

# SmartPlant 3D Symbols

## *Reference Data Guide*

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Process, Power & Marine



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# Table of Contents

<b>Preface.....</b>	<b>37</b>
What's New in 3D Symbols .....	38
<b>Symbols: An Overview .....</b>	<b>45</b>
2D Symbols: An Overview .....	46
3D Symbols: An Overview.....	47
Defining Ports on Symbols: An Overview .....	49
Providing a Graphical Preview: An Overview .....	50
Add a Preview Graphic to Parts using Catalog.....	51
Add a Preview Graphic to Parts using Bulkload.....	52
<b>Creating Part Occurrence Symbols in Visual Basic: An Overview .....</b>	<b>55</b>
Add a Symbol to Reference Data .....	56
Distributing Symbols Automatically .....	58
Distributing Symbols Manually.....	60
Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview.....	61
Workflow for Creating a VB Part Occurrence Symbol .....	62
Visual Basic Part Definition Wizard.....	63
Step 1 - Create VB Project Page .....	63
Step 2 - Create Excel Spreadsheet Page.....	65
Step 3 - Specify Definition Properties Page.....	67
Step 4 - Specify Occurrence Properties Page.....	69
Step 5 - Identify the Outputs Page .....	71
Programming Notes for Visual Basic: An Overview .....	74
Defining Electrical Parts .....	74
Defining HVAC Parts .....	76
Defining Hanger and Support Part Ports.....	78
Defining Nozzles .....	80
Defining Parametric Components.....	83
Defining Valves .....	86
Using SymbolHelper.....	88
Using Custom Aspects with a Symbol.....	91
Using String Type as an Input Parameter .....	91
Using a Part as the First Input.....	92
Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview .....	93
EDEN Translator Workflow .....	94
EDEN Translator Command Line Structure .....	94
EDEN Translator Outputs.....	96
EDEN Translator Required VB Editing.....	96
EDEN Translator Example .....	99
Symbol Definitions: An Overview .....	103
<b>Creating Symbols in Solid Edge: An Overview .....</b>	<b>107</b>

---

*Table of Contents*

Defining Ports in Solid Edge: An Overview .....	108
Model Parts in Solid Edge .....	109
Define Connection Ports on Solid Edge Parts .....	112
<b>Troubleshooting: An Overview .....</b>	<b>113</b>
Debugging Symbols with Visual Basic .....	114
Testing Symbols .....	118
Update Symbol .....	118
Edit Symbol Occurrence .....	119
Sources of Errors .....	121
Error Investigation Methods .....	123
<b>Cable Tray Symbols: An Overview.....</b>	<b>125</b>
SP3D30HCableTray .....	127
SP3D30VCTrayInside .....	128
SP3D30VCTrayOutside .....	129
SP3D45HCableTray .....	130
SP3D45VCTrayInside .....	131
SP3D45VCTrayOutside .....	132
SP3D60HCableTray .....	133
SP3D60VCTrayInside .....	134
SP3D60VCTrayOutside .....	135
SP3D90HCableTray .....	136
SP3D90HExpRedCableTray .....	137
SP3D90VCableTrayInside .....	138
SP3D90VCableTrayOutside.....	139
SP3DAadjHCableTray .....	140
SP3DAadjVCableTray .....	141
SP3DCrossCableTray .....	142
SP3DEndPlateCableTray .....	143
SP3DLeftReducerCableTray .....	144
SP3DLeftWyeCableTray .....	145
SP3DRightReducerCableTray .....	146
SP3DRightWyeCableTray .....	147
SP3DSredCableTray (Straight Reducer) .....	148
SP3DTeeCableTray .....	149
SP3DVCrossCabletray .....	150
SP3DVTeedownCableTray .....	151
SP3DVTeetupCableTray .....	152
<b>Conduit Symbols: An Overview .....</b>	<b>153</b>
SP3D90ConduitElbow.....	154
SP3DConduit45Elbow.....	155
SP3DConduitCap.....	156
SP3DConduitCoupling .....	157
SP3DConduitCross .....	158

---

SP3DConduitExpJoint .....	159
SP3DConduitHub .....	160
SP3DConduitPlug .....	161
SP3DConduitReducer .....	162
SP3DConduitReducingTee .....	163
SP3DConduitSealEYS .....	164
SP3DConduitTee .....	165
SP3DConduitUnion .....	166
SP3DConduitY .....	167
SP3DElecPullBox .....	168
<b>Design Aid Symbols: An Overview .....</b>	<b>171</b>
SP3D15TonCraneAsm .....	172
SP3D42inPalletAsm .....	174
SP3D5350cRailcarAsm .....	175
SP3D55GallonDrumAsm .....	176
SP3D5TCarryDeckCraneAsm .....	177
SP3DWasteAsm .....	179
SP3DForkTruckAsm .....	180
SP3DSixFootWorkerAsm .....	182
SP3DTractorTruckAsm .....	184
SP3DTruckTrailerAsm .....	185
SP3DWeighScaleAsm .....	187
<b>Designed Equipment and Volumes Shapes: An Overview.....</b>	<b>189</b>
CircularTori Sheet .....	191
Datum Shape .....	191
EccentricCone Sheet .....	192
EccentricRectangularPrism Sheet .....	192
EccentricTransitionElement Sheet .....	193
HexagonalSolid Sheet .....	193
Octagonal Solid Sheet .....	194
Platform1 Sheet .....	194
Platform2 Sheet .....	195
RectangularSolid Sheet .....	195
RectangularTorus Sheet .....	196
RtCircularCone Sheet .....	196
RtCircularCylinder Sheet .....	197
SemiElliptical Head Sheet .....	197
Sphere Sheet .....	198
TransitionElement Sheet .....	198
TriangularSolid Sheet .....	199
TruncatedRectangularPrism Sheet .....	199
SP3DRoadCross .....	200
SP3DRoadTee .....	202
Ellipse Sheet .....	204

Circle Sheet.....	204
Hexagon Sheet.....	204
IBeam Sheet.....	205
Rectangle Sheet .....	205
Road Sheet .....	205
Sector Sheet .....	206
TrapezeC Sheet.....	206
TrapezeR Sheet.....	206
Triangle Sheet.....	207
Nozzle Orientations .....	207
<b>Equipment Components: An Overview .....</b>	<b>211</b>
SP3DCenWebSaddleCompAsm.....	213
SP3DCIPiGuiSLCompAsm .....	215
SP3DEqpEnd2TO1CompAsm .....	217
SP3DEqpEndConeCompAsm .....	218
SP3DEqpEndDomeCompAsm .....	220
SP3DEqpEndFLGDCOMPAsm .....	221
SP3DEqpEndFnDCompAsm.....	223
SP3DEqpEndHemiCompAsm.....	224
SP3DEqpEndTORCCOMPAsm .....	225
SP3DEqpEndTORSCompAsm.....	227
SP3DEXShellBodyCompAsm .....	228
SP3DE_205CompAsm .....	230
SP3DE_210CompAsm .....	232
SP3DE_215CompAsm .....	234
SP3DE_230CompAsm .....	236
SP3DE_240CompAsm .....	238
SP3DE_245CompAsm .....	240
SP3DE_305CompAsm .....	242
SP3DE_307CompAsm .....	245
SP3DE_310CompAsm .....	247
SP3DE_320CompAsm .....	250
SP3DE_325CompAsm .....	252
SP3DE_332CompAsm .....	254
SP3DE_334CompAsm .....	256
SP3DE_405CompAsm .....	258
SP3DE_410CompAsm .....	260
SP3DFOITorusMiterAsm .....	262
SP3DFrEnExTyACDNCOMPAsm .....	264
SP3DFrEnExTyBCOMPAsm .....	266
SP3DFrEnExTyQCOMPAsm.....	268
SP3DHDrVesAIXCOMPAsm .....	269
SP3DHeatEx2EndShellCOMP.....	270
SP3DHeatEx2EndShellCOMPAsm .....	273
SP3DHeatExHeadCOMPAsm .....	275

SP3DHeatExMiterHeadsCompAsm.....	276
SP3DHeatExShellCompAsm .....	278
SP3DHorDrumCompAsm .....	279
SP3DHorOffsetSaddleCompAsm.....	280
SP3DKettleExchNestedAsm .....	282
SP3DLiftLugBPCompAsm .....	284
SP3DLiftLugFVCompAsm .....	286
SP3DManWayDBotHCAsm .....	287
SP3DManWayDHorCovAsm.....	289
SP3DManWayDVerCovAsm .....	291
SP3DParSaddleCompAsm .....	293
SP3DPlatformAsm .....	295
SP3DPlatformTypeACompAsm.....	297
SP3DPlatformTypeBCompAsm.....	298
SP3DPlatformTypeCCompAsm.....	299
SP3DPlatformTypeDCompAsm.....	300
SP3DPlatformTypeECompAsm .....	301
SP3DPlatformTypeFCompAsm .....	303
SP3DPlatformWithHoleAsm.....	304
SP3DRecTorusMiterAsm .....	306
SP3DREnExTyLNPW1CompAsm .....	308
SP3DREnExTyMSTUW2CompAsm.....	310
SP3DREnExTyQCompAsm.....	312
SP3DRndTorusMiterAsm.....	313
SP3DSaddleSupCompAsm.....	315
SP3DSkirtAsm.....	317
SP3DSkirtBaseTypeACompAsm .....	319
SP3DSkirtBaseTypeBCompAsm .....	321
SP3DSkirtBaseTypeCCompAsm .....	323
SP3DSkirtBaseTypeDCompAsm .....	325
SP3DSpiralStairTankComp .....	327
SP3DSupportLegsCompAsm .....	329
SP3DSupportLugAsm .....	331
SP3DSwGearSectCompAsm .....	332
SP3DTeskirt .....	334
SP3DVerDrumCompAsm .....	336
SP3DVesselPlatformAsm.....	338
SP3DVesselSkirtCompAsm .....	340
SP3DVOITorusMiterAsm .....	342
SP3DWeldPiGMLCompAsm.....	344
SP3DWeldPiGSLCompAsm .....	346
SP3DWeldTySMLCompAsm .....	348
SP3DWeldTySSLCompAsm.....	350
<b>Equipment Symbols: An Overview .....</b>	<b>353</b>
SP3DAirDistribAssemblyAsm .....	355

---

---

*Table of Contents*

---

SP3DCESVVessel2PlatfAsm .....	356
SP3DComplexHorCylVesselAsm .....	359
SP3DComplexVesselAsm .....	361
SP3DDDisconnectSwitchAsm .....	364
SP3DDoorsAsm.....	366
SP3DDouPipeExchangerAsm .....	369
SP3DElecBayLightAsm .....	371
SP3DElecContSwitch .....	373
SP3DElecEnclosureAsm .....	375
SP3DElecFluoFix .....	376
SP3DElecHBFixture .....	377
SP3DElecJunctionBox.....	379
SP3DElecLBFixture .....	380
SP3DElecLiEquip01Asm .....	382
SP3DElecLiPendantAsm .....	383
SP3DElecSpeaker04Asm .....	384
SP3DElecSpeaker05Asm .....	385
SP3DElectLight01Asm.....	386
SP3DElecTransformer .....	388
SP3DElectricalMotor.....	390
SP3DElecVarFreqDrive .....	392
SP3DElecWPFixture .....	393
SP3DEmergencyBeaconAsm .....	395
SP3DE_205CompVerCylEqpSkAsm.....	397
SP3DE_210SimVerCylSkirtAsm .....	400
SP3DE_215Asm .....	402
SP3DE_215SimVerCylLegsAsm .....	404
SP3DE_230SphVesselAsm .....	406
SP3DE_240CompHorCylEqpAsm.....	408
SP3DE_245Asm .....	410
SP3DE_245SimpHorCylEqpAsm .....	412
SP3DE_305HorShTubeExchAsm .....	414
SP3DE_307KettleHeatXchAsm .....	417
SP3DE_310VerShTubeExchAsm .....	420
SP3DE_320DouPipeExchAsm.....	422
SP3DE_325PlateExchAsm.....	424
SP3DE_405HoriRotEqpAsm .....	426
SP3DE_410VerRotEqAsm.....	429
SP3DFallFilmSTExAsm.....	431
SP3DFluorescentLightAsm .....	433
SP3DForDr2AirCoolerBayAsm .....	434
SP3DForDr3AirCoolerBayAsm .....	436
SP3DForDr4AirCoolerBayAsm .....	438
SP3DFrExEndTypeACDN .....	440
SP3DFrExEndTypeB.....	441
SP3DFrExEndTypeQ .....	442

---

SP3DHCPumpWFNDNozAsm .....	443
SP3DHeatXAsm .....	445
SP3DHorCenJktPumpAsm .....	446
SP3DHorDrWiSaddleAsm .....	448
SP3DHoriPumpBB1Asm .....	450
SP3DHoriPumpBB2Asm .....	453
SP3DHoriPumpBB3Asm .....	455
SP3DHoriPumpBB5Asm .....	457
SP3DHoriPumpOH2Asm .....	459
SP3DHoriShellTubeExchangerAsm .....	462
SP3DHoriVesselEndsAsm .....	464
SP3DHorizontalPumpAsm .....	466
SP3DHorRotEqpADvrAsm .....	469
SP3DHorSTEExch02Asm .....	471
SP3DHorSTEExch03Asm .....	473
SP3DHorSTEExch04Asm .....	476
SP3DIndDr2AirCoolerBayAsm .....	479
SP3DIndDr3AirCoolerBayAsm .....	481
SP3DIndDr4AirCoolerBayAsm .....	483
SP3DInstrStandDouCol .....	485
SP3DInstrStandSinCol .....	486
SP3DInstrStdWallMount .....	487
SP3DKettleExchangerAsm .....	488
SP3DLightingFixtureBHARAsm .....	490
SP3DLightingFixtureBHDRAsm .....	492
SP3DLightingFixtureBTARAsm .....	494
SP3DLightingFixtureBTDRAsm .....	496
SP3DPIAndFrExch01Asm .....	498
SP3DPIAndFrExch02Asm .....	500
SP3DPIAndFrExch03Asm .....	502
SP3DPlateExchangerAsm .....	504
SP3DPumpAsm .....	506
SP3DPumpMAsm .....	508
SP3DPumpUnitHCAsm .....	510
SP3DReceptacleAsm .....	513
SP3DSafShower01Asm .....	515
SP3DSafShower02Asm .....	516
SP3DSafShower03Asm .....	517
SP3DSafShower04Asm .....	519
SP3DSafShower05Asm .....	521
SP3DSafShower06Asm .....	523
SP3DSafShower07Asm .....	525
SP3DSafShower08Asm .....	527
SP3DSafShower09Asm .....	529
SP3DSingleFrDrAirCoolerAsm .....	531
SP3DSingleIndDrAirCoolerAsm .....	533

---

*Table of Contents*

SP3DSlipFitterFloodLightAsm .....	535
SP3DSphericalVesselAsm.....	537
SP3DSpiralStairTankAsm .....	539
SP3DStdPump .....	541
SP3DStorageTankAsm .....	543
SP3DSwitchGearAsm.....	545
SP3DVerDrumWiLegsAsm .....	547
SP3DVerRotatingEquipmentAsm .....	549
SP3DVerticalPumpAsm .....	551
SP3DVertPumpOH3Asm .....	553
SP3DVertShellTubeExchangerAsm.....	556
SP3DVertVesselEndsAsm.....	559
SP3DVesselwithSkirtAsm.....	561
<b>Fire and Safety Symbols: An Overview .....</b>	<b>563</b>
SP3D2WFireHydrantTy1 .....	564
SP3D2WFireHydrantTy2 .....	565
SP3D3WFireHydrant.....	566
SP3D3WFireHydrantTy2 .....	567
SP3D90DegSiamese .....	568
SP3DElevFireMonitor .....	569
SP3DEyeWash.....	571
SP3DFireHydWMonTy1 .....	572
SP3DFireHydWMonTy2 .....	574
SP3DFireMonitor .....	575
SP3DFlCrossWFireHydOutlet .....	576
SP3DFlTeeWFireHydOutlet.....	577
SP3DFoamChamberTy1 .....	578
SP3DFoamChamberTy2.....	579
SP3DHoseRackSt .....	581
SP3DSafetyShower.....	582
SP3DSafShower01Asm.....	584
SP3DSafShower02Asm.....	585
SP3DSafShower03Asm.....	586
SP3DSafShower04Asm.....	588
SP3DSafShower05Asm.....	590
SP3DSafShower06Asm.....	592
SP3DSafShower07Asm.....	594
SP3DSafShower08Asm.....	596
SP3DSafShower09Asm.....	598
SP3DSiamese.....	600
SP3DSpraySprinkler.....	601
<b>Hangers and Supports Symbols: An Overview .....</b>	<b>603</b>
Assy_FR_BC_CS .....	604
Assy_FR_BC_HSS .....	605

---

Assy_FR_BC_LS .....	606
Assy_FR_BC_WS .....	607
Assy_FR_IT_LS .....	608
Assy_FR_LS_CS .....	609
Assy_FR_LS_HSS .....	610
Assy_FR_LS_LS .....	611
Assy_FR_BC_CS .....	612
Assy_FR_TS_CS .....	613
Assy_FR_TS_LS .....	614
Assy_FR_TS_WS .....	615
Assy_FR_UC_CS .....	616
Assy_FR_UC_HSS .....	617
Assy_FR_UC_LS .....	618
Assy_FR_UC_WS .....	619
Assy_FR_US_LS .....	620
Assy_GD_AN .....	621
Assy_GD_HD .....	622
Assy_GD_L1 .....	623
Assy_GD_L2 .....	624
Assy_GD_T1 .....	625
Assy_GN_VR_CYL .....	626
Assy_LE_DL .....	627
Assy_RR_DR_LS .....	628
Assy_RR_DR_WS .....	629
Assy_RR_LR .....	630
Assy_RR_SR_CL .....	631
Assy_RR_SR_DB .....	632
Assy_RR_SR_DH .....	633
Assy_RR_SR_HV .....	634
Assy_RR_SR_MD .....	635
Assy_SH .....	636
Assy_SH_CL .....	637
Assy_VS_SR_CL .....	638
Assy_VS_SR_DB .....	639
Assy_VS_SR_DH .....	640
Assy_VS_SR_HV .....	641
Assy_VS_SR_MD .....	642
HgrAisc_C .....	643
HgrAisc_HSS .....	644
HgrAisc_L .....	645
HgrAisc_Pipe .....	646
HgrAisc_ST .....	647
HgrAisc_W .....	648
HgrAisc_WT .....	649
Anvil FIG103 .....	650
Anvil FIG133 .....	651

---

*Table of Contents*

---

Anvil FIG134.....	652
Anvil FIG135.....	653
Anvil FIG135E .....	654
Anvil FIG136.....	655
Anvil FIG137.....	656
Anvil FIG140.....	657
Anvil FIG146.....	658
Anvil FIG157.....	659
Anvil FIG160.....	660
Anvil FIG161.....	661
Anvil FIG162.....	662
Anvil FIG163.....	663
Anvil FIG164.....	664
Anvil FIG165.....	665
Anvil FIG167.....	666
Anvil FIG181.....	667
Anvil FIG191.....	668
Anvil FIG192.....	670
Anvil FIG200.....	671
Anvil FIG201.....	673
Anvil FIG211.....	675
Anvil FIG212.....	677
Anvil FIG216.....	679
Anvil FIG218.....	681
Anvil FIG222.....	682
Anvil FIG224.....	684
Anvil FIG230.....	685
Anvil FIG242A.....	686
Anvil FIG243A.....	687
Anvil FIG244A.....	688
Anvil FIG246.....	689
Anvil FIG248.....	690
Anvil FIG248L.....	691
Anvil FIG253.....	692
Anvil FIG255.....	693
Anvil FIG256.....	694
Anvil FIG257.....	695
Anvil FIG257A.....	696
Anvil FIG260.....	697
Anvil FIG261.....	698
Anvil FIG262.....	699
Anvil FIG271.....	700
Anvil FIG278.....	701
Anvil FIG278L.....	702
Anvil FIG290.....	703
Anvil FIG290.....	705

---

Anvil FIG291.....	707
Anvil FIG292.....	708
Anvil FIG295.....	709
Anvil FIG295H.....	711
Anvil FIG299.....	713
Anvil FIG300.....	715
Anvil FIG40.....	716
Anvil FIG436.....	718
Anvil FIG436A.....	719
Anvil FIG55L.....	720
Anvil FIG55S.....	721
Anvil FIG60.....	722
Anvil FIG63A.....	723
Anvil FIG63B.....	725
Anvil FIG63C.....	727
Anvil FIG66.....	729
Anvil FIG69.....	731
Anvil FIG80A.....	732
Anvil FIG80B.....	734
Anvil FIG80C.....	736
Anvil FIG81A.....	738
Anvil FIG81B.....	740
Anvil FIG81C.....	742
Anvil FIG81D.....	744
Anvil FIG81F.....	746
Anvil FIG82A.....	748
Anvil FIG82B.....	749
Anvil FIG82C.....	751
Anvil FIG82D.....	753
Anvil FIG82E.....	754
Anvil FIG82F.....	756
Anvil FIG82G.....	758
Anvil FIG86.....	760
Anvil FIG95.....	761
Anvil FIG98A.....	762
HgrAisc_Pipe.....	764
Anvil FIG98C.....	766
Anvil FIG98D.....	768
Anvil FIG98E.....	769
Anvil FIG98F.....	771
Anvil FIG98G.....	773
Anvil FIGB268A .....	775
Anvil FIGB268B .....	777
Anvil FIGB268C .....	779
Anvil FIGB268D .....	781
Anvil FIGB268E.....	783

---

*Table of Contents*

Anvil FIGB268F .....	785
Anvil FIGB268G .....	787
Anvil HEX_NUT .....	789
Lisega_TYPE11 .....	790
Lisega_TYPE12_13_14 .....	792
Lisega_TYPE16 .....	794
Lisega_TYPE20 .....	796
Lisega_TYPE20_EXT .....	798
Lisega_TYPE21 .....	800
Lisega_TYPE22 .....	802
Lisega_TYPE25 .....	804
Lisega_TYPE26 .....	805
Lisega_TYPE27 .....	806
Lisega_TYPE27_EXT .....	808
Lisega_TYPE28 .....	809
Lisega_TYPE29 .....	811
Lisega_TYPE299 .....	812
Lisega_TYPE30 .....	813
Lisega_TYPE31 .....	814
Lisega_TYPE32 .....	816
Lisega_TYPE33 .....	818
Lisega_TYPE35 .....	819
Lisega_TYPE36 .....	820
Lisega_TYPE37_LRG .....	822
Lisega_TYPE37_SML .....	824
Lisega_TYPE39 .....	826
Lisega_TYPE40 .....	827
Lisega_TYPE41A .....	828
Lisega_TYPE41B .....	829
Lisega_TYPE42A .....	830
Lisega_TYPE42B .....	831
Lisega_TYPE43 .....	833
Lisega_TYPE44A .....	835
Lisega_TYPE44B .....	837
Lisega_TYPE45 .....	839
Lisega_TYPE46 .....	841
Lisega_TYPE48 .....	843
Lisega_TYPE49A .....	845
Lisega_TYPE49B .....	847
Lisega_TYPE51 .....	848
Lisega_TYPE52 .....	849
Lisega_TYPE53 .....	851
Lisega_TYPE54A .....	853
Lisega_TYPE54B .....	854
Lisega_TYPE54C .....	855
Lisega_TYPE55 .....	856

---

Lisega_TYPE56A.....	857
Lisega_TYPE56B .....	859
Lisega_TYPE57.....	860
Lisega_TYPE58A.....	861
Lisega_TYPE58B .....	862
Lisega_TYPE60.....	863
Lisega_TYPE61.....	864
Lisega_TYPE62.....	866
Lisega_TYPE63.....	867
Lisega_TYPE64.....	868
Lisega_TYPE65.....	869
Lisega_TYPE66_LRG.....	870
Lisega_TYPE67A.....	871
Lisega_TYPE67B .....	872
Lisega_TYPE67C.....	873
Lisega_TYPE70.....	874
Lisega_TYPE71A.....	875
Lisega_TYPE71B .....	876
Lisega_TYPE72.....	877
Lisega_TYPE73.....	878
Lisega_TYPE74.....	880
Lisega_TYPE75.....	881
Lisega_TYPE76A.....	882
Lisega_TYPE76B .....	883
Lisega_TYPE76C.....	885
Lisega_TYPE76D.....	886
Lisega_TYPE77.....	887
Lisega_TYPE78.....	888
Lisega_TYPE79A.....	889
Lisega_TYPE79B .....	890
Lisega_TYPE79C.....	892
Lisega_TYPE79V1.....	894
Lisega_TYPE79V2.....	896
LRParts FIG135N.....	898
LRParts FIG140N.....	899
LRParts FIG212N .....	900
LRParts FIG216N.....	902
LRParts FIG230N.....	904
LRParts FIG253N .....	905
LRParts FIG290LN .....	906
LRParts FIG290N .....	908
LRParts FIG295HN .....	910
LRParts FIG295N .....	912
LRParts FIG299N .....	914
LRParts FIG55NS.....	916
LRParts FIG60N .....	917

---

*Table of Contents*

---

LRParts FIG66N .....	918
LRParts_hex_nut .....	920
PSL_114 .....	921
PSL_116 .....	922
PSL_118 .....	923
PSL_122 .....	924
PSL_122A .....	925
PSL_125 .....	926
PSL_130 .....	927
PSL_226 .....	928
PSL_227 .....	929
PSL_228 .....	930
PSL_230 .....	931
PSL_231 .....	932
PSL_232 .....	933
PSL_233 .....	934
PSL_234 .....	935
PSL_235 .....	936
PSL_235A .....	937
PSL_236 .....	938
PSL_238 .....	939
PSL_239 .....	940
PSL_274 .....	941
PSL_276A .....	942
PSL_276B .....	943
PSL_276C .....	944
PSL_277 .....	945
PSL_278 .....	946
PSL_279 .....	947
PSL_280 .....	948
PSL_281 .....	949
PSL_282 .....	950
PSL_308 .....	951
PSL_311 .....	952
PSL_313 .....	953
PSL_314 .....	954
PSL_315 .....	955
PSL_316 .....	956
PSL_317 .....	957
PSL_318 .....	958
PSL_319 .....	959
PSL_320 .....	960
PSL_321 .....	961
PSL_322 .....	962
PSL_347 .....	963
PSL_348A .....	964

---

PSL_348B .....	965
PSL_348C .....	967
PSL_348D .....	968
PSL_348E .....	969
PSL_348F .....	970
PSL_349 .....	972
PSL_350_LRG .....	973
PSL_350_SML .....	974
PSL_351 .....	975
PSL_353 .....	976
PSL_355A .....	977
PSL_355B .....	978
PSL_355C .....	979
PSL_355D .....	980
PSL_355E .....	981
PSL_355F .....	982
PSL_358 .....	983
PSL_383 .....	984
PSL_486 .....	985
PSL_487 .....	986
PSL_488 .....	987
PSL_511 .....	988
PSL_512 .....	989
PSL_513 .....	990
PSL_513S .....	992
PSL_514 .....	993
PSL_515 .....	995
PSL_516 .....	996
PSL_517 .....	997
PSL_711 .....	998
PSL_712 .....	1000
PSL_721 .....	1002
PSL_722 .....	1003
PSL_731 .....	1004
PSL_732 .....	1005
PSL_741 .....	1006
PSL_742 .....	1007
PSL_743 .....	1008
PSL_801 .....	1009
PSL_802 .....	1010
PSL_816 .....	1011
PSL_817 .....	1012
PSL_818 .....	1013
PSL_901 .....	1014
PSL_902 .....	1015
PSL_916 .....	1016

---

---

*Table of Contents*

---

PSL_917 .....	1017
PSL_918 .....	1018
PSL_CH100.....	1019
PSL_CS100_LRG.....	1021
PSL_CS100_MED.....	1023
PSL_CS100_SML .....	1025
PSL_CS200_LRG.....	1026
PSL_CS200_MED.....	1028
PSL_CS200_SML .....	1030
PSL_F495 .....	1032
PSL_F496 .....	1033
PSL_FPR .....	1034
PSL_HBM .....	1035
PSL_HBMCS .....	1036
PSL_HD_TS1 .....	1037
PSL_HD_TS2 .....	1038
PSL_HD_TS3 .....	1039
PSL_HD_TS4 .....	1040
PSL_HD_TS5 .....	1041
PSL_HS_TS2 .....	1042
PSL_HS_TS3 .....	1043
PSL_PB1 .....	1044
PSL_PB1_CM .....	1045
PSL_PB2 .....	1046
PSL_PB2_CM .....	1047
PSL_PB3 .....	1048
PSL_PB3_CM .....	1049
PSL_PB4 .....	1050
PSL_PB4_CM .....	1051
PSL_PC2 .....	1052
PSL_PC2_CM .....	1053
PSL_PC3 .....	1054
PSL_PC3_CM .....	1055
PSL_RC4 .....	1056
PSL_RC6 .....	1057
PSL_SB .....	1058
PSL_V1_BM .....	1059
PSL_V1_DS .....	1060
PSL_V1_ES .....	1062
PSL_V1_TA .....	1063
PSL_V1_TS1 .....	1064
PSL_V1_TS2 .....	1065
PSL_V1_TS3 .....	1066
PSL_V2_BM .....	1068
PSL_V2_DS .....	1070
PSL_V2_ES .....	1072

---

PSL_V2_TA .....	1073
PSL_V2_TS1 .....	1074
PSL_V2_TS2 .....	1075
PSL_V2_TS3 .....	1076
PSL_V3_BM .....	1078
PSL_V3_DS .....	1079
PSL_V3_ES .....	1081
PSL_V3_TA .....	1082
PSL_V3_TS1 .....	1083
PSL_V3_TS2 .....	1084
PSL_V3_TS3 .....	1085
PSL_VBM .....	1087
PSL_VBMCs .....	1088
PSL_VD_TS1 .....	1089
PSL_VD_TS2 .....	1090
PSL_VD_TS3 .....	1091
PSL_VD_TS4 .....	1092
PSL_VD_TS5 .....	1093
PSL_VIBM .....	1094
PSL_VID_TS2 .....	1095
PSL_VID_TS3 .....	1096
PSL_VID_TS4 .....	1097
PSL_VIS_TS2 .....	1098
PSL_VIS_TS3 .....	1099
PSL_VS_TS2 .....	1100
PSL_VS_TS3 .....	1101
Utility_CURVED_PLATE .....	1102
Utility_END_PLATE .....	1103
Utility_END_PLATE_HOLED .....	1104
Utility_END_PLATE_TAPER .....	1105
Utility_END_PLATE_VAR .....	1106
Utility_FOUR_HOLE_PLATE .....	1107
Utility_GENERIC_L .....	1108
Utility_GENERIC_T .....	1109
Utility_GENERIC_W .....	1110
Utility_GEN_3_BOLT_CLAMP .....	1111
Utility_GEN_4_BOLT_CLAMP .....	1113
Utility_GEN_4_LIN_BOLT_CL .....	1115
Utility_GEN_CLAMP .....	1117
Utility_GEN_HEX_NUT .....	1119
Utility_GEN_HOOD .....	1120
Utility_GEN_PIPE_ATT .....	1121
Utility_GEN_PIPE_ATT2 .....	1122
Utility_GEN_REC_STRAP .....	1123
Utility_GEN_U_BOLT .....	1124
Utility_GEN_U_STRAP .....	1125

---

*Table of Contents*

---

Utility_GROUT .....	1126
Utility_GUSSET .....	1127
Utility_GUSSET2 .....	1128
Utility_GUSSET_NOTCHED .....	1129
Utility_HALF_END_PLATE .....	1130
Utility_I_BEAM_STIFFENER .....	1131
Utility_NOTCH_PLATE .....	1132
Utility_PIPE_STRAP .....	1133
Utility_PLATE .....	1134
Utility_SHEAR_TAB .....	1135
Utility_SQUARE_GROUT .....	1136
Utility_TRUNNION .....	1137
Utility_TWO_HOLE_PLATE .....	1138
Utility_USER_FIXED_BOX .....	1139
Utility_USER_FIXED_CYL .....	1140
Utility_USER_VARIABLE_BOX .....	1141
Utility_USER_VARIABLE_CYL .....	1142
Utility_U_BOLT_PLATE .....	1143
CircularPad .....	1144
CTClipHoldClamp .....	1145
CTHoldDownClamp .....	1146
CTHoldSideClamp .....	1147
CTHoldUpClamp .....	1148
CTSsingleCnHg .....	1149
DuctClamp .....	1150
G4G_1451_04 .....	1151
G4G_1451_06 .....	1152
G4G_1460_01 .....	1153
G4G_1461_01 .....	1154
HgrBeam .....	1155
HgrElbowLug .....	1156
HgrElbowLug .....	1157
HgrSupFlatPlate .....	1158
HgrSupInternalBracket .....	1159
HgrSupPentrPlate .....	1160
HgrSupUBolt .....	1161
RectangularPad .....	1162
StructProfile .....	1163
TriangularPad .....	1164
VerticalPad .....	1165
VerticalPipePad .....	1166
<b>HVAC Symbols: An Overview .....</b>	<b>1167</b>
SP3DAirCoolingCoil .....	1168
SP3DAirFilterHumidifier .....	1170
SP3DAirFilterR .....	1172

---

SP3DBellMouth.....	1174
SP3DDivisionW2 .....	1175
SP3DDivisionW3 .....	1177
SP3DH30DegRndLateral .....	1179
SP3DH45DegRndLateral .....	1181
SP3DH60DegRndLateral .....	1183
SP3DH90TurnTranOffsetT .....	1185
SP3DHAirhandleUnit .....	1187
SP3DHCeilingDiffuser .....	1189
SP3DHChiller .....	1190
SP3DHCleaningBend .....	1192
SP3DHDiskValve .....	1194
SP3DHEccentricTee .....	1195
SP3DHElbow .....	1196
SP3DHExhaustFan .....	1198
SP3DHFIREDamper .....	1200
SP3DHHalfRndDiffuser .....	1202
SP3DHLinearGrille .....	1203
SP3DHMultiLeafDamper .....	1205
SP3DHPresRelDamper .....	1207
SP3DHRec2RecAdapter .....	1209
SP3DHRecDiffuserRectN .....	1210
SP3DHRecDiffuserRndN .....	1212
SP3DHRecGrillRecNeck .....	1214
SP3DHRecGrillRndN .....	1216
SP3DHRecRegisterRecN .....	1218
SP3DHRecRegisterRndN .....	1220
SP3DHRctBellMouth .....	1222
SP3DHRctBranchAngRTE .....	1223
SP3DHRctFlatFlange .....	1224
SP3DHRctFlatFlangeDInc .....	1226
SP3DHRctFlatFlangeDWInc .....	1228
SP3DHRctPantWye .....	1230
SP3DHRctRTE .....	1232
SP3DHRctSleeve .....	1234
SP3DHRndCross .....	1236
SP3DHRndDiffuser .....	1238
SP3DHRndPantWye .....	1240
SP3DHRndReducer .....	1242
SP3DHRoundBranchAngRTE .....	1243
SP3DHRoundDamper .....	1244
SP3DHRoundElbow .....	1246
SP3DHRoundFlatFlange .....	1247
SP3DHRoundFlatFlangeDInc .....	1249
SP3DHRoundFlatFlangeDWInc .....	1251
SP3DHRoundRTE .....	1253

---

*Table of Contents*

SP3DHRoundSleeve.....	1255
SP3DHSRSplitAttentor.....	1257
SP3DHSMRectDiffuser.....	1259
SP3DHSMRectRegister.....	1260
SP3DHsqrThroatElbow .....	1261
SP3DHVACCoupling.....	1263
SP3DHVACEndCap.....	1264
SP3DHVACFlatOvalRivet .....	1265
SP3DHVACFlatOvalWeld .....	1266
SP3DHVACRectRivet.....	1267
SP3DHVACRectWeld.....	1268
SP3DHVACRoundRivet .....	1269
SP3DHVACRoundWeld .....	1270
SP3DHVACSaddle.....	1271
SP3DHvacSM1PTap .....	1272
SP3DHvacSMRB .....	1273
SP3DHvacSMRoundB .....	1274
SP3DHVACSurfMount .....	1275
SP3DHWRLouvres.....	1277
SP3DMotorRoundDamper .....	1279
SP3DRFOBellMouth.....	1281
<b>Piping Symbols.....</b>	<b>1283</b>
Ball.....	1286
ConcentricReducer .....	1287
EqualTee .....	1289
SP3D11Elbow.....	1290
SP3D1OrificeFlange .....	1291
SP3D225DegMiterElbow .....	1292
SP3D22Elbow.....	1293
SP3D30DegElbow .....	1294
SP3D30DegMiterElbow .....	1295
SP3D30Elbow.....	1296
SP3D30LongTangentElbow .....	1297
SP3D3OP1 .....	1301
SP3D3WayBall.....	1303
SP3D3WayBallValve .....	1305
SP3D3WayCheckValve.....	1306
SP3D3WayControlValve.....	1309
SP3D3WayDiverterVal .....	1310
SP3D3WayGlobeValve .....	1312
SP3D3WayPlugValve.....	1313
SP3D45DegAngleValve .....	1314
SP3D45DegMiterElbow .....	1315
SP3D45Elbow.....	1316
SP3D45LongTangentElbow .....	1317

---

SP3D45TrimElbow.....	1321
SP3D45UnionElbow.....	1322
SP3D4WayInstRootVal.....	1323
SP3D4WayPlugValve.....	1324
SP3D5Elbow.....	1326
SP3D60DegMiterElbow .....	1327
SP3D60Elbow.....	1328
SP3D60LongTangentElbow .....	1329
SP3D90DegMiterElbow .....	1333
SP3D90Elbow.....	1334
SP3D90ElbowCBs.....	1335
SP3D90LongTangentElbow .....	1336
SP3D90RedElbow .....	1340
SP3D90RedShortYBranch .....	1341
SP3D90ShortYBranch.....	1342
SP3D90TElbow .....	1343
SP3D90UnionElbow.....	1344
SP3DAAdapterFlange .....	1346
SP3DAnalyzer .....	1347
SP3DAngGlobeValveAsm .....	1348
SP3DAngleCheckValve .....	1349
SP3DAngleCheckValveAsym.....	1350
SP3DAngleGlobeValve .....	1351
SP3DAngleHoseValve .....	1352
SP3DAngleStopCheckValve .....	1353
SP3DAngleValve.....	1354
SP3DAngleValveL .....	1355
SP3DAnnubarTy1.....	1357
SP3DAnnubarTy2.....	1359
SP3DAutoRecircVal.....	1360
SP3DBallAsymValve .....	1361
SP3DBallGOp.....	1362
SP3DBalloonInstr.....	1363
SP3DBallValve.....	1365
SP3DBasketStrainer .....	1366
SP3DBasketStrainer2 .....	1367
SP3DBio45ElbowWeld .....	1368
SP3DBio90ElbowWeld .....	1369
SP3DBioClamp.....	1370
SP3DBioConcReducer .....	1371
SP3DBioEccReducer .....	1372
SP3DBioInstrumentTee .....	1373
SP3DBioShortOutletRunTee .....	1374
SP3DBioUsePoint.....	1375
SP3DBioUsePointOffset.....	1377
SP3DBlankGateValve .....	1379

SP3DBlindFlange .....	1381
SP3DBubbleDetector.....	1382
SP3DBullEyeSightIndicator .....	1383
SP3DButterflyGOP.....	1385
SP3DButterflyValve .....	1386
SP3DButterflyValveAsym .....	1387
SP3DButterflyValveL.....	1388
SP3DButterflyValveSym.....	1390
SP3DButterflyValveVAL.....	1392
SP3DButterflyValveVOH .....	1393
SP3DCap.....	1394
SP3DCheckValve .....	1396
SP3DCI2WInstrValve .....	1397
SP3DCI3WInstrValve .....	1399
SP3DCIAnnubarTy1.....	1401
SP3DCIAnnubarTy2.....	1403
SP3DCIBoxInstr2Ports.....	1405
SP3DCIBoxInstr3Ports.....	1407
SP3DCIBoxInstr4Ports.....	1409
SP3DCICorioFlowMetTy3GAS .....	1412
SP3DCICorioFlowMetTy3LIQ .....	1414
SP3DCICorioFlwMtrTy2GAS .....	1416
SP3DCICorioFlwMtrTy2LIQ.....	1418
SP3DCICoriolisFlowMeterTy1 .....	1420
SP3DCICylInstr2Ports.....	1422
SP3DCICylInstr3Ports.....	1424
SP3DCICylInstr4Ports.....	1426
SP3DCIDAct3WG1StyCValve .....	1428
SP3DCIDActAngleValve .....	1430
SP3DCIDActEPPAngVal.....	1432
SP3DCIDActEPPHWhAngVal .....	1434
SP3DCIDActEPPHWhGISVal .....	1437
SP3DCIDActEPPHWhTopAngVal .....	1440
SP3DCIDActEPPHWhTopGlSCVal .....	1443
SP3DCIDActGlStyValve .....	1446
SP3DCIDADCylActTy5Valve.....	1448
SP3DCIDAOSRAct90LSValve .....	1451
SP3DCIDouAFailClActTy3Val .....	1454
SP3DCIDouAFailOpenActValve .....	1457
SP3DCIDouAOrSprRetActVal .....	1460
SP3DCIDouASinCylActTy2Val .....	1463
SP3DCIDouChamberOrifice .....	1466
SP3DCIElecActTy1AngValve .....	1469
SP3DCIElecActTy1Valve .....	1472
SP3DCIElecActTy2AngVal .....	1475
SP3DCIElecActTy2Val .....	1478

SP3DCIElecActTy3AngValve .....	1481
SP3DCIElecActTy3Valve .....	1484
SP3DCIElecActTy4AngVal .....	1487
SP3DCIElecActTy4Valve .....	1490
SP3DCIElecActTy5AngValve .....	1493
SP3DCIElecActTy5Val .....	1496
SP3DCIGateVGearA .....	1499
SP3DCIInsertionElement .....	1502
SP3DCIInsertVenturi.....	1504
SP3DCInstAngValve.....	1506
SP3DCIntegralOrificeTy1.....	1508
SP3DCIntegralOrificeTy2.....	1511
SP3DCILongOrShortVenturi .....	1514
SP3DCIMagFlowmeterTy1 .....	1517
SP3DCIMagFlowmeterTy2 .....	1519
SP3DCIMagFlowmeterTy3Tr .....	1521
SP3DCIMagFlowmeterTy4 .....	1523
SP3DCIMetDblChOriFitting .....	1525
SP3DCIMeterRunShortVenturi .....	1528
SP3DCIMetrurOriFlangePlate .....	1531
SP3DCIOffsetActVal .....	1534
SP3DCIORificePlate.....	1536
SP3DCIPerRackPinActVal.....	1538
SP3DCIPiActKnifeGateValTy1 .....	1540
SP3DCIPiActKnifeGateValTy2 .....	1542
SP3DCIPistonActAngVal.....	1544
SP3DCIPistonActStCondValve .....	1546
SP3DCIPistonActValve.....	1548
SP3DCIRackPinionActValve .....	1550
SP3DCIRegulatorTy1 .....	1553
SP3DCIRegulatorTy2.....	1555
SP3DCIRegulatorTy3.....	1557
SP3DCIRegulatorTy4.....	1559
SP3DCIRegulatorTy5.....	1561
SP3DCIReliefValveTy1 .....	1563
SP3DCIReliefValveTy2 .....	1565
SP3DCIReliefValveTy3 .....	1567
SP3DCIReliefValveTy4 .....	1569
SP3DCIReliefValveTy5 .....	1572
SP3DCIReliefValveTy6 .....	1576
SP3DCIReliefValveTy7 .....	1579
SP3DCIRoDActEPPHWPosC1Val .....	1581
SP3DCIRoDActEPPHWPosD1Val .....	1584
SP3DCIRoDActPosA4Valve .....	1587
SP3DCIRoDActPosB4Valve.....	1589
SP3DCIRoDActPosC1Valve.....	1591

---

*Table of Contents*

---

SP3DCIRoDActPosD1Valve .....	1593
SP3DCIRoPisActPosA1Valve .....	1595
SP3DCIRoPisActPosA4Valve .....	1597
SP3DCIRoPisActPosB1Valve.....	1599
SP3DCIRoPisActPosB4Valve.....	1601
SP3DCIRotameterTy1 .....	1603
SP3DCIRotameterTy2.....	1605
SP3DCIRotameterTy3 .....	1607
SP3DCIRotameterTy4.....	1609
SP3DCIRotameterTy5 .....	1611
SP3DCIRotameterTy6Tr .....	1613
SP3DCIRotameterTy7FS .....	1615
SP3DCIRotameterTy8 .....	1617
SP3DCIRotameterTy9 .....	1619
SP3DCISimInstrIndicator.....	1621
SP3DCITurbineMeter.....	1623
SP3DCIVorFlowmeterTy2 .....	1625
SP3DCIVorFlowMtrTy1 .....	1627
SP3DCIVorFlowMtrTy3 .....	1629
SP3DCIVorFlowMtrTy4DH .....	1631
SP3DCIWedgeFlElement .....	1633
SP3DClamponFlowSensor .....	1635
SP3DClosedSpectBlank .....	1637
SP3DClosurePlate.....	1638
SP3DCconductivitySensor .....	1639
SP3DCConduitGateValve .....	1641
SP3DCConduitGateValveAsym .....	1642
SP3DConservationVent.....	1643
SP3DCorioFlowMeterTy2GAS.....	1644
SP3DCorioFlowMeterTy2LIQ .....	1646
SP3DCorioFlowMeterTy3GAS .....	1648
SP3DCorioFlowMeterTy3LIQ .....	1650
SP3DCoriolisFlowMeterTy1 .....	1652
SP3DCoupling .....	1654
SP3DCross .....	1655
SP3DCrossGeneric .....	1656
SP3DCrossRB.....	1658
SP3DCrossRRB .....	1660
SP3DCS3WayBallCtrlVal .....	1662
SP3DCS3WayControlVal.....	1664
SP3DCS3WayGlobeCtrlVal .....	1666
SP3DCS3WayPlugCtrlVal .....	1668
SP3DCS4WayPlugCtrlVal .....	1670
SP3DCSAnalyzer .....	1672
SP3DCSAngGlobeCtrlVal .....	1674
SP3DCSAutoRecircVal .....	1676

---

SP3DCSBallCtrlValve.....	1678
SP3DCSBalloonInstr .....	1680
SP3DCSBasketStrainer.....	1682
SP3DCSExhaustHead.....	1684
SP3DCSExpnJointOffset.....	1686
SP3DCSFilter .....	1688
SP3DCSFlameArrestorTy1 .....	1690
SP3DCSFlowNozzle.....	1692
SP3DCSFreeVent .....	1694
SP3DCSGlobeCtrlVal .....	1695
SP3DCSImpSteamTrapTy4.....	1697
SP3DCSImpSteamTrapTy5.....	1699
SP3DCSImpSteamTrapTy6.....	1701
SP3DCSImpSteamTrapTy7.....	1703
SP3DCSImpSteamTrapTy8.....	1705
SP3DCSInlineSilencer.....	1707
SP3DCSLevelIndCtrlTy3 .....	1709
SP3DCSLevelIndCtrlTy4 .....	1711
SP3DCSLevelIndCtrlTy6 .....	1714
SP3DCSP3WayBallValve .....	1716
SP3DCSP3WayGlValve.....	1718
SP3DCSP3WRPlugValve.....	1720
SP3DCSPAutaRecValve .....	1722
SP3DCSPBallValve.....	1724
SP3DCSPBasketStrainer .....	1726
SP3DCSPButterflyVal.....	1728
SP3DCSPConeStrainer.....	1730
SP3DCSPDiaphragmVal .....	1732
SP3DCSPDressCoupling .....	1734
SP3DCSPExpnJoint.....	1736
SP3DCSPFlameArrestor.....	1738
SP3DCSPFlexHose.....	1740
SP3DCSPFIThSteamTrap.....	1742
SP3DCSPFPlateStainer .....	1744
SP3DCSPFreeVentTy1.....	1746
SP3DCSPFrVentWScreen .....	1748
SP3DCSPGlobeValve.....	1750
SP3DCSPHammerArrestor.....	1752
SP3DCSPIBktSteamTrap .....	1754
SP3DCSPIstrndicator .....	1756
SP3DCSPKnifeValve .....	1758
SP3DCSPLiThSteamTrap .....	1760
SP3DCSPlugCtrlValve .....	1762
SP3DCSPPrRelRuptdisc.....	1764
SP3DCSPROrificeUnion .....	1766
SP3DCSPRotaPlugValve .....	1768

---

*Table of Contents*

---

SP3DCSPSampleCooler .....	1770
SP3DCSPSngBStrainer .....	1772
SP3DCSPSolenoidValve .....	1774
SP3DCSPSumpStrainer .....	1776
SP3DCSPSwivelJointTy1 .....	1778
SP3DCSPSwivelJointTy2 .....	1780
SP3DCSPSwivelJointTy3 .....	1782
SP3DCSPTSteamTrap .....	1784
SP3DCSPTSteamTrapWOS .....	1786
SP3DCSPTSteamTrapWS .....	1788
SP3DCSPTStrainer .....	1790
SP3DCSPWDStreamValve .....	1792
SP3DCSPWDStRegulator .....	1794
SP3DCSPWUStreamValve .....	1796
SP3DCSPWUStRegulator .....	1798
SP3DCSPYStrainer .....	1800
SP3DCSPYStrainer2 .....	1802
SP3DCSRuptureDiscVac1 .....	1804
SP3DCSRuptureDiscVac2 .....	1806
SP3DCSSlideCtrlValve .....	1808
SP3DCSSprayNozzle .....	1810
SP3DCSSteamTrap .....	1812
SP3DCSTempFusPlug .....	1814
SP3DCSTStrainer .....	1816
SP3DCSValve .....	1818
SP3DCSValveOpGear .....	1820
SP3DCSValveOpHwheel .....	1822
SP3DCSValveOpWrench .....	1824
SP3DCSVentSilencer .....	1826
SP3DCSVenturimeter .....	1828
SP3DCSYStrainer .....	1830
SP3DCylinderValve .....	1832
SP3DDAct3WGlStyCValve .....	1834
SP3DDActAngleValve .....	1836
SP3DDActEPPAngValve .....	1838
SP3DDActEPPHWhAngValve .....	1840
SP3DDActEPPHWhGlSValve .....	1842
SP3DDActEPPHWhTopAngValve .....	1844
SP3DDActEPPHWhTopGlSCValve .....	1846
SP3DDActGlStyValve .....	1848
SP3DDADualCylActTy5Valve .....	1850
SP3DDDelugeValve .....	1852
SP3DDDiaphragmActType1 .....	1853
SP3DDDiaphragmActType2 .....	1854
SP3DDDiaphragmActType3 .....	1855
SP3DDDiaphragmValve .....	1856

---

SP3DDistancePiece .....	1858
SP3DDouAFailClActTy3Valve .....	1859
SP3DDouAFailOpenActValve .....	1861
SP3DDouAOrSprRetActValve.....	1863
SP3DDouAOSRAct90LSValve .....	1865
SP3DDouASinCylActTy2Valve .....	1867
SP3DDouChamberOrifice .....	1869
SP3DDripRingTee .....	1871
SP3DEccReducer.....	1872
SP3DEccReducingTee.....	1874
SP3DELbolet .....	1875
SP3DElecActTy1AngValve .....	1876
SP3DElecActTy1Valve .....	1878
SP3DElecActTy2AngValve .....	1880
SP3DElecActTy2Valve .....	1882
SP3DElecActTy3AngValve .....	1884
SP3DElecActTy3Valve .....	1886
SP3DElecActTy4AngValve .....	1888
SP3DElecActTy4Valve .....	1890
SP3DElecActTy5AngValve .....	1892
SP3DElecActTy5Valve .....	1894
SP3DEndolet.....	1896
SP3DExhaustHead.....	1897
SP3DExpnJointOffset.....	1898
SP3DFilter .....	1899
SP3DFlameArrestorTy1 .....	1900
SP3DFlangedElboPipet .....	1902
SP3DFlangOlet .....	1903
SP3DFlowmeter.....	1904
SP3DFlowNozzle .....	1906
SP3DFlowSwitch.....	1907
SP3DFootValve .....	1908
SP3DFreeVent .....	1909
SP3DGAngleValveM .....	1910
SP3DGateAsymValve .....	1912
SP3DGateValExtndOlet .....	1913
SP3DGateValve .....	1914
SP3DGateValveAngleOp .....	1915
SP3DGateValveAsym .....	1917
SP3DGateValveExtnd .....	1918
SP3DGateValveL .....	1919
SP3DGlobeGOp .....	1920
SP3DGlobeValve.....	1921
SP3DGlobeValveF .....	1923
SP3DGlobeValves .....	1924
SP3DGroundingPaddle.....	1925

SP3DHalfCoupling .....	1926
SP3DHorLiftCheckValve .....	1927
SP3DHoseConnection .....	1928
SP3DHoseValve .....	1929
SP3DHub .....	1930
SP3DImpSteamTrapTy4.....	1931
SP3DImpSteamTrapTy5.....	1932
SP3DImpSteamTrapTy6.....	1934
SP3DImpSteamTrapTy7.....	1935
SP3DImpSteamTrapTy8.....	1936
SP3DInsertVenturi.....	1937
SP3DInstIndicator.....	1939
SP3DInstrumentTee.....	1940
SP3DIntegralOrificeTy1.....	1941
SP3DIntegralOrificeTy2.....	1943
SP3DJktInsertFlange .....	1945
SP3DJktRedSlipOnFlange.....	1946
SP3DKnifeGateValve.....	1947
SP3DLapJointFlange .....	1951
SP3DLateral.....	1952
SP3DLateralRRB .....	1953
SP3DLatrolet .....	1954
SP3DLevelIndCtrlTy3.....	1955
SP3DLevelIndCtrlTy4.....	1957
SP3DLevelIndCtrlTy6.....	1959
SP3DLinedTStrainerAssy .....	1961
SP3DLongOrShortVenturi .....	1962
SP3DLongTangentElbow .....	1964
SP3DMagFlowmeterTy1 .....	1968
SP3DMagFlowmeterTy2 .....	1969
SP3DMagFlowmeterTy3Tr .....	1970
SP3DMagFlowmeterTy4 .....	1971
SP3DMagneticFlowMeter .....	1972
SP3DMeterRunShortVenturi .....	1974
SP3DMetrurunDbIChOriFitting.....	1976
SP3DMetrurOriFlangePlate .....	1978
SP3DMFlowController .....	1979
SP3DMultiportDia3Way .....	1981
SP3DMultiportDia4Way .....	1983
SP3DMultportG2WayDia.....	1985
SP3DMultportG4WayDia.....	1986
SP3DMultportG7WayDia.....	1988
SP3DNipple .....	1990
SP3DNippolet .....	1991
SP3DNROletG .....	1992
SP3DNRRPad .....	1993

SP3DOletG .....	1994
SP3DOnBrUnionTee .....	1995
SP3DOnRunUnionTee .....	1996
SP3DOP3 .....	1997
SP3DOP4 .....	1998
SP3DOP5 .....	1999
SP3DOP691 .....	2000
SP3DOP9 .....	2001
SP3DOPBevelGear .....	2002
SP3DOPChainWheel .....	2003
SP3DOPCylinderActuator .....	2005
SP3DOPElecActuator .....	2007
SP3DOpenSpectBlank .....	2008
SP3DOPExtnStem .....	2010
SP3DOPFloorStand .....	2011
SP3DOPHandWheel .....	2012
SP3DOPManualHydraulic .....	2013
SP3DOpRackAndPinion .....	2015
SP3DOPThreadedCap .....	2016
SP3DOPTravelingNutAc .....	2017
SP3DOP_251 .....	2018
SP3DOP_271 .....	2019
SP3DOP_291 .....	2020
SP3DOP_292 .....	2021
SP3DOP_311 .....	2023
SP3DOP_331 .....	2025
SP3DOP_332 .....	2027
SP3DOP_333 .....	2029
SP3DOP_334 .....	2030
SP3DOP_351 .....	2032
SP3DOP_391 .....	2033
SP3DOP_401 .....	2034
SP3DOP_411 .....	2035
SP3DOP_412 .....	2036
SP3DOP_413 .....	2037
SP3DOP_451 .....	2038
SP3DOP_452 .....	2039
SP3DOP_453 .....	2040
SP3DOP_491 .....	2042
SP3DOP_492 .....	2043
SP3DOP_493 .....	2044
SP3DOP_494 .....	2046
SP3DOP_571 .....	2048
SP3DOP_572 .....	2049
SP3DOP_573 .....	2050
SP3DOP_574 .....	2052

---

---

*Table of Contents*

---

SP3DOP_711.....	2054
SP3DOP_731.....	2055
SP3DOP_811.....	2057
SP3DOP_851.....	2059
SP3DOP_852.....	2060
SP3DOP_853.....	2061
SP3DOP_854.....	2062
SP3DOrificeFlange.....	2064
SP3DOrificeFlange1O.....	2065
SP3DOrificeFlangeAssembly.....	2066
SP3DOrificePlate.....	2067
SP3DOrificeSpacer.....	2069
SP3DP2WAngGlobeCtrlV .....	2070
SP3DP2WayGlobeCtrlVal .....	2071
SP3DP2WayPlugCtrlVal .....	2072
SP3DP2WaySlideCtrlVal .....	2073
SP3DP2WBallCtrlValve.....	2074
SP3DP2WSolenoidValve .....	2075
SP3DP3WAngGlobeCtrlV .....	2077
SP3DP3WBallCtrlValve.....	2078
SP3DP3WPlugControlV.....	2079
SP3DP4WPlugControlV.....	2080
SP3DPaddleBlind .....	2081
SP3DPaddleSpacer .....	2083
SP3DPAngPressReliefV .....	2085
SP3DPAutoRecircValve.....	2087
SP3DPenetrationSleeve .....	2088
SP3DPerRackPinionActValve.....	2089
SP3DPExpNJoint.....	2090
SP3DPGateValExtnd.....	2092
SP3DPiActKnifeGateValveTy1 .....	2093
SP3DPiActKnifeGateValveTy2 .....	2095
SP3DPinchValve .....	2097
SP3DPInlAvgPitotTube.....	2100
SP3DPIinlineSilencer .....	2101
SP3DPIinlineSilencerTy1 .....	2102
SP3DPipeSleeve .....	2103
SP3DPipet.....	2104
SP3DPistonActAngValve.....	2105
SP3DPistonActStCondValve.....	2107
SP3DPistonActValve.....	2109
SP3DPKnifeGateCtrlVal .....	2111
SP3DPlateFlange .....	2112
SP3DPLevelIndCtrlTy5.....	2113
SP3DPlug.....	2115
SP3DPlugGOOp .....	2116

---

SP3DPlugValve .....	2117
SP3DPlugValveAsym.....	2118
SP3DPMotOperatedVal.....	2119
SP3DPOrificePlate .....	2120
SP3DPressureGauge .....	2122
SP3DPressureRedValve .....	2123
SP3DPressureRegulator.....	2128
SP3DPressureSwitch .....	2129
SP3DPresTransmitter .....	2131
SP3DPSteamTrapTy5 .....	2133
SP3DPStrThruPresRelV .....	2135
SP3DPTempFusiblePlug .....	2136
SP3DPTrap .....	2137
SP3DPVacReliefValve .....	2139
SP3DPVortexFlowInstr .....	2140
SP3DRackPinionActValve .....	2141
SP3DRedFillerFlange .....	2143
SP3DRedInstrumentTee .....	2144
SP3DReducer.....	2145
SP3DReducingCoupling.....	2147
SP3DReducingCross.....	2148
SP3DReducingInsert.....	2149
SP3DReducingLateral .....	2150
SP3DReducingTee.....	2151
SP3DReducingTeeWye .....	2153
SP3DRegulatorTy1 .....	2155
SP3DRegulatorTy2 .....	2157
SP3DRegulatorTy3 .....	2159
SP3DRegulatorTy4 .....	2161
SP3DRegulatorTy5 .....	2163
SP3DReliefValveTy1 .....	2165
SP3DReliefValveTy2 .....	2167
SP3DReliefValveTy3 .....	2169
SP3DReliefValveTy4 .....	2171
SP3DReliefValveTy5 .....	2173
SP3DReliefValveTy6 .....	2175
SP3DReliefValveTy7 .....	2177
SP3DReturn .....	2179
SP3DRoDActEPPHWPosC1Valve .....	2180
SP3DRoDActEPPHWPosD1Valve .....	2182
SP3DRoDActPosA4Valve .....	2184
SP3DRoDActPosB4Valve.....	2186
SP3DRoDActPosC1Valve.....	2188
SP3DRoDActPosD1Valve .....	2190
SP3DRoPisActPosA1Valve .....	2192
SP3DRoPisActPosA4Valve .....	2194

---

*Table of Contents*

---

SP3DRoPisActPosB1Valve.....	2196
SP3DRoPisActPosB4Valve.....	2198
SP3DRotameterTy1 .....	2200
SP3DRotameterTy2 .....	2202
SP3DRotameterTy3 .....	2204
SP3DRotameterTy4 .....	2206
SP3DRotameterTy5 .....	2208
SP3DRotameterTy6Tr .....	2210
SP3DRotameterTy7FS .....	2212
SP3DRotameterTy8TrFs .....	2214
SP3DRotameterTy9 .....	2216
SP3DRPad .....	2218
SP3DRuptureDiscVac1 .....	2220
SP3DRuptureDiscVac2 .....	2221
SP3DS2003.....	2222
SP3DS3003.....	2223
SP3DSaddle .....	2224
SP3DShStRotameter.....	2225
SP3DSingleBasketStrainer .....	2226
SP3DSlideValve .....	2229
SP3DSlipOnFlange.....	2230
SP3DSolenoidActuator.....	2231
SP3DSpacer .....	2232
SP3DSpectacleBlind.....	2233
SP3DSteamTrapTy4 .....	2234
SP3DSteamTrapTy5 .....	2235
SP3DSteamTrapTy6 .....	2236
SP3DSteamTrapTy7 .....	2237
SP3DSteamTrapTy8 .....	2238
SP3DStopCheckValve .....	2239
SP3DSumpStrainer .....	2240
SP3DSweepolet .....	2241
SP3DSwivelJointClamp .....	2242
SP3DTankDrainValve .....	2243
SP3DTaperSpacer1Side.....	2244
SP3DTaperSpacer2Side.....	2245
SP3DTechlokClamp .....	2246
SP3DTee .....	2248
SP3DTeeRRB .....	2250
SP3DTeeStrainer .....	2251
SP3DTempBasketStrainer .....	2252
SP3DTempContrlValve .....	2255
SP3DTemperatureSwitch .....	2256
SP3DTemporaryConeStrainer .....	2257
SP3DTempTransmitter .....	2260
SP3DTrueY.....	2261

---

SP3DTStrainer.....	2263
SP3DTurbineMeter.....	2265
SP3DUnion.....	2267
SP3DUnionHead.....	2268
SP3DUnionTail.....	2269
SP3DVACChainWheel .....	2270
SP3DVAFloorBox.....	2271
SP3DVIndicatorPost.....	2272
SP3DValveGOT1 .....	2273
SP3DValveGOT2 .....	2275
SP3DVAWallPost.....	2277
SP3DVentSilencer .....	2278
SP3DVenturimeter.....	2279
SP3DVentValve.....	2280
SP3DVictralicClamp.....	2282
SP3DVorFlowmeterTy1 .....	2284
SP3DVorFlowmeterTy2 .....	2285
SP3DVorFlowmeterTy3 .....	2286
SP3DVorFlowmtrTy4DH .....	2288
SP3DVortexFlowmeter.....	2290
SP3DVPSCoupling.....	2292
SP3DVPSElbow45Deg.....	2293
SP3DVPSElbow90Deg.....	2294
SP3DWWaterFilter.....	2295
SP3DWedgeFlowElement .....	2298
SP3DWNFlange .....	2299
SP3DWyeStrainer.....	2302
SP3DY .....	2304
SP3DYLong.....	2306
SP3DYStrainer .....	2307
SPOlet .....	2308
WOSteamTrap .....	2309
WOSteamTrap3 .....	2311
<b>Structure Symbols: An Overview.....</b>	<b>2313</b>
SPSEqpFndMacros.BlockFndAsmDef.....	2313
SPSEqpFndMacros.BlockFndCompDef .....	2314
SPSEqpFndMacros.BlockFndDef .....	2314
SPSEqpFndMacros.BlockSlabFndAsmDef.....	2315
SPSEqpFndMacros.BlockSlabFndDef .....	2315
SPSEqpFndMacros.FrameFndAsmDef .....	2316
SPSEqpFndMacros.FrameFndDef .....	2317
SPSEqpFndMacros.OctagonFndDef .....	2318
SPSEqpFndMemSys.FrameFndnAsmWMemSysDef .....	2318
SPSFootingMacros.BoundedPierFtgAsmDef .....	2319
SPSFootingMacros.FtgGroutPadSym .....	2320

---

*Table of Contents*

---

SPSFootingMacros.FtgPierSym .....	2321
SPSFootingMacros.FtgSlabSym .....	2322
SPSFootingMacros.PierAndSlabFtgAsmDef .....	2323
SPSFootingMacros.PierAndSlabFtgSym .....	2325
SPSFootingMacros.PierFtgAsmDef .....	2327
SPSFootingMacros.slabFtgAsmDef .....	2328
SPSHandrailMacros.TypeA .....	2329
SPSHandrailMacros.TypeASideMount .....	2330
SPSHandrailMacros.TypeATopEmbedded .....	2331
SPSHandrailMacros.TypeATopMounted .....	2332
SPSLadderMacros .....	2333
SPSStairMacros .....	2337
<b>Index.....</b>	<b>2341</b>

# Preface

This document is a guide for SmartPlant® 3D symbols reference data. The purpose of this document is to describe how to create and customize the symbol reference data so that it fits your company or project.

For information about the specific reference data for each discipline, see the reference data guides available from the **Help > Printable Guides** command in the software.

## Document Audience

This document is intended for advanced users who should:

- Have a good understanding of Microsoft® Office products, especially Microsoft Excel.
- Be familiar with SmartPlant 3D database architecture and relational databases in general.
- Have a working knowledge of Solid Edge™ and Visual Basic® in order to create and modify three-dimensional symbols. For cross-sectional symbols, users should be familiar with Intergraph SmartSketch® or a similar product.

## Related Documents

For more information about SmartPlant 3D, please see the following documents:

- *SmartPlant 3D Installation Guide*
- *SmartPlant 3D Reference Data Guide*

## Documentation Comments

Send documentation comments or suggestions to [PPMdoc@intergraph.com](mailto:PPMdoc@intergraph.com).

# What's New in 3D Symbols

In addition to this What's New listing, each grouping of symbols has What's New listing for that grouping. Refer to the main overview topic of each grouping. The following changes have been made to this document:

*Version 2007 Service Pack 2*

## Piping Symbols

- The following new symbols have been added: SP3DFlangedElboPipet, SP3DWWaterFilter, SP3DSolenoidActuator, SP3D3WayCheckValve, SP3DOPBevelGear, SP3DOPCylinderActuator, SP3DOPHandWheel, SP3DOPManualHydraulic, SP3DPinchValve, SP3DVentValve, SP3DPipeSleeve, SP3DCylinderValve, SP3DDiaphragmActType1, SP3DDiaphragmActType2, SP3DDiaphragmActType3, SP3DPresReducingValve.
- The SP3DP2WSolenoidValve symbol was modified to be part data basis driven. This modification also changed the number of symbol inputs and outputs.
- The SP3DKnifeGateValve symbol was modified to be part data basis driven. This modification also changed the number of symbol inputs and outputs.
- The SP3DWNFlange symbol was modified to be part data basis driven. This modification also changed the number of symbol outputs.

## Equipment Symbols

- The following new symbols have been added:  
SP3DE\_210SimverCylSkirtAsm, SP3DE\_240CompHorCylEqpAsm,  
SP3DE\_245SimpHorCylEqpAsm, SP3DE\_305HorShTubeExchAsm,  
SP3DE\_307KettleHeatXchAsm, SP3DE\_310VerShTubeExchAsm,  
SP3DEqpEnd2TO1CompAsm, SP3DEqpEndConeCompAsm,  
SP3DEqpEndDomeCompAsm, SP3DEqpEndFLATCompAsm,  
SP3DEqpEndFLGDCompAsm, SP3DEqpFnDCompAsm,  
SP3DEqpEndHemiCompAsm, SP3DEqpEndTORCCompAsm,  
SP3DEqpEndTORSCompAsm, SP3DE\_205CompVerCylEqpSkAsm,  
SP3DE\_215SimVerCylLegsAsm, SP3DE\_230SphVesselAsm,  
SP3DHoriPumpBB1Asm, SP3DHoriPumpBB2Asm,  
SP3DHoriPumpBB3Asm, SP3DHoriPumpBB5Asm,  
SP3DHoriVesselEndsAsm, SP3DLightingFixtureBHARAsm,  
SP3DLightingFixtureBHDRAsm, SP3DLightingFixtureBTARAsm,  
SP3DLightingFixtureBTDRAsm, SP3DVertVesselEndsAsm,  
SP3DE\_410VerRotEqAsm, SP3DE\_405HoriRotEqpAsm,  
SP3DCenWebSaddleCompAsm, SP3DHorOffsetSaddleCompAsm,

SP3DSkirtBaseTypeACompAsm, SP3DSkirtBaseTypeBCompAsm,  
SP3DSkirtBaseTypeCCompAsm, SP3DSkirtBaseTypeDCompAsm,  
SP3DElecBayLightAsm, SP3DEmergencyBeaconAsm,  
SP3DFluorescentLightAsm, SP3DSlipFitterFloodLightAsm.

### Cabletray Symbols

- The following new symbols have been added:  
SP3D90HExpRedCableTray

*Version 2007 Service Pack 1*

### Piping Symbols

- The following symbols have changed: SP3DCap, SP3DReducer, SP3D45LongTangentElbow, SP3D90LongTangentElbow, SP3DOrificeFlange1O.
- The following new symbols have been added: SP3DCSValveOpGear, SP3DCSValveOpHwheel, SP3DCSValveOpWrench, SP3DReducingLateral, SP3DReducingTeeWye, SP3DReducingCoupling, SP3D30LongTangentElbow, SP3D60LongTangentElbow, SP3DLongTangentElbow, SP3DTrueY, SP3DSumpStrainer, SP3DTeeStrainer, SP3DTempBasketStrainer, SP3DTemporaryConeStrainer, SP3DWyeStrainer, SP3DSingleBasketStrainer.
- Fixed dimensions A and F on the preview graphic for SP3DOP\_291.
- Added missing dimension D (Cylinder Diameter) to the preview graphic for SP3DCSPSngBStrainer. (P3 112555)
- The SP3DTee symbol now has 4 inputs instead of 2. The single Face-to-Center dimension has been replaced by Face-to-Center, Face2-to-Center, and Face3-to-Center. (P3 112189)
- The SP3DCoupling symbol now has 4 inputs instead of 2. The single Face-to-Face dimension has been replaced by Face-to-Face, Face-to-Center, and Face1-to-Center. (P3 112189)
- The SP3D45Elbow, SP3D90Elbow, and SP3DGateValveAngleOp symbols have more inputs, outputs, and aspects.
- The SP3DReducingTee and SP3DTee symbols have a new input for the branch angle.

### Equipment Symbols

- New equipment symbols: SP3DHoriPumpOH2Asm, SP3DVertPumpOH3Asm, SP3DSpiralStairTankAsm, SP3DSpiralStairTankComp, SP3DSupportLegsCompAsm, SP3DSwGearSectCompAsm, SP3DSwitchGearAsm,

SP3DDDisconnectSwitchAsm, SP3DE\_320DouPipeExchAsm,  
SP3DE\_325PlateExchAsm, SP3DE\_410VerRotEqAsm.

- Fixed dimension B on the preview graphic for symbols  
SP3DSingleFrDrAirCoolerAsm, SP3DSingleIndDrAirCoolerAsm,  
SP3DIndDr2AirCoolerBayAsm, SP3DIndDr3AirCoolerBayAsm,  
SP3DIndDr4AirCoolerBayAsm, SP3DForDr2AirCoolerBayAsm,  
SP3DForDr3AirCoolerBayAsm, and SP3DForDr4AirCoolerBayAsm. (P3  
111775)

*Version 2007*

## General

- You can create part classes in the Catalog task using the new **Catalog > New > Class** command in the Catalog task. Similarly, you can edit the symbol definition and the preview graphic for a part class in the Catalog task by selecting the part class node in the tree view and then editing properties. You may still use the bulkload method to create part classes if you want.

## Piping Symbols

- Symbol GSCADButterflyValve has been renamed to SP3DButterflyValveL.
- Symbol GSCADGateValve has been renamed to SP3DGateValveL.
- Symbol GateValveAngleOp has been renamed to SP3DGateValveAngleOp.
- Symbol AngleValve has been renamed to SP3DAngleValveL.
- The graphic preview for SP3DVictaulicClamp has been updated to accurately reflect the symbol.
- The following new piping symbols have been added to the software:  
SP3DTechlokClamp, SP3DFlangOlet, SP3D5Elbow,  
SP3D225DegMiterElbow, SP3D30DegElbow, SP3D30DegMiterElbow,  
SP3D45DegAngleValve, SP3D45DegMiterElbow,  
SP3D60DegMiterElbow, SP3D90DegMiterElbow, SP3DRedFillerFlange,  
SP3DPressureGauge, SP3DPresTransmitter, SP3DTemperatureSwitch,  
SP3DPressureRegulator, SP3DConservationVent, SP3DBubbleDetector,  
SP3DMFlowController, SP3DPressureSwitch, SP3DVortexFlowmeter,  
SP3DShStRotameter, SP3DMagneticFlowMeter, SP3DFlowSwitch,  
SP3DConductivitySensor, SP3D3WayDiverterVal, SP3DButterflyGOp,  
SP3DTempContrlValve, SP3DGAngleValveM, SP3DTempTransmitter,  
SP3DFlowmeter, SP3DPAngPressReliefV, SP3DHoseConnection,  
SP3DPenetrationSleeve, SP3DAdapterFlange, SP3DRedInstrumentTee,  
SP3DBasketStrainer2, SP3DClampOnFlowSensor.

## Equipment Symbols

- Added the following new equipment component symbols:  
SP3DFOiTorusMiterAsm, SP3DRecTorusMiterAsm,  
SP3DRndTorusMiterAsm, and SP3DVOiTorusMiterAsm.
- Added the following new equipment symbols: Prismatic shapes,  
SP3DDoorsAsm.
- SP3DD\_162Asm has been replaced by SP3DHorDrWiSaddleAsm
- SP3DD\_182Asm has been replaced by SP3DVerDrumWiLegsAsm
- SP3DE\_161Asm has been replaced by SP3DFallFilmSTEExAsm
- SP3DE\_162Asm has been replaced by SP3DHorSTEExch02Asm
- SP3DE\_166Asm has been replaced by SP3DHorSTEExch03Asm
- SP3DE\_182Asm has been replaced by SP3DHorSTEExch04Asm
- SP3DE\_183Asm has been replaced by SP3DPIAndFrExch01Asm
- SP3DE\_184Asm has been replaced by SP3DPIAndFrExch02Asm
- SP3DE\_185Asm has been replaced by SP3DPIAndFrExch03Asm
- SP3DG4G\_5410\_30Asm has been replaced by SP3DSafShower01Asm
- SP3DG4G\_5411\_01Asm has been replaced by SP3DSafShower02Asm
- SP3DG4G\_5420\_01Asm has been replaced by SP3DSafShower03Asm
- SP3DG4G\_5420\_02Asm has been replaced by SP3DSafShower04Asm
- SP3DG4G\_5420\_03Asm has been replaced by SP3DSafShower05Asm
- SP3DG4G\_5421\_01Asm has been replaced by SP3DSafShower06Asm
- SP3DG4G\_5421\_02Asm has been replaced by SP3DSafShower07Asm
- SP3DG4G\_5422\_01Asm has been replaced by SP3DSafShower08Asm
- SP3DG4G\_5424\_01Asm has been replaced by SP3DSafShower09Asm
- SP3DG7C\_1841\_01Asm has been replaced by SP3DElectLight01Asm
- SP3DG7C\_1841\_08Asm has been replaced by SP3DElecLiPendantAsm
- SP3DG7C\_1841\_10Asm has been replaced by SP3DElecLiEquip01Asm
- SP3DG7C\_2011\_17Asm has been replaced by SP3DElecSpeaker04Asm
- SP3DG7C\_2011\_28Asm has been replaced by SP3DElecSpeaker05Asm
- SP3DP\_162Asm has been replaced by SP3DHorCenJktPumpAsm
- SP3DP\_181Asm has been replaced by SP3DHCPumpWFNDNozAsm
- SP3DG9D\_1000\_05H\_XCompAsm has been replaced by  
SP3DHDrVesAIXCompAsm

- SP3DG9D\_1000\_05HCompAsm has been replaced by SP3DHOrDrumCompAsm
- SP3DG9D\_1000\_05VCompAsm has been replaced by SP3DVerDrumCompAsm
- SP3DG9D\_5525\_02CompAsm has been replaced by SP3DWeldTySSLCompAsm
- SP3DG9D\_5525\_03CompAsm has been replaced by SP3DWeldTySMLCompAsm
- SP3DG9D\_5525\_11CompAsm has been replaced by SP3DWeldPiGSLCompAsm
- SP3DG9D\_5525\_12CompAsm has been replaced by SP3DWeldPiGMLCompAsm
- SP3DG9D\_5525\_14\_CompAsm has been replaced by SP3DCIPiGuiSLCompAsm
- SP3DG9D\_5540\_01CompAsm has been replaced by SP3DLiftLugFVCompAsm
- SP3DG9D\_6010\_01CompAsm has been replaced by SP3DLiftLugBPCompAsm
- SP3DG9D\_6015\_01CompAsm has been replaced by SP3DSaddleSupCompAsm
- SP3DG9D\_6015\_02CompAsm has been replaced by SP3DParSaddleCompAsm
- SP3DG9G\_7005\_01CompAsm has been replaced by SP3DManWayDHorCovAsm
- SP3DG9G\_7005\_02CompAsm has been replaced by SP3DManWayDVerCovAsm
- SP3DG9G\_7005\_03CompAsm has been replaced by SP3DManWayDBotHCAsm

### **Electrical Symbols**

- Preview graphics are now available for SP3D30VCTrayInside, SP3D30VCTrayOutside, SP3D45VCTrayInside, SP3D45VCTrayOutside, SP3D60VCTrayInside, and SP3D60VCTrayOutside.
- The following conduit symbols have been added: SP3DConduitCap.

### **HVAC Symbols**

- HVAC symbols that had names starting with GSCAD have been renamed to begin with SP3D. Only the symbol's name changed, the inputs and outputs were not changed.

- Added these new HVAC symbols: SP3DHAirhandleUnit, SP3DHChiller, SP3DHExhaustFan, SP3DHCleaningBend, SP3DHEccentricTee, SP3DHRndCross, SP3DHRndReducer, SP3DHVACCoupling, SP3DHVACEndCap, SP3DHVACSaddle, SP3DH30DegRndLateral, SP3DH45DegRndLateral, SP3DH60DegRndLateral, SP3DHRectBellMouth, SP3DHRectPantWye, SP3DHRndPantWye, SP3DHSMRectDiffuser, SP3DH90TurnTranOffsetT, SP3DHCeilingDiffuser, SP3DDiskValve, SP3DHFIREDamper, SP3DHLlinearGrille, SP3DHMultiLeafDamper, SP3DHPresRelDamper, SP3DHRSSplitAttentor, SP3DHWRLouvres, SP3DHHalfRndDiffuser, SP3DHRec2RecAdapter, SP3DHRecDiffuserRectN, SP3DHRecDiffuserRndN, SP3DHRecGrillRecNeck, SP3DHRecGrillRndN, SP3DHRecRegisterRecN, SP3DHRecRegisterRndN, SP3DHRndDiffuser, SP3DHSMRectRegister.



# Symbols: An Overview

Whether using one of the delivered symbols, or a custom symbol that you define yourself, symbols are a key building block used to create your model. There are two basic types of symbols that the software uses: 2-D and 3-D.

The 2-D symbols are used to represent structural member cross-sections and standard openings. You can use any of the defined cross sections or define your own custom cross-sections. For more information about 2-D symbols, refer to the *SmartPlant 2D Symbols User's Guide*.

The 3-D symbols are used to represent equipment, hangers, HVAC components, piping components, and so forth in your model. There are hundreds of symbols that you can use as-is or customize to fit your needs. You also can create your own symbols. This document describes how to create symbols, incorporate them into your reference data, and describes the parameters of the delivered symbols.

In order to fully understand symbols, you need to learn a few terms:

- Symbol - A symbol is a custom business object that provides a symbolic representation of a set of graphics. It is possible for this set of graphics to look completely different in the different display aspects.
- Flavor - A flavor is the persistent cache of all the graphic objects displayed by a symbol. Each symbol visible in a session is just a symbolic representation (geometric transformation) of the graphics stored in a flavor.
- Symbol Definition - A symbol definition is the persistent template for all symbols in a database. It is the definition of the inputs, outputs, and options of all symbols created using this symbol definition.
- Flavor Manager - When many symbols use the same flavor, a flavor manager object is created to manage the relationships between the symbols, flavor, and symbol definition.
- Custom Component - A special symbol that has no flavor. Each custom component is a unique symbol containing its graphic objects.
- Outputs - Persistent objects that are created by the symbol when it calculates. The most common form of output is a graphic object, but output can be parameters.
- Inputs - Optional persistent objects used by a symbol to calculate its outputs.

## Related Topics

- *Creating Part Occurrence Symbols in Visual Basic: An Overview*, page 55
- *Creating Symbols in Solid Edge: An Overview*, page 107
- *Troubleshooting: An Overview*, page 113

## 2D Symbols: An Overview

The SmartPlant 2D Symbols application is used to create 2-D symbols and facilitate using these symbols in a modeling environment. The main purpose of 2D Symbols is to graphically create a flexible symbol definition so that it can be used to place different objects in a model. Two-dimensional symbols are delivered in the *[Product Directory]\CatalogData\Symbols\CrossSections* folder.

You use 2D Symbols to create:

- The graphic representation or inputs of the symbol.
- Named symbol geometry, such as edge names used to orient the symbol in the 3-D environment and to constrain different types of symbols to each other.
- Parameters, such as driving dimensions.
- Geometric constraints (relationships) that specify which reference data parameters control which part of the symbol.
- Multiple representations, which can be selected in the model to control how the symbol is displayed.
- Additional auxiliary graphic objects to create and constrain symbols. These auxiliary objects do not become a part of symbol output geometry.

The utility also provides a dialog box for you to write the cross-section into an Excel workbook, which populates the database.

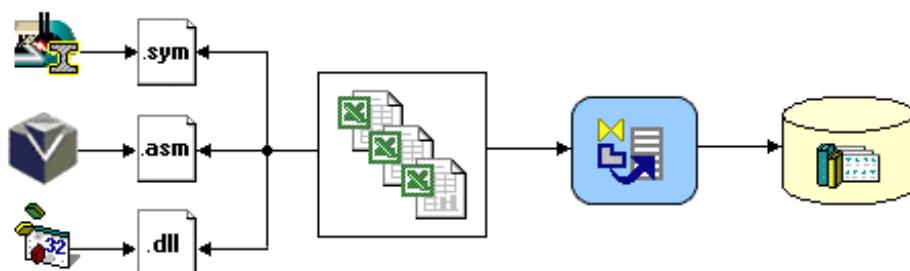
For more information, see the *SmartPlant 2D Symbols User's Guide* available from the **Help > Printable Guides** command in the software.

# 3D Symbols: An Overview

You can customize additional three-dimensional symbols for your company using the Visual Basic Part Definition Wizard or Solid Edge.

The following picture shows the three types of symbols and corresponding file formats. SmartPlant 2D Symbols files are .sym format, Solid Edge files are .asm format, and Visual Basic files are .dll format. The .sym and .asm symbols are stored at a central location such as a server. The .dll symbols are registered on the local workstations, administrator, and server computer.

The tabular data for the symbols resides in the Excel workbooks. For example, you list the symbol name for the part on the part class sheet. You can use the Bulkload utility to load the Excel data into the Catalog Database.



Each Visual Basic 3-D symbol comprises source code (.vbp and .cls) and a compiled file (.dll). The .dll files for the delivered 3-D symbols are located on the server computer at *[Product Directory]\Catalog Data\Symbols\bin*. This folder is shared to allow client computers to access the symbols. You specify this folder when you bulk load reference data. If necessary, you can change the location when you bulk load a new catalog.

The 3-D symbol source code (.vbp and .cls files) is delivered if you select the **Example Code** option during the Programming Resources Installation. For more information on installing the Programming Resources, refer to the *SmartPlant 3D Installation Guide*.

To change a symbol, you must edit and then compile the Visual Basic code for the symbol. The new .dll is saved and registered on each client that will use the symbol. You also must edit the applicable bulk load workbook for the symbol, and bulk load the modified reference data into the Catalog database.

The overall workflow for creating a part is as follows:

- Create or modify a Visual Basic project
- Compile to create a .dll

- Create or modify an Excel workbook to create the part information. As an alternative to the workbooks, you can create part classes and part information in the Catalog task using the **Catalog > New > Class** command. Refer to the *Catalog User's Guide* for more information.
- Bulk load the workbook. You do not need to bulk load anything if you create your part classes in the Catalog task using the **Catalog > New > Class** command.
- Test the symbol in the software
- Distribute and register the symbol on all clients

 **Note**

- If you add new part classes after creating the Reports databases, you must re-create the Reports databases in order to report on the new part classes.

**Related Topics**

- *Creating Part Occurrence Symbols in Visual Basic: An Overview*, page 55
- *Creating Symbols in Solid Edge: An Overview*, page 107

# Defining Ports on Symbols: An Overview

Most symbols have at least one port, which is a point on a part that connects to a routed item such as pipe or cable. A port consists of an attachment point and direction, a set of application properties, and a physical geometry depiction. A different class of port is required for each type of routing item. For example, piping requires one type of port, while cable requires another.

## Defining Ports

You define ports when you create a symbol and define the geometry of a part. You can create three-dimensional symbols using either the Visual Basic Part Definition Wizard or Solid Edge. In Visual Basic, a function specifies the port type, name, attachment point, and attachment vector. In Solid Edge, the port definition consists of a cylinder feature and a valid port name.

The software places the ports based on the information in the geometry definition file for the part and the reference data for the part. The geometry definition file defines the port type, name, attachment point, and attachment vector. The reference data for the specific part (item of the part class) defines the remainder of the property values for the port.

## Modifying Ports

If you want to reposition a port on a part in the model, you must edit the geometry definition in Visual Basic or Solid Edge. You should do this task only before any occurrences of the part are placed in the model.

A port is related to the part to which it is attached. When you move the part, the port also moves. When you delete the part, the port is also deleted.

You can change the properties of a port by selecting it in the software and entering changes on the **Properties** dialog box for the port.

## Related Topics

- *Define Connection Ports on Solid Edge Parts*, page 112
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

# Providing a Graphical Preview: An Overview

To make selecting and placing parts from the catalog easier, you can provide a preview graphic of the part. This graphic helps the user to visually identify the correct part in the catalog for placement and should include any symbol dimensions that can be edited by the user.

In the Catalog task, the **Preview** command on the **View** menu displays the preview graphic for the item. You can see preview graphics when you place items in the design tasks by clicking **Preview** on the Catalog browser from design tasks such as Equipment and Furnishings. In addition, some **Properties** dialog boxes in the design tasks have a button that allows you to see a preview of the selected item.

To add a preview graphic to the reference data, you must create a graphic file and store it in a shared symbol folder on a networked computer. For example, you can place the graphic file in *[Product Directory]\Catalog Data\Symbols\SymbolIcons*, the default location installed during the SmartPlant 3D Server setup.

You can define a preview graphic for a specific part, which overrides any preview graphics assigned to the part class. Any graphics created for individual parts must be stored in the same location as those defined for part classes.

To link the preview graphic to the part or part class, you have two options:

- Edit the Microsoft Excel workbook that contains the *part class* information. In the cell labeled SymbolIcon, enter the path and preview graphic name. You will then need to bulk load the workbook into the Catalog Database using the bulkload utility.
- Go to the Catalog task. Select the part class or part to which to assign the preview graphics. Click **Edit > Properties**. Enter the preview graphic path and file name in the **Preview Graphic** box. Click **OK**.

## Graphic Recommendations

- The graphic must be a Windows Bitmap (.bmp) or a CompuServe Graphics Interchange (.gif) file. We recommend the .gif format because of the smaller file size.
- The graphic resolution should be 37 pixels per centimeter (94 pixel per inch).
- Use the lowest color depth possible without loss of image quality. Generally, this is 256 Colors (8 bit). However, some graphics can be dropped to 16 Colors (4 bit) or 2 Colors (1 bit) without loss of image quality.

- Use Verdana font with a point size of 10 or 12 to place text in the graphic. We recommend the Verdana font because 1, I, and l can be distinguished from one another.
- Graphic dimensions should be as small as possible to allow the user to have the graphic open while working with the software. The maximum graphic dimension that you should create is 974 X 718 (50 pixels less than the default screen resolution of 1024 X 768). The software does not limit the size of the graphic, so larger graphics can be used if your default screen resolution is higher.

#### Related Topics

- *Add a Preview Graphic to Parts using Bulkload*, page 52
- *Add a Preview Graphic to Parts using Catalog*, page 51

## Add a Preview Graphic to Parts using Catalog

1. Create a graphic file (.bmp or .gif) in a graphics package.

#### Tips

- The purpose of this graphic is to help you identify the correct part in the catalog. The graphic also can assist in identifying dimensions on a part.
  - You can create the graphic from a snapshot of a two-dimensional drawing or of the three-dimensional model. You also can draw the graphic freehand in a graphics package.
  - The graphic pixel limitation is about the size of your monitor screen because the preview box in the Catalog task can be maximized to the size of the screen.
2. Save the graphic file in a shared symbol folder on the server. For example, you can place the graphic file in *[Product Directory]\Catalog Data\Symbols\SymbolIcons*, the default location installed during the SmartPlant 3D server setup.
  3. Open the Catalog task.
  4. Select a *part class* node in the tree view.

#### Tip

- For example, if you want to add a preview graphic to the PumpAsm class, expand the tree view to Equipment > Parts > Mechanical > Pumps > PumpAsm.
5. Right-click the part class node, and then select **Properties**.
  6. Type the name of a graphic file in the **Preview Graphic** field.
  7. Click **OK**.

### Notes

- You do not have to specify a preview graphic for a part class.
- You can check the preview by selecting the part or part class, and clicking **View > Preview**.
- The software delivery includes preview symbols for several items. The delivery location for many of the preview symbols is *[Product Directory]\CatalogData\Symbols\SymbolIcons* on the server computer. If you want to add symbols, you must create the graphic and add them as described above.

### Related Topics

- *Providing a Graphical Preview: An Overview*, page 50

## Add a Preview Graphic to Parts using Bulkload

1. Create a graphic file (.bmp or .gif) in a graphics package.

### Tips

- The purpose of this graphic is to help you identify the correct part in the catalog. The graphic also can assist in identifying dimensions on a part.
  - You can create the graphic from a snapshot of a two-dimensional drawing or of the three-dimensional model. You also can draw the graphic freehand in a graphics package.
  - The graphic pixel limitation is about the size of your monitor screen because the preview box in the Catalog task can be maximized to the size of the screen.
2. Save the graphic file in a shared symbol folder on the server. For example, you can place the graphic file in *[Product Directory]\Catalog Data\Symbols\SymbolIcons*, the default location installed during the SmartPlant 3D server setup.
  3. Open the Excel workbook with the part class or part to which you want to add the preview graphic.
  4. Select a *part class* sheet.

### Tip

- For example, if you want to add a preview graphic to the Pump class in the Equipment workbook, open **Equipment.xls** and select the **Pump** sheet.
5. In the **Definition** section on the sheet, add a column.
  6. Type **SymbolIcon** at the top of the new column.

7. Below the **SymbolIcon** heading, type the name of the graphic file for the part class, such as **Pump.bmp**.
8. In the **Head/Start/End** section, type **SymbolIcon** for the column heading in the new column.
9. Type the name of a graphic file beneath the **SymbolIcon** heading in the **Head/Start/End** section.

This graphic file defines the preview for the specific PART. The part graphic overrides the preview graphic for the PART CLASS.

### Tips

- If you want a part to have the same symbol file as the parent part class, type **NULL** beneath the **SymbolIcon** heading in the **Head/Start/End** section. Or, you can leave the cell blank.
- The following picture shows an Excel sheet that lists a symbol icon.

<b>PartNumber should be unique [in the entire catalog]</b>				
<b>Definition</b>	<u>PartClassType</u>	<u>SymbolDefinition</u>	<b>SymbolIcon</b>	<u>Nozzle(1).id</u>
<b>Head</b>	<u>PartNumber</u>	<u>PartDescription</u>	<u>SymbolIcon</u>	<u>SymbolDefinition</u>
<b>Start</b>				
	PUMP_001A	Centrifugal Pump		
	PUMP_001A_IMP	Centrifugal Pump		
	CPump002A8x6	Centrifugal Pump 1.5m³/s, 8" suction, 6" discharge		
<b>End</b>				

10. Mark all of the rows that you modified with the letter **M**.
11. Bulk load the workbook in the **Add/Modify/Delete** mode. For more information about bulk loading, see the section "Bulk Load Database with Data" in the *SmartPlant 3D Reference Data Guide* .

### Notes

- If you do not want to specify a preview graphic for a part class or part, do not add the **SymbolIcon** heading to the **Definition** or **Head/Start/End** sections. You do not have to specify a preview graphic for a part class or part.
- You can check the preview by starting the **Catalog** task, selecting the part or part class, and clicking **View > Preview**. You also can see the preview by selecting an item in the model and displaying the **Properties** dialog box for the item. Some **Properties** dialog boxes have a button that allows you to see a preview of the selected item.
- The software delivery includes preview symbols for several items. The delivery location for many of the preview symbols is *[Product*

*Directory]\CatalogData\Symbols\SymbolIcons* on the server computer. If you want to add symbols, you must create the graphic and bulk load as described above.

**Related Topics**

- *Providing a Graphical Preview: An Overview*, page 50

# Creating Part Occurrence Symbols in Visual Basic: An Overview

You can create and customize three-dimensional piping part symbols that fit your company or project using Visual Basic. The software provides the Part Definition Wizard to help you produce symbol ports and graphics, or you can use Visual Basic to customize delivered symbols. The Part Definition Wizard is delivered as part of the Programming Resources. Refer to the *Installation Guide* for more information on installing the Programming Resources and the Part Definition Wizard.

## Related Topics

- *Add a Symbol to Reference Data*, page 56
- *Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview*, page 61
- *Distributing Symbols Automatically*, page 58
- *Distributing Symbols Manually*, page 60
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

# Add a Symbol to Reference Data

In this procedure, you add a new symbol to the reference data. Before following this procedure, it is assumed that you have used the Visual Basic Part Definition Wizard to create a VB project and a Microsoft Excel workbook for the symbol. Save all the files from the wizard in a folder, such as C:\Symbols, and share this folder so that you can access the folder from other clients. You will use this folder later when you copy the new symbol to the other clients.

## Note

- The Part Definition Wizard is delivered as part of the Programming Resources. Refer to the *Installation Guide* for more information on installing the Programming Resources.

### Create the Visual Basic Project for a Symbol

1. Use the Visual Basic Part Definition Wizard to create a project and class module files.

*Workflow for Creating a VB Part Occurrence Symbol*, page 62

2. Store the VB files locally in C:\Symbols.
3. Open the Visual Basic project for the symbol.
4. Open the modules that the wizard created and add or modify code as necessary. For example, you may need to add code in the inputs section and the outputs section of the parent class module. This module has the same name as the project, prefixed with a C.
5. Click **File > Make <name of DLL>** to compile the project and create the .DLL file.

## Tip

- In our example, save the .dll in the local folder (C:\Symbols).
6. Save the project and exit Visual Basic.

### Add the Symbol to an Excel Workbook and Bulk Load

1. Open the Excel workbook that the wizard created and specify the individual parts in the **Head** section on the part class sheet.
2. Add custom properties as needed on the part class sheet. You can add these properties in the **Definition** section, the **Head** section, or both sections on the part class sheet.

## Tip

- When you ran the wizard, you defined custom properties (definition, occurrence, or both). These properties appear on the **Custom Interfaces** sheet of the workbook.

3. Type an **A** in the first cell of all the new rows on the part class sheet.
4. Save the changes to the workbook, and then exit Excel.
5. Bulk load the workbook in the **Add/Modify/Delete** mode. The bulkload process is usually done on an administrator machine. For more information about bulk loading, see the section "Bulk Load Database with Data" in the *Reference Data Guide*.
6. Test the symbol in the software by opening a session and placing the part that uses the symbol.
7. Choose whether to deploy the .dll manually or automatically.

*Distributing Symbols Automatically*, page 58

*Distributing Symbols Manually*, page 60

**Related Topics**

- *3D Symbols: An Overview*, page 47
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

# Distributing Symbols Automatically

You can have the software automatically distribute new and modified symbols to client computers by using CAB files. Use the **Package & Deployment Wizard** that comes with Microsoft Visual Basic to create a CAB file for the symbol. Then, put the CAB file on the Symbols share on the server. When a user on a client computer goes to place the symbol, one of the following happens:

- If the symbol is a new symbol, the software automatically pulls to the client computer the dll in the CAB file on the server, and then automatically registers the dll on the client computer.
- If the symbol dll already exists on the client computer, the software compares the version number of the dll on the client computer with the version number of the CAB file on the server. If the dll in the CAB file is newer, the software automatically pulls to the client computer the newer dll in the CAB file, and then automatically registers the dll on the client computer.

## Note

- Because of Microsoft operating system requirements, the user on the client computer must have Power User or Administrator access to the computer. If you do not allow users to have Power User or Administrator access to the client computer, then you must distribute symbols manually. For more information, see *Distributing Symbols Manually*, page 60.
1. On the computer where you have created the symbols, start the **Package & Deployment Wizard** that comes with Microsoft Visual Basic.
  2. Select the VB project for the symbol using **Browse**.
  3. Click **Package**.
  4. For the **Package Type**, select **Internet Package**, and then click **Next >**.
  5. For the **Package Folder**, specify the folder that you have shared (C:\Symbols), and then click **Next >**.
  6. On the **Included Files** page, clear all the checkboxes to the left of the file names to remove them from the package except for the dll of your symbol. That is, the only file name that should have a check next to it is the name of your symbol dll. Then click **Next >**.
  7. On the **File Source** page, verify that your symbol dll file is the only file listed, and then click **Next >**.
  8. On the **Safety Settings** page, keep the default settings, and then click **Next >**.
  9. Click **Finish**.
  10. Put the CAB file on the server symbols share.
  11. Open the Excel workbook that contains the symbol part and go to the part sheet.

12. Create a new column on the sheet called **Codebase**.
13. In the **Codebase** column, type %CAB\_SERVER%\name.CAB where *name* is the name of the symbol CAB file.
14. Type an **M** in the first cell of the row and re-bulkload the workbook.

**Related Topics**

- *3D Symbols: An Overview*, page 47
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

# Distributing Symbols Manually

If you choose not to use CAB files to distribute Visual Basic symbols, then you must distribute and register the symbols manually.

## Important

- If the symbol being distributed is an existing symbol that has been modified, the major version number in the Visual Basic project properties must be increased by 1. Increasing the major version number by 1 forces the recomputation of existing symbol occurrences when the **Synchronize Model With Catalog** command in Project Management is run. If an existing symbol is modified and distributed, all the new symbol occurrences will use the new symbol (unless the new occurrence uses an existing entry of symbol's cache). If an existing symbol is modified and distributed, and an existing occurrence is recomputed, it will use the new symbol if the recomputation results in creation of new entry in the symbol's cache.
- 1. Place the dll for the new or modified symbol on the server's symbols share.
- 2. On a client machine, copy the dll from the server to the local *[Product Directory]\CatalogData\Symbols\bin* folder.
- 3. Register the new .dll by clicking **Start > Run** and typing: `regsvr32 "[Product Directory]\CatalogData\Symbols\bin\<name of dll>"`.

## Tip

- You can drag the file into the **Run** box rather than typing the entire path.
- 4. Repeat steps 2 and 3 on each client machine.

## Related Topics

- *3D Symbols: An Overview*, page 47
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

# Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview

The Visual Basic Part Definition Wizard allows you to create and customize three-dimensional piping part symbols that fit your company or project. The wizard produces a Visual Basic project for building the symbol ports and graphics, and generates an Excel workbook for bulk loading the symbol data into the Catalog Database.

- 
- Symbol Store
    - Bin
    - Excel
    - Modules
    - PartName
- Before you use the wizard to create a part symbol, it is recommended to set up the following directory structure to store the resulting files for the part.
- The bin folder stores the .dll file for the part symbol. The Excel folder stores the reference data workbook that the wizard generates. The Modules folder stores the VB libraries (.bas files), and the PartName folder stores the Visual Basic project (.vbp) and class files (.cls).

A symbol created by the wizard always has the part as its first input. Information from the part is converted into a parameter and cached using the CMCache method of the symbol. Any other inputs are parameters. A flavor is created for each unique set of parameters for this symbol. There is no limit on the number of inputs or outputs. However a very high number of inputs and outputs affects the symbol's performance.

It is possible to create symbols that have other symbols as outputs (nested symbols). An example of this is a symbol that has nozzles as outputs. These nozzles are also symbols. These types of symbols require no special treatment by the symbol designer other than to note that more than one level of nesting can have an impact on performance.

## Custom Component

A custom component is a specialized form of a symbol. If the symbol definition has the property igSYMBOL\_CACHE\_OPTION\_NOT\_SHARED (meaning that the result of its computation cannot be shared by other symbol occurrences) and the property igSYMBOL\_SUPPORT\_UPDATE (the computation of the definition supports the update of the outputs), a custom component is created instead of a symbol by the IJDSymbolEntitiesFactory::PlaceSymbol method.

The custom component is seen as a group of entities resulting from the computation of the definition. It does not hold a matrix. The result of the computation of the symbol definition is directly attached to the custom component (using the output collections) and updated at each recompilation. This eliminates the use of a flavor object storing a unique result (gain of one object and one relation) and the creation of the proxies for the outputs at the locate.

A custom component should be used when each symbol should be unique even if the input parameters are the same.

#### **Related Topics**

- *Creating Part Occurrence Symbols in Visual Basic: An Overview*, page 55
- *Visual Basic Part Definition Wizard*, page 63
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

## Workflow for Creating a VB Part Occurrence Symbol

1. Start the VB Part Definition Wizard by opening Visual Basic and clicking **Add-Ins > SmartPlant 3D Part Definition Wizard**.

#### **Tip**

- For instructions on how to install the Part Definition Wizard, see the *Installation Guide* available from the **Help > Printable Guides** command.
  - The first page of the wizard contains a brief description of the wizard. You can select an option to skip this page in the future.
2. On the **Step 1** page, complete the project information.  
*Specify VB Project Information*, page 64
  3. On the **Step 2** page, specify the catalog and part class information.  
*Specify Excel Workbook Information*, page 66
  4. On the **Step 3** page, list the properties that are constant for all occurrences of the part class.  
*Specify Definition Properties*, page 67
  5. On the **Step 4** page, list the properties that can change for each occurrence of the part class.  
*Specify Occurrence Properties*, page 70
  6. On the **Step 5** page, list the graphical outputs of the symbol, such as the symbol body or ports.  
*Identify Outputs*, page 71
  7. On the last page, you can select an option to save the settings as the default for the next time that you run the wizard.
  8. Click **Finish**.

#### **Note**

- You have just used the wizard to create a VB project, VB modules, and an Excel workbook. Before you can test your symbol in the model, you must

add code, compile, distribute and register the .dll, edit the Excel workbook, and bulk load into the Catalog Database. For more information, see *Distributing Symbols Automatically*, page 58 or *Distributing Symbols Manually*, page 60.

#### **Related Topics**

- *Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview*, page 61
- *Visual Basic Part Definition Wizard*, page 63

## Visual Basic Part Definition Wizard

Sets options for the symbol project and Excel workbook.

*Step 1 - Create VB Project Page*, page 63

*Step 2 - Create Excel Spreadsheet Page*, page 65

*Step 3 - Specify Definition Properties Page*, page 67

*Step 4 - Specify Occurrence Properties Page*, page 69

*Step 5 - Identify the Outputs Page*, page 71

#### **Related Topics**

- *Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview*, page 61
- *Workflow for Creating a VB Part Occurrence Symbol*, page 62

## Step 1 - Create VB Project Page

Sets options for the Visual Basic project. Some of the information on this page becomes VB comments in the main class module that the wizard generates. For example, the text in the **Author** box becomes a comment in the header that tells who ran the wizard.

You cannot advance to the next page of the wizard until you have completed the **Project name**, **Class name**, **Intergraph library location**, and **Save project as** boxes.

**Project name** - Allows you to specify the name of the Visual Basic project for the symbol.

**Class name** - Specifies the name of the Visual Basic class. As you type text in the **Project name** box, the **Class name** box fills with the same text, except it starts with C. The maximum length of the project name and class name together is 39 characters.

**Project description** - Provides a brief description of the project.

**Author** - Gives the name of the author. The default is the current user. The default name is your Windows login name.

**Company** - Gives the company of the author. The default is the company name entered during the software installation.

**Intergraph library location** - Provides the path to an Intergraph-supplied library. This location is where the CoreTraderKeys.bas file is stored. More than likely, this location is C:\Program Files\SmartPlant\3D\Programming\ExampleCode\Symbols\Modules.

#### Note

- The wizard checks to see if the delivered module files already exist in the location specified. If files already exist in the location, the wizard does not copy over them, and the existing files are included in the resulting VB project. If the files do not exist in the location, the wizard copies the Intergraph .bas files from the wizard's **Templates** folder to the specified location, and the files are also included in the resulting VB project.

**Custom library location** - Provides the path to a custom library.

**Save project as** - Give the name of the project that you are creating.

**Create bulkload spreadsheet** - Specifies that the wizard creates an Excel workbook containing the entered data for the symbol. You can use this workbook to bulk load the symbol into the Catalog database.

#### Related Topics

- *Specify VB Project Information*, page 64

## Specify VB Project Information

1. In the **Project name** box, type a name for the symbol VB project. For example, type **MyPump**. As you type text in the **Project name** box, the **Class name** box fills with the same text, except it starts with **C**.
2. In the **Project description** box, type a brief explanation of the project, such as **Test Symbol**.
3. Type your name and company in the **Author** and **Company** boxes, respectively. The default name is your Windows login name, and the default company is the text entered during installation of the software.
4. Click the ellipsis button beside the **Intergraph library location** box to select a location for the VB libraries.

#### Tip

- The wizard checks to see if the delivered module files already exist in the location specified. If files already exist in the location, the wizard does not copy over them, and the existing files are included in the resulting VB project. If the files do not exist in the location, the wizard copies the Intergraph .bas files from the wizard's **Templates** folder to

the specified location, and the files are also included in the resulting VB project.

5. Click the ellipsis button beside the **Save project as** box to specify the project name and location. The default name is the value in the **Project name** box with a .vbp extension.
6. If you want the wizard to create an Excel workbook with the symbol information, make sure the **Create bulkload spreadsheet** box is selected.

#### Notes

- Some of the information on this page becomes VB comments in the main class module that the wizard generates. For example, the text in the **Author** box becomes a comment in the header that tells who ran the wizard.
- The maximum length of the project name and class name together is 39 characters.
- You cannot advance to the next page of the wizard until you have completed the **Project name**, **Class name**, **Intergraph library location**, and **Save project as** boxes.

#### Related Topics

- *Step 1 - Create VB Project Page*, page 63

## Step 2 - Create Excel Spreadsheet Page

Creates an Excel workbook containing the part class for the symbol. After running the wizard, you must open the workbook, add individual parts, and bulk load the workbook into the Catalog Database for the symbol information to take effect.

Creating the Excel workbook during the wizard is optional; however, it may save you some time because otherwise you must create the workbook or worksheets manually after running the wizard.

**Catalog server** - Specifies the name of the server that stores the Catalog Database. This box is not available.

**Catalog name** - Sets the name of the Catalog Database. This box is not available.

**Part class name** - Type the name of the part class that you want to create. The name must not exceed 30 characters and must not include any spaces.

**Copy from** - Allows you to select an existing part class to use as a template for the new part class. This button displays the standard catalog browser window. The wizard completes all applicable boxes on the rest of the pages with the information from the template. This is not available.

**Part class description** - Type a brief description of the part class. This description will appear on the **Index** sheet of the resulting bulkload workbook if you specified to create one.

**Classification** - Allows you to select a part class type. Your selection determines the type of symbol, such as piping or equipment. This text will appear in the **Definition** section of the part class sheet in the resulting bulkload workbook.

**Save in Excel file** - Specifies the name of the Excel workbook. The default name is the project name with the .xls extension.

#### Related Topics

- *Specify Excel Workbook Information*, page 66

## Specify Excel Workbook Information

The **Catalog server** and **Catalog name** boxes are not available in this version.

1. In the **Part class name** box, type a name for the symbol part class. This name will be the sheet name in the Excel workbook that the wizard creates. The name must not exceed 30 characters and must not include any spaces. If you click **Copy from**, you can select an existing part class as a template, and all the applicable values from that part class appear on the following pages.
2. In the **Part class description** box, type a brief explanation of the part class. This description will appear on the **Index** sheet of the resulting bulkload workbook if you specified to create one.
3. In the **Classification** box, select a part class type. Your selection determines the type of symbol, such as piping or equipment. This text will appear in the **Definition** section of the part class sheet in the resulting bulkload workbook.
4. In the **Save in Excel file** box, select a location for the bulkload workbook that contains the symbol data. The default name is the value entered in the **Project name** box on the previous page of the wizard plus an .xls extension.

#### Notes

- You must complete both the **Part class name** and **Classification** boxes before you can advance to the next page of the wizard.

#### Related Topics

- *Step 2 - Create Excel Spreadsheet Page*, page 65

## Step 3 - Specify Definition Properties Page

Specifies the properties of the part class that are constant for all occurrences of the part. You can define new, unique interfaces and use existing interfaces for the properties.

Completing this page is not mandatory, and you can skip it if necessary.

**Definition properties** - Provides a grid on which you can specify the definition properties for the part class and correlate these properties with Visual Basic variables.

**Interface Name** - Specifies the name of the interface to which the property belongs. You should begin a user-defined interface name with **IJUA**. This list is not populated with the preexisting interfaces already in the catalog, so you must type the name.

**Attribute Name** - Type a name for the property. This name must not contain spaces.

**Attribute User Name** - Type a user-friendly name for the property. This name can contain spaces.

**Data Type** - Provides the type of data, such as double or char.

**Unit Type** - Provides the category of units, such as **distance** or **angle**. For a list of unit types, see the **UOM** sheet in the AllCommon.xls workbook delivered with the catalog bulkload files.

**Primary Unit** - Gives the unit abbreviation, such as **mm** or **deg**, for the property.

**Description** - Type a brief description of the property.

**Default** - Type the default value for the property.

**Symbol Parameter** - Type the symbol parameter name. The name cannot have any blanks or special characters. This name will appear in the **Head/Start/End** section of the part class sheet. In the VB code, the symbol parameter is prefixed by **par-**.

### Related Topics

- *Specify Definition Properties*, page 67

## Specify Definition Properties

Completing this page is not mandatory, and you can skip it if necessary.

1. In the **Interface Name** column, type an interface name.

### Tip

- The **Interface Name** list is not populated with the preexisting interfaces already in the catalog, so you must type the name.

- You should begin the interface name with **IJUA** (for user-defined interfaces) or **IJ** (for system interfaces).
2. Type a name for the fixed property in the **Attribute Name** column. This name must not contain spaces.
  3. Type a user-friendly name for the property in the **Attribute User Name** column. This name can contain spaces.
  4. In the **Data Type** column, select the type of data, such as double or char.
  5. In the **Unit Type** column, select the unit category for the data, such as distance or angle. The list of unit types originates from the file uom.xml delivered with the VB Part Definition Wizard.
  6. In the **Primary Unit** column, select the unit abbreviation, such as **mm** or **deg**. The list of primary units is filtered based on your selection in the **Unit Type** column.
  7. In the **Description** column, type a brief description of the property.
  8. In the **Default** column, type the default value for the property.
  9. In the **Symbol Parameter** column, type the symbol parameter name. The name cannot have any blanks or special characters. This name will appear in the **Head/Start/End** section of the part class sheet. In the VB code, the symbol parameter is prefixed by **par-**.

#### **Notes**

- Both interface names and attributes names must not exceed 30 characters.
- Fixed properties apply to every occurrence of the symbol in the model.
- The columns on this page are similar to the columns on the **Custom Interfaces** sheet in the reference data workbooks.

#### **Related Topics**

- *Step 3 - Specify Definition Properties Page*, page 67

## Step 4 - Specify Occurrence Properties Page

Specifies the properties of the part class that can change for each occurrence of the part. These properties are often called occurrence properties. Occurrence properties are optional for symbols, so you can advance to the next page of the wizard if the grid is blank or when at least one complete property definition is present.

As with the fixed properties, you can define new, unique interfaces and use existing interfaces for occurrence properties.

**Occurrence properties** - Provides a grid on which you can specify the occurrence properties for the part class and correlate these properties with Visual Basic variables.

**Interface Name** - Specifies the name of the interface to which the property belongs. You should begin a user-defined interface name with **IJUA**. You will need to create category names for the interfaces using the Catalog task.

### Tip

- If you want an insulation aspect for an output of the symbol, you must include the **IJInsulationThickness** interface.

**Attribute Name** - Type a name for the property. This name must not contain spaces.

**Attribute User Name** - Type a user-friendly name for the property. This name can contain spaces.

**Data Type** - Provides the type of data, such as double or char.

**Unit Type** - Provides the category of units, such as **distance** or **angle**. For a list of unit types, see the **UOM** sheet in the AllCommon.xls workbook delivered with the catalog bulkload files.

**Primary Unit** - Gives the unit abbreviation, such as **mm** or **deg**, for the property.

**Description** - Type a brief description of the property.

**Default** - Provides the default value for the property. Users can change this value for each part occurrence. The value in the **Default** box is not required for a complete property definition.

**Symbol Parameter** - Type the symbol parameter name. The name cannot have any blanks or special characters. This name will appear in the **Head/Start/End** section of the part class sheet. In the VB code, the symbol parameter is prefixed by **par-**.

### Related Topics

- *Specify Occurrence Properties*, page 70

## Specify Occurrence Properties

### Important

- Occurrence properties are not required for symbols, so you can leave the grid blank and advance to the next page of the wizard if you want.
  - Occurrence property values can differ among symbol occurrences in the software model. Users can change these property values on the **Occurrence** tab of the **Properties** dialog box in the software.
1. In the **Interface Name** column, select one of the options in the list. You should begin a user-defined interface name with **IJUA**.

### Tip

- If you want an insulation aspect for an output of the symbol, you must include the **IJInsulationThickness** interface.
2. Type a name for the fixed property in the **Attribute Name** column. This name must not contain spaces.
  3. Type a user-friendly name for the property in the **Attribute User Name** column. This name can contain spaces.
  4. In the **Data Type** column, select the type of data, such as double or char.
  5. In the **Unit Type** column, select the unit category for the data, such as distance or angle. The list of unit types originates from the file uom.xml delivered with the VB Part Definition Wizard.
  6. In the **Primary Unit** column, select the unit abbreviation, such as **mm** or **deg**. The list of primary units is filtered based on your selection in the **Unit Type** column.
  7. In the **Description** column, type a brief description of the property.
  8. In the **Default** column, type the value for the property. Users can change this value for each part occurrence. The value in the **Default** column is not required for a complete property definition.
  9. In the **Symbol Parameter** column, type the symbol parameter name. The name cannot have any blanks or special characters. This name will appear in the **Head/Start/End** section of the part class sheet. In the VB code, the symbol parameter is prefixed by **par-**.

### Notes

- Both interface names and attributes names must not exceed 30 characters.
- For more information about units supported by the software, see "Appendix B: Units of Measure" in the *Reference Data Guide*. The **UOM** sheet in the AllCommon.xls workbook also contains information about units of measure.

### Related Topics

- *Step 4 - Specify Occurrence Properties Page*, page 69

## Step 5 - Identify the Outputs Page

Sets the output objects for the symbol. For each output, you must enter the name of the output, the type of object, and an aspect.

**Nozzles** - Select the number of nozzles on the symbol.

**Nozzle type** - Select the type of nozzle, either **Piping** or **HVAC**.

**Outputs** - Lists the outputs in a grid format.

**Name** - Type a name for the output.

**Description** - Type a brief description. The name and description will appear in the resulting Visual Basic program to aid you in correctly positioning additional output object code.

**Type** - Allows you to select the type of object. Examples of types include body, equipment nozzle, valve operator, primary, piping port, secondary piping port, HVAC port, conduit port, and cable port.

**Aspects** - Select an aspect for the selected output.

### Related Topics

- *Customize the Wizard Output*, page 72
- *Identify Outputs*, page 71

## Identify Outputs

1. In the **Nozzles** box, select the number of nozzles on the symbol.
2. In the **Nozzle type** box, select the type of nozzle, either **Piping** or **HVAC**.
3. In the **Name** column, type the name of the output in the VB program.
4. In the **Description** column, type a brief comment about the object. This description is optional.
5. In the **Type** column, select a port type.

### Tip

- Examples of types include body, equipment nozzle, valve operator, primary, piping port, secondary piping port, HVAC port, conduit port, and cable port.
6. Select an aspect for the output.

### Notes

- The text that you type in the **Name** and **Description** columns appears in the resulting VB program to help you find where to type additional code for the output geometry and position.
- For each output, you must enter the name of the output, the type of object, and an aspect.
- The wizard generates a class module for each aspect type that you specify. For example, if you specify the simple physical aspect for one or more outputs, the results will include CSimplePhysical.cls.

### Related Topics

- *Step 5 - Identify the Outputs Page*, page 71

## Customize the Wizard Output

1. Double-click the CSimplePhysical class to open the code.
2. Find the comment line that reads **Insert your code for output 1**, and write your code to define the first output. Repeat for each output.

### Tips

- The wizard adds a comment line for each output you specified.
  - Each primitive shape in your symbol must be represented by an output.
  - If you change the number of outputs in the CSimplePhysical class, you must also change the count of outputs within the custom class (MyPump.cls, for example) to the correct number.
3. Verify that the Inputs section accurately describes the number of inputs for your symbol and their positions within the arrayOfInputs.

### Tip

- The first input is usually a Part Facelet object. The remaining inputs are the inputs given to the Symbol Wizard. For example, if you were creating a symbol of a ball valve which had three inputs, the code could look like the following:

```
'Inputs
Set oPartFclt = arrayOfInputs(1)
parFacetoFace = arrayOfInputs(2)
parOperatorHeight = arrayOfInputs(3)
parOperatorLength = arrayOfInputs(4)
```

4. If necessary, declare any variables that your symbol requires.

### Tips

- You can declare these variables as a standard data type such as double, single, string, and so forth.

- If you are using an Intergraph standard type such as IJDPosition, AutoMath.DPosition, and so forth, Intergraph recommends that you declare the variable and set it equal to New in two separate steps. Group these steps with the other declarations and inputs. For example:

```
Dim StemEndPos As IJDPosition  
    (in Dim section)  
Set StemEndPos = New Dposition  
    (in Input section)
```

### **Related Topics**

- *Step 5 - Identify the Outputs Page*, page 71

# Programming Notes for Visual Basic: An Overview

If you are using Visual Basic to create or customize part symbols, refer to the following programming notes for issues and examples that apply to the various symbol types:

- Defining Electrical Parts*, page 74
- Defining HVAC Parts*, page 76
- Defining Hanger and Support Part Ports*, page 78
- Defining Nozzles*, page 80
- Defining Parametric Components*, page 83
- Defining Valves*, page 86
- Using SymbolHelper*, page 88
- Using Custom Aspects with a Symbol*, page 91
- Using String Type as an Input Parameter*, page 91
- Using a Part as the First Input*, page 92

## Defining Electrical Parts

Electrical parts require some special considerations.

### **Electrical Conduit**

Conduit is very similar to pipe, except that it is used to route electrical cables. Many of the properties and features of conduit and piping are equivalent in the software. The codelist for conduit measurements is available in AllCodeLists.xls on the Piping Point Usage tab. The last option is #130 Conduit Port. The Nominal Piping Diameter and Outside Diameter of electrical conduit are available as generic data so that they can be standard with equipment. This information is located in AllCommon.xls.

To determine whether a nozzle is a conduit or pipe nozzle, you must trigger 130 for Nozzle(1):PipingPointBasis as an attribute. When the command is launched, the nozzle is automatically identified as conduit. If equipment has been created with conduit, you must go to the catalog and trigger 130. PipingPointBasis for conduit should be 130 and ConduitSelectionBasis should be 1 or 5.

For example, if a piece of equipment has two nozzles, one piping and one conduit, the PipingPointBasis for the first may be 1 or 5 and the PipingPointBasis of the conduit nozzle will be 130.

When you place conduit nozzles as equipment, they become part of the equipment system in the hierarchy. They behave as equipment, even if they are not.

## Cable Trays

Cable trays are open on one side and used to carry electrical cables through the model. Similar to piping or conduit, they can be routed. However, they are fundamentally different.

According to the National Electrical Code, a cable tray system is *a unit or assembly of units or sections and associated fittings forming a rigid structural system used to securely fasten or support cables and raceways*. A cable tray is the structural component of the electrical system of a building or plant.

Because cable trays are open on the top, they cannot be rotated or mirrored as pipe or conduit can. This creates a need for many different components, such as Branch left, Branch right, Elbow down, Turn left, Reduce right, and so on. Every possible move that can be made by a cable tray must be represented by a component symbol. The joint where two cable trays meet is the port.

Some of the specifications that can identify a cable tray are:

- Manufacturer -- very important, because all information is fed by the part, whose measurements are fixed by the manufacturing specification.
- Material
- Tray Type -- such as ladder or open.
- Rung Spacing -- if the tray is ladder type.
- IsTraySpec
  - Determines tray versus way.
  - If True, shows parts and hides feature

Spec Data + Route Topology = Generated Part

In reporting, the nominal (general categorized) width or depth is used. For example, there may be many cable trays that have a width of about 12 inches that may all be nominally 12 inches. However, there may be several different variances in the actual width. Use the actual dimensions in the Visual Basic program. Although nominal dimensions are used in reporting, the symbol returns an actual dimension.

## Parts versus Features

The route followed by a series of cable trays is called the *cable way*. The cable way is considered a feature of its parts, which are components of the cable tray. The cable tray generates the part and the feature, but hides the feature. Features are not reported.

As an example, consider piping. On a valve there are many parts; mating flanges, gate valve body, gaskets, bolts, nuts, and so on. These parts all have an Along Leg feature, which means that the valve occurs along the pipe. In this example, there is one feature and many parts.

There may be many features belonging to one part. A pipe run may have many straight and bend features, however the only part is the pipe.

Because all information is standard and part driven, there are no inputs to the Visual Basic symbol.

### **Reducers**

An occurrence of a cable tray that is wider on one end and narrower on the other is a reducer. Visual Basic symbols for reducers will typically have three principal measurements:

- Face to Face -- Length between the location where the cable enters and exits the tray.
- Width 1 -- Width where the cable enters the tray.
- Width 2 -- Width where the cable exits the tray.

### **Vectors**

The vector directions are especially important when you construct cable tray symbols. If a vector is facing the wrong direction, the cable tray may be built backwards, causing the cable to go in the wrong direction, or upside down causing the cable to fall out.

The cable tray requires two vectors emerging from the port. The port for a cable tray begins at the center of the bottom edge of Width 1, along the Y edge. The X axis vector, or axial orientation, begins at the port and extends outward away from the direction in which the cable will run, along the center line of the cable tray. The Z axis, or radial orientation, begins at the port and extends upward, toward the open end of the tray. In dimensional terms, X represents tray length, Y represents width, and Z represents depth. The vector settings would be (-1, 0, 0) for the axial orientation, and (0, 0, 0) for the radial.

### **Related Topics**

- *Programming Notes for Visual Basic: An Overview*, page 74

## **Defining HVAC Parts**

Heating, Ventilation, and Air Conditioning (HVAC) for plants and buildings runs through a duct system very similar to that in homes and office buildings. Similar to piping, duct is routed through the model resulting in a duct run feature. A duct run feature is a continuation of many individual physical components called duct parts. When you create a run, the individual parts are generally selected by the software. Each component is fed by one part, and is entirely catalog-driven. Because these parts are fixed in width and depth, there are no occurrence attributes in HVAC.

## Specifications

The catalog data for HVAC specs resides in the Hvac.xls workbook under the HvacSpec sheet. On this sheet is a Specname of Spec-0, which allows for rectangular, round, oval, and flat oval shapes. These shapes correspond to their own part numbers.

- Rectangular = PDS-100
- Round = PDS-150
- Oval = PDS-200
- Flat oval = PDS-250

## HVAC Nozzles

HVAC components can contain nozzles, which are similar in form to those contained in piping. They have measurements such as flange thickness, ports and port depths, offset, nozzle length, and so on.

To create HVAC nozzles in a Visual Basic symbol, use the CreateNozzleFromPart sub routine function. For example:

```
Set oNozzle = NozzleFactory.CreateHVACNozzleFromPart(part input,  
index, False, objOutputColl.ResourceManager)
```

You can also use the subroutine function CreateHvacNozzle() as Object.

To create a dynamic HVAC component, do the following:

1. Pull the Symbol Parameters from the Hvac.xls sheet.
2. Use Occurrence Attributes and list in the Excel sheet.
  - OA=Width in IJDuctSize

All information must be fed to the port, as the part does not exist. The component will consist entirely of Occurrence Attributes supplied by the user.

## Division

The division is an HVAC component used to split the flow from one duct run into multiple duct runs. The most common division types split the duct run into two divisions, either vertically or horizontally. Divisions are only used on rectangular ducts. The **Insert Component** command inserts a division feature at an HVAC end feature to route more than one individual run from the division feature.

A division feature is a cross sectional plane that is located perpendicular to the HVAC running direction. It contains two or more cells. The divisions are created as symbols and reside in the HVAC Reference Data catalog of parts. You can modify the cell sizes regardless of HVAC reference data after the cells are placed. The cell sizes are stored in reference data as occurrence properties and can be modified in route.

Division symbols are rectangular in shape. Each cell division must result in a rectangular cross section. The total cross sectional area of all the cells must equal the

original cross sectional area before the division was inserted. (That is, A1 + A2 + A3 + ...n = Original Area) You can modify the cell size from the settings page before or after placing the symbol.

Each cell in the division component is treated as a port in the route.

### Related Topics

- *Programming Notes for Visual Basic: An Overview*, page 74

## Defining Hanger and Support Part Ports

The part symbols used to represent a hanger and support assembly are expected to generate ports as output. The ports in question are objects implementing the IJHgrPort interface. A factory (that is, the HgrPortFactory object) is provided for creating such objects. An example showing the creation of ports is shown below.

```
Dim m_outputColl As IJDOutputCollection
.
.
.
    Dim oStructPort As IJHgrPort
    Dim oRoutePort As IJHgrPort
    Dim oPortFac As IJHgrPortFactory
    'Create a Port Factory
    Set oPortFac = New HgrPortFactory
    'Create PortA and initialize its values
    Set oStructPort = oPortFac.CreateHgrPortEntity(
m_outputColl.ResourceManager )
    oStructPort.Name = "Structure"
    oStructPort.PutOrientation 0.0, 0.0, 0.0, _ ' The Port Origin
                                1.0, 0.0, 0.0, _ ' The Port X-Axis
                                0.0, 0.0, 1.0   ' The Port Z-Axis
    'Create PortB and initialize its values
    Set oRoutePort = oPortFac.CreateHgrPortEntity(
m_outputColl.ResourceManager )
    oTopPort.Name = "Route"
    oRoutePort.PutOrientation 2.0, 2.0, 1.0, _ ' The Port Origin
                                1.0, 0.0, 0.0, _ ' The Port X-Axis
                                0.0, 1.0, 0.0   ' The Port Z-Axis
    ' Add ports to output collection. NOTE: The output names do not
    need to match the port names.
    m_outputColl.AddOutput "PortA", oStructPort
    m_outputColl.AddOutput "PortB", oRoutePort
```

The creator of the port is responsible for setting its orientation and name. Orientation is set using the following method.

```
Sub IJHgrPort_PutOrientation( OriginX As Double, OriginY As Double,
OriginZ As Double,
                                XAxisX As Double, XAxisY As Double,
XAxisZ As Double,
                                ZAxisX As Double, ZAxisY As Double,
ZAxisZ As Double)
```

The port's name is set using the "name" property on the port object. The following conventions should be used when naming ports.

- If a symbol is in contact with or is considered to interact with a routing object, it should output a port named "Route". The port's location should represent the idealized point of contact between the symbol and the route object.
- If a symbol is in contact with or is considered to interact with a structural object, it should output a port named "Structure". The port's location should represent the idealized point of contact between the symbol and the structural object.

This information is used in combination with the output from GetStructConnections( ) and GetRouteConnections( ) of the Assembly Information Rule (see the *Hangers and Supports Reference Data Guide* for more information about Assembly Information Rules). For example, the software uses this data to generate reports and ISOGEN drawings.

If a support is expected to generate manufacturing features, its symbols must output *Support Manufacturing Features*. These objects implement the IJHgrMfgFeature interface. A factory (that is, the HgrMfgFeatureFactory object) is provided for creating such objects.

The creator of the feature is responsible for setting its contour and type. The contour is set using the following method.

```
Sub IJHgrMfgFeature_PutContour( Contour As IJCurve )
```

The provided curve is used by other tasks such as Piping and Structure to generate detailed features on the structural and routing objects associated with the support.

The feature's type is set using the *Type* property on the feature object. Valid values are shown in the following table.

**enum HgrMfgFeatType**

WeldedType

HoleType

CutoutType

...

The feature's type determines the logic used when creating any manufacturing features.

### Related Topics

- *Programming Notes for Visual Basic: An Overview*, page 74

## Defining Nozzles

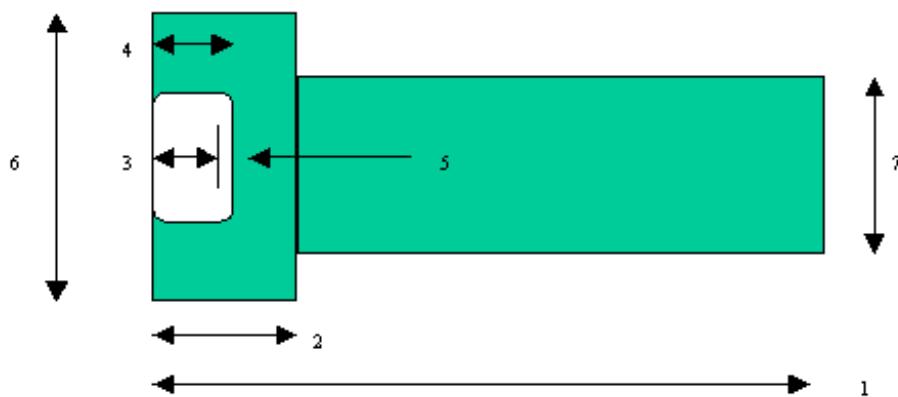
There are several ways that you can use a nozzle to connect a pipe with valves or equipment. These differences are called *end preparations*. The three most commonly used end preparations are:

- Butt Weld -- the pipe and valve *butt* up against each other and are welded together. The port is at the Face to Face of the valve itself.
- Bolted Connection -- two nozzles with equally sized flanges are bolted together through holes in the flange. The port is at the outside surface of the flange that is attached to the valve.
- Female Socket Weld -- the valve flange has a depression, or socket, that recedes back into it. The pipe is inserted into the socket with a small offset. To determine the position of the port, use one of the following formula:

PortPos = -FF/2 - Offset + Depth

PortPos = FF/2 - (Depth - Offset)

The following illustration identifies the dimensions for the formula.



1. Nozzle Length
2. Flange Thickness / Hub Thickness / Face to Face
3. Socket Offset
4. Socket Depth
5. Vector
6. Flange Diameter
7. Pipe Outside Diameter

### Note

- Set Face to Face as the first input in the Part Definition Wizard.

## Port Index

The port index (PortID) is a unique identifier that represents each port. You can write code to communicate with this PortID because it has an interface. You can retrieve information, such as the flange thickness, by calling the PortID. The PortID, in turn, calls to the generic data residing in the AllCommon.xls file for the flange thickness and returns it. This is useful when you need generic data about a part that you want to place in your Visual Basic program. With these values, you can make calculations and perform actions related to those calculations.

The first input to any Visual Basic program is the part. To retrieve information about this part, add a line of code similar to the following:

```
RetrieveParameters 1, oPartFclt, mOutputColl, pipeDiam, flangeThick,  
—  
— flangeDiam, cptOffset, depth
```

If your next line of code was the following:

```
Set ObjBody = Placesphere(m_OutputColl, CenterPos, parFacetoFace / 2  
—  
— flangeThick)
```

You would have to inquire about the value of the *flangeThick* parameter from generic data to determine the distance between the center of the valve and the beginning of the flange.

### Notes

- *oPartFclt* is the parent directory for all parts called in Visual Basic. It is declared as the first DIM statement to contribute parts to symbols.
- *flangeThick*, as used in the previous example, is not the attribute name for flange thickness. It is a variable used to hold the result of this value.

## Insulation

When you add insulation to a symbol using the Part Definition Wizard, list it as an Occurrence Attribute under the insulation aspect. There are two inputs for insulation on a simple object, such as a ball valve.

- Input 1 -- Face to Face
- Input 2 -- Insulation Thickness

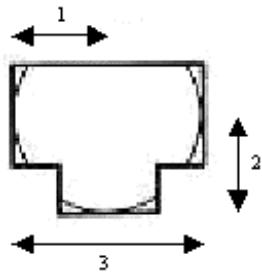
The user can modify occurrence attributes. The system property used is InsulationThickness, and IJInsulationThickness is the interface.

### Note

- The first input should always be Face To Face, Face to Center, and so on.

## **Face to Center versus Face to Face**

If the item you are creating is non-symmetrical, you might want to consider using a Face to Center dimension instead of a Face to Face dimension.



If this was a straight pipe with nozzles, you would probably describe its length using a simple Face to Face value, such as dimension 3. If you want to describe the length of the center pipe, neither the Face to Face value, nor the pipe diameter, will provide the length. A Face to Center value, or combination of Face1 to Center and Face2 to Center values, better meet the need.

Face to Center values can also be useful when describing the length between the center of the symbol and a port. A simple formula for center to port is:

FaceltoCenter = (Depth - Offset)

or

F1C = (D - O)

## **Vectors and Directions**

A vector determines the default direction that a plane or shape faces. Vectors should always face the outside of the shape to insure that when you connect to a certain nozzle or port you do not attach another component to the inside of a shape.

Vector directions are also very important for setting relationships between two symbols. For example, if you have two pumps and want to relate them to each other and to a horizontal plane, the vector of the plane must face upward, and the vectors of the bottom surfaces of the pumps must face down. Otherwise you could end up with the pumps hanging upside down from the plane.

To set vectors in the correct direction, first declare them as variables. For example:

```
DIM oDir AS IJDVector  
Set oDir = New Dvector
```

Next, set the direction. The vector always begins on the same plane as the surface for which you are setting the vector. Specify any coordinate in the correct direction through which the vector will run. For example:

```
Left Facing    oDir.set -1, 0, 0  
Right Facing   oDir.set 1, 0, 0  
Upper Left Facing   oDir.set -1, 1, 0
```

## Axis Orientation

The line between two ports of a symbol is its axis orientation. Certain types of symbols should have different axis orientations based on the needs of that symbol. For example, piping components such as valves run along pipe runs and generally have ports along the X axis where the component connects with the rest of the run. There may be a second Y axis along the valve operator of the same pipe component.

## Flanges

The flange is the connection face of the nozzle. Typically, flange diameters are significantly wider than the nominal piping diameter and are welded to the pipe. Three common types of flanges used in the software are:

- Weld Neck Flange -- Flange and neck, welded at end of neck on both sides with pipe.
- Plate Flange -- Plate for the flange, but no neck. Welded at the end of the pipe inside of the flange, and at the outside of the flange to the pipe.
- Slip-on Flange -- Flange and neck, slips on to pipe and is welded to the pipe both at the outside of the neck and the inside of the flange.

Flanges contain two ports; one to connect with other equipment, and another to connect with the pipe. The distance between Port 1 (connection with other equipment) and Port 2 (connection with pipe) is also the Face to Face value. If there is no distance between the two ports, as in a plate flange, the Face to Face value is zero.

## Related Topics

- *Programming Notes for Visual Basic: An Overview*, page 74

# Defining Parametric Components

You may need the flexibility to change the dimensions as well as nozzle data dynamically for piping specialties or instruments. In this case, create the symbols as fully parametric symbols so that you can change the data in the model.

A fully parametric symbol allows you to modify the following nozzle data as well as the dimensions of a symbol. The symbol is recomputed for dimensions and nozzle data based on the changes that you make.

- PortIndex
- Npd
- EndPreparation
- ScheduleThickness
- EndStandard
- PressureRating
- FlowDirection

A fully parametric symbol differs from a regular symbol in the following ways:

- All the input parameters are given as occurrence attributes in the PartClass sheet (bulkload sheet).
- In addition to the regular inputs, nozzle data such as NPD and End Preparation are defined as inputs.
- Create the fully parametric nozzle by using the CreatePipeNozzle function in the physical class file of the symbol. The CreatePipeNozzle function is a method on GSCADNozzleEntities.NozzleFactory. Use this instead of the CreateNozzle function (which uses CreatePipeNozzleFromPart internally) that you would use in regular symbols.

### Notes

- Do not use the RetrieveParameters function for fully parametric symbols. The RetrieveParameters function gets the values from the Catalog Database. If the user changes the nozzle data (such as the EndPreparation), the RetrieveParameters function gets the values from the Catalog Database so the new values do not display.
- Modified nozzle data is not available for the Insulation class. You can use static variables to account for this. When you create nozzles in the physical class file, store the nozzle data (such as flangedia and flangethickness) in static array variables. For example:

```
Dim pipeDiam(1 To 2) As Double  
Dim sptOffset(1 To 2) As Double  
Dim flangeDiam(1 To 2) As Double  
Dim depth(1 To 2) As Double  
Dim flangeThick(1 To 2) As Double
```

Then, in the Insulation class the nozzle data is retrieved from these static variables and used to create the geometry.

The following example shows code for creating a fully dynamic nozzle. All the geometry output creation would be similar as in a regular symbol.

```
'Place Dynamic Nozzle  
Dim oLogicalDistPort As GSCADNozzleEntities.IJLogicalDistPort  
Dim oDistribPort As GSCADNozzleEntities.IJDistribPort  
Dim oPipePort As GSCADNozzleEntities.IJDPipePort  
Dim oNozzleFactory As GSCADNozzleEntities.NozzleFactory  
Dim oNozzle As GSCADNozzleEntities.IJDNozzle  
Set oNozzleFactory = New GSCADNozzleEntities.NozzleFactory  
Private m_oCodeListMetadata As IJDCodeListMetaData  
Set m_oCodeListMetadata = m_OutputColl.ResourceManager  
TerminationSubClass1 =  
m_oCodeListMetadata.ParentValueID("EndPreparation", EndPreparation1)  
TerminationClass1 =  
m_oCodeListMetadata.ParentValueID("TerminationSubClass"  
TerminationSubClass1)  
SchedulePractice1 =  
m_oCodeListMetadata.ParentValueID("ScheduleThickness"
```

```
ScheduleThickness1)
EndPractice1 = m_oCodeListMetadata.ParentValueID("EndStandard"
EndStandard1)
RatingPractice1 =
m_oCodeListMetadata.ParentValueID("PressureRating", PressureRating1)
Set oNozzle = oNozzleFactory.CreatePipeNozzle(PortIndex1, Npd1,
NpdUnitType1, _
EndPreparation1, ScheduleThickness1, EndStandard1, _
PressureRating1, FlowDirection1, PortStatus, Id1, _
TerminationClass1, TerminationSubClass1, SchedulePractice1, _
5, EndPractice1, RatingPractice1, False,
m_OutputColl.ResourceManager, oCatalogConnection.ResourceManager)
Set oLogicalDistPort = oNozzle
Set oDistribPort = oNozzle
Set oPipePort = oNozzle
pipeDiam1 = oPipePort.PipingOutsideDiameter
flangeDiam1 = oPipePort.FlangeOrHubOutsideDiameter
flangeThick1 = oPipePort.FlangeOrHubThickness
depth = oPipePort.SeatingOrGrooveOrSocketDepth
CptOffset = oPipePort.FlangeProjectionOrSocketOffset
oNozzle.Length = flangeThick1
'Direction of the Nozzle
oDir.Set -1, 0, 0
oDistribPort.SetDirectionVector oDir
' Position of the nozzle should be the connect point of the nozzle
oPlacePoint.Set -(faceToFace / 2 + CptOffset - depth), 0, 0
```

## Using Codelist Data to Retrieve Other Nozzle Data

To create a nozzle using the CreatePipeNozzle function in a fully parametric symbol, obtain the TerminationSubClass, TerminationClass, SchedulePractice, EndPractice, and RatingPractice. You can obtain these values by using IJDCodeListMetaData.

For example:

```
Private m_oCodeListMetadata As IJDCodeListMetaData
Set m_oCodeListMetadata = m_OutputColl.ResourceManager

TerminationSubClass1 =
m_oCodeListMetadata.ParentValueID("EndPreparation", EndPreparation1)
TerminationClass1 =
m_oCodeListMetadata.ParentValueID("TerminationSubClass",
TerminationSubClass1)
SchedulePractice1 =
m_oCodeListMetadata.ParentValueID("ScheduleThickness",
ScheduleThickness1)
EndPractice1 = m_oCodeListMetadata.ParentValueID("EndStandard",
EndStandard1)
RatingPractice1 =
m_oCodeListMetadata.ParentValueID("PressureRating", PressureRating1)
```

## Related Topics

- *Programming Notes for Visual Basic: An Overview*, page 74

## Defining Valves

You can create valve symbols with or without operators. If you create the valve symbol with the operator, then the operator geometry is included in the valve geometry. That means that you must create a separate symbol for each combination of valve and operator.

If you create the valve symbol and operator symbol separately, you can associate the operator symbols with the valve symbols when you bulkload the valves. The valve symbol code contains the information for placing an operator at the required orientation.

To attach an operator with a given symbol do the following:

1. Create one output in the physical class file for Operator. For example:

```
'Insert your code for output 4 (Valve Operator)
Dim oSymbolHelper As IJSymbolGeometryHelper
Set oSymbolHelper = New SP3DSymbolHelper.SymbolServices
oSymbolHelper.OutputCollection = m_OutputColl

On Error Resume Next
Dim oDirX As IJDVector
Dim oDirY As IJDVector
Dim oDirZ As IJDVector
Set oDirX = New DVector
Set oDirY = New DVector
Set oDirZ = New DVector

oDirX.Set Cos(parRotation), 0, Sin(parRotation)
oDirY.Set 0, 1, 0
oDirZ.Set -Sin(parRotation), 0, Cos(parRotation)

Dim oPipeComponent As IJDPipeComponent
Set oPipeComponent = oPartFclt
On Error GoTo ErrorLabel
Dim oOperatorPart As IJDPart
Dim oOperatorOcc As IJPartOcc
If Not oPipeComponent Is Nothing Then
    Set oOperatorPart = oPipeComponent.GetValveOperatorPart
    If Not oOperatorPart Is Nothing Then
        Dim OpOrigin As IJDPosition
        Set OpOrigin = New DPosition
        OpOrigin.Set 0, 0, 0
        Set oOperatorOcc =
oSymbolHelper.CreateChildPartOcc("ValveOperator", oOperatorPart,
OpOrigin, oDirX, oDirY, oDirZ)

        End If
    End If
    Set oSymbolHelper = Nothing
    Set oOperatorPart = Nothing
    Set oPipeComponent = Nothing
    Set oOperatorOcc = Nothing
```

2. While bulkloading the Valve Body, specify the operator (part number - OperatorPartNumber) that you want to combine with the valve body on the PipingcommodityMatlControlData sheet in the ValveOperatorPartNumber column. For example:

Head	ContractorCommodityCode	FirstSizeFrom	FirstSizeTo	FirstSizeUnits	SecondSizeFrom	SecondSizeTo	SecondSizeUnits	MultisizeOption	IndustryCommodityCode	ClientCommodityCode	...	LooseMaterialRequirements	QuantityOfCapScrews	CapScrewContractorCmntyCode	CapScrewDiameter	TappedHoleDepth	ValveOperatorType	ValveOperatorGeometricIndStd	ValveOperatorPartNumber
A	VAABAHHGGAA								VAABAHHGGAA								3	40	GAT-BLT-150-3

The value VAABAHHGGAA under ContractorCommodityCode is the IndustryCommodityCode for the valve body. The GAT-BLT-150-3 value under ValveOperatorPartNumber is the operator IndustryCommodityCode. You must bulkload the operator separately under the equipment hierarchy.

### Create a Nozzle from a Part

You can create a nozzle using the data available in the catalog database for the Nozzle index. You provide the data in the part class sheet of the Symbol when you bulkload. Use this technique for symbols which are not parametric.

For example:

```
Set oNozzle = NozzleFactory.CreatePipeNozzleFromPart(partInput,
nozzleIndex, False, objOutputColl.ResourceManager)
PartInput - Part having the information about the Nozzle.
NozzleIndex - Nozzle Index number of the Nozzle being created and
available in Catalog data
```

### Create a Nozzle without Using a Part

You can create a nozzle using the data passed into the function by the user rather than data from the catalog database. The following example creates nozzles in parametric symbols:

```
oNozzleFactory.CreatePipeNozzle(PortIndex, Npd, NPDUnitType, _  
    EndPreparation, ScheduleThickness, EndStandard, PressureRating,  
    FlowDirection, PortStatus, Id, TerminationClass,  
    TerminationSubClass, SchedulePractice, 5, EndPractice,  
    RatingPractice, False, objOutputColl.ResourceManager,  
    oCatalogConnection.ResourceManager)
```

In the example you can specify, PortIndex, Npd, endpreparation, and so on as input parameters to the symbol. The function creates a nozzle according to the data values passed to it and not from the catalog database.

You can create the following types of nozzles using part information:

- Pipe Nozzle
- Cable Nozzle
- Cable Tray Nozzle
- Conduit Nozzle
- HVAC Nozzle

#### **Related Topics**

- *Programming Notes for Visual Basic: An Overview*, page 74

## Using SymbolHelper

The SymbolHelper object (SymbolHelper.SymbolServices) implements two interfaces; IJDUserSymbolServices and IJSymbolGeometryHelper.

SymbolHelper provides the default implementation of the methods in the IJDUserSymbolServices interface.

The Part Definition Wizard-generated code implements the methods of IJDUserSymbolServices in the main class file of the symbol project. Because of this, the implementation code of these methods is copied into each symbol project. Using the SymbolHelper object can reduce this repetition of code.

The SymbolHelper project also implements the methods of IJSymbolGeometryHelper, which provides implementation for creation of some primitive geometric shapes such as cylinder, sphere, and so on. You can use these shapes to create the symbol geometry.

For more detailed information about the SymbolHelper API, refer to the "SymbolHelper Math Reference" in the *Programmer's Guide*.

#### **Note**

- SymbolServices object does not support String type as a symbol input parameter.

## Example

The following example shows the main Symbol class file for a SP3DcheckValve created using the SymbolHelper object.

```
'+++++Copyright 1999 Copyright 1999 Intergraph
' All Rights Reserved
'
' CCheckValve.cls.cls
' ProgID: SP3DCheckValve.CCheckValve
' Author:
' Creation Date: Monday, Jan 22 2001
' Description:
' TODO - fill in header description information
'
' Change History:
' Joe Programmer : Thursday , Jan 2003
' Modified existing symbol to check for Symbol creation using
SP3DSymbolHelper.SymbolServices
' -----
'
'+++++
Option Explicit

Private Const MODULE = "CCheckValve:" 'Used for error messages

Private m_oSymbolHelper As IJSymbolHelper
Private Const E_FAIL = &H80004005
' Declaration of the User Symbol Services interface
Implements IJDUserSymbolServices
'+++++
Private Sub Class_Initialize()
    Const METHOD = "Class_Initialize:"
    On Error GoTo ErrorHandler

    Set m_oSymbolHelper = New SymbolServices
    m_oSymbolHelper.ProjectName = "SP3DCheckValve"
    m_oSymbolHelper.ClassName = "CCheckValve"

    ' Inputs
    m_oSymbolHelper.NumInputs = 2
    m_oSymbolHelper.AddInputDef 1, "FacetoFace", "Face to Face", 0.292
    m_oSymbolHelper.AddInputDef 2, "InsulationThickness", "Insulation
Thickness", 0.025

    ' Outputs
    m_oSymbolHelper.NumOutputs = 4
    m_oSymbolHelper.AddOutputDef 1, "Body", "Check Valve Body",
SimplePhysical
    m_oSymbolHelper.AddOutputDef 2, "InsulatedBody", "Insulated Body",
Insulation
    m_oSymbolHelper.AddOutputDef 3, "PNoz1", "Nozzle 1", SimplePhysical
    m_oSymbolHelper.AddOutputDef 4, "PNoz2", "Nozzle 2", SimplePhysical

    ' Aspects

```

```
m_oSymbolHelper.NumAspects = 2
m_oSymbolHelper.AddAspectDef 1, "Physical", "Physical", SimplePhysical
m_oSymbolHelper.AddAspectDef 2, "Insulation", "Insulation", Insulation

Exit Sub

ErrorHandler:
    ReportUnanticipatedError MODULE, METHOD

End Sub
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Private Sub Class_Terminate()
    Set m_oSymbolHelper = Nothing
End Sub
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Public Function IJDUserSymbolServices_InstanciateDefinition( _
    ByVal CodeBase As String, _
    ByVal defParameters As Variant, _
    ByVal ActiveConnection As Object) As Object
    ' call symbol services default implementation of this method
    IJDUserSymbolServices_InstanciateDefinition =
m_oSymbolHelper.InstanciateDefinition(CodeBase, defParameters,
ActiveConnection)
End Function
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Public Function IJDUserSymbolServices_GetDefinitionName(ByVal
definitionParameters As Variant) As String
    IJDUserSymbolServices_GetDefinitionName = m_oSymbolHelper.ProjectName +
"." + m_oSymbolHelper.ClassName
End Function
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Public Sub IJDUserSymbolServices_InitializeSymbolDefinition(ByRef
pSymbolDefinition As IJDSymbolDefinition)
    m_oSymbolHelper.InitializeSymbolDefinition pSymbolDefinition
End Sub
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Public Sub IJDUserSymbolServices_InvokeRepresentation(ByVal sblocc As Object,
-
    ByVal repName As String, _
    ByVal outputcoll As Object, _
    ByRef arrayOfInputs())
    m_oSymbolHelper.InvokeRepresentation sblocc, repName, outputcoll,
arrayOfInputs()

End Sub
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Public Function IJDUserSymbolServices_EditOccurence(ByRef pSymbolOccurence As
Object, ByVal transactionMgr As Object) As Boolean
    ' The definition uses the generic EditOccurrence command
    IJDUserSymbolServices_EditOccurence = False

End Function
'+++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
```

## Using Custom Aspects with a Symbol

If you want to use a custom aspect with a symbol, you must define the **SymbolRepId** in the symbol's code. Custom aspects are defined in the **AspectCode** codelist in the **AllCodeLists.xls** workbook (see the *Reference Data Guide* for more information about editing codelists). Codelist numbers 19 through 30 are available for custom aspects.

The **SymbolRepId** represents the custom aspect codelist number as a Long in the symbol code. For example, the custom aspect that you want to use is codelist number 19 in the **AspectCode** codelist. The **SymbolRepId** for the symbol would be  $2^{19}$  or 524288. A custom aspect with a codelist number of 30 would have 1073741824 ( $2^{30}$ ) as the **SymbolRepId**.

Example code using a custom aspect with a codelist number of 30, **SymbolRepID** 1073741824:

```
m_oSymbolHelper.NumOutputs = 2
m_oSymbolHelper.AddOutputDef 1, "O1", "O1", 1
m_oSymbolHelper.AddOutputDef 2, "O2", "O2", 1073741824
m_oSymbolHelper.NumAspects = 2
m_oSymbolHelper.AddAspectDef 1, "SimplePhysical", "Simple",
SimplePhysical
m_oSymbolHelper.AddAspectDef 2, "UserDefinedAspect", "UserDefined",
1073741824
```

### Related Topics

- *Programming Notes for Visual Basic: An Overview*, page 74

## Using String Type as an Input Parameter

You can set the input parameter to String type. String as an input parameter is useful for specifying character text. A symbol can have string as an input parameter if you want to change some input parameters dynamically, such as Nozzle Id or Unit Type. To use String as an input type, you need to create another ParameterContent and set its type to igString.

Add the following code to the code generated by the Part Definition Wizard in the **IJDUserSymbolServices\_InitializeSymbolDefinition** method:

```
'Create a default parameter for Text INput parameters
Dim PC1 As IMSSymbolEntities.IJDParameterContent
Set PC1 = New IMSSymbolEntities.DParameterContent
PC1.Type = igString
ReDim TextInputs(1 To iTextCount) As IMSSymbolEntities.IJDIInput
For iCount = 1 To iTextCount
    Set TextInputs(iCount) = New IMSSymbolEntities.DInput
    TextInputs(iCount).name = m_TextInputTypes(iCount).name
    TextInputs(iCount).description =
m_TextInputTypes(iCount).description
    TextInputs(iCount).properties =
```

```
m_TextInputTypes(iCount).properties  
    PC1.String = m_TextInputTypes(iCount).Value  
    TextInputs(iCount).DefaultParameterValue = PC1  
    InputsIf.SetInput TextInputs(iCount), nInputs + iCount + 1  
    Set TextInputs(iCount) = Nothing  
Next iCount
```

See Defining Parametric Components: An Overview for another example of string type implementation.

#### **Related Topics**

- *Programming Notes for Visual Basic: An Overview*, page 74

## Using a Part as the First Input

The first input in a Visual Basic symbol project is of the type PartFacelets.IJDPART. Every aspect will have its first input parameter of type PartFacelets.IJDPART. The following example is from the Physical.cls file:

```
Set oPartFclt = arrayOfInputs(1)  
ParFacetoFace = arrayOfInputs(2)  
...
```

The part (PartFacelets.IJDPART) contains information regarding the part you are placing in the model. For example, it could contain the number of ports and end preparations, end standard, and so on. If the symbol you are placing contains some number of inputs and some number of nozzles, the RetrieveParameters function will get the nozzle information such as pipe diameter, end preparation, pressure rating, and so on using the input part PartFacelets.IJDPART.

The RetrieveParameters function uses the information in PartFacelets.IJDPART to retrieve the pipe diameter, flange diameter, and so on of nozzles associated with the part while placing the symbol in the model.

#### **Related Topics**

- *Programming Notes for Visual Basic: An Overview*, page 74

# Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview

You can convert your PDS EDEN symbols to SmartPlant Visual Basic symbols using the EDEN2SP3D.exe translator located in the *[Product Directory]\Catalog Data\PDSTranslator\Bin* folder on the server. The translator uses the EDEN symbol's model graphics file (\*.mg), which contains the information on how to generate the symbol graphics, as the input. The translator parses the code in the \*.mg file and generates the corresponding Visual Basic project that contains the equivalent code to generate the symbol. You must have sufficient Visual Basic programming skills to understand and modify the generated Visual Basic symbol code as needed.

The translator creates a log file to inform you of any errors found while parsing the EDEN code. Typically items to look for in the log file include variables that may need to be declared as symbol inputs and functions for which translation is not yet available.

After you have translated and fine-tuned the Visual Basic code, you will need to compile the symbol and test it in the software. When testing, verify the accuracy of the graphics and the placement of the symbol ports. For information on loading the symbol into the software, refer to *Add a Symbol to Reference Data*, page 56.

The created Visual Basic project should compile and generate the symbol correctly. However, in many cases the symbol will need some manual edits. These modifications are required in certain circumstances as described in *EDEN Translator Required VB Editing*, page 96. The translator does not do a 100% translation.

A product can be purchased from CAXperts™ (<http://www.caxperts.com>) that is an alternative to PDS Eden symbol translator. The product is CAXperts 3D SymbolDesigner™. The product contains functionality to translate PDS symbols to SmartPlant 3D symbols.

## Related Topics

- *Creating Part Occurrence Symbols in Visual Basic: An Overview*, page 55
- *EDEN Translator Command Line Structure*, page 94
- *EDEN Translator Example*, page 99
- *EDEN Translator Outputs*, page 96
- *EDEN Translator Required VB Editing*, page 96
- *EDEN Translator Workflow*, page 94

## EDEN Translator Workflow

The PDS EDEN symbol translator (EDEN2SP3D.EXE) is located in *[Product Directory]\CatalogData\PDSTranslator\Bin*. The program takes command line arguments as inputs. The steps to translate an EDEN symbols are:

1. Create a new folder under *[Product Directory]\CatalogData\Symbols* (or any other location as appropriate) to hold the new Visual Basic symbol code. We recommend that you use the name of the symbol for the folder name. For more information about this folder structure, refer to the first part of *Creating Part Occurrence Symbols with the Part Definition Wizard: An Overview*, page 61.
2. Copy the EDEN Model Graphics ("\*.mg") file to this location.
3. Run the EDEN2SP3D executable with the corresponding command line arguments. We strongly recommend that you create a small batch file for this purpose so that the information can be easily edited and run again in case of errors. For more information about the outputs, see *EDEN Translator Outputs*, page 96.
4. Modify the generated Visual Basic symbol, if needed, and test whether the symbol places correctly. For more information, see *EDEN Translator Required VB Editing*, page 96.

### Related Topics

- *Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview*, page 93

## EDEN Translator Command Line Structure

The EDEN symbol translator accepts command line inputs. The explanation for the generic command line arguments and the discipline specific arguments are:

<EDENSymbol> this is the filename of the EDEN symbol.

<SP3DProjectName> the VB project name to be generated

<SP3DSymbolName> the VB symbol name to be generated

<Author> the name of the author

### Piping

*[Product Directory]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe* EDENPiping  
<EDENSymbol> <SP3DProjectName> <SP3DSymbolName> <Author>  
<PDSTranslatorExcelFile> <PDSModelCode> <SP3DTabName>

EDENPiping denotes that this is a Piping symbol. This should not be changed.

<PDSTranslatorExcelFile> the filename (with full path) to the PDS translator excel file.

<PDSModelCode> the PDS model code in the "Physical Data" sheet of the PDS translator.

<SP3DTabName> the SmartPlant3D Tab Name in the "Physical Data" sheet of the PDS translator.

## **Equipment**

[*Product Directory*]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe  
EDENEquipment <EDENSymbol> <SP3DProjectName> <SP3DSymbolName>  
<Author>

EDENEquipment denotes that this is an Equipment Symbol. This should not be changed.

## **Electrical**

[*Product Directory*]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe  
EDENElectrical <EDENSymbol> <SP3DProjectName> <SP3DSymbolName>  
<Author>

EDENElectrical denotes that this is an Electrical Symbol. This should not be changed.

## **Examples**

The following are examples of using the tool:

[*Product Directory*]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe EDENPiping  
I15AZ.mg SP3DGlobeValveF CGlobeValveF John  
"M:\CatalogData\PDSTranslator\Docs\Piping Translation Rules.xls" GLO  
GlobeValve

[*Product Directory*]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe  
EDENEquipment e405.eqp Pump PumpServices John

[*Product Directory*]\CatalogData\PDSTranslator\Bin\EDEN2SP3D.exe  
EDENElectrical thl SP3DElectricalSymbol HTrayElbow John

## **Related Topics**

- *Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview*, page 93

## EDEN Translator Outputs

When the translator finishes running, you will find the following outputs:

- <SP3DProjectName>.vbp the Visual Basic symbol project file
- <SP3DSymbolName>.cls the Visual Basic symbol class file
- CSimplePhysical.cls the class file for the "SimplePhysical" aspect.

The translator also generates a log file, <SP3DProjectName>.log, that contains any errors or warnings and reports on the parsing of the EDEN code.

### Related Topics

- *Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview*, page 93

## EDEN Translator Required VB Editing

Depending on the graphics and the code in the EDEN file, you may need to make some modifications after the utility finishes translating the EDEN code to Visual Basic code. These edits are due to some of the limitations of the translator due to the dissimilarities in the way a symbol is defined in EDEN and the way in which a symbol is defined in Visual Basic. Known issues are identified below.

### Symbol Inputs in EDEN (Dimension\_\* variables)

EDEN has some general purpose variables that are used to store certain user defined values. These variables will most probably be symbol inputs in Visual Basic.

Whenever such variables are encountered, the translator automatically treats them as symbol Inputs. For example:

```
height = Dimension_34 - Dimension_37
```

The translator generates the code as follows:

```
Dim height As Variant  
height = Dimension(34) - Dimension(37)
```

It also automatically adds the symbol inputs:

```
m_oSymbolHelper.AddInputDef 3, "Dimension(34)", "Dimension(34)", 3  
m_oSymbolHelper.AddInputDef 4, "Dimension(37)", "Dimension(37)", 4
```

Note, that in Visual Basic the symbol input can be called by some other name, say, "ImpellerDiameter", "PumpHeight", and so forth. You will have to modify the name of the input to match the one that is defined in the excel data files. For example, you can modify the generated code as follows:

```
m_oSymbolHelper.AddInputDef 3, "ImpellerDiameter",  
"ImpellerDiameter", 3
```

## Connect Points with Cylinder (Piping)

In EDEN, a cylinder is drawn separately from the Connect Point. However, in Visual Basic there is a mechanism to draw the Cylinder along with the Nozzle (that is, use the length property of the nozzle). It is not possible for the translator to determine which connect point in EDEN goes with which cylinder. Therefore, the translator simply translates the code as is. Thus, it generates two overlapping cylinders in Visual Basic. This overlap is just a runtime overhead of drawing an extra cylinder for each nozzle. You may want to remove the code that draws the graphic for the cylinder if you are sure that the graphic for the nozzle will suffice to represent the symbol and thus the extra cylinder is redundant. You will also have to remove the output declaration in the symbol initialize, if you choose to do this.

## If-Then-Else Conditions

EDEN does not require you to declare all the outputs of a symbol beforehand. However, in Visual Basic you are required to list all the outputs of a symbol in the initialization of the User Symbol Services object. If some graphics are drawn within an If-Then-Else condition, then the translator has no way of knowing which object should be drawn at runtime. The current implementation of the translator is such that it lists all the objects in the outputs. You are required to modify the code depending upon which outputs will be used. For example:

The EDEN code looks like this:

```
If ( Body_OD_1 .EQ. Body_OD_2 ) Then
    Call Draw_Cylinder_With_Capped_Ends ( length, Body_OD_1 )
Else
    Call Draw_Cone_With_Capped_Ends ( length, Body_OD_1, Body_OD_2 )
Endif
```

Depending upon the condition, either a cylinder or a cone will be drawn, but not both. The translator generates the Visual Basic code as:

```
If (oNozzleData(1).dPipeDiameter = oNozzleData(2).dPipeDiameter)
Then
    oT4x4Temp.LoadIdentity
    oT4x4Temp.IndexValue(12) = length
    Dim oCylinderCapped2 As Object
    Set oCylinderCapped2 = PlaceCylinder(m_OutputColl, oOriginPos,
oT4x4Temp.TransformPosition(oOriginPos),
CDbl(oNozzleData(1).dPipeDiameter), True
    oCylinderCapped2.Transform oT4x4Current
    oOutputCol.Add oCylinderCapped2
    oT4x4Current.MultMatrix oT4x4Temp
Else
    oT4x4Temp.LoadIdentity
    oT4x4Temp.IndexValue(12) = length
    Dim oConeCapped1 As Object
    Set oConeCapped1 = PlaceCone(m_OutputColl, oOriginPos,
oT4x4Temp.TransformPosition(oOriginPos),
CDbl(oNozzleData(1).dPipeDiameter) / 2,
CDbl(oNozzleData(2).dPipeDiameter) / 2, True)
    oConeCapped1.Transform oT4x4Current
```

```
    oOutputCol.Add oConeCapped1
    oT4x4Current.MultMatrix oT4x4Temp
End If
```

The translator also adds both the outputs in the symbol initialization:

```
    m_oSymbolHelper.AddOutputDef 1, "oCylinderCapped1",
"oCylinderCapped1", 1
    m_oSymbolHelper.AddOutputDef 2, "oCylinderCapped2",
"oCylinderCapped2", 1
```

This causes a problem at runtime because one of the outputs will be "Nothing" at runtime. To avoid this problem, remove the extra output as follows:

```
m_oSymbolHelper.AddOutputDef 1, "oCylinderorCone1",
"oCylinderorCone1", 1
```

#### Note

- Remember that you will also have to edit the `m_oSymbolHelper.NumOutputs` (in the same initialize method) appropriately.

The symbol graphics code may also be modified for better readability, however the code will function even if it is not modified.

#### Note

- In some cases, where the statements in the If-Then-Else are more complex, then more modifications may be necessary. Example of this may be when two graphics are drawn in the "if" case and only one is drawn in the "else" case.

### Approximations to Zero

Visual Basic symbols have difficulty in drawing cones with zero radii. In these cases, the generated code will compile successfully, however, at runtime it may raise some problems from the math calculations. This is avoided by changing the value of zero to a value that is very close to zero. For example:

```
Dim diameter As Variant
diameter = DELTA_TOLERANCE ' 0#
Set oCone1 = PlaceCone(..) ' this call uses the `diameter'
variable
```

In the above code, a value of zero is replaced with a value of "0.00001". The `DELTA_TOLERANCE` constant is defined for this purpose.

### Aspects (Equipment)

Symbols in Equipment can have aspects, and each graphic that is drawn can belong to one or many aspects. In Visual Basic we handle aspects by having separate ".cls" file for each aspect (for those symbols not using SmartEquipment). The translator does not generate separate code for each aspect. Thus, the code generated will not contain any information on the aspects. All the code generated will belong only to the SimplePhysical aspect. You will have to cut, copy and paste portions of the code into different aspects as needed.

## Nozzles (Equipment)

Equipment nozzles are now defined with a PlaceHolder in the symbol file and the actual nozzle is placed in a "\_Def.cls" file. The translator does not generate this "Def" file automatically. You will have to generate this file either with the wizard or by copying this file from another symbol and editing it as needed.

## Draw Complex Surface

The Draw Complex Surface primitive does not add the symbol inputs to the Initialize method in the USS symbol object. This is because several Draw Complex Surface, Draw Line, and Draw Arc calls result in a single surface being drawn and thus adding the output automatically is not supported at this time. However, you can add the output as follows:

```
m_oSymbolHelper.AddOutputDef 1, "ComplexSurface1",  
"ComplexSurface1", 1
```

### Note

- Remember that you will also have to edit the m\_oSymbolHelper.NumOutputs (in the same initialize method) appropriately.

## Removal of User Input Code (Equipment)

The Equipment EDEN modules have code that is related with getting and displaying some information from/to the user through the forms interface. This code has no meaning in Visual Basic and this should be removed from the Visual Basic symbol code. This code is generally contained within a Do...Loop statement and looks similar to this:

```
Do While (accepted = 0) If (LAST_INP_TYPE = USER_KEYIN) Then . . .  
Loop
```

### Related Topics

- *Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview*, page 93

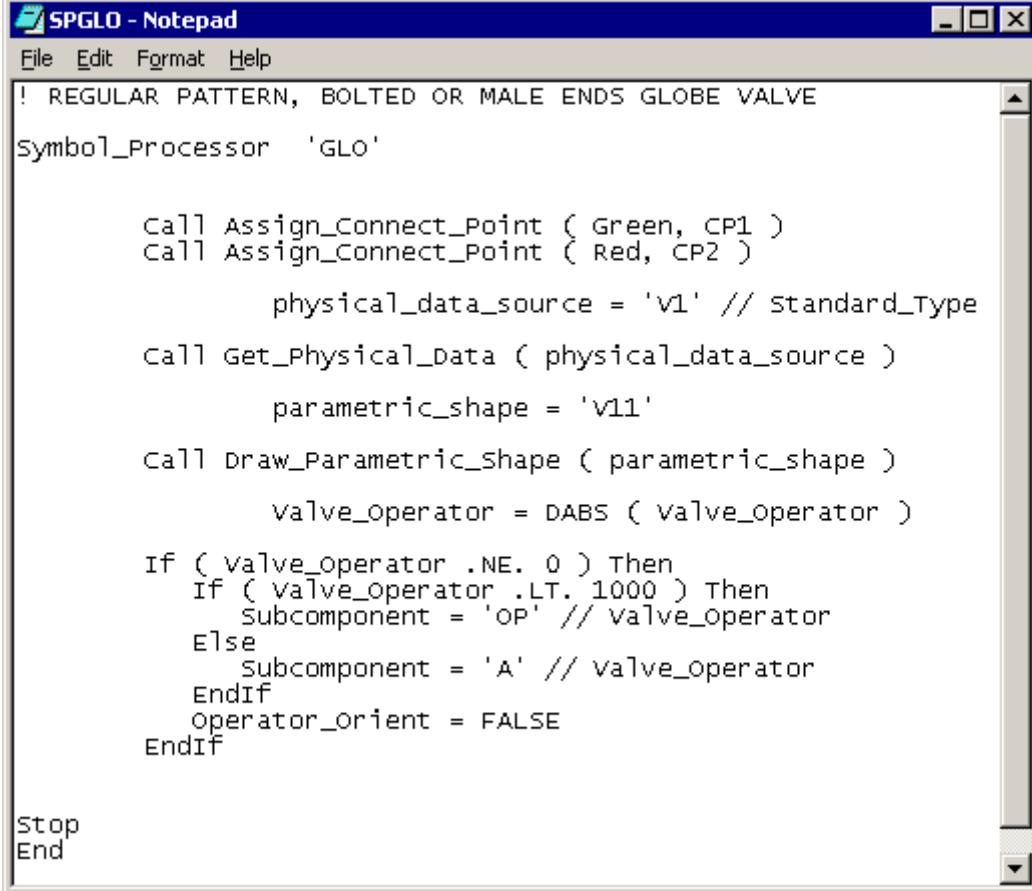
# EDEN Translator Example

This section contains an example workflow for converting a EDEN piping symbol.

To find out what EDEN modules to extract, you must assess the source EDEN in the PDS Graphic Commodity Library, and select the required Model Parametric Shape files for conversion. Interference Parametric Shape EDEN, Symbol Processor EDEN, Physical Data Definitions EDEN and User Function EDEN are not required for conversion. This example will convert the symbol for a standard full port globe valve. The PDS Model Code for a standard globe valve is GLO. This symbol is used in the example to determine which EDEN Symbol Processor is required for extraction and conversion.

### Determine the EDEN Module (Option 1)

1. Start PDS.
2. Select **Reference Data Manager**.
3. Select **Graphic Commodity Library Manager**.
4. Flip the toggle to **Sub-string**, and then type *GLO*.
5. Select **Revise Data**.
6. Select the GLO Symbol Processor from the list.
7. Click **Accept ✓**. The system displays the EDEN module.



The screenshot shows a Windows Notepad window titled "SPGLO - Notepad". The menu bar includes File, Edit, Format, and Help. The main text area contains EDEN module code:

```
! REGULAR PATTERN, BOLTED OR MALE ENDS GLOBE VALVE
Symbol_Processor 'GLO'

Call Assign_Connect_Point ( Green, CP1 )
Call Assign_Connect_Point ( Red, CP2 )

    physical_data_source = 'V1' // standard_Type
Call Get_Physical_Data ( physical_data_source )

    parametric_shape = 'V11'
Call Draw_Parametric_Shape ( parametric_shape )

    valve_operator = DABS ( Valve_operator )

If ( valve_operator .NE. 0 ) Then
    If ( valve_operator .LT. 1000 ) Then
        Subcomponent = 'OP' // Valve_operator
    Else
        Subcomponent = 'A' // Valve_operator
    EndIf
    Operator_Orient = FALSE
EndIf

Stop
End
```

8. In the code, find the "parametric\_shape" definition. In this example, "V11" is the module that should be extracted and converted.

### Determine the EDEN Module (Option 2)

1. Choose the module to convert, in this case "GLO".
2. Find the definition of the model code "GLO" in the *PDS Piping Component Data Reference Data Guide*.
3. In *Appendix B* of the guide, find the record for 6Q1C11, [2-way] globe valve (in-line).

4. Find the sub-definition for a Regular Pattern, female ends, full port globe valve (MC-GLOF).

5. Note that the definition notes SN=V11. This defines that V11 is the symbol processor for the part.

-OR-

In *Appendix C* of the guide, find the corresponding symbol for a GLOF symbol. Piping commodity symbol V11 notes a Model Code of V11.

#### **Note**

- This process assumes you have not customized the EDEN symbol. If you have customized the EDEN symbol and user-defined Symbol Processors have been created, you must use Option 1 above and then review the Symbol Processor EDEN to determine the actual code used to place the physical representation of the part.

### **Extract the Required EDEN Module**

1. Start PDS.
2. Select **Reference Data Manager**.
3. Select **Graphic Commodity Library Manager**.
4. Flip the toggle to **Sub-string**, and then type *V11*.
5. Click **Extract Data**.
6. Select the V11 Model Parametric Shape from the list.
7. Click **Accept ✓**. The software extracts the module to the indicated folder.

### **Convert the Extracted PDS Piping EDEN Module**

1. Create a new folder for the conversion files.
2. Copy the extracted EDEN module file to the new folder. You can rename the file if needed, Pd\_gc1 to V11 for example.
3. Optionally, copy the EDEN2SP3D.exe utility to the folder.
4. Optionally, copy the delivered conversion control file *[Product Directory]\CatalogData\PDSTranslator\Docs\Piping Translation Rules.exe* to the folder.
5. Open a command window (**Start > Run** then type in **cmd** and click OK).
6. Change folders to the new folder you created.
7. In the command window, type:  
EDEN2SP3D.exe EDENPiping V11 SP3DGlobeValveNew CGlobeValveNew  
User1 "Piping Translation Rules.xls" GLO GlobeValve
8. The conversion utility creates the following files:  
CGlobeValveNew.cls  
CSimplePhysical.cls  
SP3DGlobeValveNew.log  
SP3DGlobeValveNew.vbp

## **Review the Converted EDEN Code**

The log file contains the messages regarding any errors found while parsing the EDEN code. More importantly, the log file displays messages regarding variables that may need to be declared as symbol inputs. The log file also contains the parsed tokens so that any error in the parsing of the EDEN code itself can be detected easily. The log file also lists any function for which translation is not yet available.

## **Compile the Visual Basic Project and Test the Symbol**

Open the SP3DGlobeValveNew.vbp project file and compile a new .DLL file using the **File > Make SP3DGlobeValve.dll** command. After the DLL is compiled, it will be registered on the local machine.

After the symbol has been compiled it can be placed in the modeling environment and then it can be verified for accuracy, especially regarding the placement of the ports in the symbol. After the symbol has been verified to work, it can be integrated and then used in a production environment. Open the VB project and review the converted code. Amend as required per the limitations noted in *EDEN Translator Required VB Editing*, page 96.

After you completely verify the new symbol, you need to distribute the DLL to all the client computers. For more information, see *Distributing Symbols Manually*, page 60 or *Distributing Symbols Automatically*, page 58.

### **Related Topics**

- *Converting PDS EDEN to SmartPlant Visual Basic Symbols: An Overview*, page 93

# Symbol Definitions: An Overview

The symbol definition is the contract that binds all the symbol objects together. The symbol system uses the definition to check data integrity such as missing inputs, outputs or a DLL version change. After symbols have been placed in the model or created in the catalog, changes to the definition must only take place under controlled conditions and be extensively tested.

It is possible to make a symbol definition flexible by declaring it as having a variable number of inputs and/or outputs. You can do this by setting the igCOLLECTION\_VARIABLE property on the inputs and outputs collections. It is also possible to state that certain inputs are optional with the igDESCRIPTION\_OPTIONAL property. The downside of a more flexible definition is that the symbol system will be unable to use its internal caching mechanism and so there will be a flavor created for each symbol placed.

## Definition Options

igSYMBOL_ARGUMENTS_TYPE_MASK = 0x0000000f	The symbol arguments type Bits Mask.
igSYMBOL_ARGUMENTS_TYPE_STATIC = 0x00000000	The symbol definition has no input argument.
igSYMBOL_ARGUMENTS_TYPE_PARAMETRIC = 0x00000001	All the input arguments are of type parameter. Only numeric inputs.
igSYMBOL_ARGUMENTS_TYPE_ASSOC = 0x00000002	Some of the input arguments are not of type parameter. It has at least one graphic input.
igSYMBOL_CACHE_OPTION_MASK = 0x000000f0	The symbol arguments type Bits Mask.
igSYMBOL_CACHE_OPTION_AUTOMATIC = 0x00000010	The system checks if a result is or is not sharable by several symbols. The symbol sub-system handles the cache option: if it's a static or a pure parametric symbol, share the cache. Otherwise, generate another output collection.
igSYMBOL_CACHE_OPTION_SHARED = 0x00000020	A result is sharable by several symbols. If there's already a placed symbol occurrence with the same set of arguments and same active representations, share the cached graphic outputs.

igSYMBOL_CACHE_OPTION_NOT_SHARED = 0x00000030	A result is not sharable by several symbols. Don't share the cache of graphic outputs.
igSYMBOL_GEOM_OPTION_MASK = 0x00000f00	The symbol arguments drive the symbol geometry Bits Mask
igSYMBOL_GEOM_FREE = 0x00000100	The symbol arguments don't drive the symbol geometry. No external dependencies.
igSYMBOL_GEOM_DRIVEN_BY_ARG = 0x00000200	The symbol geometry is driven by input arguments.
igSYMBOL_GEOM_FIX_TO_ID = 0x00000600	The symbol geometry is driven by input arguments.
igSYMBOL_ELLIPSIS_INPUTS = 0x00001000	The symbol has ellipsis inputs.
igSYMBOL_METADATA_OPTION_MASK = 0x00002000	Symbol Meta Data Option Bits Mask.
igSYMBOL_STATIC_METADATA = 0x00000000	Meta data of the Symbol definition are fully defined by the associated USS object (default option).
igSYMBOL_DYNAMIC_METADATA = 0x00002000	Meta data of the symbol definition are edited and are not similar to the one provided by the associated USS object.
igSYMBOL_SUPPORT_ONLY_OPTION_MASK = 0x00004000	Symbol Support Only Option Bits Mask.
igSYMBOL_SUPPORT_ONLY = 0x00000000	Definition is support only (default value)
igSYMBOL_NOT_SUPPORT_ONLY = 0x00004000	Definition is NOT support only.
igSYMBOL_POOL_DESC_OPTION_MASK = 0x000f0000	Symbol Pool description Option Bits Mask.
igSYMBOL_POOL_DESCRIPTOR = 0x00010000	Pool the descriptor objects (inputs, outputs, representation).
igSYMBOL_UNPOOL_DESCRIPTOR = 0x00020000	Create a descriptor object when requested instead of getting it from a pool.
igSYMBOL_SUPPORT_UPDATE_OPTION_MASK = 0x00400000	Symbol Support Update Option Bits Mask
igSYMBOL_SUPPORT_UPDATE = 0x00400000	Definition supports update.
igSYMBOL_NOT_SUPPORT_UPDATE = 0x00000000	Definition is NOT support Update (default value)

## **Flavors and the Flavor Manager**

The symbol system has a caching mechanism for all symbols that share the same set of input parameters and same set of outputs. By default the cache mechanism is active. For more information, see cache option

(igSYMBOL\_CACHE\_OPTION\_SHARED). A flavor object is created for each unique set of parameters and each symbol placed using these same parameters is connected to the flavor and uses the flavor's graphic objects for display. For this type of 'cached' symbol, a flavor manager object is created and connected to the symbol definition. The flavor manager keeps internal data about which flavors are currently available. The flavor manager and flavors should be considered internal to the symbol system. Any manipulation by external objects or programs can break the symbols placed and compromise the model or catalog.

### **Related Topics**

- *Define Connection Ports on Solid Edge Parts*, page 112



# Creating Symbols in Solid Edge: An Overview

Using Solid Edge, you can model different types of equipment representations. You can use the different representations for different types of interference checking.

One representation is the detailed representation. Another is the *maintenance envelope* representation. You can combine multiple representations for a single piece of equipment component into an assembly file.

The file name suffix identifies the representation, or aspect, for the part. You can find the available aspects listed on the **Aspect Code** sheet in the AllCodeLists.xls workbook. The following table lists the common Solid Edge file names and associated aspects. The aspects are stored in part files, which have the extension .par. All the representations make up an assembly file, which has an extension .asm. You list the .asm file name on the part class sheet in the Excel workbook.

File Name Example	Representation
MySymbol_0.par	Simple physical
MySymbol_4.par	Detailed physical
MySymbol_5.par	Insulation
MySymbol_6.par	Operation
MySymbol_7.par	Maintenance

To control the sizes of the parts, you must define dimension variables and user-defined variables in Solid Edge. User-defined variables are then mapped to SmartPlant 3D properties in the Equipment.xls workbook. Each part class sheet in the workbook must contain a column for each user-defined variable in Solid Edge.

If you want a dimension to be a driving variable, you must define it as a user-defined variable in Solid Edge, and then define that variable as an *occurrence property* (using the syntax oa:AttributeName) in the Equipment.xls workbook.

You cannot move nozzles on parts within SmartPlant 3D. Using a macro, you define nozzles, or ports, in Solid Edge when you model the parts. The macro assigns a type and a name to each port.

## Related Topics

- *Defining Ports in Solid Edge: An Overview*, page 108
- *Model Parts in Solid Edge*, page 109

# Defining Ports in Solid Edge: An Overview

You can define different types of ports on Solid Edge part symbols. Ports must be included in the simple physical aspect file, which is named <filename>\_0.par.

Each port has a type and a name. The name must be unique within the .par file.

To create ports, you add cylindrical, rectangular, or right triangular protrusion features at each desired port location. Then, you run a macro that lets you pick the type and name for each port. The following table provides the protrusion type and the corresponding discipline.

Protrusion	Discipline
Cylindrical	HVAC
Rectangular or Square	Cable
Right Triangular	Foundations

## Related Topics

- *Creating Symbols in Solid Edge: An Overview*, page 107
- *Define Connection Ports on Solid Edge Parts*, page 112
- *Model Parts in Solid Edge*, page 109

# Model Parts in Solid Edge

1. Model a part in Solid Edge.

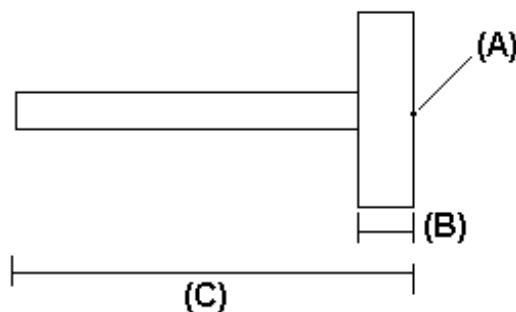
 **Tip**

- Solid Edge has tutorials and online Help to teach you how to model parts and assemblies.

2. In Solid Edge, create protrusions on the part for *nozzles*, or ports.

 **Tip**

- The protrusions can be cylindrical, rectangular, or right triangular.
- Cylindrical protrusions are commonly used for HVAC ports. Rectangular or square protrusions are used for cable ports. The right triangular shape is used for foundation ports.
- If the protrusion is cylindrical, the length of the protrusion must be greater than or equal to the flange thickness. The following picture shows a cylindrical port definition.



(A)	Connect Point on Flange (Not Gasket)
(B)	Flange Thickness
(C)	Length

3. Click **Tools > Macro**.
4. Browse to `\Equipment\Client\Bin` on a client machine to run the Intergraph **SEDefinePort.exe** macro.

*Define Connection Ports on Solid Edge Parts, page 112*

 **Tip**

- This macro displays the **Intergraph Define Port** dialog box, which allows you to identify each port with a unique name and type of connection point, such as HVAC. This macro tells SmartPlant 3D where, for example, HVAC can be routed into the Solid Edge part.

5. Dimension all aspects of the part that you want to drive with parameters inside SmartPlant 3D, such as the length and diameter of nozzles. All dimensions become entries in the Solid Edge variable table.
6. Click **Tools > Variables** to create *user attributes* in the variable table and map those attributes to the Solid Edge dimension variables.

 **Note**

- At a minimum, you must define a set of variables to control the size of the part. If the **Type** column on the **Variable Table** dialog box contains **Dim**, the variable comes from dimensions. You can add other variables to the table that are not dimensions, such as symbol length and symbol diameter. These variables can then be mapped to actual dimension variables by putting the user variable name into the **Formula** column of the actual dimensions.

The following table shows some sample values in the **Variable Table**:

Type	Variable Name	Value	Formula
Dim	V367	3600m	TankDiameter
Dim	V368	1500m	TankLength
User	TankDiameter	6090m	
User	TankLength	500m	

The user variables are then mapped to attributes in a reference data workbook such as Equipment.xls.

7. Save the part with a suffix of **\_0**. For example, you can name the part **MyEquipment\_0.par**.

 **Tip**

- Each representation, or aspect, of a part must have a specific suffix to work within SmartPlant 3D's reference data. The simple physical aspect must have a **\_0** suffix, and a maintenance aspect must have a **\_7** suffix on the file name. You must save ports in the simple physical aspect file, denoted by **\_0.par**.
- 8. If necessary, create a *maintenance envelope* of the part.

 **Tip**

- Use dimensions that coincide with the dimensions of the part that you just modeled.
- In addition, you can write a small Visual Basic program to control the positioning of the part inside the maintenance envelope, such as

whether it should be to the right or left side. Here is an example of the code:

```
Function SwitchValue (Switch as Double, Dimension1 As Double,  
Dimension2 As Double)  
If Switch = 0 Then  
SwitchValue = Dimension1  
Else  
SwitchValue = Dimension2  
EndIf  
End Function
```

You must paste this code into the **Formula** column of the variable table. You do not need to have Microsoft Visual Basic to write the function; you can write the program in Notepad.

9. Save the maintenance aspect of the part with a suffix of **\_7**; for example, **MyEquipment\_7.par**.
10. Create and save an assembly file (.asm) for the part and associated aspects.
11. Place the **\_0**, **\_7**, and .asm files in the *[Product Directory]\CatalogData\Symbols\SolidEdgeParts* folder on the server.
12. List the .asm file on the part class sheet in the Excel workbook and add any necessary data.
13. Bulk load the workbook. The bulkload process is usually done on an administrator machine. For more information about bulk loading, refer to the section "Bulk Load Database with Data" in the *SmartPlant 3D Reference Data Guide*.

### Notes

- To add ports to an existing part in reference data, you must open the .par file in Solid Edge, add the ports, and run the Define Port macro. You also must edit the part class sheet in the Excel workbook and then bulk load.
- You can select the **Create flavors** option on the **Bulkload** dialog box to allow users to place Solid Edge parts without having a copy of Solid Edge installed on their computers.

### Related Topics

- *Creating Symbols in Solid Edge: An Overview*, page 107
- *Define Connection Ports on Solid Edge Parts*, page 112

# Define Connection Ports on Solid Edge Parts

1. In Solid Edge, open the part file for which you need to define ports. The name of the part file containing the ports must conform to the format *name\_0.par* in order to work with SmartPlant 3D.
2. Select a protrusion on the part.

## Tip

- Cylindrical protrusions are commonly used for HVAC ports.  
Rectangular or square protrusions are used for cable ports. Right triangular protrusions are used for foundation ports.

3. Click **Tools > Macro**.

4. Select **Browse** on the **Macro** dialog box, and go to *[Product Directory]\Equipment\Client\Bin* and choose **SEDefinePort.exe**.

## Tip

- If no protrusion feature is selected, the software prompts you to select a protrusion.
5. Select the kind of port that you want to assign to the selected protrusion in the **Type** box of the **Define Port** dialog box.
  6. Enter the name of the port in the **Name** box. The name must be unique within the file.
  7. Click **OK** to update the part file with the newly defined port.

## Notes

- You also can use this procedure to change the definition of a previously-identified port.

## Related Topics

- *Creating Symbols in Solid Edge: An Overview*, page 107
- *Model Parts in Solid Edge*, page 109

# Troubleshooting: An Overview

While unlikely, symbols placed in a model can become corrupted or have problems. This section describes how to test symbols, what can cause symbols to become corrupt, and what you can do to fix corrupt symbols.

*Debugging Symbols with Visual Basic*, page 114

*Testing Symbols*, page 118

*Sources of Errors*, page 121

*Error Investigation Methods*, page 123

## **Related Topics**

- *Symbols: An Overview*, page 45

# Debugging Symbols with Visual Basic

You can use Microsoft Visual Basic's debugging tools to debug symbols. You must have the latest Intergraph SmartPlant 3D Programming Resources software and Microsoft Visual Basic 6.0 with Visual Studio Service Pack 5 installed on the computer. For information on how to install the Intergraph SmartPlant 3D Programming Resources, please refer to the *SmartPlant 3D Installation Guide*.

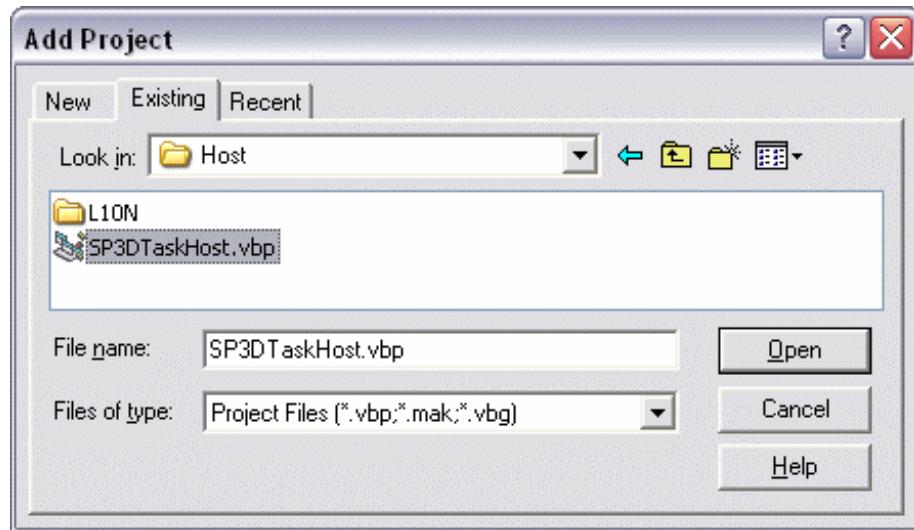
## Setup

To your PATH environment variable, add these two folders:

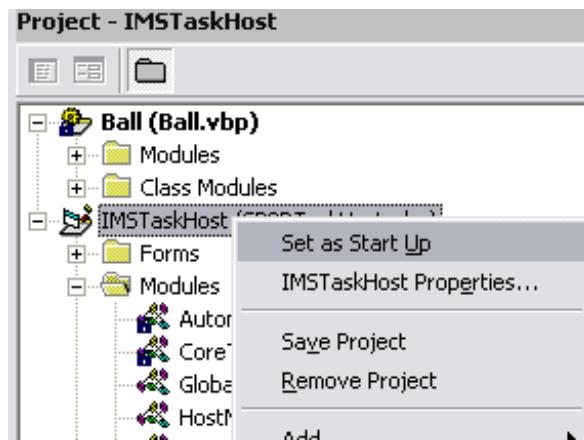
- c:\Program Files\SmartPlant\3D\Core\Runtime
- c:\Program Files\SmartPlant\3D\GeometryTopology\Runtime

## Debugging a Symbol Visual Basic Project

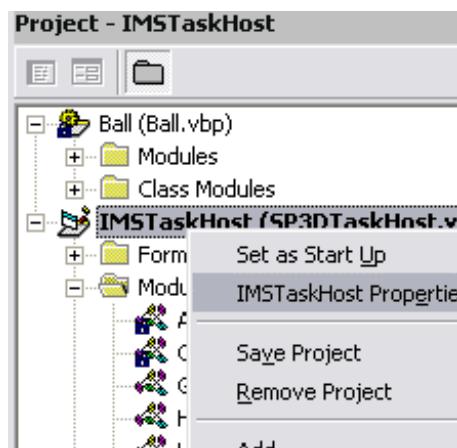
1. In Visual Basic, open the project to debug.
2. Click **File > Add Project** and add the delivered Task Host project in c:\Program Files\SmartPlant\3D\Programming\Debug\Container\Src\Host.



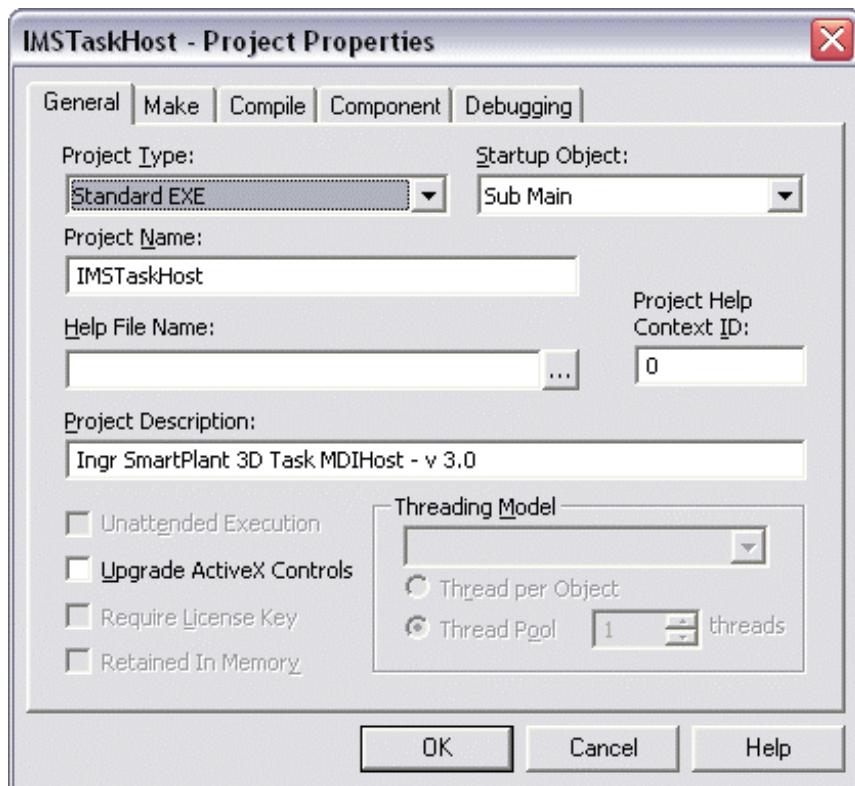
3. In Project Explorer, right-click on IMSTaskHost, and select **Set as Start Up**.



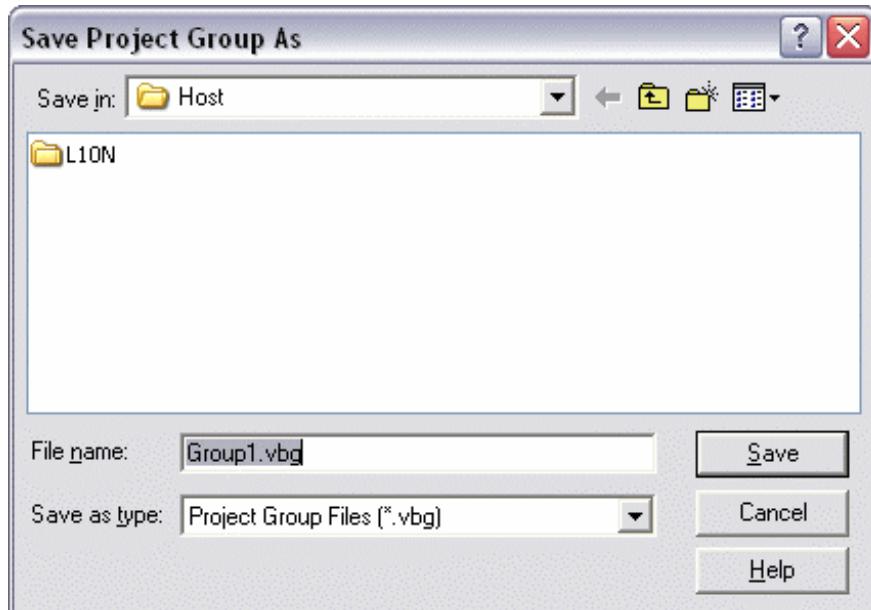
4. Right-click on IMSTaskHost again, and select **IMSTaskHost Properties**.



5. Set the **Project Type** box to **Standard EXE**.



6. Click **OK**.
7. Click **File > Save Project Group**.



- Open the code page for the symbol and add break points.

```

' Set the output
iOutput = iOutput + 1
m_OutputColl.AddOutput arrayOfOutputs(iOutput), ObjStem
Set ObjStem = Nothing

' Insert your code for output 3(handle)
Dim HandleStartPos As New AutoMath.DPosition
Dim HandleEndPos As New AutoMath.DPosition
HandleStartPos.Set CenterPos.x, CenterPos.y + parOperatorHeight - parFacet
HandleEndPos.Set HandleStartPos.x + parOperatorLength, HandleStartPos.y, E
Set ObjHandle = PlaceCylinder(m_OutputColl, HandleStartPos, HandleEndPos,
                               parOperatorRadius, parOperatorLength, parOperatorHeight)

' Set the output
iOutput = iOutput + 1
m_OutputColl.AddOutput arrayOfOutputs(iOutput), ObjHandle
Set ObjHandle = Nothing

' Place Nozzle 1

```

- Press **F5** to run the project.

SmartPlant 3D will open. Create a new session file or open an existing session file and place the symbol. Control is passed to Visual Basic at the break point and the normal Visual Basic debug commands such as Step Into and Step Over can be used.

### Important

- When symbols are placed for the first time in the model, a cache is created in the Model database and the actual symbol code will not run a second time or beyond. Please refer to *Edit Symbol Occurrence*, page 119 for information on how to force the execution of symbol code for debugging purposes.

### Related Topics

- Testing Symbols*, page 118

# Testing Symbols

Two custom commands are delivered with the software to help symbol designers:

- Locate an existing symbol and change the inputs. During the design phase of symbol creation, it can be very time consuming trying to use the full application to test a symbol, especially if it requires multiple bulk loading to the catalog. For more information, see *Edit Symbol Occurrence*, page 119.
- Update a symbol definition from a list of symbol definitions in the active connection, or update an object given an Object ID (Database ID) and an Interface ID. This issue can arise when the symbol is cached and you want to test a change in the code. If there already is an existing symbol available for the set of input parameters, then the changed symbol code will not run. For more information, see *Update Symbol*, page 118.

## Related Topics

- *Edit Symbol Occurrence*, page 119
- *Troubleshooting: An Overview*, page 113
- *Update Symbol*, page 118

# Update Symbol

This utility calls the update mechanism on a symbol definition or other object so that the software will recalculate any symbols connected to the object.

### Caution

- You must understand the consequences of trying to recalculate an object. Errors can occur when the context is incomplete in allowing one or more related objects to recalculate. This error can occur when one object is read-only or missing.
- A symbol definition may have thousands of symbols connected to it. Each symbol will recalculate if an update is called on the definition. This utility is not designed to handle it and should be used in small models.

### Symbols Tab

**Key in** - Select this option to key in the symbol definition name to update in the **Symbol Definition Name**. Use this option if you have more than 10 to 15 symbols in the model.

**Select from Combo Box** - Select this option to select the symbol to update in the **Symbol Definition Name**. Use this option only if your model is very small, 10 to 15 symbols.

**Symbol Definition Name** - Displays all the symbol definitions available in the model from which you can select one to update. You can also type the symbol definition name to update, for example: SP3DOP3.COP3.

**Apply or OK** - Click to update the selected symbol definition and cause each symbol of that definition to recalculate.

### **Object Tab**

**ObjectID** - Select the object to update.

**InterfaceID** - Select which interface on the selected object to update.

**Apply or OK** - Click to recalculate the selected object interface.

### **Workflow**

1. Click **Tools > Custom Commands**.
2. Click **Add**.
3. In the **Command ProgID** box, type `SymbolTestCmds.CUpdateSymbolDefinition`
4. In the **Command name** box, type a name for the utility. We recommend you type *Update Symbol or Object Test Command* for the command name.
5. Click **OK**.
6. Select *Update Symbol or Object Test Command* from the list of command names, and then click **Run**.
7. Select the symbol or key in the symbol to update.
8. Click **Apply**.

### **Related Topics**

- *Testing Symbols*, page 118

## **Edit Symbol Occurrence**

This utility edits an existing symbol occurrence in the model.

### **Caution**

- This command assumes the person using it is the symbol designer who knows what the valid inputs for the symbol are. This command does not check input parameter values that you enter as it cannot determine what are valid inputs for the symbol.

### **Options**

**Parameters** - Displays all the input parameter of the selected symbol.

- **Index** - Displays the index number of the input parameter.

- Name - Displays the name of the input parameter.
- ByRef - Indicates if the parameter is passed by a reference.
- Value - Type a value for the parameter.

**Graphics** - Displays the graphic elements that are inputs for the selected symbol.

**Representation** - Displays the display aspects that the symbol supports.

### **Workflow**

1. Click **Tools > Custom Commands**.
2. Click **Add**.
3. In the **Command ProgID** box, type `SymbolTestCmds.CEditSymbolOccurrence`
4. In the **Command name** box, type a name for the utility. We recommend you type *Edit Symbol Occurrence* for the command name.
5. Click **OK**.
6. Select *Edit Symbol Occurrence* from the list of command names, and then click **Run**.
7. Select the symbol in the model.
8. Test the input parameters as needed.

### **Related Topics**

- *Testing Symbols*, page 118

# Sources of Errors

## Bulkloading

Symbols can be broken in the model because of an incorrect bulk load operation. The most common bulkloading mistakes are:

- Deleting the symbol definition, flavor manager, or flavor in the catalog when the symbol still exists in the model.
- Setting incorrect parameter values in the catalog. For example, setting a pipe diameter to be zero.

## Synchronize Model with Catalog

After bulkloading is complete or if symbol definitions have been changed and the major version number of the definition increased, you must run the **Tools > Synchronize Model with Catalog** command in the Project Management task for all models that use the catalog or changed definitions.

## Symbols Folder

The software expects to find the symbol DLL files in a single folder, usually located under the CatalogData folder. This symbols folder is specified when the catalog database is created. Doing any of the following can cause symbol problems:

- An incorrect symbols folder is specified when the catalog database is created.
- The symbols folder is moved after the catalog database is created.
- The catalog database is backed up and then restored to a different server, but the symbols folder is not copied to the new server.
- Using different custom symbol folders for the different clients of the server.

## Usage of Cached/Non-cached Symbols

The default method is to cache symbols whenever possible. The VB Symbols Wizard creates cached symbols (it is the recommended property for symbols in most software tasks). Because the caching mechanism is automatic, it can sometimes cause problems when the symbol definition is changed.

A symbol definition that has a non-parametric input (for example, a part) will not be cached even if all the other inputs are parameters. However, if a custom method (CMcache) is written to convert the part into a parameter, then the symbol will be cached.

To make this change from a non-cached to cached for the case where non-cached symbols have already been placed in the model, the major version number of the symbol definition must be increased and the **Tools > Synchronize Model with**

**Catalog** command in the Project Management task run. If this is not done, then the change in the way the part input is treated results in an error as the symbols already placed in the model are expecting a part, and not a parameter, and will fail to compute.

### **Software Updates**

Errors can occur if the server and the client software are not the same software version. All the symbols must be the same version to guarantee compatibility. The best method for ensuring that the symbols are the same on the clients and the server is to use the symbol definition download feature by placing the symbols in CAB files. For more information, see *Distributing Symbols Automatically*, page 58.

### **Related Topics**

- *Troubleshooting: An Overview*, page 113

# Error Investigation Methods

For errors received on the definition:

- Check for incomplete or wrong definition.
- Check for wrong versions of a symbol definition.
- Check for input mismatches.
- Check for output mismatches.
- Check for properties mismatches.

For errors received on symbols:

- Check for unsynchronized data.
- Use the database integrity check in the Project Management task.

## **Related Topics**

- *Troubleshooting: An Overview*, page 113



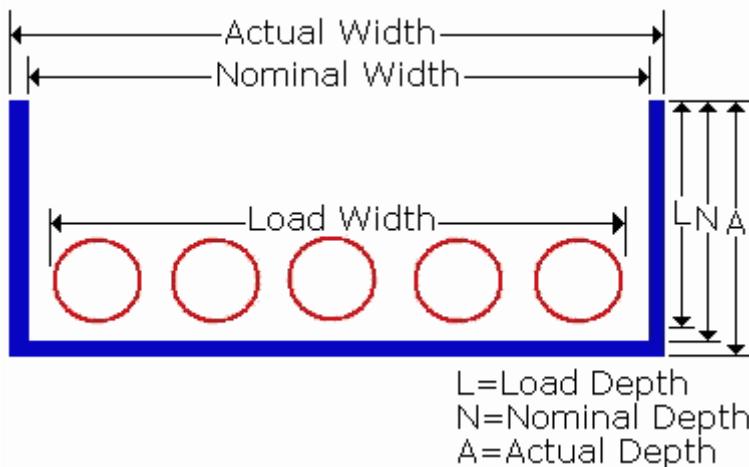
# Cable Tray Symbols: An Overview

The software uses symbols to represent the different cable tray commodity items in the model. The items are defined on the cable tray parts catalog sheets. When defining the parts in the sheets, look at the symbol that represents the item to verify the dimension that you are defining is correct.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to the *Creating Symbols in Visual Basic: An Overview* section in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

Cable tray symbols can be defined in terms of different dimensions. In some cases, a manufacturer specifies the geometry based on face-to-face dimensions, while in other cases, a manufacturer specifies the geometry based on face-to-center dimensions.

When defining cable tray parts, remember that there are three sets of dimensions: nominal, actual, and load. The nominal width and nominal depth dimensions are what the cable tray part is commonly called or referred to. The actual width and actual depth dimensions are the real world dimensions of the cable tray part if you used a measuring tape to measure the part. The load width and load depth dimensions are the "inside" dimensions available in the cable tray part for the placement of cables. The software uses the load width and load depth dimensions when calculating allowable fill area. In the delivered parts, the load width and load depth are set equal to the nominal width and nominal depth. However, you can edit the load width and load depth dimensions if needed.



Cable tray reference data contains the required catalog parts and rules for the route solver to place correct parts in the model.

The Cable tray reference data allows you to create various design check rules for the cable tray and its associated cables and conduit. The following examples show needed rules:

- **Cable Type** - The design check rule for cable type warns users when a high voltage cable and a communications cable exist within the same cable tray.
- **Fill Efficiency** - The design check rule for fill efficiency checks the fill efficiency number set for the cableway against the actual fill of the combined cables and conduit. If the amount of cable exceeds the fill efficiency, the software generates a warning. You have the option to change the cableway fill efficiency, remove cables, or select a larger cableway cross section. Any change in the cableway cross section causes the software to re-compute of the default component type.
- **Divider** - The divider design check rule checks to see if low voltage and high voltage cables exist within the same cable tray. In this situation the software prompts you to insert a tray divider. These rules are in accordance with National Electric Code (NEC) rules and regulations for cable trays.

## **What's New**

### *Version 2007 Service Pack 2*

- The following new symbols have been added:  
SP3D90HExpRedCableTray.

### *Version 2007*

- Added preview pictures for: SP3D30VCTrayInside, SP3D30VCTrayOutside, SP3D45VCTrayOutside, SP3D45VCTrayInside, SP3D60VCTrayInside, and SP3D60VCTrayOutside.
- Described the differences between nominal, actual, and load dimensions in cable tray parts.

# SP3D30HCableTray

**Description:** 30 Deg Horizontal Bend, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3D30HCableTray.C30HCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT30HBend

**User Class Name:** Cable Tray 30 Horizontal Bend

**Part Number:** 4<type of steel>-<width>-30HB<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30HCableTray.C30HCableTray

**Inputs = 3**

**Input = "BendAngle" Description = "BendAngle"**

**Input = "ActualDepth" Description = "Depth of Duct"**

**Input = "BendRadius" Description = "Radius to to the inner wall"**

**Outputs = 5**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "Elbow" Description = "U Shape Elbow"**

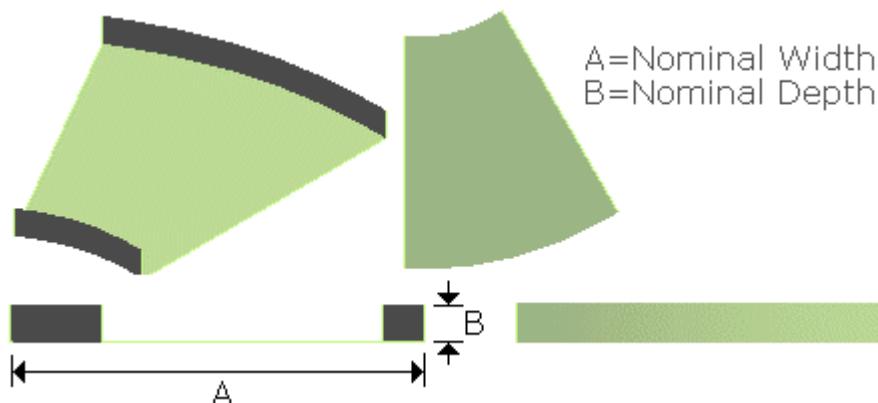
**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D30VCTrayInside

**Description:** 30 degree inside bend cable tray

**Symbol Name:** SP3D30VCTrayInside.C30VCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT30VIBend

**User Class Name:** Cable Tray 30 Vertical Inside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30VCTrayInside.C30VCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "HoriProj" Description = "Horizontal Tangent Length Projection"**

**Output = "CurvedProj" Description = "Vertical Bend Revolution"**

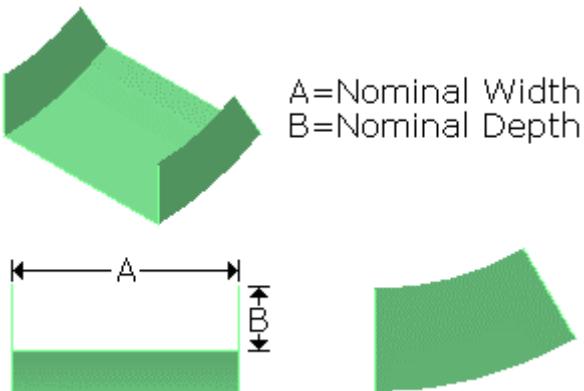
**Output = "VertProj" Description = "Vertical Tangent Length Projection"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D30VCTrayOutside

**Description:** 30 degree outside bend cabletray

**Symbol Name:** SP3D30VCTrayOutside.V30CTrayOutside

**Workbook:** CableTray.xls

**Workbook Sheet:** CT30VOBend

**User Class Name:** Cable Tray 30 Vertical Outside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30VCTrayOutside.V30CTrayOutside

**Inputs = 0**

**Outputs = 5**

**Output = "VeriProj" Description = "Vertical Bend Outside"**

**Output = "CurvedProj" Description = "Vertical Bend Outside"**

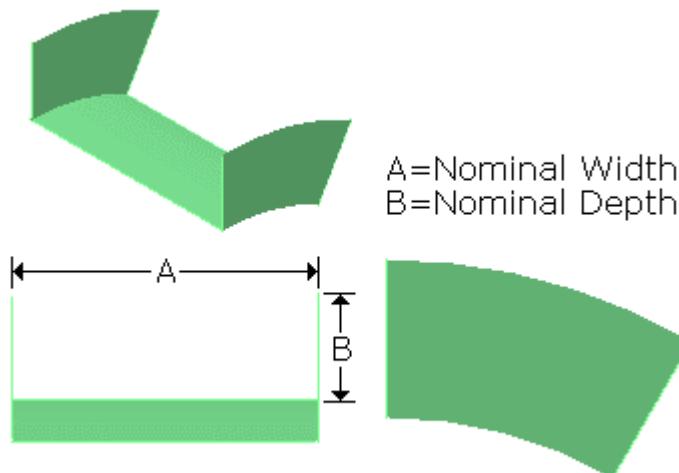
**Output = "HoriProj" Description = "Vertical Bend Outside"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D45HCableTray

**Description:** 45 Deg Horizontal Bend, Series 2, *<type of steel>* Steel, Ladder, *<radius size and units>* Rad, *<width and units>* W x *<depth and units>* D

**Symbol Name:** SP3D45HCableTray.C45HCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT45HBend

**User Class Name:** Cable Tray 45 Horizontal Bend

**Part Number:** 4<type of steel>-<width>-45HB<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45HCableTray.C45HCableTray

**Inputs = 1**

**Input = "BendAngle" Description = "BendAngle"**

**Input = "ActualDepth" Description = "Depth of Duct"**

**Input = "BendRadius" Description = "Radius to to the inner wall"**

**Outputs = 5**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "Elbow" Description = "U Shape Elbow"**

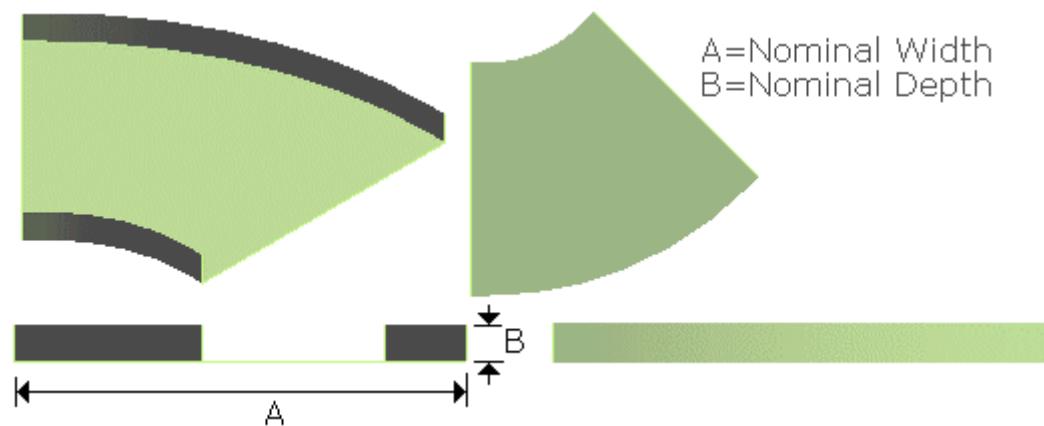
**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D45VCTrayInside

**Description:** 45 degree inside bend cable tray

**Symbol Name:** SP3D45VCTrayInside.C45VCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT45VIBend

**User Class Name:** Cable Tray 45 Vertical Inside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45VCTrayInside.C45VCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "HoriProj" Description = "Horizontal Tangent Length Projection"**

**Output = "CurvedProj" Description = "Vertical Bend Revolution"**

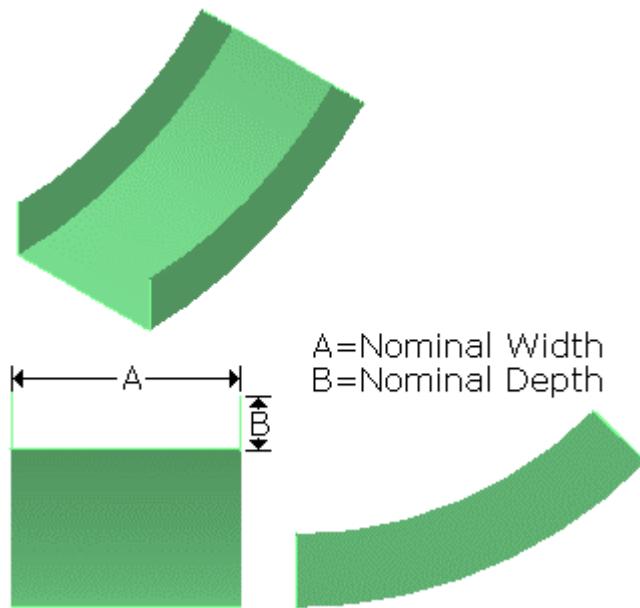
**Output = "VertProj" Description = "Vertical Tangent Length Projection"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D45VCTrayOutside

**Description:** 45 degree outside bend cable tray

**Symbol Name:** SP3D45VCTrayOutside.V45CTrayOutside

**Workbook:** CableTray.xls

**Workbook Sheet:** CT45VOBend

**User Class Name:** Cable Tray 45 Vertical Outside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45VCTrayOutside.V45CTrayOutside

**Inputs = 0**

**Outputs = 5**

**Output = "VeriProj" Description = "Vertical Bend Outside"**

**Output = "CurvedProj" Description = "Vertical Bend Outside"**

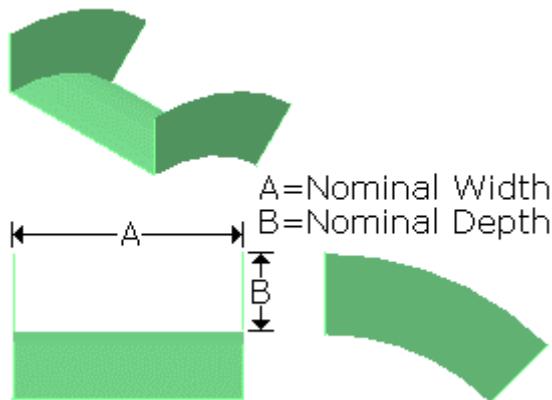
**Output = "HoriProj" Description = "Vertical Bend Outside"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D60HCableTray

**Description:** 60 Deg Horizontal Bend, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3D60HCableTray.C60HCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT60HBend

**User Class Name:** Cable Tray 60 Horizontal Bend

**Part Number:** 4<type of steel>-<width>-60HB<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60HCableTray.C60HCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "HoriBend" Description = "U Shape Bend"**

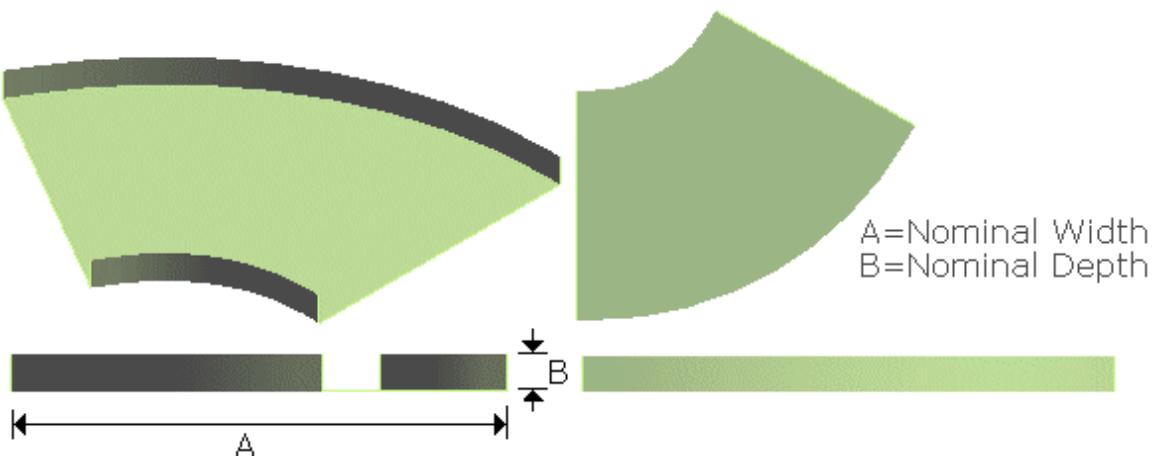
**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D60VCTrayInside

**Description:** 60 degree inside bend cable tray

**Symbol Name:** SP3D60VCTrayInside.C60VCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT60VIBend

**User Class Name:** Cable Tray 60 Vertical Inside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60VCTrayInside.C60VCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "HoriProj" Description = "Horizontal Tangent Length Projection"**

**Output = "CurvedProj" Description = "Vertical Bend Revolution"**

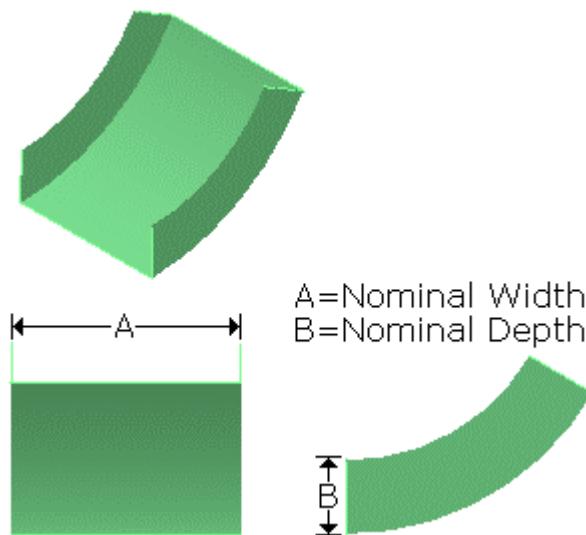
**Output = "VertProj" Description = "Vertical Tangent Length Projection"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D60VCTrayOutside

**Description:** 60 degree outside bend cable tray

**Symbol Name:** SP3D60VCTrayOutside.V60CTrayOutside

**Workbook:** CableTray.xls

**Workbook Sheet:** CT60VOBend

**User Class Name:** Cable Tray 60 Vertical Outside Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60VCTrayOutside.V60CTrayOutside

**Inputs = 0**

**Outputs = 5**

**Output = "VeriProj" Description = "Vertical Bend Outside"**

**Output = "CurvedProj" Description = "Vertical Bend Outside"**

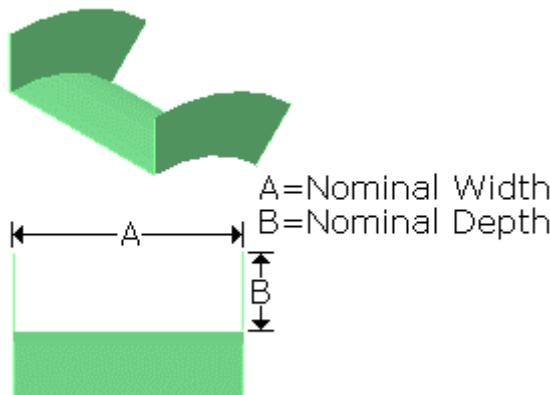
**Output = "HoriProj" Description = "Vertical Bend Outside"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D90HCableTray

**Description:** 90 Deg Horizontal Bend, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3D90HCableTray.C90HCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT90HBend

**User Class Name:** Cable Tray 90 Horizontal Bend

**Part Number:** 4<type of steel>-<width>-90HB<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90HCableTray.C90HCableTray

**Inputs = 3**

**Input = "BendAngle" Description = "BendAngle"**

**Input = "ActualDepth" Description = "Depth of Duct"**

**Input = "BendRadius" Description = "Radius to the inner wall"**

**Outputs = 5**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "Elbow" Description = "U Shape Elbow"**

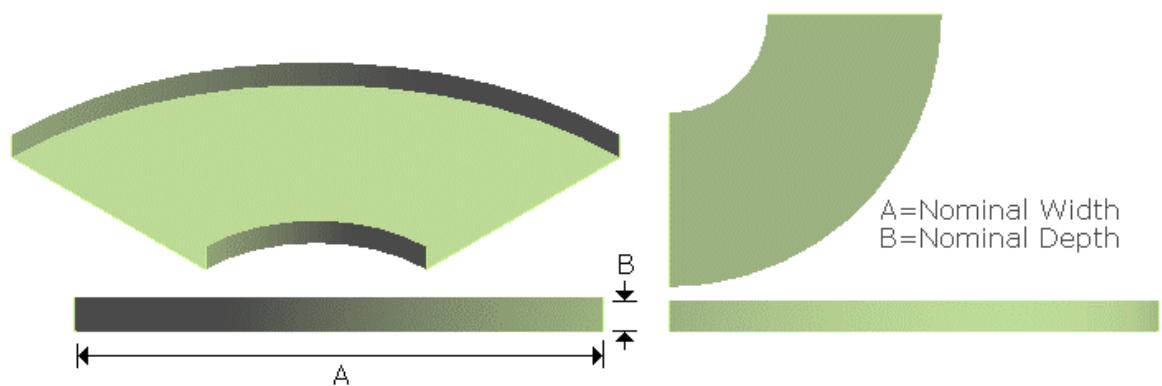
**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D90HExpRedCableTray

**Description:**

**Symbol Name:** SP3D90HExpRedCableTray.C90HExpRedCTray

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90HExpRedCableTray.C90HExpRedCTray

**Inputs = 2**

**Input = "CTBendThroatRadius" Description = "Cable Tray Bend Throat Radius"**

**Input = "CTBendOuterRadius" Description = "Cable Tray Bend Outer Radius"**

**Outputs = 7**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "BendInnerSide" Description = "Bend Inner Side"**

**Output = "BendOuterSide" Description = "Bend Outer Side"**

**Output = "BendBottom" Description = "Bend Bottom"**

**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3D90VCableTrayInside

**Description:** 90 Deg Vertical Inside Bend, Series 2, *<type of steel>* Steel, Ladder, *<radius size and units>* Rad, *<width and units>* W x *<depth and units>* D

**Symbol Name:** SP3D90VCableTrayInside.C90VCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT90VIBend

**User Class Name:** Cable Tray 90 Vertical Inside Bend

**Part Number:** 4<type of steel>-<width>-90VI<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90VCableTrayInside.C90VCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "VeriProj"** **Description = "Vertical Bend Outside"**

**Output = "CurvedProj"** **Description = "Vertical Bend Outside"**

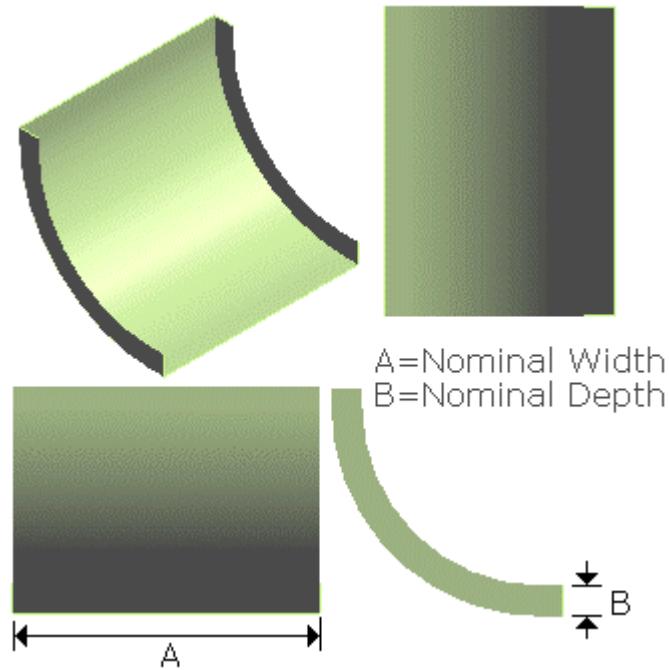
**Output = "HoriProj"** **Description = "Vertical Bend Outside"**

**Output = "PNoz1"** **Description = "Nozzle 1"**

**Output = "PNoz2"** **Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Nominal Width  
B=Nominal Depth

## SP3D90VCableTrayOutside

**Description:** 90 Deg Vertical Outside Bend, Series 2, *<type of steel>* Steel, Ladder, *<radius size and units>* Rad, *<width and units>* W x *<depth and units>* D

**Symbol Name:** SP3D90VCableTrayOutside.C90VCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CT90VOBend

**User Class Name:** Cable Tray 90 Vertical Outside Bend

**Part Number:** 4<*<type of steel>*-<*<width>*-90VO<*<radius>*>

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90VCableTrayOutside.C90VCableTray

**Inputs = 0**

**Outputs = 5**

**Output = "VeriProj" Description = "Vertical Bend Outside"**

**Output = "CurvedProj" Description = "Vertical Bend Outside"**

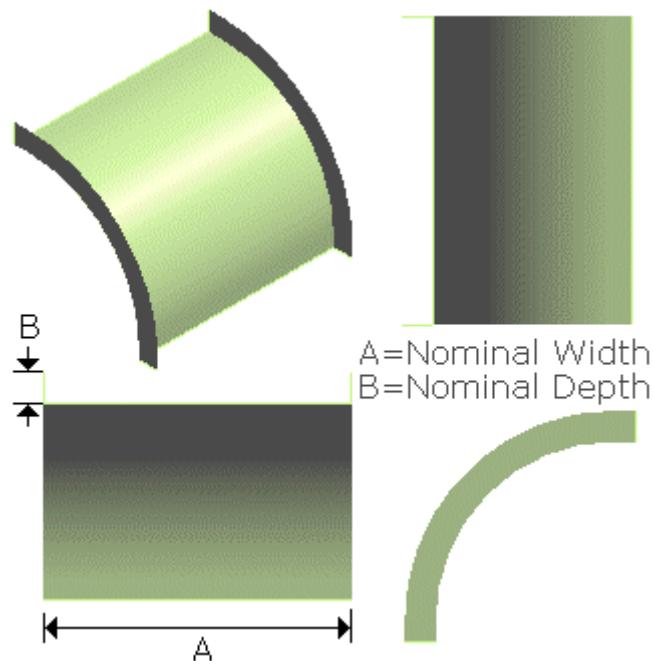
**Output = "HoriProj" Description = "Vertical Bend Outside"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DAdjHCableTray

**Description:** Part data not delivered

**Symbol Name:** SP3DAdjHCableTray.CAdjHCableTray

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:** Part data not delivered

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAdjHCableTray.CAdjHCableTray

**Inputs = 1**

**Input = "AdjBendAngle" Description = "Bend Angle of the Elbow"**

**Outputs = 5**

**Output = "HoriTangent" Description = "U Shape Horizontal Tangent"**

**Output = "Elbow" Description = "U Shape Elbow"**

**Output = "InclTangent" Description = "U Shape Inclined Tangent"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DAdjVCableTray

**Description:** Part data not delivered

**Symbol Name:** SP3DAdjVCableTray.CVAdjCableTray

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:** Part data not delivered

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAdjVCableTray.CVAdjCableTray

**Inputs = 1**

**Input = "AdjBendAngle" Description = "Bend Angle of the Elbow"**

**Outputs = 5**

**Output = "VeriProj" Description = "Vertical Bend Outside"**

**Output = "CurvedProj" Description = "Vertical Bend Outside"**

**Output = "HoriProj" Description = "Vertical Bend Outside"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DCrossCableTray

**Description:** Horizontal Cross, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3DCrossCableTray.CCrossCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTCross

**User Class Name:** Cable Tray Cross

**Part Number:** 4<type of steel>-<width>-HX<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCrossCableTray.CCrossCableTray

**Inputs = 3**

**Input = "BendAngle" Description = "BendAngle"**

**Input = "ActualDepth" Description = "Depth of Duct"**

**Input = "BendRadius" Description = "Radius to to the inner wall"**

**Outputs = 9**

**Output = "TrayBottom" Description = "Tee Tray bottom surface"**

**Output = "TopBranchPort1Side" Description = "Top Branch curved side at port 1"**

**Output = "TopBranchPort2Side" Description = "Top Branch curved side at port 2"**

**Output = "BottomBranchPort2Side" Description = "Bottom Branch curved side at port 2"**

**Output = "BottomBranchPort1Side" Description = "Bottom Branch curved side at port 1"**

**Output = "CTTeePort1" Description = "CT Tee Port 1"**

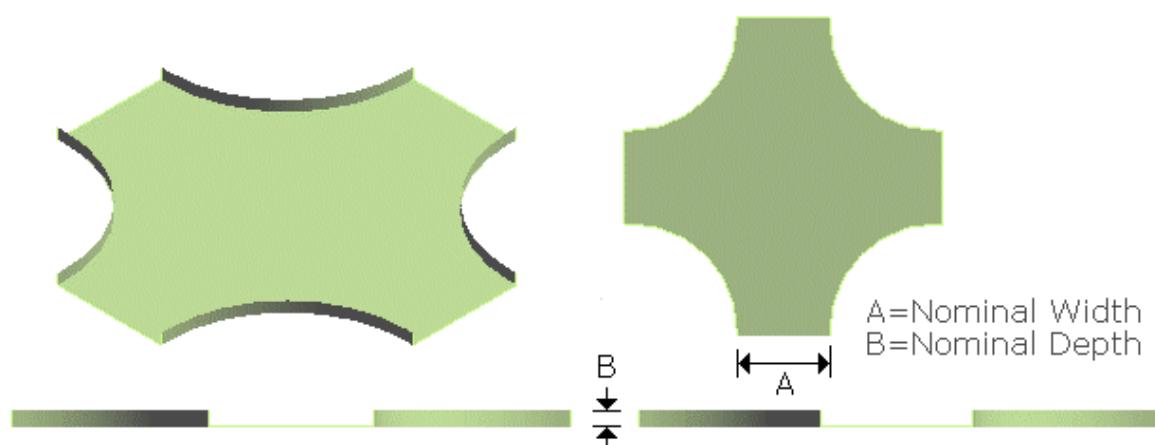
**Output = "CTTeePort2" Description = "CT Tee Port 2"**

**Output = "CTTeePort3" Description = "CT Tee Port 3"**

**Output = "CTTeePort4" Description = "CT Tee Port 4"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DEndPlateCableTray

**Description:** Blind End Plate, *<width and units> W x <depth and units> D*

**Symbol Name:** SP3DEndPlateCableTray.CEndPlateCTray

**Workbook:** CableTray.xls

**Workbook Sheet:** BlindEndPlate

**User Class Name:** Blind End Plate

**Part Number:** 9<type of steel>-8084-<width>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEndPlateCableTray.CEndPlateCTray

**Inputs = 0**

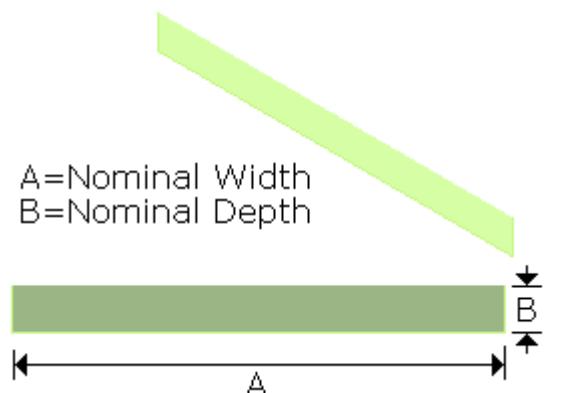
**Outputs = 2**

**Output = "EndPlate" Description = "Tray End Plate"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DLeftReducerCableTray

**Description:** Left Reducer, Series 2, <type of steel> Steel, Ladder, <widths 1 and 2 and units> W x <depth and units> D

**Symbol Name:** SP3DLeftReducerCableTray.CLeftRCTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTLeftReducer

**User Class Name:** Cable Tray Left Reducer

**Part Number:** 4<type of steel>-<width 1>-LR<width 2>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLeftReducerCableTray.CLeftRCTray

**Inputs = 0**

**Outputs = 5**

**Output = "TrayBottom" Description = "Bottom Portion of Tray"**

**Output = "VerticalStraight" Description = "Straight Vertical Portion"**

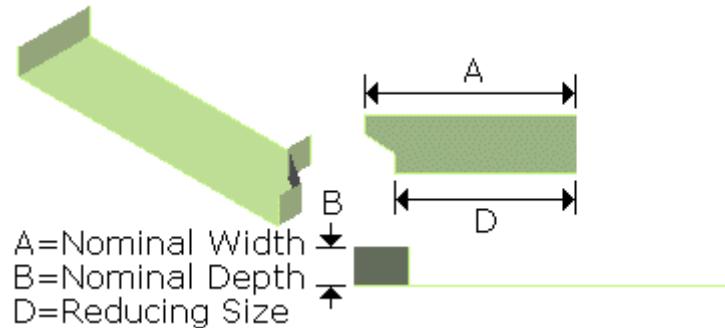
**Output = "VerticalTaper" Description = "Taper Vertical Portion"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DLeftWyeCableTray

**Description:** Horizontal Wye Left, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3DLeftWyeCableTray.CLeftWyeCTray0

**Workbook:** CableTray.xls

**Workbook Sheet:** CTHWyeLeft

**User Class Name:** Cable Tray Horizontal Wye Left

**Part Number:** 4<type of steel>-<width>-HYL<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLeftWyeCableTray.CLeftWyeCTray

**Inputs = 1**

**Input = "FacetoTangent"** **Description =** "Face to Tangent straight at port 3 C dimension"

**Outputs = 7**

**Output = "WyeBottom"** **Description =** "Wye Bottom Portion"

**Output = "CurvedBranch"** **Description =** "Branch Curved Portion"

**Output = "VShapeBranch"** **Description =** "V Shape Branch between2&3"

**Output = "StraightVerti"** **Description =** "Straight Vertical Bet 1&2"

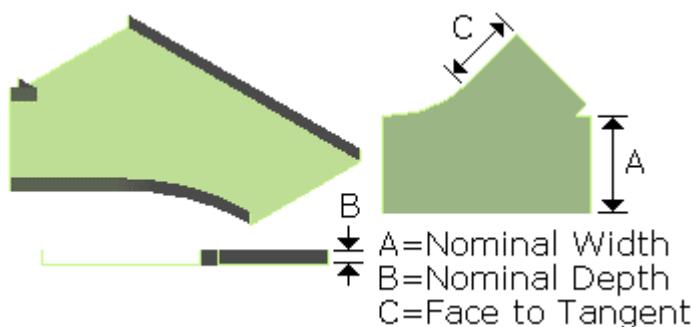
**Output = "PNoz1"** **Description =** "Nozzle 1"

**Output = "PNoz2"** **Description =** "Nozzle 2"

**Output = "PNoz3"** **Description =** "Nozzle 3"

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DRightReducerCableTray

**Description:** Right Reducer, Series 2, *<type of steel>* Steel, Ladder, *<widths 1 and 2 and units>* W x *<depth and units>* D

**Symbol Name:** SP3DRightReducerCableTray.CRightRCTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTRightReducer

**User Class Name:** Cable Tray Right Reducer

**Part Number:** 4<*type of steel>*-<*width 1>*-RR<*width 2>*

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRightReducerCableTray.CRightRCTray

**Inputs = 0**

**Outputs = 5**

**Output = "ReducerBottom" Description = "Reducer Bottom"**

**Output = "RightPlane" Description = "Reducer Right side Plane"**

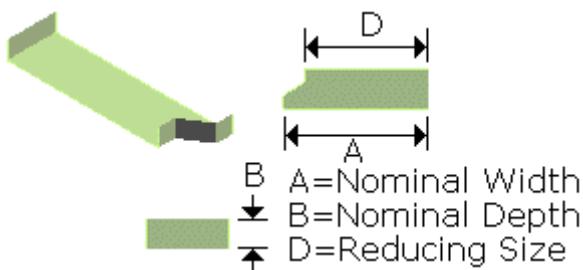
**Output = "LeftProjection" Description = "Reducer Left side Projection"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DRightWyeCableTray

**Description:** Horizontal Wye Right, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3DRightWyeCableTray.CRightWyeCTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTHWyeRight

**User Class Name:** Cable Tray Horizontal Wye Right

**Part Number:** 4<type of steel>-<width>-HYR<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRightWyeCableTray.CRightWyeCTray

**Inputs = 1**

**Input = "FacetoTangent"** **Description =** "Face to Tangent straight at port 3 C dimension"

**Outputs = 7**

**Output = "TrayBottom"** **Description =** "Wye Tray bottom surface"

**Output = "P1P3Branch"** **Description =** "Wye Port1 to Port3 Branch"

**Output = "P2P3Junction"** **Description =** "Wye Port2 and Port3 Junction"

**Output = "LeftPlane"** **Description =** "Wye Left side Plane"

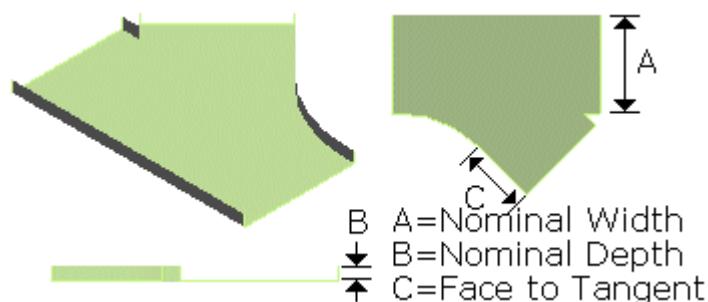
**Output = "PNoz1"** **Description =** "Nozzle 1"

**Output = "PNoz2"** **Description =** "Nozzle 2"

**Output = "PNoz3"** **Description =** "Nozzle 3"

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSredCableTray (Straight Reducer)

**Description:** Straight Reducer, Series 2, <type of steel> Steel, Ladder, <widths 1 and 2 and units> W x <depth and units> D

**Symbol Name:** SP3DSredCableTray.CSredCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTStraightReducer

**User Class Name:** Cable Tray Straight Reducer

**Part Number:** 4<type of steel>-<width 1>-SR<width 2>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSredCableTray.CSredCableTray

**Outputs = 5**

**Output = "TangentPlate1" Description = "Tangent Plate at Port 1"**

**Output = "Reducer" Description = "Reducer"**

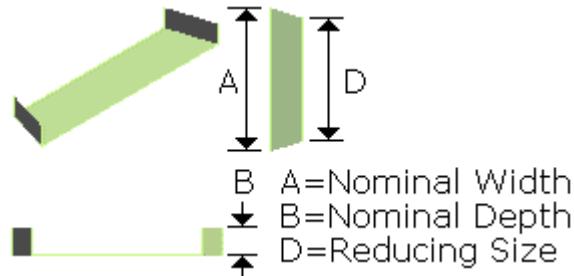
**Output = "TangentPlate2" Description = "Tangent Plate at Port 2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



### Note

- For straight reducers, D is smaller than A. For the straight cable tray, A and D are the same.

# SP3DTeeCableTray

**Description:** Horizontal Tee, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3DTeeCableTray.CTeeCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTee

**User Class Name:** Cable Tray Tee

**Part Number:** 4<type of steel>-<width>-HT<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTeeCableTray.CTeeCableTray

**Inputs = 3**

Input = "BendAngle" Description = "BendAngle"

Input = "ActualDepth" Description = "Depth of Duct"

Input = "BendRadius" Description = "Radius to to the inner wall"

**Outputs = 7**

Output = "TrayBottom" Description = "Tee Tray bottom surface"

Output = "HeaderSide" Description = "Header Side Plane"

Output = "BranchPort1Side" Description = "Branch curved side at port 1"

Output = "BranchPort2Side" Description = "Branch curved side at port 2"

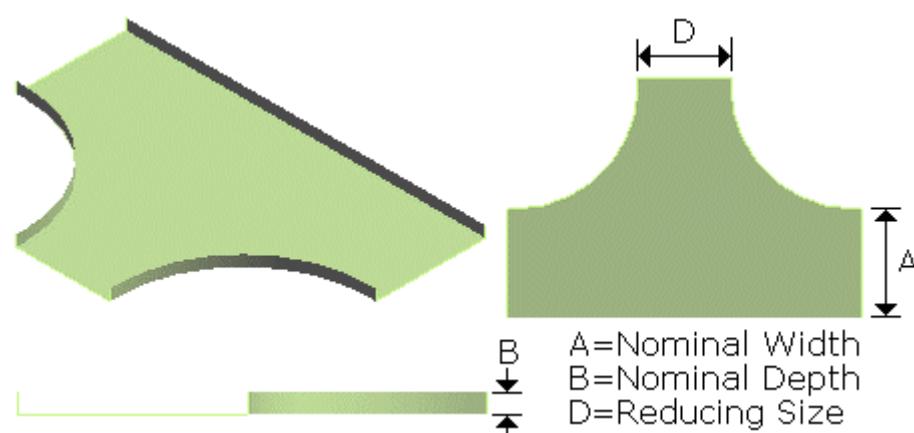
Output = "CTTeePort1" Description = "CT Tee Port 1"

Output = "CTTeePort2" Description = "CT Tee Port 2"

Output = "CTTeePort3" Description = "CT Tee Port 3"

**Aspects = 1**

Aspect = SimplePhysical



## Note

- For reducing tees, D is smaller than A. For regular tees, A and D are the same.

## SP3DVCrossCabletray

**Description:** Part data not delivered

**Symbol Name:** SP3DVCrossCabletray.CVCCableTray

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:** Part data not delivered

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVCrossCableTray.CVCCableTray

**Inputs = 1**

**Input = "BendRadius"** **Description =** "Radius to to the inner wall"

**Outputs = 10**

**Output = "CrossFront"** **Description =** "Cross - Front side"

**Output = "CrossRear"** **Description =** "Cross - Rear side"

**Output = "TopBranchPort1Side"** **Description =** "Top Branch curved side at port 1"

**Output = "BottomBranchPort1Side"** **Description =** "Bottom Branch curved side at port 1"

**Output = "TopBranchPort2Side"** **Description =** "Top Branch curved side at port 2"

**Output = "BottomBranchPort2Side"** **Description =** "Bottom Branch curved side at port 2"

**Output = "CTTeePort1"** **Description =** "CT Tee Port 1"

**Output = "CTTeePort2"** **Description =** "CT Tee Port 2"

**Output = "CTTeePort3"** **Description =** "CT Tee Port 3"

**Output = "CTTeePort4"** **Description =** "CT Tee Port 4"

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DVTeardownCableTray

**Description:** Vertical Tee Down, Series 2, *<type of steel>* Steel, Ladder, *<radius size and units>* Rad, *<width and units>* W x *<depth and units>* D

**Symbol Name:** SP3DVTeardownCableTray.CVTDownCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTeeVD

**User Class Name:** Cable Tray Tee Vertical Down

**Part Number:** 4<type of steel>-<width>-VT<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVTeardownCableTray.CVTDownCableTray

**Inputs = 3**

**Input = "BendAngle" Description = "BendAngle"**

**Input = "ActualDepth" Description = "Depth of Duct"**

**Input = "BendRadius" Description = "Radius to to the inner wall"**

**Outputs = 6**

**Output = "FrontTeeSection" Description = "Front Tee-Section"**

**Output = "RearTeeSection" Description = "Rear Tee-Section"**

**Output = "CurvedSection" Description = "Curved Section"**

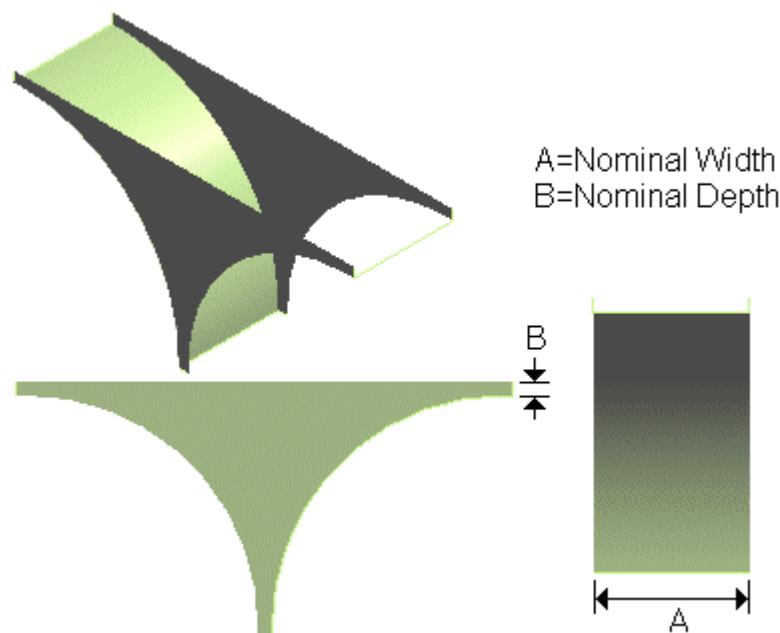
**Output = "CTTeePort1" Description = "CT Tee Port 1"**

**Output = "CTTeePort2" Description = "CT Tee Port 2"**

**Output = "CTTeePort3" Description = "CT Tee Port 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DVTeUpCableTray

**Description:** Vertical Tee Up, Series 2, <type of steel> Steel, Ladder, <radius size and units> Rad, <width and units> W x <depth and units> D

**Symbol Name:** SP3DVTeUpCableTray.CVTUpCableTray

**Workbook:** CableTray.xls

**Workbook Sheet:** CTeeVU

**User Class Name:** Cable Tray Tee Vertical Up

**Part Number:** 4<type of steel>-<width>-VTU<radius>

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVTeUpCableTray.CVTUpCableTray

**Inputs = 1**

**Input = "BendRadius"** **Description =** "Radius to to the inner wall"

**Outputs = 6**

**Output = "TrayBottom"** **Description =** "Tray Bottom"

**Output = "FrontTeeSection"** **Description =** "Front Tee-Section"

**Output = "RearTeeSection"** **Description =** "Rear Tee-Section"

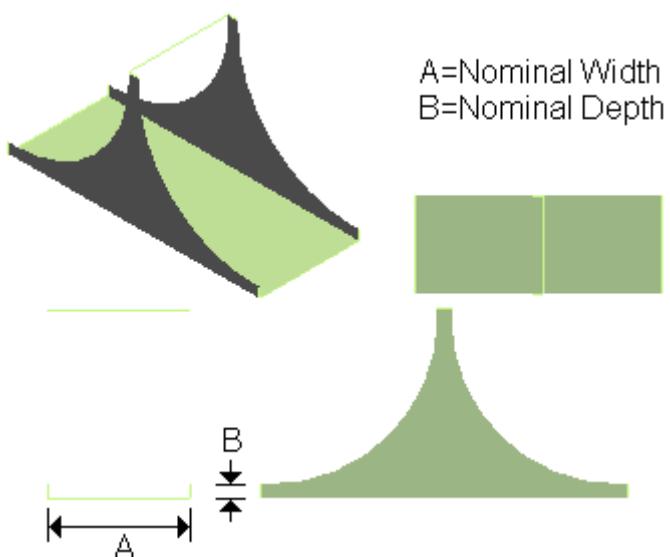
**Output = "CTTeePort1"** **Description =** "CT Tee Port 1"

**Output = "CTTeePort2"** **Description =** "CT Tee Port 2"

**Output = "CTTeePort3"** **Description =** "CT Tee Port 3"

**Aspects = 1**

**Aspect = SimplePhysical**



# Conduit Symbols: An Overview

The software uses symbols to represent the different conduit commodity items in the model. The items are defined on the conduit parts catalog sheets. When defining the parts in the sheets, look at the symbol that represents the item to verify the dimension that you are defining is correct. The conduit parts are the same as small bore piping parts and can share the piping parts listed in the piping catalog.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to the Creating Symbols in Visual Basic: An Overview section in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

## What's New

### *Version 2007*

- The following conduit symbols have been added: SP3DConduitCap.

## SP3D90ConduitElbow

**Description:** Conduit 90 Degree Elbow

**Symbol Name:** SP3D90ConduitElbow.C90ConduitElbow

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitE90

**User Class Name:** Conduit 90 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90ConduitElbow.C90ConduitElbow

**Inputs = 1**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 3**

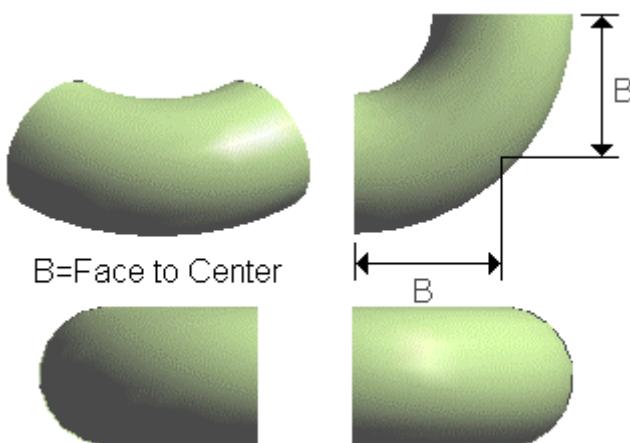
**Output = "ConduitElbow" Description = "ConduitElbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduit45Elbow

**Description:** Conduit 45 Degree Elbow

**Symbol Name:** SP3DConduit45Elbow.C45Elbow

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitE45

**User Class Name:** Conduit 45 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduit45Elbow.C45Elbow

**Inputs = 1**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 3**

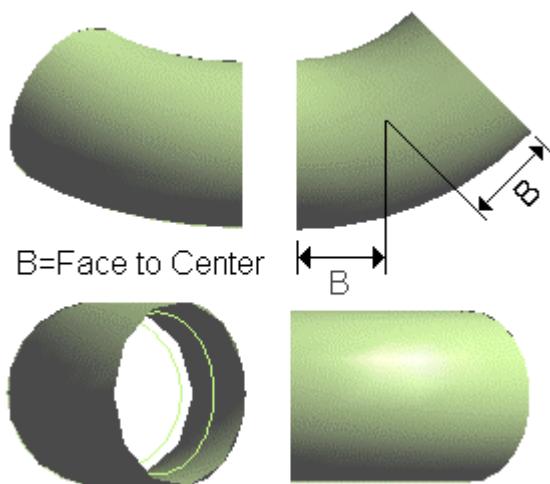
**Output = "ConduitElbow" Description = "ConduitElbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitCap

**Description:** conduit cap

**Symbol Name:** SP3DConduitCap.ConduitCap

**Workbook:** Conduit SampleData.xls

**Workbook Sheet:** ConduitCap

**User Class Name:** Conduit End Cap

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitCap.ConduitCap

**Inputs = 1**

**Input = "FacetoEnd" Description = "Face to End"**

**Outputs = 3**

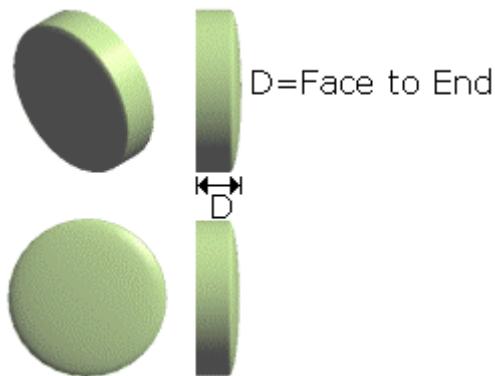
**Output = "CapBody" Description = "Cap Body"**

**Output = "CapEllipse" Description = "Cap Ellipse"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DConduitCoupling

**Description:** Conduit Coupling

**Symbol Name:** SP3DConduitCoupling.CCoupling

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitCPL

**User Class Name:** Conduit Coupling

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitCoupling.CCoupling

**Inputs = 1**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 3**

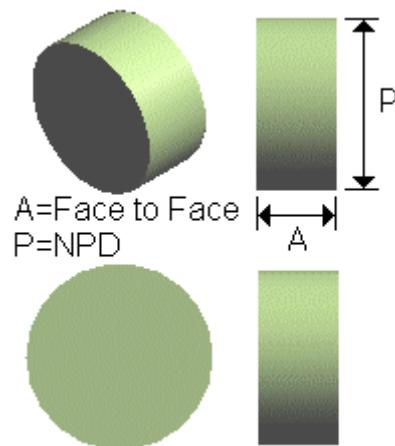
**Output = "CylinderBody" Description = "Cylinder Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitCross

**Description:** Conduit Cross

**Symbol Name:** SP3DConduitCross.ConduitCross

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitCross.ConduitCross

**Inputs = 1**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 6**

**Output = "Header1" Description = "Header Cylinder"**

**Output = "Header2" Description = "Branch Cylinder"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Output = "ConduitPort3" Description = "Conduit Port 3"**

**Output = "ConduitPort4" Description = "Conduit Port 4"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

# SP3DConduitExpJoint

**Description:** Conduit Expansion Joint

**Symbol Name:** SP3DConduitExpJoint.ConduitExpJoint

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitExpJoint.ConduitExpJoint

**Inputs = 4**

**Input = "Face1toExpJoint" Description = "Face 1 to Expansion Joint"**

**Input = "ExpJointLength1" Description = "Expansion Joint Length 1"**

**Input = "ExpJointDiameter" Description = "Expansion Joint Diameter"**

**Input = "ExpJointLength2" Description = "Expansion Joint Length 2"**

**Outputs = 6**

**Output = "Cylinder1" Description = "Cylinder Body 1"**

**Output = "Cylinder2" Description = "Cylinder Body 2"**

**Output = "Cylinder3" Description = "Cylinder Body 3"**

**Output = "Cylinder4" Description = "Cylinder Body 4"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DConduitHub

**Description:** Conduit Hub

**Symbol Name:** SP3DConduitHub.ConduitHub

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitHub.ConduitHub

**Inputs = 1**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 4**

**Output = "Cylinder" Description = "Header Cylinder"**

**Output = "EndCone" Description = "Truncated End Cone"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

# SP3DConduitPlug

**Description:** Conduit Plug

**Symbol Name:** SP3DConduitPlug.CPlug

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitPlug

**User Class Name:** Conduit Plug

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitPlug.CPlug

**Inputs = 1**

**Input = "FacetoEnd" Description = "Face to End"**

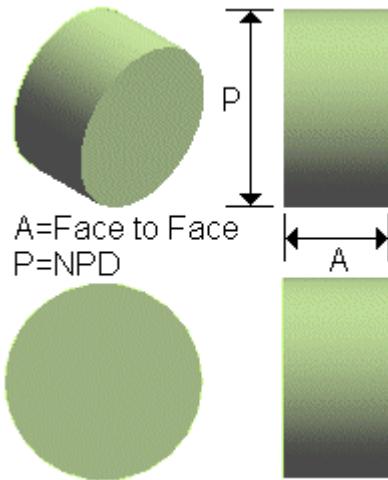
**Outputs = 2**

**Output = "Body" Description = "Plug Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitReducer

**Description:** Conduit Reducer

**Symbol Name:** SP3DConduitReducer.CConcentric

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitREDC

**User Class Name:** Conduit Reducer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitReducer.CConcentric

**Inputs = 1**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 5**

**Output = "Hubport1" Description = "Hub port 1"**

**Output = "ReducingCone" Description = "Cone"**

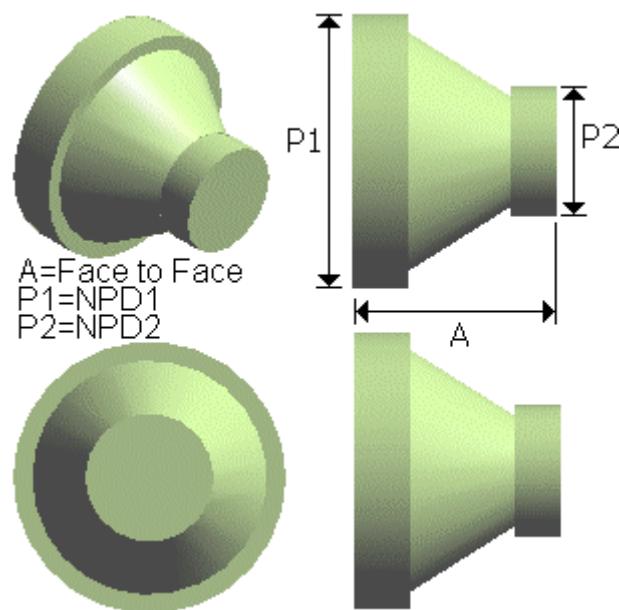
**Output = "Hubport2" Description = "Hub port 2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitReducingTee

**Description:** Conduit Reducing Tee

**Symbol Name:** SP3DConduitReducingTee.CCTRIB

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitTRB

**User Class Name:** Conduit Reducing Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitTee.CCTRIB

**Inputs = 2**

**Input = "Face1toCenter" Description = "Face of header ends to Center"**

**Input = "Face2toCenter" Description = "Face of branch end to Center"**

**Outputs = 5**

**Output = "Header" Description = "Header Body"**

**Output = "Branch" Description = "Branch Body"**

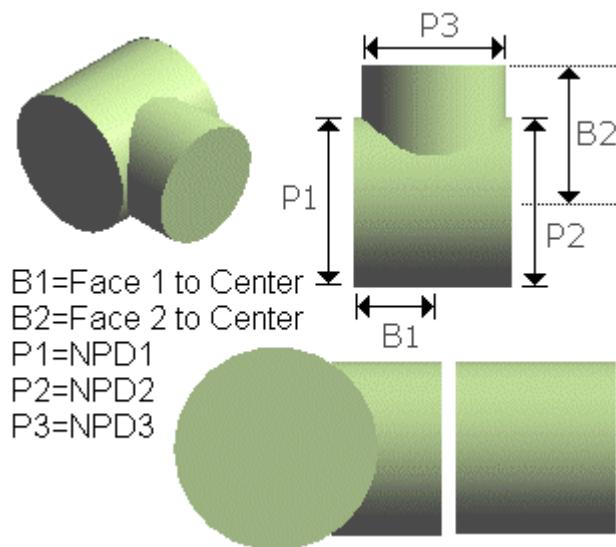
**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Output = "ConduitPort3" Description = "Conduit Port 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitSealEYS

**Description:** Conduit Seal EYS

**Symbol Name:** SP3DConduitSealEYS.ConduitSealEYS

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitSealEYS.ConduitSealEYS

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "SealExtLength" Description = "Seal Extension Length"**

**Input = "SealExtDiameter" Description = "Seal Extension Diameter"**

**Input = "SealSmallExtDiameter" Description = "Small Seal Extension Diameter"**

**Outputs = 5**

**Output = "CylinderBody1" Description = "Main Cylinder Body"**

**Output = "CylinderBody2" Description = "Seal Cylinder Body"**

**Output = "CylinderBody3" Description = "Small Seal Cylinder Body"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DConduitTee

**Description:** Conduit Tee

**Symbol Name:** SP3DConduitTee.CCETee

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitTee

**User Class Name:** Conduit Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitTee.CCETee

**Inputs = 1**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 5**

**Output = "Header" Description = "Header Body"**

**Output = "Branch" Description = "Branch Body"**

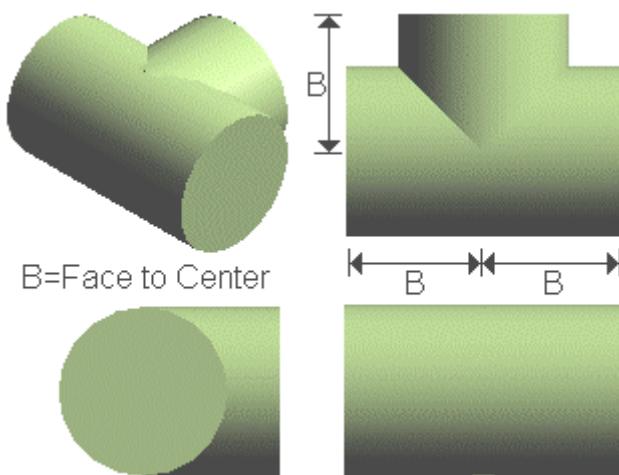
**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Output = "ConduitPort3" Description = "Conduit Port 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitUnion

**Description:** Conduit Union

**Symbol Name:** SP3DConduitUnion.CUnion

**Workbook:** Conduit.xls

**Workbook Sheet:** ConduitUN

**User Class Name:** Conduit Union

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitUnion.CUnion

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "UnionDiameter" Description = "Union Diameter"**

**Outputs = 5**

**Output = "Hubport1" Description = "Hub port 1"**

**Output = "Body" Description = "Body"**

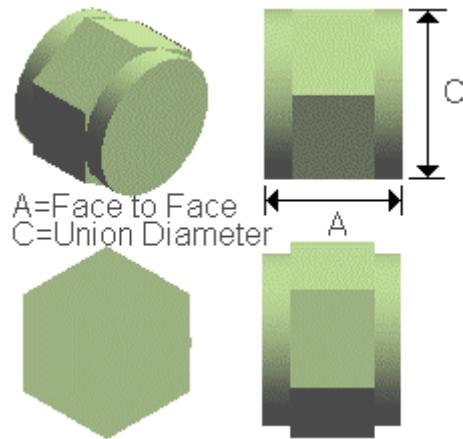
**Output = "Hubport2" Description = "Hub port 2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DConduitY

**Description:** Conduit Y

**Symbol Name:** SP3DConduitY.ConduitY

**Workbook:** Part data not delivered

**Workbook Sheet:** Part data not delivered

**User Class Name:** Part data not delivered

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitY.ConduitY

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face2toBranch" Description = "Face2 to Branch Port"**

**Outputs = 5**

**Output = "Header" Description = "Header Cylinder"**

**Output = "Branch" Description = "Branch Cylinder"**

**Output = "ConduitPort1" Description = "Conduit Port 1"**

**Output = "ConduitPort2" Description = "Conduit Port 2"**

**Output = "ConduitPort3" Description = "Conduit Port 3"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

## SP3DElecPullBox

**Description:**

**Symbol Name:** SP3DElecPullBox.ElecPullBox

**Workbook:** Conduit.xls

**Workbook Sheet:** PullBox

**User Class Name:** Conduit Pullbox

**Part Number:** COND000010

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecPullBox.ElecPullBox

**Inputs = 3**

**Input = "ElecEquipmentLength" Description = "ElecEquipmentLength"**

**Input = "ElecEquipmentWidth" Description = "ElecEquipmentWidth"**

**Input = "ElecEquipmentHeight" Description = "ElecEquipmentHeight"**

**Outputs = 7**

**Output = "PullBoxBody" Description = "PullBoxBody"**

**Output = "ConduitPort1" Description = "Nozzle 1"**

**Output = "ConduitPort2" Description = "Nozzle 2"**

**Output = "ConduitPort3" Description = "Nozzle 3"**

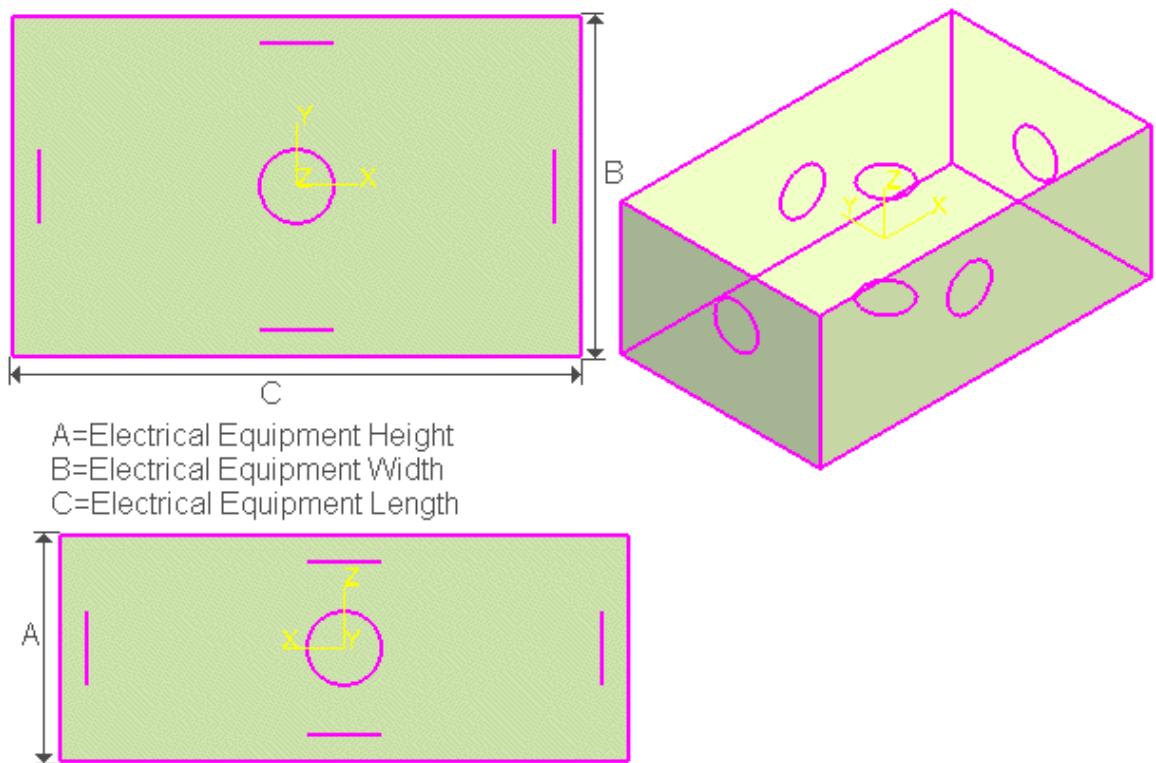
**Output = "ConduitPort4" Description = "Nozzle 4"**

**Output = "ConduitPort5" Description = "Nozzle 5"**

**Output = "ConduitPort6" Description = "Nozzle 6"**

**Aspects = 1**

**Aspect = SimplePhysical**





# Design Aid Symbols: An Overview

The software delivers many symbols to help in the design of your model. For example, you may want to make sure that a worker can reach a valve operator or that a tractor trailer has enough room to maneuver.

The following design aids are available:

- SP3D15TonCraneAsm*, page 172
- SP3D42inPalletAsm*, page 174
- SP3D5350cRailcarAsm*, page 175
- SP3D55GallonDrumAsm*, page 176
- SP3D5TCarryDeckCraneAsm*, page 177
- SP3DForkTruckAsm*, page 180
- SP3DSixFootWorkerAsm*, page 182
- SP3DTractorTruckAsm*, page 184
- SP3DTruckTrailerAsm*, page 185
- SP3DWasteAsm*, page 179
- SP3DWeighScaleAsm*, page 187

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

## SP3D15TonCraneAsm

**Description:** 15-ton crane

**Symbol Name:** SP3D15TonCraneAsm.C15TCraneSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** 15 Ton Crane\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3D15TonCraneAsm.C15TCraneSym

**Inputs = 0**

**Outputs = 17**

**Output = "BodyBox" Description = "BodyBox"**

**Output = "BodyFrontPyramid" Description = "BodyFrontPyramid"**

**Output = "BodyBackPyramid" Description = "BodyPoly"**

**Output = "BodyCenterCyl" Description = "BodyCenterCylinder"**

**Output = "BodySideCyl" & (iCount - 4) Description = "BodySideCyl "**

**Output = "BodyWheel" & (iCount - 6) Description = "BodyWheel "**

**Output = "BodyFrontTri" Description = "BodyFrontTriangle "**

**Output = "BodyBackTri" Description = "BodyBackTriangle"**

**Output = "BodyWheelWell" Description = "BodyWheelWell"**

**Output = "BodyDish" & (iCount - 24) Description = "BodyDish "**

**Output = "BodyBoxes" Description = "BodyBoxes"**

**Output = "BoomBasePyramid" Description = "BoomBasePyramid"**

**Output = "BoomBaseBox" Description = "BoomBaseBox"**

**Output = "BoomBasePyramid" Description = "BoomBasePyramid"**

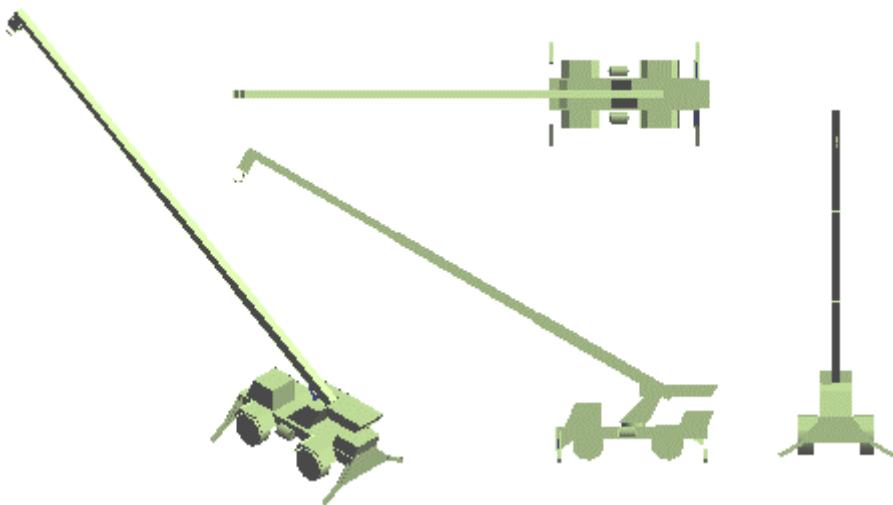
**Output = "BoomBox" Description = "BoomBox"**

**Output = "BoomHookBox" Description = "BoomHookBox"**

**Output = "BoomHook" Description = "BoomHook"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D42inPalletAsm

**Description:** 42"x42"x5" pallet

**Symbol Name:** SP3D42inPalletAsm.C42inPalletSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** 42" Pallet\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3D42inPalletAsm.C42inPalletSym

**Outputs = 5**

**Output = "TopSlat" & iCount   Description = "Top Slat " & iCount**

**Output = "BottomSlat" & iCount   Description = "Bottom Slat " & iCount**

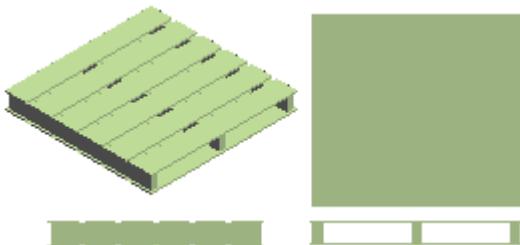
**Output = "Brace" & iCount   Description = "Vertical Brace " & iCount**

**Output = "Point"   Description = "Common Point"**

**Output = "DefaultSurface"   Description = "Default Surface"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D5350cRailcarAsm

**Description:** Railcar - 5350C

**Symbol Name:** SP3D5350cRailcar.C5350cRailcar

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** 5350c Rail car\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3D5350cRailcarAsm.C5350cRcarSym

**Inputs = 0**

**Outputs = 5**

**Output = "Box" Description = "Box"**

**Output = "Wheel" & iCount - 1 Description = "Wheel "**

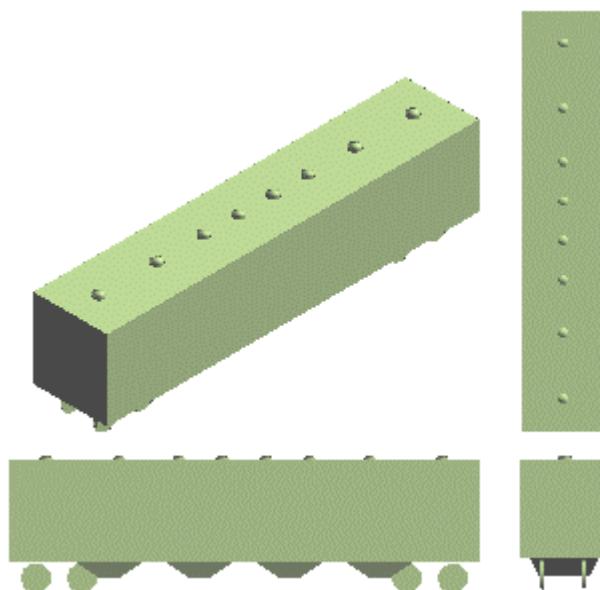
**Output = "Vent" & iCount - 1 Description = "Vent "**

**Output = "Dome" & iCount - 1 Description = "Dome "**

**Output = "planeForDump" & iCount - 1 Description = "planeForDump "**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D55GallonDrumAsm

**Description:** 55 gallon drum

**Symbol Name:** SP3D55GallonDrum.C55GDrumSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** 55 Gallon Drum\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3D55GallonDrum.C55GDrumSym

**Inputs = 0**

**Outputs = 5**

**Output = "BodyDrum" Description = "Body Drum"**

**Output = "BodyRing1" Description = "Body Ring"**

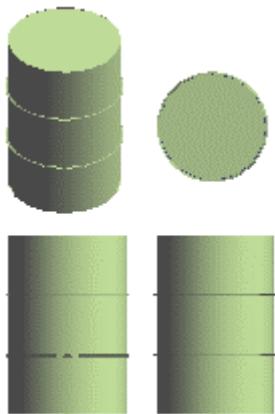
**Output = "BodyRing2" Description = "Body Ring"**

**Output = "DefaultSurface" Description = "Default Surface"**

**Output = "ControlPoint" Description = "Control Point"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D5TCarryDeckCraneAsm

**Description:** 5 ton carry deck crane

**Symbol Name:** SP3D5TCarryDeckCraneAsm.C5TCDCraneSym

## Workbook: Equipment.xls

## **Workbook Sheet: GenericAidesAsm**

## User Class Name: Generic Aides

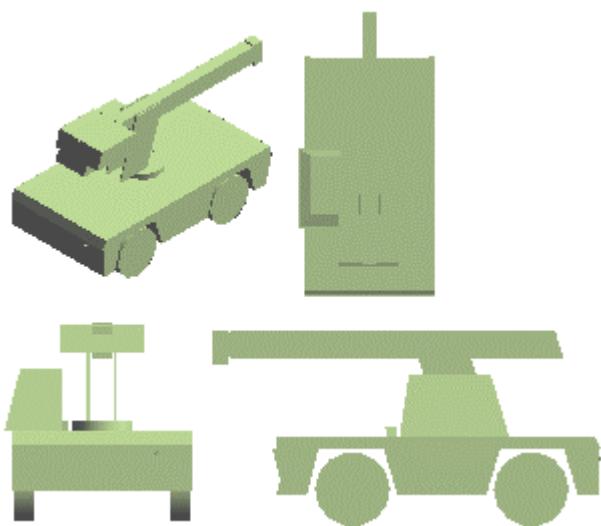
## **Part Number: 5 Ton Carry Deck Crane\_Asm**

## **Inputs, Outputs, and Aspects:**

ProgID: SISB

Aspects = 1

**Aspect** = SimplePhysical



## SP3DWasteAsm

**Description:** 750 gallon dumpster, for disposal of liquids

**Symbol Name:** SP3DWasteAsm.CWasteSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** 750 Gallon Dumpster\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWasteAsm.CWasteSym

**Inputs = 1**

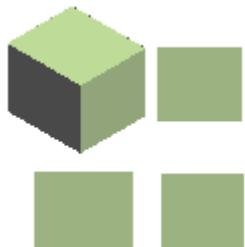
**Input = "FacetoFace" Description = ""**

**Outputs = 1**

**Output = "Body" Description = "Body"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DForkTruckAsm

**Description:** Fork truck

**Symbol Name:** SP3DForkTruck.CForkTruck

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** Fork Truck\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DForkTruck.CForkTruck

**Outputs = 31**

**Output = "leftFrontTireWheel" Description = "Left Front Tire Wheel"**

**Output = "rightFrontTireWheel" Description = "Right Front Tire Wheel"**

**Output = "leftRearTireWheel" Description = "Left Rear Tire Wheel"**

**Output = "rightRearTireWheel" Description = "Right Rear Tire Wheel"**

**Output = "mainBodyPart" Description = "Main Body Part"**

**Output = "rearBodyPart" Description = "Rear Body Part"**

**Output = "steeringColumnHousing" Description = "Steering Column Housing"**

**Output = "steeringColumnShaft" Description = "Steering Column Shaft"**

**Output = "steeringWheel" Description = "Steering Wheel"**

**Output = "seatBottom" Description = "Seat Bottom"**

**Output = "seatBack" Description = "Seat Back"**

**Output = "leftFork" Description = "Left Fork"**

**Output = "rightFork" Description = "Right Fork"**

**Output = "forkUpperCrossOver" Description = "Fork Upper Cross Over"**

**Output = "forkLeftUpright" Description = "Fork Left Upright"**

**Output = "forkRightUpright" Description = "Fork Right Upright"**

**Output = "forkLeftBumper" Description = "Fork Left Bumper"**

**Output = "forkRightBumper" Description = "Fork Right Bumper"**

**Output = "forkGrill" Description = "Fork Grill"**

**Output = "leftRearPost" Description = "Left Rear Post"**

**Output = "rightRearPost" Description = "Right Rear Post"**

**Output = "leftFrontPost" Description = "Left Front Post"**

**Output = "rightFrontPost" Description = "Right Front Post"**

**Output = "leftTopFramePiece" Description = "Left Top Frame Piece"**

**Output = "rightTopFramePiece" Description = "Right Top Frame Piece"**

**Output = "frontTopFramePiece" Description = "Front Top Frame Piece"**

**Output = "rearTopFramePiece" Description = "Rear Top Frame Piece"**

**Output = "mufflerLargePart" Description = "Muffler Large Part"**

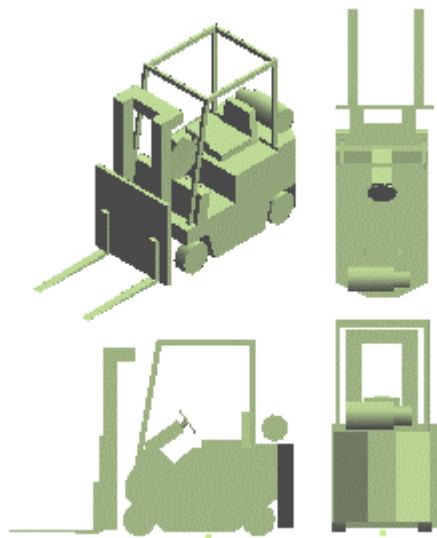
**Output = "mufflerSmallPart" Description = "Muffler Small Part"**

**Output = "PositionPoint" Description = "Position Point"**

**Output = "DefaultSurface" Description = "Default Surface"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSixFootWorkerAsm

**Description:** Six foot worker

**Symbol Name:** SP3D6FootWorkerAsm.C6F6WorkerSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** Six foot worker\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3D6FootWorkerAsm.C6F6WorkerSym

**Outputs = 33**

**Output = "head" Description = "Head"**

**Output = "leftEye" Description = "Left Eye"**

**Output = "hat" Description = "Hat"**

**Output = "hatBrim" Description = "Hat Brim"**

**Output = "neck" Description = "Neck"**

**Output = "rightEye" Description = "Right Eye"**

**Output = "shoulders" Description = "Shoulders"**

**Output = "leftShoulderJoint" Description = "Left Shoulder Joint"**

**Output = "rightShoulderJoint" Description = "Right Shoulder Joint"**

**Output = "leftUpperArm" Description = "Left Upper Arm"**

**Output = "rightUpperArm" Description = "Right Upper Arm"**

**Output = "leftElbowJoint" Description = "Left Elbow Joint"**

**Output = "rightElbowJoint" Description = "Right Elbow Joint"**

**Output = "leftForearm" Description = "Left Forearm"**

**Output = "rightForearm" Description = "Right Forearm"**

**Output = "leftHand" Description = "Left Hand"**

**Output = "rightHand" Description = "Right Hand"**

**Output = "torsoBottom" Description = "Torso Bottom"**

**Output = "lowerMiddle" Description = "Lower Middle"**

**Output = "upperMiddle" Description = "Upper Middle"**

**Output = "torsoTop" Description = "Torso Top"**

**Output = "leftThigh" Description = "Left Thigh"**

**Output = "rightThigh" Description = "Right Thigh"**

**Output = "leftKnee" Description = "Left Knee"**

**Output = "rightKnee" Description = "Right Knee"**

**Output = "lowerLeftLeg" Description = "Lower Left Leg"**

**Output = "lowerRightLeg" Description = "Lower Right Leg"**

**Output = "leftAnkle" Description = "Left Ankle"**

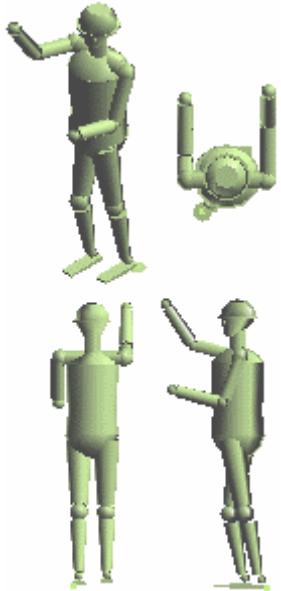
**Output = "leftAnkle" Description = "Left Ankle"**

**Output = "leftFoot" Description = "Left Foot"**

**Output = "rightFoot" Description = "Right Foot"**

**Output = "controlPoint" Description = "Control Point"**  
**Output = "defaultSurface" Description = "Default Surface"**

**Aspects = 1**  
**Aspect = SimplePhysical**



## SP3DTractorTruckAsm

**Description:** Tractor Trailer Truck body

**Symbol Name:** SP3DTractorTruckAsm.CTTruckSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidesAsm

**User Class Name:** Generic Aides

**Part Number:** Tractor Trailer Truck\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTractorTruckAsm.CTTruckSym

**Inputs = 1**

**Input = "FacetoFace" Description = ""**

**Outputs = 9**

**Output = "Cyli" Description = "Cyli"**

**Output = "Box" Description = "Box"**

**Output = "Dome" Description = "Dome"**

**Output = "Pyra" Description = "Pyra"**

**Output = "Torus1" Description = "Torus"**

**Output = "Torus2" Description = "Torus"**

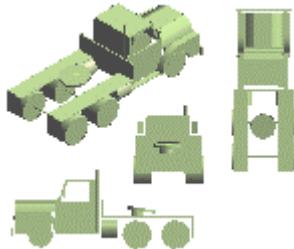
**Output = "Torus3" Description = "Torus"**

**Output = "Torus4" Description = "Torus"**

**Output = "BodyPoint" Description = "Body Point"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DTruckTrailerAsm

**Description:** 40 foot tank trailer

**Symbol Name:** SP3DTruckTrailerAsm.CTTrailerSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidsAsm

**User Class Name:** Generic Aids

**Part Number:** 40ft Tank Trailer\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTruckTrailerAsm.CTTrailerSym

**Inputs = 1**

**Input = "FacetoFace" Description = ""**

**Outputs = 62**

**Output = "TrailerBodyCyli" Description = "Trailer Body Cyli"**

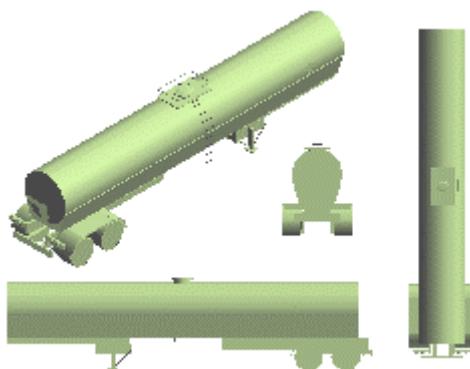
**Output = "TrailerBottomPyra" Description = "Trailer Bottom Pyra"**

**Output = "TrailerTireCyli" Description = "Trailer Tire Cyli"**

**Output = "TrailerBodyBox" Description = "Trailer Body Box"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DWeighScaleAsm

**Description:** Weigh scale

**Symbol Name:** SP3DWeighScaleAsm.CWScaleSym

**Workbook:** Equipment.xls

**Workbook Sheet:** GenericAidsAsm

**User Class Name:** Generic Aids

**Part Number:** Weigh Scale\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWeighScaleAsm.CWScaleSym

**Outputs = 7**

**Output = "Base"** **Description = "Base"**

**Output = "Step"** **Description = "Step"**

**Output = "Back"** **Description = "Back"**

**Output = "Neck"** **Description = "Neck"**

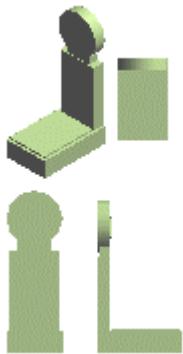
**Output = "Head"** **Description = "Head"**

**Output = "Meter"** **Description = "Meter"**

**Output = "Arrow"** **Description = "Arrow"**

**Aspects = 1**

**Aspect = SimplePhysical**





# Designed Equipment and Volumes Shapes: An Overview

The Shapes.xls workbook contains the reference data for the creation of designed equipment within the Equipment and Furnishings task and primitive volumes within the Space Management task. You can customize the Excel spreadsheets that are delivered with the software to create or customize any aspect of the shapes used in your model. The sheets that are unique to Shapes.xls are described below. For more information on common sheets, see the *SmartPlant 3D Reference Data Guide* accessible from the **Help > Printable Guides** command in the software.

**Circular Tori** - Defines reference data for circular torus. For more information, see *CircularTori Sheet*, page 191.

**Sphere** - Defines reference data for a spherical shape. For more information, see *Sphere Sheet*, page 198.

**EccentricCone** - Defines reference data for an eccentric cone shape. For more information, see *EccentricCone Sheet*, page 192.

**RtCircularCone** - Defines reference data for a right circular cone shape. For more information, see *RtCircularCone Sheet*, page 196.

**TriangularSolid** - Defines reference data for a triangular solid shape. For more information, see *TriangularSolid Sheet*, page 199.

**OctagonalSolid** - Defines reference data for a octagonal solid shape. For more information, see *Octagonal Solid Sheet*, page 194.

**HexagonalSolid** - Defines reference data for a hexagonal solid shape. For more information, see *HexagonalSolid Sheet*, page 193.

**RectangularSolid** - Defines reference data for a rectangular solid shape. For more information, see *RectangularSolid Sheet*, page 195.

**Platform1** - Defines reference data for a platform. For more information, see *Platform1 Sheet*, page 194.

**Platform2** - Defines reference data for a platform. For more information, see *Platform2 Sheet*, page 195.

**SemiEllipticalHead** - Defines reference data for a semi-elliptical head. For more information, see *SemiElliptical Head Sheet*, page 197.

**RectangularTorus** - Defines reference data for a rectangular torus. For more information, see *RectangularTorus Sheet*, page 196.

**TruncatedRectangluarPrism** - Defines reference data for a truncated rectangular prism shape. For more information, see *TruncatedRectangularPrism Sheet*, page 199.

**EccentricTransitionElement** - Defines reference data for an eccentric transition element. For more information, see *EccentricTransitionElement Sheet*, page 193.

**EccentricRectangularPrism** - Defines reference data for an eccentric rectangular prism shape. For more information, see *EccentricRectangularPrism Sheet*, page 192.

**RtCircularCylinder** - Defines reference data for a right circular cylindrical shape. For more information, see *RtCircularCylinder Sheet*, page 197.

### **Common Properties**

Each sheet in the Shapes.xls workbook is comprised of common and unique properties. The common properties are listed in the order that they appear, from left to right, on the worksheet. Unique properties are discussed in the individual worksheet topics.

**PartNumber** - Specifies the part number for the shape. The software uses the part number at placement when the part name is automatically generated.

#### **Important**

- All part numbers must be unique across the entire catalog.

**PartDescription** - Type a description for the shape.

**SymbolDefinition** - Type the symbol definition for the shape.

#### **Note**

- You can use the IJUAPaletteInfo virtual interface available in the **Shapes.xls** workbook to specify the location of the shape icon in the palette.

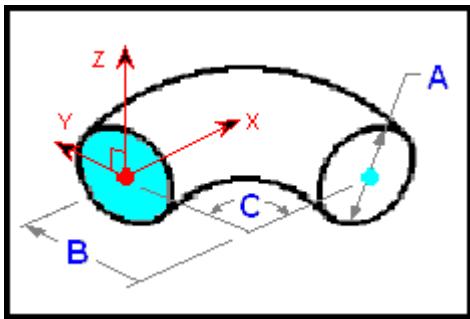
### **What's New**

*Version 2007*

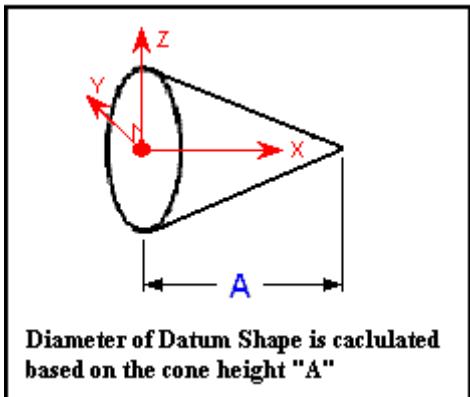
- No new symbols..

## CircularTori Sheet

The **CircularTori** sheet in the **Shapes.xls** workbook defines the circular torus shape that you want to place in your Catalog data. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:

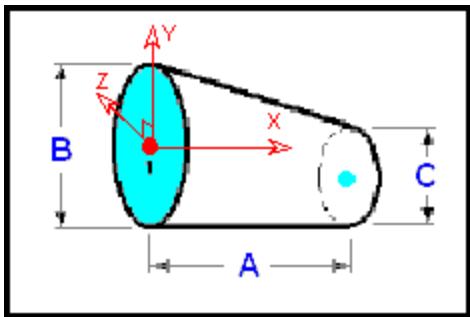


## Datum Shape



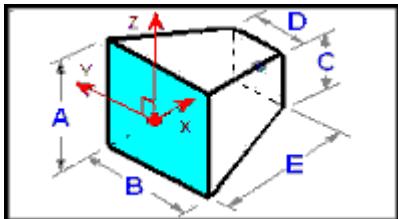
## EccentricCone Sheet

The **EccentricCone** sheet in the **Shapes.xls** workbook defines the eccentric cone shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



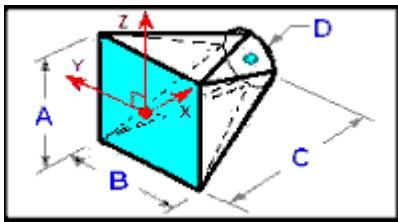
## EccentricRectangularPrism Sheet

The **EccentricRectangularPrism** sheet in the **Shapes.xls** workbook defines the eccentric rectangular prism shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



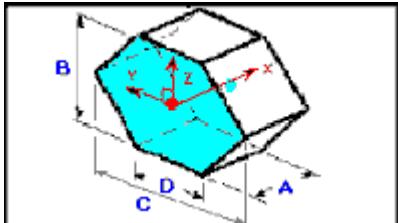
## EccentricTransitionElement Sheet

The **EccentricTransitionElement** sheet in the **Shapes.xls** workbook defines the eccentric transition element shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



## HexagonalSolid Sheet

The **HexagonalSolid** sheet in the **Shapes.xls** workbook defines the hexagonal solid shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:

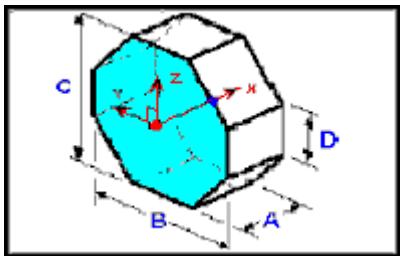


### Note

- Dimension **D** will override Dimension **B** and **C**.

## Octagonal Solid Sheet

The **OctagonalSolid** sheet in the **Equipment.xls** workbook defines the octagonal solid shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:

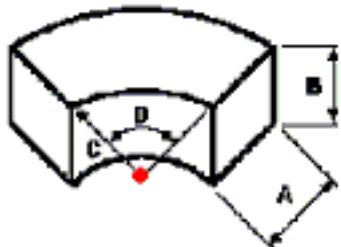


### Note

- Dimension **D** will override Dimension **B** and **C**.

## Platform1 Sheet

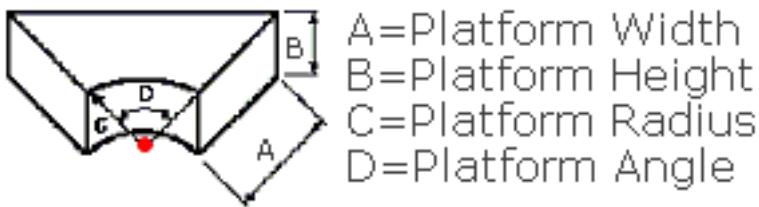
The **Platform1** sheet in the **Shapes.xls** workbook defines a primary platform shape that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



A=Platform Width  
B=Platform Height  
C=Platform Radius  
D=Platform Angle

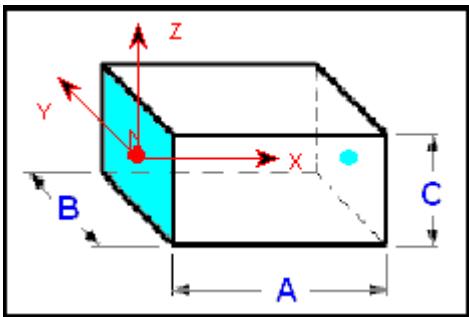
## Platform2 Sheet

The **Platform2** sheet in the **Shapes.xls** workbook defines a secondary platform that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



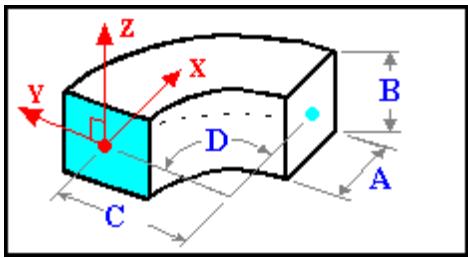
## RectangularSolid Sheet

The **RectangularSolid** sheet in the **Shapes.xls** workbook defines the rectangular solid shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



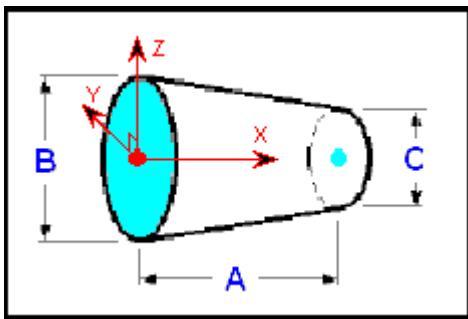
## RectangularTorus Sheet

The **RectangularTorus** sheet in the **Shapes.xls** workbook defines the rectangular torus shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



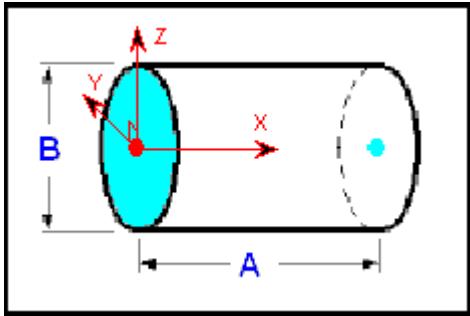
## RtCircularCone Sheet

The **RtCircularCone** sheet in the **Shapes.xls** workbook defines the steam condensers that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



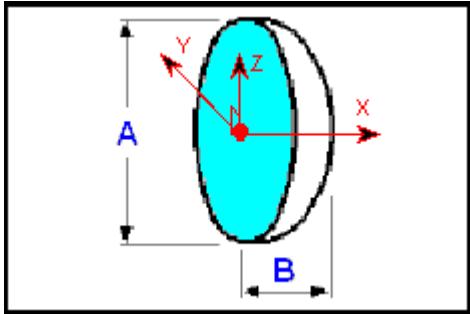
## RtCircularCylinder Sheet

The **RtCircularCylinder** sheet in the **Shapes.xls** workbook defines the right circular cylinder shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



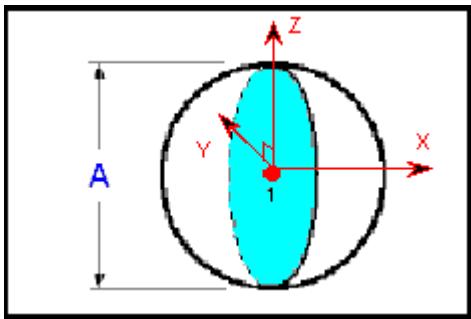
## SemiElliptical Head Sheet

The **SemiElliptical Head** sheet in the **Shapes.xls** workbook defines the semi-elliptical head shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



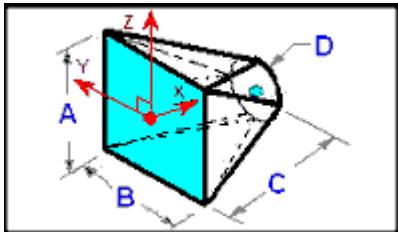
## Sphere Sheet

The **Sphere** sheet in the **Shapes.xls** workbook defines the spheres that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



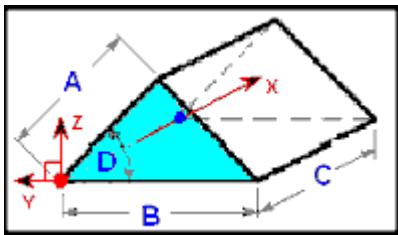
## TransitionElement Sheet

The **TransitionElement** sheet in the **Shapes.xls** workbook defines the eccentric transition element shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



## TriangularSolid Sheet

The **TriangularSolid** sheet in the **Shapes.xls** workbook defines the triangular solid shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:

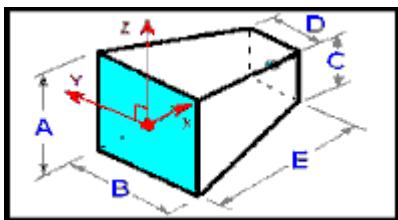


### Note

- Dimension **B** will override Angle **D**.

## TruncatedRectangularPrism Sheet

The **TruncatedRectangularPrism** sheet in the **Shapes.xls** workbook defines the truncated rectangular prism shapes that you want in your catalog. In addition to the common properties discussed in *Designed Equipment and Volumes Shapes: An Overview*, page 189, the following properties must be defined:



## SP3DRoadCross

**Description:** road intersection

**Symbol Name:** SP3DRoadCross.CRoadCross

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoadCross.CRoadCross

Number of Inputs = 3

Input name = "RoadWidth"

Input description = "Road Width"

Input name = "RoadDepth"

Input description = "Depth of Road"

Input name = "RoadRadius"

Input description = "Radius to the inner wall"

Number of Outputs = 15

Output name = "Plane1"

Output description = "Left side plane"

Output name = "Plane2"

Output description = "Down side plane"

Output name = "Plane3"

Output description = "Right side plane"

Output name = "Plane4"

Output description = "Top side plane"

Output name = "TurnSurface1"

Output description = "Left Corner Top curved Portion"

Output name = "TurnSurface2"

Output description = "Right Corner Top curved Portion"

Output name = "TurnSurface3"

Output description = "Right Corner Bottom curved Portion"

Output name = "TurnSurface4"

Output description = "Left Corner Bottom curved Portion"

Output name = "DefaultSurface"

Output description = "Road Cross bottom surface"

Output name = "RoadCrossTop"

Output description = "Road Cross Top surface"

Output name = "CrossCenterPoint"

Output description = "Center Point of Cross"

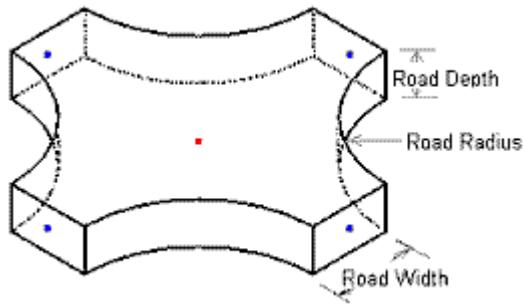
Output name = "Point1"

Output description = "Road Cross Point 1"

Output name = "Point2"

Output description = "Road Cross Point 2"

Output name = "Point3"  
Output description = "Road Cross Point 3"  
Output name = "Point4"  
Output description = "Road Cross Point 4"  
Number of Aspects = 1  
Supported AspectId = SimplePhysical



## SP3DRoadTee

**Description:** tee shaped road intersection

**Symbol Name:** SP3DRoadTee.CRoadTee

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoadTee.CRoadTee

Number of Inputs = 3

Input name = "RoadWidth"

Input description = "Road Width"

Input name = "RoadDepth"

Input description = "Depth of Road"

Input name = "RoadRadius"

Input description = "Radius to the inner wall"

Number of Outputs = 12

Output name = "Plane1"

Output description = "Left side plane"

Output name = "Plane2"

Output description = "Down side plane"

Output name = "Plane3"

Output description = "Right side plane"

Output name = "DefaultSurface"

Output description = "Road bottom surface"

Output name = "RoadTop"

Output description = "Road Top surface"

Output name = "HeaderSide"

Output description = "Header Side Plane"

Output name = "BranchSide1"

Output description = "Branch curved side at point 1"

Output name = "BranchSide2"

Output description = "Branch curved side at point 2"

Output name = "TeeCenter"

Output description = "Center of Tee"

Output name = "HeaderPoint1"

Output description = "Road Tee Point 1 along Header"

Output name = "HeaderPoint2"

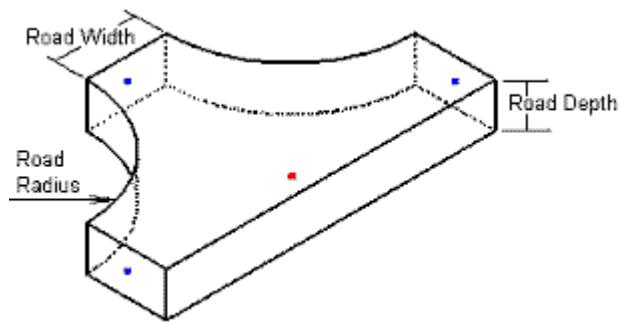
Output description = "Road Tee Point 2 along Header"

Output name = "BranchPoint3"

Output description = "Road Tee Point 3 along Branch"

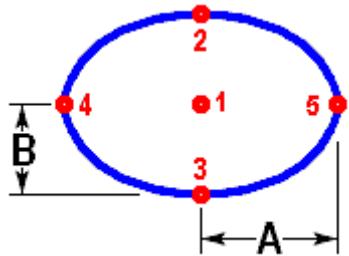
Number of Aspects = 1

Supported AspectId = SimplePhysical



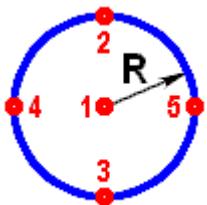
## Ellipse Sheet

The **Ellipse** sheet in the **Shapes.xls** workbook defines the ellipse prismatic cross-section sketch shapes.



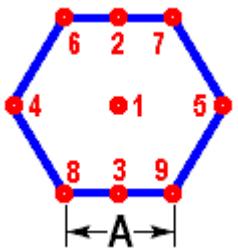
## Circle Sheet

The **Circle** sheet in the **Shapes.xls** workbook defines the circle prismatic cross-section sketch shapes.



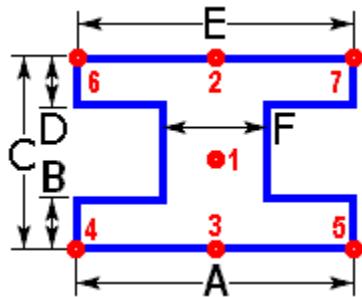
## Hexagon Sheet

The **Hexagon** sheet in the **Shapes.xls** workbook defines the hexagon prismatic cross-section sketch shapes.



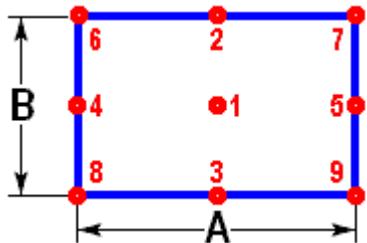
## I Beam Sheet

The **I Beam** sheet in the **Shapes.xls** workbook defines the I Beam prismatic cross-section sketch shapes.



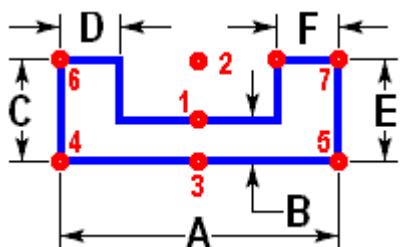
## Rectangle Sheet

The **Rectangle** sheet in the **Shapes.xls** workbook defines the rectangle prismatic cross-section sketch shapes.



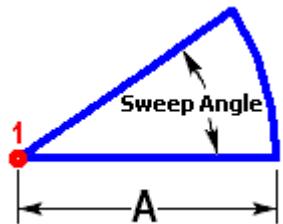
## Road Sheet

The **Road** sheet in the **Shapes.xls** workbook defines the road prismatic cross-section sketch shapes.



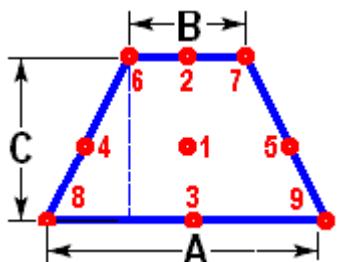
## Sector Sheet

The **Sector** sheet in the **Shapes.xls** workbook defines the sector prismatic cross-section sketch shapes.



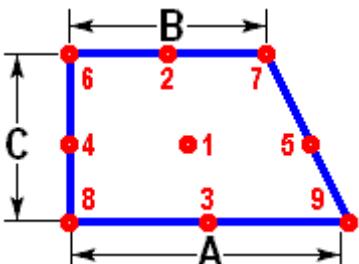
## TrapezeC Sheet

The **TrapezeC** sheet in the **Shapes.xls** workbook defines the TrapezeC prismatic cross-section sketch shapes.



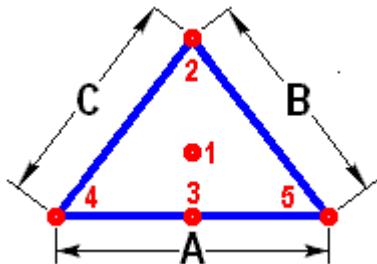
## TrapezeR Sheet

The **TrapezeR** sheet in the **Shapes.xls** workbook defines the TrapezeR prismatic cross-section sketch shapes.



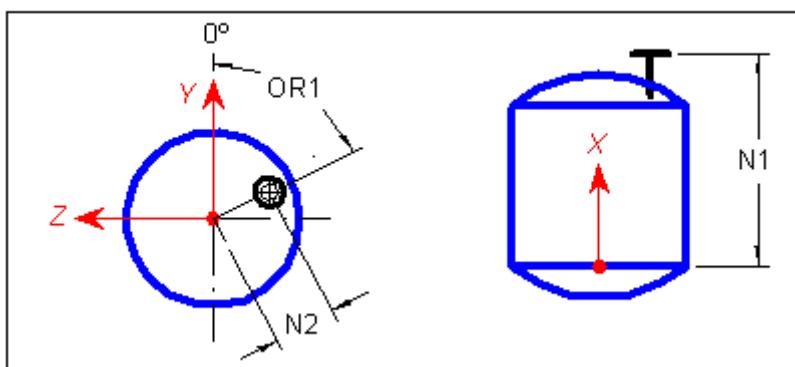
## Triangle Sheet

The **Triangle** sheet in the **Shapes.xls** workbook defines the triangle prismatic cross-section sketch shapes.

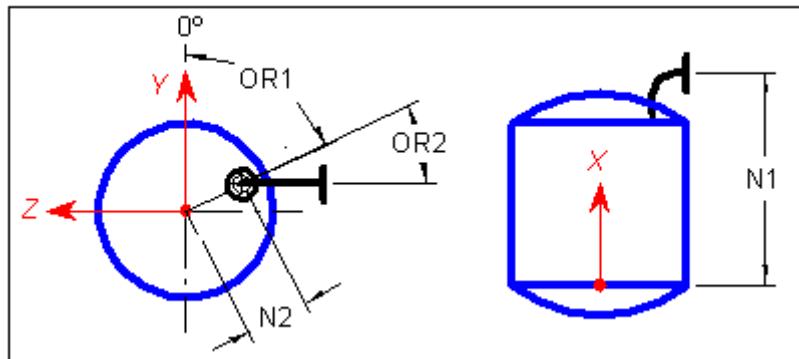


## Nozzle Orientations

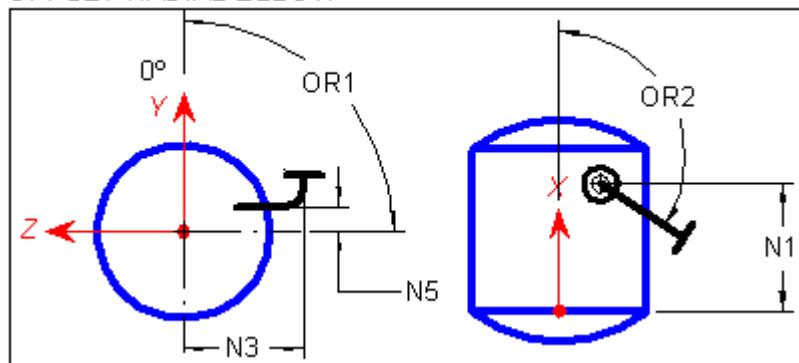
AXIAL



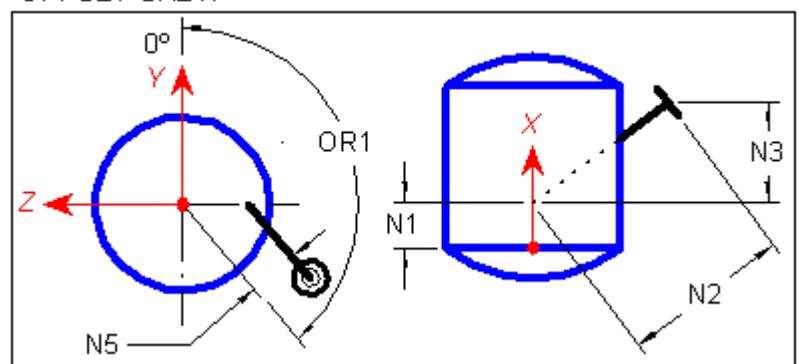
AXIAL ELBOW



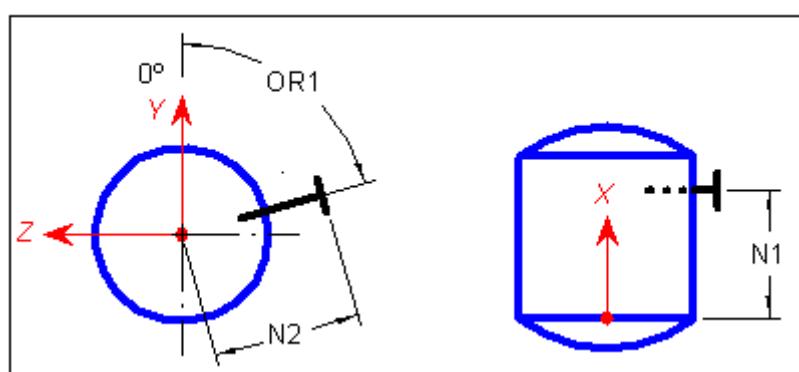
OFFSET RADIAL ELBOW



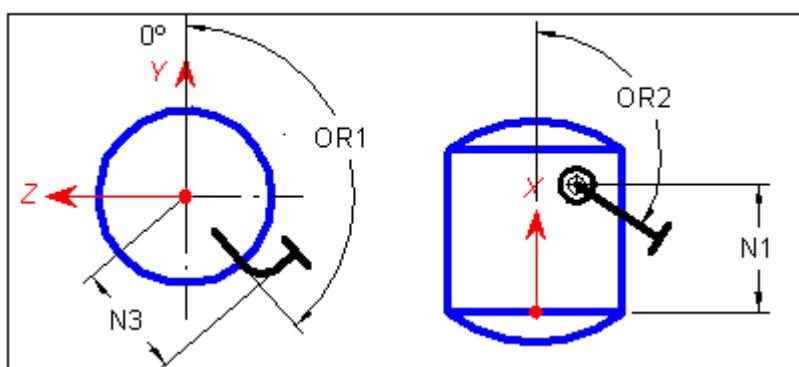
OFFSET SKEW



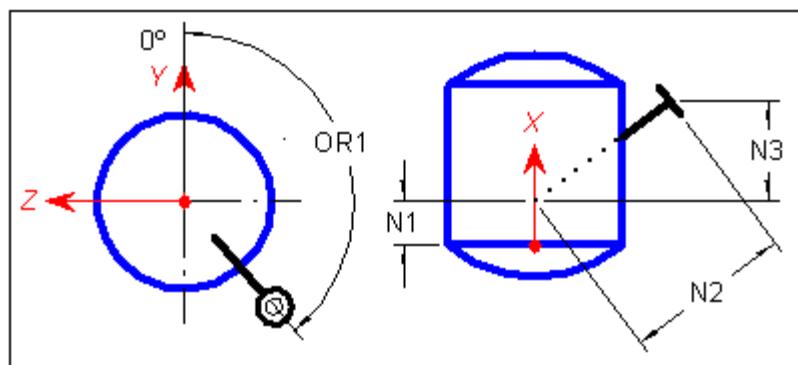
RADIAL



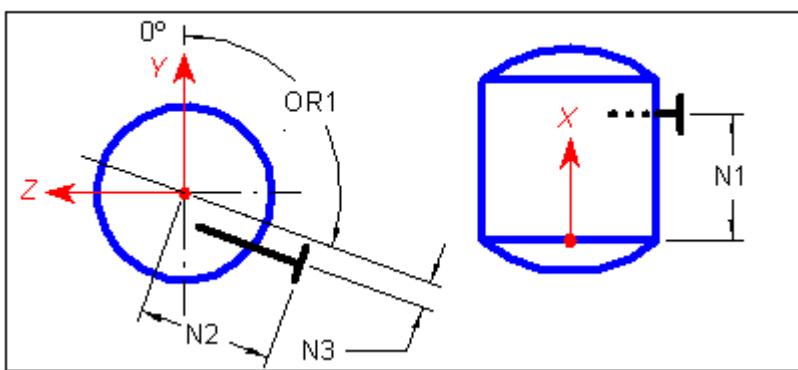
RADIAL ELBOW



SKEW



TANGENTIAL





# Equipment Components: An Overview

The EquipmentComponents.xls workbook contains the reference data for the creation of equipment components within the Equipment and Furnishings task and primitive volumes within the Space Management task. You can customize the Excel spreadsheets that are delivered with the software to create or customize any aspect of the components used in your model. The sheets that are unique to EquipmentComponent.xls are described below. For more information on common sheets, see the *SmartPlant 3D Reference Data Guide* accessible from the **Help > Printable Guides** command in the software.

## Common Properties

Each sheet in the EquipmentComponent.xls workbook is comprised of common and unique properties. The common properties are listed in the order that they appear, from left to right, on the worksheet. Unique properties are discussed in the individual worksheet topics.

**PartNumber** - Specifies the part number for the component. The software uses the part number at placement when the part name is automatically generated.

### Important

- All part numbers must be unique across the entire catalog.

**PartDescription** - Type a description for the component.

**SymbolDefinition** - Type the symbol definition for the component.

## What's New

### *Version 2007 Service Pack 2*

- Added the following new symbols: SP3DEqpEnd2TO1CompAsm, SP3DEqpEndConeCompAsm, SP3DEqpEndDomeCompAsm, SP3DEqpEndFLATCompAsm, SP3DEqpEndFLGDCompAsm, SP3DEqpFnDCompAsm, SP3DEqpEndHemiCompAsm, SP3DEqpEndTORCCompAsm, SP3DEqpEndTORSCompAsm; SP3DCenWebSaddleCompAsm, SP3DHorOffsetSaddleCompAsm, SP3DSkirtBaseTypeACompAsm, SP3DSkirtBaseTypeBCompAsm, SP3DSkirtBaseTypeCCompAsm, SP3DSkirtBaseTypeDCompAsm.

### *Version 2007*

- Added the following new symbols: SP3DFOITorusMiterAsm, SP3DRecTorusMiterAsm, SP3DRndTorusMiterAsm, and SP3DVOTorusMiterAsm.
- SP3DG9D\_1000\_05H\_XCompAsm has been replaced by SP3DHDrVesAIXCompAsm

- SP3DG9D\_1000\_05HCompAsm has been replaced by SP3DHOrDrumCompAsm
- SP3DG9D\_1000\_05VCompAsm has been replaced by SP3DVerDrumCompAsm
- SP3DG9D\_5525\_02CompAsm has been replaced by SP3DWeldTySSLCompAsm
- SP3DG9D\_5525\_03CompAsm has been replaced by SP3DWeldTySMLCompAsm
- SP3DG9D\_5525\_11CompAsm has been replaced by SP3DWeldPiGSLCompAsm
- SP3DG9D\_5525\_12CompAsm has been replaced by SP3DWeldPiGMLCompAsm
- SP3DG9D\_5525\_14\_CompAsm has been replaced by SP3DCIPiGuiSLCompAsm
- SP3DG9D\_5540\_01CompAsm has been replaced by SP3DLiftLugFVCompAsm
- SP3DG9D\_6010\_01CompAsm has been replaced by SP3DLiftLugBPCompAsm
- SP3DG9D\_6015\_01CompAsm has been replaced by SP3DSaddleSupCompAsm
- SP3DG9D\_6015\_02CompAsm has been replaced by SP3DParSaddleCompAsm
- SP3DG9G\_7005\_01CompAsm has been replaced by SP3DManWayDHorCovAsm
- SP3DG9G\_7005\_02CompAsm has been replaced by SP3DManWayDVerCovAsm
- SP3DG9G\_7005\_03CompAsm has been replaced by SP3DManWayDBotHCAsm

# SP3DCenWebSaddleCompAsm

## Description:

**Symbol Name:** SP3DCenWebSaddleCompAsm.CenWebSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DCenWebSaddleCompAsm.CenWebSym

### Inputs = 13

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "BasePlateLength", "A-Baseplate Length"

**Input and description** = "CenToSaddleBottom", "B-Center to Saddle Bottom"

**Input and description** = "BackingPlateThick", "C-Backing Plate Thickness"

**Input and description** = "BasePlateThick", "D-Baseplate Thickness"

**Input and description** = "XBoltHole", "E-Hole Bolt X Location"

**Input and description** = "BasePlateWidth", "F-Baseplate Width"

**Input and description** = "RibWidth", "G-Rib Width"

**Input and description** = "BackingPlateWidth", "H-Backing Plate Width"

**Input and description** = "WebThickness", "J-Web Thickness"

**Input and description** = "RibThick", "L-Rib Thickness"

**Input and description** = "YBoltHole", "M-Hole Bolt Y Location"

**Input and description** = "NoOfRibs", "Number of Ribs"

### Outputs = 6

**Output and description** = "BackingPlate", "Backing Plate"

**Output and description** = "Web", "Web"

**Output and description** = "Rib\_", "Rib"

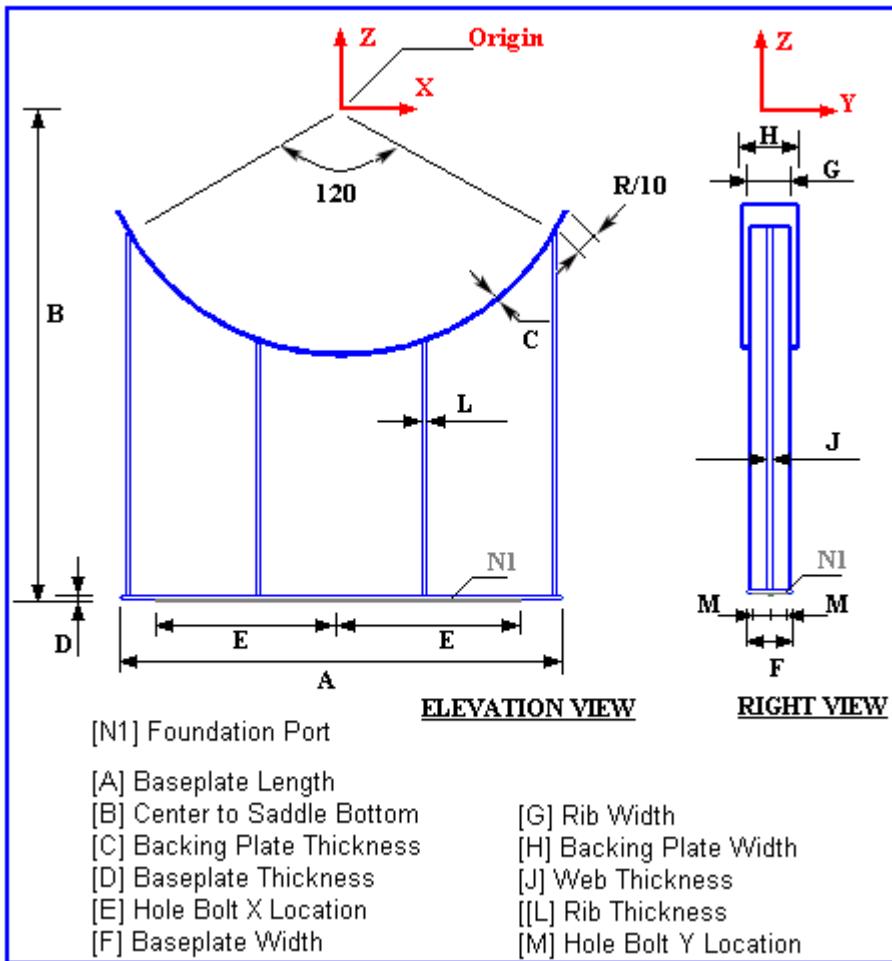
**Output and description** = "Baseplate", "Baseplate"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

### Aspects = 1

**Aspect** = "Physical", "Physical"



## SP3DCIPiGuiSLCompAsm

**Description:** CLAMPED PIPE GUIDE FOR SMALL LINES THRU 6" PIPE

**Symbol Name:** SP3DCIPiGuiSLCompAsm.CPGuideFoSmallLSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PipeguideClampedAsm

**User Class Name:** Clamped Pipe Guide for Small Lines

**Part Number:** PipeguideClamped 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPiGuiSLCompAsm.CPGuideFoSmallLSym

**Inputs = 4**

**Input and description** = "VesselDiameter", "Tower Diameter"

**Input and description** = "PipeCLtoTowerCL", "Pipe CenterLine to Tower CenterLine-Y"

**Input and description** = "TowertoGuideBase", "Tower Outer shell to Guide Base-K"

**Input and description** = "PipeOD", "Pipe Outer Diameter"

**Outputs = 21**

**Output and description** = "Saddle1", "Saddle1 Body"

**Output and description** = "Saddle2", "Saddle2 Body"

**Output and description** = "SaddleSupport1", "Top Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport2", "Bottom Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport3", "Box Type portion fits in Clamps"

**Output and description** = "SupportCenterPlate1", "Guide saddle support CenterPlate"

**Output and description** = "GuideSupport1", "Tower circular support"

**Output and description** = "GuideSupport2", "Top guide plate"

**Output and description** = "GuideSupport3", "Guide Clamp Plate"

**Output and description** = "SupportCenterPlate2", "Guide support CenterPlate"

**Output and description** = "ZClamp1A", "Left Z-Clamp Inner Box"

**Output and description** = "ZClamp1B", "Left Z-Clamp Outer Box"

**Output and description** = "ZClamp2A", "Right Z-Clamp Inner Box"

**Output and description** = "ZClamp2B", "Right Z-Clamp Outer Box"

**Output and description** = "Bolt1", "Left Bolt"

**Output and description** = "Bolt2", "Right Bolt"

**Output and description** = "Defaultsurface", "Default Surface Reference plane on Tower"

**Output and description** = "PipeAxisLine", "Line on the Pipe axis"

**Output and description** = "VesselAxisLine", "Line on the Vessel axis"

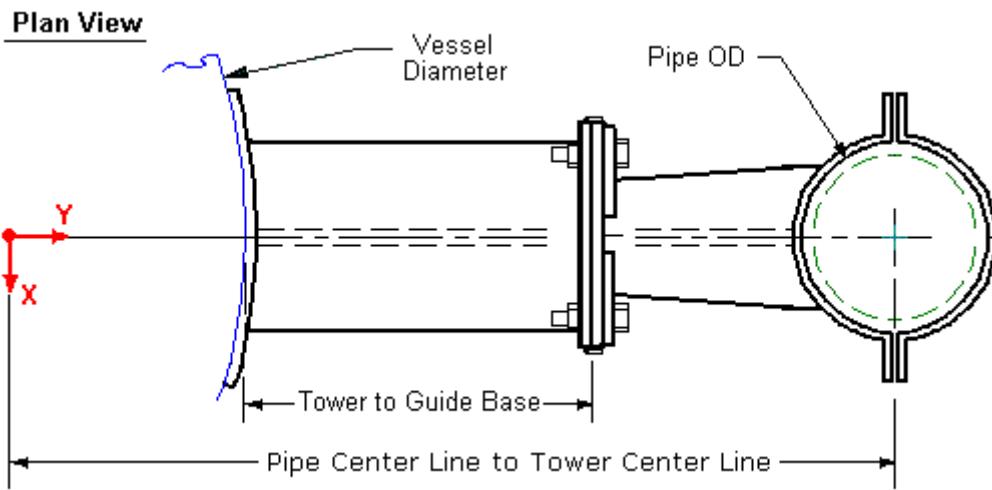
**Output and description** = "VesselAxisPoint", "Point on the Vessel axis"

**Output and description** = "PipeAxisPoint", "Point on the Pipe axis"

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "ReferenceGeometry", "ReferenceGeometry"**



# SP3DEqpEnd2TO1CompAsm

**Description:**

**Symbol Name:** SP3DEqpEnd2TO1CompAsm

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 2**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 5**

**Output and description** = "End2TO1Head", " End2TO1Head"

**Output and description** = "Point1", "Point1"

**Output and description** = "Circle1", "Circle1"

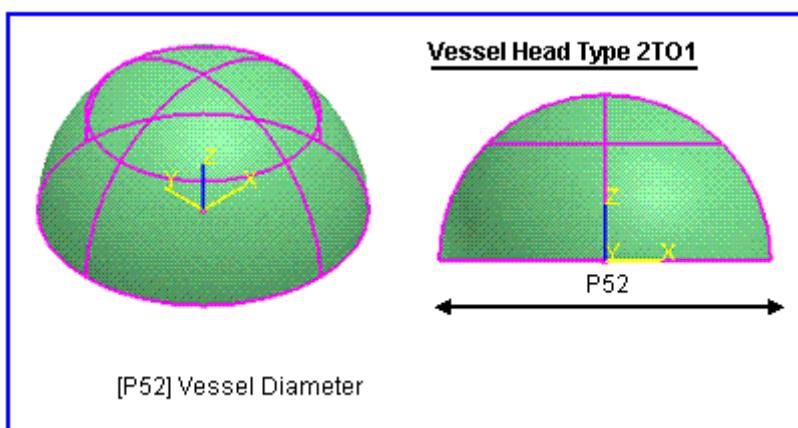
**Output and description** = "Plane1", "Plane1"

**Output and description** = "End2TO1HeadIns", " End2TO1HeadIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndConeCompAsm

**Description:**

**Symbol Name:** SP3DEqpEndConeCompAsm.EndConeSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 4**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "EndHeadConeTopDiameter", "End Cone Top Diameter",

**Input and description** = "EndHeadConeHeight", "End Head Cone Height",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 8**

**Output and description** = "EndConeHead", "EndConeHead"

**Output and description** = "Point1", "Point1"

**Output and description** = "Point2", "Point2"

**Output and description** = "Circle1", "Circle1"

**Output and description** = "Plane1", "Plane1"

**Output and description** = "Circle2", "Circle2"

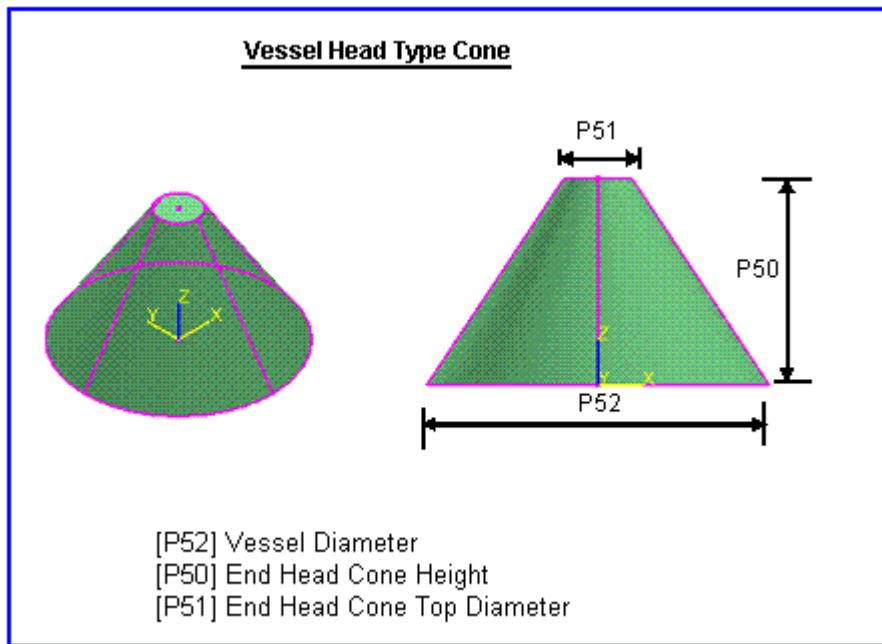
**Output and description** = "Plane2", "Plane2"

**Output and description** = "EndConeHeadIns", "EndConeHeadIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndDomeCompAsm

**Description:**

**Symbol Name:** SP3DEqpEndDomeCompAsm.EndDomeSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 3**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "EndHeadDomeradius", "End Head Dome Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 5**

**Output and description** = "EndDomeHead", "Vertical Vessel EndEndDomeHead"

**Output and description** = "Point1", "Point1"

**Output and description** = "Circle1", "Circle1"

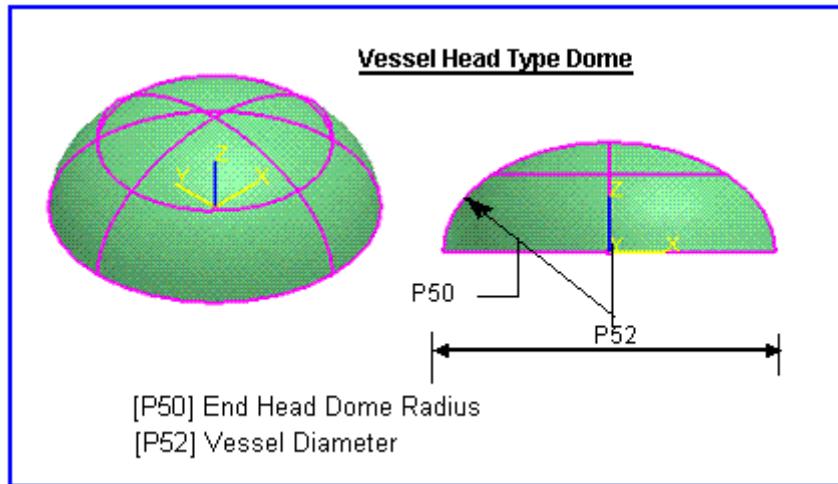
**Output and description** = "Plane1", "Plane1"

**Output and description** = "EndDomeHeadIns", "EndDomeHeadIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndFLGDCompAsm

**Description:**

**Symbol Name:** SP3DEqpEndFLGDCompAsm

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 4**

**Input and description** = "VesselDiameter", "vessel Diameter",

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1",

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 10**

**Output and description** = "EndFLGDHead1", "EndFLGDHead1"

**Output and description** = "EndFLGDHead2", "EndFLGDHead2"

**Output and description** = "Point1", "Point1"

**Output and description** = "Point2", "Point2"

**Output and description** = "Circle1", "Circle1"

**Output and description** = "Plane1", "Plane1"

**Output and description** = "Circle2", "Circle2"

**Output and description** = "Plane2", "Plane2"

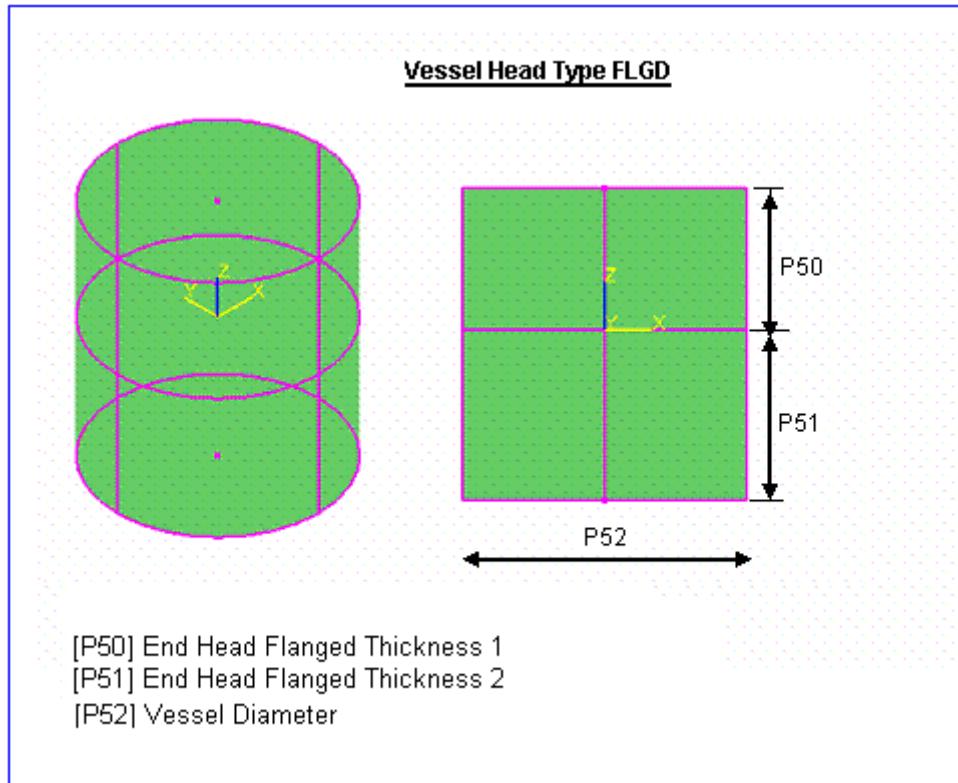
**Output and description** = "EndFLGDHead1Ins", "EndFLGDHead1Ins"

**Output and description** = "EndFLGDHead2Ins", "EndFLGDHead2Ins"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndFnDCompAsm

**Description:**

**Symbol Name:** SP3DEqpFnDCompAsm.EndFnDSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 2**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 5**

**Output and description** = "EndF&DHead", "EndF&DHead"

**Output and description** = "Point1", "Point1"

**Output and description** = "Circle1", "Circle1"

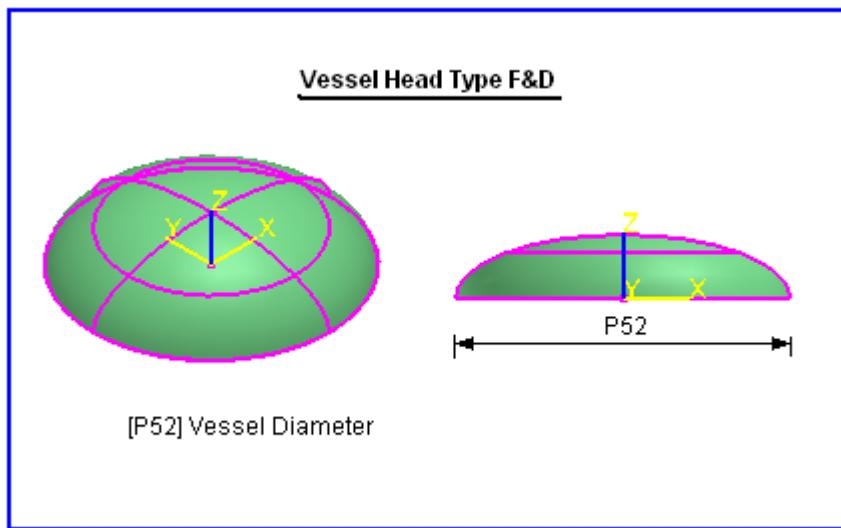
**Output and description** = "Plane1", "Plane1"

**Output and description** = "EndF&DHeadIns", "EndF&DHeadIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndHemiCompAsm

**Description:**

**Symbol Name:** SP3DEqpEndHemiCompAsm.EndHemiSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 2**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 5**

**Output and description** = "EndHemiHead", "EndEndHemiHead"

**Output and description** = "Point1", "Point1"

**Output and description** = "Circle1", "Circle1"

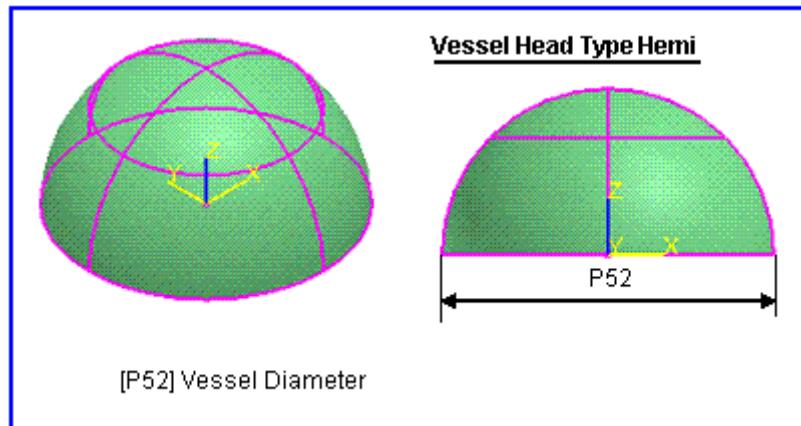
**Output and description** = "Plane1", "Plane1"

**Output and description** = "EndHemiHeadIns", "EndEndHemiHeadIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndTORCCompAsm

## **Description:**

**Symbol Name:** SP3DEqpEndTORCCompAsm.EndTORCSym

## **Workbook:**

### **Workbook Sheet:**

### **User Class Name:**

### **Part Number:**

### **Inputs, Outputs, and Aspects:**

#### **Inputs = 5**

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "EndHeadConeTopDiameter", "End Head Top Diameter",

**Input and description** = "EndHeadConeHeight", "End Head Height",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

#### **Outputs = 10**

**Output and description** = "ObjRevolution1", "ObjRevolution1"

**Output and description** = "EndTORCHead", "EndTORCHead"

**Output and description** = "Point1", "Point1"

**Output and description** = "Point2", "Point2"

**Output and description** = "Circle1", "Circle1"

**Output and description** = "Plane1", "Plane1"

**Output and description** = "Circle2", "Circle2"

**Output and description** = "Plane2", "Plane2"

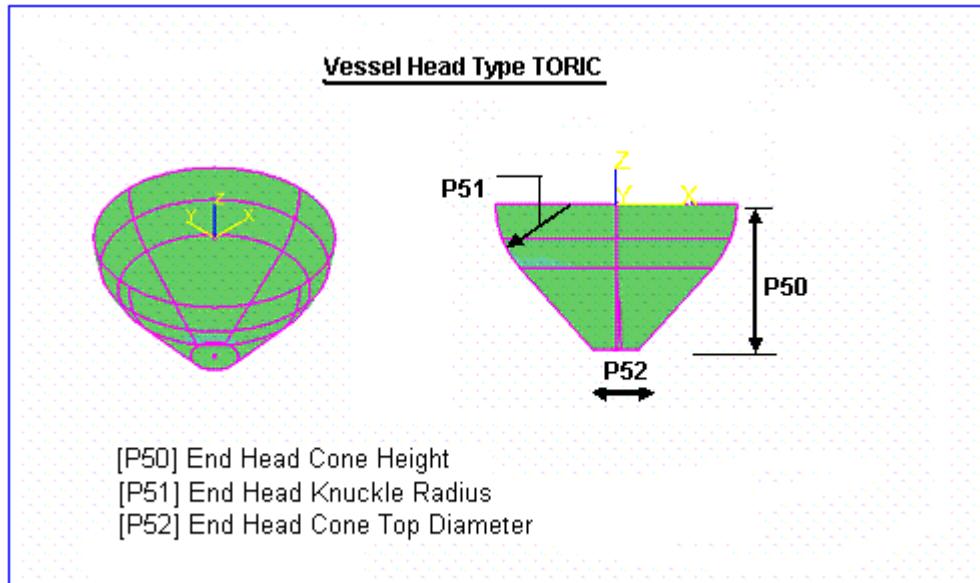
**Output and description** = "ObjRevolution1Ins", "ObjRevolution1Ins"

**Output and description** = "EndTORCHeadIns", "EndTORCHeadIns"

#### **Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DEqpEndTORSCompAsm

## Description:

**Symbol Name:** SP3DEqpEndTORSCompAsm.EndTORSSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

#### Inputs = 4

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

#### Outputs = 7

**Output and description** = "ObjRevolution1", "ObjRevolution1"

**Output and description** = "ObjRevolution2", "ObjRevolution2"

**Output and description** = "Point1", "Point1"

**Output and description** = "Circle1", "Circle1"

**Output and description** = "Plane1", "Plane1"

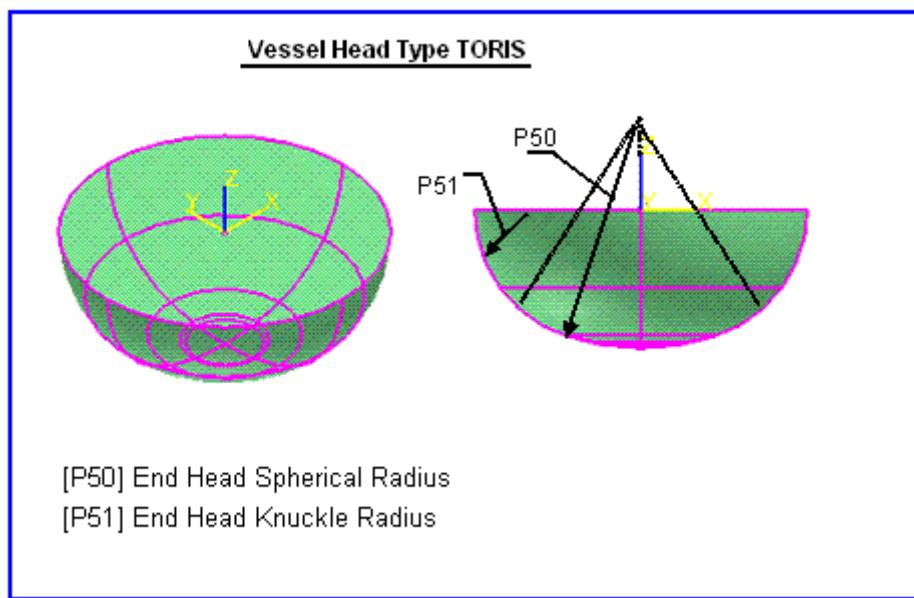
**Output and description** = "ObjRevolution1Ins", "ObjRevolution1Ins"

**Output and description** = "ObjRevolution2Ins", "ObjRevolution2Ins"

#### Aspects = 2

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DExShellBodyCompAsm

## Description:

**Symbol Name:** SP3DXShellBodyCompAsm.CXSBCSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ExchangerShellBodyCompAsm

**User Class Name:** Exchanger Shell Body

**Part Number:** ExchangerShellBody 01\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DXShellBodyCompAsm.CXSBCSym

### Inputs = 23

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"

**Input** = "ChannelDiameter"   **Description** = "Channel Diameter P2"

**Input** = "BundleFlangeTk"   **Description** = "Exchanger End Flange Thick P3"

**Input** = "BundleFlangeDia"   **Description** = "Exchanger End Flange Dia P4"

**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Left Flange Thick P5"

**Input** = "ExchangerFlangeTk2"   **Description** = "Exchanger Right Flange Thick P6"

**Input** = "ExpansionJointPosition"   **Description** = "Expansion Joint Position P7"

**Input** = "ExpansionJointThickness"   **Description** = "Expansion Joint Thickness P8"

**Input** = "ExpansionJointDiameter"   **Description** = "Expansion Joint Diameter P9"

**Input** = "BundlePullingLength"   **Description** = "Exchanger End Length P10"

**Input** = "BotSupportCenFromPP"   **Description** = "Bot Support Cen From Origin P11"

**Input** = "BottomSupportCentoCen"   **Description** = "Cen to Cen between Support P12"

**Input** = "Support1Thickness"   **Description** = "Support1 Thickness P13"

**Input** = "Support2Thickness"   **Description** = "Support2 Thickness P14"

**Input** = "BottomSupportHeight"   **Description** = "Bottom Support Height P15"

**Input** = "SupportLength"   **Description** = "Support Length P16"

**Input** = "TopSupportCenFromPP"   **Description** = "Top Support Cen From Origin P17"

**Input** = "TopSupportCentoCen"   **Description** = "Top Support Cen to Cen P18"

**Input** = "TopSupportHeight"   **Description** = "Top Support Height P19"

**Input** = "FrontEndFlangeDia"   **Description** = "Front End Flange Diameter P30"

**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"

**Input** = "RearEndFlangeDia"   **Description** = "Rear End Flange Diameter P40"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

### Outputs = 8

**Output** = "ExchangerCyl"   **Description** = "Exchanger Body Cylinder"

**Output** = "ExchangerRearFlange"   **Description** = "Exchanger Rear Flange"

**Output** = "ExchangerFrontFlange1"   **Description** = "Exchanger Front Flange 1"

**Output** = "ExchangerFrontFlange2"   **Description** = "Exchanger Front Flange 2"

**Output** = "ExchangerCylIns"   **Description** = "Exchanger Body Cylinder Insulation"

**Output** = "BundlePulling"   **Description** = "BundlePulling"  
**Output** = "DefaultSurface"   **Description** = "Default Surface Exchanger Shell Component"  
**Output** = "ExchShellCompControlPoint"   **Description** = "Control Point of Exchanger Shell Component"

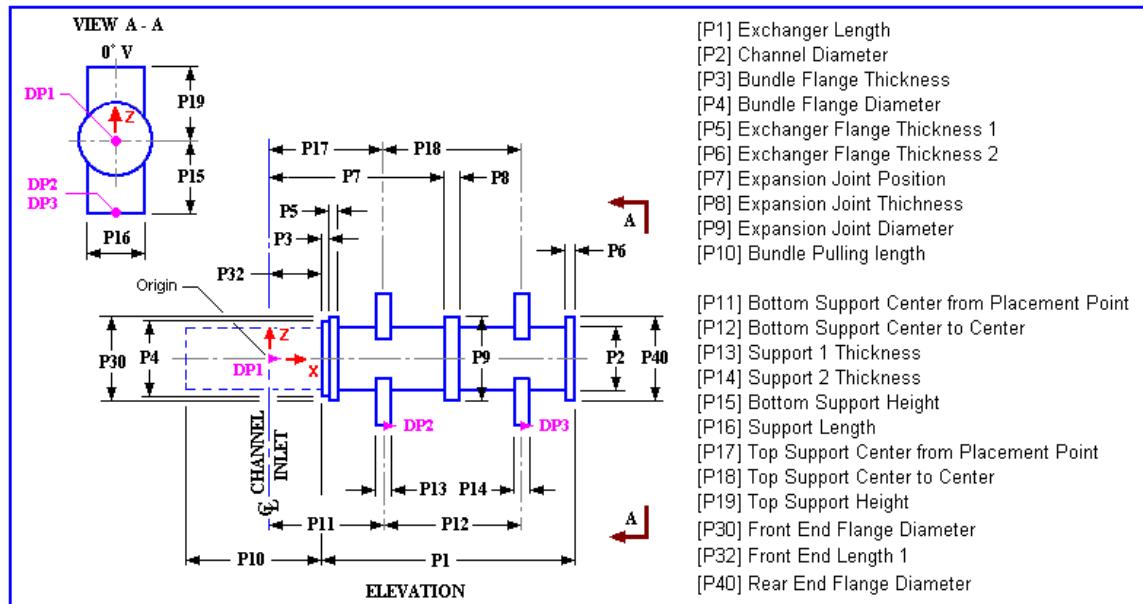
**Aspects** = 4

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = Maintenance

**Aspect** = ReferenceGeometry



# SP3DE\_205CompAsm

## Description:

**Symbol Name:** SP3DE\_205CompAsm.CE\_205CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E205\_CVerCylEqpSkCompAsm

**User Class Name:** Complex Vertical Cylindrical Equipment Skirt Component (E205)

**Part Number:** E205-Vertical Tank with Skirt (multi-stage)\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_205CompAsm.CE\_205CSym

### Inputs = 16

**Input** = "VesselHeight1" **Description** = "Vessel Height 1"

**Input** = "VesselDiameter1" **Description** = "Vessel Diameter 1"

**Input** = "SupportHeight1" **Description** = "Support Height 1"

**Input** = "VesselHeight2" **Description** = "Vessel Height 2"

**Input** = "VesselDiameter2" **Description** = "Vessel Diameter 2"

**Input** = "SupportHeight2" **Description** = "Support Height 2"

**Input** = "VesselHeight3" **Description** = "Vessel Height 3"

**Input** = "VesselDiameter3" **Description** = "Vessel Diameter 3"

**Input** = "SupportHeight3" **Description** = "Support Height 3"

**Input** = "VesselHeight4" **Description** = "Vessel Height 4"

**Input** = "VesselDiameter4" **Description** = "Vessel Diameter 4"

**Input** = "SkirtHeight" **Description** = "Skirt Height"

**Input** = "SkirtTopDiameter" **Description** = "Skirt Top Diameter"

**Input** = "SkirtBottomDiameter" **Description** = "Skirt Bottom Diameter"

**Input** = "VesselReferencePoint" **Description** = "Vessel Reference Point"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

### Outputs = 4

**Output** = "InsulatedVessel" **Description** = "InsulatedVessel"

**Output** = "Vessel" **Description** = "Vessel"

**Output** = "DefaultSurface" **Description** = "Default Surface of Complex Vertical Cylindrical Equipment Skirt Component"

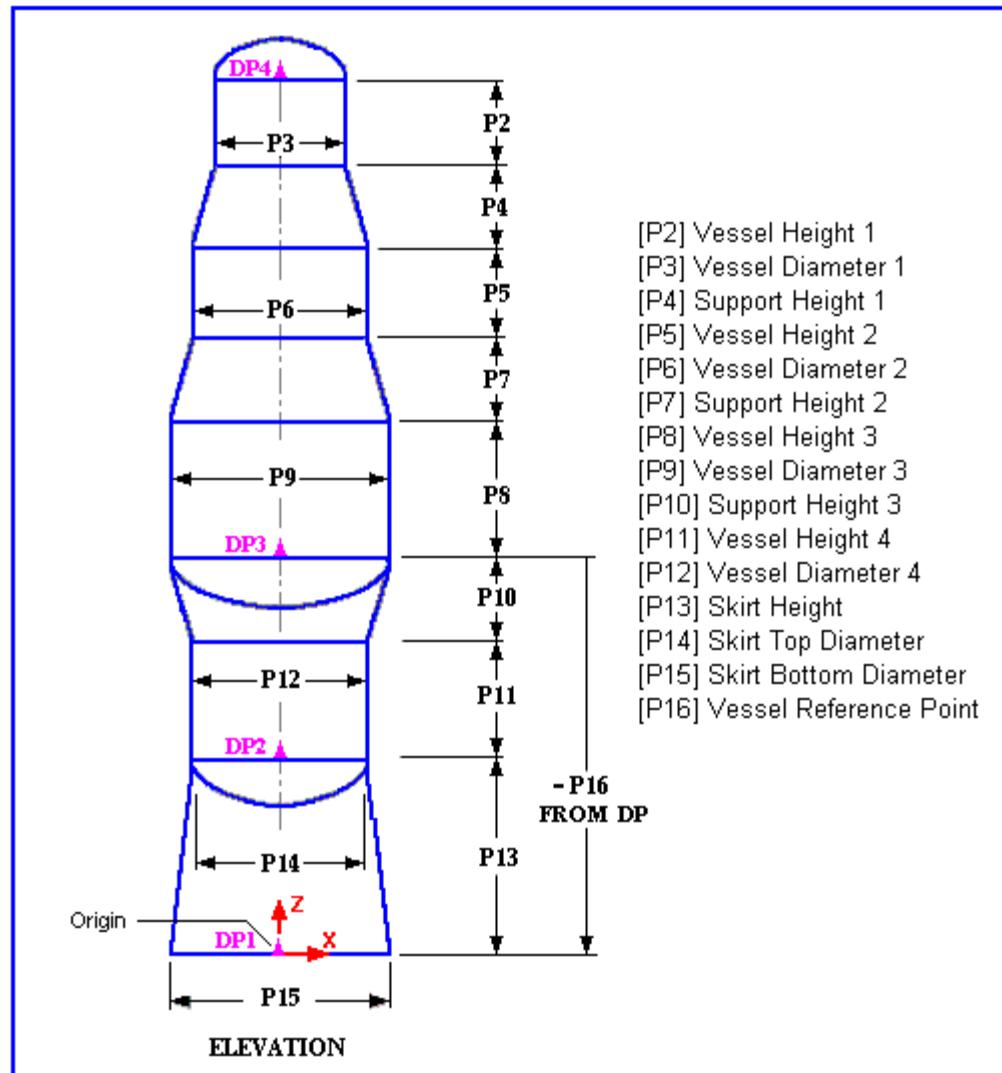
**Output** = "ComplexVCylEqpSkCompControlPoint" **Description** = "Control Point of Complex Vertical Cylindrical Equipment Skirt Component"

### Aspects = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = ReferenceGeometry



## SP3DE\_210CompAsm

### Description:

**Symbol Name:** SP3DE\_210CompAsm.CE\_210CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E210\_SVerCylSkirtCompAsm

**User Class Name:** Simple Vertical Cylindrical Equipment Skirt Component (E210)

**Part Number:** E210-Vertical Tank\_Asm

### Inputs, Outputs, and Aspects:

ProgID: SP3DE\_210CompAsm.CE\_210CSym

#### Inputs = 7

**Input** = "VesselHeight"   **Description** = "Shell Height P2"

**Input** = "VesselDiameter"   **Description** = "Shell Diameter P3"

**Input** = "SkirtTopDiameter"   **Description** = "Support Top Diameter P5"

**Input** = "SkirtBottomDiameter"   **Description** = "Support Bottom Diameter P6"

**Input** = "SkirtHeight"   **Description** = "Skirt Height P7"

**Input** = "VesselStartHeight"   **Description** = "Vessel Start Height P4"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

#### Outputs = 8

**Output** = "TopDome"   **Description** = "Top Dome of Equipment"

**Output** = "BottomDome"   **Description** = "Bottom Dome of Equipment"

**Output** = "VesselBody"   **Description** = "Vessel Body"

**Output** = "TopDomeIns"   **Description** = "Insulation for Top Dome of Equipment"

**Output** = "BottomDomeIns"   **Description** = "Insulation for Bottom Dome of Equipment"

**Output** = "VesselBodyIns"   **Description** = "Insulation for Vessel Body"

**Output** = "DefaultSurface"   **Description** = "Default Surface at the Bottom"

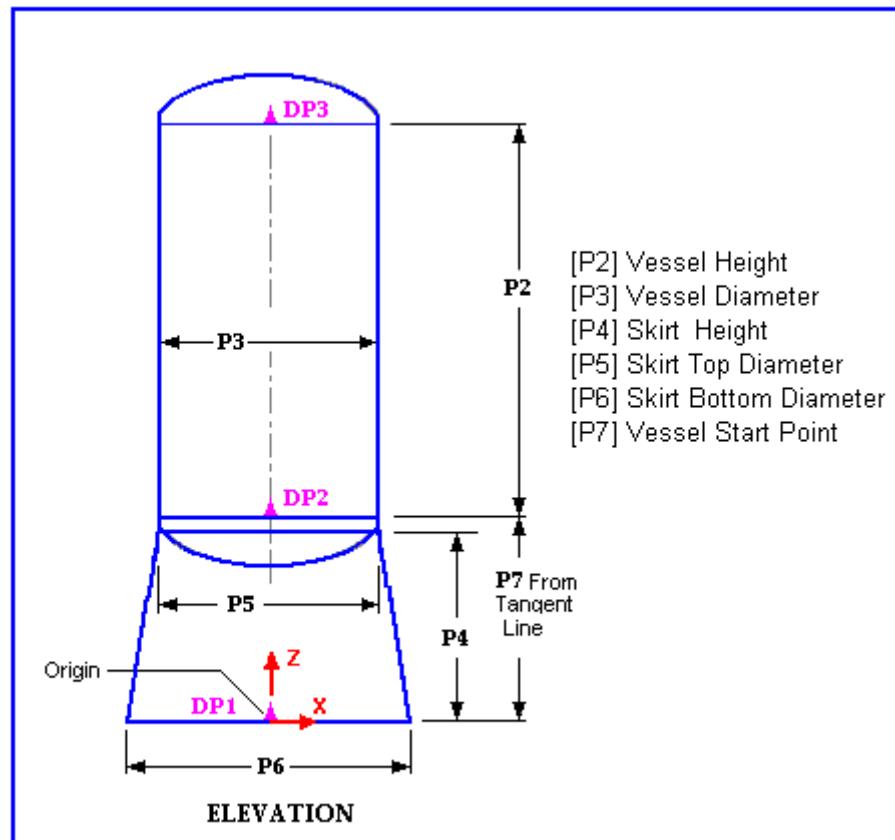
**Output** = "VesselwithSkirtCompControlPoint"   **Description** = "Control Point of Vessel with Skirt Component"

#### Aspects = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = ReferenceGeometry



# SP3DE\_215CompAsm

## Description:

**Symbol Name:** SP3DE\_215CompAsm.CE\_215CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** SP3DE\_215CompAsm.CE\_215CSym

**User Class Name:** Simple Vertical Cylindrical Equipment With Legs Component (E215)

**Part Number:** E215-Vertical Tank with Legs\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_215CompAsm.CE\_215CSym

### Inputs = 9

**Input** = "VesselHeight"   **Description** = "Shell Height P2"

**Input** = "VesselDiameter"   **Description** = "Shell Diameter P3"

**Input** = "SupportAngularLocation"   **Description** = "Support Angular Location P4"

**Input** = "NumberOfSupports"   **Description** = "Number Of Supports P5"

**Input** = "SupportHeight"   **Description** = "Support Height P6"

**Input** = "SupportLength"   **Description** = "Support Length P7"

**Input** = "SupportThickness"   **Description** = "Support Thickness P8"

**Input** = "VesselStartPoint"   **Description** = "Vessel Start Point P9"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

### Outputs = 8

**Output** = "VesselTopEllipBody"   **Description** = "Vessel Top Elliptical Body"

**Output** = "VesselCylBody"   **Description** = "Vessel cylindrical body"

**Output** = "VesselBottomEllipBody"   **Description** = "Vessel Bottom Elliptical Body"

**Output** = "VesselTopEllipBodyIns"   **Description** = "Vessel Top Elliptical Body Insulation"

**Output** = "VesselCylBodyIns"   **Description** = "Vessel cylindrical body Insulation"

**Output** = "VesselBottomEllipBodyIns"   **Description** = "Vessel Bottom Elliptical Body Insulation"

**Output** = "SimVerCylEqpLegCompControlPoint"   **Description** = "Control Point of Simple Verticle Cylinder Equipment Legs Component"

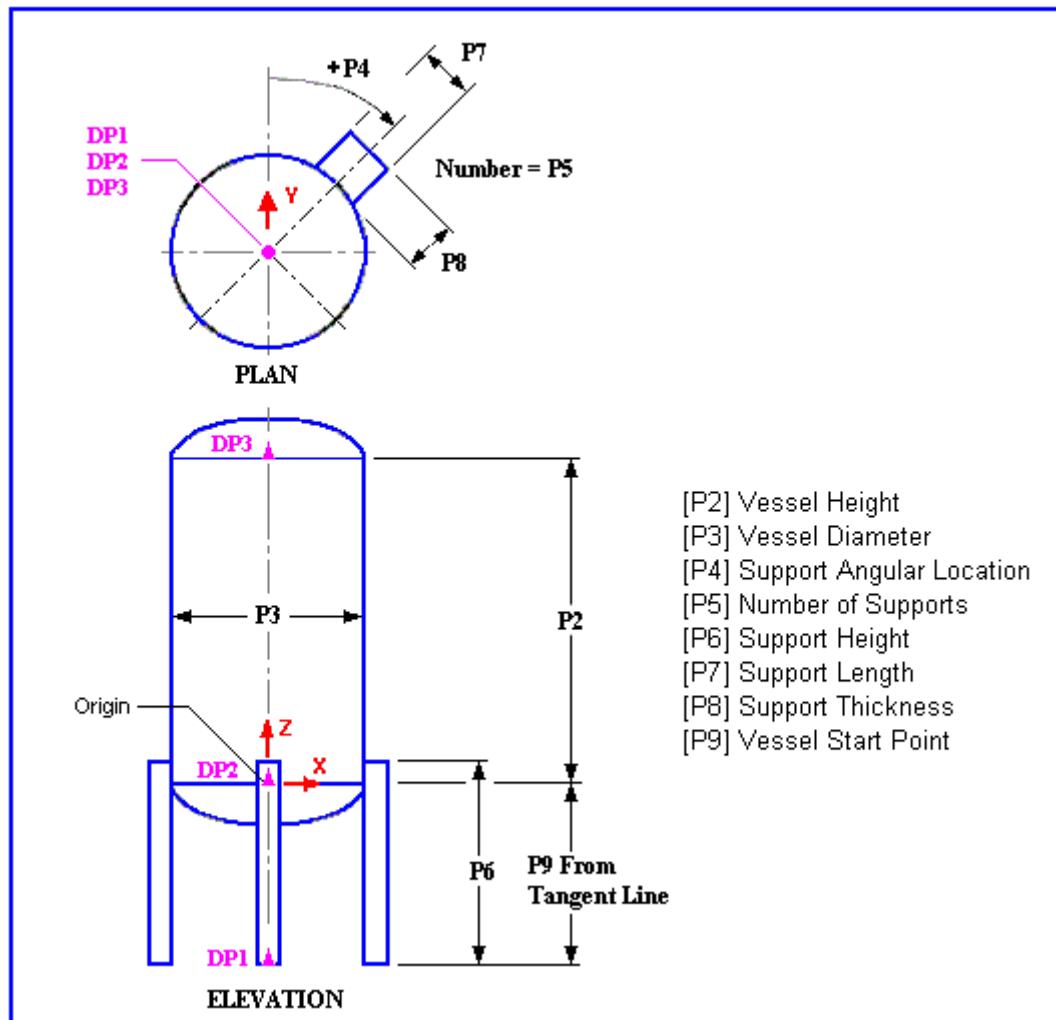
**Output** = "DefaultSurface"   **Description** = "Default Surface Simple Vertical Cylindrical Equiment Legs"

### Aspects = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = ReferenceGeometry



## SP3DE\_230CompAsm

### **Description:**

**Symbol Name:** SP3DE\_230CompAsm.CE\_230CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E230\_SphericalVesselCompAsm

**User Class Name:** Spherical Equipment Component (E230)

**Part Number:** E230-Spherical Tank\_Asm

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_230CompAsm.CE\_230CSym

#### **Inputs = 9**

**Input** = "VesselDiameter"   **Description** = "Vessel Diameter"

**Input** = "SupportAngularLocation"   **Description** = "Support Angular Location"

**Input** = "NumberOfSupports"   **Description** = "Number Of Supports"

**Input** = "VesselCenterHeight"   **Description** = "Vessel Center Height"

**Input** = "SupportLength"   **Description** = "Support Length"

**Input** = "SupportThickness"   **Description** = "Support Thickness"

**Input** = "SupportRadialLocation"   **Description** = "Support Radial Location"

**Input** = "SupportHeight"   **Description** = "Support Height"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

#### **Outputs = 4**

**Output** = "InsulatedBody"   **Description** = "Insulated Body"

**Output** = "Vessel"   **Description** = "Vessel"

**Output** = "DefaultSurface"   **Description** = "Default Surface"

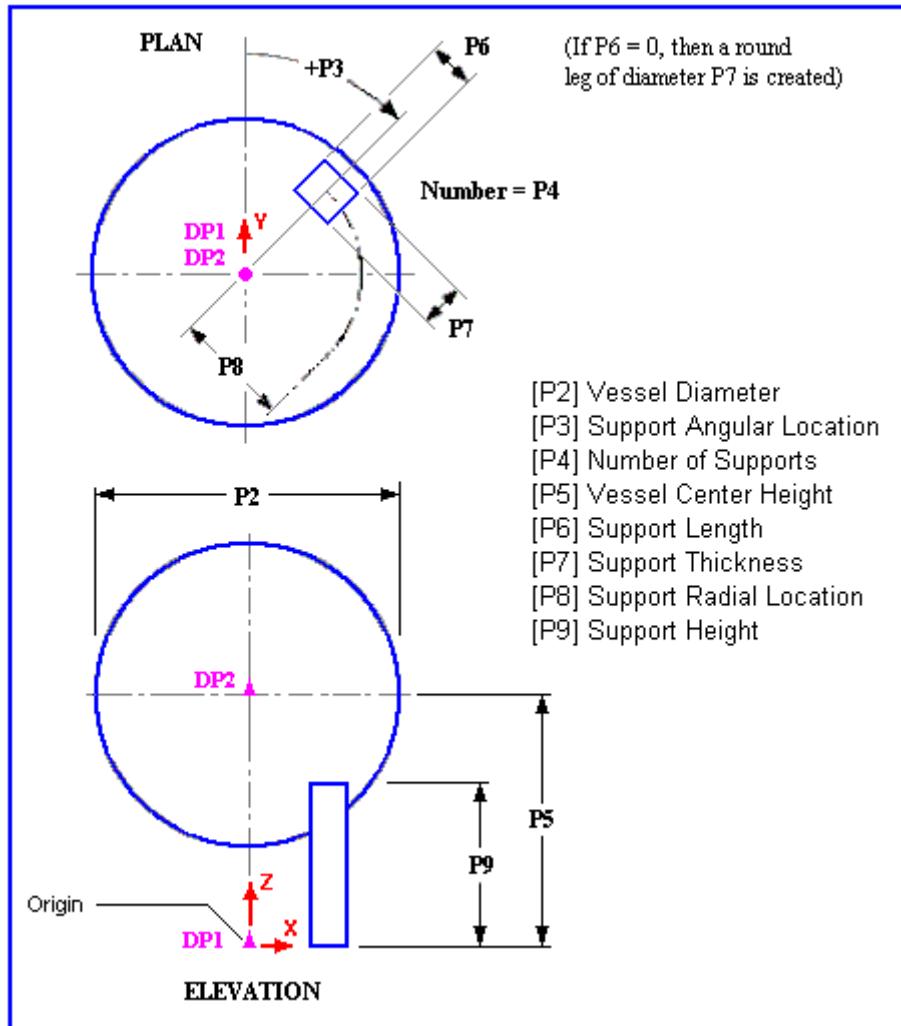
**Output** = "SphericalVesselCompControlPoint"   **Description** = "Control Point of Spherical Vessel Component"

#### **Aspects = 3**

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = ReferenceGeometry



# SP3DE\_240CompAsm

## Description:

**Symbol Name:** SP3DE\_240CplxAsm.CE\_240CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E240\_ComHorCylCompAsm

**User Class Name:** Complex Horizontal Cylindrical Equipment Component (E240)

**Part Number:** E240-Horizontal Cylindrical Tank\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_240CplxAsm.CE\_240CSym

### Inputs = 14

**Input** = "VesselLength" **Description** = "Vessel Length P2"

**Input** = "VesselDiameter" **Description** = "Vessel Diameter P3"

**Input** = "BootHorLocation" **Description** = "Boot Horizontal Location P4"

**Input** = "BootVertLocation" **Description** = "Boot Vertical Location P5"

**Input** = "BootDiameter" **Description** = "Boot Diameter P6"

**Input** = "BootAngularLocation" **Description** = "Boot Angular Location P7"

**Input** = "VesselCenterHeight" **Description** = "Vessel Center Height P8"

**Input** = "FirstSupportLocation" **Description** = "First Support Location P9"

**Input** = "SecondSupportLocation" **Description** = "Second Support Location P10"

**Input** = "ThirdSupportLocation" **Description** = "Third Support Location P11"

**Input** = "SupportThickness" **Description** = "Support Thickness P12"

**Input** = "SupportLength" **Description** = "Support Length P13"

**Input** = "StiffenerRadius" **Description** = "Stiffener Radius P14"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

### Outputs = 8

**Output** = "Vessel" **Description** = "Cylindrical Vessel Body"

**Output** = "LHSxDome" **Description** = "Left Hand Side Dome"

**Output** = "RHSxDome" **Description** = "Right Hand Side Dome"

**Output** = "InsulatedVessel" **Description** = "Insulated Vessel"

**Output** = "InsLHSxDome" **Description** = "Insulation for Left Hand Side Dome"

**Output** = "InsRHSxDome" **Description** = "Insulation for Right Hand Side Dome"

**Output** = "ComplexHorCylEqpCompControlPoint" **Description** = "Control Point of Complex Horizontal Cylindrical Vessel Component"

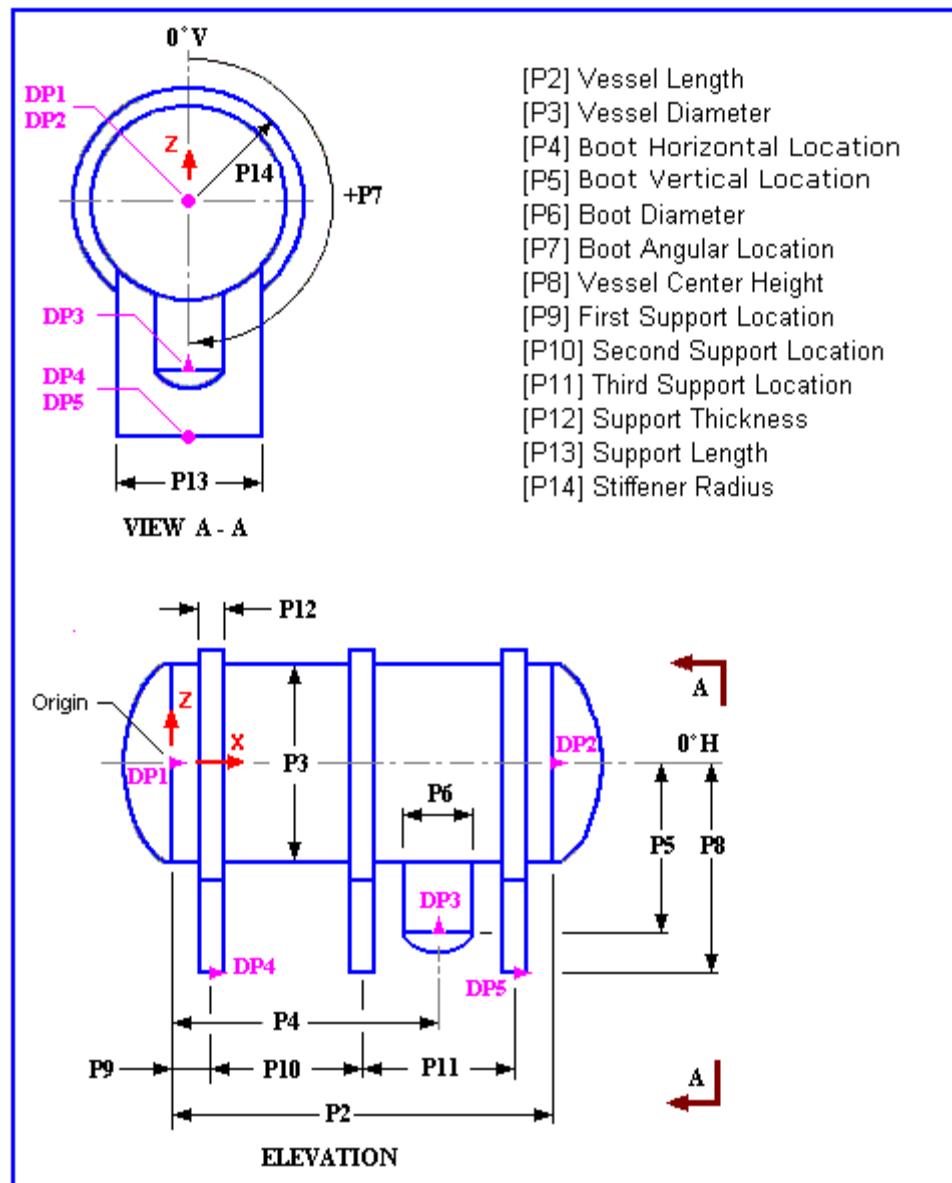
**Output** = "DefaultSurface" **Description** = "Default Surface Complex Horizontal Cylindrical Vessel Component"

### Aspects = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = ReferenceGeometry



## SP3DE\_245CompAsm

### **Description:**

**Symbol Name:** SP3DE\_245CompAsm.CE\_245CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E245\_SimHorCylVesCompAsm

**User Class Name:** Simple Horizontal Cylindrical Equipment Component (E245)

**Part Number:** E245-Horizontal Cylindrical Tank\_Asm

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_245CompAsm.CE\_245CSym

#### **Inputs = 8**

**Input = "VesselLength" Description = "Vessel Length"**

**Input = "VesselDiameter" Description = "Vessel Diameter"**

**Input = "VesselCenterHeight" Description = "Vessel CenterHeight"**

**Input = "FirstSupportLocation" Description = "First Support Location"**

**Input = "SecondSupportLocation" Description = "Second Support Location"**

**Input = "SupportThickness" Description = "Support Thickness"**

**Input = "SupportLength" Description = "Support Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

#### **Outputs = 8**

**Output = "Vessel" Description = "Vessel"**

**Output = "VesselLEH" Description = "Vessel Left Elliptical Head"**

**Output = "VesselREH" Description = "Vessel Right Elliptical Head"**

**Output = "DefaultSurface" Description = "Default Surface"**

**Output = "SimpleHorCylVesselCompControlPoint" Description = "Control Point of Simple Horizontal Cylinder Vessel Component"**

**Output = "InsulatedVessel" Description = "Insulated Vessel"**

**Output = "InsulatedVesselLEH" Description = "InsulatedVessel Left Elliptical Head"**

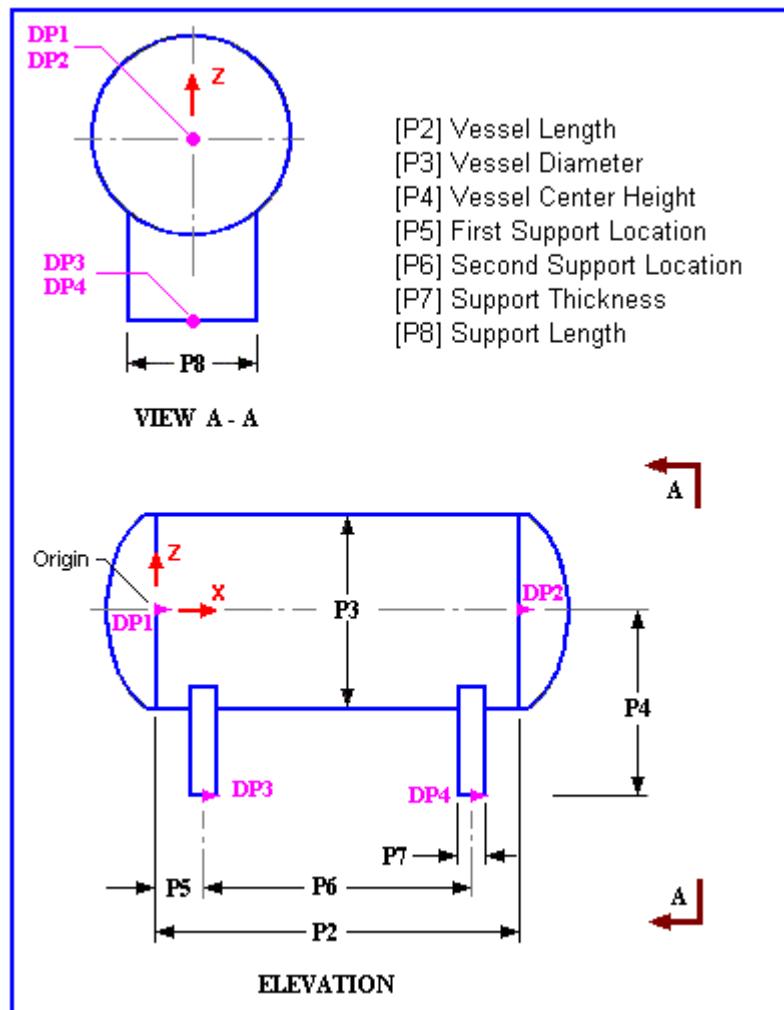
**Output = "InsulatedVesselREH" Description = "InsulatedVessel Right Elliptical Head"**

#### **Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = ReferenceGeometry**



# SP3DE\_305CompAsm

## Description:

**Symbol Name:** SP3DE\_305CompAsm.CE\_305CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E305\_HorShTubeExCompAsm

**User Class Name:** Horizontal Shell Tube Exchanger Component1 (E305)

**Part Number:** E305-Horizontal Shell & Tube Exchanger\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_305CompAsm.CE\_305CSym

### Inputs = 31

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"  
**Input** = "ExchangerDiameter"   **Description** = "Exchanger Diameter P2"  
**Input** = "BundleFlangeTk"   **Description** = "Exchanger End Flange Thick P3"  
**Input** = "BundleFlangeDia"   **Description** = "Exchanger End Flange Dia P4"  
**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Left Flange Thick P5"  
**Input** = "ExchangerFlangeTk2"   **Description** = "Exchanger Right Flange Thick P6"  
**Input** = "ExpansionJointPosition"   **Description** = "Expansion Joint Position P7"  
**Input** = "ExpansionJointThickness"   **Description** = "Expansion Joint Thickness P8"  
**Input** = "ExpansionJointDiameter"   **Description** = "Expansion Joint Diameter P9"  
**Input** = "BundlePullingLength"   **Description** = "Exchanger End Length P10"  
**Input** = "BotSupportCenFromPP"   **Description** = "Bot Support Cen From Origin P11"  
**Input** = "BottomSupportCentoCen"   **Description** = "Cen to Cen between Support P12"  
**Input** = "Support1Thickness"   **Description** = "Support1 Thickness P13"  
**Input** = "Support2Thickness"   **Description** = "Support2 Thickness P14"  
**Input** = "BottomSupportHeight"   **Description** = "Bottom Support Height P15"  
**Input** = "SupportLength"   **Description** = "Support Length P16"  
**Input** = "TopSupportCenFromPP"   **Description** = "Top Support Cen From Origin P17"  
**Input** = "TopSupportCentoCen"   **Description** = "Top Support Cen to Cen P18"  
**Input** = "TopSupportHeight"   **Description** = "Top Support Height P19"  
**Input** = "FrontEndFlangeDia"   **Description** = "Front End Flange Diameter P30"  
**Input** = "FrontEndFlangeTk1"   **Description** = "Front End Flange Tk 1 P31"  
**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"  
**Input** = "FrontEndLength2"   **Description** = "FrontEndLength2 P33"  
**Input** = "FrontEndFlangeTk2"   **Description** = "FrontEndFlangeTk2 P34"  
**Input** = "FrontEndFlangeTk3"   **Description** = "FrontEndFlangeTk3 P35"  
**Input** = "RearEndFlangeDia"   **Description** = "Rear End Flange Diameter P40"  
**Input** = "RearEndFlangeTk1"   **Description** = "Rear End Flange Tk P41"  
**Input** = "RearEndLength"   **Description** = "Rear End Length P42"  
**Input** = "RearEndFlangeTk2"   **Description** = "Rear End Flange Tk P43"

**Input = "RearEndFlangeTk3" Description = "Rear End Flange Tk P44"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 27**

**Output = "ExchangerCyl" Description = "Exchanger Body Cylinder"**  
**Output = "ExchangerRearFlange" Description = "Exchanger Rear Flange"**  
**Output = "ExchangerFrontFlange1" Description = "Exchanger Front Flange 1"**  
**Output = "ExchangerFrontFlange2" Description = "Exchanger Front Flange 2"**  
**Output = "ExchFrontEndFlange1" Description = "Exchanger Front End Flange1"**  
**Output = "ExchFrontEndCyl" Description = "Exchanger Front End Cylinder"**  
**Output = "ExchFrontEndFlange2" Description = "Exchanger Front End Flange2"**  
**Output = "ExchFrontEndFlange3" Description = "Exchanger Front End Flange3"**  
**Output = "ExchRearEndFlange1" Description = "Exchanger Rear End Flange1"**  
**Output = "ExchRearEndCyl" Description = "Exchanger Rear End Cyl"**  
**Output = "ExchRearEndFlange2" Description = "Exchanger Rear End Flange2"**  
**Output = "ExchRearEndFlange3" Description = "Exchanger Rear End Flange3"**  
**Output = "ExchangerCyllns" Description = "Exchanger Body Cylinder Insulation"**  
**Output = "ExchangerRearFlangeIns" Description = "Exchanger Rear Flange Insulation"**  
**Output = "ExchangerFrontFlange1Ins" Description = "Exchanger Front Flange1Insulation"**  
**Output = "ExchangerFrontFlange2Ins" Description = "Exchanger Front Flange 2Insulation"**  
**Output = "ExchFrontEndFlange1Ins" Description = "Exchanger Front End Flange1Insulation"**  
**Output = "ExchFrontEndCylIns" Description = "Exchanger Front End Cylinder Insulation"**  
**Output = "ExchFrontEndFlange2Ins" Description = "Exchanger Front End Flange2 Insulation"**  
**Output = "ExchFrontEndFlange3Ins" Description = "Exchanger Front End Flange3 Insulation"**  
**Output = "ExchRearEndFlange1Ins" Description = "Exchanger Rear End Flange1 Insulation"**  
**Output = "ExchRearEndCylIns" Description = "Exchanger Rear End Cyl Insulation"**  
**Output = "ExchRearEndFlange2Ins" Description = "Exchanger Rear End Flange2 Insulation"**  
**Output = "ExchRearEndFlange3Ins" Description = "Exchanger Rear End Flange3 Insulation"**  
**Output = "BundlePulling" Description = "BundlePulling"**  
**Output = "DefaultSurface" Description = "Default Surface Horizontal Shell and Tube Exchanger Component"**  
**Output = "HorShTubeExCompControlPoint" "Same name is to be used in CPhysical**  
**Description = "Control Point of Horizontal Shell and Tube Exchanger Component"**

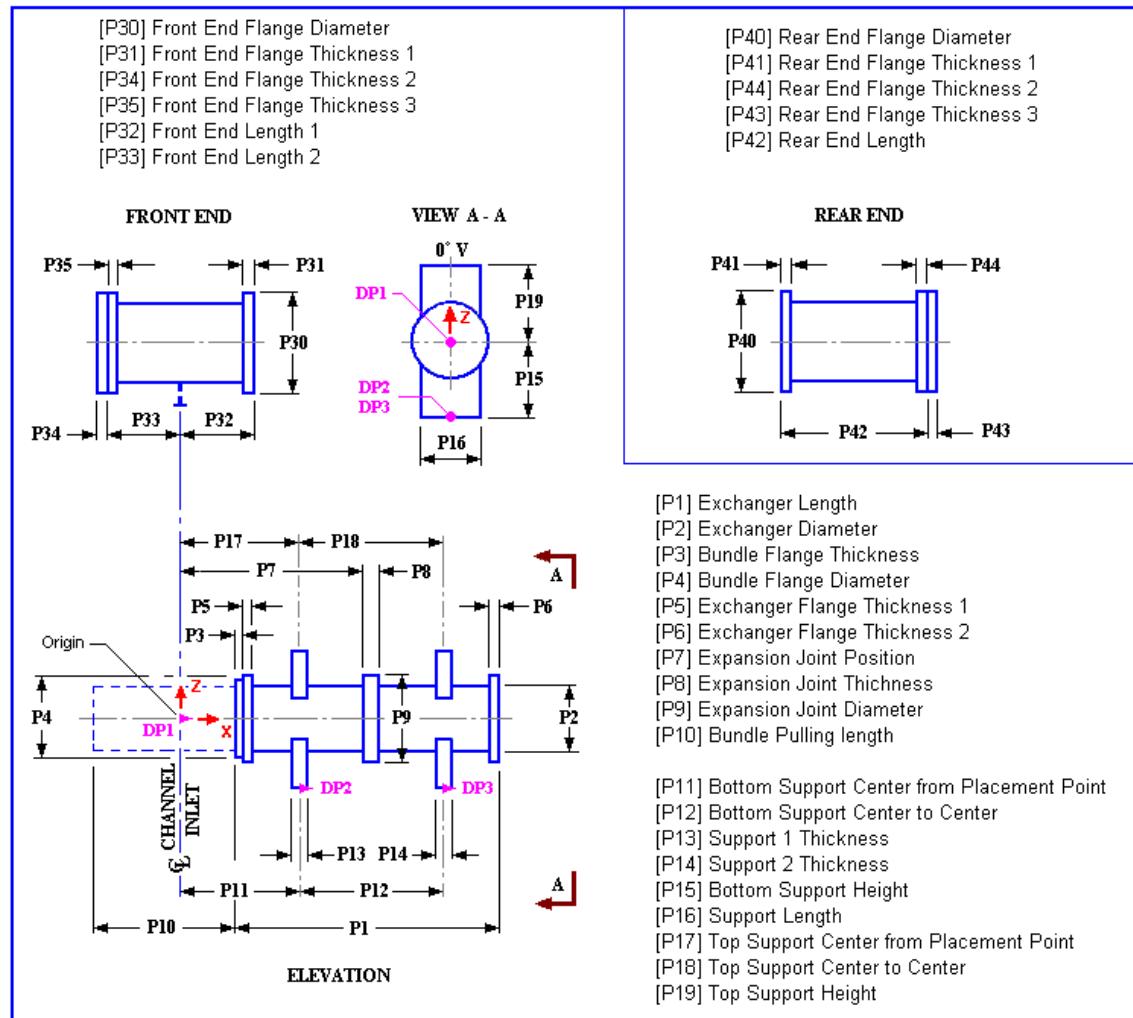
**Aspects = 4**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Maintenance**

**Aspect = ReferenceGeometry**



# SP3DE\_307CompAsm

**Description:**

**Symbol Name:** SP3DE\_307CompAsm.CE\_307CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E307\_KettleExchCompAsm

**User Class Name:** Kettle Heat Exchanger Component (E307)

**Part Number:** E307-Kettle Exchanger\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_307CompAsm.CE\_307CSym

**Inputs = 22**

**Input** = "ExchangerLength" **Description** = "Exchanger Length P1"

**Input** = "ExchangerNeckLength" **Description** = "Exchanger Neck Length P2"

**Input** = "ExchangerNeckDiameter" **Description** = "Exchanger Neck Diameter P3"

**Input** = "ExchangerTaperLength" **Description** = "Exchanger Taper Length P4"

**Input** = "ExchangerDiameter" **Description** = "Exchanger Diameter P5"

**Input** = "BundleFlangeTk" **Description** = "Bundle Flange Thickness P6"

**Input** = "BundleFlangeDia" **Description** = "Bundle Flange Diameter P7"

**Input** = "ExchangerFlangeTk1" **Description** = "Exchanger Flange Thickness P8"

**Input** = "BundlePullingLength" **Description** = "Bundle Pulling Length P9"

**Input** = "BotSupportCenFromPP" **Description** = "Bot Support Center FromPP P10"

**Input** = "BottomSupportCentoCen" **Description** = "Bottom  
SupportCentertoCenterP11"

**Input** = "Support1Thickness" **Description** = "Support 1 Thickness P12"

**Input** = "Support2Thickness" **Description** = "Support 2 Thickness P13"

**Input** = "BottomSupportHeight" **Description** = "BottomSupportHeight P14"

**Input** = "SupportLength" **Description** = "SupportLength P15"

**Input** = "FrontEndFlangeDia" **Description** = "FrontEndFlangeDia P30"

**Input** = "FrontEndFlangeTk1" **Description** = "FrontEndFlangeTk1 P31"

**Input** = "FrontEndLength1" **Description** = "FrontEndLength1 P32"

**Input** = "FrontEndLength2" **Description** = "FrontEndLength2 P33"

**Input** = "FrontEndFlangeTk2" **Description** = "FrontEndFlangeTk2 P34"

**Input** = "FrontEndFlangeTk3" **Description** = "FrontEndFlangeTk3 P35"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

**Outputs = 17**

**Output** = "ExchangerRHSEnd" **Description** = "Exchanger Right Hand Side End"

**Output** = "ExchangerBody" **Description** = "Exchanger Body"

**Output** = "ExTaperBody" **Description** = "Exchanger Taper Body"

**Output** = "ExneckBody" **Description** = "Exchanger Neck Portion"

**Output** = "ExchangerFlange" **Description** = "Exchanger Flange"

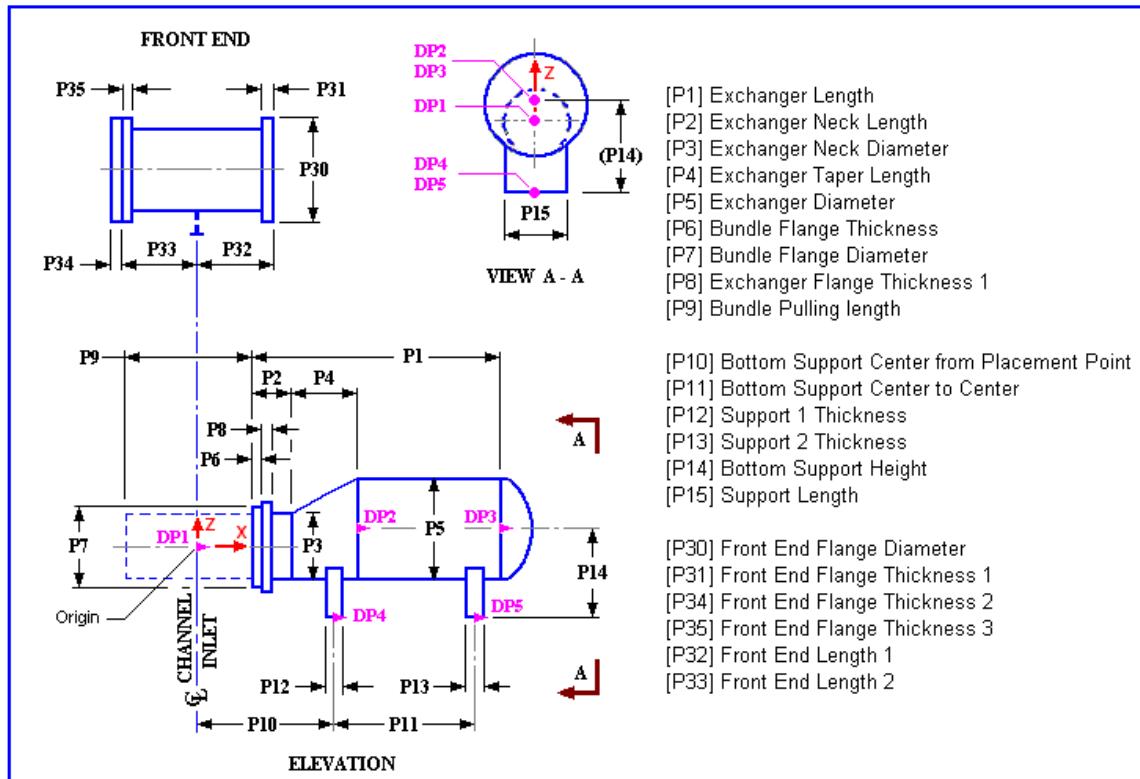
**Output** = "BundleFlange" **Description** = "Bundle Flange"

**Output** = "ExchFrontEndRHSFlange" **Description** = "Exchanger Front End Right  
Hand Side Flange"

**Output = "ExFrontEndBody" Description = "Exchanger Front End Body"**  
**Output = "ExFrontEndBodyIFlange" Description = "Exchanger Front End Body Intermediate Flange"**  
**Output = "ExchFrontEndLHSFlange" Description = "Exchanger Front End Left Hand Side Flange"**  
**Output = "DefaultSurface" Description = "Default Surface of Kettle Exchanger Component"**  
**Output = "KettleExchangerCompControlPoint" Description = "Control Point of Kettle Exchanger Component"**  
**Output = "ExBodyInsul" Description = "ExchangerBody Insulation"**  
**Output = "ExTapBodyInsul" Description = "Exchanger Taper Body Insulation"**  
**Output = "ExneckBodyInsul" Description = "Exchanger Neck Portion Insulation"**  
**Output = "ExFrontEndIns" Description = "Exchanger front end Insulation"**  
**Output = "BundlePullCylin" Description = "Bundle Pulling Cylinder"**

**Aspects = 4**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Maintenance**  
**Aspect = ReferenceGeometry**



# SP3DE\_310CompAsm

**Description:**

**Symbol Name:** SP3DE\_310CompAsm.CE\_310CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E310\_VerShTubeExCompAsm

**User Class Name:** Vertical Shell Tube Exchanger Component (E310)

**Part Number:** E310-Vertical Shell & Tube Exchanger\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_310CompAsm.CE\_310CSym

**Inputs = 29**

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"  
**Input** = "ExchangerDiameter"   **Description** = "Exchanger Diameter P2"  
**Input** = "BundleFlangeTk"   **Description** = "Exchanger End Flange Thick P3"  
**Input** = "BundleFlangeDia"   **Description** = "Exchanger End Flange Dia P4"  
**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Left Flange Thick P5"  
**Input** = "ExchangerFlangeTk2"   **Description** = "Exchanger Right Flange Thick P6"  
**Input** = "ExtensionJointPosition"   **Description** = "Extension Joint Position P7"  
**Input** = "ExtensionJointThickness"   **Description** = "Extension Joint Thickness P8"  
**Input** = "ExtensionJointDiameter"   **Description** = "Extension Joint Diameter P9"  
**Input** = "BundlePullingLength"   **Description** = "Exchanger End Length P10"  
**Input** = "SupportAngularLocation"   **Description** = "Support Angular Location P11"  
**Input** = "NumberOfSupports"   **Description** = "Number Of Supports P12"  
**Input** = "SupportDepth"   **Description** = "Support Depth P13"  
**Input** = "SupportFromOrigin"   **Description** = "Support From Origin P14"  
**Input** = "SupportTopWidth"   **Description** = "Support Top Width P15"  
**Input** = "SupportBottomWidth"   **Description** = "Support Bottom Width P16"  
**Input** = "SupportThickness"   **Description** = "Support Thickness P17"  
**Input** = "FrontEndFlangeDia"   **Description** = "Front End Flange Diameter P30"  
**Input** = "FrontEndFlangeTk1"   **Description** = "Front End Flange Tk 1 P31"  
**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"  
**Input** = "FrontEndLength2"   **Description** = "FrontEndLength2 P33"  
**Input** = "FrontEndFlangeTk2"   **Description** = "FrontEndFlangeTk2 P34"  
**Input** = "FrontEndFlangeTk3"   **Description** = "FrontEndFlangeTk3 P35"  
**Input** = "RearEndFlangeDia"   **Description** = "Rear End Flange Diameter P40"  
**Input** = "RearEndFlangeTk1"   **Description** = "Rear End Flange Tk P41"  
**Input** = "RearEndLength"   **Description** = "Rear End Length P42"  
**Input** = "RearEndFlangeTk2"   **Description** = "Rear End Flange Tk P43"  
**Input** = "RearEndFlangeTk3"   **Description** = "Rear End Flange Tk P44"  
**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

**Outputs = 9**

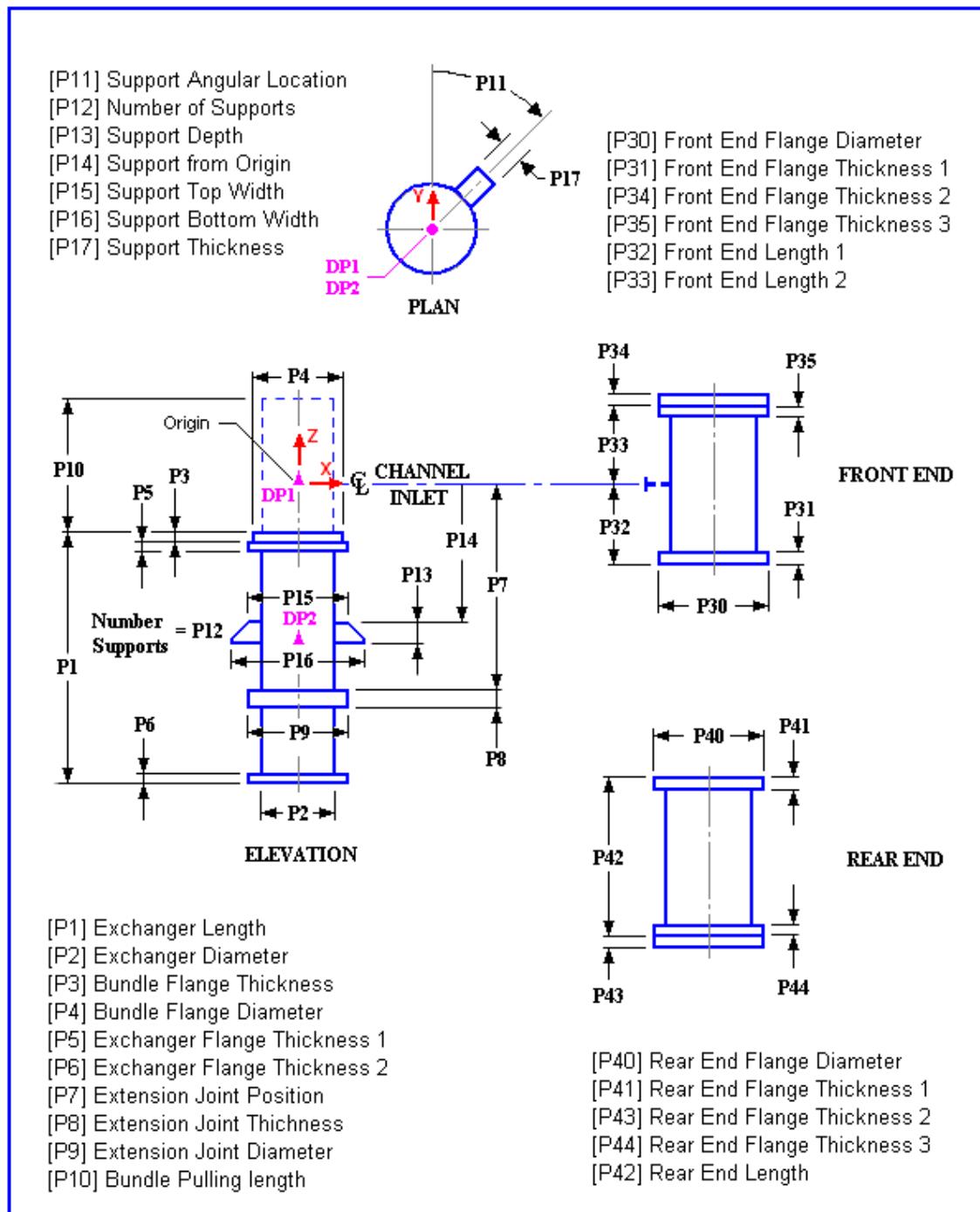
**Output** = "ExchangerBody"   **Description** = "ExchangerBody"

**Output** = "FrontEndBody"   **Description** = "FrontEndBody"

**Output** = "RearEndBody"   **Description** = "RearEndBody"  
**Output** = "ExchanBodyIns"   **Description** = "Exchanger Body Ins"  
**Output** = "FrontEndBodyIns"   **Description** = "Front End Body Ins"  
**Output** = "RearEndBodyIns"   **Description** = "Rear End Body Ins"  
**Output** = "BundlePulling"   **Description** = "Bundle Pulling Cylinder"  
**Output** = "DefaultSurface"   **Description** = "Default Surface Horizontal Shell and  
Tube Exchanger Component"  
**Output** = "VerShTubeExCompControlPoint"   **Description** = "Control Point of Vert  
Shell Tube Exchanger Component"

**Aspects** = 4

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Maintenance  
**Aspect** = ReferenceGeometry



# SP3DE\_320CompAsm

## Description:

**Symbol Name:** SP3DE\_320CompAsm.CE\_320CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E320\_DouPipeExchCompAsm

**User Class Name:** Double Pipe Exchanger Component (E320)

**Part Number:** E320-Double Pipe Exchanger\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_320CompAsm.CE\_320CSym

### Inputs = 13

**Input** = "BlockEndFromPP"   **Description** = "Dist from BlockEnd to PP"

**Input** = "PipeEndFromPP"   **Description** = "Dist from PipeEnd to PP"

**Input** = "PipeCentoCen"   **Description** = "Dist from Pipe Cen to Cen"

**Input** = "PipeDiameter"   **Description** = "Diameter of Pipe"

**Input** = "BlockLength"   **Description** = "Block Length"

**Input** = "BlockHeight"   **Description** = "Block Height"

**Input** = "BlockWidth"   **Description** = "Block Width"

**Input** = "BundlePullingLength"   **Description** = "Bundle Pulling Length"

**Input** = "Support1CenFromPP"   **Description** = "Dist from Support1 Cen to PP"

**Input** = "SupportCentoCen"   **Description** = "Support Cen to Cen"

**Input** = "SupportHeight"   **Description** = "Height of Support"

**Input** = "SupportThickness"   **Description** = "Thickness of Support"

**Input** = "SupportWidth"   **Description** = "Width of Support"

### Outputs = 6

**Output** = "Pipe1"   **Description** = "Pipe1"

**Output** = "Pipe2"   **Description** = "Pipe2"

**Output** = "Block"   **Description** = "Block"

**Output** = "DefaultSurface"   **Description** = "Default Surface"

**Output** = "DouPipeExchangerControlPoint"   **Description** = "Control Point of Double Pipe Exchanger "

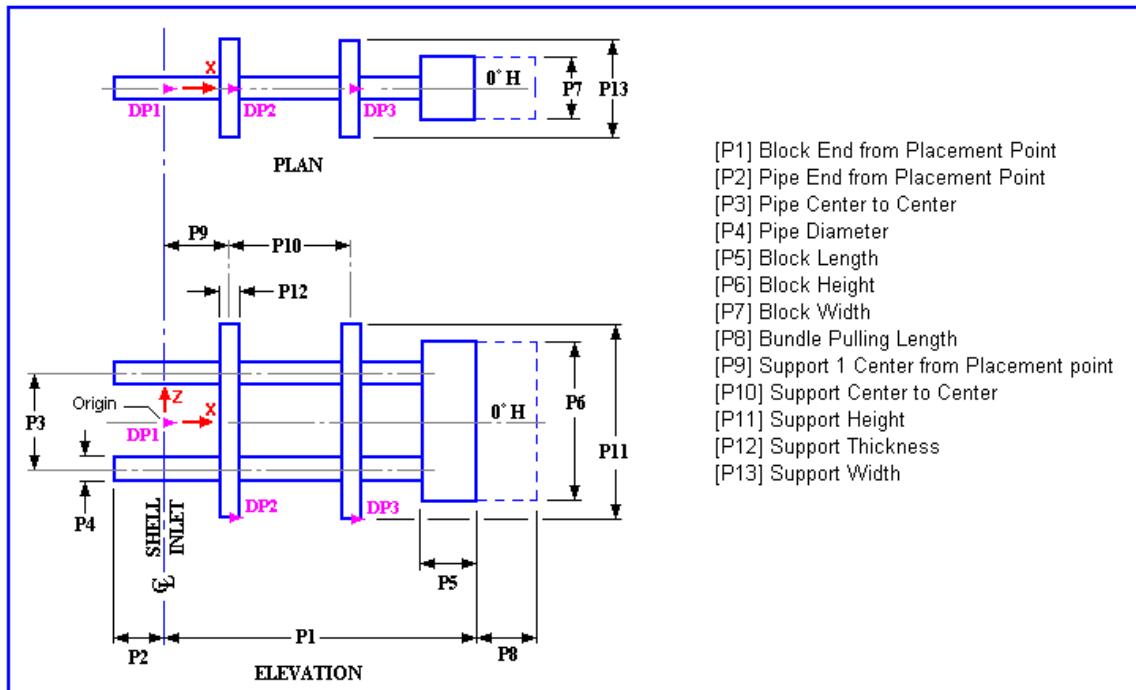
**Output** = "BundlePulling"   **Description** = "BundlePulling"

### Aspects = 3

**Aspect** = SimplePhysical

**Aspect** = Maintenance

**Aspect** = ReferenceGeometry



# SP3DE\_325CompAsm

## Description:

**Symbol Name:** SP3DE\_325CompAsm.CE\_325CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E325\_PlateExchgerCompAsm

**User Class Name:** Plate Exchanger Component (E325)

**Part Number:** E325-Plate Exchanger\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_325CompAsm.CE\_325CSym

### Inputs = 15

**Input and description** = "BotPlate1toPP", "Dist from Bottom of Plate1 to PP"

**Input and description** = "Plate1Height", "Height of Plate1",

**Input and description** = "Plate1Thickness", "Thickness of Plate1",

**Input and description** = "PlatesWidth", "Width of Plate"

**Input and description** = "ExchangerLength", "Length of Exchanger",

**Input and description** = "ExchangerHeight", "Height of Exchanger"

**Input and description** = "ExchangerWidth", "Width of Exchanger",

**Input and description** = "Plate2Height", "Height of Plate2",

**Input and description** = "Plate2Thickness", "Thickness of Plate2",

**Input and description** = "RodsLength", "Length of Rod",

**Input and description** = "RodsDiameter", "Diameter of Rod",

**Input and description** = "BotSidePlatetoRod2Cen", "Dist from Bottom of SidePlate to Rod2 Cen",

**Input and description** = "RodsCentoCen", "Rods Centre to Centre dist"

**Input and description** = "SidePlateThickness", "Thickness of SidePlate",

**Input and description** = "SidePlateWidth", "Width of Side Plate ",

### Outputs = 12

**Output and description** = "Plane1", "Plane 1"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Plane2", "Plane 2"

**Output and description** = "Plane3", "Plane 3"

**Output and description** = "Plane4", "Plane 4"

**Output and description** = "Plane5", "Plane 5"

**Output and description** = "ExchangerBody", "Exchanger Body"

**Output and description** = "Plate2", "Plate 2"

**Output and description** = "Rod1", "Rod 1"

**Output and description** = "Rod2", "Rod 2"

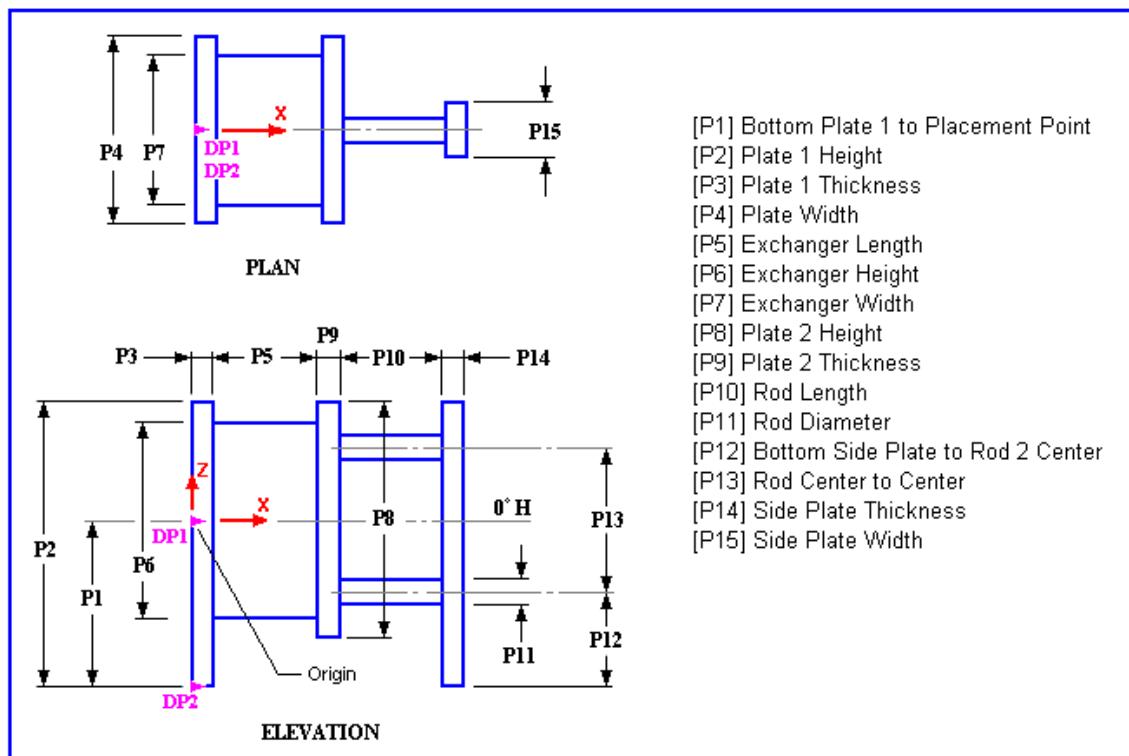
**Output and description** = "SidePlate", "Side Plate"

**Output and description** = "PlateExchangerCompControlPoint", "Control Point of Plate Exchanger Component"

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "ReferenceGeometry", "ReferenceGeometry"**



# SP3DE\_332CompAsm

## Description:

**Symbol Name:** SP3DE\_332CompAsm.CE\_332CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E332\_InDAirCoolerCompAsm

**User Class Name:** Induced Draft Air Cooler Component (E332)

**Part Number:** E332-Air Cooler\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_332CompAsm.CE\_332CSym

### Inputs = 14

**Input** = "CoolerWidth"   **Description** = "Width of Cooler"

**Input** = "CoolerLength"   **Description** = "Length of Cooler"

**Input** = "CoolerHeight"   **Description** = "Height of Cooler"

**Input** = "PlenumLength"   **Description** = "Length of Plenum"

**Input** = "PlenumHeight"   **Description** = "Height of Plenum"

**Input** = "InletBlockLength"   **Description** = "Inlet Block Length"

**Input** = "BlockToptоСoolTop"   **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight"   **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP"   **Description** = "Cooler Left from PP"

**Input** = "NoOfFans"   **Description** = "Number of Fans"

**Input** = "Fan1CentoPP"   **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen"   **Description** = "Fans Center to Center"

**Input** = "FanDiameter"   **Description** = "Diameter of Fan"

**Input** = "FanHeight"   **Description** = "Height of Fan"

### Outputs = 10

**Output** = "CoolerBodyPlane1"   **Description** = "Cooler Body Plane 1"

**Output** = "DefaultSurface"   **Description** = "Default Surface"

**Output** = "CoolerBodyPlane2"   **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3"   **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4"   **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5"   **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox"   **Description** = "Cooler Left Box"

**Output** = "CoolerRightBox"   **Description** = "Cooler Right Box"

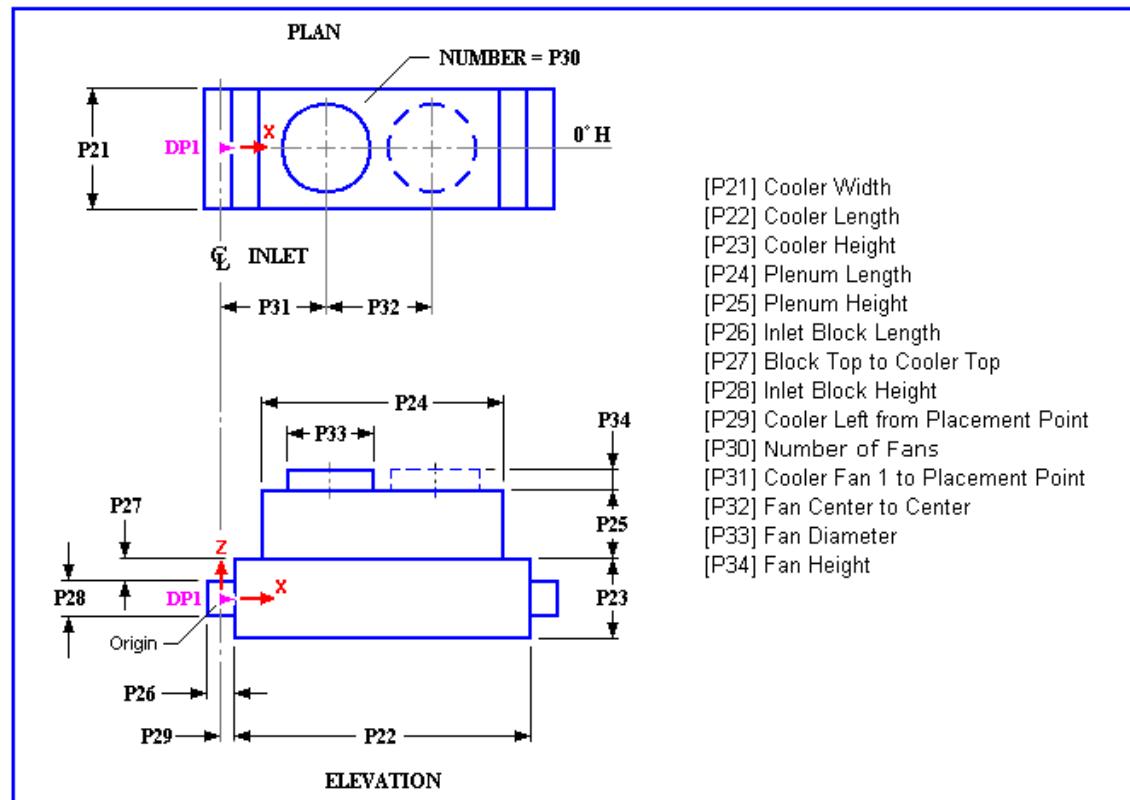
**Output** = "PlenumBox"   **Description** = "Plenum Box"

**Output** = "InducedDraftAirCoolerCompControlPoint"   **Description** = "Control Point of Induced Draft Air Cooler Bay Component"

### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = ReferenceGeometry



# SP3DE\_334CompAsm

## Description:

**Symbol Name:** SP3DE\_334CompAsm.CE\_334CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E334\_FrDAirCoolerCompAsm

**User Class Name:** Forced Draft Air Cooler Component (E334)

**Part Number:** E334-Air Cooler\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_334CompAsm.CE\_334CSym

### Inputs = 14

**Input** = "CoolerWidth"   **Description** = "Width of Cooler"

**Input** = "CoolerLength"   **Description** = "Length of Cooler"

**Input** = "CoolerHeight"   **Description** = "Height of Cooler"

**Input** = "PlenumLength"   **Description** = "Length of Plenum"

**Input** = "PlenumHeight"   **Description** = "Height of Plenum"

**Input** = "InletBlockLength"   **Description** = "Inlet Block Length"

**Input** = "BlockToptоСoolTop"   **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight"   **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP"   **Description** = "Cooler Left from PP"

**Input** = "NoOfFans"   **Description** = "Number of Fans"

**Input** = "Fan1CentoPP"   **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen"   **Description** = "Fans Center to Center"

**Input** = "FanDiameter"   **Description** = "Diameter of Fan"

**Input** = "FanHeight"   **Description** = "Height of Fan"

### Outputs = 10

**Output** = "DefaultSurface"   **Description** = "Default Surface"

**Output** = "CoolerBodyPlane1"   **Description** = "Cooler Body Plane 1"

**Output** = "CoolerBodyPlane2"   **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3"   **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4"   **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5"   **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox"   **Description** = "Cooler Left Box"

**Output** = "CoolerRightBox"   **Description** = "Cooler Right Box"

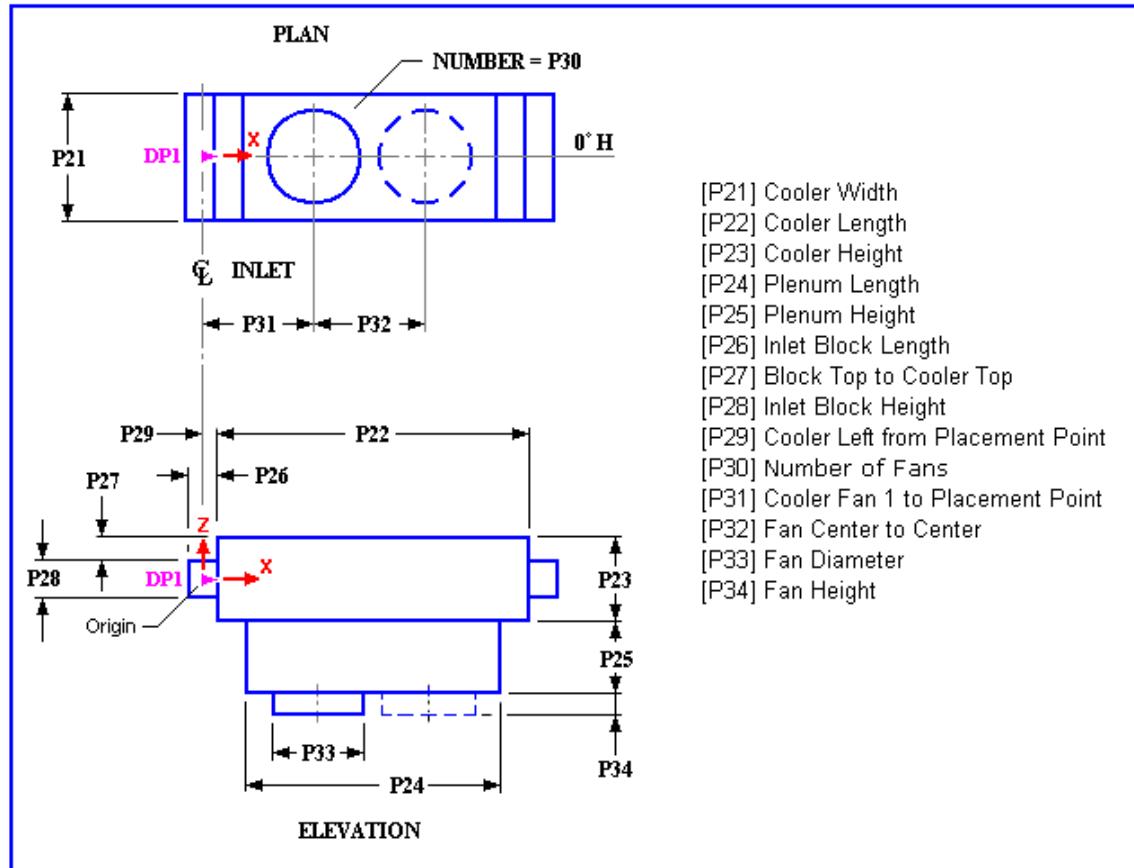
**Output** = "PlenumBox"   **Description** = "Plenum Box"

**Output** = "ForcedDraftAirCoolerCompControlPoint"   **Description** = "Control Point of Forced Draft Air Cooler Bay Component"

### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = ReferenceGeometry



# SP3DE\_405CompAsm

## Description:

**Symbol Name:** SP3DE\_405CompAsm.CE\_405CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E405\_HorRotEqpDvrCompAsm

**User Class Name:** Horizontal Rotating Equipment And Driver Component (E405)

**Part Number:** E405-Horizontal Rotating Equipment\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_405CompAsm.CE\_405CSym

### Inputs = 18

**Input and description** = "BaseLength", "Length of Base"

**Input and description** = "BaseWidth1", "Width1 of Base",

**Input and description** = "BaseWidth2", "Width2 of Base",

**Input and description** = "BaseThickness", "Thickness of Base",

**Input and description** = "DistBaseLeftToDischarge", "Dist between Base Left to Centreline of Discharge",

**Input and description** = "DistEqpLeftToDischarge", "Dist between Eqp Left to Centreline of Discharge",

**Input and description** = "DistEqpRightToDischarge", "Dist between Eqp Right to Centreline of Discharge",

**Input and description** = "EqpWidth1", "Width1 of Equipment",

**Input and description** = "EqpWidth2", "Width2 of Equipment",

**Input and description** = "EqpDepth1", "Depth1 of Equipment",

**Input and description** = "EqpDepth2", "Depth2 of Equipment",

**Input and description** = "RotEqpLength", "Length of Rotating Equipment",

**Input and description** = "RotEqpDiameter", "Diameter of Rotating Equipment",

**Input and description** = "DriverLength", "Length of Driver",

**Input and description** = "DriverWidth1", "Width1 of Driver",

**Input and description** = "DriverWidth2", "Width2 of Driver",

**Input and description** = "DriverHeight", "Height of Driver",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

### Outputs = 11

**Output and description** = "InsulatedEqp", "Insulated Equipment"

**Output and description** = "Equipment", "Equipment"

**Output and description** = "Driver", "Driver"

**Output and description** = "RotEquip", "Rotating Equipment"

**Output and description** = "SupportBodyTopPlane", "Support Body Top Plane"

**Output and description** = "DefaultSurface", "Support Body Bottom Plane"

**Output and description** = "SupportBodySidePlane1", "Support Body side plane1"

**Output and description** = "SupportBodySidePlane2", "Support Body side plane2"

**Output and description** = "SupportBodySidePlane3", "Support Body side plane3"

**Output and description** = "SupportBodySidePlane4", "Support Body side plane4"

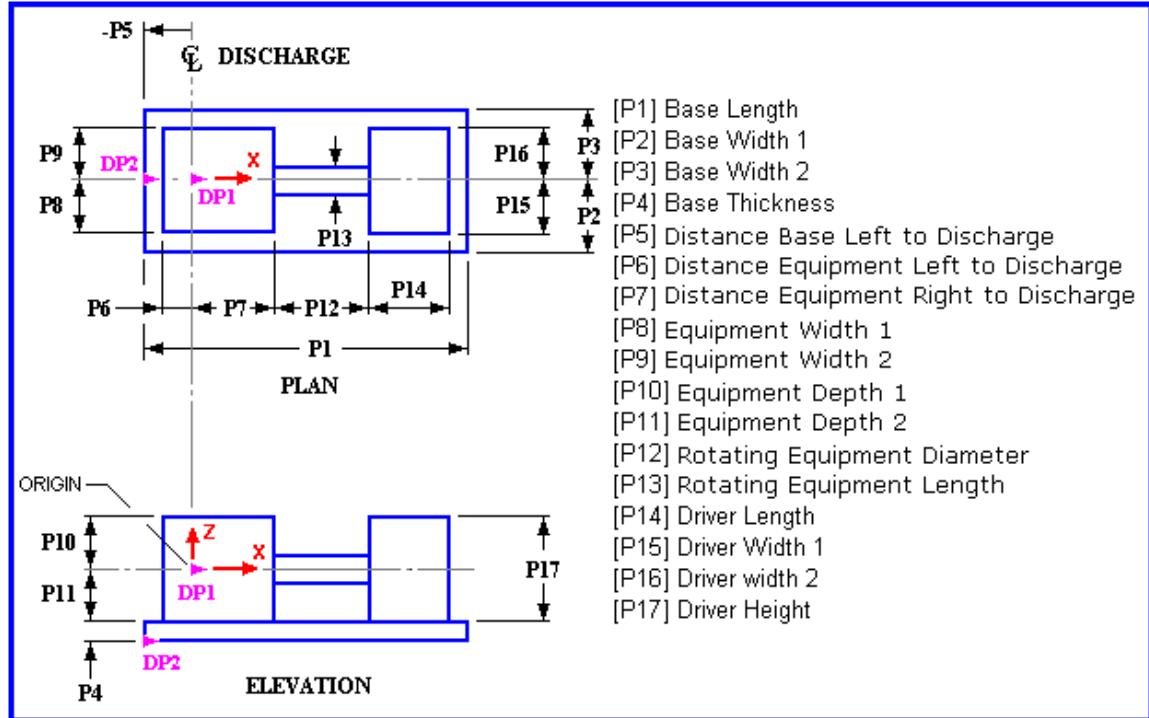
**Output and description** = "HorRotEqpADvrCompControlPoint", "Control Point of Horizontal Rotating Equipment And Driver Component"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DE\_410CompAsm

## Description:

**Symbol Name:** SP3DE\_410CompAsm.CE\_410CSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** E410\_VerRotEqpCompAsm

**User Class Name:** Vertical Rotating Equipment Component (E410)

**Part Number:** E410-Vertical Rotating Equipment\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_410CompAsm.CE\_410CSym

### Inputs = 10

**Input** = "BottomBodyHeight1" **Description** = "BottomBodyHeight1"

**Input** = "BottomBodyHeight2" **Description** = "BottomBodyHeight2"

**Input** = "BottomBodyDiameter" **Description** = "BottomBodyDiameter"

**Input** = "ShaftLength" **Description** = "ShaftLength"

**Input** = "ShaftDiameter" **Description** = "ShaftDiameter"

**Input** = "TaperBodyHeight" **Description** = "TaperBodyHeight"

**Input** = "TopBodyHeight" **Description** = "TopBodyHeight"

**Input** = "TopBodyDiameter" **Description** = "TopBodyDiameter"

**Input** = "BundlePullingLength" **Description** = "BundlePullingLength"

**Input** = "InsulationThickness" **Description** = "InsulationThickness"

### Outputs = 6

**Output** = "InsEquipment" **Description** = "Insulation for Equipment"

**Output** = "MaintEquipment" **Description** = "Maintenance for Equipment"

**Output** = "TopSurface" **Description** = "Surface at Top"

**Output** = "Equipment" **Description** = "Equipment"

**Output** = "DefaultSurface" **Description** = "Default Surface at Bottom"

**Output** = "VerRotatingEquipmentCompControlPoint" **Description** = "Control Point of Vertical Rotating Equipment Component"

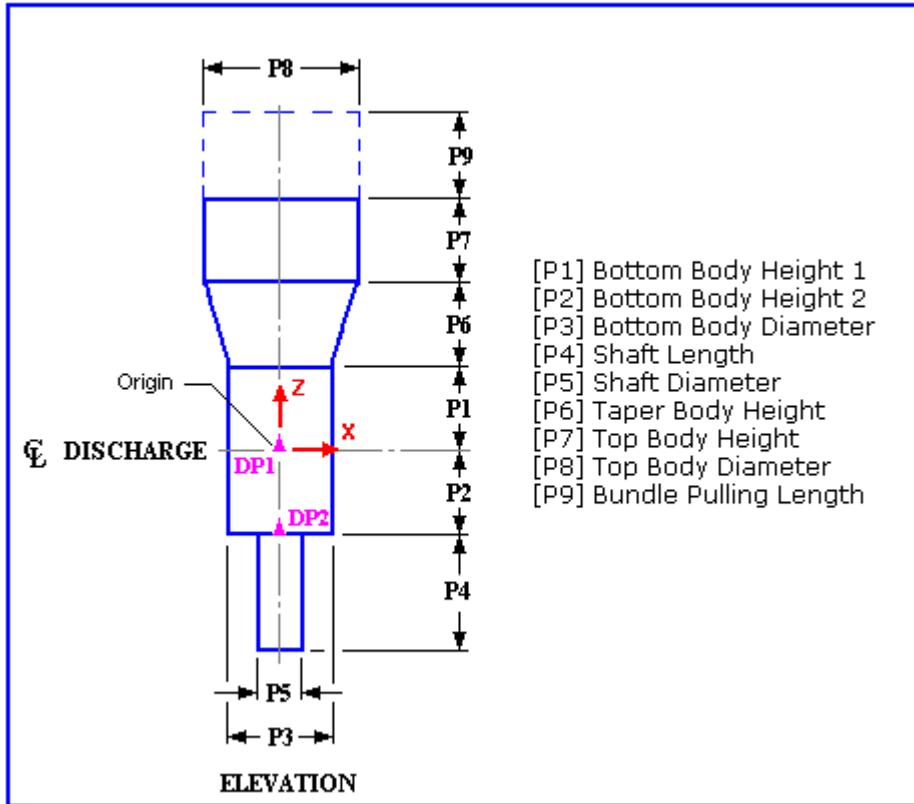
### Aspects = 4

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = Maintenance

**Aspect** = ReferenceGeometry



## SP3DFOITorusMiterAsm

**Description:** flat oval torus miter (PDS U863)

**Symbol Name:** SP3DFOITorusMiterAsm.FOITorusMiterSym

**Workbook:** Sample Data Torus Miter Equipment Components.xls

**Workbook Sheet:** FlatOvlTorMiter

**User Class Name:** Flat Oval Torus Miter

**Part Number:** FlatOvalTorusMiter

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFOITorusMiterAsm.FOITorusMiterSym

**Inputs = 6**

**Input = "MiterBendRadius"** **Description = "Bend Radius"**

**Input = "NoOfSegments"** **Description = "Number of Segments"**

**Input = "MiterBendAngle"** **Description = "Bend Angle"**

**Input = "MiterWidth"** **Description = "Width"**

**Input = "MiterDepth"** **Description = "Depth"**

**Input = "InsulationThickness"** **Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "RefPlane"** **Description = "Reference plane"**

**Output = "RefPlane1"** **Description = "Reference plane 1"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "Point"** **Description = "Reference Point"**

**Output = "ObjHoriLine"** **Description = "Reference Horizontal Line"**

**Output = "ObjVertLine"** **Description = "Reference Vertical Line"**

**Output = "ObjDefSurface"** **Description = "Default Surface"**

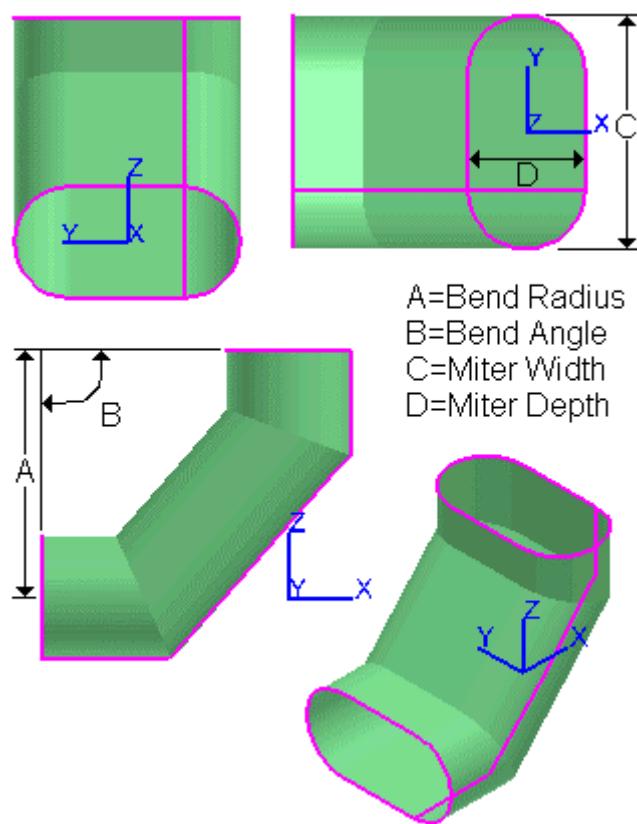
**Output = "RefSurface"** **Description = "Reference Surface"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = ReferenceGeometry**



# SP3DFrEnExTyACDNCompAsm

## Description:

**Symbol Name:** SP3DFrEnXACDNCompAsm.CFXACDNSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** FrontEndTypeACDNAsm

**User Class Name:** Exchanger Front End Type A/C/D/N

**Part Number:** FrontEndTypeACDN 01\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DFrEnXACDNCompAsm.CFXACDNSym

### Inputs = 8

**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter P30",

**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1 P31", 0

**Input and description** = "FrontEndLength1", "Front End Length1 P32",

**Input and description** = "FrontEndLength2", "Front End Length2 P33",

**Input and description** = "FrontEndFlangeTk2", "Front End Flange Thickness 2 P34",

**Input and description** = "FrontEndFlangeTk3", "Front End Flange Thickness 3 P35", 0

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

### Outputs = 10

**Output and description** = "ExchFrontEndRHSFlange", "Exchanger Front End Right Hand Side Flange"

**Output and description** = "ExFrontEndBody", "Exchanger Front End Body"

**Output and description** = "ExFrontEndBodyIFlange", "Exchanger Front End Body Intermediate Flange"

**Output and description** = "ExchFrontEndLHSFlange", "Exchanger Front End Left Hand Side Flange"

**Output and description** = "ExchFrontEndRHSFlangeIns", "Exchanger Front End Right Hand Side FlangeInsulation"

**Output and description** = "ExFrontEndBodyIns", "Exchanger Front End Body Insulation"

**Output and description** = "ExFrontEndBodyIFlangeIns", "Exchanger Front End Body Intermediate Flange Insulation"

**Output and description** = "ExchFrontEndLHSFlangeIns", "Exchanger Front End Left Hand Side Flange Insulation"

**Output and description** = "FrEndExchTypeACDNControlPoint", "Control Point"

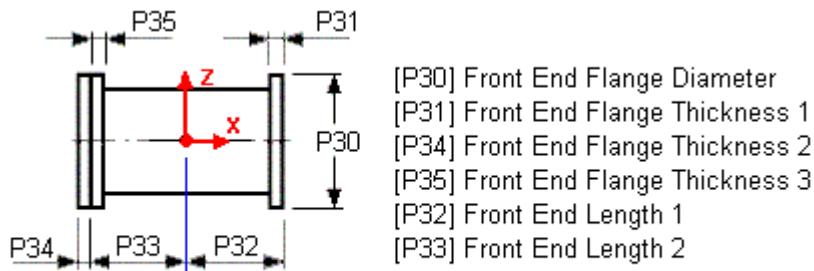
**Output and description** = "DefaultSurface", "Default Surface"

### Aspects = 3

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



**TYPE A/C/D/N**

# SP3DFrEnExTyBCompAsm

## Description:

**Symbol Name:** SP3DFrEnXBCompAsm.FEXBSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** FrontEndTypeBAsm

**User Class Name:** Exchanger Front End Type B

**Part Number:** FrontEndTypeB 01\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DFrEnXBCompAsm.FEXBSym

### Inputs = 6

**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter P30",

**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1 P31"

**Input and description** = "FrontEndLength1", "Front End Length1 P32",

**Input and description** = "FrontEndLength2", "Front End Length2 P33",

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

### Outputs = 8

**Output and description** = "ExchFrontEndRHSFlange", "Exchanger Front End Right Hand Side Flange"

**Output and description** = "ExFrontEndBody", "Exchanger Front End Body"

**Output and description** = "ExFrontEndDome", "Exchanger Front End Dome"

**Output and description** = "ExchFrontEndRHSFlangeIns", "Exchanger Front End Right Hand Side Flange Insulation"

**Output and description** = "ExFrontEndBodyIns", "Exchanger Front End Body Insulation"

**Output and description** = "ExFrontEndDomeIns", "Exchanger Front End Dome Insulation"

**Output and description** = "FrEndExchTypeBControlPoint", "Control Point"

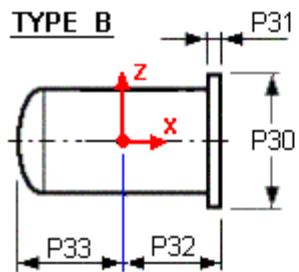
**Output and description** = "DefaultSurface", "Default Surface"

### Aspects = 3

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



[P30] Front End Flange Diameter  
[P31] Front End Flange Thickness 1  
[P32] Front End Length 1  
[P33] Front End Length 2

# SP3DFrEnExTyQCompAsm

## Description:

**Symbol Name:** SP3DFrEnXQCompAsm.CFEXQSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** FrontEndTypeQAsm

**User Class Name:** Exchanger Front End Type Q

**Part Number:** FrontEndTypeQ 01\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DFrEnXQCompAsm.CFEXQSym

### Inputs = 6

**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter P30",

**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1 P31", 0

**Input and description** = "FrontEndLength1", "Front End Length1 P32",

**Input and description** = "FrontEndDiameter", "FrontEndDiameter P33",

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

### Outputs = 6

**Output and description** = "ExchFrontEndRHSFlange", "Exchanger Front End Right Hand Side Flange"

**Output and description** = "ExFrontEndBody", "Exchanger Front End Body"

**Output and description** = "ExchFrontEndRHSFlangeIns", "Exchanger Front End Right Hand Side FlangeInsulation"

**Output and description** = "ExFrontEndBodyIns", "Exchanger Front End Body Insulation"

**Output and description** = "FrEndExchTypeQControlPoint", "Control Point"

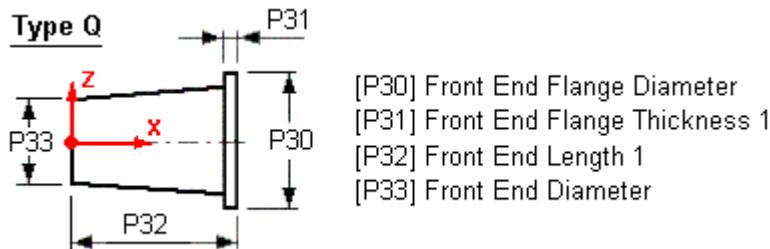
**Output and description** = "DefaultSurface", "Default Surface"

### Aspects = 3

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DHDVesAIXCompAsm

**Description:** 2:1 Elliptical Head Horizontal Drum Along X-Axis

**Symbol Name:** SP3DHDVesAIXCompAsm.HoriDrumVAlongXSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** HDrumAlongXAsm

**User Class Name:** Horizontal Drum Vessel along X-Axis

**Part Number:** HDrumAlongXaxis 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHDVesAIXCompAsm.HoriDrumVAlongXSym

**Inputs = 3**

**Input = "VesselDiameter" Description = "Vessel Diameter"**

**Input = "VesselTantoTan" Description = "Vessel Tangent to Tangent"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Cylinder1" Description = "Drum Body"**

**Output = "Dish1" Description = "Drum End1"**

**Output = "Dish2" Description = "Drum End2"**

**Output = "Point" Description = "Point"**

**Output = "DefaultSurface" Description = "Default Plane"**

**Output = "Cylinder2" Description = "Drum Body"**

**Output = "InsulatedDish1" Description = "Insulated Drum End1"**

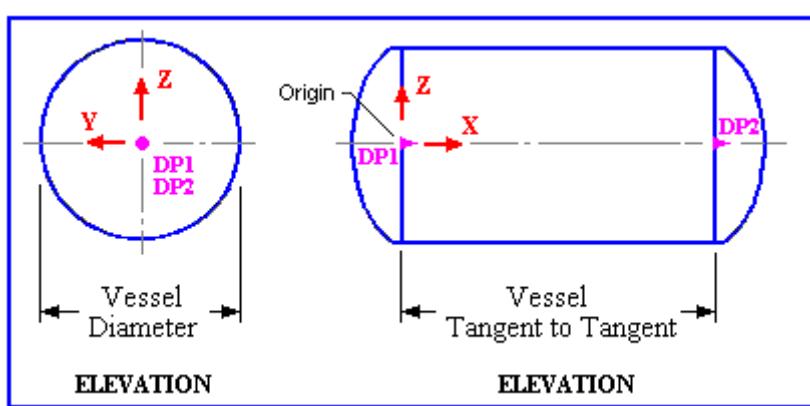
**Output = "InsulatedDish2" Description = "Insulated Drum End2"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = ReferenceGeometry**



## SP3DHeatEx2EndShellComp

**Description:** EquipComp Exchanger Shell With Option Two Heads.

**Symbol Name:** SP3DHeatEx2EndShellComp.CHEx2ShellSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** EquipCompExchangerShell

**User Class Name:** EquipComp Shell and Tube Heat Exchanger -Parametric Shell  
Option Two Heads

**Part Number:** EquipCompExchangerShell 01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHeatEx2EndShellComp.CHEx2ShellSym

**Inputs = 77**

**Input and description =** "VesselDiameter", "Exchanger Outer Diameter"

**Input and description =** "VesselHeight", "Shell Body Height"

**Input and description =** "CPtoFace", "Control point to Shell Top flange"

**Input and description =** "FaceDiameter", "Flange Diameter"

**Input and description =** "FaceThickness", "Flange Thickness"

**Input and description =** "NozzlePosition", "Nozzle C Position w.r.t Control Point"

**Input and description =** "NozzleOrientation", "Nozzle C Orientation"

**Input and description =** "RadialPosition", "Nozzle C Length"

**Input and description =** "Offset", "Nozzle C Offset"

**Input and description =** "NozzlePosition1", "Nozzle D Position w.r.t Control Point"

**Input and description =** "NozzleOrientation1", "Nozzle D Orientation"

**Input and description =** "RadialPosition1", "Nozzle D Length"

**Input and description =** "Offset1", "Nozzle D Offset"

**Input and description =** "NozzlePosition2", "Nozzle F1 Position w.r.t Control Point"

**Input and description =** "NozzleOrientation2", "Nozzle F1 Orientation"

**Input and description =** "RadialPosition2", "Nozzle F1 Length"

**Input and description =** "Offset2", "Nozzle F1 Offset"

**Input and description =** "NozzlePosition3", "Nozzle F2 Position w.r.t Control Point"

**Input and description =** "NozzleOrientation3", "Nozzle F2 Orientation"

**Input and description =** "RadialPosition3", "Nozzle F2 Length"

**Input and description =** "Offset3", "Nozzle F2 Offset"

**Input and description =** "NozzlePosition4", "Nozzle F3 Position w.r.t Control Point"

**Input and description =** "NozzleOrientation4", "Nozzle F3 Orientation"

**Input and description =** "RadialPosition4", "Nozzle F3 Length"

**Input and description =** "Offset4", "Nozzle F3 Offset"

**Input and description =** "Npd", "NPD"

**Input and description =** "EndPreparation", "End Preparation"

**Input and description =** "ScheduleThickness", "Schedule Thickness"

**Input and description** = "EndStandard", "End Standard"  
**Input and description** = "PressureRating", "Pressure Rating"  
**Input and description** = "FlowDirection", "Flow Direction"  
**Input and description** = "PortIndex1", "Port Index1"  
**Input and description** = "Npd1", "NPD1", 150 "  
**Input and description** = "EndPreparation1", "End Preparation1"  
**Input and description** = "ScheduleThickness1", "Schedule Thickness1"  
**Input and description** = "EndStandard1", "End Standard1"  
**Input and description** = "PressureRating1", "Pressure Rating1"  
**Input and description** = "FlowDirection1", "Flow Direction1"  
**Input and description** = "PortIndex2", "Port Index2"  
**Input and description** = "Npd2", "NPD2"  
**Input and description** = "EndPreparation2", "End Preparation2"  
**Input and description** = "ScheduleThickness2", "Schedule Thickness2"  
**Input and description** = "EndStandard2", "End Standard2"  
**Input and description** = "PressureRating2", "Pressure Rating2"  
**Input and description** = "FlowDirection2", "Flow Direction2"  
**Input and description** = "PortIndex3", "Port Index3"  
**Input and description** = "Npd3", "NPD3", 25 '  
**Input and description** = "EndPreparation3", "End Preparation3"  
**Input and description** = "ScheduleThickness3", "Schedule Thickness3"  
**Input and description** = "EndStandard3", "End Standard3"  
**Input and description** = "PressureRating3", "Pressure Rating3"  
**Input and description** = "FlowDirection3", "Flow Direction3"  
**Input and description** = "PortIndex4", "Port Index4"  
**Input and description** = "Npd4", "NPD4"  
**Input and description** = "EndPreparation4", "End Preparation4"  
**Input and description** = "ScheduleThickness4", "Schedule Thickness4"  
**Input and description** = "EndStandard4", "End Standard4"  
**Input and description** = "PressureRating4", "Pressure Rating4"  
**Input and description** = "FlowDirection4", "Flow Direction4"  
**Input and description** = "PortIndex5", "Port Index5"  
**Input and description** = "Npd5", "NPD5"  
**Input and description** = "EndPreparation5", "End Preparation5"  
**Input and description** = "ScheduleThickness5", "Schedule Thickness5"  
**Input and description** = "EndStandard5", "End Standard5"  
**Input and description** = "PressureRating5", "Pressure Rating5"  
**Input and description** = "FlowDirection5", "Flow Direction5"  
**Input and description** = "Id1", "Id1", "C"  
**Input and description** = "Id2", "Id2", "D"  
**Input and description** = "Id3", "Id3", "F1"  
**Input and description** = "Id4", "Id4", "F2"  
**Input and description** = "Id5", "Id5", "F3"  
**Input and description** = "NpdUnitType", "Npd Unit Type"  
**Input and description** = "NpdUnitType1", "Npd Unit Type1"  
**Input and description** = "NpdUnitType2", "Npd Unit Type2"

**Input and description = "NpdUnitType3", "Npd Unit Type3"**

**Input and description = "NpdUnitType4", "Npd Unit Type4"**

**Input and description = "NpdUnitType5", "Npd Unit Type5"**

**Outputs = 10**

**Output and description = "ShellFlange", "Shell Flange"**

**Output and description = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"**

**Output and description = "ShellBottomFlange", "Shell Bottom Flange"**

**Output and description = "C", "Nozzle A1"**

**Output and description = "D", "Nozzle A2"**

**Output and description = "F1", "Nozzle B1"**

**Output and description = "F2", "Nozzle B2"**

**Output and description = "F3", "Nozzle E1"**

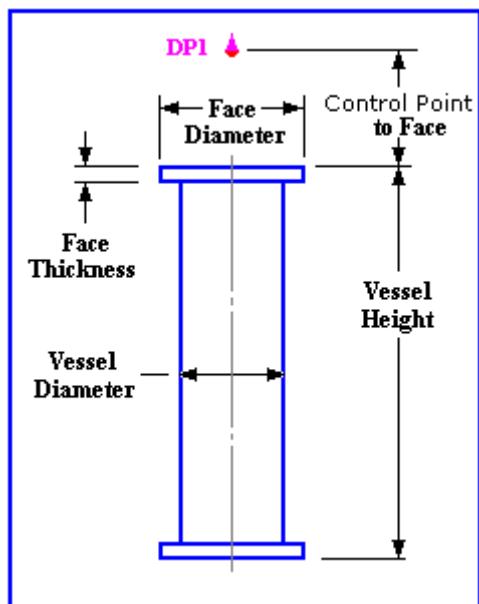
**Output and description = "VesselAxisPoint", "Reference Point on axis of vessel at Control Point"**

**Output and description = "DefaultSurface", "Reference Surface at the CP of vessel"**

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "RefGeometry", "ReferenceGeometry"**



# SP3DHeatEx2EndShellCompAsm

**Description:** Exchanger Shell With Option Two Heads

**Symbol Name:** SP3DHeatX2EndShellCompAsm.CHX2SSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ExchangerShellAsm

**User Class Name:** Shell and Tube Heat Exchanger-Parametric Shell Option Two Heads

**Part Number:** ExchangerShell 01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHeatX2EndShellCompAsm.CHX2SSym

**Inputs = 5**

**Input and description** = "VesselDiameter", "Exchanger Outer Diameter", 1.

**Input and description** = "VesselHeight", "Shell Body Height", 7.30885

**Input and description** = "CPtoFace", "Control point to Shell Top flange", 1

**Input and description** = "FaceDiameter", "Flange Diameter", 0.

**Input and description** = "FaceThickness", "Flange Thickness", 0.

**Outputs = 5**

**Output and description** = "ShellFlange", "Shell Flange"

**Output and description** = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"

**Output and description** = "ShellBottomFlange", "Shell Bottom Flange"

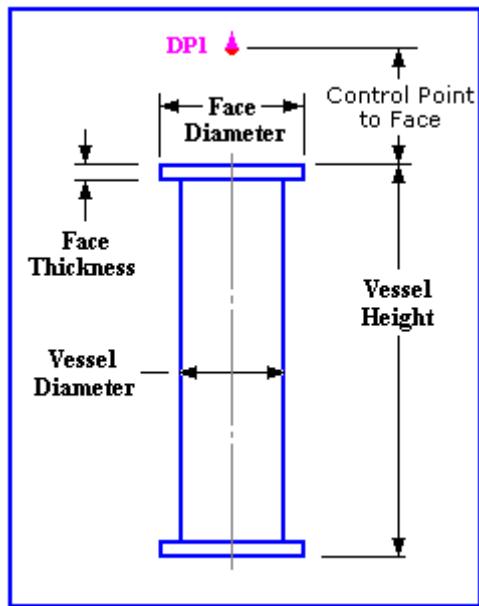
**Output and description** = "VesselAxisPoint", "Reference Point on axis of vessel at Coontrol Point"

**Output and description** = "DefaultSurface", "Reference Surface at the CP of vessel"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DHeatExHeadCompAsm

**Description:** Shell & Tube Heat Exchanger parametric Head

**Symbol Name:** SP3DHeatXHeadAsm.CHeatXHSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** HeadParametricAsm

**User Class Name:** Shell and Tube Heat Exchanger-Parametric Head

**Part Number:** Heat Exchanger Head 1-EC, Heat Exchanger Head 2-EC, Heat Exchanger Head 3-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHeatXHeadAsm.CHeatXHSym

**Inputs = 5**

**Input and description =** "VesselDiameter", "Exchanger Diameter"

**Input and description =** "CPtoHeadTangent", "Distance of Tangent from Control Point"

**Input and description =** "CPtoFace", "Flange Start Point from Control Point"

**Input and description =** "FaceDiameter", "Flange Diameter"

**Input and description =** "FaceThickness", "Flange Thickness"

**Outputs = 5**

**Output and description =** "FrontHeadBonnet", "Elliptical Front Head Bonnet Body"

**Output and description =** "FrontHeadBodyCyl", "Cylindrical Front Head Body"

**Output and description =** "FrontHeadFlange", "Flange on Front head side"

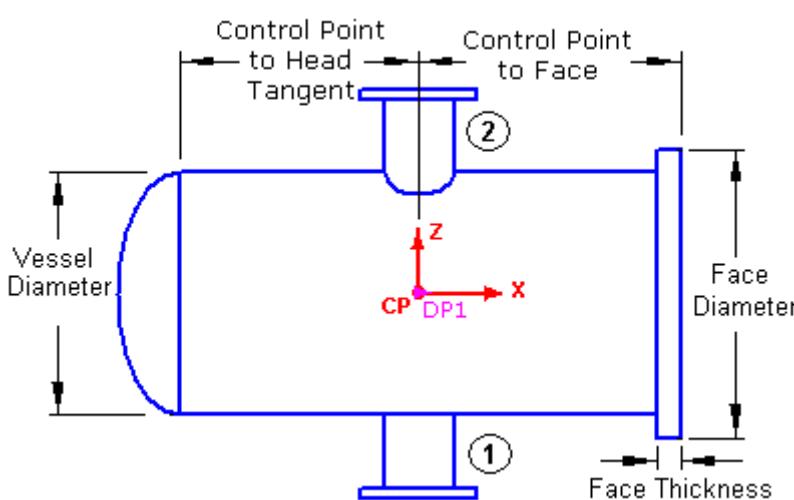
**Output and description =** "ControlPoint", "Control Point at origin"

**Output and description =** "DefaultSurface", "Default Surface at Origin"

**Aspects = 2**

**Aspect =** "SimplePhysical", "Physical"

**Aspect =** "ReferenceGeometry", "ReferenceGeometry"



## SP3DHeatExMiterHeadsCompAsm

**Description:** Exchanger Miter Head Parametric

**Symbol Name:** SP3DHeatXMiterHeadAsm.CHXMHSSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ExchangerMiterHeadAsm

**User Class Name:** Shell and Tube Heat Exchanger-Parametric Miter Head

**Part Number:** ExchangerMiterHead 01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHeatXMiterHeadAsm.CHXMHSSym

**Inputs = 4**

**Input and description** = "VesselDiameter", "Exchanger Outer Diameter"

**Input and description** = "FaceDiameter", "Flange Diameter"

**Input and description** = "FaceThickness", "Flange Thickness"

**Input and description** = "CPtoFace", "Control point to Miter flange"

**Outputs = 8**

**Output and description** = "MiterFlange", "Flange on Miter"

**Output and description** = "MiterBottom15degBody", "Rear Head Miter Bottom 15 degree portion"

**Output and description** = "MiterBottom30degBody", "Rear Head Miter Bottom 30 degree portion"

**Output and description** = "MiterTop30degBody", "Rear Head Miter Top 30 degree portion"

**Output and description** = "MiterTop15degBody", "Rear Head Miter Top 15 degree portion"

**Output and description** = "MiterTopCyl", "Rear Head Miter Top Cylinder portion"

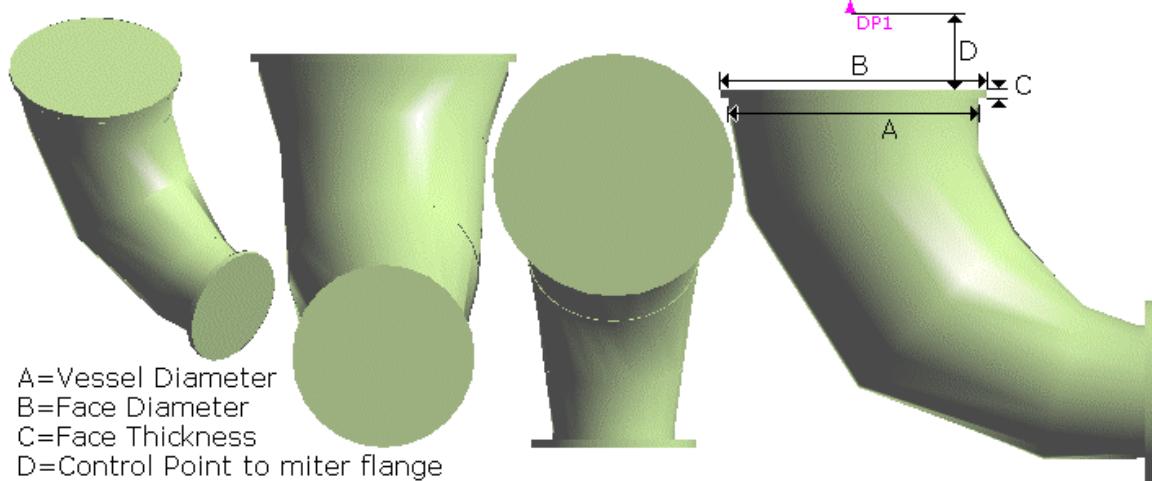
**Output and description** = "DefaultSurface", "Reference Surface at the CP of vessel"

**Output and description** = "VesselAxisPoint", "Reference Point on axis of vessel at Coontrol Point"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "RefGeometry", "ReferenceGeometry"



A=Vessel Diameter

B=Face Diameter

C=Face Thickness

D=Control Point to miter flange

## SP3DHeatExShellCompAsm

**Description:** Shell & Tube Heat Exchanger parametric Shell

**Symbol Name:** SP3DHeatXShellAsm.CHeatXSSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ShellParametricAsm

**User Class Name:** Shell and Tube Heat Exchanger-Parametric Shell

**Part Number:** Heat Exchanger Shell 1-EC, Heat Exchanger Shell 2-EC, Heat Exchanger Shell 3-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHeatXShellAsm.CHeatXSSym

**Inputs = 5**

**Input and description =** "VesselDiameter", "Exchanger Diameter"

**Input and description =** "CPtoFace", "Flange Start Point from Control Point"

**Input and description =** "CPtoShellTangent", "Distance of Tangent from Control Point"

**Input and description =** "FaceDiameter", "Flange Diameter"

**Input and description =** "FaceThickness", "Flange Thickness"

**Outputs = 5**

**Output and description =** "ShellHeadFlange", "Bottom Flange on Front head side"

**Output and description =** "ShellBodyCyl", "Cylindrical Exchanger Shell Body"

**Output and description =** "RearHeadBonnet", "Elliptical Front Head Bonnet Body"

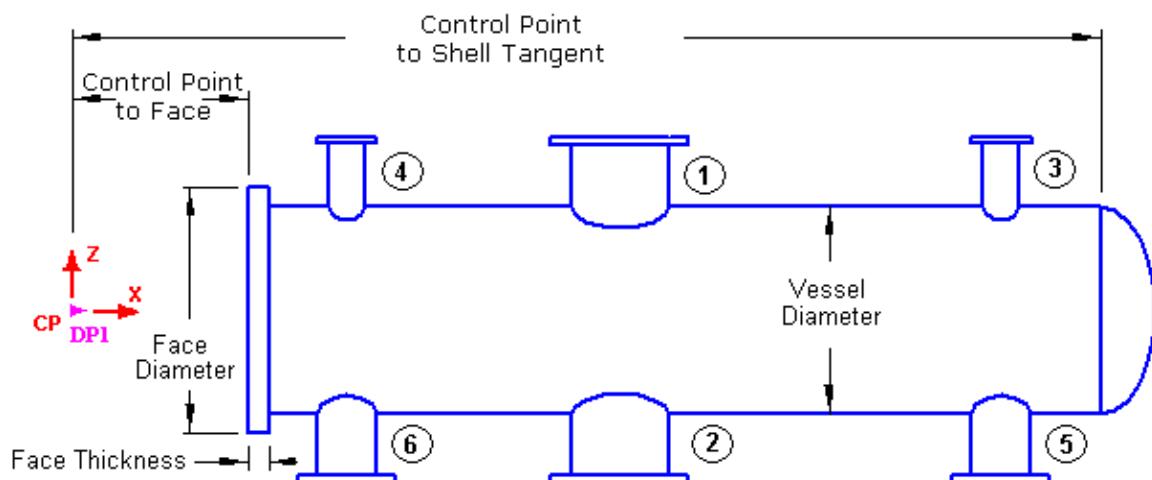
**Output and description =** "ExchangerPoint", "Point at origin"

**Output and description =** "DefaultSurface", "Default Surface at Origin"

**Aspects = 2**

**Aspect =** "SimplePhysical", "Physical"

**Aspect =** "ReferenceGeometry", "ReferenceGeometry"



## SP3DHorDrumCompAsm

**Description:** 2:1 Elliptical Head Horizontal Drum

**Symbol Name:** SP3DHorDrumCompAsm.HorizontalDrumSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** HDrumAsm

**User Class Name:** Horizontal Drum

**Part Number:** HDrum 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorDrumCompAsm.HorizontalDrumSym

**Inputs = 3**

**Input = "VesselDiameter" Description = "Vessel Diameter"**

**Input = "VesselTantoTan" Description = "Vessel Tangent to Tangent"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Cylinder1" Description = "Drum Body"**

**Output = "Dish1" Description = "Drum End1"**

**Output = "Dish2" Description = "Drum End2"**

**Output = "Point" Description = "Point"**

**Output = "Plane" Description = "Default Plane"**

**Output = "Cylinder2" Description = "Drum Body"**

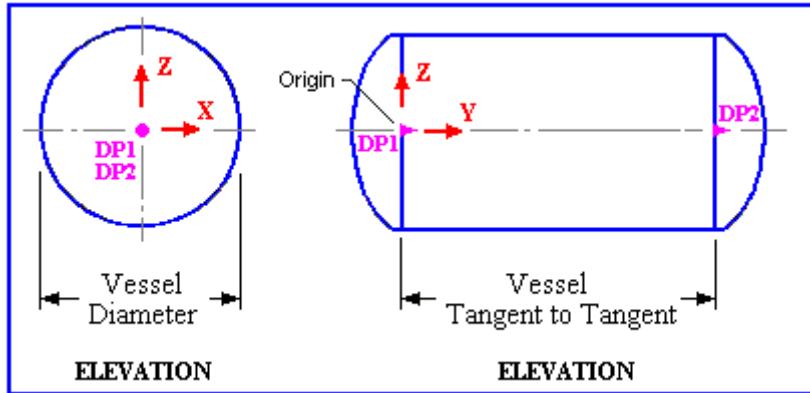
**Output = "InsulatedDish1" Description = "Insulated Drum End1"**

**Output = "InsulatedDish2" Description = "Insulated Drum End2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHorOffsetSaddleCompAsm

**Description:**

**Symbol Name:** SP3DHorOffsetSaddleCompAsm.OffSaddleSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorOffsetSaddleCompAsm.OffSaddleSym

**Inputs = 13**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "BasePlateLength", "A-Baseplate Length"

**Input and description** = "CenToSaddleBottom", "B-Center to Saddle Bottom"

**Input and description** = "BackingPlateThick", "C-Backing Plate Thickness"

**Input and description** = "BasePlateThick", "D-Baseplate Thickness"

**Input and description** = "XBoltHole", "E-Hole Bolt X Location"

**Input and description** = "BasePlateWidth", "F-Baseplate Width"

**Input and description** = "RibWidth", "G-Rib Width"

**Input and description** = "BackingPlateWidth", "H-Backing Plate Width"

**Input and description** = "WebThick", "J-Web Thickness"

**Input and description** = "RibThick", "L-Rib Thickness"

**Input and description** = "YBoltHole", "Hole Bolt Y Location"

**Input and description** = "NoOfRibs", "Number of Ribs"

**Outputs = 6**

**Output and description** = "BackingPlate", "Backing Plate"

**Output and description** = "Web", "Web"

**Output and description** = "Rib\_ ", "Rib"

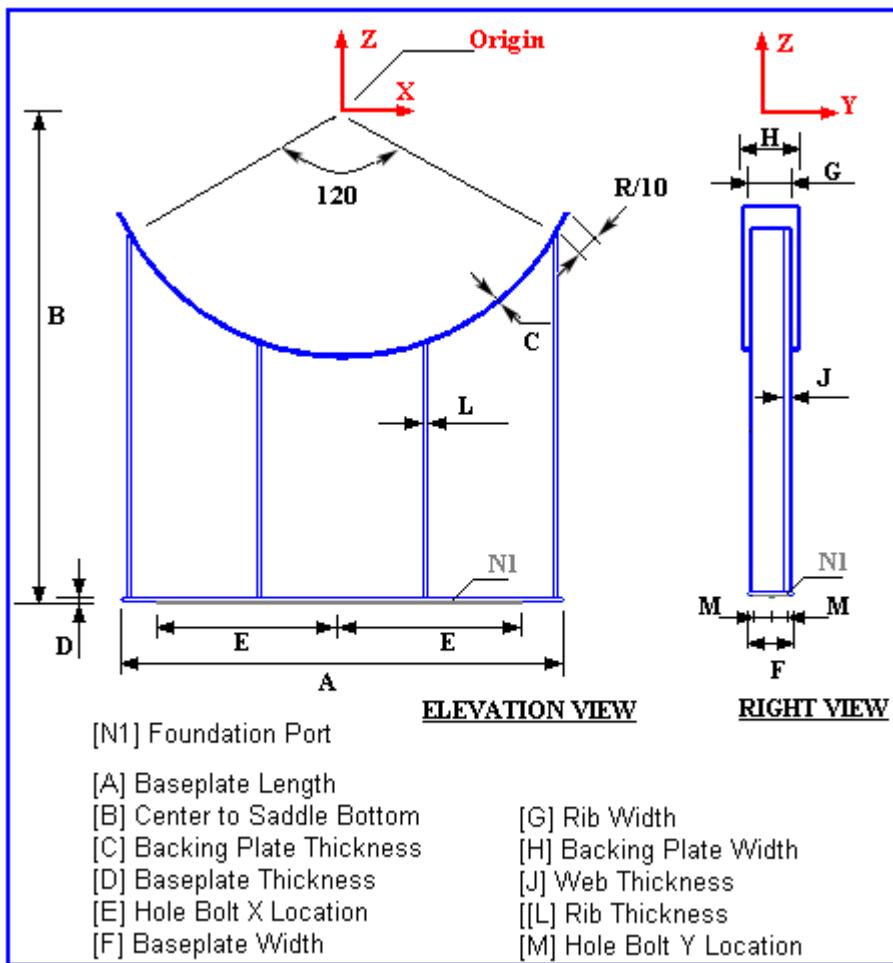
**Output and description** = "Baseplate", "Baseplate"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



## SP3DKettleExchNestedAsm

**Description:** Kettle Heat Exchanger (Variable Head Options)

**Symbol Name:** SP3DKettleXNestedAsm.CKXNSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** KettleExchNestedAsm

**User Class Name:** Kettle Heat Exchanger (Variable Head Options)

**Part Number:** KettleExchNested01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DKettleXNestedAsm.CKXNSym

**Inputs = 24**

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"

**Input** = "ExchangerNeckLength"   **Description** = "Exchanger Neck Length P2"

**Input** = "ExchangerNeckDiameter"   **Description** = "Exchanger Neck Diameter P3"

**Input** = "ExchangerTaperLength"   **Description** = "Exchanger Taper Length P4"

**Input** = "ExchangerDiameter"   **Description** = "Exchanger Diameter P5"

**Input** = "BundleFlangeTk"   **Description** = "Bundle Flange Thickness P6"

**Input** = "BundleFlangeDia"   **Description** = "Bundle Flange Diameter P7"

**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Flange Thickness P8"

**Input** = "BundlePullingLength"   **Description** = "Bundle Pulling Length P9"

**Input** = "BotSupportCenFromPP"   **Description** = "Bot Support Center FromPP P10"

**Input** = "BottomSupportCentoCen"   **Description** = "Bottom  
SupportCentertoCenterP11"

**Input** = "Support1Thickness"   **Description** = "Support 1 Thickness P12"

**Input** = "Support2Thickness"   **Description** = "Support 2 Thickness P13"

**Input** = "BottomSupportHeight"   **Description** = "BottomSupportHeight P14"

**Input** = "SupportLength"   **Description** = "SupportLength P15"

**Input** = "FrontEndFlangeDia"   **Description** = "FrontEndFlangeDia P30"

**Input** = "FrontEndFlangeTk1"   **Description** = "FrontEndFlangeTk1 P31"

**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"

**Input** = "FrontEndLength2"   **Description** = "FrontEndLength2 P33 of Type  
A/C/D/N or B"

**Input** = "FrontEndFlangeTk2"   **Description** = "FrontEndFlangeTk2 P34"

**Input** = "FrontEndFlangeTk3"   **Description** = "FrontEndFlangeTk3 P35"

**Input** = "FrontEndDiameter"   **Description** = "FrontEndDiameter P33 of Type Q"

**Input** = "FrontEndType"   **Description** = "FrontEnd Type A/C/D/N or B or Q"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

**Outputs = 12**

**Output** = "ExchangerRHSEnd"   **Description** = "Exchanger Right Hand Side End"

**Output** = "ExchangerBody"   **Description** = "Exchanger Body"

**Output** = "ExTaperBody"   **Description** = "Exchanger Taper Body"

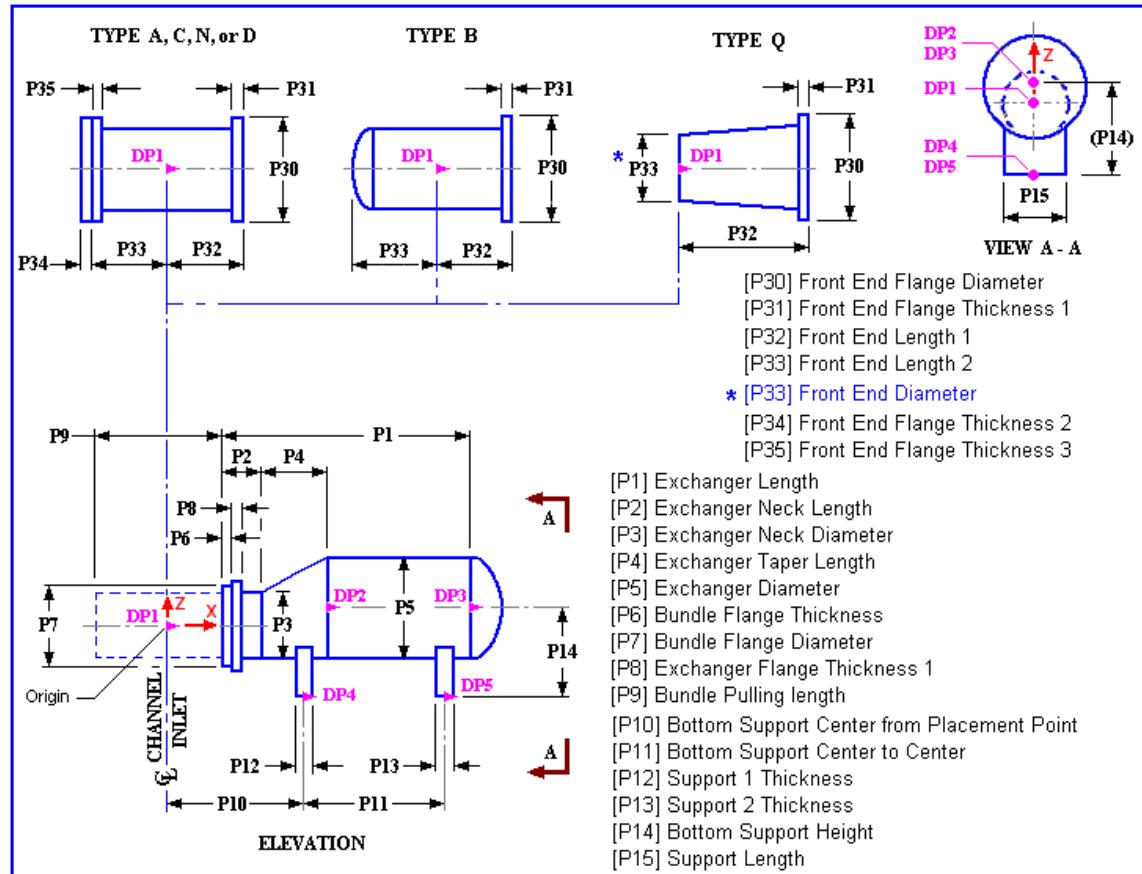
**Output** = "ExneckBody"   **Description** = "Exchanger Neck Portion"

**Output** = "ExchangerFlange"   **Description** = "Exchanger Flange"

**Output = "BundleFlange" Description = "Bundle Flange"**  
**Output = "DefaultSurface" Description = "Default Surface of Kettle Exchanger Component"**  
**Output = "KettleExchangerCompControlPoint" Description = "Control Point of Kettle Exchanger Component"**  
**Output = "ExBodyInsul" Description = "Exchanger Body Insulation"**  
**Output = "ExTapBodyInsul" Description = "Exchanger Taper Body Insulation"**  
**Output = "ExneckBodyInsul" Description = "Exchanger Neck Portion Insulation"**  
**Output = "BundlePullCylin" Description = "Bundle Pulling Cylinder"**

**Aspects = 4**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Maintenance**  
**Aspect = ReferenceGeometry**



## SP3DLiftLugBPCOMPAsm

**Description:** Lifting Lug with Backing Plate for Drums, Vessel

**Symbol Name:** SP3DLiftLugBPCOMPAsm.LLWithBackingPlSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** LiftingLugwithBackingPlateAsm

**User Class Name:** Lifting Lugs with Backing Plate

**Part Number:** LiftingLugwithBackingPlate 01\_Asm

### Inputs, Outputs, and Aspects:

ProgID: SP3DLiftLugBPCOMPAsm.LLWithBackingPlSym

#### Inputs = 11

**Input** = "VesselDiameter"   **Description** = "Vessel Shell Outside Diameter"

**Input** = "VesselLugOffset"   **Description** = "Vessel Support Lug ControlPoint Offset"

**Input** = "LugBasePlateWidth"   **Description** = "Vessel Support Lug Base Plate Width"

**Input** = "LugBasePlateLength"   **Description** = "Vessel Support Lug Base Plate Length"

**Input** = "LugBasePlateThickness"   **Description** = "Vessel Support Lug Base Plate Thickness"

**Input** = "LugGussetHeight"   **Description** = "Vessel Support Lug Gusset Height"

**Input** = "LugGussetWidth"   **Description** = "Vessel Support Lug Gusset Width"

**Input** = "LugGussetThickness"   **Description** = "Vessel Support Lug Gusset Thickness"

**Input** = "LugGussetSpacing"   **Description** = "Vessel Support Lug Gusset Spacing"

**Input** = "LugBoltSlotEccentricity"   **Description** = "Vessel Support Lug Bolt Slot Eccentricity"

**Input** = "LugBoltDiameter"   **Description** = "Vessel Support Lug Bolt Diameter"

#### Outputs = 34

**Output** = "Lug1\_PlaneOuput1"   **Description** = "Lug1\_PlaneOuput 1"

**Output** = "Lug1\_PlaneOuput2"   **Description** = "Lug1\_PlaneOuput 2"

**Output** = "Lug1\_PlaneOuput3"   **Description** = "Lug1\_PlaneOuput 3"

**Output** = "Lug1\_PlaneOuput4"   **Description** = "Lug1\_PlaneOuput 4"

**Output** = "Box1"   **Description** = "Support Lug"

**Output** = "Box2"   **Description** = "Support Lug"

**Output** = "Pyra1"   **Description** = "Support Lug"

**Output** = "Pyra2"   **Description** = "Support Lug"

**Output** = "Lug2\_PlaneOuput1"   **Description** = "Lug2\_PlaneOuput 1"

**Output** = "Lug2\_PlaneOuput2"   **Description** = "Lug2\_PlaneOuput 2"

**Output** = "Lug2\_PlaneOuput3"   **Description** = "Lug2\_PlaneOuput 3"

**Output** = "Lug2\_PlaneOuput4"   **Description** = "Lug2\_PlaneOuput 4"

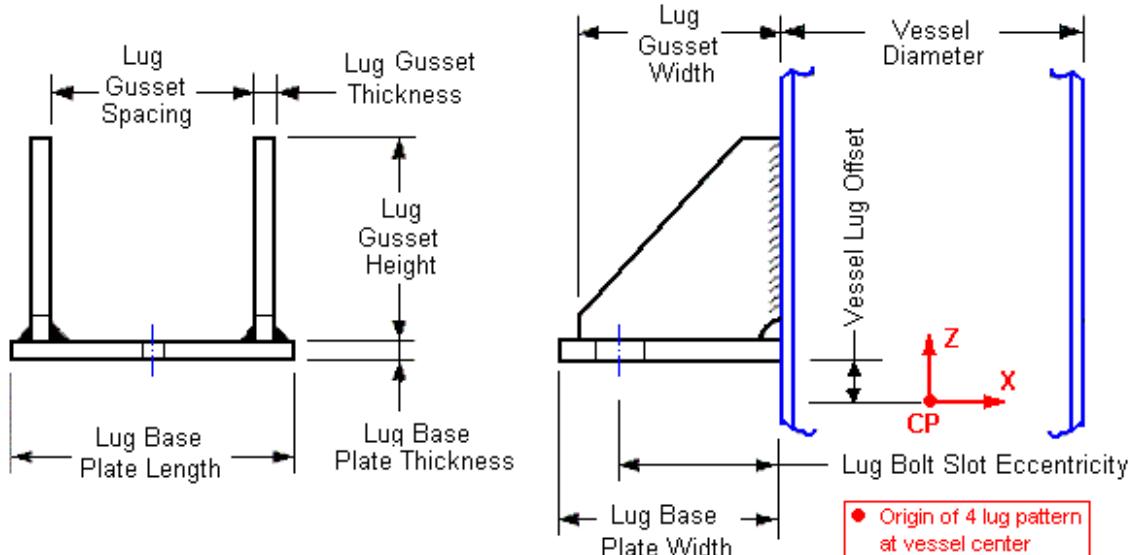
**Output** = "Box3"   **Description** = "Support Lug"

**Output** = "Box4"   **Description** = "Support Lug"

**Output = "Pyra3" Description = "Support Lug"**  
**Output = "Pyra4" Description = "Support Lug"**  
**Output = "Lug3\_PlaneOuput1" Description = "Lug3\_PlaneOuput 1"**  
**Output = "Lug3\_PlaneOuput2" Description = "Lug3\_PlaneOuput 2"**  
**Output = "Lug3\_PlaneOuput3" Description = "Lug3\_PlaneOuput 3"**  
**Output = "Lug3\_PlaneOuput4" Description = "Lug3\_PlaneOuput 4"**  
**Output = "Box5" Description = "Support Lug"**  
**Output = "Box6" Description = "Support Lug"**  
**Output = "Pyra5" Description = "Support Lug"**  
**Output = "Pyra6" Description = "Support Lug"**  
**Output = "Lug4\_PlaneOuput1" Description = "Lug4\_PlaneOuput 1"**  
**Output = "Lug4\_PlaneOuput2" Description = "Lug4\_PlaneOuput 2"**  
**Output = "Lug4\_PlaneOuput3" Description = "Lug4\_PlaneOuput 3"**  
**Output = "Lug4\_PlaneOuput4" Description = "Lug4\_PlaneOuput 4"**  
**Output = "Box7" Description = "Support Lug"**  
**Output = "Box8" Description = "Support Lug"**  
**Output = "Pyra7" Description = "Support Lug"**  
**Output = "Pyra8" Description = "Support Lug"**  
**Output = "Point" Description = "Drum Point"**  
**Output = "Plane" Description = "Default Plane"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DLiftLugFVCompAsm

**Description:** Lifting Lugs for Drums, Vessel

**Symbol Name:** SP3DLiftLugFVCompAsm.LLugsForVesselSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** LiftingLugAsm

**User Class Name:** Lifting Lugs for Vessel

**Part Number:** LiftingLug 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLiftLugFVCompAsm.LLugsForVesselSym

**Inputs = 2**

**Input = "VesselDiameter" Description = "VesselDiameter"**

**Input = "VesselTantoTan" Description = "Vessel Tan to Tan"**

**Outputs = 6**

**Output = "Box1" Description = "Lifting Lug"**

**Output = "Box2" Description = "Lifting Lug"**

**Output = "Box3" Description = "Lifting Lug"**

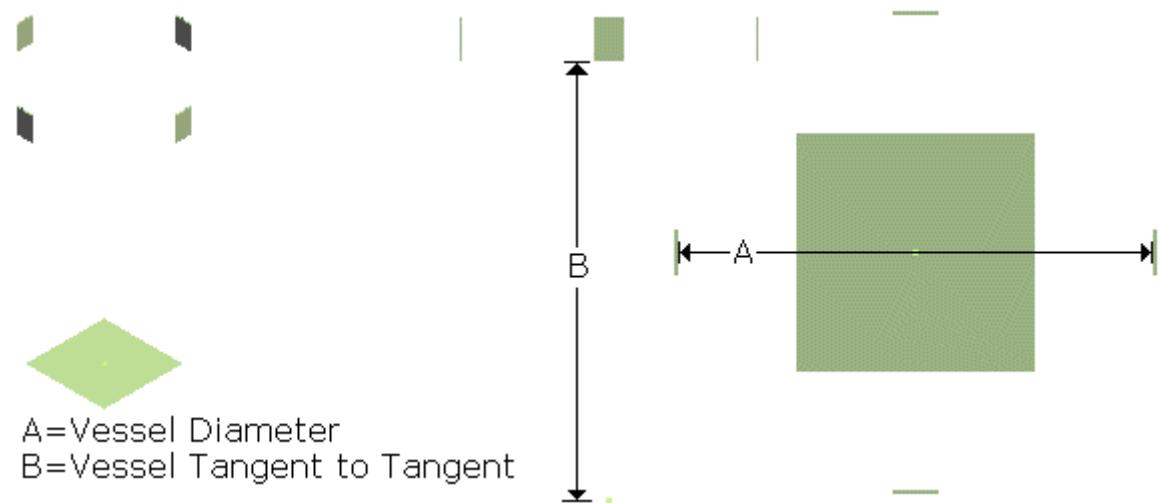
**Output = "Box4" Description = "Lifting Lug"**

**Output = "Point" Description = "Lifting Lug Point"**

**Output = "Plane" Description = "Default Plane"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DManWayDBotHCAsm

**Description:** ManWay Davit Bottom Horizontal Cover

**Symbol Name:** SP3DManWayDBotHCAsm.MDavitBHorCoverSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ManWayDavitBHCoverAsm

**User Class Name:** ManWay Davit Bottom Horizontal Cover

**Part Number:** ManWayDavitBHCover 01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DManWayDBotHCAsm.MDavitBHorCoverSym

**Inputs = 3**

**Input and description** = "CentertoDavitCover", "Nozzle Position",

**Input and description** = "DomeHeight1", "Dome Height 1",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 16**

**Output and description** = "Manhole", "Nozzle with Length"

**Output and description** = "CoverBody", "Blind Flange"

**Output and description** = "BotSupPlate", "Bottom Support Plate"

**Output and description** = "BotDavitSup", "Channel Plate attached to bottom flange"

**Output and description** = "TopDavitSup1", "Vertical Plate attached to Top Flange"

**Output and description** = "TopDavitSup2", "Vertical Plate attached to Top Flange"

**Output and description** = "DavitPin", "Davit Pin"

**Output and description** = "HexNut", "Hex Nut at the bottom of davit"

**Output and description** = "OriginPoint", "Point at origin"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "RefLine", "Reference Line"

**Output and description** = "PipeAxisLine", "Pipe Axis Line"

**Output and description** = "VesselAxisPoint", "Vessel Axis Point"

**Output and description** = "RefSurface", "Reference Surface"

**Output and description** = "MaintEnv", "Maintenance Envelope"

**Output and description** = "NozzleIns", "Insulation"

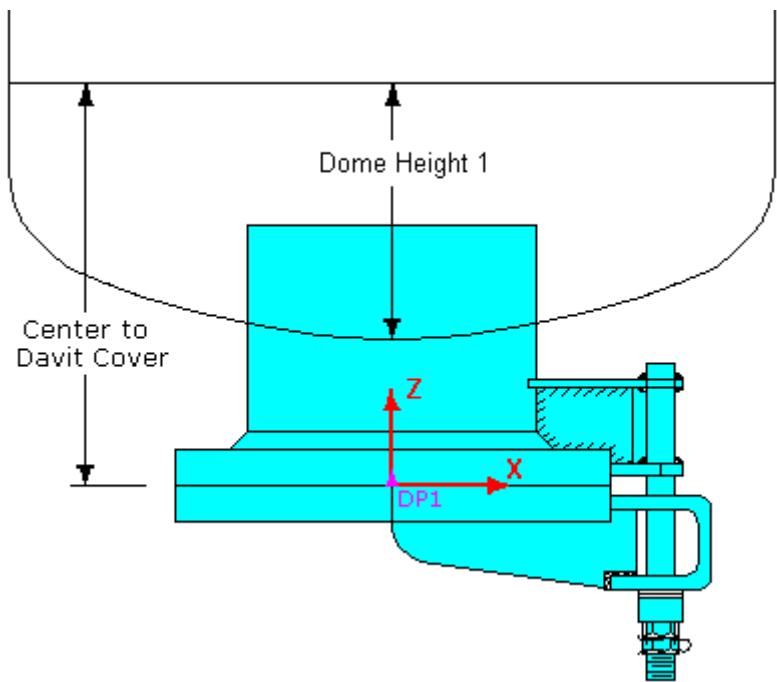
**Aspects = 4**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"

**Aspect** = "Maintenance", "Maintenance"

**Aspect** = "Insulation", "Insulation"



# SP3DManWayDHorCovAsm

**Description:** ManWay Davit Horizontal Cover

**Symbol Name:** SP3DManWayDHorCovAsm.MDavitHoriCoverSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ManWayDavitHCoverAsm

**User Class Name:** ManWay Davit Horizontal Cover

**Part Number:** ManWayDavitHCover 01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DManWayDHorCovAsm.MDavitHoriCoverSym

**Inputs = 3**

**Input and description** = "CentertoDavitCover", "Center to Davit Cover"

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 19**

**Output and description** = "Manhole", "Nozzle with Length"

**Output and description** = "BlindFlange", "Blind Flange"

**Output and description** = "CotterPinBox", "Cotter Pin of Box Shape"

**Output and description** = "CotterPinRod", "Cotter Pin Vertical Rod"

**Output and description** = "DavitHoriRod", "Davit Horizontal Rod"

**Output and description** = "DavitTorusRod", "Davit Torus Rod"

**Output and description** = "DavitPin", "Davit Pin"

**Output and description** = "HexNut", "Hex Nut"

**Output and description** = "DavitTopSup1", "Davit Top Support 1"

**Output and description** = "DavitTopSup2", "Davit Top Support 2"

**Output and description** = "DavitVertSup", "Davit Vertical Support"

**Output and description** = "OriginPoint", "Point at origin"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "HoriLine", "Horizontal Line"

**Output and description** = "VerticalLine", "Vertical Line"

**Output and description** = "VesselPoint1", "Point on Vessel axis 1"

**Output and description** = "DefaultSurface1", "Default Surface 1"

**Output and description** = "MaintEnv", "Maintenance Envelope"

**Output and description** = "NozzleIns", "Insulation Envelope"

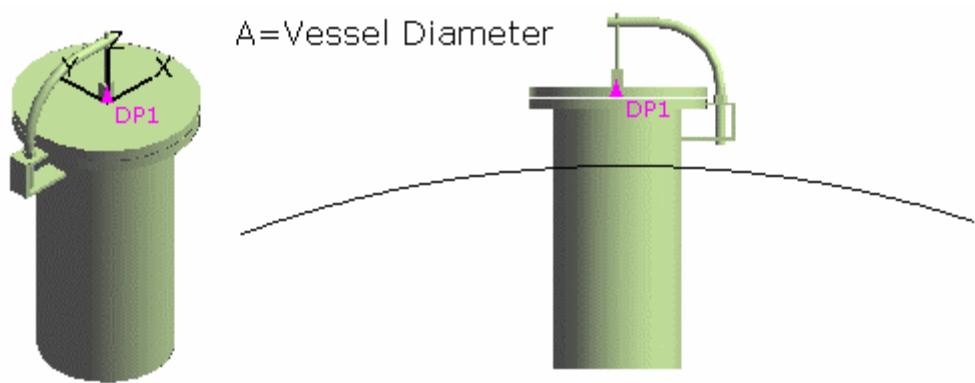
**Aspects = 4**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"

**Aspect** = "Maintenance", "Maintenance"

**Aspect** = "Insulation", "Insulation"



# SP3DManWayDVerCovAsm

**Description:** ManWay Davit Vertical Cover

**Symbol Name:** SP3DManWayDVerCovAsm.MDavitVertCoverSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** ManWayDavitVCoverAsm

**User Class Name:** ManWay Davit Vertical Cover

**Part Number:** ManWayDavitVCover 01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DManWayDVerCovAsm.MDavitVertCoverSym

**Inputs = 4**

**Input and description** = "CentertoDavitCover", "Outer Face of manhole cover to center of Vessel"

**Input and description** = "VesselDiameter", "Tower Vessel Outer Diameter"

**Input and description** = "DavitHinge", "Davit Hinge Position"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 16**

**Output and description** = "Manhole", "Nozzle 1"

**Output and description** = "ManholeCover", "ManHole Cover"

**Output and description** = "EyeBolt", "Eye Bolt"

**Output and description** = "HexNut", "Hexagonal Nut for EyeBolt"

**Output and description** = "DavitArmTop", "Davit Arm Top"

**Output and description** = "DavitArmCurved", "Davit Arm Curved"

**Output and description** = "DavitArmCollar", "Davit Arm Collar"

**Output and description** = "DavitArmBot", "Davit Arm Bottom"

**Output and description** = "HingePlate", "Hinge Plate"

**Output and description** = "MaintenaceEnvelope", "Maintenance Envelope"

**Output and description** = "OriginPoint", "Point at origin"

**Output and description** = "VesselRadialLine", "Vessel Radial Line"

**Output and description** = "VesselAxisLine", "Vessel Axial Line"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "RefSurface", "Reference Surface"

**Output and description** = "NozzleIns", "Insulation"

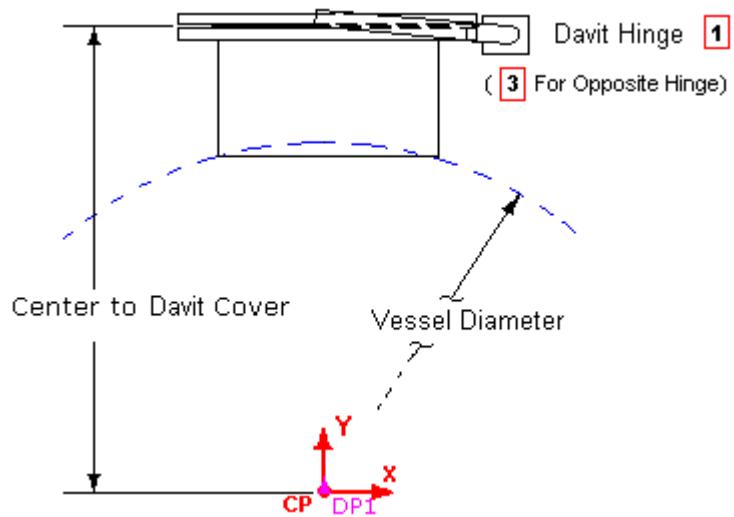
**Aspects = 4**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"

**Aspect** = "Maintenance", "Maintenance"



# SP3DParSaddleCompAsm

**Description:** Shell & Tube Heat Exchanger parametric Saddle  
**Symbol Name:** SP3DParSaddleCompAsm.ParametricSaddlSym  
**Workbook:** EquipmentComponent.xls  
**Workbook Sheet:** SaddleParametricAsm  
**User Class Name:** Parametric Saddle  
**Part Number:** Heat Exchanger Saddle 1\_Asm, Heat Exchanger Saddle 2\_Asm, Heat Exchanger Saddle 3\_Asm  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DParSaddleCompAsm.ParametricSaddlSym

**Inputs = 13**

**Input and description** = "VesselDiameter", "Vessel Diameter",  
**Input and description** = "SupportLength", "Support Length(B)",  
**Input and description** = "SupportHeight", "Support Height From Vessel Center to base of saddle",  
**Input and description** = "SupportWidth", "Support Width(G)",  
**Input and description** = "CPtoSaddle", "Distance of saddle center from the CP of vessel"  
**Input and description** = "BasePlateThickness", "Base Plate Thickness(E)", 0  
**Input and description** = "BackingPlateThickness", "Backing Plate Thickness(T)", 0  
**Input and description** = "BackingPlateWidth", "Backing Plate Widt(H)",  
**Input and description** = "StiffnerThickness", "Stiffner Thickness(D)", 0  
**Input and description** = "StiffnerThickness1", "Stiffner Thickness(DG)", 0  
**Input and description** = "StiffnerSpacing", "Stiffner Spacing(C)",  
**Input and description** = "XboltHole", "Bolt Hole Location-X (F)",  
**Input and description** = "YboltHole", "Bolt Hole Location-Y (A)",

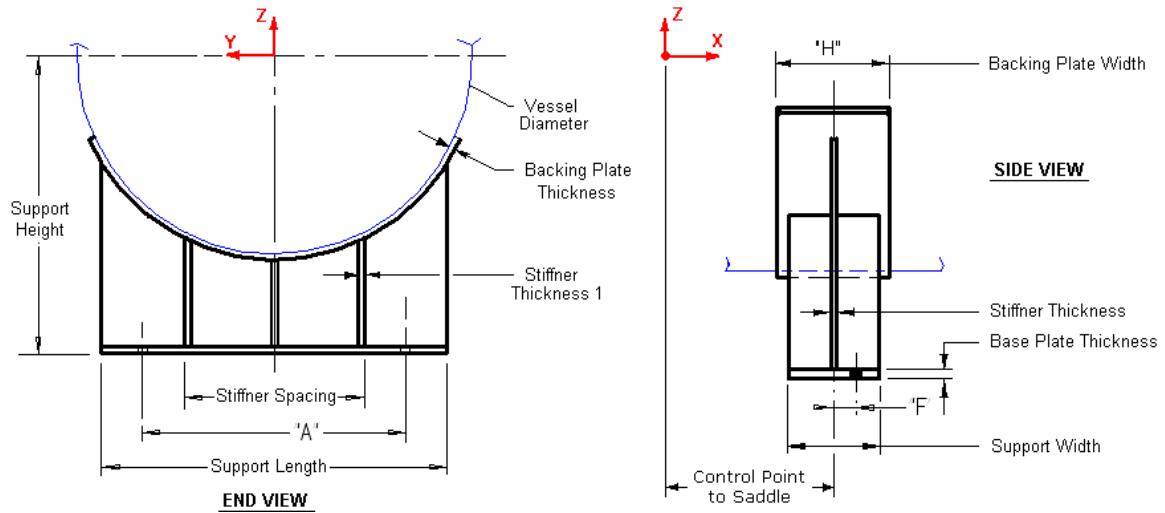
**Outputs = 12**

**Output and description** = "SaddlePlate", "Saddle Body"  
**Output and description** = "StiffnerPlate", "Ends Support Plate"  
**Output and description** = "BackingPlate1", "Center Support Plate1"  
**Output and description** = "BackingPlate2", "Center Support Plate2"  
**Output and description** = "BackingPlate3", "Middle Support Plate"  
**Output and description** = "BackingPlate4", "Center Support Plate3"  
**Output and description** = "BackingPlate5", "Center Support Plate4"  
**Output and description** = "BackingPlate6", "Bottom Support Plate"  
**Output and description** = "FoundationPort", "Foundation Port"  
**Output and description** = "DefaultSurface", "Reference Surface at the bottom of vessel"  
**Output and description** = "VesselAxisLine", "Reference Line passes through center of Vessel"  
**Output and description** = "VesselAxisPoint", "Reference Point on axis of vessel at Support height"

**Aspects = 2**

**Aspect = "SimplePhysical", "PipingAspect Description"**

**Aspect = "ReferenceGeometry", "ReferenceGeometry"**



## SP3DPlatformAsm

**Description:** Vessel Platform 01

**Symbol Name:** SP3DPlatform.CPlatformSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PlatformAsm

**User Class Name:** Vessel Platform

**Part Number:** Vessel Platform 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatform.CPlatformSym

**Inputs = 6**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "PlatformWidth", "Platform Width"

**Input and description** = "PlatformHeight", "Platform Height or Thickness"

**Input and description** = "PlatformAngle", "Platform Total Angle"

**Input and description** = "ClearancefromVessel", "Clearance between Vessel and the Platform"

**Input and description** = "InsulationThickness", "Insulation Thickness for the Vessel"

**Outputs = 9**

**Output and description** = "PlatformBody", "Body of the Platform"

**Output and description** = "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description** = "TowerPoint", "Point on Tower"

**Output and description** = "TopLine1", "Top line1 of the Platform"

**Output and description** = "TopArc2", "Top Arc2 of the Platform"

**Output and description** = "TopLine2", "Top Line2 of the Platform"

**Output and description** = "TopArc1", "Top Arc1 of the Platform"

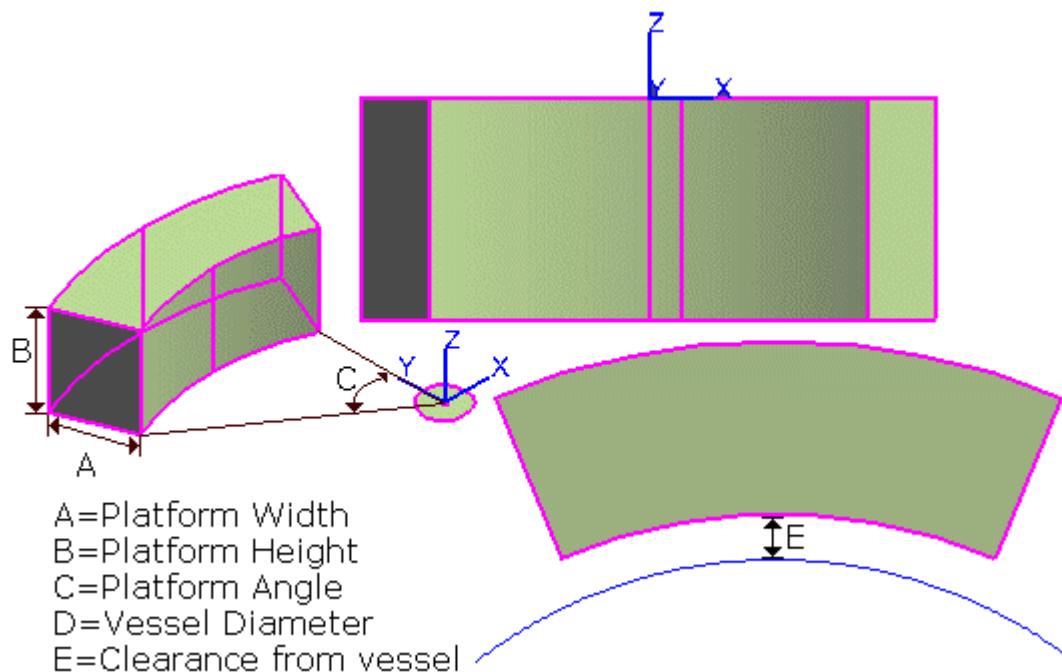
**Output and description** = "TopSurface", "Top Surface of the Platform"

**Output and description** = "BottomSurface", "Bottom Surface of the Platform"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DPlatformTypeACompAsm

**Description:**

**Symbol Name:** SP3DPlatformTypeAAsm.PlatformTypeASym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatformTypeAAsm.PlatformTypeASym

**Inputs = 5**

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "PlatformHeight", "Platform Height"

**Outputs = 5**

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

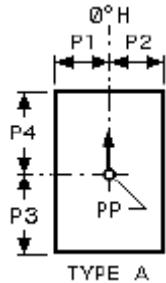
**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

**Output and description** = "ProjBody", "Body of Platform"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DPlatformTypeBCompAsm

**Description:**

**Symbol Name:** SP3DPlatformTypeBAsm.PlatformTypeBSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatformTypeBAsm.PlatformTypeBSym

**Inputs = 8**

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "EqpDimension5", "Equipment Dimension P5"

**Input and description** = "EqpDimension6", "Equipment Dimension P6"

**Input and description** = "IsCornerSkewed", "Is Curve Skewed: 0 if skewed, else otherwise"

**Input and description** = "PlatformHeight", "Platform Height"

**Outputs = 7**

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

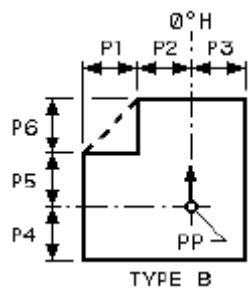
**Output and description** = "Line5", "Line 5"

**Output and description** = "Line6", "Line 6"

**Output and description** = "ProjBody", "Body of Platform"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DPlatformTypeCCompAsm

**Description:**

**Symbol Name:** SP3DPlatformTypeCAsm.PlatformTypeCSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatformTypeCAsm.PlatformTypeCSym

**Inputs = 9**

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "EqpDimension5", "Equipment Dimension P5"

**Input and description** = "EqpDimension6", "Equipment Dimension P6"

**Input and description** = "EqpDimension7", "Equipment Dimension P7"

**Input and description** = "IsCornerSkewed", "Is Corned Skewed: 0 if skewed, else otherwise"

**Input and description** = "PlatformHeight", "Platform Height"

**Outputs = 9**

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

**Output and description** = "Line5", "Line 5"

**Output and description** = "Line6", "Line 6"

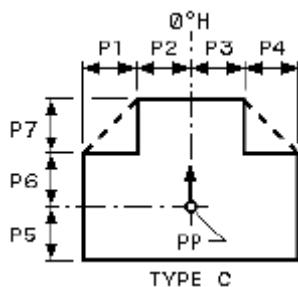
**Output and description** = "Line7", "Line 7"

**Output and description** = "Line8", "Line 8"

**Output and description** = "ProjBody", "Body of Platform"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DPlatformTypeDCompAsm

## Description:

**Symbol Name:** SP3DPlatformTypeDAsm.PlatformTypeDSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DPlatformTypeDAsm.PlatformTypeDSym

#### Inputs = 9

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "EqpDimension5", "Equipment Dimension P5"

**Input and description** = "EqpDimension6", "Equipment Dimension P6"

**Input and description** = "EqpDimension7", "Equipment Dimension P7"

**Input and description** = "IsCornerSkewed", "Is Corned Skewed: 0 if skewed"

**Input and description** = "PlatformHeight", "Platform Height"

#### Outputs = 11

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

**Output and description** = "Line5", "Line 5"

**Output and description** = "Line6", "Line 6"

**Output and description** = "Line7", "Line 7"

**Output and description** = "Line8", "Line 8"

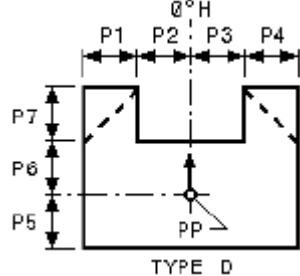
**Output and description** = "Line8", "Line 9"

**Output and description** = "Line10", "Line 10"

**Output and description** = "ProjBody", "Body of Platform"

#### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DPlatformTypeECompAsm

**Description:**

**Symbol Name:** SP3DPlatformTypeEAsm.PlatformTypeESym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatformTypeEAsm.PlatformTypeESym

**Inputs = 10**

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "EqpDimension5", "Equipment Dimension P5"

**Input and description** = "EqpDimension6", "Equipment Dimension P6"

**Input and description** = "EqpDimension7", "Equipment Dimension P7"

**Input and description** = "EqpDimension8", "Equipment Dimension P8"

**Input and description** = "IsCornerSkewed", "Is Corned Skewed: 0 if skewed, else"

**Input and description** = "PlatformHeight", "Platform Height"

**Outputs = 13**

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

**Output and description** = "Line5", "Line 5"

**Output and description** = "Line6", "Line 6"

**Output and description** = "Line7", "Line 7"

**Output and description** = "Line8", "Line 8"

**Output and description** = "Line8", "Line 9"

**Output and description** = "Line10", "Line 10"

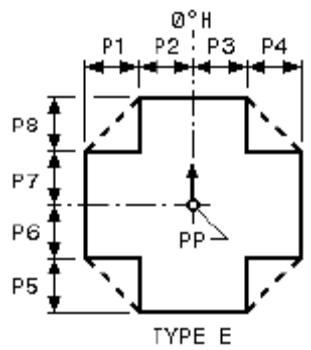
**Output and description** = "Line11", "Line 11"

**Output and description** = "Line12", "Line 12"

**Output and description** = "ProjBody", "Body of Platform"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DPlatformTypeFCompAsm

## Description:

**Symbol Name:** SP3DPlatformTypeFAsm.PlatformTypeFSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DPlatformTypeFAsm.PlatformTypeFSym

### Inputs = 8

**Input and description** = "EqpDimension1", "Equipment Dimension P1"

**Input and description** = "EqpDimension2", "Equipment Dimension P2"

**Input and description** = "EqpDimension3", "Equipment Dimension P3"

**Input and description** = "EqpDimension4", "Equipment Dimension P4"

**Input and description** = "EqpDimension5", "Equipment Dimension P5"

**Input and description** = "EqpDimension6", "Equipment Dimension P6"

**Input and description** = "PlatformAngle", "Platform Angle P9"

**Input and description** = "PlatformHeight", "Platform Height"

### Outputs = 7

**Output and description** = "Line1", "Line 1"

**Output and description** = "Line2", "Line 2"

**Output and description** = "Line3", "Line 3"

**Output and description** = "Line4", "Line 4"

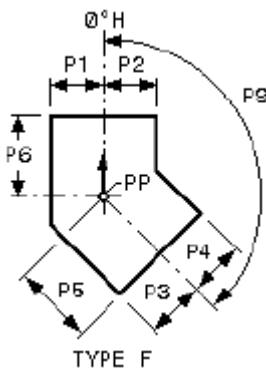
**Output and description** = "Line5", "Line 5"

**Output and description** = "Line6", "Line 6"

**Output and description** = "ProjBody", "Body of Platform"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



## SP3DPlatformWithHoleAsm

**Description:** Platform with hole for pipe

**Symbol Name:** SP3DPlatformWithHoleAsm.CPlatformWHSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PlatformwithholeAsm

**User Class Name:** Vessel Platform With Hole for Pipe

**Part Number:** Platformwithholeforpipe01-EC

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlatformWithHoleAsm.CPlatformWHSym

**Inputs = 9**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "PlatformWidth", "Platform Width"

**Input and description** = "PlatformHeight", "Platform Height or Thickness"

**Input and description** = "PlatformAngle", "Platform Total Angle"

**Input and description** = "ClearancefromVessel", "Clearance between Vessel and the Platform"

**Input and description** = "InsulationThickness", "Insulation Thickness for the Vessel"

**Input and description** = "OpeningDiameter", "Pipe Hole Opening Diameter"

**Input and description** = "RotationY", "Pipe Position Angle from the North"

**Input and description** = "PlatformHoletoCenter", "Hole (Pipe passage) to the Vessel Center"

**Outputs = 12**

**Output and description** = "PlatformTopSurface", "Body of the Platform"

**Output and description** = "PlatformHole", "Body of the Platform"

**Output and description** = "PlatformBottomSurface", "Body of the Platform"

**Output and description** = "PlatformBody", "Body of the Platform"

**Output and description** = "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description** = "TowerPoint", "Point on Tower"

**Output and description** = "TopLine1", "Top line1 of the Platform"

**Output and description** = "TopArc2", "Top Arc2 of the Platform"

**Output and description** = "TopLine2", "Top Line2 of the Platform"

**Output and description** = "TopArc1", "Top Arc1 of the Platform"

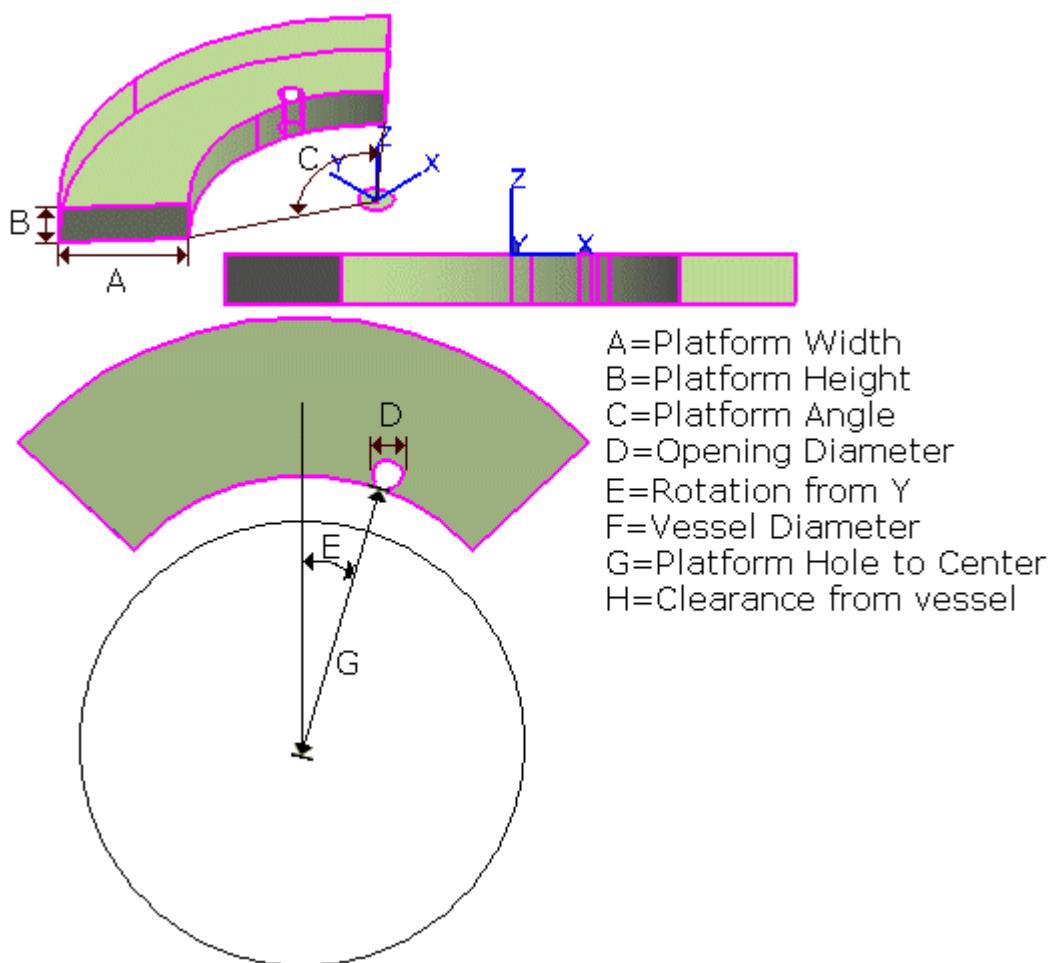
**Output and description** = "TopSurface", "Top Surface of the Platform"

**Output and description** = "BottomSurface", "Bottom Surface of the Platform"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "RefGeometry", "ReferenceGeometry"



## SP3DRecTorusMiterAsm

**Description:** rectangular torus miter (PDS U861)

**Symbol Name:** SP3DRecTorusMiterAsm.RecTorusMiterSym

**Workbook:** Sample Data Torus Miter Equipment Components.xls

**Workbook Sheet:** RecTorusMiter

**User Class Name:** Rectangular Torus Miter

**Part Number:** RectangularTorusMiter

**Inputs, Outputs, and Aspects:**

ProgID:

**Inputs = 6**

**Input = "MiterBendRadius"** **Description = "Bend Radius"**

**Input = "NoOfSegments"** **Description = "Number of Segments"**

**Input = "MiterBendAngle"** **Description = "Bend Angle"**

**Input = "MiterWidth"** **Description = "Width"**

**Input = "MiterDepth"** **Description = "Depth"**

**Input = "InsulationThickness"** **Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "RefPlane"** **Description = "Reference plane"**

**Output = "RefPlane1"** **Description = "Reference plane 1"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "Point"** **Description = "Reference Point"**

**Output = "ObjHoriLine"** **Description = "Reference Horizontal Line"**

**Output = "ObjVertLine"** **Description = "Reference Vertical Line"**

**Output = "ObjDefSurface"** **Description = "Default Surface"**

**Output = "RefSurface"** **Description = "Reference Surface"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

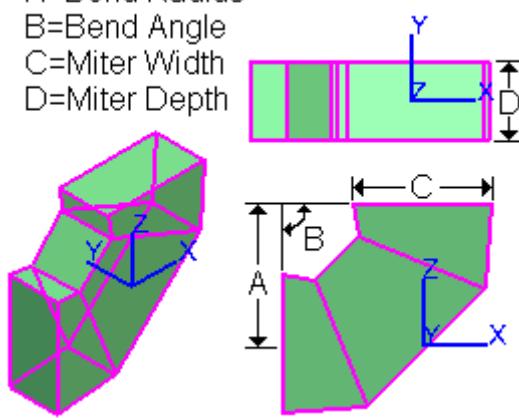
**Aspect = ReferenceGeometry**

A=Bend Radius

B=Bend Angle

C=Miter Width

D=Miter Depth



# SP3DREnExTyLNPW1CompAsm

**Description:** Exchanger Rear End Type L/N/P/W1 01

**Symbol Name:** SP3DREnXLNPW1CompAsm.REXLN PW1Sym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** RearEndTypeLNPW1Asm

**User Class Name:** Exchanger Rear End Type L/N/P/W1

**Part Number:** RearEndTypeLNPW1 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DREnXLNPW1CompAsm.REXLN PW1Sym

**Inputs = 9**

**Input and description** = "FrontEndLength1", "Front End Length1 P32",

**Input and description** = "ExchangerLength", "Exchanger Length P1", 4

**Input and description** = "RearEndFlangeDia", "Rear End Flange Diameter P40",

**Input and description** = "RearEndFlangeTk1", "Rear End Flange Thickness 1 P41"

**Input and description** = "RearEndLength", "Rear End Length P42",

**Input and description** = "RearEndFlangeTk2", "Rear End Flange Thickness 2 P43",

**Input and description** = "RearEndFlangeTk3", "Rear End Flange Thickness 3 P44"

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 10**

**Output and description** = "ExchRearEndRHSFlange", "Exchanger Rear End Right Hand Side Flange"

**Output and description** = "ExRearEndBody", "Exchanger Rear End Body"

**Output and description** = "ExRearEndBodyIFlange", "Exchanger Rear End Body Intermediate Flange"

**Output and description** = "ExchRearEndLHSFlange", "Exchanger Rear End Left Hand Side Flange"

**Output and description** = "ExchRearEndRHSFlangeIns", "Exchanger Rear End Right Hand Side FlangeInsulation"

**Output and description** = "ExRearEndBodyIns", "Exchanger Rear End Body Insulation"

**Output and description** = "ExRearEndBodyIFlangeIns", "Exchanger Rear End Body Intermediate Flange Insulation"

**Output and description** = "ExchRearEndLHSFlangeIns", "Exchanger Rear End Left Hand Side Flange Insulation"

**Output and description** = "ReEndExTypeLNPW1ControlPoint", "Control Point"

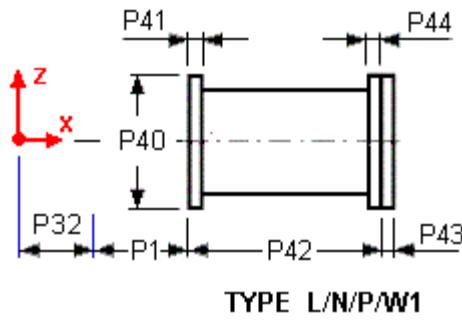
**Output and description** = "DefaultSurface", "Default Surface"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



- [P1] Exchanger Length
- [P32] Front End Length 1
- [P40] Rear End Flange Diameter
- [P41] Rear End Flange Thickness 1
- [P42] Rear End Length
- [P43] Rear End Flange Thickness 2
- [P44] Rear End Flange Thickness 3

## SP3DREnExTyMSTUW2CompAsm

**Description:** Exchanger Rear End Type MSTUW2 01

**Symbol Name:** SP3DREnXMSTUW2CompAsm.CREXMSTUW2Sym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** RearEndTypeMSTUW2Asm

**User Class Name:** Exchanger Rear End Type MSTUW2

**Part Number:** RearEndTypeMSTUW2 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DREnXMSTUW2CompAsm.CREXMSTUW2Sym

**Inputs = 7**

**Input and description** = "FrontEndLength1", "Front End Length1 P32"

**Input and description** = "ExchangerLength", "Exchanger Length P1"

**Input and description** = "RearEndFlangeDia", "Rear End Flange Diameter P40"

**Input and description** = "RearEndFlangeTk1", "Rear End Flange Thickness P41"

**Input and description** = "RearEndLength", "Rear End Length1 P42"

**Input and description** = "ChannelDiameter", "Channel Diameter P43"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 8**

**Output and description** = "ExchRearEndRHSFlange", "Exchanger Rear End Right Hand Side Flange"

**Output and description** = "ExRearEndBody", "Exchanger Rear End Body"

**Output and description** = "ExRearEndDome", "Exchanger Rear End Dome"

**Output and description** = "ExchRearEndRHSFlangeIns", "Exchanger Rear End Right Hand Side Flange Insulation"

**Output and description** = "ExRearEndBodyIns", "Exchanger Rear End Body Insulation"

**Output and description** = "ExRearEndDomeIns", "Exchanger Rear End Dome Insulation"

**Output and description** = "ReEndExTypeMSTUW2ControlPoint", "Control Point"

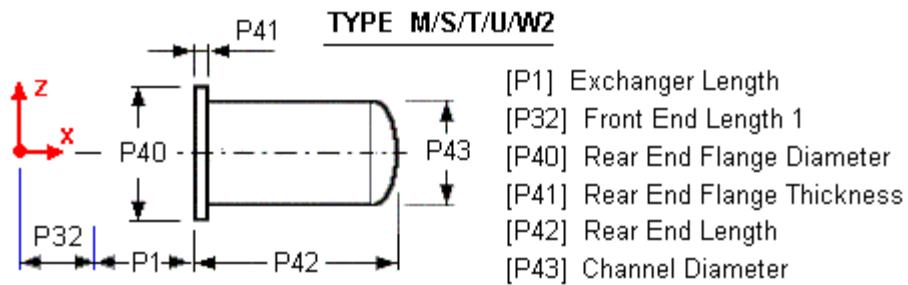
**Output and description** = "DefaultSurface", "Default Surface"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DREnExTyQCompAsm

**Description:** Exchanger Rear End Type Q 01

**Symbol Name:** SP3DREnXQCompAsm.REXQSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** RearEndTypeQAsm

**User Class Name:** Exchanger Rear End Type Q

**Part Number:** RearEndTypeQ 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DREnXQCompAsm.REXQSym

**Inputs = 8**

**Input and description** = "FrontEndLength1", "Front End Length1 P32",

**Input and description** = "ExchangerLength", "Exchanger Length P1", 4

**Input and description** = "RearEndFlangeDia", "Rear End Flange Diameter P40",

**Input and description** = "RearEndFlangeTk1", "Rear End Flange Thickness P41", 0

**Input and description** = "RearEndLength", "Rear End Length1 P42",

**Input and description** = "RearEndDiameter", "RearEndDiameter P43",

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 6**

**Output and description** = "ExchRearEndRHSFlange", "Exchanger Rear End Right Hand Side Flange"

**Output and description** = "ExRearEndBody", "Exchanger Rear End Body"

**Output and description** = "ExchRearEndRHSFlangeIns", "Exchanger Rear End Right Hand Side FlangeInsulation"

**Output and description** = "ExRearEndBodyIns", "Exchanger Rear End Body Insulation"

**Output and description** = "ReEndExTypeQControlPoint", "Control Point"

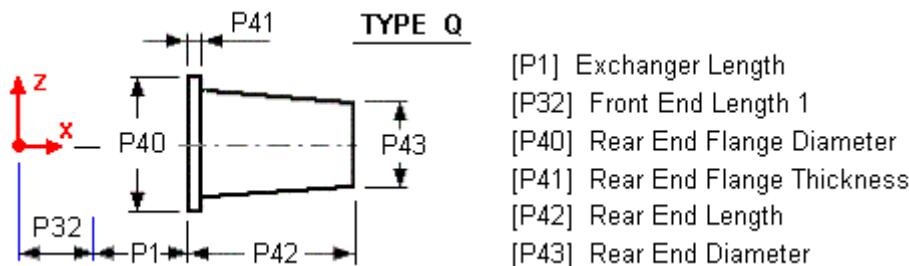
**Output and description** = "DefaultSurface", "Default Surface"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DRndTorusMiterAsm

**Description:** round torus miter (PDS U860)

**Symbol Name:** SP3DRndTorusMiterAsm.RndTorusMiterSym

**Workbook:** Sample Data Torus Miter Equipment Components.xls

**Workbook Sheet:** RoundTorusMiter

**User Class Name:** Round Torus Miter

**Part Number:** RoundTorMiter

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRndTorusMiterAsm.RndTorusMiterSym

**Inputs = 5**

**Input = "MiterBendRadius"** **Description = "Bend Radius"**

**Input = "NoOfSegments"** **Description = "Number of Segments"**

**Input = "MiterBendAngle"** **Description = "Bend Angle"**

**Input = "MiterCylinderDia"** **Description = "cylinder dia"**

**Input = "InsulationThickness"** **Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "RefPlane"** **Description = "Reference plane"**

**Output = "RefPlane1"** **Description = "Reference plane 1"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "ObjSurface"** **Description = "Object Surface"**

**Output = "Point"** **Description = "Reference Point"**

**Output = "ObjHoriLine"** **Description = "Reference Horizontal Line"**

**Output = "ObjVertLine"** **Description = "Reference Vertical Line"**

**Output = "ObjDefSurface"** **Description = "Default Surface"**

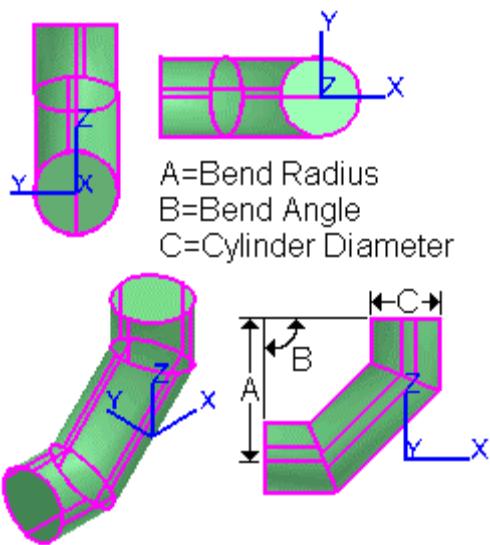
**Output = "RefSurface"** **Description = "Reference Surface"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = ReferenceGeometry**



# SP3DSaddleSupCompAsm

**Description:** Saddle Support

**Symbol Name:** SP3DSaddleSupCompAsm.SaddleSupportSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** SaddleSupportsAsm

**User Class Name:** Saddle Support

**Part Number:** SaddleSupports01\_Asm, SaddleSupports02\_Asm,  
SaddleSupports03\_Asm, SaddleSupports04\_Asm, SaddleSupports05\_Asm,  
SaddleSupports06\_Asm, SaddleSupports07\_Asm, SaddleSupports08\_Asm,  
SaddleSupports09\_Asm, SaddleSupports10\_Asm, SaddleSupports11\_Asm,  
SaddleSupports12\_Asm, SaddleSupports13\_Asm, SaddleSupports14\_Asm,  
SaddleSupports15\_Asm, SaddleSupports16\_Asm, SaddleSupports17\_Asm,  
SaddleSupports18\_Asm, SaddleSupports19\_Asm, SaddleSupports20\_Asm,  
SaddleSupports21\_Asm, SaddleSupports22\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSaddleSupCompAsm.SaddleSupportSym

**Inputs = 12**

**Input = "NominalShellDiameter" Description = "NominalShellDiameter"**

**Input = "A" Description = "A"**

**Input = "B" Description = "B"**

**Input = "D" Description = "D"**

**Input = "DG" Description = "DG"**

**Input = "E" Description = "E"**

**Input = "G" Description = "G"**

**Input = "J" Description = "J"**

**Input = "T" Description = "T"**

**Input = "VesselDesignPressureH" Description = "VesselDesignPressureH"**

**Input = "VesselDesignPressureR" Description = "VesselDesignPressureR"**

**Input = "VesselHeight" Description = "VesselHeight"**

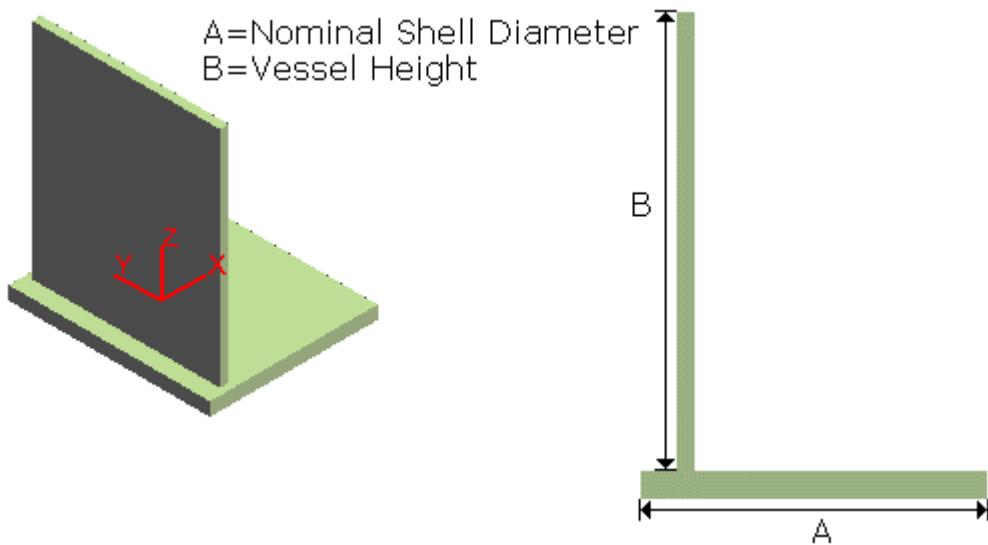
**Outputs = 2**

**Output = "Box1" Description = "Box 1"**

**Output = "Box2" Description = "Box 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSkirtAsm

**Description:** Skirt with Diameter and Tan to Tan Occurrences

**Symbol Name:** SP3DSkirtAsm.CSkirtSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** SkirtAsm

**User Class Name:** Skirt

**Part Number:** Skirt 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSkirtAsm.CSkirtSym

**Inputs = 2**

**Input = "VesselDiameter" Description = "VesselDiameter"**

**Input = "VesselTantoTan" Description = "Vessel Tan to Tan"**

**Outputs = 4**

**Output = "Snout" Description = "Drum Support Skirt"**

**Output = "Point" Description = "Skirt Point"**

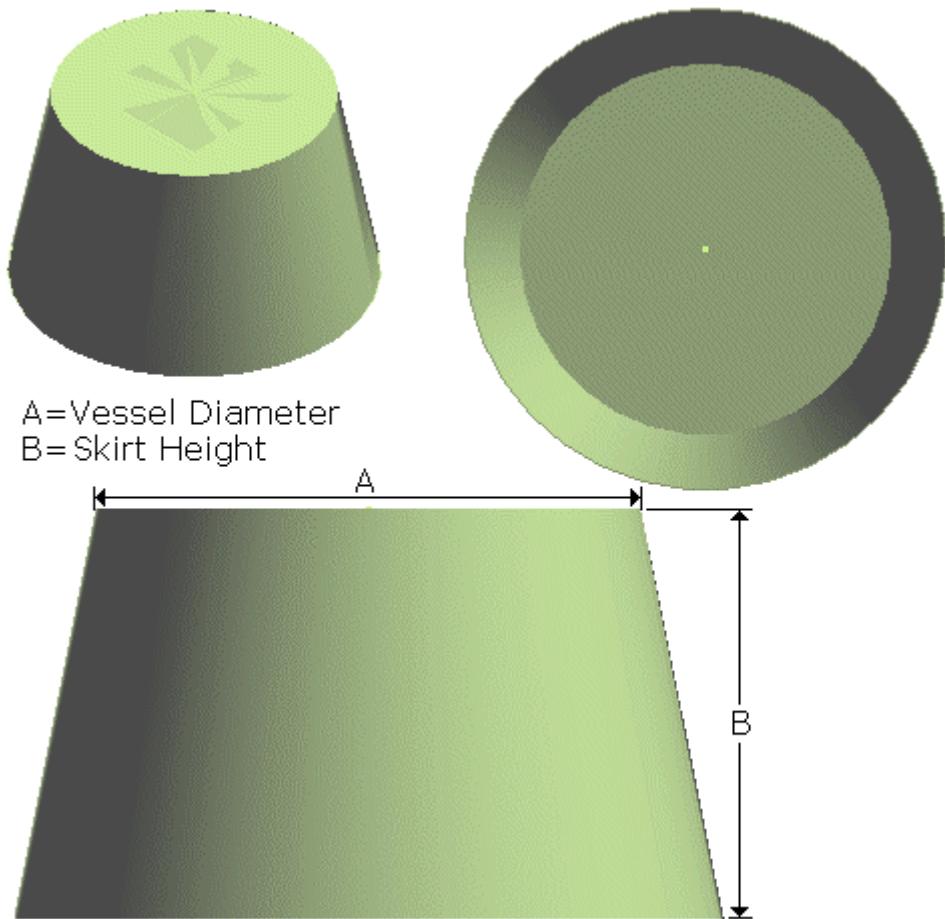
**Output = "Plane1" Description = "Default Plane Top"**

**Output = "Plane2" Description = "Default Plane Bottom"**

**Aspects = 1**

**Aspect = SimplePhysical**

Dimension	Input Name	Property Page Name
A	Vessel Diameter	Vessel Diameter
B	Vessel Tangent to Tangent	Skirt Height



# SP3DSkirtBaseTypeACompAsm

**Description:**

**Symbol Name:** SP3DSkirtBaseTypeACompAsm.TypeASym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSkirtBaseTypeACompAsm.TypeASym

**Inputs = 11**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "SkirtThickness", "Skirt Thickness"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "A", "A"

**Input and description** = "B", "B"

**Input and description** = "C", "C"

**Input and description** = "D", "D"

**Input and description** = "E", "E"

**Input and description** = "H", "H"

**Input and description** = "T", "T"

**Input and description** = "BoltSize", "Bolt Size"

**Outputs = 5**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "CircularBase", "Circular Base"

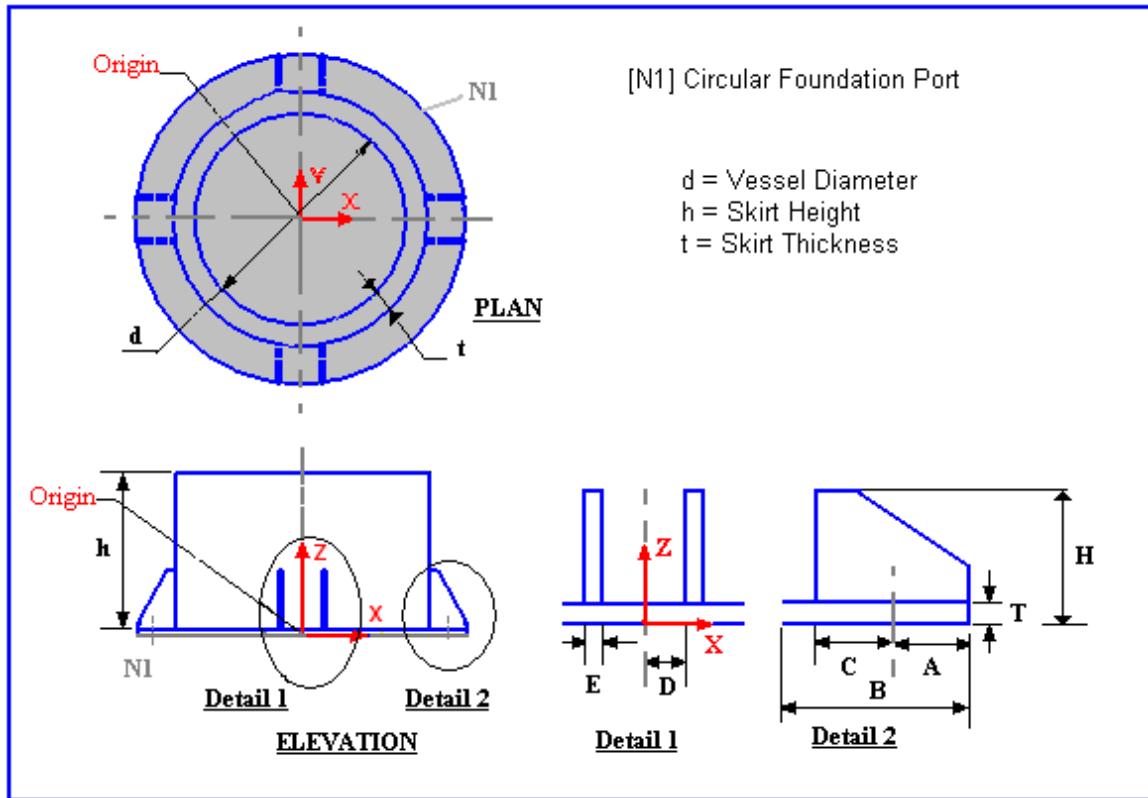
**Output and description** = "Skirt", "Vessel Skirt"

**Output and description** = "Support\_", "Support"

**Output and description** = "FoundationPort", "FoundationPort"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DSkirtBaseTypeBCompAsm

## **Description:**

**Symbol Name:** SP3DSkirtBaseTypeBCompAsm.TypeBSym

## **Workbook:**

### **Workbook Sheet:**

### **User Class Name:**

### **Part Number:**

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DSkirtBaseTypeBCompAsm.TypeBSym

#### **Inputs = 13**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "A", "A"

**Input and description** = "B", "B"

**Input and description** = "C", "C"

**Input and description** = "D", "D"

**Input and description** = "E", "E"

**Input and description** = "F", "F"

**Input and description** = "H", "H"

**Input and description** = "T1", "T1"

**Input and description** = "T2", "T2"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "SkirtThickness", "Skirt Thickness"

**Input and description** = "BoltSize", "Bolt Size"

#### **Outputs = 5**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "CircularBase", "Circular Base"

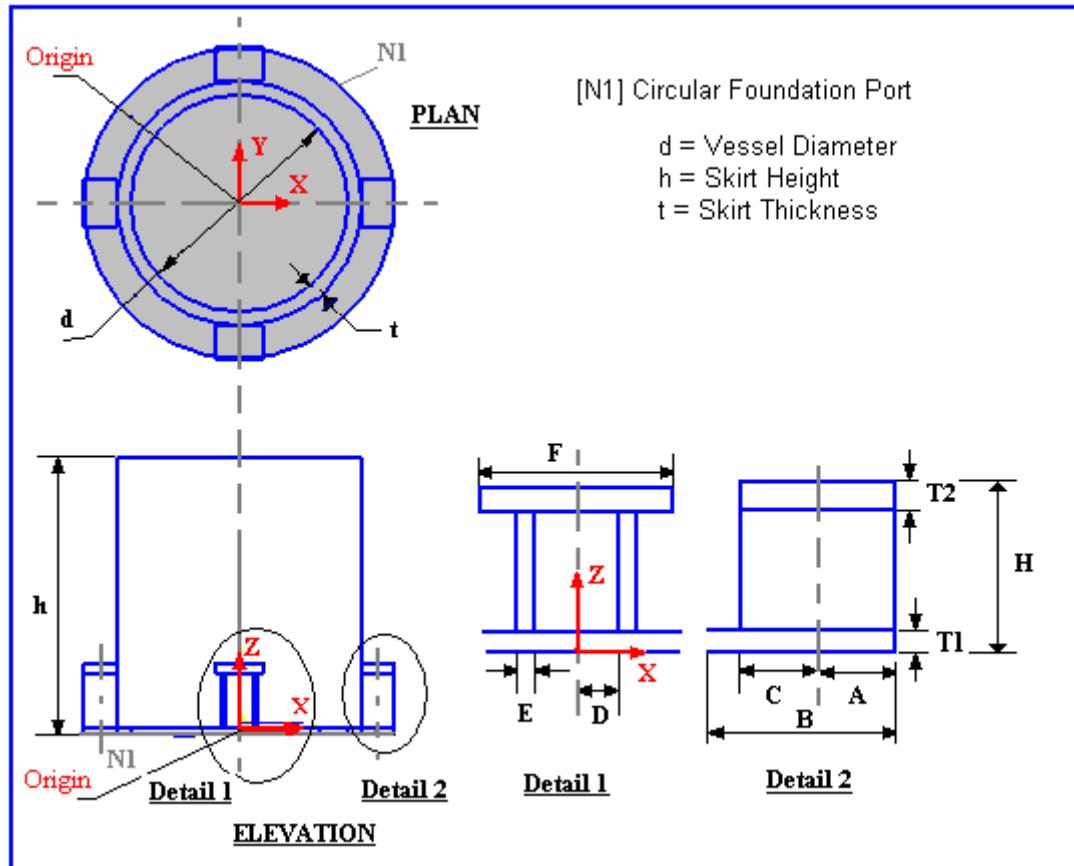
**Output and description** = "VesselSkirt", "Vessel Skirt"

**Output and description** = "Support\_", "Support"

**Output and description** = "FoundationPort", "FoundationPort"

#### **Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DSkirtBaseTypeCCompAsm

**Description:**

**Symbol Name:** SP3DSkirtBaseTypeCCompAsm.TypeCSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DSkirtBaseTypeCCompAsm.TypeCSym

**Inputs = 13**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "SkirtThickness", "Skirt Thickness"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "A", "A"

**Input and description** = "B", "B"

**Input and description** = "C", "C"

**Input and description** = "D", "D"

**Input and description** = "E", "E"

**Input and description** = "F", "F"

**Input and description** = "H", "H"

**Input and description** = "T1", "T1"

**Input and description** = "T2", "T2"

**Input and description** = "BoltSize", "Bolt Size"

**Outputs = 5**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "CircularBase", "Circular Base"

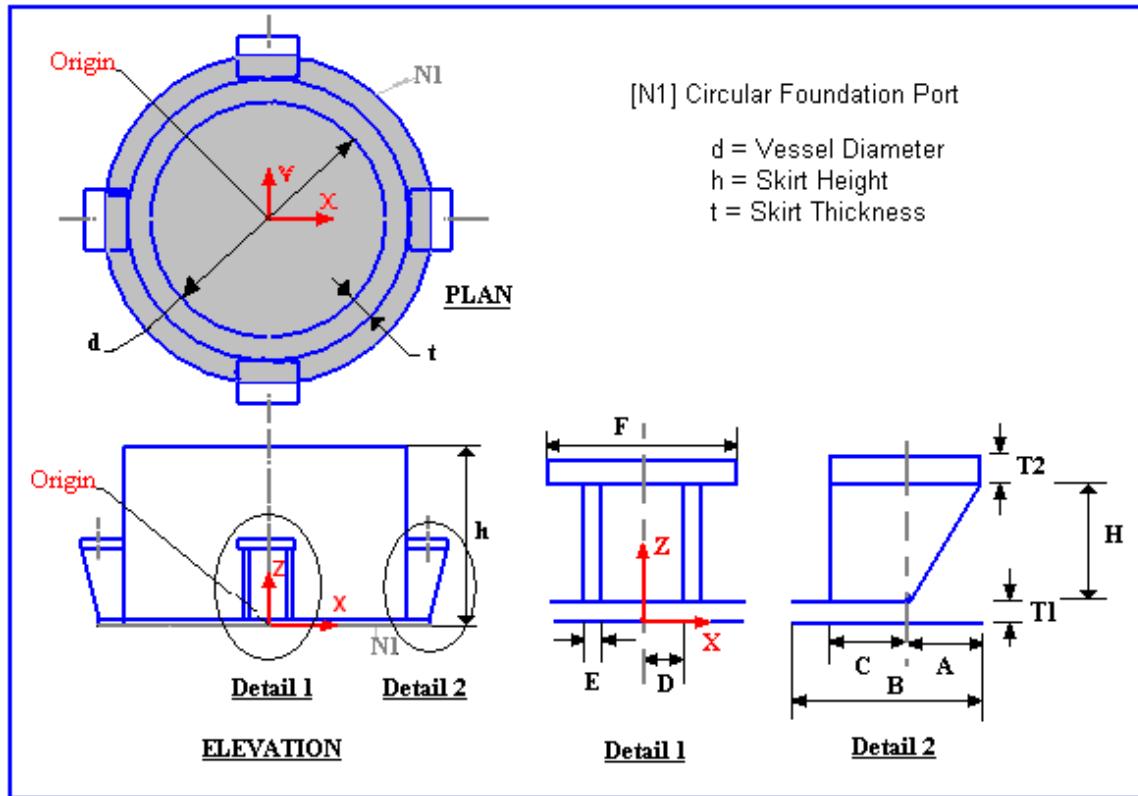
**Output and description** = "Skirt", "Vessel Skirt"

**Output and description** = "Support\_", "Support"

**Output and description** = "FoundationPort", "FoundationPort"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DSkirtBaseTypeDCompAsm

## **Description:**

**Symbol Name:** SP3DSkirtBaseTypeDCompAsm.TypeDSym

## **Workbook:**

### **Workbook Sheet:**

### **User Class Name:**

### **Part Number:**

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DSkirtBaseTypeDCompAsm.TypeDSym

#### **Inputs = 12**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "A", "A"

**Input and description** = "B", "B"

**Input and description** = "C", "C"

**Input and description** = "D", "D"

**Input and description** = "E", "E"

**Input and description** = "H", "H"

**Input and description** = "T1", "T1"

**Input and description** = "T2", "T2"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "SkirtThickness", "Skirt Thickness"

**Input and description** = "BoltSize", "Bolt Size"

#### **Outputs = 6**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "CircularBase", "Circular Base"

**Output and description** = "VesselSkirt", "Vessel Skirt"

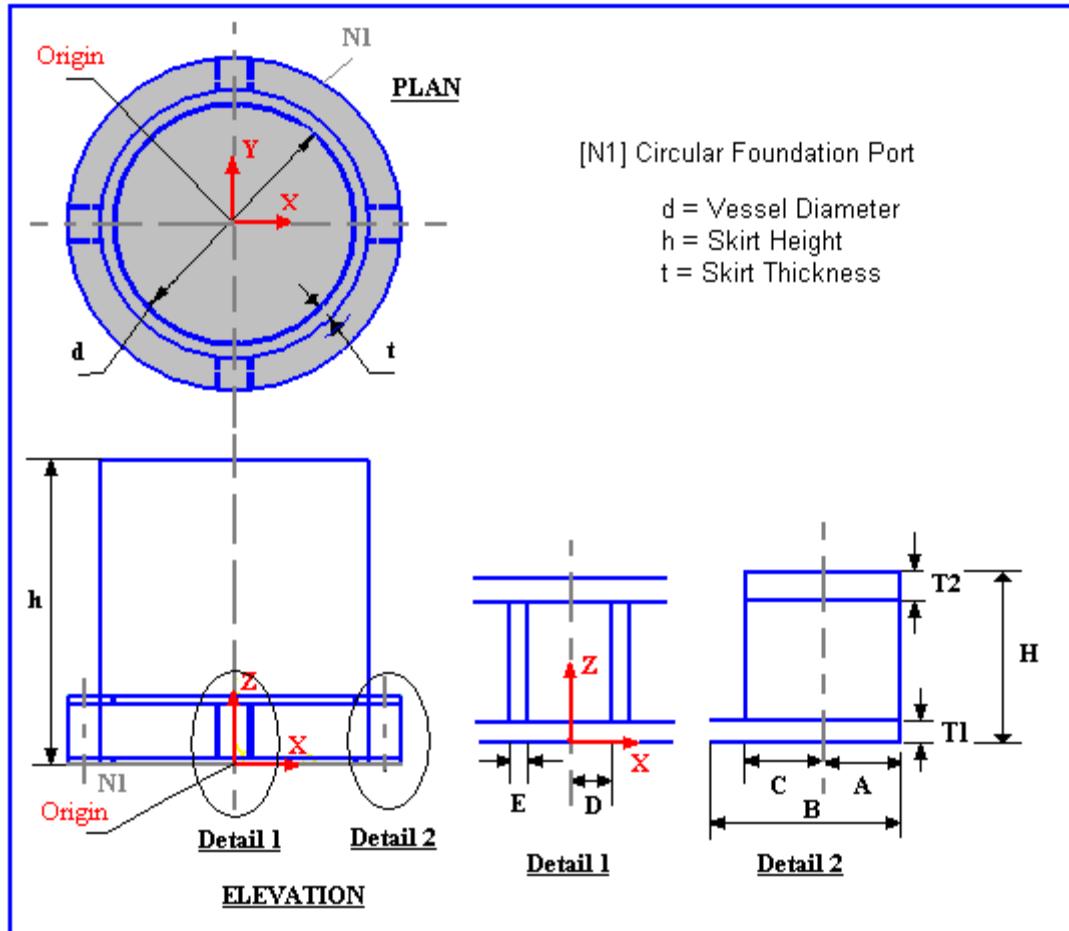
**Output and description** = "Support\_ ", "Support"

**Output and description** = "TopRing", "Top Ring"

**Output and description** = "FoundationPort", "FoundationPort"

#### **Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DSpiralStairTankComp

**Description:**

**Symbol Name:** SP3DSpiralStairTankComp.SpiralStairCSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSpiralStairTankComp.SpiralStairCSym

**Inputs = 10**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "StartElevation", "Start Elevation"

**Input and description** = "EndElevation", "End Elevation"

**Input and description** = "StartAngle", "Start Angle"

**Input and description** = "AngleBetSupports", "Angle between Supports"

**Input and description** = "RampAngle", "Ramp Angle"

**Input and description** = "SupportVerticalDistance", "Support Vertical Distance"

**Input and description** = "SupportVerticalSpacing", "Support Vertical Spacing"

**Input and description** = "SpiralDirection", "Spiral Direction"

**Input and description** = "DisplaySpiralPoints", "Display Spiral Points"

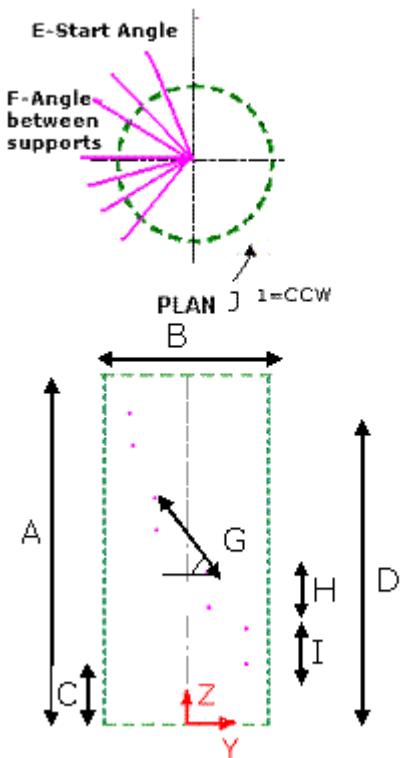
**Outputs = 2**

**Output and description** = "Point1\_", "Point1"

**Output and description** = "Point2\_", "Point2"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



A = Vessel Tangent to Tangent  
B = Vessel Diameter  
C = Start Elevation  
D = End Elevation  
E = Start Angle  
F = Angle Between Supports  
G = Ramp Angle  
H = Support Vertical Distance  
I = Support Vertical Spacing  
J = Spiral Direction

1= Counter Clock Wise Direction  
2= Clock Wise Direction

1=Display Spiral Points (Yes)  
0=Display Spiral Points (No)

When Ramp Angle is provided, set the Support Vertical Distance to Zero and Vice versa

# SP3DSupportLegsCompAsm

## Description:

**Symbol Name:** SP3DSupportLegsCompAsm.SupportLegsSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DSupportLegsCompAsm.SupportLegsSym

#### Inputs = 7

**Input and description** = "SupportAngularLocation", "SupportAngularLocation"

**Input and description** = "NumberOfSupports", "NumberOfSupports"

**Input and description** = "SupportHeight", "SupportHeight",

**Input and description** = "SupportLength", "SupportLength",

**Input and description** = "SupportThickness", "SupportThickness",

**Input and description** = "SupportRadialLocation", "SupportRadialLocation",

**Input and description** = "StartHeight", "StartHeight",

#### Outputs = 7

**Output and description** = "Supports\_", "ObjVertVesselSupport"

**Output and description** = "Point1\_", "Point1"

**Output and description** = "Point2\_", "Point2"

**Output and description** = "Edge1\_", "Edge1"

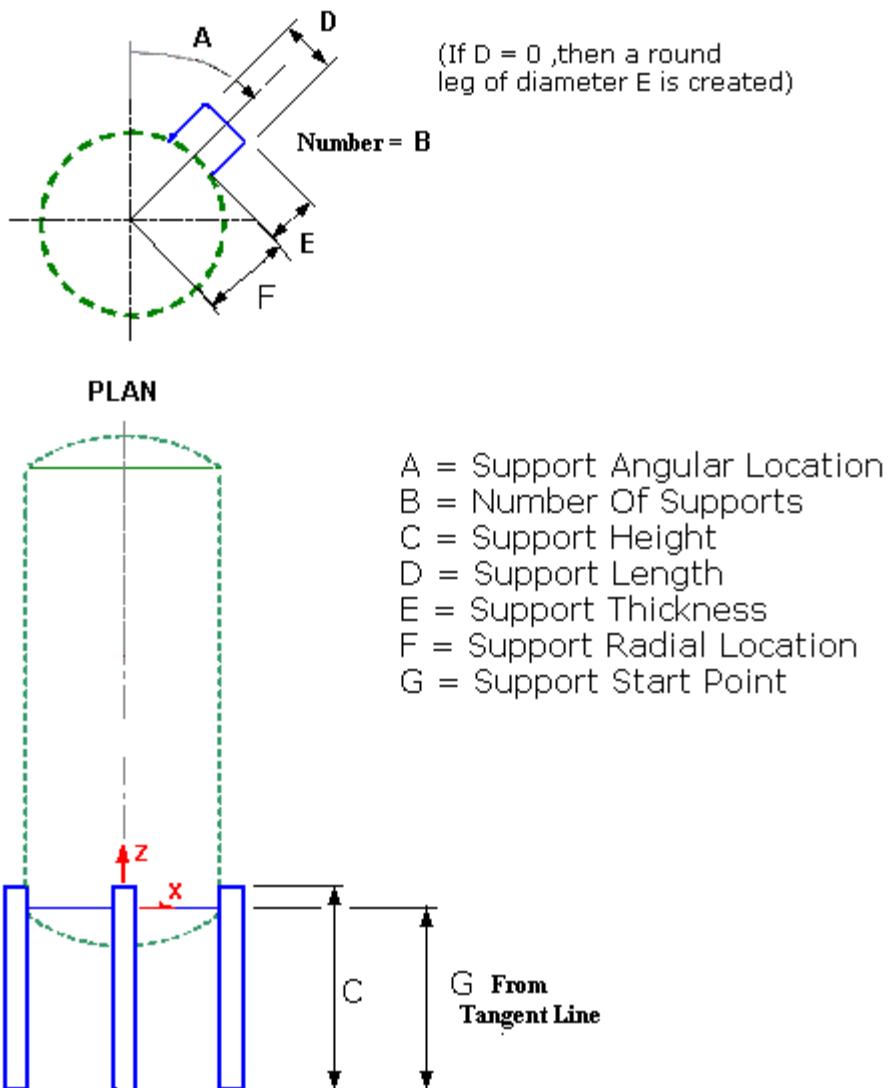
**Output and description** = "Edge2\_", "Edge2"

**Output and description** = "Edge3\_", "Edge3"

**Output and description** = "Edge4\_", "Edge4"

#### Aspects = 1

**Aspect** = "Physical", "Physical"



## SP3DSupportLugAsm

**Description:** Support Lug with Diameter and Height Occurrences

**Symbol Name:** SP3DSupportLugAsm.CSLugSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** SupportLugAsm

**User Class Name:** Support Lug for Vessel

**Part Number:** Support Lug01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSupportLugAsm.CSLugSym

**Inputs = 2**

**Input = "VesselDiameter" Description = "VesselDiameter"**

**Input = "VesselLugOffset" Description = "Drum Support Lug Offset"**

**Outputs = 6**

**Output = "Box1" Description = "Support Lug"**

**Output = "Box2" Description = "Support Lug"**

**Output = "Box3" Description = "Support Lug"**

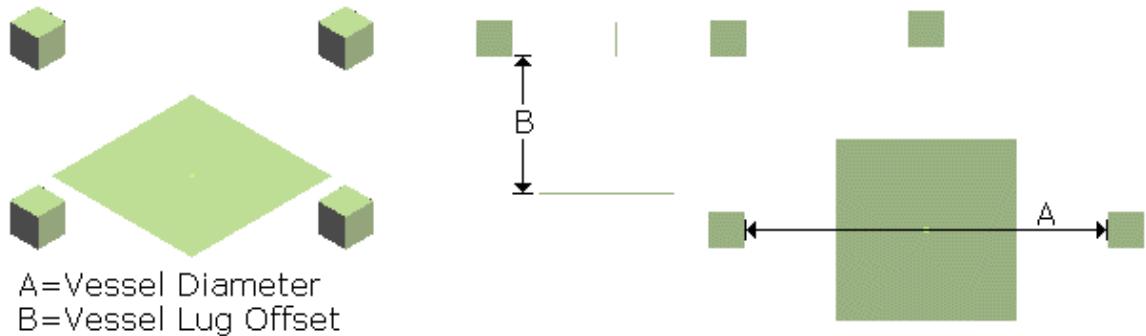
**Output = "Box4" Description = "Support Lug"**

**Output = "Point" Description = "Drum Point"**

**Output = "Plane" Description = "Default Plane"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSwGearSectCompAsm

**Description:**

**Symbol Name:** SP3DSwGearSectCompAsm.SGearSectionSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSwGearSectCompAsm.SGearSectionSym

**Inputs = 3**

**Input and description** = "SwitchGearHeight", "Height of the SwitchGear"

**Input and description** = "SwitchGearWidth", "Width of the SwitchGear"

**Input and description** = "SwitchGearLength", "Length of the SwitchGear"

**Outputs = 33**

**Output and description** = "SwitchGearBody", "SwitchGear Body"

**Output and description** = "ConduitPort1", "ConduitPort 1"

**Output and description** = "ConduitPort2", "ConduitPort 2"

**Output and description** = "ConduitPort3", "ConduitPort 3"

**Output and description** = "ConduitPort4", "ConduitPort 4"

**Output and description** = "CablePort1", "CablePort 1"

**Output and description** = "CablePort2", "Cable Port 2"

**Output and description** = "CablePort3", "Cable Port 3"

**Output and description** = "CablePort4", "Cable Port 4"

**Output and description** = "CableTrayPort1", "CableTrayPort 1"

**Output and description** = "CablePort5", "CablePort 5"

**Output and description** = "CableCircle1", "CableCircle1"

**Output and description** = "CenterPos1", "FaceCenter Position1"

**Output and description** = "CenterPos2", "FaceCenter Position2"

**Output and description** = "CenterPos3", "FaceCenter Position3"

**Output and description** = "CenterPos4", "FaceCenter Position4"

**Output and description** = "CenterPos5", "FaceCenter Position5"

**Output and description** = "CenterPos6", "FaceCenter Position6"

**Output and description** = "Edge1", "Edge 1"

**Output and description** = "Edge2", "Edge 2"

**Output and description** = "Edge3", "Edge 3"

**Output and description** = "Edge4", "Edge 4"

**Output and description** = "Edge5", "Edge 5"

**Output and description** = "Edge6", "Edge 6"

**Output and description** = "Edge7", "Edge 7"

**Output and description** = "Edge8", "Edge 8"

**Output and description** = "Edge9", "Edge 9"

**Output and description** = "Edge10", "Edge 10"

**Output and description** = "Edge11", "Edge 11"

**Output and description** = "Edge12", "Edge 12"

**Output and description** = "SwitchGearBodyOp", "SwitchGear Body Operation",  
Operation

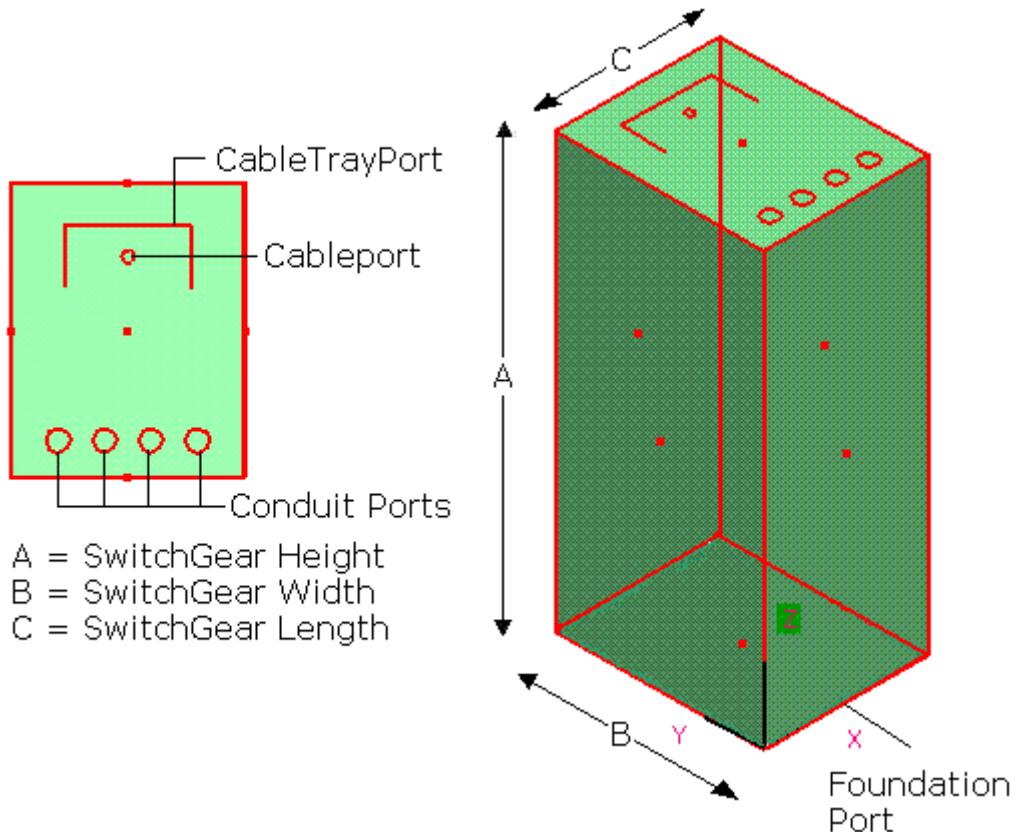
**Output and description** = "SwitchGearDoorSwingOp1", "SwitchGear Door Swing  
Operation CCWise", Operation

**Output and description** = "SwitchGearDoorSwingOp2", "SwitchGear Door Swing  
Operation CWise", Operation

**Aspects** = 2

**Aspect** = "Physical", "Physical Description"

**Aspect** = "Operation", "Operation Description", Operation



## SP3DTestSkirt

### Description:

**Symbol Name:** SP3DTestSkirt.CTestSkirt

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** Skirt

**User Class Name:** Skirt

**Part Number:** Skirt 01

### Inputs, Outputs, and Aspects:

ProgID: SP3DTestSkirt.CTestSkirt

Number of Inputs = 2

Input name = "VesselDiameter"

Input description = "VesselDiameter"

Input name = "VesselTantoTan"

Input description = "Vessel Tan to Tan"

Number of Outputs = 4

Output name = "Snout"

Output description = "Drum Support Skirt"

Output name = "Point"

Output description = "Skirt Point"

Output name = "Plane1"

Output description = "Default Plane Top"

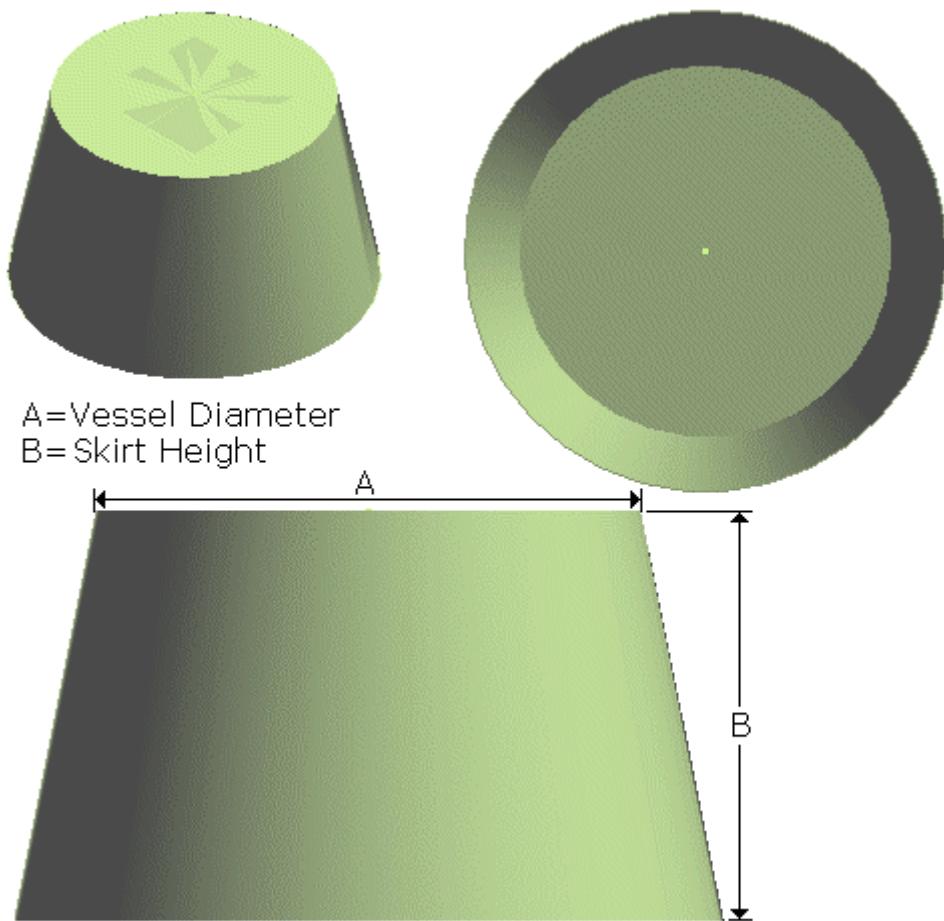
Output name = "Plane2"

Output description = "Default Plane Bottom"

Number of Aspects = 1

Supported AspectId = SimplePhysical

Dimension	Input Name	Property Page Name
A	Vessel Diameter	Vessel Diameter
B	Vessel Tangent to Tangent	Skirt Height



## SP3DVerDrumCompAsm

**Description:** 2:1 Elliptical Head Vertical Drum

**Symbol Name:** SP3DVerDrumCompAsm.VerticalDrumSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** VDrumAsm

**User Class Name:** Vertical Drum

**Part Number:** VDrum 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVerDrumCompAsm.VerticalDrumSym

**Inputs = 3**

**Input = "VesselDiameter" Description = "Vessel Diameter"**

**Input = "VesselTantoTan" Description = "Vessel Tangent to Tangent"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Cylinder" Description = "Drum Body"**

**Output = "Dish1" Description = "Drum End1"**

**Output = "Dish2" Description = "Drum End2"**

**Output = "Point" Description = "Point"**

**Output = "Plane" Description = "Plane"**

**Output = "InsulatedBody" Description = "Insulated Body"**

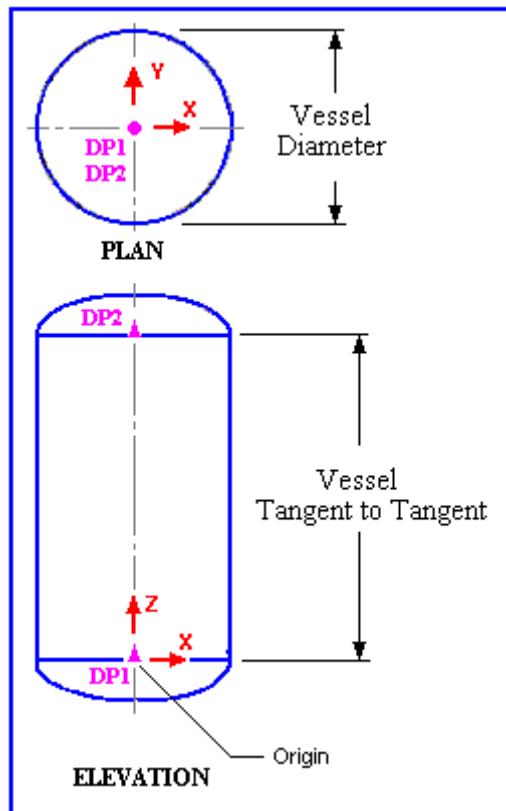
**Output = "InsulatedDish1" Description = "Insulated Drum End1"**

**Output = "InsulatedDish2" Description = "Insulated Drum End2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DVesselPlatformAsm

**Description:** Vertical Vessel Platform

**Symbol Name:** SP3DVesselPlatformAsm.CVPlatformSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** VerticalVesselPlatformAsm

**User Class Name:** Vertical Vessel Platform

**Part Number:** VerticalVesselPlatform-001\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVesselPlatformAsm.CVPlatformSym

**Inputs = 32**

**Input = "VesselDiameter" Description = "Vessel Diameter"**

**Input = "PlatformWidth1" Description = "Platform Width1"**

**Input = "PlatformHeight1" Description = "Platform Height or Thickness"**

**Input = "Angle1" Description = "Angle1"**

**Input = "Angle2" Description = "Angle2"**

**Input = "ProjectionDistance" Description = "ProjectionDistance"**

**Input = "Orientation" Description = "Orientation"**

**Input = "PlatformType" Description = "PlatformType"**

**Input = "NoofSections" Description = "NoofSections"**

**Input = "Angle3" Description = "Angle3"**

**Input = "PlatformWidth2" Description = "Platform Width2"**

**Input = "PlatformHeight2" Description = "Platform Height2 or Thickness"**

**Input = "NumberofHoles1" Description = "NumberofHoles1"**

**Input = "HoleAngle1" Description = "HoleAngle1"**

**Input = "HolePosition1" Description = "HolePosition1"**

**Input = "HoleRadius1" Description = "HoleRadius1"**

**Input = "HoleAngle2" Description = "HoleAngle2"**

**Input = "HolePosition2" Description = "HolePosition2"**

**Input = "HoleRadius2" Description = "HoleRadius2"**

**Input = "HoleAngle3" Description = "HoleAngle3"**

**Input = "HolePosition3" Description = "HolePosition3"**

**Input = "HoleRadius3" Description = "HoleRadius3"**

**Input = "NumberofHoles2" Description = "NumberofHoles2"**

**Input = "HoleAngle4" Description = "HoleAngle4"**

**Input = "HolePosition4" Description = "HolePosition4"**

**Input = "HoleRadius4" Description = "HoleRadius4"**

**Input = "HoleAngle5" Description = "HoleAngle5"**

**Input = "HolePosition5" Description = "HolePosition5"**

**Input = "HoleRadius5" Description = "HoleRadius5"**

**Input = "HoleAngle6" Description = "HoleAngle6"**

**Input = "HolePosition6" Description = "HolePosition6"**

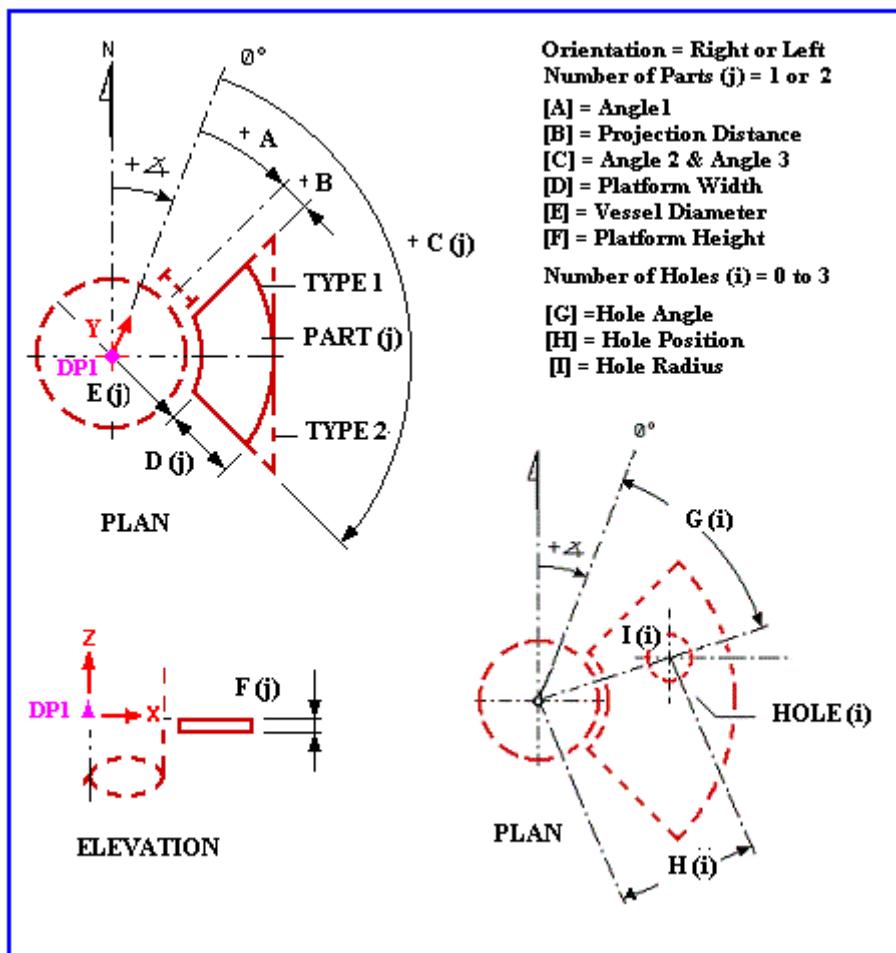
**Input = "HoleRadius6" Description = "HoleRadius6"**

**Outputs = 1**

**Output = "TopLine1" Description = "TopLine1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DVesselSkirtCompAsm

**Description:** Vessel Skirt

**Symbol Name:** SP3DVesselSkirtAsm.CVSkirtSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** VesselSkirtAsm

**User Class Name:** Skirt of Vessel

**Part Number:** VesselSkirt01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVesselSkirtAsm.CVSkirtSym

**Inputs = 8**

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "SkirtBottomDiameter", "Skirt Bottom Diameter"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "SupportHeight", "Support Height"

**Input and description** = "SupportDiameter", "Support Diameter"

**Input and description** = "BasePlateThickness", "Base Plate Thickness"

**Input and description** = "BasePlateDiameter", "BasePlate Diameter"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 10**

**Output and description** = "Skirt", "Skirt"

**Output and description** = "BasePlate", "Base Plate"

**Output and description** = "Gusset", "Gusset"

**Output and description** = "AnchorPlate", "Anchor Plate"

**Output and description** = "SupportIns", "Support Insulation"

**Output and description** = "SkirtIns", "Skirt Insulation"

**Output and description** = "OriginPoint", "Point at origin"

**Output and description** = "VerticalLine", "Vertical Line"

**Output and description** = "DefaultSurface", "Default Surface at the Top"

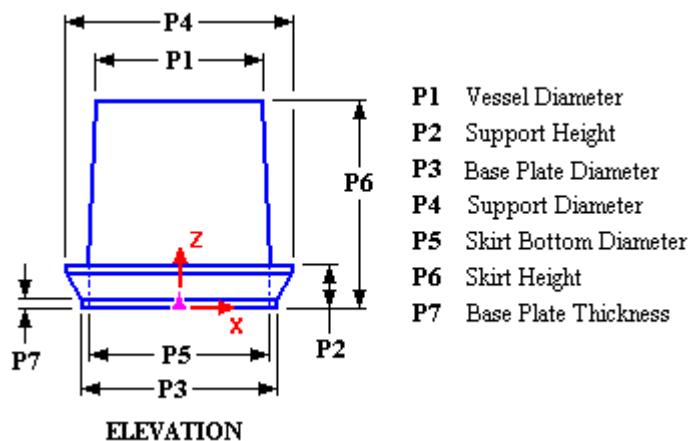
**Output and description** = "BotDefaultSurface", "Default Surface at the Bottom"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



## SP3DVOITorusMiterAsm

**Description:** vertical oval torus miter (PDS U862)

**Symbol Name:** SP3DVOITorusMiterAsm.VOITorusMiterSym

**Workbook:** Sample Data Torus Miter Equipment Components.xls

**Workbook Sheet:** VerOvlTorMiter

**User Class Name:** Vertical Oval Torus Miter

**Part Number:** Vertical Oval Torus Miter

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVOITorusMiterAsm.VOITorusMiterSym

**Inputs = 6**

**Input = "MiterBendRadius" Description = "Bend Radius"**

**Input = "NoOfSegments" Description = "Number of Segments"**

**Input = "MiterBendAngle" Description = "Bend Angle"**

**Input = "MiterWidth" Description = "Width"**

**Input = "MiterDepth" Description = "Depth"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "RefPlane" Description = "Reference plane"**

**Output = "RefPlane1" Description = "Reference plane 1"**

**Output = "ObjSurface" Description = "Object Surface"**

**Output = "ObjSurface" Description = "Object Surface"**

**Output = "Point" Description = "Reference Point"**

**Output = "ObjHoriLine" Description = "Reference Horizontal Line"**

**Output = "ObjVertLine" Description = "Reference Vertical Line"**

**Output = "ObjDefSurface" Description = "Default Surface"**

**Output = "RefSurface" Description = "Reference Surface"**

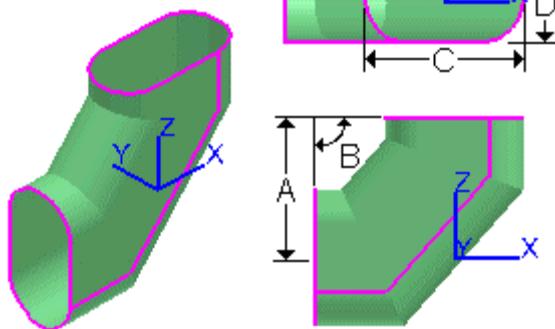
**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = ReferenceGeometry**

A=Bend Radius  
B=Bend Angle  
C=Miter Width  
D=Miter Depth



## SP3DWeldPiGMLCompAsm

**Description:** WELDED PIPE GUIDE FOR MEDIUM DIA. LINES 8" THRU 24" PIPE

**Symbol Name:** SP3DWeldPiGMLCompAsm.WPGuideFMediumLSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** Pipeguide8to24inAsm

**User Class Name:** Welded Pipe Guide for Medium Lines

**Part Number:** Pipeguide8to24in 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWeldPiGMLCompAsm.WPGuideFMediumLSym

**Inputs = 4**

**Input and description** = "VesselDiameter", "Tower Diameter",

**Input and description** = "PipeCLtoTowerCL", "Pipe CenterLine to Tower CenterLine-Y",

**Input and description** = "TowertoGuideBase", "Tower Outer shell to Guide Base-K",

**Input and description** = "PipeOD", "Pipe Outer Diameter",

**Outputs = 20**

**Output and description** = "Saddle", "Saddle Body"

**Output and description** = "SaddleSupport1", "Top Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport2", "Bottom Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport3", "Box Type portion fits in Clamps"

**Output and description** = "SupportCenterPlate1", "Guide saddle support CenterPlate"

**Output and description** = "GuideSupport1", "Tower circular support"

**Output and description** = "GuideSupport2", "Top guide plate"

**Output and description** = "GuideSupport3", "Guide Clamp Plate"

**Output and description** = "SupportCenterPlate2", "Guide support CenterPlate"

**Output and description** = "ZClamp1A", "Left Z-Clamp Inner Box"

**Output and description** = "ZClamp1B", "Left Z-Clamp Outer Box"

**Output and description** = "ZClamp2A", "Right Z-Clamp Inner Box"

**Output and description** = "ZClamp2B", "Right Z-Clamp Outer Box"

**Output and description** = "Bolt1", "Left Bolt"

**Output and description** = "Bolt2", "Right Bolt"

**Output and description** = "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description** = "VerticalPipeLine", "Reference line on Pipe"

**Output and description** = "RadialTowerLine", "Reference line on Tower"

**Output and description** = "TowerPoint", "Point at origin"

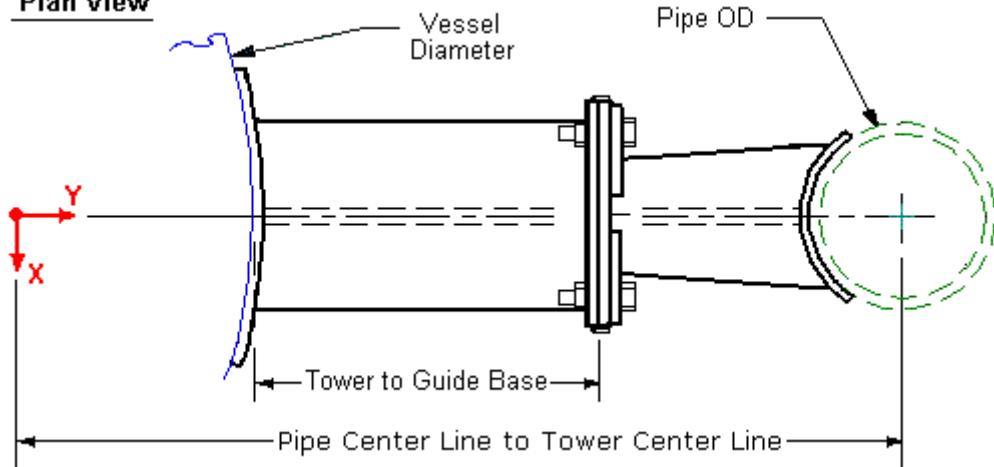
**Output and description** = "PipePoint", "Point at Pipe Axis"

**Aspects = 2**

**Aspect = "SimplePhysical", "PipingAspect Description"**

**Aspect = "ReferenceGeometry", "ReferenceGeometry"**

**Plan View**



## SP3DWeldPiGSLCompAsm

**Description:** WELDED PIPE GUIDE FOR SMALL LINES THRU 6" PIPE

**Symbol Name:** SP3DWeldPiGSLCompAsm.WPGuideFoSmallLSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PipeguideUpto6inAsm

**User Class Name:** Welded Pipe Guide for Small Lines

**Part Number:** PipeguideUpto6in 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWeldPiGSLCompAsm.WPGuideFoSmallLSym

**Inputs = 4**

**Input and description** = "VesselDiameter", "Tower Diameter",

**Input and description** = "PipeCLtoTowerCL", "Pipe CenterLine to Tower CenterLine-Y",

**Input and description** = "TowertoGuideBase", "Tower Outer shell to Guide Base-K",

**Input and description** = "PipeOD", "Pipe Outer Diameter",

**Outputs = 20**

**Output and description** = "Saddle", "Saddle Body"

**Output and description** = "SaddleSupport1", "Top Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport2", "Bottom Trapizoidal Saddle Support"

**Output and description** = "SaddleSupport3", "Box Type portion fits in Clamps"

**Output and description** = "SupportCenterPlate1", "Guide saddle support CenterPlate"

**Output and description** = "GuideSupport1", "Tower circular support"

**Output and description** = "GuideSupport2", "Top guide plate"

**Output and description** = "GuideSupport3", "Guide Clamp Plate"

**Output and description** = "SupportCenterPlate2", "Guide support CenterPlate"

**Output and description** = "ZClamp1A", "Left Z-Clamp Inner Box"

**Output and description** = "ZClamp1B", "Left Z-Clamp Outer Box"

**Output and description** = "ZClamp2A", "Right Z-Clamp Inner Box"

**Output and description** = "ZClamp2B", "Right Z-Clamp Outer Box"

**Output and description** = "Bolt1", "Left Bolt"

**Output and description** = "Bolt2", "Right Bolt"

**Output and description** = "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description** = "VerticalPipeline", "Reference line on Pipe"

**Output and description** = "RadialTowerLine", "Reference line on Tower"

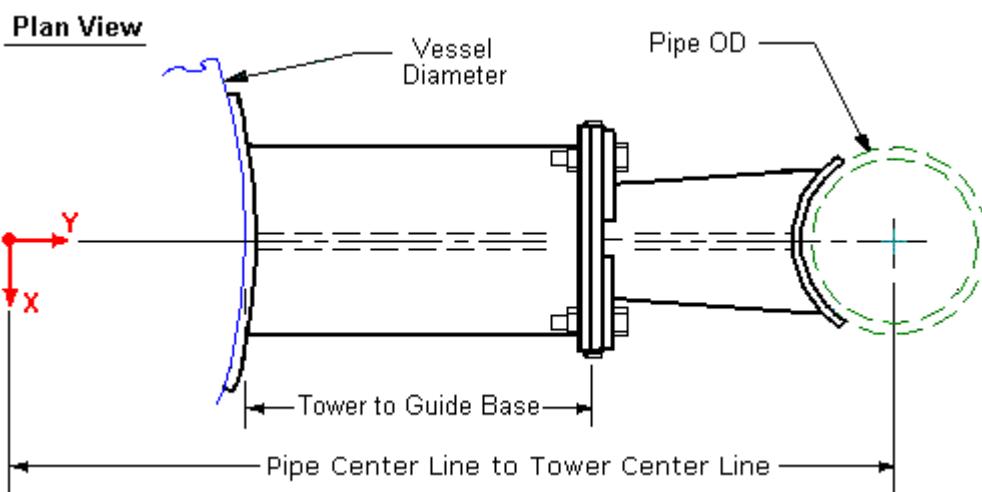
**Output and description** = "TowerPoint", "Point at origin"

**Output and description** = "PipePoint", "Point at Pipe Axis"

**Aspects = 2**

**Aspect = "SimplePhysical", "PipingAspect Description"**

**Aspect = "ReferenceGeometry", "ReferenceGeometry"**



## SP3DWeldTySMLCompAsm

**Description:** WELDED PIPE SUPPORT FOR MEDIUM DIA. LINES 6" THRU 14" PIPE

**Symbol Name:** SP3DWeldTySMLCompAsm.WTSupForMediumLSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PipeguideMediumAsm

**User Class Name:** Welded Type Support for Medium Lines

**Part Number:** PipeguideMedium 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWeldTySMLCompAsm.WTSupForMediumLSym

**Inputs = 4**

**Input and description =** "VesselDiameter", "Vessel Diameter"

**Input and description =** "PipeCLtoTowerCL", "Pipe CenterLine to Tower CenterLine-Y"

**Input and description =** "TowertoGuideBase", "Tower Outer shell to Guide Base-K"

**Input and description =** "PipeOD", "Pipe Outer Diameter"

**Outputs = 17**

**Output and description =** "PipeSideSaddle", "Pipe Side Saddle guide"

**Output and description =** "Plate1", "Plate 1"

**Output and description =** "Plate2", "Plate 2"

**Output and description =** "Plate3", "Plate 3"

**Output and description =** "Plate4", "Plate 4"

**Output and description =** "Plate5", "Plate 5"

**Output and description =** "VesselSideSaddle", "Vessel side Saddle guide"

**Output and description =** "Plate6", "Plate 6"

**Output and description =** "Plate7", "Plate 7"

**Output and description =** "Plate8", "Plate 8"

**Output and description =** "Plate9", "Plate 9"

**Output and description =** "Plate10", "Plate 10"

**Output and description =** "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description =** "VerticalPipeline", "Vertical Line on Centreline of Pipe"

**Output and description =** "RadialTowerLine", "Radial line on Tower"

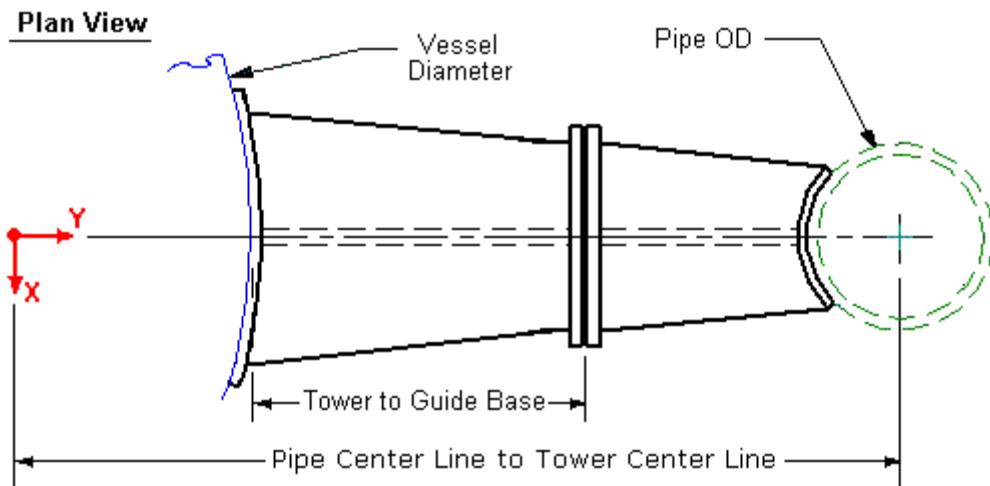
**Output and description =** "TowerPoint", "Point on Tower"

**Output and description =** "PipePoint", "Point on Pipe CentreLine"

**Aspects = 2**

**Aspect =** "SimplePhysical", "Physical"

**Aspect =** "ReferenceGeometry", "ReferenceGeometry"



## SP3DWeldTySSLCompAsm

**Description:** WELDED TYPE PIPE SUPPORT FOR SMALL LINES THRU 4" PIPE

**Symbol Name:** SP3DWeldTySSLCompAsm.WTSupForSmallLiSym

**Workbook:** EquipmentComponent.xls

**Workbook Sheet:** PipeguideSmallAsm

**User Class Name:** Welded Type Support for Small Lines

**Part Number:** PipeguideSmall 01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWeldTySSLCompAsm.WTSupForSmallLiSym

**Inputs = 4**

**Input and description** = "VesselDiameter", "Vessel Diameter", 1

**Input and description** = "PipeCLtoTowerCL", "Pipe CenterLine to Tower CenterLine-Y", 1

**Input and description** = "TowertoGuideBase", "Tower Outer shell to Guide Base-K", 0

**Input and description** = "PipeOD", "Pipe Outer Diameter", 0

**Outputs = 17**

**Output and description** = "PipeSideSaddle", "Pipe Side Saddle guide"

**Output and description** = "Plate1", "Plate 1"

**Output and description** = "Plate2", "Plate 2"

**Output and description** = "Plate3", "Plate 3"

**Output and description** = "Plate4", "Plate 4"

**Output and description** = "Plate5", "Plate 5"

**Output and description** = "VesselSideSaddle", "Vessel side Saddle guide"

**Output and description** = "Plate6", "Plate 6"

**Output and description** = "Plate7", "Plate 7"

**Output and description** = "Plate8", "Plate 8"

**Output and description** = "Plate9", "Plate 9"

**Output and description** = "Plate10", "Plate 10"

**Output and description** = "DefaultSurface", "Default Surface Reference plane on Tower"

**Output and description** = "VerticalPipeLine", "Vertical Line on Centreline of Pipe"

**Output and description** = "RadialTowerLine", "Radial line on Tower"

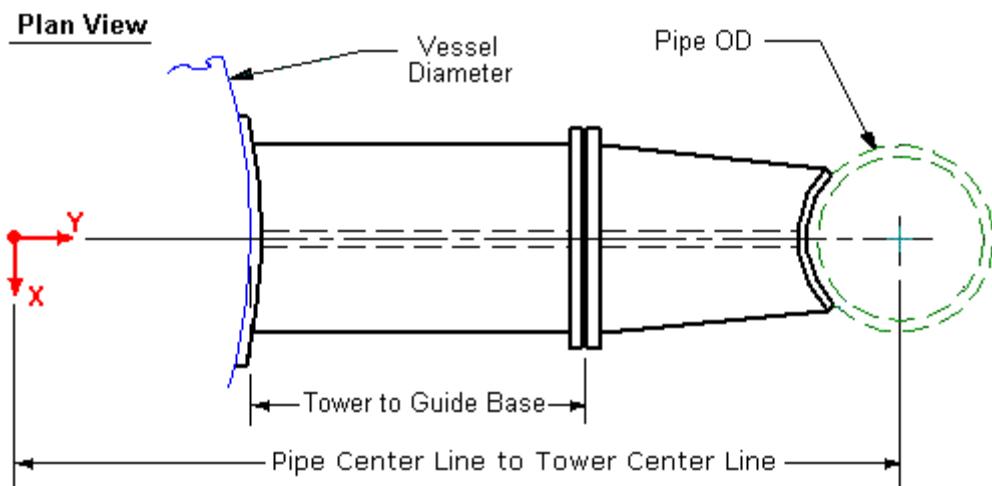
**Output and description** = "TowerPoint", "Point on Tower"

**Output and description** = "PipePoint", "Point on Pipe CentreLine"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"





# Equipment Symbols: An Overview

The software uses symbols to represent the different equipment items in the model. The items are defined on the equipment parts catalog sheets. When defining the parts in the sheets, look at the symbol that represents the item to verify the dimension that you are defining is correct. For more information on defining equipment items, see the *Equipment and Furnishings Reference Data Guide*, available from the **Help > Printable Guides** command in the software.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

In the software, equipment symbols are defined in terms of different dimensions. By modifying the dimensions of the equipment symbols delivered with the software, you can easily create customized equipment items and add them to the Catalog database.

## What's New

### *Version 2007 Service Pack 2*

- The following new symbols have been added:  
SP3DE\_210SimverCylSkirtAsm, SP3DE\_240CompHorCylEqpAsm,  
SP3DE\_245SimpHorCylEqpAsm, SP3DE\_305HorShTubeExchAsm,  
SP3DE\_307KettleHeatXchAsm, SP3DE\_310VerShTubeExchAsm,  
SP3DE\_205CompVerCylEqpSkAsm, SP3DE\_215SimVerCylLegsAsm,  
SP3DE\_230SphVesselAsm, SP3DHoriPumpBB1Asm,  
SP3DHoriPumpBB2Asm, SP3DHoriPumpBB3Asm,  
SP3DHoriPumpBB5Asm, SP3DHoriVesselEndsAsm,  
SP3DLightingFixtureBHARAsm, SP3DLightingFixtureBHDRAsm,  
SP3DLightingFixtureBTARAsm, SP3DLightingFixtureBTDRAsm,  
SP3DVertVesselEndsAsm, SP3DE\_410VerRotEqAsm,  
SP3DE\_405HoriRotEqpAsm, SP3DElecBayLightAsm,  
SP3DEmergencyBeaconAsm, SP3DFluorescentLightAsm,  
SP3DSlipFitterFloodLightAsm.

### *Version 2007 Service Pack 1*

- New equipment symbols: SP3DHoriPumpOH2Asm,  
SP3DVertPumpOH3Asm, SP3DSpiralStairTankAsm,  
SP3DSpiralStairTankComp, SP3DSupportLegsCompAsm,  
SP3DSwGearSectCompAsm, SP3DSwitchGearAsm,  
SP3DDDisconnectSwitchAsm, SP3DE\_320DouPipeExchAsm,  
SP3DE\_325PlateExchAsm, SP3DE\_410VerRotEqAsm.

- Fixed dimension B on the preview graphic for symbols SP3DSingleFrDrAirCoolerAsm, SP3DSingleIndDrAirCoolerAsm, SP3DIndDr2AirCoolerBayAsm, SP3DIndDr3AirCoolerBayAsm, SP3DIndDr4AirCoolerBayAsm, SP3DForDr2AirCoolerBayAsm, SP3DForDr3AirCoolerBayAsm, and SP3DForDr4AirCoolerBayAsm. (P3 111775)

*Version 2007*

- Added symbols: Prismatic shapes, SP3DDoorsAsm
- SP3DD\_162Asm has been replaced by SP3DHorDrWiSaddleAsm
- SP3DD\_182Asm has been replaced by SP3DVerDrumWiLegsAsm
- SP3DE\_161Asm has been replaced by SP3DFallFilmSTEExAsm
- SP3DE\_162Asm has been replaced by SP3DHorSTEExch02Asm
- SP3DE\_166Asm has been replaced by SP3DHorSTEExch03Asm
- SP3DE\_182Asm has been replaced by SP3DHorSTEExch04Asm
- SP3DE\_183Asm has been replaced by SP3DPIAndFrExch01Asm
- SP3DE\_184Asm has been replaced by SP3DPIAndFrExch02Asm
- SP3DE\_185Asm has been replaced by SP3DPIAndFrExch03Asm
- SP3DG4G\_5410\_30Asm has been replaced by SP3DSafShower01Asm
- SP3DG4G\_5411\_01Asm has been replaced by SP3DSafShower02Asm
- SP3DG4G\_5420\_01Asm has been replaced by SP3DSafShower03Asm
- SP3DG4G\_5420\_02Asm has been replaced by SP3DSafShower04Asm
- SP3DG4G\_5420\_03Asm has been replaced by SP3DSafShower05Asm
- SP3DG4G\_5421\_01Asm has been replaced by SP3DSafShower06Asm
- SP3DG4G\_5421\_02Asm has been replaced by SP3DSafShower07Asm
- SP3DG4G\_5422\_01Asm has been replaced by SP3DSafShower08Asm
- SP3DG4G\_5424\_01Asm has been replaced by SP3DSafShower09Asm
- SP3DG7C\_1841\_01Asm has been replaced by SP3DElectLight01Asm
- SP3DG7C\_1841\_08Asm has been replaced by SP3DElecLiPendantAsm
- SP3DG7C\_1841\_10Asm has been replaced by SP3DElecLiEquip01Asm
- SP3DG7C\_2011\_17Asm has been replaced by SP3DElecSpeaker04Asm
- SP3DG7C\_2011\_28Asm has been replaced by SP3DElecSpeaker05Asm
- SP3DP\_162Asm has been replaced by SP3DHorCenJktPumpAsm
- SP3DP\_181Asm has been replaced by SP3DHCPumpWFNDNozAsm

# SP3DAirDistribAssemblyAsm

## Description:

**Symbol Name:** SP3DAirDistribAssemblyAsm.VVADASym

**Workbook:** Equipment.xls

**Workbook Sheet:** VVAirDistribAssemAsm

**User Class Name:** Variable Volume Air Distribution Assembly

**Part Number:** VVADA 001A-E, VVADA 001A\_IMP-E

## Inputs, Outputs, and Aspects:

Input name = "BasicAsmWidth"

Input description = "Width of the Basic Assembly"

Input name = "BasicAsmHeight"

Input description = "Height of the basic Assembly"

Input name = "BasicAsmLength"

Input description = "Length of the basic assembly"

Input name = "HeatingCoilLength"

Input description = "Length of the heating coil"

Input name = "MultiOutletLength"

Input description = "Length of the multi outlet"

Input name = "InletDia"

Input description = "Inlet Diameter"

Input name = "MultiOutletDia"

Input description = "MultiOutlet Diameter"

Number of Outputs = 4

Output name = "BasicAsmHVACNozzle"

Output description = "HvacPort on the basic assembly"

Output name = "BasicAssembly"

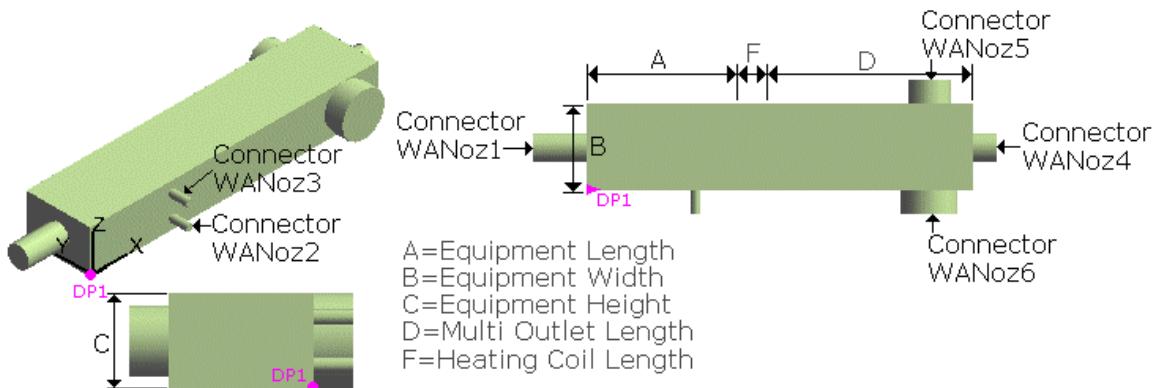
Output description = "Box representing the Basic Assembly"

Output name = "HeatingCoil"

Output description = "Box representing the Heating Coil"

Output name = "MultiOutlet"

Output description = "Box representing the Multi-Outlet"



## SP3DCESVessel2PlatfAsm

### Description:

**Symbol Name:** SP3DCESVessel2PlatfAsm.CPlatformSym

**Workbook:** Equipment.xls

**Workbook Sheet:** CESVVessel2PlatfAsm

**User Class Name:** Simple Vertical Vessel With Platforms

**Part Number:** CESVVessel2Platf1-E, CESVVessel2Platf2-E, CESVVessel2Platf3-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DCESVessel2PlatfAsm.CPlatformSym

#### Inputs = 10

**Input** = "VesselHeight"   **Description** = "Shell Height P2"

**Input** = "VesselDiameter"   **Description** = "Shell Diameter P3"

**Input** = "SkirtTopDiameter"   **Description** = "Support Top Diameter P5"

**Input** = "SkirtBottomDiameter"   **Description** = "Support Bottom Diameter P6"

**Input** = "SkirtHeight"   **Description** = "Skirt Height P7"

**Input** = "VesselStartHeight"   **Description** = "Vessel Start Height P4"

**Input** = "PlatformWidth"   **Description** = "Platform Width"

**Input** = "PlatformHeight"   **Description** = "Platform Height"

**Input** = "PlatformRadius"   **Description** = "Platform Radius"

**Input** = "PlatformAngle"   **Description** = "Platform Angle"

#### Outputs = 24

**Output** = "Vessel"   **Description** = "Vessel Shell"

**Output** = "Support"   **Description** = "Truncated Cone Support "

**Output** = "DefaultSurface"   **Description** = "Default Surface"

**Output** = "Plat1Plane1"   **Description** = "Plat1Plane1"

**Output** = "Plat1Plane2"   **Description** = "Plat1Plane2"

**Output** = "Plat1Revolution1"   **Description** = "Plat1Revolution1"

**Output** = "Plat1Revolution2"   **Description** = "Plat1Revolution2"

**Output** = "Plat1TopSurface"   **Description** = "Plat1TopSurface"

**Output** = "Plat1BottomSurface"   **Description** = "Plat1BottomSurface"

**Output** = "Plat1Line1"   **Description** = "Plat1Line1"

**Output** = "Plat1Line2"   **Description** = "Plat1Line2"

**Output** = "Plat1Line3"   **Description** = "Plat1Line3"

**Output** = "Plat1Line4"   **Description** = "Plat1Line4"

**Output** = "Plat2Plane1"   **Description** = "Plat1Plane1"

**Output** = "Plat2Plane2"   **Description** = "Plat1Plane2"

**Output** = "Plat2Revolution1"   **Description** = "Plat1Revolution1"

**Output** = "Plat2Revolution2"   **Description** = "Plat1Revolution2"

**Output** = "Plat2TopSurface"   **Description** = "Plat1TopSurface"

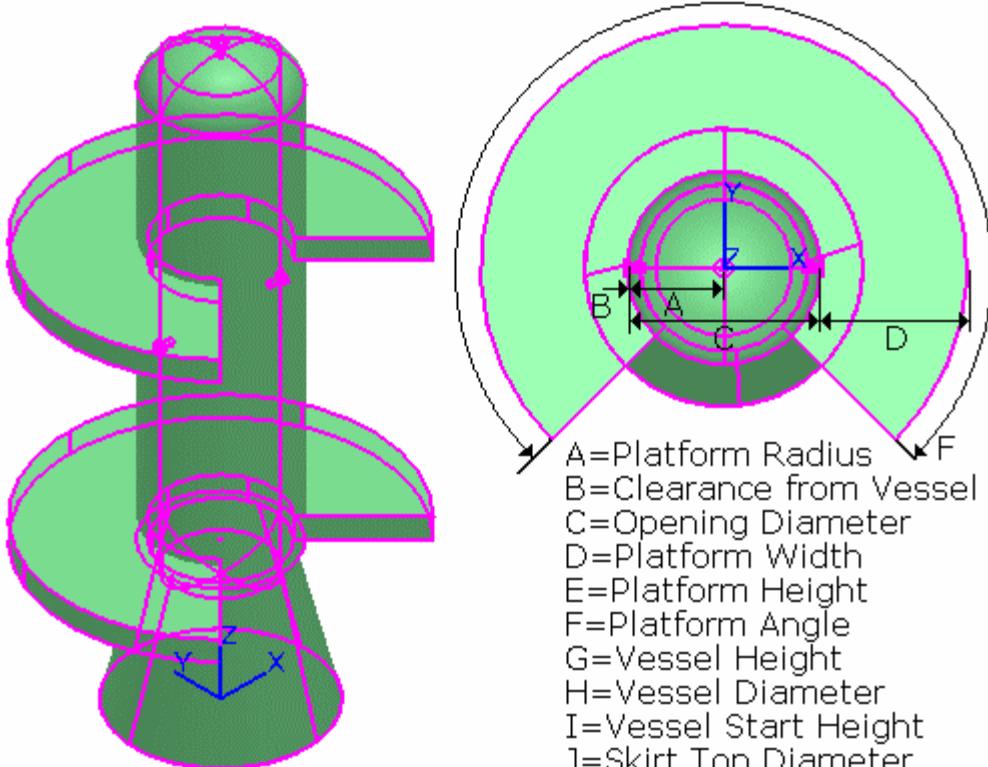
**Output** = "Plat2BottomSurface"   **Description** = "Plat1BottomSurface"

**Output** = "Plat2Line1"   **Description** = "Plat1Line1"

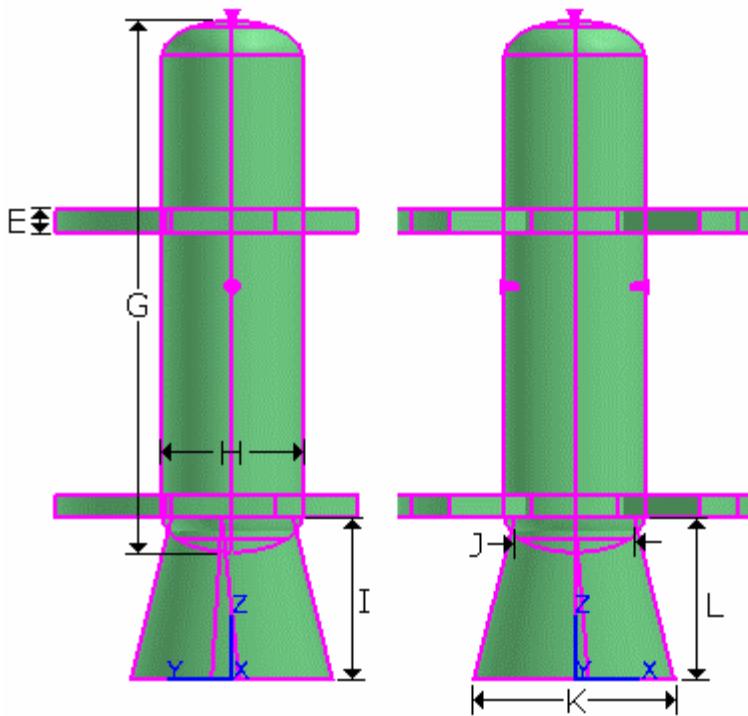
**Output** = "Plat2Line2"   **Description** = "Plat1Line2"

**Output** = "Plat2Line3"   **Description** = "Plat1Line3"  
**Output** = "Plat2Line4"   **Description** = "Plat1Line4"  
**Output** = "CESimVerVesselControlPoint"   **Description** = "Control Point of Simple Vertical Vessel with Platform"

**Aspects** = 1  
**Aspect** = SimplePhysical



A=Platform Radius  
B=Clearance from Vessel  
C=Opening Diameter  
D=Platform Width  
E=Platform Height  
F=Platform Angle  
G=Vessel Height  
H=Vessel Diameter  
I=Vessel Start Height  
J=Skirt Top Diameter  
K=Skirt Bottom Diameter  
L=Skirt Height



# SP3DComplexHorCylVesselAsm

**Description:**

**Symbol Name:** SP3DComplexHorCylVesselAsm.CCHCVesselSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ComplexHorCylVesselAsm

**User Class Name:** Complex Horizontal Cylindrical Vessel

**Part Number:** ComplexHorizontalCylindricalVessel-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DComplexHorCylVesselAsm.CCHCVesselSym

**Inputs = 14**

**Input = "VesselLength" Description = "Vessel Length"**  
**Input = "VesselDiameter" Description = "Vessel Diameter"**  
**Input = "BootHorLocation" Description = "Boot Horizontal Location"**  
**Input = "BootVertLocation" Description = "Boot Vertical Location"**  
**Input = "BootDiameter" Description = "BootDiameter"**  
**Input = "BootAngularLocation" Description = "BootAngularLocation"**  
**Input = "VesselCenterHeight" Description = "VesselCenterHeight"**  
**Input = "FirstSupportLocation" Description = "FirstSupportLocation"**  
**Input = "SecondSupportLocation" Description = "SecondSupportLocation"**  
**Input = "ThirdSupportLocation" Description = "ThirdSupportLocation"**  
**Input = "SupportThickness" Description = "SupportThickness"**  
**Input = "SupportLength" Description = "SupportLength"**  
**Input = "StiffenerRadius" Description = "StiffenerRadius"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

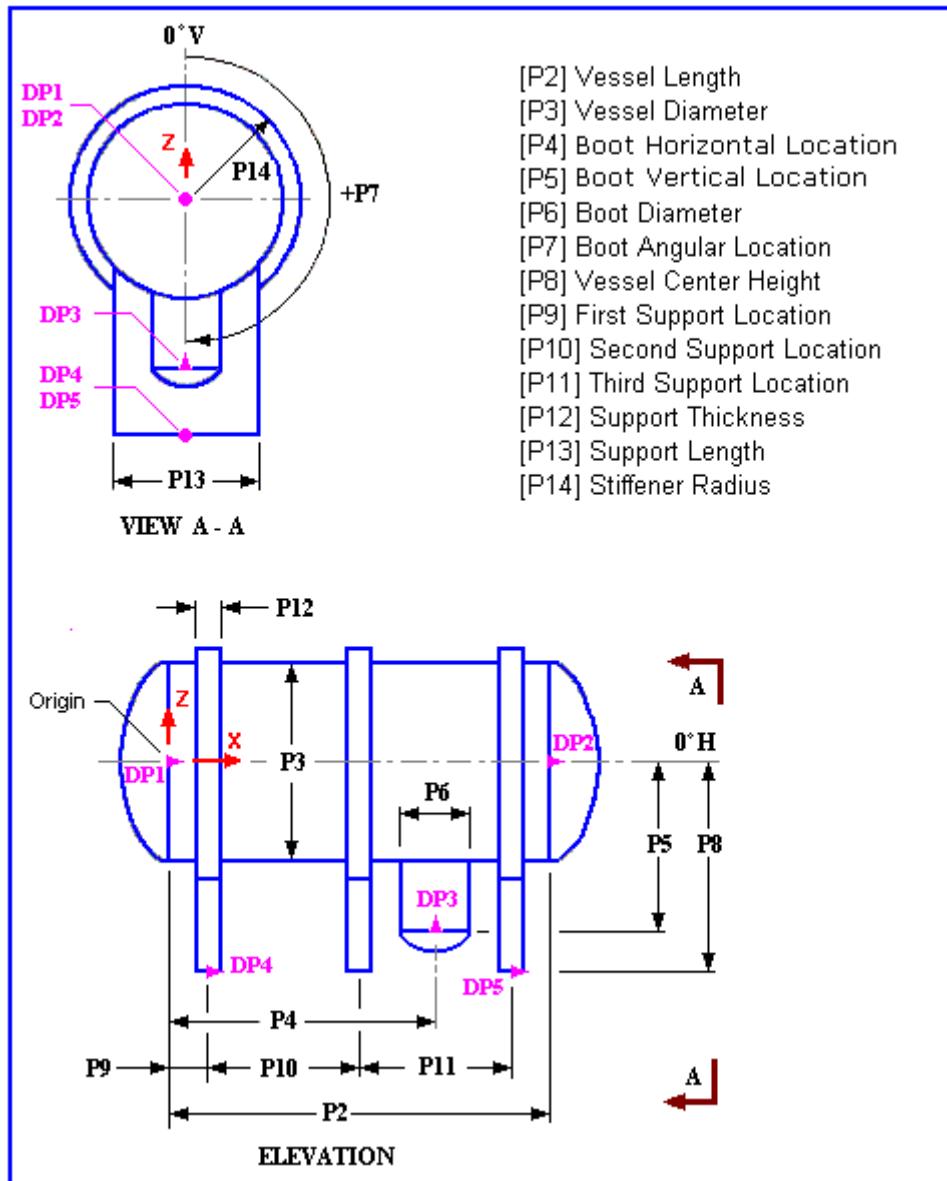
**Outputs = 14**

**Output = "Vessel" Description = "Vessel"**  
**Output = "Boot" Description = "Boot"**  
**Output = "Support1" Description = "Support1"**  
**Output = "Support2" Description = "Support2"**  
**Output = "Support3" Description = "Support3"**  
**Output = "Stiffner1" Description = "Stiffner1"**  
**Output = "Stiffner2" Description = "Stiffner2"**  
**Output = "Stiffner3" Description = "Stiffner3"**  
**Output = "DefaultSurface1" Description = "DefaultSurface1"**  
**Output = "DefaultSurface2" Description = "DefaultSurface1"**  
**Output = "DefaultSurface3" Description = "DefaultSurface1"**  
**Output = "InsulatedVessel" Description = "InsulatedVessel"**  
**Output = "InsulatedBoot" Description = "InsulatedBoot"**  
**Output = "ComplexHorCylVesselControlPoint" Description = "Control Point of Complex Horizontal Cylinder Vessel"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DComplexVesselAsm

**Description:**

**Symbol Name:** SP3DComplexVesselAsm.CCVesselSym

**Workbook:** Equipment.xls

**Workbook Sheet:** E205Asm

**User Class Name:** Complex Vertical Vessel

**Part Number:** E205\_1-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DComplexVesselAsm.CCVesselSym

**Inputs = 17**

**Input = "SupportHeight1" Description = "Skirt Height"**

**Input = "SupportDiameter1" Description = "Diameter of Skirt"**

**Input = "DomeHeight1" Description = "Bottom Dome"**

**Input = "VesselHeight1" Description = "Bottom Cyl Height"**

**Input = "VesselDiameter1" Description = "Bottom Tank Diameter"**

**Input = "SupportHeight2" Description = "Section 2 "**

**Input = "DomeHeight2" Description = "Section 2"**

**Input = "VesselHeight2" Description = "Section 2"**

**Input = "VesselDiameter2" Description = "Section 2"**

**Input = "SupportHeight3" Description = "Section 3"**

**Input = "VesselHeight3" Description = "Section 3"**

**Input = "VesselDiameter3" Description = "Section 3"**

**Input = "SupportHeight4" Description = "Section 4"**

**Input = "VesselHeight4" Description = "Section 4"**

**Input = "VesselDiameter4" Description = "Section 4"**

**Input = "DomeHeight4" Description = "Section 4"**

**Input = "InsulationThickness" Description = "Insulation Thickness input for Insulation aspect"**

**Outputs = 24**

**Output = "Section1Support" Description = ""**

**Output = "Section1Dome" Description = ""**

**Output = "Section1Tank" Description = ""**

**Output = "Section2Support" Description = ""**

**Output = "Section2Dome" Description = ""**

**Output = "Section2Tank" Description = ""**

**Output = "Section3Support" Description = ""**

**Output = "Section3Tank" Description = ""**

**Output = "Section4Support" Description = ""**

**Output = "Section4Tank" Description = ""**

**Output = "Section4Dome" Description = ""**

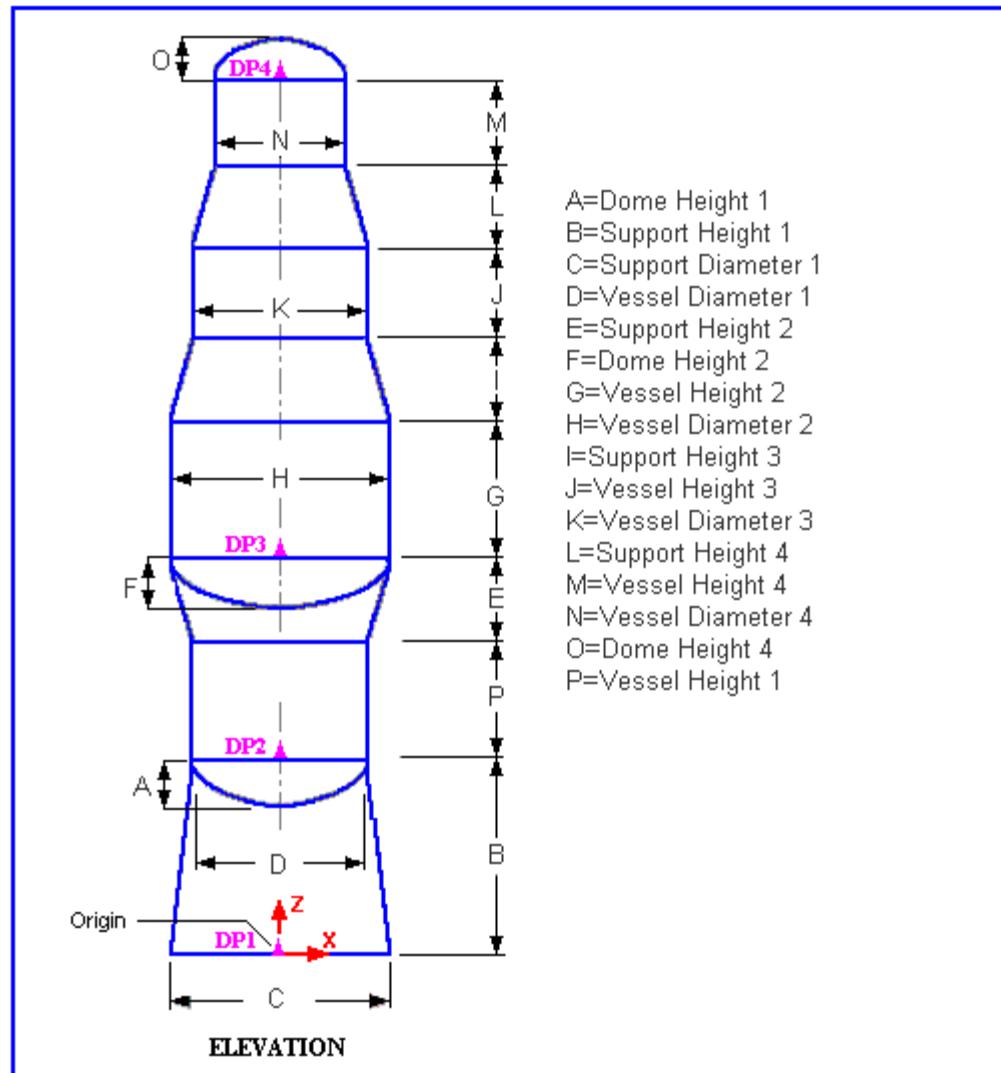
**Output = "CVMaintenance" Description = ""**

**Output = "CVOperation" Description = ""**

**Output = "CVInsulation"   Description = "Insulation for Section1"**  
**Output = "CVInsulation2"   Description = "Insulation for Section2"**  
**Output = "CVInsulation3"   Description = "Insulation for Section3"**  
**Output = "CVInsulation4"   Description = "Insulation for Section4"**  
**Output = "CVInsulation5"   Description = "Insulation for Section2 Support"**  
**Output = "CVInsulation6"   Description = "Insulation for Section3 Support"**  
**Output = "CVInsulation7"   Description = "Insulation for Section4 Support"**  
**Output = "CVInsulation8"   Description = "Insulation for Section4 Dome"**  
**Output = "ConPoint"   Description = "ConnectPoint1"**  
**Output = "ConPoint2"   Description = "ConnectPoint2"**  
**Output = "ComplexVesselControlPoint"   Description = "Control Point of Complex Vessel "**

**Aspects = 4**

**Aspect = SimplePhysical**  
**Aspect = Maintenance**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DDDisconnectSwitchAsm

**Description:**

**Symbol Name:** SP3DDDisconnectSwitchAsm.DisContSwSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDDisconnectSwitchAsm.DisContSwSym

**Inputs = 6**

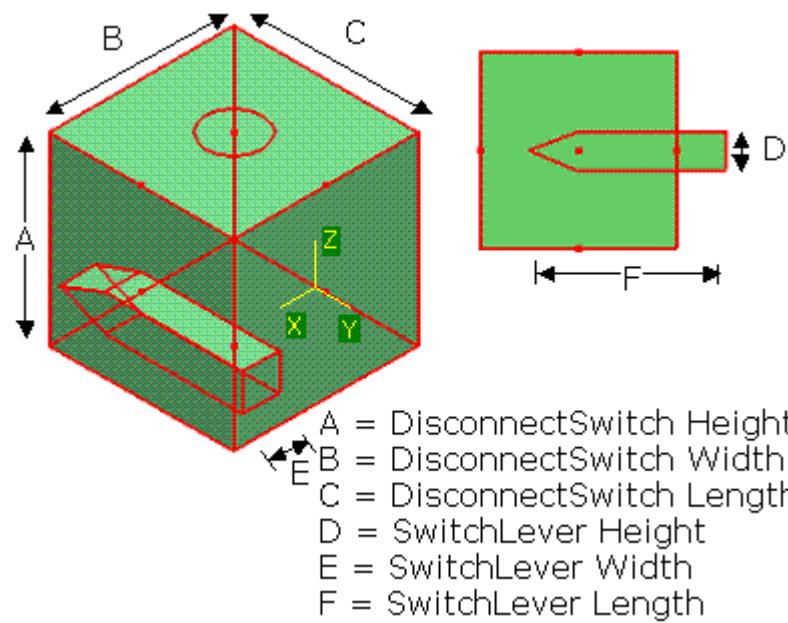
**Input and description** = "ElecEquipmentHeight", "Height of ElecEquipment",  
**Input and description** = "ElecEquipmentWidth", "Width of ElecEquipment",  
**Input and description** = "ElecEquipmentLength", "Length of ElecEquipment",  
**Input and description** = "SwitchLeverHeight", "Height of SwitchLever",  
**Input and description** = "SwitchLeverWidth", "Width of SwitchLever",  
**Input and description** = "SwitchLeverLength", "Length of SwitchLever",

**Outputs = 22**

**Output and description** = "DisContSwitchBody", "DisConnectSwitch Body"  
**Output and description** = "ProjectedKnob", "ProjectedKnob Body"  
**Output and description** = "ConduitPort1", "ConduitPort1"  
**Output and description** = "CablePort1", "CablePort1"  
**Output and description** = "CenterPos1", "FaceCenter Position1"  
**Output and description** = "CenterPos2", "FaceCenter Position2"  
**Output and description** = "CenterPos3", "FaceCenter Position3"  
**Output and description** = "CenterPos4", "FaceCenter Position4"  
**Output and description** = "CenterPos5", "FaceCenter Position5"  
**Output and description** = "CenterPos6", "FaceCenter Position6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"  
**Output and description** = "Edge8", "Edge 8"  
**Output and description** = "Edge9", "Edge 9"  
**Output and description** = "Edge10", "Edge 10"  
**Output and description** = "Edge11", "Edge 11"  
**Output and description** = "Edge12", "Edge 12"

**Aspects = 1**

**Aspect** = "Physical", "Physical Description"



## SP3DDoorsAsm

**Description:** door and window

**Symbol Name:** SP3DG7C\_2011\_17Asm.CG7C\_2011\_17Sym

**Workbook:** DoorsEquipment.xls

**Workbook Sheet:** RollupDoorsAsm, OverheadDoorsAsm, SlidingDoorsAsm, SwDoorsSimpleAsm, SwDoorsDoubleAsm, LoadingDocksAsm, ResidDoorsAsm, ResidWindowsAsm, LouversAsm

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DG7C\_2011\_17Asm.CG7C\_2011\_17Sym

Number of Inputs = 26

Input name = "DoorType"

Input description = "Type of Door"

Input name = "OpeningRatio"

Input description = "Opening rate of Door"

Input name = "Kinematics"

Input description = "Kinematics"

Input name = "Push"

Input description = "Push"

Input name = "Height"

Input description = "Height of Door"

Input name = "Width"

Input description = "Width of Door"

Input name = "CTLength"

Input description = "Top Casement Length"

Input name = "CTWidth"

Input description = "Top Casement Width"

Input name = "CTThickness"

Input description = "Top Casement Thickness"

Input name = "CTEdge"

Input description = "Top Casement Edge"

Input name = "CBLength"

Input description = "Bottom Casement Length"

Input name = "CBWidth"

Input description = "Bottom Casement Width"

Input name = "CBThickness"

Input description = "Bottom Casement Thickness"

Input name = "CBEedge"

Input description = "Bottom Casement Edge"

Input name = "CLLength"

Input description = "Left Casement Length"

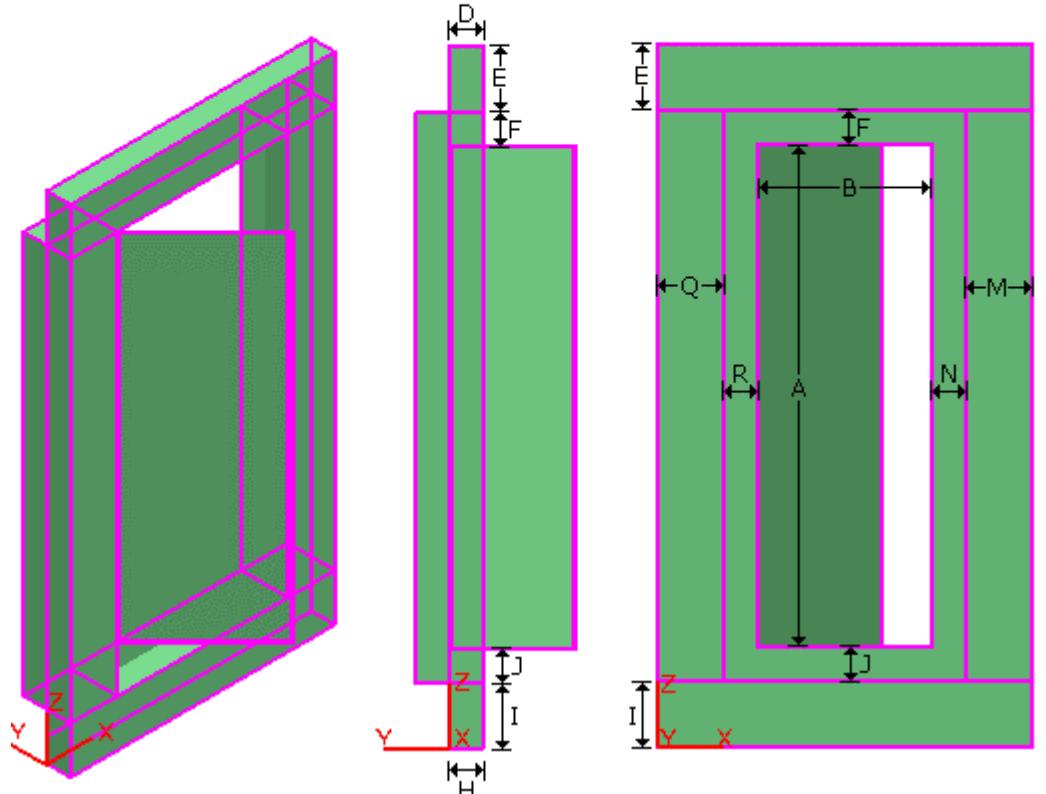
Input name = "CLWidth"

Input description = "Left Casement Width"  
Input name = "CLThickness"  
Input description = "Left Casement Thickness"  
Input name = "CLEdge"  
Input description = "Left Casement Edge"  
Input name = "CRLength"  
Input description = "Right Casement Length"  
Input name = "CRWidth"  
Input description = "Right Casement Width"  
Input name = "CRTickness"  
Input description = "Right Casement Thickness"  
Input name = "CREdge"  
Input description = "Right Casement Edge"  
Input name = "PannelThickness"  
Input description = "Thickness of the Door pannel"  
Input name = "Xposition"  
Input description = "Door X Position Door"  
Input name = "Yposition"  
Input description = "Door Y Position Doorl"  
Input name = "Zposition"  
Input description = "Door Z Position Door"  
Number of Outputs = 12  
Output name = "LeftCasementFace\_"  
Output description = "Face Of Left Casement Strip"  
Output name = "LeftCasementStrip"  
Output description = "Left Casement Strip"  
Output name = "RightCasementFace\_"  
Output description = "Face Of Right Casement Strip"  
Output name = "RightCasementStrip"  
Output description = "Right Casement Strip"  
Output name = "TopCasementFace\_"  
Output description = "Face Of Top Casement Strip"  
Output name = "TopCasementStrip"  
Output description = "Top Casement Strip"  
Output name = "BottomCasementFace\_"  
Output description = "Bottom Of Top Casement Strip"  
Output name = "BottomCasementStrip"  
Output description = "Bottom Casement Strip"  
Output name = "PannelSolidFace\_"  
Output description = "Face Of Pannel Solid"  
Output name = "PannelSolid\_"  
Output description = "Pannel Solid"  
Output name = "DefaultSurface"  
Output description = "Default Mating Surface"  
Output name = "CutoutCurve"  
Output description = "Cutout Complex lineString"

Number of Aspects = 2  
 Supported AspectId = SimplePhysical  
 Supported AspectId = Operation

A=Height  
 B=Width  
 D=Casement Top Width  
 E=Casement Top Thickness  
 F=Casement Top Edge  
 H=Casement Bottom Width  
 I=Casement Bottom Thickness  
 J=Casement Bottom Edge  
 L=Casement Right Width  
 M=Casement Right Thickness  
 N=Casement Right Edge

P=Casement Left Width  
 Q=Casement Left Thickness  
 R=Casement Left Edge  
 S=Panel Thickness



# SP3DDouPipeExchangerAsm

## Description:

**Symbol Name:** SP3DDouPipeXAsm.CSDPipeXSym

**Workbook:** DoublePipeExchangerAsm

**Workbook Sheet:** DoublePipeExchangerAsm

**User Class Name:** Double Pipe Exchanger

**Part Number:** DoublePipeExchanger01-E

## Inputs, Outputs, and Aspects:

ProgID: SP3DDouPipeXAsm.CSDPipeXSym

### Inputs = 13

**Input** = "BlockEndFromPP"   **Description** = "Dist from BlockEnd to PP"

**Input** = "PipeEndFromPP"   **Description** = "Dist from PipeEnd to PP"

**Input** = "PipeCentoCen"   **Description** = "Dist from Pipe Cen to Cen"

**Input** = "PipeDiameter"   **Description** = "Diameter of Pipe"

**Input** = "BlockLength"   **Description** = "Block Length"

**Input** = "BlockHeight"   **Description** = "Block Height"

**Input** = "BlockWidth"   **Description** = "Block Width"

**Input** = "BundlePullingLength"   **Description** = "Bundle Pulling Length"

**Input** = "Support1CenFromPP"   **Description** = "Dist from Support1 Cen to PP"

**Input** = "SupportCentoCen"   **Description** = "Support Cen to Cen"

**Input** = "SupportHeight"   **Description** = "Height of Support"

**Input** = "SupportThickness"   **Description** = "Thickness of Support"

**Input** = "SupportWidth"   **Description** = "Width of Support"

### Outputs = 5

**Output** = "Pipe1"   **Description** = "Pipe1"

**Output** = "Pipe2"   **Description** = "Pipe2"

**Output** = "Block"   **Description** = "Block"

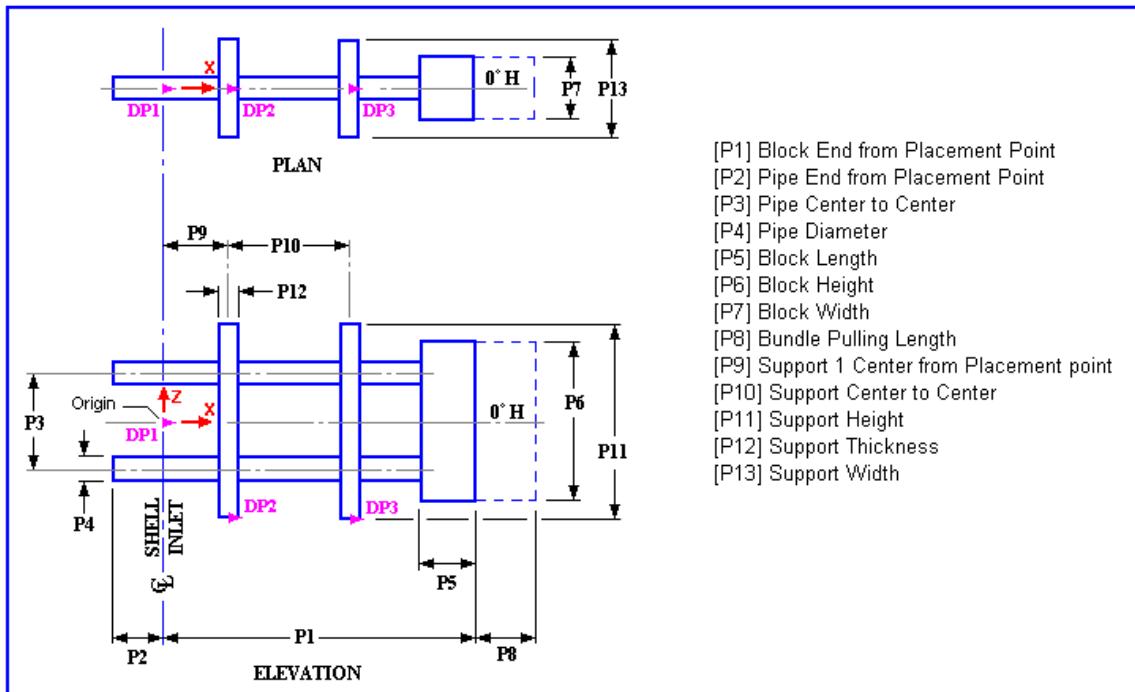
**Output** = "BundlePulling"   **Description** = "BundlePulling"

**Output** = "DouPipeExchangerControlPoint"   **Description** = "Control Point of Double Pipe Exchanger "

### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = Maintenance



# SP3DElecBayLightAsm

## **Description:**

**Symbol Name:** SP3DElecBayLightAsm.BayLightSym

## **Workbook:**

### **Workbook Sheet:**

### **User Class Name:**

### **Part Number:**

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DElecBayLightAsm.BayLightSym

#### **Inputs = 4**

**Input and description** = "FixtureHeight", "Fixture Height"

**Input and description** = "FixtureWidth", "Fixture Width"

**Input and description** = "BoxHeight", "Box Height"

**Input and description** = "BoxWidth", "Box Width"

#### **Outputs = 7**

**Output and description** = "FixtureTopBox", "Fixture TopBox"

**Output and description** = "FixtureCylindricalJoint", "Fixture CylindricalJoint"

**Output and description** = "FixtureCover", "Fixture Cover"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

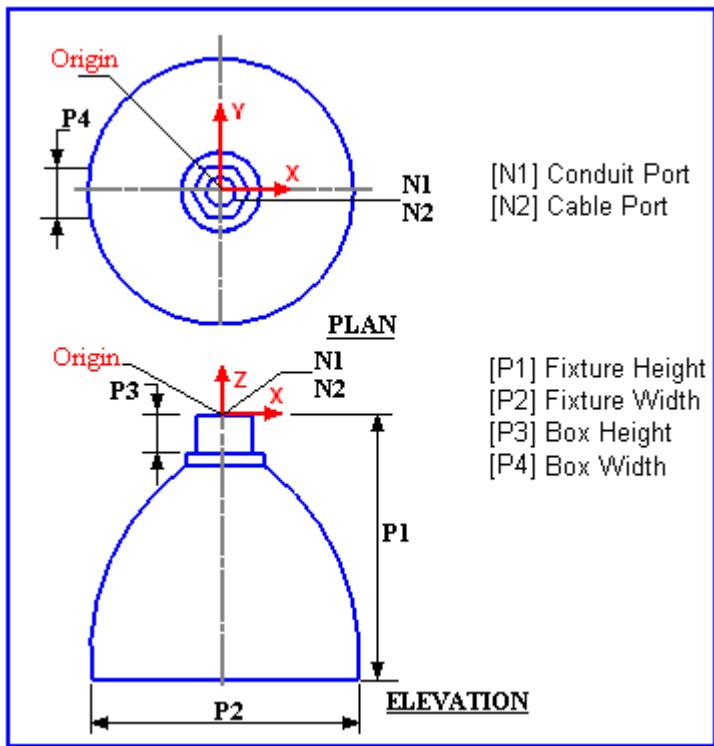
**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "ElectricalFixtureControlPoint", "Control Point of Electrical Fixture"

#### **Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "RefGeomfactory", "Reference Geom factory"



# SP3DElecContSwitch

**Description:** Siemens Control Switch

**Symbol Name:** SP3DElecContSwitch.ElecContSwitch

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** ControlSwitch

**User Class Name:** Electrical Control Switch

**Part Number:** ControlSwitch01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecContSwitch.ElecContSwitch

**Inputs = 3**

**Input and description** = "ElecEquipmentHeight", "Electrical Equipment Height", 0.

**Input and description** = "ElecEquipmentWidth", "Electrical Equipment Width", 0.

**Input and description** = "ElecEquipmentLength", "Electrical Equipment Length", 0.

**Outputs = 6**

**Output and description** = "DefaultSurface", "Default Surface on the side to be supported"

**Output and description** = "ProjectedBody", "Projected Body"

**Output and description** = "Surface2", "Surface on other side"

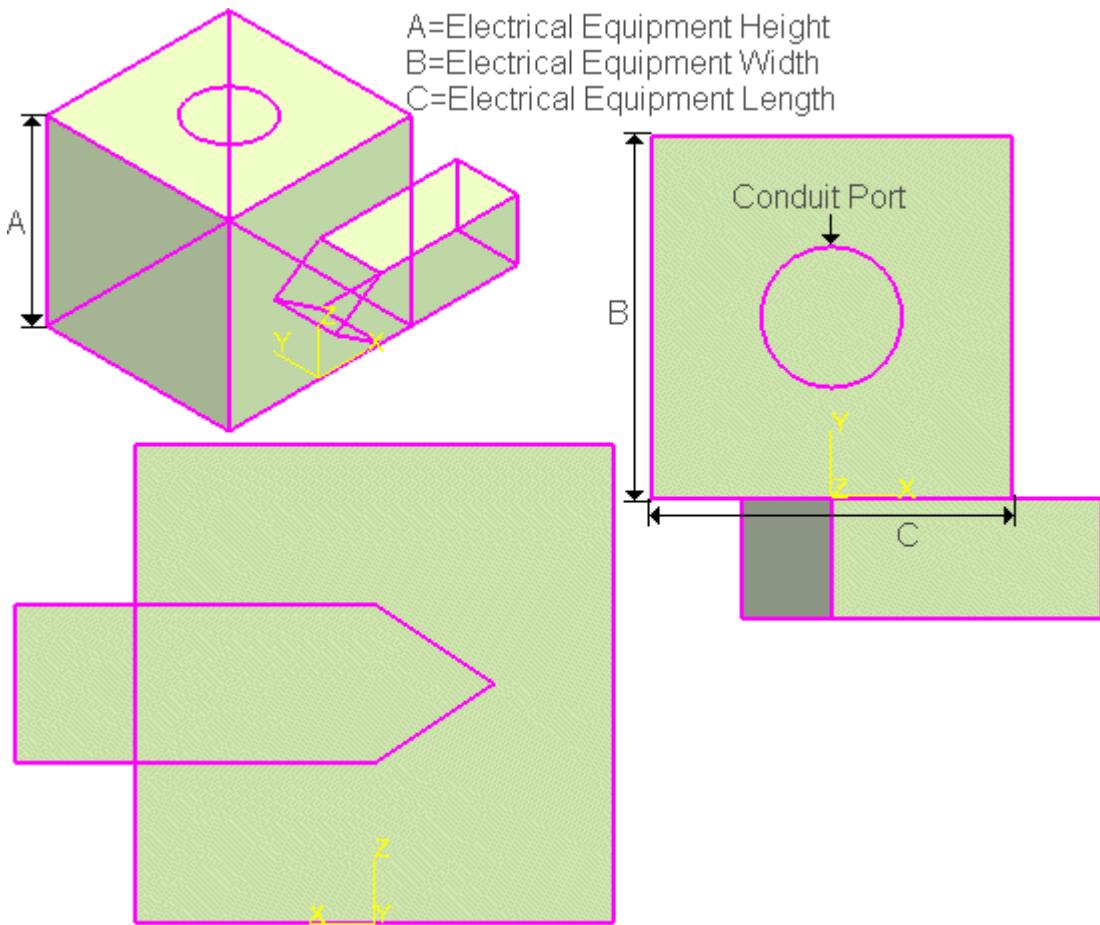
**Output and description** = "ProjectedKnob", "Projected Knob"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DElecEnclosureAsm

## Description:

**Symbol Name:** SP3DElecEnclosureAsm.CElecEnclosureSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElecEnclosureAsm

**User Class Name:** Electrical Enclosure

**Part Number:** BA106E 42309-1\_Asm, BA106E 483611-1\_Asm, BA106E 423013-1\_Asm, BA106E 483617-1\_Asm, ElecEnclosure 42309-1\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DElecEnclosureAsm.CElecEnclosureSym

### Inputs = 3

**Input** = "BasicAsmHeight"   **Description** = "Enclosure Height"

**Input** = "BasicAsmWidth"   **Description** = "Enclosure Width"

**Input** = "BasicAsmLength"   **Description** = "Enclosure Depth"

### Outputs = 7

**Output** = "EnclosureBody"   **Description** = "Enclosure Body"

**Output** = "ConduitPort1"   **Description** = "Conduit Port 1"

**Output** = "ConduitPort2"   **Description** = "Conduit Port 2"

**Output** = "ConduitPort3"   **Description** = "Conduit Port 3"

**Output** = "ConduitPort4"   **Description** = "Conduit Port 4"

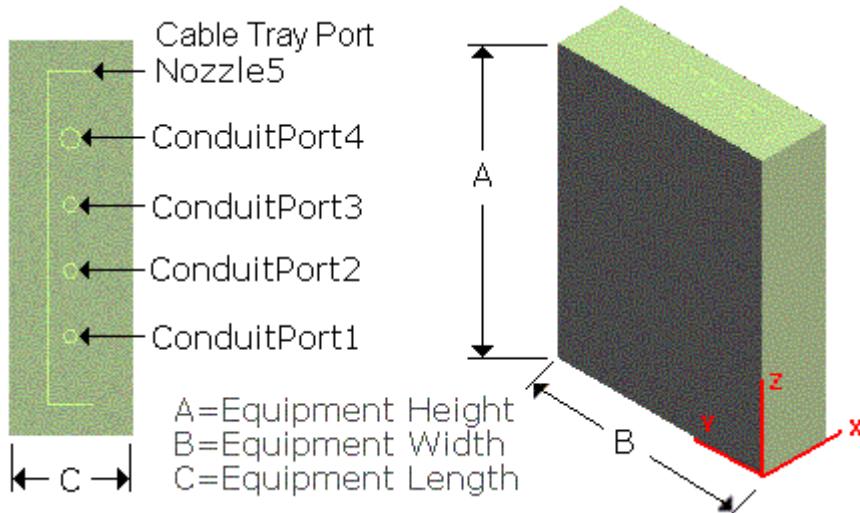
**Output** = "CableTrayPort"   **Description** = "Cable Tray Port"

**Output** = "EnclosureOp"   **Description** = "Enclosure Operation"

### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = Operation



# SP3DElecFluoFix

## Description:

**Symbol Name:** SP3DElecFluoFix.ElecFluoFix

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** FluorescentFixture

**User Class Name:** Fluorescent Fixture

**Part Number:** FluoFixture01

## Inputs, Outputs, and Aspects:

ProgID: SP3DElecFluoFix.ElecFluoFix

### Inputs = 3

**Input and description** = "ElecEquipmentLength", "Length of the Fixture",

**Input and description** = "ElecEquipmentHeight", "Depth of the Fixture",

**Input and description** = "ElecEquipmentWidth", "Width of the Fixture",

### Outputs = 9

**Output and description** = "TopCover", "Top Cover of the fixture"

**Output and description** = "SideCoverRight", "The Side Cover at the Right Hand Side"

**Output and description** = "SideCoverLeft", "The Side Cover at the Left Hand Side"

**Output and description** = "FrontCover", "Front Parabolic Cover"

**Output and description** = "RearCover", "Rear Parabolic Cover"

**Output and description** = "FluorescentTube1", "Flourescent Tube"

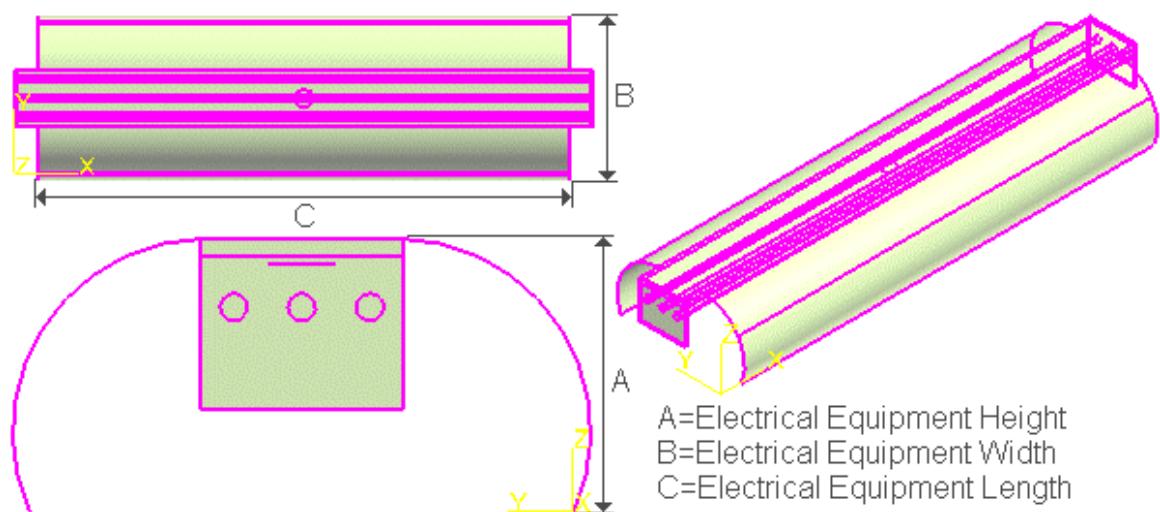
**Output and description** = "FluorescentTube2", "Flourescent Tube"

**Output and description** = "FluorescentTube3", "Flourescent Tube"

**Output and description** = "ConduitPort", "Wire-Inlet"

### Aspects = 1

**Aspect** = "SimplePhysical", "Wallpack Aspect Description"



## SP3DElecHBFixture

### **Description:**

**Symbol Name:** SP3DElecFluoFix.ElecFluoFix

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** HighBayFixture

**User Class Name:** High Bay Fixture

**Part Number:** HighBayFixture01

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DElecHBFixture.ElecHighBayFixture

#### **Inputs = 2**

**Input and description** = "ElecEquipmentHeight", "lamp height", 0

**Input and description** = "ElecEquipmentWidth", "lamp width", 0

#### **Outputs = 6**

**Output and description** = "TopBox", "Top Box housing the conduit port"

**Output and description** = "MiddleBox", "Box between the TopBox and CylindricalJoint"

**Output and description** = "CylindricalJoint", "The portion leading to the bulb holder"

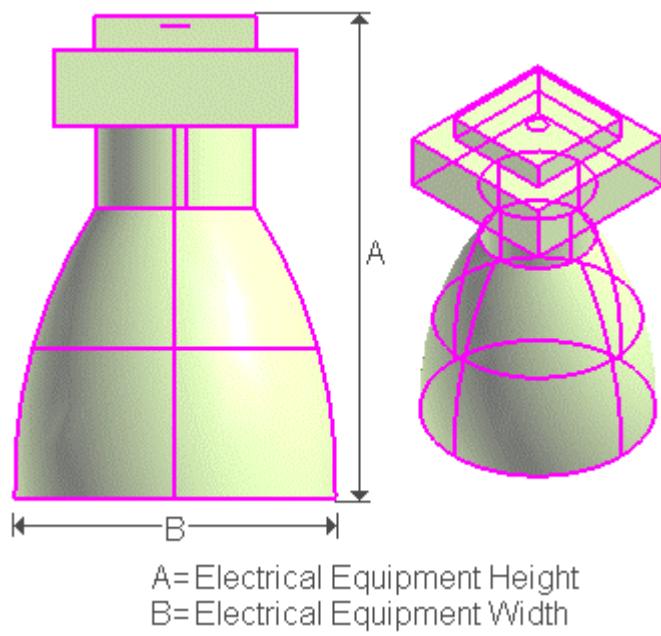
**Output and description** = "LampCover", "The portion consisting of the lamp and glass cover"

**Output and description** = "ConduitPort", "Wire-Inlet: Nozzle"

**Output and description** = "CablePort", "Cable Port"

#### **Aspects = 1**

**Aspect** = "SimplePhysical", "ElecHighBayFixture Aspect Description"



# SP3DElecJunctionBox

## Description:

**Symbol Name:** SP3DElecJunctionBox.ElecJunctionBox

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** JunctionBox

**User Class Name:** Junction Box

**Part Number:** JunctionBox01

## Inputs, Outputs, and Aspects:

ProgID: SP3DElecJunctionBox.ElecJunctionBox

### Inputs = 1

**Input and description** = "FacetoCenter", "Distance from the Outer end of Nozzle to the center of Junction Box",

### Outputs = 11

**Output and description** = "CylinderBody", "Cylindrical Body of the Junction Box"

**Output and description** = "Cylinder1", "Cylinder housing nozzles"

**Output and description** = "Cylinder2", "Cylinder housing nozzles"

**Output and description** = "ConduitPort1", "Nozzle1"

**Output and description** = "ConduitPort2", "Nozzle2"

**Output and description** = "ConduitPort3", "Nozzle3"

**Output and description** = "ConduitPort4", "Nozzle4"

**Output and description** = "CablePort1", "Cable Port1"

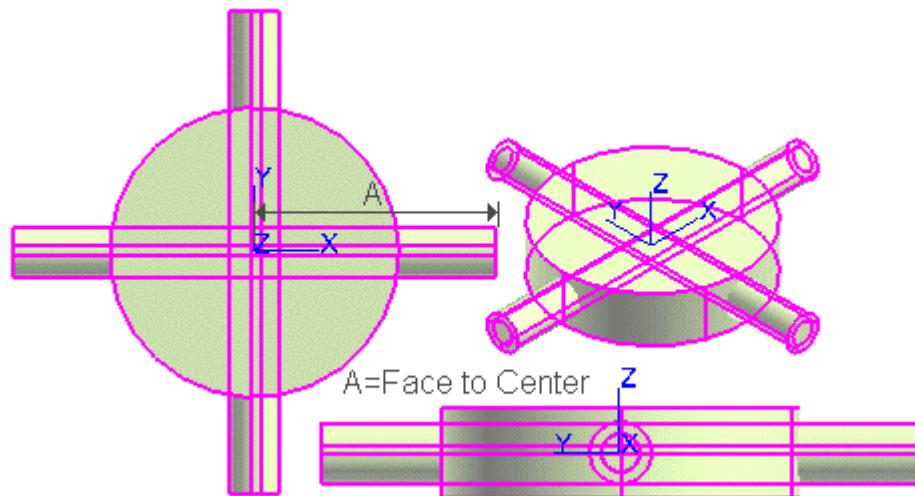
**Output and description** = "CablePort2", "Cable Port2"

**Output and description** = "CablePort3", "Cable Port3"

**Output and description** = "CablePort4", "Cable Port4"

### Aspects = 1

**Aspect** = "SimplePhysical", "Junction Box Aspect Description"



## SP3DElecLBFixture

### **Description:**

**Symbol Name:** SP3DElecFluoFix.ElecFluoFix

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** LowBayFixture

**User Class Name:** Low Bay Fixture

**Part Number:** LowBayFixture01

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DElecLBFixture.ElecLBFixture

#### **Inputs = 2**

**Input and description** = "ElecEquipmentHeight", "lamp height", 0

**Input and description** = "ElecEquipmentWidth", "lamp width", 0

#### **Outputs = 8**

**Output and description** = "TopBox", "Top Box housing the conduit port"

**Output and description** = "MiddleBox", "Box between the TopBox and CylindricalJoint"

**Output and description** = "CylindricalJoint", "The portion leading to the bulb holder"

**Output and description** = "TopLampCover", "The top portion consisting of the lamp cover"

**Output and description** = "Cylindrical Interface", "Interface between the Top Lamp Cover and Bottom Lamp Cover"

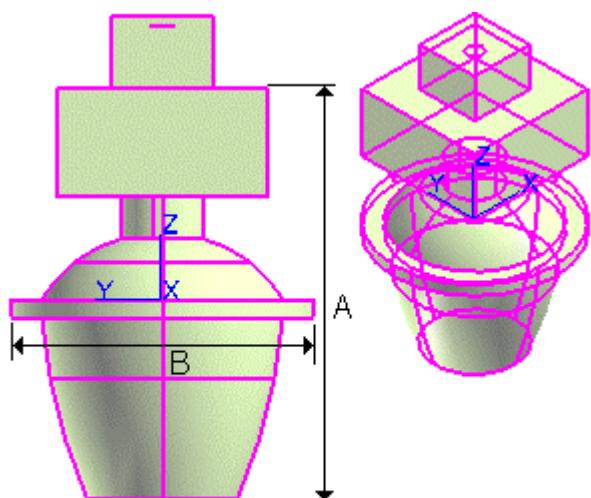
**Output and description** = "BottomLampCover", "The Bottom portion consisting of the lamp cover"

**Output and description** = "ConduitPort", "Wire-Inlet: Nozzle"

**Output and description** = "CablePort", "Cable Port"

#### **Aspects = 1**

**Aspect** = "SimplePhysical", "HighBay Aspect Description"



A=Electrical Equipment Height

B=Electrical Equipment Width

## SP3DElecLiEquip01Asm

**Description:** N7 - LIGHTING, COLUMN MOUNTING FOR BRACKET TYPE FIXTURES

**Symbol Name:** SP3DElecLiEquip01Asm.ElLightingEquipSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElectricalEquipAsm

**User Class Name:** Electrical Lighting Equipment

**Part Number:** ElectricalEquip01\_Asm, ElectricalEquip02\_Asm, ElectricalEquip03\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecLiEquip01Asm.ElLightingEquipSym

**Inputs = 1**

**Outputs = 4**

**Output = "LightMount" Description = "Light Mount"**

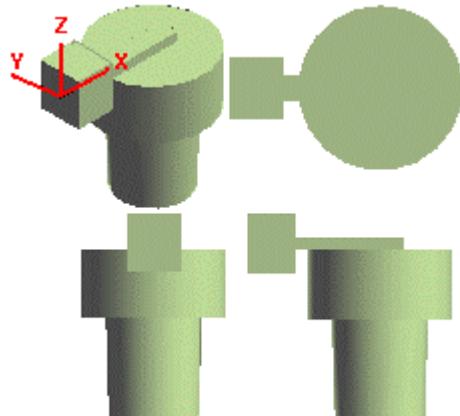
**Output = "LightSupport" Description = "Light Support"**

**Output = "Cylinder" Description = "Light Case"**

**Output = "Snout" Description = "Light"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DElecLiPendantAsm

**Description:** N7 - LIGHTING, PENDANT MOUNTING - FLEXIBLE HANGER SUPPORTS

**Symbol Name:** SP3DElecLiPendantAsm.ElecLightingPSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElectricalPendantAsm

**User Class Name:** Electrical Lighting Pendant

**Part Number:** ElectricalPendant01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecLiPendantAsm.ElecLightingPSym

**Inputs = 2**

**Input = "FixtureDrop" Description = "Drop from ceiling/beam to bottom"**

**Input = "FixtureDiameter" Description = "Diameter of Light"**

**Outputs = 4**

**Output = "LightMount" Description = "Light Mount"**

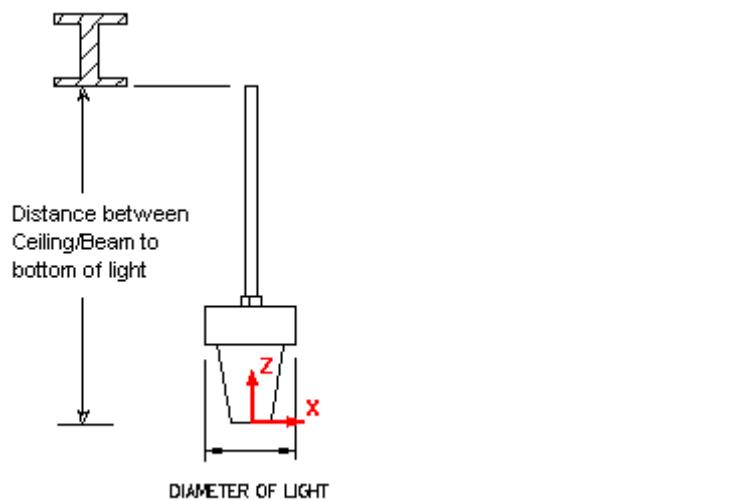
**Output = "LightSupport" Description = "Light Support"**

**Output = "Snout" Description = "Light"**

**Output = "ConduitPort" Description = "Conduit Port"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DElecSpeaker04Asm

**Description:** INTERCOM MTG DETAIL - HANDRAIL MTD STATION - CL I  
DIV 1

**Symbol Name:** SP3DElecSpeaker04Asm.ElectricalSp04Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElectricalSpeakerAsm

**User Class Name:** Electrical Speaker

**Part Number:** ElectricalSpeaker04\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecSpeaker04Asm.ElectricalSp04Sym

**Inputs = 1**

**Input = "SpeakerHeight" Description = "Size of Speaker"**

**Outputs = 4**

**Output = "Stand1" Description = "Stand 1"**

**Output = "Stand2" Description = "Stand 2"**

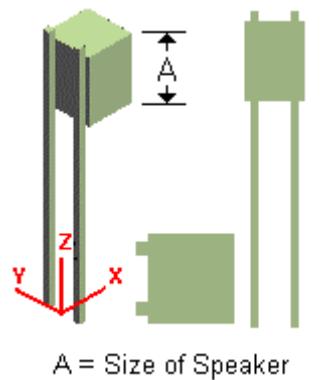
**Output = "Intercom" Description = "Intercom box"**

**Output = "Obstruction" Description = "Obstruction Volume"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A = Size of Speaker

## SP3DElecSpeaker05Asm

**Description:** INTERCOM MTG DETAIL - COLUMN MTD DUAL SPEAKER - STD & CL I DIV 2

**Symbol Name:** SP3DElecSpeaker05Asm.ElectricalSp05Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElectricalSpeakerAsm

**User Class Name:** Electrical Speaker

**Part Number:** ElectricalSpeaker05\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecSpeaker05Asm.ElectricalSp05Sym

**Inputs = 1**

**Input = "SpeakerHeight" Description = "Size of Speaker"**

**Outputs = 4**

**Output = "RailMount" Description = "Hand rail mount"**

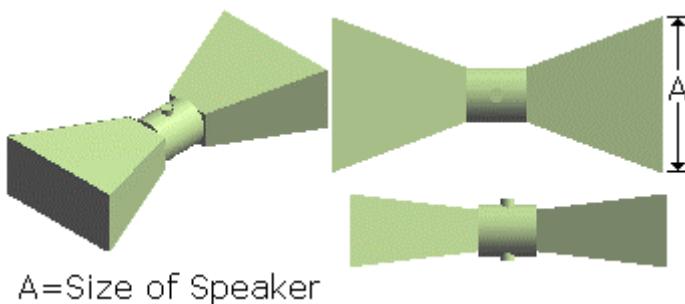
**Output = "Case" Description = "Case Cylinder"**

**Output = "Speaker1" Description = "Speaker 1"**

**Output = "Speaker2" Description = "Speaker 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DElectLight01Asm

**Description:** N7 - LIGHTING, ANGLE STANCHION, HANDRAIL MOUNTING - WELDED BRACKET

**Symbol Name:** SP3DElectLight01Asm.ElectricalLightSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ElectricalLightAsm

**User Class Name:** Electrical Light

**Part Number:** ElectricalLight01\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElectLight01Asm.ElectricalLightSym

**Inputs = 1**

**Input = "FixtureHeight" Description = "Height of Fixture"**

**Outputs = 4**

**Output = "LightPole" Description = "Light Pole"**

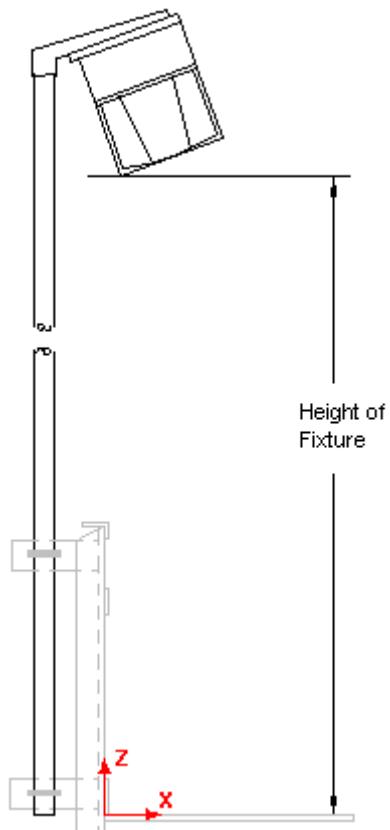
**Output = "Box" Description = "Light Support"**

**Output = "LightCase" Description = "Light Case"**

**Output = "Snout" Description = "Light"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DElecTransformer

**Description:** Grainger Catalog Part No 4RM79

**Symbol Name:** SP3DElecTransformer.ElecTransformer

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** ElectricalTransformer

**User Class Name:** Electrical Transformer

**Part Number:** ElectricalTransformer01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecTransformer.ElecTransformer

**Inputs = 3**

**Input and description** = "ElecEquipmentHeight", "Electrical Equipment Height"

**Input and description** = "ElecEquipmentWidth", "Electrical Equipment Width"

**Input and description** = "ElecEquipmentLength", "Electrical Equipment Length"

**Outputs = 12**

**Output and description** = "BaseofTransformer", "Base of Transformer"

**Output and description** = "BodyofTransformer", "Body of Transformer"

**Output and description** = "TopofTransformer", "Top of Transformer"

**Output and description** = "TransformerCoil", "Transformer Coil"

**Output and description** = "ConduitPort1", "Conduit Port 1"

**Output and description** = "ConduitPort2", "Conduit Port 2"

**Output and description** = "ConduitPort3", "Conduit Port 3"

**Output and description** = "ConduitPort4", "Conduit Port 4"

**Output and description** = "CablePort1", "Cable Port1"

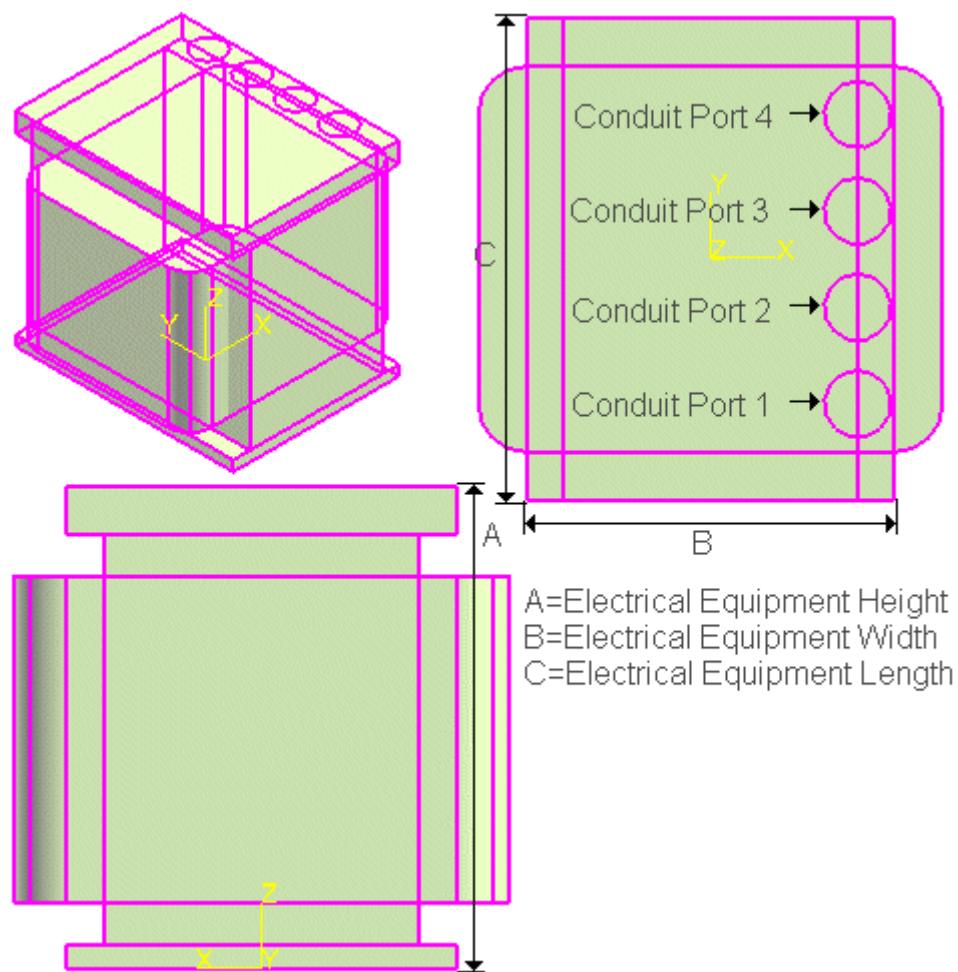
**Output and description** = "CablePort2", "Cable Port2"

**Output and description** = "CablePort3", "Cable Port3"

**Output and description** = "CablePort4", "Cable Port4"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



## SP3DElectricalMotor

**Description:** NEMA Part No T & U Frame 182

**Symbol Name:** SP3DElectricalMotor.ElectricalMotor

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** ElectricalMotor

**User Class Name:** Electrical Motor

**Part Number:** ElectricalMotor01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElectricalMotor.ElectricalMotor

**Inputs = 4**

**Input and description** = "MotorLength", "Motor Length", 0.35

**Input and description** = "MotorDiameter", "Motor Diameter", 0.

**Input and description** = "ShaftLength", "Shaft Length", 0.

**Input and description** = "ShaftDiameter", "Shaft Diameter", 0.02

**Outputs = 8**

**Output and description** = "CylBody", "Cylindrical Body of Motor"

**Output and description** = "Dome1", "Dome 1"

**Output and description** = "Dome2", "Dome 2"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "MotorBase", "Base of Motor"

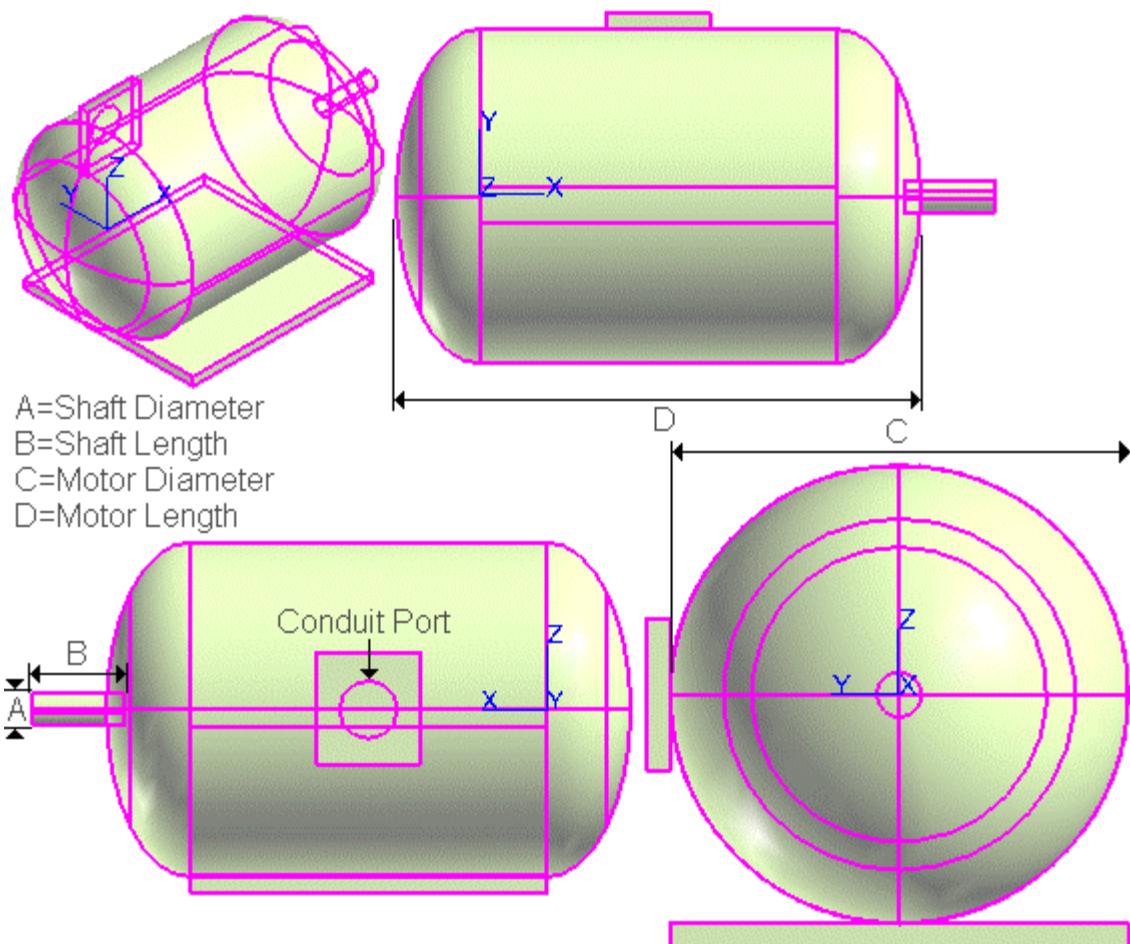
**Output and description** = "CableBox", "Box for wires and cables"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



## SP3DElecVarFreqDrive

**Description:** KoolFog Catalog Part

**Symbol Name:** SP3DElecVarFreqDrive.ElecVarFreqDrive

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** VariableFrequencyDrive

**User Class Name:** Electrical Variable Frequency Drive

**Part Number:** VariableFrequencyDrive01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecVarFreqDrive.ElecVarFreqDrive

**Inputs = 3**

**Input and description** = "ElecEquipmentHeight", "Electrical Equipment Height",

**Input and description** = "ElecEquipmentWidth", "Electrical Equipment Width",

**Input and description** = "ElecEquipmentLength", "Electrical Equipment Length",

**Outputs = 5**

**Output and description** = "DefaultSurface", "Default Surface on the side to be supported"

**Output and description** = "ProjectedBody", "Projected Body"

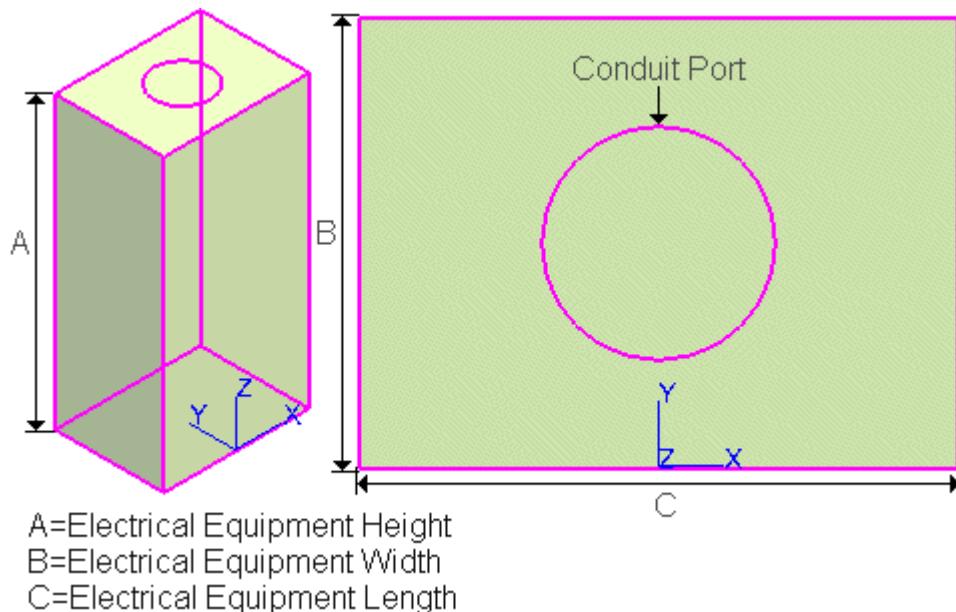
**Output and description** = "Surface2", "Surface on other side"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DElecWPFixture

## **Description:**

**Symbol Name:** SP3DElecWPFixture.ElecWallpackFixture

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** WallPackFixture

**User Class Name:** Wall Pack Fixture

**Part Number:** WallpackFixture01

## **Inputs, Outputs, and Aspects:**

ProgID: SP3DElecWPFixture.ElecWallpackFixture

### **Inputs = 3**

**Input and description** = "ElecEquipmentLength", "distance between the lamp surface and wall"

**Input and description** = "ElecEquipmentHeight", "lamp height"

**Input and description** = "ElecEquipmentWidth", "lamp width"

### **Outputs = 5**

**Output and description** = "BaseBox", "Base box of the wallpack"

**Output and description** = "TopBox", "The portion housing the bulb holder"

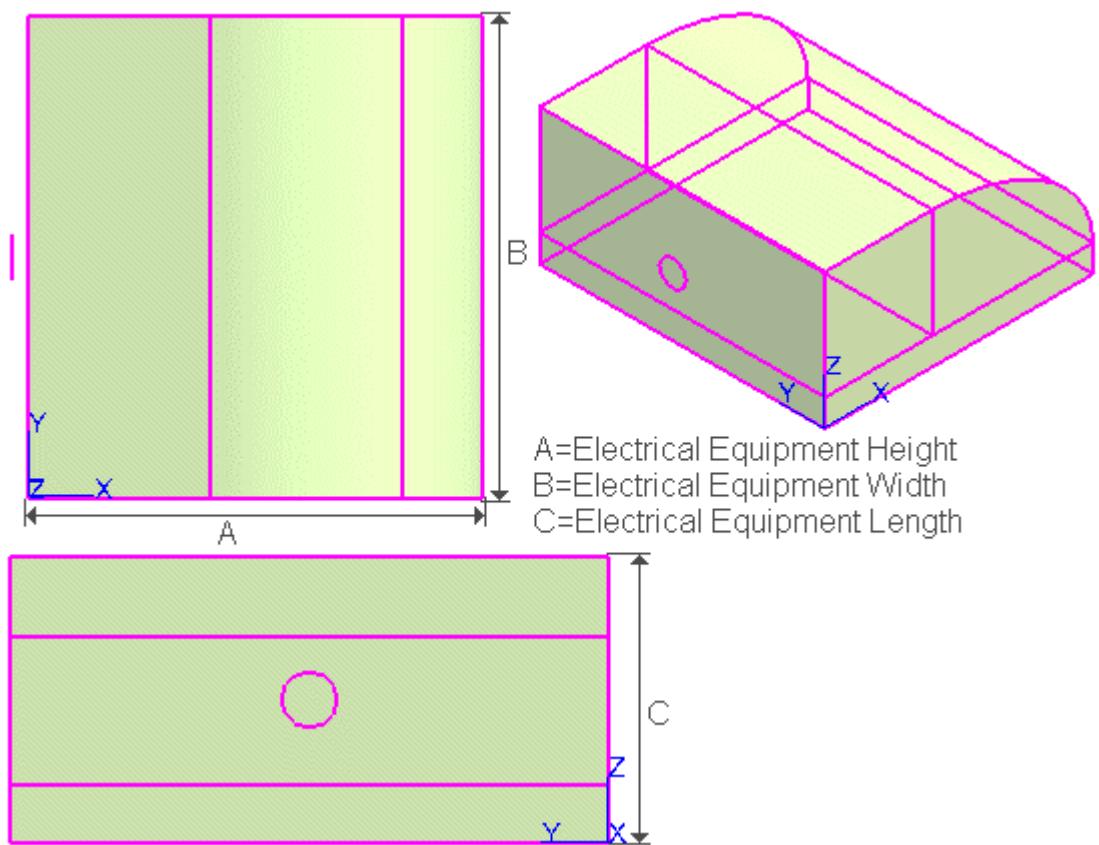
**Output and description** = "LampCover", "The portion consisting of the lamp and glass cover"

**Output and description** = "ConduitPort", "Conduit Port Wire-Inlet: Nozzle"

**Output and description** = "CablePort", "Cable Port"

### **Aspects = 1**

**Aspect** = "SimplePhysical", "WallpackFixture Aspect Description"



# SP3DEmergencyBeaconAsm

**Description:**

**Symbol Name:** SP3DEmergencyBeaconAsm.EBSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEmergencyBeaconAsm.EBSym

**Inputs = 3**

**Input and description** = "CylinderDia", "Cylinder Diameter",

**Input and description** = "BeaconLength", "Beacon Length", 0

**Input and description** = "BeaconHeight", "Beacon Height",

**Outputs = 10**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "Box", "Box"

**Output and description** = "Cylinder3", "Cylinder 3"

**Output and description** = "Cylinder4", "Cylinder 4"

**Output and description** = "SemiEllipsoid", "Semi Ellipse"

**Output and description** = "ConduitPort", "Conduit Port"

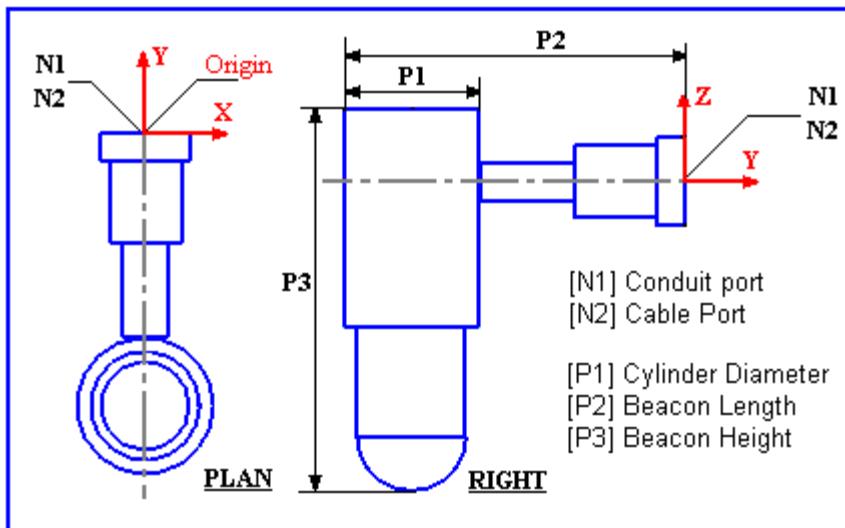
**Output and description** = "CablePort", "Cable Port"

**Output and description** = "EmergencyBeaconControlPoint", "Control Point of Emergency Beacon"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_205CompVerCylEqpSkAsm

**Description:**

**Symbol Name:** SP3DE\_205CompVerCylEqpSkAsm.CVCESym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_205CompVerCylEqpSkAsm.CVCESym

**Inputs = 40**

**Input and description** = "VesselHeight1", "Vessel Height 1"

**Input and description** = "VesselDiameter1", "Vessel Diameter 1"

**Input and description** = "SupportHeight1", "Support Height 1"

**Input and description** = "VesselHeight2", "Vessel Height 2"

**Input and description** = "VesselDiameter2", "Vessel Diameter 2"

**Input and description** = "SupportHeight2", "Support Height 2"

**Input and description** = "VesselHeight3", "Vessel Height 3"

**Input and description** = "VesselDiameter3", "Vessel Diameter 3"

**Input and description** = "SupportHeight3", "Support Height 3"

**Input and description** = "VesselHeight4", "Vessel Height 4"

**Input and description** = "VesselDiameter4", "Vessel Diameter 4"

**Input and description** = "SkirtHeight", "Skirt Height"

**Input and description** = "SkirtTopDiameter", "Skirt Top Diameter"

**Input and description** = "SkirtBottomDiameter", "Skirt Bottom Diameter"

**Input and description** = "VesselReferencePoint", "Vessel Reference Point"

**Input and description** = "End1Type", "Vessel Front Head Type"

**Input and description** = "End2Type", "Vessel Rear Head Type 1"

**Input and description** = "End3Type", "Vessel Rear Head Type 2"

**Input and description** = "EndHead1ConeTopDiameter", "End Head1 Cone Top Diameter"

**Input and description** = "EndHead1ConeHeight", "End Head1 Cone Height"

**Input and description** = "EndHead1KnuckleRadius", "End Head1 Knuckle Radius"

**Input and description** = "EndHead1Domeradius", "End Head1 Dome Radius"

**Input and description** = "EndHead1FlangedThick1", "End Head1 Flanged Thick1"

**Input and description** = "EndHead1FlangedThick2", "End Head1 Flanged Thick2"

**Input and description** = "EndHead1SphericalRadius", "End Head1 Spherical Radius"

**Input and description** = "EndHead2ConeTopDiameter", "End Head2 Cone Top Diameter"

**Input and description** = "EndHead2ConeHeight", "End Head2 Cone Height"

**Input and description** = "EndHead2KnuckleRadius", "End Head2 Knuckle Radius"

**Input and description** = "EndHead2Domeradius", "End Head2 Dome Radius"

**Input and description** = "EndHead2FlangedThick1", "End Head2 Flanged Thick1"

**Input and description** = "EndHead2FlangedThick2", "End Head2 Flanged Thick2"

**Input and description** = "EndHead2SphericalRadius", "End Head2 Spherical Radius"

**Input and description** = "EndHead3ConeTopDiameter", "End Head3 Cone Top Diameter"

**Input and description** = "EndHead3ConeHeight", "End Head3 Cone Height"

**Input and description** = "EndHead3KnuckleRadius", "End Head3 Knuckle Radius"

**Input and description** = "EndHead3Domeradius", "End Head3 Dome Radius"

**Input and description** = "EndHead3FlangedThick1", "End Head3 Flanged Thick1"

**Input and description** = "EndHead3FlangedThick2", "End Head3 Flanged Thick2"

**Input and description** = "EndHead3SphericalRadius", "End Head3 Spherical Radius"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 19**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Support1", "Support 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "Support2", "Support 2"

**Output and description** = "Cylinder3", "Cylinder 3"

**Output and description** = "Support3", "Support 3"

**Output and description** = "Cylinder4", "Cylinder 4"

**Output and description** = "Skirt", "Skirt"

**Output and description** = "SurfaceAtBottomOfSkirt", "Surface at Bottom of Skirt"

**Output and description** = "CircularFoundationPort", "Circular Foundation Port"

**Output and description** = "InsCylinder1", "Insulated Cylinder 1"

**Output and description** = "InsSupport1", "Insulated Support 1"

**Output and description** = "InsCylinder2", "Insulated Cylinder 2"

**Output and description** = "InsSupport2", "Insulated Support 2"

**Output and description** = "InsCylinder3", "Insulated Cylinder 3"

**Output and description** = "InsSupport3", "Insulated Support 3"

**Output and description** = "InsCylinder4", "Insulated Cylinder 4"

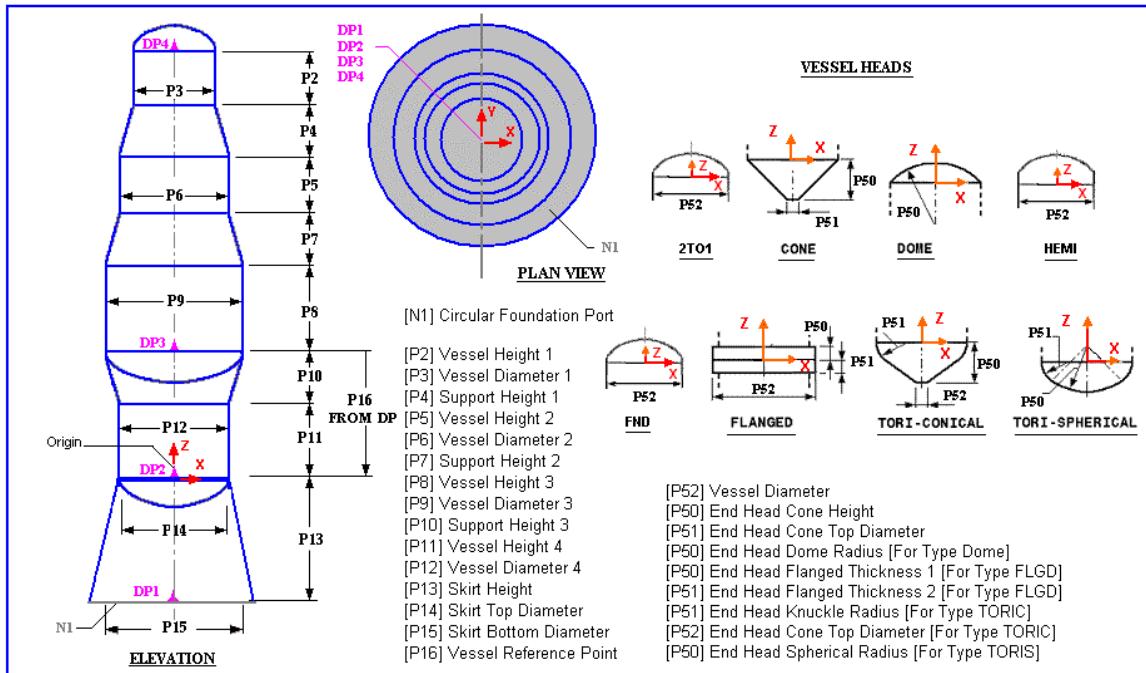
**Output and description** = "ComplexVCylEqnSkControlPoint", "Control Point of Complex Vertical Cylindrical Equipment With Skirt"

**Aspects = 3**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "RefGeom", "ReferenceGeometry"



# SP3DE\_210SimVerCylSkirtAsm

## Description:

**Symbol Name:** SP3DE\_210SimVerCylSkirtAsm.VCylSkirtSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DE\_210SimVerCylSkirtAsm.VCylSkirtSym

### Inputs = 16

**Input and description** = "End1Type", "Vessel Front Head Type"

**Input and description** = "End2Type", "Vessel Rear Head Type"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent", 8#

**Input and description** = "VesselDiameter", "Vessel Diameter", 2.1

**Input and description** = "SkirtTopDiameter", "Support Top Diameter", 2.1

**Input and description** = "SkirtBottomDiameter", "Support Bottom Diameter", 3.5

**Input and description** = "SkirtHeight", "Skirt Height", 2.7

**Input and description** = "VesselStartHeight", "Vessel Start Height", 2.8

**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter",

**Input and description** = "EndHeadConeHeight", "End Head Cone Height",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",

**Input and description** = "EndHeadDomeRadius", "End Head Dome Radius",

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1",

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2",

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

### Outputs = 6

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Vessel", "Vessel"

**Output and description** = "SupportSkirt", "Support Skirt"

**Output and description** = "EqpFoundatioPort1", "Foundation Port 1"

**Output and description** = "VesselwithSkirtEqpControlPoint", "Control Point of Vessel with Skirt"

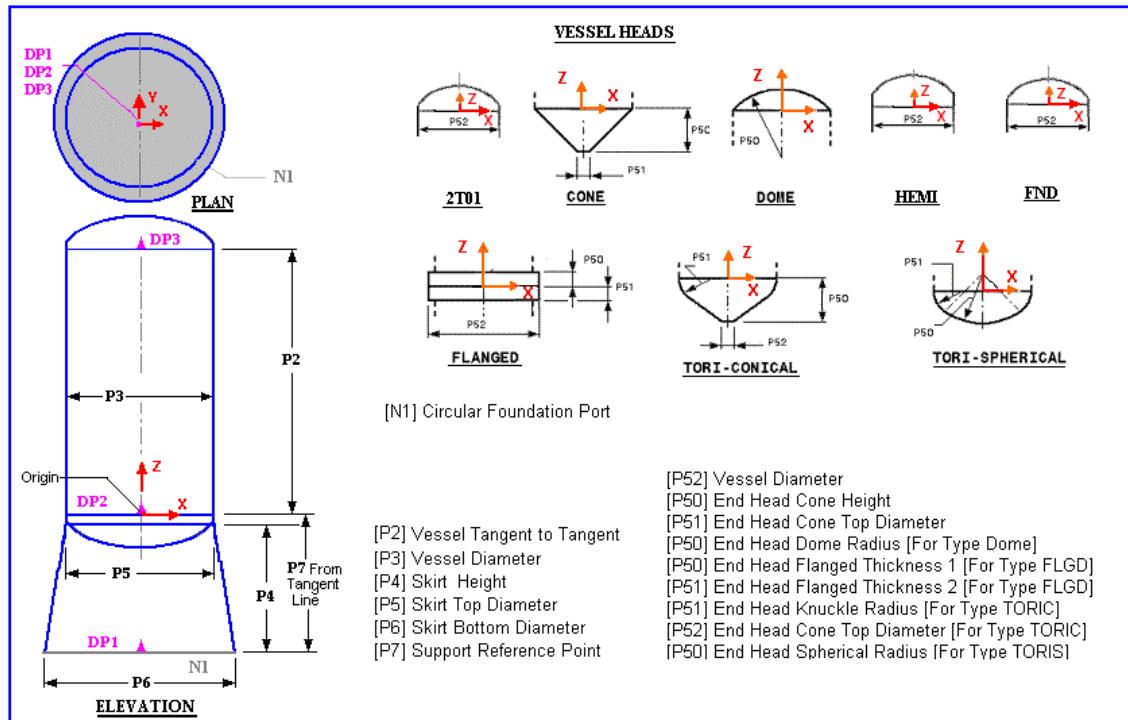
**Output and description** = "InsulatedVessel", "Insulated Vessel"

### Aspects = 3

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "RefGeometry", "ReferenceGeometry"



## SP3DE\_215Asm

### **Description:**

**Symbol Name:** SP3DE\_215Asm.CE\_215Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SimpleVerCylEqpLegsAsm

**User Class Name:** Simple Vertical Cylindrical Equipment With Legs

**Part Number:** SimpleVerticalCylindricalEqpLegs-E

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_215Asm.CE\_215Sym

#### **Inputs = 9**

**Input = "VesselHeight" Description =** "Shell Height P2"

**Input = "VesselDiameter" Description =** "Shell Diameter P3"

**Input = "SupportAngularLocation" Description =** "SupportAngularLocation"

**Input = "NumberOfSupports" Description =** "NumberOfSupports P5"

**Input = "SupportHeight" Description =** "SupportHeight P6"

**Input = "SupportLength" Description =** "SupportLength P7"

**Input = "SupportThickness" Description =** "SupportThickness P8"

**Input = "VesselStartPoint" Description =** "Vessel Start Point P9"

**Input = "InsulationThickness" Description =** "Insulation Thickness"

#### **Outputs = 4**

**Output = "Vessel" Description =** "Vessel (Shell)"

**Output = "VesselInsul" Description =** "Vessel Insulation"

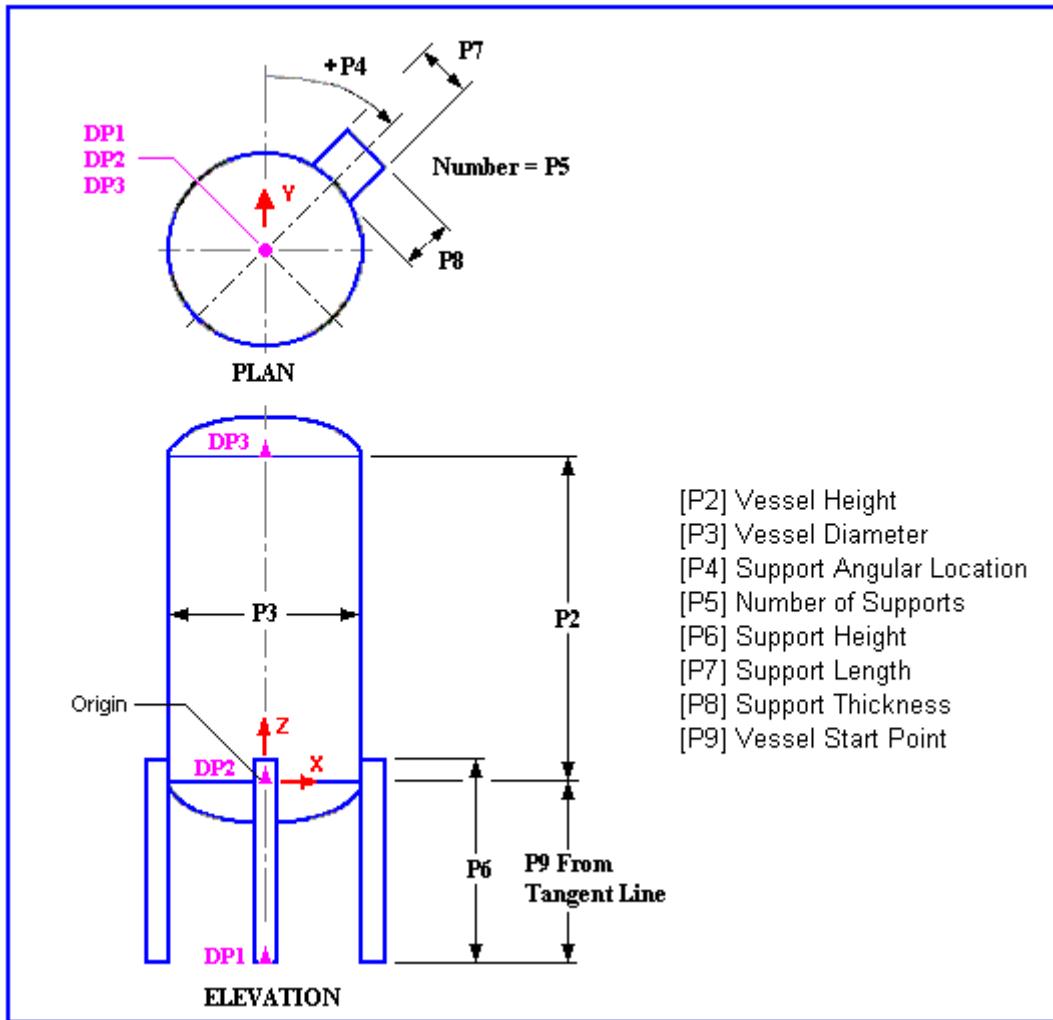
**Output = "SimpleVerCylEqpLegsControlPoint" Description =** "Control Point of SimpleVerCylEqpLegs "

**Output = "DefaultSurface" Description =** "Default Surface SimpleVerCylEqpLegs "

#### **Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DE\_215SimVerCylLegsAsm

## Description:

**Symbol Name:** SP3DE\_215SimVerCylLegsAsm.SVCylLegsSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DE\_215SimVerCylLegsAsm.SVCylLegsSym

#### Inputs = 18

**Input and description** = "End1Type", "Vessel Front Head Type"

**Input and description** = "End2Type", "Vessel Rear Head Type"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent"

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "SupportAngularLocation", "Support Angular Location"

**Input and description** = "NumberofSupports", "Number of Supports"

**Input and description** = "SupportHeight", "Support Height"

**Input and description** = "SupportLength", "Support Length"

**Input and description** = "SupportThickness", "Support Thickness"

**Input and description** = "SupportReferencePoint", "Support Reference Point"

**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter"

**Input and description** = "EndHeadConeHeight", "End Head Cone Height"

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius"

**Input and description** = "EndHeadDomeradius", "End Head Dome Radius"

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1"

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2"

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius"

**Input and description** = "InsulationThickness", "Insulation Thickness"

#### Outputs = 13

**Output and description** = "VesselCylBodyIns", "Insulated VesselCylBody"

**Output and description** = "SimVerCylEqpLegControlPoint", "Control Point of Simple Vertical Cylinder with Equipment Legs"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "VesselCylBody", "VesselCylBody"

**Output and description** = "EqpFoundationPort1", "Foundation Port 1"

**Output and description** = "Planes\_", "Leg Support"

**Output and description** = "Edge\_", "Edge"

**Output and description** = "Point1\_", "Left Face Point"

**Output and description** = "Point2\_", "Right Face Point"

**Output and description = "Point3\_**, "Front Face Point"

**Output and description = "Point4\_**, "Back Face Point"

**Output and description = "Point5\_**, "Bottom Face Point"

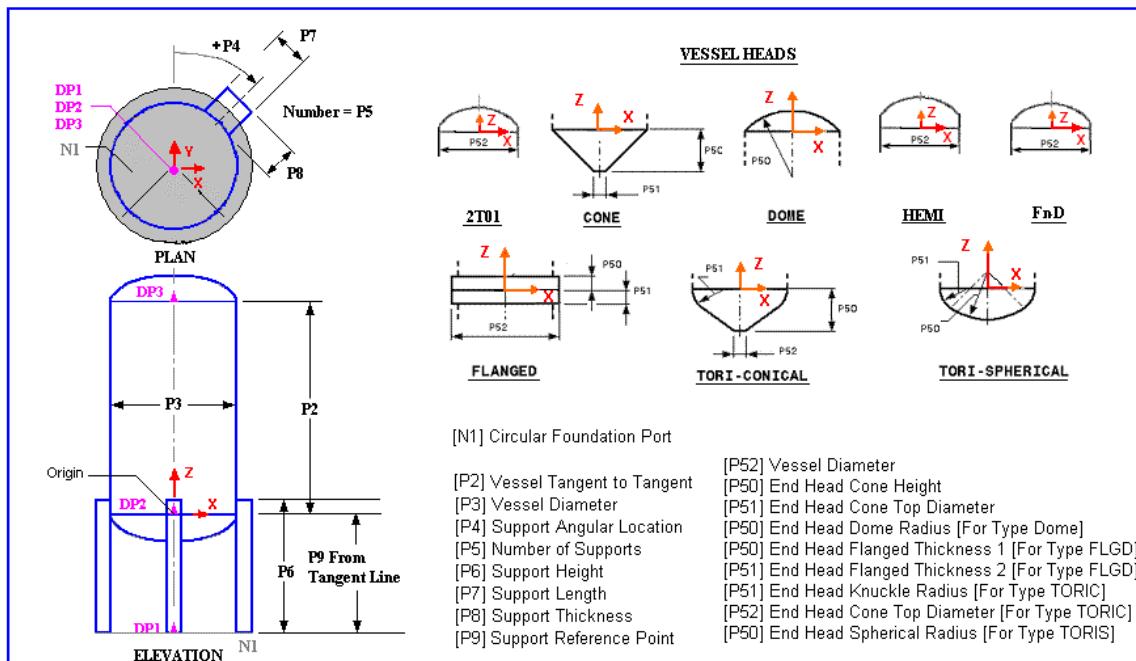
**Output and description = "Point6\_**, "Top Face Point"

**Aspects = 3**

**Aspect = "Insulation", "Insulation"**

**Aspect = "RefGeometry", "ReferenceGeometry"**

**Aspect = "Physical", "Physical"**



# SP3DE\_230SphVesselAsm

## Description:

**Symbol Name:** SP3DE\_230SphVesselAsm.SphVesselSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DE\_230SphVesselAsm.SphVesselSym

#### Inputs = 9

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "VesselCenterHeight", "Vessel Center Height"

**Input and description** = "SupportLength", "Support Length"

**Input and description** = "SupportHeight", "Support Height"

**Input and description** = "SupportThickness", "Support Thickness"

**Input and description** = "NumberOfSupports", "Number Of Supports"

**Input and description** = "SupportAngularLocation", "Support Angular Location"

**Input and description** = "SupportRadialLocation", "Support Radial Location"

**Input and description** = "InsulationThickness", "Insulation Thickness"

#### Outputs = 10

**Output and description** = "InsulatedBody", "Insulated Body"

**Output and description** = "SphericalVesselCompControlPoint", "Control Point of Spherical Vessel Component"

**Output and description** = "Vessel", "Vessel"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Support\_", "Support"

**Output and description** = "Edge\_", "Edge"

**Output and description** = "Point1\_", "Point1"

**Output and description** = "Point2\_", "Point2"

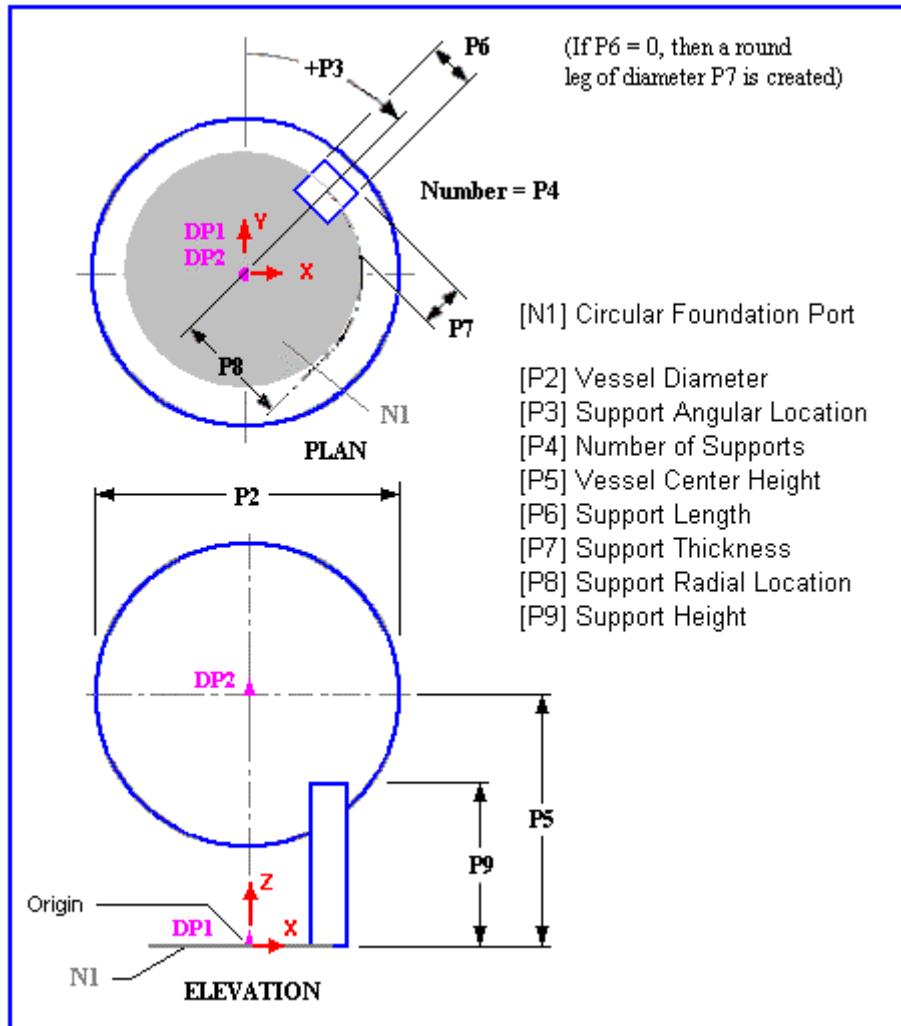
**Output and description** = "Surface\_", "Surface"

#### Aspects = 3

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_240CompHorCylEqpAsm

**Description:**

**Symbol Name:** SP3DE\_240CompHorCylEqpAsm.CompHorCylSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_240CompHorCylEqpAsm.CompHorCylSym

**Inputs = 25**

**Input and description** = "End1Type", "Vessel Front Head Type"

**Input and description** = "End2Type", "Vessel Rear Head Type"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent", 3

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "BootHorLocation", "Boot Horizontal Location", 2.175

**Input and description** = "BootVertLocation", "Boot Vertical Location",

**Input and description** = "BootDiameter", "Boot Diameter",

**Input and description** = "BootAngularLocation", "Boot Angular Location",

**Input and description** = "VesselCenterHeight", "Vessel CenterHeight",

**Input and description** = "FirstSupportLocation", "First Support Location",

**Input and description** = "SecondSupportLocation", "Second Support Location",

**Input and description** = "ThirdSupportLocation", "Third Support Location",

**Input and description** = "SupportThickness", "Support Thickness",

**Input and description** = "SupportLength", "Support Length",

**Input and description** = "StiffenerRadius", "Stiffener Radius",

**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter",

**Input and description** = "EndHeadConeHeight", "End Head Cone Height",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",

**Input and description** = "EndHeadDomeradius", "End Head Dome Radius",

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1",

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2",

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Input and description** = "XboltHole", "Bolt X Hole Location",

**Input and description** = "YboltHole", "Bolt Y Hole Location", 0

**Outputs = 15**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Vessel", "Vessel"

**Output and description** = "BootVessel", "Boot vessel"

**Output and description** = "BootDome", "Boot Dome"

**Output and description** = "Support\_ ", "Supports"

**Output and description** = "Stiffner\_ ", "Stiffners for Supports"

**Output and description** = "Edges\_ ", "Edges for Supports"

**Output and description** = "Points\_ ", "Points on Each face of Supports"

**Output and description** = "EqpFoundatioPort1", "Foundation Port 1"

**Output and description** = "EqpFoundationPort2", "Foundation Port 2"

**Output and description** = "EqpFoundationPort3", "Foundation Port 3"

**Output and description** = "ComplexHorCylEqpControlPoint", "Control Point of Complex Horizontal Cylinder Vessel"

**Output and description** = "InsulatedVessel", "Insulated Vessel"

**Output and description** = "InsBootVessel", "InsulatedVessel Left Elliptical Head"

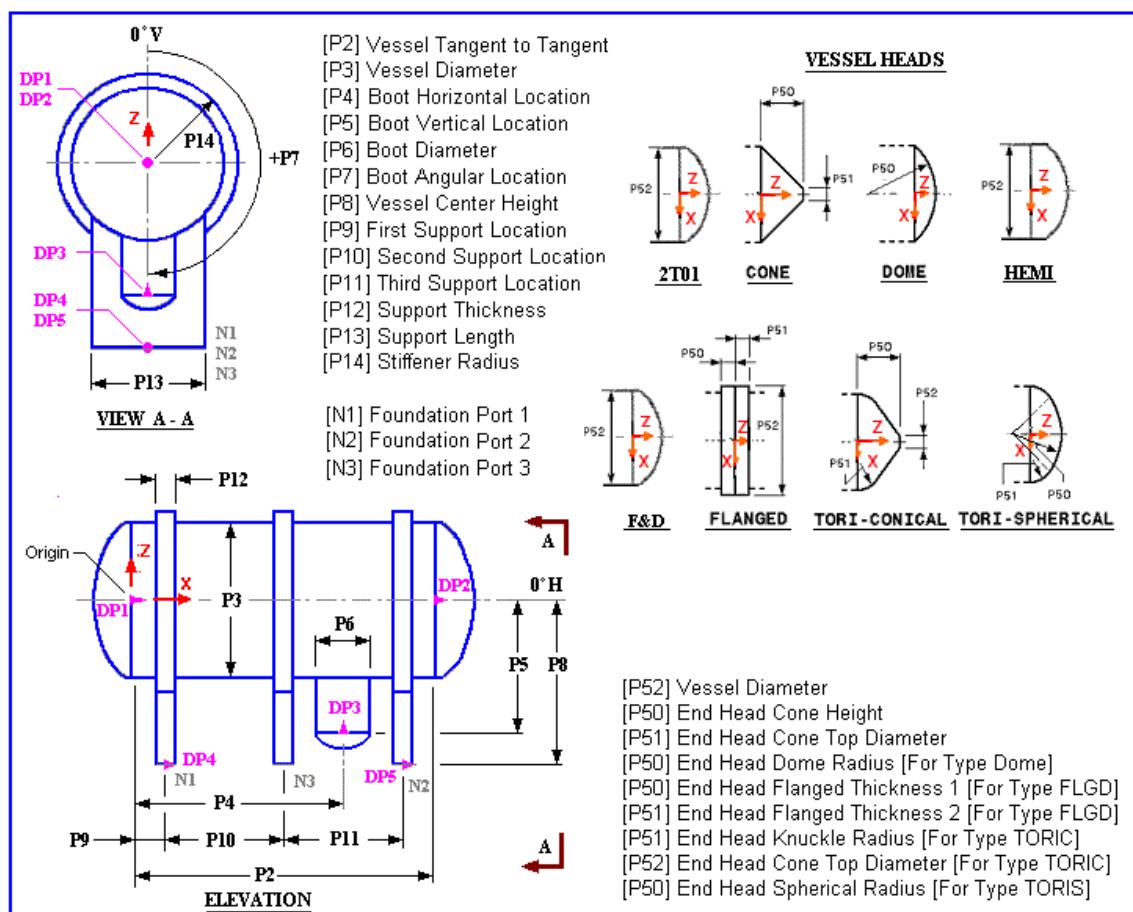
**Output and description** = "InsBootDome", "InsulatedVessel Right Elliptical Head"

### Aspects = 3

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "RefGeometry", "ReferenceGeometry"



## SP3DE\_245Asm

### Description:

**Symbol Name:** SP3DE\_245Asm.CE\_245Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** E245Asm

**User Class Name:** Simple Horizontal Cylindrical Vessel

**Part Number:** SHCV-01-L4000xD1500-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DE\_245Asm.CE\_245Sym

#### Inputs = 8

**Input** = "VesselLength" **Description** = "VesselLength"

**Input** = "VesselDiameter" **Description** = "VesselDiameter"

**Input** = "VesselCenterHeight" **Description** = "VesselCenterHeight"

**Input** = "FirstSupportLocation" **Description** = "FirstSupportLocation"

**Input** = "SecondSupportLocation" **Description** = "SecondSupportLocation"

**Input** = "SupportThickness" **Description** = "SupportThickness"

**Input** = "SupportLength" **Description** = "SupportLength"

**Input** = "InsulationThickness" **Description** = "InsulationThickness"

#### Outputs = 7

**Output** = "Vessel" **Description** = "Vessel"

**Output** = "VesselLEH" **Description** = "Vessel Left Elliptical Head"

**Output** = "VesselREH" **Description** = "Vessel Right Elliptical Head"

**Output** = "InsulatedVessel" **Description** = "InsulatedVessel"

**Output** = "InsulatedVesselLEH" **Description** = "InsulatedVessel Left Elliptical Head"

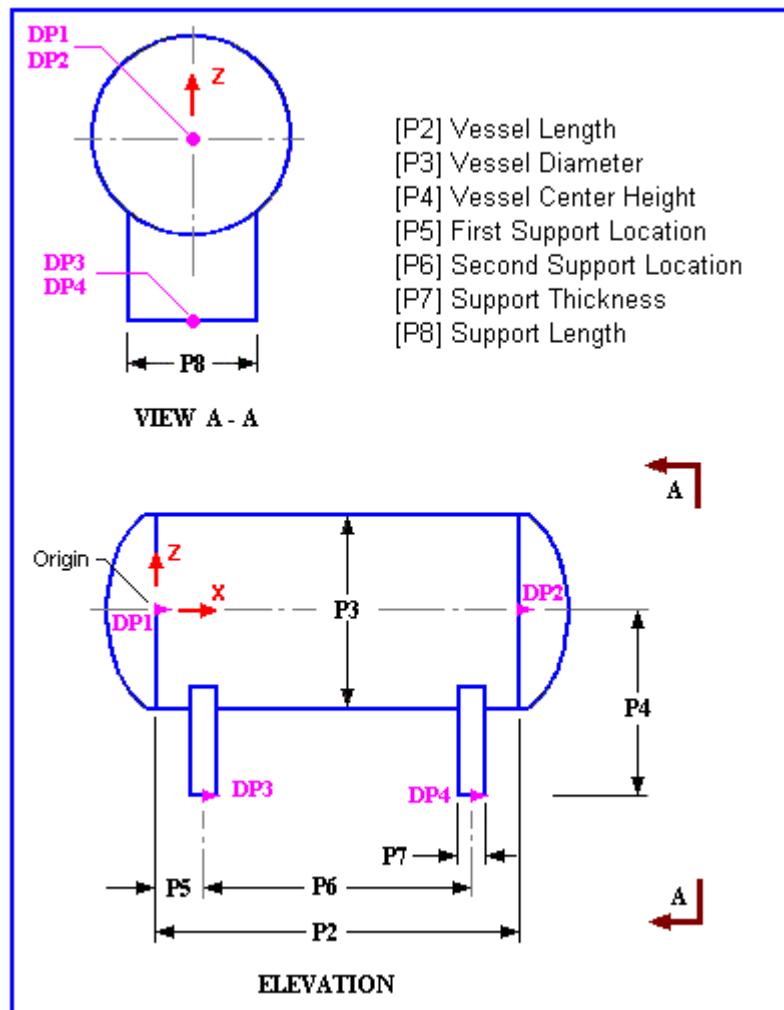
**Output** = "InsulatedVesselREH" **Description** = "InsulatedVessel Right Elliptical Head"

**Output** = "SimpleHorCylVesselControlPoint" **Description** = "Control Point of Simple Horizontal Cylinder Vessel "

#### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DE\_245SimpHorCylEqpAsm

**Description:**

**Symbol Name:** SP3DE\_410VerRotEqAsm.VerShTExchSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_245SimpHorCylEqpAsm.HorCylSym

**Inputs = 19**

**Input and description** = "End1Type", "Vessel Front Head Type"

**Input and description** = "End2Type", "Vessel Rear Head Type"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent", 4

**Input and description** = "VesselDiameter", "Vessel Diameter",

**Input and description** = "VesselCenterHeight", "Vessel CenterHeight",

**Input and description** = "FirstSupportLocation", "First Support Location",

**Input and description** = "SecondSupportLocation", "Second Support Location", 2.5

**Input and description** = "SupportThickness", "Support Thickness",

**Input and description** = "SupportLength", "Support Length"

**Input and description** = "XBoltHole", "Hole Bolt X Location",

**Input and description** = "YBoltHole", "Hole Bolt Y Location",

**Input and description** = "EndHeadConeTopDiameter", "EndHead Cone Top Diameter",

**Input and description** = "EndHeadConeHeight", "End Head Cone Height",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",

**Input and description** = "EndHeadDomeRadius", "End Head Dome Radius",

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1",

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2",

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 10**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Vessel", "Vessel"

**Output and description** = "Support\_", "Supports"

**Output and description** = "Surface\_", "Surfaces for Supports"

**Output and description** = "Edges\_", "Edges for Supports"

**Output and description** = "Points\_", "Points on Each face of Supports"

**Output and description** = "EqpFoundatioPort1", "Foundation Port 1"

**Output and description** = "EqpFoundationPort2", "Foundation Port 2"

**Output and description** = "SimpleHorCylVesselControlPoint", "Control Point of

Simple Horizontal Cylinder Vessel Component"

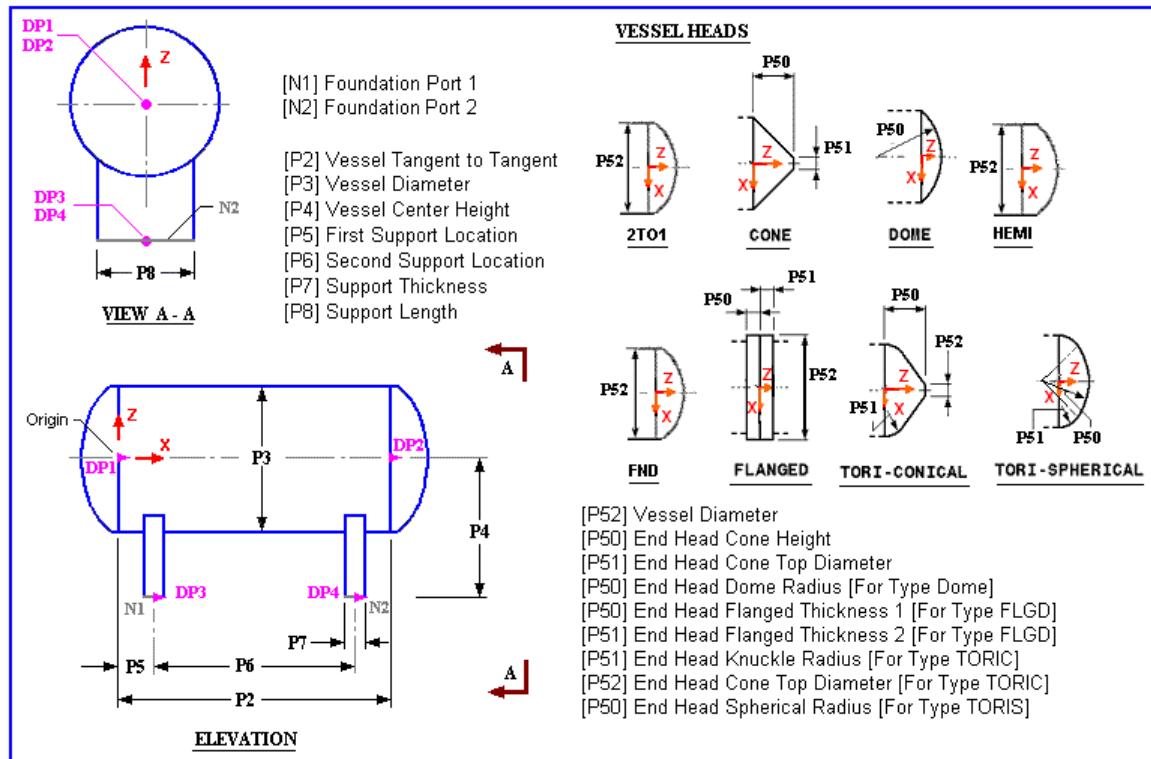
**Output and description = "InsulatedVessel", "Insulated Vessel"**

**Aspects = 3**

**Aspect = "RefGeometry", "ReferenceGeometry"**

**Aspect = "Insulation", "Insulation"**

**Aspect = "Physical", "Physical"**



# SP3DE\_305HorShTubeExchAsm

**Description:**

**Symbol Name:** SP3DE\_305HorShTubeExchAsm.HorShTExchSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 40**

**Input and description** = "FrontEndType", "Front End Type"

**Input and description** = "RearEndType", "Rear End Type"

**Input and description** = "ExchangerDiameter", "Exchanger Diameter",

**Input and description** = "ExchangerLength", "Exchanger Length", 2

**Input and description** = "ExchangerFlangeTk1", "Exchanger Flange Thickness 1", 0

**Input and description** = "ExchangerFlangeTk2", "Exchanger Flange Thickness 2", 0

**Input and description** = "ExpansionJointDiameter", "Expansion Joint Diameter",

**Input and description** = "ExpansionJointPosition", "Expansion Joint Position",

**Input and description** = "ExpansionJointThickness", "Expansion Joint Thickness",

**Input and description** = "BundleFlangeDia", "Bundle Flange Diameter",

**Input and description** = "BundleFlangeTk", "Bundle Flange Thickness",

**Input and description** = "BundlePullingLength", "Bundle Pulling Length",

**Input and description** = "SupportLength", "Support Length",

**Input and description** = "BotSupportCenFromPP", "Bottom Support Center from Placement Point",

**Input and description** = "BottomSupportCentoCen", "Bottom Support Center to Center",

**Input and description** = "BottomSupportHeight", "Bottom Support Height",

**Input and description** = "Support1Thickness", "Support 1 Thickness",

**Input and description** = "Support2Thickness", "Support 2 Thickness",

**Input and description** = "TopSupportHeight", "Top Support Height",

**Input and description** = "TopSupportCenFromPP", "Top Support Center from Placement Point",

**Input and description** = "TopSupportCentoCen", "Top Support Center to Center",

**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter",

**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1", 0

**Input and description** = "FrontEndFlangeTk2", "Front End Flange Thickness 2",

**Input and description** = "FrontEndFlangeTk3", "Front End Flange Thickness 3", 0

**Input and description** = "FrontEndLength1", "Front End Length 1",

**Input and description** = "FrontEndLength2", "Front End Length 2",

**Input and description** = "RearEndFlangeDia", "Rear End Flange Diameter",

**Input and description** = "RearEndFlangeTk1", "Rear End Flange Thickness 1",

**Input and description** = "RearEndFlangeTk2", "Rear End Flange Thickness 2", 0

**Input and description** = "RearEndFlangeTk3", "Rear End Flange Thickness 3",

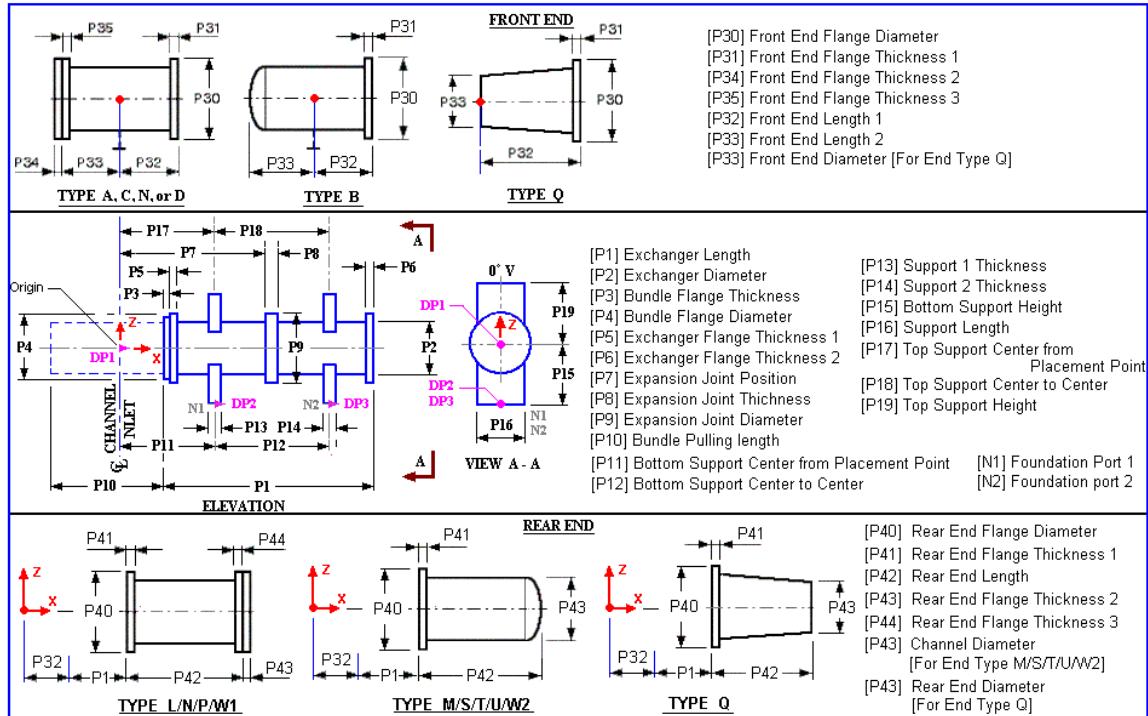
**Input and description** = "RearEndLength", "Rear End Length",  
**Input and description** = "ChannelDiameter", "Channel Diameter",  
**Input and description** = "FrontEndDiameter", "Front End Diameter",  
**Input and description** = "RearEndDiameter", "Rear EndDiameter",  
**Input and description** = "InsulationThickness", "Insulation Thickness", 0  
**Input and description** = "FP1XboltHole", "FP1 Bolt X Hole Location", 0  
**Input and description** = "FP1YboltHole", "FP1 Bolt Y Hole Location", 0  
**Input and description** = "FP2XboltHole", "FP2 Bolt X Hole Location", 0  
**Input and description** = "FP2YboltHole", "FP2 Bolt Y Hole Location",

**Outputs = 18**

**Output and description** = "ExchangerCyl", "Exchanger Body Cylinder"  
**Output and description** = "ExchangerRearFlange", "Exchanger Rear Flange"  
**Output and description** = "ExchangerFrontFlange1", "Exchanger Front Flange1"  
**Output and description** = "ExchangerFrontFlange2", "Exchanger Front Flange 2"  
**Output and description** = "Expansion\_ ", "Expansion Joint"  
**Output and description** = "Supports\_ ", "Supports"  
**Output and description** = "Point1\_ ", "Top Support Position1"  
**Output and description** = "Point2\_ ", "Top Support Position2"  
**Output and description** = "Edges\_ ", "Edges of Support1"  
**Output and description** = "EqpFoundationPort1", "EqpFoundation Port1"  
**Output and description** = "EqpFoundationPort2", "EqpFoundation Port2"  
**Output and description** = "ExchangerCylIns", "Exchanger Body Cylinder Insulation"  
**Output and description** = "ExchFrontEndCylIns", "Exchanger Front End Cylinder Insulation"  
**Output and description** = "ExchRearEndCylIns", "Exchanger Rear End Cyl Insulation"  
**Output and description** = "ExpansionJtIns\_ ", "Expansion Joint"  
**Output and description** = "BundlePulling", "BundlePulling"  
**Output and description** = "DefaultSurface", "Default Surface Horizontal Shell and Tube Exchanger"  
**Output and description** = "HorShTubeExControlPoint", "Control Point of Horizontal Shell and Tube Exchanger"

**Aspects = 4**

**Aspect** = "Insulation", "Insulation"  
**Aspect** = "Physical", "Physical"  
**Aspect** = "Maintenance", "Maintenance"  
**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_307KettleHeatXchAsm

**Description:**

**Symbol Name:** SP3DE\_307KettleHeatXchAsm.KettleExchSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_307KettleHeatXchAsm.KettleExchSym

**Inputs = 36**

**Input and description** = "FrontEndType", "Front End Type"  
**Input and description** = "VesselHeadType", "Rear End Type"  
**Input and description** = "ExchangerLength", "Exchanger Length", 4#  
**Input and description** = "ExchangerNeckLength", "Exchanger Neck Length ",  
**Input and description** = "ExchangerNeckDiameter", "Exchanger Neck Diameter",  
**Input and description** = "ExchangerTaperLength", "Exchanger Taper Length",  
**Input and description** = "ExchangerDiameter", "Exchanger Diameter",  
**Input and description** = "ExchangerFlangeTk1", "Exchanger Flange Thickness 1", 0  
**Input and description** = "BundleFlangeDia", "Bundle Flange Diameter",  
**Input and description** = "BundleFlangeTk", "Bundle Flange Thickness",  
**Input and description** = "BundlePullingLength", "Bundle Pulling Length", 3#  
**Input and description** = "SupportLength", "Support Length",  
**Input and description** = "BotSupportCenFromPP", "Bottom Support Center from Placement Point",  
**Input and description** = "BottomSupportCentoCen", "Bottom Support Center to Center",  
**Input and description** = "BottomSupportHeight", "Bottom Support Height",  
**Input and description** = "Support1Thickness", "Support 1 Thickness",  
**Input and description** = "Support2Thickness", "Support 2 Thickness",  
**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter",  
**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1", 0  
**Input and description** = "FrontEndFlangeTk2", "Front End Flange Thickness 2",  
**Input and description** = "FrontEndFlangeTk3", "Front End Flange Thickness 3", 0  
**Input and description** = "FrontEndLength1", "Front End Length 1",  
**Input and description** = "FrontEndLength2", "Front End Length 2",  
**Input and description** = "FrontEndDiameter", "Front End Diameter",  
**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter",  
**Input and description** = "EndHeadConeHeight", "End Head Cone Height",  
**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius",  
**Input and description** = "EndHeadDomeradius", "End Head Dome Radius",  
**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness

1",

**Input and description** = "EndHeadFlangedThickness2", "End Head Flanged Thickness 2",

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Input and description** = "FP1XboltHole", "FP1 Bolt X Hole Location", 0

**Input and description** = "FP1YboltHole", "FP1 Bolt Y Hole Location", 0

**Input and description** = "FP2XboltHole", "FP2 Bolt X Hole Location", 0

**Input and description** = "FP2YboltHole", "FP2 Bolt Y Hole Location",

#### **Outputs = 16**

**Output and description** = "DefaultSurface", "Default Surface of Kettle Exchange"

**Output and description** = "ExchangerBody", "Exchanger Body"

**Output and description** = "ExTaperBody", "Exchanger Taper Body"

**Output and description** = "ExneckBody", "Exchanger Neck Portion"

**Output and description** = "ExchangerFlange", "Exchanger Flange"

**Output and description** = "BundleFlange", "Bundle Flange"

**Output and description** = "Support1", "Support 1"

**Output and description** = "Support2", "Support 2"

**Output and description** = "Edges\_ ", "Edges for Supports"

**Output and description** = "EqpFoundationPort1", "Foundation Port 1"

**Output and description** = "EqpFoundationPort2", "Foundation Port 2"

**Output and description** = "ExBodyInsul", "ExchangerBody Insulation"

**Output and description** = "ExTapBodyInsul", "Exchanger Taper Body Insulation"

**Output and description** = "ExneckBodyInsul", "Exchanger Neck Portion Insulation"

**Output and description** = "BundlePullCylin", "Bundle Pulling Cylinder"

**Output and description** = "KettleExchangerControlPoint", "Control Point of Kettle Exchanger"

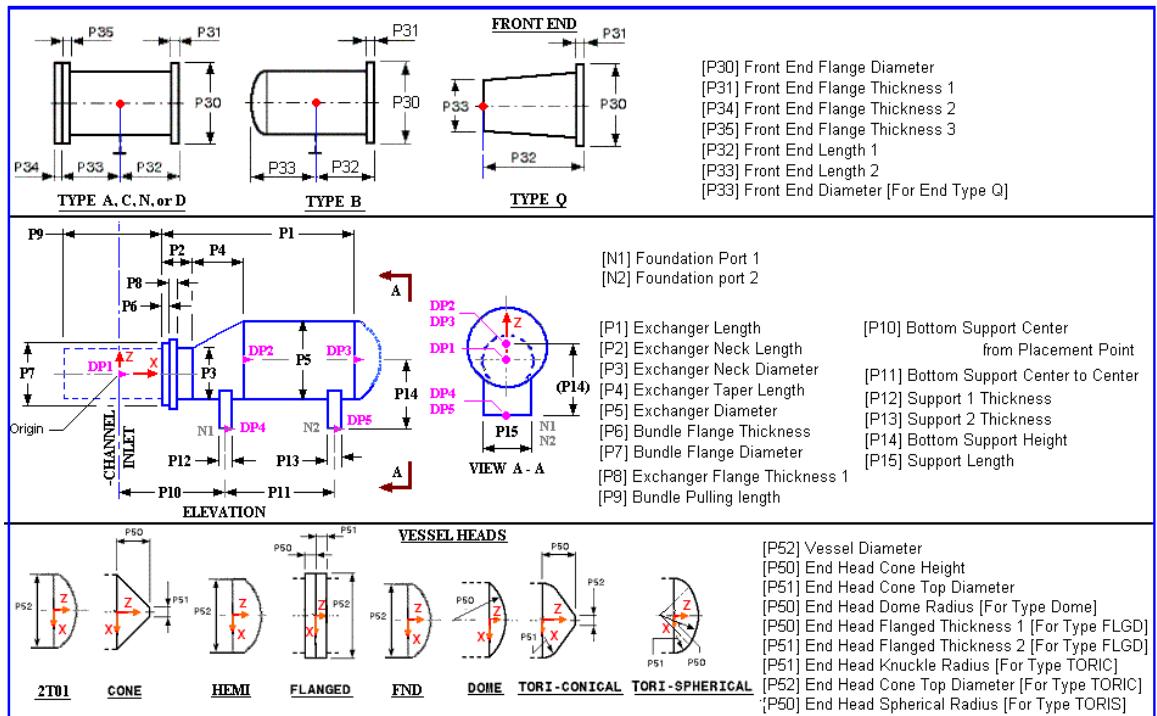
#### **Aspects = 4**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "Maintenance", "Maintenance"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_310VerShTubeExchAsm

**Description:**

**Symbol Name:** SP3DE\_410VerRotEqAsm.VerShTExchSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_310VerShTubeExchAsm.VerShTExchSym

**Inputs = 34**

**Input and description** = "FrontEndType", "Front End Type"

**Input and description** = "RearEndType", "Rear End Type"

**Input and description** = "ExchangerDiameter", "Exchanger Diameter",

**Input and description** = "ExchangerLength", "Exchanger Length", 4

**Input and description** = "ExchangerFlangeTk1", "Exchanger Flange Thickness 1"

**Input and description** = "ExchangerFlangeTk2", "Exchanger Flange Thickness 2"

**Input and description** = "ExpansionJointDiameter", "Expansion Joint Diameter",

**Input and description** = "ExpansionJointPosition", "Expansion Joint Position"

**Input and description** = "ExpansionJointThickness", "Expansion Joint Thickness",

**Input and description** = "BundleFlangeDia", "Bundle Flange Diameter",

**Input and description** = "BundleFlangeTk", "SBundle Flange Thickness",

**Input and description** = "BundlePullingLength", "Bundle Pulling Length"

**Input and description** = "SupportAngularLocation", "Support Angular Location"

**Input and description** = "NumberOfSupports", "Number Of Supports"

**Input and description** = "SupportDepth", "Support Depth",

**Input and description** = "SupportFromOrigin", "Support From Origin",

**Input and description** = "SupportTopWidth", "Support Top Width",

**Input and description** = "SupportBottomWidth", "Support Bottom Widt",

**Input and description** = "SupportThickness", "Support Thickness",

**Input and description** = "FrontEndFlangeDia", "Front End Flange Diameter",

**Input and description** = "FrontEndFlangeTk1", "Front End Flange Thickness 1",

**Input and description** = "FrontEndFlangeTk2", "Front End Flange Thickness 2",

**Input and description** = "FrontEndFlangeTk3", "Front End Flange Thickness 3"

**Input and description** = "FrontEndLength1", "Front End Length 1"

**Input and description** = "FrontEndLength2", "Front End Length 2"

**Input and description** = "RearEndFlangeDia", "Rear End Flange Diameter",

**Input and description** = "RearEndFlangeTk1", "Rear End Flange Thickness 1",

**Input and description** = "RearEndFlangeTk2", "Rear End Flange Thickness 2",

**Input and description** = "RearEndFlangeTk3", "Rear End Flange Thickness 3",

**Input and description** = "RearEndLength", "Rear End Length",

**Input and description** = "ChannelDiameter", "Channel Diameter",

**Input and description** = "FrontEndDiameter", "Front End Diameter",

**Input and description** = "RearEndDiameter", "Rear End Diameter",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

## Outputs = 9

**Output and description** = "VerShTubeExControlPoint", "Control Point of Vertical Shell Tube Exchanger Component"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "ExchangerBody", "Exchanger Body"

**Output and description = "ExpansionJoint", "Expansion Joint"**

**Output and description** = "Support\_ ", "Supports"

**Output and description = "Surface\_ ", "Surface"**

**Output and description = "ExchanBodyIns", "Exchanger Body Ins"**

**Output and description** = "ExpansionJointIns", "Expansion Joint Ins"

**Output and description = "BundlePulling", "Bundle Pulling Cylinder"**

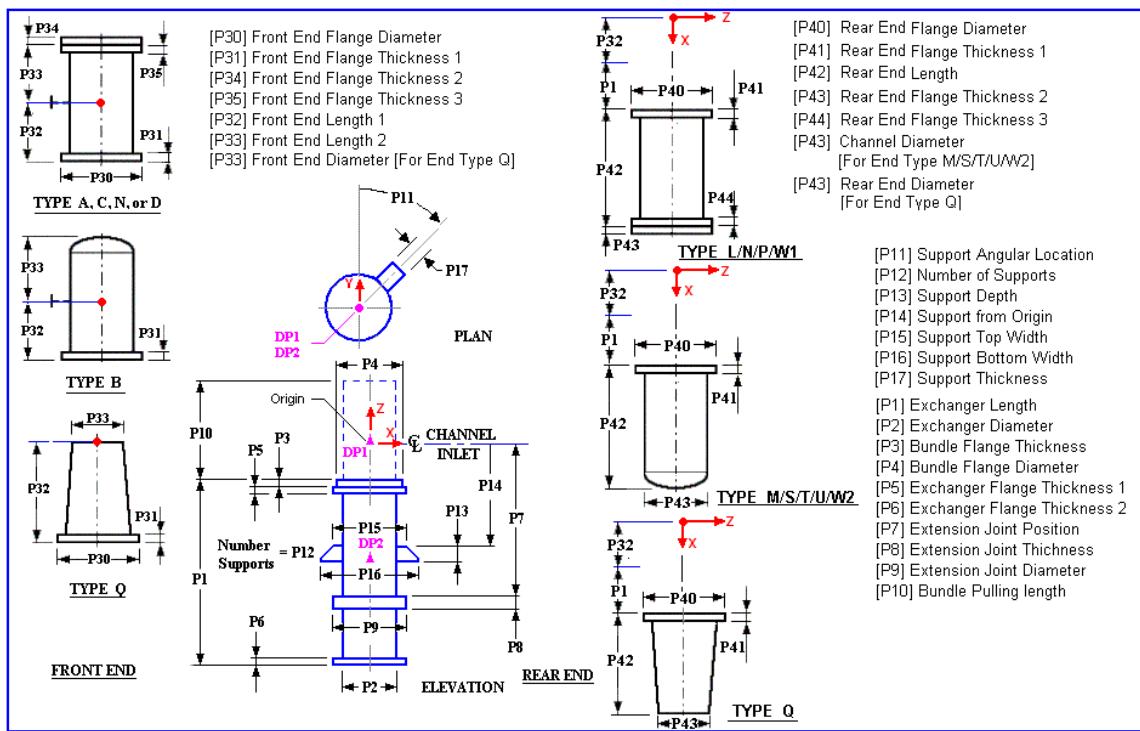
Aspects = 4

**Aspect** = "RefGeometry", "ReferenceGeometry"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "Physical", "Physical"

**Aspect** = "Maintenance", "Maintenance"



# SP3DE\_320DouPipeExchAsm

## Description:

**Symbol Name:** SP3DE\_320DouPipeExchAsm.XchSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DE\_320DouPipeExchAsm.XchSym

#### Inputs = 15

**Input and description** = "BlockEndFromPP", "Block End from Placement Point", 2

**Input and description** = "PipeEndFromPP", "Pipe End from Placement Point",

**Input and description** = "PipeCentoCen", "Pipe Center to Center",

**Input and description** = "PipeDiameter", "Diameter of Pipe",

**Input and description** = "BlockLength", "Block Length",

**Input and description** = "BlockHeight", "Block Height",

**Input and description** = "BlockWidth", "Block Width",

**Input and description** = "BundlePullingLength", "Bundle Pulling Length",

**Input and description** = "Support1CenFromPP", "Support 1 Center from Placement Point",

**Input and description** = "SupportCentoCen", "Support Center to Center",

**Input and description** = "SupportHeight", "Height of Support",

**Input and description** = "SupportThickness", "Thickness of Support",

**Input and description** = "SupportWidth", "Width of Support",

**Input and description** = "XBoltHole", "Hole Bolt X Location",

**Input and description** = "YBoltHole", "Hole Bolt Y Location",

#### Outputs = 11

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Pipe1", "Pipe 1"

**Output and description** = "Pipe2", "Pipe 2"

**Output and description** = "Block", "Block"

**Output and description** = "Edges\_", "Edges of Block"

**Output and description** = "Points\_", "Points on each face of Block"

**Output and description** = "Supports\_", "Support 1"

**Output and description** = "EqpFoundationPort1", "EqpFoundation Port1"

**Output and description** = "EqpFoundationPort2", "EqpFoundation Port1"

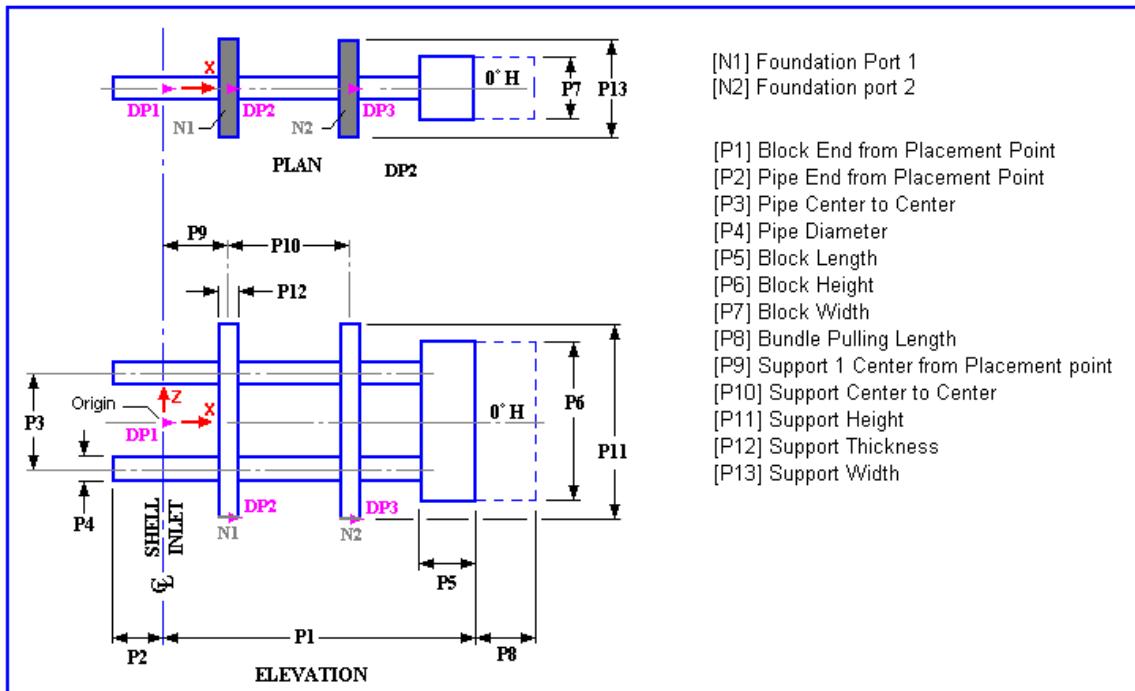
**Output and description** = "DouPipeExchangerControlPoint", "Control Point of Double Pipe Exchanger"

**Output and description** = "BundlePulling", "BundlePulling"

#### Aspects = 3

**Aspect** = "Physical", "Physical"

**Aspect = "RefGeometry", "ReferenceGeometry"**  
**Aspect = "Maintenance", "Maintenance"**



# SP3DE\_325PlateExchAsm

**Description:**

**Symbol Name:** SP3DE\_325PlateExchAsm.PlateExchSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 19**

**Input and description** = "BotPlate1toPP", "Bottom Plate 1 to Placement Point"

**Input and description** = "Plate1Height", "Plate 1 Height",

**Input and description** = "Plate1Thickness", "Plate 1 Thickness",

**Input and description** = "PlatesWidth", "Plates Width"

**Input and description** = "ExchangerLength", "Exchanger Length",

**Input and description** = "ExchangerHeight", "Exchanger height"

**Input and description** = "ExchangerWidth", "Exchanger Width",

**Input and description** = "Plate2Height", "Plate 2 Height",

**Input and description** = "Plate2Thickness", "Plate 2 Thickness",

**Input and description** = "RodsLength", "Rods Length",

**Input and description** = "RodsDiameter", "Rods Diameter",

**Input and description** = "BotSidePlatetoRod2Cen", "Bottom Side Plate to Rod 2 Center",

**Input and description** = "RodsCentoCen", "Rods Center to Center"

**Input and description** = "SidePlateThickness", "Side Plate Thickness",

**Input and description** = "SidePlateWidth", "Side Plate Width",

**Input and description** = "FP1XboltHole", "FP1 Bolt X Hole Location",

**Input and description** = "FP1YboltHole", "FP1 Bolt Y Hole Location",

**Input and description** = "FP2XboltHole", "FP2 Bolt X Hole Location",

**Input and description** = "FP2YboltHole", "FP2 Bolt Y Hole Location",

**Outputs = 32**

**Output and description** = "Plane1", "Plane 1"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Plane2", "Plane 2"

**Output and description** = "Plane3", "Plane 3"

**Output and description** = "Plane4", "Plane 4"

**Output and description** = "Plane5", "Plane 5"

**Output and description** = "ExchangerBody", "Exchanger Body"

**Output and description** = "Plate2", "Plate 2"

**Output and description** = "Rod1", "Rod 1"

**Output and description** = "Rod2", "Rod 2"

**Output and description** = "SidePlate", "Side Plate"

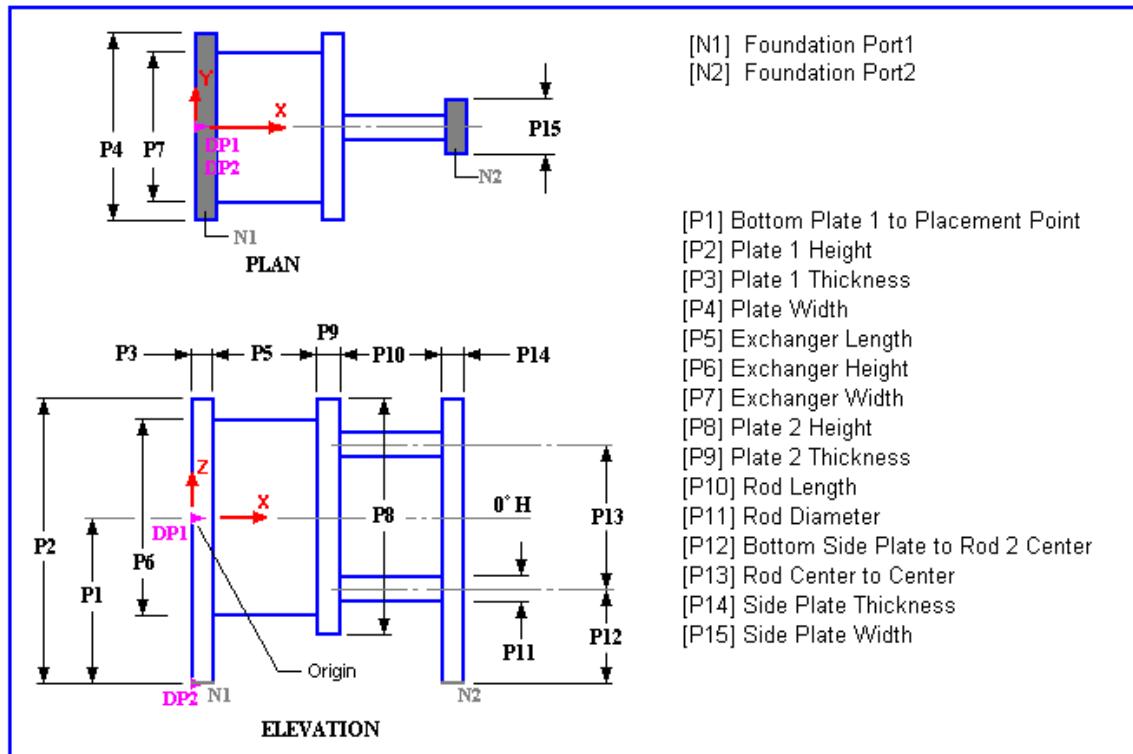
**Output and description** = "CenterPos1", "FaceCenter Position1"

**Output and description** = "CenterPos2", "FaceCenter Position2"  
**Output and description** = "CenterPos3", "FaceCenter Position3"  
**Output and description** = "CenterPos4", "FaceCenter Position4"  
**Output and description** = "CenterPos5", "FaceCenter Position5"  
**Output and description** = "CenterPos6", "FaceCenter Position6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"  
**Output and description** = "Edge8", "Edge 8"  
**Output and description** = "Edge9", "Edge 9"  
**Output and description** = "Edge10", "Edge 10"  
**Output and description** = "Edge11", "Edge 11"  
**Output and description** = "Edge12", "Edge 12"  
**Output and description** = "EqpFoundationPort1", "EqpFoundation Port1"  
**Output and description** = "EqpFoundationPort2", "EqpFoundation Port2"  
**Output and description** = "PlateExchangerCompControlPoint", "Control Point of Plate Exchanger Component"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_405HoriRotEqpAsm

**Description:**

**Symbol Name:** SP3DE\_405HoriRotEqpAsm.HorRotatEqpSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_405HoriRotEqpAsm.HorRotatEqpSym

**Inputs = 20**

**Input and description** = "BaseLength", "Length of Base"

**Input and description** = "BaseWidth1", "Width1 of Base"

**Input and description** = "BaseWidth2", "Width2 of Base"

**Input and description** = "BaseThickness", "Thickness of Base"

**Input and description** = "DistBaseLeftToDischarge", "Dist between Base Left to Centerline of Discharge"

**Input and description** = "DistEqpLeftToDischarge", "Dist between Eqp Left to Centerline of Discharge"

**Input and description** = "DistEqpRightToDischarge", "Dist between Eqp Right to Centerline of Discharge"

**Input and description** = "EqpWidth1", "Width1 of Equipment"

**Input and description** = "EqpWidth2", "Width2 of Equipment"

**Input and description** = "EqpDepth1", "Depth1 of Equipment",

**Input and description** = "EqpDepth2", "Depth2 of Equipment"

**Input and description** = "RotEqpLength", "Length of Rotating Equipment"

**Input and description** = "RotEqpDiameter", "Diameter of Rotating Equipment"

**Input and description** = "DriverLength", "Length of Driver"

**Input and description** = "DriverWidth1", "Width1 of Driver"

**Input and description** = "DriverWidth2", "Width2 of Driver"

**Input and description** = "DriverHeight", "Height of Driver",

**Input and description** = "XboltHole", "Bolt X Hole Location"

**Input and description** = "YboltHole", "Bolt Y Hole Location"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 30**

**Output and description** = "Equipment", "Equipment"

**Output and description** = "Driver", "Driver"

**Output and description** = "RotEquip", "Rotating Equipment"

**Output and description** = "SupportBodyTopPlane", "Support Body Top Plane"

**Output and description** = "DefaultSurface", "Support Body Bottom Plane"

**Output and description** = "SupportBodySidePlane1", "Support Body side plane1"

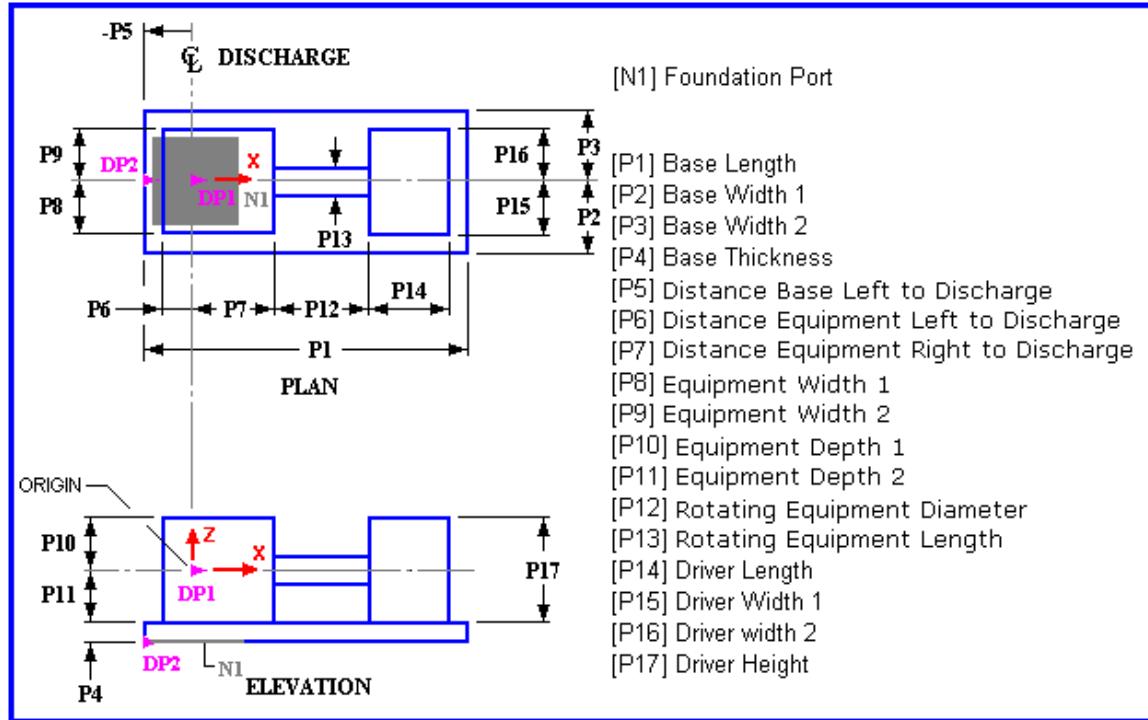
**Output and description** = "SupportBodySidePlane2", "Support Body side plane2"

**Output and description** = "SupportBodySidePlane3", "Support Body side plane3"

**Output and description** = "SupportBodySidePlane4", "Support Body side plane4"  
**Output and description** = "CenterPos1", "FaceCenter Position1"  
**Output and description** = "CenterPos2", "FaceCenter Position2"  
**Output and description** = "CenterPos3", "FaceCenter Position3"  
**Output and description** = "CenterPos4", "FaceCenter Position4"  
**Output and description** = "CenterPos5", "FaceCenter Position5"  
**Output and description** = "CenterPos6", "FaceCenter Position6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"  
**Output and description** = "Edge8", "Edge 8"  
**Output and description** = "Edge9", "Edge 9"  
**Output and description** = "Edge10", "Edge 10"  
**Output and description** = "Edge11", "Edge 11"  
**Output and description** = "Edge12", "Edge 12"  
**Output and description** = "EqpFoundationPort", "EqpFoundation Port"  
**Output and description** = "InsulatedEqp", "Insulated Equipment"  
**Output and description** = "HorRotEqpADvrCompControlPoint", "Control Point of Horizontal Rotating Equipment And Driver Component"

**Aspects = 3**

**Aspect** = "Physical", "Physical"  
**Aspect** = "Insulation", "Insulation"  
**Aspect** = "RefGeometry", "ReferenceGeometry"



# SP3DE\_410VerRotEqAsm

**Description:**

**Symbol Name:** SP3DE\_410VerRotEqAsm.VerlRotatingEqpSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DE\_410VerRotEqAsm.VerlRotatingEqpSym

**Inputs = 10**

**Input and description** = "BottomBodyHeight1", "Bottom Body Height1",

**Input and description** = "BottomBodyHeight2", "Bottom Body Height2",

**Input and description** = "BottomBodyDiameter", "Bottom Body Diameter",

**Input and description** = "ShaftLength", "Shaft Length",

**Input and description** = "ShaftDiameter", "Shaft Diameter",

**Input and description** = "TaperBodyHeight", "Taper Body Height",

**Input and description** = "TopBodyHeight", "Top Body Height",

**Input and description** = "TopBodyDiameter", "Top Body Diameter",

**Input and description** = "BundlePullingLength", "Bundle Pull Length",

**Input and description** = "InsulationThickness", "InsulationThickness",

**Outputs = 18**

**Output and description** = "InsTopBody", "Insulation for Top Body"

**Output and description** = "InsTaperBody", "Insulation for Taper Body"

**Output and description** = "InsBottomBody", "Insulation for Bottom Body"

**Output and description** = "MaintEquipment", "Maintenance for Equipment"

**Output and description** = "DefaultSurface", "Surface at Bottom"

**Output and description** = "TopSurface", "Surface at Top"

**Output and description** = "Edge1", "Top Edge of Top Body"

**Output and description** = "Edge2", "Bottom Edge of Top Body"

**Output and description** = "Edge3", "Top Edge of Bottom Body"

**Output and description** = "Edge4", "Bottom Edge of Bottom Body"

**Output and description** = "Edge5", "Top Edge of the Shaft"

**Output and description** = "Edge6", "Bottom Edge of the Shaft"

**Output and description** = "TopBody", "Top Body"

**Output and description** = "TaperBody", "Taper Body"

**Output and description** = "BottomBody", "Bottom Body"

**Output and description** = "EqpFoundationPort", "Foundation Port under Bottom Body"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "VerRotatingEquipmentCompControlPoint", "Control Point of Vertical Rotating Equipment Component"

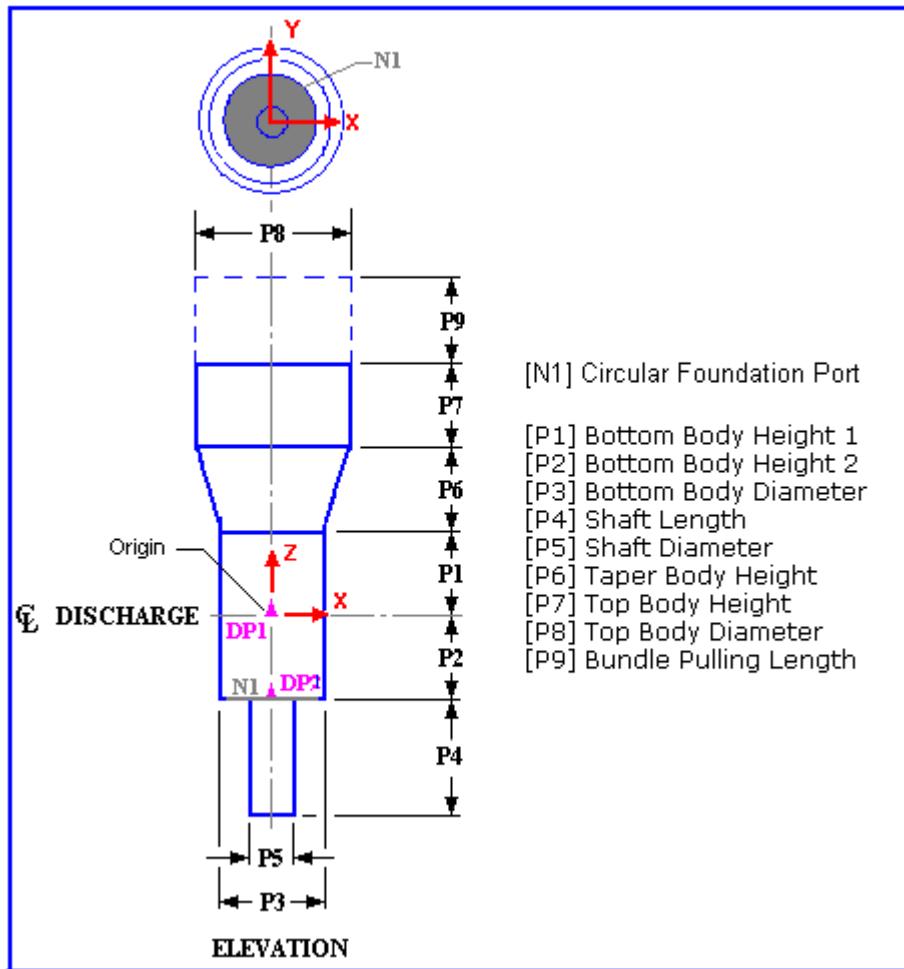
**Aspects = 4**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "Maintenance", "Maintenance"

**Aspect** = "RefGeometry", "ReferenceGeometry"



## SP3DFallFilmSTExAsm

**Description:** Falling Film Shell Tube Exchanger

**Symbol Name:** SP3DFallFilmSTExAsm.FallingFShTubeExSym

**Workbook:** Equipment.xls

**Workbook Sheet:** FallFilmVertShellTubeExchAsm

**User Class Name:** Falling Film Shell Tube Exchanger

**Part Number:** FallFilmVertShellTubeExch01\_Asm,

FallFilmVertShellTubeExch02\_Asm, FallFilmVertShellTubeExch03\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFallFilmSTExAsm.FallingFShTubeExSym

**Inputs = 5**

**Input and description** = "VesselDiameter", "Exchanger Outer Diameter"

**Input and description** = "VesselHeight", "Front Head Height"

**Input and description** = "VesselHeight1", "Exchanger Shell Height"

**Input and description** = "DomeHeight", "Front Head Bonnet Height"

**Input and description** = "VesselStartPoint", "Control Point to Dome Center point or Tan point of front head"

**Outputs = 13**

**Output and description** = "FrontHeadBonnet", "Elliptical Front Head Bonnet Body"

**Output and description** = "FrontHeadBodyCyl", "Cylindrical Front Head Body"

**Output and description** = "FrontHeadFlangeTop", "Top Flange on Front head side"

**Output and description** = "FrontHeadFlangeBottom", "Bottom Flange on Front head side"

**Output and description** = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"

**Output and description** = "RearHeadFlangeTop", "Top Flange on Rear Head side"

**Output and description** = "RearHeadFlangeBottom", "Bottom Flange on Rear Head side"

**Output and description** = "RearHeadMiterBottom15degBody", "Rear Head Miter Bottom 15 degree portion"

**Output and description** = "RearHeadMiterBottom30degBody", "Rear Head Miter Bottom 30 degree portion"

**Output and description** = "RearHeadMiterTop30degBody", "Rear Head Miter Top 30 degree portion"

**Output and description** = "RearHeadMiterTop15degBody", "Rear Head Miter Top 15 degree portion"

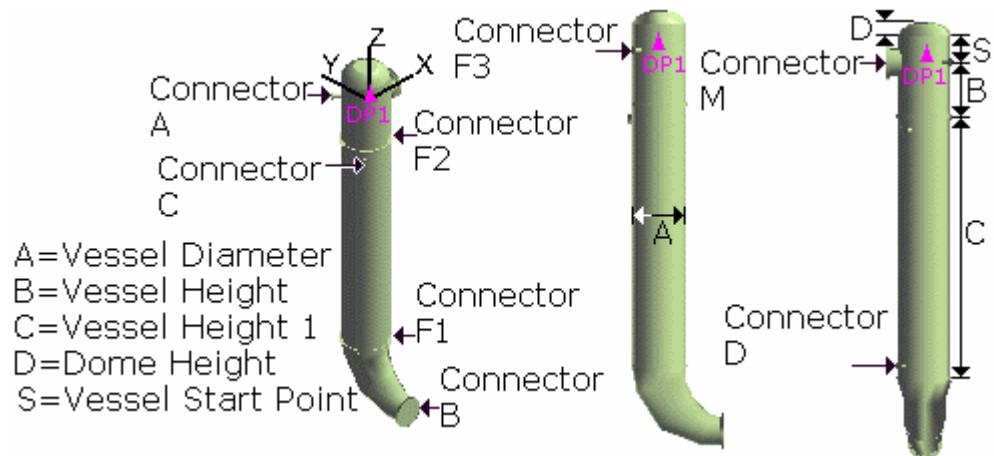
**Output and description** = "RearHeadMiterTopCyl", "Rear Head Miter Top Cylinder portion"

**Output and description** = "ControlPoint", "Control Point on Vessel Axis"

**Aspects = 2**

**Aspect** = "SimplePhysical", "PipingAspect Description"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DFluorescentLightAsm

**Description:**

**Symbol Name:** SP3DFluorescentLightAsm.FluoLightSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFluorescentLightAsm.FluoLightSym

**Inputs = 3**

**Input and description** = "FixtureLength", "Fixture Length"

**Input and description** = "FixtureWidth", "Fixture Width"

**Input and description** = "FixtureHeight", "Fixture Height"

**Outputs = 4**

**Output and description** = "FluorescentFixBody", "Body of the fixture"

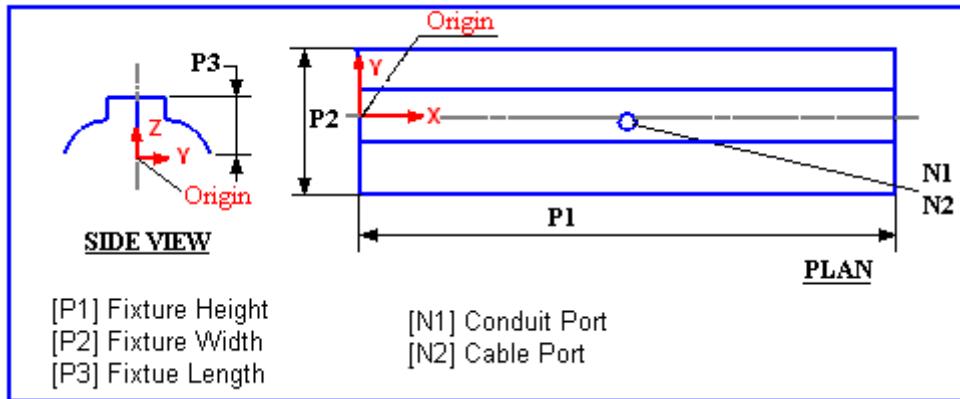
**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Output and description** = "DefaultSurface", "Default Surface"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DForDr2AirCoolerBayAsm

## Description:

**Symbol Name:** SP3DForDr2AirCoolerBay.CSFD2AirCoolBay

**Workbook:** Equipment.xls

**Workbook Sheet:** ForDraftAirCooler2BayAsm

**User Class Name:** Forced Draft 2 Cooler Bay

**Part Number:** ForcedDraftAirCooler2Bay\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DForDr2AirCoolerBay.CSFD2AirCoolBay

### Inputs = 17

**Input** = "Cool1toCool2CentoCen" **Description** = "Cooler1 to Cooler2 Center to Center"  
**Input** = "CoolerWidth" **Description** = "Width of Cooler"  
**Input** = "CoolerLength" **Description** = "Length of Cooler"  
**Input** = "CoolerHeight" **Description** = "Height of Cooler"  
**Input** = "PlenumLength" **Description** = "Length of Plenum"  
**Input** = "PlenumHeight" **Description** = "Height of Plenum"  
**Input** = "InletBlockLength" **Description** = "Inlet Block Length"  
**Input** = "BlockToptoCoolTop" **Description** = "Dist Block Top to Cooler Top "  
**Input** = "InletBlockHeight" **Description** = "Inlet Block Height"  
**Input** = "CoolLeftfromPP" **Description** = "Cooler Left from PP"  
**Input** = "NoOfFans" **Description** = "Number of Fans"  
**Input** = "Fan1CentoPP" **Description** = "Dist from Fan1 Cen to PP"  
**Input** = "FansCentoCen" **Description** = "Fans Center to Center"  
**Input** = "FanDiameter" **Description** = "Diameter of Fan"  
**Input** = "FanHeight" **Description** = "Height of Fan"  
**Input** = "InletNozzLength" **Description** = "Inlet Nozzle Length"  
**Input** = "OutletNozzLength" **Description** = "Inlet Nozzle Length"

### Outputs = 15

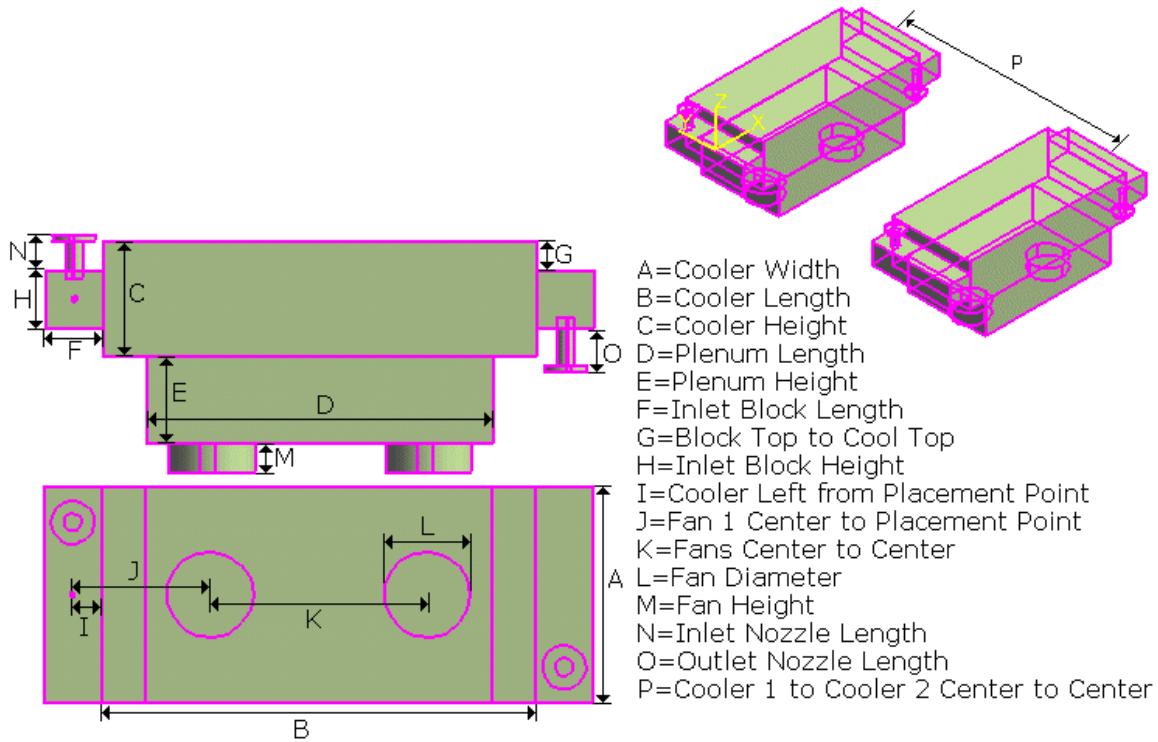
**Output** = "DefaultSurface" **Description** = "Default Surface"  
**Output** = "CoolerBodyPlane1" **Description** = "Cooler Body Plane 1"  
**Output** = "CoolerBodyPlane2" **Description** = "Cooler Body Plane 2"  
**Output** = "CoolerBodyPlane3" **Description** = "Cooler Body Plane 3"  
**Output** = "CoolerBodyPlane4" **Description** = "Cooler Body Plane 4"  
**Output** = "CoolerBodyPlane5" **Description** = "Cooler Body Plane 5"  
**Output** = "CoolerLeftBox" **Description** = "Cooler Left Box"  
**Output** = "CoolerRightBox" **Description** = "Cooler Right Box"  
**Output** = "PlenumBox" **Description** = "Plenum Box"  
**Output** = "Fan" **Description** = "Fan"  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "PNoz3" **Description** = "Nozzle 3"

**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "ControlPoint" Description = "Control Point of Forced Draft Air Cooler Bay "**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DForDr3AirCoolerBayAsm

## Description:

**Symbol Name:** SP3DFD3AirCoolerBayAsm.CFD3ACoolBSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ForDraftAirCooler3BayAsm

**User Class Name:** Forced Draft 3 Cooler Bay

**Part Number:** ForcedDraftAirCooler3Bay\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DFD3AirCoolerBayAsm.CFD3ACoolBSym

### Inputs = 18

**Input** = "Cool1toCool2CentoCen" **Description** = "Cooler1 to Cooler2 Center to Center"

**Input** = "Cool2toCool3CentoCen" **Description** = "Cooler2 to Cooler3 Center to Center"

**Input** = "CoolerWidth" **Description** = "Width of Cooler"

**Input** = "CoolerLength" **Description** = "Length of Cooler"

**Input** = "CoolerHeight" **Description** = "Height of Cooler"

**Input** = "PlenumLength" **Description** = "Length of Plenum"

**Input** = "PlenumHeight" **Description** = "Height of Plenum"

**Input** = "InletBlockLength" **Description** = "Inlet Block Length"

**Input** = "BlockToptoCoolTop" **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight" **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP" **Description** = "Cooler Left from PP"

**Input** = "NoOfFans" **Description** = "Number of Fans"

**Input** = "Fan1CentoPP" **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen" **Description** = "Fans Center to Center"

**Input** = "FanDiameter" **Description** = "Diameter of Fan"

**Input** = "FanHeight" **Description** = "Height of Fan"

**Input** = "InletNozzLength" **Description** = "Inlet Nozzle Length"

**Input** = "OutletNozzLength" **Description** = "Inlet Nozzle Length"

### Outputs = 17

**Output** = "DefaultSurface" **Description** = "Default Surface"

**Output** = "CoolerBodyPlane1" **Description** = "Cooler Body Plane 1"

**Output** = "CoolerBodyPlane2" **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3" **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4" **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5" **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox" **Description** = "Cooler Left Box"

**Output** = "CoolerRightBox" **Description** = "Cooler Right Box"

**Output** = "PlenumBox" **Description** = "Plenum Box"

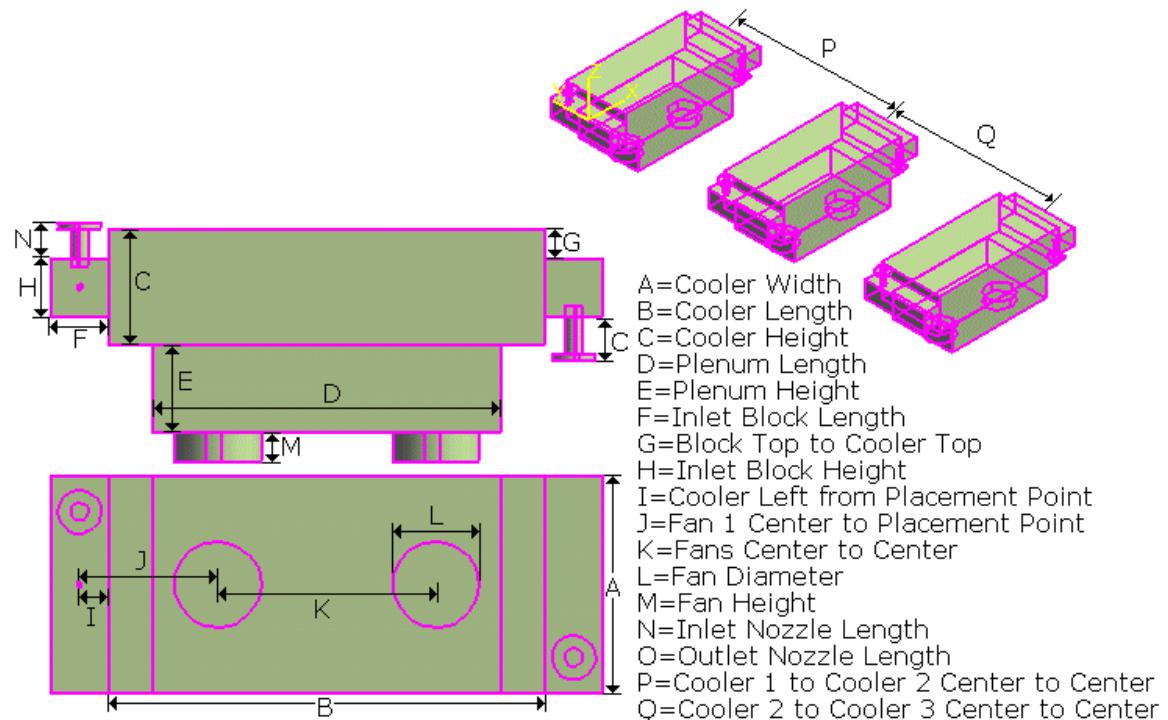
**Output** = "Fan" **Description** = "Fan"

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "PNoz5" Description = "Nozzle 5"**  
**Output = "PNoz6" Description = "Nozzle 6"**  
**Output = "ControlPoint" Description = "Control Point of Forced Draft Air Cooler Bay "**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DForDr4AirCoolerBayAsm

## Description:

**Symbol Name:** SP3DFD4AirCoolerBay.CFD4ACoolBSym

**Workbook:** Equipment.xls

**Workbook Sheet:** ForDraftAirCooler4BayAsm

**User Class Name:** Forced Draft 4 Cooler Bay

**Part Number:** ForcedDraftAirCooler4Bay\_Asm

## Inputs, Outputs, and Aspects:

ProgID: SP3DFD4AirCoolerBay.CFD4ACoolBSym

### Inputs = 19

**Input** = "Cool1toCool2CentoCen" **Description** = "Cooler1 to Cooler2 Center to Center"

**Input** = "Cool2toCool3CentoCen" **Description** = "Cooler2 to Cooler3 Center to Center"

**Input** = "Cool3toCool4CentoCen" **Description** = "Cooler3 to Cooler4 Center to Center"

**Input** = "CoolerWidth" **Description** = "Width of Cooler"

**Input** = "CoolerLength" **Description** = "Length of Cooler"

**Input** = "CoolerHeight" **Description** = "Height of Cooler"

**Input** = "PlenumLength" **Description** = "Length of Plenum"

**Input** = "PlenumHeight" **Description** = "Height of Plenum"

**Input** = "InletBlockLength" **Description** = "Inlet Block Length"

**Input** = "BlockTopToCoolTop" **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight" **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP" **Description** = "Cooler Left from PP"

**Input** = "NoOfFans" **Description** = "Number of Fans"

**Input** = "Fan1CentoPP" **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen" **Description** = "Fans Center to Center"

**Input** = "FanDiameter" **Description** = "Diameter of Fan"

**Input** = "FanHeight" **Description** = "Height of Fan"

**Input** = "InletNozzLength" **Description** = "Inlet Nozzle Length"

**Input** = "OutletNozzLength" **Description** = "Inlet Nozzle Length"

### Outputs = 19

**Output** = "DefaultSurface" **Description** = "Default Surface"

**Output** = "CoolerBodyPlane1" **Description** = "Cooler Body Plane 1"

**Output** = "CoolerBodyPlane2" **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3" **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4" **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5" **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox" **Description** = "Cooler Left Box"

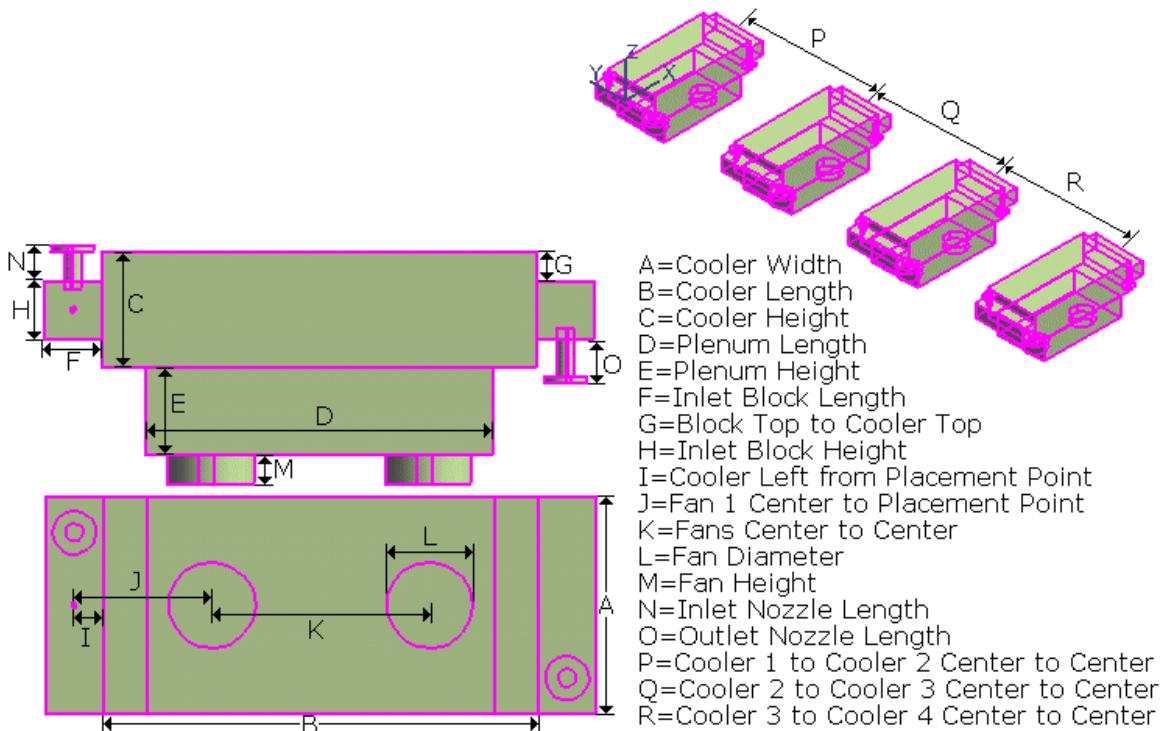
**Output** = "CoolerRightBox" **Description** = "Cooler Right Box"

**Output** = "PlenumBox" **Description** = "Plenum Box"

**Output = "Fan" Description = "Fan"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "PNoz5" Description = "Nozzle 5"**  
**Output = "PNoz6" Description = "Nozzle 6"**  
**Output = "PNoz7" Description = "Nozzle 7"**  
**Output = "PNoz8" Description = "Nozzle 8"**  
**Output = "ControlPoint" Description = "Control Point of Forced Draft Air Cooler Bay "**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DFrExEndTypeACDN

**Description:** Exchanger front end type A/C/D/N nested symbol, called from kettle exchanger.

**Symbol Name:** SP3DFrExEndTypeACDN.FrExchEndTypeACDN

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFrExEndTypeACDN.FrExchEndTypeACDN

Input name = "FrontEndFlangeDia"

Input description = "FrontEndFlangeDia P30"

Input name = "FrontEndFlangeTk1"

Input description = "FrontEndFlangeTk1 P31"

Input name = "FrontEndLength1"

Input description = "FrontEndLength1 P32"

Input name = "FrontEndLength2"

Input description = "FrontEndLength2 P33"

Input name = "FrontEndFlangeTk2"

Input description = "FrontEndFlangeTk2 P34"

Input name = "FrontEndFlangeTk3"

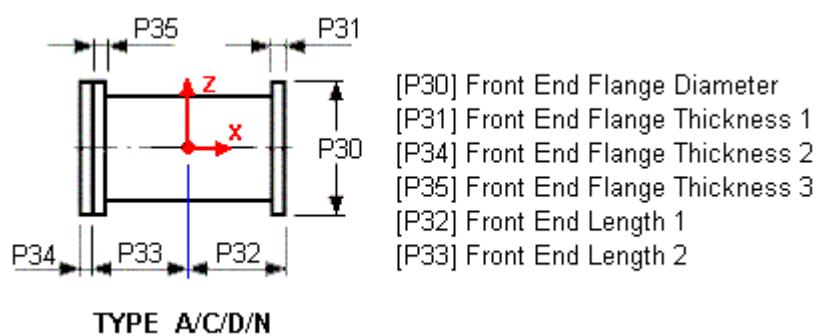
Input description = "FrontEndFlangeTk3 P35"

Input name = "ExchangerNeckDiameter"

Input description = "Exchanger Neck Diameter"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"



## SP3DFrExEndTypeB

**Description:** Exchanger front end type B nested symbol, called from kettle exchanger.

**Symbol Name:** SP3DFrExEndTypeB.FrExchEndTypeB

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFrExEndTypeB.FrExchEndTypeB

Input name = "FrontEndFlangeDia"

Input description = "FrontEndFlangeDia P30"

Input name = "FrontEndFlangeTk1"

Input description = "FrontEndFlangeTk1 P31"

Input name = "FrontEndLength1"

Input description = "FrontEndLength1 P32"

Input name = "FrontEndLength2"

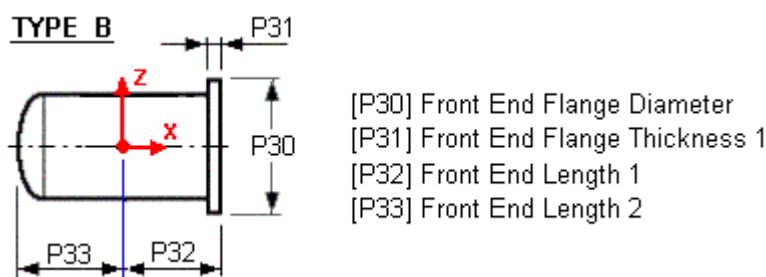
Input description = "FrontEndLength2 P33"

Input name = "ExchangerNeckDiameter"

Input description = "Exchanger Neck Diameter"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"



## SP3DFrExEndTypeQ

**Description:** Exchanger front end type Q nested symbols, called from kettle exchanger

**Symbol Name:** SP3DFrExEndTypeQ.FrExchEndTypeQ

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFrExEndTypeQ.FrExchEndTypeQ

Input name = "FrontEndFlangeDia"

Input description = "FrontEndFlangeDia P30"

Input name = "FrontEndFlangeTk1"

Input description = "FrontEndFlangeTk1 P31"

Input name = "FrontEndLength1"

Input description = "FrontEndLength1 P32"

Input name = "FrontEndDiameter"

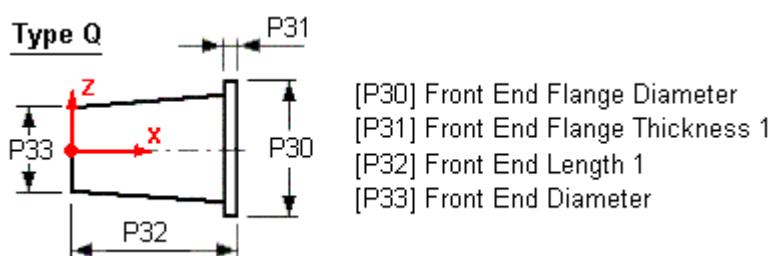
Input description = "FrontEndDiameter P33"

Input name = "ExchangerNeckDiameter"

Input description = "Exchanger Neck Diameter"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"



## SP3DHCPumpWFNDNozAsm

**Description:** Horizontal Centrifugal Pump with Flush, Drain, Purge bearing nozzle

**Symbol Name:** SP3DHCPumpWFNDNozAsm.HCPWithFlushNDNSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HorCFPumpAsm

**User Class Name:** Horiz Centrifugal Pump with Flush and Drain Nozzles

**Part Number:** HorCFPump01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHCPumpWFNDNozAsm.HCPWithFlushNDNSym

**Inputs = 13**

**Input and description** = "DisNozzletoFace", "CL Discharge Nozzle to Face",

**Input and description** = "DisNozzletoChFace", "CL Discharge Nozzle to Chamber Face"

**Input and description** = "DischargeToFaceSuction", "CL of Discharge to Face of Suction Nozzle"

**Input and description** = "BaseplatetoSuction", "Bottom of Pump Baseplate to CL of Suction"

**Input and description** = "PumptoFaceDisNozzle", "CL of Pump to Face of Discharge Nozzle"

**Input and description** = "DisNozzletoFaceBaseplate", "CL of Discharge Nozzle to Right Face of Support",

**Input and description** = "MotorLength", "Motor Length", 0.62

**Input and description** = "CouplingLength", "Coupling Length", 0.09

**Input and description** = "SupportLength", "Support Total Length", 1.

**Input and description** = "SupportHeight", "Support Total Height", 0.

**Input and description** = "SupportWidth", "Support Total Width", 0.

**Input and description** = "XboltHole", "Bolt X Hole Location", 0.

**Input and description** = "YboltHole", "Bolt Y Hole Location", 1.

**Outputs = 24**

**Output and description** = "MotorBody", "Motor Body"

**Output and description** = "MotorEllipticalCap1", "Motor Elliptical Rear Cap"

**Output and description** = "MotorEllipticalCap2", "Motor Elliptical Near Cap"

**Output and description** = "Coupling", "Shaft coupling"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "PumpCylinder1", "Pump Cylinder 1"

**Output and description** = "PumpCylinder2", "Pump Cylinder 2"

**Output and description** = "PumpCylinder3", "Pump Cylinder 3"

**Output and description** = "PumpCylinder4", "Pump Cylinder 4"

**Output and description** = "SupportBodyPlaneTop", "Support Body Top Plane"

**Output and description** = "DefaultSurface", "Support Body Bottom Plane"

**Output and description** = "SupportBodySidePlane1", "Support Body side plane1"

**Output and description** = "SupportBodySidePlane2", "Support Body side plane2"

**Output and description** = "SupportBodySidePlane3", "Support Body side plane3"

**Output and description** = "SupportBodySidePlane4", "Support Body side plane4"

**Output and description** = "SupportBodyRefPlane1", "Support Body Reference Plane 1"

**Output and description** = "SupportBodyRefPlane2", "Support Body Reference Plane 2"

**Output and description** = "SupportBox1", "support under the pump discharge nozzle"

**Output and description** = "SupportBox2", "support under the intermediate chamber"

**Output and description** = "SupportBox3", "support under the motor"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

**Output and description** = "DrainBend", "Bend of the Drain Nozzle"

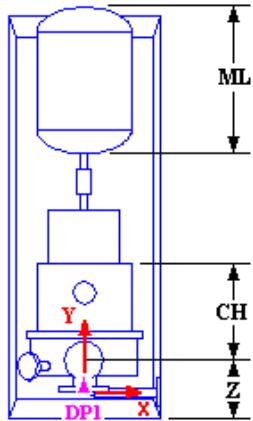
**Output and description** = "DrainBendCyl", "Cylinder of the Drain Nozzle"

**Output and description** = "PumpControlPoint", "Point at origin"

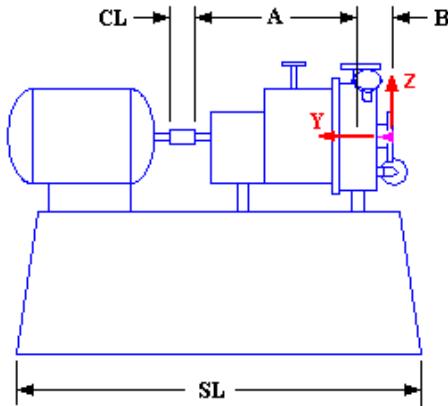
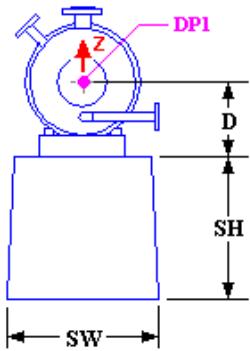
**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



A - Center Line Discharge Nozzle to Face of Coupling  
 B - Center Line of Discharge to Face of Suction Nozzle  
 CH - Discharge Nozzle to Chamber Face  
 D - Bottom of Pump Base Plate to Center Line of Suction  
 X - Center Line of Pump to Face of Discharge Nozzle  
 Z - Center Line of Discharge Nozzle to Face of Base Plate  
 CL - Coupling Length  
 ML - Motor Length  
 SH - Support Height  
 SW - Support Width  
 SL - Support Length



## SP3DHeatXasm

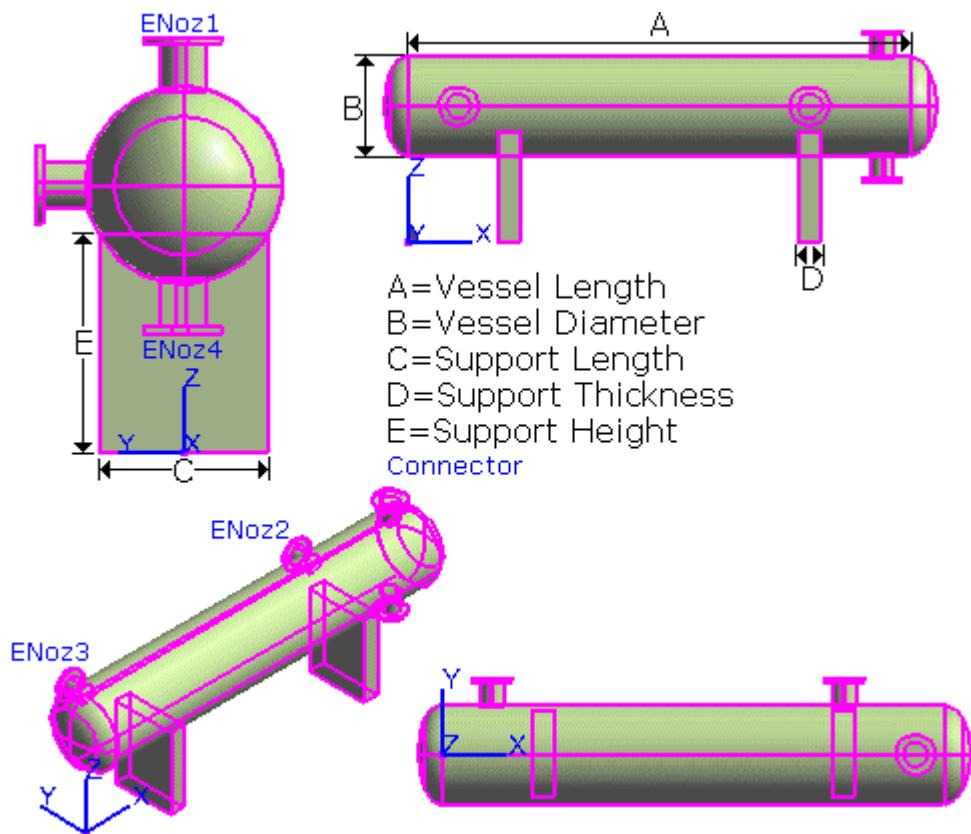
**Symbol Name:** SP3DHeatXasm.CHeatXSym

**Workbook:** Equipment.xls

**Workbook Sheet:** Coolers

**User Class Name:** Heat Exchanger

**Part Number:** HEXCH 001A, HEXCH 001A\_IMP



## SP3DHorCenJktPumpAsm

**Description:** Horizontal Centrifugal Pump with Flush, Drain, lantern, jacket In and out nozzle

**Symbol Name:** SP3DHorCenJktPumpAsm.HCentrifugalJPSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HorCFJacketedPumpAsm

**User Class Name:** Horizontal Centrifugal Jacketed Pump

**Part Number:** HorCFJacketedPump01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorCenJktPumpAsm.HCentrifugalJPSym

**Inputs = 14**

**Input and description** = "DisNozzletoFace", "CL Discharge Nozzle to Face"

**Input and description** = "DisNozzletoChFace", "CL Discharge Nozzle to Chamber Face"

**Input and description** = "DischargeToFaceSuction", "CL of Discharge to Face of Suction Nozzle"

**Input and description** = "BaseplateToSuction", "Bottom of Pump Baseplate to CL of Suction"

**Input and description** = "PumpToFaceDisNozzle", "CL of Pump to Face of Discharge Nozzle"

**Input and description** = "DisNozzleToFaceBaseplate", "CL of Discharge Nozzle to Right Face of Support"

**Input and description** = "MotorLength", "Motor Length"

**Input and description** = "CouplingLength", "Coupling Length"

**Input and description** = "SupportLength", "Support Total Length"

**Input and description** = "SupportHeight", "Support Total Height"

**Input and description** = "SupportWidth", "Support Total Width"

**Input and description** = "XboltHole", "Bolt X Hole Location"

**Input and description** = "YboltHole", "Bolt Y Hole Location"

**Input and description** = "BaseType", "Type of Support Base: PolyShield or Structure Steel"

**Outputs = 24**

**Output and description** = "MotorBody", "Motor Body"

**Output and description** = "MotorEllipticalCap1", "Motor Elliptical Rear Cap"

**Output and description** = "MotorEllipticalCap2", "Motor Elliptical Near Cap"

**Output and description** = "Coupling", "Shaft coupling"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "PumpCylinder1", "Pump Cylinder 1"

**Output and description** = "PumpCylinder2", "Pump Cylinder 2"

**Output and description** = "PumpCylinder3", "Pump Cylinder 3"

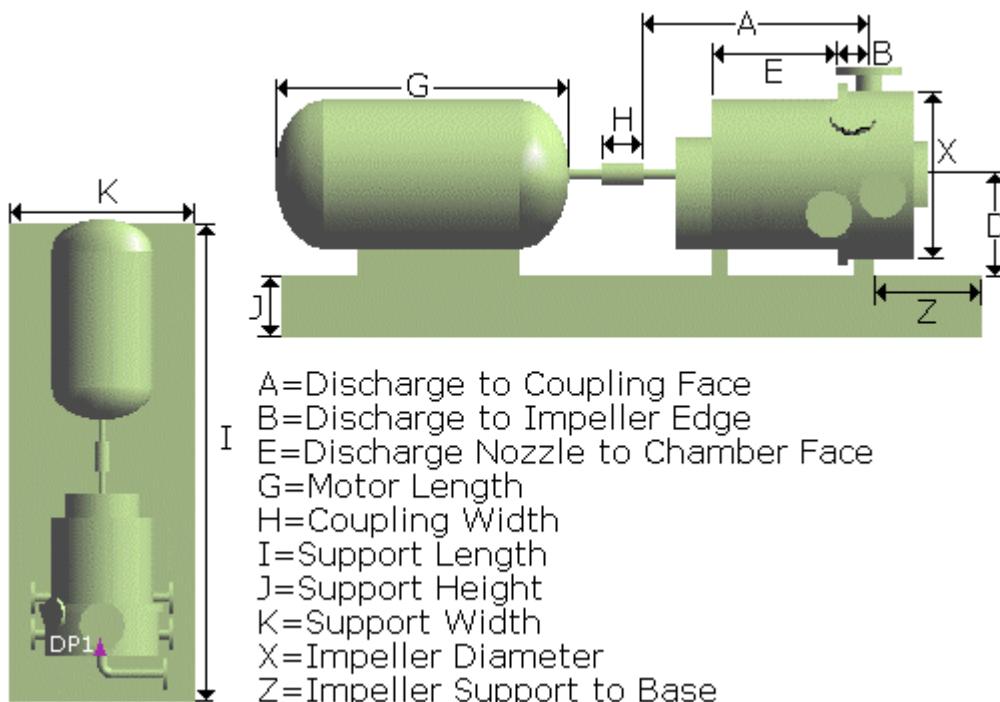
**Output and description** = "PumpCylinder4", "Pump Cylinder 4"

**Output and description** = "SupportBodyTopPlane", "Support Body Top Plane"

**Output and description** = "DefaultSurface", "Support Body Bottom Plane"  
**Output and description** = "SupportBodySidePlane1", "Support Body side plane1"  
**Output and description** = "SupportBodySidePlane2", "Support Body side plane2"  
**Output and description** = "SupportBodySidePlane3", "Support Body side plane3"  
**Output and description** = "SupportBodySidePlane4", "Support Body side plane4"  
**Output and description** = "SupportBodyRefPlane1", "Support Body Reference Plane 1"  
**Output and description** = "SupportBodyRefPlane2", "Support Body Reference Plane 2"  
**Output and description** = "SupportBox1", "support under the pump discharge nozzle"  
**Output and description** = "SupportBox2", "support under the intermediate chamber"  
**Output and description** = "SupportBox3", "support under the motor"  
**Output and description** = "EqpFoundationPort", "Foundation Port under support"  
**Output and description** = "DrainBend", "Bend of the Drain Nozzle"  
**Output and description** = "DrainBendCyl", "Cylinder of the Drain Nozzle"  
**Output and description** = "PumpControlPoint", "Point at origin"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"  
**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



## SP3DHorDrWiSaddleAsm

**Description:** horizontal drum with saddle

**Symbol Name:** SP3DHorDrWiSaddleAsm.HDrumWithSaddleSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HorizontalDrumAsm

**User Class Name:** Horizontal Drum with Saddle

**Part Number:** HorizontalDrum 01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorDrWiSaddleAsm.HDrumWithSaddleSym

**Inputs = 16**

**Input and description** = "VesselDiameter", "Vessel Internal Diameter"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent"

**Input and description** = "FirstSupportLocation", "First Support Location"

**Input and description** = "SecondSupportLocation", "Second Support Location"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Input and description** = "SupportLength", "Support Length(B)"

**Input and description** = "SupportHeight", "Support Height From Vessel Center to base of saddle"

**Input and description** = "SupportWidth", "Support Width(G)"

**Input and description** = "BasePlateThickness", "Base Plate Thickness(E)"

**Input and description** = "BackingPlateThickness", "Backing Plate Thickness(T)"

**Input and description** = "BackingPlateWidth", "Backing Plate Widt(H)"

**Input and description** = "StiffnerThickness", "Stiffner Thickness(D)"

**Input and description** = "StiffnerThickness1", "Stiffner Thickness(DG)"

**Input and description** = "StiffnerSpacing", "Stiffner Spacing(C)"

**Input and description** = "XboltHole", "Bolt Hole Location-X (F)"

**Input and description** = "YboltHole", "Bolt Hole Location-Y (A)"

**Outputs = 25**

**Output and description** = "DrumBody", "Drum body as Cylinder"

**Output and description** = "DrumHead", "Drum head"

**Output and description** = "DrumHead1", "Drum Head 1"

**Output and description** = "SaddlePlate", "Saddle Body"

**Output and description** = "SaddlePlate1", "Second Saddle Body"

**Output and description** = "StiffnerPlate", "Ends Support Plate"

**Output and description** = "StiffnerPlate1", "Second saddle Ends Support Plate"

**Output and description** = "BackingPlate1", "Center Support Plate1"

**Output and description** = "BackingPlate2", "Second Saddle Center Support Plate"

**Output and description** = "BackingPlate3", "Center Support Plate2"

**Output and description** = "BackingPlate4", "Saddle Saddle Center Support Plate2"

**Output and description** = "BackingPlate5", "Middle Support Plate"

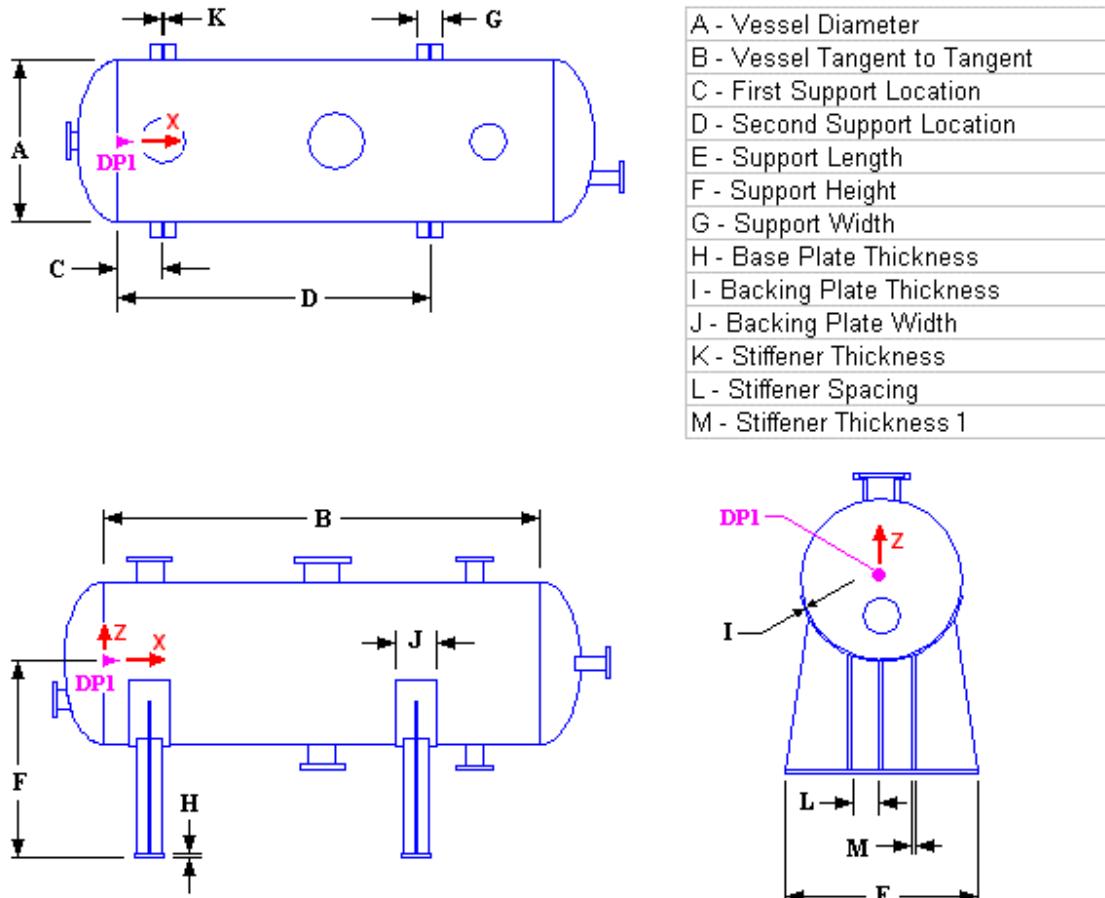
**Output and description** = "BackingPlate6", "Second saddle Middle Support Plate"

**Output and description** = "BackingPlate7", "Center Support Plate3"

**Output and description** = "BackingPlate8", "Second saddle Center Support Plate3"  
**Output and description** = "BackingPlate9", "Center Support Plate4"  
**Output and description** = "BackingPlate10", "Second saddle Center Support Plate4"  
**Output and description** = "BackingPlate11", "Bottom Support Plate"  
**Output and description** = "BackingPlate12", "Second saddle Bottom Support Plate"  
**Output and description** = "EqpFoundationPort", "Foundation Port"  
**Output and description** = "EqpFoundationPort1", "Second Foundation Port"  
**Output and description** = "ControlPoint", "Point at origin"  
**Output and description** = "DefaultSurface", "Default Surface"  
**Output and description** = "HoriLine", "Horizontal Line"  
**Output and description** = "DrumIns", " Drum Insulation"

### Aspects = 3

**Aspect** = "SimplePhysical", "Physical"  
**Aspect** = "Insulation", "Insulation"  
**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DHoriPumpBB1Asm

## Description:

**Symbol Name:** SP3DHoriPumpBB1Asm.BB1PumpSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DHoriPumpBB1Asm.BB1PumpSym

#### Inputs = 16

**Input and description** = "PumpFacetoDischargeCL", "Y-Center to Impeller Shaft Front End", 0

**Input and description** = "PumpCouplingFacetoDischargeCL", "W-Center to Impeller Shaft Rear End", 0

**Input and description** = "CouplingtoMotorEnd", "CMax-Motor Shaft Front End to Motor Rear End", 0

**Input and description** = "PumpCLtoDischargeFace", "T-Pump Centerline to Discharge Face", 0

**Input and description** = "PumpCLtoSuctionFace", "U-Pump Centerline to Suction Face", 0

**Input and description** = "PumpCLtoDischargeCL", "Z-PumpCenterline to Discharge Centerline",

**Input and description** = "PumpCLtoSuctionCL", "S-PumpCenterline to Suction Centerline",

**Input and description** = "ImpellerDiameter", "D-Impeller Diameter",

**Input and description** = "DistBetweenShaftEnds", "HT-Distance Between Shaft Ends", 0

**Input and description** = "BaseplateLength", "HB-Baseplate Length", 2.489

**Input and description** = "BaseplateWidth", "HA-Baseplate Width", 0

**Input and description** = "BaseplateHeight", "Baseplate Height",

**Input and description** = "BaseplateBottomtoPumpCL", "HD-Baseplate Bottom to Pump Centerline", 0

**Input and description** = "FoundationPortStartPoint", "HR-Center to Foundation Port Start", 0

**Input and description** = "XboltHole", "HE-Bolt X Hole Location", 0

**Input and description** = "YboltHole", "HF-Bolt Y Hole Location", 0.

#### Outputs = 30

**Output and description** = "MotorCylinderBody", "Motor Cylinder Body"

**Output and description** = "MotorShaftBody1", "Motor Shaft Body1"

**Output and description** = "MotorShaftBody2", "Motor Shaft Body2"

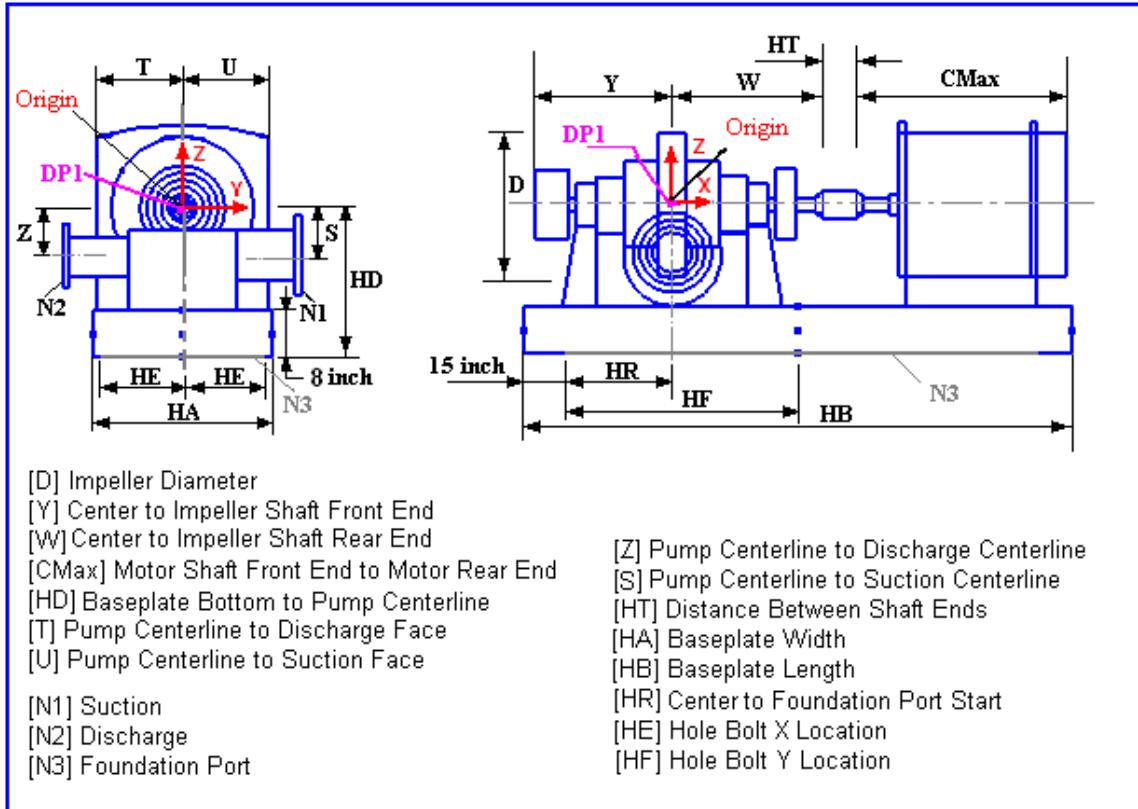
**Output and description** = "PumpShaftBody", "Pump Shaft Body"

**Output and description** = "CouplingCylinder", "Coupling Cylinder Body"

**Output and description** = "ImpellerCylinder", "Impeller Cylinder"  
**Output and description** = "PumpCylinder1", "Pump Cylinder1"  
**Output and description** = "PumpCylinder2", "Pump Cylinder2"  
**Output and description** = "PumpCylinder3", "Pump Cylinder3"  
**Output and description** = "PumpCylinder4", "Pump Cylinder4"  
**Output and description** = "PumpCylinder5", "Pump Cylinder5"  
**Output and description** = "PumpCylinder6", "Pump Cylinder6"  
**Output and description** = "PumpCylinder7", "Pump Cylinder7"  
**Output and description** = "PumpCylinder8", "Pump Cylinder8"  
**Output and description** = "CouplingCylinder", "Coupling Cylinder"  
**Output and description** = "PumpSupport1\_", "Pump Support1"  
**Output and description** = "PumpSupport2\_", "Pump Support2"  
**Output and description** = "MotorSupport1\_", "Motor Support1"  
**Output and description** = "MotorSupport2\_", "Motor Support2"  
**Output and description** = "SupportPlate1", "Support Plate1"  
**Output and description** = "SupportPlate2", "Support Plate2"  
**Output and description** = "SupportPlateDome1", "SupportPlateDome1"  
**Output and description** = "SupportPlateDome2", "SupportPlateDome2"  
**Output and description** = "BasePlate\_", "BasePlate"  
**Output and description** = "DefaultSurface", "Default Surface"  
**Output and description** = "Edges\_", "Edges For Baseplate"  
**Output and description** = "Points\_", "Points For Baseplate"  
**Output and description** = "Body1", "Body1"  
**Output and description** = "EqpFoundationPort", "Foundation Port under support"  
**Output and description** = "PumpOrigin", "Control Point at the Origin"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DHoriPumpBB2Asm

**Description:****Symbol Name:** SP3DHoriPumpBB2Asm.BB2PumpSym**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriPumpBB2Asm.BB2PumpSym

**Inputs = 15****Input and description** = "ImpellerDiameter", "D-Motor Diameter",**Input and description** = "DischargeNozLoc", "Z-Center Line to Discharge Center Line",**Input and description** = "SuctionNozLoc", "S-Center Line to Suction Center Line", 0**Input and description** = "CenterToNozzFace", "X-Height Of Nozzle Face From Center",**Input and description** = "ShaftFrontEnd", "Y-Center to Impeller Shaft Front End",**Input and description** = "CouplingStart", "W-Center to Impeller Shaft Rear End",**Input and description** = "CoupEndToMotorEnd", "CMAX-Motor Shaft Front End to Motor Rear End",**Input and description** = "CouplingLength", "DBSE-Distace Between Shaft Ends", 0**Input and description** = "SupportBottomLoc", "HC-Center to Base Plate Bottom",**Input and description** = "FounPortStartPoint", "HR-Center to Foundation Port Start",**Input and description** = "SupportHeight", "HG-Base Plate Height",**Input and description** = "SupportWidth", "HA-Base Plate Width",**Input and description** = "SupportLength", "HB-Base Plate Length", 1**Input and description** = "XBoltHole", "HE-Hole Bolt X Location",**Input and description** = "YBoltHole", "HF-Hole Bolt Y Location", 0.9**Outputs = 25****Output and description** = "ShaftFrontEnd", "Shaft Front End"**Output and description** = "Flange1", "Flange 1"**Output and description** = "PumpCylinder1", "Pump Cylinder 1"**Output and description** = "PumpCylinder2", "Pump Cylinder 2"**Output and description** = "Flange2", "Flange 2"**Output and description** = "PumpCylinder3", "Pump Cylinder 3"**Output and description** = "Flange3", "Flange 3"**Output and description** = "Flange4", "Flange 4"**Output and description** = "ShaftRearEnd", "Shaft Rear End"**Output and description** = "CouplingFlange1", "Coupling Flange 1"**Output and description** = "Coupling", "Coupling"

**Output and description** = "CouplingFlange2", "Coupling Flange 2"

**Output and description** = "MotorFlange", "Motor Flange"

**Output and description** = "MotorFrontHead", "Motor Front Head"

**Output and description** = "MotorBody", "Motor Body"

**Output and description** = "MotorRearHead", "Motor Rear Head"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "MotorSupport", "Motor Support"

**Output and description** = "PumpSupport\_ ", "Pump Support"

**Output and description** = "BasePlate\_ ", "Base Plate"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Edges\_ ", "Edges For Base Plate"

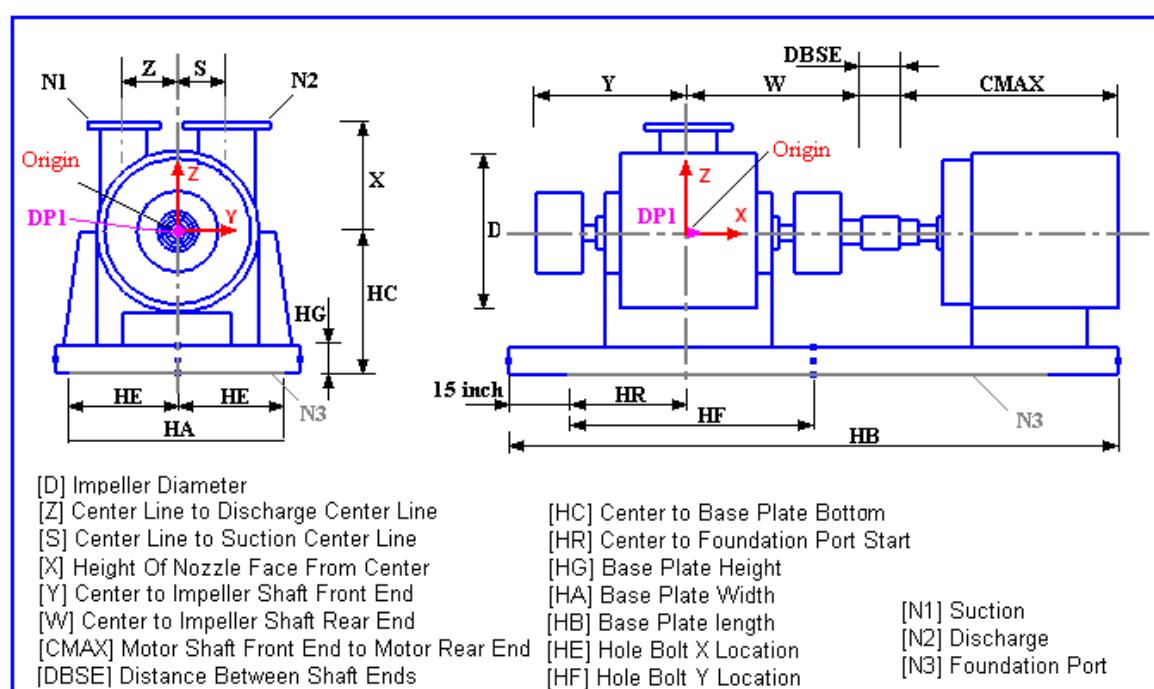
**Output and description** = "Points\_ ", "Points On Each Face Of Base Plate"

**Output and description** = "EqpFoundationPort", "Equipment Foundation Port"

**Output and description** = "EqpControlPoint", "Control Point at the Origin"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DHoriPumpBB3Asm

**Description:**

**Symbol Name:** SP3DHoriPumpBB3Asm.BB3PumpSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriPumpBB3Asm.BB3PumpSym

**Inputs = 17**

**Input and description** = "PumpFacetoDischargeCL", "Y-Center to Impeller Shaft Front End",

**Input and description** = "PumpCouplingFacetoDischargeCL", "W-Center to Impeller Shaft Rear End",

**Input and description** = "SuctionCLtoDischargeCL", "X-Suction Centerline to Discharge Centerline",

**Input and description** = "CouplingtoMotorEnd", "CMAX-Motor Shaft Front End to Motor Rear End",

**Input and description** = "PumpCLtoDischargeFace", "T-Pump Centerline to Discharge Face",

**Input and description** = "PumpCLtoSuctionFace", "U-Pump Centerline to Suction Face",

**Input and description** = "PumpCLtoDischargeCL", "R-PumpCenterline to Discharge Centerline",

**Input and description** = "PumpCLtoSuctionCL", "S-PumpCenterline to Suction Centerline",

**Input and description** = "ImpellerDiameter", "D-Impeller Diameter",

**Input and description** = "BaseplateLength", "HB-Baseplate Length", 2.92

**Input and description** = "BaseplateWidth", "HA-Baseplate Width",

**Input and description** = "BaseplateHeight", "Baseplate Height",

**Input and description** = "BaseplateBottomtoPumpCL", "HD-Baseplate Bottom to Pump Centerline",

**Input and description** = "FoundationPortStartPoint", "HR-Center to Foundation Port Start",

**Input and description** = "DistBetweenShaftEnds", "DBSE-Distance BetweenShaftEnds",

**Input and description** = "XboltHole", "Bolt X Hole Location",

**Input and description** = "YboltHole", "Bolt Y Hole Location",

**Outputs = 22**

**Output and description** = "MotorCylinderBody", "Motor Cylinder Body"

**Output and description** = "MotorShaftBody1", "Motor Shaft Body1"

**Output and description** = "MotorShaftBody2", "Motor Shaft Body2"

**Output and description** = "ShaftCoupling", "Shaft Coupling"

**Output and description** = "Cylinder", "Cylinder Coupling"

**Output and description** = "PumpCylinder1", "Pump Cylinder1"

**Output and description** = "PumpCylinder2", "Pump Cylinder2"

**Output and description** = "PumpCylinder3", "Pump Cylinder3"

**Output and description** = "PumpCylinder4", "Pump Cylinder4"

**Output and description** = "CouplingCylinder", "Coupling Cylinder"

**Output and description** = "PumpSupport1", "Pump Support1"

**Output and description** = "PumpSupport2", "Pump Support2"

**Output and description** = "MotorSupport1", "Motor Support1"

**Output and description** = "Impellerbody1", "Impellerbody1"

**Output and description** = "Impellerbody2", "Impellerbody2"

**Output and description** = "ImpellerbodyPlate", "ImpellerbodyPlate"

**Output and description** = "BasePlate\_", "BasePlate"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Edges\_", "Edges For Baseplate"

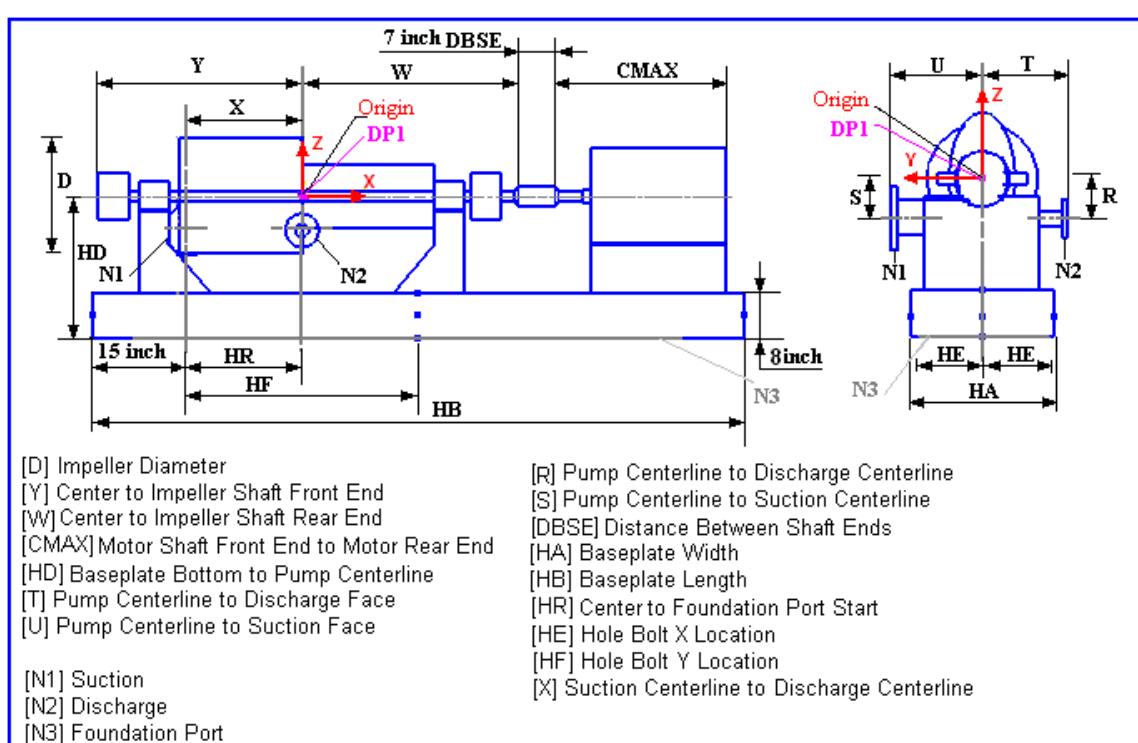
**Output and description** = "Points\_", "Points For Baseplate"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

**Output and description** = "PumpOrigin", "Control Point at the Origin"

**Aspects** = 1

**Aspect** = "Physical", "Physical"



# SP3DHoriPumpBB5Asm

**Description:****Symbol Name:** SP3DHoriPumpBB5Asm.BB5PumpSym**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriPumpBB5Asm.BB5PumpSym

**Inputs = 16****Input and description** = "MotorDiameter", "D-Motor Diameter", 0**Input and description** = "CenterToNozzFace", "NH-Height Of Nozzle Face From Center", 0.**Input and description** = "DischargeToSuction", "X-Discharge Axis to Suction Axis", 0**Input and description** = "ImpShaftFrontEnd", "Y-Center to Impeller Shaft Front End", 0**Input and description** = "ImpShaftRearEnd", "W-Center to Impeller Shaft Rear End",**Input and description** = "DistBetShaftEnds", "DBSE-Distace Between Shaft Ends", 0**Input and description** = "MotorShaftToEnd", "CMAX-Motor Shaft Front End to Motor Rear End", 0**Input and description** = "PumpSupTopWidth", "PMAX-Pump Support Top Width", 0**Input and description** = "DismantlingLength", "EX-Dismantling Length", 1**Input and description** = "BasePlateBottom", "HD-Center to Base Plate Bottom", 0**Input and description** = "CenToFouPortStart", "HR-Center to Base Plate Start", 0**Input and description** = "BasePlateWidth", "HA-Base Plate Width", 0**Input and description** = "BasePlateLength", "HB-Base Plate Length", 2.921**Input and description** = "BasePlateHeight", "BD-Base Plate Height", 0**Input and description** = "XBoltHole", "HE-Hole Bolt X Location",**Input and description** = "YBoltHole", "HF-Hole Bolt Y Location", 0.9**Outputs = 25****Output and description** = "ShaftFrontEnd", "Shaft Front End"**Output and description** = "FrontEndCyl", "Front End Cylinder"**Output and description** = "Flange1", "Flange 1"**Output and description** = "ImpellerPart1", "Impeller Part 1"**Output and description** = "ImpellerPart2", "Impeller Part 2"**Output and description** = "ImpellerPart3", "Impeller Part 3"**Output and description** = "Flange2", "Flange 2"**Output and description** = "RearEndCyl", "Rear End Cylinder"

**Output and description** = "ShaftRearEnd", "Shaft Rear End"

**Output and description** = "CouplingFlange1", "Coupling Flange 1"

**Output and description** = "Coupling", "Coupling"

**Output and description** = "CouplingFlange2", "Coupling Flange 2"

**Output and description** = "MotorFlange", "Motor Flange"

**Output and description** = "Motor", "Motor"

**Output and description** = "MotorSupport", "Motor Support"

**Output and description** = "MotorBox", "Motor Box"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "PumpSupport\_", "Pump Support"

**Output and description** = "BasePlate\_", "Base Plate"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "Edges\_", "Edges For Base Plate"

**Output and description** = "Points\_", "Points On Each Face Of Base Plate"

**Output and description** = "EqpFoundationPort", "Equipment Foundation Port"

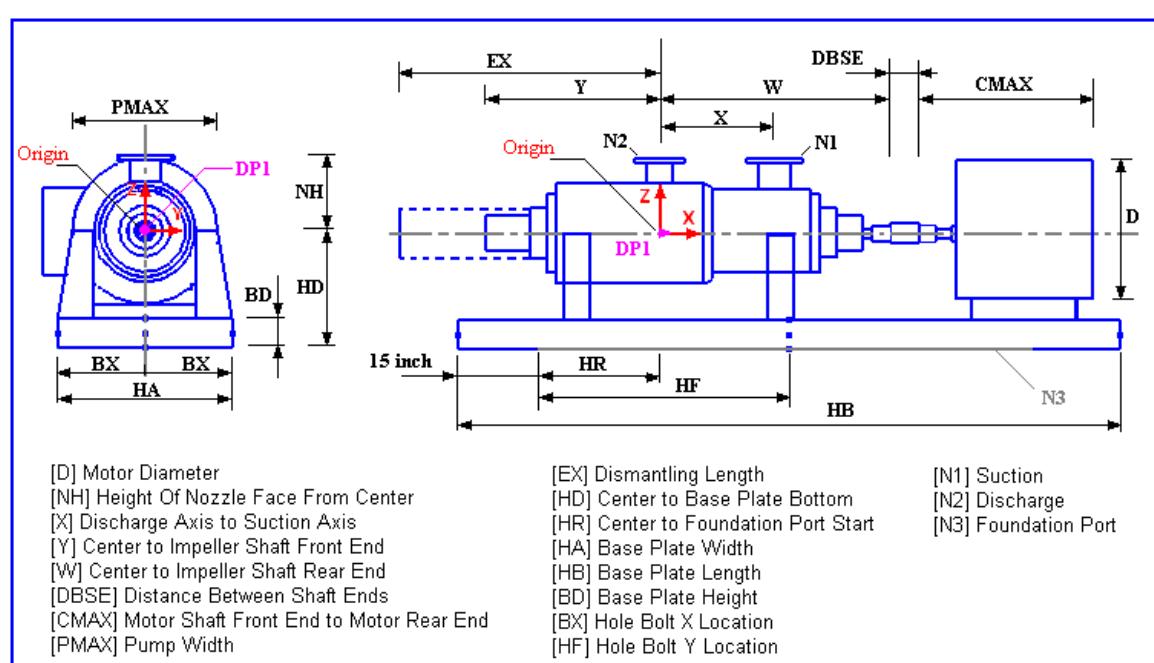
**Output and description** = "EqpControlPoint", "Contol Point at the Origin"

**Output and description** = "MaintenanceCylinder", "Maintenance Cylinder"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Maintenance", "Maintenance"



# SP3DHoriPumpOH2Asm

**Description:**

**Symbol Name:** SP3DHoriPumpOH2Asm.OH2PumpSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriPumpOH2Asm.OH2PumpSym

**Inputs = 13**

**Input and description** = "SuctiontoDischargeDistance",  
"SuctiontoDischargeDistance"

**Input and description** = "BaseplateBottomtoDischargeFace",  
"BaseplateBottomtoDischargeFace"

**Input and description** = "DischargeCLtoSuctionFace",  
"DischargeCLtoSuctionFace"

**Input and description** = "PumpSuctionFacetoCoupling",  
"PumpSuctionFacetoCoupling"

**Input and description** = "CouplingtoMotorEnd", "CouplingtoMotorEnd"

**Input and description** = "BaseplateLength", "Length of Baseplate"

**Input and description** = "BaseplateHeight", "Height of Baseplate"

**Input and description** = "BaseplateWidth", "Width of Baseplate"

**Input and description** = "OffsetfromSuctiontoCLofBaseplate",  
"OffsetfromSuctiontoCLofBaseplate"

**Input and description** = "CouplingLength", "CouplingLength"

**Input and description** = "BaseplateBottomtoSuctionCL",  
"BaseplateBottomtoSuctionCL"

**Input and description** = "XboltHole", "Bolt X Hole Location"

**Input and description** = "YboltHole", "Bolt Y Hole Location"

**Outputs = 53**

**Output and description** = "BodyBaseplate1", "BodyBaseplate1"

**Output and description** = "BodyBaseplate2", "BodyBaseplate2"

**Output and description** = "BodyBaseplate3", "BodyBaseplate3"

**Output and description** = "BodyBaseplate4", "BodyBaseplate4"

**Output and description** = "BodyBaseplate5", "BodyBaseplate5"

**Output and description** = "BodyBaseplate6", "BodyBaseplate6"

**Output and description** = "BodyCylinder1", "BodyCylinder1"

**Output and description** = "BodyCylinder2", "BodyCylinder2"

**Output and description** = "BodyCylinder3", "BodyCylinder3"

**Output and description** = "BodyCylinder4", "BodyCylinder4"

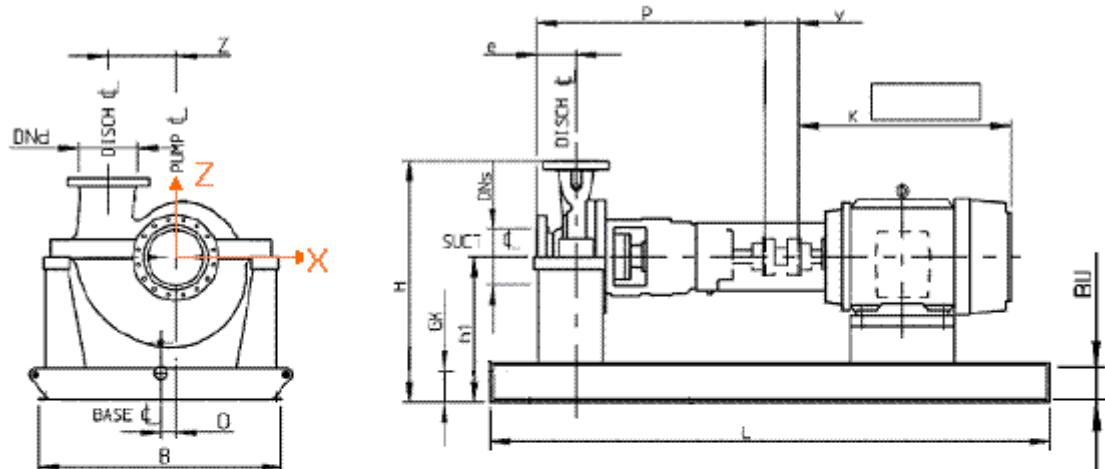
**Output and description** = "BodyCylinder5", "BodyCylinder5"

**Output and description** = "BodyCylinder6", "BodyCylinder6"

**Output and description** = "BodyCylinder7", "BodyCylinder7"  
**Output and description** = "BodyCylinder8", "BodyMotor"  
**Output and description** = "BodyDish1", "BodyDish1"  
**Output and description** = "BodyDish2", "BodyDish2"  
**Output and description** = "BodyCylinder9", "BodyCylinder9"  
**Output and description** = "BodyCylinder10", "BodyCylinder10"  
**Output and description** = "SupportBox", "SupportBox"  
**Output and description** = "Baseplate1", "Baseplate 1"  
**Output and description** = "Baseplate2", "Baseplate 2"  
**Output and description** = "Baseplate3", "Baseplate 3"  
**Output and description** = "Baseplate4", "Baseplate 4"  
**Output and description** = "Baseplate5", "Baseplate 5"  
**Output and description** = "Baseplate6", "Baseplate 6"  
**Output and description** = "Baseplate7", "Baseplate 7"  
**Output and description** = "Baseplate8", "Baseplate 8"  
**Output and description** = "Baseplate9", "Baseplate 9"  
**Output and description** = "Baseplate10", "Baseplate 10"  
**Output and description** = "Baseplate11", "Baseplate 11"  
**Output and description** = "Baseplate12", "Baseplate 12"  
**Output and description** = "SuctionNozzle", "SuctionNozzle"  
**Output and description** = "DischargeNozzle", "DischargeNozzle"  
**Output and description** = "EqpFoundationPort", "Foundation Port under support"  
**Output and description** = "PumpOrigin", "Control Point"  
**Output and description** = "Point1", "Point 1"  
**Output and description** = "Point2", "Point 2"  
**Output and description** = "Point3", "Point 3"  
**Output and description** = "Point4", "Point 4"  
**Output and description** = "Point5", "Point 5"  
**Output and description** = "Point6", "Point 6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"  
**Output and description** = "Edge8", "Edge 8"  
**Output and description** = "Edge9", "Edge 9"  
**Output and description** = "Edge10", "Edge 10"  
**Output and description** = "Edge11", "Edge 11"  
**Output and description** = "Edge12", "Edge 12"

**Aspects** = 1

**Aspect** = "Physical", "Physical"



Z = Horizontal Distance from Suction to Discharge

H = Baseplate Bottom to Discharge Face

e = Discharge Centerline to Suction Face

P = Pump Suction Face to Coupling Face

K = Coupling Face to Motor End Face

L = Baseplate Length

BU = Baseplate Height

B = Baseplate Width

O = Offset from Suction to Centerline of Baseplate

y = Coupling Length

h1 =Baseplate Bottom to Suction Centerline

# SP3DHoriShellTubeExchangerAsm

**Description:** ExchX

**Symbol Name:** SP3DHoriShellTubeXAsm.CHSTXSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HoriShellTubeExchangerAsm

**User Class Name:** Horizontal Shell Tube Exchanger

**Part Number:** HorizontalShellTubeExchanger-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriShellTubeXAsm.CHSTXSym

**Inputs = 31**

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"

**Input** = "ExchangerDiameter"   **Description** = "Exchanger Diameter P2"

**Input** = "BundleFlangeTk"   **Description** = "Exchanger End Flange Thick P3"

**Input** = "BundleFlangeDia"   **Description** = "Exchanger End Flange Dia P4"

**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Left Flange Thick P5"

**Input** = "ExchangerFlangeTk2"   **Description** = "Exchanger Right Flange Thick P6"

**Input** = "ExpansionJointPosition"   **Description** = "Expansion Joint Position P7"

**Input** = "ExpansionJointThickness"   **Description** = "Expansion Joint Thickness P8"

**Input** = "ExpansionJointDiameter"   **Description** = "Expansion Joint Diameter P9"

**Input** = "BundlePullingLength"   **Description** = "Exchanger End Length P10"

**Input** = "BotSupportCenFromPP"   **Description** = "Bot Support Cen From Origin P11"

**Input** = "BottomSupportCentoCen"   **Description** = "Cen to Cen between Support P12"

**Input** = "Support1Thickness"   **Description** = "Support1 Thickness P13"

**Input** = "Support2Thickness"   **Description** = "Support2 Thickness P14"

**Input** = "BottomSupportHeight"   **Description** = "Bottom Support Height P15"

**Input** = "SupportLength"   **Description** = "Support Length P16"

**Input** = "TopSupportCenFromPP"   **Description** = "Top Support Cen From Origin P17"

**Input** = "TopSupportCentoCen"   **Description** = "Top Support Cen to Cen P18"

**Input** = "TopSupportHeight"   **Description** = "Top Support Height P19"

**Input** = "FrontEndFlangeDia"   **Description** = "Front End Flange Diameter P30"

**Input** = "FrontEndFlangeTk1"   **Description** = "Front End Flange Tk 1 P31"

**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"

**Input** = "FrontEndLength2"   **Description** = "FrontEndLength2 P33"

**Input** = "FrontEndFlangeTk2"   **Description** = "FrontEndFlangeTk2 P34"

**Input** = "FrontEndFlangeTk3"   **Description** = "FrontEndFlangeTk3 P35"

**Input** = "RearEndFlangeDia"   **Description** = "Rear End Flange Diameter P40"

**Input** = "RearEndFlangeTk1"   **Description** = "Rear End Flange Tk P41"

**Input** = "RearEndLength"   **Description** = "Rear End Length P42"

**Input** = "RearEndFlangeTk2"   **Description** = "Rear End Flange Tk P43"

**Input = "RearEndFlangeTk3" Description = "Rear End Flange Tk P44"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

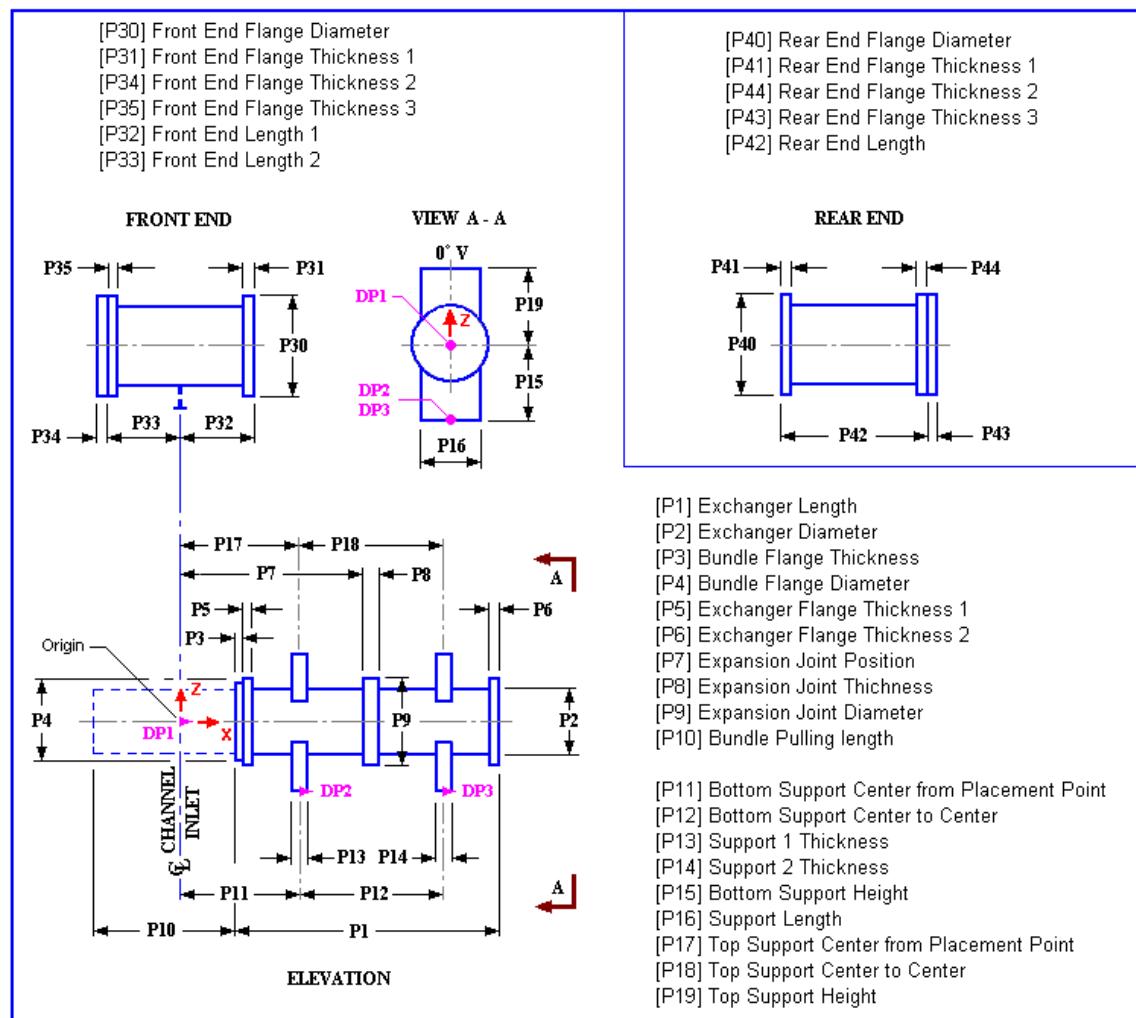
**Output = "ExchangerBody" Description = "ExchangerBody"**  
**Output = "FrontEndBody" Description = "FrontEndBody"**  
**Output = "RearEndBody" Description = "RearEndBody"**  
**Output = "BundlePulling" Description = "BundlePulling"**  
**Output = "ExchangerInsul" Description = "Exchanger Insulation"**  
**Output = "FrontEndInsul" Description = "Front End Insulation"**  
**Output = "RearEndInsul" Description = "Rear End Insulation"**  
**Output = "HoriShellTubeExchangerControlPoint" Description = "Control Point of Horizontal Shell and Tube Exchanger"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Maintenance**



# SP3DHoriVesselEndsAsm

**Description:**

**Symbol Name:** SP3DHoriVesselEndsAsm.HoriVesselEndsSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoriVesselEndsAsm.HoriVesselEndsSym

**Inputs = 12**

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent"

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Input and description** = "End1Type", "End1 Type"

**Input and description** = "End2Type", "End2 Type"

**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter"

**Input and description** = "EndHeadConeHeight", "End Head Cone Height"

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius"

**Input and description** = "EndHeadDomeradius", "End Head Dome radius"

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1"

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2"

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius"

**Outputs = 2**

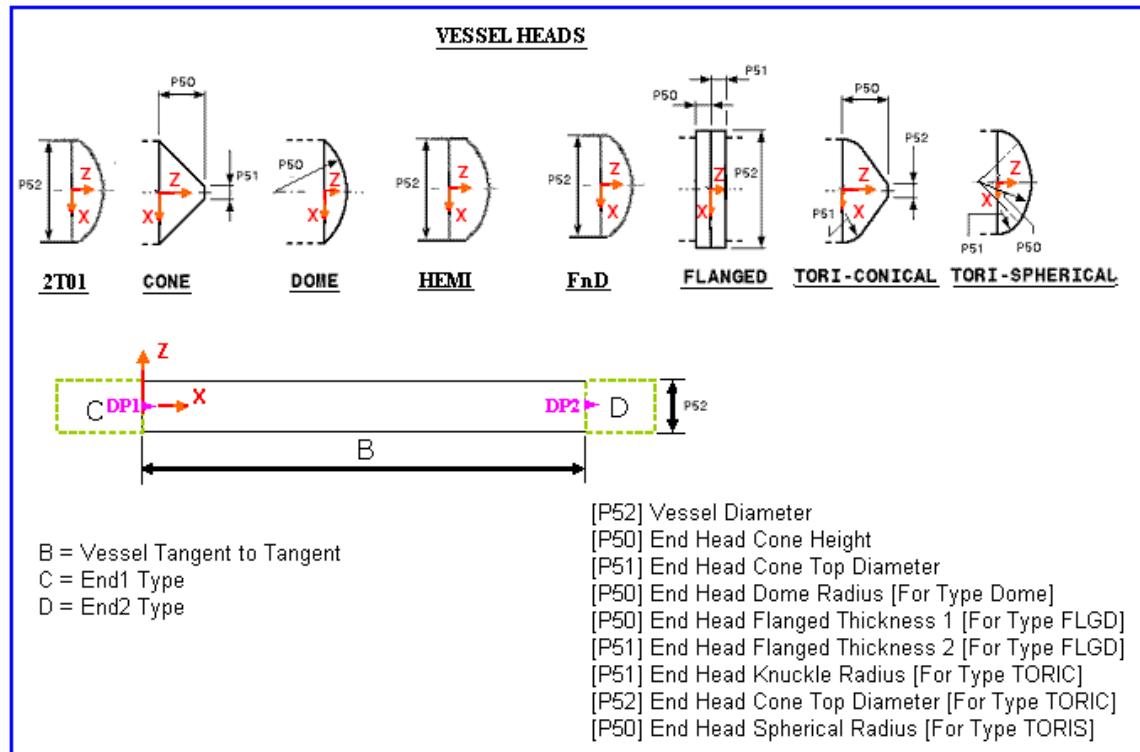
**Output and description** = "ObjHoriVessel", "ObjHoriVessel"

**Output and description** = "ObjHoriVesselIns", "ObjHoriVesselIns"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



## SP3DHorizontalPumpAsm

**Description:** Horizontal Centrifugal Pump

**Symbol Name:** SP3DHorizontalPumpAsm.CHPumpSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HorizontalCentPumpAsm

**User Class Name:** Horizontal Centrifugal Pump

**Part Number:** HCPump01 1 1/2"x1" \_Asm, HCPump02 2"x1" \_Asm, HCPump03 3"x1 1/2" \_Asm, HCPump04 3"x2" \_Asm, HCPump05 8"x4" \_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorizontalPumpAsm.CHPumpSym

**Inputs = 14**

**Input = "DisNozzletoFace"** **Description =** "CL Discharge Nozzle to Face"

**Input = "DischargeToFaceSuction"** **Description =** "CL of Discharge to Face of Suction Nozzle"

**Input = "BaseplatetoSuction"** **Description =** "Bottom of Pump Baseplate to CL of Suction"

**Input = "OffsetDisNozzletoPump"** **Description =** "Offset of Discharge Nozzle from CL of Pump"

**Input = "PumptoFaceDisNozzle"** **Description =** "CL of Pump to Face of Discharge Nozzle"

**Input = "DisNozzletoFaceBaseplate"** **Description =** "CL of Discharge Nozzle to Face of Baseplate"

**Input = "WidthBaseplate"** **Description =** "Width of Pump Baseplate"

**Input = "LengthBaseplate"** **Description =** "Length of Pump Baseplate"

**Input = "HeightBaseplate"** **Description =** "Height of Pump Baseplate"

**Input = "FaceBaseplatetoAnchorBolt"** **Description =** "Face of Baseplate to CL of Anchor Bolt"

**Input = "ShafttoAnchorBolt"** **Description =** "CL of Pump Shaft to CL of Anchor Bolt"

**Input = "FronttoBackAnchorBolt"** **Description =** "CL Dimension from Front to Back Anchor Bolt"

**Input = "BaseplatetoMotor"** **Description =** "End of Pump Baseplate to End of Pump Motor"

**Input = "ElecBoxPosition"** **Description =** "Electrical Box Position"

**Outputs = 19**

**Output = "BodyCylinder1"** **Description =** "Body of Pump Cylinder1"

**Output = "BodySnou"** **Description =** "Body of Pump Snou"

**Output = "BodyCylinder2"** **Description =** "Body of Pump Cylinder2"

**Output = "BodyCylinder3"** **Description =** "Body of Pump Cylinder3"

**Output = "BodyDish1"** **Description =** "Body of Pump Motor Dish1"

**Output = "BodyCylinder4"** **Description =** "Body of Pump Cylinder4"

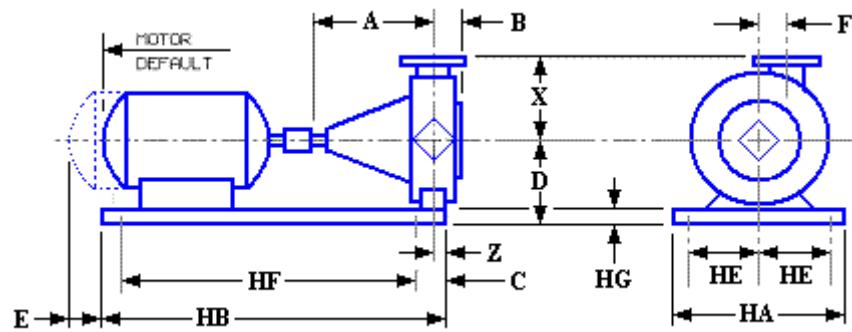
**Output = "BodyDish2"** **Description =** "Body of Pump Motor Dish2"

**Output = "BodyPyramid1" Description = "Body of Pump Motor Pyramid"**  
**Output = "BodyPyramid2" Description = "Body of Pump Pyramid"**  
**Output = "SuctionNozzle" Description = "Suction Nozzle"**  
**Output = "DischargeNozzle" Description = "Discharge Nozzle"**  
**Output = "PumpOrigin" Description = "PumpOrigin"**  
**Output = "BodyBaseplate1" Description = "Top Plane of Pump Baseplate"**  
**Output = "DefaultSurface" Description = "Default Surface Pump"**  
**Output = "BodyBaseplate2" Description = "Side Plane of Pump Baseplate"**  
**Output = "BodyBaseplate3" Description = "Side Plane of Pump Baseplate"**  
**Output = "BodyBaseplate4" Description = "Side Plane of Pump Baseplate"**  
**Output = "BodyBaseplate5" Description = "Side Plane of Pump Baseplate"**  
**Output = "EqpFoundationPort" Description = "Foundation Port under support"**

**Aspects = 1**

**Aspect = SimplePhysical**

Dimension	Input Name	Properties Dialog Box
A	DisNozzletoFace	A - Center Line Discharge Nozzle to Face of Coupling
B	DischargetoFaceSuction	B - Center Line of Discharge to Face of Suction Nozzle
D	BaseplattoSuction	D - Bottom of Pump Base Plate to Center Line of Suction
X	PumptoFaceDisNozzle	X - Center Line of Pump to Face of Discharge Nozzle
Z	DisNozzletoFaceBaseplate	Z - Center Line of Discharge Nozzle to Face of Base Plate
F	OffsetDisNozzletoPump	F - Offset of Discharge Nozzle From Center Line of Pump
C	FaceBaseplatetoAnchorBolt	C - Face of Base Plate to Center Line of Anchor Bolt
HE	ShafttoAnchorBolt	HE - Center Line of Pump Shaft to Center Line of Anchor Bolt
HF	FronttoBackAnchorBolt	HF - Center Line of Dimension from Front to Back Anchor Bolt
E	BaseplatetoMotor	E - End of Pump Base Plate to End of Pump Motor
HH	DiameterAnchorBolt	HH - Diameter of Anchor Bolts
	ElecBoxPosition	Electrical Box Position 1=Top 0=Bottom



# SP3DHOROT\_EQPADVRASM

**Description:** HorRotEqp No1

**Symbol Name:** SP3DHOROT\_EQPADVRASM.CSHREqpDSym

**Workbook:** Equipment.xls

**Workbook Sheet:** HorRotEqpADvrAsm

**User Class Name:** Horizontal Rotating Equipment

**Part Number:** HorizontalRotatingEqpADvr-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHOROT\_EQPADVRASM.CSHREqpDSym

**Inputs = 18**

**Input** = "BaseLength" 'P1 **Description** = "Length of Base"

**Input** = "BaseWidth1" 'P2 **Description** = "Width1 of Base"

**Input** = "BaseWidth2" 'P3 **Description** = "Width2 of Base"

**Input** = "BaseThickness" 'P4 **Description** = "Thickness of Base"

**Input** = "DistBaseLeftToDischarge" 'P5 **Description** = "Dist between Base Left to Centreline of Discharge"

**Input** = "DistEqpLeftToDischarge" 'P6 **Description** = "Dist between Eqp Left to Centreline of Discharge"

**Input** = "DistEqpRightToDischarge" 'P7 **Description** = "Dist between Eqp Right to Centreline of Discharge"

**Input** = "EqpWidth1" 'P8 **Description** = "Width1 of Equipment"

**Input** = "EqpWidth2" 'P9 **Description** = "Width2 of Equipment"

**Input** = "EqpDepth1" 'P10 **Description** = "Depth1 of Equipment"

**Input** = "EqpDepth2" 'P11 **Description** = "Depth2 of Equipment"

**Input** = "RotEqpLength" 'P12 **Description** = "Length of Rotating Equipment"

**Input** = "RotEqpDiameter" 'P13 **Description** = "Diameter of Rotating Equipment"

**Input** = "DriverLength" 'P14 **Description** = "Length of Driver"

**Input** = "DriverWidth1" 'P15 **Description** = "Width1 of Driver"

**Input** = "DriverWidth2" 'P16 **Description** = "Width2 of Driver"

**Input** = "DriverHeight" 'P17 **Description** = "Height of Driver"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

**Outputs = 11**

**Output** = "InsulatedEqp" **Description** = "Insulated Equipment"

**Output** = "Equipment" **Description** = "Equipment"

**Output** = "Driver" **Description** = "Driver"

**Output** = "RotEquip" **Description** = "Rotating Equipment"

**Output** = "SupportBodyTopPlane" **Description** = "Support Body Top Plane"

**Output** = "DefaultSurface" **Description** = "Support Body Bottom Plane"

**Output** = "SupportBodySidePlane1" **Description** = "Support Body side plane1"

**Output** = "SupportBodySidePlane2" **Description** = "Support Body side plane2"

**Output** = "SupportBodySidePlane3" **Description** = "Support Body side plane3"

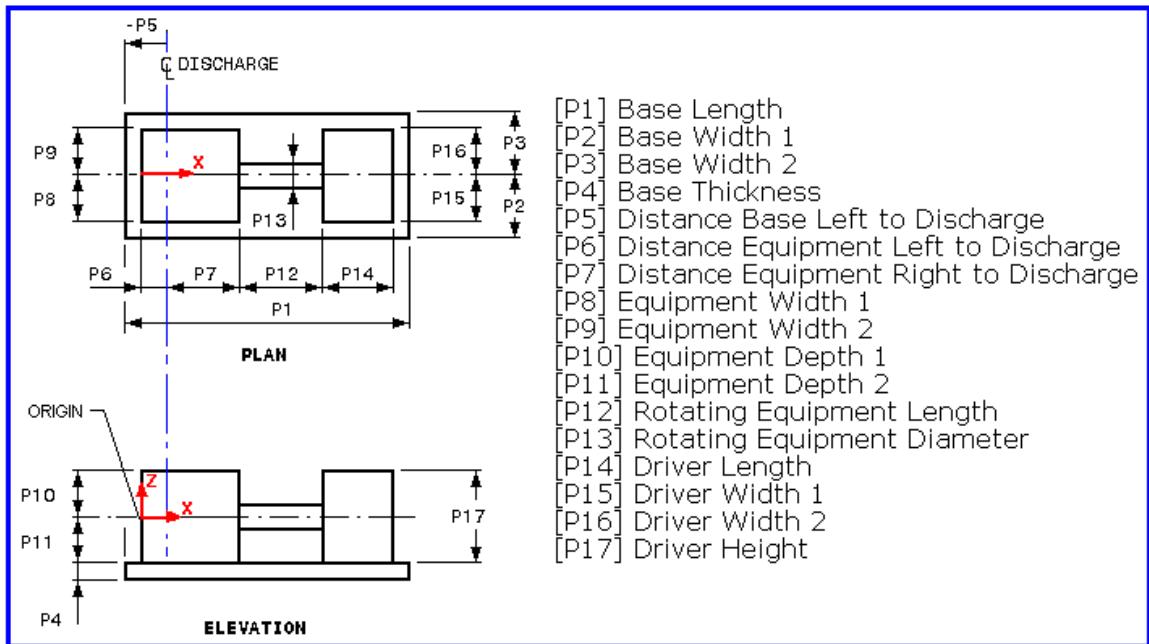
**Output** = "SupportBodySidePlane4" **Description** = "Support Body side plane4"

**Output** = "HorRotEqpADvrControlPoint" **Description** = "Control Point of Horizontal Rotating Equipment And Driver"

## Aspects = 2

**Aspect** = SimplePhysical

**Aspect = Insulation**



# SP3DHorSTExch02Asm

## Description:

**Symbol Name:** SP3DHorSTExch02Asm.HShellTubeExch02Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** HoriShellTubeExchanger02Asm

**User Class Name:** Horizontal Shell Tube Exchanger 02

**Part Number:** HoriShellTubeExchanger02 01-E

## Inputs, Outputs, and Aspects:

ProgID: SP3DHorSTExch02Asm.HShellTubeExch02Sym

### Inputs = 10

**Input and description** = "VesselDiameter", "Exchanger Diameter", 1

**Input and description** = "VesselLength", "Exchanger Length", 9.906

**Input and description** = "VesselTantoTan", "Exchanger Tangent to Tanget Length", 8.9662

**Input and description** = "VesselLength1", "Front Head Length", 0.

**Input and description** = "VesselStartPoint", "Distance of Control Point from Tangent", 0.

**Input and description** = "SupportLength", "Support Thickness", 0

**Input and description** = "SupportWidth", "Support Width",

**Input and description** = "SupportHeight", "Support Height ", 1

**Input and description** = "FirstSupportLocation", "First Support Location ", 1

**Input and description** = "SecondSupportLocation", "Second Support Location", 6.96

### Outputs = 10

**Output and description** = "FrontHeadBonnet", "Elliptical Front Head Bonnet Body"

**Output and description** = "FrontHeadBodyCyl", "Cylindrical Front Head Body"

**Output and description** = "FrontHeadFlangeTop", "Top Flange on Front head side"

**Output and description** = "FrontHeadFlangeBottom", "Bottom Flange on Front head side"

**Output and description** = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"

**Output and description** = "RearHeadBonnet", "Elliptical Rear Head Bonnet Body"

**Output and description** = "ExchangerSupport1", "Exchanger support1"

**Output and description** = "ExchangerSupport2", "Exchanger support2"

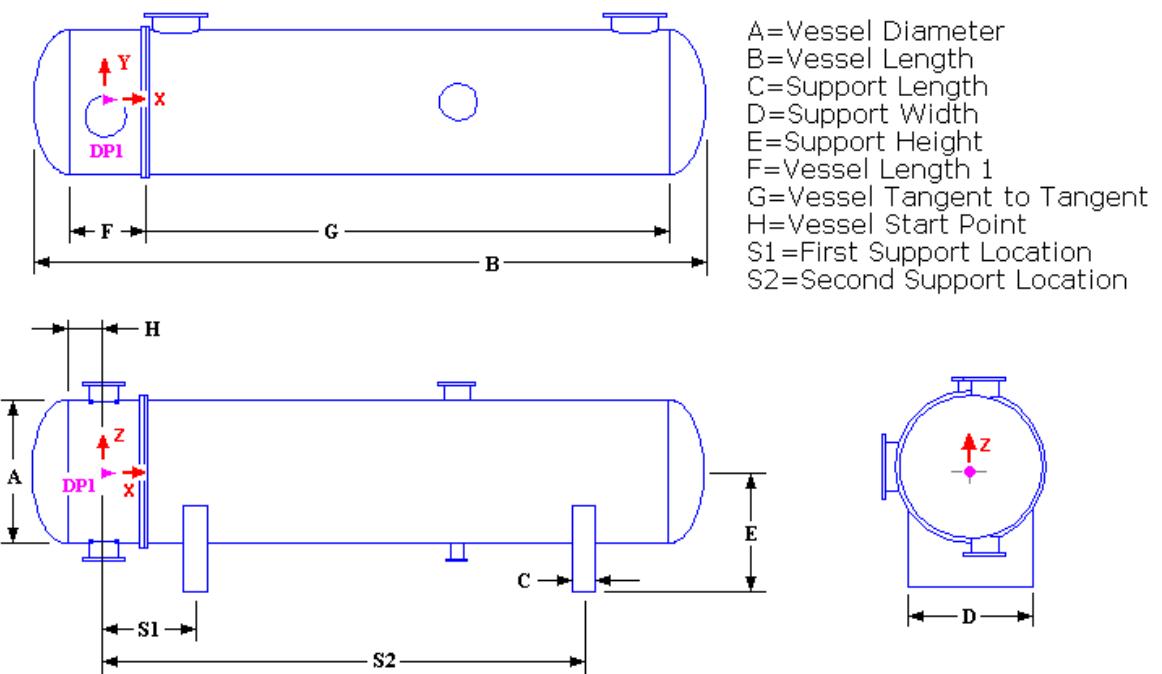
**Output and description** = "ControlPoint", "ControlPoint at origin"

**Output and description** = "DefaultSurface", "Default Surface at Support"

### Aspects = 2

**Aspect** = "SimplePhysical", "PipingAspect Description"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DHorSTExch03Asm

**Description:**

**Symbol Name:** SP3DHorSTExch03Asm.HShellTubeExch03Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** HoriShellTubeExchanger03Asm

**User Class Name:** Horizontal Shell Tube Exchanger 03

**Part Number:** HoriShellTubeExchanger03 01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorSTExch03Asm.HShellTubeExch03Sym

**Inputs = 31**

**Input and description** = "VesselDiameter", "Exchanger Diameter"

**Input and description** = "VesselTantoTan", "Exchanger Tangent to Tangent Length"

**Input and description** = "VesselLength", "Front Head Length"

**Input and description** = "VesselStartPoint", "Distance of Control Point from Tangent"

**Input and description** = "FaceDiameter", "Flange Diameter"

**Input and description** = "FaceThickness", "Flange Thickness"

**Input and description** = "SupportWidth", "Support Width"

**Input and description** = "SupportLength", "Support Length"

**Input and description** = "SupportHeight", "Support Height"

**Input and description** = "FirstSupportLocation", "First Support Location"

**Input and description** = "SecondSupportLocation", "Second Support Location"

**Input and description** = "BasePlateThickness", "Base Plate Thickness(E)"

**Input and description** = "BackingPlateThickness", "Backing Plate Thickness(T)"

**Input and description** = "BackingPlateWidth", "Backing Plate Widt(H)"

**Input and description** = "StiffnerThickness", "Stiffner Thickness(D)"

**Input and description** = "StiffnerThickness1", "Stiffner Thickness(DG)"

**Input and description** = "NozzlePosition", "Nozzle A Position along length"

**Input and description** = "NozzlePosition1", "Nozzle B1 Position along length"

**Input and description** = "NozzlePosition2", "Nozzle B2 Position along length"

**Input and description** = "NozzlePosition3", "Nozzle C Position along length"

**Input and description** = "NozzlePosition4", "Nozzle D Position along length"

**Input and description** = "RadialPosition", "Nozzle A Length"

**Input and description** = "RadialPosition1", "Nozzle B1 Length"

**Input and description** = "RadialPosition2", "Nozzle B2 Length"

**Input and description** = "RadialPosition3", "Nozzle C Length"

**Input and description** = "RadialPosition4", "Nozzle D Length"

**Input and description** = "NozzleOrientation", "Nozzle A Orientation"

**Input and description** = "NozzleOrientation1", "Nozzle B1 Orientation"

**Input and description** = "NozzleOrientation2", "Nozzle B2 Orientation", 3.1416

**Input and description** = "NozzleOrientation3", "Nozzle C Orientation", 3.1416

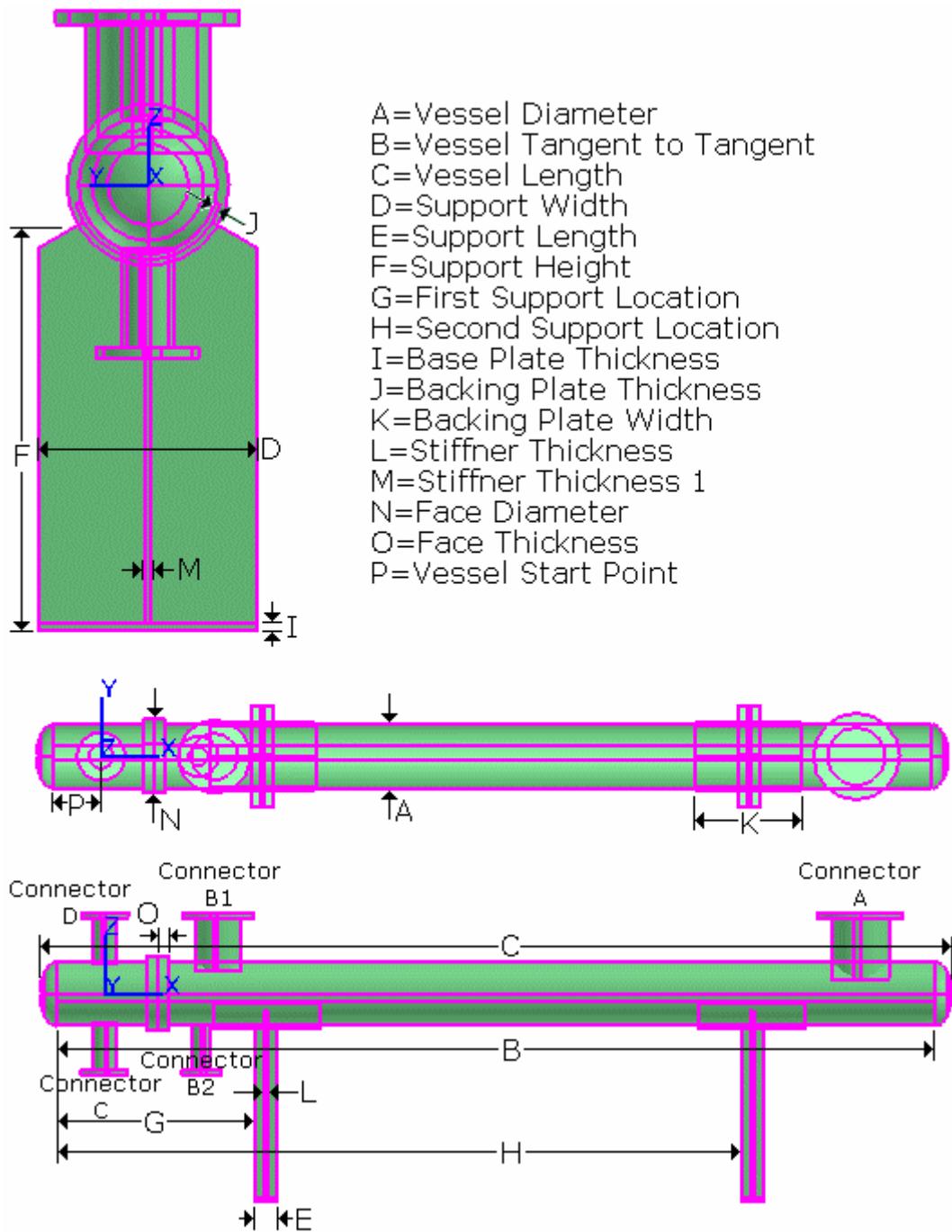
**Input and description** = "NozzleOrientation4", "Nozzle D Orientation"

**Outputs = 21**

**Output and description** = "FrontHeadBonnet", "Elliptical Front Head Bonnet Body"  
**Output and description** = "FrontHeadBodyCyl", "Cylindrical Front Head Body"  
**Output and description** = "FrontHeadFlangeTop", "Top Flange on Front head side"  
**Output and description** = "FrontHeadFlangeBottom", "Bottom Flange on Front head side"  
**Output and description** = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"  
**Output and description** = "RearHeadBonnet", "Elliptical Rear Head Bonnet Body"  
**Output and description** = "Support1SaddlePlate", "Support1 Saddle Body"  
**Output and description** = "Support1StiffnerPlate", "Support1 Ends Support Plate"  
**Output and description** = "Support1BackingPlate1", "Support1 Center Support Plate1"  
**Output and description** = "Support1BackingPlate2", "Support1 Bottom Support Plate"  
**Output and description** = "Support2SaddlePlate", "Support2 Saddle Body"  
**Output and description** = "Support2StiffnerPlate", "Support2 Ends Support Plate"  
**Output and description** = "Support2BackingPlate1", "Support2 Center Support Plate1"  
**Output and description** = "Support2BackingPlate2", "Support2 Bottom Support Plate"  
**Output and description** = "A", "Nozzle A"  
**Output and description** = "B1", "Nozzle B1"  
**Output and description** = "B2", "Nozzle B2"  
**Output and description** = "C", "Nozzle C"  
**Output and description** = "D", "Nozzle D"  
**Output and description** = "ControlPoint", "ControlPoint at origin"  
**Output and description** = "DefaultSurface", "Default Surface at Support"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"  
**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DHorSTExch04Asm

## Description:

**Symbol Name:** SP3DHorSTExch04Asm.HShellTubeExch04Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** HoriShellTubeExchanger04Asm

**User Class Name:** Horizontal Shell Tube Exchanger 04

**Part Number:** HoriShellTubeExchanger04 01-E

## Inputs, Outputs, and Aspects:

ProgID: SP3DHorSTExch04Asm.HShellTubeExch04Sym

### Inputs = 16

**Input and description** = "VesselDiameter", "Exchanger Diameter"

**Input and description** = "VesselTantoTan", "Exchanger Tangent to Tangent Length"

**Input and description** = "VesselLength", "Front Head Length"

**Input and description** = "VesselStartPoint", "Distance of Control Point from Tangent"

**Input and description** = "FaceDiameter", "Flange Diameter"

**Input and description** = "FaceThickness", "Flange Thickness"

**Input and description** = "SupportWidth", "Support Width"

**Input and description** = "SupportLength", "Support Length"

**Input and description** = "SupportHeight", "Support Height"

**Input and description** = "FirstSupportLocation", "First Support Location"

**Input and description** = "SecondSupportLocation", "Second Support Location"

**Input and description** = "BasePlateThickness", "Base Plate Thickness(E)"

**Input and description** = "BackingPlateThickness", "Backing Plate Thickness(T)"

**Input and description** = "BackingPlateWidth", "Backing Plate Widt(H)"

**Input and description** = "StiffnerThickness", "Stiffner Thickness(D)"

**Input and description** = "StiffnerThickness1", "Stiffner Thickness(DG)"

### Outputs = 20

**Output and description** = "FrontHeadBonnet", "Elliptical Front Head Bonnet Body"

**Output and description** = "FrontHeadBodyCyl", "Cylindrical Front Head Body"

**Output and description** = "FrontHeadFlangeTop", "Top Flange on Front head side"

**Output and description** = "FrontHeadFlangeBottom", "Bottom Flange on Front head side"

**Output and description** = "ShellBodyCyl", "Cylindrical Exchanger Shell Body"

**Output and description** = "RearHeadBonnet", "Elliptical Front Head Bonnet Body"

**Output and description** = "Support1SaddlePlate", "Support1 Saddle Body"

**Output and description** = "Support1StiffnerPlate", "Support1 Ends Support Plate"

**Output and description** = "Support1BackingPlate1", "Support1 Center Support Plate1"

**Output and description** = "Support1BackingPlate2", "Support1 Middle Support Plate"

**Output and description** = "Support1BackingPlate3", "Support1 Center Support

Plate2"

**Output and description** = "Support1BackingPlate4", "Support1 Bottom Support Plate"

**Output and description** = "Support2SaddlePlate", "Support2 Saddle Body"

**Output and description** = "Support2StiffnerPlate", "Support2 Ends Support Plate"

**Output and description** = "Support2BackingPlate1", "Support2 Center Support Plate1"

**Output and description** = "Support2BackingPlate2", "Support2 Middle Support Plate"

**Output and description** = "Support2BackingPlate3", "Support2 Center Support Plate2"

**Output and description** = "Support2BackingPlate4", "Support2 Bottom Support Plate"

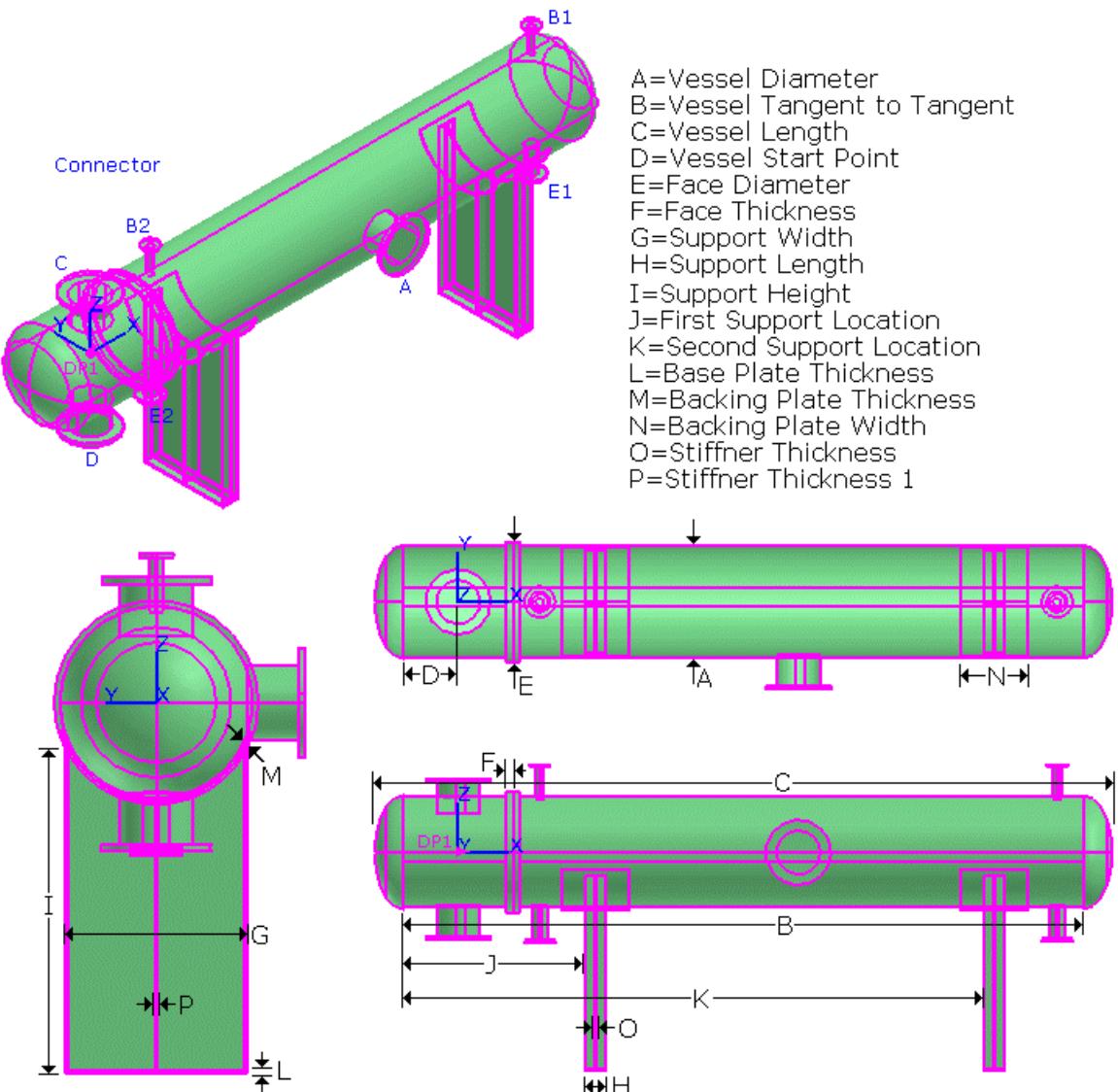
**Output and description** = "ControlPoint", "ControlPoint at origin"

**Output and description** = "DefaultSurface", "Default Surface at Support"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DIndDr2AirCoolerBayAsm

**Description:** Induced Draft 2 Air Cooler Bay

**Symbol Name:** SP3DIndDr2AirCoolerBayAsm.CSID2ACoolBSym

**Workbook:** Equipment.xls

**Workbook Sheet:** IndDraftAirCooler2BayAsm

**User Class Name:** Induced Draft 2 Cooler Bay

**Part Number:** InducedDraftAirCooler2Bay\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DIndDr2AirCoolerBayAsm.CSID2ACoolBSym

**Inputs = 17**

**Input** = "Cool1toCool2CentoCen"   **Description** = "Cooler1 to Cooler2 Center to Center"

**Input** = "CoolerWidth"   **Description** = "Width of Cooler"

**Input** = "CoolerLength"   **Description** = "Length of Cooler"

**Input** = "CoolerHeight"   **Description** = "Height of Cooler"

**Input** = "PlenumLength"   **Description** = "Length of Plenum"

**Input** = "PlenumHeight"   **Description** = "Height of Plenum"

**Input** = "InletBlockLength"   **Description** = "Inlet Block Length"

**Input** = "BlockToptoCoolTop"   **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight"   **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP"   **Description** = "Cooler Left from PP"

**Input** = "NoOfFans"   **Description** = "Number of Fans"

**Input** = "Fan1CentoPP"   **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen"   **Description** = "Fans Center to Center"

**Input** = "FanDiameter"   **Description** = "Diameter of Fan"

**Input** = "FanHeight"   **Description** = "Height of Fan"

**Input** = "InletNozzLength"   **Description** = "Inlet Nozzle Length"

**Input** = "OutletNozzLength"   **Description** = "Inlet Nozzle Length"

**Outputs = 15**

**Output** = "CoolerBodyPlane1"   **Description** = "Cooler Body Plane 1"

**Output** = "DefaultSurface"   **Description** = "Default Surface"

**Output** = "CoolerBodyPlane2"   **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3"   **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4"   **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5"   **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox"   **Description** = "Cooler Left Box"

**Output** = "CoolerRightBox"   **Description** = "Cooler Right Box"

**Output** = "PlenumBox"   **Description** = "Plenum Box"

**Output** = "Fan"   **Description** = "Fan"

**Output** = "PNoz1"   **Description** = "Nozzle 1"

**Output** = "PNoz2"   **Description** = "Nozzle 2"

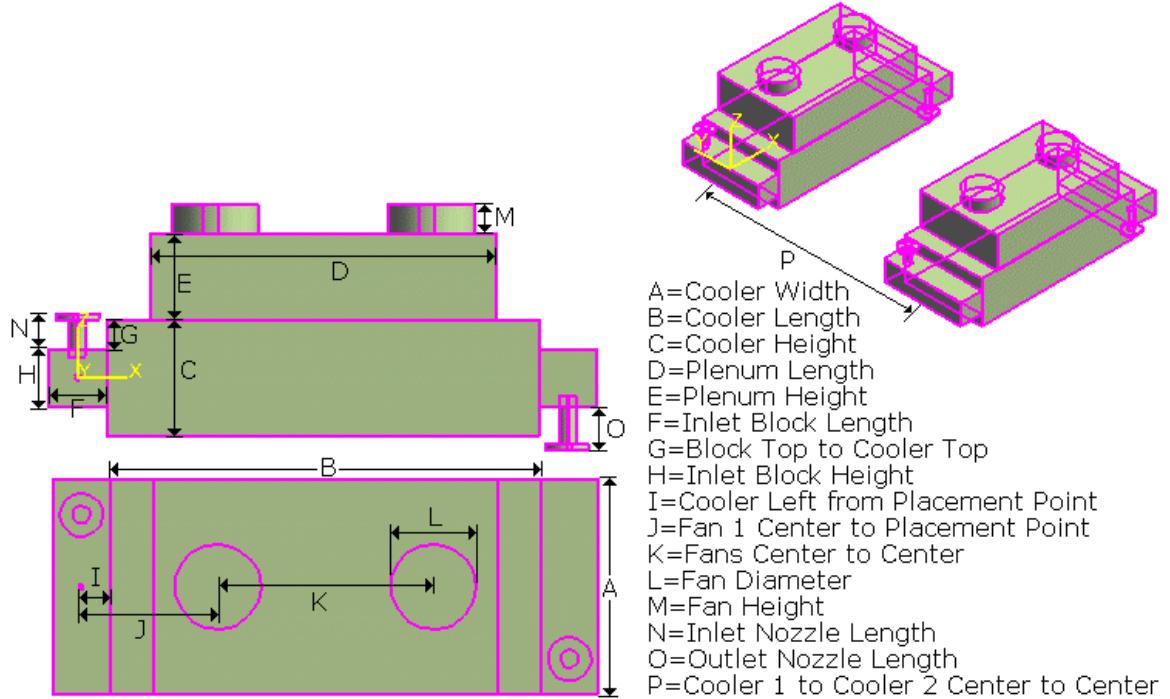
**Output** = "PNoz3"   **Description** = "Nozzle 3"

**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "ControlPoint" Description = "Control Point of Induced Draft Air Cooler Bay"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DIndDr3AirCoolerBayAsm

**Description:** Induced Draft 3 Air Cooler Bay

**Symbol Name:** SP3DIndDr3AirCoolerBayAsm.CSID3ACoolBSym

**Workbook:** Equipment.xls

**Workbook Sheet:** IndDraftAirCooler3BayAsm

**User Class Name:** Induced Draft 3 Cooler Bay

**Part Number:** InducedDraftAirCooler3Bay\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DIndDr3AirCoolerBayAsm.CSID3ACoolBSym

**Inputs = 18**

**Input** = "Cool1toCool2CentoCen" **Description** = "Cooler1 to Cooler2 Center to Center"

**Input** = "Cool2toCool3CentoCen" **Description** = "Cooler2 to Cooler3 Center to Center"

**Input** = "CoolerWidth" **Description** = "Width of Cooler"

**Input** = "CoolerLength" **Description** = "Length of Cooler"

**Input** = "CoolerHeight" **Description** = "Height of Cooler"

**Input** = "PlenumLength" **Description** = "Length of Plenum"

**Input** = "PlenumHeight" **Description** = "Height of Plenum"

**Input** = "InletBlockLength" **Description** = "Inlet Block Length"

**Input** = "BlockToptoCoolTop" **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight" **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP" **Description** = "Cooler Left from PP"

**Input** = "NoOfFans" **Description** = "Number of Fans"

**Input** = "Fan1CentoPP" **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen" **Description** = "Fans Center to Center"

**Input** = "FanDiameter" **Description** = "Diameter of Fan"

**Input** = "FanHeight" **Description** = "Height of Fan"

**Input** = "InletNozzLength" **Description** = "Inlet Nozzle Length"

**Input** = "OutletNozzLength" **Description** = "Inlet Nozzle Length"

**Outputs = 17**

**Output** = "CoolerBodyPlane1" **Description** = "Cooler Body Plane 1"

**Output** = "DefaultSurface" **Description** = "Default Surface"

**Output** = "CoolerBodyPlane2" **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3" **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4" **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5" **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox" **Description** = "Cooler Left Box"

**Output** = "CoolerRightBox" **Description** = "Cooler Right Box"

**Output** = "PlenumBox" **Description** = "Plenum Box"

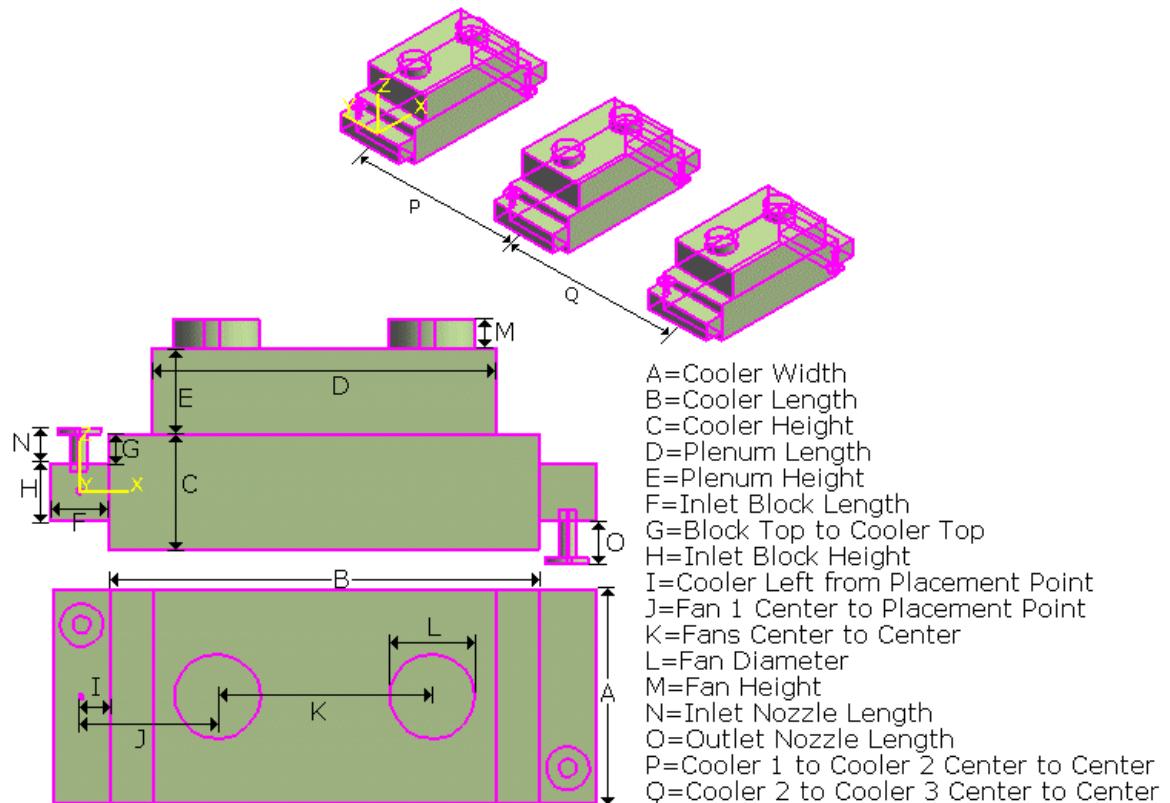
**Output** = "Fan" **Description** = "Fan"

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "PNoz5" Description = "Nozzle 5"**  
**Output = "PNoz6" Description = "Nozzle 6"**  
**Output = "ControlPoint" Description = "Control Point of Induced Draft Air Cooler Bay"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DIndDr4AirCoolerBayAsm

**Description:** Induced Draft 4 Air Cooler Bay

**Symbol Name:** SP3DIndDr4AirCoolerBayAsm.CFSID4ACoolBSym

**Workbook:** Equipment.xls

**Workbook Sheet:** IndDraftAirCooler4BayAsm

**User Class Name:** Induced Draft 4 Cooler Bay

**Part Number:** InducedDraftAirCooler4Bay\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DIndDr4AirCoolerBayAsm.CFSID4ACoolBSym

**Inputs = 19**

**Input** = "Cool1toCool2CentoCen" **Description** = "Cooler1 to Cooler2 Center to Center"

**Input** = "Cool2toCool3CentoCen" **Description** = "Cooler2 to Cooler3 Center to Center"

**Input** = "Cool3toCool4CentoCen" **Description** = "Cooler3 to Cooler4 Center to Center"

**Input** = "CoolerWidth" **Description** = "Width of Cooler"

**Input** = "CoolerLength" **Description** = "Length of Cooler"

**Input** = "CoolerHeight" **Description** = "Height of Cooler"

**Input** = "PlenumLength" **Description** = "Length of Plenum"

**Input** = "PlenumHeight" **Description** = "Height of Plenum"

**Input** = "InletBlockLength" **Description** = "Inlet Block Length"

**Input** = "BlockTopToCoolTop" **Description** = "Dist Block Top to Cooler Top "

**Input** = "InletBlockHeight" **Description** = "Inlet Block Height"

**Input** = "CoolLeftfromPP" **Description** = "Cooler Left from PP"

**Input** = "NoOfFans" **Description** = "Number of Fans"

**Input** = "Fan1CentoPP" **Description** = "Dist from Fan1 Cen to PP"

**Input** = "FansCentoCen" **Description** = "Fans Center to Center"

**Input** = "FanDiameter" **Description** = "Diameter of Fan"

**Input** = "FanHeight" **Description** = "Height of Fan"

**Input** = "InletNozzLength" **Description** = "Inlet Nozzle Length"

**Input** = "OutletNozzLength" **Description** = "Inlet Nozzle Length"

**Outputs = 19**

**Output** = "CoolerBodyPlane1" **Description** = "Cooler Body Plane 1"

**Output** = "DefaultSurface" **Description** = "Default Surface"

**Output** = "CoolerBodyPlane2" **Description** = "Cooler Body Plane 2"

**Output** = "CoolerBodyPlane3" **Description** = "Cooler Body Plane 3"

**Output** = "CoolerBodyPlane4" **Description** = "Cooler Body Plane 4"

**Output** = "CoolerBodyPlane5" **Description** = "Cooler Body Plane 5"

**Output** = "CoolerLeftBox" **Description** = "Cooler Left Box"

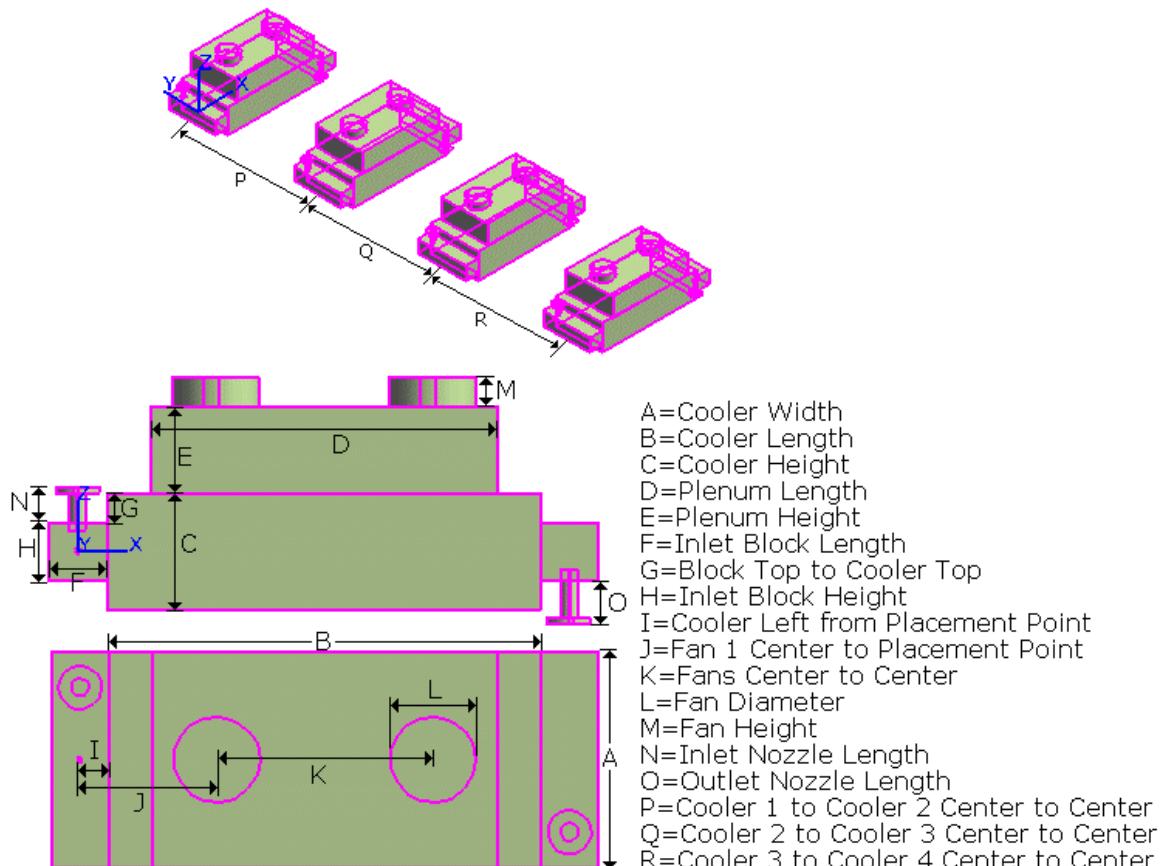
**Output** = "CoolerRightBox" **Description** = "Cooler Right Box"

**Output** = "PlenumBox" **Description** = "Plenum Box"

**Output = "Fan" Description = "Fan"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "PNoz5" Description = "Nozzle 5"**  
**Output = "PNoz6" Description = "Nozzle 6"**  
**Output = "PNoz7" Description = "Nozzle 7"**  
**Output = "PNoz8" Description = "Nozzle 8"**  
**Output = "ControlPoint" Description = "Control Point of Induced Draft Air Cooler Bay"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DInstrStandDouCol

**Description:** Double Column Floor Instrument stand made from 3in SCH40 pipe.

**Symbol Name:** SP3DInstrStandDouCol.InStandDouCol

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** InstrumentStandDouCol

**User Class Name:** Instrument Stand Double Colum

**Part Number:** InstrumentStandDouCol01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DInstrStandDouCol.InStandDouCol

**Inputs = 1**

**Input and description** = "InstrumentStandHeight", "InstrumentStandHeight"

**Outputs = 6**

**Output and description** = "BasePlate", "Base Plate of Stand"

**Output and description** = "ColumnBody1", "Column Body"

**Output and description** = "ColumnBody2", "Column Body"

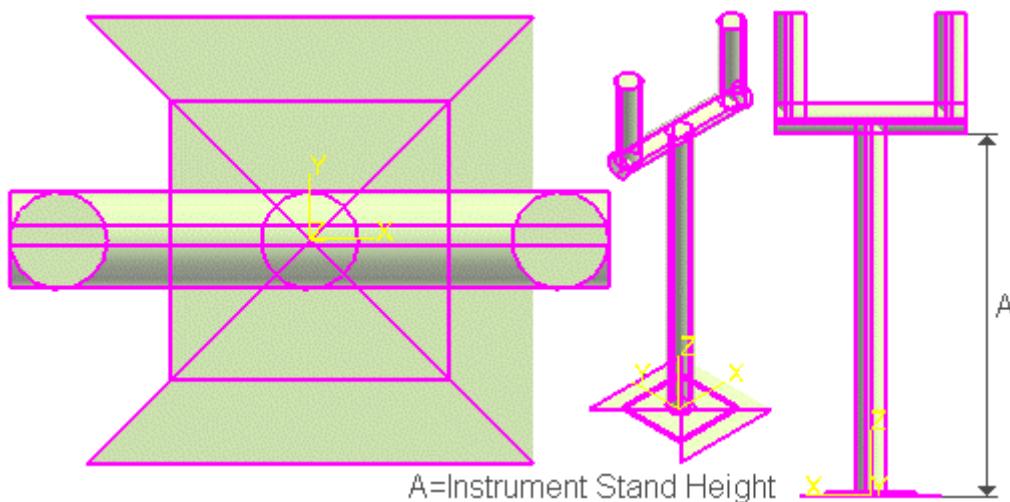
**Output and description** = "ColumnBody3", "Column Body"

**Output and description** = "ColumnBody4", "Column Body"

**Output and description** = "EqpFoundationPort", "Foundation Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Piping Aspect Description"



## SP3DInstrStandSinCol

**Description:** Single Column Floor Instrument stand made from 3in SCH40 pipe.

**Symbol Name:** SP3DInstrStandSinCol.InStandSinCol

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** InstrumentStandSinCol

**User Class Name:** Instrument Stand Single Column

**Part Number:** InstrumentStandSinCol01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DInstrStandSinCol.InStandSinCol

**Inputs = 1**

**Input and description** = "InstrumentStandHeight", "InstrumentStandHeight"

**Outputs = 3**

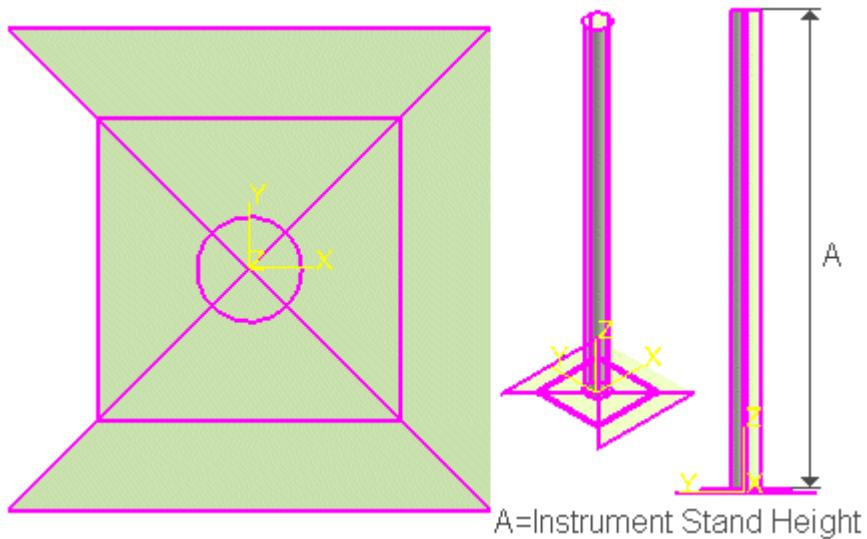
**Output and description** = "BasePlate", "Base Plate of Stand"

**Output and description** = "ColumnBody", "Column Body"

**Output and description** = "EqpFoundationPort", "Foundation Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Piping Aspect Description"



## SP3DInstrStdWallMount

**Description:** Wall Mount Single Column Instrument stand made from 3in SCH40 pipe.

**Symbol Name:** SP3DInstrStdWallMount.InstrStdWallMount

**Workbook:** Electrical Equipment.xls

**Workbook Sheet:** InstrumentStandWallMount

**User Class Name:** Instrument Stand Wall Mount Single Column

**Part Number:** InstrumentStandWallMount01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DInstrStdWallMount.InstrStdWallMount

**Inputs = 1**

**Input and description** = "InstrumentStandHeight", "InstrumentStandHeight", 1.

**Outputs = 4**

**Output and description** = "BasePlate", "Base Plate of Stand"

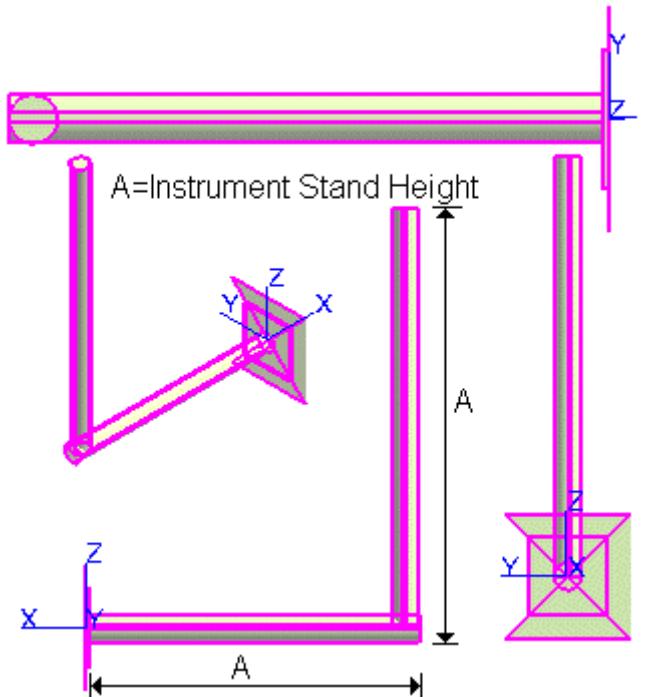
**Output and description** = "ColumnBody1", "Column Body"

**Output and description** = "ColumnBody2", "Column Body"

**Output and description** = "EqpFoundationPort", "Foundation Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "PipingAspect Description"



## SP3DKettleExchangerAsm

**Description:** SP3DKettleXAsm

**Symbol Name:** SP3DKettleXAsm.CKXSym

**Workbook:** Equipment.xls

**Workbook Sheet:** KettleHeatExchangerAsm

**User Class Name:** Kettle Heat Exchanger

**Part Number:** KettleHeatExchanger 01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DKettleXAsm.CKXSym

**Inputs = 22**

**Input** = "ExchangerLength" **Description** = "Exchanger Length P1"

**Input** = "ExchangerNeckLength" **Description** = "Exchanger Neck Length P2"

**Input** = "ExchangerNeckDiameter" **Description** = "Exchanger Neck Diameter P3"

**Input** = "ExchangerTaperLength" **Description** = "Exchanger Taper Length P4"

**Input** = "ExchangerDiameter" **Description** = "Exchanger Diameter P5"

**Input** = "BundleFlangeTk" **Description** = "Bundle Flange Thickness P6"

**Input** = "BundleFlangeDia" **Description** = "Bundle Flange Diameter P7"

**Input** = "ExchangerFlangeTk1" **Description** = "Exchanger Flange Thickness P8"

**Input** = "BundlePullingLength" **Description** = "Bundle Pulling Length P9"

**Input** = "BotSupportCenFromPP" **Description** = "Bot Support Center FromPP P10"

**Input** = "BottomSupportCentoCen" **Description** = "Bottom  
SupportCentertoCenterP11"

**Input** = "Support1Thickness" **Description** = "Support 1 Thickness P12"

**Input** = "Support2Thickness" **Description** = "Support 2 Thickness P13"

**Input** = "BottomSupportHeight" **Description** = "BottomSupportHeight P14"

**Input** = "SupportLength" **Description** = "SupportLength P15"

**Input** = "FrontEndFlangeDia" **Description** = "FrontEndFlangeDia P30"

**Input** = "FrontEndFlangeTk1" **Description** = "FrontEndFlangeTk1 P31"

**Input** = "FrontEndLength1" **Description** = "FrontEndLength1 P32"

**Input** = "FrontEndLength2" **Description** = "FrontEndLength2 P33"

**Input** = "FrontEndFlangeTk2" **Description** = "FrontEndFlangeTk2 P34"

**Input** = "FrontEndFlangeTk3" **Description** = "FrontEndFlangeTk3 P35"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

**Outputs = 10**

**Output** = "ExchangerBody" **Description** = "ExchangerBody"

**Output** = "ExTaperBody" **Description** = "ExchangerTaperBody"

**Output** = "ExneckBody" **Description** = "Exchanger Neck Portion"

**Output** = "ExFrontEnd" **Description** = "Exchanger Front End"

**Output** = "ExBodyInsul" **Description** = "ExchangerBody Insulation"

**Output** = "ExTapBodyInsul" **Description** = "ExchangerTaperBody ins"

**Output** = "ExneckBodyInsul" **Description** = "Exchanger Neck Portion ins"

**Output** = "BundlePullCylin" **Description** = "Bundle Pulling Cylinder"

**Output = "ExFrontEndIns" Description = "Ex front end Ins"**

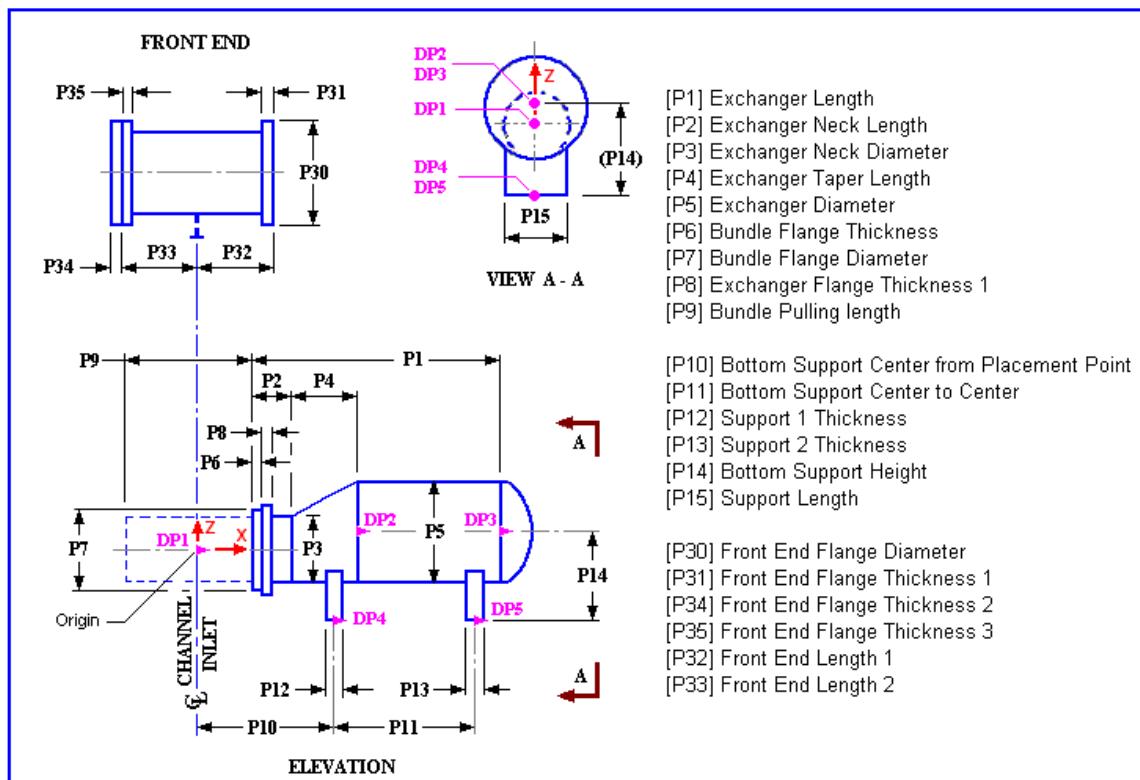
**Output = "KettleExchangerControlPoint" Description = "Control Point of Kettle Exchange"**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Maintenance**



# SP3DLightingFixtureBHARAsm

**Description:**

**Symbol Name:** SP3DLightingFixtureBHARAsm.BHARSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLightingFixtureBHARAsm.BHARSym

**Inputs = 7**

**Input and description** = "HousingDia", "Housing Diameter"

**Input and description** = "HousingLength", "Housing Length"

**Input and description** = "GuardLength", "Guard Length"

**Input and description** = "GuardDia", "Guard Diameter"

**Input and description** = "ReflectorBottomDia", "Reflector Bottom Diameter"

**Input and description** = "ReflectorLength1", "Reflector Length 1"

**Input and description** = "ReflectorLength2", "Reflector Length 2"

**Outputs = 7**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "BallastTank", "Ballast Tank"

**Output and description** = "BallastTankSupport", "Ballast Tank Support"

**Output and description** = "Reflector", "Reflector"

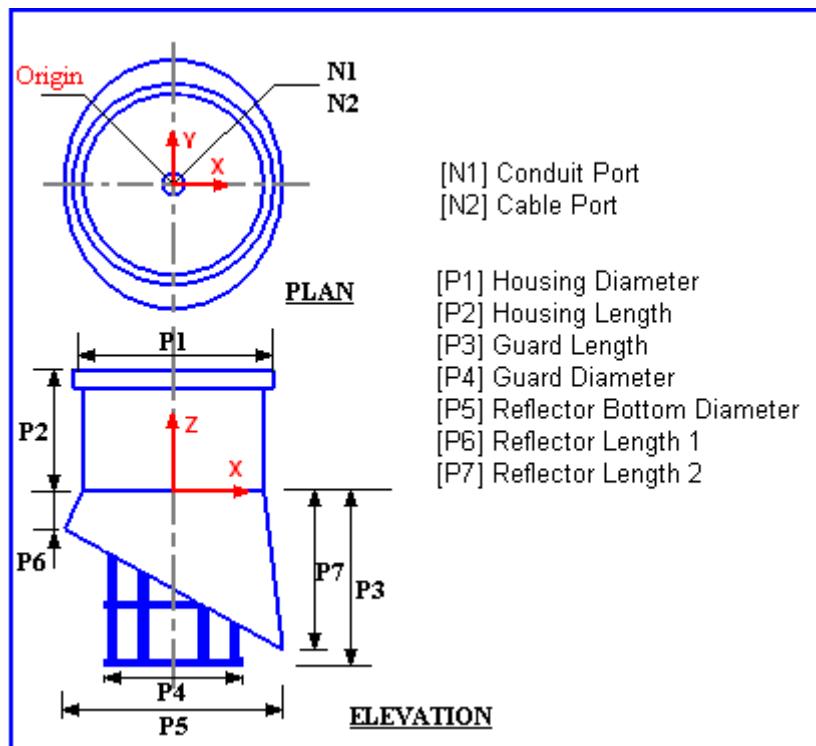
**Output and description** = "Guard\_", "Guard"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DLightingFixtureBHDRAsm

**Description:**

**Symbol Name:** SP3DLightingFixtureBHDRAsm.BHDRSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLightingFixtureBHDRAsm.BHDRSym

**Inputs = 6**

**Input and description** = "HousingDia", "Housing Diameter"

**Input and description** = "HousingLength", "Housing Length"

**Input and description** = "GuardLength", "Guard Length"

**Input and description** = "GuardDia", "Guard Diameter"

**Input and description** = "ReflectorBottomDia", "Reflector Bottom Diameter"

**Input and description** = "ReflectorLength", "Reflector Length"

**Outputs = 7**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "BallastTank", "Ballast Tank"

**Output and description** = "BallastTankSupport", "Ballast Tank Support"

**Output and description** = "Reflector", "Reflector"

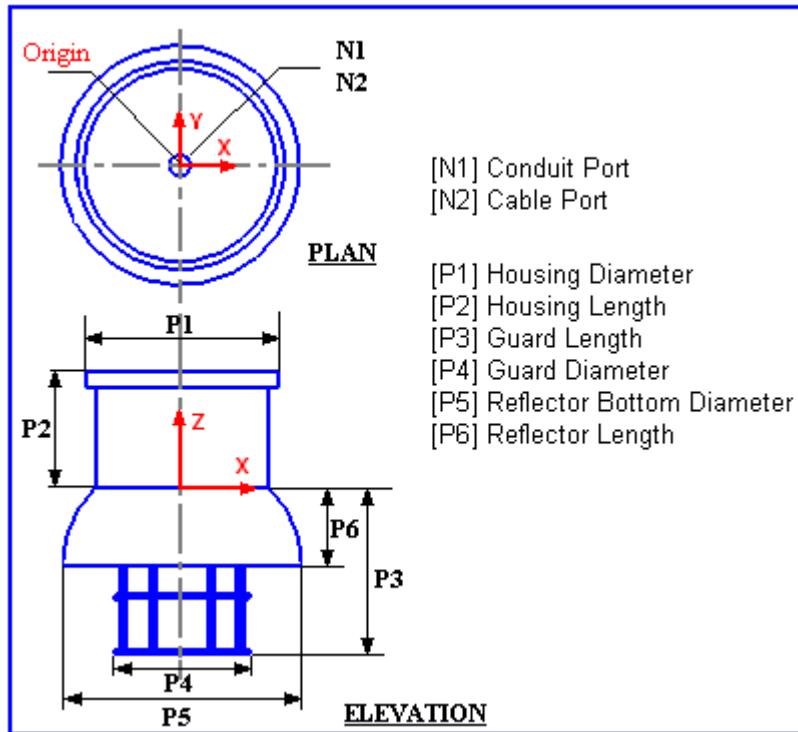
**Output and description** = "Guard\_ ", "Guard"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DLightingFixtureBTARAsm

**Description:**

**Symbol Name:** SP3DLightingFixtureBTARAsm.BTARSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLightingFixtureBTARAsm.BTARSym

**Inputs = 6**

**Input and description** = "TankDia", "Tank Diameter"

**Input and description** = "TankLength", "Tank Length"

**Input and description** = "GuardLength", "Guard Length"

**Input and description** = "ReflectorBottomDia", "Reflector Bottom Diameter"

**Input and description** = "ReflectorLength1", "Reflector Length 1"

**Input and description** = "ReflectorLength2", "Reflector Length 2"

**Outputs = 7**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "BallastTank", "Ballast Tank"

**Output and description** = "BallastTankSupport", "Ballast Tank Support"

**Output and description** = "Reflector", "Reflector"

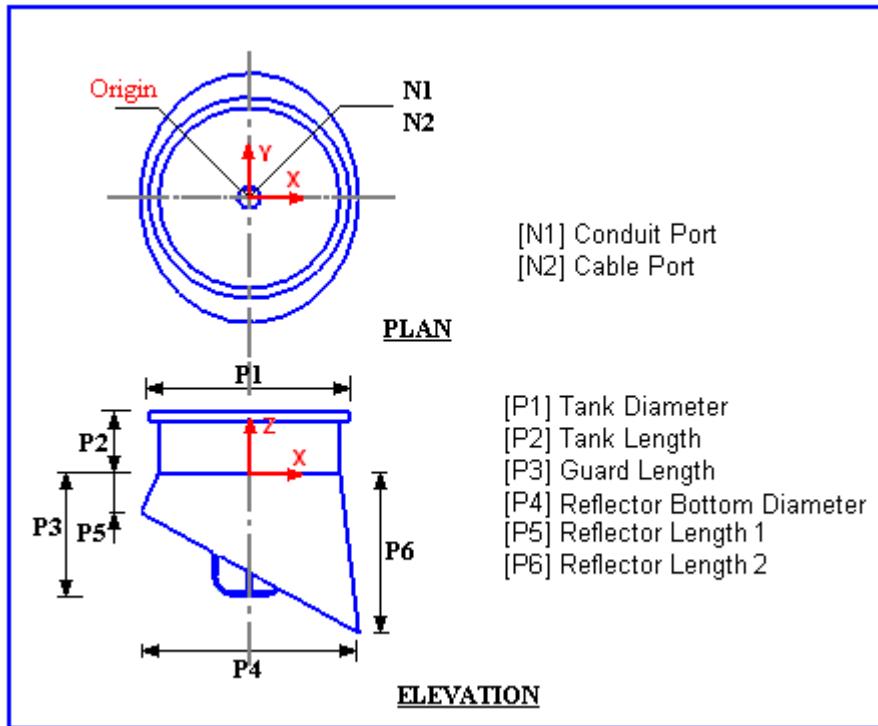
**Output and description** = "Guard\_ ", "Guard"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DLightingFixtureBTDRAsm

**Description:**

**Symbol Name:** SP3DLightingFixtureBTDRAsm.BTDRSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLightingFixtureBTDRAsm.BTDRSym

**Inputs = 5**

**Input and description** = "TankDia", "Tank Diameter"

**Input and description** = "TankLength", "Tank Length"

**Input and description** = "GuardLength", "Guard Length"

**Input and description** = "ReflectorBottomDia", "Reflector Bottom Diameter"

**Input and description** = "ReflectorLength", "Reflector Length"

**Outputs = 7**

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "BallastTank", "Ballast Tank"

**Output and description** = "BallastTankSupport", "Ballast Tank Support"

**Output and description** = "Reflector", "Reflector"

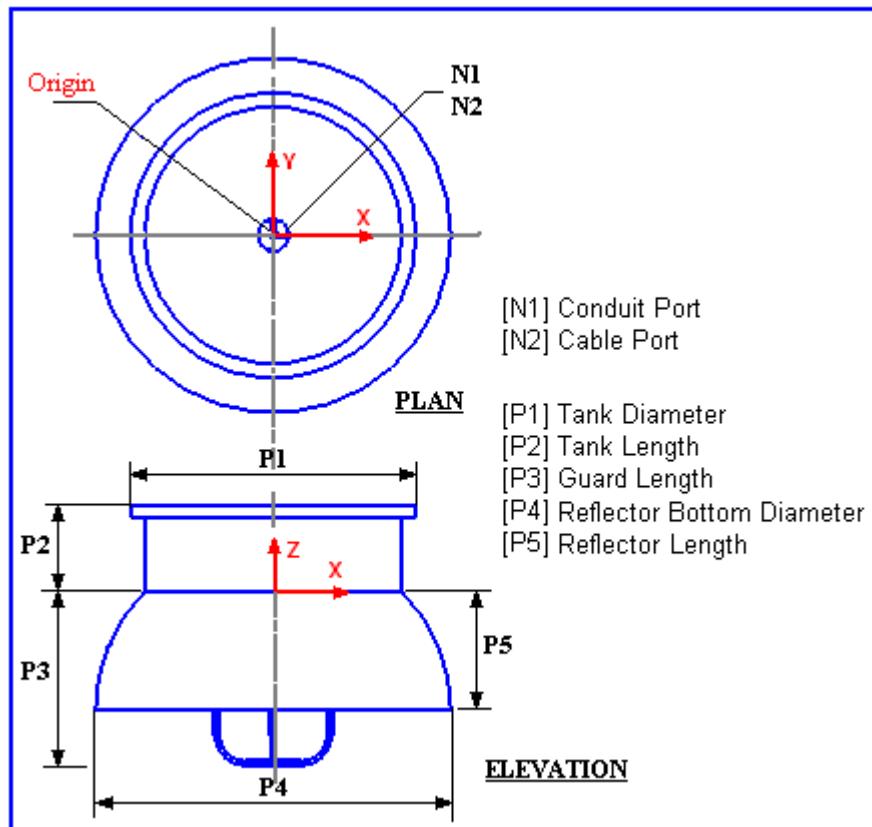
**Output and description** = "Guard\_ ", "Guard"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DPIAndFrExch01Asm

## Description:

**Symbol Name:** SP3DPIAndFrExch01Asm.PlateNFrameEx01Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** PlateFrameExchanger01Asm

**User Class Name:** Plate and Frame Exchanger 01

**Part Number:** PlateFrameExchanger01 01-E

## Inputs, Outputs, and Aspects:

ProgID: SP3DPIAndFrExch01Asm.PlateNFrameEx01Sym

### Inputs = 13

**Input and description** = "EquipmentXLength", "Equipment Length",

**Input and description** = "EquipmentYLength", "Equipment Width",

**Input and description** = "EquipmentZLength", "Equipment Height", 0

**Input and description** = "FrontPlateThickness", "Front Plate Thickness", 0

**Input and description** = "RearPlateThickness", "Rear Plate Thickness", 0

**Input and description** = "PlatePackLength", "Plate Pack Length", 0

**Input and description** = "CPtoFaceY", "Control Point to start of front plate along width", 0

**Input and description** = "CPtoFaceZ", "Control Point to start of front plate bottom along Height", 0

**Input and description** = "SupportLength", "Clamp Length", 0

**Input and description** = "SupportWidth", "ClampWidth",

**Input and description** = "SupportThickness", "Clamp Thickness",

**Input and description** = "XboltHole", "Hole Location along Length",

**Input and description** = "YboltHole", "Hole Location along Width", 0

### Outputs = 18

**Output and description** = "FrontPlate", "Front Plate Body"

**Output and description** = "PlatePack", "Plate Pack Body"

**Output and description** = "RearPlate", "Rear Plate Body"

**Output and description** = "InternalRod1", "Internal Rod1 Body"

**Output and description** = "InternalRod2", "Internal Rod2 Body"

**Output and description** = "InternalRod3", "Internal Rod3 Body"

**Output and description** = "InternalRod4", "Internal Rod4 Body"

**Output and description** = "InternalRod5", "Internal Rod1 Body"

**Output and description** = "InternalRod6", "Internal Rod2 Body"

**Output and description** = "Support1", "Horizontal Support1"

**Output and description** = "Support2", "Horizontal Support2"

**Output and description** = "Support3", "Vertical Support for Horizontal Supports"

**Output and description** = "SupportClamp1", "Support Clamp1"

**Output and description** = "SupportClamp2", "Support Clamp2"

**Output and description** = "SupportClamp3", "Support Clamp3"

**Output and description** = "ExchangerFoundationPort", "Exchanger Foundation"

Port"

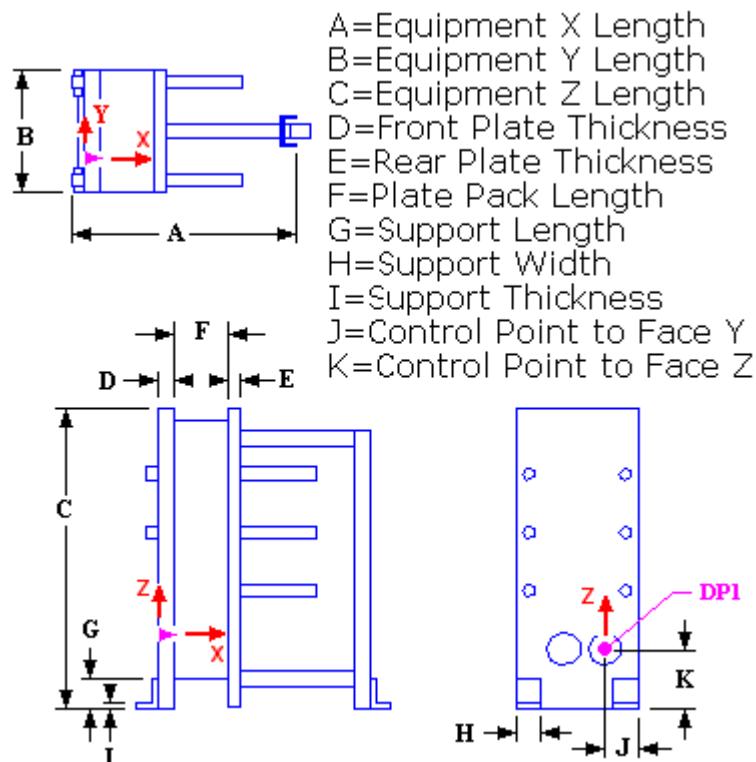
**Output and description** = "ControlPoint", "Control Point at origin"

**Output and description** = "DefaultSurface", "Default Surface at Support"

**Aspects = 2**

**Aspect** = "SimplePhysical", "PipingAspect Description"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



## SP3DPIAndFrExch02Asm

### Description:

**Symbol Name:** SP3DPIAndFrExch02Asm.PlateNFrameEx02Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** PlateFrameExchanger02Asm

**User Class Name:** Plate and Frame Exchanger 02

**Part Number:** PlateFrameExchanger02 01-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DPIAndFrExch02Asm.PlateNFrameEx02Sym

#### Inputs = 13

**Input and description** = "EquipmentXLength", "Equipment Length", 1

**Input and description** = "EquipmentYLength", "Equipment Width",

**Input and description** = "EquipmentZLength", "Equipment Height", 2.244

**Input and description** = "FrontPlateThickness", "Front Plate Thickness",

**Input and description** = "RearPlateThickness", "Rear Plate Thickness",

**Input and description** = "PlatePackLength", "Plate Pack Length", 0

**Input and description** = "CPtoFaceY", "Control Point to start of front plate along width", 0

**Input and description** = "CPtoFaceZ", "Control Point to start of front plate bottom along Height",

**Input and description** = "SupportLength", "Clamp Length",

**Input and description** = "SupportWidth", "ClampWidth",

**Input and description** = "SupportThickness", "Clamp Thickness", 0.

**Input and description** = "XboltHole", "Hole Location along Length", 0

**Input and description** = "YboltHole", "Hole Location along Width",

#### Outputs = 22

**Output and description** = "FrontPlate", "Front Plate Body"

**Output and description** = "PlatePack", "Plate Pack Body"

**Output and description** = "RearPlate", "Rear Plate Body"

**Output and description** = "InternalRod1", "Internal Rod1 Body"

**Output and description** = "InternalRod2", "Internal Rod2 Body"

**Output and description** = "InternalRod3", "Internal Rod3 Body"

**Output and description** = "InternalRod4", "Internal Rod4 Body"

**Output and description** = "InternalRod5", "Internal Rod1 Body"

**Output and description** = "InternalRod6", "Internal Rod2 Body"

**Output and description** = "InternalRod7", "Internal Rod3 Body"

**Output and description** = "InternalRod8", "Internal Rod4 Body"

**Output and description** = "Support1", "Horizontal Support1"

**Output and description** = "Support2", "Horizontal Support2"

**Output and description** = "Support3", "Vertical Support for Horizontal Supports"

**Output and description** = "SupportClamp1", "Support Clamp1"

**Output and description** = "SupportClamp2", "Support Clamp2"

**Output and description** = "SupportClamp3", "Support Clamp3"

**Output and description** = "SupportClamp4", "Support Clamp4"

**Output and description** = "SupportClamp5", "Support Clamp5"

**Output and description** = "ExchangerFoundationPort", "Exchanger Foundation Port"

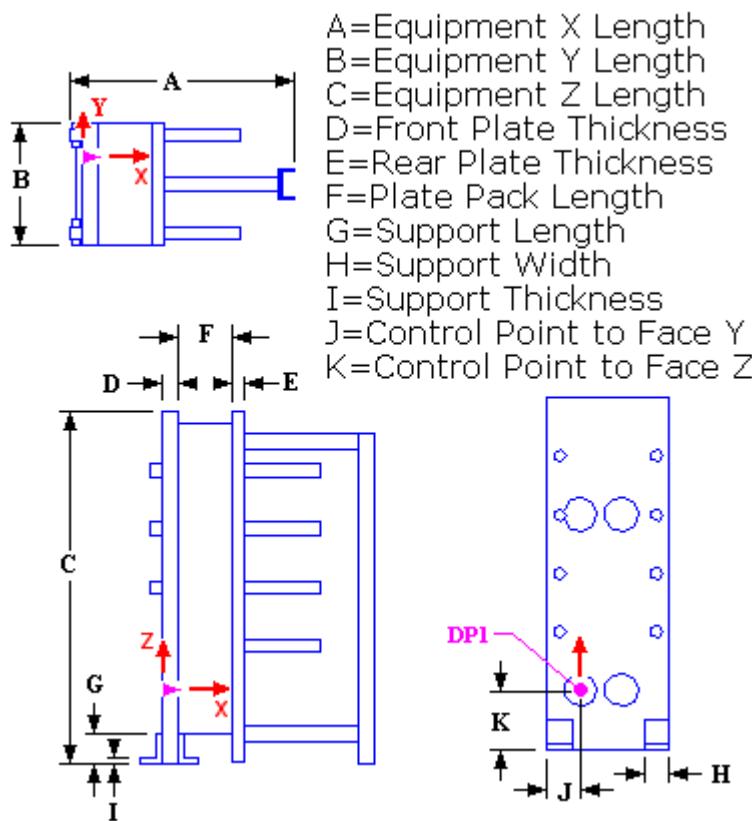
**Output and description** = "ControlPoint", "Control Point at origin"

**Output and description** = "DefaultSurface", "Default Surface at Support"

**Aspects = 2**

**Aspect** = "SimplePhysical", "PipingAspect Description"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



## SP3DPIAndFrExch03Asm

### Description:

**Symbol Name:** SP3DPIAndFrExch03Asm.PlateNFrameEx03Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** PlateFrameExchanger03Asm

**User Class Name:** Plate and Frame Exchanger 03

**Part Number:** PlateFrameExchanger03 01-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DPIAndFrExch03Asm.PlateNFrameEx03Sym

#### Inputs = 8

**Input and description** = "EquipmentXLength", "Equipment Length",

**Input and description** = "EquipmentYLength", "Equipment Width",

**Input and description** = "EquipmentZLength", "Equipment Height", 1

**Input and description** = "FrontPlateThickness", "Front Plate Thickness", 0

**Input and description** = "RearPlateThickness", "Rear Plate Thickness", 0

**Input and description** = "PlatePackLength", "Plate Pack Length", 0

**Input and description** = "CPtoFaceY", "Control Point to start of front plate along width", 0

**Input and description** = "CPtoFaceZ", "Control Point to start of front plate bottom along Height", 0

#### Outputs = 20

**Output and description** = "FrontPlate", "Front Plate Body"

**Output and description** = "PlatePack", "Plate Pack Body"

**Output and description** = "RearPlate", "Rear Plate Body"

**Output and description** = "InternalRod1", "Internal Rod1 Body"

**Output and description** = "InternalRod2", "Internal Rod2 Body"

**Output and description** = "InternalRod3", "Internal Rod3 Body"

**Output and description** = "InternalRod4", "Internal Rod4 Body"

**Output and description** = "InternalRod5", "Internal Rod1 Body"

**Output and description** = "InternalRod6", "Internal Rod2 Body"

**Output and description** = "InternalRod7", "Internal Rod3 Body"

**Output and description** = "InternalRod8", "Internal Rod4 Body"

**Output and description** = "Support1", "Horizontal Support1"

**Output and description** = "Support2", "Horizontal Support2"

**Output and description** = "Support3", "Vertical Support for Horizontal Supports"

**Output and description** = "SupportClamp1", "Support Clamp1"

**Output and description** = "SupportClamp2", "Support Clamp2"

**Output and description** = "SupportClamp3", "Support Clamp3"

**Output and description** = "ExchangerFoundationPort", "Exchanger Foundation Port"

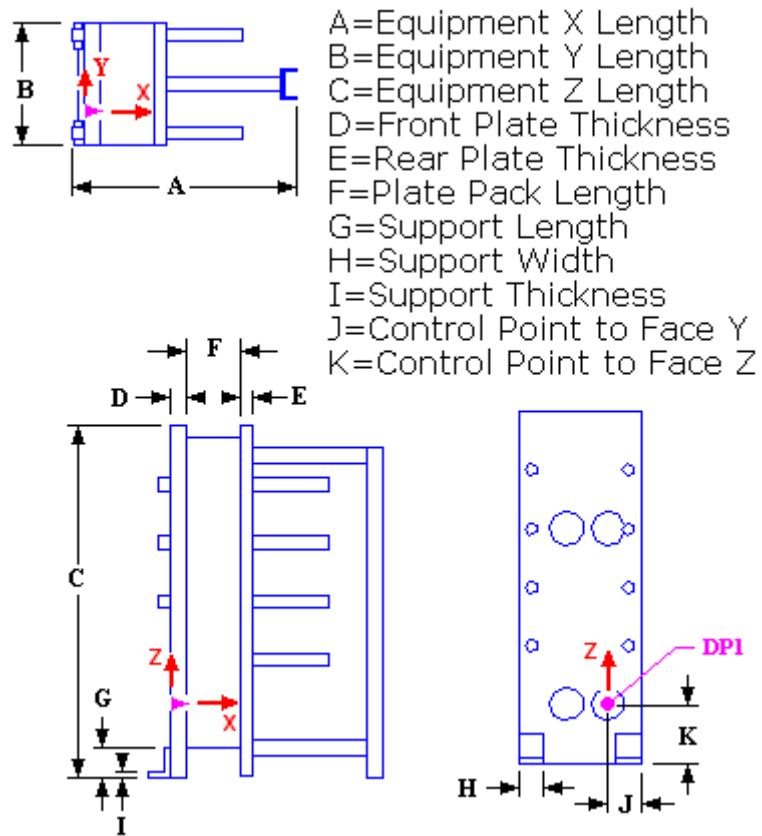
**Output and description** = "ControlPoint", "Control Point at origin"

**Output and description** = "DefaultSurface", "Default Surface at Support"

**Aspects = 2**

**Aspect** = "SimplePhysical", "PipingAspect Description"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DPlateExchangerAsm

**Description:** PlateExch No1

**Symbol Name:** SP3DPlateExchanger.CSPlateExchanger

**Workbook:** Equipment.xls

**Workbook Sheet:** PlateExchangerAsm

**User Class Name:** Plate Exchanger

**Part Number:** PlateExchanger01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlateExchanger.CSPlateExchanger

**Inputs = 15**

**Input = "BotPlate1toPP" Description =** "Dist from Bottom of Plate1 to PP"

**Input = "Plate1Height" Description =** "Height of Plate1"

**Input = "Plate1Thickness" Description =** "Thickness of Plate1"

**Input = "PlatesWidth" Description =** "Width of Plate"

**Input = "ExchangerLength" Description =** "Length of Exchanger"

**Input = "ExchangerHeight" Description =** "Height of Exchanger"

**Input = "ExchangerWidth" Description =** "Width of Exchanger"

**Input = "Plate2Height" Description =** "Height of Plate2"

**Input = "Plate2Thickness" Description =** "Thickness of Plate2"

**Input = "RodsLength" Description =** "Length of Rod"

**Input = "RodsDiameter" Description =** "Diameter of Rod"

**Input = "BotSidePlatetoRod2Cen" Description =** "Dist from Bottom of SidePlate to Rod2 Cen"

**Input = "RodsCentoCen" Description =** "Rods Centre to Centre dist"

**Input = "SidePlateThickness" Description =** "Thickness of SidePlate"

**Input = "SidePlateWidth" Description =** "Width of Side Plate "

**Outputs = 9**

**Output = "Plate1" Description =** "Plate1"

**Output = "ExchangerBody" Description =** "ExchangerBody"

**Output = "Plate2" Description =** "Plate2"

**Output = "Rod1" Description =** "Rod1"

**Output = "Rod2" Description =** "Rod2"

**Output = "SidePlate" Description =** "SidePlate"

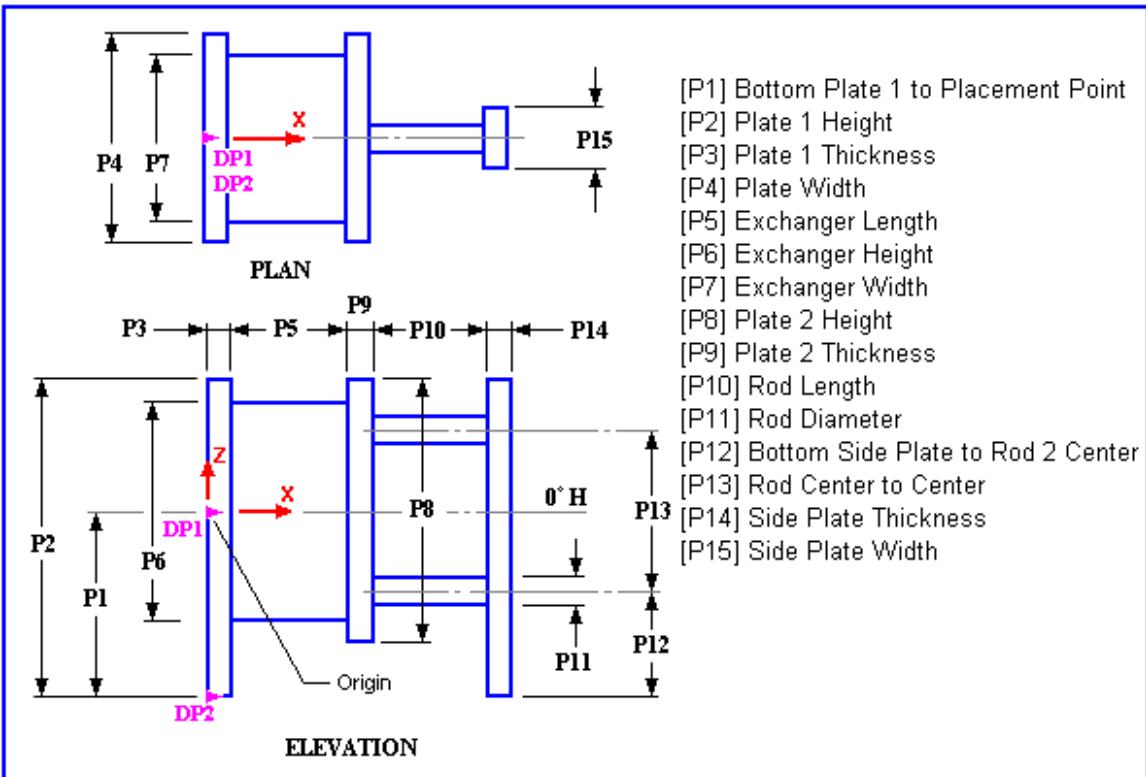
**Output = "DefaultSurface1" Description =** "Default Surface"

**Output = "DefaultSurface2" Description =** "Default Surface"

**Output = "PlateExchangerControlPoint" Description =** "Control Point of Plate Exchanger"

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DPumpAsm

**Description:** Centrifugal Pump

**Symbol Name:** SP3DPumpAsm.CPumpSym

**Workbook:** Equipment.xls

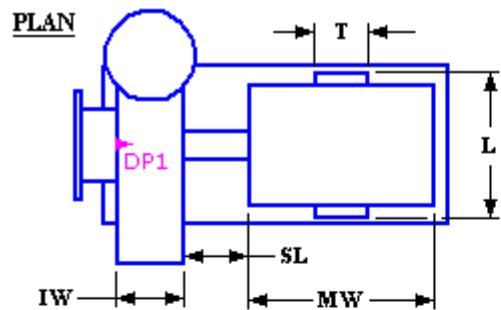
**Workbook Sheet:** PumpAsm

**User Class Name:** Pump

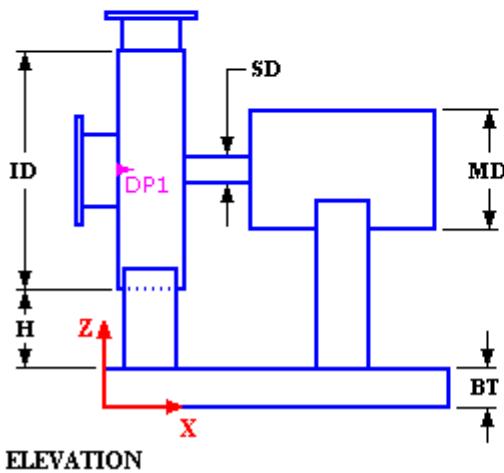
**Part Number:** PUMP 001A-E, PUMP 001A\_IMP-E, CPump002A8x6-E, PUMP 001AM-E, PUMP 001A\_IMPM-E, CPump002A8x6M-E

### Inputs, Outputs, and Aspects:

```
ProgId = "SP3DPumpAsm.CPumpSym"
Input Name = "ImpellerWidth"
Input Name = "ShaftLength"
Input Name = "MotorWidth"
Input name = "ImpellerDiameter"
Input Name = "ShaftDiameter"
Input Name = "MotorDiameter"
Input name = "SupportLength"
Input name = "BasePlateThickness"
Output Name = "ImpellerCylinder"
Output Description = "Cylinder representing impeller of Pump"
Output Name = "ShaftCylinder"
Output Description = "Cylinder representing shaft of Pump"
Output Name = "MotorCylinder"
Output Description = "Cylinder representing motor of Pump"
Output Name = "PipeNozzle1"
Output Description = "PipingPort1 of Pump"
Output Name = "PipeNozzle2"
Output Description = "PipingPort2 of Pump"
Output Name = "EqpFoundationPort"
Output Description = "EqpFoundationPort of Pump"
Output Name = "PumpControlPoint"
Output Description = "Control Point of Pump Skid"
```



IW	Impeller Width
MW	Motor Width
SL	Shaft Length
L	Support Length
T	Support Thickness



BT	Base Plate Thickness
ID	Impeller Diameter
MD	Motor Diameter
SD	Shaft Diameter
H	Support Height

## SP3DPumpMAsm

**Description:** Centrifugal pump

**Symbol Name:** SP3DPumpMAsm.CPumpMSym

**Workbook:** Equipment.xls

**Workbook Sheet:** PumpAsm

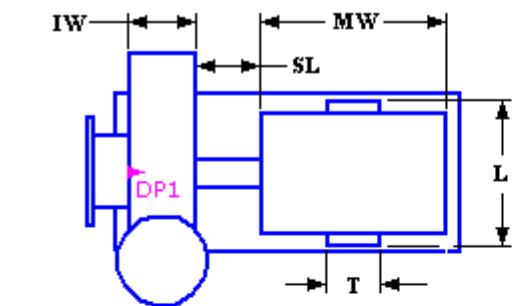
**User Class Name:** Pump

**Part Number:** PUMP 001AM-E, PUMP 001A\_IMPM-E, CPump002A8x6M-E

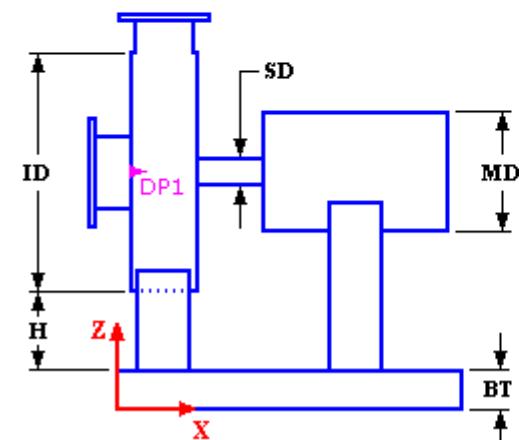
### Inputs, Outputs, and Aspects:

```
ProgId = "SP3DPumpMAsm.CPumpMSym"  
Input Name = "ImpellerWidth"  
Input Name = "ShaftLength"  
Input Name = "MotorWidth"  
Input name = "ImpellerDiameter"  
Input Name = "ShaftDiameter"  
Input Name = "MotorDiameter"  
Input name = "SupportLength"  
Input name = "BasePlateThickness"  
Output Name = "ImpellerCylinder"  
Output Description = "Cylinder representing impeller of Pump"  
Output Name = "ShaftCylinder"  
Output Description = "Cylinder representing shaft of Pump"  
Output Name = "MotorCylinder"  
Output Description = "Cylinder representing motor of Pump"  
Output Name = "PipeNozzle1"  
Output Description = "PipingPort1 of Pump"  
Output Name = "PipeNozzle2"  
Output Description = "PipingPort2 of Pump"  
Output Name = "EqpFoundationPort"  
Output Description = "EqpFoundationPort of Pump"  
Output Name = "PumpControlPoint"  
Output Description = "Control Point of Pump Skid"
```

PLAN



IW	Impeller Width
MW	Motor Width
SL	Shaft Length
L	Support Length
T	Support Thickness



BT	Base Plate Thickness
ID	Impeller Diameter
MD	Motor Diameter
SD	Shaft Diameter
H	Support Height

ELEVATION

# SP3DPumpUnitHCAsm

**Description:** Horizontal Centrifugal Pump SLM-AVO

**Symbol Name:** SP3DPumpUnitHCAsm.CPumpUHCSym

**Workbook:** Equipment.xls

**Workbook Sheet:** PumpUnitHCAsm

**User Class Name:** Horiz Centrifugal Pump With StructureSteel or Polyshield Base

**Part Number:** Pump01 3x2x8-E, Pump02 3x2x8-E, Pump03 1.5x1X6-E, Pump04 3x1.5x8-E, Pump05 3x2x13-E, Pump06 1.5x1X6-E, Pump07 3x2x8 Flush/Drain threaded-E, Pump08 3x2x8 Flush/Drain threaded-E, Pump09 1.5x1x6 Flush/Drain threaded-E, Pump10 3x1.5x8 Flush/Drain threaded-E, Pump11 3x2x13 Flush/Drain threaded-E, Pump12 1.5x1x6 Flush/Drain threaded-E, Pump13 80x50x8-E, Pump14 80x50x8-E, Pump15 40x25X6-E, Pump16 80x40x8-E, Pump17 80x50x13-E, Pump18 40x25X6-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPumpUnitHCAsm.CPumpUHCSym

**Inputs = 14**

**Input and description** = "DisNozzletoFace", "CL Discharge Nozzle to Face", 0.6

**Input and description** = "DisNozzletoChFace", "CL Discharge Nozzle to Chamber Face", 0.37

**Input and description** = "DischargetoFaceSuction", "CL of Discharge to Face of Suction Nozzle", 0.12

**Input and description** = "BaseplatetoSuction", "Bottom of Pump Baseplate to CL of Suction", 0.22

**Input and description** = "PumptoFaceDisNozzle", "CL of Pump to Face of Discharge Nozzle", 0.27

**Input and description** = "DisNozzletoFaceBaseplate", "CL of Discharge Nozzle to Right Face of Support", 0.

**Input and description** = "MotorLength", "Motor Length", 0.62

**Input and description** = "CouplingLength", "Coupling Length", 0.09

**Input and description** = "SupportLength", "Support Total Length", 1.

**Input and description** = "SupportHeight", "Support Total Height", 0.

**Input and description** = "SupportWidth", "Support Total Width", 0.

**Input and description** = "XboltHole", "Bolt X Hole Location", 0.

**Input and description** = "YboltHole", "Bolt Y Hole Location", 1.

**Input and description** = "BaseType", "Type of Support Base: PolyShield or Structure Steel", "PolyShield"

**Outputs = 24**

**Output and description** = "MotorBody", "Motor Body"

**Output and description** = "MotorEllipticalCap1", "Motor Elliptical Rear Cap"

**Output and description** = "MotorEllipticalCap2", "Motor Elliptical Near Cap"

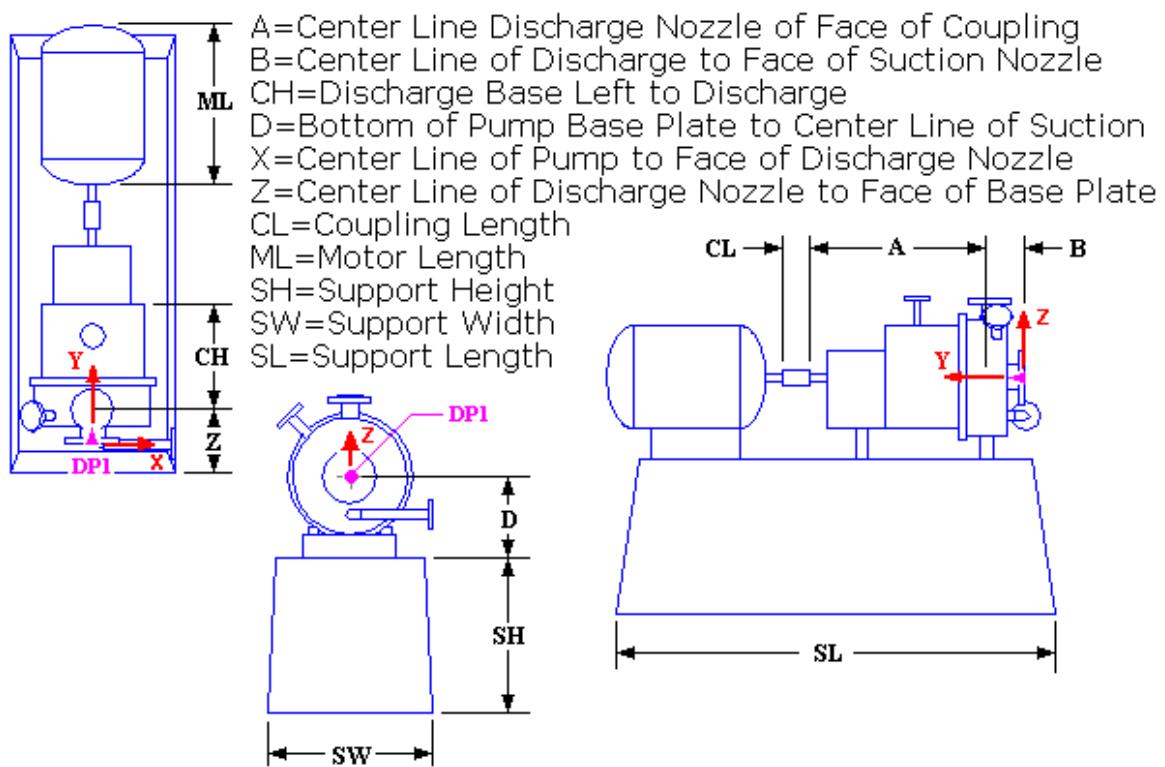
**Output and description** = "Coupling", "Shaft coupling"

**Output and description** = "Shaft", "Shaft"

**Output and description** = "PumpCylinder1", "Pump Cylinder 1"  
**Output and description** = "PumpCylinder2", "Pump Cylinder 2"  
**Output and description** = "PumpCylinder3", "Pump Cylinder 3"  
**Output and description** = "PumpCylinder4", "Pump Cylinder 4"  
**Output and description** = "SupportBodyTopPlane", "Support Body Top Plane"  
**Output and description** = "DefaultSurface", "Support Body Bottom Plane"  
**Output and description** = "SupportBodySidePlane1", "Support Body side plane1"  
**Output and description** = "SupportBodySidePlane2", "Support Body side plane2"  
**Output and description** = "SupportBodySidePlane3", "Support Body side plane3"  
**Output and description** = "SupportBodySidePlane4", "Support Body side plane4"  
**Output and description** = "SupportBodyRefPlane1", "Support Body Reference  
Plane 1"  
**Output and description** = "SupportBodyRefPlane2", "Support Body Reference  
Plane 2"  
**Output and description** = "SupportBox1", "support under the pump discharge  
nozzle"  
**Output and description** = "SupportBox2", "support under the intermediate chamber"  
**Output and description** = "SupportBox3", "support under the motor"  
**Output and description** = "EqpFoundationPort", "Foundation Port under support"  
**Output and description** = "DrainBend", "Bend of the Drain Nozzle"  
**Output and description** = "DrainBendCyl", "Cylinder of the Drain Nozzle"  
**Output and description** = "PumpControlPoint", "Point at origin"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"  
**Aspect** = "ReferenceGeometry", "ReferenceGeometry"



# SP3DReceptacleAsm

**Description:** Electrical Receptacle

**Symbol Name:** SP3DReceptacle.Receptacle

**Workbook:** Equipment.xls

**Workbook Sheet:** ReceptacleAsm

**User Class Name:** Electrical Receptacle

**Part Number:** Receptacle01\_Asm, Receptacle02\_Asm, Receptacle03\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReceptacle.Receptacle

**Inputs = 3**

**Input and description** = "BasicAsmHeight", "Receptacle Height", 0.

**Input and description** = "BasicAsmWidth", "Receptacle Width", 0.

**Input and description** = "BasicAsmLength", "Receptacle Length", 0.

**Outputs = 5**

**Output and description** = "DefaultSurface", "Default Surface on the side to be supported"

**Output and description** = "ProjectedBody", "Projected Body"

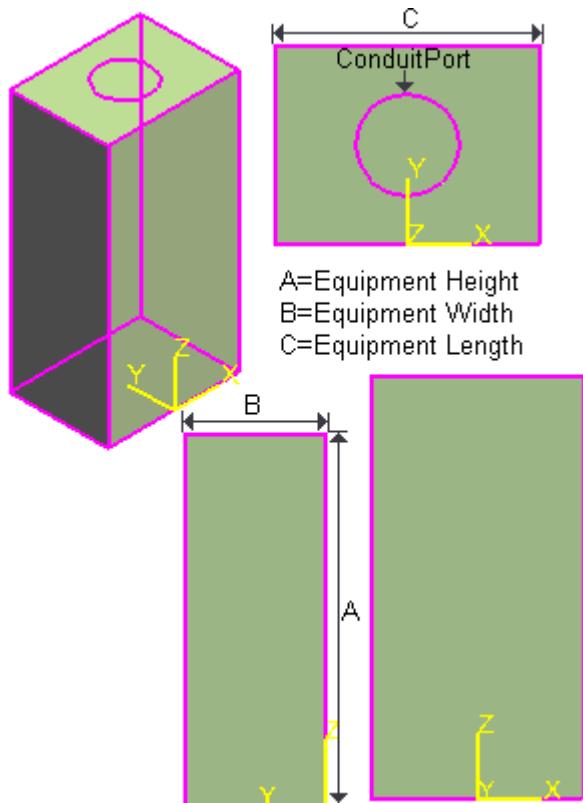
**Output and description** = "Surface2", "Surface on other side"

**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



## SP3DSafShower01Asm

### Description:

**Symbol Name:** SP3DSafShower01Asm.SafetyShower01Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower01-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DSafShower01Asm.SafetyShower01Sym

**Outputs = 7**

**Output = "Box" Description = "Shower Base"**

**Output = "Cylinder" Description = "Shower Stem"**

**Output = "Dish" Description = "Shower head"**

**Output = "Cone" Description = "Shower Support"**

**Output = "Obstruction" Description = "Obstruction"**

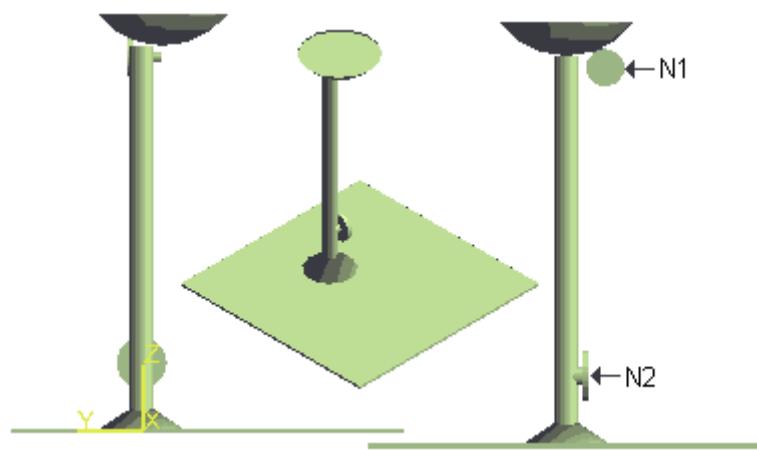
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower02Asm

**Description:** SAFETY SHOWER STATION - VERTICAL PIPE MOUNTED TYPE

**Symbol Name:** SP3DSafShower02Asm.SafetyShower02Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower02-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower02Asm.SafetyShower02Sym

**Outputs = 4**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Dish" Description = "Shower Head"**

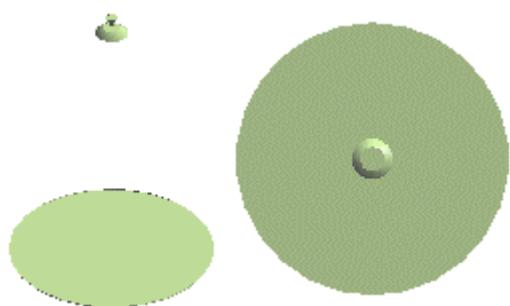
**Output = "Obstruction" Description = "Obstruction"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower03Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH STATION - COMBINATION UNIT TYPE

**Symbol Name:** SP3DSafShower03Asm.SafetyShower03Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower03-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower03Asm.SafetyShower03Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "ShowerVSupport" Description = "Shower Vert. Support"**

**Output = "ShowerHSupport" Description = "Shower Horz. Support"**

**Output = "DishAttachSupport" Description = "Dish Attach Support"**

**Output = "Cone" Description = "Base Support"**

**Output = "CTorus" Description = "Shower Support Bend"**

**Output = "Dish" Description = "Shower Head"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "Obstruction" Description = "Obstruction"**

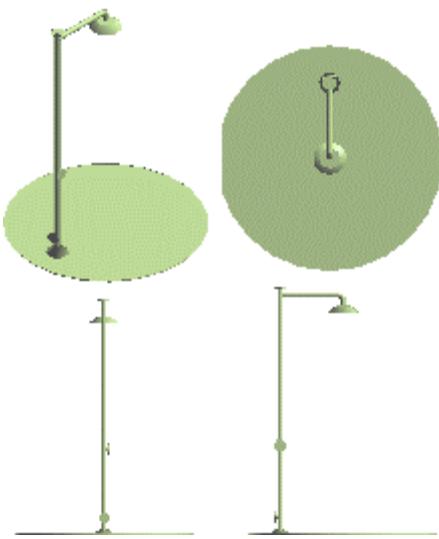
**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower04Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH STATION - COMBINATION UNIT W/DRENCH HOSE

**Symbol Name:** SP3DSafShower04Asm.SafetyShower04Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower04-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower04Asm.SafetyShower04Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Obstruction" Description = "Obstruction"**

**Output = "Cone" Description = "Shower Base Support"**

**Output = "VerticalSupport" Description = "Vertical Support"**

**Output = "HorizontalSupport" Description = "Horizontal Support"**

**Output = "CTorus" Description = "Support Bend"**

**Output = "HeadSupport" Description = "Head Support"**

**Output = "Dish" Description = "Shower Head"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

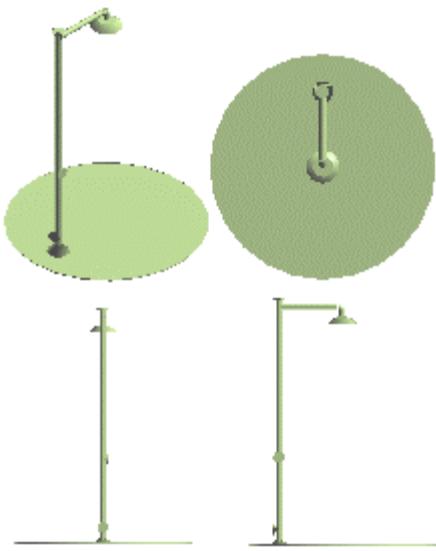
**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower05Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBINATION UNIT -  
INSUL & ELEC TRACED

**Symbol Name:** SP3DSafShower05Asm.SafetyShower05Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower05-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower05Asm.SafetyShower05Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Obstruction" Description = "Obstruction"**

**Output = "Cone" Description = "Shower Support"**

**Output = "VerticalSupport" Description = "Vertical Support"**

**Output = "CTorus" Description = "Support Bend 1"**

**Output = "HorizontalSupport" Description = "Horizontal Support"**

**Output = "CTorusSupportBend2" Description = "Support Bend 2"**

**Output = "HeadSupport" Description = "Head Support"**

**Output = "Dish" Description = "Shower Head"**

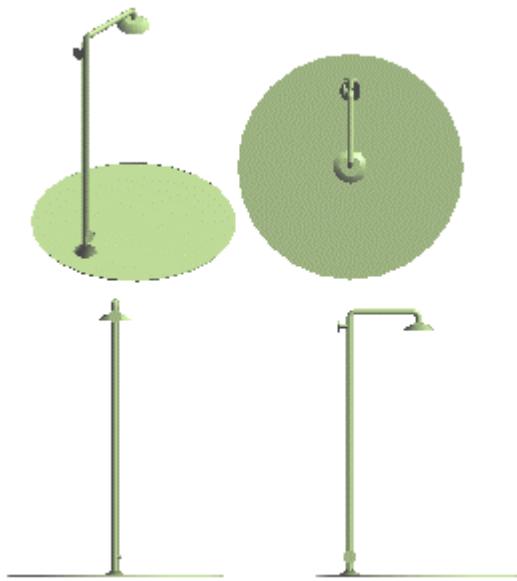
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = Maintenance**

**Aspect = SimplePhysical**



## SP3DSafShower06Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBIN. UNIT RECIR  
BOOTH W/HEATER

**Symbol Name:** SP3DSafShower06Asm.SafetyShower06Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower06-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower06Asm.SafetyShower06Sym

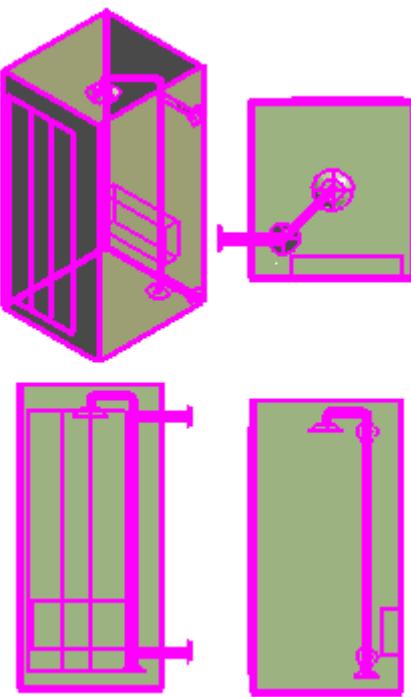
**Outputs = 18**

**Output = "Support" Description = "Support Cone"**  
**Output = "Spine" Description = "Spine Cylinder"**  
**Output = "Elbow" Description = "Elbow CTor"**  
**Output = "Arm" Description = "Arm Cylinder"**  
**Output = "Wrist" Description = "Wrist CTor"**  
**Output = "Neck" Description = "Neck Cylinder"**  
**Output = "Head" Description = "Head Dish"**  
**Output = "Box1" Description = "Box 1"**  
**Output = "Box2" Description = "Box 2"**  
**Output = "Box3" Description = "Box 3"**  
**Output = "Box4" Description = "Box 4"**  
**Output = "Box5" Description = "Box 5"**  
**Output = "Box6" Description = "Box 6"**  
**Output = "Box7" Description = "Box 7"**  
**Output = "Box8" Description = "Box 8"**  
**Output = "PipingNoz1" Description = "Nozzle 1"**  
**Output = "PipingNoz2" Description = "Nozzle 2"**  
**Output = "Obstruction" Description = "Obstruction"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower07Asm

**Description:** SAFETY SHOWER & E/F WASH - COMBIN. UNIT RECIR BOOTH  
W/O HEATER

**Symbol Name:** SP3DSafShower07Asm.SafetyShower07Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower07-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower07Asm.SafetyShower07Sym

**Outputs = 17**

**Output = "Cone" Description = "Base Cone"**

**Output = "Cylinder1" Description = "Spine Cylinder"**

**Output = "CTor1" Description = "Elbow CTor"**

**Output = "Cylinder2" Description = "Arm Cylinder"**

**Output = "CTor2" Description = "Wrist CTor"**

**Output = "Cylinder3" Description = "Neck Cylinder"**

**Output = "Dish" Description = "Dish Head"**

**Output = "Box1" Description = "Box 1 "**

**Output = "Box2" Description = "Box 2"**

**Output = "Box3" Description = "Box 3"**

**Output = "Box4" Description = "Box 4"**

**Output = "Box5" Description = "Box 5"**

**Output = "Box6" Description = "Box 6"**

**Output = "Box7" Description = "Box 7"**

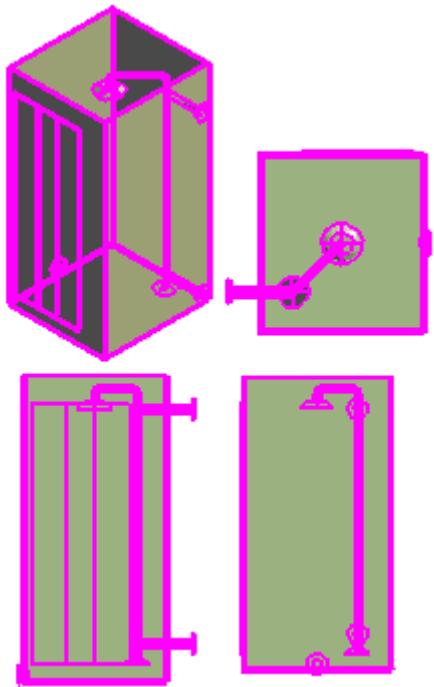
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSafShower08Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMB. UNIT NON-RECIR BOOTH BLEND SYS

**Symbol Name:** SP3DSafShower08Asm.SafetyShower08Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower08\_Asm

**Inputs, Outputs, and Aspects:**

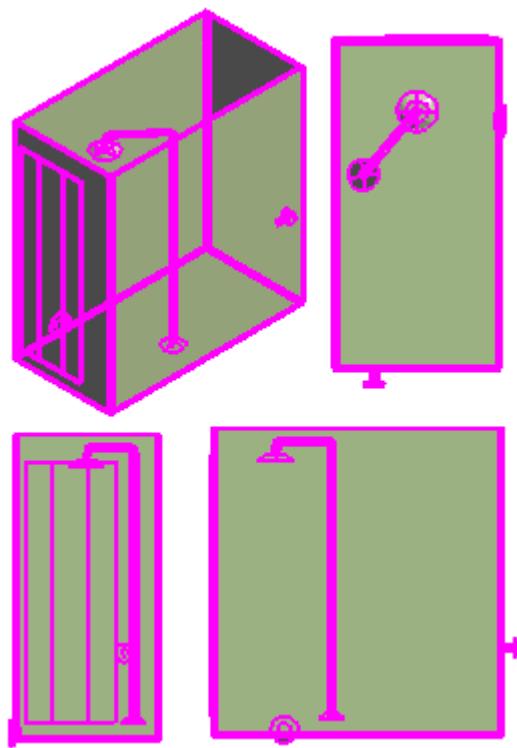
ProgID: SP3DSafShower08Asm.SafetyShower08Sym

**Outputs = 16**

**Output = "Cone "** **Description = "Support Cone"**  
**Output = "Cylinder1 "** **Description = "Spine Cylinder"**  
**Output = "CTor1 "** **Description = "Elbow CTor"**  
**Output = "Cylinder2 "** **Description = "Arm Cylinder"**  
**Output = "CTor2 "** **Description = "Wrist CTor"**  
**Output = "Cylinder3 "** **Description = "Neck Cylinder"**  
**Output = "Dish "** **Description = "Dish Head"**  
**Output = "Box1 "** **Description = "Box1"**  
**Output = "Box2 "** **Description = "Box2"**  
**Output = "Box3 "** **Description = "Box3"**  
**Output = "Box4 "** **Description = "Box4"**  
**Output = "Box5 "** **Description = "Box5"**  
**Output = "Box6 "** **Description = "Box6"**  
**Output = "Box7 "** **Description = "Box7"**  
**Output = "PipingNoz1 "** **Description = "Nozzle 1"**  
**Output = "PipingNoz2 "** **Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSafShower09Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBIN UNIT RECIR UN-INSUL BOOTH

**Symbol Name:** SP3DSafShower09Asm.SafetyShower09Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower09-E

**Inputs, Outputs, and Aspects:**

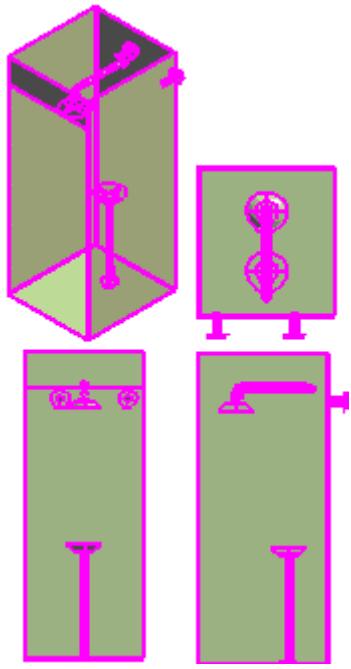
ProgID: SP3DSafShower09Asm.SafetyShower09Sym

**Outputs = 15**

```
Output = "Box1" Description = "Box1"
Output = "Box2" Description = "Box2"
Output = "Box3" Description = "Box3"
Output = "Box4" Description = "Box4"
Output = "Box5" Description = "Box5"
Output = "Cylinder1" Description = "Cylinder 1"
Output = "Dish1" Description = "Dish 1"
Output = "CTor1" Description = "CTor1"
Output = "Cylinder2" Description = "Cylinder2"
Output = "CTor2" Description = "CTor2"
Output = "Cylinder3" Description = "Cylinder3"
Output = "Dish2" Description = "Dish2"
Output = "PipingNoz1" Description = "Nozzle 1"
Output = "PipingNoz2" Description = "Nozzle 2"
Output = "PipingNoz3" Description = "Nozzle 3"
```

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSingleFrDrAirCoolerAsm

**Description:** Single Forced Draft Cooler

**Symbol Name:** SP3DSglFrDrAirCooler.CSFDAirCSym

**Workbook:** Equipment.xls

**Workbook Sheet:** SingleFrDrAirCoolerAsm

**User Class Name:** Single Forced Draft Cooler

**Part Number:** SingleForcedDraftAirCooler\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSglFrDrAirCooler.CSFDAirCSym

**Inputs = 16**

**Input = "CoolerWidth" Description =** "Width of Cooler"

**Input = "CoolerLength" Description =** "Length of Cooler"

**Input = "CoolerHeight" Description =** "Height of Cooler"

**Input = "PlenumLength" Description =** "Length of Plenum"

**Input = "PlenumHeight" Description =** "Height of Plenum"

**Input = "InletBlockLength" Description =** "Inlet Block Length"

**Input = "BlockTotoCoolTop" Description =** "Dist Block Top to Cooler Top "

**Input = "InletBlockHeight" Description =** "Inlet Block Height"

**Input = "CoolLeftfromPP" Description =** "Cooler Left from PP"

**Input = "NoOfFans" Description =** "Number of Fans"

**Input = "Fan1CentoPP" Description =** "Dist from Fan1 Cen to PP"

**Input = "FansCentoCen" Description =** "Fans Center to Center"

**Input = "FanDiameter" Description =** "Diameter of Fan"

**Input = "FanHeight" Description =** "Height of Fan"

**Input = "InletNozzLength" Description =** "Inlet Nozzle Length"

**Input = "OutletNozzLength" Description =** "Inlet Nozzle Length"

**Outputs = 13**

**Output = "DefaultSurface" Description =** "Default Surface"

**Output = "CoolerBodyPlane1" Description =** "Cooler Body Plane 1"

**Output = "CoolerBodyPlane2" Description =** "Cooler Body Plane 2"

**Output = "CoolerBodyPlane3" Description =** "Cooler Body Plane 3"

**Output = "CoolerBodyPlane4" Description =** "Cooler Body Plane 4"

**Output = "CoolerBodyPlane5" Description =** "Cooler Body Plane 5"

**Output = "CoolerLeftBox" Description =** "Cooler Left Box"

**Output = "CoolerRightBox" Description =** "Cooler Right Box"

**Output = "PlenumBox" Description =** "Plenum Box"

**Output = "Fan" Description =** "Fan"

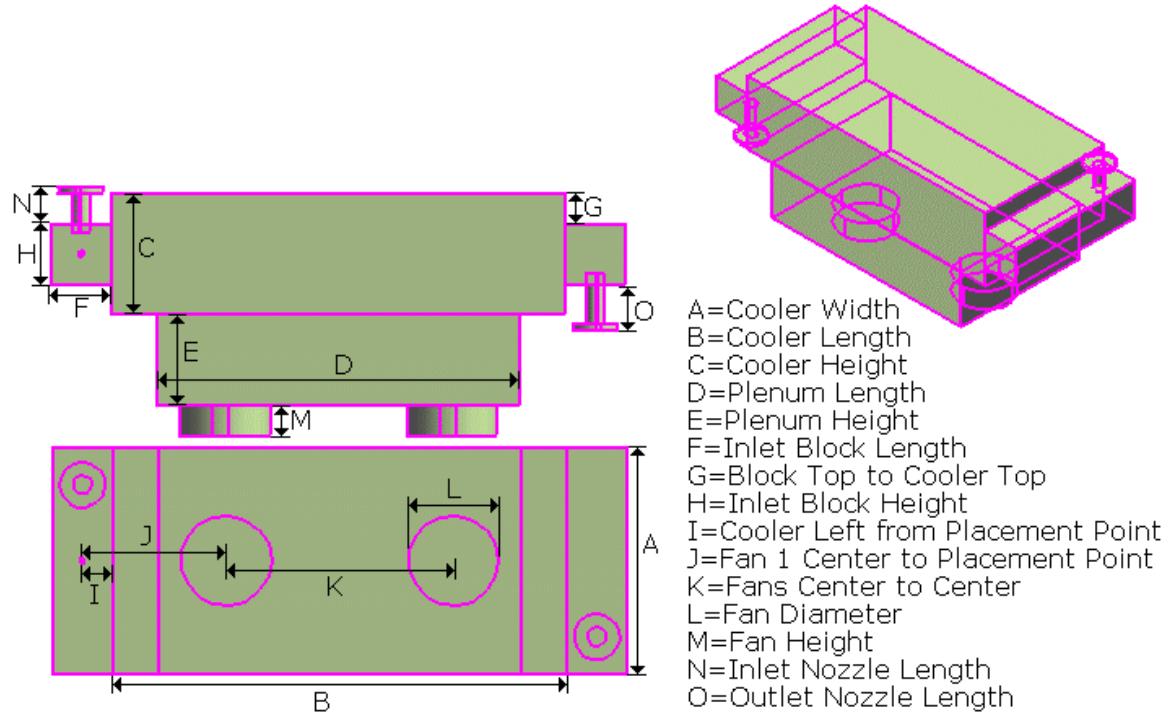
**Output = "PNoz1" Description =** "Nozzle 1"

**Output = "PNoz2" Description =** "Nozzle 2"

**Output = "ControlPoint" Description =** "Control Point of Forced Draft Air Cooler Bay "

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSingleIndDrAirCoolerAsm

**Description:** Single Induced Draft Cooler

**Symbol Name:** SP3DSglInDrAirCoolerAsm.CSIDAirCDef

**Workbook:** Equipment.xls

**Workbook Sheet:** SingleIndDrAirCoolerAsm

**User Class Name:** Single Induced Draft Cooler

**Part Number:** SingleInducedDraftAirCooler\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSglInDrAirCoolerAsm.CSIDAirCDef

**Inputs = 16**

**Input = "CoolerWidth" Description =** "Width of Cooler"

**Input = "CoolerLength" Description =** "Length of Cooler"

**Input = "CoolerHeight" Description =** "Height of Cooler"

**Input = "PlenumLength" Description =** "Length of Plenum"

**Input = "PlenumHeight" Description =** "Height of Plenum"

**Input = "InletBlockLength" Description =** "Inlet Block Length"

**Input = "BlockTptoCoolTop" Description =** "Dist Block Top to Cooler Top "

**Input = "InletBlockHeight" Description =** "Inlet Block Height"

**Input = "CoolLeftfromPP" Description =** "Cooler Left from PP"

**Input = "NoOfFans" Description =** "Number of Fans"

**Input = "Fan1CentoPP" Description =** "Dist from Fan1 Cen to PP"

**Input = "FansCentoCen" Description =** "Fans Center to Center"

**Input = "FanDiameter" Description =** "Diameter of Fan"

**Input = "FanHeight" Description =** "Height of Fan"

**Input = "InletNozzLength" Description =** "Inlet Nozzle Length"

**Input = "OutletNozzLength" Description =** "Inlet Nozzle Length"

**Outputs = 13**

**Output = "CoolerBodyPlane1" Description =** "Cooler Body Plane 1"

**Output = "DefaultSurface" Description =** "Default Surface"

**Output = "CoolerBodyPlane2" Description =** "Cooler Body Plane 2"

**Output = "CoolerBodyPlane3" Description =** "Cooler Body Plane 3"

**Output = "CoolerBodyPlane4" Description =** "Cooler Body Plane 4"

**Output = "CoolerBodyPlane5" Description =** "Cooler Body Plane 5"

**Output = "CoolerLeftBox" Description =** "Cooler Left Box"

**Output = "CoolerRightBox" Description =** "Cooler Right Box"

**Output = "PlenumBox" Description =** "Plenum Box"

**Output = "Fan" Description =** "Fan"

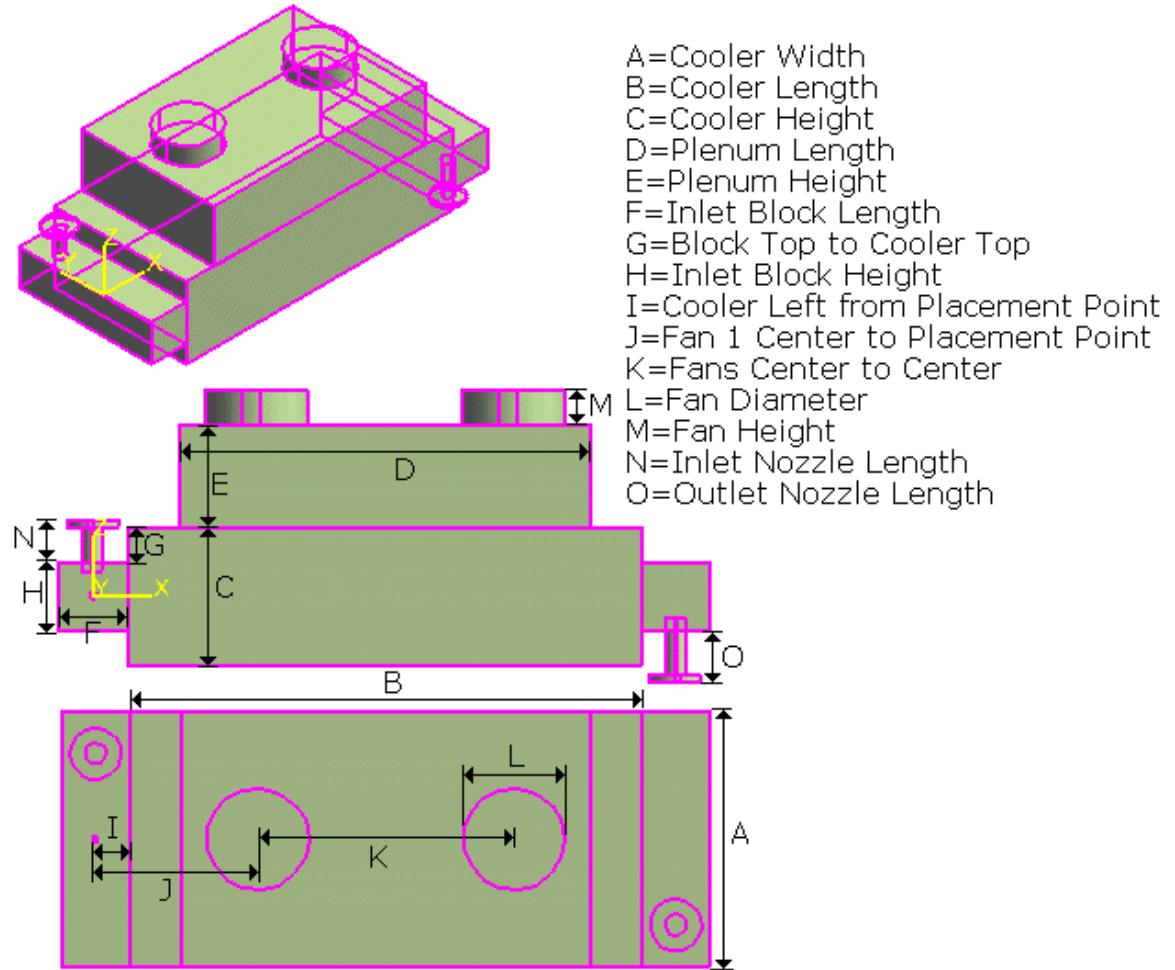
**Output = "PNoz1" Description =** "Nozzle 1"

**Output = "PNoz2" Description =** "Nozzle 2"

**Output = "ControlPoint" Description =** "Control Point of Forced Draft Air Cooler Bay "

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSlipFitterFloodLightAsm

**Description:**

**Symbol Name:** SP3DSlipFitterFloodLightAsm.FldLightSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSlipFitterFloodLightAsm.FldLightSym

**Inputs = 6**

**Input and description** = "FixtureHeight", "Fixture Height",

**Input and description** = "FixtureWidth", "Fixture Width", 0

**Input and description** = "FixtureLength", "Fixture Length",

**Input and description** = "BoxHeight", "Box Height",

**Input and description** = "BoxWidth", "Box Width",

**Input and description** = "BoxLength", "Box Length",

**Outputs = 7**

**Output and description** = "Fixture", "Fixture"

**Output and description** = "Cylinder1", "CylindricalJoint 1"

**Output and description** = "Cylinder2", "CylindricalJoint 2"

**Output and description** = "Box", "Box"

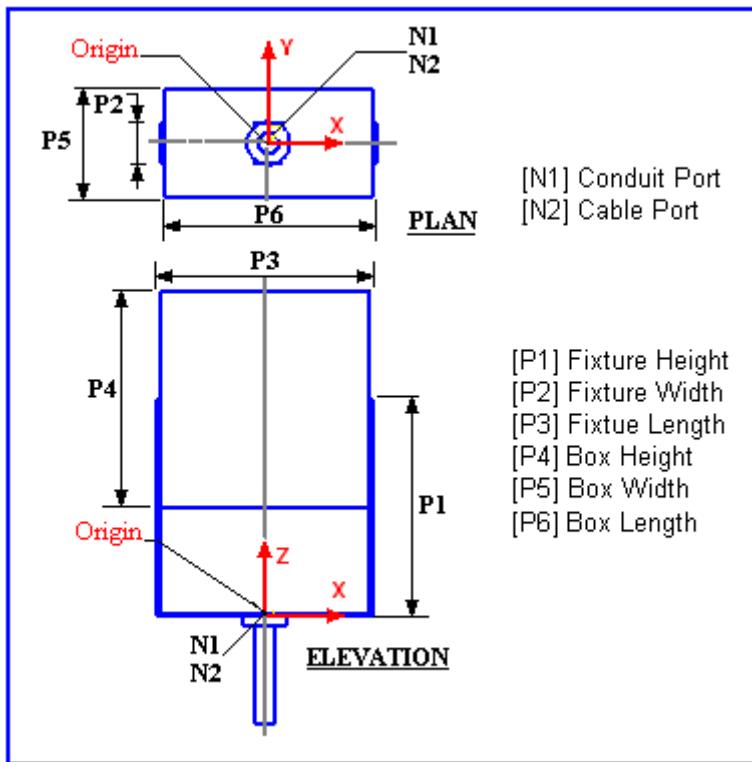
**Output and description** = "ConduitPort", "Conduit Port"

**Output and description** = "CablePort", "Cable Port"

**Output and description** = "DefaultSurface", "Default Surface"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



# SP3DSphericalVesselAsm

**Description:** Spherical Vessel

**Symbol Name:** SP3DSphericalVesselAsm.CSVesselSym

**Workbook:** Equipment.xls

**Workbook Sheet:** SphericalVesselAsm

**User Class Name:** Spherical Vessel

**Part Number:** SphericalVessel01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSphericalVesselAsm.CSVesselSym

**Inputs = 9**

**Input = "VesselDiameter" Description = "VesselDiameter"**

**Input = "SupportAngularLocation" Description = "SupportAngularLocation"**

**Input = "NumberOfSupports" Description = "NumberOfSupports"**

**Input = "VesselCenterHeight" Description = "VesselCenterHeight"**

**Input = "SupportLength" Description = "SupportLength"**

**Input = "SupportThickness" Description = "SupportThickness"**

**Input = "SupportRadialLocation" Description = "SupportRadialLocation"**

**Input = "SupportHeight" Description = "SupportHeight"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 3**

**Output = "InsulatedBody" Description = "InsulatedBody"**

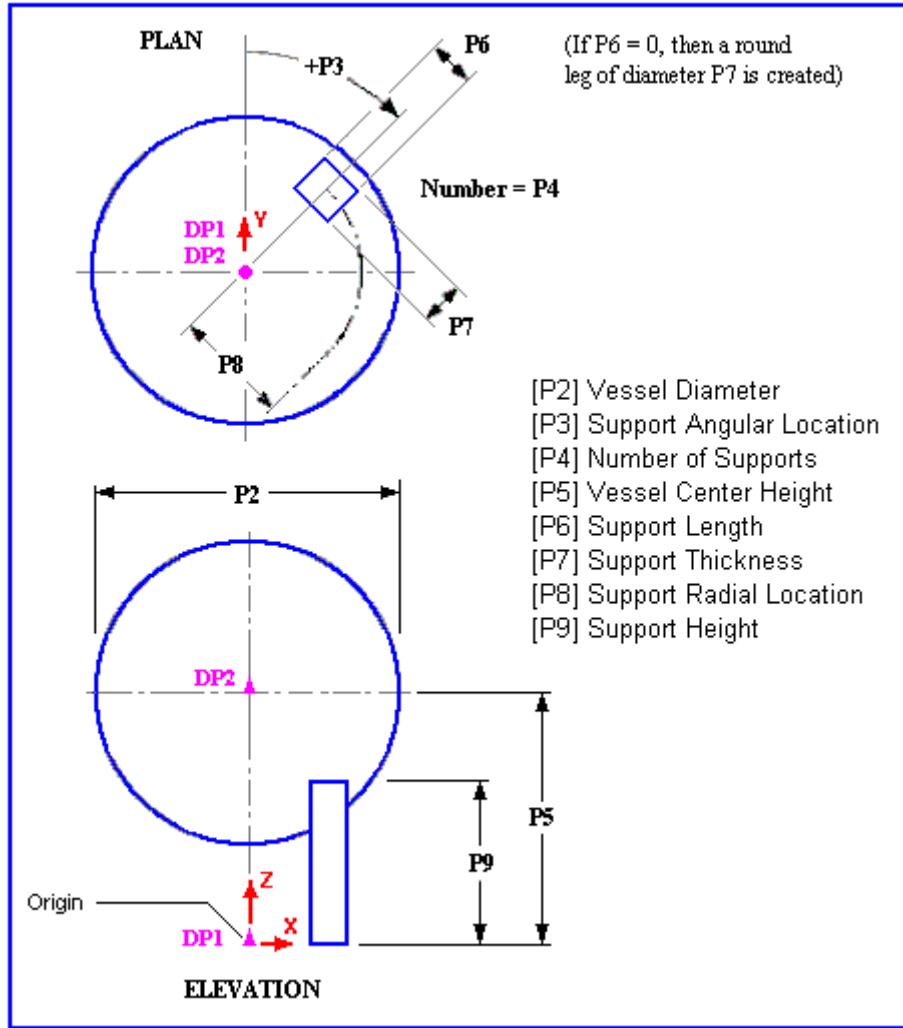
**Output = "Vessel" Description = "Vessel"**

**Output = "SphericalVesselControlPoint" Description = "Control Point of Spherical Vessel "**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DSpiralStairTankAsm

## Description:

**Symbol Name:** SP3DSpiralStairTankAsm.SpiralStairEqSym

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DSpiralStairTankAsm.SpiralStairEqSym

#### Inputs = 13

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent"

**Input and description** = "StartElevation", "Start Elevation"

**Input and description** = "EndElevation", "End Elevation"

**Input and description** = "StartAngle", "Start Angle"

**Input and description** = "AngleBetSupports", "Angle between Supports"

**Input and description** = "RampAngle", "Ramp Angle"

**Input and description** = "SupportVerticalDistance", "Support Vertical Distance"

**Input and description** = "SupportVerticalSpacing", "Support Vertical Spacing"

**Input and description** = "SpiralDirection", "Spiral Direction"

**Input and description** = "DisplaySpiralPoints", "Display Spiral Points"

**Input and description** = "XboltHole", "Bolt X Hole Location"

**Input and description** = "YboltHole", "Bolt Y Hole Location"

#### Outputs = 4

**Output and description** = "ObjStorageTank", "ObjStorageTank"

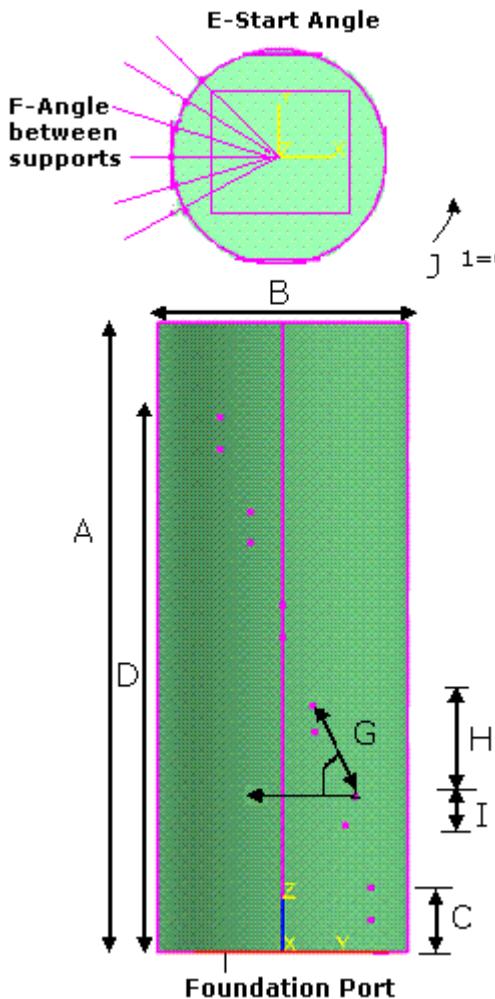
**Output and description** = "Point1\_", "Point1"

**Output and description** = "Point2\_", "Point2"

**Output and description** = "EqpFoundationPort", "Foundation Port under support"

#### Aspects = 1

**Aspect** = "Physical", "Physical"



**E-Start Angle**  
**F-Angle between supports**  
**B**  
**A**  
**D**  
**C**  
**J**  
*1=ccw*  
**G**  
**H**  
**I**  
**C**  
**Foundation Port**

A = Vessel Tangent to Tangent  
 B = Vessel Diameter  
 C = Start Elevation  
 D = End Elevation  
 E = Start Angle  
 F = Angle Between Supports  
 G = Ramp Angle  
 H = Support Vertical Distance  
 I = Support Vertical Spacing  
 J = Spiral Direction

1 = Counter Clock Wise Direction  
 2 = Clock Wise Direction

1 = Display Spiral Points (Yes)  
 0 = Display Spiral Points (No)

When Ramp Angle is provided, set the Support Vertical Distance to Zero and Vice versa

## SP3DStdPump

**Description:** Standard Centrifugal Pump, 250mm suction, 200mm discharge

**Symbol Name:** SP3DStdPump.StdPumpServices

**Workbook:** Equipment.xls

**Workbook Sheet:** StdPump

**User Class Name:** StdPump

**Part Number:** STDPUMP 001A

**Inputs, Outputs, and Aspects:**

Input = "Length of the Pump"

Input = "Diameter of the Pump"

Input = "ImpellerWidth"

Input = "ShaftLength"

Input = "MotorWidth"

Input = "ImpellerDiameter"

Input = "ShaftDiameter"

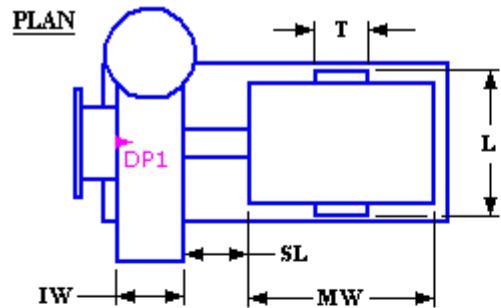
Input = "MotorDiameter"

Input = "Dim of the Block of Pump"

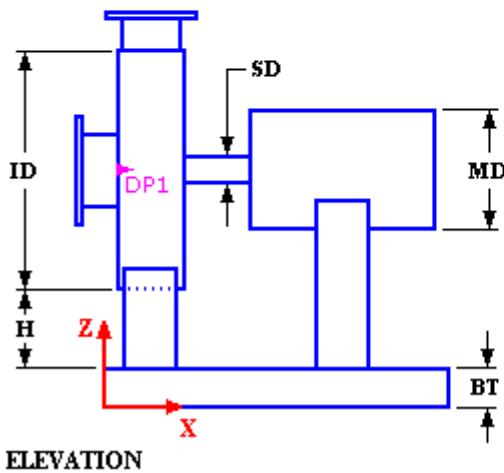
Input = "SupportLength"

Input = "BasePlateThickness"

Input = "Thickness of Base Plate"



IW	Impeller Width
MW	Motor Width
SL	Shaft Length
L	Support Length
T	Support Thickness



BT	Base Plate Thickness
ID	Impeller Diameter
MD	Motor Diameter
SD	Shaft Diameter
H	Support Height

# SP3DStorageTankAsm

**Description:** Storage Tank

**Symbol Name:** SP3DStorageTankAsm.CSTankSym

**Workbook:** Equipment.xls

**Workbook Sheet:** StorageTankAsm

**User Class Name:** Storage Tank

**Part Number:** Tank 001A-E, Tank 001A\_IMP-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DStorageTankAsm.CSTankSym

**Inputs = 6**

**Input = "VesselLength" Description =** "parVesselLength of the Tank"

**Input = "VesselDiameter" Description =** "Diameter of the Tank"

**Input = "SupportLength" Description =** "Support parVesselLength of Block of Tank"

**Input = "SupportHeight" Description =** "Support Height of Block of Tank"

**Input = "SupportThickness" Description =** "Support Thickness of Block of Tank"

**Input = "InsulationThickness" Description =** "Insulation thickness of body"

**Outputs = 16**

**Output = "TankBodyCylinder" Description =** "Tank Body Cylinder"

**Output = "LeftEndCap" Description =** "Left Elliptical End Cap"

**Output = "RightEndCap" Description =** "Right Elliptical End Cap"

**Output = "Support1" Description =** "Support 1"

**Output = "Support2" Description =** "Support 2"

**Output = "DefaultSurface1" Description =** "Default Surface 1"

**Output = "DefaultSurface2" Description =** "Default Surface 2"

**Output = "ConnectPort1" Description =** "Connect Port 1"

**Output = "ConnectPort2" Description =** "Connect Port 2"

**Output = "FoundationPort1" Description =** "Foundation Port 1"

**Output = "FoundationPort2" Description =** "Foundation Port 2"

**Output = "TankEnvelope" Description =** "Tank Envelope"

**Output = "RightEndCap" Description =** "Right End Cap"

**Output = "Cylinder" Description =** "Cylinder"

**Output = "LeftEndCap" Description =** "Left End Cap"

**Output = "TankServicesControlPoint" Description =** "Tank Services Control Point"

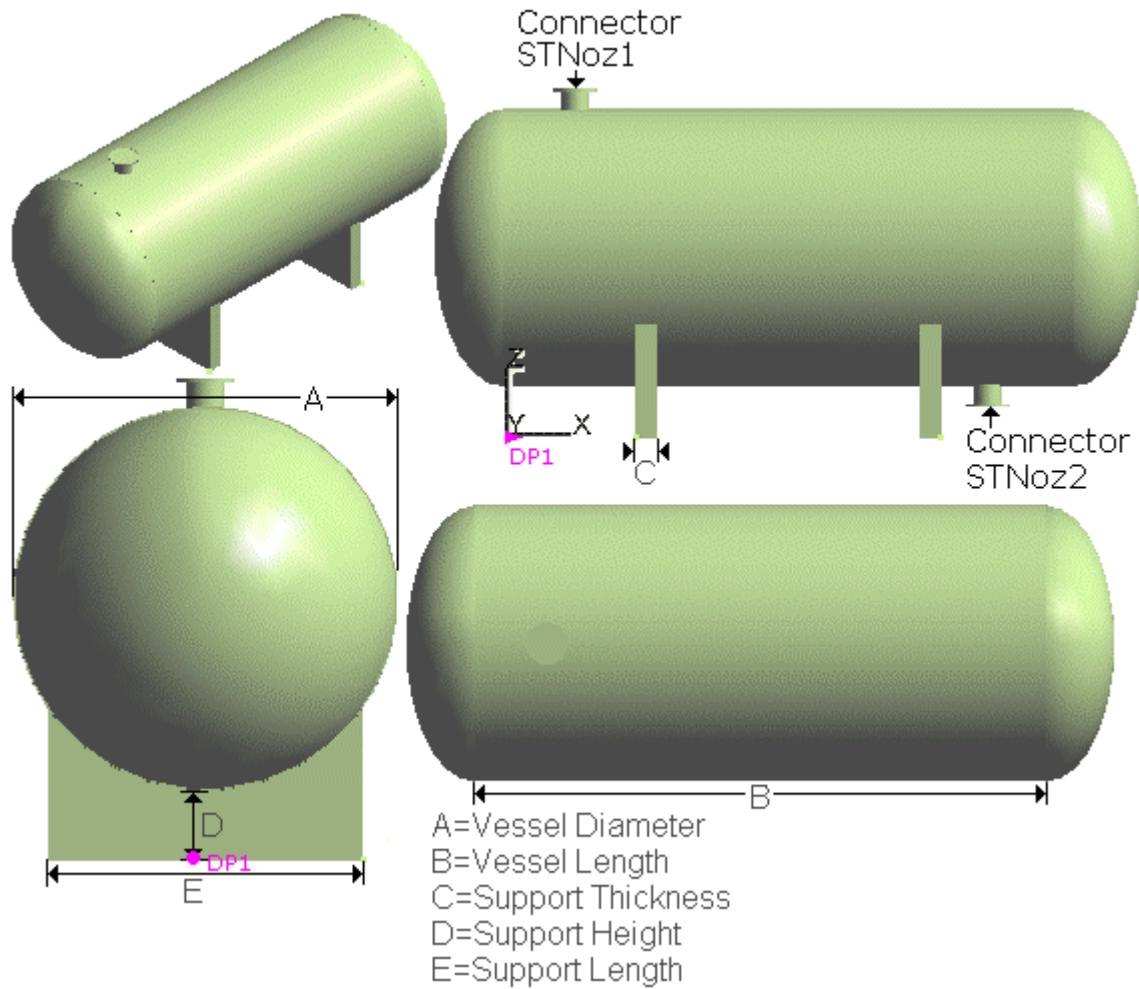
**Aspects = 4**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Maintenance**

**Aspect = ReferenceGeometry**



# SP3DSwitchGearAsm

**Description:**

**Symbol Name:** SP3DSwitchGearAsm.SwitchGearSym

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DSwitchGearAsm.SwitchGearSym

**Inputs = 5**

**Input and description** = "SwitchGearHeight", "Height of the SwitchGear",  
**Input and description** = "SwitchGearWidth", "Width of the SwitchGear",  
**Input and description** = "SwitchGearLength", "Length of the SwitchGear",  
**Input and description** = "XboltHole", "XboltHole", 0  
**Input and description** = "YboltHole", "YboltHole",

**Outputs = 34**

**Output and description** = "SwitchGearBody", "SwitchGear Body"  
**Output and description** = "ConduitPort1", "ConduitPort 1"  
**Output and description** = "ConduitPort2", "ConduitPort 2"  
**Output and description** = "ConduitPort3", "ConduitPort 3"  
**Output and description** = "ConduitPort4", "ConduitPort 4"  
**Output and description** = "CablePort1", "CablePort 1"  
**Output and description** = "CablePort2", "Cable Port 2"  
**Output and description** = "CablePort3", "Cable Port 3"  
**Output and description** = "CablePort4", "Cable Port 4"  
**Output and description** = "CableTrayPort1", "CableTrayPort 1"  
**Output and description** = "CablePort5", "CablePort 5"  
**Output and description** = "STFndPort1", "Foundation Port 1"  
**Output and description** = "CableCircle1", "CableCircle1"  
**Output and description** = "CenterPos1", "FaceCenter Position1"  
**Output and description** = "CenterPos2", "FaceCenter Position2"  
**Output and description** = "CenterPos3", "FaceCenter Position3"  
**Output and description** = "CenterPos4", "FaceCenter Position4"  
**Output and description** = "CenterPos5", "FaceCenter Position5"  
**Output and description** = "CenterPos6", "FaceCenter Position6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"

**Output and description** = "Edge8", "Edge 8"

**Output and description** = "Edge9", "Edge 9"

**Output and description** = "Edge10", "Edge 10"

**Output and description** = "Edge11", "Edge 11"

**Output and description** = "Edge12", "Edge 12"

**Output and description** = "SwitchGearBodyOp", "SwitchGear Body Operation",  
Operation

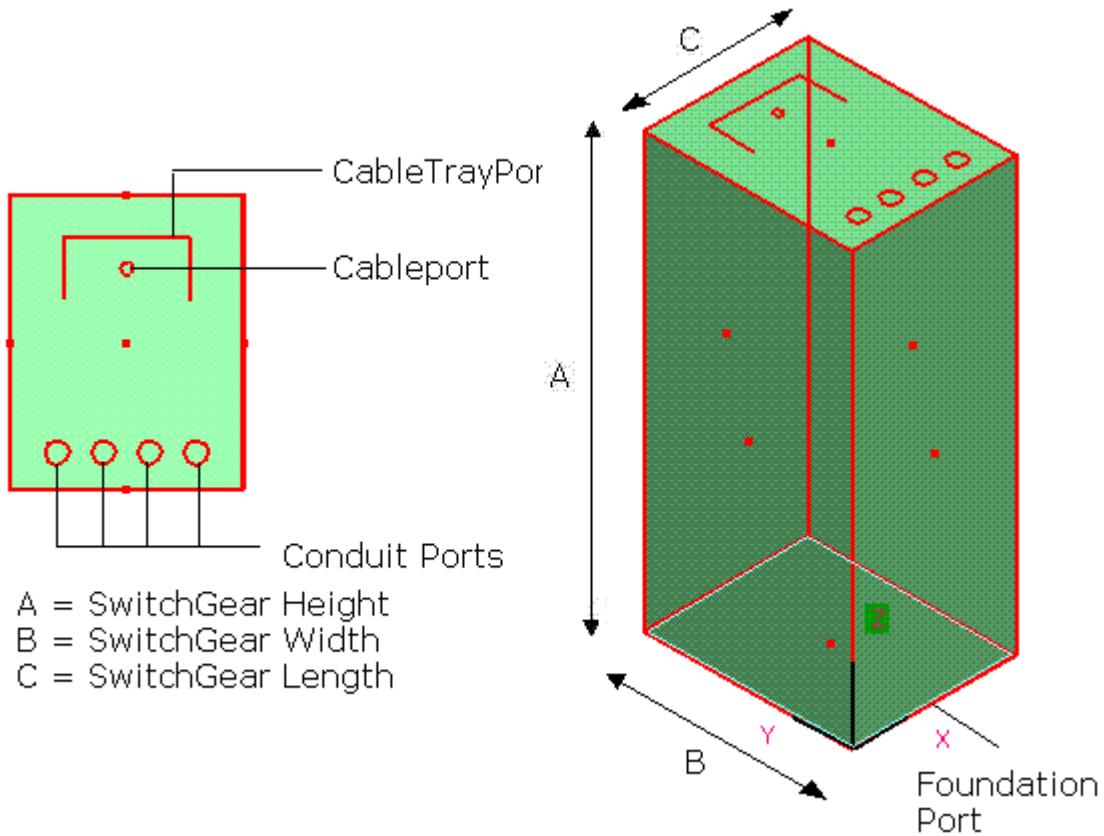
**Output and description** = "SwitchGearDoorSwingOp1", "SwitchGear Door Swing  
Operation CCWise", Operation

**Output and description** = "SwitchGearDoorSwingOp2", "SwitchGear Door Swing  
Operation CWise", Operation

**Aspects = 2**

**Aspect** = "Physical", "Physical Description"

**Aspect** = "Operation", "Operation Description", Operation



A = SwitchGear Height

B = SwitchGear Width

C = SwitchGear Length

# SP3DVerDrumWiLegsAsm

**Description:**

**Symbol Name:** SP3DVerDrumWiLegsAsm.VDrumWithLegsSym

**Workbook:** Equipment.xls

**Workbook Sheet:** VerticalDrumAsm

**User Class Name:** Vertical Drum with Legs

**Part Number:** VerticalDrum 01-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVerDrumWiLegsAsm.VDrumWithLegsSym

**Inputs = 15**

**Input and description** = "VesselDiameter", "Vessel Internal Diameter",

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent", 2.44

**Input and description** = "CPtoSupport", "Control Point to Support",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Input and description** = "SupportOrientation", "Support Orientation",

**Input and description** = "SupportLength", "Support Length", 0

**Input and description** = "SupportWidth", "Support Width", 0

**Input and description** = "SupportHeight", "Support Height", 0

**Input and description** = "BackingPlateThickness", "BackingPlateThickness", 0

**Input and description** = "BackingPlateDepth", "Backing Plate Depth",

**Input and description** = "LengthBaseplate", "Length Base plate", 0

**Input and description** = "WidthBaseplate", "Width Base plate", 0

**Input and description** = "BasePlateThickness", "Base Plate Thickness", 0

**Input and description** = "XboltHole", "Bolt Hole Location-X", 0

**Input and description** = "YboltHole", "Bolt Hole Location-Y",

**Outputs = 24**

**Output and description** = "DrumBody", "Drum body as Cylinder"

**Output and description** = "DrumHead", "Drum head"

**Output and description** = "DrumHead1", "Drum Head 1"

**Output and description** = "BackingPlate1", "Saddle Body"

**Output and description** = "BackingPlate2", "Second Saddle Body"

**Output and description** = "BackingPlate3", "Ends Support Plate"

**Output and description** = "BackingPlate4", "Second saddle Ends Support Plate"

**Output and description** = "Support1", "Center Support Plate1"

**Output and description** = "Support2", "Second Saddle Center Support Plate"

**Output and description** = "Support3", "Center Support Plate2"

**Output and description** = "Support4", "Saddle Saddle Center Support Plate2"

**Output and description** = "BasePlate1", "Middle Support Plate"

**Output and description** = "BasePlate2", "Second saddle Middle Support Plate"

**Output and description** = "BasePlate3", "Center Support Plate3"

**Output and description** = "BasePlate4", "Second saddle Center Support Plate3"

**Output and description** = "EqpFoundationPort", "Center Support Plate4"

**Output and description** = "EqpFoundationPort2", "Second saddle Center Support Plate4"

**Output and description** = "EqpFoundationPort3", "Bottom Support Plate"

**Output and description** = "EqpFoundationPort4", "Second saddle Bottom Support Plate"

**Output and description** = "ControlPoint", "Point at origin"

**Output and description** = "DefaultSurface", "Default Surface"

**Output and description** = "VesselAxisLine", "Line on the Vessel axis"

**Output and description** = "DefaultSurface1", "Line on the Vessel axis"

**Output and description** = "DrumIns", " Drum Insulation"

**Aspects = 3**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "ReferenceGeometry", "ReferenceGeometry"

A=Vessel Diameter

B=Vessel Tangent to Tangent

C=Support Length

D=Support Width

E=Support Height

F=Support Orientation

G=Backing Plate Thickness

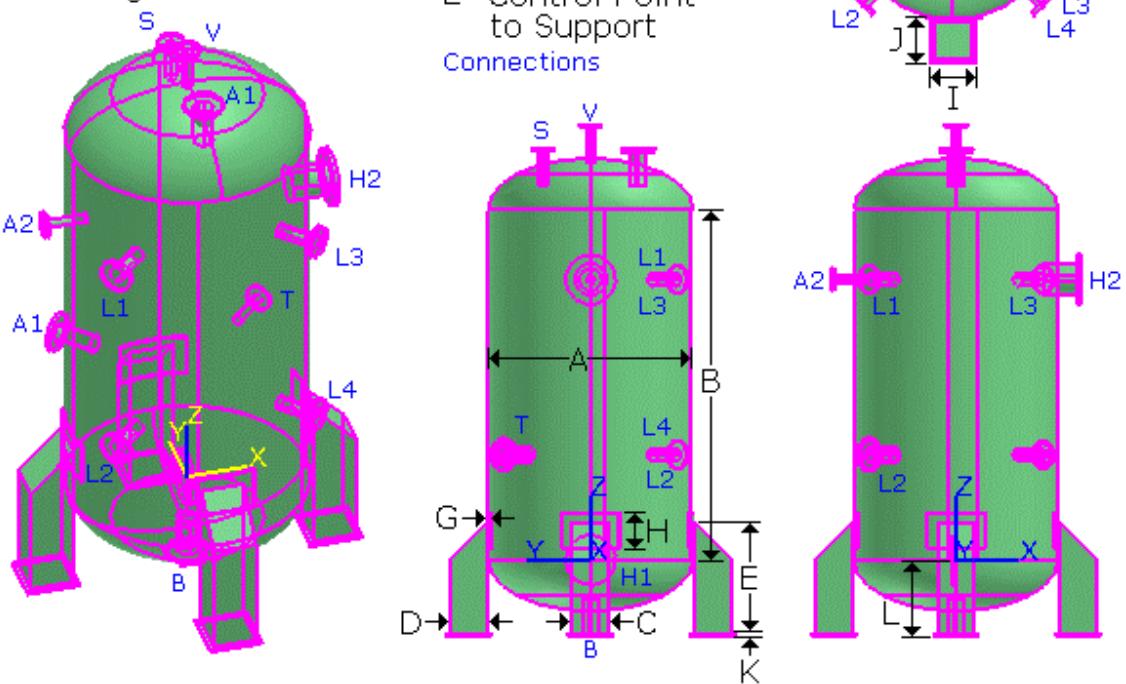
H=Backing Plate Depth

I=Length Baseplate

J=Width Baseplate

K=Base Plate Thickness

L=Control Point to Support Connections



# SP3DVerRotatingEquipmentAsm

**Description:** Vertical Rotating Equipment

**Symbol Name:** SP3DVerRotEqpAsm.CVREqpSym

**Workbook:** Equipment.xls

**Workbook Sheet:** VertRotatingEquipmentAsm

**User Class Name:** Vertical Rotating Equipment

**Part Number:** VerticalRotatingEquipment-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVerRotEqpAsm.CVREqpSym

**Inputs = 10**

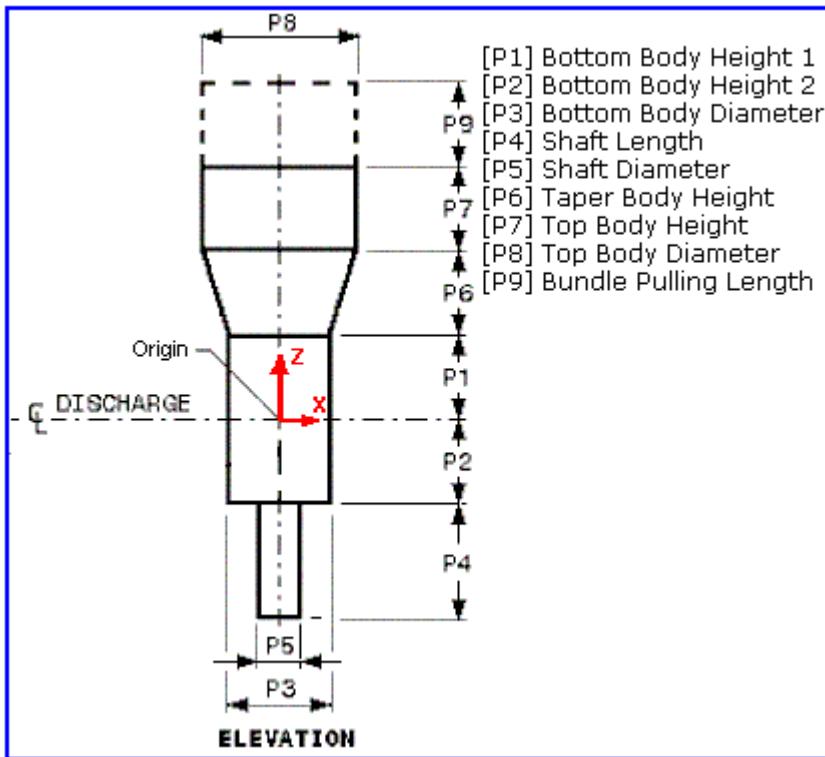
**Input** = "BottomBodyHeight1"   **Description** = "BottomBodyHeight1"  
**Input** = "BottomBodyHeight2"   **Description** = "BottomBodyHeight2"  
**Input** = "BottomBodyDiameter"   **Description** = "BottomBodyDiameter"  
**Input** = "ShaftLength"   **Description** = "ShaftLength"  
**Input** = "ShaftDiameter"   **Description** = "ShaftDiameter"  
**Input** = "TaperBodyHeight"   **Description** = "TaperBodyHeight"  
**Input** = "TopBodyHeight"   **Description** = "TopBodyHeight"  
**Input** = "TopBodyDiameter"   **Description** = "TopBodyDiameter"  
**Input** = "BundlePullingLength"   **Description** = "BundlePullingLength"  
**Input** = "InsulationThickness"   **Description** = "InsulationThickness"

**Outputs = 6**

**Output** = "InsEquipment"   **Description** = "InsEquipment"  
**Output** = "MaintEquipment"   **Description** = "MaintEquipment"  
**Output** = "DefaultSurface"   **Description** = "Default Surface at Bottom"  
**Output** = "TopDefSurface"   **Description** = "DefSurface at Top"  
**Output** = "Equipment"   **Description** = "Equipment"  
**Output** = "VerRotatingEquipmentControlPoint"   **Description** = "Control Point of  
Ver Rotating Equipment "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Maintenance



# SP3DVerticalPumpAsm

**Description:** Vertical Centrical Pump 001

**Symbol Name:** SP3DVerticalPumpAsm.CVPumpSym

**Workbook:** Equipment.xls

**Workbook Sheet:** VerticalPumpAsm

**User Class Name:** Vertical Pump

**Part Number:** VCPump001\_Asm

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVerticalPumpAsm.CVPumpSym

**Inputs = 11**

**Input** = "FaceSuctiontoFaceDischarge"   **Description** = "Face of Suction to Face of Discharge"

**Input** = "PumpShafttoFaceSuction"   **Description** = "CL of Pump Shaft to Face of Suction Nozzle"

**Input** = "WidthPumpShaftHousing"   **Description** = "Width of Pump Shaft Housing"

**Input** = "NozzletoBottomPumpBase"   **Description** = "CL of Nozzles to Bottom of Pump Base"

**Input** = "NozzletoBottomPumpShaft"   **Description** = "CL of Nozzles to Bottom of Pump Shaft Housing"

**Input** = "BottomShafttoTopMotor"   **Description** = "Bottom of Shaft Housing to Top of Motor"

**Input** = "DiameterPumpMotor"   **Description** = "Diameter of Pump Motor"

**Input** = "HeightPumpShaftHousing"   **Description** = "Height of Pump Shaft Housing"

**Input** = "BottomPumpBasetoBottomShaft"   **Description** = "Bottom of Pump Base to Bottom of Shaft"

**Input** = "ShaftDiameter"   **Description** = "Shaft Diameter"

**Input** = "ElecBoxPosition"   **Description** = "Electrical Box Position"

**Outputs = 13**

**Output** = "BodyBox"   **Description** = "Body of Pump Box"

**Output** = "BodySnout1"   **Description** = "Body of Pump Snout 1"

**Output** = "BodyCylinder1"   **Description** = "Body of Pump Cylinder1"

**Output** = "BodyCylinder2"   **Description** = "Body of Pump Cylinder2"

**Output** = "BodyCylinder3"   **Description** = "Body of Pump Cylinder3"

**Output** = "BodyCylinder4"   **Description** = "Body of Pump Cylinder4"

**Output** = "BodySnout2"   **Description** = "Body of Pump Snout 2"

**Output** = "BodyCylinder5"   **Description** = "Body of Pump Cylinder5 - Motor"

**Output** = "BodyDish"   **Description** = "Body of Pump Dish"

**Output** = "BodyPyramid"   **Description** = "Body of Pump Pyramid"

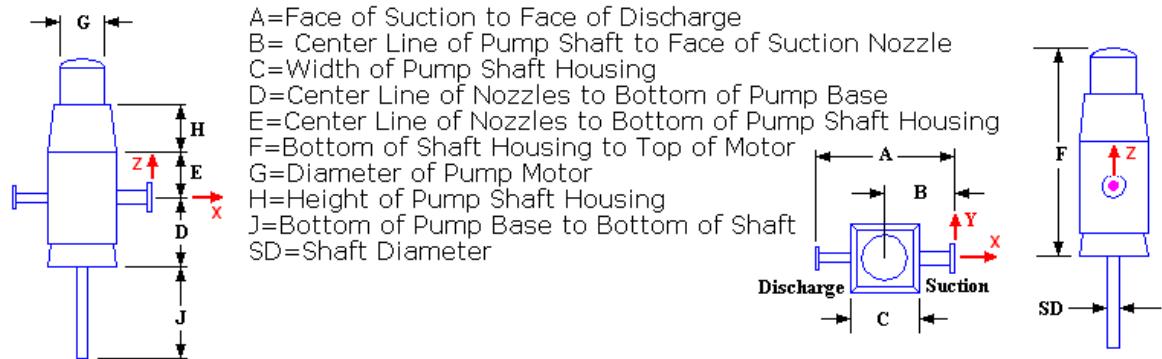
**Output** = "SuctionNozzle"   **Description** = "Suction Nozzle"

**Output** = "DischargeNozzle"   **Description** = "Discharge Nozzle"

**Output** = "PumpOrigin"   **Description** = "PumpOrigin"

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DVertPumpOH3Asm

**Description:**

**Symbol Name:** SP3DVertPumpOH3Asm.OH3PumpSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVertPumpOH3Asm.OH3PumpSym

**Inputs = 11**

**Input and description** = "MotorHeight", "MotorHeight"

**Input and description** = "MotorDiameter", "MotorDiameter"

**Input and description** = "BaseplateBottomtoMotorFace",  
"BaseplateBottomtoMotorFace"

**Input and description** = "BaseplateBottomtoDischargeCL",  
"BaseplateBottomtoDischargeCL"

**Input and description** = "CLofPumptoSuctionFace", "CLofPumptoSuctionFace"

**Input and description** = "CLofPumptoDischargeFace",  
"CLofPumptoDischargeFace"

**Input and description** = "BaseplateHeight", "Height of Baseplate"

**Input and description** = "BaseplateWidth", "Width of Baseplate"

**Input and description** = "BaseplateLength", "Length of Baseplate"

**Input and description** = "XboltHole", "Bolt X Hole Location"

**Input and description** = "YboltHole", "Bolt Y Hole Location"

**Outputs = 47**

**Output and description** = "BodyCylinder1", "BodyCylinder1"

**Output and description** = "BodyCylinder2", "BodyCylinder2"

**Output and description** = "BodyCylinder3", "BodyCylinder3"

**Output and description** = "BodyDish1", "BodyDish1"

**Output and description** = "BodyDish2", "BodyDish2"

**Output and description** = "Baseplate1", "Baseplate 1"

**Output and description** = "Baseplate2", "Baseplate 2"

**Output and description** = "Baseplate3", "Baseplate 3"

**Output and description** = "Baseplate4", "Baseplate 4"

**Output and description** = "Baseplate5", "Baseplate 5"

**Output and description** = "Baseplate6", "Baseplate 6"

**Output and description** = "BodyCylinder5", "BodyCylinder5"

**Output and description** = "BodyCylinder6", "BodyCylinder6"

**Output and description** = "BodyCylinder7", "BodyCylinder7"

**Output and description** = "BodyCylinder8", "BodyCylinder8"

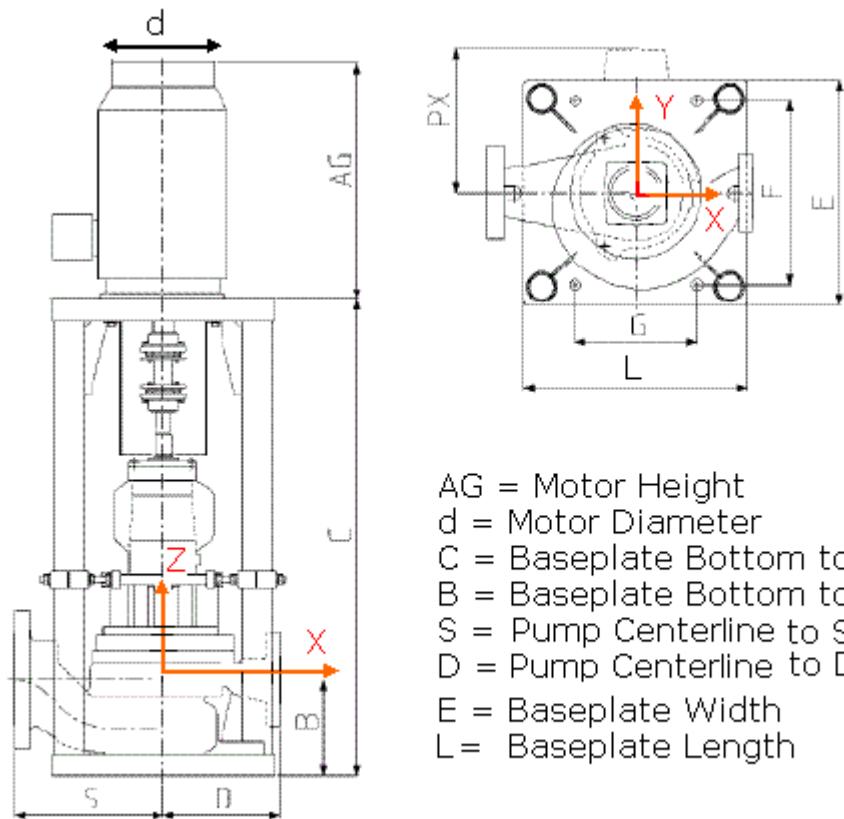
**Output and description** = "BodyCylinder9", "BodyCylinder9"

**Output and description** = "BodyCylinder10", "BodyCylinder10"

**Output and description** = "BodyCylinder11", "BodyCylinder11"  
**Output and description** = "BodyCylinder12", "BodyCylinder12"  
**Output and description** = "Baseplate7", "Baseplate 7"  
**Output and description** = "Baseplate8", "Baseplate 8"  
**Output and description** = "Baseplate9", "Baseplate 9"  
**Output and description** = "Baseplate10", "Baseplate 10"  
**Output and description** = "Baseplate11", "Baseplate 11"  
**Output and description** = "Baseplate12", "Baseplate 12"  
**Output and description** = "SuctionNozzle", "SuctionNozzle"  
**Output and description** = "DischargeNozzle", "DischargeNozzle"  
**Output and description** = "EqpFoundationPort", "Foundation Port under support"  
**Output and description** = "PumpOrigin", "Control Point"  
**Output and description** = "Point1", "Point 1"  
**Output and description** = "Point2", "Point 2"  
**Output and description** = "Point3", "Point 3"  
**Output and description** = "Point4", "Point 4"  
**Output and description** = "Point5", "Point 5"  
**Output and description** = "Point6", "Point 6"  
**Output and description** = "Edge1", "Edge 1"  
**Output and description** = "Edge2", "Edge 2"  
**Output and description** = "Edge3", "Edge 3"  
**Output and description** = "Edge4", "Edge 4"  
**Output and description** = "Edge5", "Edge 5"  
**Output and description** = "Edge6", "Edge 6"  
**Output and description** = "Edge7", "Edge 7"  
**Output and description** = "Edge8", "Edge 8"  
**Output and description** = "Edge9", "Edge 9"  
**Output and description** = "Edge10", "Edge 10"  
**Output and description** = "Edge11", "Edge 11"  
**Output and description** = "Edge12", "Edge 12"

**Aspects = 1**

**Aspect** = "Physical", "Physical"



AG = Motor Height

d = Motor Diameter

C = Baseplate Bottom to Motor Face

B = Baseplate Bottom to DischargeCL

S = Pump Centerline to Suction Face

D = Pump Centerline to Discharge Face

E = Baseplate Width

L = Baseplate Length

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# SP3DVertShellTubeExchangerAsm

**Description:** Vertical Shell Tube Exchanger

**Symbol Name:** SP3DVertShellTubeXAsm.CVSTubeXSym

**Workbook:** Equipment.xls

**Workbook Sheet:** VertShellTubeExchangerAsm

**User Class Name:** Vertical Shell Tube Exchanger

**Part Number:** VerticalShellandTubeExchanger-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVertShellTubeXAsm.CVSTubeXSym

**Inputs = 29**

**Input** = "ExchangerLength"   **Description** = "Exchanger Length P1"

**Input** = "ExchangerDiameter"   **Description** = "Exchanger Diameter P2"

**Input** = "BundleFlangeTk"   **Description** = "Exchanger End Flange Thick P3"

**Input** = "BundleFlangeDia"   **Description** = "Exchanger End Flange Dia P4"

**Input** = "ExchangerFlangeTk1"   **Description** = "Exchanger Left Flange Thick P5"

**Input** = "ExchangerFlangeTk2"   **Description** = "Exchanger Right Flange Thick P6"

**Input** = "ExtensionJointPosition"   **Description** = "Extension Joint Position P7"

**Input** = "ExtensionJointThickness"   **Description** = "Extension Joint Thickness P8"

**Input** = "ExtensionJointDiameter"   **Description** = "Extension Joint Diameter P9"

**Input** = "BundlePullingLength"   **Description** = "Exchanger End Length P10"

**Input** = "SupportAngularLocation"   **Description** = "Support Angular Location P11"

**Input** = "NumberOfSupport"   **Description** = "Number Of Supports P12"

**Input** = "SupportDepth"   **Description** = "Support Depth P13"

**Input** = "SupportFromOrigin"   **Description** = "Support From Origin P14"

**Input** = "SupportTopWidth"   **Description** = "Support Top Width P15"

**Input** = "SupportBottomWidth"   **Description** = "Support Bottom Width P16"

**Input** = "SupportThickness"   **Description** = "Support Thickness P17"

**Input** = "FrontEndFlangeDia"   **Description** = "Front End Flange Diameter P30"

**Input** = "FrontEndFlangeTk1"   **Description** = "Front End Flange Tk 1 P31"

**Input** = "FrontEndLength1"   **Description** = "FrontEndLength1 P32"

**Input** = "FrontEndLength2"   **Description** = "FrontEndLength2 P33"

**Input** = "FrontEndFlangeTk2"   **Description** = "FrontEndFlangeTk2 P34"

**Input** = "FrontEndFlangeTk3"   **Description** = "FrontEndFlangeTk3 P35"

**Input** = "RearEndFlangeDia"   **Description** = "Rear End Flange Diameter P40"

**Input** = "RearEndFlangeTk1"   **Description** = "Rear End Flange Tk P41"

**Input** = "RearEndLength"   **Description** = "Rear End Length P42"

**Input** = "RearEndFlangeTk2"   **Description** = "Rear End Flange Tk P43"

**Input** = "RearEndFlangeTk3"   **Description** = "Rear End Flange Tk P44"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

**Outputs = 8**

**Output** = "ExchangerBody"   **Description** = "ExchangerBody"

**Output** = "FrontEndBody"   **Description** = "FrontEndBody"

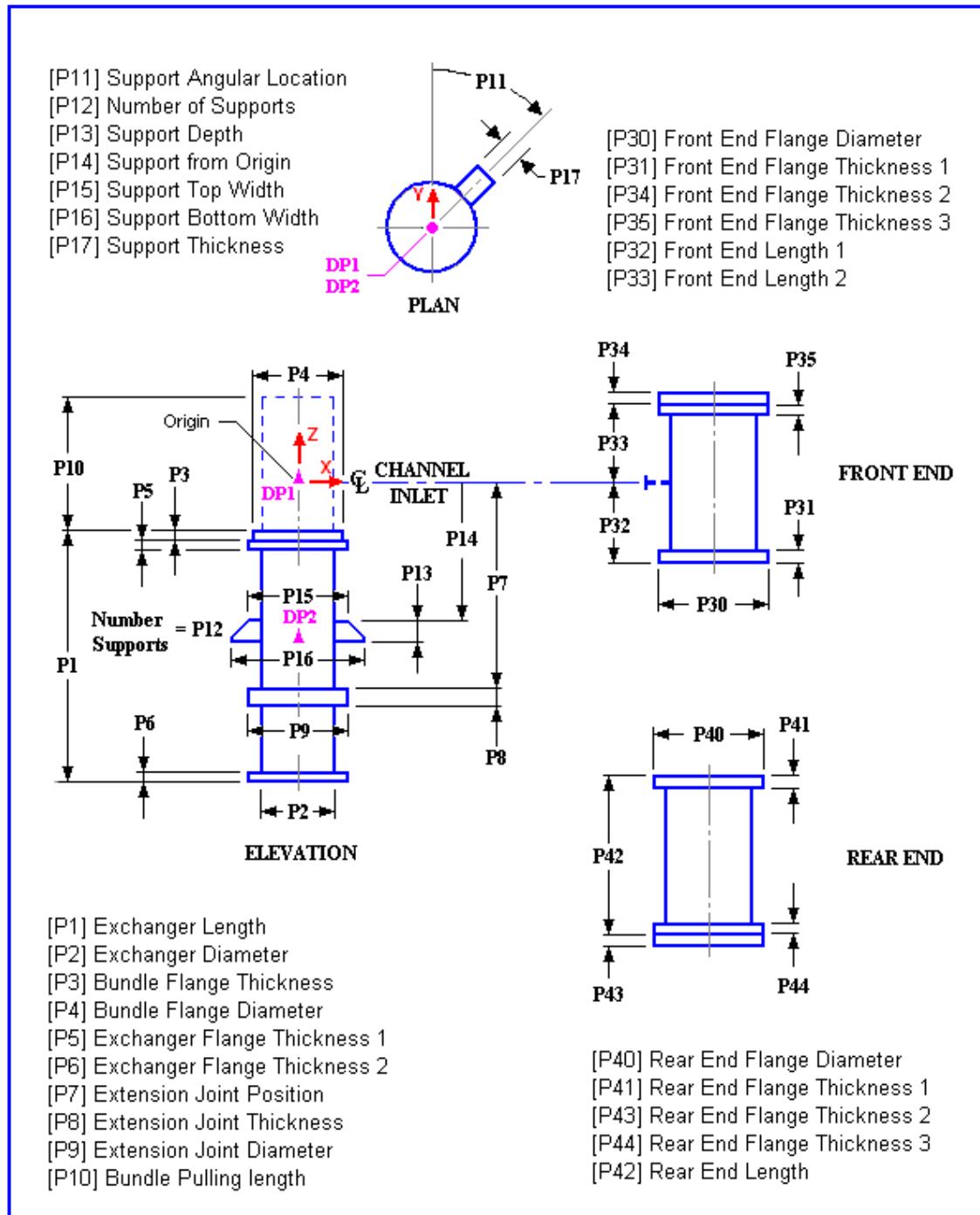
**Output** = "RearEndBody"   **Description** = "RearEndBody"  
**Output** = "ExchanBodyIns"   **Description** = "Exchanger Body Ins"  
**Output** = "FrontEndBodyIns"   **Description** = "Front End Body Ins"  
**Output** = "RearEndBodyIns"   **Description** = "Rear End Body Ins"  
**Output** = "BundlePulling"   **Description** = "Bundle Pulling Cylinder"  
**Output** = "VertShellTubeExchangerControlPoint"   **Description** = "Control Point of  
Vert Shell Tube Exchanger "

**Aspects** = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = Maintenance



# SP3DVertVesselEndsAsm

**Description:**

**Symbol Name:** SP3DVertVesselEndsAsm.VertVesselEndsSym

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVertVesselEndsAsm.VertVesselEndsSym

**Inputs = 12**

**Input and description** = "VesselTantoTan", "Vessel Tangent to Tangent"

**Input and description** = "VesselDiameter", "Vessel Diameter"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Input and description** = "End1Type", "End1 Type"

**Input and description** = "End2Type", "End2 Type"

**Input and description** = "EndHeadConeTopDiameter", "End Head Cone Top Diameter"

**Input and description** = "EndHeadConeHeight", "End Head Cone Height",

**Input and description** = "EndHeadKnuckleRadius", "End Head Knuckle Radius"

**Input and description** = "EndHeadDomeradius", "End Head Dome radius"

**Input and description** = "EndHeadFlangedThick1", "End Head Flanged Thickness 1"

**Input and description** = "EndHeadFlangedThick2", "End Head Flanged Thickness 2"

**Input and description** = "EndHeadSphericalRadius", "End Head Spherical Radius"

**Outputs = 2**

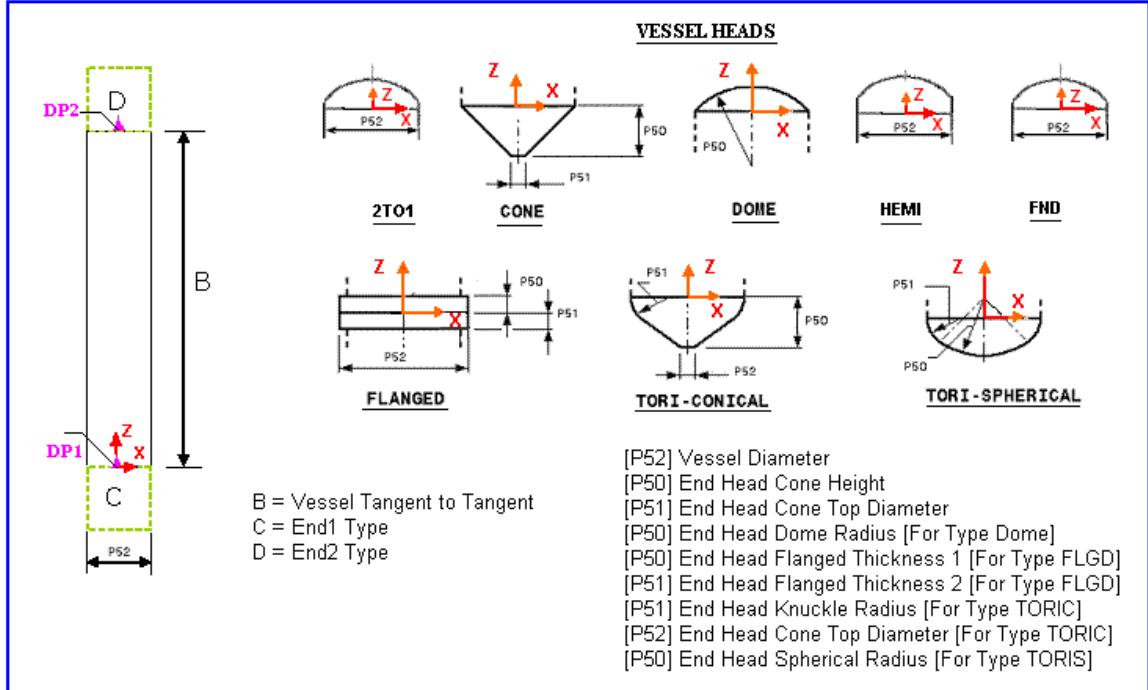
**Output and description** = "ObjVertVessel", "Vertical Vessel"

**Output and description** = "ObjVertVesselIns", "Insulated Vertical Vessel"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



## SP3DVesselwithSkirtAsm

**Description:** Simple Vertical Vessel with Skirt

**Symbol Name:** SP3DVesselWSkirtAsm.CVesselWSSym

**Workbook:** Equipment.xls

**Workbook Sheet:** VesselwithSkirtAsm

**User Class Name:** Simple Vertical Vessel with Skirt

**Part Number:** SVVWSE210-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVesselWSkirtAsm.CVesselWSSym

**Inputs = 5**

**Input = "SupportHeight" Description = "Skirt height"**

**Input = "SkirtDiameter" Description = "Skirt Diameter at Base"**

**Input = "VesselDiameter" Description = "Diameter of Cylindrical Portion of Tank"**

**Input = "VesselLength" Description = "Height of Cylindrical Portion of Tank "**

**Input = "DomeHeight" Description = "Vertical Axis Height of Domes"**

**Outputs = 9**

**Output = "SupportSkirt" Description = "Cone"**

**Output = "Tank" Description = "Cylinder"**

**Output = "TopDome" Description = "Revolved quarter Ellipse"**

**Output = "BottomDome" Description = "Revolved quarter Ellipse"**

**Output = "OperationEnv" Description = ""**

**Output = "MaintenanceEnv" Description = ""**

**Output = "InsulationEnv" Description = ""**

**Output = "FoundationPort8" Description = "Foundation Port 8"**

**Output = "VesselwithSkirtControlPoint" Description = "Control Point of Vessel with Skirt"**

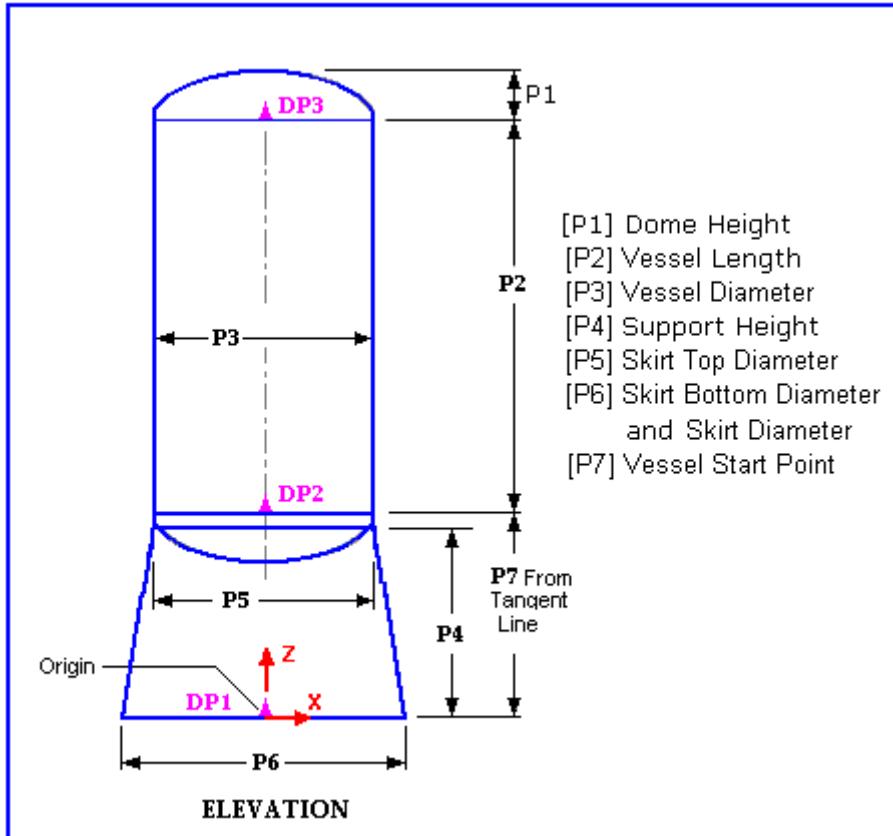
**Aspects = 4**

**Aspect = SimplePhysical**

**Aspect = Maintenance**

**Aspect = Insulation**

**Aspect = Operation**



# Fire and Safety Symbols: An Overview

The software delivers many fire and safety symbols to help in the design of your model.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

## **What's New**

### *Version 2007*

- No new symbols.

# SP3D2WFireHydrantTy1

**Description:** fire hydrant

**Symbol Name:** SP3D2WFireHydrantTy1.C2WFireHydrantTy1

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D2WFireHydrantTy1.C2WFireHydrantTy1

**Inputs = 9**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "BottomtoCenter" Description = "BottomtoCenter"**

**Input = "GradetoCenter" Description = "GradetoCenter"**

**Input = "WaterOutlettoGrade" Description = "WaterOutlettoGrade"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Input = "Rotation" Description = "Rotation"**

**Outputs = 4**

**Output = "HydrantBody" Description = "HydrantBody"**

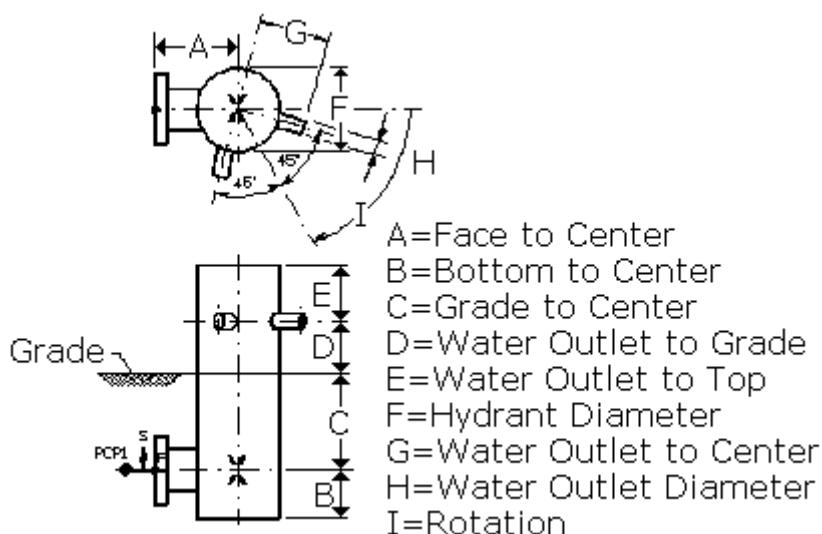
**Output = "WaterOutlet1" Description = "WaterOutlet1"**

**Output = "WaterOutlet2" Description = "WaterOutlet2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D2WFireHydrantTy2

**Description:** fire hydrant

**Symbol Name:** SP3D2WFireHydrantTy2.C2WFireHydrantTy2

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D2WFireHydrantTy2.C2WFireHydrantTy2

**Inputs = 5**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Outputs = 4**

**Output = "HydrantBody" Description = "HydrantBody"**

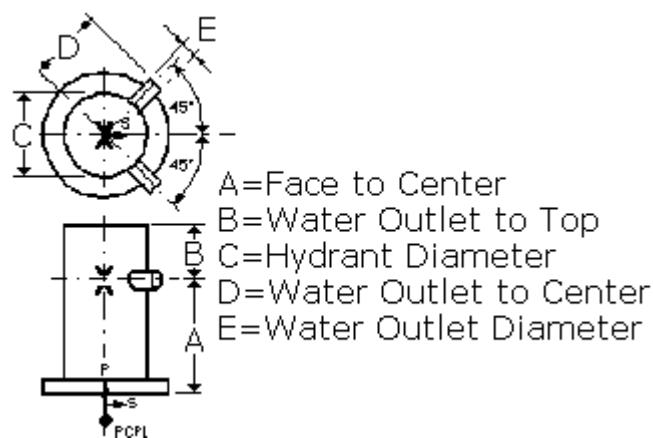
**Output = "WaterOutlet1" Description = "WaterOutlet1"**

**Output = "WaterOutlet2" Description = "WaterOutlet2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D3WFireHydrant

**Description:** fire hydrant

**Symbol Name:** SP3D3WFireHydrant.CFireHydrant

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** FireHydrant

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WFireHydrant.CFireHydrant

**Inputs = 9**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "BottomtoCenter" Description = "BottomtoCenter"**

**Input = "GradetoCenter" Description = "GradetoCenter"**

**Input = "WaterOutlettoGrade" Description = "WaterOutlettoGrade"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Input = "HandwheelAngle" Description = "Rotation"**

**Outputs = 5**

**Output = "HydrantBody" Description = "HydrantBody"**

**Output = "WaterOutlet1" Description = "WaterOutlet1"**

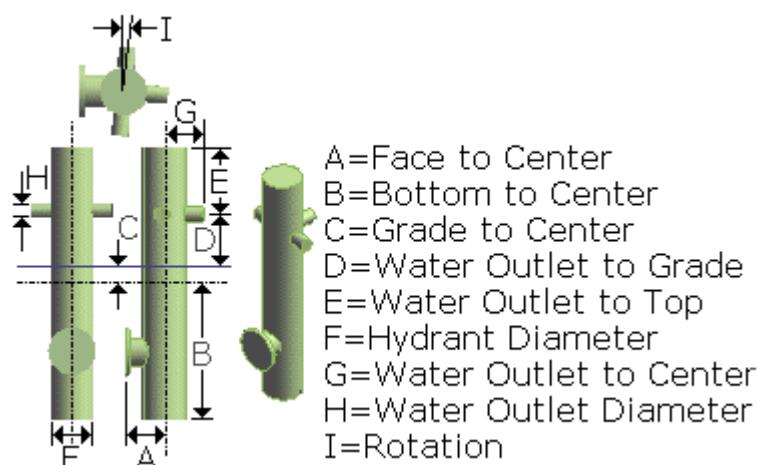
**Output = "WaterOutlet2" Description = "WaterOutlet2"**

**Output = "WaterOutlet3" Description = "WaterOutlet3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D3WFireHydrantTy2

**Description:** fire hydrant

**Symbol Name:** SP3D3WFireHydrantTy2.C3WFireHydrantTy2

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WFireHydrantTy2.C3WFireHydrantTy2

**Inputs = 5**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Outputs = 5**

**Output = "HydrantBody" Description = "HydrantBody"**

**Output = "WaterOutlet1" Description = "WaterOutlet1"**

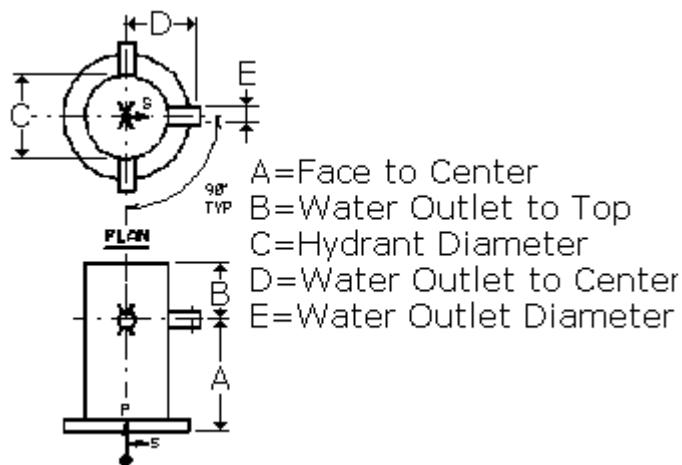
**Output = "WaterOutlet2" Description = "WaterOutlet2"**

**Output = "WaterOutlet3" Description = "WaterOutlet3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D90DegSiamese

**Description:** This symbol consists of a nozzle with length, body cylinder, and two outlets cylinders

**Symbol Name:** SP3D90DegSiamese.C90DegSiamese

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90DegSiamese.C90DegSiamese

**Inputs = 4**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "CentertoEnd" Description = "CentertoEnd"**

**Input = "OutletLength" Description = "OutletLength"**

**Input = "OutletDiameter" Description = "OutletDiameter"**

**Outputs = 3**

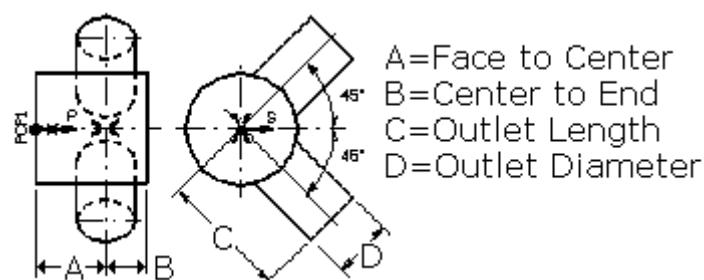
**Output = "Outlet1" Description = "Outlet1"**

**Output = "Outlet2" Description = "Outlet2"**

**Output = "PNoz1" Description = "Nozzle 1 with Length"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DElevFireMonitor

**Description:** elevated fire monitor

**Symbol Name:** SP3DElevFireMonitor.CElevFireMonitor

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElevFireMonitor.CElevFireMonitor

**Inputs = 14**

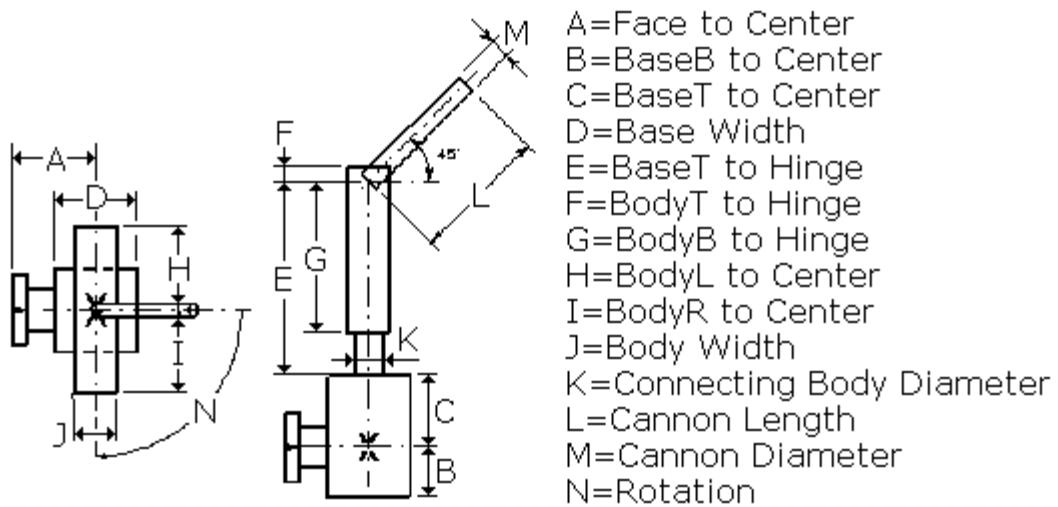
```
Input = "FacetoCenter" Description = "FacetoCenter"
Input = "BaseBtoCenter" Description = "BaseBtoCenter"
Input = "BaseTtoCenter" Description = "BaseTtoCenter"
Input = "BaseWidth" Description = "BaseWidth"
Input = "BaseTtoHinge" Description = "BaseTtoHinge"
Input = "BodyTtoHinge" Description = "BodyTtoHinge"
Input = "BodyBtoHinge" Description = "BodyBtoHinge"
Input = "BodyLtoCenter" Description = "BodyLtoCenter"
Input = "BodyRtoCenter" Description = "BodyRtoCenter"
Input = "BodyWidth" Description = "BodyWidth"
Input = "ConnBodyDiameter" Description = "Connecting Body Diameter"
Input = "CannonLength" Description = "CannonLength"
Input = "CannonDiameter" Description = "Cannon Diameter"
Input = "Rotation" Description = "Rotation"
```

**Outputs = 5**

```
Output = "MonitorBody" Description = "Monitor Body"
Output = "CannonBody" Description = "Cannon Body"
Output = "ConnBody" Description = "Connecting Body"
Output = "BaseBody" Description = "Base Body"
Output = "PNoz1" Description = "Nozzle 1"
```

**Aspects = 1**

**Aspect** = SimplePhysical



# SP3DEyeWash

**Description:** eye wash station

**Symbol Name:** SP3DEyeWash.CEyeWash

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEyeWash.CEyeWash

**Inputs = 10**

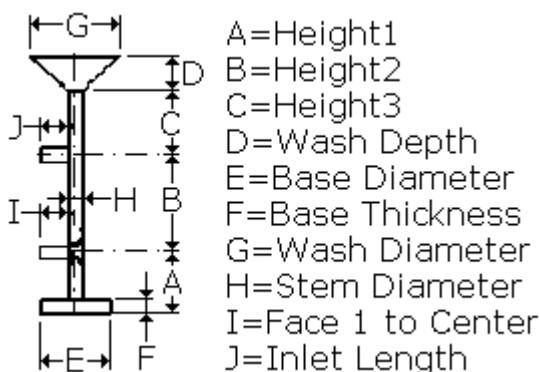
```
Input = "Height1" Description = "Height1"
Input = "Height2" Description = "Height2"
Input = "Height3" Description = "Height3"
Input = "WashDepth" Description = "WashDepth"
Input = "BaseDiameter" Description = "BaseDiameter"
Input = "BaseThickness" Description = "BaseThickness"
Input = "WashDiameter" Description = "WashDiameter"
Input = "StemDiameter" Description = "StemDiameter"
Input = "Face1toCenter" Description = "Face1toCenter"
Input = "InletLength" Description = "InletLength"
```

**Outputs = 5**

```
Output = "ShowerCone" Description = "ShowerCone"
Output = "Stem" Description = "Stem"
Output = "Inlet" Description = "Inlet"
Output = "Base" Description = "Base"
Output = "PNoz1" Description = "Nozzle 1"
```

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DFireHydWMonTy1

**Description:** fire hydrant

**Symbol Name:** SP3DFireHydWMonTy1.CFireHydWMonTy1

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFireHydWMonTy1.CFireHydWMonTy1

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "BottomtoCenter" Description = "BottomtoCenter"**

**Input = "GradetoCenter" Description = "GradetoCenter"**

**Input = "WaterOutlettoGrade" Description = "WaterOutlettoGrade"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "FlangeOutlettoCenter" Description = "FlangeOutlettoCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "Rotation" Description = "Rotation"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Input = "MonitorOutletDiameter" Description = "MonitorOutletDiameter"**

**Input = "FlangeWidth" Description = "FlangeWidth"**

**Input = "FlangeDiameter" Description = "FlangeDiameter"**

**Outputs = 7**

**Output = "HydrantBody" Description = "Hydrant Body"**

**Output = "WaterOutlet1" Description = "Water Outlet1"**

**Output = "WaterOutlet2" Description = "Water Outlet2"**

**Output = "MonitorHorzBody" Description = "Monitor Horizontal Body"**

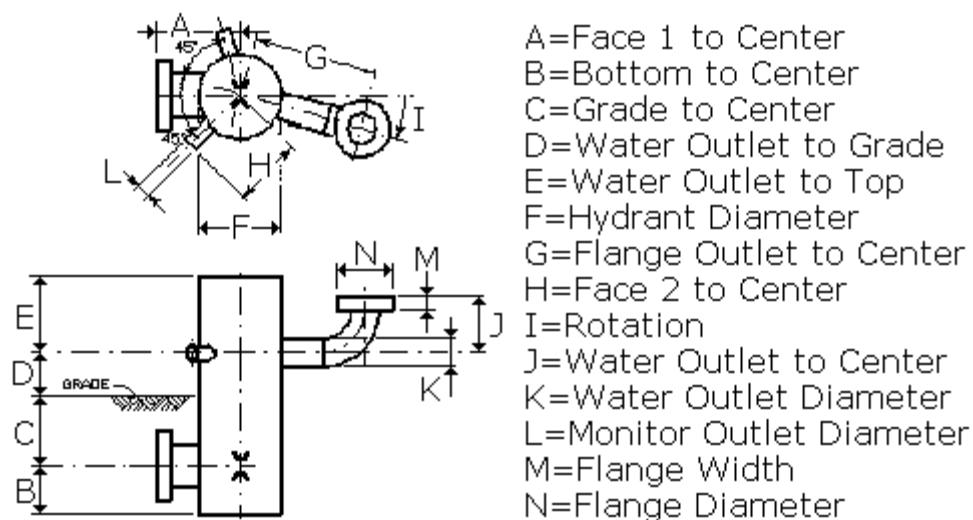
**Output = "MonitorElbow" Description = "Monitor Elbow"**

**Output = "MonitorFlange" Description = "Monitor Flange"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DFireHydWMonTy2

**Description:** fire hydrant

**Symbol Name:** SP3DFireHydWMonTy2.CFireHydWMonTy2

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFireHydWMonTy2.CFireHydWMonTy2

**Inputs = 10**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "WaterOutlettoTop" Description = "WaterOutlettoTop"**

**Input = "HydrantDiameter" Description = "HydrantDiameter"**

**Input = "FlangeOutlettoCenter" Description = "FlangeOutlettoCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "WaterOutlettoCenter" Description = "WaterOutlettoCenter"**

**Input = "WaterOutletDiameter" Description = "WaterOutletDiameter"**

**Input = "MonitorOutletDiameter" Description = "MonitorOutletDiameter"**

**Input = "FlangeWidth" Description = "FlangeWidth"**

**Input = "FlangeDiameter" Description = "FlangeDiameter"**

**Outputs = 7**

**Output = "HydrantBody" Description = "Hydrant Body"**

**Output = "WaterOutlet1" Description = "Water Outlet1"**

**Output = "WaterOutlet2" Description = "Water Outlet2"**

**Output = "MonitorHorzBody" Description = "Monitor Horizontal Body"**

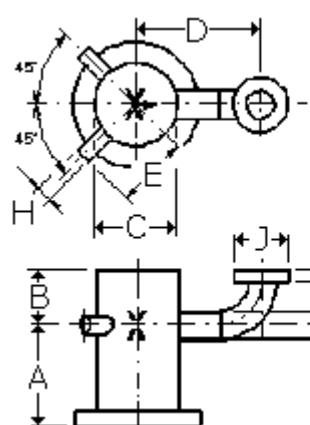
**Output = "MonitorElbow" Description = "Monitor Elbow"**

**Output = "MonitorFlange" Description = "Monitor Flange"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Face 1 to Center  
B=Water Outlet to Top  
C=Hydrant Diameter  
D=Flange Outlet to Center  
E=Face 2 to Center  
F=Water Outlet to Center  
G=Water Outlet Diameter  
H=Monitor Outlet Diameter  
I=Flange Width  
J=Flange Diameter

## SP3DFireMonitor

**Description:** fire monitor

**Symbol Name:** SP3DFireMonitor.CFireMonitor

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ElevatedFireMonitorType1, ElevatedFireMonitorType2, Monitor Inputs, Outputs, and Aspects:

ProgID: SP3DFireMonitor.CFireMonitor

**Inputs = 8**

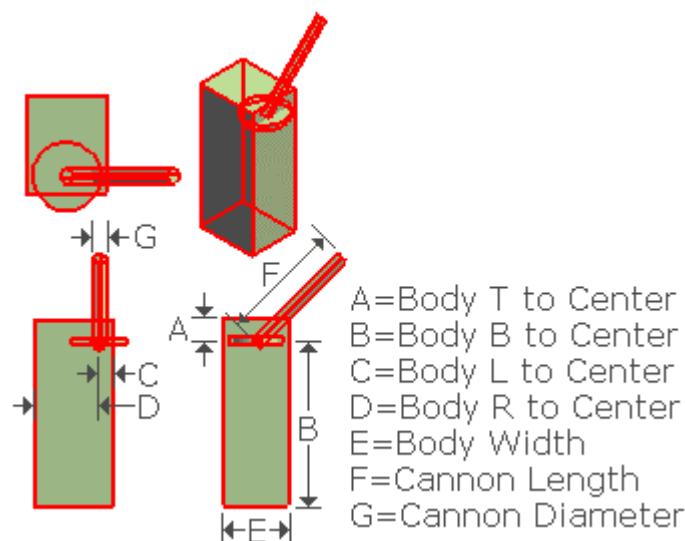
```
Input = "FacetoCenter" Description = "FacetoCenter"  
Input = "BodyTtoCenter" Description = "BodyTtoCenter"  
Input = "BodyBtoCenter" Description = "BodyBtoCenter"  
Input = "BodyLtoCenter" Description = "BodyLtoCenter"  
Input = "BodyRtoCenter" Description = "BodyRtoCenter"  
Input = "BodyWidth" Description = "BodyWidth"  
Input = "CannonLength" Description = "CannonLength"  
Input = "CannonDiameter" Description = "CannonDiameter"
```

**Outputs = 3**

```
Output = "MonitorBody" Description = "Body of Monitor"  
Output = "CannonBody" Description = "Body of Cannon"  
Output = "PNoz1" Description = "Nozzle 1"
```

**Aspects = 1**

**Aspect =** SimplePhysical



# SP3DFICrossWFireHydOutlet

**Description:**

**Symbol Name:** SP3DFICrossWFireHydOutlet.CFCWFHOutlet

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFICrossWFireHydOutlet.CFCWFHOutlet

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "Face5toCenter" Description = "Face5 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulationBody1" Description = "Insulation Body1"**

**Output = "InsulationBody2" Description = "Insulation Body2"**

**Output = "InsulationBody3" Description = "Insulation Body3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

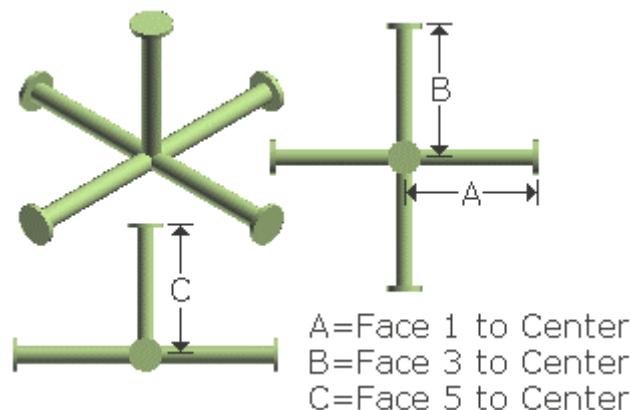
**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "PNoz5" Description = "Nozzle 5"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DFITeeWFireHydOutlet

## Description:

**Symbol Name:** SP3DFITeeWFireHydOutlet.CFTWFHOutlet

## Workbook:

### Workbook Sheet:

**User Class Name:** PipeComponentClass

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DFITeeWFireHydOutlet.CFTWFHOutlet

### Inputs = 4

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "Face4toCenter" Description = "Face4 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

### Outputs = 7

**Output = "InsulationBody1" Description = "Insulation Body1"**

**Output = "InsulationBody2" Description = "Insulation Body2"**

**Output = "InsulationBody3" Description = "Insulation Body3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

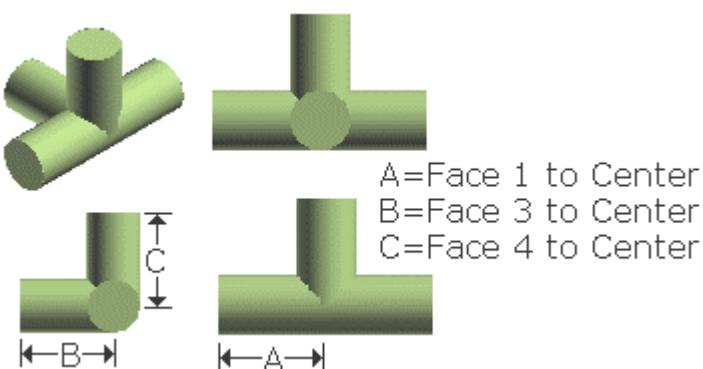
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

### Aspects = 2

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DFoamChamberTy1

**Description:** foam chamber

**Symbol Name:** SP3DFoamChamberTy1.CFoamChamberTy1

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFoamChamberTy1.CFoamChamberTy1

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "BodyTopToCenter" Description = "BodyTopToCenter"**

**Input = "BodyBottomToCenter" Description = "BodyBottomToCenter"**

**Input = "BodyDiameter" Description = "BodyDiameter"**

**Outputs = 3**

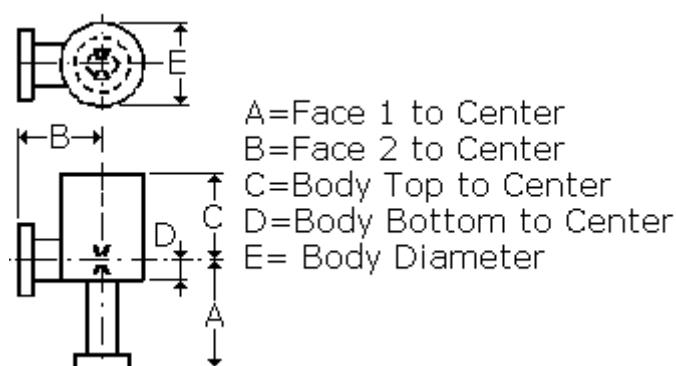
**Output = "CylinBody" Description = "Cylinder Body"**

**Output = "PNoz1" Description = "Nozzle 1 with Length"**

**Output = "PNoz2" Description = "Nozzle 2 with Length"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DFoamChamberTy2

**Description:** foam chamber

**Symbol Name:** SP3DFoamChamberTy2.CFoamChamberTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFoamChamberTy2.CFoamChamberTy2

**Inputs = 13**

**Input and description** = "Face1toCenter", "Face 1 to Center", 0.

**Input and description** = "FoamChamberWidth", "Foam Chamber Width", 0.

**Input and description** = "FoamChamberLength1", "Foam Chamber Length 1", 0.

**Input and description** = "FoamChamberHeight1", "Foam Chamber Height 1", 0.

**Input and description** = "FoamChamberHeight2", "Foam Chamber Height 2", 0.

**Input and description** = "FoamChamberHeight3", "Foam Chamber Height 3", 0.

**Input and description** = "FoamChamberCyltoCenter", "Foam Chamber Cylinder to Center", 0.

**Input and description** = "FoamChamberInletWidth", "Foam Chamber Inlet Width"

**Input and description** = "FoamChamberInletHeight1", "Foam Chamber Inlet Height 1"

**Input and description** = "FoamChamberInletHeight2", "Foam Chamber Inlet Height 2"

**Input and description** = "FoamChamberCylDia1", "Foam Chamber Cylinder Diameter 1"

**Input and description** = "FoamChamberCylThickness", "Foam Chamber Cylinder Thickness"

**Input and description** = "FoamChamberCylDia2", "Foam Chamber Cylinder Diameter 2"

**Outputs = 6**

**Output and description** = "oTrapezoid1", "oTrapezoid1", 1

**Output and description** = "oTrapezoid2", "oTrapezoid2", 1

**Output and description** = "oTrapezoid3", "oTrapezoid3", 1

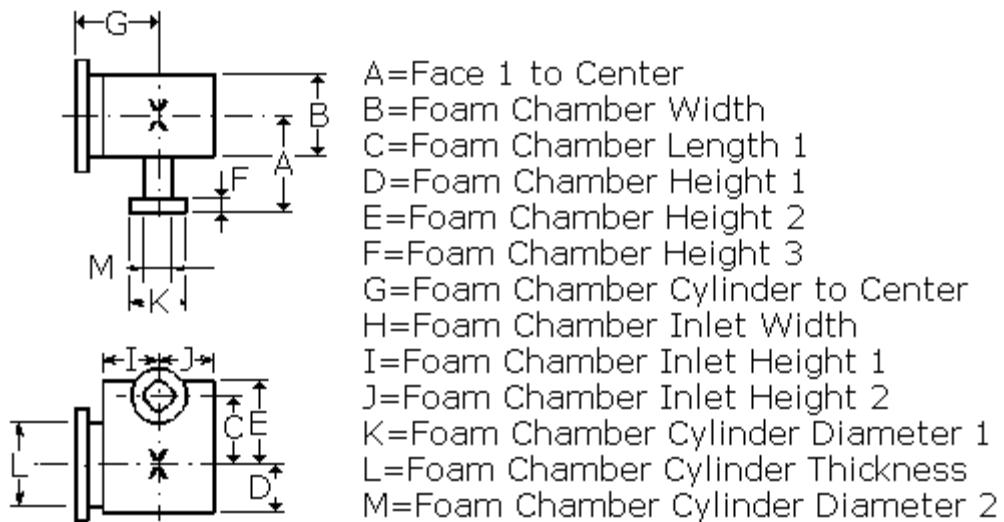
**Output and description** = "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description** = "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description** = "Nozzle1", "Nozzle1", 1

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DHoseRackSt

**Description:** hose rack station

**Symbol Name:** SP3DHoseRackSt.CHoseRackSt

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** HoseRackStation

**User Class Name:** Hose Rack Station

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoseRackSt.CHoseRackSt

**Inputs = 6**

**Input = "FacetoCenter" Description = "Face to Center-D1"**

**Input = "PortVOffset" Description = "Port Vert Offset"**

**Input = "PortHOffset" Description = "Port Hori Offset"**

**Input = "StationLength" Description = "Station Length"**

**Input = "StationHeight" Description = "Station Height"**

**Input = "StationWidth" Description = "Station Width"**

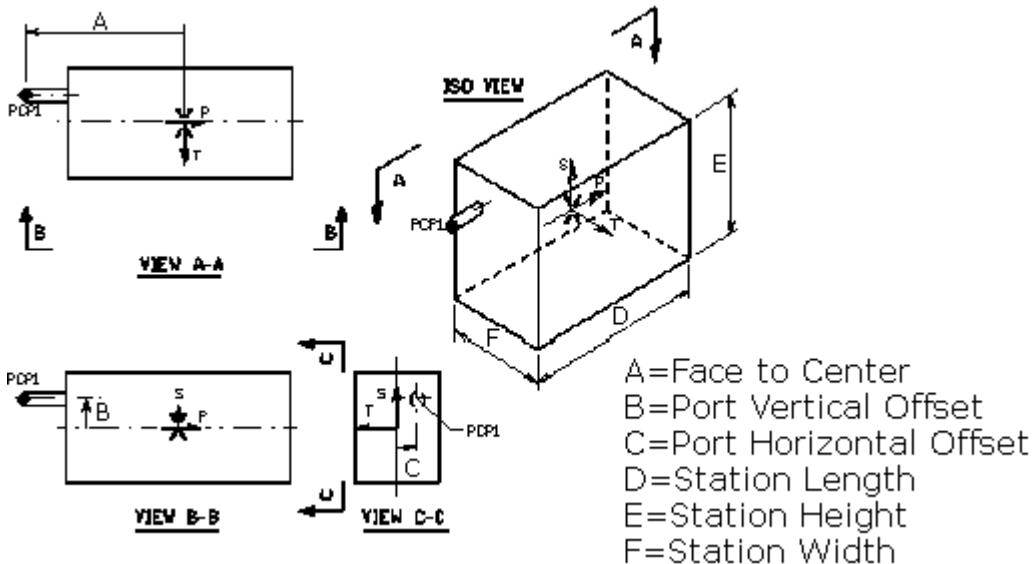
**Outputs = 2**

**Output = "Box" Description = "Box"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSafetyShower

**Description:** safety shower

**Symbol Name:** SP3DSafetyShower.CSafetyShower

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafetyShower.CSafetyShower

**Inputs = 12**

**Input = "Height1" Description = "Height1"**

**Input = "Height2" Description = "Height2"**

**Input = "Height3" Description = "Height3"**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "BaseDiameter" Description = "BaseDiameter"**

**Input = "BaseThickness" Description = "BaseThickness"**

**Input = "ShowerSupLength" Description = "ShowerSupLength"**

**Input = "Rotation" Description = "Rotation"**

**Input = "ShowerDiameter" Description = "ShowerDiameter"**

**Input = "WashHeight" Description = "WashHeight"**

**Input = "WashSupLength" Description = "WashSupLength"**

**Input = "WashDiameter" Description = "WashDiameter"**

**Outputs = 8**

**Output = "Stem" Description = "Stem"**

**Output = "ShowerBase" Description = "ShowerBase"**

**Output = "ShowerSupLength" Description = "ShowerSupLength"**

**Output = "Shower" Description = "Shower"**

**Output = "WashSupLength" Description = "WashSupLength"**

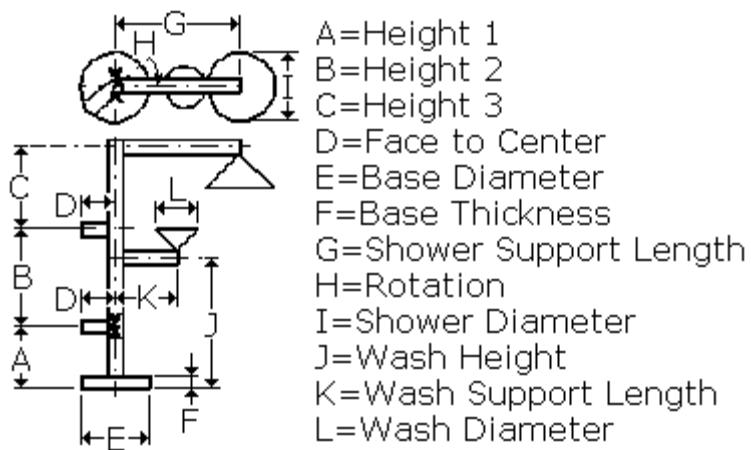
**Output = "EyeWash" Description = "EyeWash"**

**Output = "Inlet" Description = "Inlet"**

**Output = "PNoz1" Description = "Nozzle 1 with Length"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSafShower01Asm

### Description:

**Symbol Name:** SP3DSafShower01Asm.SafetyShower01Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower01-E

### Inputs, Outputs, and Aspects:

ProgID: SP3DSafShower01Asm.SafetyShower01Sym

**Outputs = 7**

**Output = "Box" Description = "Shower Base"**

**Output = "Cylinder" Description = "Shower Stem"**

**Output = "Dish" Description = "Shower head"**

**Output = "Cone" Description = "Shower Support"**

**Output = "Obstruction" Description = "Obstruction"**

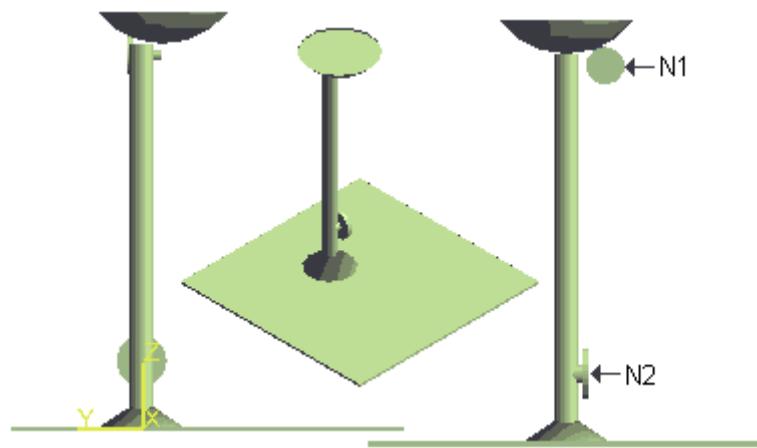
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower02Asm

**Description:** SAFETY SHOWER STATION - VERTICAL PIPE MOUNTED TYPE

**Symbol Name:** SP3DSafShower02Asm.SafetyShower02Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower02-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower02Asm.SafetyShower02Sym

**Outputs = 4**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Dish" Description = "Shower Head"**

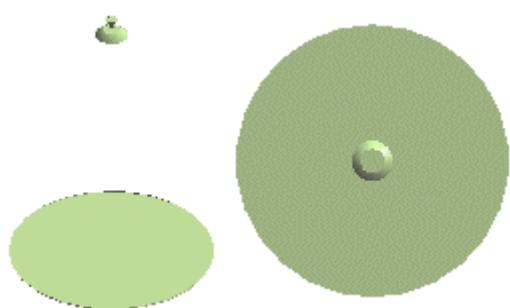
**Output = "Obstruction" Description = "Obstruction"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower03Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH STATION - COMBINATION UNIT TYPE

**Symbol Name:** SP3DSafShower03Asm.SafetyShower03Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower03-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower03Asm.SafetyShower03Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "ShowerVSupport" Description = "Shower Vert. Support"**

**Output = "ShowerHSupport" Description = "Shower Horz. Support"**

**Output = "DishAttachSupport" Description = "Dish Attach Support"**

**Output = "Cone" Description = "Base Support"**

**Output = "CTorus" Description = "Shower Support Bend"**

**Output = "Dish" Description = "Shower Head"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "Obstruction" Description = "Obstruction"**

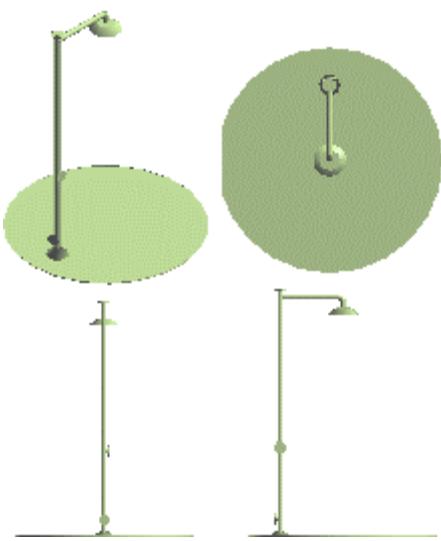
**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower04Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH STATION - COMBINATION UNIT W/DRENCH HOSE

**Symbol Name:** SP3DSafShower04Asm.SafetyShower04Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower04-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower04Asm.SafetyShower04Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Obstruction" Description = "Obstruction"**

**Output = "Cone" Description = "Shower Base Support"**

**Output = "VerticalSupport" Description = "Vertical Support"**

**Output = "HorizontalSupport" Description = "Horizontal Support"**

**Output = "CTorus" Description = "Support Bend"**

**Output = "HeadSupport" Description = "Head Support"**

**Output = "Dish" Description = "Shower Head"**

**Output = "PipingNoz1" Description = "Nozzle 1"**

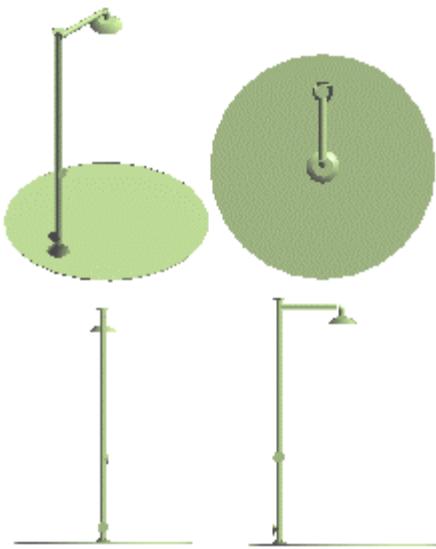
**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower05Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBINATION UNIT -  
INSUL & ELEC TRACED

**Symbol Name:** SP3DSafShower05Asm.SafetyShower05Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower05-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower05Asm.SafetyShower05Sym

**Outputs = 11**

**Output = "ShowerBase" Description = "Shower Base"**

**Output = "Obstruction" Description = "Obstruction"**

**Output = "Cone" Description = "Shower Support"**

**Output = "VerticalSupport" Description = "Vertical Support"**

**Output = "CTorus" Description = "Support Bend 1"**

**Output = "HorizontalSupport" Description = "Horizontal Support"**

**Output = "CTorusSupportBend2" Description = "Support Bend 2"**

**Output = "HeadSupport" Description = "Head Support"**

**Output = "Dish" Description = "Shower Head"**

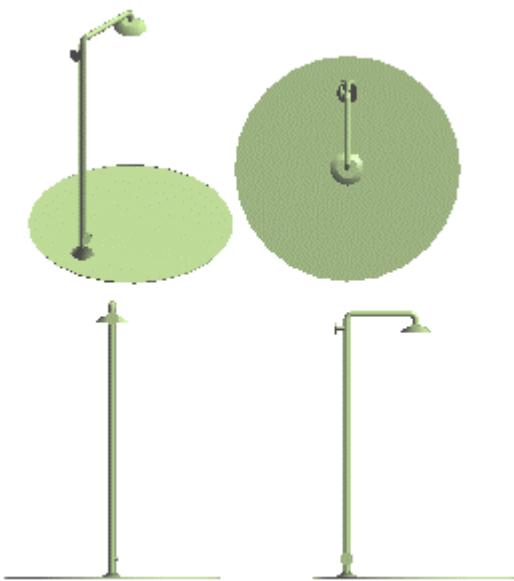
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = Maintenance**

**Aspect = SimplePhysical**



## SP3DSafShower06Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBIN. UNIT RECIR  
BOOTH W/HEATER

**Symbol Name:** SP3DSafShower06Asm.SafetyShower06Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower06-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower06Asm.SafetyShower06Sym

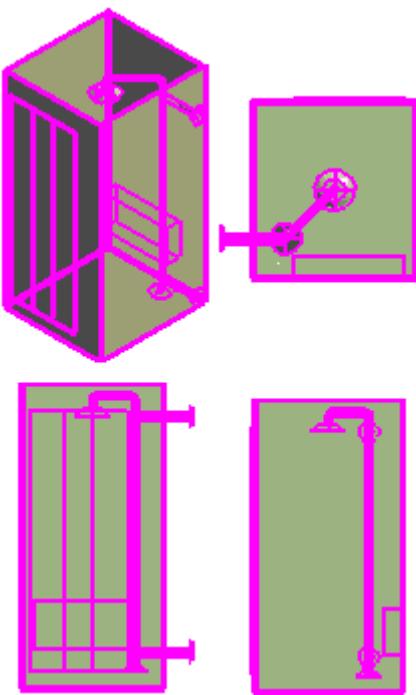
**Outputs = 18**

**Output = "Support" Description = "Support Cone"**  
**Output = "Spine" Description = "Spine Cylinder"**  
**Output = "Elbow" Description = "Elbow CTor"**  
**Output = "Arm" Description = "Arm Cylinder"**  
**Output = "Wrist" Description = "Wrist CTor"**  
**Output = "Neck" Description = "Neck Cylinder"**  
**Output = "Head" Description = "Head Dish"**  
**Output = "Box1" Description = "Box 1"**  
**Output = "Box2" Description = "Box 2"**  
**Output = "Box3" Description = "Box 3"**  
**Output = "Box4" Description = "Box 4"**  
**Output = "Box5" Description = "Box 5"**  
**Output = "Box6" Description = "Box 6"**  
**Output = "Box7" Description = "Box 7"**  
**Output = "Box8" Description = "Box 8"**  
**Output = "PipingNoz1" Description = "Nozzle 1"**  
**Output = "PipingNoz2" Description = "Nozzle 2"**  
**Output = "Obstruction" Description = "Obstruction"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DSafShower07Asm

**Description:** SAFETY SHOWER & E/F WASH - COMBIN. UNIT RECIR BOOTH  
W/O HEATER

**Symbol Name:** SP3DSafShower07Asm.SafetyShower07Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower07-E

**Inputs, Outputs, and Aspects:**

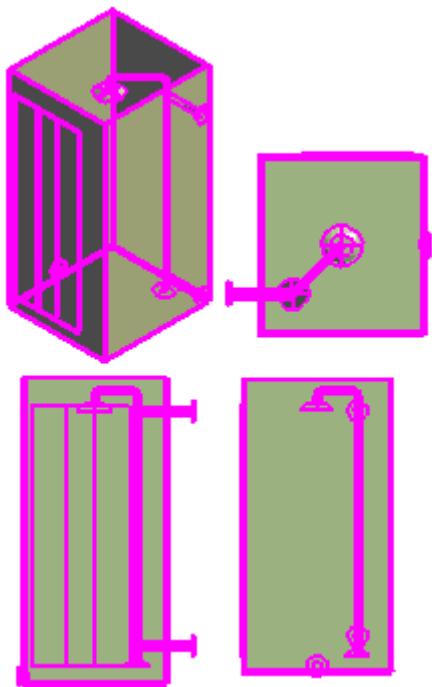
ProgID: SP3DSafShower07Asm.SafetyShower07Sym

**Outputs = 17**

**Output = "Cone" Description = "Base Cone"**  
**Output = "Cylinder1" Description = "Spine Cylinder"**  
**Output = "CTor1" Description = "Elbow CTor"**  
**Output = "Cylinder2" Description = "Arm Cylinder"**  
**Output = "CTor2" Description = "Wrist CTor"**  
**Output = "Cylinder3" Description = "Neck Cylinder"**  
**Output = "Dish" Description = "Dish Head"**  
**Output = "Box1" Description = "Box 1 "**  
**Output = "Box2" Description = "Box 2"**  
**Output = "Box3" Description = "Box 3"**  
**Output = "Box4" Description = "Box 4"**  
**Output = "Box5" Description = "Box 5"**  
**Output = "Box6" Description = "Box 6"**  
**Output = "Box7" Description = "Box 7"**  
**Output = "PipingNoz1" Description = "Nozzle 1"**  
**Output = "PipingNoz2" Description = "Nozzle 2"**  
**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSafShower08Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMB. UNIT NON-RECIR BOOTH BLEND SYS

**Symbol Name:** SP3DSafShower08Asm.SafetyShower08Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower08\_Asm

**Inputs, Outputs, and Aspects:**

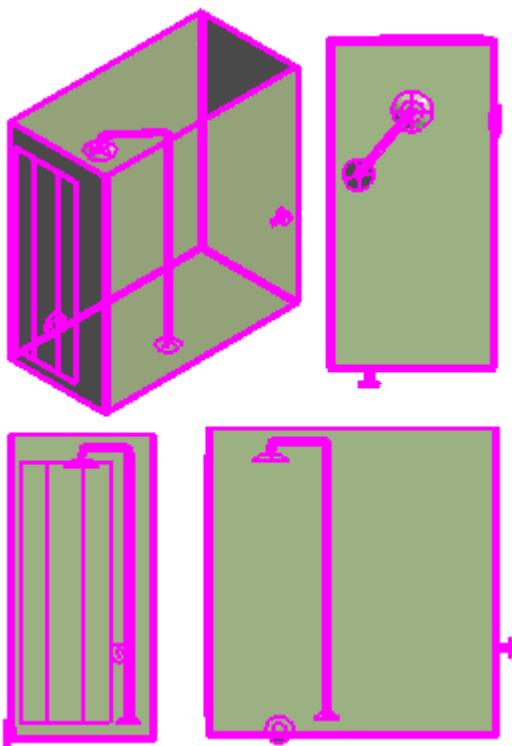
ProgID: SP3DSafShower08Asm.SafetyShower08Sym

**Outputs = 16**

**Output = "Cone "** **Description = "Support Cone"**  
**Output = "Cylinder1 "** **Description = "Spine Cylinder"**  
**Output = "CTor1 "** **Description = "Elbow CTor"**  
**Output = "Cylinder2 "** **Description = "Arm Cylinder"**  
**Output = "CTor2 "** **Description = "Wrist CTor"**  
**Output = "Cylinder3 "** **Description = "Neck Cylinder"**  
**Output = "Dish "** **Description = "Dish Head"**  
**Output = "Box1 "** **Description = "Box1"**  
**Output = "Box2 "** **Description = "Box2"**  
**Output = "Box3 "** **Description = "Box3"**  
**Output = "Box4 "** **Description = "Box4"**  
**Output = "Box5 "** **Description = "Box5"**  
**Output = "Box6 "** **Description = "Box6"**  
**Output = "Box7 "** **Description = "Box7"**  
**Output = "PipingNoz1 "** **Description = "Nozzle 1"**  
**Output = "PipingNoz2 "** **Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSafShower09Asm

**Description:** SAFETY SHOWER & EYE/FACE WASH - COMBIN UNIT RECIR UN-INSUL BOOTH

**Symbol Name:** SP3DSafShower09Asm.SafetyShower09Sym

**Workbook:** Equipment.xls

**Workbook Sheet:** SafetyShowerAsm

**User Class Name:** Safety Showers

**Part Number:** SafetyShower09-E

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSafShower09Asm.SafetyShower09Sym

**Outputs = 15**

**Output = "Box1" Description = "Box1"**

**Output = "Box2" Description = "Box2"**

**Output = "Box3" Description = "Box3"**

**Output = "Box4" Description = "Box4"**

**Output = "Box5" Description = "Box5"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Dish1" Description = "Dish 1"**

**Output = "CTor1" Description = "CTor1"**

**Output = "Cylinder2" Description = "Cylinder2"**

**Output = "CTor2" Description = "CTor2"**

**Output = "Cylinder3" Description = "Cylinder3"**

**Output = "Dish2" Description = "Dish2"**

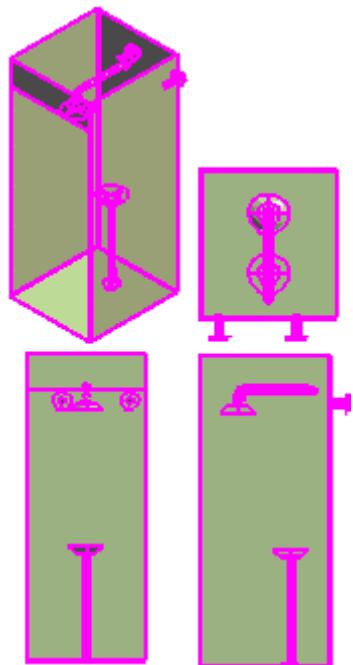
**Output = "PipingNoz1" Description = "Nozzle 1"**

**Output = "PipingNoz2" Description = "Nozzle 2"**

**Output = "PipingNoz3" Description = "Nozzle 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSiamese

**Description:** siamese hydrant

**Symbol Name:** SP3DSiamese.CSiamese

**Workbook:**

**Workbook Sheet:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSiamese.CSiamese

**Inputs = 4**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "BodyDiameter" Description = "BodyDiameter"**

**Input = "OutletLength" Description = "OutletLength"**

**Input = "OutletDiameter" Description = "OutletDiameter"**

**Outputs = 4**

**Output = "BodyCylinder" Description = "BodyCylinder"**

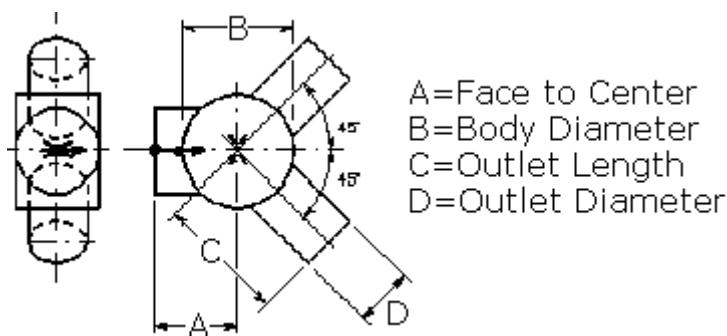
**Output = "OutletLet1" Description = "OutletLet1"**

**Output = "OutletLet2" Description = "OutletLet2"**

**Output = "PNoz1" Description = "Nozzle 1 with Length"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSpraySprinkler

**Description:** sprinkler

**Symbol Name:** SP3DSpraySprinkler.CSpraySprinkler

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Sprinkler

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSpraySprinkler.CSpraySprinkler

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "SprinklerDiameter" Description = "Sprinkler Diameter"**

**Outputs = 2**

**Output = "Cone" Description = "Cone Sprinkler"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



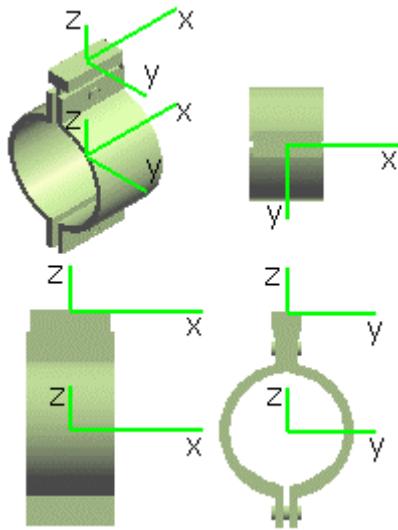


# Hangers and Supports Symbols: An Overview

The software uses symbols to represent the different hanger and support parts (components) in the model. The parts are defined on the hangers and supports parts catalog sheets. For more information on defining parts, see the Defining Parts: An Overview section in the *Hangers and Supports Reference Data Guide*.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to the Creating Symbols in Visual Basic: An Overview section in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

The parts ports are shown on the symbol using a green triad. The long arm of the triad is the x-axis of the port. The mid-length arm of the triad is the y-axis of the port. The shortest arm of the triad is the z-axis of the port. For more information on part ports, see the Understanding Part Ports section in the *Hangers and Supports Reference Data Guide*.



## What's New

### Version 2007

- Parts from the Pipe Supports Limits (PSL) catalog have been added.

## Assy\_FR\_BC\_CS

**Description:** Braced Cantilever C<size> w/ Baseplate

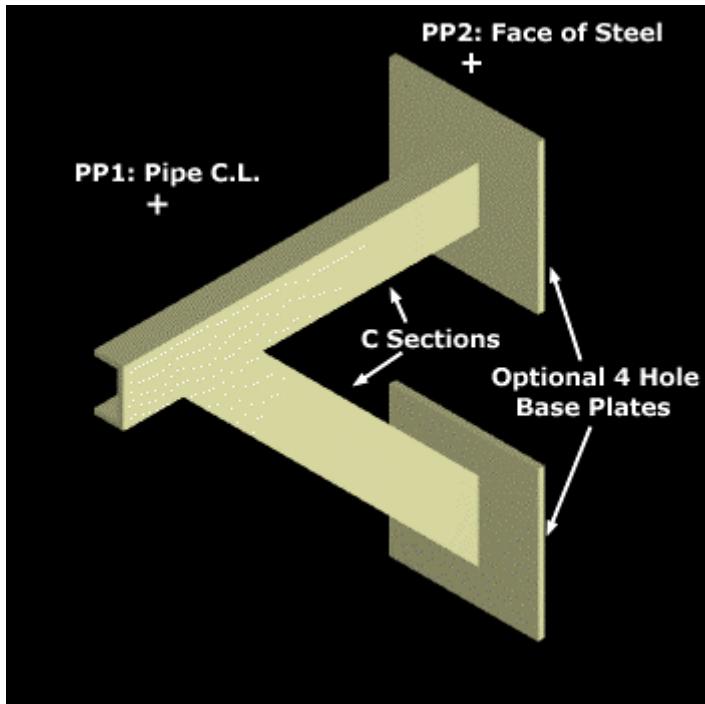
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_BC\_CS

**User Class Name:** Braced Cantilever - CS

**Part Number:** Assy\_FR\_BC\_CS\_<number>



## Assy\_FR\_BC\_HSS

**Description:** Braced Cantilever HSS $<size1>.<size2>$  w/ Baseplate

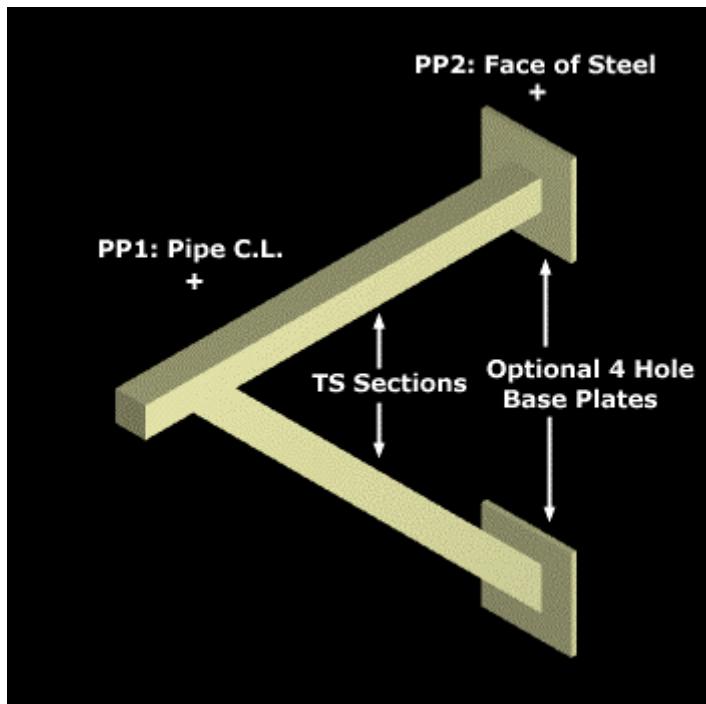
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_BC\_HSS

**User Class Name:** Braced Cantilever - HSS

**Part Number:** Assy\_FR\_BC\_HSS\_<number>



## Assy\_FR\_BC\_LS

**Description:** Braced Cantilever L<size> w/ Baseplate

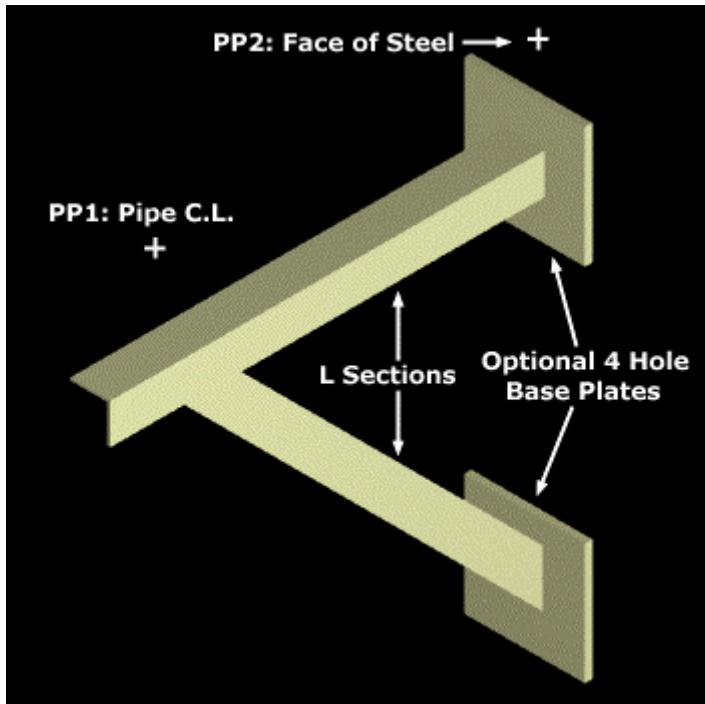
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_BC\_LS

**User Class Name:** Braced Cantilever - LS

**Part Number:** Assy\_FR\_BC\_LS\_<number>



## Assy\_FR\_BC\_WS

**Description:** Braced Cantilever W<size> w/ Baseplate

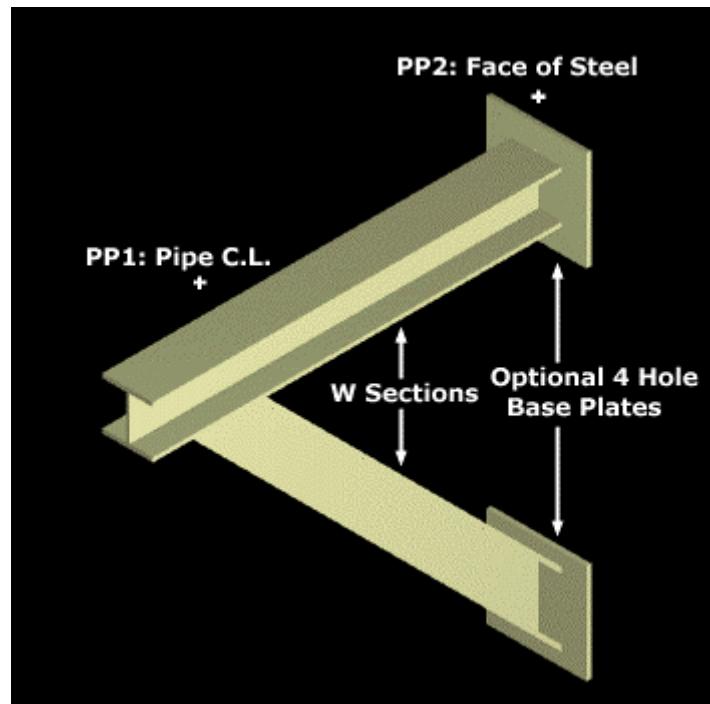
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_BC\_WS

**User Class Name:** Braced Cantilever - WS

**Part Number:** Assy\_FR\_BC\_WS\_<number>



## Assy\_FR\_IT\_LS

**Description:** Inverted T Shaped Frame L<sub>size</sub> <w/ or w/o> Baseplate

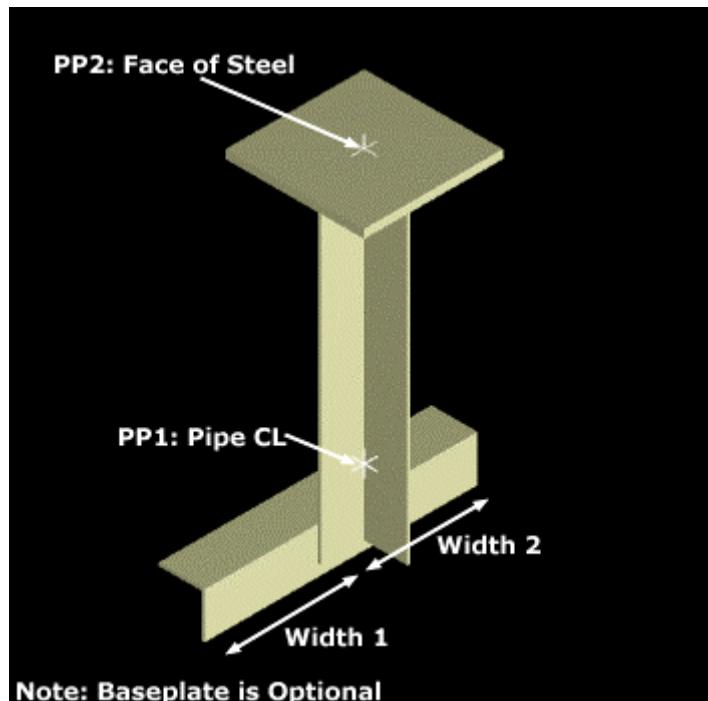
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_IT\_LS

**User Class Name:** Inverted T-Shaped Frame LS

**Part Number:** Assy\_FR\_IT\_LS\_<number>



## Assy\_FR\_LS\_CS

**Description:** L Shaped Frame C<size> <w/ or w/o> Baseplate

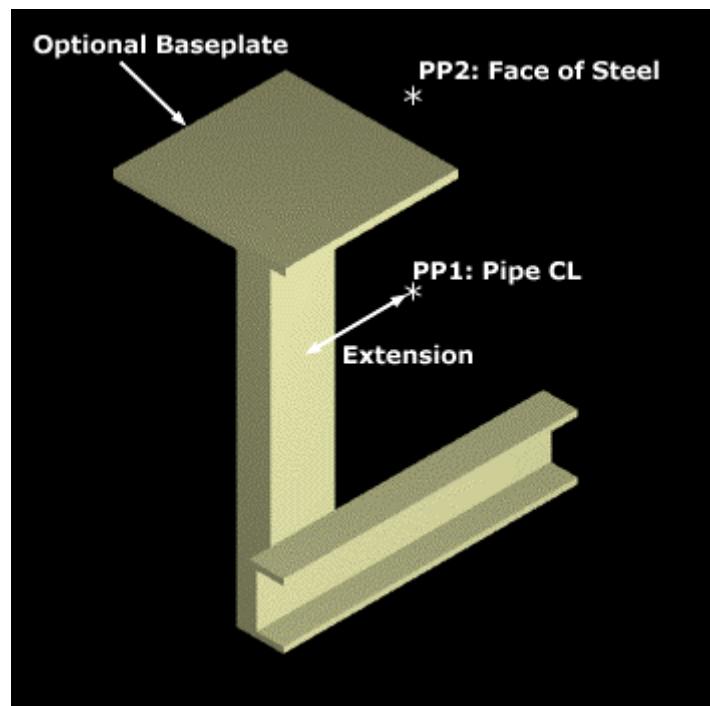
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_LS\_CS

**User Class Name:** L-Shaped Frame CS

**Part Number:** Assy\_FR\_LS\_CS\_<number>



## Assy\_FR\_LS\_HSS

**Description:** L Shaped Frame HSS<size1>.<size2> <w/ or w/o> Baseplate

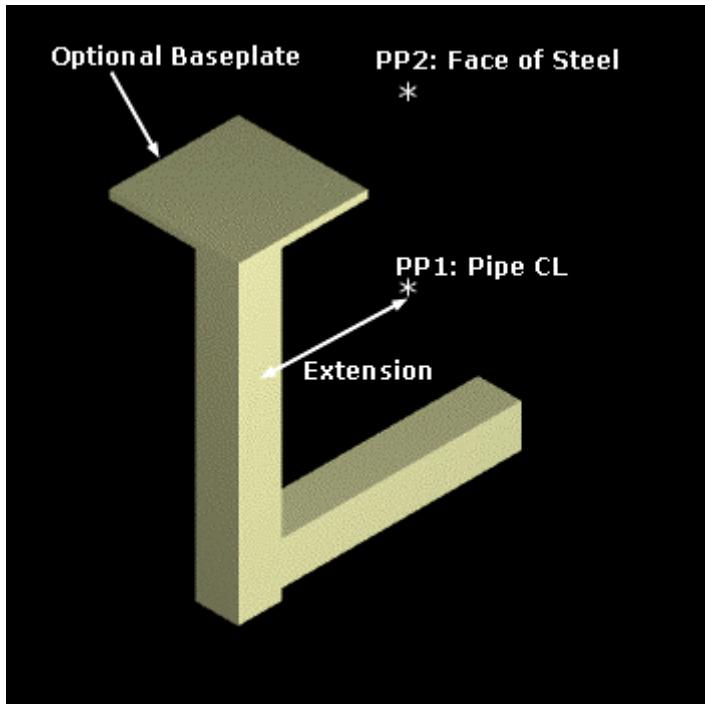
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_LS\_HSS

**User Class Name:** L-Shaped Frame HSS

**Part Number:** Assy\_FR\_LS\_HSS\_<number>



## Assy\_FR\_LS\_LS

**Description:** L Shaped Frame L<size> <w/ or w/o> Baseplate

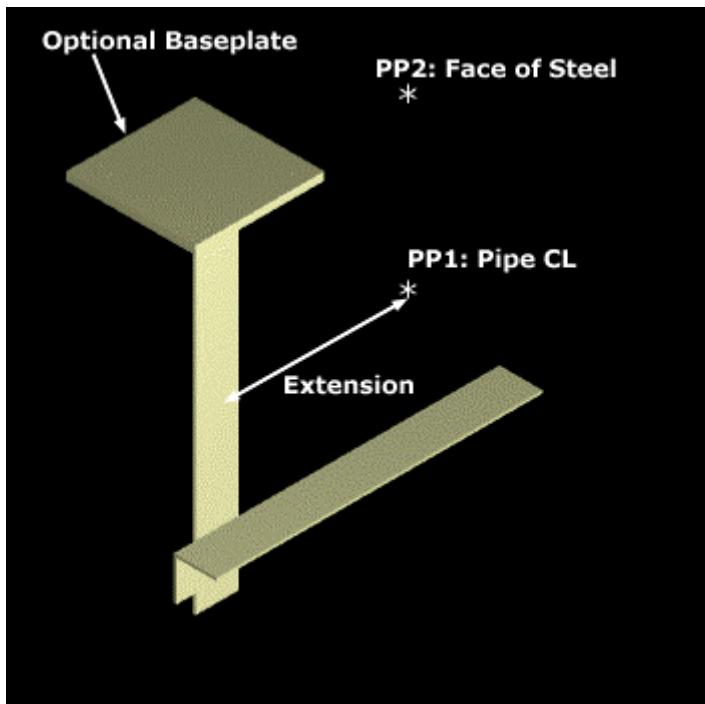
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_LS\_LS

**User Class Name:** L-Shaped Frame LS

**Part Number:** Assy\_FR\_LS\_LS\_<number>



## Assy\_FR\_BC\_CS

**Description:** Braced Cantilever C<size> w/ Baseplate

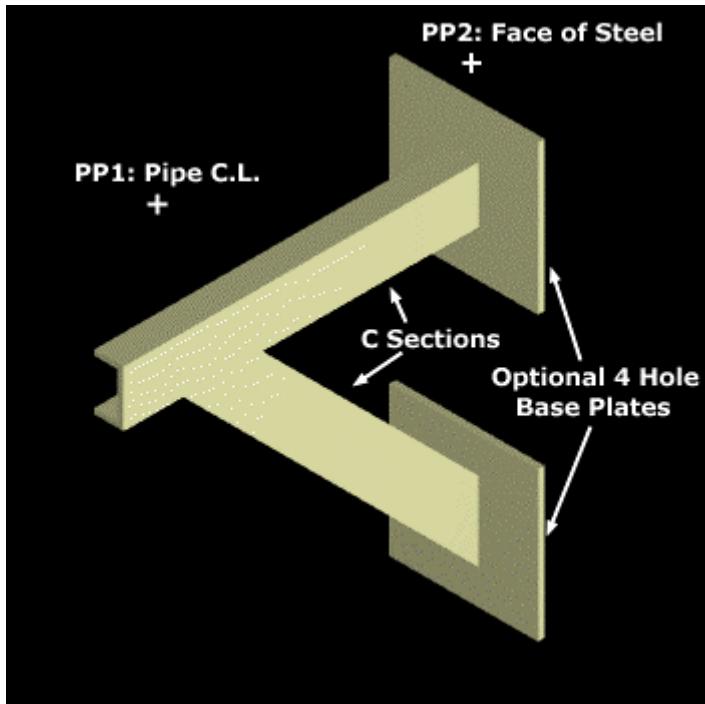
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_BC\_CS

**User Class Name:** Braced Cantilever - CS

**Part Number:** Assy\_FR\_BC\_CS\_<number>



## Assy\_FR\_TS\_CS

**Description:** T Shaped Frame C<size> <w/ or w/o> Baseplate

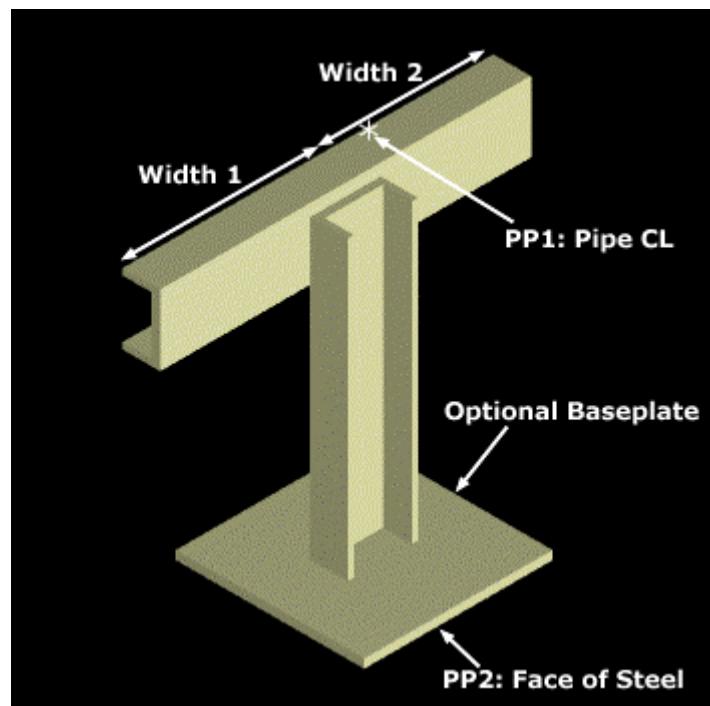
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_TS\_CS

**User Class Name:** T-Shaped Frame CS

**Part Number:** Assy\_FR\_TS\_CS\_<number>



## Assy\_FR\_TS\_LS

**Description:** T Shaped Frame L<size> <w/ or w/o> Baseplate

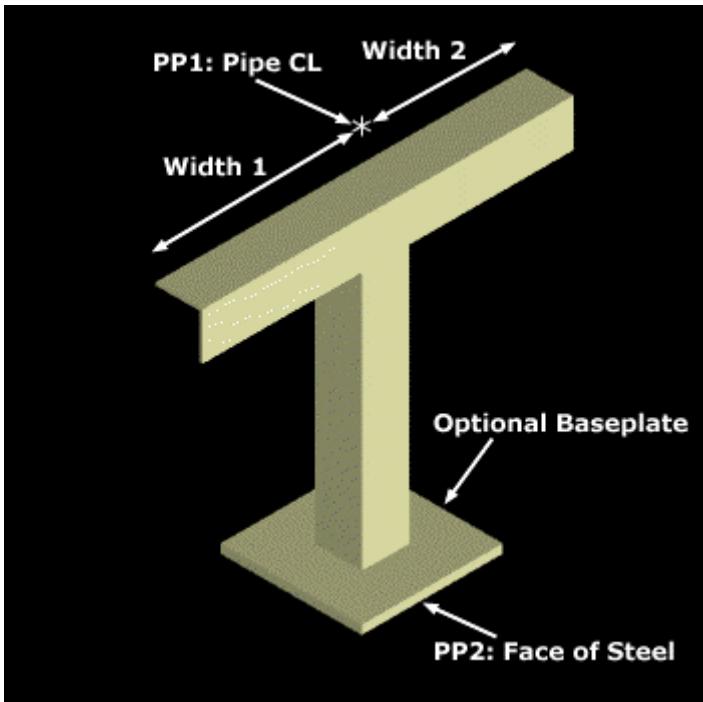
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_TS\_LS

**User Class Name:** T-Shaped Frame LS

**Part Number:** Assy\_FR\_TS\_LS\_<number>



## Assy\_FR\_TS\_WS

**Description:** T Shaped Frame W<size> <w/ or w/o> Baseplate

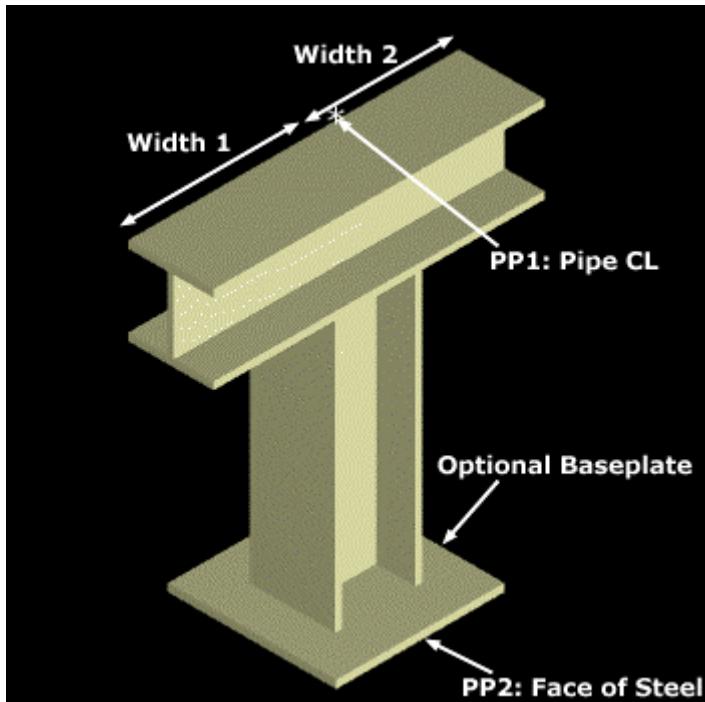
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_TS\_WS

**User Class Name:** T-Shaped Frame WS

**Part Number:** Assy\_FR\_TS\_WS\_<number>



## Assy\_FR\_UC\_CS

**Description:** Unbraced Cantilever C<size> w/ Baseplate

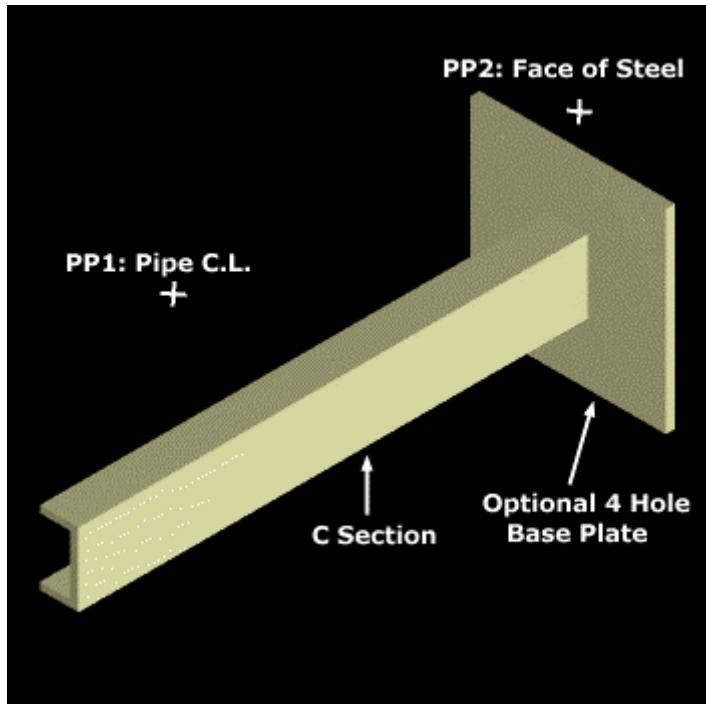
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_UC\_CS

**User Class Name:** Unbraced Cantilever - CS

**Part Number:** Assy\_FR\_UC\_CS\_<number>



## Assy\_FR\_UC\_HSS

**Description:** Unbraced Cantilever HSS $<size1>.<size2>$  w/ Baseplate

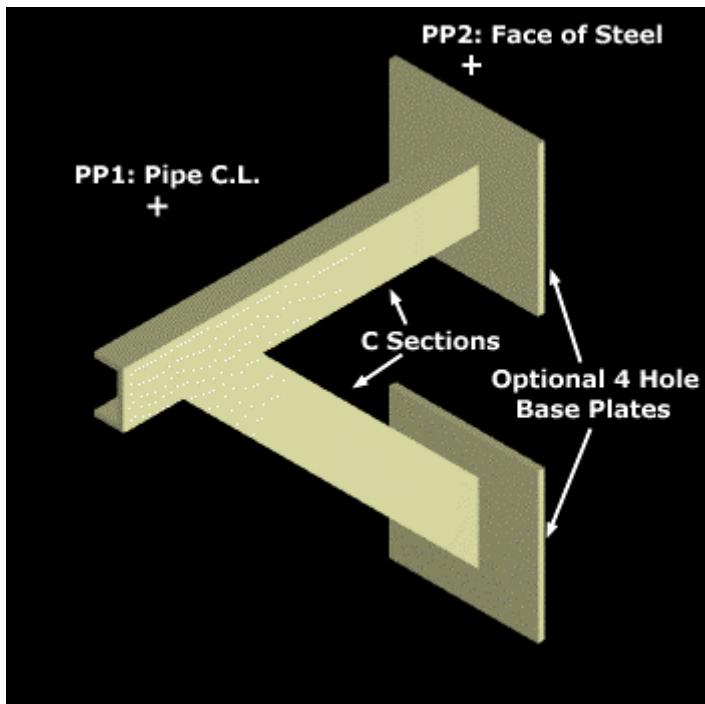
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_UC\_HSS

**User Class Name:** Unbraced Cantilever - HSS

**Part Number:** Assy\_FR\_UC\_HSS\_<number>



## Assy\_FR\_UC\_LS

**Description:** Unbraced Cantilever L<size> w/ Baseplate

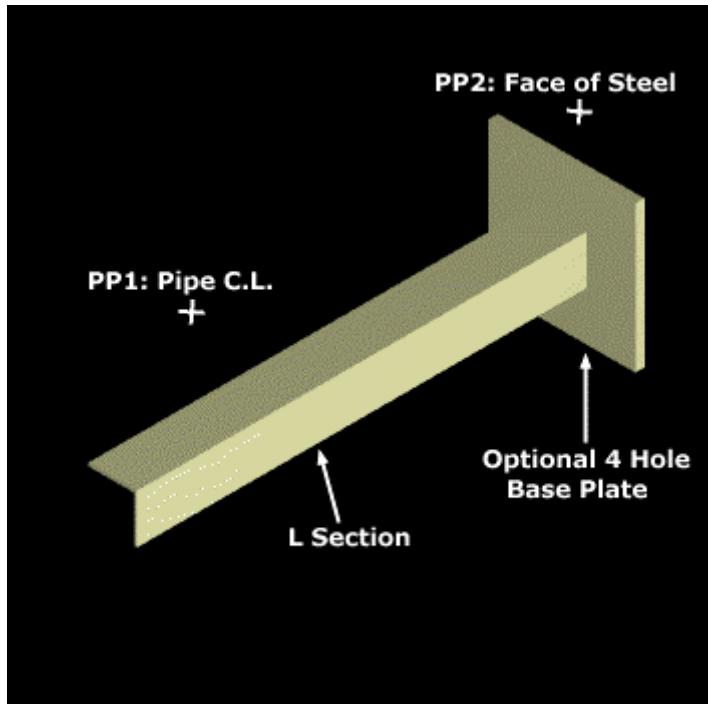
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_UC\_LS

**User Class Name:** Unbraced Cantilever - LS

**Part Number:** Assy\_FR\_UC\_LS\_<number>



## Assy\_FR\_UC\_WS

**Description:** Unbraced Cantilever W<sub><size></sub> w/ Baseplate

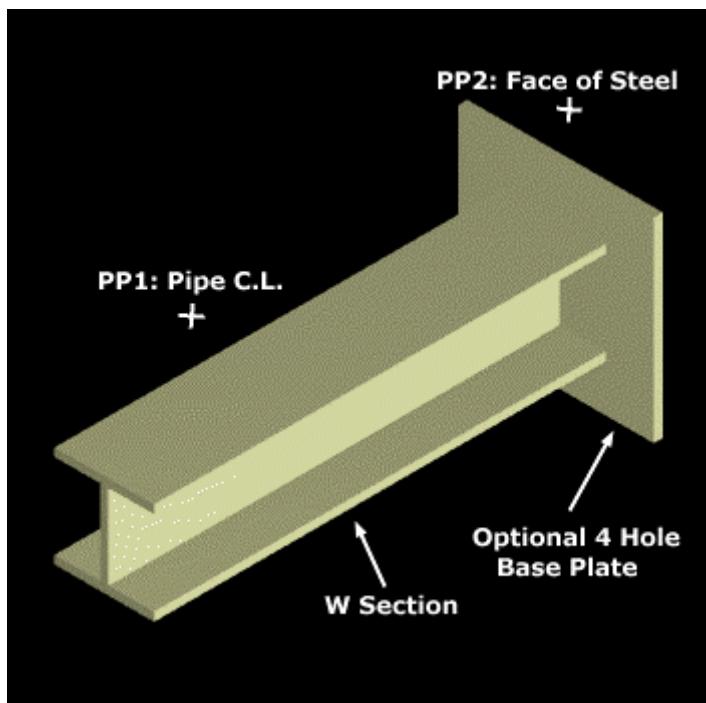
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_UC\_WS

**User Class Name:** Unbraced Cantilever - WS

**Part Number:** Assy\_FR\_UC\_WS\_<number>



## Assy\_FR\_US\_LS

**Description:** U Shaped Frame L<sub><size></sub> <w/ or w/o> Baseplate

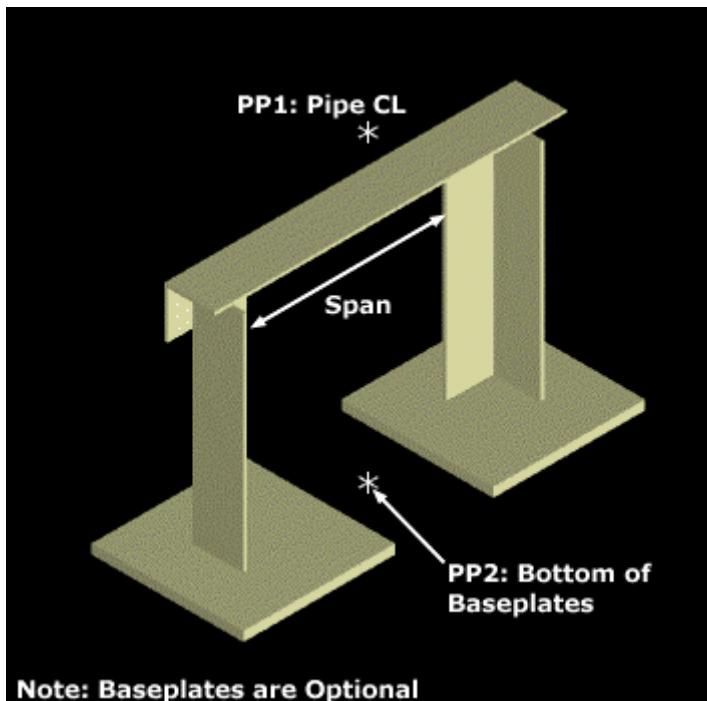
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_FR\_US\_LS

**User Class Name:** U-Shaped Frame LS

**Part Number:** Assy\_FR\_US\_LS\_<number>



## Assy\_GD\_AN

**Description:** Longitudinal Restraint - WT $<size>$ , Longitudinal Restraint - Plate- $<size>$

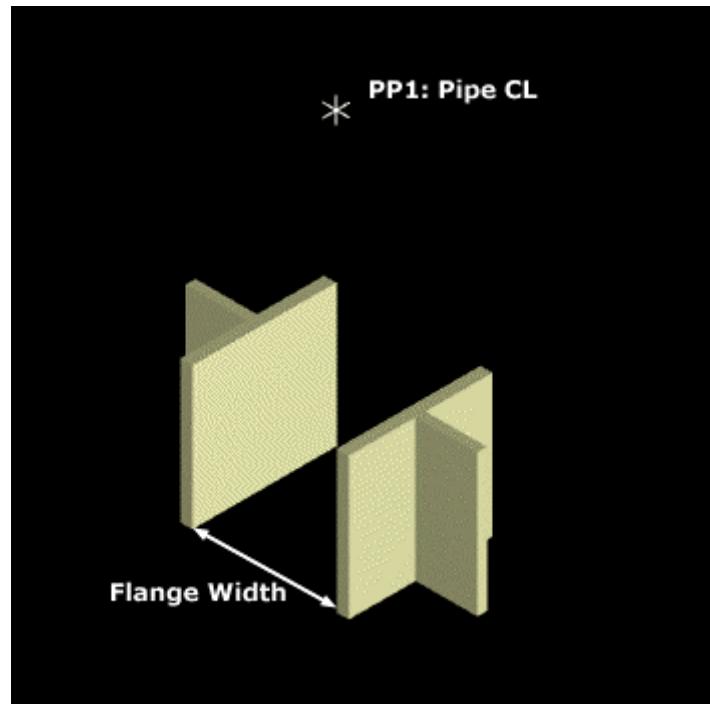
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GD\_AN

**User Class Name:** Longitudinal Restraint

**Part Number:** Assy\_GD\_AN\_<number>



## Assy\_GD\_HD

**Description:** Shoe Hold Down - <number>L

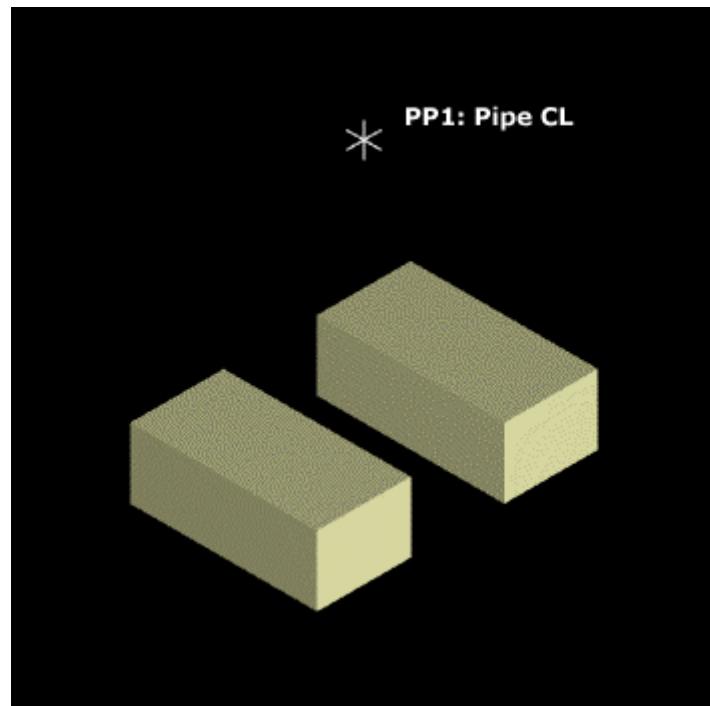
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GD\_HD

**User Class Name:** Shoe Hold Down

**Part Number:** Assy\_GD\_HD\_<number>



## Assy\_GD\_L1

**Description:** L Section Guide - <number>L

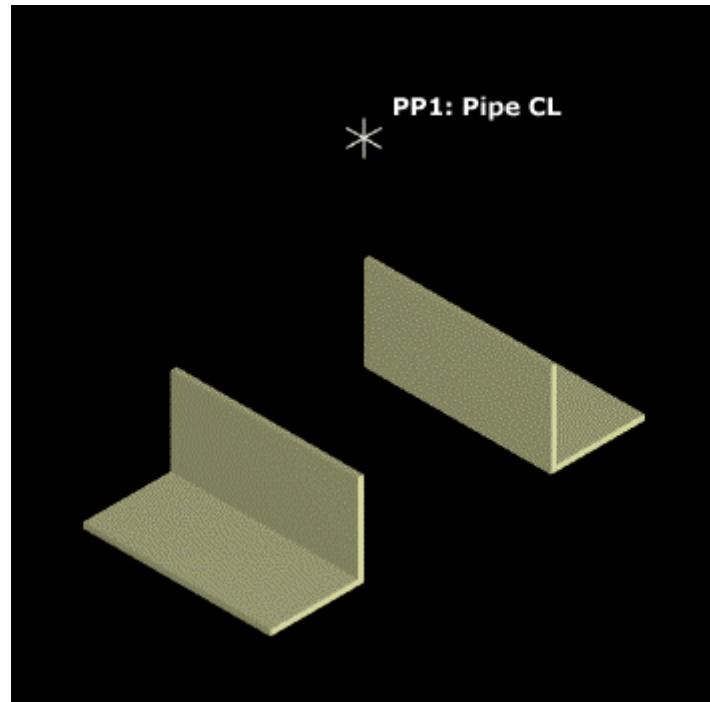
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GD\_L1

**User Class Name:** L Section Guide

**Part Number:** Assy\_GD\_L1\_<number>



## Assy\_GD\_L2

**Description:** Upright L Section Guide - <number>L

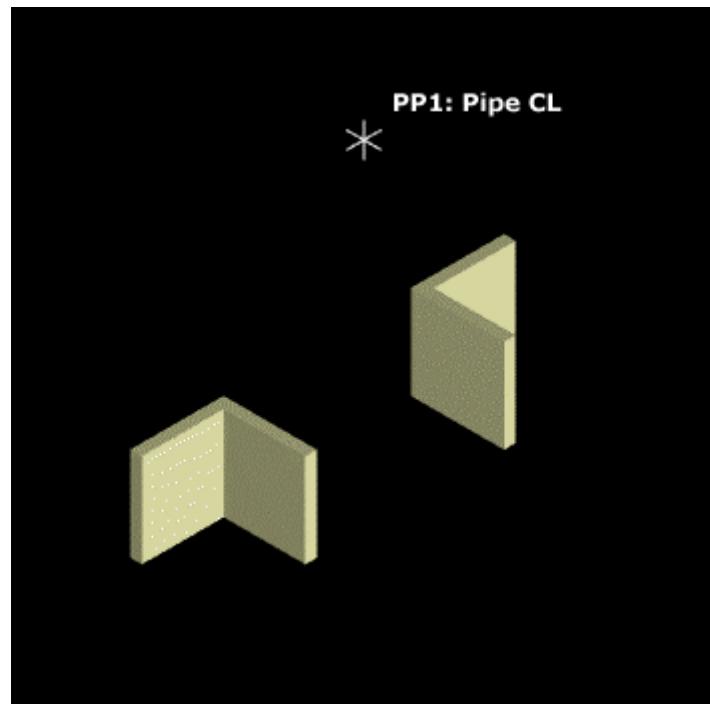
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GD\_L2

**User Class Name:** Upright L Section Guide

**Part Number:** Assy\_GD\_L2\_<number>



## Assy\_GD\_T1

**Description:** Upright WT Section Guide - <number>L

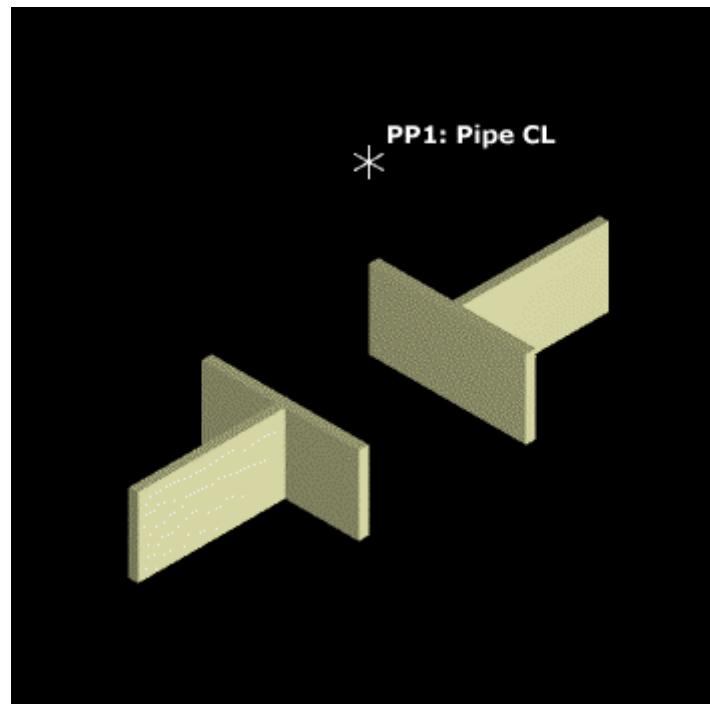
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GD\_T1

**User Class Name:** Upright WT Section Guide

**Part Number:** Assy\_GD\_T1\_<number>



## Assy\_GN\_VR\_CYL

**Description:** Generic Variable Cylinder *<size>* Radius

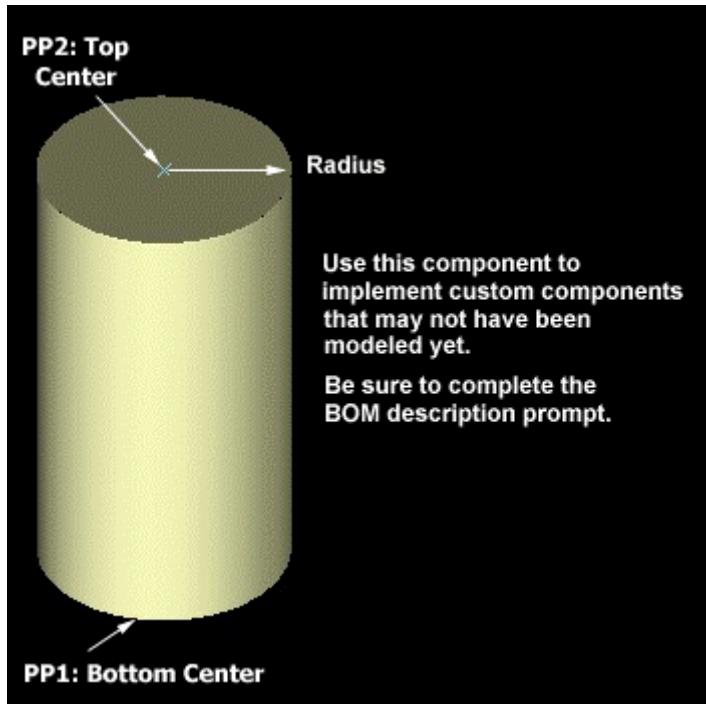
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_GN\_VR\_CYL

**User Class Name:** Generic Variable Cylinder

**Part Number:** Assy\_GN\_VR\_CYL\_<number>



## Assy\_LE\_DL

**Description:** Dummy Leg HgrAisc\_PIPE<size>

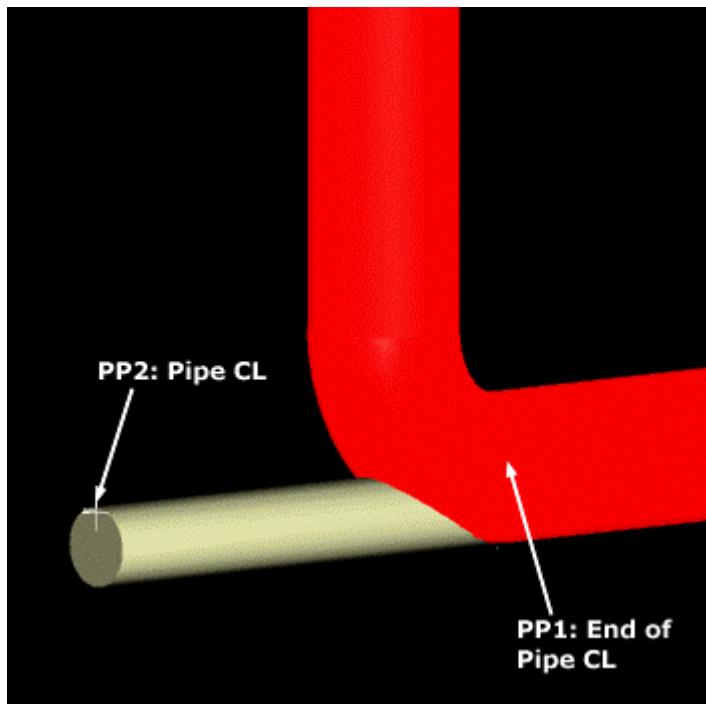
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_LE\_DL

**User Class Name:** Dummy Leg

**Part Number:** Assy\_LE\_DL\_<number>



## Assy\_RR\_DR\_LS

**Description:** Rigid Rod Trapeze - C-Section, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - C-Section, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod Trapeze - C-Section, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - C-Section, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - C-Section, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

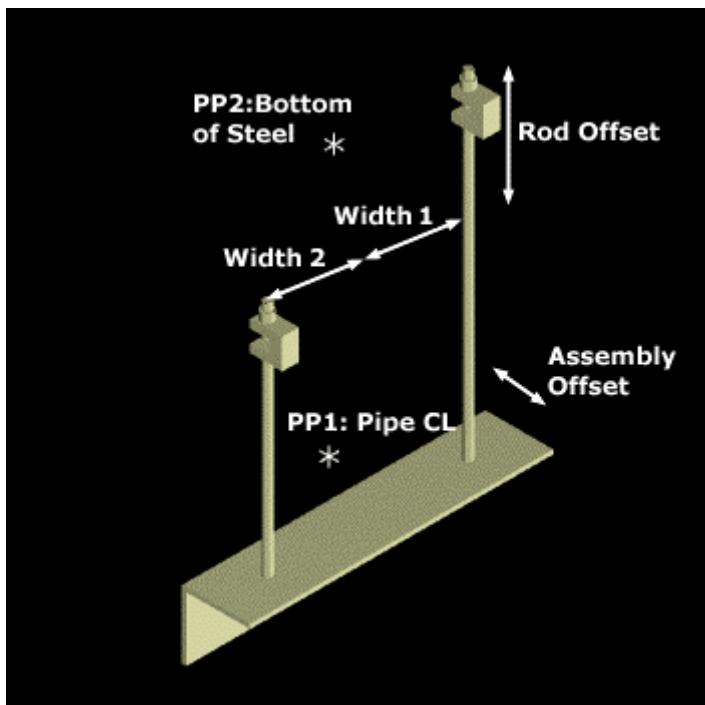
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_DR\_LS

**User Class Name:** Rigid Rod with Clevis Hanger

**Part Number:** Assy\_RR\_DR\_LS\_<number>



## Assy\_RR\_DR\_WS

**Description:** Rigid Rod Trapeze - W-Section, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - W-Section, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod Trapeze - W-Section, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - W-Section, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod Trapeze - W-Section, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

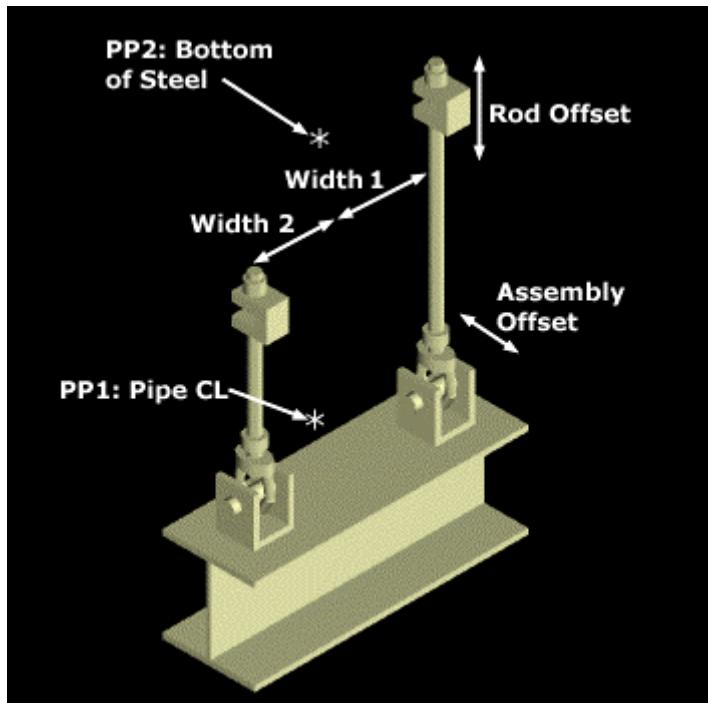
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_DR\_WS

**User Class Name:** Rigid Rod with Clevis Hanger

**Part Number:** Assy\_RR\_DR\_WS\_<number>



## Assy\_RR\_LR

**Description:** Load Based, Rigid Rod with Medium Clamp, Top Type: <WELDED BEAM ATTACH, Welded Lug & Clevis, Washer Plate>

**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_LR

**User Class Name:** Rigid Rod with Heavy Clamp- Load Rated

**Part Number:** Assy\_RR\_LR\_<number>

Preview  
not  
available

## Assy\_RR\_SR\_CL

**Description:** Rigid Rod with Clevis Hanger, Top Type: C-CLAMP, Rod: <Cont. or End> Thread, <*rod size*>; Rigid Rod with Clevis Hanger, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <*rod size*>; Rigid Rod with Clevis Hanger, Top Type: BEAM CLAMP, Rod: Cont. Thread, <*rod size*>, Clamp:<*number*>; Rigid Rod with Clevis Hanger, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <*rod size*>; Rigid Rod with Clevis Hanger, Top Type: NUT/WASHER, Rod: Cont. Thread, <*rod size*>; Rigid Rod with Clevis Hanger, Top Type: NUT, Rod: <Cont or End>. Thread, <*rod size*>

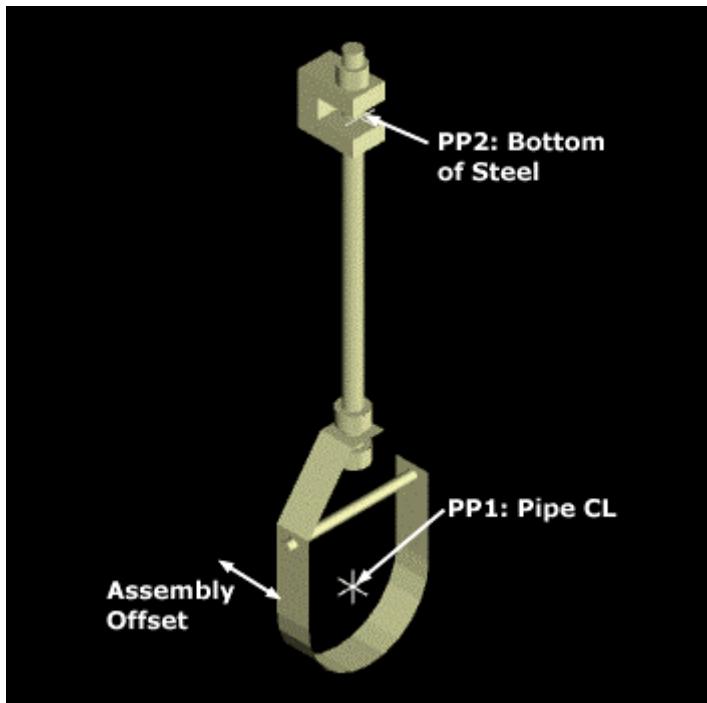
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_SR\_CL

**User Class Name:** Rigid Rod with Clevis Hanger

**Part Number:** Assy\_RR\_SR\_CL\_<*number*>



## Assy\_RR\_SR\_DB

**Description:** Rigid Rod with Double Bolt Clamp, Top Type: C-CLAMP, Rod: <Cont. or End> Thread, <rod size> Rigid Rod with Double Bolt Clamp, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Double Bolt Clamp, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod with Double Bolt Clamp, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Double Bolt Clamp, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Double Bolt Clamp, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

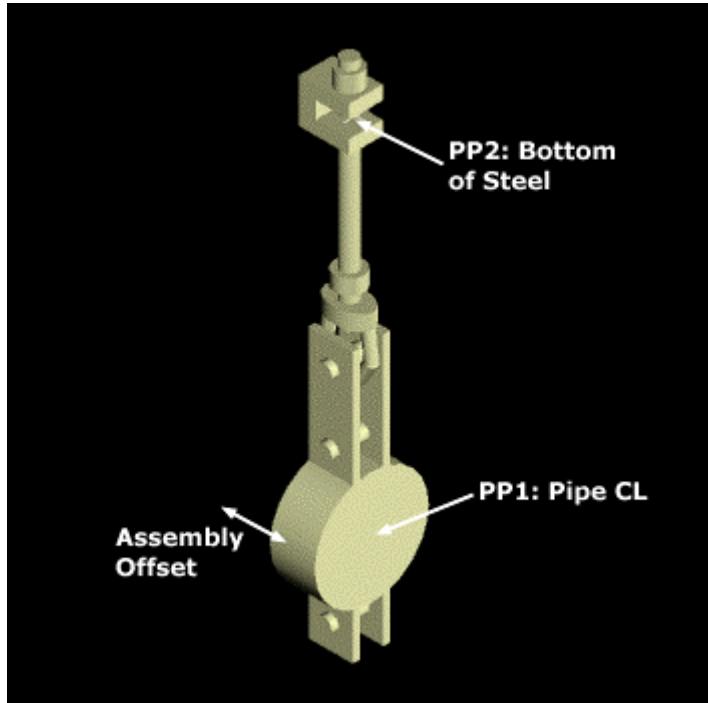
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_SR\_DB

**User Class Name:** Rigid Rod with Double-Bolt Clamp

**Part Number:** Assy\_RR\_SR\_DB\_<number>



## Assy\_RR\_SR\_DH

**Description:** Rigid Rod with Heavy Double Bolt Clamp, Top Type: C-CLAMP, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Double Bolt Clamp, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Double Bolt Clamp, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod with Heavy Double Bolt Clamp, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Double Bolt Clamp, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Double Bolt Clamp, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

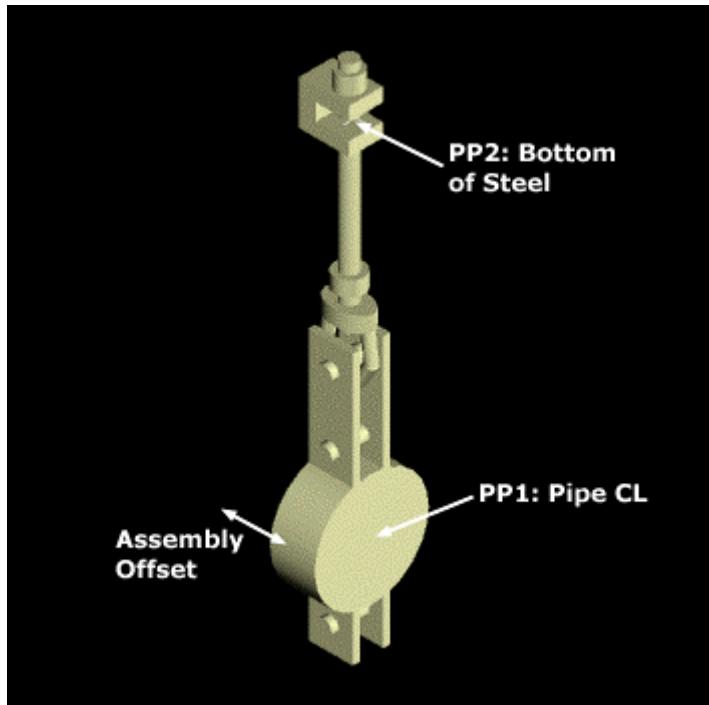
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_SR\_DH

**User Class Name:** Rigid Rod with Heavy Double-Bolt Clamp

**Part Number:** Assy\_RR\_SR\_DH\_<number>



## Assy\_RR\_SR\_HV

**Description:** Rigid Rod with Heavy Clamp, Top Type: C-CLAMP, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Clamp, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Clamp, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod with Heavy Clamp, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Clamp, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Heavy Clamp, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

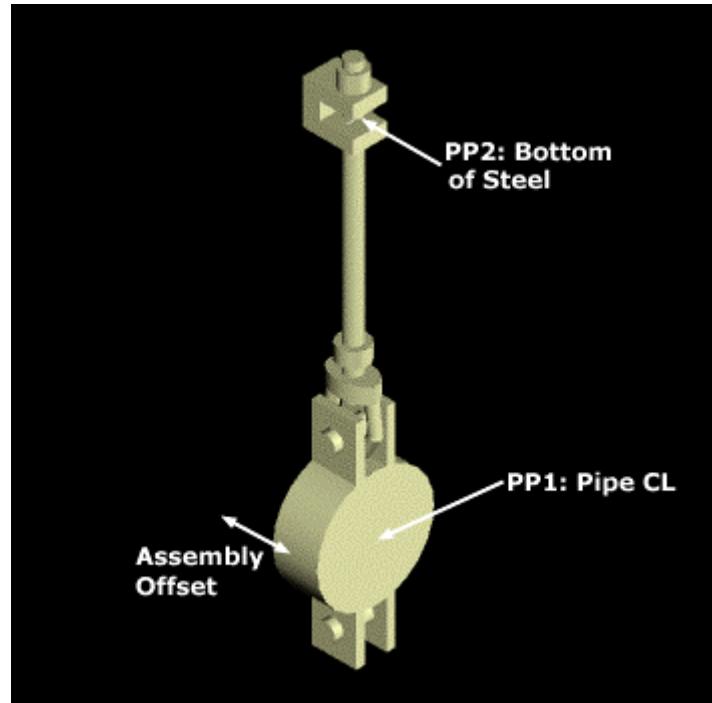
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_SR\_HV

**User Class Name:** Rigid Rod with Heavy Clamp

**Part Number:** Assy\_RR\_SR\_HV\_<number>



## Assy\_RR\_SR\_MD

**Description:** Rigid Rod with Medium Clamp, Top Type: C-CLAMP, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Medium Clamp, Top Type: LUG/CLEVIS, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Medium Clamp, Top Type: BEAM CLAMP, Rod: <Cont. or End> Thread, <rod size>, Clamp:<number>; Rigid Rod with Medium Clamp, Top Type: WELDED BEAM ATTACH, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Medium Clamp, Top Type: NUT/WASHER, Rod: <Cont. or End> Thread, <rod size>; Rigid Rod with Medium Clamp, Top Type: NUT, Rod: <Cont. or End> Thread, <rod size>

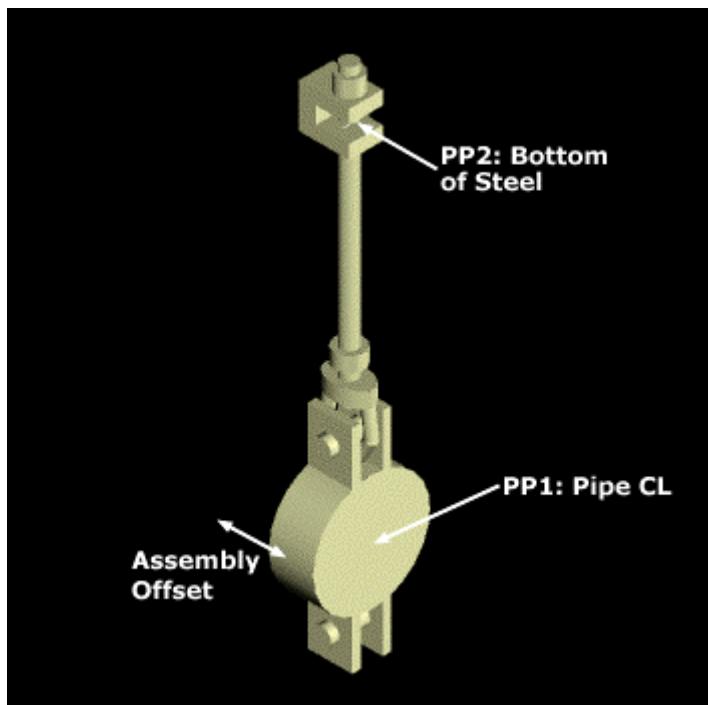
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_RR\_SR\_MD

**User Class Name:** Rigid Rod with Medium Clamp

**Part Number:** Assy\_RR\_SR\_MD\_<number>



## Assy\_SH

**Description:** Shoe - WT $<dimensions>$  L= $<length>$

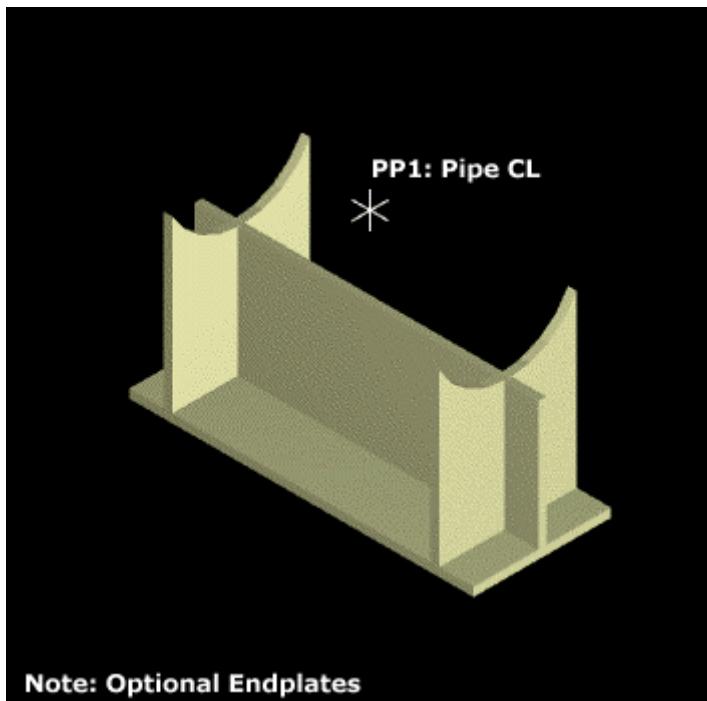
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_SH

**User Class Name:** WT Shoe

**Part Number:** Assy\_SH\_<number>



## Assy\_SH\_CL

**Description:** Shoe w/Medium Clamps (& Endplates) - WT<*dimensions*> L = <*length*>; Shoe w/Heavy Clamps (& Endplates) - WT<*dimensions*> L = <*length*>

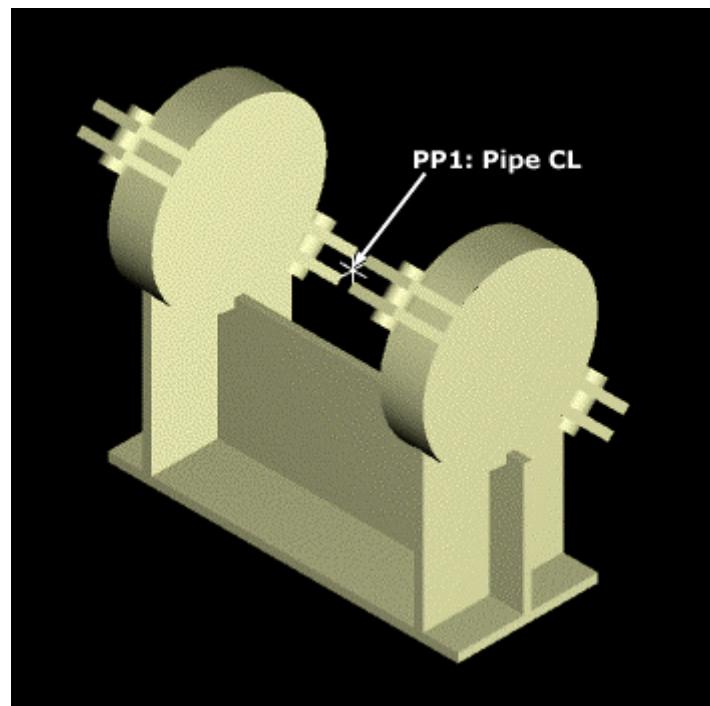
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_SH\_CL

**User Class Name:** WT Shoe with Clamps

**Part Number:** Assy\_SH\_CL\_<*number*>



## Assy\_VS\_SR\_CL

**Description:** Variable Spring with Clevis Hanger, TYPE A SPRING, WELDED BEAM ATTACH, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE A SPRING, BEAM CLAMP, STND SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE A SPRING, LUG/CLEVIS, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE A SPRING, C-CLAMP, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE A SPRING, NUT, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE A SPRING, NUT/WASHER, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE B SPRING, WELDED BEAM ATTACH, <length type of spring> SPRING, Size:<size>; Variable Spring with Clevis Hanger, TYPE C SPRING, LUG, <length type of spring> SPRING, Size:<size>

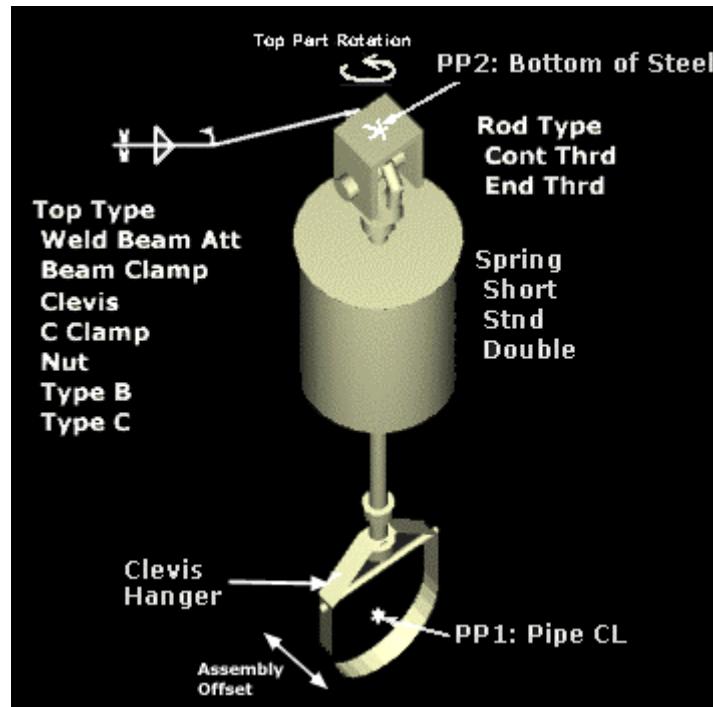
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_VS\_SR\_CL

**User Class Name:** Spring Rod with Clevis Hanger

**Part Number:** Assy\_VS\_SR\_CL\_<number>



## Assy\_VS\_SR\_DB

**Description:** Variable Spring with Double Bolt Clamp, TYPE A SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE A SPRING, BEAM CLAMP, STND SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE A SPRING, LUG/CLEVIS, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE A SPRING, C-CLAMP, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE A SPRING, NUT, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE A SPRING, NUT/WASHER, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE B SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<size>; Variable Spring with Double Bolt Clamp, TYPE C SPRING, LUG, *<length type of spring>* SPRING, Size:<size>

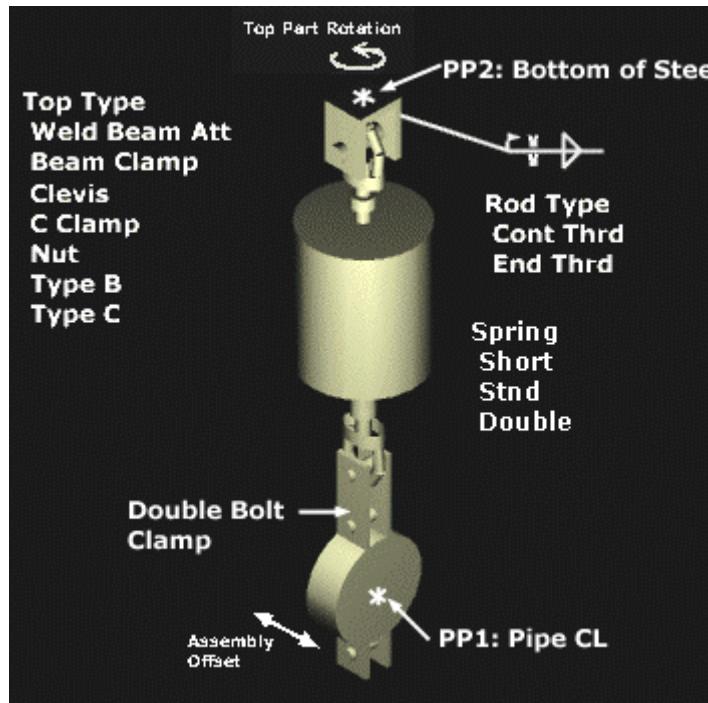
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_VS\_SR\_DB

**User Class Name:** Spring Rod with Double-Bolt Clamp

**Part Number:** Assy\_VS\_SR\_DB\_<number>



## Assy\_VS\_SR\_DH

**Description:** Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, BEAM CLAMP, STND SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, LUG/CLEVIS, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, C-CLAMP, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, NUT, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE A SPRING, NUT/WASHER, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE B SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Double Bolt Clamp, TYPE C SPRING, LUG, *<length type of spring>* SPRING, Size:<*size*>

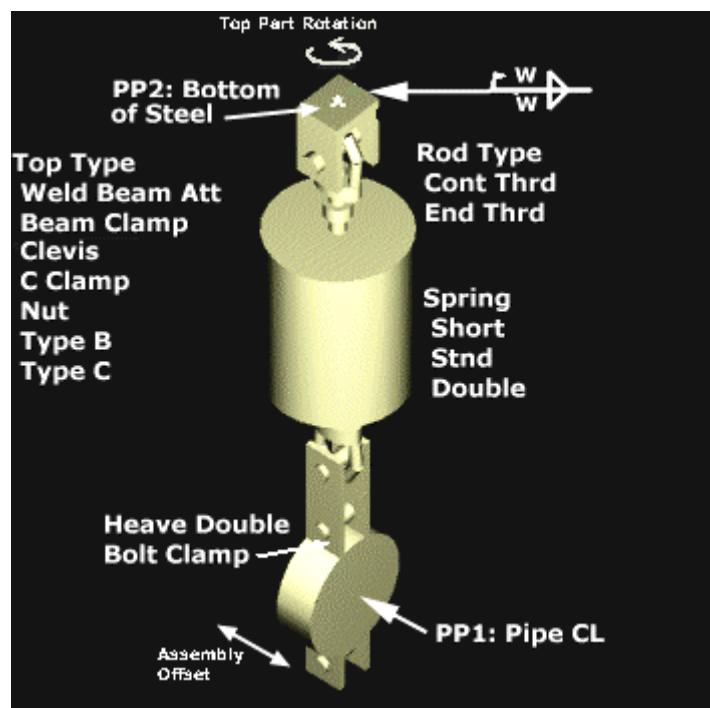
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_VS\_SR\_DH

**User Class Name:** Spring Rod with Heavy Double-Bolt Clamp

**Part Number:** Assy\_VS\_SR\_DH\_<*number*>



## Assy\_VS\_SR\_HV

**Description:** Variable Spring with Heavy Clamp, TYPE A SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE A SPRING, BEAM CLAMP, STND SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE A SPRING, LUG/CLEVIS, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE A SPRING, C-CLAMP, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE A SPRING, NUT, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE A SPRING, NUT/WASHER, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE B SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Heavy Clamp, TYPE C SPRING, LUG, *<length type of spring>* SPRING, Size:<*size*>

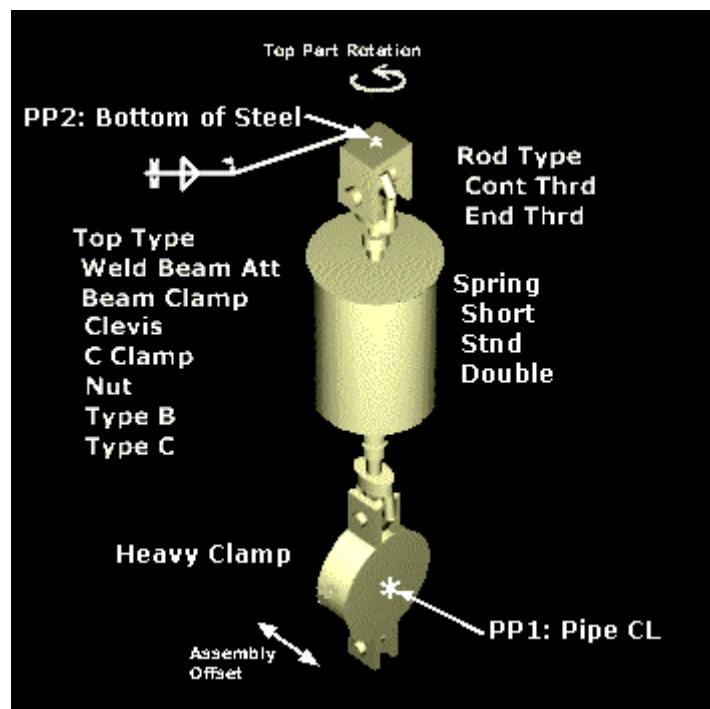
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_VS\_SR\_HV

**User Class Name:** Spring Rod with Heavy Clamp

**Part Number:** Assy\_VS\_SR\_HV\_<*number*>



## Assy\_VS\_SR\_MD

**Description:** Variable Spring with Medium Clamp, TYPE A SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE A SPRING, BEAM CLAMP, STND SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE A SPRING, LUG/CLEVIS, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE A SPRING, C-CLAMP, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE A SPRING, NUT, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE A SPRING, NUT/WASHER, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE B SPRING, WELDED BEAM ATTACH, *<length type of spring>* SPRING, Size:<*size*>; Variable Spring with Medium Clamp, TYPE C SPRING, LUG, *<length type of spring>* SPRING, Size:<*size*>

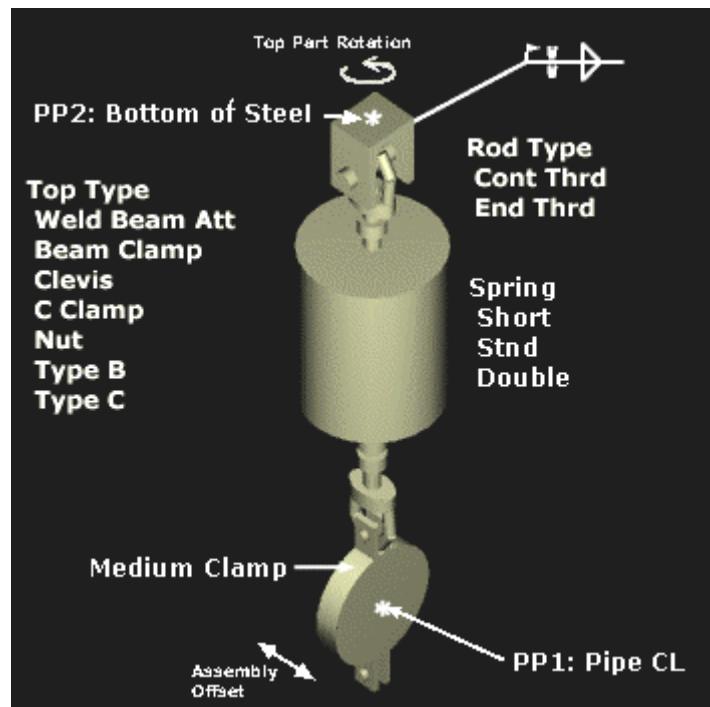
**Symbol Name:** N/A

**Workbook:** HS\_Assembly.xls

**Workbook Sheet:** Assy\_VS\_SR\_MD

**User Class Name:** Spring Rod with Medium Clamp

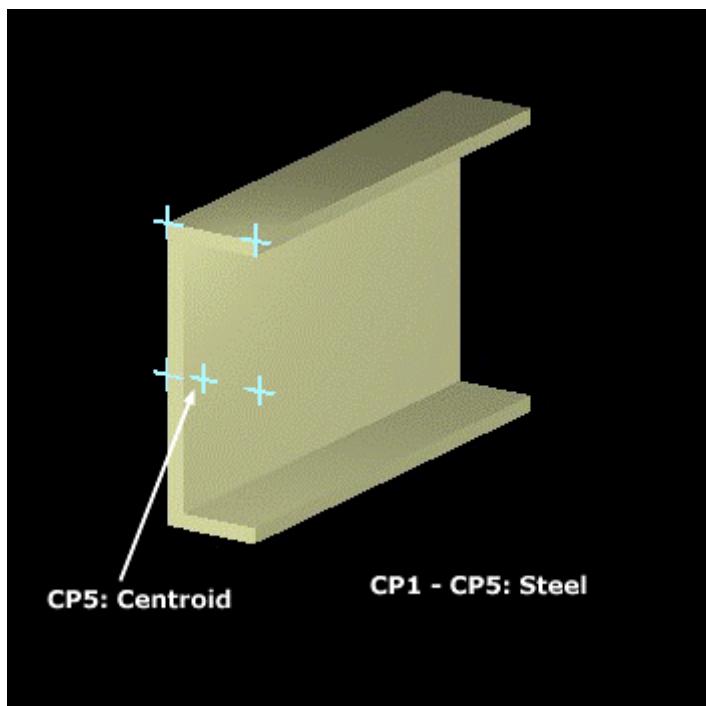
**Part Number:** Assy\_VS\_SR\_MD\_<*number*>



## HgrAisc\_C

**Description:** AISC Hanger, C Section  
**Symbol Name:** HS\_HgrStructural.HgrBeam  
**Workbook:** HS\_HgrAisc.xls  
**Workbook Sheet:** HgrAisc\_C  
**User Class Name:** C Section  
**Part Number:** HgrAisc\_C<dimensions>  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam  
Output name BC = "BeginCap"  
Output name EC = "EndCap"  
Output name NT = "Neutral"  
Output name BC\_SUR = "BeginCapSurface"  
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_HSS

**Description:** AISC Hanger, HSS Section

**Symbol Name:** HS\_HgrStructural.HgrBeam

**Workbook:** HS\_HgrAisc.xls

**Workbook Sheet:** HgrAisc\_HSS

**User Class Name:** HSS Section

**Part Number:** HgrAisc\_HSS<dimensions>

**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam

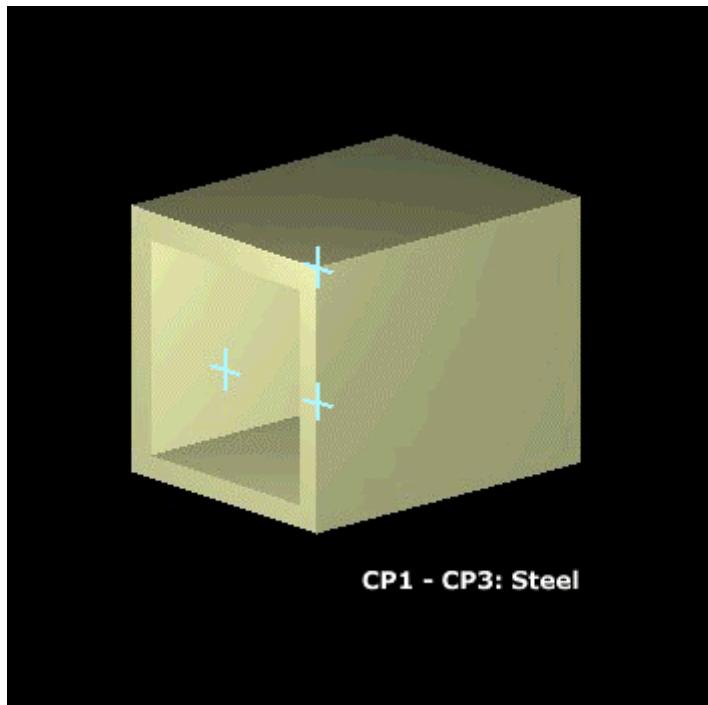
Output name BC = "BeginCap"

Output name EC = "EndCap"

Output name NT = "Neutral"

Output name BC\_SUR = "BeginCapSurface"

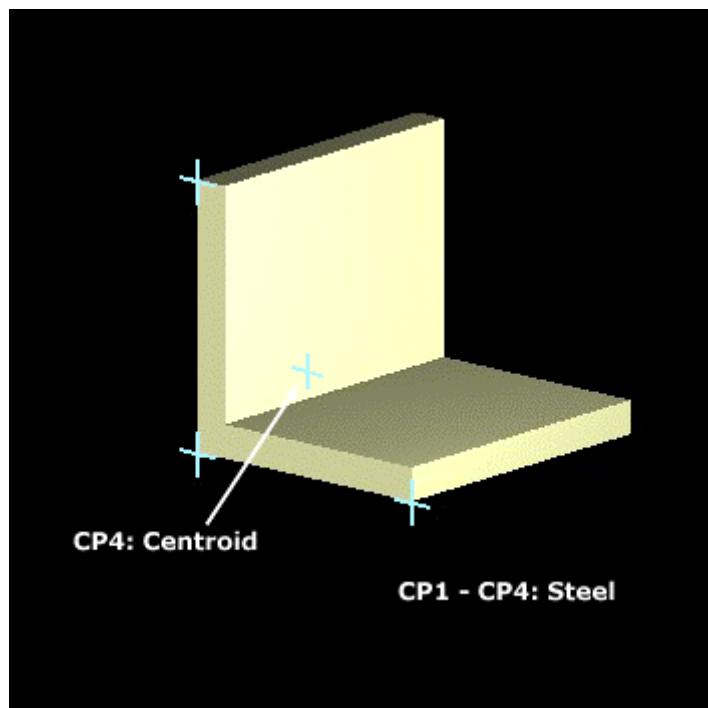
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_L

**Description:** AISC Hanger, L Section  
**Symbol Name:** HS\_HgrStructural.HgrBeam  
**Workbook:** HS\_HgrAisc.xls  
**Workbook Sheet:** HgrAisc\_L  
**User Class Name:** L Section  
**Part Number:** HgrAisc\_L<dimensions>  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam  
Output name BC = "BeginCap"  
Output name EC = "EndCap"  
Output name NT = "Neutral"  
Output name BC\_SUR = "BeginCapSurface"  
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_Pipe

**Description:** AISC Hanger, Pipe

**Symbol Name:** HS\_HgrStructural.HgrBeam

**Workbook:** HS\_HgrAisc.xls

**Workbook Sheet:** HgrAisc\_Pipe

**User Class Name:** Pipe

**Part Number:** HgrAisc\_PIPE<dimensions>

**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam

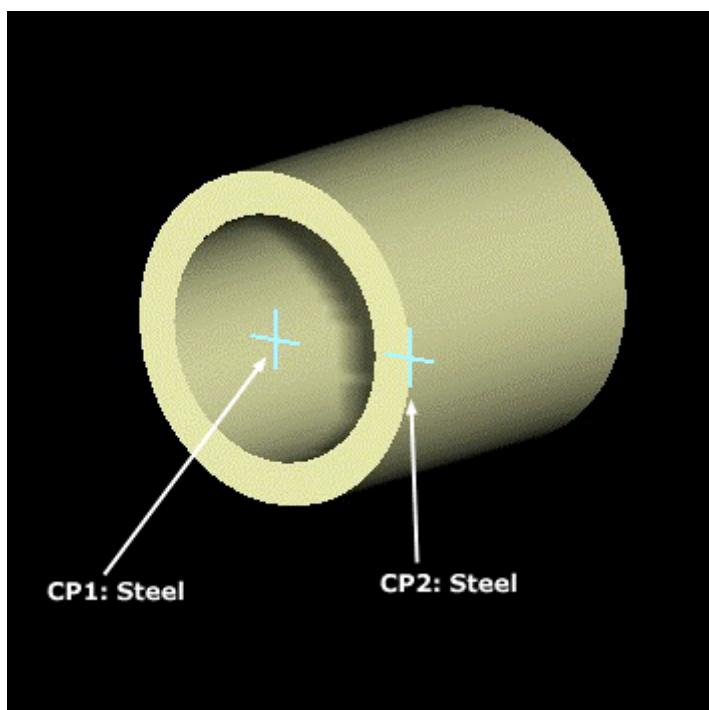
Output name BC = "BeginCap"

Output name EC = "EndCap"

Output name NT = "Neutral"

Output name BC\_SUR = "BeginCapSurface"

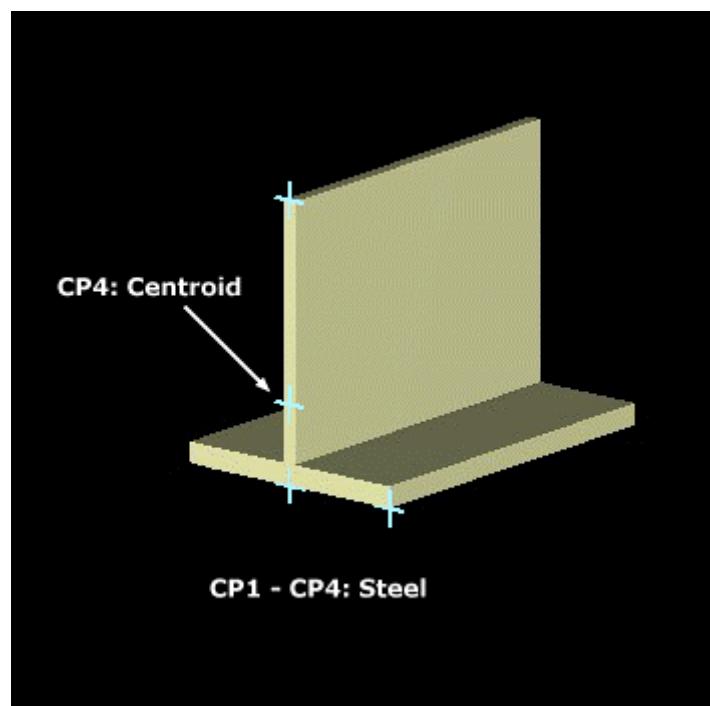
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_ST

**Description:** AISC Hanger, ST Section  
**Symbol Name:** HS\_HgrStructural.HgrBeam  
**Workbook:** HS\_HgrAisc.xls  
**Workbook Sheet:** HgrAisc\_ST  
**User Class Name:** ST Section  
**Part Number:** HgrAisc\_ST<dimensions>  
**Inputs, Outputs, and Aspects:**

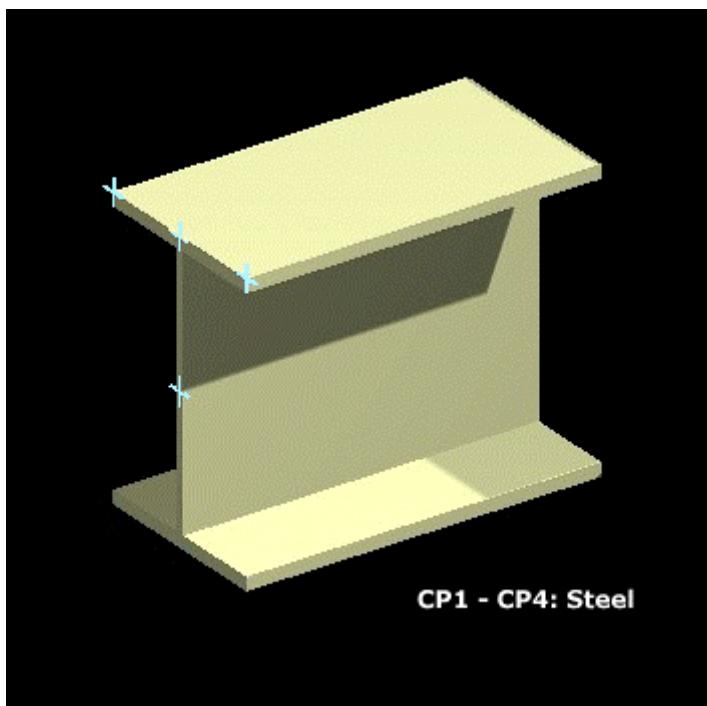
ProgID: SP\_HgrStructural.HgrBeam  
Output name BC = "BeginCap"  
Output name EC = "EndCap"  
Output name NT = "Neutral"  
Output name BC\_SUR = "BeginCapSurface"  
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_W

**Description:** AISC Hanger, W Section  
**Symbol Name:** HS\_HgrStructural.HgrBeam  
**Workbook:** HS\_HgrAisc.xls  
**Workbook Sheet:** HgrAisc\_W  
**User Class Name:** W Section  
**Part Number:** HgrAisc\_W<dimensions>  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam  
Output name BC = "BeginCap"  
Output name EC = "EndCap"  
Output name NT = "Neutral"  
Output name BC\_SUR = "BeginCapSurface"  
Output name EC\_SUR = "EndCapSurface"



## HgrAisc\_WT

**Description:** AISC Hanger, WT Section

**Symbol Name:** HS\_HgrStructural.HgrBeam

**Workbook:** HS\_HgrAisc.xls

**Workbook Sheet:** HgrAisc\_WT

**User Class Name:** WT Section

**Part Number:** HgrAisc\_WT<dimensions>

**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam

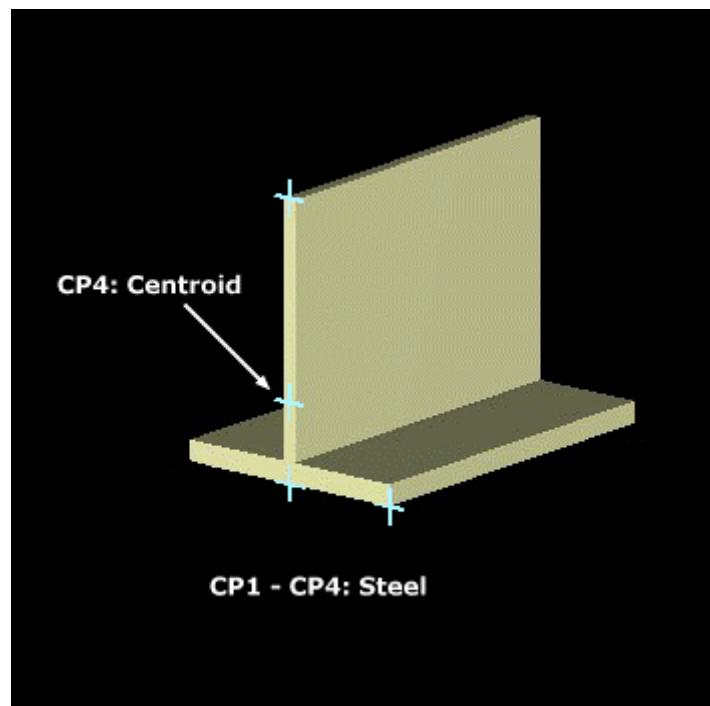
Output name BC = "BeginCap"

Output name EC = "EndCap"

Output name NT = "Neutral"

Output name BC\_SUR = "BeginCapSurface"

Output name EC\_SUR = "EndCapSurface"



## Anvil FIG103

**Description:** Anvil FIG103 <size> Offset Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG103

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG103

**User Class Name:** Offset Pipe Clamp

**Part Number:** Anvil FIG103 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG103

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "R1"

Output name 5 = "R2"

Output name 6 = "R3"

Output name 7 = "L1"

Output name 8 = "L2"

Output name 9 = "L3"

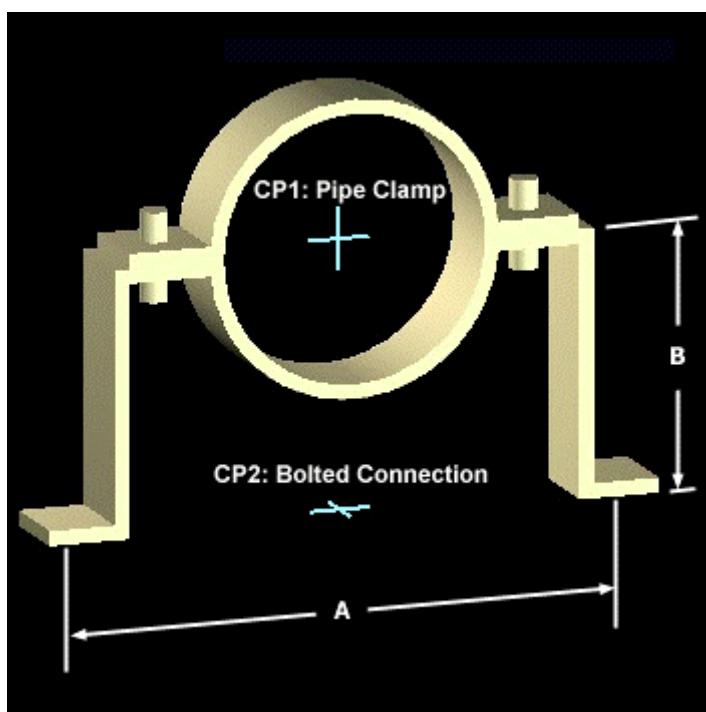
Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C1"

Input name(6) = "C2"



## Anvil FIG133

**Description:** Anvil FIG133 Size <size number> Standard Beam Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG133

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG133

**User Class Name:** Standard Beam Clamp

**Part Number:** Anvil FIG133 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG133

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOLT"

Output name 4 = "CLAMP1"

Output name 5 = "CLAMP2"

Input name(2) = "SIZE"

Input name(3) = "B"

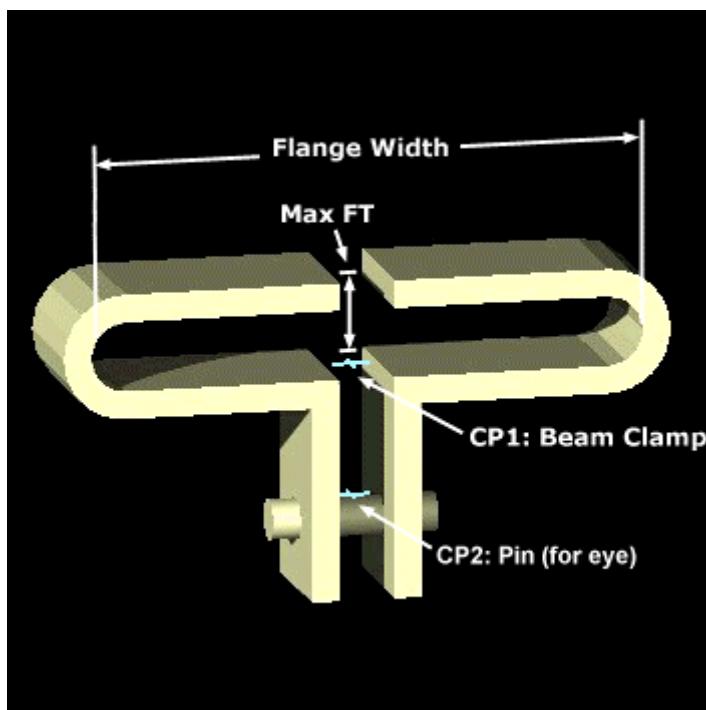
Input name(4) = "BOLT\_SIZE"

Input name(5) = "A"

Input name(6) = "FT"

Input name(7) = "T"

Input name(8) = "W"



## Anvil FIG134

**Description:** Anvil FIG134 Size <size number> Heavy Duty Beam Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG134

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG134

**User Class Name:** Heavy Duty Beam Clamp

**Part Number:** Anvil FIG134 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG134

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOLT"

Output name 4 = "CLAMP1"

Output name 5 = "CLAMP2"

Input name(2) = "SIZE"

Input name(3) = "B"

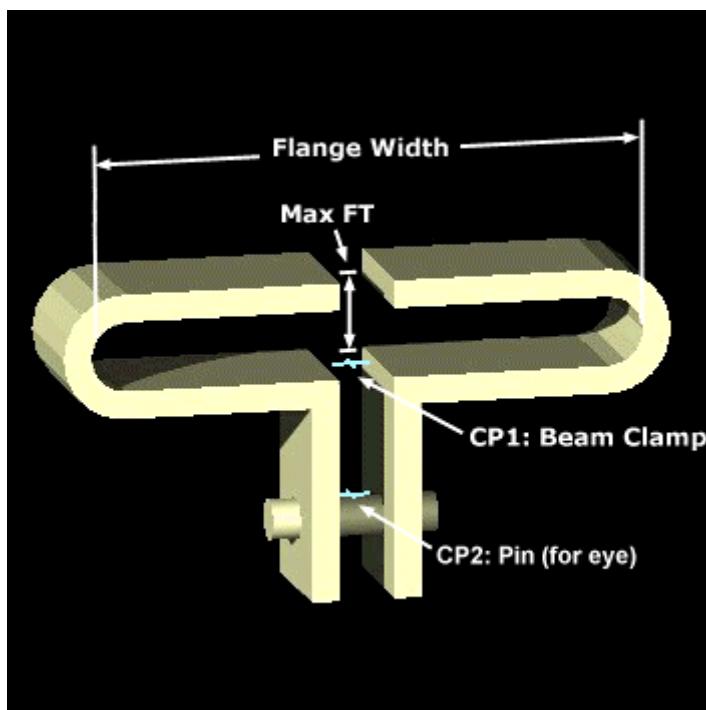
Input name(4) = "BOLT\_SIZE"

Input name(5) = "A"

Input name(6) = "FT"

Input name(7) = "T"

Input name(8) = "W"



## Anvil FIG135

**Description:** Anvil FIG135 <size> Rod Coupling

**Symbol Name:** HS\_Anvil.Anvil FIG135

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG135

**User Class Name:** Rod Coupling

**Part Number:** Anvil FIG135 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG135

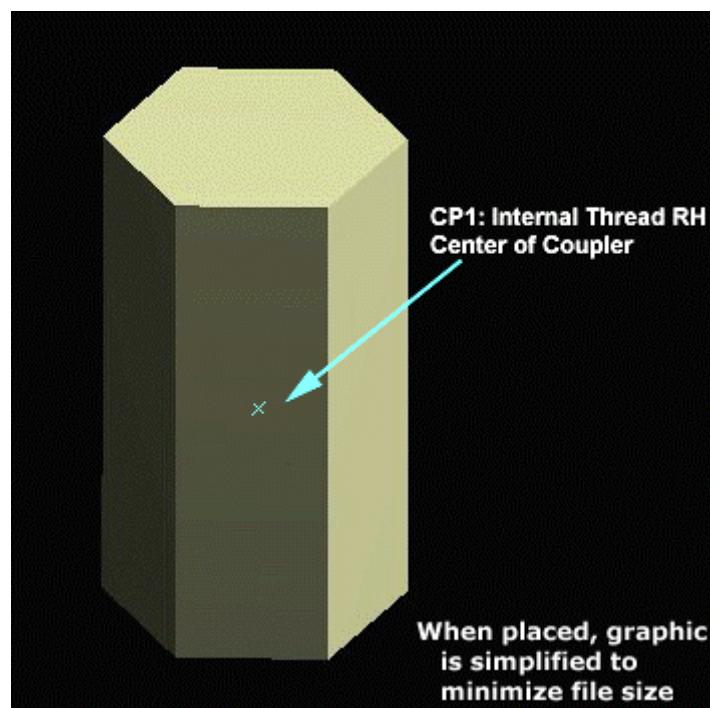
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "COUPLING"

Input name(2) = "L"

Input name(3) = "D"



## Anvil FIG135E

**Description:** Anvil FIG135E <size> Rod Coupling E

**Symbol Name:** HS\_Anvil.Anvil FIG135E

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG135E

**User Class Name:** Rod Coupling E

**Part Number:** Anvil FIG135E <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG135E

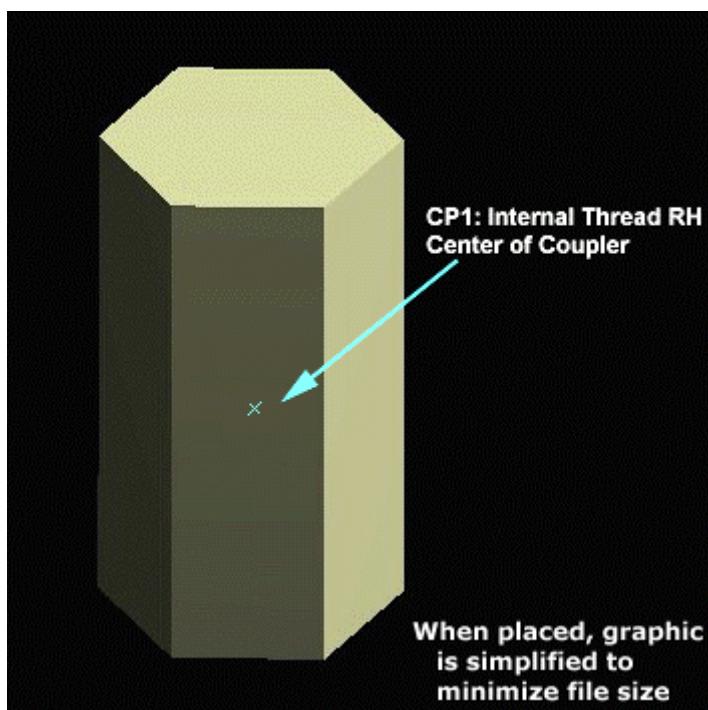
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "COUPLING"

Input name(2) = "L"

Input name(3) = "D"



## Anvil FIG136

**Description:** Anvil FIG136 <size> Iron Rod Coupling

**Symbol Name:** HS\_Anvil.Anvil FIG136

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG136

**User Class Name:** Iron Rod Coupling

**Part Number:** Anvil FIG136\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG136

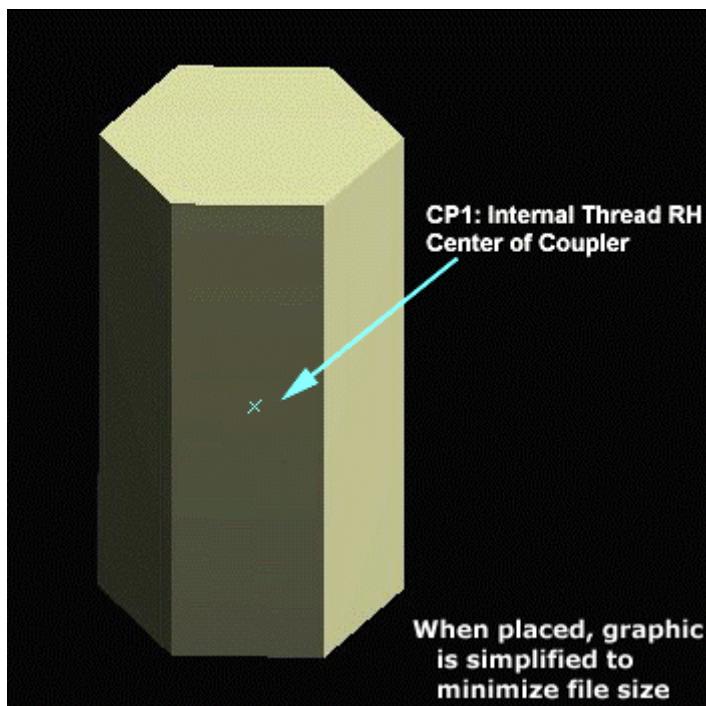
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "COUPLING"

Input name(2) = "L"

Input name(3) = "D"



## Anvil FIG137

**Description:** Anvil FIG137 <size> U-bolt

**Symbol Name:** HS\_Anvil.Anvil FIG137

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG137

**User Class Name:** U-bolt

**Part Number:** Anvil FIG137\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG137

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BEND"

Output name 4 = "R"

Output name 5 = "L"

Input name(2) = "EXTRA\_TANGENT"

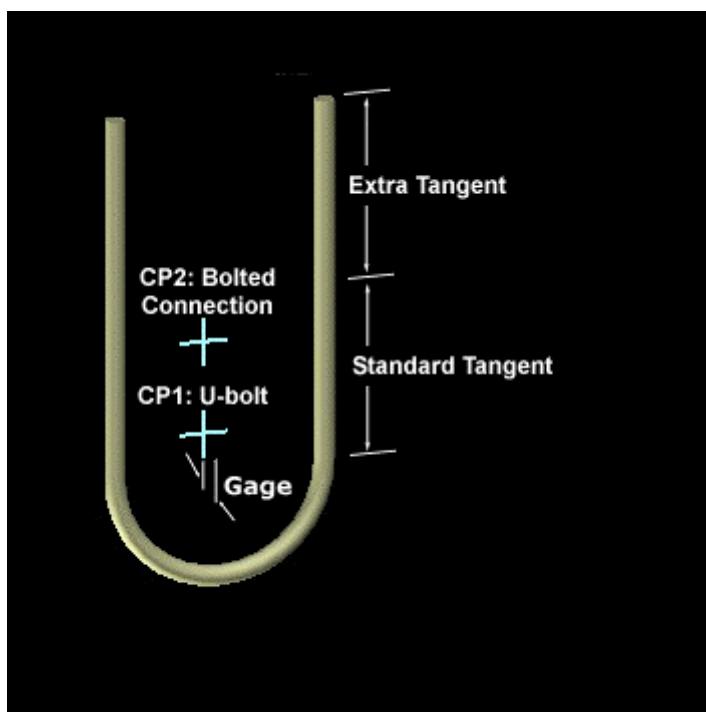
Input name(3) = "GAGE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "A"

Input name(6) = "C"

Input name(7) = "D"



## Anvil FIG140

**Description:** Anvil FIG140 <size> End Threaded Rod Right Hand Thread

**Symbol Name:** HS\_Anvil.Anvil\_fig140

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG140

**User Class Name:** End Threaded Rod Right Hand Thread

**Part Number:** Anvil FIG140\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil\_fig140

Output name 1 = "Port1"

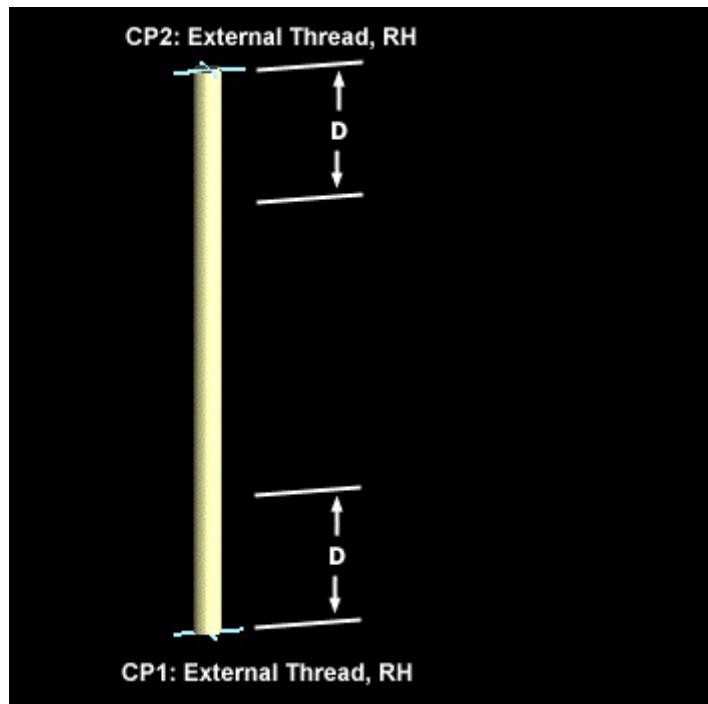
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG146

**Description:** Anvil FIG146 <size> Continuous Threaded Rod

**Symbol Name:** HS\_Anvil.Anvil\_fig146

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG146

**User Class Name:** Continuous Threaded Rod

**Part Number:** Anvil FIG146 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil\_fig146

Output name 1 = "Port1"

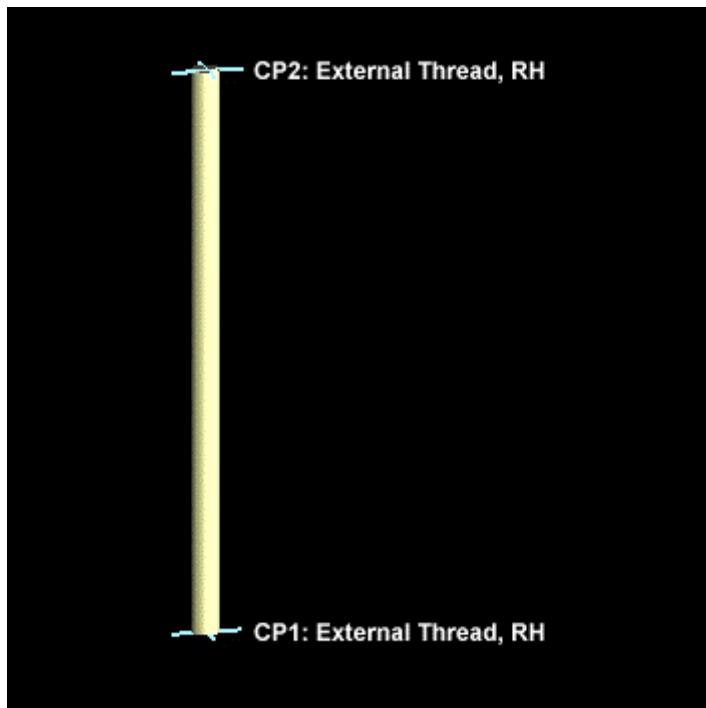
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "ROD\_DIA"

Input name(3) = "WEIGHT\_PER\_LENGTH"

Input name(4) = "Length"



## Anvil FIG157

**Description:** Anvil FIG157 <size> Extension Piece

**Symbol Name:** HS\_Anvil.Anvil FIG157

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG157

**User Class Name:** Extension Piece

**Part Number:** Anvil FIG157\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG157

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

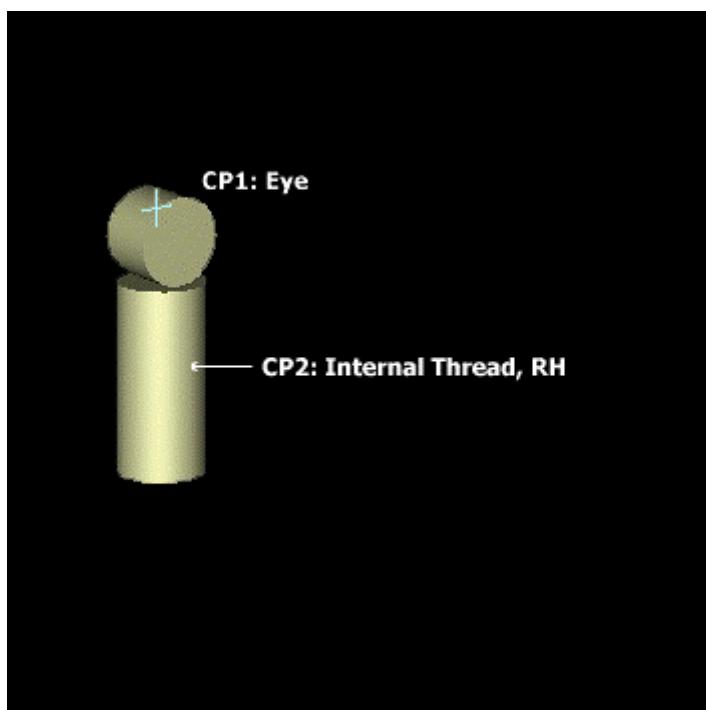
Output name 4 = "BOTTOM"

Input name(2) = "C"

Input name(3) = "TAKE\_OUT"

Input name(4) = "G"

Input name(5) = "K"



## Anvil FIG160

**Description:** Anvil FIG160 <size> Protection Saddle for 1 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG160

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG160

**User Class Name:** Protection Saddle for 1 in Insulation

**Part Number:** Anvil FIG160\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG160

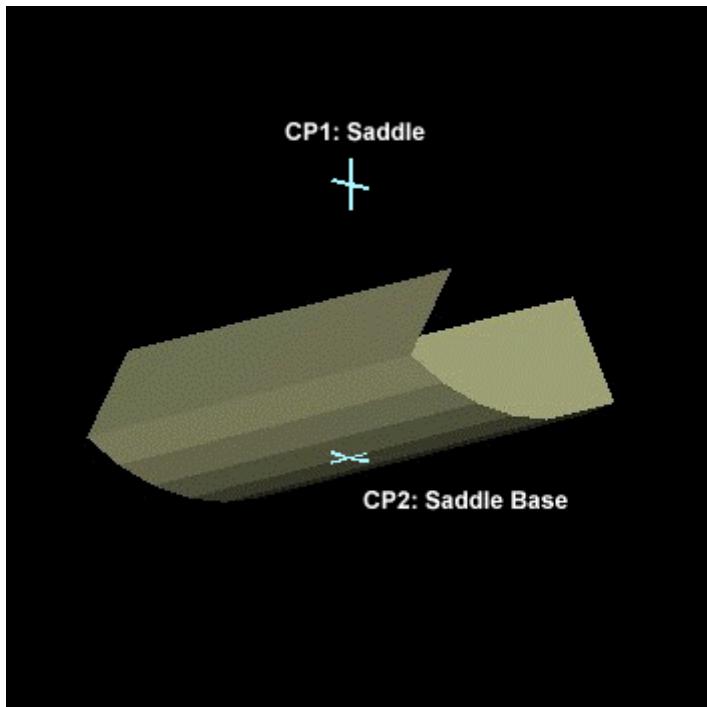
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG161

**Description:** Anvil FIG161 <size> Protection Saddle for 1 1/2 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG161

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG161

**User Class Name:** Protection Saddle for 1 1/2 in Insulation

**Part Number:** Anvil FIG161\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG161

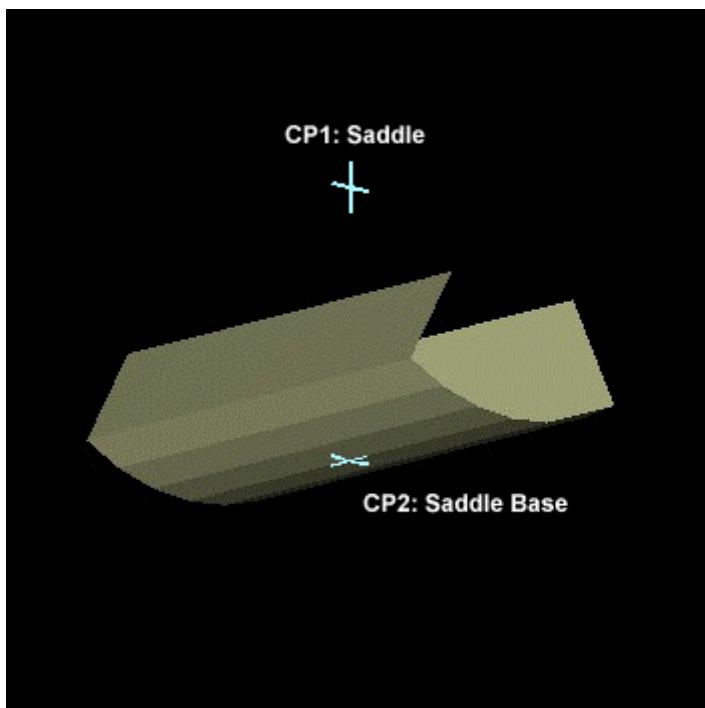
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG162

**Description:** Anvil FIG162 <size> Protection Saddle for 2 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG162

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG162

**User Class Name:** Protection Saddle for 2 in Insulation

**Part Number:** Anvil FIG162\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG162

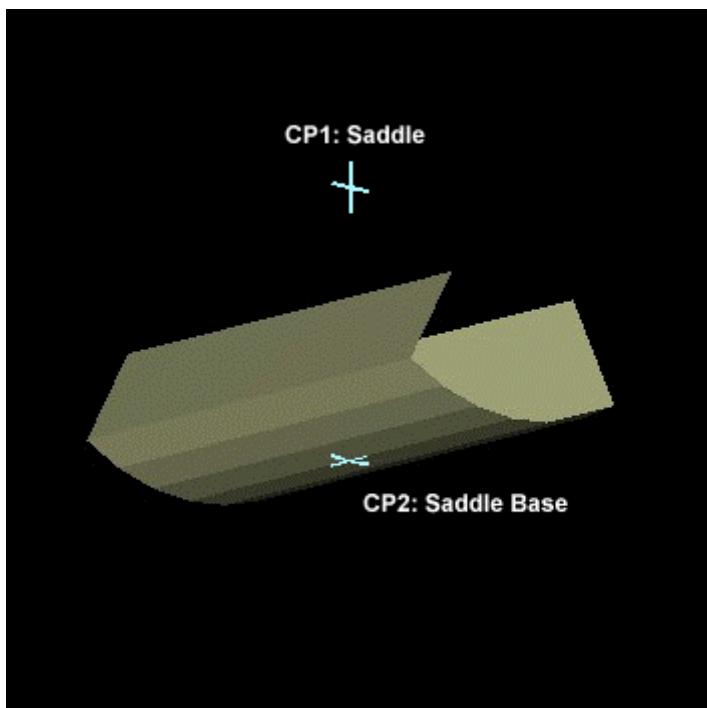
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG163

**Description:** Anvil FIG163 <size> Protection Saddle for 2 1/2 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG163

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG163

**User Class Name:** Protection Saddle for 2 1/2 in Insulation

**Part Number:** Anvil FIG163 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG163

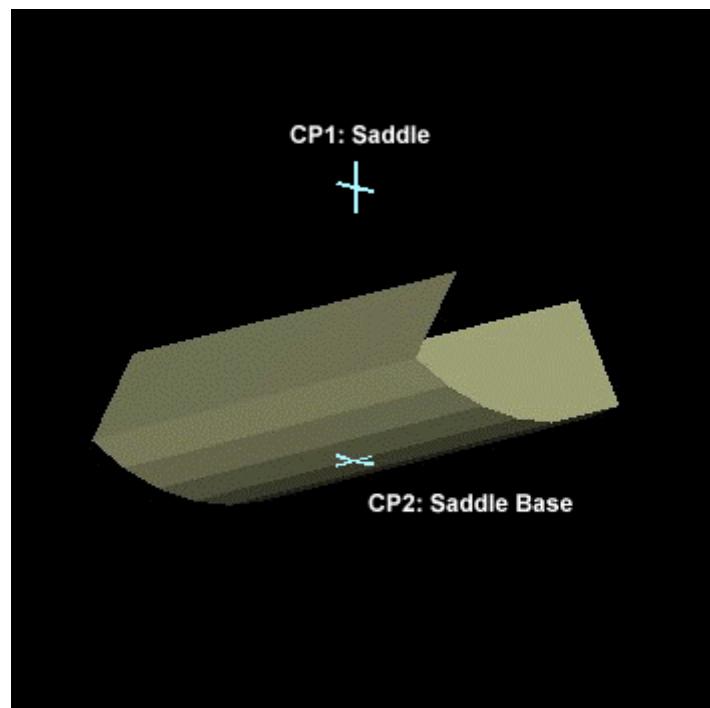
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG164

**Description:** Anvil FIG164 <size> Protection Saddle for 3 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG164

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG164

**User Class Name:** Protection Saddle for 3 in Insulation

**Part Number:** Anvil FIG164 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG164

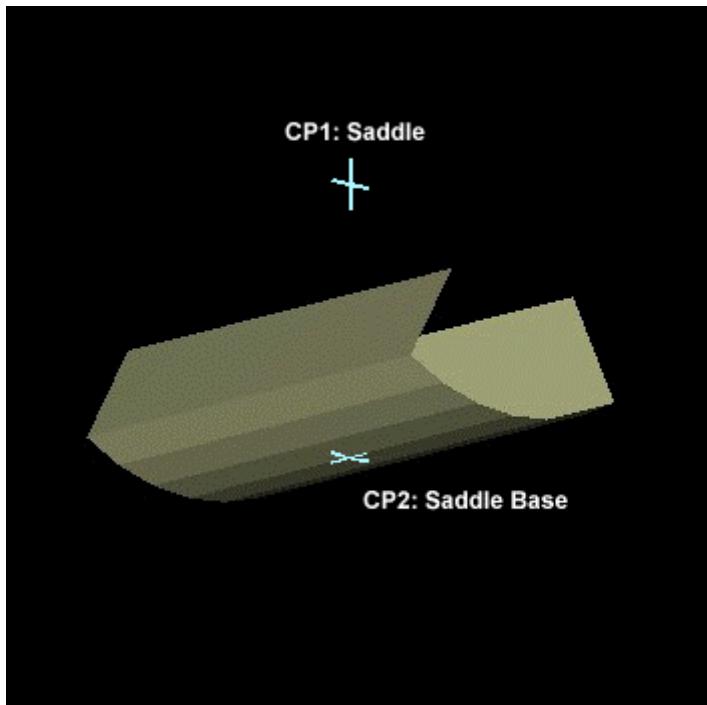
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG165

**Description:** Anvil FIG165 <size> Protection Saddle for 4 in Insulation

**Symbol Name:** HS\_Anvil.Anvil FIG165

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG165

**User Class Name:** Protection Saddle for 4 in Insulation

**Part Number:** Anvil FIG165 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG165

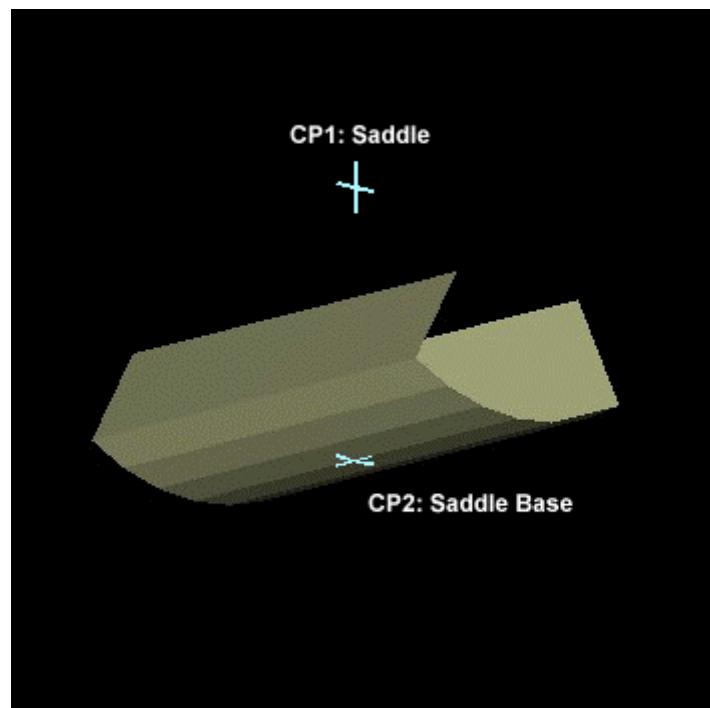
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"



## Anvil FIG167

**Description:** Anvil FIG167 <size> Insulation Protection Shield

**Symbol Name:** HS\_Anvil.Anvil FIG167

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG167

**User Class Name:** Insulation Protection Shield

**Part Number:** Anvil FIG167 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG167

Output name 1 = "Port1"

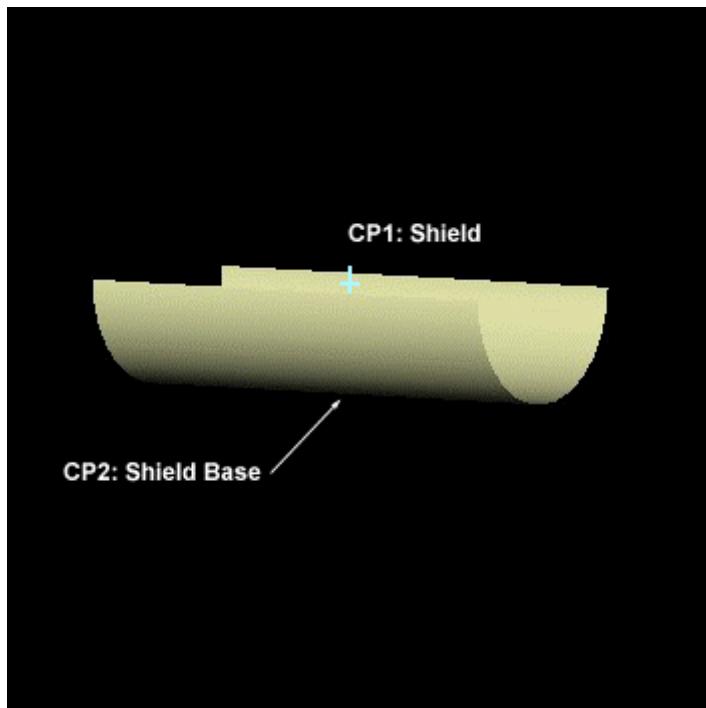
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "INSULAT"

Input name(3) = "UNARCO"

Input name(4) = "PIPE\_DIA"



## Anvil FIG181

**Description:** Anvil FIG181 <size> Adjustable Steel Yoke Pipe Roll

**Symbol Name:** HS\_Anvil.Anvil FIG181

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG181

**User Class Name:** Adjustable Steel Yoke Pipe Roll

**Part Number:** Anvil FIG181\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG181

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "ROLL"

Input name(2) = "E"

Input name(3) = "B"

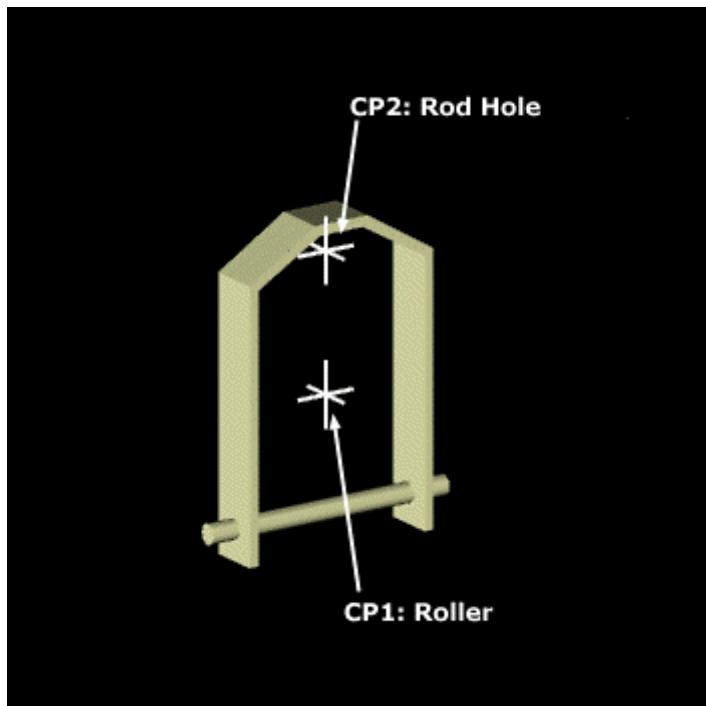
Input name(4) = "D"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "G1"

Input name(8) = "G2"



## Anvil FIG191

**Description:** Anvil FIG191 <size> Adjustable Pipe Stanchion Saddle

**Symbol Name:** HS\_Anvil.Anvil FIG191

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG191

**User Class Name:** Adjustable Pipe Stanchion Saddle

**Part Number:** Anvil FIG191\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG191

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "ROD"

Output name 5 = "BEND"

Output name 6 = "LEFT\_ROD"

Output name 7 = "RIGHT\_ROD"

Output name 8 = "LEFT"

Output name 9 = "RIGHT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "E"

Input name(4) = "ROD\_DIA"

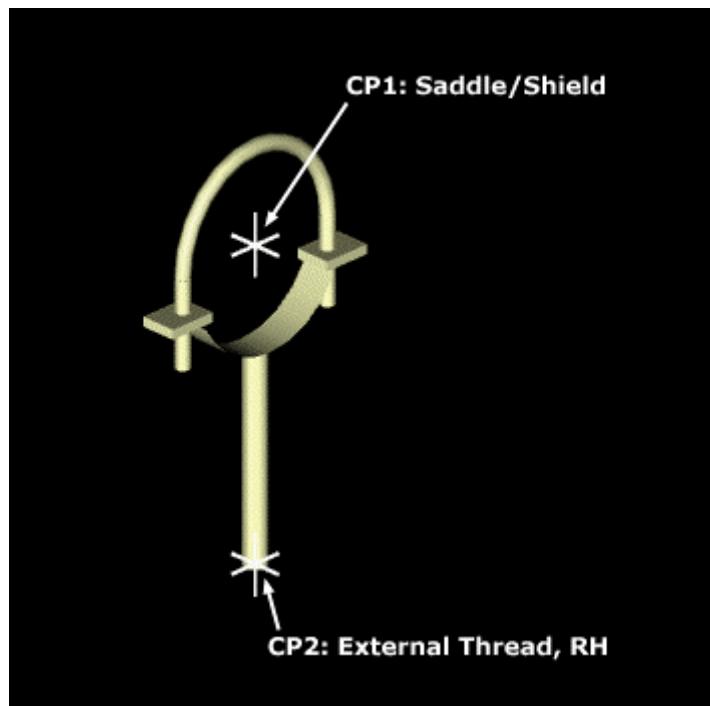
Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "D"

Input name(8) = "F1"

Input name(9) = "F2"



## Anvil FIG192

**Description:** Anvil FIG192 <size> Adjustable Pipe Saddle Support

**Symbol Name:** HS\_Anvil.Anvil FIG192

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG192

**User Class Name:** Adjustable Pipe Saddle Support

**Part Number:** Anvil FIG192 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG192

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "ROD"

Input name(2) = "PIPE\_DIA"

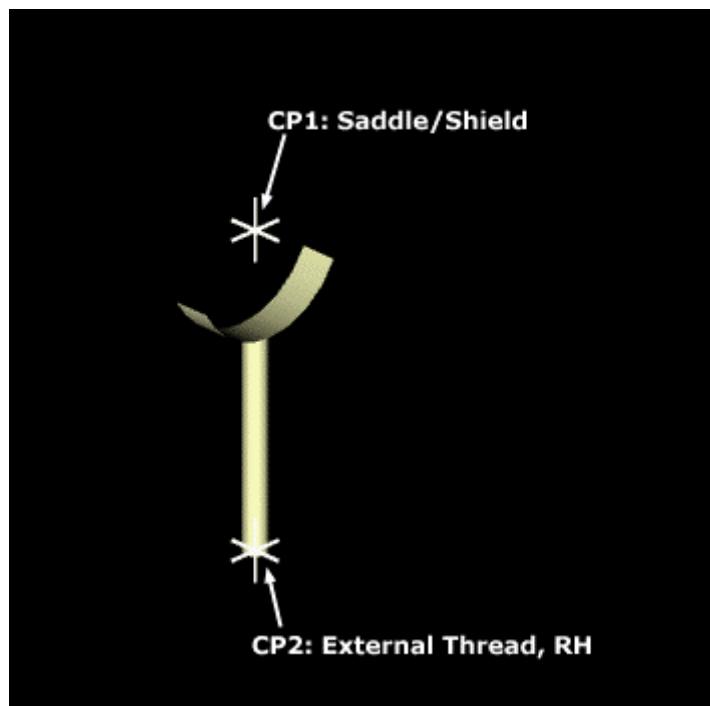
Input name(3) = "D"

Input name(4) = "ROD\_DIA"

Input name(5) = "B"

Input name(6) = "C1"

Input name(7) = "C2"



## Anvil FIG200

**Description:** Anvil FIG200 Size <size> Hydraulic Snubber

**Symbol Name:** HS\_Anvil.Anvil FIG200

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG200

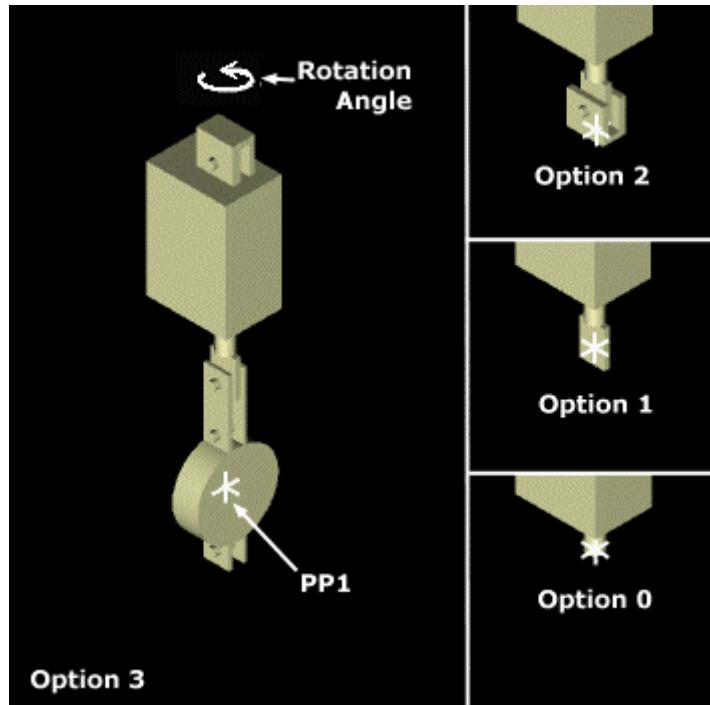
**User Class Name:** Hydraulic Snubber

**Part Number:** Anvil FIG200\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG200  
Output name 1 = "LUG2"  
Output name 2 = "LUG2"  
Output name 3 = "LUG2"  
Output name 4 = "LUG"  
Output name 5 = "VALVE"  
Output name 6 = "CYL"  
Output name 7 = "OPTIONALPART1"  
Output name 8 = "OPTIONALPART2"  
Output name 9 = "OPTIONALPART3"  
Output name 10 = "OPTIONALPART4"  
Output name 11 = "OPTIONALPART5"  
Output name 12 = "OPTIONALPART6"  
Output name 13 = "OPTIONALPART7"  
Output name 14 = "OPTIONALPART8"  
Output name 15 = "RIGHT"  
Output name 16 = "LEFT"  
Output name 17 = "END"  
Output name 18 = "BOLT"  
Input name(2) = "RESERVOIR\_TYP"  
Input name(3) = "OPT"  
Input name(4) = "STROKE"  
Input name(5) = "PISTON\_SETTING"  
Input name(6) = "ROTATION"  
Input name(7) = "PIPE\_DIA"  
Input name(8) = "SIZE"  
Input name(9) = "Z"  
Input name(10) = "I\_TRANS"  
Input name(11) = "I\_PRESS"  
Input name(12) = "A"  
Input name(13) = "B"  
Input name(14) = "D"  
Input name(15) = "D1"  
Input name(16) = "I\_METAL"  
Input name(17) = "K"

Input name(18) = "L"  
Input name(19) = "N"  
Input name(20) = "Q"  
Input name(21) = "R"  
Input name(22) = "S"  
Input name(23) = "T"  
Input name(24) = "SIZE\_INDEX"



## Anvil FIG201

**Description:** Anvil FIG201 Size <size> Hydraulic Snubber with Extension Piece

**Symbol Name:** HS\_Anvil.Anvil FIG201

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG201

**User Class Name:** Hydraulic Snubber with Extension Piece

**Part Number:** Anvil FIG201\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG201

Output name 1 = "LUG2"

Output name 2 = "LUG2"

Output name 3 = "LUG2"

Output name 4 = "LUG"

Output name 5 = "EXTENSION"

Output name 6 = "VALVE"

Output name 7 = "CYL"

Output name 8 = "OPTIONALPART1"

Output name 9 = "OPTIONALPART2"

Output name 10 = "OPTIONALPART3"

Output name 11 = "OPTIONALPART4"

Output name 12 = "OPTIONALPART5"

Output name 13 = "OPTIONALPART6"

Output name 14 = "OPTIONALPART7"

Output name 15 = "OPTIONALPART8"

Output name 16 = "RIGHT"

Output name 17 = "LEFT"

Output name 18 = "END"

Output name 19 = "BOLT"

Input name(2) = "RESERVOIR\_TYP"

Input name(3) = "OPT"

Input name(4) = "STROKE"

Input name(5) = "PISTON\_SETTING"

Input name(6) = "ROTATION"

Input name(7) = "Length"

Input name(8) = "PIPE\_DIA"

Input name(9) = "SIZE"

Input name(10) = "Z"

Input name(11) = "A"

Input name(12) = "F"

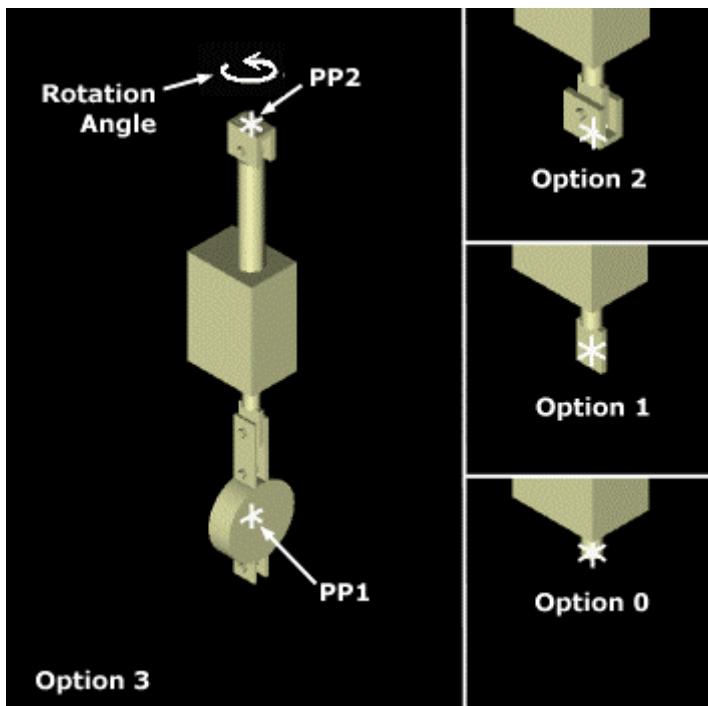
Input name(13) = "Q"

Input name(14) = "D"

Input name(15) = "D1"

Input name(16) = "N"

Input name(17) = "T"  
Input name(18) = "R"  
Input name(19) = "S"  
Input name(20) = "SIZE\_INDEX"  
Input name(21) = "I\_TRANS"  
Input name(22) = "I\_PRESS"  
Input name(23) = "I\_METAL"  
Input name(24) = "K"  
Input name(25) = "L"



## Anvil FIG211

**Description:** Anvil FIG211 Size <size> Sway Strut Assembly

**Symbol Name:** HS\_Anvil.Anvil FIG211

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG211

**User Class Name:** Sway Strut Assembly

**Part Number:** Anvil FIG211\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG211

Output name 1 = "TOP\_EYE"

Output name 2 = "BOT\_EYE"

Output name 3 = "TOP\_END"

Output name 4 = "BOT\_END"

Output name 5 = "EXT\_PIECE"

Output name 6 = "OPTIONALPART1"

Output name 7 = "OPTIONALPART2"

Output name 8 = "OPTIONALPART3"

Output name 9 = "OPTIONALPART4"

Output name 10 = "OPTIONALPART5"

Output name 11 = "OPTIONALPART6"

Output name 12 = "OPTIONALPART7"

Output name 13 = "OPTIONALPART8"

Output name 14 = "RIGHT"

Output name 15 = "LEFT"

Output name 16 = "END"

Output name 17 = "BOLT"

Input name(2) = "CONFIG"

Input name(3) = "X"

Input name(4) = "Y"

Input name(5) = "Length"

Input name(6) = "PIPE\_DIA"

Input name(7) = "SIZE"

Input name(8) = "A"

Input name(9) = "EXT\_DIA"

Input name(10) = "ROD\_END"

Input name(11) = "F"

Input name(12) = "D"

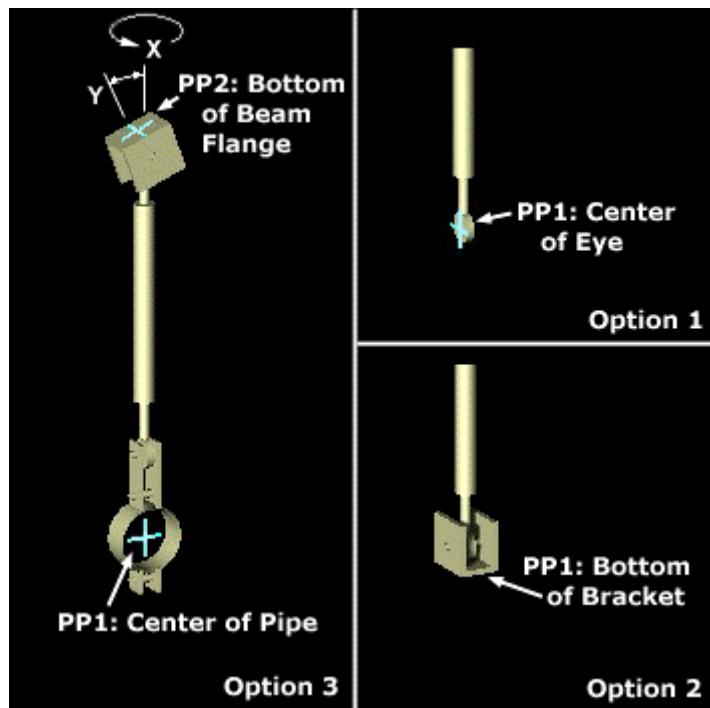
Input name(13) = "D1"

Input name(14) = "N"

Input name(15) = "R"

Input name(16) = "S"

Input name(17) = "T"



## Anvil FIG212

**Description:** Anvil FIG212 <size> Medium Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG212

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG212

**User Class Name:** Medium Pipe Clamp

**Part Number:** Anvil FIG212\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG212

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

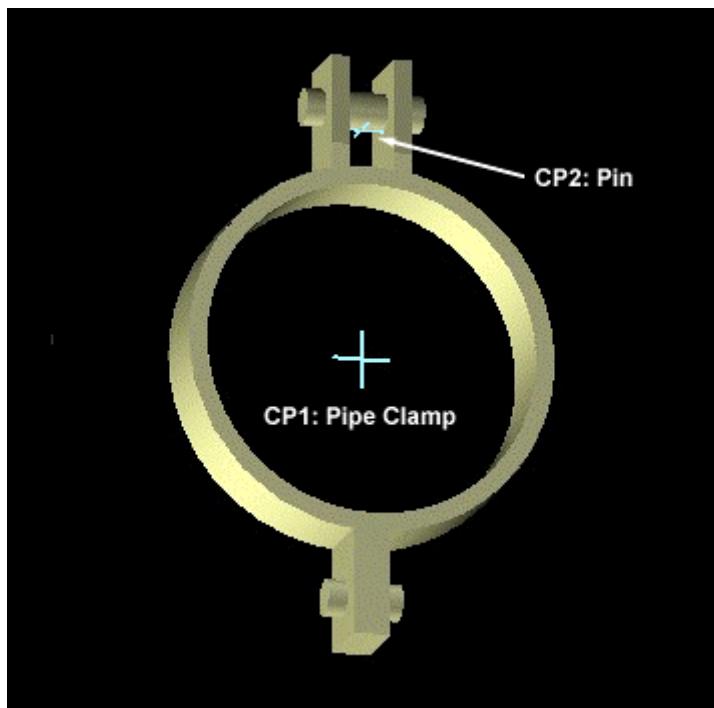
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## Anvil FIG216

**Description:** Anvil FIG216 <size> Heavy Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG216

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG216

**User Class Name:** Heavy Pipe Clamp

**Part Number:** Anvil FIG216\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG216

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

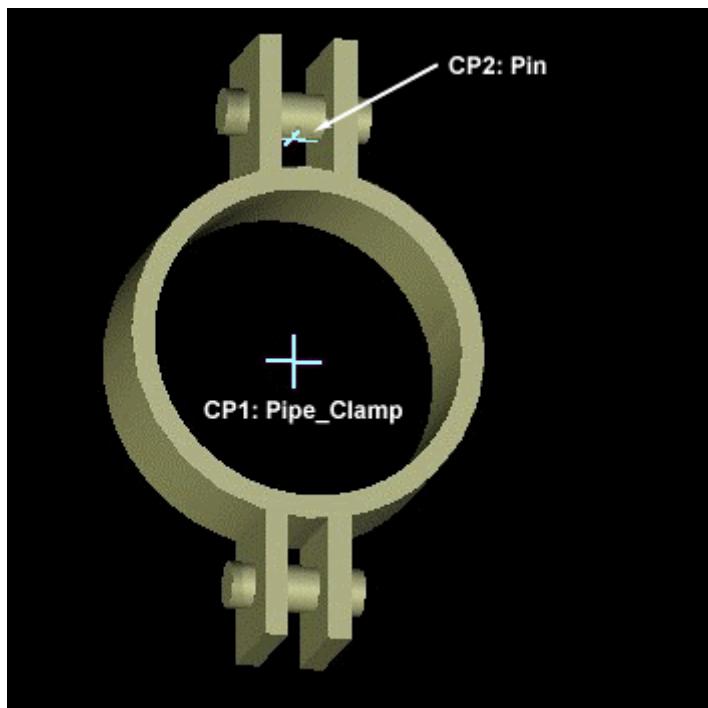
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## Anvil FIG218

**Description:** Anvil FIG218 Size <size> Malleable Beam Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG218

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG218

**User Class Name:** Malleable Beam Clamp

**Part Number:** Anvil FIG218\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG218

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

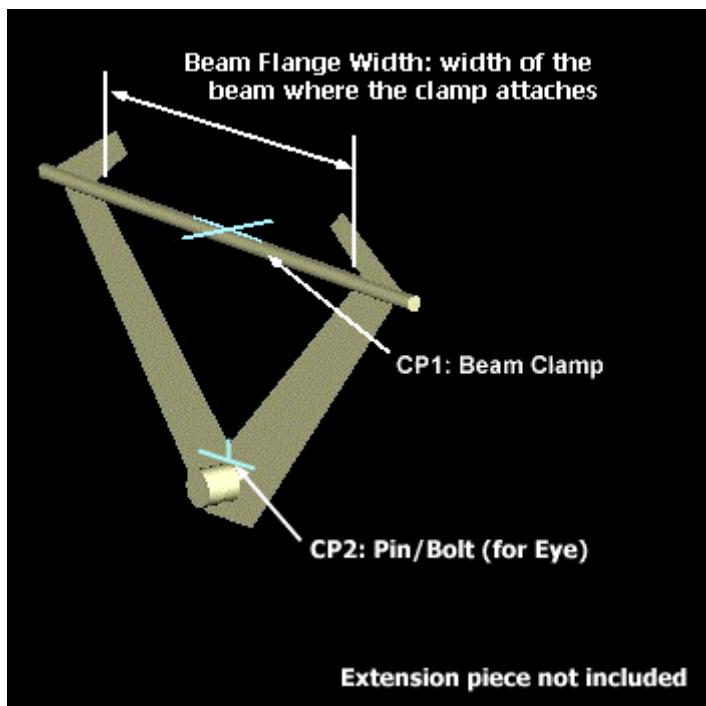
Output name 4 = "BOLT"

Output name 5 = "PIN"

Input name(2) = "FLANGE\_WIDTH"

Input name(3) = "SIZE"

Input name(4) = "BOLT\_DIA"



## Anvil FIG222

**Description:** Anvil FIG222 Size <size> Mini-Sway Strut Assembly

**Symbol Name:** HS\_HgrStructural.HgrBeam

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG222

**User Class Name:** Mini-Sway Strut Assembly

**Part Number:** Anvil FIG222 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG222

Output name 1 = "TOP\_LUG"

Output name 2 = "BOT\_EYE"

Output name 3 = "TOP\_END"

Output name 4 = "BOT\_END"

Output name 5 = "EXT\_PIECE"

Output name 6 = "OPTIONALPART1"

Output name 7 = "OPTIONALPART2"

Output name 8 = "OPTIONALPART3"

Output name 9 = "OPTIONALPART4"

Output name 10 = "OPTIONALPART5"

Output name 11 = "OPTIONALPART6"

Output name 12 = "OPTIONALPART7"

Output name 13 = "OPTIONALPART8"

Output name 14 = "RIGHT"

Output name 15 = "LEFT"

Output name 16 = "END"

Output name 17 = "BOLT"

Input name(2) = "CONFIG"

Input name(3) = "X"

Input name(4) = "Y\_TEMP"

Input name(5) = "Length"

Input name(6) = "PIPE\_DIA"

Input name(7) = "SIZE"

Input name(8) = "A"

Input name(9) = "EXT\_DIA"

Input name(10) = "ROD\_END"

Input name(11) = "D"

Input name(12) = "D1"

Input name(13) = "N"

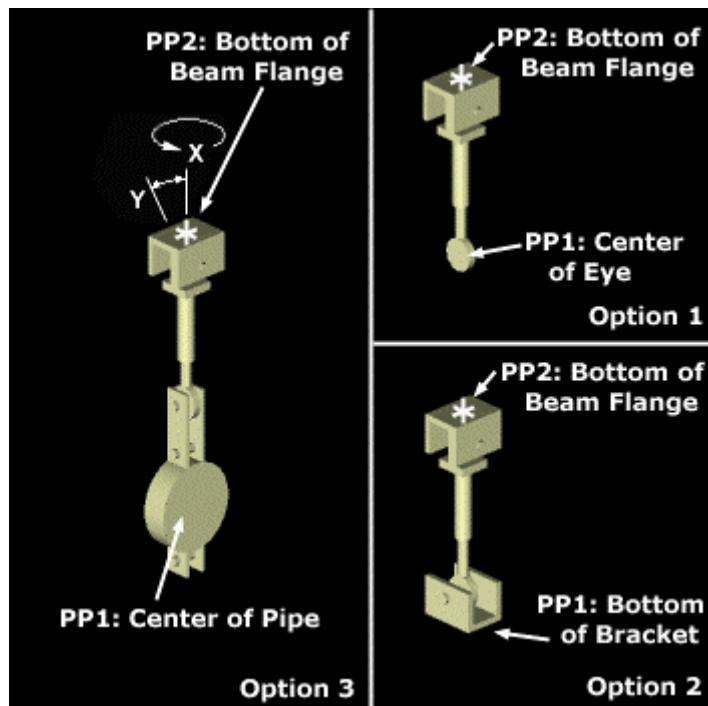
Input name(14) = "R"

Input name(15) = "S"

Input name(16) = "T"

Input name(17) = "B"

Input name(18) = "W"



## Anvil FIG224

**Description:** Anvil FIG224 <size> Alloy Steel Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG224

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG224

**User Class Name:** Alloy Steel Pipe Clamp

**Part Number:** Anvil FIG224 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG224

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "TOP\_BOLT"

Output name 6 = "BODY"

Input name(2) = "PIPE\_DIA"

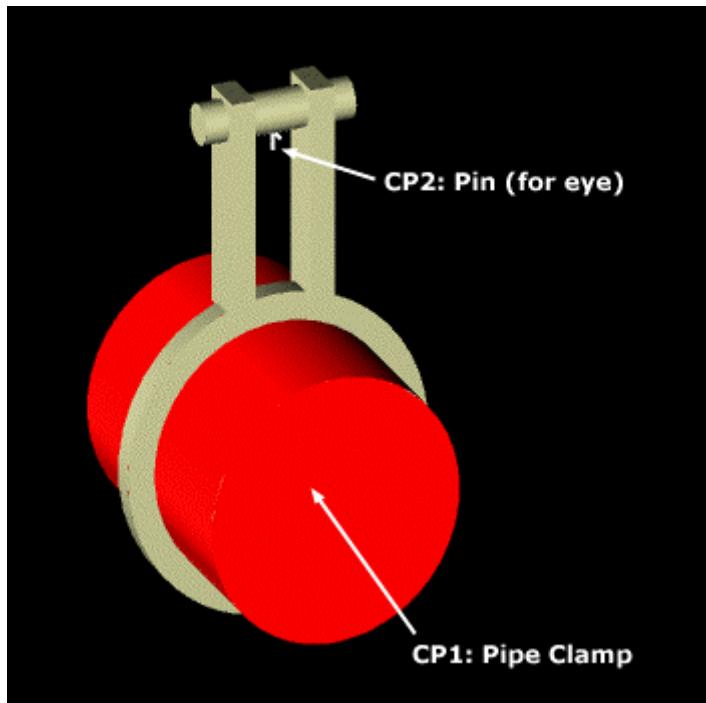
Input name(3) = "C"

Input name(4) = "E"

Input name(5) = "F"

Input name(6) = "H"

Input name(7) = "M"



## Anvil FIG230

**Description:** Anvil FIG230 <size> Forged Steel Turnbuckle (<size of opening> Opening)

**Symbol Name:** HS\_Anvil.Anvil FIG230

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG230

**User Class Name:** Forged Steel Turnbuckle

**Part Number:** Anvil FIG230\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG230

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

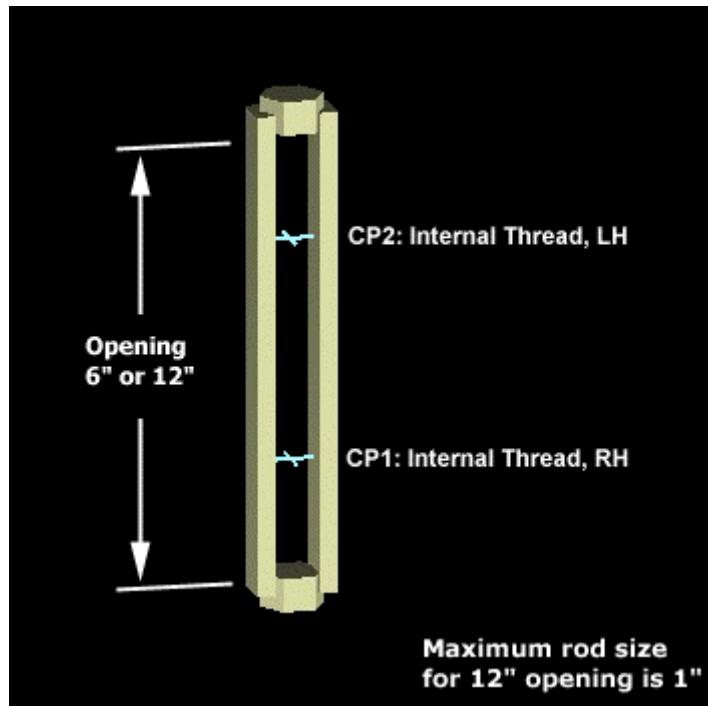
Output name 4 = "BOTTOM"

Output name 5 = "RIGHT"

Output name 6 = "LEFT"

Input name(2) = "OPENING"

Input name(3) = "ROD\_DIA"



## Anvil FIG242A

**Description:** Anvil FIG242A <size> Tall Pipe Strap

**Symbol Name:** HS\_Anvil.Anvil FIG242A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG242A

**User Class Name:** Tall Pipe Strap

**Part Number:** Anvil FIG242A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG242A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "LEFT"

Output name 5 = "RIGHT"

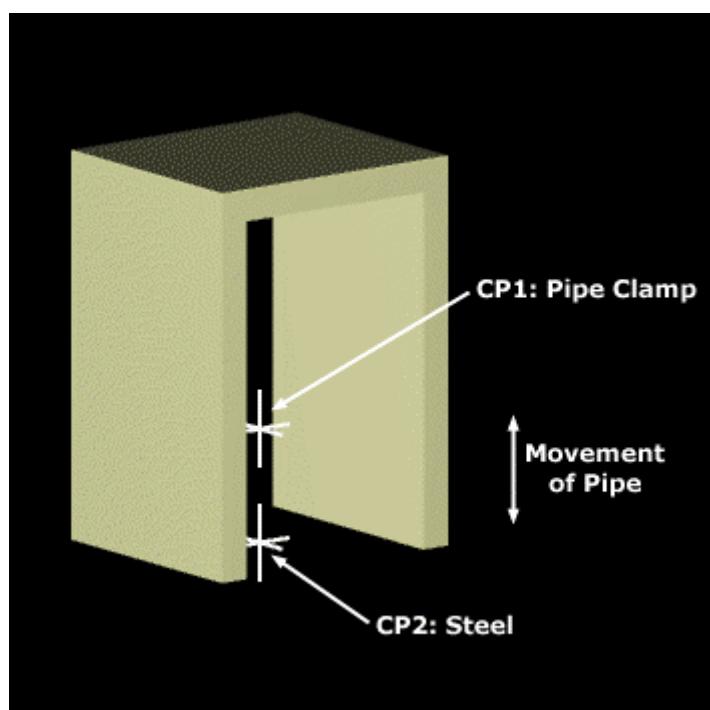
Input name(2) = "PIPE\_DIA"

Input name(3) = "W"

Input name(4) = "T"

Input name(5) = "B"

Input name(6) = "A"



## Anvil FIG243A

**Description:** Anvil FIG243A <size> Wide Pipe Strap

**Symbol Name:** HS\_Anvil.Anvil FIG243A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG243A

**User Class Name:** Wide Pipe Strap

**Part Number:** Anvil FIG243A <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG243A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "LEFT"

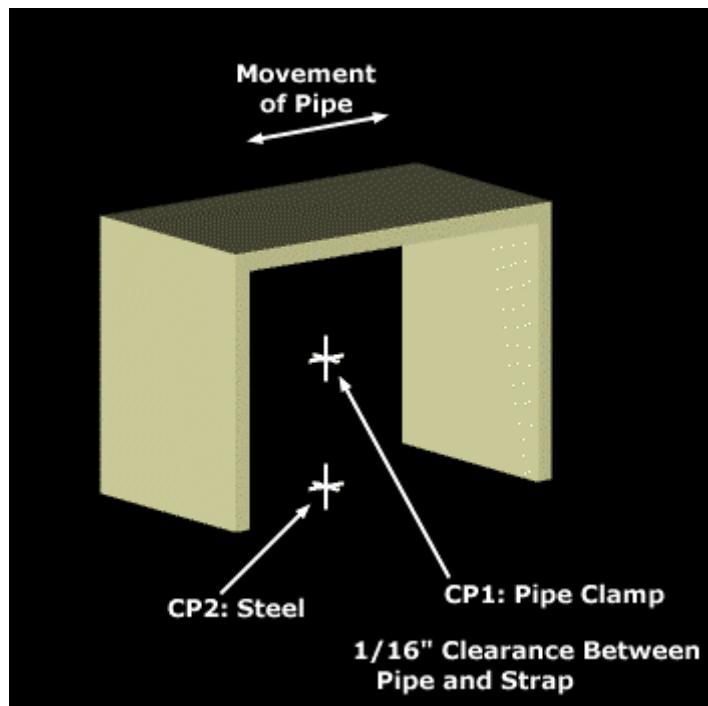
Output name 5 = "RIGHT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "W"

Input name(4) = "T"

Input name(5) = "A"



## Anvil FIG244A

**Description:** Anvil FIG244A <size> Round Pipe Strap

**Symbol Name:** HS\_Anvil.Anvil FIG244A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG244A

**User Class Name:** Round Pipe Strap

**Part Number:** Anvil FIG244A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG244A

Output name 1 = "Port1"

Output name 2 = "Port2"

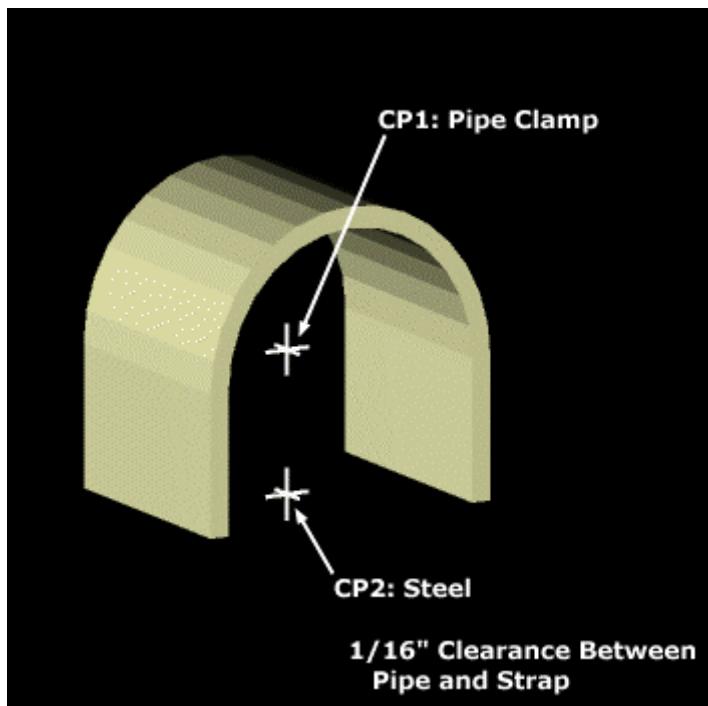
Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "W"

Input name(4) = "T"

Input name(5) = "A"



## Anvil FIG246

**Description:** Anvil FIG246 <size> Heavy Duty Alloy Steel Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG246

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG246

**User Class Name:** Heavy Duty Alloy Steel Pipe Clamp

**Part Number:** Anvil FIG246 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG246

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "TOP\_BOLT"

Output name 6 = "BODY"

Output name 7 = "FILLER"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"

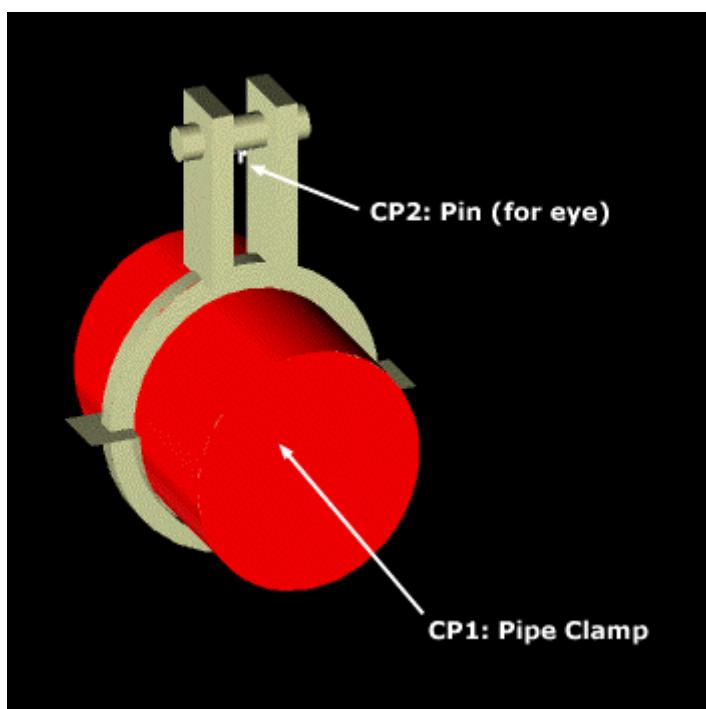
Input name(4) = "E"

Input name(5) = "F"

Input name(6) = "H"

Input name(7) = "M"

Input name(8) = "K"



## Anvil FIG248

**Description:** Anvil FIG248 <size> Eye Rod Right Thread

**Symbol Name:** HS\_Anvil.Anvil FIG248

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG248

**User Class Name:** Eye Rod Right Thread

**Part Number:** Anvil FIG248 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG248

Output name 1 = "Port1"

Output name 2 = "Port2"

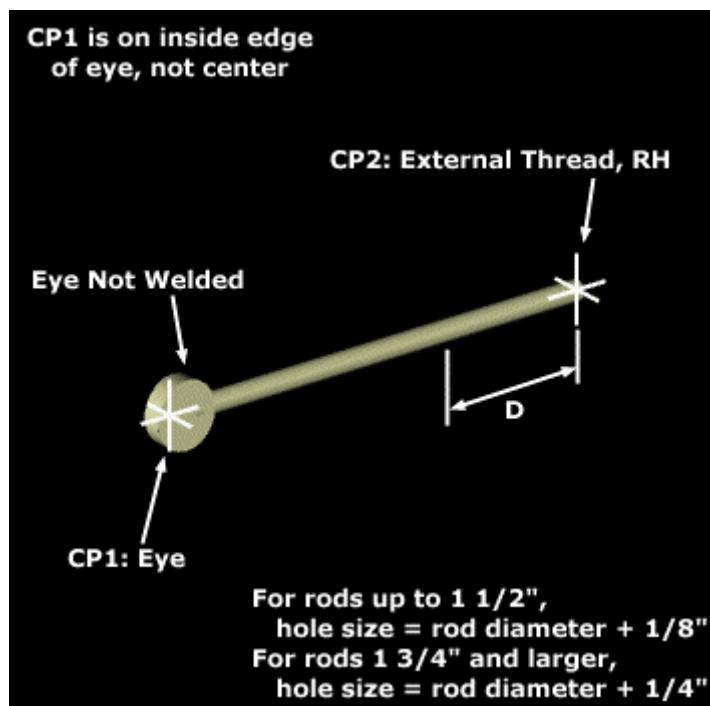
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG248L

**Description:** Anvil FIG248L <size> Eye Rod Left Thread

**Symbol Name:** HS\_Anvil.Anvil FIG248L

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG248L

**User Class Name:** Eye Rod Left Thread

**Part Number:** Anvil FIG248L <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG248L

Output name 1 = "Port1"

Output name 2 = "Port2"

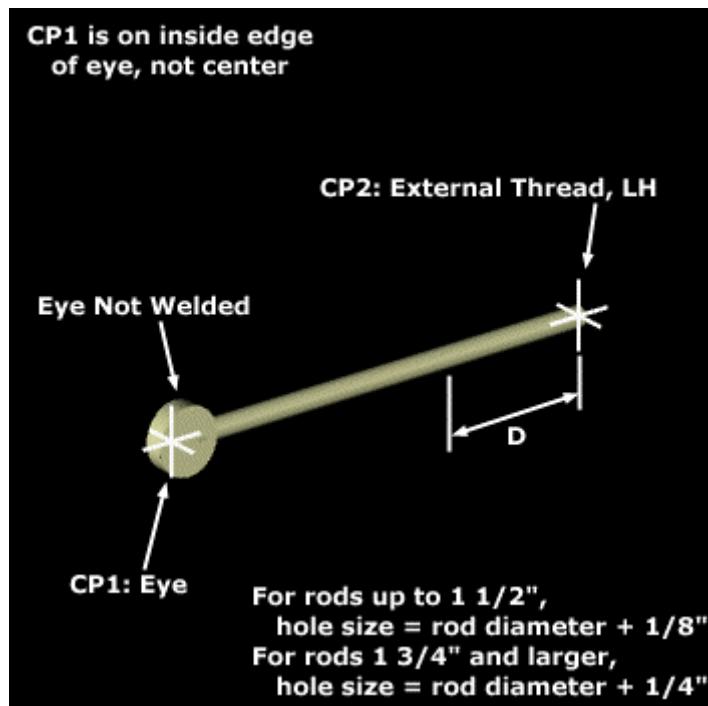
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG253

**Description:** Anvil FIG253 <size> End Threaded Rod Right and Left Hand Thread

**Symbol Name:** HS\_Anvil.Anvil FIG253

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG253

**User Class Name:** End Threaded Rod Right and Left Hand Thread

**Part Number:** Anvil FIG253 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG253

Output name 1 = "Port1"

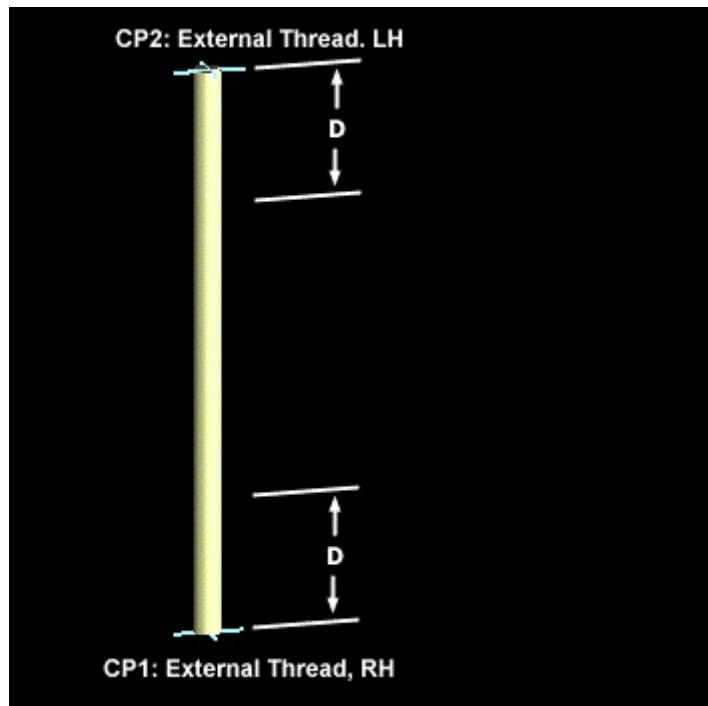
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG255

**Description:** Anvil FIG255 <size> Pipe Alignment Guide

**Symbol Name:** HS\_Anvil.Anvil FIG255

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG255

**User Class Name:** Pipe Alignment Guide

**Part Number:** Anvil FIG255 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG255

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL"

Output name 4 = "LEG1"

Output name 5 = "FOOT1"

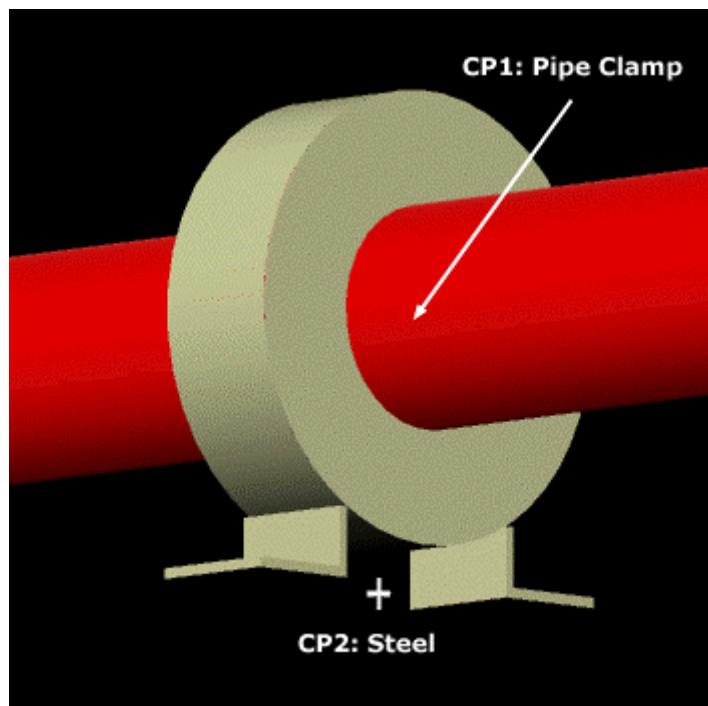
Output name 6 = "LEG2"

Output name 7 = "FOOT2"

Input name(2) = "INSUL"

Input name(3) = "PIPE\_DIA"

Input name(4) = "L"



## Anvil FIG256

**Description:** Anvil FIG256 <size> Pipe Alignment Guide

**Symbol Name:** HS\_Anvil.Anvil FIG256

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG256

**User Class Name:** Pipe Alignment Guide

**Part Number:** Anvil FIG256 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG256

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL"

Output name 4 = "LEG1"

Output name 5 = "FOOT1"

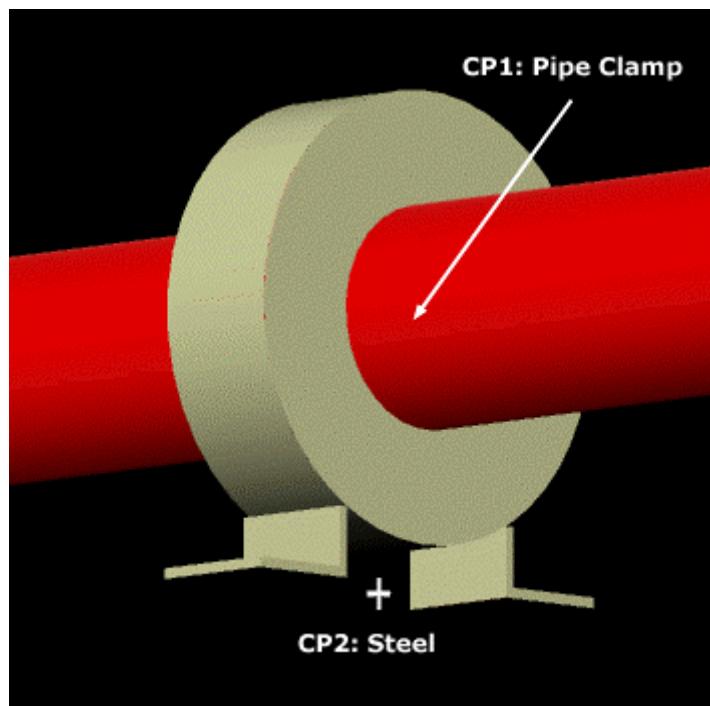
Output name 6 = "LEG2"

Output name 7 = "FOOT2"

Input name(2) = "INSUL"

Input name(3) = "PIPE\_DIA"

Input name(4) = "L"



## Anvil FIG257

**Description:** Anvil FIG257 <size> Structural Tee Slide Assembly

**Symbol Name:** HS\_Anvil.Anvil FIG257

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG257

**User Class Name:** Structural Tee Slide Assembly

**Part Number:** Anvil FIG257 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG257

Output name 1 = "WEB"

Output name 2 = "T\_BASE"

Output name 3 = "Port1"

Output name 4 = "Port2"

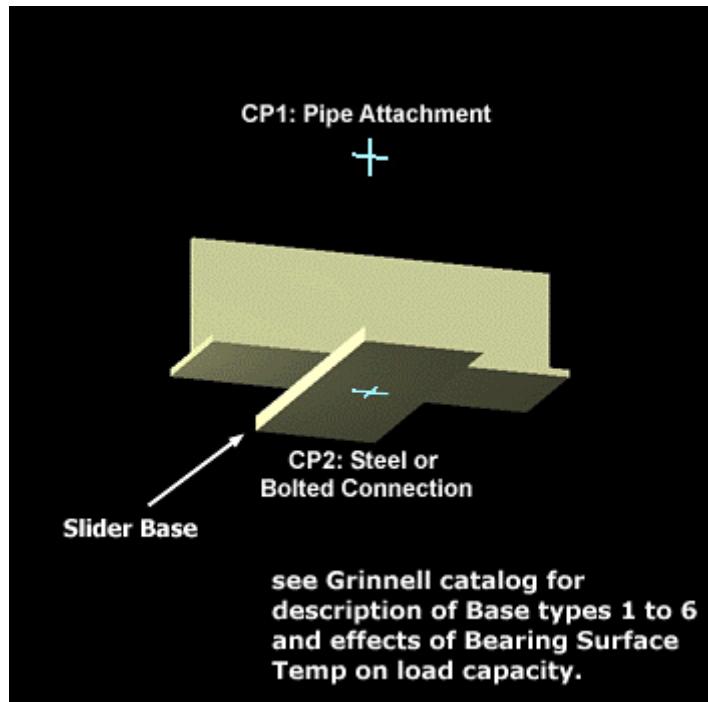
Output name 5 = "BASE"

Input name(2) = "TYP"

Input name(3) = "BASE\_TYP"

Input name(4) = "BASE\_TEMP"

Input name(5) = "PIPE\_DIA"



## Anvil FIG257A

**Description:** Anvil FIG257A <size> Structural Tee Anchor

**Symbol Name:** HS\_Anvil.Anvil FIG257A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG257A

**User Class Name:** Structural Tee Anchor

**Part Number:** Anvil FIG257A\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG257A

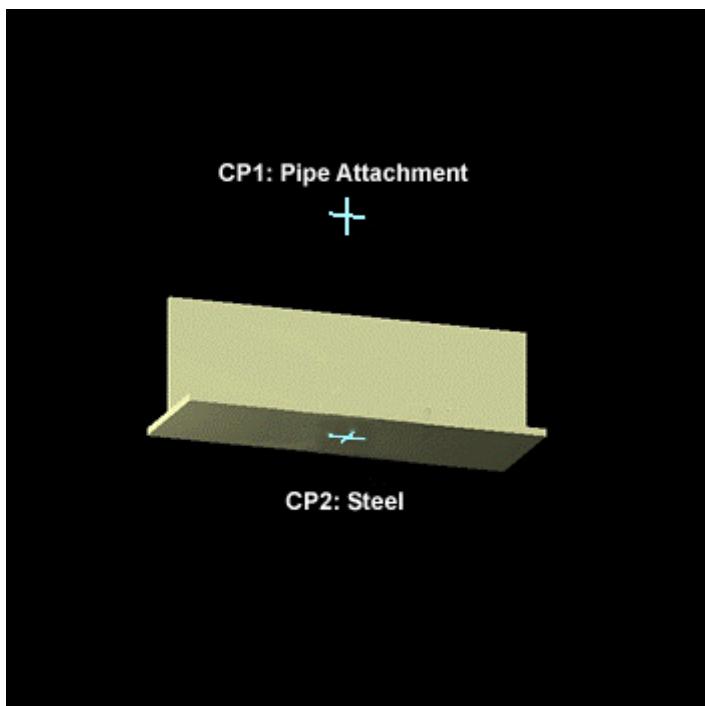
Output name 1 = "WEB"

Output name 2 = "T\_BASE"

Output name 3 = "Port1"

Output name 4 = "Port2"

Input name(2) = "PIPE\_DIA"



## Anvil FIG260

**Description:** Anvil FIG260 <size> Adjustable Clevis Hanger

**Symbol Name:** HS\_Anvil.Anvil FIG260

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG260

**User Class Name:** Adjustable Clevis Hanger

**Part Number:** Anvil FIG260\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG260

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOLT"

Input name(2) = "PIPE\_DIA"

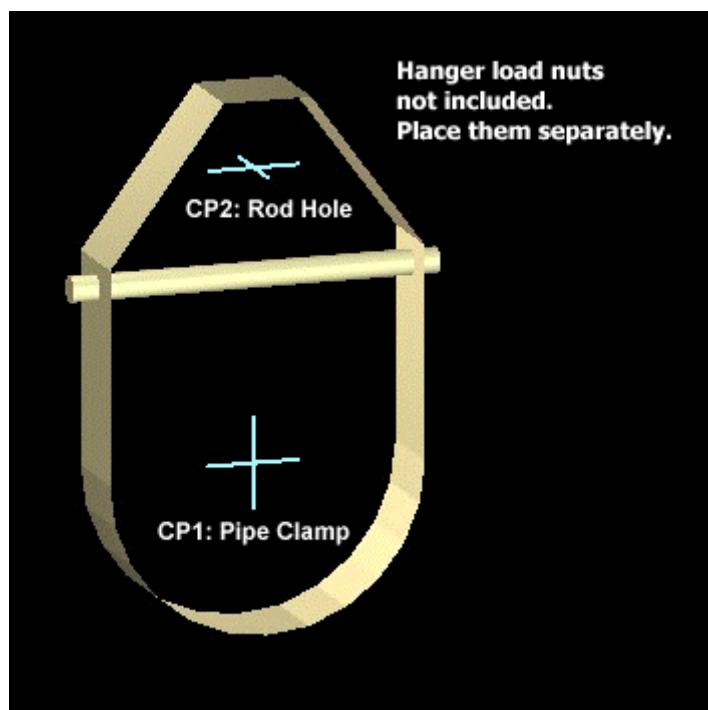
Input name(3) = "TAKE\_OUT"

Input name(4) = "B"

Input name(5) = "A"

Input name(6) = "WIDTH"

Input name(7) = "G"



## Anvil FIG261

**Description:** Anvil FIG261 <size> Extension Pipe or Riser Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG261

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG261

**User Class Name:** Extension Pipe or Riser Clamp

**Part Number:** Anvil FIG261 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG261

Output name 1 = "Port1"

Output name 2 = "CLAMP1"

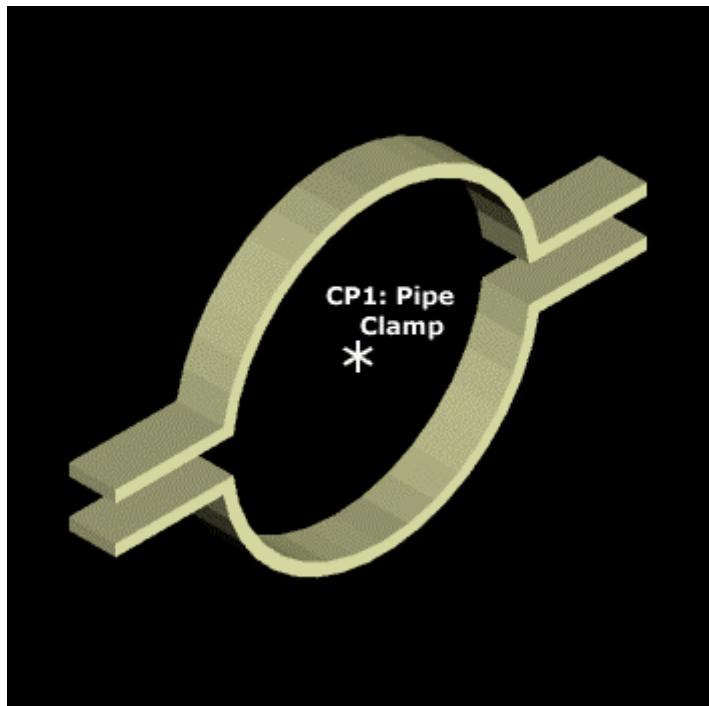
Output name 3 = "CLAMP2"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "G1"

Input name(5) = "G2"



## Anvil FIG262

**Description:** Anvil FIG262 <size> Strap

**Symbol Name:** HS\_Anvil.Anvil FIG262

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG262

**User Class Name:** Strap

**Part Number:** Anvil FIG262 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG262

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

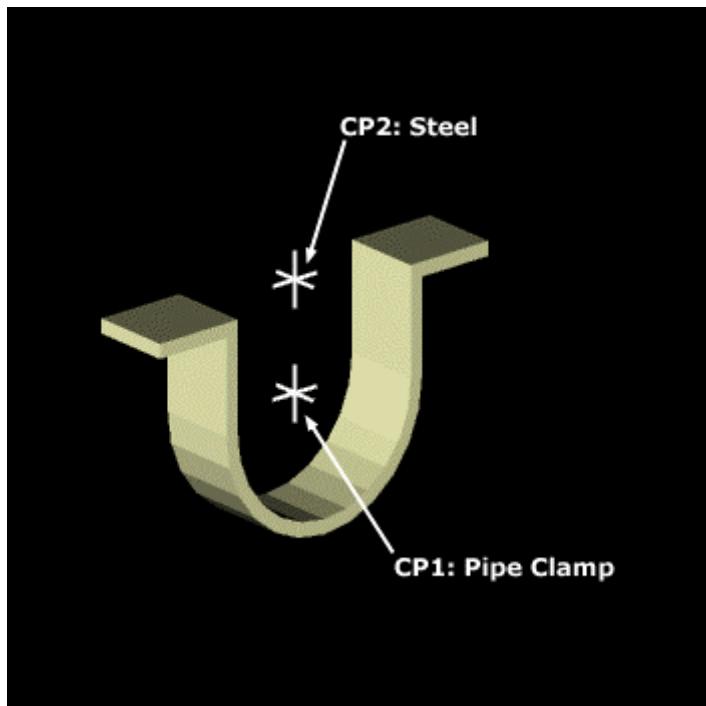
Input name(2) = "D"

Input name(3) = "F"

Input name(4) = "E"

Input name(5) = "B"

Input name(6) = "A"



## Anvil FIG271

**Description:** Anvil FIG271 <size> Pipe Roller Stand

**Symbol Name:** HS\_Anvil.Anvil FIG271

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG271

**User Class Name:** Pipe Roller Stand

**Part Number:** Anvil FIG271\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG271

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "R\_ROLL"

Output name 4 = "L\_ROLL"

Output name 5 = "R\_SIDE"

Output name 6 = "L\_SIDE"

Output name 7 = "BOTTOM"

Input name(2) = "A"

Input name(3) = "C"

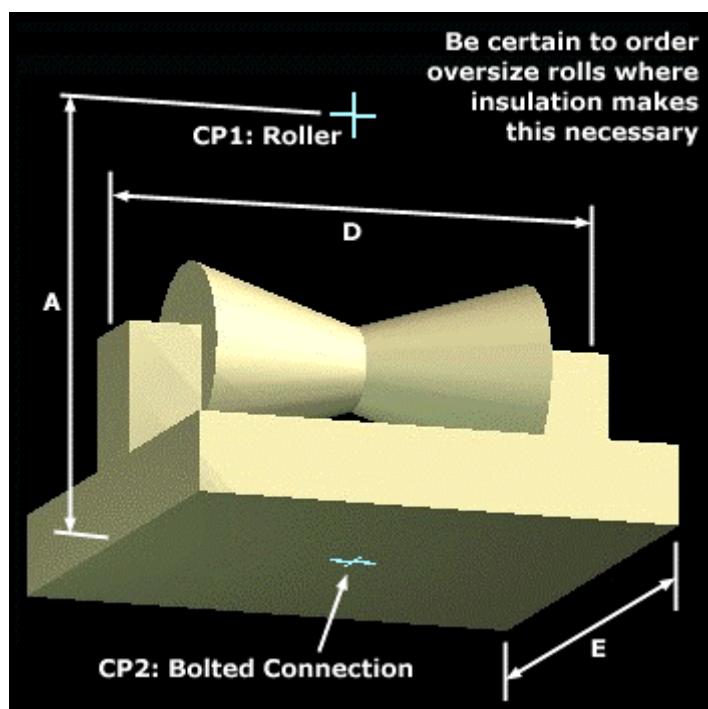
Input name(4) = "D"

Input name(5) = "E"

Input name(6) = "F"

Input name(7) = "G"

Input name(8) = "M"



## Anvil FIG278

**Description:** Anvil FIG278 <size> Welded Eye Rod Right Thread

**Symbol Name:** HS\_Anvil.Anvil FIG278

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG278

**User Class Name:** Welded Eye Rod Right Thread

**Part Number:** Anvil FIG278 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG278

Output name 1 = "Port1"

Output name 2 = "Port2"

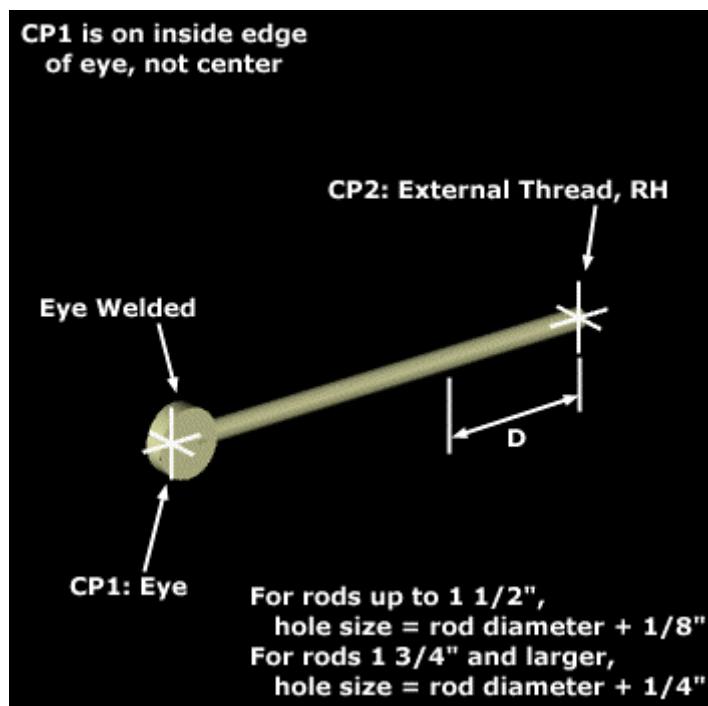
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG278L

**Description:** Anvil FIG278L <size> Welded Eye Rod Left Thread

**Symbol Name:** HS\_Anvil.Anvil FIG278L

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG278L

**User Class Name:** Welded Eye Rod Left Thread

**Part Number:** Anvil FIG278L\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG278L

Output name 1 = "Port1"

Output name 2 = "Port2"

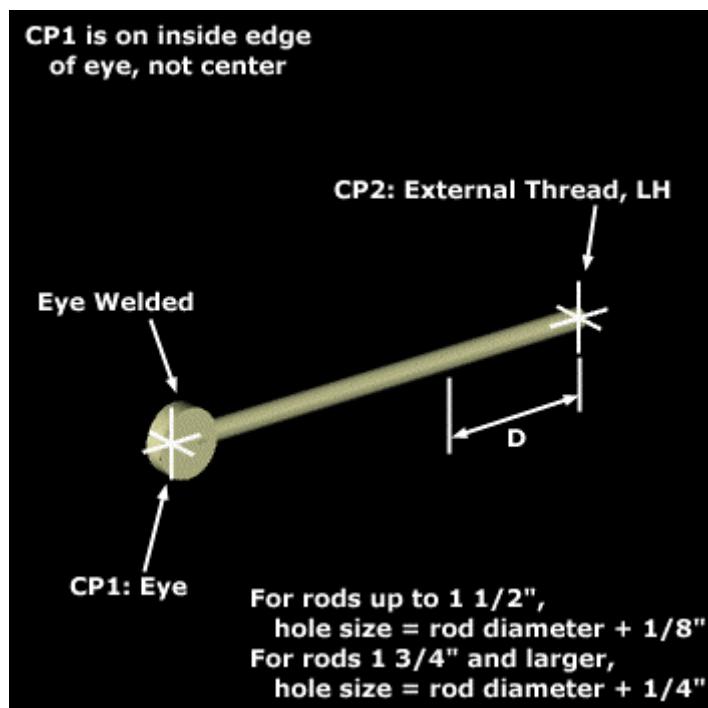
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## Anvil FIG290

**Description:** Anvil FIG290 <size> Weldless Eye Nut

**Symbol Name:** HS\_Anvil.Anvil FIG290

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG290

**User Class Name:** Weldless Eye Nut

**Part Number:** Anvil FIG290\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG290

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "TOP\_CYL\_1"

Output name 5 = "TOP\_CYL\_2"

Output name 6 = "BOT\_CYL\_1"

Output name 7 = "BOT\_CYL\_2"

Output name 8 = "BOTTOM"

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

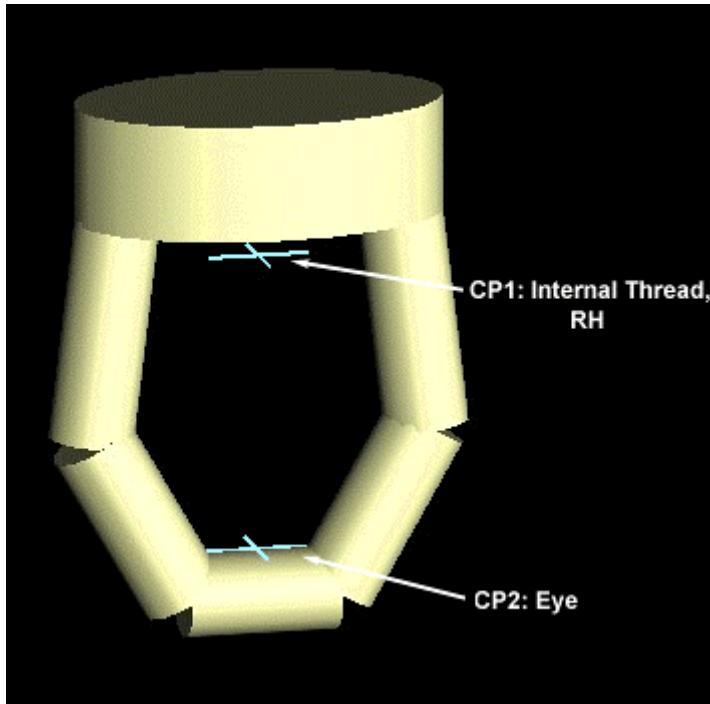
Input name(4) = "C"

Input name(5) = "D"

Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G"



## Anvil FIG290

**Description:** Anvil FIG290L <size> Weldless Eye Nut Left Hand

**Symbol Name:** HS\_Anvil.Anvil FIG290L

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG290L

**User Class Name:** Weldless Eye Nut Left Hand

**Part Number:** Anvil FIG290L\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG290L

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "TOP\_CYL\_1"

Output name 5 = "TOP\_CYL\_2"

Output name 6 = "BOT\_CYL\_1"

Output name 7 = "BOT\_CYL\_2"

Output name 8 = "BOTTOM"

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

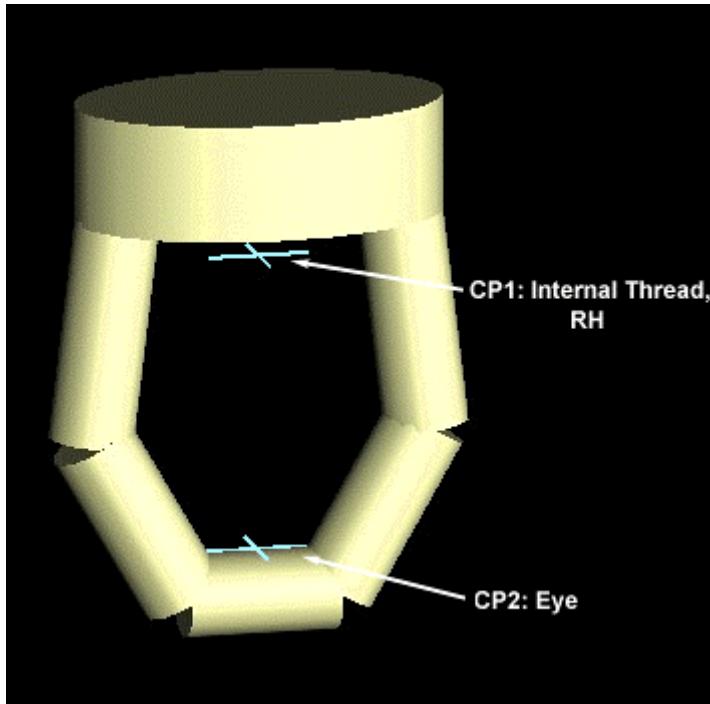
Input name(4) = "C"

Input name(5) = "D"

Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G"



## Anvil FIG291

**Description:** Anvil FIG291 Size <size> Pin with Cotter Pins

**Symbol Name:** HS\_Anvil.Anvil FIG291

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG291

**User Class Name:** Pin with Cotter Pins

**Part Number:** Anvil FIG291\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG291

Output name 1 = "Port1"

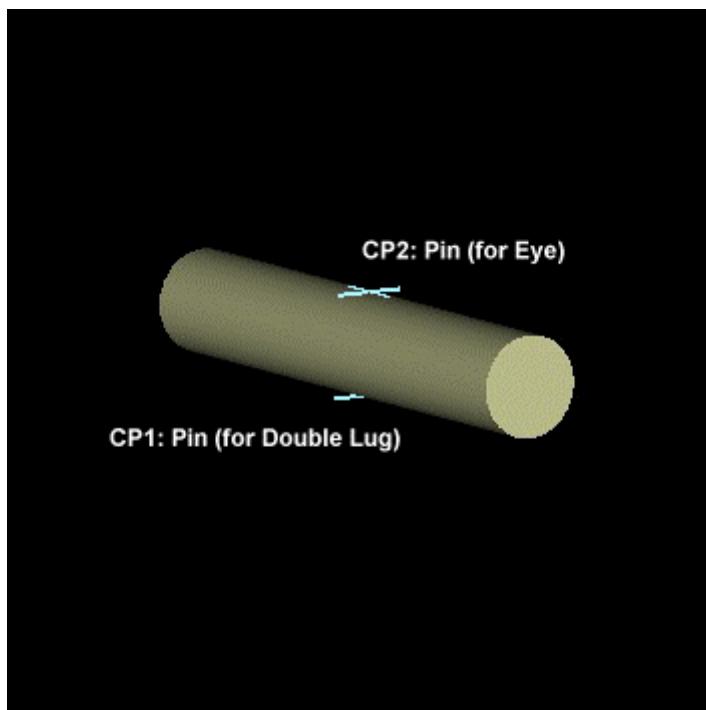
Output name 2 = "Port2"

Output name 3 = "CYL"

Input name(2) = "SIZE"

Input name(3) = "L"

Input name(4) = "W"



## Anvil FIG292

**Description:** Anvil FIG292 Size <size> UFS Beam Clamp <rod size> Rod Size

**Symbol Name:** HS\_Anvil.Anvil FIG292

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG292

**User Class Name:** UFS Beam Clamp

**Part Number:** Anvil FIG292\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG292

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "EYE"

Output name 5 = "PIN"

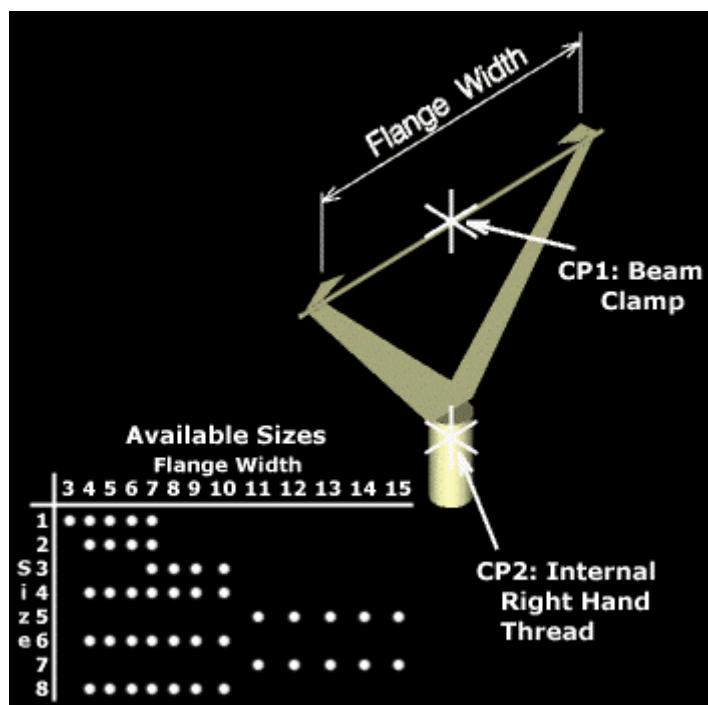
Input name(2) = "FLANGE\_WIDTH"

Input name(3) = "ROD\_DIA"

Input name(4) = "SIZE"

Input name(5) = "B"

Input name(6) = "V"



## Anvil FIG295

**Description:** Anvil FIG295 <size> Double Bolt Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG295

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG295

**User Class Name:** Double Bolt Pipe Clamp

**Part Number:** Anvil FIG295 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG295

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Output name 10 = "MID\_BOLT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

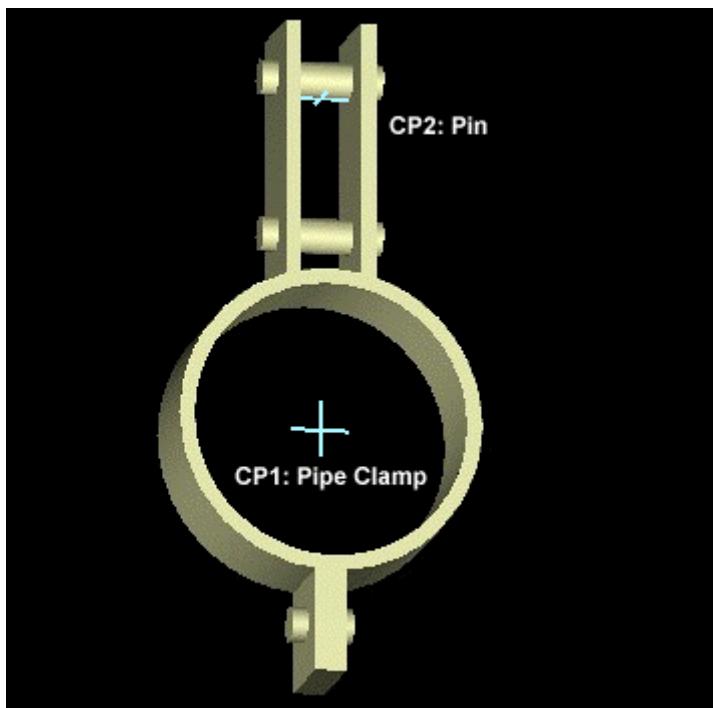
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## Anvil FIG295H

**Description:** Anvil FIG295H <size> Heavy Double Bolt Pipe Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG295H

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG295H

**User Class Name:** Heavy Double Bolt Pipe Clamp

**Part Number:** Anvil FIG295H\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG295H

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Output name 10 = "MID\_BOLT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

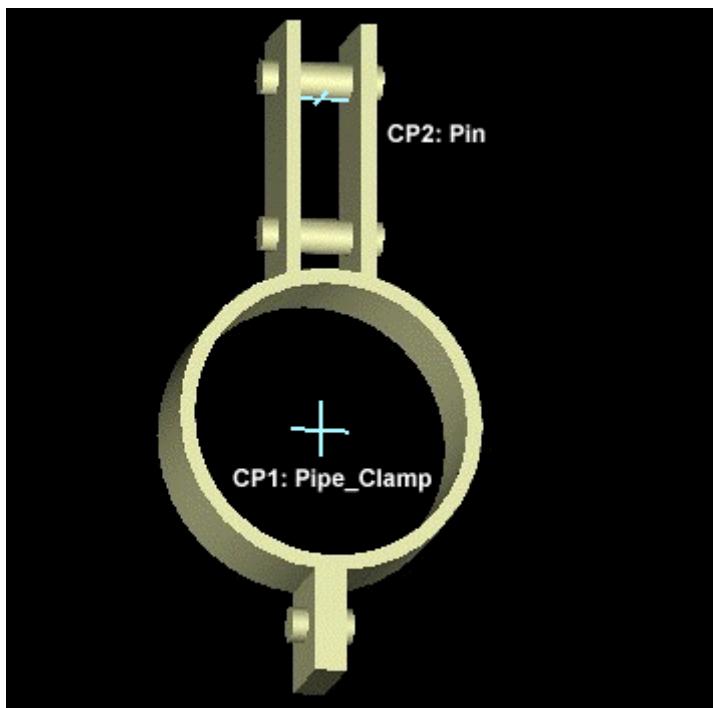
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## Anvil FIG299

**Description:** Anvil FIG299 <size> Forged Steel Clevis (<With or Without> Pin)

**Symbol Name:** HS\_Anvil.Anvil\_fig299

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG299

**User Class Name:** Forged Steel Clevis

**Part Number:** Anvil FIG299\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_fig299

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "PIN"

Output name 4 = "TOP"

Output name 5 = "LEFT"

Output name 6 = "RIGHT"

Output name 7 = "LEFT\_CYL"

Output name 8 = "RIGHT\_CYL"

Input name(2) = "CONFIG"

Input name(3) = "ROD\_DIA"

Input name(4) = "A"

Input name(5) = "P"

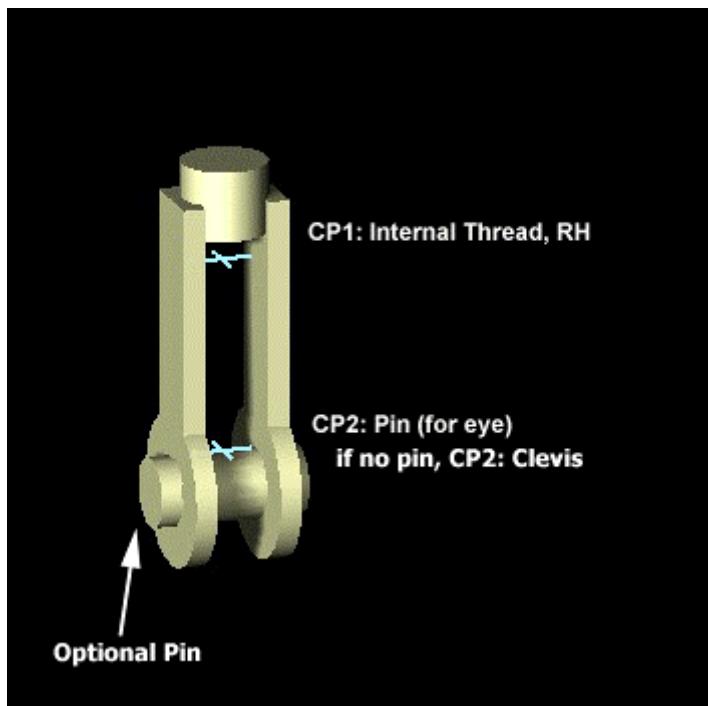
Input name(6) = "N"

Input name(7) = "GRIP"

Input name(8) = "D"

Input name(9) = "T"

Input name(10) = "W"



## Anvil FIG300

**Description:** Anvil FIG300 <size> Adjustable Clevis Hanger - Insulated

**Symbol Name:** HS\_Anvil.Anvil FIG300

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG300

**User Class Name:** Adjustable Clevis Hanger - Insulated

**Part Number:** Anvil FIG300 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG300

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOLT"

Input name(2) = "FINISH"

Input name(2) = "PIPE\_DIA"

Input name(3) = "TAKE\_OUT"

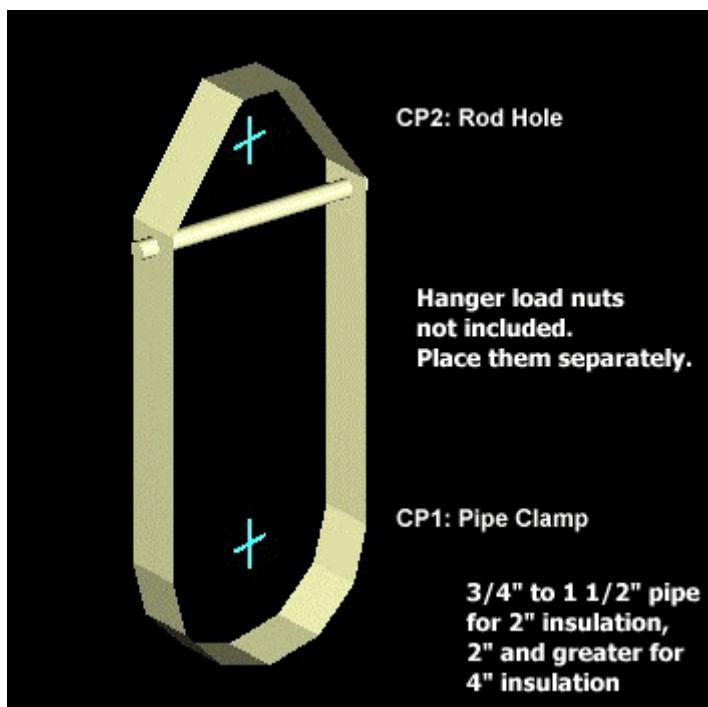
Input name(4) = "B"

Input name(5) = "A"

Input name(6) = "WIDTH"

Input name(7) = "G"

Input name(8) = "H"



## Anvil FIG40

**Description:** Anvil FIG40 <size> Standard Riser Clamp

**Symbol Name:** HS\_Anvil.Anvil FIG40

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG40

**User Class Name:** Standard Riser Clamp

**Part Number:** Anvil FIG40\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG40

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BODY"

Output name 5 = "LEFT\_FRONT"

Output name 6 = "LEFT\_BACK"

Output name 7 = "RIGHT\_FRONT"

Output name 8 = "RIGHT\_BACK"

Output name 9 = "LEFT\_OUTER"

Output name 10 = "LEFT\_INNER"

Output name 11 = "RIGHT\_OUTER"

Output name 12 = "RIGHT\_INNER"

Output name 13 = "LINE"

Input name(2) = "FINISH"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "B"

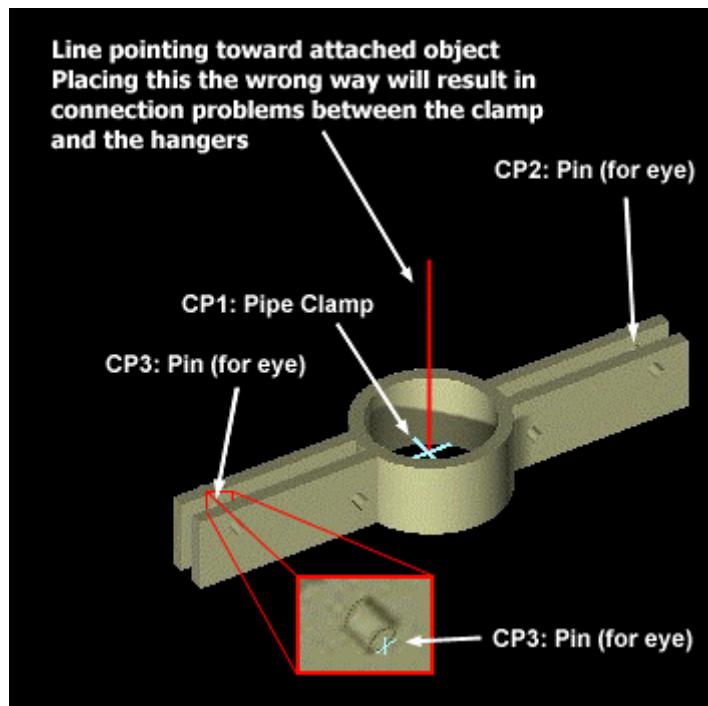
Input name(5) = "E"

Input name(6) = "F"

Input name(7) = "G1"

Input name(8) = "G2"

Input name(9) = "S"



## Anvil FIG436

**Description:** Anvil FIG436 <size> Fabricated Tee Slide Assembly

**Symbol Name:** HS\_Anvil.Anvil FIG436

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG436

**User Class Name:** Fabricated Tee Slide Assembly

**Part Number:** Anvil FIG436 <number>

**Inputs, Outputs, and Aspects:**

ProgID: SP\_HgrStructural.HgrBeam

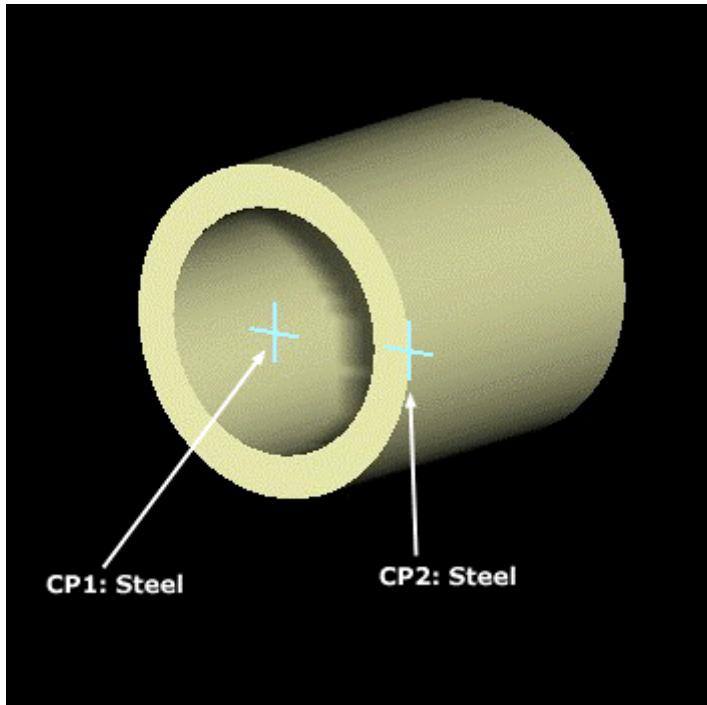
Output name BC = "BeginCap"

Output name EC = "EndCap"

Output name NT = "Neutral"

Output name BC\_SUR = "BeginCapSurface"

Output name EC\_SUR = "EndCapSurface"



## Anvil FIG436A

**Description:** Anvil FIG436A <size> Fabricated Tee Anchor

**Symbol Name:** HS\_Anvil.Anvil FIG436A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG436A

**User Class Name:** Fabricated Tee Anchor

**Part Number:** Anvil FIG436A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG436A

Output name 1 = "WEB"

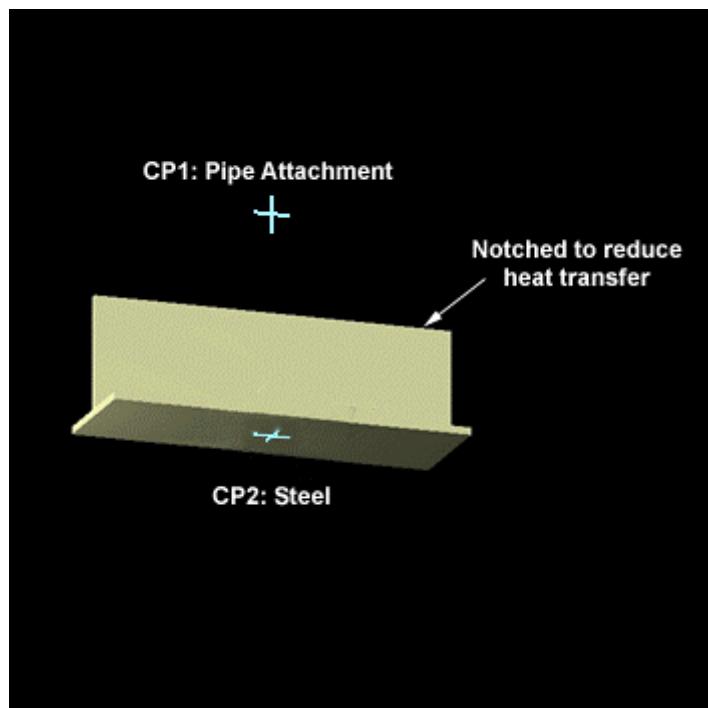
Output name 2 = "T\_BASE"

Output name 3 = "Port1"

Output name 4 = "Port2"

Input name(2) = "FINISH"

Input name(2) = "PIPE\_DIA"



## Anvil FIG55L

**Description:** Anvil FIG55L <size> Long Welding Lug

**Symbol Name:** HS\_Anvil.Anvil FIG55L

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG55L

**User Class Name:** Long Welding Lug

**Part Number:** Anvil FIG55L <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG55L

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

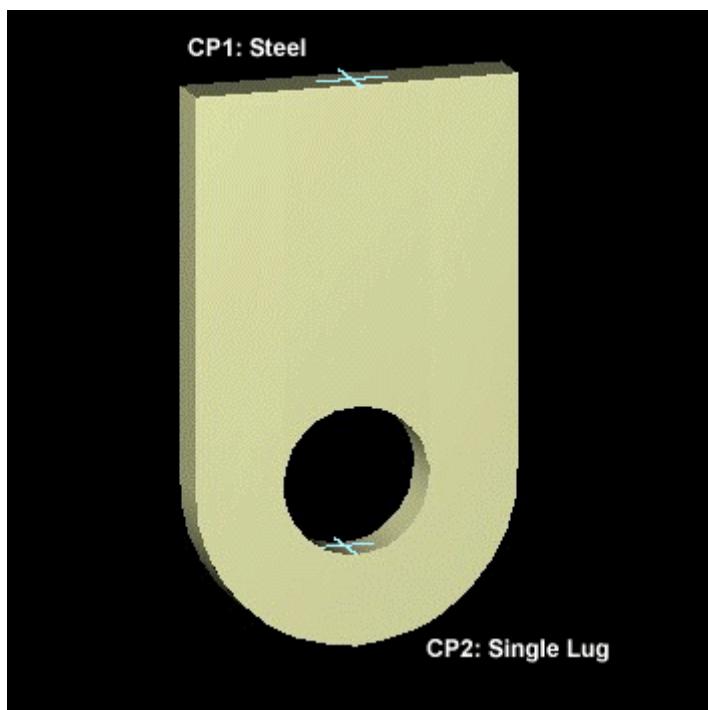
Input name(2) = "ROD\_DIA"

Input name(2) = "W"

Input name(3) = "F"

Input name(4) = "H"

Input name(5) = "T"



## Anvil FIG55S

**Description:** Anvil FIG55S <size> Short Welding Lug

**Symbol Name:** HS\_Anvil.Anvil FIG55S

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG55S

**User Class Name:** Short Welding Lug

**Part Number:** Anvil FIG55S <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG55S

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

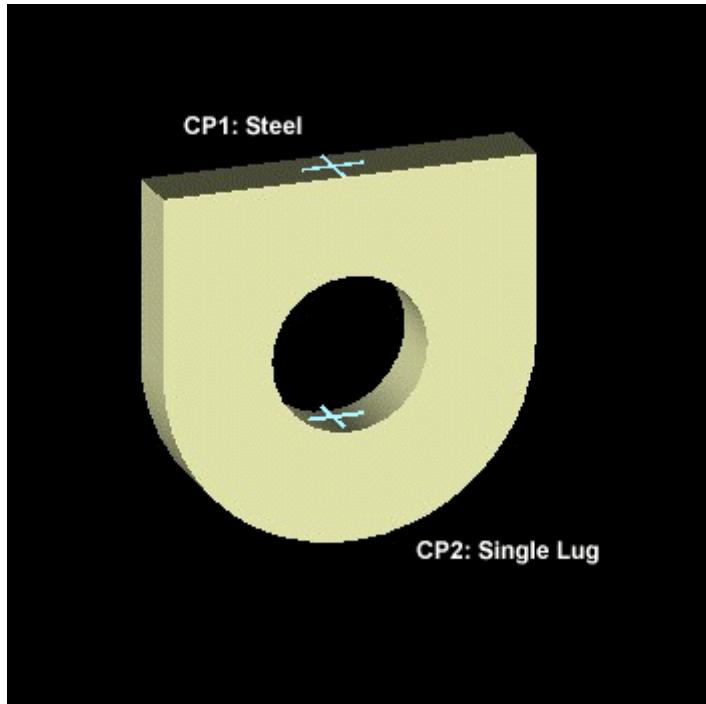
Input name(2) = "ROD\_DIA"

Input name(2) = "W"

Input name(3) = "F"

Input name(4) = "H"

Input name(5) = "T"



## Anvil FIG60

**Description:** Anvil FIG60 <size> Steel Washer Plate

**Symbol Name:** HS\_Anvil.Anvil FIG60

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG60

**User Class Name:** Steel Washer Plate

**Part Number:** Anvil FIG60 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG60

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

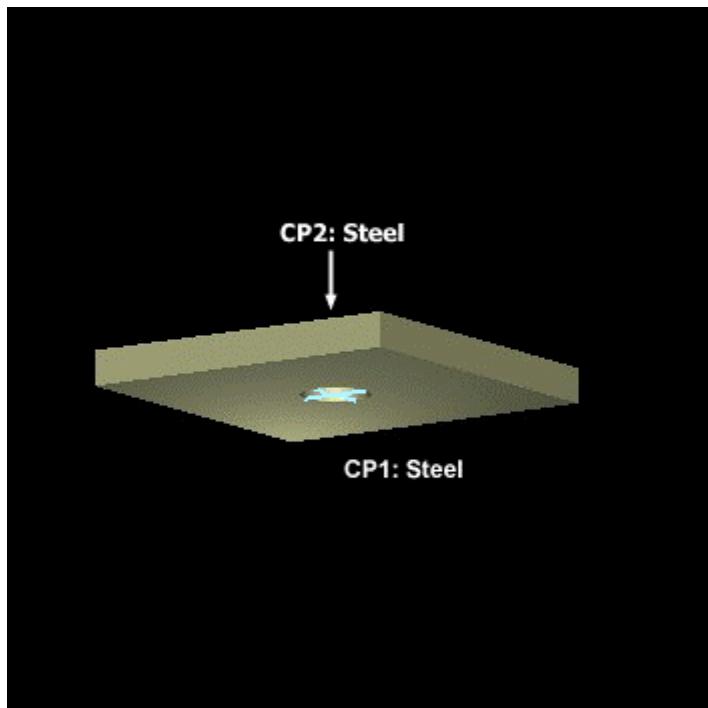
Output name 4 = "HOLE"

Input name(2) = "ROD\_DIA"

Input name(2) = "THICKNESS"

Input name(3) = "HOLE\_SIZE"

Input name(4) = "WIDTH"



## Anvil FIG63A

**Description:** Anvil FIG63A <size> Pipe Stanchion for Long Radius Elbow

**Symbol Name:** HS\_Anvil.Anvil FIG63A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG63A

**User Class Name:** Pipe Stanchion for Long Radius Elbow

**Part Number:** Anvil FIG63A <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG63A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASE"

Output name 4 = "PIPE"

Input name(2) = "Length"

Input name(3) = "STANCHION\_NOM\_DIA"

Input name(4) = "Elbow\_Radius"

Input name(5) = "PIPE\_DIA"

Input name(5) = "N"

Input name(6) = "A"

Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "F"

Input name(12) = "G"

Input name(13) = "H"

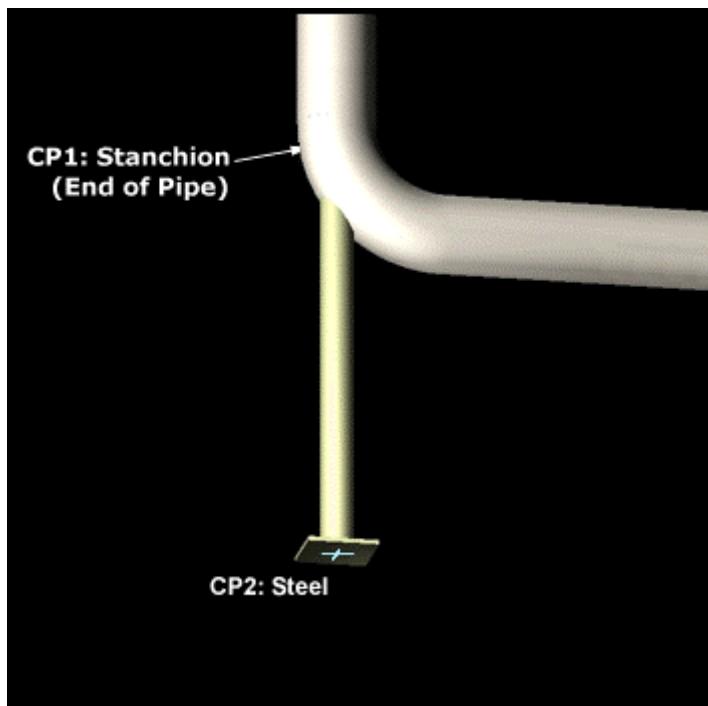
Input name(14) = "I"

Input name(15) = "J"

Input name(16) = "K"

Input name(17) = "L"

Input name(18) = "M"



## Anvil FIG63B

**Description:** Anvil FIG63B <size> Pipe Stanchion for Short Radius Elbow

**Symbol Name:** HS\_Anvil.Anvil FIG63B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG63B

**User Class Name:** Pipe Stanchion for Short Radius Elbow

**Part Number:** Anvil FIG63B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG63B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASE"

Output name 4 = "PIPE"

Input name(2) = "Length"

Input name(3) = "STANCHION\_NOM\_DIA"

Input name(4) = "Elbow\_Radius"

Input name(5) = "PIPE\_DIA"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "D"

Input name(9) = "E"

Input name(10) = "F"

Input name(11) = "G"

Input name(12) = "H"

Input name(13) = "I"

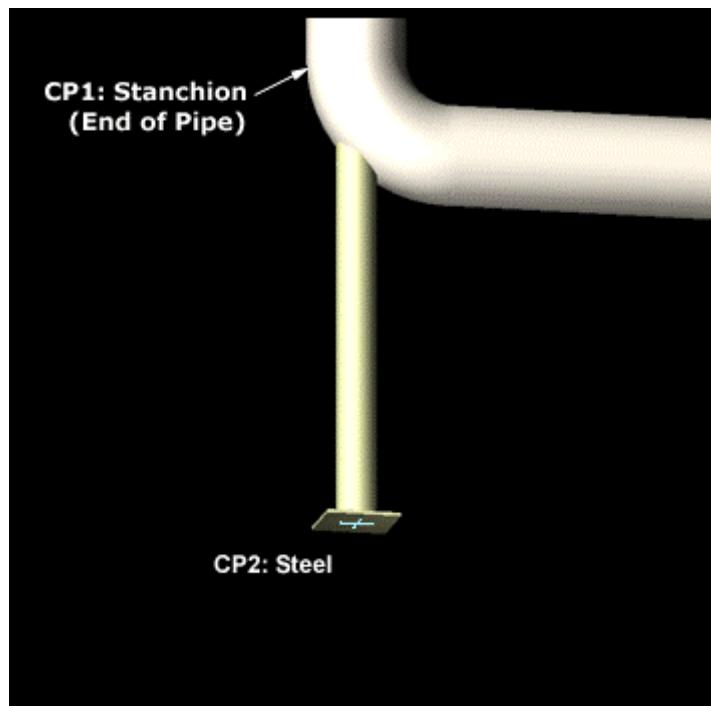
Input name(14) = "J"

Input name(15) = "K"

Input name(16) = "L"

Input name(17) = "M"

Input name(18) = "N"



## Anvil FIG63C

**Description:** Anvil FIG63C <size> Pipe Stanchion for Horizontal Pipe

**Symbol Name:** HS\_Anvil.Anvil FIG63C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG63C

**User Class Name:** Pipe Stanchion for Horizontal Pipe

**Part Number:** Anvil FIG63C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG63C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASE"

Output name 4 = "PIPE"

Input name(2) = "Length"

Input name(3) = "STANCHION\_NOM\_DIA"

Input name(4) = "PIPE\_DIA"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "D"

Input name(8) = "E"

Input name(9) = "F"

Input name(10) = "G"

Input name(11) = "H"

Input name(12) = "I"

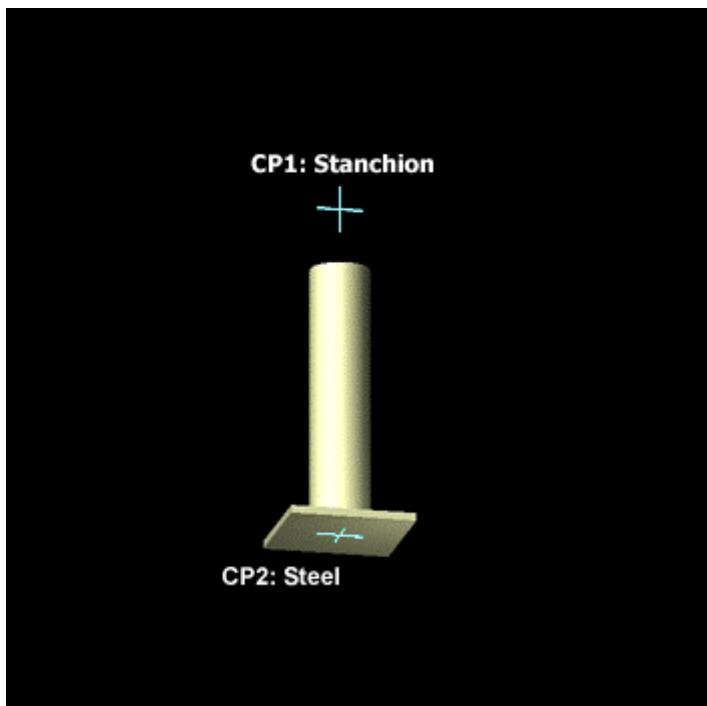
Input name(13) = "J"

Input name(14) = "K"

Input name(15) = "L"

Input name(16) = "M"

Input name(17) = "N"



## Anvil FIG66

**Description:** Anvil FIG66 <size> Welded Beam Attachment (Connect to Bolt), Anvil FIG66 <size> Welded Beam Attachment (Connect with Hanger Rod)

**Symbol Name:** HS\_Anvil.Anvil\_fig66

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG66

**User Class Name:** Welded Beam Attachment

**Part Number:** Anvil FIG66\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil\_fig66

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "SIDE1"

Output name 5 = "SIDE2"

Output name 6 = "PIN"

Input name(2) = "PLACE\_MODE\_USER"

Input name(3) = "ROD\_DIA"

Input name(4) = "E"

Input name(5) = "E\_PRIME"

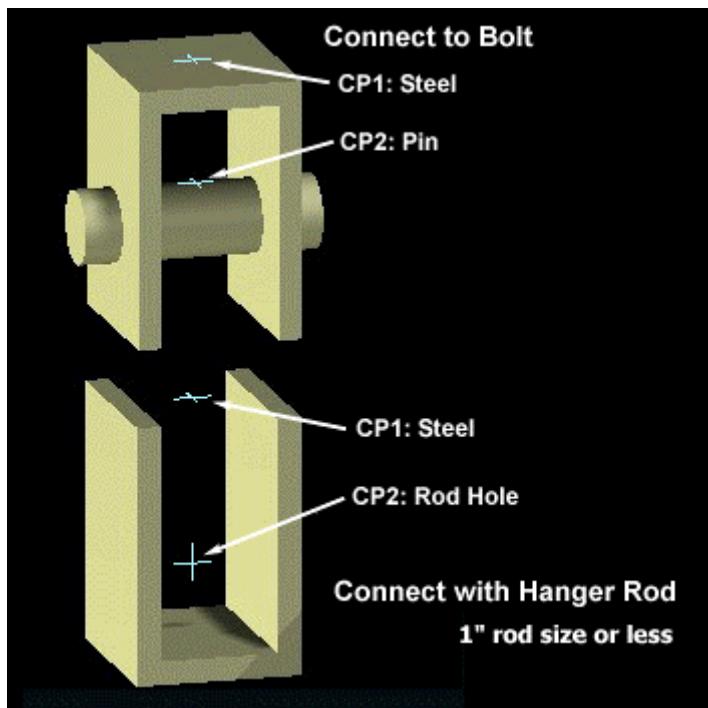
Input name(6) = "H"

Input name(7) = "R"

Input name(8) = "S"

Input name(9) = "B"

Input name(10) = "T"



## Anvil FIG69

**Description:** Anvil FIG69 <size> Adjustable Swivel Ring

**Symbol Name:** HS\_Anvil.Anvil FIG69

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG69

**User Class Name:** Adjustable Swivel Ring

**Part Number:** Anvil FIG69 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG69

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

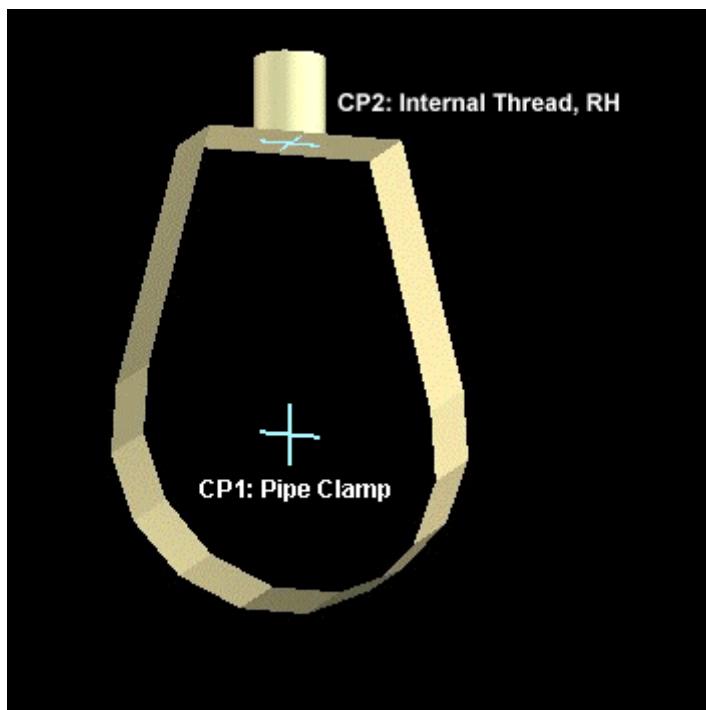
Output name 4 = "NUT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "C"

Input name(4) = "B"

Input name(5) = "A"



## Anvil FIG80A

**Description:** Anvil Fig 80A Size <size> Type A Vertical Constant Support, Anvil Fig C-80A Size <size> Type A Vertical Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG80A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG80A

**User Class Name:** Type A Vertical Constant Support

**Part Number:** Anvil FIG80A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG80A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SPRING"

Output name 4 = "BOTTOM"

Output name 5 = "THINGY"

Input name(2) = "LOAD"

Input name(3) = "ACT\_TRAVEL"

Input name(3) = "Q"

Input name(4) = "TOTAL\_TRAV"

Input name(5) = "TRAVEL\_DIR"

Input name(5) = "P"

Input name(6) = "SIZE"

Input name(7) = "G"

Input name(8) = "A"

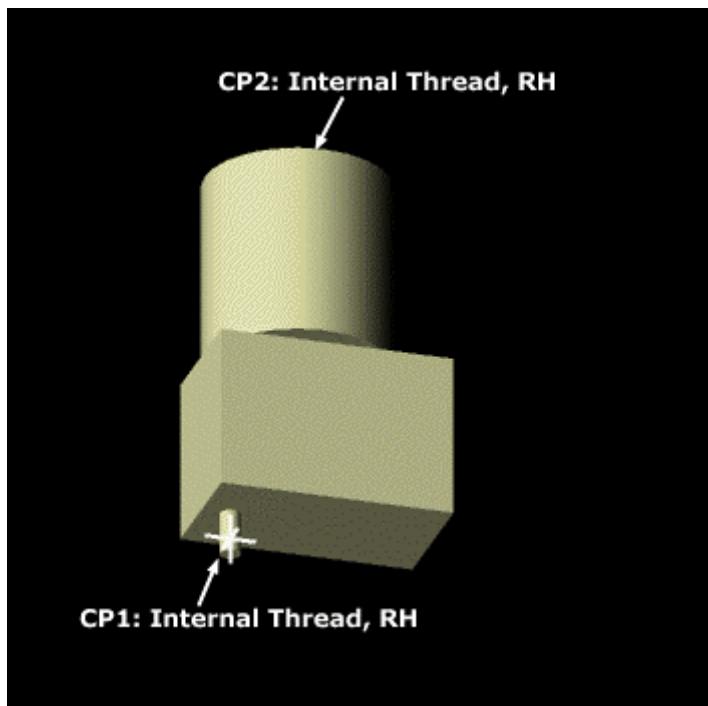
Input name(9) = "D"

Input name(10) = "F"

Input name(11) = "I"

Input name(12) = "M"

Input name(13) = "N"



## Anvil FIG80B

**Description:** Anvil Fig 80B Size <size> Type B Vertical Constant Support, Anvil Fig C-80B Size <size> Type B Vertical Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG80B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG80B

**User Class Name:** Type B Vertical Constant Support

**Part Number:** Anvil FIG80B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG80B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LUG"

Output name 4 = "SPRING"

Output name 5 = "BOTTOM"

Output name 6 = "THINGY"

Input name(2) = "LOAD"

Input name(3) = "ACT\_TRAVEL"

Input name(3) = "R"

Input name(4) = "TOTAL\_TRAV"

Input name(5) = "TRAVEL\_DIR"

Input name(5) = "Q"

Input name(6) = "SIZE"

Input name(7) = "FACTOR"

Input name(8) = "T"

Input name(9) = "A"

Input name(10) = "D"

Input name(11) = "F"

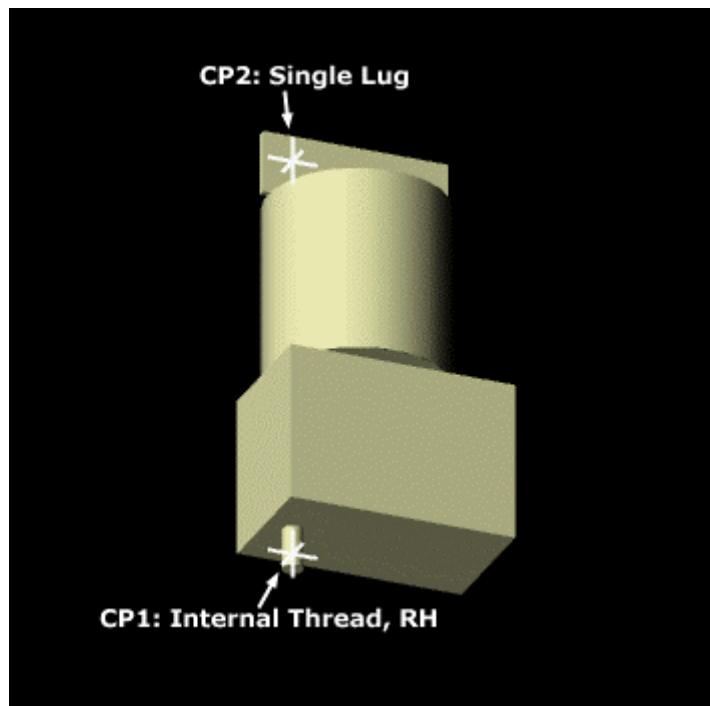
Input name(12) = "G"

Input name(13) = "H"

Input name(14) = "I"

Input name(15) = "M"

Input name(16) = "N"



## Anvil FIG80C

**Description:** Anvil Fig 80C Size <size> Type C Vertical Constant Support, Anvil Fig C-80C Size <size> Type C Vertical Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG80C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG80C

**User Class Name:** Type C Vertical Constant Support

**Part Number:** Anvil FIG80C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG80C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LUG1"

Output name 4 = "LUG2"

Output name 5 = "SPRING"

Output name 6 = "BOTTOM"

Output name 7 = "THINGY"

Input name(2) = "LOAD"

Input name(3) = "ACT\_TRAVEL"

Input name(3) = "T"

Input name(4) = "TOTAL\_TRAV"

Input name(5) = "TRAVEL\_DIR"

Input name(5) = "R"

Input name(6) = "SIZE"

Input name(7) = "FACTOR"

Input name(8) = "A"

Input name(9) = "D"

Input name(10) = "F"

Input name(11) = "G"

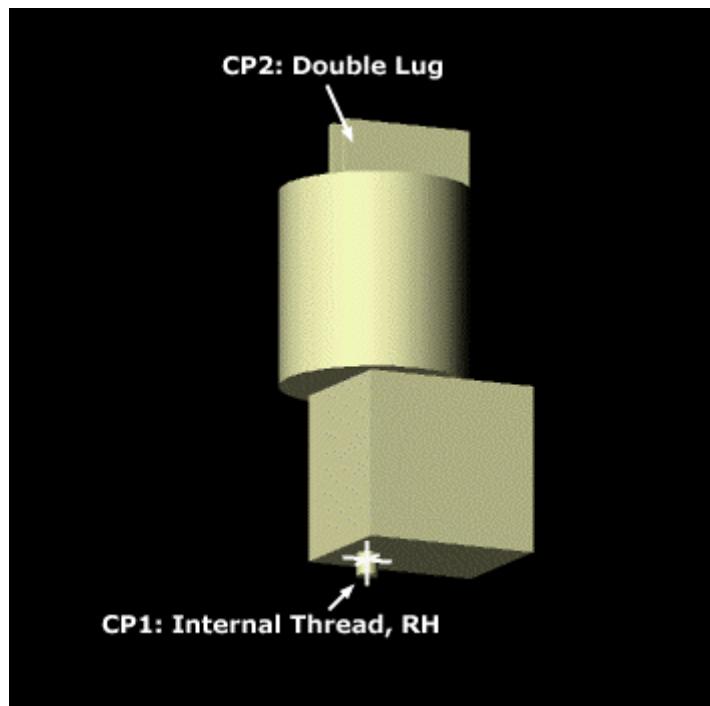
Input name(12) = "H"

Input name(13) = "I"

Input name(14) = "M"

Input name(15) = "N"

Input name(16) = "Q"



## Anvil FIG81A

**Description:** Anvil Fig 81A Size <size> Type A Horizontal Constant Support, Anvil Fig C-81A Size <size> Type A Horizontal Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG81A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG81A

**User Class Name:** Type A Horizontal Constant Support

**Part Number:** Anvil FIG81A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG81A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "SPRING"

Output name 5 = "BOTTOM"

Output name 6 = "THINGY"

Input name(2) = "SUSPENSION"

Input name(3) = "LOAD"

Input name(4) = "ACT\_TRAVEL"

Input name(4) = "P"

Input name(5) = "TOTAL\_TRAV"

Input name(6) = "TRAVEL\_DIR"

Input name(6) = "N"

Input name(7) = "SIZE"

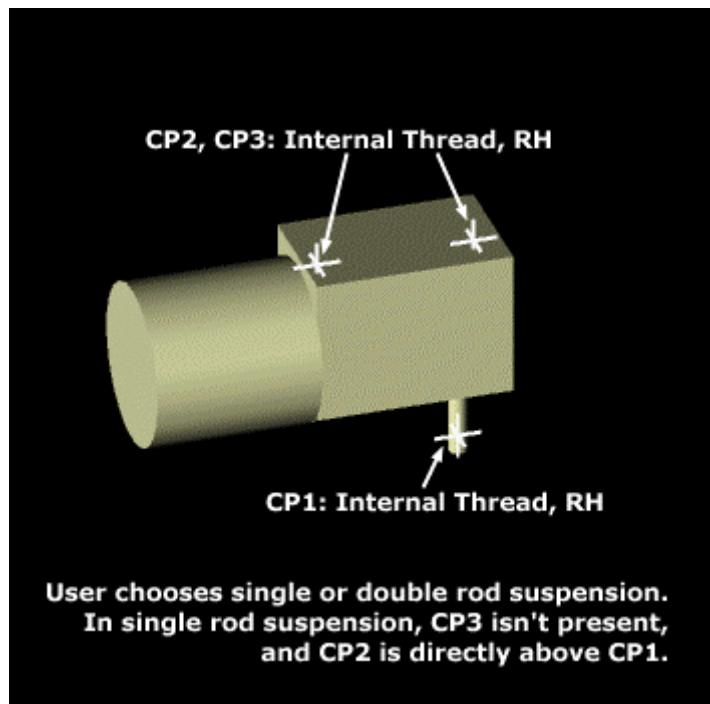
Input name(8) = "G"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "F"

Input name(12) = "M"



## Anvil FIG81B

**Description:** Anvil Fig 81B Size <size> Type B Horizontal Constant Support, Anvil Fig C-81B Size <size> Type B Horizontal Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG81B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG81B

**User Class Name:** Type B Horizontal Constant Support

**Part Number:** Anvil FIG81B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG81B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "LUG1"

Output name 5 = "LUG2"

Output name 6 = "SPRING"

Output name 7 = "BOTTOM"

Output name 8 = "THINGY"

Input name(2) = "SUSPENSION"

Input name(3) = "LOAD"

Input name(4) = "ACT\_TRAVEL"

Input name(4) = "M"

Input name(5) = "TOTAL\_TRAV"

Input name(6) = "TRAVEL\_DIR"

Input name(6) = "H"

Input name(7) = "SIZE"

Input name(8) = "C"

Input name(9) = "G"

Input name(10) = "FACTOR"

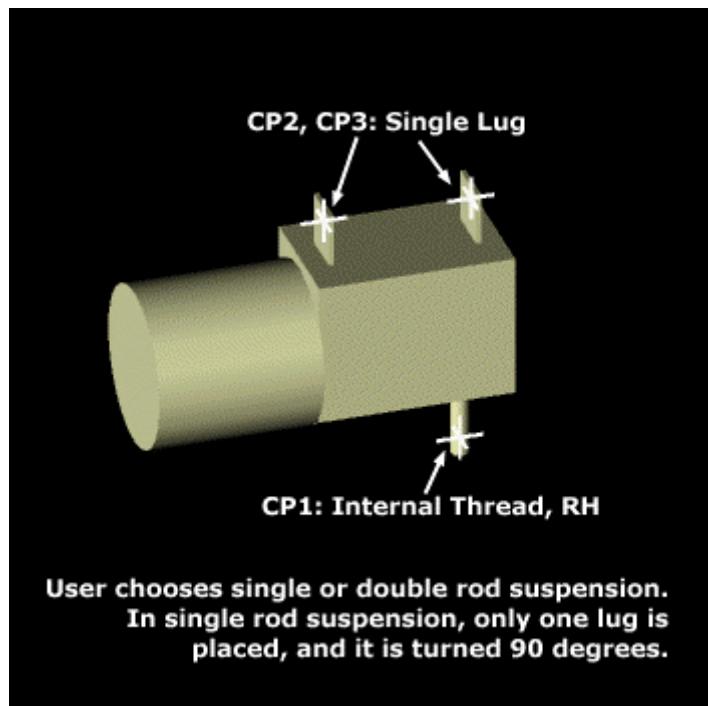
Input name(11) = "A"

Input name(11) = "N"

Input name(12) = "D"

Input name(13) = "E"

Input name(14) = "F"



## Anvil FIG81C

**Description:** Anvil Fig 81C Size <size> Type C Horizontal Constant Support, Anvil Fig C-81C Size <size> Type C Horizontal Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG81C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG81C

**User Class Name:** Type C Horizontal Constant Support

**Part Number:** Anvil FIG81C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG81C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "LUG1"

Output name 5 = "LUG2"

Output name 6 = "LUG3"

Output name 7 = "LUG4"

Output name 8 = "SPRING"

Output name 9 = "BOTTOM"

Output name 10 = "THINGY"

Input name(2) = "SUSPENSION"

Input name(3) = "LOAD"

Input name(4) = "ACT\_TRAVEL"

Input name(5) = "TOTAL\_TRAV"

Input name(6) = "TRAVEL\_DIR"

Input name(6) = "M"

Input name(7) = "SIZE"

Input name(8) = "C"

Input name(9) = "G"

Input name(10) = "FACTOR"

Input name(11) = "A"

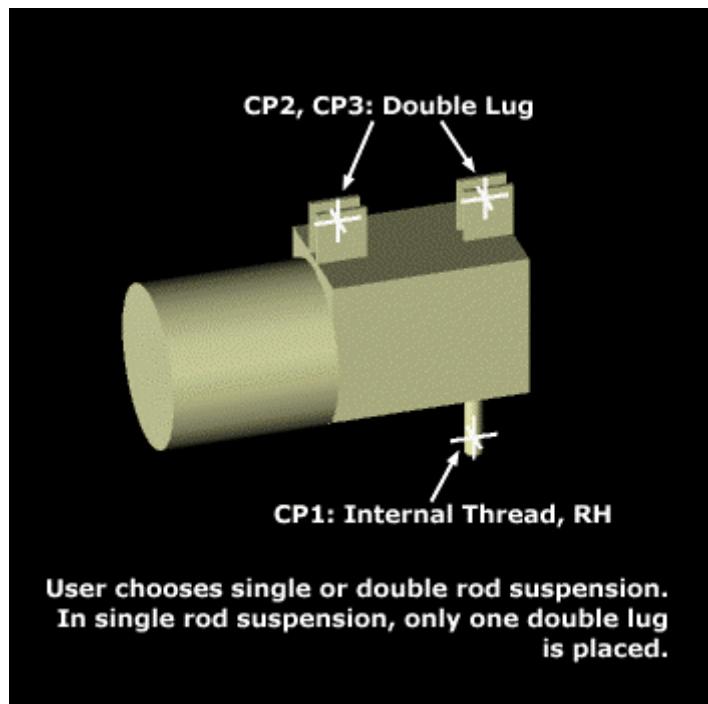
Input name(11) = "N"

Input name(12) = "D"

Input name(13) = "E"

Input name(14) = "F"

Input name(15) = "H"



## Anvil FIG81D

**Description:** Anvil Fig 81D Size <size> Type D Horizontal Constant Support, Anvil Fig C-81D Size <size> Type D Horizontal Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG81D

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG81D

**User Class Name:** Type D Horizontal Constant Support

**Part Number:** Anvil FIG81D\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG81D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SPRING"

Output name 4 = "BOTTOM"

Output name 5 = "THINGY"

Output name 6 = "TOP"

Input name(2) = "LOAD"

Input name(3) = "ACT\_TRAVEL"

Input name(3) = "Y"

Input name(4) = "TOTAL\_TRAV"

Input name(5) = "TRAVEL\_DIR"

Input name(5) = "Z"

Input name(6) = "SIZE"

Input name(7) = "G"

Input name(8) = "D"

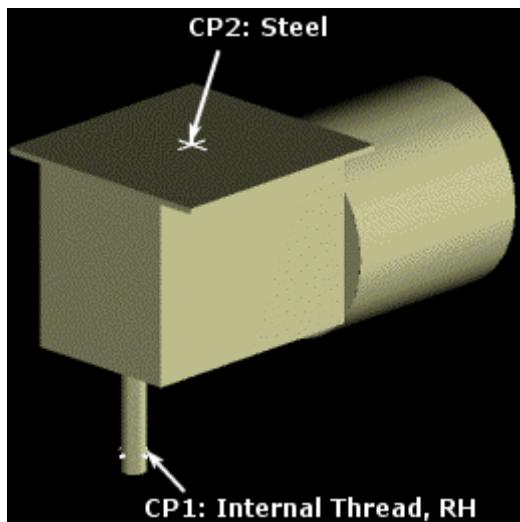
Input name(9) = "E"

Input name(10) = "F"

Input name(11) = "M"

Input name(12) = "N"

Input name(13) = "X"



## Anvil FIG81F

**Description:** Anvil Fig 81F Size <size> Type F Horizontal Constant Support, Anvil Fig C-81F Size <size> Type F Horizontal Constant Support, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG81F

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG81F

**User Class Name:** Type F Horizontal Constant Support

**Part Number:** Anvil FIG81F\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG81F

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASE"

Output name 4 = "BODY"

Output name 5 = "TOP"

Input name(2) = "OPER\_LOAD"

Input name(2) = "M"

Input name(3) = "ACT\_TRAVEL"

Input name(4) = "TOTAL\_TRAV"

Input name(5) = "DIR"

Input name(6) = "SIZE"

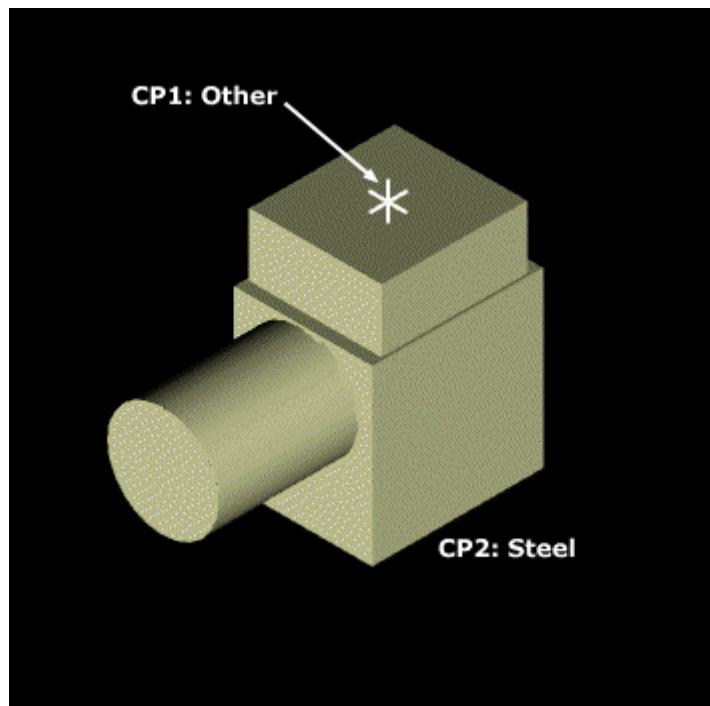
Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "J"

Input name(10) = "K"

Input name(11) = "L"



## Anvil FIG82A

**Description:** Anvil Fig 82A Size <size> Short Type A Spring, Anvil Fig C-82A Size <size> Short Type A Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82A

**User Class Name:** Short Type A Spring

**Part Number:** Anvil FIG82A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG82A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "TAKE\_OUT"

Input name(3) = "A"

Input name(4) = "B"

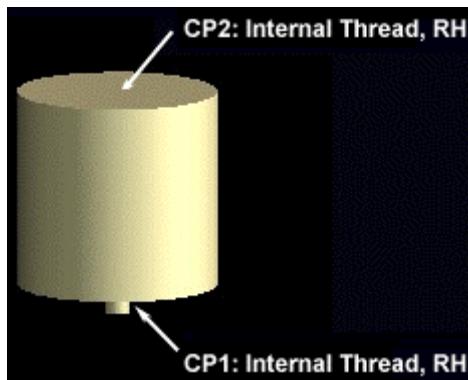
Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"



## Anvil FIG82B

**Description:** Anvil Fig 82B Size <size> Short Type B Spring, Anvil Fig C-82B Size <size> Short Type B Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82B

**User Class Name:** Short Type B Spring

**Part Number:** Anvil FIG82B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG82B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Output name 6 = "LUG"

Output name 7 = "HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "R"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

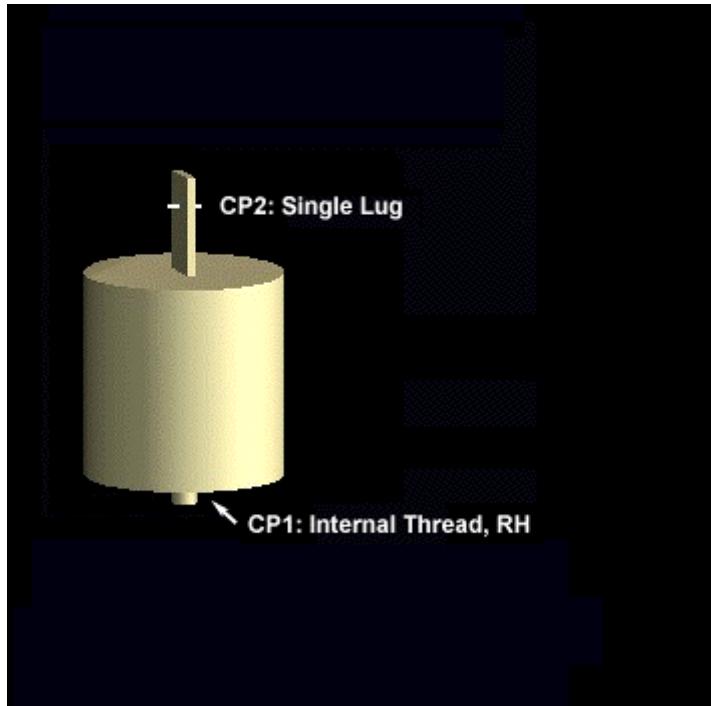
Input name(9) = "Z"

Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "T"

Input name(13) = "H"



## Anvil FIG82C

**Description:** Anvil Fig 82C Size 0 Short Type C Spring, Anvil Fig C-82C Size <size> Short Type C Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82C

**User Class Name:** Short Type C Spring

**Part Number:** Anvil FIG82C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG82C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Output name 6 = "R\_LUG"

Output name 7 = "L\_LUG"

Output name 8 = "L\_HOLE"

Output name 9 = "R\_HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "T"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"

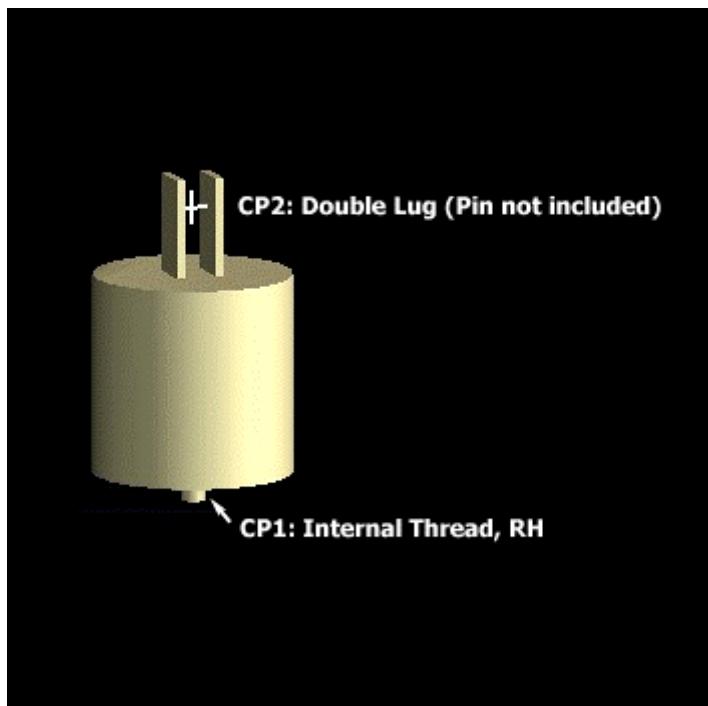
Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "S"

Input name(13) = "H"

Input name(14) = "R"



## Anvil FIG82D

**Description:** Anvil Fig 82D Size <size> Short Type D Spring, Anvil Fig C-82D Size <size> Short Type D Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82D

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82D

**User Class Name:** Short Type D Spring

**Part Number:** Anvil FIG82D\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG82D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "TOP"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "M"

Input name(3) = "A"

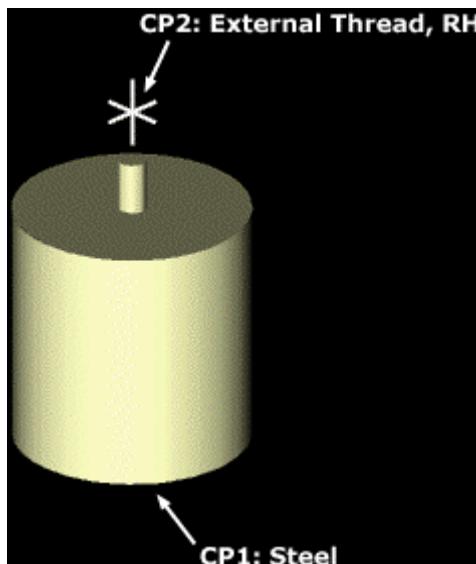
Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "TAKE\_OUT"

Input name(7) = "D"

Input name(8) = "G"



## Anvil FIG82E

**Description:** Anvil Fig 82E Size <size> Short Type E Spring, Anvil Fig C-82E Size <size> Short Type E Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82E

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82E

**User Class Name:** Short Type E Spring

**Part Number:** Anvil FIG82E\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG82E

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "BODY"

Output name 6 = "FLANGE"

Output name 7 = "BOTTOM"

Input name(4) = "DIR"

Input name(5) = "WORKING\_TRAV"

Input name(6) = "HOT\_LOAD"

Input name(2) = "ROD\_L"

Input name(3) = "SIZE"

Input name(3) = "Q"

Input name(4) = "A"

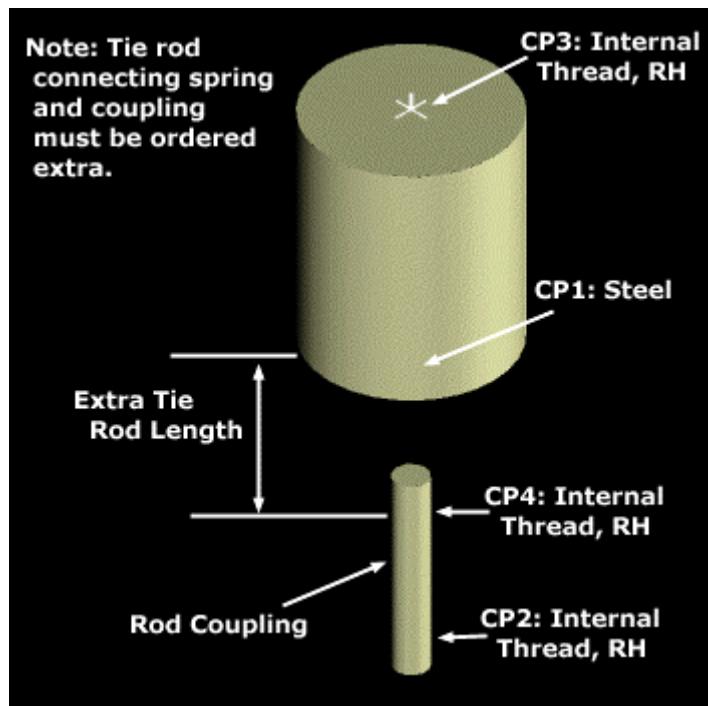
Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "F"

Input name(8) = "D"

Input name(9) = "G"



## Anvil FIG82F

**Description:** Anvil Fig 82F Size <size> Short Type F Spring, Anvil Fig C-82F Size <size> Short Type F Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82F

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82F

**User Class Name:** Short Type F Spring

**Part Number:** Anvil FIG82F\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG82F

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LOAD\_FLANGE"

Output name 4 = "PIPE\_ROLL"

Output name 5 = "ROLL\_1"

Output name 6 = "ROLL\_2"

Output name 7 = "BODY"

Output name 8 = "BOTTOM"

Output name 9 = "LOAD\_COLUMN"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "COL\_TYP"

Input name(6) = "TOP"

Input name(7) = "ROLL\_MATERIAL"

Input name(8) = "PIPE\_DIA"

Input name(9) = "SIZE"

Input name(10) = "B"

Input name(11) = "C"

Input name(12) = "E"

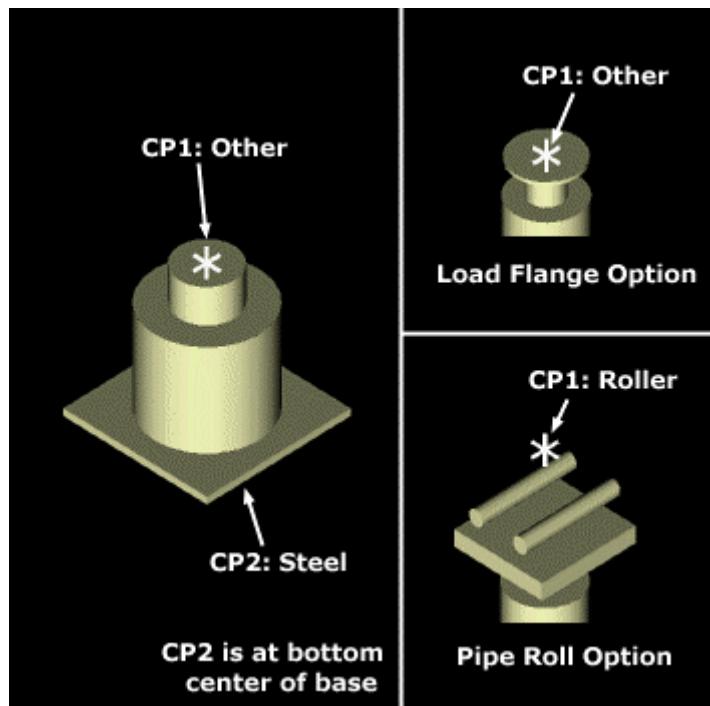
Input name(13) = "T"

Input name(14) = "COL\_DIA"

Input name(15) = "FLANGE\_T"

Input name(16) = "FLANGE\_DIA"

Input name(17) = "X"



## Anvil FIG82G

**Description:** Anvil Fig 82G Size <size> Short Type G Spring, Anvil Fig C-82G Size <size> Short Type G Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG82G

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG82G

**User Class Name:** Short Type G Spring

**Part Number:** Anvil FIG82G\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG82G

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "SPRING1"

Output name 6 = "SPRING2"

Output name 7 = "FLANGE1"

Output name 8 = "FLANGE2"

Output name 9 = "TOP1"

Output name 10 = "TOP2"

Output name 11 = "SECTIONS"

Input name(2) = "HOT\_LOAD"

Input name(6) = "DIR"

Input name(7) = "WORKING\_TRAV"

Input name(2) = "SPAN"

Input name(3) = "P\_USER"

Input name(4) = "SIZE"

Input name(4) = "P"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "F"

Input name(9) = "D"

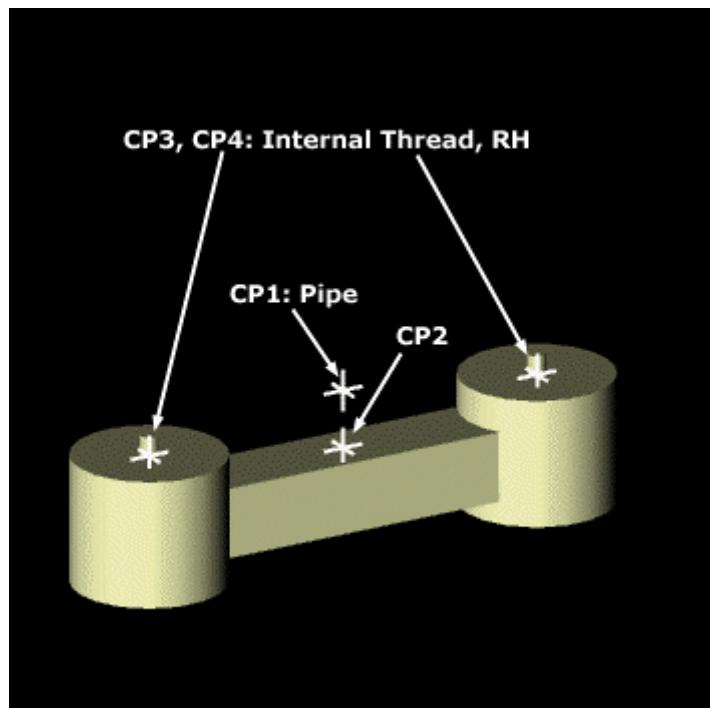
Input name(10) = "G"

Input name(11) = "Z"

Input name(12) = "PIPE\_DIA"

Input name(13) = "SECTION\_SIZE"

Input name(14) = "W"



## Anvil FIG86

**Description:** Anvil FIG86 <size> Malleable Iron C-clamp with Locknut

**Symbol Name:** HS\_Anvil.Anvil FIG86

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG86

**User Class Name:** Malleable Iron C-clamp with Locknut

**Part Number:** Anvil FIG86 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG86

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOLT"

Output name 5 = "NUT"

Input name(3) = "FINISH"

Input name(2) = "CLIP"

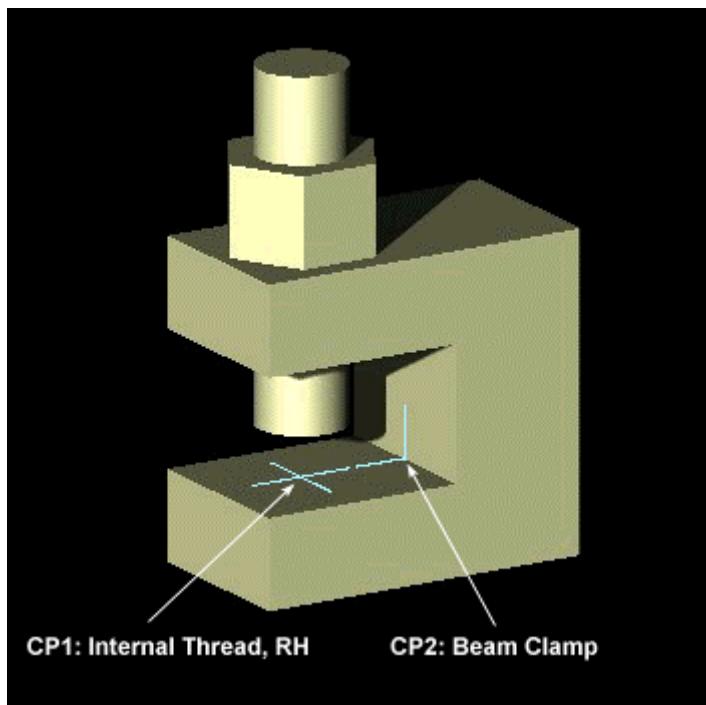
Input name(3) = "ROD\_DIA"

Input name(4) = "E"

Input name(5) = "C"

Input name(6) = "H"

Input name(7) = "FLANGE\_T"



## Anvil FIG95

**Description:** Anvil FIG95 <size> Steel C-clamp with Locknut

**Symbol Name:** HS\_Anvil.Anvil FIG95

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG95

**User Class Name:** Steel C-clamp with Locknut

**Part Number:** Anvil FIG95 <number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG95

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOLT"

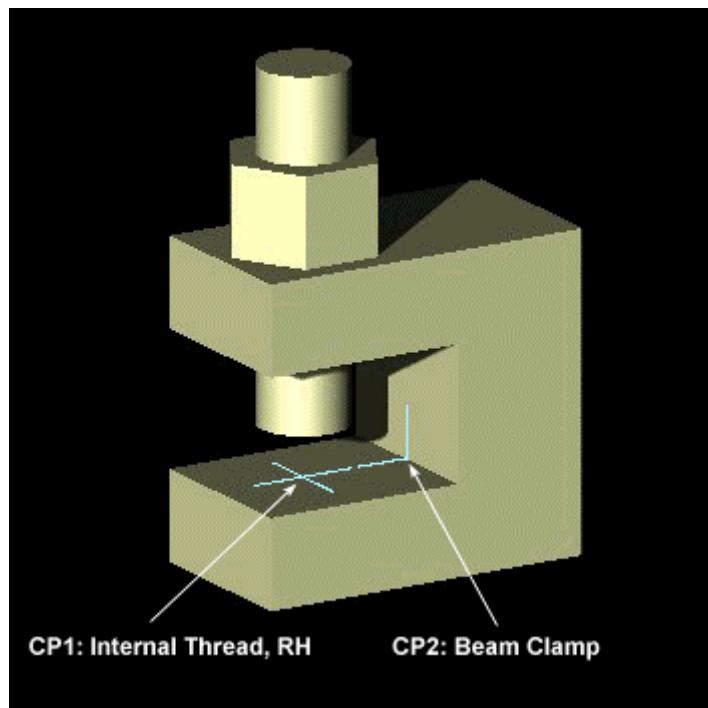
Output name 5 = "NUT"

Input name(2) = "ROD\_DIA"

Input name(3) = "C"

Input name(4) = "D"

Input name(5) = "FLANGE\_T"



## Anvil FIG98A

**Description:** Anvil Fig 98A Size <size> Double Type A Spring, Anvil Fig C-98A Size <size> Double Type A Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98A

**User Class Name:** Double Type A Spring

**Part Number:** Anvil FIG98A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG98A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "TAKE\_OUT"

Input name(3) = "A"

Input name(4) = "B"

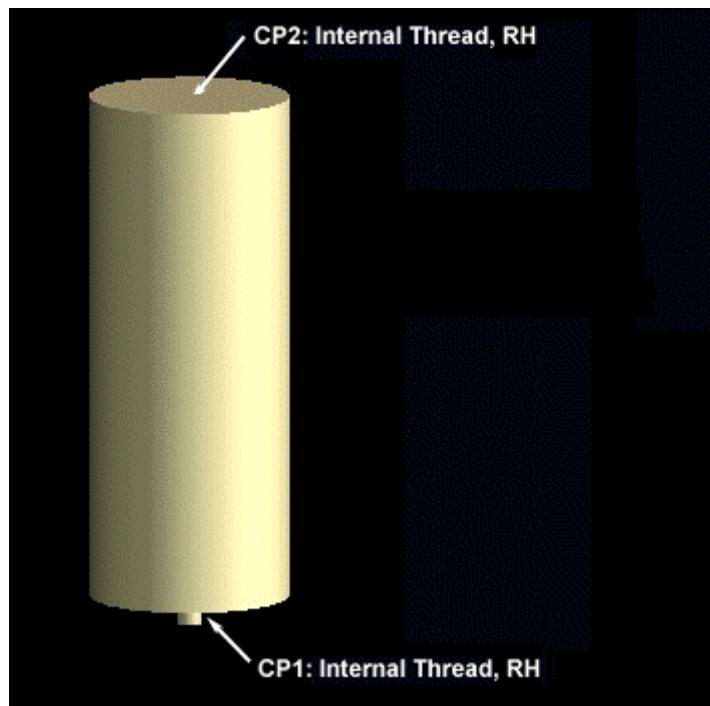
Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"



## HgrAisc\_Pipe

**Description:** Anvil Fig 98B Size <size> Double Type B Spring, Anvil Fig C-98B Size <size> Double Type B Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98B

**User Class Name:** Double Type B Spring

**Part Number:** Anvil FIG98B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG98B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOTTOM"

Output name 5 = "FLANGE"

Output name 6 = "LUG"

Output name 7 = "HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "R"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

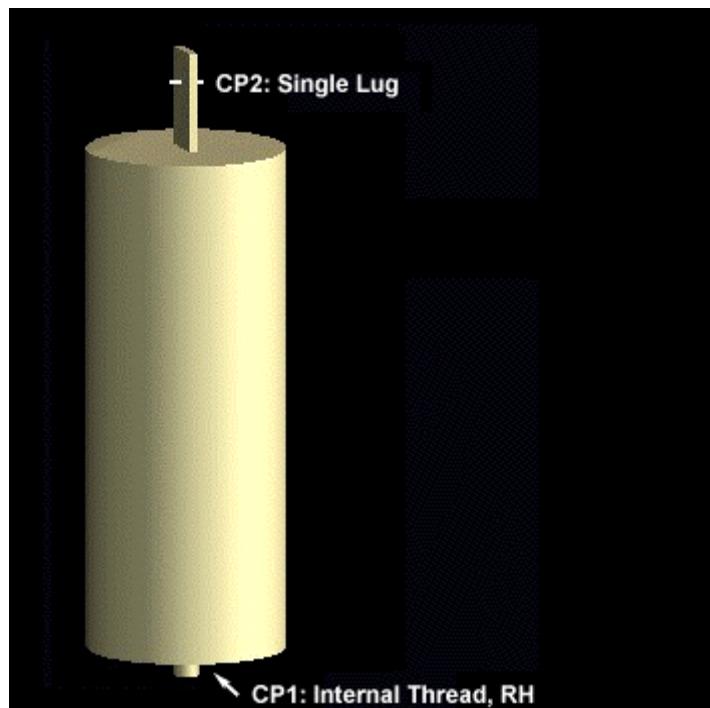
Input name(9) = "Z"

Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "T"

Input name(13) = "H"



## Anvil FIG98C

**Description:** Anvil Fig 98C Size <size> Double Type C Spring, Anvil Fig C-98C  
Size <size> Double Type C Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98C

**User Class Name:** Double Type C Spring

**Part Number:** Anvil FIG98C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil FIG98C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOTTOM"

Output name 5 = "FLANGE"

Output name 6 = "R\_LUG"

Output name 7 = "L\_LUG"

Output name 8 = "L\_HOLE"

Output name 9 = "R\_HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "T"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"

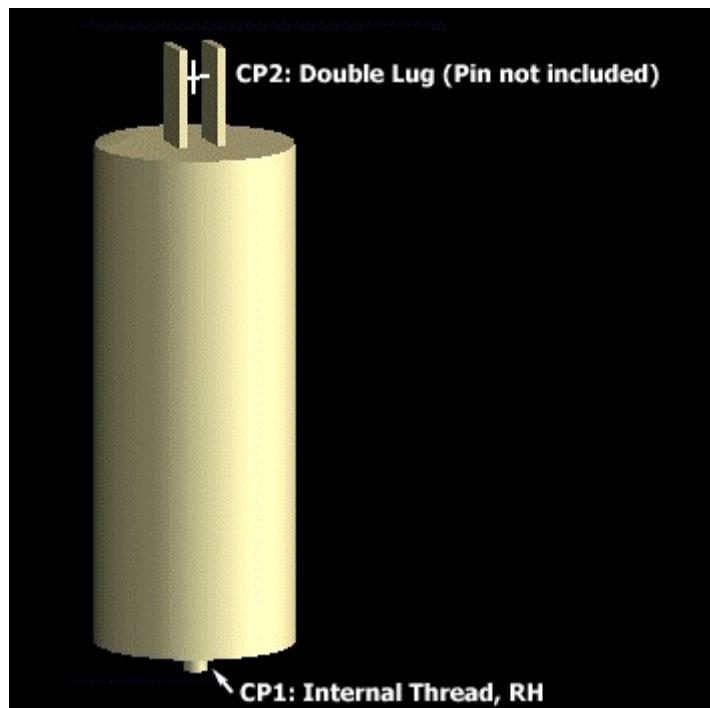
Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "S"

Input name(13) = "H"

Input name(14) = "R"



## Anvil FIG98D

**Description:** Anvil Fig 98D Size <size> Double Type D Spring, Anvil Fig C-98D Size <size> Double Type D Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98D

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98D

**User Class Name:** Double Type D Spring

**Part Number:** Anvil FIG98D\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG98D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "TOP"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "M"

Input name(3) = "A"

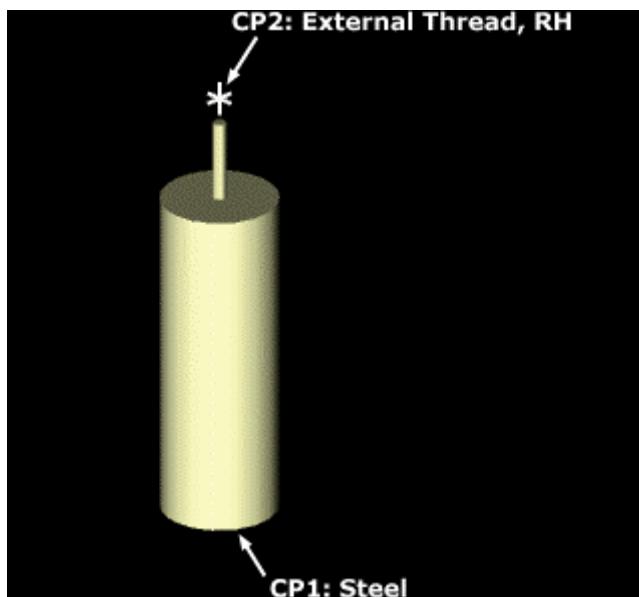
Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "TAKE\_OUT"

Input name(7) = "D"

Input name(8) = "G"



## Anvil FIG98E

**Description:** Anvil Fig 98E Size <size> Double Type E Spring, Anvil Fig C-98E Size <size> Double Type E Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98E

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98E

**User Class Name:** Double Type E Spring

**Part Number:** Anvil FIG98E\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG98E

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "BODY"

Output name 6 = "FLANGE"

Output name 7 = "BOTTOM"

Input name(4) = "DIR"

Input name(5) = "WORKING\_TRAV"

Input name(6) = "HOT\_LOAD"

Input name(2) = "ROD\_L"

Input name(3) = "SIZE"

Input name(3) = "Q"

Input name(4) = "A"

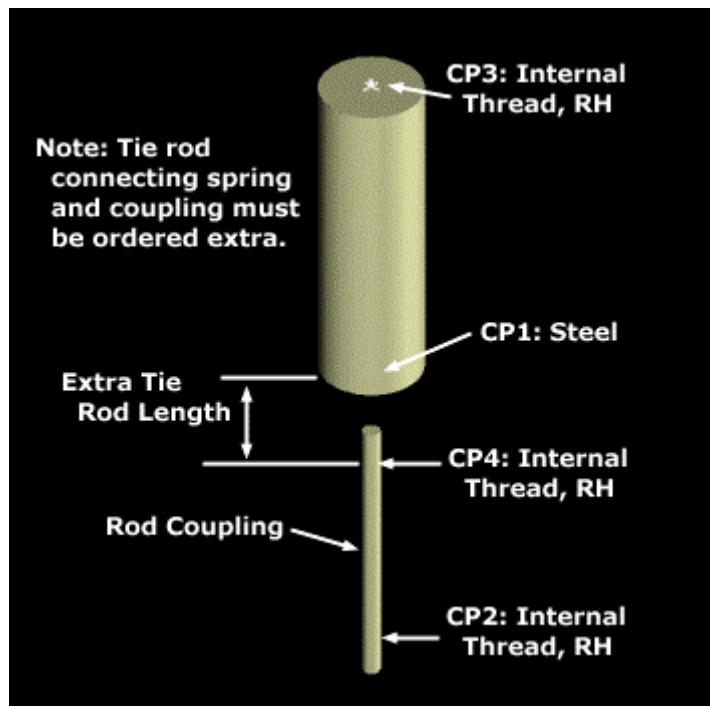
Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "F"

Input name(8) = "D"

Input name(9) = "G"



## Anvil FIG98F

**Description:** Anvil Fig 98F Size <size> Double Type F Spring, Anvil Fig C-98F Size <size> Double Type F Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98F

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98F

**User Class Name:** Double Type F Spring

**Part Number:** Anvil FIG98F\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG98F

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LOAD\_FLANGE"

Output name 4 = "PIPE\_ROLL"

Output name 5 = "ROLL\_1"

Output name 6 = "ROLL\_2"

Output name 7 = "BODY"

Output name 8 = "BOTTOM"

Output name 9 = "LOAD\_COLUMN"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "COL\_TYP"

Input name(6) = "TOP"

Input name(7) = "ROLL\_MATERIAL"

Input name(8) = "PIPE\_DIA"

Input name(9) = "SIZE"

Input name(10) = "B"

Input name(11) = "C"

Input name(12) = "E"

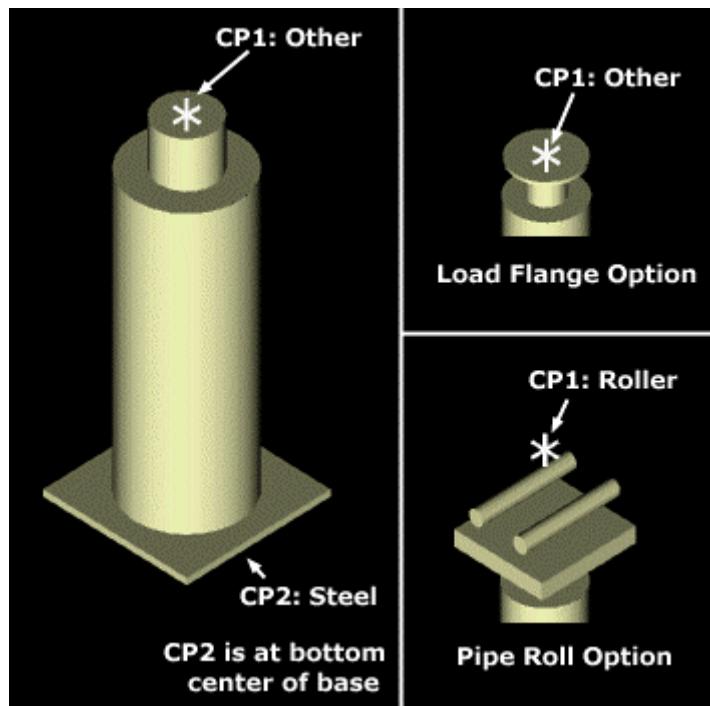
Input name(13) = "T"

Input name(14) = "COL\_DIA"

Input name(15) = "FLANGE\_T"

Input name(16) = "FLANGE\_DIA"

Input name(17) = "X"



## Anvil FIG98G

**Description:** Anvil Fig 98G Size <size> Double Type G Spring, Anvil Fig C-98G Size <size> Double Type G Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIG98G

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIG98G

**User Class Name:** Double Type G Spring

**Part Number:** Anvil FIG98G\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIG98G

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "SPRING1"

Output name 6 = "SPRING2"

Output name 7 = "FLANGE1"

Output name 8 = "FLANGE2"

Output name 9 = "TOP1"

Output name 10 = "TOP2"

Output name 11 = "SECTIONS"

Input name(2) = "HOT\_LOAD"

Input name(6) = "DIR"

Input name(7) = "WORKING\_TRAV"

Input name(2) = "SPAN"

Input name(3) = "P\_USER"

Input name(4) = "SIZE"

Input name(4) = "P"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "F"

Input name(9) = "D"

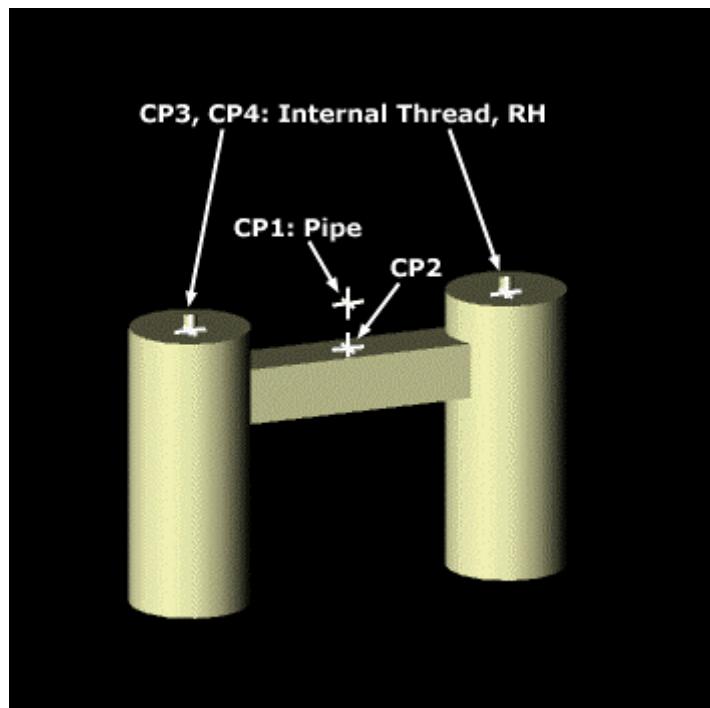
Input name(10) = "G"

Input name(11) = "Z"

Input name(12) = "PIPE\_DIA"

Input name(13) = "SECTION\_SIZE"

Input name(14) = "W"



## Anvil FIGB268A

**Description:** Anvil Fig B-268A Size <size> Standard Type A Spring, Anvil Fig C-268A Size <size> Standard Type A Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIGB268A

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIGB268A

**User Class Name:** Standard Type A Spring

**Part Number:** Anvil FIGB268A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIGB268A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "TAKE\_OUT"

Input name(3) = "A"

Input name(4) = "B"

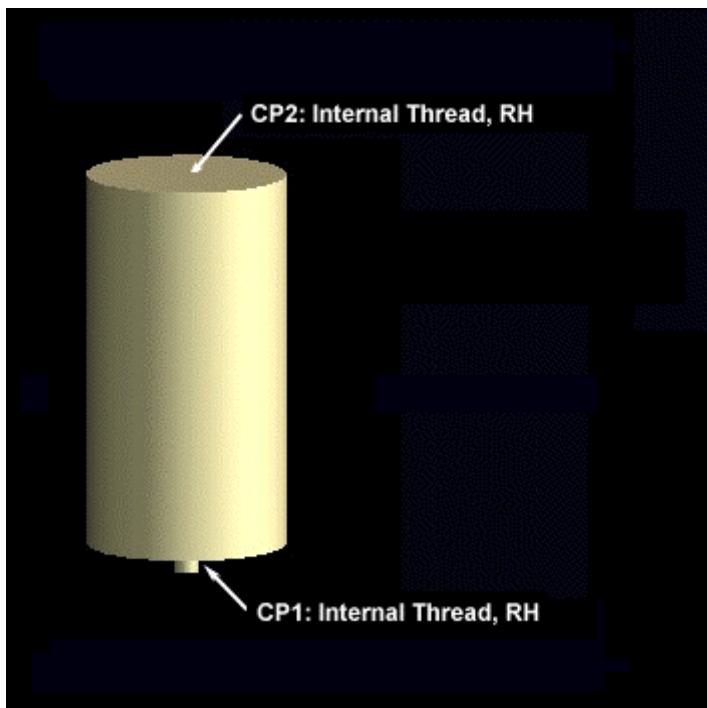
Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"



## Anvil\_FIGB268B

**Description:** Anvil Fig B-268B Size <size> Standard Type B Spring, Anvil Fig C-268B Size <size> Standard Type B Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil\_FIGB268B

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil\_FIGB268B

**User Class Name:** Standard Type B Spring

**Part Number:** Anvil\_FIGB268B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_FIGB268B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Output name 6 = "LUG"

Output name 7 = "HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "R"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

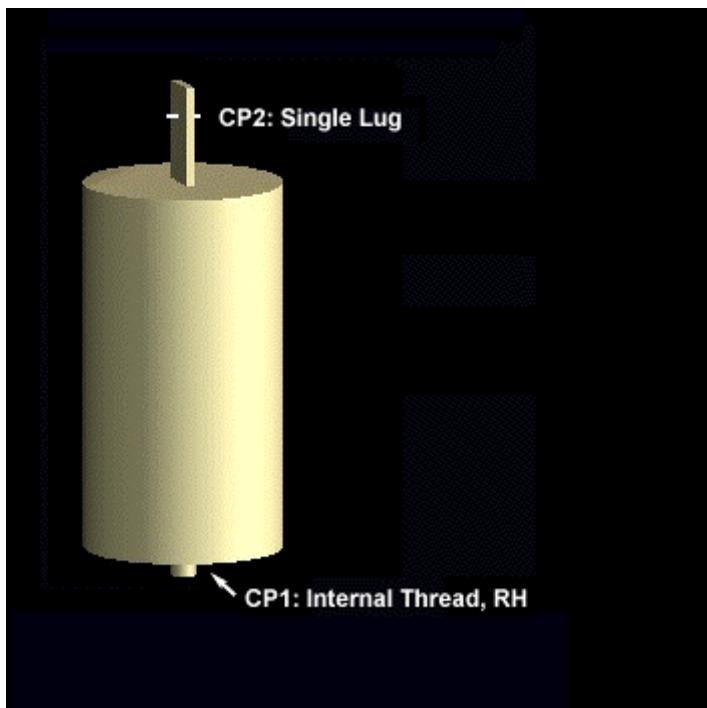
Input name(9) = "Z"

Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "T"

Input name(13) = "H"



## Anvil\_FIGB268C

**Description:** Anvil Fig B-268C Size <size> Standard Type C Spring, Anvil Fig C-268C Size <size> Standard Type C Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil\_FIGB268C

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil\_FIGB268C

**User Class Name:** Standard Type C Spring

**Part Number:** Anvil\_FIGB268C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_FIGB268C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "BOTTOM"

Output name 6 = "R\_LUG"

Output name 7 = "L\_LUG"

Output name 8 = "L\_HOLE"

Output name 9 = "R\_HOLE"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "T"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "F"

Input name(7) = "D"

Input name(8) = "G"

Input name(9) = "Z"

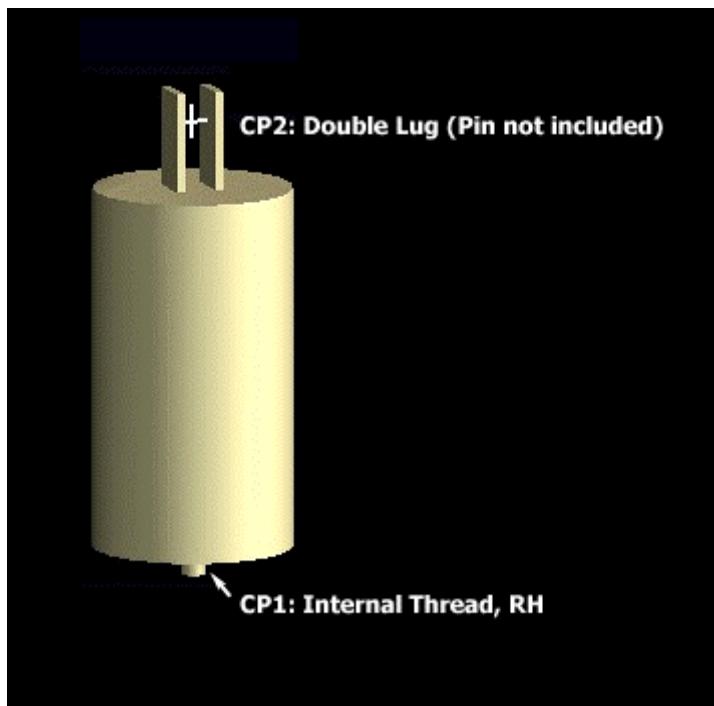
Input name(10) = "J"

Input name(11) = "HOLE\_SIZE"

Input name(12) = "S"

Input name(13) = "H"

Input name(14) = "R"



## Anvil FIGB268D

**Description:** Anvil Fig B-268D Size 000 Standard Type D Spring, Anvil Fig C-268D Size 000 Standard Type D Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIGB268D

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIGB268D

**User Class Name:** Standard Type D Spring

**Part Number:** Anvil FIGB268D\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIGB268D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "FLANGE"

Output name 5 = "TOP"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

Input name(2) = "SIZE"

Input name(2) = "M"

Input name(3) = "A"

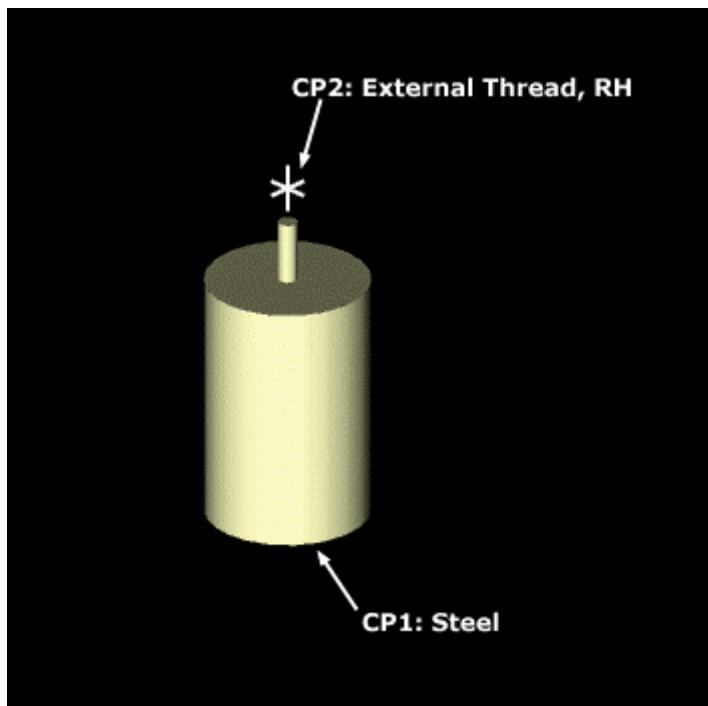
Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "TAKE\_OUT"

Input name(7) = "D"

Input name(8) = "G"



## Anvil FIGB268E

**Description:** Anvil Fig B-268E Size <size> Standard Type E Spring, Anvil Fig C-268E Size <size> Standard Type E Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIGB268E

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIGB268E

**User Class Name:** Standard Type E Spring

**Part Number:** Anvil FIGB268E\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIGB268E

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "BODY"

Output name 6 = "FLANGE"

Output name 7 = "BOTTOM"

Input name(2) = "ROD\_L"

Input name(3) = "Q"

Input name(3) = "SIZE"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "F"

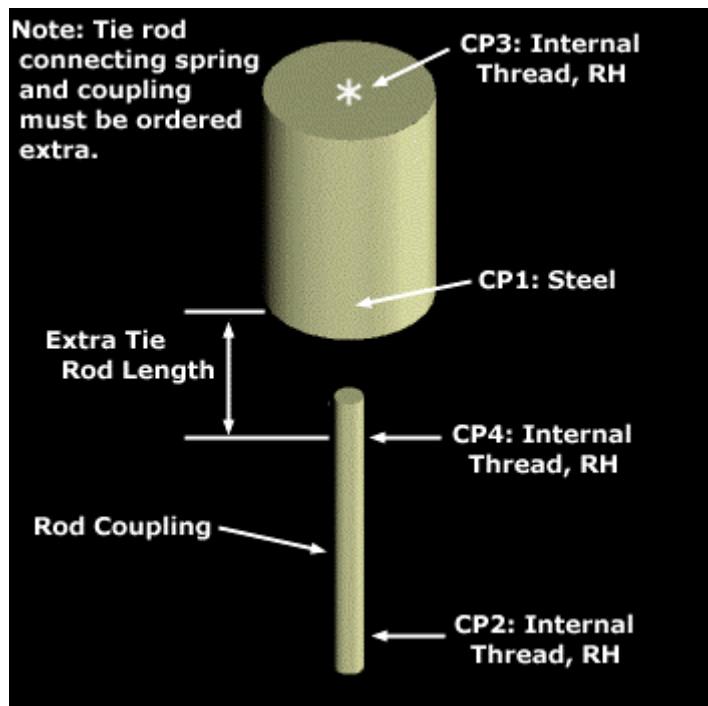
Input name(8) = "D"

Input name(9) = "G"

Input name(4) = "DIR"

Input name(5) = "WORKING\_TRAV"

Input name(6) = "HOT\_LOAD"



## Anvil\_FIGB268F

**Description:** Anvil Fig B-268F Size <size> Standard Type F Spring, Anvil Fig C-268F Size <size> Standard Type F Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil\_FIGB268F

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil\_FIGB268F

**User Class Name:** Standard Type F Spring

**Part Number:** Anvil\_FIGB268F\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil\_FIGB268F

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LOAD\_FLANGE"

Output name 4 = "PIPE\_ROLL"

Output name 5 = "ROLL\_1"

Output name 6 = "ROLL\_2"

Output name 7 = "BODY"

Output name 8 = "BOTTOM"

Output name 9 = "LOAD\_COLUMN"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "TOP"

Input name(6) = "ROLL\_MATERIAL"

Input name(7) = "PIPE\_DIA"

Input name(8) = "SIZE"

Input name(9) = "B"

Input name(10) = "C"

Input name(11) = "E"

Input name(12) = "T"

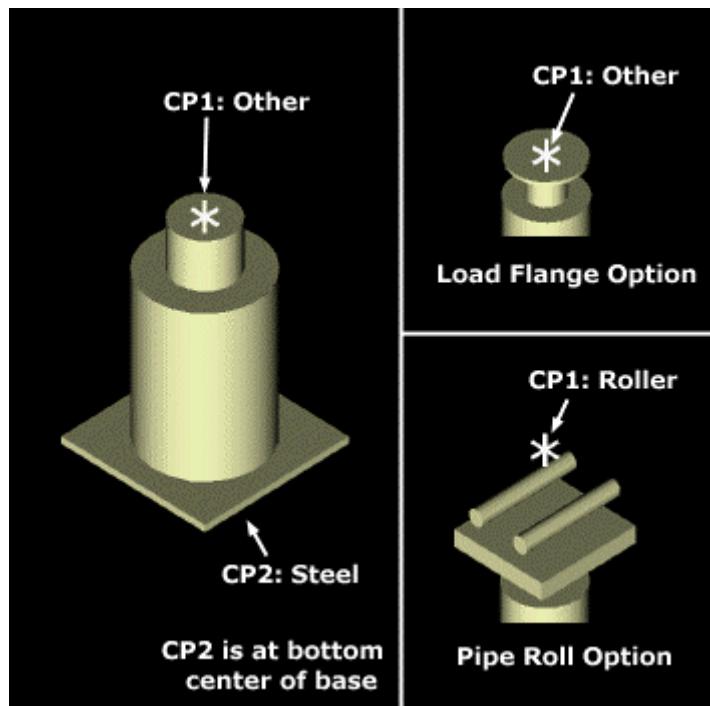
Input name(13) = "COL\_DIA"

Input name(14) = "FLANGE\_T"

Input name(15) = "FLANGE\_DIA"

Input name(16) = "X"

Input name(9) = "ADJ"



## Anvil FIGB268G

**Description:** Anvil Fig B-268G Size <size> Standard Type G Spring, Anvil Fig C-268G Size <size> Standard Type G Spring, Corrosion Resistant

**Symbol Name:** HS\_Anvil.Anvil FIGB268G

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil FIGB268G

**User Class Name:** Standard Type G Spring

**Part Number:** Anvil FIGB268G\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_Anvil FIGB268G

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "SPRING1"

Output name 6 = "SPRING2"

Output name 7 = "FLANGE1"

Output name 8 = "FLANGE2"

Output name 9 = "TOP1"

Output name 10 = "TOP2"

Output name 11 = "SECTIONS"

Input name(2) = "SPAN"

Input name(3) = "P\_USER"

Input name(4) = "P"

Input name(4) = "SIZE"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "F"

Input name(9) = "D"

Input name(10) = "G"

Input name(11) = "Z"

Input name(12) = "PIPE\_DIA"

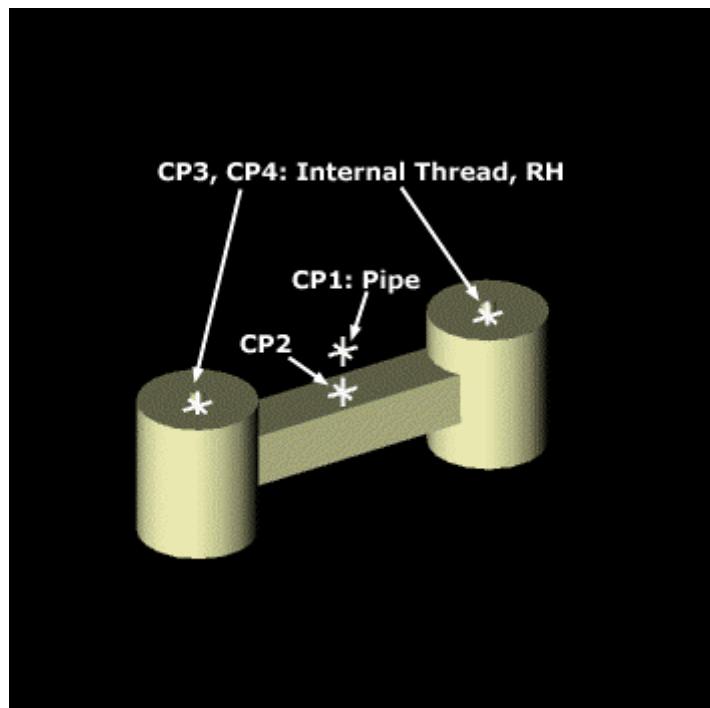
Input name(13) = "SECTION\_SIZE"

Input name(14) = "W"

Input name(2) = "HOT\_LOAD"

Input name(6) = "DIR"

Input name(7) = "WORKING\_TRAV"



## Anvil\_HEX\_NUT

**Description:** Anvil <size> Standard Hex Nut

**Symbol Name:** HS\_Anvil.Anvil\_hex\_nut

**Workbook:** HS\_Anvil.xls

**Workbook Sheet:** Anvil\_HEX\_NUT

**User Class Name:** Standard Hex Nut

**Part Number:** Anvil\_HEX\_NUT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Anvil.Anvil\_hex\_nut

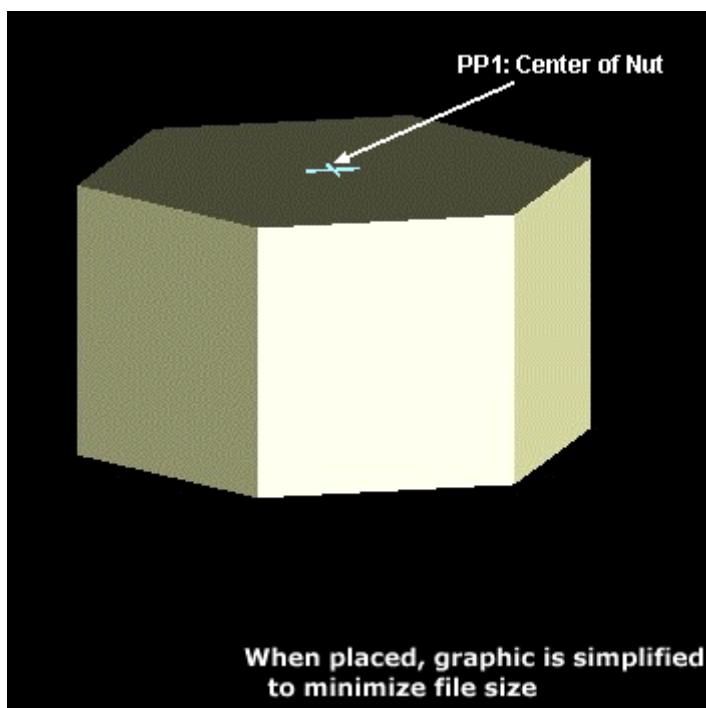
Output name 1 = "Port1"

Output name 2 = "NUT"

Input name(2) = "ROD\_DIA"

Input name(3) = "W"

Input name(4) = "T"



## Lisega\_TYPE11

**Description:** Lisega Size <size> Constant Hanger Type 11

**Symbol Name:** HS\_Lisega.Lisega\_TYPE11

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE11

**User Class Name:** Constant Hanger Type 11

**Part Number:** Lisega\_TYPE11\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE11

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "CYLINDER1"

Output name 5 = "CYLINDER2"

Input name(2) = "PRESET"

Input name(3) = "L"

Input name(4) = "X"

Input name(5) = "P"

Input name(6) = "E"

Input name(7) = "A"

Input name(8) = "D"

Input name(9) = "H"

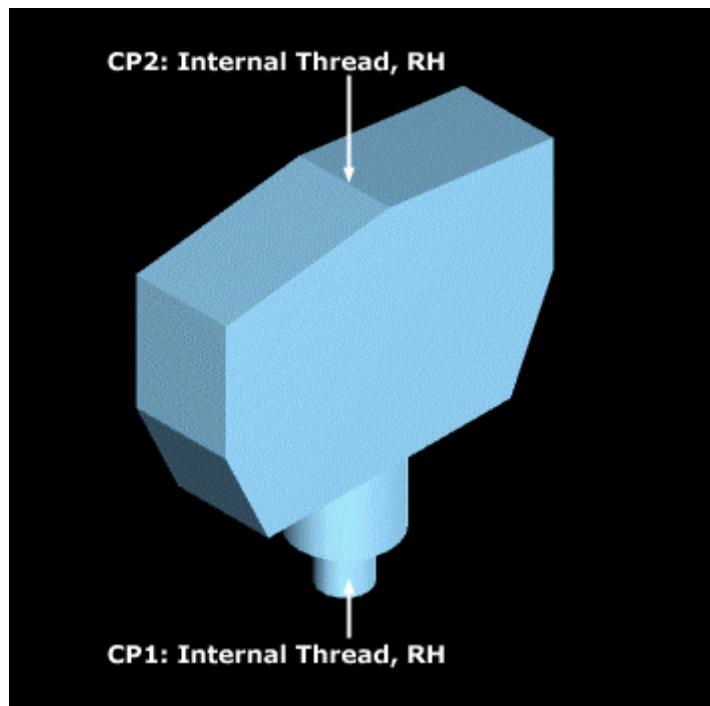
Input name(10) = "O"

Input name(12) = "ROD\_DIA"

Input name(3) = "OPER"

Input name(4) = "SIZE"

Input name(13) = "TRAVEL\_RNG"



## Lisega\_TYPE12\_13\_14

**Description:** Lisega Size <size> Constant Support Types 12-14

**Symbol Name:** HS\_Lisega.Lisega\_TYPE12\_13\_14

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE12\_13\_14

**User Class Name:** Constant Support Types 12-14

**Part Number:** Lisega\_TYPE12\_13\_14\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE12\_13\_14

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "Port3"

Output name 5 = "BODY"

Output name 6 = "BOTTOM"

Output name 7 = "CYL1"

Output name 8 = "CYL2"

Output name 9 = "ROD1"

Output name 10 = "ROD2"

Output name 11 = "BODY"

Output name 12 = "BOTTOM"

Output name 13 = "CYL1"

Output name 14 = "CYL2"

Output name 15 = "CYL3"

Output name 16 = "ROD1"

Output name 17 = "ROD2"

Output name 18 = "ROD3"

Output name 19 = "BODY"

Output name 20 = "BOTTOM"

Output name 21 = "CYL1"

Output name 22 = "CYL2"

Output name 23 = "CYL3"

Output name 24 = "CYL4"

Output name 25 = "ROD1"

Output name 26 = "ROD2"

Output name 27 = "ROD3"

Output name 28 = "ROD4"

Input name(2) = "YOKE"

Input name(3) = "RESET"

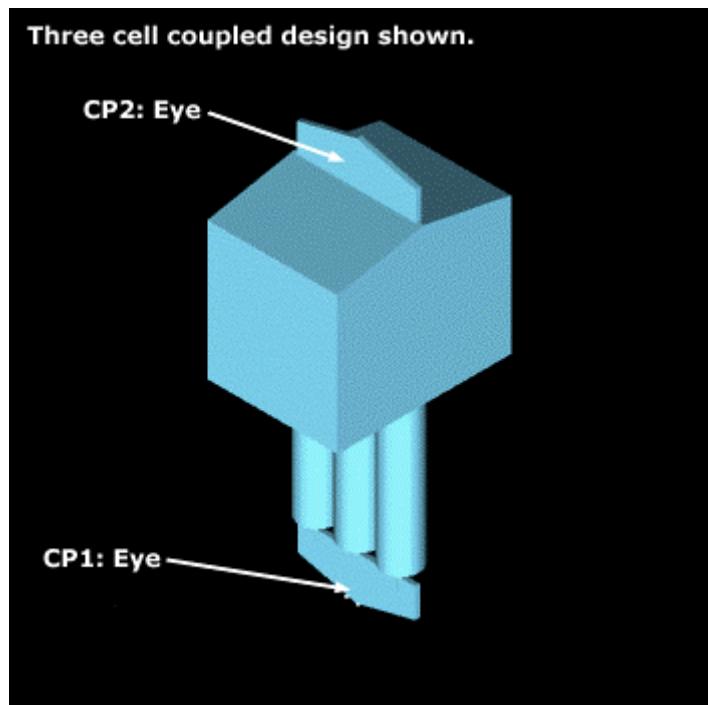
Input name(4) = "X"

Input name(5) = "S"

Input name(6) = "M"

Input name(7) = "N"

```
Input name(8) = "A"  
Input name(9) = "D"  
Input name(10) = "H"  
Input name(11) = "O"  
Input name(12) = "R"  
Input name(13) = "W"  
Input name(14) = "PROD_TYPE"  
Input name(15) = "B"  
Input name(16) = "E2"  
Input name(17) = "ROD_DIA"  
Input name(18) = "HOLE_DIA"  
Input name(19) = "E1"  
Input name(13) = "TRAVEL_RNG"  
Input name(4) = "OPER"  
Input name(5) = "SIZE"  
Input name(6) = "LOAD_GRP"  
Input name(7) = "EXTRA_LG"
```



## Lisega\_TYPE16

**Description:** Lisega Size <size> Constant Support Type 16

**Symbol Name:** HS\_Lisega.Lisega\_TYPE16

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE16

**User Class Name:** Constant Support Type 16

**Part Number:** Lisega\_TYPE16\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE16

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL4"

Output name 4 = "CYL5"

Output name 5 = "BOX3"

Output name 6 = "BOX4"

Output name 7 = "BOX5"

Output name 8 = "BODY"

Output name 9 = "CYL1"

Output name 10 = "CYL2"

Output name 11 = "CYL3"

Output name 12 = "BOX1"

Output name 13 = "BOX2"

Input name(2) = "PRESET"

Input name(3) = "SG"

Input name(4) = "R"

Input name(5) = "J"

Input name(6) = "E"

Input name(7) = "A"

Input name(8) = "D"

Input name(9) = "H"

Input name(10) = "O"

Input name(11) = "P"

Input name(12) = "U"

Input name(13) = "SUP\_TYPE"

Input name(14) = "B"

Input name(15) = "B1"

Input name(16) = "C"

Input name(17) = "E1"

Input name(18) = "F"

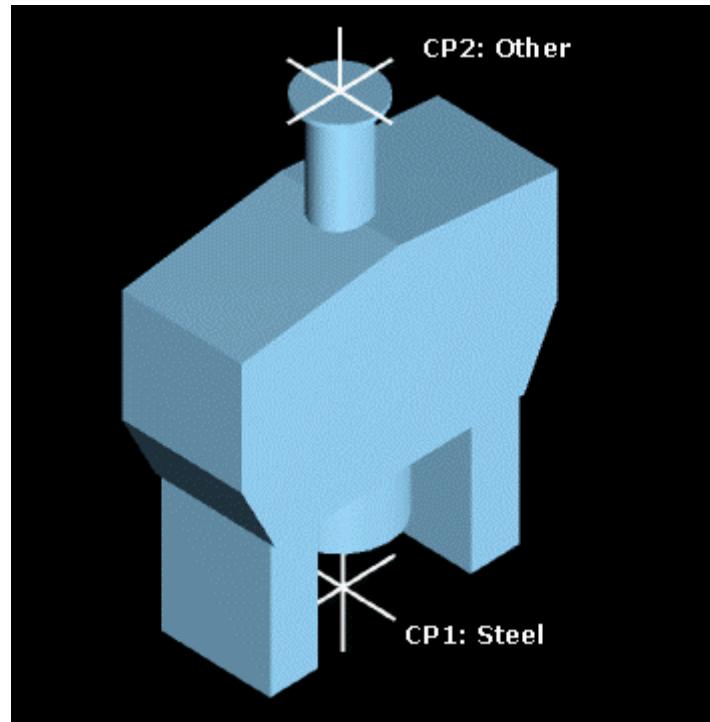
Input name(19) = "S"

Input name(20) = "K"

Input name(21) = "K1"

Input name(22) = "TOP\_DIA"

Input name(23) = "M"  
Input name(3) = "OPER"  
Input name(4) = "SIZE"  
Input name(5) = "LOAD\_GRP"  
Input name(6) = "EXTRA\_LG"  
Input name(12) = "TRAVEL\_RNG"



## Lisega\_TYPE20

**Description:** Lisega Size <size> Angulating Spring Support

**Symbol Name:** HS\_Lisega.Lisega\_TYPE20

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE20

**User Class Name:** Angulating Spring Support

**Part Number:** Lisega\_TYPE20\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE20

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER2"

Output name 4 = "Port4"

Output name 5 = "CYLINDER4"

Output name 6 = "CYLINDER5"

Output name 7 = "CYLINDER3"

Output name 8 = "CYLINDER1"

Input name(2) = "BOTTOM"

Input name(3) = "A"

Input name(4) = "H"

Input name(5) = "E"

Input name(6) = "F"

Input name(7) = "S"

Input name(8) = "R"

Input name(9) = "CYL\_DIA"

Input name(3) = "DIR"

Input name(4) = "WORKING\_TRAV"

Input name(5) = "HOT\_LOAD"

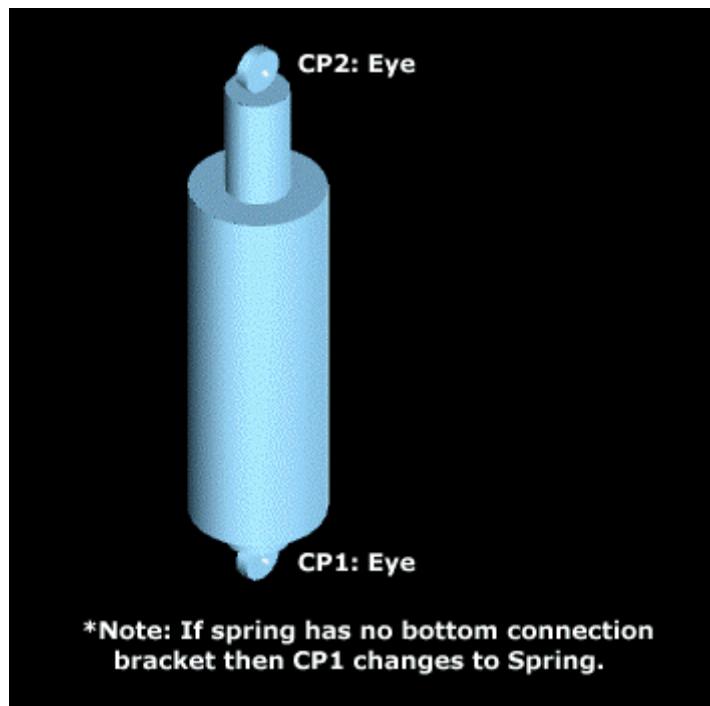
Input name(6) = "SIZE"

Input name(7) = "LOAD\_GRP"

Input name(8) = "EXTRA\_LG"

Input name(13) = "HOLE\_SIZE"

Input name(17) = "BRACKET\_TYP"



## Lisega\_TYPE20\_EXT

**Description:** Lisega Size <size> Angulating Spring Support

**Symbol Name:** HS\_Lisega.Lisega\_TYPE20\_EXT

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE20\_EXT

**User Class Name:** Angulating Spring Support

**Part Number:** Lisega\_TYPE20\_EXT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE20\_EXT

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER2"

Output name 4 = "CYLINDER1"

Input name(2) = "BOTTOM"

Input name(3) = "Length"

Input name(4) = "S"

Input name(5) = "R"

Input name(6) = "CYL\_DIA"

Input name(19) = "BRACKET\_TYP"

Input name(4) = "SIZE"

Input name(5) = "LOAD\_GRP"

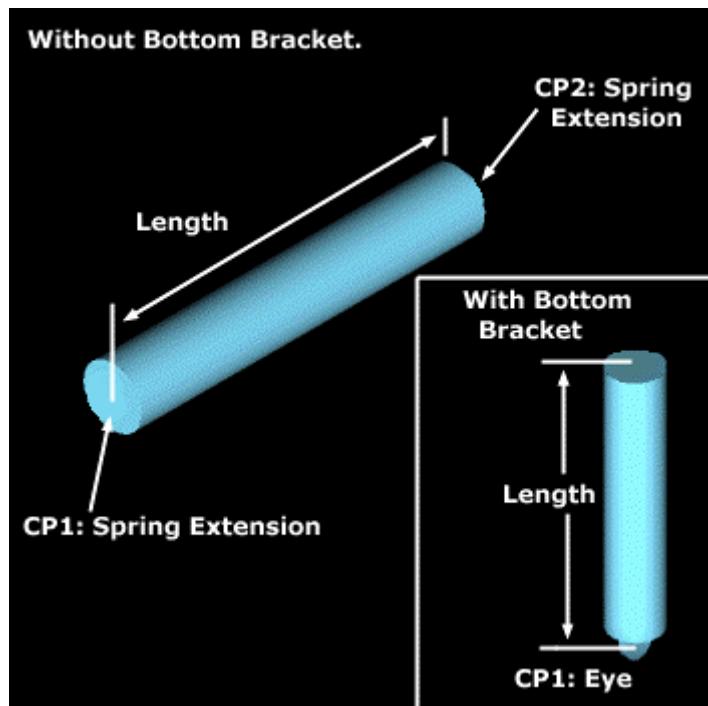
Input name(6) = "MIN\_WEIGHT"

Input name(7) = "TUBE\_WEIGHT"

Input name(11) = "HOLE\_SIZE"

Input name(16) = "LMIN"

Input name(17) = "LMAX"



## Lisega\_TYPE21

**Description:** Lisega Size <size> Variable Spring Hanger

**Symbol Name:** HS\_Lisega.Lisega\_TYPE21

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE21

**User Class Name:** Variable Spring Hanger

**Part Number:** Lisega\_TYPE21\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE21

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "TOP\_CYL"

Output name 5 = "BOT\_CYL"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "SW"

Input name(6) = "LOAD\_GRP"

Input name(7) = "EXTRA\_LG"

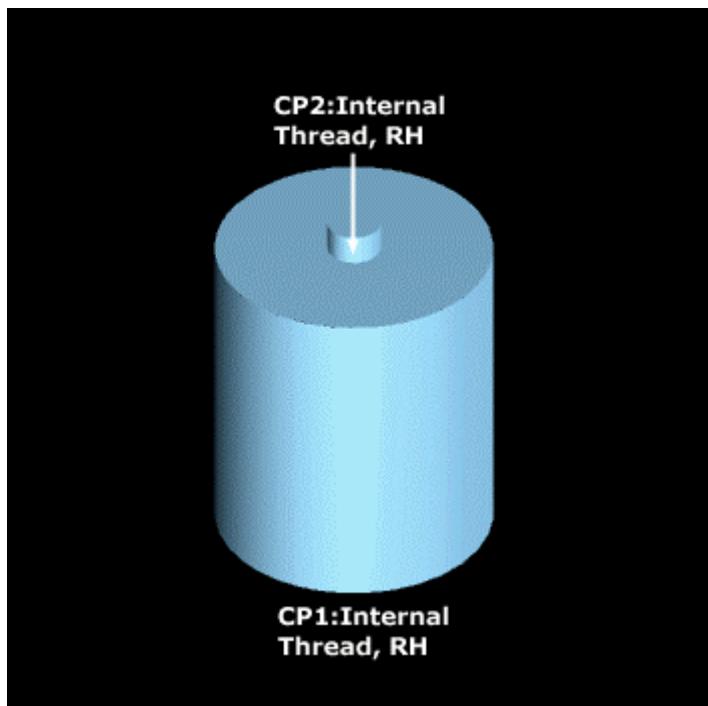
Input name(8) = "A"

Input name(9) = "H"

Input name(10) = "E"

Input name(11) = "B"

Input name(12) = "X"



## Lisega\_TYPE22

**Description:** Lisega Size <size> Variable Spring Hanger

**Symbol Name:** HS\_Lisega.Lisega\_TYPE22

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE22

**User Class Name:** Variable Spring Hanger

**Part Number:** Lisega\_TYPE22\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE22

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "TOP\_CYL"

Output name 5 = "BOX"

Output name 6 = "BOT\_CYL"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "SIZE"

Input name(6) = "LOAD\_GRP"

Input name(7) = "EXTRA\_LG"

Input name(8) = "A"

Input name(9) = "H"

Input name(10) = "E"

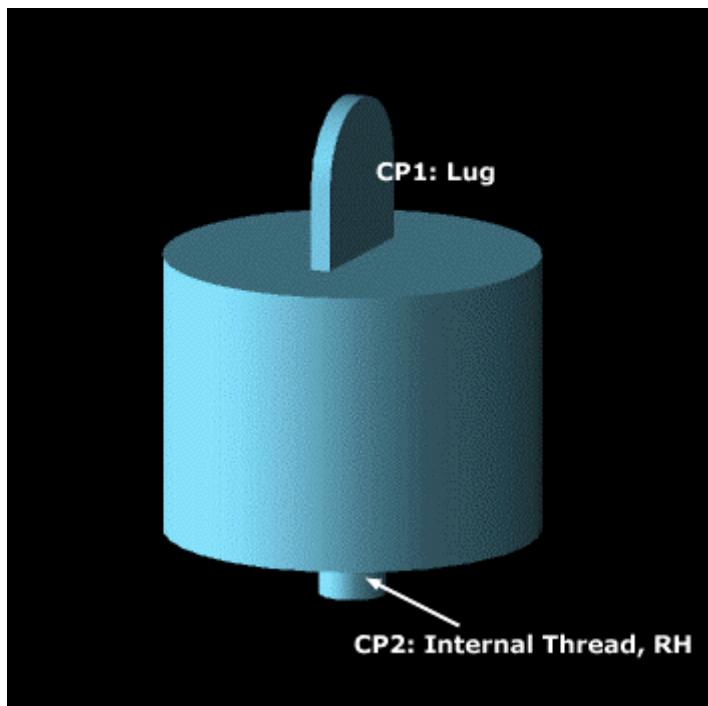
Input name(11) = "S"

Input name(12) = "X"

Input name(13) = "R"

Input name(14) = "C"

Input name(15) = "SW"



## Lisega\_TYPE25

**Description:** Lisega Size <size> Variable Spring Hanger

**Symbol Name:** HS\_Lisega.Lisega\_TYPE25

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE25

**User Class Name:** Variable Spring Hanger

**Part Number:** Lisega\_TYPE25\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE25

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "CYL2"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "SIZE"

Input name(6) = "ROD\_DIA"

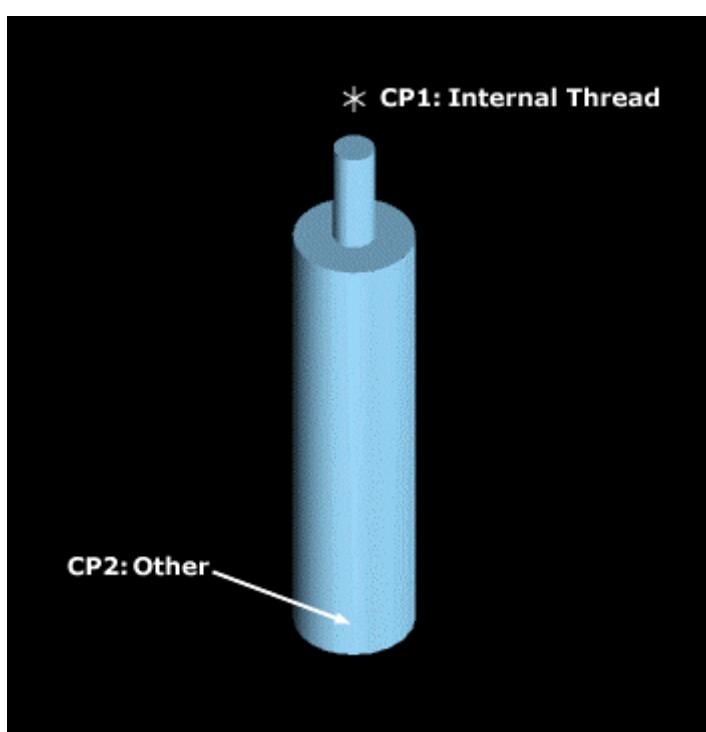
Input name(7) = "EXTRA\_LG"

Input name(8) = "A"

Input name(9) = "H"

Input name(10) = "X"

Input name(11) = "B"



## Lisega\_TYPE26

**Description:** Lisega Size <size> Variable Spring Hanger

**Symbol Name:** HS\_Lisega.Lisega\_TYPE26

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE26

**User Class Name:** Variable Spring Hanger

**Part Number:** Lisega\_TYPE26\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE26

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "TOP\_CYL"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "SIZE"

Input name(6) = "ROD\_DIA"

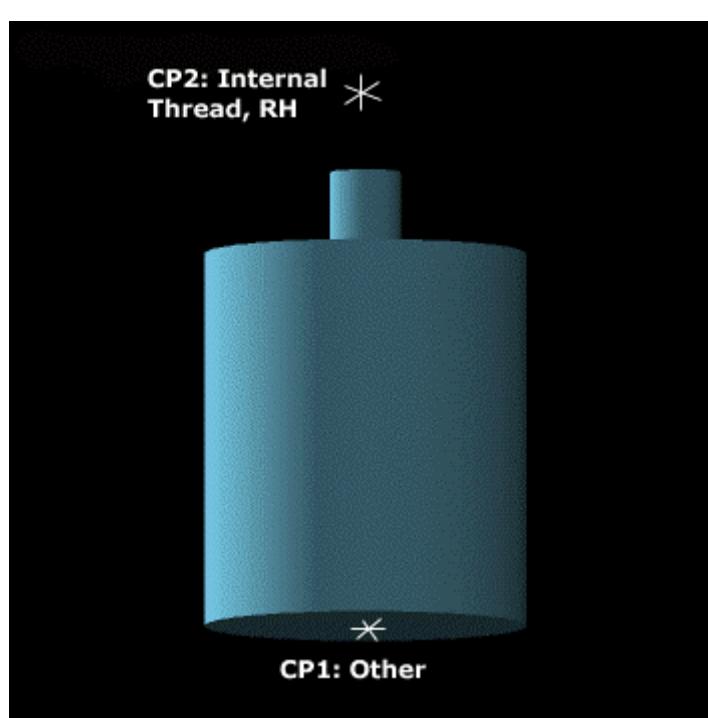
Input name(7) = "EXTRA\_LG"

Input name(8) = "A"

Input name(9) = "H"

Input name(10) = "X"

Input name(11) = "B"



## Lisega\_TYPE27

**Description:** Lisega Size <size> Sway Brace

**Symbol Name:** HS\_Lisega.Lisega\_TYPE27

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE27

**User Class Name:** Sway Brace

**Part Number:** Lisega\_TYPE27\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE27

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER3"

Output name 4 = "Port3"

Output name 5 = "CYLINDER5"

Output name 6 = "CYLINDER6"

Output name 7 = "CYLINDER4"

Output name 8 = "CYLINDER1"

Output name 9 = "CYLINDER2"

Input name(2) = "BOTTOM"

Input name(3) = "CYL\_DIA"

Input name(4) = "A"

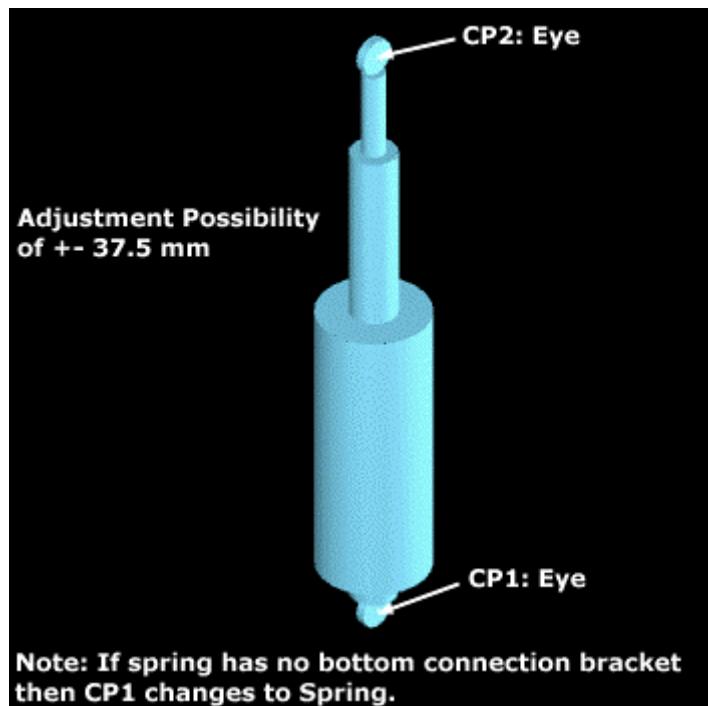
Input name(5) = "H"

Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "S"

Input name(9) = "R"



## Lisega\_TYPE27\_EXT

**Description:** Lisega Size <size> Extension for Sway Brace

**Symbol Name:** HS\_Lisega.Lisega\_TYPE27\_EXT

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE27\_EXT

**User Class Name:** Extension for Sway Brace

**Part Number:** Lisega\_TYPE27\_EXT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE27\_EXT

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER2"

Output name 4 = "CYLINDER1"

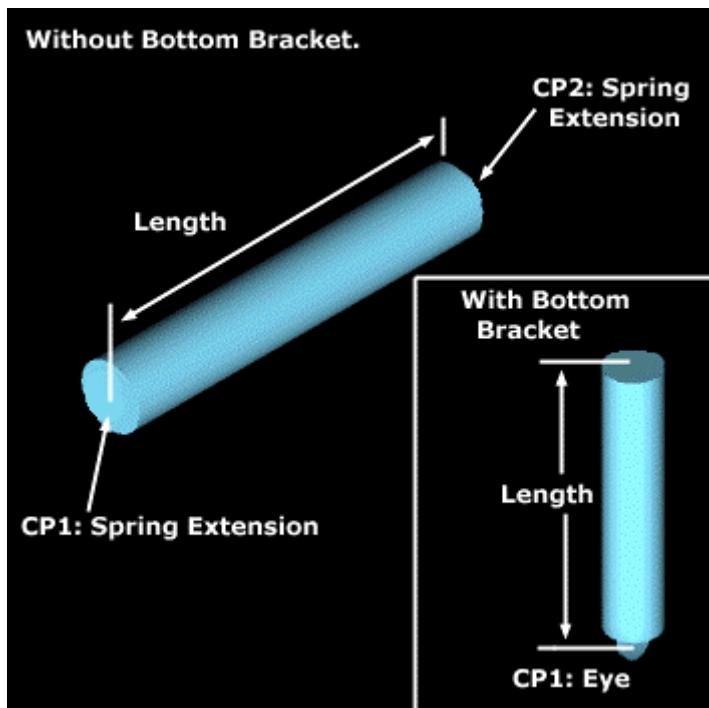
Input name(2) = "BOTTOM"

Input name(3) = "Length"

Input name(4) = "S"

Input name(5) = "R"

Input name(6) = "CYL\_DIA"



## Lisega\_TYPE28

**Description:** Lisega Size <size> Variable Spring Support

**Symbol Name:** HS\_Lisega.Lisega\_TYPE28

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE28

**User Class Name:** Variable Spring Support

**Part Number:** Lisega\_TYPE28\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE28

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "CYL2"

Output name 5 = "CYL3"

Output name 6 = "BASE"

Input name(2) = "DIR"

Input name(3) = "WORKING\_TRAV"

Input name(4) = "HOT\_LOAD"

Input name(5) = "SIZE"

Input name(6) = "D"

Input name(7) = "EXTRA\_LG"

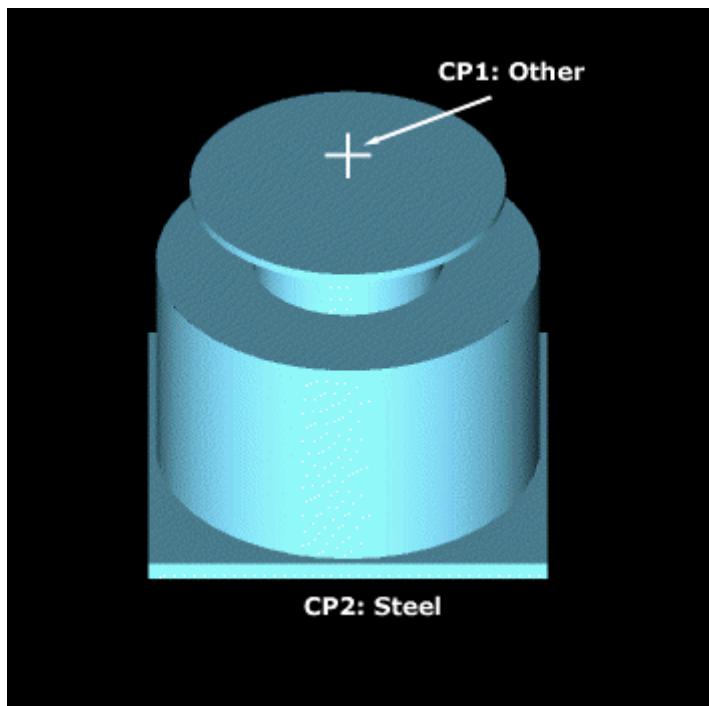
Input name(8) = "A"

Input name(9) = "H"

Input name(10) = "E"

Input name(11) = "S"

Input name(12) = "B"



## Lisega\_TYPE29

**Description:** Lisega Size <size> Variable Spring Support

**Symbol Name:** HS\_Lisega.Lisega\_TYPE29

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE29

**User Class Name:** Variable Spring Support

**Part Number:** Lisega\_TYPE29\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE29

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "CYL2"

Output name 5 = "CYL3"

Output name 6 = "BASE"

Input name(2) = "H"

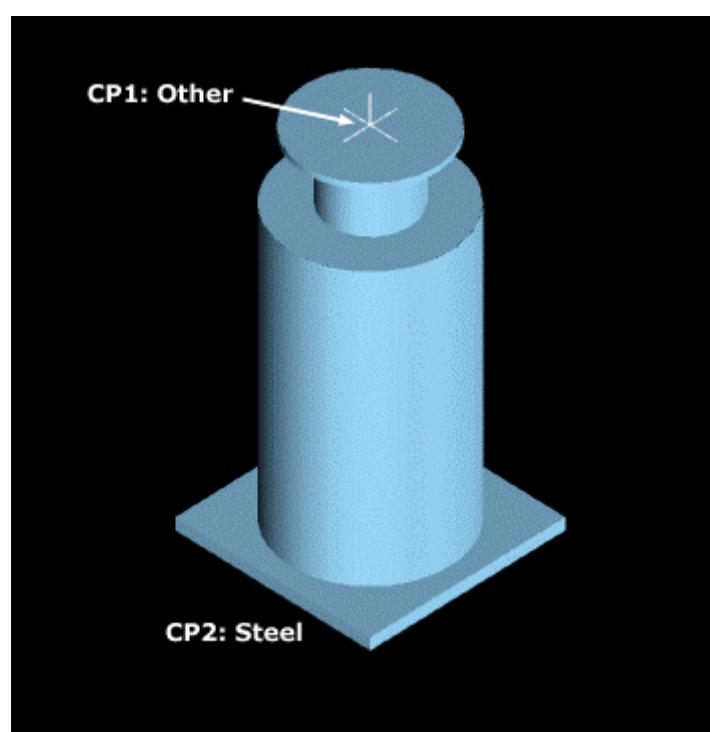
Input name(3) = "E"

Input name(4) = "S"

Input name(5) = "B"

Input name(6) = "D"

Input name(7) = "A"



## Lisega\_TYPE299

**Description:** Lisega Size <size> Extension for Spring Hanger Type 29

**Symbol Name:** HS\_Lisega.Lisega\_TYPE299

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE299

**User Class Name:** Extension for Spring Hanger Type 29

**Part Number:** Lisega\_TYPE299\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE299

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "BASE"

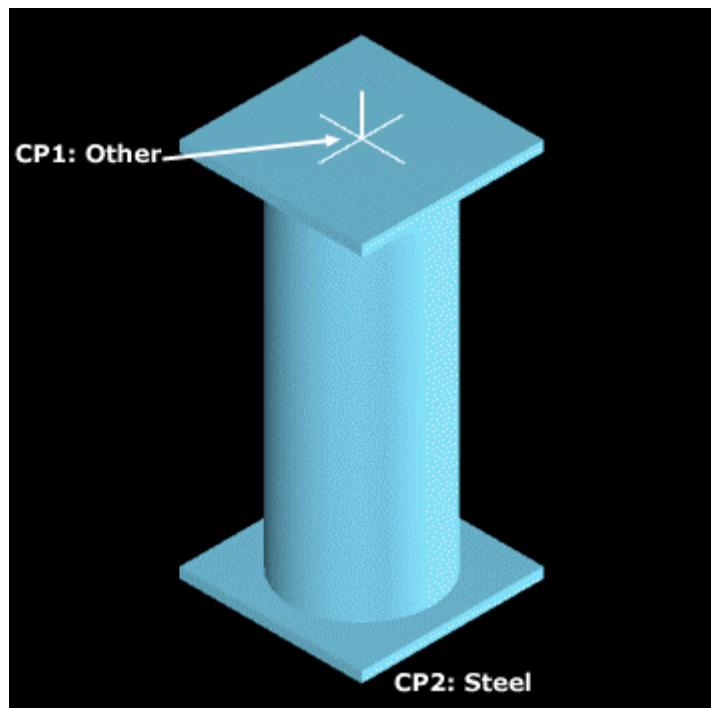
Output name 5 = "BASE2"

Input name(2) = "Length"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "E"



## Lisega\_TYPE30

**Description:** Lisega Size <size> Shock Absorber

**Symbol Name:** HS\_Lisega.Lisega\_TYPE30

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE30

**User Class Name:** Shock Absorber

**Part Number:** Lisega\_TYPE30\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE30

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER1"

Output name 4 = "BOX1"

Output name 5 = "CYLINDER2"

Output name 6 = "CYLINDER3"

Output name 7 = "BOX2"

Input name(2) = "Length"

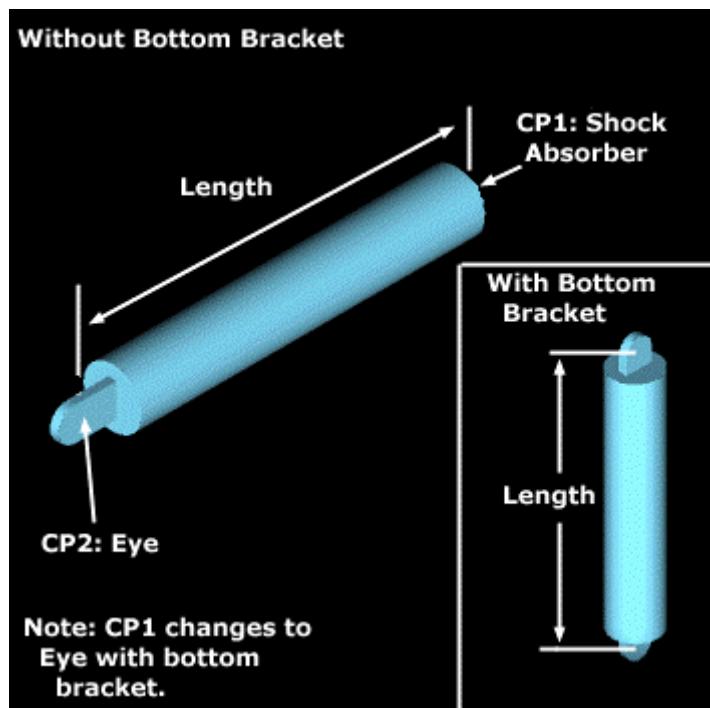
Input name(3) = "BOTTOM"

Input name(4) = "SHOCK\_DIA"

Input name(5) = "F"

Input name(6) = "S"

Input name(7) = "R"



## Lisega\_TYPE31

**Description:** Lisega Size <size> Shock Absorber

**Symbol Name:** HS\_Lisega.Lisega\_TYPE31

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE31

**User Class Name:** Shock Absorber

**Part Number:** Lisega\_TYPE31\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE31

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER1"

Output name 4 = "BOX1"

Output name 5 = "CYLINDER4"

Output name 6 = "CYLINDER2"

Output name 7 = "CYLINDER3"

Output name 8 = "BOX2"

Input name(2) = "Length"

Input name(3) = "SHOCK\_DIA"

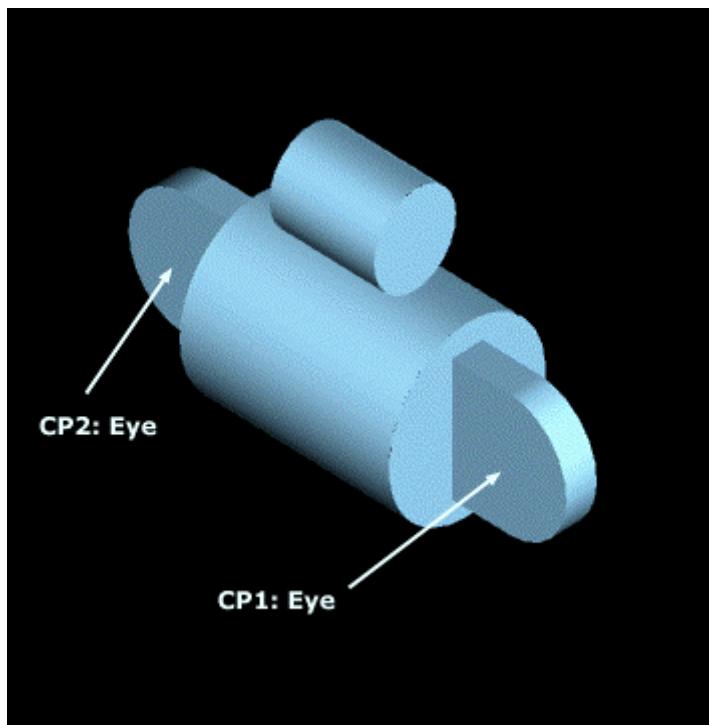
Input name(4) = "H"

Input name(5) = "S"

Input name(6) = "G"

Input name(7) = "F"

Input name(8) = "R"



## Lisega\_TYPE32

**Description:** Lisega Size <size> Energy Absorber

**Symbol Name:** HS\_Lisega.Lisega\_TYPE32

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE32

**User Class Name:** Energy Absorber

**Part Number:** Lisega\_TYPE32\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE32

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER1"

Output name 4 = "BOX1"

Output name 5 = "CYLINDER4"

Output name 6 = "CYLINDER2"

Output name 7 = "CYLINDER3"

Output name 8 = "BOX2"

Input name(2) = "F1"

Input name(3) = "TENSION"

Input name(4) = "ADJ"

Input name(5) = "SHOCK\_DIA"

Input name(6) = "D\_ROD"

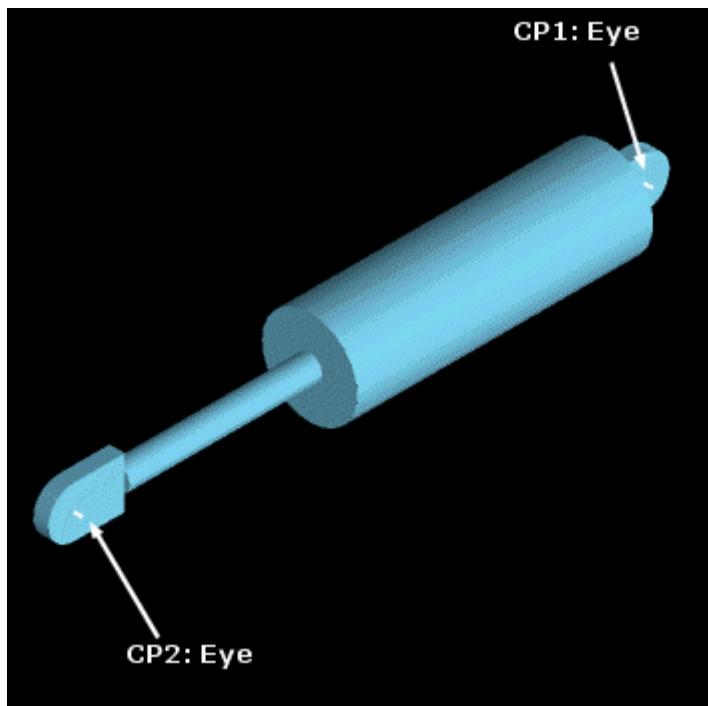
Input name(7) = "L\_TUBE"

Input name(8) = "E"

Input name(9) = "S"

Input name(10) = "R"

Input name(11) = "F"



## Lisega\_TYPE33

**Description:** Lisega Size <size> Shock Absorber Extension

**Symbol Name:** HS\_Lisega.Lisega\_TYPE33

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE33

**User Class Name:** Shock Absorber Extension

**Part Number:** Lisega\_TYPE33\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE33

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER1"

Output name 4 = "BOX1"

Output name 5 = "CYLINDER2"

Input name(2) = "BOTTOM"

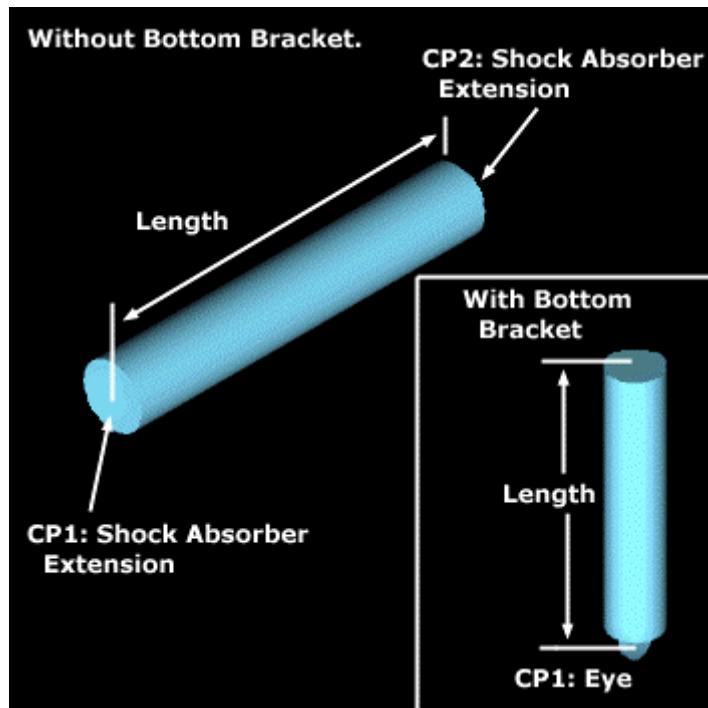
Input name(3) = "Length"

Input name(4) = "S"

Input name(5) = "F"

Input name(6) = "D"

Input name(7) = "R"



## Lisega\_TYPE35

**Description:** Lisega Size <size> Weld-On Bracket

**Symbol Name:** HS\_Lisega.Lisega\_TYPE35

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE35

**User Class Name:** Weld-On Bracket

**Part Number:** Lisega\_TYPE35\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE35

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOX"

Output name 4 = "CYLINDER"

Output name 5 = "BODY\_LEFT"

Output name 6 = "BODY\_RIGHT"

Input name(2) = "L"

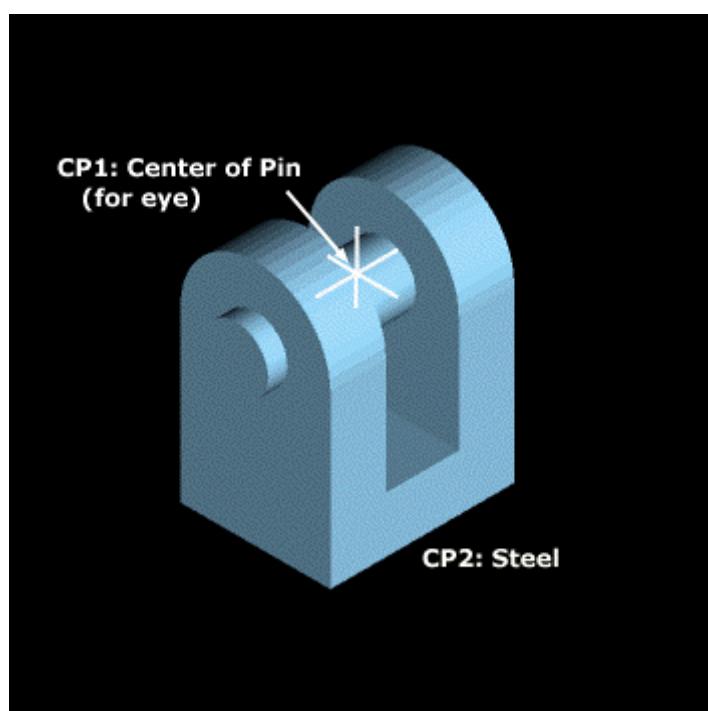
Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "C"

Input name(6) = "PIN\_DIA"

Input name(7) = "E"



## Lisega\_TYPE36

**Description:** Lisega Size <size> Dynamic Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE36

**Workbook:** HS\_Lisega.xls

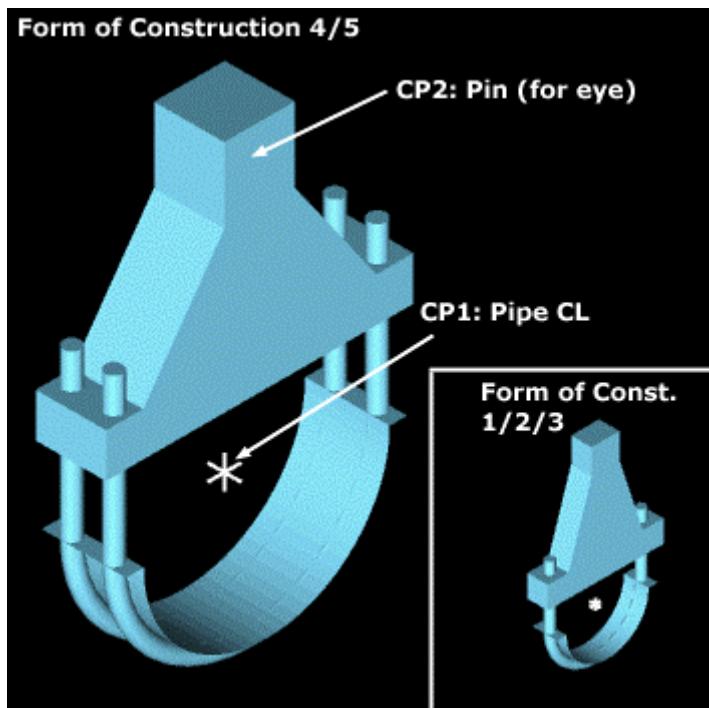
**Workbook Sheet:** Lisega\_TYPE36

**User Class Name:** Dynamic Pipe Clamp

**Part Number:** Lisega\_TYPE36\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE36  
Output name 1 = "Port1"  
Output name 2 = "Port2"  
Output name 3 = "FILLER1"  
Output name 4 = "FILLER2"  
Output name 5 = "BEND1"  
Output name 6 = "R1"  
Output name 7 = "L1"  
Output name 8 = "BEND2"  
Output name 9 = "R2"  
Output name 10 = "L2"  
Output name 11 = "FILLER"  
Output name 12 = "BEND"  
Output name 13 = "R"  
Output name 14 = "L"  
Output name 15 = "TOP"  
Input name(2) = "SIZE"  
Input name(3) = "CONNECTING\_LOAD\_GRP"  
Input name(4) = "LOAD\_GRP"  
Input name(5) = "HS"  
Input name(6) = "A"  
Input name(7) = "S"  
Input name(8) = "E"  
Input name(9) = "H8"  
Input name(10) = "L12"  
Input name(11) = "G"  
Input name(12) = "H"  
Input name(13) = "B4"  
Input name(14) = "D"  
Input name(15) = "D1"  
Input name(16) = "B8"  
Input name(17) = "B5"  
Input name(18) = "C"



## Lisega\_TYPE37\_LRG

**Description:** Lisega Size <size> Dynamic Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE37\_LRG

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE37\_LRG

**User Class Name:** Dynamic Pipe Clamp

**Part Number:** Lisega\_TYPE37\_LRG\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE37\_LRG

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY1"

Output name 4 = "BODY2"

Output name 5 = "TOP"

Input name(2) = "M"

Input name(3) = "SIZE"

Input name(4) = "S"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "EB"

Input name(8) = "E"

Input name(9) = "K"

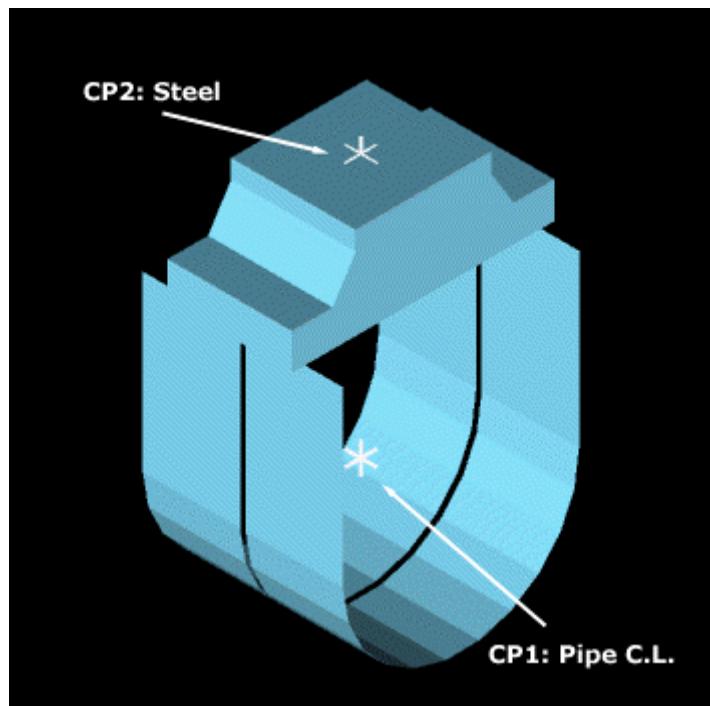
Input name(10) = "H"

Input name(11) = "P"

Input name(12) = "B1"

Input name(13) = "D"

Input name(14) = "B4"



## Lisega\_TYPE37\_SML

**Description:** Lisega Size <size> Dynamic Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE37\_SML

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE37\_SML

**User Class Name:** Dynamic Pipe Clamp

**Part Number:** Lisega\_TYPE37\_SML\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE37\_SML

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY1"

Output name 4 = "TOP"

Input name(2) = "M"

Input name(3) = "SIZE"

Input name(4) = "T"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "EB"

Input name(8) = "E"

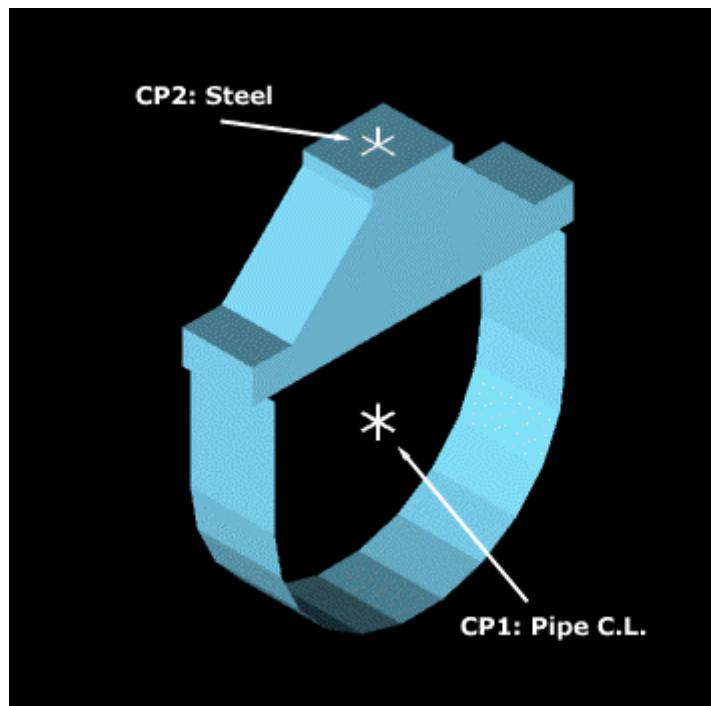
Input name(9) = "K"

Input name(10) = "H"

Input name(11) = "P"

Input name(12) = "B1"

Input name(13) = "D"



## Lisega\_TYPE39

**Description:** Lisega Size <size> Rigid Struts

**Symbol Name:** HS\_Lisega.Lisega\_TYPE39

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE39

**User Class Name:** Rigid Struts

**Part Number:** Lisega\_TYPE39\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE39

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYLINDER1"

Output name 4 = "CYLINDER2"

Output name 5 = "CYLINDER3"

Output name 6 = "BOX1"

Output name 7 = "BOX2"

Input name(2) = "Length"

Input name(3) = "STRUT\_DIA"

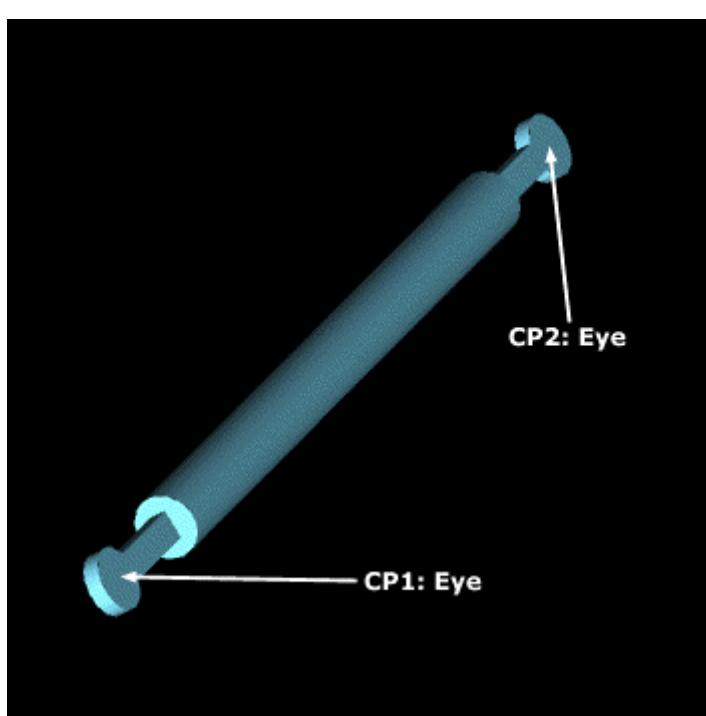
Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "S"

Input name(7) = "X"

Input name(8) = "Y"



## Lisega\_TYPE40

**Description:** Lisega Size <size> U-Bolt

**Symbol Name:** HS\_Lisega.Lisega\_TYPE40

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE40

**User Class Name:** U-Bolt

**Part Number:** Lisega\_TYPE40\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE40

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BEND"

Output name 4 = "R"

Output name 5 = "L"

Input name(2) = "EXTRA\_TAN"

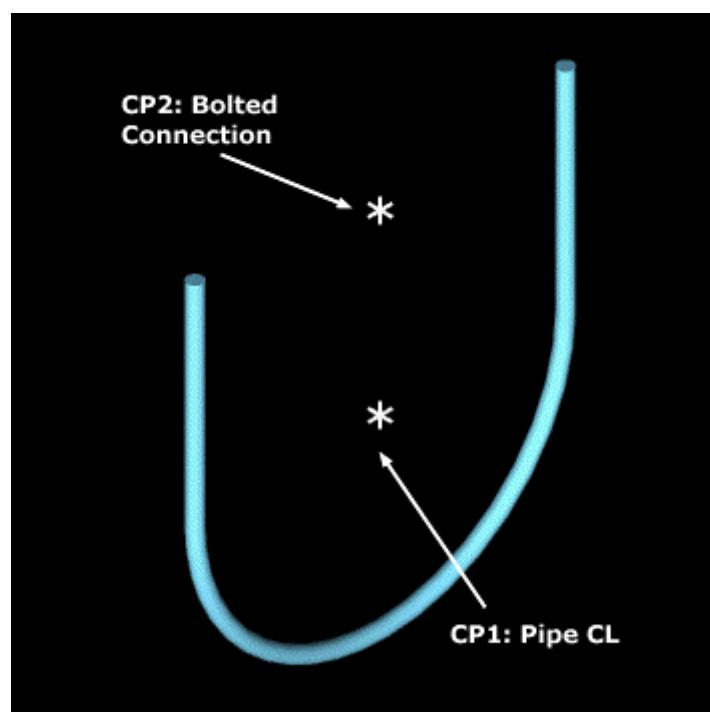
Input name(3) = "ROD\_DIA"

Input name(4) = "PIPE\_DIA1"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "E"



## Lisega\_TYPE41A

**Description:** Lisega Size <size> Weld-On Lug for Pipe

**Symbol Name:** HS\_Lisega.Lisega\_TYPE41A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE41A

**User Class Name:** Weld-On Lug for Pipe

**Part Number:** Lisega\_TYPE41A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE41A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

Input name(2) = "PIPE\_DIA"

Input name(3) = "G"

Input name(4) = "T"

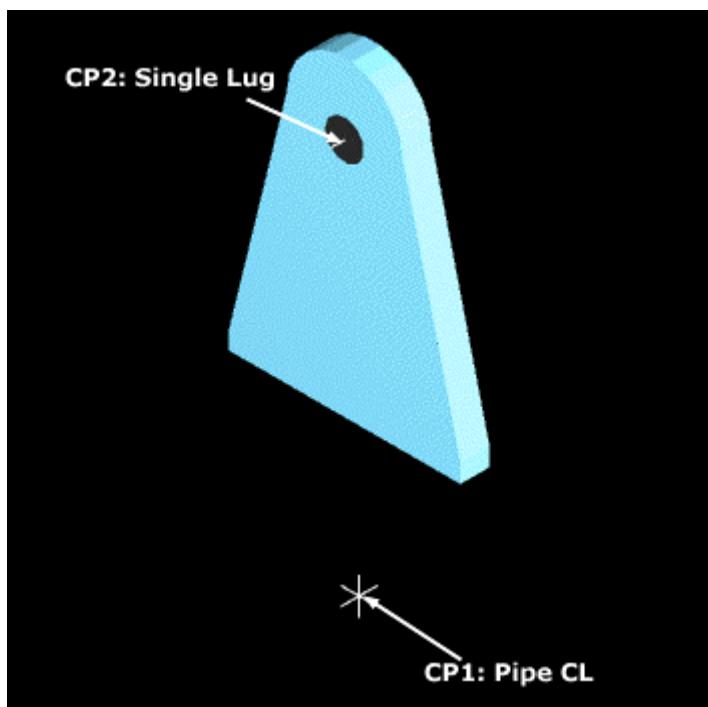
Input name(5) = "HOLE\_DIA"

Input name(6) = "A"

Input name(7) = "H"

Input name(8) = "R"

Input name(9) = "C"



## Lisega\_TYPE41B

**Description:** Lisega Size <size> Weld-On Lug for Pipe Elbow R=1.5 OD

**Symbol Name:** HS\_Lisega.Lisega\_TYPE41B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE41B

**User Class Name:** Weld-On Lug for Pipe Elbow R=1.5 OD

**Part Number:** Lisega\_TYPE41B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE41B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

Input name(2) = "R"

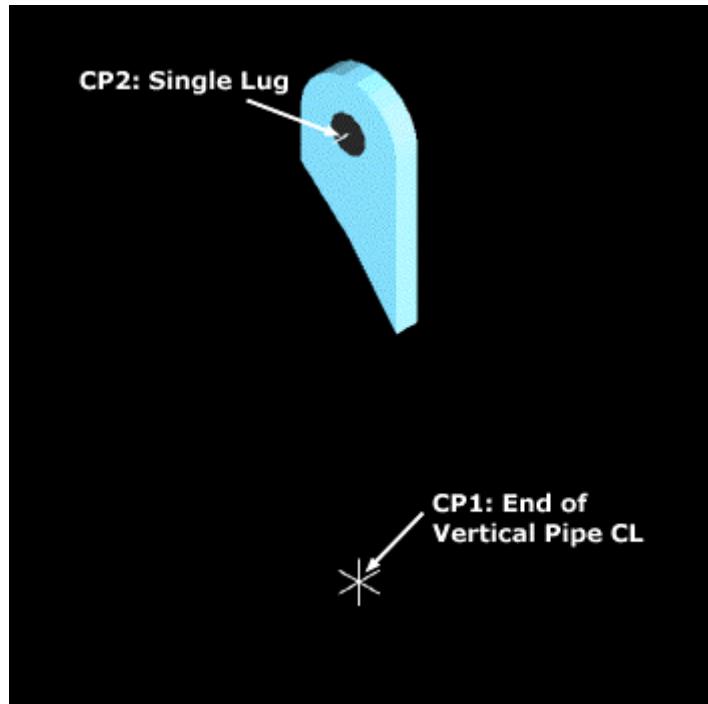
Input name(3) = "PIPE\_DIA"

Input name(4) = "D3"

Input name(5) = "R1"

Input name(6) = "E"

Input name(7) = "T"



## Lisega\_TYPE42A

**Description:** Lisega Size <size> Horizontal Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE42A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE42A

**User Class Name:** Horizontal Pipe Clamp

**Part Number:** Lisega\_TYPE42A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE42A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BOLT"

Input name(2) = "SIZE"

Input name(3) = "E"

Input name(4) = "A"

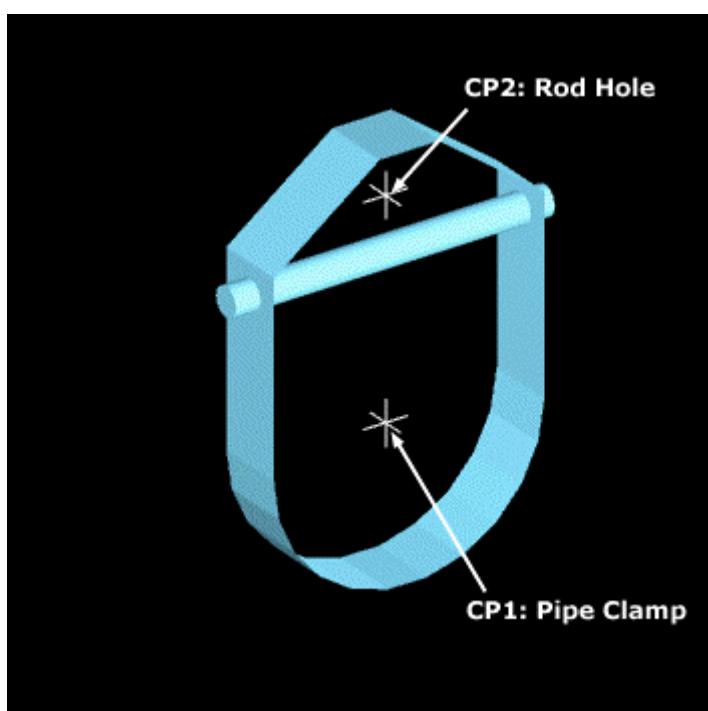
Input name(5) = "B"

Input name(6) = "F"

Input name(7) = "S"

Input name(8) = "G"

Input name(9) = "PIPE\_DIA"



## Lisega\_TYPE42B

**Description:** Lisega Size <size> Horizontal Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE42B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE42B

**User Class Name:** Horizontal Pipe Clamp

**Part Number:** Lisega\_TYPE42B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE42B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP\_BOLT"

Output name 4 = "BOT\_BOLT"

Output name 5 = "CYLINDER"

Output name 6 = "TOP\_BOX\_L"

Output name 7 = "TOP\_BOX\_R"

Output name 8 = "BOT\_BOX"

Input name(2) = "SIZE"

Input name(3) = "B"

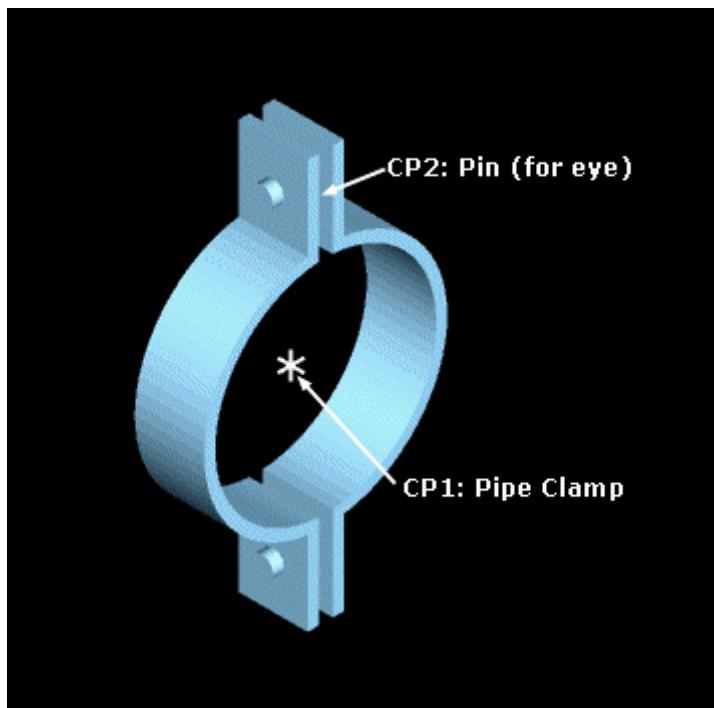
Input name(4) = "C"

Input name(5) = "S"

Input name(6) = "E"

Input name(7) = "BOLT\_SIZE"

Input name(8) = "F"



## Lisega\_TYPE43

**Description:** Lisega Size <size> Horizontal Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE43

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE43

**User Class Name:** Horizontal Pipe Clamp

**Part Number:** Lisega\_TYPE43\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE43

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP\_BOLT"

Output name 4 = "TOP\_BOLT\_2"

Output name 5 = "BOT\_BOLT"

Output name 6 = "CYLINDER"

Output name 7 = "TOP\_BOX\_L"

Output name 8 = "TOP\_BOX\_R"

Output name 9 = "BOT\_BOX"

Input name(2) = "BOLT\_SIZE\_1"

Input name(3) = "PIPE\_DIA"

Input name(4) = "F"

Input name(5) = "A"

Input name(6) = "B"

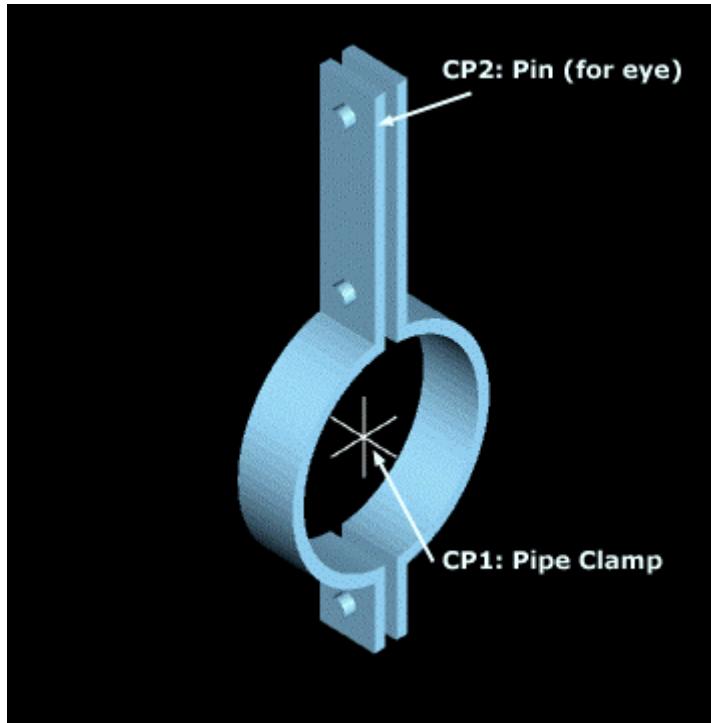
Input name(7) = "C"

Input name(8) = "C1"

Input name(9) = "S"

Input name(10) = "E"

Input name(11) = "BOLT\_SIZE"



## Lisega\_TYPE44A

**Description:** Lisega Size <size> Horizontal Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE44A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE44A

**User Class Name:** Horizontal Pipe Clamp

**Part Number:** Lisega\_TYPE44A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE44A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY1"

Output name 4 = "BEND"

Output name 5 = "R"

Output name 6 = "L"

Output name 7 = "FILLER"

Output name 8 = "BOX1"

Output name 9 = "BOX2"

Input name(2) = "T"

Input name(3) = "F"

Input name(4) = "B"

Input name(5) = "BE"

Input name(6) = "C"

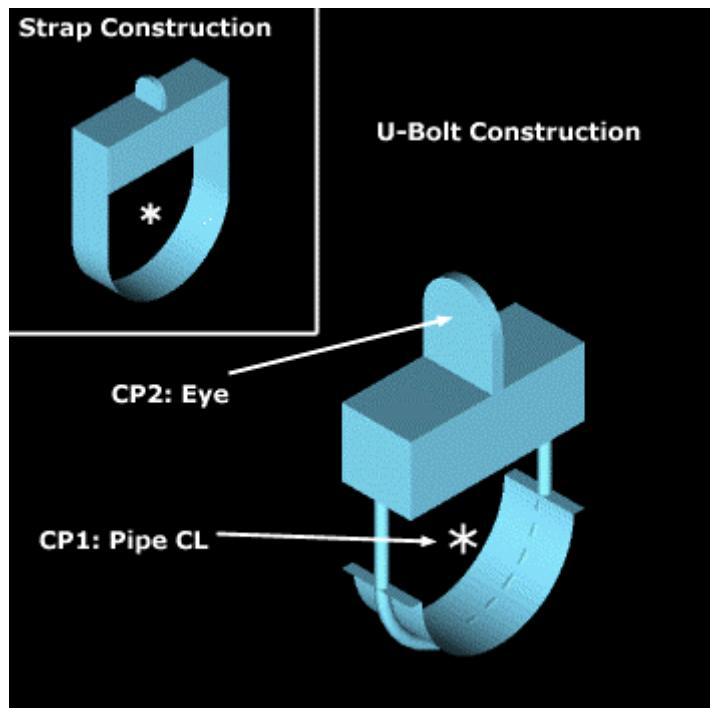
Input name(7) = "D"

Input name(8) = "D1"

Input name(9) = "E"

Input name(10) = "S"

Input name(11) = "SIZE"



## Lisega\_TYPE44B

**Description:** Lisega Size <size> Horizontal Pipe Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE44B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE44B

**User Class Name:** Horizontal Pipe Clamp

**Part Number:** Lisega\_TYPE44B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE44B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY1"

Output name 4 = "BODY2"

Output name 5 = "BOX1"

Output name 6 = "BOX2"

Output name 7 = "BOX3"

Input name(2) = "SIZE"

Input name(3) = "C5"

Input name(4) = "F5"

Input name(5) = "A1"

Input name(6) = "B1"

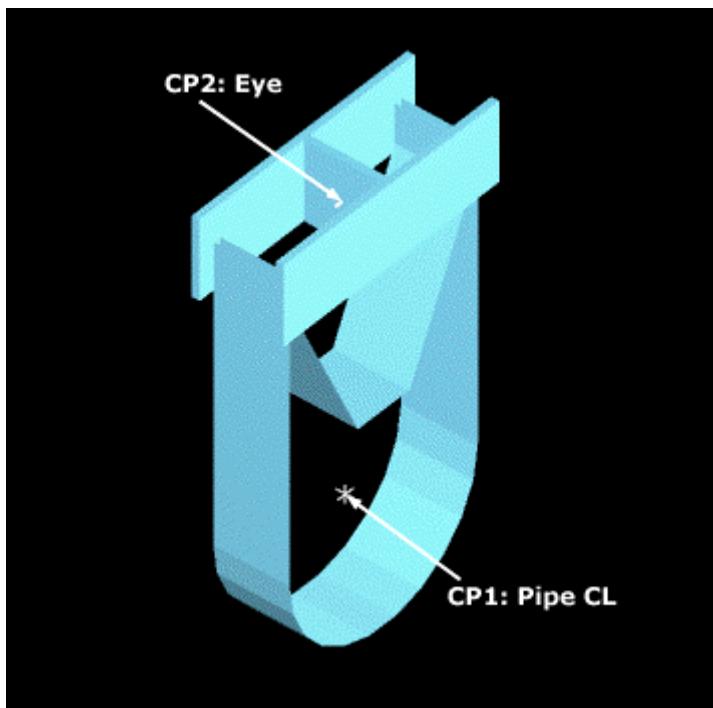
Input name(7) = "E5"

Input name(8) = "E"

Input name(9) = "T"

Input name(10) = "B4"

Input name(11) = "A4"



## Lisega\_TYPE45

**Description:** Lisega Size <size> Riser Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE45

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE45

**User Class Name:** Riser Clamp

**Part Number:** Lisega\_TYPE45\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE45

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BOLT1"

Output name 5 = "BOLT2"

Output name 6 = "CYLINDER"

Output name 7 = "BOX\_L\_1"

Output name 8 = "BOX\_L\_2"

Output name 9 = "BOX\_R\_1"

Output name 10 = "BOX\_R\_2"

Input name(2) = "L"

Input name(3) = "SIZE"

Input name(4) = "BOLT\_SIZE"

Input name(5) = "F"

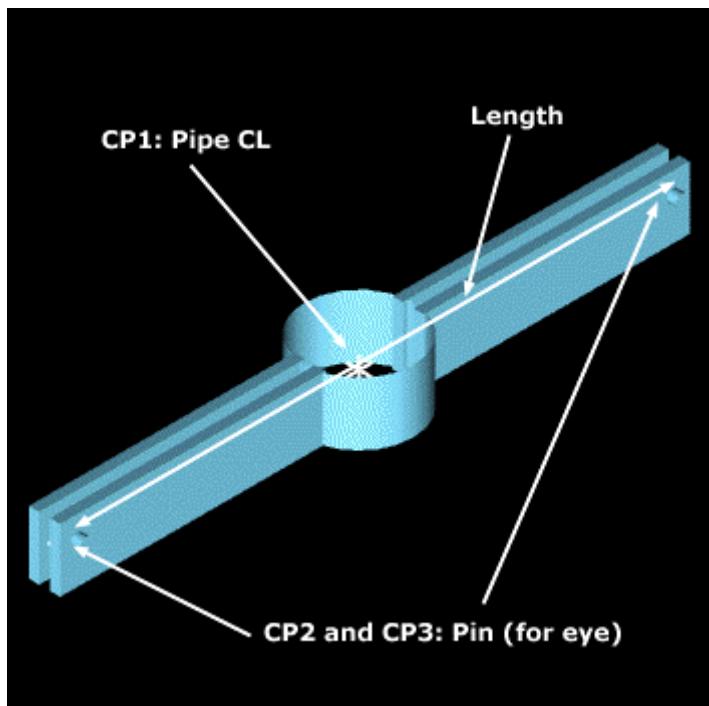
Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "S"

Input name(9) = "E"

Input name(10) = "Y"



## Lisega\_TYPE46

**Description:** Lisega Size <size> Riser Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE46

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE46

**User Class Name:** Riser Clamp

**Part Number:** Lisega\_TYPE46\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE46

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BOX1"

Output name 5 = "BOX2"

Output name 6 = "BODY"

Input name(2) = "L"

Input name(3) = "N"

Input name(4) = "EK"

Input name(5) = "A"

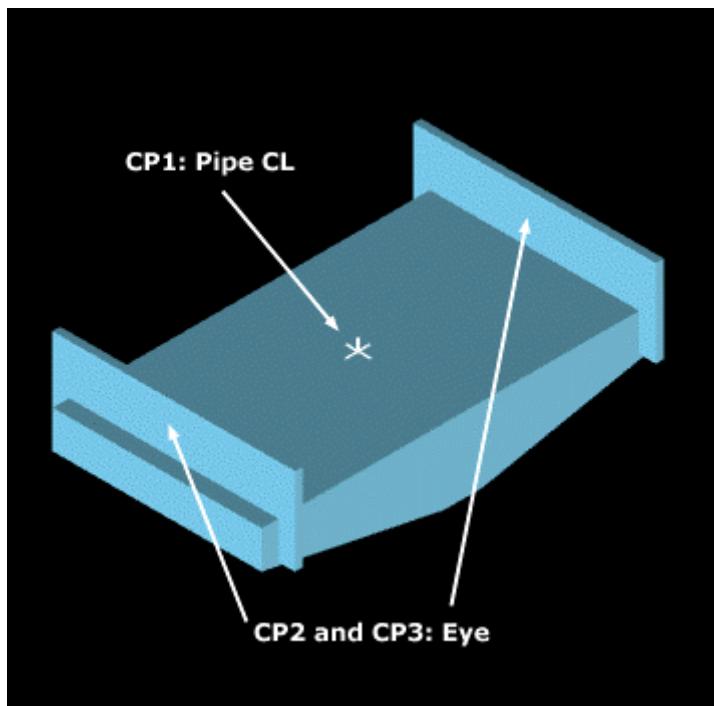
Input name(6) = "B"

Input name(7) = "D"

Input name(8) = "S1"

Input name(9) = "S"

Input name(10) = "F"



## Lisega\_TYPE48

**Description:** Lisega Size <size> Riser Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE48

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE48

**User Class Name:** Riser Clamp

**Part Number:** Lisega\_TYPE48\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE48

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BOX1"

Output name 5 = "BOX2"

Output name 6 = "BODY"

Input name(2) = "L"

Input name(3) = "F"

Input name(4) = "N"

Input name(5) = "A"

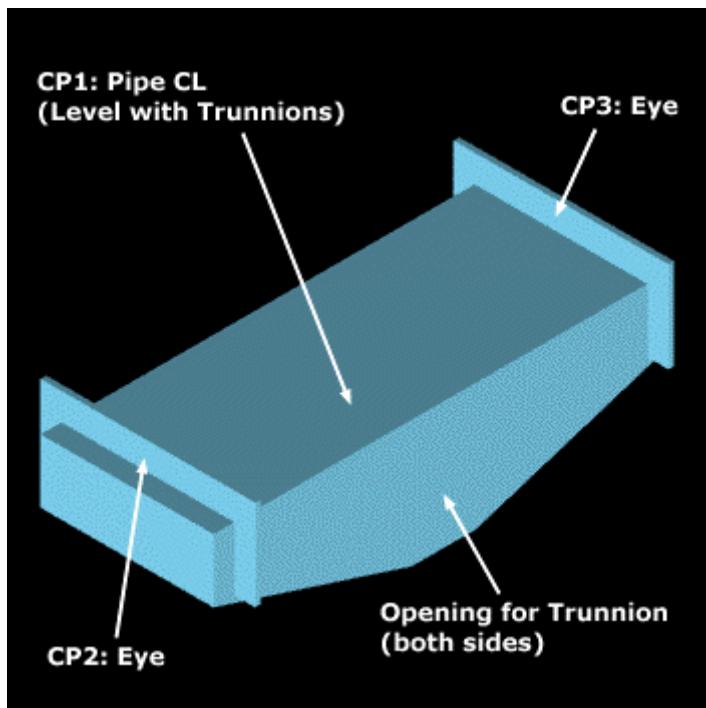
Input name(6) = "B"

Input name(7) = "D"

Input name(8) = "S1"

Input name(9) = "S"

Input name(10) = "ER"



## Lisega\_TYPE49A

**Description:** Lisega Size <size> Horizontal Pipe Clamp Base

**Symbol Name:** HS\_Lisega.Lisega\_TYPE49A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE49A

**User Class Name:** Horizontal Pipe Clamp Base

**Part Number:** Lisega\_TYPE49A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE49A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOX1"

Output name 4 = "BOX2"

Output name 5 = "BOX3"

Output name 6 = "BOX4"

Output name 7 = "BOX5"

Output name 8 = "CYL1"

Output name 9 = "CYL2"

Output name 10 = "TOP\_BOX"

Output name 11 = "BOT\_BOX"

Output name 12 = "BASE\_BOX"

Output name 13 = "CYL"

Input name(2) = "SIZE"

Input name(3) = "PIPE\_DIA"

Input name(4) = "F"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "BB"

Input name(8) = "C"

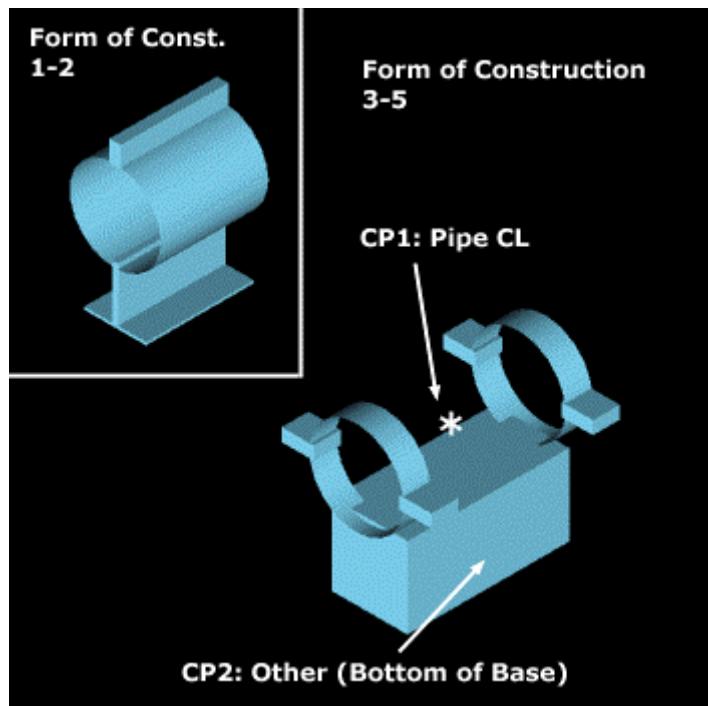
Input name(9) = "T"

Input name(10) = "S"

Input name(11) = "E"

Input name(12) = "E1"

Input name(13) = "H"



## Lisega\_TYPE49B

**Description:** Lisega Size <size> Lift-off Restraint for Clamp Bases Type 49

**Symbol Name:** HS\_Lisega.Lisega\_TYPE49B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE49B

**User Class Name:** Lift-off Restraint for Clamp Bases Type 49

**Part Number:** Lisega\_TYPE49B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE49B

Output name 1 = "Port1"

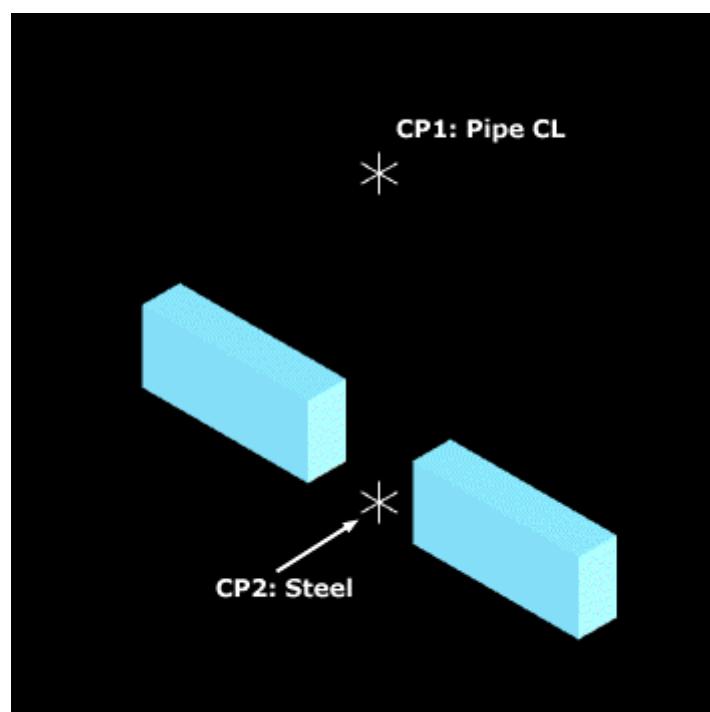
Output name 2 = "Port2"

Output name 3 = "BOX1"

Output name 4 = "BOX2"

Input name(2) = "SIZE"

Input name(3) = "TYPE"



## Lisega\_TYPE51

**Description:** Lisega Size <size> Cylinder Roller Bearing Single

**Symbol Name:** HS\_Lisega.Lisega\_TYPE51

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE51

**User Class Name:** Cylinder Roller Bearing Single

**Part Number:** Lisega\_TYPE51\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE51

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL"

Output name 4 = "BOX1"

Output name 5 = "BOX2"

Output name 6 = "BOX3"

Input name(2) = "S"

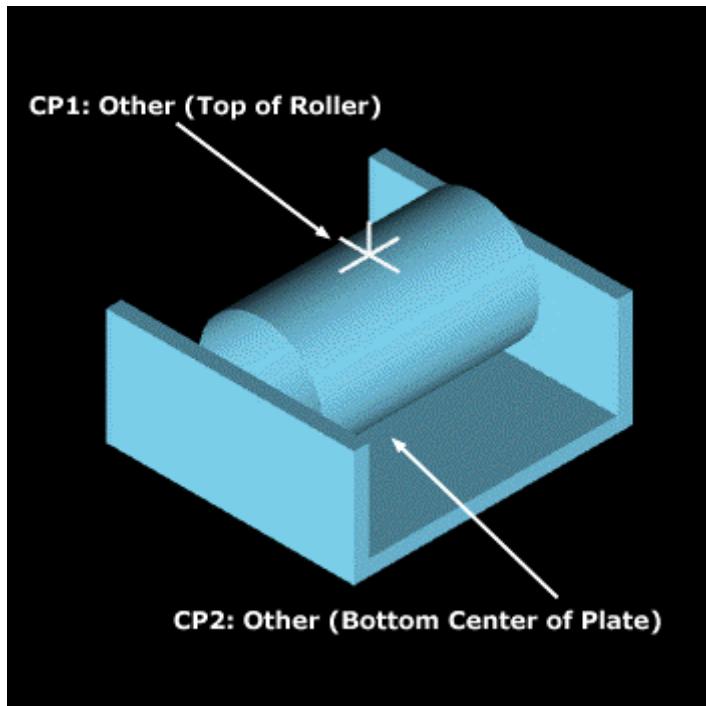
Input name(3) = "E"

Input name(4) = "A1"

Input name(5) = "A2"

Input name(6) = "B"

Input name(7) = "CYL\_DIA"



## Lisega\_TYPE52

**Description:** Lisega Size <size> Double Taper Roller Bearing

**Symbol Name:** HS\_Lisega.Lisega\_TYPE52

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE52

**User Class Name:** Double Taper Roller Bearing

**Part Number:** Lisega\_TYPE52\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE52

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL"

Output name 4 = "R\_ROLL"

Output name 5 = "L\_ROLL"

Output name 6 = "BOX1"

Output name 7 = "BOX2"

Output name 8 = "BOX3"

Input name(2) = "RADIUS"

Input name(3) = "SIZE"

Input name(4) = "X"

Input name(5) = "A"

Input name(6) = "B"

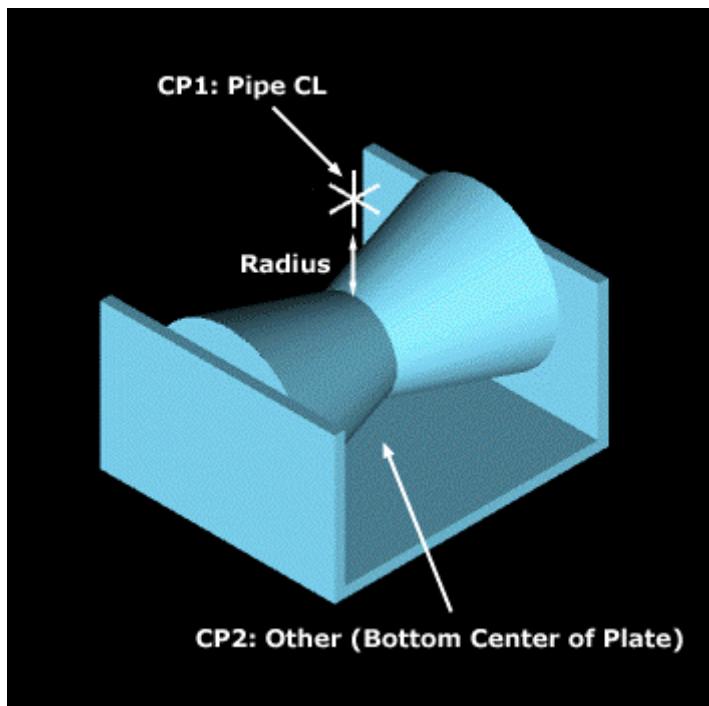
Input name(7) = "C"

Input name(8) = "N\_DIA"

Input name(9) = "O\_DIA"

Input name(10) = "CYL\_DIA"

Input name(11) = "S"



## Lisega\_TYPE53

**Description:** Lisega Size <size> Double-Cylinder Roller Bearing

**Symbol Name:** HS\_Lisega.Lisega\_TYPE53

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE53

**User Class Name:** Double-Cylinder Roller Bearing

**Part Number:** Lisega\_TYPE53\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE53

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "CYL2"

Output name 5 = "BOX1"

Output name 6 = "BOX2"

Output name 7 = "BOX3"

Output name 8 = "BOX4"

Output name 9 = "CYL1"

Output name 10 = "CYL2"

Output name 11 = "BOX1"

Output name 12 = "BOX2"

Output name 13 = "BOX3"

Input name(2) = "RADIUS"

Input name(3) = "TRAVEL"

Input name(4) = "SIZE"

Input name(5) = "X"

Input name(6) = "A1"

Input name(7) = "S"

Input name(8) = "A3"

Input name(9) = "C"

Input name(10) = "B"

Input name(11) = "O"

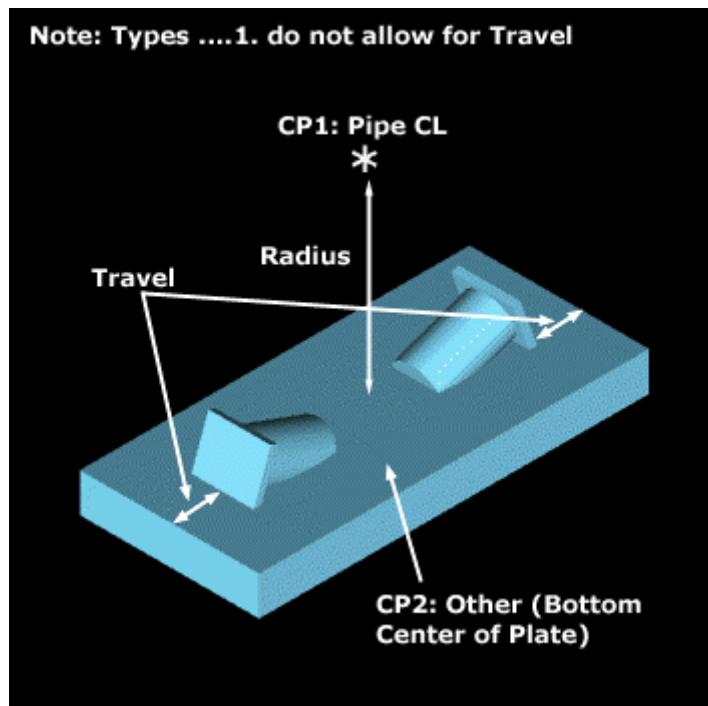
Input name(12) = "D"

Input name(13) = "G"

Input name(14) = "K"

Input name(15) = "Z2"

Input name(16) = "Z"



## Lisega\_TYPE54A

**Description:** Lisega Size <size> Weld on Pipe Saddle

**Symbol Name:** HS\_Lisega.Lisega\_TYPE54A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE54A

**User Class Name:** Weld on Pipe Saddle

**Part Number:** Lisega\_TYPE54A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE54A

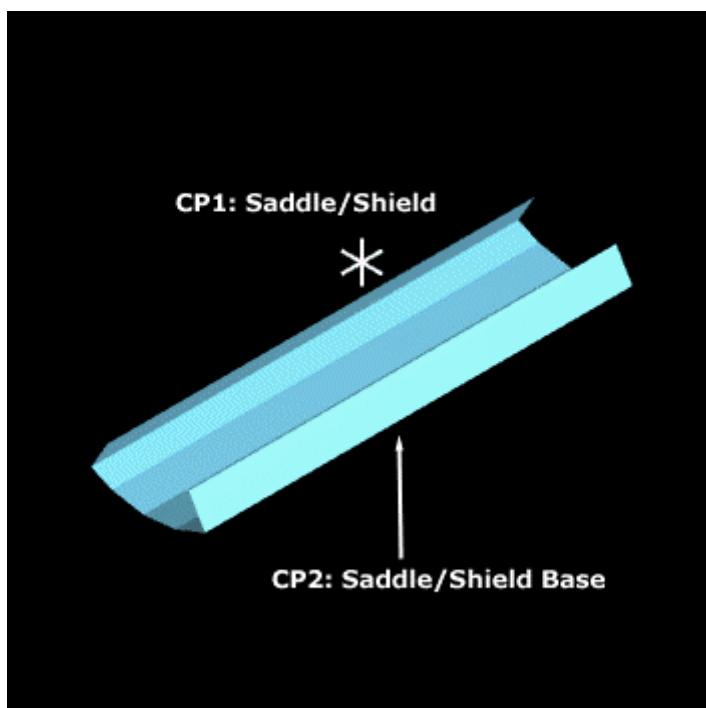
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "RADIUS"

Input name(3) = "PIPE\_DIA"



## Lisega\_TYPE54B

**Description:** Lisega Size <size> Pipe Saddle with Pipe Clamps

**Symbol Name:** HS\_Lisega.Lisega\_TYPE54B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE54B

**User Class Name:** Pipe Saddle with Pipe Clamps

**Part Number:** Lisega\_TYPE54B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE54B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

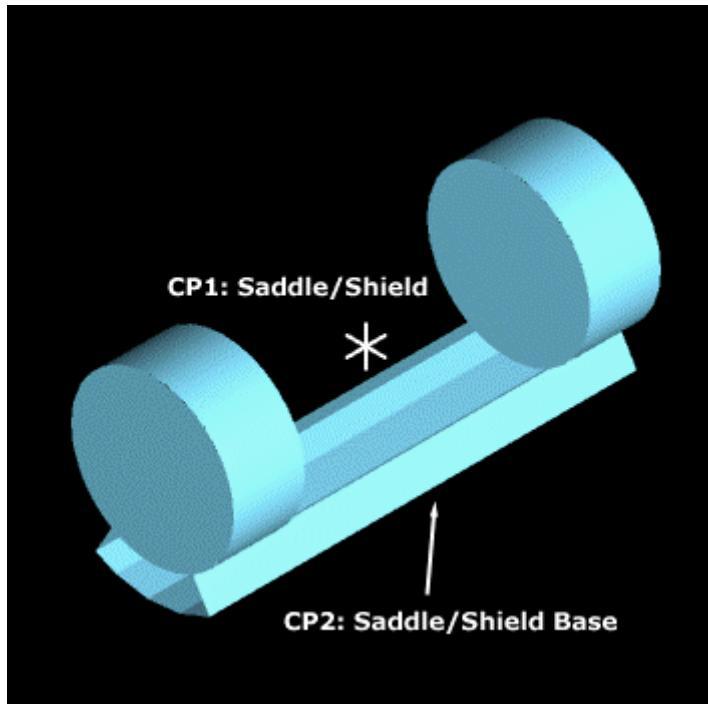
Output name 4 = "CYLINDER1"

Output name 5 = "CYLINDER2"

Input name(2) = "RADIUS"

Input name(3) = "PIPE\_DIA"

Input name(4) = "B"



## Lisega\_TYPE54C

**Description:** Lisega Size <size> Pipe Tray with Pipe Clamps

**Symbol Name:** HS\_Lisega.Lisega\_TYPE54C

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE54C

**User Class Name:** Pipe Tray with Pipe Clamps

**Part Number:** Lisega\_TYPE54C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE54C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "CYLINDER1"

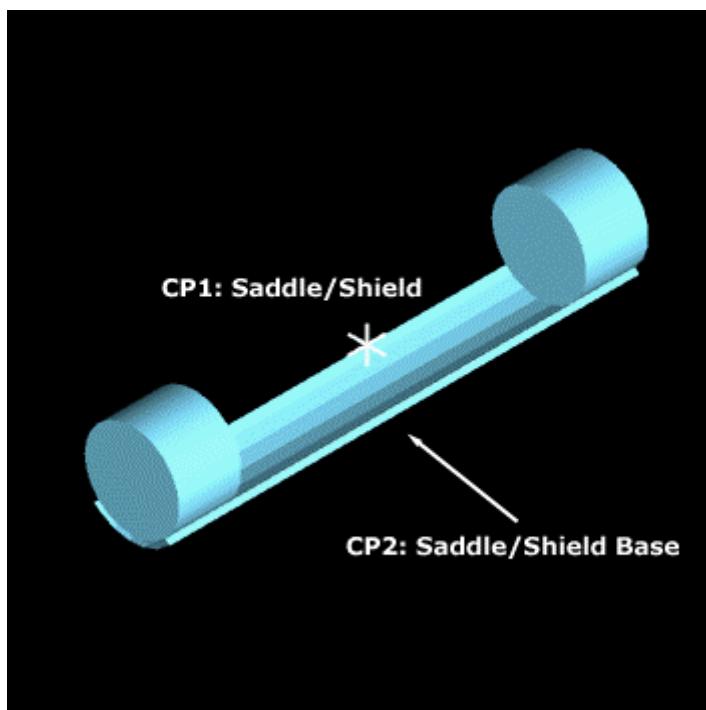
Output name 5 = "CYLINDER2"

Input name(2) = "B"

Input name(3) = "PIPE\_DIA"

Input name(4) = "R"

Input name(5) = "S1"



## Lisega\_TYPE55

**Description:** Lisega Size <size> Lift Off Restraint

**Symbol Name:** HS\_Lisega.Lisega\_TYPE55

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE55

**User Class Name:** Lift Off Restraint

**Part Number:** Lisega\_TYPE55\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE55

Output name 1 = "Port1"

Output name 2 = "BOX2"

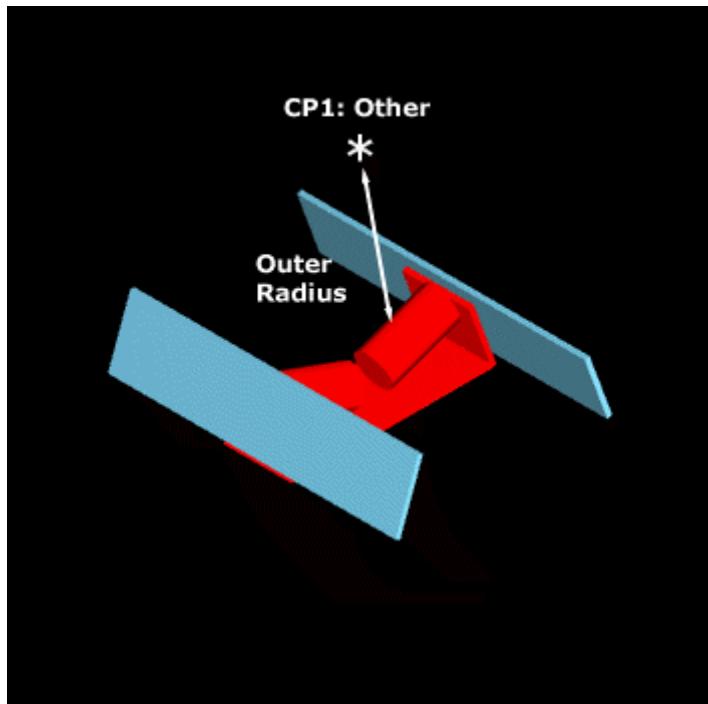
Output name 3 = "BOX3"

Input name(2) = "RADIUS"

Input name(3) = "C"

Input name(4) = "S"

Input name(5) = "A1"



## Lisega\_TYPE56A

**Description:** Lisega Size <size> Horizontal Pipe Clamp Base

**Symbol Name:** HS\_Lisega.Lisega\_TYPE56A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE56A

**User Class Name:** Horizontal Pipe Clamp Base

**Part Number:** Lisega\_TYPE56A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE56A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOT\_BOX5"

Output name 4 = "CYL1"

Output name 5 = "CYL2"

Output name 6 = "CYL3"

Output name 7 = "CYL4"

Output name 8 = "BOT\_BOX"

Output name 9 = "BASE\_BOX"

Output name 10 = "CYL1"

Output name 11 = "CYL2"

Output name 12 = "CYL3"

Output name 13 = "CYL4"

Input name(2) = "E"

Input name(3) = "ISO"

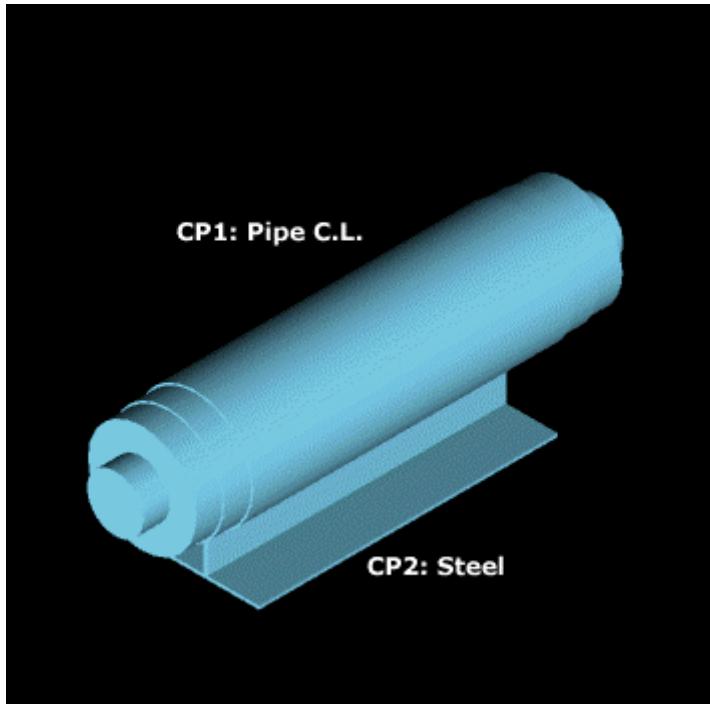
Input name(4) = "PIPE\_DIA"

Input name(5) = "FOOT\_TYPE"

Input name(6) = "B"

Input name(7) = "D"

Input name(8) = "C"



## Lisega\_TYPE56B

**Description:** Lisega Size <size> Cold Block Pipe Support

**Symbol Name:** HS\_Lisega.Lisega\_TYPE56B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE56B

**User Class Name:** Cold Block Pipe Support

**Part Number:** Lisega\_TYPE56B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE56B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "CYL2"

Output name 5 = "TOP\_BOX"

Output name 6 = "BOT\_BOX"

Output name 7 = "BASE\_BOX"

Input name(2) = "T"

Input name(3) = "OD"

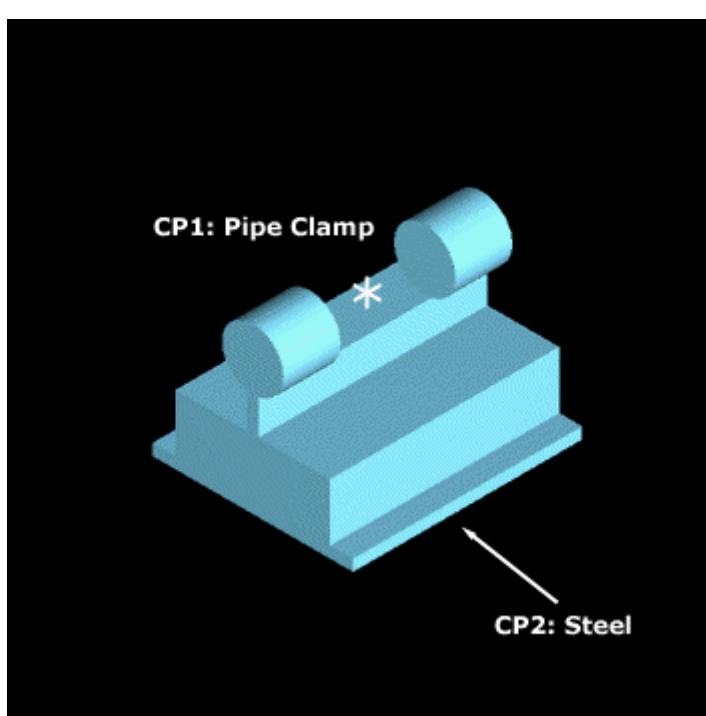
Input name(4) = "J"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "H"

Input name(8) = "E"



## Lisega\_TYPE57

**Description:** Lisega Size <size1> Weld On <size2> Pipe Shoe

**Symbol Name:** HS\_Lisega.Lisega\_TYPE57

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE57

**User Class Name:** Weld On Pipe Shoe

**Part Number:** Lisega\_TYPE57\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE57

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOT\_BOX1"

Output name 4 = "BOT\_BOX2"

Output name 5 = "BOT\_BOX3"

Output name 6 = "BOT\_BOX"

Output name 7 = "BASE\_BOX"

Input name(2) = "OD"

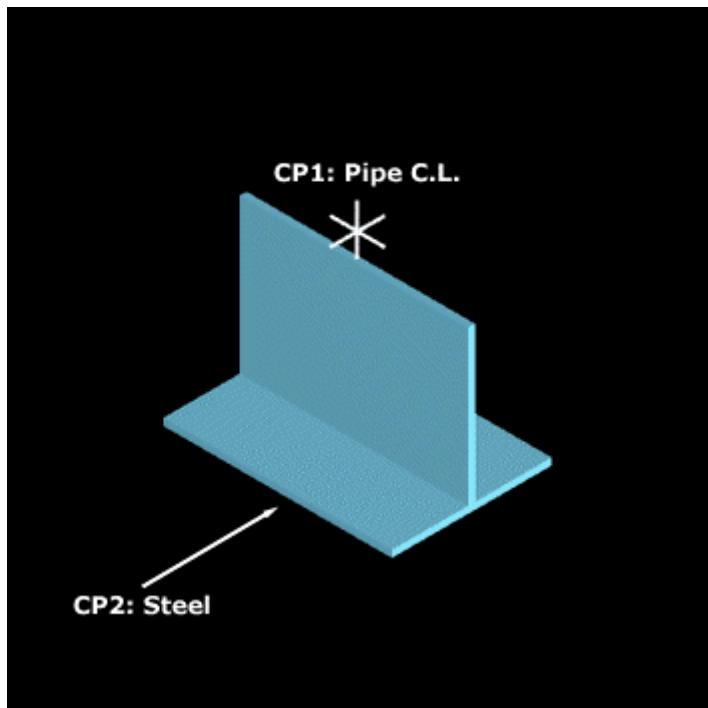
Input name(3) = "SIZE"

Input name(4) = "A1"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "E"



# Lisega\_TYPE58A

**Description:**

**Symbol Name:** HS\_Lisega.Lisega\_TYPE58A

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE58A

Output name 1 = "STANCHION2"

Output name 2 = "Port1"

Output name 3 = "Port2"

Output name 4 = "STANCHION"

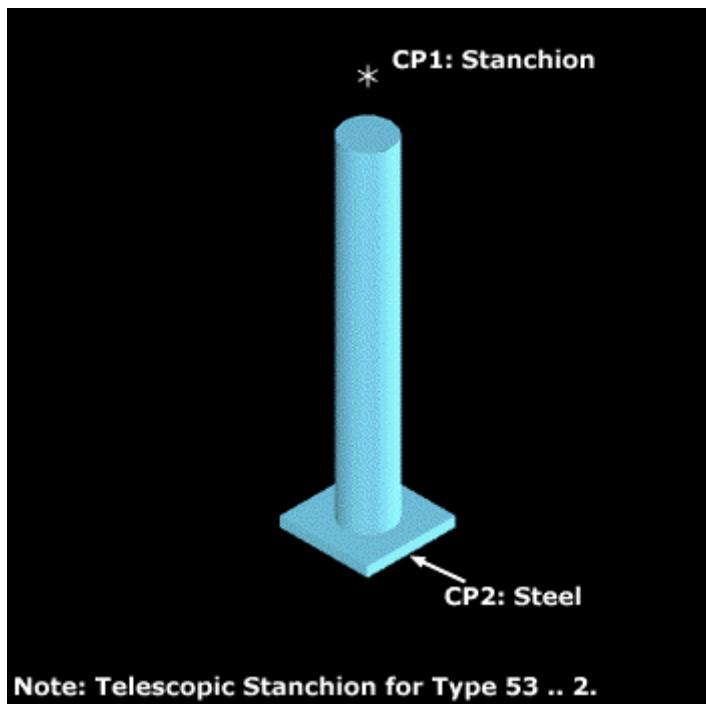
Output name 5 = "BASE"

Input name(2) = "Length"

Input name(3) = "SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "TYPE"



## Lisega\_TYPE58B

**Description:** Lisega Size <size> Stanchion for Horizontal Pipe

**Symbol Name:** HS\_Lisega.Lisega\_TYPE58B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE58B

**User Class Name:** Stanchion for Horizontal Pipe

**Part Number:** Lisega\_TYPE58B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE58B

Output name 1 = "STANCHION2"

Output name 2 = "Port1"

Output name 3 = "Port2"

Output name 4 = "STANCHION"

Output name 5 = "BASE"

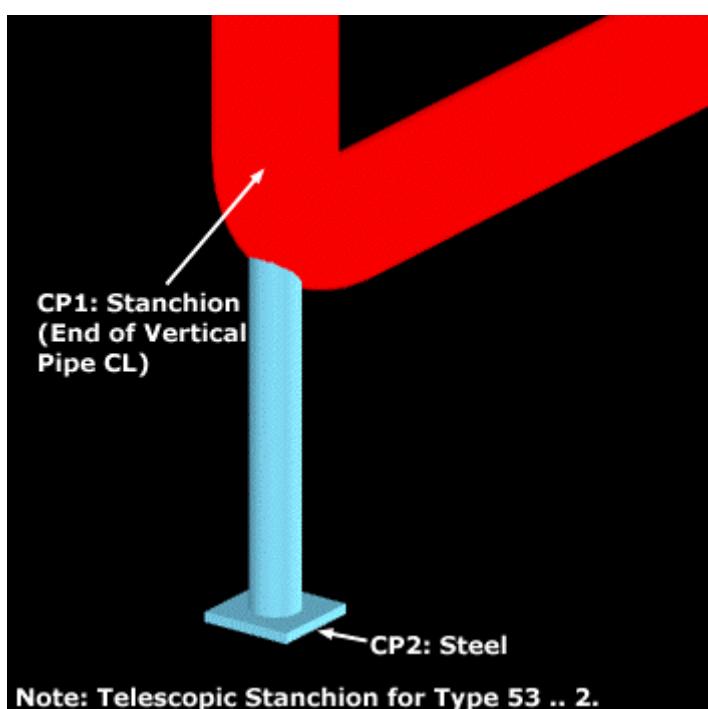
Input name(2) = "Length"

Input name(3) = "SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "TYPE"

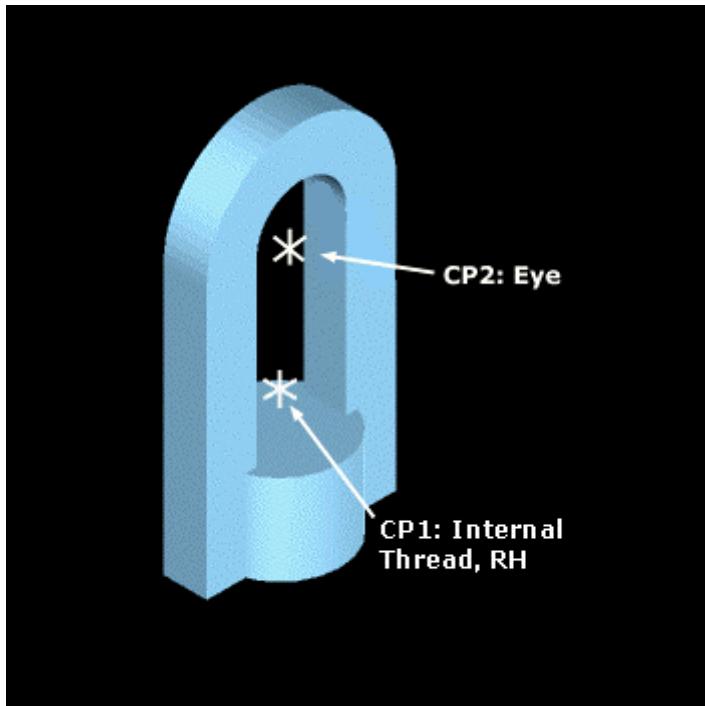
Input name(6) = "ELBOW\_RADIUS"



## Lisega\_TYPE60

**Description:** Lisega Size <size> Eye Nut  
**Symbol Name:** HS\_Lisega.Lisega\_TYPE60  
**Workbook:** HS\_Lisega.xls  
**Workbook Sheet:** Lisega\_TYPE60  
**User Class Name:** Eye Nut  
**Part Number:** Lisega\_TYPE60\_<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE60  
Output name 1 = "Port1"  
Output name 2 = "Port2"  
Output name 3 = "CYLINDER"  
Output name 4 = "BODY"  
Input name(2) = "F"  
Input name(3) = "X"  
Input name(4) = "E"  
Input name(5) = "A"  
Input name(6) = "SPACE"  
Input name(7) = "C"  
Input name(8) = "D"



## Lisega\_TYPE61

**Description:** Lisega Size <size> Clevis With Pin

**Symbol Name:** HS\_Lisega.Lisega\_TYPE61

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE61

**User Class Name:** Clevis With Pin

**Part Number:** Lisega\_TYPE61\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE61

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOTTOM"

Output name 4 = "BOTTOM"

Output name 5 = "LEFT"

Output name 6 = "RIGHT"

Output name 7 = "LEFT\_CYL"

Output name 8 = "RIGHT\_CYL"

Output name 9 = "PIN"

Input name(2) = "M"

Input name(3) = "X"

Input name(4) = "LOAD\_GRP"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "D"

Input name(9) = "PIN\_SIZE"

Input name(10) = "E"

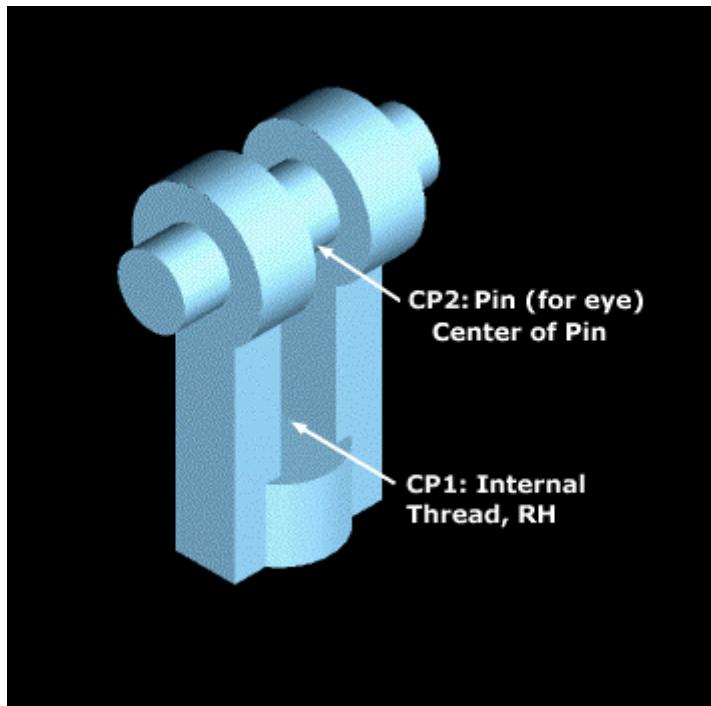
Input name(11) = "F"

Input name(12) = "G"

Input name(13) = "H"

Input name(14) = "K"

Input name(15) = "L"



## Lisega\_TYPE62

**Description:** Lisega Size <size> Turnbuckle

**Symbol Name:** HS\_Lisega.Lisega\_TYPE62

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE62

**User Class Name:** Turnbuckle

**Part Number:** Lisega\_TYPE62\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE62

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "BOTTOM"

Output name 5 = "RIGHT"

Output name 6 = "LEFT"

Output name 7 = "LH"

Input name(2) = "X"

Input name(3) = "WIDTH"

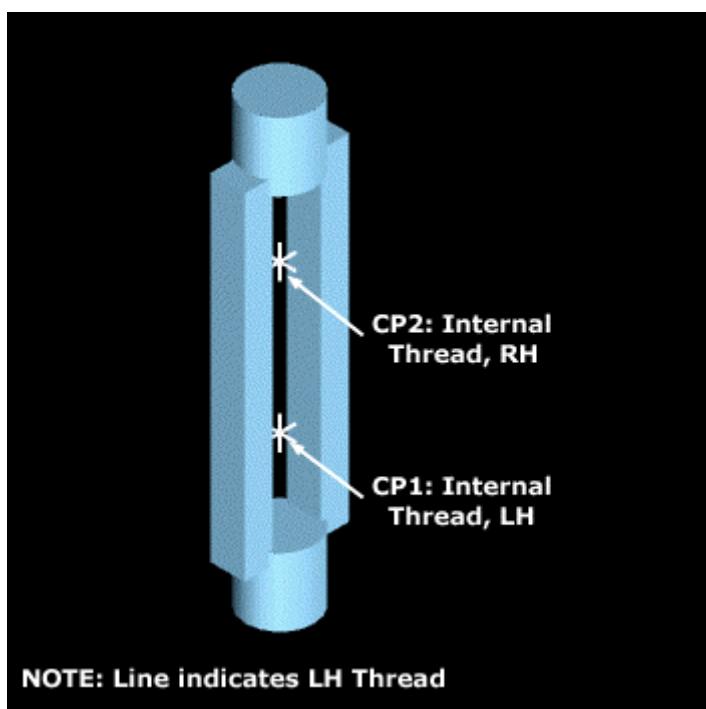
Input name(4) = "DEPTH"

Input name(5) = "E"

Input name(6) = "A"

Input name(7) = "C"

Input name(8) = "D"



## Lisega\_TYPE63

**Description:** Lisega Size <size> Hexagonal Nut

**Symbol Name:** HS\_Lisega.Lisega\_TYPE63

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE63

**User Class Name:** Hexagonal Nut

**Part Number:** Lisega\_TYPE63\_<number>

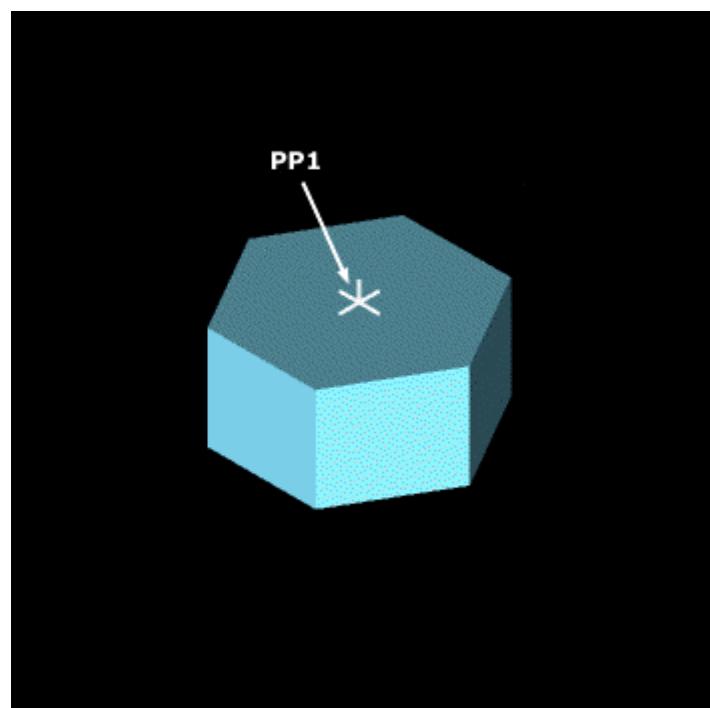
**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE63

Output name 1 = "NUT"

Input name(2) = "E"

Input name(3) = "M"



## Lisega\_TYPE64

**Description:** Lisega Size <size> Rod Coupling

**Symbol Name:** HS\_Lisega.Lisega\_TYPE64

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE64

**User Class Name:** Rod Coupling

**Part Number:** Lisega\_TYPE64\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE64

Output name 1 = "Port1"

Output name 2 = "CYLINDER1"

Output name 3 = "CYLINDER2"

Output name 4 = "BOX1"

Output name 5 = "BOX2"

Input name(2) = "D"

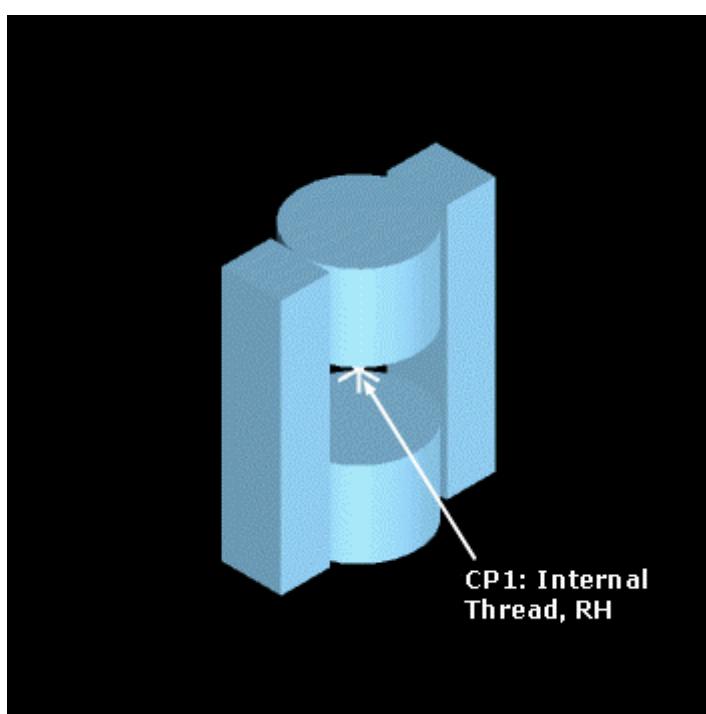
Input name(3) = "L"

Input name(4) = "W"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"



## Lisega\_TYPE65

**Description:** Lisega Size <size> Tie Rod LR

**Symbol Name:** HS\_Lisega.Lisega\_TYPE65

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE65

**User Class Name:** Tie Rod LR

**Part Number:** Lisega\_TYPE65\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE65

Output name 1 = "Port1"

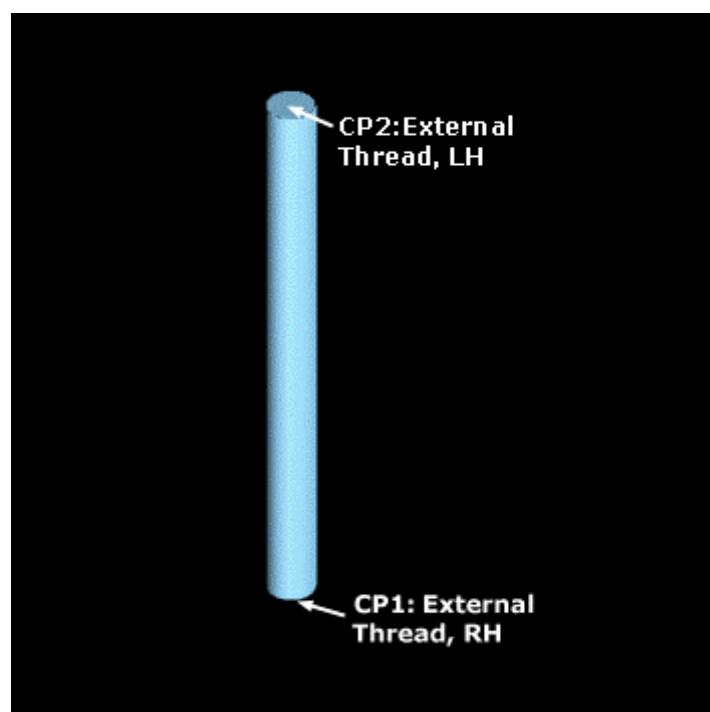
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "L5"

Input name(3) = "ROD\_DIA"

Input name(4) = "L"



## Lisega\_TYPE66\_LRG

**Description:** Lisega Size <size> Tie Rod Heavy

**Symbol Name:** HS\_Lisega.Lisega\_TYPE66\_LRG

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE66\_LRG

**User Class Name:** Tie Rod Heavy

**Part Number:** Lisega\_TYPE66\_LRG\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE66\_LRG

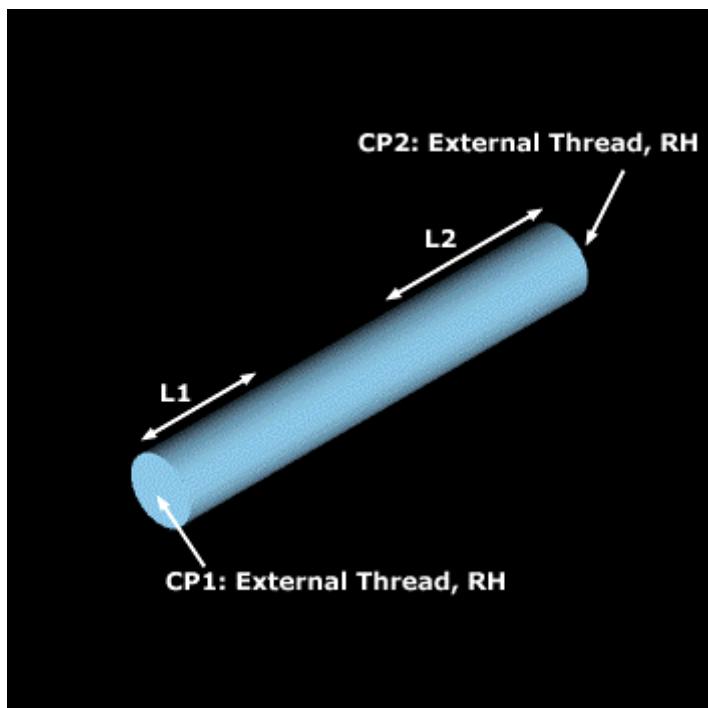
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"



## Lisega\_TYPE67A

**Description:** Lisega Size <size> Threaded Stud

**Symbol Name:** HS\_Lisega.Lisega\_TYPE67A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE67A

**User Class Name:** Threaded Stud

**Part Number:** Lisega\_TYPE67A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE67A

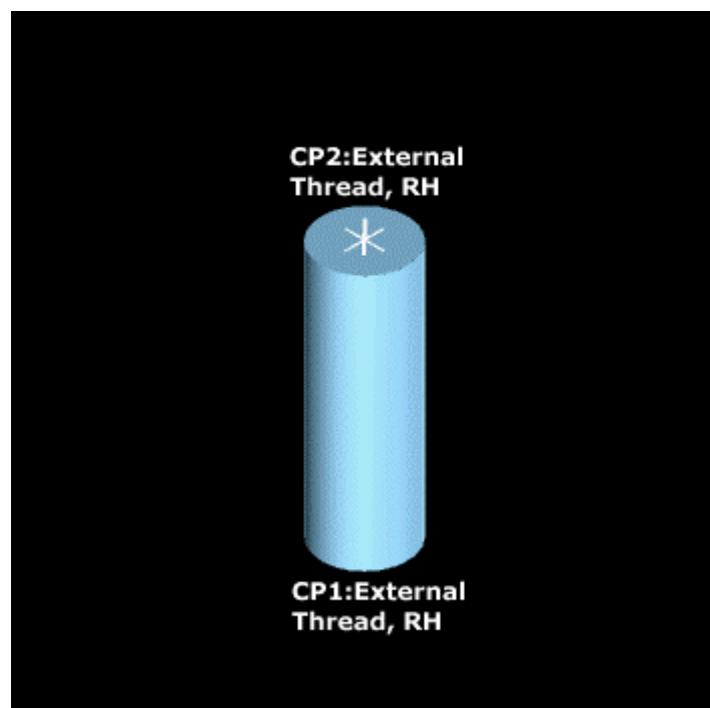
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "ROD\_DIA"

Input name(3) = "L"



## Lisega\_TYPE67B

**Description:** Lisega Size <size> Threaded Rod Light

**Symbol Name:** HS\_Lisega.Lisega\_TYPE67B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE67B

**User Class Name:** Threaded Rod Light

**Part Number:** Lisega\_TYPE67B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE67B

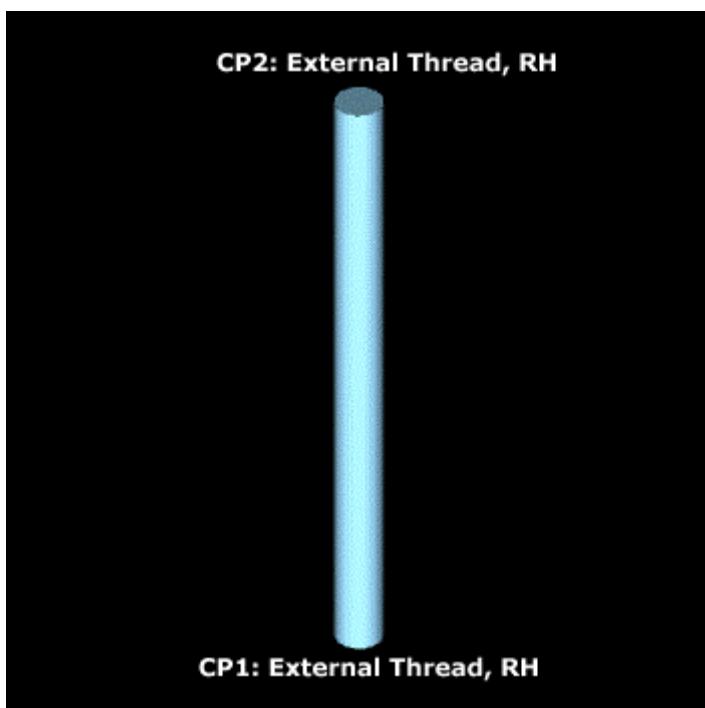
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"



# Lisega\_TYPE67C

**Description:**

**Symbol Name:** HS\_Lisega.Lisega\_TYPE67C

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE67C

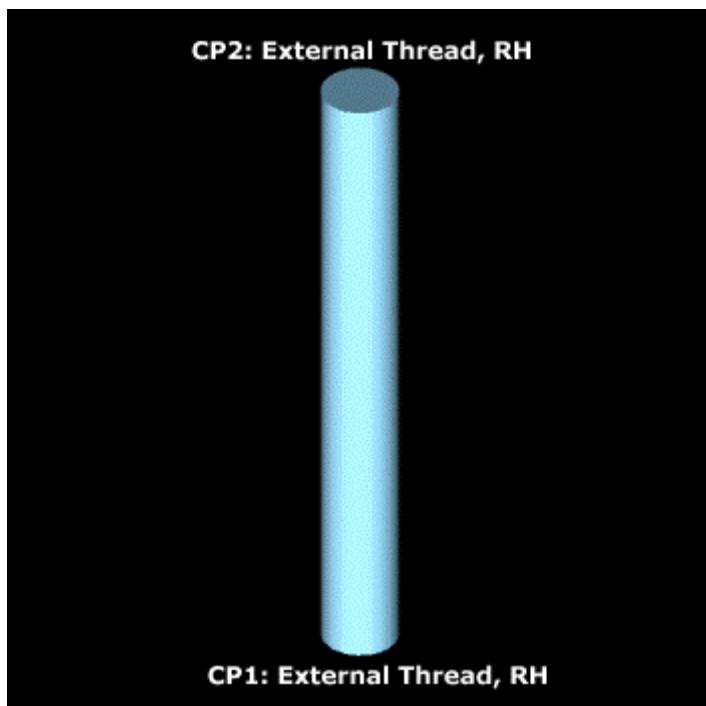
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"



## Lisega\_TYPE70

**Description:** Lisega Size <size> PTFE Slide Plate

**Symbol Name:** HS\_Lisega.Lisega\_TYPE70

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE70

**User Class Name:** PTFE Slide Plate

**Part Number:** Lisega\_TYPE70\_<number>

**Inputs, Outputs, and Aspects:**

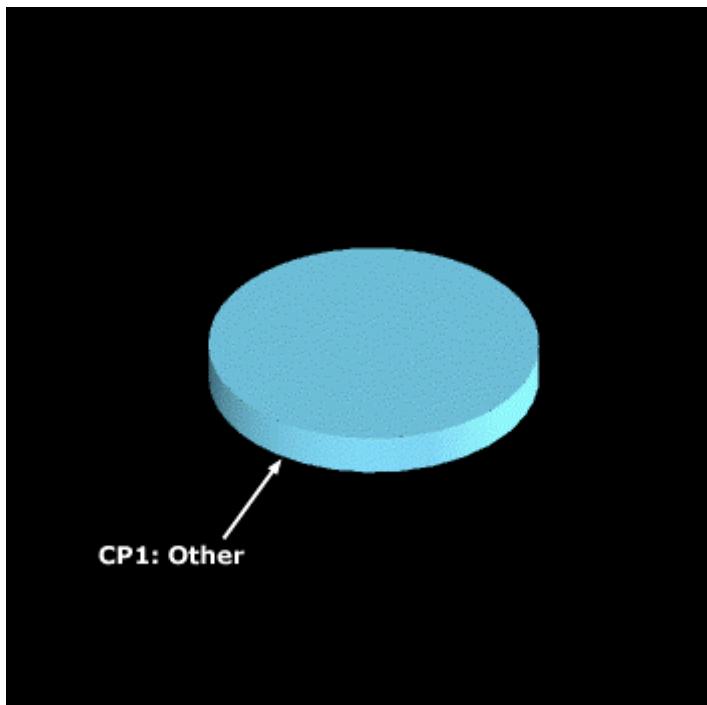
ProgID: HS\_Lisega.Lisega\_TYPE70

Output name 1 = "Port1"

Output name 2 = "CYLINDER2"

Input name(2) = "L1"

Input name(3) = "T"



## Lisega\_TYPE71A

**Description:** Lisega Size <size> Brackets for Constant Hanger Type 11

**Symbol Name:** HS\_Lisega.Lisega\_TYPE71A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE71A

**User Class Name:** Brackets for Constant Hanger Type 11

**Part Number:** Lisega\_TYPE71A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE71A

Output name 1 = "Port1"

Output name 2 = "BOX1"

Output name 3 = "BOX2"

Input name(2) = "PRESET"

Input name(3) = "SIZE"

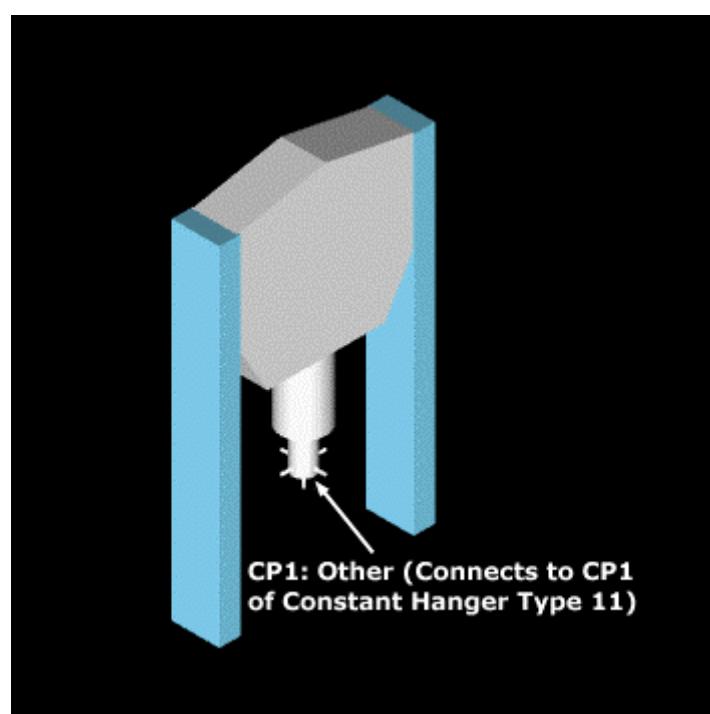
Input name(4) = "O"

Input name(5) = "E"

Input name(6) = "G"

Input name(7) = "A"

Input name(8) = "B"



**CP1: Other (Connects to CP1  
of Constant Hanger Type 11)**

## Lisega\_TYPE71B

**Description:** Lisega Size <size> Brackets for Constant Hanger Type 12\_13\_14

**Symbol Name:** HS\_Lisega.Lisega\_TYPE71B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE71B

**User Class Name:** Brackets for Constant Hanger Type 12\_13\_14

**Part Number:** Lisega\_TYPE71B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE71B

Output name 1 = "Port1"

Output name 2 = "BOX1"

Output name 3 = "BOX2"

Input name(2) = "PRESET"

Input name(3) = "SIZE"

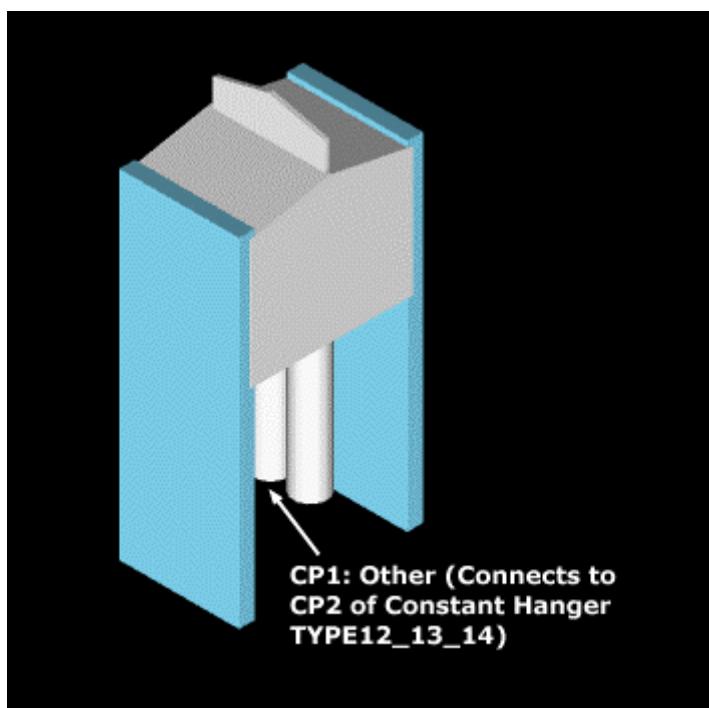
Input name(4) = "G2"

Input name(5) = "O"

Input name(6) = "G"

Input name(7) = "A"

Input name(8) = "B"



## Lisega\_TYPE72

**Description:** Lisega Size <size> Base Plate for Spring Hanger Type 25

**Symbol Name:** HS\_Lisega.Lisega\_TYPE72

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE72

**User Class Name:** Base Plate for Spring Hanger Type 25

**Part Number:** Lisega\_TYPE72\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE72

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

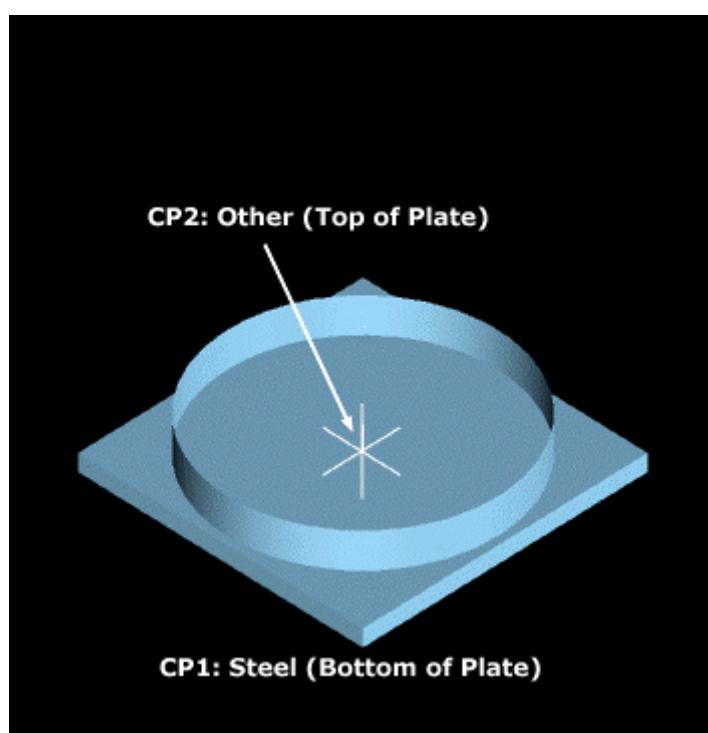
Output name 4 = "BASE"

Input name(2) = "E"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "F"



## Lisega\_TYPE73

**Description:** Lisega Size <size> Weld-On Clevis With Pin

**Symbol Name:** HS\_Lisega.Lisega\_TYPE73

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE73

**User Class Name:** Weld-On Clevis With Pin

**Part Number:** Lisega\_TYPE73\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE73

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOX1"

Output name 4 = "BOX2"

Output name 5 = "BODY\_FRONT"

Output name 6 = "BODY\_BACK"

Output name 7 = "BOX"

Output name 8 = "CYLINDER"

Input name(2) = "M"

Input name(3) = "LOAD\_GRP"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "PIN\_DIA"

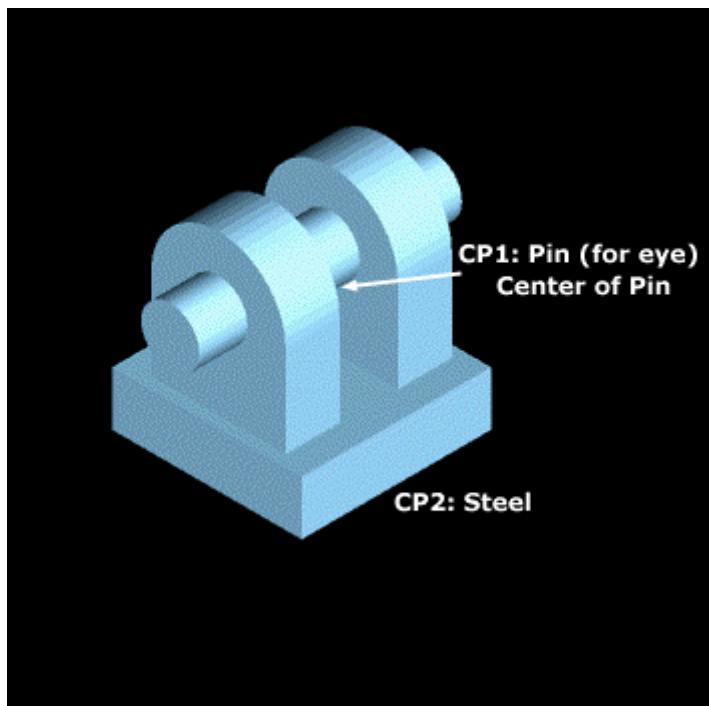
Input name(7) = "E"

Input name(8) = "F"

Input name(9) = "G"

Input name(10) = "H"

Input name(11) = "K"



## Lisega\_TYPE74

**Description:** Lisega Size <size> Spherical Washer w/Weld On Plate

**Symbol Name:** HS\_Lisega.Lisega\_TYPE74

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE74

**User Class Name:** Spherical Washer w/Weld On Plate

**Part Number:** Lisega\_TYPE74\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE74

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "BASE"

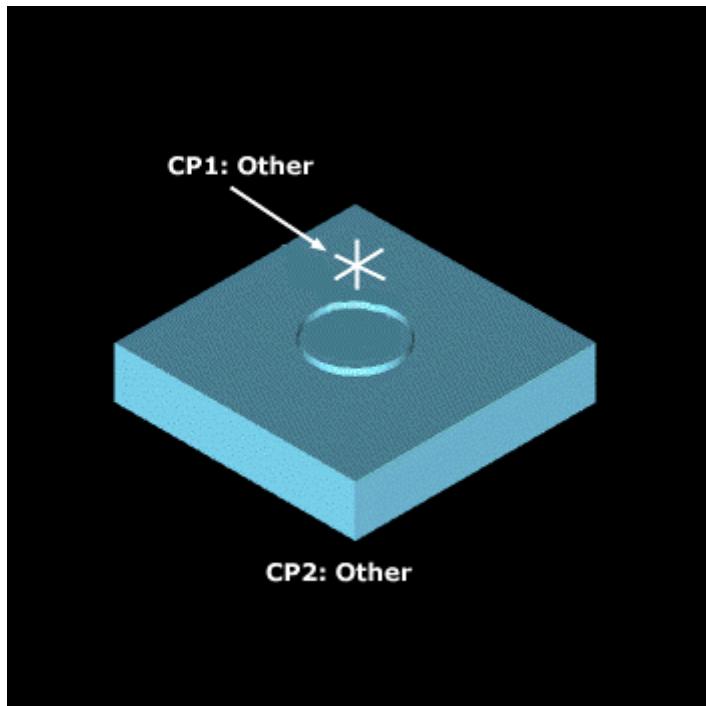
Input name(2) = "B"

Input name(3) = "S"

Input name(4) = "G"

Input name(5) = "E"

Input name(6) = "A"



## Lisega\_TYPE75

**Description:** Lisega Size <size> Weld-On Eye Plate

**Symbol Name:** HS\_Lisega.Lisega\_TYPE75

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE75

**User Class Name:** Weld-On Eye Plate

**Part Number:** Lisega\_TYPE75\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE75

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

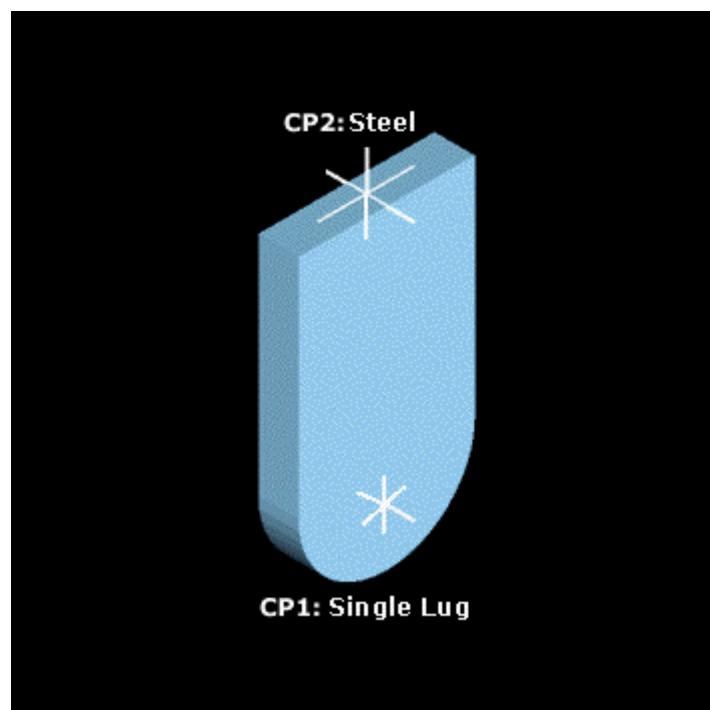
Output name 4 = "HOLE"

Input name(2) = "CYL\_DIA"

Input name(3) = "A"

Input name(4) = "E"

Input name(5) = "S"



## Lisega\_TYPE76A

**Description:** Lisega Size *<size>* Beam Adapter

**Symbol Name:** HS\_Lisega.Lisega\_TYPE76A

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE76A

**User Class Name:** Beam Adapter

**Part Number:** Lisega\_TYPE76A\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE76A

Output name 1 = "Port1"

Output name 2 = "Port2"

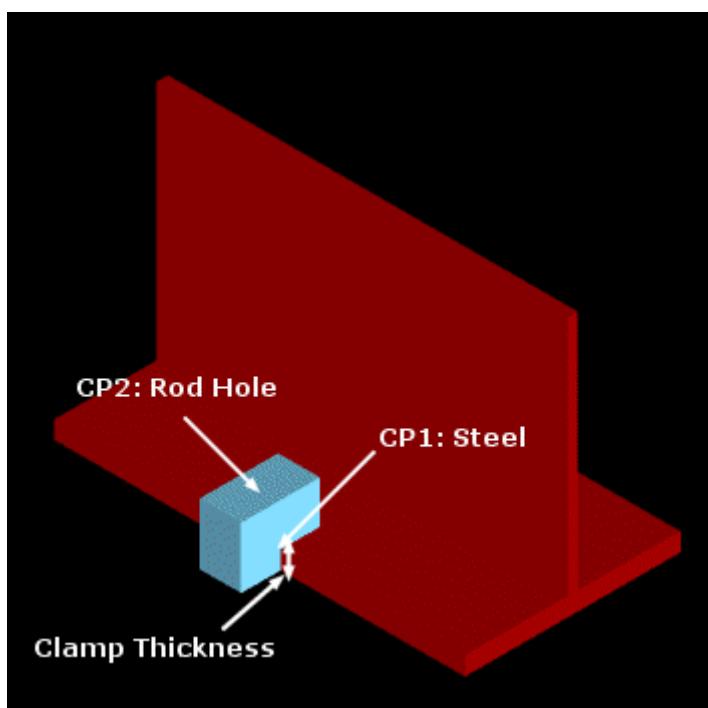
Output name 3 = "BOX1"

Input name(2) = "T"

Input name(3) = "B"

Input name(4) = "H"

Input name(5) = "A"



## Lisega\_TYPE76B

**Description:** Lisega Size <size> Guide with Beam Adapters

**Symbol Name:** HS\_Lisega.Lisega\_TYPE76B

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE76B

**User Class Name:** Guide with Beam Adapters

**Part Number:** Lisega\_TYPE76B\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE76B

Output name 1 = "Port1"

Output name 2 = "RESTRAINT1"

Output name 3 = "RESTRAINT2"

Output name 4 = "BOX1"

Output name 5 = "BOX2"

Output name 6 = "BOX3"

Output name 7 = "BOX4"

Output name 8 = "BOX5"

Output name 9 = "BOX6"

Output name 10 = "BOX7"

Output name 11 = "BOX8"

Input name(2) = "CLAMP\_SIZE"

Input name(3) = "B"

Input name(4) = "SIZE"

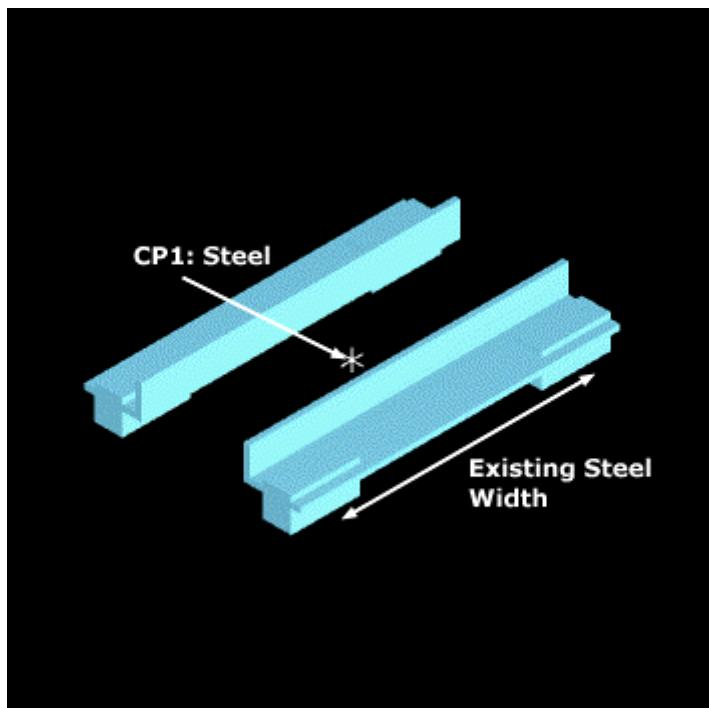
Input name(5) = "A1"

Input name(6) = "A2"

Input name(7) = "T"

Input name(8) = "C"

Input name(9) = "RES\_W"



## Lisega\_TYPE76C

**Description:** Lisega Size <size> Cantilever with Beam Adapters

**Symbol Name:** HS\_Lisega.Lisega\_TYPE76C

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE76C

**User Class Name:** Cantilever with Beam Adapters

**Part Number:** Lisega\_TYPE76C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE76C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOX1"

Output name 4 = "BOX2"

Output name 5 = "BOX3"

Output name 6 = "BOX4"

Input name(2) = "B"

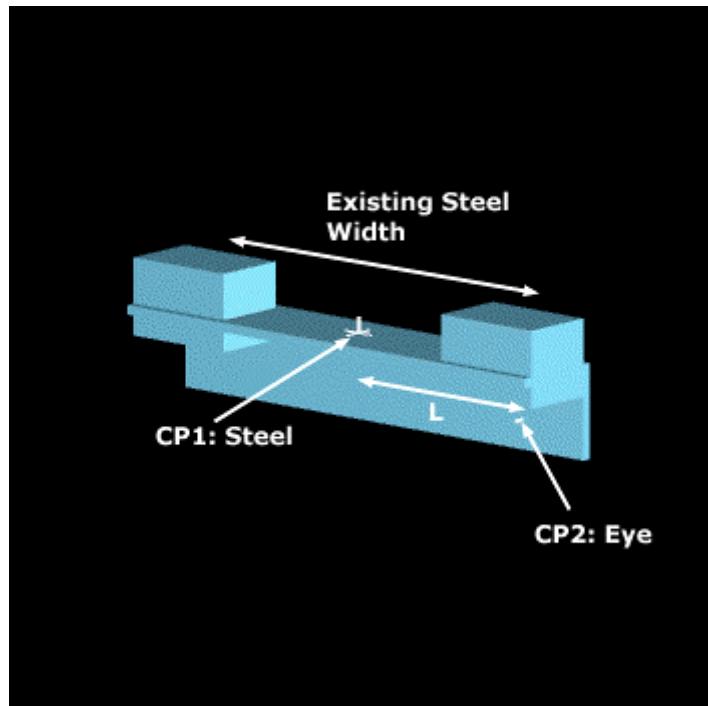
Input name(3) = "L"

Input name(4) = "E"

Input name(5) = "A"

Input name(6) = "S"

Input name(7) = "C"



## Lisega\_TYPE76D

**Description:** Lisega Size <size> Cantilever with Beam Adapters

**Symbol Name:** HS\_Lisega.Lisega\_TYPE76D

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE76D

**User Class Name:** Cantilever with Beam Adapters

**Part Number:** Lisega\_TYPE76D\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE76D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BOX1"

Output name 4 = "BOX2"

Output name 5 = "BOX3"

Output name 6 = "BOX4"

Input name(2) = "B"

Input name(3) = "L"

Input name(4) = "E"

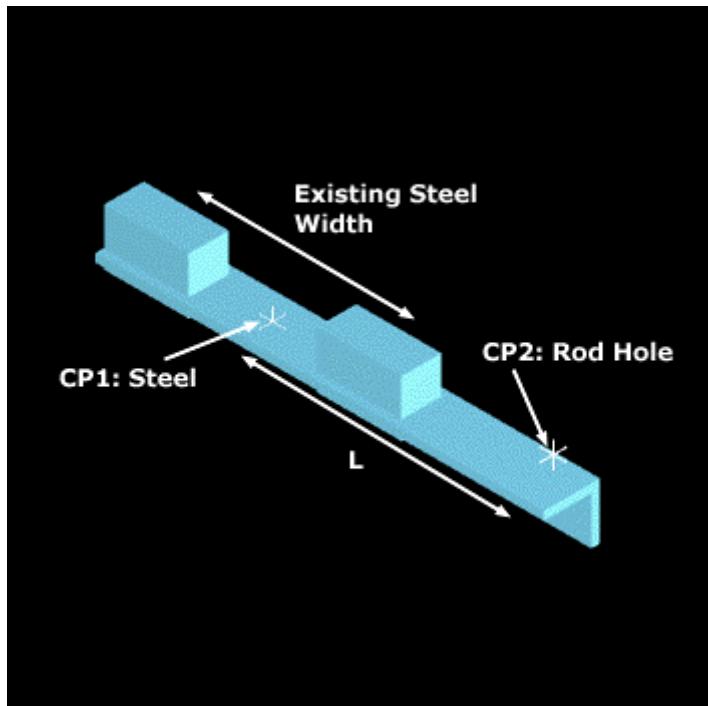
Input name(5) = "EE"

Input name(6) = "A"

Input name(7) = "S"

Input name(8) = "D3"

Input name(9) = "C"



## Lisega\_TYPE77

**Description:** Lisega Size <size> Connecting Plates for Pipe Clamps

**Symbol Name:** HS\_Lisega.Lisega\_TYPE77

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE77

**User Class Name:** Connecting Plates for Pipe Clamps

**Part Number:** Lisega\_TYPE77\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE77

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "CYL1"

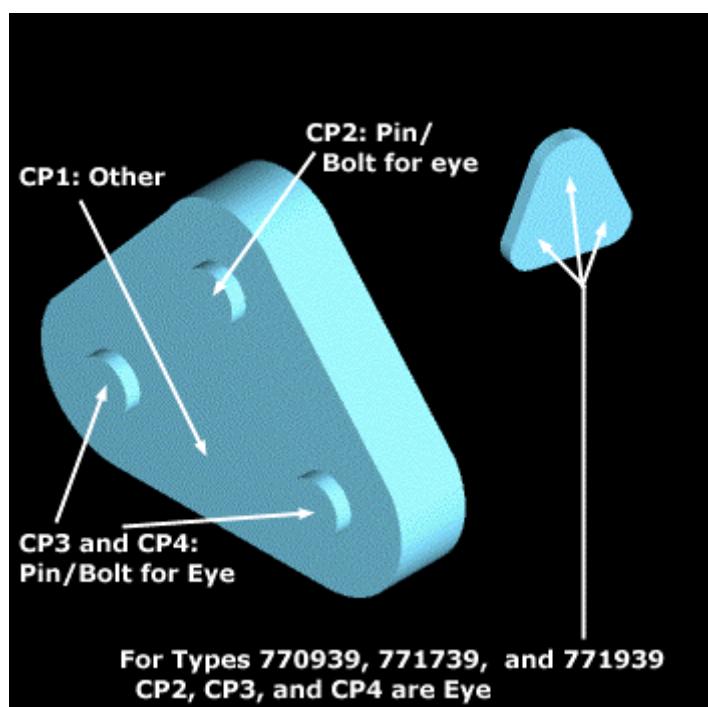
Output name 6 = "CYL2"

Output name 7 = "CYL3"

Output name 8 = "BODY1"

Input name(2) = "LOAD\_GRP"

Input name(3) = "SIZE"



## Lisega\_TYPE78

**Description:** Lisega Size <size> Beam Clamp

**Symbol Name:** HS\_Lisega.Lisega\_TYPE78

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE78

**User Class Name:** Beam Clamp

**Part Number:** Lisega\_TYPE78\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE78

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CYL1"

Output name 4 = "BASE"

Output name 5 = "BOX1"

Output name 6 = "BOX2"

Input name(2) = "WIDTH"

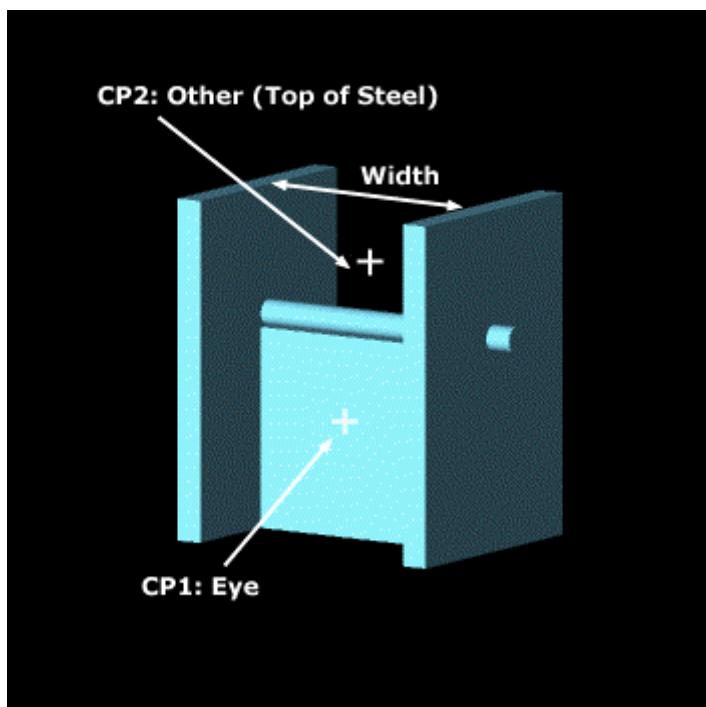
Input name(3) = "T"

Input name(4) = "A"

Input name(5) = "D"

Input name(6) = "S"

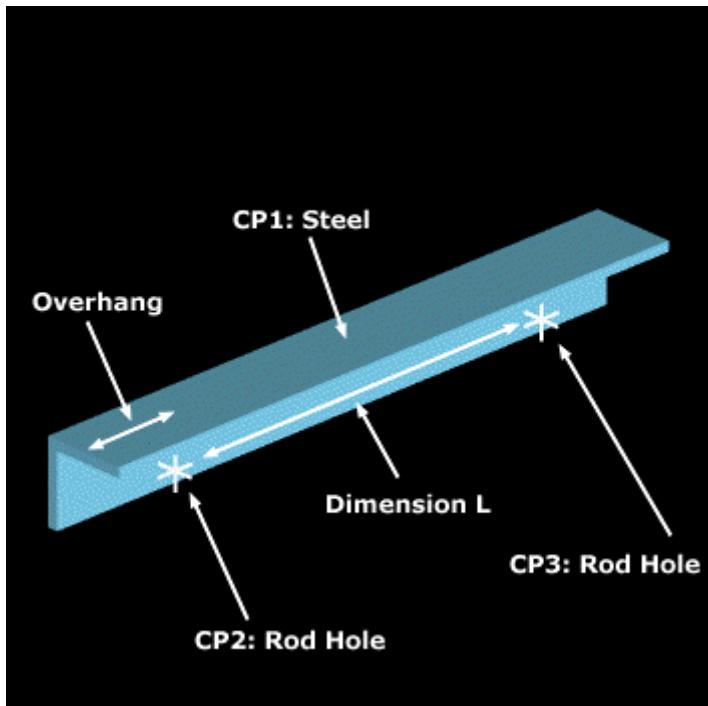
Input name(7) = "SIZE"



## Lisega\_TYPE79A

**Description:** Lisega Size *<size>* Trapeze  
**Symbol Name:** HS\_Lisega.Lisega\_TYPE79A  
**Workbook:** HS\_Lisega.xls  
**Workbook Sheet:** Lisega\_TYPE79A  
**User Class Name:** Trapeze  
**Part Number:** Lisega\_TYPE79A\_<number>  
**Inputs, Outputs, and Aspects:**

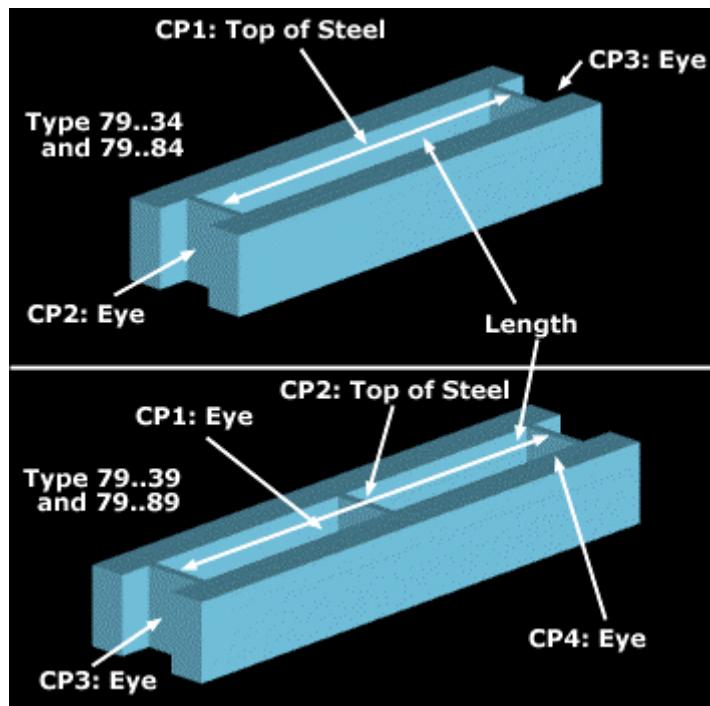
ProgID: HS\_Lisega.Lisega\_TYPE79A  
Output name 1 = "Port1"  
Output name 2 = "Port2"  
Output name 3 = "Port3"  
Output name 4 = "BODY"  
Input name(2) = "E"  
Input name(3) = "L"  
Input name(4) = "OVRHNG"  
Input name(5) = "A"  
Input name(6) = "HOLE\_DIA"



## Lisega\_TYPE79B

**Description:** Lisega Size <size> Trapeze  
**Symbol Name:** HS\_Lisega.Lisega\_TYPE79B  
**Workbook:** HS\_Lisega.xls  
**Workbook Sheet:** Lisega\_TYPE79B  
**User Class Name:** Trapeze  
**Part Number:** Lisega\_TYPE79B\_<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE79B  
Output name 1 = "Port1"  
Output name 2 = "Port2"  
Output name 3 = "Port3"  
Output name 4 = "Port4"  
Output name 5 = "Port5"  
Output name 6 = "Port6"  
Output name 7 = "Port7"  
Output name 8 = "BOX5"  
Output name 9 = "BOX1"  
Output name 10 = "BOX2"  
Output name 11 = "BOX3"  
Output name 12 = "BOX4"  
Input name(2) = "L"  
Input name(3) = "SIZE"  
Input name(4) = "C"  
Input name(5) = "U"  
Input name(6) = "E1"  
Input name(7) = "E2"  
Input name(8) = "B"  
Input name(9) = "D"  
Input name(10) = "S"  
Input name(11) = "E3"  
Input name(12) = "U1"  
Input name(13) = "B1"  
Input name(14) = "L\_MAX"



## Lisega\_TYPE79C

**Description:** Lisega Size <size> Constant Hanger Trapeze

**Symbol Name:** HS\_Lisega.Lisega\_TYPE79C

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE79C

**User Class Name:** Constant Hanger Trapeze

**Part Number:** Lisega\_TYPE79C\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE79C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BODY"

Output name 5 = "CYLINDER1"

Output name 6 = "CYLINDER2"

Output name 7 = "BODY2"

Output name 8 = "CYLINDER3"

Output name 9 = "CYLINDER4"

Output name 10 = "BOX1"

Input name(2) = "PRESET"

Input name(3) = "X"

Input name(4) = "USER\_LEN"

Input name(5) = "A"

Input name(6) = "D"

Input name(7) = "H"

Input name(8) = "O"

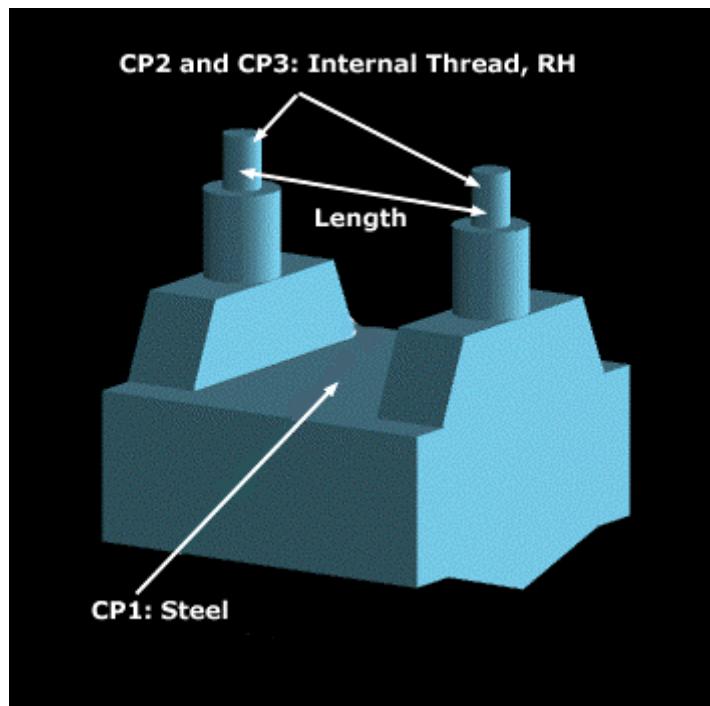
Input name(9) = "P"

Input name(10) = "L"

Input name(11) = "E3"

Input name(12) = "B"

Input name(13) = "E"



## Lisega\_TYPE79V1

**Description:** = Lisega Size <size> Large Variable Spring Hanger Trapeze

**Symbol Name:** HS\_Lisega.Lisega\_TYPE79V1

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE79V1

**User Class Name:** Variable Spring Hanger Trapeze

**Part Number:** Lisega\_TYPE79V1\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE79V1

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BODY"

Output name 5 = "TOP\_CYL"

Output name 6 = "BOT\_CYL"

Output name 7 = "BODY2"

Output name 8 = "TOP\_CYL2"

Output name 9 = "BOT\_CYL2"

Output name 10 = "BOX"

Input name(2) = "WORKING\_TRAV"

Input name(3) = "HOT\_LOAD"

Input name(4) = "DIR"

Input name(5) = "L"

Input name(6) = "SIZE"

Input name(7) = "LOAD\_GRP"

Input name(8) = "EXTRA\_LG"

Input name(9) = "B"

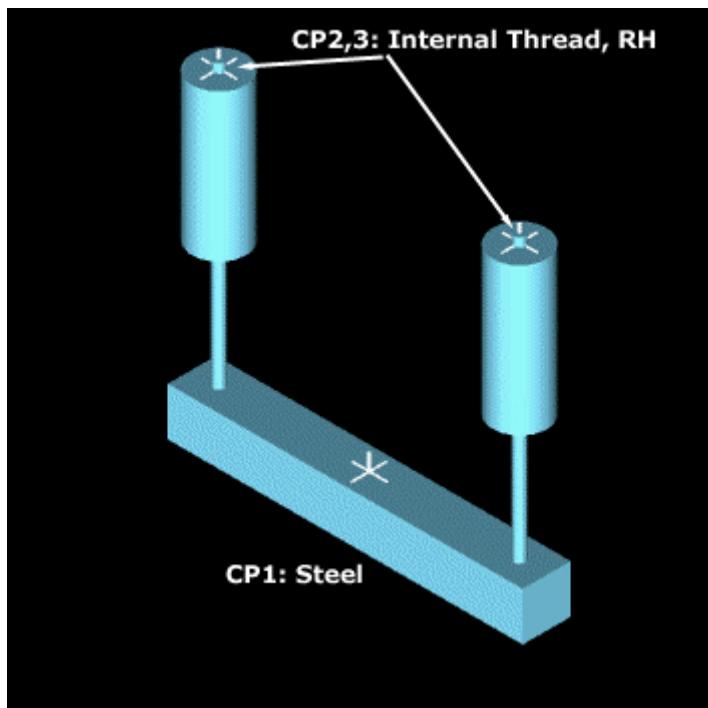
Input name(10) = "E"

Input name(11) = "X"

Input name(12) = "STEEL\_H"

Input name(13) = "A"

Input name(14) = "ROD\_DIA"



## Lisega\_TYPE79V2

**Description:** Lisega Size <size> Variable Spring Hanger Trapeze

**Symbol Name:** HS\_Lisega.Lisega\_TYPE79V2

**Workbook:** HS\_Lisega.xls

**Workbook Sheet:** Lisega\_TYPE79V2

**User Class Name:** Variable Spring Hanger Trapeze

**Part Number:** Lisega\_TYPE79V2\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Lisega.Lisega\_TYPE79V2

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "Port4"

Output name 5 = "BODY"

Output name 6 = "TOP\_CYL"

Output name 7 = "BOT\_CYL"

Output name 8 = "BODY2"

Output name 9 = "TOP\_CYL2"

Output name 10 = "BOT\_CYL2"

Output name 11 = "BOX"

Input name(2) = "WORKING\_TRAV"

Input name(3) = "HOT\_LOAD"

Input name(4) = "DIR"

Input name(5) = "L"

Input name(6) = "STEEL\_W"

Input name(7) = "SW"

Input name(8) = "EXTRA\_LG"

Input name(9) = "A"

Input name(10) = "TRAVEL\_RNG"

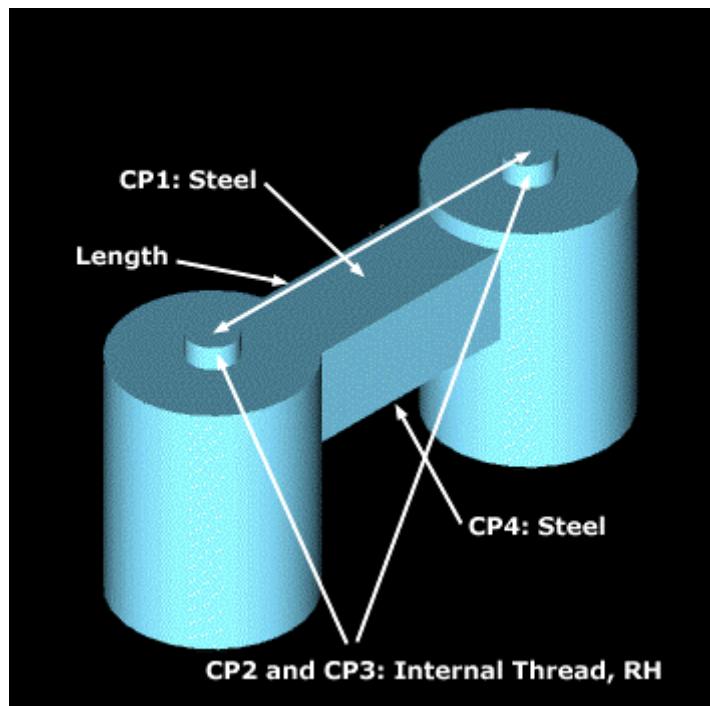
Input name(11) = "B"

Input name(12) = "E"

Input name(13) = "H2"

Input name(14) = "X"

Input name(15) = "STEEL\_H"



## LRParts FIG135N

**Description:** Load Rated Part FIG135N <size> Rod Coupling

**Symbol Name:** HS\_LRParts.LRParts FIG135N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG135N

**User Class Name:** Rod Coupling

**Part Number:** LRParts FIG135N\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG135N

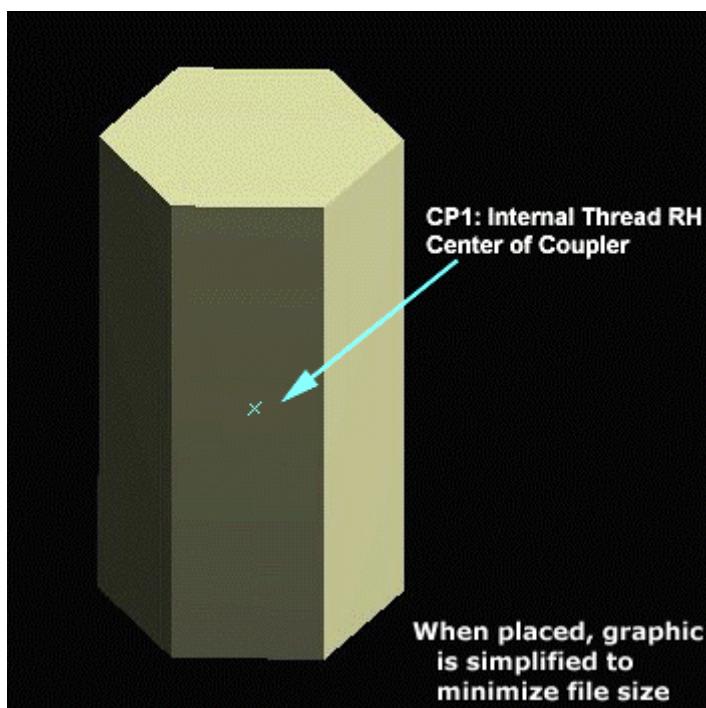
Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "COUPLING"

Input name(2) = "L"

Input name(3) = "D"



## LRParts FIG140N

**Description:** Load Rated Part FIG140N <size> End Threaded Rod Right Hand Thread

**Symbol Name:** HS\_LRParts.LRParts FIG140N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG140N

**User Class Name:** End Threaded Rod Right Hand Thread

**Part Number:** LRParts FIG140N\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG140N

Output name 1 = "Port1"

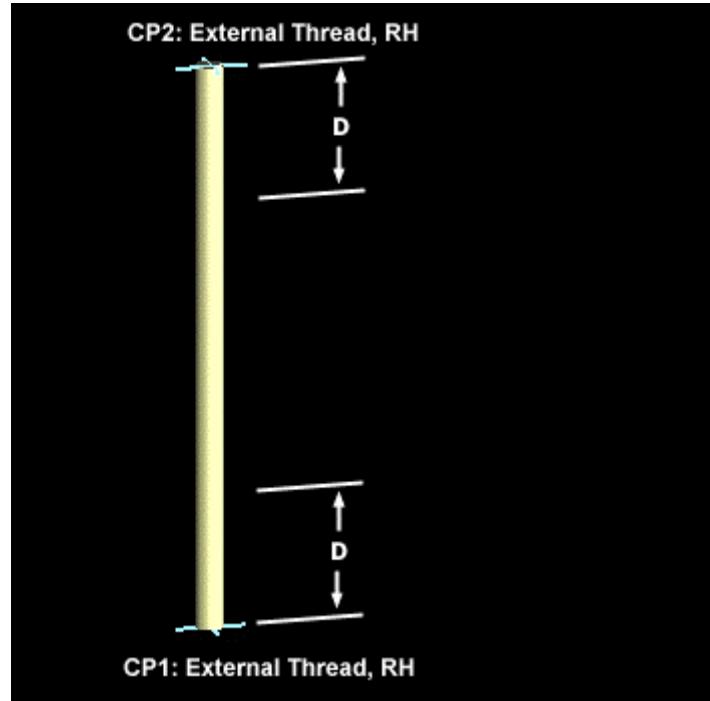
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## LRParts FIG212N

**Description:** Load Rated Part FIG212N <*size*> Medium Pipe Clamp

**Symbol Name:** HS\_LRParts.LRParts FIG212N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG212N

**User Class Name:** Medium Pipe Clamp

**Part Number:** LRParts FIG212N <*pipe diameter*>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG212N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

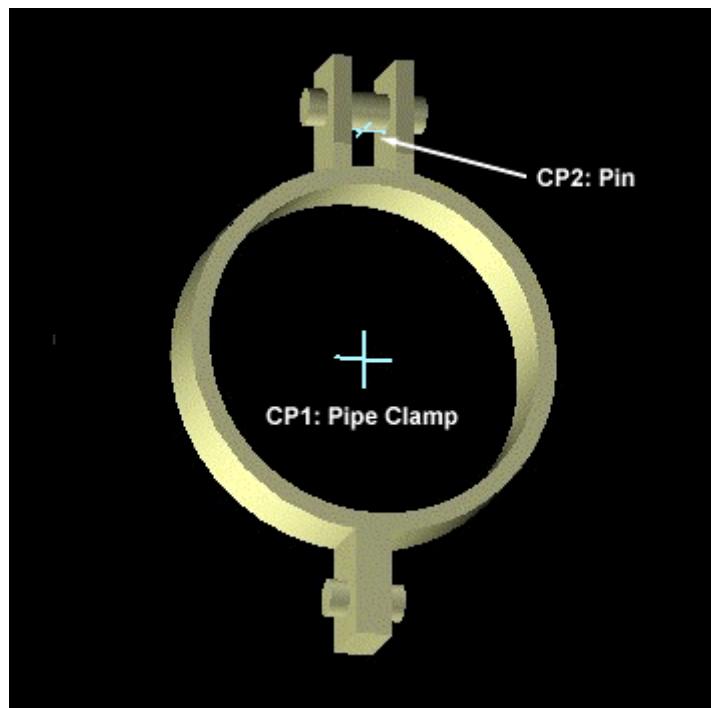
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## LRParts FIG216N

**Description:** Load Rated Part FIG216N <size> Heavy Pipe Clamp

**Symbol Name:** HS\_LRParts.LRParts FIG216N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG216N

**User Class Name:** Heavy Pipe Clamp

**Part Number:** LRParts FIG216N <pipe diameter>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG216N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

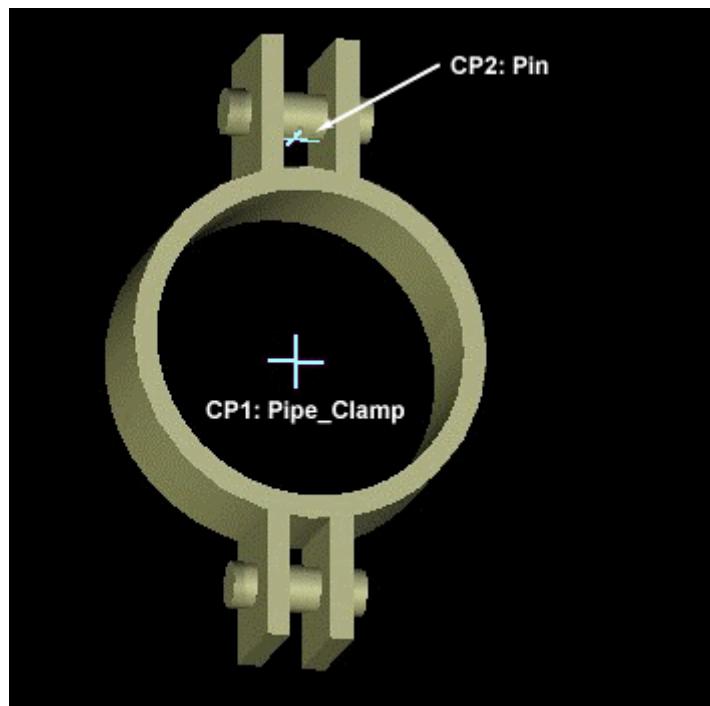
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## LRParts FIG230N

**Description:** Load Rated Part FIG230N <size> Forged Steel Turnbuckle (6 in Opening)

**Symbol Name:** HS\_LRParts.LRParts FIG230N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG230N

**User Class Name:** Forged Steel Turnbuckle

**Part Number:** LRParts FIG230N\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG230N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

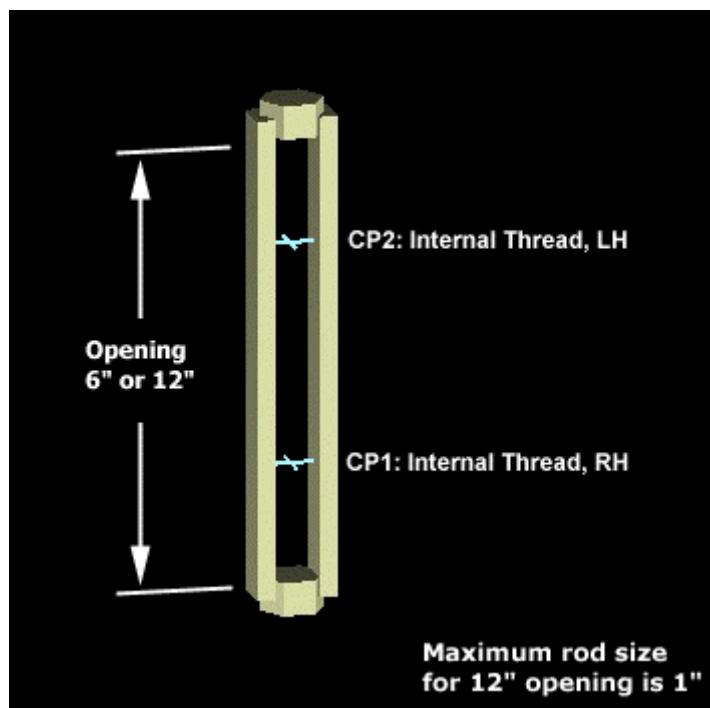
Output name 4 = "BOTTOM"

Output name 5 = "RIGHT"

Output name 6 = "LEFT"

Input name(2) = "OPENING"

Input name(3) = "ROD\_DIA"



## LRParts FIG253N

**Description:** Load Rated Part FIG253N <size> End Threaded Rod Right and Left Hand Thread

**Symbol Name:** HS\_LRParts.LRParts FIG253N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG253N

**User Class Name:** End Threaded Rod Right and Left Hand Thread

**Part Number:** LRParts FIG253N\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG253N

Output name 1 = "Port1"

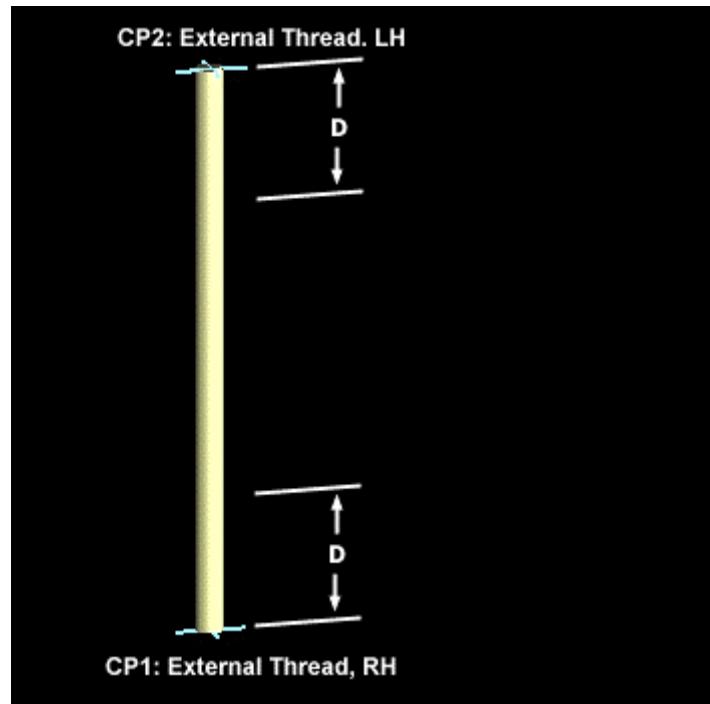
Output name 2 = "Port2"

Output name 3 = "ROD"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "WEIGHT\_PER\_LENGTH"



## LRParts FIG290LN

**Description:** Load Rated Part FIG290L <size> Weldless Eye Nut Left Hand

**Symbol Name:** HS\_LRParts.LRParts FIG290LN

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG290LN

**User Class Name:** Weldless Eye Nut Left Hand

**Part Number:** LRParts FIG290LN <size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG290LN

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "TOP\_CYL\_1"

Output name 5 = "TOP\_CYL\_2"

Output name 6 = "BOT\_CYL\_1"

Output name 7 = "BOT\_CYL\_2"

Output name 8 = "BOTTOM"

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

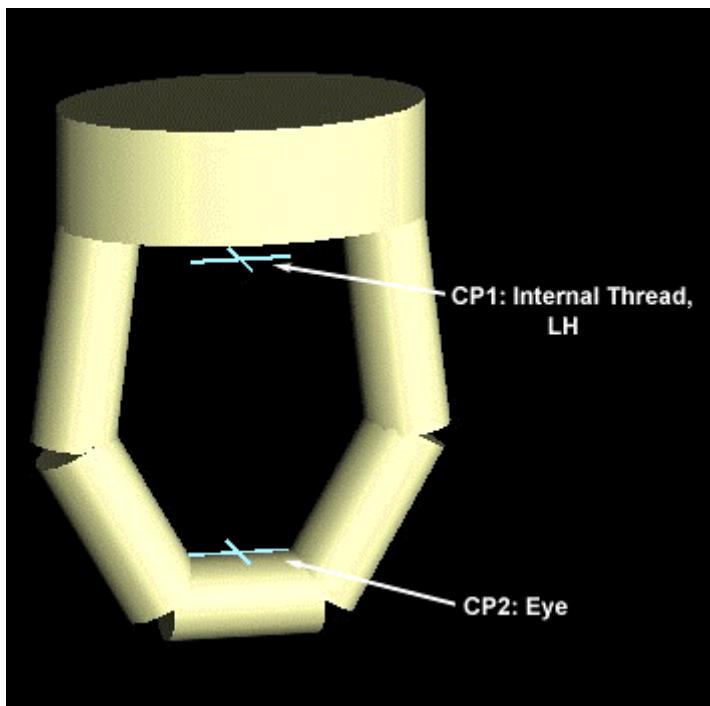
Input name(4) = "C"

Input name(5) = "D"

Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G"



## LRParts FIG290N

**Description:** Load Rated Part FIG290N <size> Weldless Eye Nut

**Symbol Name:** HS\_LRParts.LRParts FIG290N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG290N

**User Class Name:** Weldless Eye Nut

**Part Number:** LRParts FIG290N <size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG290N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "TOP\_CYL\_1"

Output name 5 = "TOP\_CYL\_2"

Output name 6 = "BOT\_CYL\_1"

Output name 7 = "BOT\_CYL\_2"

Output name 8 = "BOTTOM"

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

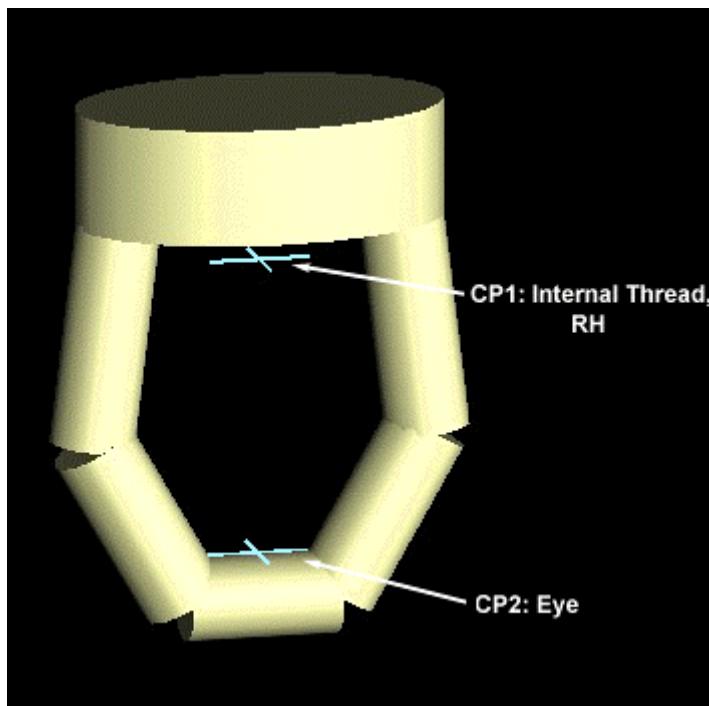
Input name(4) = "C"

Input name(5) = "D"

Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G"



## LRParts FIG295HN

**Description:** Load Rated Part FIG295HN <size> Heavy Double Bolt Pipe Clamp

**Symbol Name:** HS\_LRParts.LRParts FIG295HN

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG295HN

**User Class Name:** Heavy Double Bolt Pipe Clamp

**Part Number:** LRParts FIG295HN\_<pipe diameter>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG295HN

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Output name 10 = "MID\_BOLT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

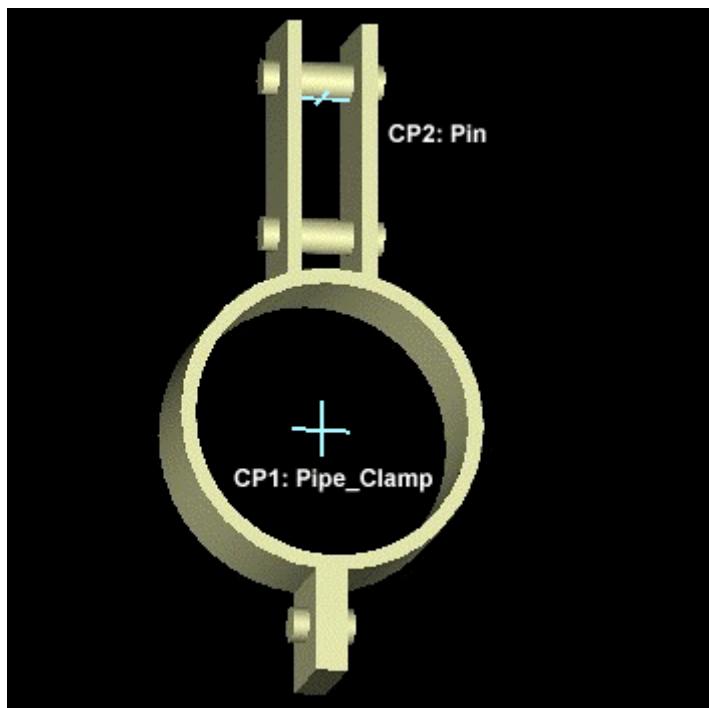
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## LRParts FIG295N

**Description:** Load Rated Part FIG295N <size> Double Bolt Pipe Clamp

**Symbol Name:** HS\_LRParts.LRParts FIG295N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG295N

**User Class Name:** Double Bolt Pipe Clamp

**Part Number:** LRParts FIG295N <pipe diameter>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG295N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Output name 10 = "MID\_BOLT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "B"

Input name(4) = "C"

Input name(5) = "D"

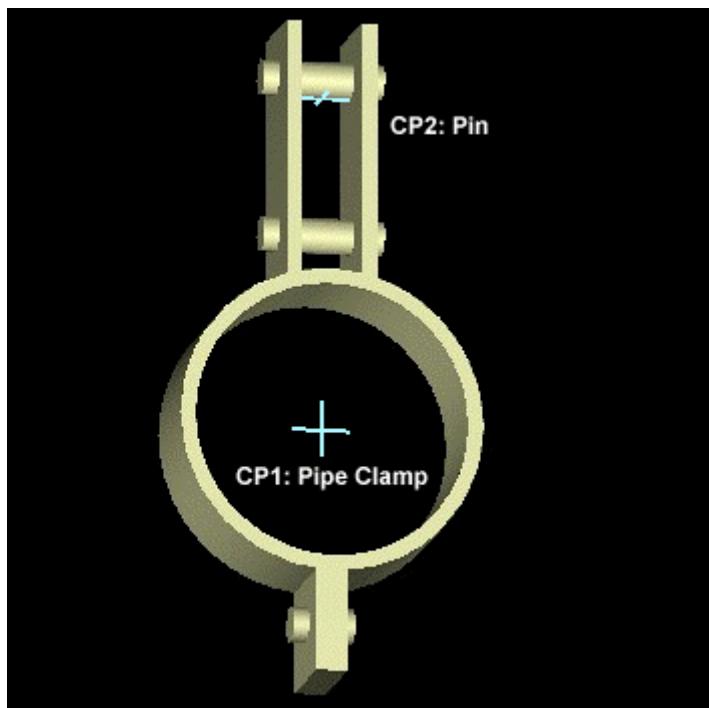
Input name(6) = "E"

Input name(7) = "F"

Input name(8) = "G1"

Input name(9) = "G2"

Input name(10) = "H"



## LRParts FIG299N

**Description:** Load Rated Part FIG299N <size> Forged Steel Clevis (With Pin)

**Symbol Name:** HS\_LRParts.LRParts FIG299N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG299N

**User Class Name:** Forged Steel Clevis

**Part Number:** LRParts FIG299N <size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG299N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "PIN"

Output name 4 = "TOP"

Output name 5 = "LEFT"

Output name 6 = "RIGHT"

Output name 7 = "LEFT\_CYL"

Output name 8 = "RIGHT\_CYL"

Input name(2) = "CONFIG"

Input name(3) = "ROD\_DIA"

Input name(4) = "A"

Input name(5) = "P"

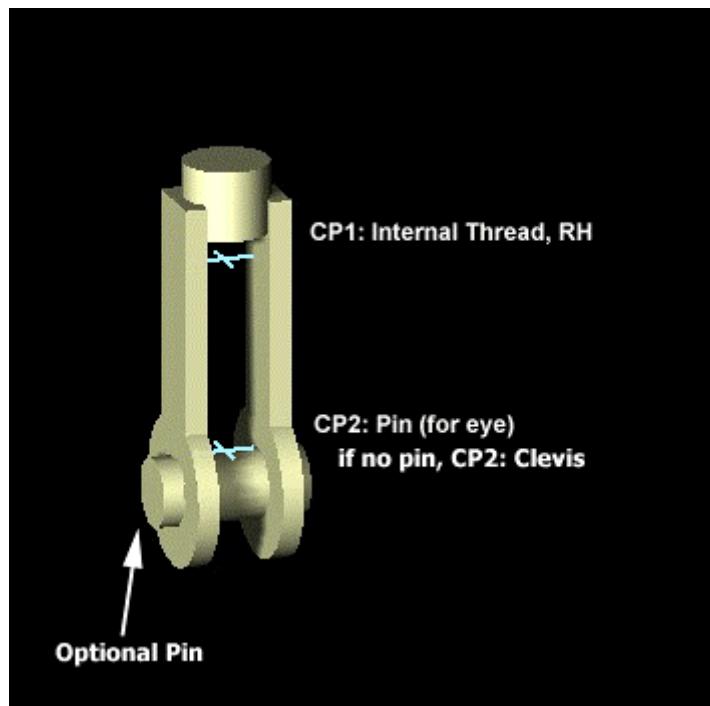
Input name(6) = "N"

Input name(7) = "GRIP"

Input name(8) = "D"

Input name(9) = "T"

Input name(10) = "W"



## LRParts FIG55NS

**Description:** Load Rated Part FIG55NS <size> Short Welding Lug

**Symbol Name:** HS\_LRParts.LRParts FIG55NS

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG55NS

**User Class Name:** Short Welding Lug

**Part Number:** LRParts FIG55NS <size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG55NS

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

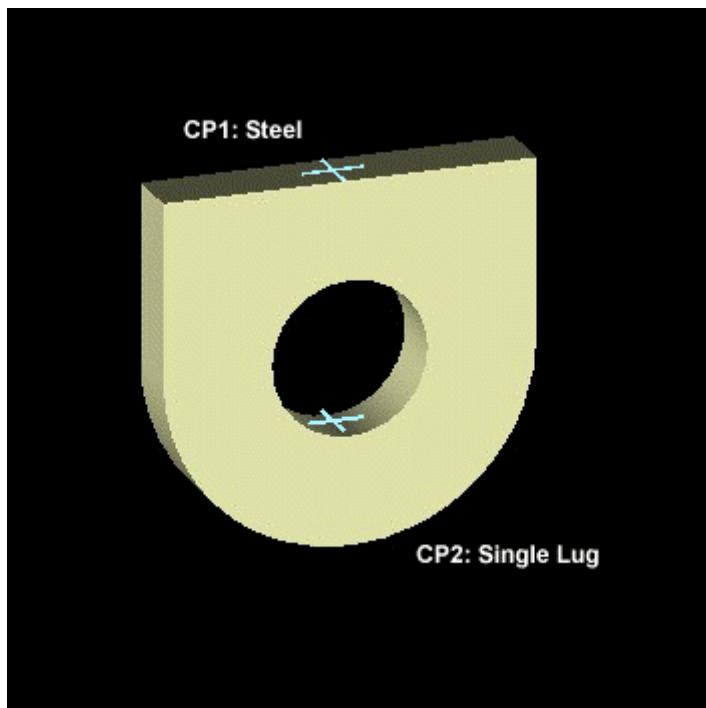
Input name(2) = "ROD\_DIA"

Input name(2) = "W"

Input name(3) = "F"

Input name(4) = "H"

Input name(5) = "T"



## LRParts FIG60N

**Description:** Load Rated Part FIG60N <size> Steel Washer Plate

**Symbol Name:** HS\_LRParts.LRParts FIG60N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG60N

**User Class Name:** Steel Washer Plate

**Part Number:** LRParts FIG60N <size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG60N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

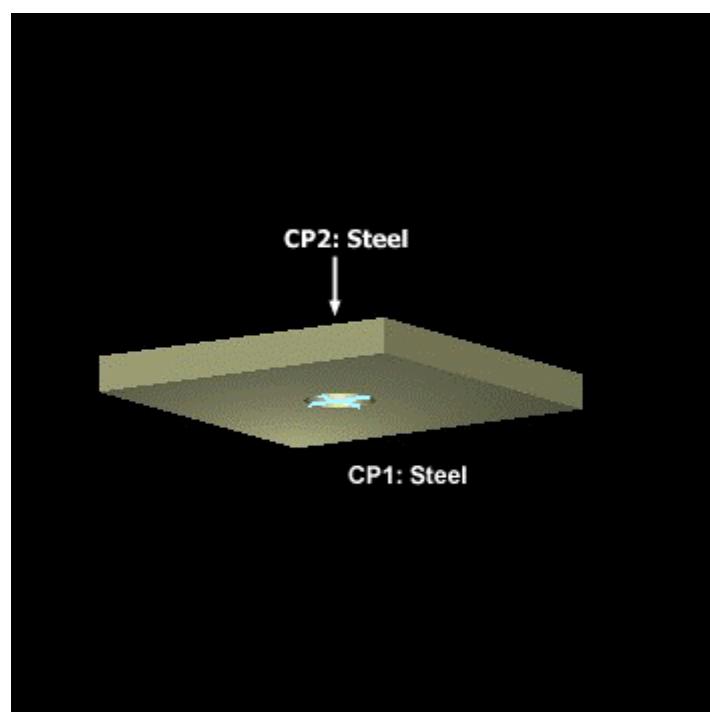
Output name 4 = "HOLE"

Input name(2) = "ROD\_DIA"

Input name(2) = "THICKNESS"

Input name(3) = "HOLE\_SIZE"

Input name(4) = "WIDTH"



## LRParts FIG66N

**Description:** Load Rated Part FIG66N <size> Welded Beam Attachment (Connect to Bolt)

**Symbol Name:** HS\_LRParts.LRParts FIG66N

**Workbook:** HS\_LRParts.xls

**Workbook Sheet:** LRParts FIG66N

**User Class Name:** Welded Beam Attachment

**Part Number:** LRParts FIG66N\_<size>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_LRParts.LRParts FIG66N

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "SIDE1"

Output name 5 = "SIDE2"

Output name 6 = "PIN"

Input name(2) = "PLACE\_MODE\_USER"

Input name(3) = "ROD\_DIA"

Input name(4) = "A"

Input name(5) = "E\_PRIME"

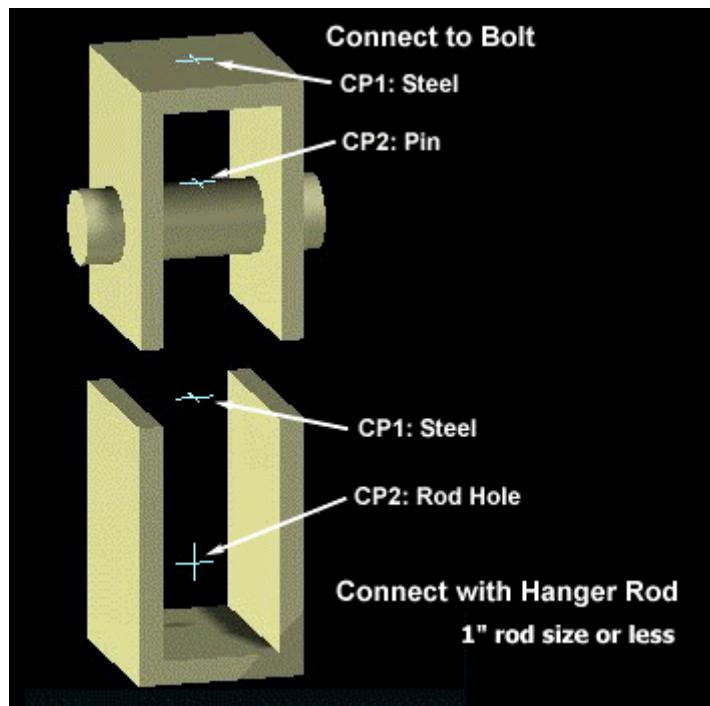
Input name(6) = "H"

Input name(7) = "R"

Input name(8) = "S"

Input name(9) = "B"

Input name(10) = "T"

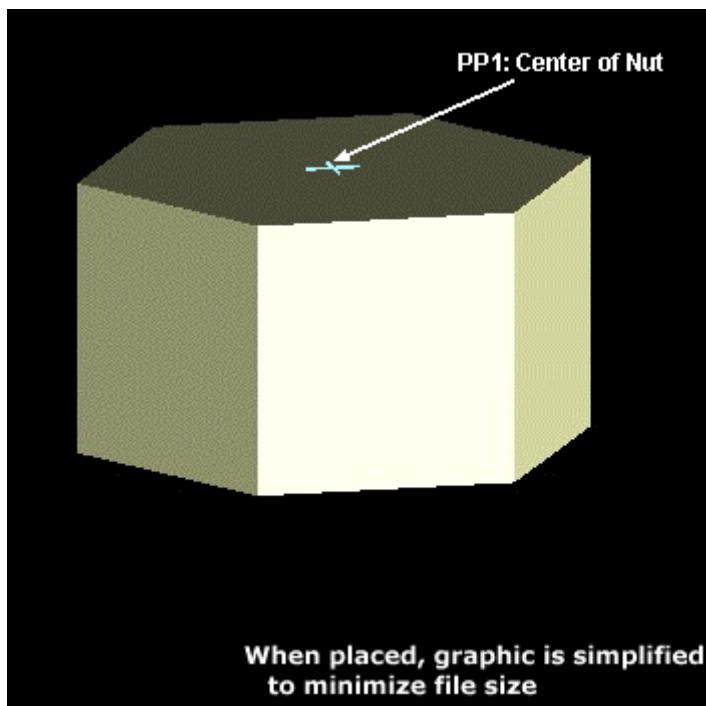


## LRParts\_hex\_nut

**Description:** Anvil <size> Standard Hex Nut  
**Symbol Name:** HS\_LRParts.LRParts\_hex\_nut  
**Workbook:** HS\_LRParts.xls  
**Workbook Sheet:** LRParts\_hex\_nut  
**User Class Name:** Standard Hex Nut  
**Part Number:** LRParts\_HEX\_NUT\_<size>

### Inputs, Outputs, and Aspects:

ProgID: HS\_LRParts.LRParts\_hex\_nut  
Output name 1 = "Port1"  
Output name 2 = "NUT"  
Input name(2) = "ROD\_DIA"  
Input name(3) = "W"  
Input name(4) = "T"



## PSL\_114

**Description:** lug attachment

**Symbol Name:** SP\_PSL.PSL\_114

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_114

**User Class Name:** Lug Attachment

**Part Number:** PSL\_114\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_114

Input name() As String

Input name(iNumInputs)

Input name(2) = "L"

Input name(3) = "W"

Input name(4) = "HOLE\_SIZE"

Input name(5) = "A"

Input name(6) = "T"



## PSL\_116

**Description:**

**Symbol Name:** SP\_PSL.PSL\_116

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_116

Input name(2) = "FW"

Input name(3) = "ST2"

Input name(4) = "SD2"

Input name(5) = "B"

Input name(6) = "BOLT\_SIZE"

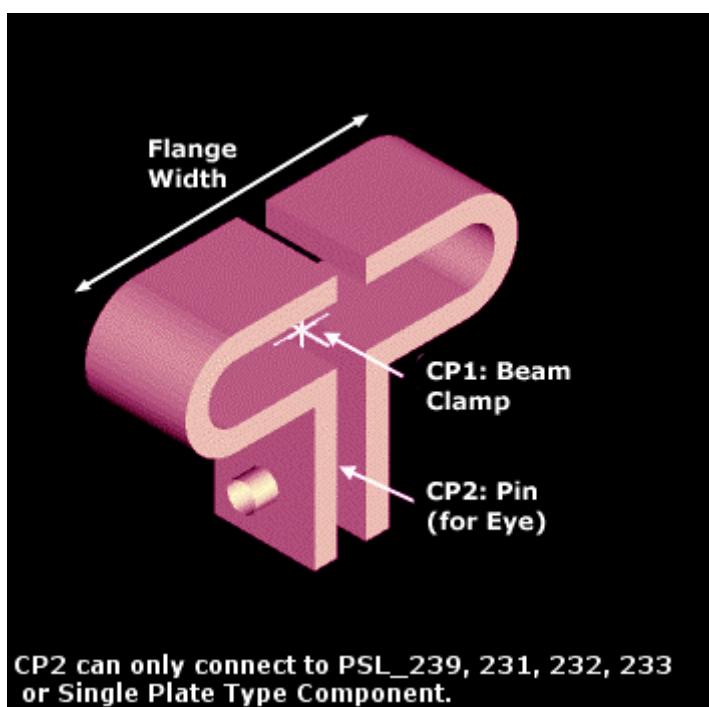
Input name(7) = "A"

Input name(8) = "FW1"

Input name(9) = "FW2"

Input name(10) = "ST1"

Input name(11) = "SD1"



## PSL\_118

**Description:**

**Symbol Name:** SP\_PSL.PSL\_118

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_118

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "EYE"

Output name 5 = "PIN"

Input name(2) = "FLANGE\_WIDTH"

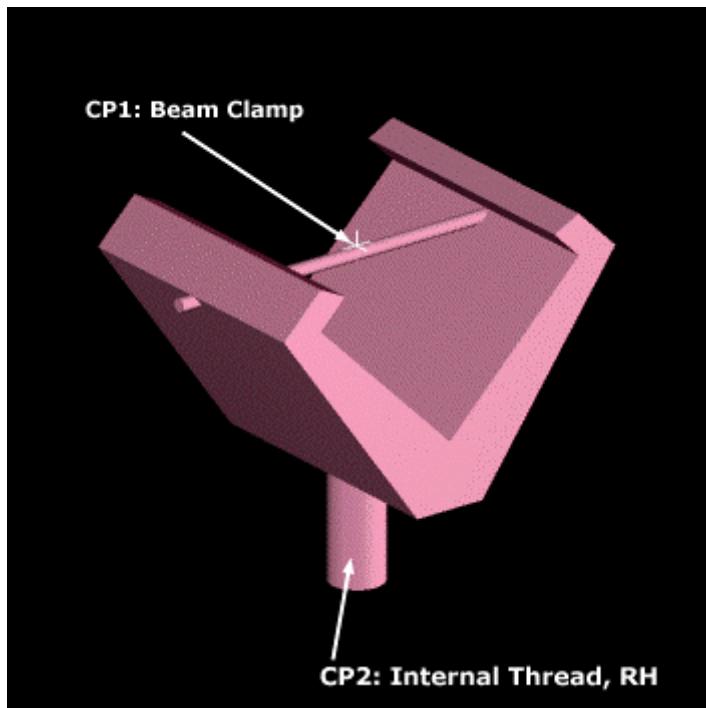
Input name(3) = "FLANGE\_THICKNESS"

Input name(4) = "E"

Input name(5) = "B"

Input name(6) = "ROD\_DIA"

Input name(7) = "SIZE"



## PSL\_122

**Description:**

**Symbol Name:** SP\_PSL.PSL\_122

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_122

**User Class Name:** Beam welding attachment (rod connection)

**Part Number:** PSL\_122\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_122

Input name(2) = "LOAD\_GROUP"

Input name(3) = "E"

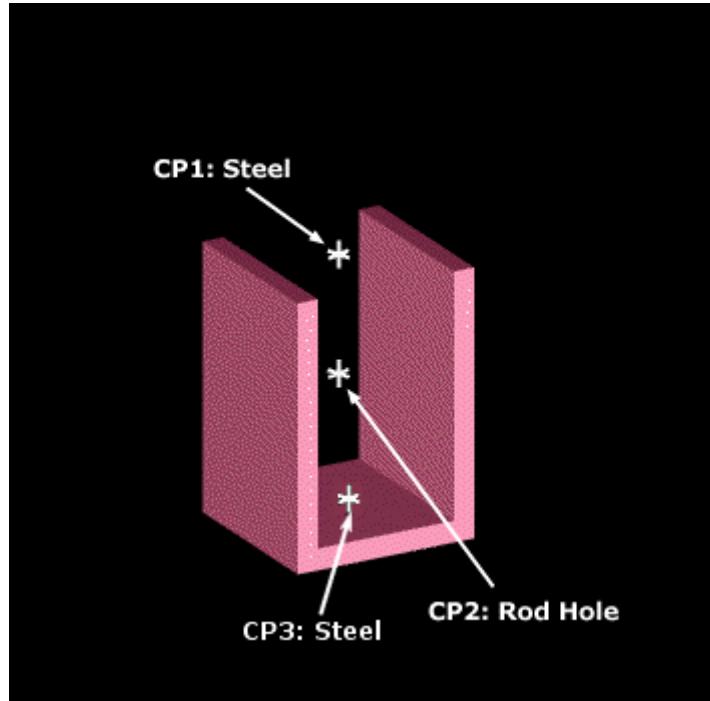
Input name(4) = "RTO"

Input name(5) = "A"

Input name(6) = "C"

Input name(7) = "B"

Input name(8) = "F"



## PSL\_122A

**Description:**

**Symbol Name:** SP\_PSL.PSL\_122A

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_122A

**User Class Name:** Beam Welding Attachment (Rod Connection)

**Part Number:** PSL\_122A\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_122A

Input name(2) = "C"

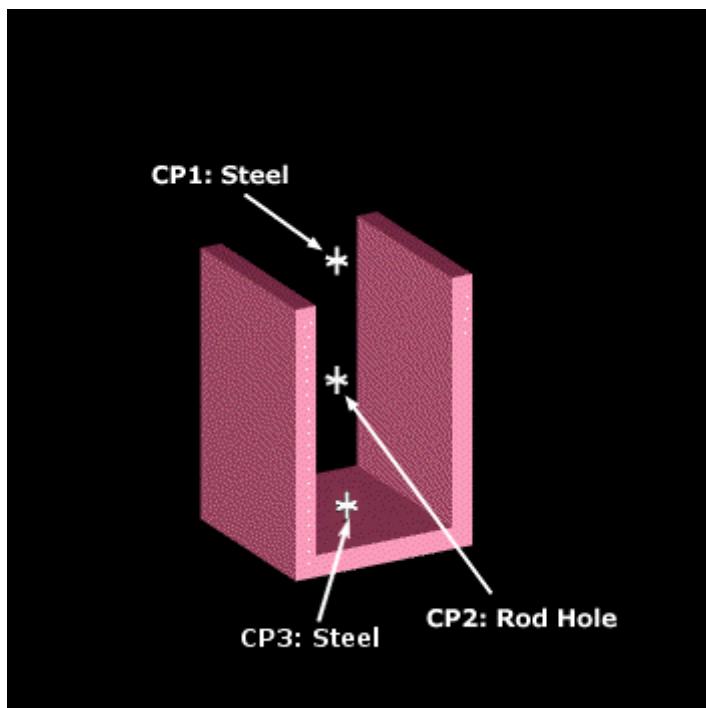
Input name(3) = "E"

Input name(4) = "RTO"

Input name(5) = "A"

Input name(6) = "F"

Input name(7) = "B"



## PSL\_125

**Description:** inverted beam welding attachment

**Symbol Name:** SP\_PSL.PSL\_125

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_125

**User Class Name:** Inverted Beam Welding Attachment

**Part Number:** PSL\_125\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_125

Input name(2) = "SIZE"

Input name(3) = "A"

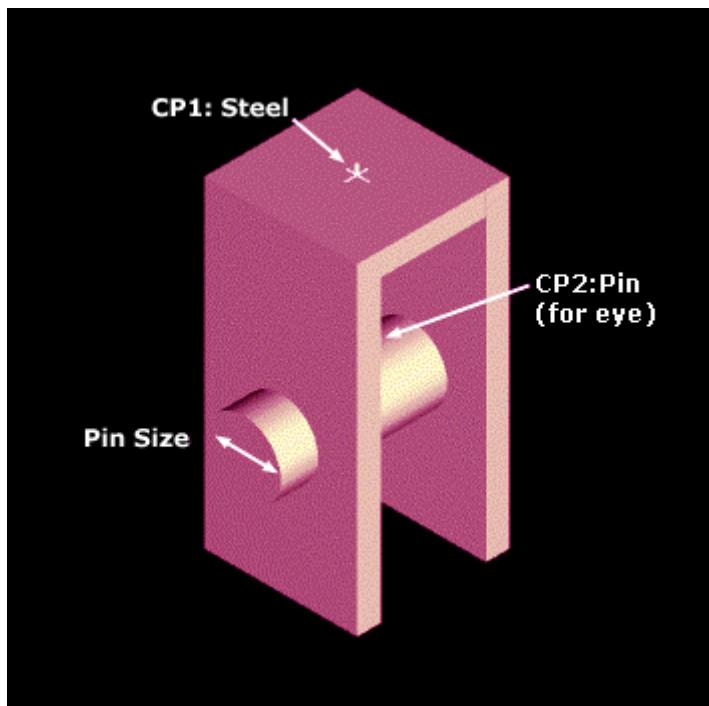
Input name(4) = "C"

Input name(5) = "E"

Input name(6) = "B"

Input name(7) = "F"

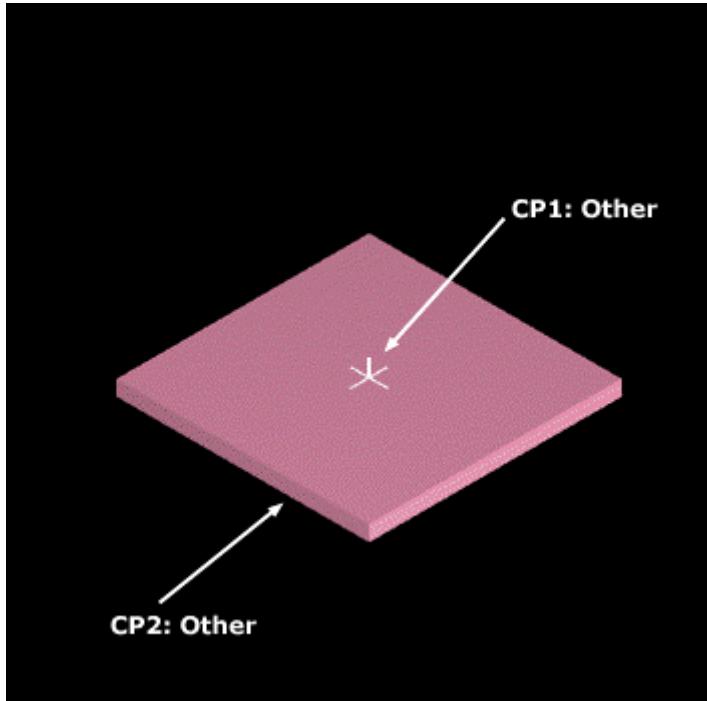
Input name(8) = "G"



## PSL\_130

**Description:** ceiling plate  
**Symbol Name:** SP\_PSL.PSL\_130  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_130  
**User Class Name:** Ceiling Plate  
**Part Number:** PSL\_130\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_130  
Input name(2) = "A"  
Input name(3) = "B"  
Input name(4) = "D"  
Input name(5) = "C"



## PSL\_226

**Description:** hanger rod  
**Symbol Name:** SP\_PSL.PSL\_226  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_226  
**User Class Name:** Hanger Rod  
**Part Number:** PSL\_226\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_226

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"



## PSL\_227

**Description:** all threaded rod

**Symbol Name:** SP\_PSL.PSL\_227

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_227

**User Class Name:** All Thread rod

**Part Number:** PSL\_227\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_227

Input name() As String

Input name(iNumInputs)

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"



## PSL\_228

**Description:** forged eyebolt

**Symbol Name:** SP\_PSL.PSL\_228

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_228

**User Class Name:** Forged Eyebolt

**Part Number:** PSL\_228\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_228

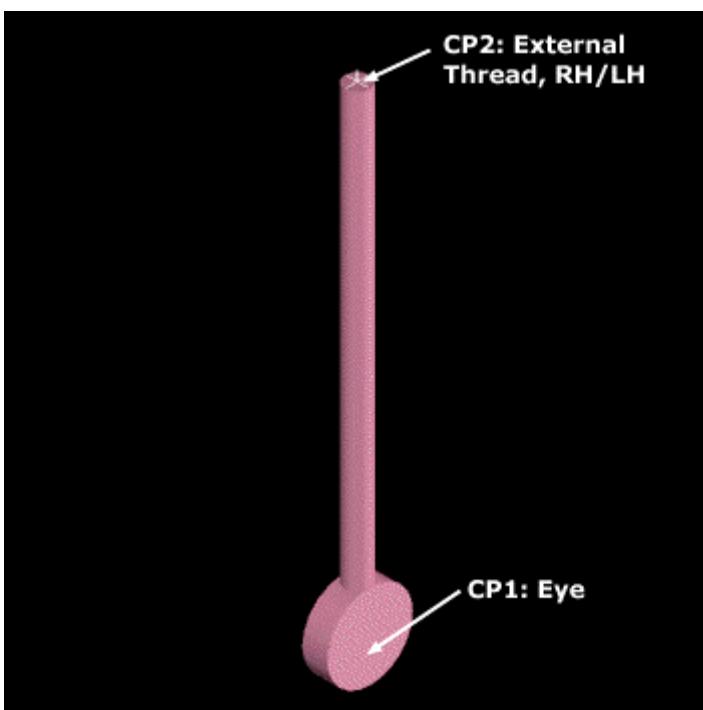
Input name() As String

Input name(iNumInputs)

Input name(2) = "E"

Input name(3) = "ROD\_DIA"

Input name(4) = "L"



## PSL\_230

**Description:** eye rod

**Symbol Name:** SP\_PSL.PSL\_230

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_230

**User Class Name:** Eye Rod

**Part Number:** PSL\_230\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_230

Input name(2) = "R\_T\_O"

Input name(3) = "Length"

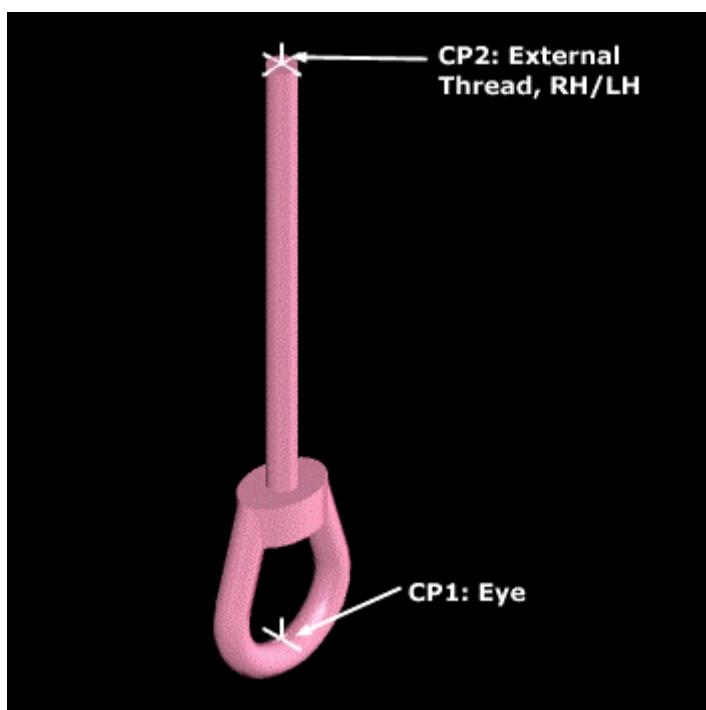
Input name(4) = "ROD\_DIA"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "D"



## PSL\_231

**Description:**

**Symbol Name:** SP\_PSL.PSL\_231

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_231

Output name 1 = "Port1"

Output name 2 = "Port2"

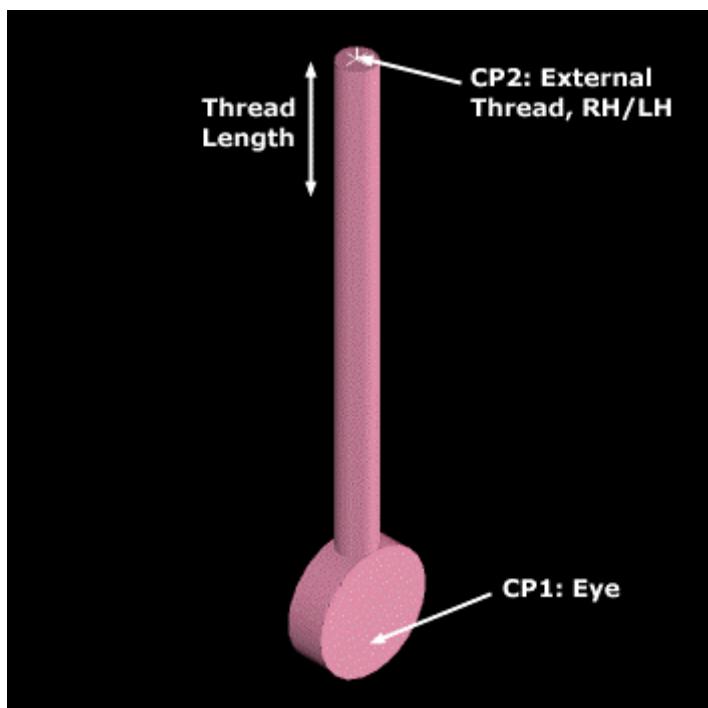
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "D"



## PSL\_232

**Description:**

**Symbol Name:** SP\_PSL.PSL\_232

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_232

Output name 1 = "Port1"

Output name 2 = "Port2"

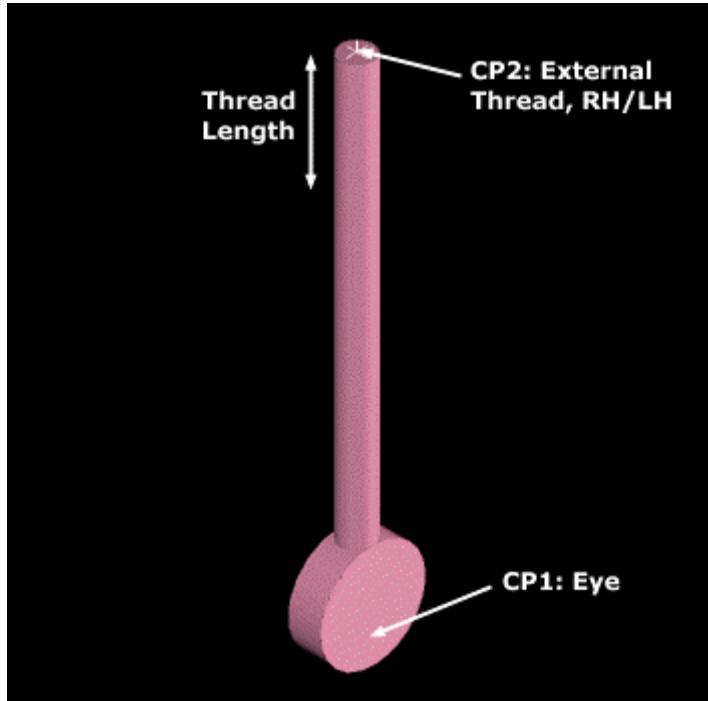
Output name 3 = "ROD"

Output name 4 = "EYE"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

Input name(4) = "D"



## PSL\_233

**Description:**

**Symbol Name:** SP\_PSL.PSL\_233

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_233

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "ROD"

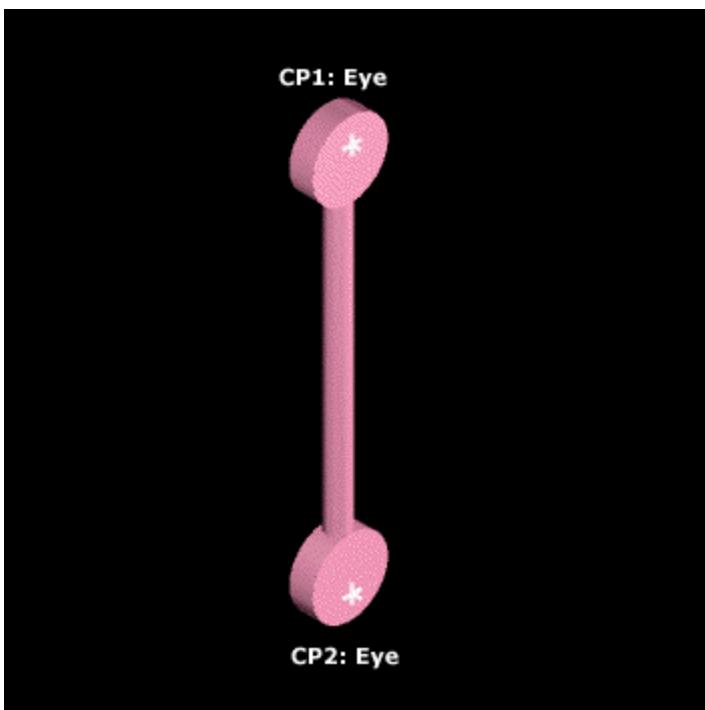
Output name 4 = "EYE"

Output name 5 = "EYE2"

Input name(2) = "Length"

Input name(3) = "ROD\_DIA"

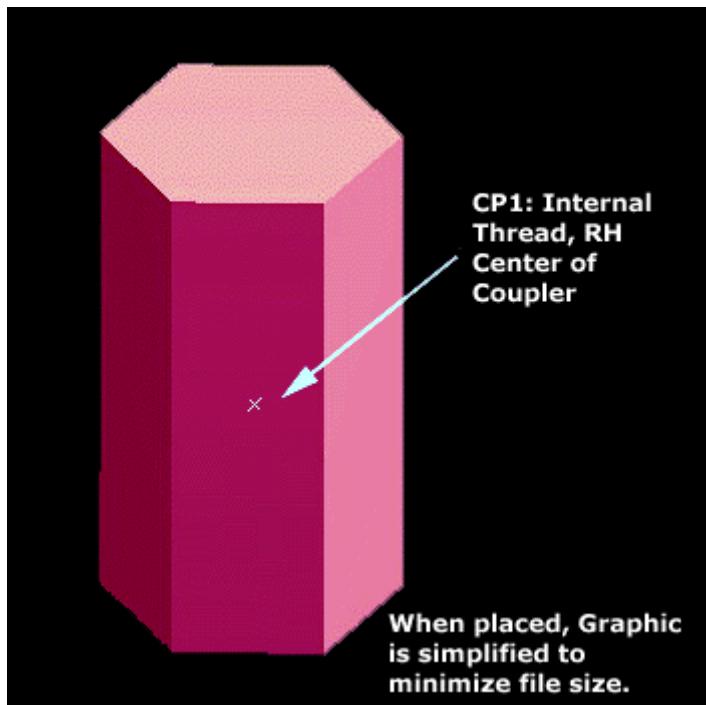
Input name(4) = "D"



## PSL\_234

**Description:** rod coupling  
**Symbol Name:** SP\_PSL.PSL\_234  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_234  
**User Class Name:** Rod Coupling  
**Part Number:** PSL\_234\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_234  
Input name(2) = "ROD\_DIA"  
Input name(3) = "A"



## PSL\_235

**Description:** right hand/left hand turnbuckle

**Symbol Name:** SP\_PSL.PSL\_235

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_235

**User Class Name:** Turnbuckle RH/LH

**Part Number:** PSL\_235\_\*

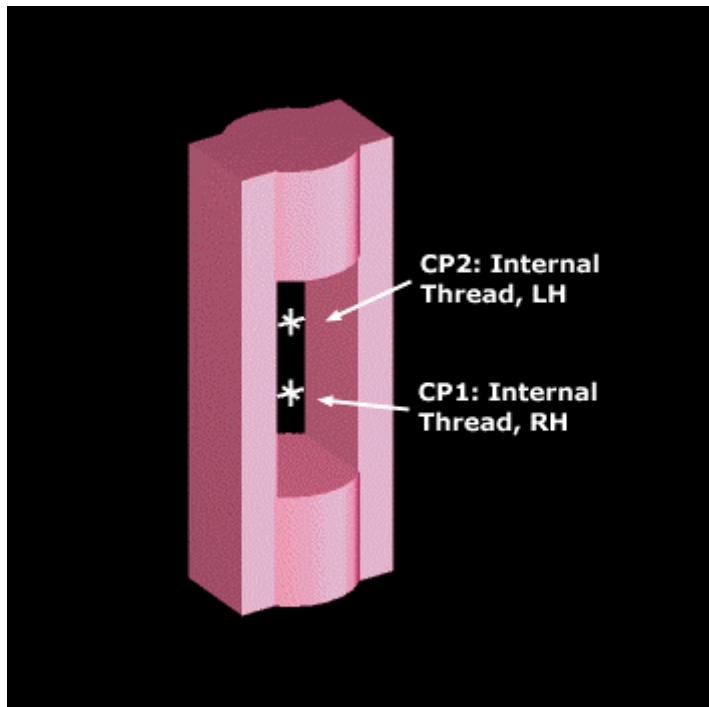
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_235

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

Input name(4) = "C"



## PSL\_235A

**Description:** turnbuckle

**Symbol Name:** SP\_PSL.PSL\_235A

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_235A

**User Class Name:** Turnbuckle RH/RH

**Part Number:** PSL\_235A\_\*

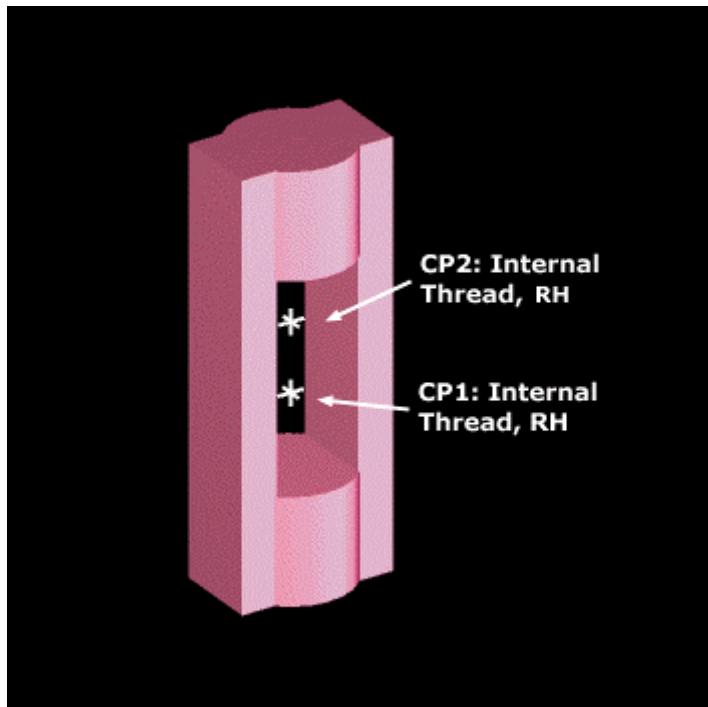
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_235A

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

Input name(4) = "C"



## PSL\_236

**Description:** spherical washer

**Symbol Name:** SP\_PSL.PSL\_236

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_236

**User Class Name:** Spherical Washer

**Part Number:** PSL\_236\_\*

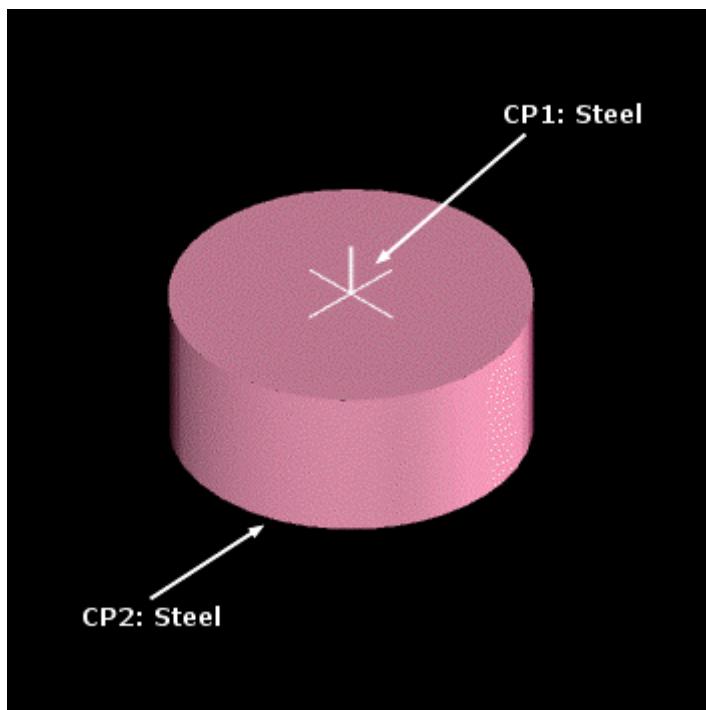
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_236

Input name(2) = "ROD\_DIA"

Input name(3) = "B"

Input name(4) = "A"



## PSL\_238

**Description:** clevis

**Symbol Name:** SP\_PSL.PSL\_238

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_238

**User Class Name:** Clevis

**Part Number:** PSL\_238\_1

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_238

Input name(2) = "ROD\_DIA"

Input name(3) = "H"

Input name(4) = "A"

Input name(5) = "B"

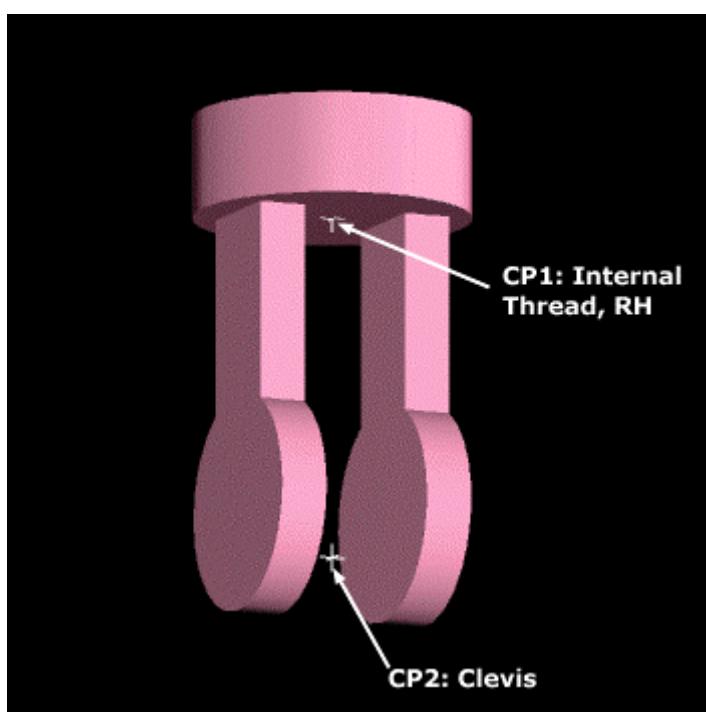
Input name(6) = "C"

Input name(7) = "D"

Input name(8) = "E"

Input name(9) = "F"

Input name(10) = "HOLE\_SIZE"



## PSL\_239

**Description:** weldless eye nut

**Symbol Name:** SP\_PSL.PSL\_239

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_239

**User Class Name:** Weldless Eye Nut

**Part Number:** PSL\_239\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_239

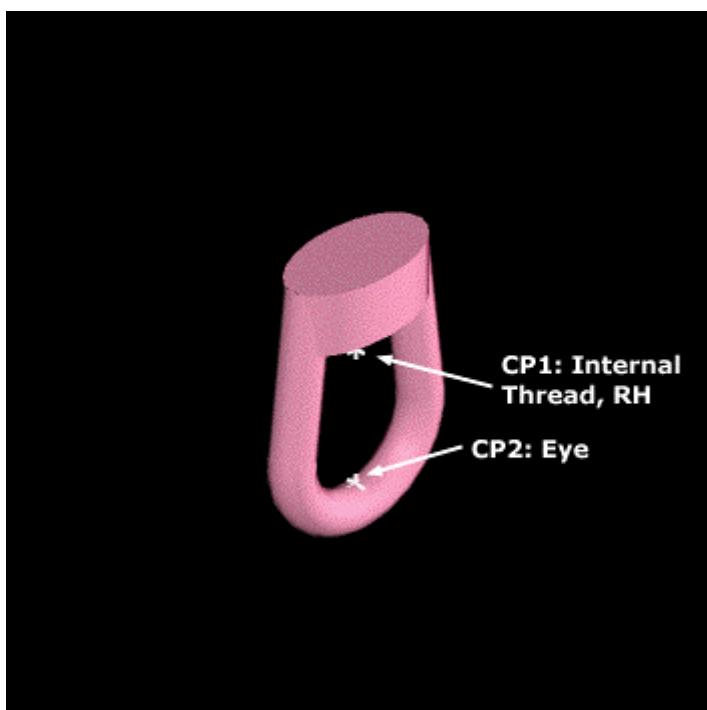
Input name(2) = "ROD\_DIA"

Input name(3) = "A"

Input name(4) = "B"

Input name(5) = "D"

Input name(6) = "C"



## PSL\_274

**Description:** clevis pin with split pins

**Symbol Name:** SP\_PSL.PSL\_274

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_274

**User Class Name:** Clevis Pin with Split Pins

**Part Number:** PSL\_274\_\*

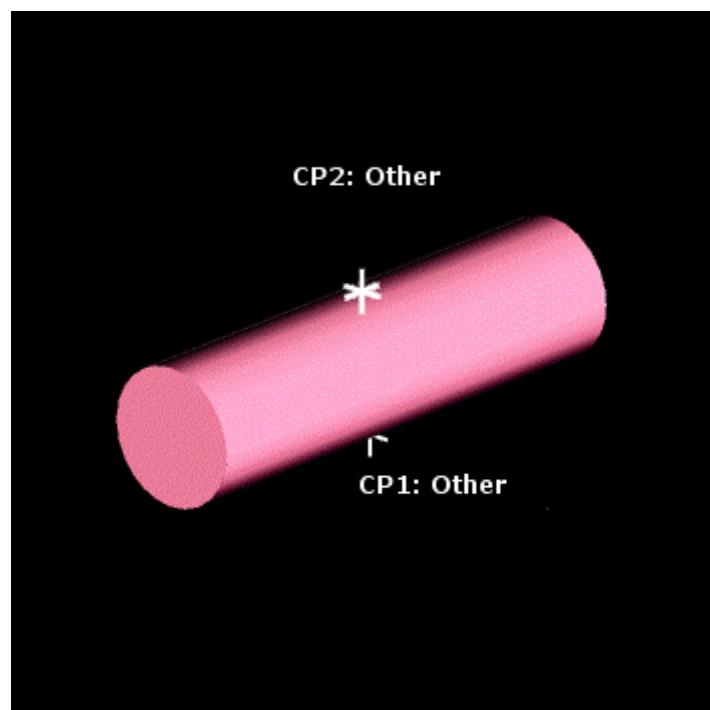
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_274

Input name(2) = "B"

Input name(3) = "PIN\_SIZE"

Input name(4) = "A"



## PSL\_276A

**Description:** bolt

**Symbol Name:** SP\_PSL.PSL\_276A

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_276A

**User Class Name:** Bolt C/W Nut

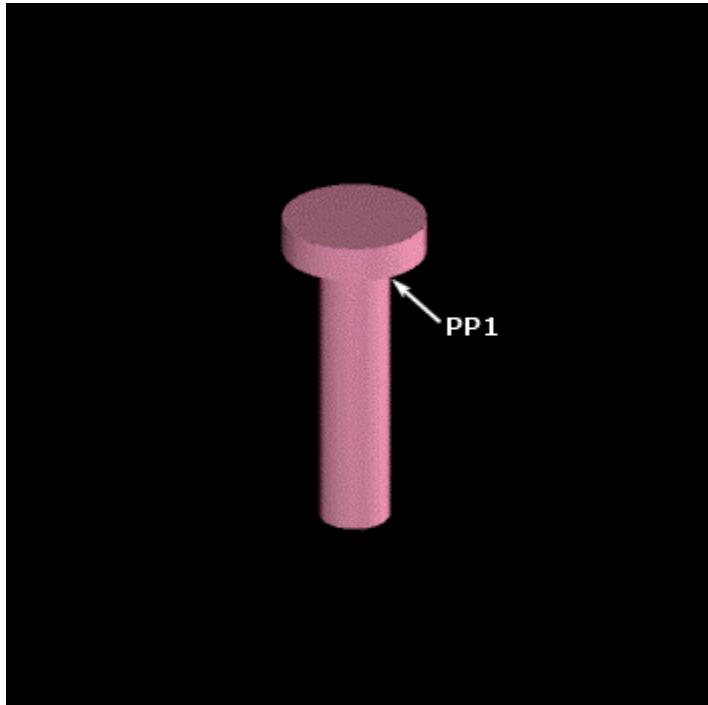
**Part Number:** PSL\_276A\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_276A

Input name(2) = "L"

Input name(3) = "BOLT\_DIA"



## PSL\_276B

**Description:** bolt

**Symbol Name:** SP\_PSL.PSL\_276B

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_276B

**User Class Name:** Bolt C/W Nut

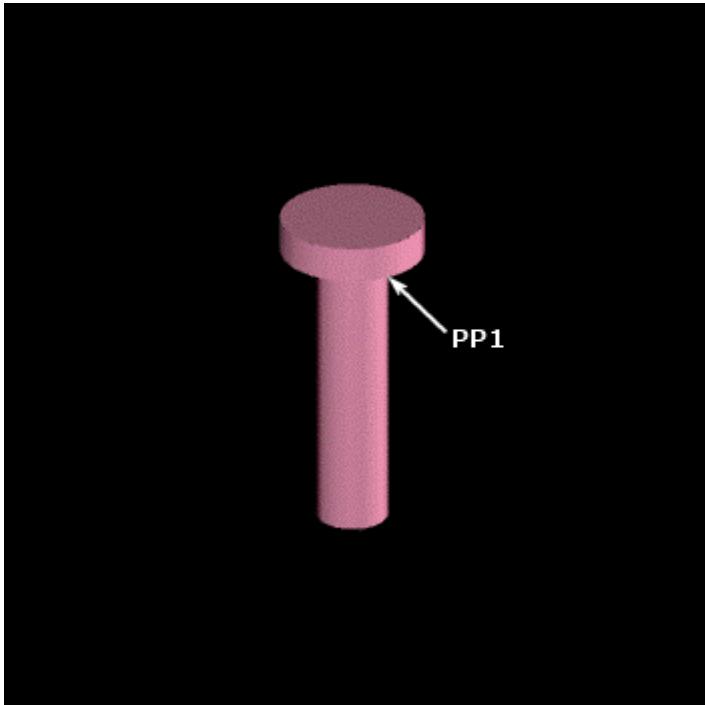
**Part Number:** PSL\_276B\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_276B

Input name(2) = "L"

Input name(3) = "BOLT\_DIA"



## PSL\_276C

**Description:** set screw

**Symbol Name:** SP\_PSL.PSL\_276C

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_276C

**User Class Name:** Set Screw C/W Nut

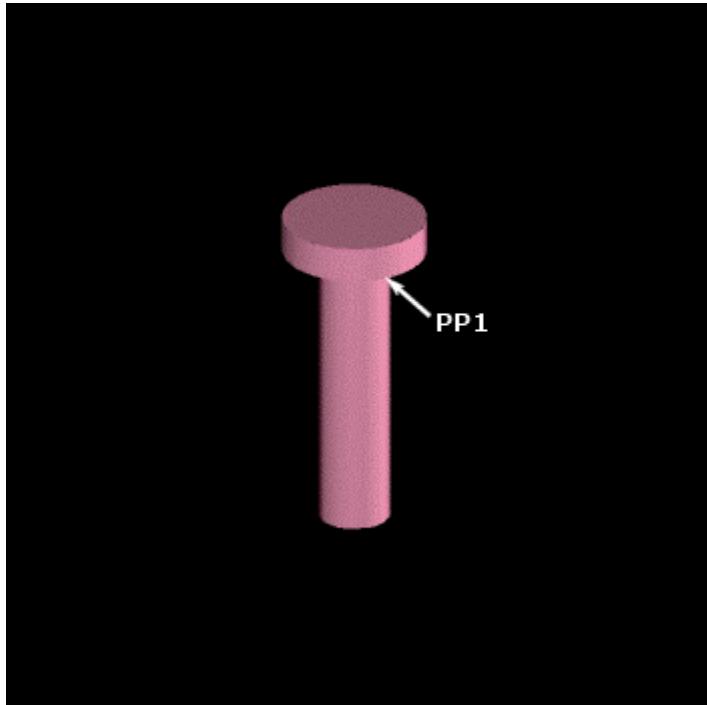
**Part Number:** PSL\_276C\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_276C

Input name(2) = "L"

Input name(3) = "BOLT\_DIA"



## PSL\_277

**Description:** lock nut

**Symbol Name:** SP\_PSL.PSL\_277

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_277

**User Class Name:** Lock Nut

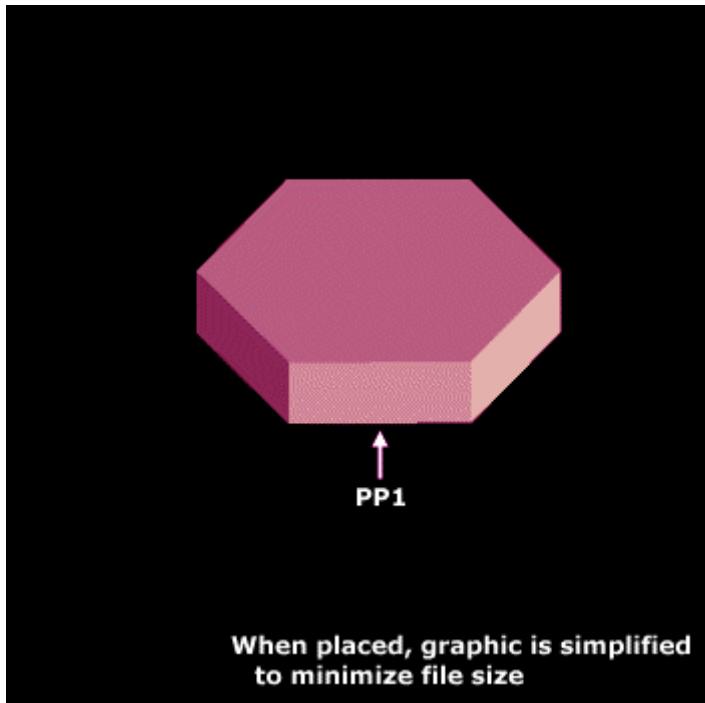
**Part Number:** PSL\_277\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_277

Input name(2) = "D"

Input name(3) = "A"



**When placed, graphic is simplified  
to minimize file size**

## PSL\_278

**Description:** nut

**Symbol Name:** SP\_PSL.PSL\_278

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_278

**User Class Name:** Full Nut

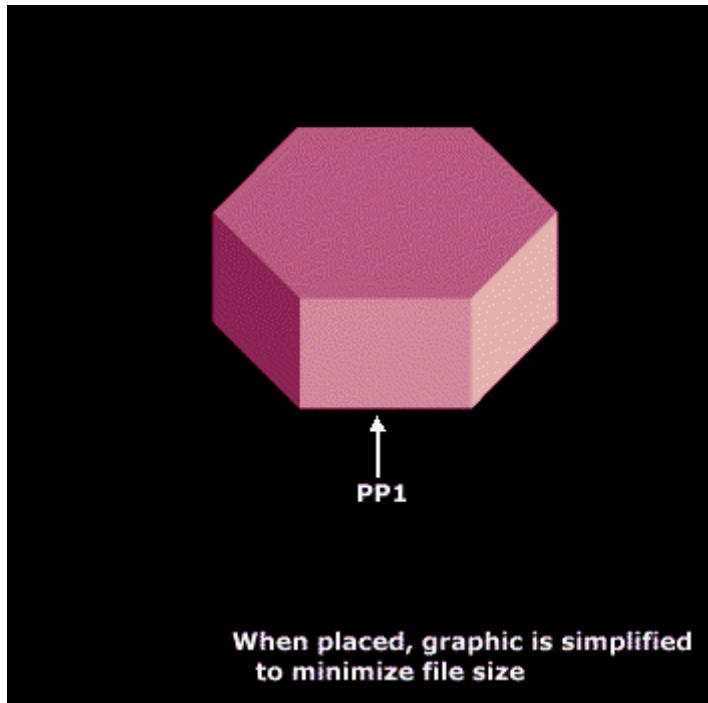
**Part Number:** PSL\_278\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_278

Input name(2) = "D"

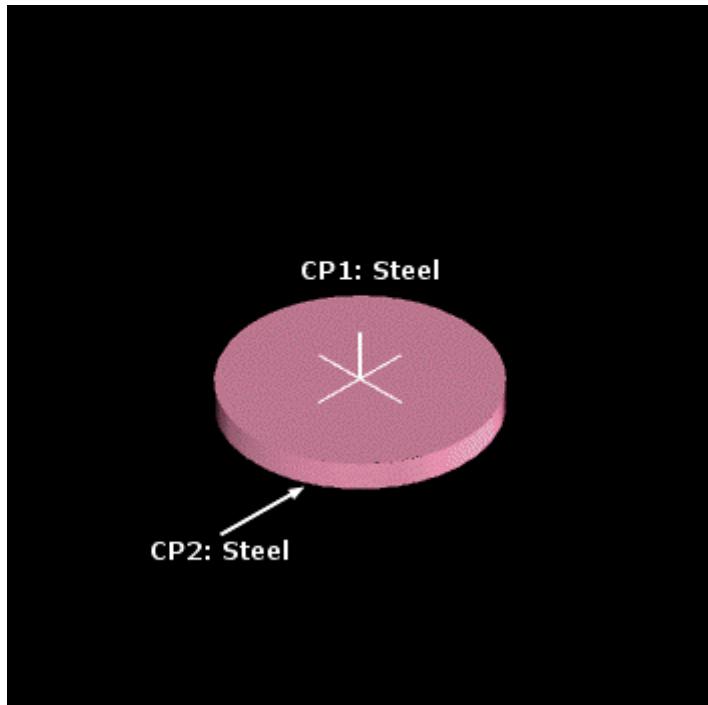
Input name(3) = "B"



## PSL\_279

**Description:** flat washer  
**Symbol Name:** SP\_PSL.PSL\_279  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_279  
**User Class Name:** Flat Washer  
**Part Number:** PSL\_279\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_279  
Input name(2) = "C"  
Input name(3) = "F"



## PSL\_280

**Description:**

**Symbol Name:** SP\_PSL.PSL\_280

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_280

**User Class Name:** Hemispherical Cup

**Part Number:** PSL\_280\_\*

**Inputs, Outputs, and Aspects:**

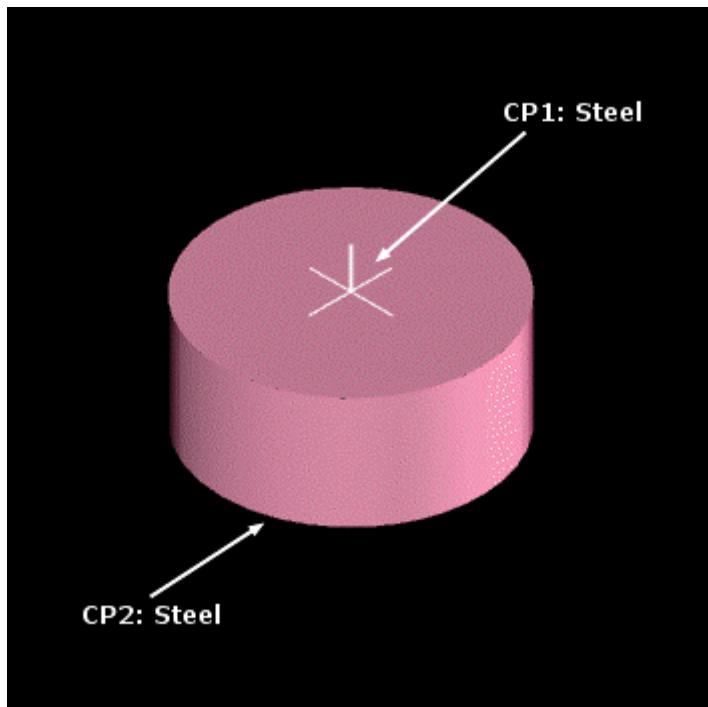
ProgID: SP\_PSL.PSL\_280

Input name(2) = "B"

Input name(3) = "A"

Input name(4) = "C"

Input name(5) = "B1"



## PSL\_281

**Description:** washer

**Symbol Name:** SP\_PSL.PSL\_281

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_281

**User Class Name:** Dual Faced Rocking Washer

**Part Number:** PSL\_281\_\*

**Inputs, Outputs, and Aspects:**

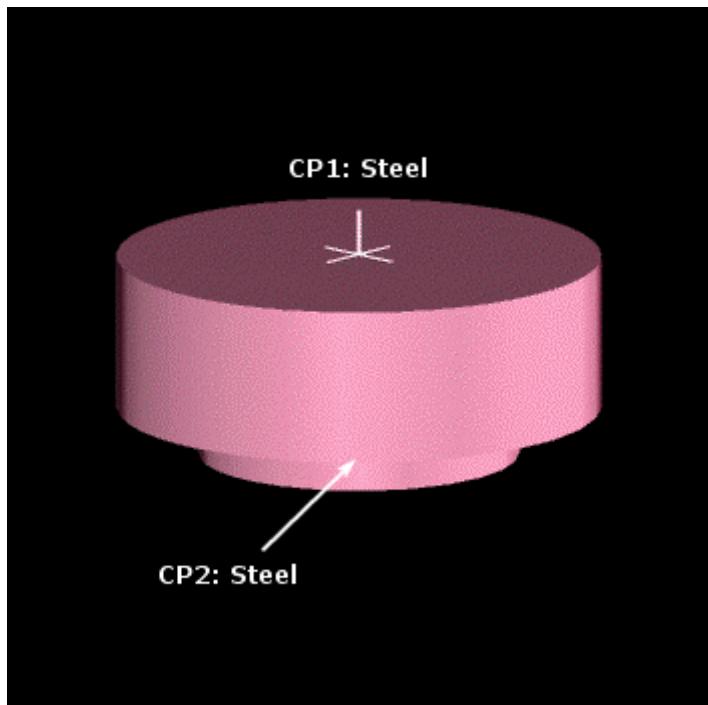
ProgID: SP\_PSL.PSL\_281

Input name(2) = "E"

Input name(3) = "B"

Input name(4) = "K"

Input name(5) = "H"



## PSL\_282

**Description:** plate for dual faced rocking washer

**Symbol Name:** SP\_PSL.PSL\_282

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_282

**User Class Name:** Plate for Dual Faced Rocking Washer

**Part Number:** PSL\_282\_\*

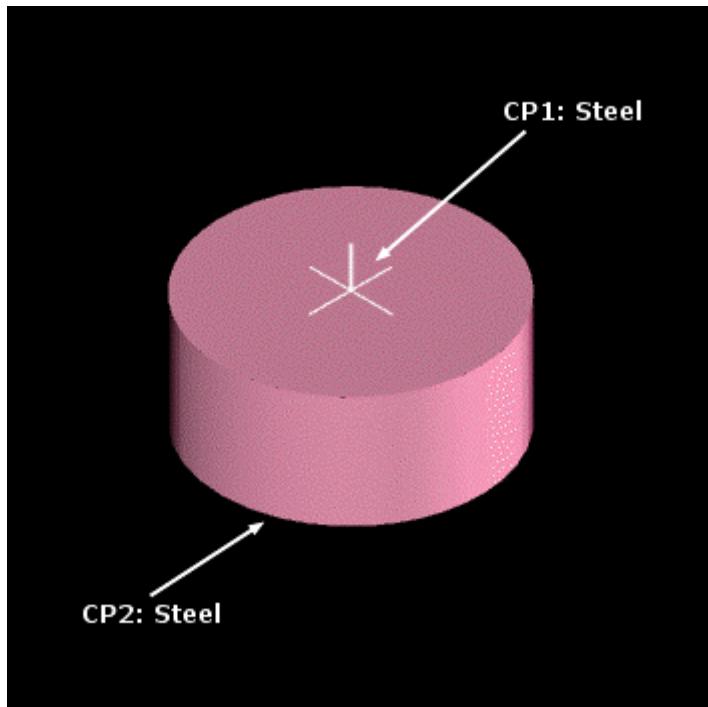
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_282

Input name(2) = "ROD\_DIA"

Input name(3) = "D"

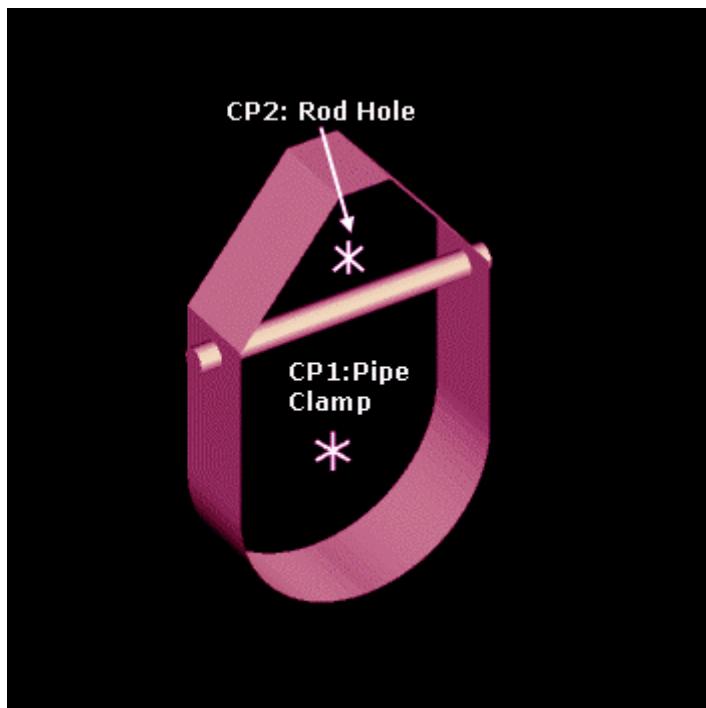
Input name(4) = "B"



## PSL\_308

**Description:** clevis hanger  
**Symbol Name:** SP\_PSL.PSL\_308  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_308  
**User Class Name:** Clevis Hanger  
**Part Number:** PSL\_308\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_308  
Input name(2) = "T2"  
Input name(3) = "WIDTH"  
Input name(4) = "BOLT\_SIZE"  
Input name(5) = "RTO"  
Input name(6) = "A"  
Input name(7) = "B"  
Input name(8) = "C"  
Input name(9) = "R"  
Input name(10) = "T1"



## PSL\_311

**Description:** u bolt

**Symbol Name:** SP\_PSL.PSL\_311

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_311

**User Class Name:** U Bolt Grip Type

**Part Number:** PSL\_311\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_311

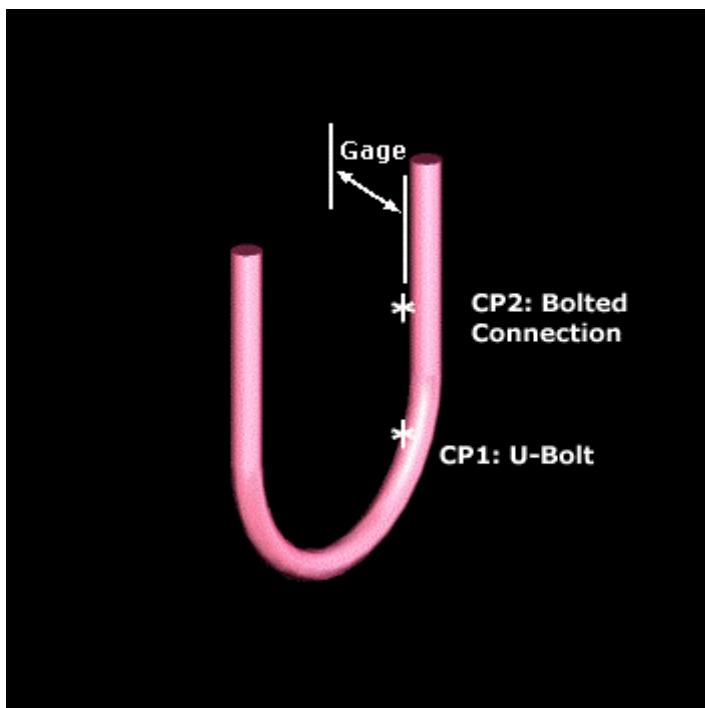
Input name(2) = "C"

Input name(3) = "GAGE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "A"

Input name(6) = "B"



## PSL\_313

**Description:** u bolt

**Symbol Name:** SP\_PSL.PSL\_313

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_313

**User Class Name:** U Bolt Non Grip Type

**Part Number:** PSL\_313\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_313

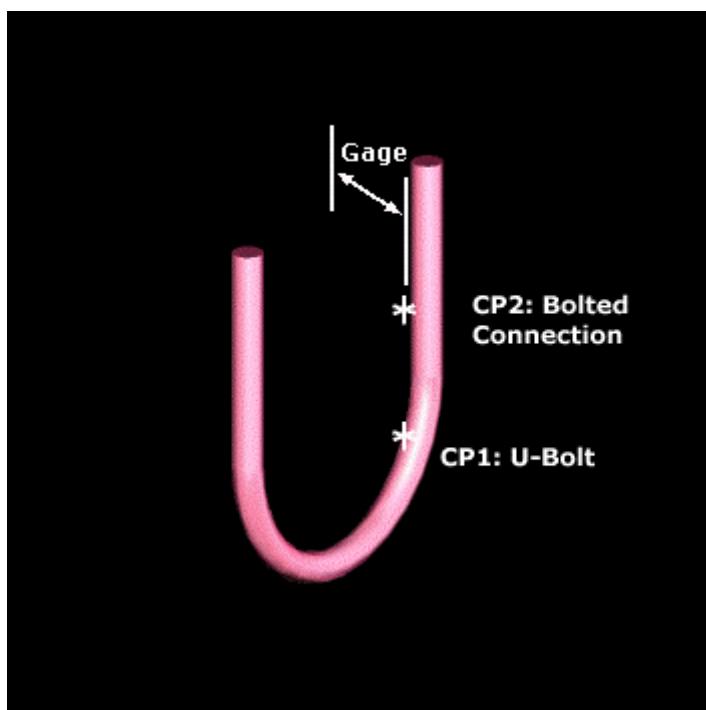
Input name(2) = "C"

Input name(3) = "GAGE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "A"

Input name(6) = "B"



## PSL\_314

**Description:**

**Symbol Name:** SP\_PSL.PSL\_314

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_314

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SIDE1"

Output name 4 = "SIDE2"

Output name 5 = "TOP"

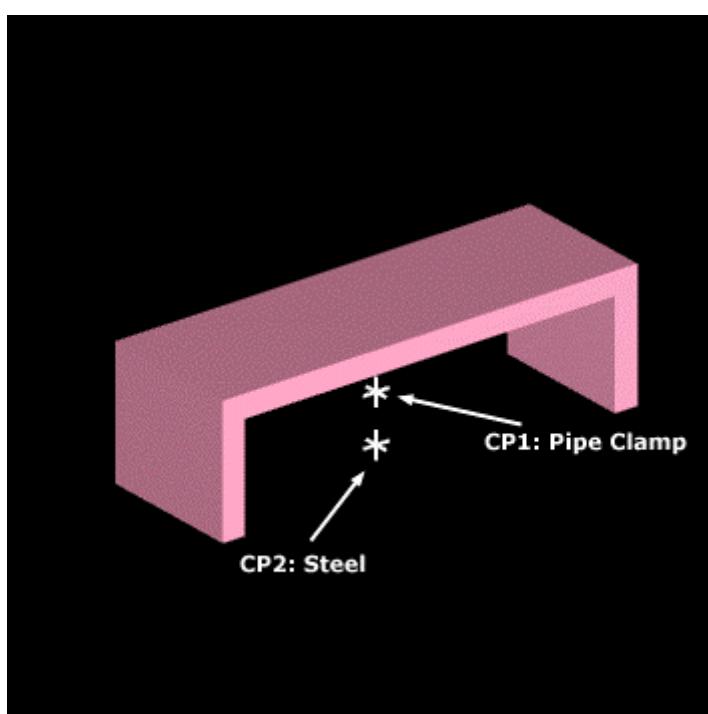
Input name(2) = "T"

Input name(3) = "PIPE\_DIA"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "W"



## PSL\_315

**Description:**

**Symbol Name:** SP\_PSL.PSL\_315

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_315

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SIDE1"

Output name 4 = "SIDE2"

Output name 5 = "TOP"

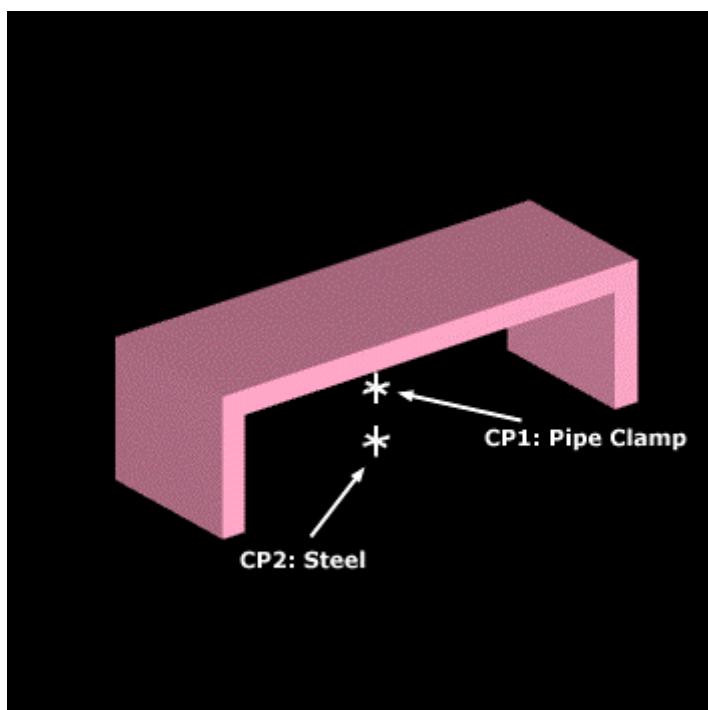
Input name(2) = "T"

Input name(3) = "PIPE\_DIA"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "W"



## PSL\_316

**Description:**

**Symbol Name:** SP\_PSL.PSL\_316

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_316

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SIDE1"

Output name 4 = "SIDE2"

Output name 5 = "TOP"

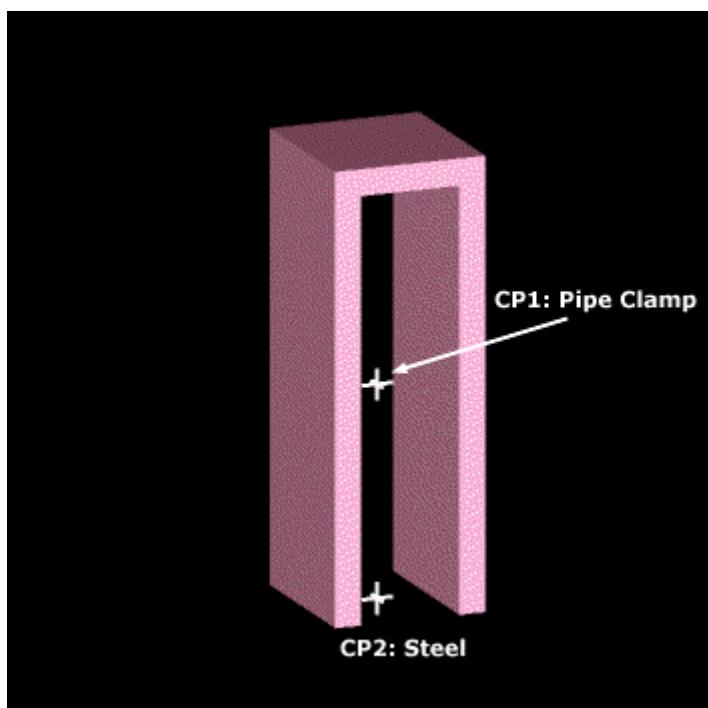
Input name(2) = "T"

Input name(3) = "PIPE\_DIA"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "W"



## PSL\_317

**Description:**

**Symbol Name:** SP\_PSL.PSL\_317

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_317

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SIDE1"

Output name 4 = "SIDE2"

Output name 5 = "TOP"

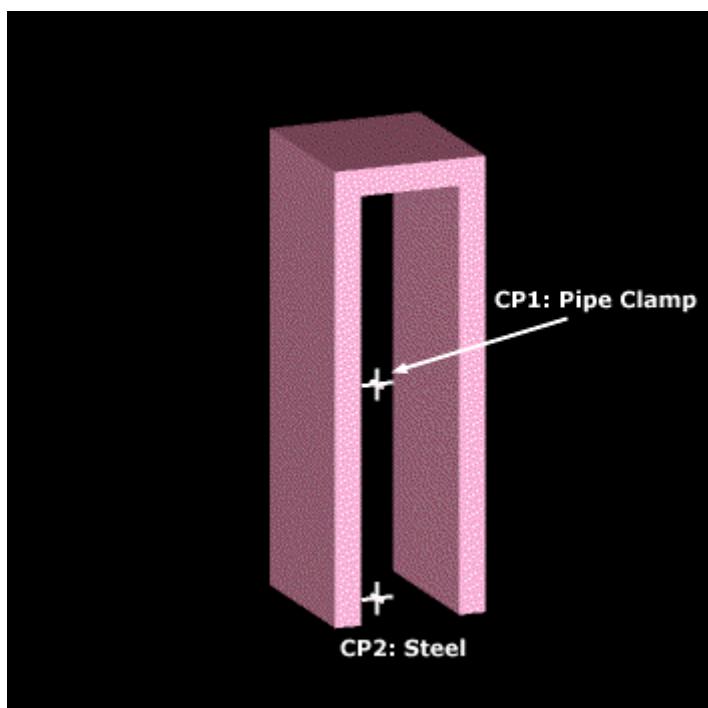
Input name(2) = "T"

Input name(3) = "PIPE\_DIA"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "W"



## PSL\_318

**Description:**

**Symbol Name:** SP\_PSL.PSL\_318

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_318

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "LEFT"

Output name 5 = "RIGHT"

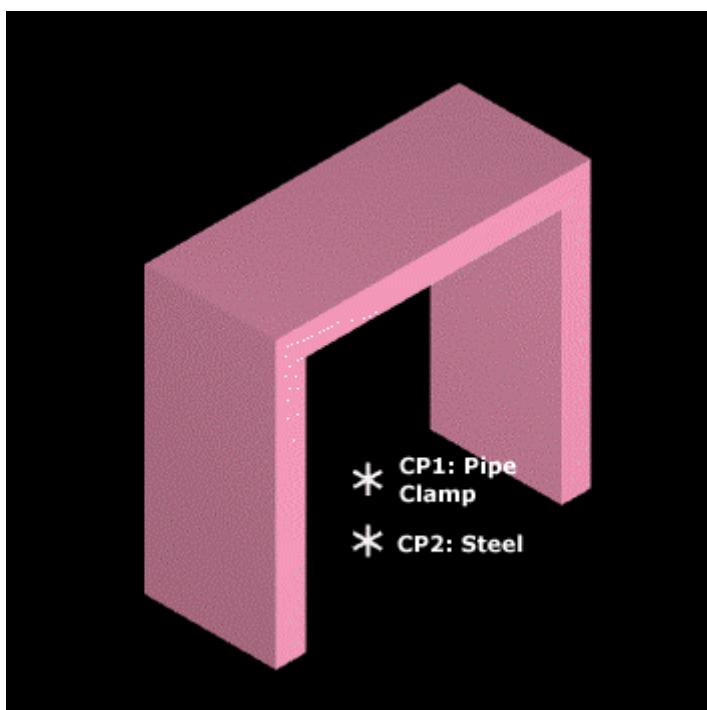
Input name(2) = "B\_"

Input name(3) = "A\_"

Input name(4) = "PIPE\_DIA"

Input name(5) = "W"

Input name(6) = "T"



## PSL\_319

**Description:**

**Symbol Name:** SP\_PSL.PSL\_319

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_319

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "LEFT"

Output name 5 = "RIGHT"

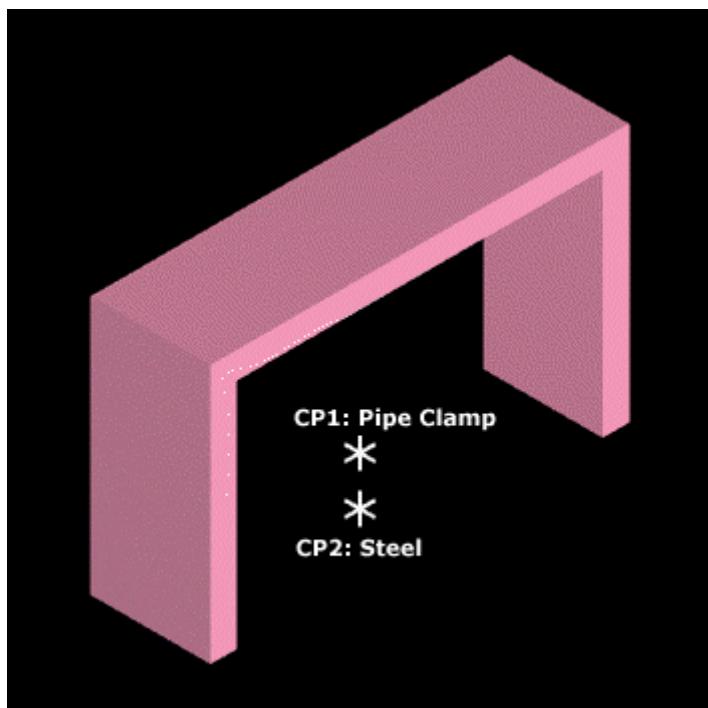
Input name(2) = "B\_"

Input name(3) = "A\_"

Input name(4) = "PIPE\_DIA"

Input name(5) = "W"

Input name(6) = "T"



## PSL\_320

**Description:**

**Symbol Name:** SP\_PSL.PSL\_320

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_320

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP"

Output name 4 = "LEFT"

Output name 5 = "RIGHT"

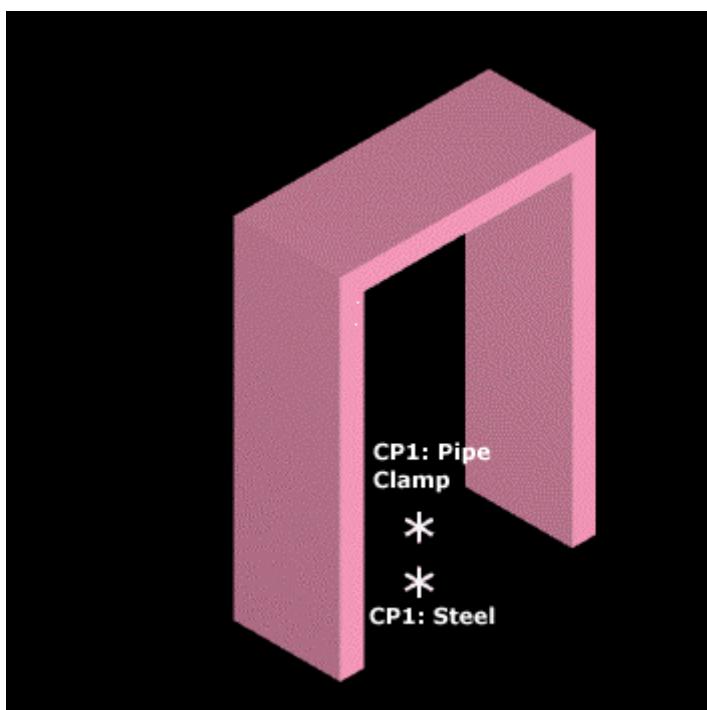
Input name(2) = "B\_"

Input name(3) = "A\_"

Input name(4) = "PIPE\_DIA"

Input name(5) = "W"

Input name(6) = "T"



## PSL\_321

**Description:**

**Symbol Name:** SP\_PSL.PSL\_321

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_321

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

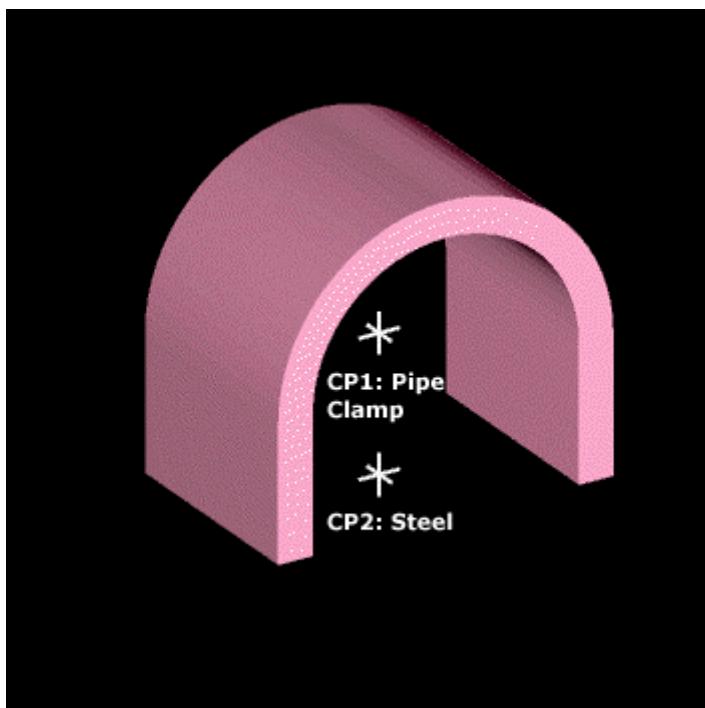
Input name(2) = "W"

Input name(3) = "PIPE\_DIA"

Input name(4) = "T"

Input name(5) = "A"

Input name(6) = "B"



## PSL\_322

**Description:**

**Symbol Name:** SP\_PSL.PSL\_322

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_322

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

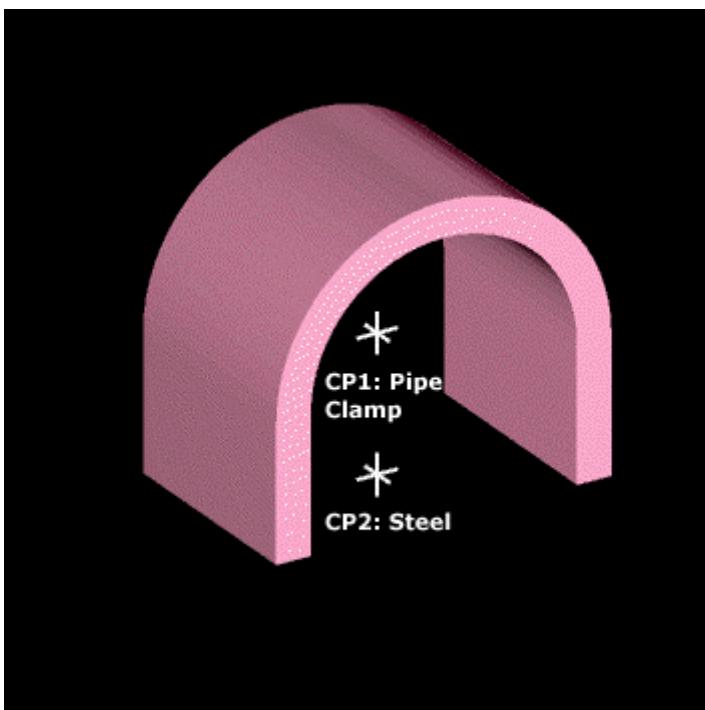
Input name(2) = "W"

Input name(3) = "PIPE\_DIA"

Input name(4) = "T"

Input name(5) = "A"

Input name(6) = "B"



## PSL\_347

**Description:** hold down pipe clamp

**Symbol Name:** SP\_PSL.PSL\_347

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_347

**User Class Name:** Hold Down Pipe Clamp

**Part Number:** PSL\_347\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_347

Input name(2) = "G1"

Input name(3) = "F"

Input name(4) = "G2"

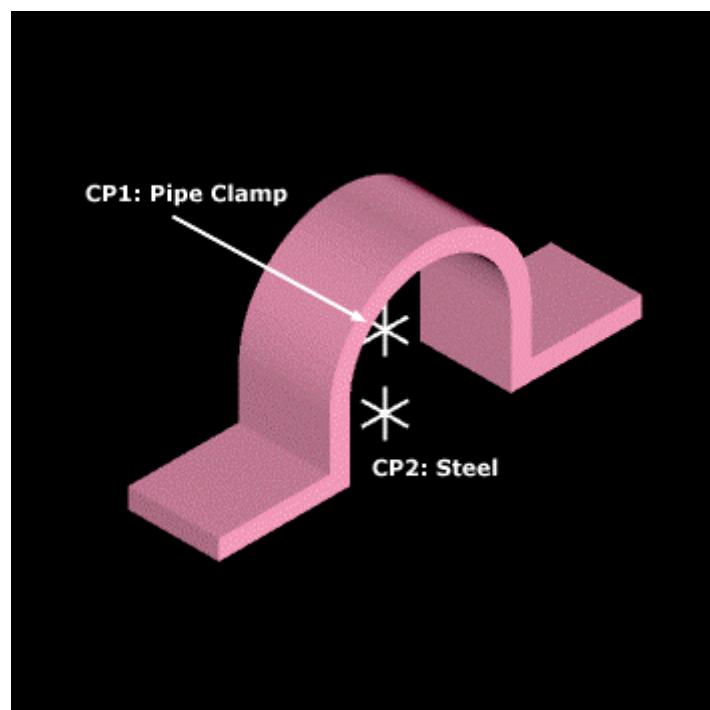
Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "D"

Input name(9) = "E"



## PSL\_348A

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348A

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348A

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "SADDLE"

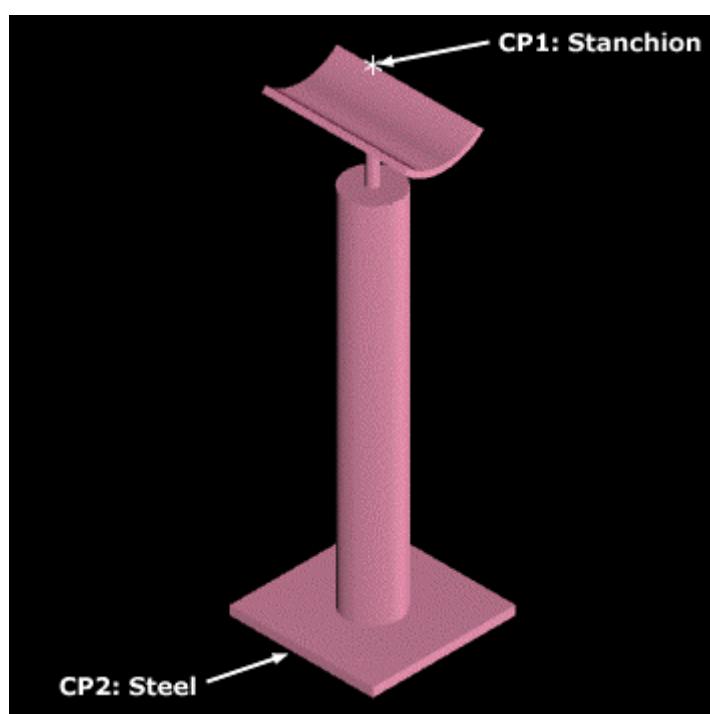
Input name(2) = "PIPE\_DIA"

Input name(5) = "C"

Input name(3) = "Length"

Input name(4) = "D"

Input name(6) = "B"



# PSL\_348B

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348B

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348B

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "R\_ROLL"

Output name 7 = "L\_ROLL"

Output name 8 = "LEFT"

Output name 9 = "RIGHT"

Output name 10 = "BOTTOM"

Output name 11 = "PIN"

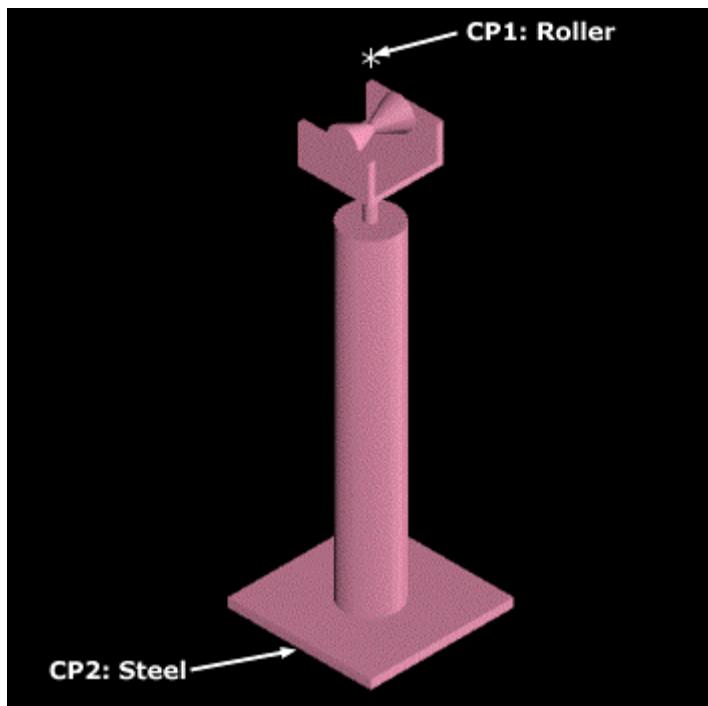
Input name(2) = "D"

Input name(3) = "Length"

Input name(4) = "C"

Input name(5) = "PIPE\_DIA"

Input name(6) = "B"



# PSL\_348C

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348C

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348C

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "BEND"

Output name 7 = "R"

Output name 8 = "L"

Output name 9 = "PLATE"

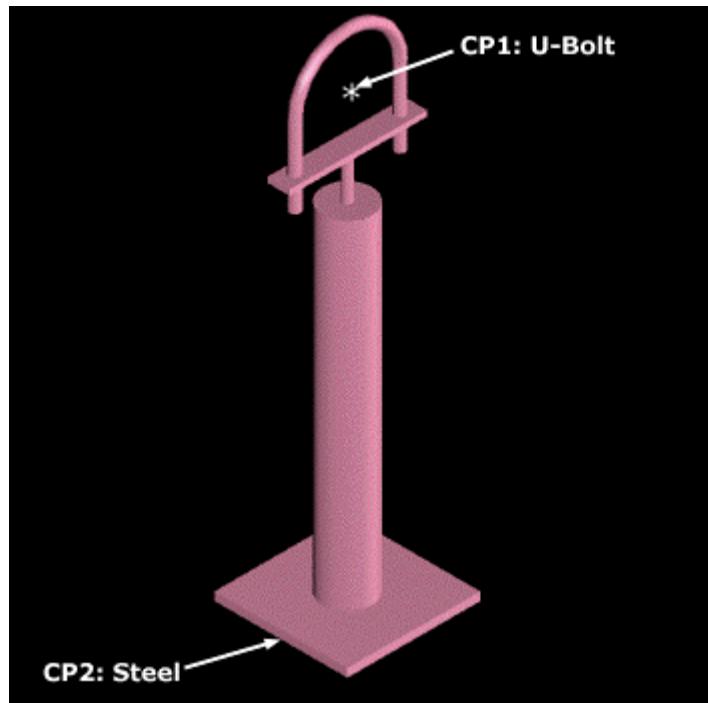
Input name(2) = "D"

Input name(3) = "Length"

Input name(4) = "C"

Input name(5) = "PIPE\_DIA"

Input name(6) = "B"



## PSL\_348D

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348D

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348D

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "CYL"

Output name 7 = "BOX1"

Output name 8 = "BOX2"

Input name(2) = "B"

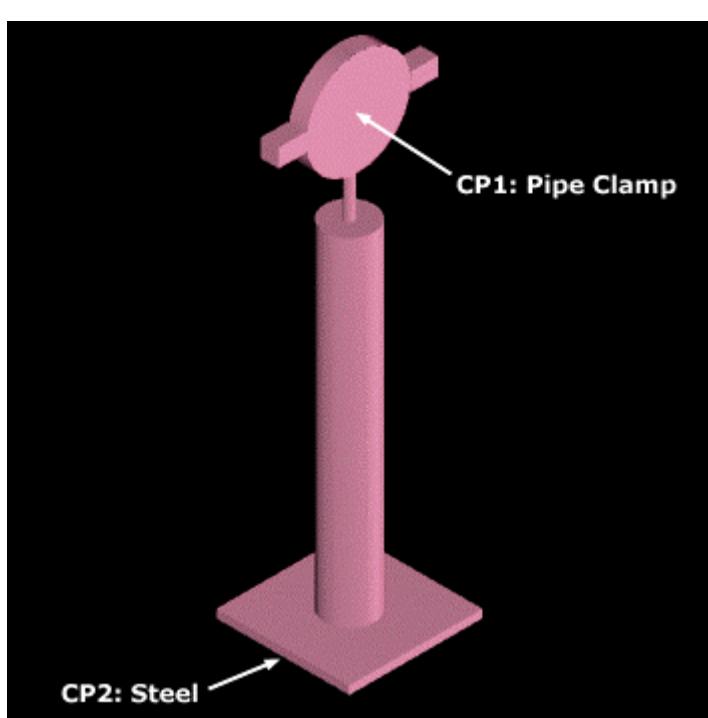
Input name(3) = "Length"

Input name(4) = "D"

Input name(5) = "PIPE\_DIA"

Input name(6) = "SIZE"

Input name(7) = "C"



## PSL\_348E

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348E

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348E

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "BODY"

Output name 7 = "PLATE"

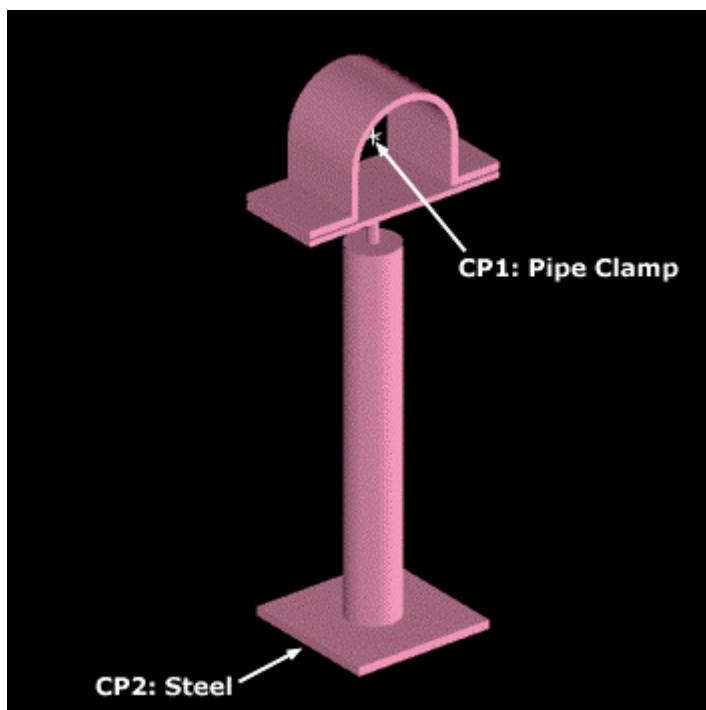
Input name(2) = "D"

Input name(3) = "Length"

Input name(4) = "C"

Input name(5) = "PIPE\_DIA"

Input name(6) = "B"



## PSL\_348F

**Description:**

**Symbol Name:** SP\_PSL.PSL\_348F

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_348F

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BASEPLATE"

Output name 4 = "MIDDLE\_CYL"

Output name 5 = "UPPER\_CYL"

Output name 6 = "R\_ROLL1"

Output name 7 = "R\_ROLL2"

Output name 8 = "L\_ROLL1"

Output name 9 = "L\_ROLL2"

Output name 10 = "LEFT"

Output name 11 = "RIGHT"

Output name 12 = "BOTTOM"

Output name 13 = "PIN"

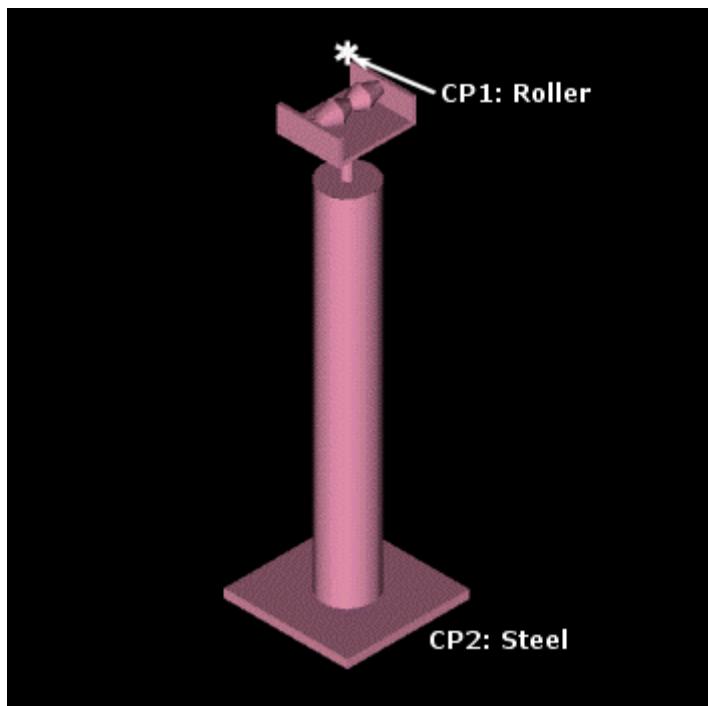
Input name(2) = "D"

Input name(3) = "Length"

Input name(4) = "C"

Input name(5) = "PIPE\_DIA"

Input name(6) = "B"



## PSL\_349

**Description:** light duty pipe base

**Symbol Name:** SP\_PSL.PSL\_349

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_349

**User Class Name:** Pipe Base (Light Duty)

**Part Number:** PSL\_349\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_349

Input name(2) = "WEB\_T"

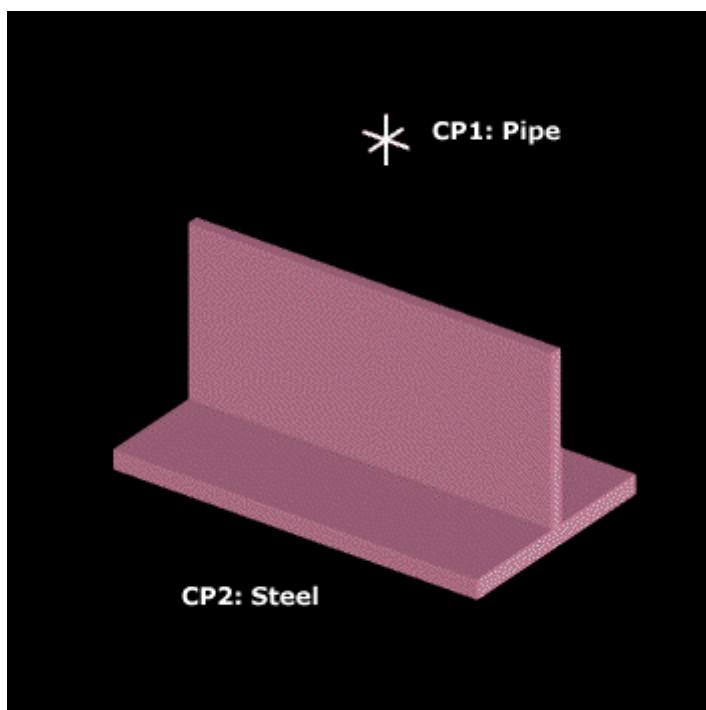
Input name(3) = "PIPE\_DIA"

Input name(4) = "FLANGE\_T"

Input name(5) = "L"

Input name(7) = "A"

Input name(6) = "K"



## PSL\_350\_LRG

**Description:** heavy duty pipe base

**Symbol Name:** SP\_PSL.PSL\_350\_LRG

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_350

**User Class Name:** Pipe Base (Heavy Duty)

**Part Number:** PSL\_350\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_350\_LRG

Input name(2) = "PIPE\_DIA"

Input name(3) = "K"

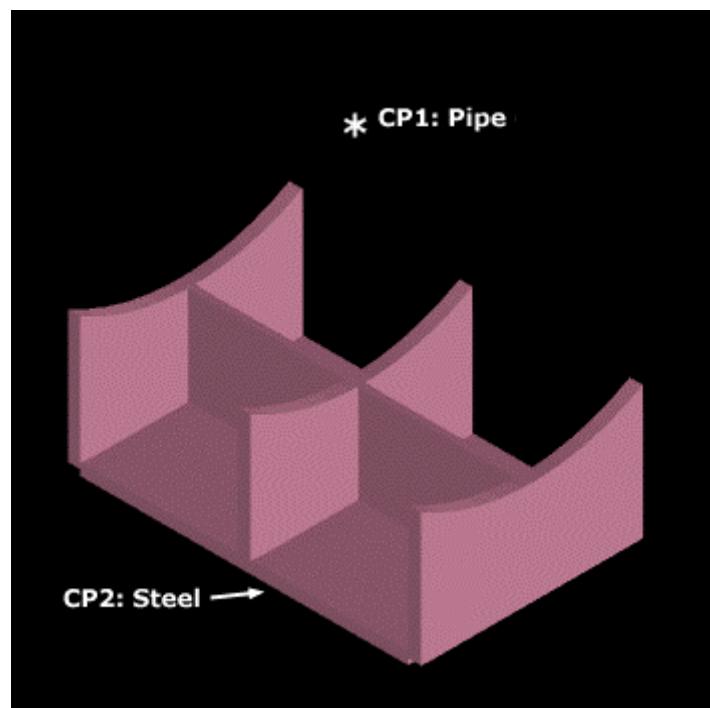
Input name(4) = "L"

Input name(5) = "WEB\_T"

Input name(6) = "FLANGE\_T"

Input name(7) = "END\_T"

Input name(8) = "A"



## PSL\_350\_SML

**Description:** heavy duty pipe base

**Symbol Name:** SP\_PSL.PSL\_350\_SML

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_350\_SML

**User Class Name:** Pipe Base (Heavy Duty)

**Part Number:** PSL\_350\_SML\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_350\_SML

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

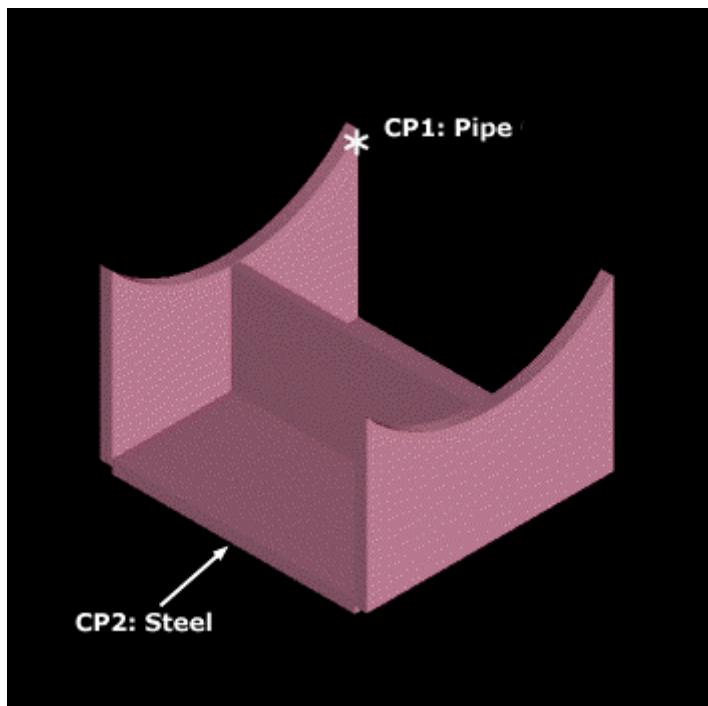
Input name(4) = "K"

Input name(5) = "L"

Input name(6) = "WEB\_T"

Input name(7) = "FLANGE\_T"

Input name(8) = "END\_T"



## PSL\_351

**Description:** light duty pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_351

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_351

**User Class Name:** Pipe Clamp Base - Light Duty

**Part Number:** PSL\_351\_\*

**Inputs, Outputs, and Aspects:**

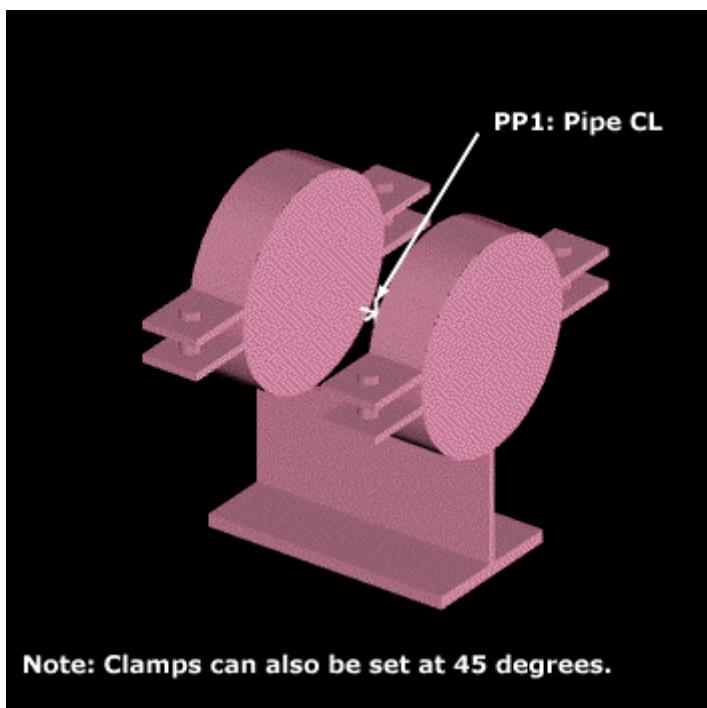
ProgID: SP\_PSL.PSL\_351

Input name(2) = "ANGLE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "CLAMP"

Input name(3) = "A"



## PSL\_353

**Description:** tubular base

**Symbol Name:** SP\_PSL.PSL\_353

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_353

**User Class Name:** Tubular Base

**Part Number:** PSL\_353\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_353

Input name(2) = "STANCHION\_DIA"

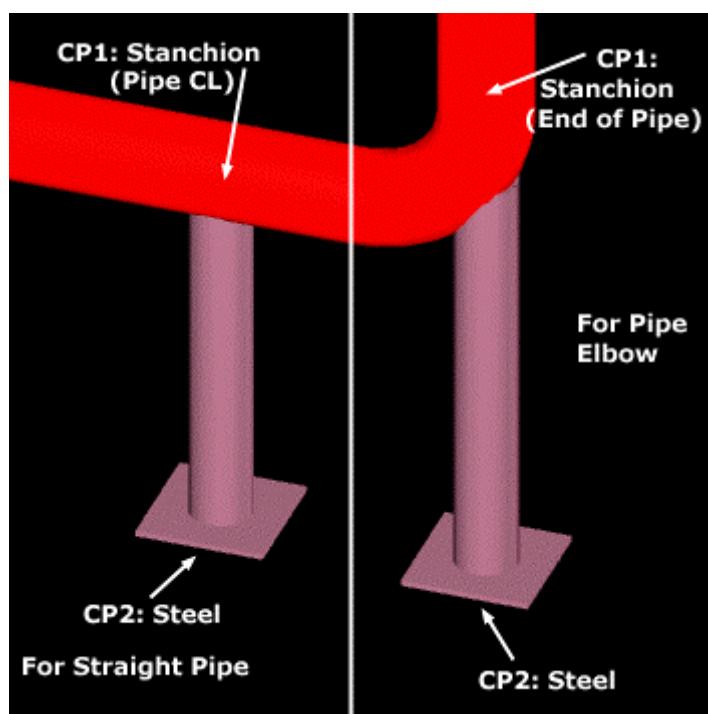
Input name(3) = "ELBOW\_OPT"

Input name(4) = "Length"

Input name(5) = "PIPE\_NOM\_DIA"

Input name(6) = "PIPE\_DIA"

Input name(7) = "D"



# PSL\_355A

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355A

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355A

Output name 1 = "Port1"

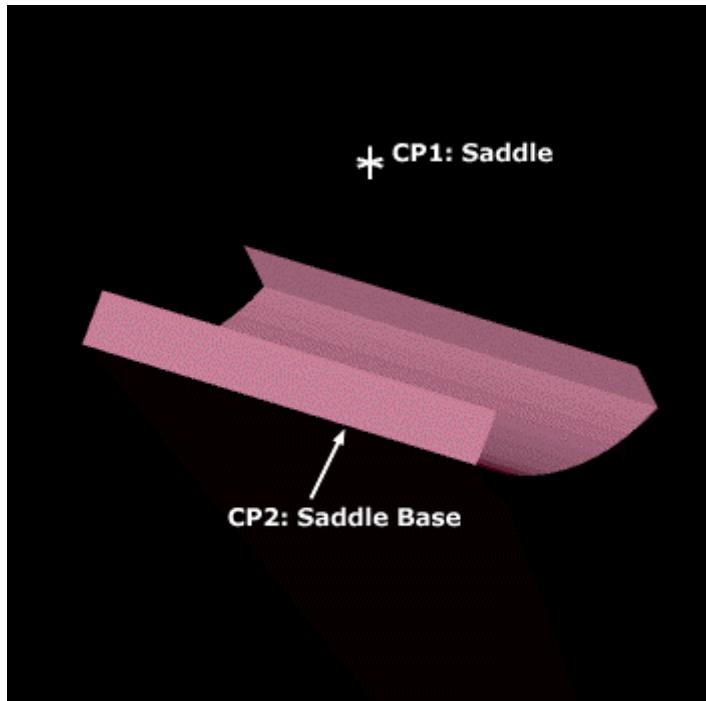
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



## PSL\_355B

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355B

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355B

Output name 1 = "Port1"

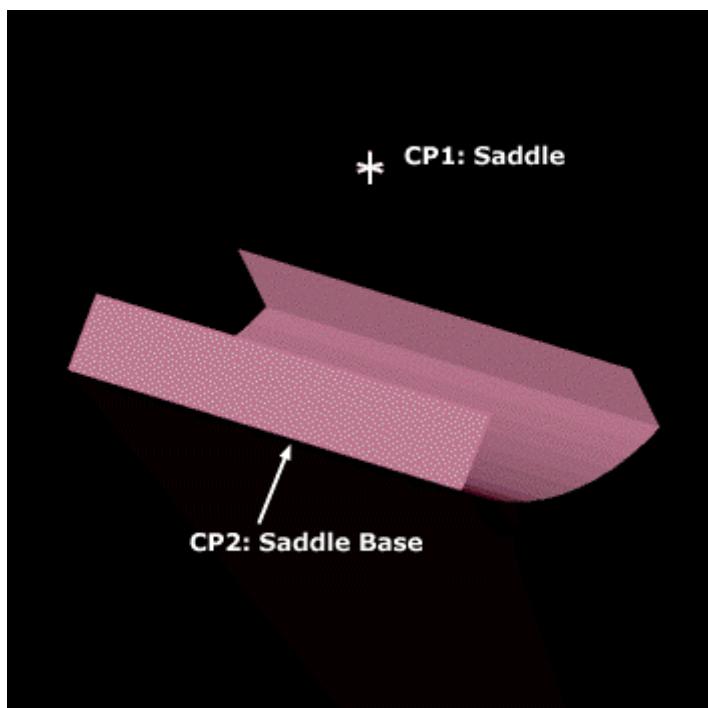
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



# PSL\_355C

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355C

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355C

Output name 1 = "Port1"

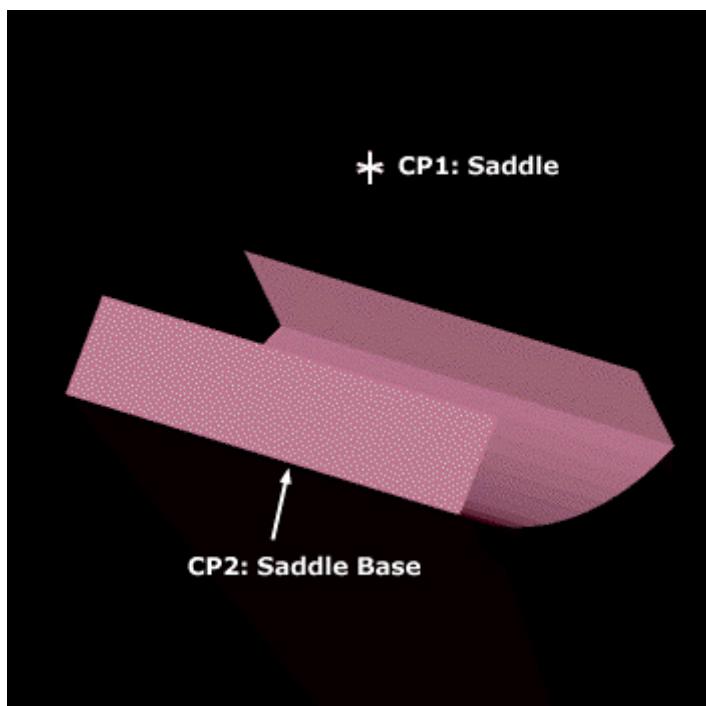
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



## PSL\_355D

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355D

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355D

Output name 1 = "Port1"

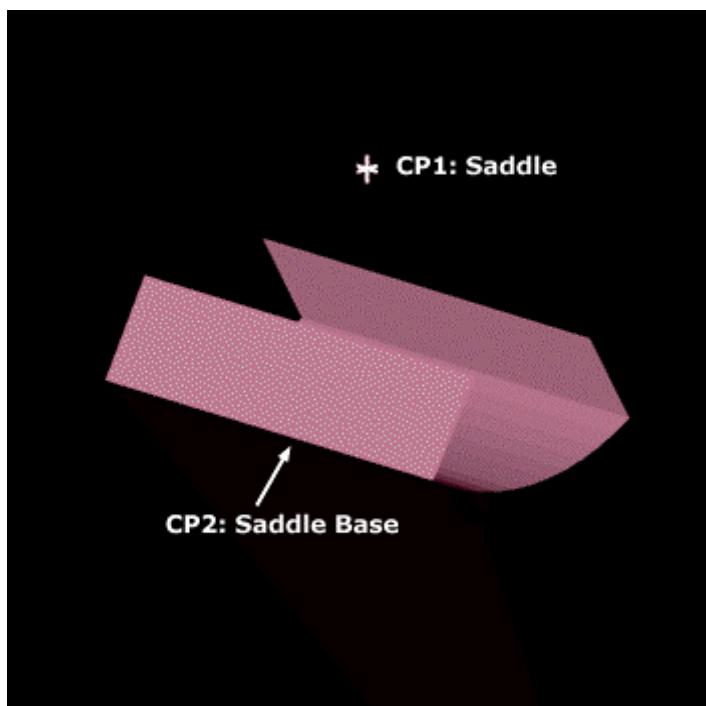
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



# PSL\_355E

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355E

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355E

Output name 1 = "Port1"

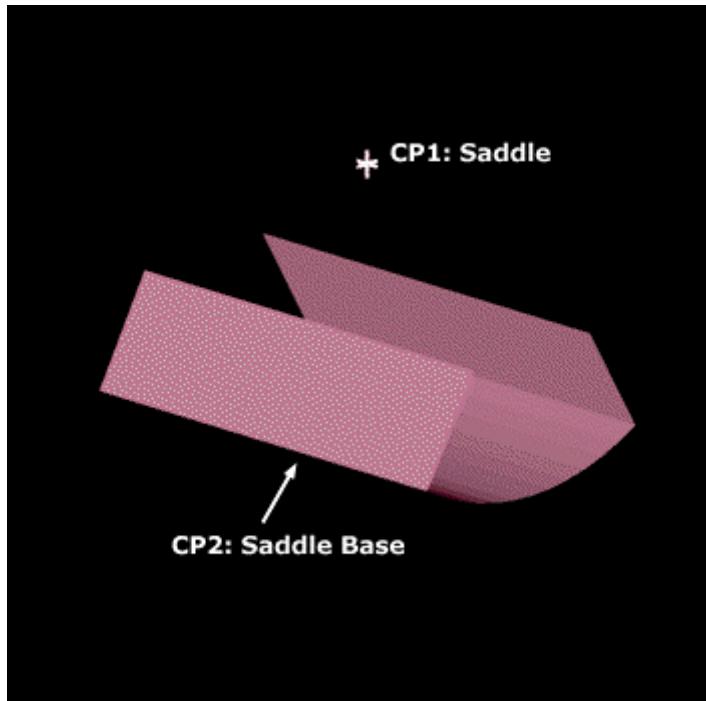
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



## PSL\_355F

**Description:**

**Symbol Name:** SP\_PSL.PSL\_355F

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_355F

Output name 1 = "Port1"

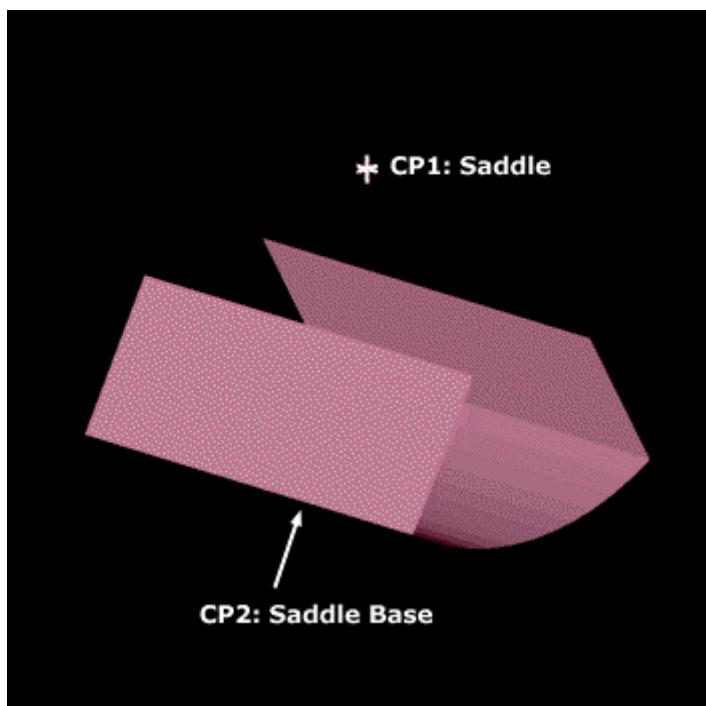
Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "PIPE\_DIA"

Input name(3) = "A"

Input name(4) = "L"



## PSL\_358

**Description:** pipe lug attachment

**Symbol Name:** SP\_PSL.PSL\_358

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_358

**User Class Name:** Pipe Lug Attachment

**Part Number:** PSL\_358\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_358

Input name(2) = "RADIUS"

Input name(3) = "PIPE\_DIA"

Input name(4) = "B\_1"

Input name(5) = "D"

Input name(7) = "T"

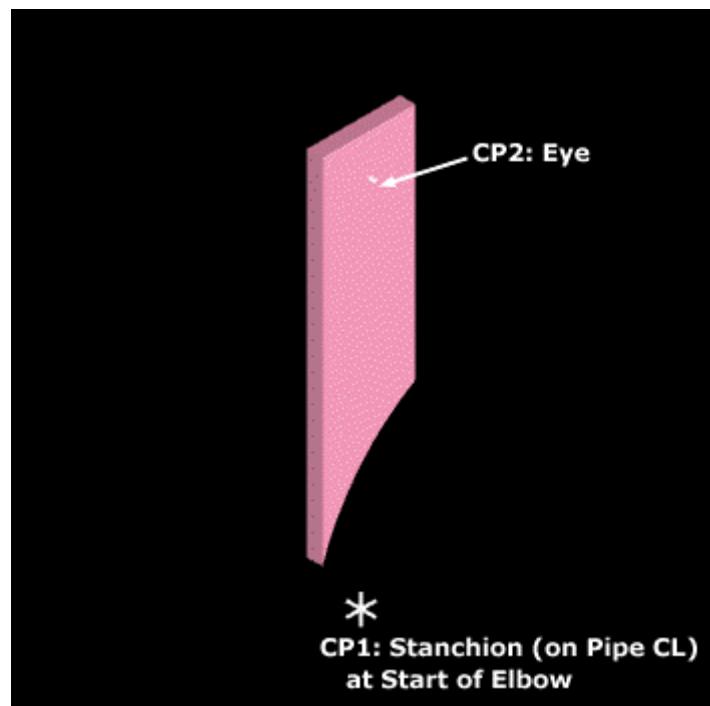
Input name(6) = "W"

Input name(8) = "A"

Input name(9) = "B\_3"

Input name(10) = "B\_5"

Input name(11) = "PIPE\_NOM\_DIA"



## PSL\_383

**Description:** anchor hold down clamp

**Symbol Name:** SP\_PSL.PSL\_383

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_383\_AUX

**User Class Name:** Anchor Hold Down Clamp

**Part Number:** PSL\_383\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_383

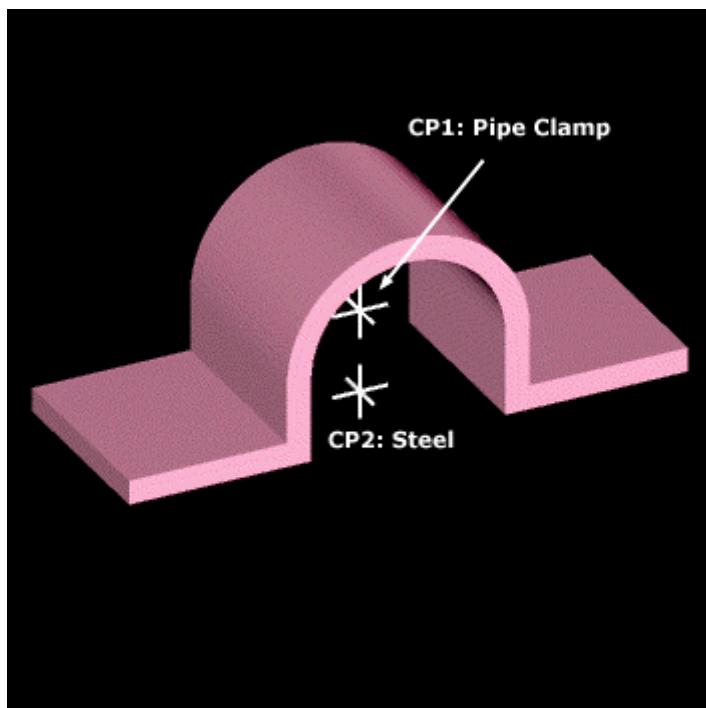
Input name(2) = "A"

Input name(3) = "C"

Input name(4) = "F"

Input name(5) = "G1"

Input name(6) = "G2"



## PSL\_486

**Description:** spreader beam

**Symbol Name:** SP\_PSL.PSL\_486

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_486

**User Class Name:** Spreader Beam

**Part Number:** PSL\_486\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_486

Input name(2) = "SHOE\_H"

Input name(3) = "S"

Input name(5) = "PIPE\_DIA"

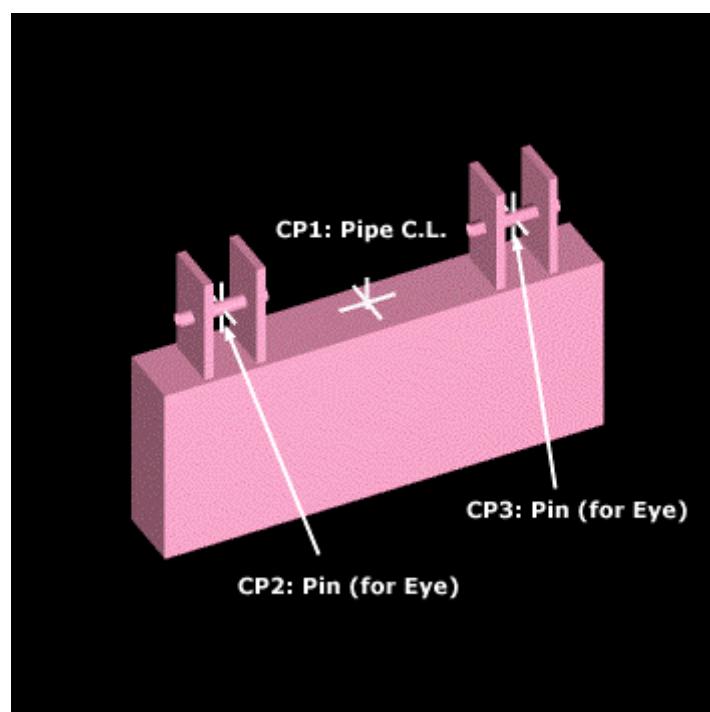
Input name(8) = "C"

Input name(9) = "E"

Input name(10) = "B"

Input name(12) = "L"

Input name(13) = "T"



## PSL\_487

**Description:** spreader beam with battenplate

**Symbol Name:** SP\_PSL.PSL\_487

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_487

**User Class Name:** Spreader Beam w/Battenplate

**Part Number:** PSL\_487\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_487

Input name(2) = "SHOE\_H"

Input name(3) = "S"

Input name(4) = "BEAM\_REF"

Input name(5) = "PIPE\_DIA"

Input name(6) = "ROD\_DIA"

Input name(7) = "C"

Input name(8) = "A"

Input name(9) = "F"

Input name(10) = "B"

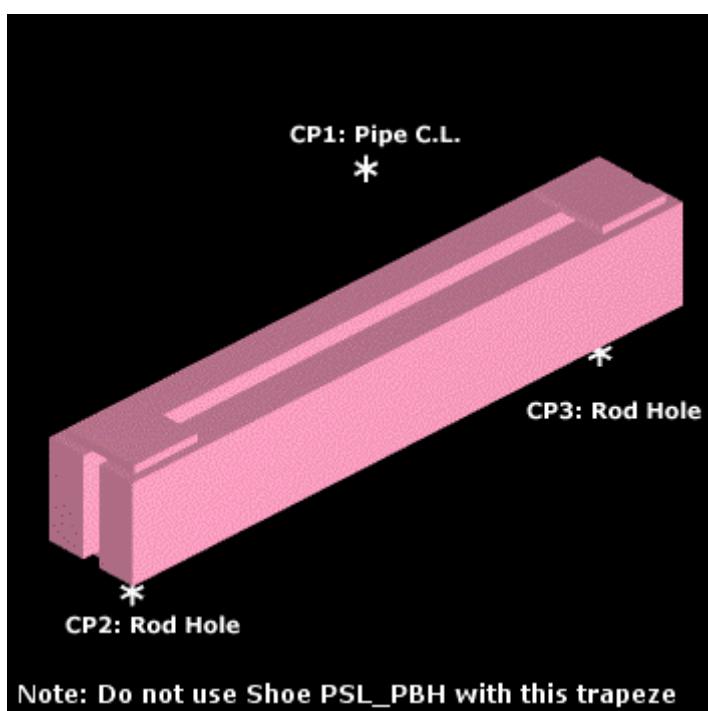
Input name(11) = "E"

Input name(12) = "G"

Input name(13) = "H"

Input name(14) = "T"

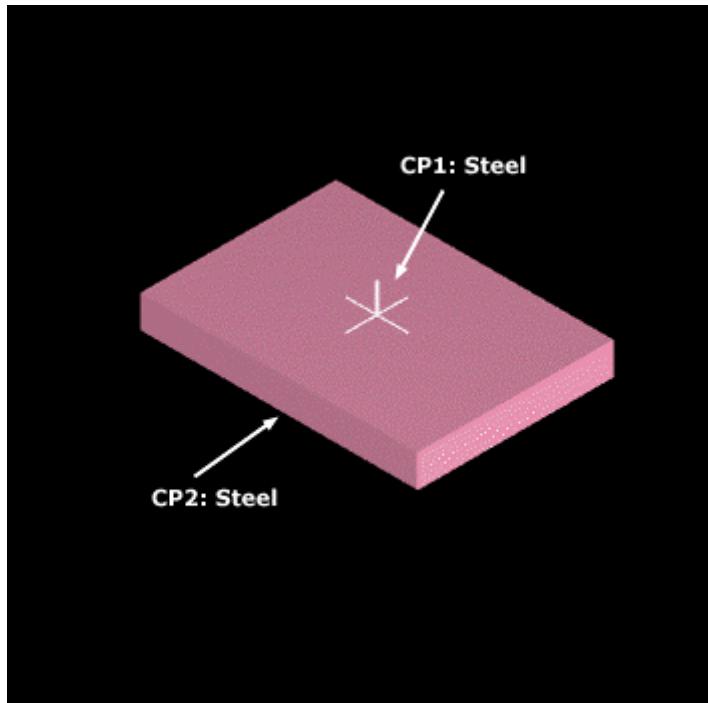
Input name(15) = "K"



## PSL\_488

**Description:** battenplate  
**Symbol Name:** SP\_PSL.PSL\_488  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_488  
**User Class Name:** Battenplate  
**Part Number:** PSL\_488\_\*  
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_488  
Input name(2) = "C\_"  
Input name(3) = "D\_"  
Input name(4) = "E\_"  
Input name(5) = "B\_"



## PSL\_511

**Description:** rigid strut

**Symbol Name:** SP\_PSL.PSL\_511

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_511

**User Class Name:** Rigid Strut

**Part Number:** PSL\_511\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_511

Input name(2) = "END\_ROT"

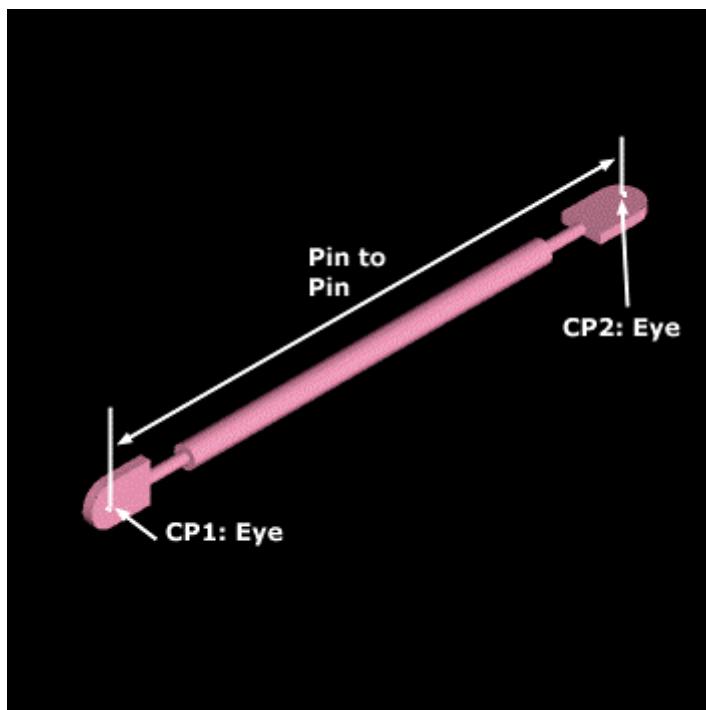
Input name(3) = "L"

Input name(4) = "A"

Input name(5) = "B"

Input name(6) = "C"

Input name(7) = "D"



## PSL\_512

**Description:** welding clevis

**Symbol Name:** SP\_PSL.PSL\_512

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_512

**User Class Name:** Welding Clevis

**Part Number:** PSL\_512\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_512

Input name(2) = "F"

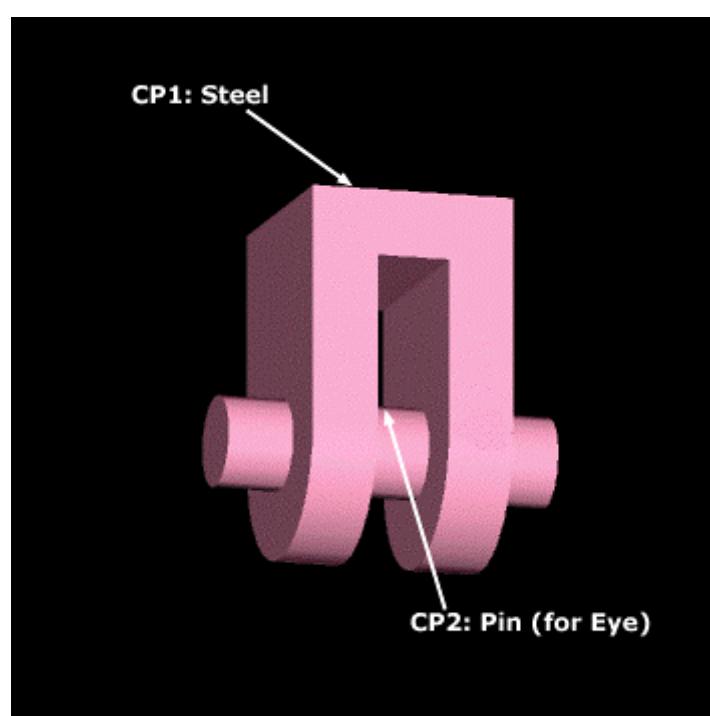
Input name(3) = "G"

Input name(4) = "PIN\_DIA"

Input name(5) = "E"

Input name(6) = "C"

Input name(7) = "H"



## PSL\_513

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_513

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_513

**User Class Name:** Clamp For Rigid Struts and Snubbers

**Part Number:** PSL\_513\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_513

Input name(2) = "S"

Input name(3) = "T"

Input name(4) = "A"

Input name(5) = "C"

Input name(6) = "PIPE\_DIA"

Input name(7) = "B"

Input name(8) = "R"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "F"

Input name(12) = "I"

Input name(13) = "U"

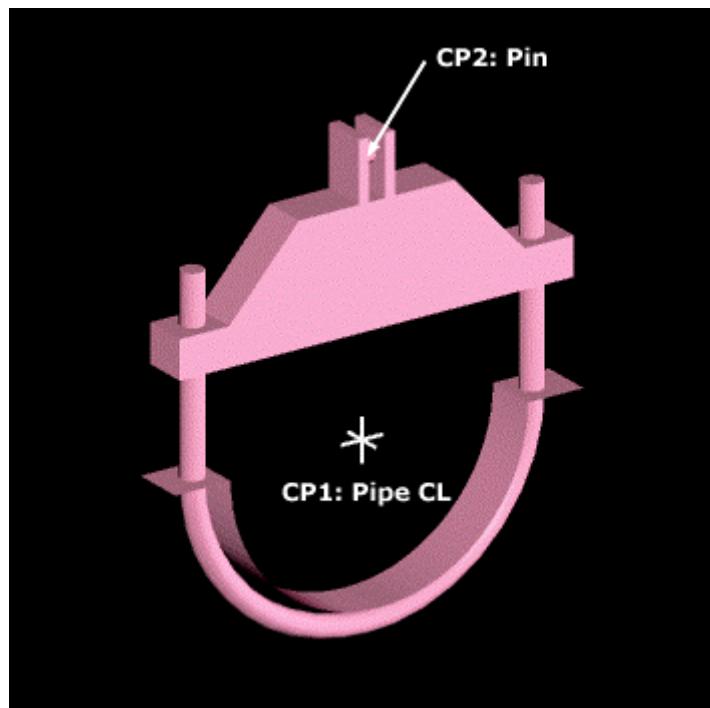
Input name(14) = "Q"

Input name(15) = "Z"

Input name(16) = "P"

Input name(17) = "L"

Input name(18) = "O"



## PSL\_513S

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_513S

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_513S

**User Class Name:** Clamp For Rigid Struts and Snubbers

**Part Number:** PSL\_513S\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_513S

Input name(15) = "R"

Input name(2) = "S"

Input name(3) = "T"

Input name(4) = "Q"

Input name(5) = "C"

Input name(6) = "O"

Input name(7) = "PIPE\_DIA"

Input name(8) = "L"

Input name(9) = "Z"

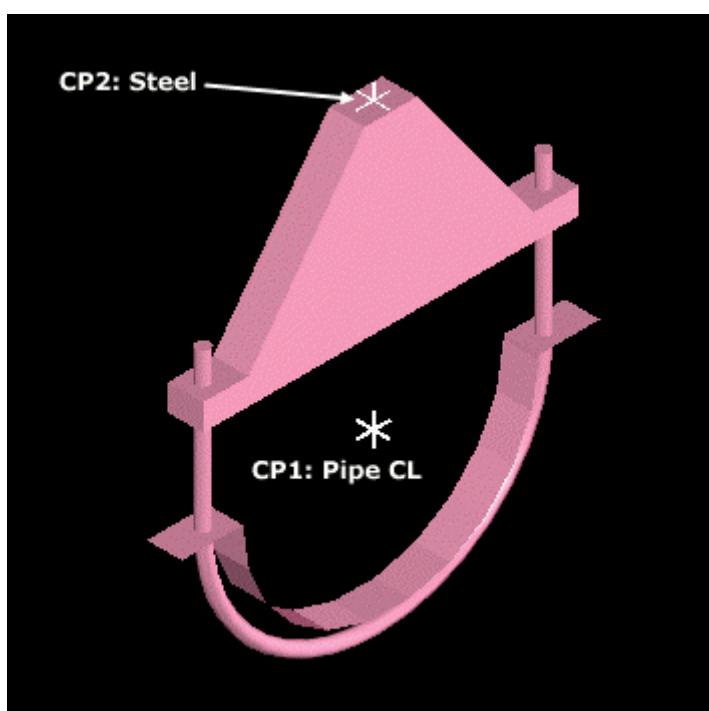
Input name(10) = "D"

Input name(11) = "E"

Input name(12) = "F"

Input name(13) = "I"

Input name(14) = "U"



## PSL\_514

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_514

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_514

**User Class Name:** Clamp For Rigid Struts and Snubbers

**Part Number:** PSL\_514\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_514

Input name(2) = "AJ"

Input name(3) = "AH"

Input name(4) = "A"

Input name(5) = "C"

Input name(6) = "PIPE\_DIA"

Input name(7) = "B"

Input name(8) = "AK"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "F"

Input name(12) = "CA"

Input name(13) = "CB"

Input name(14) = "CC"

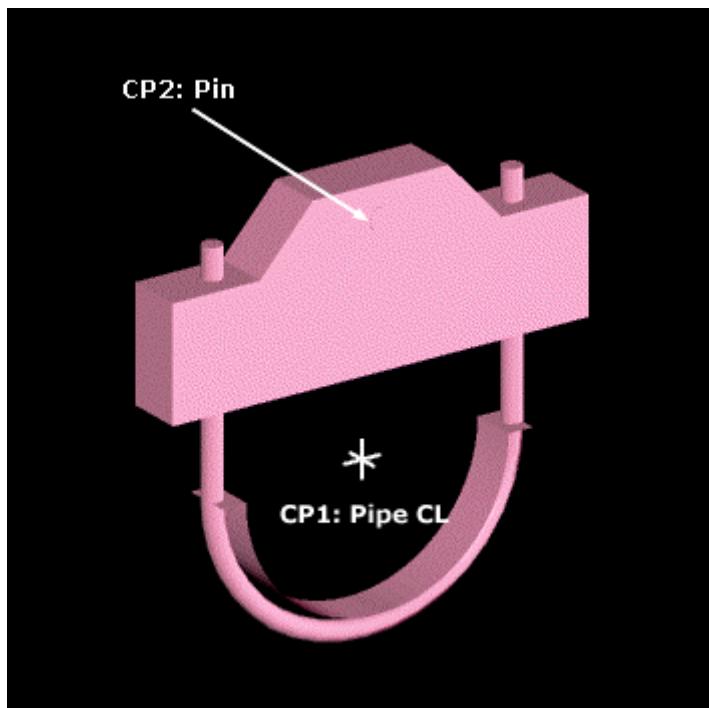
Input name(15) = "DB"

Input name(16) = "AE"

Input name(17) = "AP"

Input name(18) = "AR"

Input name(19) = "AF"



## PSL\_515

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_515

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_515

**User Class Name:** Clamp for Rigid Struts and Snubbers

**Part Number:** PSL\_515\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_515

Input name(2) = "PIN\_L"

Input name(3) = "BOLT\_L"

Input name(4) = "A"

Input name(5) = "C"

Input name(6) = "N"

Input name(7) = "B"

Input name(8) = "X"

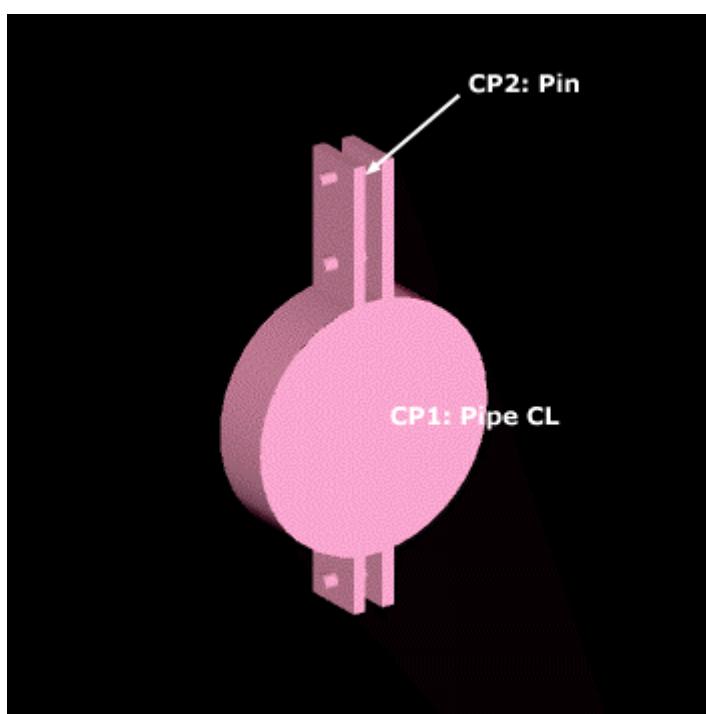
Input name(9) = "D"

Input name(10) = "B1"

Input name(11) = "F"

Input name(12) = "E"

Input name(13) = "T"



## PSL\_516

**Description:** short snubber

**Symbol Name:** SP\_PSL.PSL\_516

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_516

**User Class Name:** Short Snubber

**Part Number:** PSL\_516\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_516

Input name(2) = "PTP"

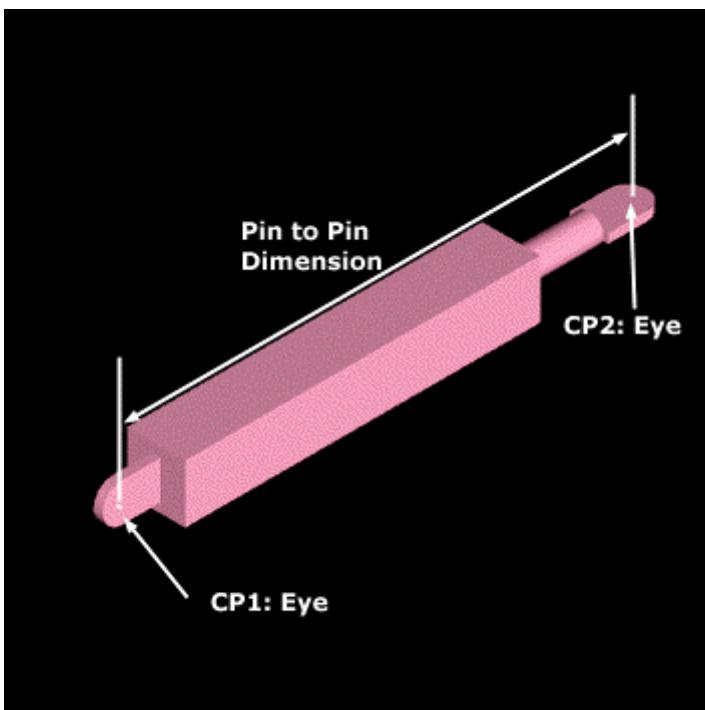
Input name(3) = "B"

Input name(4) = "D"

Input name(5) = "END\_ROT"

Input name(6) = "A"

Input name(7) = "C"



## PSL\_517

**Description:** adjustable snubber

**Symbol Name:** SP\_PSL.PSL\_517

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_517

**User Class Name:** Adjustable Snubber

**Part Number:** PSL\_517\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_517

Input name(2) = "PTP"

Input name(3) = "END\_ROT"

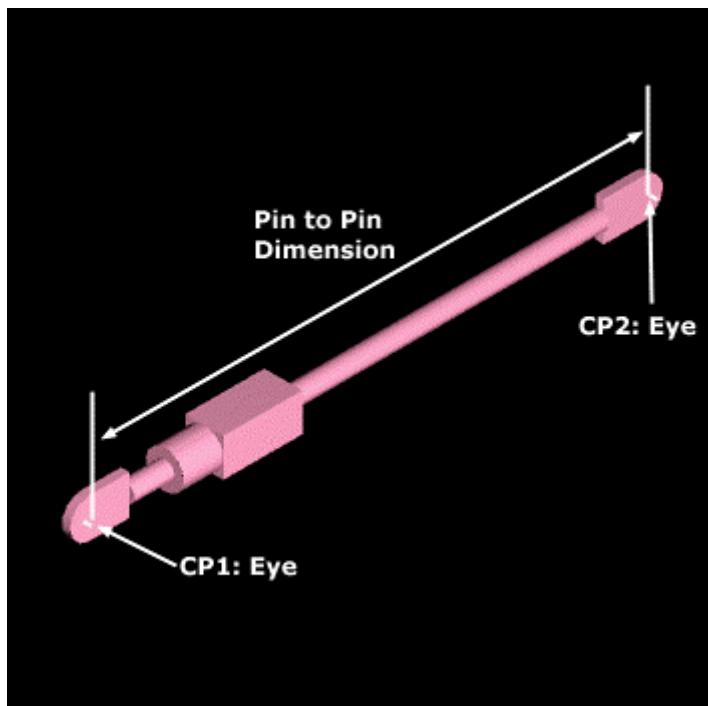
Input name(4) = "A"

Input name(5) = "C"

Input name(6) = "B"

Input name(7) = "D"

Input name(8) = "E"



## PSL\_711

**Description:**

**Symbol Name:** SP\_PSL.PSL\_711

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_711

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BODY2"

Output name 5 = "PLATE"

Output name 6 = "RIGHT\_BOLT"

Output name 7 = "LEFT\_BOLT"

Input name(2) = "PIPE\_DIA"

Input name(3) = "STRAP\_T"

Input name(4) = "BOLT\_DIA"

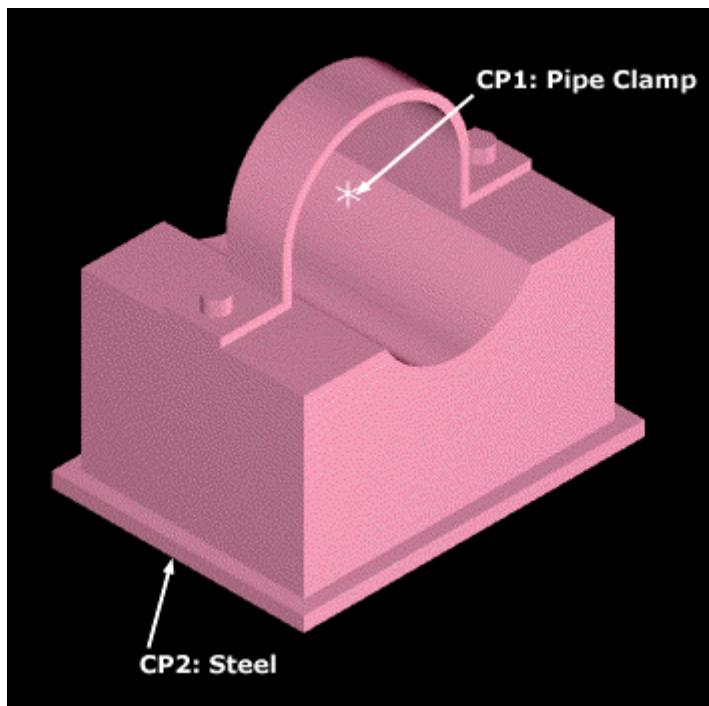
Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "T"

Input name(9) = "W"



## PSL\_712

**Description:**

**Symbol Name:** SP\_PSL.PSL\_712

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_712

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BODY2"

Output name 5 = "PLATE"

Output name 6 = "RIGHT\_BOLT1"

Output name 7 = "LEFT\_BOLT1"

Output name 8 = "RIGHT\_BOLT2"

Output name 9 = "LEFT\_BOLT2"

Output name 10 = "BODY3"

Input name(2) = "PIPE\_DIA"

Input name(3) = "STRAP\_T"

Input name(4) = "BOLT\_DIA"

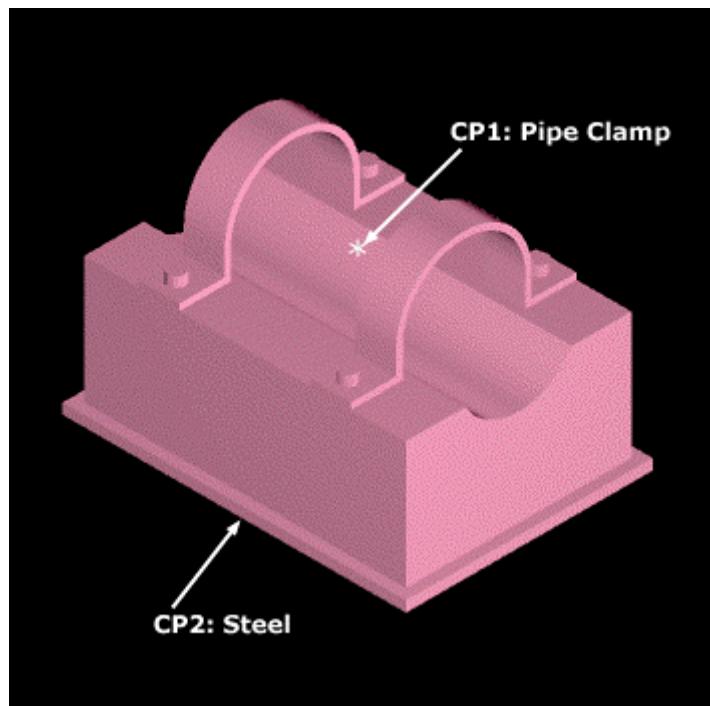
Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "T"

Input name(9) = "W"



## PSL\_721

**Description:**

**Symbol Name:** SP\_PSL.PSL\_721

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_721

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "PLATE"

Output name 5 = "CYL1"

Output name 6 = "CYL2"

Output name 7 = "OUTSIDE"

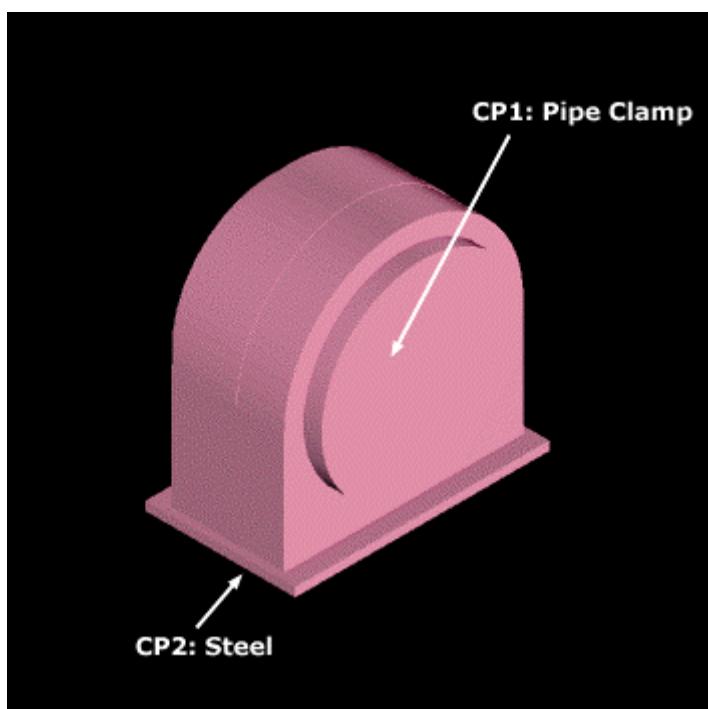
Input name(2) = "INSULAT"

Input name(3) = "PIPE\_DIA"

Input name(4) = "T"

Input name(5) = "W"

Input name(6) = "STRAP\_T"



## PSL\_722

**Description:**

**Symbol Name:** SP\_PSL.PSL\_722

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_722

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "BODY2"

Output name 5 = "PLATE"

Output name 6 = "CYL1"

Output name 7 = "CYL2"

Output name 8 = "OUTSIDE"

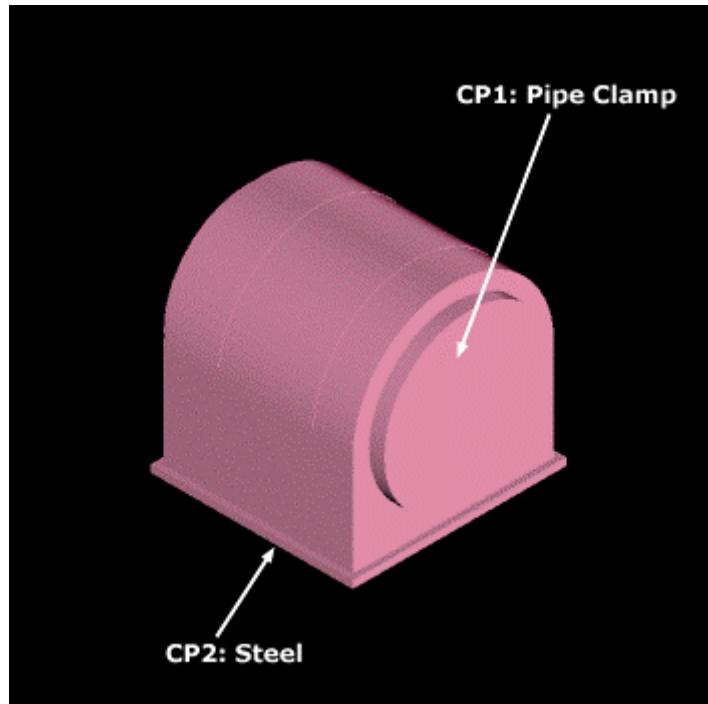
Input name(2) = "INSULAT"

Input name(3) = "PIPE\_DIA"

Input name(4) = "T"

Input name(5) = "W"

Input name(6) = "STRAP\_T"



## PSL\_731

**Description:**

**Symbol Name:** SP\_PSL.PSL\_731

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_731

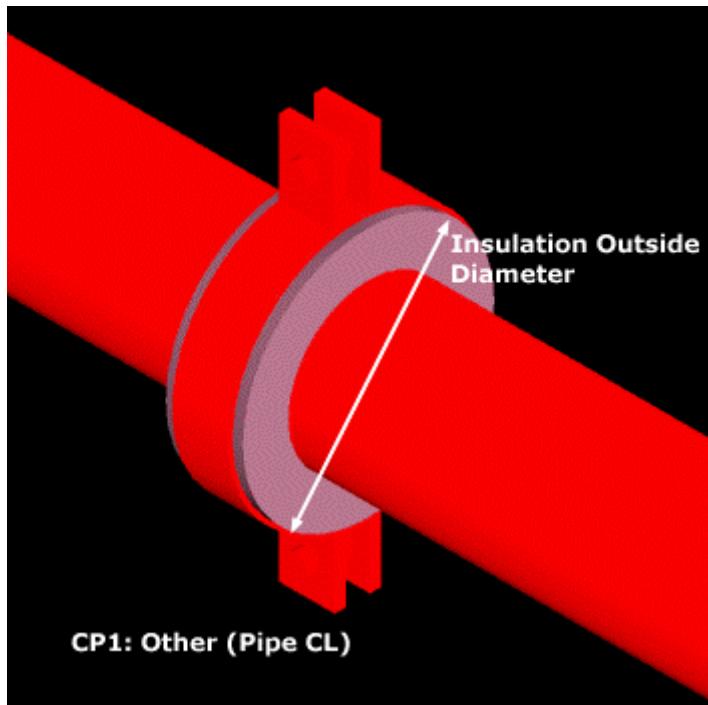
Output name 1 = "Port1"

Output name 2 = "CYL"

Input name(2) = "INSUL\_DIA"

Input name(3) = "W"

Input name(4) = "TYP"



# PSL\_732

**Description:**

**Symbol Name:** SP\_PSL.PSL\_732

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_732

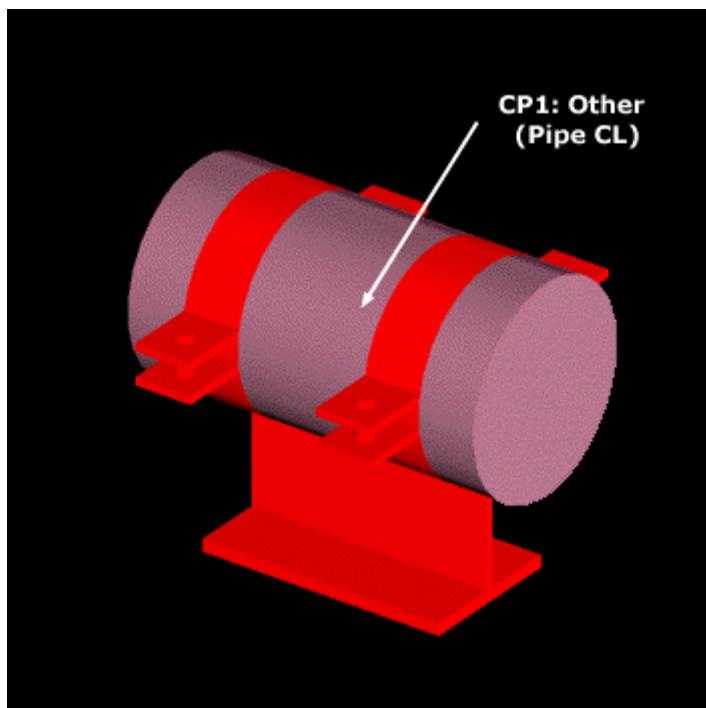
Output name 1 = "Port1"

Output name 2 = "CYL"

Input name(2) = "INSUL\_DIA"

Input name(3) = "W"

Input name(4) = "TYP"



## PSL\_741

**Description:**

**Symbol Name:** SP\_PSL.PSL\_741

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_741

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP\_PLATE"

Output name 4 = "INSUL"

Output name 5 = "BASE\_PLATE"

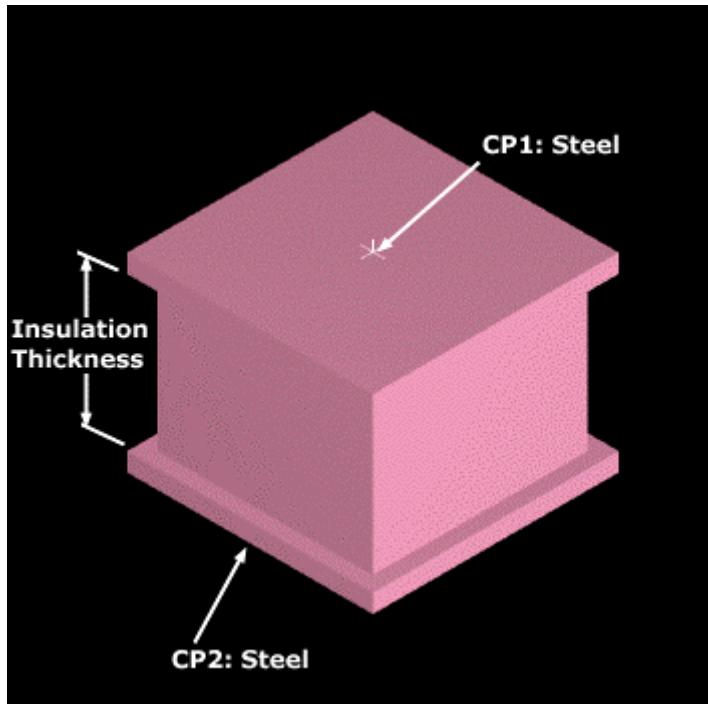
Input name(2) = "C"

Input name(3) = "INSULAT"

Input name(4) = "WIDTH"

Input name(5) = "T"

Input name(6) = "A"



# PSL\_742

**Description:**

**Symbol Name:** SP\_PSL.PSL\_742

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_742

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP\_PLATE"

Output name 4 = "INSUL"

Output name 5 = "BASE\_PLATE"

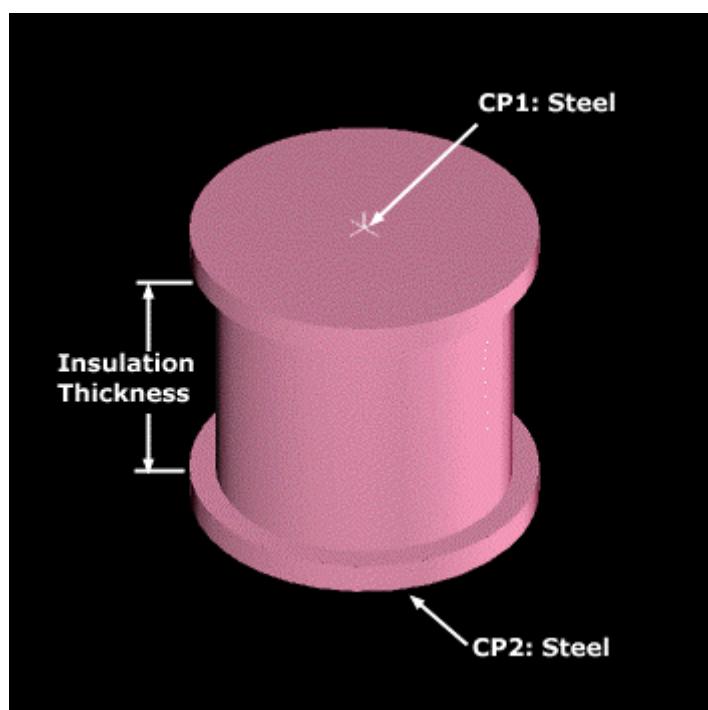
Input name(2) = "D"

Input name(3) = "INSULAT"

Input name(4) = "WIDTH"

Input name(5) = "T"

Input name(6) = "B"



# PSL\_743

**Description:**

**Symbol Name:** SP\_PSL.PSL\_743

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_743

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP\_PLATE"

Output name 4 = "INSUL"

Output name 5 = "BASE\_PLATE"

Input name(2) = "INSULAT"

Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

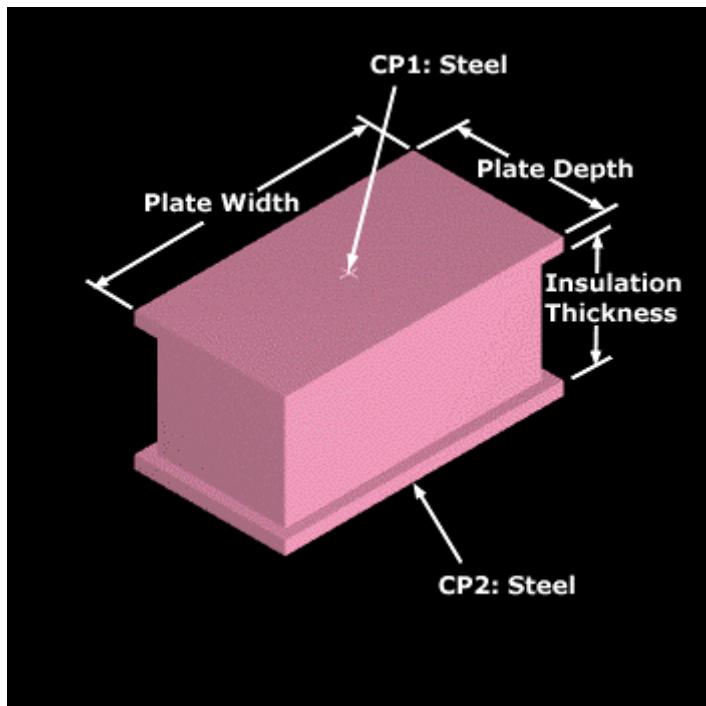
Input name(5) = "B"

Input name(6) = "T"

Input name(7) = "C"

Input name(8) = "D"

Input name(9) = "A"



## PSL\_801

**Description:** u-bolt

**Symbol Name:** SP\_PSL.PSL\_801

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_801

**User Class Name:** Grip-Type U-Bolt for Stainless Steel & Galvanised Pipes

**Part Number:** PSL\_801\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_801

Input name(2) = "GAGE"

Input name(3) = "B"

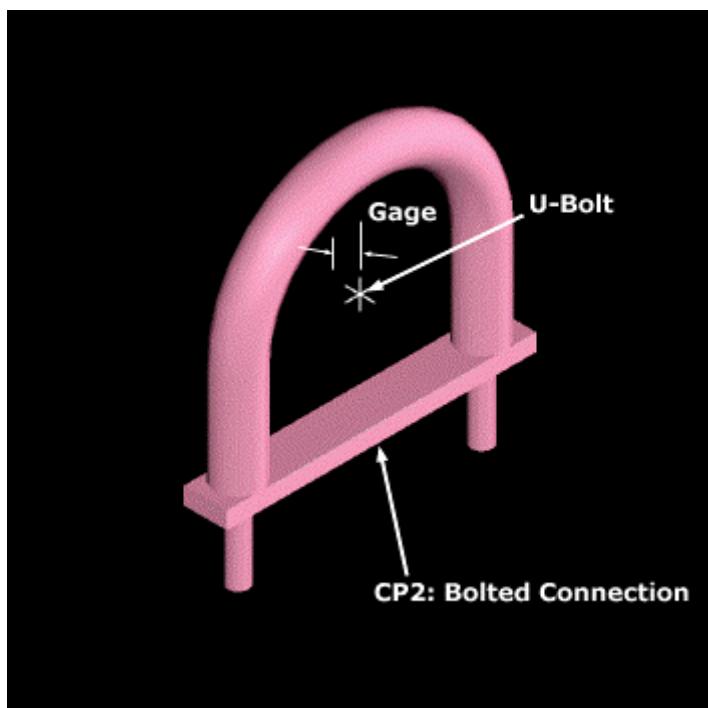
Input name(4) = "D"

Input name(5) = "E"

Input name(6) = "A"

Input name(7) = "F"

Input name(8) = "C"



## PSL\_802

**Description:** u-bolt

**Symbol Name:** SP\_PSL.PSL\_802

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_802

**User Class Name:** Grid-Type U-Bolt for Copper and Cupro-Nickel Pipes

**Part Number:** PSL\_802\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_802

Input name(2) = "GAGE"

Input name(3) = "B"

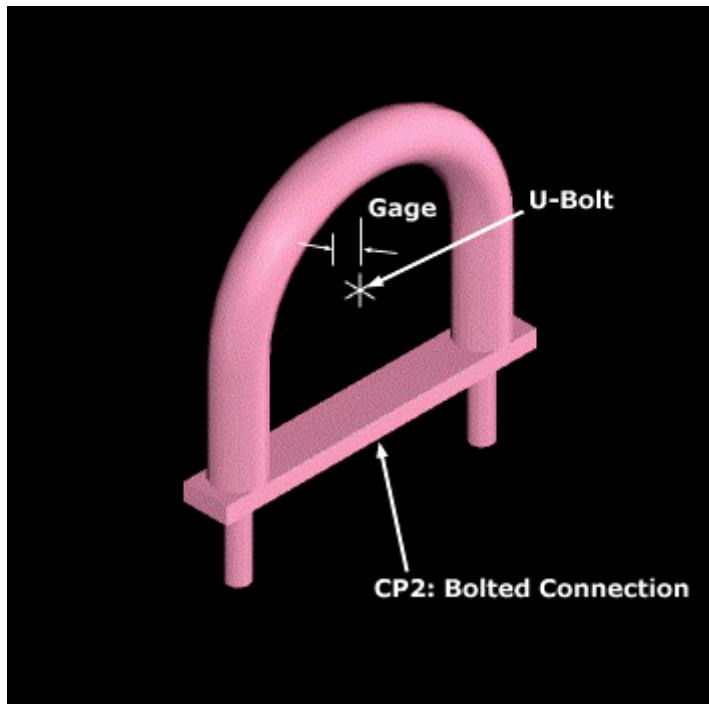
Input name(4) = "D"

Input name(5) = "E"

Input name(6) = "A"

Input name(7) = "F"

Input name(8) = "C"



## PSL\_816

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_816

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_816

**User Class Name:** Comlin Clamp Strip

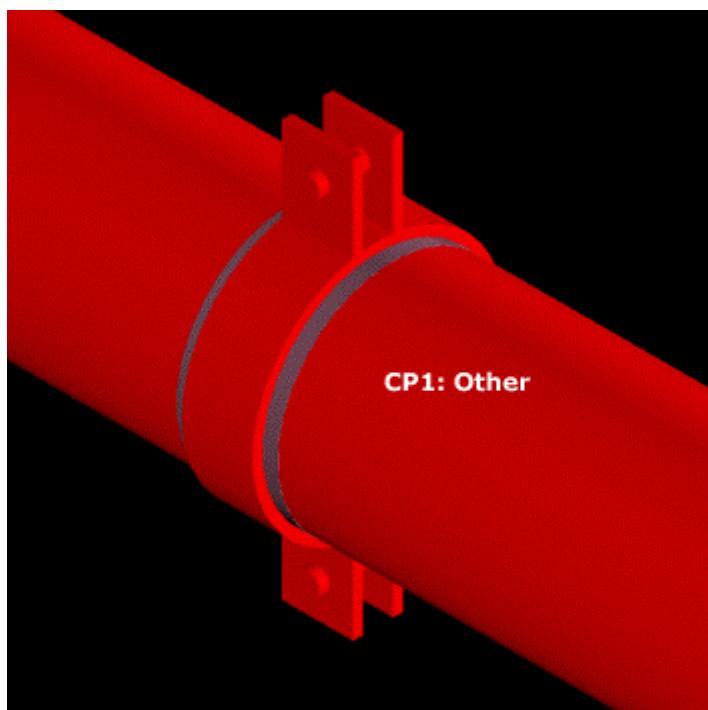
**Part Number:** PSL\_816\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_816

Input name(2) = "Pipe\_Dia"

Input name(3) = "C"



## PSL\_817

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_817

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_817

**User Class Name:** Comlin Clamp Strip

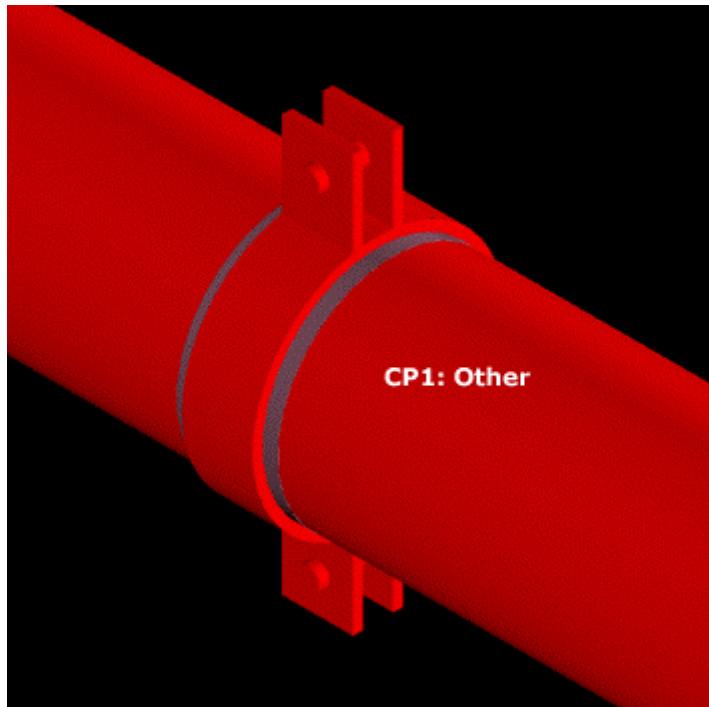
**Part Number:** PSL\_817\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_817

Input name(2) = "Pipe\_Dia"

Input name(3) = "C"



## PSL\_818

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_818

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_818

**User Class Name:** Comlin Grip Clamp Strip

**Part Number:** PSL\_818\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_818

Input name(2) = "C"

Input name(3) = "B"

Input name(4) = "Pipe\_Dia"



## PSL\_901

**Description:** u-bolt

**Symbol Name:** SP\_PSL.PSL\_901

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_901

**User Class Name:** Non-Grip Type U-Bolt for Stainless Steel & Galvanized Pipes

**Part Number:** PSL\_901\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_901

Input name(2) = "GAGE"

Input name(3) = "D"

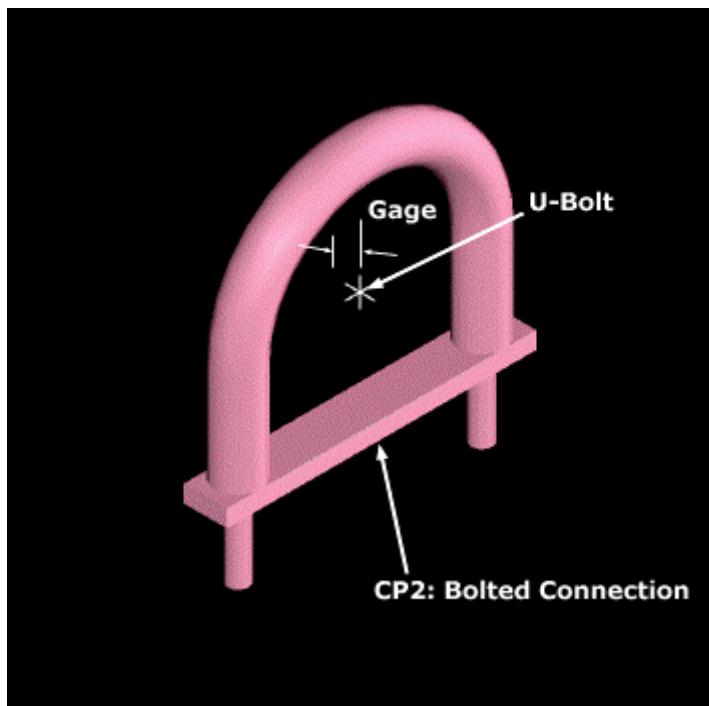
Input name(4) = "E"

Input name(5) = "A"

Input name(6) = "F"

Input name(7) = "C"

Input name(8) = "B"



## PSL\_902

**Description:** u-bolt

**Symbol Name:** SP\_PSL.PSL\_902

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_902

**User Class Name:** Non-Grip Type Lined U-Bolt for Copper and Cupro-Nickel Pipes

**Part Number:** PSL\_902\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_902

Input name(2) = "GAGE"

Input name(3) = "D"

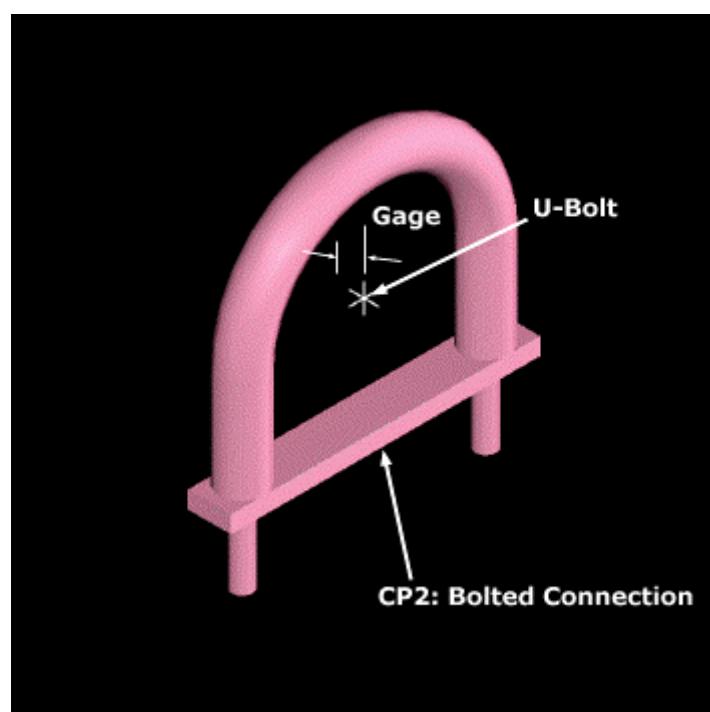
Input name(4) = "E"

Input name(5) = "A"

Input name(6) = "F"

Input name(7) = "C"

Input name(8) = "B"



## PSL\_916

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_916

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_916

**User Class Name:** Comlin Lined Clamp Strip

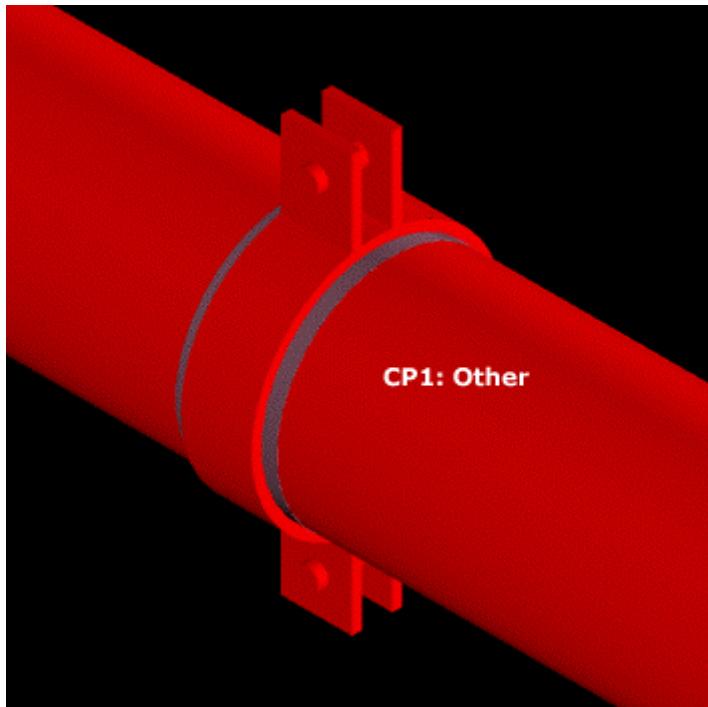
**Part Number:** PSL\_916\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_916

Input name(2) = "C"

Input name(3) = "Pipe\_Dia"



## PSL\_917

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_917

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_917

**User Class Name:** Comlin Lined Clamp Strip

**Part Number:** PSL\_917\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_917

Input name(2) = "C"

Input name(3) = "Pipe\_Dia"



## PSL\_918

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_918

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_918

**User Class Name:** Comlin Grip Clamp Strip

**Part Number:** PSL\_918\_\*

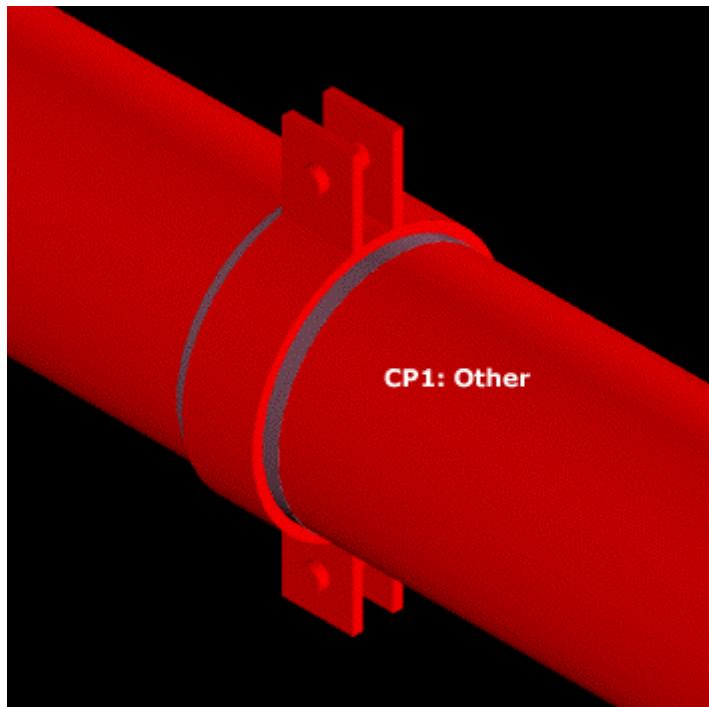
**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_918

Input name(2) = "B"

Input name(3) = "Pipe\_Dia"

Input name(4) = "C"



## PSL\_CH100

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CH100

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CH100

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Output name 10 = "SADDLE1"

Input name(2) = "INSULAT"

Input name(3) = "F2"

Input name(4) = "PIPE\_DIA"

Input name(5) = "F"

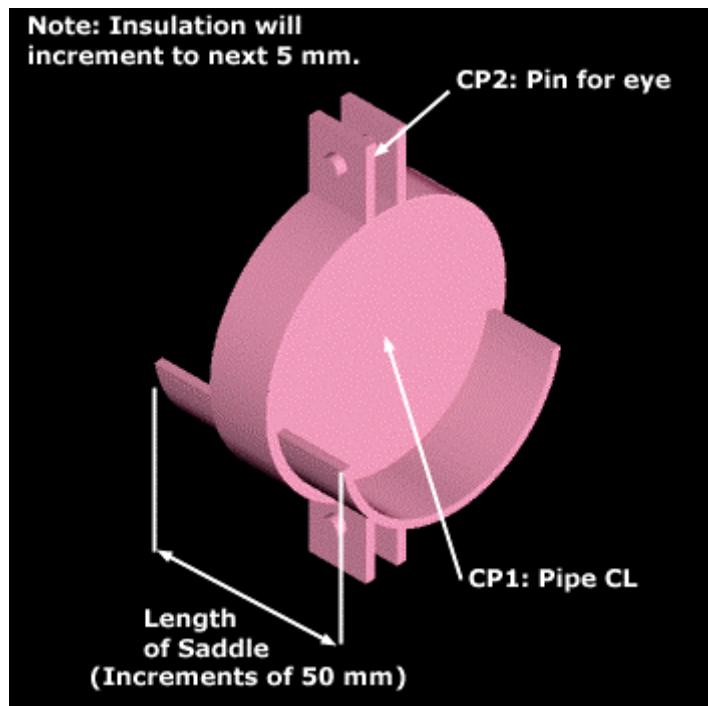
Input name(6) = "E"

Input name(7) = "A"

Input name(8) = "GAP"

Input name(9) = "B1"

Input name(10) = "T1"



# PSL\_CS100\_LRG

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS100\_LRG

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS100\_LRG

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SADDLE1"

Output name 4 = "BASE"

Output name 5 = "WEB1"

Output name 6 = "WEB2"

Input name(2) = "SHOE\_H"

Input name(3) = "SHOE\_L"

Input name(4) = "INSULAT"

Input name(5) = "PIPE\_DIA"

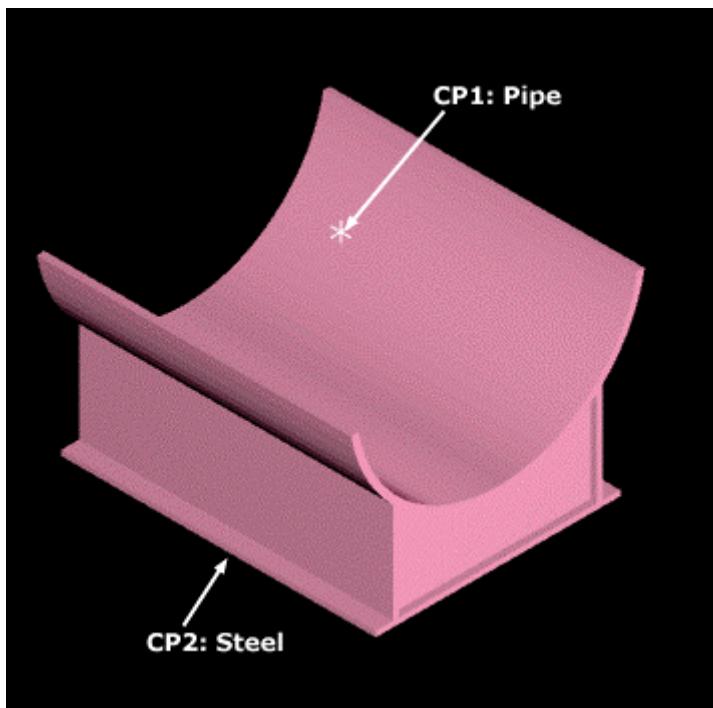
Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"

Input name(10) = "K"



## PSL\_CS100\_MED

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS100\_MED

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS100\_MED

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SADDLE1"

Output name 4 = "BASE"

Output name 5 = "WEB1"

Output name 6 = "WEB2"

Input name(2) = "SHOE\_H"

Input name(3) = "SHOE\_L"

Input name(4) = "INSULAT"

Input name(5) = "PIPE\_DIA"

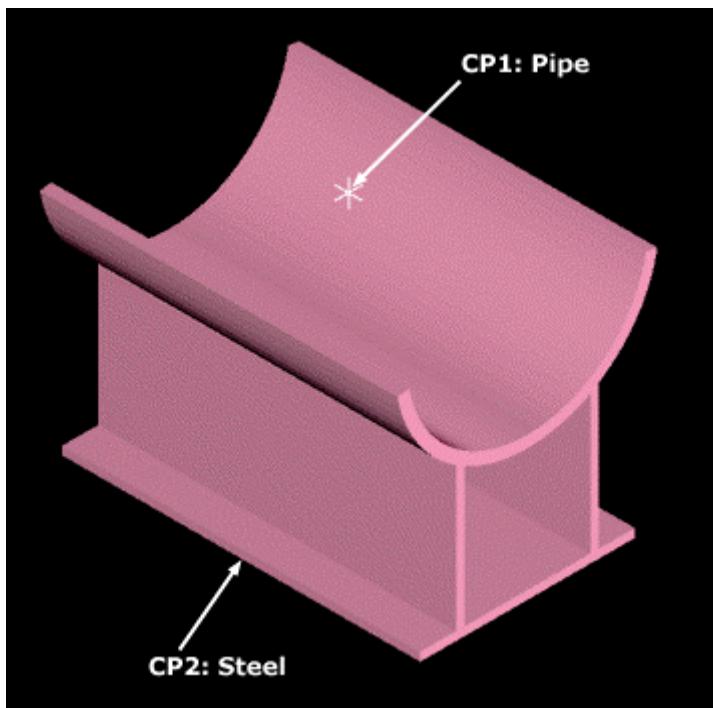
Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"

Input name(10) = "K"



## PSL\_CS100\_SML

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS100\_SML

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS100\_SML

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "SADDLE1"

Output name 4 = "BASE"

Output name 5 = "WEB"

Input name(2) = "SHOE\_L"

Input name(3) = "INSULAT"

Input name(4) = "PIPE\_DIA"

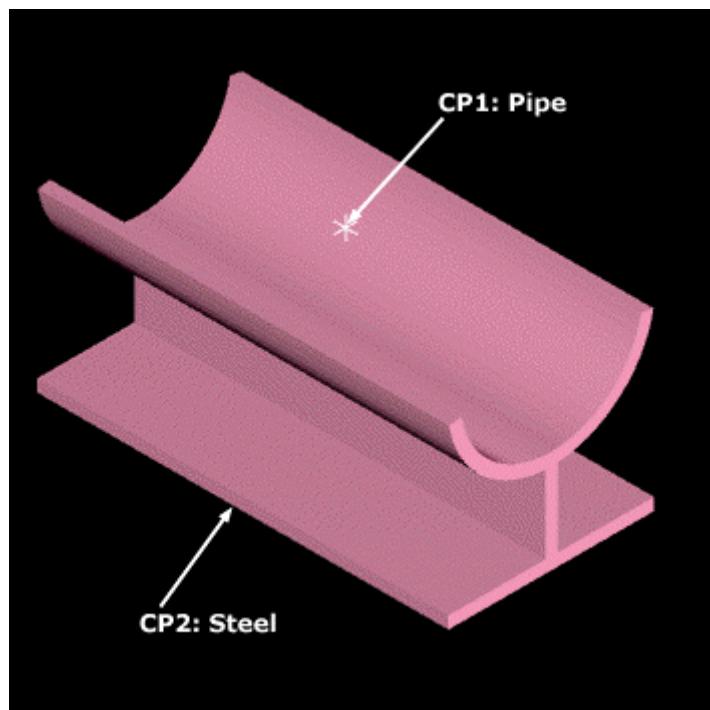
Input name(5) = "SHOE\_H"

Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"



## PSL\_CS200\_LRG

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS200\_LRG

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS200\_LRG

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CLAMP\_CYL"

Output name 4 = "CLAMP\_BOX1"

Output name 5 = "CLAMP\_BOX2"

Output name 6 = "BASE"

Output name 7 = "WEB1"

Output name 8 = "WEB2"

Input name(2) = "SHOE\_H"

Input name(3) = "SHOE\_L"

Input name(4) = "INSULAT"

Input name(5) = "PIPE\_DIA"

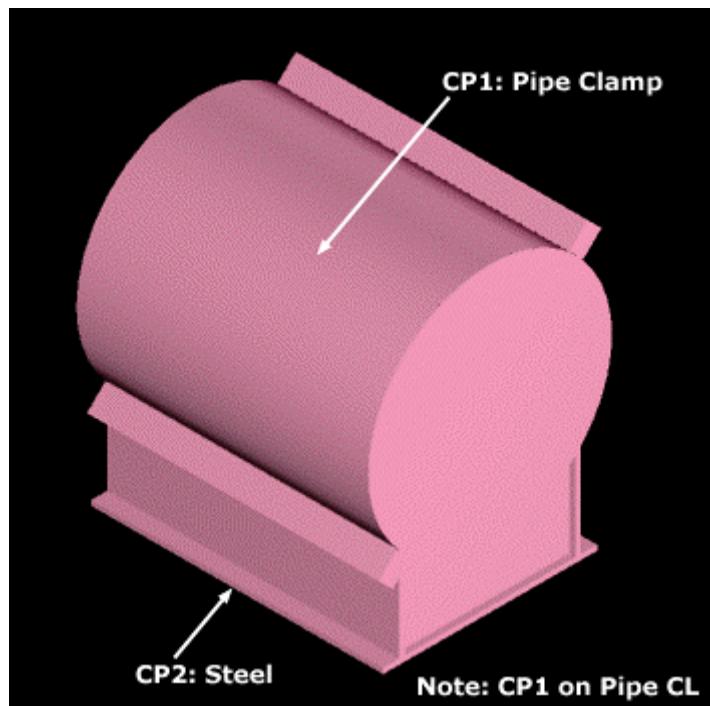
Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"

Input name(10) = "K"



## PSL\_CS200\_MED

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS200\_MED

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS200\_MED

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CLAMP\_CYL"

Output name 4 = "CLAMP\_BOX1"

Output name 5 = "CLAMP\_BOX2"

Output name 6 = "BASE"

Output name 7 = "WEB1"

Output name 8 = "WEB2"

Input name(2) = "SHOE\_H"

Input name(3) = "SHOE\_L"

Input name(4) = "INSULAT"

Input name(5) = "PIPE\_DIA"

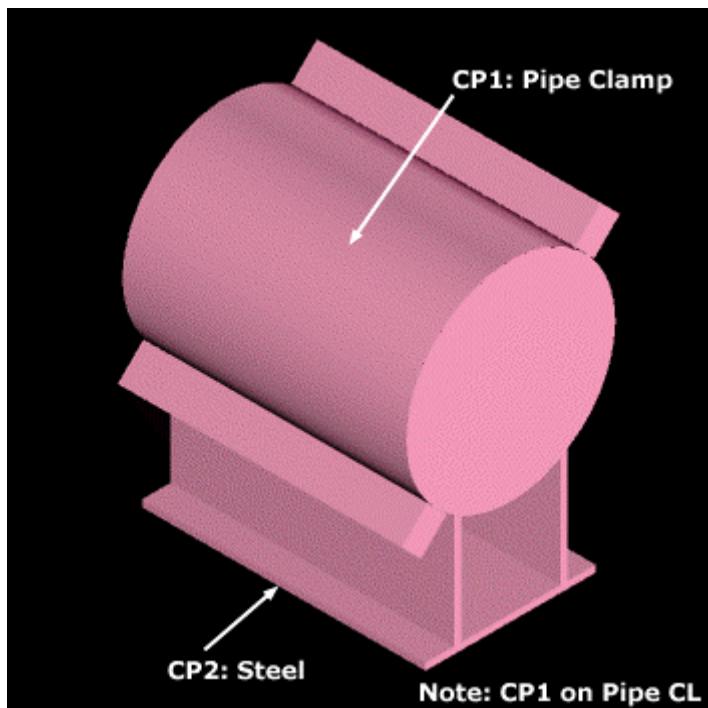
Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"

Input name(10) = "K"



## PSL\_CS200\_SML

**Description:**

**Symbol Name:** SP\_PSL.PSL\_CS200\_SML

**Workbook:** HS\_PSL.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_CS200\_SML

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "CLAMP\_CYL"

Output name 4 = "CLAMP\_BOX1"

Output name 5 = "CLAMP\_BOX2"

Output name 6 = "BASE"

Output name 7 = "WEB"

Input name(2) = "SHOE\_L"

Input name(3) = "INSULAT"

Input name(4) = "PIPE\_DIA"

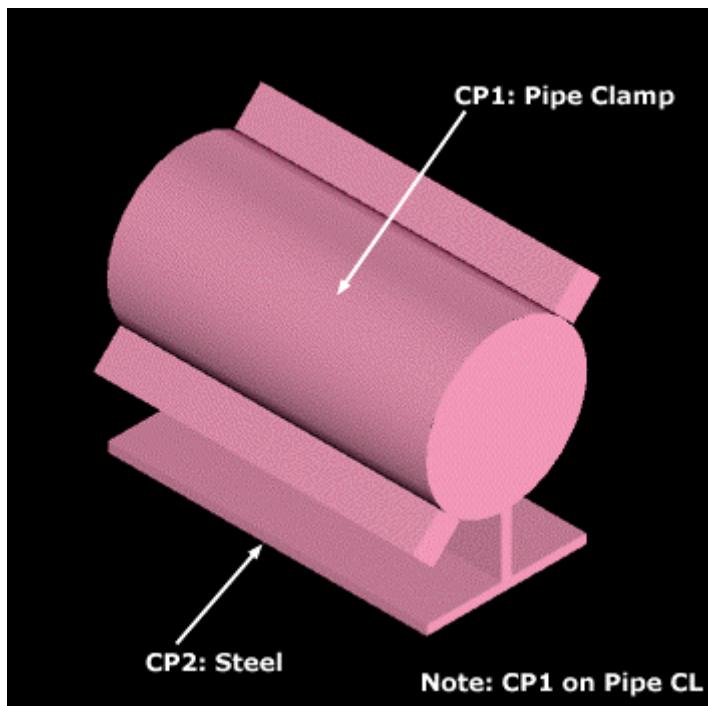
Input name(5) = "SHOE\_H"

Input name(6) = "D"

Input name(7) = "T1"

Input name(8) = "T2"

Input name(9) = "T3"



## PSL\_F495

**Description:** pedestal

**Symbol Name:** SP\_PSL.PSL\_F495

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_F495

**User Class Name:** Standard Pedestal for Rigid Supports

**Part Number:** PSL\_F495\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_F495

Input name(2) = "D"

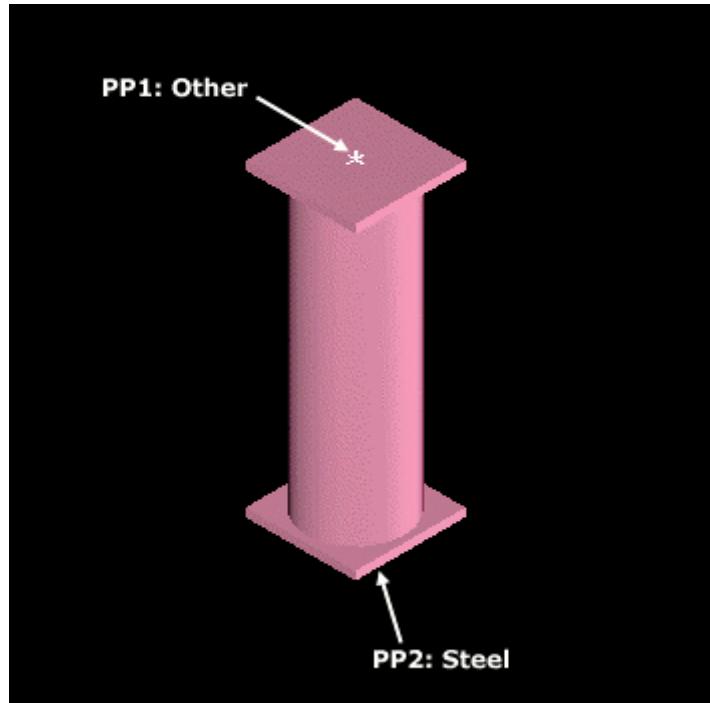
Input name(3) = "Length"

Input name(4) = "E"

Input name(5) = "C"

Input name(6) = "A"

Input name(7) = "B"



## PSL\_F496

**Description:** pedestal

**Symbol Name:** SP\_PSL.PSL\_F496

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_F496

**User Class Name:** Standard Pedestal for Variable Supports

**Part Number:** PSL\_F496

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_F496

Input name(2) = "Length"

Input name(3) = "E"

Input name(4) = "F"

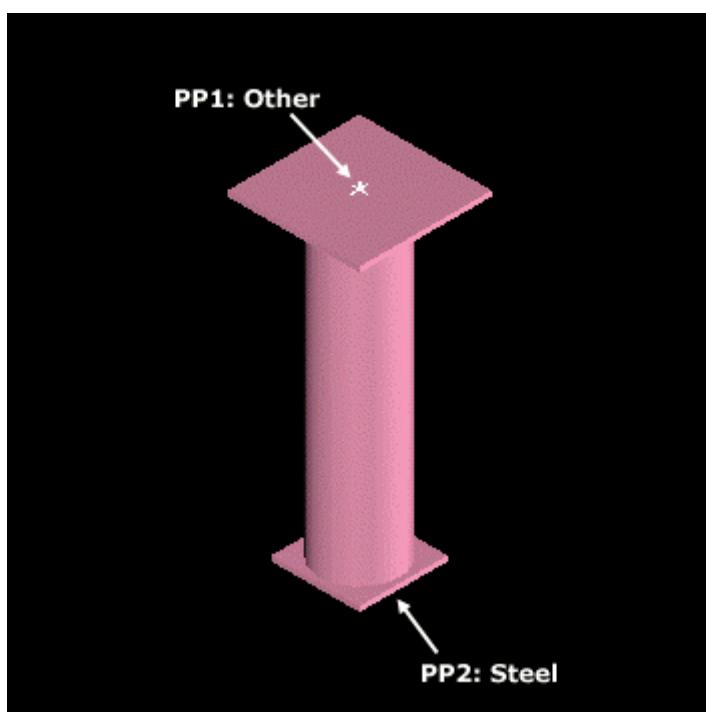
Input name(5) = "G"

Input name(6) = "A"

Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"



## PSL\_FPR

**Description:** clamp

**Symbol Name:** SP\_PSL.PSL\_FPR

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_FPR

**User Class Name:** Riser Clamp Flat Plate Type

**Part Number:** PSL\_FPR\_\*

**Inputs, Outputs, and Aspects:**

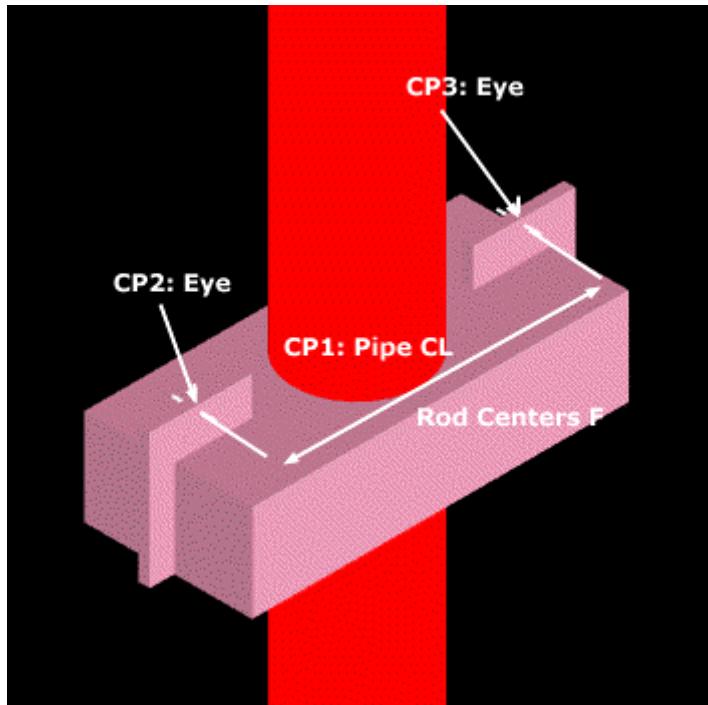
ProgID: SP\_PSL.PSL\_FPR

Input name(2) = "F"

Input name(3) = "TEMP2"

Input name(4) = "PIPE\_NOM\_DIA"

Input name(5) = "LOAD\_GRP"



## PSL\_HBM

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HBM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HBM

**User Class Name:** Constant Support HBM

**Part Number:** PSL\_HBM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_HBM

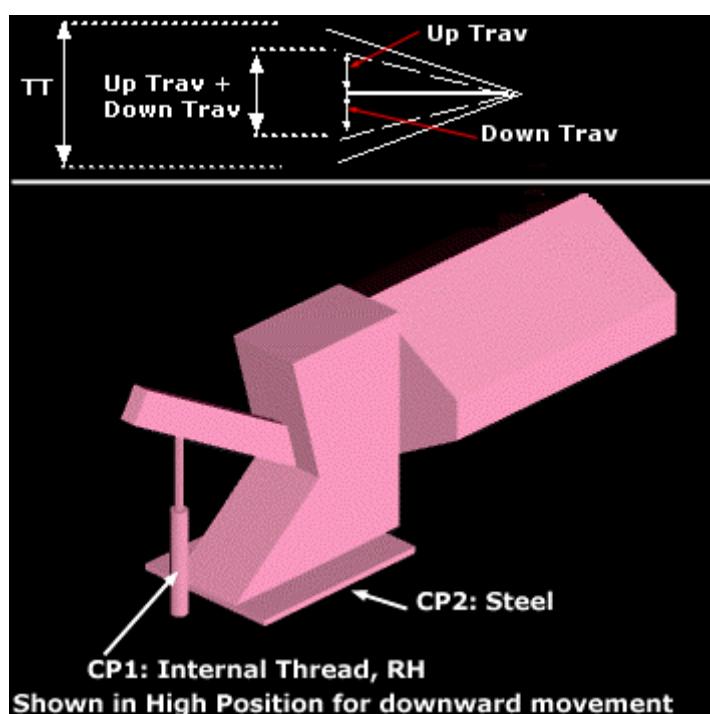
Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"

Input name(6) = "MIN\_TRAVEL"



## PSL\_HBMCS

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HBMCS

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HBMCS

**User Class Name:** Constant Support HBMCS

**Part Number:** PSL\_HBMCS\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_HBMCS

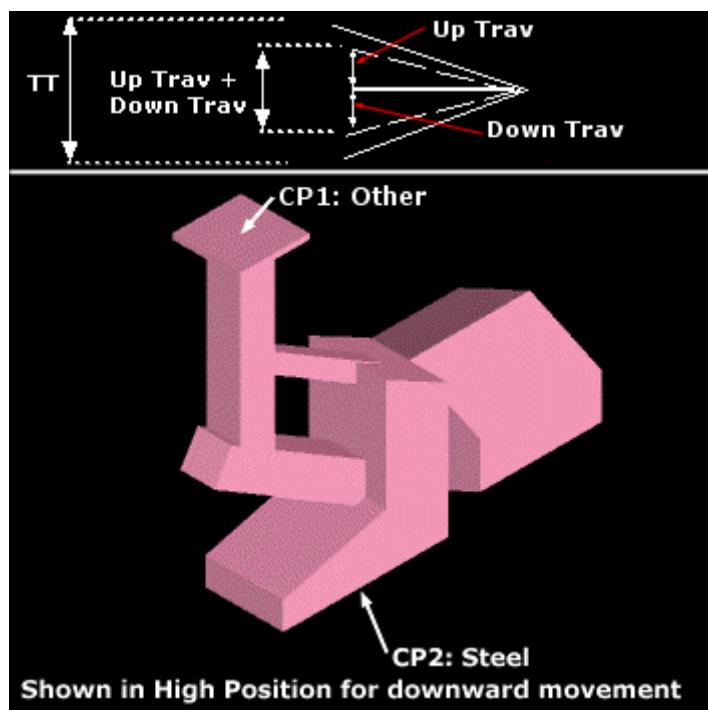
Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"

Input name(6) = "MIN\_TRAVEL"



## PSL\_HD\_TS1

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HD\_TS1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HD\_TS1

**User Class Name:** Constant Support HD Style TS1

**Part Number:** PSL\_HD\_TS1\_\*

**Inputs, Outputs, and Aspects:**

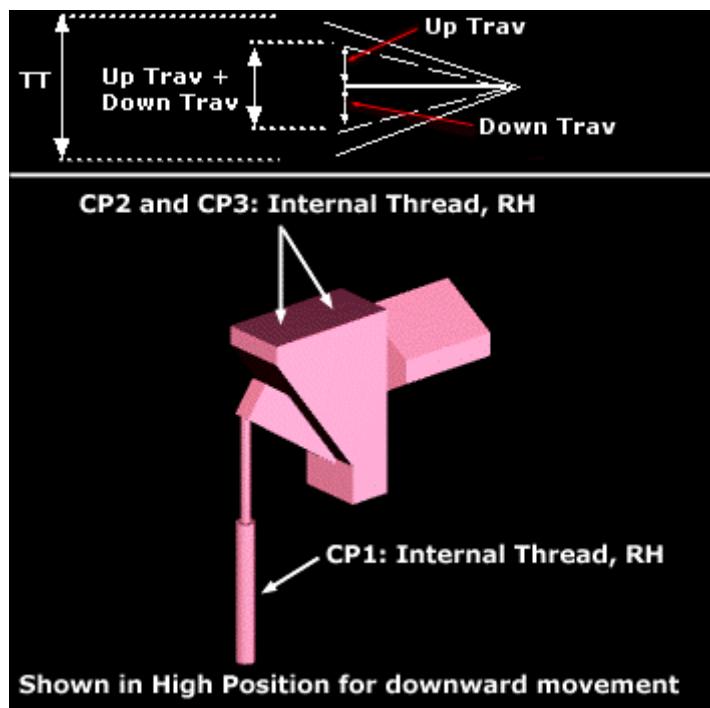
ProgID: SP\_PSL.PSL\_HD\_TS1

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HD\_TS2

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HD\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HD\_TS2

**User Class Name:** Constant Support HD Style TS2

**Part Number:** PSL\_HD\_TS2\_\*

**Inputs, Outputs, and Aspects:**

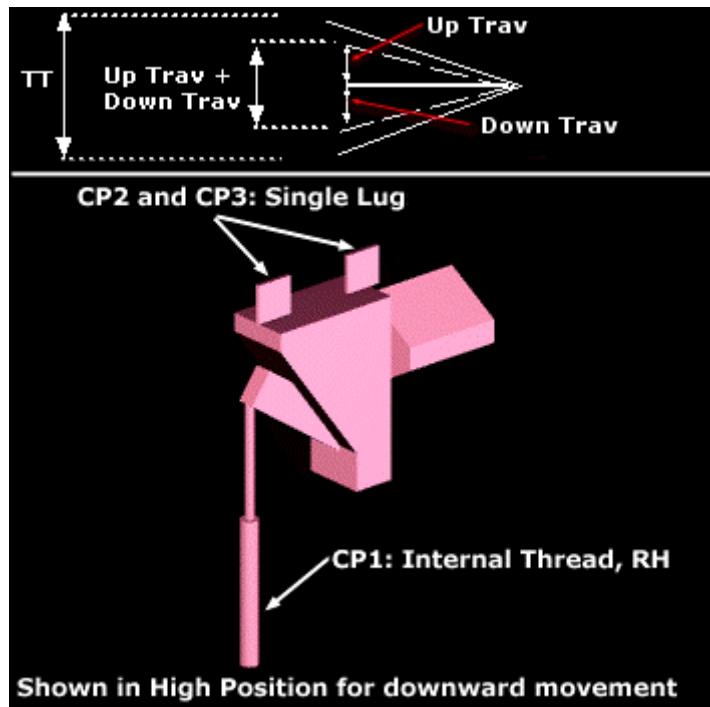
ProgID: SP\_PSL.PSL\_HD\_TS2

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HD\_TS3

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HD\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HD\_TS3

**User Class Name:** Constant Support HD Style TS3

**Part Number:** PSL\_HD\_TS3\_\*

**Inputs, Outputs, and Aspects:**

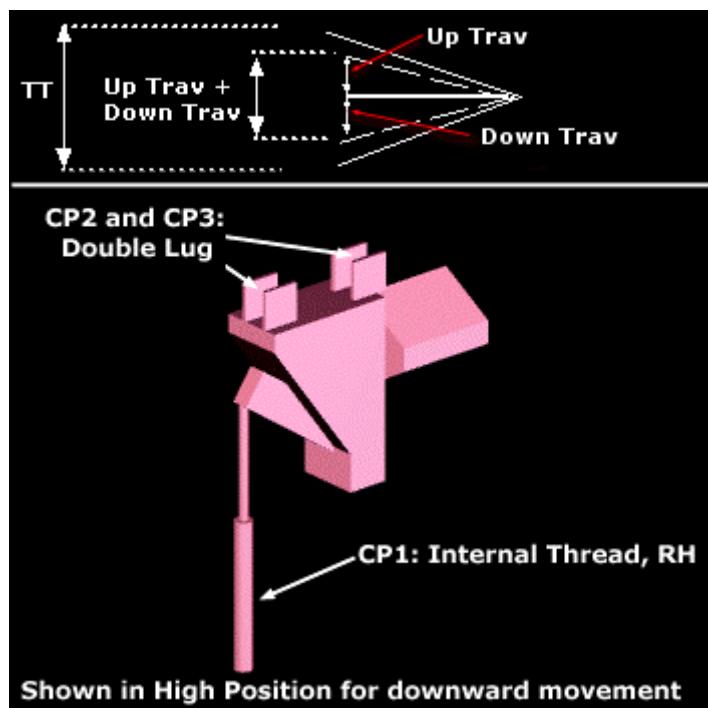
ProgID: SP\_PSL.PSL\_HD\_TS3

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HD\_TS4

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HD\_TS4

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HD\_TS4

**User Class Name:** Constant Support HD Style TS4

**Part Number:** PSL\_HD\_TS4\_\*

**Inputs, Outputs, and Aspects:**

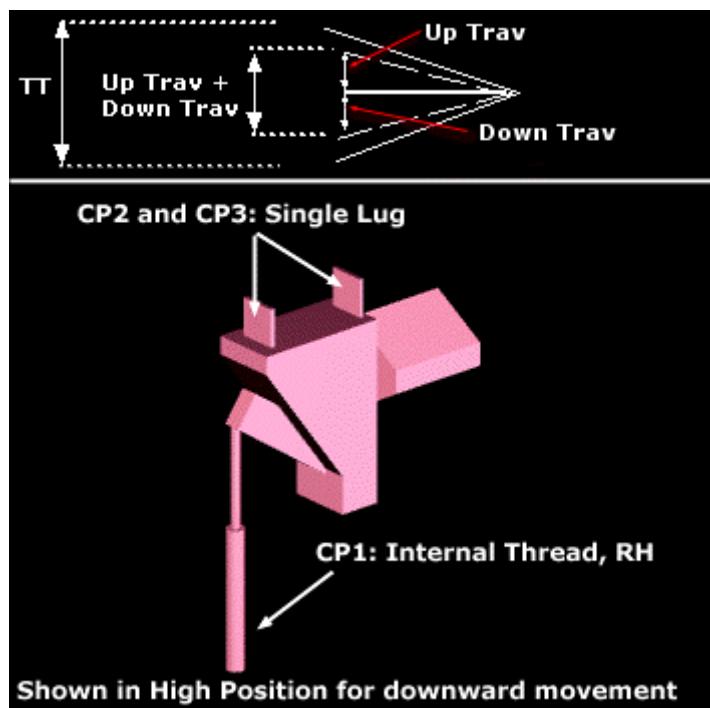
ProgID: SP\_PSL.PSL\_HD\_TS4

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HD\_TS5

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HD\_TS5

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HD\_TS5

**User Class Name:** Constant Support HD Style TS5

**Part Number:** PSL\_HD\_TS5\_\*

**Inputs, Outputs, and Aspects:**

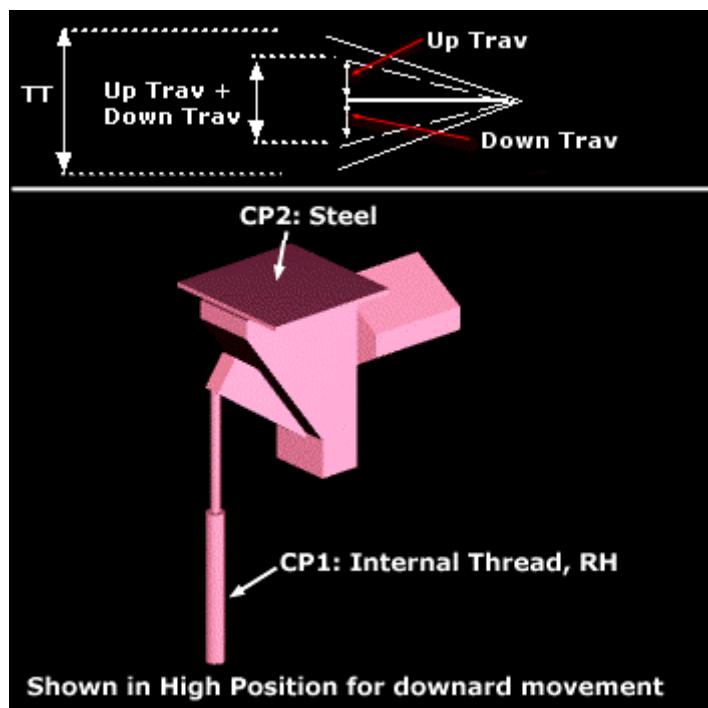
ProgID: SP\_PSL.PSL\_HD\_TS5

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HS\_TS2

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HS\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HS\_TS2

**User Class Name:** Constant Support HS Style TS2

**Part Number:** PSL\_HS\_TS2\_\*

**Inputs, Outputs, and Aspects:**

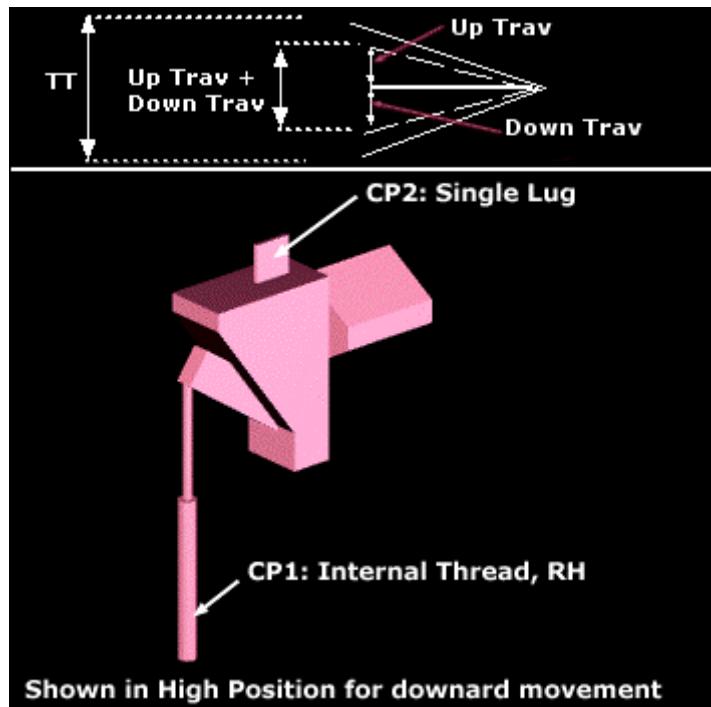
ProgID: SP\_PSL.PSL\_HS\_TS2

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_HS\_TS3

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_HS\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_HS\_TS3

**User Class Name:** Constant Support HS Style TS3

**Part Number:** PSL\_HS\_TS3\_\*

**Inputs, Outputs, and Aspects:**

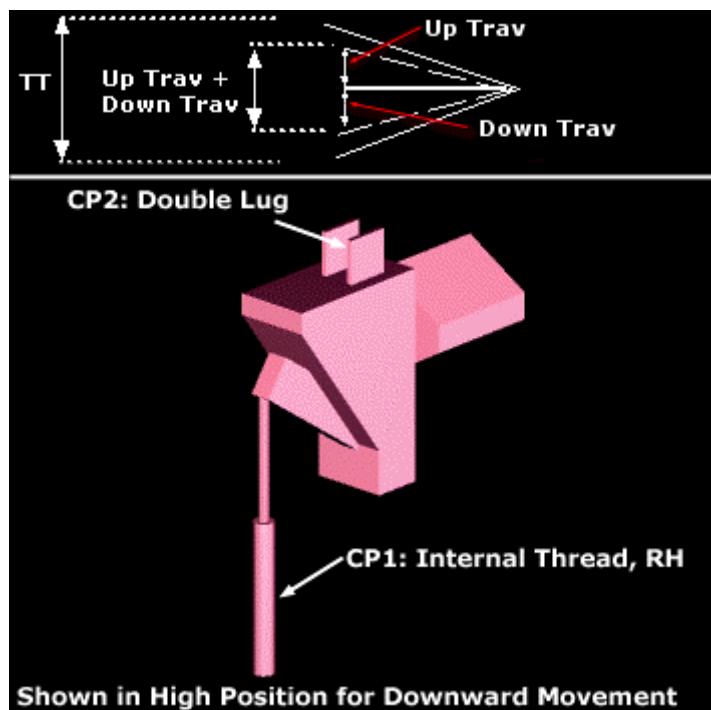
ProgID: SP\_PSL.PSL\_HS\_TS3

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_PB1

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB1

**User Class Name:** Pipe Clamp Base

**Part Number:** PSL\_PB1\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB1

Input name(2) = "FLANGE\_T"

Input name(3) = "END\_T"

Input name(4) = "PIPE\_DIA"

Input name(5) = "CLAMP\_SIZE"

Input name(6) = "A"

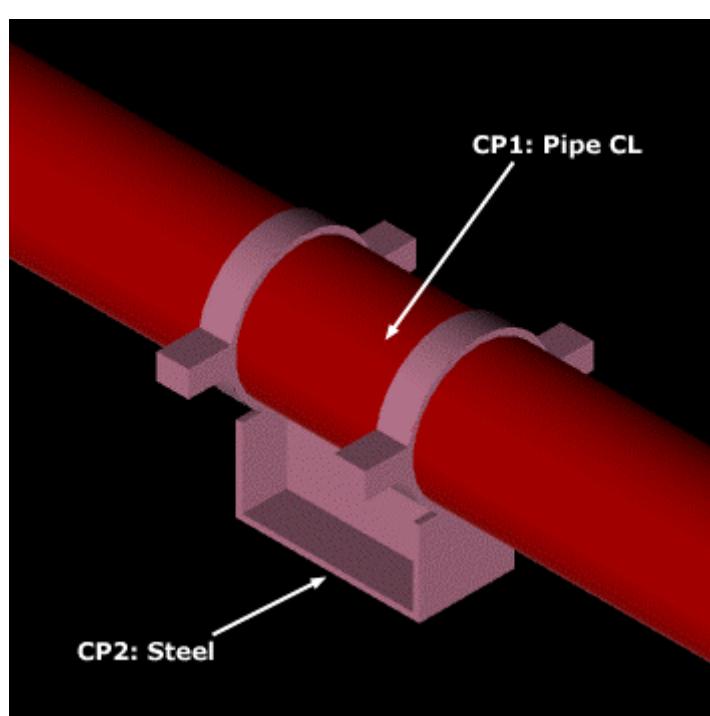
Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"



## PSL\_PB1\_CM

**Description:** pipe clamp base with comlin

**Symbol Name:** SP\_PSL.PSL\_PB1\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB1\_CM

**User Class Name:** Pipe Clamp Base w/Comlin

**Part Number:** PSL\_PB1\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB1\_CM

Input name(2) = "COMLIN\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "END\_T"

Input name(6) = "A"

Input name(7) = "B"

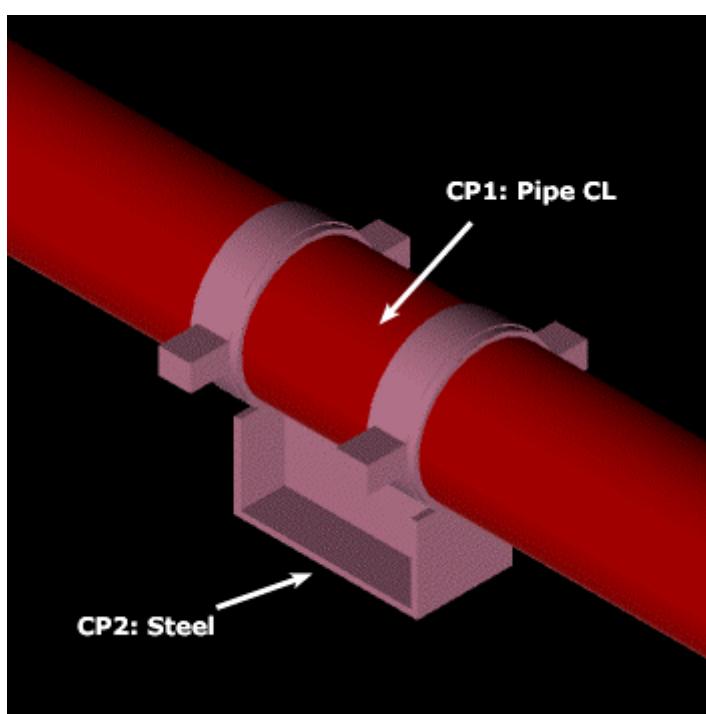
Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"

Input name(12) = "FLANGE\_T"



## PSL\_PB2

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB2

**User Class Name:** Pipe Clamp Base

**Part Number:** PSL\_PB2\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB2

Input name(2) = "END\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "FLANGE\_T"

Input name(6) = "A"

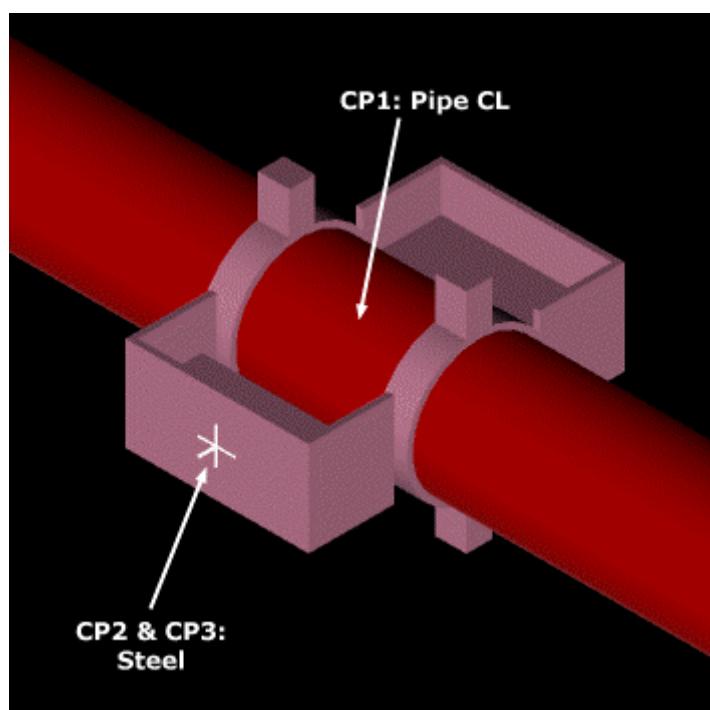
Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"



## PSL\_PB2\_CM

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB2\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB2\_CM

**User Class Name:** Pipe Clamp Base w/Comlin

**Part Number:** PSL\_PB2\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB2\_CM

Input name(2) = "COMLIN\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "END\_T"

Input name(6) = "A"

Input name(7) = "B"

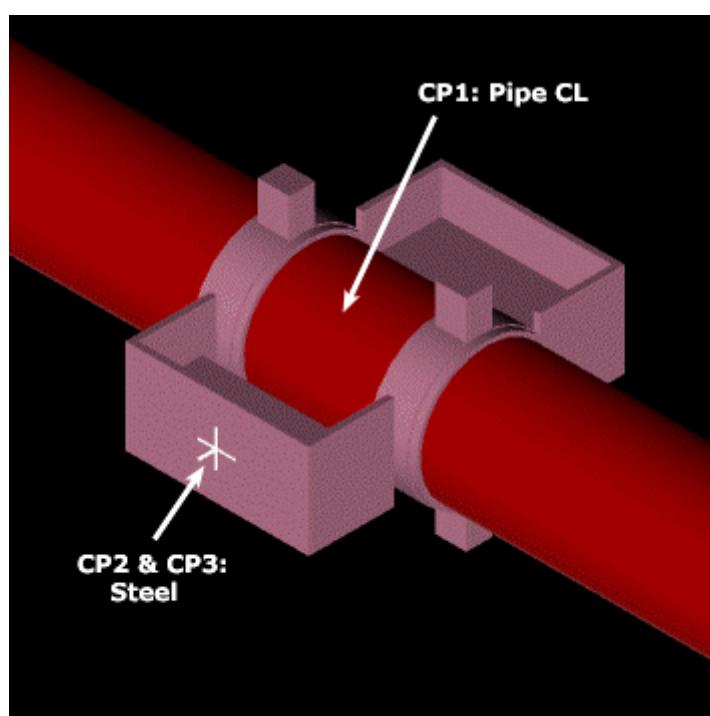
Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"

Input name(12) = "FLANGE\_T"



## PSL\_PB3

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB3

**User Class Name:** Pipe Clamp Base

**Part Number:** PSL\_PB3\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB3

Input name(2) = "END\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "FLANGE\_T"

Input name(6) = "A"

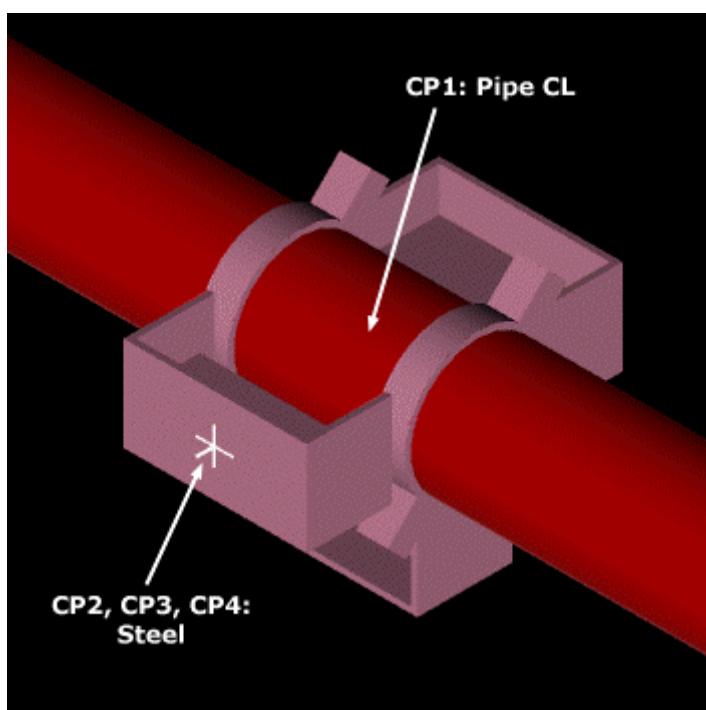
Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"



## PSL\_PB3\_CM

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB3\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB3\_CM

**User Class Name:** Pipe Clamp Base w/Comlin

**Part Number:** PSL\_PB3\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB3\_CM

Input name(2) = "COMLIN\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "END\_T"

Input name(6) = "A"

Input name(7) = "B"

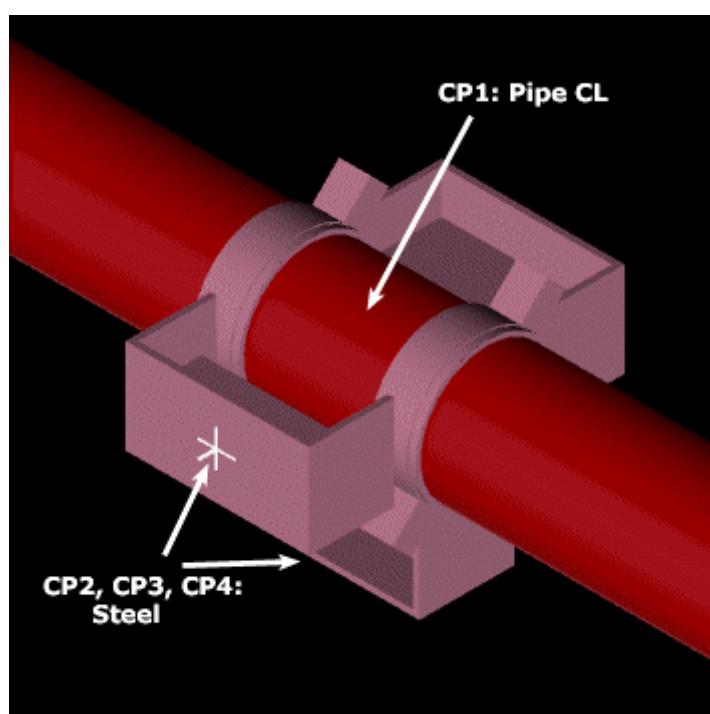
Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"

Input name(12) = "FLANGE\_T"



## PSL\_PB4

**Description:** pipe clamp base

**Symbol Name:** SP\_PSL.PSL\_PB4

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB4

**User Class Name:** Pipe Clamp Base

**Part Number:** PSL\_PB4\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB4

Input name(2) = "END\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "FLANGE\_T"

Input name(6) = "A"

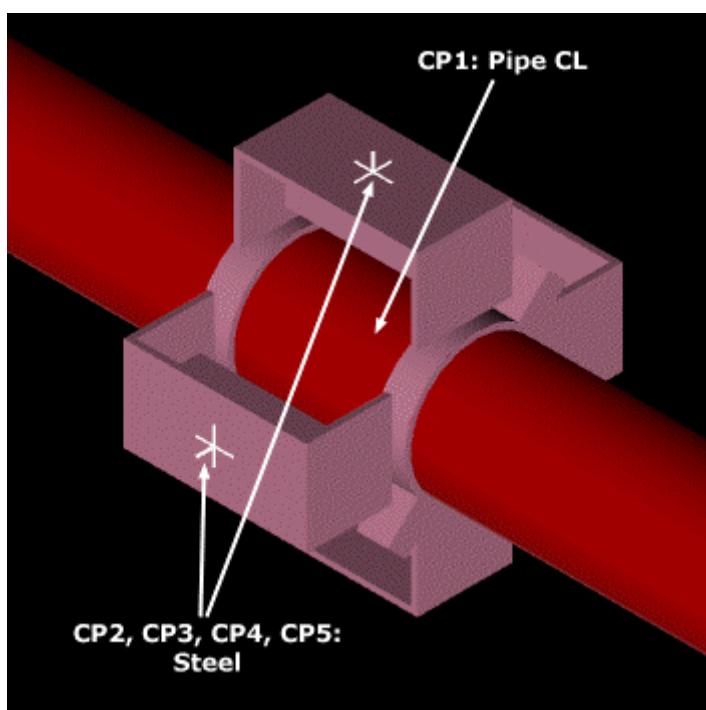
Input name(7) = "B"

Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"



## PSL\_PB4\_CM

**Description:** pipe clamp base with comlin

**Symbol Name:** SP\_PSL.PSL\_PB4\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PB4\_CM

**User Class Name:** Pipe Clamp Base w/Comlin

**Part Number:** PSL\_PB4\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PB4\_CM

Input name(2) = "COMLIN\_T"

Input name(3) = "CLAMP\_SIZE"

Input name(4) = "PIPE\_DIA"

Input name(5) = "END\_T"

Input name(6) = "A"

Input name(7) = "B"

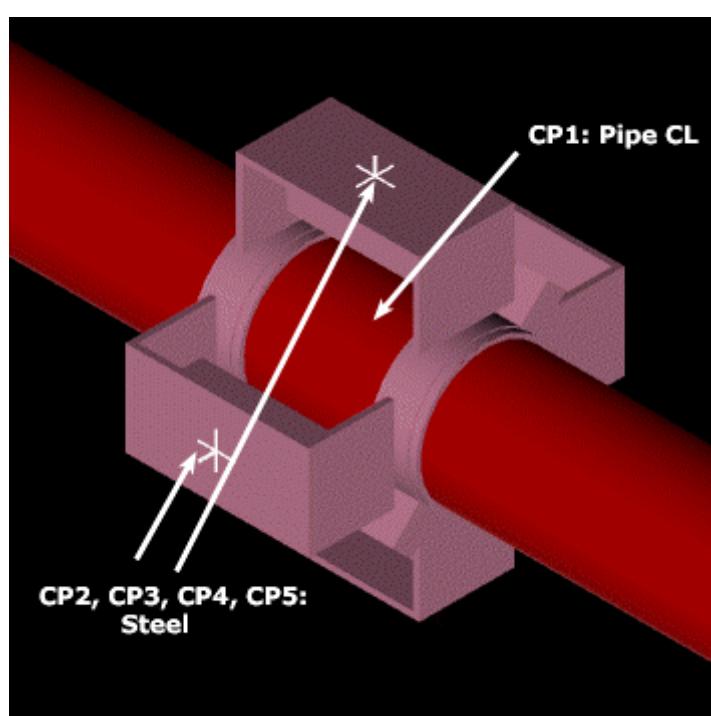
Input name(8) = "C"

Input name(9) = "D"

Input name(10) = "E"

Input name(11) = "WEB\_T"

Input name(12) = "FLANGE\_T"



## PSL\_PC2

**Description:** pipe clamp

**Symbol Name:** SP\_PSL.PSL\_PC2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PC2

**User Class Name:** Pipe Clamp for Unlagged Pipe

**Part Number:** PSL\_PC2\_2

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PC2

Input name(2) = "E"

Input name(3) = "F"

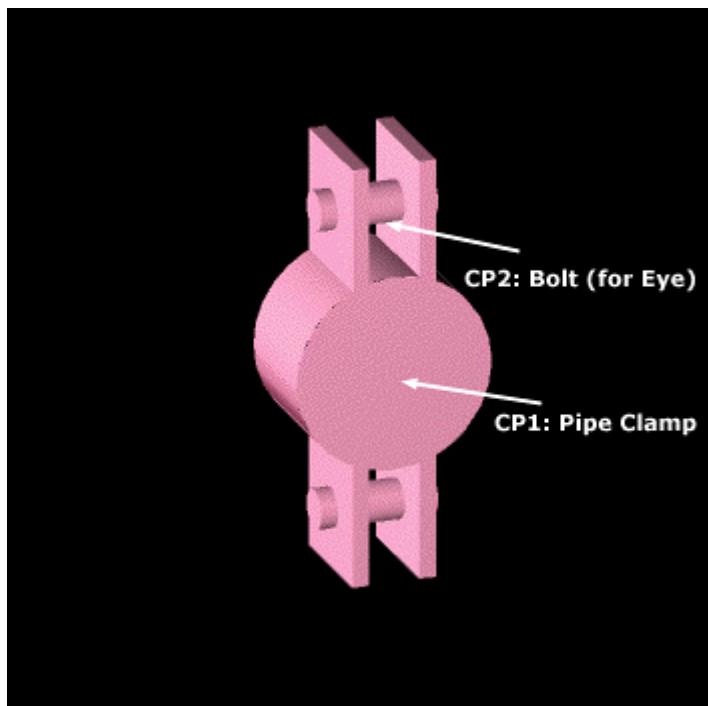
Input name(4) = "PIPE\_DIA"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "C"

Input name(8) = "D"



## PSL\_PC2\_CM

**Description:** pipe clamp

**Symbol Name:** SP\_PSL.PSL\_PC2\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PC2\_CM

**User Class Name:** Two Bolt Pipe Clamp with Comlin

**Part Number:** PSL\_PC2\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PC2\_CM

Input name(2) = "B"

Input name(3) = "D"

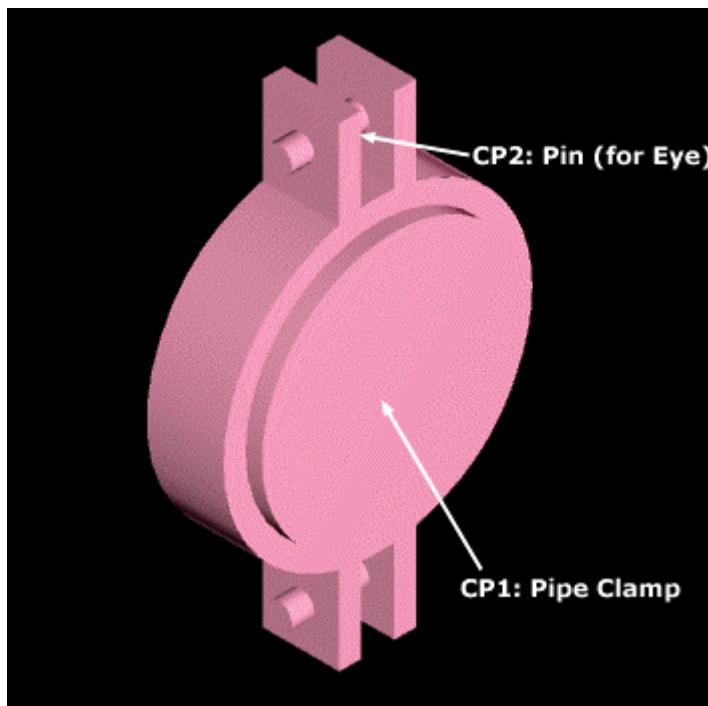
Input name(4) = "E"

Input name(5) = "T"

Input name(6) = "A"

Input name(7) = "C"

Input name(8) = "PIPE\_DIA"



## PSL\_PC3

**Description:** pipe clamp

**Symbol Name:** SP\_PSL.PSL\_PC3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PC3

**User Class Name:** Pipe Clamp Three Bolt Type

**Part Number:** PSL\_PC3\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PC3

Input name(2) = "F"

Input name(3) = "INSULAT"

Input name(4) = "D"

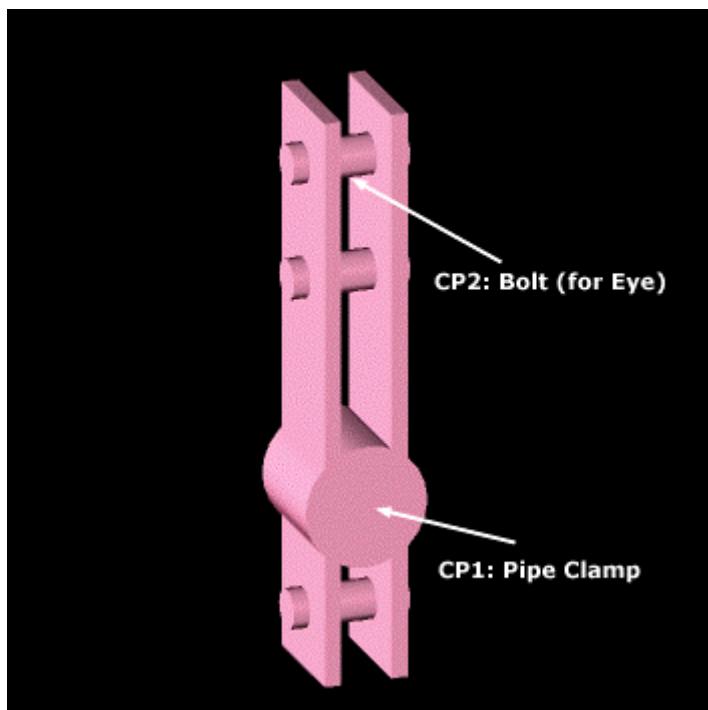
Input name(5) = "E"

Input name(6) = "PIPE\_DIA"

Input name(7) = "A"

Input name(8) = "B"

Input name(9) = "C"



## PSL\_PC3\_CM

**Description:** pipe clamp

**Symbol Name:** SP\_PSL.PSL\_PC3\_CM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_PC3\_CM

**User Class Name:** Three Bolt Pipe Clamp with Comlin

**Part Number:** PSL\_PC3\_CM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_PC3\_CM

Input name(2) = "E"

Input name(3) = "T"

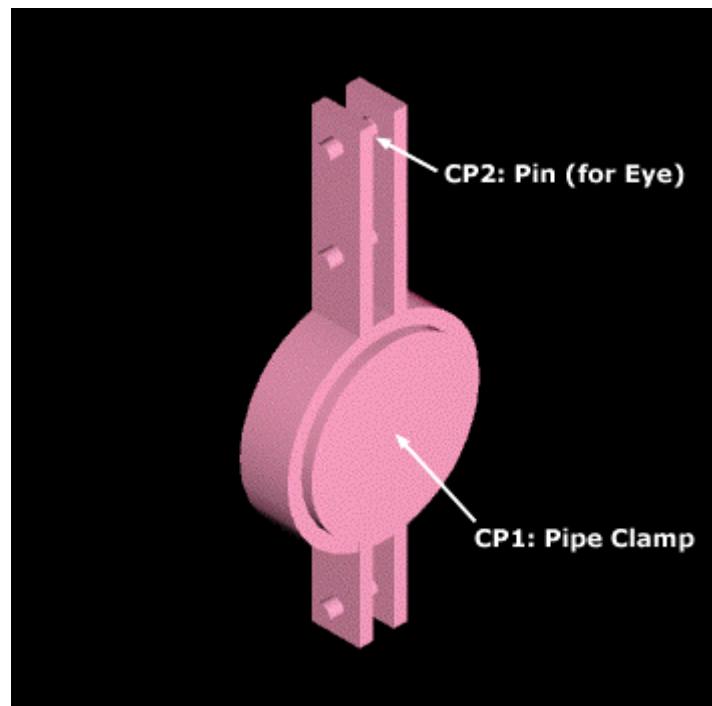
Input name(5) = "D"

Input name(6) = "A"

Input name(7) = "C"

Input name(8) = "PIPE\_DIA"

Input name(4) = "B"



## PSL\_RC4

**Description:** press riser clamp

**Symbol Name:** SP\_PSL.PSL\_RC4

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_RC4

**User Class Name:** Pressed Riser Clamp Four Bolt Type

**Part Number:** PSL\_RC4\_\*

**Inputs, Outputs, and Aspects:**

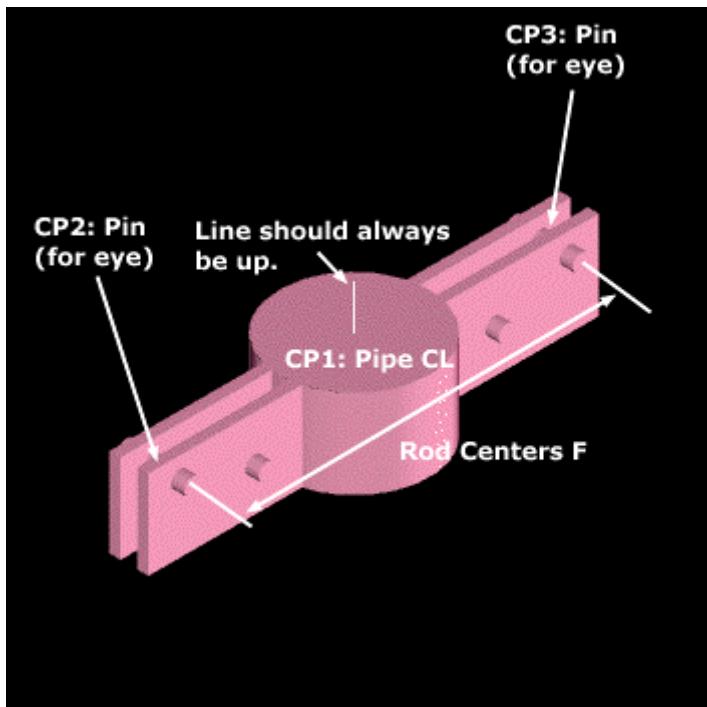
ProgID: SP\_PSL.PSL\_RC4

Input name(2) = "F"

Input name(3) = "TEMP2"

Input name(4) = "PIPE\_NOM\_DIA"

Input name(5) = "LOAD\_GRP"



## PSL\_RC6

**Description:** pressed riser clamp

**Symbol Name:** SP\_PSL.PSL\_RC6

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_RC6

**User Class Name:** Pressed Riser Clamp Six Bolt Type

**Part Number:** PSL\_RC6\_\*

**Inputs, Outputs, and Aspects:**

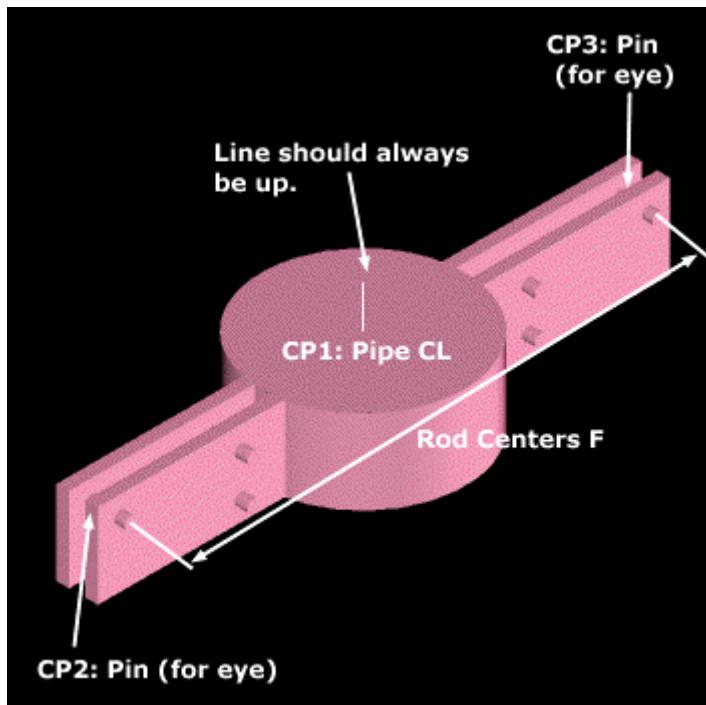
ProgID: SP\_PSL.PSL\_RC6

Input name(2) = "F"

Input name(3) = "TEMP2"

Input name(4) = "PIPE\_NOM\_DIA"

Input name(5) = "LOAD\_GRP"

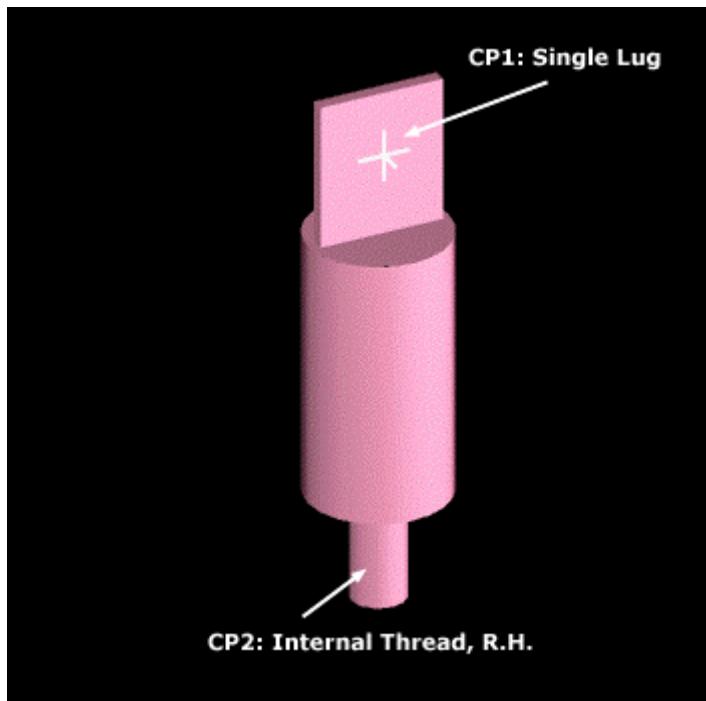


## PSL\_SB

**Description:** sway brace  
**Symbol Name:** SP\_PSL.PSL\_SB  
**Workbook:** HS\_PSL.xls  
**Workbook Sheet:** PSL\_SB  
**User Class Name:** Sway Brace  
**Part Number:** PSL\_SB\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_SB  
Input name(2) = "F"  
Input name(3) = "E"  
Input name(4) = "C"  
Input name(5) = "B"  
Input name(6) = "G"  
Input name(7) = "L"  
Input name(8) = "H"  
Input name(9) = "ROD\_DIA"  
Input name(10) = "A"  
Input name(11) = "D"



## PSL\_V1\_BM

**Description:** suprt

**Symbol Name:** SP\_PSL.PSL\_V1\_BM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_BM

**User Class Name:** Range V1 - BM Variable Support

**Part Number:** PSL\_V1\_BM\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_BM

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "S"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

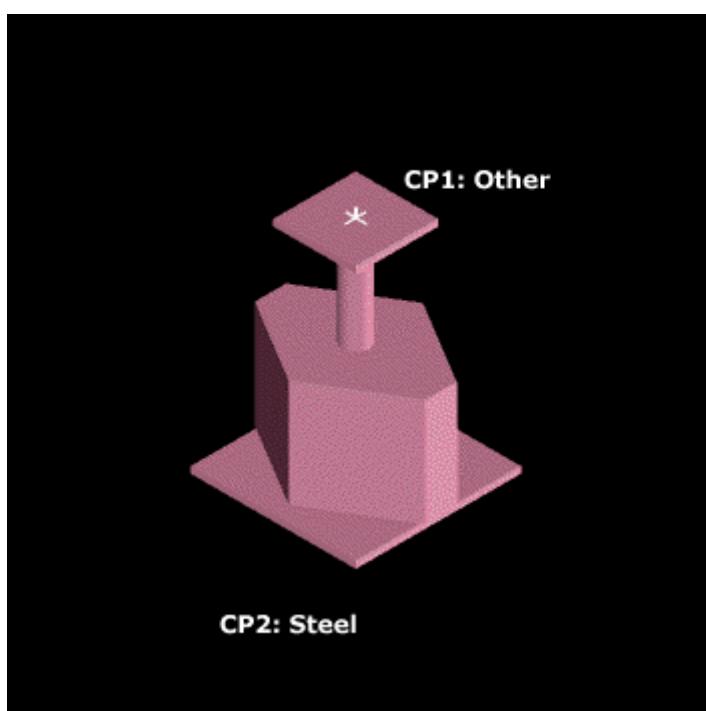
Input name(11) = "RTO"

Input name(12) = "V"

Input name(13) = "Y"

Input name(14) = "Z"

Input name(15) = "SIZE"



## PSL\_V1\_DS

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_V1\_DS

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_DS

**User Class Name:** Range V1 - DS Variable Support

**Part Number:** PSL\_V1\_DS\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_DS

Input name(2) = "HOT\_LOAD"

Input name(3) = "SHOE\_H"

Input name(4) = "SPAN"

Input name(5) = "WORKING\_TRAV\_DOWN"

Input name(6) = "WORKING\_TRAV\_UP"

Input name(7) = "D1"

Input name(8) = "BB1"

Input name(9) = "ROD\_DIA"

Input name(10) = "L"

Input name(11) = "M"

Input name(12) = "D"

Input name(13) = "K"

Input name(14) = "RTO"

Input name(15) = "PIPE\_DIA"

Input name(16) = "AA"

Input name(17) = "W"

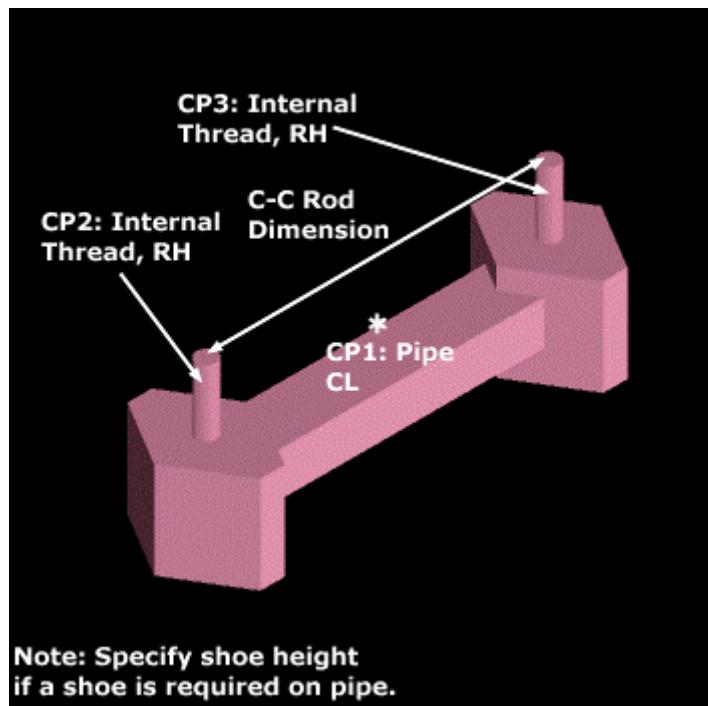
Input name(18) = "BB2"

Input name(19) = "D2"

Input name(20) = "BB3"

Input name(21) = "D3"

Input name(22) = "SIZE"



## PSL\_V1\_ES

**Description:** support

**Symbol Name:** SP\_PSL.PSL\_V1\_ES

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_ES

**User Class Name:** Range V1 - ES Variable Support

**Part Number:** PSL\_V1\_ES\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_ES

Input name(2) = "ROD\_LEN"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "HOT\_LOAD"

Input name(6) = "TURN\_A"

Input name(7) = "ROD\_DIA"

Input name(8) = "L"

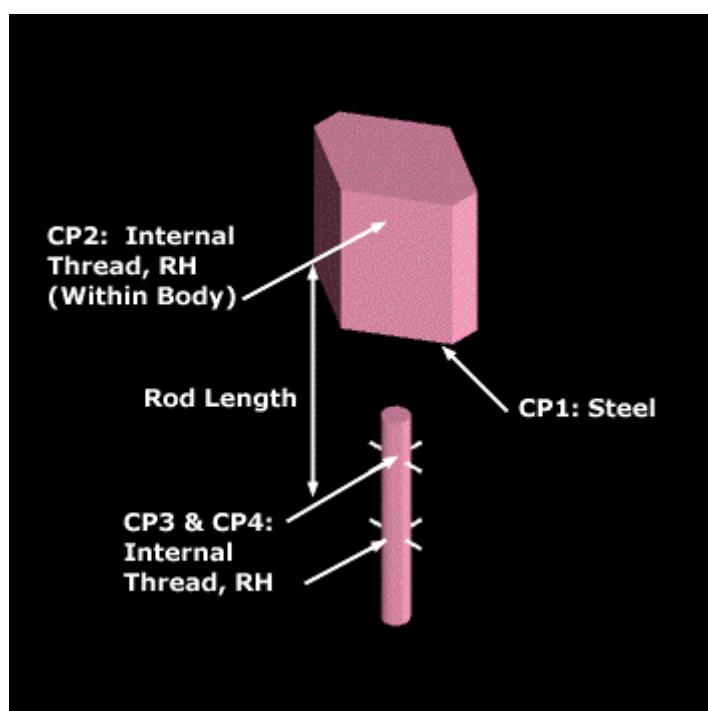
Input name(9) = "M"

Input name(10) = "D"

Input name(11) = "K"

Input name(12) = "RTO"

Input name(13) = "SIZE"



## PSL\_V1\_TA

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V1\_TA

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_TA

**User Class Name:** Range V1 - TA Variable Support

**Part Number:** PSL\_V1\_TA\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_TA

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "RTO"

Input name(6) = "ROD\_DIA"

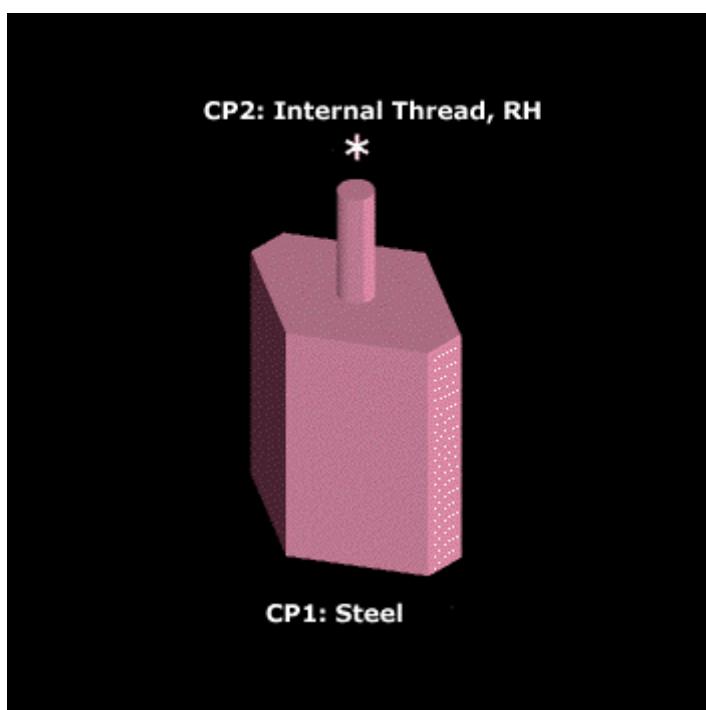
Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "SIZE"



## PSL\_V1\_TS1

### Description:

**Symbol Name:** SP\_PSL.PSL\_V1\_TS1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_TS1

**User Class Name:** Range V1 - TS1 Variable Support

**Part Number:** PSL\_V1\_TS1\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V1\_TS1

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "A"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

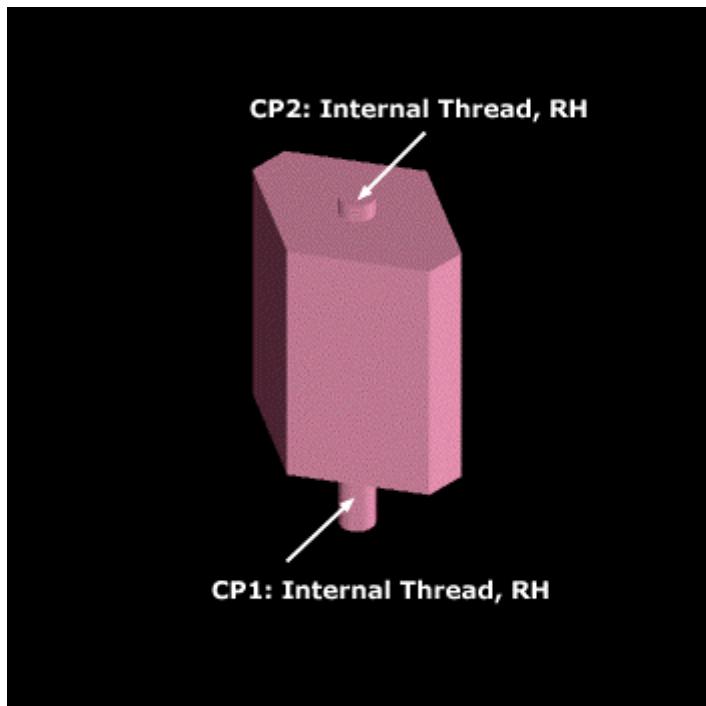
Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

Input name(12) = "SIZE"



## PSL\_V1\_TS2

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V1\_TS2

**Workbook:** HS\_PSL

**Workbook Sheet:** PSL\_V1\_TS2

**User Class Name:** Range V1 - TS2 Variable Support

**Part Number:** PSL\_V1\_TS2\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_TS2

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

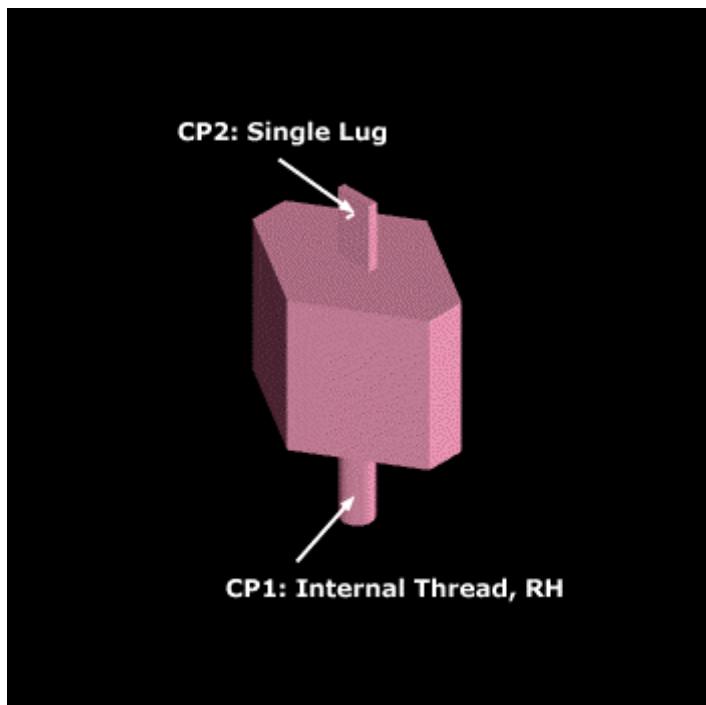
Input name(11) = "RTO"

Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "G"

Input name(15) = "SIZE"



## PSL\_V1\_TS3

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V1\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V1\_TS3

**User Class Name:** Range V1 - TS3 Variable Support

**Part Number:** PSL\_V1\_TS3\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V1\_TS3

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

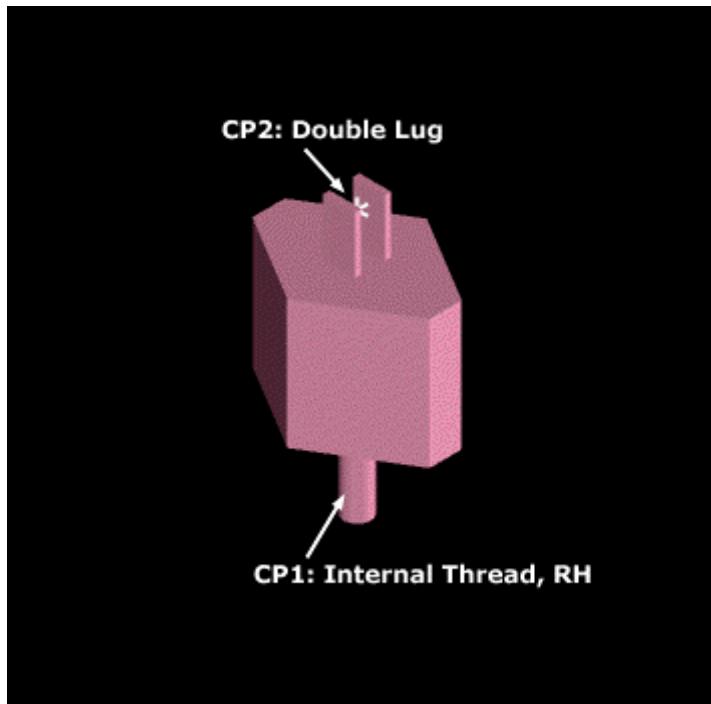
Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "E"

Input name(15) = "G"

Input name(16) = "SIZE"



## PSL\_V2\_BM

### Description:

**Symbol Name:** SP\_PSL.PSL\_V2\_BM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_BM

**User Class Name:** Range V2 - BM Variable Support

**Part Number:** PSL\_V2\_BM\_x

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V2\_BM

Input name(15) = "SIZE"

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "S"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

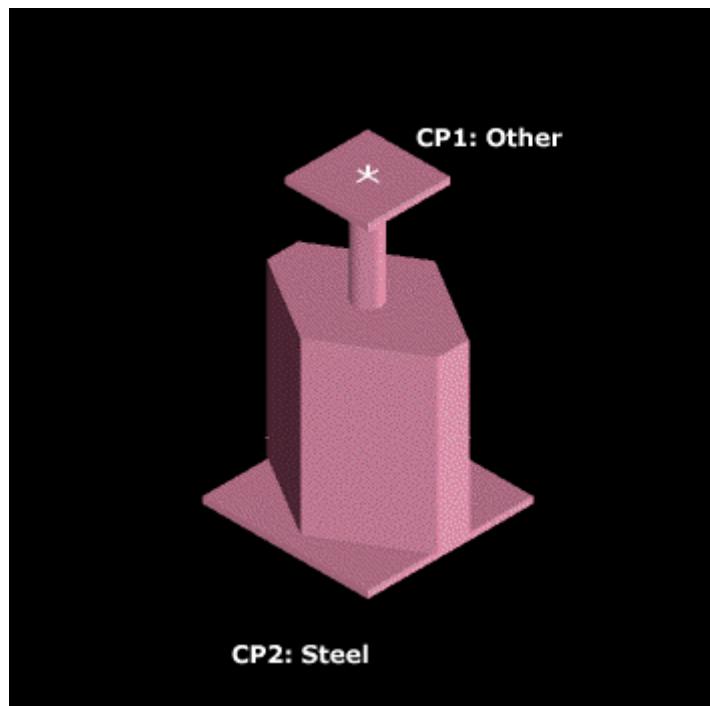
Input name(11) = "RTO"

Input name(12) = "V"

Input name(13) = "Y"

Input name(14) = "Z"

Input name(15) = "SIZE"



## PSL\_V2\_DS

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V2\_DS

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_DS

**User Class Name:** Range V2 - DS Variable Support

**Part Number:** PSL\_V2\_DS\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V2\_DS

Input name(2) = "HOT\_LOAD"

Input name(3) = "SHOE\_H"

Input name(4) = "SPAN"

Input name(5) = "WORKING\_TRAV\_DOWN"

Input name(6) = "WORKING\_TRAV\_UP"

Input name(7) = "PIPE\_DIA"

Input name(8) = "AA"

Input name(9) = "ROD\_DIA"

Input name(10) = "L"

Input name(11) = "M"

Input name(12) = "D"

Input name(13) = "K"

Input name(14) = "RTO"

Input name(15) = "W"

Input name(16) = "D1"

Input name(17) = "BB1"

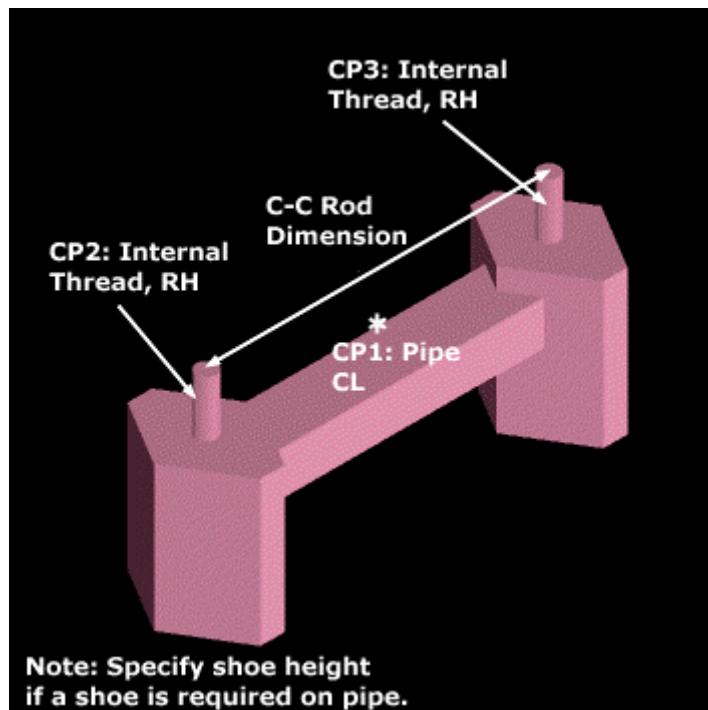
Input name(18) = "BB2"

Input name(19) = "D2"

Input name(20) = "BB3"

Input name(21) = "D3"

Input name(22) = "SIZE"



## PSL\_V2\_ES

### Description:

**Symbol Name:** SP\_PSL.PSL\_V2\_ES

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_ES

**User Class Name:** Range V2 - ES Variable Support

**Part Number:** PSL\_V2\_ES\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V2\_ES

Input name(2) = "ROD\_LEN"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "HOT\_LOAD"

Input name(6) = "TURN\_A"

Input name(7) = "ROD\_DIA"

Input name(8) = "L"

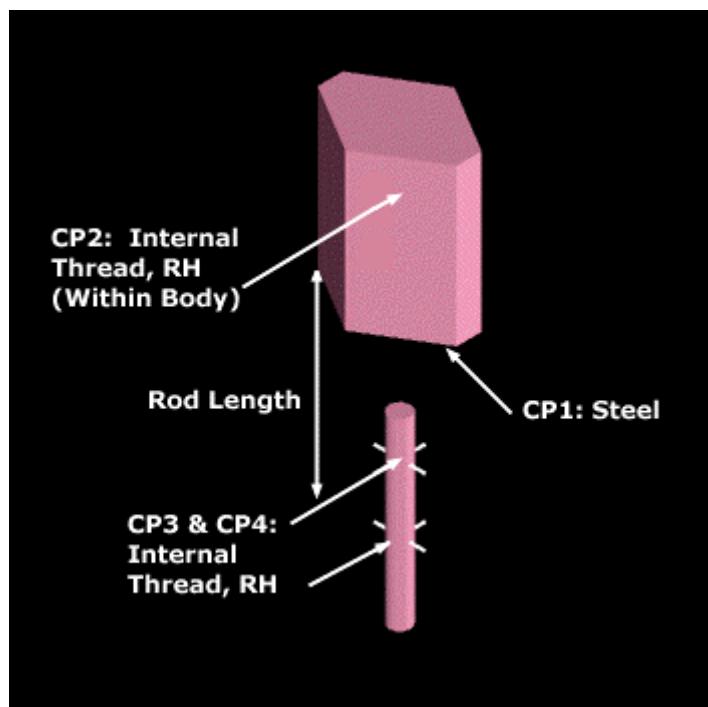
Input name(9) = "M"

Input name(10) = "D"

Input name(11) = "K"

Input name(12) = "RTO"

Input name(13) = "SIZE"



## PSL\_V2\_TA

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V2\_TA

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_TA

**User Class Name:** Range V2 - TA Variable Support

**Part Number:** PSL\_V2\_TA\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V2\_TA

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "RTO"

Input name(6) = "ROD\_DIA"

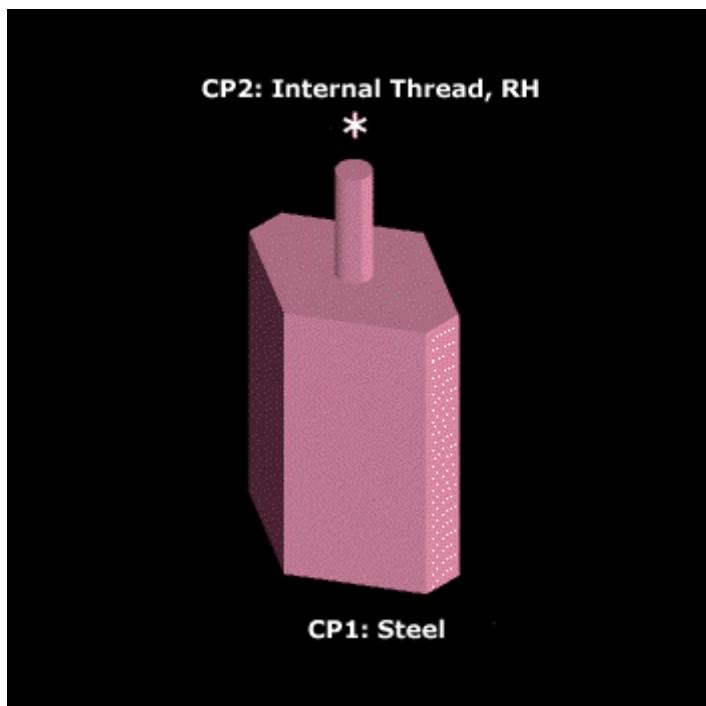
Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "SIZE"



## PSL\_V2\_TS1

**Description:** Internal Thread, RH

**Symbol Name:** SP\_PSL.PSL\_V2\_TS1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_TS1\_AUX

**User Class Name:** Range V2 - TS1 Variable Support

**Part Number:** PSL\_V2\_TS1\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V2\_TS1

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "A"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

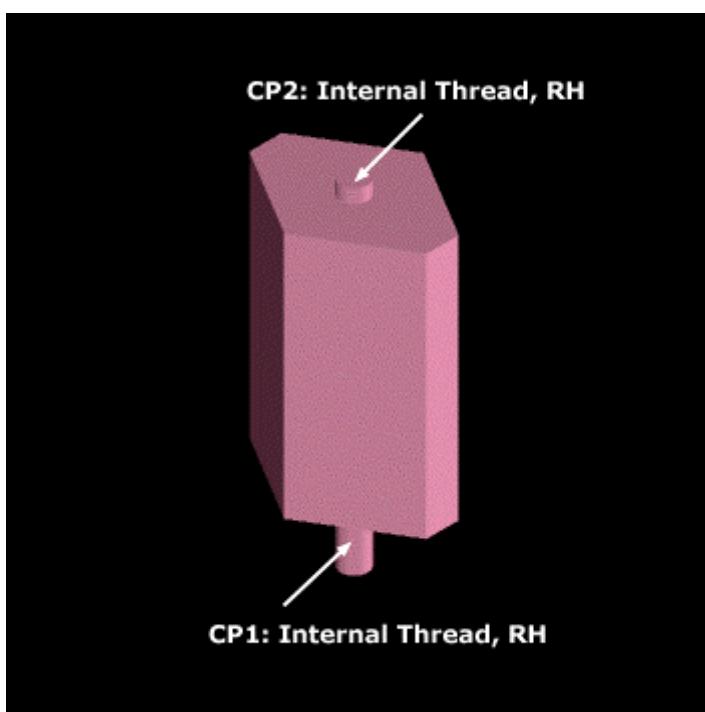
Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

Input name(12) = "SIZE"



## PSL\_V2\_TS2

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V2\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_TS2

**User Class Name:** Range V2 - TS2 Variable Support

**Part Number:** PSL\_V2\_TS2\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V2\_TS2

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

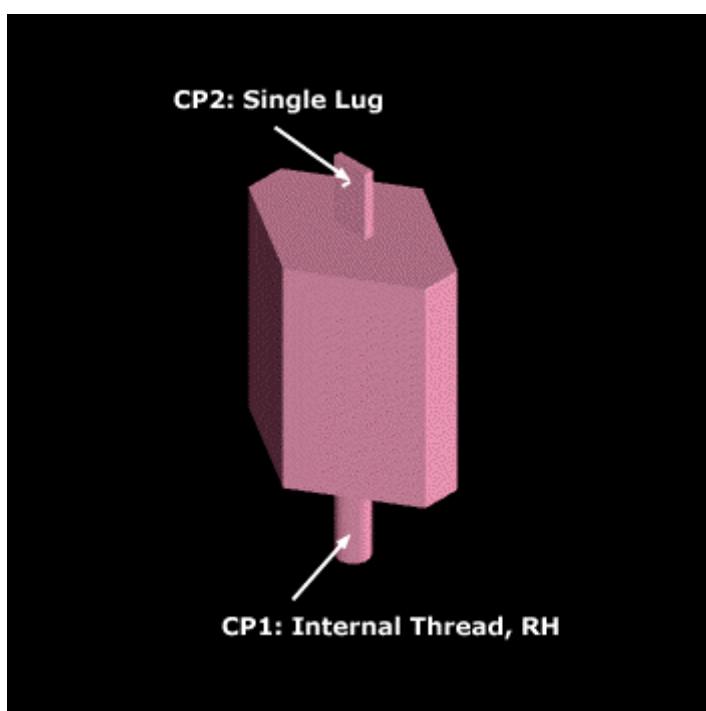
Input name(11) = "RTO"

Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "G"

Input name(15) = "SIZE"



## PSL\_V2\_TS3

### Description:

**Symbol Name:** SP\_PSL.PSL\_V2\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V2\_TS3

**User Class Name:** Range V2 - TS3 Variable Support

**Part Number:** PSL\_V2\_TS3\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V2\_TS3

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

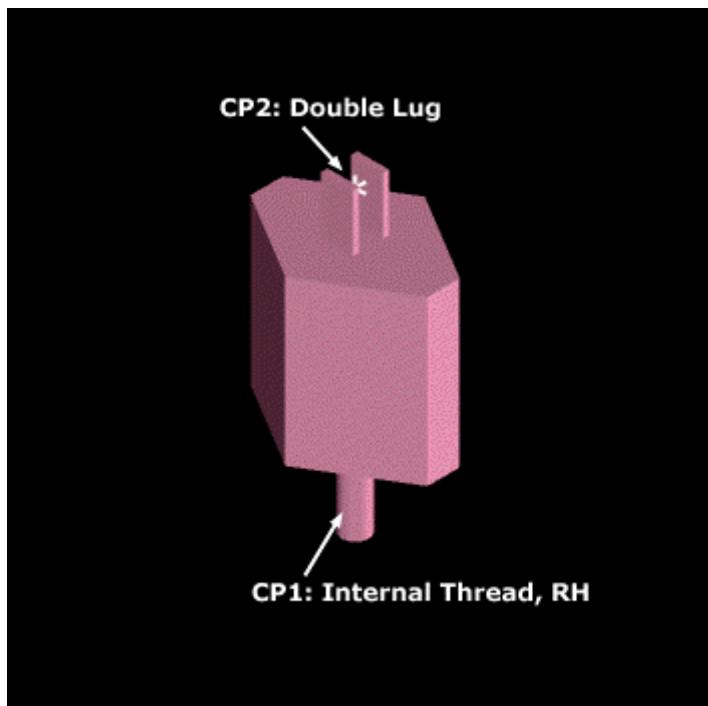
Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "E"

Input name(15) = "G"

Input name(16) = "SIZE"



## PSL\_V3\_BM

### Description:

**Symbol Name:** SP\_PSL.PSL\_V3\_BM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_BM

**User Class Name:** Range V3 - BM Variable Support

**Part Number:** PSL\_V3\_BM\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V3\_BM

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "S"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

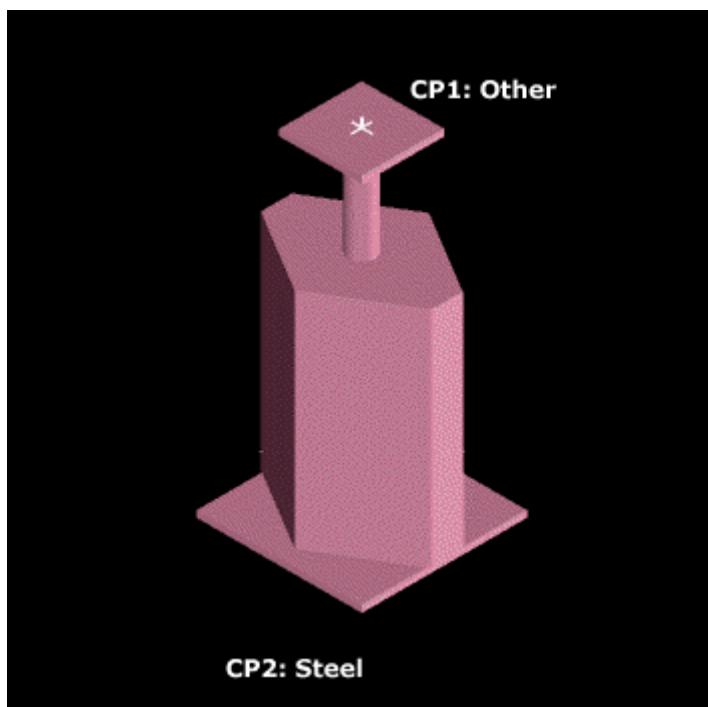
Input name(11) = "RTO"

Input name(12) = "V"

Input name(13) = "Y"

Input name(14) = "Z"

Input name(15) = "SIZE"



## PSL\_V3\_DS

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V3\_DS

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_DS

**User Class Name:** Range V3 - DS Variable Support

**Part Number:** PSL\_V3\_DS\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V3\_DS

Input name(2) = "HOT\_LOAD"

Input name(3) = "SHOE\_H"

Input name(4) = "SPAN"

Input name(5) = "WORKING\_TRAV\_DOWN"

Input name(6) = "WORKING\_TRAV\_UP"

Input name(7) = "PIPE\_DIA"

Input name(8) = "AA"

Input name(9) = "ROD\_DIA"

Input name(10) = "L"

Input name(11) = "M"

Input name(12) = "D"

Input name(13) = "K"

Input name(14) = "RTO"

Input name(15) = "W"

Input name(16) = "D1"

Input name(17) = "BB1"

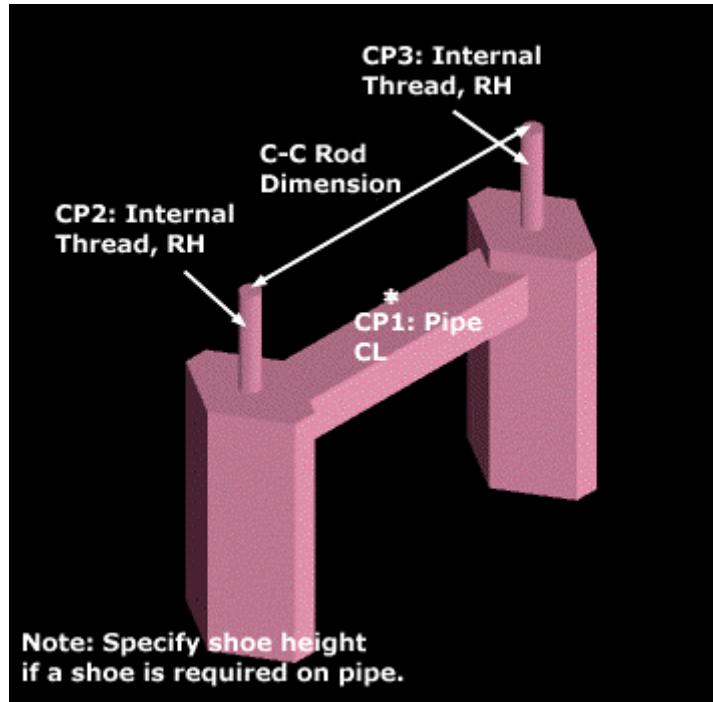
Input name(18) = "BB2"

Input name(19) = "D2"

Input name(20) = "BB3"

Input name(21) = "D3"

Input name(22) = "SIZE"



## PSL\_V3\_ES

### Description:

**Symbol Name:** SP\_PSL.PSL\_V3\_ES

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_ES

**User Class Name:** Range V3 - ES Variable Support

**Part Number:** PSL\_V3\_ES\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V3\_ES

Input name(2) = "ROD\_LEN"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "HOT\_LOAD"

Input name(6) = "TURN\_A"

Input name(7) = "ROD\_DIA"

Input name(8) = "L"

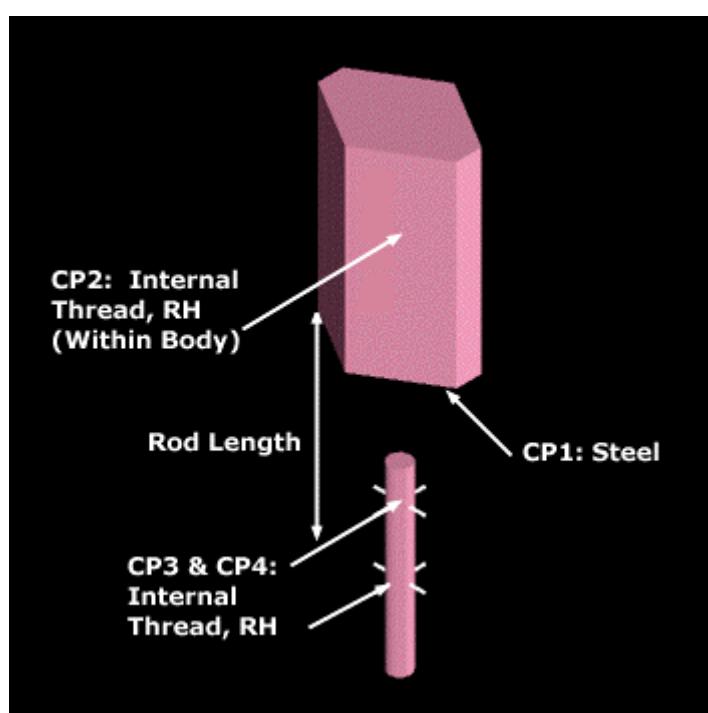
Input name(9) = "M"

Input name(10) = "D"

Input name(11) = "K"

Input name(12) = "RTO"

Input name(13) = "SIZE"



## PSL\_V3\_TA

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V3\_TA

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_TA

**User Class Name:** Range V3 - TA Variable Support

**Part Number:** PSL\_V3\_TA\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V3\_TA

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "RTO"

Input name(6) = "ROD\_DIA"

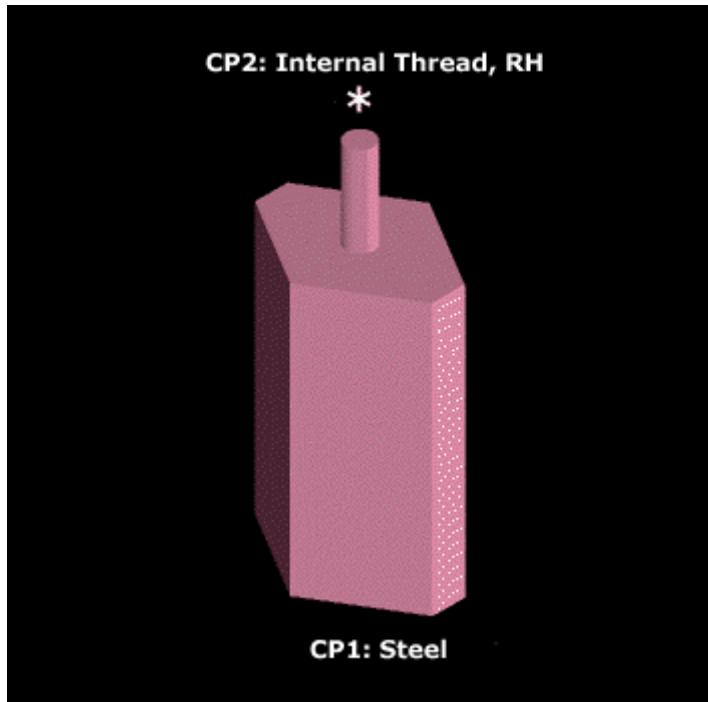
Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "SIZE"



## PSL\_V3\_TS1

**Description:** Internal Thread, RH

**Symbol Name:** SP\_PSL.PSL\_V3\_TS1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_TS1

**User Class Name:** Range V3 - TS1 Variable Support

**Part Number:** PSL\_V3\_TS1\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V3\_TS1

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "A"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

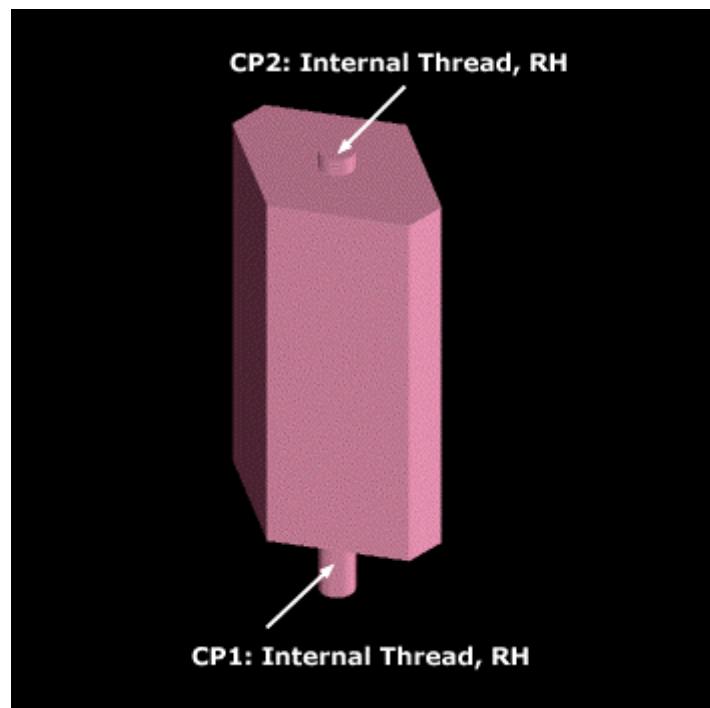
Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

Input name(12) = "SIZE"



## PSL\_V3\_TS2

### Description:

**Symbol Name:** SP\_PSL.PSL\_V3\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_TS2

**User Class Name:** Range V3 - TS2 Variable Support

**Part Number:** PSL\_V3\_TS2\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_V3\_TS2

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

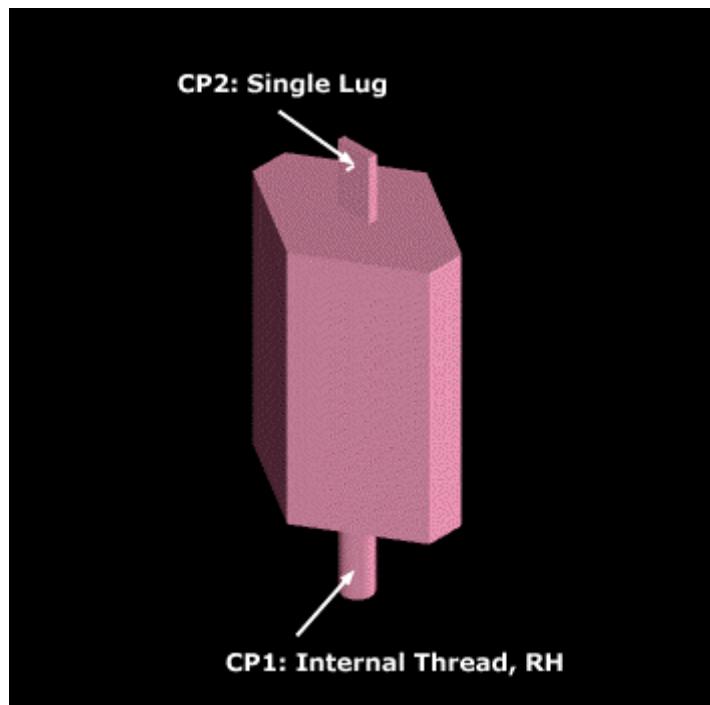
Input name(11) = "RTO"

Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "G"

Input name(15) = "SIZE"



## PSL\_V3\_TS3

**Description:**

**Symbol Name:** SP\_PSL.PSL\_V3\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_V3\_TS3

**User Class Name:** Range V3 - TS3 Variable Support

**Part Number:** PSL\_V3\_TS3\_\*

**Inputs, Outputs, and Aspects:**

ProgID: SP\_PSL.PSL\_V3\_TS3

Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "HOT\_LOAD"

Input name(5) = "F"

Input name(6) = "ROD\_DIA"

Input name(7) = "L"

Input name(8) = "M"

Input name(9) = "D"

Input name(10) = "K"

Input name(11) = "RTO"

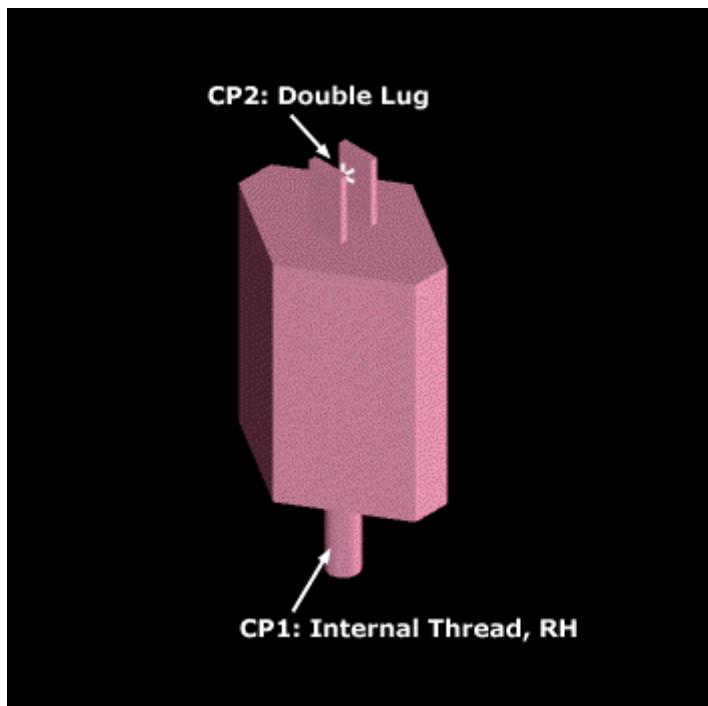
Input name(12) = "H"

Input name(13) = "T"

Input name(14) = "E"

Input name(15) = "G"

Input name(16) = "SIZE"



## PSL\_VBM

### Description:

**Symbol Name:** SP\_PSL.PSL\_VBM

**Workbook:** HS\_PSL.xlm

**Workbook Sheet:** PSL\_VBM

**User Class Name:** Constant Support VBM

**Part Number:** PSL\_VBM\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_VBM

Input name(2) = "MAX\_TRAVEL"

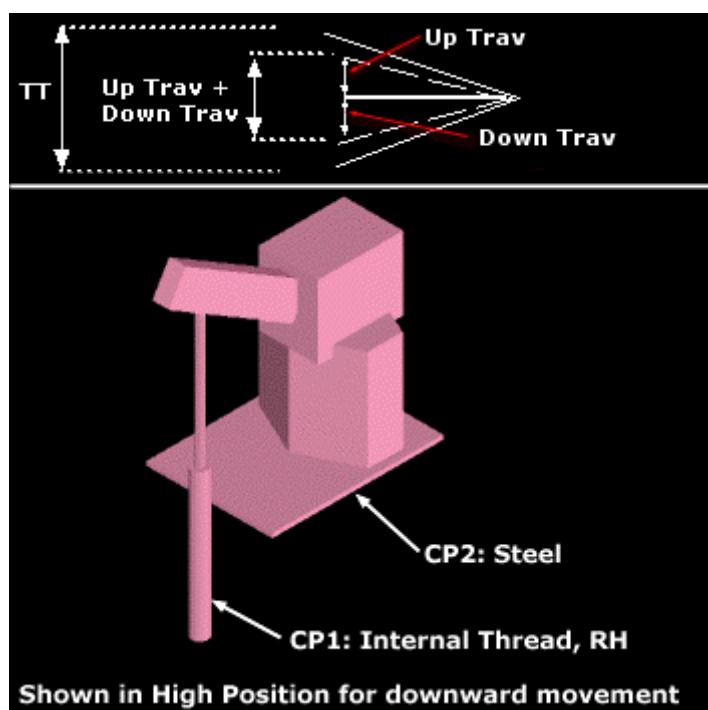
Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "TOTAL\_TRAV1"

Input name(7) = "SIZE"

Input name(6) = "MIN\_TRAVEL"



## PSL\_VBMCS

### Description:

**Symbol Name:** SP\_PSL.PSL\_VBMCS

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VBMCS

**User Class Name:** Constant Support VBMCS

**Part Number:** PSL\_VBMCS\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_VBMCS

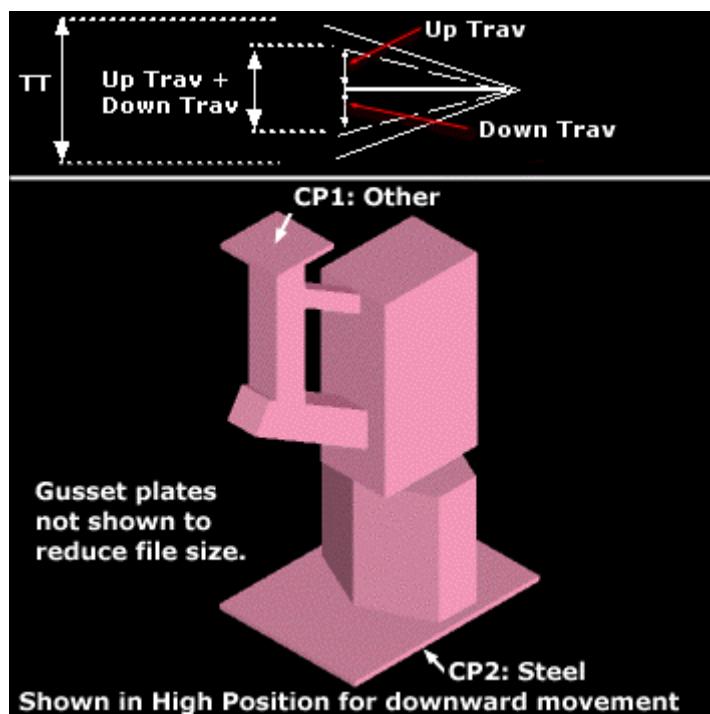
Input name(2) = "WORKING\_TRAV\_DOWN"

Input name(3) = "WORKING\_TRAV\_UP"

Input name(4) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"

Input name(6) = "MIN\_TRAVEL"



## PSL\_VD\_TS1

### Description:

**Symbol Name:** SP\_PSL.PSL\_VD\_TS1

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VD\_TS1

**User Class Name:** Constant Support VD Style TS1

**Part Number:** PSL\_VD\_TS1\_\*

### Inputs, Outputs, and Aspects:

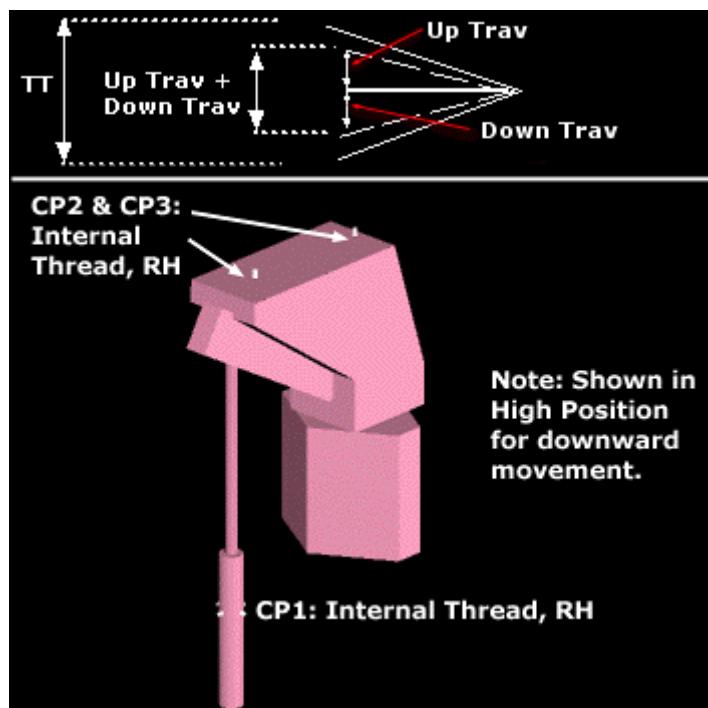
ProgID: SP\_PSL.PSL\_VD\_TS1

Input name(5) = "SIZE"

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"



## PSL\_VD\_TS2

**Description:** Single Lug

**Symbol Name:** SP\_PSL.PSL\_VD\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VD\_TS2

**User Class Name:** Constant Support VD Style TS2

**Part Number:** PSL\_VD\_TS2\_\*

**Inputs, Outputs, and Aspects:**

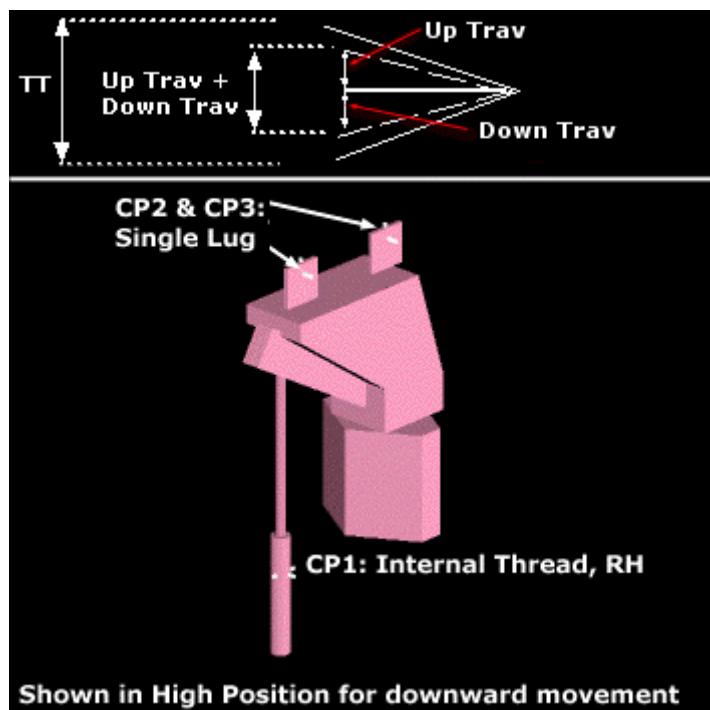
ProgID: SP\_PSL.PSL\_VD\_TS2

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VD\_TS3

**Description:** Double Lug

**Symbol Name:** SP\_PSL.PSL\_VD\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VD\_TS3

**User Class Name:** Constant Support VD Style TS3

**Part Number:** PSL\_VD\_TS3\_\*

**Inputs, Outputs, and Aspects:**

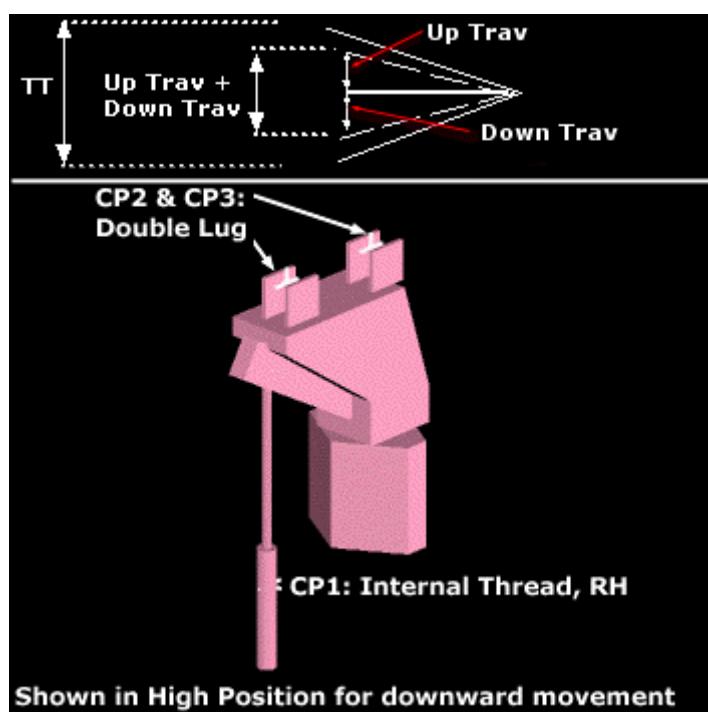
ProgID: SP\_PSL.PSL\_VD\_TS3

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_VD\_TS4

**Description:** Single Lug

**Symbol Name:** SP\_PSL.PSL\_VD\_TS4

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VD\_TS4

**User Class Name:** Constant Support VD Style TS4

**Part Number:** PSL\_VD\_TS4\_\*

**Inputs, Outputs, and Aspects:**

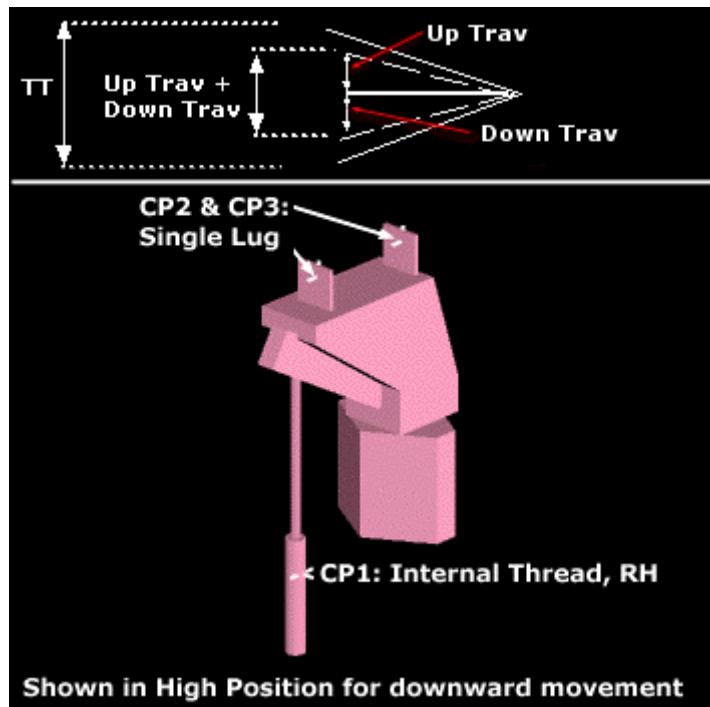
ProgID: SP\_PSL.PSL\_VD\_TS4

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(5) = "SIZE"



## PSL\_VD\_TS5

### Description:

**Symbol Name:** SP\_PSL.PSL\_VD\_TS5

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VD\_TS5

**User Class Name:** Constant Support VD Style TS5

**Part Number:** PSL\_VD\_TS5\_\*

### Inputs, Outputs, and Aspects:

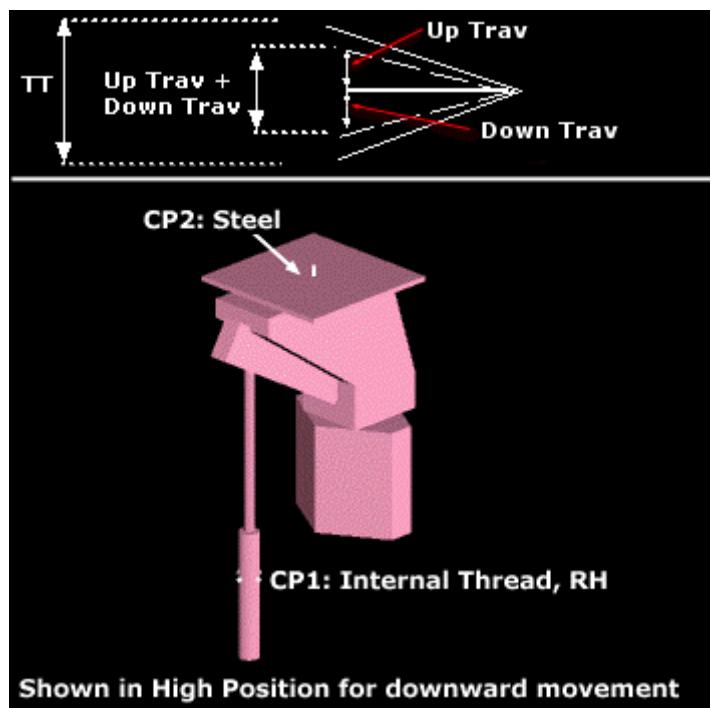
ProgID: SP\_PSL.PSL\_VD\_TS5

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VIBM

### Description:

**Symbol Name:** SP\_PSL.PSL\_VIBM

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VIBM

**User Class Name:** Constant Support VIBM

**Part Number:** PSL\_VIBM\_\*

### Inputs, Outputs, and Aspects:

ProgID: SP\_PSL.PSL\_VIBM

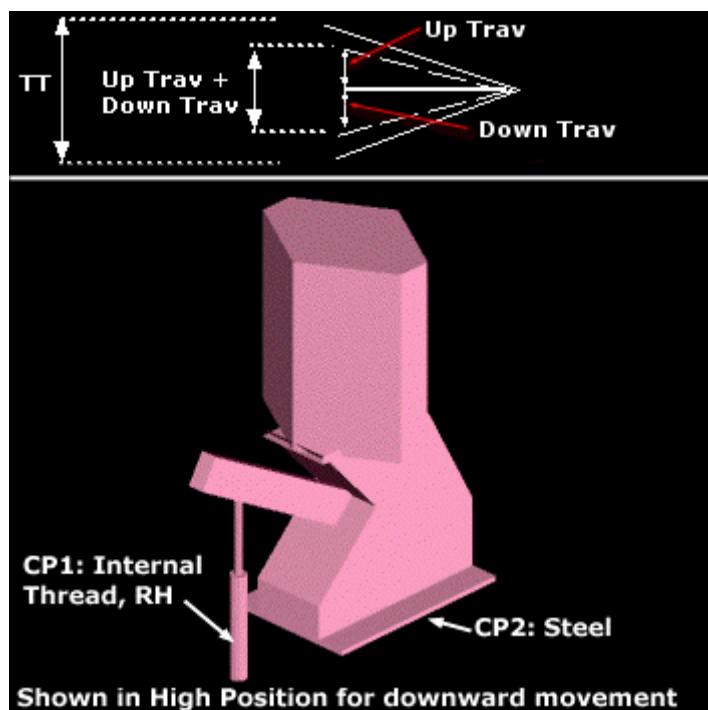
Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"

Input name(6) = "MIN\_TRAVEL"



## PSL\_VID\_TS2

**Description:** Lug

**Symbol Name:** SP\_PSL.PSL\_VID\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VID\_TS2

**User Class Name:** Constant Support VID Style TS2

**Part Number:** PSL\_VID\_TS2\_\*

**Inputs, Outputs, and Aspects:**

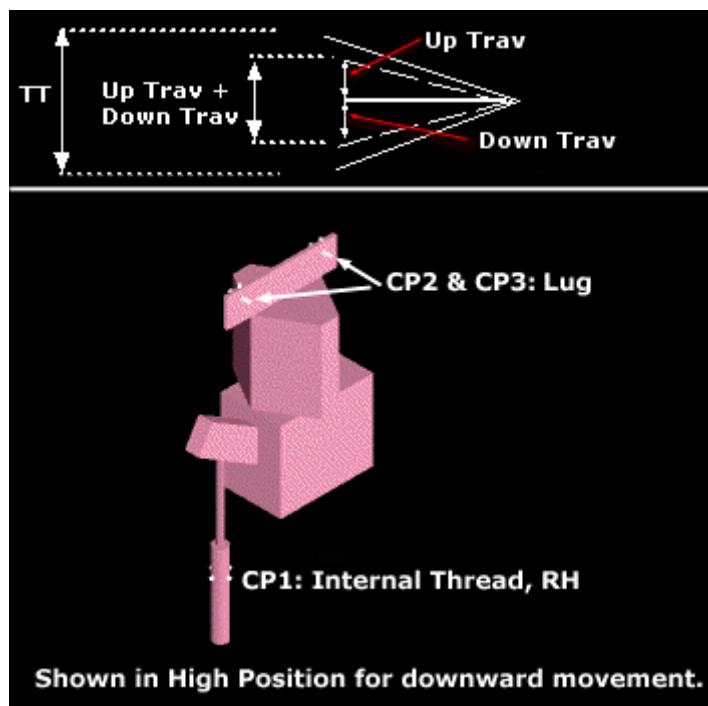
ProgID: SP\_PSL.PSL\_VID\_TS2

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VID\_TS3

**Description:** Double Lug

**Symbol Name:** SP\_PSL.PSL\_VID\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VID\_TS3

**User Class Name:** Constant Support VID Style TS3

**Part Number:** PSL\_VID\_TS3\_\*

**Inputs, Outputs, and Aspects:**

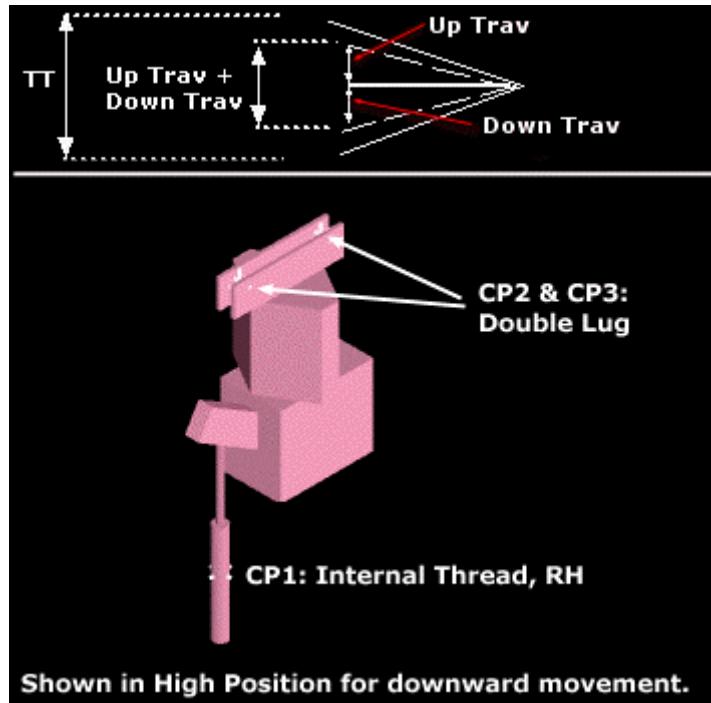
ProgID: SP\_PSL.PSL\_VID\_TS3

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VID\_TS4

**Description:** Single Lug

**Symbol Name:** SP\_PSL.PSL\_VID\_TS4

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VID\_TS4

**User Class Name:** Constant Support VID Style TS4

**Part Number:** PSL\_VID\_TS4\_\*

**Inputs, Outputs, and Aspects:**

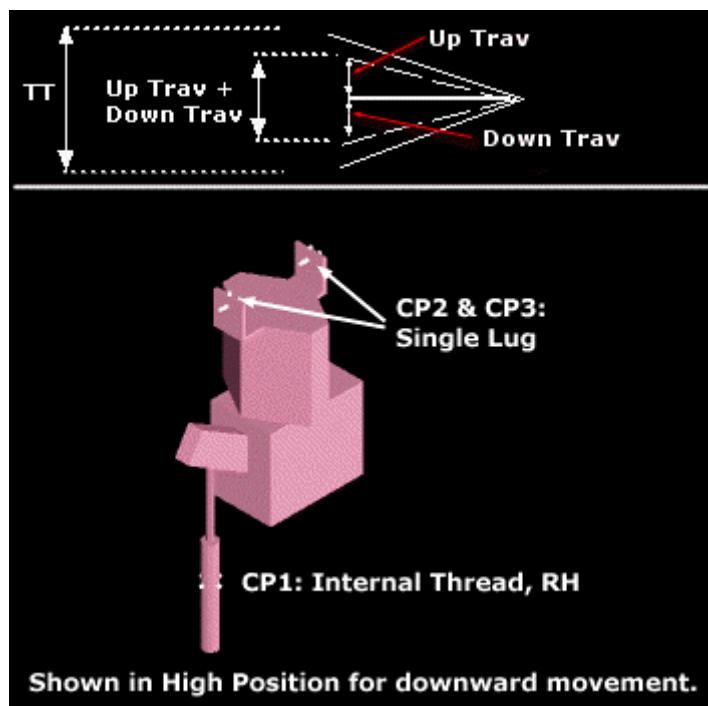
ProgID: SP\_PSL.PSL\_VID\_TS4

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VIS\_TS2

**Description:** Single Lug

**Symbol Name:** SP\_PSL.PSL\_VIS\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VIS\_TS2

**User Class Name:** Constant Support VIS Style TS2

**Part Number:** PSL\_VIS\_TS2\_\*

**Inputs, Outputs, and Aspects:**

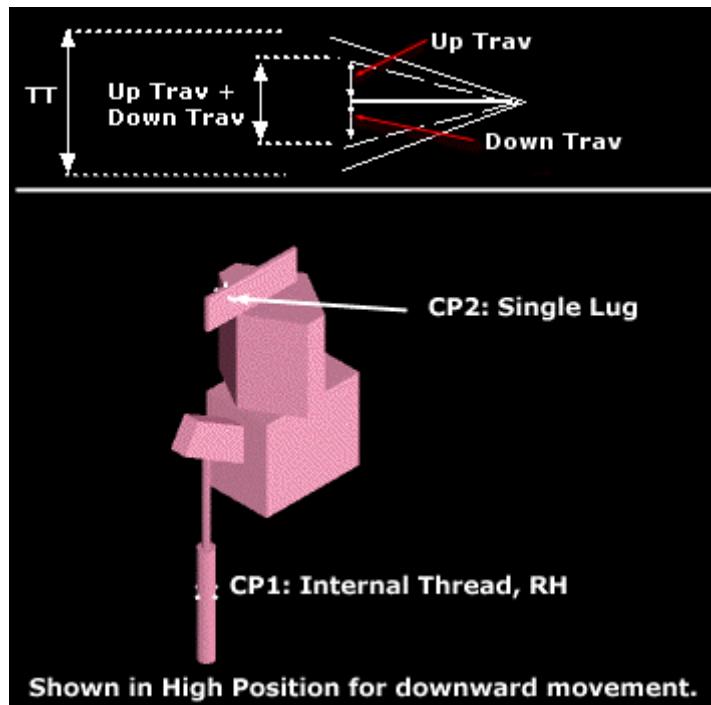
ProgID: SP\_PSL.PSL\_VIS\_TS2

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VIS\_TS3

### Description:

**Symbol Name:** SP\_PSL.PSL\_VIS\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VIS\_TS3

**User Class Name:** Constant Support VIS Style TS3

**Part Number:** PSL\_VIS\_TS3\_\*

### Inputs, Outputs, and Aspects:

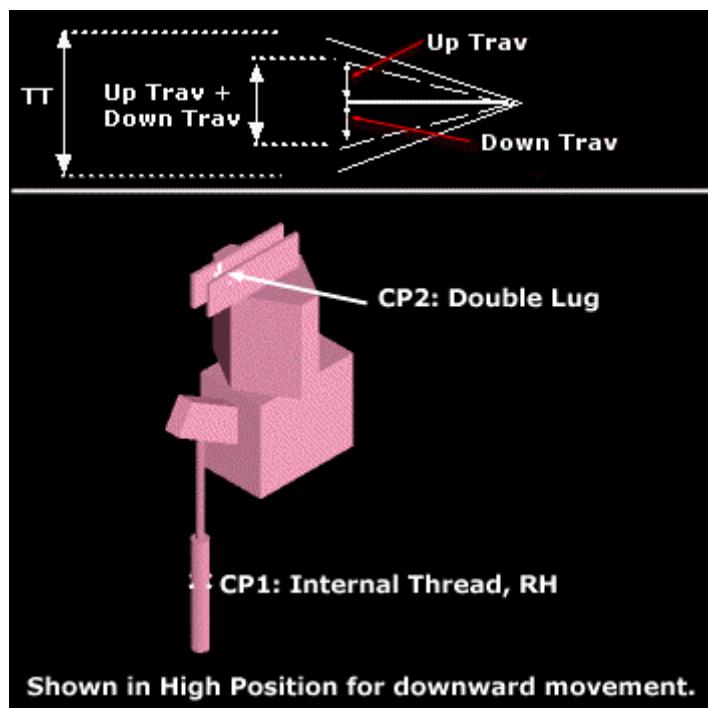
ProgID: SP\_PSL.PSL\_VIS\_TS3

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VS\_TS2

**Description:** Single Lug

**Symbol Name:** SP\_PSL.PSL\_VS\_TS2

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VS\_TS2

**User Class Name:**

**Part Number:** PSL\_VS\_TS2\_\*

**Inputs, Outputs, and Aspects:**

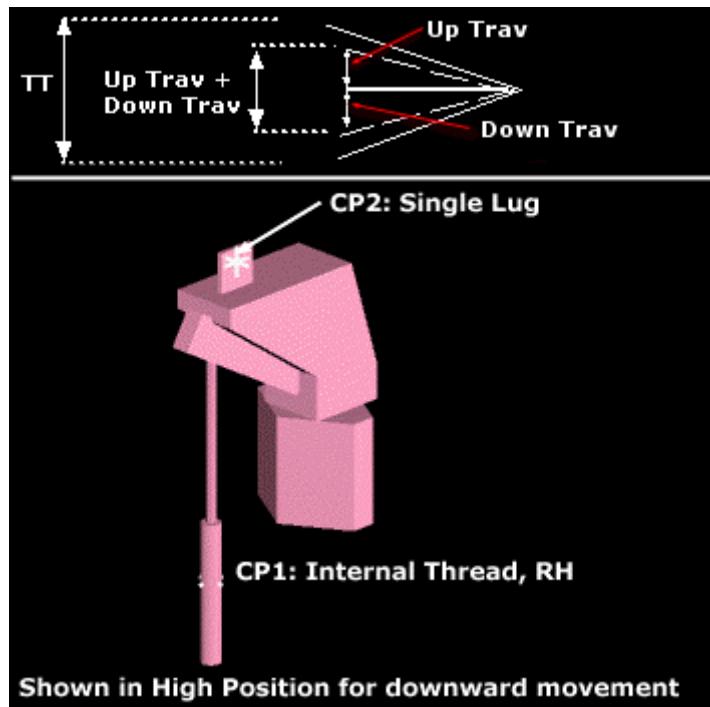
ProgID: SP\_PSL.PSL\_VS\_TS2

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"

Input name(2) = "TOTAL\_TRAV1"

Input name(5) = "SIZE"



## PSL\_VS\_TS3

**Description:** Double Lug

**Symbol Name:** SP\_PSL.PSL\_VS\_TS3

**Workbook:** HS\_PSL.xls

**Workbook Sheet:** PSL\_VS\_TS3

**User Class Name:**

**Part Number:** PSL\_VS\_TS3\_\*

**Inputs, Outputs, and Aspects:**

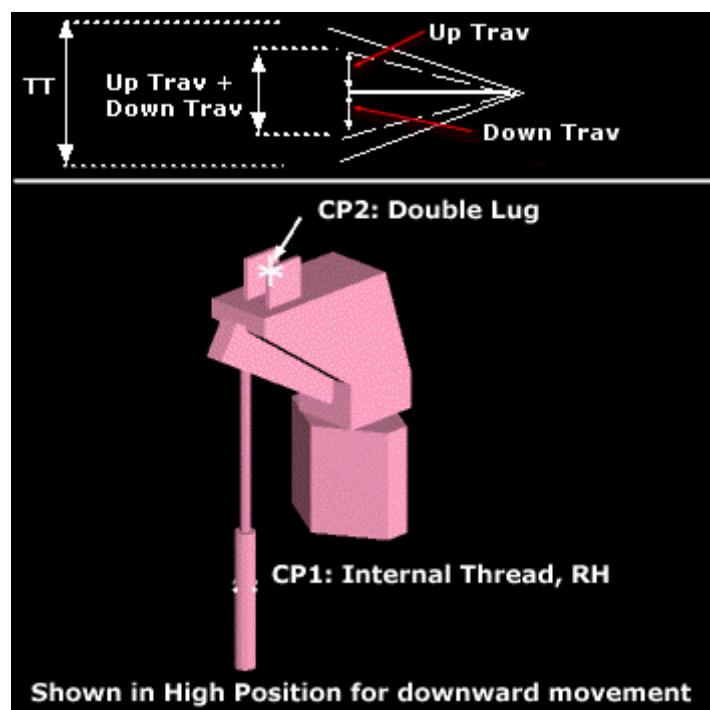
ProgID: SP\_PSL.PSL\_VS\_TS3

Input name(5) = "SIZE"

Input name(2) = "TOTAL\_TRAV1"

Input name(3) = "WORKING\_TRAV\_DOWN"

Input name(4) = "WORKING\_TRAV\_UP"



## Utility\_CURVED\_PLATE

**Description:** Utility Curved Plate

**Symbol Name:** HS.Utility.Utility\_CURVED\_PLATE

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_CURVED\_PLATE

**User Class Name:** Curved Plate

**Part Number:** Utility\_CURVED\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_CURVED\_PLATE

Output name 1 = "Port1"

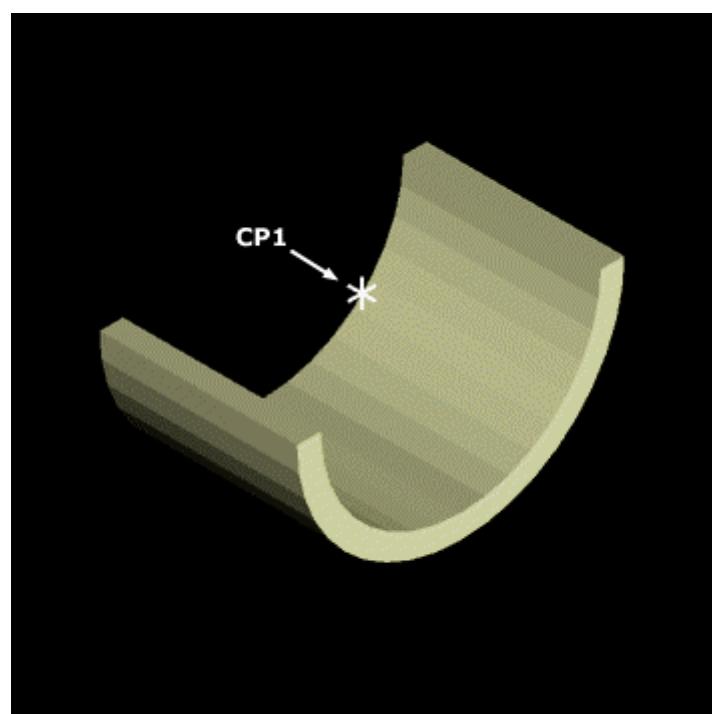
Output name 2 = "BODY"

Input name(2) = "L"

Input name(3) = "RADIUS"

Input name(4) = "THICKNESS"

Input name(5) = "ANGLE"



## Utility-END\_PLATE

**Description:** Utility <size> Curved Edge End Plate

**Symbol Name:** HS\_Utility.Utility.Utility-END\_PLATE

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility-END\_PLATE

**User Class Name:** Curved Edge End Plate

**Part Number:** Utility-END\_PLATE-<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility-END\_PLATE

Output name 1 = "Port1"

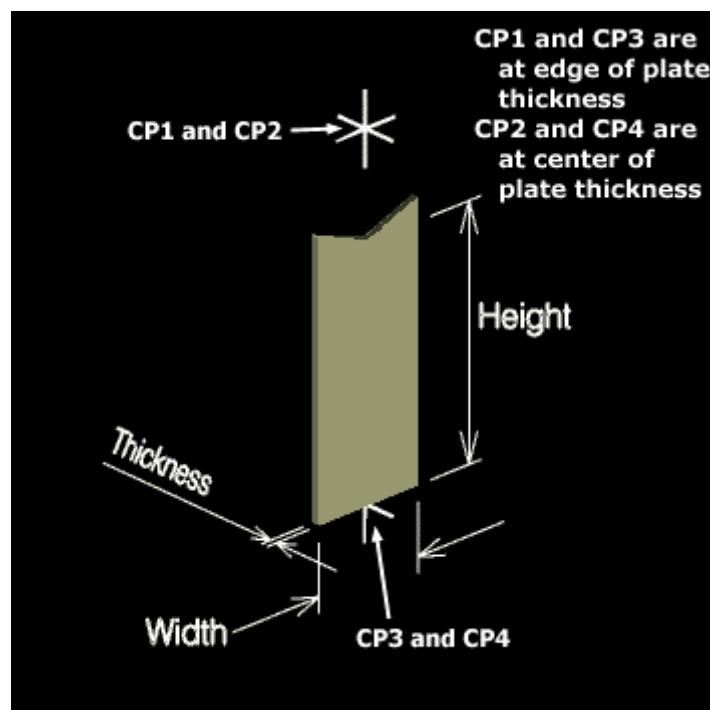
Output name 2 = "BODY"

Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "H"

Input name(5) = "PIPE\_DIA"



## Utility-END\_PLATE\_HOLED

**Description:** Utility End Plate with Holes

**Symbol Name:** HS\_Utility.Utility.Utility-END\_PLATE\_HOLED

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility-END\_PLATE\_HOLED

**User Class Name:** Holed End Plate

**Part Number:** Utility-END\_PLATE\_HOLED-<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility-END\_PLATE\_HOLED

Output name 1 = "Port1"

Output name 2 = "BODY"

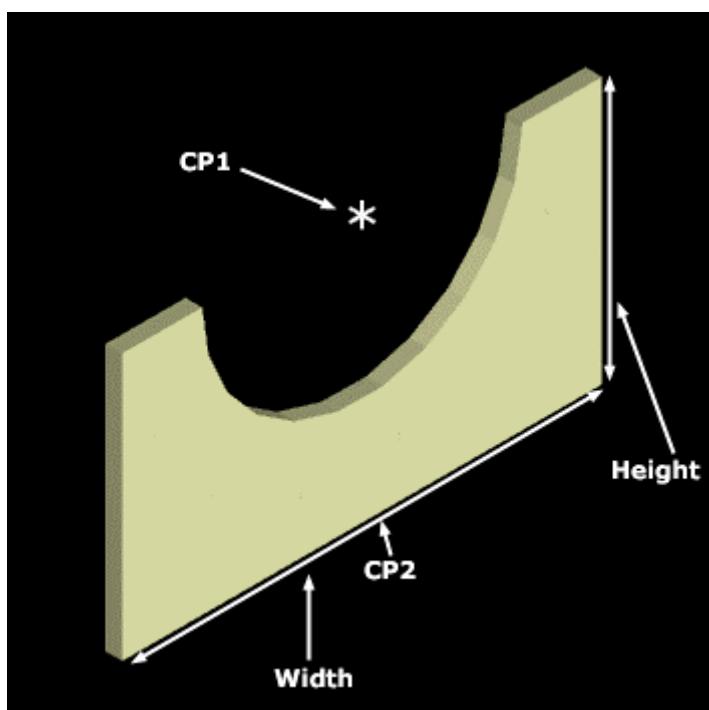
Input name(2) = "R2"

Input name(3) = "THICKNESS"

Input name(4) = "W"

Input name(5) = "H"

Input name(6) = "BOM\_DESC"



## Utility-END\_PLATE\_TAPER

**Description:** Utility Tapered End Plate

**Symbol Name:** HS\_Utility.Utility.Utility-END\_PLATE\_TAPER

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility-END\_PLATE\_TAPER

**User Class Name:** Tapered End Plate

**Part Number:** Utility-END\_PLATE\_TAPER-<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility-END\_PLATE\_TAPER

Output name 1 = "Port1"

Output name 2 = "BODY"

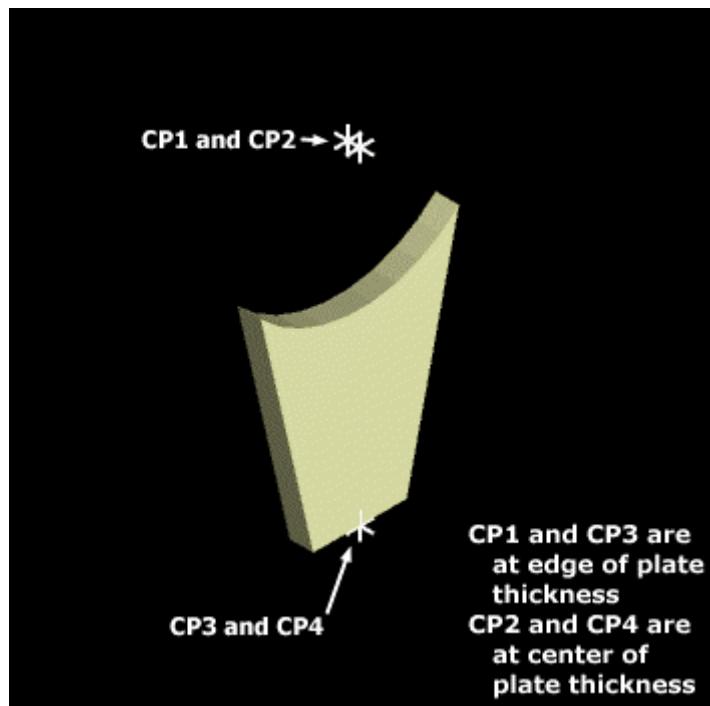
Input name(2) = "R"

Input name(3) = "T"

Input name(4) = "W"

Input name(5) = "H"

Input name(6) = "ANGLE"



## Utility-END\_PLATE\_VAR

**Description:** Utility <size> Variable Length End Plate

**Symbol Name:** HS.Utility.Utility\_END\_PLATE\_VAR

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility-END\_PLATE\_VAR

**User Class Name:** Variable Length End Plate

**Part Number:** Utility-END\_PLATE\_VAR\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_ENDIAN\_PLATE\_VAR

Output name 1 = "Port1"

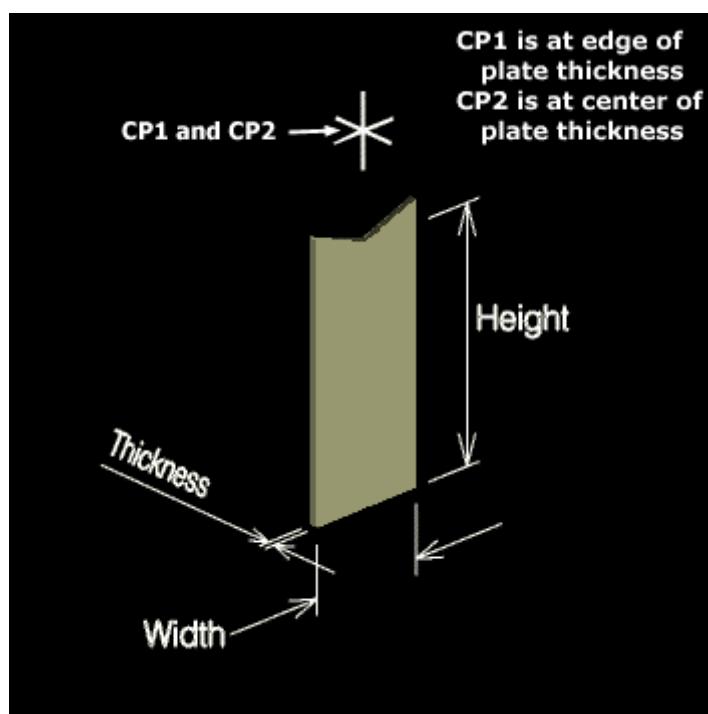
Output name 2 = "BODY"

Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "Length"

Input name(5) = "PIPE\_DIA"



# Utility\_FOUR\_HOLE\_PLATE

**Description:** Utility <size> Base Plate with Four Holes

**Symbol Name:** HS\_Utility.Utility\_FOUR\_HOLE\_PLATE

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_FOUR\_HOLE\_PLATE

**User Class Name:** Base Plate with Four Holes

**Part Number:** Utility\_FOUR\_HOLE\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility\_FOUR\_HOLE\_PLATE

Output name 1 = "BODY"

Output name 2 = "LINE"

Output name 3 = "Port1"

Output name 4 = "Port2"

Output name 5 = "R\_F\_HOLE"

Output name 6 = "R\_B\_HOLE"

Output name 7 = "L\_F\_HOLE"

Output name 8 = "L\_B\_HOLE"

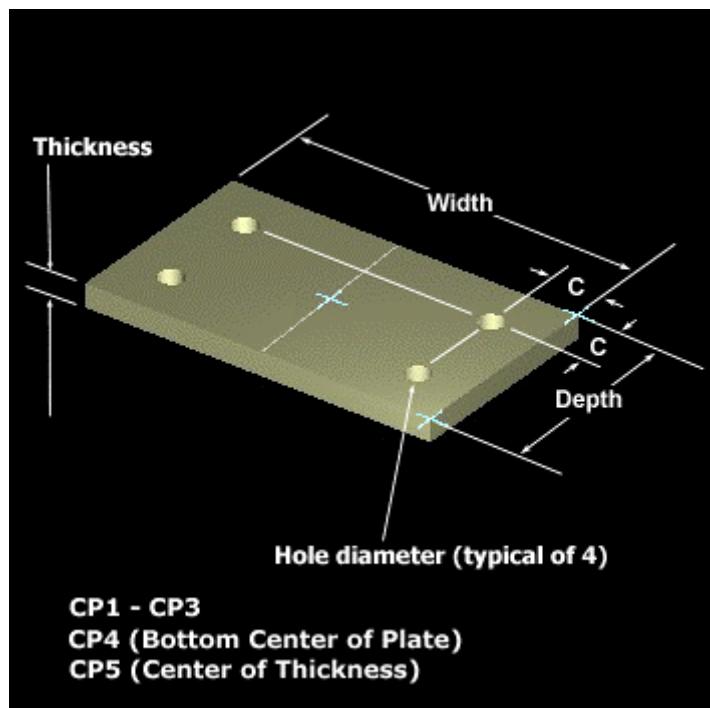
Input name(2) = "C"

Input name(3) = "HOLE\_SIZE"

Input name(4) = "THICKNESS"

Input name(5) = "WIDTH"

Input name(6) = "DEPTH"



## Utility\_GENERIC\_L

**Description:** Utility Generic L Section

**Symbol Name:** HS\_Utility.Utility.Utility\_GENERIC\_L

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GENERIC\_L

**User Class Name:** Fixed Length Generic L-Section

**Part Number:** Utility\_GENERIC\_L\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GENERIC\_L

Output name 1 = "Port1"

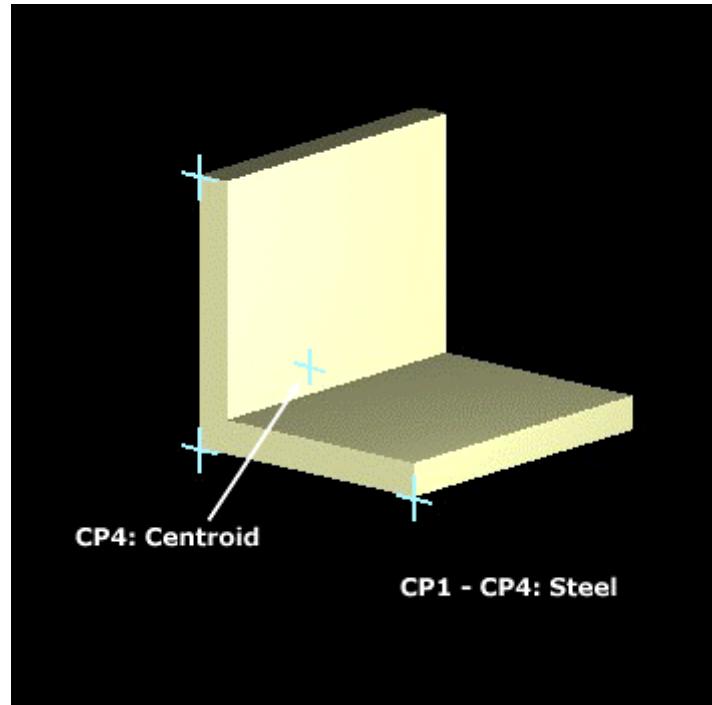
Output name 2 = "BODY"

Input name(2) = "L"

Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(5) = "THICKNESS"



## Utility\_GENERIC\_T

**Description:** Utility Generic T Section

**Symbol Name:** HS\_Utility.Utility.Utility\_GENERIC\_T

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GENERIC\_T

**User Class Name:** Fixed Length Generic T-Section

**Part Number:** Utility\_GENERIC\_T\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GENERIC\_T

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Input name(2) = "L"

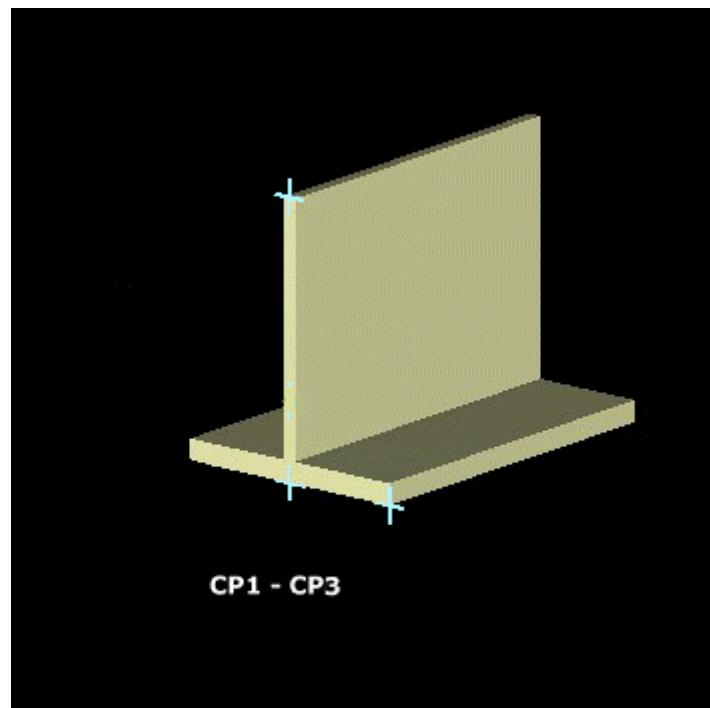
Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(5) = "T\_FLANGE"

Input name(6) = "T\_WEB"

Input name(8) = "SIZE"



## Utility\_GENERIC\_W

**Description:** Utility Generic W Section

**Symbol Name:** HS\_Utility.Utility.Utility\_GENERIC\_W

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GENERIC\_W

**User Class Name:** Fixed Length Generic W-Section

**Part Number:** Utility\_GENERIC\_W\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GENERIC\_W

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "BODY"

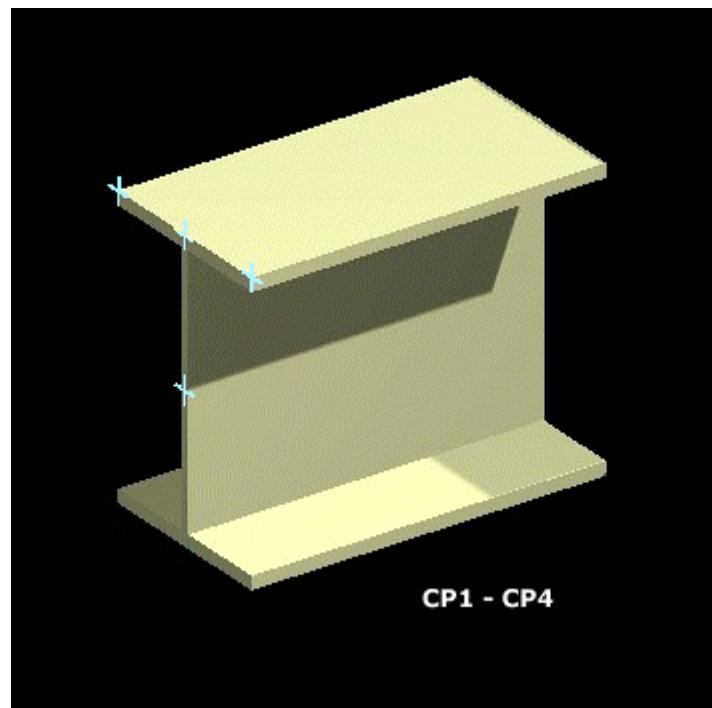
Input name(2) = "L"

Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(5) = "T\_FLANGE"

Input name(6) = "T\_WEB"



## **Utility\_GEN\_3\_BOLT\_CLAMP**

**Description:** Utility Generic 3 Bolt Clamp

**Symbol Name:** HS.Utility.Utility.Utility\_GEN\_3\_BOLT\_CLAMP

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_3\_BOLT\_CLAMP

**User Class Name:** Custom Clamp

**Part Number:** Utility\_GEN\_3\_BOLT\_CLAMP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility.Utility\_GEN\_3\_BOLT\_CLAMP

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "MIDDLE\_BOLT"

Output name 9 = "BOT\_BOLT"

Output name 10 = "BODY"

Input name(2) = "R"

Input name(3) = "J"

Input name(4) = "K"

Input name(5) = "A"

Input name(6) = "B"

Input name(7) = "H"

Input name(8) = "BOLT\_DIA"

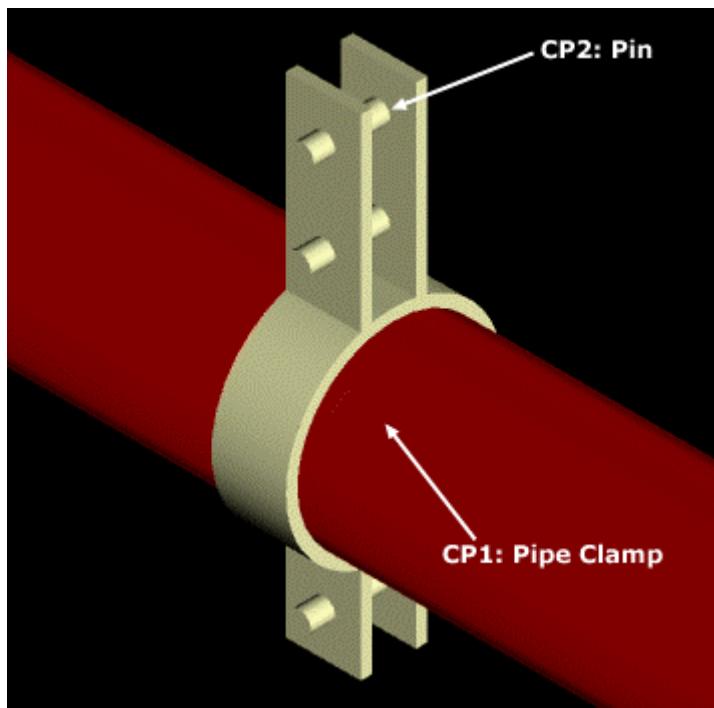
Input name(9) = "BOLT\_L"

Input name(10) = "BOLT\_DIA2"

Input name(11) = "BOLT\_L2"

Input name(12) = "T"

Input name(13) = "W"



## Utility\_GEN\_4\_BOLT\_CLAMP

**Description:** Utility Generic 4 Bolt Clamp

**Symbol Name:** HS.Utility.Utility.Utility\_GEN\_4\_BOLT\_CLAMP

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_4\_BOLT\_CLAMP

**User Class Name:** Custom 4 Bolt Clamp

**Part Number:** Utility\_GEN\_4\_BOLT\_CLAMP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility.Utility\_GEN\_4\_BOLT\_CLAMP

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "Port3"

Output name 4 = "TOP1"

Output name 5 = "TOP2"

Output name 6 = "BOT1"

Output name 7 = "BOT2"

Output name 8 = "TOP\_BOLT1"

Output name 9 = "TOP\_BOLT2"

Output name 10 = "BOT\_BOLT1"

Output name 11 = "BOT\_BOLT2"

Output name 12 = "BODY"

Input name(2) = "R"

Input name(3) = "A"

Input name(4) = "K"

Input name(5) = "J"

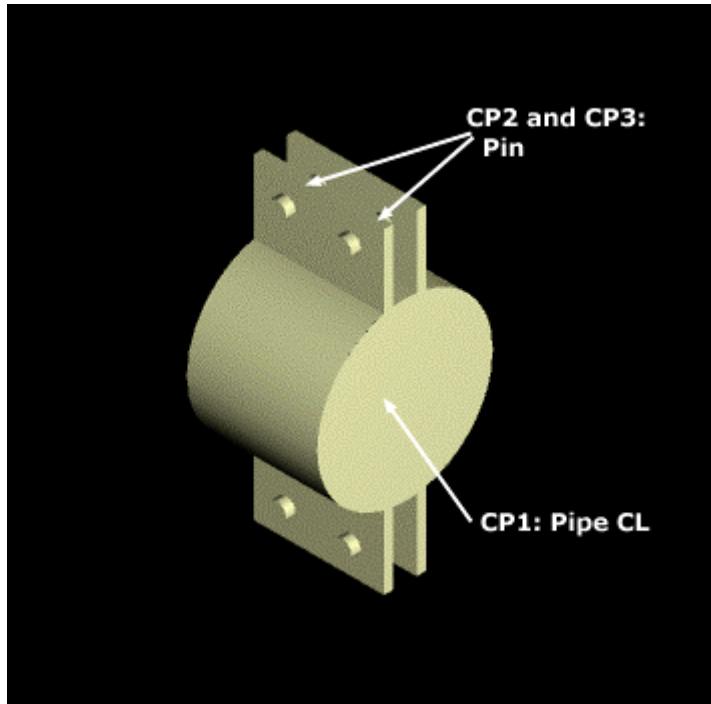
Input name(6) = "H"

Input name(7) = "BOLT\_DIA"

Input name(8) = "BOLT\_L"

Input name(9) = "T"

Input name(10) = "W"



# Utility\_GEN\_4\_LIN\_BOLT\_CL

**Description:**

**Symbol Name:** HS.Utility.Utility\_GEN\_4\_LINEAR\_BOLT\_CLAMP

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_GEN\_4\_LINEAR\_BOLT\_CLAMP

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "MIDDLE\_BOLT"

Output name 10 = "MIDDLE\_BOLT2"

Output name 11 = "BODY"

Input name(2) = "R"

Input name(3) = "J"

Input name(4) = "K"

Input name(5) = "A"

Input name(6) = "H"

Input name(7) = "BOLT\_DIA"

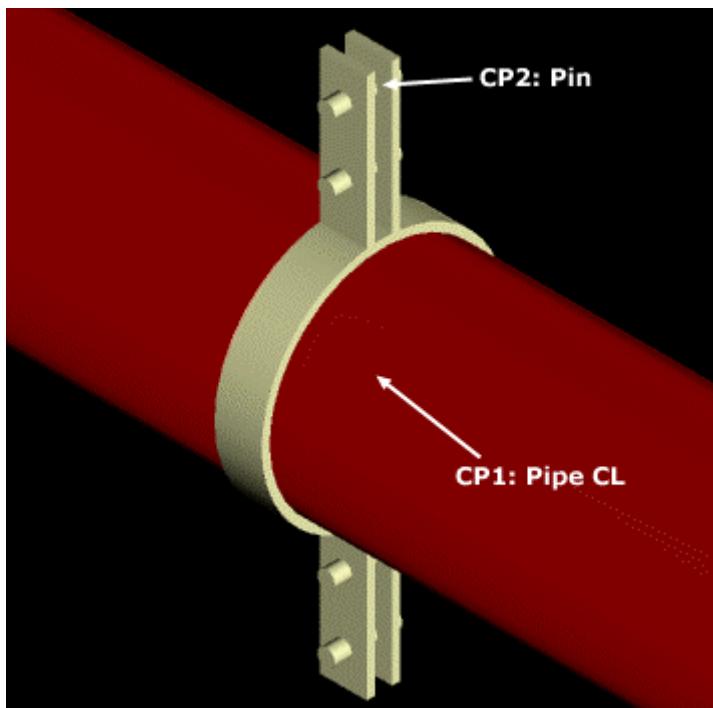
Input name(8) = "BOLT\_L"

Input name(9) = "BOLT\_DIA2"

Input name(10) = "BOLT\_L2"

Input name(11) = "T"

Input name(12) = "W"



## Utility\_GEN\_CLAMP

**Description:** Utility Generic Clamp

**Symbol Name:** HS.Utility.Utility.Utility\_GEN\_CLAMP

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_CLAMP

**User Class Name:** Custom Clamp

**Part Number:** Utility\_GEN\_CLAMP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility.Utility\_GEN\_CLAMP

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "TOP1"

Output name 4 = "TOP2"

Output name 5 = "BOT1"

Output name 6 = "BOT2"

Output name 7 = "TOP\_BOLT"

Output name 8 = "BOT\_BOLT"

Output name 9 = "BODY"

Input name(2) = "R"

Input name(3) = "A"

Input name(4) = "K"

Input name(5) = "H"

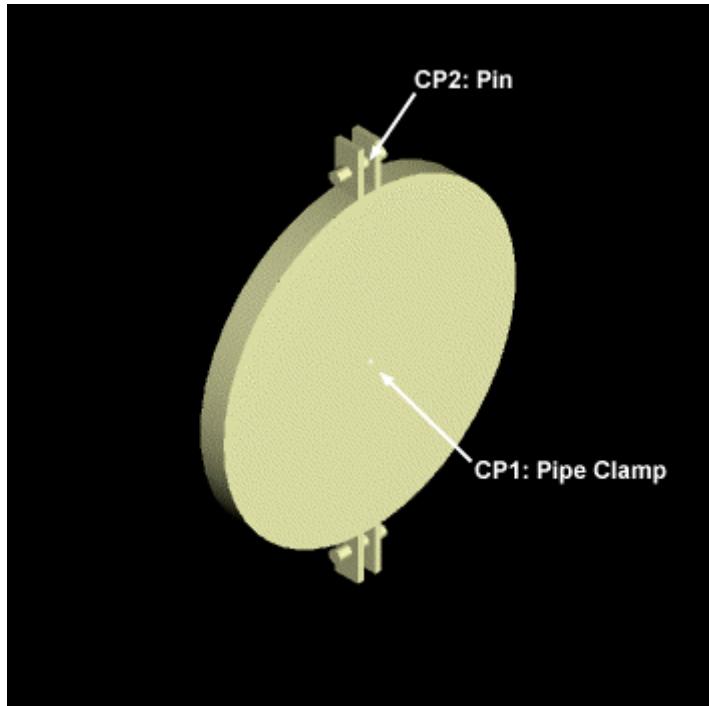
Input name(6) = "BOLT\_DIA"

Input name(7) = "BOLT\_L"

Input name(8) = "T"

Input name(9) = "W"

Input name(10) = "BOM\_DESC1"



## Utility\_GEN\_HEX\_NUT

**Description:** Utility <size> Generic Hex Nut

**Symbol Name:** HS.Utility.Utility\_GEN\_HEX\_NUT

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_HEX\_NUT

**User Class Name:** Generic Hex Nut

**Part Number:** Utility\_GEN\_HEX\_NUT\_<number>

**Inputs, Outputs, and Aspects:**

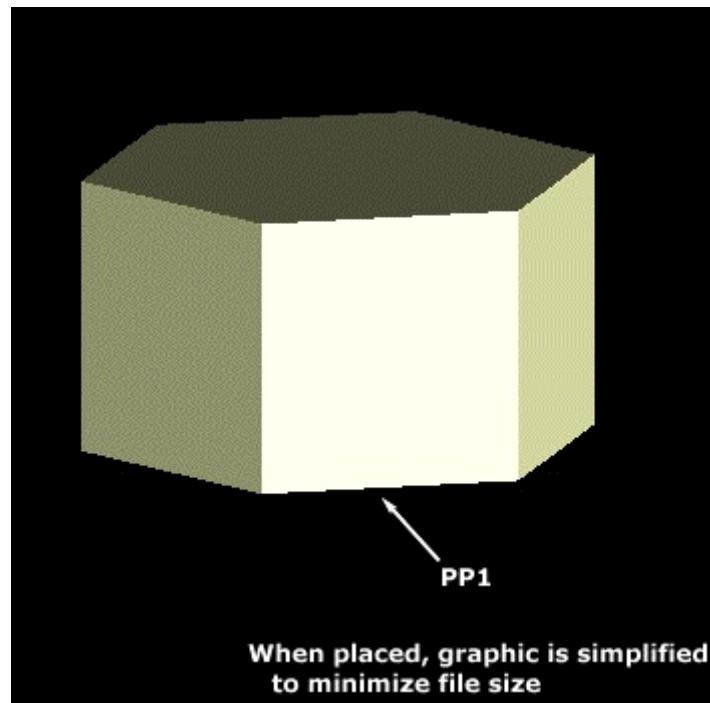
ProgID: HS.Utility.Utility\_GEN\_HEX\_NUT

Output name 1 = "NUT"

Input name(2) = "ROD\_DIA"

Input name(3) = "W"

Input name(4) = "T"



## Utility\_GEN\_HOOD

**Description:** Utility Generic Hood

**Symbol Name:** HS\_Utility.Utility.Utility\_GEN\_HOOD

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GEN\_HOOD

**User Class Name:** Generic Strap/Hood

**Part Number:** Utility\_GEN\_HOOD\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GEN\_HOOD

Output name 1 = "Port1"

Output name 2 = "BODY"

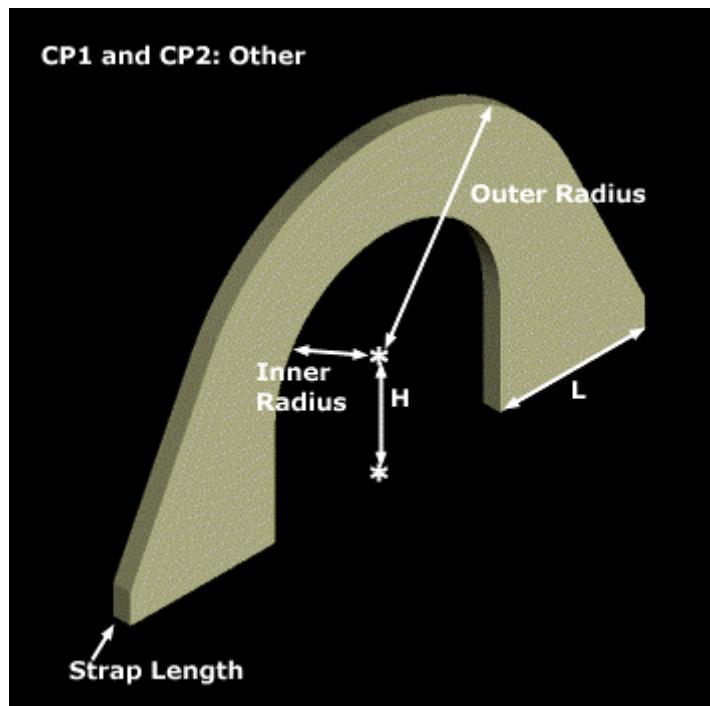
Input name(2) = "OUT\_RAD"

Input name(3) = "IN\_RAD"

Input name(4) = "STRAP\_L"

Input name(5) = "HEIGHT"

Input name(6) = "LEG"



## Utility\_GEN\_PIPE\_ATT

**Description:** Utility <size> Pipe Attachment for Elbow

**Symbol Name:** HS.Utility.Utility\_GEN\_PIPE\_ATT

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_PIPE\_ATT

**User Class Name:** Pipe Attachment for Elbow

**Part Number:** Utility\_GEN\_PIPE\_ATT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_GEN\_PIPE\_ATT

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "BODY"

Output name 4 = "HOLE"

Input name(2) = "D"

Input name(3) = "R"

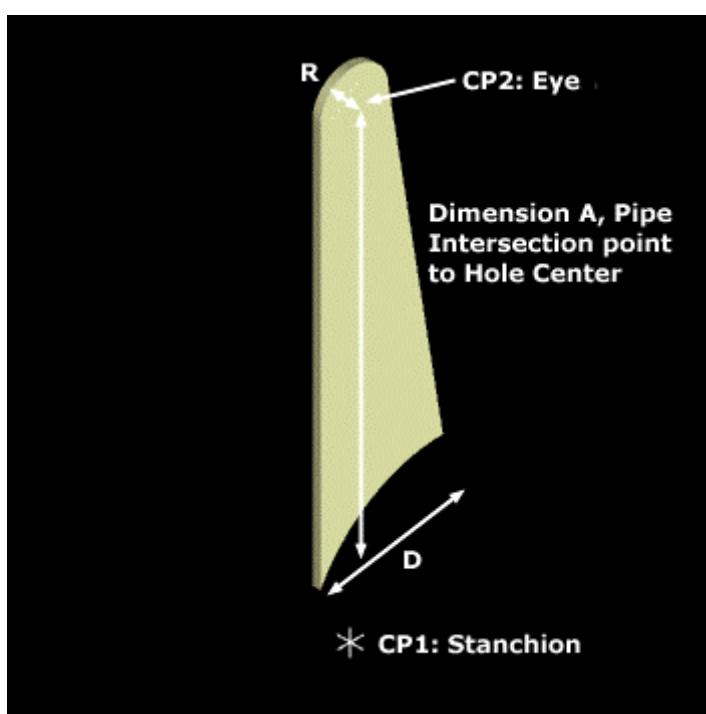
Input name(4) = "A"

Input name(5) = "T"

Input name(6) = "HOLE\_DIA"

Input name(7) = "ELBOW\_RADIUS"

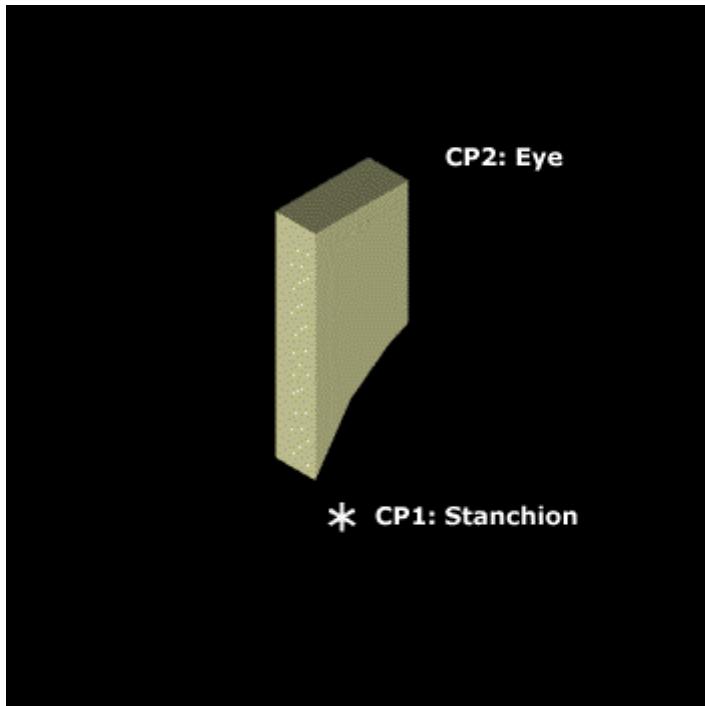
Input name(8) = "PIPE\_DIA"



## Utility\_GEN\_PIPE\_ATT2

**Description:** Utility <size> Pipe Attachment 2 for Elbow  
**Symbol Name:** HS.Utility.Utility\_GEN\_PIPE\_ATT2  
**Workbook:** HS.Utility.xls  
**Workbook Sheet:** Utility\_GEN\_PIPE\_ATT2  
**User Class Name:** Pipe Attachment 2 for Elbow  
**Part Number:** Utility\_GEN\_PIPE\_ATT2\_<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_GEN\_PIPE\_ATT2  
Output name 1 = "Port1"  
Output name 2 = "Port2"  
Output name 3 = "BODY"  
Output name 4 = "HOLE"  
Input name(2) = "D"  
Input name(3) = "A"  
Input name(4) = "T"  
Input name(5) = "HOLE\_DIA"  
Input name(6) = "C"  
Input name(7) = "ELBOW\_RADIUS"  
Input name(8) = "PIPE\_DIA"



## Utility\_GEN\_REC\_STRAP

**Description:** Utility <size> Generic Rectangular Strap

**Symbol Name:** HS\_Utility.Utility.Utility\_GEN\_REC\_STRAP

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GEN\_REC\_STRAP

**User Class Name:** Generic Rectangular Strap

**Part Number:** Utility\_GEN\_REC\_STRAP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GEN\_REC\_STRAP

Output name 1 = "Port1"

Output name 2 = "TOP"

Output name 3 = "LEFT"

Output name 4 = "RIGHT"

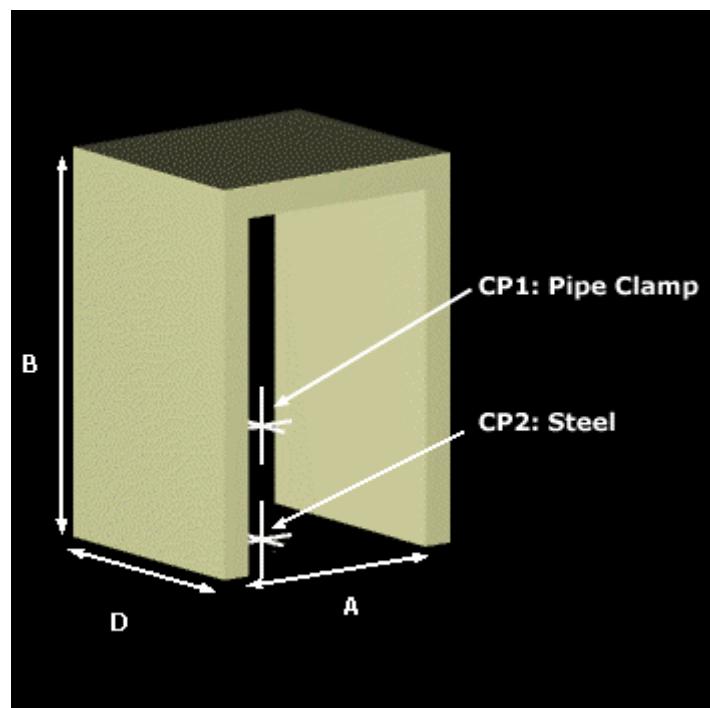
Input name(2) = "A"

Input name(3) = "D"

Input name(4) = "B"

Input name(5) = "T"

Input name(6) = "PIPE\_DIA"



## Utility\_GEN\_U\_BOLT

**Description:** Utility Generic U-Bolt

**Symbol Name:** HS.Utility.Utility.Utility\_GEN\_U\_BOLT

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_U\_BOLT

**User Class Name:** Generic U-Bolt

**Part Number:** Utility\_GEN\_U\_BOLT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility.Utility\_GEN\_U\_BOLT

Output name 1 = "Port1"

Output name 2 = "BEND"

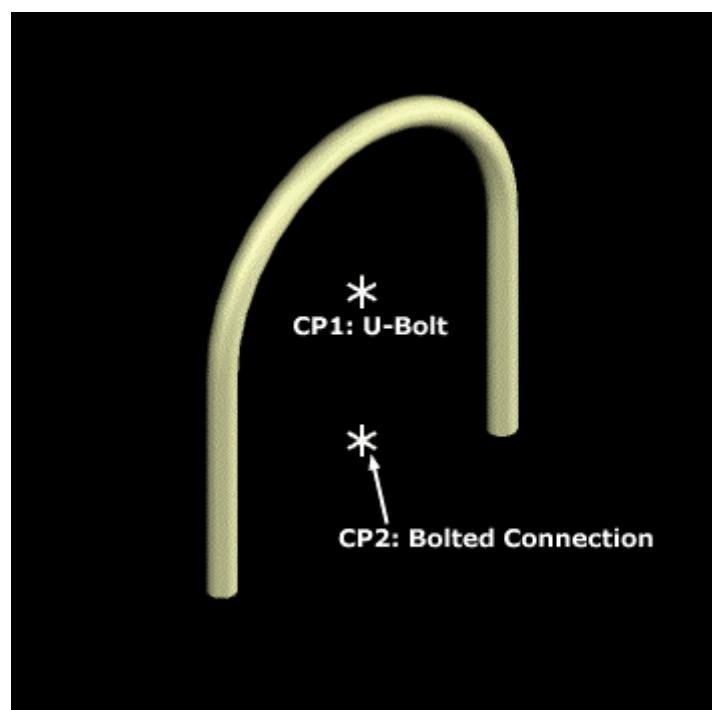
Output name 3 = "RIGHT"

Output name 4 = "LEFT"

Input name(2) = "D"

Input name(3) = "H"

Input name(4) = "R"



## Utility\_GEN\_U\_STRAP

**Description:** Utility Generic U-Strap

**Symbol Name:** HS.Utility.Utility.Utility\_GEN\_U\_STRAP

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GEN\_U\_STRAP

**User Class Name:** Generic U-Strap

**Part Number:** Utility\_GEN\_U\_STRAP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility.Utility\_GEN\_U\_STRAP

Output name 1 = "Port1"

Output name 2 = "BODY"

Output name 3 = "RIGHT"

Output name 4 = "LEFT"

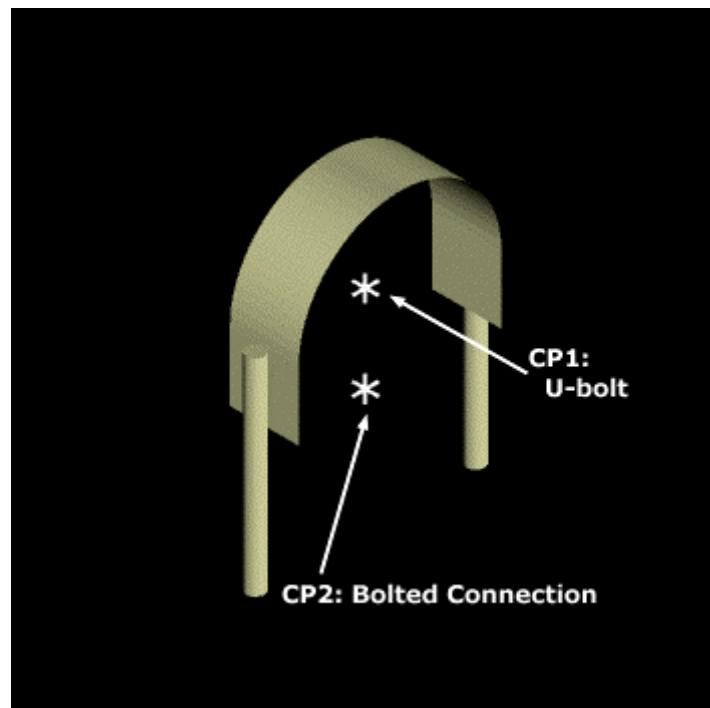
Input name(2) = "D"

Input name(3) = "H"

Input name(4) = "R"

Input name(5) = "W"

Input name(6) = "OL"



## Utility\_GROUT

**Description:** Utility Grout

**Symbol Name:** HS.Utility.Utility\_GROUT

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_GROUT

**User Class Name:** Square Grout

**Part Number:** Utility\_GROUT\_<number>

**Inputs, Outputs, and Aspects:**

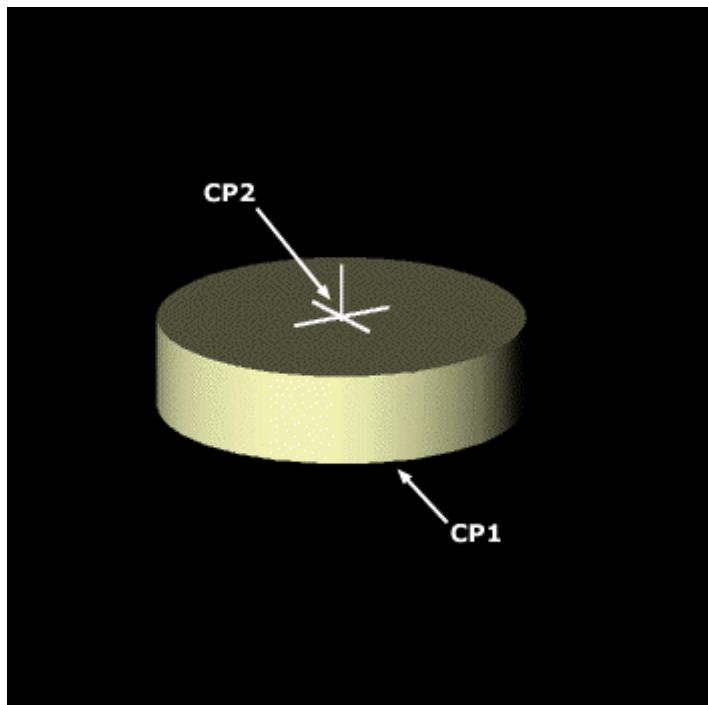
ProgID: HS.Utility.Utility\_GROUT

Output name 1 = "Port1"

Output name 2 = "BODY"

Input name(2) = "DIA"

Input name(3) = "T"



## Utility\_GUSSET

**Description:** Utility <size> Steel Gusset Plate

**Symbol Name:** HS\_Utility.Utility\_Utility\_GUSSET

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GUSSET

**User Class Name:** Steel Gusset Plate

**Part Number:** Utility\_GUSSET\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility\_Utility\_GUSSET

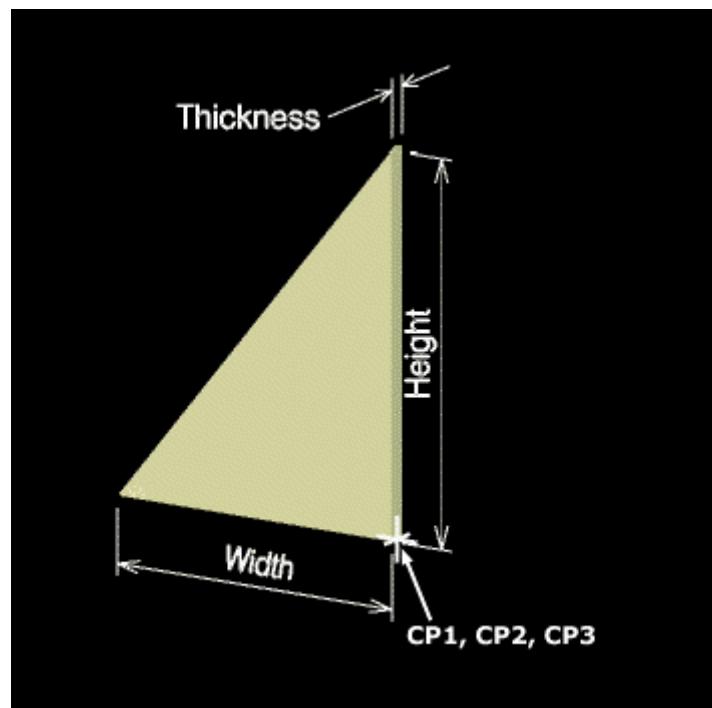
Output name 1 = "Port1"

Output name 2 = "BODY"

Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "H"



## Utility\_GUSSET2

**Description:** Utility <size> Steel Gusset Plate

**Symbol Name:** HS\_Utility.Utility\_Utility\_GUSSET2

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GUSSET2

**User Class Name:** Steel Gusset Plate

**Part Number:** Utility\_GUSSET2\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility\_Utility\_GUSSET2

Output name 1 = "Port1"

Output name 2 = "BODY"

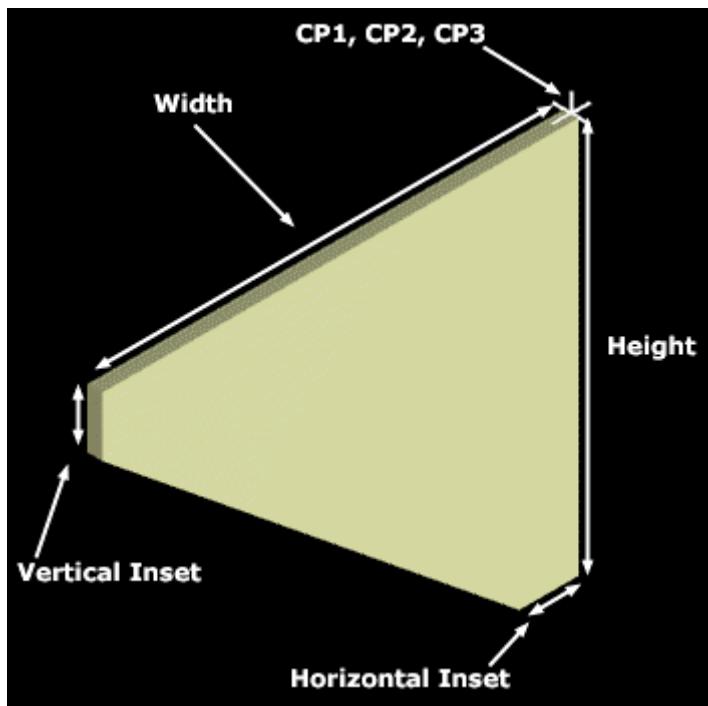
Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "H"

Input name(5) = "VERTICAL\_INSET"

Input name(6) = "HORIZONTAL\_INSET"



## Utility\_GUSSET\_NOTCHED

**Description:** Utility <size> Notched Steel Gusset Plate

**Symbol Name:** HS\_Utility.Utility.Utility\_GUSSET\_NOTCHED

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_GUSSET\_NOTCHED

**User Class Name:** Notched Steel Gusset Plate

**Part Number:** Utility\_GUSSET\_NOTCHED\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_GUSSET\_NOTCHED

Output name 1 = "Port1"

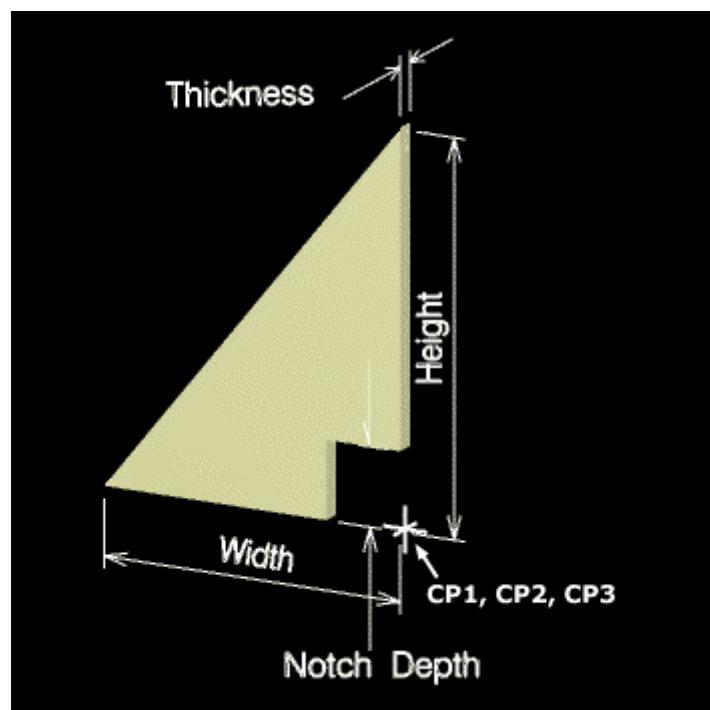
Output name 2 = "BODY"

Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "H"

Input name(5) = "NOTCH\_DEPTH"



## Utility\_HALF\_END\_PLATE

**Description:** Utility <size> Half End Plate

**Symbol Name:** HS\_Utility.Utility.Utility\_HALF\_END\_PLATE

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_HALF\_END\_PLATE

**User Class Name:** Half End Plate

**Part Number:** Utility\_HALF\_END\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility.Utility\_HALF\_END\_PLATE

Output name 1 = "Port1"

Output name 2 = "BODY"

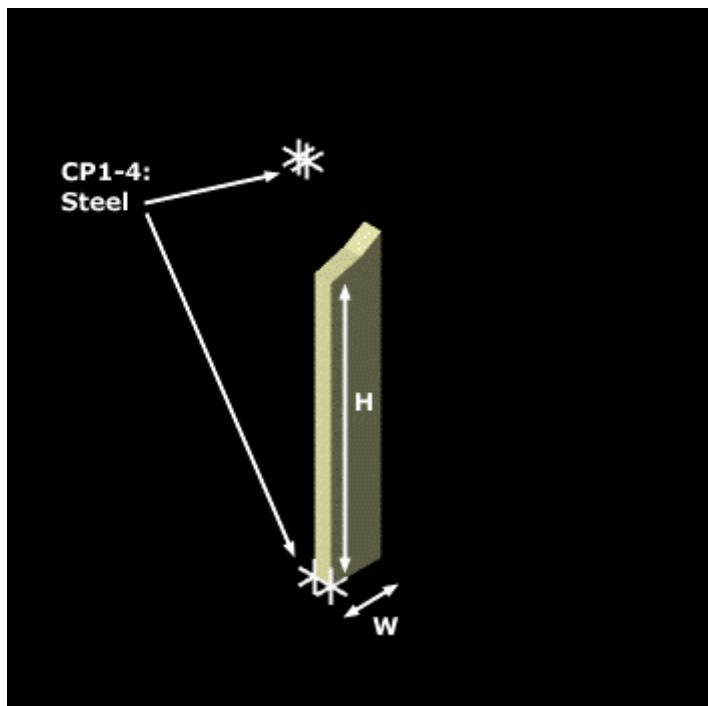
Input name(2) = "THICKNESS"

Input name(3) = "W"

Input name(4) = "H"

Input name(5) = "OVER"

Input name(6) = "PIPE\_DIA"



# Utility\_I\_BEAM\_STIFFENER

**Description:** Utility Size <size> I-Beam Stiffener Plate

**Symbol Name:** HS\_Utility.Utility\_I\_BEAM\_STIFFENER

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_I\_BEAM\_STIFFENER

**User Class Name:** I-Beam Stiffener Plate

**Part Number:** Utility\_I\_BEAM\_STIFFENER\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility\_I\_BEAM\_STIFFENER

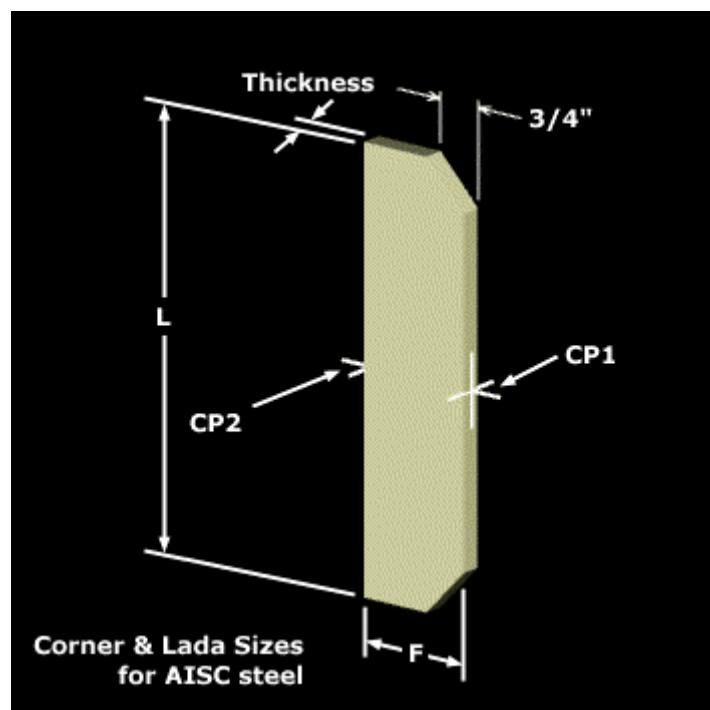
Output name 1 = "Port1"

Output name 2 = "BODY"

Input name(2) = "F"

Input name(3) = "THICKNESS"

Input name(4) = "L"



# Utility\_NOTCH\_PLATE

**Description:** Utility <size> Notch Plate for Assemblies Only

**Symbol Name:** HS.Utility.Utility\_NOTCH\_PLATE

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_NOTCH\_PLATE

**User Class Name:** Notch Plate for Assemblies Only

**Part Number:** Utility\_NOTCH\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_NOTCH\_PLATE

Output name 1 = "Port1"

Output name 2 = "BODY"

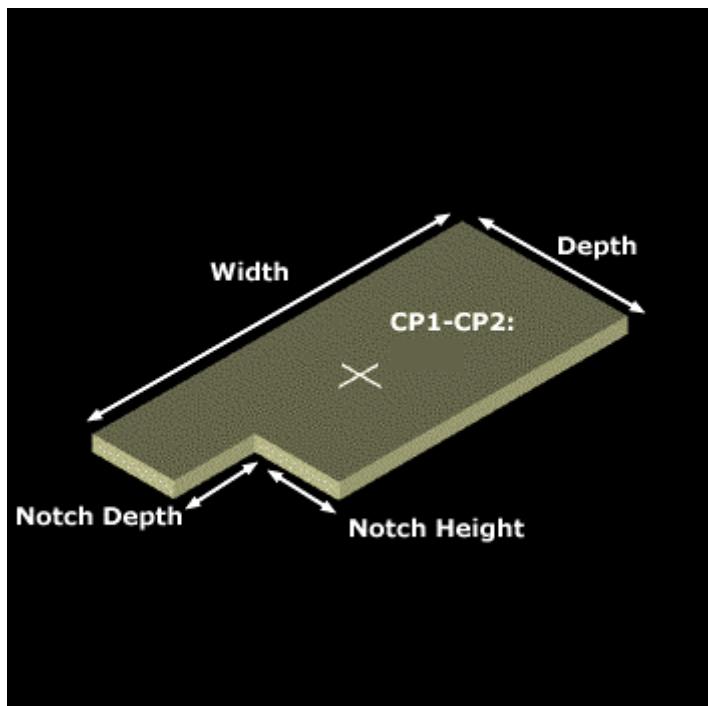
Input name(2) = "THICKNESS"

Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(5) = "X"

Input name(6) = "Z"



## Utility\_PIPE\_STRAP

**Description:** Utility <size> Pipe Strap

**Symbol Name:** HS.Utility.Utility\_PIPE\_STRAP

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_PIPE\_STRAP

**User Class Name:** Pipe Strap

**Part Number:** Utility\_PIPE\_STRAP\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_PIPE\_STRAP

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "HOLE1"

Output name 4 = "HOLE2"

Output name 5 = "HOLE1"

Output name 6 = "HOLE2"

Output name 7 = "HOLE3"

Output name 8 = "HOLE4"

Output name 9 = "BODY"

Input name(2) = "NO\_HOLES"

Input name(3) = "STRAP\_O"

Input name(4) = "STRAP\_T"

Input name(5) = "INNER\_DIA"

Input name(6) = "STRAP\_L"

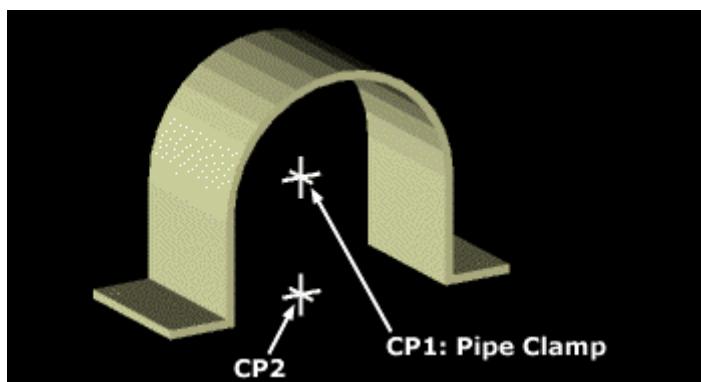
Input name(7) = "STRAP\_W"

Input name(8) = "HOLE\_INSET1"

Input name(9) = "HOLE\_INSET2"

Input name(10) = "HOLE\_SIZE"

Input name(11) = "PIPE\_DIA"



## Utility\_PLATE

**Description:** Utility <size> Standard Plate Steel

**Symbol Name:** HS.Utility.Utility\_PLATE

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_PLATE

**User Class Name:** Standard Plate Steel

**Part Number:** Utility\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_PLATE

Output name 1 = "BODY"

Output name 2 = "LINE"

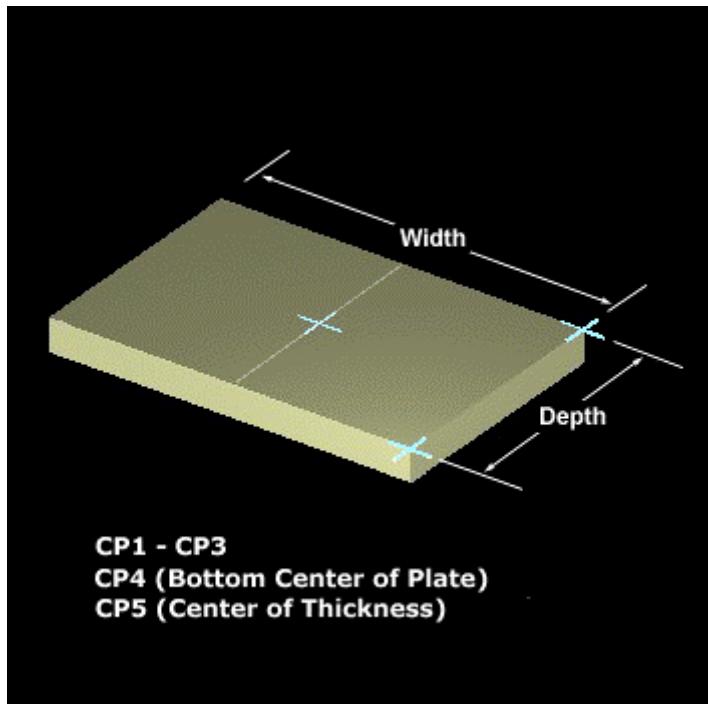
Output name 3 = "Port1"

Output name 4 = "Port2"

Input name(2) = "THICKNESS"

Input name(3) = "WIDTH"

Input name(4) = "DEPTH"



# Utility\_SHEAR\_TAB

**Description:** Utility <size> Shear Tab

**Symbol Name:** HS\_Utility.Utility\_SHEAR\_TAB

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** Utility\_SHEAR\_TAB

**User Class Name:** Shear Tab

**Part Number:** Utility\_SHEAR\_TAB\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS\_Utility.Utility\_SHEAR\_TAB

Output name 1 = "Port1"

Output name 2 = "TAB2"

Output name 3 = "TAB2"

Output name 4 = "TAB3"

Output name 5 = "TAB4"

Output name 6 = "TAB1"

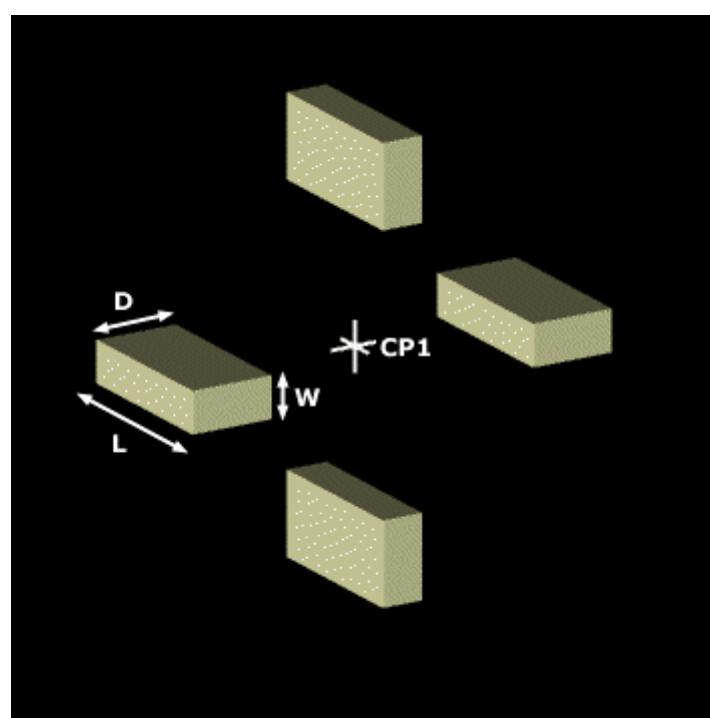
Input name(2) = "NO\_TABS"

Input name(3) = "W"

Input name(4) = "D"

Input name(5) = "L"

Input name(6) = "PIPE\_DIA"



## Utility\_SQUARE\_GROUT

**Description:** Utility Square Grout

**Symbol Name:** HS.Utility.Utility\_SQUARE\_GROUT

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_SQUARE\_GROUT

**User Class Name:** Square Grout

**Part Number:** Utility\_SQUARE\_GROUT\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_SQUARE\_GROUT

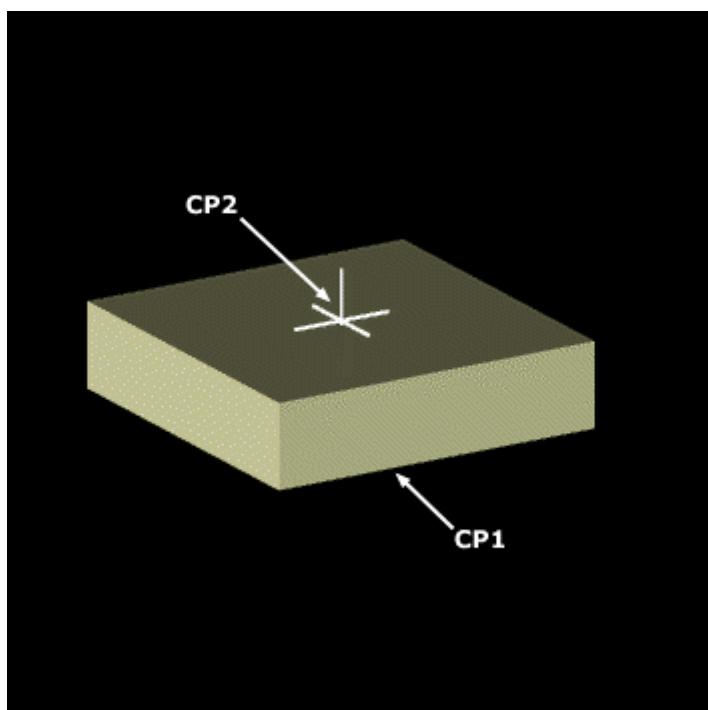
Output name 1 = "Port1"

Output name 2 = "BODY"

Input name(2) = "L"

Input name(3) = "W"

Input name(4) = "T"



## Utility\_TRUNNION

**Description:** Utility Size <size> Pipe Trunnion

**Symbol Name:** HS.Utility.Utility\_TRUNNION

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_TRUNNION

**User Class Name:** Pipe Trunnion

**Part Number:** Utility\_TRUNNION\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_TRUNNION

Output name 1 = "Port1"

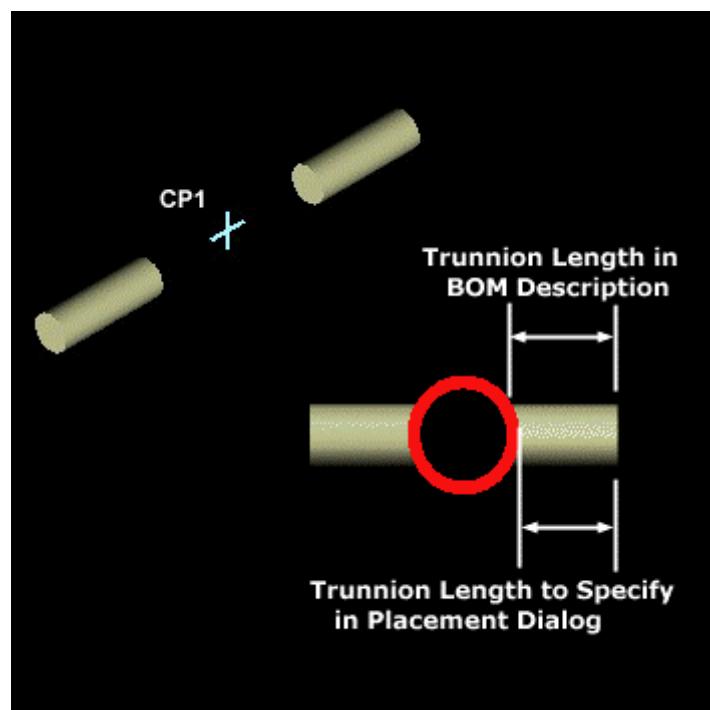
Output name 2 = "LEFT"

Output name 3 = "RIGHT"

Input name(2) = "TRUNNION\_LENGTH"

Input name(3) = "PIPE\_DIA"

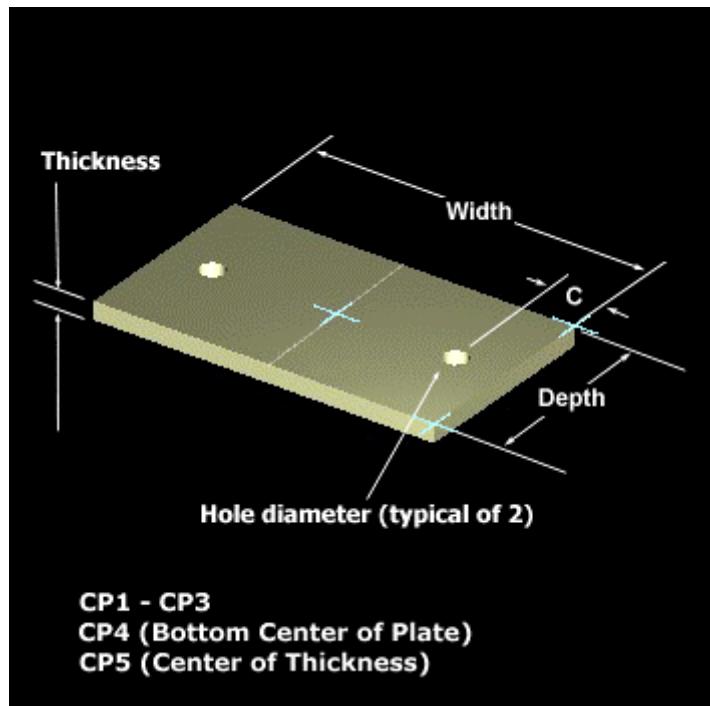
Input name(4) = "DIAMETER"



## Utility\_TWO\_HOLE\_PLATE

**Description:** Utility <size> Base Plate with Two Holes  
**Symbol Name:** HS.Utility.Utility\_TWO\_HOLE\_PLATE  
**Workbook:** HS.Utility.xls  
**Workbook Sheet:** Utility\_TWO\_HOLE\_PLATE  
**User Class Name:** Base Plate with Two Holes  
**Part Number:** Utility\_TWO\_HOLE\_PLATE\_<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_TWO\_HOLE\_PLATE  
Output name 1 = "BODY"  
Output name 2 = "LINE"  
Output name 3 = "Port1"  
Output name 4 = "Port2"  
Output name 5 = "R\_HOLE"  
Output name 6 = "L\_HOLE"  
Input name(2) = "C"  
Input name(3) = "HOLE\_SIZE"  
Input name(4) = "THICKNESS"  
Input name(5) = "WIDTH"  
Input name(6) = "DEPTH"



# Utility\_USER\_FIXED\_BOX

**Description:** Utility User Fixed Box

**Symbol Name:** HS.Utility.Utility\_USER\_FIXED\_BOX

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_USER\_FIXED\_BOX

**User Class Name:** Standard Plate Steel

**Part Number:** Utility\_USER\_FIXED\_BOX\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_USER\_FIXED\_BOX

Output name 1 = "BODY"

Output name 2 = "TOP\_POINTPT0"

Output name 3 = "BOTTOM\_POINTPT0"

Output name 4 = "Port1"

Output name 5 = "Port2"

Input name(2) = "L"

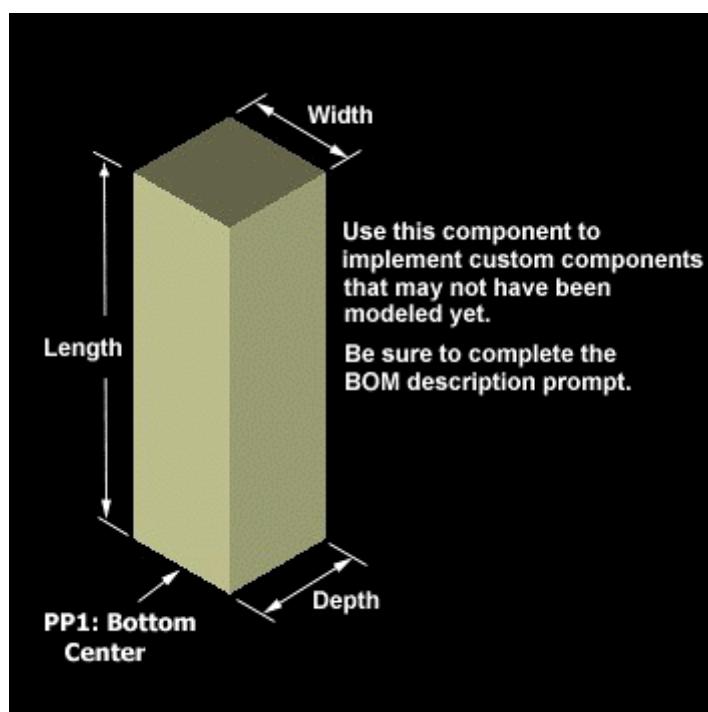
Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(6) = "WEIGHT"

Input name(7) = "DWG\_NOTES"

Input name(8) = "SIZE"



## Utility\_USER\_FIXED\_CYL

**Description:** Utility User Fixed Cylinder

**Symbol Name:** HS.Utility.Utility\_USER\_FIXED\_CYL

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_USER\_FIXED\_CYL

**User Class Name:** Fixed Length User Defined Component (Cylindrical)

**Part Number:** Utility\_USER\_FIXED\_CYL

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_USER\_FIXED\_CYL

Output name 1 = "BODY"

Output name 2 = "TOP\_POINTPT0"

Output name 3 = "BOTTOM\_POINTPT0"

Output name 4 = "Port1"

Output name 5 = "Port2"

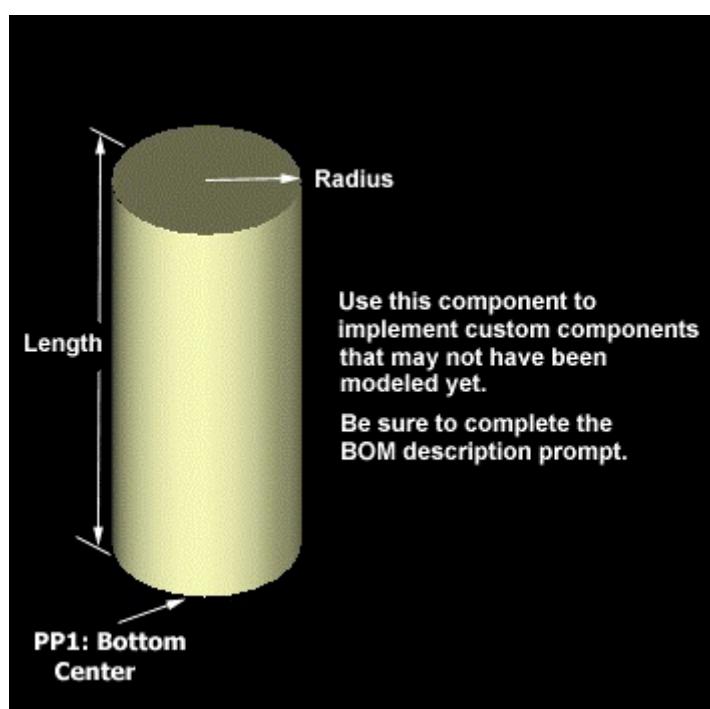
Input name(2) = "L"

Input name(3) = "RADIUS"

Input name(5) = "WEIGHT"

Input name(6) = "DWG\_NOTES"

Input name(7) = "SIZE"



# Utility\_USER\_VARIABLE\_BOX

**Description:** Utility Variable Length Box

**Symbol Name:** HS.Utility.Utility\_USER\_VARIABLE\_BOX

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_USER\_VARIABLE\_BOX

**User Class Name:** Variable Length User Defined Component (Box)

**Part Number:** Utility\_USER\_VARIABLE\_BOX\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_USER\_VARIABLE\_BOX

Output name 1 = "BODY"

Output name 2 = "TOP\_POINTPT0"

Output name 3 = "BOTTOM\_POINTPT0"

Output name 4 = "Port1"

Output name 5 = "Port2"

Input name(2) = "WIDTH"

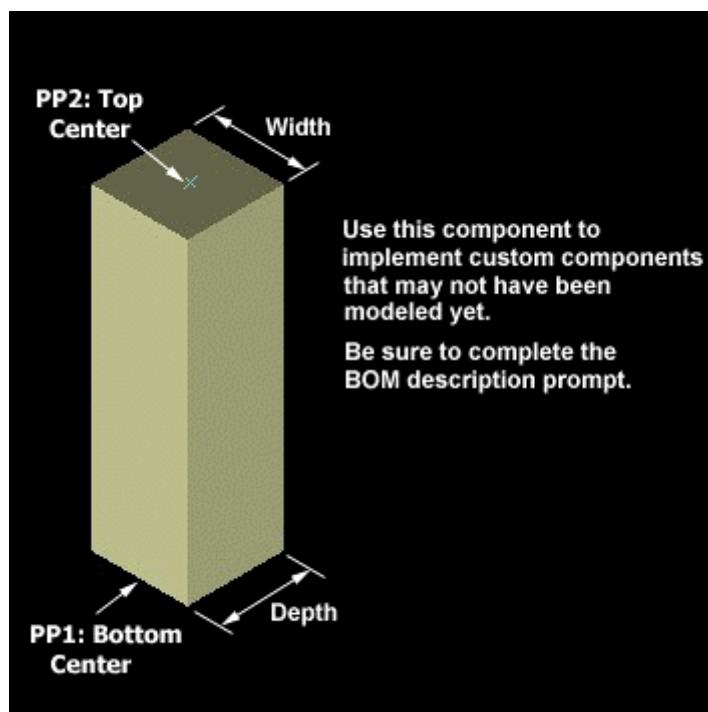
Input name(3) = "DEPTH"

Input name(4) = "Length"

Input name(6) = "WEIGHT"

Input name(7) = "DWG\_NOTES"

Input name(8) = "SIZE"



## Utility\_USER\_VARIABLE\_CYL

**Description:** Utility Variable Length Cylinder

**Symbol Name:** HS.Utility.Utility\_USER\_VARIABLE\_CYL

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_USER\_VARIABLE\_CYL

**User Class Name:** Variable Length User Defined Component (Cylindrical)

**Part Number:** Utility\_USER\_VARIABLE\_CYL\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_USER\_VARIABLE\_CYL

Output name 1 = "BODY"

Output name 2 = "TOP\_POINTPT0"

Output name 3 = "BOTTOM\_POINTPT0"

Output name 4 = "Port1"

Output name 5 = "Port2"

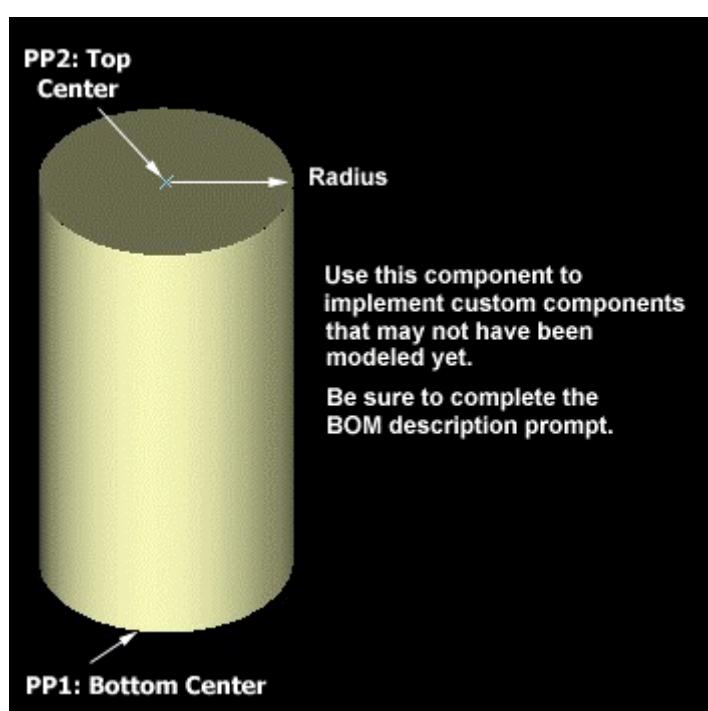
Input name(2) = "RADIUS"

Input name(4) = "WEIGHT"

Input name(3) = "Length"

Input name(6) = "DWG\_NOTES"

Input name(7) = "SIZE"



## Utility\_U\_BOLT\_PLATE

**Description:** Utility <size> Plate with Two Holes Matching U-bolt

**Symbol Name:** HS.Utility.Utility\_U\_BOLT\_PLATE

**Workbook:** HS.Utility.xls

**Workbook Sheet:** Utility\_U\_BOLT\_PLATE

**User Class Name:** Plate with Two Holes Matching U-bolt

**Part Number:** Utility\_U\_BOLT\_PLATE\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.Utility\_U\_BOLT\_PLATE

Output name 1 = "BODY"

Output name 2 = "LINE"

Output name 3 = "Port1"

Output name 4 = "Port2"

Output name 5 = "R\_HOLE"

Output name 6 = "L\_HOLE"

Input name(2) = "THICKNESS"

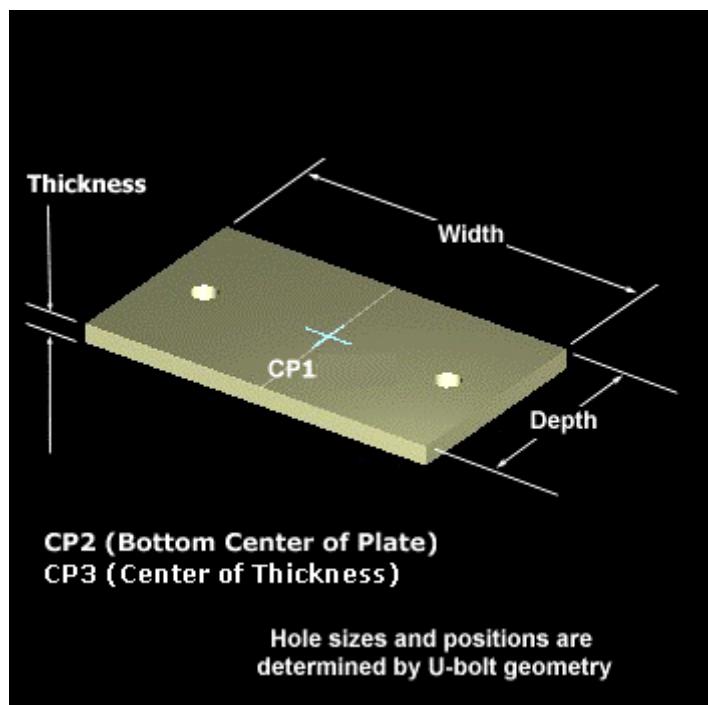
Input name(3) = "WIDTH"

Input name(4) = "DEPTH"

Input name(5) = "PIPE\_DIA"

Input name(6) = "SPACING"

Input name(7) = "ROD\_DIA"



## CircularPad

**Description:** Circular Pad

**Symbol Name:** HgrSupPadSymbols.CCircle

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** CircularPad

**User Class Name:** Circular Pad

**Part Number:** CircularPad\_<number>

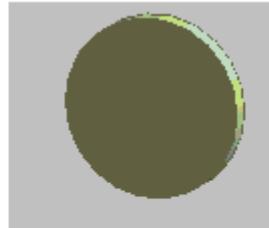
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupPadSymbols.CCircle

Output name 1 = "Circle"

Output name 2 = "HgrPort\_1"

Output name 3 = "HgrPort\_2"



## CTClipHoldClamp

**Description:** Cable Tray Clip Hold Clamp

**Symbol Name:** HgrCTAssemblySymbols.CClipHoldClamp

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** CTClipHoldClamp

**User Class Name:** Cable Tray Clip Hold Clamp

**Part Number:** Clip\_Hold\_Clamp\_<number>

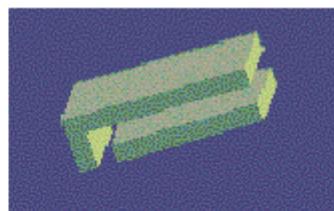
**Inputs, Outputs, and Aspects:**

ProgID: HgrCTAssemblySymbols.CClipHoldClamp

Output name CLMPS = "Clamps"

Output name 2 = "Structure"

Output name 3 = "Route"



## CTHoldDownClamp

**Description:** Cable Tray Cover and Hold Down Clamp

**Symbol Name:** HgrCTAssemblySymbols.CHoldDownClamp

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** CHoldDownClamp

**User Class Name:** Cable Tray Hold Down Clamp

**Part Number:** Cover\_Hold\_Down\_Clamp\_<number>

**Inputs, Outputs, and Aspects:**

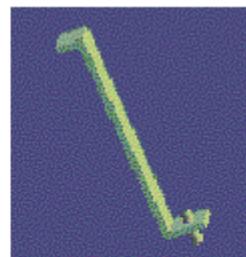
ProgID: HgrCTAssemblySymbols.CHoldDownClamp

Output name CLMP = "Clamp"

Output name BOLT = "Bolt"

Output name 2 = "Structure"

Output name 3 = "Route"



## CTHoldSideClamp

**Description:** Cable Tray Cover and Hold Side Clamp

**Symbol Name:** HgrCTAssemblySymbols.CHoldSideClamp

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** CTHoldSideClamp

**User Class Name:** Cable Tray Hold Side Clamp

**Part Number:** Cover\_Hold\_Side\_Clamp\_<number>

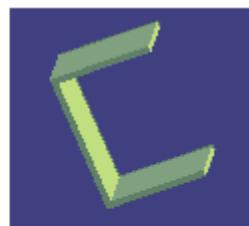
**Inputs, Outputs, and Aspects:**

ProgID: HgrCTAssemblySymbols.CHoldSideClamp

Output name PL = "Clamp"

Output name 2 = "Structure"

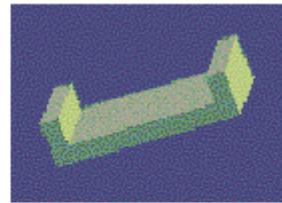
Output name 3 = "Route"



## CTHoldUpClamp

**Description:** Cable Tray Cover and Hold Up Clamp  
**Symbol Name:** HgrCTAssemblySymbols.CHoldUpClamp  
**Workbook:** HS\_Utility.xls  
**Workbook Sheet:** CTHoldUpClamp  
**User Class Name:** Cable Tray Hold Up Clamp  
**Part Number:** Cover\_Hold\_Up\_Clamp\_<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HgrCTAssemblySymbols.CHoldUpClamp  
Output name PL = "Clamp"  
Output name 2 = "Structure"  
Output name 3 = "Route"



## CTSingleCnHg

**Description:** Cable Tray Single Channel Hanger

**Symbol Name:** HgrCTAssemblySymbols.CSingleCnHg

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** CTSingleCnHg

**User Class Name:** Cable Tray Single Channel Hanger

**Part Number:** Single\_channel\_Hanger\_<number>

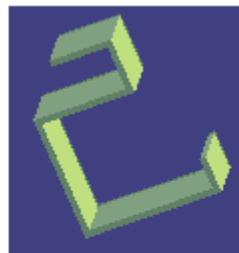
**Inputs, Outputs, and Aspects:**

ProgID: HgrCTAssemblySymbols.CSingleCnHg

Output name PL = "Clamp"

Output name 2 = "Structure"

Output name 3 = "Route"



## DuctClamp

**Description:** Duct Clamp

**Symbol Name:** HgrSupDuctSymbols.CDuctClamp

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** DuctClamp

**User Class Name:** Duct Clamp

**Part Number:** DuctClamp1\_<PR or R>-<Nominal Diameter To (in mm)>

### Note

- In the part numbers for this part class, PR is used for insulated duct, and R is used for un-insulated duct.

### Inputs, Outputs, and Aspects:

ProgID: HgrSupDuctSymbols.CDuctClamp

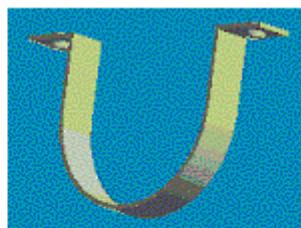
Output name 1 = "DuctClamp"

Output name 2 = "LeftBolt"

Output name 3 = "RightBolt"

Output name 4 = "HgrPort\_1"

Output name 5 = "HgrPort\_2"



## G4G\_1451\_04

**Description:** Pipe Weld Lug

**Symbol Name:** HS.Utility.BottomLug

**Workbook:** HS.Utility.xls

**Workbook Sheet:** G4G\_1451\_04

**User Class Name:** Pipe Weld Lug

**Part Number:** G4G\_1451\_04\_P<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.BottomLug

Output name 1 = "Lug"

Output name 2 = "FlatBar1"

Output name 3 = "FlatBar2"

Output name 4 = "TopFlatBar"

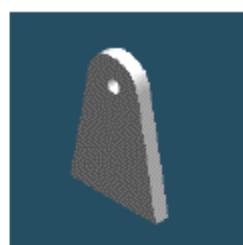
Output name 5 = "Pin"

Output name 6 = "Port1"

Output name 7 = "Port2"

Output name 8 = "Weldline"

Output name 9 = "LugLine"



## G4G\_1451\_06

**Description:** Pipe Clamp

**Symbol Name:** HgrSupHgrAssemblySymbols.BottomClamp

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** G4G\_1451\_06

**User Class Name:** Pipe Clamp

**Part Number:** G4G\_1451\_06\_P<number>

**Inputs, Outputs, and Aspects:**

ProgID: HgrSupHgrAssemblySymbols.BottomClamp

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "LeftHalfClamp"

Output name 4 = "RightHalfClamp"

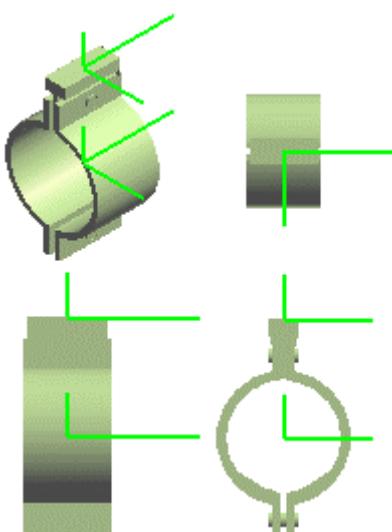
Output name 5 = "Bolt"

Output name 6 = "Pin1"

Output name 7 = "Pin2"

Output name 8 = "ClampCircle"

Output name 9 = "ClampLine"



## G4G\_1460\_01

**Description:** Threaded Rod, Welded Eye Threaded Rod  
**Symbol Name:** HgrSupHgrAssemblySymbols.ThreadFlex  
**Workbook:** HS\_Utility.xls  
**Workbook Sheet:** G4G\_1460\_01  
**User Class Name:** Flexible Rod  
**Part Number:** G4G\_1460\_01\_P<number>  
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupHgrAssemblySymbols.ThreadFlex  
Output name 1 = "FlexRod"  
Output name 2 = "Port1"  
Output name 3 = "Port2"



## G4G\_1461\_01

**Description:** Welded Beam Attachment

**Symbol Name:** HgrSupHgrAssemblySymbols.ThreadTop

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** G4G\_1461\_01

**User Class Name:** Tread Top

**Part Number:** G4G\_1461\_01\_P<number>

**Inputs, Outputs, and Aspects:**

ProgID: HgrSupHgrAssemblySymbols.ThreadTop

Output name 1 = "Port1"

Output name 2 = "Port2"

Output name 3 = "XSProjection"

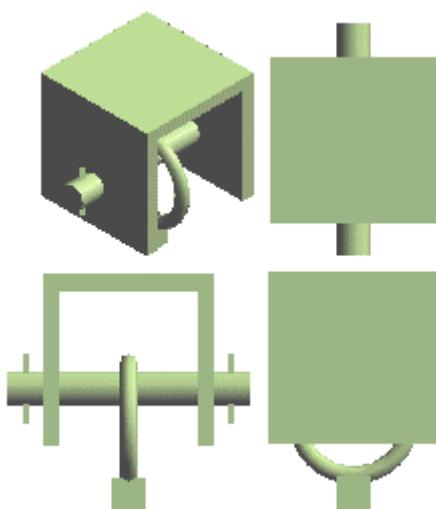
Output name 4 = "Pin"

Output name 5 = "EndPin1"

Output name 6 = "EndPin2"

Output name 7 = "EyeNut"

Output name 8 = "EyeNutBolt"



## HgrBeam

**Description:** <part class><dimensions>

**Symbol Name:** GeneralProfileSymbols.HgrBeam

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** HgrBeam

**User Class Name:** Hanger Beam

**Part Number:** HgrProfile\_<part class><dimensions>

**Inputs, Outputs, and Aspects:**

ProgID: GeneralProfileSymbols.HgrBeam

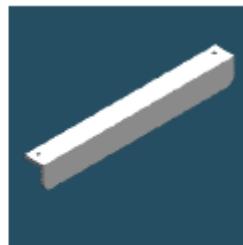
Output name BC = "BeginCap"

Output name EC = "EndCap"

Output name NT = "Neutral"

Output name BC\_SUR = "BeginCapSurface"

Output name EC\_SUR = "EndCapSurface"



## HgrElbowLug

**Description:** Pipe Weld Elbow Lug

**Symbol Name:** HS.Utility.HgrElbowLug

**Workbook:** HS.Utility.xls

**Workbook Sheet:** HgrElbowLug

**User Class Name:** Hgr Elbow Leg

**Part Number:** HgrElbowLug\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HS.Utility.HgrElbowLug

Output name 1 = "Lug"

Output name 2 = "LugPin"

Output name 3 = "ClevisRing"

Output name 4 = "RightClevisLeg"

Output name 5 = "LeftClevisLeg"

Output name 6 = "ClevisNut"

Output name 7 = "SupportedPort"

Output name 8 = "FlexMembPort"

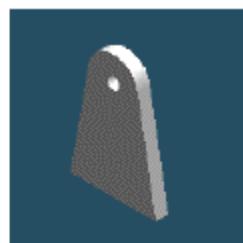
Output name 9 = "LugProfile"

Output name 10 = "LugHole"

Output name 11 = "NutHole"

Output name 12 = "ClevisLegs"

Output name 13 = "Weldline"



## HgrElbowLug

**Description:** Pipe Weld Elbow Lug

**Symbol Name:** HS.Utility.HgrElbowLug

**Workbook:** HS.Utility.xls

**Workbook Sheet:** HgrElbowLug

**User Class Name:** Hgr Elbow Leg

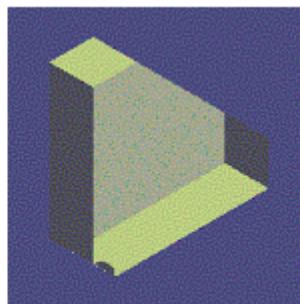
**Part Number:** HgrElbowLug\_<number>

**Inputs, Outputs, and Aspects:**

ProgID: HgrBracketSymbols.CTwoProfile

Output name 1 = "Bracket"

Output name 2 = "BracketPort"



## HgrSupFlatPlate

**Description:** Cable Tray

**Symbol Name:** GeneralProfileSymbols.GPlate

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** HgrSupFlatPlate

**User Class Name:** Hgr Flat Plate

**Part Number:** G4G\_9000\_01\_CTA<number>

**Inputs, Outputs, and Aspects:**

ProgID: GeneralProfileSymbols.GPlate

Output name 1 = "CableTray"

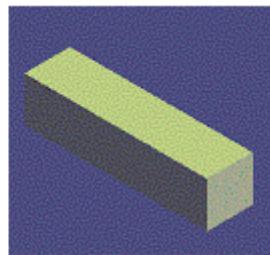
Output name 2 = "Port1"

Output name 3 = "Port2"

Output name 4 = "Port3"

Output name 5 = "Port4"

Output name 6 = "Port5"



## HgrSupInternalBracket

**Description:** Bracket for L Shape, Bracket for W Shape

**Symbol Name:** HgrBracketSymbols.CInternalLBracket

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** HgrSupInternalBracket

**User Class Name:** Hanger Internal Bracket

**Part Number:** HgrBracketWithLShape, HgrBracketWithWShape

**Inputs, Outputs, and Aspects:**

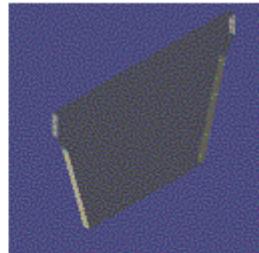
ProgID: HgrBracketSymbols.CInternalLBracket

Output name 1 = "Bracket\_1"

Output name 2 = "Bracket\_2"

Output name 3 = "Bracket\_3"

Output name 4 = "BracketPort"



## HgrSupPentrPlate

**Description:** Penetration Plate

**Symbol Name:** HgrSupHgrAssemblySymbols.PentrPlate

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** HgrSupPentrPlate

**User Class Name:** Hgr Penetration Plate

**Part Number:** G4G\_9600\_01\_PP<number>

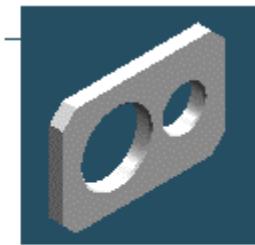
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupHgrAssemblySymbols.PentrPlate

Output name PL = "Plate"

Output name 2 = "StructPort"

Output name 3 = "PipePort"



## HgrSupUBolt

**Description:** U Bolt

**Symbol Name:** HgrSupHgrAssemblySymbols.Ubolt

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** HgrSupUBolt

**User Class Name:** U-Bolt

**Part Number:** G4G\_9700\_01\_S<number>

**Inputs, Outputs, and Aspects:**

ProgID: HgrSupHgrAssemblySymbols.Ubolt

Output name 1 = "SemiCircle"

Output name 2 = "LeftLeg"

Output name 3 = "RightLeg"

Output name 4 = "PipePort"

Output name 5 = "BasePort"

Output name 6 = "UboltProfile"



## RectangularPad

**Description:** Rectangular Pad

**Symbol Name:** HgrSupPadSymbols.CRectangle

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** RectangularPad

**User Class Name:** Rectangular Pad

**Part Number:** RectangularPad\_<number>

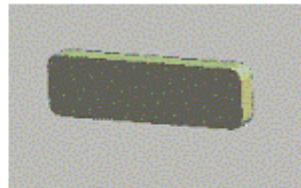
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupPadSymbols.CRectangle

Output name 1 = "Rectangle"

Output name 2 = "HgrPort\_1"

Output name 3 = "HgrPort\_2"



## StructProfile

**Description:** <name of part class><dimensions> (for example, L3x2x3/8)

**Symbol Name:** GeneralProfileSymbols.GBeam

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** StructProfile

**User Class Name:** Struct Profile

**Part Number:** StructProfile\_<name of part class><dimensions>

**Inputs, Outputs, and Aspects:**

ProgID: GeneralProfileSymbols.GBeam

Output name 1 = "General Beam"

Output name 2 = "Port1"

Output name 3 = "Port2"

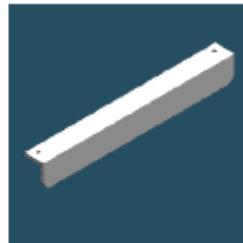
Output name 4 = "Port3"

Output name 5 = "Port4"

Output name 6 = "Port5"

Output name 7 = "Port6"

Output name 8 = "Port7"



## TriangularPad

**Description:** Triangular Pad

**Symbol Name:** HgrSupPadSymbols.CTriangle

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** TriangularPad

**User Class Name:** Triangular Pad

**Part Number:** TriangularPad\_<number>

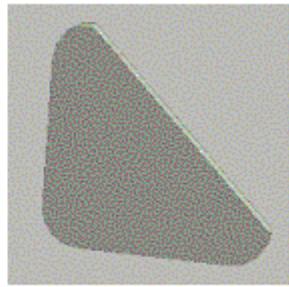
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupPadSymbols.CTriangle

Output name 1 = "Triangle"

Output name 2 = "HgrPort\_1"

Output name 3 = "HgrPort\_2"



## VerticalPad

**Description:** VerticalPad

**Symbol Name:** HgrSupPadSymbols.CVertical

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** VerticalPad

**User Class Name:** Vertical Pad

**Part Number:** VerticalPad\_<number>

**Inputs, Outputs, and Aspects:**

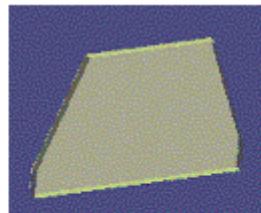
ProgID: HgrSupPadSymbols.CVertical

Output name 1 = "Rectangle"

Output name 2 = "HgrPort\_1"

Output name 3 = "HgrPort\_2"

Output name 4 = "HgrPort\_3"



## VerticalPipePad

**Description:** VerticalPipePad

**Symbol Name:** HgrSupPadSymbols.CVerticalPipe

**Workbook:** HS\_Utility.xls

**Workbook Sheet:** VerticalPipePad

**User Class Name:** Vertical Pipe Pad

**Part Number:** VerticalPipePad\_<number>

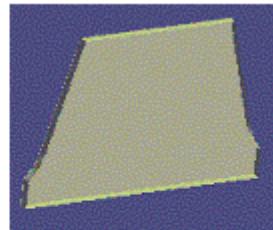
**Inputs, Outputs, and Aspects:**

ProgID: HgrSupPadSymbols.CVerticalPipe

Output name 1 = "VerticalPipe"

Output name 2 = "HgrPort\_1"

Output name 3 = "HgrPort\_2"



# HVAC Symbols: An Overview

The software uses symbols to represent the different HVAC commodity items in the model. The items are defined on the HVAC parts catalog sheets. When defining the parts in the sheets, look at the symbol that represents the item to verify the dimension that you are defining is correct.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

HVAC symbols can be defined in terms of different dimensions. In some cases, a manufacturer specifies the geometry based on face-to-face dimensions, while in other cases, a manufacturer specifies the geometry based on face-to-center dimensions.

## What's New

### *Version 2007*

- HVAC symbols that had names starting with GSCAD have been renamed to begin with SP3D. Only the symbol's name changed, the inputs and outputs were not changed.
- Added these new symbols: SP3DHAirhandleUnit, SP3DHChiller, SP3DHExhaustFan, SP3DHCleaningBend, SP3DHEccentricTee, SP3DHRndCross, SP3DHRndReducer, SP3DHVACCoupling, SP3DHVACEndCap, SP3DHVACSaddle, SP3DH30DegRndLateral, SP3DH45DegRndLateral, SP3DH60DegRndLateral, SP3DHRectBellMouth, SP3DHRectPantWye, SP3DHRndPantWye, SP3DHSMRectDiffuser, SP3DH90TurnTranOffsetT, SP3DHCeilingDiffuser, SP3DDiskValve, SP3DHFIREDamper, SP3DHLlinearGrille, SP3DHMultiLeafDamper, SP3DHPresRelDamper, SP3DHRSSplitAttentor, SP3DHWRLouvres, SP3DHHalfRndDiffuser, SP3DHRec2RecAdapter, SP3DHRecDiffuserRectN, SP3DHRecDiffuserRndN, SP3DHRecGrillRecNeck, SP3DHRecGrillRndN, SP3DHRecRegisterRecN, SP3DHRecRegisterRndN, SP3DHRndDiffuser, SP3DHSMRectRegister.

# SP3DAirCoolingCoil

**Description:** HVAC Air Cooling Coil

**Symbol Name:** SP3DAirCoolingCoil.CAirCoolingCoil

**Workbook:** Hvac.xls

**Workbook Sheet:** AirCoolingCoil

**User Class Name:** HVAC Air Cooling Coil

**Part Number:** AirCoolingCoil400x200x350, AirCoolingCoil300x200x325,  
AirCoolingCoil400x250x350, AirCoolingCoil250x200x300

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAirCoolingCoil.CAirCoolingCoil

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "CoilLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirCoolingCoil"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirCoolingCoil"

Number of Outputs = 4

Output name = "HvacNozzle1"

Output description = "Hvac Port1 of AirCoolingCoil"

Output name = "HvacNozzle2"

Output description = "Hvac Port2 of AirCoolingCoil"

Output name = "PipingNozzle3"

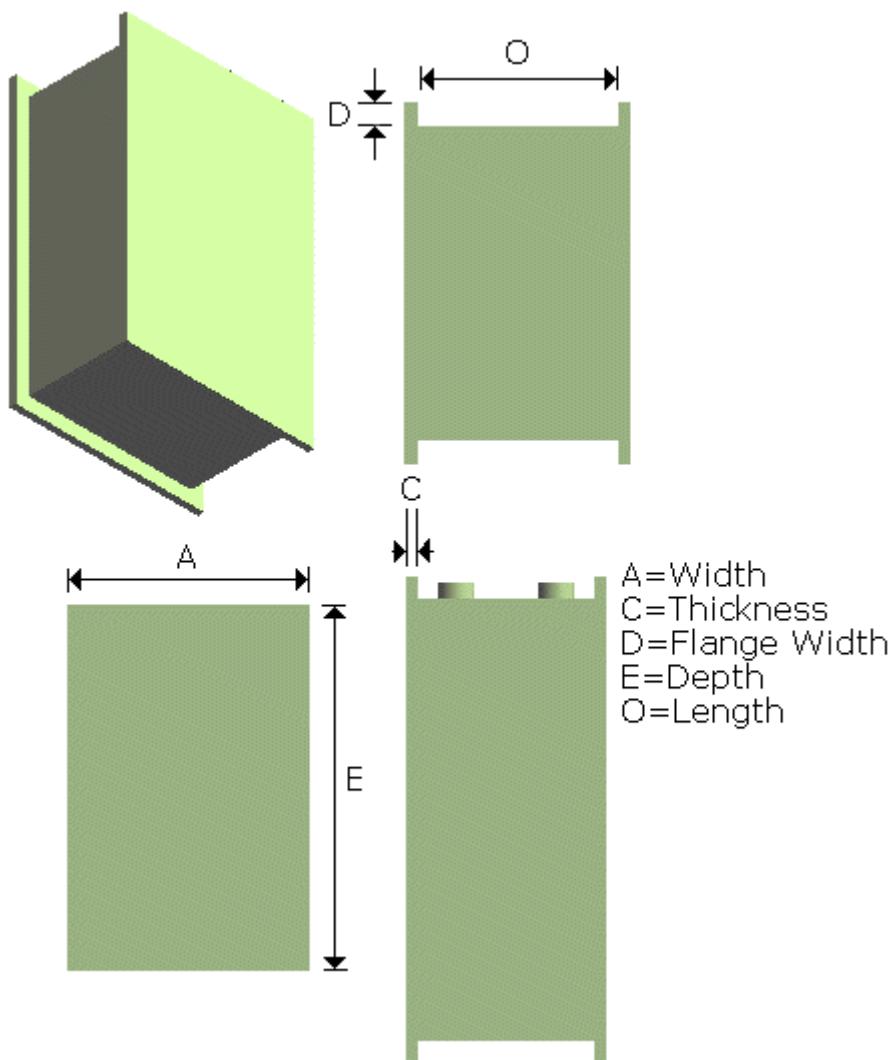
Output description = "Piping Port3 of AirCoolingCoil"

Output name = "PipingNozzle4"

Output description = "Piping Port4 of AirCoolingCoil"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DAirFilterHumidifier

**Description:** HVAC Air Filter Humidifier

**Symbol Name:** SP3DAirFilterHumidifier.CAirFilterHumid

**Workbook:** Hvac.xls

**Workbook Sheet:** AirFilterHumidifier

**User Class Name:** HVAC Air Filter Humidifier

**Part Number:** AirFilterHumidifier400x200x275, AirFilterHumidifier300x200x225, AirFilterHumidifier400x250x275, AirFilterHumidifier250x200x200

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAirFilterHumidifier.CAirFilterHumidifier

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "CoilLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirFilterHumidifier"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirFilterHumidifier"

Number of Outputs = 3

Output name = "AirIN"

Output description = "Hvac Port1 of AirFilterHumidifier"

Output name = "AirOUT"

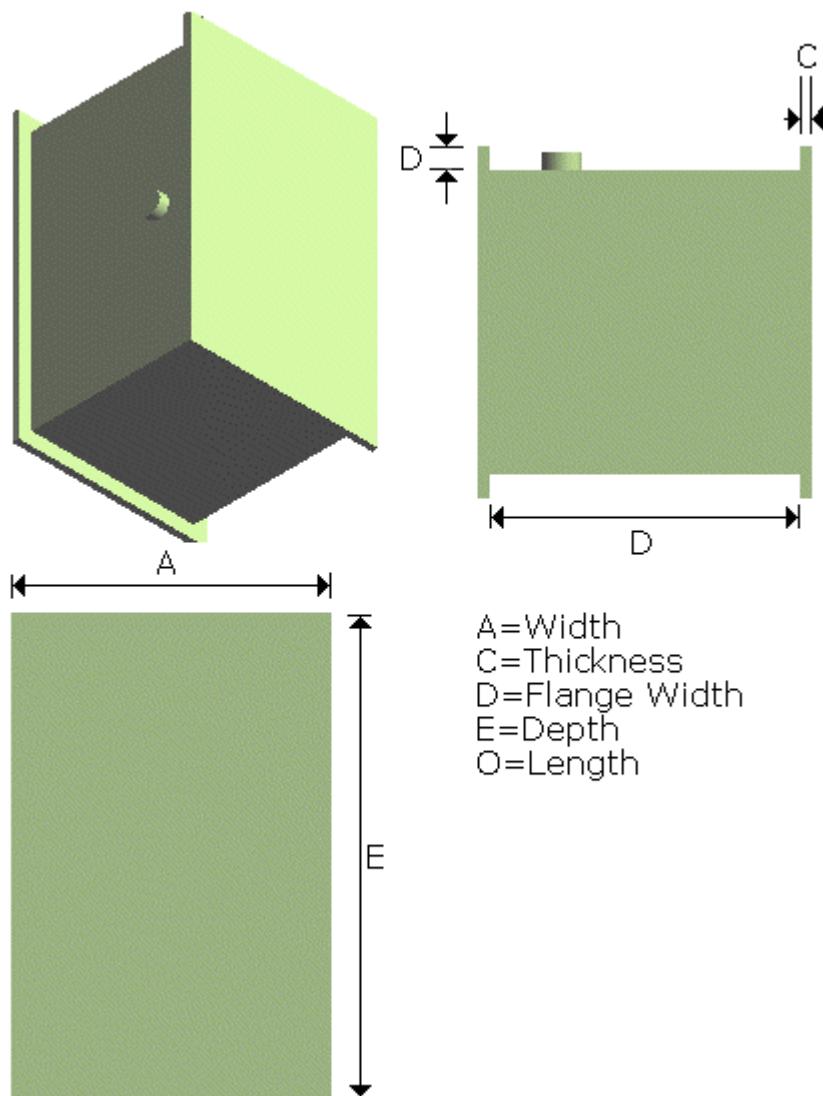
Output description = "Hvac Port2 of AirFilterHumidifier"

Output name = "WaterSpray"

Output description = "Piping Port3 of AirFilterHumidifier"

Number of Aspects = 1

Supported AspectId = SimplePhysical



A=Width  
C=Thickness  
D=Flange Width  
E=Depth  
O=Length

## SP3DAirFilterR

**Description:** HVAC Air Filter

**Symbol Name:** SP3DAirFilterR.CAirFilterR

**Workbook:** Hvac.xls

**Workbook Sheet:** AirFilter

**User Class Name:** HVAC Air Filter

**Part Number:** AirFilter400x200x180, AirFilter300x200x150,  
AirFilter400x250x180, AirFilter250x200x120

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAirFilterR.CAirFilterR

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "FilterLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirFilterR"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirFilterR"

Number of Outputs = 2

Output name = "HvacNozzle1"

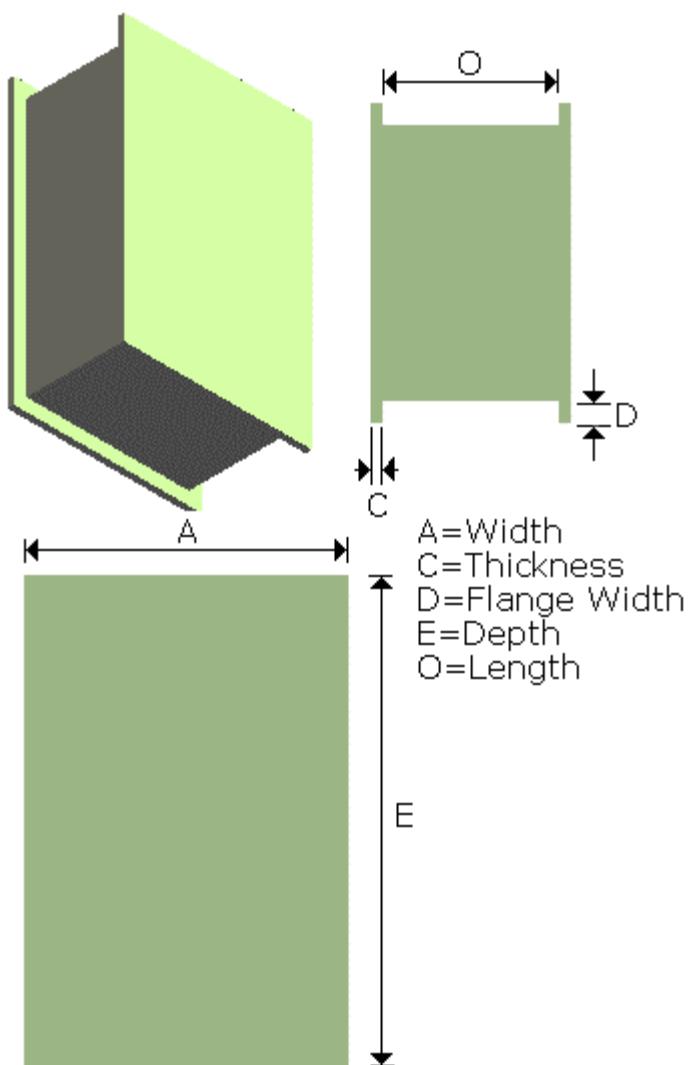
Output description = "HvacPort1 of AirFilterR"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of AirFilterR"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DBellMouth

**Description:** Round Bell Mouth 300 D x 250 throat

**Symbol Name:** SP3DBellMouth

**Workbook:** Hvac.xls

**Workbook Sheet:** BellMouthRound

**User Class Name:** HVAC Bell Mouth

**Part Number:** Round Bellmouth 300x250

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBellMouth.CBellMouth

**Inputs = 2**

**Input = "Width" Description = "Inlet Diameter"**

**Input = "ThroatRadius" Description = "Bell mouth throat radius"**

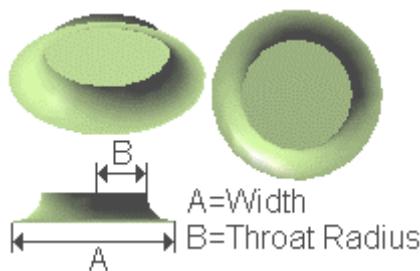
**Outputs = 2**

**Output = "BellMouth" Description = "Bell Mouth"**

**Output = "BellMouthPort" Description = "Bell Mouth Port"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DDivisionW2

**Description:** HVAC Division Width divided into two cells

**Symbol Name:** SP3DDivisionW2.CDivisionW2

**Workbook:** Hvac.xls

**Workbook Sheet:** Division2

**User Class Name:** HVAC Division Width divided into two cells

**Part Number:** DivisionW2

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDivisionW2.CDivisionW2

Number of Inputs = 4

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Cell"

Input description = "Cell number"

Input name = "CellDimension"

Input description = "Width of the Cell"

Number of Outputs = 4

Output name = "GrandPort1"

Output description = "Grand Port1 HvacPort 1 of Division"

Output name = "Cell1ClosetoRef"

Output description = "Close to Reference, at Cell = 1, HvacPort 2 of Division"

Output name = "Cell2FarfromRef"

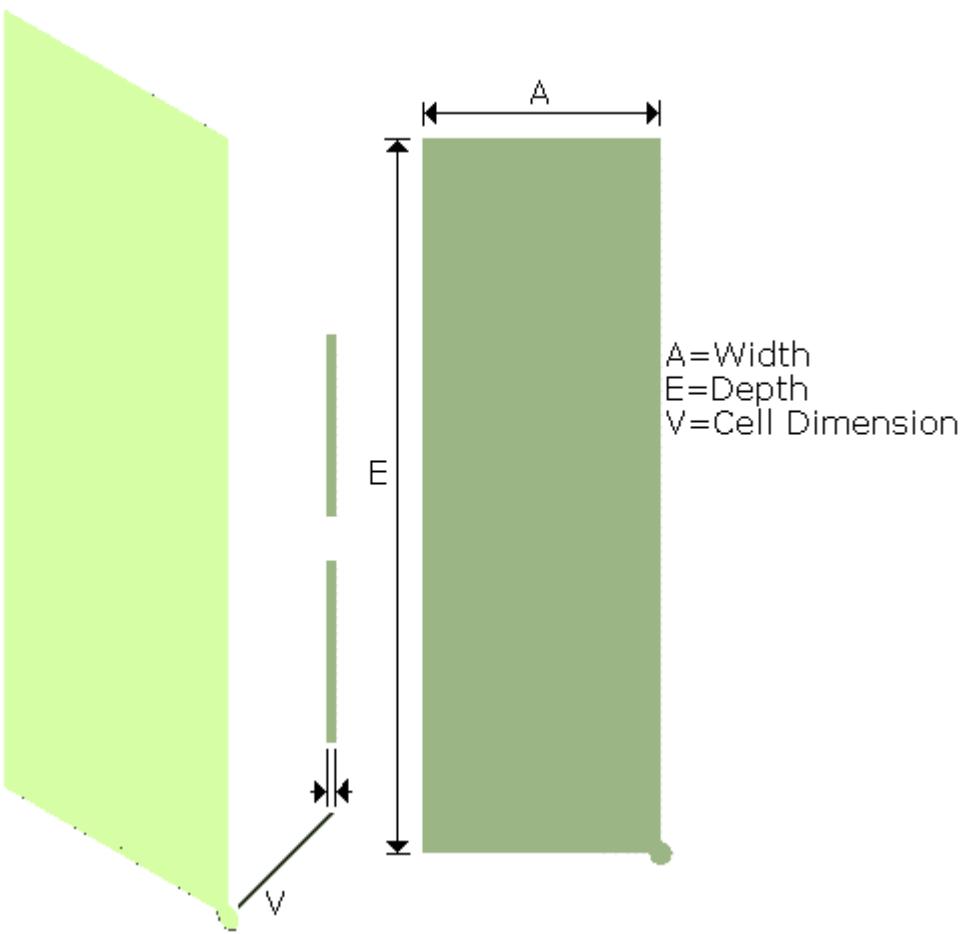
Output description = "Far from Reference, at Cell = 2, HvacPort 3 of Division"

Output name = "DivisionReference"

Output description = "Reference of Division"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DDivisionW3

**Description:** HVAC Division Width divided into three cells

**Symbol Name:** SP3DDivisionW3.CDivisionW3

**Workbook:** Hvac.xls

**Workbook Sheet:** DivisionW3

**User Class Name:** HVAC Division Width divided into three cells

**Part Number:** DivisionW3-01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDivisionW3.CDivisionW3

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Cell"

Input description = "Cells value"

Input name = "CellDimension"

Input description = "Width Cell 2 or 4"

Input name = "CellDimension3or4"

Input description = "Dimension of Cell 3 or 4"

Number of Outputs = 5

Output name = "GrandPort1"

Output description = "Grand Port1 HvacPort1 of Division"

Output name = "ClosetoRefCell2"

Output description = "Close to Reference, at Cell2 HvacPort2 of Division"

Output name = "MiddleCell3"

Output description = "Middle Cell3 HvacPort3 of Division"

Output name = "FarfromRefCell4"

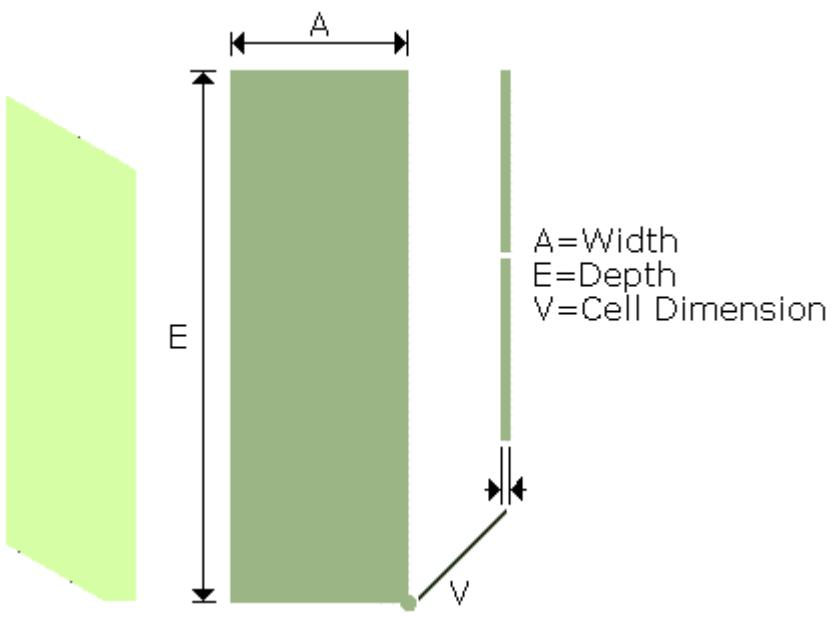
Output description = "Far from Reference, at Cell4 HvacPort4 of Division"

Output name = "DivisionReference"

Output description = "Reference of Division"

Number of Aspects = 1

Supported AspectId = SimplePhysical



# SP3DH30DegRndLateral

**Description:** HVAC 30 degree lateral branch

**Symbol Name:** SP3DH30DegRndLateral.H30DegRndLateral

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralHVAC30DegLateral

**User Class Name:** Spiral HVAC 30 Degree Lateral

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DH30DegRndLateral.H30DegRndLateral

Number of Inputs = 4

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Lateral along the Header"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 11

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Lateral "

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Lateral "

Output name = "HvacNozzle3"

Output description = "HvacPort2 of Lateral "

Output name = "ObjBody1"

Output description = "Body 1 of Lateral"

Output name = "ObjBody2"

Output description = "Body 2 of Lateral"

Output name = "ObjBody3"

Output description = "Body 3 of Lateral"

Output name = "ObjTakeOff1"

Output description = "TakeOff 1 of Lateral"

Output name = "ObjTakeOff2"

Output description = "TakeOff 2 of Lateral"

Output name = "ObjTakeOff3"

Output description = "TakeOff 3 of Lateral"

Output name = "HeaderIns"

Output description = "Header Insulation"

Output name = "BranchIns"

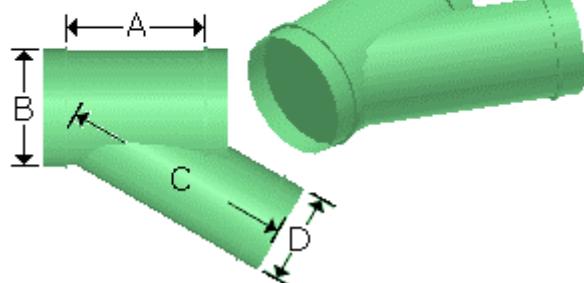
Output description = "Branch Insulation"

A=Header Length

B=Width

C=Branch Length

D=Branch Width



# SP3DH45DegRndLateral

**Description:** HVAC 45 degree lateral

**Symbol Name:** SP3DH45DegRndLateral.H45DegRndLateral

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralHVAC45DegLateral

**User Class Name:** Spiral HVAC 45 Degree Lateral

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DH45DegRndLateral.H45DegRndLateral

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Lateral along the Header"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Lateral"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Lateral"

Output name = "HvacNozzle3"

Output description = "HvacPort2 of Lateral"

Output name = "ObjBody1"

Output description = "Body 1 of Lateral"

Output name = "ObjBody2"

Output description = "Body 2 of Lateral"

Output name = "ObjBody3"

Output description = "Body 3 of Lateral"

Output name = "ObjTakeOff1"

Output description = "TakeOff 1 of Lateral"

Output name = "ObjTakeOff2"

Output description = "TakeOff 2 of Lateral"

Output name = "ObjTakeOff3"

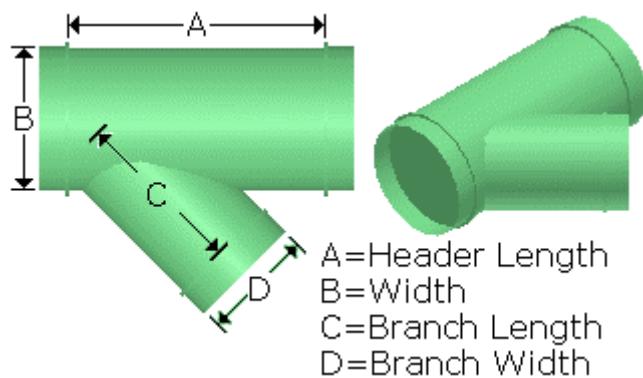
Output description = "TakeOff 3 of Lateral"

Output name = "HeaderIns"

Output description = "Header Insulation"

Output name = "BranchIns"

Output description = "Branch Insulation"



# SP3DH60DegRndLateral

**Description:** HVAC 60-degree lateral

**Symbol Name:** SP3DH60DegRndLateral.H60DegRndLateral

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralHVAC60DegLateral

**User Class Name:** Spiral HVAC 60 Degree Lateral

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DH60DegRndLateral.H60DegRndLateral

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Lateral along the Header"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Lateral"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Lateral"

Output name = "HvacNozzle3"

Output description = "HvacPort2 of Lateral"

Output name = "ObjBody1"

Output description = "Body 1 of Lateral"

Output name = "ObjBody2"

Output description = "Body 2 of Lateral"

Output name = "ObjBody3"

Output description = "Body 3 of Lateral"

Output name = "ObjTakeOff1"

Output description = "TakeOff 1 of Lateral"

Output name = "ObjTakeOff2"

Output description = "TakeOff 2 of Lateral"

Output name = "ObjTakeOff3"

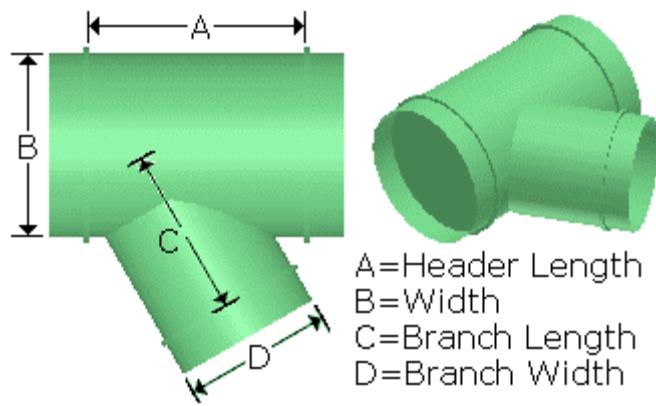
Output description = "TakeOff 3 of Lateral"

Output name = "HeaderIns"

Output description = "Header Insulation"

Output name = "BranchIns"

Output description = "Branch Insulation"



# SP3DH90TurnTranOffsetT

## Description:

**Symbol Name:** SP3DH90TurnTranOffsetT.H90TurnTranOT

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** HTurnTransition

**User Class Name:** HVAC Turn Transition with offset

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DH90TurnTranOffsetT.H90TurnTranOT

Number of Inputs = 8

Input name and description = "Width", "Duct Width at Port 1"

Input name and description = "Depth", "Duct Depth at Port 1"

Input name and description = "Width2", "Duct Width a Port 2"

Input name and description = "Depth2", "Duct Depth at Port 2"

Input name and description = "ElbowThroatRadius", "Turn Throat Radius"

Input name and description = "InsulationThickness", "Insulation Thickness"

Input name and description = "FlipComponent", "Flip Component"

Input name and description = "AlignComponent", "Align Component"

Number of Outputs = 4

Output name and description = "TurnTransition", "Turn Transition Skinning Surface"

Output name and description = "HTTransitionPort1", "HVAC Turn Transition Port 1"

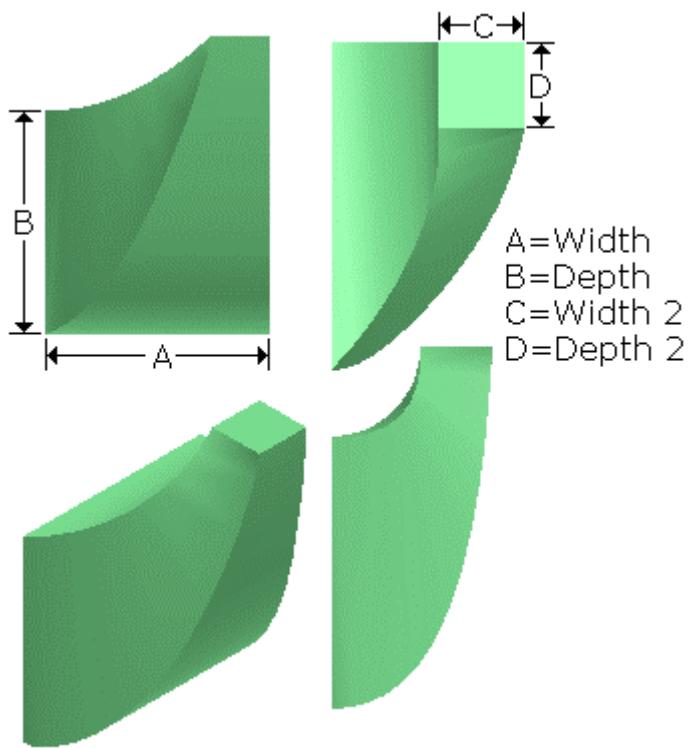
Output name and description = "HTTransitionPort2", "HVAC Turn Transition Port 2"

Output name and description = "TransitionInsulated", "Turn Transition Insulated"

Number of Aspects = 2

Supported aspects = "SimplePhysical", "Physical"

Supported aspects = "Insulation", "Insulation"



# SP3DHAirhandleUnit

**Description:**

**Symbol Name:** SP3DHAirhandleUnit.AirhandleUnit

**Workbook:** HVAC Sample Equipment.xls

**Workbook Sheet:** AirHandlingUnit

**User Class Name:** Air Handling Unit

**Part Number:** AHU\*

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHAirhandleUnit.AirhandleUnit

Input name = "BasicAsmWidth"

Input description = "Width of the Basic Assembly"

Input name = "BasicAsmHeight"

Input description = "Height of the basic Assembly"

Input name = "BasicAsmLength"

Input description = "Length of the basic assembly"

Input name = "HeatingCoilLength"

Input description = "Length of the heating coil"

Input name = "MultiOutletLength"

Input description = "Length of the multi outlet"

Input name = "InletDia"

Input description = "Inlet Diameter"

Input name = "MultiOutletDia"

Input description = "MultiOutlet Diameter"

Input name = "SieSide"

Input description = "SieSide"

Output name = "BasicAsmHVACNozzle"

Output description = "HvacPort on the basic assembly"

Output name = "BasicAssembly"

Output description = "Box representing the Basic Assembly"

Output name = "HeatingCoil"

Output description = "Box representing the Heating Coil"

Output name = "MultiOutlet"

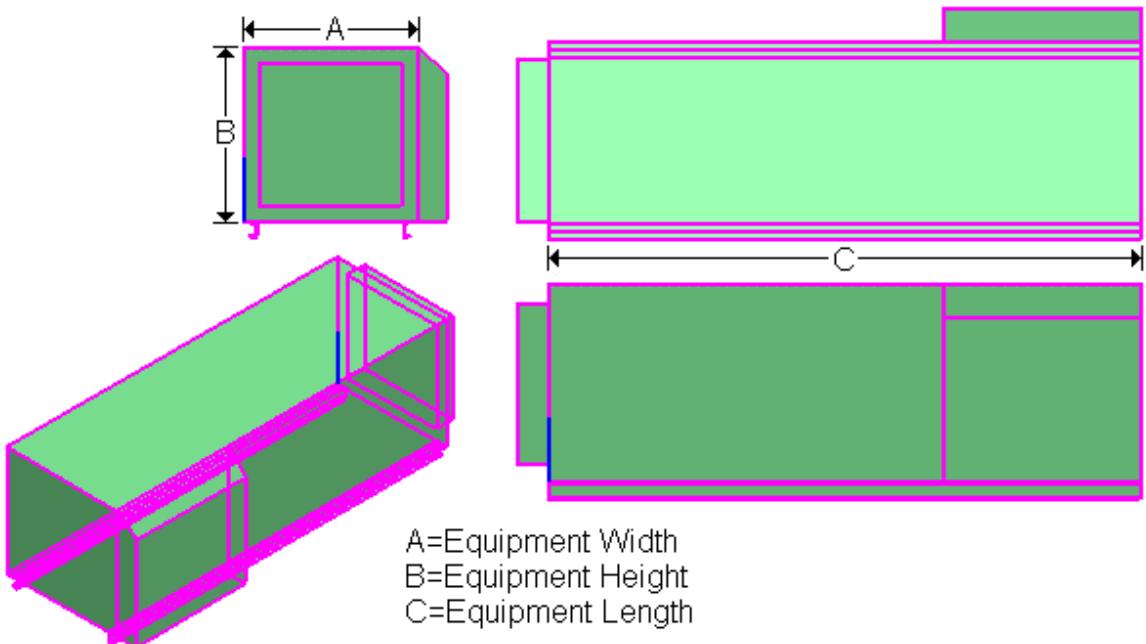
Output description = "Box representing the Multi-Outlet"

Output name = "Profil2"

Output description = "Box representing the Multi-Outlet"

Output name = "VVADAEvelope"

Output description = "VVADA's Maintenance envelope"



# SP3DHCeilingDiffuser

**Description:** HVAC ceiling diffuser

**Symbol Name:** SP3DHCeilingDiffuser.CeilingDiffuser

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** Ceiling Diffuser

**User Class Name:** HVAC Ceiling Diffuser

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHCeilingDiffuser.CeilingDiffuser

Number of Inputs = 5

Input name and description = "Width", "", 0.1 ' Is used as diameter for round features

Input name and description = "Depth", "", 0.2 ' is not used for round features

Input name and description = "DiffuserHeight", "", 0.262

Input name and description = "DiffuserWidth", "", 0.216

Input name and description = "DiffuserSide", "", 1

Number of Outputs = 2

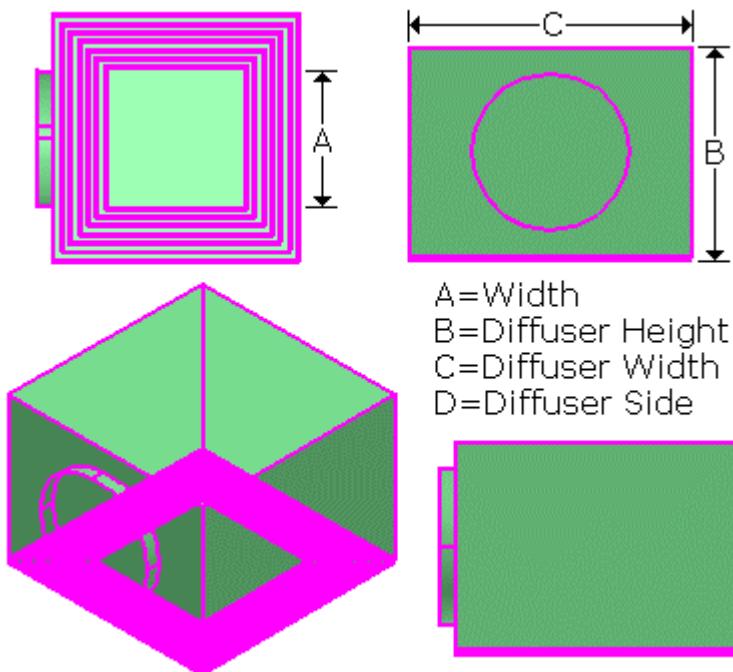
Output name and description = "Quader", "Quader", 1

Output name and description = "HvacNozzle1", "HvacNozzle1", 1

Output name and description = "Luft" & i, "Luft" & i, 1

Number of Aspects = 1

Supported aspects = "SimplePhysical", "Physical", SimplePhysical



## SP3DHChiller

**Description:** chiller

**Symbol Name:** SP3DHChiller.Chiller

**Workbook:** HVAC Sample Equipment.xls

**Workbook Sheet:** Chiller

**User Class Name:** Chillers

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHChiller.Chiller

Input name = "BasicAsmWidth"

Input description = "Width of the Basic Assembly"

Input name = "BasicAsmHeight"

Input description = "Height of the basic Assembly"

Input name = "BasicAsmLength"

Input description = "Length of the basic assembly"

Input name = "HeatingCoilLength"

Input description = "Length of the heating coil"

Input name = "MultiOutletLength"

Input description = "Length of the multi outlet"

Input name = "InletDia"

Input description = "Inlet Diameter"

Input name = "MultiOutletDia"

Input description = "MultiOutlet Diameter"

Input name = "SieSide"

Input description = "SieSide"

Input name = "SieBEZ"

Input description = "SieBEZ"

Output name = "BasicAsmHVACNozzle"

Output description = "HvacPort on the basic assembly"

Output name = "BasicAssembly"

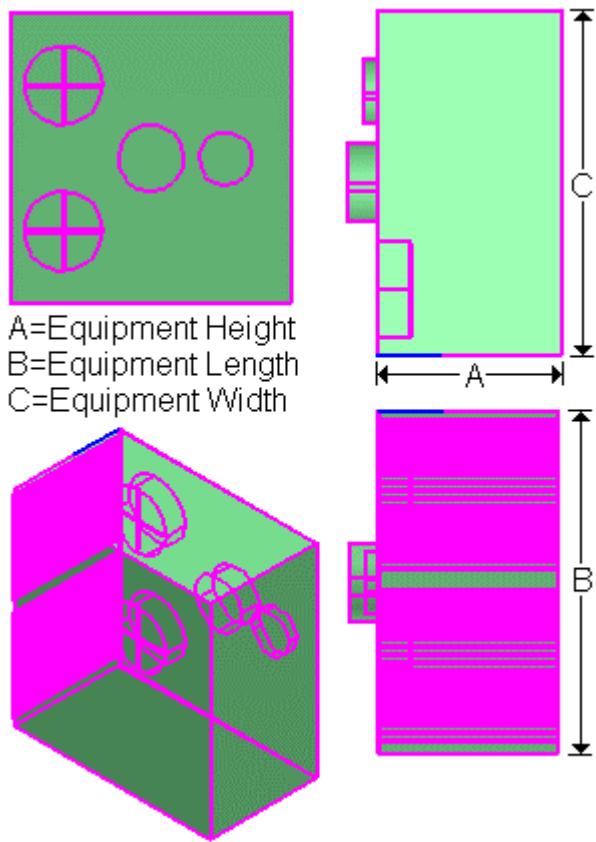
Output description = "Box representing the Basic Assembly"

Output name = "Feature1"

Output description = "Feature n"

Output name = "VVADAEvelope"

Output description = "VVADA's Maintenance envelope"



## SP3DHCleaningBend

**Description:** cleaning bend

**Symbol Name:** SP3DHCleaningBend.CleanBend

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabCleaningBend

**User Class Name:** Lindab HVAC Cleaning Bend

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHCleaningBend.CleanBend

**Inputs = 5**

**Input and description** = "Width", "Width",

**Input and description** = "BWidth", "Branch Width",

**Input and description** = "Length", "Length",

**Input and description** = "BLength", "Branch Length",

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 8**

**Output and description** = "Elbow", "Elbow Body", 1

**Output and description** = "HVACNoz1", "Nozzle 1", 1

**Output and description** = "HVACNoz2", "Nozzle 2", 1

**Output and description** = "HVACNoz3", "Nozzle 3", 1

**Output and description** = "ObjElbowIns", "Elbow Insulation"

**Output and description** = "HVACNoz1Ins", "Nozzle 1 Insulation"

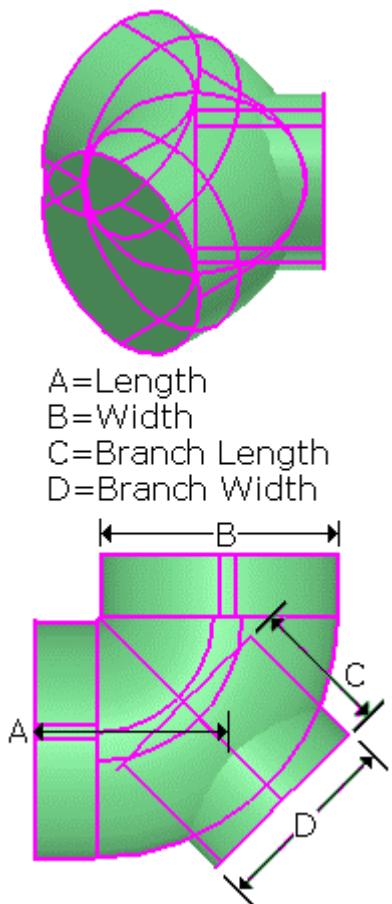
**Output and description** = "HVACNoz2Ins", "Nozzle 2 Insulation"

**Output and description** = "HVACNoz3Ins", "Nozzle 3 Insulation"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Insulation", "Insulation"



## SP3DHDiskValve

### Description:

**Symbol Name:** SP3DHDiskValve.DiskValve

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** HVACDiskValve

**User Class Name:** HVAC Disk Valves

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DHDiskValve.DiskValve

### Inputs = 6

**Input and description** = "Width", "", 0.1 ' Is used as diameter for round feature

**Input and description** = "CentralDiskDia", "", 0

**Input and description** = "ValveLength", "", 0

**Input and description** = "DiskPosition", "", 0

**Input and description** = "ValveDia", "", 0

**Input and description** = "SealingRingLength", "", 0

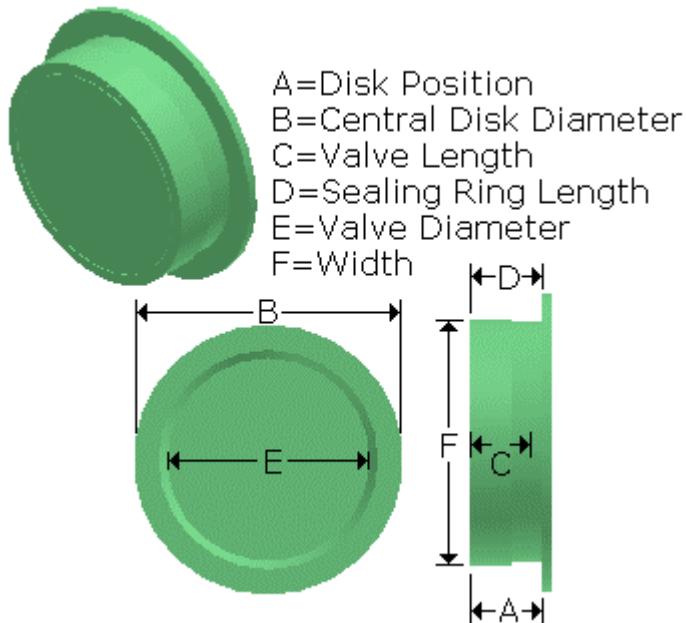
### Outputs = 2

**Output and description** = "HvacNozzle1", "HvacNozzle1", 1

**Output and description** = "Luft", "Luft", 1

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DHEccentricTee

**Description:** HVAC eccentric tee

**Symbol Name:** SP3DHEccentricTee.EccentricTee

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabEccentricTee

**User Class Name:** Lindab HVAC Eccentric Branch Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHEccentricTee.EccentricTee

**Inputs = 5**

**Input and description** = "Width", "Width",

**Input and description** = "BWidth", "Branch Width",

**Input and description** = "Length", "Length",

**Input and description** = "BLength", "Branch Length",

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 5**

**Output and description** = "HVACNoz1", "Nozzle 1", 1

**Output and description** = "HVACNoz2", "Nozzle 2", 1

**Output and description** = "HVACNoz3", "Nozzle 3", 1

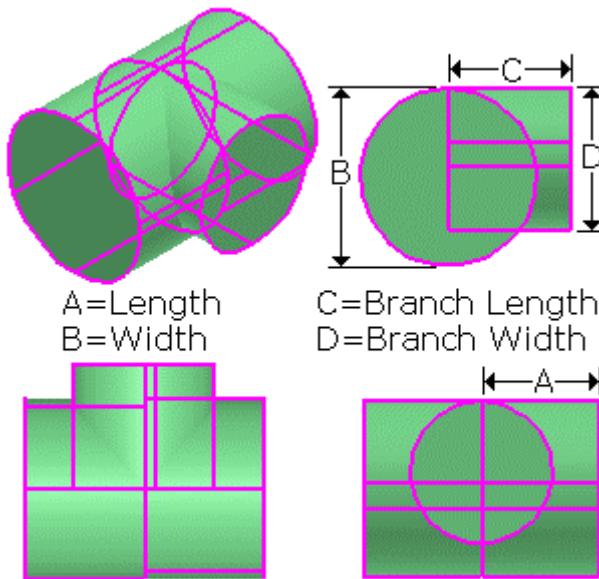
**Output and description** = "HVACNoz1Ins", "Nozzle 1 Insulation"

**Output and description** = "HVACNoz3Ins", "Nozzle 3 Insulation"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Insulation", "Insulation"



## SP3DHElbow

**Description:** HVAC Round Sleeve

**Symbol Name:** SP3DHElbow.HELbow

**Workbook:** Hvac.xls

**Workbook Sheet:** HVACElbow

**User Class Name:** HVAC Generic Elbow

**Part Number:** HVACElbowFo

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHElbow.HELbow

Number of Inputs = 8

Input name = "HVACShape"

Input description = "HVAC shape of Elbow"

Input name = "Width"

Input description = "Width of shape"

Input name = "Depth"

Input description = "Depth of shape"

Input name = "CornerRadius"

Input description = "Corner radius of shape"

Input name = "ElbowThroatRadius"

Input description = ""

Input name = "Angle"

Input description = "Angle of Elbow"

Input name = "PlaneOfTurn"

Input description = "0 turn around depth, 1 turn around width side"

Input name = "InsulationThickness"

Input description = "Insulation thickness of body"

Number of Outputs = 4

Output name = "OutElbow"

Output description = "Outside Elbow"

Output name = "HvacNozzle1"

Output description = "HVACPort at End2"

Output name = "HvacNozzle2"

Output description = "HVACPort of End1"

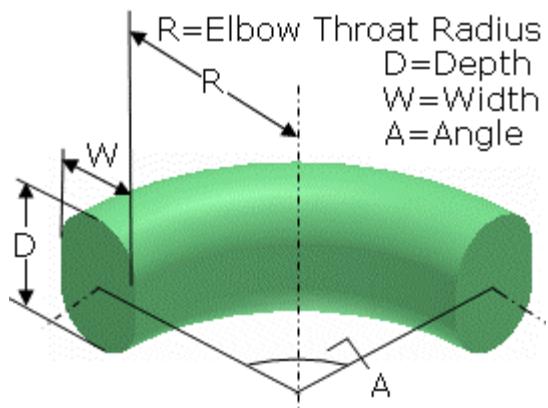
Output name = "InsElbow"

Output description = "Insulation for Elbow"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DHExhaustFan

**Description:** exhaust fan

**Symbol Name:** SP3DHExhaustFan.ExhaustFan

**Workbook:** HVAC Sample Equipment.xls

**Workbook Sheet:** ExhaustFan

**User Class Name:** Exhaust Fans

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHExhaustFan.Exhaust.Fan

Input name = "BasicAsmWidth"

Input description = "Width of the Basic Assembly"

Input name = "BasicAsmHeight"

Input description = "Height of the basic Assembly"

Input name = "BasicAsmLength"

Input description = "Length of the basic assembly"

Input name = "HeatingCoilLength"

Input description = "Length of the heating coil"

Input name = "MultiOutletLength"

Input description = "Length of the multi outlet"

Input name = "InletDia"

Input description = "Inlet Diameter"

Input name = "MultiOutletDia"

Input description = "MultiOutlet Diameter"

Input name = "SieSide"

Input description = "SieSide"

Input name = "SieBEZ"

Input description = "SieBEZ"

Output name = "BasicAsmHVACNozzle"

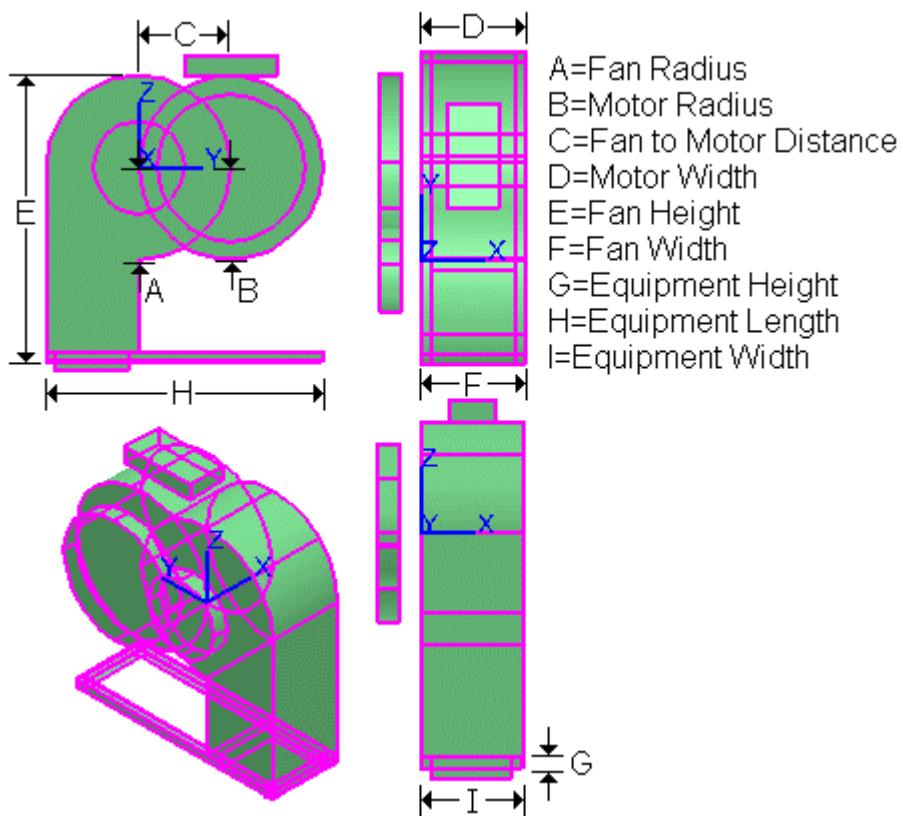
Output description = "HvacPort on the basic assembly"

Output name = "Feature1"

Output description = "Feature n"

Output name = "VVADAEvelope"

Output description = "VVADA's Maintenance envelope"



## SP3DHFIREDamper

**Description:** HVAC fire damper

**Symbol Name:** SP3DHFIREDamper.FireDamper

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** FireDamper

**User Class Name:** HVAC Fire Dampers

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHFIREDamper.FireDamper

Number of Outputs = 8

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "FilterLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirFilterR"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirFilterR"

Input name = "CasingWidth"

Input description = "CasingWidth"

Input name = "CasingThickness"

Input description = "CasingThickness"

Input name = "DamperLength"

Input description = "DamperLength"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Fire Damper"

Output name = "HvacNozzle2"

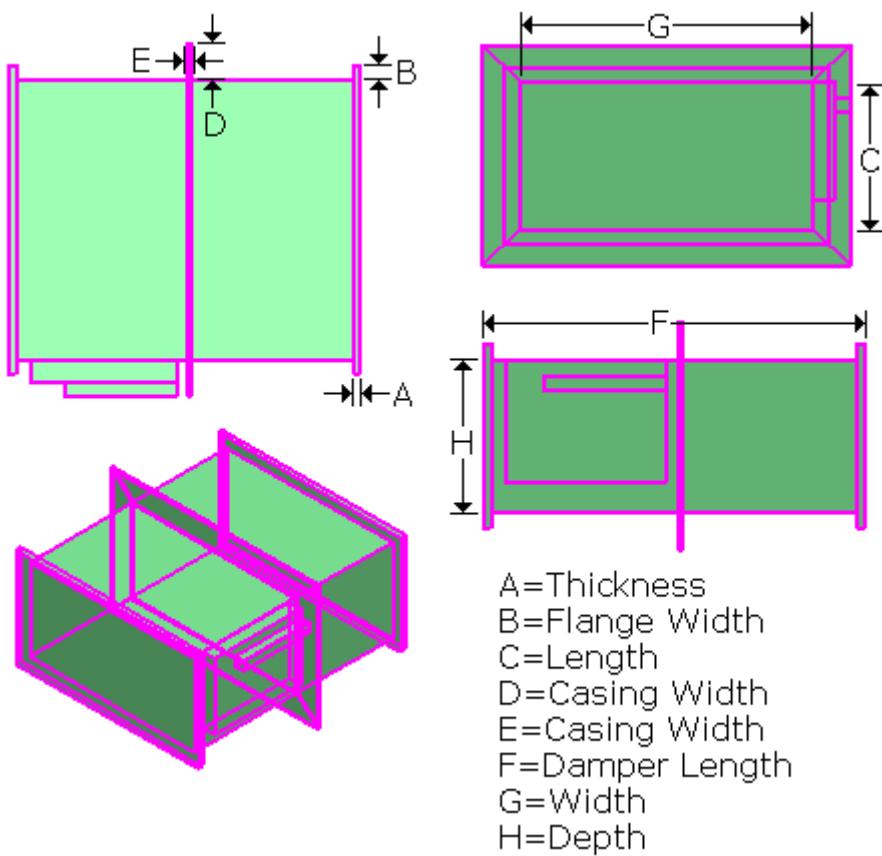
Output description = "HvacPort2 of Fire Damper"

Output name = "Hebel"

Output description = "Hebel"

Output name = "Feature" & (index - 3)

Output description = "Feature" & (index - 3)



## SP3DHHalfRndDiffuser

**Description:** half round diffuser

**Symbol Name:** SP3DHHalfRndDiffuser.HHalfRndDiffuser

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesHalfRoundDiffuser

**User Class Name:** Carnes HVAC Half Round Diffuser

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHHalfRndDiffuser.HHalfRndDiffuser

**Inputs = 5**

**Input = "Width" Description = "Neck Diameter"**

**Input = "FrameOuterDia" Description = "Frame Outer Diameter"**

**Input = "FormProjection" Description = "Form Projection"**

**Input = "OverallProjection" Description = "Overall Projection"**

**Input = "CollarHeight" Description = "Collar Height"**

**Outputs = 6**

**Output = "Neck" Description = "Neck portion"**

**Output = "FormProjection" Description = "Form Projection"**

**Output = "DiffuserPort" Description = "Diffuser Port"**

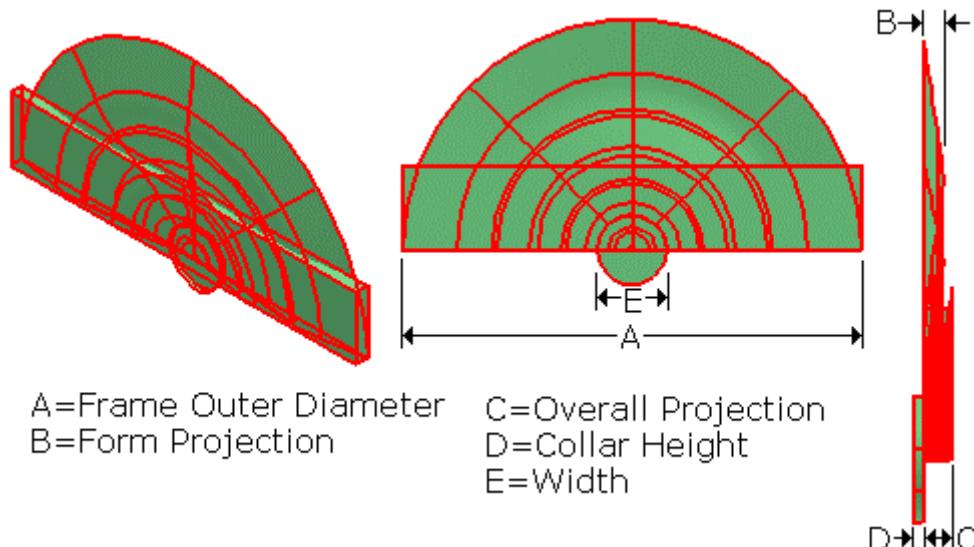
**Output = "DiffuserCone1" Description = "Diffuser Cone 1"**

**Output = "DiffuserCone2" Description = "Diffuser Cone 2"**

**Output = "Box" Description = "Box portion"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Frame Outer Diameter  
B=Form Projection

C=Overall Projection  
D=Collar Height  
E=Width

## SP3DHLLinearGrille

**Description:**

**Symbol Name:** SP3DHLLinearGrille.LinearGrille

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** LinearGrille

**User Class Name:** HVAC Linear Grille

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHLLinearGrille.LinearGrille

**Inputs = 7**

**Input and description =** "Width", ""

**Input and description =** "Depth", ""

**Input and description =** "FinWidth", ""

**Input and description =** "FrameWidth", ""

**Input and description =** "FrameThickness", ""

**Input and description =** "GrillWidth", ""

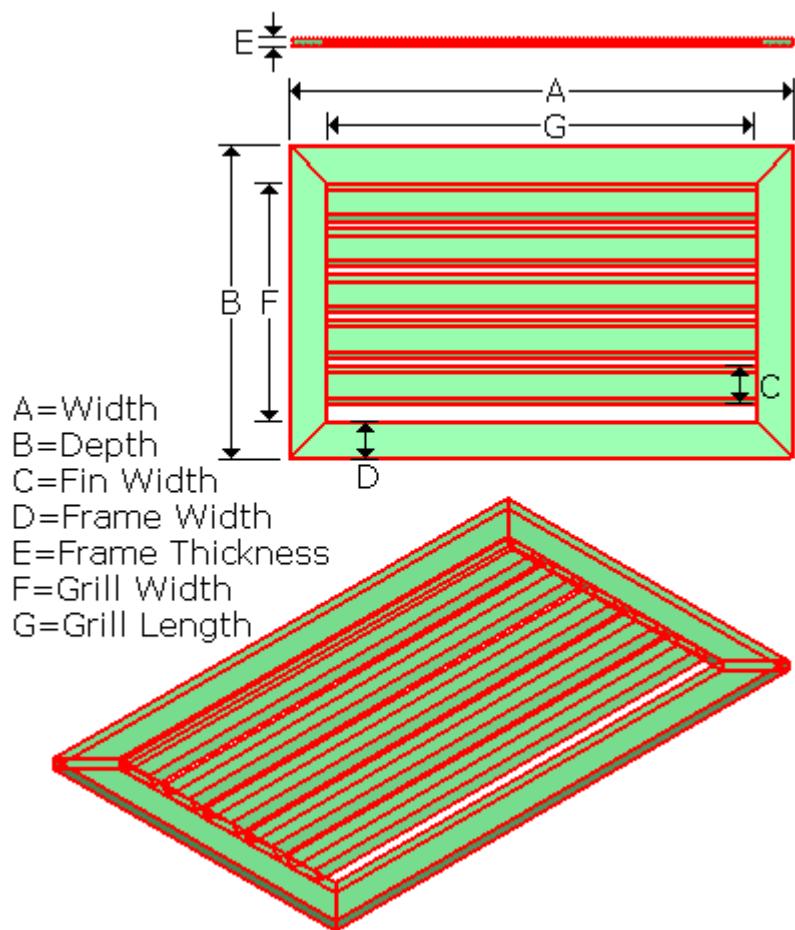
**Input and description =** "GrillLength", ""

**Outputs = 1**

**Output and description =** "Feature", "Feature"

**Aspects = 1**

**Aspect =** "SimplePhysical", "Physical"



# SP3DHMultiLeafDamper

**Description:** HVAC multileaf damper

**Symbol Name:** SP3DHMultiLeafDamper.MultiLeafDamper

**Workbook:** Hvac SampleData.xls

**Workbook Sheet:** MultiLeafDamper

**User Class Name:** HVAC Multi-Leaf Damper

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHMultiLeafDamper.MultiLeafDamper

Number of Inputs = 8

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "FilterLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirFilterR"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirFilterR"

Input name = "DamperLength"

Input description = "DamperLength"

Input name = "HandleOffset"

Input description = "HandleOffset"

Input name = "HandlePosition"

Input description = "HandlePosition"

Number of Outputs = 3

Output name = "HvacNozzle1"

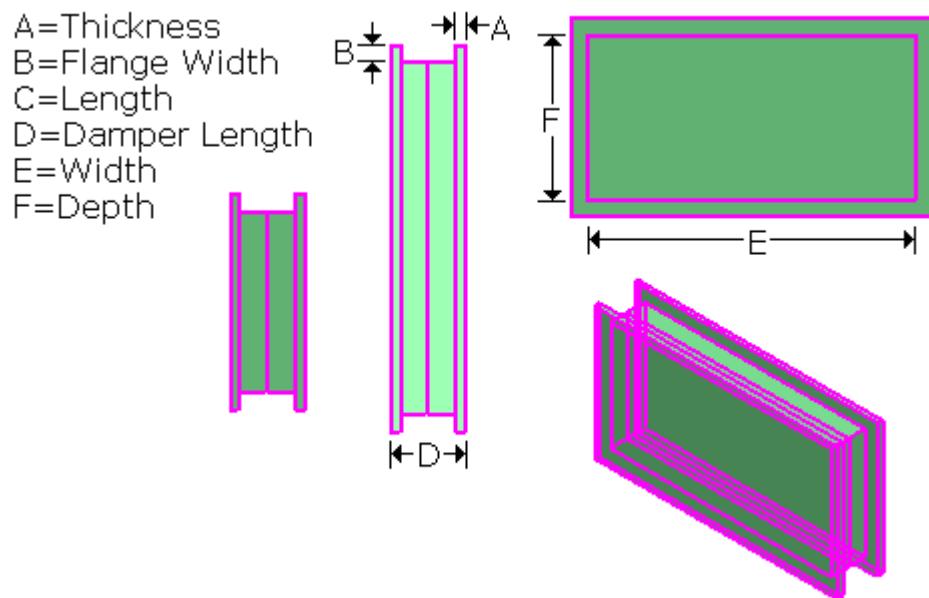
Output description = "HvacPort1 of MultiLeafDamper"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of MultiLeafDamper"

Output name = "Hebel"

Output description = "Hebel"



# SP3DHPresRelDamper

**Description:** HVAC pressure relief damper

**Symbol Name:** SP3DHPresRelDamper.PresRelDamper

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** PressureReliefDamper

**User Class Name:** HVAC Pressure Relief Dampers

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHPresRelDamper.PresRelDamper

**Inputs = 6**

**Input and description =** "Width", ""

**Input and description =** "Depth", ""

**Input and description =** "DamperLength", ""

**Input and description =** "DamperHeight", ""

**Input and description =** "CasingWidth", ""

**Input and description =** "CasingThickness", ""

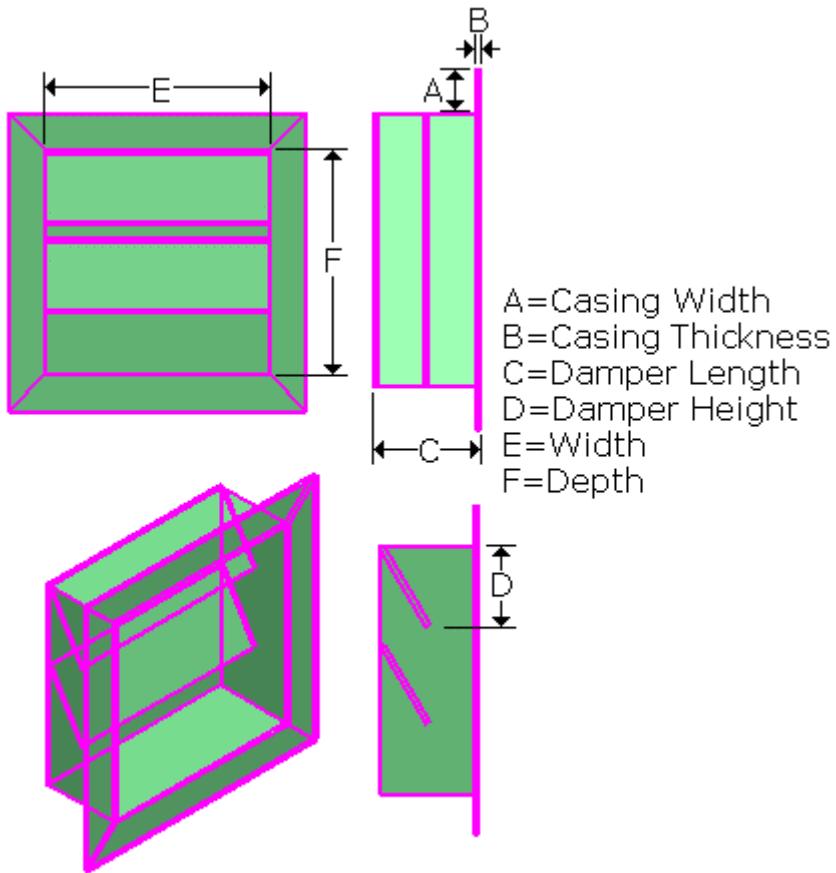
**Outputs = 1**

**Output and description =** "HvacNozzle1", "HvacNozzle1"

**Output and description =** "Feature", "Feature"

**Aspects = 1**

**Aspect =** "SimplePhysical", "Physical"



# SP3DHRec2RecAdapter

## Description:

**Symbol Name:** SP3DHRec2RecAdapter.HRec2RecAdapter

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRec2RecAdapter

**User Class Name:** Carnes HVAC Rectangular to Rectangular Adapter

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRecDiffuserRectN.RecDiffuserRectN

### Inputs = 5

**Input = "Width" Description = " Width"**

**Input = "Depth" Description = " Depth"**

**Input = "BWidth" Description = " Diffuser Outer Width"**

**Input = "BDepth" Description = " Diffuser Outer Depth"**

**Input = "DiffuserThickness" Description = " Diffuser Thickness"**

### Outputs = 7

**Output = "Neck" Description = "Rectangular Diffuser Neck"**

**Output = "DiffuserProjection" Description = "Rectangular Diffuser Projection"**

**Output = "DiffuserOuterPlane" Description = "Rectangular Diffuser Outer Plane"**

**Output = "DiffuserBaffle2" Description = "Rectangular Diffuser Baffle 2"**

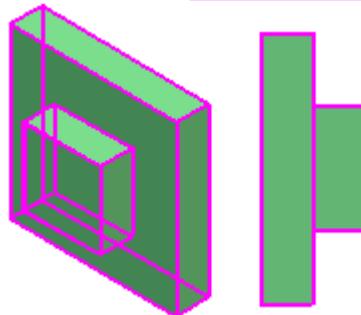
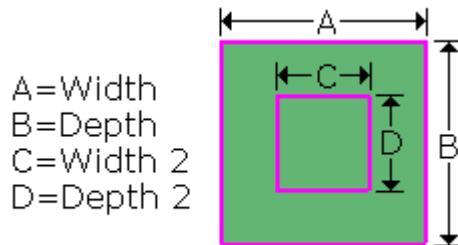
**Output = "DiffuserBaffle3" Description = "Rectangular Diffuser Baffle 3"**

**Output = "DiffuserBaffle4" Description = "Rectangular Diffuser Baffle 4"**

**Output = "DiffuserPort" Description = "Diffuser Port"**

### Aspects = 1

**Aspect = SimplePhysical**



# SP3DHRecDiffuserRectN

## Description:

**Symbol Name:** SP3DHRecDiffuserRectN.RecDiffuserRectN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectDiffEndComp

**User Class Name:** Carnes HVAC Rectangular Diffuser Rectangular Neck (End Component)

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRecDiffuserRectN.RecDiffuserRectN

### Inputs = 5

**Input = "Width" Description = " Width"**

**Input = "Depth" Description = " Depth"**

**Input = "BWidth" Description = " Diffuser Outer Width"**

**Input = "BDepth" Description = " Diffuser Outer Depth"**

**Input = "DiffuserThickness" Description = " Diffuser Thickness"**

### Outputs = 7

**Output = "Neck" Description = "Rectangular Diffuser Neck"**

**Output = "DiffuserProjection" Description = "Rectangular Diffuser Projection"**

**Output = "DiffuserOuterPlane" Description = "Rectangular Diffuser Outer Plane"**

**Output = "DiffuserBaffle2" Description = "Rectangular Diffuser Baffle 2"**

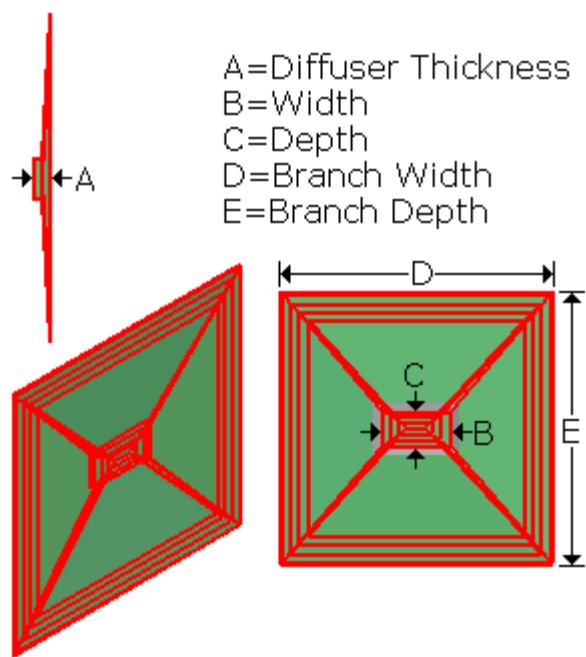
**Output = "DiffuserBaffle3" Description = "Rectangular Diffuser Baffle 3"**

**Output = "DiffuserBaffle4" Description = "Rectangular Diffuser Baffle 4"**

**Output = "DiffuserPort" Description = "Diffuser Port"**

### Aspects = 1

**Aspect = SimplePhysical**



# SP3DHRecDiffuserRndN

**Description:**

**Symbol Name:** SP3DHRecDiffuserRndN.RecDiffuserRndN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectDiffuserRndNeck

**User Class Name:** Carnes HVAC Rectangular Diffuser Round Neck (End Component)

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRecDiffuserRndN.RecDiffuserRndN

**Inputs = 8**

**Input = "Width" Description = " Width"**

**Input = "NeckWidth" Description = " Neck Width"**

**Input = "NeckDepth" Description = " Neck Depth"**

**Input = "BWidth" Description = " Diffuser Outer Width"**

**Input = "BDepth" Description = " Diffuser Outer Depth"**

**Input = "DiffuserLength" Description = " Diffuser Length"**

**Input = "RoundNeckLength" Description = " Round Neck Length"**

**Input = "RectNeckLength" Description = " Rect Neck Length"**

**Outputs = 8**

**Output = "RndNeck" Description = "Rectangular Diffuser Round Neck"**

**Output = "RectNeck" Description = "Rectangular Diffuser Rectangular Neck"**

**Output = "DiffuserProjection" Description = "Rectangular Diffuser Projection"**

**Output = "DiffuserOuterPlane" Description = "Rectangular Diffuser Outer Plane"**

**Output = "DiffuserBaffle2" Description = "Rectangular Diffuser Baffle 2"**

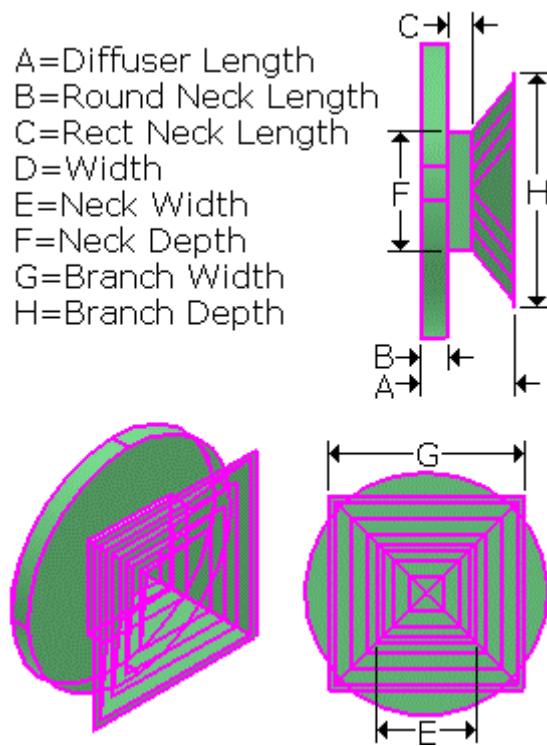
**Output = "DiffuserBaffle3" Description = "Rectangular Diffuser Baffle 3"**

**Output = "DiffuserBaffle4" Description = "Rectangular Diffuser Baffle 4"**

**Output = "DiffuserPort" Description = "Diffuser Port"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DHRecGrillRecNeck

## Description:

**Symbol Name:** SP3DHRecGrillRecNeck.HRectGrillRectN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectGrillWithRtN

**User Class Name:** Carnes HVAC Rectangular Grill Rectangular Neck

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRecGrillRecNeck.HRectGrillRectN

### Inputs = 8

**Input and description** = "Width", ""

**Input and description** = "Depth", ""

**Input and description** = "GrillBladeWidth", ""

**Input and description** = "FrameWidth", ""

**Input and description** = "GrillWidth", ""

**Input and description** = "GrillHeight", ""

**Input and description** = "GrillLength", ""

**Input and description** = "NeckLength", ""

### Outputs = 4

**Output and description** = "HvacNozzle1", "HvacNozzle1"

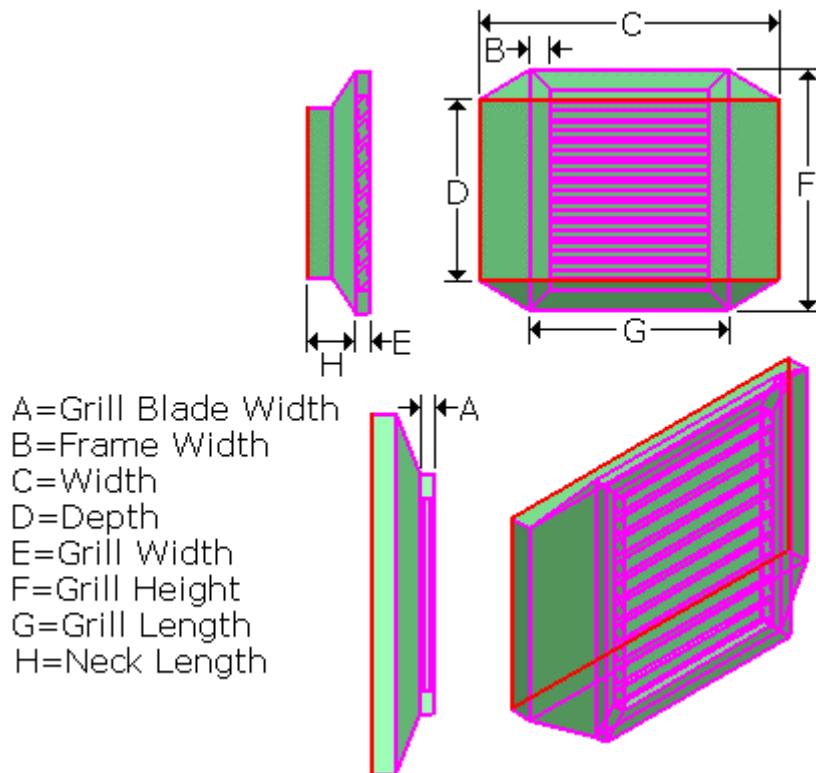
**Output and description** = "Neck", "Neck"

**Output and description** = "ConePortion", "ConePortion"

**Output and description** = "Feature", "Feature"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DHRecGrillRndN

## Description:

**Symbol Name:** SP3DHRecGrillRndN.HRectGrillRndN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectGrillRndNeck

**User Class Name:** Carnes HVAC Rect Grill Round Neck

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRecGrillRndN.HRectGrillRndN

### Inputs = 9

**Input and description** = "Width", ""

**Input and description** = "NeckWidth", ""

**Input and description** = "NeckDepth", ""

**Input and description** = "GrillBladeWidth", ""

**Input and description** = "FrameWidth", ""

**Input and description** = "GrillWidth", ""

**Input and description** = "GrillHeight", ""

**Input and description** = "GrillLength", ""

**Input and description** = "NeckLength", ""

### Outputs = 5

**Output and description** = "HvacNozzle1", "HvacNozzle1"

**Output and description** = "RndNeck", "RndNeck"

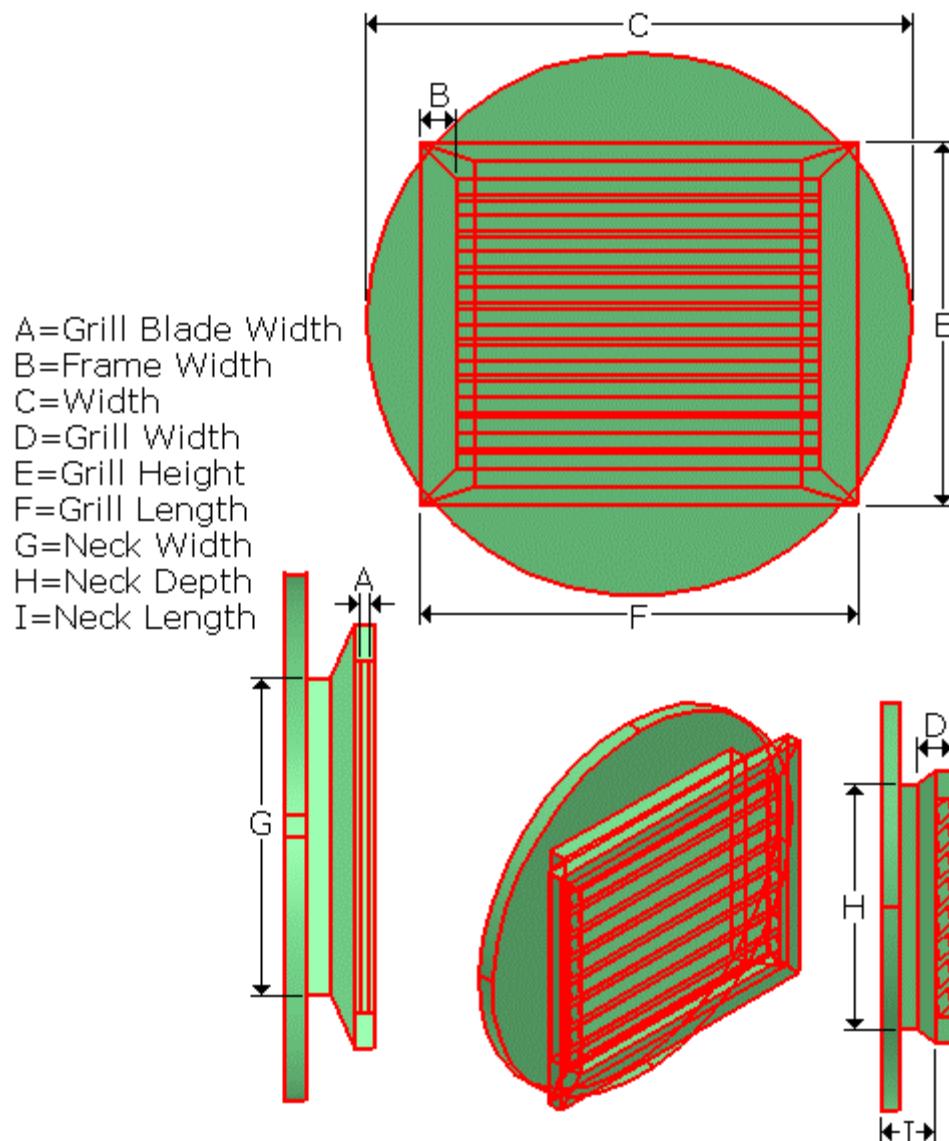
**Output and description** = "RectNeck", "RectNeck"

**Output and description** = "ConePortion", "ConePortion"

**Output and description** = "Feature", "Feature"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DHRecRegisterRecN

## Description:

**Symbol Name:** SP3DHRecRegisterRecN.HRectRegisterRectN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectRegisterRectNeck

**User Class Name:** Carnes HVAC Rectangular Register Rectangular Neck

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRecRegisterRecN.HRectRegisterRectN

### Inputs = 9

**Input and description** = "Width", ""

**Input and description** = "Depth", ""

**Input and description** = "GrillBladeWidth", ""

**Input and description** = "DamperBladeWidth", ""

**Input and description** = "FrameWidth", ""

**Input and description** = "RegisterThickness", ""

**Input and description** = "RegisterWidth", ""

**Input and description** = "RegisterLength", ""

**Input and description** = "NeckLength", ""

### Outputs = 4

**Output and description** = "HvacNozzle1", "HvacNozzle1"

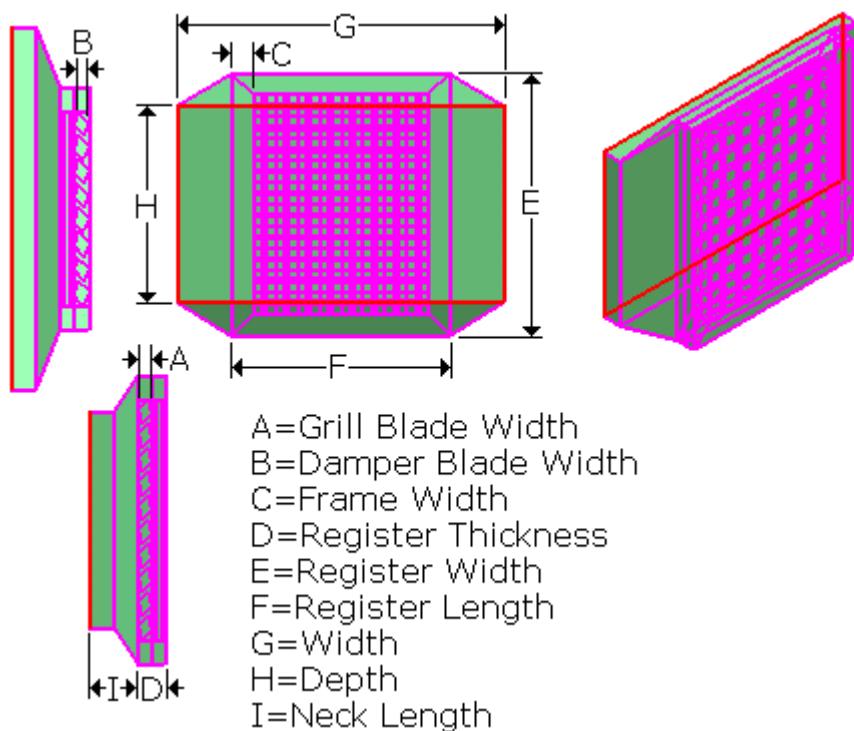
**Output and description** = "Neck", "Neck"

**Output and description** = "ConePortion", "ConePortion"

**Output and description** = "Feature", "Feature"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DHRecRegisterRndN

**Description:**

**Symbol Name:** SP3DHRecRegisterRndN.HRecRegisterRndN

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRectRegisterRndNeck

**User Class Name:** Carnes HVAC Rectangular Register Round Neck

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRecRegisterRndN.HRecRegisterRndN

**Inputs = 10**

**Input and description** = "Width", ""

**Input and description** = "NeckWidth", ""

**Input and description** = "NeckDepth", ""

**Input and description** = "GrillBladeWidth", ""

**Input and description** = "DamperBladeWidth", ""

**Input and description** = "FrameWidth", ""

**Input and description** = "RegisterThickness", ""

**Input and description** = "RegisterWidth", ""

**Input and description** = "RegisterLength", ""

**Input and description** = "NeckLength", ""

**Outputs = 5**

**Output and description** = "HvacNozzle1", "HvacNozzle1"

**Output and description** = "RoundNeck", "RoundNeck"

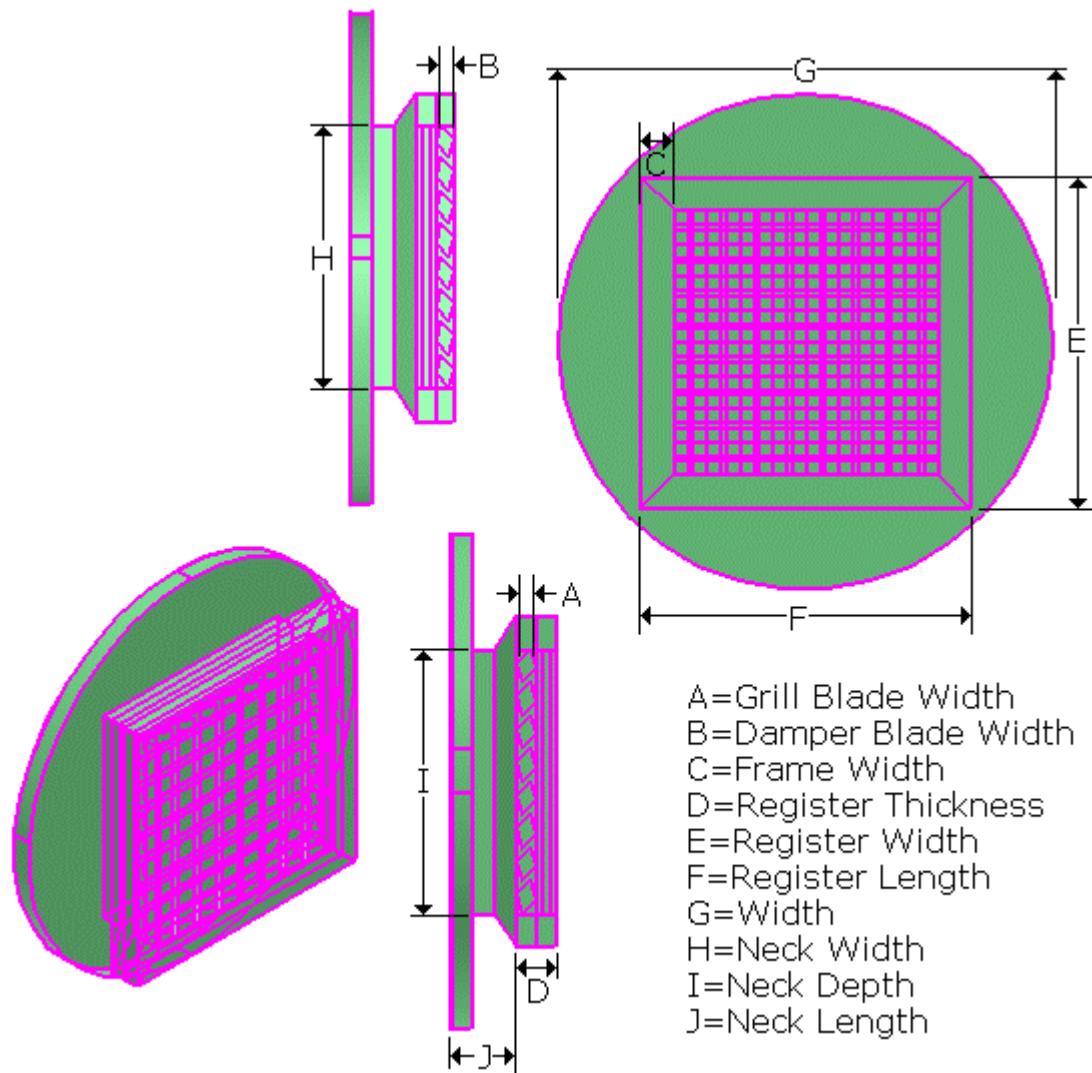
**Output and description** = "RectNeck", "RectNeck"

**Output and description** = "ConePortion", "ConePortion"

**Output and description** = "Feature", "Feature"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



## SP3DHRectBellMouth

**Description:** rectangular bell mouth

**Symbol Name:** SP3DHRectBellMouth.HRectBellMouth

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralRectBellMouth

**User Class Name:** Spiral HVAC Rectangular Bell Mouth

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectBellMouth.HRectBellMouth

**Inputs = 6**

**Input = "Width" Description = "Header Width"**

**Input = "Depth" Description = "Header Depth"**

**Input = "BWidth" Description = "Bell mouth Branch Width"**

**Input = "BDepth" Description = "Bell mouth Branch Depth"**

**Input = "Length" Description = "Bell mouth Length"**

**Input = "PlaneOfBranch" Description = "Bell mouth Plane Of Branch"**

**Outputs = 4**

**Output = "HNoz1" Description = "Hvac Nozzle 1 of Bell Mouth"**

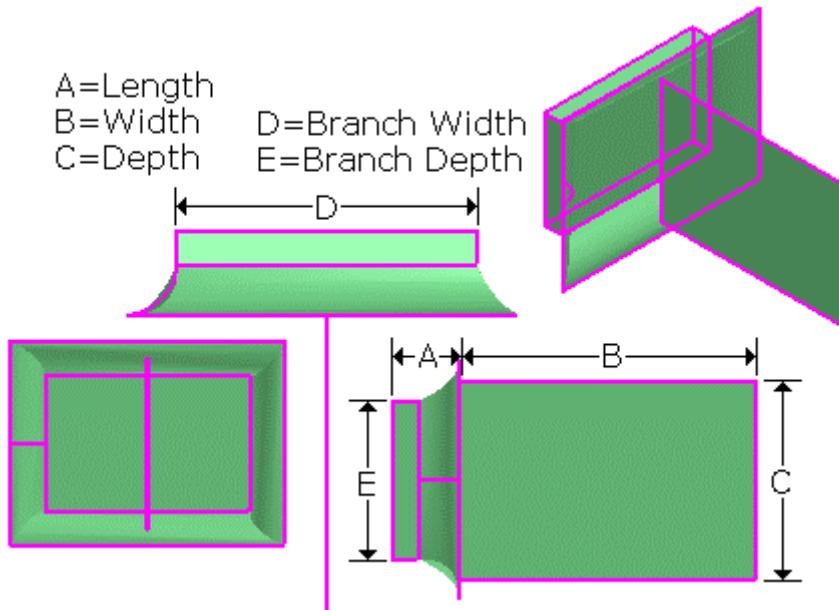
**Output = "HNoz2" Description = "Hvac Nozzle 2 of Bell Mouth"**

**Output = "HNoz3" Description = "Hvac Nozzle 3 of Bell Mouth"**

**Output = "ObjBellPortion" Description = "Bell Portion of Bell Mouth"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DHRectBranchAngRTE

**Description:**

**Symbol Name:** SP3DHRectBranchAngRTE

**Workbook:** Hvac.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectBranchAngRTE.HRectBranchAngRTE

**Inputs = 8**

**Input = "Width" Description = "Width"**

**Input = "Depth" Description = "Depth"**

**Input = "BWidth" Description = "BWidth"**

**Input = "BDepth" Description = "BDepth"**

**Input = "HLength" Description = "HLength"**

**Input = "BLength" Description = "BLength"**

**Input = "Angle" Description = "Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "HvacNozzle1" Description = "HvacPort1 of Tee and Reducing Tee"**

**Output = "HvacNozzle2" Description = "HvacPort2 of Tee and Reducing Tee"**

**Output = "HvacNozzle3" Description = "HvacPort3 of Tee and Reducing Tee"**

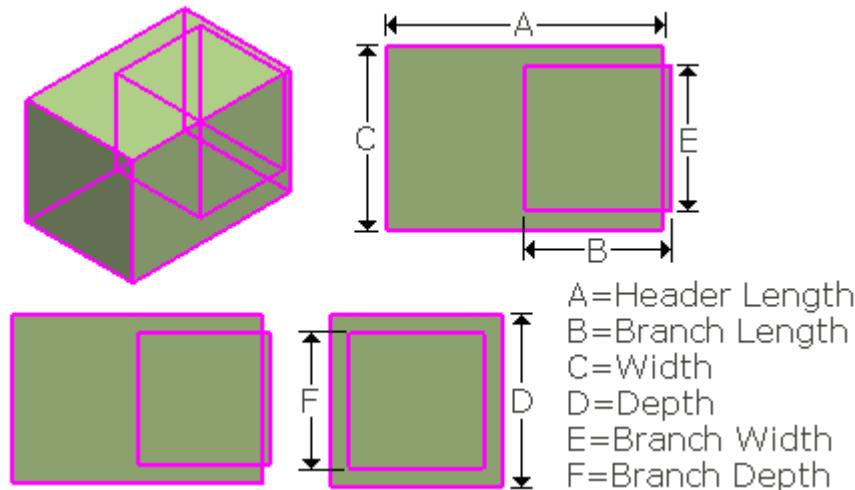
**Output = "HvacHeaderIns" Description = "Hvac Header Insulation"**

**Output = "HvacBranchIns" Description = "Hvac Branch Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHRectFlatFlange

**Description:** HVAC Rectangular Flat Flange

**Symbol Name:** SP3DHRectFlatFlange.HRECTFF

**Workbook:** Hvac.xls

**Workbook Sheet:** Rect\_FlatFlange

**User Class Name:** HVAC Rectangular Flat Flange

**Part Number:** RECTFF

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectFlatFlange.HRECTFF

Number of Inputs = 6

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange"

Input name = "CompressedGasket"

Input description = "Compressed Gasket Thickness"

Number of Outputs = 2

Output name = "HvacNozzle1"

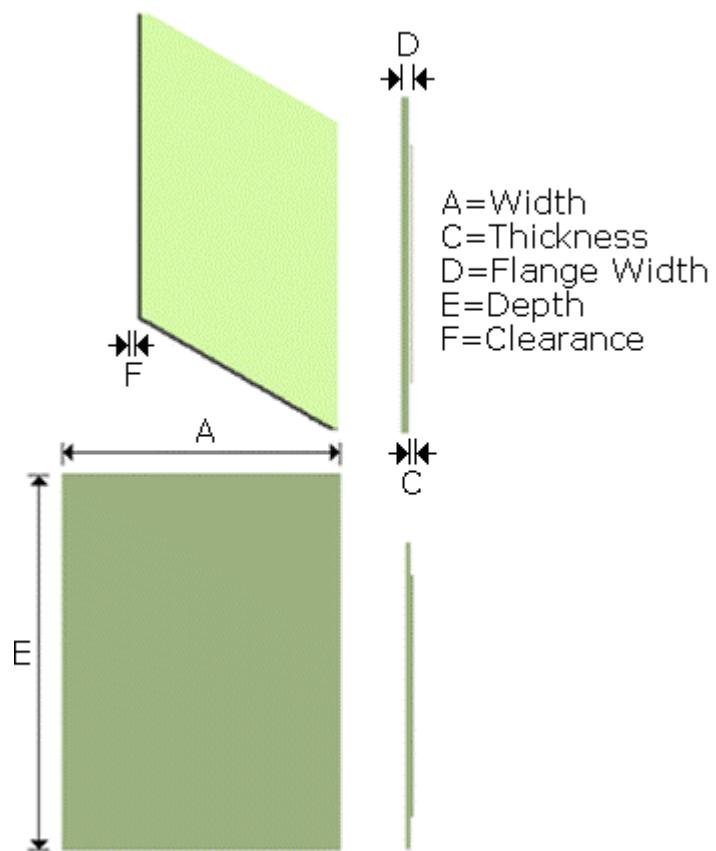
Output description = "HvacPort1 of Flat Flange"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Flat Flange"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DHRectFlatFlangeDInc

**Description:** HVAC Rectangular Flat Flange with Depth inclination

**Symbol Name:** SP3DHRectFlatFlangeDInc.HRECTFFDInc

**Workbook:** Hvac.xls

**Workbook Sheet:** Rect\_FlatFlangeVA

**User Class Name:** HVAC Rectangular Flat Flange with Depth inclination

**Part Number:** Rect\_SlopedFlange

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectFlatFlangeDInc.HRECTFFDInc

Number of Inputs = 8

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange"

Input name = "CompressedGasket"

Input description = "Compressed Gasket Thickness"

Input name = "Angle"

Input description = "Depth Inclination Angle"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 4

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Flat Flange"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Flat Flange"

Output name = "RectFlange1"

Output description = "Dumb graphics of Flat Flange 1"

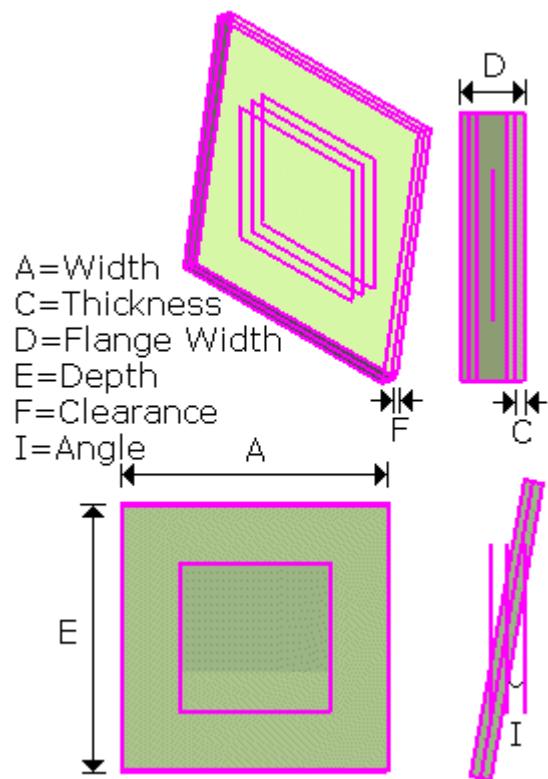
Output name = "RectFlangeIns"

Output description = "Dumb graphics of Insulation for the Flat Flanges"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DHRectFlatFlangeDWInc

**Description:**

**Symbol Name:** SP3DHRectFlatFlangeDWInc

**Workbook:** Hvac.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectFlatFlangeDWInc.HRECTFFDWInc

Number of Inputs = 9

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange"

Input name = "CompressedGasket"

Input description = "Compressed Gasket Thickness"

Input name = "Angle"

Input description = "Depth Inclination Angle"

Input name = "Rotation"

Input description = "Rotation"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 4

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Flat Flange"

Output name = "HvacNozzle2"

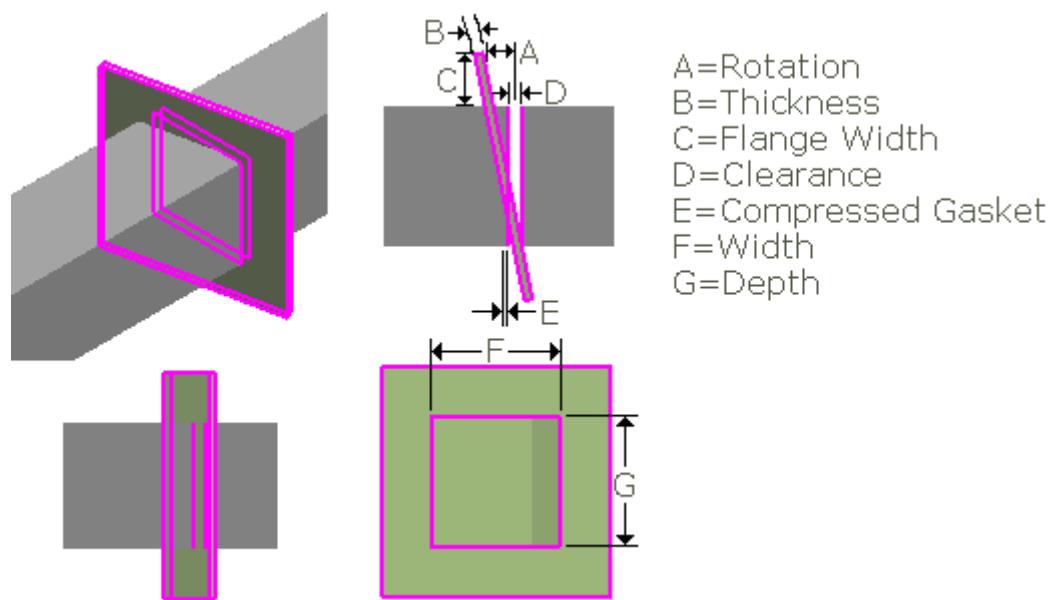
Output description = "HvacPort2 of Flat Flange"

Output name = "RectFlange"

Output description = "Dumb graphics of Flat Flange"

Output name = "RectFlangeIns"

Output description = "Dumb graphics of Insulation for the Flat Flanges"



## SP3DHRectPantWye

**Description:** HVAC rectangular Y

**Symbol Name:** SP3DHRectPantWye.HRectPantWye

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralRectPantWye

**User Class Name:** Spiral HVAC Pant Wye Rect 002

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID:SP3DHRectPantWye.HRectPantWye

Input name = "Width"

Input description = "Width of the Header"

Input name = "Depth"

Input description = "Depth of the Header"

Input name = "BWidth1"

Input description = "Branch 1 Width"

Input name = "BDepth1"

Input description = "Branch 1 Depth"

Input name = "BWidth2"

Input description = "Branch 1 Width"

Input name = "BDepth2"

Input description = "Branch 1 Depth"

Input name = "BLength"

Input description = "Length of the Pant WYe along the Branch"

Input name = "BranchAngle"

Input description = "Angle of Branch 1"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Rectangular Pant Wye"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Rectangular Pant Wye"

Output name = "HvacNozzle3"

Output description = "HvacPort2 of Rectangular Pant Wye"

Output name = "HeaderTakeoff"

Output description = "Take Off of Header portion of Rectangular Pant Wye"

Output name = "ObjLeg2"

Output description = "Leg Portion of Branch 1 of Rectangular Pant Wye"

Output name = "ObjLeg3"

Output description = "Leg Portion of Branch 2 of Rectangular Pant Wye"

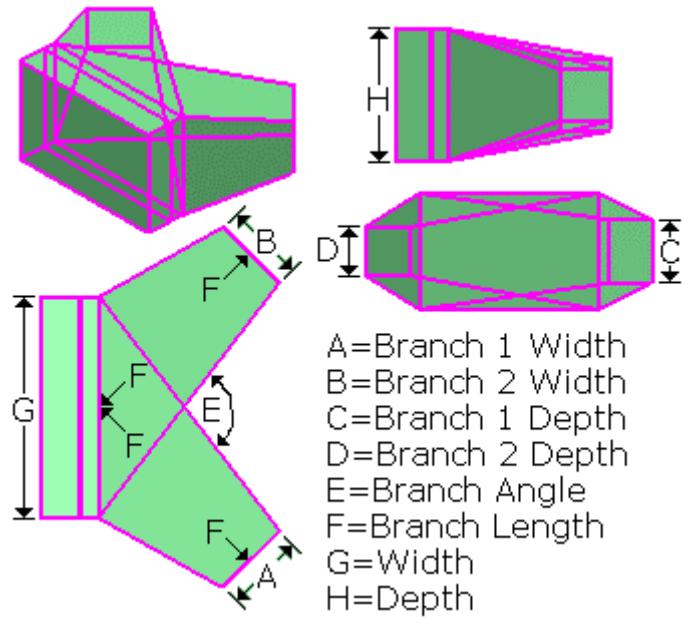
Output name = "HeaderIns"

Output description = "Header Insulation"

Output name = "ObjLeg2Ins"

Output description = "Branch 1 Insulation"

Output name = "ObjLeg3Ins"  
Output description = "Branch 2 Insulation"



## SP3DHRectRTE

**Description:** RectTee with 90 deg Branch

**Symbol Name:** SP3DHRectRTE.HRectRTE

**Workbook:** Hvac.xls

**Workbook Sheet:** RectTee

**User Class Name:** HVAC Rectangular Tee

**Part Number:** RectTee1

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectRTE.HRectRTE

**Inputs = 8**

**Input = "Width" Description = "Header Width"**

**Input = "Depth" Description = "Header Depth"**

**Input = "BWidth" Description = "Branch Width"**

**Input = "BDepth" Description = "Branch Depth"**

**Input = "HLength" Description = "Header Length"**

**Input = "BLength" Description = "Branch Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "PlaneOfBranch" Description = "Plane Of Branch"**

**Outputs = 5**

**Output = "HvacNozzle1" Description = "HvacPort1 of Tee and Reducing Tee"**

**Output = "HvacNozzle2" Description = "HvacPort2 of Tee and Reducing Tee"**

**Output = "HvacNozzle3" Description = "HvacPort3 of Tee and Reducing Tee"**

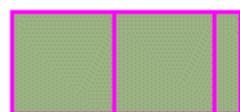
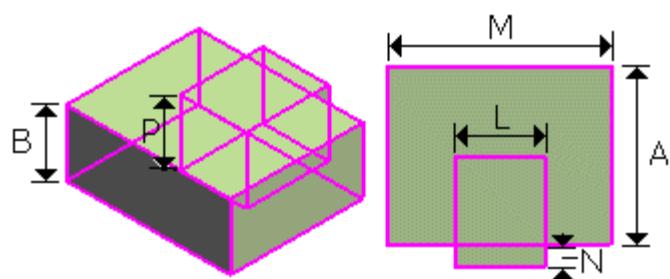
**Output = "HvacHeaderIns" Description = "Hvac Header Insulation"**

**Output = "HvacBranchIns" Description = "Hvac Branch Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

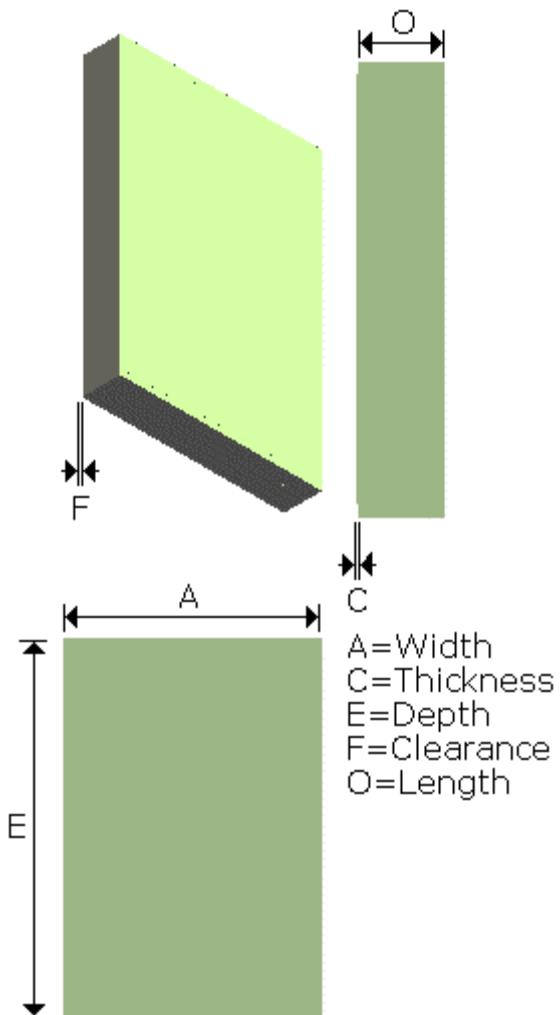


A=Header Width  
B=Header Depth  
L=Branch Width  
P=Branch Depth  
M=Header Length  
N=Branch Length

## SP3DHRectSleeve

**Description:** HVAC Rectangular Sleeve  
**Symbol Name:** SP3DHRectSleeve.HRECTSLV  
**Workbook:** Hvac.xls  
**Workbook Sheet:** Rect\_Sleeve  
**User Class Name:** HVAC Rectangular Sleeve  
**Part Number:** RectSleeve  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRectSleeve.HRECTSLV  
Number of Inputs = 5  
Input name = "Width"  
Input description = "Width of the Rect Duct"  
Input name = "Depth"  
Input description = "Depth of the Rect Duct"  
Input name = "Clearance"  
Input description = "Clearance between ducts"  
Input name = "Thickness"  
Input description = "Thickness of the Sleeve"  
Input name = "Length"  
Input description = "Length of the Sleeve"  
Number of Outputs = 2  
Output name = "HvacNozzle1"  
Output description = "HvacPort1 of Sleeve"  
Output name = "HvacNozzle2"  
Output description = "HvacPort2 of Sleeve"  
Number of Aspects = 1  
Supported AspectId = SimplePhysical



## SP3DHRndCross

**Description:** HVAC round cross

**Symbol Name:** SP3DHRndCross.HRndCross

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabRndCross

**User Class Name:** Lindab HVAC Round Cross

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRndCross.HRndCross

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Tee along the Header"

Input name = "BLength"

Input description = "Length of the Tee along the Branch"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Output name = "HvacNozzle1"

Output description = "HvacPort 1 of Round Cross"

Output name = "HvacNozzle2"

Output description = "HvacPort 2 of Round Cross"

Output name = "HvacNozzle3"

Output description = "HvacPort 3 of Round Cross"

Output name = "HvacNozzle4"

Output description = "HvacPort 4 of Round Cross"

Output name = "ObjTakeOff1"

Output description = "Take-Off 1 of Round Cross"

Output name = "ObjTakeOff2"

Output description = "Take-Off 2 of Round Cross"

Output name = "ObjTakeOff3"

Output description = "Take-Off 3 of Round Cross"

Output name = "ObjTakeOff4"

Output description = "Take-Off 4 of Round Cross"

Output name = "ObjRing1"

Output description = "Outer Ring 1 of Round Cross"

Output Name = "ObjRing2"

Output Description = "Outer Ring 2 of Round Cross"

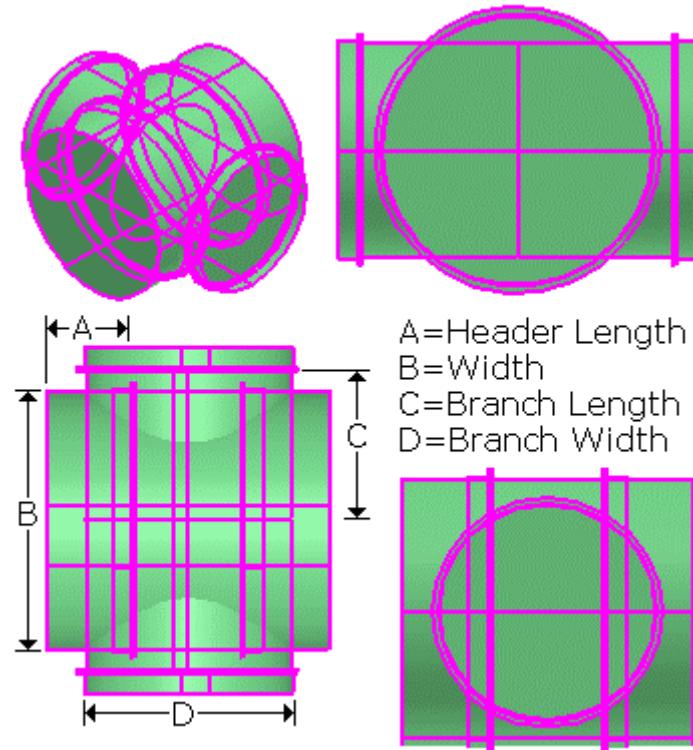
Output Name = "ObjRing3"

Output Description = "Outer Ring 3 of Round Cross"

Output Name = "ObjRing4"

Output Description = "Outer Ring 4 of Round Cross"

Output Name = "HeaderIns"  
Output Description = "Header Insulation"  
Output Name = "BranchIns"  
Output Description = "Branch Insulation"



# SP3DHRndDiffuser

## Description:

**Symbol Name:** SP3DHRndDiffuser.HRndDiffuser

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesRoundDiffuser

**User Class Name:** Carnes HVAC Round Diffuser

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRndDiffuser.HRndDiffuser

### Inputs = 5

**Input = "Width" Description = "Neck Diameter"**

**Input = "FrameOuterDia" Description = "Frame Outer Diameter"**

**Input = "FormProjection" Description = "Form Projection"**

**Input = "OverallProjection" Description = "Overall Projection"**

**Input = "CollarHeight" Description = "Collar Height"**

### Outputs = 5

**Output = "Neck" Description = "Neck portion"**

**Output = "FormProjection" Description = "Form Projection"**

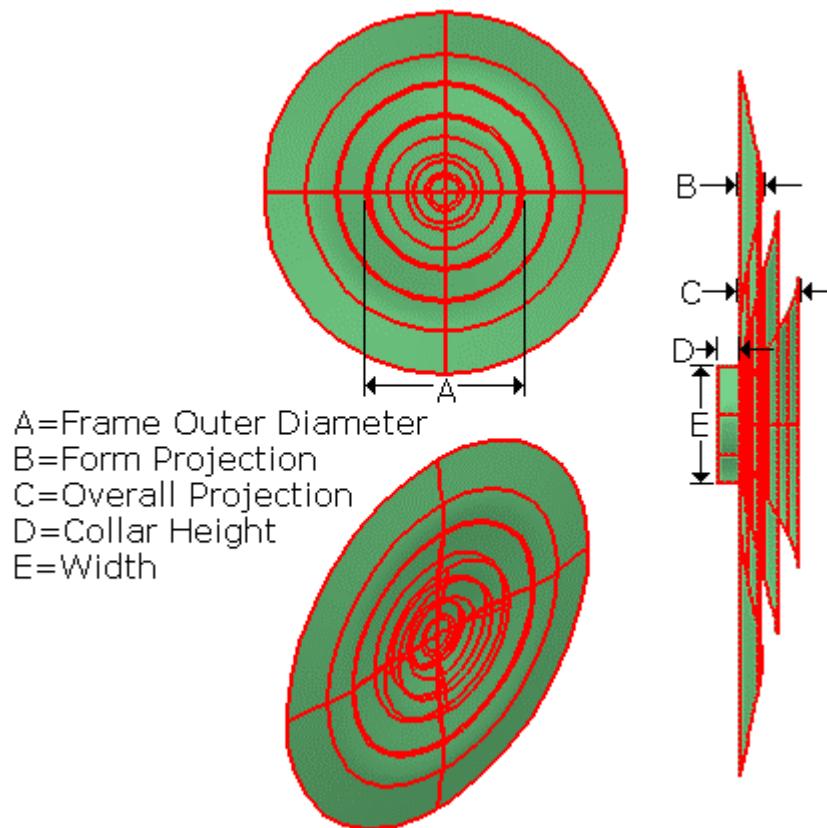
**Output = "DiffuserPort" Description = "Diffuser Port"**

**Output = "DiffuserCone1" Description = "Diffuser Cone 1"**

**Output = "DiffuserCone2" Description = "Diffuser Cone 2"**

### Aspects = 1

**Aspect = SimplePhysical**



# SP3DHRndPantWye

**Description:** HVAC round Y

**Symbol Name:** SP3DHRndPantWye.HRndPantWye

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralRoundPantWye

**User Class Name:** Sprial HVAC Round Pant Wye

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRndPantWye.HRndPantWye

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth1"

Input description = "Branch 1 Width"

Input name = "BWidth2"

Input description = "Branch 2 Width"

Input name = "BLength"

Input description = "Length of the Pant WYe along the Branch"

Input name = "BranchAngle"

Input description = "Angle of Branch 1"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Round Pant Wye"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Round Pant Wye"

Output name = "HvacNozzle3"

Output description = "HvacPort2 of Round Pant Wye"

Output name = "ObjBody1"

Output description = "Body 1 of Round Pant Wye"

Output name = "ObjBody2"

Output description = "Body 2 of Round Pant Wye"

Output name = "ObjBody3"

Output description = "Body 3 of Round Pant Wye"

Output name = "ObjTakeOff1"

Output description = "TakeOff 1 of Round Pant Wye"

Output name = "ObjTakeOff2"

Output description = "TakeOff 2 of Round Pant Wye"

Output name = "ObjTakeOff3"

Output description = "TakeOff 3 of Round Pant Wye"

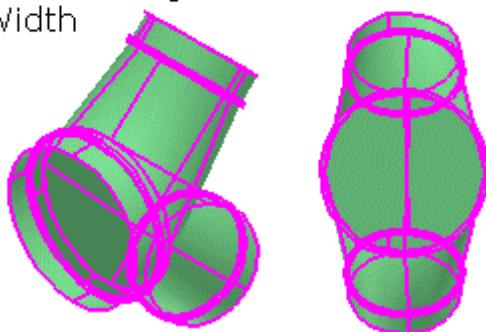
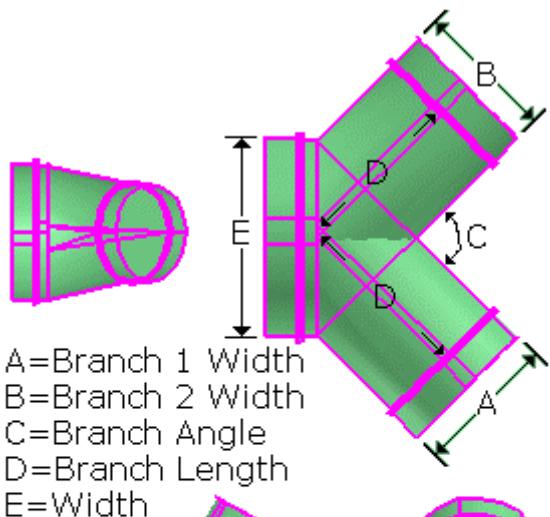
Output name = "ObjLeg2"

Output description = "Leg 2 of Round Pant Wye"

Output name = "ObjLeg3"

Output description = "Leg 3 of Round Pant Wye"

Output name = "HeaderIns"  
Output description = "Header Insulation"  
Output name = "Branch1Ins"  
Output description = "Branch1 Insulation"  
Output name = "Branch2Ins"  
Output description = "Branch2 Insulation"  
Output name = "TakeOff2Ins"  
Output description = "TakeOff2 Insulation"  
Output name = "TakeOff3Ins"  
Output description = "TakeOff3 Insulation"



## SP3DHRndReducer

**Description:** HVAC round reducer

**Symbol Name:** SP3DHRndReducer.HRndReducer

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabHReducer

**User Class Name:** Lindab HVAC Reducer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRndReducer.HRndReducer

**Inputs = 4**

**Input = "Width" Description = "Header Width"**

**Input = "BWidth" Description = "Reducer Width"**

**Input = "Length" Description = "Reducer Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "ObjReducerBody" Description = "Reducer Body"**

**Output = "ObjTakeOff1" Description = "Take Off 1 of Reducer Body"**

**Output = "ObjTakeOff2" Description = "Take Off 2 of Reducer Body"**

**Output = "ObjRing1" Description = "Outer Ring 1 of Reducer Body"**

**Output = "ObjRing2" Description = "Outer Ring 2 of Reducer Body"**

**Output = "HvacNozzle1" Description = "HvacPort1 of Tee and Reducing Tee"**

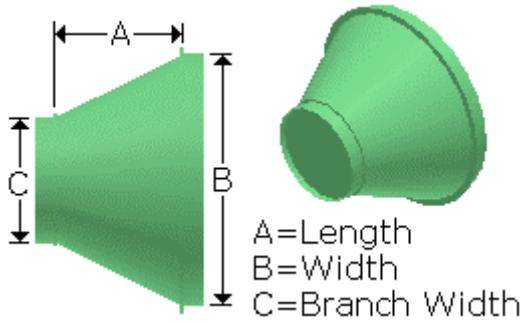
**Output = "HvacNozzle2" Description = "HvacPort2 of Tee and Reducing Tee"**

**Output = "HvacReducerIns" Description = "Hvac Reducer Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHRoundBranchAngRTE

**Description:**

**Symbol Name:** SP3DHRoundBranchAngRTE

**Workbook:** Hvac.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number: Inputs, Outputs, and Aspects:**

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Tee along the Header"

Input name = "BLength"

Input description = "Length of the Tee along the Branch"

Input name = "Angle"

Input description = "Angle of the Branch"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 5

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Tee and Reducing Tee"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Tee and Reducing Tee"

Output name = "HvacNozzle3"

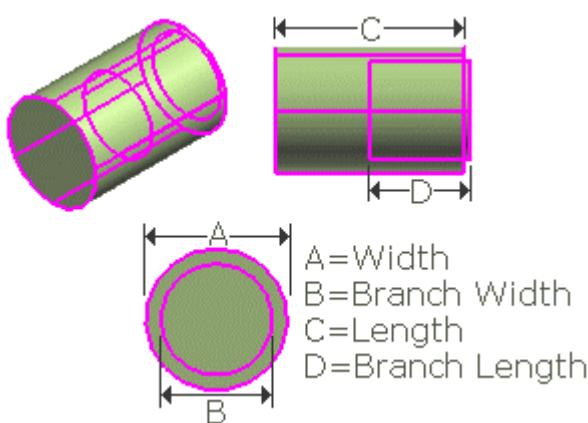
Output description = "HvacPort2 of Tee and Reducing Tee"

Output name = "HvacHeaderIns"

Output description = "Hvac Header Insulation"

Output name = "HvacBranchIns"

Output description = "Hvac Branch Insulation"



# SP3DHRoundDamper

**Description:** HVAC Round Damper

**Symbol Name:** SP3DHRoundDamper.HRoundDamper

**Workbook:** HVAC.xls

**Workbook Sheet:** ManualDamper

**User Class Name:** HVAC Round Damper

**Part Number:** PDS-100, PDS-150, PDS-200, PDS-250, PDS-300, PDS-350, PDS-400

## Inputs, Outputs, and Aspects

ProgID: SP3DHRoundDamper.HRoundDamper

Number of Inputs = 4

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "DamperLength"

Input description = "DamperLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of Damper"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of Damper"

Number of Outputs = 4

Output name = "Shaft"

Output description = "Shaft of Damper"

Output name = "Motor"

Output description = "Motor of Damper"

Output name = "AirIN"

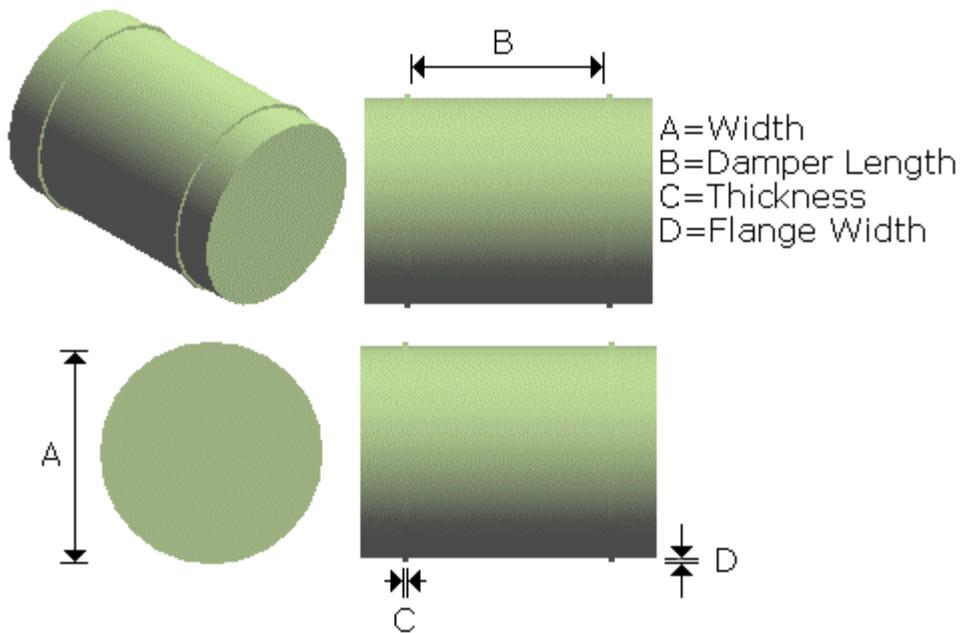
Output description = "AirIN Hvac Port1 of Damper"

Output name = "AirOUT"

Output description = "AirOUT Hvac Port2 of Damper"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DHRoundElbow

**Description:** HVAC Round Elbow

**Symbol Name:** SP3DHRoundElbow.HROUNDElbow

**Workbook:** Hvac.xls

**Workbook Sheet:** RoundElbow

**User Class Name:** HVAC Round Elbow

**Part Number:** B-100

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundElbow.HROUNDElbow

Number of Inputs = 4

Input name = "Width"

Input description = "Diameter of Elbow"

Input name = "ElbowCurveRadius"

Input description = ""

Input name = "Angle"

Input description = "Angle of Elbow"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 4

Output name = "HvacNozzle1"

Output description = "PipingPort at End2"

Output name = "HvacNozzle2"

Output description = "PipingPort of End1"

Output name = "OutElbow"

Output description = "Outside Elbow"

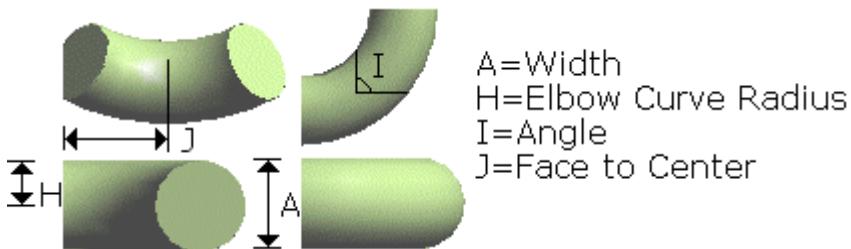
Output name = "OutElbowIns"

Output description = "Outside Elbow Insulation"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DHRoundFlatFlange

**Description:** HVAC Round Flat Flange

**Symbol Name:** SP3DHRoundFlatFlange.HROUNDFF

**Workbook:** Hvac.xls

**Workbook Sheet:** Round\_FlatFlange

**User Class Name:** HVAC Round Flat Flange

**Part Number:** ROUNDFF

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundFlatFlange.HROUNDFF

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange"

Input name = "CompressedGasket"

Input description = "Compressed Gasket Thickness"

Number of Outputs = 2

Output name = "HvacNozzle1"

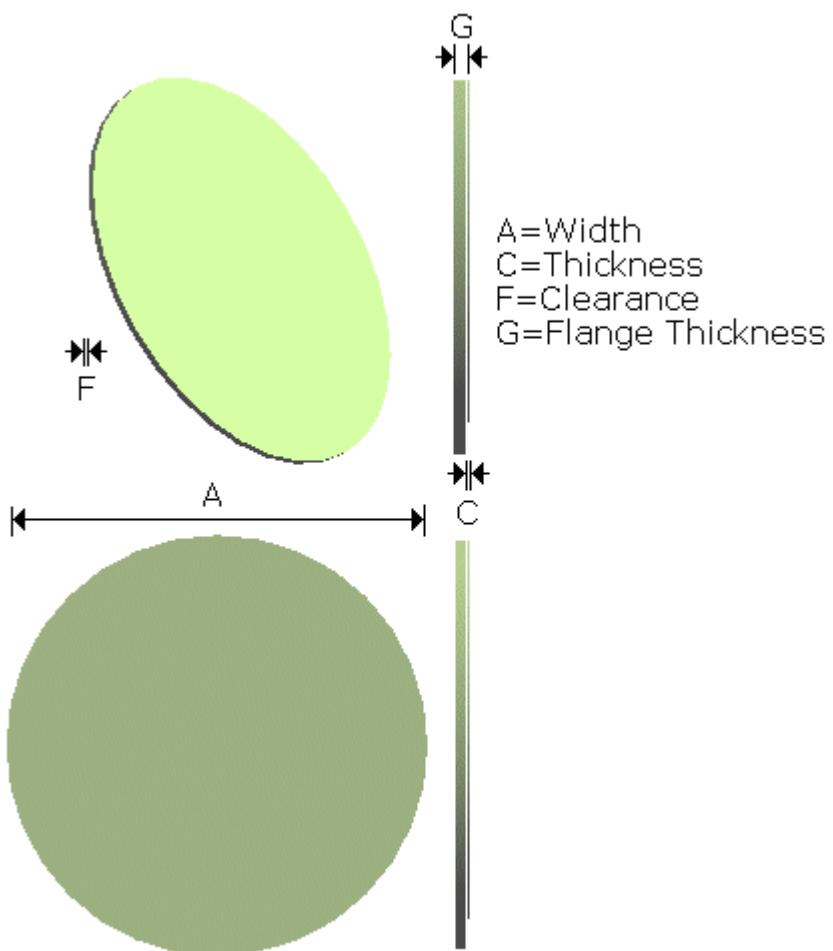
Output description = "HvacPort1 of Flat Flange"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Flat Flange"

Number of Aspects = 1

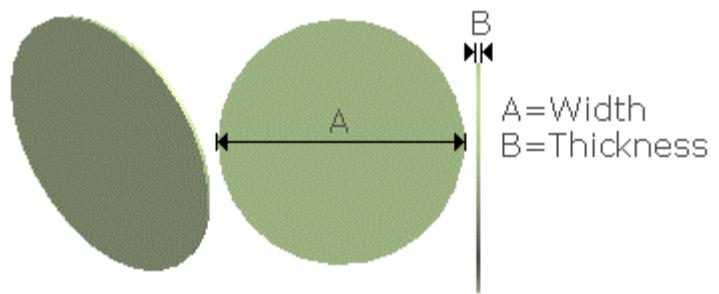
Supported AspectId = SimplePhysical



## SP3DHRoundFlatFlangeDInc

**Description:** HVAC Round Flat Flange with Depth inclination  
**Symbol Name:** SP3DHRoundFlatFlangeDInc.HROUNDFFDInc  
**Workbook:** Hvac.xls  
**Workbook Sheet:** Round\_FlatFlangeVA  
**User Class Name:** HVAC Round Flat Flange with Depth inclination  
**Part Number:** Round\_SlopedFlange  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundFlatFlangeDInc.HROUNDFFDInc  
Number of Inputs = 7  
Input name = "Width"  
Input description = "Width of the Rect Duct"  
Input name = "Clearance"  
Input description = "Clearance between ducts"  
Input name = "Thickness"  
Input description = "Thickness of the Flat Flange"  
Input name = "FlangeWidth"  
Input description = "Width of the Flat Flange"  
Input name = "CompressedGasket"  
Input description = "Compressed Gasket Thickness"  
Input name = "Angle"  
Input description = "Angle"  
Input name = "InsulationThickness"  
Input description = "Insulation thickness of body"  
Number of Outputs = 4  
Output name = "HvacNozzle1"  
Output description = "HvacPort1 of Flat Flange"  
Output name = "HvacNozzle2"  
Output description = "HvacPort2 of Flat Flange"  
Output name = "DGFlange1"  
Output description = "Dumb graphics Flange1"  
Output name = "InsDGFlange"  
Output description = "Insulation for Dumb Graphics Flanges"  
Number of Aspects = 2  
Supported AspectId = SimplePhysical  
Supported AspectId = Insulation



# SP3DHRoundFlatFlangeDWInc

**Description:**

**Symbol Name:** SP3DHRoundFlatFlangeDWInc

**Workbook:** Hvac.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundFlatFlangeDWInc.HROUNDFFDWInc

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange"

Input name = "CompressedGasket"

Input description = "Compressed Gasket Thickness"

Input name = "Angle"

Input description = "Angle"

Input name = "Rotation"

Input description = "Rotation"

Input name = "InsulationThickness"

Input description = "Insulation thickness of body"

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Flat Flange"

Output name = "HvacNozzle2"

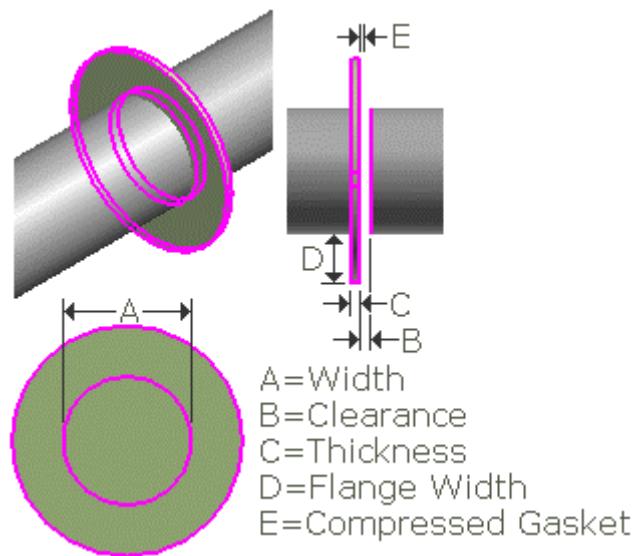
Output description = "HvacPort2 of Flat Flange"

Output name = "DGFlange"

Output description = "Dumb Graphics Flange"

Output name = "InsDGFlange"

Output description = "Insulation for Dumb Graphics Flanges"



# SP3DHRoundRTE

**Description:** RoundTee

**Symbol Name:** SP3DHRoundRTE.HRoundRTE

**Workbook:** Hvac.xls

**Workbook Sheet:** RoundTee

**User Class Name:** HVAC Round Tee and Reducing Tee

**Part Number:** TA-100X80

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundRTE.HRoundRTE

Number of Inputs = 5

Input name = "Width"

Input description = "Width of the Header"

Input name = "BWidth"

Input description = "Branch Width"

Input name = "HLength"

Input description = "Length of the Tee along the Header"

Input name = "BLength"

Input description = "Length of the Tee along the Branch"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 5 Output name = "HvacNozzle1"

Output description = "HvacPort1 of Tee and Reducing Tee"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Tee and Reducing Tee"

Output name = "HvacNozzle3"

Output description = "HvacPort3 of Tee and Reducing Tee"

Output name = "HeaderIns"

Output description = "Header Insulation"

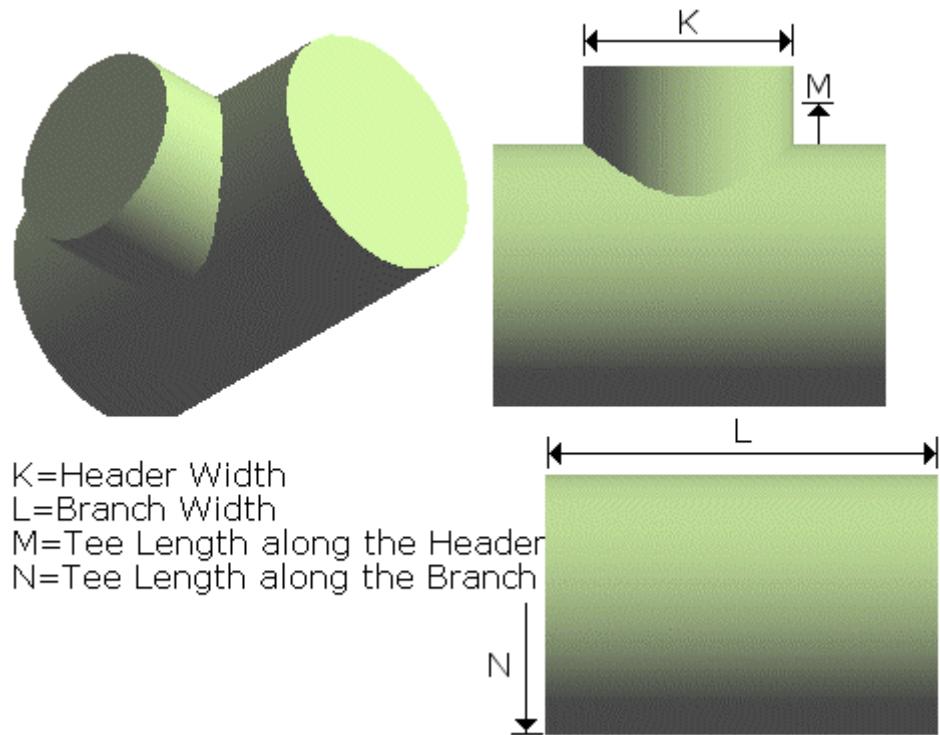
Output name = "BranchIns"

Output description = "Branch Insulation"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



K=Header Width

L=Branch Width

M=Tee Length along the Header

N=Tee Length along the Branch

## SP3DHRoundSleeve

**Description:** HVAC Round Sleeve

**Symbol Name:** SP3DHRoundSleeve.HROUNDSDLV

**Workbook:** Hvac.xls

**Workbook Sheet:** Round\_Sleeve

**User Class Name:** HVAC Round Sleeve

**Part Number:** ROUNDSLEEVE

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHRoundSleeve.HROUNDSDLV

Number of Inputs = 4

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Clearance"

Input description = "Clearance between ducts"

Input name = "Thickness"

Input description = "Thickness of the Sleeve"

Input name = "Length"

Input description = "Width of the Sleeve"

Number of Outputs = 2

Output name = "HvacNozzle1"

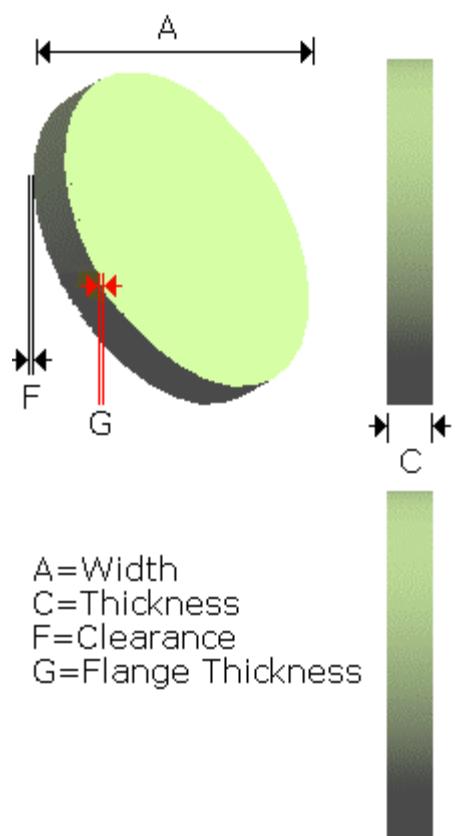
Output description = "HvacPort1 of Sleeve"

Output name = "HvacNozzle2"

Output description = "HvacPort2 of Sleeve"

Number of Aspects = 1

Supported AspectId = SimplePhysical



# SP3DHRSSplitAttentor

## Description:

**Symbol Name:** SP3DHRSSplitAttentor.RSplitAttentor

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** RectSplitAttenuator

**User Class Name:** HVAC Rectangular Splitter Attenuators

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DHRSSplitAttentor.RSplitAttentor

Number of Inputs = 8

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "Depth"

Input description = "Depth of the Rect Duct"

Input name = "Length"

Input description = "FilterLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of AirFilterR"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of AirFilterR"

Input name = "AttenuatorWidth"

Input description = "AttenuatorWidth"

Input name = "PlateThickness"

Input description = "PlateThickness"

Input name = "AttenuatorLength"

Input description = "AttenuatorLength"

Number of Outputs = 4

Output name = "HvacNozzle1"

Output description = "HvacPort1 of Rectangular Splitter Attenuator"

Output name = "HvacNozzle2"

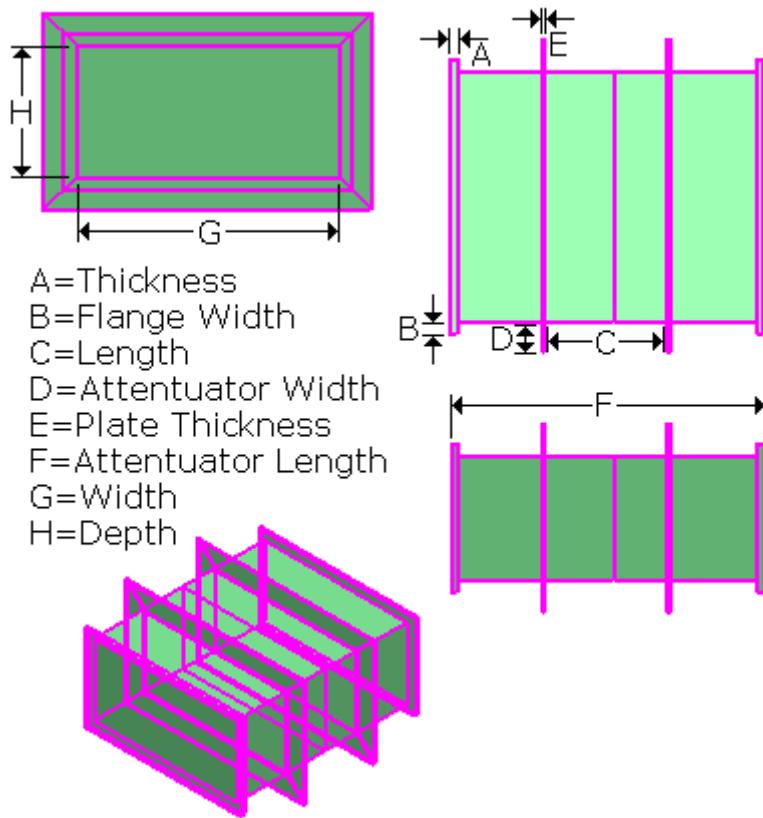
Output description = "HvacPort2 of Rectangular Splitter Attenuator"

Output name = "Hebel"

Output description = "Hebel"

Output name = "Feature" & (index - 3)

Output description = "Feature" & (index - 3)



## SP3DHSMRectDiffuser

**Description:** rectangular diffuser

**Symbol Name:** SP3DHSMRectDiffuser.HSMRectDiffuser

**Workbook:** Spiral HVAC Catalog.xls

**Workbook Sheet:** SpiralHVACSMRectDiff

**User Class Name:** Spiral HVAC SM Rectangular Diffuser

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHSMRectDiffuser.HSMRectDiffuser

**Inputs = 2**

**Input = "Width" Description = "Width"**

**Input = "Depth" Description = "Depth"**

**Outputs = 7**

**Output = "DiffuserPlate" Description = "Rectangular Diffuser Plate"**

**Output = "DiffuserBaffle1" Description = "Rectangular Diffuser Baffle 1"**

**Output = "DiffuserProjection1" Description = "Rectangular Diffuser Projection 1"**

**Output = "DiffuserBaffle2" Description = "Rectangular Diffuser Baffle 2"**

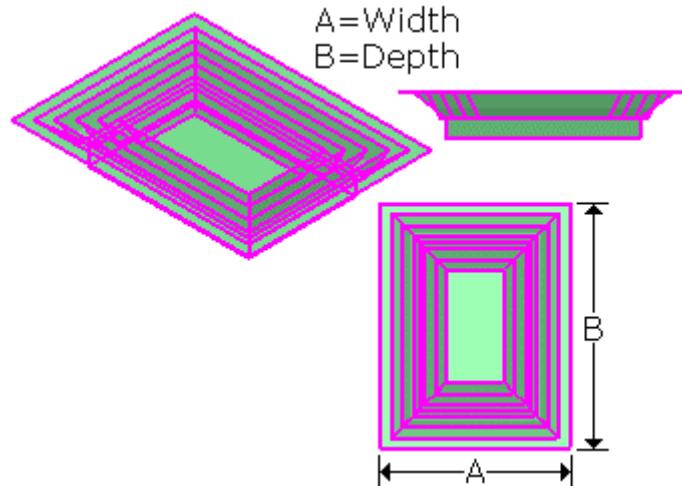
**Output = "DiffuserBaffle3" Description = "Rectangular Diffuser Baffle 3"**

**Output = "DiffuserBaffle4" Description = "Rectangular Diffuser Baffle 4"**

**Output = "DiffuserBaffle5" Description = "Rectangular Diffuser Baffle 5"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHSMRectRegister

### Description:

**Symbol Name:** SP3DHSMRectRegister.HSMRectRegister

**Workbook:** Carnes HVAC Catalog.xls

**Workbook Sheet:** CarnesSMRectDiffuser

**User Class Name:** Carnes HVAC Surface Mounted Rectangular Diffuser

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DHSMRectRegister.HSMRectRegister

### Inputs = 6

**Input and description** = "GrillBladeWidth", ""

**Input and description** = "DamperBladeWidth", ""

**Input and description** = "FrameWidth", ""

**Input and description** = "RegisterThickness", ""

**Input and description** = "RegisterWidth", ""

**Input and description** = "RegisterLength", ""

### Outputs = 1

**Output and description** = "Feature", "Feature"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DHsqrThroatElbow

**Description:** HVAC Square Throat Elbow

**Symbol Name:** SP3DHsqrThroatElbow.HsqrThroatElbow

**Workbook:** Hvac.xls

**Workbook Sheet:** HsqrThroatElbow

**User Class Name:** HVAC Square Throat Elbow

**Part Number:** HVACsqrThroatElbow01

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHsqrThroatElbow.HsqrThroatElbow

**Inputs = 6**

**Input and description** = "Width", "Width",

**Input and description** = "Depth", "Depth",

**Input and description** = "Throat1", "Throat1",

**Input and description** = "Throat2", "Throat2",

**Input and description** = "PlaneOfTurn", "PlaneOfTurn"

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 4**

**Output and description** = "HVACNoz1", "Nozzle 1", 1

**Output and description** = "HVACNoz2", "Nozzle 2", 1

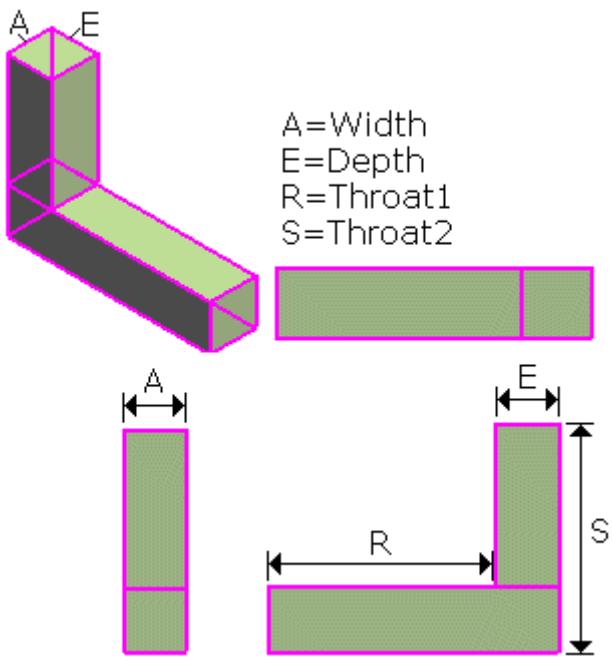
**Output and description** = "HVACNoz1Ins", "Nozzle 1 Insulation"

**Output and description** = "HVACNoz2Ins", "Nozzle 2 Insulation"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Insulation", "Insulation"



# SP3DHVACCoupling

**Description:** HVAC coupling

**Symbol Name:** SP3DHVACCoupling.HVACCoupling

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabHVACCoupling

**User Class Name:** Lindab HVAC Coupling

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACCoupling.HVACCoupling

**Inputs = 3**

**Input = "Width" Description = "Header Width"**

**Input = "Length" Description = "Coupling Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "ObjTaperBody1" Description = "Taper Body 1"**

**Output = "ObjTaperBody2" Description = "Taper Body 2"**

**Output = "HvacNozzle1" Description = "HvacPort1 of Coupling"**

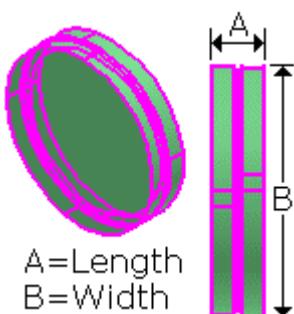
**Output = "HvacNozzle2" Description = "HvacPort2 of Coupling"**

**Output = "HvacCouplingIns" Description = "Hvac Coupling Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DHVACEndCap

**Description:** HVAC end cap

**Symbol Name:** SP3DHVACEndCap.HVACEndCap

**Workbook:** Lindab HVAC Catalog

**Workbook Sheet:** LindabHVACCap

**User Class Name:** Lindab HVAC End Cap

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACEndCap.HVACEndCap

**Inputs = 3**

**Input = "Width" Description = "Cap Width"**

**Input = "Length" Description = "EndCap Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "ObjCapEnd" Description = "Cap End Projection"**

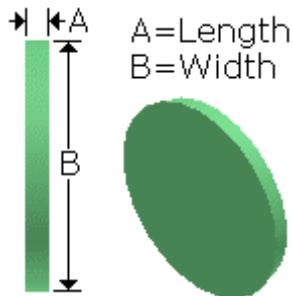
**Output = "HvacNozzle1" Description = "HvacPort1 of EndCap"**

**Output = "HvacEndCapIns" Description = "Hvac EndCap Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHVACFlatOvalRivet

**Description:** HVAC Rivets for Flat Oval Duct

**Symbol Name:** SP3DHVACFlatOvalRivet.CHVACFlatOvRivet

**Workbook:** Hvac.xls

**Workbook Sheet:** FlatOval\_Rivet

**User Class Name:** HVAC Rivets for Flat Oval Duct

**Part Number:** FlatOvalRivet

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACFlatOvalRivet.CHVACFlatOvRivet

**Inputs = 2**

**Input = "Width" Description = "Width"**

**Input = "Depth" Description = "Depth"**

**Outputs = 3**

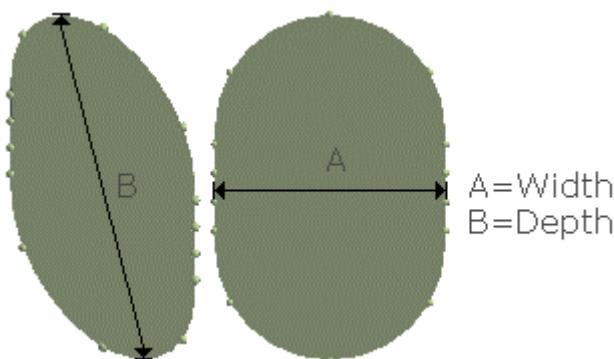
**Output = "Rivet1" Description = "Rivets"**

**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**

**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACFlatOvalWeld

**Description:** HVAC Split Weld for Flat Oval Duct

**Symbol Name:** SP3DHVACFlatOvalWeld.CFlatOvWeld

**Workbook:** Hvac.xls

**Workbook Sheet:** FlatOval\_Weld

**User Class Name:** HVAC Split Weld for Flat Oval Duct

**Part Number:** FlatOvalWeld

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACFlatOvalWeld.CFlatOvWeld

**Inputs = 2**

**Input = "Width" Description = "Width"**

**Input = "Depth" Description = "Depth"**

**Outputs = 6**

**Output = "FrontWeldSeam" Description = "Front Weld Seam"**

**Output = "TopWeldSeam" Description = "Top Weld Seam"**

**Output = "RearWeldSeam" Description = "Rear Weld Seam"**

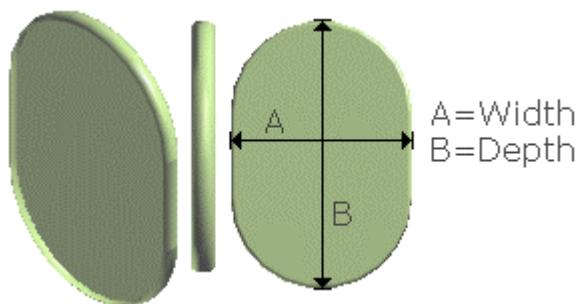
**Output = "BottomWeldSeam" Description = "Bottom Weld Seam"**

**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**

**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACRectRivet

**Description:** HVAC Rivets for Rectangular Duct

**Symbol Name:** SP3DHVACRectRivet.CHVACRectRivet

**Workbook:** Hvac.xls

**Workbook Sheet:** Rect\_Rivet

**User Class Name:** HVAC Rivets for Rectangular Duct

**Part Number:** RectRivet

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACRectRivet.CHVACRectRivet

**Inputs = 2**

**Input = "Width" Description = "Width"**

**Input = "Depth" Description = "Depth"**

**Outputs = 3**

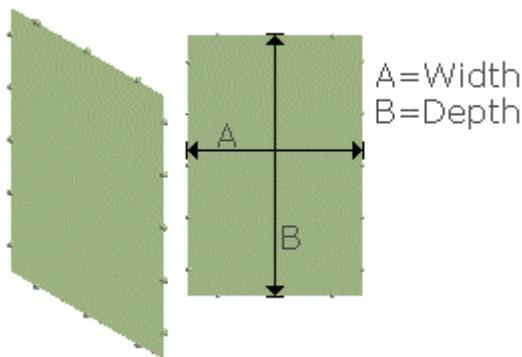
**Output = "Rivet1" Description = "Rivets"**

**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**

**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACRectWeld

**Description:** HVAC Split Weld for Rectangular Duct  
**Symbol Name:** SP3DHVACRectWeld.CHVACRectWeld  
**Workbook:** Hvac.xls  
**Workbook Sheet:** Rect\_Weld  
**User Class Name:** HVAC Split Weld for Rectangular Duct  
**Part Number:** RectWeld  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACRectWeld.CHVACRectWeld

**Inputs = 2**

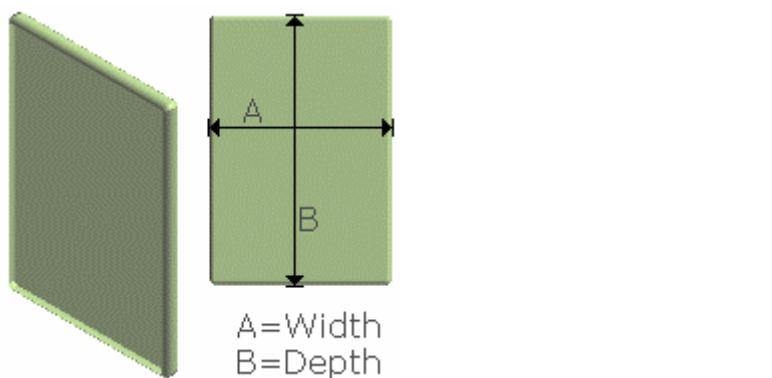
**Input = "Width" Description = "Width"**  
**Input = "Depth" Description = "Depth"**

**Outputs = 10**

**Output = "WeldSeam1" Description = "Weld Seam1"**  
**Output = "WeldSeam2" Description = "Weld Seam2"**  
**Output = "WeldSeam3" Description = "Weld Seam3"**  
**Output = "WeldSeam4" Description = "Weld Seam4"**  
**Output = "WeldSeam5" Description = "Weld Seam5"**  
**Output = "WeldSeam6" Description = "Weld Seam6"**  
**Output = "WeldSeam7" Description = "Weld Seam7"**  
**Output = "WeldSeam8" Description = "Weld Seam8"**  
**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**  
**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACRoundRivet

**Description:** HVAC Rivets for Round Duct

**Symbol Name:** SP3DHVACRoundRivet.CHVACRoundRivet

**Workbook:** Hvac.xls

**Workbook Sheet:** Round\_Rivet

**User Class Name:** HVAC Rivets for Round Duct

**Part Number:** RoundRivet

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACRoundRivet.CHVACRoundRivet

**Inputs = 1**

**Input = "Width" Description = "Width"**

**Outputs = 3**

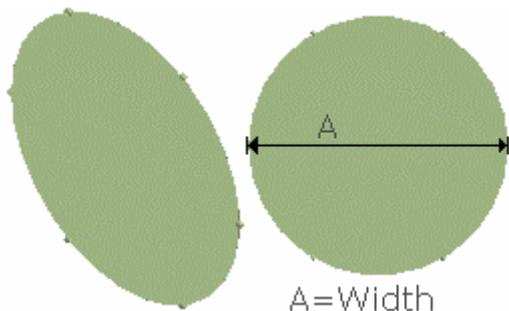
**Output = "Rivet1" Description = "Rivets"**

**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**

**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACRoundWeld

**Description:** HVAC Split Weld for Round Duct

**Symbol Name:** SP3DHVACRoundWeld.CHVACRoundWeld

**Workbook:** Hvac.xls

**Workbook Sheet:** Round\_Weld

**User Class Name:** HVAC Split Weld for Round Duct

**Part Number:** RoundWeld

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACRoundWeld.CHVACRoundWeld

**Inputs = 1**

**Input = "Width" Description = "Width"**

**Outputs = 3**

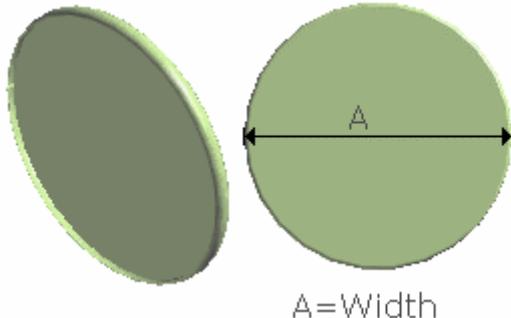
**Output = "WeldSeam" Description = "Weld Seam"**

**Output = "HvacNozzle1" Description = "Hvac Nozzle 1"**

**Output = "HvacNozzle2" Description = "Hvac Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DHVACSSaddle

**Description:** HVAC saddle

**Symbol Name:** SP3DHVACSSaddle.HVACSSaddle

**Workbook:** Lindab HVAC Catalog.xls

**Workbook Sheet:** LindabHVACSMSaddle

**User Class Name:** Lindab HVAC Round Saddle

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHVACSSaddle.HVACSSaddle

**Inputs = 3**

**Input = "Width" Description = " Width"**

**Input = "BWidth" Description = " Width from Branch"**

**Input = "Length" Description = "Branch Length"**

**Outputs = 2**

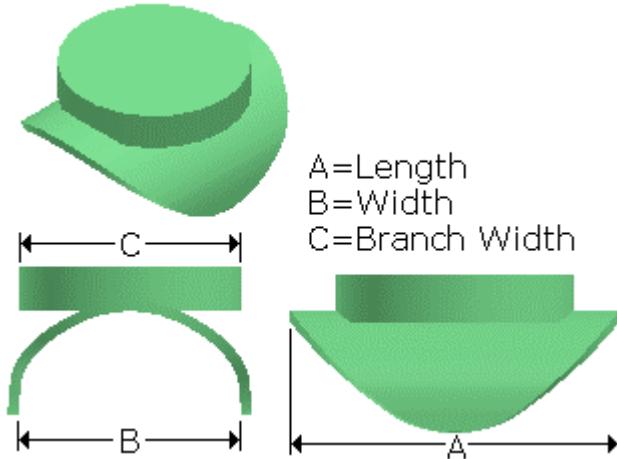
**Output = "Pad" Description = "Reinforcing Pad"**

**Output = "HvacNozzle1" Description = "hvac 1"**

**Output = "HvacNozzle2" Description = "hvac 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHvacSM1PTap

**Description:** HVAC Surface Mounted component with 1 Piping Tap

**Symbol Name:** SP3DHvacSM1PTap.CHvacSM1PTap

**Workbook:** Hvac.xls

**Workbook Sheet:** SM1PipingTap

**User Class Name:** Hvac Surface Mounted component with 1 Piping Tap

**Part Number:** SM1PTapSWhalfin, SM1PTapFThalfin

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHvacSM1PTap.CHvacSM1PTap

**Inputs = 1**

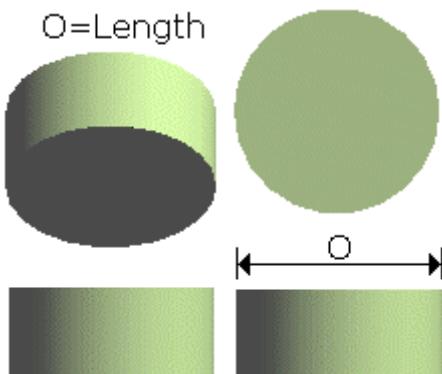
**Input = "Length" Description = "Length"**

**Outputs = 1**

**Output = "PTap1" Description = "Piping Tap 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHvacSMRB

**Description:** HVAC Surface Mounted component with one Rectangular nozzle

**Symbol Name:** SP3DHvacSMRB.CHvacSMRB

**Workbook:** Hvac.xls

**Workbook Sheet:** SMRectangularBranch

**User Class Name:** HVAC Surface Mounted component with one Rectangular nozzle

**Part Number:** SMRectangularBranch1

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHvacSMRB.CHvacSMRB

**Inputs = 2**

**Input = "BranchWidth" Description = "Branch Width"**

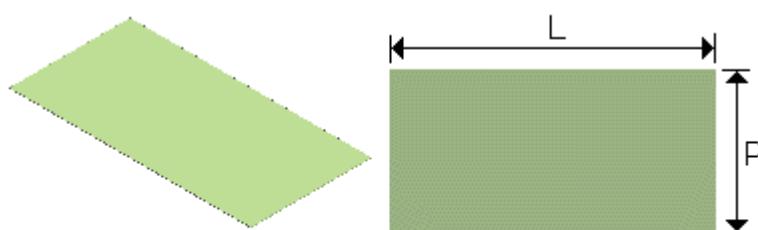
**Input = "BranchDepth" Description = "Branch Depth"**

**Outputs = 1**

**Output = "HvacSMPort" Description = "Hvac SM Port"**

**Aspects = 1**

**Aspect = SimplePhysical**



L=Branch Width

P=Branch Depth

## SP3DHvacSMRoundB

**Description:** HVAC Surface Mounted component with one Round nozzle

**Symbol Name:** SP3DHvacSMRoundB.CHvacSMRoundB

**Workbook:** Hvac.xls

**Workbook Sheet:** SMRoundBranch

**User Class Name:** HVAC Surface Mounted component with one Round nozzle

**Part Number:** SMRoundBranch1

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHvacSMRoundB.CHvacSMRoundB

**Inputs = 1**

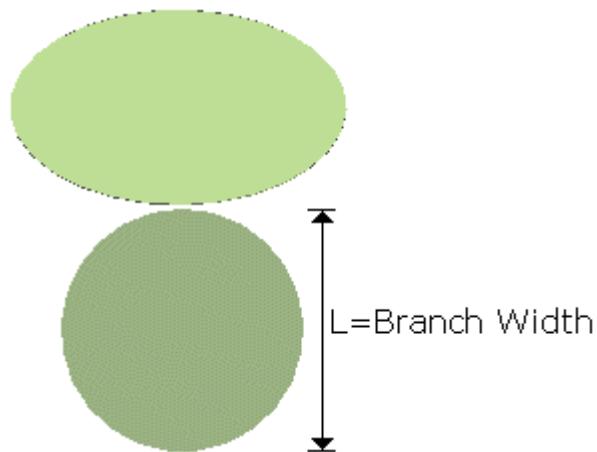
**Input = "BranchWidth" Description = "Branch Width"**

**Outputs = 1**

**Output = "HvacSMPort" Description = "Hvac SM Port"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DHVACSurfMount

**Description:** HVAC Duct Smoke Detector, HVAC Surf Mount Inspection Cover

**Symbol Name:** SP3DHVACSurfMount.Cover

**Workbook:** Hvac.xls

**Workbook Sheet:** DuctSmokeDetector, SurfMountIcover

**User Class Name:** HVAC Duct Smoke Detector, HVAC Surf Mount Inspection Cover

**Part Number:** SL-2000-P, SM-501-N, SM-501-P, RWX-N, Icover250x400, Icover400x600

### Inputs, Outputs, and Aspects:

ProgID: SP3DHVACSurfMount.Cover

Number of Inputs = 8

Input name = "CrossSectionShape"

Input description = "Shape of the CrossSection"

Input name = "Thickness"

Input description = "Thickness of the Flange"

Input name = "cover"

Input description = "Incremental width of the flange"

Input name = "holelength"

Input description = "holelength of the crosssection"

Input name = "holebreadth"

Input description = "holebreadth of the crosssection"

Input name = "covercornerradius"

Input description = "Corner Radius of the crosssection"

Input name = "gripdistance"

Input description = "Height of the cover Handle"

Input name = "handlelength"

Input description = "Length of the Cover Handle"

Number of Outputs = 2

Output name = "Flange"

Output description = "Flange of Hvac Nozzle"

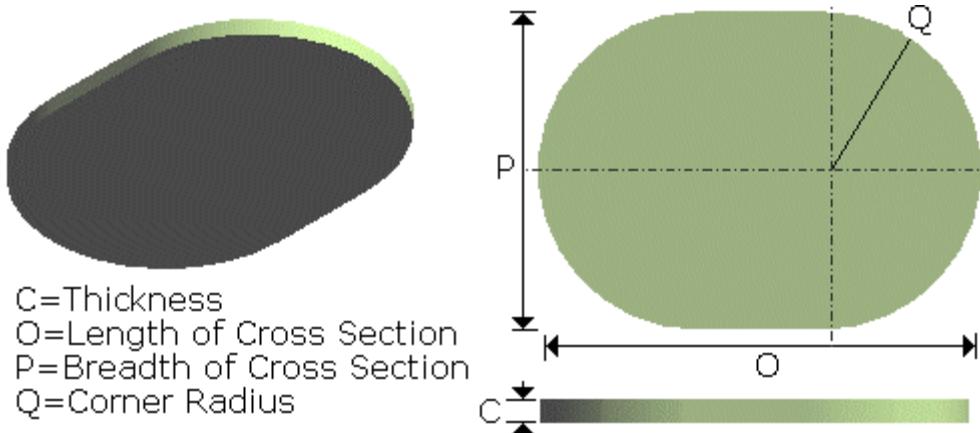
Output name = "Hvac"

Output description = "Hvac of Nozzle"

Number of Aspects = 2

Supported AspectId = Symbolic

Supported AspectId = Detailed



## SP3DHWRLouvres

**Description:** weather resistant louvers

**Symbol Name:** SP3DHWRLouvres.WRLouvres

**Workbook:** HVAC SampleData.xls

**Workbook Sheet:** WeatherResistLouvres

**User Class Name:** HVAC Weather-Resistant Louvres

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHWRLouvres.WRLouvres

**Inputs = 6**

**Input and description =** "Width", ""

**Input and description =** "Depth", ""

**Input and description =** "LouvreLength", ""

**Input and description =** "LouvreDistance", ""

**Input and description =** "LouvreWidth", ""

**Input and description =** "FlangeThickness", ""

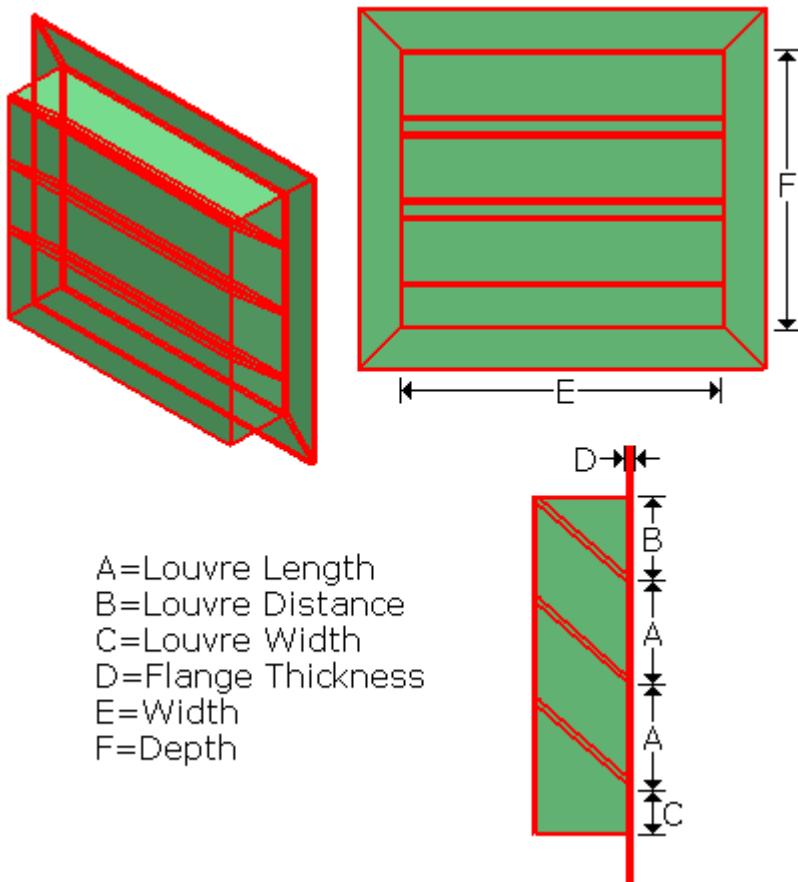
**Outputs = 2**

**Output and description =** "HvacNozzle1", "HvacNozzle1"

**Output and description =** "Feature", "Feature"

**Aspects = 1**

**Aspect =** "SimplePhysical", "Physical"



## SP3DMotorRoundDamper

**Description:** HVAC Motorized Round Damper

**Symbol Name:** SP3DMotorRoundDamper.CMotorRoundDamper

**Workbook:** Hvac.xls

**Workbook Sheet:** MotorDamper

**User Class Name:** HVAC Motorized Round Damper

**Part Number:** MRD-URD-100, MRD-URD-150, MRD-URD-200, MRD-URD-250, MRD-URD-300, MRD-URD-350, MRD-URD-400

### Inputs, Outputs, and Aspects:

ProgID: SP3DMotorRoundDamper.CMotorRoundDamper

Number of Inputs = 4

Input name = "Width"

Input description = "Width of the Rect Duct"

Input name = "DamperLength"

Input description = "DamperLength between ducts"

Input name = "Thickness"

Input description = "Thickness of the Flat Flange of Damper"

Input name = "FlangeWidth"

Input description = "Width of the Flat Flange of Damper"

Number of Outputs = 4

Output name = "Shaft"

Output description = "Shaft of Damper"

Output name = "Motor"

Output description = "Motor of Damper"

Output name = "AirIN"

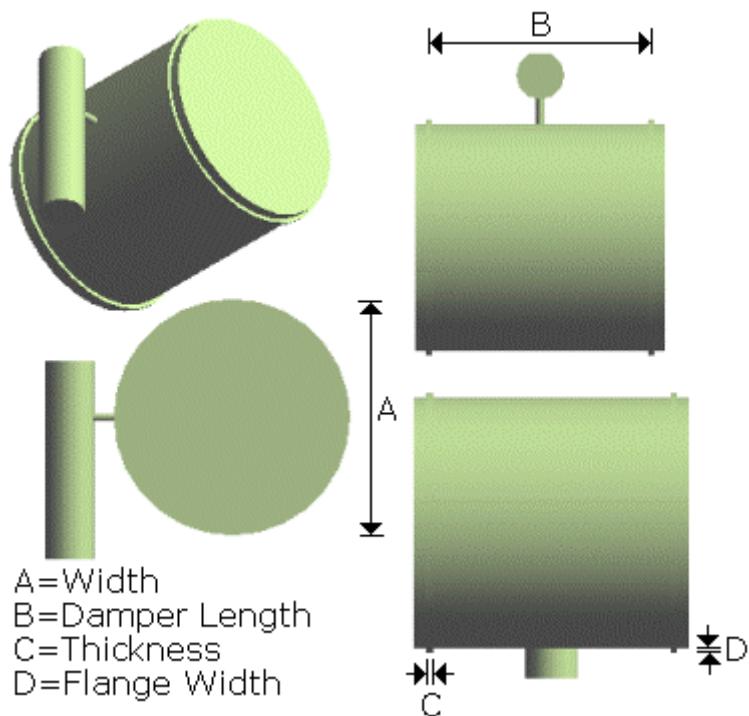
Output description = "AirIN Hvac Port1 of Damper"

Output name = "AirOUT"

Output description = "AirOUT Hvac Port2 of Damper"

Number of Aspects = 1

Supported AspectId = SimplePhysical



## SP3DRFOBellMouth

**Description:** Bell Mouth with Round neck and Flat Oval outlet

**Symbol Name:** SP3DRFOBellMouth

**Workbook:** Hvac.xls

**Workbook Sheet:** BellMouthRFO

**User Class Name:** HVAC RFO Bell Mouth

**Part Number:** RoundxFlatOval Bellmouth 355x1450

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRFOBellMouth.CRFOBellMouth

**Inputs = 4**

**Input = "Width" Description = "Inlet Diameter"**

**Input = "BellMouthOutletWidth" Description = "Bell mouth Outlet Width"**

**Input = "BellMouthOutletDepth" Description = "Bell mouth Outlet Depth"**

**Input = "BellMouthHeight" Description = "Bell mouth Height"**

**Outputs = 5**

**Output = "BellMouthLeft" Description = "Left of Bell Mouth"**

**Output = "BellMouthRight" Description = "Right of Bell Mouth"**

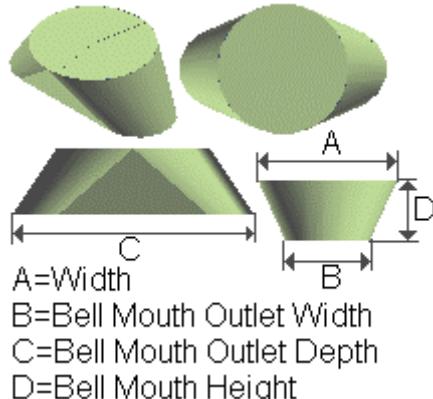
**Output = "BellMouthFrontPlane" Description = "Bell Mouth Front Plane"**

**Output = "BellMouthBackPlane" Description = "Bell Mouth Back Plane"**

**Output = "BellMouthPort" Description = "Bell Mouth Port"**

**Aspects = 1**

**Aspect = SimplePhysical**





# Piping Symbols

The software uses symbols to represent the different piping commodity items in the model. The items are defined on the piping parts catalog sheets. When defining the parts in the sheets, look at the symbol that represents the item to verify the dimension that you are defining is correct. For more information on defining parts, see the "Piping Parts: An Overview" section in the *Piping Reference Data Guide*.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

Piping symbols can be defined in terms of different dimensions. In some cases, a manufacturer specifies the geometry based on face-to-face dimensions, while in other cases, a manufacturer specifies the geometry based on face-to-center dimensions.

In the software, piping symbols are defined based on face-to-center dimensions. The following conventions in the piping catalog hold for piping symbols.

## Bolted and Male Fittings

- If the face-to-face dimension has been specified in the part data, the two face-to-center dimensions are computed as half of the face-to-face dimension.
- If any face-to-center dimension has been specified in the part data, it is assumed that all face-to-center dimensions have been provided, and that no further action is required.

## Female Fittings

- If the face-to-face dimension has been specified in the part data, the two face-to-center dimensions are computed as half of the face-to-face dimension.
- If the seat-to-seat dimension has been specified in the part data, the two face-to-center dimensions are computed as half of the seat-to-seat dimension plus the socket depth or the thread depth for the applicable end.
- If the seat-to-center dimension has been specified in the part data, the two face-to-center dimensions are computed as the seat-to-center dimension plus the socket depth or the thread depth for the applicable end.
- If the port-to-center dimension has been specified in the part data, the two face-to-center dimensions are computed as the port-to-center dimension plus the socket depth or the thread depth minus the socket offset for the applicable end.

## What's New

### Version 2007 Service Pack 2

- The following new symbols have been added: SP3DFlangedElboPipet, SP3DWWaterFilter, SP3DSolenoidActuator, SP3D3WayCheckValve, SP3DOPBevelGear, SP3DOPCylinderActuator, SP3DOPHandWheel, SP3DOPManualHydraulic, SP3DPinchValve, SP3DVentValve, SP3DPipeSleeve, SP3DCylinderValve, SP3DDiaphragmActType1, SP3DDiaphragmActType2, SP3DDiaphragmActType3, SP3DPresReducingValve.
- The SP3DP2WSolenoidValve symbol was modified to be part data basis driven. This modification also changed the number of symbol inputs and outputs.
- The SP3DKnifeGateValve symbol was modified to be part data basis driven. This modification also changed the number of symbol inputs and outputs.
- The SP3DWNFlange symbol was modified to be part data basis driven. This modification also changed the number of symbol outputs.

### Version 2007 Service Pack 1

- The following symbols have been changed: SP3DCap, SP3DReducer, SP3D45LongTangentElbow, SP3D90LongTangentElbow, SP3DOrificeFlange1O.
- The following new symbols have been added: SP3DCSValveOpGear, SP3DCSValveOpHwheel, SP3DCSValveOpWrench, SP3DReducingLateral, SP3DReducingTeeWye, SP3DReducingCoupling, SP3D30LongTangentElbow, SP3D60LongTangentElbow, SP3DLongTangentElbow, SP3DTrueY, SP3DSumpStrainer, SP3DTeeStrainer, SP3DTempBasketStrainer, SP3DTemporaryConeStrainer, SP3DWyeStrainer, SP3DSingleBasketStrainer.
- Fixed dimensions A and F on the preview graphic for SP3DOP\_291.
- Added missing dimension D (Cylinder Diameter) to the preview graphic for SP3DCSPSngBStrainer. (P3 112555)
- The SP3DTee symbol now has 4 inputs instead of 2. The single Face-to-Center dimension has been replaced by Face-to-Center, Face2-to-Center, and Face3-to-Center. (P3 112189)
- The SP3DCoupling symbol now has 4 inputs instead of 2. The single Face-to-Face dimension has been replaced by Face-to-Face, Face-to-Center, and Face1-to-Center. (P3 112189)
- The SP3D45Elbow, SP3D90Elbow, and SP3DGateValveAngleOp symbols have more inputs, outputs, and aspects.

- The SP3DReducingTee and SP3DTee symbols have a new input for the branch angle.

*Version 2007*

- Symbol GSCADButterflyValve has been renamed to SP3DButterflyValveL.
- Symbol GSCADGateValve has been renamed to SP3DGateValveL.
- Symbol GateValveAngleOp has been renamed to SP3DGateValveAngleOp.
- Symbol AngleValve has been renamed to SP3DAngleValveL.
- The graphic preview for SP3DVictaulicClamp has been updated to accurately reflect the symbol.
- The following new symbols have been added: SP3DTechlokClamp, SP3DFlangOlet, SP3D5Elbow, SP3D225DegMiterElbow, SP3D30DegElbow, SP3D30DegMiterElbow, SP3D45DegAngleValve, SP3D45DegMiterElbow, SP3D60DegMiterElbow, SP3D90DegMiterElbow, SP3DRedFillerFlange, SP3DPressureGauge, SP3DPresTransmitter, SP3DTemperatureSwitch, SP3DPressureRegulator, SP3DConservationVent, SP3DBubbleDetector, SP3DMFlowController, SP3DPressureSwitch, SP3DVortexFlowmeter, SP3DShStRotameter, SP3DMagneticFlowMeter, SP3DFlowSwitch, SP3DConductivitySensor, SP3D3WayDiverterVal, SP3DButterflyGOp, SP3DTempContrlValve, SP3DGAngleValveM, SP3DTempTransmitter, SP3DFlowmeter, SP3DPAngPressReliefV, SP3DHoseConnection, SP3DPenetrationSleeve, SP3DAdapterFlange, SP3DRedInstrumentTee, SP3DBasketStrainer2, SP3DClampOnFlowSensor.

# Ball

**Description:**

**Symbol Name:** Ball.CBall

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: Ball.CBall

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorLength" Description = "Handle Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Ball" Description = "body"**

**Output = "Stem" Description = "stem"**

**Output = "Handle" Description = "handle"**

**Output = "InsulatedBody" Description = "Insulated Ball"**

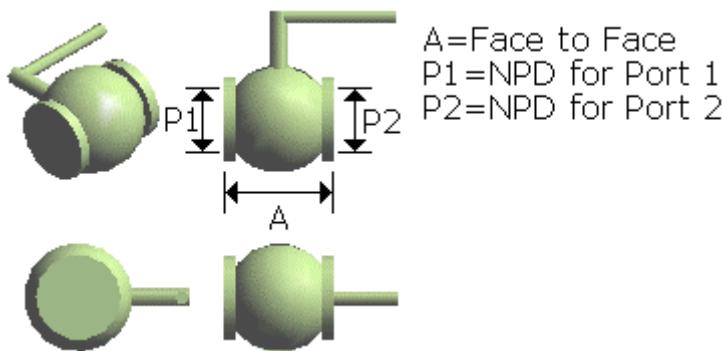
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# ConcentricReducer

**Description:**

**Symbol Name:** SP3DReducer.CConcentric

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DReducer.CConcentric

Number of Inputs = 4

Input name = "FacetoFace"

Input description = "Face To Face"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Input name = "Face1toCenter"

Input description = "Face 1 to Center"

Input name = "Face2toCenter"

Input description = "Face 2 to Center"

Number of Outputs = 4

Output name = "Reducer"

Output description = "Body of Reducer"

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "PNoz1"

Output description = "Nozzle 1"

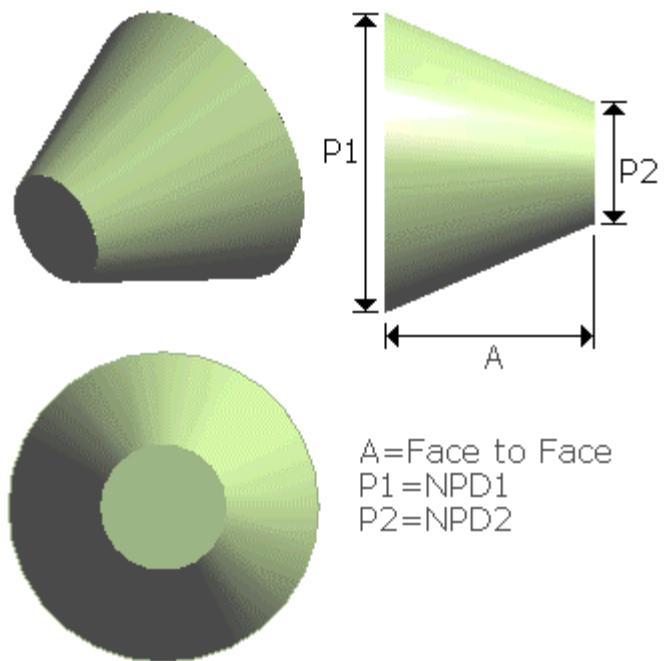
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# EqualTee

**Description:**

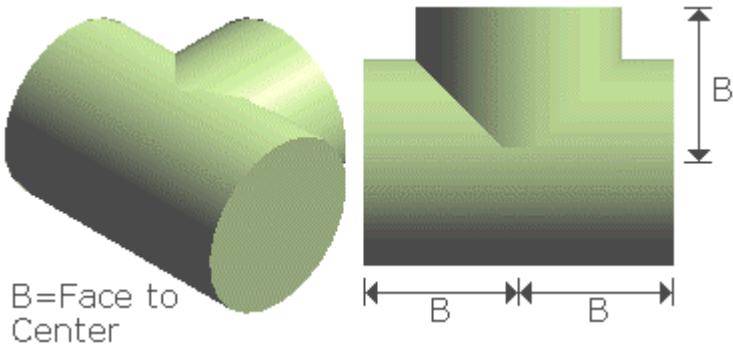
**Symbol Name:**

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**



## SP3D11Elbow

**Description:** 11.25 Degree Elbow

**Symbol Name:** SP3D11Elbow.C11Elbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 11\_25DegElbow

**User Class Name:** 11.25 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D11Elbow.C11Elbow

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face To Center

# SP3D1OrificeFlange

**Description:** Orifice Flange with one Tap. Face to Tap is the position of the tap along the flow centerline measured from the bolted face of the flange. The Tap position along the Y-axis is the tap female generic depth and offset measured from the flange outer radius.

**Symbol Name:** SP3D1OrificeFlange.C1OrificeFlange

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** OrificeFlange

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects**

ProgID: SP3D1OrificeFlange.C1OrificeFlange

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoTap" Description = "Tap to bolted Face of flange"**

**Outputs = 3**

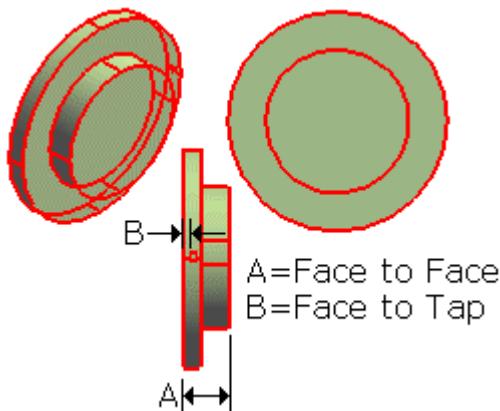
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3, Tap"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3D225DegMiterElbow

**Description:** 22.5 degree miter elbow

**Symbol Name:** SP3D225DegMiterElbow.C225DegMiterElbow

**Workbook:** Sample Data for Mitered Elbows.xls

**Workbook Sheet:** E225MiterNCut

**User Class Name:** 22.5 Degree Miter Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D225DegMiterElbow.C225DegMiterElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "NoOfMiterCuts" Description = "Number of Miter Cuts"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "TangentAtPort1" Description = "Tangent at Port 1"**

**Output = "TangentAtPort2" Description = "Tangent at Port 2"**

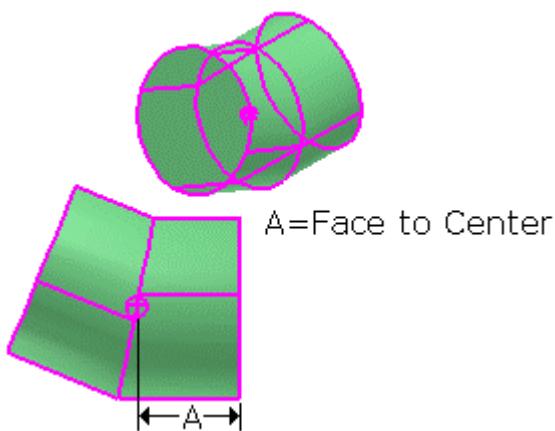
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D22Elbow

**Description:** 22 degree elbow

**Symbol Name:** SP3D22Elbow.C22Elbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 22\_5DegElbow

**User Class Name:** 22.5 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D22Elbow.C22Elbow

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

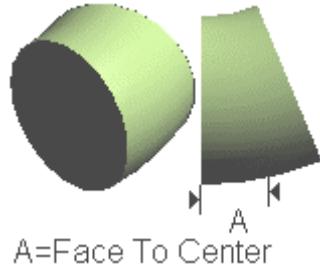
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D30DegElbow

**Description:**

**Symbol Name:** SP3D30DegElbow.C30DegElbow

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30DegElbow.C30DegElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "ElbowRadius" Description = "Elbow Radius"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

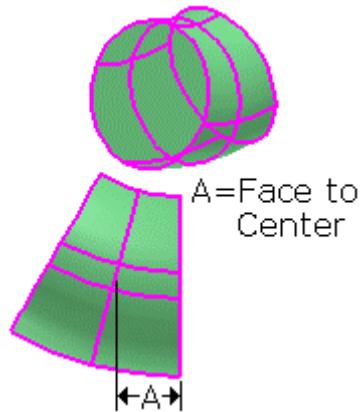
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D30DegMiterElbow

**Description:** 30 degree mitered elbow

**Symbol Name:** SP3D30DegMiterElbow.C30DegMiterElbow

**Workbook:** Sample Data for Mitered Elbows.xls

**Workbook Sheet:** E30MiterNCut

**User Class Name:** 30 Degree Miter Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30DegMiterElbow.C30DegMiterElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "NoOfMiterCuts" Description = "Number of Miter Cuts"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "TangentAtPort1" Description = "Tangent at Port 1"**

**Output = "TangentAtPort2" Description = "Tangent at Port 2"**

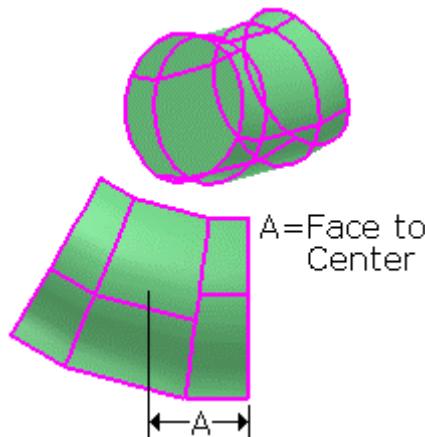
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D30Elbow

**Description:** 30 degree elbow

**Symbol Name:** SP3D30Elbow.C30Elbow

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30Elbow.C30Elbow

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

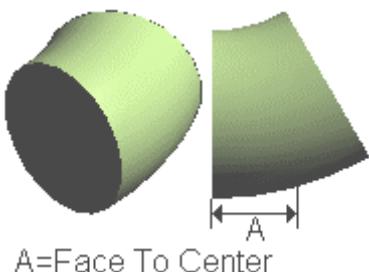
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D30LongTangentElbow

**Description:** 30-degree long tangent elbow

**Symbol Name:** SP3D30LongTangentElbow.C30DegLTElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:**

**User Class Name:** 30 Degree Long Tangent elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D30LongTangentElbow.C30DegLTElbow

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "TangentLength1" Description = "TangentLength 1"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "TangentLength2" Description = "TangentLength 2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "Tangent Length"**

**Input = "BendRadius" Description = "Bend Radius"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Elbow" Description = "Elbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "InsulatedTangent1" Description = "Insulated Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedTangent2" Description = "Insulated Tangent at Port 2"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

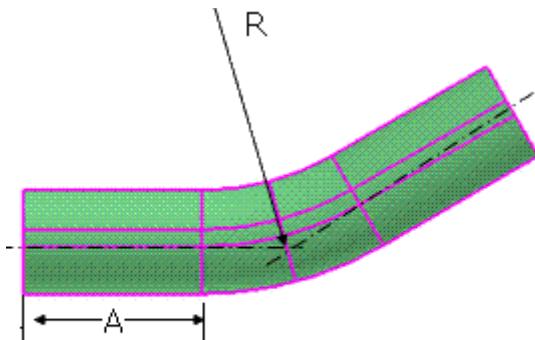
**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

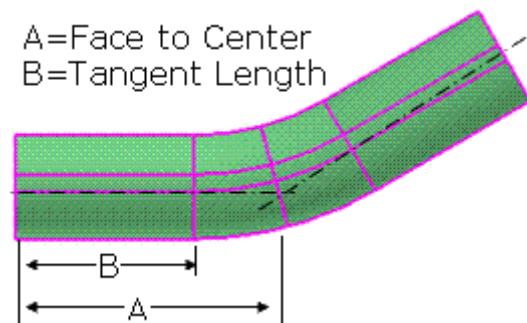
Specified by Bend Radius and Tangent



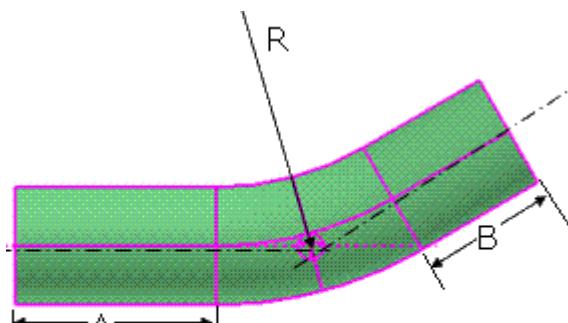
$A = \text{Tangent Length}$

$R = \text{Bend Radius}$

Specified by Face-to-Center and Tangent



Specified by Bend Radius, Tangent 1, and Tangent 2

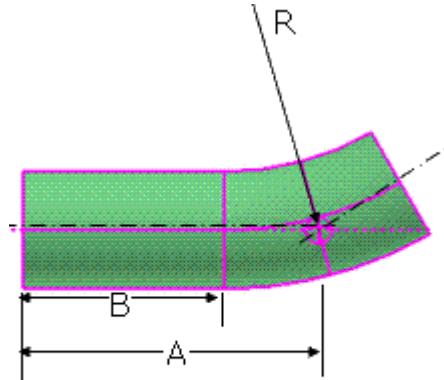


$A = \text{Tangent Length 1}$

$B = \text{Tangent Length 2}$

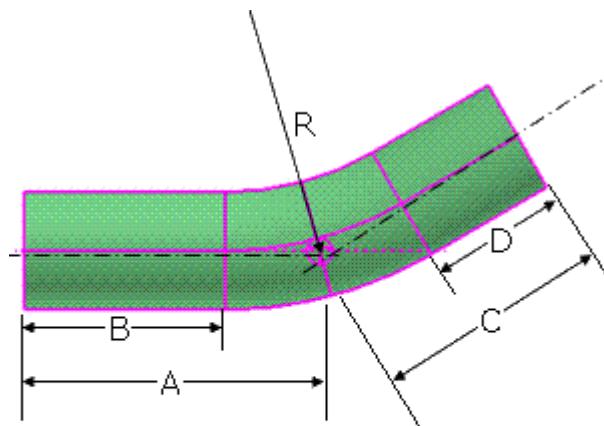
$R = \text{Bend Radius}$

Specified by Face-to-Center 1, Tangent 1, and Bend Radius



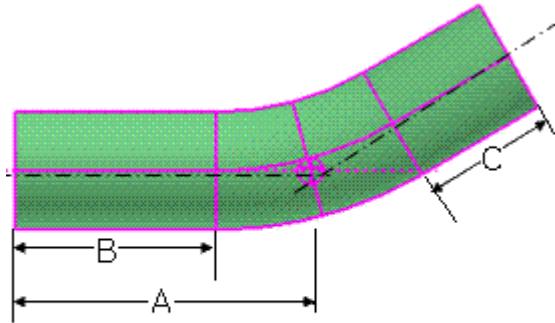
A=Face 1 to Center  
B=Tangent Length 1  
R=Bend Radius

Specified by Face-to-Center 1, Face-to-Center 2, Tangent 1, Tangent 2, and Bend Radius



A=Face 1 to Center  
B=Tangent Length 1  
C=Face 2 to Center  
D=Tangent Length 2  
R=Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Tangent 2



A=Face 1 to Center  
B=Tangent Length 1  
C=Tangent Length 2

# SP3D3OP1

**Description:**

**Symbol Name:** SP3D3OP1.C3OP1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 3OP1

**User Class Name:** Orifice Plate - 3OP1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3OP1.C3OP1

**Inputs = 23**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 4**

**Output = "PNoz1" Description = "Nozzle 1"**

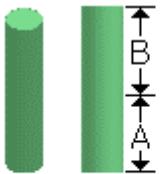
**Output = "PNoz2" Description = "Nozzle 2"**

**Output** = "InstrumentBody"   **Description** = "Cylindrical Body of Instrument"  
**Output** = "InstrumentBodyIns"   **Description** = "InstrumentBodyIns"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



A=Face 1 to Center

B=Face 2 to Center

# SP3D3WayBall

**Description:** 3-way ball valve

**Symbol Name:** SP3D3WayBall.C3WayBall

**Workbook:** Instrument Data.xls

**Workbook Sheet:** BA3W, MSCBA3W

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayBall.C3WayBall

ProgID SP3d3WayBall.C3wayBall (GSCAD3WayBall.C3WayBall)

Number of Inputs = 4

Input name = "FacetoCenter"

Input description = "Face to Center"

Input name = "OperatorHeight"

Input description = "Height of Handle"

Input name = "B"

Input description = "Diameter of Body"

Input name = "OperatorLength"

Input description = "Length of Handle"

Number of Outputs = 7

Output name = "Body"

Output description = "Body of valve"

Output name = "InOutlet"

Output description = "Inlet, Outlet of valve"

Output name = "3rdWay"

Output description = "3-Way of valve"

Output name = "Stem"

Output description = "Stem of valve"

Output name = "Handle1"

Output description = "Handle 1(Long) of valve"

Output name = "Handle2"

Output description = "Handle 2(Short) of valve"

Output name = "Port1"

Output description = "Nozzle 1"

Output name = "Port2"

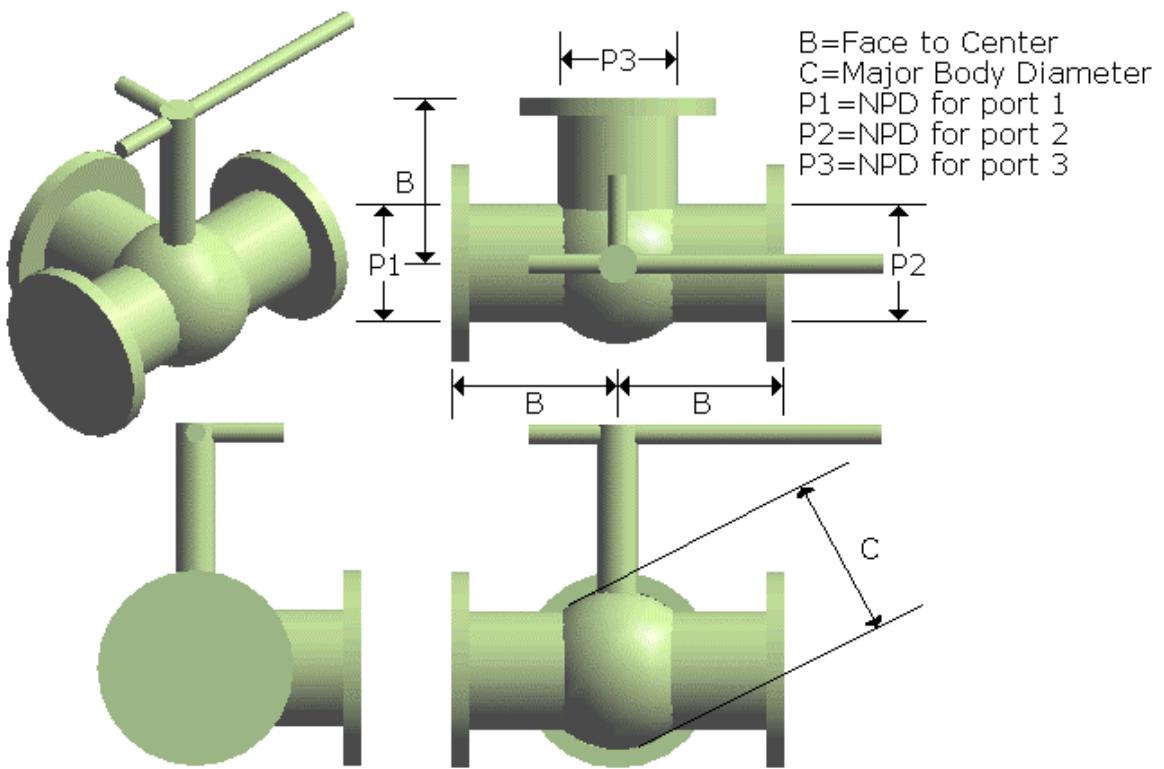
Output description = "Nozzle 2"

Output name = "Port3"

Output description = "Nozzle 3"

Number of Aspects = 1

Supported AspectId = SimplePhysical



# SP3D3WayBallValve

**Description:** 3-way ball valve

**Symbol Name:** SP3D3WayBallValve.C3WayBallValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 3WayBallValve

**User Class Name:** 3-Way Ball Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayBallValve.C3WayBallValve

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 10**

**Output = "BodyBall" Description = "Ball of Valve Body"**

**Output = "BodyCone1" Description = "Cone Port1 of Body"**

**Output = "BodyCone2" Description = "Cone Port2 of Body"**

**Output = "BodyCone3" Description = "Cone Port3 of Body"**

**Output = "InsulatedCylinder1" Description = "Insulation for Cone1, Ball and Cone2"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cone3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

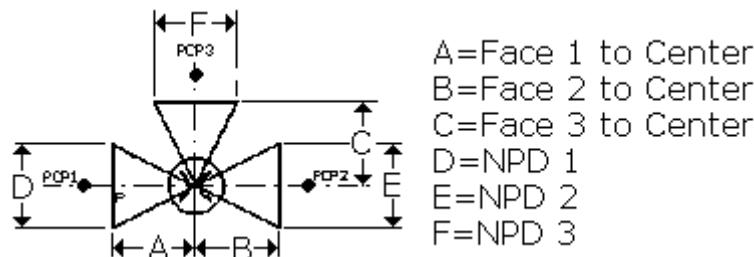
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D3WayCheckValve

**Description:**

**Symbol Name:** SP3D3WayCheckValve.C3WayCheckValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayCheckValve.C3WayCheckValve

**Inputs = 5**

**Input** = "FacetoInletPort" **Description** = "Face 3 to Inlet Port"

**Input** = "PortSeparation" **Description** = "Port Separation"

**Input** = "Angle" **Description** = "Angle"

**Input** = "ValveWidth" 'Optional input **Description** = "Valve Width"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

**Outputs = 13**

**Output** = "BodyLegPort1Side" **Description** = "Body of Leg Port2 Side (joins port1 to port3)"

**Output** = "BodyLegPort2Side" **Description** = "Body of Leg Port2 Side (joins port2 to port3)"

**Output** = "Triangularsurfaces" **Description** = "Triangular surfaces on either sides of the valve"

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output** = "PNoz2" **Description** = "Nozzle 2"

**Output** = "PNoz3" **Description** = "Nozzle 3"

**Output** = "InsBodyLegPort1Side" **Description** = "Insulated Body of Leg Port2 Side (joins port1 to port3)"

**Output** = "InsBodyLegPort2Side" **Description** = "Insulated Body of Leg Port2 Side (joins port2 to port3)"

**Output** = "InsTriangularsurfaces" **Description** = "Insulated Triangular surfaces on either sides of the valve"

**Output** = "InsValveInletAdapter1" **Description** = "Insulated Valve Inlet Adapter at Port 1"

**Output** = "InsValveInletAdapter2" **Description** = "Valve Inlet Adapter at Port 2"

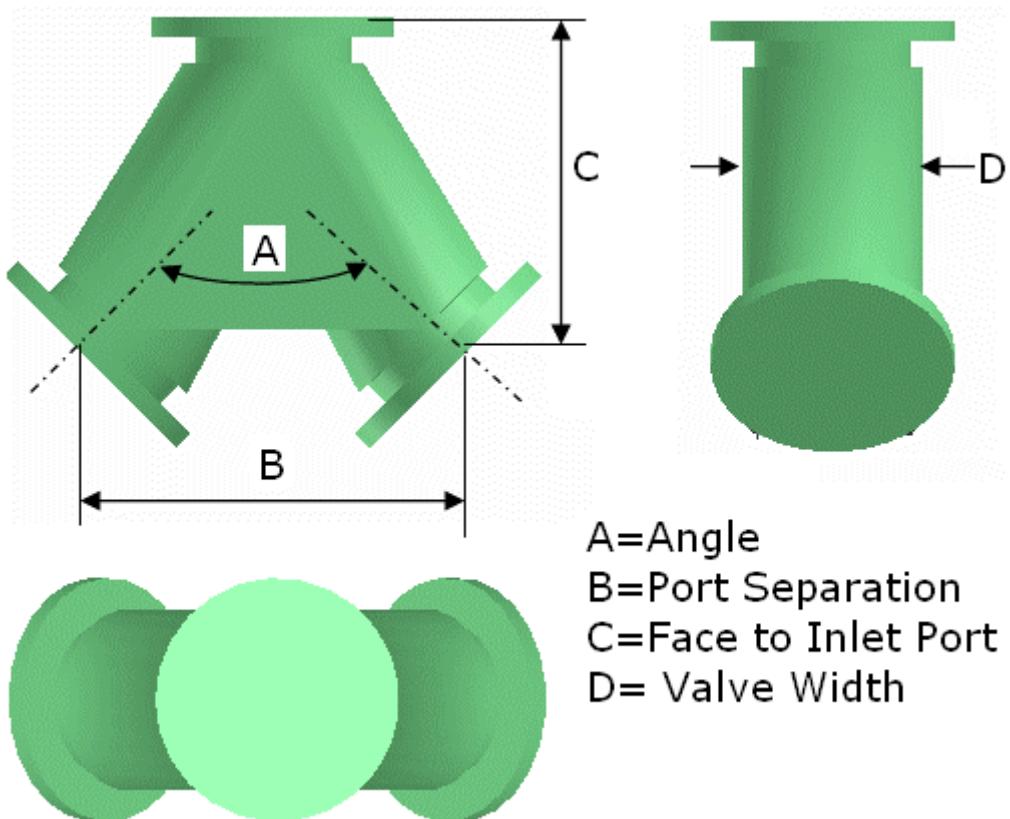
**Output** = "InsValveInletAdapter3" **Description** = "Insulated Valve Inlet Adapter at Port 3"

**Output** = "InsFlangePort4" **Description** = "Insulated Flange at Port 4"

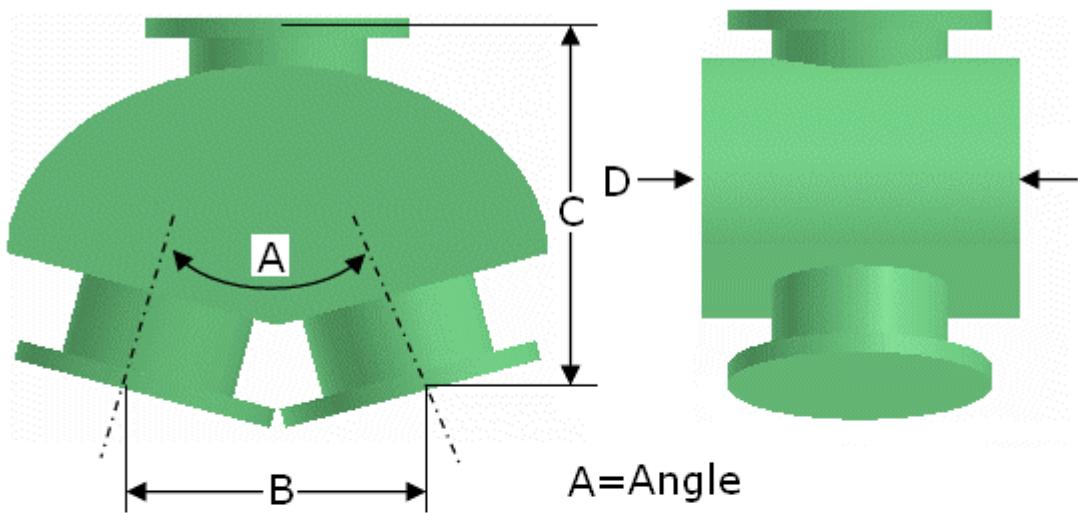
**Aspects = 2**

**Aspect** = SimplePhysical

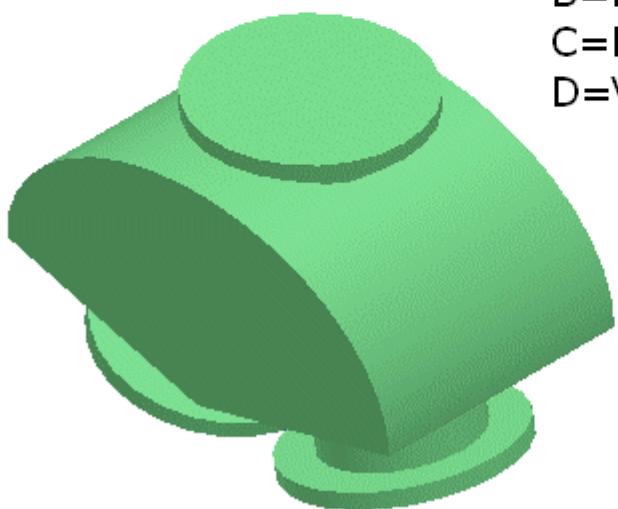
**Aspect** = Insulation



**Part Design Basis 270**



A=Angle  
B=Port Separation  
C=Face to Inlet Port  
D=Valve Width



# SP3D3WayControlValve

**Description:** 3-way control valve

**Symbol Name:** SP3D3WayControlValve.C3WayControlValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayControlValve.C3WayControlValve

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "Angle" Description = "Angle from positive X"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 13**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "BodyCone3" Description = "Body Cone3"**

**Output = "InsulatedCone1" Description = "Insulation Cone1"**

**Output = "InsulatedPort1" Description = "Insulation Port1"**

**Output = "InsulatedCone2" Description = "Insulation Cone2"**

**Output = "InsulatedPort2" Description = "Insulation Port2"**

**Output = "InsulatedCone3" Description = "Insulation Cone3"**

**Output = "InsulatedPort3" Description = "Insulation Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

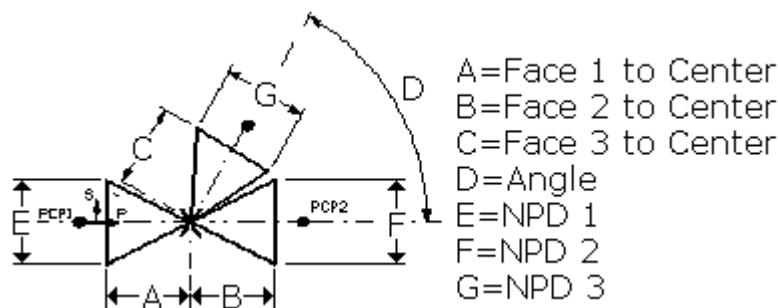
**Output = "PNoz3" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D3WayDiverterVal

**Description:** 3-way diverter valve

**Symbol Name:** SP3D3WayDiverterVal.C3WayDiverterValve

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** 3WayDiaDiv

**User Class Name:** 3-Way Diverter Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayDiverterVal.C3WayDiverterValve

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoCenter" Description = "Height of Handle"**

**Input = "InstrumentHeight" Description = "Diameter of Body"**

**Outputs = 10**

**Output = "Body" Description = "Body of valve"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Cylinder2" Description = "Cylinder 2"**

**Output = "Flange1" Description = "Flange1"**

**Output = "Flange2" Description = "Flange 2"**

**Output = "Cone" Description = "Cone"**

**Output = "Port1" Description = "Nozzle 1"**

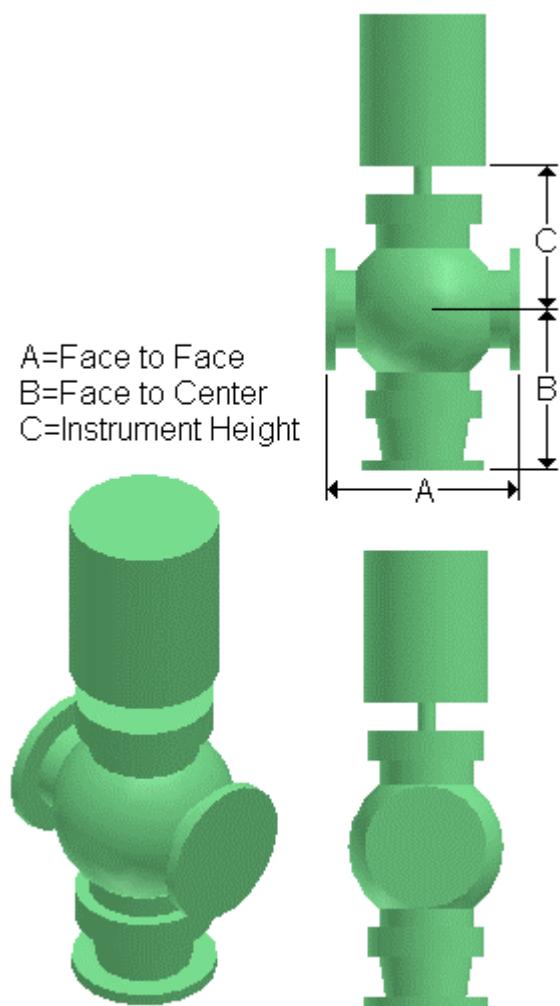
**Output = "Port2" Description = "Nozzle 2"**

**Output = "Port3" Description = "Nozzle 3"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3D3WayGlobeValve

**Description:** 3-way globe valve

**Symbol Name:** SP3D3WayGlobeValve.C3WayGlobeValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D3WayGlobeValve.C3WayGlobeValve

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 10**

**Output = "InsHorBody" Description = "Insulation for Valve Body - Horizontal"**

**Output = "InsVertBody" Description = "Insulation for Valve Body - Vertical"**

**Output = "Ellipsoid" Description = "Ellipsoid"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "BodyCone3" Description = "Cone - Port3 Side"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

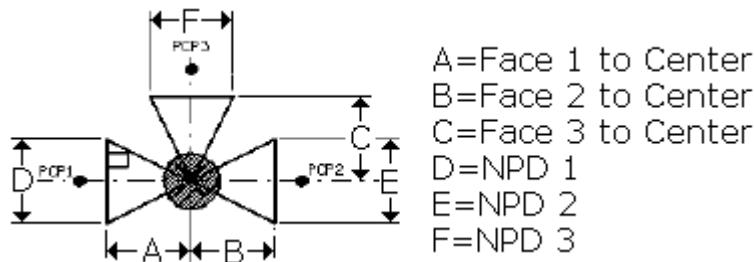
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D3WayPlugValve

## Description:

**Symbol Name:** SP3D3WayPlugValve.C3WayPlugValve

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3D3WayPlugValve.C3WayPlugValve

### Inputs = 5

**Input = "Face1toCenter" Description = "Face to Face"**

**Input = "Face2toCenter" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

### Outputs = 11

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "TopCone" Description = "Top Cone"**

**Output = "InsulCylinder1" Description = "Insul Cylinder1"**

**Output = "InsulCylinder2" Description = "Insul Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

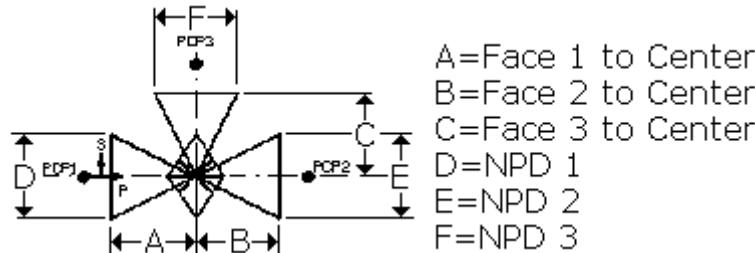
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "ValveOperator" Description = "Valve Operator"**

### Aspects = 2

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D45DegAngleValve

**Description:** 45 degree angle valve

**Symbol Name:** SP3D45DegAngleValve.C45DegAngleValve

**Workbook:** Sample Data for 45 Degree Angle Valve.xls

**Workbook Sheet:** AngleValve45Deg

**User Class Name:** 45 Degree Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45DegAngleValve.C45DegAngleValve

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "BodyCone1" Description = "Cone Port1 of Body"**

**Output = "BodyCone2" Description = "Cone Port2 of Body"**

**Output = "InsulatedCylinder1" Description = "Insulation for Cylinder1"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

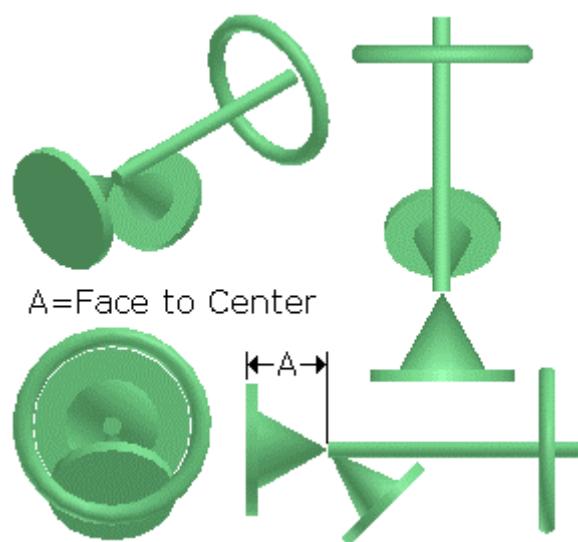
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D45DegMiterElbow

**Description:** 45 degree mitered elbow

**Symbol Name:** SP3D45DegMiterElbow.C45DegMiterElbow

**Workbook:** Sample Data for Mitered Elbows.xls

**Workbook Sheet:** 45Miter

**User Class Name:** 45 Degree Miter Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45DegMiterElbow.C45DegMiterElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "NoOfMiterCuts" Description = "Number of Miter Cuts"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "TangentAtPort1" Description = "Tangent at Port 1"**

**Output = "TangentAtPort2" Description = "Tangent at Port 2"**

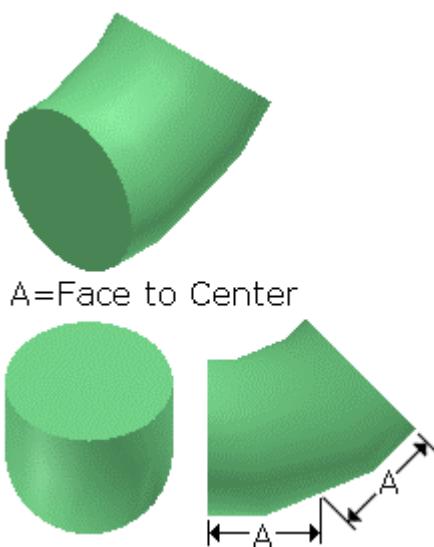
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D45Elbow

**Description:** 45 degree elbow flanged ends

**Symbol Name:** SP3D45Elbow.C45Elbow

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls; 1S6470 Catalog.xls

**Workbook Sheet:** 45DegElbow; E45TC; VE45

**User Class Name:** 45 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45Elbow.C45Elbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "ElbowRadius" Description = "Elbow Radius"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

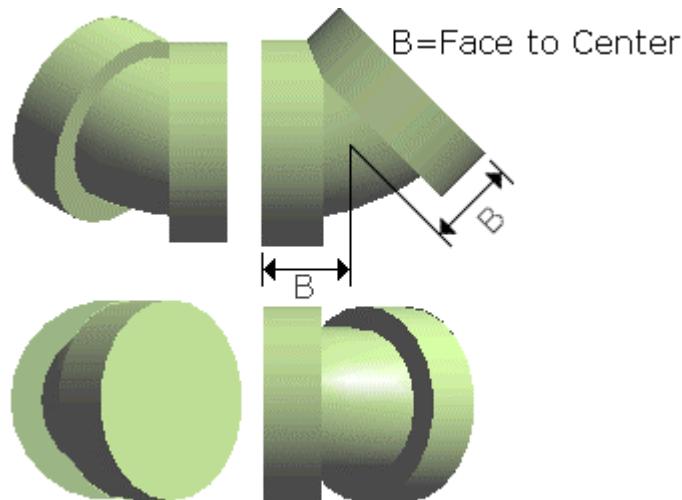
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D45LongTangentElbow

**Description:** 45 degree long tangent elbow

**Symbol Name:** SP3D45LongTangentElbow.C45LTElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 45DegLTElbow, 45DegStreetElbow, 45DegUnionElbow

**User Class Name:** 45 Degree Long Tangent elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45LongTangentElbow.C45LTElbow

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "TangentLength1" Description = "TangentLength 1"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "TangentLength2" Description = "TangentLength 2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "Tangent Length"**

**Input = "BendRadius" Description = "Bend Radius"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulatedTangent1" Description = "Insulated Tangent At Port1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedTangent2" Description = "Insulated Tangent At Port2"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "Elbow" Description = "Elbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

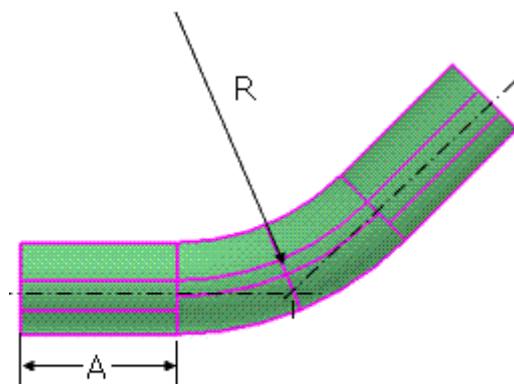
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

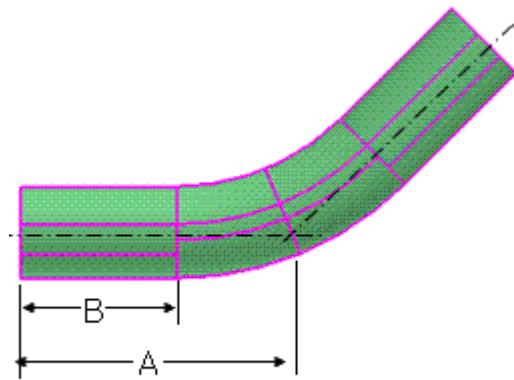
**Aspect = Insulation**

Specified by Bend Radius and Tangent



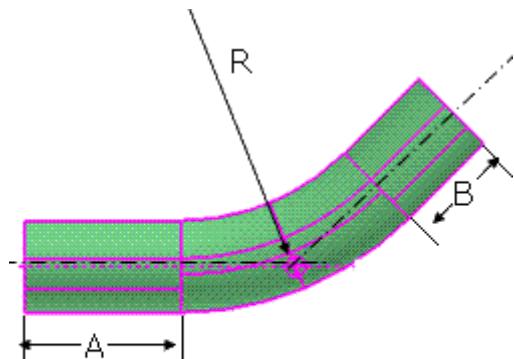
A = Tangent Length  
R = Bend Radius

Specified by Face-to-Center and Tangent



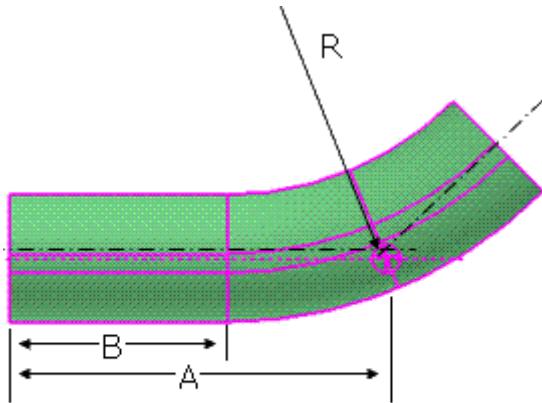
A = Face to Center  
B = Tangent Length

Specified by Bend Radius, Tangent 1, and Tangent 2



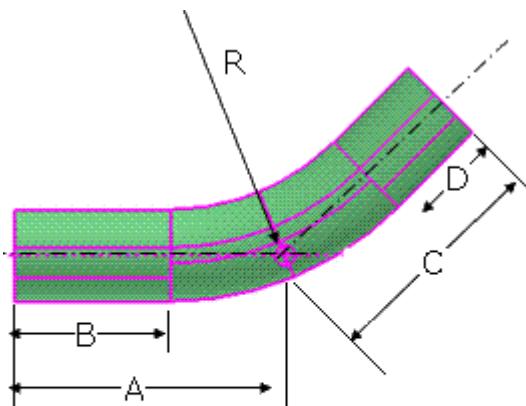
A = Tangent Length 1  
B = Tangent Length 2  
R = Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Bend Radius



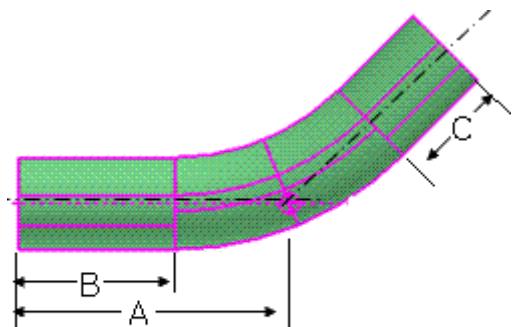
A=Face 1 to Center  
B=Tangent Length 1  
R=Bend Radius

Specified by Face-to-Center 1, Face-to-Center 2, Tangent 1, Tangent 2, and Bend Radius



A=Face 1 to Center  
B=Tangent Length 1  
C=Face 2 to Center  
D=Tangent Length 2  
R=Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Tangent 2



A=Face 1 to Center  
B=Tangent Length 1  
C=Tangent Length 2

## SP3D45TrimElbow

**Description:** 45 degree trim elbow

**Symbol Name:** SP3D45TrimElbow.C45TrimElbow

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls

**Workbook Sheet:** 45Deg3DElbow, 45DegLRElbow; E45LRRJ

**User Class Name:** 45 Degree 3D Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45TrimElbow.C45TrimElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Angle" Description = "Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

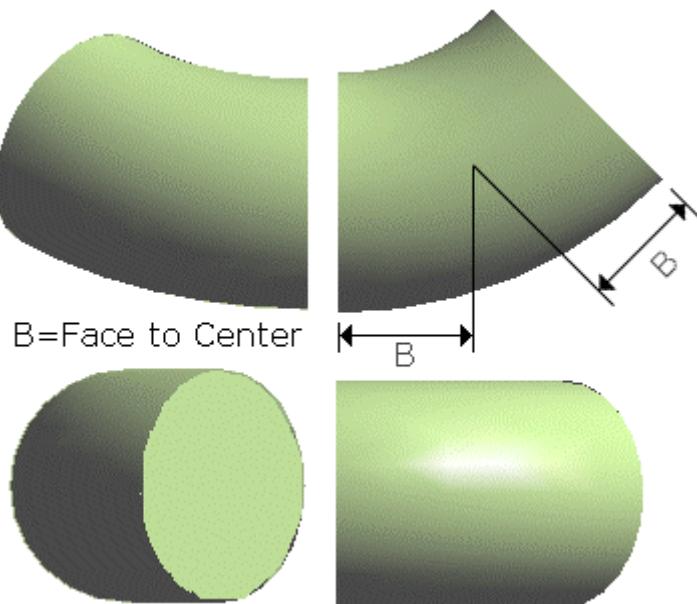
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D45UnionElbow

**Description:** 45 degree union elbow

**Symbol Name:** SP3D45UnionElbow.C45UnionElbow

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D45UnionElbow.C45UnionElbow

**Inputs = 5**

**Input and description** = "Face1toCenter", "Face1toCenter E", 0.

**Input and description** = "Face2toCenter", "Face2toCenter F", 0

**Input and description** = "UnionDiameter", "UnionDiameter J",

**Input and description** = "TangentLength", "TangentLength K", 0.0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 12**

**Output and description** = "InsulatedTangent1", "Insulated Tangent At Port1", 32

**Output and description** = "InsulatedUnion1", "Insulated Union At Port1", 32

**Output and description** = "InsulatedBody", "Insulated Body", 32

**Output and description** = "InsulatedTangent2", "Insulated Tangent At Port2", 32

**Output and description** = "InsulatedUnion2", "Insulated Union At Port2", 32

**Output and description** = "InsulatedPort1", "Insulated Port1", 32

**Output and description** = "InsulatedPort2", "Insulated Port2", 32

**Output and description** = "Union1", "Union At Port1", 1

**Output and description** = "Elbow", "Elbow", 1

**Output and description** = "Union2", "Union At Port2", 1

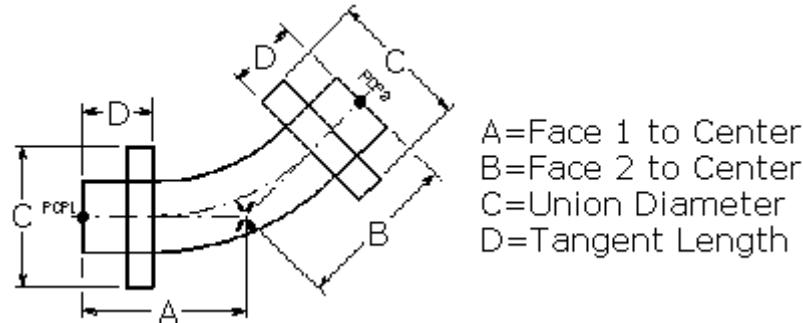
**Output and description** = "PipingNoz1", "Nozzle 1", 1

**Output and description** = "PipingNoz2", "Nozzle 2", 1

**Aspects = 2**

**Aspect** = "Insulation", "Insulation", 32

**Aspect** = "SimplePhysical", "SimplePhysical", 1



# SP3D4WayInstRootVal

**Description:**

**Symbol Name:** SP3D4WayInstRootVal.C4WayInstRootVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D4WayInstRootVal.C4WayInstRootVal

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "CentertoTap" Description = "CentertoTap"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 9**

**Output = "BodyCylinF2C" Description = "BodyCylinF2C"**

**Output = "BodyCylinF1CIns" Description = "BodyCylinF1CIns"**

**Output = "BodyCylinF2CIns" Description = "BodyCylinF2CIns"**

**Output = "Nozzle3Ins" Description = "Nozzle3Ins"**

**Output = "Nozzle4Ins" Description = "Nozzle4Ins"**

**Output = "Nozzle1withLen" Description = "Nozzle1withLen"**

**Output = "PNoz2" Description = "PNoz2"**

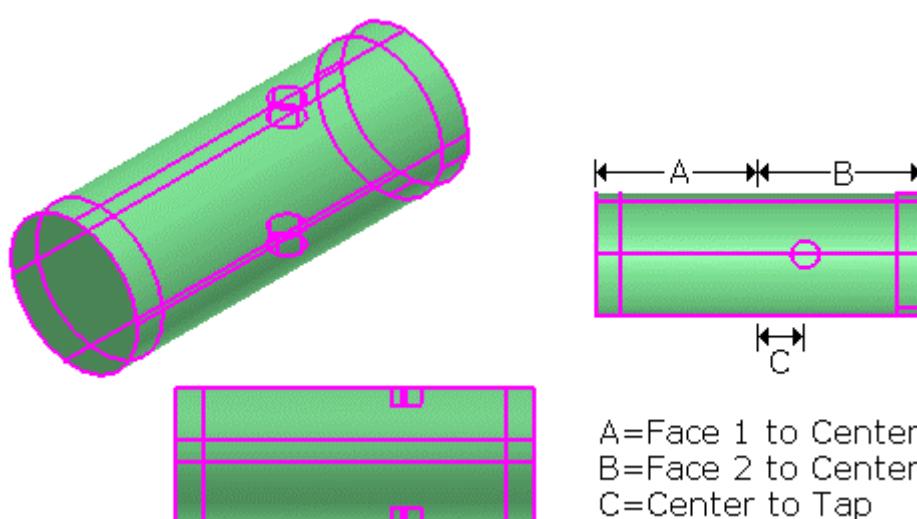
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

C=Center to Tap

# SP3D4WayPlugValve

**Description:** 4-way plug valve

**Symbol Name:** SP3D4WayPlugValve.C4WayPlugValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D4WayPlugValve.C4WayPlugValve

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face to Face"**

**Input = "Face2toCenter" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face to Face"**

**Input = "Face4toCenter" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 13**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "TopCone" Description = "Top Cone"**

**Output = "BottomCone" Description = "Bottom Cone"**

**Output = "InsulCylinder1" Description = "Insul Cylinder1"**

**Output = "InsulCylinder2" Description = "Insul Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

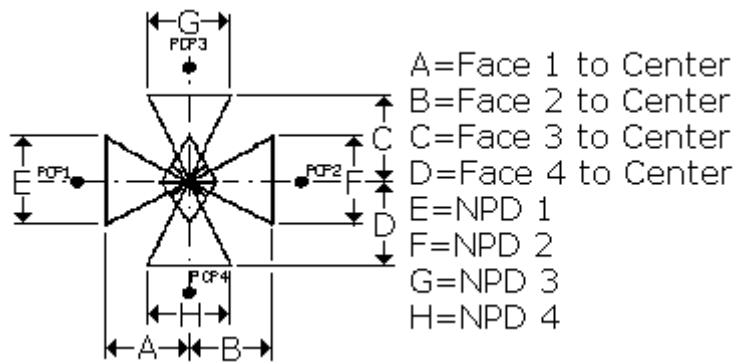
**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D5Elbow

**Description:** 5 degree elbow

**Symbol Name:** SP3D5Elbow.C5Elbow

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D5Elbow.C5Elbow

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D60DegMiterElbow

**Description:** 60 degree miter elbow

**Symbol Name:** SP3D60DegMiterElbow.C60DegMiterElbow

**Workbook:** Sample Data for Mitered Elbows.xls

**Workbook Sheet:** E60MiterNCut

**User Class Name:** 60 Degree Miter Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60DegMiterElbow.C60DegMiterElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "NoOfMiterCuts" Description = "Number of Miter Cuts"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "TangentAtPort1" Description = "Tangent at Port 1"**

**Output = "TangentAtPort2" Description = "Tangent at Port 2"**

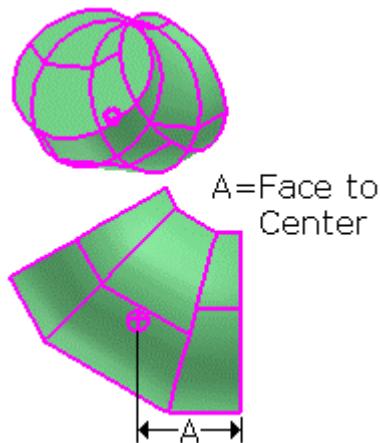
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D60Elbow

**Description:** 60 degree elbow

**Symbol Name:** SP3D60Elbow.C60Elbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 60DegElbow

**User Class Name:** 60 Degree Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60Elbow.C60Elbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "ElbowRadius" Description = "Elbow Radius"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

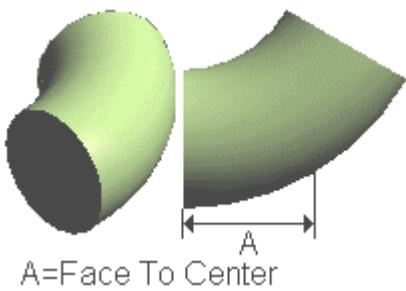
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D60LongTangentElbow

**Description:** 60-degree long tangent elbow

**Symbol Name:** SP3D60LongTangentElbow.C60DegLTElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:**

**User Class Name:** 60 Degree Long Tangent Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D60LongTangentElbow.C60DegLTElbow

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "TangentLength1" Description = "TangentLength 1"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "TangentLength2" Description = "TangentLength 2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "Tangent Length"**

**Input = "BendRadius" Description = "Bend Radius"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Elbow" Description = "Elbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "InsulatedTangent1" Description = "Insulated Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedTangent2" Description = "Insulated Tangent at Port 2"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

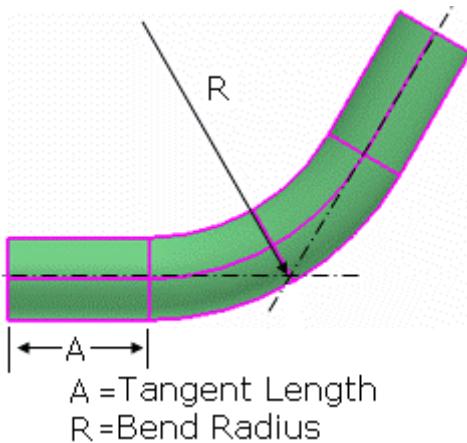
**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Aspects = 2**

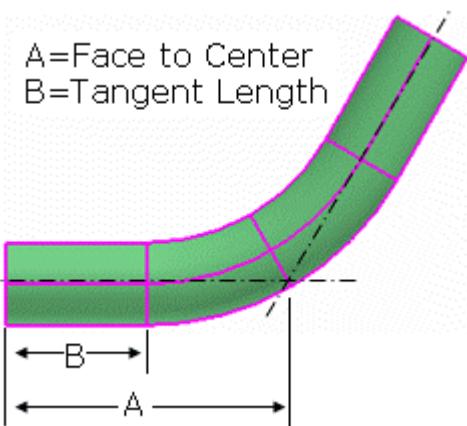
**Aspect = SimplePhysical**

**Aspect = Insulation**

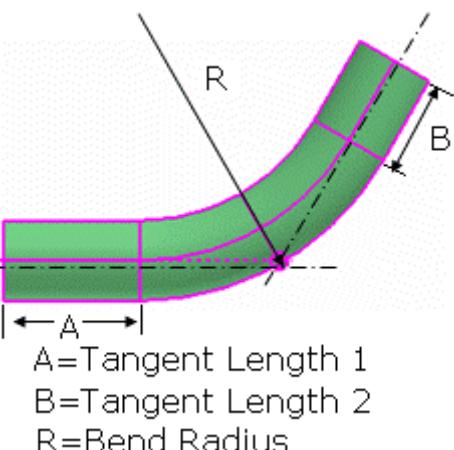
**Specified by Bend Radius and Tangent**



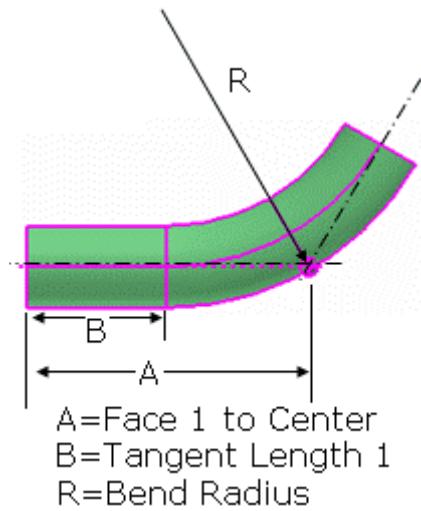
**Specified by Face-to-Center and Tangent**



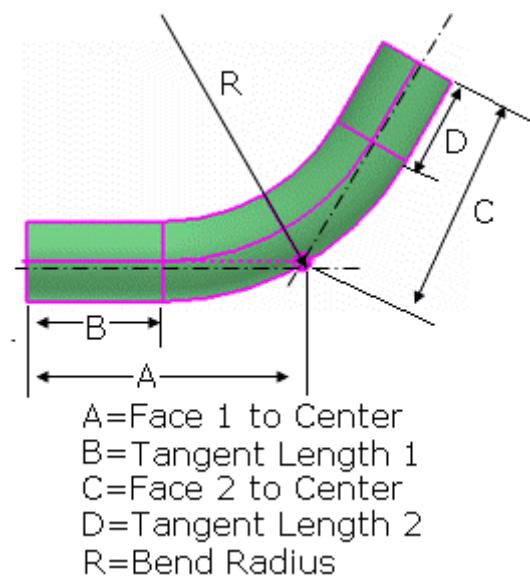
**Specified by Bend Radius, Tangent 1, and Tangent 2**



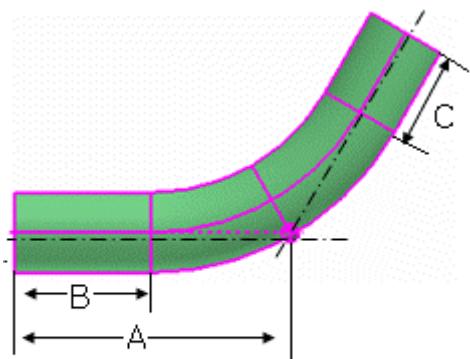
**Specified by Face-to-Center 1, Tangent 1, and Bend Radius**



**Specified by Face-to-Center 1, Face-to-Center 2, Tangent 1, Tangent 2, and Bend Radius**



**Specified by Face-to-Center 1, Tangent 1, and Tangent 2**



A=Face 1 to Center  
B=Tangent Length 1  
C=Tangent Length 2

# SP3D90DegMiterElbow

**Description:** 90 degree mitered elbow

**Symbol Name:** SP3D90DegMiterElbow.C90DegMiterElbow

**Workbook:** Sample Data for Mitered Elbows.xls

**Workbook Sheet:** E90Miter

**User Class Name:** 90 Degree Miter Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90DegMiterElbow.C90DegMiterElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "NoOfMiterCuts" Description = "Number of Miter Cuts"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "TangentAtPort1" Description = "Tangent at Port 1"**

**Output = "TangentAtPort2" Description = "Tangent at Port 2"**

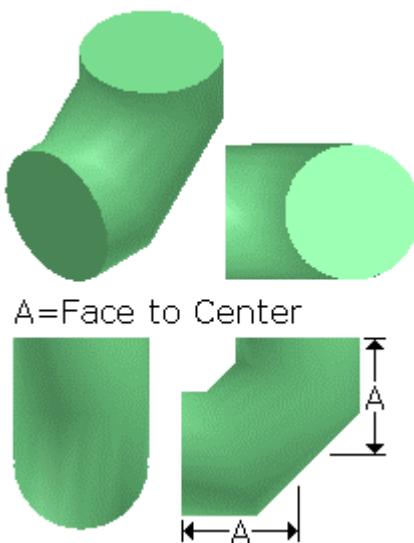
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3D90Elbow

**Description:** 90 degree elbow flanged ends

**Symbol Name:** SP3D90Elbow.C90Elbow

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls; 1S6470 Catalog.xls;

**Workbook Sheet:** 90DegElbow; E90TC; VE90Elbow

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90Elbow.C90Elbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "ElbowRadius" Description = "Elbow Radius"**

**Outputs = 6**

**Output = "Elbow" Description = "Body of Elbow"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

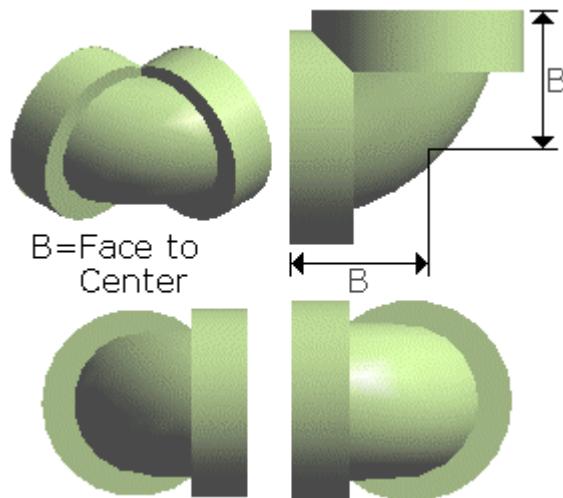
**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D90ElbowCBs

**Description:**

**Symbol Name:** SP3DElbowCBs.ElbowCBs

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElbowCBs.ElbowCBs

**Inputs = 3**

**Input and description** = "Face1toCenter", "Face 1 to Center", 0.055

**Input and description** = "Face2toCenter", "Face 2 to Center", 0.

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 6**

**Output and description** = "InsulatedBody", "Insulated Body"

**Output and description** = "InsulatedPort1", "Insulated Port 1"

**Output and description** = "InsulatedPort2", "Insulated Port 2"

**Output and description** = "Elbow", "Elbow"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"

Preview  
not  
available

# SP3D90LongTangentElbow

**Description:** 90 degree long tangent elbow

**Symbol Name:** SP3D90LongTangentElbow.C90LTElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 90DegLTElbow, 90DegStreetElbow, 90DegUnionElbow

**User Class Name:** 90 Long Tangent Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90LongTangentElbow.C90LTElbow

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "TangentLength1" Description = "TangentLength 1"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "TangentLength2" Description = "TangentLength 2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "Tangent Length"**

**Input = "BendRadius" Description = "Bend Radius"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Elbow" Description = "Elbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "InsulatedTangent1" Description = "Insulated Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedTangent2" Description = "Insulated Tangent at Port 2"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

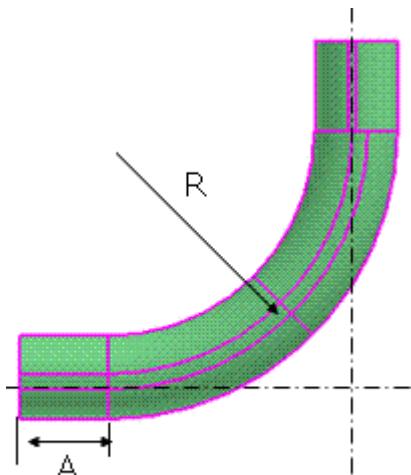
**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

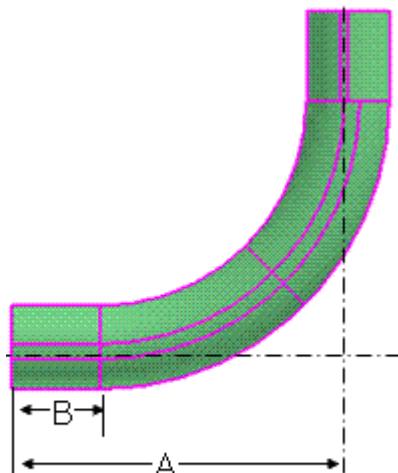
**Aspect = Insulation**

Specified by Bend Radius and Tangent



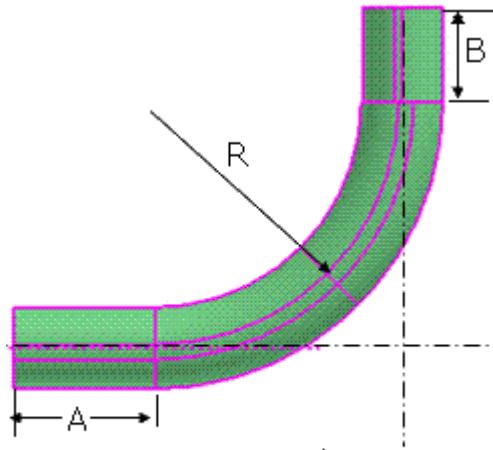
A = Tangent Length  
R = Bend Radius

Specified by Face-to-Center and Tangent



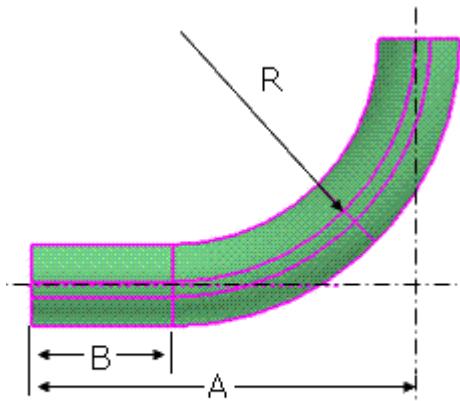
A = Face to Center  
B = Tangent Length

Specified by Bend Radius, Tangent 1, and Tangent 2



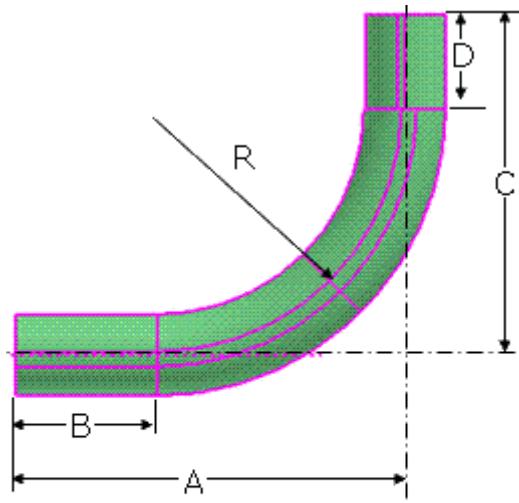
A=Tangent Length 1  
B=Tangent Length 2  
R=Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Bend Radius



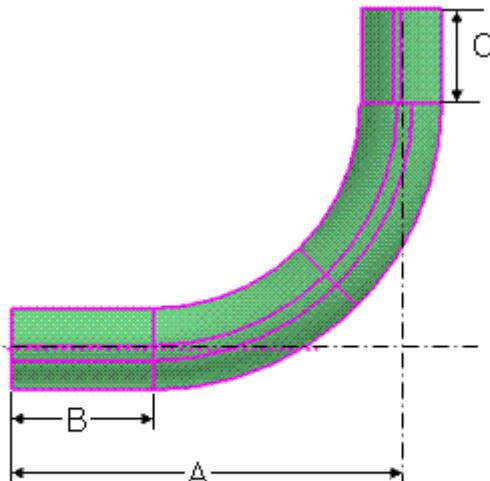
A=Face 1 to Center  
B=Tangent Length 1  
R=Bend Radius

Specified by Face-to-Center 1, Face-to-Center 2, Tangent 1, Tangent 2, and Bend Radius



A=Face 1 to Center  
B=Tangent Length 1  
C=Face 2 to Center  
D=Tangent Length 2  
R=Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Tangent 2



A=Face 1 to Center  
B=Tangent Length 1  
C=Tangent Length 2

## SP3D90RedElbow

**Description:** 90 degree reducing elbow

**Symbol Name:** SP3D90RedElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 90DegReducingElbow, 90DegReducingStreetElbow

**User Class Name:** 90 Degree Reducing Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90RedElbow.C90RedElbow

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face 1 to Center E"**

**Input = "Face2toCenter" Description = "Face 2 to Center F"**

**Input = "ReducingLength" Description = "Reducing portion Length K"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "Elbow" Description = "Body of Elbow"**

**Output = "ReducingBody" Description = "Body of Elbow"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "ReducingBodyIns" Description = "Insulation for Reducing portion"**

**Output = "TangentBodyIns" Description = "Insulated Body"**

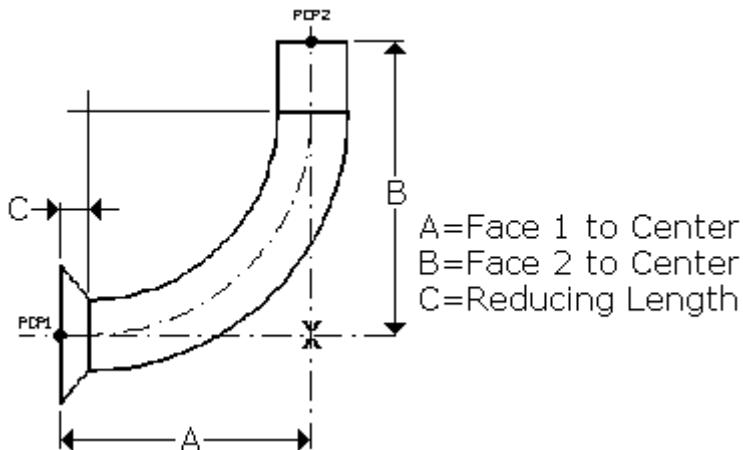
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D90RedShortYBranch

**Description:**

**Symbol Name:** SP3D90RedShortYBranch.Red90ShortYBranch

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90RedShortYBranch.Red90ShortYBranch

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulatedBody" Description = "Insulation to Body Run"**

**Output = "InsulatedPort1" Description = "Insulation for port 1"**

**Output = "InsulatedPort2" Description = "Insulation for port 2"**

**Output = "InsulatedBranch" Description = "Insulation for Branch"**

**Output = "InsulatedPort3" Description = "Insulation for port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3D90ShortYBranch

**Description:**

**Symbol Name:** SP3D90ShortYBranch.C90ShortYBranch

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90ShortYBranch.C90ShortYBranch

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulatedBody" Description = "Insulation to Body Run"**

**Output = "InsulatedPort1" Description = "Insulation for port 1"**

**Output = "InsulatedPort2" Description = "Insulation for port 2"**

**Output = "InsulatedBranch" Description = "Insulation for Branch"**

**Output = "InsulatedPort3" Description = "Insulation for port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3D90TElbow

**Description:** 90 degree elbow

**Symbol Name:** SP3D90TElbow.C90TElbow

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls

**Workbook Sheet:** 90Deg3DElbow, 90DegLRElbow, 90DegSRElbow; E90LRRJ

**User Class Name:** 90 Degree 3D Elbow

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90TElbow.C90TElbow

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Angle" Description = "Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

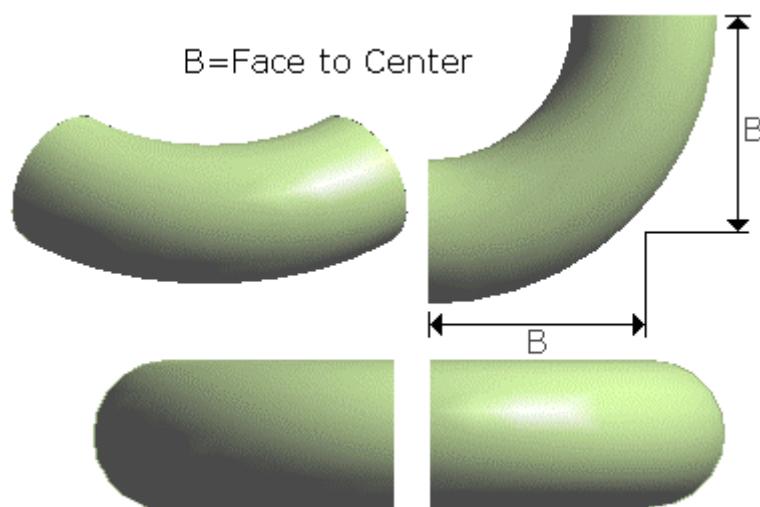
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3D90UnionElbow

**Description:** 90 degree union elbow

**Symbol Name:** SP3D90UnionElbow.C90UnionElbow

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3D90UnionElbow.C90UnionElbow

**Inputs = 5**

**Input and description** = "Face1toCenter", "Face1toCenter E"

**Input and description** = "Face2toCenter", "Face2toCenter F"

**Input and description** = "UnionDiameter", "UnionDiameter J"

**Input and description** = "TangentLength", "TangentLength K"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 12**

**Output and description** = "InsulatedTangent1", "Insulated Tangent At Port1"

**Output and description** = "InsulatedUnion1", "Insulated Union At Port1"

**Output and description** = "InsulatedBody", "Insulated Body"

**Output and description** = "InsulatedTangent2", "Insulated Tangent At Port2"

**Output and description** = "InsulatedUnion2", "Insulated Union At Port2"

**Output and description** = "InsulatedPort1", "Insulated Port1"

**Output and description** = "InsulatedPort2", "Insulated Port2"

**Output and description** = "Union1", "Union At Port1"

**Output and description** = "Elbow", "Elbow"

**Output and description** = "Union2", "Union At Port2"

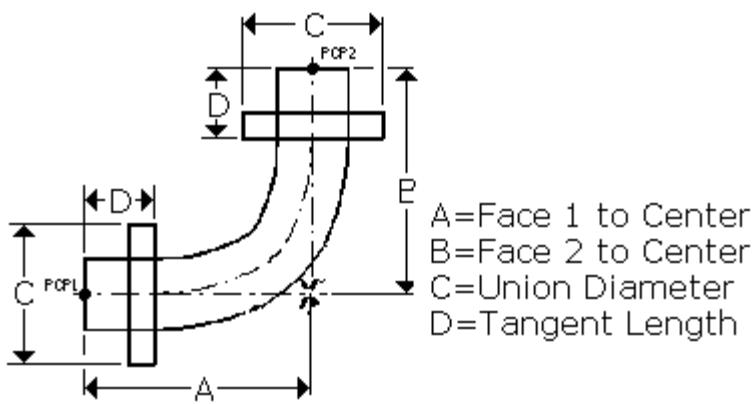
**Output and description** = "PipingNoz1", "Nozzle 1"

**Output and description** = "PipingNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Insulation", "Insulation"

**Aspect** = "SimplePhysical", "SimplePhysical"



# SP3DAdapterFlange

**Description:** adapter flange

**Symbol Name:** SP3DAdapterFlange.CAdapterFlange

**Workbook:** Sample Data Flange Face Adapter.xls

**Workbook Sheet:** AdapterFlange

**User Class Name:** Flange face adapter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAdapterFlange.CAdapterFlange

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "AdapterBody" Description = "Adapter Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

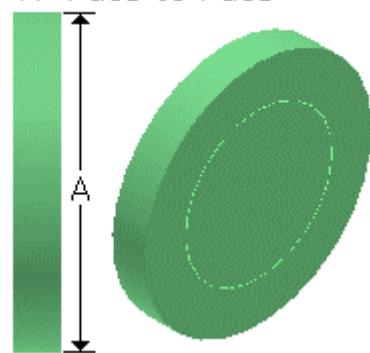
**Output = "InsulatedBody" Description = "Insulated Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

A=Face to Face



# SP3DAnalyzer

**Description:**

**Symbol Name:** SP3DAnalyzer.CAnalyzer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAnalyzer.CAnalyzer

**Inputs = 2**

**Input = "AnalyzerThickness" Description = "Analyzer Thickness"**

**Input = "AnalyzerDiameter" Description = "Analyzer Diameter"**

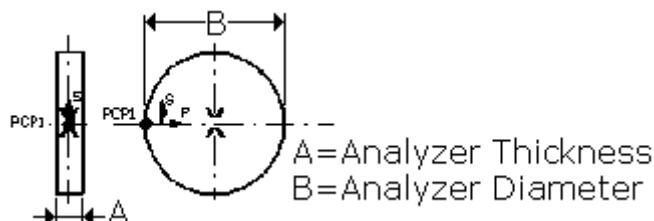
**Outputs = 2**

**Output = "Body" Description = "Body of Analyzer"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DAngGlobeValveAsm

**Description:** globe valve

**Symbol Name:** SP3DAngGlobeValveAsm.CAngGlobeValveAsm

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngGlobeValveAsm.CAngGlobeValveAsm

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 8**

**Output = "BodyBall" Description = "Ball of Valve Body"**

**Output = "BodyCone1" Description = "Cone Port1 of Body"**

**Output = "BodyCone2" Description = "Cone Port2 of Body"**

**Output = "InsulatedCylinder1" Description = "Insulation for Cylinder1"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DAngleCheckValve

**Description:** check valve

**Symbol Name:** SP3DAngleCheckValve.CAngleCheckValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleCheckValve.CAngleCheckValve

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "LeftCone" Description = "Left Side Cone"**

**Output = "RightCone" Description = "Right Side Cone"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulCylinderA" Description = "Insulation Cylinder"**

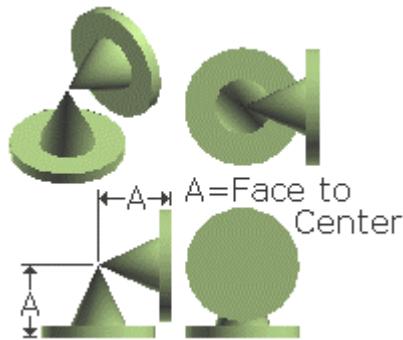
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DAngleCheckValveAsym

**Description:** check valve

**Symbol Name:** SP3DAngleCheckValveAsym.CAngleCheckVal

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** AngleCheckValve

**User Class Name:** Angle Check Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleCheckValveAsym.CAngleCheckVal

**Inputs = 3**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "LeftCone" Description = "Left Side Cone"**

**Output = "RightCone" Description = "Right Side Cone"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulCylinderA" Description = "Insulation Cylinder"**

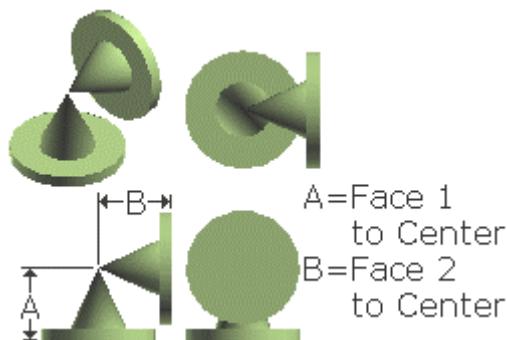
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DAngleGlobeValve

**Description:** globe valve

**Symbol Name:** SP3DAngleGlobeValve.CAngleGlobeValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** AngleGlobeValve, AngleGlobeValve\_Asym

**User Class Name:** Angle Globe Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleGlobeValve.CAngleGlobeValve

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 8**

**Output = "BodyBall" Description = "Ball of Valve Body"**

**Output = "BodyCone1" Description = "Cone Port1 of Body "**

**Output = "BodyCone2" Description = "Cone Port2 of Body "**

**Output = "InsulatedCylinder1" Description = "Insulation for Cylinder1"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

## SP3DAngleHoseValve

**Description:** Angle Hose Valve

**Symbol Name:** SP3DAngleHoseValve.CAngleHoseValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** AngleHoseValve

**User Class Name:** Angle Hose Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleHoseValve.CAngleHoseValve

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "HoseConnEndtoCenter" Description = "Hose Connector End to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 8**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulCylinderA" Description = "Insulation Cylinder"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "HoseConnectBody" Description = "Hose Connector Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

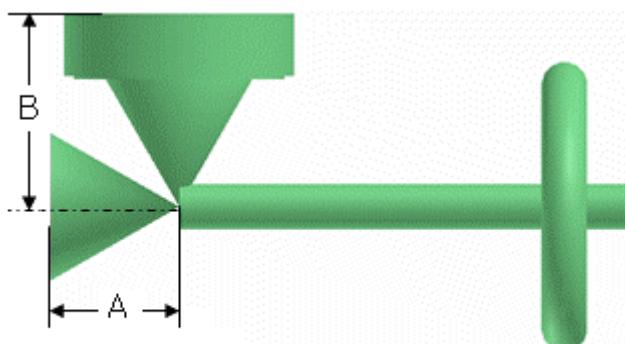
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Center

B=Hose Connection End to Center

# SP3DAngleStopCheckValve

**Description:** Angle Stop Check Valve

**Symbol Name:** SP3DAngleStopCheckValve.CASCheckValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** AngleStopCheckValve

**User Class Name:** Angle Stop Check Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleStopCheckValve.CASCheckValve

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "InsulCylinder" Description = "Horizontal Insulation Cylinder"**

**Output = "InsulCylinderV" Description = "Vertical Insulation Cylinder"**

**Output = "Ellipsoid" Description = "Ellipsoid"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "Arrow1" Description = "Arrow - Front Side"**

**Output = "Arrow2" Description = "Arrow - Rear Side"**

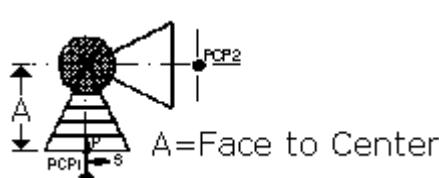
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DAngleValve

**Description:** valve

**Symbol Name:** SP3DAngleValve.AngleValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleValve.AngleValve

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Face"**

**Input = "OperatorHeight" Description = "Height of Handle"**

**Input = "OperatorDiameter" Description = "Diameter of Handle"**

**Input = "RadiusBody" Description = "Radius of Valve Body"**

**Outputs = 7**

**Output = "BodyV" Description = "Body of valve"**

**Output = "Handle" Description = "Handle of valve"**

**Output = "HandlePlate" Description = "Plate of Handle"**

**Output = "Inlet" Description = "Inlet of valve"**

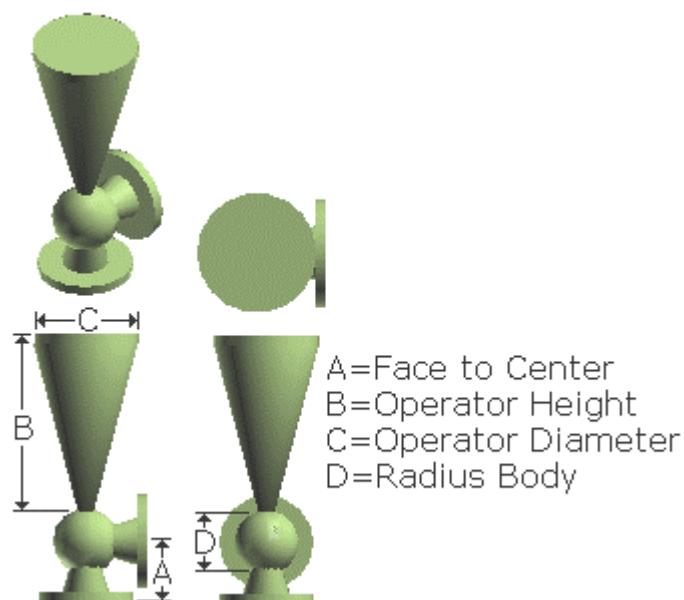
**Output = "Outlet" Description = "Outlet of valve"**

**Output = "ANoz1" Description = "Nozzle 1"**

**Output = "ANoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DAngleValveL

**Description:** angle valve

**Symbol Name:** SP3DAngleValveL.Angle

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAngleValveL.Angle

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Face"**

**Input = "OperatorHeight" Description = "Height of Handle"**

**Input = "OperatorDiameter" Description = "Diameter of Handle"**

**Input = "RadiusBody" Description = "Radius of Valve Body"**

**Outputs = 7**

**Output = "BodyV" Description = "Body of valve"**

**Output = "Handle" Description = "Handle of valve"**

**Output = "HandlePlate" Description = "Plate of Handle"**

**Output = "Inlet" Description = "Inlet of valve"**

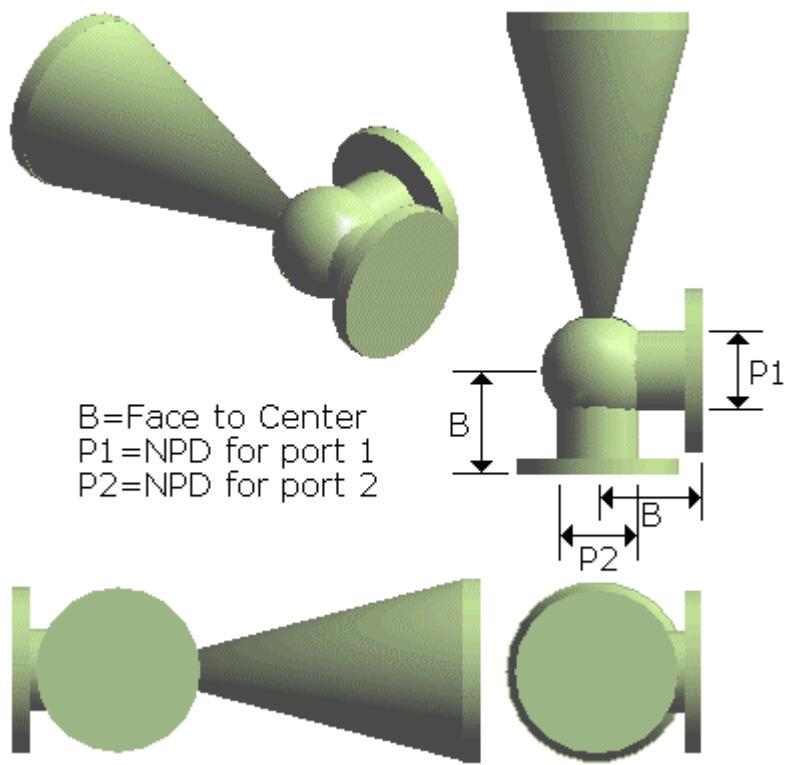
**Output = "Outlet" Description = "Outlet of valve"**

**Output = "ANoz1" Description = "Nozzle 1"**

**Output = "ANoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DAnnubarTy1

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIAnnubarTy1 if you want to interactively resize the symbol during or after placement.

**Description:** Annubar Type 1

**Symbol Name:** SP3DAnnubarTy1.CAnnubarTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAnnubarTy1.CAnnubarTy1

**Inputs = 7**

**Input = "InstrumentLength" Description = "Instrument Length D2"**

**Input = "FacetoEnd" Description = "Face to End D3"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D4"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D5"**

**Input = "InstrumentHeight" Description = "Instrument Height D6"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1 D7"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 15**

**Output = "BodyCone1" Description = "Nozzle 1"**

**Output = "BodyCone2" Description = "Nozzle 1"**

**Output = "AnubarStem" Description = "Annubar Stem"**

**Output = "AnuTeeBody" Description = "Annubar Tee Body"**

**Output = "BotElbow" Description = "Bottom Elbow"**

**Output = "HoriBotBody" Description = "Horizontal Bottom Body 1"**

**Output = "TopElbow" Description = "Top Elbow"**

**Output = "HoriTopBody" Description = "Horizontal Top Body"**

**Output = "AnubarStemIns" Description = "Annubar Stem Insulation"**

**Output = "AnuTeeBodyIns" Description = "Annubar Tee Body Insulation"**

**Output = "BotElbowIns" Description = "Bottom Elbow Insulation"**

**Output = "HoriBotBodyIns" Description = "Horizontal Bottom Body Insulation"**

**Output = "TopElbowIns" Description = "Top Elbow Insulation"**

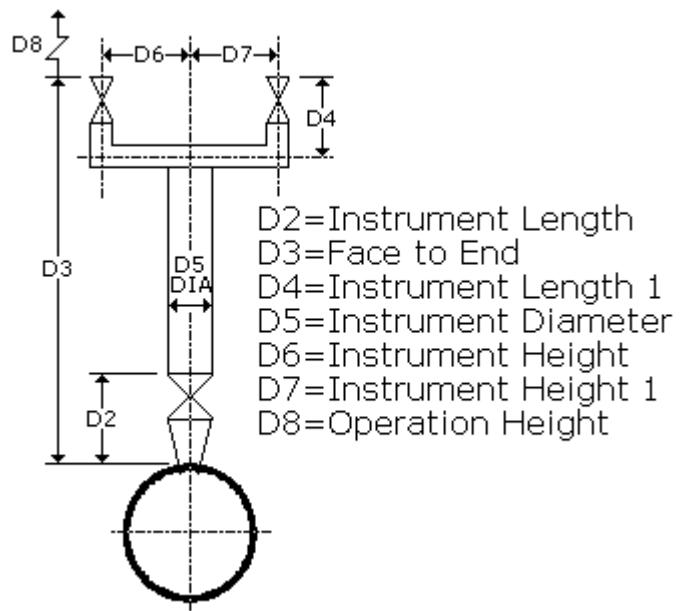
**Output = "HoriTopBodyIns" Description = "Horizontal Top Body Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DAnnubarTy2

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIAAnnubarTy2 if you want to interactively resize the symbol during or after placement.

**Description:** Annubar Type 2

**Symbol Name:** SP3DAnnubarTy2.CAnnubarTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAnnubarTy2.CAnnubarTy2

**Inputs = 5**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 5**

**Output = "InsHorBody" Description = "Insulation for Horizontal Body"**

**Output = "InsVerBody" Description = "Insulation for Vertical Body"**

**Output = "HorBody" Description = "Horizontal Body"**

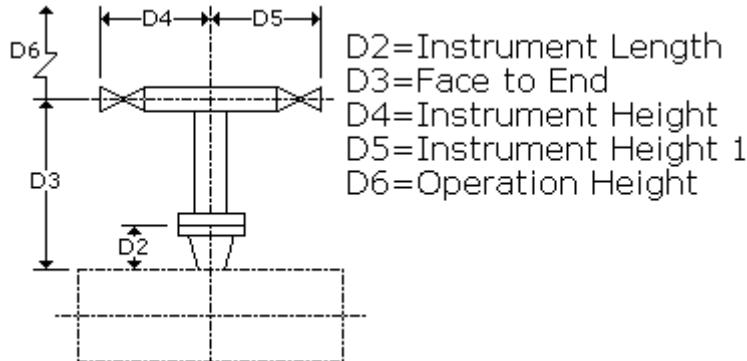
**Output = "VerBody" Description = "Vertical Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DAutoRecircVal

**Description:** Automatic Recirculation Valve

**Symbol Name:** SP3DAutoRecircVal.CAutoRecircVal

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** AutomaticRecirculationValve

**User Class Name:** Automatic Recirculation Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DAutoRecircVal.CAutoRecircVal

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "Face3toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 9**

**Output = "MainCone" Description = "Main Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "RightCylinder" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulBranch" Description = "Insulation Cylinder"**

**Output = "Nozzle1" Description = "Nozzle 1"**

**Output = "Nozzle2" Description = "Nozzle 2"**

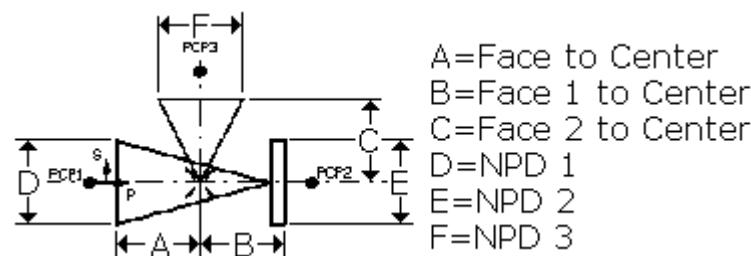
**Output = "Nozzle3" Description = "Nozzle 3"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBallAsymValve

**Description:** asymmetric ball valve

**Symbol Name:** SP3DBallAsymValve.CBallAsymValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBallAsymValve.CBallAsymValve

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Sphere"**

**Output = "RightCone" Description = "Cone"**

**Output = "BallInsulation" Description = "Sphere"**

**Output = "PNoz1" Description = "Nozzle 1"**

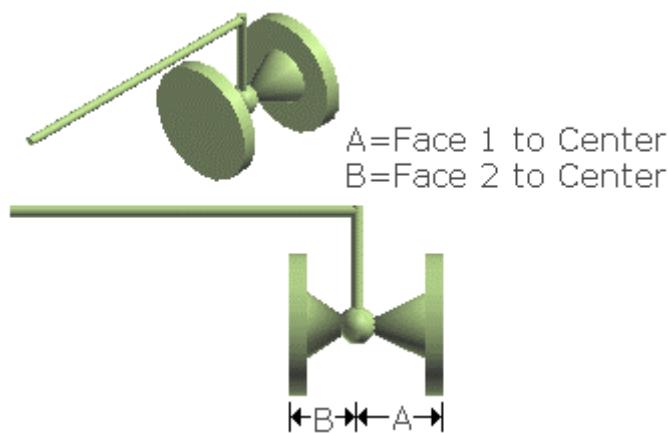
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBallGOp

**Description:**

**Symbol Name:** SP3DBallGOp.CBallGOp

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBallGOp.CBallGOp

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Sphere"**

**Output = "RightCone" Description = "Cone"**

**Output = "BallInsulation" Description = "Sphere"**

**Output = "PNoz1" Description = "Nozzle 1"**

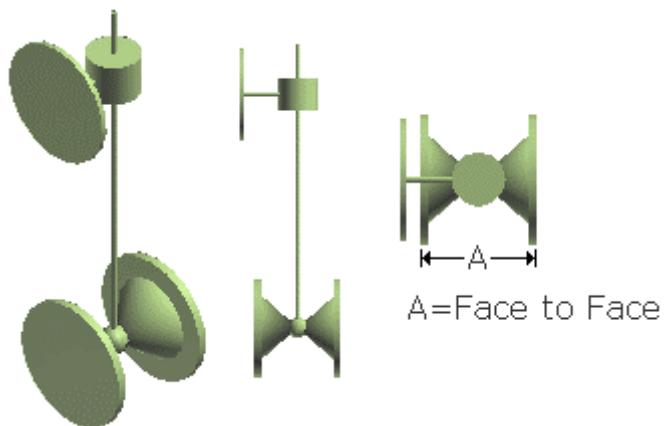
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBalloonInstr

### **Description:**

**Symbol Name:** SP3DBalloonInstr.CBalloonInstr

### **Workbook:**

### **Workbook Sheet:**

### **User Class Name:**

### **Part Number:**

### **Inputs, Outputs, and Aspects:**

ProgID: SP3DBalloonInstr.CBalloonInstr

#### **Inputs = 7**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Offset" Description = "Actuator Offset"**

**Input = "ConeHeight" Description = "Cone Height"**

**Input = "ConeDiameter1" Description = "Cone Top Diameter"**

**Input = "ConeDiameter2" Description = "Cone Bottom Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

#### **Outputs = 8**

**Output = "InstrBody" Description = "Instruments Body"**

**Output = "Stem" Description = "Actuator Stem"**

**Output = "Cone" Description = "Cone"**

**Output = "InstrBodyIns" Description = "Instruments Body Insulation"**

**Output = "Nozzl1Ins" Description = "Nozzle 1 Insulation"**

**Output = "Nozzle2Ins" Description = "Nozzle 2 Insulation"**

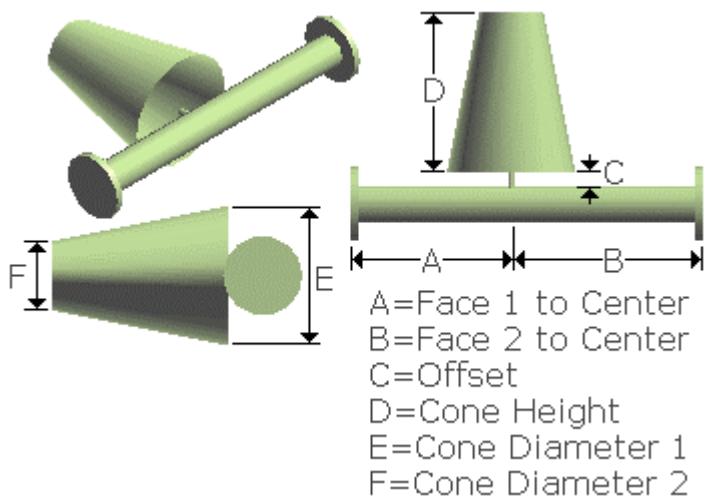
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

#### **Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBallValve

**Description:** Ball Valve

**Symbol Name:** SP3DBallValve.CBallValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** BallValve, GlobeValve

**User Class Name:** Ball Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBallValve.CBallValve

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Sphere"**

**Output = "RightCone" Description = "Cone"**

**Output = "BallInsulation" Description = "Sphere"**

**Output = "PNoz1" Description = "Nozzle 1"**

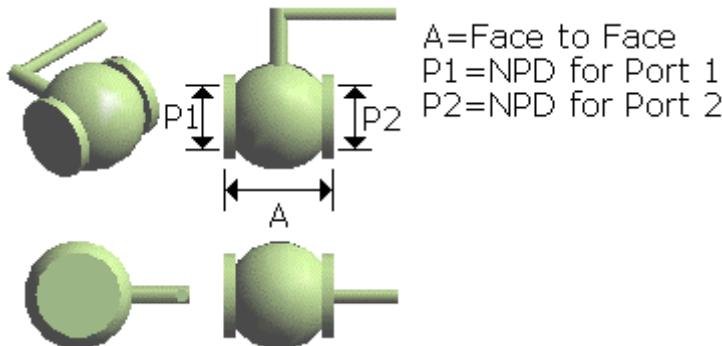
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBasketStrainer

**Description:**

**Symbol Name:** SP3DBasketStrainer.CBasketStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBasketStrainer.CBasketStrainer

**Inputs = 5**

**Input = "CollarThickness" Description = "CollarThickness"**

**Input = "BasketLength" Description = "BasketLength"**

**Input = "BasketEndDiameter" Description = "BasketEndDiameter"**

**Input = "CollarEndtoCenter" Description = "CollarEndtoCenter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Strainer" Description = "Strainer"**

**Output = "Collar" Description = "Collar"**

**Output = "CollarExtn" Description = "CollarExtn"**

**Output = "CollarIns" Description = "CollarIns"**

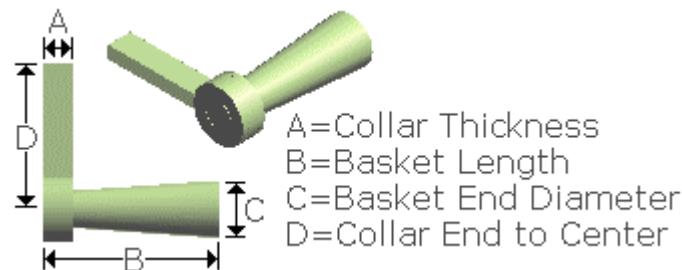
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBasketStrainer2

**Description:**

**Symbol Name:** SP3DBasketStrainer2.BasketStrainer2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBasketStrainer2.BasketStrainer2

**Inputs = 9**

**Input and description** = "StrDiameter", "Strainer Diameter", 0

**Input and description** = "EndDiameter", "End Diameter",

**Input and description** = "BasketEndDiameter", "Basket End Diameter",

**Input and description** = "BasketLength", "Basket Length",

**Input and description** = "CollarThickness", "Collar Thickness", 0

**Input and description** = "ArmLength", "Arm Length", 0

**Input and description** = "StrWidth", "Strainer Width", 0

**Input and description** = "CylinderLength", "Cylinder Length", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 7**

**Output and description** = "CollarIns", "Collar Insulation"

**Output and description** = "Strainer", "Strainer"

**Output and description** = "StrainerEnd", "Strainer End"

**Output and description** = "Collar", "Collar"

**Output and description** = "CollarExtn", "Collar Extension"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "Insulation"

Preview  
not  
available

## SP3DBio45ElbowWeld

**Description:** 45 degree elbow

**Symbol Name:** SP3DBio45ElbowWeld.CBio45ElbowWeld

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** E45LT

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBio45ElbowWeld.CBio45ElbowWeld

**Inputs = 3**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "TangentLength" Description = "TangentLength"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Elbow" Description = "Elbow"**

**Output = "InsTangentAtPort1" Description = "Insulated Tangent At Port1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsTangentAtPort2" Description = "Insulated Tangent At Port2"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

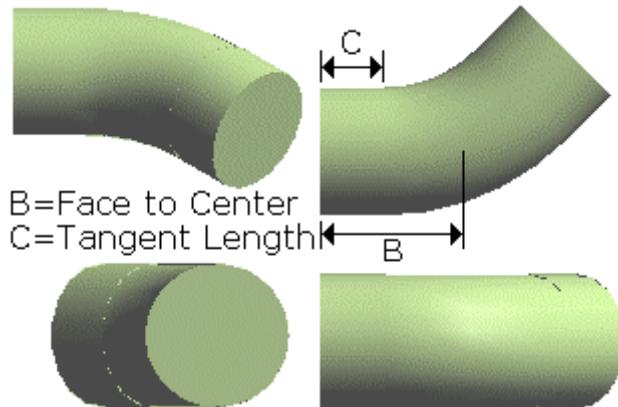
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBio90ElbowWeld

**Description:** 90 degree elbow

**Symbol Name:** SP3DBio90ElbowWeld.CBio90ElbowWeld

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** E90LT

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBio90ElbowWeld.CBio90ElbowWeld

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "Tangent Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Elbow" Description = "Elbow"**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body of Bend"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

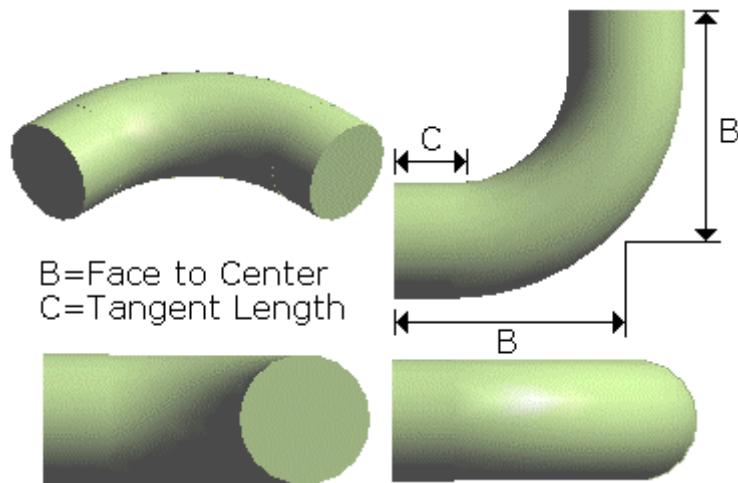
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBioClamp

**Description:** Tri-Clover 13MHHM Hinged Tri-Clamp, Heavy Duty with Metal Wing Nut (2 segments design)

**Symbol Name:** SP3DBioClamp.CBioClamp

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** ClampHDHWN\_TriClover

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioClamp.CBioClamp

**Inputs = 2**

**Input = "ClampDiameter" Description = "Clamp Diameter"**

**Input = "InsulationThickness" Description = "Body Insulation"**

**Outputs = 7**

**Output = "ClampBody" Description = "Clamp Body "**

**Output = "UpperSup" Description = "Upper Support"**

**Output = "LowSup" Description = "Lower Support"**

**Output = "Stem" Description = "Handle Stem"**

**Output = "Handle" Description = "Handle"**

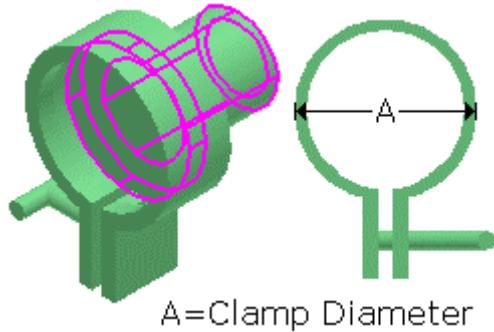
**Output = "ClampBodyInsulation" Description = "Clamp Body Insulation"**

**Output = "ClampSupportInsulation" Description = "Clamp Support Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBioConcReducer

**Description:** concentric reducer

**Symbol Name:** SP3DBioConcReducer.CBioConcReducer

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** REDCLT

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioConcReducer.CBioConcReducer

**Inputs = 2**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body - Taper"**

**Output = "InsBodyPort1Side" Description = "Insulated Body Port1 Side"**

**Output = "InsBodyPort2Side" Description = "Insulated Body Port2 Side"**

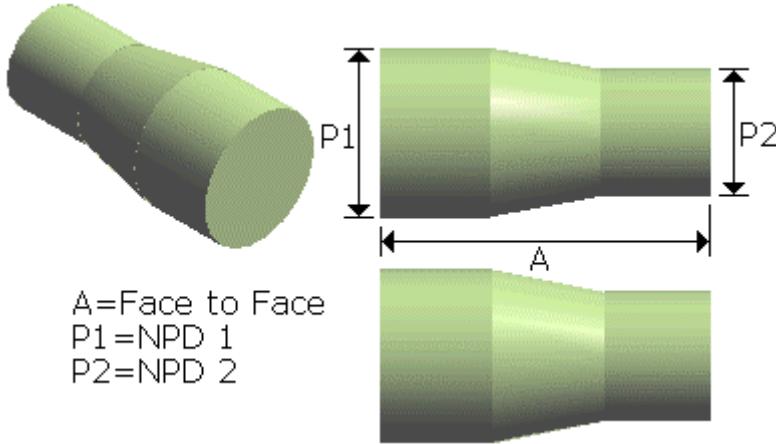
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBioEccReducer

**Description:** Eccentric Reducer

**Symbol Name:** SP3DBioEccReducer.CBioEccReducer

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** REDELT

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioEccReducer.CBioEccReducer

**Inputs = 2**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body - Taper"**

**Output = "InsBodyPort1Side" Description = "Insulated Body Port1 Side"**

**Output = "InsBodyPort2Side" Description = "Insulated Body Port2 Side"**

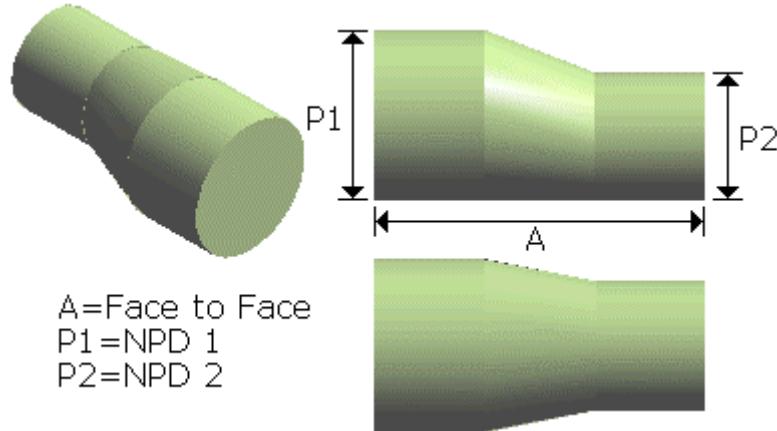
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBioInstrumentTee

**Description:** instrument tee

**Symbol Name:** SP3DBioInstrumentTee.CBioInstrumentT

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** InstrumentTee

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioInstrumentTee.CBioInstrumentT

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center Dist"**

**Input = "Face1toCenter" Description = "Face 1 to Center Dist"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "BodyWithNoz" Description = "Main Body with Noz"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "BranWithNoz" Description = "Branch with Nozzle"**

**Output = "Port1Insul" Description = "Port1 Insulation"**

**Output = "MainBodyInsul" Description = "Main Body Insulation"**

**Output = "Port2Insul" Description = "Port2 Insulation"**

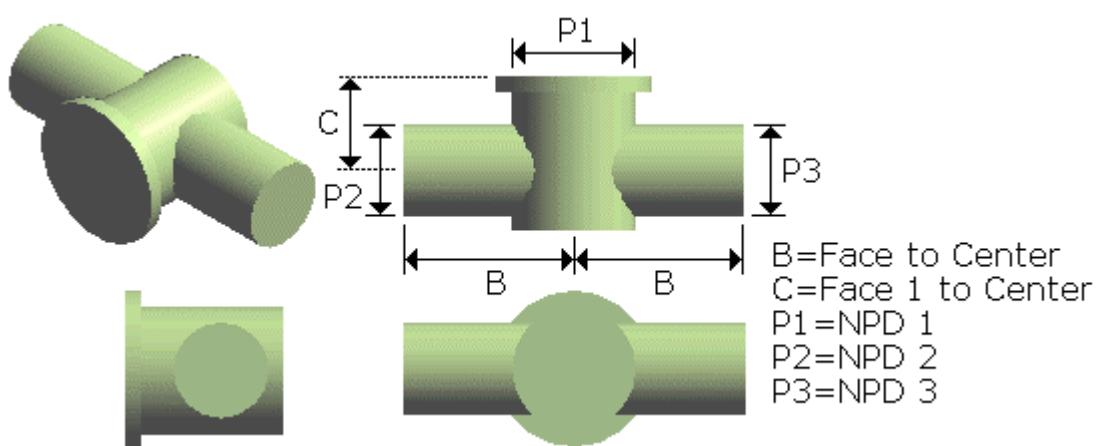
**Output = "BranchInsul" Description = "Branch Body Insulation"**

**Output = "Port3Insul" Description = "Port3 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBioShortOutletRunTee

**Description:** short outlet tee

**Symbol Name:** SP3DBioShortOutletRunTee.CBioSORT

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** TMSWMS, TWMSW, TWMW

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioShortOutletRunTee.CBioSORT

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center Dist"**

**Input = "Face2toCenter" Description = "Face 2 to Center Dist"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "BodyWithNoz" Description = "Main Body with Noz"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "BranWithNoz" Description = "Branch with Nozzle"**

**Output = "Port1Insul" Description = "Port1 Insulation"**

**Output = "MainBodyInsul" Description = "Main Body Insulation"**

**Output = "Port2Insul" Description = "Port2 Insulation"**

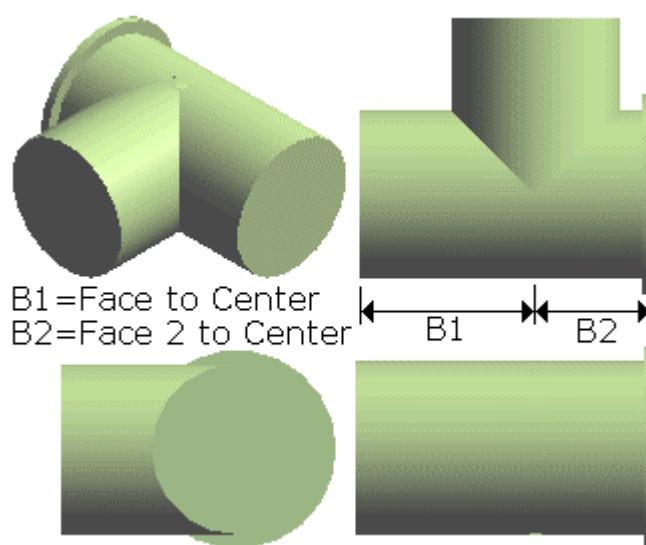
**Output = "BranchInsul" Description = "Branch Body Insulation"**

**Output = "Port3Insul" Description = "Port3 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBioUsePoint

**Description:** use point

**Symbol Name:** SP3DBioUsePoint.CBioUsePoint

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** TRUBWWM

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioUsePoint.CBioUsePoint

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toFace3" Description = "Face 1 to Face 3"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Return" Description = "Fitting - Return "**

**Output = "PNoz1WithLen" Description = "Nozzle 1"**

**Output = "PNoz2WithLen" Description = "Nozzle 2"**

**Output = "PNoz3WithLen" Description = "Nozzle 3"**

**Output = "InsulatedBody" Description = "Insulation"**

**Output = "Port1TanInsul" Description = "Insulated Port1"**

**Output = "Port2TanInsul" Description = "Insulated Port2"**

**Output = "Port3TanInsul" Description = "Insulated Port3"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

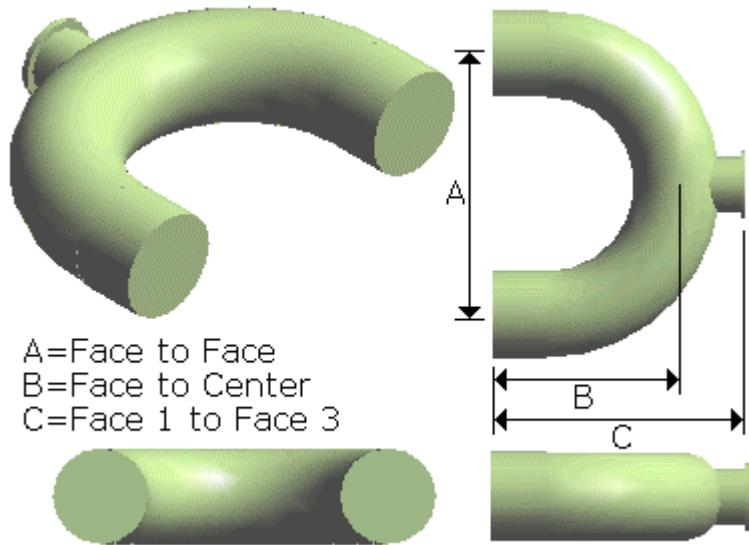
**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedPort3" Description = "Insulated Port2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DBioUsePointOffset

**Description:** use point with offset

**Symbol Name:** SP3DBioUsePointOffset.CBioUsePtOffset

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** TRUSWWM

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBioUsePointOffset.CBioUsePtOffset

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "Face1toPort3Tangent" Description = "Face 1 to Face 3 Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Return" Description = "Fitting - Return "**

**Output = "PNoz1WithLen" Description = "Nozzle 1"**

**Output = "PNoz2WithLen" Description = "Nozzle 2"**

**Output = "PNoz3WithLen" Description = "Nozzle 3"**

**Output = "InsulatedBody" Description = "Insulation"**

**Output = "Port1TanInsul" Description = "Insulated Port1"**

**Output = "Port2TanInsul" Description = "Insulated Port2"**

**Output = "Port3TanInsul" Description = "Insulated Port2"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

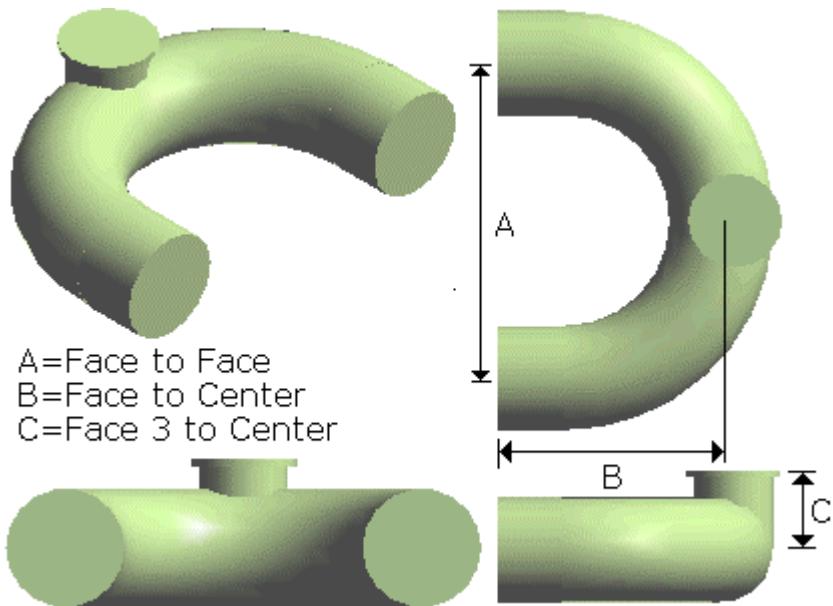
**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedPort3" Description = "Insulated Port2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBlankGateValve

**Description:** gate valve

**Symbol Name:** SP3DBlankGateValve.CBlankGateValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBlankGateValve.CBlankGateValve

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face Distance"**

**Input = "ActuatorOffset" Description = "Actuator Height to its Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 8**

**Output = "LeftCone" Description = "Cone"**

**Output = "TriangularDisc" Description = "Triangle"**

**Output = "ActuatorCylinder" Description = "Cylinder"**

**Output = "RightCone" Description = "Cone"**

**Output = "BodyInsulation" Description = "Cylinder"**

**Output = "Nozzle1" Description = "Nozzle"**

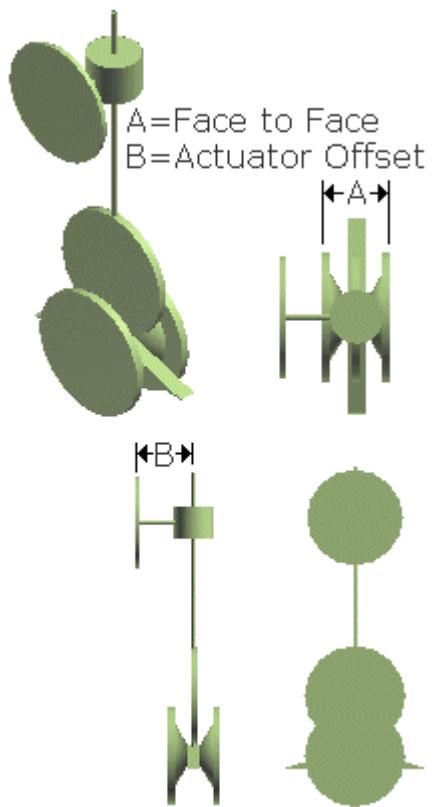
**Output = "Nozzle2" Description = "Nozzle"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DBlindFlange

**Description:** blind flange or end cap

**Symbol Name:** SP3DBlindFlange.CBlindFlange

**Workbook:** Piping Catalog.xls, Bio Pharm Catalog.xls

**Workbook Sheet:** BlindFlange, CAPTC

**User Class Name:** Blind Flange

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBlindFlange.CBlindFlange

Number of Inputs = 1

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 3

Output name = "PlaneBackofFlange"

Output description = "Plane closing Back of Flange for tapping"

Output name = "PNoz1"

Output description = "Nozzle 1"

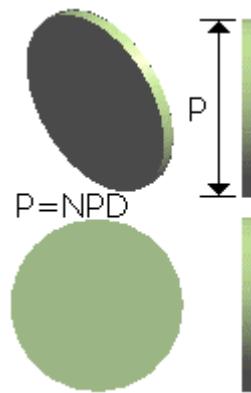
Output name = "InsulatedBody"

Output description = "Insulated Body"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



## SP3DBubbleDetector

**Description:** bubble detector

**Symbol Name:** SP3DBubbleDetector.BubbleDetector

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** BubbleDetector

**User Class Name:** Bubble Detector

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBubbleDetector.BubbleDetector

**Inputs = 3**

**Input and description =** "FacetoFace", "Instrument Length"

**Input and description =** "InstrumentLength1", "Instrument Length 1"

**Input and description =** "InstrumentDiameter", "Instrument Diameter"

**Outputs = 3**

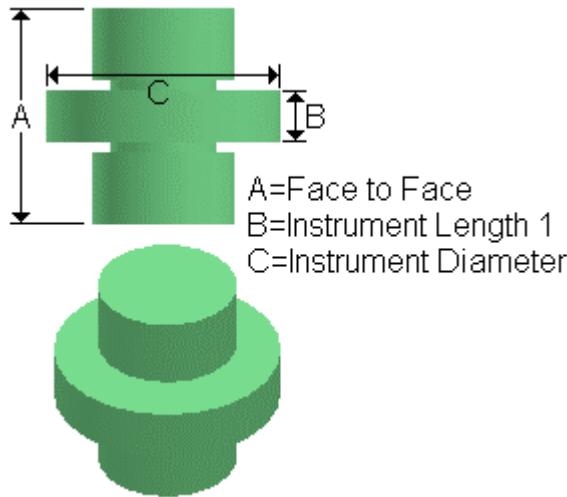
**Output and description =** "Housing", "Housing of Bubble Detector"

**Output and description =** "PipingNoz1", "Nozzle 1"

**Output and description =** "PipingNoz2", "Nozzle 2"

**Aspects = 1**

**Aspect =** "SimplePhysical", "Physical"



# SP3DBullEyeSightIndicator

**Description:** sight indicator

**Symbol Name:** SP3DBullEyeSightIndicator.CBullESInd

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DBullEyeSightIndicator.CBullESInd

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face To Center"**

**Input = "IndicatorHeight" Description = "Indicator Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 18**

**Output = "Cyl1" Description = "Cylinder1"**

**Output = "Cyl2" Description = "Cylinder2"**

**Output = "Flange1" Description = "Flange1"**

**Output = "Flange2" Description = "Flange2"**

**Output = "Flange3" Description = "Flange3"**

**Output = "Flange4" Description = "Flange4"**

**Output = "Bolt1" Description = "Bolt1"**

**Output = "Bolt2" Description = "Bolt2"**

**Output = "Bolt3" Description = "Bolt3"**

**Output = "Bolt4" Description = "Bolt4"**

**Output = "Bolt5" Description = "Bolt5"**

**Output = "Bolt6" Description = "Bolt6"**

**Output = "Bolt7" Description = "Bolt7"**

**Output = "Bolt8" Description = "Bolt8"**

**Output = "InsulationBody1" Description = "Insulation Body1"**

**Output = "InsulationBody2" Description = "Insulation Body2"**

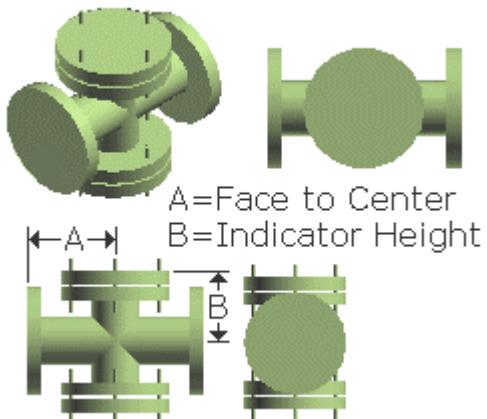
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DButterflyGOP

**Description:** butterfly valve with operator

**Symbol Name:** SP3DButterflyGOP.CButterflyGOP

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** ButterflyValveOnOffV, ButterflyvalveElec

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyGOP.CButterflyGOP

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 5**

**Output = "ValveBody" Description = "Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

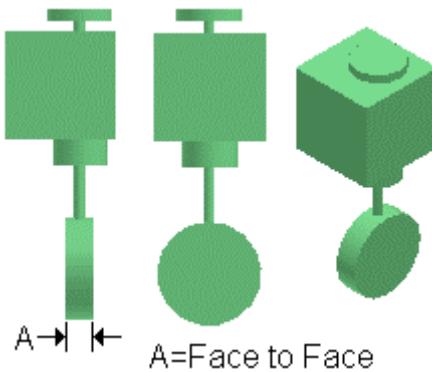
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DButterflyValve

**Description:**

**Symbol Name:** SP3DButterflyValve.CButterflyValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValve.CButterflyValve

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "StemHeight" Description = "Stem Height"**

**Input = "LeverLength" Description = "Lever Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "Stem" Description = "Stem"**

**Output = "Lever" Description = "Lever"**

**Output = "InsulatedBody" Description = "Insulated Body"**

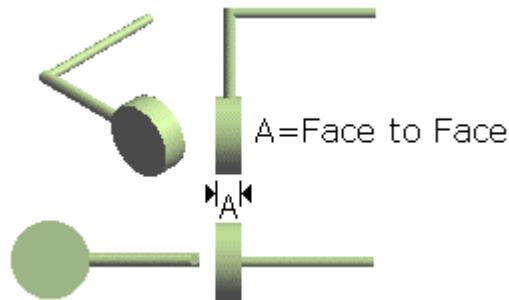
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DButterflyValveAsym

**Description:**

**Symbol Name:** SP3DButterflyValveAsym.CButterflyAsym

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValveAsym.CButterflyAsym

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 6**

**Output = "LeftCylin" Description = "Left Cylinder"**

**Output = "RightCylin" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

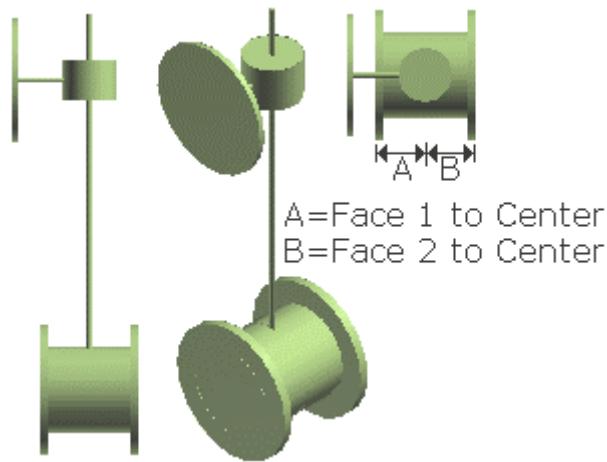
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DButterflyValveL

**Description:** butterfly valve

**Symbol Name:** SP3DButterflyValveL.BFYLP

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValveL.BFYLP

Number of Inputs = 9

Input Name = "DiscWidth"

Input Description = "Width of the Disc"

Input Name = "DiscDiameter"

Input Description = "Diameter of the Disc"

Input Name = "StemWidth"

Input Description = "Width of the Stem"

Input Name = "StemDiameter"

Input Description = "Diameter of the Stem"

Input Name = "StemFlWidth"

Input Description = "Width of the Stem Flange"

Input Name = "StemFlDiameter"

Input Description = "Diameter of the Stem Flange"

Input Name = "ActFlWidth"

Input Description = "Width of the Actuator Flange"

Input Name = "ActFlDiameter"

Input Description = "Diameter of the Actuator Flange"

Input Name = "ActWidth"

Input Description = "Width of the Actuator"

Number of Outputs = 7

Output Name = "Disc"

Output Description = "Disc of ButtValve"

Output Name = "Stem"

Output Description = "Stem of ButtValve"

Output Name = "StemFlange"

Output Description = "Stem Flange of Butt Valve"

Output Name = "ActuatorFlange"

Output Description = "Actuator flange of ButtValve"

Output Name = "Actuator"

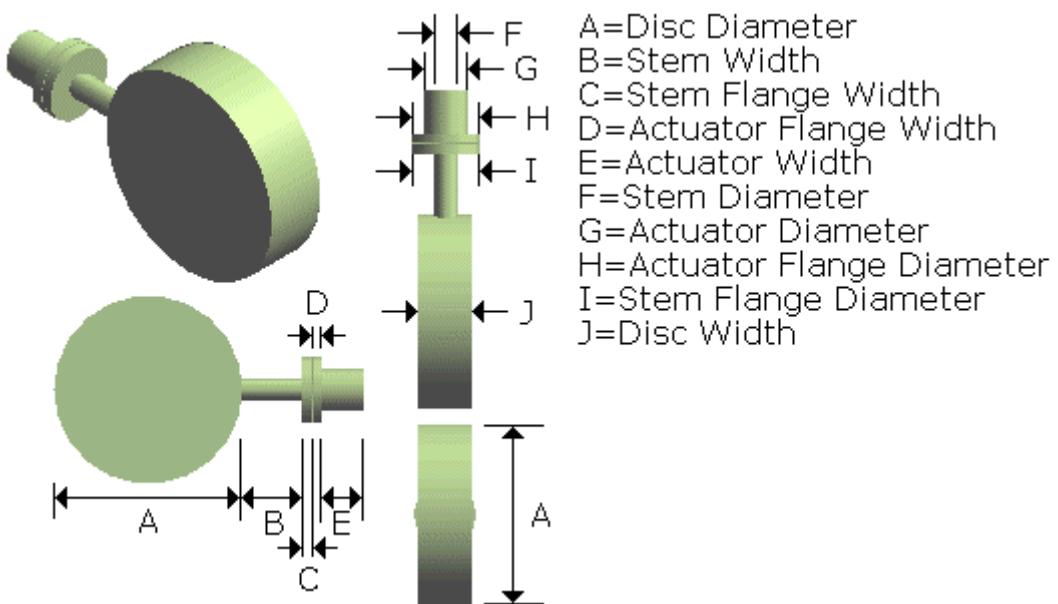
Output Description = "Actuator of ButtValve"

Output Name = "PipePort1"

Output Description = "PipingPort1 of Butterfly valve"

Output Name = "PipePort2"

Output Description = "PipingPort2 of Butterfly valve"



## SP3DButterflyValveSym

**Description:** butterfly valve

**Symbol Name:** SP3DButterflyValveSym.CButterflyValveS

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ButterflyValve

**User Class Name:** butterfly valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValveSym.CButterflyValveS

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 5**

**Output = "ValveBody" Description = "Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

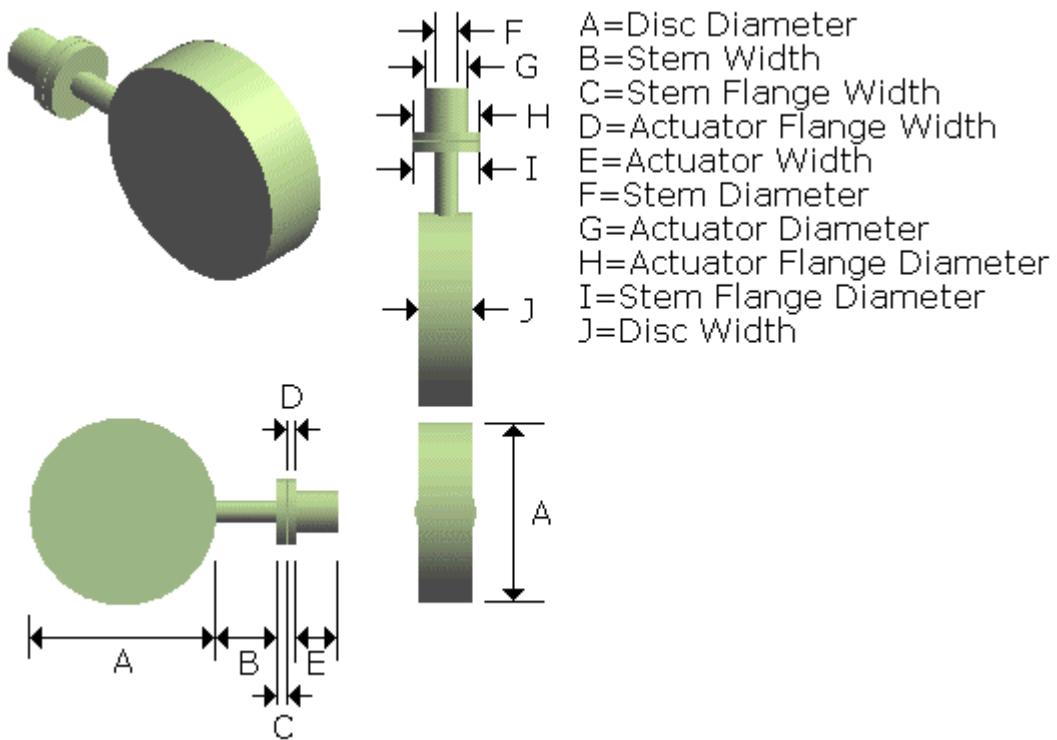
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DButterflyValveVAL

**Description:** Butterfly Valve Variable Arm Length

**Symbol Name:** SP3DButterflyValveVAL.ButterflyValveVAL

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ButterflyValveVarArmLength

**User Class Name:** Butterfly Valve Variable Arm Length

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValveVAL.ButterflyValveVAL

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "VArmLength1" Description = "Input corresponds to Operator parameter"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 5**

**Output = "ValveBody" Description = "Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

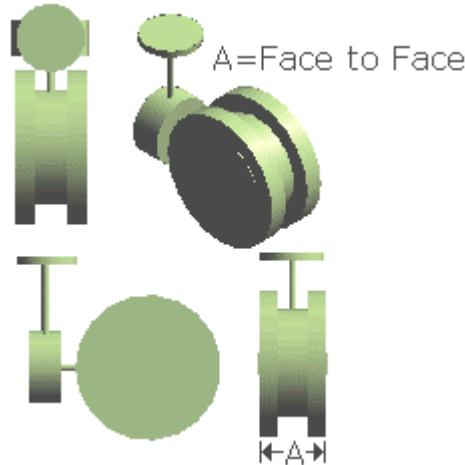
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DButterflyValveVOH

**Description:** Butterfly Valve Variable Operator Height

**Symbol Name:** SP3DButterflyValveVOH.ButterflyValveVOH

## Workbook: Piping Catalog.xls

## **Workbook Sheet: ButterflyValveVarOpHeight**

## User Class Name: Butterfly Valve Variable Operator Height

## **Part Number:**

## **Inputs, Outputs, and Aspects:**

ProgID: SP3DButterflyValveVOH.ButterflyValveVOH

**Inputs = 5**

**Input** = "FaceToFace"   **Description** = "Face to Face"

**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

**Input** = "HandwheelAngle" **Description** = "Rotation of Operator"

**Input** = "VOperatorHeight1" **Description** = "Input corresponds to Operator parameter"

**Input** = "FacetoCenter" **Description** = "Face to Center"

## Outputs = 5

**Output = "ValveBody" Description = "Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output** = "PNoz1" **Description** = "Nozzle 1"

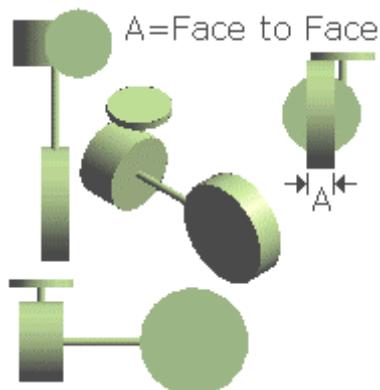
**Output** = "PNoz2"   **Description** = "Nozzle 2"

**Output = "ValveOperator" Description = "Valve Operator"**

Aspects = 2

**Aspect** = SimplePhysical

**Aspect = Insulation**



## SP3DCap

**Description:** cap

**Symbol Name:** SP3DCap.CCap

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Cap

**User Class Name:** Cap

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCap.CCap

**Inputs = 3**

**Input = "FacetoEnd" Description = "Face to Cap End"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Outputs = 3**

**Output = "Body" Description = "Cap Body"**

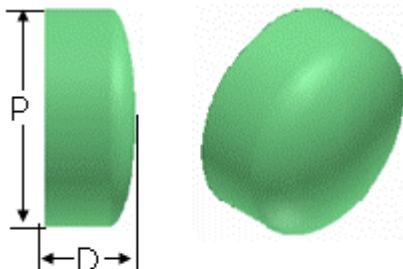
**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

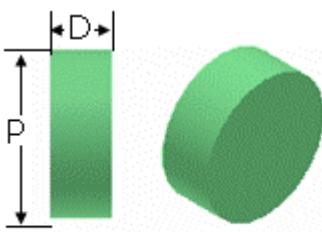
**Aspects = 2**

**Aspect = SimplePhysical**

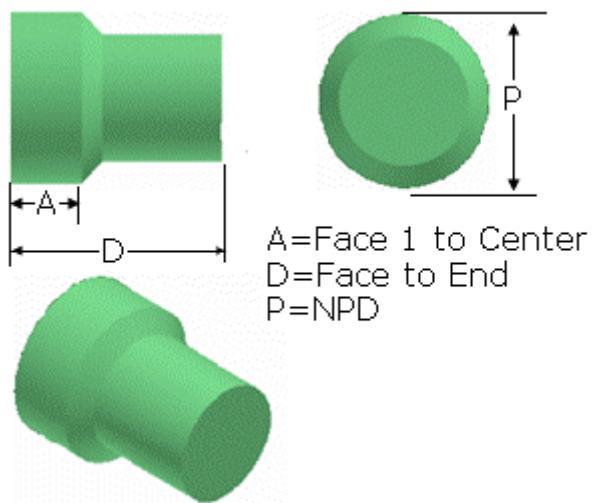
**Aspect = Insulation**



D=Face to End  
P=NPD



D=Face to End  
P=NPD



## SP3DCheckValve

**Description:** check valve

**Symbol Name:** SP3DCheckValve.CCheckValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** CheckValve, CheckValve\_Fem, WaferCheckValve

**User Class Name:** Check valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCheckValve.CCheckValve

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Check Valve Body"**

**Output = "InsulatedBody" Description = "Check Valve Insulated Body"**

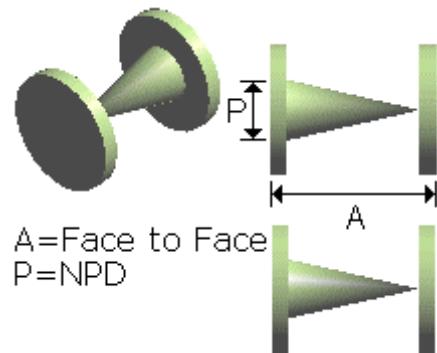
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCI2WInstrValve

## Description:

**Symbol Name:** SP3DCI2WInstrValve.C2WInstrValve

**Workbook:** Instrument Data.xls

**Workbook Sheet:** I2WAY

**User Class Name:** Simple 2 WAY Instrument Valve

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DCI2WInstrValve.C2WInstrValve

### Inputs = 25

**Input** = "Face1toCenter" **Description** = "Face1 to Center"  
**Input** = "Face2toCenter" **Description** = "Face2 to Center"  
**Input** = "ActuatorHeight" **Description** = "Actuator Height"  
**Input** = "ActuatorDiameter" **Description** = "Actuator Diameter"  
**Input** = "InsulationThickness" **Description** = "Insulation Thickness"  
**Input** = "Npd" **Description** = "NPD"  
**Input** = "EndPreparation" **Description** = "EndPreparation"  
**Input** = "ScheduleThickness" **Description** = "ScheduleThickness"  
**Input** = "EndStandard" **Description** = "EndStandard"  
**Input** = "PressureRating" **Description** = "PressureRating"  
**Input** = "FlowDirection" **Description** = "FlowDirection"  
**Input** = "PortIndex1" **Description** = "PortIndex1"  
**Input** = "Npd1" **Description** = "NPD1"  
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

### Outputs = 6

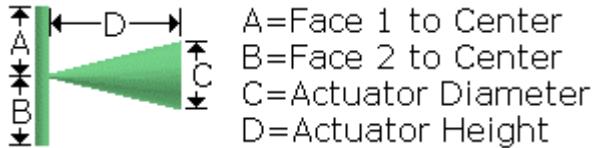
**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "ValveBodyLeftCone" Description = "Cylindrical Body of Valve"**  
**Output = "ValveBodyRightCone" Description = "Box Body of Valve"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "ValveBodyIns" Description = "ValveBodyIns"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center  
B=Face 2 to Center  
C=Actuator Diameter  
D=Actuator Height

# SP3DCI3WInstrValve

**Description:**

**Symbol Name:** SP3DCI3WInstrValve.C3WInstrValve

**Workbook:** Instrument Data.xls

**Workbook Sheet:** I3WAY

**User Class Name:** Simple 3 WAY Instrument Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCI3WInstrValve.C3WInstrValve

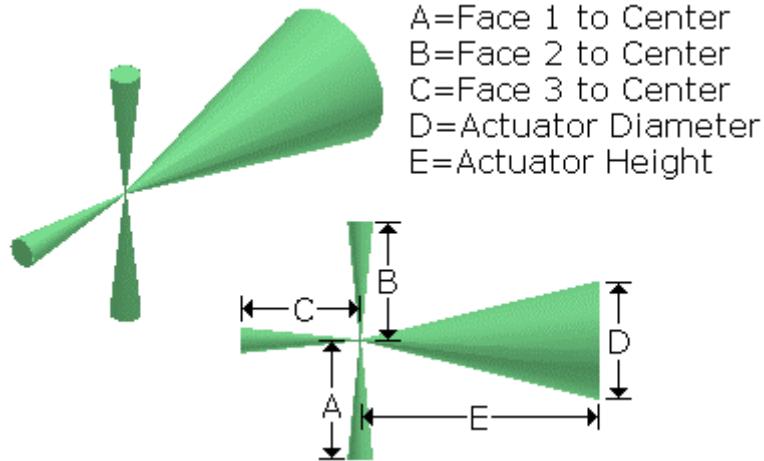
**Inputs = 33**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "Face3toCenter" Description = "Face3 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**

**Input** = "FlowDirection3"   **Description** = "FlowDirection3"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "Id3"   **Description** = "Id3"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3"   **Description** = "Npd Unit Type 3"

**Outputs** = 9  
**Output** = "PNoz1"   **Description** = "Nozzle 1"  
**Output** = "PNoz2"   **Description** = "Nozzle 2"  
**Output** = "PNoz3"   **Description** = "Nozzle 3"  
**Output** = "ValveBodyLeftCone"   **Description** = "Body of Valve"  
**Output** = "ValveBodyRightCone"   **Description** = "Body of Valve"  
**Output** = "ValveBodyTopCone"   **Description** = "Body of Valve"  
**Output** = "ActuatorBody"   **Description** = "Actuator Body"  
**Output** = "ValveBodyIns"   **Description** = "ValveBodyIns"  
**Output** = "ValveBodyIns2"   **Description** = "ValveBodyIns2"

**Aspects** = 2  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIAannubarTy1

You can interactively resize this part symbol during or after placement. Use the symbol SP3DAnnubarTy1 if you do not want to interactively resize the symbol during or after placement.

**Description:** Annubar Type 1

**Instrument Dimension Group:** IA1

**Symbol Name:** SP3DCIAannubarTy1.CCIAnnubarTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IA1

**User Class Name:** Annubar Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIAannubarTy1.CCIAnnubarTy1

**Inputs = 21**

**Input = "InstrumentLength" Description = "Instrument Length D2"**

**Input = "FacetoEnd" Description = "Face to End D3"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D4"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D5"**

**Input = "InstrumentHeight" Description = "Instrument Height D6"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1 D7"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "OperationHeight" Description = "OperationHeight"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 16**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "BodyCone1" Description = "Nozzle 1"**

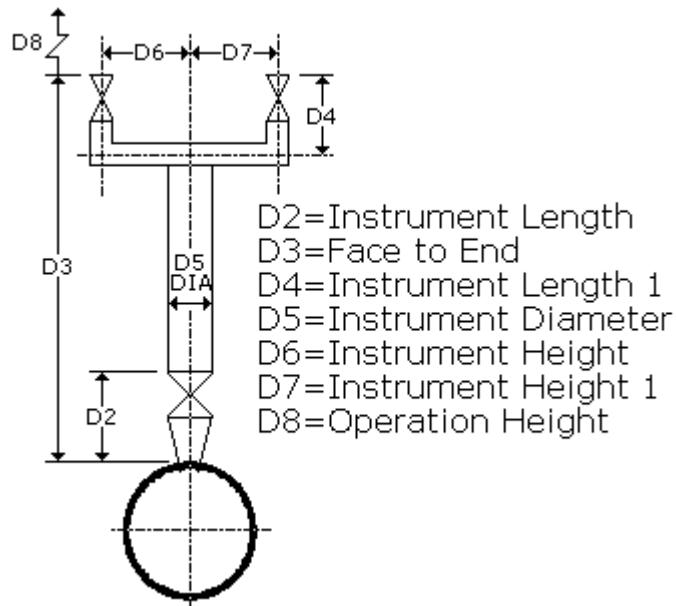
**Output** = "BodyCone2" **Description** = "Body Cone 2"  
**Output** = "AnubarStem" **Description** = "Annubar Stem"  
**Output** = "AnuTeeBody" **Description** = "Annubar Tee Body"  
**Output** = "BotElbow" **Description** = "Bottom Elbow"  
**Output** = "HoriBotBody" **Description** = "Horizontal Bottom Body 1"  
**Output** = "TopElbow" **Description** = "Top Elbow"  
**Output** = "HoriTopBody" **Description** = "Horizontal Top Body"  
**Output** = "AnubarStemIns" **Description** = "Annubar Stem Insulation"  
**Output** = "AnuTeeBodyIns" **Description** = "Annubar Tee Body Insulation"  
**Output** = "BotElbowIns" **Description** = "Bottom Elbow Insulation"  
**Output** = "HoriBotBodyIns" **Description** = "Horizontal Bottom Body Insulation"  
**Output** = "TopElbowIns" **Description** = "Top Elbow Insulation"  
**Output** = "HoriTopBodyIns" **Description** = "Horizontal Top Body Insulation"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation"

**Aspects** = 3

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = Operation



## SP3DCIAannubarTy2

You can interactively resize this part symbol during or after placement. Use the symbol SP3DAnnubarTy2 if you do not want to interactively resize the symbol during or after placement.

**Description:** Annubar Type 2

**Instrument Dimension Group:** IA2

**Symbol Name:** SP3DCIAannubarTy2.CCIAnnubarTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IA2

**User Class Name:** Annubar Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIAannubarTy2.CCIAnnubarTy2

**Inputs = 19**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "OperationHeight" Description = "OperationHeight"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "HorBody" Description = "Horizontal Body"**

**Output = "VerBody" Description = "Vertical Body"**

**Output = "InsHorBody" Description = "Insulation for Horizontal Body"**

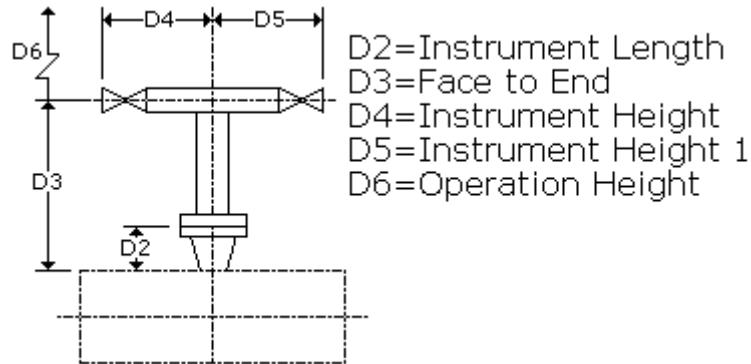
**Output = "InsVerBody"** **Description = "Insulation for Vertical Body"**  
**Output = "OpEnvelope"** **Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Operation**



# SP3DCIBoxInstr2Ports

**Description:**

**Symbol Name:** SP3DCIBoxInstr2Ports.BoxInstr2Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4Box

**User Class Name:** Simple Box Instrument with 2 ports

**Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DCIBoxInstr2Ports.BoxInstr2Ports

**Inputs = 24**

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentWidth" Description = "Instrument Width"
Input = "InstrumentHeight" Description = "Instrument Height"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 4**

**Output = "PNoz1" Description = "Nozzle 1"**

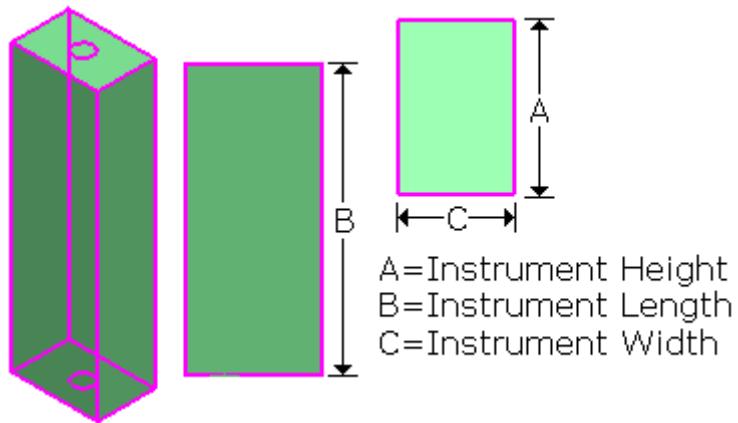
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "InstrumentBody"** **Description = "Instrument Body"**  
**Output = "InstrumentBodyIns"** **Description = "ValveBodyIns"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCIBoxInstr3Ports

**Description:**

**Symbol Name:** SP3DCIBoxInstr3Ports.BoxInstr3Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4Box3

**User Class Name:** Simple Box Instrument 3 ports

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIBoxInstr3Ports.BoxInstr3Ports

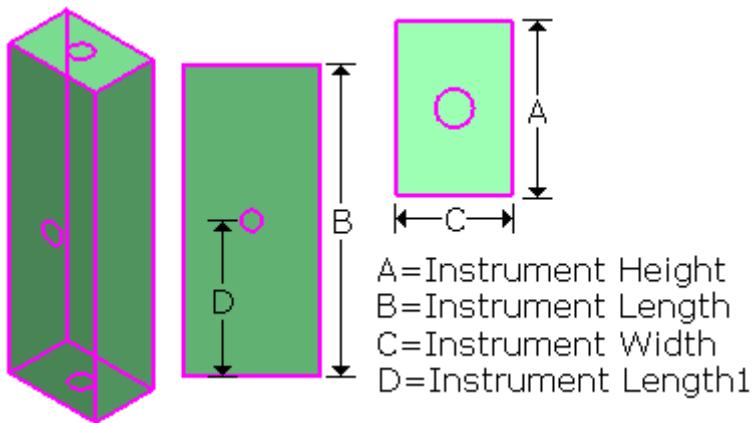
**Inputs = 32**

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentWidth" Description = "Instrument Width"
Input = "InstrumentHeight" Description = "Instrument Height"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "InstrumentLength1" Description = "Instrument Length 1"
```

**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 5**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "InstrumentBody" Description = "Instrument Body"**  
**Output = "InstrumentBodyIns" Description = "ValveBodyIns"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIBoxInstr4Ports

**Description:**

**Symbol Name:** SP3DCIBoxInstr4Ports.BoxInstr4Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4Box4

**User Class Name:** Simple Box Instrument 4 ports

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIBoxInstr4Ports.BoxInstr4Ports

**Inputs = 41**

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentWidth" Description = "Instrument Width"
Input = "InstrumentHeight" Description = "Instrument Height"
Input = "InstrumentLength1" Description = "Instrument Length 1"
Input = "InstrumentLength2" Description = "Instrument Length 2"
Input = "PortRotation4" Description = "Port Rotation 4"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
```

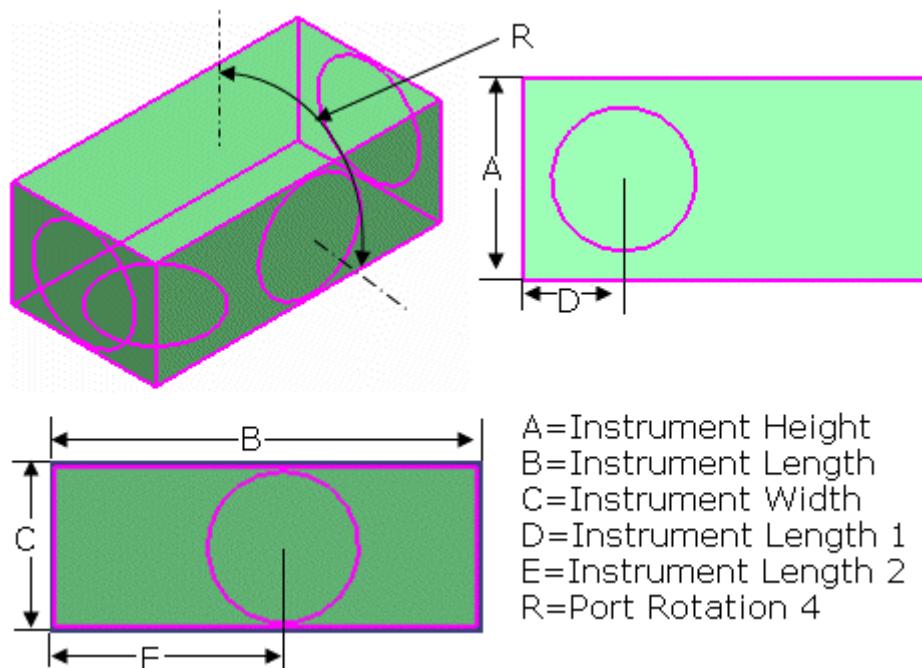
**Input** = "PressureRating3" **Description** = "PressureRating3"  
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "PortIndex4" **Description** = "PortIndex4"  
**Input** = "Npd4" **Description** = "NPD4"  
**Input** = "EndPreparation4" **Description** = "EndPreparation4"  
**Input** = "ScheduleThickness4" **Description** = "ScheduleThickness3"  
**Input** = "EndStandard4" **Description** = "EndStandard4"  
**Input** = "PressureRating4" **Description** = "PressureRating3"  
**Input** = "FlowDirection4" **Description** = "FlowDirection3"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "Id4" **Description** = "Id4"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3" **Description** = "Npd Unit Type 3"  
**Input** = "NpdUnitType4" **Description** = "Npd Unit Type 4"

**Outputs = 6**

**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "PNoz3" **Description** = "Nozzle 3"  
**Output** = "PNoz4" **Description** = "Nozzle 4"  
**Output** = "InstrumentBody" **Description** = "Instrument Body"  
**Output** = "InstrumentBodyIns" **Description** = "ValveBodyIns"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



A=Instrument Height  
B=Instrument Length  
C=Instrument Width  
D=Instrument Length 1  
E=Instrument Length 2  
R=Port Rotation 4

# SP3DCICorioFlowMetTy3GAS

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMeterTy3GAS if you do not want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter type 3 Gas

**Instrument Dimension Group:** ICM5

**Symbol Name:** SP3DCICorioFlowMetTy3GAS.CCICFMTy3GAS

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ICM5

**User Class Name:** Coriolis flowmeter Type 3 GAS Service

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICorioFlowMetTy3GAS.CCICFMTy3GAS

**Inputs = 31**

**Input = "FacetoFace" Description = "Distance between two nozzles"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

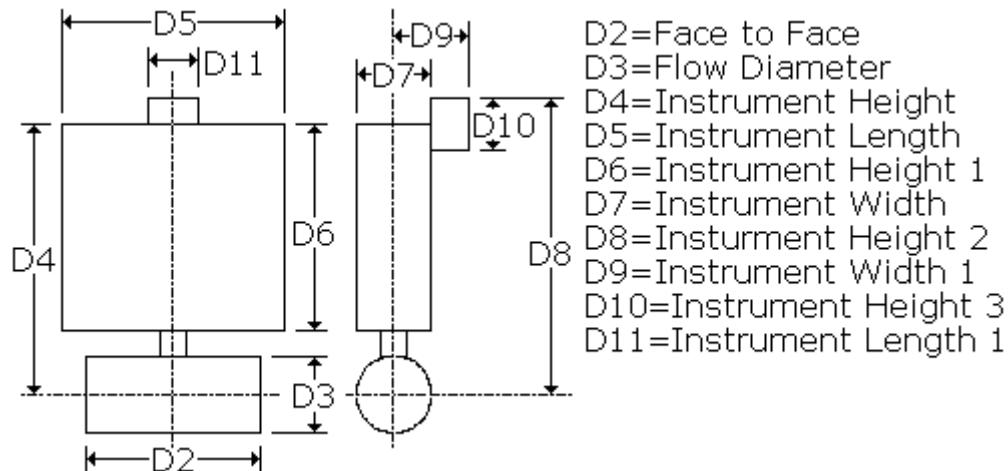
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 9**  
**Output = "FlowmeterBody" Description = "Flowmeter Body"**  
**Output = "LargeBoxBody" Description = "Large Box Body"**  
**Output = "SmallBoxBody" Description = "Small Box Body"**  
**Output = "ConnectingBody" Description = "Connecting Body"**  
**Output = "FlowmeterBodyIns" Description = "Flowmeter Body Insulation"**  
**Output = "BoxBodyIns" Description = "Box Body Insulation"**  
**Output = "ConnectingBodyIns" Description = "Connecting Body Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCICorioFlowMetTy3LIQ

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMeterTy3LIQ if you do not want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 3 Liquid

**Instrument Dimension Group:** ICM4

**Symbol Name:** SP3DCICorioFlowMetTy3LIQ.CCICFMTy3LIQ

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ICM4

**User Class Name:** Coriolis flowmeter Type 3 LIQUID Service

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICorioFlowMetTy3LIQ.CCICFMTy3LIQ

**Inputs = 31**

**Input = "FacetoFace"** **Description =** "Distance between two nozzles"

**Input = "FlowDiameter"** **Description =** "Flow Diameter"

**Input = "InstrumentHeight"** **Description =** "Instrument Height"

**Input = "InstrumentLength"** **Description =** "Instrument Length"

**Input = "InstrumentHeight1"** **Description =** "Instrument Height1"

**Input = "InstrumentWidth"** **Description =** "Instrument Width"

**Input = "InstrumentHeight2"** **Description =** "Instrument Height2"

**Input = "InstrumentWidth1"** **Description =** "Instrument width1"

**Input = "InstrumentHeight3"** **Description =** "Instrument Height3"

**Input = "InstrumentLength1"** **Description =** "Instrument Length1"

**Input = "InsulationThickness"** **Description =** "Insulation Thickness"

**Input = "Npd"** **Description =** "NPD"

**Input = "EndPreparation"** **Description =** "EndPreparation"

**Input = "ScheduleThickness"** **Description =** "ScheduleThickness"

**Input = "EndStandard"** **Description =** "EndStandard"

**Input = "PressureRating"** **Description =** "PressureRating"

**Input = "FlowDirection"** **Description =** "FlowDirection"

**Input = "PortIndex1"** **Description =** "PortIndex1"

**Input = "Npd1"** **Description =** "NPD1"

**Input = "EndPreparation1"** **Description =** "EndPreparation1"

**Input = "ScheduleThickness1"** **Description =** "ScheduleThickness1"

**Input = "EndStandard1"** **Description =** "EndStandard1"

**Input = "PressureRating1"** **Description =** "PressureRating1"

**Input = "FlowDirection1"** **Description =** "FlowDirection1"

**Input = "PortIndex2"** **Description =** "PortIndex2"

**Input = "Npd2"** **Description =** "NPD2"

**Input = "EndPreparation2"** **Description =** "EndPreparation2"

**Input = "ScheduleThickness2"** **Description =** "ScheduleThickness2"

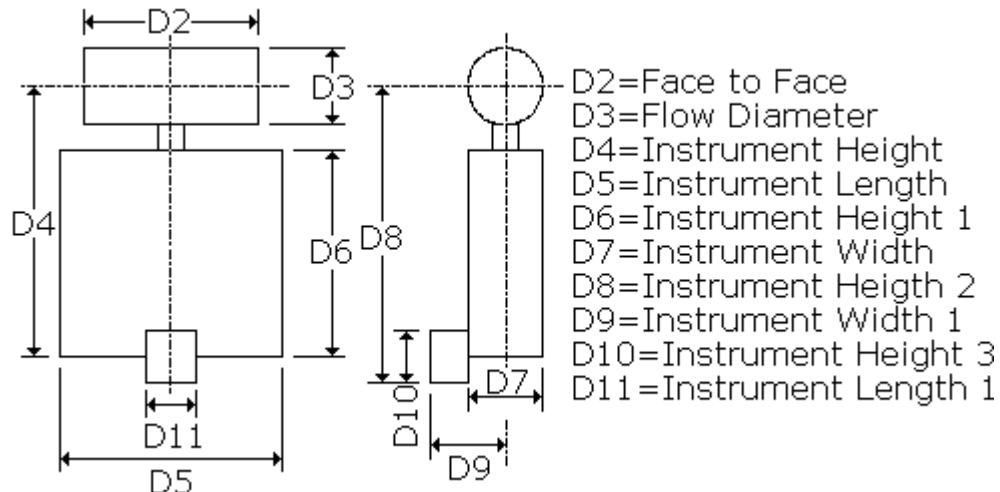
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 9**

**Output = "FlowmeterBody" Description = "Flowmeter Body"**  
**Output = "LargeBoxBody" Description = "Large Box Body"**  
**Output = "SmallBoxBody" Description = "Small Box Body"**  
**Output = "ConnectingBody" Description = "Connecting Body"**  
**Output = "FlowmeterBodyIns" Description = "Flowmeter Body Insulation"**  
**Output = "BoxBodyIns" Description = "Box Body Insulation"**  
**Output = "ConnectingBodyIns" Description = "Connecting Body Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCICorioFlwMtrTy2GAS

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMeterTy2GAS if you do not want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 2 Gas

**Instrument Dimension Group:** ICM3

**Symbol Name:** SP3DCICorioFlwMtrTy2GAS.CCICorFlwMtrTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ICM3

**User Class Name:** Coriolis Flow Meter Type 2 GAS

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICorioFlwMtrTy2GAS.CCICorFlwMtrTy2

**Inputs = 28**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length 1"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

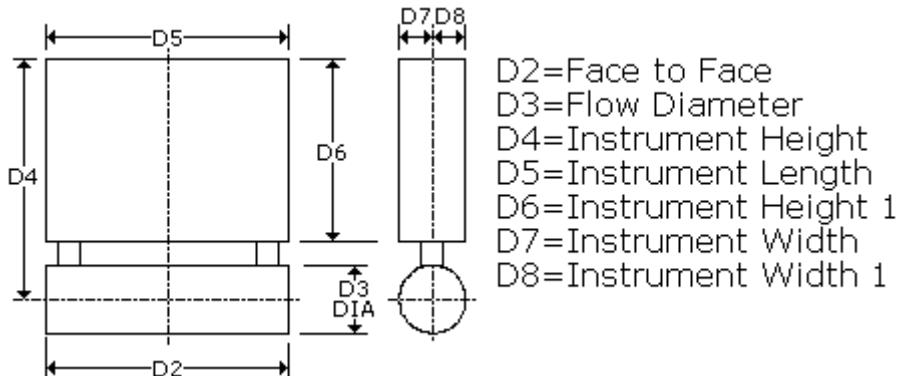
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 10**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "FlowMtrBody" Description = "Flow Meter Body"**  
**Output = "Cylinder1" Description = "Cylinder 1"**  
**Output = "Cylinder2" Description = "Cylinder 2"**  
**Output = "Box" Description = "Box"**  
**Output = "BodyIns" Description = "Body Insulation"**  
**Output = "Cylin1Ins" Description = "Cylinder 1 Insulation"**  
**Output = "Cylin2Ins" Description = "Cylinder 2 Insulation"**  
**Output = "BoxIns" Description = "Box Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCICorioFlwMtrTy2LIQ

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMeterTy2LIQ if you do not want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 2 Liquid

**Instrument Dimension Group:** ICM2

**Symbol Name:** SP3DCICorioFlwMtrTy2LIQ.CCICorFlMtrTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ICM2

**User Class Name:** Coriolis Flow Meter Type 2 Liquid Service

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICorioFlwMtrTy2LIQ.CCICorFlMtrTy2

**Inputs = 28**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

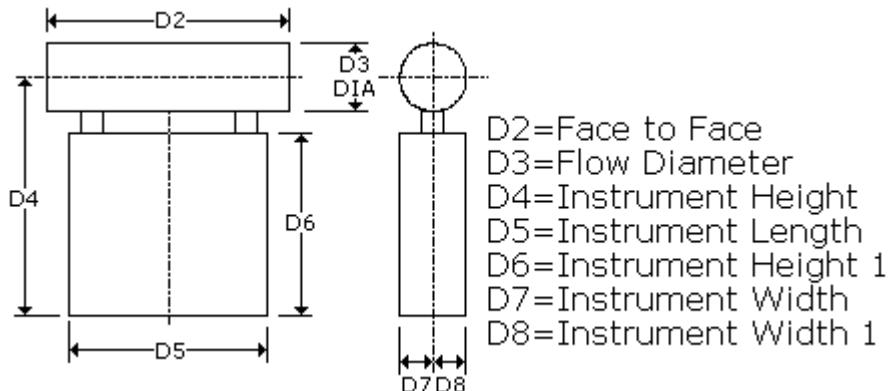
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 10**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "FlowMtrBody" Description = "Flow Meter Body"**  
**Output = "Cylinder1" Description = "Cylinder 1"**  
**Output = "Cylinder2" Description = "Cylinder 2"**  
**Output = "Box" Description = "Box"**  
**Output = "BodyIns" Description = "Body Insulation"**  
**Output = "Cylin1Ins" Description = "Cylinder 1 Insulation"**  
**Output = "Cylin2Ins" Description = "Cylinder 2 Insulation"**  
**Output = "BoxIns" Description = "Box Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCICoriolisFlowMeterTy1

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCICoriolisFlowMeterTy1 if you do not want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 1

**Instrument Dimension Group:** ICM1

**Symbol Name:** SP3DCICoriolisFlowMeterTy1.CCICFMetTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ICM1

**User Class Name:** Coriolis flowmeter Straight Thru Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICoriolisFlowMeterTy1.CCICFMetTy1

**Inputs = 27**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Diameter of Pipe Flow"**

**Input = "InstrumentHeight" Description = "Height of Instrument"**

**Input = "InstrumentDiameter" Description = "Diameter of Instrument"**

**Input = "InstrumentWidth" Description = "Width of Instrument"**

**Input = "InstrumentWidth1" Description = "Width1 of Instrument"**

**Input = "InsulationThickness" Description = "Thickness of Insulation"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

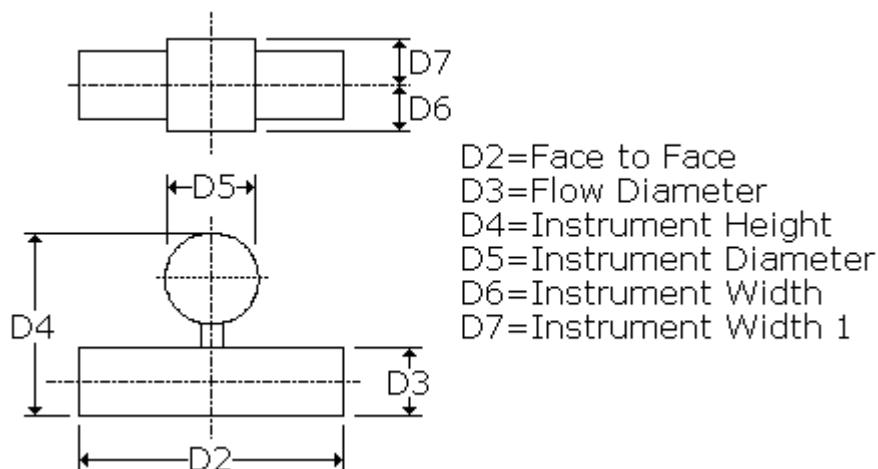
**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**  
**Output = "FlowMeterBody" Description = "Body of Flowmeter"**  
**Output = "VerCyl" Description = "Vertical Cylinder"**  
**Output = "FlowMeterTopBody" Description = "Top Body of Flowmeter"**  
**Output = "FlowMeterBodyIns" Description = "Insulation of Flowmeter"**  
**Output = "FlowMeterTopBodyIns" Description = "Insulation for Top Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCICylInstr2Ports

## Description:

**Symbol Name:** SP3DCICylInstr2Ports.CylInstr2Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4CYL

**User Class Name:** Simple Cylindrical Instrument with 2 ports

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DCICylInstr2Ports.CylInstr2Ports

### Inputs = 25

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "ActuatorHeight" Description = "Actuator Height"
Input = "ActuatorDiameter" Description = "Actuator Diameter"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

### Outputs = 5

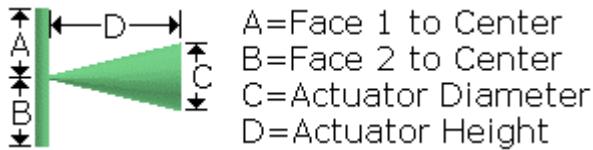
```
Output = "PNoz1" Description = "Nozzle 1"
```

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "ValveBody" Description = "Cylindrical Body of Valve"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "ValveBodyIns" Description = "ValveBodyIns"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

C=Actuator Diameter

D=Actuator Height

# SP3DCICylInstr3Ports

**Description:**

**Symbol Name:** SP3DCICylInstr3Ports.CylInstr3Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4CYL3

**User Class Name:** Simple Cylindrical Instrument 3 ports

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICylInstr3Ports.CylInstr3Ports

**Inputs = 32**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "ActuatorHeight" Description = "Actuator Height"
Input = "ActuatorDiameter" Description = "Actuator Diameter"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

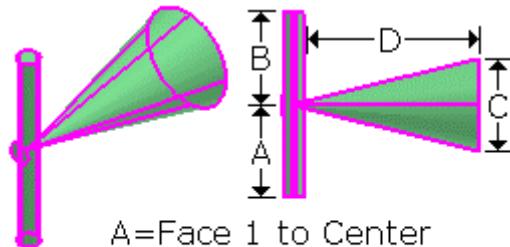
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 6**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "InstrumentBody" Description = "Cylindrical Body of Instrument"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "InstrumentBodyIns" Description = "ValveBodyIns"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



A=Face 1 to Center  
B=Face 2 to Center  
C=Actuator Diameter  
D=Actuator Height

# SP3DCICylInstr4Ports

**Description:**

**Symbol Name:** SP3DCICylInstr4Ports.CylInstr4Ports

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 4CYL4

**User Class Name:** Simple Cylindrical Instrument 4 ports

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCICylInstr4Ports.CylInstr4Ports

**Inputs = 39**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "InstrumentLength1" Description = "Instrument Length1"
Input = "PortRotation1" Description = "PortRotation1"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

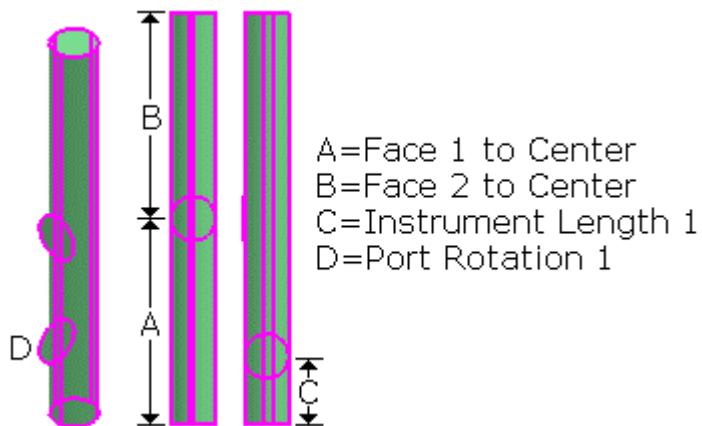
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 6**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "InstrumentBody" Description = "Cylindrical Body of Instrument"**  
**Output = "InstrumentBodyIns" Description = "ValveBodyIns"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCIDAct3WGIStyCValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAAct3WGIStyCValve if you do not want to interactively resize the symbol during or after placement.

**Description:** 3-way valve with diaphragm actuator

**Instrument Dimension Group:** ISSD3

**Symbol Name:** SP3DCIDAct3WGIStyCValve.CCIDA3WGScVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ISSD3

**User Class Name:** 3 Way Globe Style Control Valve with Diaphragm Actuator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDAct3WGIStyCValve.CCIDA3WGScVal

**Inputs = 37**

```
Input = "Face1toCenter" Description = "Face1toCenter(D2)"
Input = "FacetoFace" Description = "FacetoFace(D3)"
Input = "Face3toCenter" Description = "Face3toCenter(D4)"
Input = "ActuatorHeight" Description = "ActuatorHeight(D5)"
Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"
Input = "ActuatorHeight1" Description = "ActuatorHeight1(D19)"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
```

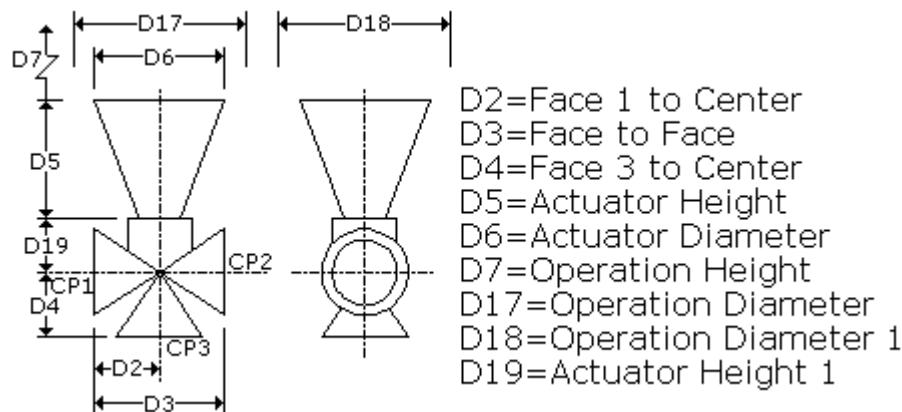
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationDiameter" Description = "Operation Diameter"**  
**Input = "OperationDiameter1" Description = "Operation Diameter1"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

#### Outputs = 11

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "ConicalBody1" Description = "ConicalBody1"**  
**Output = "ConicalBody2" Description = "ConicalBody2"**  
**Output = "ConicalBody3" Description = "ConicalBody3"**  
**Output = "ConicalActBody" Description = "ConicalActBody"**  
**Output = "ActCylinder" Description = "ActCylinder"**  
**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

#### Aspects = 3

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIDActAngleValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActAngleValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle control valve with diaphragm actuator

**Instrument Dimension Group:** ISSDA

**Symbol Name:** SP3DCIDActAngleValve.CCIDActAngVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ISSDA

**User Class Name:** Diaphragm Actuator Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActAngleValve.CCIDActAngVal

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**

**Input = "ValveOutertoCenter" Description = "ValveOutertoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

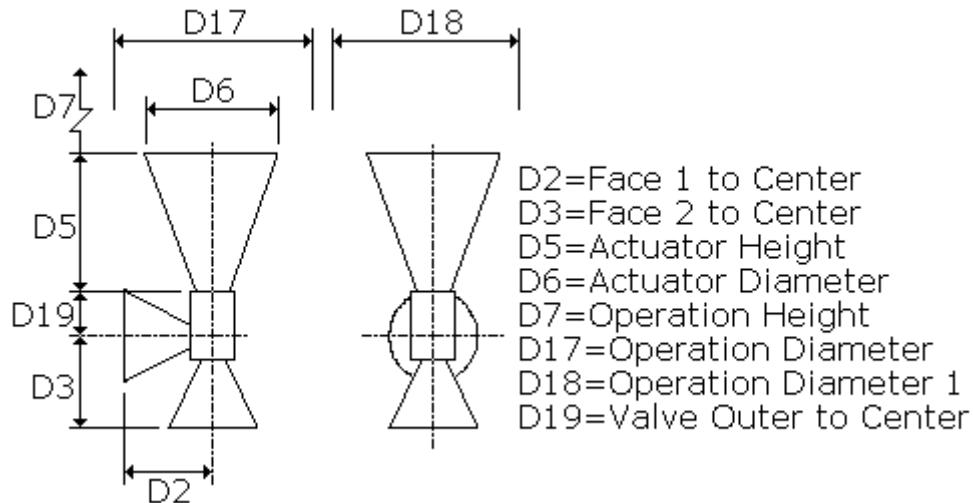
**Input = "OperationHeight" Description = "Operation Height"**

**Input = "OperationDiameter" Description = "Operation Diameter"**

**Input** = "OperationDiameter1" **Description** = "Operation Diameter1"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 9  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1"  
**Output** = "BodyCone2" **Description** = "Body Cone2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "ActuatorBody" **Description** = "Actuator Body"  
**Output** = "BodyCone1Ins" **Description** = "Insulation for Body Cone1"  
**Output** = "BodyCone2Ins" **Description** = "Insulation for Body Cone2"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects** = 3  
**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDActEPPAngVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActEPPAngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner  
**Instrument Dimension Group:**

**Symbol Name:** SP3DCIDActEPPAngVal.CCIDAЕAV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIDActEPPAngVal

**User Class Name:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActEPPAngVal.CCIDAЕAV

**Inputs = 35**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "PositionerHeight" Description = "Positioner Height"**  
**Input = "PositionerOffset" Description = "Positioner Offset"**  
**Input = "PositionerOffset1" Description = "Positioner Offset1"**  
**Input = "PositionerOffset2" Description = "Positioner Offset2"**  
**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**  
**Input = "PositionerLength" Description = "Positioner Length"**  
**Input = "HandwheelAngle" Description = "Rotation of Operator"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**

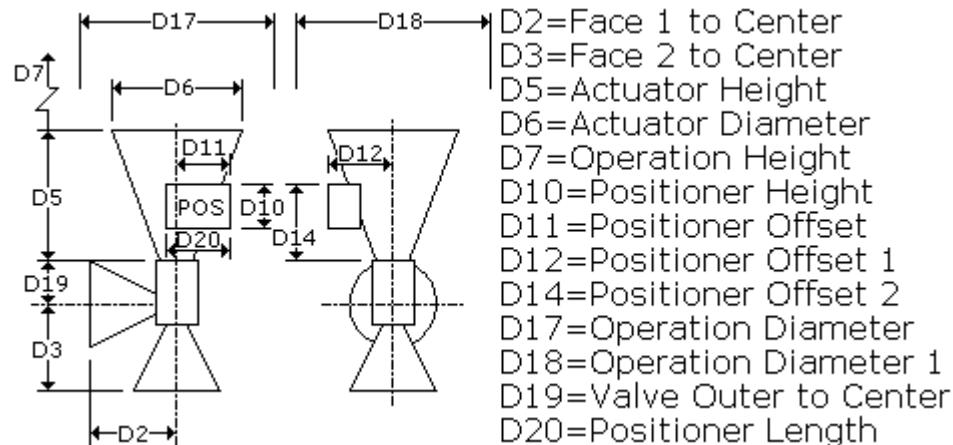
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationDiameter" Description = "Operation Diameter"**  
**Input = "OperationDiameter1" Description = "Operation Diameter1"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 10**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIDActEPPHWhAngVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActEPPHWhAngVal if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIDActEPPHWhAngVal.CCIDAECWAV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIDActEPPHWhAngVal

**User Class Name:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActEPPHWhAngVal.CCIDAECWAV

**Inputs = 38**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "PositionerHeight" Description = "Positioner Height"**

**Input = "PositionerOffset" Description = "Positioner Offset"**

**Input = "PositionerOffset1" Description = "Positioner Offset1"**

**Input = "PositionerOffset2" Description = "Positioner Offset2"**

**Input = "ValveOutertoHandWheel" Description = "Positioner Offset2"**

**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**

**Input = "PositionerLength" Description = "Positioner Length"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

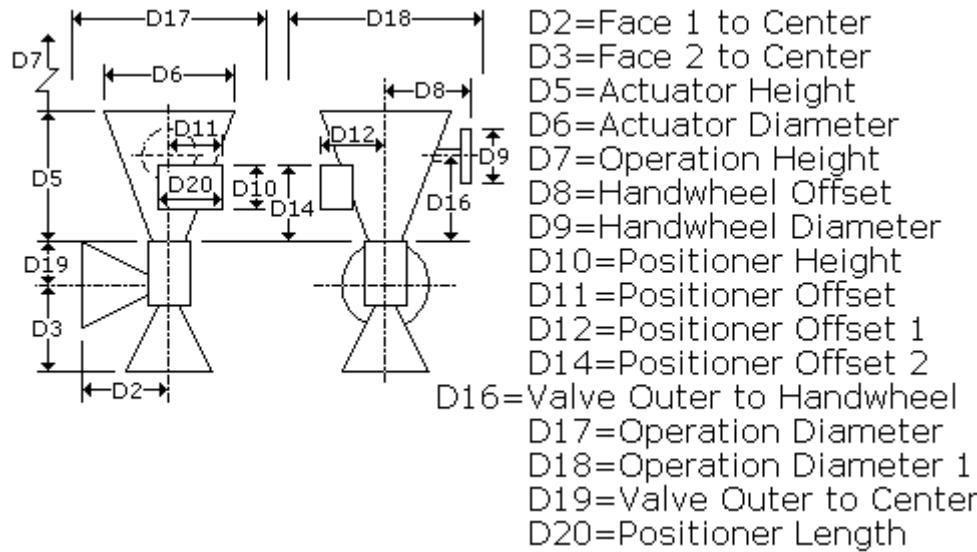
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationDiameter" Description = "Operation Diameter"**  
**Input = "OperationDiameter1" Description = "Operation Diameter1"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 12**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "Handwheel" Description = "Hand wheel"**  
**Output = "HandwheelStem" Description = "HandWheel Stem"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIDActEPPHWhGISVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActEPPHWhGISVal if you do not want to interactively resize the symbol during or after placement.

**Description:** Globe Style Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIDActEPPHWhGISVal.CCIDAECV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIDActEPPHWhGISVal

**User Class Name:** Globe Style Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActEPPHWhGISVal.CCIDAECV

**Inputs = 39**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "PositionerHeight" Description = "Positioner Height"**

**Input = "PositionerOffset" Description = "Positioner Offset"**

**Input = "PositionerOffset1" Description = "Positioner Offset1"**

**Input = "PositionerOffset2" Description = "Positioner Offset2"**

**Input = "ValveOutertoHandWheel" Description = "Positioner Offset2"**

**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**

**Input = "PositionerLength" Description = "Positioner Length"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

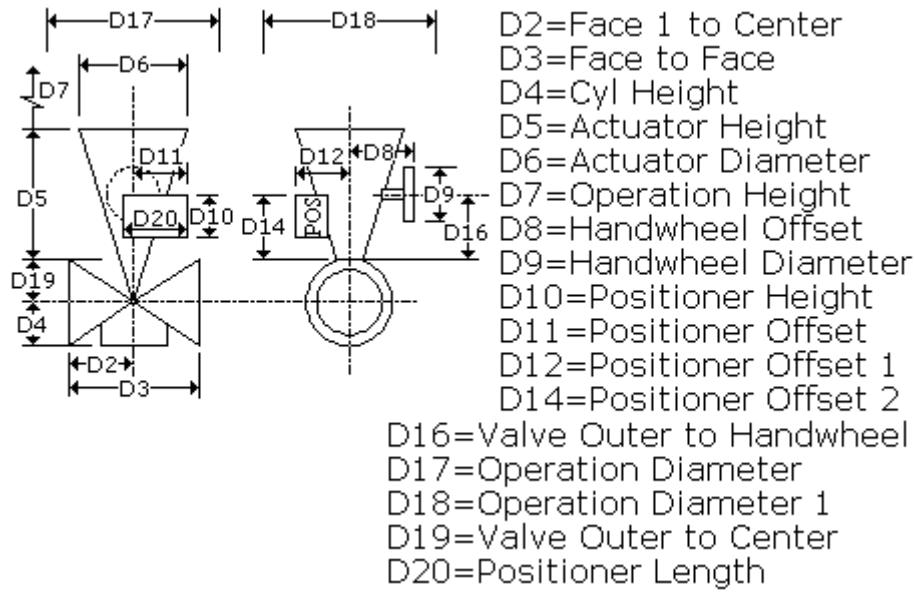
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationHeight"   **Description** = "Operation Height"  
**Input** = "OperationDiameter"   **Description** = "Operation Diameter"  
**Input** = "OperationDiameter1"   **Description** = "Operation Diameter1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone1"   **Description** = "Body Cone1"  
**Output** = "BodyCone2"   **Description** = "Body Cone2"  
**Output** = "ValCyl"   **Description** = "Valve Center Cylinder"  
**Output** = "ActuatorBody"   **Description** = "Actuator Body"  
**Output** = "PositionerBody"   **Description** = "Positioner Body"  
**Output** = "Handwheel"   **Description** = "Hand wheel"  
**Output** = "HandwheelStem"   **Description** = "HandWheel Stem"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation"  
**Output** = "OpEnvelope"   **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDActEPPHWhTopAngVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActEPPHWhTopAngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel Top

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIDActEPPHWhTopAngVal.CCIDAEHWTA

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIDActEPPHWhTopAngVal

**User Class Name:** Angle Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel Top

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActEPPHWhTopAngVal.CCIDAEHWTA

**Inputs = 37**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**  
**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**  
**Input = "PositionerHeight" Description = "Positioner Height"**  
**Input = "PositionerOffset" Description = "Positioner Offset"**  
**Input = "PositionerOffset1" Description = "Positioner Offset1"**  
**Input = "PositionerOffset2" Description = "Positioner Offset2"**  
**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**  
**Input = "PositionerLength" Description = "Positioner Length"**  
**Input = "HandwheelAngle" Description = "Rotation of Operator"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**

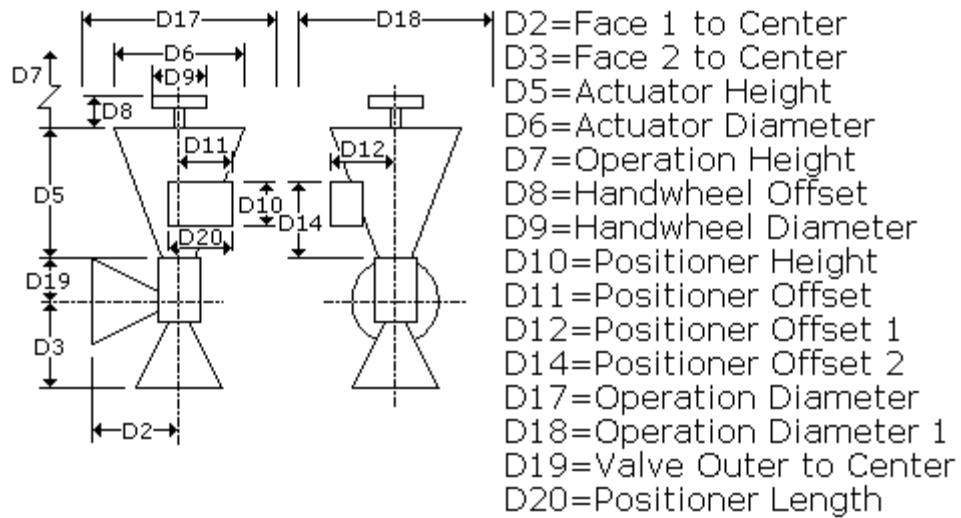
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationDiameter" Description = "Operation Diameter"**  
**Input = "OperationDiameter1" Description = "Operation Diameter1"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 12**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "Handwheel" Description = "Hand wheel"**  
**Output = "HandwheelStem" Description = "HandWheel Stem"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIDActEPPHWhTopGlSCVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActEPPHWhTopGlSCValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Globe Style Control Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel Top

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIDActEPPHWhTopGlSCVal.CCIDAETCV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIDActEPPHWhTopGlSCVal

**User Class Name:** Globe Style Control Valve with Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel Top

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActEPPHWhTopGlSCVal.CCIDAETCV

**Inputs = 37**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "PositionerHeight" Description = "Positioner Height"**

**Input = "PositionerOffset" Description = "Positioner Offset"**

**Input = "PositionerOffset1" Description = "Positioner Offset1"**

**Input = "PositionerOffset2" Description = "Positioner Offset2"**

**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**

**Input = "PositionerLength" Description = "Positioner Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

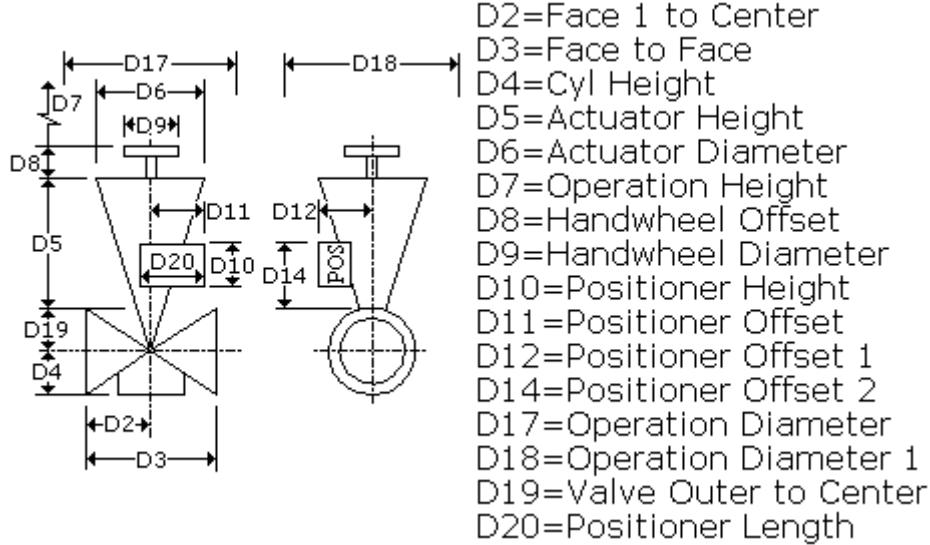
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationHeight"   **Description** = "Operation Height"  
**Input** = "OperationDiameter"   **Description** = "Operation Diameter"  
**Input** = "OperationDiameter1"   **Description** = "Operation Diameter1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone1"   **Description** = "Body Cone1"  
**Output** = "BodyCone2"   **Description** = "Body Cone2"  
**Output** = "ValCyl"   **Description** = "Valve Bottom Cylinder"  
**Output** = "ActuatorBody"   **Description** = "Actuator Body"  
**Output** = "PositionerBody"   **Description** = "Positioner Body"  
**Output** = "Handwheel"   **Description** = "Hand wheel"  
**Output** = "HandwheelStem"   **Description** = "HandWheel Stem"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation"  
**Output** = "OpEnvelope"   **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDActGlStyValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDAActGlStyValve if you do not want to interactively resize the symbol during or after placement.

**Description:** two-way globe control valve with diaphragm actuator

**Instrument Dimension Group:** ISSDS

**Symbol Name:** SP3DCIDActGlStyValve.CCIDActGSValve

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ISSDS

**User Class Name:** Diaphragm Actuator Globe Style Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDActGlStyValve.CCIDActGSValve

**Inputs = 30**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**

**Input = "ValveOutertoCenter" Description = "ValveOutertoCenter"**

**Input = "OperationHeight" Description = "Operation Height(D7)"**

**Input = "OperationDiameter" Description = "Operation Diameter(D17)"**

**Input = "OperationDiameter1" Description = "Operation Diameter1(D18)"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

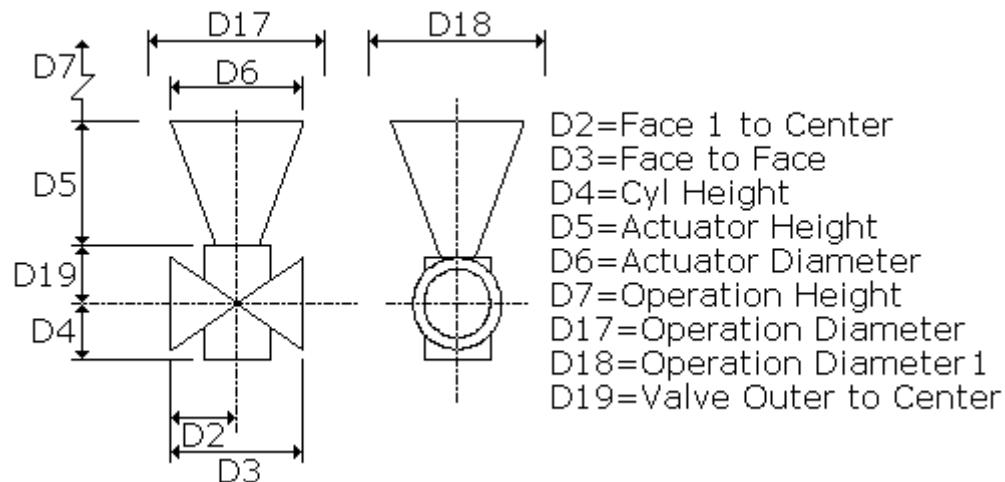
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 8**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1"  
**Output** = "BodyCone2" **Description** = "Body Cone2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "ActuatorBody" **Description** = "Actuator Body"  
**Output** = "ValveBodyIns" **Description** = "Insulation for Valve Body"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDADCylActTy5Valve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDADualCylActTy5Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting dual cylinder actuator

**Instrument Dimension Group:** IPDA5

**Symbol Name:** SP3DCIDADCylActTy5Valve.CCIDADCATy5Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA5

**User Class Name:** Double Acting Dual Cylinder Actuator Type 5 Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDADCylActTy5Valve.CCIDADCATy5Val

**Inputs = 43**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "FacetoFace" Description = "Face to Face"**  
**Input = "CylHeight" Description = "Cyl Height"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorHeight1" Description = "Actuator Height1"**  
**Input = "ActuatorWidth" Description = "Actuator Width"**  
**Input = "ActuatorWidth1" Description = "Actuator Width1"**  
**Input = "ActuatorLength" Description = "Actuator Length"**  
**Input = "ActuatorLength1" Description = "Actuator Length1"**  
**Input = "ActuatorHeight2" Description = "Actuator Height2"**  
**Input = "ActuatorLength2" Description = "Actuator Length2"**  
**Input = "ActuatorLength3" Description = "Actuator Length3"**  
**Input = "ActuatorWidth2" Description = "Actuator Width2"**  
**Input = "ActuatorWidth3" Description = "Actuator Width3"**  
**Input = "ActuatorOffset" Description = "Actuator Offset"**  
**Input = "ActuatorCylDiameter" Description = "Actuator Cylinder Diameter"**  
**Input = "ActuatorCylLength" Description = "Actuator Cylinder Length"**  
**Input = "ActuatorHeight3" Description = "Actuator Height3"**  
**Input = "ActuatorCyl1Diameter" Description = "Actuator Cylinder1 Diameter"**  
**Input = "ActuatorCyl1Length" Description = "Actuator Cylinder1 Length"**  
**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**

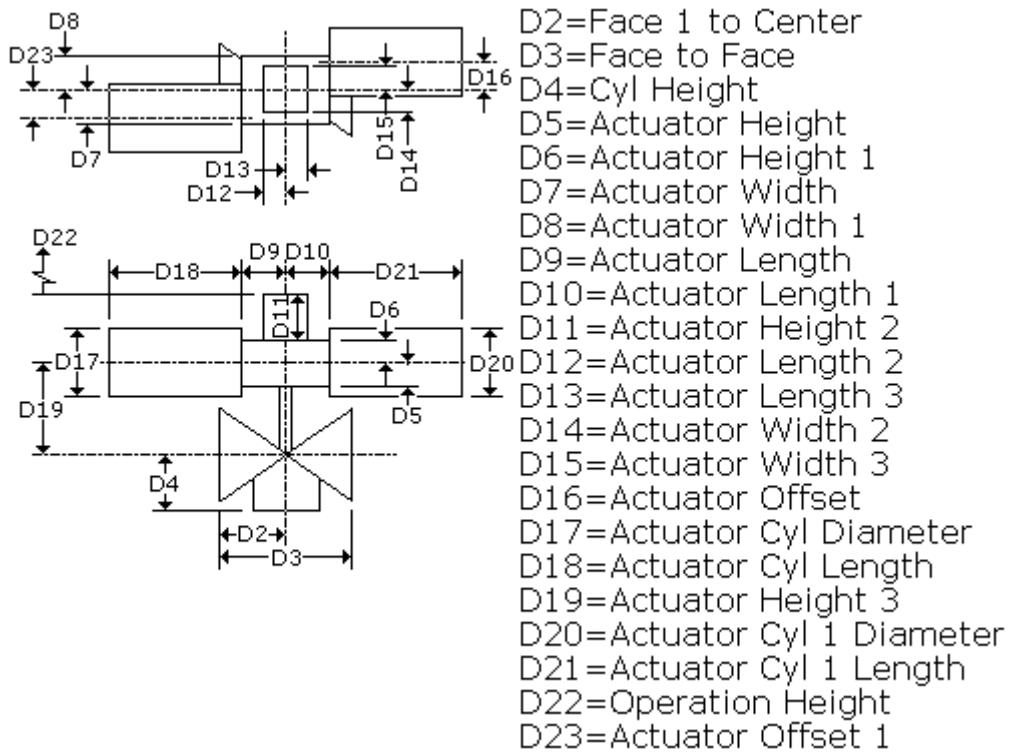
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 12**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem" Description = "Stem"**  
**Output = "LargeBox" Description = "LargeBox"**  
**Output = "SmallBox" Description = "SmallBox"**  
**Output = "Cylinder1" Description = "Cylinder1"**  
**Output = "Cylinder2" Description = "Cylinder2"**  
**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIDAOSRAct90LSValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouAOSRAct90LSValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting spring return actuator

**Instrument Dimension Group:** IPDA4A

**Symbol Name:** SP3DCIDAOSRAct90LSValve.CCIDAOSRA90LSV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA4A

**User Class Name:** Valve with Double Acting or Spring Return Actuator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDAOSRAct90LSValve.CCIDAOSRA90LSV

**Inputs = 40**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylder Height"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "ActuatorWidth" Description = "ActuatorWidth"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2"**

**Input = "ActuatorWidth3" Description = "ActuatorWidth3"**

**Input = "ActuatorLength2" Description = "ActuatorLength2"**

**Input = "ActuatorLength3" Description = "ActuatorLength3"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"**

**Input = "ActuatorCylLength" Description = "ActuatorCylLength"**

**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

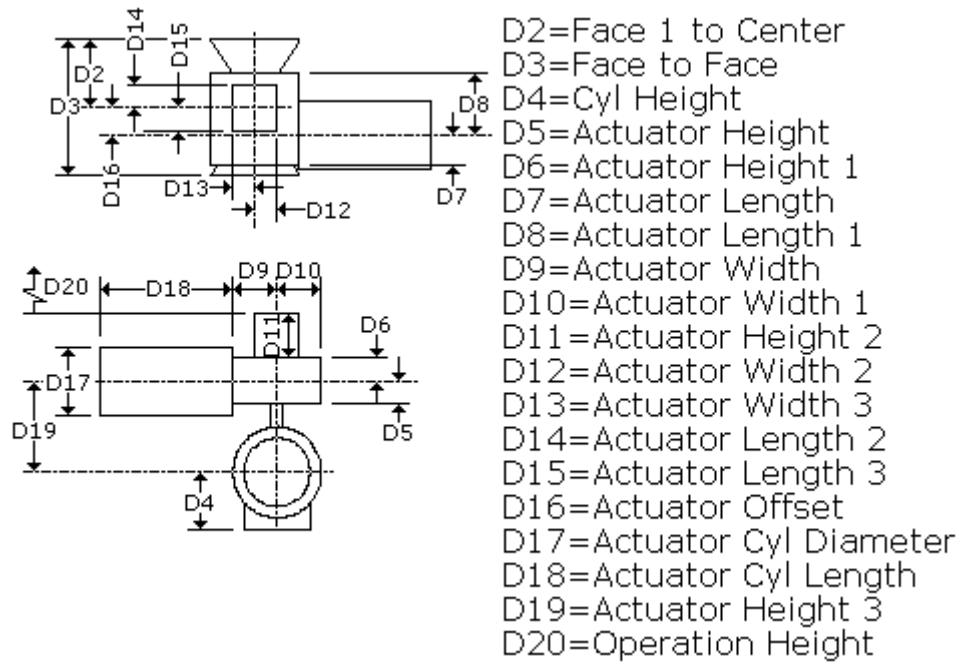
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1"  
**Output** = "BodyCone2" **Description** = "Body Cone2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "Stem" **Description** = "Stem"  
**Output** = "LargeBox" **Description** = "LargeBox"  
**Output** = "SmallBox" **Description** = "SmallBox"  
**Output** = "Cylinder" **Description** = "Cylinder"  
**Output** = "ValveBodyIns" **Description** = "Insulation for Valve Body"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDouAFailClActTy3Val

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouAFailClActTy3Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Double Acting Piston Actuator Type 3 Fail Close Control Valve

**Instrument Dimension Group:** IPDA3

**Symbol Name:** SP3DCIDouAFailClActTy3Val.CCIDAFCATy3V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA3, IPSR3

**User Class Name:** Control valve with double acting fail close actuator Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDouAFailClActTy3Val.CCIDAFCATy3V

**Inputs = 40**

```
Input = "Face1toCenter" Description = "Face 1 to Center"
Input = "FacetoFace" Description = "Face to Face"
Input = "CylHeight" Description = "Bottom Cylder Height "
Input = "ActuatorHeight" Description = "ActuatorHeight"
Input = "ActuatorHeight1" Description = "ActuatorHeight1"
Input = "ActuatorWidth" Description = "ActuatorWidth"
Input = "ActuatorWidth1" Description = "ActuatorWidth1"
Input = "ActuatorLength" Description = "ActuatorLength"
Input = "ActuatorLength1" Description = "ActuatorLength1"
Input = "ActuatorHeight2" Description = "ActuatorHeight2"
Input = "ActuatorLength2" Description = "ActuatorLength2"
Input = "ActuatorLength3" Description = "ActuatorLength3"
Input = "ActuatorWidth2" Description = "ActuatorWidth2"
Input = "ActuatorWidth3" Description = "ActuatorWidth3"
Input = "ActuatorOffset" Description = "ActuatorOffset"
Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"
Input = "ActuatorCylLength" Description = "ActuatorCylLength"
Input = "ActuatorHeight3" Description = "ActuatorHeight3"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
```

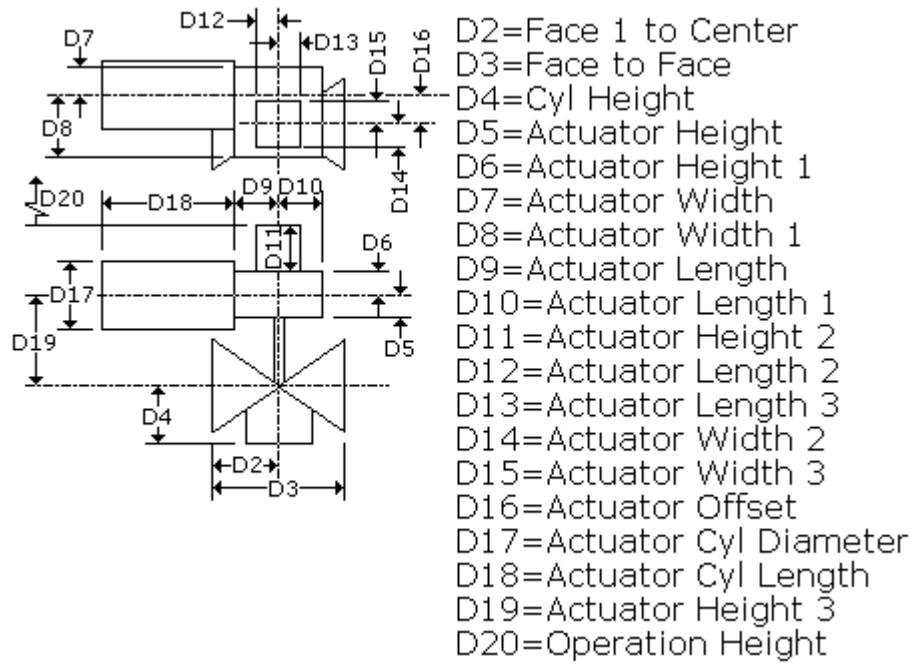
**Input** = "ScheduleThickness1"   **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationHeight"   **Description** = "OperationHeight"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Body Cone 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Body Cone 2"  
**Output** = "ValCyl"   **Description** = "Valve Cylinder"  
**Output** = "Stem"   **Description** = "Stem"  
**Output** = "LargeBox"   **Description** = "LargeBox"  
**Output** = "SmallBox"   **Description** = "SmallBox"  
**Output** = "Cylinder"   **Description** = "Cylinder"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation"  
**Output** = "OpEnvelope"   **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIDouAFailOpenActValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouAFailOpenActValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting single piston actuator fail open

**Instrument Dimension Group:** IPDA4

**Symbol Name:** SP3DCIDouAFailOpenActValve.CCIDAFOAVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA4, IPSR4

**User Class Name:** Control valve with double acting single piston actuator fail open

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDouAFailOpenActValve.CCIDAFOAVal

**Inputs = 40**

```
Input = "Face1toCenter" Description = "Face1toCenter"
Input = "FacetoFace" Description = "FacetoFace"
Input = "CylHeight" Description = "CylHeight"
Input = "ActuatorHeight" Description = "ActuatorHeight"
Input = "ActuatorHeight1" Description = "ActuatorHeight1"
Input = "ActuatorWidth" Description = "ActuatorWidth"
Input = "ActuatorWidth1" Description = "ActuatorWidth1"
Input = "ActuatorLength" Description = "ActuatorLength"
Input = "ActuatorLength1" Description = "ActuatorLength1"
Input = "ActuatorHeight2" Description = "ActuatorHeight2"
Input = "ActuatorLength2" Description = "ActuatorLength2"
Input = "ActuatorLength3" Description = "ActuatorLength3"
Input = "ActuatorWidth2" Description = "ActuatorWidth2"
Input = "ActuatorWidth3" Description = "ActuatorWidth3"
Input = "ActuatorOffset" Description = "ActuatorOffset"
Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"
Input = "ActuatorCylLength" Description = "ActuatorCylLength"
Input = "ActuatorHeight3" Description = "ActuatorHeight3"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
```

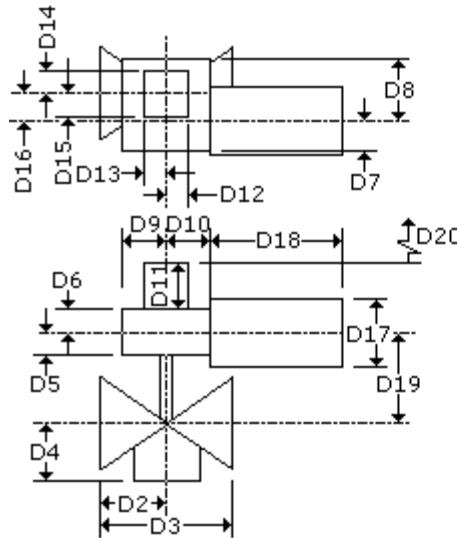
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1"  
**Output** = "BodyCone2" **Description** = "Body Cone2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "Stem" **Description** = "Stem"  
**Output** = "LargeBox" **Description** = "LargeBox"  
**Output** = "SmallBox" **Description** = "SmallBox"  
**Output** = "Cylinder" **Description** = "Cylinder"  
**Output** = "ValveBodyIns" **Description** = "Insulation for Valve Body"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIDouAOrSprRetActVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouAOrSprRetActValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting spring return actuator

**Instrument Dimension Group:** IPDA3A

**Symbol Name:** SP3DCIDouAOrSprRetActVal.CCIDAOSRAV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA3A

**User Class Name:** Double Acting or Spring Return Actuator Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDouAOrSprRetActVal.CCIDAOSRAV

**Inputs = 40**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylder Height "**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "ActuatorWidth" Description = "ActuatorWidth"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2"**

**Input = "ActuatorWidth3" Description = "ActuatorWidth3"**

**Input = "ActuatorLength2" Description = "ActuatorLength2"**

**Input = "ActuatorLength3" Description = "ActuatorLength3"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"**

**Input = "ActuatorCylLength" Description = "ActuatorCylLength"**

**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

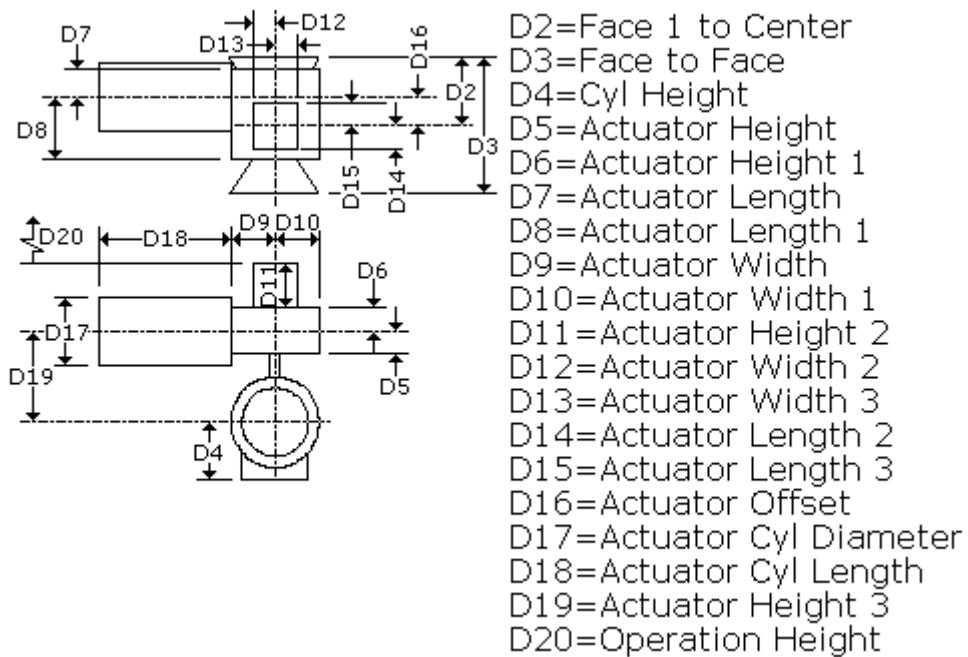
**Input** = "ScheduleThickness1"   **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationHeight"   **Description** = "Operation Height"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Body Cone 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Body Cone 2"  
**Output** = "ValCyl"   **Description** = "Valve Cylinder"  
**Output** = "Stem"   **Description** = "Stem"  
**Output** = "LargeBox"   **Description** = "LargeBox"  
**Output** = "SmallBox"   **Description** = "SmallBox"  
**Output** = "Cylinder"   **Description** = "Cylinder"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation"  
**Output** = "OpEnvelope"   **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIDouASinCylActTy2Val

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouASinCylActTy2Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Double Acting Dual Cylinder Actuator Type 1 Valve

**Instrument Dimension Group:** IPDA2

**Symbol Name:** SP3DCIDouASinCylActTy2Val.CCIDASCATy2V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPDA1, IPDA2, IPSR1, IPSR2

**User Class Name:** Control valve with double acting dual cylinder actuator Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDouASinCylActTy2Val.CCIDASCATy2V

**Inputs = 42**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorLength3" Description = "Actuator Length3"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorWidth3" Description = "Actuator Width3"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "ActuatorCylDiameter" Description = "Actuator Cyliner Diameter"**

**Input = "ActuatorCylLength" Description = "Actuator Cyliner Length"**

**Input = "ActuatorHeight3" Description = "Actuator Height3"**

**Input = "ActuatorCyl1Diameter" Description = "Actuator Cyliner Diameter"**

**Input = "ActuatorCyl1Length" Description = "Actuator Cyliner Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

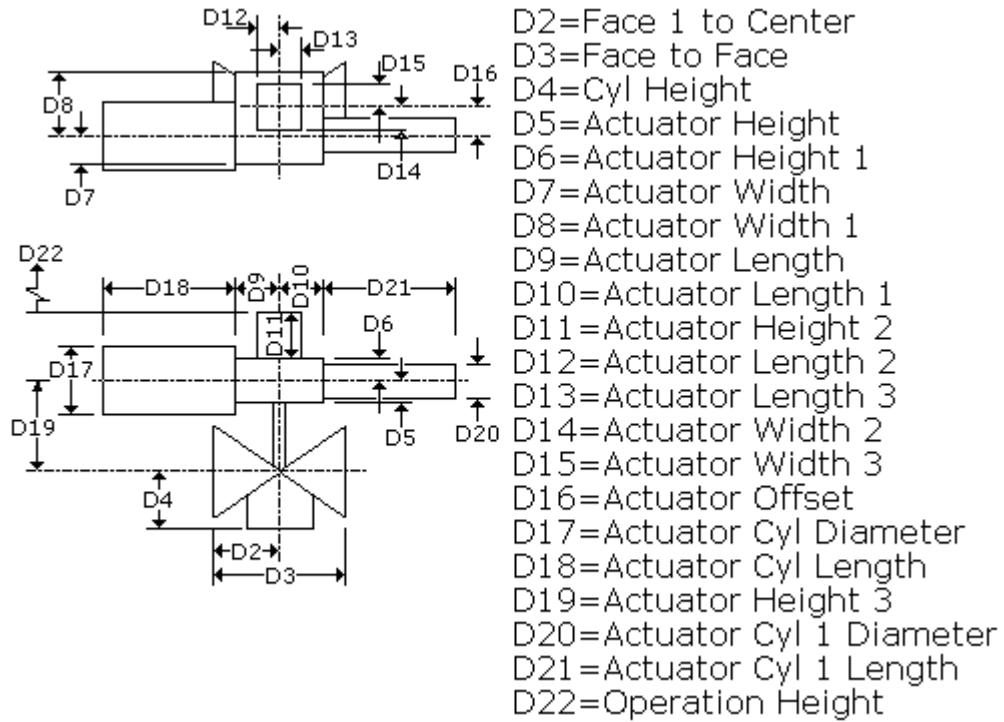
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 12**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Body Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "StemBody" Description = "Stem Body"**  
**Output = "LargeBoxBody" Description = "Large Box Body"**  
**Output = "SmallBoxBody" Description = "Small Box Body"**  
**Output = "Cylinder1Body" Description = "Cylinder1 Body"**  
**Output = "Cylinder2Body" Description = "Cylinder2 Body"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIDouChamberOrifice

You can interactively resize this part symbol during or after placement. Use the symbol SP3DDouChamberOrifice if you do not want to interactively resize the symbol during or after placement.

**Description:** Double Chamber Orifice Fitting

**Instrument Dimension Group:** IDCO

**Symbol Name:** SP3DCIDouChamberOrifice.CCIDChOrifice

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IDCO

**User Class Name:** Double Chambered Orifice Fitting

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIDouChamberOrifice.CCIDChOrifice

**Inputs = 49**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "ArmLength" Description = "Arm Length"**

**Input = "NozzleOffset" Description = "Nozzle offset"**

**Input = "NozzleOffset1" Description = "Nozzle offset1"**

**Input = "ArmHeight" Description = "Arm Height"**

**Input = "ArmHeight1" Description = "Arm Height1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

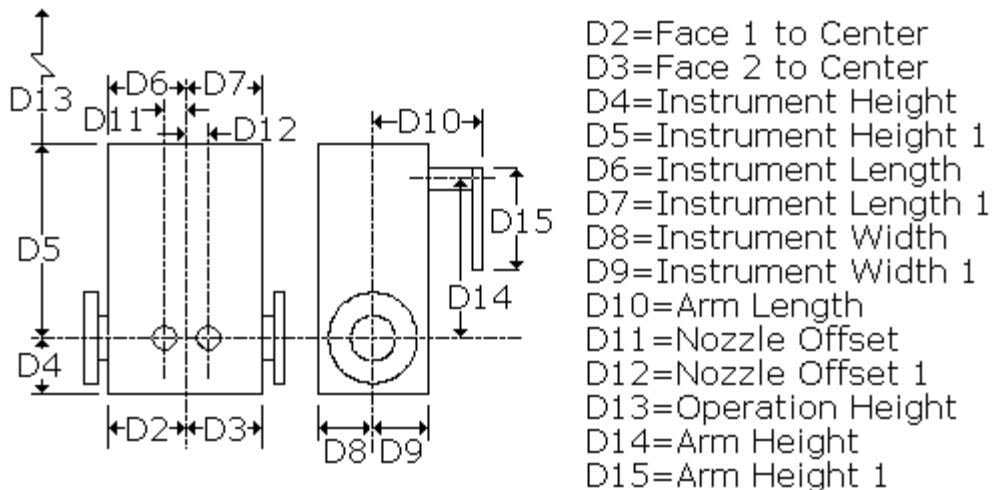
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**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 10**  
**Output = "ChamberBody" Description = "Chamber Body"**  
**Output = "ArmCyl1" Description = "Arm Cylinder1"**  
**Output = "ArmBody2" Description = "Arm Body2"**  
**Output = "NozzCylIns" Description = "Nozzle Cylinder Insulation"**  
**Output = "ChamberBodyIns" Description = "Chamber Body Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIElecActTy1AngValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy1AngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electrical Actuator Type 1 Angle Valve

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIElecActTy1AngValve.CCIElecATy1AV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIElecActTy1AngValve

**User Class Name:** Electrical Actuator Type 1 Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy1AngValve.CCIElecATy1AV

**Inputs = 36**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "Motor1Diameter" Description = "Motor1Diameter"**

**Input = "Motor2Diameter" Description = "Motor2Diameter"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "Motor3Diameter" Description = "Motor3Diameter"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "HandWheelDiameter" Description = "HandWheelDiameter"**

**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**

**Input = "Motor3EndtoCenter" Description = "Motor3EndtoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

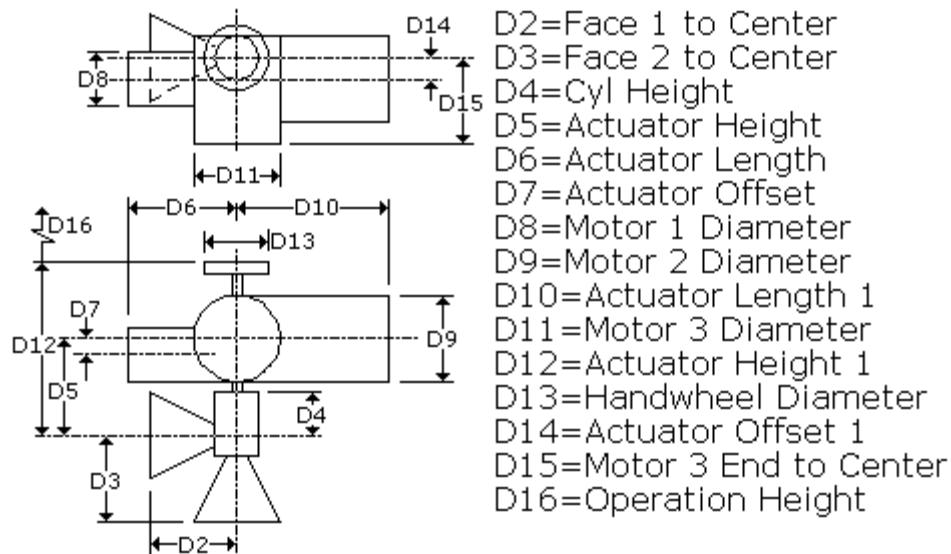
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 14**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "BodyCone1"**  
**Output = "BodyCone2" Description = "BodyCone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem1" Description = "Stem 1"**  
**Output = "Motor1" Description = "Motor 1"**  
**Output = "Motor2" Description = "Motor 2"**  
**Output = "Motor3" Description = "Motor 3"**  
**Output = "Stem2" Description = "Stem 2"**  
**Output = "Handwheel" Description = "Handwheel"**  
**Output = "BodyCone1Ins" Description = "Insulation for Valve Horizontal Body"**  
**Output = "BodyCone2Ins" Description = "Insulation for Valve Vertical Body"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIElecActTy1Valve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy1Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 1

**Instrument Dimension Group:** IEAM1

**Symbol Name:** SP3DCIElecActTy1Valve.CCIElecActTy1Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IEAM1

**User Class Name:** Electrical Actuator Type 1 Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy1Valve.CCIElecActTy1Val

**Inputs = 36**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "Motor1Diameter" Description = "Motor1Diameter"**

**Input = "Motor2Diameter" Description = "Motor2Diameter"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "Motor3Diameter" Description = "Motor3Diameter"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "HandWheelDiameter" Description = "HandWheelDiameter"**

**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**

**Input = "Motor3EndtoCenter" Description = "Motor3EndtoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

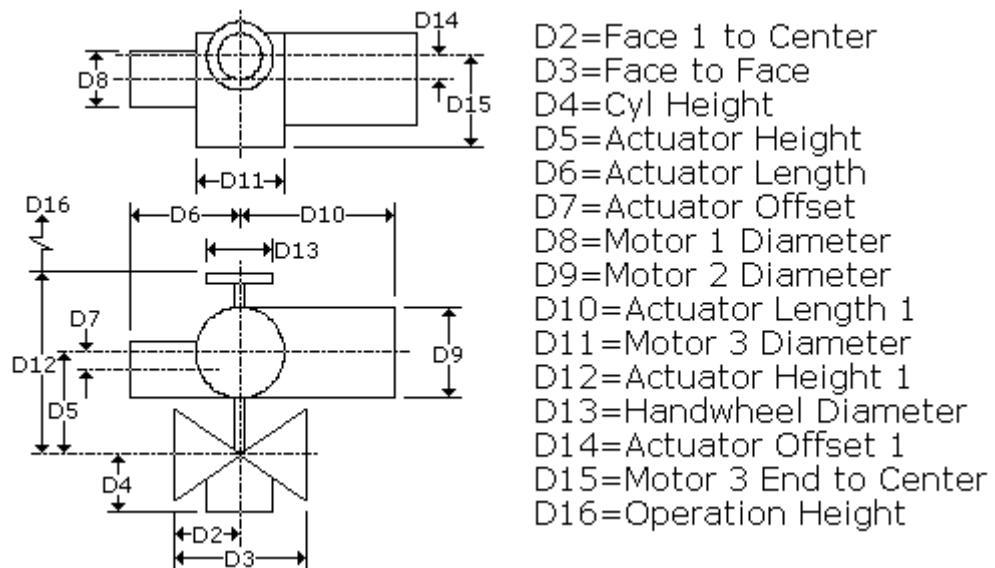
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "OperationHeight"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 13**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem1" Description = "Stem 1"**  
**Output = "Motor1" Description = "Motor 1"**  
**Output = "Motor2" Description = "Motor 2"**  
**Output = "Motor3" Description = "Motor 3"**  
**Output = "Stem2" Description = "Stem 2"**  
**Output = "Handwheel" Description = "Handwheel"**  
**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIElecActTy2AngVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy2AngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Type 2 Angle Valve

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIElecActTy2AngVal.CCIElActTy2AVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIElecActTy2AngVal

**User Class Name:** Electric Actuator Type 2 Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy2AngVal.CCIElActTy2AVal

**Inputs = 38**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "CylHeight" Description = "Valve Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorLength" Description = "Actuator Length D6"**

**Input = "ActuatorOffset" Description = "Actuator Offset D7"**

**Input = "Motor2Diameter" Description = "Motor2Diameter D8"**

**Input = "Motor1Diameter" Description = "Motor1Diameter D9"**

**Input = "ActuatorLength1" Description = "ActuatorLength1 D10"**

**Input = "Motor3Diameter" Description = "Motor 3 Diameter D11"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D12"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D13"**

**Input = "ActuatorOffset1" Description = "Actuator Offset 1 D14"**

**Input = "Motor3EndtoCenter" Description = "Motor 3 End to Center D15"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset 2 D17"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D18"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

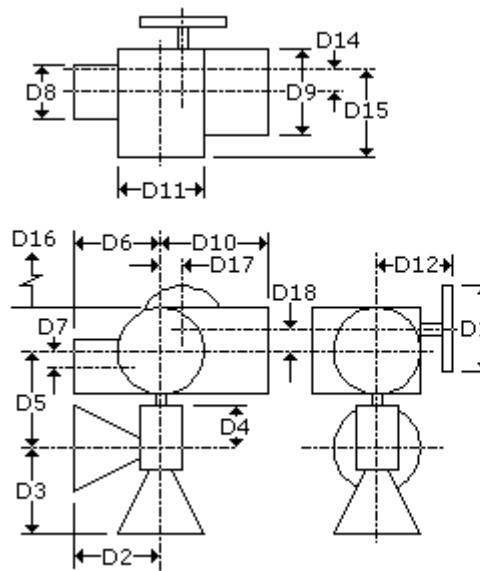
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 14**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone 1"  
**Output** = "BodyCone2" **Description** = "Body Cone 1"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "Stem" **Description** = "Stem"  
**Output** = "CentralMotor" **Description** = "Central Motor"  
**Output** = "Motor2" **Description** = "Motor2"  
**Output** = "Motor1" **Description** = "Motor1"  
**Output** = "Stem1" **Description** = "Stem1"  
**Output** = "HandWheel" **Description** = "HandWheel"  
**Output** = "BodyCone1Ins" **Description** = "Body Insulation Horizontal Cylinder"  
**Output** = "BodyCone2Ins" **Description** = "Body Insulation Vertical Cylinder"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIElecActTy2Val

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy2Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 2

**Instrument Dimension Group:** IEAM2

**Symbol Name:** SP3DCIElecActTy2Val.CCIElecActTy2V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IEAM2

**User Class Name:** Electric Actuator Type 2 Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy2Val.CCIElecActTy2V

**Inputs = 38**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorLength" Description = "Actuator Length D6"**

**Input = "ActuatorOffset" Description = "Actuator Offset D7"**

**Input = "Motor2Diameter" Description = "Motor2Diameter D8"**

**Input = "Motor1Diameter" Description = "Motor1Diameter D9"**

**Input = "ActuatorLength1" Description = "ActuatorLength1 D10"**

**Input = "Motor3Diameter" Description = "Motor 3 Diameter D11"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D12"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D13"**

**Input = "ActuatorOffset1" Description = "Actuator Offset 1 D14"**

**Input = "Motor3EndtoCenter" Description = "Motor 3 End to Center D15"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset 2 D17"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D18"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

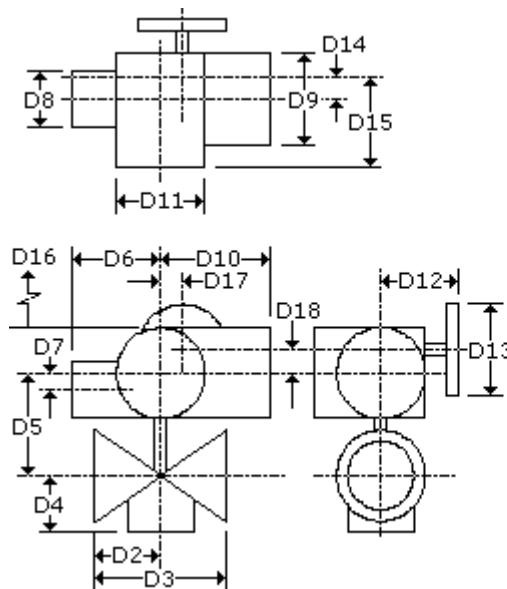
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 13**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Body Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem" Description = "Stem"**  
**Output = "CentralMotor" Description = "Central Motor"**  
**Output = "Motor2" Description = "Motor2"**  
**Output = "Motor1" Description = "Motor1"**  
**Output = "Stem1" Description = "Stem1"**  
**Output = "HandWheel" Description = "HandWheel"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



D2=Face 1 to Center  
D3=Face to Face  
D4=Cyl Height  
D5=Actuator Height  
D6=Actuator Length  
D7=Actuator Offset  
D8=Motor 2 Diameter  
D9=Motor 1 Diameter  
D10=Actuator Length 1  
D11=Motor 3 Diameter  
D12=Handwheel Length  
D13=Handwheel Diameter  
D14=Actuator Offset 1  
D15=Motor 3 End to Center  
D16=Operation Height  
D17=Handwheel Offset  
D18=Handwheel Offset 1

# SP3DCIElecActTy3AngValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy3AngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electrical Actuator Type 3 Angle Valve

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIElecActTy3AngValve.CCIEATy3AVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIElecActTy3AngValve

**User Class Name:** Electrical Actuator Type 3 Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy3AngValve.CCIEATy3AVal

**Inputs = 41**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "CylHeight" Description = "Cylinder Height"**

**Input = "Motor4Offset" Description = "Motor4 Offset"**

**Input = "Motor4Length" Description = "Motor4 Length"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "HandWheelDiameter" Description = "HandWheel Diameter"**

**Input = "Motor1Diameter" Description = "Motor1 Diameter"**

**Input = "Motor4Diameter" Description = "Motor4 Diameter"**

**Input = "Motor3Length" Description = "Motor3 Length"**

**Input = "Motor1Offset" Description = "Motor1 Offset"**

**Input = "Motor2Offset" Description = "Motor2 Offset"**

**Input = "Motor1Length" Description = "Motor1 Length"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "Motor3toCenter" Description = "Motor3 to Center"**

**Input = "ActuatorHeight3" Description = "Actuator Height3"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

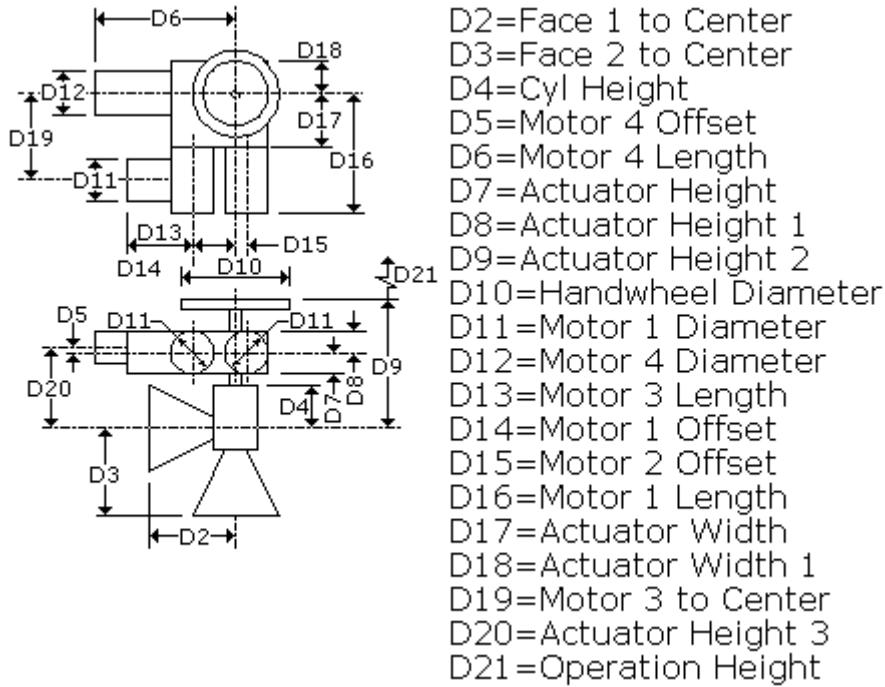
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 15**

**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1Ins" **Description** = "Insulation for Body Cone1"  
**Output** = "BodyCone2Ins" **Description** = "Insulation for Body Cone2"  
**Output** = "BodyCone1" **Description** = "Body Cone1"  
**Output** = "BodyCone2" **Description** = "Body Cone2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "StemBody" **Description** = "StemBody"  
**Output** = "ActuatorBody" **Description** = "ActuatorBody"  
**Output** = "Motor1Body" **Description** = "Motor1Body"  
**Output** = "Motor2Body" **Description** = "Motor2Body"  
**Output** = "Motor3Body" **Description** = "Motor3Body"  
**Output** = "Motor4Body" **Description** = "Motor4Body"  
**Output** = "HandWheel" **Description** = "HandWheel"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIElecActTy3Valve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy3Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 3

**Instrument Dimension Group:** IEAM3

**Symbol Name:** SP3DCIElecActTy3Valve.CCIElecActTy3Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IEAM3

**User Class Name:** Electrical Actuator Type 3 Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy3Valve.CCIElecActTy3Val

**Inputs = 41**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height"**

**Input = "Motor4Offset" Description = "Motor4 Offset"**

**Input = "Motor4Length" Description = "Motor4 Length"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "HandWheelDiameter" Description = "HandWheel Diameter"**

**Input = "Motor1Diameter" Description = "Motor1 Diameter"**

**Input = "Motor4Diameter" Description = "Motor4 Diameter"**

**Input = "Motor3Length" Description = "Motor3 Length"**

**Input = "Motor1Offset" Description = "Motor1Offset"**

**Input = "Motor2Offset" Description = "Motor2Offset"**

**Input = "Motor1Length" Description = "Motor1Length"**

**Input = "ActuatorWidth" Description = "ActuatorWidth"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**

**Input = "Motor3toCenter" Description = "Motor3toCenter"**

**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

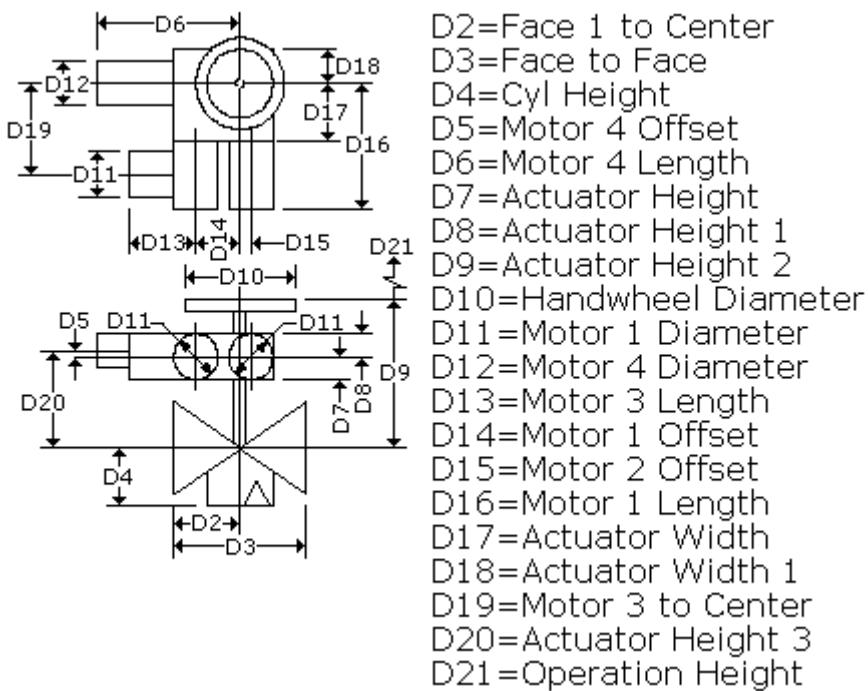
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "OperationHeight"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 14**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "StemBody" Description = "Stem Body"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "Motor1Body" Description = "Motor1 Body"**  
**Output = "Motor2Body" Description = "Motor2 Body"**  
**Output = "Motor3Body" Description = "Motor3 Body"**  
**Output = "Motor4Body" Description = "Motor4 Body"**  
**Output = "HandWheel" Description = "HandWheel"**  
**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIElecActTy4AngVal

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy4AngVal if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle Valve with Electric Actuator Ty 4

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIElecActTy4AngVal.CCIElActTy4AVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIElecActTy4AngVal

**User Class Name:** Angle Valve with Electric Actuator Ty 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy4AngVal.CCIElActTy4AVal

**Inputs = 38**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "CylHeight" Description = "Valve Center Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "Motor1Diameter" Description = "Motor1 Diameter"**

**Input = "Motor2Diameter" Description = "Motor2 Diameter"**

**Input = "Motor2Offset" Description = "Motor2 Offset"**

**Input = "Motor1Offset" Description = "Motor1 Offset"**

**Input = "Motor2Length" Description = "Motor2 Length"**

**Input = "Motor1Length" Description = "Motor1 Length"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

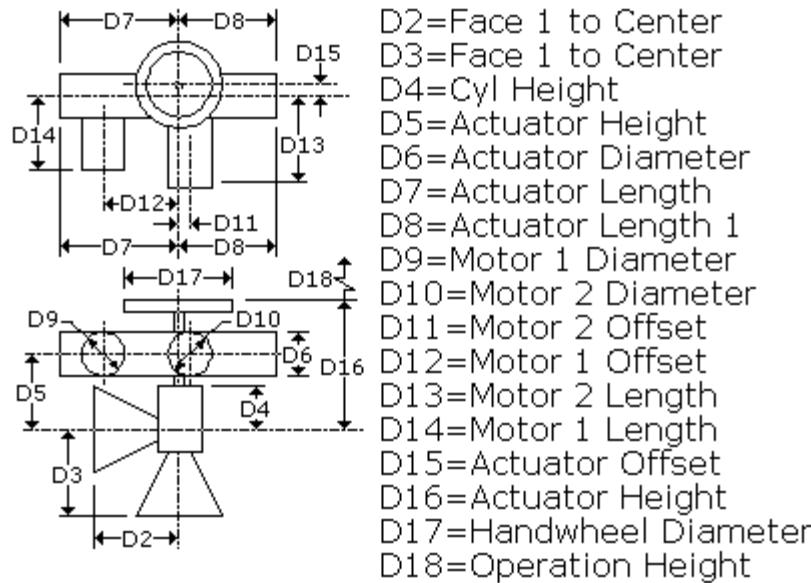
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 13**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1 of Valve"  
**Output** = "BodyCone2" **Description** = "Body Cone2 of Valve"  
**Output** = "ValCyl" **Description** = "Valve Center Cylinder"  
**Output** = "StemBody" **Description** = "Stem Body"  
**Output** = "ActuatorBody" **Description** = "Actuator Body"  
**Output** = "Motor1Body" **Description** = "Motor1 Body"  
**Output** = "Motor2Body" **Description** = "Motor2 Body"  
**Output** = "HandWheel" **Description** = "HandWheel"  
**Output** = "BodyCone1Ins" **Description** = "Body Cone 1 Insulation"  
**Output** = "BodyCone2Ins" **Description** = "Body Cone 2 Insulation"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIElecActTy4Valve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy4Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Type 4

**Instrument Dimension Group:** IEAM4

**Symbol Name:** SP3DCIElecActTy4Valve.CCIElecActTy4Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IEAM4

**User Class Name:** Valve with Electric Actuator Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy4Valve.CCIElecActTy4Val

**Inputs = 38**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "Motor1Diameter" Description = "Motor1 Diameter"**

**Input = "Motor2Diameter" Description = "Motor2 Diameter"**

**Input = "Motor2Offset" Description = "Motor2 Offset"**

**Input = "Motor1Offset" Description = "Motor1 Offset"**

**Input = "Motor2Length" Description = "Motor2 Length"**

**Input = "Motor1Length" Description = "Motor1 Length"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

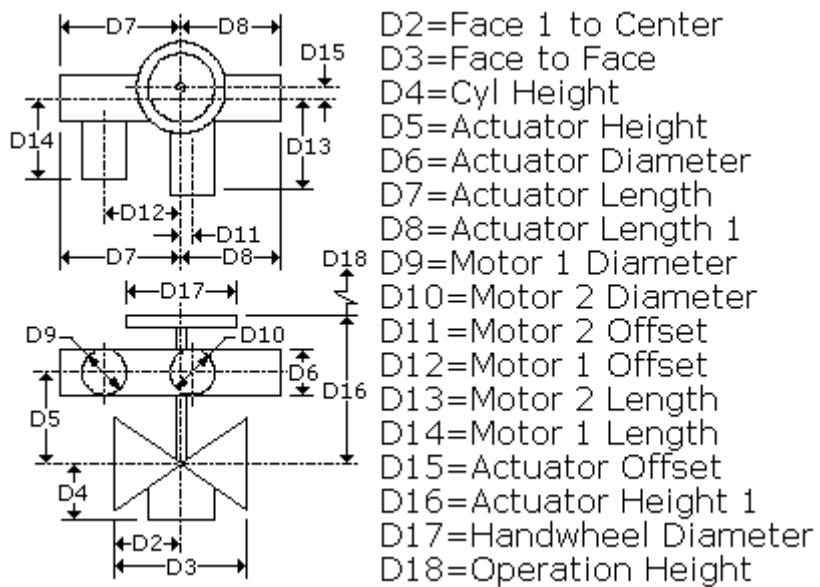
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "OperationHeight"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 12**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone1 of Valve"  
**Output** = "BodyCone2" **Description** = "Body Cone2 of Valve"  
**Output** = "ValCyl" **Description** = "Bottom Valve Cylinder"  
**Output** = "StemBody" **Description** = "Stem Body"  
**Output** = "ActuatorBody" **Description** = "Actuator Body"  
**Output** = "Motor1Body" **Description** = "Motor1 Body"  
**Output** = "Motor2Body" **Description** = "Motor2 Body"  
**Output** = "HandWheel" **Description** = "HandWheel"  
**Output** = "ValveBodyIns" **Description** = "Valve Body Insulation"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIElecActTy5AngValve

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy5AngValve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Type 5 Angle Valve

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIElecActTy5AngValve.CCIEATy5AVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIElecActTy5angValve

**User Class Name:** Electric Actuator Type 5 Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy5AngValve.CCIEATy5AVal

**Inputs = 41**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "CylHeight" Description = "Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1 D6"**

**Input = "ActuatorHeight2" Description = "Actuator Height 2 D7"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D8"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D9"**

**Input = "ActuatorLength" Description = "Actuator Length D10"**

**Input = "ActuatorDiameter1" Description = "Actuator Diameter D11"**

**Input = "Motor1Diameter" Description = "Motor 1 Diameter D12"**

**Input = "Motor1Length" Description = "Motor 1 Length D13"**

**Input = "Motor1Offset" Description = "Motor 1 Offset D14"**

**Input = "Motor2Diameter" Description = "Motor 2 Diameter D15"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D16"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D17"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D18"**

**Input = "Motor2Offset" Description = "Motor 2 Offset D19"**

**Input = "Motor2Length" Description = "Motor 2 Length D20"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

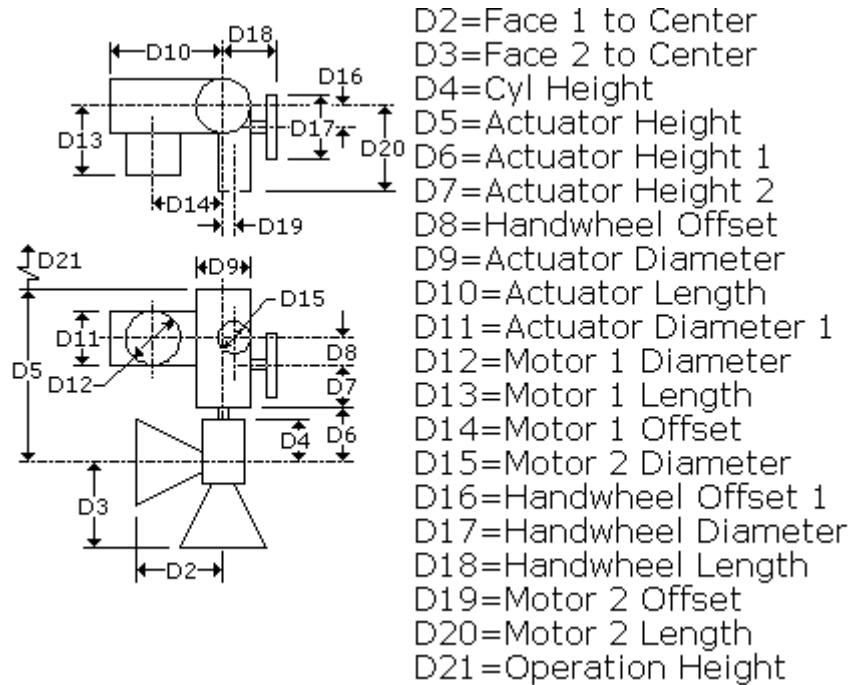
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationHeight" **Description** = "Operation Height"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 14**

**Output** = "PNozz1" **Description** = "Nozzle 1"  
**Output** = "PNozz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone1" **Description** = "Body Cone 1"  
**Output** = "BodyCone2" **Description** = "Body Cone 2"  
**Output** = "ValCyl" **Description** = "Valve Cylinder"  
**Output** = "StemAndCylin" **Description** = "Stem and Cylinder"  
**Output** = "Cylinder" **Description** = "Cylinder"  
**Output** = "Motor1" **Description** = "Motor 1"  
**Output** = "Motor2" **Description** = "Motor 2"  
**Output** = "Stem1" **Description** = "Stem 1"  
**Output** = "HandWheel" **Description** = "Hand Wheel"  
**Output** = "BodyCone1Ins" **Description** = "Body Cone 1 Insulation"  
**Output** = "BodyCone2Ins" **Description** = "Body Cone 2 Insulation"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



## SP3DCIElecActTy5Val

You can interactively resize this part symbol during or after placement. Use the symbol SP3DElecActTy5Valve if you do not want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 5

**Instrument Dimension Group:** IEAM5

**Symbol Name:** SP3DCIElecActTy5Val.CCIElecActTy5V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IEAM5

**User Class Name:** Electric Actuator Type 5 Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIElecActTy5Val.CCIElecActTy5V

**Inputs = 41**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1 D6"**

**Input = "ActuatorHeight2" Description = "Actuator Height 2 D7"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D8"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D9"**

**Input = "ActuatorLength" Description = "Actuator Length D10"**

**Input = "ActuatorDiameter1" Description = "Actuator Diameter D11"**

**Input = "Motor1Diameter" Description = "Motor 1 Diameter D12"**

**Input = "Motor1Length" Description = "Motor 1 Length D13"**

**Input = "Motor1Offset" Description = "Motor 1 Offset D14"**

**Input = "Motor2Diameter" Description = "Motor 2 Diameter D15"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D16"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D17"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D18"**

**Input = "Motor2Offset" Description = "Motor 2 Offset D19"**

**Input = "Motor2Length" Description = "Motor 2 Length D20"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

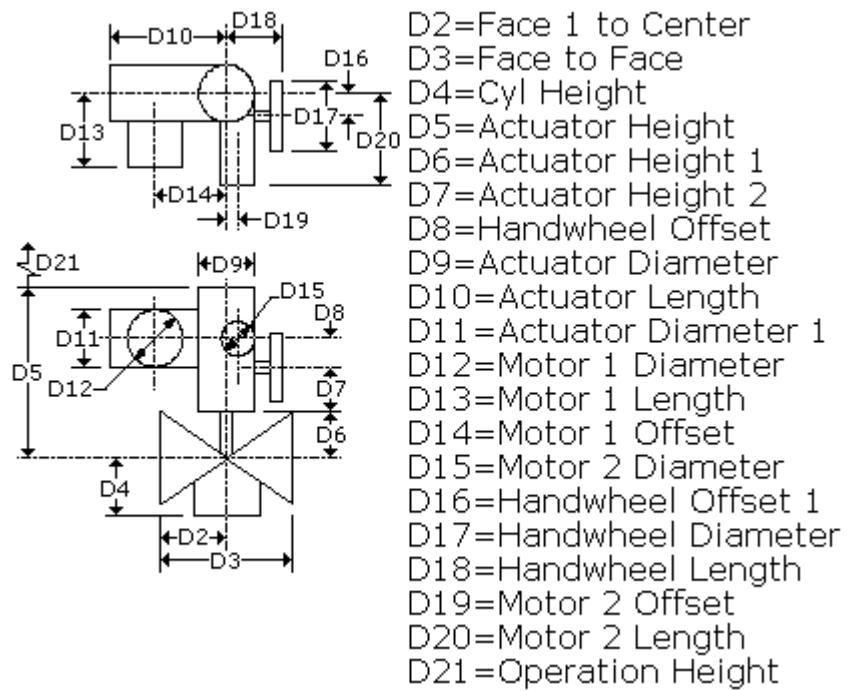
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "OperationHeight"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 13**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Diverging Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "StemAndCylin" Description = "Stem and Cylinder"**  
**Output = "Cylinder" Description = "Cylinder"**  
**Output = "Motor1" Description = "Motor 1"**  
**Output = "Motor2" Description = "Motor 2"**  
**Output = "Stem1" Description = "Stem 1"**  
**Output = "HandWheel" Description = "Hand Wheel"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIGateVGearA

**Description:** Gate Valve 150# Gear Operated mounted at variable angles

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIGateVGearA.CCIGateVGearA

**Workbook:** Instrument Data.xls

**Workbook Sheet:** GateValveAngleOpINTD, CIGateVGearA

**User Class Name:** Gate Valve Class 150 Gear Operated Mounted at variable angles

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIGateVGearA.CCIGateVGearA

Input name = "FacetoFace"

Input description = "valve width"

Input name = "ValveHeight"

Input description = "valve height"

Input name = "HandWheelDiameter"

Input description = "handwheel diameter"

Input name = "HandwheelAngle"

Input description = "handwheel angle"

Input name = "Npd"

Input description = "NPD"

Input name = "EndPreparation"

Input description = "EndPreparation"

Input name = "ScheduleThickness"

Input description = "ScheduleThickness"

Input name = "EndStandard"

Input description = "EndStandard"

Input name = "PressureRating"

Input description = "PressureRating"

Input name = "FlowDirection"

Input description = "FlowDirection"

Input name = "PortIndex1"

Input description = "PortIndex1"

Input name = "Npd1"

Input description = "NPD1"

Input name = "EndPreparation1"

Input description = "EndPreparation1"

Input name = "ScheduleThickness1"

Input description = "ScheduleThickness1"

Input name = "EndStandard1"

Input description = "EndStandard1"

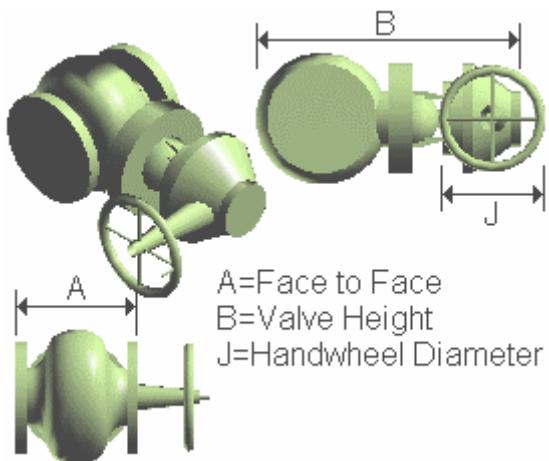
Input name = "PressureRating1"

Input description = "PressureRating1"

Input name = "FlowDirection1"

```
Input description = "FlowDirection1"
Input name = "PortIndex2"
Input description = "PortIndex2"
Input name = "Npd2"
Input description = "NPD2"
Input name = "EndPreparation2"
Input description = "EndPreparation2"
Input name = "ScheduleThickness2"
Input description = "ScheduleThickness2"
Input name = "EndStandard2"
Input description = "EndStandard2"
Input name = "PressureRating2"
Input description = "PressureRating2"
Input name = "FlowDirection2"
Input description = "FlowDirection2"
Input name = "Id1"
Input description = "Id1"
Input name = "Id2"
Input description = "Id2"
Input name = "Id1"
Input description = "Id1"
Input name = "Id2"
Input description = "Id2"
Input name = "NpdUnitType"
Input description = "Npd Unit Type"
Input name = "NpdUnitType1"
Input description = "Npd Unit Type 1"
Input name = "NpdUnitType2"
Input description = "Npd Unit Type 2"
Output name = "ValveBody"
Output description = "Main body"
Output name = "ValvePost"
Output description = "Vertical post"
Output name = "Valvestem"
Output description = "Stem"
Output name = "Support brace"
Output description = "Brace"
Output name = "Crossbrace"
Output description = "Cross brace"
Output name = "TransferCase"
Output description = "Transfer case"
Output name = "SpindleCone"
Output description = "Spindle cone"
Output name = "HandWheelSpoke1"
Output description = "Spoke 1"
Output name = "HandWheelSpoke2"
```

Output description = "Spoke 2"  
Output name = "HandWheel"  
Output description = "Hand wheel"  
Output name = "Knob"  
Output description = "Hand wheel knob"  
Output name = "VNoz1"  
Output description = "Nozzle 1"  
Output name = "VNoz2"  
Output description = "Nozzle 2"  
Supported AspectId = SimplePhysical



# SP3DCIIInsertionElement

## Description:

**Symbol Name:** SP3DCIIInsertionElement.CCIInsElem

## Instrument Dimension Group:

**Workbook:** Instrument Data.xls

**Workbook Sheet:** HMI1

**User Class Name:** Insertion Elements process connections

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DCIIInsertionElement.CCIInsElem

### Inputs = 19

**Input and description** = "FacetoEnd", "Face to End",

**Input and description** = "InstrumentLength", "Instrument Length",

**Input and description** = "InstrumentWidth", "Instrument Width",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "End Preparation", 21

**Input and description** = "ScheduleThickness", "Schedule Thickness",

**Input and description** = "EndStandard", "End Standard", 5

**Input and description** = "PressureRating", "Pressure Rating", 35

**Input and description** = "FlowDirection", "Flow Direction", 3

**Input and description** = "PortIndex1", "Port Index1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "End Preparation1"

**Input and description** = "ScheduleThickness1", "Schedule Thickness1"

**Input and description** = "EndStandard1", "End Standard1"

**Input and description** = "PressureRating1", "Pressure Rating1"

**Input and description** = "FlowDirection1", "Flow Direction1"

**Input and description** = "Id1", "Id1", "1"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type1", ""

### Outputs = 4

**Output and description** = "PNoz1", "Nozzle 1"

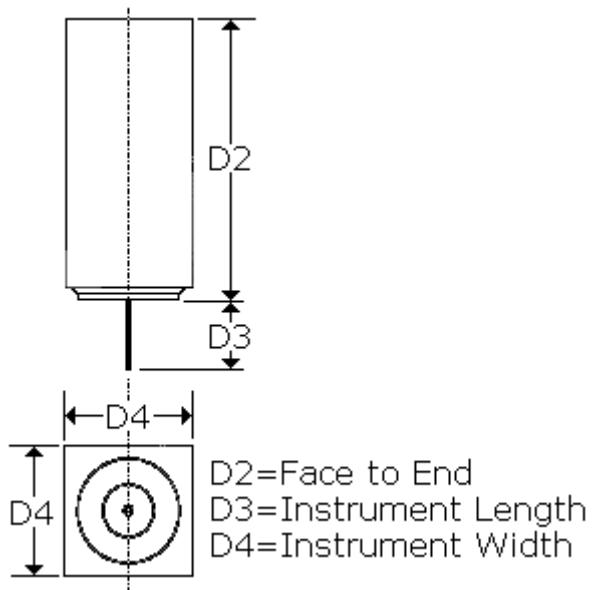
**Output and description** = "ConnectCyl", "Connecting Cylinder Body"

**Output and description** = "Element", "Connecting Cylinder Body"

**Output and description** = "InstrumentBox", "Instrument Box Body"

### Aspects = 1

**Aspect** = "SimplePhysical", "Physical"



## SP3DCIInsertVenturi

**Description:** Insert Venturi

**Instrument Dimension Group:** IIV

**Symbol Name:** SP3DCIInsertVenturi.CCIInsertVenturi

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IIV

**User Class Name:** Insert Venturi

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIInsertVenturi.CCIInsertVenturi

**Input = "FacetoFace"    Description = "Face to Face"**

**Input = "InstrumentLength"    Description = "Instrument Length"**

**Input = "InstrumentLength1"    Description = "Instrument Length1"**

**Input = "InstrumentLength2"    Description = "Instrument Length2"**

**Input = "InstrumentDiameter"    Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1"    Description = "Instrument Diameter1"**

**Input = "InstrumentDiameter2"    Description = "Instrument Diameter2"**

**Input = "PortRotation1"    Description = "Port Rotation1"**

**Input = "PortRotation2"    Description = "Port Rotation2"**

**Input = "Npd"    Description = "NPD"**

**Input = "EndPreparation"    Description = "EndPreparation"**

**Input = "ScheduleThickness"    Description = "ScheduleThickness"**

**Input = "EndStandard"    Description = "EndStandard"**

**Input = "PressureRating"    Description = "PressureRating"**

**Input = "FlowDirection"    Description = "FlowDirection"**

**Input = "PortIndex1"    Description = "PortIndex1"**

**Input = "Npd1"    Description = "NPD1"**

**Input = "EndPreparation1"    Description = "EndPreparation1"**

**Input = "ScheduleThickness1"    Description = "ScheduleThickness1"**

**Input = "EndStandard1"    Description = "EndStandard1"**

**Input = "PressureRating1"    Description = "PressureRating1"**

**Input = "FlowDirection1"    Description = "FlowDirection1"**

**Input = "PortIndex2"    Description = "PortIndex2"**

**Input = "Npd2"    Description = "NPD2"**

**Input = "EndPreparation2"    Description = "EndPreparation2"**

**Input = "ScheduleThickness2"    Description = "ScheduleThickness2"**

**Input = "EndStandard2"    Description = "EndStandard2"**

**Input = "PressureRating2"    Description = "PressureRating2"**

**Input = "FlowDirection2"    Description = "FlowDirection2"**

**Input = "PortIndex3"    Description = "PortIndex3"**

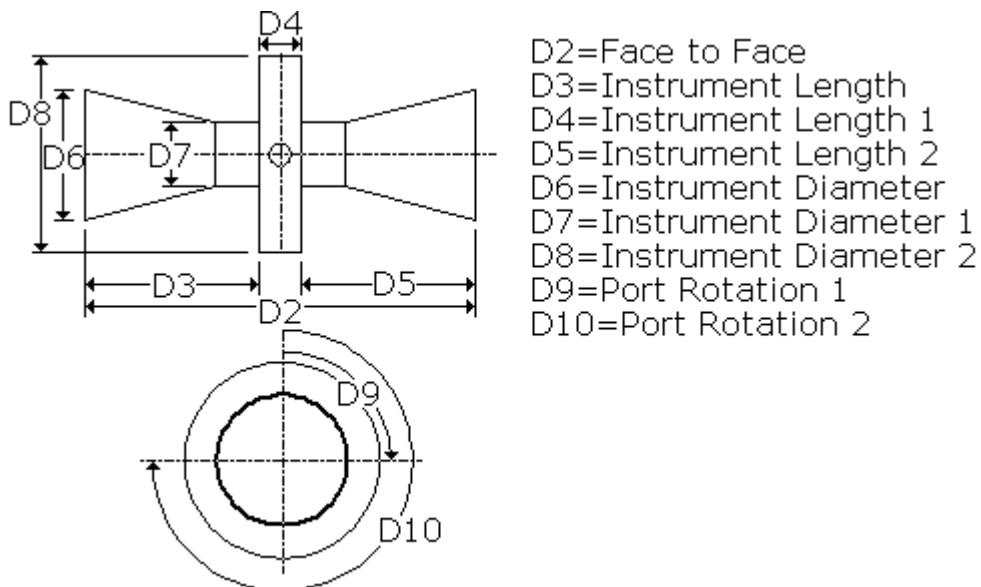
**Input = "Npd3"    Description = "NPD3"**

**Input = "EndPreparation3"    Description = "EndPreparation3"**

```

Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "PortIndex4" Description = "PortIndex4"
Input = "Npd4" Description = "NPD4"
Input = "EndPreparation4" Description = "EndPreparation4"
Input = "ScheduleThickness4" Description = "ScheduleThickness4"
Input = "EndStandard4" Description = "EndStandard4"
Input = "PressureRating4" Description = "PressureRating4"
Input = "FlowDirection4" Description = "FlowDirection4"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "Id3" Description = "Id3"
Input = "Id4" Description = "Id4"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
Input = "NpdUnitType3" Description = "Npd Unit Type 3"
Input = "NpdUnitType4" Description = "Npd Unit Type 2"
Output = "InsBody" Description = "Insulation for Body"
Output = "Body" Description = "Body of Venturi"
Output = "VNoz1" Description = "Nozzle 1"
Output = "VNoz2" Description = "Nozzle 2"
Output = "VNoz3" Description = "Nozzle 3"
Output = "VNoz4" Description = "Nozzle 4"
Aspect = SimplePhysical
Aspect = Insulation

```



# SP3DCIIInstAngValve

## Description:

**Symbol Name:** SP3DCIIInstAngValve.InstAngValve

**Workbook:** Instrument Data.xls

**Workbook Sheet:** 2PRVA1

**User Class Name:** Simple Instrument Angle Valve

## Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DCIIInstAngValve.InstAngValve

### Inputs = 25

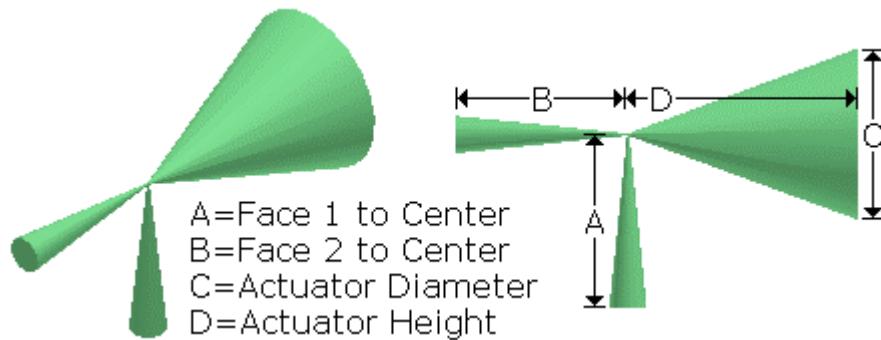
**Input** = "Face1toCenter" **Description** = "Face1 to Center"  
**Input** = "Face2toCenter" **Description** = "Face2 to Center"  
**Input** = "ActuatorHeight" **Description** = "Actuator Height"  
**Input** = "ActuatorDiameter" **Description** = "Actuator Diameter"  
**Input** = "InsulationThickness" **Description** = "Insulation Thickness"  
**Input** = "Npd" **Description** = "NPD"  
**Input** = "EndPreparation" **Description** = "EndPreparation"  
**Input** = "ScheduleThickness" **Description** = "ScheduleThickness"  
**Input** = "EndStandard" **Description** = "EndStandard"  
**Input** = "PressureRating" **Description** = "PressureRating"  
**Input** = "FlowDirection" **Description** = "FlowDirection"  
**Input** = "PortIndex1" **Description** = "PortIndex1"  
**Input** = "Npd1" **Description** = "NPD1"  
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

### Outputs = 7

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "ValveBodyLeftCone" Description = "Cylindrical Body of Valve"**  
**Output = "ValveBodyRightCone" Description = "Box Body of Valve"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "ValveBodyIns" Description = "ValveBodyIns"**  
**Output = "ValveBodyIns2" Description = "ValveBodyIns2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIIIntegralOrificeTy1

**Description:** Orifice Integral Type 1

**Instrument Dimension Group:** IIOR

**Symbol Name:** SP3DCIIIntegralOrificeTy1.CCIIntOriTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IIOR

**User Class Name:** Integral Orifice Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIIIntegralOrificeTy1.CCIIntOriTy1

**Inputs = 42**

```
Input = "InstrumentWidth" Description = "InstrumentWidth"
Input = "InstrumentWidth1" Description = "InstrumentWidth1"
Input = "InstrumentHeight" Description = "InstrumentHeight"
Input = "InstrumentHeight1" Description = "InstrumentHeight1"
Input = "InstrumentHeight2" Description = "InstrumentHeight2"
Input = "InstrumentWidth2" Description = "InstrumentWidth2"
Input = "InstrumentHeight3" Description = "InstrumentHeight3"
Input = "InstrumentHeight4" Description = "InstrumentHeight4"
Input = "InstrumentHeight5" Description = "InstrumentHeight5"
Input = "InstrumentWidth3" Description = "InstrumentWidth3"
Input = "InstrumentHeight6" Description = "InstrumentHeight6"
Input = "InstrumentHeight7" Description = "InstrumentHeight7"
Input = "InstrumentHeight8" Description = "InstrumentHeight8"
Input = "InstrumentWidth4" Description = "InstrumentWidth4"
Input = "InstrumentOffset" Description = "InstrumentOffset"
Input = "InstrumentDiameter" Description = "InstrumentDiameter"
Input = "InstrumentLength" Description = "InstrumentLength"
Input = "InstrumentLength1" Description = "InstrumentLength1"
Input = "InstrumentLength2" Description = "InstrumentLength2"
Input = "InstrumentLength3" Description = "InstrumentLength3"
Input = "InstrumentLength4" Description = "InstrumentLength4"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
```

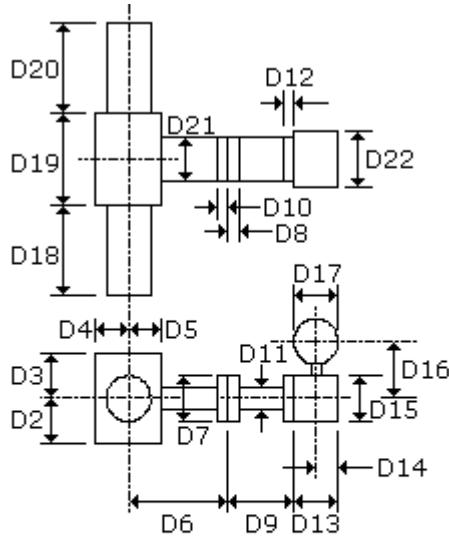
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 14**

**Output** = "ObjBodyInsCyl1" **Description** = "Insulation for CP1"  
**Output** = "ObjBodyInsCyl2" **Description** = "Insulation for CP2"  
**Output** = "ObjBodyInsBox" **Description** = "Insulation Box Between Nozzles"  
**Output** = "Box1" **Description** = "Box on the flow axis"  
**Output** = "Box2" **Description** = "second box"  
**Output** = "Box3" **Description** = "Third Box"  
**Output** = "Box4" **Description** = "Fourth Box"  
**Output** = "Box5" **Description** = "Fifth Box"  
**Output** = "Box6" **Description** = "sixth Box"  
**Output** = "Box7" **Description** = "Seventh Box"  
**Output** = "Cylinder1" **Description** = "Cylinder1"  
**Output** = "Cylinder2" **Description** = "Cylinder2"  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



D2=Instrument Width  
D3=Instrument Width 1  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Height 2  
D7=Instrument Width 2  
D8=Instrument Height 3  
D9=Instrument Height 4  
D10=Instrument Height 5  
D11=Instrument Width 3  
D12=Instrument Height 6  
D13=Instrument Height 7  
D14=Instrument Height 8  
D15=Instrument Width 4  
D16=Instrument Offset  
D17=Instrument Diameter  
D18=Instrument Length  
D19=Instrument Length 1  
D20=Instrument Length 2  
D21=Instrument Length 3  
D22=Instrument Length 4

## SP3DCIIIntegralOrificeTy2

**Description:** Orifice Integral Type 2  
**Instrument Dimension Group:** IIOL  
**Symbol Name:** SP3DCIIIntegralOrificeTy2.CCIIntOriTy2  
**Workbook:** Instrument Data.xls  
**Workbook Sheet:** IIOL  
**User Class Name:** Integral Orifice Type 2  
**Part Number:**  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIIIntegralOrificeTy2.CCIIntOriTy2

**Inputs = 42**

**Input = "InstrumentWidth" Description = "InstrumentWidth"**  
**Input = "InstrumentWidth1" Description = "InstrumentWidth1"**  
**Input = "InstrumentHeight" Description = "InstrumentHeight"**  
**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**  
**Input = "InstrumentHeight2" Description = "InstrumentHeight2"**  
**Input = "InstrumentWidth2" Description = "InstrumentWidth2"**  
**Input = "InstrumentHeight3" Description = "InstrumentHeight3"**  
**Input = "InstrumentHeight4" Description = "InstrumentHeight4"**  
**Input = "InstrumentHeight5" Description = "InstrumentHeight5"**  
**Input = "InstrumentWidth3" Description = "InstrumentWidth3"**  
**Input = "InstrumentHeight6" Description = "InstrumentHeight6"**  
**Input = "InstrumentHeight7" Description = "InstrumentHeight7"**  
**Input = "InstrumentHeight8" Description = "InstrumentHeight8"**  
**Input = "InstrumentWidth4" Description = "InstrumentWidth4"**  
**Input = "InstrumentOffset" Description = "InstrumentOffset"**  
**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**  
**Input = "InstrumentLength" Description = "InstrumentLength"**  
**Input = "InstrumentLength1" Description = "InstrumentLength1"**  
**Input = "InstrumentLength2" Description = "InstrumentLength2"**  
**Input = "InstrumentLength3" Description = "InstrumentLength3"**  
**Input = "InstrumentLength4" Description = "InstrumentLength4"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**

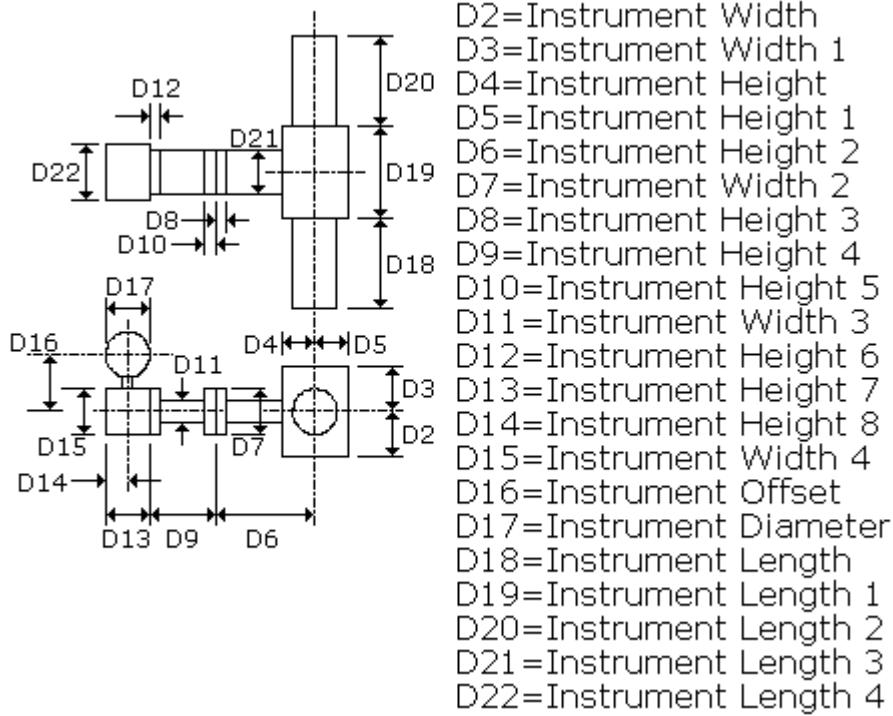
```
Input = "ScheduleThickness1" Description = "ScheduleThickness1"  
Input = "EndStandard1" Description = "EndStandard1"  
Input = "PressureRating1" Description = "PressureRating1"  
Input = "FlowDirection1" Description = "FlowDirection1"  
Input = "PortIndex2" Description = "PortIndex2"  
Input = "Npd2" Description = "NPD2"  
Input = "EndPreparation2" Description = "EndPreparation2"  
Input = "ScheduleThickness2" Description = "ScheduleThickness2"  
Input = "EndStandard2" Description = "EndStandard2"  
Input = "PressureRating2" Description = "PressureRating2"  
Input = "FlowDirection2" Description = "FlowDirection2"  
Input = "Id1" Description = "Id1"  
Input = "Id2" Description = "Id2"  
Input = "NpdUnitType" Description = "Npd Unit Type"  
Input = "NpdUnitType1" Description = "Npd Unit Type 1"  
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 14**

```
Output = "ObjBodyInsCyl1" Description = "Insulation for CP1"  
Output = "ObjBodyInsCyl2" Description = "Insulation for CP2"  
Output = "ObjBodyInsBox" Description = "Insulation Box Between Nozzles"  
Output = "Box1" Description = "Box on the flow axis"  
Output = "Box2" Description = "second box"  
Output = "Box3" Description = "Third Box"  
Output = "Box4" Description = "Fourth Box"  
Output = "Box5" Description = "Fifth Box"  
Output = "Box6" Description = "sixth Box"  
Output = "Box7" Description = "Seventh Box"  
Output = "Cylinder1" Description = "Cylinder1"  
Output = "Cylinder2" Description = "Cylinder2"  
Output = "PNoz1" Description = "Nozzle 1"  
Output = "PNoz2" Description = "Nozzle 2"
```

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCILongOrShortVenturi

**Description:** Long or Short Venturi

**Instrument Dimension Group:** ILSV

**Symbol Name:** SP3DCILongOrShortVenturi.CCILorSVenturi

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ILSV

**User Class Name:** Long or Short Venturi

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCILongOrShortVenturi.CCILorSVenturi

**Inputs = 46**

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentLength1" Description = "Instrument Length1"
Input = "InstrumentLength2" Description = "Instrument Length2"
Input = "InstrumentLength3" Description = "Instrument Length3"
Input = "InstrumentDiameter" Description = "Venturi Diameter"
Input = "NozzleOffset" Description = "Nozzle Offset"
Input = "NozzleOffset1" Description = "Nozzle Offset1"
Input = "NozzleOffset2" Description = "Nozzle Offset2"
Input = "NozzleOffset3" Description = "Nozzle Offset3"
Input = "PortRotation1" Description = "Port Rotation of Nozz3"
Input = "PortRotation2" Description = "Port Rotation of Nozz4"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
```

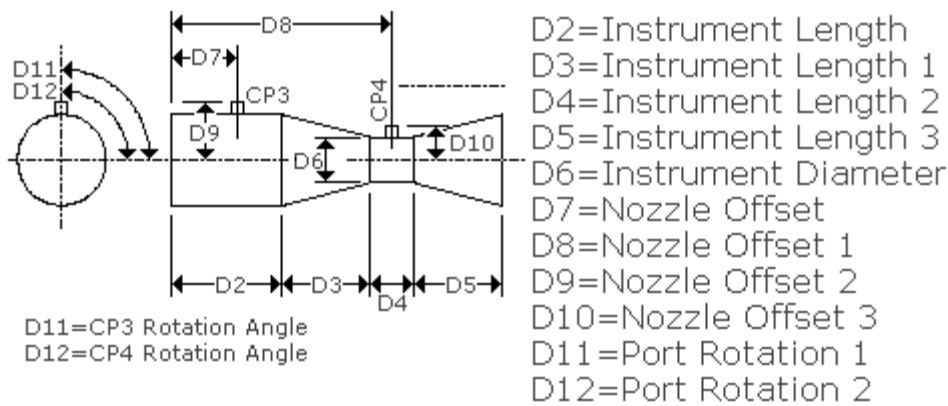
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 11**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "VNoz4" Description = "Nozzle 4"**  
**Output = "CylinderBody1" Description = "Cylinder Body1"**  
**Output = "CylinderBody2" Description = "Cylinder Body2"**  
**Output = "ReducingCone" Description = "Reducing Cone"**  
**Output = "DivergingCone" Description = "Diverging Cone"**  
**Output = "VenturiBodyIns" Description = "Venturi Body Insulation"**  
**Output = "Nozz3BodyIns" Description = "Nozzle3 Body Insulation"**  
**Output = "Nozz4BodyIns" Description = "Nozzle4 Body Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIMagFlowmeterTy1

**Description:** Magnetic Flowmeter Type 1

**Instrument Dimension Group:** IMFM1

**Symbol Name:** SP3DCIMagFlowmeterTy1.CCIMFMetTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMFM1

**User Class Name:** Mangetic FlowMeter Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMagFlowmeterTy1.CCIMFMetTy1

**Inputs = 27**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Pipe Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

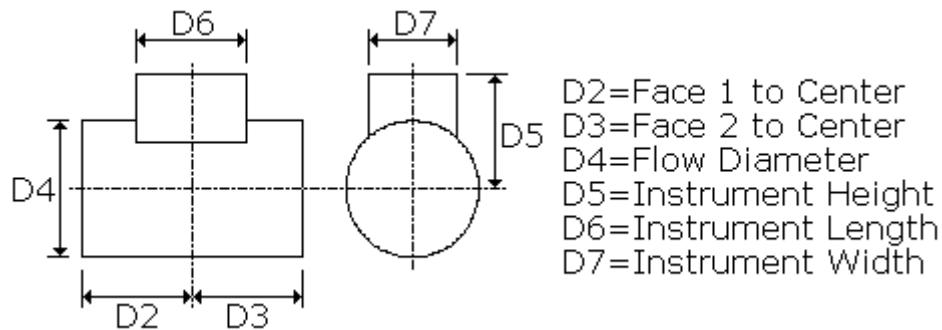
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "FlowMeterBody" Description = "Flow Meter Body"**  
**Output = "FlowMeterTopBody" Description = "Flow Meter Top Body"**  
**Output = "FlowMeterBodyIns" Description = "Flow Meter Body Insulation"**  
**Output = "FlowMeterTopBodyIns" Description = "Flow Meter Top Body Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIMagFlowmeterTy2

**Description:** Magnetic Flowmeter Type 2

**Instrument Dimension Group:** IMFM2

**Symbol Name:** SP3DCIMagFlowmeterTy2.CCIMFlowmeterTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMFM2

**User Class Name:** Magnetic Flowmeter Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMagFlowmeterTy2.CCIMFlowmeterTy2

**Inputs = 28**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "FlowDiameter" Description = "FlowDiameter"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**

**Input = "InstrumentLength" Description = "InstrumentLength"**

**Input = "InstrumentWidth" Description = "InstrumentWidth"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

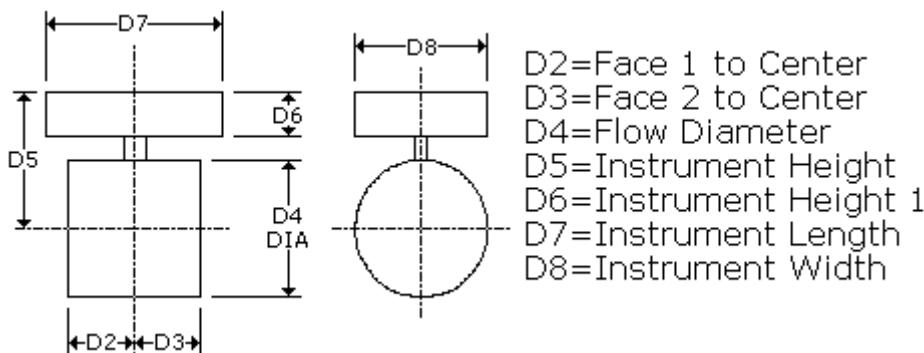
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "FlowMtrBase" Description = "Flow Meter Base"**  
**Output = "Connector" Description = "Base to Top Connector"**  
**Output = "FlowMtrTop" Description = "Flow Meter Top"**  
**Output = "InsFlowMtrBase" Description = "Insulation for Flow Meter Base"**  
**Output = "InsFlowMtrTop" Description = "Insulation for Flow Meter Top"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIMagFlowmeterTy3Tr

**Description:** Magnetic Flowmeter Type 3

**Instrument Dimension Group:** IMFM3

**Symbol Name:** SP3DCIMagFlowmeterTy3Tr.CCIMFlowmtrTy3T

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMFM3

**User Class Name:** Magnetic Flowmeter Type 3 Transmitter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMagFlowmeterTy3Tr.CCIMFlowmtrTy3T

**Inputs = 30**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentOffset" Description = "Instrument Offset"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentOffset1" Description = "Instrument Offset1"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

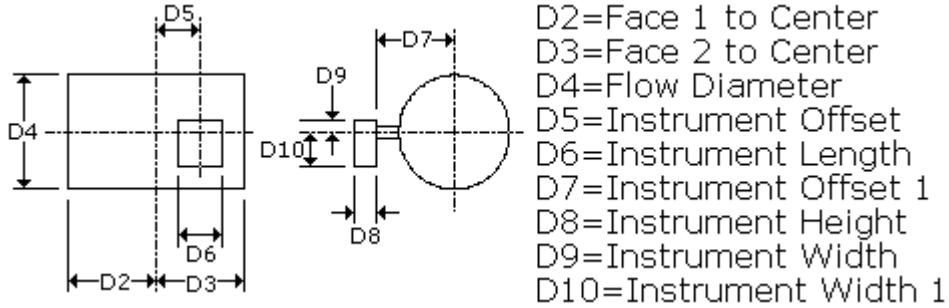
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "FlowmtrBase" Description = "Flowmeter Base"**  
**Output = "Connector" Description = "Connector"**  
**Output = "Transmitter" Description = "Transmitter"**  
**Output = "InsFlowmtrBase" Description = "Insulation for Flowmeter Base"**  
**Output = "InsTransmitter" Description = "Insulation for Transmitter"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCIMagFlowmeterTy4

**Description:** Magnetic Flowmeter Type 4

**Instrument Dimension Group:** IMFM4

**Symbol Name:** SP3DCIMagFlowmeterTy4.CCIMFlowmeterTy4

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMFM4

**User Class Name:** Magnetic Flowmeter Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMagFlowmeterTy4.CCIMFlowmeterTy4

**Inputs = 29**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

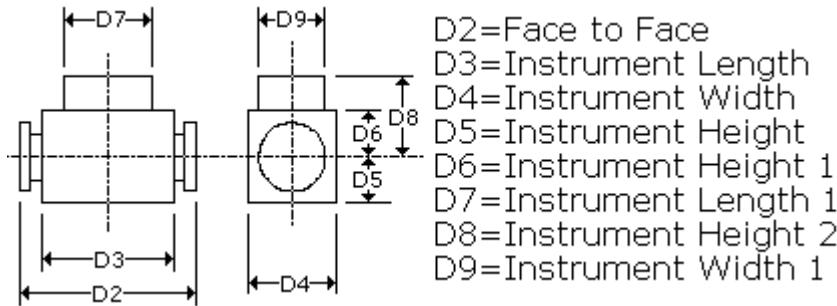
**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs** = 5  
**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "FlowmeterBase"   **Description** = "FlowmeterBase"  
**Output** = "FlowmeterTop"   **Description** = "FlowmeterTop"  
**Output** = "InsFlowmeter"   **Description** = "Insulation for Flowmeter"

**Aspects** = 2  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIMetDblChOriFitting

**Description:** double chamber orifice fitting

**Instrument Dimension Group:** IMDC2

**Symbol Name:** SP3DCIMetDblChOriFitting.CCIMDCOrificeF

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMDC2

**User Class Name:** Meterrun Double Chamber Orifice Fitting

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMetDblChOriFitting.CCIMDCOrificeF

**Inputs = 51**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength2" Description = "Instrument Length2"**

**Input = "InstrumentLength3" Description = "Instrument Length3"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "ArmLength" Description = "Arm Length"**

**Input = "NozzleOffset" Description = "Nozzle Offset"**

**Input = "NozzleOffset1" Description = "Nozzle Offset1"**

**Input = "ArmHeight" Description = "Arm Height"**

**Input = "ArmHeight1" Description = "Arm Height1"**

**Input = "InstrumentLength4" Description = "Instrument Length4"**

**Input = "InstrumentLength5" Description = "Instrument Length5"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 12**

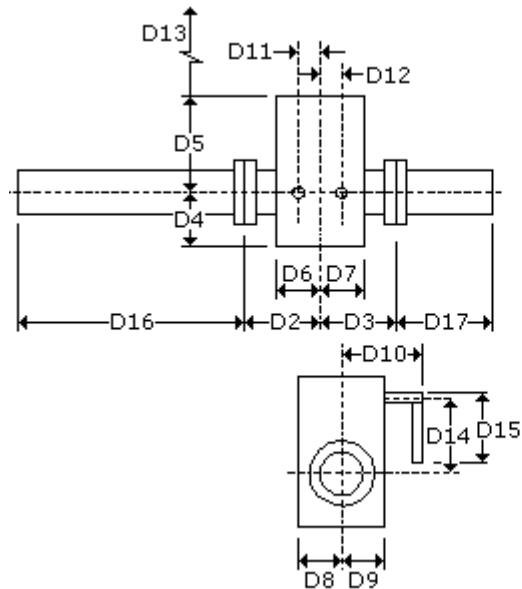
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "VNoz4" Description = "Nozzle 4"**  
**Output = "LHSPipe" Description = "Left Hand Side Pipe"**  
**Output = "RHSPipe" Description = "Right Hand Side Pipe"**  
**Output = "FittingBody" Description = "Body Orifice fitting "**  
**Output = "ArmCylinder1" Description = "ArmCylinder1"**  
**Output = "ArmBody2" Description = "ArmBody2"**  
**Output = "InsBody" Description = "Insulation for Body of Orifice fitting"**  
**Output = "InsPipeLine" Description = "Insulation for pipes"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Operation**



D<sub>2</sub>=Instrument Length  
D<sub>3</sub>=Instrument Length 1  
D<sub>4</sub>=Instrument Height  
D<sub>5</sub>=Instrument Height 1  
D<sub>6</sub>=Instrument Length 2  
D<sub>7</sub>=Instrument Length 3  
D<sub>8</sub>=Instrument Width  
D<sub>9</sub>=Instrument Width 1  
D<sub>10</sub>=Arm Length  
D<sub>11</sub>=Nozzle Offset  
D<sub>12</sub>=Nozzle Offset 1  
D<sub>13</sub>=Operation Height  
D<sub>14</sub>=Arm Height  
D<sub>15</sub>=Arm Height 1  
D<sub>16</sub>=Instrument Length 4  
D<sub>17</sub>=Instrument Length 5

## SP3DCIMeterRunShortVenturi

**Description:** Short Meterrun Venturi

**Instrument Dimension Group:** IMRSV

**Symbol Name:** SP3DCIMeterRunShortVenturi.CCIMSVenturi

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMRSV

**User Class Name:** MeterRun Short Venturi

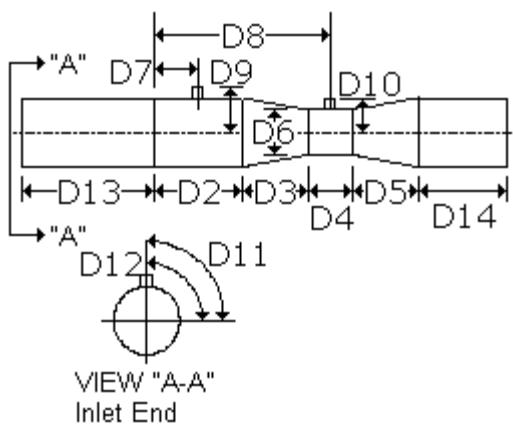
**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMeterRunShortVenturi.CCIMSVenturi

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentLength1" Description = "Instrument Length1"
Input = "InstrumentLength2" Description = "Instrument Length2"
Input = "InstrumentLength3" Description = "Instrument Length3"
Input = "InstrumentDiameter" Description = "Instrument Diameter"
Input = "NozzleOffset" Description = "NozzleOffset"
Input = "NozzleOffset1" Description = "NozzleOffset1"
Input = "NozzleOffset2" Description = "Nozzle Offset 2"
Input = "NozzleOffset3" Description = "Nozzle Offset3"
Input = "PortRotation1" Description = "Port Rotation of Nozz3"
Input = "PortRotation2" Description = "Port Rotation of Nozz4"
Input = "InstrumentLength4" Description = "Instrument Length4"
Input = "InstrumentLength5" Description = "Instrument Length5"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
```

**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "PortIndex3" **Description** = "PortIndex3"  
**Input** = "Npd3" **Description** = "NPD3"  
**Input** = "EndPreparation3" **Description** = "EndPreparation3"  
**Input** = "ScheduleThickness3" **Description** = "ScheduleThickness3"  
**Input** = "EndStandard3" **Description** = "EndStandard3"  
**Input** = "PressureRating3" **Description** = "PressureRating3"  
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "PortIndex4" **Description** = "PortIndex4"  
**Input** = "Npd4" **Description** = "NPD4"  
**Input** = "EndPreparation4" **Description** = "EndPreparation4"  
**Input** = "ScheduleThickness4" **Description** = "ScheduleThickness4"  
**Input** = "EndStandard4" **Description** = "EndStandard4"  
**Input** = "PressureRating4" **Description** = "PressureRating4"  
**Input** = "FlowDirection4" **Description** = "FlowDirection4"  
**Input** = "InsulationThickness" **Description** = "Insulation Thickness"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "Id4" **Description** = "Id4"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3" **Description** = "Npd Unit Type 3"  
**Input** = "NpdUnitType4" **Description** = "Npd Unit Type 2"  
**Output** = "vNoz1" **Description** = "Nozzle 1"  
**Output** = "vNoz2" **Description** = "Nozzle 2"  
**Output** = "vNoz3" **Description** = "Nozzle 3"  
**Output** = "vNoz4" **Description** = "Nozzle 4"  
**Output** = "CylinderBody1" **Description** = "Cylinder Body1"  
**Output** = "CylinderBody2" **Description** = "Cylinder Body2"  
**Output** = "ReducingCone" **Description** = "Reducing Cone"  
**Output** = "DivergingCone" **Description** = "Diverging Cone"  
**Output** = "VenturiBodyIns" **Description** = "Venturi Body Insulation"  
**Output** = "Nozz3BodyIns" **Description** = "Nozzle3 Body Insulation"  
**Output** = "Nozz4BodyIns" **Description** = "Nozzle4 Body Insulation"  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



D2=Instrument Length  
D3=Instrument Length 1  
D4=Instrument Length 2  
D5=Instrument Length 3  
D6=Instrument Diameter  
D7=Nozzle Offset  
D8=Nozzle Offset 1  
D9=Nozzle Offset 2  
D10=Nozzle Offset 3  
D11=Port Rotation 1  
D12=Port Roatation 2  
D13=Instrument Length 4  
D14=Instrument Length 5

# SP3DCIMetrurOriFlangePlate

**Description:** Orifice Meterrun Flanges and Plate

**Instrument Dimension Group:** IMOP1

**Symbol Name:** SP3DCIMetrurOriFlangePlate.CCIMOFPlate

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IMOP1

**User Class Name:** Meterrun Orifice Flanges and Plate

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIMetrurOriFlangePlate.CCIMOFPlate

**Inputs = 40**

**Input = "FacetoFace" Description = "Face To Face"**

**Input = "Face1toCenter" Description = "Face1 To Center"**

**Input = "OrificeFlangeClearance" Description = "Orifice Flange Clearance"**

**Input = "PortRotation1" Description = "Port Rotation1"**

**Input = "PortRotation2" Description = "Port Rotation2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

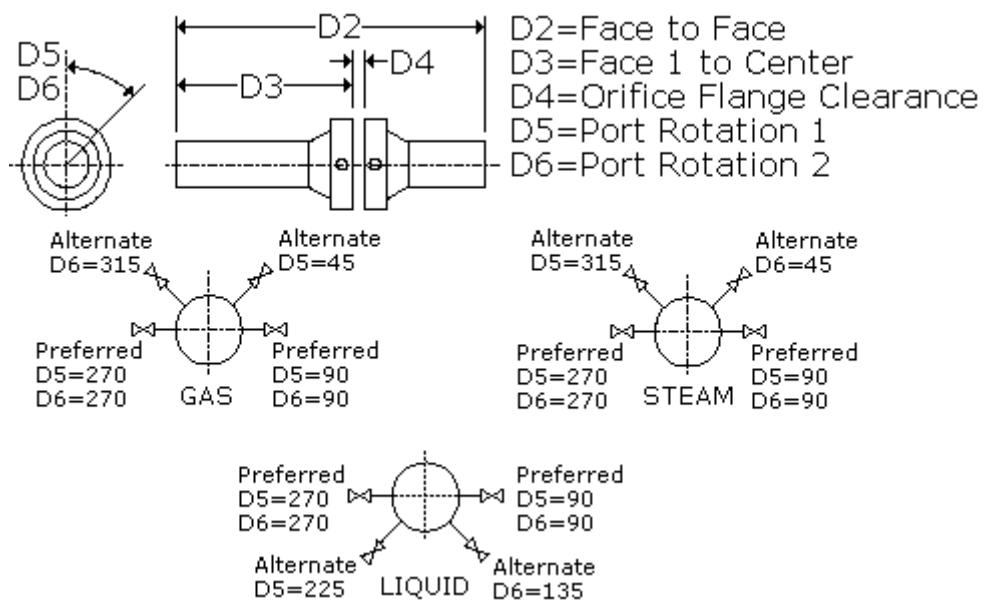
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input** = "PressureRating3" **Description** = "PressureRating3"  
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "PortIndex4" **Description** = "PortIndex4"  
**Input** = "Npd4" **Description** = "NPD4"  
**Input** = "EndPreparation4" **Description** = "EndPreparation4"  
**Input** = "ScheduleThickness4" **Description** = "ScheduleThickness4"  
**Input** = "EndStandard4" **Description** = "EndStandard4"  
**Input** = "PressureRating4" **Description** = "PressureRating4"  
**Input** = "FlowDirection4" **Description** = "FlowDirection4"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "Id4" **Description** = "Id4"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3" **Description** = "Npd Unit Type 3"  
**Input** = "NpdUnitType4" **Description** = "Npd Unit Type 4"

**Outputs** = 9  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz3" **Description** = "Nozzle 3"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "PNoz4" **Description** = "Nozzle 4"  
**Output** = "DivergingCone" **Description** = "Diverging Cone"  
**Output** = "ConvergingCone" **Description** = "Converging Cone"  
**Output** = "Flange1" **Description** = "Flange1"  
**Output** = "Flange2" **Description** = "Flange2"  
**Output** = "InsulationBody" **Description** = "Insulation Body"

**Aspects** = 2  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCIOffsetActVal

**Description:** SmartPlant Instrument Component IADD, the nozzles are fully parametric

**Instrument Dimension Group:** IADD

**Symbol Name:** SP3DCIOffsetActVal.CCIOffActVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IADD

**User Class Name:** Valve with Offset Actuator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIOffsetActVal.CCIOffActVal

**Inputs = 36**

**Input and description** = "Face1toCenter", "Face 1 to Center",  
**Input and description** = "FacetoFace", "Face to Face",  
**Input and description** = "ActuatorHeight", "Actuator Height",  
**Input and description** = "ActuatorDiameter", "Actuator Diameter", 0  
**Input and description** = "ActuatorHeight1", "Actuator Height1",  
**Input and description** = "ActuatorLength", "Actuator Length",  
**Input and description** = "ActuatorLength1", "Actuator Length1",  
**Input and description** = "ActuatorLength2", "Actuator Length2",  
**Input and description** = "ActuatorWidth", "Actuator Width",  
**Input and description** = "ActuatorWidth1", "Actuator Width1",  
**Input and description** = "ActuatorHeight2", "Actuator Height2", 0  
**Input and description** = "Npd", "NPD",  
**Input and description** = "EndPreparation", "End Preparation", 21  
**Input and description** = "ScheduleThickness", "Schedule Thickness",  
**Input and description** = "EndStandard", "End Standard", 5  
**Input and description** = "PressureRating", "Pressure Rating", 35  
**Input and description** = "FlowDirection", "Flow Direction", 3  
**Input and description** = "PortIndex1", "Port Index1"  
**Input and description** = "Npd1", "NPD1"  
**Input and description** = "EndPreparation1", "End Preparation1"  
**Input and description** = "ScheduleThickness1", "Schedule Thickness1"  
**Input and description** = "EndStandard1", "End Standard1"  
**Input and description** = "PressureRating1", "Pressure Rating1"  
**Input and description** = "FlowDirection1", "Flow Direction1"  
**Input and description** = "PortIndex2", "Port Index2", 2  
**Input and description** = "Npd2", "NPD2"  
**Input and description** = "EndPreparation2", "End Preparation2"  
**Input and description** = "ScheduleThickness2", "Schedule Thickness2"  
**Input and description** = "EndStandard2", "End Standard2"  
**Input and description** = "PressureRating2", "Pressure Rating2"

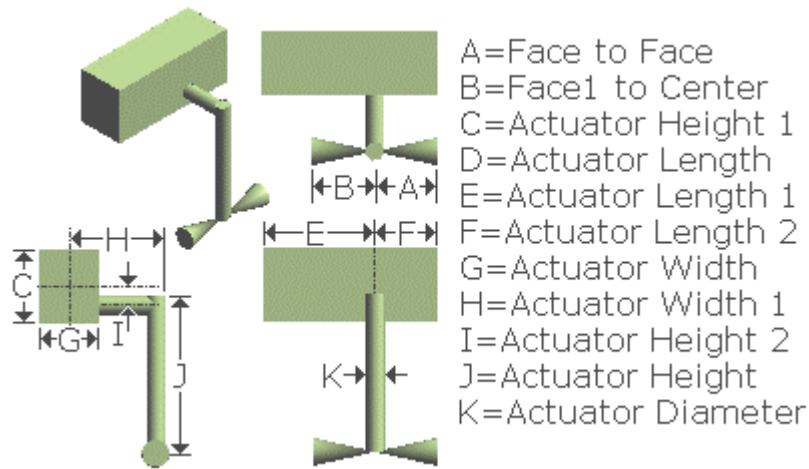
**Input and description** = "FlowDirection2", "Flow Direction2"  
**Input and description** = "Id1", "Id1", "1"  
**Input and description** = "Id2", "Id2", "2"  
**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"  
**Input and description** = "NpdUnitType1", "Npd Unit Type1", ""  
**Input and description** = "NpdUnitType2", "Npd Unit Type2", ""

**Outputs** = 7

**Output and description** = "PNoz1", "Nozzle 1"  
**Output and description** = "PNoz2", "Nozzle 2"  
**Output and description** = "ConvergingCone", "Converging Cone"  
**Output and description** = "DivergingCone", "Diverging Cone"  
**Output and description** = "ActuatorStem1", "Actuator Stem 1"  
**Output and description** = "ActuatorStem2", "Actuator Stem 2"  
**Output and description** = "ActuatorBody", "Actuator Body"

**Aspects** = 1

**Aspect** = "SimplePhysical", "Physical"



# SP3DCIOrificePlate

**Description:** Orifice Plate

**Instrument Dimension Group:** IOP

**Symbol Name:** SP3DCIOrificePlate.CCIOrificePlate

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IOP

**User Class Name:** Orifice Plate

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIOrificePlate.CCIOrificePlate

**Inputs = 26**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "OperationHeight" Description = "Operation Height"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

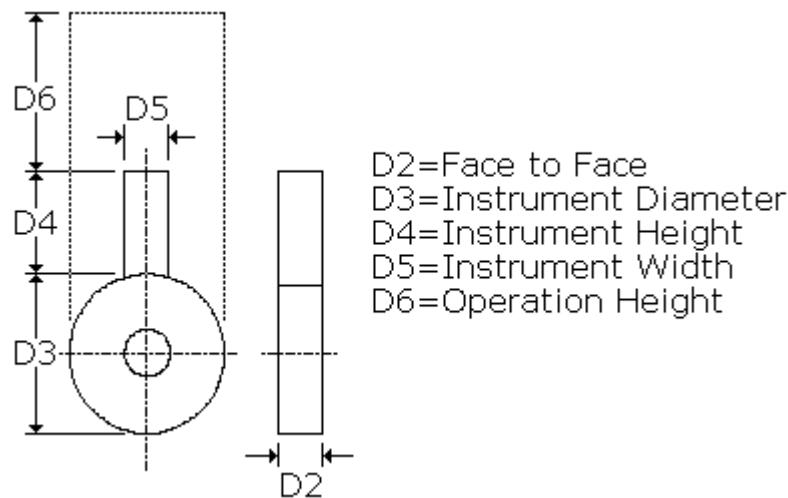
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "OrificePlateBody" Description = "Orifice Plate Body"**  
**Output = "PaddleBody" Description = "Paddle Body"**  
**Output = "OrificePlateIns" Description = "Orifice Plate Insulation"**  
**Output = "PaddleIns" Description = "Paddle Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIPerRackPinActVal

**Description:** SmartPlant Instrument Components IRI2, the nozzles are fully parametric

**Symbol Name:** SP3DCIPerRackPinActVal.CCIPRPAVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRI2

**User Class Name:** Valve with Perpendicular Rack and Pinion Actuator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPerRackPinActVal.CCIPRPAVal

**Inputs = 31**

**Input and description** = "Face1toCenter", "Face1 to Center",

**Input and description** = "FacetoFace", "Face to Face",

**Input and description** = "ActuatorHeight", "Actuator Height",

**Input and description** = "ActuatorCylDiameter", "Actuator Cylinder Diameter",

**Input and description** = "ActuatorDiameter", "Actuator Diameter",

**Input and description** = "ActuatorCylLength", "Actuator Cylinder Length",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "End Preparation", 21

**Input and description** = "ScheduleThickness", "Schedule Thickness",

**Input and description** = "EndStandard", "End Standard", 5

**Input and description** = "PressureRating", "Pressure Rating", 35

**Input and description** = "FlowDirection", "Flow Direction", 3

**Input and description** = "PortIndex1", "Port Index1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "End Preparation1"

**Input and description** = "ScheduleThickness1", "Schedule Thickness1"

**Input and description** = "EndStandard1", "End Standard1"

**Input and description** = "PressureRating1", "Pressure Rating1"

**Input and description** = "FlowDirection1", "Flow Direction1"

**Input and description** = "PortIndex2", "Port Index2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "End Preparation2"

**Input and description** = "ScheduleThickness2", "Schedule Thickness2"

**Input and description** = "EndStandard2", "End Standard2"

**Input and description** = "PressureRating2", "Pressure Rating2"

**Input and description** = "FlowDirection2", "Flow Direction2"

**Input and description** = "Id1", "Id1", "1"

**Input and description** = "Id2", "Id2", "2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type2", ""

**Outputs = 6**

**Output and description = "PNoz1", "Nozzle 1"**

**Output and description = "PNoz2", "Nozzle 2"**

**Output and description = "ConvergingCone", "Converging Cone"**

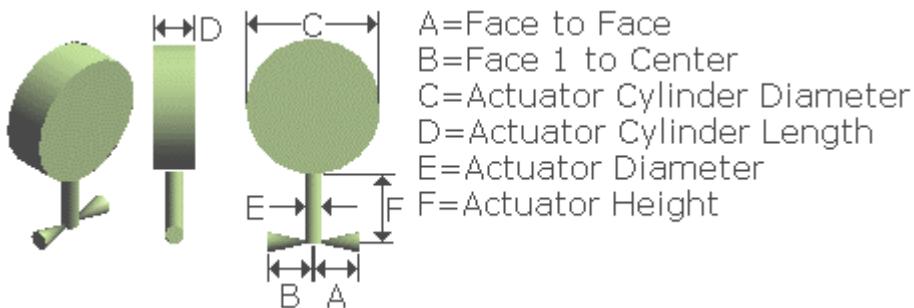
**Output and description = "DivergingCone", "Diverging Cone"**

**Output and description = "ActuatorStem", "Actuator Stem"**

**Output and description = "ActuatorBody", "Actuator Body"**

**Aspects = 1**

**Aspect = "SimplePhysical", "Physical"**



## SP3DCIPiActKnifeGateValTy1

**Description:** Knife Gate Valve Type 1, Piston Actuator

**Instrument Dimension Group:** IKG1

**Symbol Name:** SP3DCIPiActKnifeGateValTy1.CCIPAKGVTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IKG1

**User Class Name:** Knife Gate Valve Type 1 with Piston Actuator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPiActKnifeGateValTy1.CCIPAKGVTy1

**Inputs = 31**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "ValveHeight" Description = "Valve Height"**

**Input = "ValveHeight1" Description = "Valve Height1"**

**Input = "ValveWidth" Description = "Valve Width"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "OperationHeight" Description = "Operation Height"**

**Input = "OperationDiameter" Description = "Operation Diameter"**

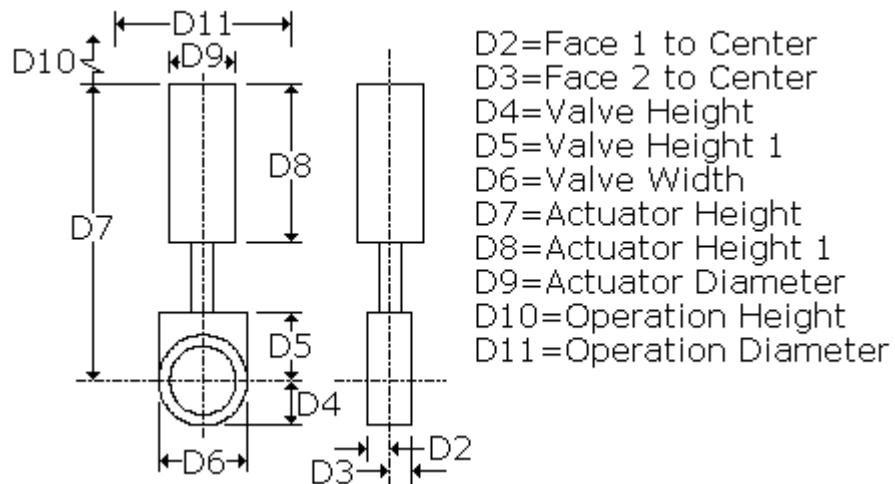
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "ValveBody" Description = "Cylindrical Body of Valve"**  
**Output = "ValveBoxBody" Description = "Box Body of Valve"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "Stem" Description = "Stem between Valve and Actuator Body"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIPiActKnifeGateValTy2

**Description:** Knife Gate Valve Type 2, Piston Actuator  
**Instrument Dimension Group:** IKG2  
**Symbol Name:** SP3DCIPiActKnifeGateValTy2.CCIPAKGVTy2  
**Workbook:** Instrument Data.xls  
**Workbook Sheet:** IKG2  
**User Class Name:** Knife Gate Valve Type 2 with Piston Actuator  
**Part Number:**  
**Inputs, Outputs, and Aspects:**

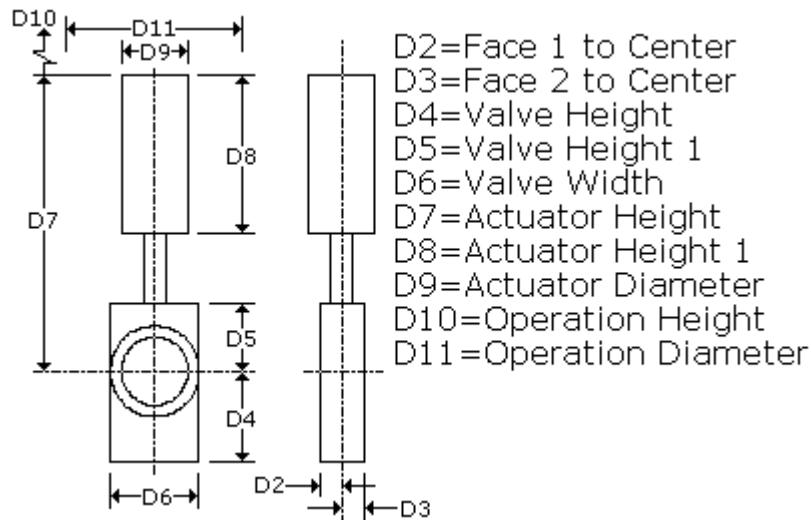
ProgID: SP3DCIPiActKnifeGateValTy2.CCIPAKGVTy2

**Inputs = 31**  
**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ValveHeight" Description = "Valve Height"**  
**Input = "ValveHeight1" Description = "Valve Height1"**  
**Input = "ValveWidth" Description = "Valve Width"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorHeight1" Description = "Actuator Height1"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationDiameter" Description = "Operation Diameter"**

**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "ValveBody" Description = "Body Valve"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "Stem" Description = "Stem Between Valve and Actuator"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



# SP3DCIPistonActAngVal

**Description:** Piston Actuator Angle Valve

**Instrument Dimension Group:** ISSPA

**Symbol Name:** SP3DCIPistonActAngVal.CCIPistonActAV

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ISSPA

**User Class Name:** Piston Actuator Angle Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPistonActAngVal.CCIPistonActAV

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "OperationHeight" Description = "OperationHeight"**

**Input = "OperationDiameter" Description = "OperationDiameter"**

**Input = "OperationDiameter1" Description = "OperationDiameter1"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

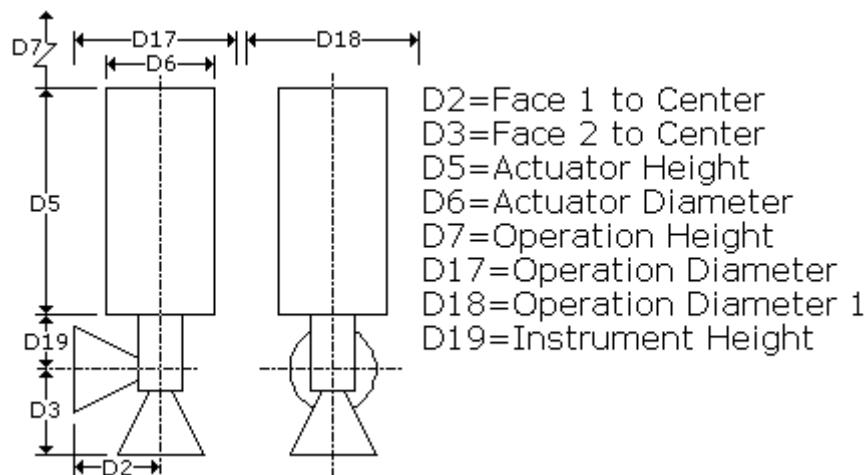
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Body Cone 2"**  
**Output = "ActuatorCylinder" Description = "Actuator Cylinder"**  
**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIPistonActStCondValve

**Description:** steam conditioning piston actuator valve  
**Instrument Dimension Group:** ISCV3  
**Symbol Name:** SP3DCIPistonActStCondValve.CCIPASCValve  
**Workbook:** Instrument Data.xls  
**Workbook Sheet:** ISCV3  
**User Class Name:** Piston Actuator Steam Conditioning Valve  
**Part Number:**  
**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPistonActStCondValve.CCIPASCValve

**Inputs = 37**  
**Input = "Face1toCenter" Description = "Face1toCenter"**  
**Input = "FacetoFace" Description = "FacetoFace"**  
**Input = "CylHeight" Description = "CylHeight"**  
**Input = "ActuatorHeight" Description = "ActuatorHeight"**  
**Input = "NozzleOffset" Description = "Nozzle Offset"**  
**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**  
**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**  
**Input = "Face3toCenter" Description = "Face3toCenter"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**

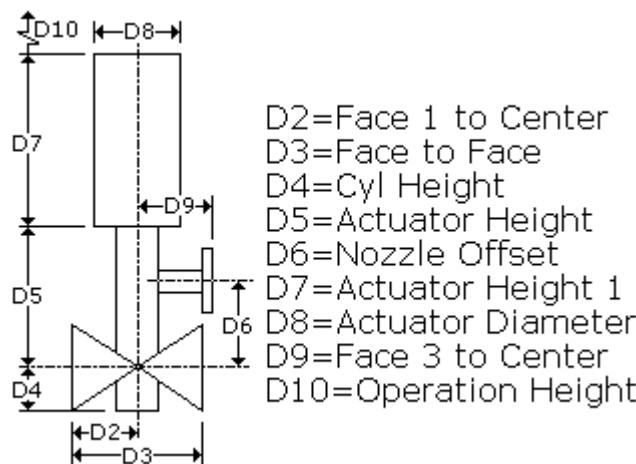
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "OperationHeight" Description = "OperationHeight "**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

### Outputs = 11

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**  
**Output = "VertBodyIns" Description = "Insulation for Vertical Body"**  
**Output = "Nozzle3Ins" Description = "Insulation for Nozzle3"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

### Aspects = 3

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIPistonActValve

**Description:** two-way globe control valve with piston actuator

**Instrument Dimension Group:** ISSPS

**Symbol Name:** SP3DCIPistonActValve.CCIPistonActVal

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ISSPS

**User Class Name:** Piston Actuator Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIPistonActValve.CCIPistonActVal

**Inputs = 30**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "InstrumentHeight" Description = "Instrument Height D19"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "OperationHeight" Description = "Operation Height"**

**Input = "OperationDiameter" Description = "Operation Diameter"**

**Input = "OperationDiameter1" Description = "Operation Diameter1"**

**Input = "Id1" Description = "Id1"**

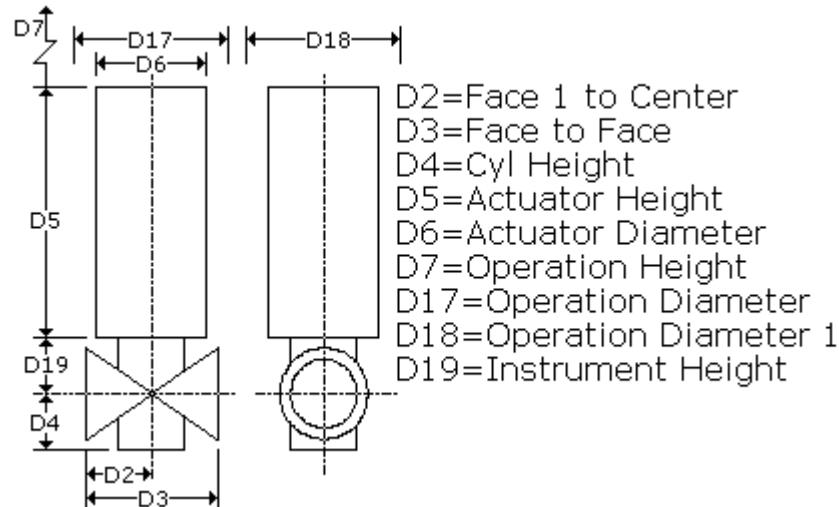
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Diverging Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "ActAndCylin" Description = "Actuator Cylinder"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



## SP3DCIRackPinionActValve

**Description:** Control valve with rack and pinion actuator

**Instrument Dimension Group:** IRXPA

**Symbol Name:** SP3DCIRackPinionActValve.CCIRPActValve

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRXPA

**User Class Name:** InstrumentsClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRackPinionActValve.CCIRPActValve

**Inputs = 42**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorLength3" Description = "Actuator Length3"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorWidth3" Description = "Actuator Width3"**

**Input = "ActuatorWidth4" Description = "Actuator Width4"**

**Input = "ActuatorLength4" Description = "Actuator Length4"**

**Input = "ActuatorLength5" Description = "Actuator Length5"**

**Input = "ActuatorHeight3" Description = "Actuator Height3"**

**Input = "ActuatorHeight4" Description = "Actuator Height4"**

**Input = "ActuatorHeight5" Description = "Actuator Height5"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

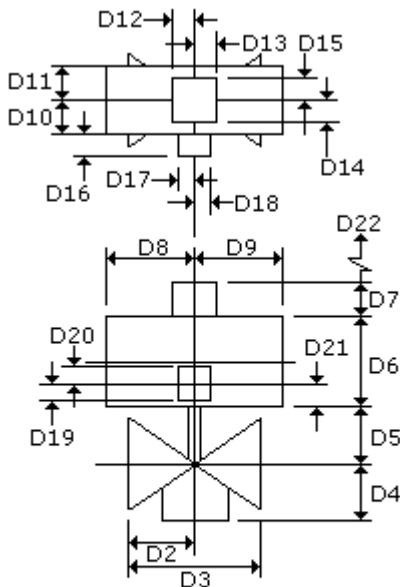
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 11**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "ConvergingCone" Description = "ConvergingCone"**  
**Output = "DivergingCone" Description = "DivergingCone"**  
**Output = "ValCylinder" Description = "ValCylinder"**  
**Output = "Stem" Description = "Stem"**  
**Output = "Box1" Description = "Box1"**  
**Output = "Box2" Description = "Box2"**  
**Output = "Box3" Description = "Box3"**  
**Output = "InsulationBody" Description = "InsulationBody"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



D2=Face 1 to Center  
D3=Face to Face  
D4=Cyl Height  
D5=Actuator Height  
D6=Actuator Height 1  
D7=Actuator Height 2  
D8=Actuator Length  
D9=Actuator Length 1  
D10=Actuator Width  
D11=Actuator Width 1  
D12=Actuator Length 2  
D13=Actuator Length 3  
D14=Actuator Width 2  
D15=Actuator Width 3  
D16=Actuator Width 4  
D17=Actuator Length 4  
D18=Actuator Length 5  
D19=Actuator Height 3  
D20=Actuator Height 4  
D21=Actuator Height 5  
D22=Operation Height

# SP3DCIRegulatorTy1

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy1 if you do not want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Instrument Dimension Group:** IREG1

**Symbol Name:** SP3DCIRegulatorTy1.CCIRegulatorTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IREG1

**User Class Name:** Regulator Type1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRegulatorTy1.CCIRegulatorTy1

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

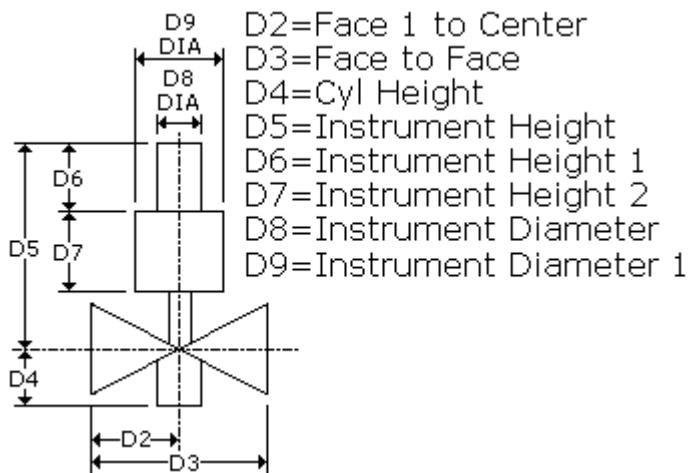
**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs** = 7  
**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "ConvergCone"   **Description** = "Converging Cone"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "DivergCone"   **Description** = "Diverging Cone"  
**Output** = "RegulatorVerCylin"   **Description** = "Regulator Vertical Cylinder"  
**Output** = "ConeIns"   **Description** = "Insulation for the Cones"  
**Output** = "RegVerCylinIns"   **Description** = "Vertical Cylinder Insulation"

**Aspects** = 2  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRegulatorTy2

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy2 if you do not want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Instrument Dimension Group:** IREG2

**Symbol Name:** SP3DCIRegulatorTy2.CCIRegulatorTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IREG2

**User Class Name:** Regulator Type2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRegulatorTy2.CCIRegulatorTy2

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "CylHeight" Description = "Bottom Cylinder Height D4"**

**Input = "InstrumentLength" Description = "Instrument Length D5"**

**Input = "InstrumentHeight" Description = "Instrument height D6"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

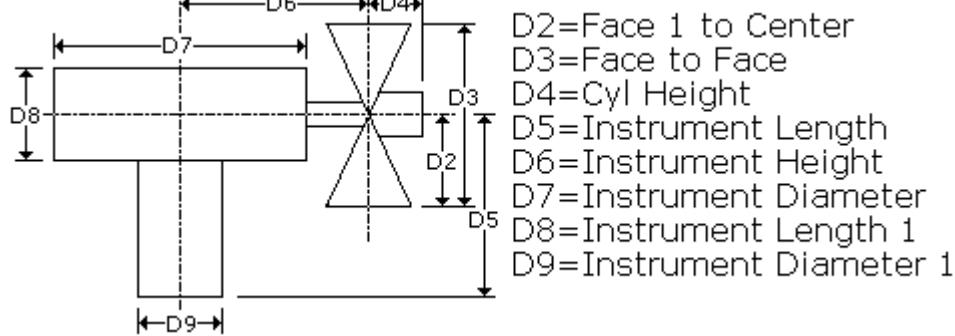
**Outputs = 10**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "BodyCone1" **Description** = "Body Cone 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "BodyCone2" **Description** = "Body Cone 2"  
**Output** = "ValCyl" **Description** = "Valve Bottom Cylinder"  
**Output** = "TopValCyl" **Description** = "Valve Top Cylinder"  
**Output** = "HoriCylinders" **Description** = "Horizontal Cylinders"  
**Output** = "ValveBodyIns" **Description** = "Valve Body Insulation"  
**Output** = "VertCylinsIns" **Description** = "Vertical Cylinders Insulation"  
**Output** = "HoriCylindersIns" **Description** = "Horizontal Cylinders Insulation"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRegulatorTy3

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy3 if you do not want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Instrument Dimension Group:** IREG3

**Symbol Name:** SP3DCIRegulatorTy3.CCIRegulatorTy3

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IREG3

**User Class Name:** Regulator Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRegulatorTy3.CCIRegulatorTy3

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "CylHeight" Description = "Bottom Cylinder Height D4"**

**Input = "InstrumentLength" Description = "Instrument Length D5"**

**Input = "InstrumentHeight" Description = "Instrument Height D6"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

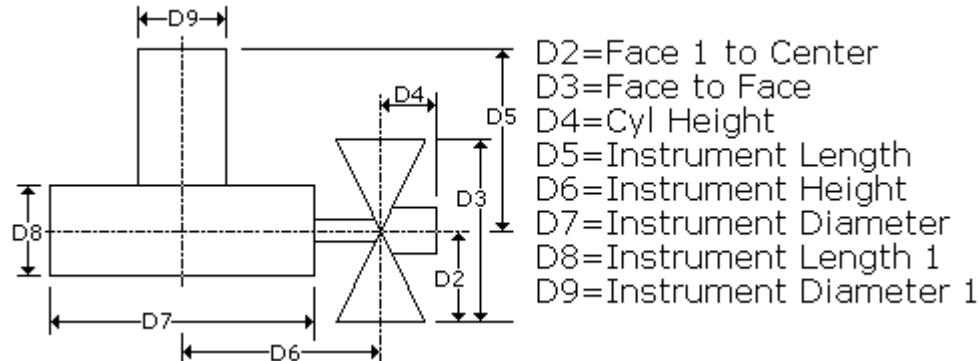
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 10**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Horizontal Cylinder"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Diverging Cone"  
**Output** = "ValCyl"   **Description** = "Regulator Cylinder"  
**Output** = "TopValCyl"   **Description** = "Regulator Cylinder 1"  
**Output** = "HorizontalCylins"   **Description** = "Regulator Cylinder 1"  
**Output** = "ValveBodyIns"   **Description** = "Cone Insulation"  
**Output** = "VertCylinsIns"   **Description** = "Cylinder Insulation"  
**Output** = "HoriCylinIns"   **Description** = "Horizontal Cylinders Insulation"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRegulatorTy4

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy4 if you do not want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Instrument Dimension Group:** IREG4

**Symbol Name:** SP3DCIRegulatorTy4.CCIRegulatorTy4

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IREG4

**User Class Name:** Regulator Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRegulatorTy4.CCIRegulatorTy4

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "OperationHeight" Description = "Operation Height1"**

**Input** = "OperationHeight1" **Description** = "Operation Height2"

**Input** = "Id1" **Description** = "Id1"

**Input** = "Id2" **Description** = "Id2"

**Input** = "NpdUnitType" **Description** = "Npd Unit Type"

**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"

**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 11**

**Output** = "VNoz1" **Description** = "Nozzle 1"

**Output** = "VNoz2" **Description** = "Nozzle 2"

**Output** = "ConeBody1" **Description** = "Cone Body1"

**Output** = "ConeBody2" **Description** = "Cone Body2"

**Output** = "ConeBody3" **Description** = "Cone Body3"

**Output** = "ConeBody4" **Description** = "Cone Body4"

**Output** = "TopCylBody" **Description** = "Top Cylinder Body"

**Output** = "RegulatorBodyIns" **Description** = "Regulator Body Insulation"

**Output** = "ConeBody4Ins" **Description** = "Cone Body4 Insulation"

**Output** = "OpEnvelope1" **Description** = "Envelop1 for Operation "

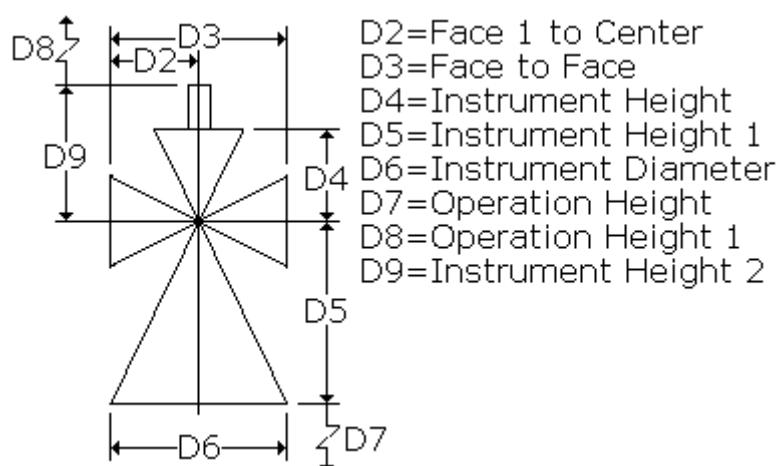
**Output** = "OpEnvelope2" **Description** = "Envelop2 for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical

**Aspect** = Insulation

**Aspect** = Operation



# SP3DCIRegulatorTy5

You can interactively resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy5 if you do not want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Instrument Dimension Group:** IREG5

**Symbol Name:** SP3DCIRegulatorTy5.CCIRegulatorTy5

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IREG5

**User Class Name:** Regulator Type 5

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRegulatorTy5.CCIRegulatorTy5

**Inputs = 29**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "InstrumentHeight" Description = "Instrument Height D4"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D5"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D6"**

**Input = "InstrumentLength" Description = "Instrument Length D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentLength2" Description = "Instrument Length 2 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

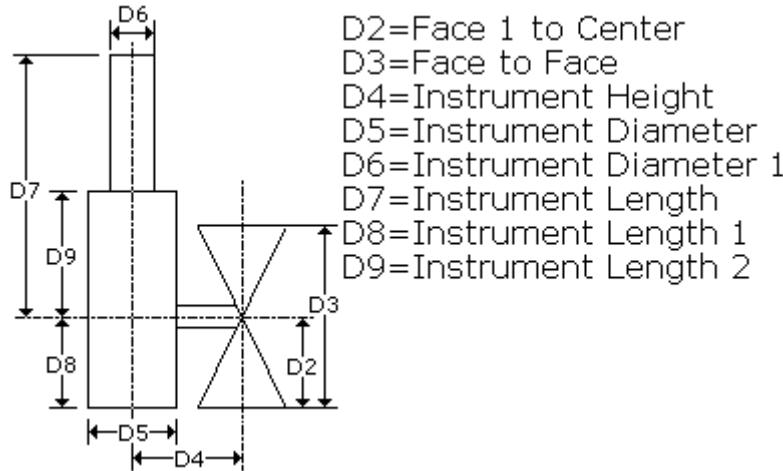
**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs** = 9  
**Output** = "VertCylin"   **Description** = "Regulator Vertical Cylinder"  
**Output** = "HoriCylin"   **Description** = "Regulator Horizontal Cylinder"  
**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Body Cone 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Body Cone 2"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation"  
**Output** = "VerCylinIns"   **Description** = "Vertical Cylinder Insulation"  
**Output** = "HorCylins"   **Description** = "Horizontal Cylinders Insulation"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIReliefValveTy1

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy1 if you do not want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 1

**Instrument Dimension Group:** IRVT1

**Symbol Name:** SP3DCIReliefValveTy1.CCIReliefValTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT1

**User Class Name:** Relief Valve Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy1.CCIReliefValTy1

**Inputs = 33**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

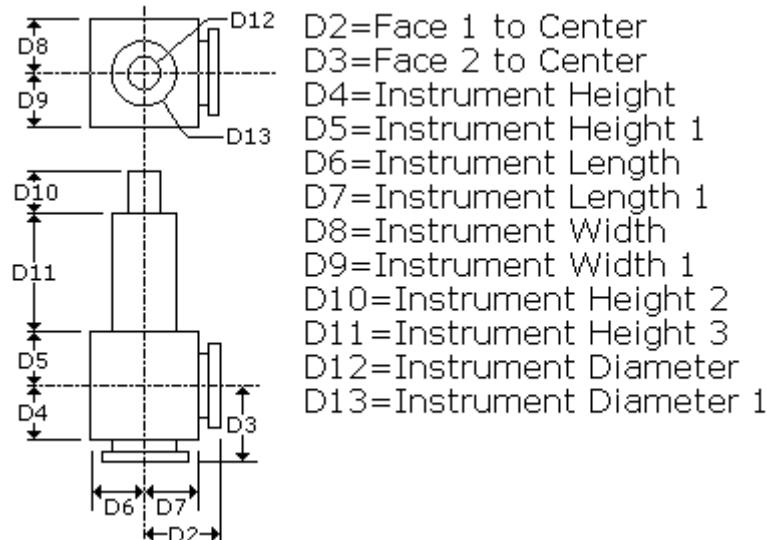
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 8**

**Output** = "ValveBody" **Description** = "Valve Body"  
**Output** = "TopCylBody1" **Description** = "Top Cylinder Body1"  
**Output** = "TopCylBody2" **Description** = "Top Cylinder Body2"  
**Output** = "ValveBodyIns" **Description** = "Valve Body Insulation"  
**Output** = "Nozz1BodyIns" **Description** = "Nozzle1 Body Insulation"  
**Output** = "Nozz2BodyIns" **Description** = "Nozzle2 Body Insulation"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCIReliefValveTy2

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy2 if you do not want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 2

**Instrument Dimension Group:** IRVT2

**Symbol Name:** SP3DCIReliefValveTy2.CCIReliefValveTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT2

**User Class Name:** Relief Valve Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy2.CCIReliefValveTy2

**Inputs = 31**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

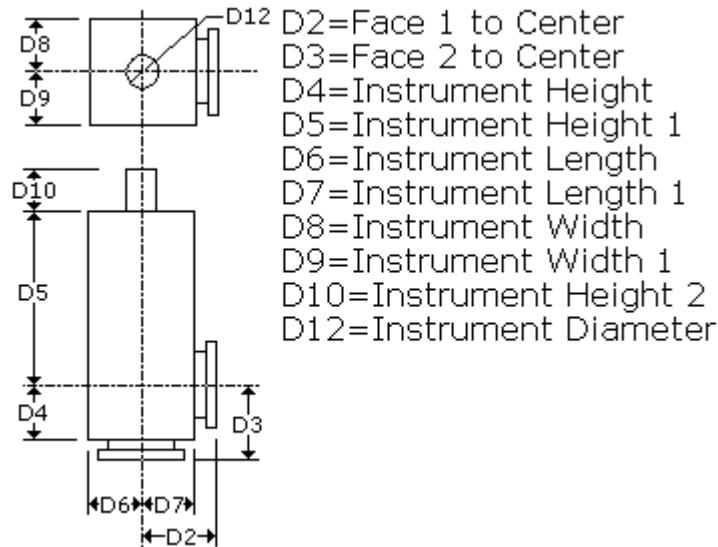
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 7

**Output** = "ValveBody" **Description** = "Valve Body"  
**Output** = "TopCylBody" **Description** = "Top Cylinder Body"  
**Output** = "ValveBodyIns" **Description** = "Valve Body Insulation"  
**Output** = "Nozz1BodyIns" **Description** = "Nozzle1 Body Insulation"  
**Output** = "Nozz2BodyIns" **Description** = "Nozzle2 Body Insulation"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIReliefValveTy3

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy3 if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Instrument Dimension Group:** IRVT3

**Symbol Name:** SP3DCIReliefValveTy3.CCIReliefValveTy3

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT3

**User Class Name:** Relief Valve Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy3.CCIReliefValveTy3

**Inputs = 35**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

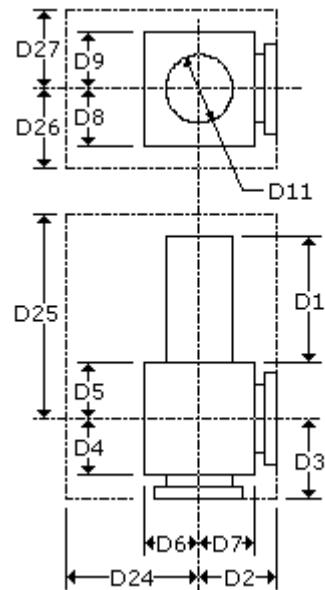
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationLength"   **Description** = "OperationLength"  
**Input** = "OperationHeight"   **Description** = "OperationHeight"  
**Input** = "OperationWidth"   **Description** = "OperationWidth"  
**Input** = "OperationWidth1"   **Description** = "OperationWidth1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 6**

**Output** = "ReliefValBody"   **Description** = "Relief Valve Body"  
**Output** = "VerCylin"   **Description** = "Vertical Cylinder"  
**Output** = "InsulationBody"   **Description** = "Insulation Body"  
**Output** = "PNoz1"   **Description** = "Nozzle 1"  
**Output** = "PNoz2"   **Description** = "Nozzle 2"  
**Output** = "OpEnvelope"   **Description** = "Envelop for Operation "

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Length  
D7=Instrument Length 1  
D8=Instrument Width  
D9=Instrument Width 1  
D10=Instrument Height 2  
D11=Instrument Diameter  
D24=Operation Length  
D25=Operation Height  
D26=Operation Width  
D27=Operation Width 1

# SP3DCIReliefValveTy4

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy4 if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Instrument Dimension Group:** IRVT4

**Symbol Name:** SP3DCIReliefValveTy4.CCIReliefValveTy4

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT4

**User Class Name:** Relief Valve Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy4.CCIReliefValveTy4

**Inputs = 47**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentRadius" Description = "Instrument Radius"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentHeight3" Description = "Instrument Height 3"**

**Input = "InstrumentRadius1" Description = "Instrument Radius 1"**

**Input = "InstrumentHeight4" Description = "Instrument Height 4"**

**Input = "InstrumentHeight5" Description = "Instrument Height 5"**

**Input = "InstrumentRadius2" Description = "Instrument Radius 2"**

**Input = "InstrumentHeight6" Description = "Instrument Height 6"**

**Input = "InstrumentHeight7" Description = "Instrument Height 7"**

**Input = "InstrumentRadius3" Description = "Instrument Radius 3"**

**Input = "InstrumentHeight8" Description = "Instrument Height 8"**

**Input = "InstrumentHeight9" Description = "Instrument Height 9"**

**Input = "CylOffset" Description = "Cylinder Offset"**

**Input = "CylOffset1" Description = "Cylinder Offset 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

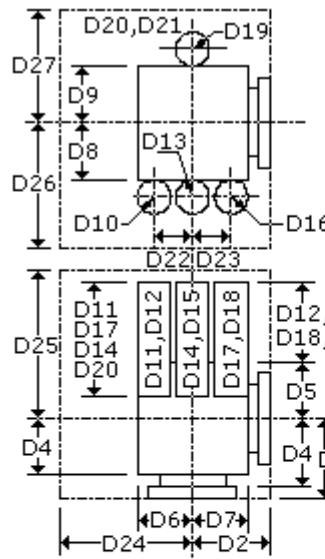
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "OperationLength" Description = "Operation Length"**  
**Input = "OperationHeight" Description = "Operation Height"**  
**Input = "OperationWidth" Description = "Operation Width"**  
**Input = "OperationWidth1" Description = "Operation Width1"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 9**

**Output = "ReliefValBody" Description = "Relief Valve Body"**  
**Output = "VerCylin1" Description = "Vertical Cylinder 1"**  
**Output = "VerCylin2" Description = "Vertical Cylinder 2"**  
**Output = "VerCylin3" Description = "Vertical Cylinder 3"**  
**Output = "VerCylin4" Description = "Vertical Cylinder 4"**  
**Output = "InsulationBody" Description = "Insulation Body"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**  
**Aspect = Insulation**  
**Aspect = Operation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Length  
D7=Instrument Length 1  
D8=Instrument Width  
D9=Instrument Width 1  
D10=Instrument Radius  
D11=Instrument Height 2  
D12=Instrument Height 3  
D13=Instrument Radius 1  
D14=Instrument Height 4  
D15=Instrument Height 5  
D16=Instrument Radius 2  
D17=Instrument Height 6  
D18=Instrument Height 7  
D19=Instrument Radius 3  
D20=Instrument Height 8  
D21=Instrument Height 9  
D22=Cyl Offset  
D23=Cyl Offset 1  
D24=Operation Length  
D25=Operation Height  
D26=Operation Width  
D27=Operation Width 1

## SP3DCIReliefValveTy5

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy5 if you do not want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 5

**Instrument Dimension Group:** IRVT5

**Symbol Name:** SP3DCIReliefValveTy5.CCIReliefValveTy5

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT5

**User Class Name:** Relief Valve Type 5

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy5.CCIReliefValveTy5

Number of Inputs = 44

Input name = "Face1toCenter"

Input description = "Face1 to Center"

Input name = "Face2toCenter"

Input description = "Face2 to Center"

Input name = "InstrumentHeight"

Input description = "Instrument Height"

Input name = "InstrumentHeight1"

Input description = "Instrument Height1"

Input name = "InstrumentLength"

Input description = "Instrument Length"

Input name = "InstrumentLength1"

Input description = "Instrument Length1"

Input name = "InstrumentWidth"

Input description = "Instrument Width"

Input name = "InstrumentWidth1"

Input description = "Instrument Width1"

Input name = "InstrumentRadius"

Input description = "Instrument Diameter"

Input name = "InstrumentHeight2"

Input description = "Instrument Height2"

Input name = "InstrumentHeight3"

Input description = "Instrument Height3"

Input name = "InstrumentRadius1"

Input description = "Instrument Diameter1"

Input name = "InstrumentHeight4"

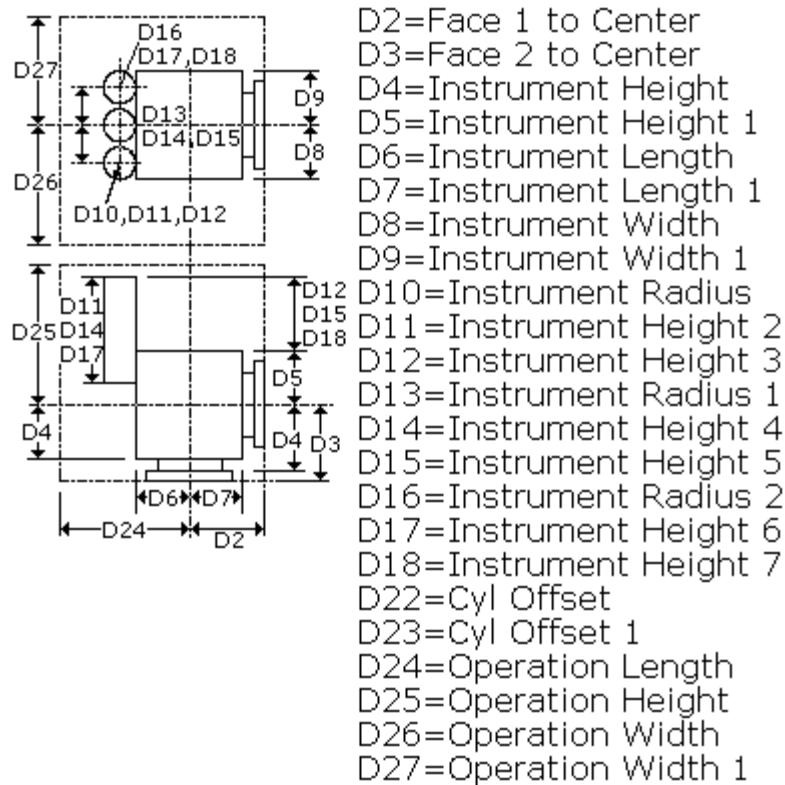
Input description = "Instrument Height4"

Input name = "InstrumentHeight5"

Input description = "Instrument Height5"

Input name = "InstrumentRadius2"  
Input description = "Instrument Diameter2"  
Input name = "InstrumentHeight6"  
Input description = "Instrument Height6"  
Input name = "InstrumentHeight7"  
Input description = "Instrument Height7"  
Input name = "CylOffset"  
Input description = "Cylinder Offset"  
Input name = "CylOffset1"  
Input description = "Cylinder Offset 1"  
Input name = "InsulationThickness"  
Input description = "Insulation Thickness"  
Input name = "Npd"  
Input description = "NPD"  
Input name = "EndPreparation"  
Input description = "EndPreparation"  
Input name = "ScheduleThickness"  
Input description = "ScheduleThickness"  
Input name = "EndStandard"  
Input description = "EndStandard"  
Input name = "PressureRating"  
Input description = "PressureRating"  
Input name = "FlowDirection"  
Input description = "FlowDirection"  
Input name = "PortIndex1"  
Input description = "PortIndex1"  
Input name = "Npd1"  
Input description = "NPD1"  
Input name = "EndPreparation1"  
Input description = "EndPreparation1"  
Input name = "ScheduleThickness1"  
Input description = "ScheduleThickness1"  
Input name = "EndStandard1"  
Input description = "EndStandard1"  
Input name = "PressureRating1"  
Input description = "PressureRating1"  
Input name = "FlowDirection1"  
Input description = "FlowDirection1"  
Input name = "PortIndex2"  
Input description = "PortIndex2"  
Input name = "Npd2"  
Input description = "NPD2"  
Input name = "EndPreparation2"  
Input description = "EndPreparation2"  
Input name = "ScheduleThickness2"  
Input description = "ScheduleThickness2"

```
Input name = "EndStandard2"
Input description = "EndStandard2"
Input name = "PressureRating2"
Input description = "PressureRating2"
Input name = "FlowDirection2"
Input description = "FlowDirection2"
Input name = "OperationLength"
Input description = "OperationLength"
Input name = "OperationHeight"
Input description = "OperationHeight"
Input name = "OperationWidth"
Input description = "OperationWidth"
Input name = "OperationWidth1"
Input description = "OperationWidth1"
Input name = "Id1"
Input description = "Id1"
Input name = "Id2"
Input description = "Id2"
Input name = "NpdUnitType"
Input description = "Npd Unit Type"
Input name = "NpdUnitType1"
Input description = "Npd Unit Type 1"
Input name = "NpdUnitType2"
Input description = "Npd Unit Type 2"
Number of Outputs = 8
Output name = "ValveBody"
Output description = "ValveBody"
Output name = "Cyl1Body"
Output description = "Cylinder 1Body"
Output name = "Cyl2Body"
Output description = "Cylinder 2Body"
Output name = "Cyl3Body"
Output description = "Cylinder 3Body"
Output name = "ValveBodyIns"
Output description = "Valve Body Insulation"
Output name = "VNoz1"
Output description = "Nozzle 1"
Output name = "VNoz2"
Output description = "Nozzle 2"
Output name = "OpEnvelope"
Output description = "Envelop for Operation "
Number of Aspects = 3
Supported AspectId = SimplePhysical
Supported AspectId = Insulation
Supported AspectId = Operation
```



# SP3DCIReliefValveTy6

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy6 if you do not want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 6

**Instrument Dimension Group:** IRVT6

**Symbol Name:** SP3DCIReliefValveTy6.CCIReliefValveTy6

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT6

**User Class Name:** Relief Valve Type 6

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy6.CCIReliefValveTy6

**Inputs = 54**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentRadius" Description = "Instrument Radius"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentRadius1" Description = "Instrument Diameter1"**

**Input = "InstrumentHeight4" Description = "Instrument Height4"**

**Input = "InstrumentHeight5" Description = "Instrument Height5"**

**Input = "InstrumentRadius2" Description = "Instrument Diameter2"**

**Input = "InstrumentHeight6" Description = "Instrument Height6"**

**Input = "InstrumentHeight7" Description = "Instrument Height7"**

**Input = "InstrumentRadius3" Description = "Instrument Radius3"**

**Input = "InstrumentHeight8" Description = "Instrument Height8"**

**Input = "InstrumentHeight9" Description = "Instrument Height9"**

**Input = "CylOffset" Description = "Cylinder Offset"**

**Input = "CylOffset1" Description = "Cylinder Offset1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

---

```

Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "OperationLength" Description = "OperationLength"
Input = "OperationHeight" Description = "OperationHeight"
Input = "OperationWidth" Description = "OperationWidth"
Input = "OperationWidth1" Description = "OperationWidth1"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "Id3" Description = "Id3"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
Input = "NpdUnitType3" Description = "Npd Unit Type 3"

```

#### **Outputs = 10**

```

Output = "ValveBody" Description = "ValveBody"
Output = "Cyl1Body" Description = "Cylinder 1Body"
Output = "Cyl2Body" Description = "Cylinder 2Body"
Output = "Cyl3Body" Description = "Cylinder 3Body"
Output = "Cyl4Body" Description = "Cylinder 4Body"
Output = "ValveBodyIns" Description = "Valve Body Insulation"
Output = "VNoz1" Description = "Nozzle 1"
Output = "VNoz2" Description = "Nozzle 2"
Output = "VNoz3" Description = "Nozzle 3"
Output = "OpEnvelope" Description = "Envelop for Operation "

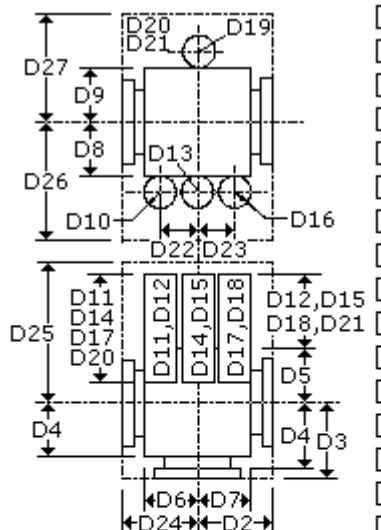
```

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Operation**



D2=Face 1 to Center  
D3=Face 3 to Center  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Length  
D7=Instrument Length 1  
D8=Instrument Width  
D9=Instrument Width 1  
D10=Instrument Radius  
D11=Instrument Height 2  
D12=Instrument Height 3  
D13=Instrument Radius 1  
D14=Instrument Height 4  
D15=Instrument Height 5  
D16=Instrument Radius 2  
D17=Instrument Height 6  
D18=Instrument Height 7  
D19=Instrument Radius 3  
D20=Instrument Height 8  
D21=Instrument Height 9  
D22=Cyl Offset  
D23=Cyl Offset 1  
D24=Operation Length  
D25=Operation Height  
D26=Operation Width  
D27=Operation Width 1

# SP3DCIReliefValveTy7

You can interactively resize this part symbol during or after placement. Use the symbol SP3DReliefValveTy7 if you do not want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Instrument Dimension Group:** IRVT7

**Symbol Name:** SP3DCIReliefValveTy7.CCIReliefValveTy7

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IRVT7

**User Class Name:** Relief Valve Type 7

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIReliefValveTy7.CCIReliefValveTy7

**Inputs = 32**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

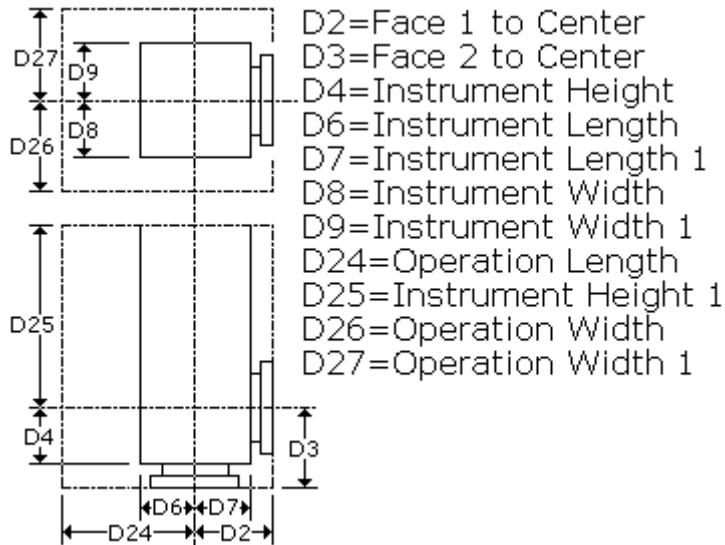
**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "OperationLength" **Description** = "OperationLength"  
**Input** = "OperationWidth" **Description** = "OperationWidth"  
**Input** = "OperationWidth1" **Description** = "OperationWidth1"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 5  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "Box" **Description** = "Box"  
**Output** = "InsulationBody" **Description** = "Insulation Body"  
**Output** = "OpEnvelope" **Description** = "Envelop for Operation "

**Aspects** = 3

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIRoDActEPPHWPosC1Val

**Description:** Valve with Rotary Diaphragm Actuator Electro Pneumatic Positioner

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIRoDActEPPHWPosC1Val.CCIRDAEHPC1V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIRoDActEPPHWPosC1Val

**User Class Name:** Valve with Rotary Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel style C Position 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActEPPHWPosC1Val.CCIRDAEHPC1V

**Inputs = 42**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height "**

**Input = "ActuatorWidth" Description = "Actuator Width D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "ActuatorHeight" Description = "Actuator Height D7"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D8"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D9"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1 D10"**

**Input = "ActuatorHeight2" Description = "Actuator Height 2 D11"**

**Input = "ActuatorLength" Description = "Actuator Length D12"**

**Input = "ActuatorLength1" Description = "Actuator Length 1 D14"**

**Input = "ActuatorHeight3" Description = "Actuator Height 3 D16"**

**Input = "ActuatorHeight4" Description = "Actuator Height 4 D19"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D20"**

**Input = "ActuatorWidth1" Description = "Actuator Width 1 D25"**

**Input = "ActuatorWidth2" Description = "Actuator Width 2 D26"**

**Input = "ActuatorHeight5" Description = "Actuator Height 5 D27"**

**Input = "ActuatorLength2" Description = "Actuator Length 2 D28"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

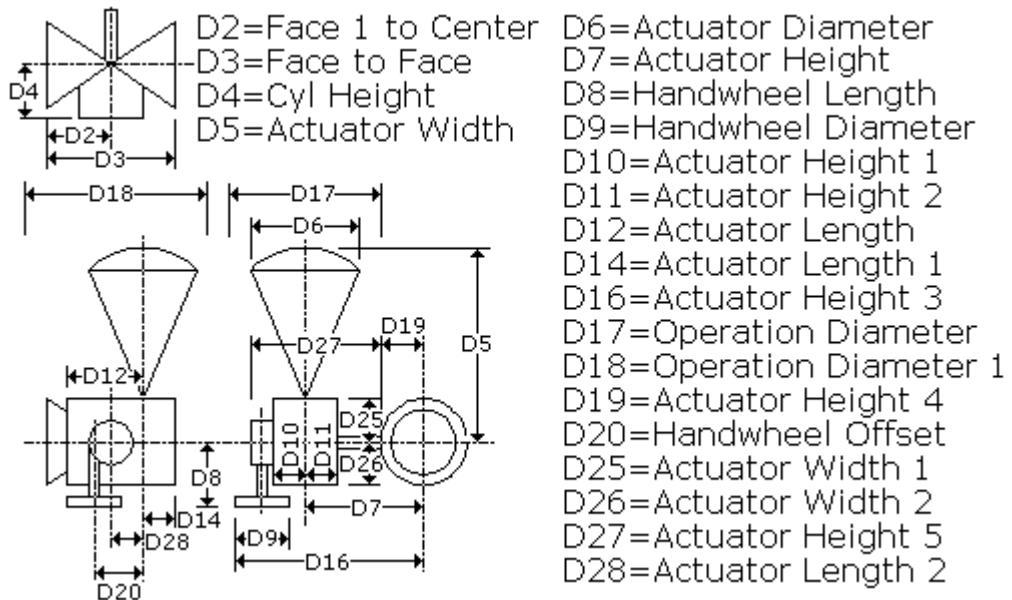
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**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationDiameter"   **Description** = "Operation Diameter"  
**Input** = "OperationDiameter1"   **Description** = "Operation Diameter1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 13**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Body Cone 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Body Cone 2"  
**Output** = "ValCyl"   **Description** = "Valve Cylinder"  
**Output** = "Stem"   **Description** = "Stem"  
**Output** = "Box"   **Description** = "Box"  
**Output** = "Cylinder"   **Description** = "Cylinder"  
**Output** = "Stem1"   **Description** = "Stem 1"  
**Output** = "HandWheel"   **Description** = "Hand Wheel"  
**Output** = "ActuatorCone"   **Description** = "Actuator Cone"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation "  
**Output** = "OperationEnvelope"   **Description** = "Envelope for Operation"

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIRoDActEPPHWPosD1Val

**Description:** Valve with Rotary Diaphragm Actuator Electro Pneumatic Positioner

**Instrument Dimension Group:**

**Symbol Name:** SP3DCIRoDActEPPHWPosD1Val.CCIRDAEHPD1V

**Workbook:** Instrument Data.xls

**Workbook Sheet:** CIRoDActEPPHWPosD1Val

**User Class Name:** Valve with Rotary Diaphragm Actuator Electro Pneumatic Positioner and Hand Wheel style D Position 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActEPPHWPosD1Val.CCIRDAEHPD1V

**Inputs = 42**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylder Height "**

**Input = "ActuatorWidth" Description = "Actuator Width D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "ActuatorHeight" Description = "Actuator Height D7"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D8"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D9"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1 D10"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2 D11"**

**Input = "ActuatorLength" Description = "Actuator Length D12"**

**Input = "ActuatorLength1" Description = "Actuator Length 1 D14"**

**Input = "ActuatorHeight3" Description = "Actuator Height 3 D16"**

**Input = "ActuatorHeight4" Description = "Actuator Height 4 D19"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D20"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1 D25"**

**Input = "ActuatorWidth2" Description = "Actuator Width 2 D26"**

**Input = "ActuatorHeight5" Description = "Actuator Height 5 D27"**

**Input = "ActuatorLength2" Description = "Actuator Length 2 D28"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

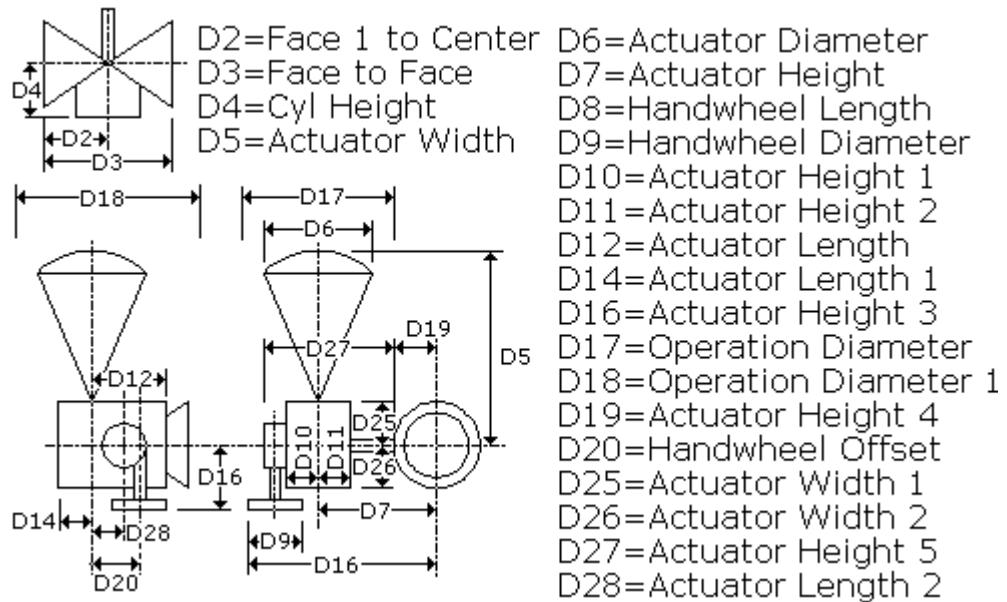
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "OperationDiameter"   **Description** = "Operation Diameter"  
**Input** = "OperationDiameter1"   **Description** = "Operation Diameter1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 13**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "BodyCone1"   **Description** = "Body Cone 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "BodyCone2"   **Description** = "Body Cone 2"  
**Output** = "ValCyl"   **Description** = "Valve Cylinder"  
**Output** = "Stem"   **Description** = "Stem"  
**Output** = "Box"   **Description** = "Box"  
**Output** = "Cylinder"   **Description** = "Cylinder"  
**Output** = "Stem1"   **Description** = "Stem1"  
**Output** = "HandWheel"   **Description** = "HandWheel"  
**Output** = "ActuatorCone"   **Description** = "ActuatorCone"  
**Output** = "ValveBodyIns"   **Description** = "Valve Body Insulation "  
**Output** = "OperationEnvelope"   **Description** = "Envelope for Operation"

**Aspects = 3**

**Aspect** = SimplePhysical  
**Aspect** = Insulation  
**Aspect** = Operation



# SP3DCIRoDActPosA4Valve

**Description:** Rotary Diaphragm Actuator Valve Position C4 (Vertical Line)

**Instrument Dimension Group:** IDR4A, IDR4C

**Symbol Name:** SP3DCIRoDActPosA4Valve.CCIRDAPosA4Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IDL4C, IDR4A

**User Class Name:** Valve with Rotary Diaphragm Actuator Position A 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActPosA4Valve.CCIRDAPosA4Val

**Inputs = 34**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

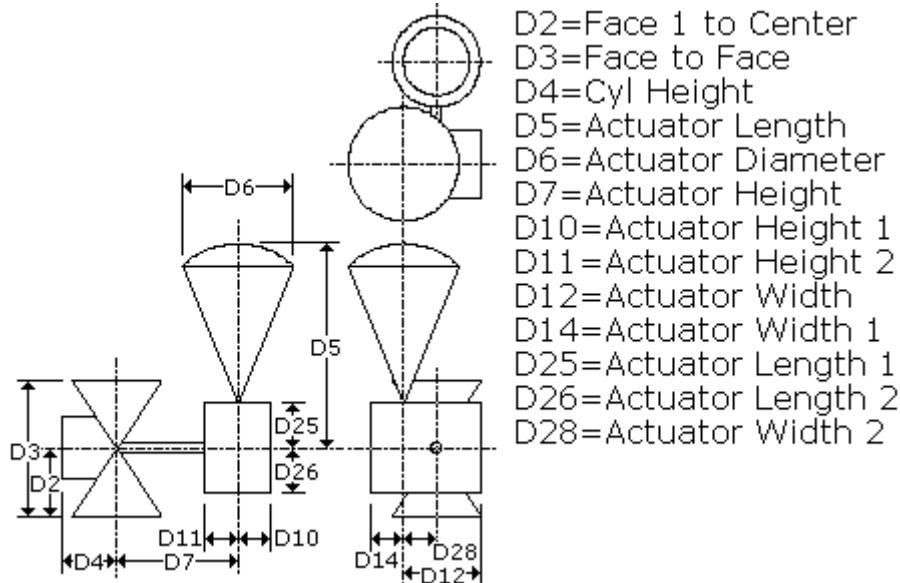
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 9  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "ConvergingCone" **Description** = "ConvergingCone"  
**Output** = "DivergingCone" **Description** = "DivergingCone"  
**Output** = "ValCylinder" **Description** = "ValCylinder"  
**Output** = "Stem" **Description** = "Stem"  
**Output** = "ActuatorBox" **Description** = "ActuatorBox"  
**Output** = "ActuatorCone" **Description** = "ActuatorCone"  
**Output** = "InsulationBody" **Description** = "InsulationBody"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRoDActPosB4Valve

**Description:** Rotary Diaphragm Actuator Valve Position D4 (vertical line)

**Instrument Dimension Group:** IDR4B

**Symbol Name:** SP3DCIRoDActPosB4Valve.CCIRDAPosB4Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IDL4D, IDR4B

**User Class Name:** Valve with Rotary Diaphragm Actuator Position B 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActPosB4Valve.CCIRDAPosB4Val

**Inputs = 34**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

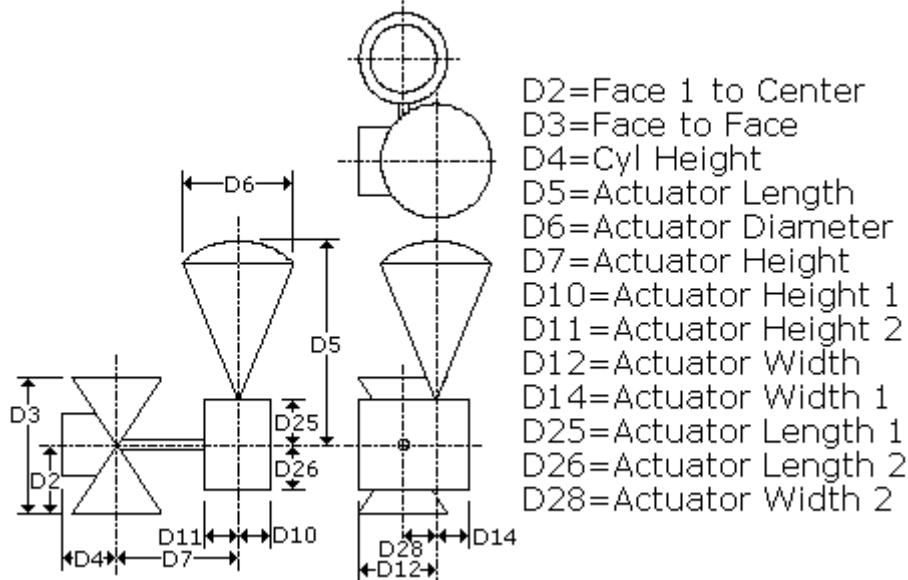
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 9  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "ConvergingCone" **Description** = "ConvergingCone"  
**Output** = "DivergingCone" **Description** = "DivergingCone"  
**Output** = "ValCylinder" **Description** = "ValCylinder"  
**Output** = "Stem" **Description** = "Stem"  
**Output** = "ActuatorBox" **Description** = "ActuatorBox"  
**Output** = "ActuatorCone" **Description** = "ActuatorCone"  
**Output** = "InsulationBody" **Description** = "InsulationBody"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRoDActPosC1Valve

**Description:** Rotary Diaphragm Actuator Valve Position C1

**Instrument Dimension Group:** IDL1C, IDR1B

**Symbol Name:** SP3DCIRoDActPosC1Valve.CCIRDAPosC1Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IDL1C, IDR1B

**User Class Name:** Valve with Rotary Diaphragm Actuator Position C 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActPosC1Valve.CCIRDAPosC1Val

**Inputs = 35**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of operator"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

```

Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"

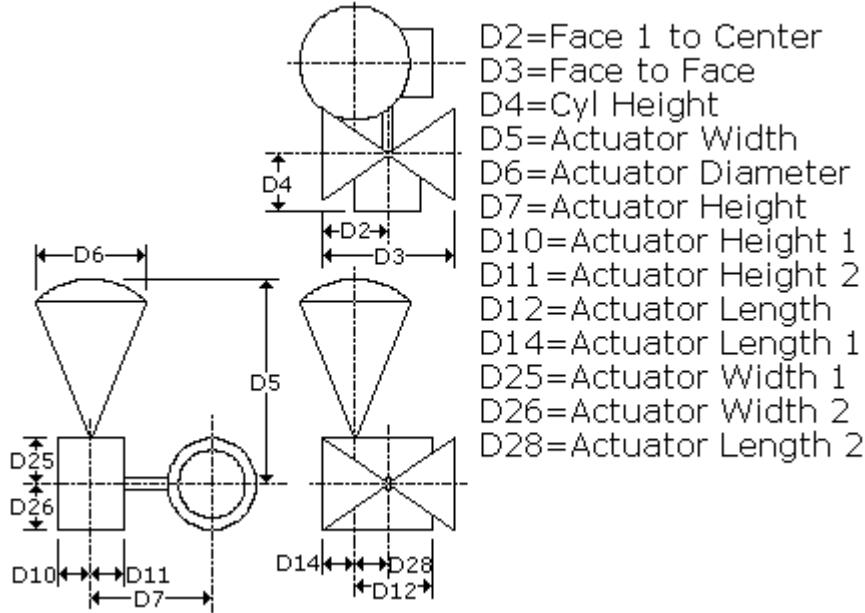
Outputs = 9
Output = "PNoz1" Description = "Nozzle 1"
Output = "PNoz2" Description = "Nozzle 2"
Output = "ConvergingCone" Description = "ConvergingCone"
Output = "DivergingCone" Description = "DivergingCone"
Output = "ValCylinder" Description = "ValCylinder"
Output = "Stem" Description = "Stem"
Output = "ActuatorBox" Description = "ActuatorBox"
Output = "ActuatorCone" Description = "ActuatorCone"
Output = "InsulationBody" Description = "InsulationBody"

```

**Aspects** = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRoDActPosD1Valve

**Description:** Rotary Diaphragm Actuator Valve Position D1

**Instrument Dimension Group:** IDL1D, IDL1A

**Symbol Name:** SP3DCIRoDActPosD1Valve.CCIRDAPosD1Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IDL1D, IDRIA

**User Class Name:** Valve with Rotary Diaphragm Actuator Position D 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoDActPosD1Valve.CCIRDAPosD1Val

**Inputs = 35**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of operator"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

```

Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"

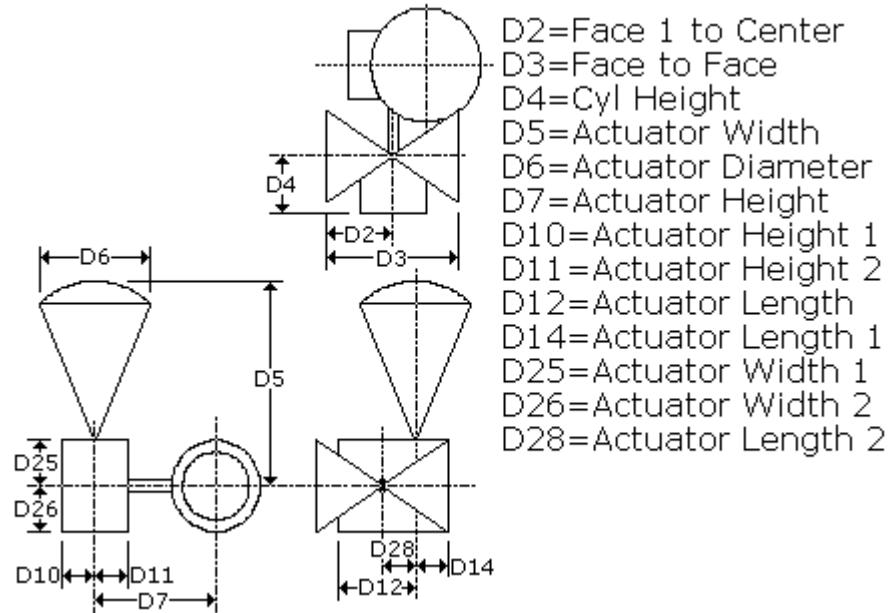
Outputs = 9
Output = "PNoz1" Description = "Nozzle 1"
Output = "PNoz2" Description = "Nozzle 2"
Output = "ConvergingCone" Description = "ConvergingCone"
Output = "DivergingCone" Description = "DivergingCone"
Output = "ValCylinder" Description = "ValCylinder"
Output = "Stem" Description = "Stem"
Output = "ActuatorBox" Description = "ActuatorBox"
Output = "ActuatorCone" Description = "ActuatorCone"
Output = "InsulationBody" Description = "InsulationBody"

```

**Aspects** = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRoPisActPosA1Valve

**Description:** Valve with Rotary Piston Actuator

**Instrument Dimension Group:** IPR1A

**Symbol Name:** SP3DCIRoPisActPosA1Valve.CCIRPAPosA1Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPL1D, IPR1A

**User Class Name:** Valve with Rotary Piston Actuator Pos A 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoPisActPosA1Valve.CCIRPAPosA1Val

**Inputs = 35**

```
Input = "Face1toCenter" Description = "Face1toCenter(D2)"
Input = "FacetoFace" Description = "FacetoFace(D3)"
Input = "CylHeight" Description = "CylHeight(D4)"
Input = "ActuatorWidth" Description = "ActuatorWidth(D5)"
Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"
Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"
Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"
Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"
Input = "ActuatorLength" Description = "ActuatorLength(D12)"
Input = "ActuatorLength1" Description = "ActuatorLength1(D14)"
Input = "ActuatorWidth1" Description = "ActuatorWidth1(D25)"
Input = "ActuatorWidth2" Description = "ActuatorWidth2(D26)"
Input = "ActuatorLength2" Description = "ActuatorLength2(D28)"
Input = "HandwheelAngle" Description = "HandwheelAngle"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
```

```

Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"

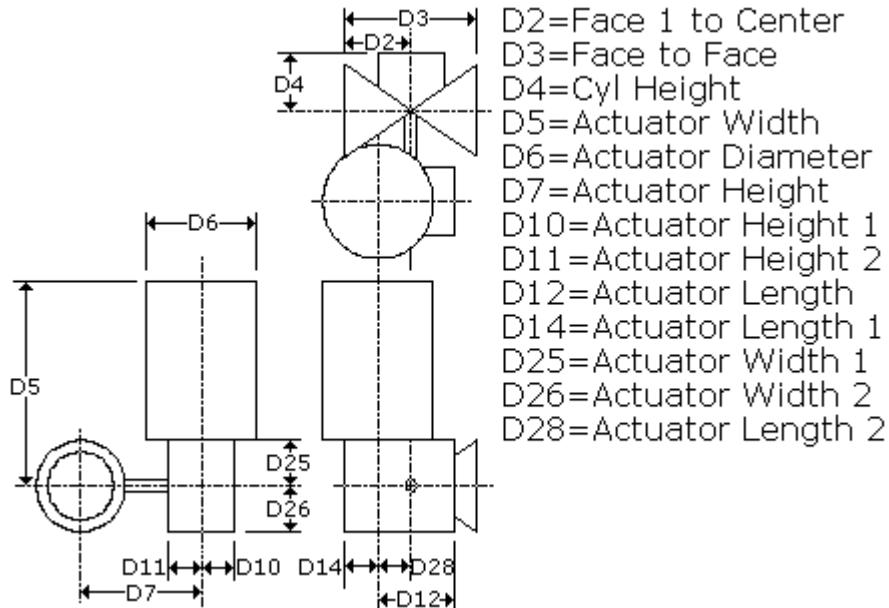
Outputs = 9
Output = "VNoz1" Description = "Nozzle 1"
Output = "VNoz2" Description = "Nozzle 2"
Output = "BodyCone1" Description = "Conical Valve Body 1"
Output = "BodyCone2" Description = "Conical Valve Body 2 "
Output = "StemRod" Description = "Stem Body "
Output = "ValveCylinder" Description = "Valve Cylindrical Body"
Output = "ActuatorRect" Description = "Actuator Rectangular box "
Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"
Output = "InsulationBody" Description = "Insulation Body"

```

**Aspects** = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRoPisActPosA4Valve

**Description:** Valve with Rotary Piston Actuator

**Instrument Dimension Group:** IPR4A

**Symbol Name:** SP3DCIRoPisActPosA4Valve.CCIRPAPosA4Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPL4D, IPR4A

**User Class Name:** Valve with Rotary Piston Actuator style D Position 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoPisActPosA4Valve.CCIRPAPosA4Val

**Inputs = 34**

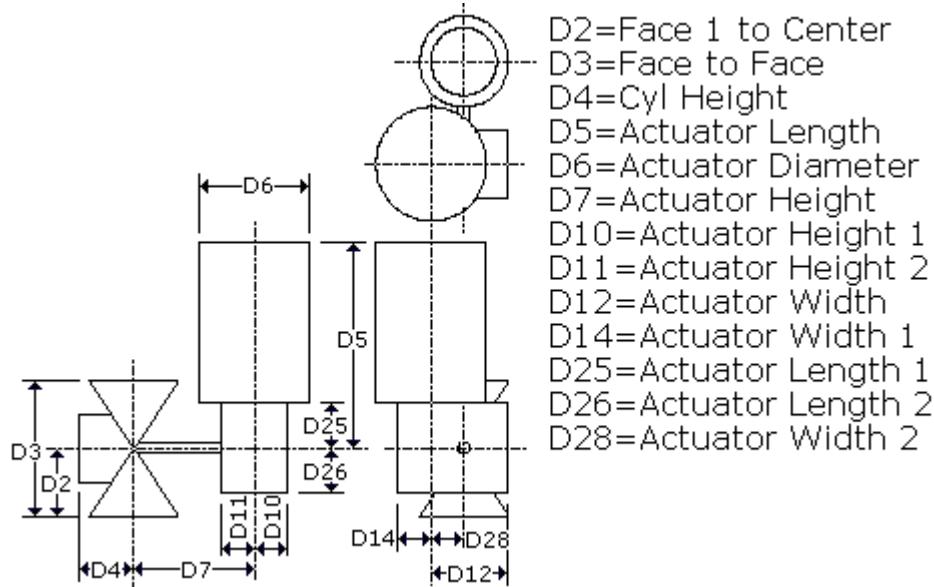
```
Input = "Face1toCenter" Description = "Face1toCenter(D2)"
Input = "FacetoFace" Description = "FacetoFace(D3)"
Input = "CylHeight" Description = "CylHeight(D4)"
Input = "ActuatorLength" Description = "ActuatorLength(D5)"
Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"
Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"
Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"
Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"
Input = "ActuatorWidth" Description = "ActuatorWidth(D12)"
Input = "ActuatorWidth1" Description = "ActuatorWidth1(D14)"
Input = "ActuatorLength1" Description = "ActuatorLength1(D25)"
Input = "ActuatorLength2" Description = "ActuatorLength2(D26)"
Input = "ActuatorWidth2" Description = "ActuatorWidth2(D28)"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
```

**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 9  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "ValveCone1" **Description** = "Conical Valve Body 1"  
**Output** = "ValveCone2" **Description** = "Conical Valve Body 2"  
**Output** = "StemRod" **Description** = "Stem Body"  
**Output** = "ValveCylinder" **Description** = "Valve Cylindrical Body"  
**Output** = "ActuatorRect" **Description** = "Actuator Rectangular box"  
**Output** = "ActuatorCyl" **Description** = "Actuator Cylindrical Body"  
**Output** = "InsulationBody" **Description** = "Insulation Body"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRoPisActPosB1Valve

**Description:** Valve with Rotary Piston Actuator

**Instrument Dimension Group:** IPR1B

**Symbol Name:** SP3DCIRoPisActPosB1Valve.CCIRPAPosB1Val

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IPL1C, IPR1B

**User Class Name:** Valve with Rotary Piston Actuator Pos B 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoPisActPosB1Valve.CCIRPAPosB1Val

**Inputs = 35**

```
Input = "Face1toCenter" Description = "Face1toCenter(D2)"
Input = "FacetoFace" Description = "FacetoFace(D3)"
Input = "CylHeight" Description = "CylHeight(D4)"
Input = "ActuatorWidth" Description = "ActuatorWidth(D5)"
Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"
Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"
Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"
Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"
Input = "ActuatorLength" Description = "ActuatorLength(D12)"
Input = "ActuatorLength1" Description = "ActuatorLength1(D14)"
Input = "ActuatorWidth1" Description = "ActuatorWidth1(D25)"
Input = "ActuatorWidth2" Description = "ActuatorWidth2(D26)"
Input = "ActuatorLength2" Description = "ActuatorLength2(D28)"
Input = "HandwheelAngle" Description = "HandwheelAngle"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
```

```

Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"

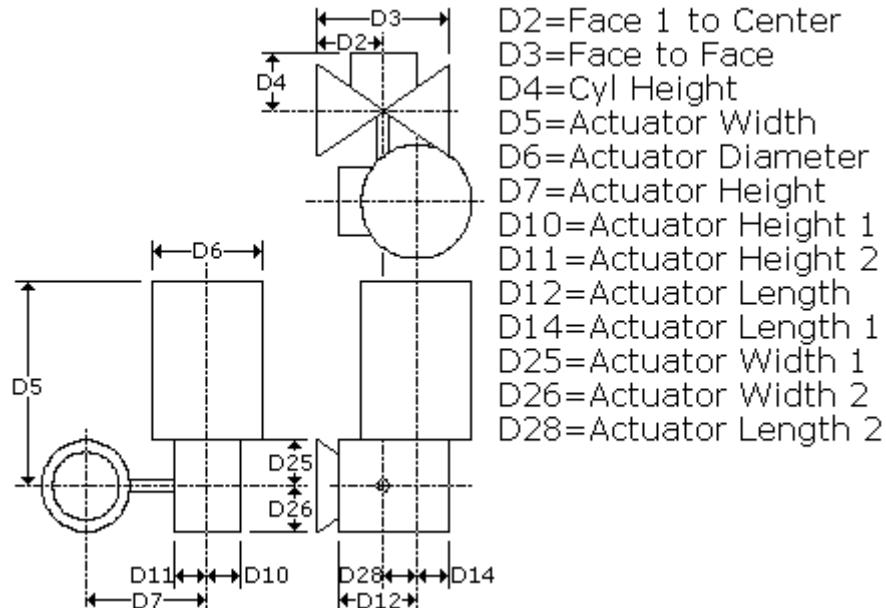
Outputs = 9
Output = "VNoz1" Description = "Nozzle 1"
Output = "VNoz2" Description = "Nozzle 2"
Output = "BodyCone1" Description = "Conical Valve Body 1"
Output = "BodyCone2" Description = "Conical Valve Body 2 "
Output = "StemRod" Description = "Stem Body "
Output = "ValveCylinder" Description = "Valve Cylindrical Body"
Output = "ActuatorRect" Description = "Actuator Rectangular box "
Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"
Output = "InsulationBody" Description = "Insulation Body"

```

**Aspects** = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRoPisActPosB4Valve

**Description:** Valve with Rotary Piston Actuator

**Instrument Dimension Group:** IPR4B

**Symbol Name:** SP3DCIRoPisActPosB4Valve.CCIRPAPosB4Val

**Workbook:** Instrument Data.xls Valve with Rotary Piston Actuator Pos A 1

**Workbook Sheet:** IPL4C, IPR4B

**User Class Name:** Valve with Rotary Piston Actuator Valve with Rotary Piston Actuator Pos B 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRoPisActPosB4Valve.CCIRPAPosB4Val

**Inputs = 34**

```
Input = "Face1toCenter" Description = "Face1toCenter(D2)"  
Input = "FacetoFace" Description = "FacetoFace(D3)"  
Input = "CylHeight" Description = "CylHeight(D4)"  
Input = "ActuatorLength" Description = "ActuatorLength(D5)"  
Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"  
Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"  
Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"  
Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"  
Input = "ActuatorWidth" Description = "ActuatorWidth(D12)"  
Input = "ActuatorWidth1" Description = "ActuatorWidth1(D14)"  
Input = "ActuatorLength1" Description = "ActuatorLength1(D25)"  
Input = "ActuatorLength2" Description = "ActuatorLength2(D26)"  
Input = "ActuatorWidth2" Description = "ActuatorWidth2(D28)"  
Input = "InsulationThickness" Description = "InsulationThickness"  
Input = "Npd" Description = "NPD"  
Input = "EndPreparation" Description = "EndPreparation"  
Input = "ScheduleThickness" Description = "ScheduleThickness"  
Input = "EndStandard" Description = "EndStandard"  
Input = "PressureRating" Description = "PressureRating"  
Input = "FlowDirection" Description = "FlowDirection"  
Input = "PortIndex1" Description = "PortIndex1"  
Input = "Npd1" Description = "NPD1"  
Input = "EndPreparation1" Description = "EndPreparation1"  
Input = "ScheduleThickness1" Description = "ScheduleThickness1"  
Input = "EndStandard1" Description = "EndStandard1"  
Input = "PressureRating1" Description = "PressureRating1"  
Input = "FlowDirection1" Description = "FlowDirection1"  
Input = "PortIndex2" Description = "PortIndex2"  
Input = "Npd2" Description = "NPD2"  
Input = "EndPreparation2" Description = "EndPreparation2"
```

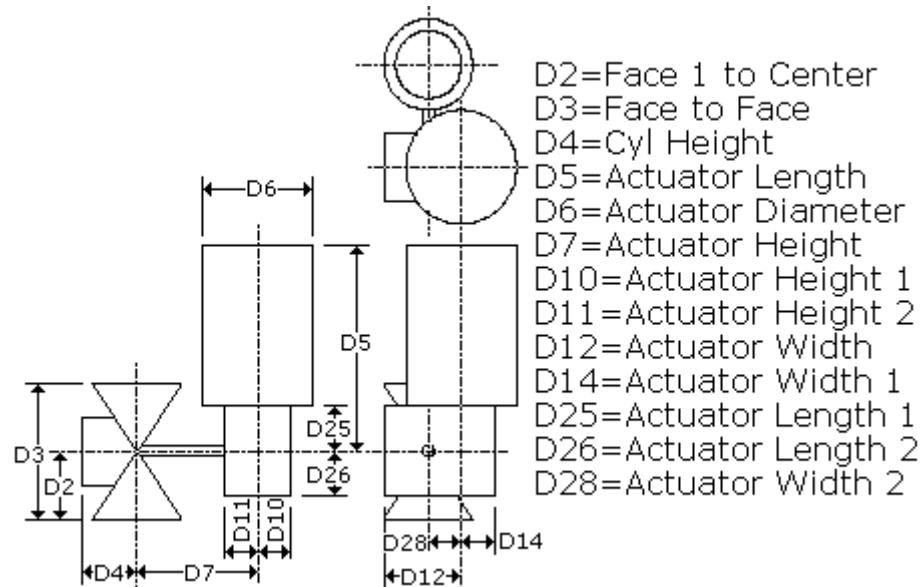
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2"   **Description** = "Npd Unit Type 2"

**Outputs = 9**

**Output** = "VNoz1"   **Description** = "Nozzle 1"  
**Output** = "VNoz2"   **Description** = "Nozzle 2"  
**Output** = "ValveCone1"   **Description** = "Conical Valve Body 1"  
**Output** = "ValveCone2"   **Description** = "Conical Valve Body 2 "  
**Output** = "StemRod"   **Description** = "Stem Body "  
**Output** = "ValveCylinder"   **Description** = "Valve Cylindrical Body"  
**Output** = "ActuatorRect"   **Description** = "Actuator Rectangular box "  
**Output** = "ActuatorCyl"   **Description** = "Actuator Cylindrical Body"  
**Output** = "InsulationBody"   **Description** = "Insulation Body"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DCIRotameterTy1

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy1 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 1

**Instrument Dimension Group:** IR1

**Symbol Name:** SP3DCIRotameterTy1.CCIRotameterTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR1

**User Class Name:** Purge Meter With Controller Rotameter Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy1.CCIRotameterTy1

**Inputs = 30**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter1"**

**Input = "InstrumentDiameter2" Description = "Instrument Diameter2"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

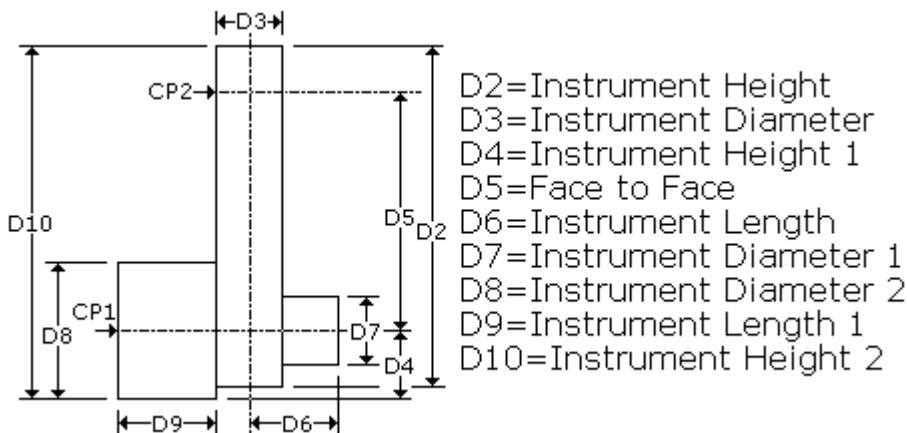
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 7  
**Output** = "Cyl1" **Description** = "Cylinder1"  
**Output** = "Cyl2" **Description** = "Cylinder2"  
**Output** = "Cyl3" **Description** = "Cylinder3"  
**Output** = "InsulationBody1" **Description** = "Insulation Body1"  
**Output** = "InsulationBody2" **Description** = "Insulation Body2"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects** = 2  
**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCIRotameterTy2

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy2 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 2

**Instrument Dimension Group:** IR2

**Symbol Name:** SP3DCIRotameterTy2.CCIRotameterTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR2

**User Class Name:** Glass Tube Varea Meter Top and Bottom Connected Rotameter Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy2.CCIRotameterTy2

**Inputs = 28**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

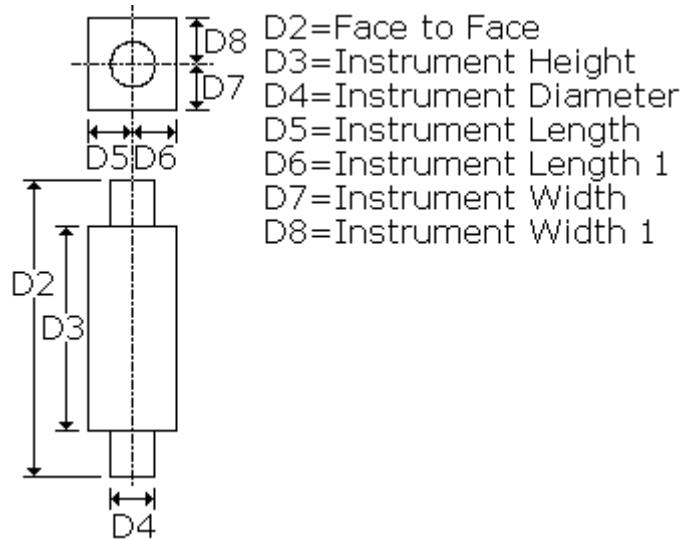
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 6  
**Output** = "RotameterBody" **Description** = "Rotameter Body"  
**Output** = "TopCylBody" **Description** = "Top Cylinder Body"  
**Output** = "BottCylBody" **Description** = "Bottom Cylinder Body"  
**Output** = "RotameterBodyIns" **Description** = "Rotameter Body Insulation"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects** = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRotameterTy3

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy3 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 3

**Instrument Dimension Group:** IR3

**Symbol Name:** SP3DCIRotameterTy3.CCIRotameterTy3

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR3

**User Class Name:** Glass Tube Varea Meter Top Side and Bottom Side Connected Rotameter Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy3.CCIRotameterTy3

**Inputs = 31**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "PortRotation1" Description = "Port Rotation for Top Nozzle"**

**Input = "PortRotation2" Description = "Port Rotation for Bottom Nozzle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"

**Input** = "EndStandard2" **Description** = "EndStandard2"

**Input** = "PressureRating2" **Description** = "PressureRating2"

**Input** = "FlowDirection2" **Description** = "FlowDirection2"

**Input** = "Id1" **Description** = "Id1"

**Input** = "Id2" **Description** = "Id2"

**Input** = "NpdUnitType" **Description** = "Npd Unit Type"

**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"

**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 6**

**Output** = "RotameterBody" **Description** = "Rotameter Body"

**Output** = "RotameterBodyIns" **Description** = "Rotameter Body Insulation"

**Output** = "TopCylBody" **Description** = "Top Cylinder Body"

**Output** = "BottCylBody" **Description** = "Bottom Cylinder Body"

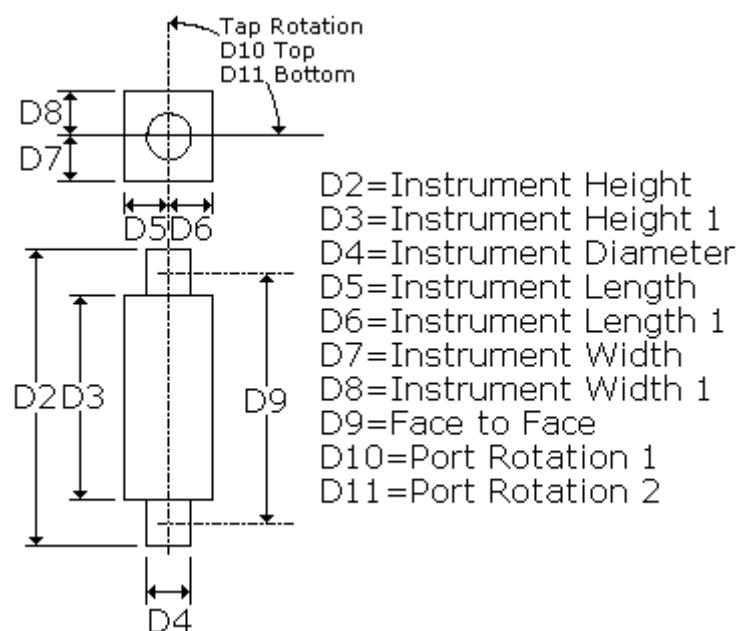
**Output** = "VNoz1" **Description** = "Nozzle 1"

**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIRotameterTy4

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy4 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 4

**Instrument Dimension Group:** IR4

**Symbol Name:** SP3DCIRotameterTy4.CCIRotameterTy4

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR4

**User Class Name:** Glass Tube Varea Meter Top Side and Bottom Side Flanged Connections Rotameter Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy4.CCIRotameterTy4

**Inputs = 32**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "PortRotation1" Description = "Port Rotation for Top Nozzle"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "PortRotation2" Description = "Port Rotation for Bottom Nozzle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

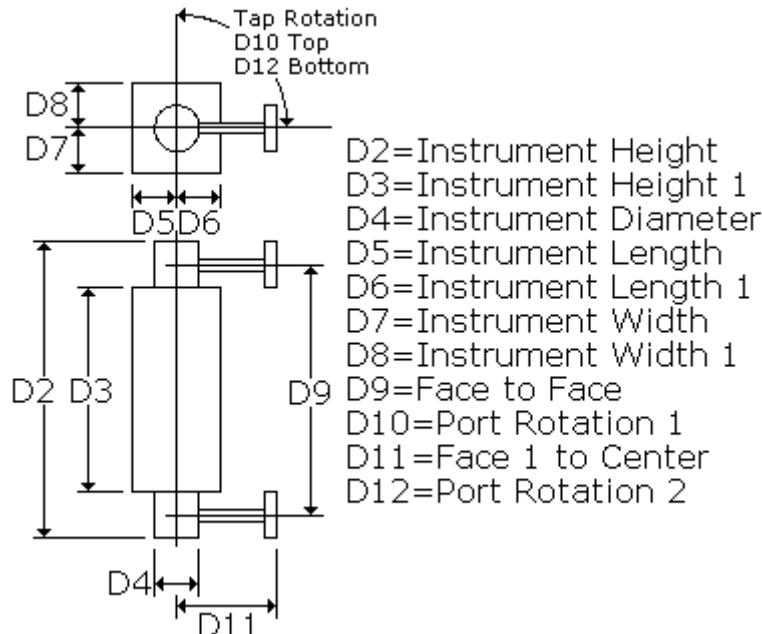
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "RotameterBody" Description = "Rotameter Body"**  
**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**  
**Output = "TopCylBody" Description = "Top Cylinder Body"**  
**Output = "BottCylBody" Description = "Bottom Cylinder Body"**  
**Output = "Nozz1BodyIns" Description = "Nozzle1 Body Insulation"**  
**Output = "Nozz2BodyIns" Description = "Nozzle2 Body Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIRotameterTy5

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy5 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 5

**Instrument Dimension Group:** IR5

**Symbol Name:** SP3DCIRotameterTy5.CCIRotameterTy5

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR5

**User Class Name:** Rotameter Type5

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy5.CCIRotameterTy5

**Inputs = 30**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentHeight3" Description = "Instrument Height 3"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

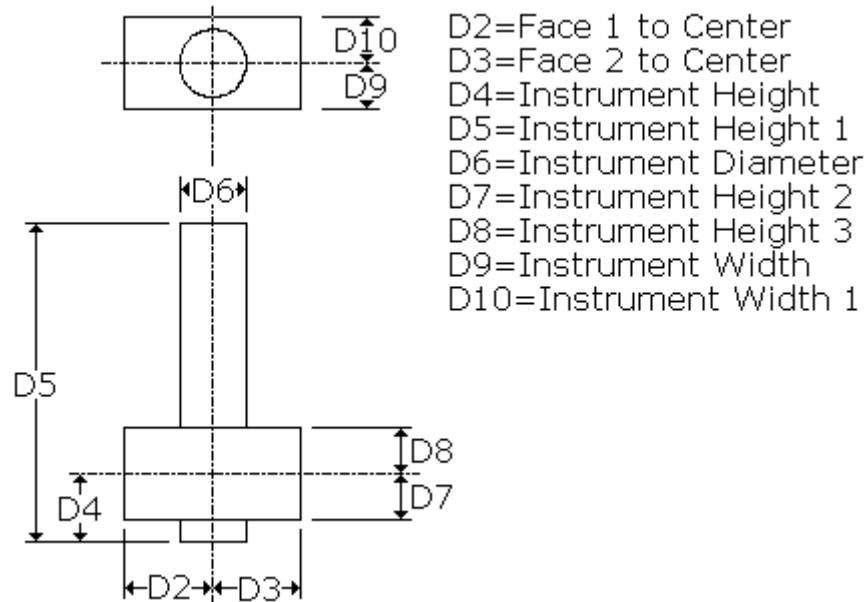
**Input = "EndStandard2" Description = "EndStandard2"**

**Inputs = 7**  
Input = "PressureRating2" Description = "PressureRating2"  
Input = "FlowDirection2" Description = "FlowDirection2"  
Input = "Id1" Description = "Id1"  
Input = "Id2" Description = "Id2"  
Input = "NpdUnitType" Description = "Npd Unit Type"  
Input = "NpdUnitType1" Description = "Npd Unit Type 1"  
Input = "NpdUnitType2" Description = "Npd Unit Type 2"

**Outputs = 6**  
Output = "RotaMtrVerCylin" Description = "Rotameter Vertical Cylinder"  
Output = "RotaMtrHorBox" Description = "Rotameter Horizontal Cylinder 1"  
Output = "HoriBoxIns" Description = "Insulation Body in Hori Direction"  
Output = "VerCylinIns" Description = "Insulation Body in Vert Direction"  
Output = "PNoz1" Description = "Nozzle 1"  
Output = "PNoz2" Description = "Nozzle 2"

**Aspects = 2**

Aspect = SimplePhysical  
Aspect = Insulation



# SP3DCIRotameterTy6Tr

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy6Tr if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 6

**Instrument Dimension Group:** IR6

**Symbol Name:** SP3DCIRotameterTy6Tr.CCIRotameterTy6Tr

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR6

**User Class Name:** Rotameter With Transmitter or Indicator Top and Bottom Connections Type 6

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy6Tr.CCIRotameterTy6Tr

**Inputs = 29**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Transmitter Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "TransmitterBody" Description = "Transmitter Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

**Output = "TransmitterBodyIns" Description = "Transmitter Body Insulation"**

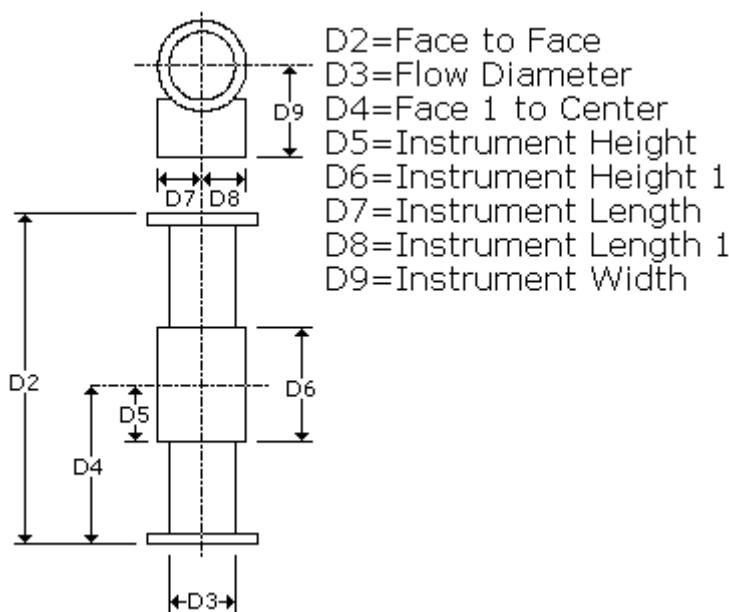
**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCIRotameterTy7FS

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy7FS if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 7

**Instrument Dimension Group:** IR7

**Symbol Name:** SP3DCIRotameterTy7FS.CCIRotameterTy7FS

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR7

**User Class Name:** Rotameter With Flow Switch Type 7

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy7FS.CCIRotameterTy7FS

**Inputs = 26**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diamter"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

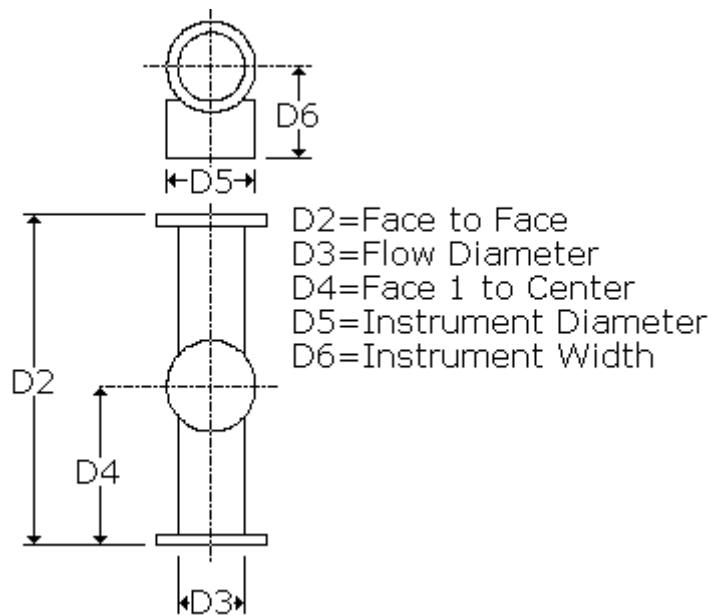
**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**  
**Output = "RotameterBody" Description = "Rotameter Body"**  
**Output = "FlowSwitchBody" Description = "Flow Switch Body"**  
**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**  
**Output = "FlowSwitchBodyIns" Description = "Flow Switch Body Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIRotameterTy8

**Description:** Rotameter Type 8

**Instrument Dimension Group:** IR8

**Symbol Name:** SP3DCIRotameterTy8.CCIRotameterTy8TrFs

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR8

**User Class Name:** Rotameter With Transmitter and Flow Switch Type8

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy8.CCIRotameterTy8TrFs

**Inputs = 32**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

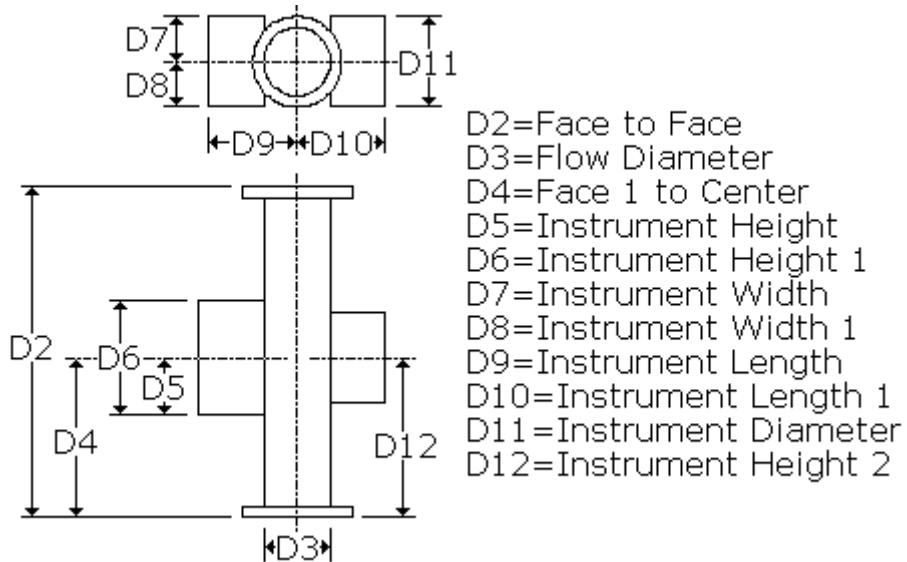
**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs** = 8  
**Output** = "PNoz1" **Description** = "Nozzle 1"  
**Output** = "PNoz2" **Description** = "Nozzle 2"  
**Output** = "InsVerBody" **Description** = "Insulation for Vertical Body"  
**Output** = "InsSwitch" **Description** = "Insulation for Switch"  
**Output** = "InsTransmitterBox" **Description** = "Insulation for Transmitter Box"  
**Output** = "RotaMtrVerBody" **Description** = "Rotameter Vertical Body"  
**Output** = "RotaMtrSwitch" **Description** = "RotaMeter Switch"  
**Output** = "RotaMtrTrBox" **Description** = "RotaMeter Transmitter Box"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCIRotameterTy9

You can interactively resize this part symbol during or after placement. Use the symbol SP3DRotameterTy9 if you do not want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 9

**Instrument Dimension Group:** IR9

**Symbol Name:** SP3DCIRotameterTy9.CCIRotameterTy9

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IR9

**User Class Name:** Purge Meter With Control Valve Rotameter Type9

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIRotameterTy9.CCIRotameterTy9

**Inputs = 27**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Output = "InsHoriCylinder" Description = "Insulation for Horizontal Cylinder"**

**Output = "RotaMtrVerCylinder" Description = "Rotameter Vertical Cylinder"**

**Output = "RotaMtrHorCylinder" Description = "RotaMeter Horizontal Cylinder"**

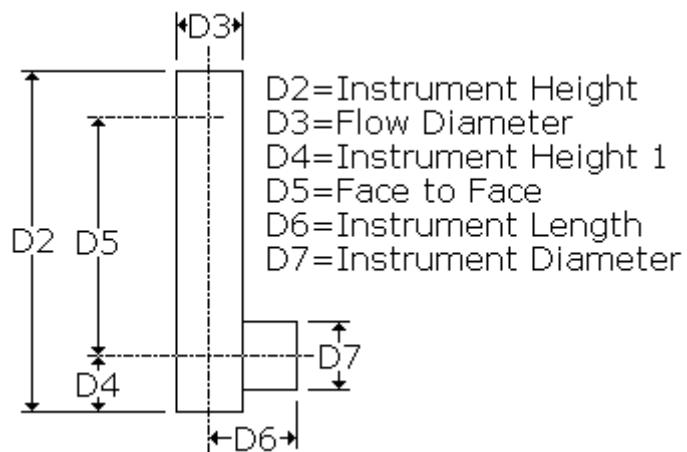
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCISimInstrIndicator

## Description:

**Symbol Name:** SP3DCISimInstrIndicator.InstIndicator

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IND

**User Class Name:** Simple Instrument Indicator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCISimInstrIndicator.InstIndicator

## Inputs = 16

**Input** = "InstrumentLength"   **Description** = "Instrument Length"  
**Input** = "InstrumentDiameter"   **Description** = "Face2 to Center"  
**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"  
**Input** = "Npd"   **Description** = "NPD"  
**Input** = "EndPreparation"   **Description** = "EndPreparation"  
**Input** = "ScheduleThickness"   **Description** = "ScheduleThickness"  
**Input** = "EndStandard"   **Description** = "EndStandard"  
**Input** = "PressureRating"   **Description** = "PressureRating"  
**Input** = "FlowDirection"   **Description** = "FlowDirection"  
**Input** = "PortIndex1"   **Description** = "PortIndex1"  
**Input** = "Npd1"   **Description** = "NPD1"  
**Input** = "EndPreparation1"   **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1"   **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1"   **Description** = "Npd Unit Type 1"

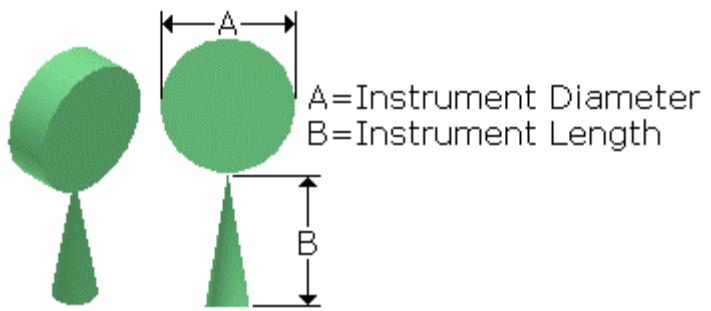
## Outputs = 4

**Output** = "PNoz1"   **Description** = "Nozzle 1"  
**Output** = "Stem"   **Description** = "Stem"  
**Output** = "Indicator"   **Description** = "Indicator Body"  
**Output** = "StemIns"   **Description** = "StemIns"

## Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



## SP3DCITurbineMeter

You can interactively resize this part symbol during or after placement. Use the symbol SP3DTurbineMeter if you do not want to interactively resize the symbol during or after placement.

**Description:** In-line turbine or propeller flow instrument

**Instrument Dimension Group:** ITM

**Symbol Name:** SP3DCITurbineMeter.CCITurbMeter

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ITM

**User Class Name:** Turbine Meter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCITurbineMeter.CCITurbMeter

**Inputs = 27**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

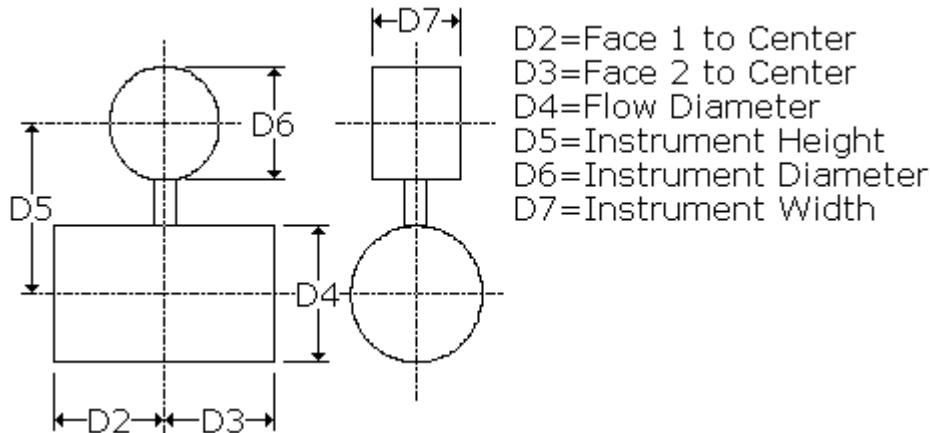
**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**  
**Output = "TurbineMeterBody" Description = "TurbineMeterBody"**  
**Output = "TurbineVerCyl" Description = "TurbineVerCyl"**  
**Output = "TurbineMeterTopBody" Description = "TurbineMeterTopBody"**  
**Output = "TurbineMeterBodyIns" Description = "TurbineMeterBodyIns"**  
**Output = "TurbineMeterTopBodyIns" Description = "TurbineMeterTopBodyIns"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIVorFlowmeterTy2

**Description:** Vortex flow meter

**Instrument Dimension Group:** IVM2

**Symbol Name:** SP3DCIVorFlowmeterTy2.CCIVFlowmeterTy2

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IVM2

**User Class Name:** Vortex Flowmeter Type 2

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIVorFlowmeterTy2.CCIVFlowmeterTy2

**Inputs = 27**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "FlowDiameter" Description = "FlowDiameter"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**

**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

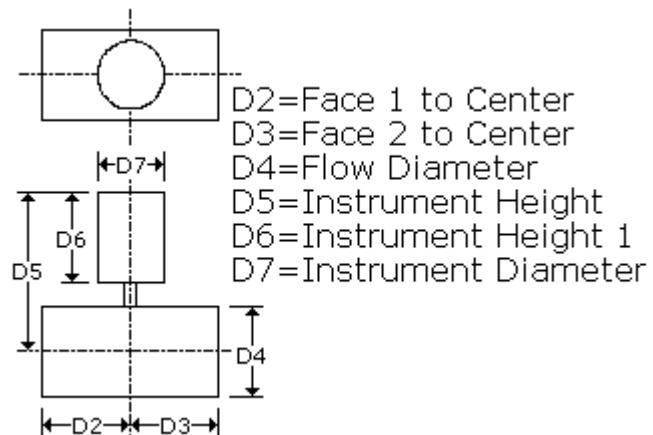
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "HorCylinder" Description = "Horizontal Cylinder"**  
**Output = "Connector" Description = "Connector"**  
**Output = "VerCylinder" Description = "Vertical Cylinder"**  
**Output = "InsHorCylinder" Description = "Insulation for Horizontal Cylinder"**  
**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIVorFlowMtrTy1

**Description:** Vortex flow meter

**Instrument Dimension Group:** IVM1

**Symbol Name:** SP3DCIVorFlowMtrTy1.CCIVorFlowMtrTy1

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IVM1

**User Class Name:** Vortex Flow Meter Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIVorFlowMtrTy1.CCIVorFlowMtrTy1

**Inputs = 28**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

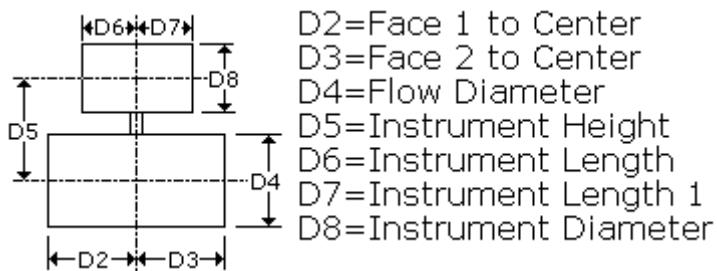
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "HorizontalCylin" Description = "Horizontal Cylinder"**  
**Output = "VerticalCylin" Description = "Vertical Cylinder"**  
**Output = "InstruHoriCylin" Description = "Instrument Horizontal Cylinder"**  
**Output = "HoriCylinIns" Description = "Insulation Body in Hori Direction"**  
**Output = "VerCylinIns" Description = "Insulation Body in Vert Direction"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIVorFlowMtrTy3

**Description:** Vortex flow meter

**Instrument Dimension Group:** IVM3

**Symbol Name:** SP3DCIVorFlowMtrTy3.CCIVorFlowMtrTy3

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IVM3

**User Class Name:** Vortex Flow Meter Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIVorFlowMtrTy3.CCIVorFlowMtrTy3

**Inputs = 30**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

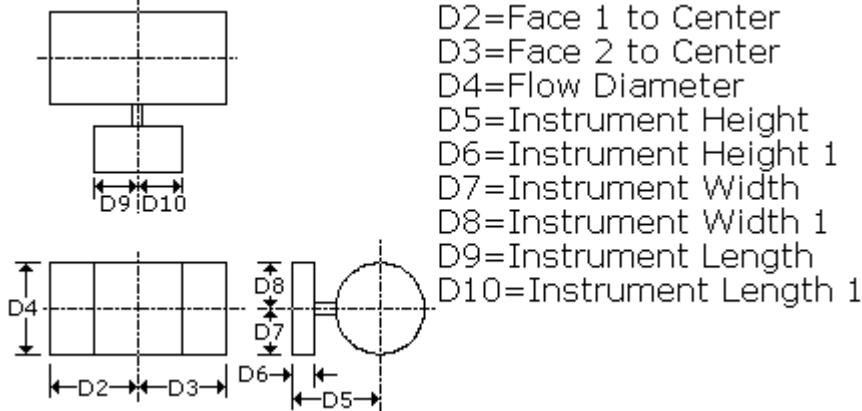
**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**  
**Output = "HoriCylin" Description = "Horizontal Cylinder"**  
**Output = "TopCylin" Description = "Top Cylinder"**  
**Output = "TopBox" Description = "Top Box"**  
**Output = "HoriCylinIns" Description = "Horizontal Cylinder Insulation"**  
**Output = "TopBoxIns" Description = "Top Box Insulation"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCIVorFlowMtrTy4DH

**Description:** Vortex flow meter with dual heads

**Instrument Dimension Group:** IVM4

**Symbol Name:** SP3DCIVorFlowMtrTy4DH.CCIVorFlowMtrTy4

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IVM4

**User Class Name:** Vortex Flow Meter Type 4 Dual Head

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIVorFlowMtrTy4DH.CCIVorFlowMtrTy4

**Inputs = 32**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength2" Description = "Instrument Length 2"**

**Input = "InstrumentLength3" Description = "Instrument Length 3"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

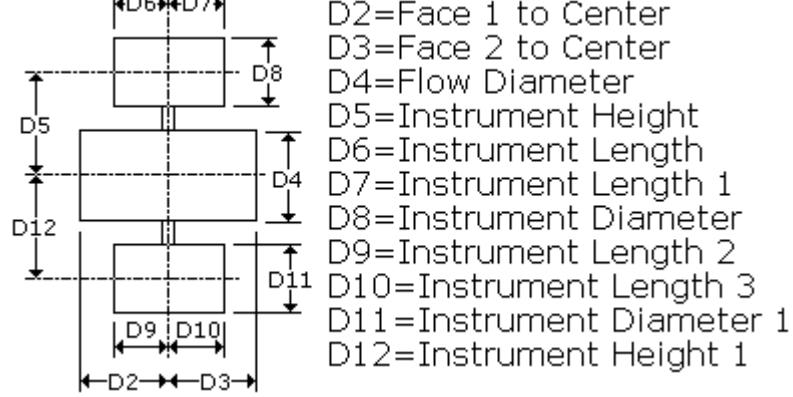
**Outputs = 10**

**Output** = "HorizontalCylin" **Description** = "Horizontal Cylinder"  
**Output** = "VerticalCylin" **Description** = "Vertical Cylinder"  
**Output** = "InstruHoriCylin" **Description** = "Instrument Horizontal Cylinder"  
**Output** = "VerticalCylin1" **Description** = "Vertical Cylinder 1"  
**Output** = "InstruHoriCylin1" **Description** = "Instrument Horizontal Cylinder 1"  
**Output** = "HoriCylinIns" **Description** = "Insulation Body in Hori Direction"  
**Output** = "InstruIns" **Description** = "Instrument Inslation as Box"  
**Output** = "InstruIns1" **Description** = "Instrument Inslation as Box"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DCIWedgeFIElement

**Description:** Wedge flow element

**Instrument Dimension Group:** IWFE

**Symbol Name:** SP3DCIWedgeFIElement.CCIWFIElement

**Workbook:** Instrument Data.xls

**Workbook Sheet:** IWFE

**User Class Name:** Wedge Flow Element

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCIWedgeFIElement.CCIWFIElement

**Inputs = 40**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "NozzleOffset" Description = "Nozzle 4 Offset"**

**Input = "NozzleOffset1" Description = "Nozz3 to Nozz4 Offset"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

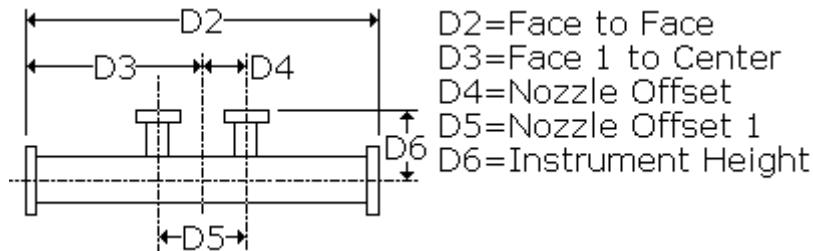
**Input** = "PressureRating3" **Description** = "PressureRating3"  
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "PortIndex4" **Description** = "PortIndex4"  
**Input** = "Npd4" **Description** = "NPD4"  
**Input** = "EndPreparation4" **Description** = "EndPreparation4"  
**Input** = "ScheduleThickness4" **Description** = "ScheduleThickness4"  
**Input** = "EndStandard4" **Description** = "EndStandard4"  
**Input** = "PressureRating4" **Description** = "PressureRating4"  
**Input** = "FlowDirection4" **Description** = "FlowDirection4"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "Id4" **Description** = "Id4"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3" **Description** = "Npd Unit Type 3"  
**Input** = "NpdUnitType4" **Description** = "Npd Unit Type 4"

**Outputs** = 7

**Output** = "FlowElementBodyIns" **Description** = "Flow Element Body Insulation"  
**Output** = "Nozz3Ins" **Description** = "Nozzle 3 Insulation"  
**Output** = "Nozz4Ins" **Description** = "Nozzle 4 Insulation"  
**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "VNoz3" **Description** = "Nozzle 3"  
**Output** = "VNoz4" **Description** = "Nozzle 4"

**Aspects** = 2

**Aspect** = SimplePhysical  
**Aspect** = Insulation



# SP3DClampOnFlowSensor

**Description:** clamp-on flow sensor

**Symbol Name:** SP3DClampOnFlowSensor.ClampOnFlowSensor

**Workbook:** Clamp-on Flow Sensor Sample Data.xls

**Workbook Sheet:** ClampOnFlowSensor

**User Class Name:** Clamp-on Flow Sensor

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DClampOnFlowSensor.ClampOnFlowSensor

**Inputs = 6**

**Input and description** = "InstrumentWidth", "Instrument Width", 0

**Input and description** = "InstrumentHeight", "Instrument Height", 0

**Input and description** = "InstrumentDiameter", "Instrument Diameter", 0

**Input and description** = "SensorSpacing", "Sensor Spacing", 0.

**Input and description** = "ClampSpacing", "Clamp Spacing", 0

**Input and description** = "ClamptoEnd", "Clamp to End", 0

**Outputs = 8**

**Output and description** = "LHSFlowSensor", "Left Hand Side Flow Sensor"

**Output and description** = "LHSBaseforFlowSensor", "Left Hand Side base for Flow Sensor"

**Output and description** = "LHSCLampforFlowSensor", "Left Hand Side Clamp for Flow Sensor"

**Output and description** = "LHSCLampBolt", "Left Hand Side Clamp Bolt"

**Output and description** = "RHSFlowSensor", "Right Hand Side Flow Sensor"

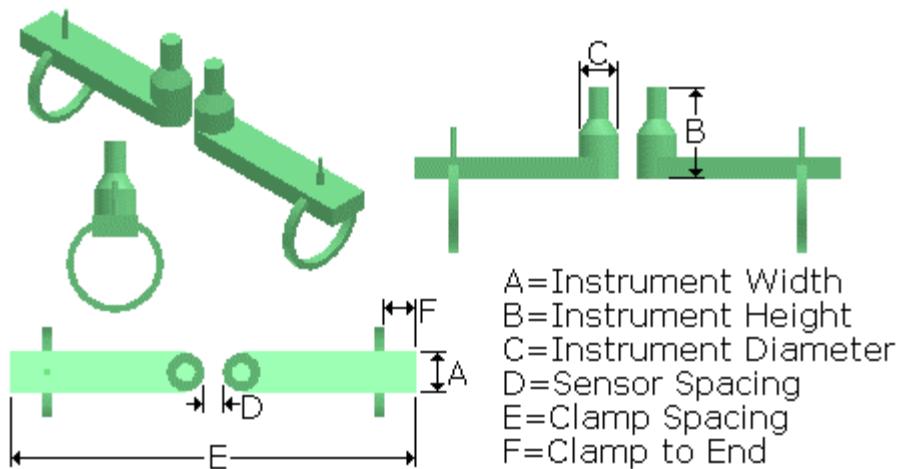
**Output and description** = "RHSBaseforFlowSensor", "Right Hand Side base for Flow Sensor"

**Output and description** = "RHSCLampforFlowSensor", "Right Hand Side Clamp for Flow Sensor"

**Output and description** = "RHSCLampBolt", "Right Hand Side Clamp Bolt"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DClosedSpectBlank

**Description:**

**Symbol Name:** SP3DClosedSpectBlank.CClosedSpectBlank

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DClosedSpectBlank.CClosedSpectBlank

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Fig8InterAxis" Description = "Inter Discs Axis"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InlineBlank" Description = "In line Blank Disc"**

**Output = "InterCyl" Description = "Cylinder bet Discs"**

**Output = "OpenDisc" Description = "Open Disc"**

**Output = "InsulatedBody" Description = "Insulated Body"**

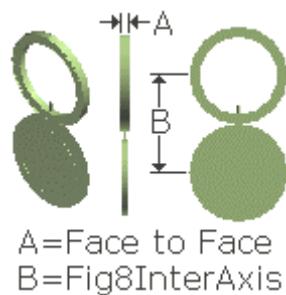
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DClosurePlate

**Description:**

**Symbol Name:** SP3DClosurePlate.ClosurePlate

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DClosurePlate.ClosurePlate

**Inputs = 2**

**Input and description** = "FacetoFace", "Length between two faces"

**Input and description** = "InsulationThickness", "InsulationThickness", 0

**Outputs = 4**

**Output and description** = "ClosurePlateBody", "ClosurePlate body"

**Output and description** = "BodyInsulation", "Insulation Body"

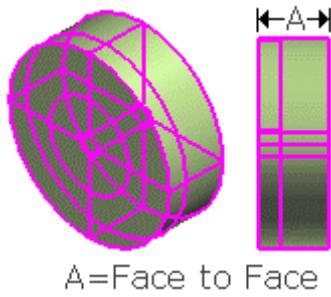
**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DConductivitySensor

**Description:** conductivity sensor

**Symbol Name:** SP3DConductivitySensor.ConductivitySensor

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** ConductivitySensor

**User Class Name:** Conductivity Sensor

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConductivitySensor.ConductivitySensor

**Inputs = 2**

**Input and description** = "FacetoFace", "Face to Face", 0.

**Input and description** = "InstrumentHeight", "Instrument Height", 0

**Outputs = 19**

**Output and description** = "Body", "Body"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "Cylinder3", "Cylinder 3"

**Output and description** = "Cylinder4", "Cylinder 4"

**Output and description** = "T1Header", "T1 Header"

**Output and description** = "T2Header", "T2 Header"

**Output and description** = "T3Header", "T3 Header"

**Output and description** = "T1Branch", "T1 Branch"

**Output and description** = "T1ConnectorBase", "T1 Connector Base"

**Output and description** = "T1Connector", "T1 Connector "

**Output and description** = "T2Branch", "T2 Branch"

**Output and description** = "T2ConnectorBase", "T2 ConnectorBase"

**Output and description** = "T2Connector", "T2 Connector "

**Output and description** = "T3Branch", "T3 Branch"

**Output and description** = "T3ConnectorBase", "T3 ConnectorBase"

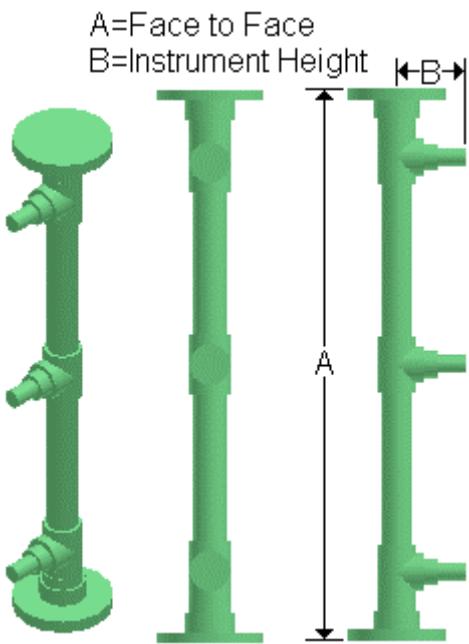
**Output and description** = "T3Connector", "T3 Connector "

**Output and description** = "PipingNoz1", "Nozzle 1"

**Output and description** = "PipingNoz2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DConduitGateValve

**Description:** gate valve

**Symbol Name:** SP3DConduitGateValve.CConduitGateValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ConduitGateValve

**User Class Name:** Conduit Gate Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitGateValve.CConduitGateValve

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylinderHeight" Description = "Cylinder Height"**

**Input = "InsulationThickness" Description = "Body Insulation"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone on Left"**

**Output = "ExtnCylinder" Description = "Extending Cylinder"**

**Output = "RightCone" Description = "Cone on Right"**

**Output = "BodyInsulation" Description = "Body Insulation"**

**Output = "Nozzle1" Description = "Nozzle Cylinder"**

**Output = "Nozzle2" Description = "Nozzle"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DConduitGateValveAsym

**Description:** gate valve

**Symbol Name:**

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DConduitGateValveAsym.CGateValveAsym

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "CylinderHeight" Description = "Cylinder Height"**

**Input = "InsulationThickness" Description = "Body Insulation"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone on Left"**

**Output = "ExtnCylinder" Description = "Extending Cylinder"**

**Output = "RightCone" Description = "Cone on Right"**

**Output = "BodyInsulation" Description = "Body Insulation"**

**Output = "Nozzle1" Description = "Nozzle Cylinder"**

**Output = "Nozzle2" Description = "Nozzle"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DConservationVent

**Description:** conservation vent

**Symbol Name:** SP3DConservationVent.ConservationVent

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** ConservationVent

**User Class Name:** Conservation Vent

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 4**

**Input and description** = "Face1toCenter", "Face1toCenter K", 0.1277

**Input and description** = "Face2toCenter", "Face2toCenter L", 0.1

**Input and description** = "InstrumentHeight1", "InstrumentHeight1 J", 0.28

**Input and description** = "InstrumentLength", "InstrumentLength B", 0.

**Outputs = 7**

**Output and description** = "TopCylinder", "Top Cylinder"

**Output and description** = "TopConicalLid", "Top Conical Lid"

**Output and description** = "LowerCylinder", "Lower Cylinder"

**Output and description** = "ProjTrapezoid", "Projection of Trapezoid"

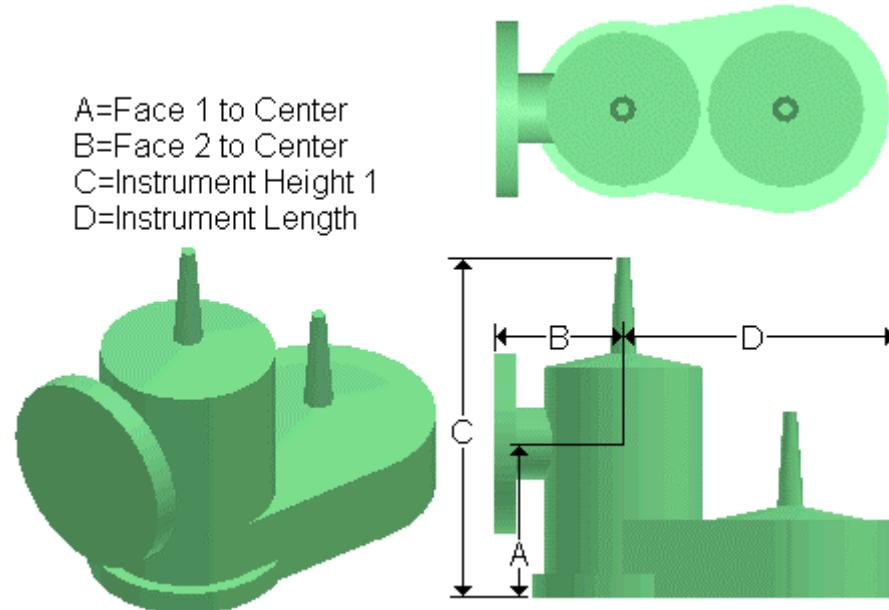
**Output and description** = "LowerConicalLid", "Lower Conical Lid"

**Output and description** = "PipingNoz1", "Nozzle 1"

**Output and description** = "PipingNoz2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysical"



# SP3DCorioFlowMeterTy2GAS

You cannot resize this part symbol during or after placement. Use the symbol SP3DCICorioFlwMtrTy2GAS if you want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 2 Gas

**Symbol Name:** SP3DCorioFlowMeterTy2GAS.CCorFlwMtrTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCorioFlowMeterTy2GAS.CCorFlwMtrTy2

**Inputs = 8**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length 1"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "FlowMtrBody" Description = "Flow Meter Body"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Cylinder2" Description = "Cylinder 2"**

**Output = "Box" Description = "Box"**

**Output = "BodyIns" Description = "Body Insulation"**

**Output = "Cylin1Ins" Description = "Cylinder 1 Insulation"**

**Output = "Cylin2Ins" Description = "Cylinder 2 Insulation"**

**Output = "BoxIns" Description = "Box Insulation"**

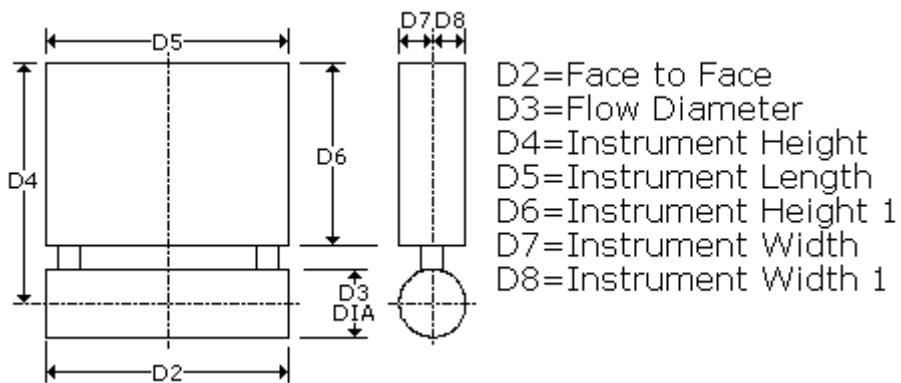
**Output = "PNozz1" Description = "Nozzle 1"**

**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCorioFlowMeterTy2LIQ

You cannot resize this part symbol during or after placement. Use the symbol SP3DCICorioFlwMtrTy2LIQ if you want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 2 Liquid

**Symbol Name:** SP3DCorioFlowMeterTy2LIQ.CCorFlwMtrTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCorioFlowMeterTy2LIQ.CCorFlwMtrTy2

**Inputs = 8**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "FlowMtrBody" Description = "Flow Meter Body"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Cylinder2" Description = "Cylinder 2"**

**Output = "Box" Description = "Box"**

**Output = "BodyIns" Description = "Body Insulation"**

**Output = "Cylin1Ins" Description = "Cylinder 1 Insulation"**

**Output = "Cylin2Ins" Description = "Cylinder 2 Insulation"**

**Output = "BoxIns" Description = "Box Insulation"**

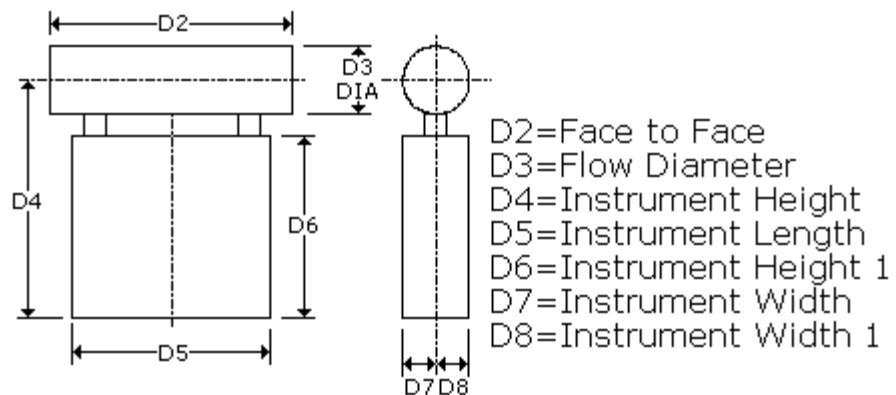
**Output = "PNozz1" Description = "Nozzle 1"**

**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCorioFlowMeterTy3GAS

You cannot resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMetTy3GAS if you want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter type 3 Gas

**Symbol Name:** SP3DCorioFlowMeterTy3GAS.CCFMTy3GAS

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCorioFlowMeterTy3GAS.CCFMTy3GAS

**Inputs = 11**

**Input = "FacetoFace" Description = "Distance between two nozzles"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "FlowmeterBody" Description = "Flowmeter Body"**

**Output = "LargeBoxBody" Description = "Large Box Body"**

**Output = "SmallBoxBody" Description = "Small Box Body"**

**Output = "ConnectingBody" Description = "Connecting Body"**

**Output = "FlowmeterBodyIns" Description = "Flowmeter Body Insulation"**

**Output = "BoxBodyIns" Description = "Box Body Insulation"**

**Output = "ConnectingBodyIns" Description = "Connecting Body Insulation"**

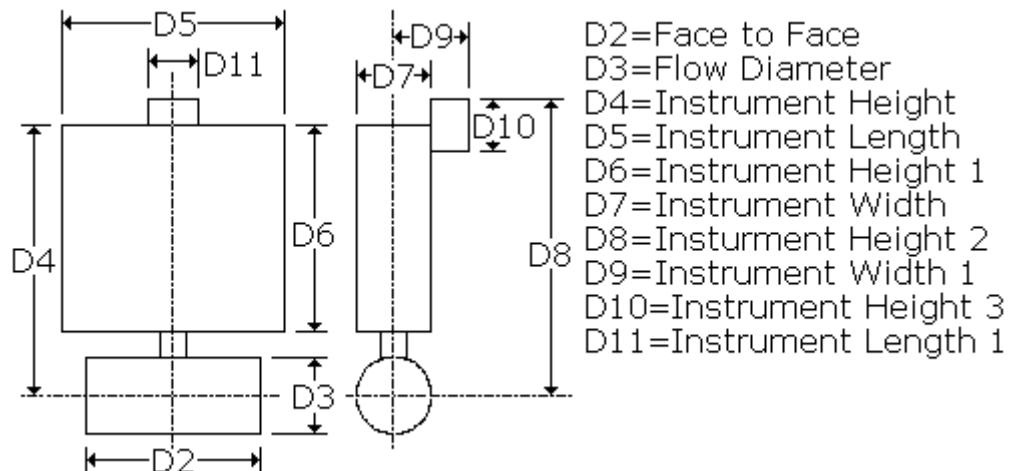
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCorioFlowMeterTy3LIQ

You cannot resize this part symbol during or after placement. Use the symbol SP3DCICorioFlowMetTy3LIQ if you want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 3 Liquid

**Symbol Name:** SP3DCorioFlowMeterTy3LIQ.CCFMTy3LIQ

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCorioFlowMeterTy3LIQ.CCFMTy3LIQ

**Inputs = 11**

**Input = "FacetoFace" Description = "Distance between two nozzles"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentWidth1" Description = "Instrument width1"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "FlowmeterBody" Description = "Flowmeter Body"**

**Output = "LargeBoxBody" Description = "Large Box Body"**

**Output = "SmallBoxBody" Description = "Small Box Body"**

**Output = "ConnectingBody" Description = "Connecting Body"**

**Output = "FlowmeterBodyIns" Description = "Flowmeter Body Insulation"**

**Output = "BoxBodyIns" Description = "Box Body Insulation"**

**Output = "ConnectingBodyIns" Description = "Connecting Body Insulation"**

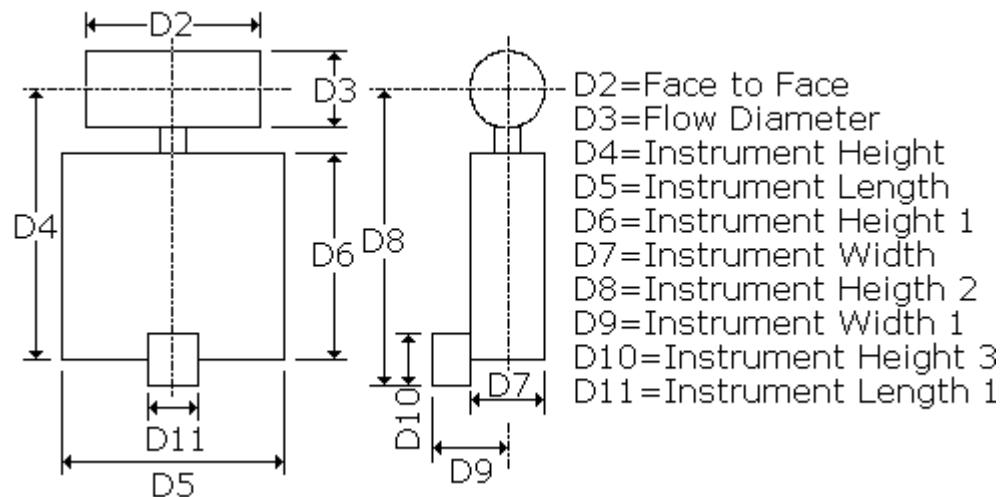
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCoriolisFlowMeterTy1

You cannot resize this part symbol during or after placement. Use the symbol SP3DCICoriolisFlowMeterTy1 if you want to interactively resize the symbol during or after placement.

**Description:** Coriolis Flowmeter Type 1

**Symbol Name:** SP3DCoriolisFlowMeterTy1.CCFMeterTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCoriolisFlowMeterTy1.CCFMeterTy1

**Inputs = 7**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Diameter of Pipe Flow"**

**Input = "InstrumentHeight" Description = "Height of Instrument"**

**Input = "InstrumentDiameter" Description = "Diameter of Instrument"**

**Input = "InstrumentWidth" Description = "Width of Instrument"**

**Input = "InstrumentWidth1" Description = "Width1 of Instrument"**

**Input = "InsulationThickness" Description = "Thickness of Insulation"**

**Outputs = 7**

**Output = "FlowMeterBody" Description = "Body of Flowmeter"**

**Output = "VerCyl" Description = "Vertical Cylinder"**

**Output = "FlowMeterTopBody" Description = "Top Body of Flowmeter"**

**Output = "FlowMeterBodyIns" Description = "Insulation of Flowmeter"**

**Output = "FlowMeterTopBodyIns" Description = "Insulation for Top Body"**

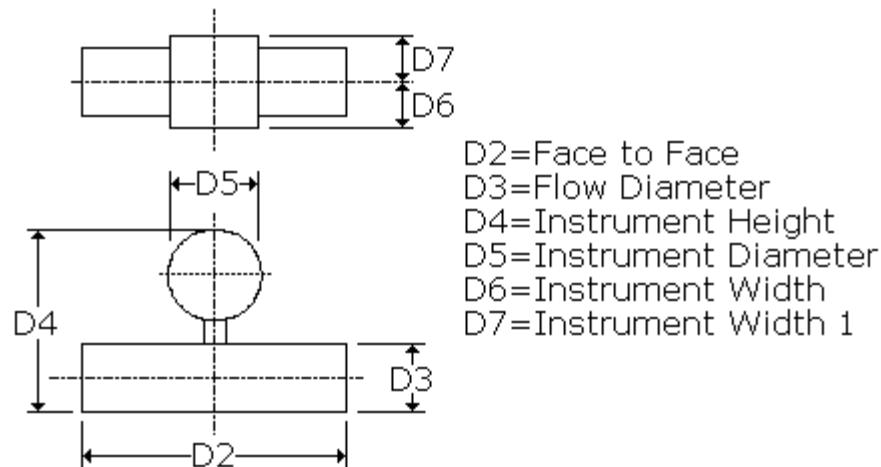
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCoupling

**Description:** Coupling

**Symbol Name:** SP3DCoupling.Ccoupling

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Coupling

**User Class Name:** Coupling

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCoupling.CCoupling

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

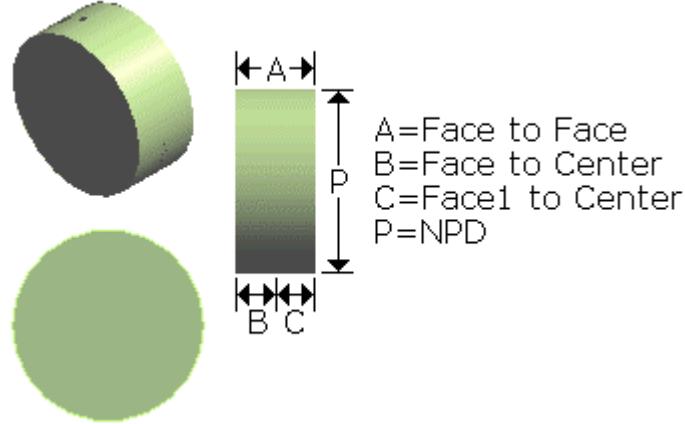
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCross

**Description:** cross

**Symbol Name:** SP3DCross.CCross

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** XLT, XMMMM,

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCross.CCross

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch"**

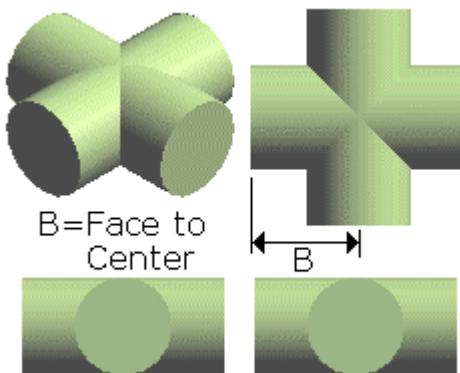
**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "InsulatedPort4" Description = "Insulated Port4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCrossGeneric

**Description:** cross

**Symbol Name:** SP3DCrossGeneric.CCrossGeneric

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** BasinCross, Cross

**User Class Name:** Basin Cross

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCrossGeneric.CCrossGeneric

**Inputs = 5**

**Input = "Face1toCenter" Description = "Main run Face to Center"**

**Input = "Face2toCenter" Description = "Main Taper run Face to Center"**

**Input = "Face3toCenter" Description = "Center to Branch Face"**

**Input = "Face4toCenter" Description = "Center to Branch Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "MainNozwithLen" Description = "Main run Nozzle with Length"**

**Output = "Nozzle" Description = "Nozzle in Main Line"**

**Output = "TaperCone" Description = "Main run Reducer"**

**Output = "BranchNozLen" Description = "Branch run Nozzle with Length"**

**Output = "BranchNozLen1" Description = "Branch run Nozzle with Length"**

**Output = "Port1Insulation" Description = "Insulation for Port 1"**

**Output = "MainBodyInsul" Description = "Insulation for the Main Body"**

**Output = "Port2Insulation" Description = "Insulation for Port 2"**

**Output = "TaperConeInsul" Description = "Insulation for Taper Cone"**

**Output = "Port3Insulation" Description = "Insulation for Port 3"**

**Output = "BranchInsulation" Description = "Insulation for Branch"**

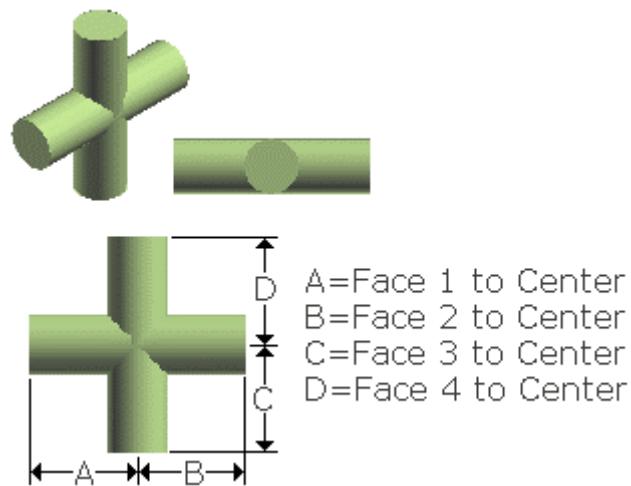
**Output = "Port4Insulation" Description = "Insulation for Port 4"**

**Output = "BranchInsulation1" Description = "Insulation for Branch 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCrossRB

**Description:** Reducing Branch Cross

**Symbol Name:** SP3DCrossRB.CCrossRB

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ReducingBranchCross, ReducingRunAndBranchCross

**User Class Name:** Reducing Branch Cross

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCrossRB.CCrossRB

**Inputs = 3**

**Input = "Face1toCenter" Description = "Face to Center in Main Line"**

**Input = "Face2toCenter" Description = "Face to Center in Branch Line"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 11**

**Output = "NozWithLenMain" Description = "Nozzle with Length Main Line"**

**Output = "NozzleWithoutLen" Description = "Nozzle without Branch"**

**Output = "NozWithLenBran1" Description = "Nozzle with Length in Branch"**

**Output = "NozWithLenBran2" Description = "Nozzle with Length in Branch"**

**Output = "Port1Insulation" Description = "Port in Main Run Insulation"**

**Output = "MainRunInsul" Description = "Main Run Body Insulation"**

**Output = "Port2Insulation" Description = "Port in Main Run Insulation"**

**Output = "Port3Insulation" Description = "Port in Branch Run Insulation"**

**Output = "Branch1Insul" Description = "Brach1 Run Body Insulation "**

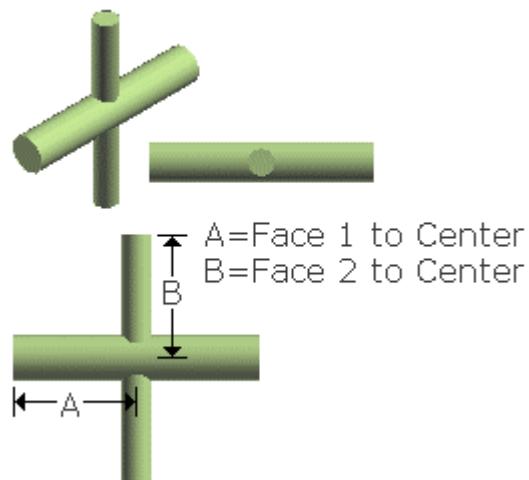
**Output = "Port4Insulation" Description = "Port in Branch Run Insulation"**

**Output = "Branch2Insul" Description = "Brach2 Run Body Insulation "**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCrossRRB

**Description:**

**Symbol Name:** SP3DCrossRRB.CCrossRRB

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCrossRRB.CCrossRRB

**Inputs = 4**

**Input = "Face1toCenter" Description = "Main run Face to Center"**

**Input = "Face2toCenter" Description = "Main Taper run Face to Center"**

**Input = "Face3toCenter" Description = "Center to Branch Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "MainNozwithLen" Description = "Main run Nozzle with Length"**

**Output = "Nozzle" Description = "Nozzle in Main Line"**

**Output = "TaperCone" Description = "Main run Reducer"**

**Output = "BranchNozLen" Description = "Branch run Nozzle with Length"**

**Output = "BranchNozLen1" Description = "Branch run Nozzle with Length"**

**Output = "Port1Insulation" Description = "Insulation for Port 1"**

**Output = "MainBodyInsul" Description = "Insulation for the Main Body"**

**Output = "Port2Insulation" Description = "Insulation for Port 2"**

**Output = "TaperConeInsul" Description = "Insulation for Taper Cone"**

**Output = "Port3Insulation" Description = "Insulation for Port 3"**

**Output = "BranchInsulation" Description = "Insulation for Branch"**

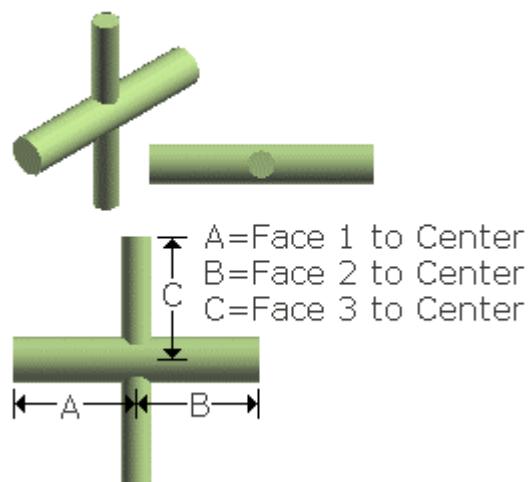
**Output = "Port4Insulation" Description = "Insulation for Port 4"**

**Output = "BranchInsulation1" Description = "Insulation for Branch 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCS3WayBallCtrlVal

**Description:** 3 Way Ball Control Valve

**Symbol Name:** SP3DCS3WayBallCtrlVal.CCS3WayBallCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CS3WayBallCVal

**User Class Name:** 3 Way Ball Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCS3WayBallCtrlVal.CCS3WayBallCVal

**Inputs = 32**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Face3toCenter" Description = "Face3 to Center"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

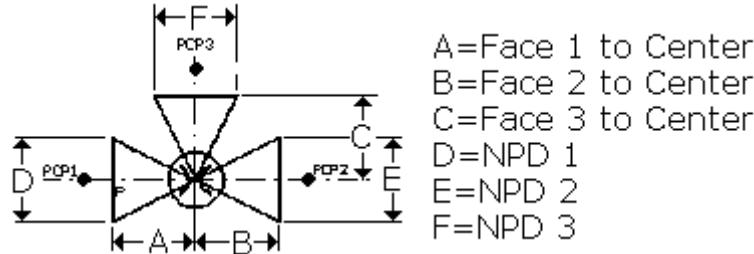
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 10**  
**Output = "BodyBall" Description = "Ball of Valve Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Cone Port1 of Body"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Cone Port2 of Body"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "BodyCone3" Description = "Cone Port3 of Body"**  
**Output = "InsulatedCylinder1" Description = "Insulation for Cone1, Ball and Cone2"**  
**Output = "InsulatedCylinder2" Description = "Insulation for Cone3"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCS3WayControlVal

**Description:** 3Way Control Valve

**Symbol Name:** SP3DCS3WayControlVal.CCS3WayControlVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CS3WayControlVal

**User Class Name:** 3Way Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCS3WayControlVal.CCS3WayControlVal

**Inputs = 33**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Face3toCenter" Description = "Face3 to Center"
Input = "Angle" Description = "Angle from positive X"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
```

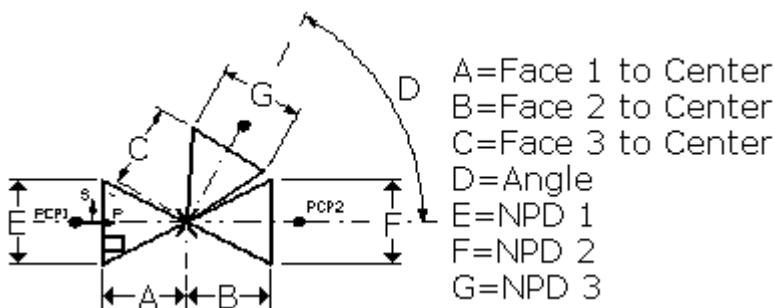
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 13**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "VNoz3" Description = "Nozzle 2"**  
**Output = "BodyCone3" Description = "Body Cone3"**  
**Output = "InsulatedCone1" Description = "Insulation Cone1"**  
**Output = "InsulatedPort1" Description = "Insulation Port1"**  
**Output = "InsulatedCone2" Description = "Insulation Cone2"**  
**Output = "InsulatedPort2" Description = "Insulation Port2"**  
**Output = "InsulatedCone3" Description = "Insulation Cone3"**  
**Output = "InsulatedPort3" Description = "Insulation Port3"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCS3WayGlobeCtrlVal

**Description:** 3 Way Globe Control Valve

**Symbol Name:** SP3DCS3WayGlobeCtrlVal.CCS3WayGlobeCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CS3WayGlobeCVal

**User Class Name:** 3 Way Globe Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCS3WayGlobeCtrlVal.CCS3WayGlobeCVal

**Inputs = 32**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Face3toCenter" Description = "Face3 to Center"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

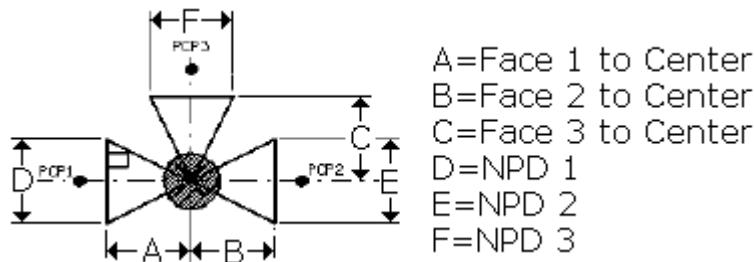
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 10**

**Output = "InsHorBody" Description = "Insulation for Valve Body - Horizontal"**  
**Output = "InsVertBody" Description = "Insulation for Valve Body - Vertical"**  
**Output = "Ellipsoid" Description = "Ellipsoid"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "BodyCone1" Description = "Cone - Port1 Side"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Cone - Port2 Side"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "BodyCone3" Description = "Cone - Port3 Side"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCS3WayPlugCtrlVal

**Description:** 3 Way Plug Control Valve

**Symbol Name:** SP3DCS3WayPlugCtrlVal.CCS3WayPlugCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CS3WayPlugCVal

**User Class Name:** 3 Way Plug Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCS3WayPlugCtrlVal.CCS3WayPlugCVal

**Inputs = 32**

```
Input = "Face1toCenter" Description = "Face to Face"
Input = "Face2toCenter" Description = "Face to Face"
Input = "Face3toCenter" Description = "Face to Face"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

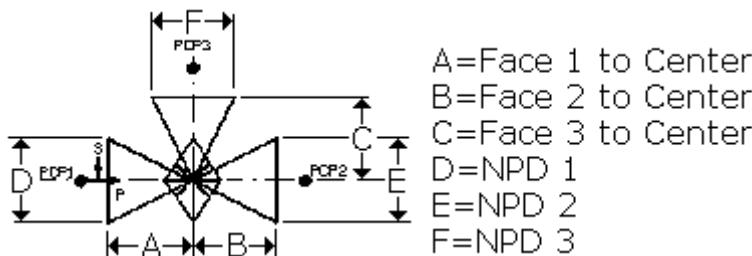
**Outputs = 11**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "LeftCone" Description = "Left Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "LowerCone" Description = "Lower Cone"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "RightCone" Description = "Right Cone"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "TopCone" Description = "Top Cone"**  
**Output = "InsulCylinder1" Description = "Insul Cylinder1"**  
**Output = "InsulCylinder2" Description = "Insul Cylinder2"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCS4WayPlugCtrlVal

**Description:** 4 Way Plug Control Valve

**Symbol Name:** SP3DCS4WayPlugCtrlVal.CCS4WayPlugCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CS4WayPlugCVal

**User Class Name:** 4 Way Plug Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCS4WayPlugCtrlVal.CCS4WayPlugCVal

**Inputs = 40**

```
Input = "Face1toCenter" Description = "Face to Face"
Input = "Face2toCenter" Description = "Face to Face"
Input = "Face3toCenter" Description = "Face to Face"
Input = "Face4toCenter" Description = "Face to Face"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
```

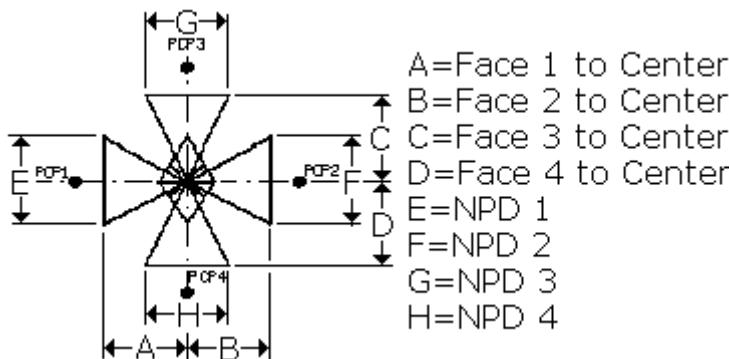
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "PortIndex4" **Description** = "PortIndex4"  
**Input** = "Npd4" **Description** = "NPD4"  
**Input** = "EndPreparation4" **Description** = "EndPreparation4"  
**Input** = "ScheduleThickness4" **Description** = "ScheduleThickness4"  
**Input** = "EndStandard4" **Description** = "EndStandard4"  
**Input** = "PressureRating4" **Description** = "PressureRating4"  
**Input** = "FlowDirection4" **Description** = "FlowDirection4"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "Id4" **Description** = "Id4"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType3" **Description** = "Npd Unit Type 3"  
**Input** = "NpdUnitType4" **Description** = "Npd Unit Type 4"

**Outputs = 13**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "LeftCone" **Description** = "Left Cone"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "UpperCone" **Description** = "Upper Cone"  
**Output** = "LowerCone" **Description** = "Lower Cone"  
**Output** = "RightCone" **Description** = "Right Cone"  
**Output** = "VNoz3" **Description** = "Nozzle 3"  
**Output** = "TopCone" **Description** = "Top Cone"  
**Output** = "VNoz4" **Description** = "Nozzle 4"  
**Output** = "BottomCone" **Description** = "Bottom Cone"  
**Output** = "InsulCylinder1" **Description** = "Insul Cylinder1"  
**Output** = "InsulCylinder2" **Description** = "Insul Cylinder2"  
**Output** = "ValveOperator" **Description** = "Valve Operator"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCSAnalyzer

**Description:** Discrete Field Mounted Analyzer

**Symbol Name:** SP3DCSAnalyzer.CCSAnalyzer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSAnalyzer

**User Class Name:** Discrete Field Mounted Analyzer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSAnalyzer.CCSAnalyzer

**Inputs = 15**

**Input = "AnalyzerThickness" Description = "Analyzer Thickness"**

**Input = "AnalyzerDiameter" Description = "Analyzer Diameter"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

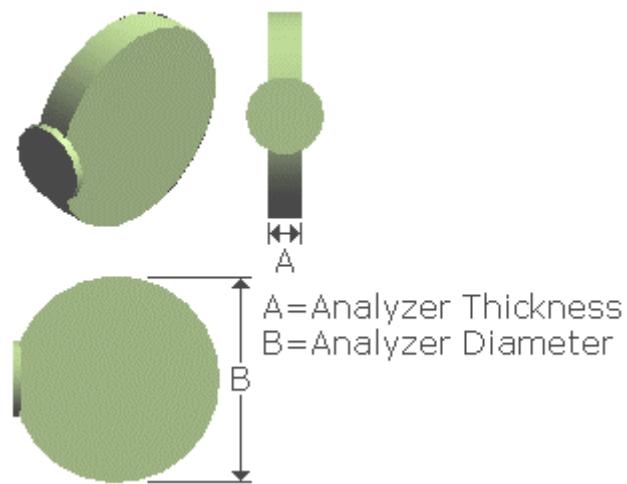
**Outputs = 2**

**Output = "Body" Description = "Body of Analyzer"**

**Output = "VNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSAngGlobeCtrlVal

**Description:** Angle Globe Control Valve

**Symbol Name:** SP3DCSAngGlobeCtrlVal.CCSAngGlobeCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSAngGlobeCVal

**User Class Name:** Angle Globe Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSAngGlobeCtrlVal.CCSAngGlobeCVal

**Inputs = 22**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "LeftCone" Description = "Left Side Cone"**

**Output = "VNoz2" Description = "Nozzle 2"**

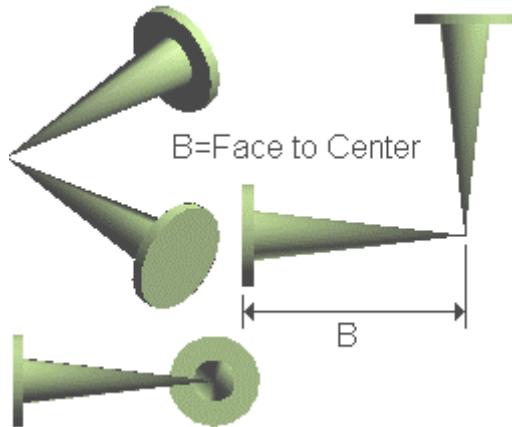
**Output = "RightCone" Description = "Right Side Cone"**

**Output = "InsulCylinder"** **Description = "Insulation Cylinder"**  
**Output = "InsulCylinderA"** **Description = "Insulation Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSAutoRecircVal

**Description:** Auto Recirculation Valve

**Symbol Name:** SP3DCSAutoRecircVal.CSAutoRecircVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSAutoRecircVal

**User Class Name:** Auto Recirculation Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSAutoRecircVal.CSAutoRecircVal

**Inputs = 32**

```
Input = "Face1toCenter" Description = "Face to Center"
Input = "Face2toCenter" Description = "Face to Center"
Input = "Face3toCenter" Description = "Face to Center"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "HandwheelAngle" Description = "Rotation of Operator"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
```

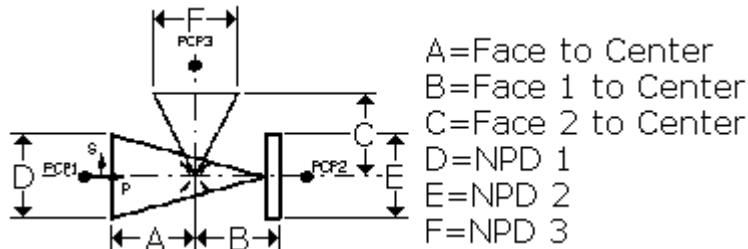
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "MainCone" Description = "Main Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "RightCylinder" Description = "Right Cylinder"**  
**Output = "InsulCylinder" Description = "Insulation Cylinder"**  
**Output = "InsulBranch" Description = "Insulation Cylinder"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSBallCtrlValve

**Description:** Ball Control Valve

**Symbol Name:** SP3DCSBallCtrlValve.CCSBallCValve

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSBallCValve

**User Class Name:** Ball Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSBallCtrlValve.CCSBallCValve

**Inputs = 24**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "VNoz1" Description = "Nozzle 1"**

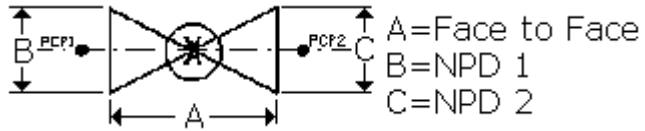
**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Sphere"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "RightCone" Description = "Cone"**  
**Output = "BallInsulation" Description = "Sphere"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSBalloonInstr

**Description:** Balloon Instrument

**Symbol Name:** SP3DCSBalloonInstr.CCSBalloonInstr

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSBalloonInstr

**User Class Name:** Balloon Instrument

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSBalloonInstr.CCSBalloonInstr

**Inputs = 27**

```
Input = "Face1toCenter" Description = "Face 1 to Center"
Input = "Face2toCenter" Description = "Face 2 to Center"
Input = "Offset" Description = "Actuator Offset"
Input = "ConeHeight" Description = "Cone Height"
Input = "ConeDiameter1" Description = "Cone Top Diameter"
Input = "ConeDiameter2" Description = "Cone Bottom Diameter"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Output = "InstrBody" Description = "Instruments Body"**

**Output = "Stem" Description = "Actuator Stem"**

**Output = "Cone" Description = "Cone"**

**Output = "InstrBodyIns" Description = "Instruments Body Insulation"**

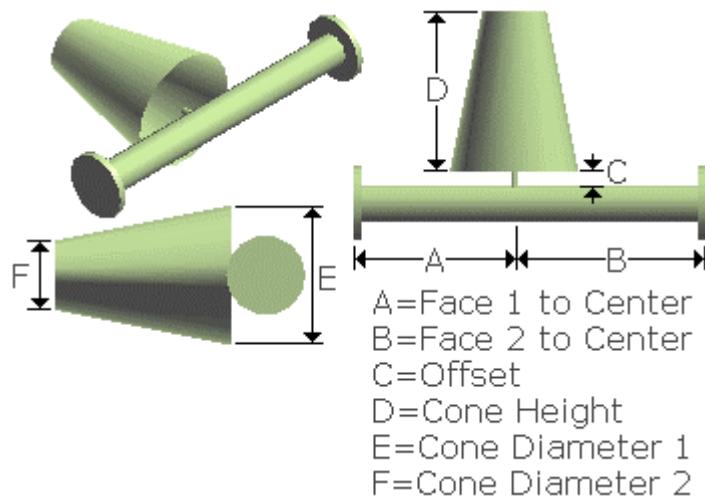
**Output = "Nozzl1Ins" Description = "Nozzle 1 Insulation"**

**Output = "Nozzle2Ins" Description = "Nozzle 2 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSBasketStrainer

**Description:** Basket Strainer

**Symbol Name:** SP3DCSBasketStrainer.CCSBasketStrainer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSBasketStrainer

**User Class Name:** Basket Strainer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSBasketStrainer.CCSBasketStrainer

**Inputs = 25**

**Input = "CollarThickness" Description = "CollarThickness"**  
**Input = "BasketLength" Description = "BasketLength"**  
**Input = "BasketEndDiameter" Description = "BasketEndDiameter"**  
**Input = "CollarEndtoCenter" Description = "CollarEndtoCenter"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

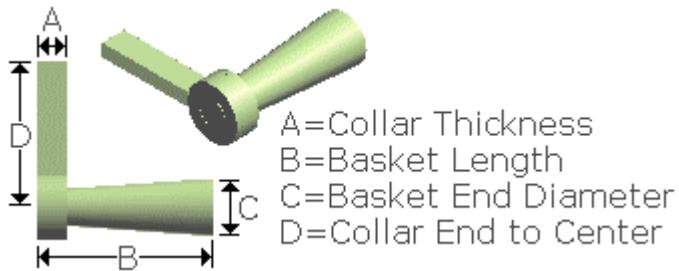
**Outputs = 6**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "Strainer" Description = "Strainer"**  
**Output = "Collar" Description = "Collar"**  
**Output = "CollarExtn" Description = "CollarExtn"**  
**Output = "CollarIns" Description = "CollarIns"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSExhaustHead

**Description:** Exhaust Head

**Symbol Name:** SP3DCSExhaustHead.CCSExhaustHead

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSExhaustHead

**User Class Name:** Exhaust Head

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSExhaustHead.CCSExhaustHead

**Inputs = 25**

**Input = "ExhaustHeight" Description = "Exhaust Height"**

**Input = "ExhaustDiameter" Description = "Exhaust Diameter "**

**Input = "PipeOffset" Description = "Pipe Offset"**

**Input = "PipeHeight" Description = "Pipe Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

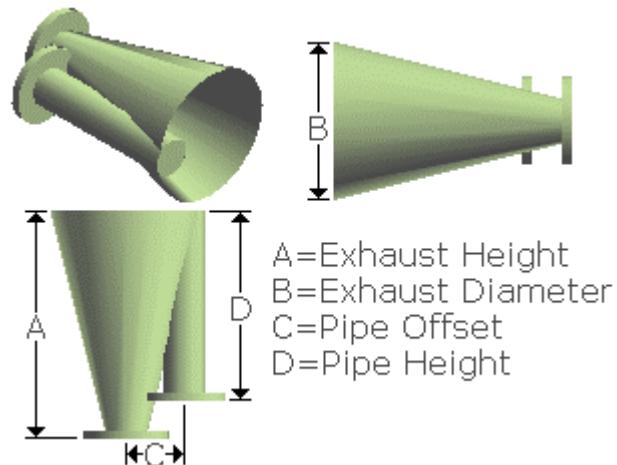
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "ExhaustCone" Description = "Exhaust Cone"**  
**Output = "Pipe" Description = "Down Pipe"**  
**Output = "ExConeIns" Description = "Exhaust Cone Ins"**  
**Output = "Noz1Ins" Description = "nozzl1 Insulation"**  
**Output = "PipeIns" Description = "Pipe Insulation"**  
**Output = "Noz2Ins" Description = "Nozzle 2 Insulation"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSExpnJointOffset

**Description:** Expansion Joint with Offset

**Symbol Name:** SP3DCSExpnJointOffset.CCSExpnJointOff

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSExpJointOff

**User Class Name:** Expansion Joint with Offset

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSExpnJointOffset.CCSExpnJointOff

**Inputs = 24**

**Input = "Face1toCenter" Description = "Face to Center "**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "Offset" Description = "Offset"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 12**

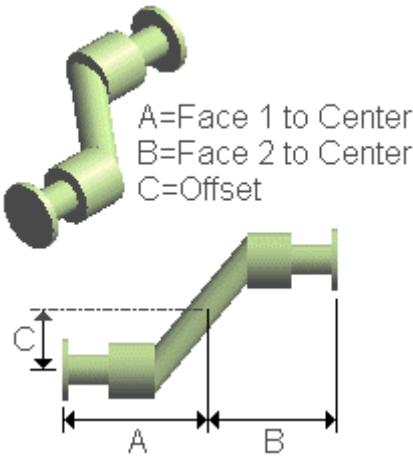
**Output = "VNoz1" Description = "Nozzle with Extension"**

**Output = "VNoz2" Description = "Nozzle 2 with Extension"**

```
Output = "Junction1" Description = "Junction1 (Cylinder)"
Output = "SkewPipe" Description = "Skewed Pipe"
Output = "Junction2" Description = "Junction2 (Cylinder)"
Output = "Nozzle1Insul" Description = "Insulation for Nozzle1"
Output = "Noz1ExtnInsul" Description = "Insulation Nozzle1 Extension"
Output = "Junction1Insul" Description = "Junction 1 Insulation"
Output = "SkewPipeInsul" Description = "Insulation for Skew Pipe"
Output = "Junction2Insul" Description = "Junction 2 Insulation"
Output = "Noz2ExtnInsul" Description = "Insulation for Nozzle 1 Extn"
Output = "Nozzle2Insul" Description = "Insulation for Nozzle 2"
```

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSFilter

**Description:** Filter

**Symbol Name:** SP3DCSFilter.CCSFilter

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSFilter

**User Class Name:** Filter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSFilter.CCSFilter

**Inputs = 28**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Offset1" Description = "Offset of Port1 Center"
Input = "Offset2" Description = "Offset of Port2 Center"
Input = "FilterBodyDiameter" Description = "Filter Body Diameter"
Input = "FilterBodyHeight1" Description = "Filter Body Height1"
Input = "FilterBodyHeight2" Description = "Filter Body Height2"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
```

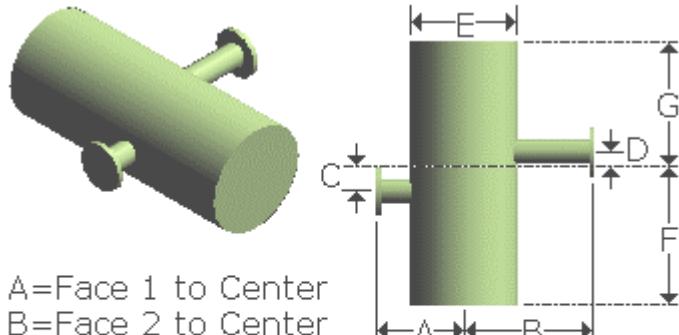
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsFilterBody" Description = "Insulation for Filter Body"**  
**Output = "InsPort1" Description = "Insulation Port1 Side"**  
**Output = "InsBody1" Description = "Insulation for body Port1 Side"**  
**Output = "InsPort2" Description = "Insulation Port2 Side"**  
**Output = "InsBody2" Description = "Insulation for body Port2 Side"**  
**Output = "FilterBody" Description = "Filter Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



A=Face 1 to Center  
B=Face 2 to Center  
C=Offset 1  
D=Offset 2  
E=Filter Body Diameter  
F=Filter Body Height 1  
G=Filter Body Height 2

# SP3DCSFlameArrestorTy1

**Description:** Flame Arrestor Type 1

**Symbol Name:** SP3DCSFlameArrestorTy1.CCSFArrestorTy1

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSFArrestorTy1

**User Class Name:** Flame Arrestor Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSFlameArrestorTy1.CCSFArrestorTy1

**Inputs = 31**

**Input** = "Face1toCenter" **Description** = "Face1 to Center"  
**Input** = "Face2toCenter" **Description** = "Face2 to Center"  
**Input** = "Offset1" **Description** = "Offset of Port1 center"  
**Input** = "Offset2" **Description** = "Offset of Port2 center"  
**Input** = "FlArrestorBodyLength1" **Description** = "Flame Arrestor Body Length1"  
**Input** = "FlArrestorBodyLength2" **Description** = "Flame Arrestor Body Length2"  
**Input** = "FlArrestorBodyHeight1" **Description** = "Flame Arrestor Body Height1"  
**Input** = "FlArrestorBodyHeight2" **Description** = "Flame Arrestor Body Height2"  
**Input** = "FlArrestorBodyWidth1" **Description** = "Flame Arrestor Body Width1"  
**Input** = "FlArrestorBodyWidth2" **Description** = "Flame Arrestor Body Width2"  
**Input** = "InsulationThickness" **Description** = "InsulationThickness"  
**Input** = "Npd" **Description** = "NPD"  
**Input** = "EndPreparation" **Description** = "EndPreparation"  
**Input** = "ScheduleThickness" **Description** = "ScheduleThickness"  
**Input** = "EndStandard" **Description** = "EndStandard"  
**Input** = "PressureRating" **Description** = "PressureRating"  
**Input** = "FlowDirection" **Description** = "FlowDirection"  
**Input** = "PortIndex1" **Description** = "PortIndex1"  
**Input** = "Npd1" **Description** = "NPD1"  
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"

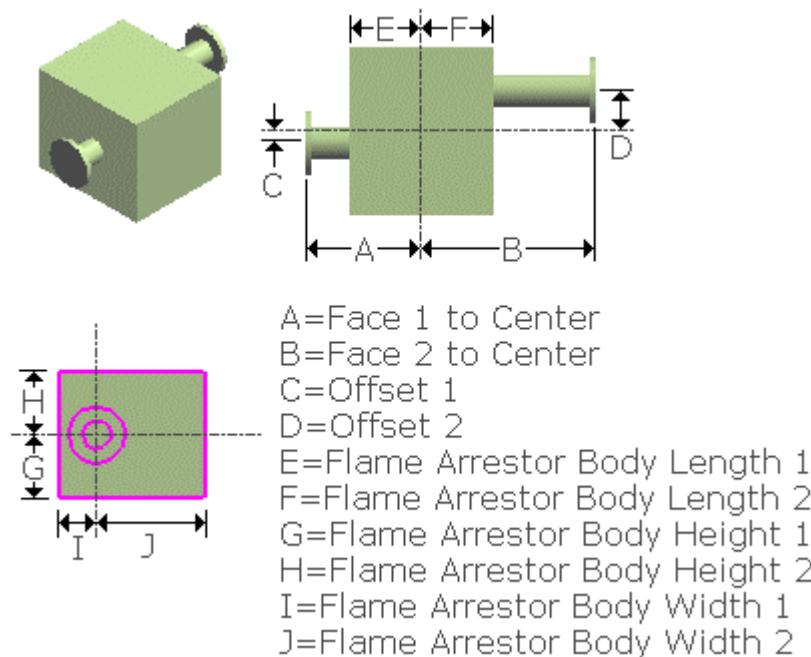
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsFABody" Description = "Insulation for Flame Arrestor Body"**  
**Output = "InsPort1" Description = "Insulation for Port1"**  
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "FABody" Description = "Flame Arrestor Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSFlowNozzle

**Description:** Flow Nozzle

**Symbol Name:** SP3DCSFlowNozzle.CCSFlowNozzle

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSFlowNozzle

**User Class Name:** Flow Nozzle

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSFlowNozzle.CCSFlowNozzle

**Inputs = 26**

**Input = "FacetoFace" Description = "Face To Face"**

**Input = "FlowNozzleDiameter1" Description = "Flow Nozzle Diameter1"**

**Input = "FlowNozzleLength" Description = "Flow Nozzle Length"**

**Input = "FlowNozzleEndDiameter" Description = "Flow Nozzle End Diameter"**

**Input = "FlowNozzleDiameter2" Description = "Flow Nozzle Diameter2"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 5**

**Output = "FlowNozzleConeBody" Description = "Flow Nozzle Cone Body"**

**Output = "FlowNozzleCylBody" Description = "Flow Nozzle Cyl Body"**

**Output = "FlowNozzleBodyIns" Description = "Flow Nozzle Body Ins"**

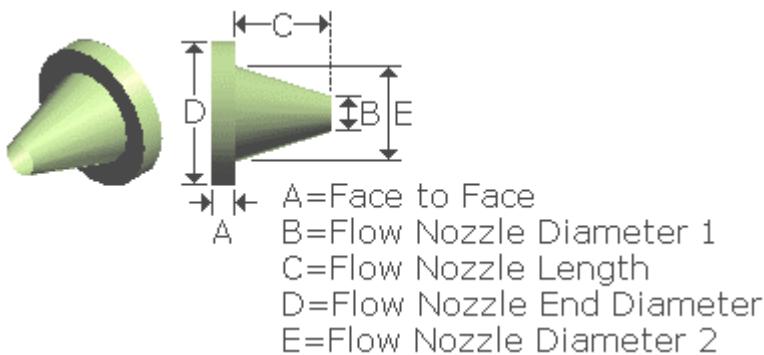
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSFreeVent

**Description:** Free Vent

**Symbol Name:** SP3DCSFreeVent.CCSFreeVent

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSFreeVent

**User Class Name:** Free Vent

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSFreeVent.CCSFreeVent

**Inputs = 16**

**Input = "NozztoCenter" Description = "NozztoCenter"**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "VentAngle" Description = "Angle of Vent Turn"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

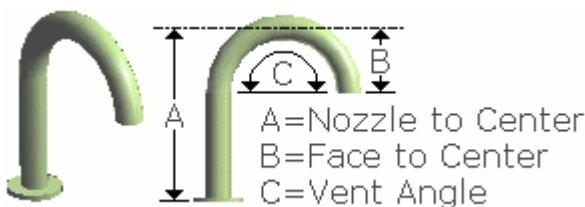
**Outputs = 2**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "FreeeVentBody" Description = "FreeeVentBody"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSGlobeCtrlVal

**Description:** Globe Control Valve

**Symbol Name:** SP3DCSGlobeCtrlVal.CCSGlobeCVal

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSGlobeCVal

**User Class Name:** Globe Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSGlobeCtrlVal.CCSGlobeCVal

**Inputs = 24**

**Input** = "Face1toCenter" **Description** = "Face1 to Center"  
**Input** = "Face2toCenter" **Description** = "Face2 to Center"  
**Input** = "InsulationThickness" **Description** = "Insulation Thickness"  
**Input** = "HandwheelAngle" **Description** = "Rotation of Operator"  
**Input** = "Npd" **Description** = "NPD"  
**Input** = "EndPreparation" **Description** = "EndPreparation"  
**Input** = "ScheduleThickness" **Description** = "ScheduleThickness"  
**Input** = "EndStandard" **Description** = "EndStandard"  
**Input** = "PressureRating" **Description** = "PressureRating"  
**Input** = "FlowDirection" **Description** = "FlowDirection"  
**Input** = "PortIndex1" **Description** = "PortIndex1"  
**Input** = "Npd1" **Description** = "NPD1"  
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 7**

**Output** = "Ellipsoid" **Description** = "Ellipsoid"

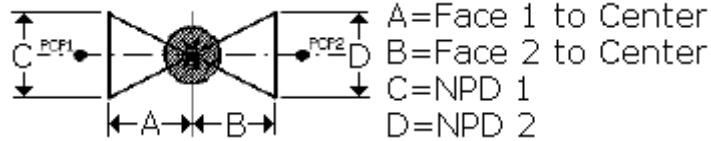
**Output** = "VNoz1" **Description** = "Nozzle 1"

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "InsulatedBody" Description = "Insulation for Valve Body"**  
**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSImpSteamTrapTy4

**Description:** Impulse Steam Trap Type 4

**Symbol Name:** SP3DCSImpSteamTrapTy4.CCSISteamTrapTy4

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSISteamTrapTy4

**User Class Name:** Impulse Steam Trap Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSImpSteamTrapTy4.CCSISteamTrapTy4

**Inputs = 26**

**Input** = "Face1toCenter"   **Description** = "Face 1 to Center"  
**Input** = "Face2toCenter"   **Description** = "Face 2 to Center"  
**Input** = "CylinderDiameter"   **Description** = "Cylinder Diameter"  
**Input** = "VertCylinHeightFromCen"   **Description** = "Vertical Cylinder Height From Cen"  
**Input** = "HoriCylinLengthFromCen"   **Description** = "Horizontal Cylinder LengthFromCen"  
**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"  
**Input** = "Npd"   **Description** = "NPD"  
**Input** = "EndPreparation"   **Description** = "EndPreparation"  
**Input** = "ScheduleThickness"   **Description** = "ScheduleThickness"  
**Input** = "EndStandard"   **Description** = "EndStandard"  
**Input** = "PressureRating"   **Description** = "PressureRating"  
**Input** = "FlowDirection"   **Description** = "FlowDirection"  
**Input** = "PortIndex1"   **Description** = "PortIndex1"  
**Input** = "Npd1"   **Description** = "NPD1"  
**Input** = "EndPreparation1"   **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1"   **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1"   **Description** = "EndStandard1"  
**Input** = "PressureRating1"   **Description** = "PressureRating1"  
**Input** = "FlowDirection1"   **Description** = "FlowDirection1"  
**Input** = "PortIndex2"   **Description** = "PortIndex2"  
**Input** = "Npd2"   **Description** = "NPD2"  
**Input** = "EndPreparation2"   **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2"   **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2"   **Description** = "EndStandard2"  
**Input** = "PressureRating2"   **Description** = "PressureRating2"  
**Input** = "FlowDirection2"   **Description** = "FlowDirection2"  
**Input** = "Id1"   **Description** = "Id1"  
**Input** = "Id2"   **Description** = "Id2"  
**Input** = "NpdUnitType"   **Description** = "Npd Unit Type"

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

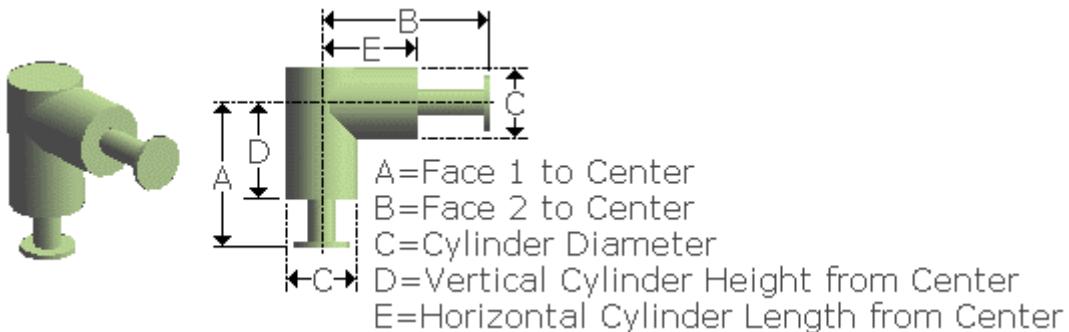
**Outputs = 10**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "VerticalCylin" Description = "Vertical Cylinder"**  
**Output = "HoriCylinder" Description = "Horizontal Cylinder"**  
**Output = "HoriCylinIns" Description = "Horizontal Cylin Insulation"**  
**Output = "VertCylinIns" Description = "Vertical Cylin Insulation"**  
**Output = "PipeinNoz1Ins" Description = "Pipe portion in Noz1 Insulation"**  
**Output = "Noz1Ins" Description = "Noz1 Insulation"**  
**Output = "PipeinNoz2Ins" Description = "Pipe portion in Noz2 Insulation"**  
**Output = "Noz2Ins" Description = "Noz2 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSImpSteamTrapTy5

**Description:** Impulse Steam Trap Type 5

**Symbol Name:** SP3DCSImpSteamTrapTy5.CCSISteamTrapTy5

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSISteamTrapTy5

**User Class Name:** Impulse Steam Trap Type 5

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSImpSteamTrapTy5.CCSISteamTrapTy5

**Inputs = 28**

```
Input = "Nozz1toCentre" Description = "Nozz1toCentre"
Input = "Nozz2toCentre" Description = "Nozz2toCentre"
Input = "Offset1" Description = "Offset1"
Input = "Offset2" Description = "Offset2"
Input = "TrapBodyDiameter" Description = "TrapBodyDiameter"
Input = "TrapHeightBottoCen" Description = "TrapHeightBottoCen"
Input = "TrapHeightToptoCen" Description = "TrapHeightToptoCen"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
```

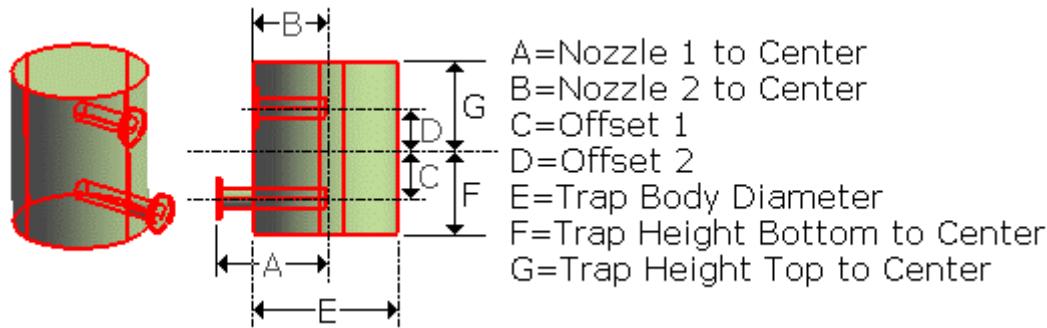
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsTrapBody" Description = "Insulation for Filter Body"**  
**Output = "InsPort1" Description = "Insulation Port1 Side"**  
**Output = "InsBody1" Description = "Insulation for body Port1 Side"**  
**Output = "InsPort2" Description = "Insulation Port2 Side"**  
**Output = "InsBody2" Description = "Insulation for body Port2 Side"**  
**Output = "TrapBody" Description = "Filter Body"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSImpSteamTrapTy6

**Description:** Impulse Steam Trap Type 6

**Symbol Name:** SP3DCSImpSteamTrapTy6.CCSISteamTrapTy6

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSISteamTrapTy6

**User Class Name:** Impulse Steam Trap Type 6

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSImpSteamTrapTy6.CCSISteamTrapTy6

**Inputs = 27**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset" Description = "Offset between Port and Trap centers"**

**Input = "TrapDiameter" Description = "Trap Diameter"**

**Input = "TrapLength1" Description = "Trap Length1"**

**Input = "TrapLength2" Description = "Trap Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

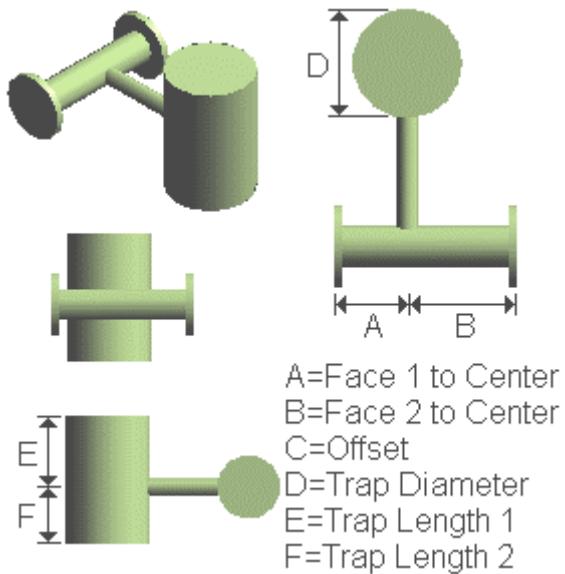
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 10**

**Output = "InsTrapBody"** **Description = "Insulation for Trap Body"**  
**Output = "InsConnectorBody"** **Description = "Insulation for Connector Body"**  
**Output = "InsPort1"** **Description = "Insulation Port1 Side"**  
**Output = "InsBody1"** **Description = "Insulation for body Port1 Side"**  
**Output = "InsPort2"** **Description = "Insulation Port2 Side"**  
**Output = "InsBody2"** **Description = "Insulation for body Port2 Side"**  
**Output = "Body"** **Description = "Body of Trap"**  
**Output = "PNoz1"** **Description = "Nozzle 1"**  
**Output = "PNoz2"** **Description = "Nozzle 2"**  
**Output = "Connector"** **Description = "Connector from ports to Trap"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSImpSteamTrapTy7

**Description:** Impulse Steam Trap Type 7

**Symbol Name:** SP3DCSImpSteamTrapTy7.CCSISteamTrapTy7

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSISteamTrapTy7

**User Class Name:** Impulse Steam Trap Type 7

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSImpSteamTrapTy7.CCSISteamTrapTy7

**Inputs = 27**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset" Description = "Offset between Port and Trap centers"**

**Input = "TrapDiameter" Description = "Trap Diameter"**

**Input = "TrapLength1" Description = "Trap Length1"**

**Input = "TrapLength2" Description = "Trap Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

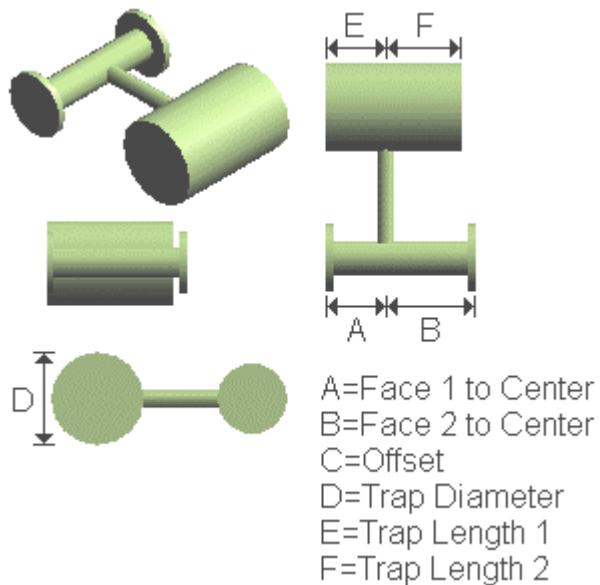
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 10**

**Output = "InsTrapBody"** **Description = "Insulation for Trap Body"**  
**Output = "InsConnectorBody"** **Description = "Insulation for Connector Body"**  
**Output = "InsPort1"** **Description = "Insulation Port1 Side"**  
**Output = "InsBody1"** **Description = "Insulation for body Port1 Side"**  
**Output = "InsPort2"** **Description = "Insulation Port2 Side"**  
**Output = "InsBody2"** **Description = "Insulation for body Port2 Side"**  
**Output = "Body"** **Description = "Body of Trap"**  
**Output = "PNoz1"** **Description = "Nozzle 1"**  
**Output = "PNoz2"** **Description = "Nozzle 2"**  
**Output = "Connector"** **Description = "Connector from ports to Trap"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSImpSteamTrapTy8

**Description:** Impulse Steam Trap Type 8

**Symbol Name:** SP3DCSImpSteamTrapTy8.CCSISteamTrapTy8

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSISteamTrapTy8

**User Class Name:** Impulse Steam Trap Type 8

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSImpSteamTrapTy8.CCSISteamTrapTy8

**Inputs = 26**

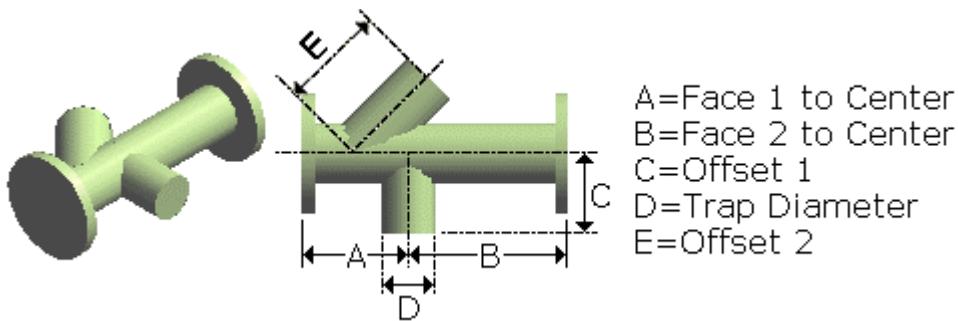
```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Offset1" Description = "Offset of Lower Trap"
Input = "TrapDiameter" Description = "Trap Diameter"
Input = "Offset2" Description = "Offset of Upper Trap from Center line"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 10**

**Output = "InsUpTrBody"** **Description = "Insulation for Upper Trap Body"**  
**Output = "InsLowTrBody"** **Description = "Insulation for Lower Trap Body"**  
**Output = "InsPort1"** **Description = "Insulation for Port1"**  
**Output = "InsBody1"** **Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2"** **Description = "Insulation for Port2"**  
**Output = "InsBody2"** **Description = "Insulation for Body Port2 side"**  
**Output = "PNoz1"** **Description = "Nozzle 1"**  
**Output = "PNoz2"** **Description = "Nozzle 2"**  
**Output = "UpperTrapBody"** **Description = "Upper Trap Body"**  
**Output = "LowerTrapBody"** **Description = "Lower Trap Body"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSInlineSilencer

**Description:** Custom Specialty Inline Silencer

**Symbol Name:** SP3DCSInlineSilencer.CSInlineSilencer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSInlineSilencer

**User Class Name:** Custom Specialty Inline Silencer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSInlineSilencer.CSInlineSilencer

**Inputs = 23**

**Input = "Face1toCenter" Description = "Face1 To Center"**

**Input = "Face2toCenter" Description = "Face2 To Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 3**

**Output = "BodyCylIns" Description = "Insulation Cylindrical Body"**

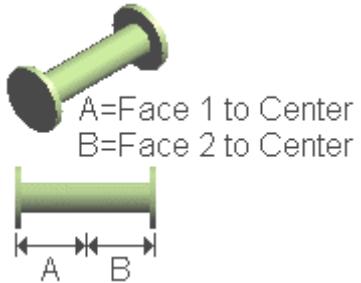
**Output = "VNoz1" Description = "Nozzle with Length"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSLevelIndCtrlTy3

**Description:** Level Indicating Controller Type 3

**Symbol Name:** SP3DCSLevelIndCtrlTy3.CCSLIndCtrlTy3

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSLIndCtrlTy3

**User Class Name:** Level Indicating Controller Type 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSLevelIndCtrlTy3.CCSLIndCtrlTy3

**Inputs = 33**

```
Input = "Face1toCenter" Description = "Face1toCenter"
Input = "Face2toCenter" Description = "Face2toCenter"
Input = "FloatDiameter" Description = "Float Diameter"
Input = "FloatTopToCenter" Description = "Float Top to Center"
Input = "FloatBottomToCenter" Description = "Float Bottom to Center"
Input = "ArmToCenter" Description = "Arm to Center"
Input = "IndicatorHeight1" Description = "Indicator Height1"
Input = "IndicatorHeight2" Description = "Indicator Height2"
Input = "Angle" Description = "Angle"
Input = "Arm1Length" Description = "Arm1 Length"
Input = "Arm2Length" Description = "Arm2 Length"
Input = "IndicatorWidth" Description = "Indicator Width"
Input = "IndicatorLength" Description = "Indicator Length"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
```

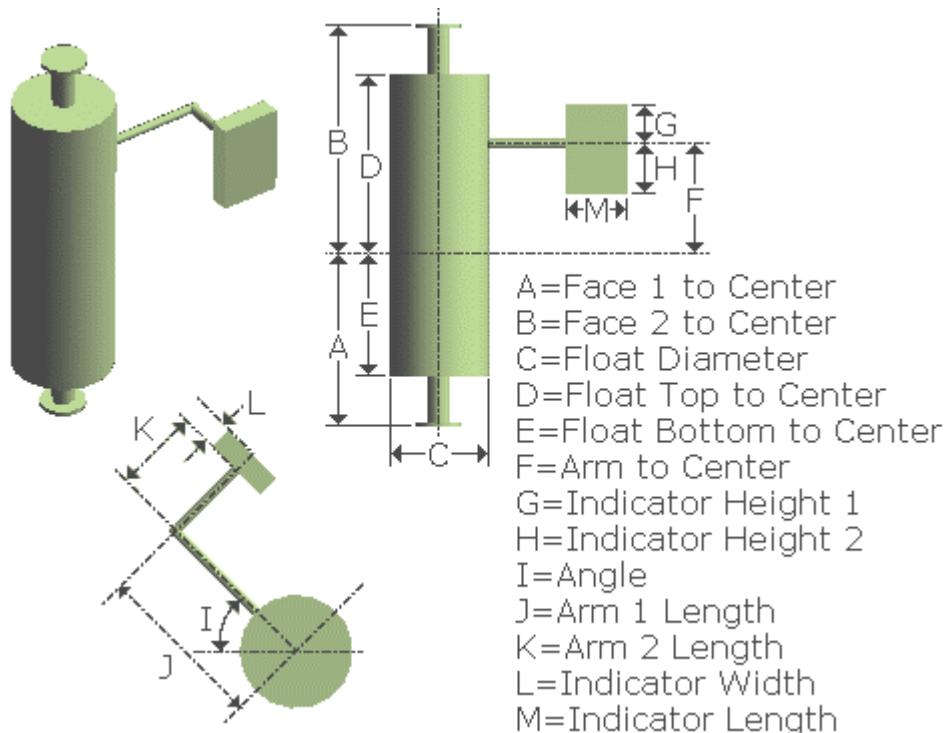
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "FloatBody" Description = "FloatBody"**  
**Output = "Arm1" Description = "Arm1"**  
**Output = "Arm2" Description = "Arm2"**  
**Output = "Indicator" Description = "Indicator"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DCSLevelIndCtrlTy4

**Description:** Level Indicating Controller Type 4

**Symbol Name:** SP3DCSLevelIndCtrlTy4.CCSLIndCtrlTy4

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSLIndCtrlTy4

**User Class Name:** Level Indicating Controller Type 4

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSLevelIndCtrlTy4.CCSLIndCtrlTy4

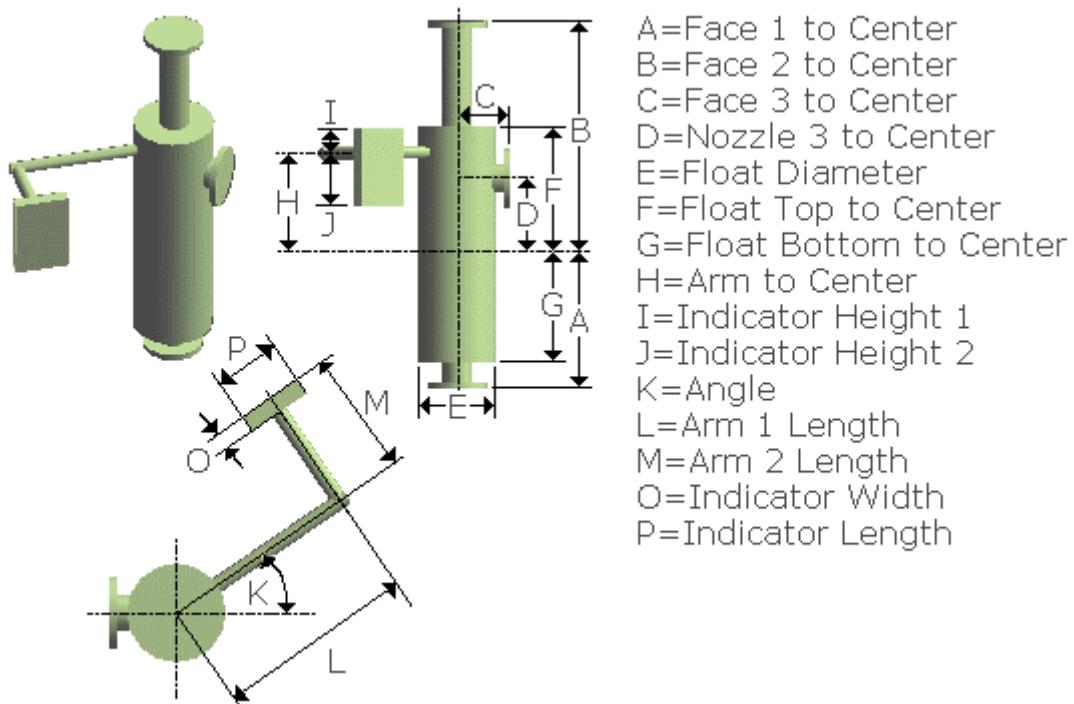
**Inputs = 42**

**Input = "Face3toCenter" Description = "Face 3 to Center P2"**  
**Input = "Nozzle3toCenter" Description = "Nozzle3toCenter P3"**  
**Input = "Face1toCenter" Description = "Face1toCenter P4"**  
**Input = "Face2toCenter" Description = "Face2toCenter P5"**  
**Input = "FloatDiameter" Description = "FloatDiameter P6"**  
**Input = "FloatTopToCenter" Description = "FloatTopToCenter P7"**  
**Input = "FloatBottomToCenter" Description = "FloatBottomToCenter P8"**  
**Input = "ArmtoCenter" Description = "ArmtoCenter P9"**  
**Input = "IndicatorHeight1" Description = "IndicatorHeight1 P10"**  
**Input = "IndicatorHeight2" Description = "IndicatorHeight2 P11"**  
**Input = "Angle" Description = "Angle P12"**  
**Input = "Arm1Length" Description = "Arm1Length P13"**  
**Input = "Arm2Length" Description = "Arm2Length P14"**  
**Input = "IndicatorWidth" Description = "IndicatorWidth P15"**  
**Input = "IndicatorLength" Description = "IndicatorLength P16"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "PortIndex3" Description = "PortIndex3"**  
**Input = "Npd3" Description = "NPD3"**  
**Input = "EndPreparation3" Description = "EndPreparation3"**  
**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**  
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 7**  
**Output = "FloatBody" Description = "FloatBody"**  
**Output = "Arm1" Description = "Arm1"**  
**Output = "Arm2" Description = "Arm2"**  
**Output = "Indicator" Description = "Indicator"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**

**Aspects = 1**  
**Aspect = SimplePhysical**



## SP3DCSLevelIndCtrlTy6

**Description:** Level Indicating Controller Type 6

**Symbol Name:** SP3DCSLevelIndCtrlTy6.CCSLIndCtrlTy6

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSLIndCtrlTy6

**User Class Name:** Level Indicating Controller Type 6

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSLevelIndCtrlTy6.CCSLIndCtrlTy6

**Inputs = 34**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "Offset1" Description = "Offset1"**

**Input = "Offset2" Description = "Offset2"**

**Input = "FloatDiameter" Description = "Float Diameter"**

**Input = "FloatTopToCenter" Description = "Float Top to Center"**

**Input = "FloatBottomToCenter" Description = "Float Bottom to Center"**

**Input = "Armtocenter" Description = "Arm to Center"**

**Input = "IndicatorHeight1" Description = "Indicator Height1"**

**Input = "IndicatorHeight2" Description = "Indicator Height2"**

**Input = "Angle" Description = "Angle"**

**Input = "Arm1Length" Description = "Arm1 Length"**

**Input = "Arm2Length" Description = "Arm2 Length"**

**Input = "IndicatorWidth" Description = "Indicator Width"**

**Input = "IndicatorLength" Description = "Indicator Length"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

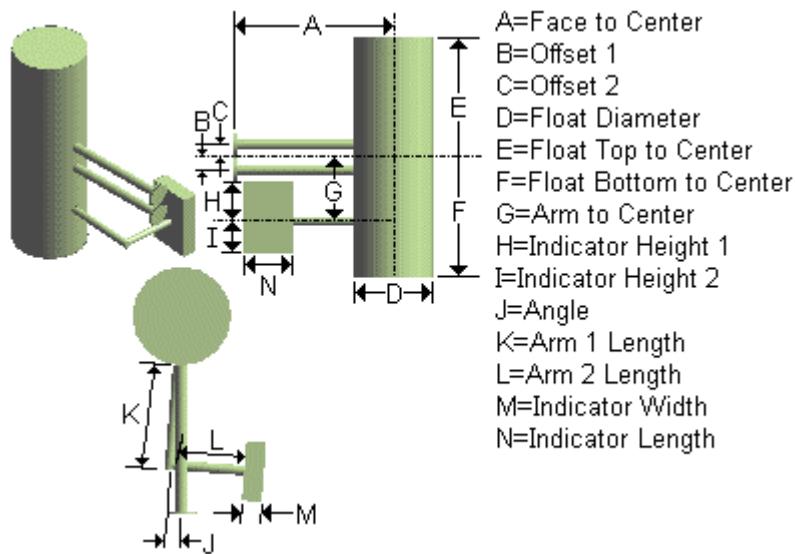
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "FloatBody" Description = "FloatBody"**  
**Output = "Arm1" Description = "Arm1"**  
**Output = "Arm2" Description = "Arm2"**  
**Output = "Indicator" Description = "Indicator"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSP3WayBallValve

**Description:** This is PDS on-the-fly I14A 3 Way Ball Valve Symbol.

**Symbol Name:** SP3DCSP3WayBallValve.CSP3WayBallValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSP3WayBallValve.CSP3WayBallValve

**Inputs = 31**

```
Input = "FacetoCenter" Description = "Face1 to Center"
Input = "Face1toCenter" Description = "Face2 to Center"
Input = "Face2toCenter" Description = "Face3 to Center"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "Id1" Description = "Id1"
```

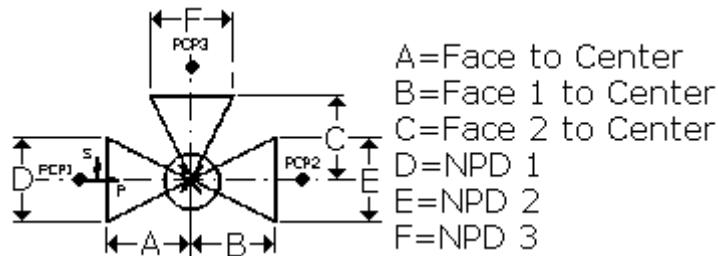
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 9**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "ValveBodyLeftCone" Description = "Body of Valve"**  
**Output = "ValveBodyRightCone" Description = "Body of Valve"**  
**Output = "ValveBodyTopCone" Description = "Body of Valve"**  
**Output = "Sphere" Description = "Sphere"**  
**Output = "ValveBodyIns" Description = "ValveBodyIns"**  
**Output = "ValveBodyIns2" Description = "ValveBodyIns2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSP3WayGIValve

**Description:** This is PDS on-the-fly I18A 3-Way Globe Valve Symbol.

**Symbol Name:** SP3DCSP3WayGIValve.CSP3WayGIValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSP3WayGIValve.CSP3WayGIValve

**Inputs = 31**

```
Input = "FacetoCenter" Description = "Face1 to Center"
Input = "Face1toCenter" Description = "Face2 to Center"
Input = "Face2toCenter" Description = "Face3 to Center"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "Id1" Description = "Id1"
```

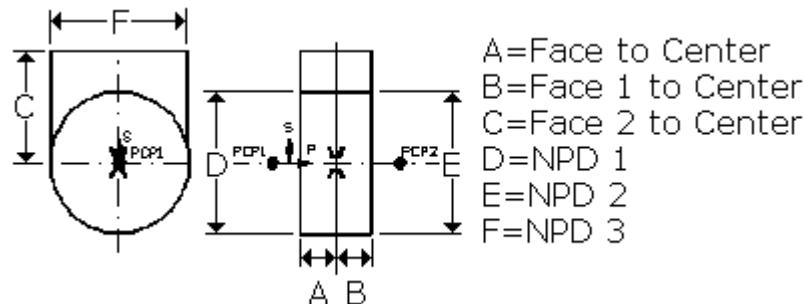
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 9**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "ValveBodyLeftCone" Description = "Body of Valve"**  
**Output = "ValveBodyRightCone" Description = "Body of Valve"**  
**Output = "ValveBodyTopCone" Description = "Body of Valve"**  
**Output = "Sphere" Description = "Sphere"**  
**Output = "ValveBodyIns" Description = "ValveBodyIns"**  
**Output = "ValveBodyIns2" Description = "ValveBodyIns2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSP3WRPlugValve

**Description:** This is PDS on-the-fly I28A 3 Way Rotary Plug Valve Symbol.

**Symbol Name:** SP3DCSP3WRPlugValve.CSP3WRPlugValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSP3WRPlugValve.CSP3WRPlugValve

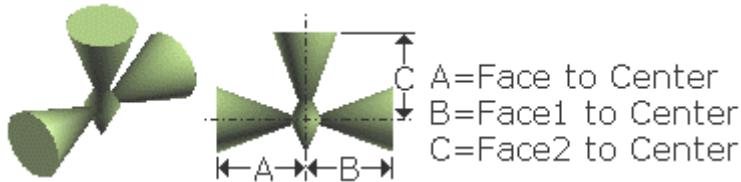
**Inputs = 31**

```
Input = "FacetoCenter" Description = "Face to Face"
Input = "Face1toCenter" Description = "Face to Face"
Input = "Face2toCenter" Description = "Face to Face"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
Input = "PressureRating3" Description = "PressureRating3"
Input = "FlowDirection3" Description = "FlowDirection3"
Input = "Id1" Description = "Id1"
```

**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 10**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "LeftCone" Description = "Left Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "LowerCone" Description = "Lower Cone"**  
**Output = "RightCone" Description = "Right Cone"**  
**Output = "TopCone" Description = "Top Cone"**  
**Output = "InsulCylinder1" Description = "Insul Cylinder1"**  
**Output = "InsulCylinder2" Description = "Insul Cylinder2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSPAutoRecValve

**Description:** This is PDS on-the-fly I30A Auto Recirculation Valve Symbol.

**Symbol Name:** SP3DCSPAutoRecValve.CSPAutoRecValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPAutoRecValve.CSPAutoRecValve

**Inputs = 31**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face 2 to Center"**

**Input = "Face2toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

**Input = "FlowDirection3" Description = "FlowDirection3"**

**Input = "Id1" Description = "Id1"**

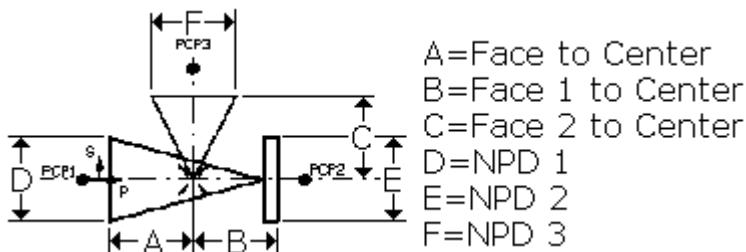
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "MainCone" Description = "Main Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "RightCylinder" Description = "Right Cylinder"**  
**Output = "InsulCylinder" Description = "Insulation Cylinder"**  
**Output = "InsulBranch" Description = "Insulation Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSPBallValve

**Description:** This is PDS on-the-fly I13A Ball Valve Symbol.

**Symbol Name:** SP3DCSPBallValve.CSPBallValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPBallValve.CSPBallValve

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

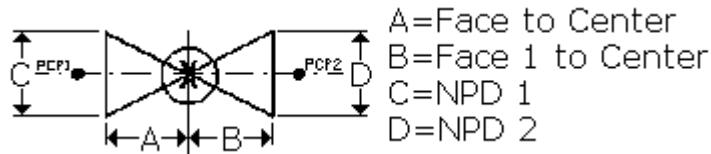
**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Output = "Sphere" Description = "Sphere"**

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "InsulatedBody" Description = "Insulation for Valve Body"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSPBasketStrainer

**Description:** This is PDS on-the-fly S53A Basket Strainer Symbol.

**Symbol Name:** SP3DCSPBasketStrainer.CSPBasketStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPBasketStrainer.CSPBasketStrainer

**Inputs = 25**

**Input = "CollarThickness" Description = "Collar Thickness"**  
**Input = "BasketLength" Description = "Basket Length"**  
**Input = "BasketEndDiameter" Description = "Basket End Diameter"**  
**Input = "CollarEndtoCenter" Description = "Collar End to Center"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

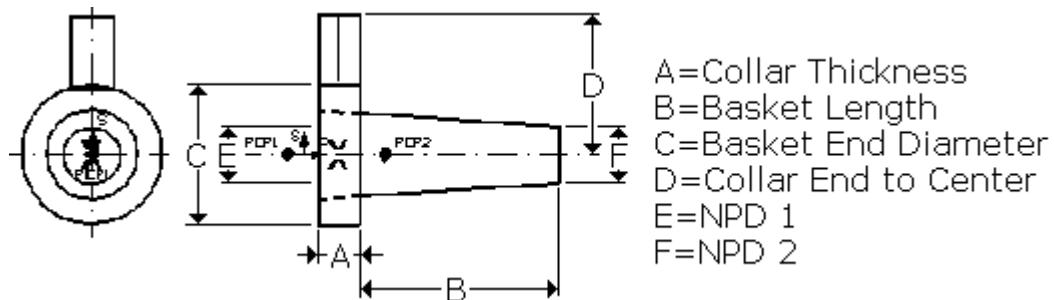
**Outputs = 7**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "Strainer" Description = "Strainer"**  
**Output = "Collar" Description = "Collar"**  
**Output = "CollarExtn" Description = "Collar Extension"**  
**Output = "BodyIns" Description = "Body Insulation"**  
**Output = "CollarIns" Description = "Collar Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSPButterflyVal

**Description:** This is PDS on-the-fly I17A Butterfly valve Symbol.

**Symbol Name:** SP3DCSPButterflyVal.CSPButterflyVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPButterflyVal.CSPButterflyVal

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 4**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

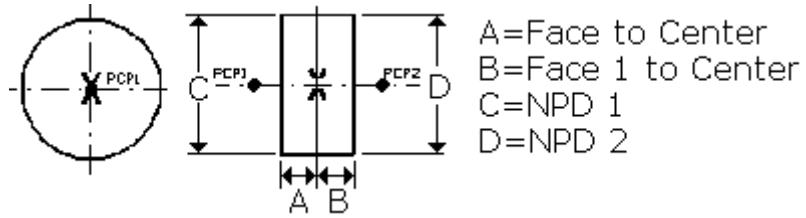
**Output = "Cylinder" Description = "Left Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPConeStrainer

**Description:** This is PDS on-the-fly S53A Cone Strainer Symbol.

**Symbol Name:** SP3DCSPConeStrainer.CSPConeStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPConeStrainer.CSPConeStrainer

**Inputs = 25**

**Input = "CollarThickness" Description = "Collar Thickness"**  
**Input = "BasketLength" Description = "Basket Length"**  
**Input = "BasketEndDiameter" Description = "Basket End Diameter"**  
**Input = "CollarEndtoCenter" Description = "Collar End to Center"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

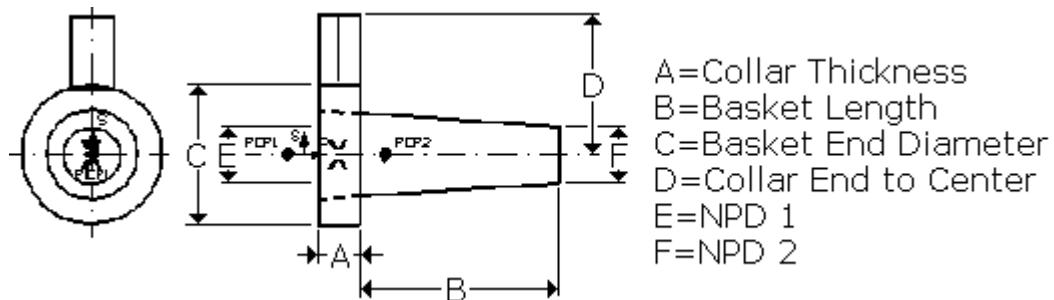
**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "Strainer" Description = "Strainer"**  
**Output = "Collar" Description = "Collar"**  
**Output = "CollarExtn" Description = "Collar Extension"**  
**Output = "BodyIns" Description = "Body Insulation"**  
**Output = "CollarIns" Description = "Collar Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSPDiaphragmVal

**Description:** This is PDS on-the-fly I7A Diaphragm Valve Symbol.

**Symbol Name:** SP3DCSPDiaphragmVal.CSPDiaphragmVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPDiaphragmVal.CSPDiaphragmVal

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

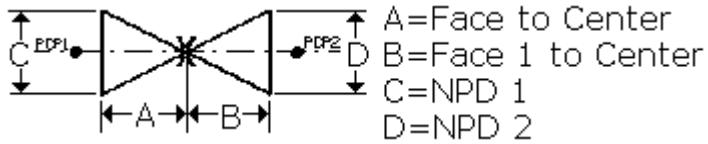
**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "InsulatedBody" Description = "Insulation for Valve Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPDressCoupling

**Description:** The two symbol ports are fully parametric and can be changed on-the-fly. This symbol details are as per PDS EDEN S1A1.

**Symbol Name:** SP3DCSPDressCoupling.CSPDresserCoupling

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPDressCoupling.CSPDresserCoupling

**Inputs = 27**

**Input and description** = "FacetoFace", "Face to Face",

**Input and description** = "CylinderDiameter", "Cylinder Diameter",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "EndPreparation", 21

**Input and description** = "ScheduleThickness", "ScheduleThickness",

**Input and description** = "EndStandard", "EndStandard", 5

**Input and description** = "PressureRating", "PressureRating", 35

**Input and description** = "FlowDirection", "FlowDirection", 3

**Input and description** = "PortIndex1", "PortIndex1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "EndPreparation1"

**Input and description** = "ScheduleThickness1", "ScheduleThickness1"

**Input and description** = "EndStandard1", "EndStandard1"

**Input and description** = "PressureRating1", "PressureRating1"

**Input and description** = "FlowDirection1", "FlowDirection1"

**Input and description** = "PortIndex2", "PortIndex2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "EndPreparation2"

**Input and description** = "ScheduleThickness2", "ScheduleThickness2"

**Input and description** = "EndStandard2", "EndStandard2"

**Input and description** = "PressureRating2", "PressureRating2"

**Input and description** = "FlowDirection2", "FlowDirection2"

**Input and description** = "Id1", "Id1", "VNoz1"

**Input and description** = "Id2", "Id2", "VNoz2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 5**

**Output and description** = "VNoz1", "Nozzle 1"

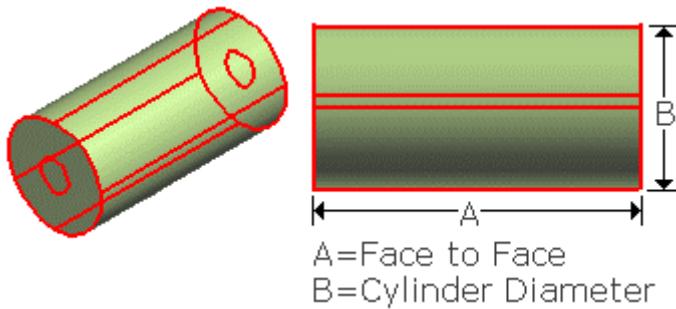
**Output and description** = "VNoz2", "Nozzle 2"

**Output and description** = "oCylinderCapped2", "Cylinder Capped 2"

**Output and description = "oCylinderCapped3", "Cylinder Capped 3"**  
**Output and description = "oCylinderCapped4", "Cylinder Capped 4"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



A=Face to Face

B=Cylinder Diameter

# SP3DCSPEXPNJoint

**Description:** This is PDS on-the-fly S28A Expansion Joint Symbol.

**Symbol Name:** SP3DCSPEXPNJoint.CSPEXPNJoint

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPEXPNJoint.CSPEXPNJoint

**Inputs = 30**

**Input and description** = "FacetoCenter", "Face to Center",

**Input and description** = "Face1toCenter", "Face 1 to Center",

**Input and description** = "CylinderDiameter", "Cylinder Diameter",

**Input and description** = "NozzleLength", "Nozzle Length",

**Input and description** = "NozzleLength1", "Nozzle Length 1",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "EndPreparation", 21

**Input and description** = "ScheduleThickness", "ScheduleThickness",

**Input and description** = "EndStandard", "EndStandard", 5

**Input and description** = "PressureRating", "PressureRating", 35

**Input and description** = "FlowDirection", "FlowDirection", 3

**Input and description** = "PortIndex1", "PortIndex1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "EndPreparation1"

**Input and description** = "ScheduleThickness1", "ScheduleThickness1"

**Input and description** = "EndStandard1", "EndStandard1"

**Input and description** = "PressureRating1", "PressureRating1"

**Input and description** = "FlowDirection1", "FlowDirection1"

**Input and description** = "PortIndex2", "PortIndex2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "EndPreparation2"

**Input and description** = "ScheduleThickness2", "ScheduleThickness2"

**Input and description** = "EndStandard2", "EndStandard2"

**Input and description** = "PressureRating2", "PressureRating2"

**Input and description** = "FlowDirection2", "FlowDirection2"

**Input and description** = "Id1", "Id1", "VNoz1"

**Input and description** = "Id2", "Id2", "VNoz2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 3**

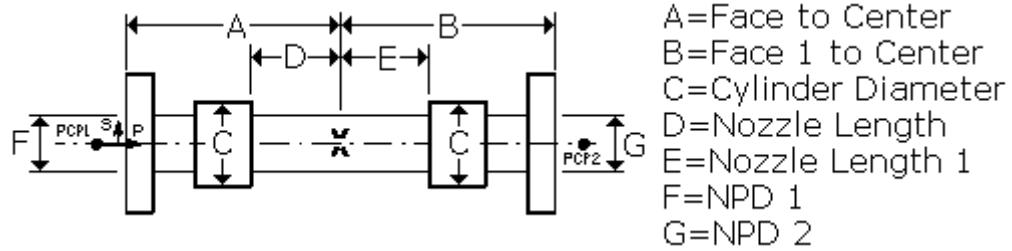
**Output and description** = "VNoz1", "Nozzle 1"

**Output and description = "VNoz2", "Nozzle 2"**

**Output and description = "oCylinderCapped1", "Cylinder Capped 1"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



# SP3DCSPFlameArrestor

**Description:** This is PDS on-the-fly S3A1 Flame Arrestor Symbol.

**Symbol Name:** SP3DCSPFlameArrestor.CSPFlameArrestor

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 27**

**Input and description** = "FacetoFace", "Face to Face",

**Input and description** = "CylinderDiameter", "Cylinder Diameter",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "EndPreparation", 21

**Input and description** = "ScheduleThickness", "ScheduleThickness",

**Input and description** = "EndStandard", "EndStandard", 5

**Input and description** = "PressureRating", "PressureRating", 35

**Input and description** = "FlowDirection", "FlowDirection", 3

**Input and description** = "PortIndex1", "PortIndex1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "EndPreparation1"

**Input and description** = "ScheduleThickness1", "ScheduleThickness1"

**Input and description** = "EndStandard1", "EndStandard1"

**Input and description** = "PressureRating1", "PressureRating1"

**Input and description** = "FlowDirection1", "FlowDirection1"

**Input and description** = "PortIndex2", "PortIndex2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "EndPreparation2"

**Input and description** = "ScheduleThickness2", "ScheduleThickness2"

**Input and description** = "EndStandard2", "EndStandard2"

**Input and description** = "PressureRating2", "PressureRating2"

**Input and description** = "FlowDirection2", "FlowDirection2"

**Input and description** = "Id1", "Id1", "VNoz1"

**Input and description** = "Id2", "Id2", "VNoz2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 7**

**Output and description** = "VNoz1", "Nozzle 1"

**Output and description** = "VNoz2", "Nozzle 2"

**Output and description** = "oCylinderCapped1", "Cylinder Capped 1"

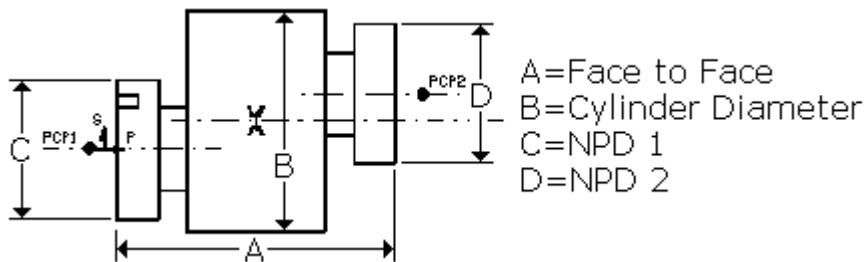
**Output and description** = "oCylinderCapped2", "Cylinder Capped 2"

**Output and description** = "oCylinderCapped3", "Cylinder Capped 3"

**Output and description = "oCylinderCapped4", "Cylinder Capped 4"**  
**Output and description = "oCylinderCapped5", "Cylinder Capped 5"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



## SP3DCSPFlexHose

**Description:** This is PDS on-the-fly S36A Flex Hose Symbol.

**Symbol Name:** SP3DCSPFlexHose.CSPFlexHose

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPFlexHose.CSPFlexHose

**Inputs = 21**

**Input = "FacetoFace" Description = "Collar Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 5**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

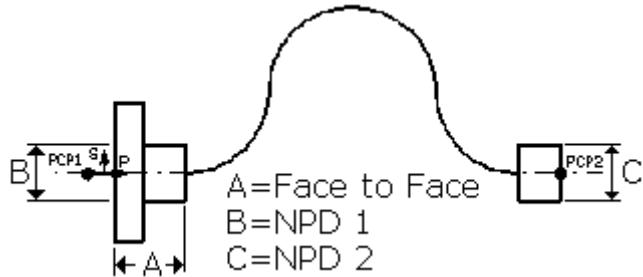
**Output = "Torus1" Description = "Torus1 for representing flexible hose"**

**Output = "Torus2" Description = "Torus2 for representing flexible hose"**

**Output = "Torus3" Description = "Torus3 for representing flexible hose"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSPFIThSteamTrap

**Description:** This is PDS on-the-fly S47A1 Float Thermostatic Steam Trap Symbol.

**Symbol Name:** SP3DCSPFIThSteamTrap.CSPFIThSteamTrap

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPFIThSteamTrap.CSPFIThSteamTrap

**Inputs = 30**

**Input and description** = "Height", "Height",

**Input and description** = "FacetoFace", "Faceto Face",

**Input and description** = "Length", "Length",

**Input and description** = "Offset", "Offset",

**Input and description** = "Width", "Width",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "EndPreparation", 21

**Input and description** = "ScheduleThickness", "ScheduleThickness",

**Input and description** = "EndStandard", "EndStandard", 5

**Input and description** = "PressureRating", "PressureRating", 35

**Input and description** = "FlowDirection", "FlowDirection", 3

**Input and description** = "PortIndex1", "PortIndex1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "EndPreparation1"

**Input and description** = "ScheduleThickness1", "ScheduleThickness1"

**Input and description** = "EndStandard1", "EndStandard1"

**Input and description** = "PressureRating1", "PressureRating1"

**Input and description** = "FlowDirection1", "FlowDirection1"

**Input and description** = "PortIndex2", "PortIndex2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "EndPreparation2"

**Input and description** = "ScheduleThickness2", "ScheduleThickness2"

**Input and description** = "EndStandard2", "EndStandard2"

**Input and description** = "PressureRating2", "PressureRating2"

**Input and description** = "FlowDirection2", "FlowDirection2"

**Input and description** = "Id1", "Id1", "VNoz1"

**Input and description** = "Id2", "Id2", "VNoz2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 3**

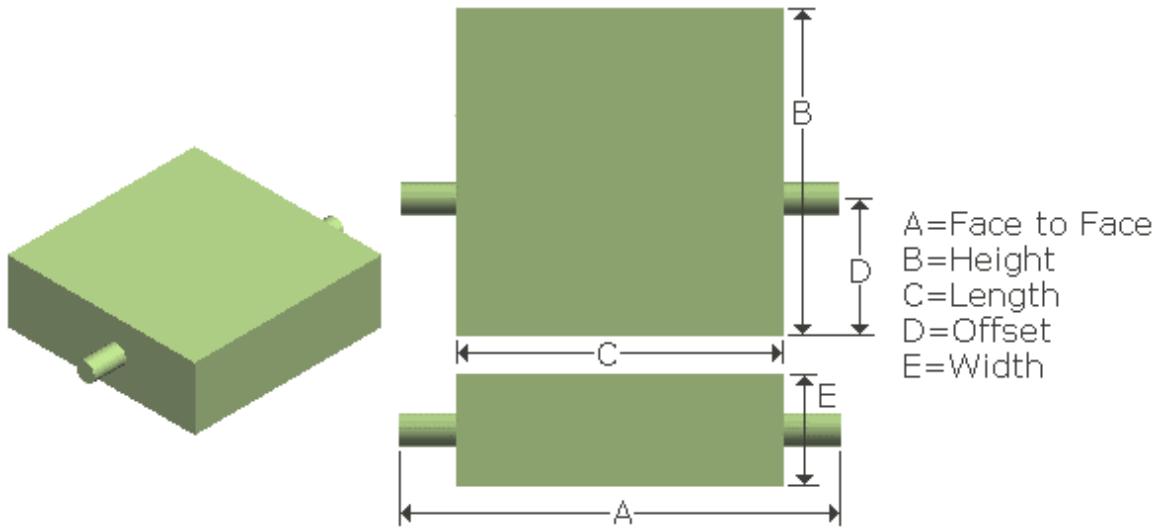
**Output and description** = "VNoz1", "Nozzle 1"

**Output and description = "VNoz2", "Nozzle 2"**

**Output and description = "oBox", "Box"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



## SP3DCSPFPlateStainer

**Description:** This is PDS on-the-fly S53A Flat Plate Strainer symbol.

**Symbol Name:** SP3DCSPFPlateStainer.CSPFPlateStainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPFPlateStainer.CSPFPlateStainer

**Inputs = 25**

**Input = "CollarThickness" Description = "Collar Thickness"**  
**Input = "BasketLength" Description = "Basket Length"**  
**Input = "BasketEndDiameter" Description = "Basket End Diameter"**  
**Input = "CollarEndtoCenter" Description = "Collar End to Center"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

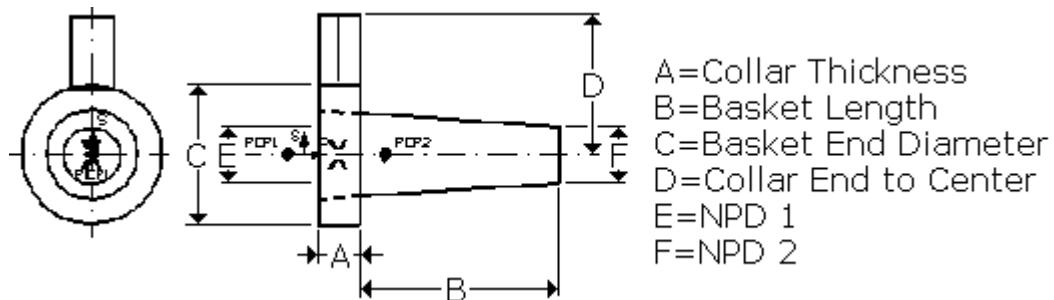
**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "Strainer" Description = "Strainer"**  
**Output = "Collar" Description = "Collar"**  
**Output = "CollarExtn" Description = "Collar Extension"**  
**Output = "BodyIns" Description = "Body Insulation"**  
**Output = "CollarIns" Description = "Collar Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPFreeVentTy1

**Description:** This is PDS on-the-fly Description="S1A2" Free Vent without Screen Symbol.

**Symbol Name:** SP3DCSPFreeVentTy1.CSPFreeVentTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPFreeVentTy1.CSPFreeVentTy1

**Inputs = 15**

**Input = "FacetoEnd" Description = "NozztoCenter"**

**Input = "CylinderDiameter" Description = "NozztoCenter"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

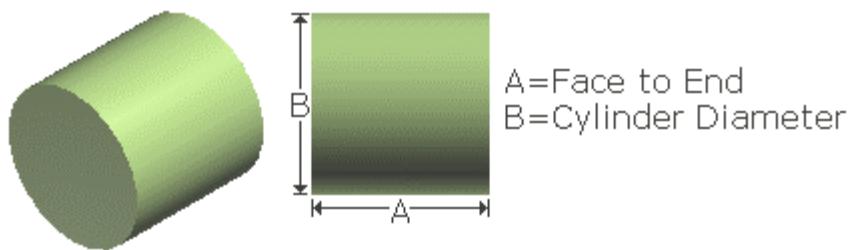
**Outputs = 2**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "FreeeVentBody" Description = "FreeeVentBody"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSPFrVentWScreen

**Description:** The one symbol port is fully parametric and can be changed on-the-fly.  
This is PDS Symbol Number SN=S11BZ.

**Symbol Name:** SP3DCSPFrVentWScreen.CSPFreeVentWithScr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPFrVentWScreen.CSPFreeVentWithScr

**Inputs = 16**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "VentRadius" Description = "VentRadius"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 5**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "FreeVentBody" Description = "Free Vent Body"**

**Output = "Nozzle1Ins" Description = "Nozzle1 Insulation"**

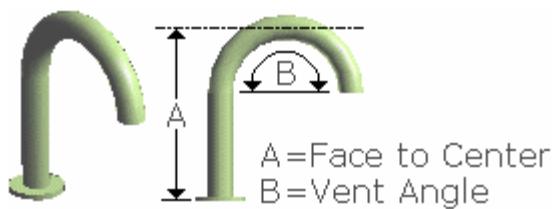
**Output = "Nozzle1BodyIns" Description = "Insulation for pipe body at Nozzle1"**

**Output = "FreeVentBodyIns" Description = "Free Vent Body Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Center  
B=Vent Angle

## SP3DCSPGlobeValve

**Description:** This is PDS on-the-fly I15A Globe Valve Symbol.

**Symbol Name:** SP3DCSPGlobeValve.CSPGlobeValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPGlobeValve.CSPGlobeValve

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

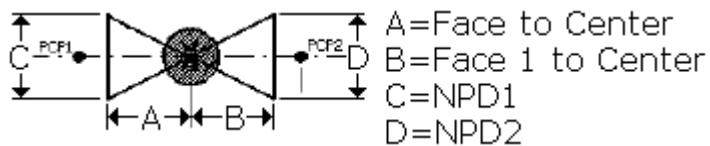
**Output = "Sphere" Description = "Sphere"**

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "InsulatedBody" Description = "Insulation for Valve Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPHammerArrestor

**Description:** This is PDS on-the-fly S3A1 Hammer Arrestor symbol.

**Symbol Name:** SP3DCSPHammerArrestor.CSPHammerArrestor

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPHammerArrestor.CSPHammerArrestor

**Inputs = 24**

```
Input = "CylinderLength" Description = "Cylinder Length"
Input = "FacetoFace" Description = "Face2 to Face"
Input = "CylOffset" Description = "Offset of cylinder from Port1"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 8**

Output = "InsPort1" Description = "Insulation for Port1"

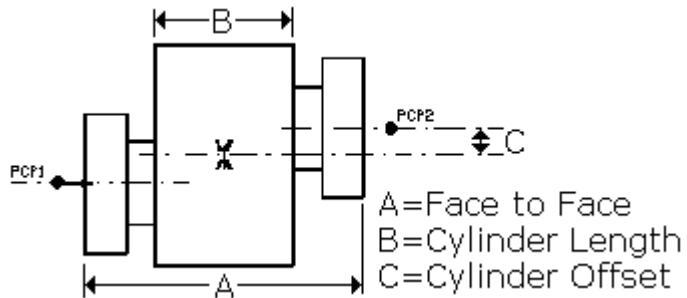
Output = "InsBody1" Description = "Insulation for Body Port1 side"

**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsHABody" Description = "Insulation for Hammer Arrestor Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "HABody" Description = "Hammer Arrestor Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSPIBktSteamTrap

**Description:** This is PDS on-the-fly S3A7 Inverted Bucket Steam Trap symbol.

**Symbol Name:** SP3DCSPIBktSteamTrap.CSPIBktSteamTrap

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPIBktSteamTrap.CSPIBktSteamTrap

**Inputs = 40**

**Input = "NozzleOffset" Description = "Face to Face"**

**Input = "CylinderDiameter" Description = "Face to Face"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "NozzleOffset1" Description = "Face to Face"**

**Input = "NozzleOffset2" Description = "Insulation Thickness"**

**Input = "NozzleOffset3" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

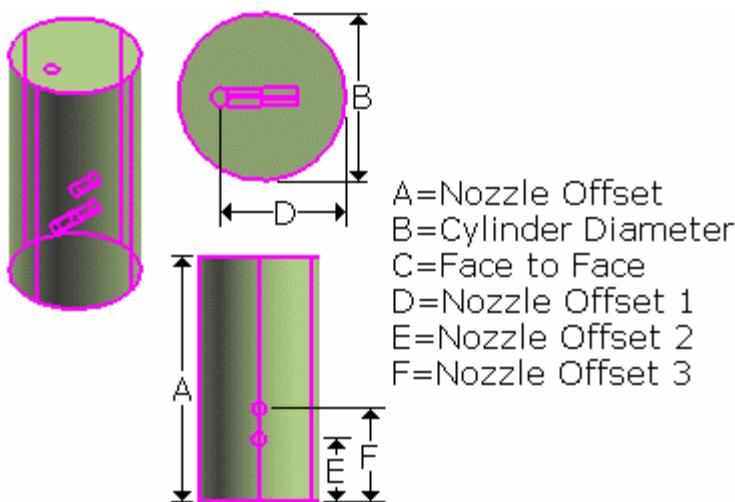
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 5**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "VNoz4" Description = "Nozzle 4"**  
**Output = "Cylinder" Description = "Cylinder"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DCSInstrndicator

**Description:** This is PDS on-the-fly I401A Instrument Indicator Symbol.

**Symbol Name:** SP3DCSInstrndicator.CSPIstrndicator

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSInstrndicator.CSPIstrndicator

**Inputs = 15**

**Input = "CylinderDiameter" Description = "NozztoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 3**

**Output = "VNoz1" Description = "Nozzle 1"**

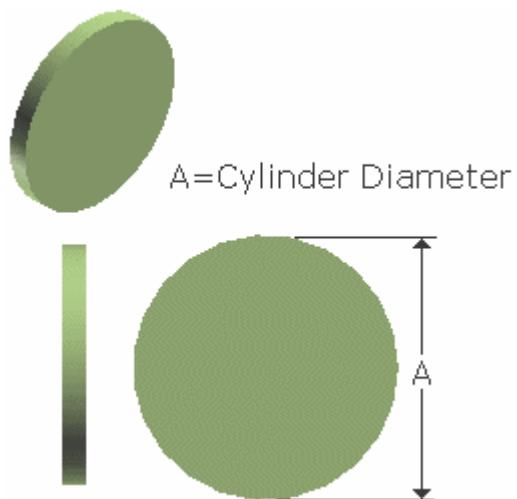
**Output = "InstrumentIndicator" Description = "Instrument Indicator Body"**

**Output = "InstrumentIndicatorIns" Description = "Insulation for Instrument Indicator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSPKnifeValve

**Description:** This is PDS on-the-fly Knife Valve Symbol.

**Symbol Name:** SP3DCSPKnifeValve.CSPKnifeValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPKnifeValve.CSPKnifeValve

**Inputs = 24**

```
Input = "FacetoCenter" Description = "Face1 to Center"
Input = "Face1toCenter" Description = "Face2 to Center"
Input = "ValveHeight" Description = "Valve Height"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

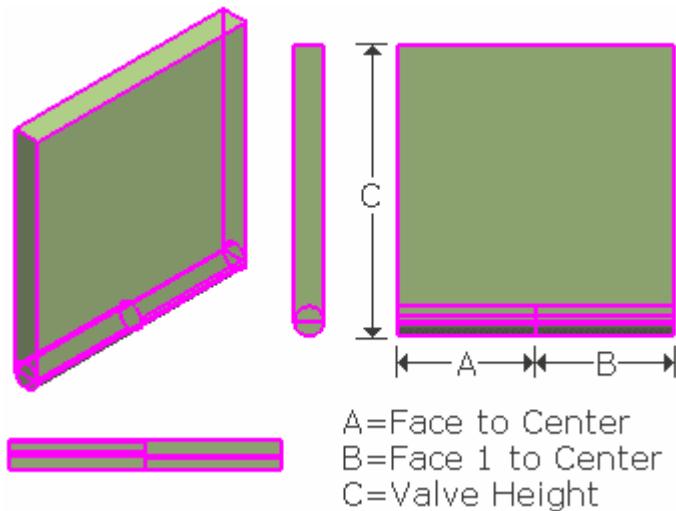
**Outputs = 5**

Output = "VNoz1" Description = "Nozzle 1"

Output = "VNoz2" Description = "Nozzle 2"

**Output = "ValveBoxBody" Description = "Box Body of Valve"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "ValveBoxBodyIns" Description = "Valve Box Body Insulation"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSPLiThSteamTrap

**Description:** This is PDS on-the-fly S1A6 Liquid Thermostatic Steam Trap symbol.

**Symbol Name:** SP3DCSPLiThSteamTrap.CSPLiThSteamTrap

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPLiThSteamTrap.CSPLiThSteamTrap

**Inputs = 23**

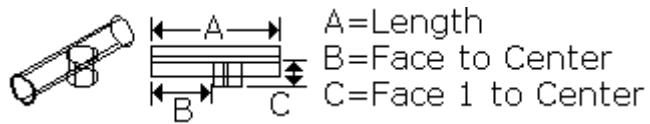
**Input = "Length" Description = "Nozzle Offset"**  
**Input = "FacetoCenter" Description = "Face to Center"**  
**Input = "Face1toCenter" Description = "Nozzle Offset1"**  
**Input = "Npd" Description = "NPD"**  
**Input = "EndPreparation" Description = "EndPreparation"**  
**Input = "ScheduleThickness" Description = "ScheduleThickness"**  
**Input = "EndStandard" Description = "EndStandard"**  
**Input = "PressureRating" Description = "PressureRating"**  
**Input = "FlowDirection" Description = "FlowDirection"**  
**Input = "PortIndex1" Description = "PortIndex1"**  
**Input = "Npd1" Description = "NPD1"**  
**Input = "EndPreparation1" Description = "EndPreparation1"**  
**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**  
**Input = "EndStandard1" Description = "EndStandard1"**  
**Input = "PressureRating1" Description = "PressureRating1"**  
**Input = "FlowDirection1" Description = "FlowDirection1"**  
**Input = "PortIndex2" Description = "PortIndex2"**  
**Input = "Npd2" Description = "NPD2"**  
**Input = "EndPreparation2" Description = "EndPreparation2"**  
**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**  
**Input = "EndStandard2" Description = "EndStandard2"**  
**Input = "PressureRating2" Description = "PressureRating2"**  
**Input = "FlowDirection2" Description = "FlowDirection2"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 2**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSPlugCtrlValve

**Description:** The symbol is prepared based on PDS Instrument Specialty Symbol SN=I16AZ, MC=MC=I16AT or I16AS. The two ports for the symbol are fully parametric and can be changed on-the-fly.

**Symbol Name:** SP3DCSPlugCtrlValve.CCSPlugCValve

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSPlugCValve

**User Class Name:** Control Plug Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPlugCtrlValve.CCSPlugCValve

**Inputs = 24**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

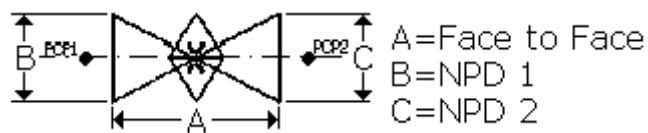
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "LeftCone" Description = "Left Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "LowerCone" Description = "Lower Cone"**  
**Output = "RightCone" Description = "Right Cone"**  
**Output = "ValveOperator" Description = "Valve Operator"**  
**Output = "InsulCylinder" Description = "Insul Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSPPrRelRuptdisc

**Description:** This is PDS on-the-fly I17A Pressure Relief Rupture disc Symbol.

**Symbol Name:** SP3DCSPPrRelRuptdisc.CSPPrRelRuptdisc

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPPrRelRuptdisc.CSPPrRelRuptdisc

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 4**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

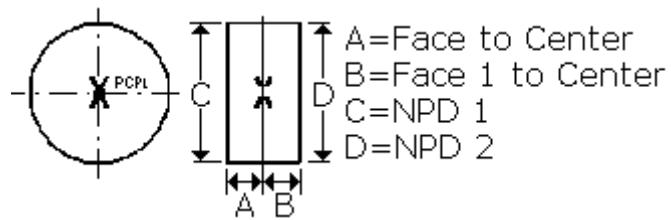
**Output = "Cylinder" Description = "Left Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPROrificeUnion

**Description:** This is PDS on-the-fly I116A Restriction Orifice Union Symbol.

**Symbol Name:** SP3DCSPROrificeUnion.CSPROrificeUnion

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPROrificeUnion.CSPROrificeUnion

**Inputs = 25**

**Input = "FacetoCenter" Description = "Cylinder Length"**

**Input = "Face1toCenter" Description = "Face2 to Face"**

**Input = "CylinderDiameter" Description = "Offset of cylinder from Port1"**

**Input = "CylinderLength" Description = "Offset of cylinder from Port1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

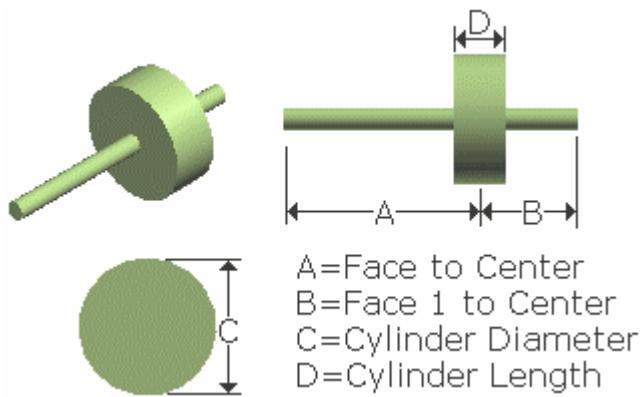
**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsUnionBody" Description = "Insulation for Union Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "UnionBody" Description = "Union Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPRotaPlugValve

**Description:** This is PDS on-the-fly I16A Custom Speciality Rotary Plug Valve symbol.

**Symbol Name:** SP3DCSPRotaPlugValve.CSPRotaPlugValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPRotaPlugValve.CSPRotaPlugValve

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 7**

**Output = "VNoz1" Description = "Nozzle 1"**

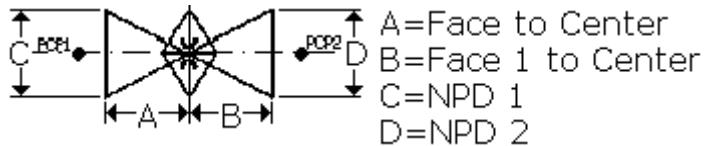
**Output = "VNoz2" Description = "Nozzle 2"**

**Output = "LeftCone" Description = "Left Cone"**  
**Output = "UpperCone" Description = "Upper Cone"**  
**Output = "LowerCone" Description = "Lower Cone"**  
**Output = "RightCone" Description = "Right Cone"**  
**Output = "InsulCylinder" Description = "Insul Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPSampleCooler

**Description:** This is PDS on-the-fly S3A2 Sample Cooler symbol.

**Symbol Name:** SP3DCSPSampleCooler.CSPSampleCooler

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSampleCooler.CSPSampleCooler

**Inputs = 40**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylinderDiameter" Description = "Face to Face"**

**Input = "Offset" Description = "Face to Face"**

**Input = "NozzleOffset" Description = "Face to Face"**

**Input = "NozzleOffset1" Description = "Insulation Thickness"**

**Input = "NozzleOffset2" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

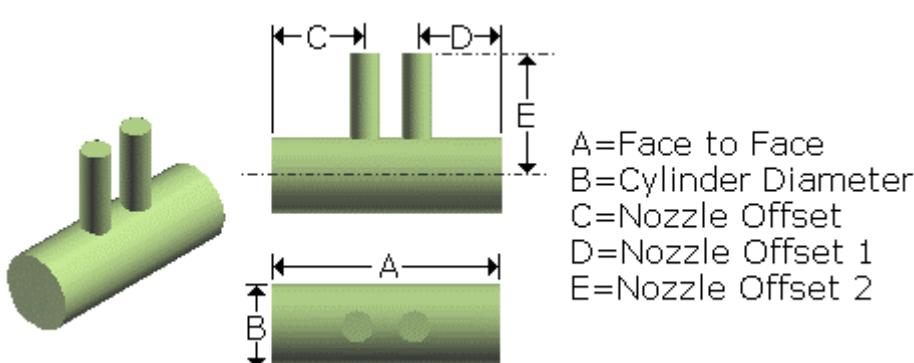
**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "PortIndex4" Description = "PortIndex4"**  
**Input = "Npd4" Description = "NPD4"**  
**Input = "EndPreparation4" Description = "EndPreparation4"**  
**Input = "ScheduleThickness4" Description = "ScheduleThickness4"**  
**Input = "EndStandard4" Description = "EndStandard4"**  
**Input = "PressureRating4" Description = "PressureRating4"**  
**Input = "FlowDirection4" Description = "FlowDirection4"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "Id4" Description = "Id4"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**  
**Input = "NpdUnitType4" Description = "Npd Unit Type 4"**

**Outputs = 5**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "VNoz4" Description = "Nozzle 4"**  
**Output = "Cylinder" Description = "Cylinder"**

**Aspects = 1**  
**Aspect = SimplePhysical**



# SP3DCSPSngBStrainer

**Description:** This is PDS on-the-fly S3A5 Single Basket Strainer Symbol.

**Symbol Name:** SP3DCSPSngBStrainer.CSPSSingleBasketStr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSngBStrainer.CSPSSingleBasketStr

**Inputs = 32**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "CylinderDiameter" Description = "Face2 to Center"**

**Input = "FacetoFace" Description = "Face3 to Center"**

**Input = "CylOffset" Description = "Insulation Thickness"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

**Input = "FlowDirection3" Description = "FlowDirection3"**

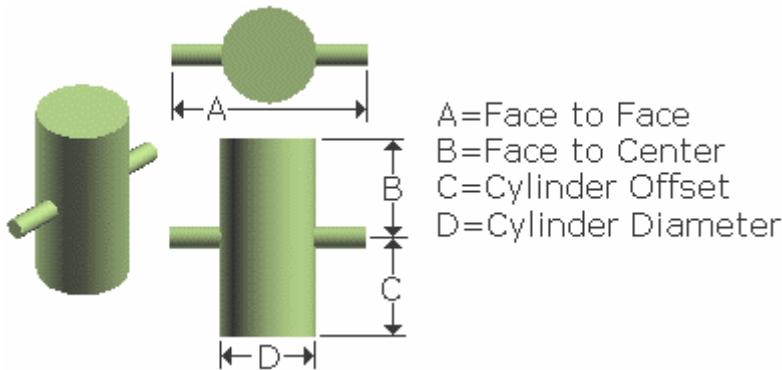
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 11**

**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "Cylinder" Description = "Cylinder"**  
**Output = "Nozzle1FlIns" Description = "Insulation for Nozzle1 flange"**  
**Output = "Nozzle1BodyIns" Description = "Insulation for Nozzle1 body"**  
**Output = "Nozzle2FlIns" Description = "Insulation for Nozzle2 flange"**  
**Output = "Nozzle2BodyIns" Description = "Insulation for Nozzle2 body"**  
**Output = "Nozzle3FlIns" Description = "Insulation for Nozzle3 flange"**  
**Output = "Nozzle3BodyIns" Description = "Insulation for Nozzle3 body"**  
**Output = "InsulatedCylinder" Description = "Insulation for Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSPSolenoidValve

**Description:** This is PDS on-the-fly I7A Solenoid Valve Symbol.

**Symbol Name:** SP3DCSPSolenoidValve.CSPSolenoidValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSolenoidValve.CSPSolenoidValve

**Inputs = 23**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

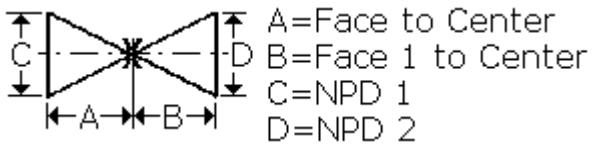
**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "InsulatedBody" Description = "Insulation for Valve Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPSumpStrainer

**Description:** This is PDS on-the-fly S1A7 Sump Strainer Symbol.

**Symbol Name:** SP3DCSPSumpStrainer.CSPSumpStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSumpStrainer.CSPSumpStrainer

**Inputs = 21**

**Input = "Length" Description = "NPD"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 3**

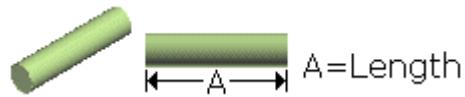
**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Output = "Strainer" Description = "Strainer"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DCSPSwivelJointTy1

**Description:** This is PDS on-the-fly S1A1 Swivel Joint Type 1 Symbol.

**Symbol Name:** SP3DCSPSwivelJointTy1.CSPSwivelJointTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSwivelJointTy1.CSPSwivelJointTy1

**Inputs = 27**

**Input and description** = "FacetoFace", "Face to Face",

**Input and description** = "CylinderDiameter", "Cylinder Diameter",

**Input and description** = "Npd", "NPD",

**Input and description** = "EndPreparation", "EndPreparation", 21

**Input and description** = "ScheduleThickness", "ScheduleThickness",

**Input and description** = "EndStandard", "EndStandard", 5

**Input and description** = "PressureRating", "PressureRating", 35

**Input and description** = "FlowDirection", "FlowDirection", 3

**Input and description** = "PortIndex1", "PortIndex1"

**Input and description** = "Npd1", "NPD1"

**Input and description** = "EndPreparation1", "EndPreparation1"

**Input and description** = "ScheduleThickness1", "ScheduleThickness1"

**Input and description** = "EndStandard1", "EndStandard1"

**Input and description** = "PressureRating1", "PressureRating1"

**Input and description** = "FlowDirection1", "FlowDirection1"

**Input and description** = "PortIndex2", "PortIndex2", 2

**Input and description** = "Npd2", "NPD2"

**Input and description** = "EndPreparation2", "EndPreparation2"

**Input and description** = "ScheduleThickness2", "ScheduleThickness2"

**Input and description** = "EndStandard2", "EndStandard2"

**Input and description** = "PressureRating2", "PressureRating2"

**Input and description** = "FlowDirection2", "FlowDirection2"

**Input and description** = "Id1", "Id1", "VNoz1"

**Input and description** = "Id2", "Id2", "VNoz2"

**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"

**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 7**

**Output and description** = "VNoz1", "Nozzle 1"

**Output and description** = "VNoz2", "Nozzle 2"

**Output and description** = "oCylinderCapped1", "Cylinder Capped 1"

**Output and description** = "oCylinderCapped2", "Cylinder Capped 2"

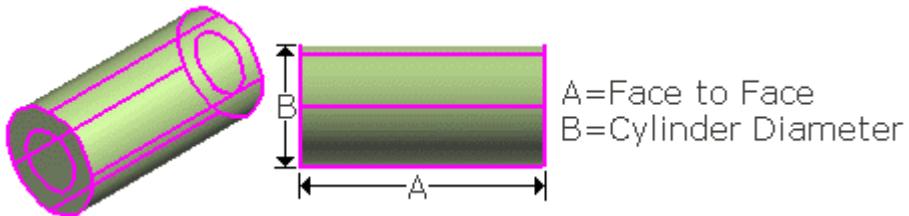
**Output and description = "oCylinderCapped3", "Cylinder Capped 3"**

**Output and description = "oCylinderCapped4", "Cylinder Capped 4"**

**Output and description = "oCylinderCapped5", "Cylinder Capped 5"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



A=Face to Face

B=Cylinder Diameter

## SP3DCSPSwivelJointTy2

**Description:** This is PDS on-the-fly S1A4 Swivel Joint Type2 Symbol.

**Symbol Name:** SP3DCSPSwivelJointTy2.CSPSwivelJointTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSwivelJointTy2.CSPSwivelJointTy2

**Inputs = 23**

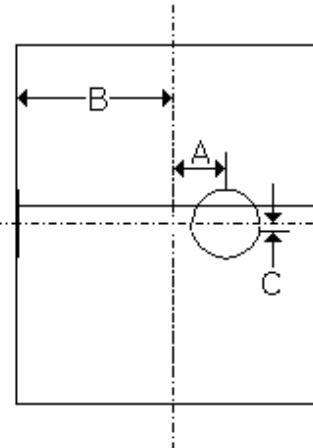
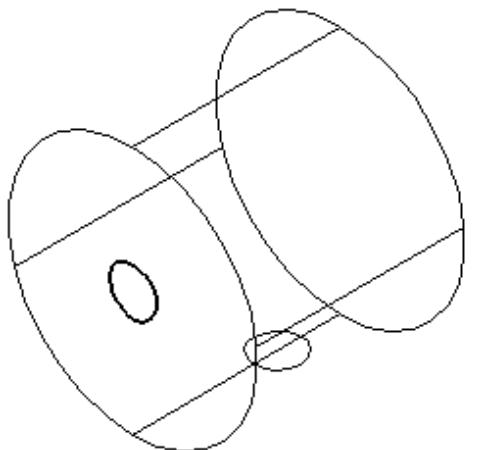
```
Input = "NozzleOffset" Description = "Nozzle Offset"
Input = "FacetoCenter" Description = "Face to Center"
Input = "NozzleOffset1" Description = "Nozzle Offset1"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 3**

```
Output = "VNoz1" Description = "Nozzle 1"
Output = "VNoz2" Description = "Nozzle 2"
Output = "Cylinder" Description = "Cylinder"
```

**Aspects = 1**

**Aspect = SimplePhysical**



A=Nozzle Offset  
B=Face to Center  
C=Nozzle Offset 1

## SP3DCSPSwivelJointTy3

**Description:** This is PDS on-the-fly S1A5 Swivel Joint Type3 Symbol.

**Symbol Name:** SP3DCSPSwivelJointTy3.CSPSwivelJointTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPSwivelJointTy3.CSPSwivelJointTy3

**Inputs = 24**

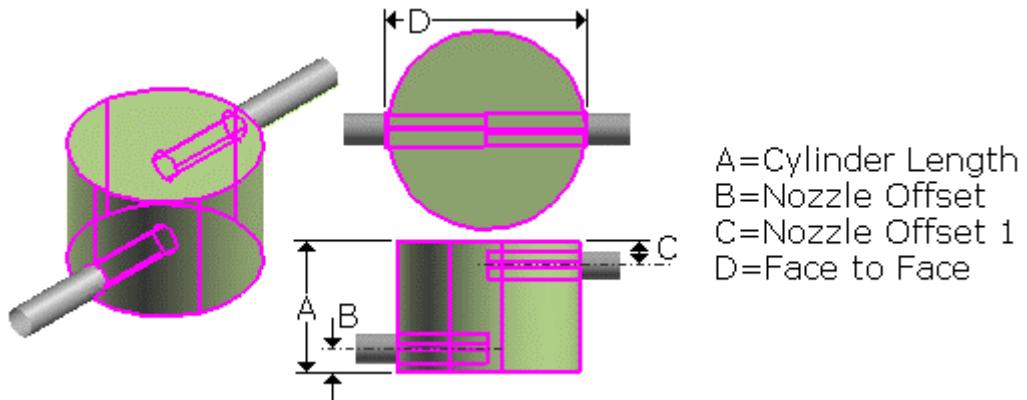
```
Input = "CylinderLength" Description = "Cylinder Length"
Input = "NozzleOffset" Description = "Nozzle Offset"
Input = "NozzleOffset1" Description = "Nozzle Offset1"
Input = "FacetoFace" Description = "Face to Face"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

**Outputs = 3**

Output = "VNoz1" Description = "Nozzle 1"

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "Cylinder" Description = "Cylinder"**

**Aspects = 1**  
**Aspect = SimplePhysical**



## SP3DCSPTherSteamTrap

**Description:** This is PDS on-the-fly S3A4 thermostatic steam trap.

**Symbol Name:** SP3DCSPTherSteamTrap.CSPTherSteamTrap

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPTherSteamTrap.CSPTherSteamTrap

**Inputs = 31**

**Input = "FacetoFace" Description = "Face1 to Center"**

**Input = "CylinderDiameter" Description = "Face2 to Center"**

**Input = "FacetoCenter" Description = "Face3 to Center"**

**Input = "NozzleOffset" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

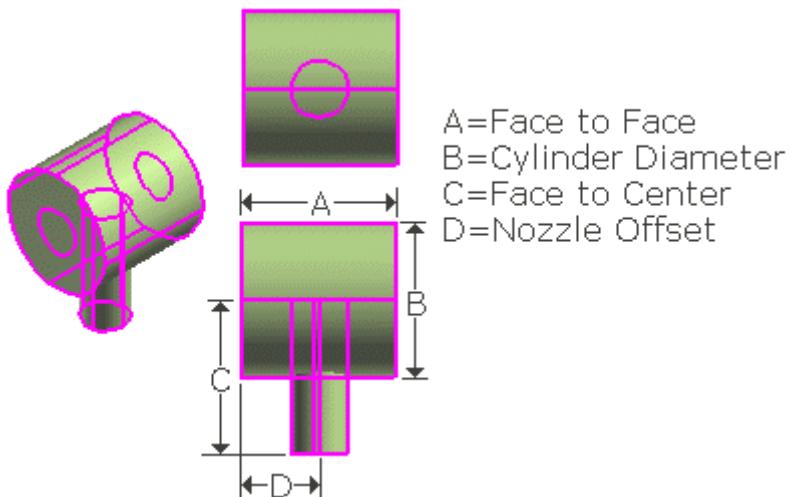
**Input = "FlowDirection3" Description = "FlowDirection3"**

**Input = "Id1" Description = "Id1"**

```
Input = "Id2"  Description = "Id2"
Input = "Id3"  Description = "Id3"
Input = "NpdUnitType"  Description = "Npd Unit Type"
Input = "NpdUnitType1"  Description = "Npd Unit Type 1"
Input = "NpdUnitType2"  Description = "Npd Unit Type 2"
Input = "NpdUnitType3"  Description = "Npd Unit Type 3"

Outputs = 4
Output = "VNoz1"  Description = "Nozzle 1"
Output = "VNoz2"  Description = "Nozzle 2"
Output = "VNoz3"  Description = "Nozzle 3"
Output = "Cylinder"  Description = "Cylinder"

Aspects = 1
Aspect = SimplePhysical
```



# SP3DCSPTSteamTrapWOS

**Description:** This is PDS on-the-fly S47A1 Float Thermostatic Steam Trap without Strainer Symbol.

**Symbol Name:** SP3DCSPTSteamTrapWOS.CSPTSteamTrapWOS

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPTSteamTrapWOS.CSPTSteamTrapWOS

**Inputs = 30**

**Input and description = "Height", "Height",**

**Input and description = "FacetoFace", "Faceto Face",**

**Input and description = "Length", "Length",**

**Input and description = "Offset", "Offset",**

**Input and description = "Width", "Width",**

**Input and description = "Npd", "NPD",**

**Input and description = "EndPreparation", "EndPreparation", 21**

**Input and description = "ScheduleThickness", "ScheduleThickness",**

**Input and description = "EndStandard", "EndStandard", 5**

**Input and description = "PressureRating", "PressureRating", 35**

**Input and description = "FlowDirection", "FlowDirection", 3**

**Input and description = "PortIndex1", "PortIndex1"**

**Input and description = "Npd1", "NPD1"**

**Input and description = "EndPreparation1", "EndPreparation1"**

**Input and description = "ScheduleThickness1", "ScheduleThickness1"**

**Input and description = "EndStandard1", "EndStandard1"**

**Input and description = "PressureRating1", "PressureRating1"**

**Input and description = "FlowDirection1", "FlowDirection1"**

**Input and description = "PortIndex2", "PortIndex2", 2**

**Input and description = "Npd2", "NPD2"**

**Input and description = "EndPreparation2", "EndPreparation2"**

**Input and description = "ScheduleThickness2", "ScheduleThickness2"**

**Input and description = "EndStandard2", "EndStandard2"**

**Input and description = "PressureRating2", "PressureRating2"**

**Input and description = "FlowDirection2", "FlowDirection2"**

**Input and description = "Id1", "Id1", "VNoz1"**

**Input and description = "Id2", "Id2", "VNoz2"**

**Input and description = "NpdUnitType", "Npd Unit Type", "mm"**

**Input and description = "NpdUnitType1", "Npd Unit Type 1", ""**

**Input and description = "NpdUnitType2", "Npd Unit Type 2", ""**

**Outputs = 3**

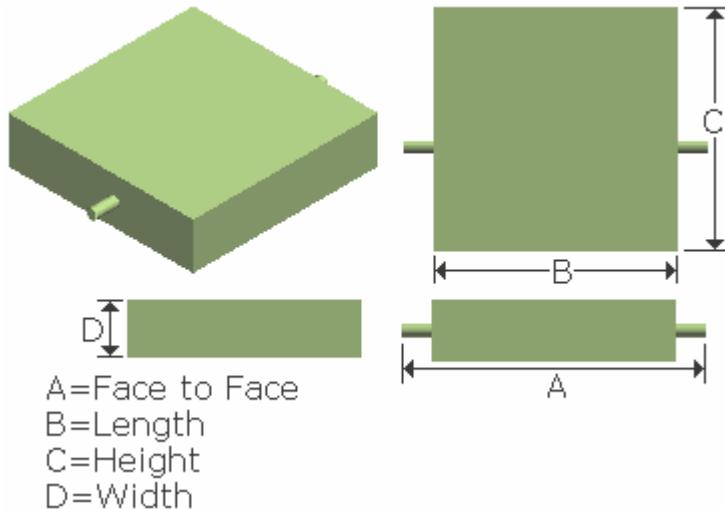
**Output and description = "VNoz1", "Nozzle 1"**

**Output and description = "VNoz2", "Nozzle 2"**

**Output and description = "oBox", "Box"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



# SP3DCSPTSteamTrapWS

**Description:** This is PDS on-the-fly S47A1 Float Thermostatic Steam Trap with Strainer Symbol.

**Symbol Name:** SP3DCSPTSteamTrapWS.CSPTSteamTrapWS

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPTSteamTrapWS.CSPTSteamTrapWS

**Inputs = 30**

**Input and description =** "Height", "Height",

**Input and description =** "FacetoFace", "Faceto Face",

**Input and description =** "Length", "Length",

**Input and description =** "Offset", "Offset",

**Input and description =** "Width", "Width",

**Input and description =** "Npd", "NPD",

**Input and description =** "EndPreparation", "EndPreparation", 21

**Input and description =** "ScheduleThickness", "ScheduleThickness",

**Input and description =** "EndStandard", "EndStandard", 5

**Input and description =** "PressureRating", "PressureRating", 35

**Input and description =** "FlowDirection", "FlowDirection", 3

**Input and description =** "PortIndex1", "PortIndex1"

**Input and description =** "Npd1", "NPD1"

**Input and description =** "EndPreparation1", "EndPreparation1"

**Input and description =** "ScheduleThickness1", "ScheduleThickness1"

**Input and description =** "EndStandard1", "EndStandard1"

**Input and description =** "PressureRating1", "PressureRating1"

**Input and description =** "FlowDirection1", "FlowDirection1"

**Input and description =** "PortIndex2", "PortIndex2", 2

**Input and description =** "Npd2", "NPD2"

**Input and description =** "EndPreparation2", "EndPreparation2"

**Input and description =** "ScheduleThickness2", "ScheduleThickness2"

**Input and description =** "EndStandard2", "EndStandard2"

**Input and description =** "PressureRating2", "PressureRating2"

**Input and description =** "FlowDirection2", "FlowDirection2"

**Input and description =** "Id1", "Id1", "VNoz1"

**Input and description =** "Id2", "Id2", "VNoz2"

**Input and description =** "NpdUnitType", "Npd Unit Type", "mm"

**Input and description =** "NpdUnitType1", "Npd Unit Type 1", ""

**Input and description =** "NpdUnitType2", "Npd Unit Type 2", ""

**Outputs = 3**

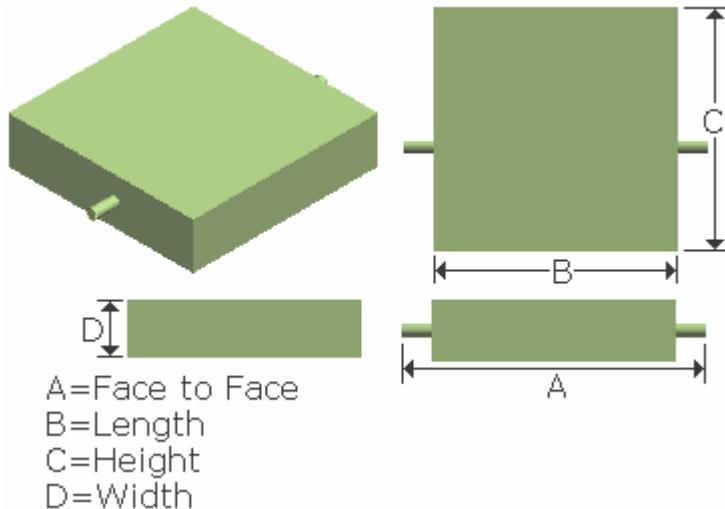
**Output and description = "VNoz1", "Nozzle 1"**

**Output and description = "VNoz2", "Nozzle 2"**

**Output and description = "oBox", "Box"**

**Aspects = 1**

**Aspect = "SimplePhysical", "SimplePhysicalAspect Description", 1**



# SP3DCSPTStrainer

**Description:** This is PDS on-the-fly S49A T Strainer Symbol.

**Symbol Name:** SP3DCSPTStrainer.CSPTStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPTStrainer.CSPTStrainer

**Inputs = 34**

```
Input = "FacetoCenter" Description = "Face1 to Center"
Input = "Face1toCenter" Description = "Face2 to Center"
Input = "Face2toCenter" Description = "Face3 to Center"
Input = "StrDiameter" Description = "Strainer Diameter"
Input = "BranchDiameter" Description = "Branch Pipe Diameter"
Input = "StrWidth" Description = "Strainer Width"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
```

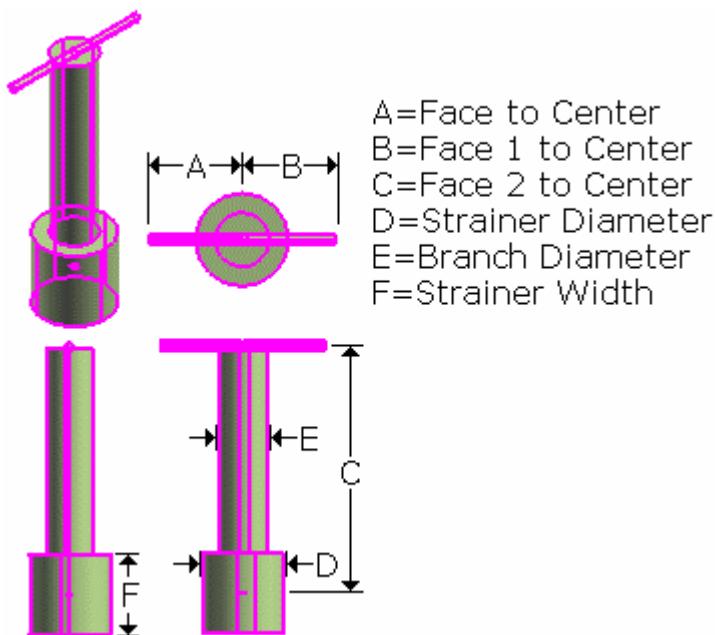
**Input** = "PressureRating3" **Description** = "PressureRating3"  
**Input** = "FlowDirection3" **Description** = "FlowDirection3"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "Id3" **Description** = "Id3"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 12**

**Output** = "VNoz1" **Description** = "Nozzle 1"  
**Output** = "VNoz2" **Description** = "Nozzle 2"  
**Output** = "VNoz3" **Description** = "Nozzle 3"  
**Output** = "BranchBody" **Description** = "Branch Body"  
**Output** = "StrainerBody" **Description** = "Strainer Body"  
**Output** = "PipeinNoz1Ins" **Description** = "Pipe portion in Noz1 Insulation"  
**Output** = "Noz1Ins" **Description** = "Noz1 Insulation"  
**Output** = "PipeinNoz2Ins" **Description** = "Pipe portion in Noz2 Insulation"  
**Output** = "Noz2Ins" **Description** = "Noz2 Insulation"  
**Output** = "Noz3Ins" **Description** = "Noz3 Insulation"  
**Output** = "InsBranch" **Description** = "Insulation for Branch"  
**Output** = "InsStrainer" **Description** = "Insulation for Strainer"

**Aspects = 2**

**Aspect** = SimplePhysical  
**Aspect** = Insulation



## SP3DCSPWDStreamValve

**Description:** This is PDS on-the-fly I10A with downstream Valve Symbol.

**Symbol Name:** SP3DCSPWDStreamValve.CSPWDStreamValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPWDStreamValve.CSPWDStreamValve

**Inputs = 25**

**Input = "FacetoFace" Description = "Cylinder Length"**

**Input = "Width" Description = "Face2 to Face"**

**Input = "Height" Description = "Offset of cylinder from Port1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

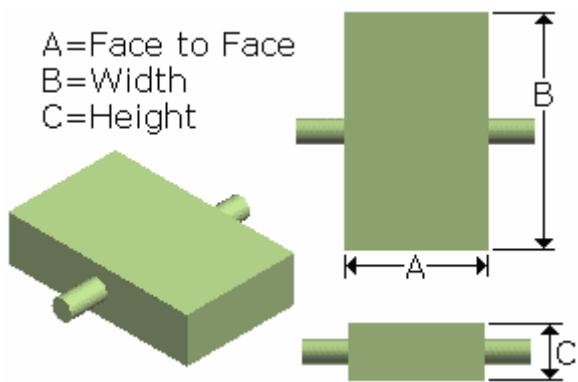
**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsValveBody" Description = "Insulation for Valve Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "ValveBody" Description = "Valve Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPWDStRegulator

**Description:** This is PDS on-the-fly I10A with downstream Regulator Symbol.

**Symbol Name:** SP3DCSPWDStRegulator.CSPWDStRegulator

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPWDStRegulator.CSPWDStRegulator

**Inputs = 24**

**Input = "FacetoFace" Description = "Cylinder Length"**

**Input = "Width" Description = "Face2 to Face"**

**Input = "Height" Description = "Offset of cylinder from Port1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsPort1" Description = "Insulation for Port1"**

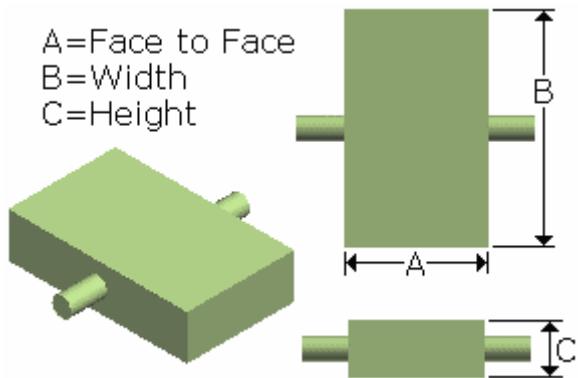
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsRegulatorBody" Description = "Insulation for Regulator Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "RegulatorBody" Description = "Regulator Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSPWUStreamValve

**Description:** This is PDS on-the-fly I10A with upstream Valve Symbol.

**Symbol Name:** SP3DCSPWUStreamValve.CSPWUStreamValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPWUStreamValve.CSPWUStreamValve

**Inputs = 25**

**Input = "FacetoFace" Description = "Cylinder Length"**

**Input = "Width" Description = "Face2 to Face"**

**Input = "Height" Description = "Offset of cylinder from Port1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "FacetoCenter" Description = "Cylinder Length"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

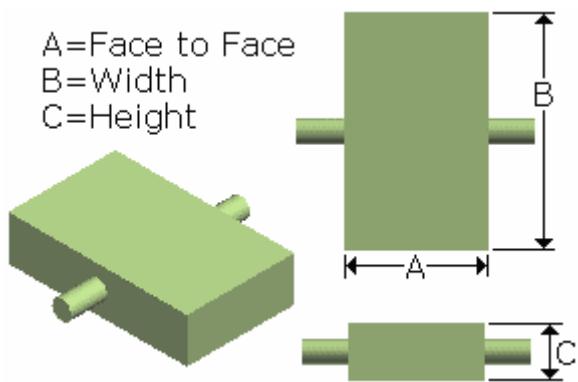
**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsValveBody" Description = "Insulation for Valve Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "ValveBody" Description = "Valve Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPWUStRegulator

**Description:** This is PDS on-the-fly I10A With Upstream Regulator Symbol.

**Symbol Name:** SP3DCSPWUStRegulator.CSPWUStRegulator

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPWUStRegulator.CSPWUStRegulator

**Inputs = 24**

**Input = "FacetoFace" Description = "Cylinder Length"**

**Input = "Width" Description = "Face2 to Face"**

**Input = "Height" Description = "Offset of cylinder from Port1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsPort1" Description = "Insulation for Port1"**

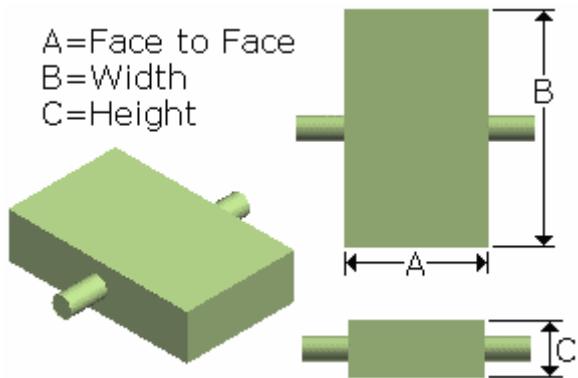
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsRegulatorBody" Description = "Insulation for Regulator Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "RegulatorBody" Description = "Regulator Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSPYStrainer

**Description:** This is PDS on-the-fly S51A Y Strainer Symbol.

**Symbol Name:** SP3DCSPYStrainer.CSPYStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPYStrainer.CSPYStrainer

**Inputs = 34**

```
Input = "FacetoCenter" Description = "Face1 to Center"
Input = "Face1toCenter" Description = "Face2 to Center"
Input = "Face2toCenter" Description = "Strainer Top to Center"
Input = "StrDiameter" Description = "Strainer Diameter"
Input = "BranchDiameter" Description = "Face3 to Strainer Top"
Input = "StrWidth" Description = "Branch Diameter"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
Input = "EndStandard3" Description = "EndStandard3"
```

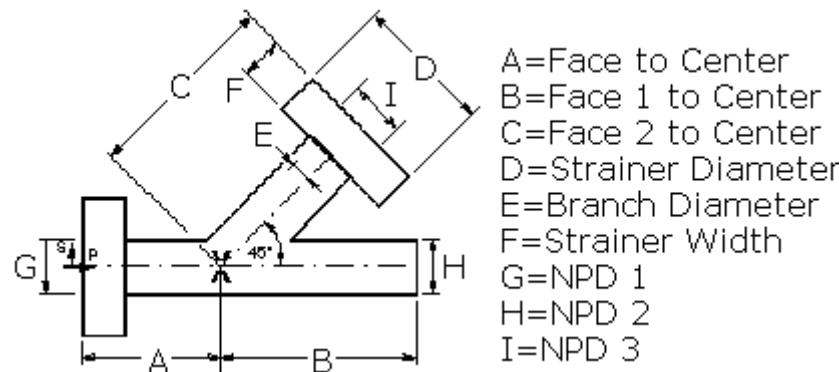
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 12**

**Output = "InsPort1" Description = "Insulation for Port1"**  
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsPort3" Description = "Insulation for Port3"**  
**Output = "InsBranch" Description = "Insulation for Branch"**  
**Output = "InsStrainer" Description = "Insulation for Strainer"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**  
**Output = "BodyBranch" Description = "Body of Branch"**  
**Output = "BodyStrainer" Description = "Body of Strainer"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSPYStrainer2

**Description:** This is PDS on-the-fly G51 Y Strainer Symbol.

**Symbol Name:** SP3DCSPYStrainer2.CSPYStrainer2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSPYStrainer2.CSPYStrainer2

**Inputs = 31**

**Input = "FacetoFace" Description = "Face1 to Center"**

**Input = "NozzleOffset" Description = "Face2 to Center"**

**Input = "FacetoCenter" Description = "Strainer Top to Center"**

**Input = "InsulationThickness" Description = "Strainer Diameter"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "PortIndex3" Description = "PortIndex3"**

**Input = "Npd3" Description = "NPD3"**

**Input = "EndPreparation3" Description = "EndPreparation3"**

**Input = "ScheduleThickness3" Description = "ScheduleThickness3"**

**Input = "EndStandard3" Description = "EndStandard3"**

**Input = "PressureRating3" Description = "PressureRating3"**

**Input = "FlowDirection3" Description = "FlowDirection3"**

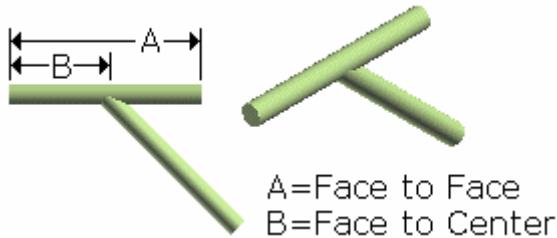
**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

**Outputs = 8**  
**Output = "InsPort1" Description = "Insulation for Port1"**  
**Output = "InsBody" Description = " Insulation for Body"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsPort3" Description = "Insulation for Port3"**  
**Output = "InsBody3" Description = " Insulation for Body Port3 side"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "VNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSRuptureDiscVac1

**Description:** Vac Relief rupture disc Type 1

**Symbol Name:** SP3DCSRuptureDiscVac1.CCSRuptureDiscV1

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSRuptureDiscV1

**User Class Name:** Vac Relief rupture disc Type 1

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSRuptureDiscVac1.CCSRuptureDiscV1

**Inputs = 24**

**Input** = "Face1toCenter" **Description** = "Face1 to Center"  
**Input** = "Face2toCenter" **Description** = "Face2 to Center"  
**Input** = "InsulationThickness" **Description** = "Insulation Thickness"  
**Input** = "ValveDiscHeight" **Description** = "Valve Disc Height"  
**Input** = "Npd" **Description** = "NPD"  
**Input** = "EndPreparation" **Description** = "EndPreparation"  
**Input** = "ScheduleThickness" **Description** = "ScheduleThickness"  
**Input** = "EndStandard" **Description** = "EndStandard"  
**Input** = "PressureRating" **Description** = "PressureRating"  
**Input** = "FlowDirection" **Description** = "FlowDirection"  
**Input** = "PortIndex1" **Description** = "PortIndex1"  
**Input** = "Npd1" **Description** = "NPD1"  
**Input** = "EndPreparation1" **Description** = "EndPreparation1"  
**Input** = "ScheduleThickness1" **Description** = "ScheduleThickness1"  
**Input** = "EndStandard1" **Description** = "EndStandard1"  
**Input** = "PressureRating1" **Description** = "PressureRating1"  
**Input** = "FlowDirection1" **Description** = "FlowDirection1"  
**Input** = "PortIndex2" **Description** = "PortIndex2"  
**Input** = "Npd2" **Description** = "NPD2"  
**Input** = "EndPreparation2" **Description** = "EndPreparation2"  
**Input** = "ScheduleThickness2" **Description** = "ScheduleThickness2"  
**Input** = "EndStandard2" **Description** = "EndStandard2"  
**Input** = "PressureRating2" **Description** = "PressureRating2"  
**Input** = "FlowDirection2" **Description** = "FlowDirection2"  
**Input** = "Id1" **Description** = "Id1"  
**Input** = "Id2" **Description** = "Id2"  
**Input** = "NpdUnitType" **Description** = "Npd Unit Type"  
**Input** = "NpdUnitType1" **Description** = "Npd Unit Type 1"  
**Input** = "NpdUnitType2" **Description** = "Npd Unit Type 2"

**Outputs = 4**

**Output** = "VNoz1" **Description** = "Nozzle 1"

**Output** = "VNoz2" **Description** = "Nozzle 2"

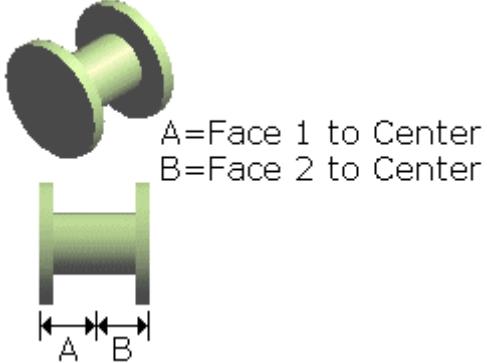
**Output = "InsulatedCylinder" Description = "Insulation for Cylinder"**  
**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Aspects = 3**

**Aspect = SimplePhysical**

**Aspect = Insulation**

**Aspect = Operation**



# SP3DCSRuptureDiscVac2

**Description:** Vac Relief rupture disc Type

**Symbol Name:** SP3DCSRuptureDiscVac2.CCSRDiscVac2

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSRDiscVac2

**User Class Name:** Vac Relief rupture disc Type

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSRuptureDiscVac2.CCSRDiscVac2

**Inputs = 25**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "DiscDiameter" Description = "Diameter of Disc"**

**Input = "DiscLength" Description = "Disc Length"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

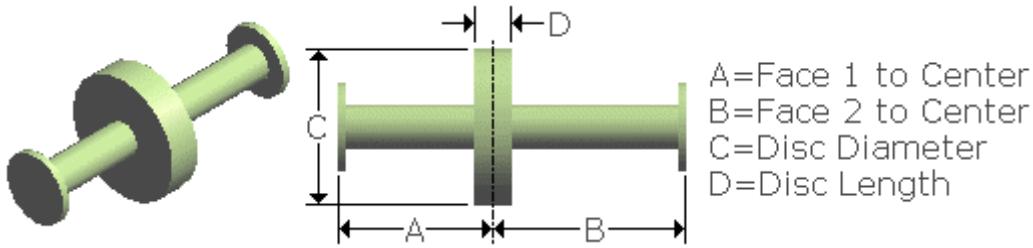
**Outputs = 6**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "LeftCylinder" Description = "Left Cylinder"**  
**Output = "CentralCylin" Description = "Central Cylinder"**  
**Output = "RightCylinder" Description = "Right Cylinder"**  
**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSSlideCtrlValve

**Description:** Slide Valve details were taken from PDS Piping Component Data Reference Manual at Page No - D-21 and SN=V33. (PDS Instrument Specialty Symbol SN=I20AZ is same as this symbol)

**Symbol Name:** SP3DCSSlideCtrlValve.CCSSlideCValve

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSSlideCValve

**User Class Name:** Slide Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSSlideCtrlValve.CCSSlideCValve

**Inputs = 28**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "BranchLength" Description = "Branch Length"**

**Input = "ProjectionHeight" Description = "Projection Height"**

**Input = "ProjectionLength" Description = "Projection Length"**

**Input = "ProjectionWidth" Description = "Projection Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

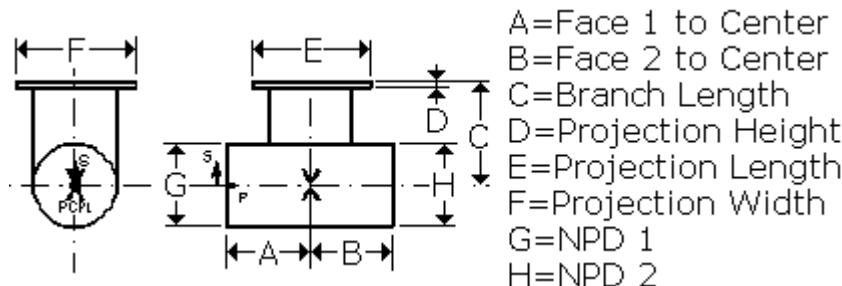
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "VNoz1" Description = "Nozzle 1 with Length"**  
**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "Cylinder" Description = "Cylinder"**  
**Output = "ProjectionBox" Description = "Projection Box"**  
**Output = "ValveOperator" Description = "Valve Operator"**  
**Output = "BranchInsulation" Description = "Branch Insulation"**  
**Output = "BoxInsulation" Description = "BoxInsulation"**  
**Output = "BodyInsulation" Description = "Body Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DCSSprayNozzle

**Description:** spray nozzle

**Symbol Name:** SP3DCSSprayNozzle.CCSSprayNozzle

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSSprayNozzle

**User Class Name:** Spray Nozzle

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSSprayNozzle.CCSSprayNozzle

**Inputs = 16**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "EndDiameter" Description = "End Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 4**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "InsulatedPort" Description = "Insulation for Port"**

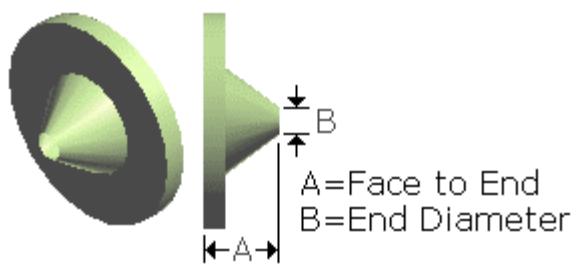
**Output = "InsulatedBody" Description = "Insulation Body"**

**Output = "Body" Description = "Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DCSSteamTrap

**Description:** Weight Operated Steam Trap Class 3000

**Symbol Name:** SP3DCSSteamTrap.CCSWOSteamTrap

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** WOSteamTrapOA, CSWOSteamTrap

**User Class Name:** Weight Operated Steam Trap Class 3000

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSSteamTrap.CCSWOSteamTrap

**Inputs = 25**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "BasetoInlet" Description = "Base to Inlet"**

**Input = "BasetoOutlet" Description = "Base to Outlet"**

**Input = "OutletOffset" Description = "Outlet Offset"**

**Input = "STHeight" Description = "Steam Trap Height"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 4**

**Output = "Float" Description = "Float Inlet Chamber"**

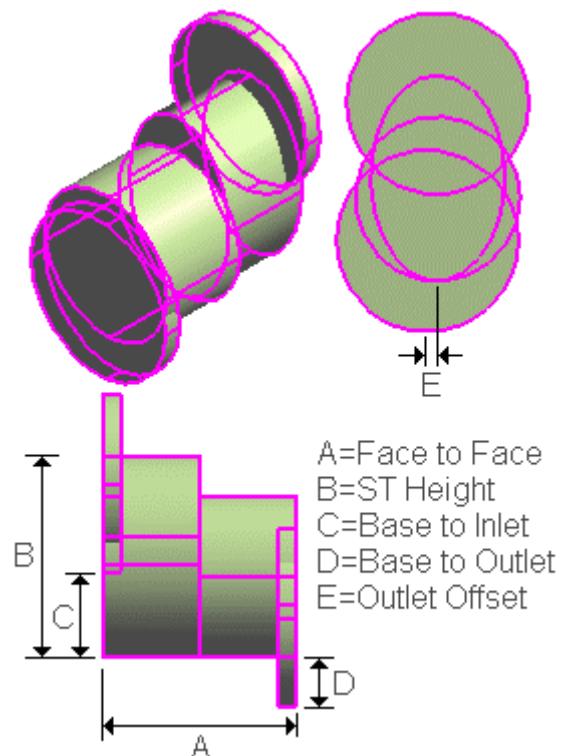
**Output = "Orifice" Description = "Valve Outlet Orifice"**

**Output = "VNoz1" Description = "Nozzle 1"**

**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DCSTempFusPlug

**Description:** temp fusible plug

**Symbol Name:** SP3DCSTempFusPlug.CCSTFPlug

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSTFPlug

**User Class Name:** Temp fusible plug

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSTempFusPlug.CCSTFPlug

**Inputs = 15**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "Id1" Description = "Id1"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Outputs = 3**

**Output = "VNoz1" Description = "Nozzle 1"**

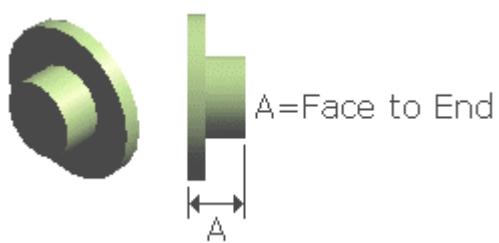
**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSTStrainer

**Description:** T Strainer

**Symbol Name:** SP3DCSTStrainer.CCSTStrainer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSTStrainer

**User Class Name:** T Strainer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSTStrainer.CCSTStrainer

**Inputs = 35**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "StrToptoCenter" Description = "Strainer Top to Center"
Input = "StrDiameter" Description = "Strainer Diameter"
Input = "BranchDiameter" Description = "Branch Pipe Diameter"
Input = "StrWidth" Description = "Strainer Width"
Input = "Face3toStrTop" Description = "Face3 to Strainer Top"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
```

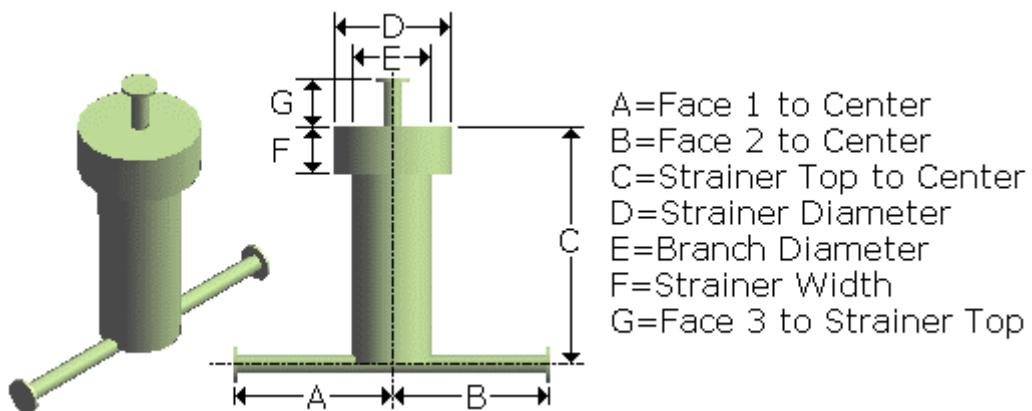
**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 13**

**Output = "BranchBody" Description = "Branch Body"**  
**Output = "StrainerBody" Description = "Strainer Body"**  
**Output = "PipeinNoz1Ins" Description = "Pipe portion in Noz1 Insulation"**  
**Output = "Noz1Ins" Description = "Noz1 Insulation"**  
**Output = "PipeinNoz2Ins" Description = "Pipe portion in Noz2 Insulation"**  
**Output = "Noz2Ins" Description = "Noz2 Insulation"**  
**Output = "PipeinNoz3Ins" Description = "Pipe portion in Noz3 Insulation"**  
**Output = "Noz3Ins" Description = "Noz3 Insulation"**  
**Output = "InsBranch" Description = "Insulation for Branch"**  
**Output = "InsStrainer" Description = "Insulation for Strainer"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSValve

**Description:** Custom Specialty Inline Valve

**Symbol Name:** SP3DCSValve.CSValve

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSValve

**User Class Name:** Custom Specialty Inline Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSValve.CCSValve

**Inputs = 23**

**Input = "Face1toCenter" Description = "Face1 To Center"**

**Input = "Face2toCenter" Description = "Face2 To Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Npd" Description = "NPD"**

**Input = "EndPreparation" Description = "EndPreparation"**

**Input = "ScheduleThickness" Description = "ScheduleThickness"**

**Input = "EndStandard" Description = "EndStandard"**

**Input = "PressureRating" Description = "PressureRating"**

**Input = "FlowDirection" Description = "FlowDirection"**

**Input = "PortIndex1" Description = "PortIndex1"**

**Input = "Npd1" Description = "NPD1"**

**Input = "EndPreparation1" Description = "EndPreparation1"**

**Input = "ScheduleThickness1" Description = "ScheduleThickness1"**

**Input = "EndStandard1" Description = "EndStandard1"**

**Input = "PressureRating1" Description = "PressureRating1"**

**Input = "FlowDirection1" Description = "FlowDirection1"**

**Input = "PortIndex2" Description = "PortIndex2"**

**Input = "Npd2" Description = "NPD2"**

**Input = "EndPreparation2" Description = "EndPreparation2"**

**Input = "ScheduleThickness2" Description = "ScheduleThickness2"**

**Input = "EndStandard2" Description = "EndStandard2"**

**Input = "PressureRating2" Description = "PressureRating2"**

**Input = "FlowDirection2" Description = "FlowDirection2"**

**Input = "Id1" Description = "Id1"**

**Input = "Id2" Description = "Id2"**

**Input = "NpdUnitType" Description = "Npd Unit Type"**

**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**

**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 5**

**Output = "VNoz1" Description = "Nozzle with Length"**

**Output = "VNoz2" Description = "Nozzle 2"**

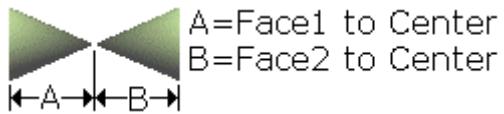
**Output = "BodyLeftCone" Description = "Left Body Cone"**

**Output = "BodyRightCone"** **Description = "Right Body Cone"**  
**Output = "BodyCylIns"** **Description = "Insulation Cylindrical Body"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCSValveOpGear

**Description:**

**Symbol Name:** SP3DCSValveOpGear.CSValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 35**

**Input and description** = "Face1toCenter", "Face 1 to Center",  
**Input and description** = "Face2toCenter", "Face 2 to Center",  
**Input and description** = "OperatorHeight", "Total Height of Operator",  
**Input and description** = "OperatorDiameter", "Diameter of Operator",  
**Input and description** = "ActuatorLength", "Operator to Top of Hand Wheel",  
**Input and description** = "OperatorDepth", "Thickness of Operator",  
**Input and description** = "ActuatorDiameter", "Diameter of the Hand Wheel",  
**Input and description** = "ActuatorOffset", "Distance between Operator and Handwheel",  
**Input and description** = "StemExtension", "Top of Operator to Top of Stem", 0  
**Input and description** = "InsulationThickness", "Insulation Thickness",  
**Input and description** = "Npd", "NPD",  
**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"  
**Input and description** = "EndPreparation", "End Preparation", 21  
**Input and description** = "ScheduleThickness", "Schedule Thickness",  
**Input and description** = "EndStandard", "End Standard", 5  
**Input and description** = "PressureRating", "Pressure Rating", 35  
**Input and description** = "FlowDirection", "Flow Direction", 3  
**Input and description** = "Id1", "Id1", "VNoz1"  
**Input and description** = "PortIndex1", "Port Index 1"  
**Input and description** = "Npd1", "Npd 1"  
**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""  
**Input and description** = "EndPreparation1", "End Preparation 1"  
**Input and description** = "ScheduleThickness1", "Schedule Thickness 1"  
**Input and description** = "EndStandard1", "End Standard 1"  
**Input and description** = "PressureRating1", "Pressure Rating 1"  
**Input and description** = "FlowDirection1", "Flow Direction 1"  
**Input and description** = "Id2", "Id2", "VNoz2"  
**Input and description** = "PortIndex2", "Port Index 2", 2  
**Input and description** = "Npd2", "Npd 2"  
**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""  
**Input and description** = "EndPreparation2", "End Preparation 2"  
**Input and description** = "ScheduleThickness2", "Schedule Thickness 2"  
**Input and description** = "EndStandard2", "End Standard 2"

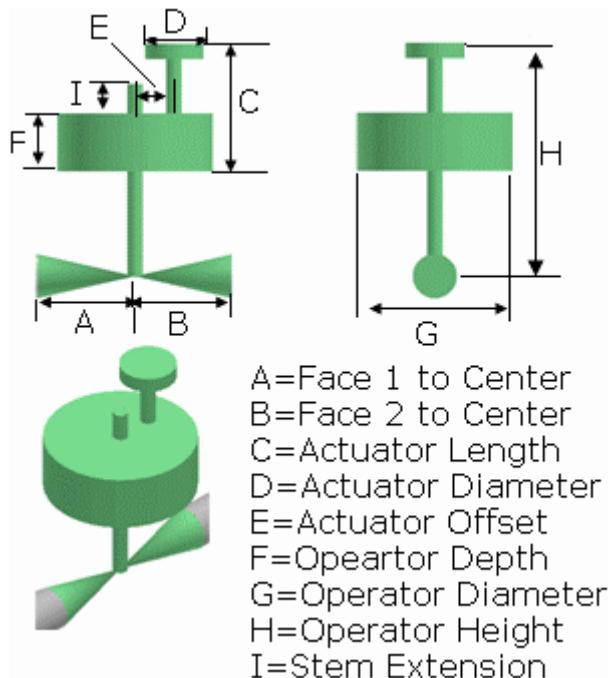
**Input and description** = "PressureRating2", "Pressure Rating 2"  
**Input and description** = "FlowDirection2", "Flow Direction 2"

**Outputs = 13**

**Output and description** = "VNoz1", "Nozzle 1"  
**Output and description** = "VNoz2", "Nozzle 2"  
**Output and description** = "LeftBodyCone", "Left Body Cone"  
**Output and description** = "RightBodyCone", "Right Body Cone"  
**Output and description** = "Stem", "Vertical Stem"  
**Output and description** = "Operator", "Horizontal Operator"  
**Output and description** = "AxisCylinder", "Verical Axis Cylinder"  
**Output and description** = "HandWheelCylinder", "Top Hand Cylinder"  
**Output and description** = "BodyCylIns", "Insulation Cylindrical Body"  
**Output and description** = "MaintStem", "Maintenance Vertical Stem"  
**Output and description** = "MaintOperator", "Maintenance Horizontal Operator"  
**Output and description** = "MaintAxisCylinder", "aintenance Verical Axis Cylinder"  
**Output and description** = "MaintHandWheelCylinder", "Maintenance Top Hand Cylinder"

**Aspects = 3**

**Aspect** = "SimplePhysical", "SimplePhysical"  
**Aspect** = "Insulation", "Insulation"  
**Aspect** = "Maintenance", "Maintenance"



# SP3DCSValveOpHwheel

**Description:**

**Symbol Name:** SP3DCSValveOpHwheel.CSValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSValveOpHwheel.CSValve

**Inputs = 30**

**Input and description** = "Face1toCenter", "Face 1 to Center",  
**Input and description** = "Face2toCenter", "Face 2 to Center",  
**Input and description** = "OperatorHeight", "Total Height of Operator", 0.  
**Input and description** = "OperatorDiameter", "Diameter of Operator",  
**Input and description** = "InsulationThickness", "Insulation Thickness",  
**Input and description** = "Npd", "NPD",  
**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"  
**Input and description** = "EndPreparation", "End Preparation", 21  
**Input and description** = "ScheduleThickness", "Schedule Thickness",  
**Input and description** = "EndStandard", "End Standard", 5  
**Input and description** = "PressureRating", "Pressure Rating", 35  
**Input and description** = "FlowDirection", "Flow Direction", 3  
**Input and description** = "Id1", "Id1", "VNoz1"  
**Input and description** = "PortIndex1", "Port Index 1"  
**Input and description** = "Npd1", "Npd 1"  
**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""  
**Input and description** = "EndPreparation1", "End Preparation 1"  
**Input and description** = "ScheduleThickness1", "Schedule Thickness 1"  
**Input and description** = "EndStandard1", "End Standard 1"  
**Input and description** = "PressureRating1", "Pressure Rating 1"  
**Input and description** = "FlowDirection1", "Flow Direction 1"  
**Input and description** = "Id2", "Id2", "VNoz2"  
**Input and description** = "PortIndex2", "Port Index 2", 2  
**Input and description** = "Npd2", "Npd 2"  
**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""  
**Input and description** = "EndPreparation2", "End Preparation 2"  
**Input and description** = "ScheduleThickness2", "Schedule Thickness 2"  
**Input and description** = "EndStandard2", "End Standard 2"  
**Input and description** = "PressureRating2", "Pressure Rating 2"  
**Input and description** = "FlowDirection2", "Flow Direction 2"

**Outputs = 9**

**Output and description** = "VNoz1", "Nozzle 1"

**Output and description = "VNoz2", "Nozzle 2"**

**Output and description = "LeftBodyCone", "Left Body Cone"**

**Output and description = "RightBodyCone", "Right Body Cone"**

**Output and description = "Stem", "Stem of the Handwheel"**

**Output and description = "Handwheel", "Handwheel"**

**Output and description = "BodyCylIns", "Insulation Cylindrical Body"**

**Output and description = "MaintCone", "Maintenance Cone"**

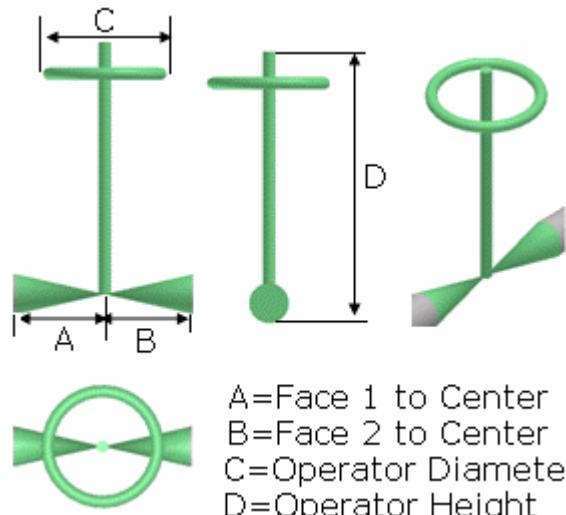
**Output and description = "MaintCyl", "Maintenance Cylinder"**

**Aspects = 3**

**Aspect = "SimplePhysical", "SimplePhysical"**

**Aspect = "Insulation", "Insulation"**

**Aspect = "Maintenance", "Maintenance"**



A=Face 1 to Center

B=Face 2 to Center

C=Operator Diameter

D=Operator Height

# SP3DCSValveOpWrench

**Description:**

**Symbol Name:** SP3DCSValveOpWrench.CSValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSValveOpWrench.CSValve

**Inputs = 32**

**Input and description** = "Face1toCenter", "Face 1 to Center",  
**Input and description** = "Face2toCenter", "Face 2 to Center",  
**Input and description** = "OperatorHeight", "Height of stem", 0  
**Input and description** = "LeverLength", "Right Hand Side Handle Length", 0.  
**Input and description** = "LeverLength1", "Left Hand Side Handle Length"  
**Input and description** = "HandwheelAngle", "Angle Specifying Rotation of Operator"  
**Input and description** = "InsulationThickness", "Insulation Thickness",  
**Input and description** = "Npd", "NPD",  
**Input and description** = "NpdUnitType", "Npd Unit Type", "mm"  
**Input and description** = "EndPreparation", "End Preparation", 21  
**Input and description** = "ScheduleThickness", "Schedule Thickness",  
**Input and description** = "EndStandard", "End Standard", 5  
**Input and description** = "PressureRating", "Pressure Rating", 35  
**Input and description** = "FlowDirection", "Flow Direction", 3  
**Input and description** = "Id1", "Id1", "VNoz1"  
**Input and description** = "PortIndex1", "Port Index 1"  
**Input and description** = "Npd1", "Npd 1"  
**Input and description** = "NpdUnitType1", "Npd Unit Type 1", ""  
**Input and description** = "EndPreparation1", "End Preparation 1"  
**Input and description** = "ScheduleThickness1", "Schedule Thickness 1"  
**Input and description** = "EndStandard1", "End Standard 1"  
**Input and description** = "PressureRating1", "Pressure Rating 1"  
**Input and description** = "FlowDirection1", "Flow Direction 1"  
**Input and description** = "Id2", "Id2", "VNoz2"  
**Input and description** = "PortIndex2", "Port Index 2", 2  
**Input and description** = "Npd2", "Npd 2"  
**Input and description** = "NpdUnitType2", "Npd Unit Type 2", ""  
**Input and description** = "EndPreparation2", "End Preparation 2"  
**Input and description** = "ScheduleThickness2", "Schedule Thickness 2"  
**Input and description** = "EndStandard2", "End Standard 2"

**Input and description** = "PressureRating2", "Pressure Rating 2"  
**Input and description** = "FlowDirection2", "Flow Direction 2"

**Outputs** = 9

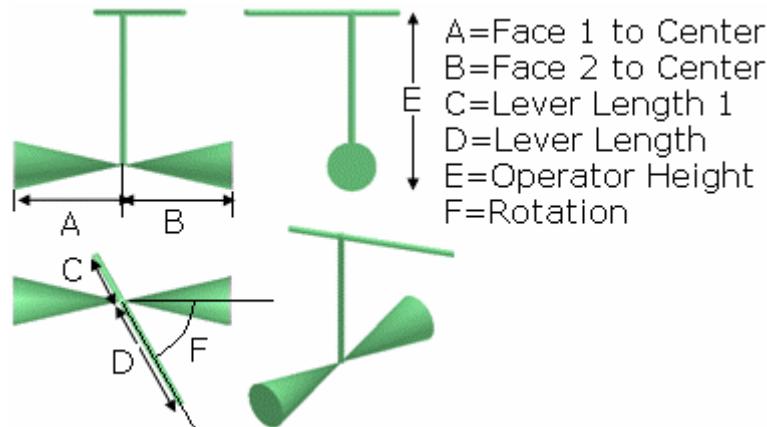
**Output and description** = "VNoz1", "Nozzle 1"  
**Output and description** = "VNoz2", "Nozzle 2"  
**Output and description** = "LeftBodyCone", "Left Body Cone"  
**Output and description** = "RightBodyCone", "Right Body Cone"  
**Output and description** = "Stem", "Vertical Stem"  
**Output and description** = "Handle", "Horizontal Handle"  
**Output and description** = "BodyCylIns", "Insulation Cylindrical Body"  
**Output and description** = "MaintCyl1", "Maintenance Cylinder 1"  
**Output and description** = "MaintCyl2", "Maintenance Cylinder 2"

**Aspects** = 3

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "Maintenance", "Maintenance"



# SP3DCSVentSilencer

**Description:** Vent Silencer

**Symbol Name:** SP3DCSVentSilencer.CCSVentSilencer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSVentSilencer

**User Class Name:** Vent Silencer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSVentSilencer.CCSVentSilencer

**Inputs = 28**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "Offset1" Description = "Offset of Port1 Center"
Input = "Offset2" Description = "Offset of Port2 Center"
Input = "VentSilencerBodyDiameter" Description = "Vent Silencer Body Diameter"
Input = "VentSilencerBodyLength1" Description = "Vent Silencer Body Length1"
Input = "VentSilencerBodyLength2" Description = "Vent Silencer Body Length2"
Input = "InsulationThickness" Description = "InsulationThickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
```

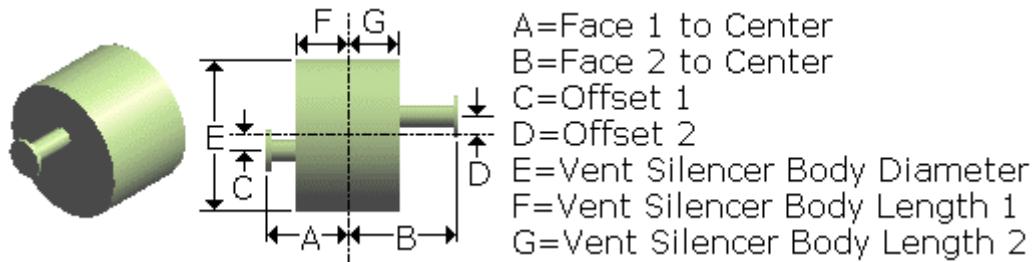
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**

**Outputs = 8**

**Output = "InsVentSilencerBody" Description = "Insulation for VentSilencer Body"**  
**Output = "InsPort1" Description = "Insulation for Port1"**  
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "VentSilencerBody" Description = "VentSilencer Body"**  
**Output = "VNoz1" Description = "Nozzle 1"**  
**Output = "VNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DCSVenturimeter

**Description:** Venturimeter

**Symbol Name:** SP3DCSVenturimeter.CCSVenturimeter

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSVenturimeter

**User Class Name:** Venturimeter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSVenturimeter.CCSVenturimeter

**Inputs = 25**

```
Input = "Face1toCenter" Description = "Face 1 to Center"
Input = "Face2toCenter" Description = "Face 2 to Center"
Input = "VenturiLength" Description = "Venturi Length"
Input = "VenturiDiameter" Description = "Venturi Diameter"
Input = "InsulationThickness" Description = "Insulation Thickness"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "Id1" Description = "Id1"
Input = "Id2" Description = "Id2"
Input = "NpdUnitType" Description = "Npd Unit Type"
Input = "NpdUnitType1" Description = "Npd Unit Type 1"
Input = "NpdUnitType2" Description = "Npd Unit Type 2"
```

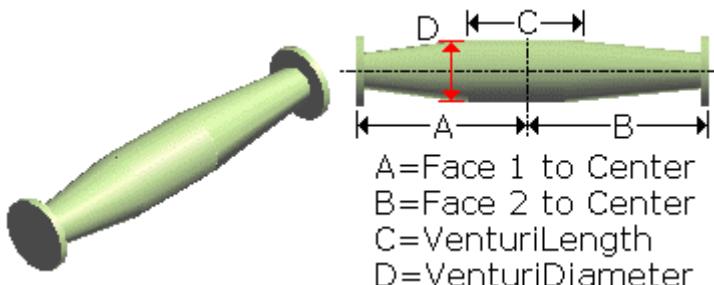
**Outputs = 10**

Output = "VNoz1" Description = "Nozzle 1"

**Output = "VNoz2" Description = "Nozzle 2"**  
**Output = "ConvergingCone" Description = "Converging Cone"**  
**Output = "Venturi" Description = "Venturi"**  
**Output = "ConvergConeIns" Description = "Converg Cone Insulation"**  
**Output = "VenturiIns" Description = "Venturi Insulation"**  
**Output = "Nozzle1Ins" Description = "Nozzle1 Insulation"**  
**Output = "DivergingCone" Description = "Diverging Cone"**  
**Output = "DivergConeIns" Description = "Diverging Cone Insulation"**  
**Output = "Nozzle2Ins" Description = "Nozzle2 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



A=Face 1 to Center  
B=Face 2 to Center  
C=VenturiLength  
D=VenturiDiameter

## SP3DCSYStrainer

**Description:** Y Strainer

**Symbol Name:** SP3DCSYStrainer.CCSYStrainer

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** CSYStrainer

**User Class Name:** Y Strainer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCSYStrainer.CCSYStrainer

**Inputs = 36**

```
Input = "Face1toCenter" Description = "Face1 to Center"
Input = "Face2toCenter" Description = "Face2 to Center"
Input = "StrToTopCenter" Description = "Strainer Top to Center"
Input = "StrDiameter" Description = "Strainer Diameter"
Input = "BranchDiameter" Description = "Branch Diameter"
Input = "Offset" Description = "Nozzle3 Offeset from Strainer Center"
Input = "StrWidth" Description = "Strainer Width"
Input = "Face3toStrTop" Description = "Face3 to Strainer Top"
Input = "Npd" Description = "NPD"
Input = "EndPreparation" Description = "EndPreparation"
Input = "ScheduleThickness" Description = "ScheduleThickness"
Input = "EndStandard" Description = "EndStandard"
Input = "PressureRating" Description = "PressureRating"
Input = "FlowDirection" Description = "FlowDirection"
Input = "PortIndex1" Description = "PortIndex1"
Input = "Npd1" Description = "NPD1"
Input = "EndPreparation1" Description = "EndPreparation1"
Input = "ScheduleThickness1" Description = "ScheduleThickness1"
Input = "EndStandard1" Description = "EndStandard1"
Input = "PressureRating1" Description = "PressureRating1"
Input = "FlowDirection1" Description = "FlowDirection1"
Input = "PortIndex2" Description = "PortIndex2"
Input = "Npd2" Description = "NPD2"
Input = "EndPreparation2" Description = "EndPreparation2"
Input = "ScheduleThickness2" Description = "ScheduleThickness2"
Input = "EndStandard2" Description = "EndStandard2"
Input = "PressureRating2" Description = "PressureRating2"
Input = "FlowDirection2" Description = "FlowDirection2"
Input = "PortIndex3" Description = "PortIndex3"
Input = "Npd3" Description = "NPD3"
Input = "EndPreparation3" Description = "EndPreparation3"
Input = "ScheduleThickness3" Description = "ScheduleThickness3"
```

**Input = "EndStandard3" Description = "EndStandard3"**  
**Input = "PressureRating3" Description = "PressureRating3"**  
**Input = "FlowDirection3" Description = "FlowDirection3"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**  
**Input = "Id1" Description = "Id1"**  
**Input = "Id2" Description = "Id2"**  
**Input = "Id3" Description = "Id3"**  
**Input = "NpdUnitType" Description = "Npd Unit Type"**  
**Input = "NpdUnitType1" Description = "Npd Unit Type 1"**  
**Input = "NpdUnitType2" Description = "Npd Unit Type 2"**  
**Input = "NpdUnitType3" Description = "Npd Unit Type 3"**

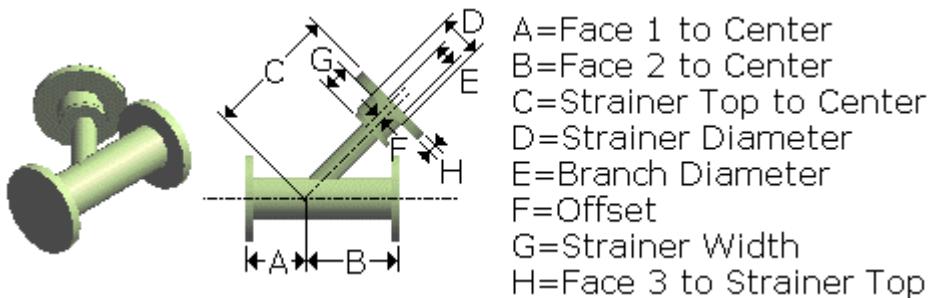
**Outputs = 13**

**Output = "InsPort1" Description = "Insulation for Port1"**  
**Output = "InsBody1" Description = "Insulation for Body Port1 side"**  
**Output = "InsPort2" Description = "Insulation for Port2"**  
**Output = "InsBody2" Description = "Insulation for Body Port2 side"**  
**Output = "InsPort3" Description = "Insulation for Port3"**  
**Output = "InsBody3" Description = "Insulation for Body Port3 side"**  
**Output = "InsBranch" Description = "Insulation for Branch"**  
**Output = "InsStrainer" Description = "Insulation for Strainer"**  
**Output = "BodyBranch" Description = "Body of Branch"**  
**Output = "BodyStrainer" Description = "Body of Strainer"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DCylinderValve

**Description:**

**Symbol Name:** SP3DCylinderValve.CylinderValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DCylinderValve.CylinderValve

**Inputs = 4**

**Input and description** = "Face1toCenter", "Face 1 to Center"

**Input and description** = "Face2toCenter", "Face 2 to Center"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Input and description** = "HandwheelAngle", "Rotation of Operator"

**Outputs = 7**

**Output and description** = "SideCap", "Cylinder for the cap"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Output and description** = "ValveOperator", "Valve Operator"

**Output and description** = "InsulCylinderPort1", "Insulation Cylinder along Port 1"

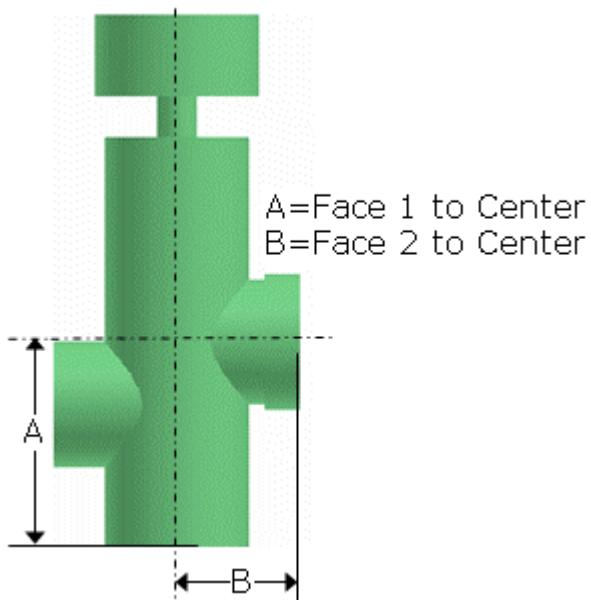
**Output and description** = "InsulCylinderPort2", "Insulation Cylinder along Port 2"

**Output and description** = "SideCapInsulCylinder", "Insulation Cylinder for Side Cap"

**Aspects = 2**

**Aspect** = "Physical", "Physical"

**Aspect** = "Insulation", "Insulation"



## SP3DDAct3WGIStyCValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDAct3WGIStyCValve if you want to interactively resize the symbol during or after placement.

**Description:** 3-way valve with diaphragm actuator

**Symbol Name:** SP3DDAct3WGIStyCValve.CDA3WGScVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDAct3WGIStyCValve.CDA3WGScVal

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1toCenter(D2)"**

**Input = "FacetoFace" Description = "FacetoFace(D3)"**

**Input = "Face3toCenter" Description = "Face3toCenter(D4)"**

**Input = "ActuatorHeight" Description = "ActuatorHeight(D5)"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1(D19)"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 10**

**Output = "ConicalBody1" Description = "ConicalBody1"**

**Output = "ConicalBody2" Description = "ConicalBody2"**

**Output = "ConicalBody3" Description = "ConicalBody3"**

**Output = "ConicalActBody" Description = "ConicalActBody"**

**Output = "ActCylinder" Description = "ActCylinder"**

**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**

**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

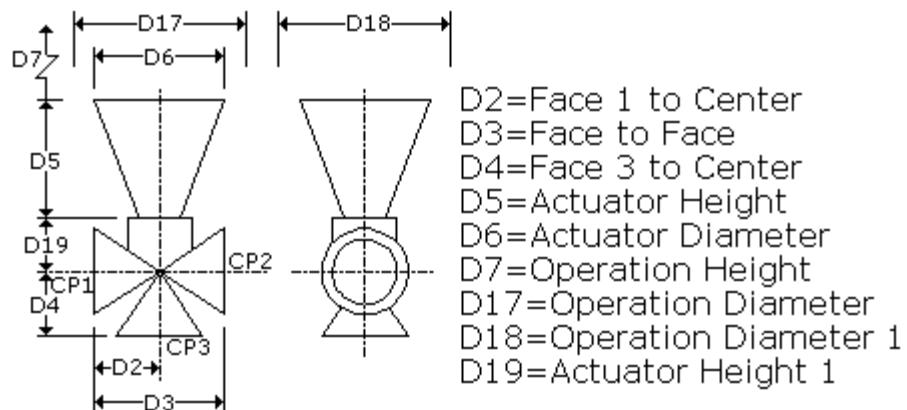
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DDActAngleValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActAngleValve if you want to interactively resize the symbol during or after placement.

**Description:** Angle control valve with diaphragm actuator

**Symbol Name:** SP3DDActAngleValve.CDActAngVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActAngleValve.CDActAngVal

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**

**Input = "ValveOutertoCenter" Description = "ValveOutertoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "BodyCone1Ins" Description = "Insulation for Body Cone1"**

**Output = "BodyCone2Ins" Description = "Insulation for Body Cone2"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "ActuatorBody" Description = "Actuator Body"**

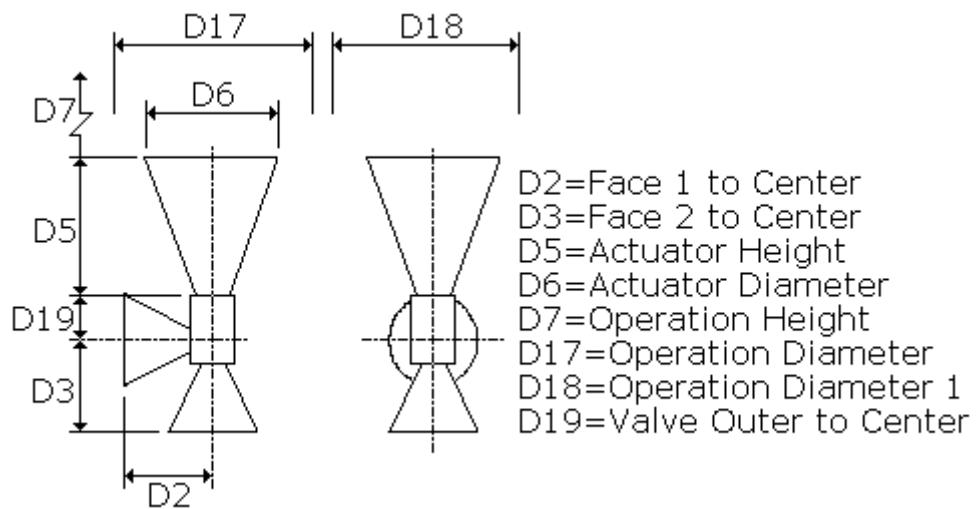
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDActEPPAngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActEPPAngVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DDActEPPAngValve.CDAEAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActEPPAngValve.CDAEAVal

**Inputs = 12**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "PositionerHeight" Description = "Positioner Height"**  
**Input = "PositionerOffset" Description = "Positioner Offset"**  
**Input = "PositionerOffset1" Description = "Positioner Offset1"**  
**Input = "PositionerOffset2" Description = "Positioner Offset2"**  
**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**  
**Input = "PositionerLength" Description = "Positioner Length"**  
**Input = "HandwheelAngle" Description = "Rotation of Operator"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

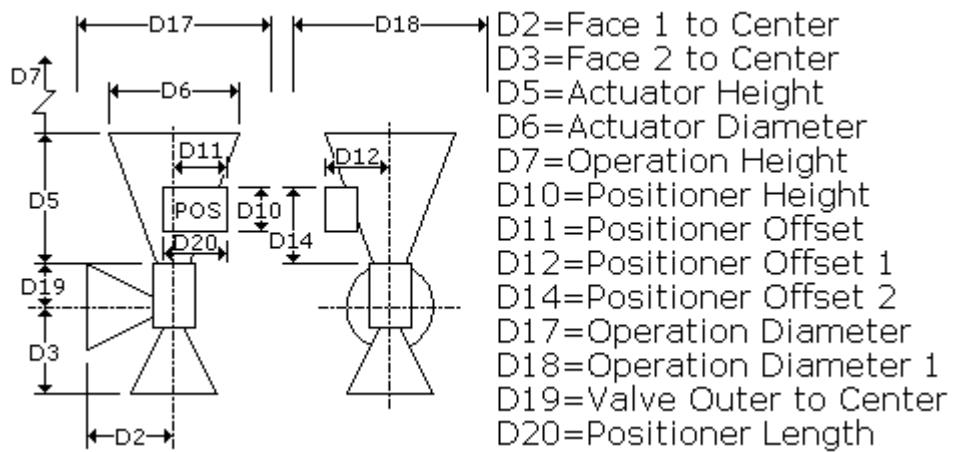
**Outputs = 9**

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DDActEPPHWhAngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActEPPHWhAngVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DDActEPPHWhAngValve.CDAEHWAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActEPPHWhAngValve.CDAEHWAVal

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**  
**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**  
**Input = "PositionerHeight" Description = "Positioner Height"**  
**Input = "PositionerOffset" Description = "Positioner Offset"**  
**Input = "PositionerOffset1" Description = "Positioner Offset1"**  
**Input = "PositionerOffset2" Description = "Positioner Offset2"**  
**Input = "ValveOutertoHandWheel" Description = "Positioner Offset2"**  
**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**  
**Input = "PositionerLength" Description = "Positioner Length"**  
**Input = "HandwheelAngle" Description = "Rotation of Operator"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

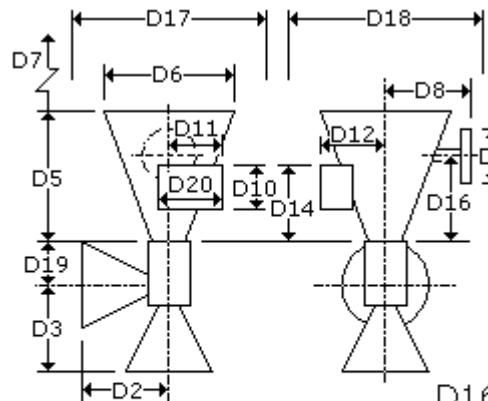
**Outputs = 11**

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "Handwheel" Description = "Hand wheel"**  
**Output = "HandwheelStem" Description = "HandWheel Stem"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D5=Actuator Height  
D6=Actuator Diameter  
D7=Operation Height  
D8=Handwheel Offset  
D9=Handwheel Diameter  
D10=Positioner Height  
D11=Positioner Offset  
D12=Positioner Offset 1  
D14=Positioner Offset 2  
D16=Valve Outer to Handwheel  
D17=Operation Diameter  
D18=Operation Diameter 1  
D19=Valve Outer to Center  
D20=Positioner Length

## SP3DDActEPPHWhGISValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActEPPHWhGISVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DDActEPPHWhGISValve.CDAEHVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActEPPHWhGISValve.CDAEHVal

**Inputs = 16**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "PositionerHeight" Description = "Positioner Height"**

**Input = "PositionerOffset" Description = "Positioner Offset"**

**Input = "PositionerOffset1" Description = "Positioner Offset1"**

**Input = "PositionerOffset2" Description = "Positioner Offset2"**

**Input = "ValveOutertoHandWheel" Description = "Positioner Offset2"**

**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**

**Input = "PositionerLength" Description = "Positioner Length"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Center Cylinder"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "PositionerBody" Description = "Positioner Body"**

**Output = "Handwheel" Description = "Hand wheel"**

**Output = "HandwheelStem" Description = "HandWheel Stem"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

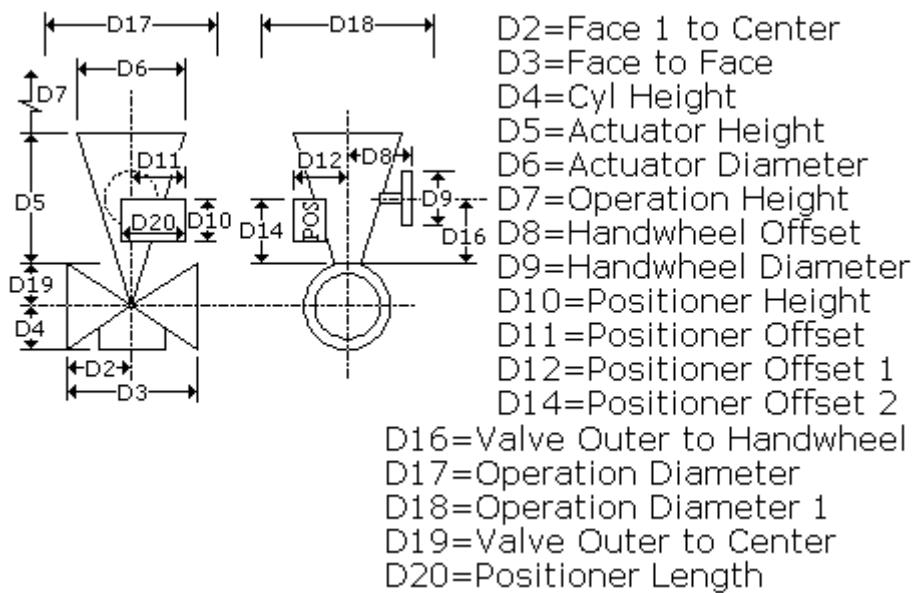
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

Aspects = 2

**Aspect** = SimplePhysical

**Aspect = Insulation**



## SP3DDActEPPHWhTopAngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActEPPHWhTopAngVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DDActEPPHWhTopAngValve.CDAEHWTAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActEPPHWhTopAngValve.CDAEHWTAVal

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**  
**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**  
**Input = "PositionerHeight" Description = "Positioner Height"**  
**Input = "PositionerOffset" Description = "Positioner Offset"**  
**Input = "PositionerOffset1" Description = "Positioner Offset1"**  
**Input = "PositionerOffset2" Description = "Positioner Offset2"**  
**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**  
**Input = "PositionerLength" Description = "Positioner Length"**  
**Input = "HandwheelAngle" Description = "Rotation of Operator"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

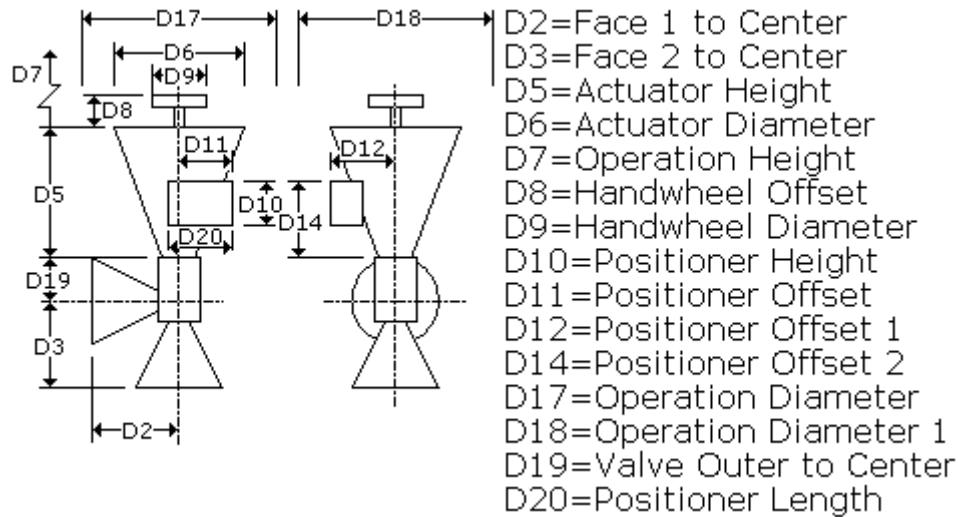
**Outputs = 11**

**Output = "BodyCone1" Description = "Body Cone1"**  
**Output = "BodyCone2" Description = "Body Cone2"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "PositionerBody" Description = "Positioner Body"**  
**Output = "Handwheel" Description = "Hand wheel"**  
**Output = "HandwheelStem" Description = "HandWheel Stem"**  
**Output = "BodyCone1Ins" Description = "Body Cone1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone2 Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DDActEPPHWhTopGISCValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActEPPHWhTopGISCVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DDActEPPHWhTopGISCValve.CDAEHTCVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActEPPHWhTopGISCValve.CDAEHTCVal

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "PositionerHeight" Description = "Positioner Height"**

**Input = "PositionerOffset" Description = "Positioner Offset"**

**Input = "PositionerOffset1" Description = "Positioner Offset1"**

**Input = "PositionerOffset2" Description = "Positioner Offset2"**

**Input = "ValveOutertoCenter" Description = "Valve Outer to Center"**

**Input = "PositionerLength" Description = "Positioner Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Bottom Cylinder"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "PositionerBody" Description = "Positioner Body"**

**Output = "Handwheel" Description = "Hand wheel"**

**Output = "HandwheelStem" Description = "HandWheel Stem"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

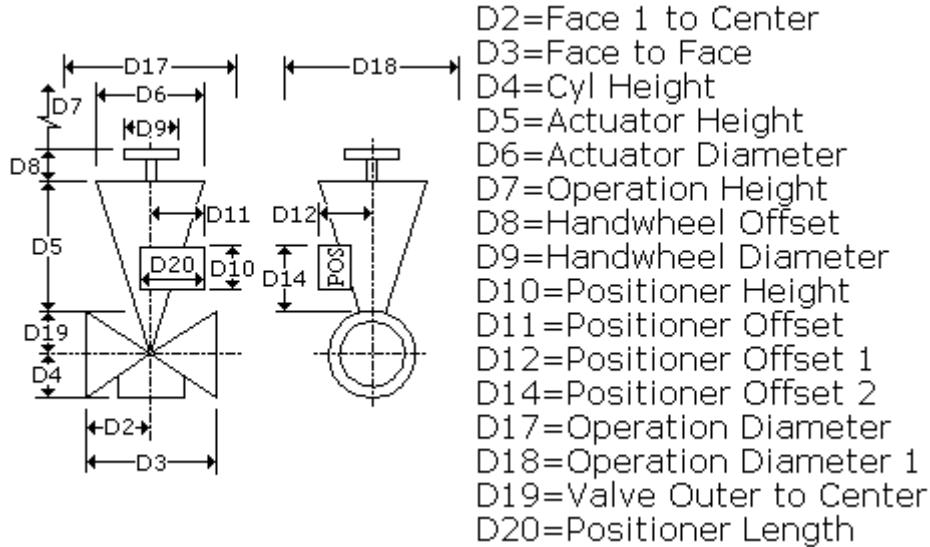
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DDActGlStyValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDActGlStyValve if you want to interactively resize the symbol during or after placement.

**Description:** two-way globe control valve with diaphragm actuator

**Symbol Name:** SP3DDActGlStyValve.CDActGSValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDActGlStyValve.CDActGSValve

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**

**Input = "ValveOutertoCenter" Description = "ValveOutertoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "ActuatorBody" Description = "Actuator Body"**

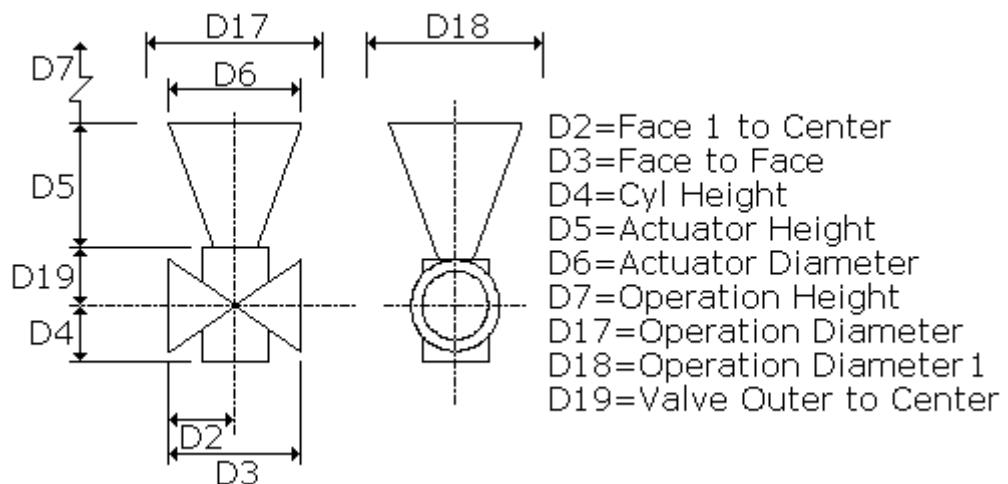
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDADualCylActTy5Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDADCylActTy5Valve if you want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting dual cylinder actuator

**Symbol Name:** SP3DDADualCylActTy5Valve.CDADCATy5Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDADualCylActTy5Valve.CDADCATy5Val

**Inputs = 22**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorLength3" Description = "Actuator Length3"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorWidth3" Description = "Actuator Width3"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "ActuatorCylDiameter" Description = "Actuator Cylinder Diameter"**

**Input = "ActuatorCylLength" Description = "Actuator Cylinder Length"**

**Input = "ActuatorHeight3" Description = "Actuator Height3"**

**Input = "ActuatorCyl1Diameter" Description = "Actuator Cylinder1 Diameter"**

**Input = "ActuatorCyl1Length" Description = "Actuator Cylinder1 Length"**

**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 11**

**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

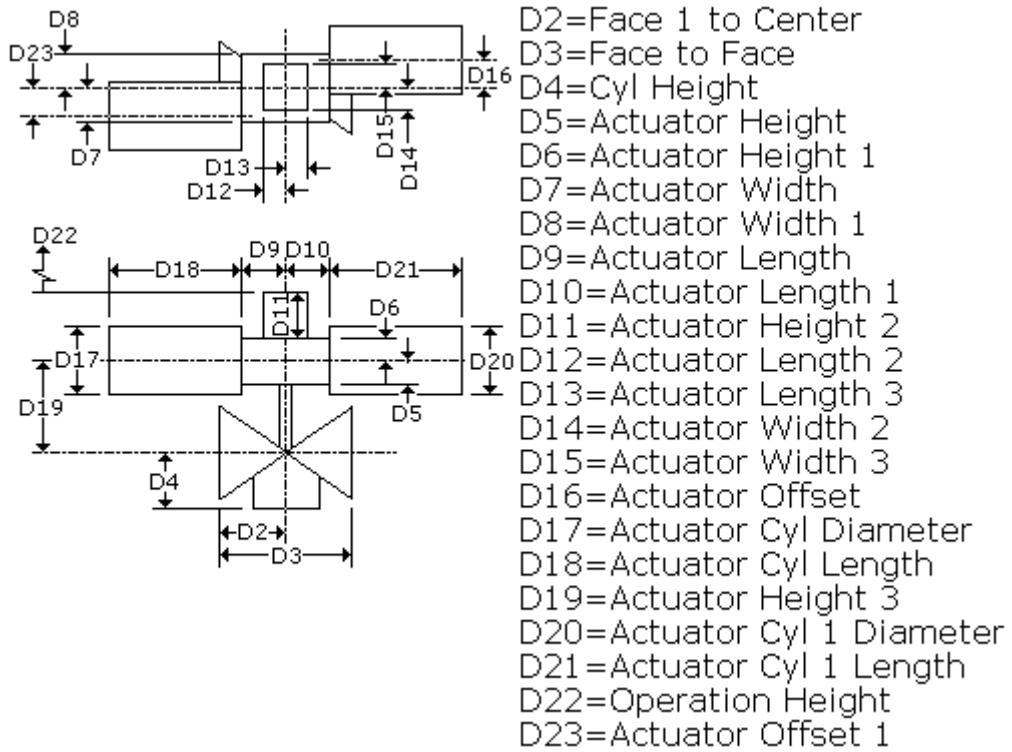
**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "LargeBox" Description = "LargeBox"**  
**Output = "SmallBox" Description = "SmallBox"**  
**Output = "Cylinder1" Description = "Cylinder1"**  
**Output = "Cylinder2" Description = "Cylinder2"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DDelugeValve

**Description:** Deluge valve. Based on the SP3DGateValve symbol.

**Symbol Name:** SP3DDelugeValve.DelugeValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GateValve

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDelugeValve.DelugeValve

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face Distance"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 5**

**Output = "LeftCone" Description = "Cone "**

**Output = "RightCone" Description = "Cone"**

**Output = "InsulationCylinder" Description = "Cylinder"**

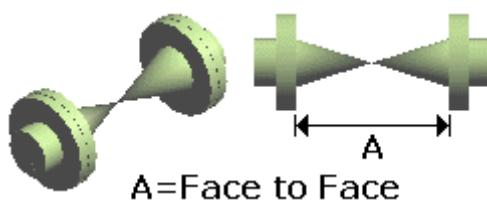
**Output = "Nozzle1" Description = "Nozzle with out Length"**

**Output = "Nozzle2" Description = "Nozzle with out Length"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDiaphragmActType1

**Description:**

**Symbol Name:** SP3DDiaphragmActType1.DiaActuatorTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDiaphragmActType1.DiaActuatorTy1

**Inputs = 3**

**Input and description** = "OperatorHeight", "Operator Height",

**Input and description** = "OperatorDiameter", "Operator Diameter",

**Input and description** = "OperatorHeight1", "Operator Height 1",

**Outputs = 4**

**Output and description** = "BaseCylinder", "Base Cylinder"

**Output and description** = "BellPortion", "Bell Portion"

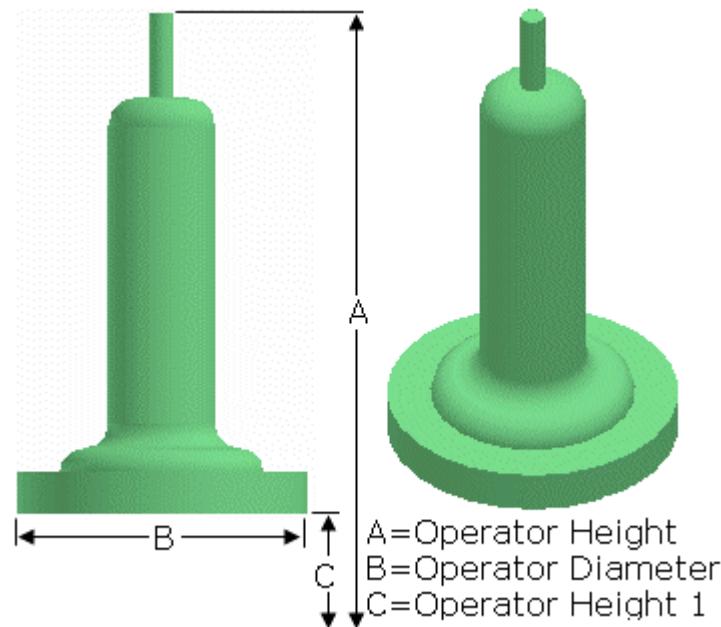
**Output and description** = "TopCylinder", "Top Cylinder"

**Output and description** = "MaintCylinder", "Maintenance Cylinder"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Maintenance", "Maintenance"



## SP3DDiaphragmActType2

**Description:**

**Symbol Name:** SP3DDiaphragmActType2.DiaActuatorTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDiaphragmActType2.DiaActuatorTy2

**Inputs = 3**

**Input and description** = "OperatorHeight", "Operator Height",

**Input and description** = "OperatorDiameter", "Operator Diameter",

**Input and description** = "OperatorHeight1", "Operator Height 1",

**Outputs = 3**

**Output and description** = "BaseCylinder", "Base Cylinder"

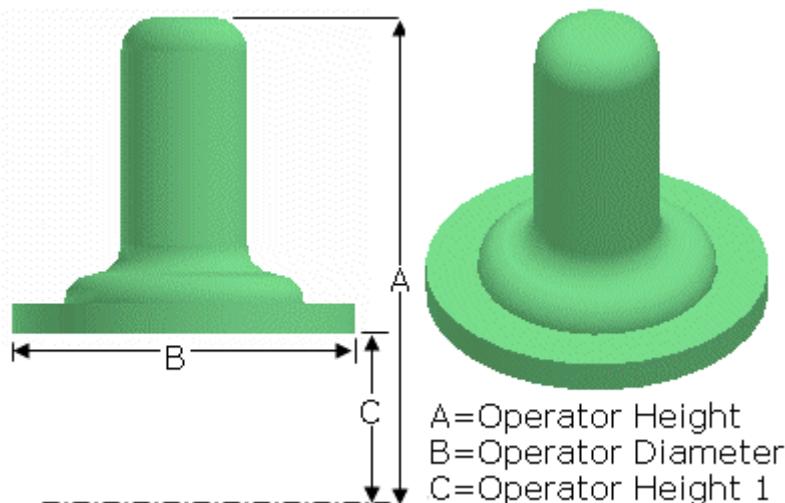
**Output and description** = "BellPortion", "Bell Portion"

**Output and description** = "MaintCylinder", "Maintenance Cylinder"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Maintenance", "Maintenance"



# SP3DDiaphragmActType3

**Description:**

**Symbol Name:** SP3DDiaphragmActType3.DiaActuatorTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDiaphragmActType3.DiaActuatorTy3

**Inputs = 3**

**Input and description** = "OperatorHeight", "Operator Height",

**Input and description** = "OperatorDiameter", "Operator Diameter",

**Input and description** = "OperatorHeight1", "Operator Height 1",

**Outputs = 4**

**Output and description** = "BaseCylinder", "Base Cylinder"

**Output and description** = "BellPortion", "Bell Portion"

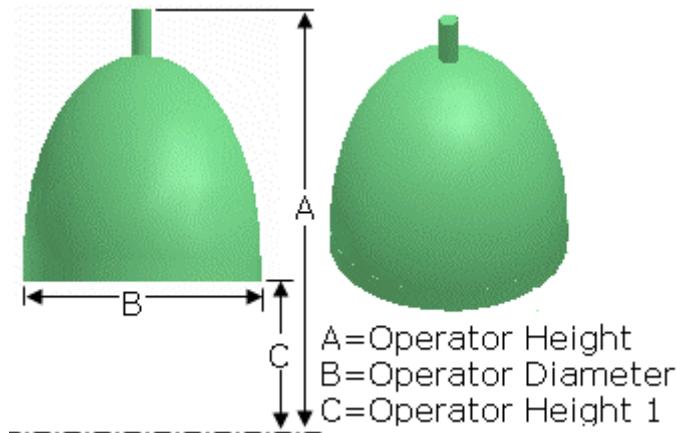
**Output and description** = "TopCylinder", "Top Cylinder"

**Output and description** = "MaintCylinder", "Maintenance Cylinder"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Maintenance", "Maintenance"



# SP3DDiaphragmValve

**Description:** diaphragm valve

**Symbol Name:** SP3DDiaphragmValve.CGateValve150

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** DIALT, DIAWM

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDiaphragmValve.CGateValve150

**Inputs = 4**

**Input = "FacetoFace" Description = "Width of the Operator (F-F)"**

**Input = "OperatorHeight" Description = "Height of Operator"**

**Input = "OperatorDiameter" Description = "Diameter of Operator Wheel"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 12**

**Output = "BodyH" Description = "Horisontal Body of GateValve"**

**Output = "BodyVB" Description = "Vertical Body of GateValve; Bottom Part"**

**Output = "BodyVT" Description = "Vertical Body of GateValve"**

**Output = "BodyVFlange" Description = "Vertical Body Flange of GateValve"**

**Output = "BonnetFlange" Description = "Bonnet Flange of GateValve"**

**Output = "Bonnet" Description = "Bonnet of GateValve"**

**Output = "Stem" Description = "Stem of GateValve"**

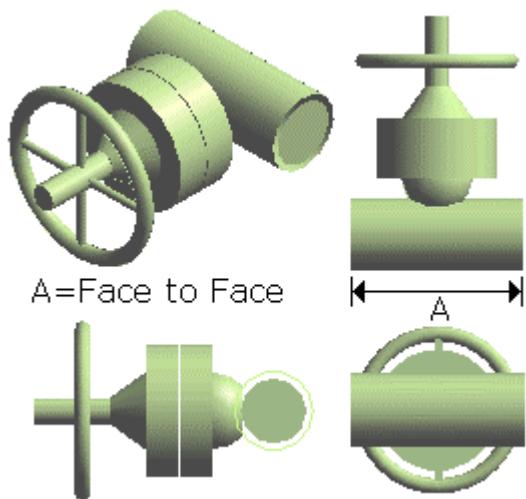
**Output = "Actuator" Description = "Actuator of GateValve"**

**Output = "ActuatorSpike1" Description = "Spike 1 of Actuator wheel"**

**Output = "ActuatorSpike2" Description = "Spike 2 of Actuator wheel"**

**Output = "PipePort1" Output = "VNoz1" Description = "PipingPort1 of Gate valve"**

**Output = "PipePort2" Output = "VNoz2" Description = "PipingPort2 of Gate valve"**



## SP3DDistancePiece

**Description:** Resistoflex distance piece

**Symbol Name:** SP3DDistancePiece.CDistancePiece

**Workbook:** Piping.xls

**Workbook Sheet:** DistancePiece

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDistancePiece.CDistancePiece

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Flange1" Description = "Flange 1"**

**Output = "DistBody" Description = "Distance piece Body"**

**Output = "Flange2" Description = "Flange 2"**

**Output = "DistPieceIns" Description = "Distance Piece Insulation"**

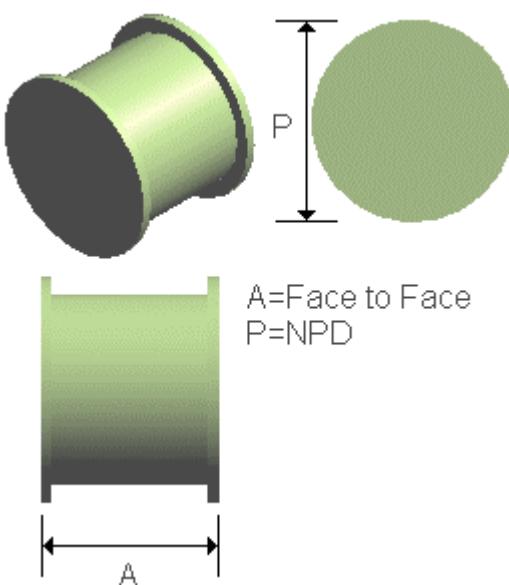
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDouAFailClActTy3Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDouAFailClActTy3Val if you want to interactively resize the symbol during or after placement.

**Description:** Double Acting Piston Actuator Type 3 Fail Close Control Valve

**Symbol Name:** SP3DDouAFailClActTy3Valve.CDAFCATy3Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDouAFailClActTy3Valve.CDAFCATy3Val

**Inputs = 19**

**Input = "Face1toCenter" Description = "Face 1 to Center"**  
**Input = "FacetoFace" Description = "Face to Face"**  
**Input = "CylHeight" Description = "Bottom Cylder Height "**  
**Input = "ActuatorHeight" Description = "ActuatorHeight"**  
**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**  
**Input = "ActuatorWidth" Description = "ActuatorWidth"**  
**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**  
**Input = "ActuatorLength" Description = "ActuatorLength"**  
**Input = "ActuatorLength1" Description = "ActuatorLength1"**  
**Input = "ActuatorHeight2" Description = "ActuatorHeight2"**  
**Input = "ActuatorLength2" Description = "ActuatorLength2"**  
**Input = "ActuatorLength3" Description = "ActuatorLength3"**  
**Input = "ActuatorWidth2" Description = "ActuatorWidth2"**  
**Input = "ActuatorWidth3" Description = "ActuatorWidth3"**  
**Input = "ActuatorOffset" Description = "ActuatorOffset"**  
**Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"**  
**Input = "ActuatorCylLength" Description = "ActuatorCylLength"**  
**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 10**

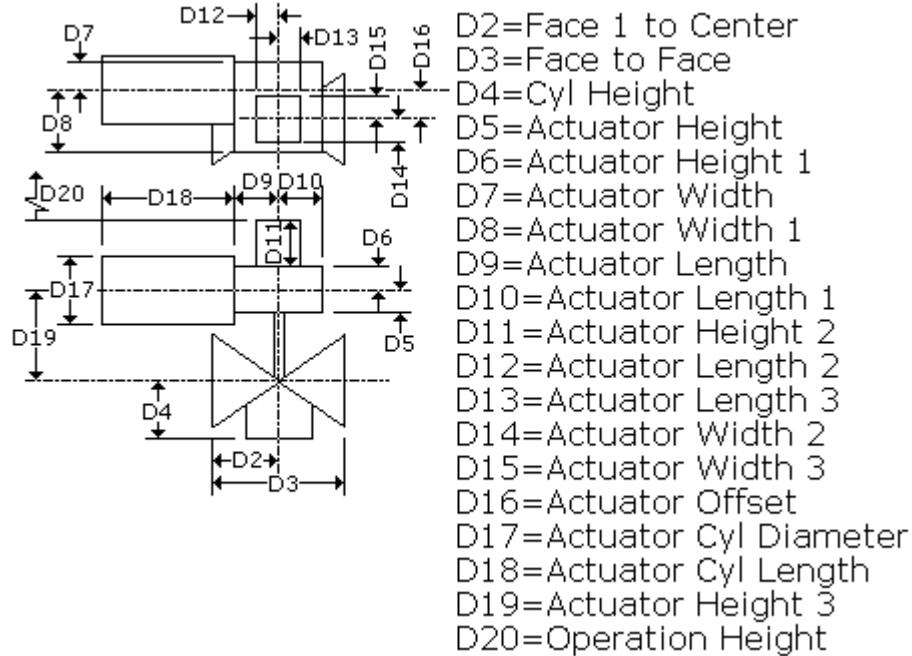
**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "BodyCone2" Description = "Body Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem" Description = "Stem"**  
**Output = "LargeBox" Description = "LargeBox"**  
**Output = "SmallBox" Description = "SmallBox"**  
**Output = "Cylinder" Description = "Cylinder"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "PNozz1"** **Description = "Nozzle 1"**  
**Output = "PNozz2"** **Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDouAFailOpenActValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDouAFailOpenActValve if you want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting single piston actuator fail open  
**Symbol Name:** SP3DDouAFailOpenActValve.CDAFOAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDouAFailOpenActValve.CDAFOAVal

**Inputs = 19**

```
Input = "Face1toCenter" Description = "Face1toCenter"
Input = "FacetoFace" Description = "FacetoFace"
Input = "CylHeight" Description = "CylHeight"
Input = "ActuatorHeight" Description = "ActuatorHeight"
Input = "ActuatorHeight1" Description = "ActuatorHeight1"
Input = "ActuatorWidth" Description = "ActuatorWidth"
Input = "ActuatorWidth1" Description = "ActuatorWidth1"
Input = "ActuatorLength" Description = "ActuatorLength"
Input = "ActuatorLength1" Description = "ActuatorLength1"
Input = "ActuatorHeight2" Description = "ActuatorHeight2"
Input = "ActuatorLength2" Description = "ActuatorLength2"
Input = "ActuatorLength3" Description = "ActuatorLength3"
Input = "ActuatorWidth2" Description = "ActuatorWidth2"
Input = "ActuatorWidth3" Description = "ActuatorWidth3"
Input = "ActuatorOffset" Description = "ActuatorOffset"
Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"
Input = "ActuatorCylLength" Description = "ActuatorCylLength"
Input = "ActuatorHeight3" Description = "ActuatorHeight3"
Input = "InsulationThickness" Description = "InsulationThickness"
```

**Outputs = 10**

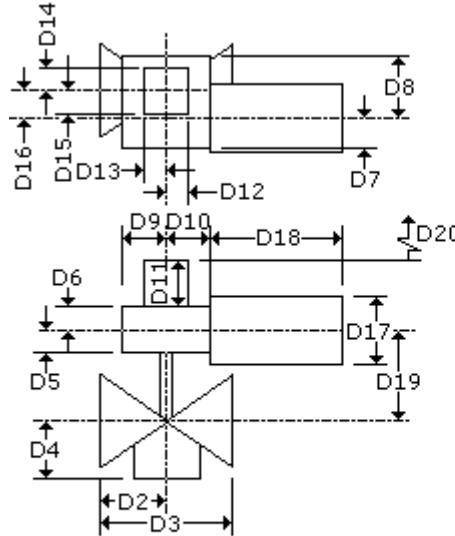
```
Output = "ValveBodyIns" Description = "Insulation for Valve Body"
Output = "BodyCone1" Description = "Body Cone1"
Output = "BodyCone2" Description = "Body Cone2"
Output = "ValCyl" Description = "Valve Cylinder"
Output = "Stem" Description = "Stem"
Output = "LargeBox" Description = "LargeBox"
Output = "SmallBox" Description = "SmallBox"
Output = "Cylinder" Description = "Cylinder"
```

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face to Face  
D4=Cyl Height  
D5=Actuator Height  
D6=Actuator Height 1  
D7=Actuator Width  
D8=Actuator Width 1  
D9=Actuator Length  
D10=Actuator Length 1  
D11=Actuator Height 2  
D12=Actuator Length 2  
D13=Actuator Length 3  
D14=Actuator Width 2  
D15=Actuator Width 3  
D16=Actuator Offset  
D17=Actuator Cyl Diameter  
D18=Actuator Cyl Length  
D19=Actuator Height 3  
D20=Operation Height

# SP3DDouAOrSprRetActValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDouAOrSprRetActVal if you want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting spring return actuator

**Symbol Name:** SP3DDouAOrSprRetActValve.CDAOSRAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDouAOrSprRetActValve.CDAOSRAVal

**Inputs = 19**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylder Height "**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "ActuatorWidth" Description = "ActuatorWidth"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2"**

**Input = "ActuatorWidth3" Description = "ActuatorWidth3"**

**Input = "ActuatorLength2" Description = "ActuatorLength2"**

**Input = "ActuatorLength3" Description = "ActuatorLength3"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"**

**Input = "ActuatorCylLength" Description = "ActuatorCylLength"**

**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 10**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "LargeBox" Description = "LargeBox"**

**Output = "SmallBox" Description = "SmallBox"**

**Output = "Cylinder" Description = "Cylinder"**

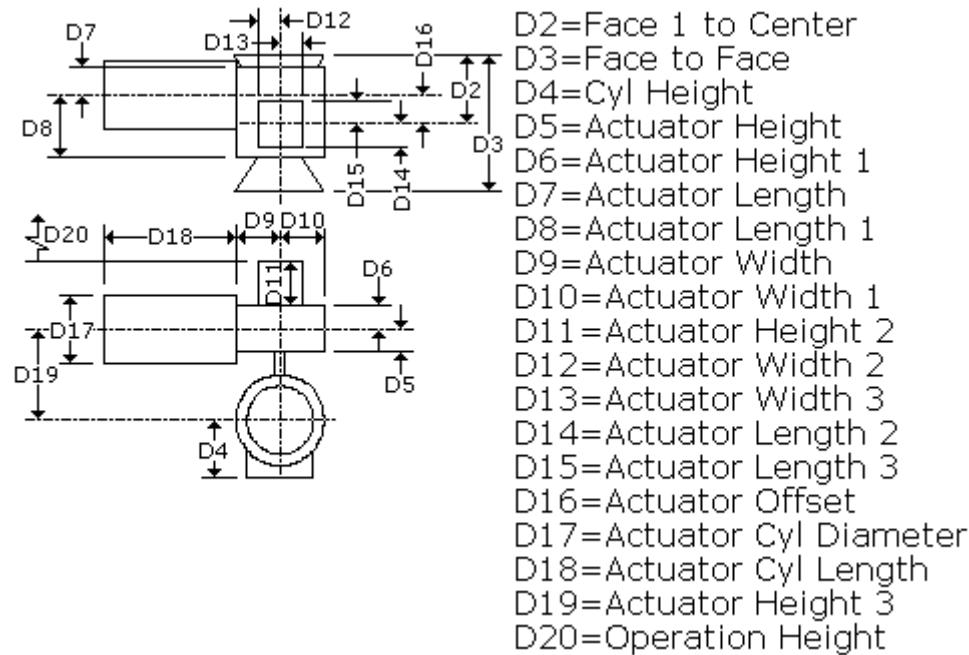
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDouAOSRAct90LSValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDAOSRAct90LSValve if you want to interactively resize the symbol during or after placement.

**Description:** Control valve with double acting spring return actuator

**Symbol Name:** SP3DDouAOSRAct90LSValve.CDAOSRA90LSVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDouAOSRAct90LSValve.CDAOSRA90LSVal

**Inputs = 19**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylder Height"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "ActuatorWidth" Description = "ActuatorWidth"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2"**

**Input = "ActuatorWidth3" Description = "ActuatorWidth3"**

**Input = "ActuatorLength2" Description = "ActuatorLength2"**

**Input = "ActuatorLength3" Description = "ActuatorLength3"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "ActuatorCylDiameter" Description = "ActuatorCylDiameter"**

**Input = "ActuatorCylLength" Description = "ActuatorCylLength"**

**Input = "ActuatorHeight3" Description = "ActuatorHeight3"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 10**

**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "LargeBox" Description = "LargeBox"**

**Output = "SmallBox" Description = "SmallBox"**

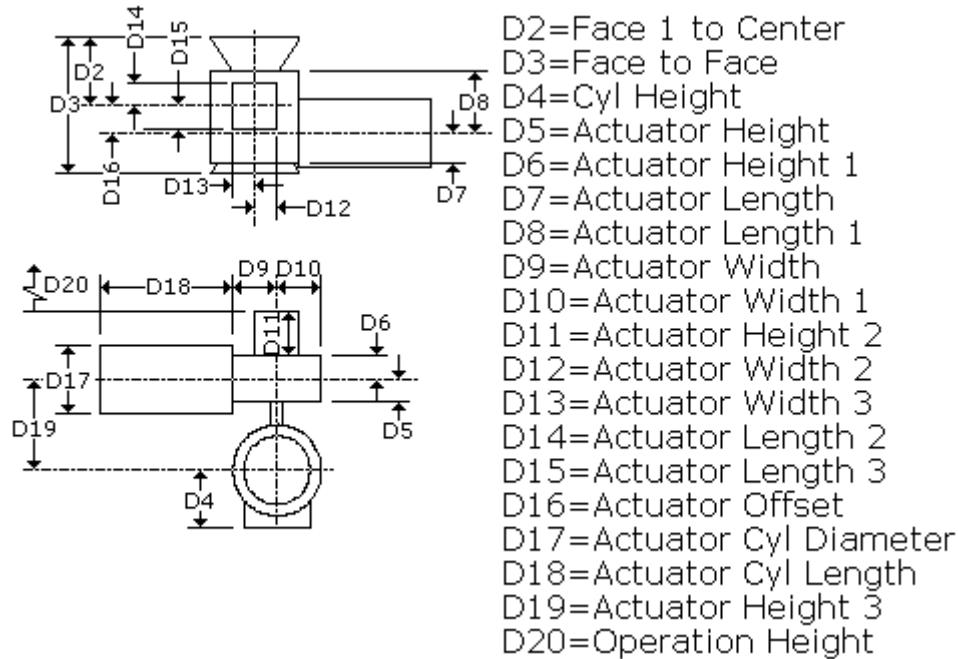
**Output = "Cylinder" Description = "Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDouASinCylActTy2Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIDouASinCylActTy2Val if you want to interactively resize the symbol during or after placement.

**Description:** Double Acting Dual Cylinder Actuator Type 1 Valve

**Symbol Name:** SP3DDouASinCylActTy2Valve.CDASCATy2Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDouASinCylActTy2Valve.CDASCATy2Val

**Inputs = 21**

```

Input = "Face1toCenter" Description = "Face 1 to Center"
Input = "FacetoFace" Description = "Face to Face"
Input = "CylHeight" Description = "Cylinder Height"
Input = "ActuatorHeight" Description = "Actuator Height"
Input = "ActuatorHeight1" Description = "Actuator Height1"
Input = "ActuatorWidth" Description = "Actuator Width"
Input = "ActuatorWidth1" Description = "Actuator Width1"
Input = "ActuatorLength" Description = "Actuator Length"
Input = "ActuatorLength1" Description = "Actuator Length1"
Input = "ActuatorHeight2" Description = "Actuator Height2"
Input = "ActuatorLength2" Description = "Actuator Length2"
Input = "ActuatorLength3" Description = "Actuator Length3"
Input = "ActuatorWidth2" Description = "Actuator Width2"
Input = "ActuatorWidth3" Description = "Actuator Width3"
Input = "ActuatorOffset" Description = "Actuator Offset"
Input = "ActuatorCylDiameter" Description = "Actuator Cyliner Diameter"
Input = "ActuatorCylLength" Description = "Actuator Cyliner Length"
Input = "ActuatorHeight3" Description = "Actuator Height3"
Input = "ActuatorCyl1Diameter" Description = "Actuator Cyliner Diameter"
Input = "ActuatorCyl1Length" Description = "Actuator Cyliner Length"
Input = "InsulationThickness" Description = "Insulation Thickness"

```

**Outputs = 11**

```

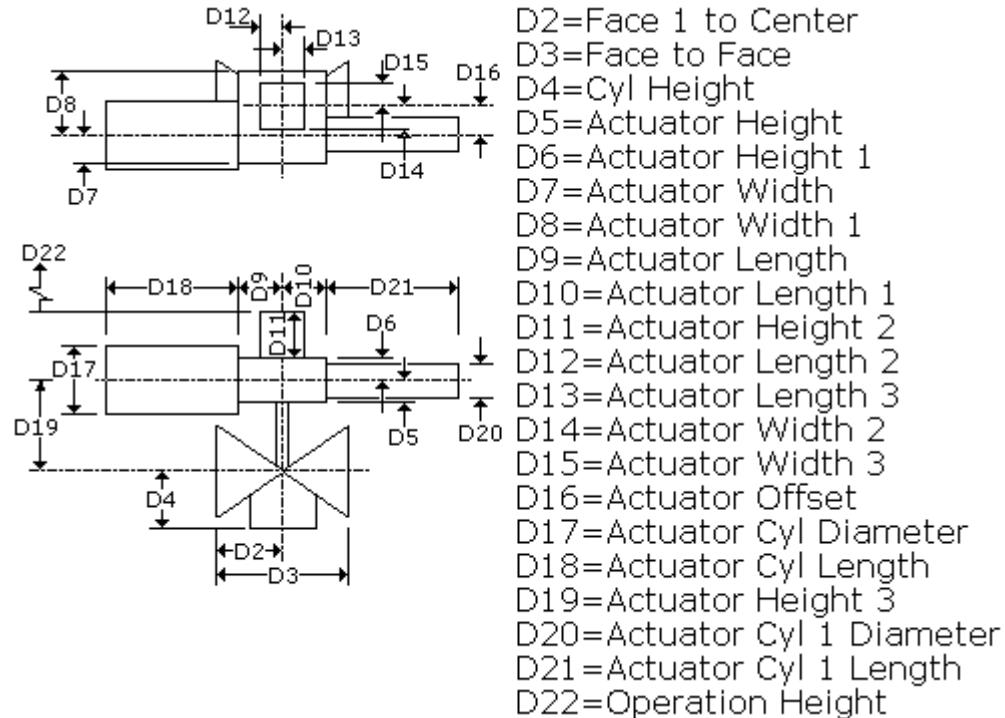
Output = "BodyCone1" Description = "Body Cone 1"
Output = "BodyCone2" Description = "Body Cone 2"
Output = "ValCyl" Description = "Valve Cylinder"
Output = "StemBody" Description = "Stem Body"
Output = "LargeBoxBody" Description = "Large Box Body"
Output = "SmallBoxBody" Description = "Small Box Body"

```

**Output = "Cylinder1Body" Description = "Cylinder1 Body"**  
**Output = "Cylinder2Body" Description = "Cylinder2 Body"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DDouChamberOrifice

## Description:

**Symbol Name:** SP3DDouChamberOrifice.CDChOrifice

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DDouChamberOrifice.CDChOrifice

#### Inputs = 14

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "InstrumentHeight" Description = "Instrument Height"**  
**Input = "InstrumentHeight1" Description = "Instrument Height1"**  
**Input = "InstrumentLength" Description = "Instrument Length"**  
**Input = "InstrumentLength1" Description = "Instrument Length1"**  
**Input = "InstrumentWidth" Description = "Instrument Width"**  
**Input = "InstrumentWidth1" Description = "Instrument Width1"**  
**Input = "ArmLength" Description = "Arm Length"**  
**Input = "NozzleOffset" Description = "Nozzle offset"**  
**Input = "NozzleOffset1" Description = "Nozzle offset1"**  
**Input = "ArmHeight" Description = "Arm Height"**  
**Input = "ArmHeight1" Description = "Arm Height1"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

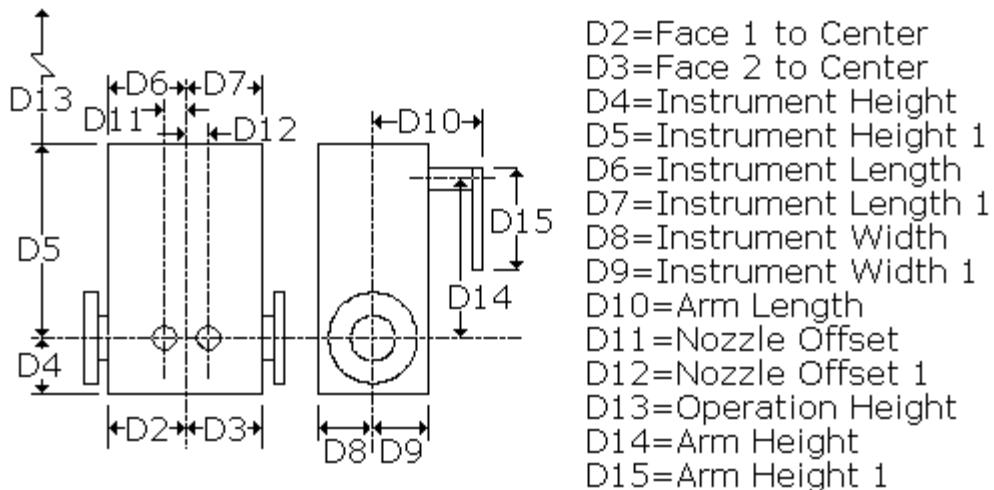
#### Outputs = 9

**Output = "ChamberBody" Description = "Chamber Body"**  
**Output = "ArmCyl1" Description = "Arm Cylinder1"**  
**Output = "ArmBody2" Description = "Arm Body2"**  
**Output = "NozzCylIns" Description = "Nozzle Cylinder Insulation"**  
**Output = "ChamberBodyIns" Description = "Chamber Body Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**

#### Aspects = 2

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DDripRingTee

**Description:** drip ring tee

**Symbol Name:** SP3DDripRingTee.CDripRingTee

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** DripRingTee

**User Class Name:** drip ring tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DDripRingTee.CDripRingTee

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "InsulatedBody1" Description = "Insulated Body (Port1 side)"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedBody2" Description = "Insulated Body (Port2 side)"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch (Port3 side)"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

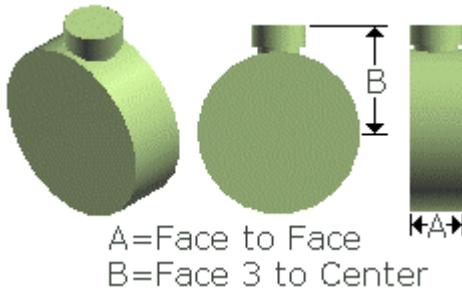
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DEccReducer

**Description:** Resistoflex concentric reducer flanged ends

**Symbol Name:** SP3DEccReducer.Ceccentric

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls; 1S6470 Catalog.xls

**Workbook Sheet:** EccentricReducer, EccentricReducer\_b, EccentricSwage; REDEMM, REDERJ; VREDE

**User Class Name:** Eccentric Reducer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEccReducer.CEccentric

Number of Inputs = 3

Input name = "FacetoFace"

Input description = "Face to Face"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Input name = "EccentricOffsetBasis"

Input description = "Eccentric Offset Basis 1 based on Outside Diameter or 2 based on Inside Diameter codelist values"

Number of Outputs = 4

Output name = "Body"

Output description = "Body"

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "PNoz1"

Output description = "Nozzle 1"

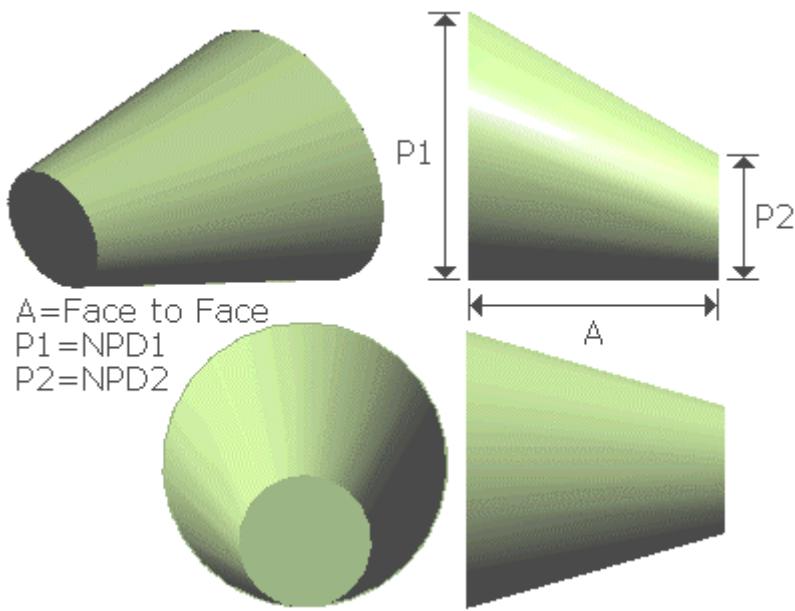
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DEccReducingTee

**Description:** eccentric reducing tee

**Symbol Name:** SP3DEccReducingTee.EccentricReducingTee

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEccReducingTee.EccentricReducingTee

**Inputs = 3**

**Input and description** = "Face1toCenter", "Face 1 to Center", 0

**Input and description** = "Face2toCenter", "Face 2 to Center", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 8**

**Output and description** = "InsulatedBody", "Insulated Body"

**Output and description** = "InsulatedPort1", "Insulated Port 1"

**Output and description** = "InsulatedPort2", "Insulated Port 2"

**Output and description** = "InsulatedBranch", "Insulated Branch"

**Output and description** = "InsulatedPort3", "Insulated Port 3"

**Output and description** = "PNoz1", "Nozzle 1"

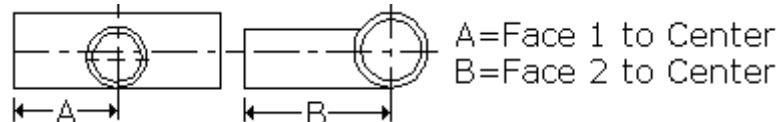
**Output and description** = "PNoz2", "Nozzle 2"

**Output and description** = "PNoz3", "Nozzle 3"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



A=Face 1 to Center

B=Face 2 to Center

## SP3DElbolet

**Symbol Name:** SP3DElbolet.CElbolet

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Elbolet

**User Class Name:** Elbolet

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElbolet.CElbolet

**Inputs = 2**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 3**

**Output = "InsulatedBody" Description = "InsulatedBody"**

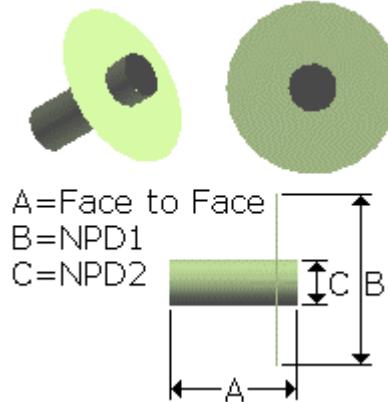
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy1AngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy1AngValve if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DElecActTy1AngValve.CElecActTy1AVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy1AngValve.CElecActTy1AVal

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1toCenter"**  
**Input = "Face2toCenter" Description = "FacetoFace"**  
**Input = "CylHeight" Description = "CylHeight"**  
**Input = "ActuatorHeight" Description = "ActuatorHeight"**  
**Input = "ActuatorLength" Description = "ActuatorLength"**  
**Input = "ActuatorOffset" Description = "ActuatorOffset"**  
**Input = "Motor1Diameter" Description = "Motor1Diameter"**  
**Input = "Motor2Diameter" Description = "Motor2Diameter"**  
**Input = "ActuatorLength1" Description = "ActuatorLength1"**  
**Input = "Motor3Diameter" Description = "Motor3Diameter"**  
**Input = "ActuatorHeight1" Description = "Actuator Height1"**  
**Input = "HandWheelDiameter" Description = "HandWheelDiameter"**  
**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**  
**Input = "Motor3EndtoCenter" Description = "Motor3EndtoCenter"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 13**

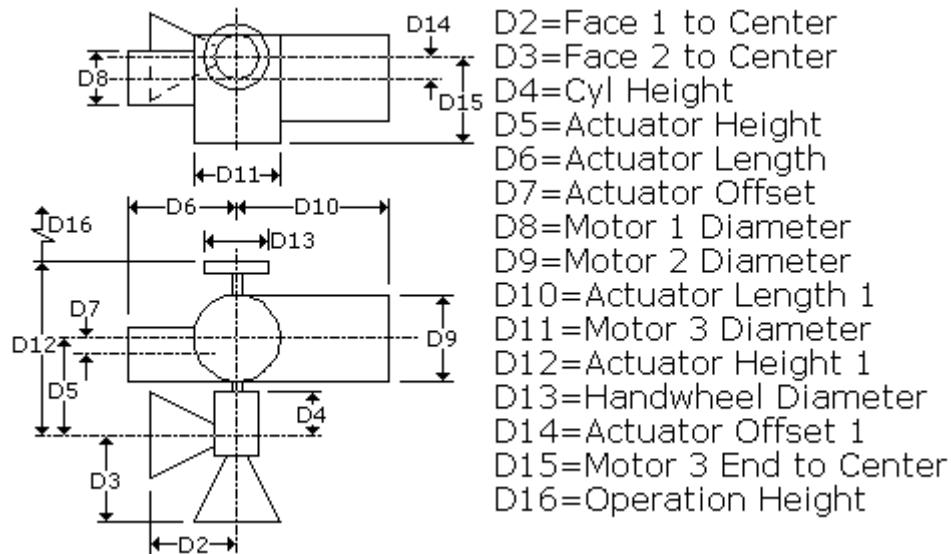
**Output = "BodyCone1Ins" Description = "Insulation for Valve Horizontal Body"**  
**Output = "BodyCone2Ins" Description = "Insulation for Valve Vertical Body"**  
**Output = "BodyCone1" Description = "BodyCone1"**  
**Output = "BodyCone2" Description = "BodyCone2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "Stem1" Description = "Stem 1"**  
**Output = "Motor1" Description = "Motor 1"**  
**Output = "Motor2" Description = "Motor 2"**  
**Output = "Motor3" Description = "Motor 3"**  
**Output = "Stem2" Description = "Stem 2"**  
**Output = "Handwheel" Description = "Handwheel"**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy1Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy1Valve if you want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 1

**Symbol Name:** SP3DElecActTy1Valve.CElecActTy1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy1Valve.CElecActTy1Val

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "ActuatorLength" Description = "ActuatorLength"**

**Input = "ActuatorOffset" Description = "ActuatorOffset"**

**Input = "Motor1Diameter" Description = "Motor1Diameter"**

**Input = "Motor2Diameter" Description = "Motor2Diameter"**

**Input = "ActuatorLength1" Description = "ActuatorLength1"**

**Input = "Motor3Diameter" Description = "Motor3Diameter"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "HandWheelDiameter" Description = "HandWheelDiameter"**

**Input = "ActuatorOffset1" Description = "ActuatorOffset1"**

**Input = "Motor3EndtoCenter" Description = "Motor3EndtoCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 12**

**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem1" Description = "Stem 1"**

**Output = "Motor1" Description = "Motor 1"**

**Output = "Motor2" Description = "Motor 2"**

**Output = "Motor3" Description = "Motor 3"**

**Output = "Stem2" Description = "Stem 2"**

**Output = "Handwheel" Description = "Handwheel"**

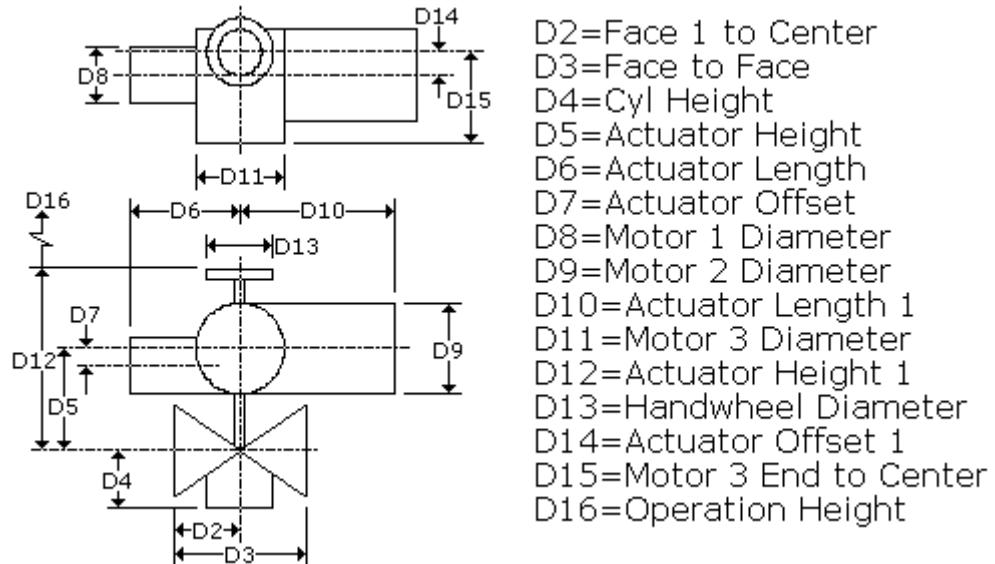
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy2AngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy2AngValve if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DElecActTy2AngValve.CElecActTy2AVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy2AngValve.CElecActTy2AVal

**Inputs = 17**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "CylHeight" Description = "Valve Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorLength" Description = "Actuator Length D6"**

**Input = "ActuatorOffset" Description = "Actuator Offset D7"**

**Input = "Motor2Diameter" Description = "Motor2Diameter D8"**

**Input = "Motor1Diameter" Description = "Motor1Diameter D9"**

**Input = "ActuatorLength1" Description = "ActuatorLength1 D10"**

**Input = "Motor3Diameter" Description = "Motor 3 Diameter D11"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D12"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D13"**

**Input = "ActuatorOffset1" Description = "Actuator Offset 1 D14"**

**Input = "Motor3EndtoCenter" Description = "Motor 3 End to Center D15"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset 2 D17"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D18"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 13**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 1"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "CentralMotor" Description = "Central Motor"**

**Output = "Motor2" Description = "Motor2"**

**Output = "Motor1" Description = "Motor1"**

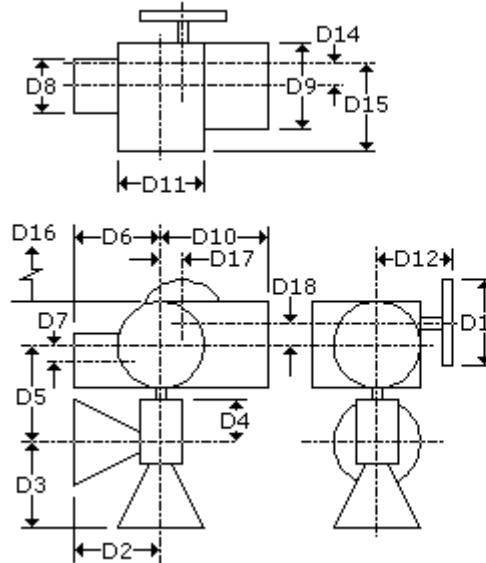
**Output = "Stem1" Description = "Stem1"**

**Output = "HandWheel" Description = "HandWheel"**

**Output = "BodyCone1Ins" Description = "Body Insulation Horizontal Cylinder"**

**Output = "BodyCone2Ins" Description = "Body Insulation Vertical Cylinder"**  
**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**  
**Aspect = SimplePhysical**  
**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Cyl Height  
D5=Actuator Height  
D6=Actuator Length  
D7=Actuator Offset  
D8=Motor 2 Diameter  
D9=Motor 1 Diameter  
D10=Actuator Length 1  
D11=Motor 3 Diameter  
D12=Handwheel Length  
D13=Handwheel Diameter  
D14=Actuator Offset 1  
D15=Motor 3 End to Center  
D16=Operation Height  
D17=Handwheel Offset  
D18=Handwheel Offset 1

## SP3DElecActTy2Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy2Val if you want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 2

**Symbol Name:** SP3DElecActTy2Valve.CElecActTy2Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy2Valve.CElecActTy2Val

**Inputs = 17**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorLength" Description = "Actuator Length D6"**

**Input = "ActuatorOffset" Description = "Actuator Offset D7"**

**Input = "Motor2Diameter" Description = "Motor2Diameter D8"**

**Input = "Motor1Diameter" Description = "Motor1Diameter D9"**

**Input = "ActuatorLength1" Description = "ActuatorLength1 D10"**

**Input = "Motor3Diameter" Description = "Motor 3 Diameter D11"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D12"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D13"**

**Input = "ActuatorOffset1" Description = "Actuator Offset 1 D14"**

**Input = "Motor3EndtoCenter" Description = "Motor 3 End to Center D15"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset 2 D17"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D18"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 12**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "CentralMotor" Description = "Central Motor"**

**Output = "Motor2" Description = "Motor2"**

**Output = "Motor1" Description = "Motor1"**

**Output = "Stem1" Description = "Stem1"**

**Output = "HandWheel" Description = "HandWheel"**

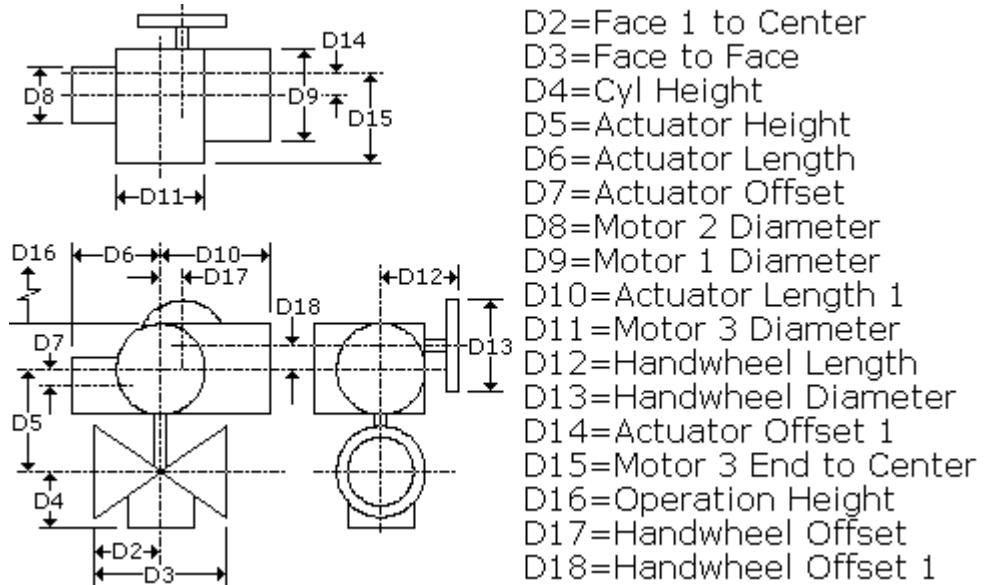
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy3AngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy3AngValve if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DElecActTy3AngValve.CElecActTy3AVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy3AngValve.CElecActTy3AVal

**Inputs = 20**

**Input** = "Face1toCenter"   **Description** = "Face1 to Center"  
**Input** = "Face2toCenter"   **Description** = "Face2 to Center"  
**Input** = "CylHeight"   **Description** = "Cylinder Height"  
**Input** = "Motor4Offset"   **Description** = "Motor4 Offset"  
**Input** = "Motor4Length"   **Description** = "Motor4 Length"  
**Input** = "ActuatorHeight"   **Description** = "Actuator Height"  
**Input** = "ActuatorHeight1"   **Description** = "Actuator Height1"  
**Input** = "ActuatorHeight2"   **Description** = "Actuator Height2"  
**Input** = "HandWheelDiameter"   **Description** = "HandWheel Diameter"  
**Input** = "Motor1Diameter"   **Description** = "Motor1 Diameter"  
**Input** = "Motor4Diameter"   **Description** = "Motor4 Diameter"  
**Input** = "Motor3Length"   **Description** = "Motor3 Length"  
**Input** = "Motor1Offset"   **Description** = "Motor1 Offset"  
**Input** = "Motor2Offset"   **Description** = "Motor2 Offset"  
**Input** = "Motor1Length"   **Description** = "Motor1 Length"  
**Input** = "ActuatorWidth"   **Description** = "Actuator Width"  
**Input** = "ActuatorWidth1"   **Description** = "Actuator Width1"  
**Input** = "Motor3toCenter"   **Description** = "Motor3 to Center"  
**Input** = "ActuatorHeight3"   **Description** = "Actuator Height3"  
**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

**Outputs = 14**

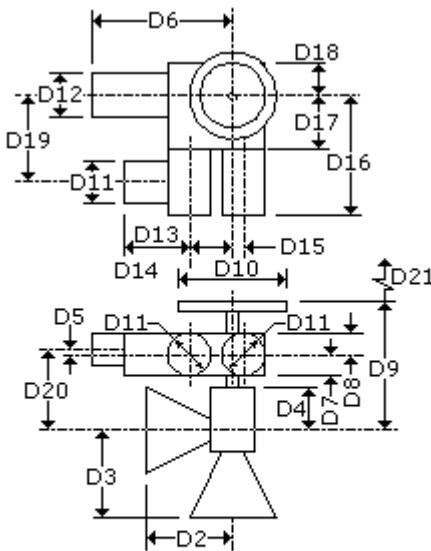
**Output** = "BodyCone1Ins"   **Description** = "Insulation for Body Cone1"  
**Output** = "BodyCone2Ins"   **Description** = "Insulation for Body Cone2"  
**Output** = "BodyCone1"   **Description** = "Body Cone1"  
**Output** = "BodyCone2"   **Description** = "Body Cone2"  
**Output** = "ValCyl"   **Description** = "Valve Cylinder"  
**Output** = "StemBody"   **Description** = "StemBody"  
**Output** = "ActuatorBody"   **Description** = "ActuatorBody"

**Output = "Motor1Body" Description = "Motor1Body"**  
**Output = "Motor2Body" Description = "Motor2Body"**  
**Output = "Motor3Body" Description = "Motor3Body"**  
**Output = "Motor4Body" Description = "Motor4Body"**  
**Output = "HandWheel" Description = "HandWheel"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
 D3=Face 2 to Center  
 D4=Cyl Height  
 D5=Motor 4 Offset  
 D6=Motor 4 Length  
 D7=Actuator Height  
 D8=Actuator Height 1  
 D9=Actuator Height 2  
 D10=Handwheel Diameter  
 D11=Motor 1 Diameter  
 D12=Motor 4 Diameter  
 D13=Motor 3 Length  
 D14=Motor 1 Offset  
 D15=Motor 2 Offset  
 D16=Motor 1 Length  
 D17=Actuator Width  
 D18=Actuator Width 1  
 D19=Motor 3 to Center  
 D20=Actuator Height 3  
 D21=Operation Height

# SP3DElecActTy3Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy3Valve if you want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 3

**Symbol Name:** SP3DElecActTy3Valve.CElecActTy3Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy3Valve.CElecActTy3Val

**Inputs = 20**

```
Input = "Face1toCenter" Description = "Face1toCenter"
Input = "FacetoFace" Description = "Face to Face"
Input = "CylHeight" Description = "Cylinder Height"
Input = "Motor4Offset" Description = "Motor4 Offset"
Input = "Motor4Length" Description = "Motor4 Length"
Input = "ActuatorHeight" Description = "Actuator Height"
Input = "ActuatorHeight1" Description = "Actuator Height1"
Input = "ActuatorHeight2" Description = "Actuator Height2"
Input = "HandWheelDiameter" Description = "HandWheel Diameter"
Input = "Motor1Diameter" Description = "Motor1 Diameter"
Input = "Motor4Diameter" Description = "Motor4 Diameter"
Input = "Motor3Length" Description = "Motor3 Length"
Input = "Motor1Offset" Description = "Motor1Offset"
Input = "Motor2Offset" Description = "Motor2Offset"
Input = "Motor1Length" Description = "Motor1Length"
Input = "ActuatorWidth" Description = "ActuatorWidth"
Input = "ActuatorWidth1" Description = "ActuatorWidth1"
Input = "Motor3toCenter" Description = "Motor3toCenter"
Input = "ActuatorHeight3" Description = "ActuatorHeight3"
Input = "InsulationThickness" Description = "InsulationThickness"
```

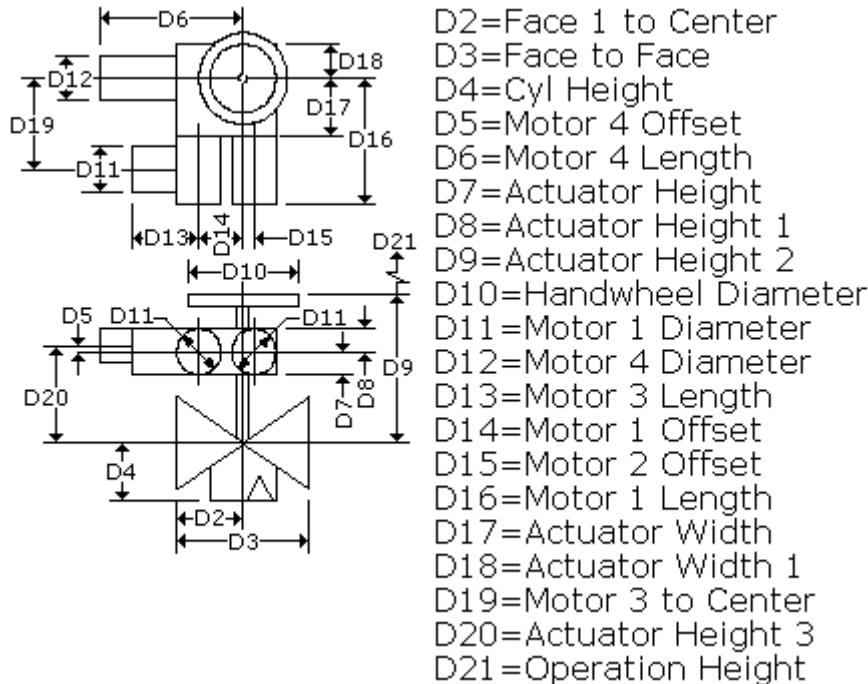
**Outputs = 13**

```
Output = "ValveBodyIns" Description = "Insulation for Valve Body"
Output = "BodyCone1" Description = "Body Cone1"
Output = "BodyCone2" Description = "Body Cone2"
Output = "ValCyl" Description = "Valve Cylinder"
Output = "StemBody" Description = "Stem Body"
Output = "ActuatorBody" Description = "Actuator Body"
Output = "Motor1Body" Description = "Motor1 Body"
```

**Output = "Motor2Body" Description = "Motor2 Body"**  
**Output = "Motor3Body" Description = "Motor3 Body"**  
**Output = "Motor4Body" Description = "Motor4 Body"**  
**Output = "HandWheel" Description = "HandWheel"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DElecActTy4AngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy4AngVal if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DElecActTy4AngValve.CElecActTy4AVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy4AngValve.CElecActTy4AVal

**Inputs = 17**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "CylHeight" Description = "Valve Center Cylinder Height"**  
**Input = "ActuatorHeight" Description = "Actuator Height"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter"**  
**Input = "ActuatorLength" Description = "Actuator Length"**  
**Input = "ActuatorLength1" Description = "Actuator Length1"**  
**Input = "Motor1Diameter" Description = "Motor1 Diameter"**  
**Input = "Motor2Diameter" Description = "Motor2 Diameter"**  
**Input = "Motor2Offset" Description = "Motor2 Offset"**  
**Input = "Motor1Offset" Description = "Motor1 Offset"**  
**Input = "Motor2Length" Description = "Motor2 Length"**  
**Input = "Motor1Length" Description = "Motor1 Length"**  
**Input = "ActuatorOffset" Description = "Actuator Offset"**  
**Input = "ActuatorHeight1" Description = "Actuator Height1"**  
**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 12**

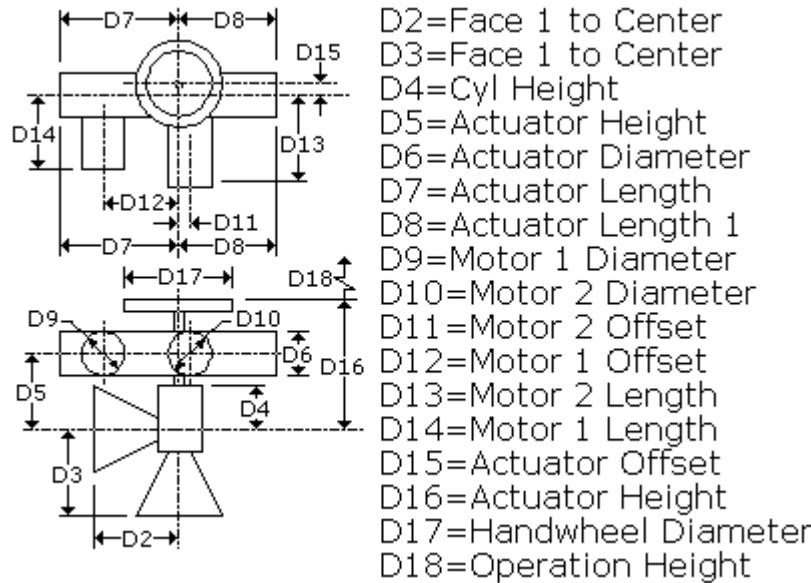
**Output = "BodyCone1" Description = "Body Cone1 of Valve"**  
**Output = "BodyCone2" Description = "Body Cone2 of Valve"**  
**Output = "ValCyl" Description = "Valve Center Cylinder"**  
**Output = "StemBody" Description = "Stem Body"**  
**Output = "ActuatorBody" Description = "Actuator Body"**  
**Output = "Motor1Body" Description = "Motor1 Body"**  
**Output = "Motor2Body" Description = "Motor2 Body"**  
**Output = "HandWheel" Description = "HandWheel"**  
**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy4Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy4Valve if you want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Type 4

**Symbol Name:** SP3DElecActTy4Valve.CElecActTy4Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy4Valve.CElecActTy4Val

**Inputs = 17**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "Motor1Diameter" Description = "Motor1 Diameter"**

**Input = "Motor2Diameter" Description = "Motor2 Diameter"**

**Input = "Motor2Offset" Description = "Motor2 Offset"**

**Input = "Motor1Offset" Description = "Motor1 Offset"**

**Input = "Motor2Length" Description = "Motor2 Length"**

**Input = "Motor1Length" Description = "Motor1 Length"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 11**

**Output = "BodyCone1" Description = "Body Cone1 of Valve"**

**Output = "BodyCone2" Description = "Body Cone2 of Valve"**

**Output = "ValCyl" Description = "Bottom Valve Cylinder"**

**Output = "StemBody" Description = "Stem Body"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "Motor1Body" Description = "Motor1 Body"**

**Output = "Motor2Body" Description = "Motor2 Body"**

**Output = "HandWheel" Description = "HandWheel"**

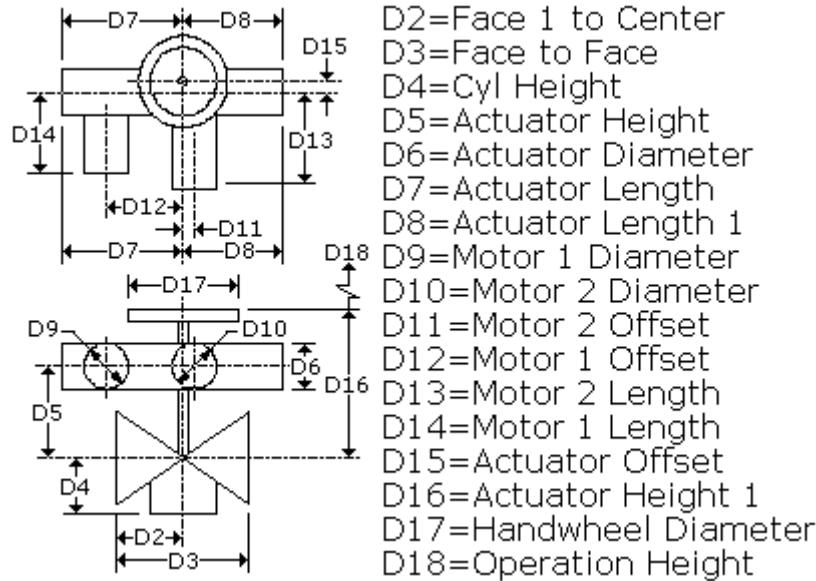
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DElecActTy5AngValve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy5AngValve if you want to interactively resize the symbol during or after placement.

**Description:**

**Symbol Name:** SP3DElecActTy5AngValve.CElecActTy5AVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy5AngValve.CElecActTy5AVal

**Inputs = 20**

**Input = "Face1toCenter" Description = "Face 1 to Center"**  
**Input = "Face2toCenter" Description = "Face 2 to Center"**  
**Input = "CylHeight" Description = "Cylinder Height "**  
**Input = "ActuatorHeight" Description = "Actuator Height D5"**  
**Input = "ActuatorHeight1" Description = "Actuator Height 1 D6"**  
**Input = "ActuatorHeight2" Description = "Actuator Height 2 D7"**  
**Input = "HandWheelOffset" Description = "Hand Wheel Offset D8"**  
**Input = "ActuatorDiameter" Description = "Actuator Diameter D9"**  
**Input = "ActuatorLength" Description = "Actuator Length D10"**  
**Input = "ActuatorDiameter1" Description = "Actuator Diameter D11"**  
**Input = "Motor1Diameter" Description = "Motor 1 Diameter D12"**  
**Input = "Motor1Length" Description = "Motor 1 Length D13"**  
**Input = "Motor1Offset" Description = "Motor 1 Offset D14"**  
**Input = "Motor2Diameter" Description = "Motor 2 Diameter D15"**  
**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D16"**  
**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D17"**  
**Input = "HandWheelLength" Description = "Hand Wheel Length D18"**  
**Input = "Motor2Offset" Description = "Motor 2 Offset D19"**  
**Input = "Motor2Length" Description = "Motor 2 Length D20"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

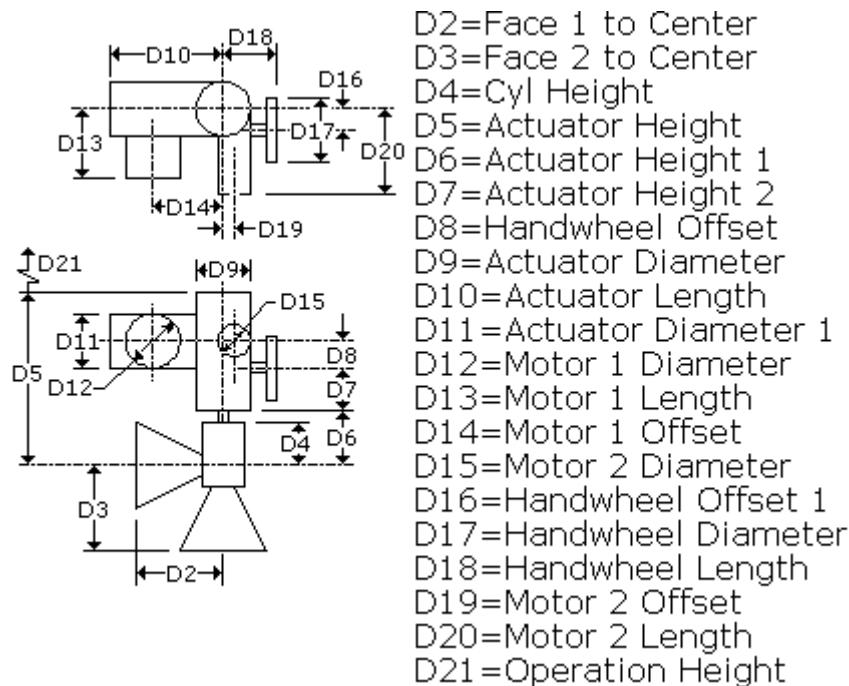
**Outputs = 13**

**Output = "BodyCone1" Description = "Body Cone 1"**  
**Output = "BodyCone2" Description = "Body Cone 2"**  
**Output = "ValCyl" Description = "Valve Cylinder"**  
**Output = "StemAndCylin" Description = "Stem and Cylinder"**  
**Output = "Cylinder" Description = "Cylinder"**  
**Output = "Motor1" Description = "Motor 1"**  
**Output = "Motor2" Description = "Motor 2"**

**Output = "Stem1" Description = "Stem 1"**  
**Output = "HandWheel" Description = "Hand Wheel"**  
**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**  
**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**  
**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DElecActTy5Valve

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIElecActTy5Val if you want to interactively resize the symbol during or after placement.

**Description:** Electric Actuator Valve Type 5

**Symbol Name:** SP3DElecActTy5Valve.CElecActTy5Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DElecActTy5Valve.CElecActTy5Val

**Inputs = 20**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1 D6"**

**Input = "ActuatorHeight2" Description = "Actuator Height 2 D7"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D8"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D9"**

**Input = "ActuatorLength" Description = "Actuator Length D10"**

**Input = "ActuatorDiameter1" Description = "Actuator Diameter D11"**

**Input = "Motor1Diameter" Description = "Motor 1 Diameter D12"**

**Input = "Motor1Length" Description = "Motor 1 Length D13"**

**Input = "Motor1Offset" Description = "Motor 1 Offset D14"**

**Input = "Motor2Diameter" Description = "Motor 2 Diameter D15"**

**Input = "HandWheelOffset1" Description = "Hand Wheel Offset 1 D16"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D17"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D18"**

**Input = "Motor2Offset" Description = "Motor 2 Offset D19"**

**Input = "Motor2Length" Description = "Motor 2 Length D20"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 12**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Diverging Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "StemAndCylin" Description = "Stem and Cylinder"**

**Output = "Cylinder" Description = "Cylinder"**

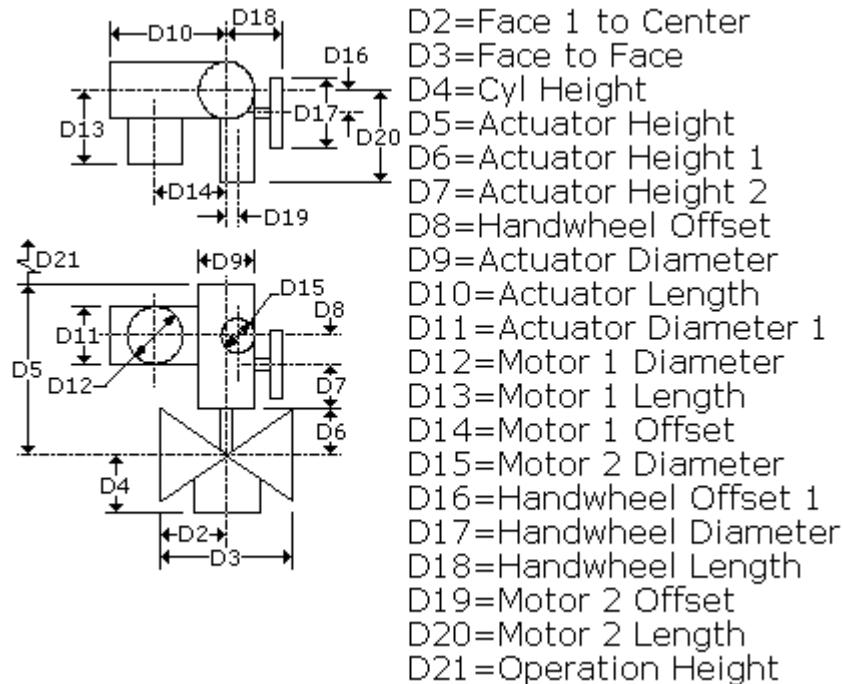
**Output = "Motor1" Description = "Motor 1"**

**Output = "Motor2" Description = "Motor 2"**

**Output = "Stem1" Description = "Stem 1"**  
**Output = "HandWheel" Description = "Hand Wheel"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



## SP3DEndolet

**Description:** endolet

**Symbol Name:** SP3DEndolet.CEndolet

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Endolet

**User Class Name:** Endolet

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DEndolet.CEndolet

**Inputs = 2**

**Input = "FacetoFace" Description = "face to face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "DivergingCone" Description = "Diverging Cone"**

**Output = "ConvergingCone" Description = "Converging Cone"**

**Output = "InsulatedEndolet" Description = "Endolet Insulation"**

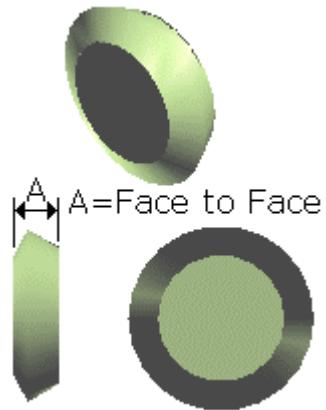
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DExhaustHead

**Description:** This symbol is based on the PDS symbol SN=S7AZ and consists of two nozzles, an exhaust (truncated cone), and a down pipe (cylinder)

**Symbol Name:** SP3DExhaustHead.CExhaustHead

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DExhaustHead.CExhaustHead

**Inputs = 5**

**Input = "ExhaustDiameter" Description = "Exhaust Diameter "**

**Input = "ExhaustHeight" Description = "Exhaust Height"**

**Input = "PortVOffset" Description = "Port Vertical Offset"**

**Input = "PortHOffset" Description = "Pipe Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "ExhaustCone" Description = "Exhaust Cone"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ExConeIns" Description = "Exhaust Cone Ins"**

**Output = "Noz1Ins" Description = "Nozzle 1 Insulation"**

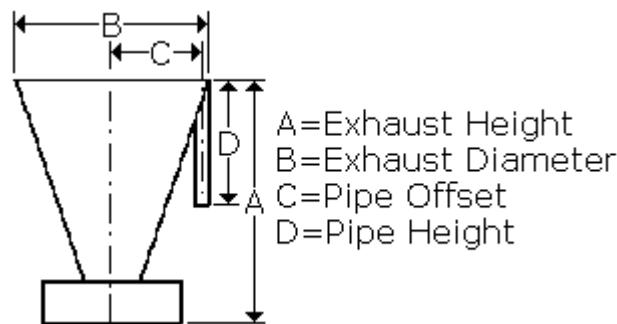
**Output = "PipeIns" Description = "Nozzle 2 - Pipe Insulation"**

**Output = "Noz2Ins" Description = "Nozzle 2 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DExpnJointOffset

**Description:**

**Symbol Name:** SP3DExpnJointOffset.CExpnJointOffset

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DExpnJointOffset.CexpnJointOffset

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face to Center "**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "Offset" Description = "Offset"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 12**

**Output = "Nozzle1withExtn" Description = "Nozzle with Extension"**

**Output = "Junction1" Description = "Junction1 (Cylinder)"**

**Output = "SkewPipe" Description = "Skewed Pipe"**

**Output = "Junction2" Description = "Junction2 (Cylinder)"**

**Output = "Nozzle2withExtn" Description = "Nozzle with Extension"**

**Output = "Nozzle1Insul" Description = "Insulation for Nozzle1"**

**Output = "Noz1ExtnInsul" Description = "Insulation Nozzle1 Extension"**

**Output = "Junction1Insul" Description = "Junction 1 Insulation"**

**Output = "SkewPipeInsul" Description = "Insulation for Skew Pipe"**

**Output = "Junction2Insul" Description = "Junction 2 Insulation"**

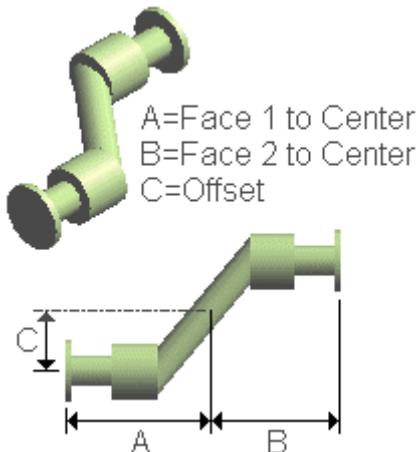
**Output = "Noz2ExtnInsul" Description = "Insulation for Nozzle 1 Extn"**

**Output = "Nozzle2Insul" Description = "Insulation for Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DFilter

**Description:**

**Symbol Name:** SP3DFilter.CFilter

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFilter.CFilter

**Inputs = 5**

**Input = "FilterBodyHeight1" Description = "Filter Body Height 1"**

**Input = "NozzleOffset" Description = "Nozzle Offset"**

**Input = "Offset" Description = "Offset"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsFilterBody" Description = "Insulation for Filter Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "FilterBody" Description = "Filter Body"**

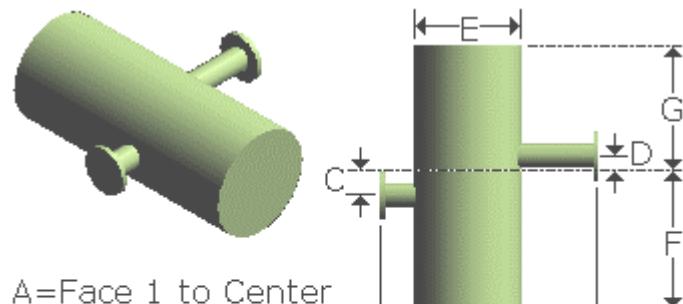
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

C=Offset 1

D=Offset 2

E=Filter Body Diameter

F=Filter Body Height 1

G=Filter Body Height 2

# SP3DFlameArrestorTy1

**Description:**

**Symbol Name:** SP3DFlameArrestorTy1.CFARrestorTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Pipe Component Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFlameArrestorTy1.CFARrestorTy1

**Inputs = 11**

**Input** = "Face1toCenter" **Description** = "Face1 to Center"

**Input** = "Face2toCenter" **Description** = "Face2 to Center"

**Input** = "Offset1" **Description** = "Offset of Port1 center"

**Input** = "Offset2" **Description** = "Offset of Port2 center"

**Input** = "FlArrestorBodyLength1" **Description** = "Flame Arrestor Body Length1"

**Input** = "FlArrestorBodyLength2" **Description** = "Flame Arrestor Body Length2"

**Input** = "FlArrestorBodyHeight1" **Description** = "Flame Arrestor Body Height1"

**Input** = "FlArrestorBodyHeight2" **Description** = "Flame Arrestor Body Height2"

**Input** = "FlArrestorBodyWidth1" **Description** = "Flame Arrestor Body Width1"

**Input** = "FlArrestorBodyWidth2" **Description** = "Flame Arrestor Body Width2"

**Input** = "InsulationThickness" **Description** = "InsulationThickness"

**Outputs = 8**

**Output** = "InsFABody" **Description** = "Insulation for Flame Arrestor Body"

**Output** = "InsPort1" **Description** = "Insulation for Port1"

**Output** = "InsBody1" **Description** = "Insulation for Body Port1 side"

**Output** = "InsPort2" **Description** = "Insulation for Port2"

**Output** = "InsBody2" **Description** = "Insulation for Body Port2 side"

**Output** = "FABody" **Description** = "Flame Arrestor Body"

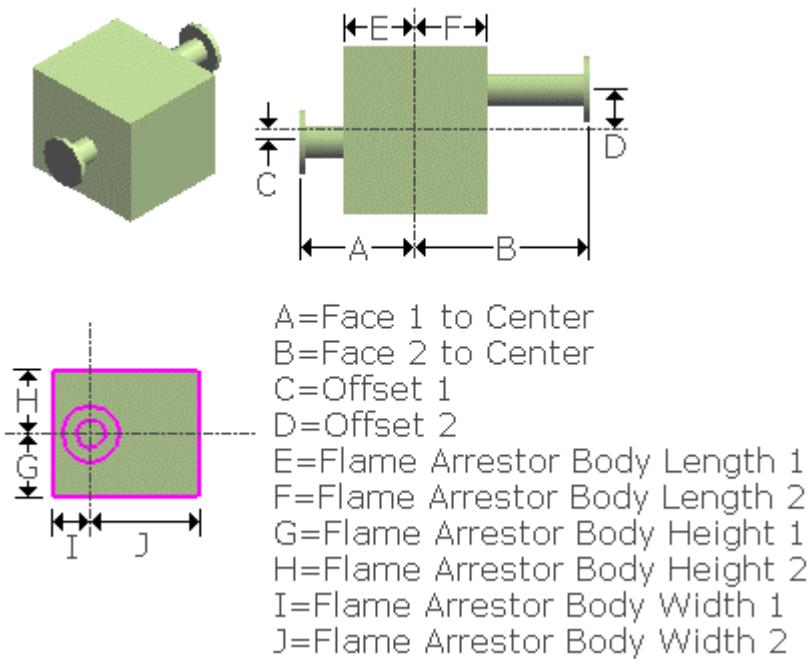
**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output** = "PNoz2" **Description** = "Nozzle 2"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DFlangedElboPipet

**Description:**

**Symbol Name:** SP3DFlangedElboPipet.FlangElboPipet

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFlangedElboPipet.FlangElboPipet

**Inputs = 2**

**Input and description** = "FacetoFace", "Face to Face"

**Input and description** = "InsulationThickness", "Insulation Thickness"

**Outputs = 4**

**Output and description** = "Elbo-PipetBody", "Elbo-Pipet Body"

**Output and description** = "Nozzle1", "Nozzle 1"

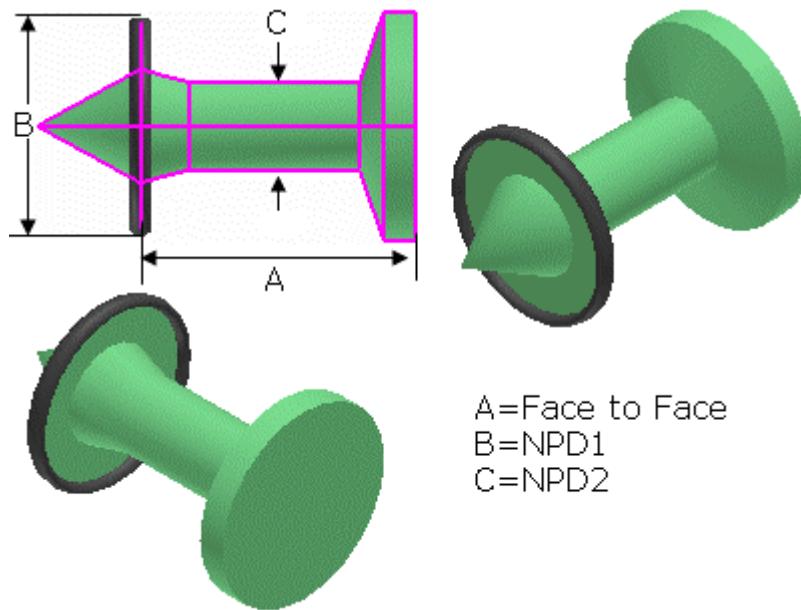
**Output and description** = "Nozzle2", "Nozzle 2"

**Output and description** = "BodyInsulation", "Insulation Body"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DFlangOlet

**Description:** olet with a flange

**Symbol Name:** SP3FlangOlet.CFlangOlet

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3FlangOlet.CFlangOlet

**Inputs = 4**

**Input and description = "A", "Height of olet above pipe"**

**Input and description = "FlangeLength", "Flange length"**

**Input and description = "NippleLength", "Nipple length"**

**Input and description = "InsulationThickness", "InsulationThickness", 0**

**Outputs = 6**

**Output and description = "OletBody", "Cylindrical body"**

**Output and description = "NippleBody", "Cylindrical body"**

**Output and description = "FlangeBody", "Cylindrical body"**

**Output and description = "BodyInsulation", "InsulationBody"**

**Output and description = "Nozzle1", "Nozzle 1"**

**Output and description = "Nozzle2", "Nozzle 2"**

**Aspects = 2**

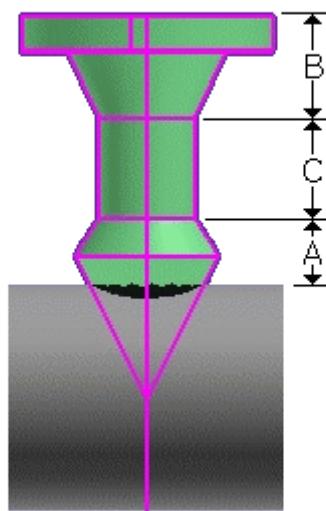
**Aspect = "SimplePhysical", "Physical"**

**Aspect = "Insulation", "Insulation"**

A=Height of olet above pipe

B=Flange length

C=Nipple length



## SP3DFlowmeter

**Description:** flow meter

**Symbol Name:** SP3DFlowmeter.Flowmeter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** FlowTransmitter

**User Class Name:** Flowmeter (Model LUS)

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFlowmeter.Flowmeter

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentWidth" Description = "Instrument Height 2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsFlowmeterBody" Description = "Insulation for Flowmeter Body"**

**Output = "InsConnectorBody" Description = "Insulation for Connector Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "Body" Description = "Body of Flowmeter"**

**Output = "Connector" Description = "Connector from ports to Flowmeter"**

**Output = "PNoz1" Description = "Nozzle 1"**

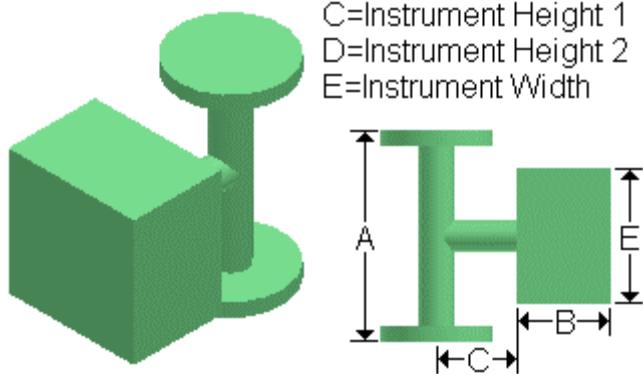
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

A=Face to Face  
B=Instrument Height  
C=Instrument Height 1  
D=Instrument Height 2  
E=Instrument Width



# SP3DFlowNozzle

**Description:**

**Symbol Name:** SP3DFlowNozzle.CFlowNozzle

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFlowNozzle.CFlowNozzle

**Inputs = 6**

**Input = "FaceToFace" Description = "Face To Face"**

**Input = "FlowNozzleDiameter1" Description = "Flow Nozzle Diameter1"**

**Input = "FlowNozzleLength" Description = "Flow Nozzle Length"**

**Input = "FlowNozzleEndDiameter" Description = "Flow Nozzle End Diameter"**

**Input = "FlowNozzleDiameter2" Description = "Flow Nozzle Diameter2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "FlowNozzleConeBody" Description = "Flow Nozzle Cone Body"**

**Output = "FlowNozzleCylBody" Description = "Flow Nozzle Cyl Body"**

**Output = "FlowNozzleBodyIns" Description = "Flow Nozzle Body Ins"**

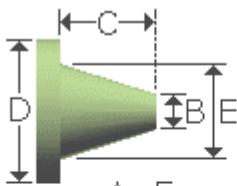
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Face  
B=Flow Nozzle Diameter 1  
C=Flow Nozzle Length  
D=Flow Nozzle End Diameter  
E=Flow Nozzle Diameter 2

# SP3DFlowSwitch

**Description:** flow switch

**Symbol Name:** SP3DFlowSwitch.FlowSwitch

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** FlowSwitch

**User Class Name:** Flow Switch

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFlowSwitch.FlowSwitch

**Inputs = 3**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Outputs = 5**

**Output = "ThreadedInsertion" Description = "ThreadedInsertion"**

**Output = "Nut" Description = "Hexagonal Nut"**

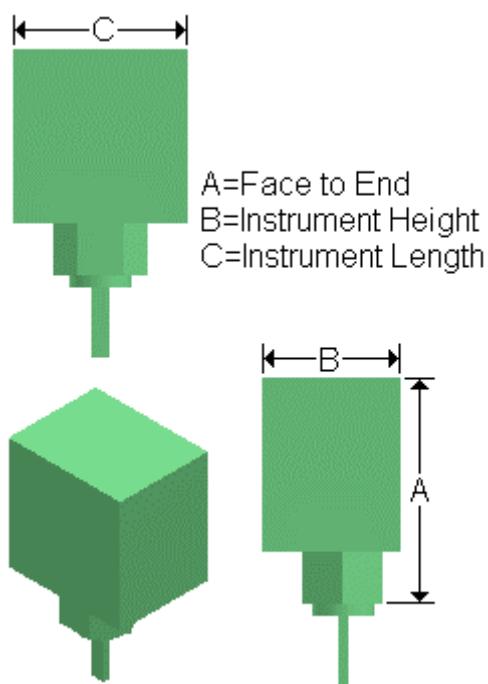
**Output = "Enclosure" Description = "Rectangular Enclosure"**

**Output = "Paddle" Description = "Flow Switch Paddle"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DFootValve

**Description:** based on PDS symbol V58

**Symbol Name:** SP3DFootValve.CFootValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFootValve.CFootValve

**Inputs = 2**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Strainer End to Center"**

**Outputs = 4**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

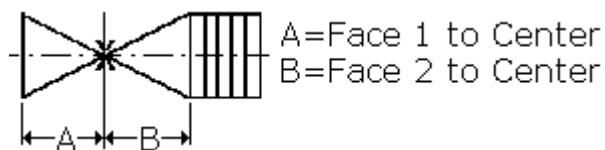
**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "StrainerBody" Description = "Strainer Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DFreeVent

**Description:**

**Symbol Name:** SP3DFreeVent.CFreeVent

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DFreeVent.CFreeVent

**Inputs = 3**

**Input = "NozztoCenter" Description = "NozztoCenter"**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "VentAngle" Description = "Angle of Vent Turn"**

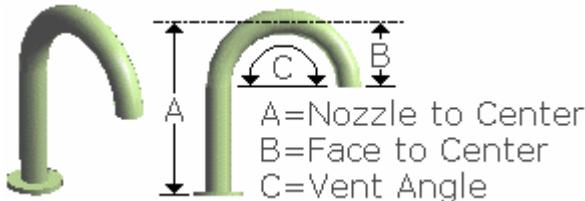
**Outputs = 2**

**Output = "FreeeVentBody" Description = "FreeeVentBody"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DGAngleValveM

**Description:** angle control valve

**Symbol Name:** SP3DGAngleValveM.GAngleValveM

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** AngleControlValve

**User Class Name:** Angle Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGAngleValveM.GAngleValveM

Number of Inputs = 3

Input name = "Face1toCenter"

Input description = "Face1 to Center"

Input name = "Face2toCenter"

Input description = "Face2 to Center"

Input name = "HandwheelAngle"

Input description = "Rotation of Operator"

Number of Outputs = 5

Output name = "Inlet"

Output description = "Inlet of valve"

Output name = "Outlet"

Output description = "Outlet of valve"

Output name = "ANoz1"

Output description = "Nozzle 1"

Output name = "ANoz2"

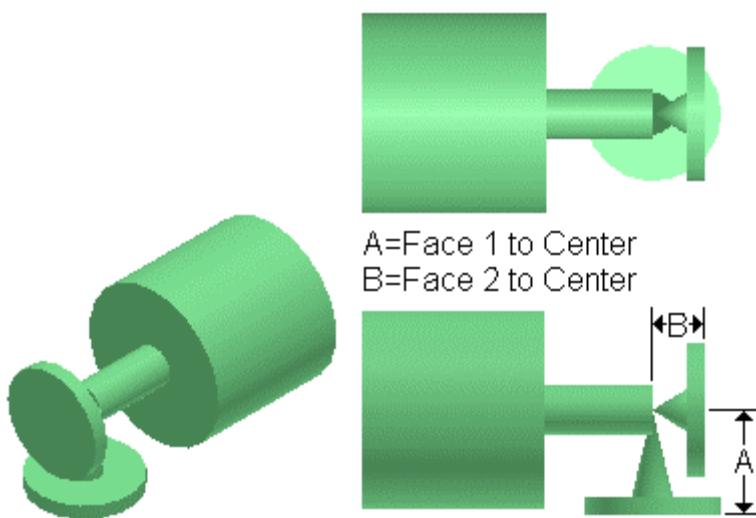
Output description = "Nozzle 2"

Output name = "ValveOperator"

Output description = "Valve Operator"

Number of Aspects = 1

Supported AspectId = SimplePhysical



# SP3DGateAsymValve

**Description:** asymmetric gate valve

**Symbol Name:** SP3DGateAsymValve.CGateAsymValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GateValve\_Asym

**User Class Name:** Asymmetric Gate Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateAsymValve.CGateAsymValve

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 6**

**Output = "LeftCone" Description = "Cone"**

**Output = "RightCone" Description = "Cone"**

**Output = "InsulationCylinder" Description = "Insulation Cylinder"**

**Output = "Nozzle1" Description = "Nozzle 1"**

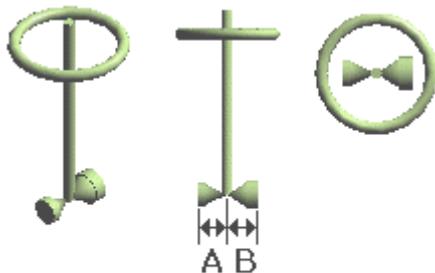
**Output = "Nozzle2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

# SP3DGateValExtndOlet

**Description:** Olet Gate Valve

**Symbol Name:** SP3DGateValExtndOlet.CGateValExtndOlet

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** OletGateValve

**User Class Name:** Olet Gate Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateValExtndOlet.CGateValExtndOlet

**Inputs = 5**

**Input = "ValveCentertoHeaderCenter" Description = "Valve Center to Header Center"**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "OletLength" Description = "Olet Length"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "UpperCone" Description = "UpperCone"**

**Output = "LowerCone" Description = "LowerCone"**

**Output = "BodyExtension" Description = "BodyExtension"**

**Output = "InsulationCylin" Description = "InsulationCylin"**

**Output = "PNoz1" Description = "Nozzle 1"**

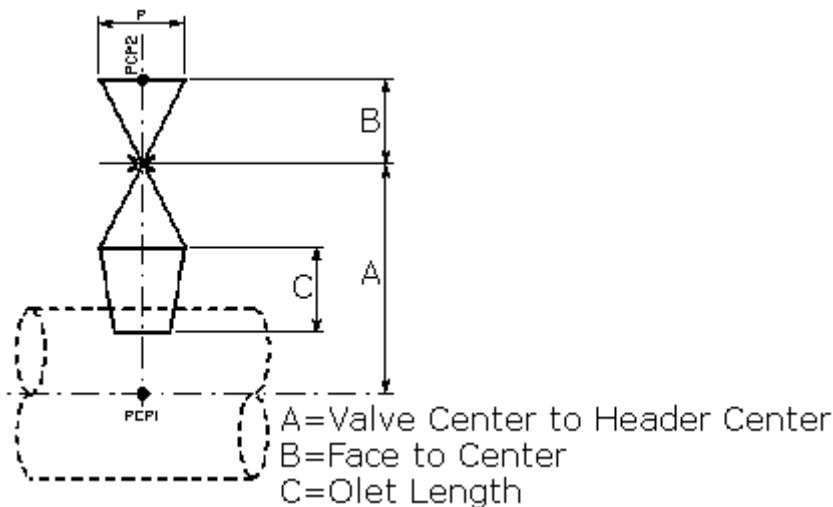
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DGateValve

**Description:** gate valve

**Symbol Name:** SP3DGateValve.CGateValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GateValve

**User Class Name:** Gate Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateValve.CGateValve

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face Distance"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 6**

**Output = "LeftCone" Description = "Cone "**

**Output = "RightCone" Description = "Cone"**

**Output = "InsulationCylinder" Description = "Cylinder"**

**Output = "Nozzle1" Description = "Nozzle with out Length"**

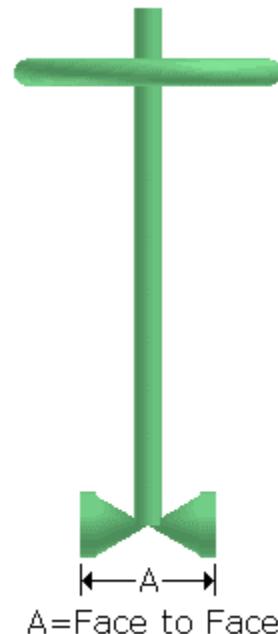
**Output = "Nozzle2" Description = "Nozzle with out Length"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DGateValveAngleOp

**Description:** gate valve with angled operator

**Symbol Name:** SP3DGateValveAngleOp.GateValve150

**Workbook:** Instrument Data.xls

**Workbook Sheet:** ControlGateValve, ControlGateValveOA,  
ReducingControlGateValve

**User Class Name:**

**Part Number:** Control Gate Valve

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateValveAngleOp.GateValve150

**Inputs = 5**

**Input = "FacetoFace" Description = "valve width"**

**Input = "ValveHeight" Description = "valve height"**

**Input = "HandWheelDiameter" Description = "handwheel diameter"**

**Input = "HandwheelAngle" Description = "handwheel angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 14**

**Output = "valvebody" Description = "main body"**

**Output = "valvepost" Description = "vertical post"**

**Output = "valvestem" Description = "stem"**

**Output = "Support brace" Description = "brace"**

**Output = "crossbrace" Description = "cross brace"**

**Output = "transfercase" Description = "transfer case"**

**Output = "spindlecone" Description = "spindle cone"**

**Output = "handwheelspoke1" Description = "spoke"**

**Output = "handwheelspoke2" Description = "spoke"**

**Output = "handwheel" Description = "handwheel"**

**Output = "knob" Description = "handwheel knob"**

**Output = "VNoz1" Description = "Nozzle 1"**

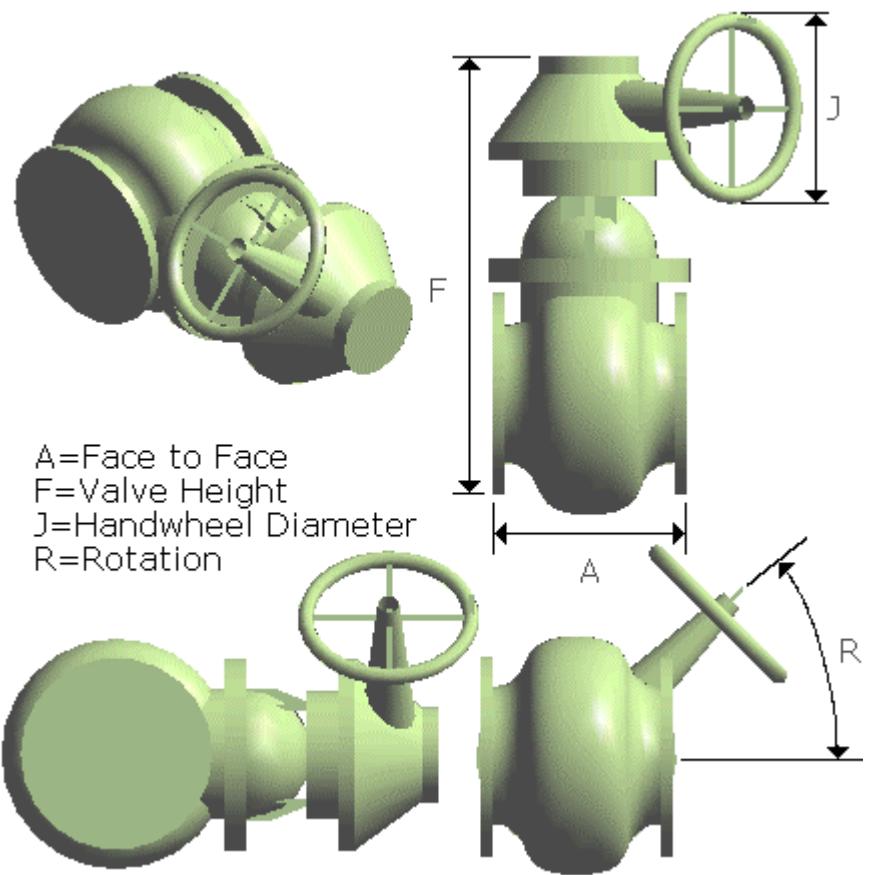
**Output = "VNoz2" Description = "Nozzle 2"**

**Output = "InsulatedValve" Description = "Insulated Valve"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DGateValveAsym

**Description:** asymmetric gate valve

**Symbol Name:** SP3DGateAsymValve.CGateAsymValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GateValve\_Asym

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "OperatorHeight" Description = "Height of Operator"**

**Input = "OperatorDiameter" Description = "Diameter of Operator Wheel"**

**Outputs = 12**

**Output = "BodyH" Description = "Horizontal Body of Gate Valve"**

**Output = "BodyVB" Description = "Vertical Body of Gate Valve; Bottom Part"**

**Output = "BodyVT" Description = "Vertical Body of Gate Valve"**

**Output = "BodyVFlange" Description = "Vertical Body Flange of Gate Valve"**

**Output = "BonnetFlange" Description = "Bonnet Flange of Gate Valve"**

**Output = "Bonnet" Description = "Bonnet of Gate Valve"**

**Output = "Stem" Description = "Stem of Gate Valve"**

**Output = "Actuator" Description = "Actuator of Gate Valve"**

**Output = "ActuatorSpike1" Description = "Spike 1 of Actuator wheel"**

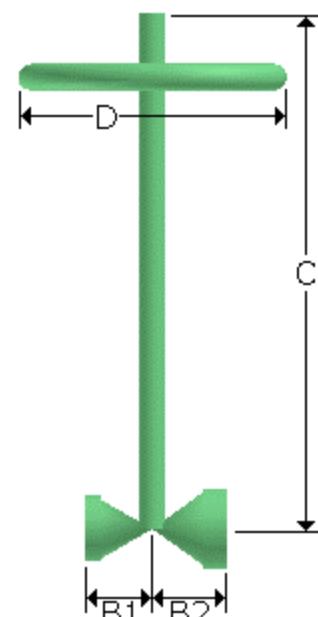
**Output = "ActuatorSpike2" Description = "Spike 2 of Actuator wheel"**

**Output = "PipePort1" Output = "VNoz1"**

**Description = "Piping Port 1 of Gate valve"**

**Output = "PipePort2" Output = "VNoz2"**

**Description = "Piping Port 2 of Gate valve"**



B1=Face 1 to Center  
B2=Face 2 to Center  
C=Operator Height  
D=Operator Diameter

## SP3DGateValveExtnd

**Description:** gate valve

**Symbol Name:** SP3DGateValveExtnd.CGateValveExtnd

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateValveExtnd.CGateValveExtnd

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "TaperCone" Description = "Truncated Cone"**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "InsulationCylinder" Description = "Insulation"**

**Output = "Nozzle1" Description = "Nozzle1"**

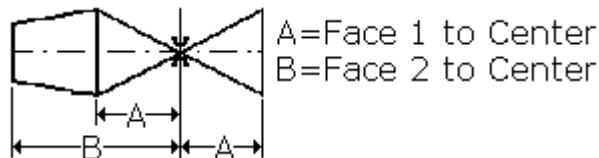
**Output = "Nozzle2" Description = "Nozzle2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DGateValveL

**Description:** Solid wedge Gate Valve class

**Symbol Name:** SP3DGateValveL.CGateValve150

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** DIAMM

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGateValveL.CGateValve150

**Inputs = 4**

**Input = "FacetoFace" Description = "Width of the Operator (F-F)"**

**Input = "OperatorHeight" Description = "Height of Operator"**

**Input = "OperatorDiameter" Description = "Diameter of Operator Wheel"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 14**

**Output = "BodyH" Description = "Horizontal Body of GateValve"**

**Output = "BodyVB" Description = "Vertical Body of GateValve; Bottom Part"**

**Output = "BodyVT" Description = "Vertical Body of GateValve"**

**Output = "BodyVFlange" Description = "Vertical Body Flange of GateValve"**

**Output = "BonnetFlange" Description = "Bonnet Flange of GateValve"**

**Output = "Bonnet" Description = "Bonnet of GateValve"**

**Output = "Stem" Description = "Stem of GateValve"**

**Output = "Actuator" Description = "Actuator of GateValve"**

**Output = "ActuatorSpike1" Description = "Spike 1 of Actuator wheel"**

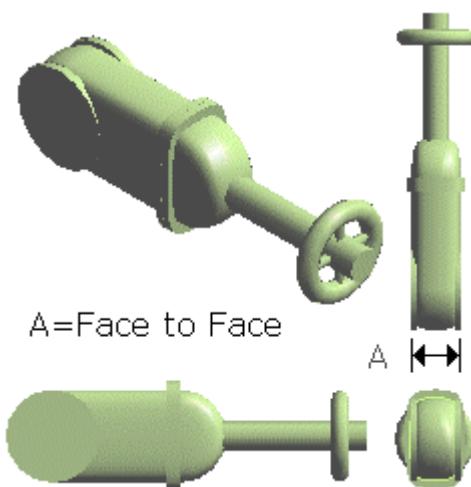
**Output = "ActuatorSpike2" Description = "Spike 2 of Actuator wheel"**

**Output = "PipePort1" Output = "VNoz1" Description = "PipingPort1 of Gate valve"**

**Output = "PipePort2" Output = "VNoz2" Description = "PipingPort2 of Gate valve"**

**Output = "CylBodyIns" Description =  
"Cylindrical Body Insulation"**

**Output = "VerBodyIns" Description =  
"Vertical Body Insulation"**



# SP3DGlobeGOP

**Description:**

**Symbol Name:** SP3DGlobeGOP.CGlobeGOP

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** GlobeControlValve

**User Class Name:** Globe Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGlobeGOP.CGlobeGOP

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 7**

**Output = "Ellipsoid" Description = "Ellipsoid"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "InsulatedBody" Description = "Insulation for Valve Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

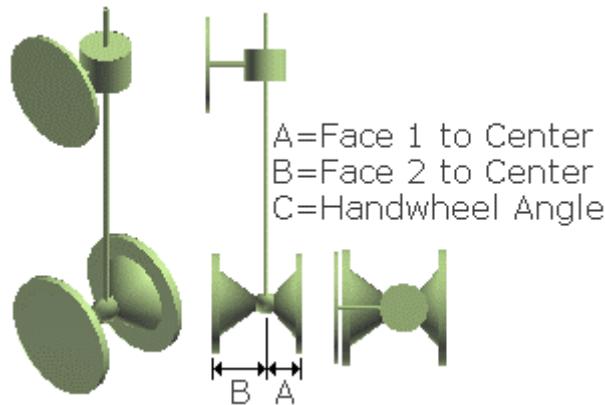
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DGlobeValve

**Description:**

**Symbol Name:** SP3DGlobeValve.CGlobeValve

**Workbook:****Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DGlobeValve.CGlobeValve

Number of Inputs = 4

Input name = "FacetoFace"

Input description = "Face to Face"

Input name = "OperatorHeight"

Input description = "Height of Operator Stem"

Input name = "OperatorDiameter"

Input description = "Diameter Of Operator Hand Wheel"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 10

Output name = "BodyBall"

Output description = "Ball of Body of Globe Valve"

Output name = "BodyCone1"

Output description = "Cone Port1 of Body"

Output name = "BodyCone2"

Output description = "Cone Port2 of Body"

Output name = "Stem"

Output description = "Stem of Operator"

Output name = "HandWheel"

Output description = "Hand Wheel of Operator"

Output name = "HWSpokesX"

Output description = "Stem of Operator"

Output name = "HWSpokesZ"

Output description = "Hand Wheel of Operator"

Output name = "InsulatedBody"

Output description = "Insulated Body and Flanges"

Output name = "PNoz1"

Output description = "Nozzle 1"

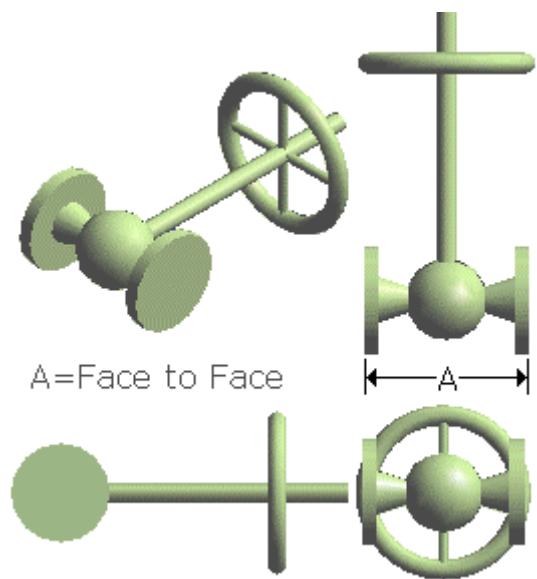
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



## SP3DGlobeValveF

**Description:** Valve with 7 outputs and 2 inputs: face to face and insulation thickness.

**Symbol Name:** SP3DGlobeValveF.CGlobeValveF

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GlobeValve

**User Class Name:** Globe Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGlobeValveF.CGlobeValveF

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Ellipsoid"**

**Output = "RightCone" Description = "Cone"**

**Output = "ValveInsulation" Description = "Valve Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

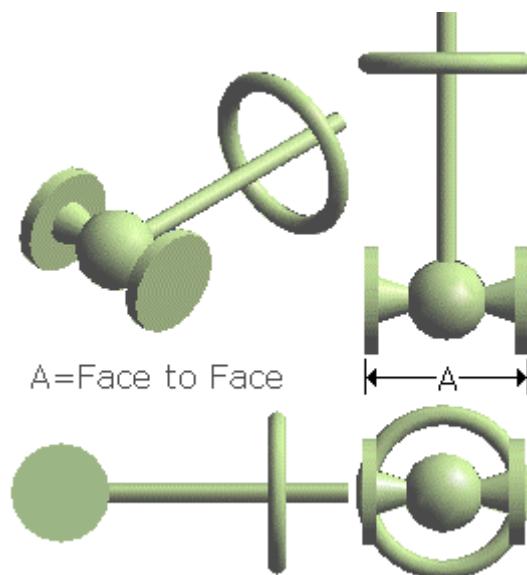
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DGlobeValves

**Description:** Asymmetric Globe Valve

**Symbol Name:** SP3DGlobeValves.CGlobeValves

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** GlobeValve\_Asym

**User Class Name:** Asymmetric Globe Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGlobeValveF.CGlobeValveF

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 7**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Ellipsoid"**

**Output = "RightCone" Description = "Cone"**

**Output = "ValveInsulation" Description = "Valve Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Face

# SP3DGroundingPaddle

**Description:** grounding paddle

**Symbol Name:**

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DGroundingPaddle.CGrPaddle

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "PaddleHeight" Description = "Top of Handle to Paddle Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "PaddleBody" Description = "PaddleBody"**

**Output = "ProjForHandleSides" Description = "Sides of Handle"**

**Output = "HandleFrontPlane" Description = "Face plane of Handle"**

**Output = "HandleBackPlane" Description = "Back of Handle"**

**Output = "HandleThroughHole" Description = "Hole in Handle"**

**Output = "InsulatedBody" Description = "Insulated Body"**

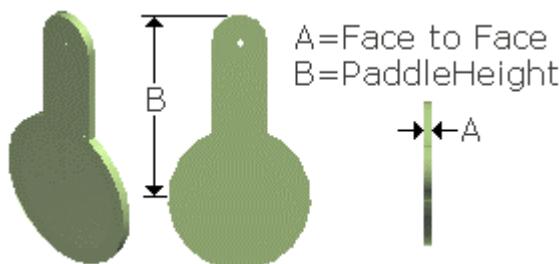
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHalfCoupling

**Description:** Half Coupling

**Symbol Name:** SP3DSP3DHalfCoupling.CHalfCoupling

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** HalfCoupling

**User Class Name:** Half Coupling

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHalfCoupling.CHalfCoupling

**Inputs = 3**

**Input = "FacetoHeaderCenter" Description = "Face to Center"**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "HalfCouplingIns" Description = "Insulation for Half Coupling"**

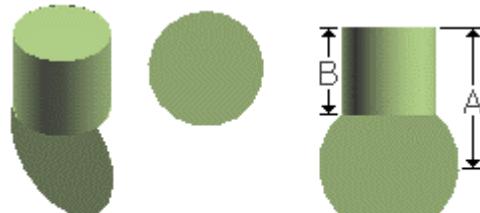
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Header Center

B=Face to End

# SP3DHorLiftCheckValve

**Description:** Resistoflex Horizontal Lift Check Valve

**Symbol Name:** SP3DHorLiftCheckValve.CHLCheckVal

**Workbook:** Piping.xls

**Workbook Sheet:** CKL

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHorLiftCheckValve.CHLCheckVal

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face "**

**Input = "ValveHeight" Description = "Valve height"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 11**

**Output = "ValBodyCyl" Description = "Valve Cylindrical Body"**

**Output = "FillerBody" Description = "Filler of Valve Body"**

**Output = "BotRectFlange" Description = "Bottom Rectangular Flange"**

**Output = "TopRectFlange" Description = "Top Rectangular Flange"**

**Output = "FlangeFiller1" Description = "Flange Filler Body 1"**

**Output = "FlangeFiller2" Description = "Flange Filler Body 2"**

**Output = "ValBodyRev" Description = "Valve Body Upper portion "**

**Output = "BonetIns" Description = "Bonet Insulation"**

**Output = "BodyIns" Description = "Body Insulation"**

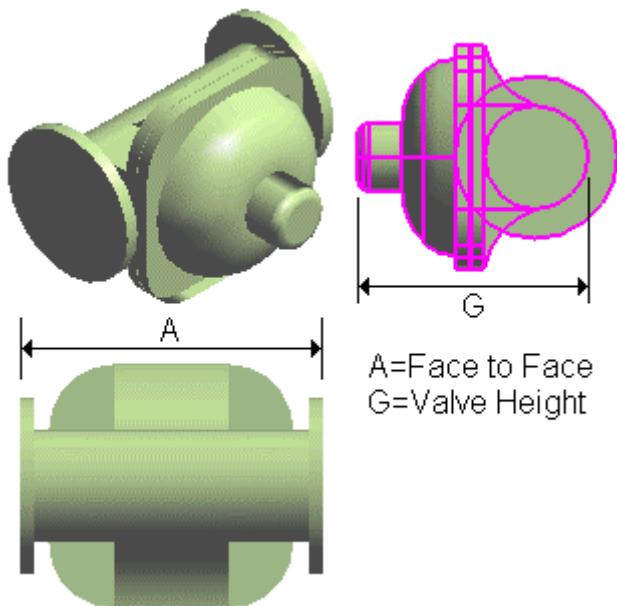
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHoseConnection

**Description:** hose connection

**Symbol Name:** SP3DHoseConnection.HoseConnection

**Workbook:** Sample Data for Hose Connection.xls

**Workbook Sheet:** HoseConnection

**User Class Name:** Hose Connection

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoseConnection.HoseConnection

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

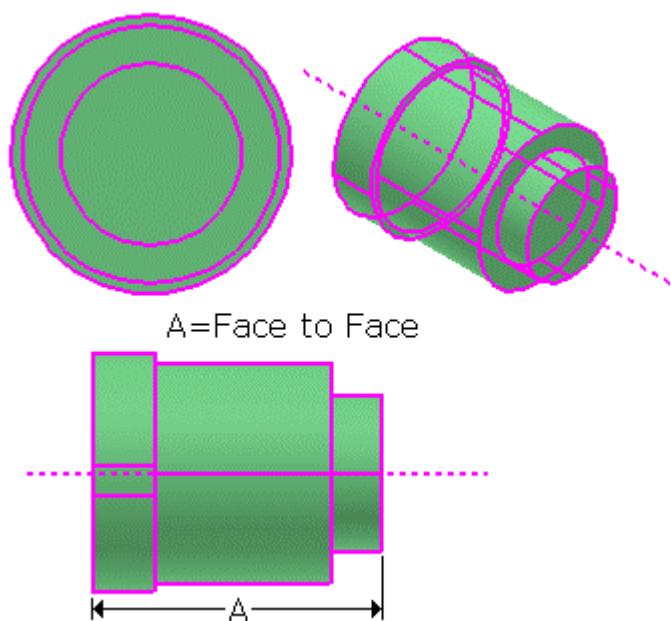
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHoseValve

**Description:** based on PDS symbol V72

**Symbol Name:** SP3DHoseValve.CHoseValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHoseValve.CHoseValve

**Inputs = 3**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Hose Connector End to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "HoseConnectBody" Description = "Hose Connector Body"**

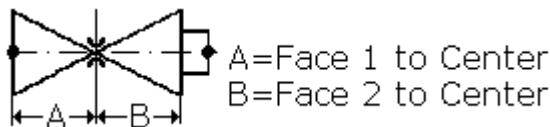
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DHub

**Description:** hub

**Symbol Name:** SP3DHub.Hub

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** Hub

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DHub.Hub

**Inputs = 2**

**Input and description** = "FacetoFace", "Face to Face D", 0.

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 4**

**Output and description** = "HubBody", "Hub Body"

**Output and description** = "PNoz1", "Nozzle 1"

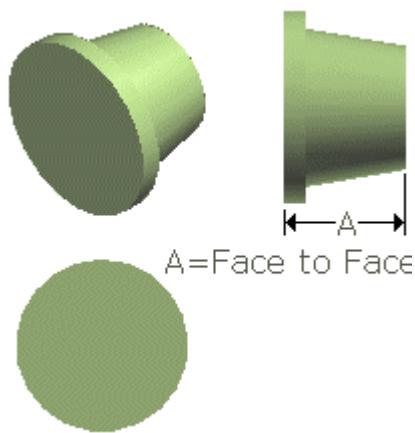
**Output and description** = "PNoz2", "Nozzle 2"

**Output and description** = "HubIns", "Hub Insulation"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Insulation", "Insulation"



# SP3DImpSteamTrapTy4

**Description:** steam trap

**Symbol Name:** SP3DImpSteamTrapTy4.CImpSteamTrapTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DImpSteamTrapTy4.CImpSteamTrapTy4

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "CylinderDiameter" Description = "Cylinder Diameter"**

**Input = "VertCylinHeightFromCen" Description = "Vertical Cylinder Height From Cen"**

**Input = "HoriCylinLengthFromCen" Description = "Horizontal Cylinder LengthFromCen"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "VerticalCylin" Description = "Vertical Cylinder"**

**Output = "HoriCylinder" Description = "Horizontal Cylinder"**

**Output = "HoriCylinIns" Description = "Horizontal Cylin Insulation"**

**Output = "VertCylinIns" Description = "Vertical Cylin Insulation"**

**Output = "PipeinNoz1Ins" Description = "Pipe portion in Noz1 Insulation"**

**Output = "Noz1Ins" Description = "Noz1 Insulation"**

**Output = "PipeinNoz2Ins" Description = "Pipe portion in Noz2 Insulation"**

**Output = "Noz2Ins" Description = "Noz2 Insulation"**

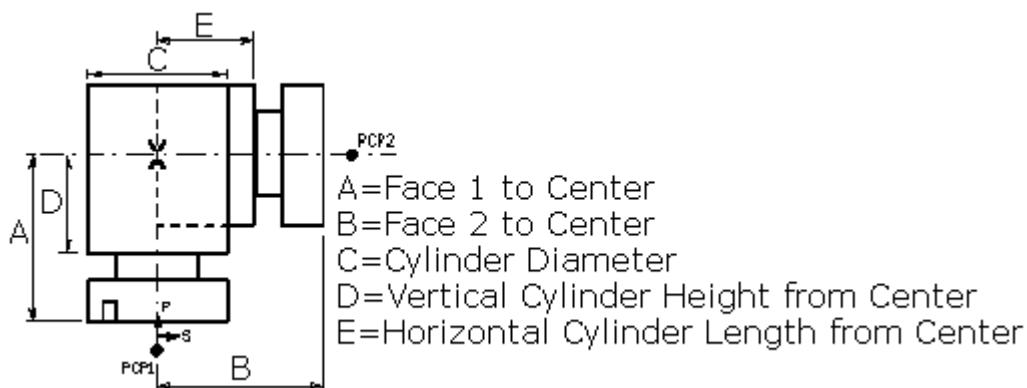
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DImpSteamTrapTy5

**Description:** steam trap

**Symbol Name:** SP3DImpSteamTrapTy5.CImpSteamTrapTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DImpSteamTrapTy5.CImpSteamTrapTy5

**Inputs = 8**

**Input = "Nozz1toCentre" Description = "Nozz1toCentre"**

**Input = "Nozz2toCentre" Description = "Nozz2toCentre"**

**Input = "Offset1" Description = "Offset1"**

**Input = "Offset2" Description = "Offset2"**

**Input = "TrapBodyDiameter" Description = "TrapBodyDiameter"**

**Input = "TrapHeightBottoCen" Description = "TrapHeightBottoCen"**

**Input = "TrapHeightToptoCen" Description = "TrapHeightToptoCen"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "InsTrapBody" Description = "Insulation for Filter Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "TrapBody" Description = "Filter Body"**

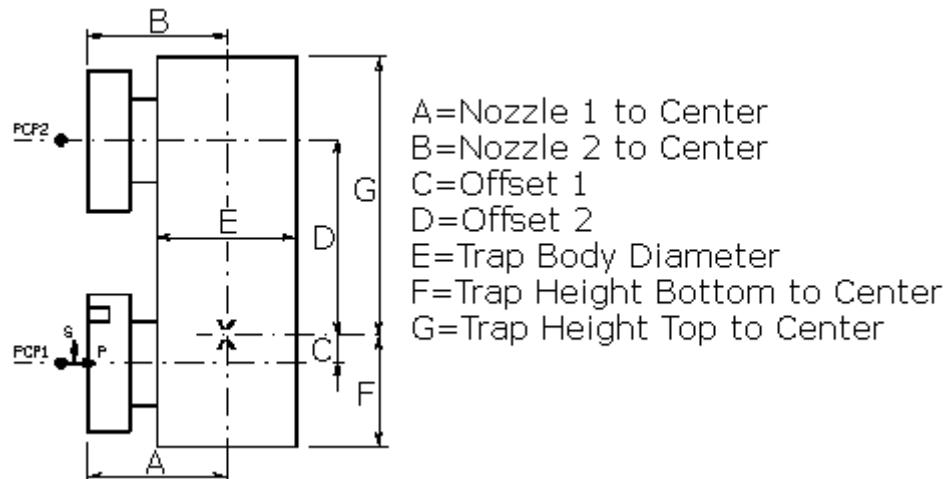
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DImpSteamTrapTy6

**Description:** steam trap

**Symbol Name:** SP3DImpSteamTrapTy6.CImpSteamTrapTy6

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DImpSteamTrapTy6.CImpSteamTrapTy6

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset" Description = "Offset between Port and Trap centers"**

**Input = "TrapDiameter" Description = "Trap Diameter"**

**Input = "TrapLength1" Description = "Trap Length1"**

**Input = "TrapLength2" Description = "Trap Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsTrapBody" Description = "Insulation for Trap Body"**

**Output = "InsConnectorBody" Description = "Insulation for Connector Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "Body" Description = "Body of Trap"**

**Output = "Connector" Description = "Connector from ports to Trap"**

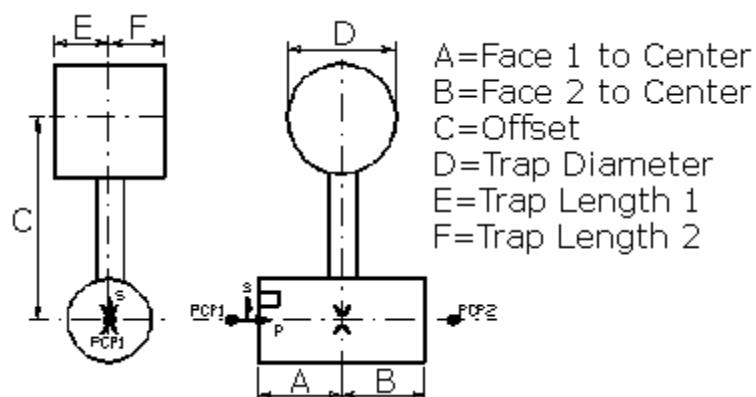
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DImpSteamTrapTy7

**Description:** steam trap

**Symbol Name:** SP3DImpSteamTrapTy7.CImpSteamTrapTy7

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DImpSteamTrapTy7.CImpSteamTrapTy7

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset" Description = "Offset between Port and Trap centers"**

**Input = "TrapDiameter" Description = "Trap Diameter"**

**Input = "TrapLength1" Description = "Trap Length1"**

**Input = "TrapLength2" Description = "Trap Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsTrapBody" Description = "Insulation for Trap Body"**

**Output = "InsConnectorBody" Description = "Insulation for Connector Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "Body" Description = "Body of Trap"**

**Output = "Connector" Description = "Connector from ports to Trap"**

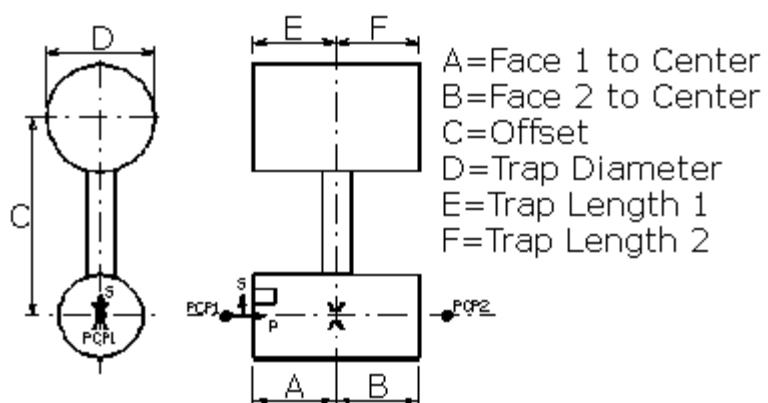
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DImpSteamTrapTy8

**Description:** steam trap

**Symbol Name:** SP3DImpSteamTrapTy8.CImpSteamTrapTy8

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DImpSteamTrapTy8.CImpSteamTrapTy8

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset1" Description = "Offset of Lower Trap"**

**Input = "TrapDiameter" Description = "Trap Diameter"**

**Input = "Offset2" Description = "Offset of Upper Trap from Center line"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsUpTrBody" Description = "Insulation for Upper Trap Body"**

**Output = "InsLowTrBody" Description = "Insulation for Lower Trap Body"**

**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**

**Output = "InsBody2" Description = "Insulation for Body Port2 side"**

**Output = "UpperTrapBody" Description = "Upper Trap Body"**

**Output = "LowerTrapBody" Description = "Lower Trap Body"**

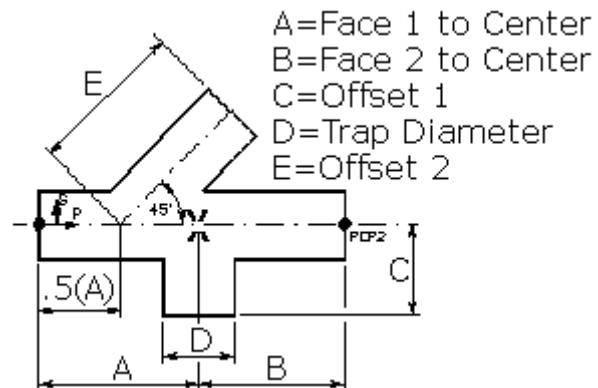
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DInsertVenturi

## **Description:**

**Symbol Name:** SP3DInsertVenturi.CInsertVenturi

## **Workbook:**

### **Workbook Sheet:**

**User Class Name:** PipeComponentClass

## **Part Number:**

## **Inputs, Outputs, and Aspects:**

ProgID: SP3DInsertVenturi.CInsertVenturi

### **Inputs = 10**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentLength2" Description = "Instrument Length2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter1"**

**Input = "InstrumentDiameter2" Description = "Instrument Diameter2"**

**Input = "PortRotation1" Description = "Port Rotation1"**

**Input = "PortRotation2" Description = "Port Rotation2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

### **Outputs = 6**

**Output = "InsBody" Description = "Insulation for Body"**

**Output = "Body" Description = "Body of Venturi"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

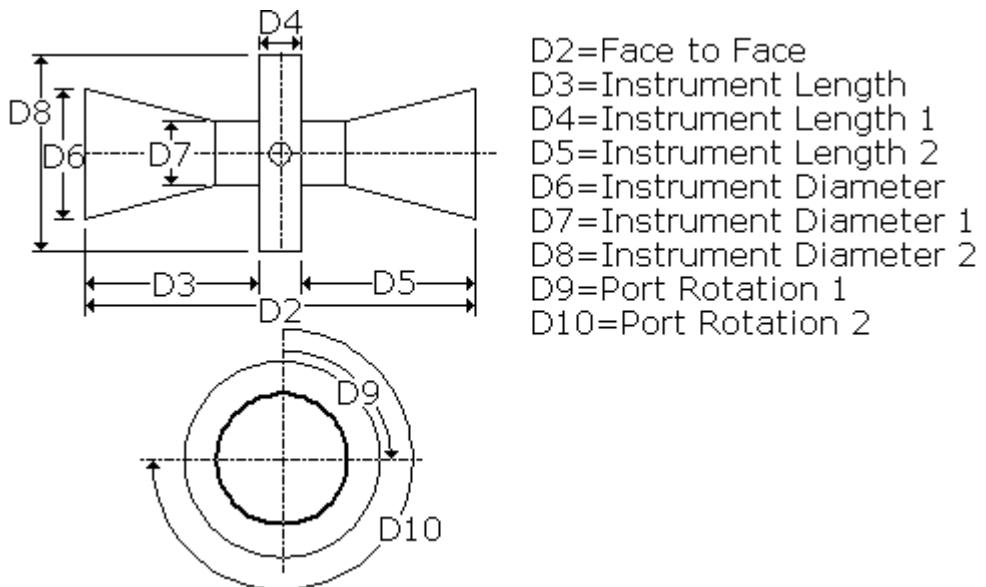
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

### **Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DInstIndicator

**Description:** instrument indicator

**Symbol Name:** SP3DInstIndicator.CInstIndicator

**Workbook:** Instrument Data.xls

**Workbook Sheet:** InstIndicator

**User Class Name:** Instrument Indicator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DInstIndicator.CInstIndicator

**Inputs = 1**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

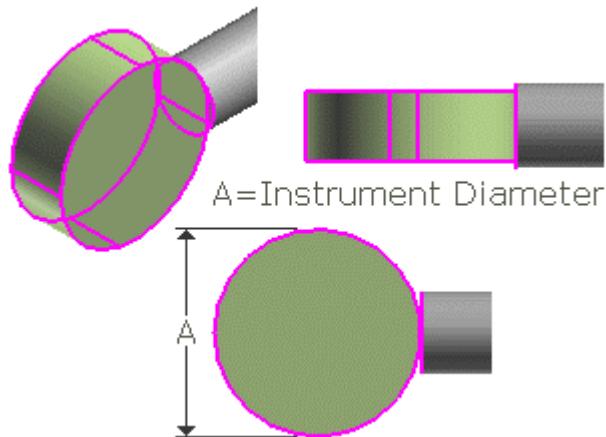
**Outputs = 2**

**Output = "Body" Description = "Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DInstrumentTee

**Description:** Resistoflex full size instrument tee bolt-thru ends x flanged branch

**Symbol Name:** SP3DInstrumentTee.CInstrumentTee

**Workbook:** Piping.xls

**Workbook Sheet:** TFI

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DInstrumentTee.CInstrumentTee

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "TeeBody" Description = "Instrument Body Between 2 Nozzles"**

**Output = "TeeBodyIns" Description = "Tee Body Insulation"**

**Output = "TeeBranNozIns" Description = "Tee Branch Nozzle Insulation"**

**Output = "TeeBranchIns" Description = "Tee Branch Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

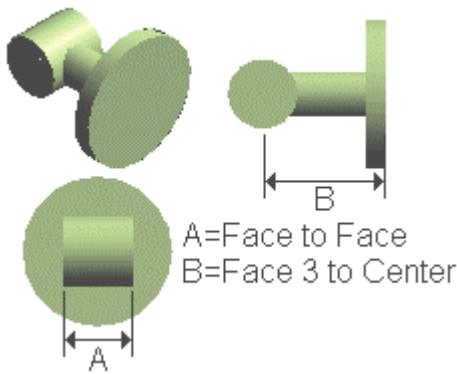
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3 with Length"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DIntegralOrificeTy1

**Description:** Integral orifice type 1

**Symbol Name:** SP3DIntegralOrificeTy1.CIntOrificeTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DIntegralOrificeTy1.CIntOrificeTy1

**Inputs = 22**

**Input = "InstrumentWidth" Description = "InstrumentWidth"**  
**Input = "InstrumentWidth1" Description = "InstrumentWidth1"**  
**Input = "InstrumentHeight" Description = "InstrumentHeight"**  
**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**  
**Input = "InstrumentHeight2" Description = "InstrumentHeight2"**  
**Input = "InstrumentWidth2" Description = "InstrumentWidth2"**  
**Input = "InstrumentHeight3" Description = "InstrumentHeight3"**  
**Input = "InstrumentHeight4" Description = "InstrumentHeight4"**  
**Input = "InstrumentHeight5" Description = "InstrumentHeight5"**  
**Input = "InstrumentWidth3" Description = "InstrumentWidth3"**  
**Input = "InstrumentHeight6" Description = "InstrumentHeight6"**  
**Input = "InstrumentHeight7" Description = "InstrumentHeight7"**  
**Input = "InstrumentHeight8" Description = "InstrumentHeight8"**  
**Input = "InstrumentWidth4" Description = "InstrumentWidth4"**  
**Input = "InstrumentOffset" Description = "InstrumentOffset"**  
**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**  
**Input = "InstrumentLength" Description = "InstrumentLength"**  
**Input = "InstrumentLength1" Description = "InstrumentLength1"**  
**Input = "InstrumentLength2" Description = "InstrumentLength2"**  
**Input = "InstrumentLength3" Description = "InstrumentLength3"**  
**Input = "InstrumentLength4" Description = "InstrumentLength4"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

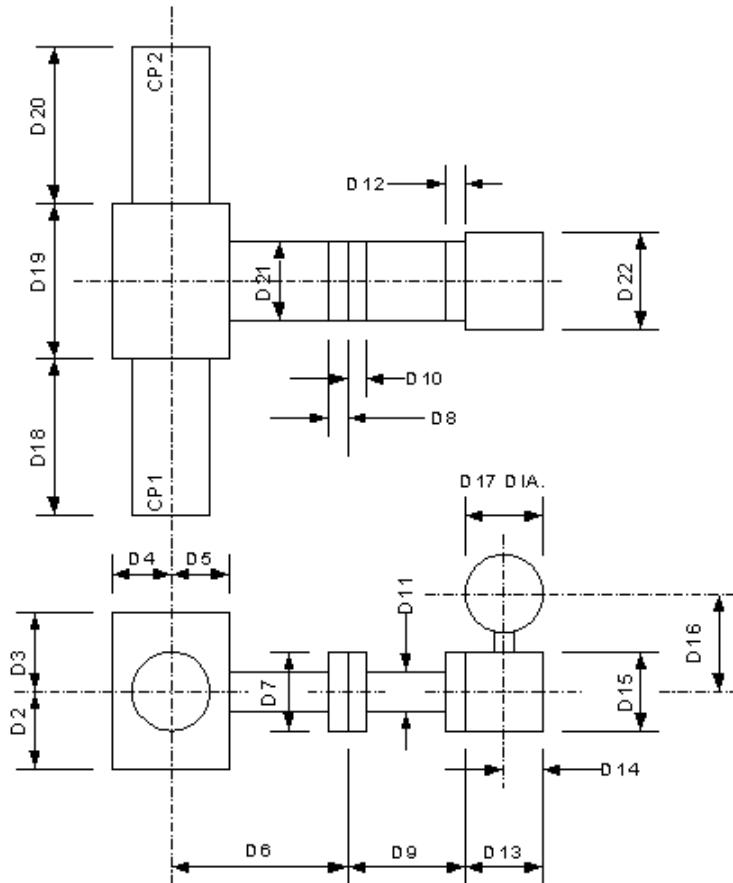
**Outputs = 14**

**Output = "ObjBodyInsCyl1" Description = "Insulation for CP1"**  
**Output = "ObjBodyInsCyl2" Description = "Insulation for CP2"**  
**Output = "ObjBodyInsBox" Description = "Insulation Box Between Nozzles"**  
**Output = "Box1" Description = "Box on the flow axis"**  
**Output = "Box2" Description = "second box"**  
**Output = "Box3" Description = "Third Box"**  
**Output = "Box4" Description = "Fourth Box"**  
**Output = "Box5" Description = "Fifth Box"**  
**Output = "Box6" Description = "sixth Box"**

**Output = "Box7" Description = "Seventh Box"**  
**Output = "Cylinder1" Description = "Cylinder1"**  
**Output = "Cylinder2" Description = "Cylinder2"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



D2=Instrument Width  
 D3=Instrument Width 1  
 D4=Instrument Height  
 D5=Instrument Height 1  
 D6=Instrument Height 2  
 D7=Instrument Width 2  
 D8=Instrument Height 3  
 D9=Instrument Height 4  
 D10=Instrument Height 5  
 D11=Instrument Width 2  
 D12=Instrument Height 6  
 D13=Instrument Height 7  
 D14=Instrument Height 8  
 D15=Instrument Width 4  
 D16=Instrument Offset  
 D17=Instrument Diameter  
 D18=Instrument Length  
 D19=Instrument Length 1  
 D20=Instrument Length 2  
 D21=Instrument Length 3  
 D22=Instrument Length 4

# SP3DIntegralOrificeTy2

**Description:** Integral orifice type 2

**Symbol Name:** SP3DIntegralOrificeTy2.CIntOrificeTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DIntegralOrificeTy2.CIntOrificeTy2

**Inputs = 22**

**Input = "InstrumentWidth" Description = "InstrumentWidth"**  
**Input = "InstrumentWidth1" Description = "InstrumentWidth1"**  
**Input = "InstrumentHeight" Description = "InstrumentHeight"**  
**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**  
**Input = "InstrumentHeight2" Description = "InstrumentHeight2"**  
**Input = "InstrumentWidth2" Description = "InstrumentWidth2"**  
**Input = "InstrumentHeight3" Description = "InstrumentHeight3"**  
**Input = "InstrumentHeight4" Description = "InstrumentHeight4"**  
**Input = "InstrumentHeight5" Description = "InstrumentHeight5"**  
**Input = "InstrumentWidth3" Description = "InstrumentWidth3"**  
**Input = "InstrumentHeight6" Description = "InstrumentHeight6"**  
**Input = "InstrumentHeight7" Description = "InstrumentHeight7"**  
**Input = "InstrumentHeight8" Description = "InstrumentHeight8"**  
**Input = "InstrumentWidth4" Description = "InstrumentWidth4"**  
**Input = "InstrumentOffset" Description = "InstrumentOffset"**  
**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**  
**Input = "InstrumentLength" Description = "InstrumentLength"**  
**Input = "InstrumentLength1" Description = "InstrumentLength1"**  
**Input = "InstrumentLength2" Description = "InstrumentLength2"**  
**Input = "InstrumentLength3" Description = "InstrumentLength3"**  
**Input = "InstrumentLength4" Description = "InstrumentLength4"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 14**

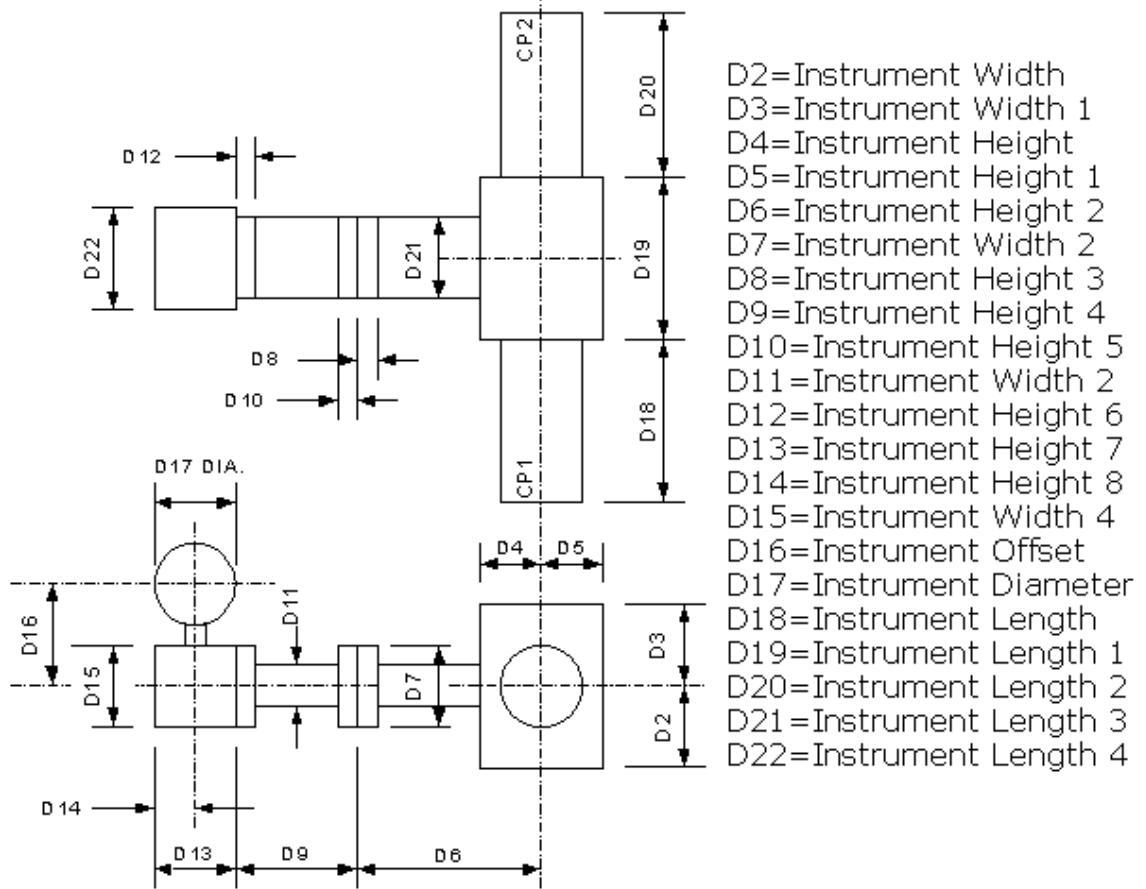
**Output = "ObjBodyInsCyl1" Description = "Insulation for CP1"**  
**Output = "ObjBodyInsCyl2" Description = "Insulation for CP2"**  
**Output = "ObjBodyInsBox" Description = "Insulation Box Between Nozzles"**  
**Output = "Box1" Description = "Box on the flow axis"**  
**Output = "Box2" Description = "second box"**  
**Output = "Box3" Description = "Third Box"**  
**Output = "Box4" Description = "Fourth Box"**  
**Output = "Box5" Description = "Fifth Box"**  
**Output = "Box6" Description = "sixth Box"**

**Output** = "Box7"   **Description** = "Seventh Box"  
**Output** = "Cylinder1"   **Description** = "Cylinder1"  
**Output** = "Cylinder2"   **Description** = "Cylinder2"  
**Output** = "PNoz1"   **Description** = "Nozzle 1"  
**Output** = "PNoz2"   **Description** = "Nozzle 2"

## Aspects = 2

**Aspect** = SimplePhysical

**Aspect = Insulation**



# SP3DJktInsertFlange

**Description:**

**Symbol Name:** SP3DJktInsertFlange.JktInsertFlange

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DJktInsertFlange.JktInsertFlange

**Inputs = 2**

**Input and description** = "FacetoFace", "InsulationThickness"

**Input and description** = "InsulationThickness", "InsulationThickness", 0

**Outputs = 4**

**Output and description** = "BodyInsulation", "Insulation Body"

**Output and description** = "Nozzle1", "Nozzle 1"

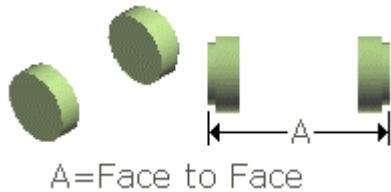
**Output and description** = "Nozzle2", "Nozzle 2"

**Output and description** = "Nozzle3", "Nozzle 3"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DJktRedSlipOnFlange

**Description:**

**Symbol Name:** SP3DJktRedSlipOnFlange.JRSlipOnFlange

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DJktRedSlipOnFlange.JRSlipOnFlange

**Inputs = 1**

**Input and description** = "InsulationThickness", "InsulationThickness", 0

**Outputs = 4**

**Output and description** = "BodyInsulation", "Insulation Body"

**Output and description** = "Nozzle1", "Core Pipe Nozzle 1"

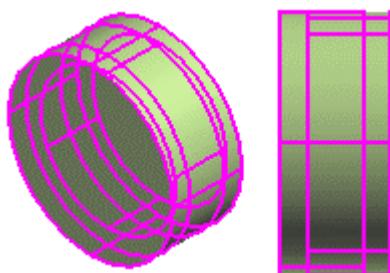
**Output and description** = "Nozzle2", "Core Pipe Nozzle 2"

**Output and description** = "Nozzle3", "Jacketed Pipe Nozzle"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DKnifeGateValve

**Description:** Knife Gate Valve

**Symbol Name:** SP3DKnifeGateValve.CKnifeGateValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** KnifeGateValve

**User Class Name:** Knife Gate Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DKnifeGateValve.CKnifeGateValve

**Inputs = 10**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "ValveHeight" Description = "Valve Height from the center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FrameHeight" Description = "Frame Height"**

**Input = "FrameWidth" Description = "Frame Width"**

**Input = "FrameDepth" Description = "Frame Depth"**

**Input = "ValveWidth" Description = "Valve Width"**

**Outputs = 8**

**Output = "ValveBodyBox" Description = "Valve Body Box"**

**Output = "InsulatedCyl" Description = "Insulation for Cylinder"**

**Output = "InsulatedBox" Description = "Insulation for Box"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Output = "OperatorFrame" Description = "Operator Frame"**

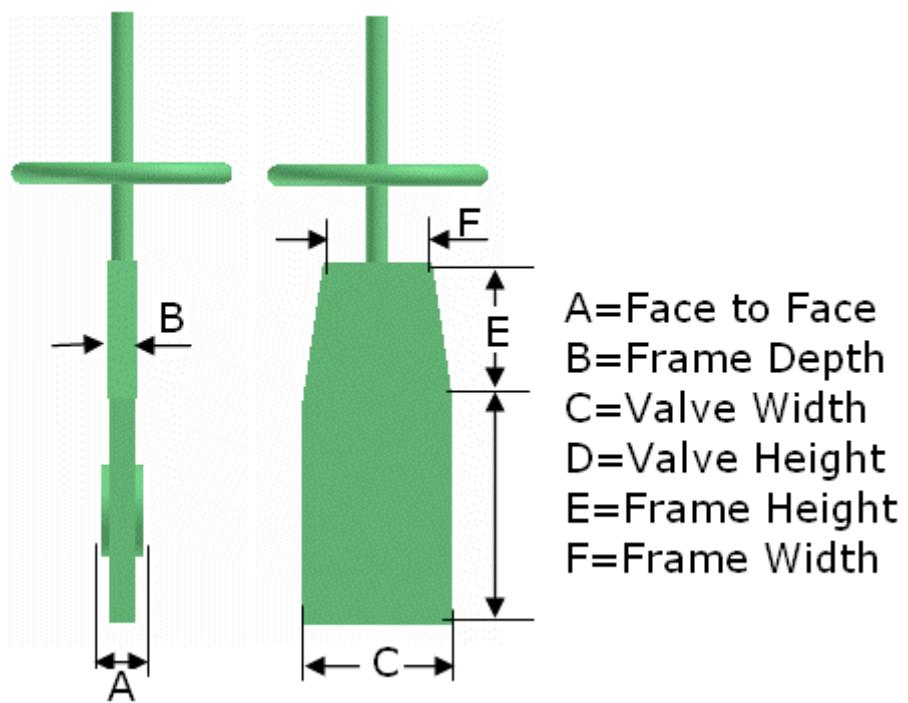
**Output = "InsOperatorFrame" Description = "Insulation for Operator Frame"**

**Aspects = 2**

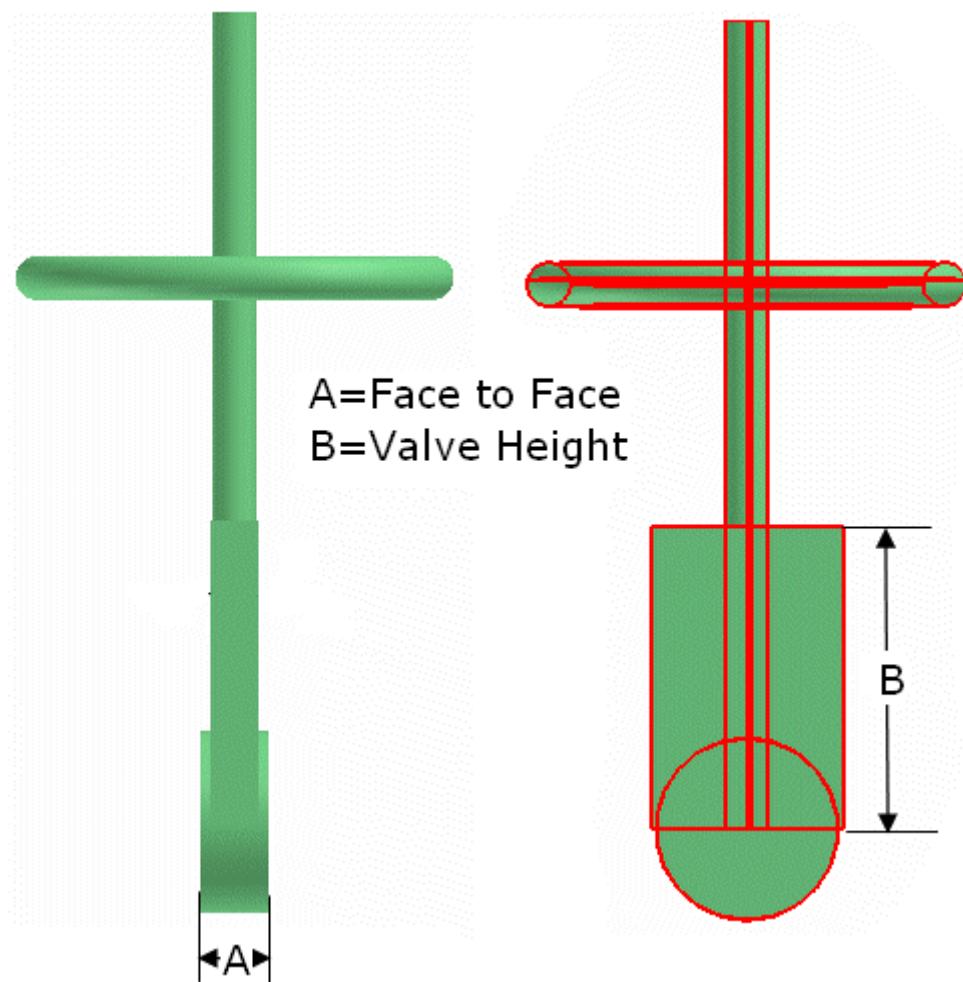
**Aspect = SimplePhysical**

**Aspect = Insulation**

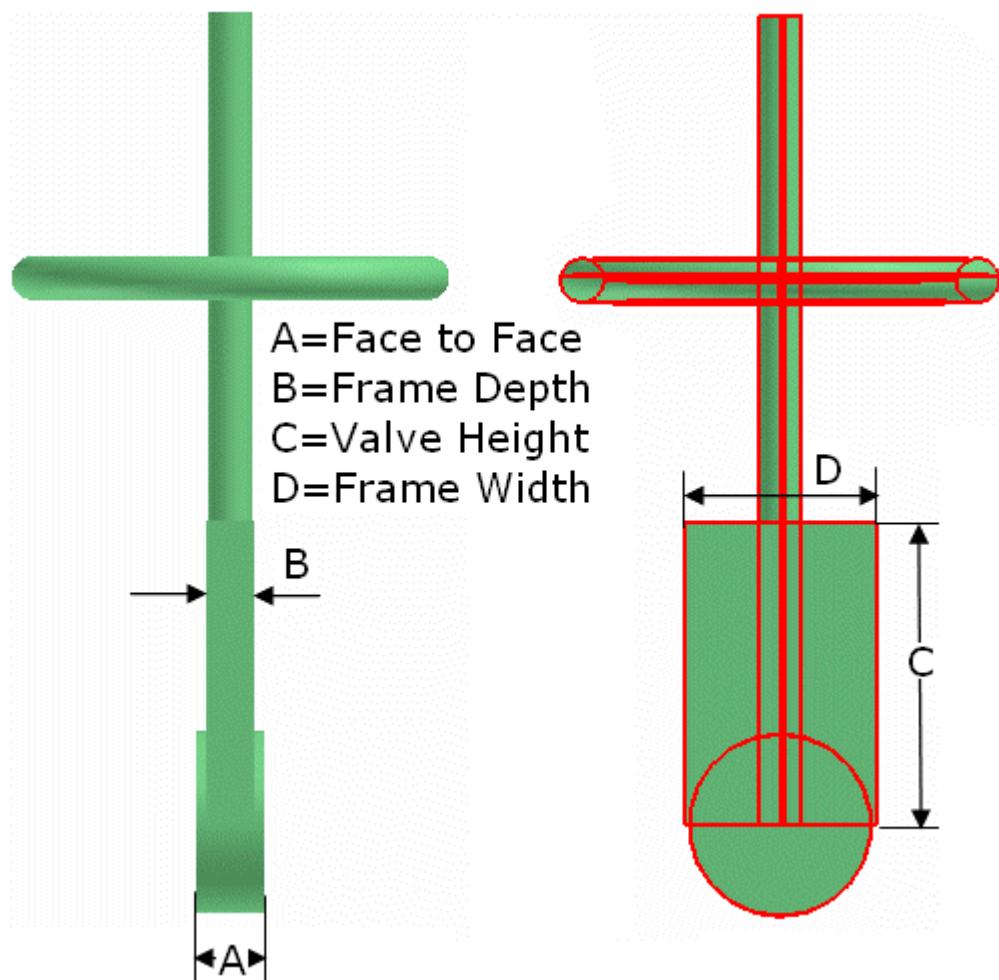
**Part Design Basis 290**



Part Design Basis 295



**Part Design Basis 300**



# SP3DLapJointFlange

**Description:** lap joint flange

**Symbol Name:** SP3DLapJointFlange.CLapJointFlange

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** LapJointFlange

**User Class Name:** Lap Joint Flange

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLapJointFlange.CLapJointFlange

**Inputs = 4**

**Input = "StubLength" Description = "Stub Length"**

**Input = "LapThickness" Description = "Lap Thickness"**

**Input = "IsPipeFlared" Description = "Is Pipe Flared would take a value of 1 if Flared and 0 if Non-Flared"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Flange" Description = "Lap Flange Cylinder"**

**Output = "StubEnd" Description = "Stub End Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "FlangeIns" Description = "Lap Flange Cylinder Insulation"**

**Output = "StubEndIns" Description = "Stub End Cylinder Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Stub Length

B=Lap Thickness

## SP3DLateral

**Description:** lateral

**Symbol Name:** SP3DLateral.CLateral

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLateral.CLateral

**Inputs = 3**

**Input = "FacetoFace" Description = "Face1 to Center"**

**Input = "Face2toBranch" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

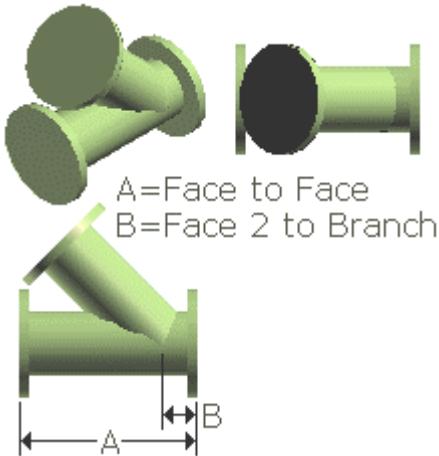
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DLateralRRB

**Description:** lateral

**Symbol Name:** SP3DLateralRRB.CLateralRRB

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Lateral, ReducingLateral

**User Class Name:** Lateral

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLateralRRB.CLateralRRB

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsulatedBody1" Description = "Insulated Body (Port1 side)"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedBody2" Description = "Insulated Body (Port2 side)"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch (Port3 side)"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

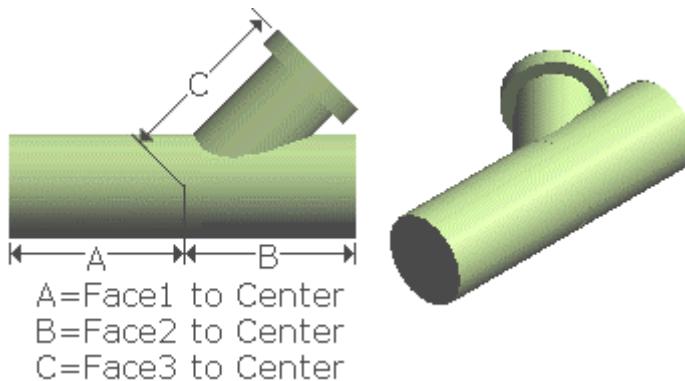
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "TruncCone" Description = "Truncated Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DLatrolet

**Description:** latrolet

**Symbol Name:** SP3DLateral.CLatrolet

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Latrolet

**User Class Name:** Latrolet

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLatrolet.CLatrolet

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

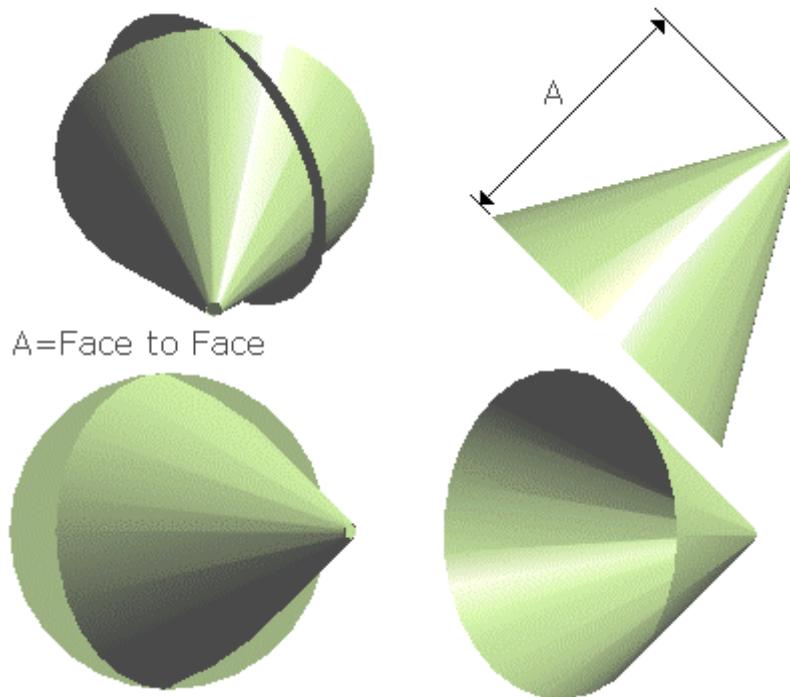
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Face

# SP3DLevelIndCtrlTy3

**Description:** Level indicating controller

**Symbol Name:** SP3DLevelIndCtrlTy3.CLevelIndCtrlTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLevelIndCtrlTy3.CLevelIndCtrlTy3

**Inputs = 13**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FloatDiameter" Description = "Float Diameter"**

**Input = "FloatTopToCenter" Description = "Float Top to Center"**

**Input = "FloatBottomToCenter" Description = "Float Bottom to Center"**

**Input = "Armtocenter" Description = "Arm to Center"**

**Input = "IndicatorHeight1" Description = "Indicator Height1"**

**Input = "IndicatorHeight2" Description = "Indicator Height2"**

**Input = "Angle" Description = "Angle"**

**Input = "Arm1Length" Description = "Arm1 Length"**

**Input = "Arm2Length" Description = "Arm2 Length"**

**Input = "IndicatorWidth" Description = "Indicator Width"**

**Input = "IndicatorLength" Description = "Indicator Length"**

**Outputs = 6**

**Output = "FloatBody" Description = "FloatBody"**

**Output = "Arm1" Description = "Arm1"**

**Output = "Arm2" Description = "Arm2"**

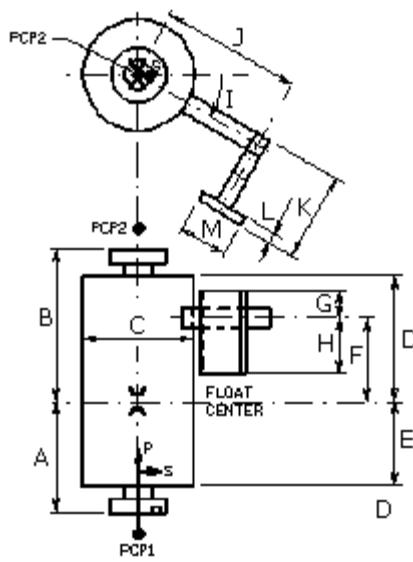
**Output = "Indicator" Description = "Indicator"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Face to Center  
B=Face 1 to Center  
C=Float Diameter  
D=Float Top to Center  
E=Float Bottom to Center  
F=Arm to Center  
G=Indicator Height 1  
H=Indicator Height 2  
I=Angle  
J=Arm 1 Length  
K=Arm 2 Length  
L=Indicator Width  
M=Indicator Length

# SP3DLevelIndCtrlTy4

**Description:** Level indicating controller

**Symbol Name:** SP3DLevelIndCtrlTy4.CLevelIndCtrlTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLevelIndCtrlTy4.CLevelIndCtrlTy4

**Inputs = 15**

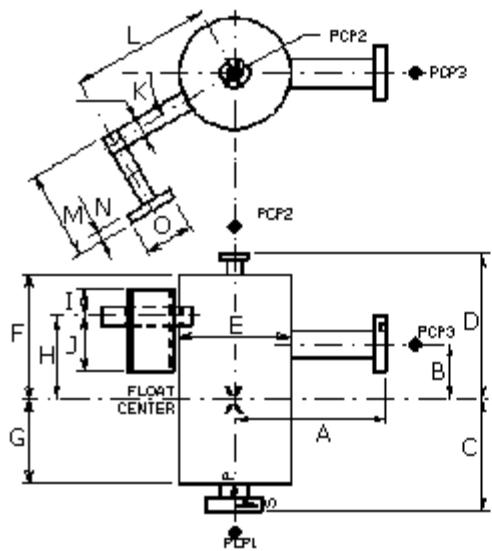
**Input = "Face2toCenter" Description = "Face 3 to Center P2"**  
**Input = "Nozzle3toCenter" Description = "Nozzle3toCenter P3"**  
**Input = "FacetoCenter" Description = "FacetoCenter P4"**  
**Input = "Face1toCenter" Description = "Face1toCenter P5"**  
**Input = "FloatDiameter" Description = "FloatDiameter P6"**  
**Input = "FloatTopoCenter" Description = "FloatTopoCenter P7"**  
**Input = "FloatBottoCenter" Description = "FloatBottoCenter P8"**  
**Input = "Armtocenter" Description = "Armtocenter P9"**  
**Input = "IndicatorHeight1" Description = "IndicatorHeight1 P10"**  
**Input = "IndicatorHeight2" Description = "IndicatorHeight2 P11"**  
**Input = "Angle" Description = "Angle P12"**  
**Input = "Arm1Length" Description = "Arm1Length P13"**  
**Input = "Arm2Length" Description = "Arm2Length P14"**  
**Input = "IndicatorWidth" Description = "IndicatorWidth P15"**  
**Input = "IndicatorLength" Description = "IndicatorLength P16"**

**Outputs = 7**

**Output = "FloatBody" Description = "FloatBody"**  
**Output = "Arm1" Description = "Arm1"**  
**Output = "Arm2" Description = "Arm2"**  
**Output = "Indicator" Description = "Indicator"**  
**Output = "Nozzle1withLength" Description = "NozzlewithLength"**  
**Output = "Nozzle2withLength" Description = "Nozzle 2"**  
**Output = "Nozzle3withLength" Description = "Nozzle 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Face 2 to Center  
B=Nozzle 3 to Center  
C=Face to Center  
D=Face 1 to Center  
E=Float Diameter  
F=Float Top to Center  
G=Float Bottom to Center  
H=Arm to Center  
I=Indicator Height 1  
J=Indicator Height 2  
K=Angle  
L=Arm 1 Length  
M=Arm 2 Length  
N=Indicator Width  
O=Indicator Length

# SP3DLevelIndCtrlTy6

**Description:** Level indicating controller

**Symbol Name:** SP3DLevelIndCtrlTy6.CLevelIndCtrlTy6

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLevelIndCtrlTy6.CLevelIndCtrlTy6

**Inputs = 14**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "Offset1" Description = "Offset1"**

**Input = "Offset2" Description = "Offset2"**

**Input = "FloatDiameter" Description = "Float Diameter"**

**Input = "FloatTopToCenter" Description = "Float Top to Center"**

**Input = "FloatBottomToCenter" Description = "Float Bottom to Center"**

**Input = "Armtocenter" Description = "Arm to Center"**

**Input = "IndicatorHeight1" Description = "Indicator Height1"**

**Input = "IndicatorHeight2" Description = "Indicator Height2"**

**Input = "Angle" Description = "Angle"**

**Input = "Arm1Length" Description = "Arm1 Length"**

**Input = "Arm2Length" Description = "Arm2 Length"**

**Input = "IndicatorWidth" Description = "Indicator Width"**

**Input = "IndicatorLength" Description = "Indicator Length"**

**Outputs = 6**

**Output = "FloatBody" Description = "FloatBody"**

**Output = "Arm1" Description = "Arm1"**

**Output = "Arm2" Description = "Arm2"**

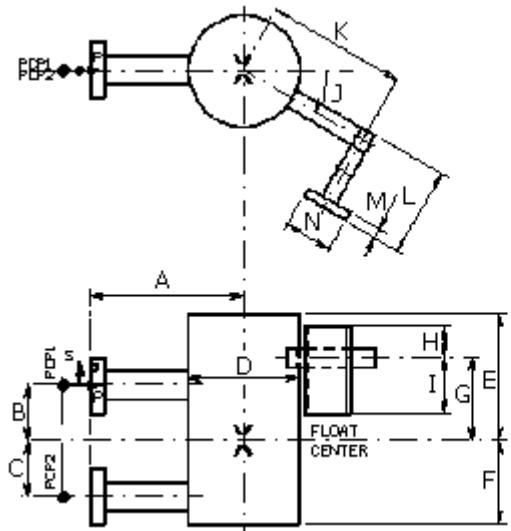
**Output = "Indicator" Description = "Indicator"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Face to Center  
B=Offset 1  
C=Offset 2  
D=Float Diameter  
E=Float Top to Center  
F=Float Bottom to Center  
G=Arm to Center  
H=Indicator Height 1  
I=Indicator Height 2  
J=Angle  
K=Arm 1 Length  
L=Arm 2 Length  
M=Indicator Width  
N=Indicator Length

# SP3DLinedTStrainerAssly

**Description:** Tee strainer assembly

**Symbol Name:** SP3DLinedTStrainerAssly.CStnrTAsmby

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLinedTStrainerAssly.CStnrTAsmby

**Inputs = 3**

**Input = "FaceToCenter" Description = "Face To Center"**

**Input = "StrainerHeight" Description = "Strainer Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "VerticalCyl" Description = "Vertical Cylinder"**

**Output = "BlindFlange1" Description = "Blind Flange1"**

**Output = "BlindFlange2" Description = "Blind Flange2"**

**Output = "PortsIns" Description = "Ports Insulation"**

**Output = "VerCylIns" Description = "Insulation Body2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DLongOrShortVenturi

**Description:** Long or short venturi

**Symbol Name:** SP3DLongOrShortVenturi.CLorSVenturi

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLongOrShortVenturi.CLorSVenturi

**Inputs = 12**

**Input = "InstrumentLength" Description = "Instrument Length"**  
**Input = "InstrumentLength1" Description = "Instrument Length1"**  
**Input = "InstrumentLength2" Description = "Instrument Length2"**  
**Input = "InstrumentLength3" Description = "Instrument Length3"**  
**Input = "InstrumentDiameter" Description = "Venturi Diameter"**  
**Input = "NozzleOffset" Description = "Nozzle Offset"**  
**Input = "NozzleOffset1" Description = "Nozzle Offset1"**  
**Input = "NozzleOffset2" Description = "Nozzle Offset2"**  
**Input = "NozzleOffset3" Description = "Nozzle Offset3"**  
**Input = "PortRotation1" Description = "Port Rotation of Nozz3"**  
**Input = "PortRotation2" Description = "Port Rotation of Nozz4"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

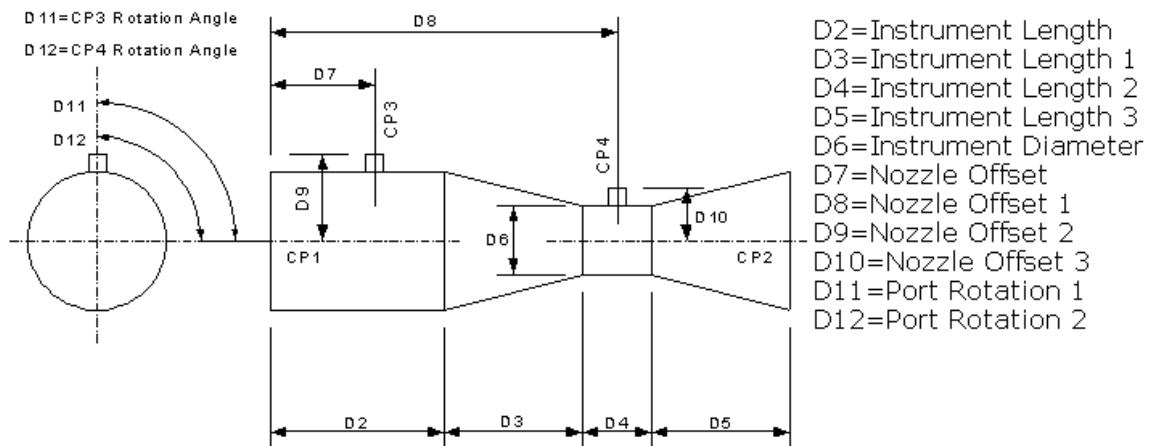
**Outputs = 11**

**Output = "CylinderBody1" Description = "Cylinder Body1"**  
**Output = "CylinderBody2" Description = "Cylinder Body2"**  
**Output = "ReducingCone" Description = "Reducing Cone"**  
**Output = "DivergingCone" Description = "Diverging Cone"**  
**Output = "VenturiBodyIns" Description = "Venturi Body Insulation"**  
**Output = "Nozz3BodyIns" Description = "Nozzle3 Body Insulation"**  
**Output = "Nozz4BodyIns" Description = "Nozzle4 Body Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**  
**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DLongTangentElbow

**Description:**

**Symbol Name:** SP3DLongTangentElbow.LTElbow

**Workbook:** Piping Catalog.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLongTangentElbow.LTElbow

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "TangentLength1" Description = "TangentLength 1"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "TangentLength2" Description = "TangentLength 2"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "TangentLength" Description = "TangentLength"**

**Input = "BendRadius" Description = "Bend Radius"**

**Input = "Angle" Description = "Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Elbow" Description = "Elbow"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "InsulatedTangent1" Description = "Insulated Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedTangent2" Description = "Insulated Tangent at Port 2"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

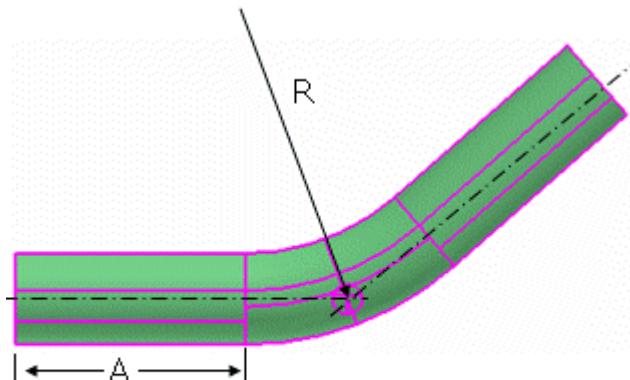
**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

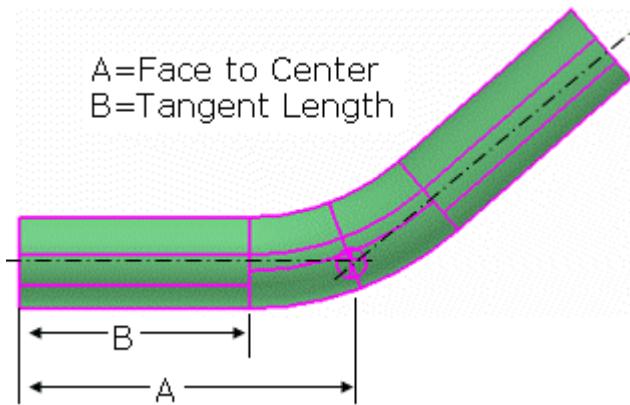
**Aspect = Insulation**

Specified by Bend Radius and Tangent

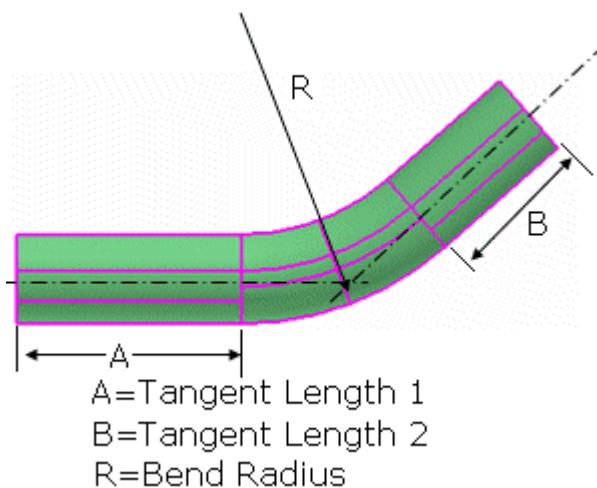


A = Tangent Length  
R = Bend Radius

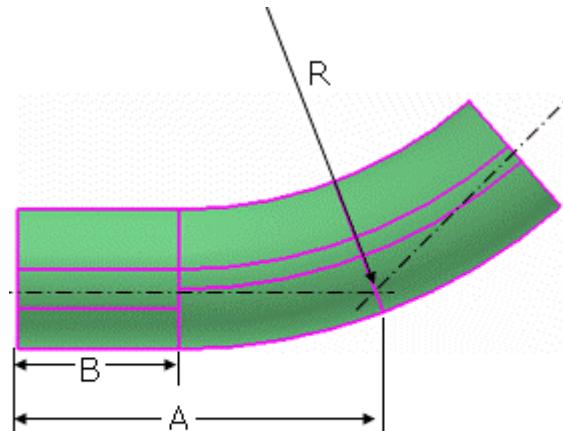
Specified by Face-to-Center and Tangent



Specified by Bend Radius, Tangent 1, and Tangent 2

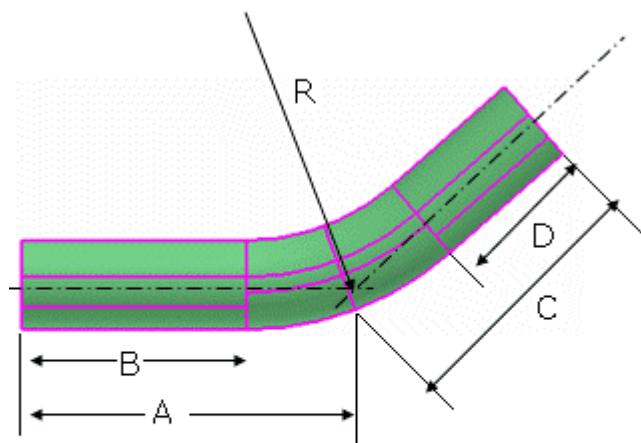


Specified by Face-to-Center 1, Tangent 1, and Bend Radius



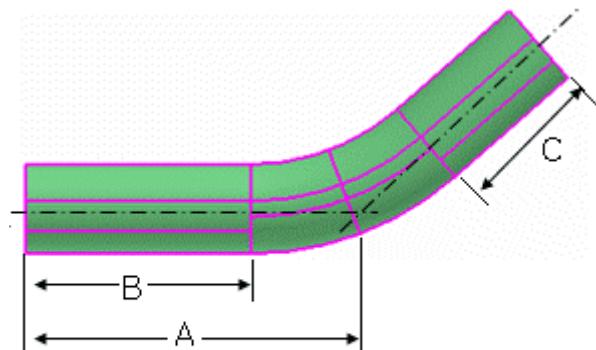
A=Face 1 to Center  
B=Tangent Length 1  
R=Bend Radius

Specified by Face-to-Center 1, Face-to-Center 2, Tangent 1, Tangent 2, and Bend Radius



A=Face 1 to Center  
B=Tangent Length 1  
C=Face 2 to Center  
D=Tangent Length 2  
R=Bend Radius

Specified by Face-to-Center 1, Tangent 1, and Tangent 2



A=Face 1 to Center  
B=Tangent Length 1  
C=Tangent Length 2

# SP3DMagFlowmeterTy1

**Description:** Magnetic Flowmeter Type 1

**Symbol Name:** SP3DMagFlowmeterTy1.CMagFlowmeterTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMagFlowmeterTy1.CMagFlowmeterTy1

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Pipe Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "FlowMeterBody" Description = "Flow Meter Body"**

**Output = "FlowMeterTopBody" Description = "Flow Meter Top Body"**

**Output = "FlowMeterBodyIns" Description = "Flow Meter Body Insulation"**

**Output = "FlowMeterTopBodyIns" Description = "Flow Meter Top Body Insulation"**

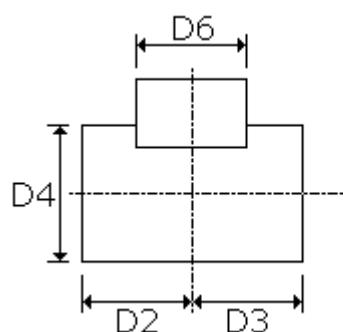
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Flow Diameter  
D5=Instrument Height  
D6=Instrument Length  
D7=Instrument Width

# SP3DMagFlowmeterTy2

**Description:** Magnetic Flowmeter Type 2

**Symbol Name:** SP3DMagFlowmeterTy2.CMFlowmeterTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMagFlowmeterTy2.CMagFlowmeterTy2

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "FlowDiameter" Description = "FlowDiameter"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**

**Input = "InstrumentLength" Description = "InstrumentLength"**

**Input = "InstrumentWidth" Description = "InstrumentWidth"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "InsFlowMtrBase" Description = "Insulation for Flow Meter Base"**

**Output = "InsFlowMtrTop" Description = "Insulation for Flow Meter Top"**

**Output = "FlowMtrBase" Description = "Flow Meter Base"**

**Output = "Connector" Description = "Base to Top Connector"**

**Output = "FlowMtrTop" Description = "Flow Meter Top"**

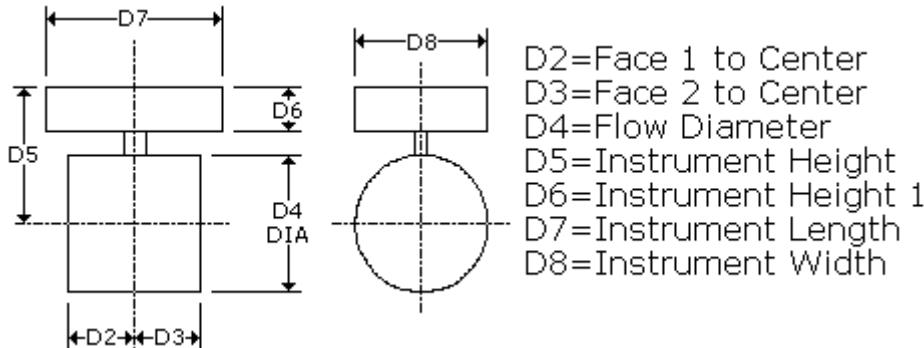
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DMagFlowmeterTy3Tr

**Description:** Magnetic Flowmeter Type 3

**Symbol Name:** SP3DMagFlowmeterTy3Tr.CMFlowmtrTy3T

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMagFlowmeterTy3Tr.CMFlowmeterTy3Tr

**Inputs = 10**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentOffset" Description = "Instrument Offset"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentOffset1" Description = "Instrument Offset1"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "InsFlowmtrBase" Description = "Insulation for Flowmeter Base"**

**Output = "InsTransmitter" Description = "Insulation for Transmitter"**

**Output = "FlowmtrBase" Description = "Flowmeter Base"**

**Output = "Connector" Description = "Connector"**

**Output = "Transmitter" Description = "Transmitter"**

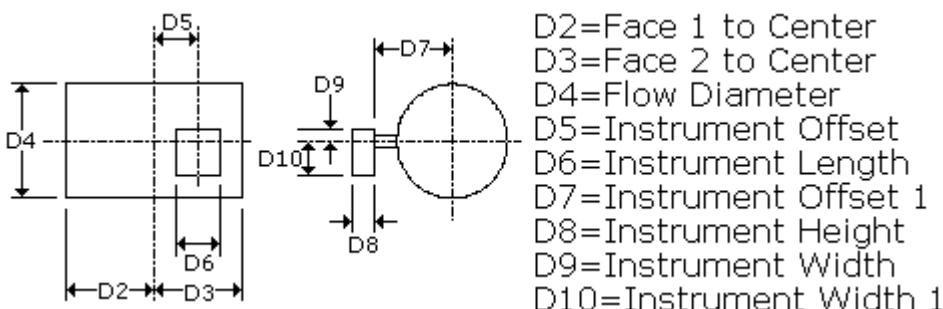
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DMagFlowmeterTy4

**Description:** Magnetic Flowmeter Type 4

**Symbol Name:** SP3DMagFlowmeterTy4.CMFlowmeterTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:** InstrumentsClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMagFlowmeterTy4.CMagFlowmeterTy4

**Inputs = 9**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "InsFlowmeter" Description = "Insulation for Flowmeter"**

**Output = "FlowmeterBase" Description = "FlowmeterBase"**

**Output = "FlowmeterTop" Description = "FlowmeterTop"**

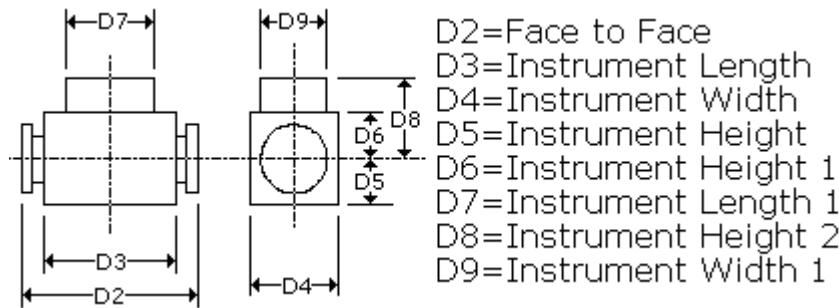
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DMagneticFlowMeter

**Description:** magnetic flow meter

**Symbol Name:** SP3DMagneticFlowMeter.MagneticFlowMeter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** FlowMagnetic

**User Class Name:** Magnetic FlowMeter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMagneticFlowMeter.MagneticFlowMeter

**Inputs = 5**

**Input and description** = "FacetoFace", "Face to Face", 0.

**Input and description** = "InstrumentHeight", "Instrument Height", 0

**Input and description** = "InstrumentLength", "Instrument Length", 0.

**Input and description** = "InstrumentWidth", "Instrument Width", 0

**Input and description** = "InstrumentHeight1", "Instrument Height1", 0

**Outputs = 9**

**Output and description** = "Body", "Body"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Box1", "Box 1"

**Output and description** = "Box2", "Box 2"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "ConduitCylinder1", "Conduit Cylinder 1"

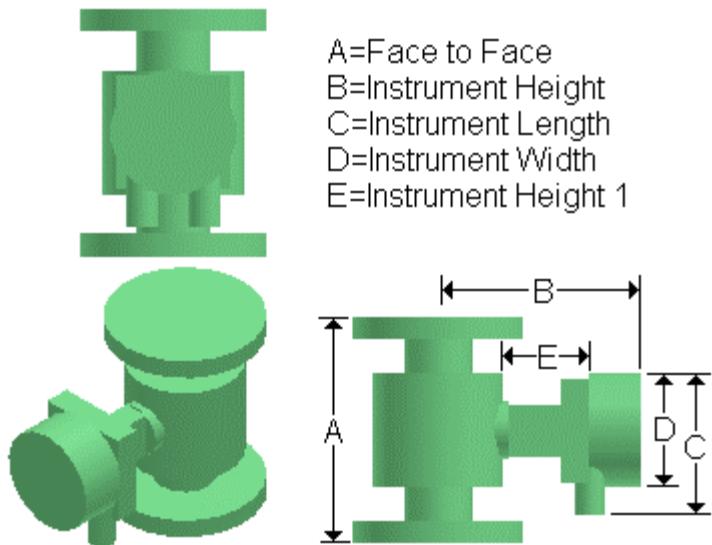
**Output and description** = "ConduitCylinder2", "Conduit Cylinder 2"

**Output and description** = "PipingNoz1", "Nozzle 1"

**Output and description** = "PipingNoz2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DMeterRunShortVenturi

**Description:** Meter run short venturi

**Symbol Name:** SP3DMeterRunShortVenturi.CMSVenturi

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMeterRunShortVenturi.CMSVenturi

**Inputs = 14**

```
Input = "InstrumentLength" Description = "Instrument Length"
Input = "InstrumentLength1" Description = "Instrument Length1"
Input = "InstrumentLength2" Description = "Instrument Length2"
Input = "InstrumentLength3" Description = "Instrument Length3"
Input = "InstrumentDiameter" Description = "Instrument Diameter"
Input = "NozzleOffset" Description = "NozzleOffset"
Input = "NozzleOffset1" Description = "NozzleOffset1"
Input = "NozzleOffset2" Description = "Nozzle Offset 2"
Input = "NozzleOffset3" Description = "Nozzle Offset3"
Input = "PortRotation1" Description = "Port Rotation of Nozz3"
Input = "PortRotation2" Description = "Port Rotation of Nozz4"
Input = "InstrumentLength4" Description = "Instrument Length4"
Input = "InstrumentLength5" Description = "Instrument Length5"
Input = "InsulationThickness" Description = "Insulation Thickness"
```

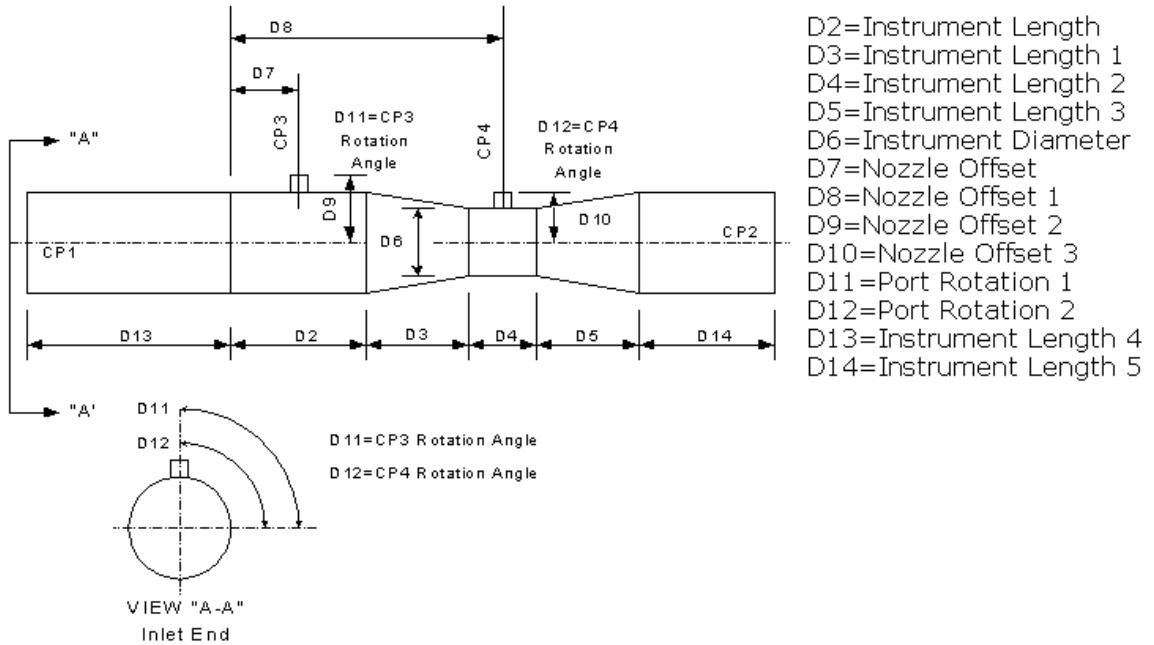
**Outputs = 11**

```
Output = "CylinderBody1" Description = "Cylinder Body1"
Output = "CylinderBody2" Description = "Cylinder Body2"
Output = "ReducingCone" Description = "Reducing Cone"
Output = "DivergingCone" Description = "Diverging Cone"
Output = "VenturiBodyIns" Description = "Venturi Body Insulation"
Output = "Nozz3BodyIns" Description = "Nozzle3 Body Insulation"
Output = "Nozz4BodyIns" Description = "Nozzle4 Body Insulation"
Output = "PNoz1" Description = "Nozzle 1"
Output = "PNoz2" Description = "Nozzle 2"
Output = "PNoz3" Description = "Nozzle 3"
Output = "PNoz4" Description = "Nozzle 4"
```

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DMetrundblChOriFitting

**Description:** Meter run double chamber orifice fitting

**Symbol Name:** SP3DMetrundblChOriFitting.CMDCOrificeF

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMetrundblChOriFitting.CMDCOrificeF

**Inputs = 16**

**Input** = "InstrumentLength"   **Description** = "Instrument Length"  
**Input** = "InstrumentLength1"   **Description** = "Instrument Length1"  
**Input** = "InstrumentHeight"   **Description** = "Instrument Height"  
**Input** = "InstrumentHeight1"   **Description** = "Instrument Height1"  
**Input** = "InstrumentLength2"   **Description** = "Instrument Length2"  
**Input** = "InstrumentLength3"   **Description** = "Instrument Length3"  
**Input** = "InstrumentWidth"   **Description** = "Instrument Width"  
**Input** = "InstrumentWidth1"   **Description** = "Instrument Width1"  
**Input** = "ArmLength"   **Description** = "Arm Length"  
**Input** = "NozzleOffset"   **Description** = "Nozzle Offset"  
**Input** = "NozzleOffset1"   **Description** = "Nozzle Offset1"  
**Input** = "ArmHeight"   **Description** = "Arm Height"  
**Input** = "ArmHeight1"   **Description** = "Arm Height1"  
**Input** = "InstrumentLength4"   **Description** = "Instrument Length4"  
**Input** = "InstrumentLength5"   **Description** = "Instrument Length5"  
**Input** = "InsulationThickness"   **Description** = "Insulation Thickness"

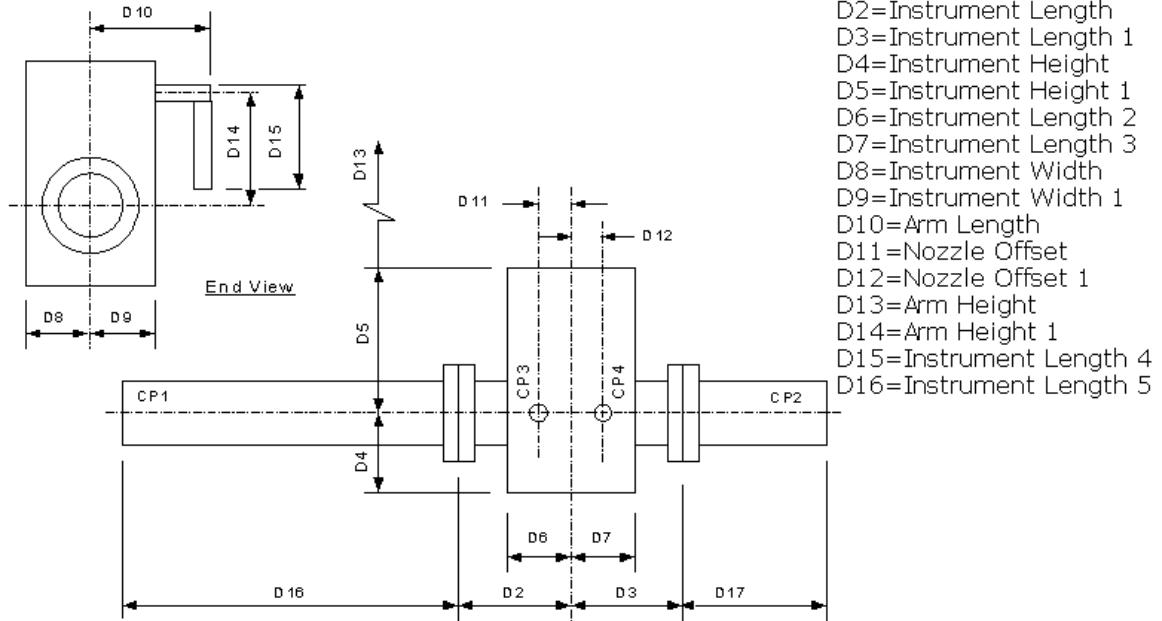
**Outputs = 11**

**Output** = "InsBody"   **Description** = "Insulation for Body of Orifice fitting"  
**Output** = "InsPipeLine"   **Description** = "Insulation for pipes"  
**Output** = "LHSPipe"   **Description** = "Left Hand Side Pipe"  
**Output** = "RHSPipe"   **Description** = "Right Hand Side Pipe"  
**Output** = "FittingBody"   **Description** = "Body Orifice fitting "  
**Output** = "ArmCylinder1"   **Description** = "ArmCylinder1"  
**Output** = "ArmBody2"   **Description** = "ArmBody2"  
**Output** = "PNoz1"   **Description** = "Nozzle 1"  
**Output** = "PNoz2"   **Description** = "Nozzle 2"  
**Output** = "PNoz3"   **Description** = "Nozzle 3"  
**Output** = "PNoz4"   **Description** = "Nozzle 4"

**Aspects = 2**

**Aspect** = SimplePhysical

**Aspect** = Insulation



# SP3DMetrurOriFlangePlate

**Description:** Meter run orifice flanges and plate

**Symbol Name:** SP3DMetrurOriFlangePlate.CMOFPlate

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMetrurOriFlangePlate.CMOFPlate

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "OrificeFlangeClearance" Description = "OrificeFlangeClearance"**

**Input = "PortRotation1" Description = "Port Rotation1"**

**Input = "PortRotation2" Description = "PortRotation2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "DivergingCone" Description = "Diverging Cone"**

**Output = "ConvergingCone" Description = "Converging Cone"**

**Output = "Flange1" Description = "Flange1"**

**Output = "Flange2" Description = "Flange2"**

**Output = "InsulationBody" Description = "Insulation Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

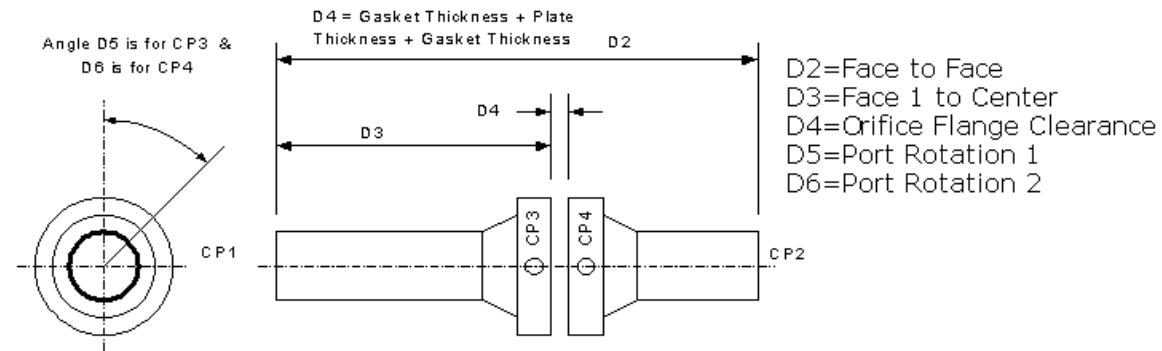
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DMFlowController

**Description:** flow controller

**Symbol Name:** SP3DMFlowController.MassFlowController

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** MassFlow

**User Class Name:** Mass Flow Controller

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DMFlowController.MassFlowController

**Inputs = 6**

**Input and description** = "FacetoFace", "Face to Face", 0.12

**Input and description** = "InstrumentLength", "Instrument Length", 0.09

**Input and description** = "InstrumentHeight", "Instrument Height", 0.

**Input and description** = "InstrumentWidth", "Instrument Width", 0.02

**Input and description** = "InstrumentHeight1", "Instrument Height 1", 0

**Input and description** = "InstrumentHeight2", "Instrument Height 2", 0.09

**Outputs = 7**

**Output and description** = "MassFlowControllerBody", "Mass Flow Controller Body"

**Output and description** = "Body1", "Body 1(Rectangular Body)"

**Output and description** = "Body2", "Body 2(Cylindrical Body)"

**Output and description** = "LHSNozMountingBox", "Left Hand Side Nozzle Mounting Box"

**Output and description** = "RHSNozMountingBox", "Right Hand Side Nozzle Mounting Box"

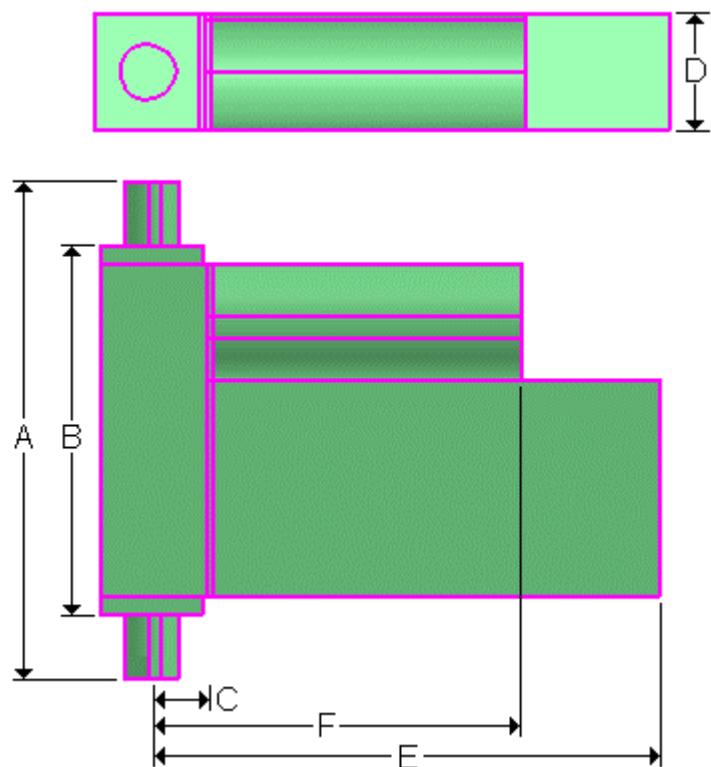
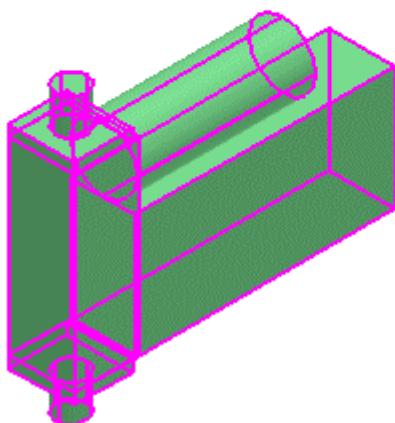
**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1

A=Face to Face  
B=Instrument Length  
C=Instrument Height  
D=Instrument Width  
E=Instrument Height 1  
F=Instrument Height 2



# SP3DMultiportDia3Way

**Description:** multi-port diverter valve

**Symbol Name:** SP3DMultiportDia3Way.MultiportDia3Way

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** MultiportDia3Way

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 8**

**Input and description** = "ValveBodyHeight", "Valve Body Height"

**Input and description** = "Face1toCenter", "Face 1 to Center"

**Input and description** = "Face2toCenter", "Face 2 to Center"

**Input and description** = "Face3toCenter", "Face 3 to Center"

**Input and description** = "Face4toCenter", "Face 4 to Center"

**Input and description** = "NozzleCentertoCenter", "Nozzle Center to Center"

**Input and description** = "Offset", "Offset"

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 25**

**Output and description** = "ValveBody", "Valve Body"

**Output and description** = "Nozzle2CylinderBody", "Nozzle 2 Cylinder Body"

**Output and description** = "Nozzle2CurvedBody", "Nozzle 2 Curved Body"

**Output and description** = "Nozzle3CylinderBody", "Nozzle 3 Cylinder Body"

**Output and description** = "Nozzle3CurvedBody", "Nozzle 3 Curved Body"

**Output and description** = "Nozzle4CylinderBody", "Nozzle 4 Cylinder Body"

**Output and description** = "Nozzle4CurvedBody", "Nozzle 4 Curved Body"

**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

**Output and description** = "Nozzle3", "Nozzle 3"

**Output and description** = "Nozzle4", "Nozzle 4"

**Output and description** = "ValveOperator1", "Valve Operator 1"

**Output and description** = "ValveOperator2", "Valve Operator 2"

**Output and description** = "ValveOperator3", "Valve Operator 3"

**Output and description** = "InsValveBody", "Insulation for Valve Body"

**Output and description** = "InsNozzle2CylinderBody", "Insulation for Nozzle 2 Cylinder Body"

**Output and description** = "InsNozzle2CurvedBody", "Insulation for Nozzle 2 Curved Body"

**Output and description** = "InsNozzle3CylinderBody", "Insulation for Nozzle 3 Cylinder Body"

**Output and description** = "InsNozzle3CurvedBody", "Insulation for Nozzle 3 Curved Body"

**Output and description** = "InsNozzle4CylinderBody", "Insulation for Nozzle 4

Cylinder Body"

**Output and description** = "InsNozzle4CurvedBody", "Insulation for Nozzle 4 Curved Body"

**Output and description** = "InsNozzle1", "Insulation for Nozzle 1"

**Output and description** = "InsNozzle2", "Insulation for Nozzle 2"

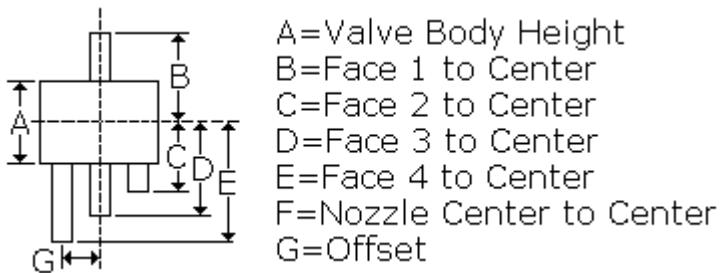
**Output and description** = "InsNozzle3", "Insulation for Nozzle 3"

**Output and description** = "InsNozzle4", "Insulation for Nozzle 4"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DMultiportDia4Way

**Description:** multi-port diverter valve

**Symbol Name:** SP3DMultiportDia4Way.CMultiportDia4Way

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** MultiportDia4Way

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 10**

**Input and description** = "ValveBodyWidth", "Valve Body Width"

**Input and description** = "ValveBodyDepth", "Valve Body Depth"

**Input and description** = "ValveBodyHeight", "Valve Body Height"

**Input and description** = "Face1toCenter", "Face 1 to Center"

**Input and description** = "Face2toCenter", "Face 2 to Center"

**Input and description** = "Face3toCenter", "Face 3 to Center"

**Input and description** = "Face4toCenter", "Face 4 to Center"

**Input and description** = "Face5toCenter", "Face 5 to Center"

**Input and description** = "Offset", "Offset"

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 32**

**Output and description** = "ValveBody", "Valve Body"

**Output and description** = "Nozzle2CylinderBody", "Nozzle 2 Cylinder Body"

**Output and description** = "Nozzle2CurvedBody", "Nozzle 2 Curved Body"

**Output and description** = "Nozzle3CylinderBody", "Nozzle 3 Cylinder Body"

**Output and description** = "Nozzle3CurvedBody", "Nozzle 3 Curved Body"

**Output and description** = "Nozzle4CylinderBody", "Nozzle 4 Cylinder Body"

**Output and description** = "Nozzle4CurvedBody", "Nozzle 4 Curved Body"

**Output and description** = "Nozzle5CylinderBody", "Nozzle 5 Cylinder Body"

**Output and description** = "Nozzle5CurvedBody", "Nozzle 5 Curved Body"

**Output and description** = "Nozzle1", "Nozzle 1 with length"

**Output and description** = "Nozzle2", "Nozzle 2 with length"

**Output and description** = "Nozzle3", "Nozzle 3 with length"

**Output and description** = "Nozzle4", "Nozzle 4 with length"

**Output and description** = "Nozzle5", "Nozzle 5 with length"

**Output and description** = "ValveOperator1", "Port 1 Valve Operator"

**Output and description** = "ValveOperator2", "Port 2 Valve Operator"

**Output and description** = "ValveOperator3", "Port 3 Valve Operator"

**Output and description** = "ValveOperator4", "Port 4 Valve Operator"

**Output and description** = "InsValveBody", "Ins Valve Body"

**Output and description** = "InsNozzle2CylinderBody", "Ins Nozzle 2 Cylinder Body"

**Output and description** = "InsNozzle2CurvedBody", "Ins Nozzle 2 Curved Body"

**Output and description = "InsNozzle3CylinderBody", "Ins Nozzle 3 Cylinder Body"**

**Output and description = "InsNozzle3CurvedBody", "Ins Nozzle 3 Curved Body"**

**Output and description = "InsNozzle4CylinderBody", "Ins Nozzle 4 Cylinder Body"**

**Output and description = "InsNozzle4CurvedBody", "Ins Nozzle 4 Curved Body"**

**Output and description = "InsNozzle5CylinderBody", "Ins Nozzle 5 Cylinder Body"**

**Output and description = "InsNozzle5CurvedBody", "Ins Nozzle 5 Curved Body"**

**Output and description = "InsNozzle1", "Ins Nozzle 1"**

**Output and description = "InsNozzle2", "Ins Nozzle 2"**

**Output and description = "InsNozzle3", "Ins Nozzle 3"**

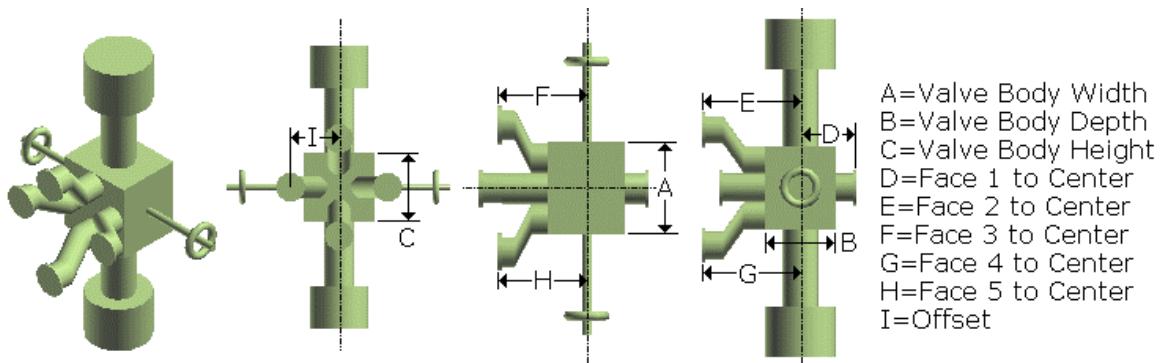
**Output and description = "InsNozzle4", "Ins Nozzle 4"**

**Output and description = "InsNozzle5", "Ins Nozzle 5"**

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "Insulation", "Insulation"**



# SP3DMultportG2WayDia

**Description:** multiport 2-way valve

**Symbol Name:** SP3DMultportG2WayDia.CMultportG2WayDia

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** MultiportDia2WayG

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 7**

**Input and description =** "ValveBodyWidth", "Valve Body Width", 0.

**Input and description =** "ValveBodyDepth", "Valve Body Depth", 0.

**Input and description =** "ValveBodyHeight", "Valve Body Height", 0

**Input and description =** "Face1toCenter", "Face 1 to Center", 0.

**Input and description =** "Face2toCenter", "Face 2 to Center", 0.

**Input and description =** "Face3toCenter", "Face 3 to Center", 0.

**Input and description =** "InsulationThickness", "Insulation Thickness", 0.

**Outputs = 10**

**Output and description =** "ValveBody", "Valve Body"

**Output and description =** "Nozzle1", "Nozzle 1 with length"

**Output and description =** "Nozzle2", "Nozzle 2 with length"

**Output and description =** "Nozzle3", "Nozzle 3 with length"

**Output and description =** "ValveOperator1", "Port 1 Valve Operator"

**Output and description =** "ValveOperator2", "Port 2 Valve Operator"

**Output and description =** "InsValveBody", "Ins Valve Body"

**Output and description =** "InsNozzle1", "Ins Nozzle 1"

**Output and description =**

"InsNozzle2", "Ins Nozzle 2"

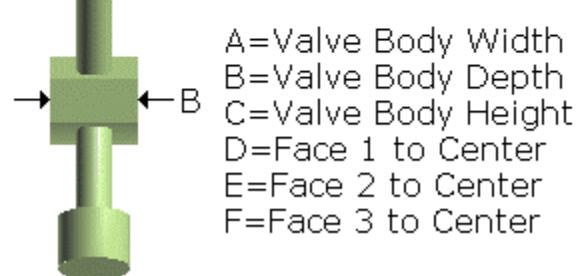
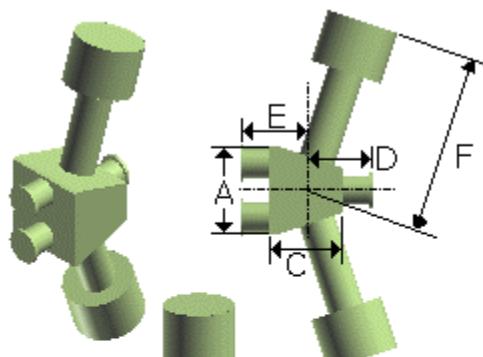
**Output and description =**

"InsNozzle3", "Ins Nozzle 3"

**Aspects = 2**

**Aspect =** "SimplePhysical",  
"Physical"

**Aspect =** "Insulation",  
"Insulation"



A=Valve Body Width  
B=Valve Body Depth  
C=Valve Body Height  
D=Face 1 to Center  
E=Face 2 to Center  
F=Face 3 to Center

## SP3DMultportG4WayDia

**Description:** multiport 4-way diaphragm valve

**Symbol Name:** SP3DMultportG4WayDia

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** MultiportDia4Way

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 9**

**Input and description** = "ValveBodyWidth", "Valve Body Width", 0.

**Input and description** = "ValveBodyDepth", "Valve Body Depth", 0.

**Input and description** = "ValveBodyHeight", "Valve Body Height", 0

**Input and description** = "Face1toCenter", "Face 1 to Center", 0.

**Input and description** = "Face2toCenter", "Face 2 to Center", 0.

**Input and description** = "Face3toCenter", "Face 3 to Center", 0.

**Input and description** = "Face4toCenter", "Face 4 to Center", 0.

**Input and description** = "Face5toCenter", "Face 5 to Center", 0.

**Input and description** = "InsulationThickness", "Insulation Thickness", 0.

**Outputs = 18**

**Output and description** = "ValveBody", "Valve Body"

**Output and description** = "ValveBodyStep", "Stepped part of Valve Body"

**Output and description** = "Nozzle1", "Nozzle 1 with length"

**Output and description** = "Nozzle2", "Nozzle 2 with length"

**Output and description** = "Nozzle3", "Nozzle 3 with length"

**Output and description** = "Nozzle4", "Nozzle 4 with length"

**Output and description** = "Nozzle5", "Nozzle 5 with length"

**Output and description** = "ValveOperator1", "Port 2 Valve Operator"

**Output and description** = "ValveOperator2", "Port 3 Valve Operator"

**Output and description** = "ValveOperator3", "Port 4 Valve Operator"

**Output and description** = "ValveOperator4", "Port 5 Valve Operator"

**Output and description** = "InsValveBody", "Ins Valve Body"

**Output and description** = "InsValveBodyStep", "Ins Valve Body for Stepped part"

**Output and description** = "InsNozzle1", "Ins Nozzle 1"

**Output and description** = "InsNozzle2", "Ins Nozzle 2"

**Output and description** = "InsNozzle3", "Ins Nozzle 3"

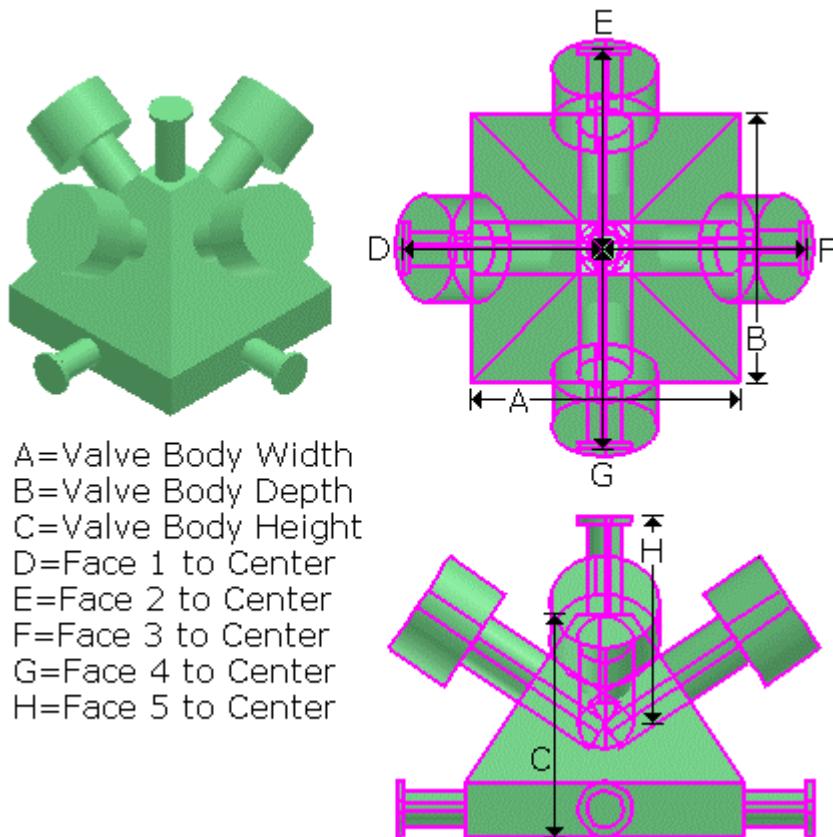
**Output and description** = "InsNozzle4", "Ins Nozzle 4"

**Output and description** = "InsNozzle5", "Ins Nozzle 5"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DMultportG7WayDia

**Description:** multiport manifold valve

**Symbol Name:** SP3DMultportG7WayDia.CMultportG7WayDia

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** MultiportDia7WayG

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 11**

**Input and description** = "ValveBodyWidth", "Valve Body Width", 0.

**Input and description** = "ValveBodyHeight", "Valve Body Height", 0

**Input and description** = "Face1toCenter", "Face 1 to Center", 0.

**Input and description** = "Face2toCenter", "Face 2 to Center", 0.

**Input and description** = "Face3toCenter", "Face 3 to Center", 0.

**Input and description** = "Face4toCenter", "Face 4 to Center", 0.

**Input and description** = "Face5toCenter", "Face 5 to Center", 0.

**Input and description** = "Face6toCenter", "Face 6 to Center", 0.

**Input and description** = "Face7toCenter", "Face 7 to Center", 0.

**Input and description** = "Face8toCenter", "Face 8 to Center", 0.

**Input and description** = "InsulationThickness", "Insulation Thickness", 0.

**Outputs = 28**

**Output and description** = "TopTaperBody", "Top Taper part of Valve Body"

**Output and description** = "SteppedBody", "Stepped part of Valve Body"

**Output and description** = "BottomTaperBody", "Bottom Taper part of Valve Body"

**Output and description** = "Nozzle1", "Nozzle 1 with length"

**Output and description** = "Nozzle2", "Nozzle 2 with length"

**Output and description** = "Nozzle3", "Nozzle 3 with length"

**Output and description** = "Nozzle4", "Nozzle 4 with length"

**Output and description** = "Nozzle5", "Nozzle 5 with length"

**Output and description** = "Nozzle6", "Nozzle 6 with length"

**Output and description** = "Nozzle7", "Nozzle 7 with length"

**Output and description** = "Nozzle8", "Nozzle 8 with length"

**Output and description** = "ValveOperator1", "Port 3 Valve Operator"

**Output and description** = "ValveOperator2", "Port 4 Valve Operator"

**Output and description** = "ValveOperator3", "Port 5 Valve Operator"

**Output and description** = "ValveOperator4", "Port 6 Valve Operator"

**Output and description** = "ValveOperator5", "Port 7 Valve Operator"

**Output and description** = "ValveOperator6", "Port 8 Valve Operator"

**Output and description** = "InsTopTaperBody", "Insulation for Top Taper Body"

**Output and description** = "InsValveBodyStep", "Insulation fo Stepped part"

**Output and description** = "InsBottomTaperBody", "Insulation Bottom Taper Body"

**Output and description** = "InsNozzle1", "Ins Nozzle 1"

**Output and description = "InsNozzle2", "Ins Nozzle 2"**

**Output and description = "InsNozzle3", "Ins Nozzle 3"**

**Output and description = "InsNozzle4", "Ins Nozzle 4"**

**Output and description = "InsNozzle5", "Ins Nozzle 5"**

**Output and description = "InsNozzle6", "Ins Nozzle 6"**

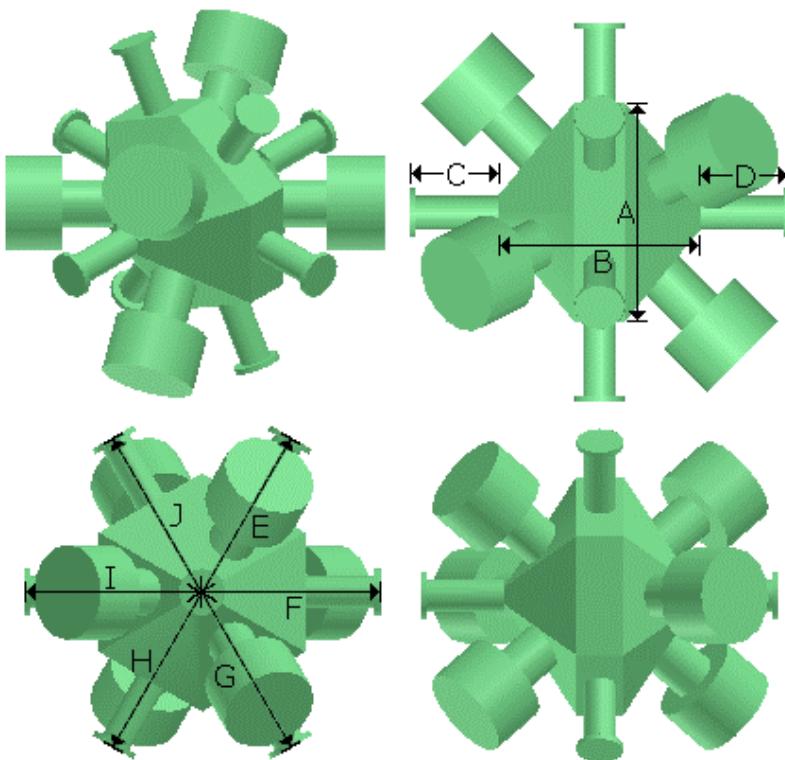
**Output and description = "InsNozzle7", "Ins Nozzle 7"**

**Output and description = "InsNozzle8", "Ins Nozzle 8"**

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "Insulation", "Insulation"**



A=Valve Body Width  
B=Valve Body Height  
C=Face 1 to Center  
D=Face 2 to Center  
E=Face 3 to Center  
F=Face 4 to Center  
G=Face 5 to Center  
H=Face 6 to Center  
I=Face 7 to Center  
J=Face 8 to Center

## SP3DNipple

**Description:** nipple

**Symbol Name:** SP3DNipple.CNipple

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Nipple

**User Class Name:** Nipple

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DNipple.CNipple

**Inputs = 2**

**Input = "FacetoFace" Description = "Nipple Length"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Nipple Body"**

**Output = "InsulatedBody" Description = "Insulated Nipple Body"**

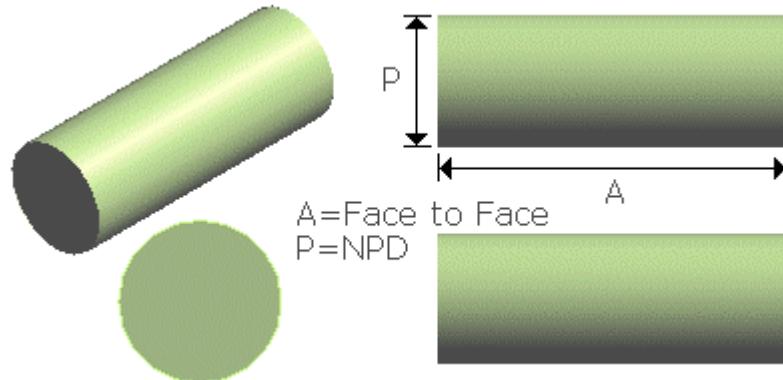
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DNippolet

**Description:**

**Symbol Name:** SP3DNippolet.CNippolet

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DNippolet.CNippolet

**Inputs = 2**

**Input = "FacetoHeaderCenter" Description = "Face to Header Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "DivergingCone" Description = "Diverging Cone"**

**Output = "ConvergingCone" Description = "Converging Cone"**

**Output = "DivergingConeIns" Description = "Diverging Cone Insulation"**

**Output = "ConvergingConeIns" Description = "Converging Cone Insulation"**

**Output = "Noz2StraightIns" Description = "Nozzle 2 Straight Portion Insulation"**

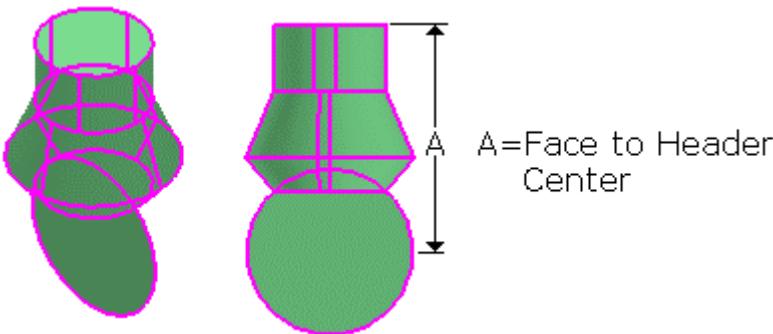
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2 with Length"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DNROletG

**Description:** generic nonradial olet

**Symbol Name:** SP3DNROletG.NROletG

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DNROletG.NROletG

**Inputs = 2**

**Input and description** = "FacetoCenter", "Face to Center is from Branch Nozzle to Header Center"

**Input and description** = "InsulationThickness", "InsulationThickness", 0

**Outputs = 6**

**Output and description** = "OletBody1", "Olet Body 1"

**Output and description** = "OletBody2", "Olet Body 2"

**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

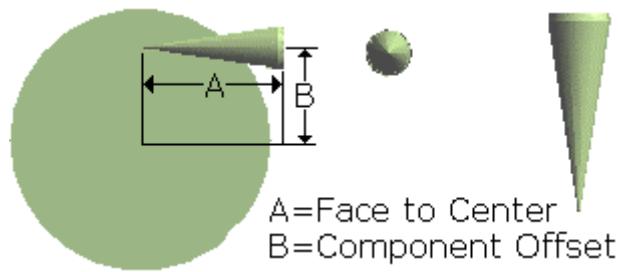
**Output and description** = "InsOletBody1", "Insulation Olet Body 1"

**Output and description** = "InsOletBody2", "Insulation Olet Body 2"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DNRRPad

**Description:**

**Symbol Name:** SP3DNRRPad.CNRRPad

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DNRRPad.CNRRPad

**Inputs = 4**

**Input = "RPadWidth" Description = " Width from Branch"**

**Input = "RPadThickness" Description = "Reinforcing Pad Thickness"**

**Input = "Angle" Description = "Branch Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Pad" Description = "Reinforcing Pad"**

**Output = "InsulatedPad" Description = "Insulated Reinforcing Pad"**

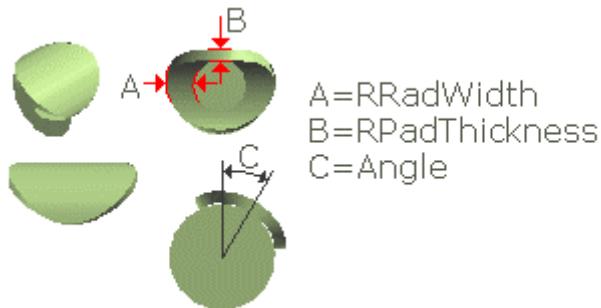
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DOletG

**Description:** generic olet

**Symbol Name:** SP3DOletG.CSPOlet

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOletG.OletG

**Inputs = 2**

**Input and description = "A", "Height of olet above pipe"**

**Input and description = "InsulationThickness", "InsulationThickness", 0**

**Outputs = 4**

**Output and description = "OletBody", "Cylindrical Equipment body"**

**Output and description = "BodyInsulation", "Equipment Cover"**

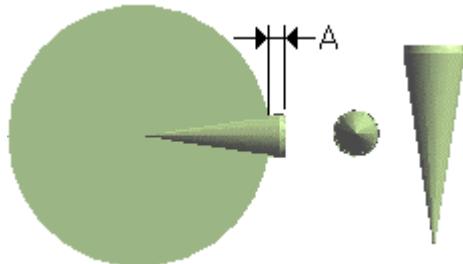
**Output and description = "Nozzle1", "Nozzle 1"**

**Output and description = "Nozzle2", "Nozzle 2"**

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "Insulation", "Insulation"**



# SP3DOnBrUnionTee

**Description:** union

**Symbol Name:** SP3DOnBrUnionTee.COnBrUnionTee

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** OnBranchUnionTee

**User Class Name:** On Branch Union Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOnBrUnionTee.COnBrUnionTee

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "UnionDiameter" Description = "Union Diameter"**

**Input = "UnionOffset" Description = "UnionOffset"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "UnionBody" Description = "Body of Union"**

**Output = "InsulatedBody" Description = "Insulation to Body Run"**

**Output = "InsulatedPort1" Description = "Insulation for port 1"**

**Output = "InsulatedPort2" Description = "Insulation for port 2"**

**Output = "InsulatedBranch" Description = "Insulation for Branch"**

**Output = "InsulatedPort3" Description = "Insulation for port3"**

**Output = "InsulatedUnion" Description = "Insulation for Union"**

**Output = "PNoz1" Description = "Nozzle 1"**

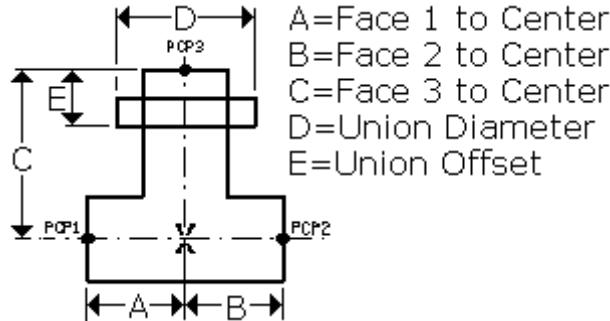
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DOnRunUnionTee

**Description:** union

**Symbol Name:** SP3DOnRunUnionTee.COnRunUnionTee

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** OnRunUnionTee

**User Class Name:** On Run Union Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOnRunUnionTee.COnRunUnionTee

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "UnionDiameter" Description = "Union Diameter"**

**Input = "UnionOffset" Description = "UnionOffset"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "UnionBody" Description = "Body of Union"**

**Output = "InsulatedBody" Description = "Insulation to Body Run"**

**Output = "InsulatedPort1" Description = "Insulation for port 1"**

**Output = "InsulatedPort2" Description = "Insulation for port 2"**

**Output = "InsulatedBranch" Description = "Insulation for Branch"**

**Output = "InsulatedPort3" Description = "Insulation for port3"**

**Output = "InsulatedUnion" Description = "Insulation for Union"**

**Output = "PNoz1" Description = "Nozzle 1"**

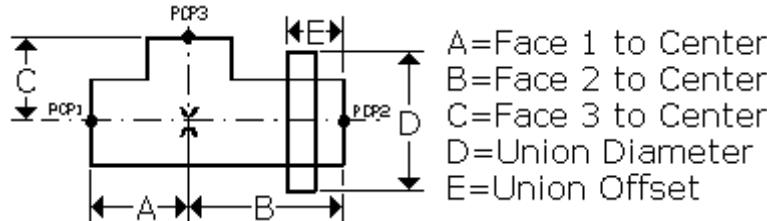
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DOP3

**Symbol Name:** SP3DOP3.COP3

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator3

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP3.COP3

**Inputs = 2**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorDiameter" Description = "Handwheel Outer Diameter"**

**Outputs = 4**

**Output = "Stem" Description = "Stem"**

**Output = "Handwheel" Description = "Handwheel"**

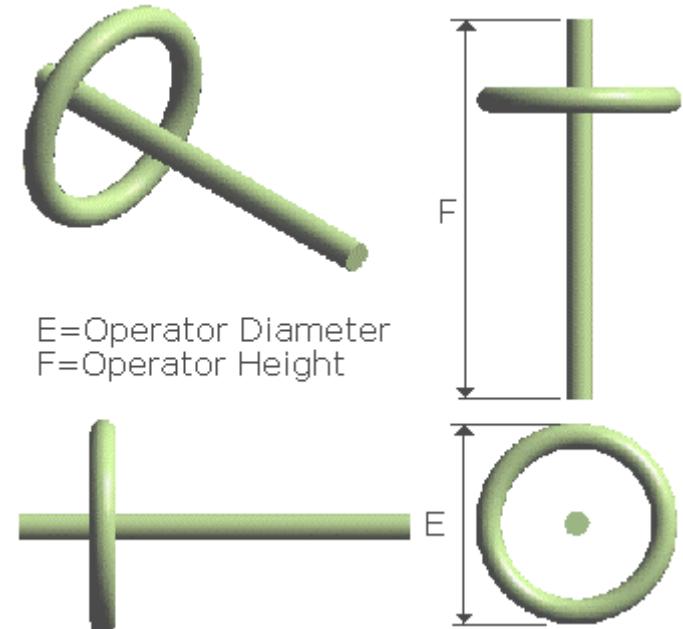
**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP4

**Symbol Name:** SP3DOP4.COP4

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator4

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP4.COP4

**Inputs = 2**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorDiameter" Description = "Handwheel Outer Diameter"**

**Outputs = 4**

**Output = "Stem" Description = "Stem"**

**Output = "Handwheel" Description = "Handwheel"**

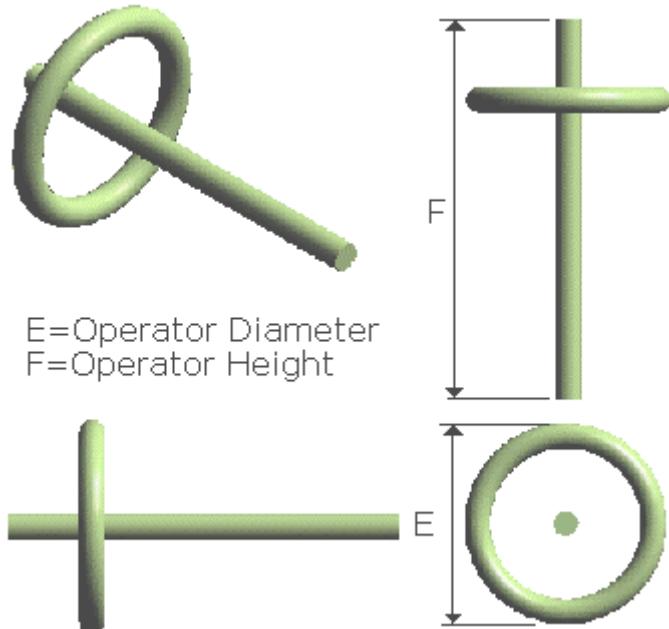
**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



E=Operator Diameter  
F=Operator Height

# SP3DOP5

**Symbol Name:** SP3DOP5.COP5

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator5

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP5.COP5

**Inputs = 3**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "StemAngle" Description = "Stem Inclination from negative X"**

**Input = "OperatorDiameter" Description = "Handwheel Outer Diameter"**

**Outputs = 4**

**Output = "Cylinder" Description = "Stem"**

**Output = "Torus" Description = "Handwheel"**

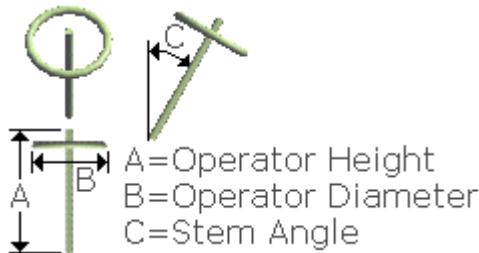
**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP691

**Description:**

**Symbol Name:** SP3DOP691.COP691

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP691.COP691

**Inputs = 2**

**Input and description** = "OperatorHeight", "Operator Height", 0.

**Input and description** = "OperatorDiameter", "Operator Diameter", 0.

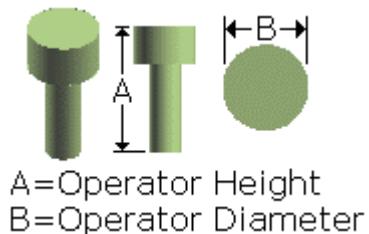
**Outputs = 2**

**Output and description** = "Body1", "Body 1"

**Output and description** = "Body2", "Body 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Piping Aspect Description"



A=Operator Height

B=Operator Diameter

## SP3DOP9

**Description:** short T-handled valve operator

**Symbol Name:** SP3DOP9.COP9

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator9, Operator17

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP9.COP9

**Inputs = 3**

**Input = "OperatorHeight" Description = "Height of stem"**

**Input = "LeverLength" Description = "Right Hand Side Handle Length"**

**Input = "LeverLength1" Description = "Left Hand Side Handle Length"**

**Outputs = 4**

**Output = "Stem" Description = "Stem "**

**Output = "Handle" Description = "Horizontal Handle"**

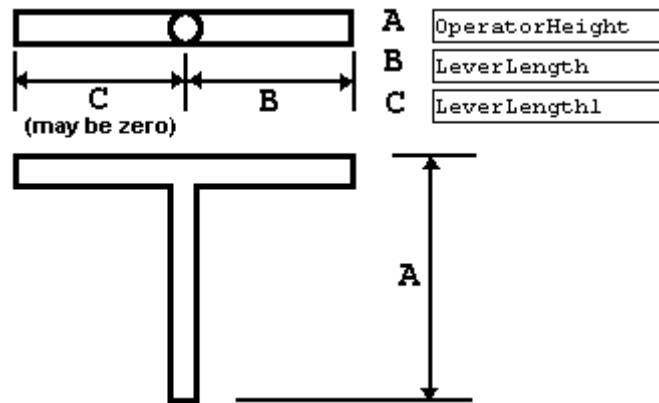
**Output = "MaintCyl1" Description = "Maintenance Cylinder1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOPBevelGear

**Description:**

**Symbol Name:** SP3DOPBevelgear.OPBevelGear

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPBevelgear.OPBevelGear

**Inputs = 3**

**Input = "OperatorHeight" Description =** "Overall Height of the Operator"

**Input = "OperatorDiameter" Description =** "Operator Diameter"

**Input = "ArmLength" Description =** "Length of the Arm"

**Outputs = 8**

**Output = "Stem" Description =** "Stem in valve portion"

**Output = "OpCyl" Description =** "Operator Cylinder"

**Output = "ArmShaft" Description =** "Arm Shaft"

**Output = "ArmWheel" Description =** "Arm Wheel"

**Output = "StemHousing" Description =** "Stem Housing"

**Output = "MaintStem" Description =** "Maintenance Stem"

**Output = "MaintOperator" Description =** "Maintenance Operator"

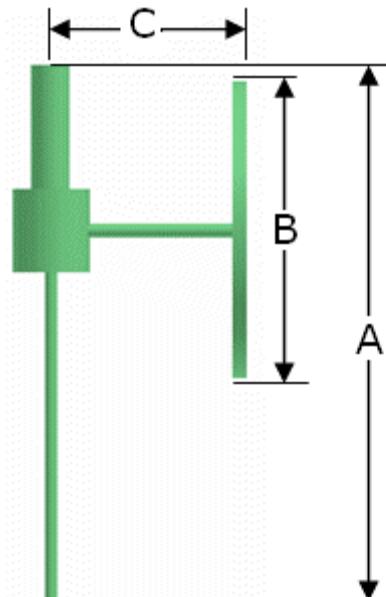
**Output = "MaintArm" Description =**

"Maintenance Arm"

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height

B=Operator Diameter

C=Arm Length

# SP3DOPChainWheel

**Description:**

**Symbol Name:** SP3DOPChainWheel.COPChainWheel

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DOPChainWheel.COPChainWheel

**Inputs = 4**

**Input = "ChainWheelDia" Description = "Chain Wheel diameter"**

**Input = "Offset" Description = "Offset from ground"**

**Input = "FloorToValveDistance" Description = "Floor to Valve Distance"**

**Input = "OperatorHeight" Description = "Operator Height"**

**Outputs = 22**

**Output = "ChainWheel" Description = "ChainWheel"**

**Output = "SpokeCyl1" Description = "Spoke Cylinder 1"**

**Output = "SpokeCyl2" Description = "Spoke Cylinder 2"**

**Output = "GuideBaseCyl" Description = "Guide Base Cylinder"**

**Output = "Chain" Description = "Chain"**

**Output = "LeftGuide" Description = "Left side Guide"**

**Output = "RightGuide" Description = "Right side Guide"**

**Output = "LeftGuideCyl" Description = "Left Guide Cylinder"**

**Output = "RightGuideCyl" Description = "Right Guide Cylinder"**

**Output = "LeftGuideCyl1" Description = "Left Connecting Cylinder of Guide and Guide Cyl"**

**Output = "RightGuideCyl1" Description = "Right Connecting Cylinder of Guide and Guide Cyl"**

**Output = "MaintChainWheel" Description = "Maintenance ChainWheel"**

**Output = "MaintSpokeCyl1" Description = "Maintenance Spoke Cylinder 1"**

**Output = "MaintSpokeCyl2" Description = "Maintenance Spoke Cylinder 2"**

**Output = "MaintGuideBaseCyl" Description = "Maintenance Guide Base Cylinder"**

**Output = "MaintChain" Description = "Maintenance Chain"**

**Output = "MaintLeftGuide" Description = "Maintenance Left side Guide"**

**Output = "MaintRightGuide" Description = "Maintenance Right side Guide"**

**Output = "MaintLeftGuideCyl" Description = "Maintenance Left Guide Cylinder"**

**Output = "MaintRightGuideCyl" Description = "Maintenance Right Guide Cylinder"**

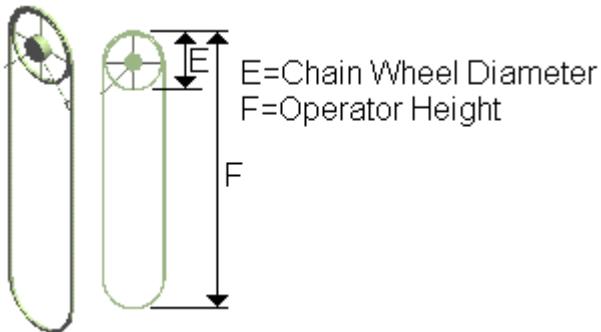
**Output = "MaintLeftGuideCyl1" Description = "Maintenance Left Connecting Cylinder of Guide and Guide Cyl"**

**Output = "MaintRightGuideCyl1"** **Description = "Maintenance Right Connecting Cylinder of Guide and Guide Cyl"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOPCylinderActuator

**Description:**

**Symbol Name:** SP3DOPCylinderActuator.CylActuator

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPCylinderActuator.CylActuator

**Inputs = 6**

**Input = "OperatorHeight" Description = "Operator Height"**

**Input = "OperatorHeight1" Description = "Operator Height 1"**

**Input = "ArmLength" Description = "Arm Length"**

**Input = "ArmLength1" Description = "Arm Length 1"**

**Input = "ActuatorOffset" Description = "Offset"**

**Input = "ActuatorRadius" Description = "Radius"**

**Outputs = 6**

**Output = "Stem" Description = "Spindle"**

**Output = "Actuator" Description = "Actuator"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Cylinder2" Description = "Cylinder 2"**

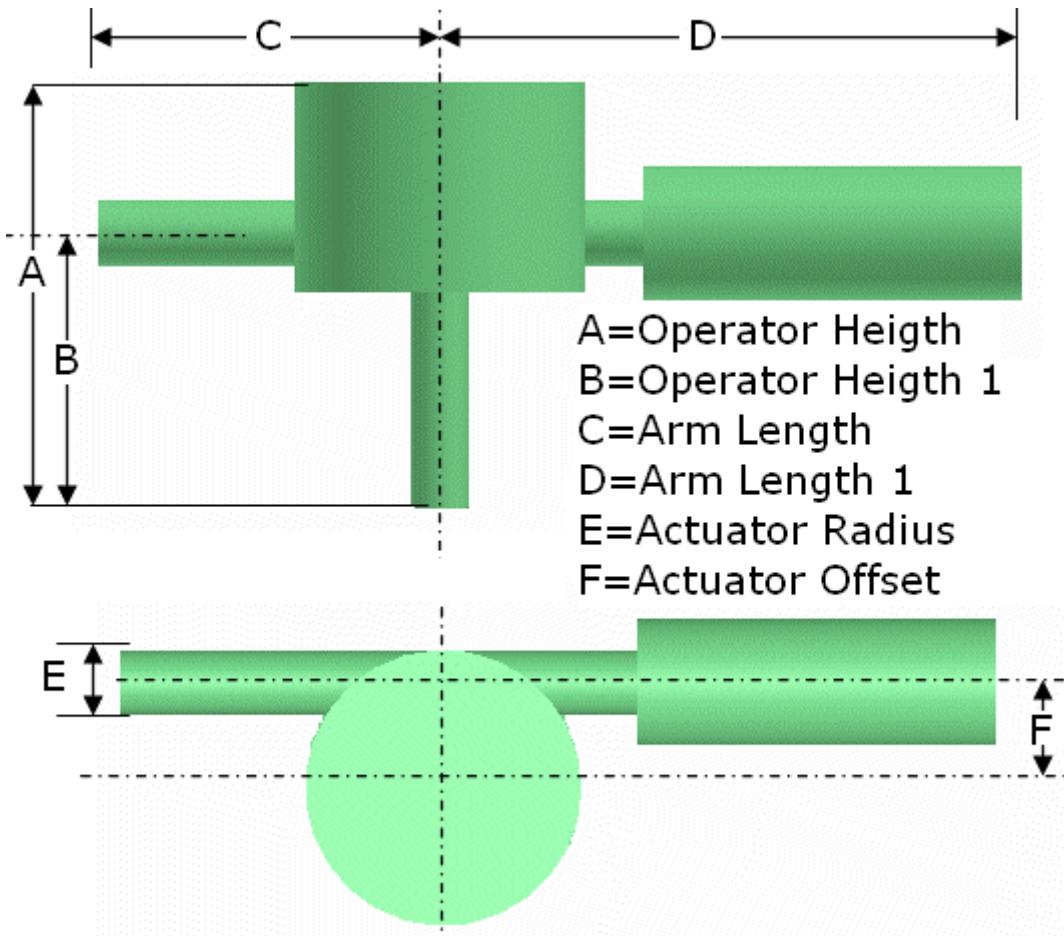
**Output = "MaintCylinder1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOPElecActuator

**Description:** electric valve actuator

**Symbol Name:** SP3DOPElecActuator.ElecActuator

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** OperatorElecAct

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPElecActuator.ElecActuator

**Inputs = 3**

**Input = "ActuatorHeight" Description = "Spindle Bottom to Handwheel Top"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Outputs = 4**

**Output = "Stem" Description = "Stem"**

**Output = "HandWheel" Description = "Hand Wheel"**

**Output = "Actuator" Description = "Actuator"**

**Output = "Cylinder" Description = "Cylinder"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

# SP3DOpenSpectBlank

**Description:**

**Symbol Name:** SP3DOpenSpectBlank.COpenSpectBlank

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOpenSpectBlank.COpenSpectBlank

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Fig8InterAxis" Description = "Distance Bet Spectacle Discs"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InlineOpenSpect" Description = "In line Open Spectacle"**

**Output = "InterSpectCyl" Description = "Cylinder bet Discs"**

**Output = "BlankDisc" Description = "Blank Disc"**

**Output = "InsulatedBody" Description = "Insulated Body"**

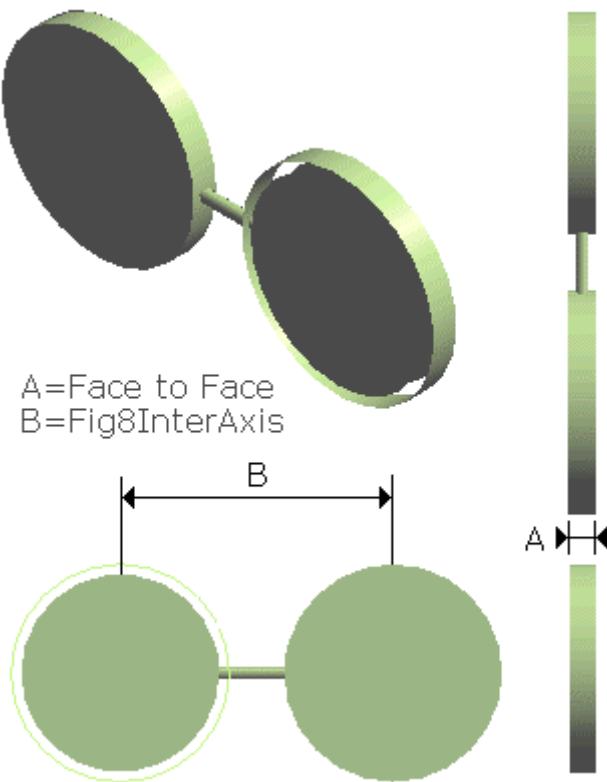
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DOPExtnStem

**Description:** stem extension valve operator

**Symbol Name:** SP3DOPExtnStem.COPExtnStem

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPExtnStem.COPExtnStem

**Inputs = 2**

**Input = "OperatorHeight" Description = "Height of Operator"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Dia"**

**Outputs = 5**

**Output = "HandWheelTorus" Description = "Hand wheel as Torus"**

**Output = "SpokeCyl1" Description = "Spoke Cylinder1"**

**Output = "SpokeCyl2" Description = "Spoke Cylinder2"**

**Output = "StemRodCyl" Description = "Stem Rod Cylinder"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOPFloorStand

**Description:** floor stand valve operator

**Symbol Name:** SP3DOPFloorStand.COPFloorStand

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPFloorStand.COPFloorStand

Number of Inputs = 4

Input name="OperatorHeight"

Input description="Height of operator from valve center to handwheel top"

Input name="OperatorHeight1"

Input description="Height of operator from bottom of base plate to handwheel top"

Input name="HandWheelDiameter"

Input description="Diameter of handwheel"

Input name="BasePlateDia"

Input description="Diameter of base plate"

Number of Outputs = 5

Output name = "HandWheelTorus"

Output description = "Hand Wheel Body Torus"

Output name = "SpokeCyl1"

Output description = "Spoke Cylinder 1"

Output name = "SpokeCyl2"

Output description = "Spoke Cylinder 2"

Output name = "BodyRevolution"

Output description = "Body by Revolution of complex str"

Output name = "MaintCyl"

Output description = "Maintenance Cylinder"

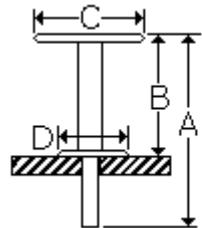
Number of Aspects = 2

Aspect name = "Physical"

Aspect description = "Physical"

Aspect name = "Maintenance"

Aspect description = "Maintenance"



A=Operator Height  
B=Operator Height 1  
C=Handwheel Diameter  
D=Base Plate Diameter

# SP3DOPHandWheel

**Description:**

**Symbol Name:** SP3DOPHandwheel.OPHandWheel

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPHandwheel.OPHandWheel

**Inputs = 2**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorDiameter" Description = "Handwheel Outer Diameter"**

**Outputs = 4**

**Output = "Stem" Description = "Stem"**

**Output = "Handwheel" Description = "Handwheel"**

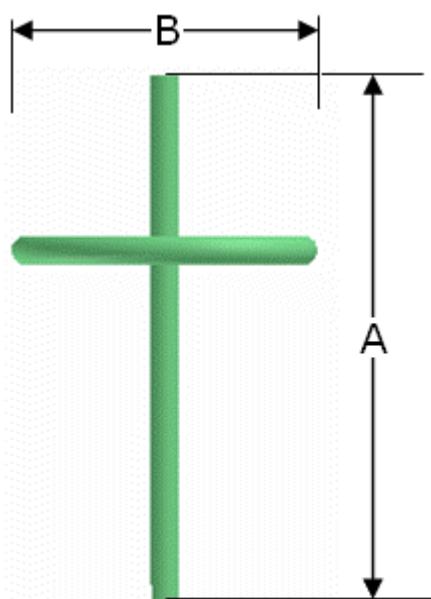
**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height

B=Operator Diameter

# SP3DOPManualHydraulic

**Description:**

**Symbol Name:** SP3DOPManualHydraulic.OPManualHydraulic

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPManualHydraulic.OPManualHydraulic

**Inputs = 3**

**Input = "OperatorHeight" Description = "Operator Height"**

**Input = "OperatorLength" Description = "Operator Length"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Outputs = 6**

**Output = "Stem" Description = "Spindle"**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "Frame" Description = "Frame"**

**Output = "Box" Description = "Box"**

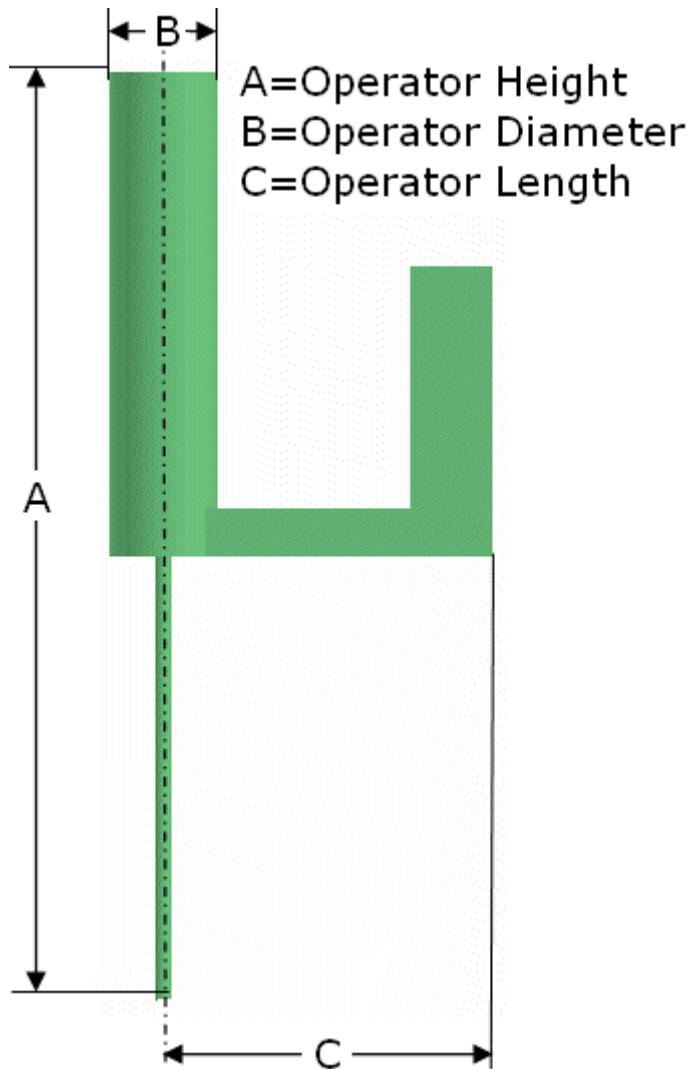
**Output = "MaintBox" Description = "Maintenance Box"**

**Output = "MaintCylinder" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOpRackAndPinion

**Description:** rack and pinion valve operator

**Symbol Name:** SP3DOpRackAndPinion.OpRackAndPinion

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** OPRacKAndPinion

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOpRackAndPinion.OpRackAndPinion

**Inputs = 7**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "WithdrawalDistance" Description = "Withdrawal Distance"**

**Outputs = 5**

**Output = "RectCapAtTop" Description = "Rectangular Cap at Top"**

**Output = "RectPlate" Description = "Rectangular Plate"**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "InstBox" Description = "Instrument Box"**

**Output = "MaintEnv" Description = "Maintenance Envelope"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**

Preview  
not  
available

# SP3DOPThreadedCap

**Description:**

**Symbol Name:** SP3DOPThreadedCap.OPThreadedCap

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** ThreadedCapOperator

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOPThreadedCap.OPThreadedCap

**Inputs = 1**

**Input = "OperatorHeight" Description = "Operator Height"**

**Outputs = 2**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "Nut" Description = "Nut"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

# SP3DOPTravelingNutAc

**Description:** traveling nut valve actuator

**Symbol Name:** SP3DOPTravelingNutAc.TraNutActuator

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** OPTravelingNutAct

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 2**

**Input and description** = "OperatorHeight", "Operator Height G", 0.233

**Input and description** = "OperatorDepth", "Operator Depth K", 0.19

**Outputs = 5**

**Output and description** = "InstrumentBox", "Instrument Box"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "SquareNut", "Square Nut"

**Output and description** = "Stem", "Stem"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysical"

Preview  
not  
available

## SP3DOP\_251

**Symbol Name:** SP3DOP\_251.COP\_251

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator251

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_251.COP\_251

**Inputs = 2**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorDiameter" Description = "Handwheel Outer Diameter"**

**Outputs = 4**

**Output = "Stem" Description = "Stem"**

**Output = "Handwheel" Description = "Handwheel"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_271

**Description:** valve operator

**Symbol Name:** SP3DOP\_271.COP\_271

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator271

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_271.COP\_271

**Inputs = 2**

**Input = "OperatorHeight" Description = "Height of Stem"**

**Input = "LeverLength" Description = "Length of Handle"**

**Outputs = 4**

**Output = "Stem\_Cylin" Description = "Vertical Stem"**

**Output = "Handle\_Cylin" Description = "Handle"**

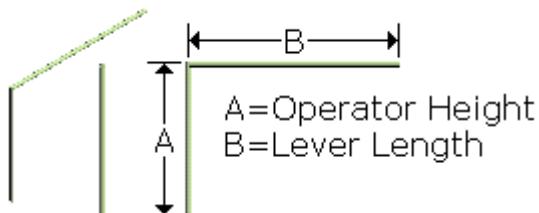
**Output = "MaintCyl1" Description = "Maintenance Cylinder1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_291

**Description:** valve operator

**Symbol Name:** SP3DOP\_291.COP\_291

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator291

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_291.COP\_291

**Inputs = 7**

**Input = "OperatorHeight" Description =** "Total Height of Operator"

**Input = "OperatorDiameter" Description =** "Diameter of Operator"

**Input = "ActuatorLength" Description =** "Operator to Top of Hand Wheel"

**Input = "OperatorDepth" Description =** "Thickness of Operator"

**Input = "ActuatorDiameter" Description =** "Dia of Hand Wheel"

**Input = "ActuatorOffset" Description =** "Distance between Oper & Hand"

**Input = "StemExtension" Description =** "Top of Operator to Top of Stem"

**Outputs = 8**

**Output = "Stem" Description =** "Vertical Stem"

**Output = "Operator" Description =** "Horizontal Operator"

**Output = "AxisCylinder" Description =** "Verical Axis Cylinder"

**Output = "HandWheelCylinder" Description =** "Top Hand Cylinder"

**Output = "MaintStem" Description =** "Maintenance Vertical Stem"

**Output = "MaintOperator" Description =** "Maintenance Horizontal Operator"

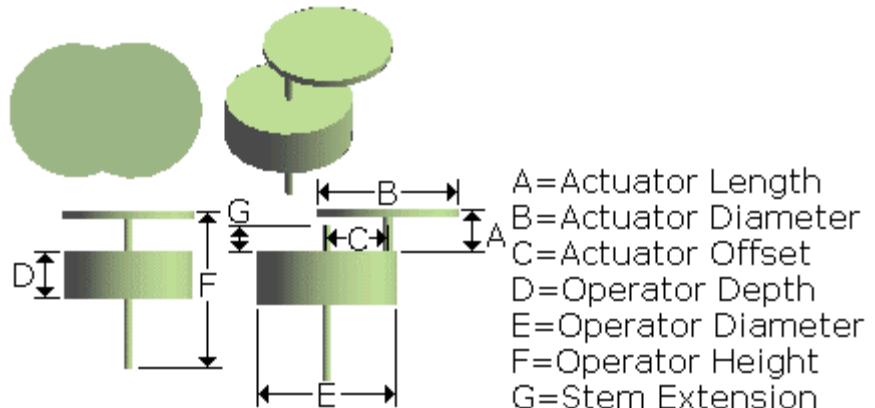
**Output = "MaintAxisCylinder" Description =** "Maintenance Verical Axis Cylinder"

**Output = "MaintHandWheelCylinder" Description =** "Maintenance Top Hand Cylinder"

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_292

**Description:** valve operator

**Symbol Name:** SP3DOP\_292.COP\_292

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_292.COP\_292

**Inputs = 10**

**Input = "OperatorHeight" Description = "Operator Height Incl Handwheel"**

**Input = "OperatorDiameter" Description = "Horizontal Disc Diameter"**

**Input = "OperCenFromTop" Description = "Operator top to it's Center"**

**Input = "OperatorDepth" Description = "Thickness of Operator"**

**Input = "ArmLength1" Description = "Vertical axis center from oper center"**

**Input = "ArmLength" Description = "Center of Operator till HoriAxis End"**

**Input = "ArmDiameter" Description = "Horizontal Axis Diameter"**

**Input = "ActuatorLength" Description = "Top of Handwheel to Center"**

**Input = "ActuatorDiameter" Description = "Handwheel Diameter"**

**Input = "StemExtension" Description = "Top of Stem to Center of Operator"**

**Outputs = 10**

**Output = "VerticalStem" Description = "Cylinder"**

**Output = "OperatorDisc" Description = "Horizontal Cylinder"**

**Output = "HoriAxis" Description = "Horizontal Cylinder"**

**Output = "VeriAxis" Description = "Vertical Cylinder"**

**Output = "HoriCylinder" Description = "Hand Wheel Cylinder"**

**Output = "MaintVerticalStem" Description = "Cylinder"**

**Output = "MaintOperatorDisc" Description = "Horizontal Cylinder"**

**Output = "MaintHoriAxis" Description = "Horizontal Cylinder"**

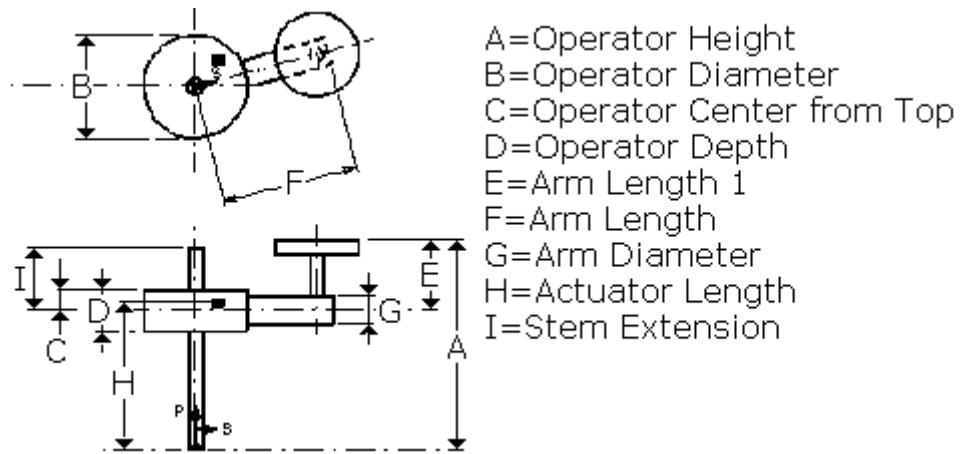
**Output = "MaintVeriAxis" Description = "Vertical Cylinder"**

**Output = "MaintHoriCylinder" Description = "Hand Wheel Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_311

**Description:** gear top mounted inclined handwheel

**Symbol Name:** SP3DOP\_311.COP\_311

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator311

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_311.COP\_311

**Inputs = 8**

**Input = "StemAngle" Description = "Spindle Inclination from negative X"**

**Input = "OperatorHeight" Description = "Spindle Bottom to Handwheel Top"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "ActuatorLength" Description = "Operator Top to Handwheel TOp"**

**Input = "OperatorDepth" Description = "Operator Height"**

**Input = "ActuatorOffset" Description = "Handwheel Offset"**

**Input = "ActuatorDiameter" Description = "Handwheel Diameter"**

**Input = "StemExtension" Description = "Operator Top to Spindle Top"**

**Outputs = 7**

**Output = "Stem" Description = "Spindle"**

**Output = "Operator" Description = "Operator"**

**Output = "HandwheelAxis" Description = "Handwheel Axis "**

**Output = "Wheel" Description = "Handwheel"**

**Output = "MaintStem" Description = "Maintenance Stem"**

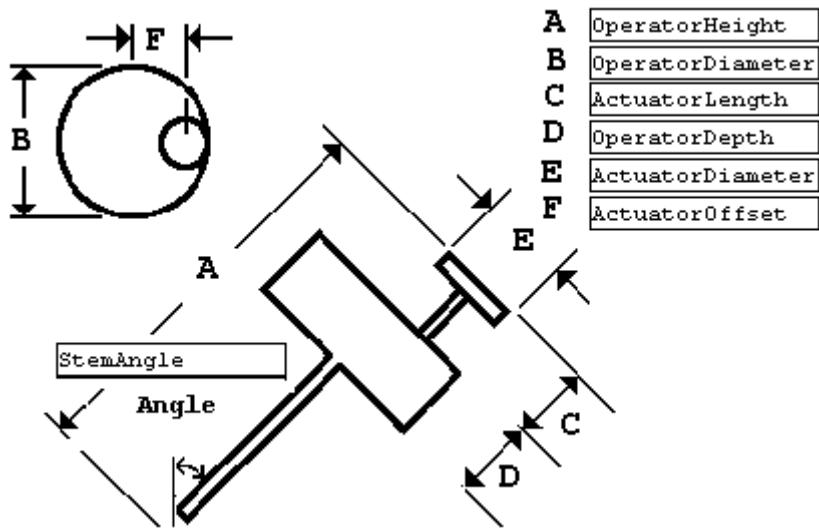
**Output = "MaintOperator" Description = "Maintenance Operator"**

**Output = "MaintHandwheelAxis" Description = "Maintenance Handwheel Axis"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_331

**Description:** valve operator

**Symbol Name:** SP3DOP\_331.COP\_331

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator331

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_331.COP\_331

**Inputs = 8**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Half Depth of Operator"**

**Input = "OperatorDepth" Description = "Total Depth of Operator"**

**Input = "ArmLength" Description = "Length of Shaft"**

**Input = "ActuatorDiameter" Description = "Hand Wheel Diameter"**

**Input = "ActuatorOffset" Description = "Hand Wheel Offset"**

**Input = "StemExtension" Description = "Operator Center from Top of Stem"**

**Outputs = 8**

**Output = "Stem" Description = "Cylinder for Stem"**

**Output = "Operator" Description = "Operator Cylinder"**

**Output = "EccentricShaft" Description = "Shaft "**

**Output = "HandWheelCylin" Description = "Hand Wheel Cylinder"**

**Output = "MaintStem" Description = "Maintenance Stem"**

**Output = "MaintOperator" Description = "Maintenance Operator"**

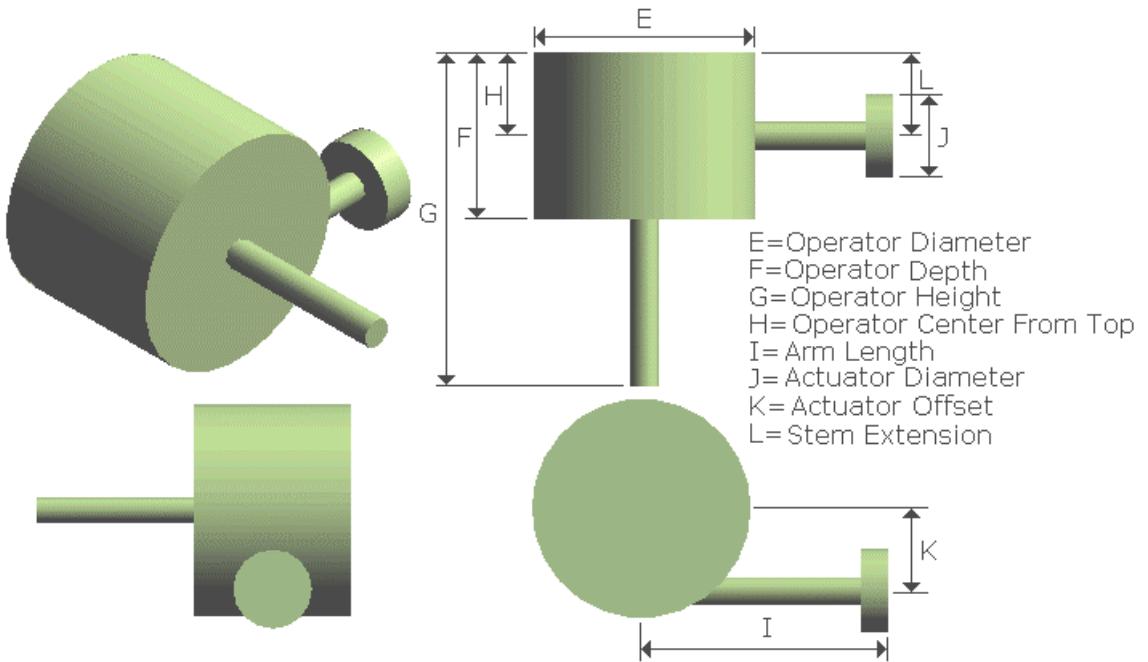
**Output = "MaintEccentricShaft" Description = "Maintenance Eccentric Shaft"**

**Output = "MaintHandWheelCylin" Description = "Maintenance Hand-Wheel Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_332

**Description:** valve operator

**Symbol Name:** SP3DOP\_332.COP\_332

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator332

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_332.COP\_332

**Inputs = 10**

**Input = "OperatorHeight" Description = "Spindle Height"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Handwheel to Operator Top"**

**Input = "OperatorDepth" Description = "Operator Height"**

**Input = "ArmLength1" Description = "Handwheel Projection"**

**Input = "ArmLength" Description = "Operator Arm Projection"**

**Input = "ArmDiameter" Description = "Operator Arm Width"**

**Input = "ActuatorOffset" Description = "Handwheel To Arm"**

**Input = "ActuatorDiameter" Description = "Handwheel Diameter"**

**Input = "StemExtension" Description = "Handwheel to Stem Top"**

**Outputs = 10**

**Output = "Stem" Description = "Spindle"**

**Output = "Operator" Description = "Operator"**

**Output = "Arm" Description = "Arm"**

**Output = "HWAx" Description = "Handwheel Axis"**

**Output = "Wheel" Description = "Handwheel"**

**Output = "MaintStem" Description = "Maintenance Spindle"**

**Output = "MaintOperator" Description = "Maintenance Operator"**

**Output = "MaintArm" Description = "Maintenance Arm"**

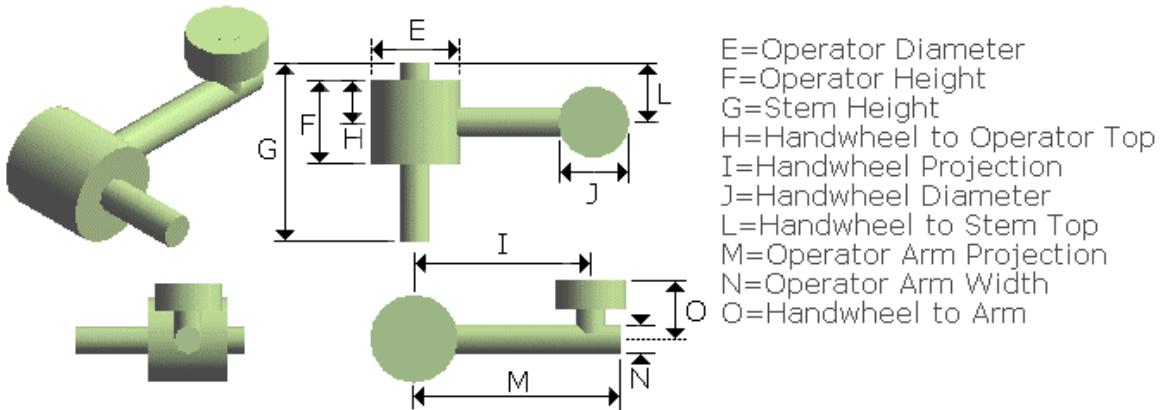
**Output = "MaintHWAx" Description = "Maintenance Handwheel Axis"**

**Output = "MaintWheel" Description = "Maintenance Handwheel"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_333

**Description:** valve operator

**Symbol Name:** SP3DOP\_333.COP\_333

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator333

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_333.COP\_333

**Inputs = 9**

**Input = "OperatorHeight" Description = "Stem Height in valve portion"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Half Depth of Operator"**

**Input = "OperatorDepth" Description = "Total Depth of Operator"**

**Input = "ArmLength" Description = "Length of Shaft"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorOffset" Description = "Actuator Offset"**

**Input = "OperatorHeight1" Description = "Height of extension rod"**

**Input = "StemExtension" Description = "Operator Center from Top of Stem"**

**Outputs = 9**

**Output = "Stem" Description = "Stem in valve portion"**

**Output = "ExtnRod" Description = "Extension Rod"**

**Output = "OpCyl" Description = "Operator Cylinder"**

**Output = "StemExtn" Description = "Extension of Stem above Operator Cylinder"**

**Output = "ActuatorShaft" Description = "Atuator Shaft"**

**Output = "ActuatorCylinder" Description = "Actuator Cylinder"**

**Output = "MaintStem" Description = "Maintenance Stem"**

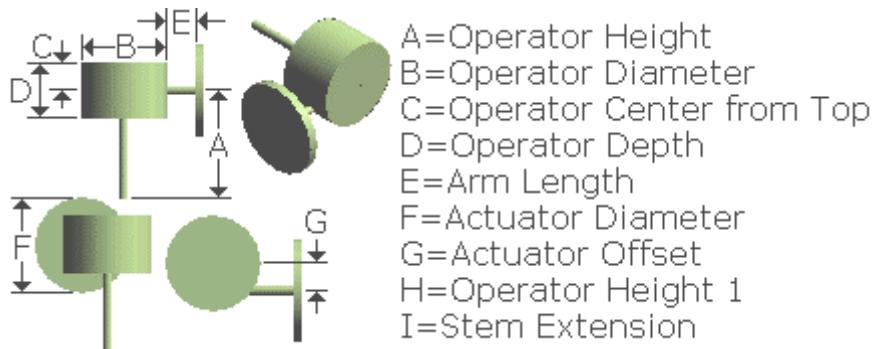
**Output = "MaintOperator" Description = "Maintenance Operator"**

**Output = "MaintActuator" Description = "Maintenance Actuator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP\_334

**Description:** valve operator

**Symbol Name:** SP3DOP\_334.COP\_334

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator334

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_334.COP\_334

**Inputs = 9**

**Input = "OperatorHeight" Description = "Stem Height in valve portion"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Half Depth of Operator"**

**Input = "OperatorDepth" Description = "Total Depth of Operator"**

**Input = "ArmLength" Description = "Length of Shaft"**

**Input = "ActuatorDiameter" Description = "Hand Wheel Diameter"**

**Input = "ActuatorOffset" Description = "Hand Wheel Offset"**

**Input = "ArmLength1" Description = "Length of Extension stem"**

**Input = "StemExtension" Description = "Operator Center from Top of Stem"**

**Outputs = 12**

**Output = "Stem" Description = "Stem"**

**Output = "OpCyl" Description = "Operator Cylinder"**

**Output = "StemExtn" Description = "Extension of Stem above Operator Cylinder"**

**Output = "FixedActShaft" Description = "Fixed portion of Atuator Shaft"**

**Output = "VarLenActShaft" Description = "Variable Portion of Atuator Shaft"**

**Output = "ActuatorCylinder" Description = "Actuator Cylinder"**

**Output = "MaintStem" Description = "Maintenance Stem"**

**Output = "MaintenanceOpCyl" Description = "Maintenance Operator Cylinder"**

**Output = "MaintStemExtn" Description = "Maintenance Extension of MaintStem above Operator Cylinder"**

**Output = "MaintFixedActShaft" Description = "Maintenance Fixed portion of Atuator Shaft"**

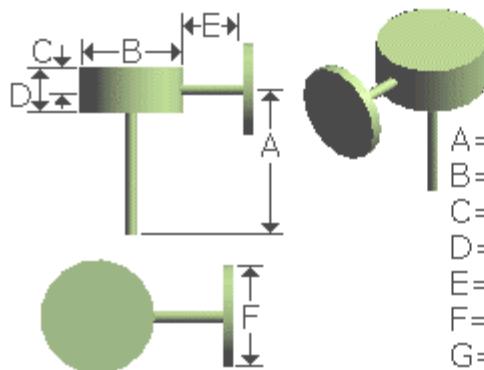
**Output = "MaintVarLenActShaft" Description = "Maintenance Variable Portion of Atuator Shaft"**

**Output = "MaintActuatorCylinder" Description = "Maintenance Actuator Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height  
B=Operator Diameter  
C=Operator Center from Top  
D=Operator Depth  
E=Arm Length  
F=Actuator Diameter  
G=Actuator Offset  
H=Arm Length 1  
I=Stem Extension

# SP3DOP\_351

**Description:** valve operator

**Symbol Name:** SP3DOP\_351.COP\_351

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator351

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_351.COP\_351

**Inputs = 9**

**Input = "StemAngle" Description = "Spindle Inclination from negative X"**

**Input = "OperatorHeight" Description = "Spindle Height"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Operator Top to HWheel Axis"**

**Input = "OperatorDepth" Description = "Operator Height"**

**Input = "ArmLength" Description = "Handwheel Offset from Spindle"**

**Input = "ActuatorDiameter" Description = "Handwheel Diameter"**

**Input = "ActuatorOffset" Description = "Handwheel Axis Offset"**

**Input = "StemExtension" Description = "Spindle Top to HWheel Axis"**

**Outputs = 8**

**Output = "Stem" Description = "Spindle"**

**Output = "Operator" Description = "Operator"**

**Output = "HandwheelAxis" Description = "Handwheel Axis"**

**Output = "Wheel" Description = "Handwheel"**

**Output = "MaintStem" Description = "Maintenance Spindle"**

**Output = "MaintOperator" Description = "Maintenance Operator"**

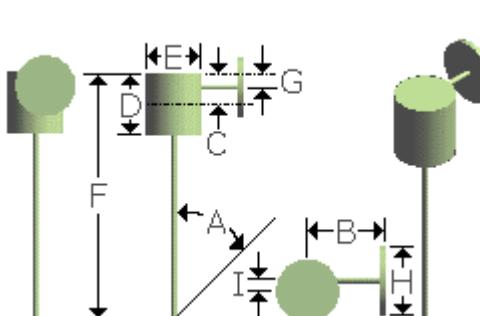
**Output = "MaintHandwheelAxis" Description = "Maintenance Handwheel Axis"**

**Output = "MaintWheel" Description = "Maintenance Handwheel"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Stem Angle  
B=Arm Length  
C=Operator Center from Top  
D=Operator Depth  
E=Operator Diameter  
F=Operator Height  
G=Stem Extension  
H=Actuator Diameter  
I=Actuator Offset

# SP3DOP\_391

**Description:** quick action lever valve operator

**Symbol Name:** SP3DOP\_391.COP\_391

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator391

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_391.COP\_391

**Inputs = 3**

**Input = "OperatorHeight" Description = "Vert.Height Including Inclined Stem"**

**Input = "OperatorHeight1" Description = "Vertical Stem Height"**

**Input = "LeverLength" Description = "Handle Length"**

**Outputs = 5**

**Output = "VerCylin" Description = "Vertical Stem "**

**Output = "HoriCylin" Description = "Horizontal Hanle"**

**Output = "IncliCylin" Description = "Inclined Cylinder"**

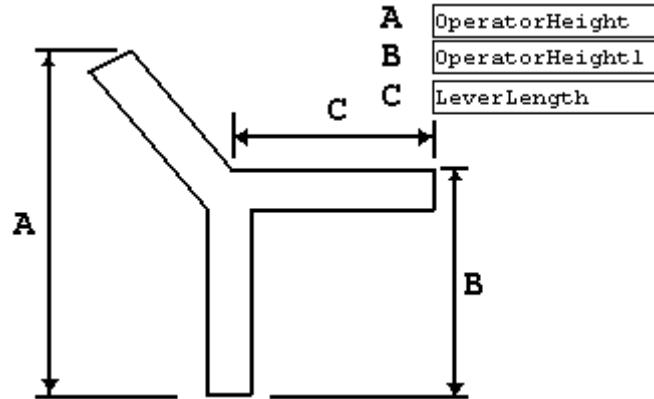
**Output = "MaintCyl1" Description = "Maintenance Cylinder1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_401

**Description:**

**Symbol Name:** SP3DOP\_401.COP\_401

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_401.COP\_401

**Inputs = 3**

**Input = "OperatorDepth" Description = "Height"**

**Input = "OperatorDiameter" Description = "Diameter"**

**Input = "OperatorHeight" Description = "Height"**

**Outputs = 4**

**Output = "ThinStem" Description = "Physical Aspect of stem 1"**

**Output = "ThickStem" Description = "Physical Aspect of stem 2"**

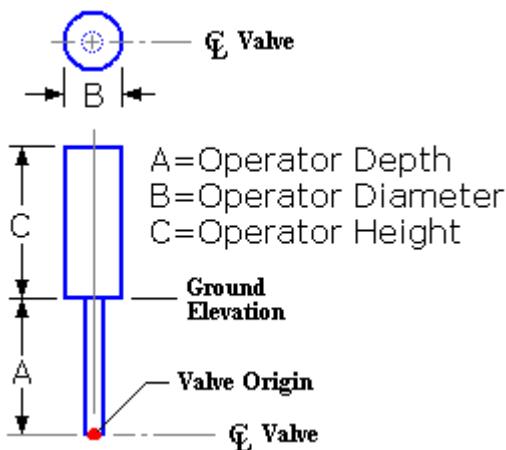
**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_411

**Description:** type 6 valve operator

**Symbol Name:** SP3DOP\_411.COP\_411

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Operator411

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_411.COP\_411

**Inputs = 2**

**Input = "OperatorHeight" Description = "Cone Height"**

**Input = "OperatorDiameter" Description = "Cone Base Diameter"**

**Outputs = 2**

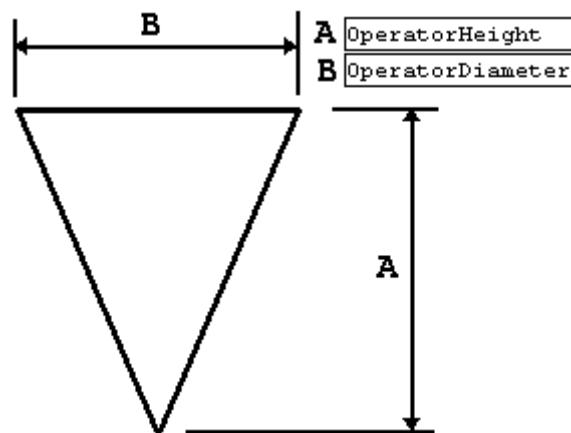
**Output = "Cone" Description = "Cone"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP\_412

**Description:** valve operator

**Symbol Name:** SP3DOP\_412.COP\_412

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_412.COP\_412

**Inputs = 3**

**Input = "StemAngle" Description = "Cone Inclination from negative X"**

**Input = "OperatorHeight" Description = "Cone Height"**

**Input = "OperatorDiameter" Description = "Cone Base Diameter"**

**Outputs = 2**

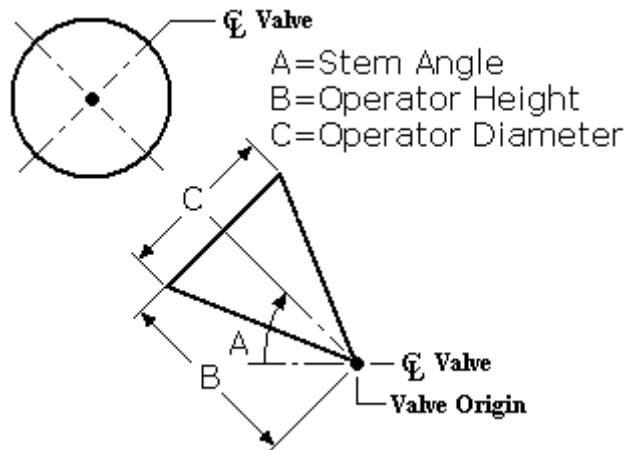
**Output = "Cone" Description = "Cone"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_413

**Description:** valve operator

**Symbol Name:** SP3DOP\_413.COP\_413

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_413.COP\_413

**Inputs = 4**

**Input = "OperatorHeight" Description = "Stem Height"**

**Input = "StemOffset" Description = "Stem Offset"**

**Input = "ActuatorHeight" Description = "Actuator (Cone) Height"**

**Input = "ActuatorDiameter" Description = "Actuator (Cone) Diameter"**

**Outputs = 6**

**Output = "Operator" Description = "Stem"**

**Output = "StemExtension" Description = "Stem Extension"**

**Output = "Actuator" Description = "Actuator (Cone)"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder1"**

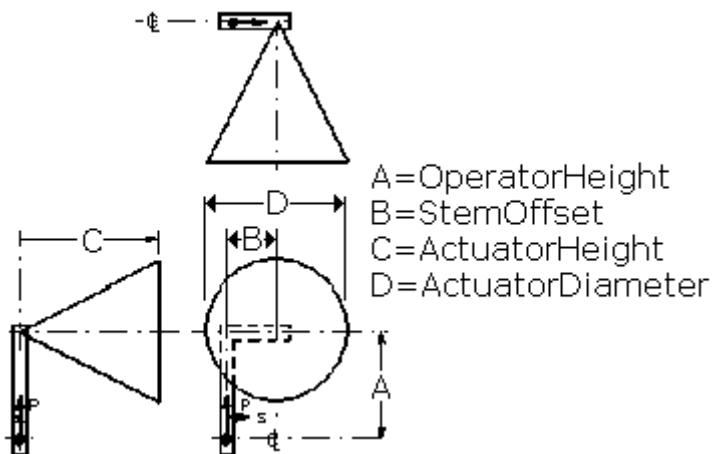
**Output = "MaintCyl2" Description = "Maintenance Cylinder2"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_451

**Description:** valve operator

**Symbol Name:** SP3DOP\_451.COP\_451

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_451.COP\_451

**Inputs = 4**

**Input = "OperatorHeight" Description = "Total Height of Operator"**

**Input = "OperatorDepth" Description = "Height of Truncated Cone"**

**Input = "OperatorDiameter" Description = "Bottom Dia of Truncated Cone"**

**Input = "OperatorDiameter1" Description = "Top Dia of Truncated Cone"**

**Outputs = 4**

**Output = "VerticalStem" Description = "Cylinder portion of Operator"**

**Output = "TruncatedCone" Description = "Truncated Cone"**

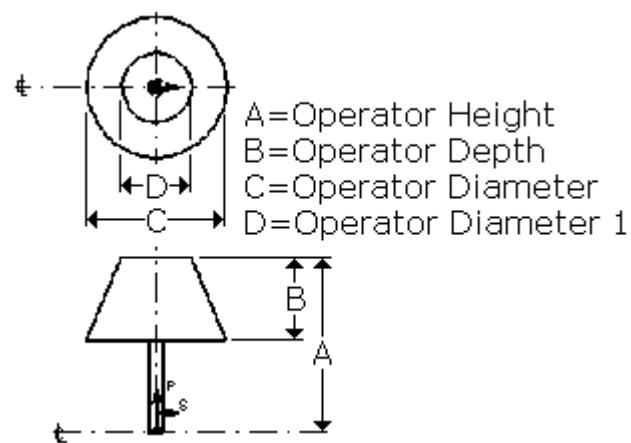
**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_452

**Description:** valve operator

**Symbol Name:** SP3DOP\_452.COP\_452

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_452.COP\_452

**Inputs = 4**

**Input = "OperatorHeight" Description = "Valve Origin to Cone Center"**

**Input = "OperatorLength" Description = "Cone Projection from Center of Val"**

**Input = "OperatorDiameter" Description = "Base Diameter of Cone"**

**Input = "OperatorDiameter1" Description = "Top Diameter of Cone"**

**Outputs = 4**

**Output = "VeriStem" Description = "Stem Cylinder"**

**Output = "TruncatedCone" Description = "Cone"**

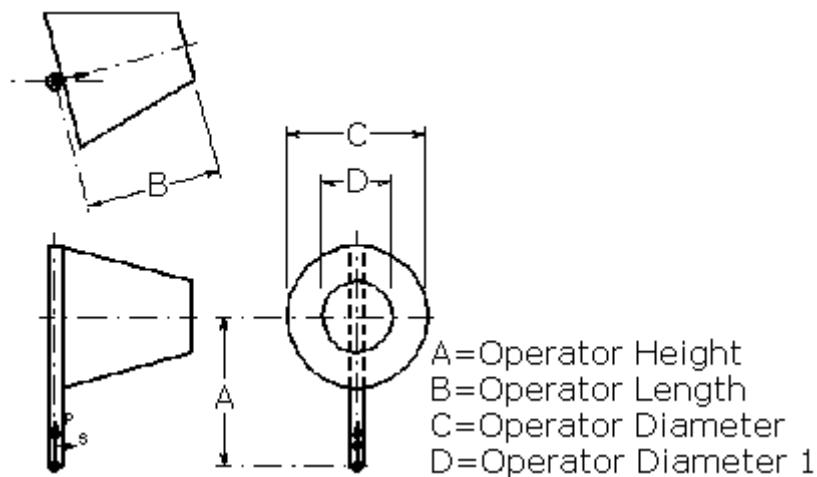
**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP\_453

**Description:** valve operator

**Symbol Name:** SP3DOP\_453.COP\_453

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_453.COP\_453

**Inputs = 7**

**Input = "OperatorHeight" Description =** "From Center of Valve to Top"

**Input = "OperatorDepth" Description =** "Depth of Truncated Cone"

**Input = "OperatorHeight1" Description =** "Disc in Negative Direction of Y"

**Input = "OperatorDepth1" Description =** "Thickness of Base Disc"

**Input = "OperatorDiameter2" Description =** "Dia of Base Disc"

**Input = "OperatorDiameter" Description =** "Truncated Cone Top Diameter"

**Input = "OperatorDiameter1" Description =** "Truncated Cone Bottom Diameter"

**Outputs = 6**

**Output = "OperatorStem" Description =** "Vertical Stem"

**Output = "BaseDisc" Description =** "Bottom Disc"

**Output = "TruncatedCone" Description =** "Truncated Cone in Top"

**Output = "MaintCyl1" Description =** "Maintenance Cylinder1"

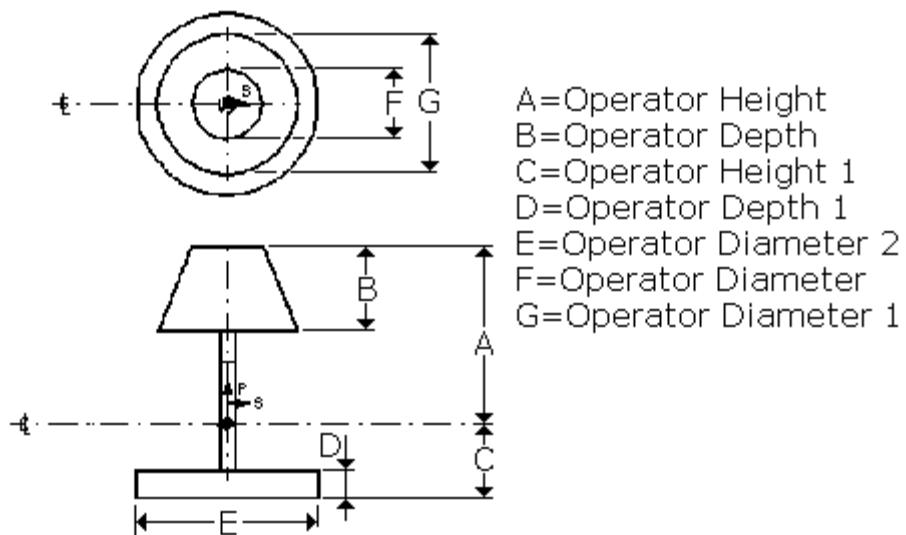
**Output = "MaintCyl2" Description =** "Maintenance Cylinder2"

**Output = "MaintCone" Description =** "Maintenance Cone"

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_491

**Description:** valve operator

**Symbol Name:** SP3DOP\_491.COP\_491

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_491.COP\_491

**Inputs = 6**

**Input = "OperatorHeight" Description = "Stem Bottom to Main Cylinder Top"**

**Input = "OperatorDepth" Description = "Main Cylinder Height"**

**Input = "OperatorDiameter" Description = "Main Cylinder Diameter"**

**Input = "ActuatorOffset" Description = "Second Cylinder Axis Offset"**

**Input = "ActuatorDiameter" Description = "Second Cylinder Diameter"**

**Input = "ActuatorDepth" Description = "Second Cylinder Height"**

**Outputs = 6**

**Output = "Stem" Description = "Spindle"**

**Output = "MainCyl" Description = "Main Cylinder"**

**Output = "SecCyl" Description = "Second Cylinder"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder1"**

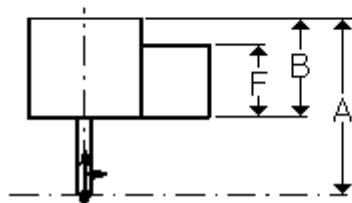
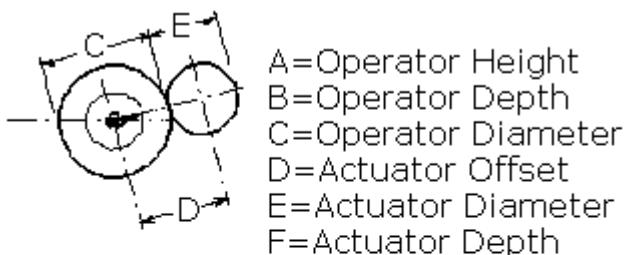
**Output = "MaintCyl2" Description = "Maintenance Cylinder2"**

**Output = "MaintCyl3" Description = "Maintenance Cylinder3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_492

**Description:** valve operator

**Symbol Name:** SP3DOP\_492.COP\_492

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Valve Operator Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_492.COP\_492

**Inputs = 7**

**Input = "StemAngle" Description = "Spindle Inclination from negative X"**

**Input = "OperatorHeight" Description = "Spindle Bottom to Main Cylinder Top"**

**Input = "OperatorDiameter" Description = "Main Cylinder Diameter"**

**Input = "OperatorDepth" Description = "main Cylinder Height"**

**Input = "ActuatorOffset" Description = "Second Cylinder Axis Offset"**

**Input = "ActuatorDiameter" Description = "Second Cylinder Diameter"**

**Input = "ActuatorDepth" Description = "Second Cylinder Height"**

**Outputs = 6**

**Output = "Stem" Description = "Spindle"**

**Output = "MainCyl" Description = "Main Cylinder"**

**Output = "SecCyl" Description = "Second Cylinder"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

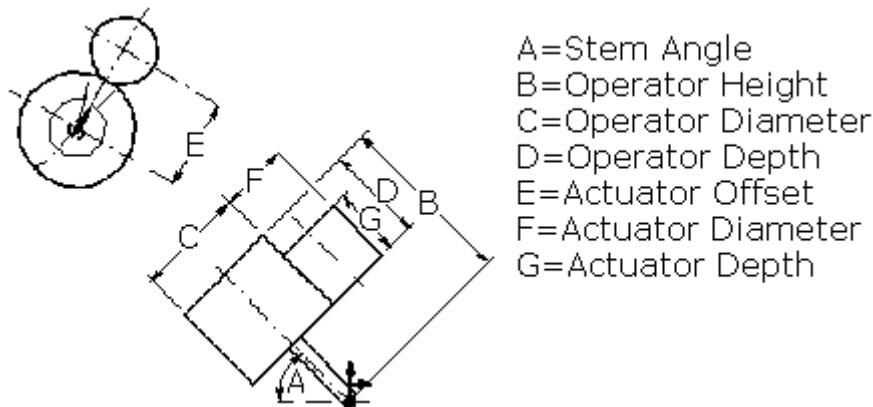
**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP\_493

**Description:** valve operator

**Symbol Name:** SP3DOP\_493.COP\_493

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_493.COP\_493

**Inputs = 13**

**Input = "OperatorHeight" Description = "Stem Bottom to Box Top"**

**Input = "OperatorHeight1" Description = "Stem Bottom to Cylinder Axis"**

**Input = "OperatorWidth" Description = "Stem Offset from Box Front"**

**Input = "OperatorWidth1" Description = "Stem Offset from Box Rear"**

**Input = "OperatorLength" Description = "Stem Offset from Box Left"**

**Input = "OperatorLength1" Description = "Stem Offset from Box Right"**

**Input = "OperatorDepth" Description = "Box Height"**

**Input = "ActuatorOffset" Description = "Cylinder Axis Offset from Stem"**

**Input = "ActuatorDiameter" Description = "Main Cylinder Diameter"**

**Input = "ActuatorLength1" Description = "Main Cylinder Offset from Stem"**

**Input = "ActuatorLength" Description = "Main Cylinder Height"**

**Input = "ActuatorLength2" Description = "Second Cylinder Height"**

**Input = "ActuatorDiameter1" Description = "Second Cylinder Diameter"**

**Outputs = 8**

**Output = "Stem" Description = "Spindle"**

**Output = "Box" Description = "Rectangular Box"**

**Output = "MainCyl" Description = "Main Cylinder"**

**Output = "SecCyl" Description = "Second Cylinder"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintBox1" Description = "Maintenance Box 1"**

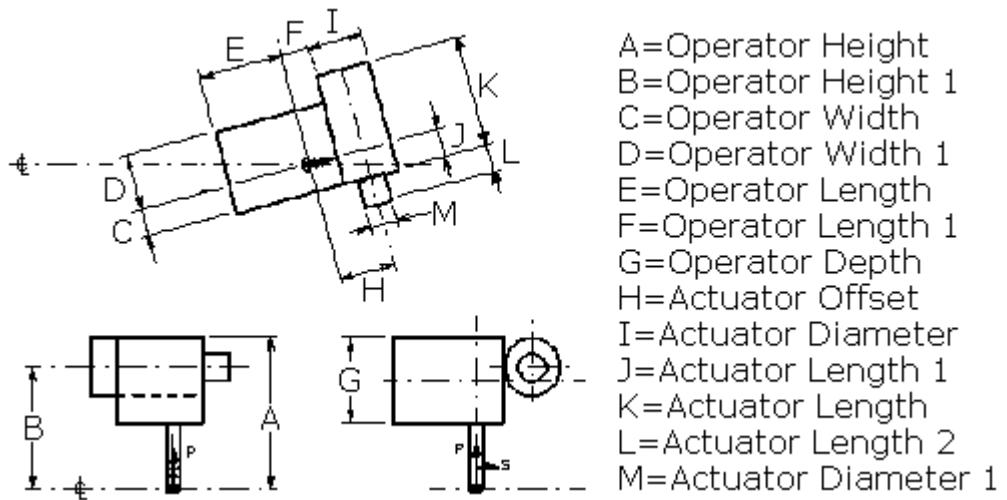
**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_494

**Description:** valve operator

**Symbol Name:** SP3DOP\_494.COP\_494

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_494.COP\_494

**Inputs = 11**

**Input = "OperatorHeight" Description = "Spindle Bottom to Box Top"**

**Input = "OperatorHeight1" Description = "Spindle Bottom to Cylinder Axis"**

**Input = "OperatorLength" Description = "Spindle Offset from Box Left"**

**Input = "OperatorLength1" Description = "Spindle Offset from Box Right"**

**Input = "ActuatorLength" Description = "Right Hand Side Cylinder Height"**

**Input = "ActuatorLength1" Description = "Left Hand Side Cylinder Height"**

**Input = "ActuatorDiameter" Description = "Cylinder Diameter"**

**Input = "ActuatorCenter" Description = "Cylinder Axis Offset from Box Rear"**

**Input = "OperatorWidth1" Description = "Cylinder Axis Offset from Spindle"**

**Input = "OperatorWidth" Description = "Rectangular Box Width"**

**Input = "OperatorDepth" Description = "Rectangular Box Height"**

**Outputs = 8**

**Output = "Stem" Description = "Spindle"**

**Output = "Box" Description = "Rectangular Box"**

**Output = "RHSCyl" Description = "Right Hand Side Cylinder"**

**Output = "LHSCyl" Description = "Left Hand Side Cylinder"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintBox1" Description = "Maintenance Box 1"**

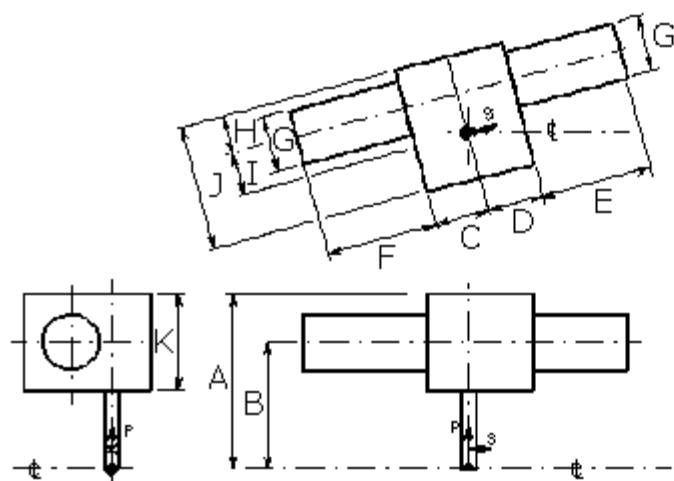
**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height  
B=Operator Height 1  
C=Operator Length  
D=Operator Length 1  
E=Actuator Length  
F=Actuator Length 1  
G=Actuator Diameter  
H=Actuator Center  
I=Operator Width 1  
J=Operator Width  
K=Operator Depth

# SP3DOP\_571

**Description:** valve operator

**Symbol Name:** SP3DOP\_571.COP\_571

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_571.COP\_571

**Inputs = 5**

**Input = "OperatorHeight" Description = "Operator Height including Box"**

**Input = "OperatorDepth" Description = "Depth of Rectangle Operator"**

**Input = "OperatorLength" Description = "Rect Operator Len in Negative Sec"**

**Input = "OperatorLength1" Description = "Rext Operator Len in Positive Sec"**

**Input = "OperatorWidth" Description = "Rect Operator Width"**

**Outputs = 4**

**Output = "VeriticalStem" Description = "Vertical Cylinder"**

**Output = "RectanglePrism" Description = "Rectangular Prism"**

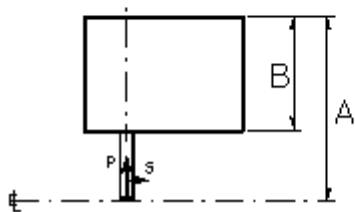
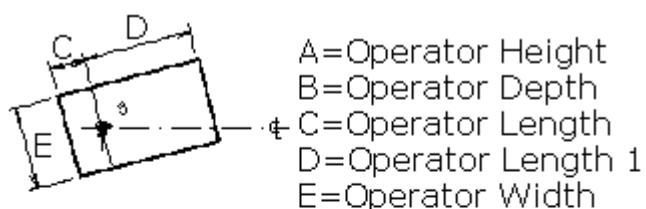
**Output = "MaintCyl" Description = "Maintenance Cylinder"**

**Output = "MaintBox" Description = "Maintenance Box"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_572

**Description:** valve operator

**Symbol Name:** SP3DOP\_572.COP\_572

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_572.COP\_572

**Inputs = 6**

**Input = "StemAngle" Description = "Angle of Inclination"**

**Input = "OperatorHeight" Description = "Total Height of Operator"**

**Input = "OperatorLength" Description = "Inclined Length along Sec Axis Dir"**

**Input = "OperatorLength1" Description = "Inclined Length along Sec Axis Dir"**

**Input = "OperatorWidth" Description = "Width in Z Axis"**

**Input = "OperatorDepth" Description = "Depth in Y axis but Inclined"**

**Outputs = 4**

**Output = "InclinedStem" Description = "Stem of Operator"**

**Output = "RectOperator" Description = "Rectangle Prism "**

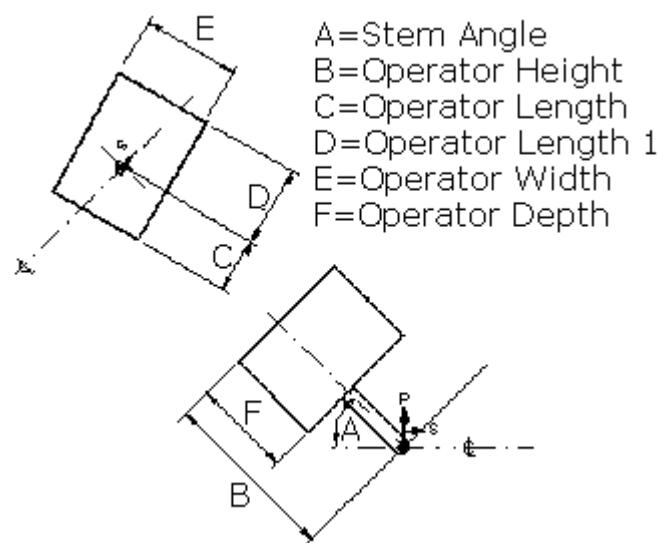
**Output = "MaintInclinedStem" Description = "Maintenance Stem of Operator"**

**Output = "MaintRectOperator" Description = "Maintenance Rectangle Prism"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_573

**Description:** valve operator

**Symbol Name:** SP3DOP\_573.COP\_573

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_573.COP\_573

**Inputs = 18**

**Input = "OperatorHeight" Description =** "Height to Operator Center"

**Input = "OperatorDiameter" Description =** "Horizontal Disc Diameter"

**Input = "OperCenFromTop" Description =** "Center of Operator from Top"

**Input = "OperatorDepth" Description =** "Depth of Main Cylinder"

**Input = "ActuatorOffset" Description =** "Eccentric Cylinder Center"

**Input = "ArmLength" Description =** "Length of Eccentric Cylinder"

**Input = "ArmDiameter" Description =** "Diameter of Eccentric Cylinder"

**Input = "ArmLength1" Description =** "C/C of Box and Main Disc"

**Input = "ActuatorBoxLength" Description =** "Length of Box"

**Input = "ActuatorBoxLength1" Description =** "Length of Box"

**Input = "ActuatorLength" Description =** "RHS Cylinder from Center"

**Input = "ActuatorLength1" Description =** "LHS Cylinder from Center"

**Input = "ActuatorBoxWidth" Description =** "Rect Box Width"

**Input = "ActuatorBoxDepth1" Description =** "Center of Box from Top"

**Input = "ActuatorBoxDepth" Description =** "Depth of Rect Box"

**Input = "ActuatorCenter" Description =** "Cylinder Center from Box Center"

**Input = "ActuatorDiameter" Description =** "Cylinder Dia"

**Input = "ActuatorDiameter1" Description =** "Cylinder Dia"

**Outputs = 12**

**Output = "Stem" Description =** "Cylinder"

**Output = "MainCylinder" Description =** "Main Cylinder (Horizontal)"

**Output = "EccentricCylin" Description =** "Eccentric Cylinder"

**Output = "RectBox" Description =** "Box"

**Output = "LeftCylinder" Description =** "Left Side Cylinder"

**Output = "RightCylinder" Description =** "Right Side Cylinder"

**Output = "MaintStem" Description =** "Maintenance Cylinder"

**Output = "MaintMainCylinder" Description =** "Maintenance Main Cylinder (Horizontal)"

**Output = "MaintEccentricCylin" Description =** "Maintenance Eccentric Cylinder"

**Output = "MaintRectBox" Description =** "Maintenance Box"

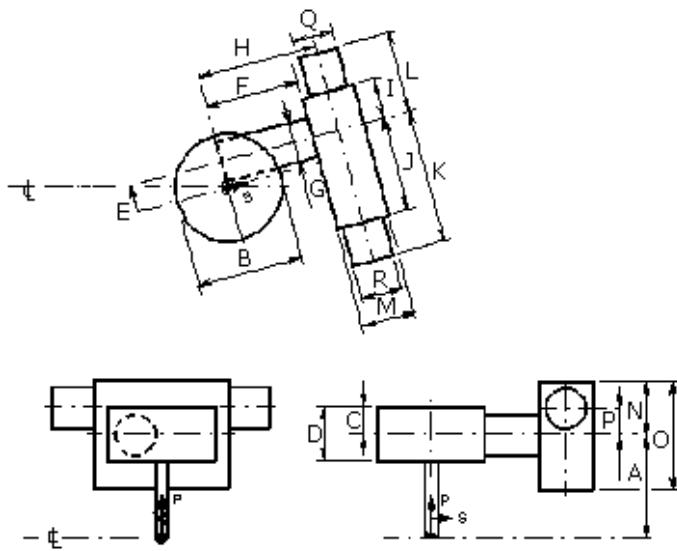
**Output = "MaintLeftCylinder" Description =** "Maintenance Left Side Cylinder"

**Output = "MaintRightCylinder" Description =** "Maintenance Right Side Cylinder"

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height  
B=Operator Diameter  
C=Operator Center From Top  
D=Operator Depth  
E=Actuator Offset  
F=Arm Length  
G=Arm Diameter  
H=Arm Length 1  
I=Actuator Box Length  
J=Actuator Box Length 1  
K=Actuator Length  
L=Actuator Length 1  
M=Actuator Box Width  
N=Actuator Box Depth 1  
O=Actuator Box Depth  
P=Actuator Center  
Q=Actuator Diameter  
R=Actuator Diameter 1

# SP3DOP\_574

**Description:** valve operator

**Symbol Name:** SP3DOP\_574.COP\_574

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_574.COP\_574

**Inputs = 18**

**Input = "StemAngle" Description = "Angle of Inclination"**

**Input = "OperatorHeight" Description = "Height to Center of Operator"**

**Input = "OperatorDiameter" Description = "Dia Of Main Cylinder"**

**Input = "OperCenFromTop" Description = "Center of Main Cylinder from Top"**

**Input = "OperatorDepth" Description = "Cepth of Main Cylinder"**

**Input = "ActuatorOffset" Description = "Center of Eccentric Shaft"**

**Input = "ArmLength" Description = "Length of Eccentric Shaft"**

**Input = "ArmDiameter" Description = "Dia of Eccentric Shaft"**

**Input = "ArmLength1" Description = "Center of Box Center of Valve"**

**Input = "ActuatorBoxLength" Description = "Length of Box"**

**Input = "ActuatorBoxLength1" Description = "Length of Box"**

**Input = "ActuatorLength" Description = "Distance from Eccentric Shaft"**

**Input = "ActuatorLength1" Description = "Distance from Eccentric Shaft"**

**Input = "ActuatorBoxWidth" Description = "Width of Rectangular Box"**

**Input = "ActuatorBoxDepth1" Description = "Rect Box Depth"**

**Input = "ActuatorBoxDepth" Description = "Total Box Depth"**

**Input = "ActuatorCenter" Description = "Distance from center of Eccen. Sha"**

**Input = "ActuatorDiameter" Description = "Projected Cylinder Dia"**

**Outputs = 12**

**Output = "Stem" Description = "Vertical Cylinder"**

**Output = "MainCylinder" Description = "Horizontal Cylinder"**

**Output = "EccentricShaft" Description = "Cylinder"**

**Output = "RectBox" Description = "Box"**

**Output = "RightCylinder" Description = "Cylinder"**

**Output = "LeftCylinder" Description = "Left Cylinder"**

**Output = "MaintStem" Description = "Maintenance Vertical Cylinder"**

**Output = "MaintMainCylinder" Description = "Maintenance Horizontal Cylinder"**

**Output = "MaintEccentricShaft" Description = "Maintenance Cylinder"**

**Output = "MaintRectBox" Description = "Maintenance Box"**

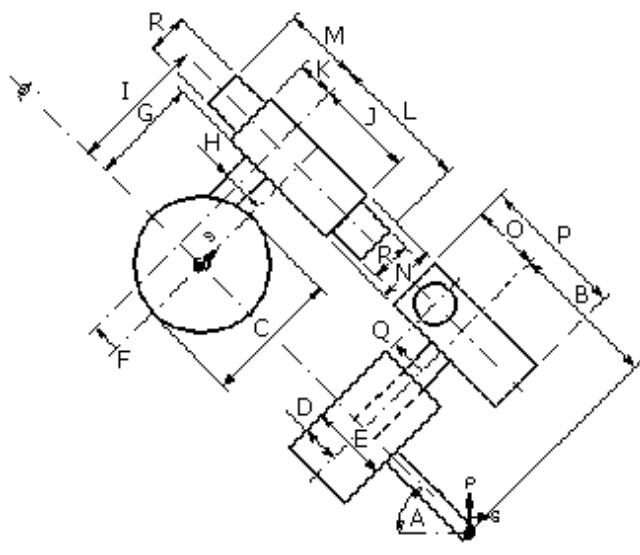
**Output = "MaintRightCylinder" Description = "Maintenance Cylinder"**

**Output = "MaintLeftCylinder" Description = "Maintenance Left Cylinder"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Stem Angle  
B=Operator Height  
C=Operator Diameter  
D=Operator Center From Top  
E=Operator Depth  
F=Actuator Offset  
G=Arm Length  
H=Arm Diameter  
I=Arm Length 1  
J=Actuator Box Length  
K=Actuator Box Length 1  
L=Actuator Length  
M=Actuator Length 1  
N=Actuator Box Width  
O=Actuator Box Depth 1  
P=Actuator Box Depth  
Q=Actuator Center  
R=Actuator Diameter

# SP3DOP\_711

**Description:** valve operator

**Symbol Name:** SP3DOP\_711.COP\_711

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_711.COP\_711

**Inputs = 7**

**Input = "OperatorHeight" Description = "Operator Height"**

**Input = "OperatorLength1" Description = "Partial Length of Operator"**

**Input = "OperatorDepth" Description = "Depth of Rectangle Box"**

**Input = "OperatorLength" Description = "Total Length of Box"**

**Input = "OperatorWidth" Description = "Box Width"**

**Input = "OperatorCenter" Description = "Center of Handle from Top"**

**Input = "LeverLength" Description = "Length of Handle"**

**Outputs = 6**

**Output = "Stem" Description = "Cylinder"**

**Output = "RectBox" Description = "Rectangular Box"**

**Output = "Handle" Description = "Cylinder"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

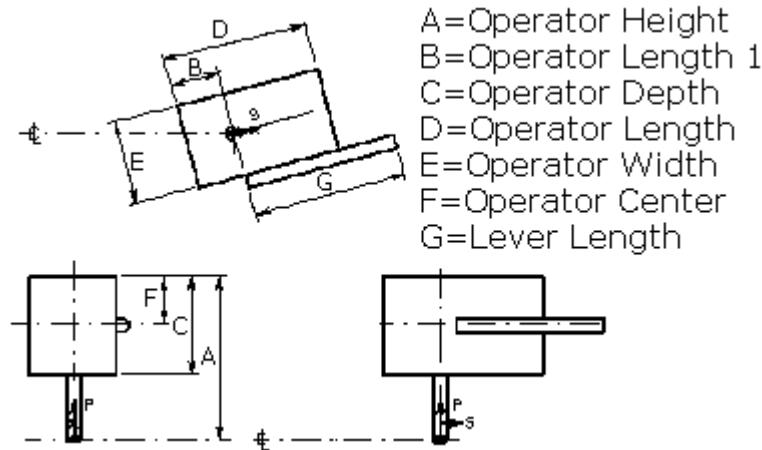
**Output = "MaintBox1" Description = "Maintenance Box 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_731

**Description:** valve operator

**Symbol Name:** SP3DOP\_731.COP\_731

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_731.COP\_731

**Inputs = 8**

**Input = "OperatorHeight" Description = "Operator Height in Positive Direct"**

**Input = "OperatorDepth" Description = "Cone Depth in Positive Direction"**

**Input = "OperatorDiameter" Description = "Cone Top Diameter"**

**Input = "OperatorDiameter2" Description = "Cone Bottom Diameter"**

**Input = "OperatorHeight1" Description = "Operator Height in Negative Direct"**

**Input = "OperatorDepth1" Description = "Cone Depth in Nagative Direction"**

**Input = "OperatorDiameter1" Description = "Cone Top Diameter below valve"**

**Input = "OperatorDiameter3" Description = "Cone Base Diameter"**

**Outputs = 6**

**Output = "Stem" Description = "Cylinder"**

**Output = "TopCone" Description = "Cone"**

**Output = "BottomCone" Description = "Cone"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

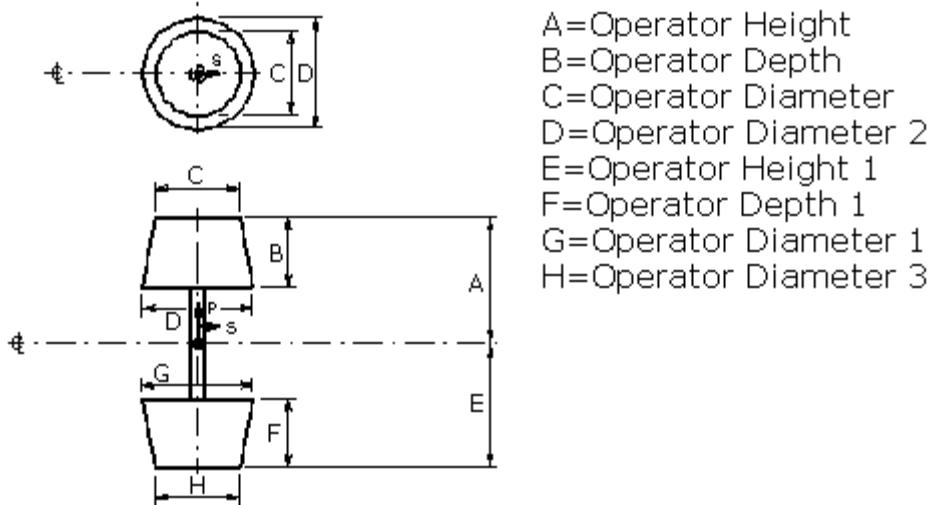
**Output = "MaintCone1" Description = "Maintenance Cone 1"**

**Output = "MaintCone2" Description = "Maintenance Cone 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height  
B=Operator Depth  
C=Operator Diameter  
D=Operator Diameter 2  
E=Operator Height 1  
F=Operator Depth 1  
G=Operator Diameter 1  
H=Operator Diameter 3

# SP3DOP\_811

**Description:** valve operator

**Symbol Name:** SP3DOP\_811.COP\_811

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_811.COP\_811

**Inputs = 17**

**Input = "OperatorHeight" Description = "Cone Height"**

**Input = "OperatorDiameter" Description = "Cone Diameter"**

**Input = "CounterWtLeverLen1" Description = "LHS Weight Offset from Cone Axis"**

**Input = "CounterWtBoxTk1" Description = "LHS Weight Thickness"**

**Input = "OperatorHeight1" Description = "LHS Stem Offset from Cone Base"**

**Input = "CounterWtBoxHt1" Description = "LHS Weight Height"**

**Input = "CounterWtBoxDia1" Description = "LHS Weight Width"**

**Input = "CounterWtLeverLen2" Description = "RHS Upper Weight Offset"**

**Input = "CounterWtBoxTk2" Description = "RHS Upper Weight Thickness"**

**Input = "OperatorHeight2" Description = "RHS Upper Stem Offset"**

**Input = "CounterWtBoxHt2" Description = "RHS Upper Weight Height"**

**Input = "CounterWtBoxDia2" Description = "RHS Upper Weight Width"**

**Input = "OperatorHeight3" Description = "RHS Lower Stem Offset"**

**Input = "CounterWtLeverLen3" Description = "RHS Lower Weight Offset"**

**Input = "CounterWtBoxTk3" Description = "RHS Lower Weight Thickness"**

**Input = "CounterWtBoxHt3" Description = "RHS Lower Weight Height"**

**Input = "CounterWtBoxDia3" Description = "RHS Lower Weight Width"**

**Outputs = 14**

**Output = "Cone" Description = "Cone"**

**Output = "LHSStem" Description = "Left Hand Side Stem"**

**Output = "LHSWt" Description = "Left Hand Side Weight"**

**Output = "RHSUpStem" Description = "Right Hand Side Upper Stem"**

**Output = "RHSUpWt" Description = "RH Side Upper Weight"**

**Output = "RHSLoStem" Description = "RH Side Lower Stem"**

**Output = "RHSLoWt" Description = "RH Side Lower Weight"**

**Output = "MaintCone" Description = "Maintenance Cone"**

**Output = "MaintLHSStem" Description = "Maintenance Left Hand Side Stem"**

**Output = "MaintLHSWt" Description = "Maintenance Left Hand Side Weight"**

**Output = "MaintRHSUpStem" Description = "Maintenance Right Hand Side Upper Stem"**

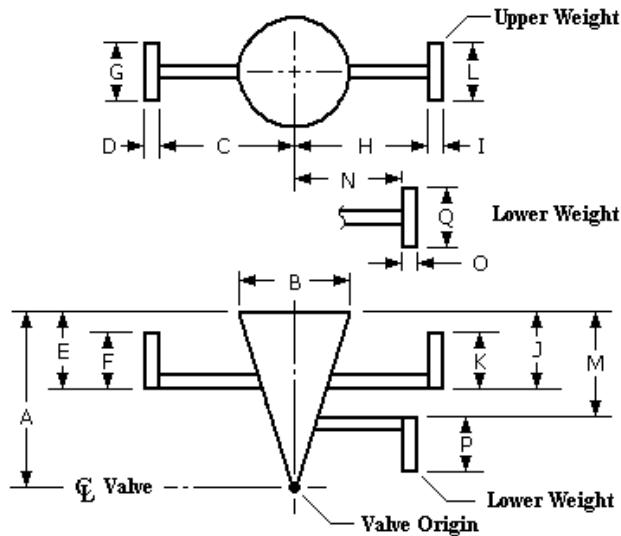
**Output = "MaintRHSUpWt" Description = "Maintenance RH Side Upper Weight"**

**Output = "MaintRHSLoStem"** **Description = "Maintenance RH Side Lower Stem"**  
**Output = "MaintRHSLoWt"** **Description = "Maintenance RH Side Lower Weight"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



A=Operator Height  
B=Operator Diameter  
C=Counterweight Level Length 1  
D=Counterweight Box Thickness 1  
E=Operator Height 1  
F=Counterweight Box Height 1  
G=Counterweight Box Diameter 1  
H=Counterweight Lever Length 2  
I=Counterweight Box Thickness 2  
J=Operator Height 2  
K=Counterweight Box Height 2  
L=Counterweight Box Diameter 2  
M=Operator Height 3  
N=Counterweight Lever Length 3  
O=Counterweight Box Thickness 3  
P=Counterweight Box Height 3  
Q=Counterweight Box Diameter 3

# SP3DOP\_851

**Description:** valve operator

**Symbol Name:** SP3DOP\_851.COP\_851

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_851.COP\_851

**Inputs = 5**

**Input = "OperatorHeight" Description = "Spindle Bottom to Handwheel Top"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "StemExtension" Description = "Operator Top to Handwheel Top"**

**Input = "OperatorDepth" Description = "operator Height"**

**Input = "ActuatorDiameter" Description = "handwheel Diameter"**

**Outputs = 8**

**Output = "Stem" Description = "Spindle"**

**Output = "Operator" Description = "operator"**

**Output = "OPToHWShaft" Description = "Shaft bet"**

**Output = "Wheel" Description = "Handwheel"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

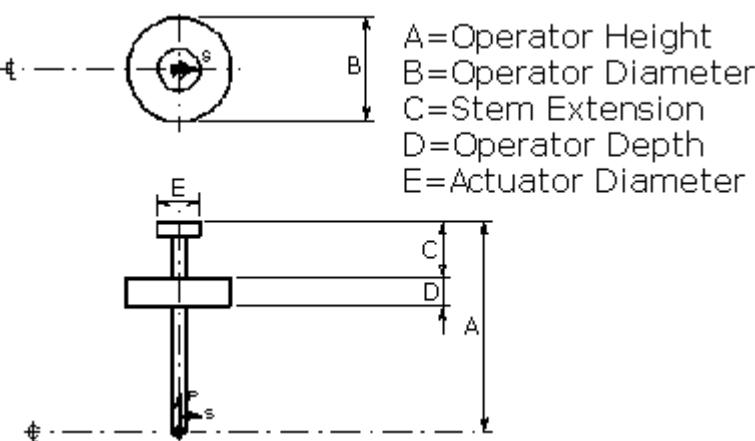
**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Output = "MaintCyl4" Description = "Maintenance Cylinder 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



## SP3DOP\_852

**Description:** valve operator

**Symbol Name:** SP3DOP\_852.COP\_852

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_852.COP\_852

**Inputs = 6**

**Input = "StemAngle" Description = "Spindle Inclination from negative X"**

**Input = "OperatorHeight" Description = "Spindle Bottom to Handwheel Top"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "StemExtension" Description = "Operator Top to Handwheel Top"**

**Input = "OperatorDepth" Description = "Operator Height"**

**Input = "ActuatorDiameter" Description = "handwheel Diameter"**

**Outputs = 8**

**Output = "Stem" Description = "Spindle"**

**Output = "Operator" Description = "Operator"**

**Output = "OPToHWShaft" Description = "Shaft between OP. and HW."**

**Output = "Wheel" Description = "Handwheel"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

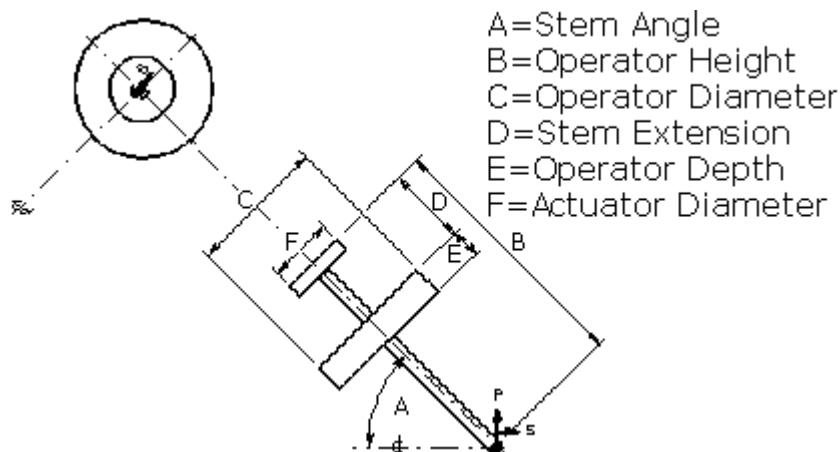
**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Output = "MaintCyl4" Description = "Maintenance Cylinder 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_853

**Description:** valve operator

**Symbol Name:** SP3DOP\_853.COP\_853

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_853.COP\_853

**Inputs = 7**

**Input = "OperatorHeight" Description = "Total Height"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Center of Hand Wheel from Top"**

**Input = "OperatorDepth" Description = "Operator Depth"**

**Input = "ArmLength" Description = "Shaft Length from Center"**

**Input = "ActuatorDiameter" Description = "Dia of Hand Wheel"**

**Input = "ActuatorOffset" Description = "Center of Handwheel from Valve"**

**Outputs = 8**

**Output = "Stem" Description = "Stem Cylinder"**

**Output = "OperatorDisc" Description = "Operator Disc"**

**Output = "ShaftCylinder" Description = "Eccentric Shaft"**

**Output = "HandWheel" Description = "Hand Wheel"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

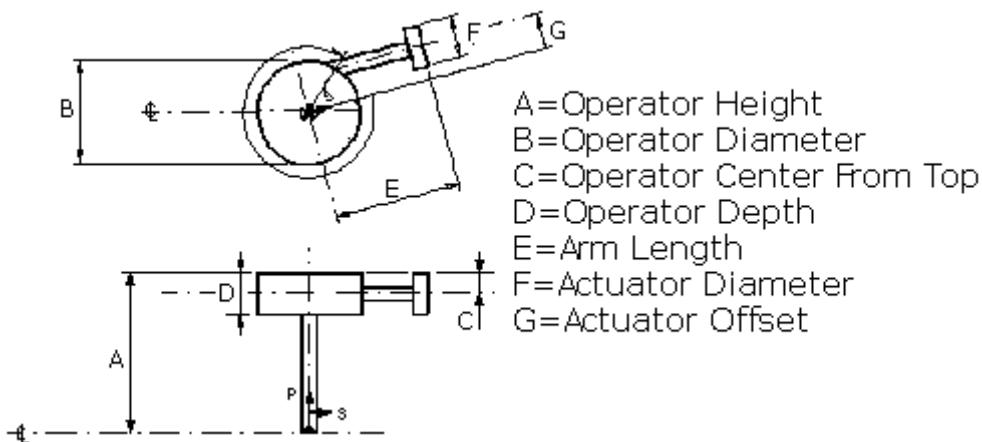
**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Output = "MaintCyl4" Description = "Maintenance Cylinder 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOP\_854

**Description:** valve operator

**Symbol Name:** SP3DOP\_854.COP\_854

**Workbook:**

**Workbook Sheet:**

**User Class Name:** ValveOperatorClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOP\_854.COP\_854

**Inputs = 8**

**Input = "StemAngle" Description = "Angle of Inclination"**

**Input = "OperatorHeight" Description = "Operator Height"**

**Input = "OperatorDiameter" Description = "Operator Diameter"**

**Input = "OperCenFromTop" Description = "Center of Operator"**

**Input = "OperatorDepth" Description = "Depth of Operator"**

**Input = "ArmLength" Description = "Length of Eccentric Shaft"**

**Input = "ActuatorDiameter" Description = "Dia of Hand wheel"**

**Input = "ActuatorOffset" Description = "Distance of Hand Wheel from cen"**

**Outputs = 8**

**Output = "Stem" Description = "Stem"**

**Output = "OperatorCylin" Description = "Operator Cylinder"**

**Output = "EccentricShaft" Description = "Cylinder"**

**Output = "HandWheel" Description = "Cylinder for Hand Whee;"**

**Output = "MaintCyl1" Description = "Maintenance Cylinder 1"**

**Output = "MaintCyl2" Description = "Maintenance Cylinder 2"**

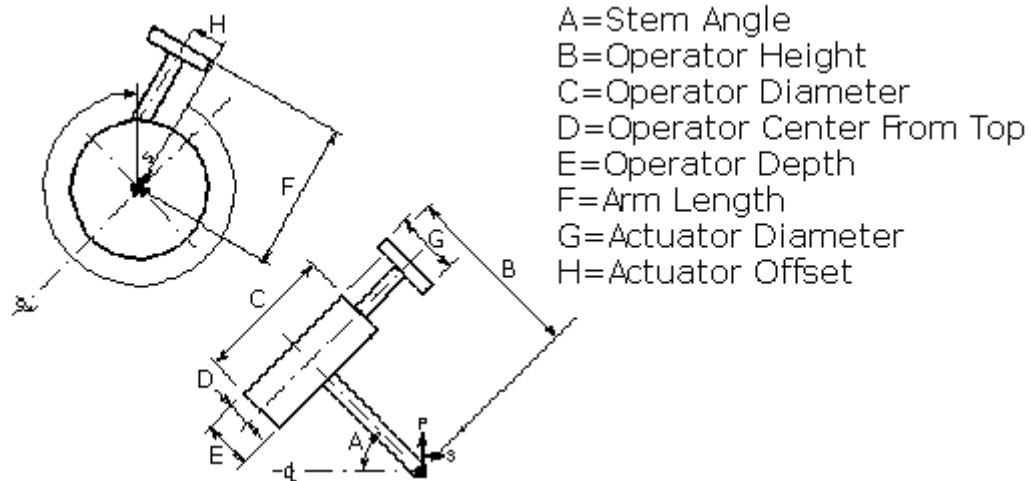
**Output = "MaintCyl3" Description = "Maintenance Cylinder 3"**

**Output = "MaintCyl4" Description = "Maintenance Cylinder 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Maintenance**



# SP3DOrificeFlange

**Description:**

**Symbol Name:** SP3DOrificeFlange.OrificeFlange

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOrificeFlange.COrificeFlange

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "OrificeBody" Description = "Orifice Body"**

**Output = "OrificeBodyIns" Description = "Orifice Body Insulation"**

**Output = "Port3BodyIns" Description = "Port3 Body Insulation"**

**Output = "Port3Ins" Description = "Port3 Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

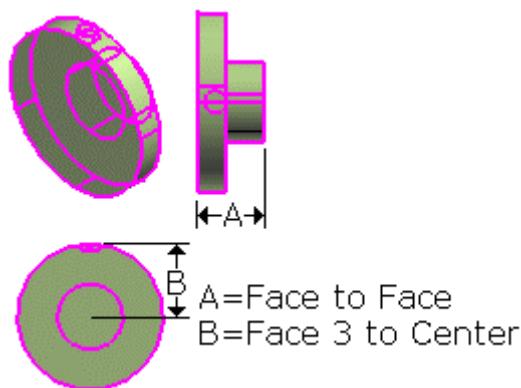
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DOrificeFlange1O

**Description:** Orifice Flange

**Symbol Name:** SP3DOrificeFlange1O.OrificeFlange1O

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** OrificeFlange

**User Class Name:** Orifice Flange

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOrificeFlange1O.OrificeFlange1O

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoTap" Description = "Tap to bolted Face of flange"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "TapOrientation" Description = "Orifice Flange Tap Orientation"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Outputs = 7**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3, Tap"**

**Output = "BodyInsulation" Description = "Orifice Body Insulation"**

**Output = "Nozz3Insulation" Description = "Nozzle 3 Insulation"**

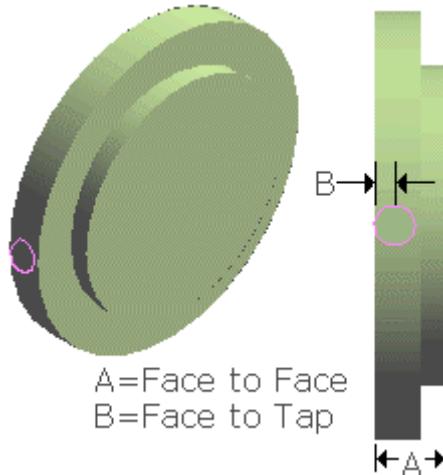
**Output = "PNoz4" Description = "Nozzle 4, Tap"**

**Output = "Nozz4Insulation" Description = "Nozzle 4 Insulation"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DOrificeFlangeAssembly

**Description:**

**Symbol Name:** SP3DOrificeFlangeAssembly.COriFIAssm

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOrificeFlangeAssembly.COriFIAssm

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "OrificeFlangeThk" Description = "Orifice Flange Thickness"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "OriFlange1Body" Description = "Orifice Flange1 Body"**

**Output = "OriFlange2Body" Description = "Orifice Flange2 Body"**

**Output = "OriFlange1MatingFlange" Description = "Orifice Flange1 Mating Flange"**

**Output = "OriFlange2MatingFlange" Description = "Orifice Flange2 Mating Flange"**

**Output = "OriFIAssmBodyIns" Description = "Orifice Flange Assembly Body Insulation"**

**Output = "Port3BodyIns" Description = "Port3 Body Insulation"**

**Output = "Port3Ins" Description = "Port3 Insulation"**

**Output = "Port4BodyIns" Description = "Port4 Body Insulation"**

**Output = "Port4Ins" Description = "Port4 Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DOrificePlate

**Description:** Orifice plate

**Symbol Name:** SP3DOrificePlate.COrificePlate

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** OrificePlates

**User Class Name:** Orifice Plate (Paddle Type)

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOrificePlate.COrificePlate

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "OrificePlateBody" Description = "Orifice Plate Body"**

**Output = "PaddleBody" Description = "Paddle Body"**

**Output = "OrificePlateIns" Description = "Orifice Plate Insulation"**

**Output = "PaddleIns" Description = "Paddle Insulation"**

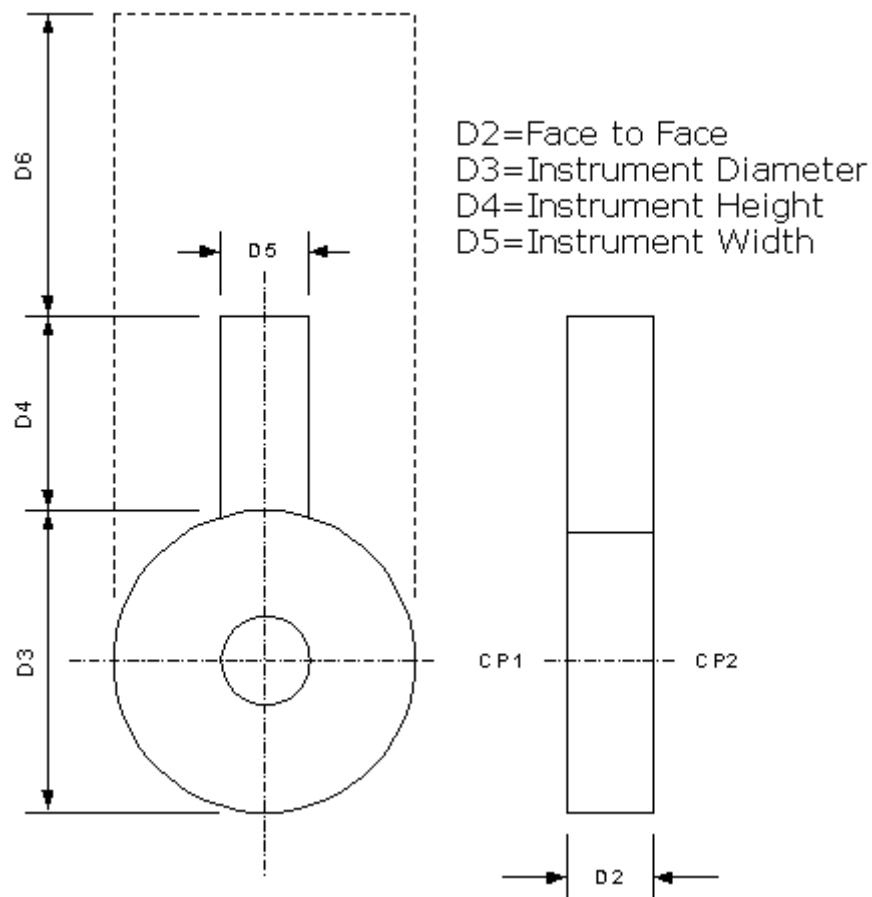
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DOrificeSpacer

**Description:**

**Symbol Name:** SP3DOrificeSpacer.COrificeSpacer

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DOrificeSpacer.COrificeSpacer

**Inputs = 2**

**Input = "FacetoFace" Description = "Spacer Thickness (Face to Face)"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "SpacerBody" Description = "Spacer Body"**

**Output = "SpacerIns" Description = "Spacer Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

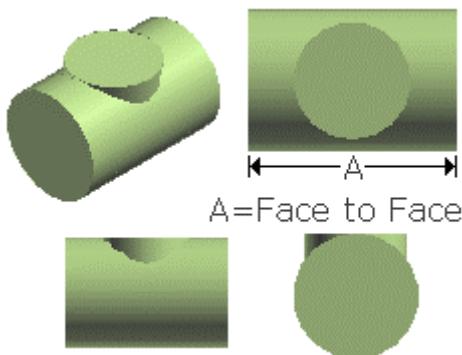
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DP2WAngGlobeCtrlV

**Description:** 2-way angle globe control valve, based on PDS symbol I5AZ

**Symbol Name:** SP3DP2WAngGlobeCtrlV.P2WAngGlobeCtrlV

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WAngGlobeCtrlV.P2WAngGlobeCtrlV

**Inputs = 2**

**Input and description** = "FacetoCenter", "FacetoCenter"

**Input and description** = "Face1toCenter", "Face1toCenter", 2

**Outputs = 4**

**Output and description** = "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description** = "oCone1", "oCone1", 1

**Output and description** = "oCone2", "oCone2", 1

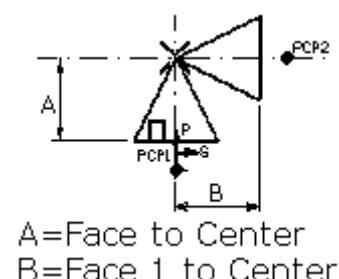
**Output and description** = "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description** = "Nozzle1", "Nozzle1", 1

**Output and description** = "Nozzle2", "Nozzle2", 1

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DP2WayGlobeCtrlVal

**Description:** 2-way globe control valve, based on PDS symbol I15AZ

**Symbol Name:** SP3DP2WayGlobeCtrlVal.P2WayGlobeCtrlVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WayGlobeCtrlVal.P2WayGlobeCtrlVal

**Inputs = 2**

**Input and description =** "FacetoCenter", "FacetoCenter"

**Input and description =** "Face1toCenter", "Face1toCenter", 2

**Outputs = 7**

**Output and description =** "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description =** "oCone1", "oCone1", 1

**Output and description =** "oSphere1", "oSphere1", 1

**Output and description =** "oCone2", "oCone2", 1

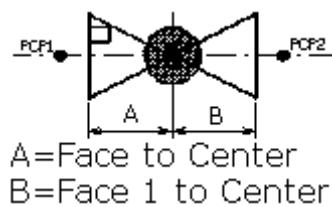
**Output and description =** "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description =** "Nozzle1", "Nozzle1", 1

**Output and description =** "Nozzle2", "Nozzle2", 1

**Aspects = 1**

**Aspect =** "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DP2WayPlugCtrlVal

**Description:** 2-way plug control valve, based on PDS symbol I16AZ

**Symbol Name:** SP3DP2WayGlobeCtrlVal.P2WayGlobeCtrlVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WayPlugCtrlVal.P2WayPlugCtrlVal

**Inputs = 2**

**Input and description** = "FacetoCenter", "FacetoCenter"

**Input and description** = "Face1toCenter", "Face1toCenter", 2

**Outputs = 6**

**Output and description** = "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description** = "oCone1", "oCone1", 1

**Output and description** = "oCone2", "oCone2", 1

**Output and description** = "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description** = "oCone3", "oCone3", 1

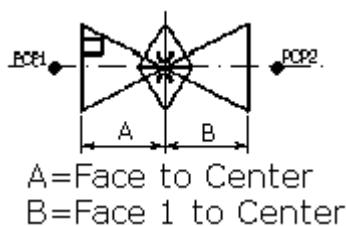
**Output and description** = "oCone4", "oCone4", 1

**Output and description** = "Nozzle1", "Nozzle1", 1

**Output and description** = "Nozzle2", "Nozzle2", 1

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DP2WaySlideCtrlVal

**Description:** 2-way slide control valve, based on PDS symbol I20AZ

**Symbol Name:** SP3DP2WaySlideCtrlVal.P2WaySlideCtrlVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WaySlideCtrlVal.P2WaySlideCtrlVal

**Inputs = 7**

**Input and description** = "FacetoFace", "Face 1 to Center"

**Input and description** = "BranchLength", "Branch Length"

**Input and description** = "ProjectionLength", "Projection Length"

**Input and description** = "BranchHeight", "Branch Height"

**Input and description** = "ProjectionHeight", "Projection Height"

**Input and description** = "ProjectionWidth", "Projection Width"

**Input and description** = "BranchWidth", "Branch Width"

**Outputs = 8**

**Output and description** = "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description** = "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description** = "ValveBody", "ValveBody Body", 1

**Output and description** = "oConeCapped1", "oConeCapped1", 1

**Output and description** = "oCylinderCapped3", "oCylinderCapped3", 1

**Output and description** = "oTrapezoid1", "oTrapezoid1", 1

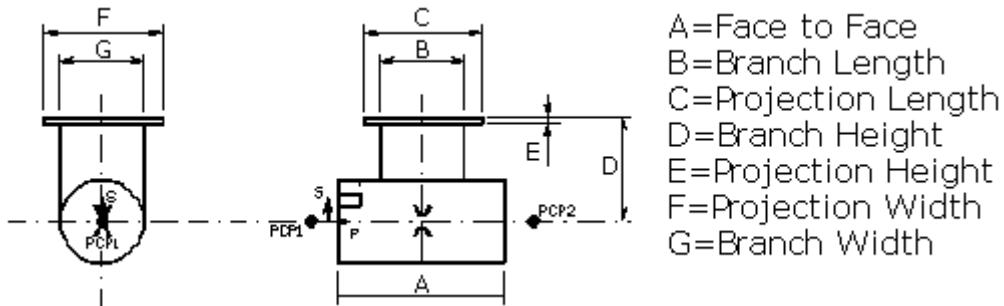
**Output and description** = "oTrapezoid2", "oTrapezoid2", 1

**Output and description** = "Nozzle1", "Nozzle1", 1

**Output and description** = "Nozzle2", "Nozzle2", 1

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DP2WBallCtrlValve

**Description:** 2-way ball control valve, based on PDS symbol I13AZ

**Symbol Name:** SP3DP2WBallCtrlValve.P2WBallCtrlValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WBallCtrlValve.P2WBallCtrlValve

**Inputs = 3**

**Input = "FaceToCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "LeftCone" Description = "Cone"**

**Output = "ValveBody" Description = "Sphere"**

**Output = "RightCone" Description = "Cone"**

**Output = "BallInsulation" Description = "Sphere"**

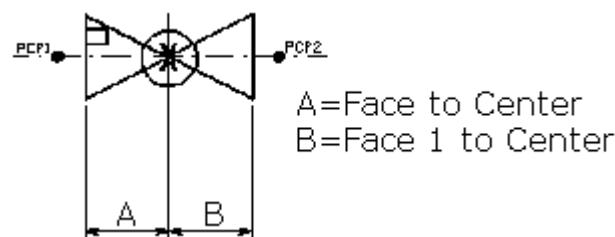
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DP2WSolenoidValve

**Description:** 2-way solenoid valve, based on PDS symbol I7AZ

**Symbol Name:** SP3DP2WSolenoidValve.P2WSolenoidValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP2WSolenoidValve.P2WSolenoidValve

**Inputs = 5**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 11**

**Output = "LeftCone" Description = "Cone"**

**Output = "RightCone" Description = "Cone"**

**Output = "InsulationCylinder" Description = "Insulation Cylinder"**

**Output = "Nozzle1" Description = "Nozzle 1"**

**Output = "Nozzle2" Description = "Nozzle 2"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "Cylinder2" Description = "Cylinder 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Output = "InsValveBody" Description = "Insulated valve body"**

**Output = "InsCylinder1" Description = "Insulated Cylinder 1"**

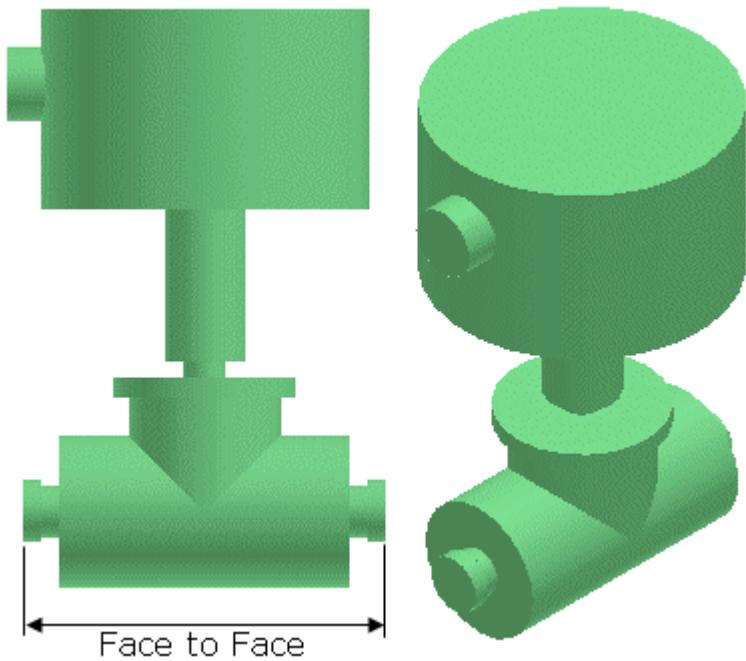
**Output = "InsCylinder2" Description = "Insulated Cylinder 2"**

**Aspects = 2**

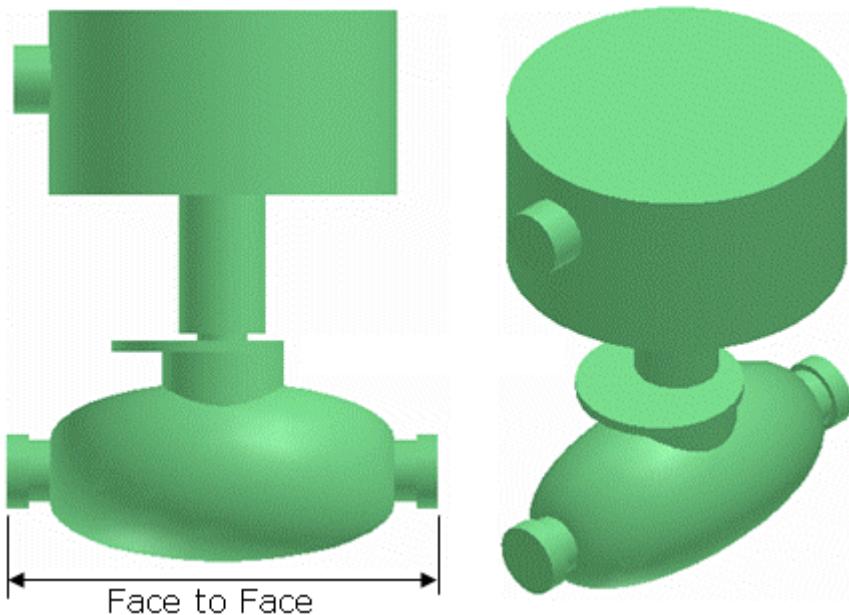
**Aspect = SimplePhysical**

**Aspect = Insulation**

Part Data Basis 255



Part Data Basis 260



# SP3DP3WAngGlobeCtrlV

**Description:** 3-way globe valve, based on PDS symbol I6AZ

**Symbol Name:** SP3DP3WAngGlobeCtrlV.P3WAngGlobeCtrlV

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP3WAngGlobeCtrlV.P3WAngGlobeCtrlV

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "InsHorBody" Description = "Insulation for Valve Body - Horizontal"**

**Output = "InsVertBody" Description = "Insulation for Valve Body - Vertical"**

**Output = "Ellipsoid" Description = "Ellipsoid"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "BodyCone3" Description = "Cone - Port3 Side"**

**Output = "PNoz1" Description = "Nozzle 1"**

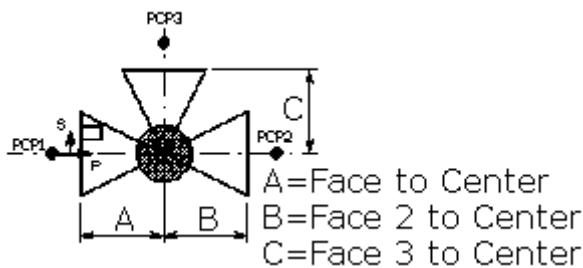
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DP3WBallCtrlValve

**Description:** 3-way ball control valve, based on PDS symbol I14AZ

**Symbol Name:** SP3DP3WBallCtrlValve.P3WBallCtrlValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP3WBallCtrlValve.P3WBallCtrlValve

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "Face2toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "BodyBall" Description = "Ball of Valve Body"**

**Output = "BodyCone1" Description = "Cone Port1 of Body"**

**Output = "BodyCone2" Description = "Cone Port2 of Body"**

**Output = "BodyCone3" Description = "Cone Port3 of Body"**

**Output = "InsulatedCylinder1" Description = "Insulation for Cone1, Ball and Cone2"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cone3"**

**Output = "PNoz1" Description = "Nozzle 1"**

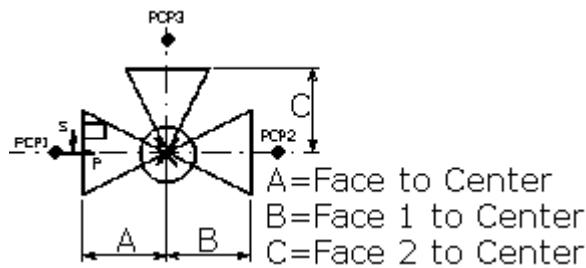
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DP3WPlugControlV

**Description:** 3-way plug control valve, based on PDS symbol I11AZ

**Symbol Name:** SP3DP3WPlugControlV.P3WPlugControlV

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP3WPlugControlV.P3WPlugControlV

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face to Face"**

**Input = "Face2toCenter" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "TopCone" Description = "Top Cone"**

**Output = "InsulCylinder1" Description = "Insul Cylinder1"**

**Output = "InsulCylinder2" Description = "Insul Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

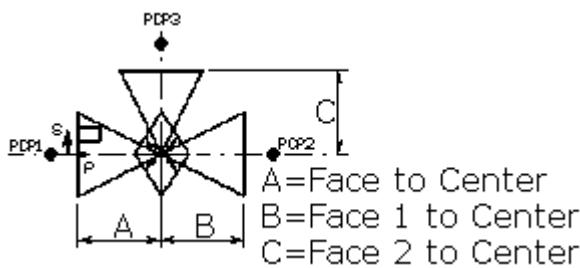
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DP4WPlugControlV

**Description:** 4-way plug control valve, based on PDS symbol I12AZ

**Symbol Name:** SP3DP4WPlugControlV.P4WPlugControlV

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DP4WPlugControlV.P4WPlugControlV

**Inputs = 5**

**Input = "FacetoCenter" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face to Face"**

**Input = "Face2toCenter" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 12**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "TopCone" Description = "Top Cone"**

**Output = "BottomCone" Description = "Bottom Cone"**

**Output = "InsulCylinder1" Description = "Insul Cylinder1"**

**Output = "InsulCylinder2" Description = "Insul Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

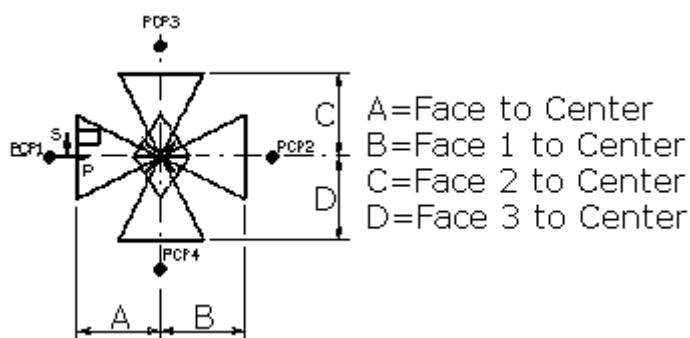
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPaddleBlind

**Description:**

**Symbol Name:** SP3DPaddleBlind.CPaddleBlind

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPaddleBlind.CPaddleBlind

Number of Inputs = 3

Input name = "FacetoFace"

Input description = "Face to Face"

Input name = "HandletoCenter"

Input description = "Top of Handle to Center"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 5

Output name = "Body"

Output description = "Body"

Output name = "Handle"

Output description = "Handle"

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "PNoz1"

Output description = "Nozzle 1"

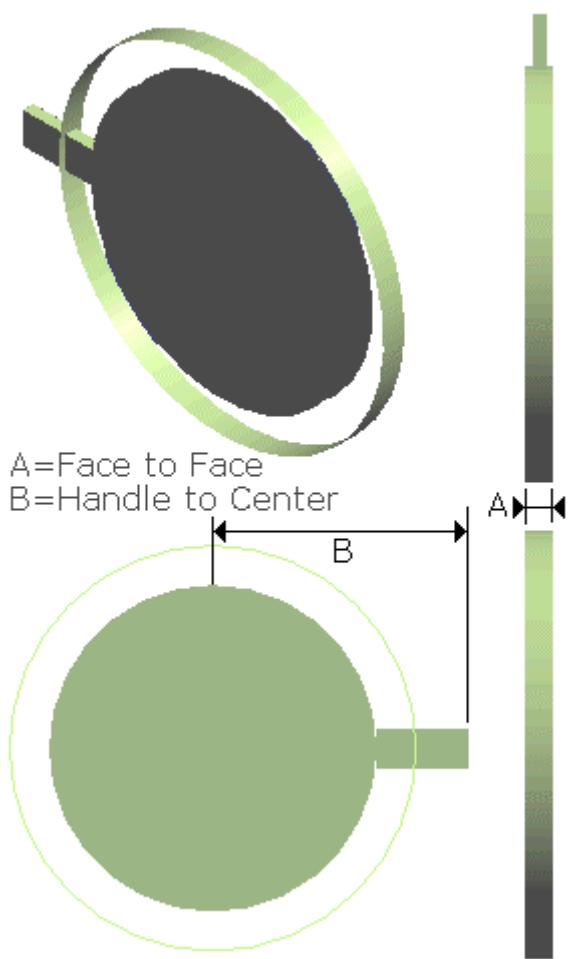
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DPaddleSpacer

**Description:** paddle spacer

**Symbol Name:** SP3DPaddleSpacer.CPaddleSpacer

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Paddle

**User Class Name:** paddle

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPaddleSpacer.CPaddleSpacer

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "HandletoCenter" Description = "Top of Handle to Paddle Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "Body" Description = "Body"**

**Output = "HandleFace" Description = "Face of Handle"**

**Output = "HandleBack" Description = "Back of Handle"**

**Output = "HandleSide" Description = "Sides of Handle"**

**Output = "HandleHole" Description = "Hole in Handle"**

**Output = "InsulatedBody" Description = "Insulated Body"**

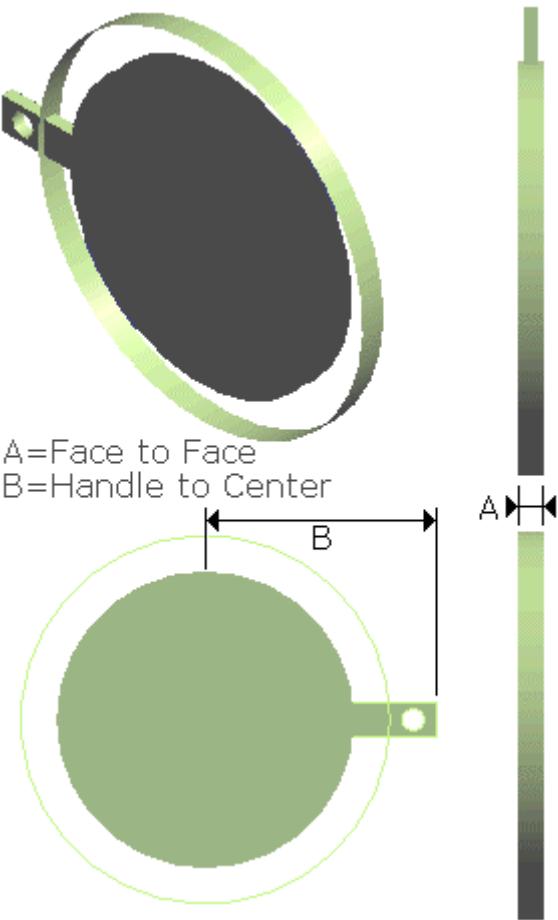
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPAngPressReliefV

**Description:** Angle pressure relief valve, based on PDS symbol I8AZ

**Symbol Name:** SP3DPAngPressReliefV.PAngPressReliefV

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** PressureReliefValve

**User Class Name:** Pressure Relief Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPAngPressReliefV.PAngPressReliefV

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "LeftCone" Description = "Left Side Cone"**

**Output = "TopCone" Description = "Top Cone"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulCylinderA" Description = "Insulation Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

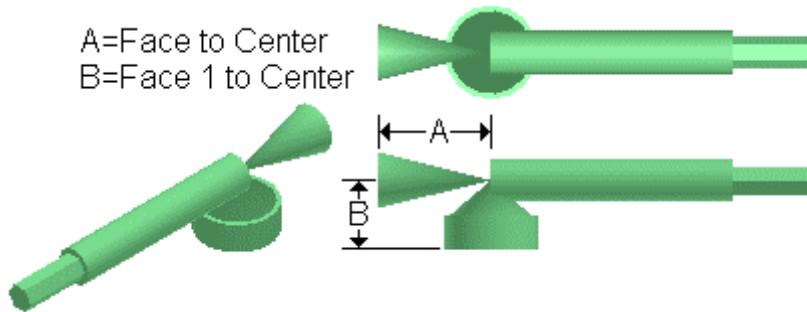
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

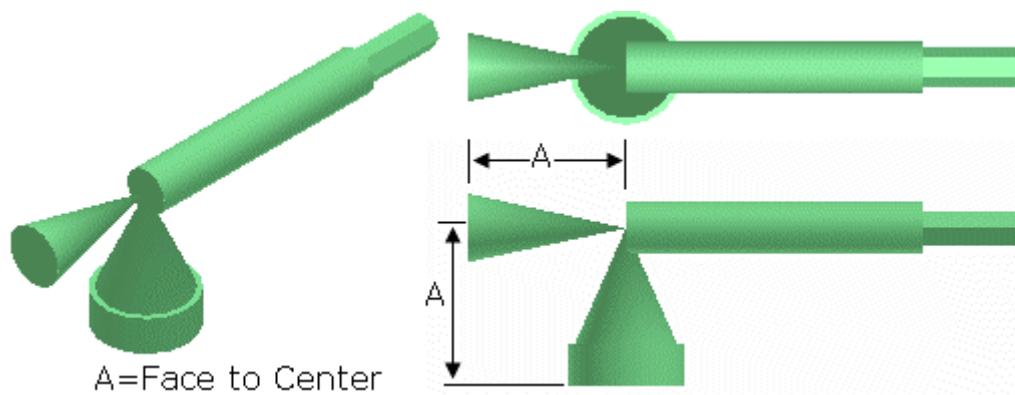
**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



**Part Data Basis 200**



# SP3DPAutoRecircValve

**Description:** Automatic recirculation valve, based on PDS symbol I30AZ

**Symbol Name:** SP3DPAutoRecircValve.PAutoRecircValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPAutoRecircValve.PAutoRecircValve

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "MainCone" Description = "Main Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "RightCylinder" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "InsulBranch" Description = "Insulation Cylinder"**

**Output = "Nozzle1" Description = "Nozzle 1"**

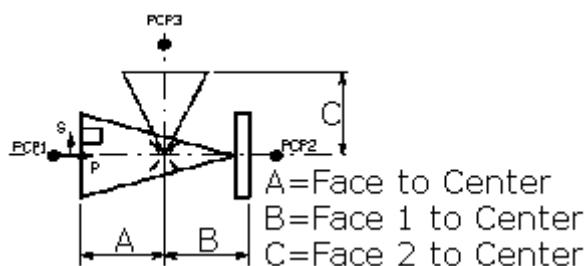
**Output = "Nozzle2" Description = "Nozzle 2"**

**Output = "Nozzle3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPenetrationSleeve

**Description:** penetration sleeve

**Symbol Name:** SP3DPenetrationSleeve.PenetrationSleeve

**Workbook:** Pipe Sleeve with Puddle Flange Sample Data.xls

**Workbook Sheet:** PipeSlvWithPuddleFlg

**User Class Name:** Pipe Sleeve with Puddle Flange (Penetration Sleeve)

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPenetrationSleeve.PenetrationSleeve

**Inputs = 3**

**Input and description =** "InnerDiameter", "Inner Diameter",

**Input and description =** "PuddleFlangeDiameter", "Puddle Flange Diameter",

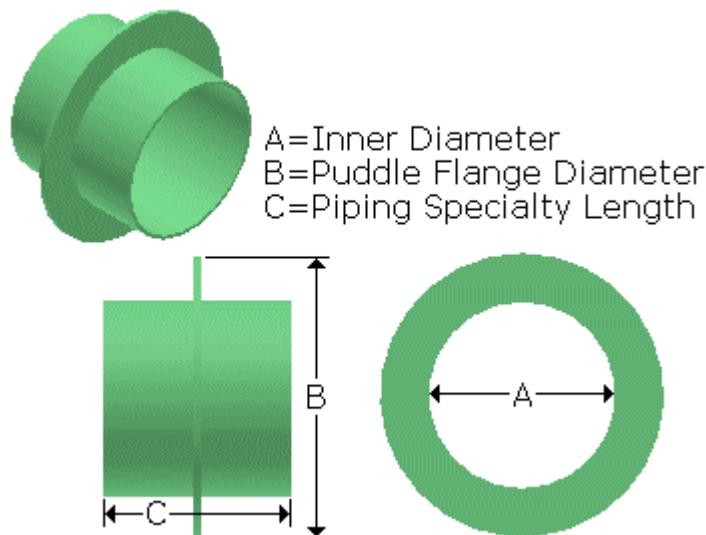
**Input and description =** "PipingSpecialtyLength", "Piping Specialty Length",

**Outputs = 1**

**Output and description =** "PenetrationSleeve", "Penetration Sleeve"

**Aspects = 1**

**Aspect =** "SimplePhysical", "Physical"



# SP3DPerRackPinionActValve

**Description:**

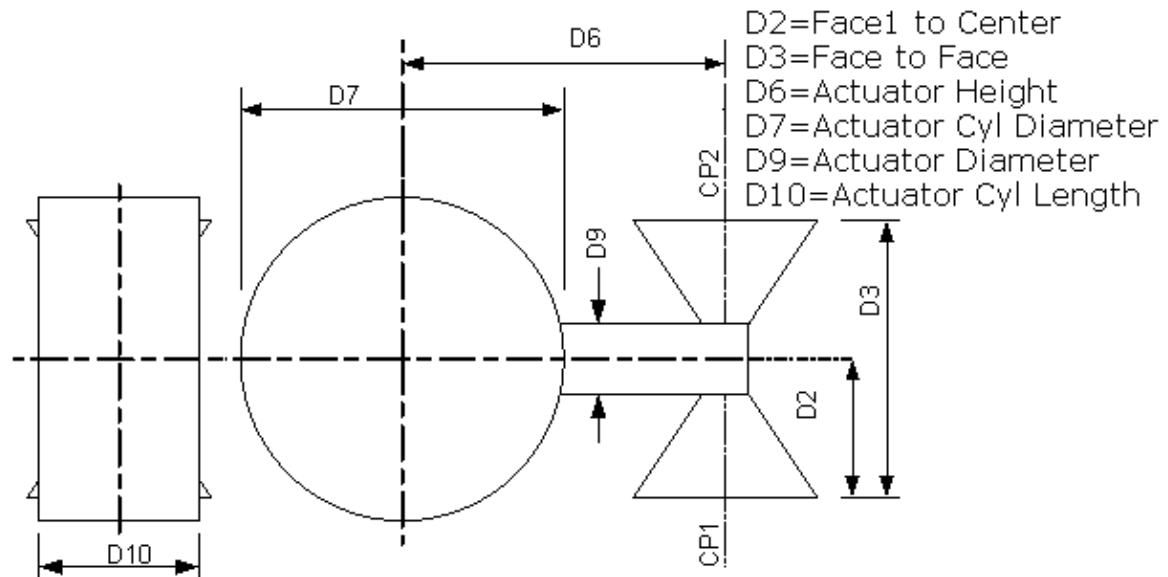
**Symbol Name:**

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**



## SP3DPExnJoint

**Description:** Expansion joint, based on PDS symbol S28AZ

**Symbol Name:** SP3DPExnJoint.PExnJoint

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPExnJoint.PExnJoint

**Inputs = 8**

**Input and description** = "FacetoCenter", "FacetoCenter"

**Input and description** = "Face1toCenter", "Face1toCenter"

**Input and description** = "PipingSpecialityLength", "Piping Specialty Length"

**Input and description** = "PipingSpecialityLength1", "Piping Specialty Length 1"

**Input and description** = "PipingSpecialityLength2", "Piping Specialty Length 2"

**Input and description** = "CylinderDiameter", "Cylinder Diameter"

**Input and description** = "PipingSpecialityLength3", "Piping Specialty Length 3"

**Input and description** = "CylinderDiameter1", "Cylinder Diameter 1"

**Outputs = 8**

**Output and description** = "oCylinderCapped1", "oCylinderCapped1"

**Output and description** = "oCylinderCapped2", "oCylinderCapped2"

**Output and description** = "oCylinderCapped3", "oCylinderCapped3"

**Output and description** = "oCylinderCapped4", "oCylinderCapped4"

**Output and description** = "oCylinderCapped5", "oCylinderCapped5"

**Output and description** = "oCylinderCapped6", "oCylinderCapped6"

**Output and description** = "oCylinderCapped7", "oCylinderCapped7"

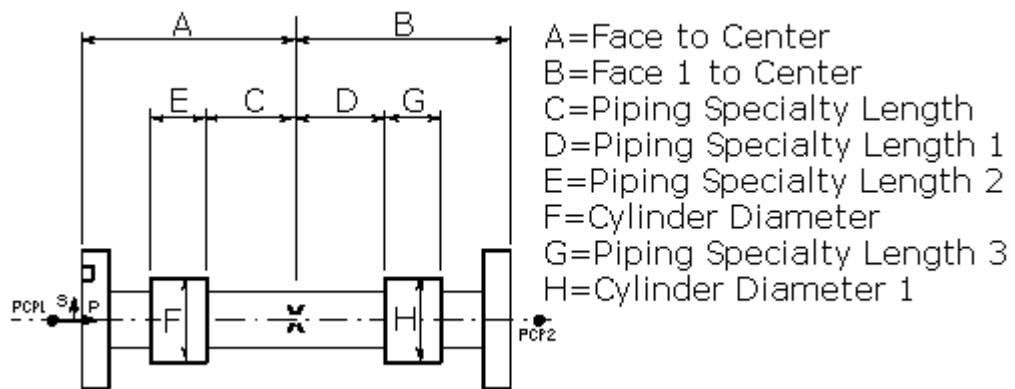
**Output and description** = "oCylinderCapped8", "oCylinderCapped8"

**Output and description** = "Nozzle1", "Nozzle1"

**Output and description** = "Nozzle2", "Nozzle2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description"



## SP3DPGateValExtnd

**Description:** based on PDS symbol V2B

**Symbol Name:** SP3DPGateValExtnd.PGateValExtnd

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

**Inputs = 2**

**Input and description** = "FacetoCenter", "FacetoCenter",

**Input and description** = "Face1toCenter", "Face1toCenter",

**Outputs = 5**

**Output and description** = "oConeCapped1", "oConeCapped1", 1

**Output and description** = "oCylinderCapped1", "oCylinderCapped1", 1

**Output and description** = "oConeCapped2", "oConeCapped2", 1

**Output and description** = "oConeCapped3", "oConeCapped3", 1

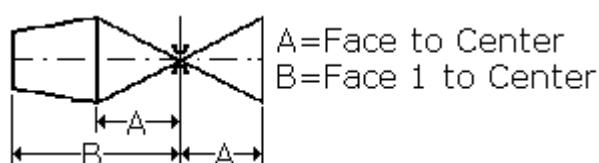
**Output and description** = "oCylinderCapped2", "oCylinderCapped2", 1

**Output and description** = "Nozzle1", "Nozzle1", 1

**Output and description** = "Nozzle2", "Nozzle2", 1

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1



# SP3DPiActKnifeGateValveTy1

**Description:** Knife gate valve type 1 with piston actuator

**Symbol Name:** SP3DPiActKnifeGateValveTy1.CPAKGValTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPiActKnifeGateValveTy1.CPAKGValTy1

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "ValveHeight" Description = "Valve Height"**

**Input = "ValveHeight1" Description = "Valve Height1"**

**Input = "ValveWidth" Description = "Valve Width"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "ValveBody" Description = "Cylindrical Body of Valve"**

**Output = "ValveBoxBody" Description = "Box Body of Valve"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "Stem" Description = "Stem between Valve and Actuator Body"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

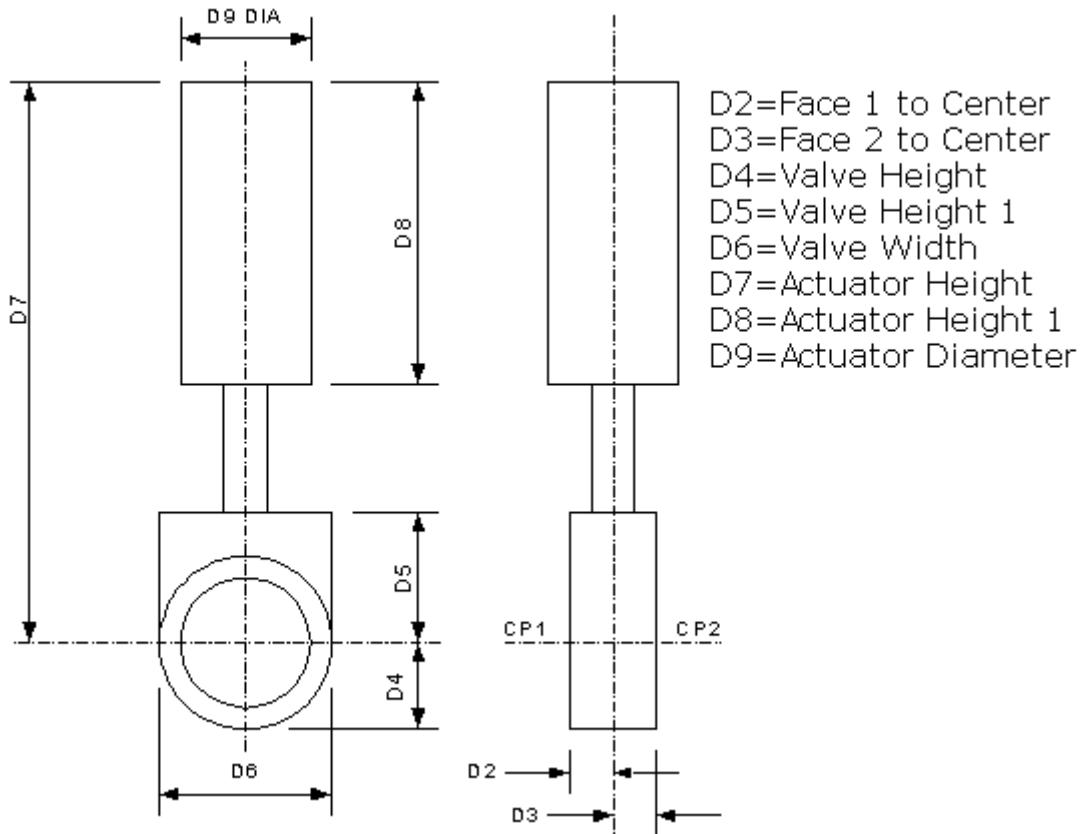
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPiActKnifeGateValveTy2

**Description:** Knife gate valve type 2 with piston actuator

**Symbol Name:** SP3DPiActKnifeGateValveTy2.CPAKGValTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPiActKnifeGateValveTy2.CPAKGValTy2

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "ValveHeight" Description = "Valve Height"**

**Input = "ValveHeight1" Description = "Valve Height1"**

**Input = "ValveWidth" Description = "Valve Width"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "ValveBody" Description = "Body Valve"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "Stem" Description = "Stem Between Valve and Actuator"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

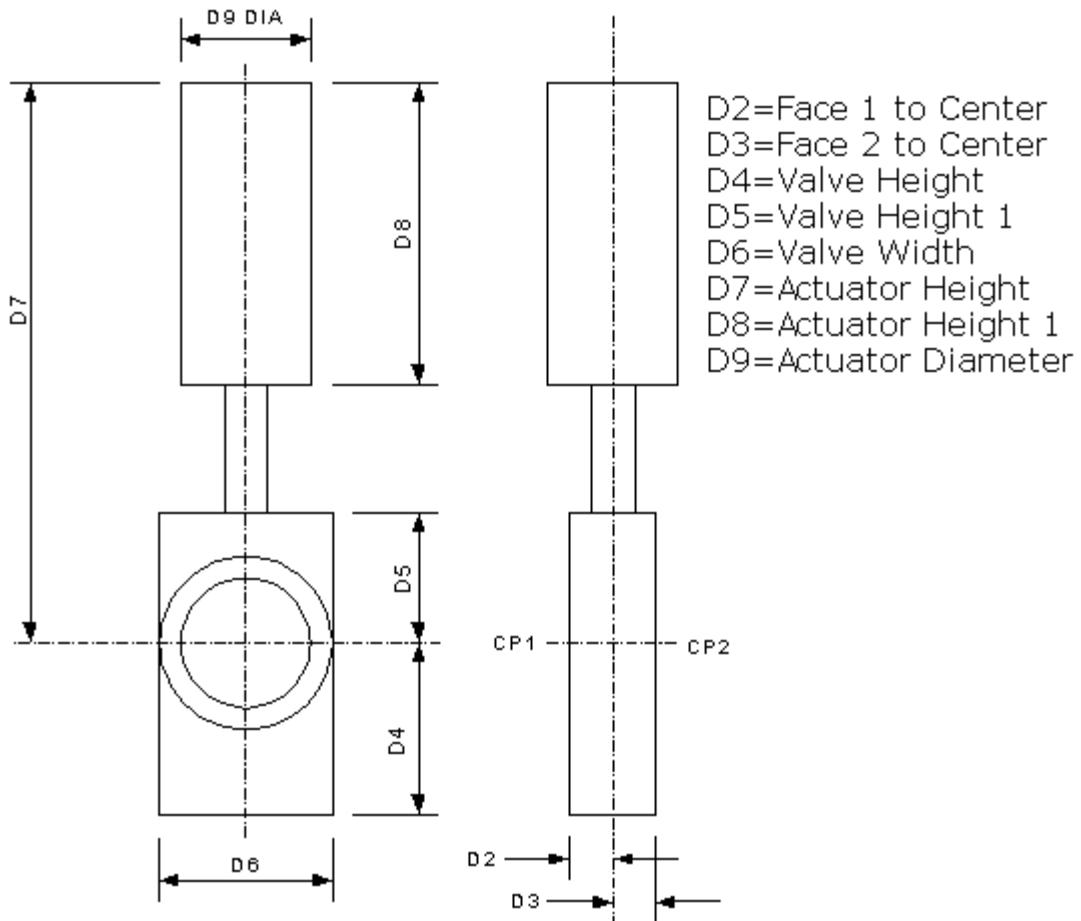
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPinchValve

**Description:**

**Symbol Name:** SP3DPinchValve.PinchValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPinchValve.PinchValve

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "ValveWidth" Description = "Valve Width"**

**Input = "ValveHeight" Description = "Valve Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Handwheel Angle"**

**Outputs = 8**

**Output = "Box" Description = "Box"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Output = "InsulationCylinder" Description = "Insulation for Cylinder"**

**Output = "InsulationBox" Description = "Insulation for Box"**

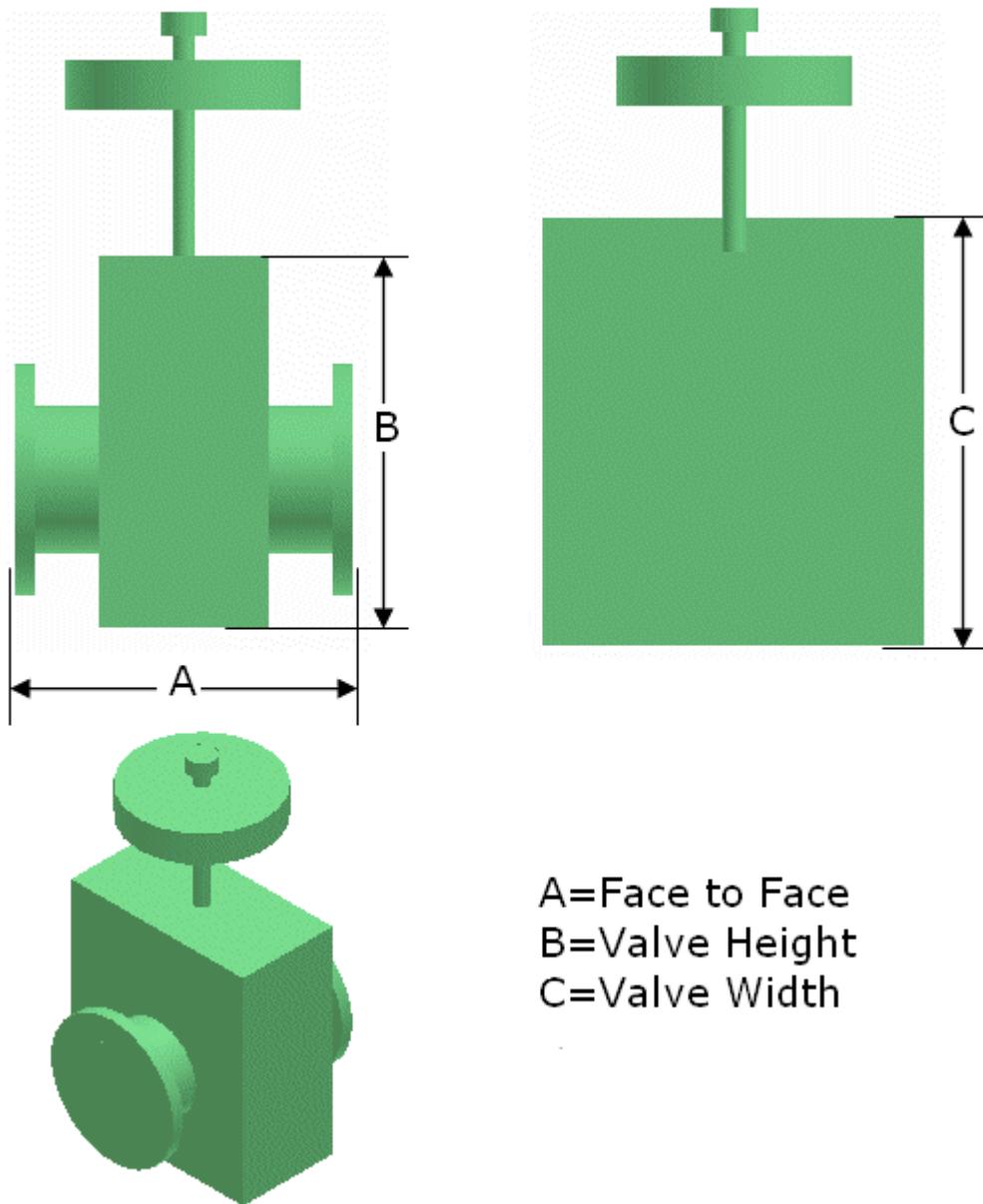
**Output = "Port1Insulation" Description = "Insulation for Port 1"**

**Output = "Port2Insulation" Description = "Insulation for Port 2"**

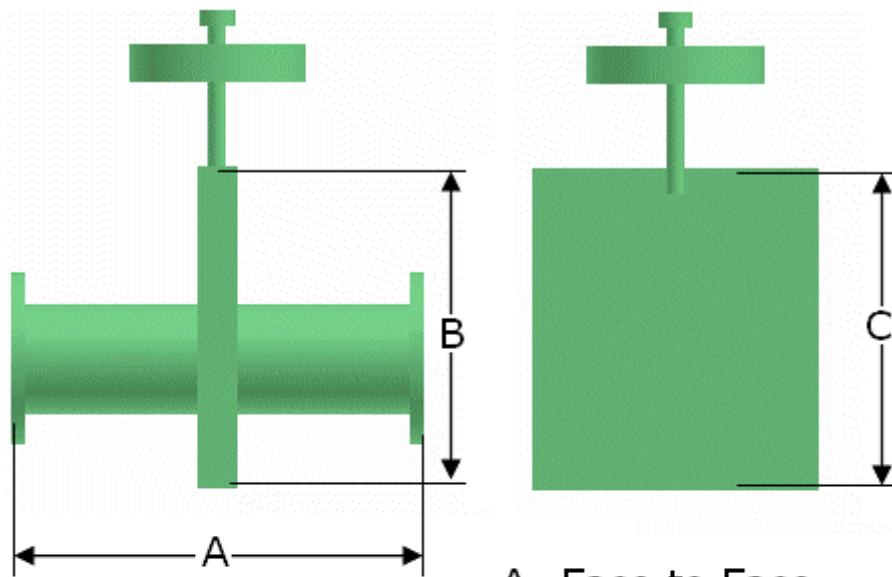
**Aspects = 2**

**Aspect = SimplePhysical**

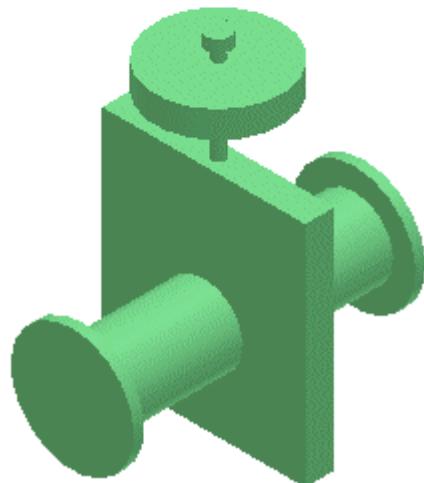
**Aspect = Insulation**



**Part Data Basis 285**



A=Face to Face  
B=Valve Height  
C=Valve Width



# SP3DPInlAvgPitotTube

**Description:** Inline averaging pitot tube, based on PDS symbol I216AZ

**Symbol Name:** SP3DPInlAvgPitotTube.PI nlAvgPitotTube

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPInlAvgPitotTube.PI nlAvgPitotTube

**Inputs = 8**

**Input = "Face to Center" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "Offset1" Description = "Offset of Port1 Center"**

**Input = "Offset2" Description = "Offset of Port2 Center"**

**Input = "FilterBodyDiameter" Description = "Filter Body Diameter"**

**Input = "FilterBodyHeight1" Description = "Filter Body Height1"**

**Input = "FilterBodyHeight2" Description = "Filter Body Height2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsFilterBody" Description = "Insulation for Filter Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "FilterBody" Description = "Filter Body"**

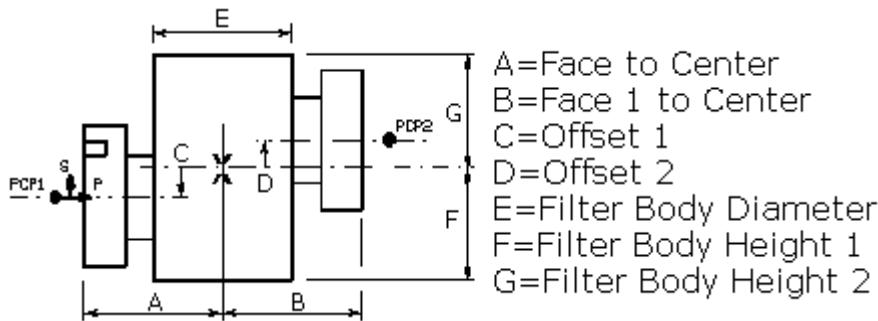
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPIinlineSilencer

**Description:** Inline silencer, based on PDS symbol I216AZ

**Symbol Name:** SP3DPIinlineSilencer.PInlineSilencer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPIinlineSilencer.PInlineSilencer

**Inputs = 8**

**Input = "FaceToCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "Offset1" Description = "Offset of Port1 Center"**

**Input = "Offset2" Description = "Offset of Port2 Center"**

**Input = "VentSilencerBodyDiameter" Description = "Vent Silencer Body Diameter"**

**Input = "VentSilencerBodyLength1" Description = "Vent Silencer Body Length1"**

**Input = "VentSilencerBodyLength2" Description = "Vent Silencer Body Length2"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "InsVentSilencerBody" Description = "Insulation for VentSilencer Body"**

**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**

**Output = "InsBody2" Description = "Insulation for Body Port2 side"**

**Output = "VentSilencerBody" Description = "VentSilencer Body"**

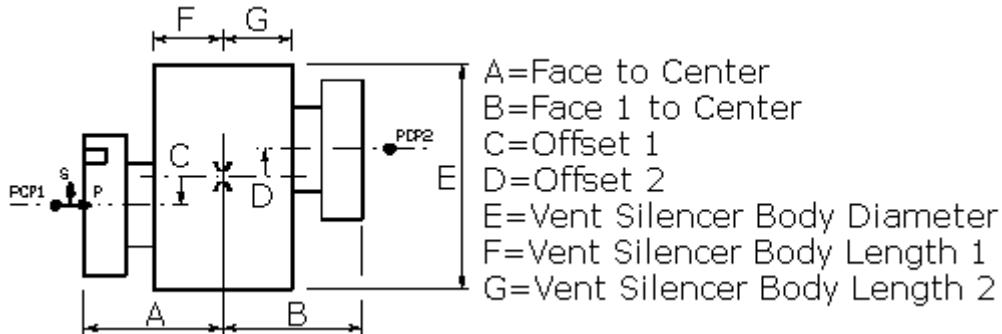
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPIinlineSilencerTy1

**Description:** Inline silencer type 1, based on PDS symbol S5AZ

**Symbol Name:** SP3DPIinlineSilencerTy1.PInlSilencerTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPIinlineSilencerTy1.PInlSilencerTy1

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "LeftCylin" Description = "Left Cylinder"**

**Output = "RightCylin" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

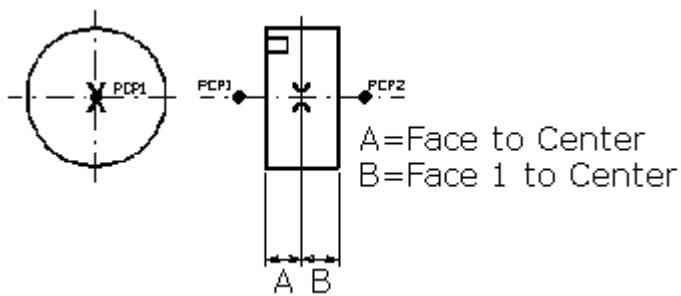
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPipeSleeve

**Description:**

**Symbol Name:** SP3DPipeSleeve.PipeSleeve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPipeSleeve.PipeSleeve

**Inputs = 2**

**Input and description** = "PipingSpecialtyLength", "Piping Specialty Length"

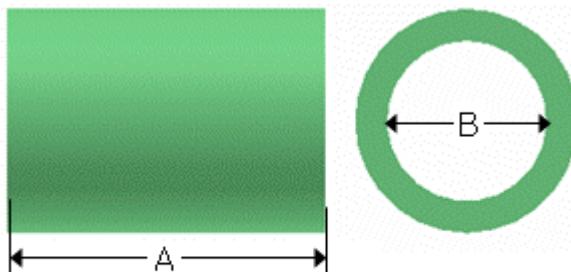
**Input and description** = "InnerDiameter", "Inner Diameter"

**Outputs = 1**

**Output and description** = "PipeSleeve", "Pipe Sleeve"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



A=Piping Specialty Length

B=Inner Diameter

## SP3DPipet

**Description:** generic pipet

**Symbol Name:** SP3DPipet.Pipet

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPipet.Pipet

**Inputs = 2**

**Input and description = "A", "Height of Pipet above pipe"**

**Input and description = "InsulationThickness", "InsulationThickness", 0**

**Outputs = 4**

**Output and description = "PipetBody", "Pipet body"**

**Output and description = "BodyInsulation", "Insulation Body"**

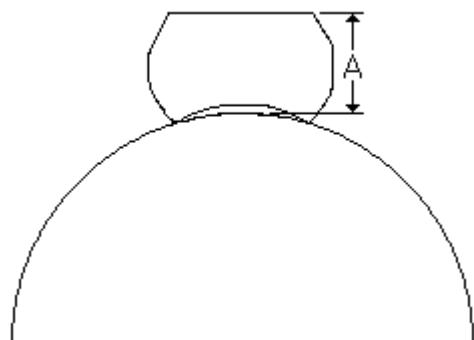
**Output and description = "Nozzle1", "Nozzle 1"**

**Output and description = "Nozzle2", "Nozzle 2"**

**Aspects = 2**

**Aspect = "SimplePhysical", "Physical"**

**Aspect = "Insulation", "Insulation"**



# SP3DPistonActAngValve

**Description:** Angle valve with piston actuator

**Symbol Name:** SP3DPistonActAngValve.CPistonActAVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPistonActAngValve.CPistonActAVal

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ActuatorCylinder" Description = "Actuator Cylinder"**

**Output = "BodyCone1Ins" Description = "Body Cone 1 Insulation"**

**Output = "BodyCone2Ins" Description = "Body Cone 2 Insulation"**

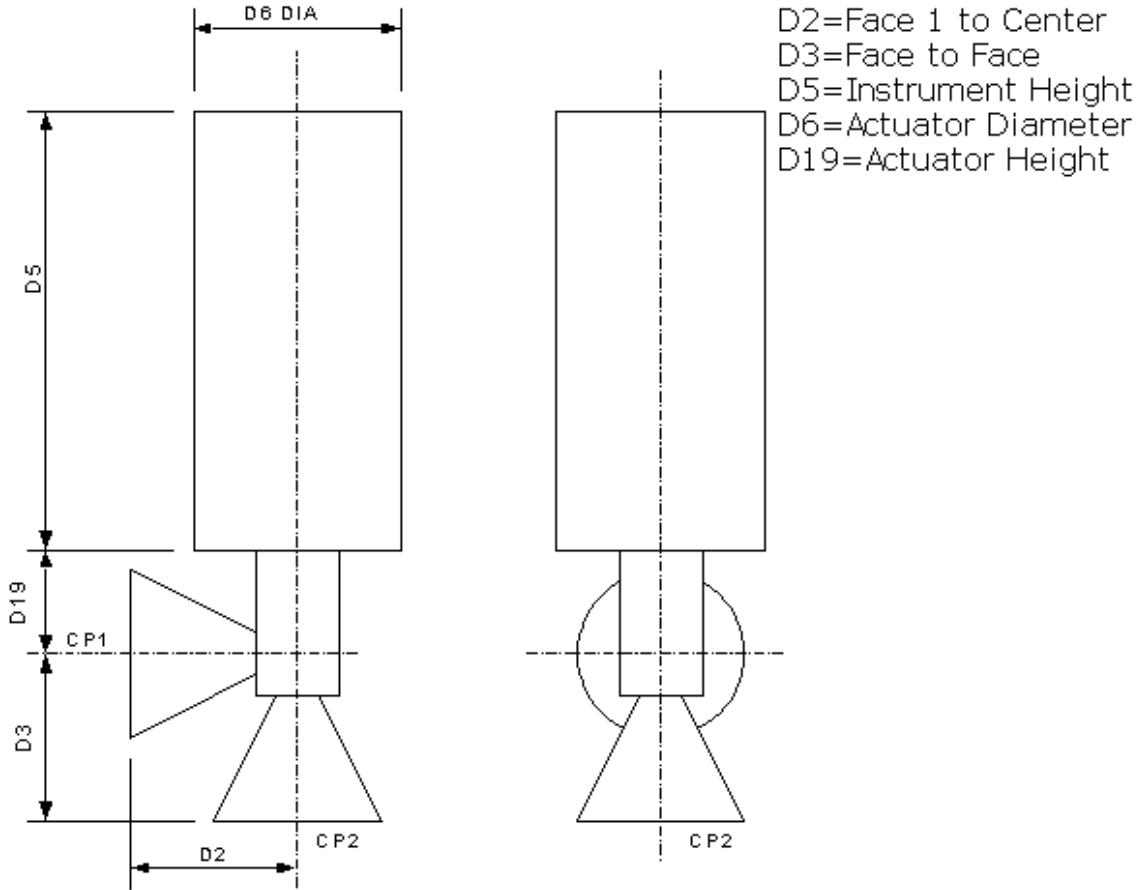
**Output = "PNozz1" Description = "Nozzle 1"**

**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face to Face  
D5=Instrument Height  
D6=Actuator Diameter  
D19=Actuator Height

# SP3DPistonActStCondValve

**Description:** Steam conditioning valve with piston actuator

**Symbol Name:** SP3DPistonActStCondValve.CPASCValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPistonActStCondValve.CPASCValve

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "FacetoFace" Description = "FacetoFace"**

**Input = "CylHeight" Description = "CylHeight"**

**Input = "ActuatorHeight" Description = "ActuatorHeight"**

**Input = "NozzleOffset" Description = "NozzleOffset"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter"**

**Input = "Face3toCenter" Description = "Face3toCenter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 10**

**Output = "ValveBodyIns" Description = "Insulation for Valve Body"**

**Output = "VertBodyIns" Description = "Insulation for Vertical Body"**

**Output = "Nozzle3Ins" Description = "Insulation for Nozzle3"**

**Output = "BodyCone1" Description = "Body Cone1"**

**Output = "BodyCone2" Description = "Body Cone2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "ActuatorBody" Description = "Actuator Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

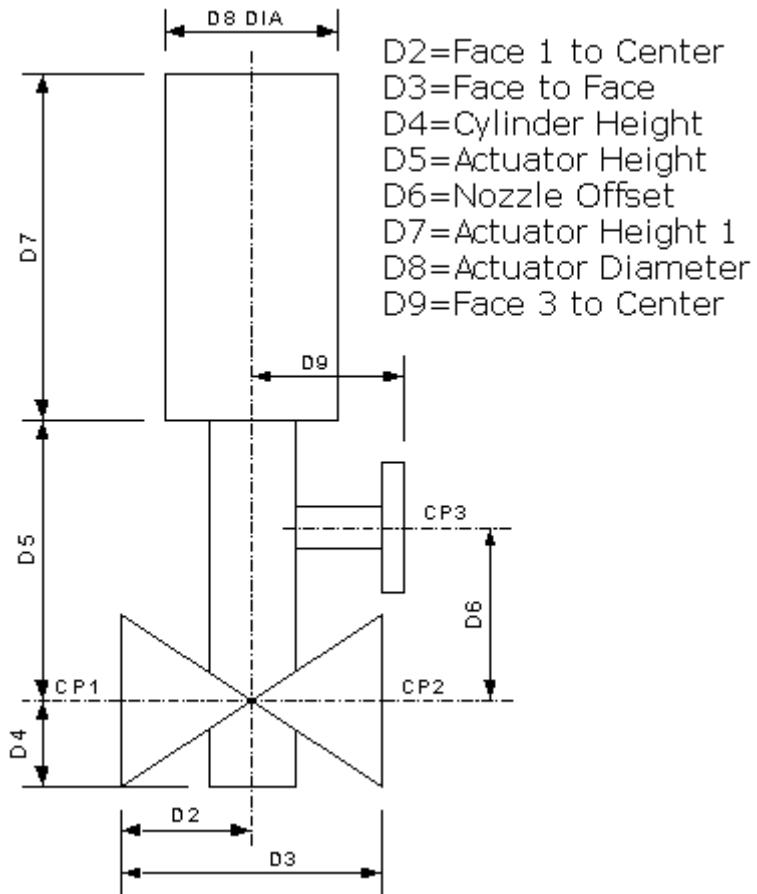
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPistonActValve

**Description:** Globe style control valve with piston actuator

**Symbol Name:** SP3DPistonActValve.CPistonActVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPistonActValve.CPistonActVal

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cylinder Height "**

**Input = "ActuatorHeight" Description = "Actuator Height D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "InstrumentHeight" Description = "Instrument Height D19"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Diverging Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "ActAndCylin" Description = "Actuator Cylinder"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

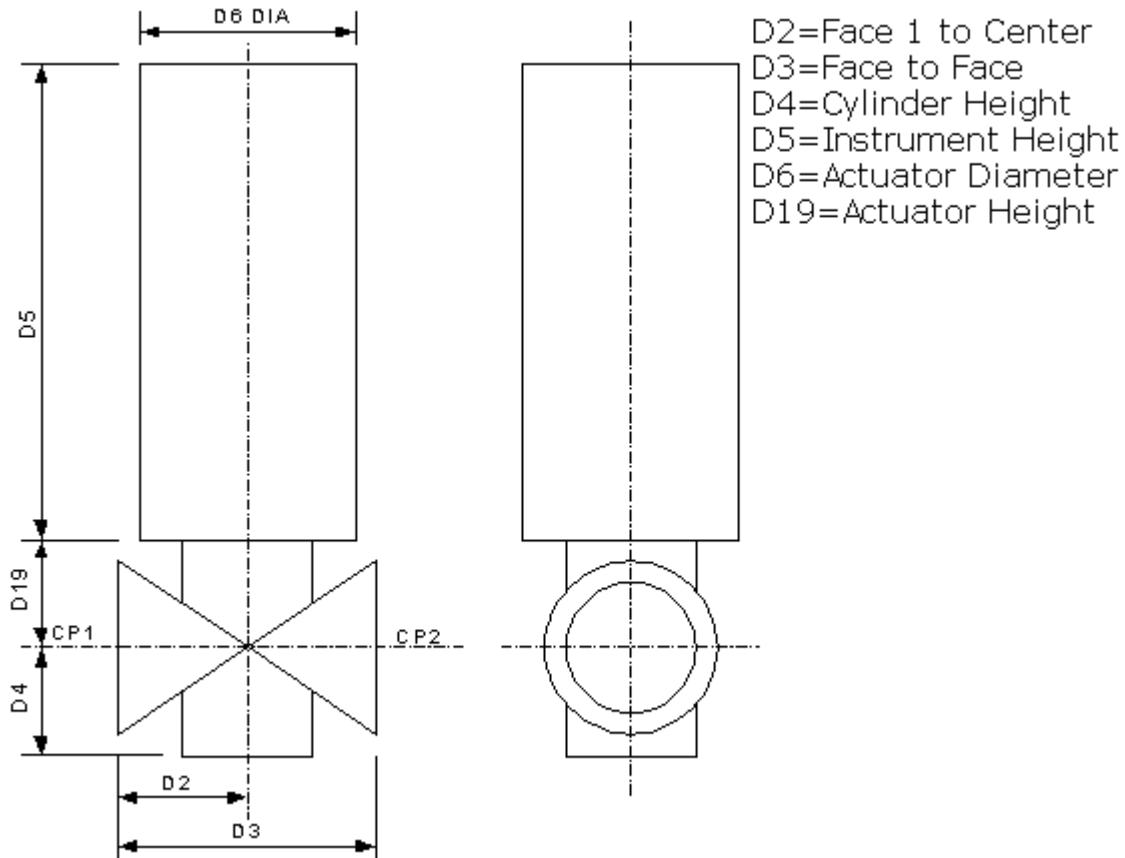
**Output = "PNozz1" Description = "Nozzle 1"**

**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face to Face  
D4=Cylinder Height  
D5=Instrument Height  
D6=Actuator Diameter  
D19=Actuator Height

# SP3DPKnifeGateCtrlVal

**Description:** 2-way knife gate control valve, based on PDS symbol I17AZ

**Symbol Name:** SP3DPKnifeGateCtrlVal.PKnifeGateCtrlVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPKnifeGateCtrlVal.PKnifeGateCtrlVal

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "LeftCylin" Description = "Left Cylinder"**

**Output = "RightCylin" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

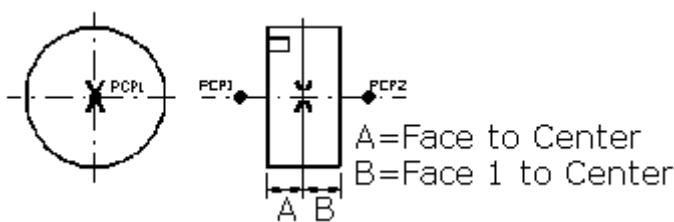
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DPlateFlange

**Description:** plate flange

**Symbol Name:** SP3DPlateFlange.CPlateFlange

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** PlateFlange

**User Class Name:** Plate Flange

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlateFlange.CPlateFlange

**Inputs = 1**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "InsulatedBody" Description = "Insulated Body"**

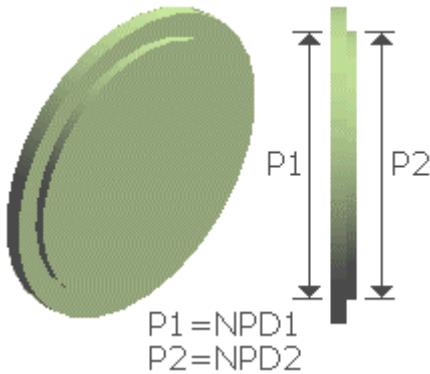
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPLevelIndCtrlTy5

**Description:** Level indicator control type 5, based on PDS symbol I324EZ

**Symbol Name:** SP3DPLevelIndCtrlTy5.PLevelIndCtrlTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPLevelIndCtrlTy5.PLevelIndCtrlTy5

**Inputs = 15**

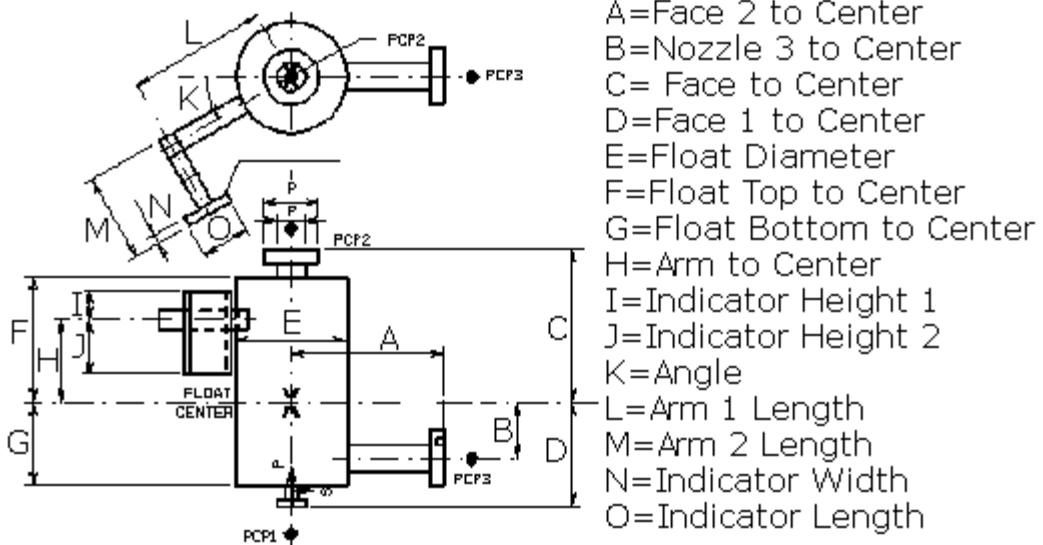
**Input = "Face2toCenter" Description = "Face 3 to Center P2"**  
**Input = "Nozzle3toCenter" Description = "Nozzle3toCenter P3"**  
**Input = "FacetoCenter" Description = "FacetoCenter P4"**  
**Input = "Face1toCenter" Description = "Face1toCenter P5"**  
**Input = "FloatDiameter" Description = "FloatDiameter P6"**  
**Input = "FloatTopoCenter" Description = "FloatTopoCenter P7"**  
**Input = "FloatBottoCenter" Description = "FloatBottoCenter P8"**  
**Input = "Armtocenter" Description = "Armtocenter P9"**  
**Input = "IndicatorHeight1" Description = "IndicatorHeight1 P10"**  
**Input = "IndicatorHeight2" Description = "IndicatorHeight2 P11"**  
**Input = "Angle" Description = "Angle P12"**  
**Input = "Arm1Length" Description = "Arm1Length P13"**  
**Input = "Arm2Length" Description = "Arm2Length P14"**  
**Input = "IndicatorWidth" Description = "IndicatorWidth P15"**  
**Input = "IndicatorLength" Description = "IndicatorLength P16"**

**Outputs = 7**

**Output = "FloatBody" Description = "FloatBody"**  
**Output = "Arm1" Description = "Arm1"**  
**Output = "Arm2" Description = "Arm2"**  
**Output = "Indicator" Description = "Indicator"**  
**Output = "Nozzle1withLength" Description = "NozzlewithLength"**  
**Output = "Nozzle2withLength" Description = "Nozzle 2"**  
**Output = "Nozzle3withLength" Description = "Nozzle 3"**

**Aspects = 1**

**Aspect = SimplePhysical**



A=Face 2 to Center  
B=Nozzle 3 to Center  
C= Face to Center  
D=Face 1 to Center  
E=Float Diameter  
F=Float Top to Center  
G=Float Bottom to Center  
H=Arm to Center  
I=Indicator Height 1  
J=Indicator Height 2  
K=Angle  
L=Arm 1 Length  
M=Arm 2 Length  
N=Indicator Width  
O=Indicator Length

# SP3DPlug

**Description:** plug

**Symbol Name:** SP3DPlug.CPlug

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Plug

**User Class Name:** plug

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlug.CPlug

**Inputs = 2**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "Body" Description = "Body"**

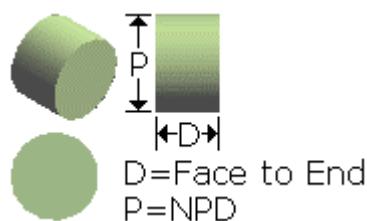
**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DPlugGOOp

**Description:**

**Symbol Name:** SP3DPlugGOOp.CPlugGOOp

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlugGOOp.CPlugGOOp

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 8**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "InsulCylinder" Description = "Insul Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

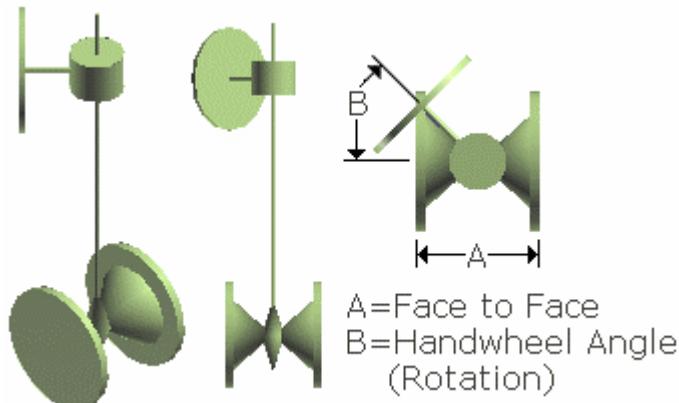
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPlugValve

**Description:** Plug Valve

**Symbol Name:** SP3DPlugValve.CPlugValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** PlugValve

**User Class Name:** Plug Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlugValve.CPlugValve

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 8**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "InsulCylinder" Description = "Insul Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

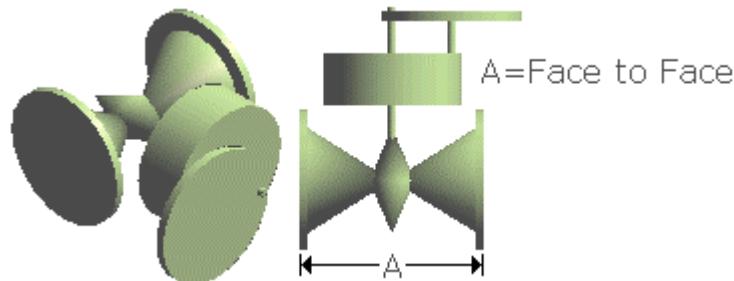
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPlugValveAsym

**Description:** asymmetrical plug valve

**Symbol Name:** SP3DPlugValveAsym.CPlugValveAsym

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPlugValveAsym.CPlugValveAsym

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 8**

**Output = "LeftCone" Description = "Left Cone"**

**Output = "UpperCone" Description = "Upper Cone"**

**Output = "LowerCone" Description = "Lower Cone"**

**Output = "RightCone" Description = "Right Cone"**

**Output = "InsulCylinder" Description = "Insul Cylinder"**

**Output = "PNoz1" Description = "Nozzle 1"**

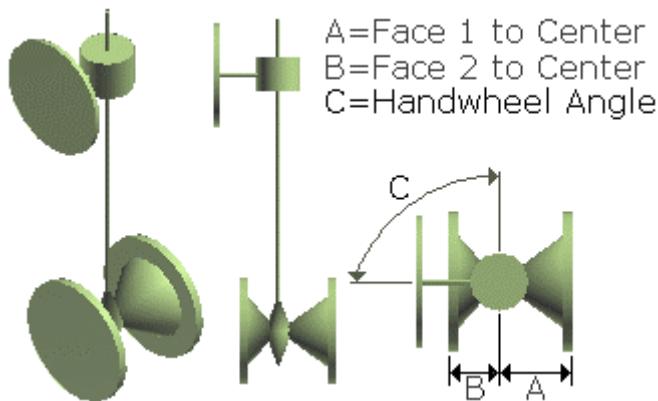
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPMotOperatedVal

**Description:** Inline motor operated valve, based on PDS symbol S13AZ

**Symbol Name:** SP3DPMotOperatedVal.PMotOperatedVal

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPMotOperatedVal.PMotOperatedVal

**Inputs = 4**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 5**

**Output = "LeftCone" Description = "Cone"**

**Output = "RightCone" Description = "Cone"**

**Output = "InsulationCylinder" Description = "Insulation Cylinder"**

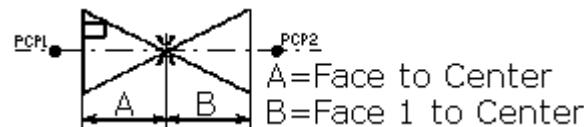
**Output = "Nozzle1" Description = "Nozzle 1"**

**Output = "Nozzle2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DPOrificePlate

**Description:** Orifice plate, based on PDS symbol I209AZ

**Symbol Name:** SP3DPOrificePlate.POrificePlate

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPOrificePlate.POrificePlate

**Inputs = 11**

**Input = "FacetoCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "Offset1" Description = "Offset of Port1 center"**

**Input = "Offset2" Description = "Offset of Port2 center"**

**Input = "FlArrestorBodyLength1" Description = "Flame Arrestor Body Length1"**

**Input = "FlArrestorBodyLength2" Description = "Flame Arrestor Body Length2"**

**Input = "FlArrestorBodyHeight1" Description = "Flame Arrestor Body Height1"**

**Input = "FlArrestorBodyHeight2" Description = "Flame Arrestor Body Height2"**

**Input = "FlArrestorBodyWidth1" Description = "Flame Arrestor Body Width1"**

**Input = "FlArrestorBodyWidth2" Description = "Flame Arrestor Body Width2"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "InsFABody" Description = "Insulation for Flame Arrestor Body"**

**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**

**Output = "InsBody2" Description = "Insulation for Body Port2 side"**

**Output = "FABody" Description = "Flame Arrestor Body"**

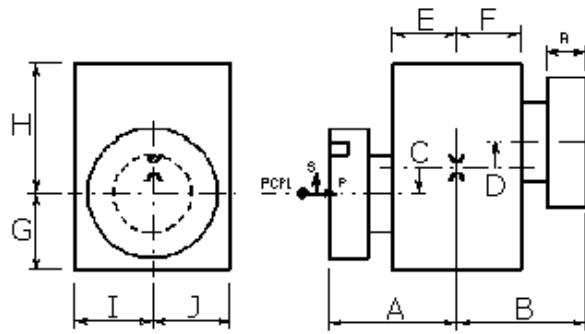
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Center  
B=Face 1 to Center  
C=Offset 1  
D=Offset 2  
E=Flame Arrestor Body Length 1  
F=Flame Arrestor Body Length 2  
G=Flame Arrestor Body Height 1  
H=Flame Arrestor Body Height 2  
I=Flame Arrestor Body Width 1  
J=Flame Arrestor Body Width 2

## SP3DPressureGauge

**Description:** pressure gauge

**Symbol Name:** SP3DPressureGauge.PressureGauge

**Workbook:** Instrument Sample Data

**Workbook Sheet:** PressureGauge

**User Class Name:** Pressure gauge

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPressureGauge.PressureGauge

**Inputs = 4**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Outputs = 5**

**Output = "ThreadedInsertion" Description = "ThreadedInsertion"**

**Output = "Nut" Description = "Hexagonal Nut"**

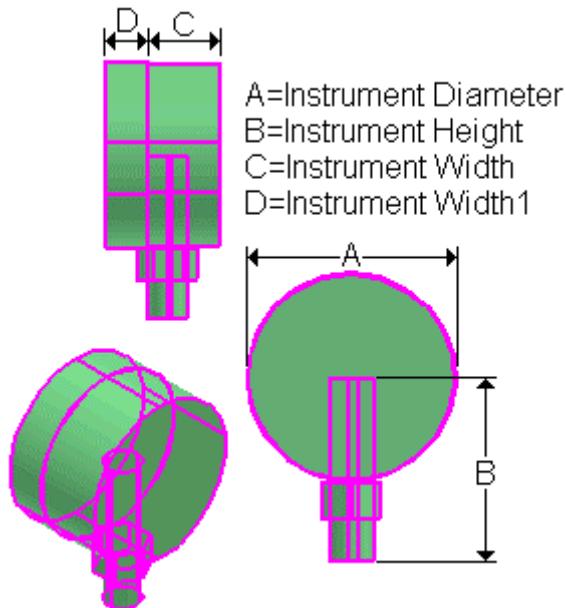
**Output = "Gauge" Description = "Cylindrical Gauge"**

**Output = "Dial" Description = "Cylindrical Dial"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DPressureRedValve

**Description:**

**Symbol Name:** SP3DPressureRedValve.PressureRedValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPressureRedValve.PressureRedValve

**Inputs = 11**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Height" Description = "Height of Cover"**

**Input = "Height1" Description = "Height of Lower Cover"**

**Input = "Height2" Description = "Height of Upper Cover"**

**Input = "Diameter" Description = "Diameter Cover"**

**Input = "Width1" Description = "Width of Lower Cover"**

**Input = "Width2" Description = "Width of Upper Cover"**

**Input = "StrainerHeight" Description = "Height of Strainer"**

**Input = "StrDiameter" Description = "Diameter of Strainer"**

**Input = "HandwheelAngle" Description = "Handwheel Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "HorizontalCylinderLeft" Description = "Horizontal Cylinder at the left"**

**Output = "HorizontalCylinderRight" Description = "Horizontal Cylinder at the right"**

**Output = "VerticalCylinder" Description = "Vertical Cylinder"**

**Output = "Cylinder1" Description = "Cylinder 1"**

**Output = "UpperCover" Description = "Upper Cover"**

**Output = "LowerCover" Description = "Lower Cover"**

**Output = "Nozzle1" Description = "Nozzle 1"**

**Output = "Nozzle2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Output = "InsHorizontalCylinder" Description = "Insulated Horizontal Cylinder"**

**Output = "InsUpperCover" Description = "Insulated Upper Cover"**

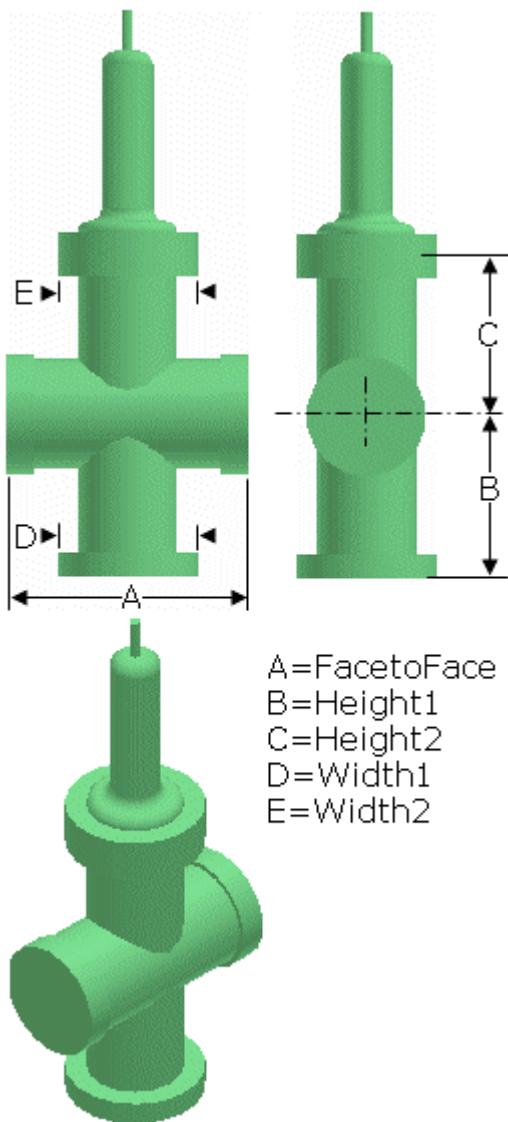
**Output = "InsLowerCover" Description = "Insulated Lower Cover"**

**Output = "InsCylinder1" Description = "Insulated Cylinder 1"**

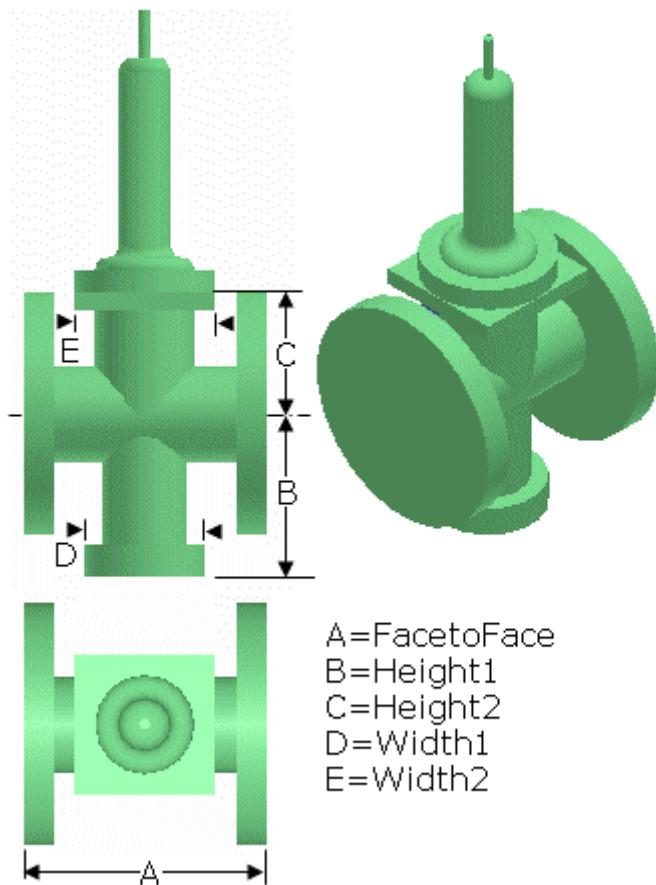
**Aspects = 2**

**Aspect = SimplePhysical**

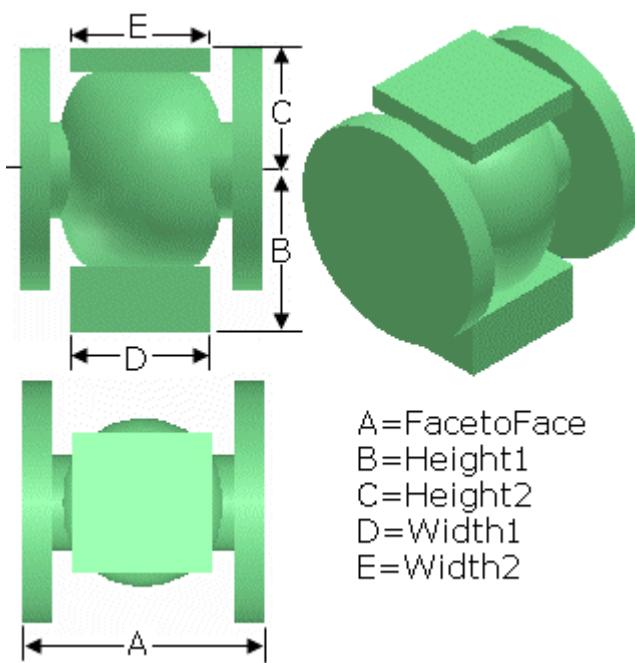
**Aspect = Insulation**



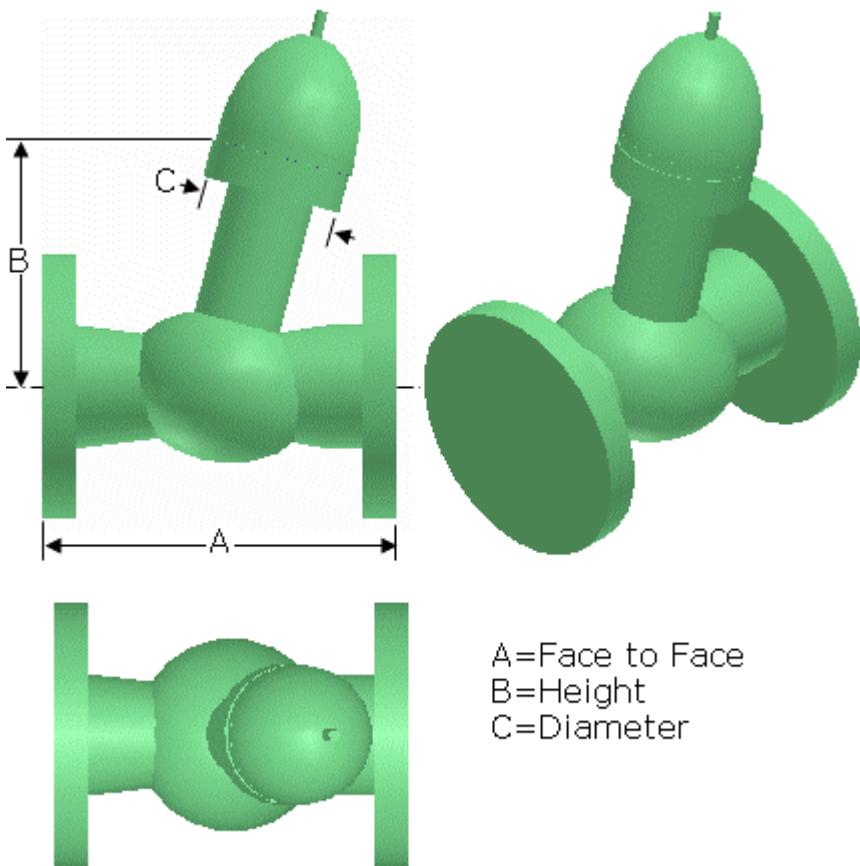
**Part Design Basis 320**



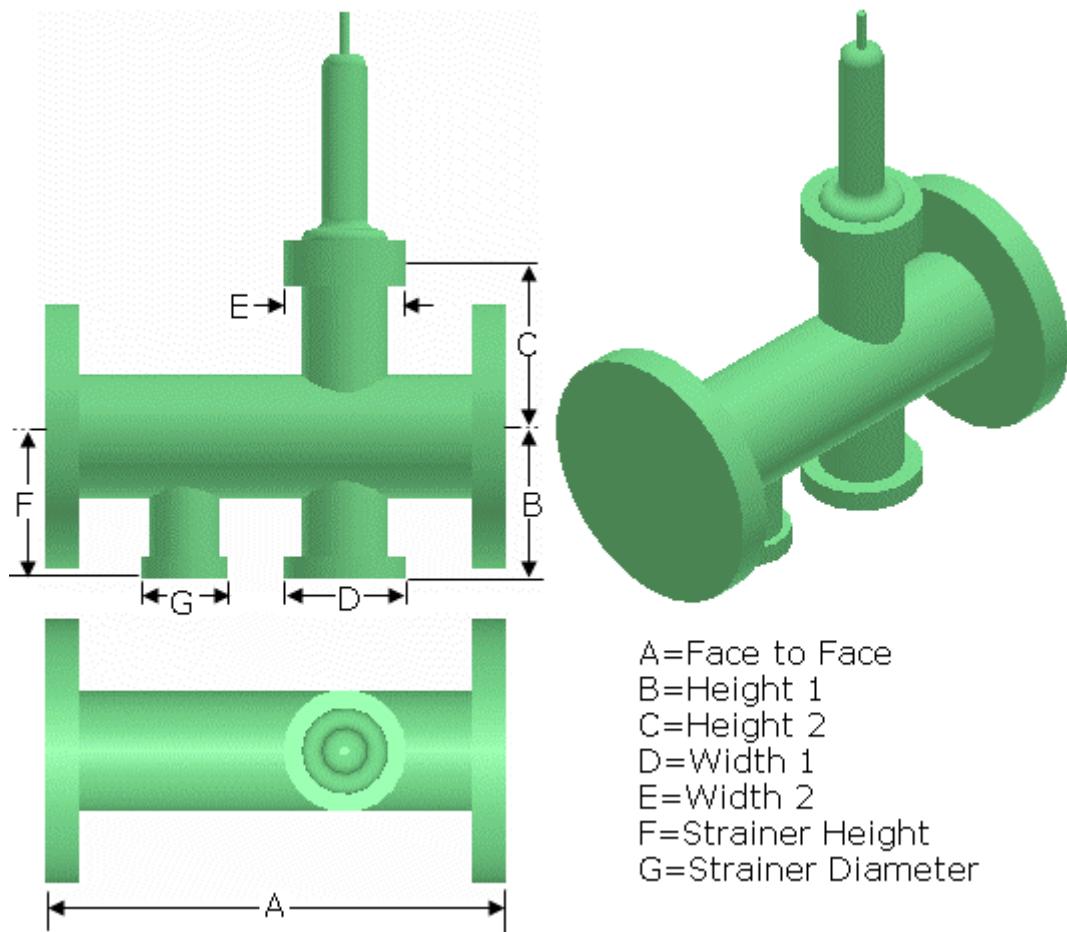
**Part Design Basis 325**



**Part Design Basis 330**



Part Design Basis 335



A=Face to Face  
B=Height 1  
C=Height 2  
D=Width 1  
E=Width 2  
F=Strainer Height  
G=Strainer Diameter

# SP3DPressureRegulator

**Description:** pressure regulator

**Symbol Name:** SP3DPressureRegulator.PressureRegulator

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** PressureRegulator

**User Class Name:** Pressure Regulator

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPressureRegulator.PressureRegulator

**Inputs = 4**

**Input and description =** "FacetoFace", "FacetoFace A"

**Input and description =** "InstrumentHeight", "InstrumentHeight B"

**Input and description =** "InstrumentHeight1", "InstrumentHeight1 C"

**Input and description =** "InstrumentDiameter", "InstrumentDiameter D"

**Outputs = 5**

**Output and description =** "TheBell", "The Bell"

**Output and description =** "Nut", "Nut"

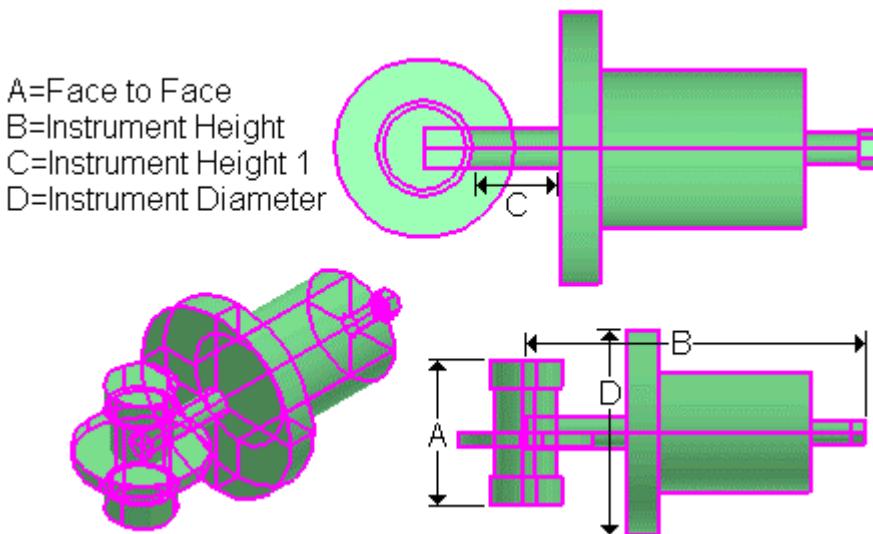
**Output and description =** "BottomCylinder", "Bottom Cylinder"

**Output and description =** "PipingNoz1", "Nozzle 1"

**Output and description =** "PipingNoz2", "Nozzle 2"

**Aspects = 1**

**Aspect =** "SimplePhysical", "SimplePhysical"



# SP3DPressureSwitch

**Description:** pressure switch

**Symbol Name:** SP3DPressureSwitch.PressureSwitch

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** PressureSwitch

**User Class Name:** Pressure Switch5

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPressureSwitch.PressureSwitch

**Inputs = 5**

**Input and description** = "FacetoFace", "Faceto Face",

**Input and description** = "InstrumentHeight", "Instrument Height", 0

**Input and description** = "InstrumentWidth", "Instrument Width",

**Input and description** = "InstrumentLength", "Instrument Length", 0

**Input and description** = "InstrumentHeight1", "Instrument Height 1",

**Outputs = 6**

**Output and description** = "PressureSwitchBotBody", "Pressure Switch Bottom Body"

**Output and description** = "BotBodyConnector", "Pressure Switch Bottom Body Connector"

**Output and description** = "PressureSwitchBody", "Pressure Switch Body"

**Output and description** = "PressureSwitchTopBody", "Pressure Switch Top Body"

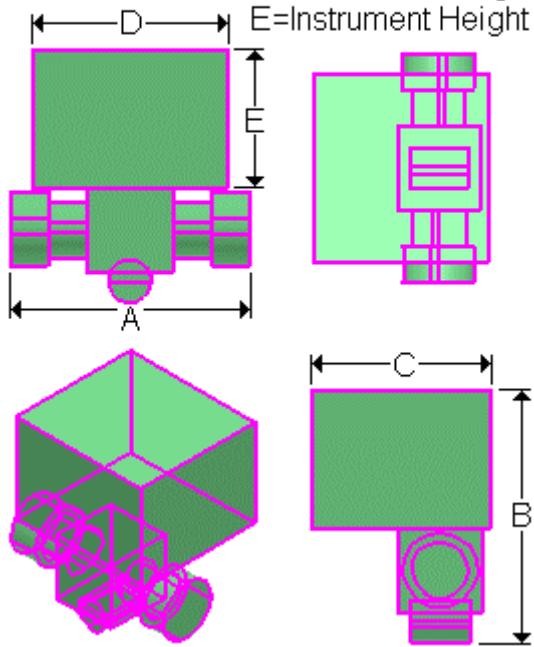
**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysicalAspect Description", 1

A=Face to Face  
B=Instrument Height  
C=Instrument Width  
D=Instrument Length  
E=Instrument Height 1



# SP3DPresTransmitter

**Description:** pressure transmitter

**Symbol Name:** SP3DPresTransmitter.PressureTransmitter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** PressureTransmitter

**User Class Name:** Pressure Transmitter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPresTransmitter.PressureTransmitter

**Inputs = 6**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentNutWidth" Description = "Instrument Nut Width"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Outputs = 7**

**Output = "PortNut" ' The Nut at the port Description = "PortNut"**

**Output = "Cylinder1" ' The cylinder immediately above the Port Nut Description = "Cylinder1"**

**Output = "Cylinder2" ' The cylinder above Cylinder1 Description = "Cylinder2"**

**Output = "Nut1" ' The Nut above Cylinder2 Description = "Nut1"**

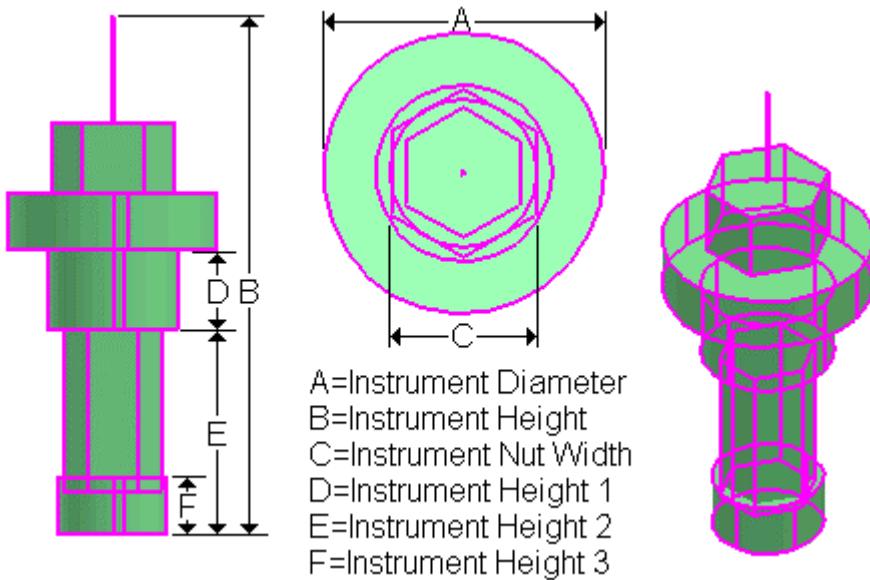
**Output = "Cylinder3" ' The cylinder above Nut1 Description = "Cylinder3"**

**Output = "Cylinder4" ' The cylinder above Cylinder3 Description = "Cylinder4"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DPSteamTrapTy5

**Description:** Steam trap type 5, based on PDS symbol I253AZ

**Symbol Name:** SP3DPSteamTrapTy5.PSteamTrapTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPSteamTrapTy5.PSteamTrapTy5

**Inputs = 8**

**Input = "Nozz1toCentre" Description = "Nozz1toCentre"**

**Input = "Nozz2toCentre" Description = "Nozz2toCentre"**

**Input = "Offset1" Description = "Offset1"**

**Input = "Offset2" Description = "Offset2"**

**Input = "TrapBodyDiameter" Description = "TrapBodyDiameter"**

**Input = "TrapHeightBottoCen" Description = "TrapHeightBottoCen"**

**Input = "TrapHeightToptoCen" Description = "TrapHeightToptoCen"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "InsTrapBody" Description = "Insulation for Filter Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "TrapBody" Description = "Filter Body"**

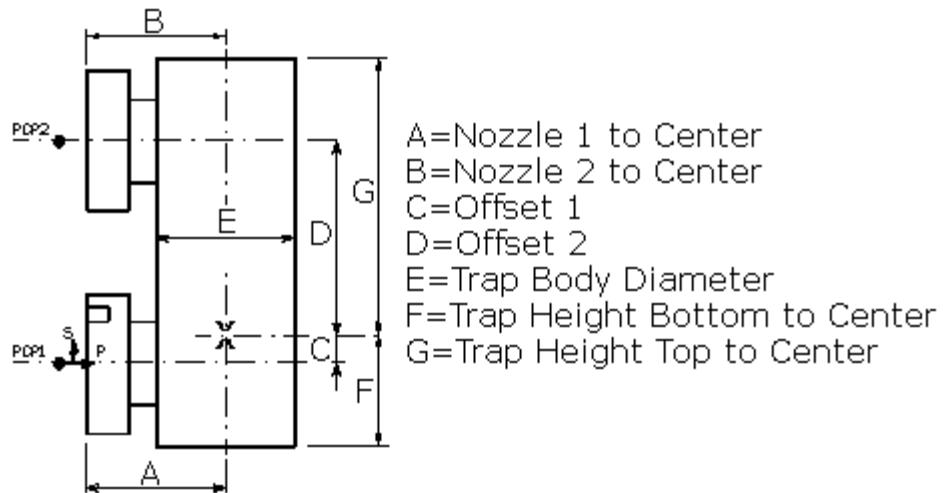
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DPStrThruPresRelV

**Description:** Straight-through pressure relief valve, based on PDS symbol I106BZ

**Symbol Name:** SP3DPStrThruPresRelV.PStrThruPresRelV

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPStrThruPresRelV.PStrThruPresRelV

**Inputs = 3**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "EndDiameter" Description = "End Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "InsulatedPort" Description = "Insulation for Port"**

**Output = "InsulatedBody" Description = "Insulation Body"**

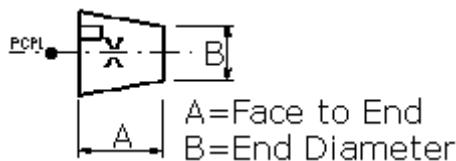
**Output = "Body" Description = "Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPTempFusiblePlug

**Description:** Temperature fusible plug, based on PDS symbol I120AZ

**Symbol Name:** SP3DPTempFusiblePlug.PTempFusiblePlug

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPTempFusiblePlug.PTempFusiblePlug

**Inputs = 2**

**Input = "FacetoEnd" Description = "Face to End"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "Body" Description = "Body"**

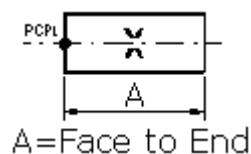
**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to End

# SP3DPTrap

**Description:** Trap, based on PDS symbol I201CZ

**Symbol Name:** SP3DPTrap.PTrap

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPTrap.PTrap

**Inputs = 6**

**Input = "FacetoCenter" Description = "Face 1 to Center"**

**Input = "Face1toCenter" Description = "Face 2 to Center"**

**Input = "CylinderDiameter" Description = "Cylinder Diameter"**

**Input = "VertCylinHeightFromCen" Description = "Vertical Cylinder Height From Cen"**

**Input = "HoriCylinLengthFromCen" Description = "Horizontal Cylinder LengthFromCen"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "VerticalCylin" Description = "Vertical Cylinder"**

**Output = "HoriCylinder" Description = "Horizontal Cylinder"**

**Output = "HoriCylinIns" Description = "Horizontal Cylin Insulation"**

**Output = "VertCylinIns" Description = "Vertical Cylin Insulation"**

**Output = "PipeinNoz1Ins" Description = "Pipe portion in Noz1 Insulation"**

**Output = "Noz1Ins" Description = "Noz1 Insulation"**

**Output = "PipeinNoz2Ins" Description = "Pipe portion in Noz2 Insulation"**

**Output = "Noz2Ins" Description = "Noz2 Insulation"**

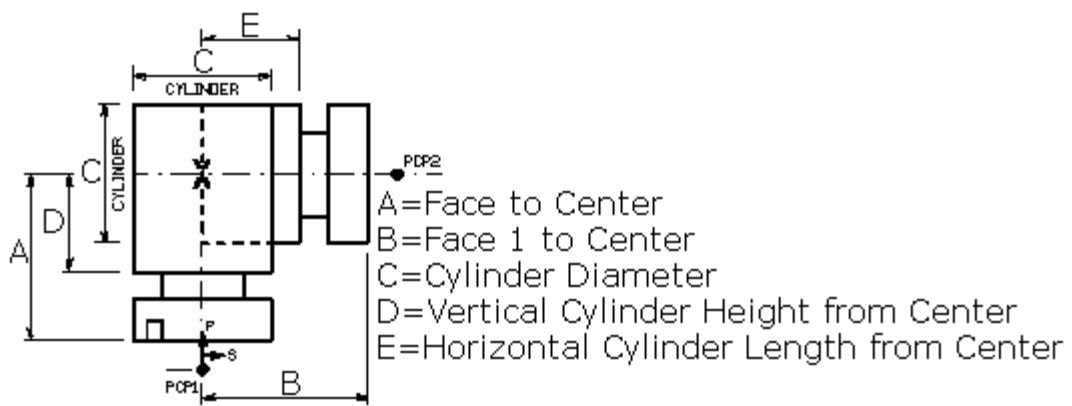
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DPVacReliefValve

**Description:** Inline vacuum relief valve, based on PDS symbol I109BZ

**Symbol Name:** SP3DPVacReliefValve.PVacReliefValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPVacReliefValve.PVacReliefValve

**Inputs = 3**

**Input = "NozztoCenter" Description = "NozztoCenter"**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "VentAngle" Description = "Angle of Vent Turn"**

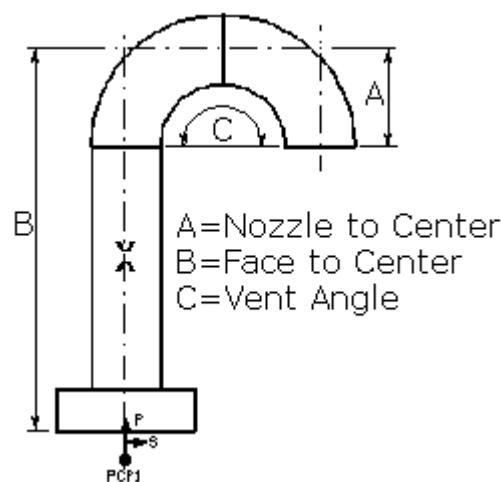
**Outputs = 2**

**Output = "FreeeVentBody" Description = "FreeeVentBody"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DPVortexFlowInstr

**Description:** Vortex flow instrument, based on PDS symbol I237AZ

**Symbol Name:** SP3DPVortexFlowInstr.PVortexFlowInstr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DPVortexFlowInstr.PVortexFlowInstr

**Inputs = 8**

**Input = "FaceToCenter" Description = "Face1 to Center"**

**Input = "Face1toCenter" Description = "Face2 to Center"**

**Input = "Offset" Description = "Offset between Port and Trap centers"**

**Input = "TrapLength" Description = "Trap Length"**

**Input = "TrapHeight" Description = "Trap Height"**

**Input = "TrapWidth1" Description = "Trap Width1"**

**Input = "TrapWidth2" Description = "Trap Width2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsTrapBody" Description = "Insulation for Trap Body"**

**Output = "InsConnectorBody" Description = "Insulation for Connector Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "Body" Description = "Body of Trap"**

**Output = "Connector" Description = "Connector from ports to Trap"**

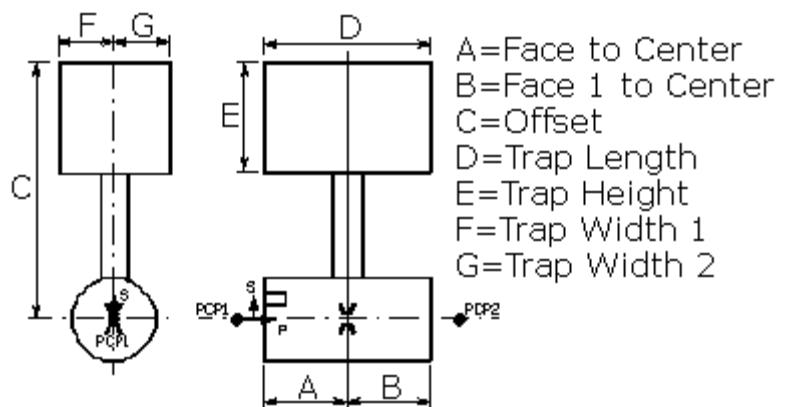
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRackPinionActValve

**Description:** valve with rack and pinion actuator

**Symbol Name:** SP3DRackPinionActValve.CRPActValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRackPinionActValve.CRPActValve

**Inputs = 21**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorLength3" Description = "Actuator Length3"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorWidth3" Description = "Actuator Width3"**

**Input = "ActuatorWidth4" Description = "Actuator Width4"**

**Input = "ActuatorLength4" Description = "Actuator Length4"**

**Input = "ActuatorLength5" Description = "Actuator Length5"**

**Input = "ActuatorHeight3" Description = "Actuator Height3"**

**Input = "ActuatorHeight4" Description = "Actuator Height4"**

**Input = "ActuatorHeight5" Description = "Actuator Height5"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "ConvergingCone" Description = "ConvergingCone"**

**Output = "DivergingCone" Description = "DivergingCone"**

**Output = "ValCylinder" Description = "ValCylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "Box1" Description = "Box1"**

**Output = "Box2" Description = "Box2"**

**Output = "Box3" Description = "Box3"**

**Output = "InsulationBody" Description = "InsulationBody"**

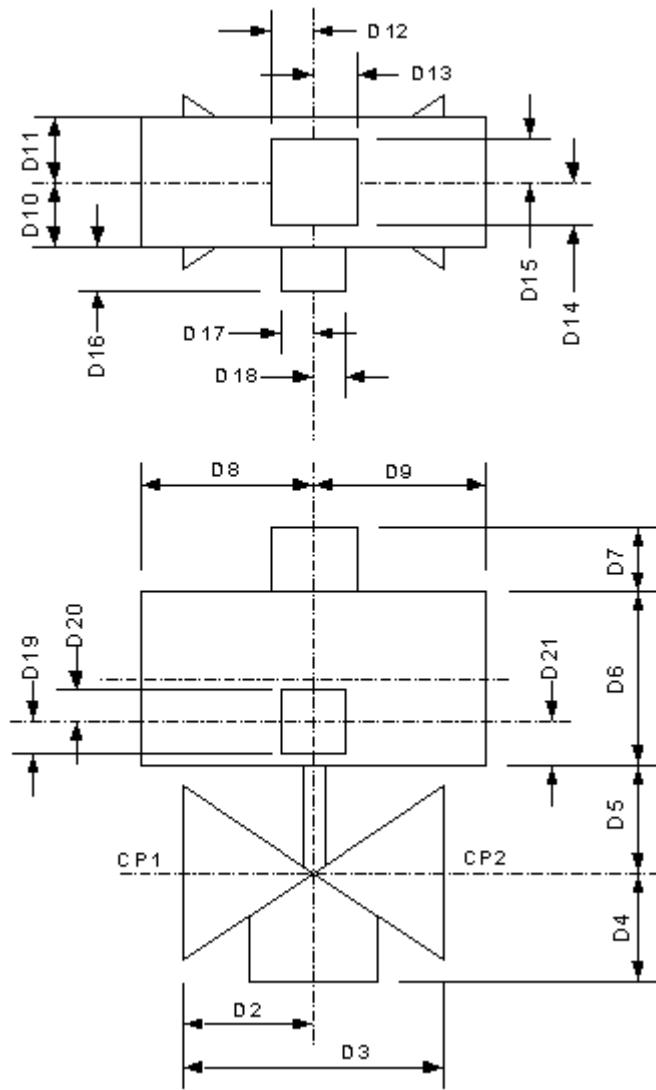
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face to Face  
D4=Cylinder Height  
D5=Actuator Height  
D6=Actuator Height 1  
D7=Actuator Height 2  
D8=Actuator Length  
D9=Actuator Length 1  
D10=Actuator Width  
D11=Actuator Width 1  
D12=Actuator Length 2  
D13=Actuator Length 3  
D14=Actuator Width 2  
D15=Actuator Width 3  
D16=Actuator Width 4  
D17=Actuator Length 4  
D18=Actuator Length 5  
D19=Actuator Height 3  
D20=Actuator Height 4  
D21=Actuator Height 5

# SP3DRedFillerFlange

**Description:** reducing filler flange

**Symbol Name:** SP3DRedFillerFlange.CRedFillerFlange

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRedFillerFlange.CRedFillerFlange

**Inputs = 1**

**Input = "FacetoFace" Description = "Face to Face"**

**Outputs = 3**

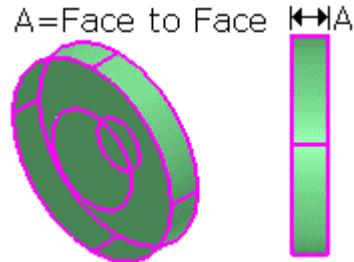
**Output = "RedFillerFlangeBody" Description = "Reducing Filler Flange Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DRedInstrumentTee

**Description:** reducing instrument tee

**Symbol Name:** SP3DRedInstrumentTee.CRedInstrumentTee

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRedInstrumentTee.CRedInstrumentTee

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "TeeBody" Description = "Instrument Body Between 2 Nozzles"**

**Output = "TeeBodyIns" Description = "Tee Body Insulation"**

**Output = "TeeBranNozIns" Description = "Tee Branch Nozzle Insulation"**

**Output = "TeeBranchIns" Description = "Tee Branch Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

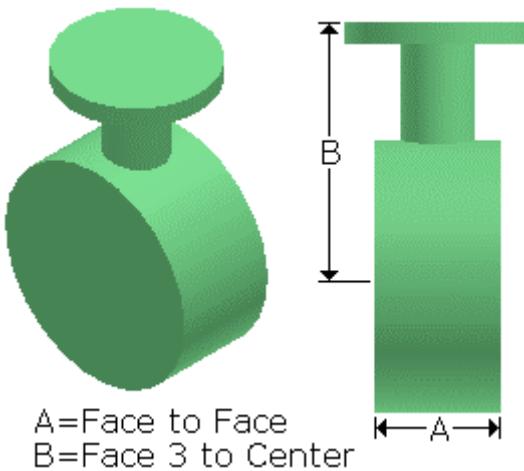
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3 with Length"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReducer

**Description:** concentric reducer flanged ends

**Symbol Name:** SP3DReducer.Cconcentric

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls; 1S6470 Catalog.xls

**Workbook Sheet:** ConcentricReducer, ConcentricReducer\_b, ConcentricSwage; REDCMM, REDCRJ; VREDC

**User Class Name:** Concentric Reducer

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReducer.CConcentric

Number of Inputs = 4

Input name = "FacetoFace"

Input description = "Face To Face"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Input name = "Face1toCenter"

Input description = "Face 1 to Center"

Input name = "Face2toCenter"

Input description = "Face 2 to Center"

Number of Outputs = 4

Output name = "Reducer"

Output description = "Body of Reducer"

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "PNoz1"

Output description = "Nozzle 1"

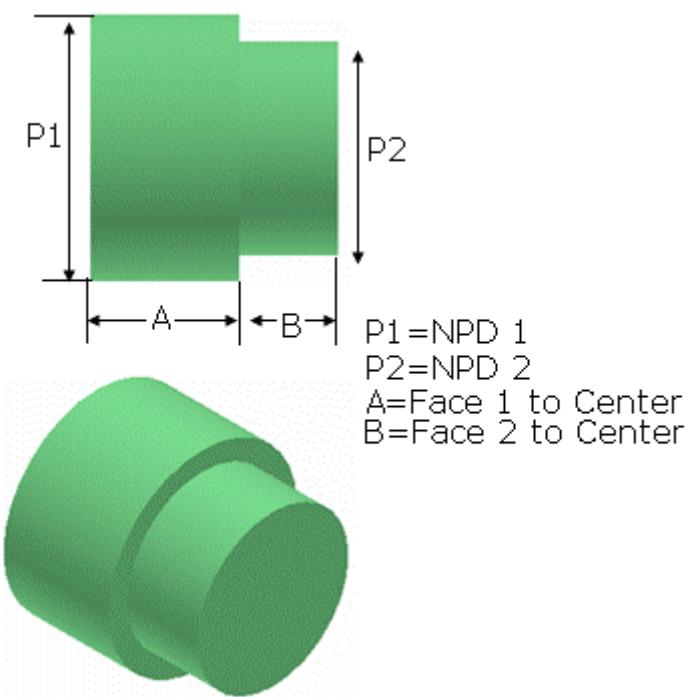
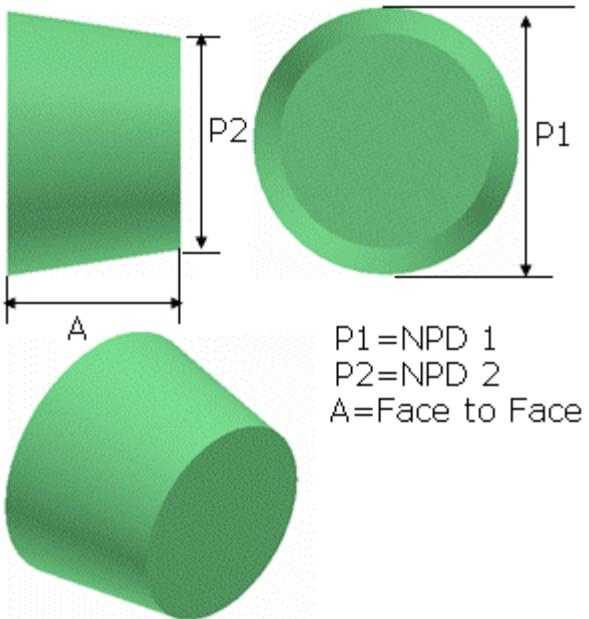
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DReducingCoupling

**Description:**

**Symbol Name:** SP3DReducingCoupling.ReducingCoupling

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReducingCoupling.ReducingCoupling

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "DiscWidth" Description = "Disc Width"**

**Input = "DiscDiameter" Description = "Disc Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Body" Description = "Body"**

**Output = "BoltEar" Description = "Bolt Ear"**

**Output = "BoltEar1" Description = "Bolt Ear 1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

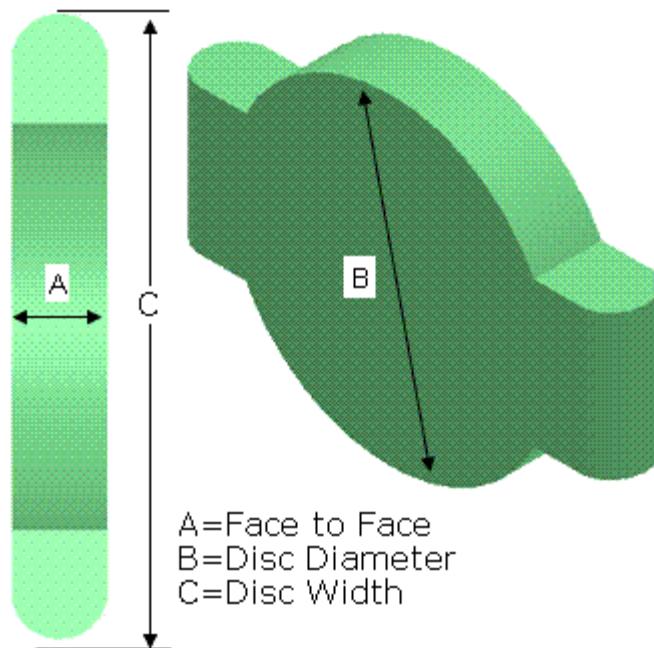
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DReducingCross

**Description:** reducing cross

**Symbol Name:** SP3DReducingCross.CReducingCross

**Workbook:** Bio Pharm Catalog.xls

**Workbook Sheet:** XRMMMM, XRLT

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReducingCross.CReducingCross

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Face2toCenter" Description = "Face of branch to Center"**

**Outputs = 10**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch"**

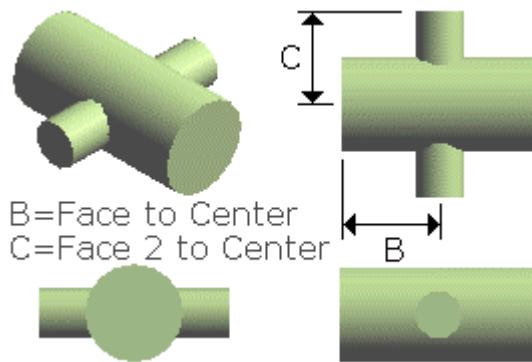
**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "InsulatedPort4" Description = "Insulated Port4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReducingInsert

**Description:** Reducing insert

**Symbol Name:** SP3DReducingInsert.CReducingInsert

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Bushing, ReducingInsert

**User Class Name:** Bushing, Reducing Insert

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReducingInsert.CReducingInsert

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

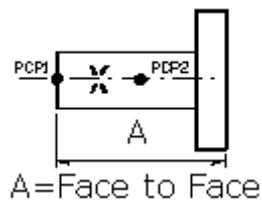
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReducingLateral

**Description:**

**Symbol Name:** SP3DReducingLateral.ReducingLateral

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReducingLateral.ReducingLateral

**Inputs = 3**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsulatedBody1" Description = "Insulated Body (Port 1 side)"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

**Output = "InsulatedBody2" Description = "Insulated Body (Port 2 side)"**

**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Output = "InsulatedBranch" Description = "Insulated Branch (Port 3 side)"**

**Output = "InsulatedPort3" Description = "Insulated Port 3"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

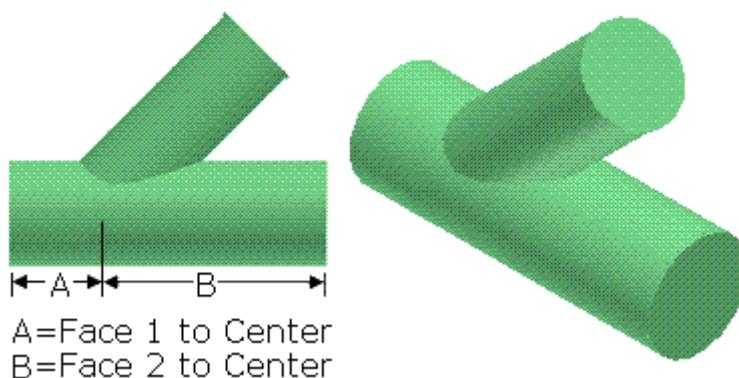
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "TruncCone" Description = "Truncated Cone"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReducingTee

**Description:** reducing tee

**Symbol Name:** SP3DReducingTee.CReducingTee

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls

**Workbook Sheet:** ReducingInstrumentTee, ReducingRunAndBranchTee, Reducing Tee; TMMMS, TRLT, TRMMM, TRMMMS, TRWWM, TRWWMS, TWWM, TWWMS

**User Class Name:** Reducing Instrument Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTee.CReducingTee

Number of Inputs = 4

Input name = "Face1toCenter"

Input description = "Face1 to Center"

Input name = "Face2toCenter"

Input description = "Face2 to Center"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Input name = "Angle"

Input description = "Angle of Branch measured from Header"

Number of Outputs = 8

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "InsulatedPort1"

Output description = "Insulated Port1"

Output name = "InsulatedPort2"

Output description = "Insulated Port2"

Output name = "InsulatedBranch"

Output description = "Insulated Branch"

Output name = "InsulatedPort3"

Output description = "Insulated Port3"

Output name = "PNoz1"

Output description = "Nozzle 1"

Output name = "PNoz2"

Output description = "Nozzle 2"

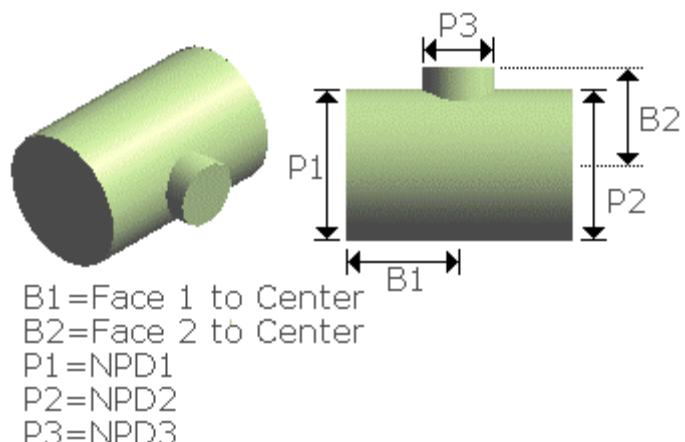
Output name = "PNoz3"

Output description = "Nozzle 3"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DReducingTeeWye

## Description:

**Symbol Name:** SP3DReducingTeeWye.ReducingTeeY

**Workbook:** 1S6470 Catalog.xls

## Workbook Sheet:

**User Class Name:**

**Part Number:**

## Inputs, Outputs, and Aspects:

ProgID: SP3DReducingTeeWye.ReducingTeeY

### Inputs = 5

**Input** = "Face1toCenter" **Description** = "Face 1 to Center"

**Input** = "Face2toCenter" **Description** = "Face 2 to Center"

**Input** = "Face3Offset1" **Description** = "Face 3 to Center along X direction"

**Input** = "Face3Offset2" **Description** = "Face 3 to Center along Y direction"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

### Outputs = 17

**Output** = "Cylinder" **Description** = "Cylinder at 45 degrees to X"

**Output** = "BranchTor" **Description** = "Branch Torus"

**Output** = "InsulatedBody1" **Description** = "Insulated Body 1"

**Output** = "InsulatedPort1" **Description** = "Insulated Port 1"

**Output** = "InsulatedBody2" **Description** = "Insulated Body 2"

**Output** = "InsulatedCylinder1" **Description** = "Insulated Cylinder 1"

**Output** = "InsulatedCone1" **Description** = "Insulated Cone 1"

**Output** = "InsulatedPort2" **Description** = "Insulated Port 2"

**Output** = "InsBranchCyl1" **Description** = "Insulated Branch Cylider 1"

**Output** = "InsBranchTorSeg" **Description** = "Insulated Branch Torus Segment"

**Output** = "InsBranchCyl2" **Description** = "Insulated Branch Cylinder 2"

**Output** = "InsulatedPort3" **Description** = "Insulated Port 3"

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output** = "Cylinder1" **Description** = "Cylinder 1"

**Output** = "Cone1" **Description** = "Cone 1"

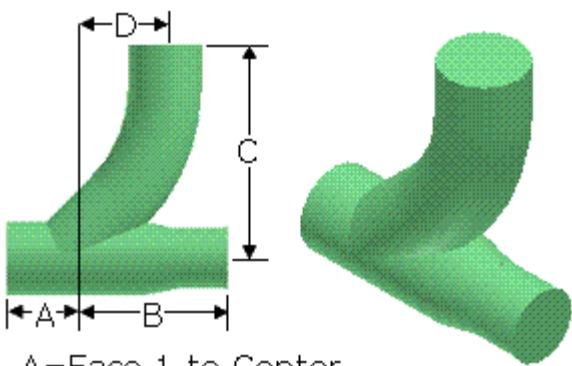
**Output** = "PNoz2" **Description** = "Nozzle 2"

**Output** = "PNoz3" **Description** = "Nozzle 3"

### Aspects = 2

**Aspect** = SimplePhysical

**Aspect** = Insulation



A=Face 1 to Center  
B=Face 2 to Center  
C=Face 3 to Offset 2  
D=Face 3 to Offset 1

# SP3DRegulatorTy1

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy1 if you want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Symbol Name:** SP3DRegulatorTy1.CRegulatorTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRegulatorTy1.CRegulatorTy1

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "ConvergCone" Description = "Converging Cone"**

**Output = "DivergCone" Description = "Diverging Cone"**

**Output = "RegulatorVerCylin" Description = "Regulator Vertical Cylinder"**

**Output = "ConeIns" Description = "Insulation for the Cones"**

**Output = "RegVerCylinIns" Description = "Vertical Cylinder Insulation"**

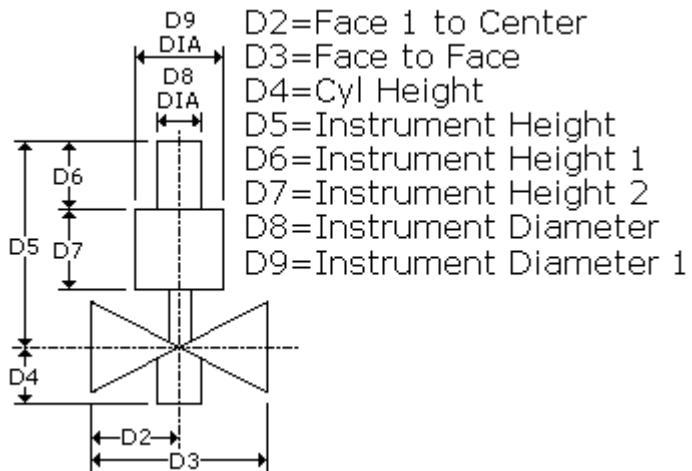
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRegulatorTy2

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy2 if you want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Symbol Name:** SP3DRegulatorTy2.CRegulatorTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRegulatorTy2.CRegulatorTy2

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "CylHeight" Description = "Bottom Cylinder Height D4"**

**Input = "InstrumentLength" Description = "Instrument Length D5"**

**Input = "InstrumentHeight" Description = "Instrument height D6"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ValCyl" Description = "Valve Bottom Cylinder"**

**Output = "TopValCyl" Description = "Valve Top Cylinder"**

**Output = "HoriCylinders" Description = "Horizontal Cylinders"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "VertCylinsIns" Description = "Vertical Cylinders Insulation"**

**Output = "HoriCylindersIns" Description = "Horizontal Cylinders Insulation"**

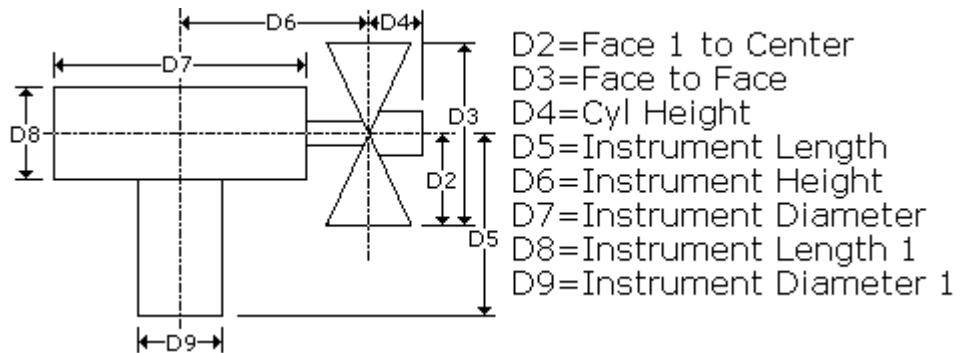
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRegulatorTy3

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy3 if you want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Symbol Name:** SP3DRegulatorTy3.CRegulatorTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRegulatorTy3.CRegulatorTy3

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "CylHeight" Description = "Bottom Cylinder Height D4"**

**Input = "InstrumentLength" Description = "Instrument Length D5"**

**Input = "InstrumentHeight" Description = "Instrument Height D6"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "BodyCone1" Description = "Horizontal Cylinder"**

**Output = "BodyCone2" Description = "Diverging Cone"**

**Output = "ValCyl" Description = "Regulator Cylinder"**

**Output = "TopValCyl" Description = "Regulator Cylinder 1"**

**Output = "HorizontalCylins" Description = "Regulator Cylinder 1"**

**Output = "ValveBodyIns" Description = "Cone Insulation"**

**Output = "VertCylinsIns" Description = "Cylinder Insulation"**

**Output = "HoriCylinIns" Description = "Horizontal Cylinders Insulation"**

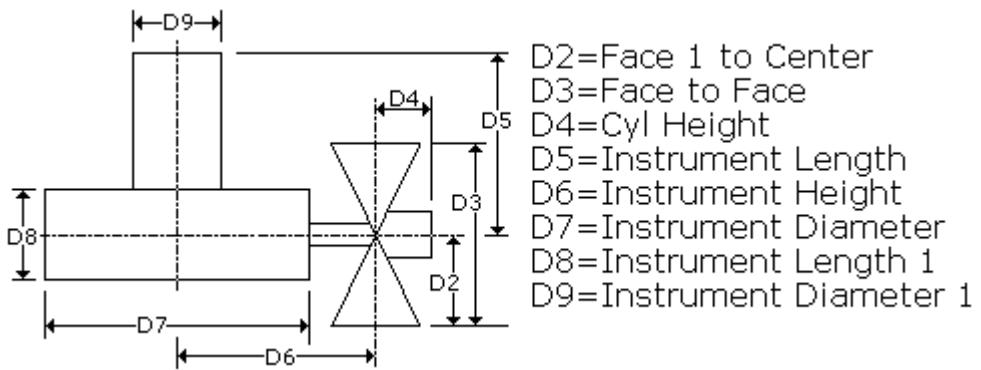
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRegulatorTy4

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy4 if you want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Symbol Name:** SP3DRegulatorTy4.CRegulatorTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRegulatorTy4.CRegulatorTy4

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 9**

**Output = "ConeBody1" Description = "Cone Body1"**

**Output = "ConeBody2" Description = "Cone Body2"**

**Output = "ConeBody3" Description = "Cone Body3"**

**Output = "ConeBody4" Description = "Cone Body4"**

**Output = "TopCylBody" Description = "Top Cylinder Body"**

**Output = "RegulatorBodyIns" Description = "Regulator Body Insulation"**

**Output = "ConeBody4Ins" Description = "Cone Body4 Insulation"**

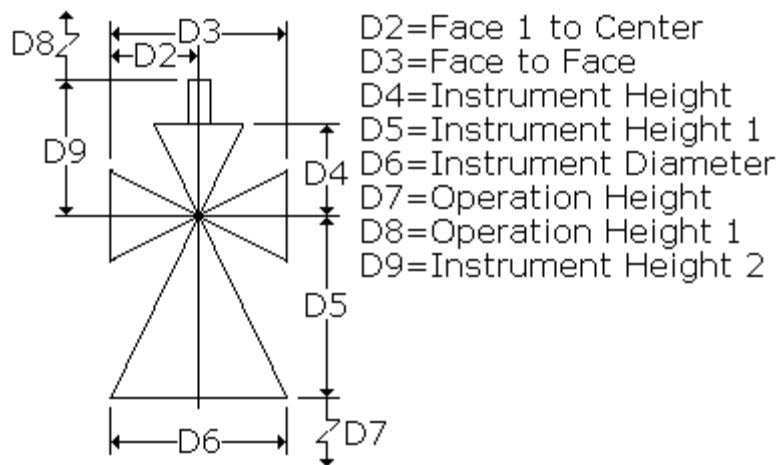
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRegulatorTy5

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRegulatorTy5 if you want to interactively resize the symbol during or after placement.

**Description:** Generic regulator

**Symbol Name:** SP3DRegulatorTy5.CRegulatorTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRegulatorTy5.CRegulatorTy5

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face 1 to Center D2"**

**Input = "FacetoFace" Description = "Face to Face D3"**

**Input = "InstrumentHeight" Description = "Instrument Height D4"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter D5"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1 D6"**

**Input = "InstrumentLength" Description = "Instrument Length D7"**

**Input = "InstrumentLength1" Description = "Instrument Length 1 D8"**

**Input = "InstrumentLength2" Description = "Instrument Length 2 D9"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "VertCylin" Description = "Regulator Vertical Cylinder"**

**Output = "HoriCylin" Description = "Regulator Horizontal Cylinder"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "VerCylinIns" Description = "Vertical Cylinder Insulation"**

**Output = "HorCylins" Description = "Horizontal Cylinders Insulation"**

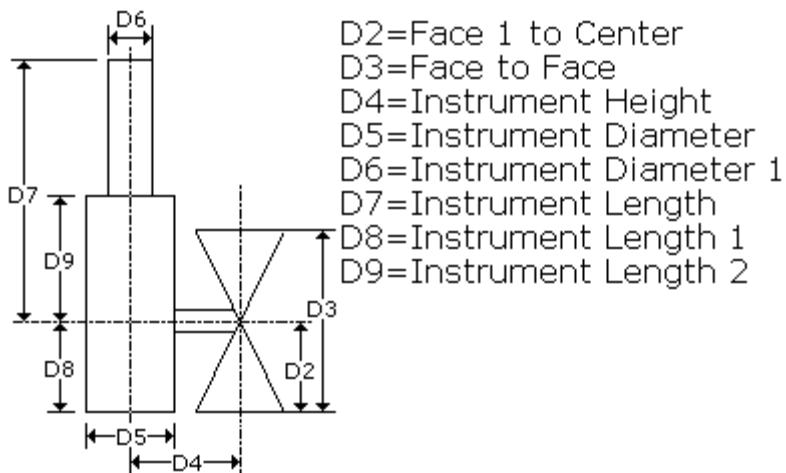
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReliefValveTy1

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy1 if you want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 1

**Symbol Name:** SP3DReliefValveTy1.CReliefValveTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy1.CReliefValveTy1

**Inputs = 13**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "ValveBody" Description = "Valve Body"**

**Output = "TopCylBody1" Description = "Top Cylinder Body1"**

**Output = "TopCylBody2" Description = "Top Cylinder Body2"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "Nozz1BodyIns" Description = "Nozzle1 Body Insulation"**

**Output = "Nozz2BodyIns" Description = "Nozzle2 Body Insulation"**

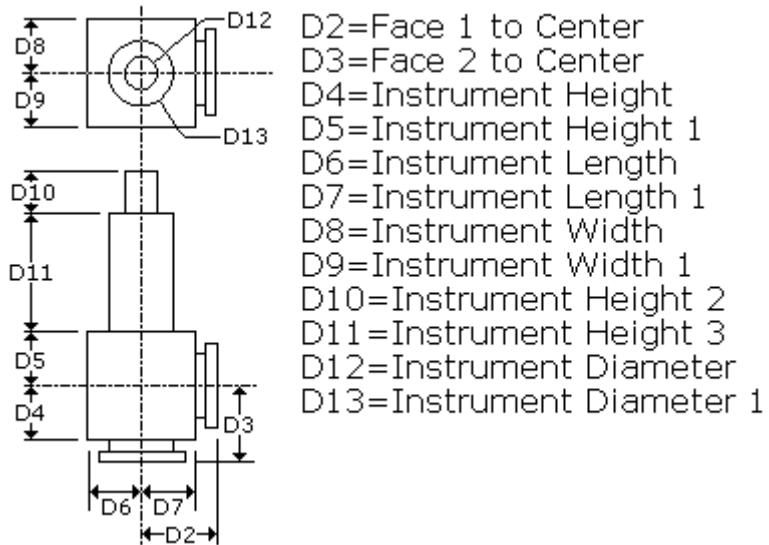
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DReliefValveTy2

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy2 if you want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 2

**Symbol Name:** SP3DReliefValveTy2.CReliefValveTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy2.CReliefValveTy2

**Inputs = 11**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "ValveBody" Description = "Valve Body"**

**Output = "TopCylBody" Description = "Top Cylinder Body"**

**Output = "ValveBodyIns" Description = "Valve Body Insulation"**

**Output = "Nozz1BodyIns" Description = "Nozzle1 Body Insulation"**

**Output = "Nozz2BodyIns" Description = "Nozzle2 Body Insulation"**

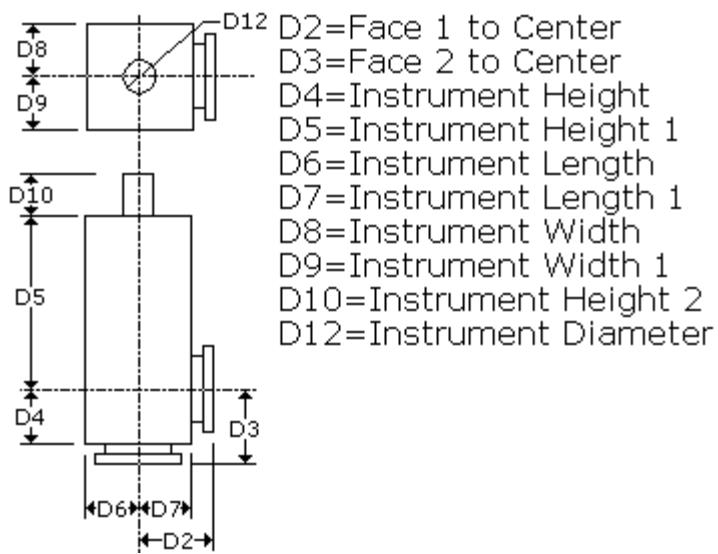
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReliefValveTy3

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy3 if you want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Symbol Name:** SP3DReliefValveTy3.CReliefValveTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy3.CReliefValveTy3

**Inputs = 11**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "ReliefValBody" Description = "Relief Valve Body"**

**Output = "VerCylin" Description = "Vertical Cylinder"**

**Output = "InsulationBody" Description = "Insulation Body"**

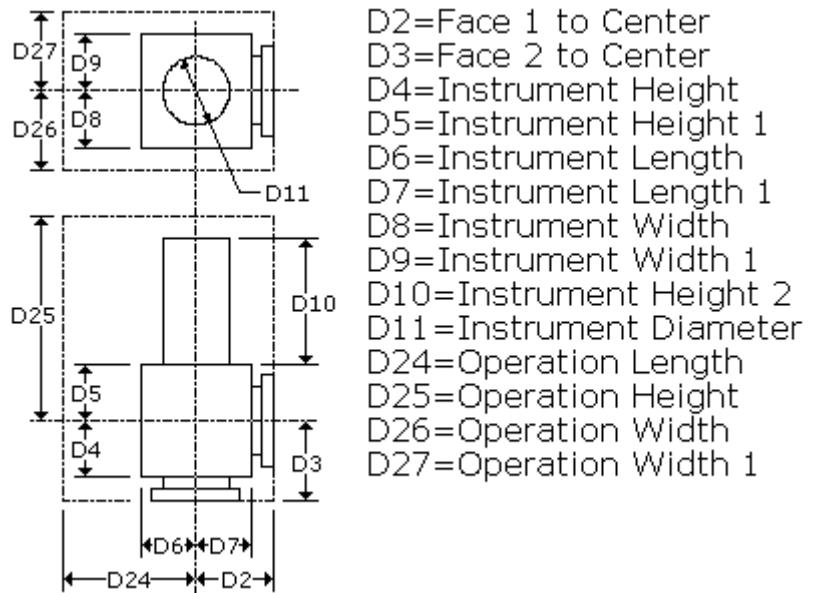
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DReliefValveTy4

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy4 if you want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Symbol Name:** SP3DReliefValveTy4.CReliefValveTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy4.CReliefValveTy4

**Inputs = 23**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentRadius" Description = "Instrument Radius"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentHeight3" Description = "Instrument Height 3"**

**Input = "InstrumentRadius1" Description = "Instrument Radius 1"**

**Input = "InstrumentHeight4" Description = "Instrument Height 4"**

**Input = "InstrumentHeight5" Description = "Instrument Height 5"**

**Input = "InstrumentRadius2" Description = "Instrument Radius 2"**

**Input = "InstrumentHeight6" Description = "Instrument Height 6"**

**Input = "InstrumentHeight7" Description = "Instrument Height 7"**

**Input = "InstrumentRadius3" Description = "Instrument Radius 3"**

**Input = "InstrumentHeight8" Description = "Instrument Height 8"**

**Input = "InstrumentHeight9" Description = "Instrument Height 9"**

**Input = "CylOffset" Description = "Cylinder Offset"**

**Input = "CylOffset1" Description = "Cylinder Offset 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "ReliefValBody" Description = "Relief Valve Body"**

**Output = "VerCylin1" Description = "Vertical Cylinder 1"**

**Output = "VerCylin2" Description = "Vertical Cylinder 2"**

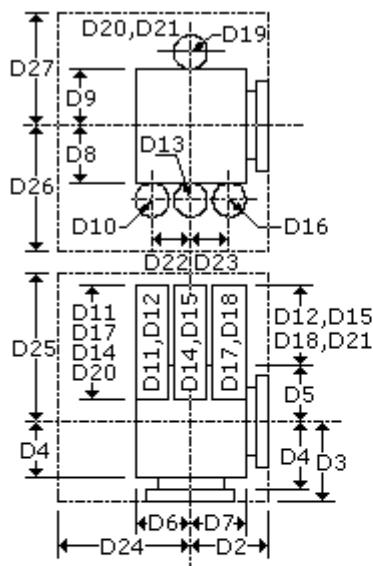
**Output = "VerCylin3" Description = "Vertical Cylinder 3"**

**Output = "VerCylin4" Description = "Vertical Cylinder 4"**  
**Output = "InsulationBody" Description = "Insulation Body"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Length  
D7=Instrument Length 1  
D8=Instrument Width  
D9=Instrument Width 1  
D10=Instrument Radius  
D11=Instrument Height 2  
D12=Instrument Height 3  
D13=Instrument Radius 1  
D14=Instrument Height 4  
D15=Instrument Height 5  
D16=Instrument Radius 2  
D17=Instrument Height 6  
D18=Instrument Height 7  
D19=Instrument Radius 3  
D20=Instrument Height 8  
D21=Instrument Height 9  
D22=Cyl Offset  
D23=Cyl Offset 1  
D24=Operation Length  
D25=Operation Height  
D26=Operation Width  
D27=Operation Width 1

# SP3DReliefValveTy5

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy5 if you want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 5

**Symbol Name:** SP3DReliefValveTy5.CReliefValveTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy5.CReliefValveTy5

**Inputs = 20**

**Input = "Face1toCenter" Description = "Face1 to Center"**  
**Input = "Face2toCenter" Description = "Face2 to Center"**  
**Input = "InstrumentHeight" Description = "Instrument Height"**  
**Input = "InstrumentHeight1" Description = "Instrument Height1"**  
**Input = "InstrumentLength" Description = "Instrument Length"**  
**Input = "InstrumentLength1" Description = "Instrument Length1"**  
**Input = "InstrumentWidth" Description = "Instrument Width"**  
**Input = "InstrumentWidth1" Description = "Instrument Width1"**  
**Input = "InstrumentRadius" Description = "Instrument Diameter"**  
**Input = "InstrumentHeight2" Description = "Instrument Height2"**  
**Input = "InstrumentHeight3" Description = "Instrument Height3"**  
**Input = "InstrumentRadius1" Description = "Instrument Diameter1"**  
**Input = "InstrumentHeight4" Description = "Instrument Height4"**  
**Input = "InstrumentHeight5" Description = "Instrument Height5"**  
**Input = "InstrumentRadius2" Description = "Instrument Diameter2"**  
**Input = "InstrumentHeight6" Description = "Instrument Height6"**  
**Input = "InstrumentHeight7" Description = "Instrument Height7"**  
**Input = "CylOffset" Description = "Cylinder Offset"**  
**Input = "CylOffset1" Description = "Cylinder Offset 1"**  
**Input = "InsulationThickness" Description = "Insulation Thickness"**

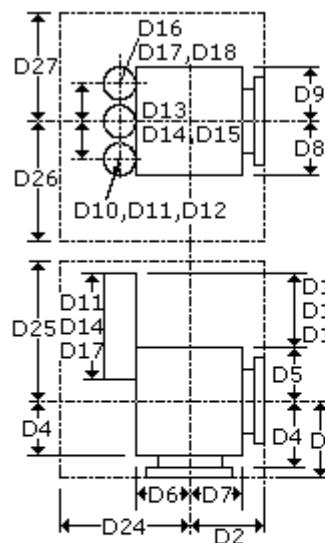
**Outputs = 7**

**Output = "ValveBody" Description = "ValveBody"**  
**Output = "Cyl1Body" Description = "Cylinder 1Body"**  
**Output = "Cyl2Body" Description = "Cylinder 2Body"**  
**Output = "Cyl3Body" Description = "Cylinder 3Body"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



D2=Face 1 to Center  
D3=Face 2 to Center  
D4=Instrument Height  
D5=Instrument Height 1  
D6=Instrument Length  
D7=Instrument Length 1  
D8=Instrument Width  
D9=Instrument Width 1  
D10=Instrument Radius  
D11=Instrument Height 2  
D12=Instrument Height 3  
D13=Instrument Radius 1  
D14=Instrument Height 4  
D15=Instrument Height 5  
D16=Instrument Radius 2  
D17=Instrument Height 6  
D18=Instrument Height 7  
D22=Cyl Offset  
D23=Cyl Offset 1  
D24=Operation Length  
D25=Operation Height  
D26=Operation Width  
D27=Operation Width 1

# SP3DReliefValveTy6

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy6 if you want to interactively resize the symbol during or after placement.

**Description:** Relief valve type 6

**Symbol Name:** SP3DReliefValveTy6.CReliefValveTy6

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy6.CReliefValveTy6

**Inputs = 23**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentRadius" Description = "Instrument Radius"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InstrumentHeight3" Description = "Instrument Height3"**

**Input = "InstrumentRadius1" Description = "Instrument Diameter1"**

**Input = "InstrumentHeight4" Description = "Instrument Height4"**

**Input = "InstrumentHeight5" Description = "Instrument Height5"**

**Input = "InstrumentRadius2" Description = "Instrument Diameter2"**

**Input = "InstrumentHeight6" Description = "Instrument Height6"**

**Input = "InstrumentHeight7" Description = "Instrument Height7"**

**Input = "InstrumentRadius3" Description = "Instrument Radius3"**

**Input = "InstrumentHeight8" Description = "Instrument Height8"**

**Input = "InstrumentHeight9" Description = "Instrument Height9"**

**Input = "CylOffset" Description = "Cylinder Offset"**

**Input = "CylOffset1" Description = "Cylinder Offset1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "ValveBody" Description = "ValveBody"**

**Output = "Cyl1Body" Description = "Cylinder 1Body"**

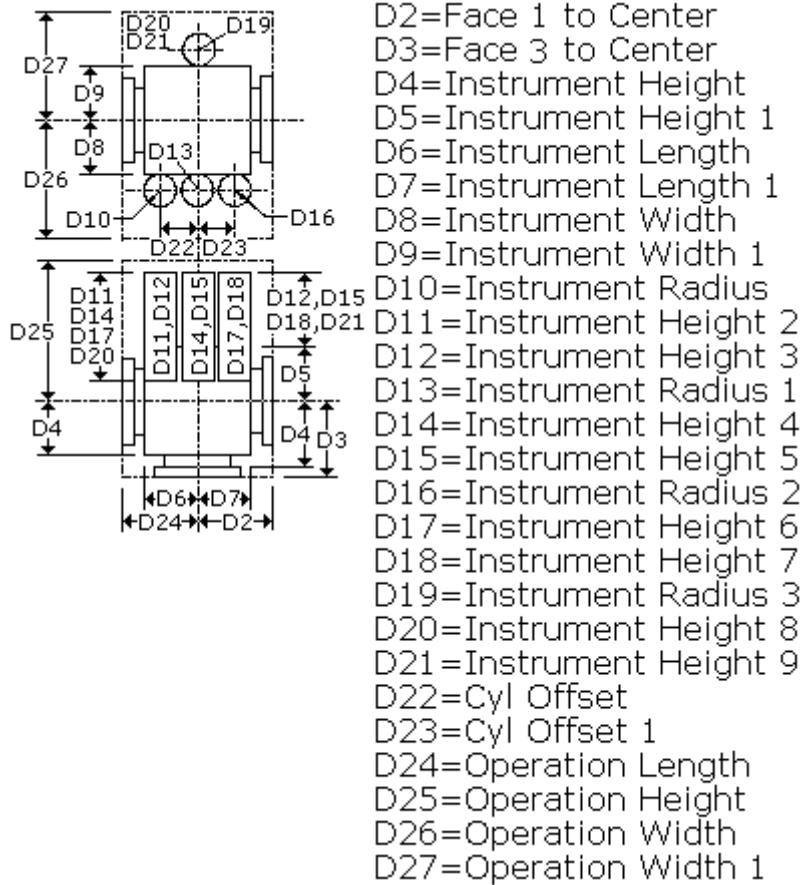
**Output = "Cyl2Body" Description = "Cylinder 2Body"**

**Output = "Cyl3Body" Description = "Cylinder 3Body"**

**Output = "Cyl4Body" Description = "Cylinder 4Body"**  
**Output = "ValveBodyIns" Description = "Valve Body Insulation"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**  
**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**  
**Aspect = Insulation**



# SP3DReliefValveTy7

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIReliefValveTy7 if you want to interactively resize the symbol during or after placement.

**Description:** Angle pressure relief valve

**Symbol Name:** SP3DReliefValveTy7.CReliefValveTy7

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReliefValveTy7.CReliefValveTy7

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Box" Description = "Box"**

**Output = "InsulationBody" Description = "Insulation Body"**

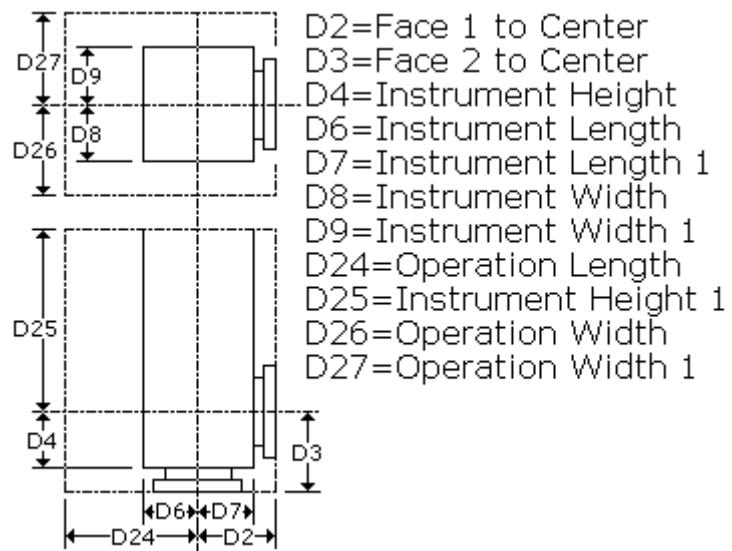
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DReturn

**Description:** return

**Symbol Name:** SP3DReturn.CReturn

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** 180DegReturn

**User Class Name:** 180 Degree Return

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DReturn.CReturn

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "SP3DReturn" Description = "Fitting - Return "**

**Output = "InsulatedBody" Description = "Insulation"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoDActEPPHPosC1Valve

**Description:**

**Symbol Name:** SP3DRoDActEPPHPosC1Valve.CRDAEHPC1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActEPPHPosC1Valve.CRDAEHPC1Val

**Inputs = 20**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylinder Height "**

**Input = "ActuatorWidth" Description = "Actuator Width D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "ActuatorHeight" Description = "Actuator Height D7"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D8"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D9"**

**Input = "ActuatorHeight1" Description = "Actuator Height 1 D10"**

**Input = "ActuatorHeight2" Description = "Actuator Height 2 D11"**

**Input = "ActuatorLength" Description = "Actuator Length D12"**

**Input = "ActuatorLength1" Description = "Actuator Length 1 D14"**

**Input = "ActuatorHeight3" Description = "Actuator Height 3 D16"**

**Input = "ActuatorHeight4" Description = "Actuator Height 4 D19"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D20"**

**Input = "ActuatorWidth1" Description = "Actuator Width 1 D25"**

**Input = "ActuatorWidth2" Description = "Actuator Width 2 D26"**

**Input = "ActuatorHeight5" Description = "Actuator Height 5 D27"**

**Input = "ActuatorLength2" Description = "Actuator Length 2 D28"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 12**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "Box" Description = "Box"**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "Stem1" Description = "Stem 1"**

**Output = "HandWheel" Description = "Hand Wheel"**

**Output = "ActuatorCone" Description = "Actuator Cone"**

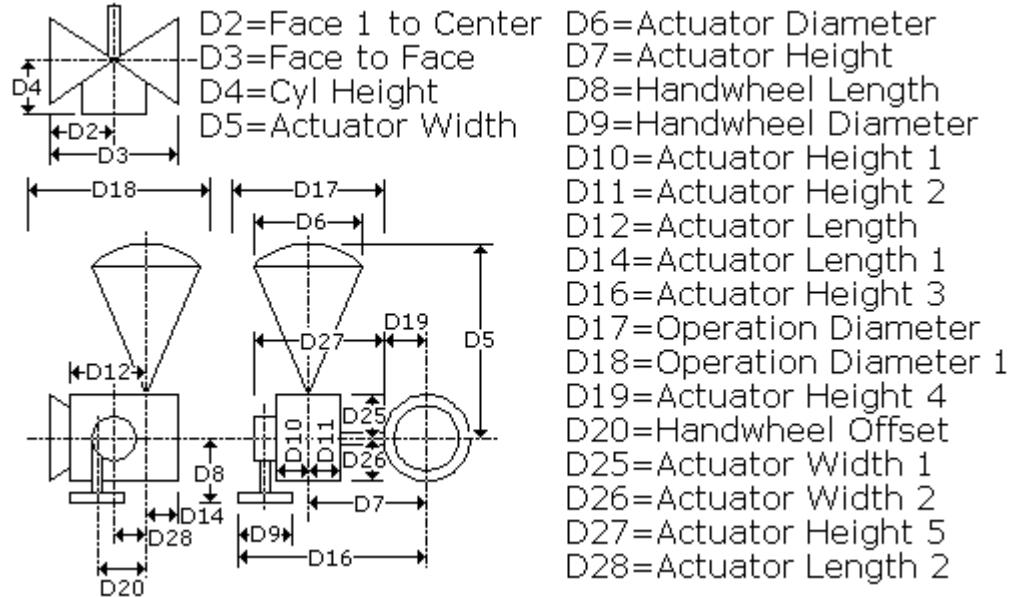
**Output = "ValveBodyIns" Description = "Valve Body Insulation "**

**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoDActEPPHPosD1Valve

**Description:**

**Symbol Name:** SP3DRoDActEPPHPosD1Valve.CRDAEHPD1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActEPPHPosD1Valve.CRDAEHPD1Val

**Inputs = 20**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Bottom Cylder Height "**

**Input = "ActuatorWidth" Description = "Actuator Width D5"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter D6"**

**Input = "ActuatorHeight" Description = "Actuator Height D7"**

**Input = "HandWheelLength" Description = "Hand Wheel Length D8"**

**Input = "HandWheelDiameter" Description = "Hand Wheel Diameter D9"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1 D10"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2 D11"**

**Input = "ActuatorLength" Description = "Actuator Length D12"**

**Input = "ActuatorLength1" Description = "Actuator Length 1 D14"**

**Input = "ActuatorHeight3" Description = "Actuator Height 3 D16"**

**Input = "ActuatorHeight4" Description = "Actuator Height 4 D19"**

**Input = "HandWheelOffset" Description = "Hand Wheel Offset D20"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1 D25"**

**Input = "ActuatorWidth2" Description = "Actuator Width 2 D26"**

**Input = "ActuatorHeight5" Description = "Actuator Height 5 D27"**

**Input = "ActuatorLength2" Description = "Actuator Length 2 D28"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 12**

**Output = "BodyCone1" Description = "Body Cone 1"**

**Output = "BodyCone2" Description = "Body Cone 2"**

**Output = "ValCyl" Description = "Valve Cylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "Box" Description = "Box"**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "Stem1" Description = "Stem1"**

**Output = "HandWheel" Description = "HandWheel"**

**Output = "ActuatorCone" Description = "ActuatorCone"**

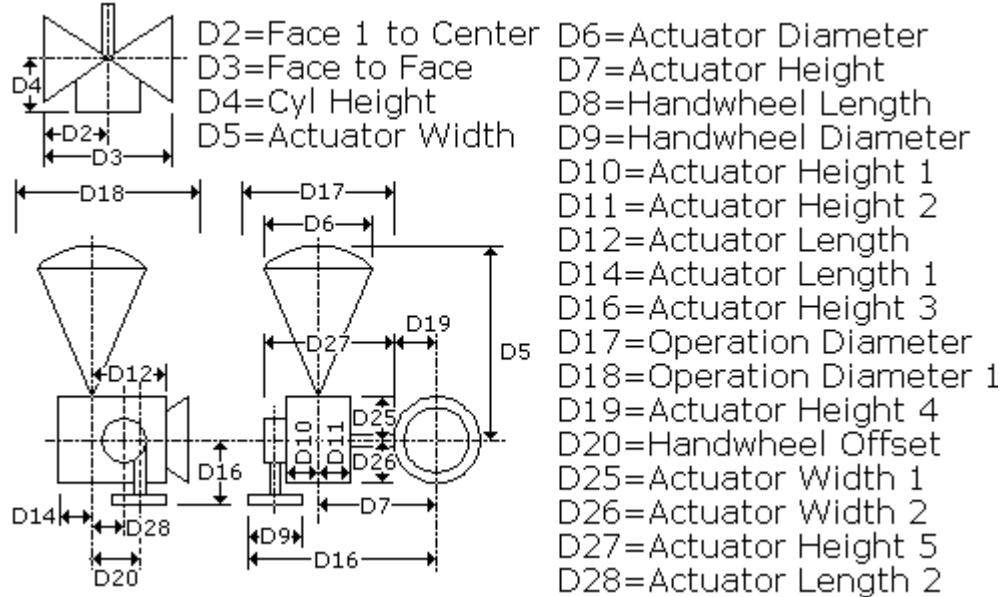
**Output = "ValveBodyIns" Description = "Valve Body Insulation "**

**Output = "PNozz1" Description = "Nozzle 1"**  
**Output = "PNozz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRoDActPosA4Valve

**Description:** Rotary Diaphragm Actuator Valve Position C4 (Vertical Line)

**Symbol Name:** SP3DRoDActPosA4Valve.CRDAPosA4Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActPosA4Valve.CRDAPosA4Val

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "ConvergingCone" Description = "ConvergingCone"**

**Output = "DivergingCone" Description = "DivergingCone"**

**Output = "ValCylinder" Description = "ValCylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "ActuatorBox" Description = "ActuatorBox"**

**Output = "ActuatorCone" Description = "ActuatorCone"**

**Output = "InsulationBody" Description = "InsulationBody"**

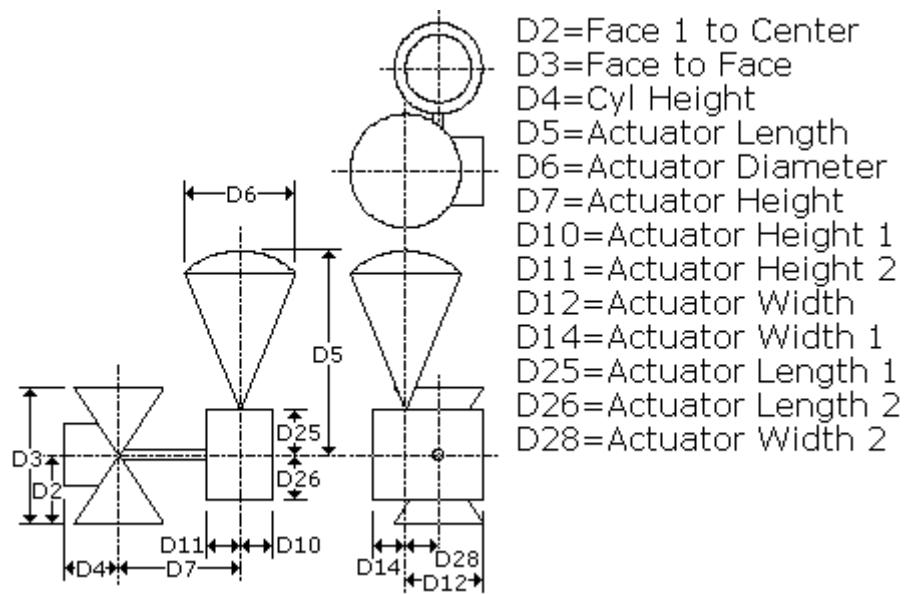
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRoDActPosB4Valve

**Description:** Rotary Diaphragm Actuator Valve Position D4 (vertical line)

**Symbol Name:** SP3DRoDActPosB4Valve.CRDAPosB4Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActPosB4Valve.CRDAPosB4Val

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "ConvergingCone" Description = "ConvergingCone"**

**Output = "DivergingCone" Description = "DivergingCone"**

**Output = "ValCylinder" Description = "ValCylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "ActuatorBox" Description = "ActuatorBox"**

**Output = "ActuatorCone" Description = "ActuatorCone"**

**Output = "InsulationBody" Description = "InsulationBody"**

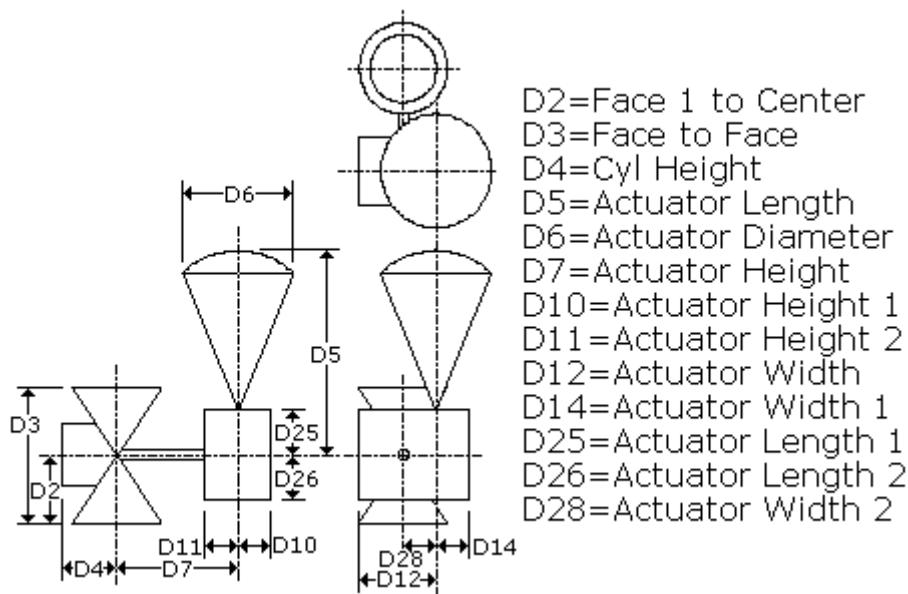
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRoDActPosC1Valve

**Description:** Rotary Diaphragm Actuator Valve Position C1

**Symbol Name:** SP3DRoDActPosC1Valve.CRDAPosC1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActPosC1Valve.CRDAPosC1Val

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of operator"**

**Outputs = 9**

**Output = "ConvergingCone" Description = "ConvergingCone"**

**Output = "DivergingCone" Description = "DivergingCone"**

**Output = "ValCylinder" Description = "ValCylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "ActuatorBox" Description = "ActuatorBox"**

**Output = "ActuatorCone" Description = "ActuatorCone"**

**Output = "InsulationBody" Description = "InsulationBody"**

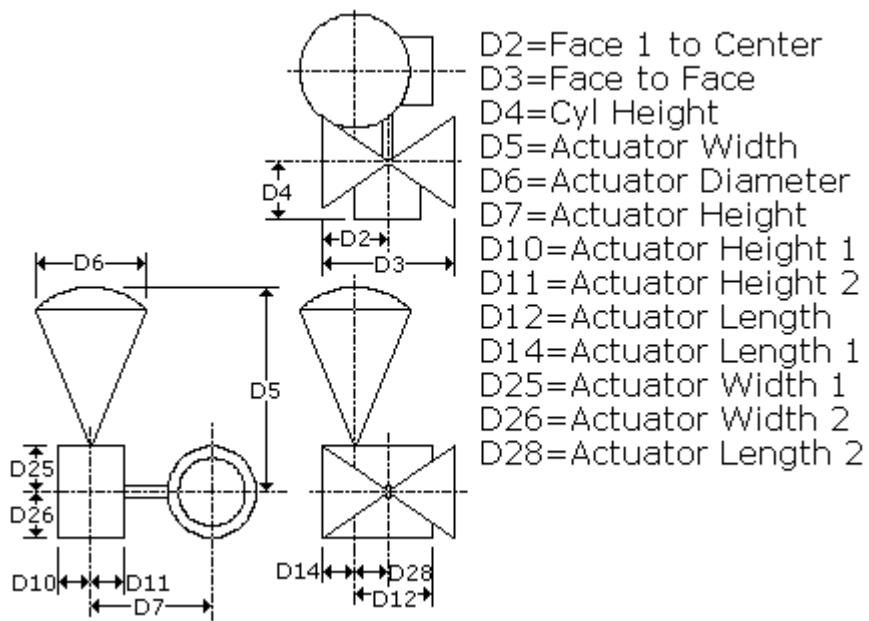
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRoDActPosD1Valve

**Description:** Rotary Diaphragm Actuator Valve Position D1

**Symbol Name:** SP3DRoDActPosD1Valve.CRDAPosD1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoDActPosD1Valve.CRDAPosD1Val

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "CylHeight" Description = "Cyl Height"**

**Input = "ActuatorWidth" Description = "Actuator Width"**

**Input = "ActuatorDiameter" Description = "Actuator Diameter"**

**Input = "ActuatorHeight" Description = "Actuator Height"**

**Input = "ActuatorHeight1" Description = "Actuator Height1"**

**Input = "ActuatorHeight2" Description = "Actuator Height2"**

**Input = "ActuatorLength" Description = "Actuator Length"**

**Input = "ActuatorLength1" Description = "Actuator Length1"**

**Input = "ActuatorWidth1" Description = "Actuator Width1"**

**Input = "ActuatorWidth2" Description = "Actuator Width2"**

**Input = "ActuatorLength2" Description = "Actuator Length2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "HandwheelAngle" Description = "Rotation of operator"**

**Outputs = 9**

**Output = "ConvergingCone" Description = "ConvergingCone"**

**Output = "DivergingCone" Description = "DivergingCone"**

**Output = "ValCylinder" Description = "ValCylinder"**

**Output = "Stem" Description = "Stem"**

**Output = "ActuatorBox" Description = "ActuatorBox"**

**Output = "ActuatorCone" Description = "ActuatorCone"**

**Output = "InsulationBody" Description = "InsulationBody"**

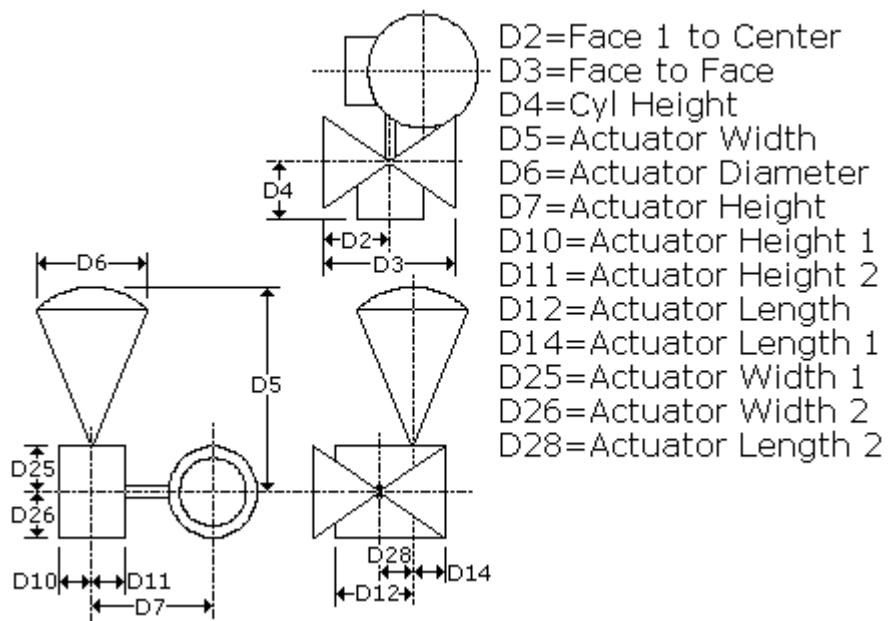
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoPisActPosA1Valve

**Description:** Valve with Rotary Piston Actuator

**Symbol Name:** SP3DRoPisActPosA1Valve.CRPAPosA1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoPisActPosA1Valve.CRPAPosA1Val

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1toCenter(D2)"**  
**Input = "FacetoFace" Description = "FacetoFace(D3)"**  
**Input = "CylHeight" Description = "CylHeight(D4)"**  
**Input = "ActuatorWidth" Description = "ActuatorWidth(D5)"**  
**Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"**  
**Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"**  
**Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"**  
**Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"**  
**Input = "ActuatorLength" Description = "ActuatorLength(D12)"**  
**Input = "ActuatorLength1" Description = "ActuatorLength1(D14)"**  
**Input = "ActuatorWidth1" Description = "ActuatorWidth1(D25)"**  
**Input = "ActuatorWidth2" Description = "ActuatorWidth2(D26)"**  
**Input = "ActuatorLength2" Description = "ActuatorLength2(D28)"**  
**Input = "InsulationThickness" Description = "InsulationThickness"**  
**Input = "HandwheelAngle" Description = "HandwheelAngle"**

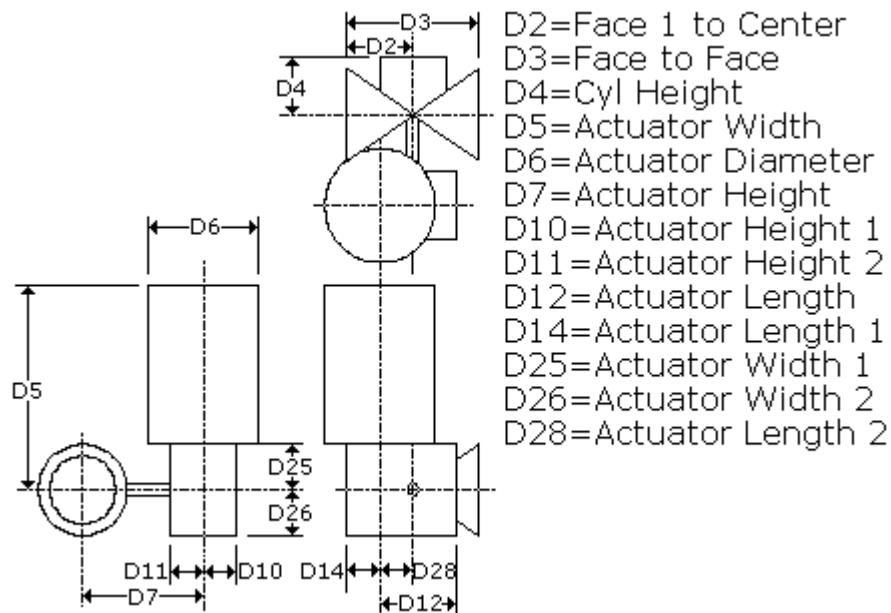
**Outputs = 9**

**Output = "BodyCone1" Description = "Conical Valve Body 1"**  
**Output = "BodyCone2" Description = "Conical Valve Body 2 "**  
**Output = "StemRod" Description = "Stem Body "**  
**Output = "ValveCylinder" Description = "Valve Cylindrical Body"**  
**Output = "ActuatorRect" Description = "Actuator Rectangular box "**  
**Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"**  
**Output = "InsulationBody" Description = "Insulation Body"**  
**Output = "PNoz1" Description = "Nozzle 1"**  
**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoPisActPosA4Valve

**Description:** Valve with Rotary Piston Actuator

**Symbol Name:** SP3DRoPisActPosA4Valve.CRPAPosA4Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoPisActPosA4Valve.CRPAPosA4Val

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1toCenter(D2)"**

**Input = "FacetoFace" Description = "FacetoFace(D3)"**

**Input = "CylHeight" Description = "CylHeight(D4)"**

**Input = "ActuatorLength" Description = "ActuatorLength(D5)"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"**

**Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"**

**Input = "ActuatorWidth" Description = "ActuatorWidth(D12)"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1(D14)"**

**Input = "ActuatorLength1" Description = "ActuatorLength1(D25)"**

**Input = "ActuatorLength2" Description = "ActuatorLength2(D26)"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2(D28)"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 9**

**Output = "ValveCone1" Description = "Conical Valve Body 1"**

**Output = "ValveCone2" Description = "Conical Valve Body 2 "**

**Output = "StemRod" Description = "Stem Body "**

**Output = "ValveCylinder" Description = "Valve Cylindrical Body"**

**Output = "ActuatorRect" Description = "Actuator Rectangular box "**

**Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"**

**Output = "InsulationBody" Description = "Insulation Body"**

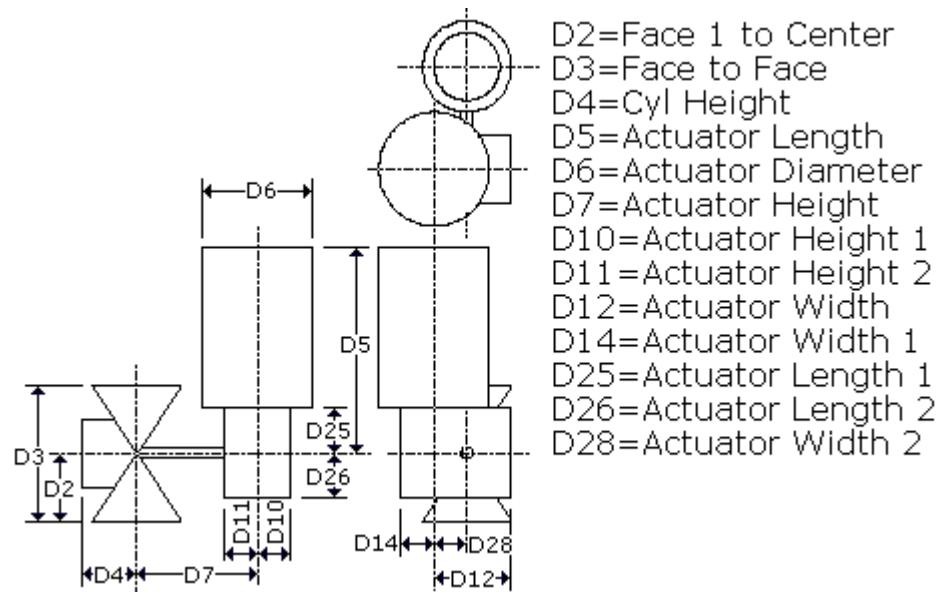
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoPisActPosB1Valve

**Description:** Valve with Rotary Piston Actuator

**Symbol Name:** SP3DRoPisActPosB1Valve.CRPAPosB1Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoPisActPosB1Valve.CRPAPosB1Val

**Inputs = 15**

**Input = "Face1toCenter" Description = "Face1toCenter(D2)"**

**Input = "FacetoFace" Description = "FacetoFace(D3)"**

**Input = "CylHeight" Description = "CylHeight(D4)"**

**Input = "ActuatorWidth" Description = "ActuatorWidth(D5)"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"**

**Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"**

**Input = "ActuatorLength" Description = "ActuatorLength(D12)"**

**Input = "ActuatorLength1" Description = "ActuatorLength1(D14)"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1(D25)"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2(D26)"**

**Input = "ActuatorLength2" Description = "ActuatorLength2(D28)"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Input = "HandwheelAngle" Description = "HandwheelAngle"**

**Outputs = 9**

**Output = "BodyCone1" Description = "Conical Valve Body 1"**

**Output = "BodyCone2" Description = "Conical Valve Body 2 "**

**Output = "StemRod" Description = "Stem Body "**

**Output = "ValveCylinder" Description = "Valve Cylindrical Body"**

**Output = "ActuatorRect" Description = "Actuator Rectangular box "**

**Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"**

**Output = "InsulationBody" Description = "Insulation Body"**

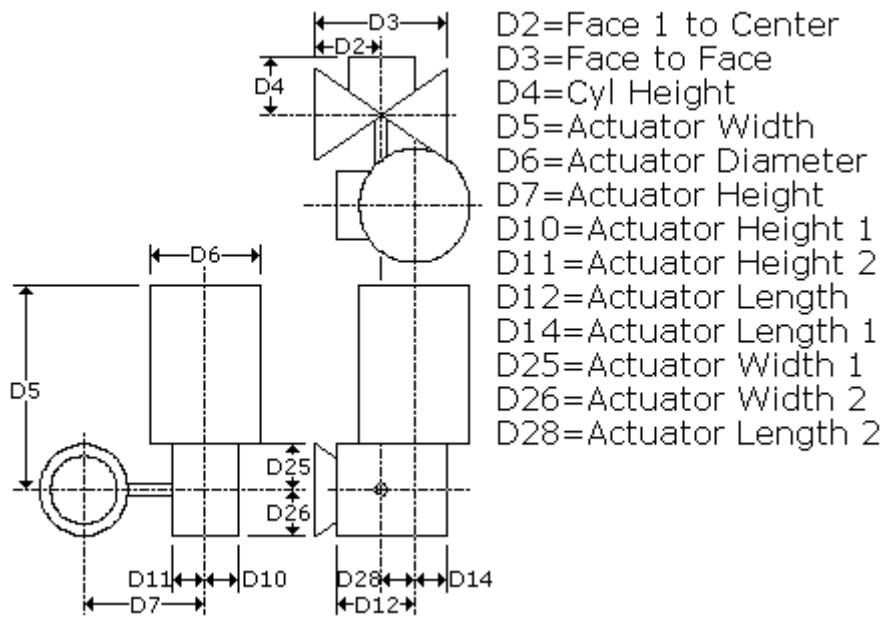
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRoPisActPosB4Valve

**Description:** Valve with Rotary Piston Actuator

**Symbol Name:** SP3DRoPisActPosB4Valve.CRPAPosB4Val

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRoPisActPosB4Valve.CRPAPosB4Val

**Inputs = 14**

**Input = "Face1toCenter" Description = "Face1toCenter(D2)"**

**Input = "FacetoFace" Description = "FacetoFace(D3)"**

**Input = "CylHeight" Description = "CylHeight(D4)"**

**Input = "ActuatorLength" Description = "ActuatorLength(D5)"**

**Input = "ActuatorDiameter" Description = "ActuatorDiameter(D6)"**

**Input = "ActuatorHeight" Description = "ActuatorHeight(D7)"**

**Input = "ActuatorHeight1" Description = "ActuatorHeight1(D10)"**

**Input = "ActuatorHeight2" Description = "ActuatorHeight2(D11)"**

**Input = "ActuatorWidth" Description = "ActuatorWidth(D12)"**

**Input = "ActuatorWidth1" Description = "ActuatorWidth1(D14)"**

**Input = "ActuatorLength1" Description = "ActuatorLength1(D25)"**

**Input = "ActuatorLength2" Description = "ActuatorLength2(D26)"**

**Input = "ActuatorWidth2" Description = "ActuatorWidth2(D28)"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 9**

**Output = "ValveCone1" Description = "Conical Valve Body 1"**

**Output = "ValveCone2" Description = "Conical Valve Body 2 "**

**Output = "StemRod" Description = "Stem Body "**

**Output = "ValveCylinder" Description = "Valve Cylindrical Body"**

**Output = "ActuatorRect" Description = "Actuator Rectangular box "**

**Output = "ActuatorCyl" Description = "Actuator Cylindrical Body"**

**Output = "InsulationBody" Description = "Insulation Body"**

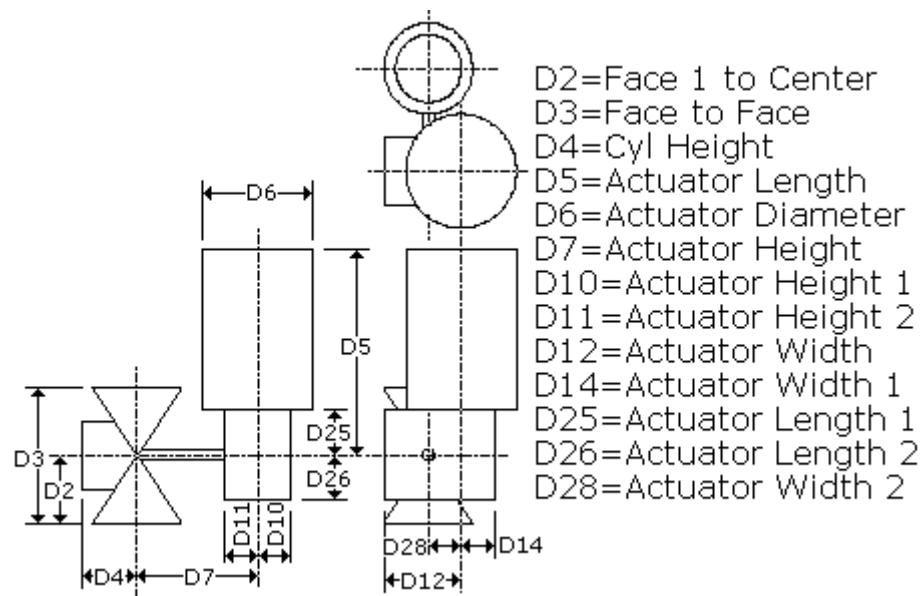
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy1

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy1 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 1

**Symbol Name:** SP3DRotameterTy1.CRotameterTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy1.CRotameterTy1

**Inputs = 10**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter1"**

**Input = "InstrumentDiameter2" Description = "Instrument Diameter2"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "Cyl1" Description = "Cylinder1"**

**Output = "Cyl2" Description = "Cylinder2"**

**Output = "Cyl3" Description = "Cylinder3"**

**Output = "InsulationBody1" Description = "Insulation Body1"**

**Output = "InsulationBody2" Description = "Insulation Body2"**

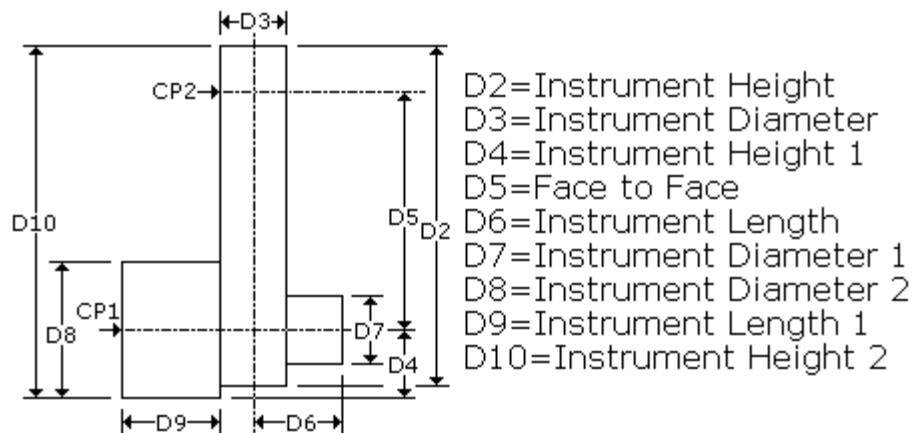
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy2

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy2 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter Type 2

**Symbol Name:** SP3DRotameterTy2.CRotameterTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy2.CRotameterTy2

**Inputs = 8**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "TopCylBody" Description = "Top Cylinder Body"**

**Output = "BottCylBody" Description = "Bottom Cylinder Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

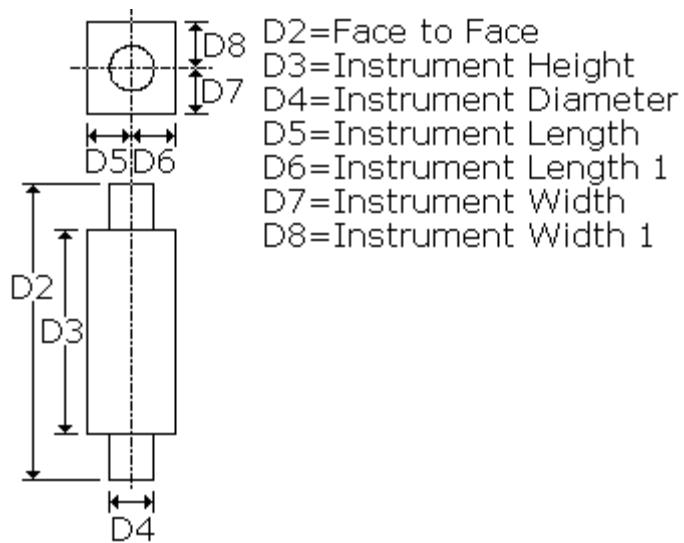
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy3

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy3 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 3

**Symbol Name:** SP3DRotameterTy3.CRotameterTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy3.CRotameterTy3

**Inputs = 11**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "PortRotation1" Description = "Port Rotation for Top Nozzle"**

**Input = "PortRotation2" Description = "Port Rotation for Bottom Nozzle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

**Output = "TopCylBody" Description = "Top Cylinder Body"**

**Output = "BottCylBody" Description = "Bottom Cylinder Body"**

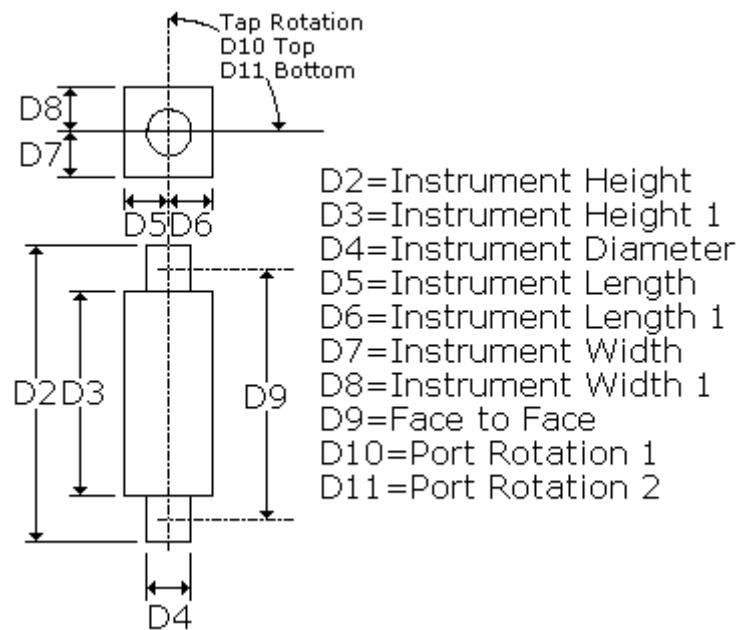
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy4

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy4 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 4

**Symbol Name:** SP3DRotameterTy4.CRotameterTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy4.CRotameterTy4

**Inputs = 12**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "PortRotation1" Description = "Port Rotation for Top Nozzle"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "PortRotation2" Description = "Port Rotation for Bottom Nozzle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

**Output = "TopCylBody" Description = "Top Cylinder Body"**

**Output = "BottCylBody" Description = "Bottom Cylinder Body"**

**Output = "Nozz1BodyIns" Description = "Nozzle1 Body Insulation"**

**Output = "Nozz2BodyIns" Description = "Nozzle2 Body Insulation"**

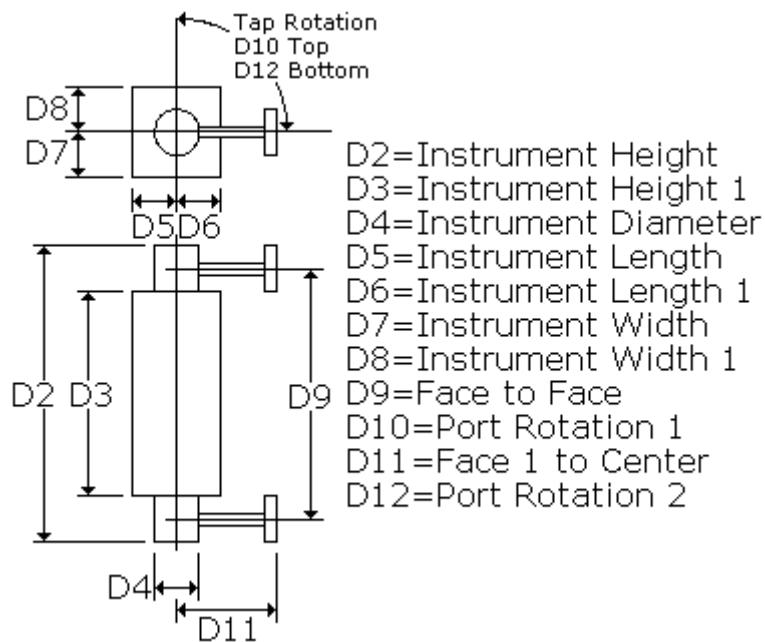
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy5

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy5 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 5

**Symbol Name:** SP3DRotameterTy5.CRotameterTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy5.CRotameterTy5

**Inputs = 10**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height 2"**

**Input = "InstrumentHeight3" Description = "Instrument Height 3"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "RotaMtrVerCylin" Description = "Rotameter Vertical Cylinder"**

**Output = "RotaMtrHorBox" Description = "RotaMeter Horizontal Cylinder 1"**

**Output = "HoriBoxIns" Description = "Insulation Body in Hori Direction"**

**Output = "VerCylinIns" Description = "Insulation Body in Vert Direction"**

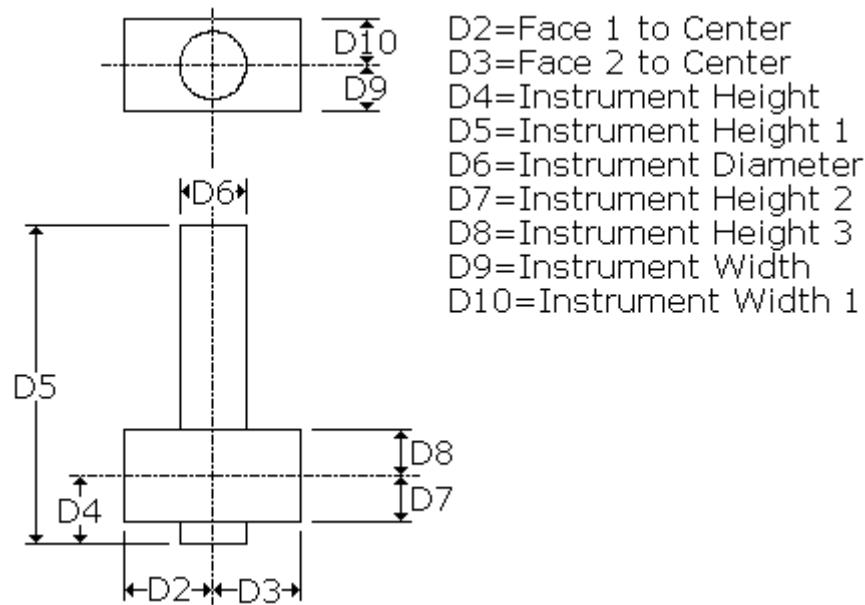
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRotameterTy6Tr

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy6Tr if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 6

**Symbol Name:** SP3DRotameterTy6Tr.CRotameterTy6Tr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy6Tr.CRotameterTy6Tr

**Inputs = 9**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentWidth" Description = "Transmitter Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "TransmitterBody" Description = "Transmitter Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

**Output = "TransmitterBodyIns" Description = "Transmitter Body Insulation"**

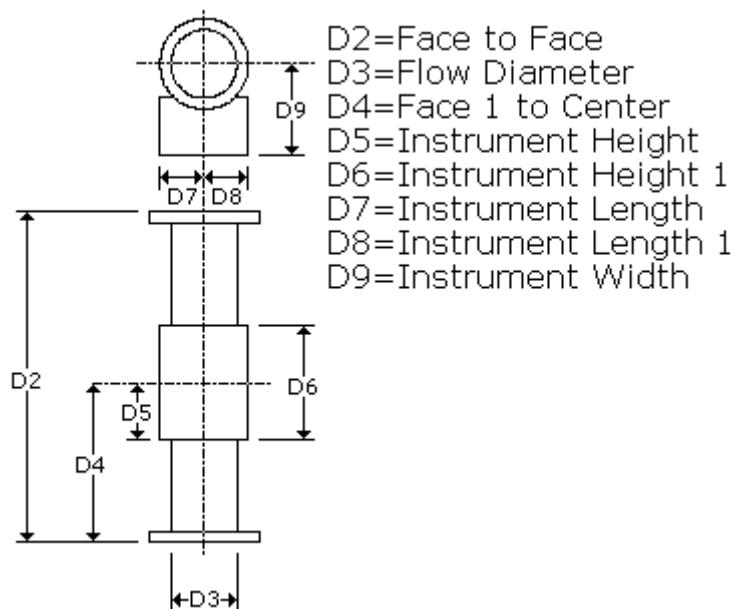
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRotameterTy7FS

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy7FS if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 7

**Symbol Name:** SP3DRotameterTy7FS.CRotameterTy7FS

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy7FS.CRotameterTy7FS

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diamter"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "FlowSwitchBody" Description = "Flow Switch Body"**

**Output = "RotameterBodyIns" Description = "Rotameter Body Insulation"**

**Output = "FlowSwitchBodyIns" Description = "Flow Switch Body Insulation"**

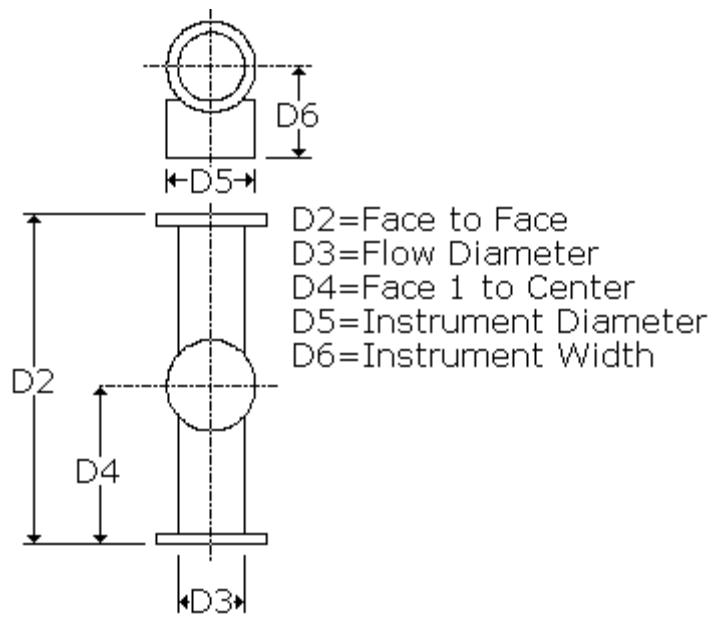
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DRotameterTy8TrFs

**Description:** Rotameter type 7

**Symbol Name:** SP3DRotameterTy8TrFs.CRotameterTy8TrFs

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy8TrFs.CRotameterTy8TrFs

**Inputs = 12**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentHeight2" Description = "Instrument Height2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsVerBody" Description = "Insulation for Vertical Body"**

**Output = "InsSwitch" Description = "Insulation for Switch"**

**Output = "InsTransmitterBox" Description = "Insulation for Transmitter Box"**

**Output = "RotaMtrVerBody" Description = "Rotameter Vertical Body"**

**Output = "RotaMtrSwitch" Description = "RotaMeter Switch"**

**Output = "RotaMtrTrBox" Description = "RotaMeter Transmitter Box"**

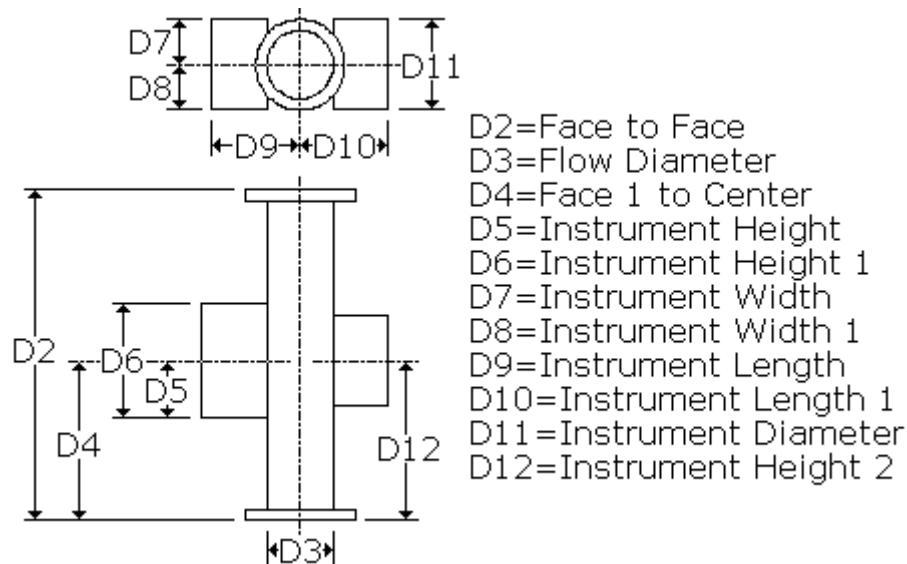
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRotameterTy9

You cannot resize this part symbol during or after placement. Use the symbol SP3DCIRotameterTy9 if you want to interactively resize the symbol during or after placement.

**Description:** Rotameter type 9

**Symbol Name:** SP3DRotameterTy9.CRotameterTy9

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRotameterTy9.CRotameterTy9

**Inputs = 7**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight1" Description = "Instrument Height1"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Output = "InsHoriCylinder" Description = "Insulation for Horizontal Cylinder"**

**Output = "RotaMtrVerCylinder" Description = "Rotameter Vertical Cylinder"**

**Output = "RotaMtrHorCylinder" Description = "RotaMeter Horizontal Cylinder"**

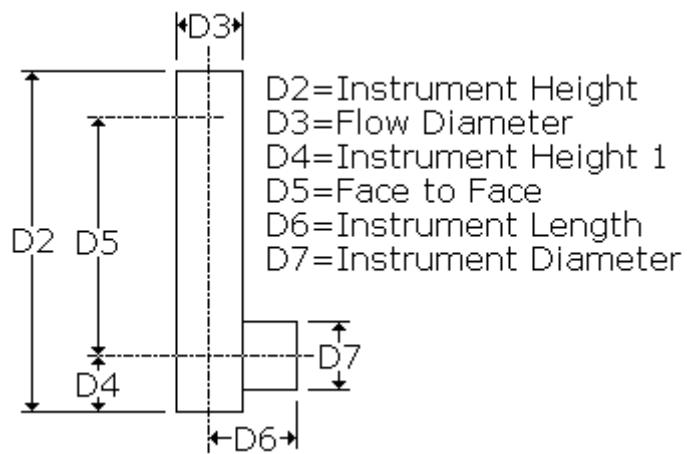
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DRPad

**Description:** Reinforcing Pad

**Symbol Name:** SP3DRPad.CRPad

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** ReinforcingPad

**User Class Name:** Reinforcing Pad

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRPad.CRPad

Number of Inputs = 4

Input name = "RPadWidth"

Input description = " Width from Branch"

Input name = "RPadThickness"

Input description = "Reinforcing Pad Thickness"

Input name = "Angle"

Input description = "Branch Angle"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 4

Output name = "Pad"

Output description = "Reinforcing Pad"

Output name = "InsulatedPad"

Output description = "Insulated Reinforcing Pad"

Output name = "PNoz1"

Output description = "Nozzle 1"

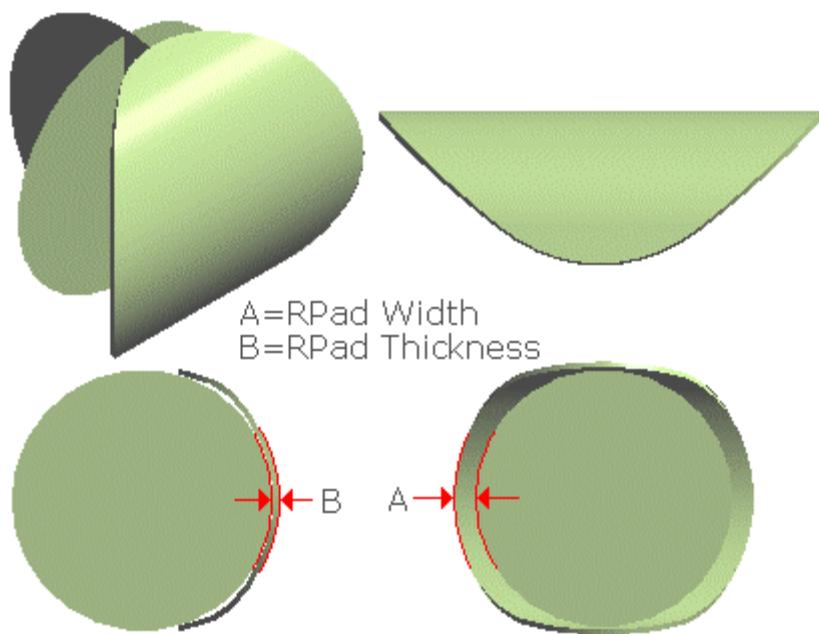
Output name = "PNoz2"

Output description = "Nozzle 2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DRuptureDiscVac1

**Description:**

**Symbol Name:** SP3DRuptureDiscVac1.CRuptureDiscVac1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRuptureDiscVac1.CRuptureDiscVac1

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "ValveDiscHeight" Description = "Valve Disc Height"**

**Outputs = 4**

**Output = "InsulatedCylinder" Description = "Insulation for Cylinder"**

**Output = "OpEnvelope" Description = "Envelop for Operation "**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 3**

**Aspect = SimplePhysical**

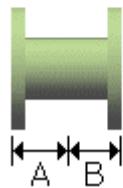
**Aspect = Insulation**

**Aspect = Operation**



A=Face 1 to Center

B=Face 2 to Center



# SP3DRuptureDiscVac2

**Description:**

**Symbol Name:** SP3DRuptureDiscVac2.CRuptureDiscVac2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DRuptureDiscVac2.CRuptureDiscVac2

**Inputs = 5**

**Input = "Face1toCenter" Description = "Face to Center"**

**Input = "Face2toCenter" Description = "Face to Center"**

**Input = "DiscDiameter" Description = "Diameter of Disc"**

**Input = "DiscLength" Description = "Disc Length"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 6**

**Output = "LeftCylinder" Description = "Left Cylinder"**

**Output = "CentralCylin" Description = "Central Cylinder"**

**Output = "RightCylinder" Description = "Right Cylinder"**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

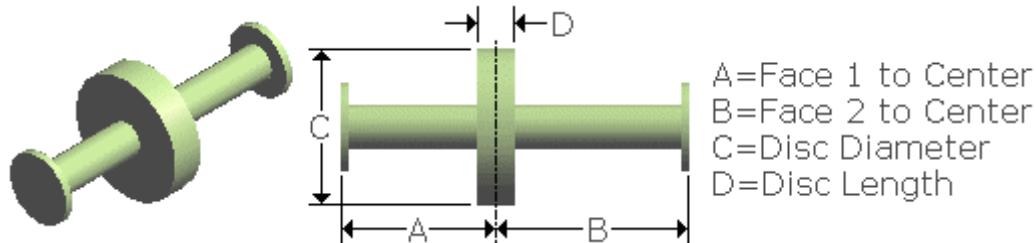
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DS2003

**Description:** valve operator

**Symbol Name:** SP3DS2003.CS2003

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Valve Operator Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DS2003.CS2003

**Inputs = 4**

**Input = "OperatorHeight" Description = "Height of Thinner stem"**

**Input = "OperatorHeight1" Description = "Height of Thicker stem"**

**Input = "OperatorDiameter1" Description = "Dia of Disc"**

**Input = "OperatorDiameter" Description = "Dia of Thicker Stem"**

**Outputs = 3**

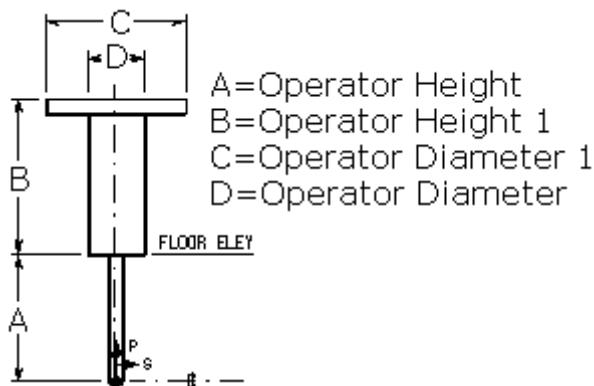
**Output = "ThinStem" Description = "Thinner Stem"**

**Output = "ThickStem" Description = "Thick Stem"**

**Output = "Disc" Description = "Discs on top of Stem"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DS3003

**Description:** valve operator

**Symbol Name:** SP3DS3003.CS3003

**Workbook:**

**Workbook Sheet:**

**User Class Name:** Valve Operator Class

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DS3003.CS3003

**Inputs = 2**

**Input = "OperatorHeight" Description = "Height of Operator"**

**Input = "OperatorDiameter" Description = "Diameter of Operator"**

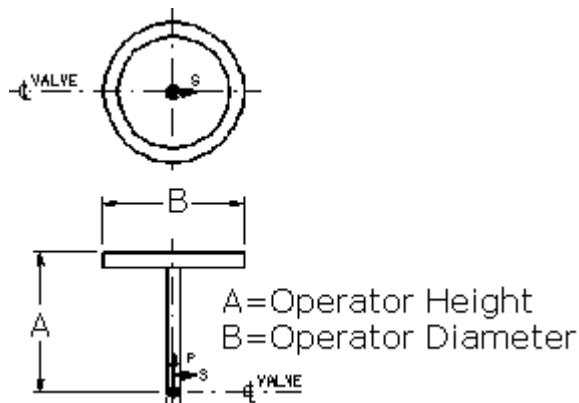
**Outputs = 2**

**Output = "Stem" Description = "Vertical Stem"**

**Output = "Disc" Description = "Horizontal Disc"**

**Aspects = 1**

**Aspect = SimplePhysical**



## SP3DSaddle

**Description:**

**Symbol Name:** SP3DSaddle.CSaddle

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSaddle.CSaddle

**Inputs = 4**

**Input = "FacetoCenter" Description = "face to Center"**

**Input = "SaddleThickness" Description = "Saddle Thickness"**

**Input = "PipeCentertoSaddleEnd" Description = "Pipe Center to Saddle End"**

**Input = "SaddleRadius" Description = "Saddle Radius"**

**Outputs = 4**

**Output = "SaddleCylinder" Description = "SaddleCylinder"**

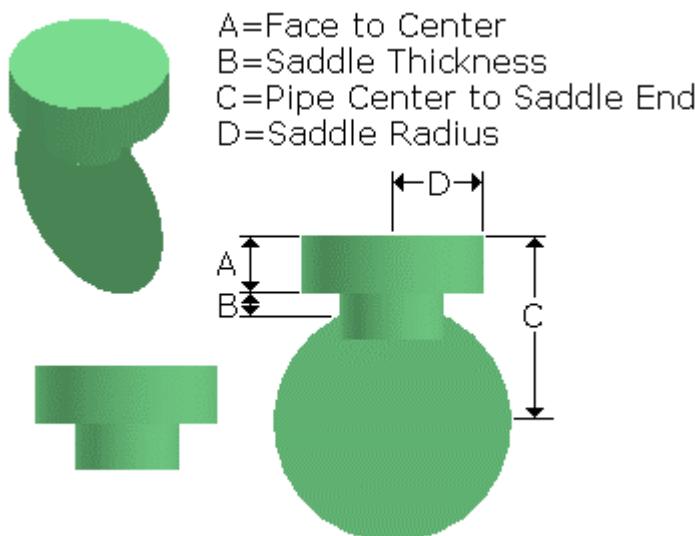
**Output = "SaddleOutlet" Description = "Saddle Outlet"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DShStRotameter

**Description:** short stroke rotameter

**Symbol Name:** SP3DShStRotameter.ShortStrokeRotameter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** ShStRotameter

**User Class Name:** Short-stroke Rotameter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DShStRotameter.ShortStrokeRotameter

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "Offset" Description = "Offset"**

**Outputs = 4**

**Output = "RotameterBody" Description = "Rotameter Body"**

**Output = "InstrumentBody" Description = "Instrument Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**

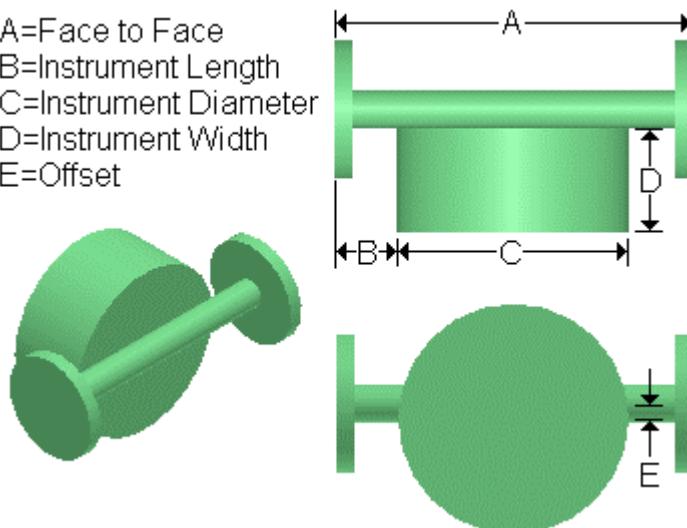
A=Face to Face

B=Instrument Length

C=Instrument Diameter

D=Instrument Width

E=Offset



# SP3DSingleBasketStrainer

**Description:**

**Symbol Name:** SP3DSingleBasketStrainer.SnglBStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSingleBasketStrainer.SnglBStrainer

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "StrainerHeight" 'A' Description = "Strainer Height"**

**Input = "CentertoBottom" 'B' Description = "Strainer Center to Bottom"**

**Input = "CoverDiameter" 'C' Description = "Cover Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 9**

**Output = "Cylinder" Description = "Plate"**

**Output = "Cover" Description = "Cone"**

**Output = "Port1" Description = "Port 1"**

**Output = "Port2" Description = "Port 2"**

**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Output = "InsHorCylinder" Description = "Insulation for Horizontal Cylinder"**

**Output = "InsCover" Description = "Insulation for Cover"**

**Output = "InsPort1" Description = "Insulation for Port 1"**

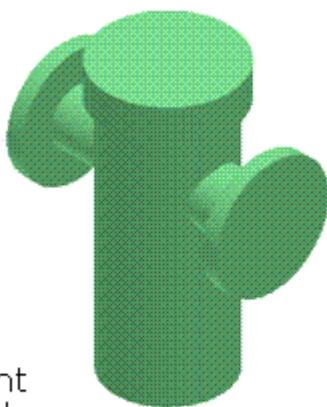
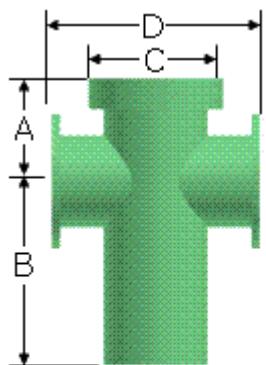
**Output = "InsPort2" Description = "Insulation for Port 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

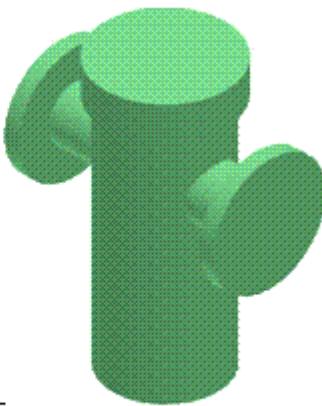
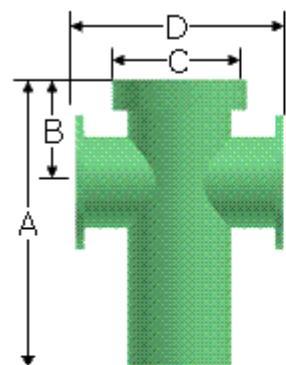
**Aspect = Insulation**

**Part Design Basis 140**



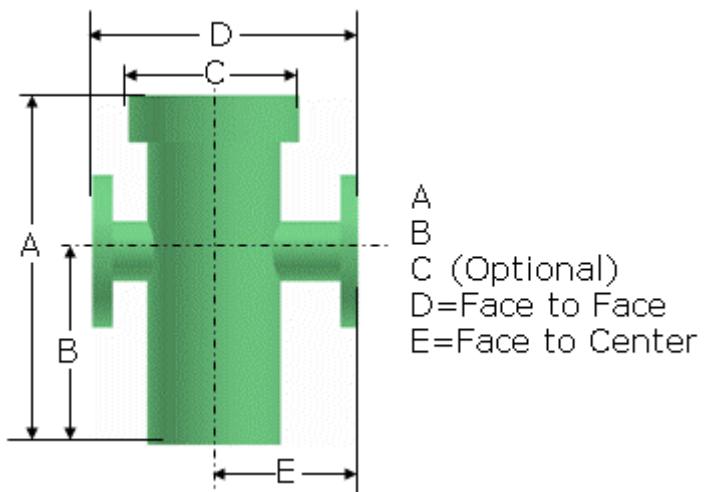
A=Strainer Height  
B=Center to Bottom  
C=Cover Diameter (optional)  
D=Face to Face

**Part Design Basis 145**



A=Strainer Height  
B=Center to Bottom  
C=Cover Diameter (optional)  
D=Face to Face

**Part Design Basis 147**



# SP3DSlideValve

**Description:** based on PDS symbol V33

**Symbol Name:** SP3DSlideValve.CSlideValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSlideValve.CSlideValve

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "BranchLength" Description = "Branch Length"**

**Input = "ProjectionHeight" Description = "Projection Height"**

**Input = "ProjectionLength" Description = "Projection Length"**

**Input = "ProjectionWidth" Description = "Projection Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "ProjectionBox" Description = "Projection Box"**

**Output = "BranchInsulation" Description = "Branch Insulation"**

**Output = "BoxInsulation" Description = "BoxInsulation"**

**Output = "BodyInsulation" Description = "Body Insulation"**

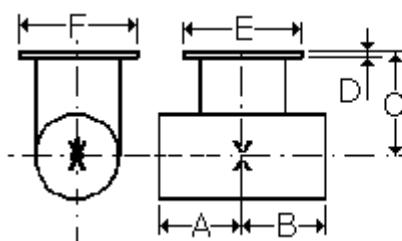
**Output = "PNoz1" Description = "Nozzle 1 with Length"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

C=Branch Length

D=Projection Height

E=Projection Length

F=Projection Width

# SP3DSlipOnFlange

**Description:** slip on flange

**Symbol Name:** SP3DSlipOnFlange.CSlipOnFlange

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** LapJointFlange, LapJointFlangeWithStubEnd, PlateFlange, SlipOnReducingFlange

**User Class Name:** Slip-on Reducing Flange

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSlipOnFlange.CSlipOnFlange

Number of Inputs = 1

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 5

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "PNoz1"

Output description = "Nozzle 1"

Output name = "PNoz2"

Output description = "Nozzle 2"

Output name = "CylinderPort1"

Output description = "Cylinder of Port1"

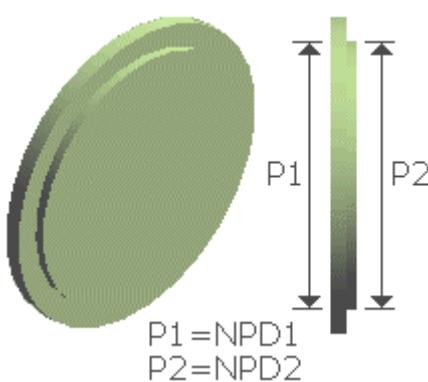
Output name = "CylinderPort2"

Output description = "Cylinder of Port2"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



# SP3DSolenoidActuator

**Description:**

**Symbol Name:** SP3DSolenoidActuator.SolenoidActuator

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSolenoidActuator.SolenoidActuator

**Inputs = 2**

**Input and description** = "OperatorHeight", "Operator Height",

**Input and description** = "OperatorDiameter", "Operator Diameter",

**Outputs = 6**

**Output and description** = "SolenoidCylinder", "Solenoid-cylinder"

**Output and description** = "PistonCylinder", "Piston-cylinder"

**Output and description** = "Stem", "Stem"

**Output and description** = "CableCylinder", "Cable Cylinder"

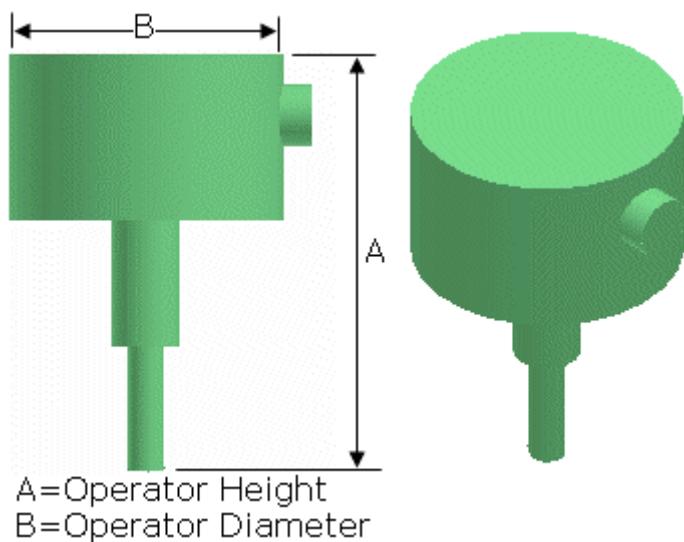
**Output and description** = "MaintCylinder", "Maintenance Cylinder"

**Output and description** = "MaintCone", "Maintenance Cone"

**Aspects = 2**

**Aspect** = "SimplePhysical", "SimplePhysical"

**Aspect** = "Maintenance", "Maintenance"



## SP3DSpacer

**Description:** spacer

**Symbol Name:** SP3DSpacer.CSpacer

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** BlankDisc

**User Class Name:** Blank Disc

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSpacer.CSpacer

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "SpacerBody" Description = "Spacer Body"**

**Output = "SpacerIns" Description = "Spacer Insulation"**

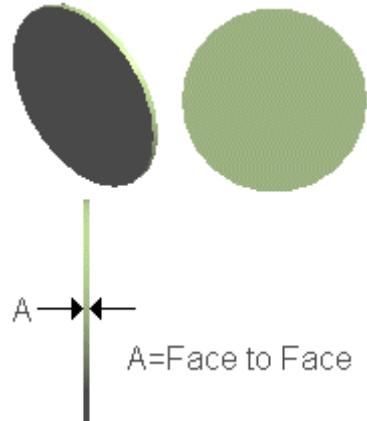
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DSpectacleBlind

**Description:** Spectacle Blind

**Symbol Name:** SP3DSpectacleBlind.SpectacleBlind

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** SpectacleBlind

**User Class Name:** Spectacle Blind

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSpectacleBlind.SpectacleBlind

**Inputs = 4**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Fig8InterAxis" Description = "Distance Bet Spectacle Discs"**

**Input = "SpectaclePosition" Description = "Spectacle Position either 1 for open 2 for close"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InlineSpect" Description = "In line Spectacle"**

**Output = "InterSpectCyl" Description = "Cylinder bet Discs"**

**Output = "Disc" Description = "Spectacle Disc"**

**Output = "InsulatedBody" Description = "Insulated Body"**

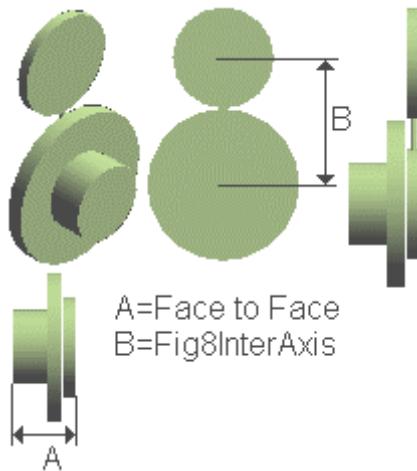
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DSteamTrapTy4

**Description:** steam trap

**Symbol Name:** SP3DSteamTrapTy4.SteamTrapTy4

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSteamTrapTy4.SteamTrapTy4

**Inputs = 6**

**Input and description** = "TrapBodyDiameter", "Trap Body Diameter (A)", 0

**Input and description** = "STHeight", "Steam Trap Height (B)",

**Input and description** = "Face1toCenter", "Face 1 to Center (D)", 0

**Input and description** = "Face2toCenter", "Face 2 to Center (C)", 0

**Input and description** = "TrapLength1", "Steam Trap Length 1 (H)", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 10**

**Output and description** = "VertCylinIns", "Vertical Cylinder Insulation"

**Output and description** = "DomeIns", "Dome Insulation"

**Output and description** = "PipeinNoz1Ins", "Pipe portion in Nozzle 1 Insulation"

**Output and description** = "Noz1Ins", "Nozzle 1 Insulation"

**Output and description** = "PipeinNoz2Ins", "Pipe portion in Nozzle 2 Insulation"

**Output and description** = "Noz2Ins", "Nozzle 2 Insulation"

**Output and description** = "VerticalCylin", "Vertical Cylinder"

**Output and description** = "Dome", "Dome"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "Insulation"

Preview  
not  
available

# SP3DSteamTrapTy5

**Description:** steam trap

**Symbol Name:** SP3DSteamTrapTy5.SteamTrapTy5

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSteamTrapTy5.SteamTrapTy5

**Inputs = 8**

**Input and description** = "PipingSpecialtyHeight", "Piping Specialty Height", 0

**Input and description** = "PipingSpecialtyLength", "Piping Specialty Length", 0

**Input and description** = "NozzleOffset", "Nozzle Offset", 0.

**Input and description** = "PipingSpecialtyWidth", "Piping Specialty Width", 0

**Input and description** = "NozzleOffset1", "Nozzle Offset 1", 0.

**Input and description** = "Nozzle1toNozzle2", "Nozzle 1 to Nozzle 2", 0.

**Input and description** = "NozzleOffset2", "Nozzle Offset 2", 0.

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 8**

**Output and description** = "InsTrapBody", "Ins Trap Body"

**Output and description** = "InsPort1", "Insulation for Port 1"

**Output and description** = "InsBody1", "Insulation for Body of Port 1"

**Output and description** = "InsPort2", "Insulation for Port 2"

**Output and description** = "InsBody2", "Insulation for Body of Port 2"

**Output and description** = "TrapBody", "Trap Body"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "Insulation"

Preview  
not  
available

# SP3DSteamTrapTy6

**Description:** steam trap

**Symbol Name:** SP3DSteamTrapTy6.SteamTrapTy6

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSteamTrapTy6.SteamTrapTy6

**Inputs = 6**

**Input and description** = "FacetoFace", "Face to Face", 0

**Input and description** = "PipingSpecialtyLength", "Piping Specialty Length", 0

**Input and description** = "TrapLength1", "Trap Length", 0

**Input and description** = "PipingSpecialtyHeight", "Piping Specialty Height", 0

**Input and description** = "PipingSpecialtyWidth", "Piping Specialty Width", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 9**

**Output and description** = "InsTrapBody", "Insulation for Trap Body"

**Output and description** = "InsConnectorBody", "Insulation for Connector Body"

**Output and description** = "InsPort1", "Insulation Port1 Side"

**Output and description** = "InsBody", "Insulation for pipe body"

**Output and description** = "InsPort2", "Insulation Port2 Side"

**Output and description** = "Body", "Body of Trap"

**Output and description** = "Connector", "Connector from ports to Trap"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "Insulation"

Preview  
not  
available

# SP3DSteamTrapTy7

**Description:** steam trap

**Symbol Name:** SP3DSteamTrapTy7.SteamTrapTy7

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSteamTrapTy7.SteamTrapTy7

**Inputs = 4**

**Input and description** = "FacetoFace", "Face to Face", 0

**Input and description** = "TrapDiameter", "Trap Diameter", 0

**Input and description** = "PipingSpecialtyHeight", "Piping Specialty Height", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 9**

**Output and description** = "InsTrapBody", "Insulation for Trap Body"

**Output and description** = "InsConnectorBody", "Insulation for Connector Body"

**Output and description** = "InsPort1", "Insulation Port1 Side"

**Output and description** = "InsBody", "Insulation for pipe body"

**Output and description** = "InsPort2", "Insulation Port2 Side"

**Output and description** = "Body", "Body of Trap"

**Output and description** = "Connector", "Connector from ports to Trap"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 2**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "ReferenceGeometry"

Preview  
not  
available

# SP3DSteamTrapTy8

**Description:** steam trap

**Symbol Name:** SP3DSteamTrapTy8.SteamTrapTy8

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSteamTrapTy8.SteamTrapTy8

**Inputs = 8**

**Input and description** = "TrapLength1", "Trap Length 1", 0

**Input and description** = "FacetoFace", "Face to Face",

**Input and description** = "BodyWidth", "Body Width", 0

**Input and description** = "TrapHeightToTopCen", "Trap Height Top to Center", 0

**Input and description** = "WithdrawalDistance", "Withdrawal Distance", 0

**Input and description** = "TrapHeightBottomCen", "Trap Height Bottom Center", 0

**Input and description** = "WithdrawalDistance1", "Withdrawal Distance 1", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 14**

**Output and description** = "InsUpTrBody", "Insulation for Upper Trap Body"

**Output and description** = "InsTrapBody", "Insulation for Trap Body"

**Output and description** = "InsLowTrBody", "Insulation for Lower Trap Body"

**Output and description** = "InsPort1", "Insulation for Port1"

**Output and description** = "InsBody1", "Insulation for Body Port1 side"

**Output and description** = "InsPort2", "Insulation for Port2"

**Output and description** = "InsBody2", "Insulation for Body Port2 side"

**Output and description** = "MaintUpperTrapBody", "Maintenance of Upper Trap Body"

**Output and description** = "MaintLowerTrapBody", "Maintenance of Lower Trap Body"

**Output and description** = "UpperTrapBody", "Upper Trap Body"

**Output and description** = "TrapBody", "Trap Body"

**Output and description** = "LowerTrapBody", "Lower Trap Body"

**Output and description** = "PNoz1", "Nozzle 1"

**Output and description** = "PNoz2", "Nozzle 2"

**Aspects = 3**

**Aspect** = "Physical", "PipingAspect Description"

**Aspect** = "Insulation", "Insulation"

**Aspect** = "Maintenance", "Maintenance"

Preview  
not  
available

# SP3DStopCheckValve

**Description:** check valve

**Symbol Name:** SP3DStopCheckValve.CStopCheckValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** StopCheckValve

**User Class Name:** Stop Check Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DStopCheckValve.CStopCheckValve

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Outputs = 8**

**Output = "InsulCylinder" Description = "Insulation Cylinder"**

**Output = "Ellipsoid" Description = "Ellipsoid"**

**Output = "BodyCone1" Description = "Cone - Port1 Side"**

**Output = "BodyCone2" Description = "Cone - Port2 Side"**

**Output = "Arrow1" Description = "Arrow - Front Side"**

**Output = "Arrow2" Description = "Arrow - Rear Side"**

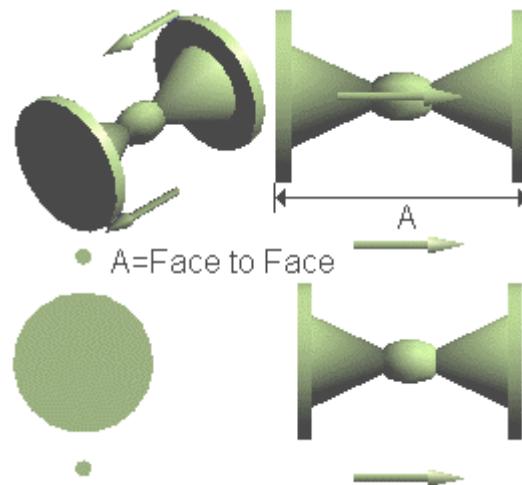
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DSumpStrainer

**Description:**

**Symbol Name:** SP3DSumpStrainer.SumpStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSumpStrainer.SumpStrainer

**Inputs = 2**

**Input = "FacetoEnd" Description = "Face to Face"**

**Input = "Diameter" Description = "Diameter"**

**Outputs = 3**

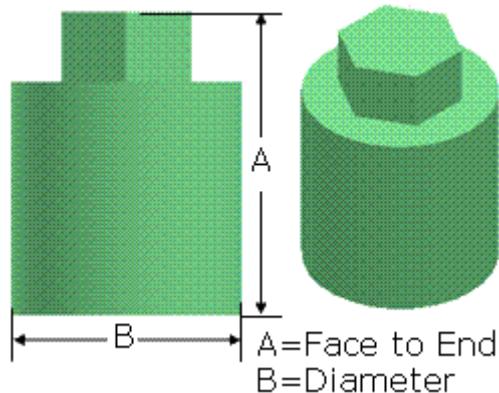
**Output = "Cylinder" Description = "Cylinder for Sump Strainer Body"**

**Output = "Nut" Description = "Nut"**

**Output = "Port1" Description = "Port 1"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DSweeplet

**Description:**

**Symbol Name:** SP3DSweeplet.CSweeplet

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSweeplet.CSweeplet

**Inputs = 3**

**Input = "FacetoHeaderCenter" Description = "FacetoHeaderCenter J"**

**Input = "SweepletWidth" Description = "SweepletWidth M"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 5**

**Output = "SweepletBase" Description = "Sweeplet Base"**

**Output = "SweepletBaseIns" Description = "Sweeplet Base Ins"**

**Output = "SweepletOutletIns" Description = "Sweeplet Outlet Ins"**

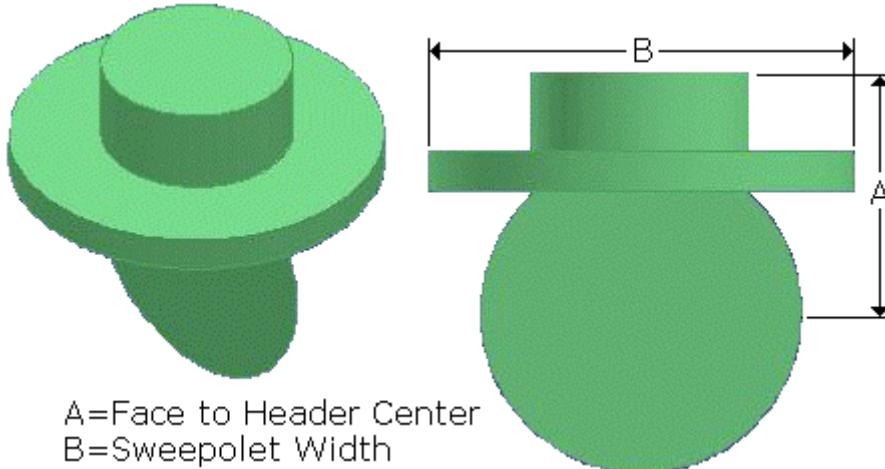
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2 with Length"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DSwivelJointClamp

**Description:** swivel joint clamp

**Symbol Name:** SP3DSwivelJointClamp.SwivelJointClamp

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DSwivelJointClamp.SwivelJointClamp

**Inputs = 3**

**Input and description =** "ClampDiameter", "Clamp Inner Diameter", 0

**Input and description =** "ClampWidth", "Clamp Width", 0

**Input and description =** "InsulationThickness", "Insulation Thickness", 0

**Outputs = 5**

**Output and description =** "ClampBodyIns", "Clamp Body Ins"

**Output and description =** "ClampBody", "Clamp Body"

**Output and description =** "WingNutEar", "Wing nut ear"

**Output and description =** "WingNutBase", "Wing nut base"

**Output and description =** "WingNut", "Wing nut"

**Aspects = 2**

**Aspect =** "SimplePhysical", "Physical"

**Aspect =** "Insulation", "Insulation"

Preview  
not  
available

# SP3DTankDrainValve

**Description:** Tank Drain Valve

**Symbol Name:** SP3DTankDrainValve.CTankDrainValve

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Tank Drain Valve

**User Class Name:** Tank Drain Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTankDrainValve.CTankDrainValve

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation thickness"**

**Input = "HandwheelAngle" Description = "Rotation of Operator"**

**Outputs = 7**

**Output = "BodyCone1" Description = "Cone Port1 of Body"**

**Output = "BodyCone2" Description = "Cone Port2 of Body"**

**Output = "InsulatedCylinder1" Description = "Insulation for Cylinder1"**

**Output = "InsulatedCylinder2" Description = "Insulation for Cylinder2"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "ValveOperator" Description = "Valve Operator"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**

Preview  
not  
available

# SP3DTaperSpacer1Side

**Description:** Tapered spacer, one sided

**Symbol Name:** SP3DTaperSpacer1Side.CTaperSpacer1Side

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTaperSpacer1Side.CTaperSpacer1Side

**Inputs = 2**

**Input = "SpacerThickness" Description = "Spacer Thickness"**

**Input = "Angle" Description = "Angle from positive X"**

**Outputs = 3**

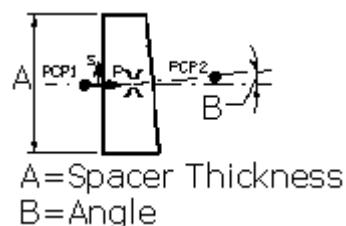
**Output = "BodySpacer" Description = "Body of Spacer"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DTaperSpacer2Side

**Description:** Tapered spacer, two sided

**Symbol Name:** SP3DTaperSpacer2Side.CTaperSpacer2Side

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTaperSpacer2Side.CTaperSpacer2Side

**Inputs = 2**

**Input = "SpacerThickness" Description = "Spacer Thickness"**

**Input = "Angle" Description = "Inclination from positive X"**

**Outputs = 3**

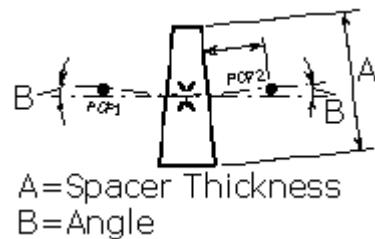
**Output = "BodySpacer" Description = "Body Spacer"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 1**

**Aspect = SimplePhysical**



# SP3DTechlokClamp

**Description:** techlok clamp

**Symbol Name:** SP3DTechlokClamp.TechlokClamp

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** TechlokClamp

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTechlokClamp.TechlokClamp

**Inputs = 11**

**Input and description** = "ClampInnerDiameter", "Clamp Inner Diameter", 0

**Input and description** = "BoltCenterDistance", "Bolt Center Distance", 0

**Input and description** = "ClampOuterDiameter", "Clamp Outer Diameter", 0

**Input and description** = "ClampLength", "Clamp Length", 0

**Input and description** = "ClampWidth", "Clamp Width", 0

**Input and description** = "LugSeparation", "Lug Separation", 0

**Input and description** = "BoltDiameter", "Bolt Diameter", 0

**Input and description** = "BoltLength", "Bolt Length", 0

**Input and description** = "BoltLugWidth", "Bolt Lug Width", 0

**Input and description** = "BoltPitch", "Bolt Pitch", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 19**

**Output and description** = "ClampBodyIns", "Clamp Body Ins"

**Output and description** = "ClampBodyFront", "Clamp Body Upper"

**Output and description** = "ClampBodyRear", "Clamp Body Lower"

**Output and description** = "SupFrontTop", "Front Top Support"

**Output and description** = "SupFrontBottom", "Front Bottom Support"

**Output and description** = "SupRearTop", "Rear Top Support"

**Output and description** = "SupRearBottom", "Lower Sup Right"

**Output and description** = "LeftTopBolt", "Left Top Bolt"

**Output and description** = "LeftBottomBolt", "Left Bottom Bolt"

**Output and description** = "RightTopBolt", "Right Top Bolt"

**Output and description** = "RightBottomBolt", "Right Bottom Bolt"

**Output and description** = "LeftFrontTopNut", "Left Front Top Nut"

**Output and description** = "LeftRearTopNut", "Left Rear Top Nut"

**Output and description** = "RightFrontTopNut", "Right Front Top Nut"

**Output and description** = "RightRearTopNut", "Right Rear Top Nut"

**Output and description** = "LeftFrontBottomNut", "Left Front Bottom Nut"

**Output and description** = "LeftRearBottomNut", "Left Rear Bottom Nut"

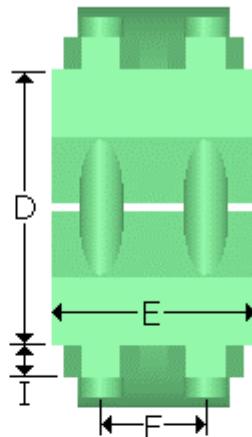
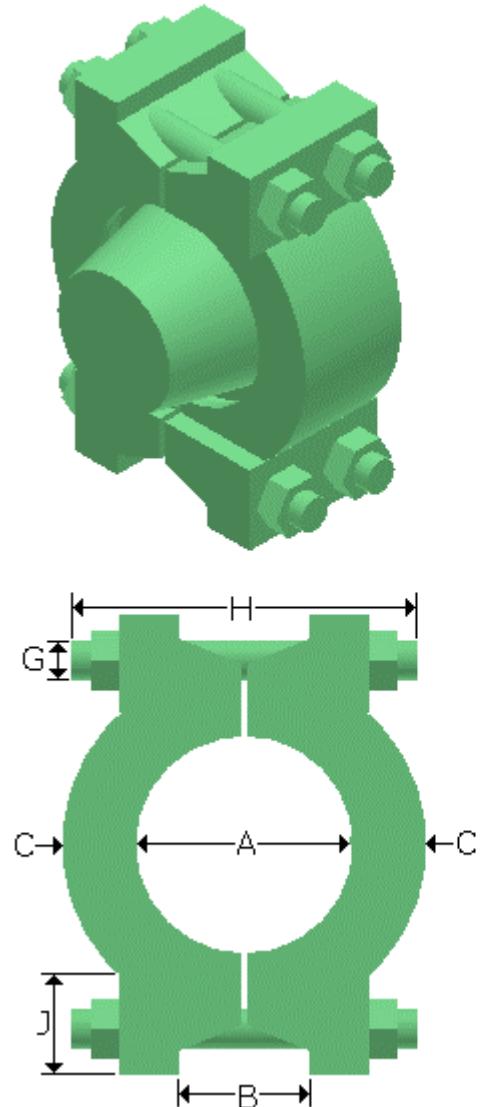
**Output and description** = "RightFrontBottomNut", "Right Front Bottom Nut"

**Output and description** = "RightRearBottomNut", "Right Rear Bottom Nut"

Aspects = 2

Aspect = "SimplePhysical", "Physical"

Aspect = "Insulation", "Insulation"



A=Clamp Inner Diameter  
B=Bolt Center Distance  
C=Clamp Outer Diameter  
D=Clamp Length  
E=Clamp Width  
F=Lug Separation  
G=Bolt Diameter  
H=Bolt Length  
I=Bolt Lug Width  
J=Bolt Pitch

## SP3DTee

**Description:** tee

**Symbol Name:** SP3DTee.CEqualTee

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls; 1S6470 Catalog.xls

**Workbook Sheet:** Tee; TLT, TMMM, TRJ; VictaulicT, VPSTee

**User Class Name:** Tee

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTee.CEqualTee

Number of Inputs = 4

Input name = "FacetoCenter"

Input description = "Face to Center"

Input name = "Face2toCenter"

Input description = "Face1 to Center"

Input name = "Face3toCenter"

Input description = "Face1 to Center"

Input name = "InsulationThickness"

Input description = "Insulation Thickness"

Number of Outputs = 8

Output name = "InsulatedBody"

Output description = "Insulated Body"

Output name = "InsulatedPort1"

Output description = "Insulated Port1"

Output name = "InsulatedPort2"

Output description = "Insulated Port2"

Output name = "InsulatedBranch"

Output description = "Insulated Branch"

Output name = "InsulatedPort3"

Output description = "Insulated Port3"

Output name = "PNoz1"

Output description = "Nozzle 1"

Output name = "PNoz2"

Output description = "Nozzle 2"

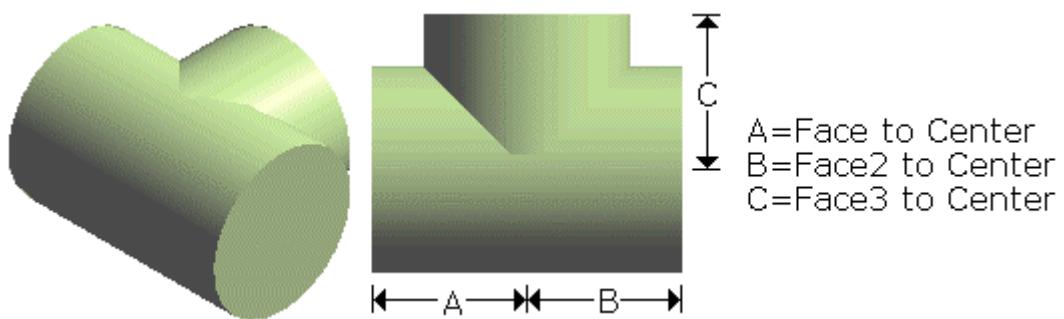
Output name = "PNoz3"

Output description = "Nozzle 3"

Number of Aspects = 2

Supported AspectId = SimplePhysical

Supported AspectId = Insulation



## SP3DTeeRRB

**Description:** Reducing run and branch lateral tee

**Symbol Name:** SP3DTeeRRB.CTeeRRB

**Workbook:**

**Workbook Sheet:**

**User Class Name:** PipeComponentClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTeeRRB.CTeeRRB

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Face3toCenter" Description = "Face3 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsulatedBody1" Description = "Insulated Body (Port1 side)"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedBody2" Description = "Insulated Body (Port2 side)"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch (Port3 side)"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "TruncCone" Description = "Truncated Cone"**

**Output = "PNoz1" Description = "Nozzle 1"**

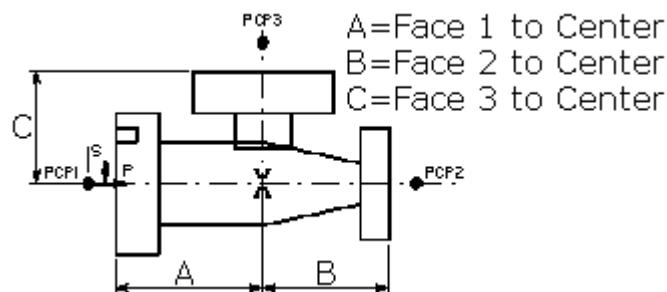
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DTeeStrainer

**Description:**

**Symbol Name:** SP3DTeeStrainer.TeeStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTeeStrainer.TeeStrainer

**Inputs = 3**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "InsStrainer" Description = "Insulation for Strainer"**

**Output = "InsBranch" Description = "Insulation for Branch"**

**Output = "InsPort1" Description = "Insulation for Port 1"**

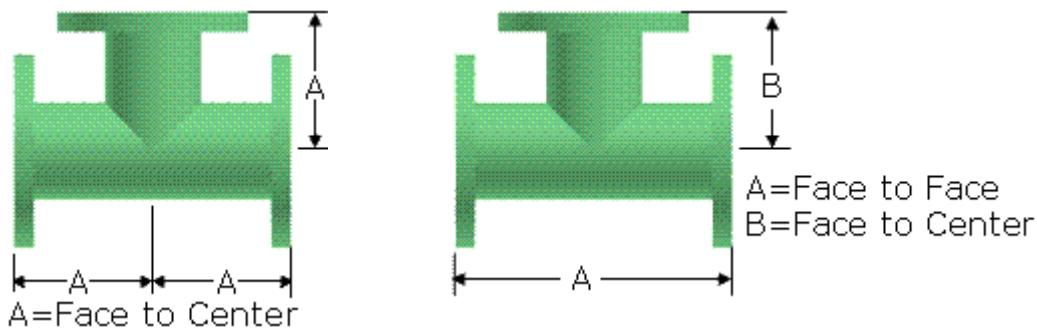
**Output = "InsPort2" Description = "Insulation for Port 2"**

**Output = "InsPort3" Description = "Insulation for Port 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DTempBasketStrainer

**Description:**

**Symbol Name:** SP3DTempBasketStrainer.TmpBsktStr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTempBasketStrainer.TmpBsktStr

**Inputs = 7**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "BasketLength" Description = "Basket Length"**

**Input = "BasketMajorDiameter" Description = "Basket Major Diameter"**

**Input = "BasketMinorDiameter" Description = "Basket Minor Diameter"**

**Input = "IdentifierTagHeight" Description = "Identifier Tag Height"**

**Input = "IdentifierTagHtFrmCenter" Description = "Identifier Tag Height from Center"**

**Input = "IdentifierTagWidth" Description = "Identifier Tag Width"**

**Outputs = 5**

**Output = "Plate" Description = "Plate"**

**Output = "Cone" Description = "Cone"**

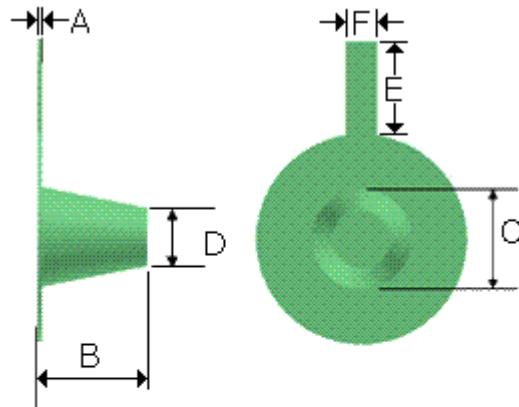
**Output = "IdentifierTagHandle" Description = "Identifier Tag Handle"**

**Output = "Port1" Description = "Port 1"**

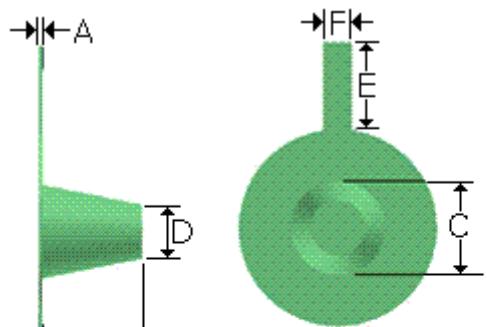
**Output = "Port2" Description = "Port 2"**

**Aspects = 1**

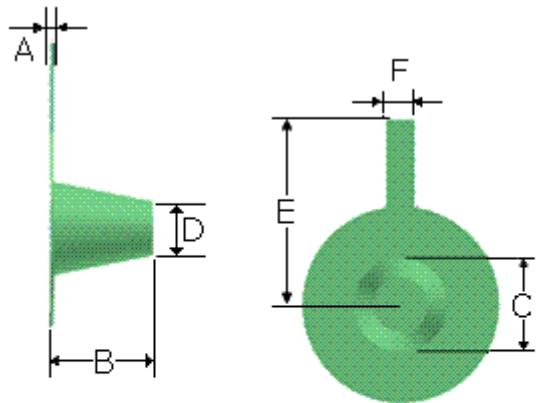
**Aspect = SimplePhysical**



A=Face to Face  
B=Basket Length  
C=Basket Major Diameter  
D=Basket Minor Diameter  
E=Identifier Tag Height  
F=Identifier Tag Width



A=Face to Face  
B=Basket Length  
C=Basket Major Diameter  
D=Basket Minor Diameter  
E=Identifier Tag Height  
F=Identifier Tag Width



A=Face to Face

B=Basket Length

C=Basket Major Diameter

D=Basket Minor Diameter

E=Identifier Tag Height from Center

F=Identifier Tag Width

# SP3DTempContrlValve

**Description:** temperature control valve

**Symbol Name:** SP3DTempContrlValve.TempContrlValve

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** TemperatureControlValve

**User Class Name:** Temperature Control Valve

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTempContrlValve.TempContrlValve

**Inputs = 3**

**Input and description** = "FacetoFace", "Face to Face", 0.

**Input and description** = "InstrumentHeight", "Instrument Height", 0

**Input and description** = "InstrumentHeight1", "Instrument Height 1", 0

**Outputs = 11**

**Output and description** = "HexagonalNut1", "Hexagonal Nut 1"

**Output and description** = "HexagonalNut2", "Hexagonal Nut 2"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "Box1", "Box 1"

**Output and description** = "Box2", "Box 2"

**Output and description** = "Cylinder3", "Cylinder 3"

**Output and description** = "Cylinder4", "Cylinder 4"

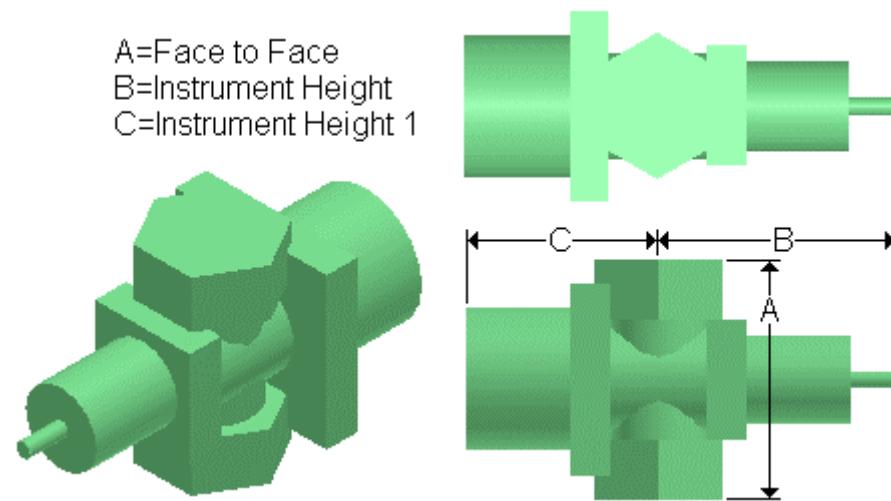
**Output and description** = "Cylinder5", "Cylinder 5"

**Output and description** = "Nozzle1", "Nozzle 1"

**Output and description** = "Nozzle2", "Nozzle 2"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"



# SP3DTemperatureSwitch

**Description:** temperature switch

**Symbol Name:** SP3DTemperatureSwitch.TemperatureSwitch

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** Temperature Switch

**User Class Name:** Temperature Switch

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTemperatureSwitch.TemperatureSwitch

**Inputs = 4**

**Input and description** = "InstrumentHeight1", "InstrumentHeight1", 0.01

**Input and description** = "InstrumentHeight2", "InstrumentHeight2", 0.0

**Input and description** = "InstrumentDiameter", "InstrumentDiameter", 0.01

**Input and description** = "InstrumentDiameter1", "InstrumentDiameter1", 0.01

**Outputs = 4**

**Output and description** = "BottomCylinder", "Bottom Cylinder"

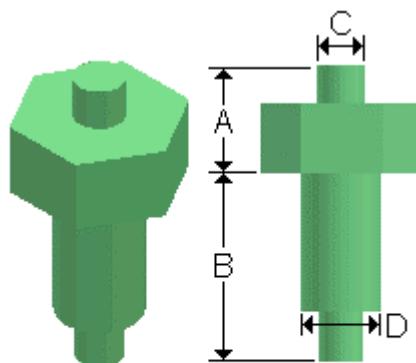
**Output and description** = "HexagonalNut", "Hexagonal Nut"

**Output and description** = "TopCylinder", "Top Cylinder"

**Output and description** = "Nozzle1", "Nozzle 1"

**Aspects = 1**

**Aspect** = "SimplePhysical", "SimplePhysical"



A=Instrument Height 1

B=Instrument Height 2

C=Instrument Diameter

D=Instrument Diameter 1

# SP3DTemporaryConeStrainer

**Description:**

**Symbol Name:** SP3DTemporaryConeStrainer.TmpConeStr

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTemporaryConeStrainer.TmpConeStr

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "ConeLength" Description = "Cone Length"**

**Input = "ConeDiameter" Description = "Cone Diameter"**

**Input = "IdentifierTagHeight" Description = "Identifier Tag Height"**

**Input = "IdentifierTagHtFrmCenter" Description = "Identifier Tag Height from Center"**

**Input = "IdentifierTagWidth" Description = "Identifier Tag Width"**

**Outputs = 5**

**Output = "Plate" Description = "Plate"**

**Output = "Cone" Description = "Cone"**

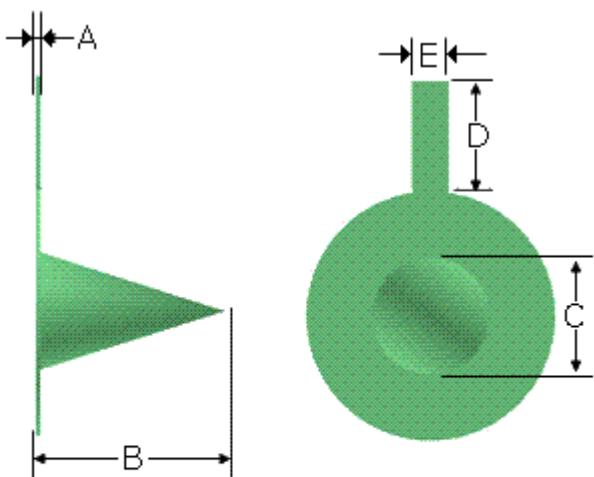
**Output = "IdentifierTag" Description = "Identifier Tag "**

**Output = "Port1" Description = "Port 1"**

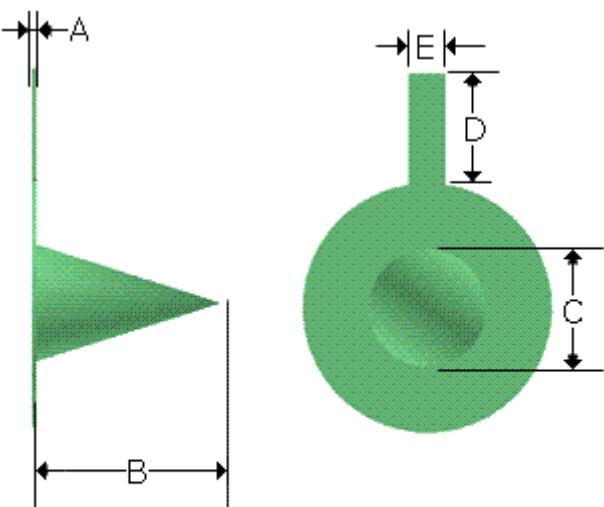
**Output = "Port2" Description = "Port 2"**

**Aspects = 1**

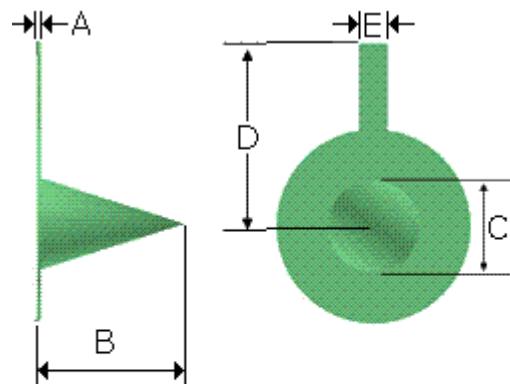
**Aspect = SimplePhysical**



A=Face to Face  
B=Cone Length  
C=Cone Diameter  
D=Identifier Tag Height  
E=Identifier Tag Width



A=Face to Face  
B=Cone Length  
C=Cone Diameter  
D=Identifier Tag Height  
E=Identifier Tag Width



A=Face to Face

B=Cone Length

C=Cone Diameter

D=Identifier Tag Height from Center

E=Identifier Tag Width

# SP3DTempTransmitter

**Description:** temperature transmitter

**Symbol Name:** SP3DTempTransmitter.TempTransmitter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** TemperatureTransmitter

**User Class Name:** Temperature Transmitter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTempTransmitter.TempTransmitter

**Inputs = 3**

**Input and description** = "InstrumentHeight", "Instrument Height", 0.

**Input and description** = "InstrumentLength", "Instrument Length", 0

**Input and description** = "InstrumentLength1", "Instrument Length 1", 0

**Outputs = 9**

**Output and description** = "JunctionBox", "Junction Box"

**Output and description** = "Cylinder1", "Cylinder 1"

**Output and description** = "Cylinder2", "Cylinder 2"

**Output and description** = "Cylinder3", "Cylinder 3"

**Output and description** = "Union", "Union"

**Output and description** = "HexagonalNut", "Hexagonal Nut"

**Output and description** = "ConicalPart", "Conical Part"

**Output and description** = "ThermoWellEnd", "Thermo Well End"

**Output and description** = "PipingNoz1", "Nozzle 1"

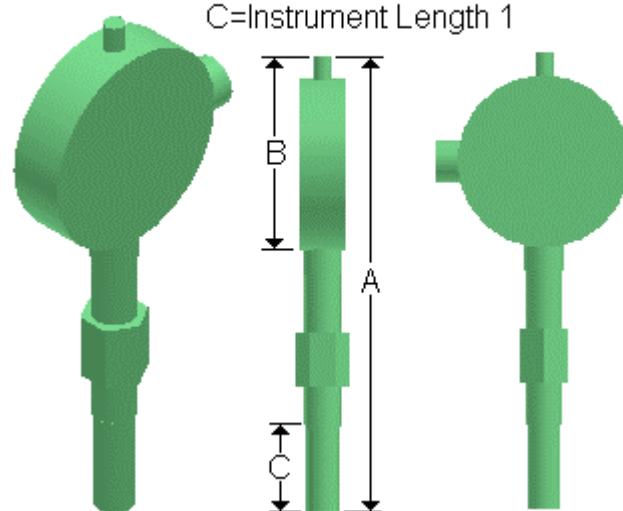
**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"

A=Instrument Height

B=Instrument Length

C=Instrument Length 1



## SP3DTrueY

**Description:**

**Symbol Name:** SP3DTrueY.TrueY

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTrueY.TrueY

**Inputs = 4**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "Face3toCenter" Description = "Face 3 to Center"**

**Outputs = 9**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

**Output = "InsulatedBranchPort2" Description = "Insulated Branch Port 2"**

**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Output = "InsulatedBranchPort3" Description = "Insulated Branch Port 3"**

**Output = "InsulatedPort3" Description = "Insulated Port 3"**

**Output = "PNoz1" Description = "Nozzle 1"**

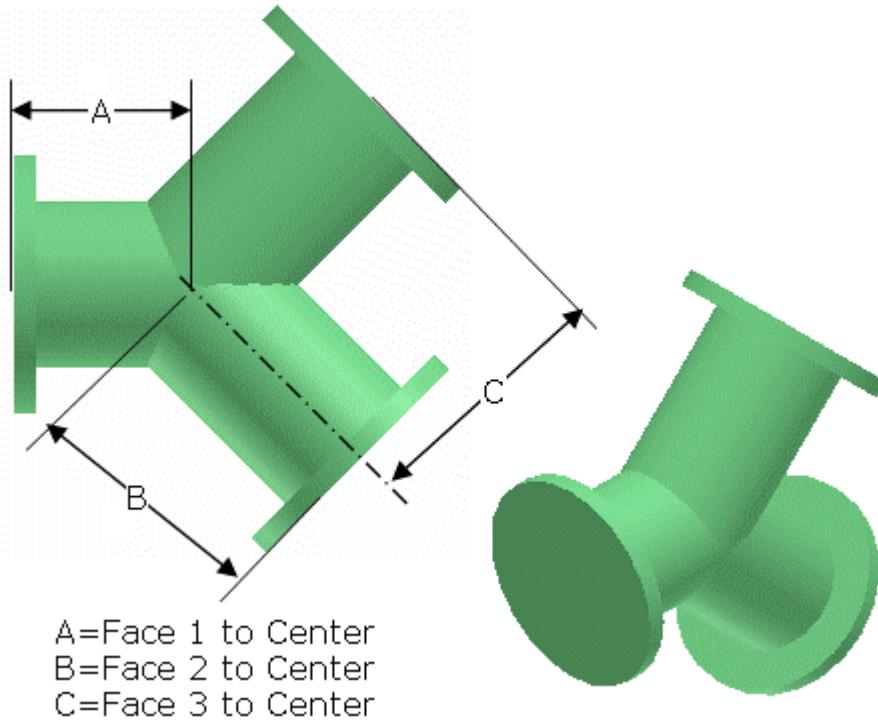
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center  
B=Face 2 to Center  
C=Face 3 to Center

# SP3DTStrainer

**Description:** strainer

**Symbol Name:** SP3DTStrainer.CTStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTStrainer.CTStrainer

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "StrToptoCenter" Description = "Strainer Top to Center"**

**Input = "StrDiameter" Description = "Strainer Diameter"**

**Input = "BranchDiameter" Description = "Branch Pipe Diameter"**

**Input = "StrWidth" Description = "Strainer Width"**

**Input = "Face3toStrTop" Description = "Face3 to Strainer Top"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "BranchBody" Description = "Branch Body"**

**Output = "StrainerBody" Description = "Strainer Body"**

**Output = "PipeinNoz1Ins" Description = "Pipe portion in Noz1 Insulation"**

**Output = "Noz1Ins" Description = "Noz1 Insulation"**

**Output = "PipeinNoz2Ins" Description = "Pipe portion in Noz2 Insulation"**

**Output = "Noz2Ins" Description = "Noz2 Insulation"**

**Output = "PipeinNoz3Ins" Description = "Pipe portion in Noz3 Insulation"**

**Output = "Noz3Ins" Description = "Noz3 Insulation"**

**Output = "InsBranch" Description = "Insulation for Branch"**

**Output = "InsStrainer" Description = "Insulation for Strainer"**

**Output = "PNoz1" Description = "Nozzle 1"**

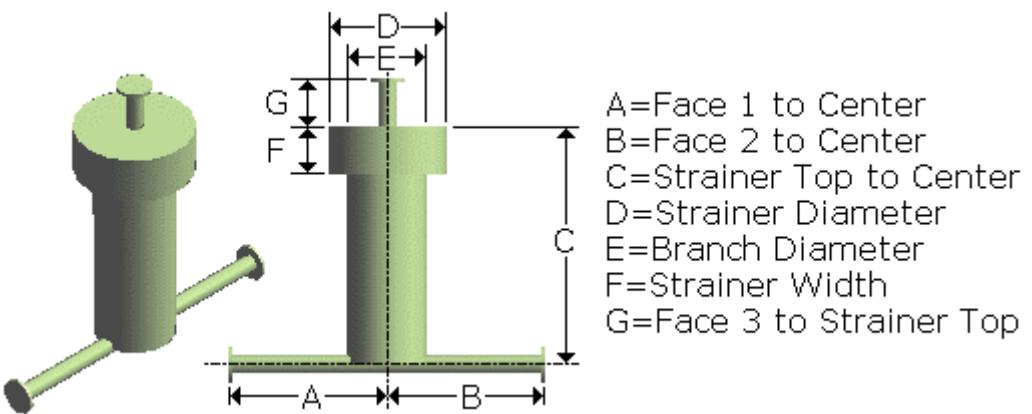
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DTurbineMeter

You cannot resize this part symbol during or after placement. Use the symbol SP3DCITurbineMeter if you want to interactively resize the symbol during or after placement.

**Description:** In-line turbine or propeller flow instrument

**Symbol Name:** SP3DTurbineMeter.CTurbineMeter

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DTurbineMeter.CTurbineMeter

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "TurbineMeterBody" Description = "TurbineMeterBody"**

**Output = "TurbineVerCyl" Description = "TurbineVerCyl"**

**Output = "TurbineMeterTopBody" Description = "TurbineMeterTopBody"**

**Output = "TurbineMeterBodyIns" Description = "TurbineMeterBodyIns"**

**Output = "TurbineMeterTopBodyIns" Description = "TurbineMeterTopBodyIns"**

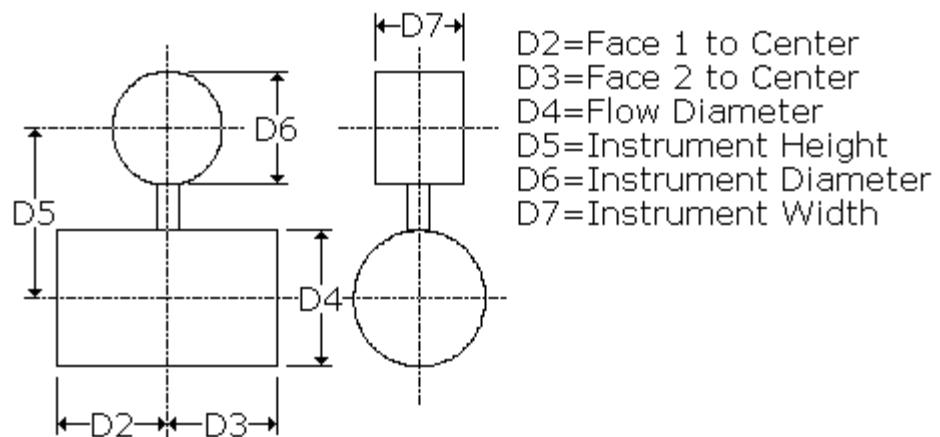
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DUnion

**Description:** union

**Symbol Name:** SP3DUnion.CUnion

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Union

**User Class Name:** Union

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DUnion.CUnion

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "UnionDiameter" Description = "Union Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "Body" Description = "Body"**

**Output = "InsulatedBody" Description = "Insulated Body"**

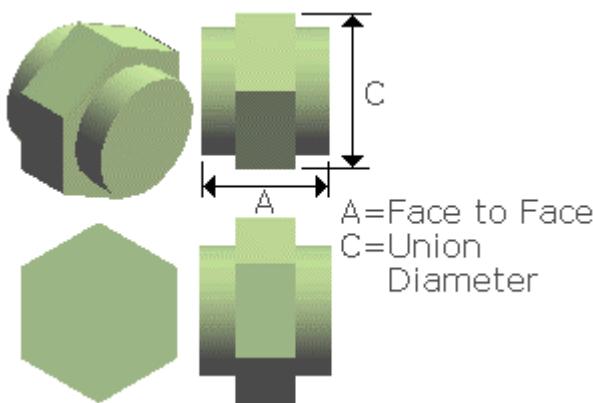
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DUnionHead

**Description:** union head

**Symbol Name:** SP3DUnionHead.CUnionHead

**Workbook:** Union Fitting Assembly Data.xls

**Workbook Sheet:** UnionHead

**User Class Name:** Union Head

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DUnionHead.CUnionHead

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 4**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

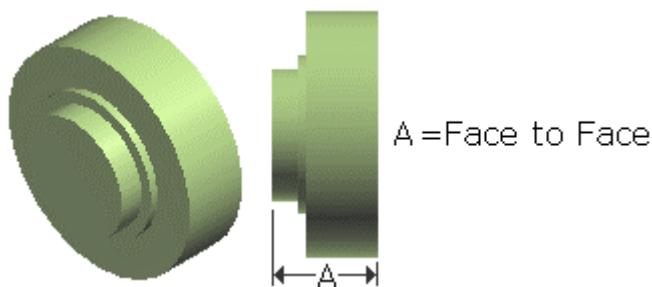
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "Nut" Description = "Union Nut"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DUnionTail

**Description:** union tail

**Symbol Name:** SP3DUnionTail.CUnionTail

**Workbook:** Union Fitting Assembly Data.xls

**Workbook Sheet:** UnionTail

**User Class Name:** union tail

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DUnionTail.CUnionTail

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 3**

**Output = "InsulatedBody" Description = "Insulated Body"**

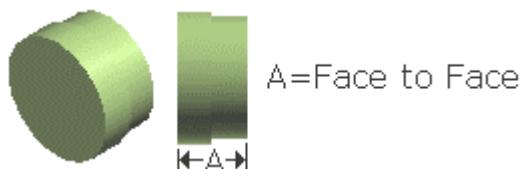
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVACChainWheel

**Description:**

**Symbol Name:** SP3DVACChainWheel.ChainWheel

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVACChainWheel.ChainWheel

**Inputs = 4**

**Input = "OperatorLength" Description = "Sprocket rim thickness"**

**Input = "OperatorDiameter" Description = "Sprocket rim diameter"**

**Input = "HandWheelDiameter" Description = "Valve hand wheel outside diameter"**

**Input = "OperatorHeight" Description = "Chain wheel axis to operating level"**

**Outputs = 5**

**Output = "SprocketRim" Description = "Sprocket Rim"**

**Output = "ChainTop" Description = "Chain Top"**

**Output = "ChainLeft" Description = "Chain Left"**

**Output = "ChainRight" Description = "Chain Right"**

**Output = "ChainBottom" Description = "Chain Bottom"**

**Aspects = 1**

**Aspect = SimplePhysical**

Preview  
not  
available

# SP3DVAFloorBox

**Description:**

**Symbol Name:** SP3DVAFloorBox.FloorBox

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVAFloorBox.FloorBox

**Inputs = 4**

**Input and description** = "FloorThickness", "Floor Thickness", 0.

**Input and description** = "FloorLevelToValveCenter", "Floor Level To Valve Center"

**Input and description** = "TopOpeningDiameter", "Top Opening Diameter", 0.

**Input and description** = "BottomOpeningDiameter", "Bottom Opening Diameter", 0.

**Outputs = 2**

**Output and description** = "TopFloorBox", "Top Portion of Floor Box"

**Output and description** = "BottFloorBox", "Bottom Portion of Floor Box"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"

Preview  
not  
available

# SP3DVAIndicatorPost

**Description:**

**Symbol Name:** SP3DVAIndicatorPost.IndicatorPost

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVAIndicatorPost.IndicatorPost

**Inputs = 4**

**Input and description** = "PostBaseToValveCenter", "Post Base To Valve Centreline", 0.25

**Input and description** = "PostBaseToLevel", "Post Base to Ground Level", 0.8

**Input and description** = "PostHeight", "Post Height", 0.

**Input and description** = "PostDiameter", "Post Diameter", 0.

**Outputs = 4**

**Output and description** = "Stem", "Stem"

**Output and description** = "BasePlateFlange", "Base Plate Flange"

**Output and description** = "PostBody", "Body of Post"

**Output and description** = "PostHead", "Head of Post"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"

Preview  
not  
available

# SP3DValveGOT1

**Description:**

**Symbol Name:** SP3DValveGOT1.CButterflyGate

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DValveGOT1.CButterflyGate

**Inputs = 11**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Y4StemHeight" Description = "Y4 Stem Height"**

**Input = "Y5OperatorDiameter" Description = "Y5 Operator Diameter"**

**Input = "Y6HandwheelToOpTop" Description = "Y6 Handwheel To Operator Top"**

**Input = "Y7OperatorHeight" Description = "Y7 Operator Height"**

**Input = "Y8HandwheelProjection" Description = "Y8 Handwheel Projection"**

**Input = "Y9HandwheelDiameter" Description = "Y9 Handwheel Diameter"**

**Input = "Y10HandwheelOffset" Description = "Y10 Handwheel Offset"**

**Input = "Y11HandwheelToStemTop" Description = "Y11 Handwheel To Stem Top"**

**Input = "HandwheelAngle" Description = "Handwheel Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "Body" Description = "Body"**

**Output = "Stem" Description = "Stem"**

**Output = "Operator" Description = "Operator"**

**Output = "Axis" Description = "Axis"**

**Output = "Wheel" Description = "Wheel"**

**Output = "Spoke" Description = "Spoke"**

**Output = "SpokeA" Description = "SpokeA"**

**Output = "InsulatedBody" Description = "Insulated Body"**

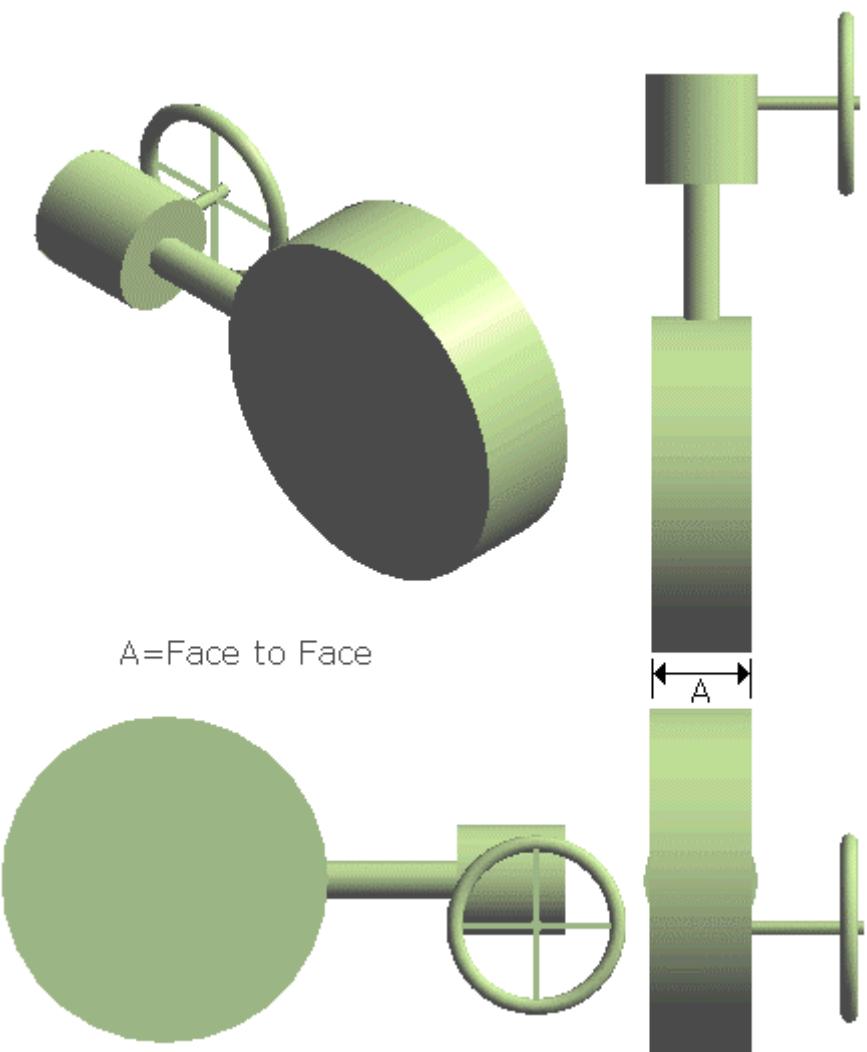
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DValveGOT2

**Description:**

**Symbol Name:** SP3DValveGOT2.CGate

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DValveGOT2.CGate

**Inputs = 13**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Y4StemHeight" Description = "Y4 Stem Height"**

**Input = "Y5OperatorDiameter" Description = "Y5 Operator Diameter"**

**Input = "Y6HandwheelToOpTop" Description = "Y6 Handwheel To Operator Top"**

**Input = "Y7OperatorHeight" Description = "Y7 Operator Height"**

**Input = "Y8HandwheelProjection" Description = "Y8 Handwheel Projection"**

**Input = "Y9OpArmProjection" Description = "Y9OpArmProjection"**

**Input = "Y10OpArmWidth" Description = "Y10 Operator Arm Width"**

**Input = "Y11HandwheelToArm" Description = "Y11 Handwheel To Arm"**

**Input = "Y12HandwheelDiameter" Description = "Y12 Handwheel Diameter"**

**Input = "Y13HandwheelToStemTop" Description = "Y13 Handwheel To Stem Top"**

**Input = "HandwheelAngle" Description = "Handwheel Angle"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 11**

**Output = "Body" Description = "Body"**

**Output = "Stem" Description = "Stem"**

**Output = "Operator" Description = "Operator"**

**Output = "Arm" Description = "Arm"**

**Output = "HwAxis" Description = "HandWheel Axis"**

**Output = "Wheel" Description = "Hand Wheel"**

**Output = "SpokeY" Description = "Wheel Spoke Y"**

**Output = "SpokeZ" Description = "Wheel Spoke Z"**

**Output = "InsulatedBody" Description = "Insulated Body"**

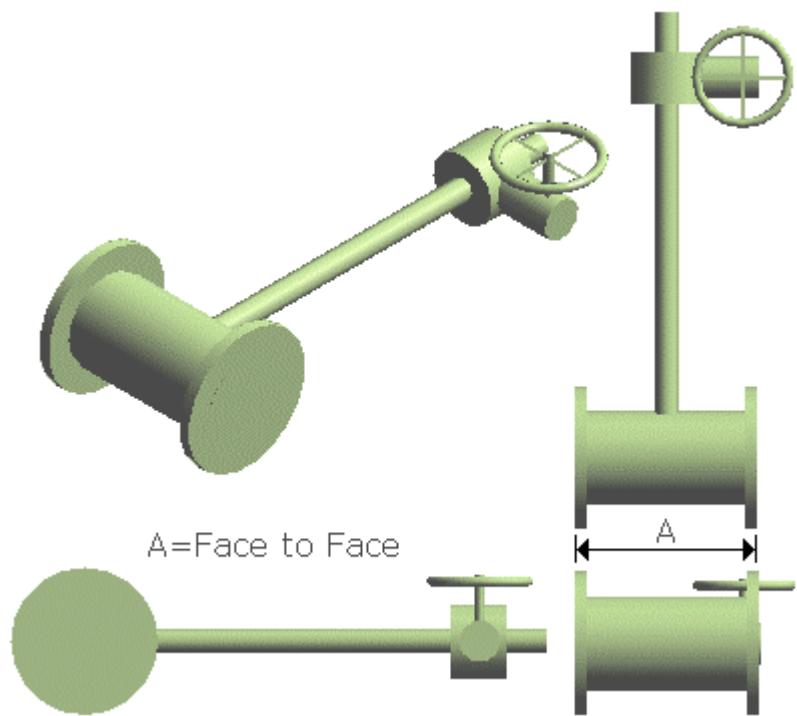
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVAWallPost

**Description:**

**Symbol Name:** SP3DVAWallPost.WallPost

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVAWallPost.WallPost

**Inputs = 5**

**Input and description** = "PostBaseToValveCenter", "Post Base To Valve Centreline", 0.

**Input and description** = "WallThickness", "Wall Thickness", 0.

**Input and description** = "PostHeight", "Post Height", 0.

**Input and description** = "PostDiameter", "Post Diameter", 0.

**Input and description** = "HandWheelDiameter", "Hand Wheel Diameter", 0.

**Outputs = 5**

**Output and description** = "Stem", "Stem"

**Output and description** = "PostBottBody", "Bottom Body of Post inside Wall"

**Output and description** = "BasePlateFlange", "Base Plate Flange"

**Output and description** = "PostBody", "Body of Post"

**Output and description** = "HandWheel", "Hand Wheel of Post"

**Aspects = 1**

**Aspect** = "SimplePhysical", "Physical"

Preview  
not  
available

# SP3DVentSilencer

**Description:**

**Symbol Name:** SP3DVentSilencer.CVentSilencer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVentSilencer.CVentSilencer

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "Offset1" Description = "Offset of Port1 Center"**

**Input = "Offset2" Description = "Offset of Port2 Center"**

**Input = "VentSilencerBodyDiameter" Description = "Vent Silencer Body Diameter"**

**Input = "VentSilencerBodyLength1" Description = "Vent Silencer Body Length1"**

**Input = "VentSilencerBodyLength2" Description = "Vent Silencer Body Length2"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 8**

**Output = "InsVentSilencerBody" Description = "Insulation for VentSilencer Body"**

**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = "Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**

**Output = "InsBody2" Description = "Insulation for Body Port2 side"**

**Output = "VentSilencerBody" Description = "VentSilencer Body"**

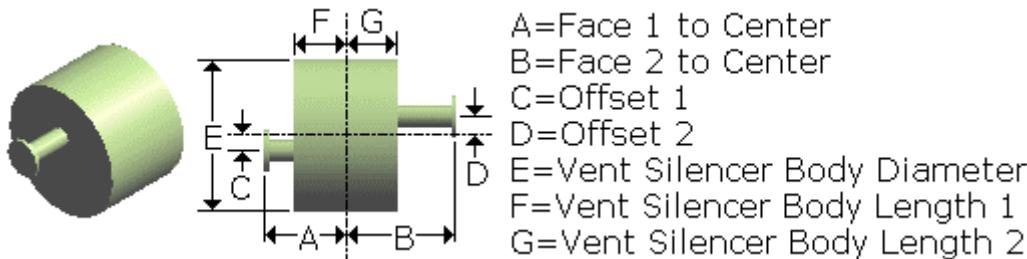
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVenturimeter

## Description:

**Symbol Name:** SP3DVenturimeter.CVenturimeter

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

### Inputs, Outputs, and Aspects:

ProgID: SP3DVenturimeter.CVenturimeter

#### Inputs = 5

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "VenturiLength" Description = "Venturi Length"**

**Input = "VenturiDiameter" Description = "Venturi Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

#### Outputs = 10

**Output = "ConvergingCone" Description = "Converging Cone"**

**Output = "Venturi" Description = "Venturi"**

**Output = "ConvergConeIns" Description = "Converg Cone Insulation"**

**Output = "VenturiIns" Description = "Venturi Insulation"**

**Output = "Nozzle1Ins" Description = "Nozzle1 Insulation"**

**Output = "DivergingCone" Description = "Diverging Cone"**

**Output = "DivergConeIns" Description = "Diverging Cone Insulation"**

**Output = "Nozzle2Ins" Description = "Nozzle2 Insulation"**

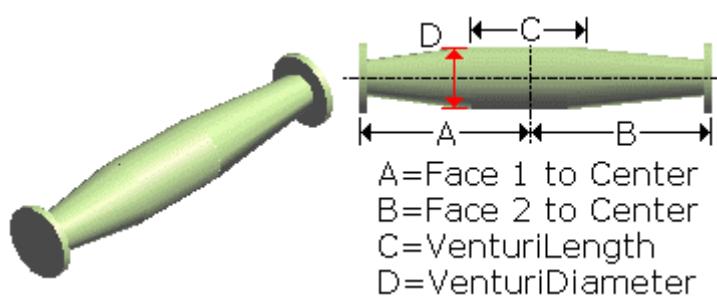
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

#### Aspects = 2

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DVentValve

**Description:**

**Symbol Name:** SP3DVentValve.VentValve

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVentValve.VentValve

**Inputs = 3**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "B" Description = "Major Body Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "InsBody" Description = "Insulation for Body"**

**Output = "InsulatedPort1" Description = "Insulated Port 1"**

**Output = "InsulatedPort2" Description = "Insulated Port 2"**

**Output = "Body" Description = "Body of Venturi"**

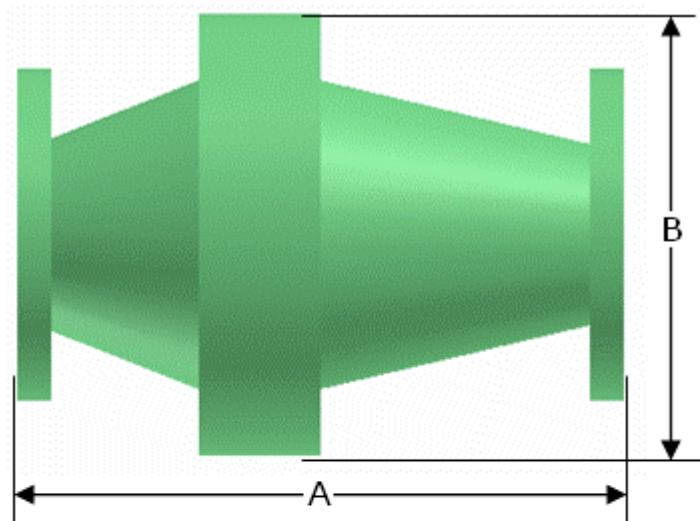
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

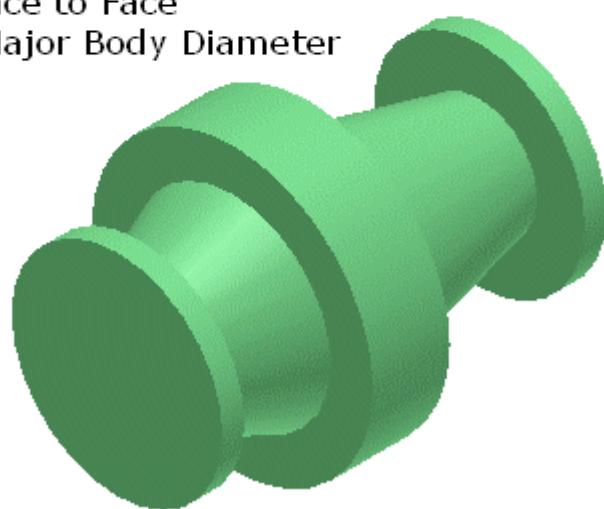
**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face to Face  
B= Major Body Diameter



# SP3DVictaulicClamp

**Description:** victaulic clamp

**Symbol Name:** SP3DVictaulicClamp.VictaulicClamp

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** VictaulicClamp

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVictaulicClamp.VictaulicClamp

**Inputs = 4**

**Input and description** = "ClampOuterDiameter", "Clamp Outer Diameter", 0

**Input and description** = "ClampLength", "Clamp Length", 0

**Input and description** = "ClampWidth", "Clamp Width", 0

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 13**

**Output and description** = "ClampBodyIns", "Clamp Body Ins"

**Output and description** = "ClampBodyFront", "Clamp Body Upper"

**Output and description** = "ClampBodyRear", "Clamp Body Lower"

**Output and description** = "SupFrontTop", "Front Top Support"

**Output and description** = "SupFrontBottom", "Front Bottom Support"

**Output and description** = "SupRearTop", "Rear Top Support"

**Output and description** = "SupRearBottom", "Lower Sup Right"

**Output and description** = "LeftTopBolt", "Left Top Bolt"

**Output and description** = "LeftBottomBolt", "Left Bottom Bolt"

**Output and description** = "LeftFrontTopNut", "Left Front Top Nut"

**Output and description** = "LeftRearTopNut", "Left Rear Top Nut"

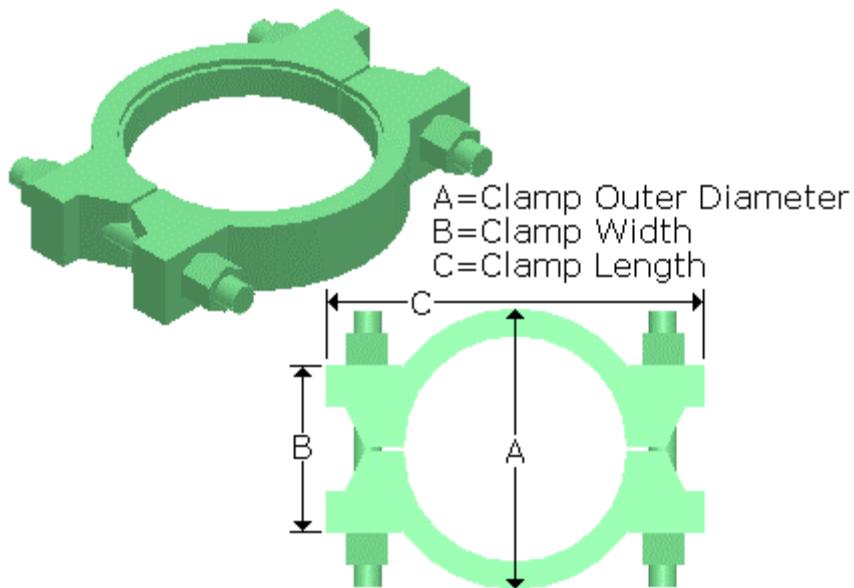
**Output and description** = "LeftFrontBottomNut", "Left Front Bottom Nut"

**Output and description** = "LeftRearBottomNut", "Left Rear Bottom Nut"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



# SP3DVorFlowmeterTy1

**Description:** Vortex flow meter

**Symbol Name:** SP3DVorFlowmeterTy1.CVorFlowmeterTy1

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVorFlowmeterTy1.CVorFlowmeterTy1

**Inputs = 8**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "HorizontalCylin" Description = "Horizontal Cylinder"**

**Output = "VerticalCylin" Description = "Vertical Cylinder"**

**Output = "InstruHoriCylin" Description = "Instrument Horizontal Cylinder"**

**Output = "HoriCylinIns" Description = "Insulation Body in Hori Direction"**

**Output = "VerCylinIns" Description = "Insulation Body in Vert Direction"**

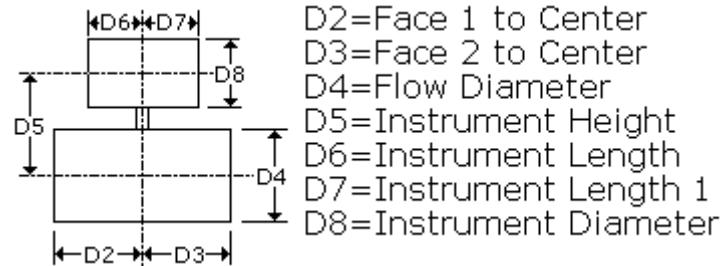
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVorFlowmeterTy2

**Description:** Vortex flow meter

**Symbol Name:** SP3DVorFlowmeterTy2.CVorFlowmeterTy2

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVorFlowmeterTy2.CVorFlowmeterTy2

**Inputs = 7**

**Input = "Face1toCenter" Description = "Face1toCenter"**

**Input = "Face2toCenter" Description = "Face2toCenter"**

**Input = "FlowDiameter" Description = "FlowDiameter"**

**Input = "InstrumentHeight" Description = "InstrumentHeight"**

**Input = "InstrumentHeight1" Description = "InstrumentHeight1"**

**Input = "InstrumentDiameter" Description = "InstrumentDiameter"**

**Input = "InsulationThickness" Description = "InsulationThickness"**

**Outputs = 7**

**Output = "InsHorCylinder" Description = "Insulation for Horizontal Cylinder"**

**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Output = "HorCylinder" Description = "Horizontal Cylinder"**

**Output = "Connector" Description = "Connector"**

**Output = "VerCylinder" Description = "Vertical Cylinder"**

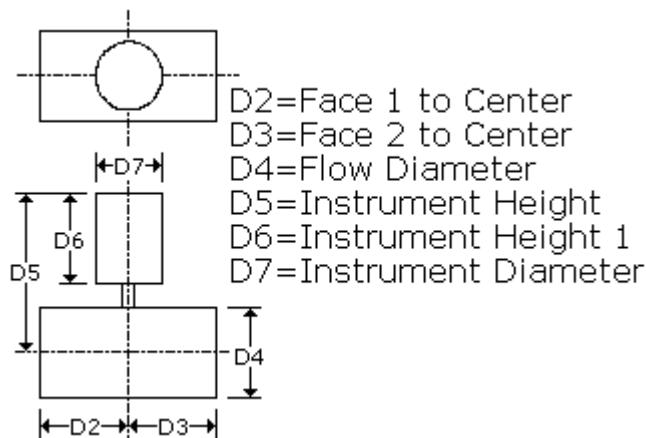
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DVorFlowmeterTy3

**Description:** Vortex flow meter

**Symbol Name:** SP3DVorFlowmeterTy3.CVorFlowmeterTy3

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVorFlowmeterTy3.CVorFlowmeterTy3

**Inputs = 10**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InstrumentWidth1" Description = "Instrument Width 1"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "HoriCylin" Description = "Horizontal Cylinder"**

**Output = "TopCylin" Description = "Top Cylinder"**

**Output = "TopBox" Description = "Top Box"**

**Output = "HoriCylinIns" Description = "Horizontal Cylinder Insulation"**

**Output = "TopBoxIns" Description = "Top Box Insulation"**

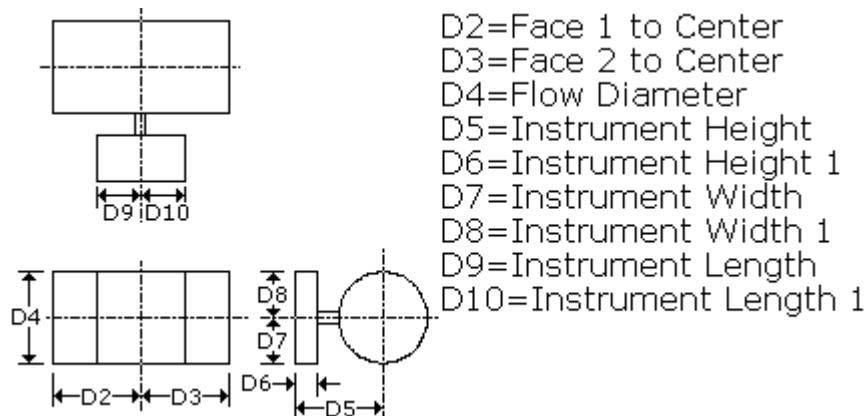
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVorFlowmtrTy4DH

**Description:** Vortex flow meter with dual heads

**Symbol Name:** SP3DVorFlowmtrTy4DH.CVorFlowmtrTy4DH

**Workbook:**

**Workbook Sheet:**

**User Class Name:** InstrumentsClass

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVorFlowmtrTy4DH.CVorFlowmtrTy4DH

**Inputs = 12**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "FlowDiameter" Description = "Flow Diameter"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentLength" Description = "Instrument Length"**

**Input = "InstrumentLength1" Description = "Instrument Length 1"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentLength2" Description = "Instrument Length 2"**

**Input = "InstrumentLength3" Description = "Instrument Length 3"**

**Input = "InstrumentDiameter1" Description = "Instrument Diameter 1"**

**Input = "InstrumentHeight1" Description = "Instrument Height 1"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "HorizontalCylin" Description = "Horizontal Cylinder"**

**Output = "VerticalCylin" Description = "Vertical Cylinder"**

**Output = "InstruHoriCylin" Description = "Instrument Horizontal Cylinder"**

**Output = "VerticalCylin1" Description = "Vertical Cylinder 1"**

**Output = "InstruHoriCylin1" Description = "Instrument Horizontal Cylinder 1"**

**Output = "HoriCylinIns" Description = "Insulation Body in Hori Direction"**

**Output = "InstruIns" Description = "Instrument Inslation as Box"**

**Output = "InstruIns1" Description = "Instrument Inslation as Box"**

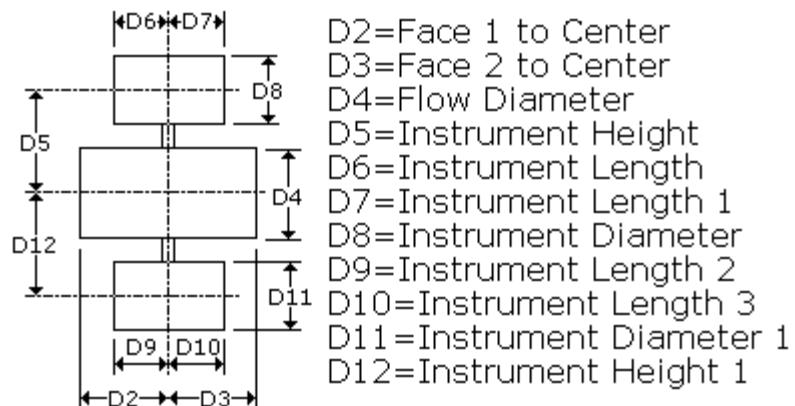
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVortexFlowmeter

**Description:** vortex flow meter

**Symbol Name:** SP3DVortexFlowmeter.VortexFlowmeter

**Workbook:** Instrument Sample Data.xls

**Workbook Sheet:** VortexFlow

**User Class Name:** Vortex Flowmeter

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVortexFlowmeter.VortexFlowmeter

**Inputs = 5**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InstrumentDiameter" Description = "Instrument Diameter"**

**Input = "InstrumentWidth" Description = "Instrument Width"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 10**

**Output = "InsFlowmeterBody" Description = "Insulation for Flowmeter Body"**

**Output = "InsConnectorBody" Description = "Insulation for Connector Body"**

**Output = "InsPort1" Description = "Insulation Port1 Side"**

**Output = "InsBody1" Description = "Insulation for body Port1 Side"**

**Output = "InsPort2" Description = "Insulation Port2 Side"**

**Output = "InsBody2" Description = "Insulation for body Port2 Side"**

**Output = "Body" Description = "Body of Flowmeter"**

**Output = "Connector" Description = "Connector from ports to Flowmeter"**

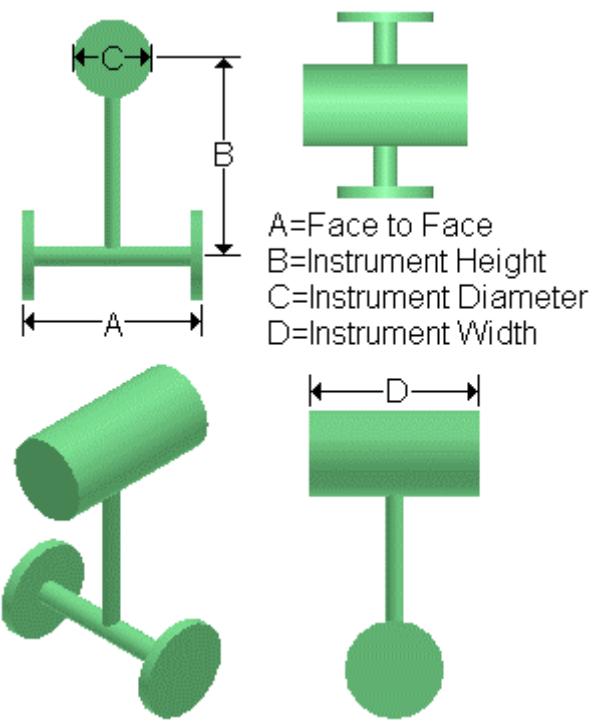
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DVPSCoupling

**Description:** victaulic pressfit swaged coupling

**Symbol Name:** SP3DVPSCoupling.VictaulicPressfitSwaged

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** VPSCoupling

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVPSCoupling.VictaulicPressfitSwaged

**Inputs = 2**

**Input and description** = "FacetoFace", "Face to Face", 50.8

**Input and description** = "InsulationThickness", "Insulation Thickness", 0

**Outputs = 4**

**Output and description** = "Coupling", "Coupling"

**Output and description** = "PNoz1", "Nozzle 1"

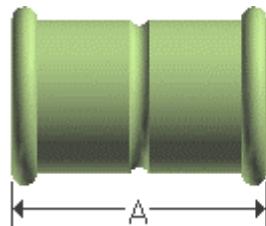
**Output and description** = "PNoz2", "Nozzle 2"

**Output and description** = "CouplingIns", "Coupling Insulation"

**Aspects = 2**

**Aspect** = "SimplePhysical", "Physical"

**Aspect** = "Insulation", "Insulation"



A=Face to face

## SP3DVPSElbow45Deg

**Description:** victaulic pressfit 45 degree elbow

**Symbol Name:** SP3DVPSElbow45Deg.VictaulicPSELbow45Deg

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** VPSELbow45Deg

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVPSElbow45Deg.VictaulicPSELbow45Deg

**Inputs = 2**

**Input = "FacetoCenter" Description = "FacetoCenter"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Elbow" Description = "Elbow"**

**Output = "InsTangentAtPort1" Description = "Insulated Tangent At Port1"**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsTangentAtPort2" Description = "Insulated Tangent At Port2"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

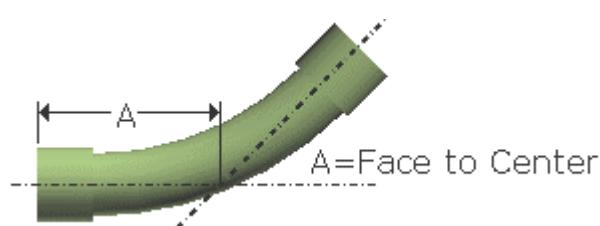
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DVPSElbow90Deg

**Description:** victaulic pressfit 90 degree elbow

**Symbol Name:** SP3DVPSElbow90Deg.VictaulicPSELbow90Deg

**Workbook:** 1S6470 Catalog.xls

**Workbook Sheet:** VPSELbow90Deg

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DVPSElbow90Deg.VictaulicPSELbow90Deg

**Inputs = 2**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 6**

**Output = "Elbow" Description = "Elbow"**

**Output = "InsTangentAtPort1" Description = "Insulated Body Tangent at Port 1"**

**Output = "InsulatedBody" Description = "Insulated Body of Bend"**

**Output = "InsTangentAtPort2" Description = "Insulated Body Tangent at Port 2"**

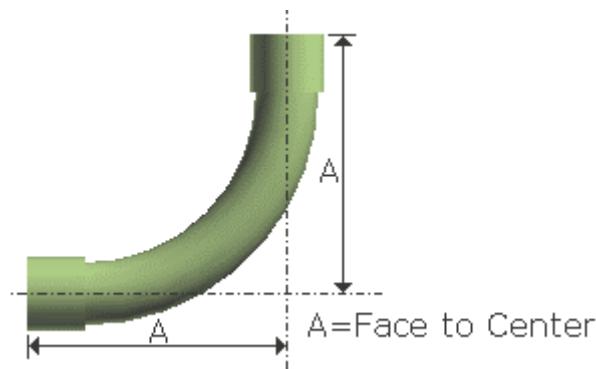
**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DWaterFilter

**Description:**

**Symbol Name:** SP3DWaterFilter.WaterFilter

**Workbook:****Workbook Sheet:****User Class Name:****Part Number:****Inputs, Outputs, and Aspects:**

ProgID: SP3DWaterFilter.WaterFilter

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "FacetoCenter" Description = "Face to Center"**

**Input = "Height" Description = "Height"**

**Input = "Height1" Description = "Height 1"**

**Input = "Height2" Description = "Height 2"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "Cylinder" Description = "Cylinder"**

**Output = "CylinderTop" Description = "Top of the Cylinder"**

**Output = "Cover" Description = "Cover"**

**Output = "CoverTop" Description = "Top of the Cover"**

**Output = "Port1" Description = "Port 1"**

**Output = "Port2" Description = "Port 2"**

**Output = "InsVerCylinder" Description = "Insulation for Vertical Cylinder"**

**Output = "InsCover" Description = "Insulation for Cover"**

**Output = "InsTopCover" Description = "Insulation for top of the cover"**

**Output = "InsPort1HorCylinder" Description = "Insulation for Horizontal Cylinder at Port 1"**

**Output = "InsPort2HorCylinder" Description = "Insulation for Horizontal Cylinder at Port 2"**

**Output = "InsPort1" Description = "Insulation for Port 1"**

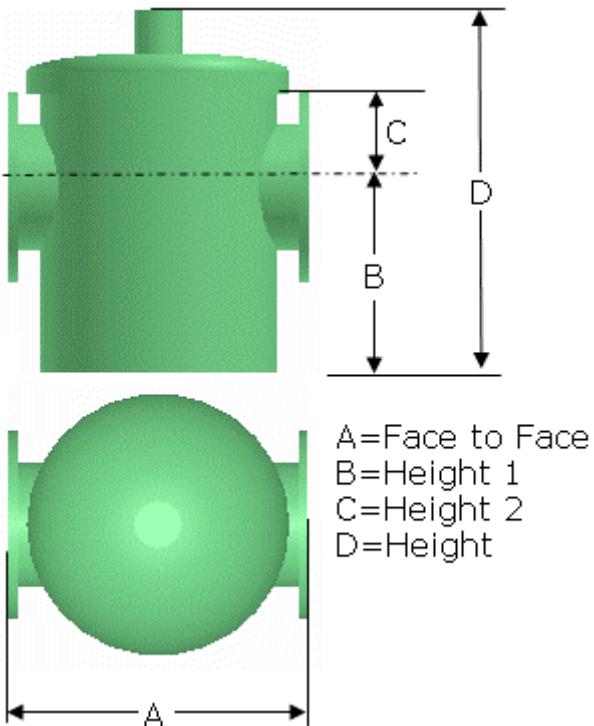
**Output = "InsPort2" Description = "Insulation for Port 2"**

**Aspects = 2**

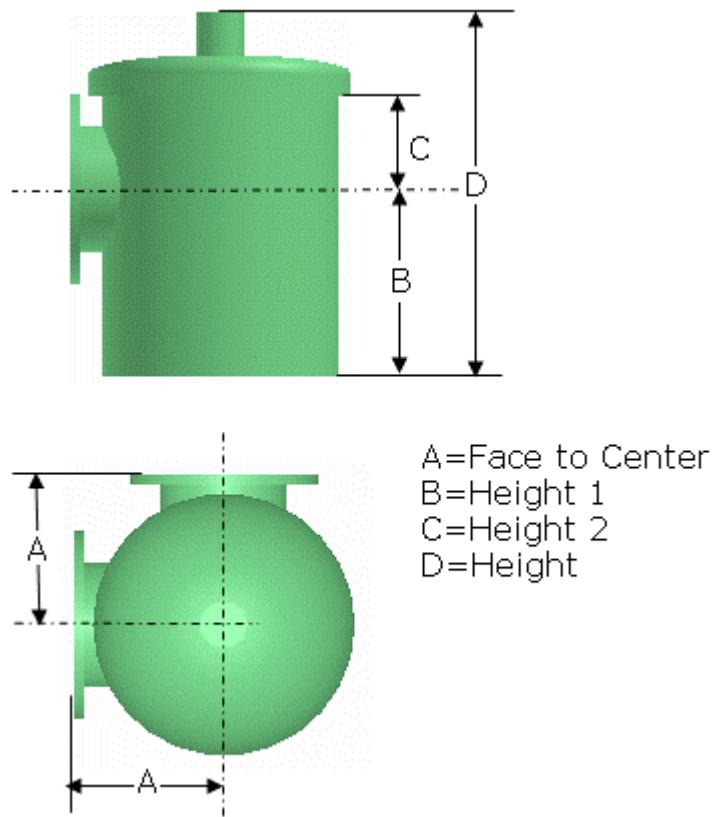
**Aspect = SimplePhysical**

**Aspect = Insulation**

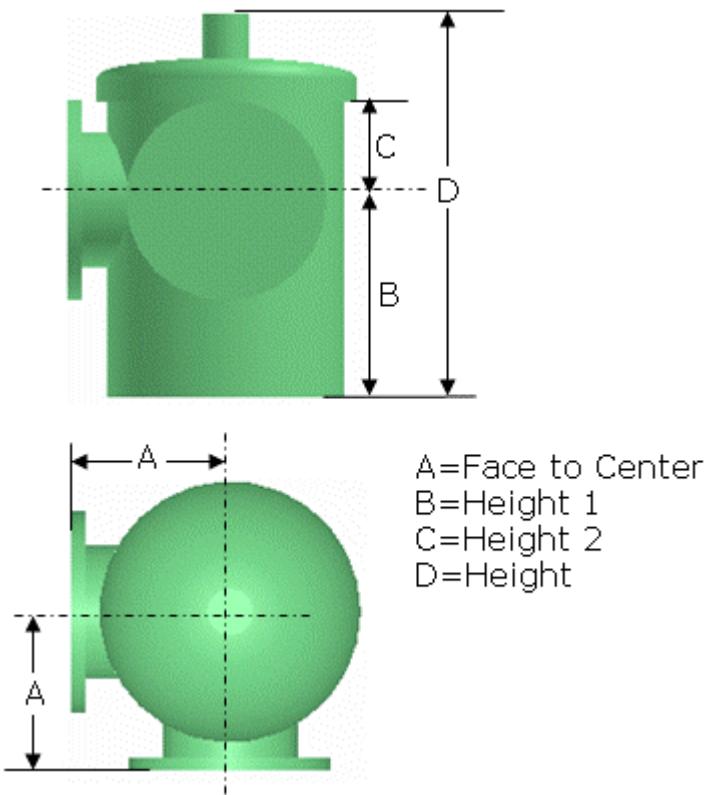
Part Design Basis 240



Part Design Basis 245



Part Design Basis 250



# SP3DWedgeFlowElement

**Description:** Wedge flow element

**Symbol Name:** SP3DWedgeFlowElement.CWFlowElement

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWedgeFlowElement.CWFlowElement

**Inputs = 6**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "NozzleOffset" Description = "Nozzle 4 Offset"**

**Input = "NozzleOffset1" Description = "Nozz3 to Nozz4 Offset"**

**Input = "InstrumentHeight" Description = "Instrument Height"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 7**

**Output = "FlowElementBodyIns" Description = "Flow Element Body Insulation"**

**Output = "Nozz3Ins" Description = "Nozzle 3 Insulation"**

**Output = "Nozz4Ins" Description = "Nozzle 4 Insulation"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

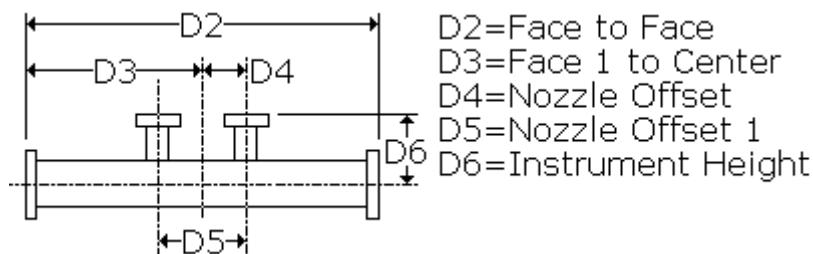
**Output = "PNoz3" Description = "Nozzle 3"**

**Output = "PNoz4" Description = "Nozzle 4"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



# SP3DWNFlange

**Description:** weld neck flange or ferrule

**Symbol Name:** SP3DWNFlange.CWNFlange

**Workbook:** Piping Catalog.xls; Bio Pharm Catalog.xls

**Workbook Sheet:** FlangeConnectionPiece, LapJointFlangeWithStubEnd, LongWeldNeckFlange, ReducingFlange, SlipOnFlange, SlipOnReducingFlange, SocketFlange, SocketWeldFlange, ThreadedFlange, WeldNeckFlange; FERR

**User Class Name:** Flange Connection Piece

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DWNFlange.CWNFlange

**Inputs = 2**

**Input = "FacetoFace" Description = "Face to Face"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 9**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "PNoz1" Description = "Nozzle 1"**

**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "FlangeBody" Description = "Flange Body"**

**Output = "FlangeBody2" Description = "Flange Body 2"**

**Output = "FlangeBodyNoncircular" Description = "Flange Body Noncircular"**

'This output will be created only for NON-Circular flanges.

**Output = "InsulatedBody2" Description = "Insulated Body 2"**

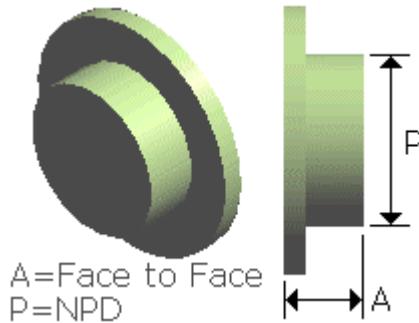
**Output = "InsulatedCylinder" Description = "Insulated cylinder for socket 2"**

**Output = "FlangeInsBodyNoncircular" Description = "Insulated Flange Body Noncircular"** 'This output will be created only for NON-Circular flanges.

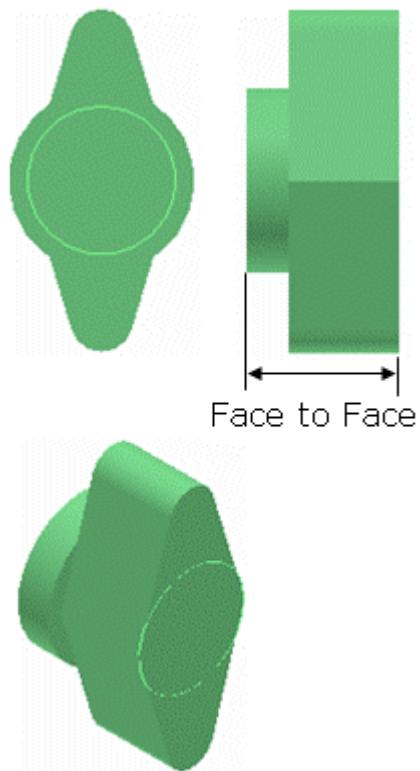
**Aspects = 2**

**Aspect = SimplePhysical**

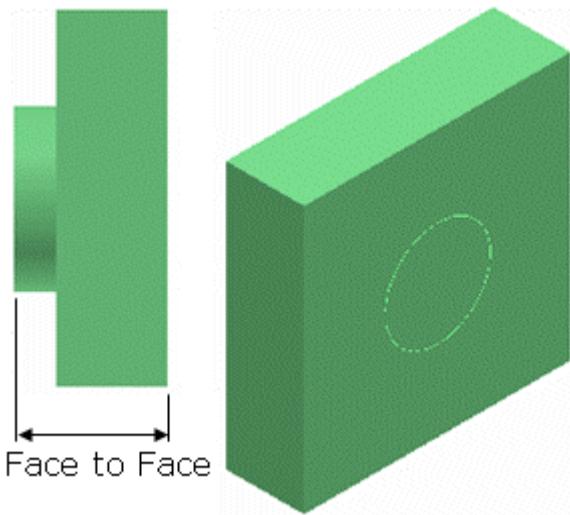
**Aspect = Insulation**



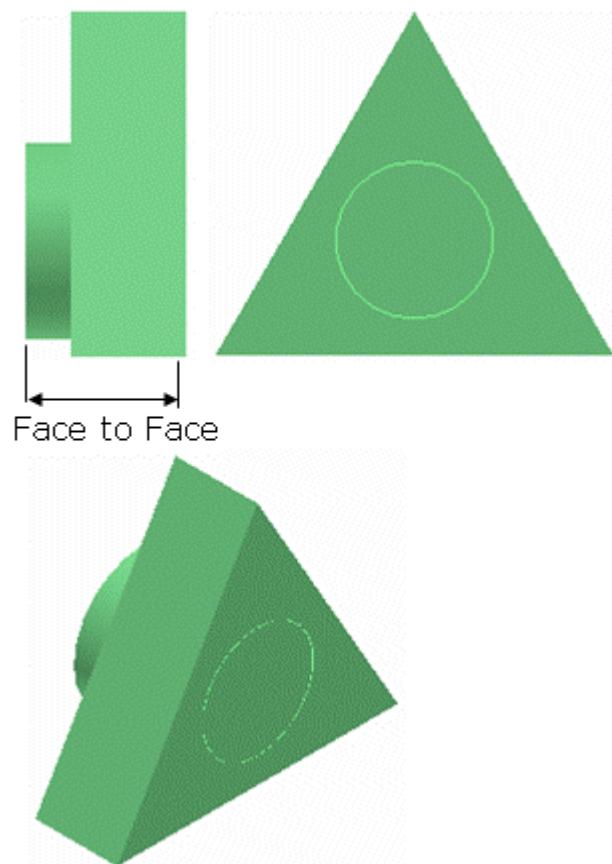
**Part Data Basis 215**



**Part Data Basis 230**



**Part Data Basis 235**



# SP3DWyeStrainer

## Description:

**Symbol Name:** SP3DWyeStrainer.WyeStrainer

## Workbook:

### Workbook Sheet:

### User Class Name:

### Part Number:

## Inputs, Outputs, and Aspects:

ProgID: SP3DWyeStrainer.WyeStrainer

### Inputs = 7

**Input** = "Face1toCenter" **Description** = "Face 1 to Center"

**Input** = "Face2toCenter" **Description** = "Face 2 to Center"

**Input** = "Face3toCenter" **Description** = "Face 3 to Center"

**Input** = "FacetoFace" **Description** = "Face to Face"

**Input** = "Offset" **Description** = "Offset to Branch Face"

**Input** = "PortVOffset" **Description** = "Port Offset"

**Input** = "InsulationThickness" **Description** = "Insulation Thickness"

### Outputs = 11

**Output** = "BranchBody" **Description** = "Body For Branch"

**Output** = "StrainerCover" **Description** = "Strainer Cover"

**Output** = "PNoz3" **Description** = "Nozzle 3"

**Output** = "PNoz1" **Description** = "Nozzle 1"

**Output** = "PNoz2" **Description** = "Nozzle 2"

**Output** = "PNoz3" **Description** = "Nozzle 3"

**Output** = "InsStrainer" **Description** = "Insulation for Strainer"

**Output** = "InsBranch" **Description** = "Insulation for Branch"

**Output** = "InsStrainerCover" **Description** = "Insulation for Port 3"

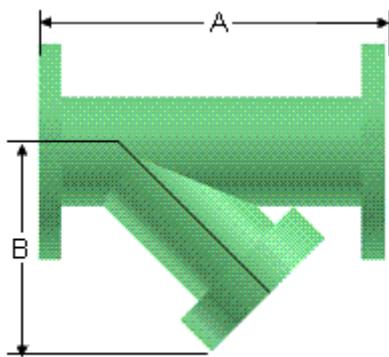
**Output** = "InsPort1" **Description** = "Insulation for Port 1"

**Output** = "InsPort2" **Description** = "Insulation for Port 2"

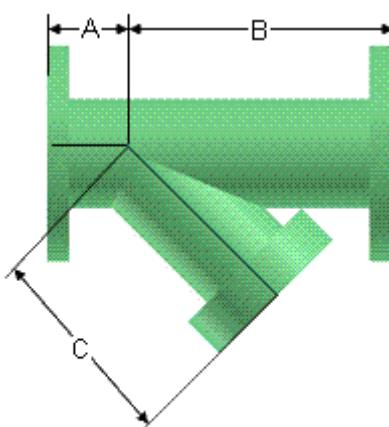
### Aspects = 2

**Aspect** = SimplePhysical

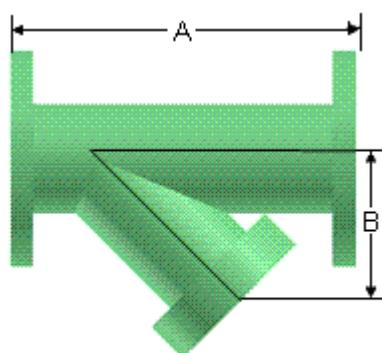
**Aspect** = Insulation



A=Face to Face  
B=Offset



A=Face 1 to Center  
B=Face 2 to Center  
C=Face 3 to Center



A=Face to Face  
B=Port Offset

## SP3DY

**Description:** Y

**Symbol Name:** SP3DY.CY

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** TrueY

**User Class Name:** True Y

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DLateral.CLateral

**Inputs = 3**

**Input = "FacetoFace" Description = "Face1 to Center"**

**Input = "Face2toBranch" Description = "Face2 to Center"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 8**

**Output = "InsulatedBody" Description = "Insulated Body"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsulatedBranch" Description = "Insulated Branch"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

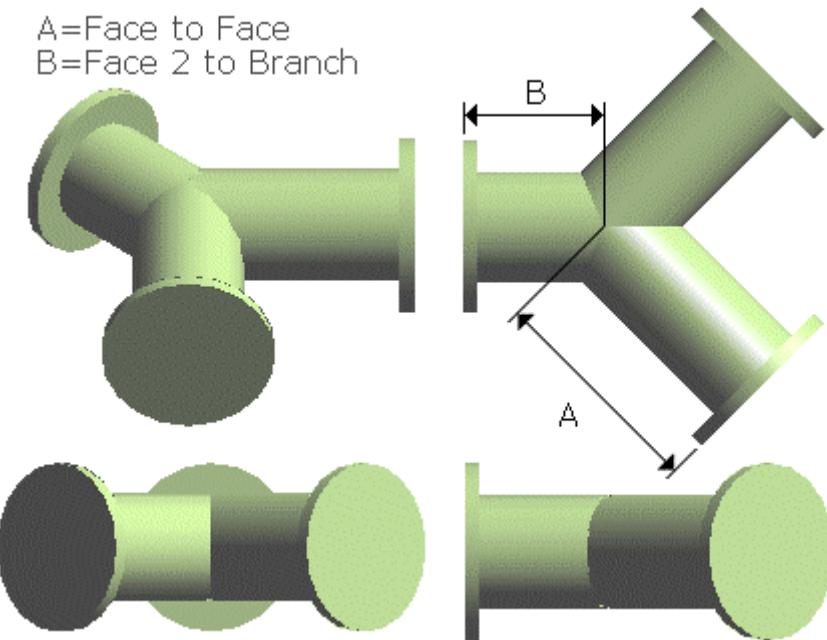
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



## SP3DYLong

**Description:** Y

**Symbol Name:** SP3DYLong.CYLong

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DYLong.CYLong

**Inputs = 6**

**Input = "Face1toCenter" Description = "Face 1 to Center"**

**Input = "Face2toCenter" Description = "Face 2 to Center"**

**Input = "Face3Offset1" Description = "Face 3 to Center along X direction"**

**Input = "Face3Offset2" Description = "Face 3 to Center along Y direction"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Input = "BendCenterOffset" Description = "Bend Center to Face 3 along Y"**

**Outputs = 13**

**Output = "Cylinder" Description = "Cylinder at 45 degrees to X"**

**Output = "BranchTor" Description = "Branch Torus"**

**Output = "InsulatedBody1" Description = "Insulated Body1"**

**Output = "InsulatedPort1" Description = "Insulated Port1"**

**Output = "InsulatedBody2" Description = "Insulated Body2"**

**Output = "InsulatedPort2" Description = "Insulated Port2"**

**Output = "InsBranchCyl1" Description = "Insulated Branch Cylinder1"**

**Output = "InsBranchTorSeg" Description = "Insulated Branch Torus Segment"**

**Output = "InsBranchCyl2" Description = "Insulated Branch Cylinder2"**

**Output = "InsulatedPort3" Description = "Insulated Port3"**

**Output = "PNoz1" Description = "Nozzle 1"**

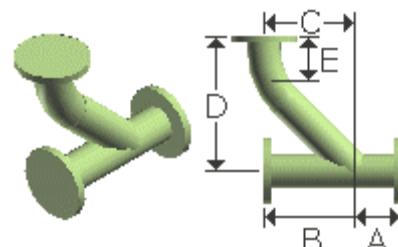
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center

B=Face 2 to Center

C=Face 3 Offset 1

D=Face 3 Offset 2

E=Bend Center Offset

# SP3DYStrainer

**Description:**

**Symbol Name:** SP3DYStrainer.CYStrainer

**Workbook:**

**Workbook Sheet:**

**User Class Name:**

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SP3DYStrainer.CYStrainer

**Inputs = 9**

**Input = "Face1toCenter" Description = "Face1 to Center"**

**Input = "Face2toCenter" Description = "Face2 to Center"**

**Input = "StrToptoCenter" Description = "Strainer Top to Center"**

**Input = "StrDiameter" Description = "Strainer Diameter"**

**Input = "BranchDiameter" Description = "Branch Diameter"**

**Input = "ComponentOffset" Description = "Nozzle3 Offeset from Strainer Center"**

**Input = "StrWidth" Description = "Strainer Width"**

**Input = "Face3toStrTop" Description = "Face3 to Strainer Top"**

**Input = "InsulationThickness" Description = "Insulation Thickness"**

**Outputs = 13**

**Output = "InsPort1" Description = "Insulation for Port1"**

**Output = "InsBody1" Description = " Insulation for Body Port1 side"**

**Output = "InsPort2" Description = "Insulation for Port2"**

**Output = "InsBody2" Description = " Insulation for Body Port2 side"**

**Output = "InsPort3" Description = "Insulation for Port3"**

**Output = "InsBody3" Description = "Insulation for Body Port3 side"**

**Output = "InsBranch" Description = "Insulation for Branch"**

**Output = "InsStrainer" Description = "Insulation for Strainer"**

**Output = "BodyBranch" Description = "Body of Branch"**

**Output = "BodyStrainer" Description = "Body of Strainer"**

**Output = "PNoz1" Description = "Nozzle 1"**

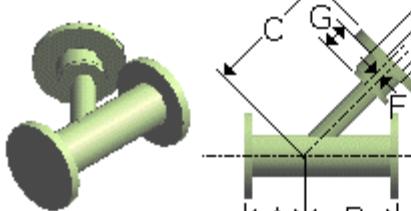
**Output = "PNoz2" Description = "Nozzle 2"**

**Output = "PNoz3" Description = "Nozzle 3"**

**Aspects = 2**

**Aspect = SimplePhysical**

**Aspect = Insulation**



A=Face 1 to Center  
 B=Face 2 to Center  
 C=Strainer Top to Center  
 D=Strainer Diameter  
 E=Branch Diameter  
 F=Offset  
 G=Strainer Width  
 H=Face 3 to Strainer Top

# SPOlet

**Symbol Name:** SPOlet.CSPOlet

**Workbook:** Piping Catalog.xls

**Workbook Sheet:** Weldolet, Thredolet, Sockolet

**User Class Name:** Sockolet

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: SPOlet.CSPOlet

**Inputs = 4**

**Input = "A"** **Description =** "Height of olet above pipe"

**Input = "B"** **Description =** "Width of the olet"

**Input = "C"** **Description =** "Inside hole diameter"

**Input = "InsulationThickness"** **Description =** "Insulation Thickness"

**Outputs = 4**

**Output = "body"** **Description =** "olet body"

**Output = "InsulatedBody"** **Description =** "Insulated Body"

**Output = "PNoz1"** **Description =** "Nozzle 1"

**Output = "PNoz2"** **Description =** "Nozzle 2"

**Aspects = 2**

**Aspect = SimplePhysical**

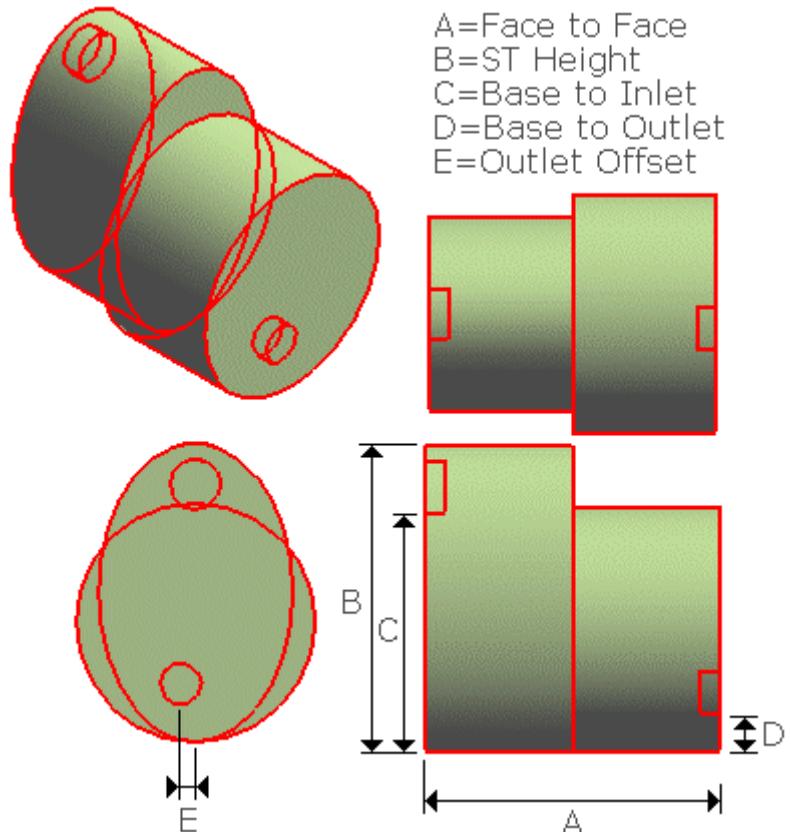
**Aspect = Insulation**



# WOSteamTrap

**Description:** Steam Trap Class 3000  
**Symbol Name:** WOSteamTrap.CWOSteamTrap  
**Workbook:** Piping Specialty Data.xls  
**Workbook Sheet:** EqualSteamTrap, SteamTrap  
**User Class Name:** Steam Trap Class 3000  
**Part Number:**  
**Inputs, Outputs, and Aspects:**

ProgID: WOSteamTrap.CWOSteamTrap  
Number of Inputs = 5  
Input name = "FacetoFace"  
Input description = "Face to Face"  
Input name = "BasetoInlet"  
Input description = "Base to Inlet"  
Input name = "BasetoOutlet"  
Input description = "Base to Outlet"  
Input name = "OutletOffset"  
Input description = "Outlet Offset"  
Input name = "STHeight"  
Input description = "Steam Trap Height"  
Number of Outputs = 4  
Output name = "Float"  
Output description = "Float Inlet Chamber"  
Output name = "Orifice"  
Output description = "Valve Outlet Orifice"  
Output name = "PNoz1"  
Output description = "Nozzle 1"  
Output name = "PNoz2"  
Output description = "Nozzle 2"  
Number of Aspects = 1  
Supported AspectId = SimplePhysical



## WOSteamTrap3

**Description:** Steam Trap 3

**Symbol Name:** WOSteamTrap3.CWOSteamTrap3

**Workbook:** Piping Specialty Data.xls

**Workbook Sheet:** SteamTrap3, EqualSteamTrap3

**User Class Name:** Steam Trap 3

**Part Number:**

**Inputs, Outputs, and Aspects:**

ProgID: WOSteamTrap3.CWOSteamTrap3

Number of Inputs = 5

Input name = "FacetoFace"

Input description = "Face to Face"

Input name = "BasetoInlet"

Input description = "Base to Inlet"

Input name = "BasetoOutlet"

Input description = "Base to Outlet"

Input name = "OutletOffset"

Input description = "Outlet Offset"

Input name = "STHeight"

Input description = "Steam Trap Height"

Number of Outputs = 5

Output name = "Float"

Output description = "Float Inlet Chamber"

Output name = "Orifice"

Output description = "Valve Outlet Orifice"

Output name = "PNoz1"

Output description = "Nozzle 1"

Output name = "PNoz2"

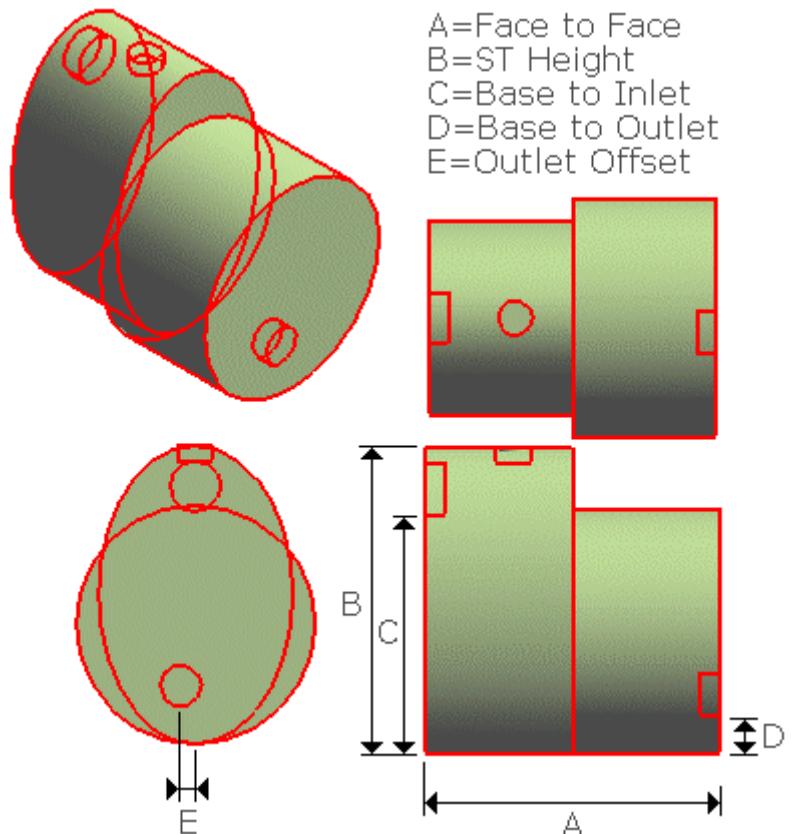
Output description = "Nozzle 2"

Output name = "PNoz3"

Output description = "Nozzle 3"

Number of Aspects = 1

Supported AspectId = SimplePhysical



# Structure Symbols: An Overview

The software delivers several basic structure symbols for stairs, ladders, handrails, footings, and equipment foundations. For information about member cross-sections symbols, refer to the *SmartPlant 2D Symbols User's Guide* or the *SmartPlant Structure Reference Data Guide*.

In addition to the symbols delivered with the software, you can create your own symbols that you can use in your model. For more information about creating symbols, refer to "Creating Symbols in Visual Basic: An Overview" in the *SmartPlant 3D Symbols Reference Guide*, available from the **Help > Printable Guides** command in the software.

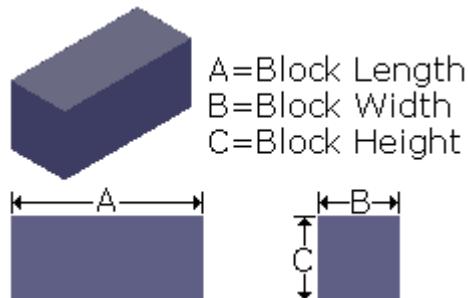
## SPSEqpFndMacros.BlockFndAsmDef

**Description:** equipment block foundations

**Symbol Name:** SPSEqpFndMacros.BlockFndAsmDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** BlockFndnAsm



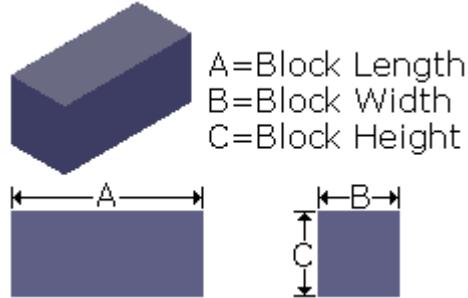
## SPSEqpFndMacros.BlockFndCompDef

**Description:** equipment block foundations

**Symbol Name:** SPSEqpFndMacros.BlockFndCompDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** BlockFndnComp



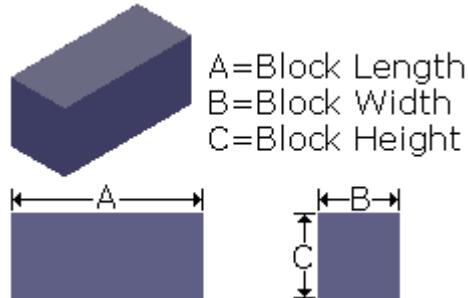
## SPSEqpFndMacros.BlockFndDef

**Description:** equipment block foundations

**Symbol Name:** SPSEqpFndMacros.BlockFndDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** BlockFndn



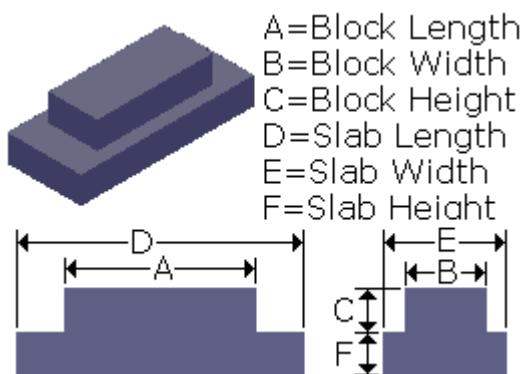
## SPSEqpFndMacros.BlockSlabFndAsmDef

**Description:** equipment block foundations

**Symbol Name:** SPSEqpFndMacros.BlockSlabFndAsmDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** BlockAndSlabFndnAsm



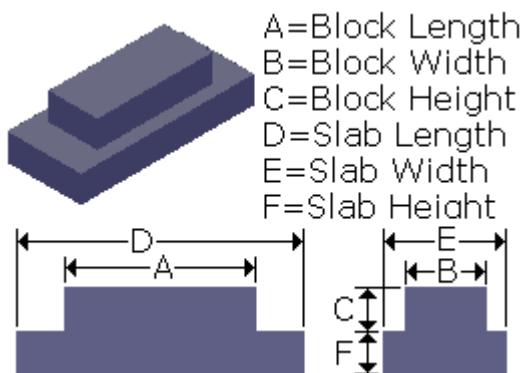
## SPSEqpFndMacros.BlockSlabFndDef

**Description:** equipment block foundations

**Symbol Name:** SPSEqpFndMacros.BlockSlabFndDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** BlockSlabFndn



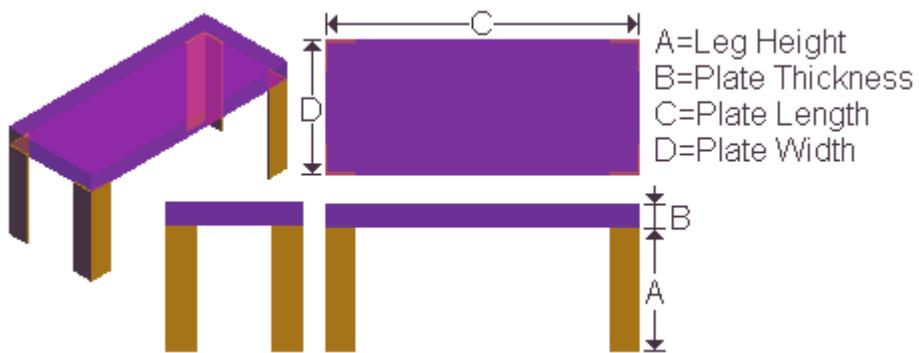
## SPSEqpFndMacros.FrameFndAsmDef

**Description:** equipment frame foundations

**Symbol Name:** SPSEqpFndMacros.FrameFndAsmDef

**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** FrameFndnAsm



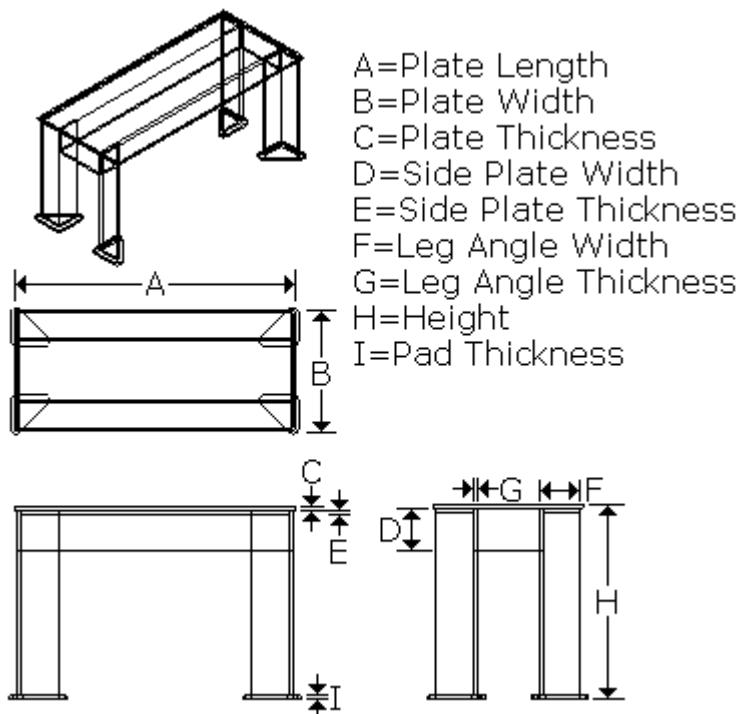
## SPSEqpFndMacros.FrameFndDef

**Description:** equipment frame foundations

**Symbol Name:** SPSEqpFndMacros.FrameFndDef

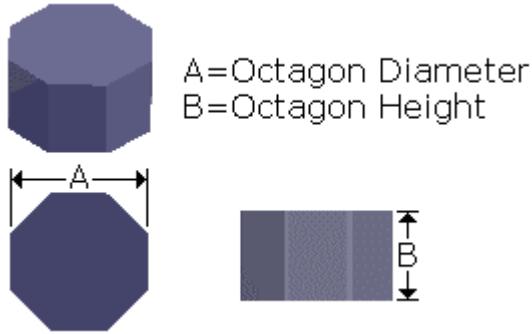
**Workbook:** StructEquipFoundations.xls

**Workbook Sheet:** LegAngleFrameFndn



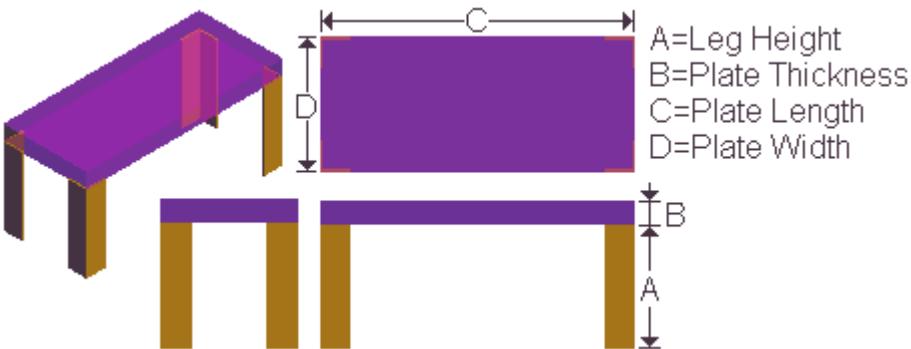
## SPSEqpFndMacros.OctagonFndDef

**Description:** equipment frame foundations  
**Symbol Name:** SPSEqpFndMacros.OctagonFndDef  
**Workbook:** StructEquipFoundations.xls  
**Workbook Sheet:** OctagonFndn



## SPSEqpFndMemSys.FrameFndnAsmWMemSysDef

**Description:** equipment frame foundations with member systems definitions  
**Symbol Name:** SPSEqpFndMemSys.FrameFndnAsmWMemSysDef  
**Workbook:** StructEquipFoundations.xls  
**Workbook Sheet:** FrameFndnAsmWMemSys



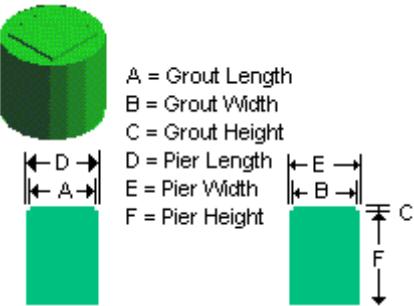
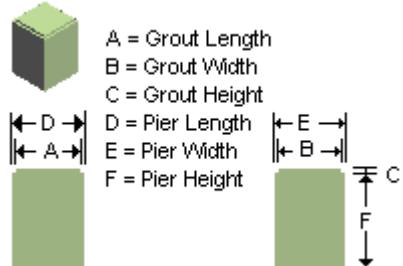
## SPSFootingMacros.BoundedPierFtgAsmDef

**Description:** rectangular and circular pier footings

**Symbol Name:** SPSFootingsMacros.BoundedPierFtgAsmDef

**Workbook:** StructFootings.xls

**Workbook Sheet:** PierFootningAsm



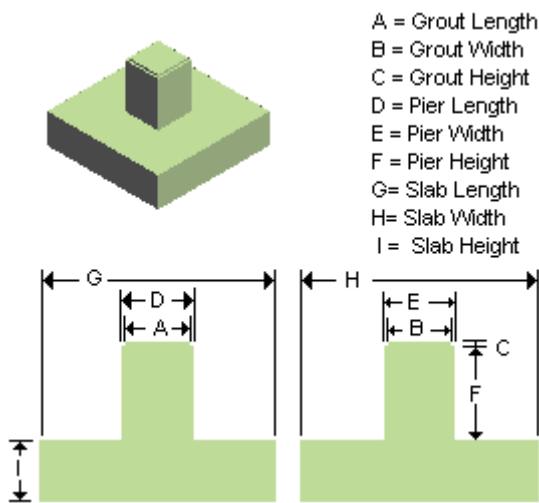
## SPSFootingMacros.FtgGroutPadSym

**Description:** pier and slab footings

**Symbol Name:** SPSFootingMacros.FtgGroutPadSym

**Workbook:** StructFootings.xls

**Workbook Sheet:** FootingGroutPad



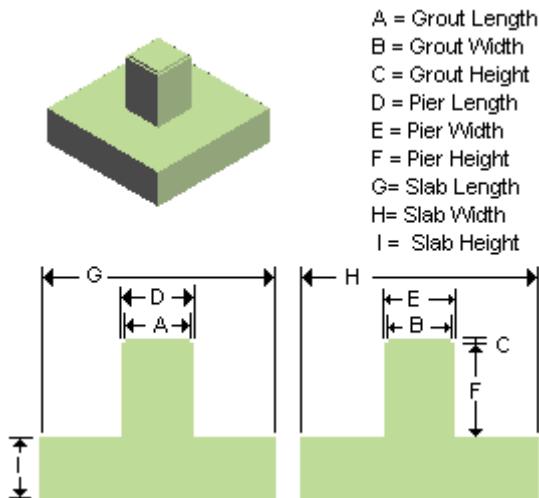
# SPSFootingMacros.FtgPierSym

**Description:** pier and slab footings

**Symbol Name:** SPSFootingMacros.FtgPierSym

**Workbook:** StructFootings.xls

**Workbook Sheet:** FootingPier



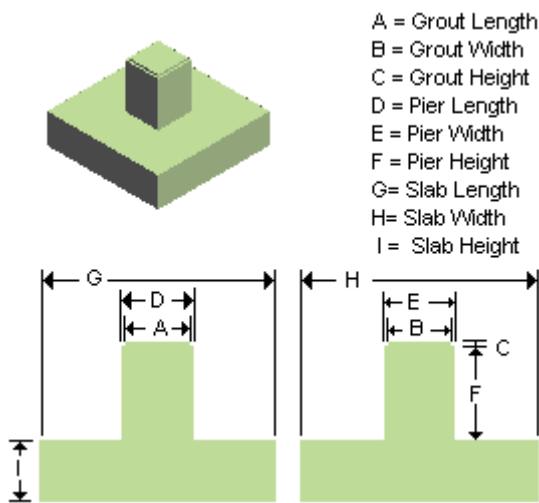
## SPSFootingMacros.FtgSlabSym

**Description:** rectangular and circular slab footings

**Symbol Name:** SPSFootingsMacros.FtgSlabSym

**Workbook:** StructFootings.xls

**Workbook Sheet:** FootingSlab



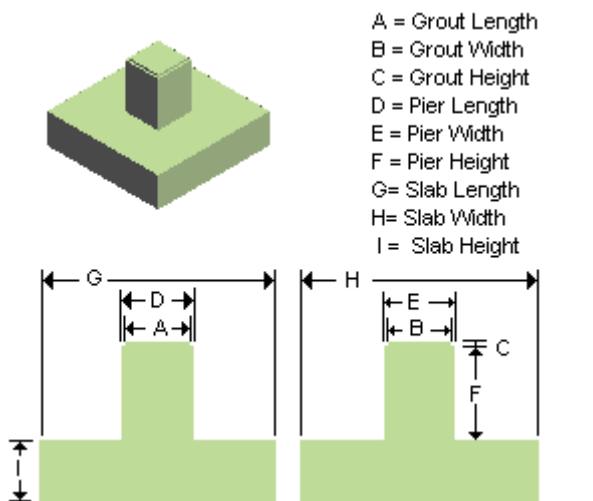
# SPSFootingMacros.PierAndSlabFtgAsmDef

**Description:** pier and slab footings

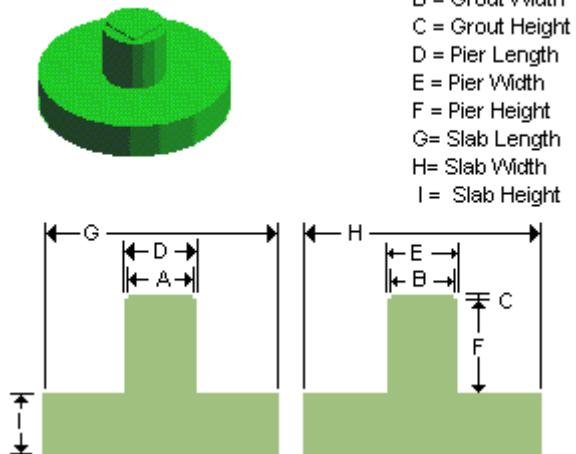
**Symbol Name:** SPSFootingMacros.PierAndSlabFtgAsmDef

**Workbook:** StructFootings.xls

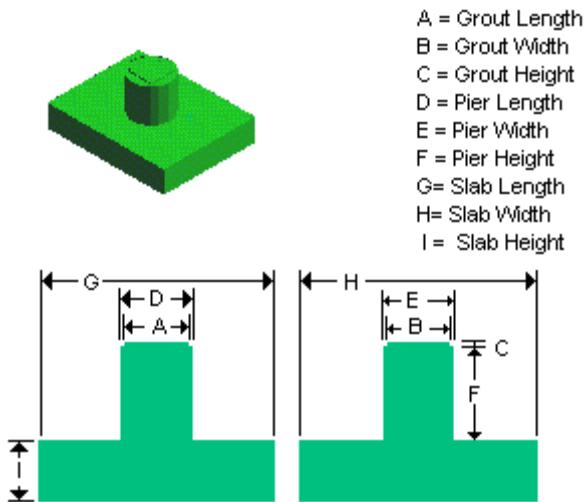
**Workbook Sheet:** PierAndSlabFootningAsm



*Rectangular pier and slab footing*



*Circular pier and slab footing*



*Circular pier and rectangular footing*

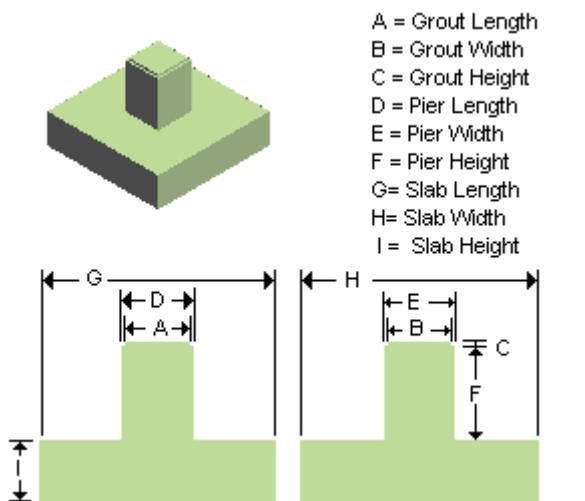
# SPSFootingMacros.PierAndSlabFtgSym

**Description:** pier and slab footings

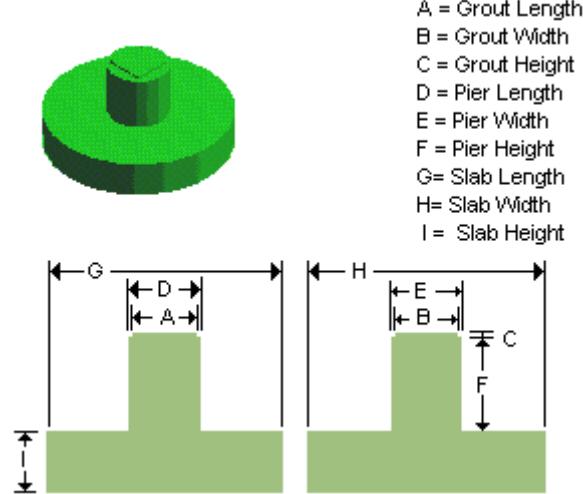
**Symbol Name:** SPSFootngMacros.PierAndSlabFtgSym

**Workbook:** StructFootings.xls

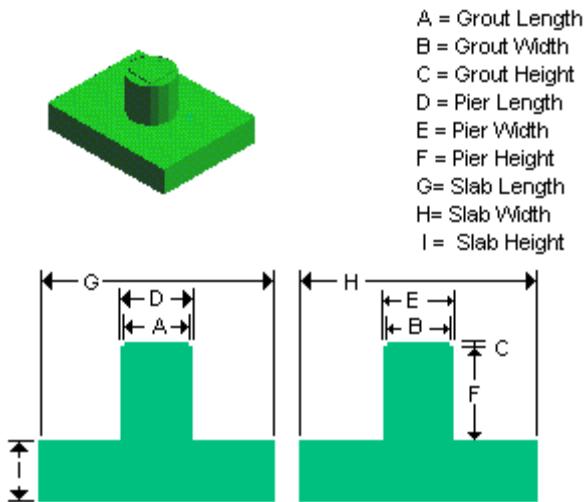
**Workbook Sheet:** PierAndSlabFootng



*Rectangular pier and slab footing*



*Circular pier and slab footing*



*Circular pier and rectangular footing*

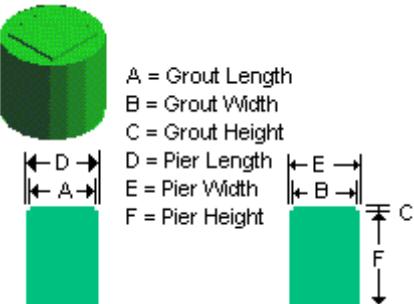
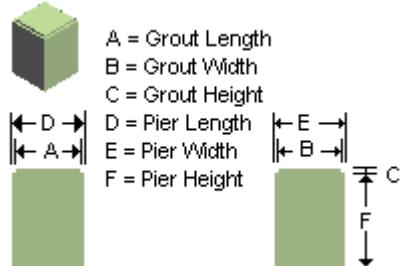
## SPSFootingMacros.PierFtgAsmDef

**Description:** rectangular and circular pier footings

**Symbol Name:** SPSFootingsMacros.PierFtgAsmDef

**Workbook:** StructFootings.xls

**Workbook Sheet:** PierFootningAsm



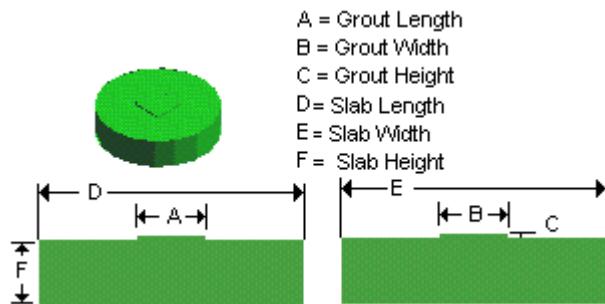
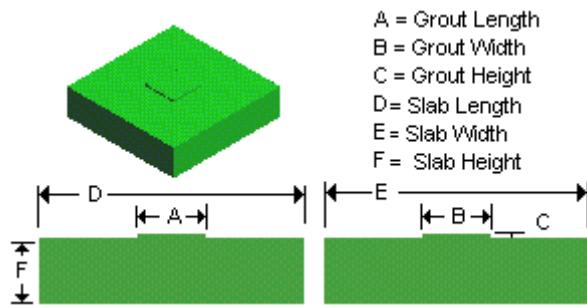
## SPSFootingMacros.slabFtgAsmDef

**Description:** rectangular and circular slab footings

**Symbol Name:** SPSFootngMacros.SlabFtgAsmDef

**Workbook:** StructFootings.xls

**Workbook Sheet:** SlabFootngAsm



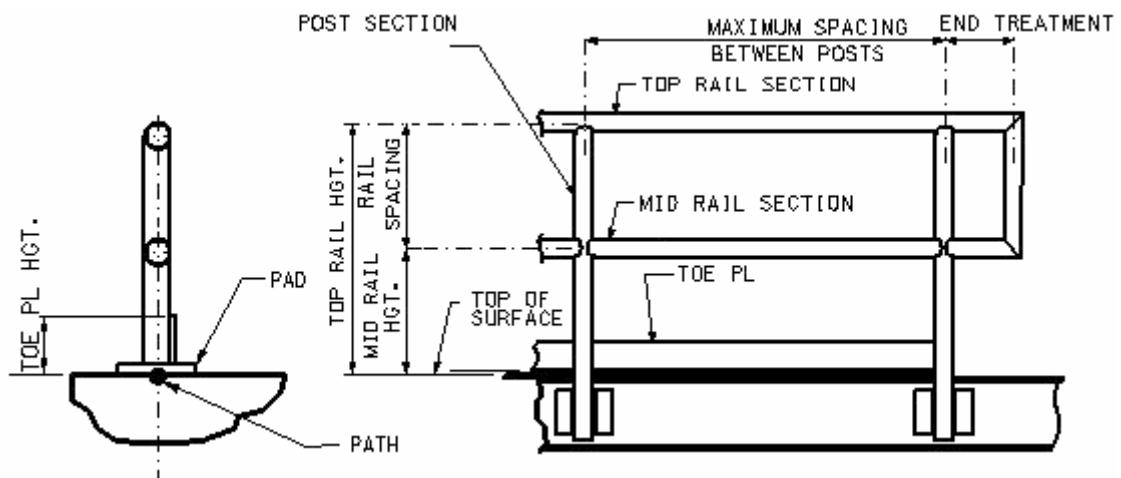
# SPSHandrailMacros.TypeA

**Description:** side-mounted handrail

**Symbol Name:** SPSHandrailMacros.TypeA

**Workbook:** StructHandrails.xls

**Workbook Sheet:** HandrailTypeA



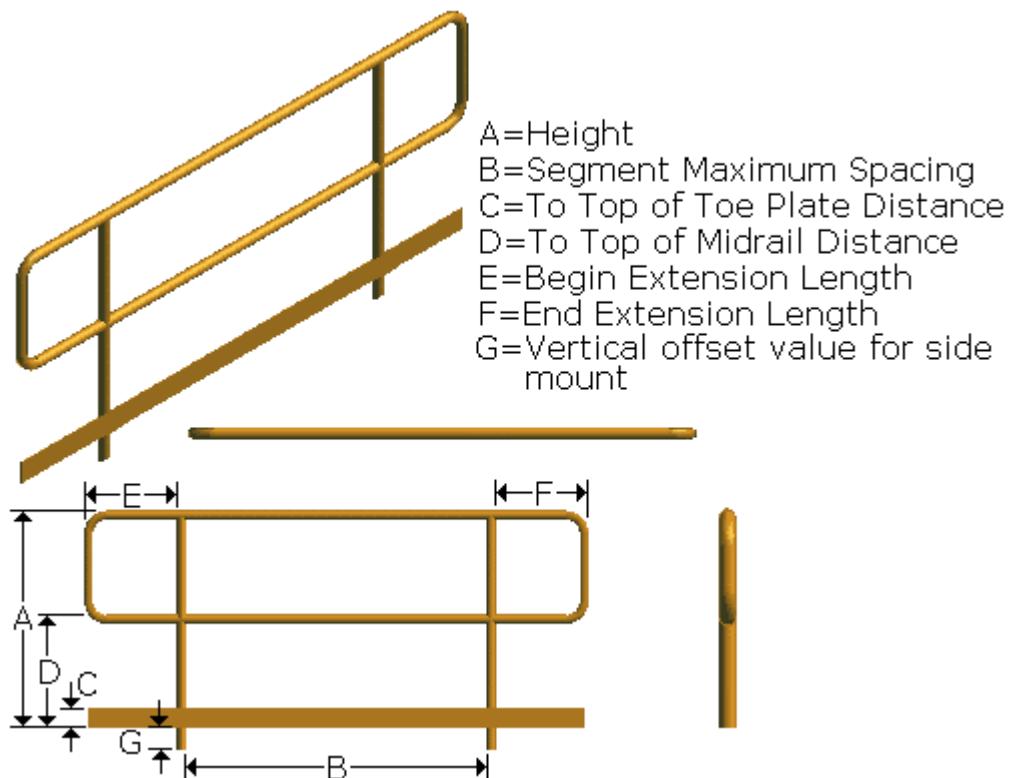
## SPSHandrailMacros.TypeASideMount

**Description:** side-mounted handrail

**Symbol Name:** SPSHandrailMacros.TypeASideMount

**Workbook:** StructHandrails.xls

**Workbook Sheet:** HandrailTypeA\_SideMounted



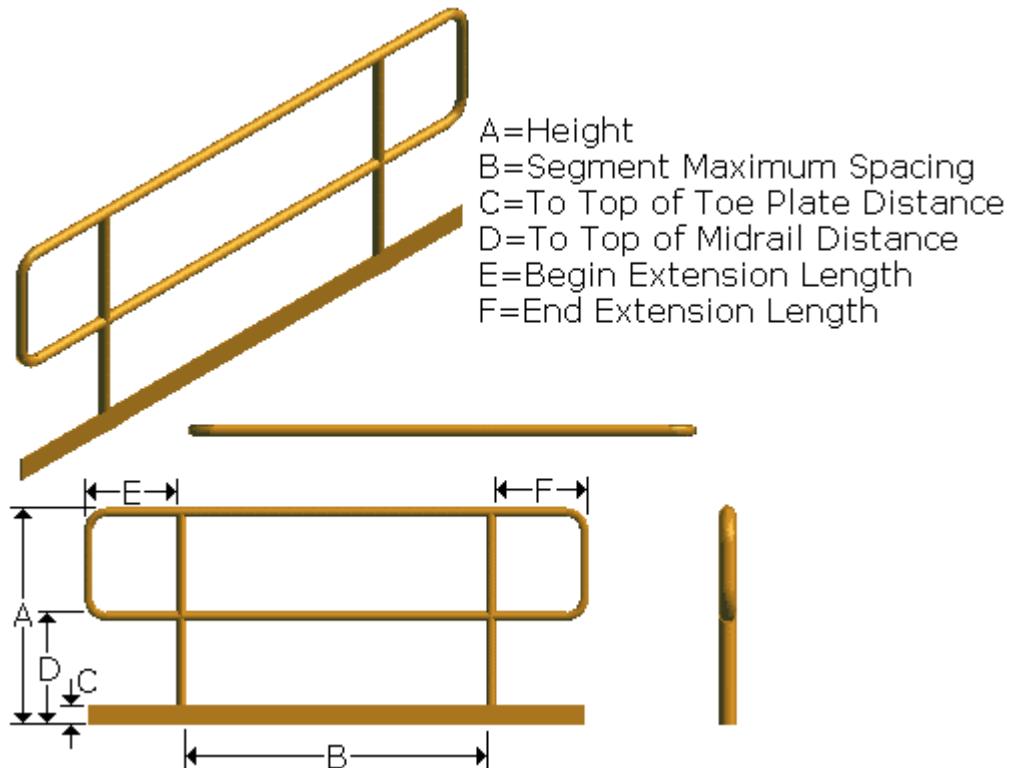
## SPSHandrailMacros.TypeATopEmbedded

**Description:** top-mounted handrail embedded in surface

**Symbol Name:** SPSHandrailMacros.TypeATopEmbedded

**Workbook:** StructHandrails.xls

**Workbook Sheet:** HandrailTypeA\_TopEmbedded



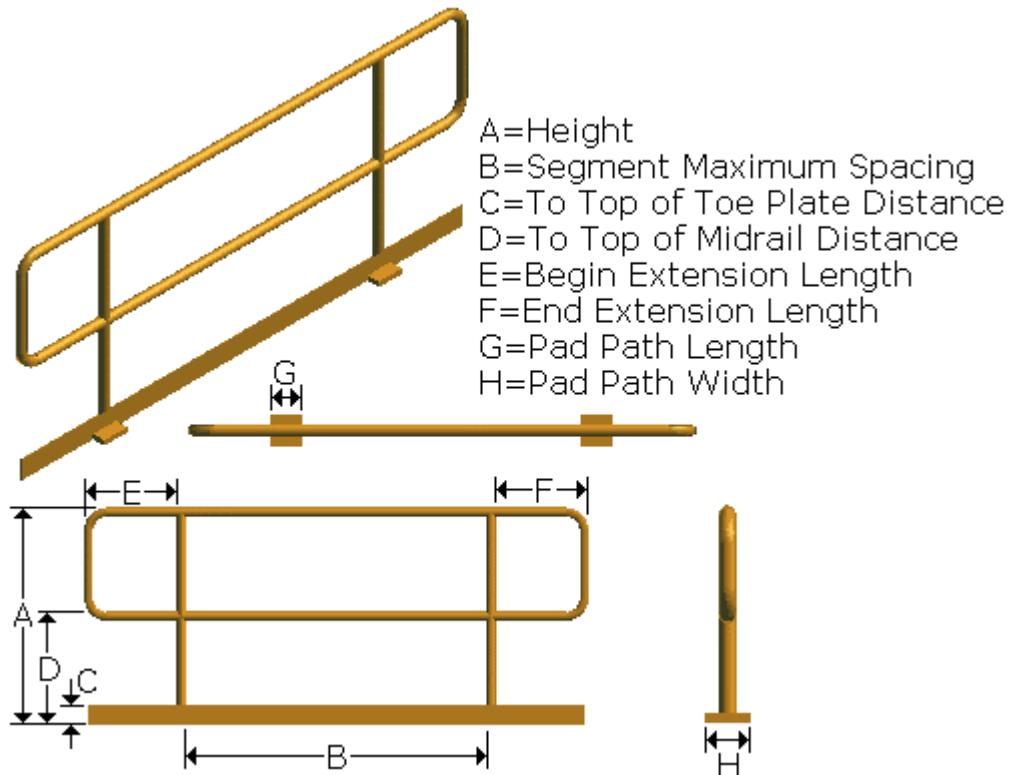
## SPSHandrailMacros.TypeATopMounted

**Description:** handrail top mounted on pad

**Symbol Name:** SPSHandrailMacros.TypeATopMounted

**Workbook:** StructHandrails.xls

**Workbook Sheet:** HandrailTypeA\_TopMounted



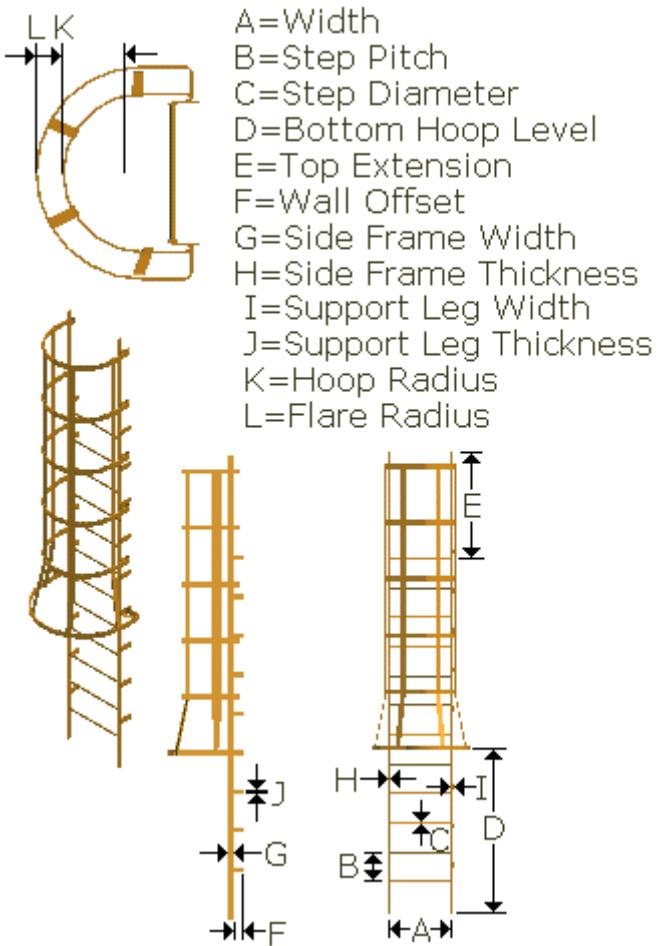
# SPSLadderMacros

**Description:** ladder with safety cage  
**Symbol Name:** SPSLadderMacros.LadderTypeA  
**Workbook:** StructLadders.xls  
**Workbook Sheet:** LadderTypeA  
**Inputs, Outputs, and Aspects:**

Input Name = "Width"  
Input Description = "Width"  
Input Name = "Angle"  
Input Description = "Angle"  
Input Name = "StepPitch"  
Input Description = "StepPitch"  
Input Name = "SupportLegPitch"  
Input Description = "SupportLegPitch"  
Input Name = "SupportLegWidth"  
Input Description = "SupportLegWidth"  
Input Name = "SupportLegThickness"  
Input Description = "SupportLegThickness"  
Input Name = "SideFrameWidth"  
Input Description = "SideFrameWidth"  
Input Name = "SideFrameThickness"  
Input Description = "SideFrameThickness"  
Input Name = "StepDiameter"  
Input Description = "StepDiameter"  
Input Name = "V1Dim1"  
Input Description = "V1Dim1"  
Input Name = "V1Dim2"  
Input Description = "V1Dim2"  
Input Name = "V1Dim3"  
Input Description = "V1Dim3"  
Input Name = "WallOffset"  
Input Description = "WallOffset"  
Input Name = "Span"  
Input Description = "Span"  
Input Name = "Height"  
Input Description = "Height"  
Input Name = "Length"  
Input Description = "Length"  
Input Name = "WithWallSupports"  
Input Description = "WithWallSupports"  
Input Name = "NumSteps"  
Input Description = "NumSteps"  
Input Name = "StepProtrusion"

Input Description = "StepProtrusion"  
Input Name = "WithSafetyHoop"  
Input Description = "WithSafetyHoop"  
Input Name = "HoopPitch"  
Input Description = "HoopPitch"  
Input Name = "BottomHoopLevel"  
Input Description = "BottomHoopLevel"  
Input Name = "HoopClearance"  
Input Description = "HoopClearance"  
Input Name = "HoopRadius"  
Input Description = "HoopRadius"  
Input Name = "HoopPlateThickness"  
Input Description = "HoopPlateThickness"  
Input Name = "HoopPlateWidth"  
Input Description = "HoopPlateWidth"  
Input Name = "HoopBendRadius"  
Input Description = "HoopBendRadius"  
Input Name = "HoopOpening"  
Input Description = "HoopOpening"  
Input Name = "ShDim1"  
Input Description = "ShDim1"  
Input Name = "ShDim2"  
Input Description = "ShDim2"  
Input Name = "ShDim3"  
Input Description = "ShDim3"  
Input Name = "FlareClearance"  
Input Description = "FlareClearance"  
Input Name = "FlareRadius"  
Input Description = "FlareRadius"  
Input Name = "HoopFlareBendRadius"  
Input Description = "HoopFlareBendRadius"  
Input Name = "FlareShDim1"  
Input Description = "FlareShDim1"  
Input Name = "FlareShDim2"  
Input Description = "FlareShDim2"  
Input Name = "FlareShDim3"  
Input Description = "FlareShDim3"  
Input Name = "HoopFlareHeight"  
Input Description = "HoopFlareHeight"  
Input Name = "HoopFlareMaxHeight"  
Input Description = "HoopFlareMaxHeight"  
Input Name = "VerticalStrapWidth"  
Input Description = "VerticalStrapWidth"  
Input Name = "VerticalStrapThickness"  
Input Description = "VerticalStrapThickness"  
Input Name = "VerticalStrapCount"

Input Description = "VerticalStrapCount"  
Input Name = "TopExtension"  
Input Description = "TopExtension"  
Input Name = "BottomExtension"  
Input Description = "BottomExtension"  
Input Name = "Justification"  
Input Description = "Justification"  
Input Name = "TopSupportSide"  
Input Description = "TopSupportSide"  
Input Name = "IsAssembly"  
Input Description = "IsAssembly"  
Input Name = "EnvelopeHeight"  
Input Description = "EnvelopeHeight"  
Input Name = "Primary\_SPSMaterial"  
Input Description = "Primary\_SPSMaterial"  
Input Name = "Primary\_SPSPGrade"  
Input Description = "Primary\_SPSPGrade"  
Aspect Name = "Physical"  
Aspect Description = "Physical representation"  
Output Name = "LeftSideFrame1"  
Output Description = "Left side frame element"  
Output Name = "RightSideFrame1"  
Output Description = "Right side frame element"  
Aspect Name = "DetailPhysical"  
Aspect Description = "DetailPhysical representation"  
Aspect Name = "OperationalSub"  
Aspect Description = "Operational representation"  
Output Name = "OperationalEnvelope1"  
Output Description = "Operational Envelope of the Vertical Ladder"  
Output Name = "Step"  
Output Description = "Ladder Step"  
Output Name = "LeftSupportLeg"  
Output Description = "Left Support Leg"  
Output Name = "RightSupportLeg"  
Output Description = "Right Support Leg"  
Output Name = "SafetyHoop"  
Output Description = "SafetyHoop"  
Output Name = "SafetyHoop"  
Output Description = "SafetyHoop"



## SPSStairMacros

**Description:** stairs with side handrails and optional top landing

**Symbol Name:** SPSStairMacros.StairTypeA

**Workbook:** StructStairs.xls

**Workbook Sheet:** StairTypeA

**Inputs, Outputs, and Aspects:**

Input name = "Width"

Input Description = "Width"

Input name = "Angle"

Input Description = "Angle"

Input name = "StepPitch"

Input Description = "StepPitch"

Input name = "Height"

Input Description = "Height"

Input name = "NumSteps"

Input Description = "NumSteps"

Input name = "Span"

Input Description = "Span"

Input name = "Length"

Input Description = "Length"

Input name = "Justification"

Input Description = "Justification"

Input name = "TopSupportSide"

Input Description = "TopSupportSide"

Input name = "SideFrame\_SPSSectionName"

Input Description = "SideFrame\_SPSSectionName"

Input name = "SideFrame\_SPSSectionRefStandard"

Input Description = "SideFrame\_SPSSectionRefStandard"

Input name = "HandRail\_SPSSectionName"

Input Description = "HandRail\_SPSSectionName"

Input name = "HandRail\_SPSSectionRefStandard"

Input Description = "HandRail\_SPSSectionRefStandard"

Input name = "Step\_SPSSectionName"

Input Description = "Step\_SPSSectionName"

Input name = "Step\_SPSSectionRefStandard"

Input Description = "Step\_SPSSectionRefStandard"

Input name = "SideFrameSectionCP"

Input Description = "SideFrameSectionCP"

Input name = "SideFrameSectionAngle"

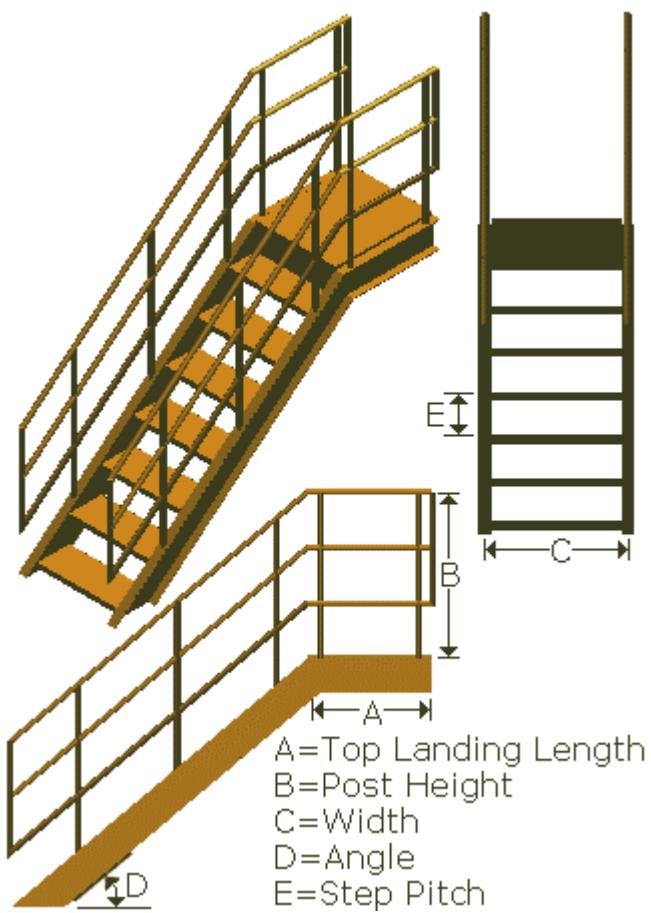
Input Description = "SideFrameSectionAngle"

Input name = "HandRailSectionCP"

Input Description = "HandRailSectionCP"

Input name = "HandRailSectionAngle"

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Input name = "StepSectionCP"
Input Description = "StepSectionCP"
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Input Description = "StepSectionAngle"
Input name = "Primary_SPSMaterial"
Input Description = "Primary_SPSMaterial"
Input name = "Primary_SPSGrade"
Input Description = "Primary_SPSGrade"
Input name = "PlatformThickness"
Input Description = "PlatformThickness"
Input name = "WithTopLanding"
Input Description = "WithTopLanding"
Input name = "TopLandingLength"
Input Description = "TopLandingLength"
Input name = "PostHeight"
Input Description = "PostHeight"
Input name = "HandRailPostPitch"
Input Description = "HandRailPostPitch"
Input name = "NumMidRails"
Input Description = "NumMidRails"
Input name = "IsAssembly"
Input Description = "IsAssembly"
Input name = "IsSystem"
Input Description = "IsSystem"
Input name = "EnvelopeHeight"
Input Description = "EnvelopeHeight"
Aspect name = "Physical"
Aspect Description = "Physical representation"
Output name = "LeftSideFrame"
Output Description = "Left side frame element"
Output name = "RightSideFrame"
Output Description = "Right side frame element"
Aspect name = "DetailPhysical"
Aspect Description = "DetailPhysical representation"
Aspect name = "OperationalSub"
Aspect Description = "Operational representation"
Output name = "OperationalEnvelope1"
Output Description = "Operational Envelope of the Stair"
```





# Index

- 17A, 1732  
 2-D symbols, 46  
 3D Symbols  
     what's new, 38  
 actual width/actual depth, 125  
 actuators  
     SP3DSolenoidActuator, 2231  
 air handling unit, 1187  
 AirCoolingCoil250x200x300, 1168  
 AirCoolingCoil300x200x325, 1168  
 AirCoolingCoil400x200x350, 1168  
 AirCoolingCoil400x250x350, 1168  
 AirFilter250x200x120, 1172  
 AirFilter300x200x150, 1172  
 AirFilter400x200x180, 1172  
 AirFilter400x250x180, 1172  
 AirFilterHumidifier250x200x200, 1170  
 AirFilterHumidifier300x200x225, 1170  
 AirFilterHumidifier400x200x275, 1170  
 AirFilterHumidifier400x250x275, 1170  
 angle control valve with diaphragm actuator, 1430  
 angle pressure relief valve, 1567, 1569, 1579  
 angle valves  
     SP3DAngleValveL, 1355  
 Annubar Type 1, 1401  
 Annubar Type 2, 1403  
 Anvil FIG103, 650  
 Anvil FIG133, 651  
 Anvil FIG134, 652  
 Anvil FIG135, 653  
 Anvil FIG135E, 654  
 Anvil FIG136, 655  
 Anvil FIG137, 656  
 Anvil FIG140, 657  
 Anvil FIG146, 658  
 Anvil FIG157, 659  
 Anvil FIG160, 660  
 Anvil FIG161, 661  
 Anvil FIG162, 662  
 Anvil FIG163, 663  
 Anvil FIG164, 664  
 Anvil FIG165, 665  
 Anvil FIG167, 666  
 Anvil FIG181, 667  
 Anvil FIG191, 668  
 Anvil FIG192, 670  
 Anvil FIG200, 671  
 Anvil FIG201, 673  
 Anvil FIG211, 675  
 Anvil FIG212, 677  
 Anvil FIG216, 679  
 Anvil FIG218, 681  
 Anvil FIG222, 682  
 Anvil FIG224, 684  
 Anvil FIG230, 685  
 Anvil FIG242A, 686  
 Anvil FIG243A, 687  
 Anvil FIG244A, 688  
 Anvil FIG246, 689  
 Anvil FIG248, 690  
 Anvil FIG248L, 691  
 Anvil FIG253, 692  
 Anvil FIG255, 693  
 Anvil FIG256, 694  
 Anvil FIG257, 695  
 Anvil FIG257A, 696  
 Anvil FIG260, 697  
 Anvil FIG261, 698  
 Anvil FIG262, 699  
 Anvil FIG271, 700  
 Anvil FIG278, 701  
 Anvil FIG278L, 702  
 Anvil FIG290, 703  
 Anvil FIG290L, 705  
 Anvil FIG291, 707  
 Anvil FIG292, 708  
 Anvil FIG295, 709  
 Anvil FIG295H, 711  
 Anvil FIG299, 713  
 Anvil FIG300, 715  
 Anvil FIG40, 716  
 Anvil FIG436, 718  
 Anvil FIG436A, 719  
 Anvil FIG55L, 720  
 Anvil FIG55S, 721  
 Anvil FIG60, 722  
 Anvil FIG63A, 723  
 Anvil FIG63B, 725  
 Anvil FIG63C, 727  
 Anvil FIG66, 729  
 Anvil FIG69, 731  
 Anvil FIG80A, 732  
 Anvil FIG80B, 734  
 Anvil FIG80C, 736  
 Anvil FIG81A, 738  
 Anvil FIG81B, 740  
 Anvil FIG81C, 742  
 Anvil FIG81D, 744  
 Anvil FIG81F, 746  
 Anvil FIG82A, 748  
 Anvil FIG82B, 749  
 Anvil FIG82C, 751

- Anvil FIG82D, 753  
Anvil FIG82E, 754  
Anvil FIG82F, 756  
Anvil FIG82G, 758  
Anvil FIG86, 760  
Anvil FIG95, 761  
Anvil FIG98A, 762  
Anvil FIG98B, 764  
Anvil FIG98C, 766  
Anvil FIG98D, 768  
Anvil FIG98E, 769  
Anvil FIG98F, 771  
Anvil FIG98G, 773  
Anvil FIGB268A, 775  
Anvil FIGB268B, 777  
Anvil FIGB268C, 779  
Anvil FIGB268D, 781  
Anvil FIGB268E, 783  
Anvil FIGB268F, 785  
Anvil FIGB268G, 787  
Anvil HEX\_NUT, 789  
aspects  
    custom, 91  
assembly files, 109  
Assy\_FR\_BC\_CS, 604, 612  
Assy\_FR\_BC\_HSS, 605  
Assy\_FR\_BC\_LS, 606  
Assy\_FR\_BC\_WS, 607  
Assy\_FR\_IT\_LS, 608  
Assy\_FR\_LS\_CS, 609  
Assy\_FR\_LS\_HSS, 610  
Assy\_FR\_LS\_LS, 611  
Assy\_FR\_TS\_CS, 613  
Assy\_FR\_TS\_LS, 614  
Assy\_FR\_TS\_WS, 615  
Assy\_FR\_UC\_CS, 616  
Assy\_FR\_UC\_HSS, 617  
Assy\_FR\_UC\_LS, 618  
Assy\_FR\_UC\_WS, 619  
Assy\_FR\_US\_LS, 620  
Assy\_GD\_AN, 621  
Assy\_GD\_HD, 622  
Assy\_GD\_L1, 623  
Assy\_GD\_L2, 624  
Assy\_GD\_T1, 625  
Assy\_GN\_VR\_CYL, 626  
Assy\_LE\_DL, 627  
Assy\_RR\_DR\_LS, 628  
Assy\_RR\_DR\_WS, 629  
Assy\_RR\_LR, 630  
Assy\_RR\_SR\_CL, 631  
Assy\_RR\_SR\_DB, 632  
Assy\_RR\_SR\_DH, 633  
Assy\_RR\_SR\_HV, 634  
Assy\_RR\_SR\_MD, 635  
Assy\_SH, 636  
Assy\_SH\_CL, 637  
Assy\_VS\_SR\_CL, 638  
Assy\_VS\_SR\_DB, 639  
Assy\_VS\_SR\_DH, 640  
Assy\_VS\_SR\_HV, 641  
Assy\_VS\_SR\_MD, 642  
axial elbow nozzle orientation, 207  
axial nozzle orientation, 207  
axis orientation, 80  
B-100, 1246  
BA106E 42369-1, 379  
ball, 1286  
ball valves  
    SP3D3WayBall, 1303  
    SP3D3WayBallValve, 1305  
    SP3DBallAsymValve, 1361  
    SP3DCSPBallValve, 1724  
basket strainers  
    SP3DBasketStrainer, 1366  
    SP3DBasketStrainer2, 1367  
body of symbols, 71  
bubble detector, 1382  
bull's eye sight indicator, 1383  
butterfly valves  
    SP3DButterflyGOp, 1385  
    SP3DButterflyValve, 1386  
    SP3DButterflyValveAsym, 1387  
    SP3DButterflyValveL, 1388  
    SP3DButterflyValveSym, 1390  
    SP3DButterflyValveVAL, 1392  
    SP3DButterflyValveVOH, 1393  
CAB files, 58  
cable tray  
    nominal vs actual vs load dimensions, 125  
    SP3D30HCableTray, 127  
    SP3D30VCTrayInside, 128  
    SP3D30VCTrayOutside, 129  
    SP3D45HCableTray, 130  
    SP3D45VCTrayInside, 131  
    SP3D45VCTrayOutside, 132  
    SP3D60HCableTray, 133  
    SP3D60VCTrayInside, 134  
    SP3D60VCTrayOutside, 135  
    SP3D90HCableTray, 136  
    SP3D90VCableTrayInside, 138  
    SP3D90VCableTrayOutside, 139  
    SP3DAdjHCableTray, 140  
    SP3DAdjVCableTray, 141  
    SP3DCrossCableTray, 142  
    SP3DEndPlateCableTray, 143, 146  
    SP3DLeftReducerCableTray, 144  
    SP3DLeftWyeCableTray, 145  
    SP3DRightWyeCableTray, 147  
    SP3DSredCableTray (Straight Reducer), 148  
    SP3DTeeCableTray, 149  
    SP3DVCrossCableTray, 150

- SP3DVTEEDownCableTray, 151  
 SP3DVTEEUpCableTray, 152  
 symbols overview, 125  
 cable trays, 74  
 caps  
   SP3DCap, 1394  
 catalog database valves, 86  
 ceiling diffuser, 1189  
 chain wheels  
   SP3DOPChainWheel, 2003  
   SP3DVACChainWheel, 2270  
 check valve, 1396  
 check valves  
   SP3DAngleCheckValve, 1349  
   SP3DAngleCheckValveAsym, 1350  
   SP3DAngleStopCheckValve, 1353  
   SP3DStopCheckValve, 2239  
 Circle sheet, 204  
 CircularPad, 1144  
 CircularTori sheet, 191  
 clamps  
   SP3DBioClamp, 1370  
   SP3DSwivelJointClamp, 2242  
   techlok, 2246  
   victaulic, 2282  
 classification of symbols, 65, 66  
 cleaning bend, 1192  
 ConcentricReducer, 1287  
 conduit, 74  
   SP3D90ConduitElbow, 154  
   SP3DConduit45Elbow, 155  
   SP3DConduitCoupling, 157  
   SP3DConduitCross, 158  
   SP3DConduitExpJoint, 159  
   SP3DConduitHub, 160  
   SP3DConduitPlug, 161  
   SP3DConduitReducer, 162  
   SP3DConduitReducingTee, 163  
   SP3DConduitSealEYS, 164  
   SP3DConduitTee, 165  
   SP3DConduitUnion, 166  
   SP3DConduitY, 167  
   symbols overview, 153  
 connections  
   defining, 112  
 control valve with double acting dual cylinder actuator, 1448  
 control valve with double acting single piston actuator fail open, 1457  
 control valve with double acting spring return actuator, 1451  
 control valve with rack and pinion actuator, 1550  
 converting  
   PDS symbols to SP3D, 93, 94, 96  
   PDS symbols to SP3D examples, 99  
 Coriolis Flowmeter Type 1, 1420  
 Coriolis Flowmeter Type 2 Gas, 1416  
 Coriolis Flowmeter Type 2 Liquid, 1418  
 Coriolis Flowmeter type 3 Gas, 1412  
 Coriolis Flowmeter Type 3 Liquid, 1414  
 couplings  
   SP3DCoupling, 1654  
   victaulic pressfit, 2292  
 creating  
   symbols, 55, 61, 62, 64  
 crosses  
   SP3DCross, 1655  
   SP3DCrossGeneric, 1656  
   SP3DCrossRB, 1658  
   SP3DCrossRRB, 1660  
   SP3DReducingCross, 2148  
 cross-sections  
   creating, 46  
   CTClipHoldClamp, 1145  
   CTHoldDownClamp, 1146  
   CTHoldSideClamp, 1147  
   CTHoldUpClamp, 1148  
   CTSsingleCnHg, 1149  
   custom aspects, 91  
   custom component, 61  
   customizing Part Definition Wizard output, 72  
   datum shape, 191  
   debugging symbols, 114  
   defining  
     connections on equipment, 112  
     ports, 49, 108  
     ports in Solid Edge, 112  
   definition properties, 67  
   definitions  
     symbols, 103  
   deluge valve, 1852  
   design aids  
     overview, 171  
     SP3DRoadCross, 200  
     SP3DRoadTee, 202  
   diaphragm valves, 1856  
   differences between parametric and regular symbols, 83  
   directions, 80  
   distributing symbols  
     automatically, 58  
     manually, 60  
   divisions, 76  
   DivisionW2, 1175  
   DivisionW3-01, 1177  
   Double Acting Dual Cylinder Actuator Type 1 Valve, 1463  
   Double Chamber Orifice Fitting, 1466  
   drains  
     SP3DTankDrainValve, 2243  
   drip ring tee, 1871  
   drum

- vertical with legs, 547
- DuctClamp, 1150
- EccentricCone sheet, 192
- EccentricRectangularPrism sheet, 192
- EccentricTransitionElement sheet, 193, 198
- EDEN symbols, 93, 94, 96, 99
  - command line structure, 94
  - translator outputs, 96
  - VB modifications, 96
  - workflow, 94
  - workflow examples, 99
- editing
  - symbol occurrence, 118, 119
- elbows
  - 45 degrees mitered, 1315
  - 90 degrees mitered, 1333
  - SP3D11Elbow, 1290
  - SP3D225DegMiterElbow, 1292
  - SP3D22Elbow, 1293
  - SP3D30DegElbow, 1294
  - SP3D30DegMiterElbow, 1295
  - SP3D30Elbow, 1296
  - SP3D45Elbow, 1316
  - SP3D45LTElbow, 1317
  - SP3D45TrimElbow, 1321
  - SP3D45UnionElbow, 1322
  - SP3D5Elbow, 1326
  - SP3D60DegMiterElbow, 1327
  - SP3D60Elbow, 1328
  - SP3D90Elbow, 1334
  - SP3D90ElbowCBs, 1335
  - SP3D90LongTangentElbow, 1336
  - SP3D90RedElbow, 1340
  - SP3D90TElbow, 1343
  - SP3D90UnionElbow, 1344
  - SP3DBio45ElbowWeld, 1368
  - SP3DBio90ElbowWeld, 1369
  - victaulic pressfit 45 degrees, 2293
  - victaulic pressfit 90 degrees, 2294
- Electric Actuator Type 4, 1490
- Electric Actuator Valve Type 1, 1472
- Electric Actuator Valve Type 2, 1478
- Electric Actuator Valve Type 3, 1484
- Electric Actuator Valve Type 5, 1496
- electric lights, 382, 383, 386
- electric speakers, 385
- electrical
  - cable trays, 74
  - conduit, 74
  - parts versus features, 74
  - reducers, 74
  - vectors, 74
- Electrical Equipment.xls
  - FluorescentFixture, 376
  - HighBayFixture, 377
  - JunctionBox, 379
- LowBayFixture, 380
- PullBox, 168
- WallPackFixture, 393
- electrical speaker, 384
- Ellipse sheet, 204
- end preparations, 80
- EqualTee, 1289
- EquipCompExchangerShell 01, 270
- equipment
  - SP3DElecContSwitch, 373
  - SP3DElecFluoFix, 376, 380
  - SP3DElecHBFixture, 377
  - SP3DElecJunctionBox, 379
  - SP3DElecPullBox, 168
  - SP3DElecTransformer, 388
  - SP3DElectricalMotor, 390
  - SP3DElecVarFreqDrive, 392
  - SP3DElecWPFixture, 393
  - SP3DHeatXasm, 445
  - SP3DInstrStandDouCol, 485
  - SP3DInstrStandSinCol, 486
  - SP3DInstrStdWallMount, 487
  - StdPump, 541
- equipment foundations
  - SPSEqpFndMacros.BlockFndAsmDef, 2313
  - SPSEqpFndMacros.BlockFndCompDef, 2314
  - SPSEqpFndMacros.BlockFndDef, 2314
  - SPSEqpFndMacros.BlockSlabFndAsmDef, 2315
  - SPSEqpFndMacros.BlockSlabFndDef, 2315
  - SPSEqpFndMacros.FrameFndAsmDef, 2316
  - SPSEqpFndMacros.FrameFndDef, 2317
  - SPSEqpFndMacros.OctagonFndDef, 2318
  - SPSEqpFndMemSys.FrameFndnAsmWMemSysDef, 2318
- Equipment.xls, 445
  - Coolers, 445
- EquipmentComponent.xls, 211
  - EquipCompExchangerShell, 270
  - Skirt, 334
- example using String type, 91
- example using SymbolHelper, 88
- Excel workbooks, 65, 66
- extension stem, 2010
- eye wash station, 571
- Face to Center Versus Face to Face, 80
- features, 74
- file names for Solid Edge parts, 109
- fire and safety
  - eye wash station, 571
  - hose rack station, 581
  - overview, 563
  - SP3D2WFireHydrantTy1, 564
  - SP3D2WFireHydrantTy2, 565
  - SP3D3WFireHydrant, 566
  - SP3D3WFireHydrantTy2, 567
  - SP3D90DegSiamese, 568

- SP3DElevFireMonitor, 569  
 SP3DFireHydWMonTy1, 572  
 SP3DFireHydWMonTy2, 574  
 SP3DFireMonitor, 575  
 SP3DFoamChamberTy1, 578  
 SP3DSafetyShower, 582  
 SP3DSiamese, 600  
 SP3DSpraySprinkler, 601  
 fire damper, 1200  
 first input, 92  
 fixed properties, 62, 67  
 flame arrestors  
   SP3DCSFlameArrestorTy1, 1690  
   SP3DCSPFlameArrestor, 1738  
   SP3DFlameArrestorTy1, 1900  
 flanges, 80  
   lap joint, 1951  
   plate, 2112  
   rectangular flat, 1224  
   rectangular flat with depth inclination, 1226  
   reducing filler, 2143  
 SP3D1OrificeFlange, 1291  
 SP3DAdapterFlange, 1346  
 SP3DBlindFlange, 1381  
 SP3DOrificeFlange, 2064  
 SP3DOrificeFlange1O, 2065  
 SP3DOrificeFlangeAssembly, 2066  
 SP3DOrificePlate, 2067  
 SP3DSlipOnFlange, 2230  
 SP3DWNFNFlange, 2299  
 flat oval torus miter, 262  
 FlatOvalRivet, 1265  
 FlatOvalWeld, 1266  
 flavors, 103  
 flow controller, 1979  
 flow meter, 1904  
   magnetic, 1972  
 FluoFixture01, 376  
 Fluorescent Fixture, 376  
 footings  
   SPSFootingMacros.BoundedPierFtgAsmDef, 2319  
   SPSFootingMacros.FtgGroutPadSym, 2320  
   SPSFootingMacros.FtgPierSym, 2321  
   SPSFootingMacros.FtgSlabSym, 2322  
   SPSFootingMacros.PierAndSlabFtgAsmDef, 2323  
   SPSFootingMacros.PierAndSlabFtgSym, 2325  
   SPSFootingMacros.PierFtgAsmDef, 2327  
   SPSFootingMacros.SlabFtgAsmDef, 2328  
 FS10A, 564  
 FS10B, 565  
 FS11A, 572  
 FS11B, 574  
 FS13B, 567  
 FS26A, 578  
 FS26B, 579  
 FS2B, 569  
 FS38A, 571  
 FS39A, 582  
 FS60A, 600  
 FS66A, 568  
 G4G\_1451\_04, 1151  
 G4G\_1451\_06, 1152  
 G4G\_1460\_01, 1153  
 G4G\_1461\_01, 1154  
 G51, 1802  
 gate valve, 1914  
 gate valves  
   SP3DBlankGateValve, 1379  
   SP3DConduitGateValve, 1641  
   SP3DConduitGateValveAsym, 1642  
   SP3DGateValExtndOlet, 1913  
   SP3DGateValveAngleOp, 1915  
   SP3DGateValveExtnd, 1918  
   SP3DGateValveL, 1919  
 generic aids  
   overview, 171  
   SP3DRoadCross, 200  
   SP3DRoadTee, 202  
 generic regulator, 1553, 1555, 1557, 1559, 1561  
 globe valves, 1351  
   SP3D3WayGlobeValve, 1312  
   SP3DCSPGlobeValve, 1750  
   SP3DGlobeGOp, 1920  
   SP3DGlobeValve, 1921  
   SP3DGlobeValveF, 1923  
   SP3DGlobeValves, 1924  
 graphical  
   preview of symbols, 50, 51, 52  
 graphical output, 62  
 grounding paddle, 1925  
 hammer arrestors, 1752  
 handrails  
   side-mounted, 2330  
   top embedded, 2331  
   top mounted, 2332  
   type A, 2329  
 hangers and supports  
   symbols overview, 603  
 Heat Exchanger, 445  
 heat exchangers  
   SP3DHeatEx2EndShellComp, 270  
 Hexagon sheet, 204  
 HexagonalSolid sheet, 193  
 HgrAISC\_C, 643  
 HgrAisc\_HSS, 644  
 HgrAISC\_L, 645  
 HgrAISC\_Pipe, 646  
 HgrAISC\_ST, 647  
 HgrAISC\_W, 648  
 HgrAISC\_WT, 649  
 HgrBeam, 1155  
 HgrElbowLug, 1156, 1157

- HgrSupFlatPlate, 1158  
HgrSupInternalBracket, 1159  
HgrSupPentrPlate, 1160  
HgrSupUBolt, 1161  
High Bay Fixture, 377  
HighBayFixture01, 377  
HMI1, 1502  
hose connections  
    SP3DHoseConnection, 1928  
hose rack station, 581  
HVAC  
    air handling unit, 1187  
    cleaning bend, 1192  
    coupling, 1263  
    disk valve, 1194  
    divisions, 76  
    end cap, 1264  
    fire damper, 1200  
    nozzles, 76  
    saddle, 1271  
    SP3DAirCoolingCoil, 1168  
    SP3DAirFilterHumidifier, 1170  
    SP3DAirFilterR, 1172  
    SP3DBellMouth, 1174  
    SP3DDivisionW2, 1175  
    SP3DDivisionW3, 1177  
    SP3DHElbow, 1196  
    SP3DHRectBranchAngRTE, 1223  
    SP3DHRectFlatFlange, 1224  
    SP3DHRectFlatFlangeDInc, 1226  
    SP3DHRectFlatFlangeDWInc, 1228  
    SP3DHRectRTE, 1232  
    SP3DHRectSleeve, 1234  
    SP3DHRoundBranchAngRTE, 1243  
    SP3DHRoundDamper, 1244  
    SP3DHRoundElbow, 1246  
    SP3DHRoundFlateFlangeDWInc, 1251  
    SP3DHRoundFlatFlange, 1247  
    SP3DHRoundFlatFlangeDInc, 1249  
    SP3DHRoundRTE, 1253  
    SP3DHRoundSleeve, 1255  
    SP3DHsqrThroatElbow, 1261  
    SP3DHVACFlatOvalRivet, 1265  
    SP3DHVACFlatOvalWeld, 1266  
    SP3DHVACRectRivet, 1267  
    SP3DHVACRectWeld, 1268  
    SP3DHVACRoundRivet, 1269  
    SP3DHVACRoundWeld, 1270  
    SP3DHvacSM1PTap, 1272  
    SP3DHvacSMRB, 1273  
    SP3DHvacSMRoundB, 1274  
    SP3DHVACSurfMount, 1275  
    SP3DMotorRoundDamper, 1279  
    SP3DRFOBellMouth, 1281  
    specifications, 76  
    symbols overview, 1167  
    HVAC Air Cooling Coil, 1168  
    HVAC Air Filter, 1172  
    HVAC Air Filter Humidifier, 1170  
    HVAC Division Width divided into three cells, 1177  
    HVAC Division Width divided into two cells, 1175  
    HVAC Duct Smoke Detector, 1275  
    HVAC Generic Elbow, 1196  
    HVAC Motorized Round Damper, 1279  
    HVAC Rectangular Flat Flange, 1224  
    HVAC Rectangular Sleeve, 1234  
    HVAC Rivets for Flat Oval Duct, 1265  
    HVAC Rivets for Rectangular Duct, 1267  
    HVAC Rivets for Round Duct, 1269  
    HVAC Round Damper, 1244  
    HVAC Round Elbow, 1246  
    HVAC Round Flat Flange, 1247  
    HVAC Round Flat Flange with Depth inclination, 1249  
    HVAC Round Sleeve, 1255  
    HVAC Round Tee and Reducing Tee, 1253  
    HVAC Split Weld for Flat Oval Duct, 1266  
    HVAC Split Weld for Rectangular Duct, 1268  
    HVAC Split Weld for Round Duct, 1270  
    HVAC Surf Mount Inspection Cover, 1275  
    Hvac Surface Mounted component with 1 Piping Tap, 1272  
Hvac.xls  
    Division2, 1175  
    DuctSmokeDetector, 1275  
    SP3DAirCoolingCoil, 1168  
    SP3DAirFilterHumidifier, 1170  
    SP3DAirFilterR, 1172  
    SP3DDivisionW3, 1177  
    SP3DHElbow, 1196  
    SP3DHRect\_FlatFlange, 1224  
    SP3DHRectSleeve, 1234  
    SP3DHRoundDamper, 1244  
    SP3DHRoundElbow, 1246  
    SP3DHRoundFlatFlange, 1247  
    SP3DHRoundFlatFlangeDInc, 1249  
    SP3DHRoundRTE, 1253  
    SP3DHRoundSleeve, 1255  
    SP3DHVACFlatOvalRivet, 1265  
    SP3DHVACFlatOvalWeld, 1266  
    SP3DHVACRectRivet, 1267  
    SP3DHVACRectWeld, 1268  
    SP3DHVACRoundRivet, 1269  
    SP3DHVACRoundWeld, 1270  
    SP3DHvacSM1PTap, 1272  
    SP3DMotorDamper, 1279  
    SurfMountCover, 1275  
    HVACElbowFo, 1196  
hydrant, 564, 565, 566, 567, 568, 569, 572, 574, 600  
I10A, 1792, 1794, 1796, 1798  
I116A, 1766  
I12A, 1758

- I13A, 1724  
I13AZ, 1678  
I14A, 1716  
I15A, 1750  
I15AZ, 1695  
I16A, 1768  
I17A, 1728, 1764  
I18A, 1718  
I28A, 1720  
I301AZ, 1347  
I30A, 1722  
I3AZ, 1664  
I401A, 1756  
I7A, 1774  
IA1, 1401  
IA2, 1403  
IADD, 1534  
IBeam sheet, 205  
ICM1, 1420  
ICM2, 1418  
ICM3, 1416  
ICM4, 1414  
ICM5, 1412  
Icover250x400, 1275  
Icover400x600, 1275  
IDCO, 1466  
IDL1A, 1593  
IDL1C, 1591  
IDL1D, 1593  
IDL4C, 1587  
IDR1B, 1591  
IDR4A, 1587  
IDR4B, 1589  
IEAM1, 1472  
IEAM2, 1478  
IEAM3, 1484  
IEAM4, 1490  
IEAM5, 1496  
IIOL, 1511  
IIOR, 1508  
IIV, 1504  
IKG1, 1540  
IKG2, 1542  
ILSV, 1514  
IMDC2, 1525  
IMFM1, 1517  
IMFM2, 1519  
IMFM3, 1521  
IMFM4, 1523  
IMOP1, 1531  
IMRSV, 1528  
in-line turbine or propeller flow instrument, 1623  
inputs, 92  
Insert Venturi, 1504  
instruments  
    angle control valve with diaphragm actuator, 1430  
    angle pressure relief valve, 1567, 1569, 1579  
    Annubar Type 1, 1401  
    Annubar Type 2, 1403  
    control valve with double acting dual cylinder actuator, 1448  
    control valve with double acting single piston actuator fail open, 1457  
    control valve with double acting spring return actuator, 1451  
    control valve with rack and pinion actuator, 1550  
    control valves with double acting spring return actuator, 1460  
    Coriolis Flowmeter Type 1, 1420  
    Coriolis Flowmeter Type 2 Gas, 1416  
    Coriolis Flowmeter Type 2 Liquid, 1418  
    Coriolis Flowmeter type 3 Gas, 1412  
    Coriolis Flowmeter Type 3 Liquid, 1414  
    Double Acting Dual Cylinder Actuator Type 1 Valve, 1463  
    Double Chamber Orifice Fitting, 1466  
    Electric Actuator Type 4, 1490  
    Electric Actuator Valve Type 1, 1472  
    Electric Actuator Valve Type 3, 1484  
    Electric Actuator Valve Type 5, 1496  
    generic regulator, 1553, 1555, 1557, 1559, 1561  
    HMI1, 1502  
    IA1, 1401  
    IA2, 1403  
    ICM1, 1420  
    ICM2, 1418  
    ICM3, 1416  
    ICM4, 1414  
    ICM5, 1412  
    IDCO, 1466  
    IDL1C, 1591  
    IDL1D, 1593  
    IDL4C, 1587  
    IDR4A, 1587  
    IDR4B, 1589  
    IEAM1, 1472  
    IEAM2, 1478  
    IEAM3, 1484  
    IEAM4, 1490  
    IEAM5, 1496  
    IIOL, 1511  
    IIOR, 1508  
    IIV, 1504  
    IKG1, 1540  
    IKG2, 1542  
    ILSV, 1514  
    IMDC2, 1525  
    IMFM1, 1517  
    IMFM2, 1519  
    IMFM3, 1521  
    IMFM4, 1523  
    IMOP1, 1531

- IMRSV, 1528  
in-line turbine or propeller flow instrument, 1623  
Insert Venturi, 1504  
IOP, 1536  
IPDA2, 1463  
IPDA3, 1454  
IPDA3A, 1460  
IPDA4, 1457  
IPDA4A, 1451  
IPDA5, 1448  
IPR1A, 1595  
IPR1B, 1599  
IPR4A, 1597  
IPR4B, 1601  
IR1, 1603  
IR2, 1605  
IR3, 1607  
IR4, 1609  
IR5, 1611  
IR6, 1613  
IR7, 1615  
IR8, 1617  
IR9, 1619  
IREG1, 1553  
IREG2, 1555  
IREG3, 1557  
IREG4, 1559  
IREG5, 1561  
IRI2, 2089  
IRVT1, 1563  
IRVT2, 1565  
IRVT3, 1567  
IRVT4, 1569  
IRVT5, 1572  
IRVT6, 1576  
IRVT7, 1579  
IRXPA, 1550  
ISCV3, 1546  
ISSD3, 1428  
ISSDA, 1430  
ISSDS, 1446  
ISSPA, 1544  
ISSPS, 1548  
ITM, 1623  
IVM1, 1627  
IVM2, 1625  
IVM3, 1629  
IVM4, 1631  
IWFE, 1633  
Knife Gate Valve Type 1, 1540  
Knife Gate Valve Type 2, 1542  
Long or Short Venturi, 1514  
Magnetic Flowmeter Type 1, 1517, 1968  
Magnetic Flowmeter Type 2, 1519, 1969  
Magnetic Flowmeter Type 3, 1521, 1970  
Magnetic Flowmeter Type 4, 1523, 1971  
orifice double chamber fitting, 1466  
Orifice Integral Type 1, 1508  
Orifice Integral Type 2, 1511  
Orifice Meterrun Flanges and Plate, 1531  
Orifice Plate, 1536  
rotameter type 1, 1603  
rotameter type 2, 1605  
rotameter type 3, 1607  
rotameter type 4, 1609  
rotameter type 5, 1611  
rotameter type 6, 1613  
rotameter type 7, 1615  
rotameter type 8, 1617  
rotameter type 9, 1619  
Rotary Diaphragm Actuator Valve Position C1, 1591  
Rotary Diaphragm Actuator Valve Position C4, 1587  
Rotary Diaphragm Actuator Valve Position D1, 1593  
Short Meterrun Venturi, 1528  
simple 2 way valve, 1397  
simple 3-way valve, 1399  
simple angle valve, 1506  
simple box with 2 ports, 1405  
simple box with 3 ports, 1407  
simple box with 4 ports, 1409  
simple cylindircal with 2 ports, 1422  
simple cylindircal with 3 ports, 1424  
simple cylindircal with 4 ports, 1426  
simple indicator, 1621  
SP3DCIAannubarTy1, 1401  
SP3DCIAannubarTy2, 1403  
SP3DCICorioFlowMetTy3GAS, 1412  
SP3DCICorioFlowMetTy3LIQ, 1414  
SP3DCICorioFlwMtrTy2GAS, 1416  
SP3DCICorioFlwMtrTy2LIQ, 1418  
SP3DCICoriolisFlowMeterTy1, 1420  
SP3DCIDAct3WGIStyCValve, 1428  
SP3DCIDActAngleValve, 1430  
SP3DCIDActEPPAngVal, 1432  
SP3DCIDActEPPHWhAngVal, 1434  
SP3DCIDActEPPHWhGisVal, 1437  
SP3DCIDActEPPHWhTopAngVal, 1440  
SP3DCIDActEPPHWhTopGisVal, 1443  
SP3DCIDActGIStyValve, 1446  
SP3DCIDADcylActTy5Valve, 1448  
SP3DCIDAOSRAct90LSValve, 1451  
SP3DCIDouAFailClActTy3Val, 1454  
SP3DCIDouAFailOpenActValve, 1457  
SP3DCIDouAOOrSprRetActVal, 1460  
SP3DCIDouASinCylActTy2Val, 1463  
SP3DCIDouChamberOrifice, 1466  
SP3DCIElecActTy1AngValve, 1469  
SP3DCIElecActTy1Valve, 1472  
SP3DCIElecActTy2AngVal, 1475

- SP3DCIElecActTy2Val, 1478  
 SP3DCIElecActTy3AngValve, 1481  
 SP3DCIElecActTy3Valve, 1484  
 SP3DCIElecActTy4AngVal, 1487  
 SP3DCIElecActTy4Valve, 1490  
 SP3DCIElecActTy5AngValve, 1493  
 SP3DCIElecActTy5Val, 1496  
 SP3DCIIInsertionElement, 1502  
 SP3DCIIInsertVenturi, 1504  
 SP3DCIIIntegralOrificeTy1, 1508  
 SP3DCIIIntegralOrificeTy2, 1511  
 SP3DCILongOrShortVenturi, 1514  
 SP3DCIMagFlowmeterTy1, 1517  
 SP3DCIMagFlowmeterTy2, 1519  
 SP3DCIMagFlowmeterTy3Tr, 1521  
 SP3DCIMagFlowmeterTy4, 1523  
 SP3DCIMetDblChOriFitting, 1525  
 SP3DCIMeterRunShortVenturi, 1528  
 SP3DCIMetrurOriFlangePlate, 1531  
 SP3DCIOffsetActVal, 1534  
 SP3DCIOrificePlate, 1536  
 SP3DCIPerRackPinActVal, 1538  
 SP3DCIPiActKnifeGateValTy1, 1540  
 SP3DCIPiActKnifeGateValTy2, 1542  
 SP3DCIPistonActAngVal, 1544  
 SP3DCIPistonActStCondValve, 1546  
 SP3DCIPistonActValve, 1548  
 SP3DCIRackPinionActValve, 1550  
 SP3DCIRegulatorTy1, 1553  
 SP3DCIRegulatorTy2, 1555  
 SP3DCIRegulatorTy3, 1557  
 SP3DCIRegulatorTy4, 1559  
 SP3DCIRegulatorTy5, 1561  
 SP3DCIReliefValveTy1, 1563  
 SP3DCIReliefValveTy2, 1565  
 SP3DCIReliefValveTy3, 1567  
 SP3DCIReliefValveTy4, 1569  
 SP3DCIReliefValveTy5, 1572  
 SP3DCIReliefValveTy6, 1576  
 SP3DCIReliefValveTy7, 1579  
 SP3DCIRODActEPPHWPosC1Val, 1581  
 SP3DCIRODActEPPHWPosD1Val, 1584  
 SP3DCIRODActPosA4Valve, 1587  
 SP3DCIRODActPosB4Valve, 1589  
 SP3DCIRODActPosC1Valve, 1591  
 SP3DCIRODActPosD1Valve, 1593  
 SP3DCIROPisActPosA1Valve, 1595  
 SP3DCIROPisActPosA4Valve, 1597  
 SP3DCIROPisActPosB1Valve, 1599  
 SP3DCIROPisActPosB4Valve, 1601  
 SP3DCIRotameterTy1, 1603  
 SP3DCIRotameterTy2, 1605  
 SP3DCIRotameterTy3, 1607  
 SP3DCIRotameterTy4, 1609  
 SP3DCIRotameterTy5, 1611  
 SP3DCIRotameterTy6Tr, 1613  
 SP3DCIRotameterTy7FS, 1615  
 SP3DCIRotameterTy8, 1617  
 SP3DCIRotameterTy9, 1619  
 SP3DCITurbineMeter, 1623  
 SP3DCIVorFlowmeterTy2, 1625  
 SP3DCIVorFlowMtrTy1, 1627  
 SP3DCIVorFlowMtrTy3, 1629  
 SP3DCIVorFlowMtrTy4DH, 1631  
 SP3DCIWedgeFIElement, 1633  
 SP3DLevelIndCtrlTy3, 1955  
 SP3DLevelIndCtrlTy4, 1957  
 SP3DLevelIndCtrlTy6, 1959  
 SP3DMagFlowmeterTy1, 1968  
 SP3DMagFlowmeterTy2, 1969  
 SP3DMagFlowmeterTy3Tr, 1970  
 SP3DMagFlowmeterTy4, 1971  
 SP3DPerRackPinionActValve, 2089  
 two-way globe control valve with diaphragm actuator, 1446  
 two-way globe control valve with piston actuator, 1548  
 valve with rotary piston actuator, 1597  
 valve with Rotary Piston Actuator, 1595, 1599  
 vortex flow meter, 1625, 1627, 1629  
 vortex flow meter with dual heads, 1631  
 wedge flow element, 1633  
 InstrumentStandDouCol01, 485  
 InstrumentStandSinCol01, 486  
 InstrumentStandWallMount01, 487  
 insulation, 80  
 IOP, 1536  
 IPDA2, 1463  
 IPDA3, 1454  
 IPDA3A, 1460  
 IPDA4, 1457  
 IPDA4A, 1451  
 IPDA5, 1448  
 IPR1A, 1595  
 IPR1B, 1599  
 IPR4A, 1597  
 IPR4B, 1601  
 IR1, 1603  
 IR2, 1605  
 IR3, 1607  
 IR4, 1609  
 IR5, 1611  
 IR6, 1613  
 IR7, 1615  
 IR8, 1617  
 IR9, 1619  
 IREG1, 1553  
 IREG2, 1555  
 IREG3, 1557  
 IREG4, 1559  
 IREG5, 1561  
 IRI2, 1538, 2089

- IRVT1, 1563  
IRVT2, 1565  
IRVT3, 1567  
IRVT4, 1569  
IRVT5, 1572  
IRVT6, 1576  
IRVT7, 1579  
IRXPA, 1550  
ISCV3, 1546  
ISSD3, 1428  
ISSDA, 1430  
ISSDS, 1446  
ISSPA, 1544  
ISSPS, 1548  
ITM, 1623  
IVM1, 1627  
IVM2, 1625  
IVM3, 1629  
IVM4, 1631  
IWFE, 1633  
JunctionBox, 379  
JunctionBox01, 379  
kettle exchangers  
    SP3DKettleExchangerAsm, 488  
Knife Gate Valve Type 1, 1540  
Knife Gate Valve Type 2, 1542  
knife gate valves  
    SP3DCSPKnifeValve, 1758  
ladders, 2333  
lap joint flange, 1951  
lateral, 1953  
laterals  
    HVAC 30-degree, 1179  
    HVAC 45-degrees, 1181  
    HVAC 60-degrees, 1183  
    SP3DLateral, 1952  
latrolet, 1954  
lifting lugs, 284, 286  
lights, 382, 383, 386  
    SP3DElecBayLightAsm, 371  
    SP3DFluorescentLightAsm, 433  
    SP3DLightingFixtureBHARAsm, 490  
    SP3DLightingFixtureBHDRAsm, 492  
    SP3DLightingFixtureBTARAsm, 494  
    SP3DLightingFixtureBTDRAsm, 496  
    SP3DSlipFitterFloodLightAsm, 535  
limitation of PDS translation  
    discussed, 96  
linear grill, 1203  
Lisega\_TYPE11, 790  
Lisega\_TYPE12\_13\_14, 792  
Lisega\_TYPE16, 794  
Lisega\_TYPE20, 796  
Lisega\_TYPE20\_EXT, 798  
Lisega\_TYPE21, 800  
Lisega\_TYPE22, 802  
Lisega\_TYPE25, 804  
Lisega\_TYPE26, 805  
Lisega\_TYPE27, 806  
Lisega\_TYPE27\_EXT, 808  
Lisega\_TYPE28, 809  
Lisega\_TYPE29, 811  
Lisega\_TYPE299, 812  
Lisega\_TYPE30, 813  
Lisega\_TYPE31, 814  
Lisega\_TYPE32, 816  
Lisega\_TYPE33, 818  
Lisega\_TYPE35, 819  
Lisega\_TYPE36, 820  
Lisega\_TYPE37\_LRG, 822  
Lisega\_TYPE37\_SML, 824  
Lisega\_TYPE39, 826  
Lisega\_TYPE40, 827  
Lisega\_TYPE41A, 828  
Lisega\_TYPE41B, 829  
Lisega\_TYPE42A, 830  
Lisega\_TYPE42B, 831  
Lisega\_TYPE43, 833  
Lisega\_TYPE44A, 835  
Lisega\_TYPE44B, 837  
Lisega\_TYPE45, 839  
Lisega\_TYPE46, 841  
Lisega\_TYPE48, 843  
Lisega\_TYPE49A, 845  
Lisega\_TYPE49B, 847  
Lisega\_TYPE51, 848  
Lisega\_TYPE52, 849  
Lisega\_TYPE53, 851  
Lisega\_TYPE54A, 853  
Lisega\_TYPE54B, 854  
Lisega\_TYPE54C, 855  
Lisega\_TYPE55, 856  
Lisega\_TYPE56A, 857  
Lisega\_TYPE56B, 859  
Lisega\_TYPE57, 860  
Lisega\_TYPE58A, 861  
Lisega\_TYPE58B, 862  
Lisega\_TYPE60, 863  
Lisega\_TYPE61, 864  
Lisega\_TYPE62, 866  
Lisega\_TYPE63, 867  
Lisega\_TYPE64, 868  
Lisega\_TYPE65, 869  
Lisega\_TYPE66\_LRG, 870  
Lisega\_TYPE67A, 871  
Lisega\_TYPE67B, 872  
Lisega\_TYPE67C, 873  
Lisega\_TYPE70, 874  
Lisega\_TYPE71A, 875  
Lisega\_TYPE71B, 876  
Lisega\_TYPE72, 877  
Lisega\_TYPE73, 878

- Lisega\_TYPE74, 880  
 Lisega\_TYPE75, 881  
 Lisega\_TYPE76A, 882  
 Lisega\_TYPE76B, 883  
 Lisega\_TYPE76C, 885  
 Lisega\_TYPE76D, 886  
 Lisega\_TYPE77, 887  
 Lisega\_TYPE78, 888  
 Lisega\_TYPE79A, 889  
 Lisega\_TYPE79B, 890  
 Lisega\_TYPE79C, 892  
 Lisega\_TYPE79V1, 894  
 Lisega\_TYPE79V2, 896  
 load width/load depth, 125  
 Long or Short Venturi, 1514  
 Low Bay Fixture, 380  
 LowBayFixture01, 380  
 LRParts FIG135N, 898  
 LRParts FIG140N, 899  
 LRParts FIG212N, 900  
 LRParts FIG216N, 902  
 LRParts FIG230N, 904  
 LRParts FIG253N, 905  
 LRParts FIG290LN, 906  
 LRParts FIG290N, 908  
 LRParts FIG295HN, 910  
 LRParts FIG295N, 912  
 LRParts FIG299N, 914  
 LRParts FIG55NS, 916  
 LRParts FIG60N, 917  
 LRParts FIG66N, 918  
 LRParts\_hex\_nut, 920  
 magnetic flow meter, 1972  
 Magnetic Flowmeter Type 1, 1517, 1968  
 Magnetic Flowmeter Type 2, 1519, 1969  
 Magnetic Flowmeter Type 3, 1521, 1970  
 Magnetic Flowmeter Type 4, 1523, 1971  
 maintenance envelopes, 109  
 man ways, 287, 289, 291  
 meters  
     SP3DTurbineMeter, 2265  
 mitered  
     elbow 45 degrees, 1315  
     elbow 90 degrees, 1333  
 modeling  
     parts in Solid Edge, 109  
 monitors  
     fire, 575  
 MRD-URD-100, 1279  
 MRD-URD-150, 1279  
 MRD-URD-200, 1279  
 MRD-URD-250, 1279  
 MRD-URD-300, 1279  
 MRD-URD-350, 1279  
 MRD-URD-400, 1279  
 nested symbols, 61  
 new features  
     3D Symbols, 38  
 nipples  
     SP3DNipple, 1990  
 nozzle orientations, 207  
 nozzles, 76, 109  
     axis orientation, 80  
     end preparations, 80  
     Face to Center Versus Face to Face, 80  
     flanges, 80  
     insulation, 80  
     port indexes, 80  
     vectors and directions, 80  
 occurrence properties, 62, 69, 70  
 OctagonalSolid sheet, 194  
 offset radial elbow nozzle orientation, 207  
 offset skew nozzle orientation, 207  
 olets  
     flanged, 1903  
     nippolet, 1991  
     SP3DLatrolet, 1954  
     SP3DOletG, 1994  
     SPOlet, 2308  
     sweeplets, 2241  
 OP311, 2023  
 OP391, 2033  
 OP401, 2034  
 OP411, 2035  
 OP412, 2036  
 OP413, 2037  
 OP491, 2042  
 OP492, 2043  
 OP493, 2044  
 OP494, 2046  
 OP711, 2054  
 OP731, 2055  
 OP811, 2057  
 OP851, 2059  
 OP852, 2060  
 OP853, 2061  
 OP854, 2062  
 OP9, 2001  
 operators  
     floor stand, 2011  
     handwheel, 2012  
     SP3DOP\_251, 2018  
     SP3DOP\_271, 2019  
     SP3DOP\_291, 2020  
     SP3DOP\_292, 2021  
     SP3DOP\_311, 2023  
     SP3DOP\_331, 2025  
     SP3DOP\_332, 2027  
     SP3DOP\_333, 2029  
     SP3DOP\_334, 2030  
     SP3DOP\_351, 2032  
     SP3DOP\_391, 2033

- SP3DOP\_401, 2034
- SP3DOP\_411, 2035
- SP3DOP\_412, 2036
- SP3DOP\_413, 2037
- SP3DOP\_451, 2038
- SP3DOP\_452, 2039
- SP3DOP\_453, 2040
- SP3DOP\_491, 2042
- SP3DOP\_492, 2043
- SP3DOP\_493, 2044
- SP3DOP\_494, 2046
- SP3DOP\_571, 2048
- SP3DOP\_572, 2049
- SP3DOP\_573, 2050
- SP3DOP\_574, 2052
- SP3DOP\_711, 2054
- SP3DOP\_731, 2055
- SP3DOP\_811, 2057
- SP3DOP\_851, 2059
- SP3DOP\_852, 2060
- SP3DOP\_853, 2061
- SP3DOP\_854, 2062
- SP3DOP3, 1997
- SP3DOP4, 1998
- SP3DOP5, 1999
- SP3DOP9, 2001
- SP3DOPBevelGear, 2002
- SP3DOPChainWheel, 2003
- SP3DOPCylinderActuator, 2005
- SP3DOPExtnStem, 2010
- SP3DOPManualHydraulic, 2013
- SP3DS2003, 2222
- SP3DS3003, 2223
- SP3DVACChainWheel, 2270
- orifice double chamber fitting, 1466
- orifice flange plate
  - SP3D3OP1, 1301
- Orifice Integral Type 1, 1508
- Orifice Integral Type 2, 1511
- Orifice Meterrun Flanges and Plate, 1531
- Orifice Plate, 1536
- output information for symbols, 71
- overviews
  - cable tray symbols, 125
  - conduit symbols, 153
  - Design Aid symbols, 171
  - Fire and Safety symbols, 563
  - hangers and supports symbols, 603
  - HVAC symbols, 1167
  - Piping symbols, 1283
  - Structure symbols, 2313
- paddles
  - SP3DPaddleBlind, 2081
  - SP3DPaddleSpacer, 2083
- pads
  - SP3DRPad, 2218
- parametric symbols
  - differences, 83
- parametric valves, 86
- part class templates, 66
- part classes, 47
- part classes for symbols, 65
- Part Definition Wizard, 63
- PartFacelets.IJDPart, 92
- parts, 74
  - as first input, 92
- PDS symbols, 93, 94, 96, 99
  - command line structure, 94
  - translator outputs, 96
  - VB modifications, 96
  - workflow, 94
  - workflow examples, 99
- PDS-100, 1244
- PDS-150, 1244
- PDS-200, 1244
- PDS-250, 1244
- PDS-300, 1244
- PDS-350, 1244
- PDS-400, 1244
- penetration sleeve, 2088
- pipet, 2104
- Piping
  - symbols overview, 1283
- Piping Catalog.xls
  - FireHydrant, 566
  - Sprinkler, 601
- piping commodity
  - SP3DCorioFlowMeterTy2GAS, 1644
  - SP3DCorioFlowMeterTy2LIQ, 1646
  - SP3DCorioFlowMeterTy3GAS, 1648
  - SP3DCorioFlowMeterTy3LIQ, 1650
  - SP3DCoriolisFlowMeterTy1, 1652
  - SP3DDAct3WGIStyCValve, 1834
  - SP3DDActAngleValve, 1836
  - SP3DDActEPPAngValve, 1838
  - SP3DDActEPPHWhAngValve, 1840
  - SP3DDActEPPHWhGISValve, 1842
  - SP3DDActEPPHWhTopAngValve, 1844
  - SP3DDActEPPHWhTopGISValve, 1846
  - SP3DDActGIStyValve, 1848
  - SP3DDADualCylActTy5Valve, 1850
  - SP3DDouAFailClActTy3Valve, 1859
  - SP3DDouAFailOpenActValve, 1861
  - SP3DDouAOrSprRetActValve, 1863
  - SP3DDouAOSSRAct90LSValve, 1865
  - SP3DDouASinCylActTy2Valve, 1867
  - SP3DDouChamberOrifice, 1869
  - SP3DElecActTy1AngValve, 1876
  - SP3DElecActTy1Valve, 1878
  - SP3DElecActTy2AngValve, 1880
  - SP3DElecActTy2Valve, 1882
  - SP3DElecActTy3AngValve, 1884

- SP3DElecActTy3Valve, 1886  
 SP3DElecActTy4AngValve, 1888  
 SP3DElecActTy4Valve, 1890  
 SP3DElecActTy5AngValve, 1892  
 SP3DElecActTy5Valve, 1894  
 SP3DRegulatorTy1, 2155  
 SP3DRegulatorTy2, 2157  
 SP3DRegulatorTy3, 2159  
 SP3DRegulatorTy4, 2161  
 SP3DRegulatorTy5, 2163  
 SP3DReliefValveTy1, 2165  
 SP3DReliefValveTy2, 2167  
 SP3DReliefValveTy3, 2169  
 SP3DReliefValveTy4, 2171  
 SP3DReliefValveTy5, 2173  
 SP3DReliefValveTy6, 2175  
 SP3DReliefValveTy7, 2177  
 SP3DRotameterTy1, 2200  
 SP3DRotameterTy2, 2202  
 SP3DRotameterTy3, 2204  
 SP3DRotameterTy4, 2206  
 SP3DRotameterTy5, 2208  
 SP3DRotameterTy6Tr, 2210  
 SP3DRotameterTy7FS, 2212  
 SP3DRotameterTy8TrFs, 2214  
 SP3DRotameterTy9, 2216
- piping specialty
- SP3DCIAannubarTy1, 1401  
 SP3DCIAannubarTy2, 1403  
 SP3DCICorioFlowMetTy3GAS, 1412  
 SP3DCICorioFlowMetTy3LIQ, 1414  
 SP3DCICorioFlwMtrTy2GAS, 1416  
 SP3DCICorioFlwMtrTy2LIQ, 1418  
 SP3DCICoriolisFlowMeterTy1, 1420  
 SP3CIDAct3WGIStyCValve, 1428  
 SP3CIDActAngleValve, 1430  
 SP3CIDActEPPAngVal, 1432  
 SP3CIDActEPPHWAngVal, 1434  
 SP3CIDActEPPHWGisVal, 1437  
 SP3CIDActEPPHWTopAngVal, 1440  
 SP3CIDActEPPHWTopGisCVal, 1443  
 SP3CIDActGisValve, 1446  
 SP3CIDADCylActTy5Valve, 1448  
 SP3CIDAOsRAct90LSValve, 1451  
 SP3CIDouAFailClActTy3Val, 1454  
 SP3CIDouAFailOpenActValve, 1457  
 SP3CIDouAOrSprRetActVal, 1460  
 SP3CIDouASinCylActTy2Val, 1463  
 SP3CIDouChamberOrifice, 1466  
 SP3DCIElecActTy1AngValve, 1469  
 SP3DCIElecActTy1Valve, 1472  
 SP3DCIElecActTy2AngVal, 1475  
 SP3DCIElecActTy2Val, 1478  
 SP3DCIElecActTy3AngValve, 1481  
 SP3DCIElecActTy3Valve, 1484  
 SP3DCIElecActTy4AngVal, 1487
- SP3DCIElecActTy4Valve, 1490  
 SP3DCIElecActTy5AngValve, 1493  
 SP3DCIElecActTy5Val, 1496  
 SP3DCIIInsertionElement, 1502  
 SP3DCIIInsertVenturi, 1504  
 SP3DCIIIntegralOrificeTy1, 1508  
 SP3DCIIIntegralOrificeTy2, 1511  
 SP3DCILongOrShortVenturi, 1514  
 SP3DCIMagFlowmeterTy1, 1517  
 SP3DCIMagFlowmeterTy2, 1519  
 SP3DCIMagFlowmeterTy3Tr, 1521  
 SP3DCIMagFlowmeterTy4, 1523  
 SP3DCIMetDblChOriFitting, 1525  
 SP3DCIMeterRunShortVenturi, 1528  
 SP3DCIMetrOriFlangePlate, 1531  
 SP3DCIOffsetActVal, 1534  
 SP3DCIORificePlate, 1536  
 SP3DCIPerRackPinActVal, 1538  
 SP3DCIPiActKnifeGateValTy1, 1540  
 SP3DCIPiActKnifeGateValTy2, 1542  
 SP3DCIPistonActAngVal, 1544  
 SP3DCIPistonActStCondValve, 1546  
 SP3DCIPistonActValve, 1548  
 SP3DCIRackPinionActValve, 1550  
 SP3DCIRegulatorTy1, 1553  
 SP3DCIRegulatorTy2, 1555  
 SP3DCIRegulatorTy3, 1557  
 SP3DCIRegulatorTy4, 1559  
 SP3DCIRegulatorTy5, 1561  
 SP3DCIReliefValveTy1, 1563  
 SP3DCIReliefValveTy2, 1565  
 SP3DCIReliefValveTy3, 1567  
 SP3DCIReliefValveTy4, 1569  
 SP3DCIReliefValveTy5, 1572  
 SP3DCIReliefValveTy6, 1576  
 SP3DCIReliefValveTy7, 1579  
 SP3DCIRODActEPPHWPosC1Val, 1581  
 SP3DCIRODActEPPHWPosD1Val, 1584  
 SP3DCIRODActPosA4Valve, 1587  
 SP3DCIRODActPosB4Valve, 1589  
 SP3DCIRODActPosC1Valve, 1591  
 SP3DCIRODActPosD1Valve, 1593  
 SP3DCIROPisActPosA1Valve, 1595  
 SP3DCIROPisActPosA4Valve, 1597  
 SP3DCIROPisActPosB1Valve, 1599  
 SP3DCIROPisActPosB4Valve, 1601  
 SP3DCIRotameterTy1, 1603  
 SP3DCIRotameterTy2, 1605  
 SP3DCIRotameterTy3, 1607  
 SP3DCIRotameterTy4, 1609  
 SP3DCIRotameterTy5, 1611  
 SP3DCIRotameterTy6Tr, 1613  
 SP3DCIRotameterTy7FS, 1615  
 SP3DCIRotameterTy8, 1617  
 SP3DCIRotameterTy9, 1619  
 SP3DCITurbineMeter, 1623

- SP3DCIVorFlowmeterTy2, 1625  
SP3DCIVorFlowMtrTy1, 1627  
SP3DCIVorFlowMtrTy3, 1629  
SP3DCIVorFlowMtrTy4DH, 1631  
SP3DCIWedgeFlElement, 1633  
SP3DCSAnalyzer, 1672  
SP3DCSAngGlobeCtrlVal, 1674  
SP3DCSBalloonInstr, 1680  
SP3DCSBasketStrainer, 1682  
SP3DCSExhaustHead, 1684  
SP3DCSExpJointOffset, 1686  
SP3DCSFilter, 1688  
SP3DCSFlowNozzle, 1692  
SP3DCSFreeVent, 1694  
SP3DCSImpSteamTrapTy4, 1697  
SP3DCSImpSteamTrapTy5, 1699  
SP3DCSImpSteamTrapTy6, 1701  
SP3DCSImpSteamTrapTy7, 1703  
SP3DCSImpSteamTrapTy8, 1705  
SP3DCSInlineSilencer, 1707  
SP3DCSLevelIndCtrlTy3, 1709  
SP3DCSLevelIndCtrlTy4, 1711  
SP3DCSLevelIndCtrlTy6, 1714  
SP3DCSRuptureDiscVac1, 1804  
SP3DCSRuptureDiscVac2, 1806  
SP3DCSSprayNozzle, 1810  
SP3DCSSteamTrap, 1812  
SP3DCSTempFusPlug, 1814  
SP3DCSTStrainer, 1816  
SP3DCSValve, 1818  
SP3DCSVentSilencer, 1826  
SP3DCSVenturimeter, 1828  
SP3DCSYStrainer, 1830  
SP3DMagFlowmeterTy1, 1968  
SP3DMagFlowmeterTy2, 1969  
SP3DMagFlowmeterTy3Tr, 1970  
SP3DMagFlowmeterTy4, 1971  
SP3DPerRackPinionActValve, 2089  
SP3DVenturimeter, 2279  
piping symbols  
  SP3DTStrainer, 2263  
  SP3DVentSilencer, 2278  
  SP3DVorFlowmeterTy1, 2284  
  SP3DVorFlowmeterTy2, 2285  
  SP3DVorFlowmeterTy3, 2286  
  SP3DVorFlowmtrTy4DH, 2288  
  SP3DWedgeFlowElement, 2298  
  SP3DYStrainer, 2307  
placing  
  ports, 49  
plate and frame exchanger, 498, 500  
plate and frame exchangers, 502  
plate exchangers  
  SP3DPIAndFrExch03Asm, 502  
plate flange, 2112  
Platform1 sheet, 194  
Platform2 sheet, 195  
plug valves  
  SP3D3WayPlugValve, 1313  
  SP3D4WayPlugValve, 1324  
  SP3DCSP3WRPlugValve, 1720  
  SP3DCSPRotaPlugValve, 1768  
plugs  
  SP3DPlug, 2115  
  SP3DPlugGOp, 2116  
  SP3DPlugValveAsym, 2118  
port indexes, 80  
ports, 49, 71, 108  
  defining, 112  
  support parts, 78  
pressure  
  gauge, 2122  
  regulator, 2128  
  switch, 2129  
  transmitter, 2131  
preview symbols, 50, 51, 52  
profiles  
  creating, 46  
programming notes for Visual Basic, 74  
projects for symbols, 64  
properties  
  symbols, 67, 70  
PSL\_114, 921  
PSL\_116, 922  
PSL\_118, 923  
PSL\_122, 924  
PSL\_122A, 925  
PSL\_125, 926  
PSL\_130, 927  
PSL\_226, 928  
PSL\_227, 929  
PSL\_228, 930  
PSL\_230, 931  
PSL\_231, 932  
PSL\_232, 933  
PSL\_233, 934  
PSL\_234, 935  
PSL\_235, 936  
PSL\_235A, 937  
PSL\_236, 938  
PSL\_238, 939  
PSL\_239, 940  
PSL\_274, 941  
PSL\_276A, 942  
PSL\_276B, 943  
PSL\_276C, 944  
PSL\_277, 945  
PSL\_278, 946  
PSL\_279, 947  
PSL\_280, 948  
PSL\_281, 949  
PSL\_282, 950

PSL_308, 951	PSL_818, 1013
PSL_311, 952	PSL_901, 1014
PSL_313, 953	PSL_902, 1015
PSL_314, 954	PSL_916, 1016
PSL_315, 955	PSL_917, 1017
PSL_316, 956	PSL_918, 1018
PSL_317, 957	PSL_CH100, 1019
PSL_318, 958	PSL_CS100_LRG, 1021
PSL_319, 959	PSL_CS100_MED, 1023
PSL_320, 960	PSL_CS100_SML, 1025
PSL_321, 961	PSL_CS200_LRG, 1026
PSL_322, 962	PSL_CS200_MED, 1028
PSL_347, 963	PSL_CS200_SML, 1030
PSL_348A, 964	PSL_F495, 1032
PSL_348B, 965	PSL_F496, 1033
PSL_348C, 967	PSL_FPR, 1034
PSL_348D, 968	PSL_HBM, 1035
PSL_348E, 969	PSL_HBMCS, 1036
PSL_348F, 970	PSL_HD_TS1, 1037
PSL_349, 972	PSL_HD_TS2, 1038
PSL_350_LRG, 973	PSL_HD_TS3, 1039
PSL_350_SML, 974	PSL_HD_TS4, 1040
PSL_351, 975	PSL_HD_TS5, 1041
PSL_353, 976	PSL_HS_TS2, 1042
PSL_355A, 977	PSL_HS_TS3, 1043
PSL_355B, 978	PSL_PB1, 1044
PSL_355C, 979	PSL_PB1_CM, 1045
PSL_355D, 980	PSL_PB2, 1046
PSL_355E, 981	PSL_PB2_CM, 1047
PSL_355F, 982	PSL_PB3, 1048
PSL_358, 983	PSL_PB3_CM, 1049
PSL_383, 984	PSL_PB4, 1050
PSL_486, 985	PSL_PB4_CM, 1051
PSL_487, 986	PSL_PC2, 1052
PSL_488, 987	PSL_PC2_CM, 1053
PSL_511, 988	PSL_PC3, 1054
PSL_512, 989	PSL_PC3_CM, 1055
PSL_513, 990	PSL_RC4, 1056
PSL_513S, 992	PSL_RC6, 1057
PSL_514, 993	PSL_SB, 1058
PSL_515, 995	PSL_V1_BM, 1059
PSL_516, 996	PSL_V1_DS, 1060
PSL_517, 997	PSL_V1_ES, 1062
PSL_711, 998	PSL_V1_TA, 1063
PSL_712, 1000	PSL_V1_TS1, 1064
PSL_721, 1002	PSL_V1_TS2, 1065
PSL_722, 1003	PSL_V1_TS3, 1066
PSL_731, 1004	PSL_V2_BM, 1068
PSL_732, 1005	PSL_V2_DS, 1070
PSL_741, 1006	PSL_V2_ES, 1072
PSL_742, 1007	PSL_V2_TA, 1073
PSL_743, 1008	PSL_V2_TS1, 1074
PSL_801, 1009	PSL_V2_TS2, 1075
PSL_802, 1010	PSL_V2_TS3, 1076
PSL_816, 1011	PSL_V3_BM, 1078
PSL_817, 1012	PSL_V3_DS, 1079

- PSL\_V3\_ES, 1081  
PSL\_V3\_TA, 1082  
PSL\_V3\_TS1, 1083  
PSL\_V3\_TS2, 1084  
PSL\_V3\_TS3, 1085  
PSL\_VBM, 1087  
PSL\_VBMCS, 1088  
PSL\_VD\_TS1, 1089  
PSL\_VD\_TS2, 1090  
PSL\_VD\_TS3, 1091  
PSL\_VD\_TS4, 1092  
PSL\_VD\_TS5, 1093  
PSL\_VIBM, 1094  
PSL\_VID\_TS2, 1095  
PSL\_VID\_TS3, 1096  
PSL\_VID\_TS4, 1097  
PSL\_VIS\_TS2, 1098  
PSL\_VIS\_TS3, 1099  
PSL\_VS\_TS2, 1100  
PSL\_VS\_TS3, 1101  
PullBox, 168  
PullBox01, 168  
pumps  
    horizontal centrifugal with flush, drain, purge, 443  
    horizontal centrifugal with flush, drain, lantern,  
        446  
SP3DHoriPumpBB1Asm, 450  
SP3DHoriPumpBB2Asm, 453  
SP3DHoriPumpBB3Asm, 455  
SP3DHoriPumpBB5Asm, 457  
SP3DHoriPumpOH2Asm, 459  
radial elbow nozzle orientation, 207  
radial nozzle orientation, 207  
Rectangle sheet, 205  
rectangular miter, 306  
RectangularPad, 1162  
RectangularSolid sheet, 195  
RectangularToris sheet, 196  
RECTFF, 1224  
RectRivet, 1267  
RectSleeve, 1234  
RectWeld, 1268  
reducers, 74  
    ConcentricReducer, 1287  
    SP3DBioConcReducer, 1371  
    SP3DBioEccReducer, 1372  
    SP3DEccReducer, 1872  
    SP3DReducer, 2145  
    SP3DReducingCross, 2148  
    SP3DReducingInsert, 2149  
    SP3DReducingTee, 2151  
reducing instrument tee, 2144  
reducing tee, 2151  
regulators  
    SP3DCSPWDStRegulator, 1794  
    SP3DCSPWUStRegulator, 1798  
representations  
    assembly, 107  
    detailed, 107  
    maintenance envelope, 107  
Resistoflex  
    blind flange, 1381  
    concentric reducer flanged ends, 1872, 2145  
    distance piece, 1858  
    full size instrument tee bolt-thru ends x flanged  
        branch, 1940  
    horizontal lift check valve, 1927  
RetrieveParameters function, 92  
returns  
    SP3DReturn, 2179  
road crossing, 200  
Road sheet, 205  
road tee, 202  
rotameter type 1, 1603  
rotameter type 2, 1605  
rotameter type 3, 1607  
rotameter type 4, 1609  
rotameter type 5, 1611  
rotameter type 6, 1613  
rotameter type 7, 1615  
rotameter type 8, 1617  
rotameter type 9, 1619  
rotameters  
    short stroke, 2225  
Rotary Diaphragm Actuator Valve Position C1, 1591,  
    2188  
Rotary Diaphragm Actuator Valve Position C4, 1587,  
    2184  
Rotary Diaphragm Actuator Valve Position D1,  
    1593, 2190  
Rotary Diaphragm Actuator Valve Position D4,  
    1589, 2186  
round torus miter, 313  
Round\_SlopedFlange, 1249  
ROUNDFF, 1247  
RoundRivet, 1269  
ROUNDSLEEVE, 1255  
RoundWeld, 1270  
RtCircularCone sheet, 196  
RtCircularCylinder sheet, 197  
RWX-N, 1275  
S11B, 1748  
S1A1, 1734, 1738, 1778  
S1A2, 1746  
S1A3, 1810  
S1A4, 1780  
S1A5, 1782  
S1A6, 1760  
S1A7, 1776  
S28A, 1736  
S36A, 1740  
S3A1, 1752

- S3A2, 1770  
 S3A4, 1784  
 S3A5, 1772, 1786, 1788  
 S3A7, 1742  
 S47A1, 1742  
 S49A, 1790  
 S51A, 1800  
 S53A, 1726, 1730, 1754  
 S7A, 1684  
 saddle  
   HVAC, 1271  
 saddle supports, 315  
 saddles, 293  
   SP3DCenWebSaddleCompAsm, 213  
   SP3DHorOffsetSaddleCompAsm, 280  
   SP3DSaddle, 2224  
 safety shower, 521, 590  
 safety showers, 515, 516, 517, 519, 523, 525, 527, 529, 584, 585, 586, 588, 592, 594, 596, 598  
 safety symbols  
   overview, 563  
 Sector sheet, 206  
 select from combo box, 118  
 SemiElliptical sheet, 197  
 Shapes.xls, 189  
   Circle sheet, 204  
   CircularTori sheet, 191  
   EccentricCone sheet, 192  
   EccentricRectangularPrism sheet, 192  
   EccentricTransitionElement sheet, 193, 198  
   Ellipse sheet, 204  
   Hexagon sheet, 204  
   HexagonalSolid sheet, 193  
   IBeam sheet, 205  
   OctagonalSolid sheet, 194  
   Platform1 sheet, 194  
   Platform2 sheet, 195  
   Rectangle sheet, 205  
   RectangularSolid sheet, 195  
   RectangularTori sheet, 196  
   Road sheet, 205  
   RtCircularCone sheet, 196  
   RtCircularCylinder sheet, 197  
   Sector sheet, 206  
   SemiElliptical sheet, 197  
   Sphere sheet, 198  
   TrapezeC sheet, 206  
   TrapezeR sheet, 206  
   Triangle sheet, 207  
   TriangularSolid sheet, 199  
   TruncatedRectangular sheet, 199  
 sheets  
   EquipmentComponent.xls, 211  
   Shapes.xls, 189  
 Shell and Tube Heat Exchanger-Parametric Shell Option Two Heads, 270  
 Short Meterrun Venturi, 1528  
 short stroke rotameter, 2225  
 sight indicators  
   SP3DBullEyeSightIndicator, 1383  
 skew nozzle orientation, 207  
 Skirt, 334  
 Skirt 01, 334  
 SL-2000-P, 1275  
 slide valve, 2229  
 SM1PTapFThalfin, 1272  
 SM1PTapSWhalfin, 1272  
 SM-501-N, 1275  
 SM-501-P, 1275  
 solenoid valves, 1774  
 Solid Edge, 109  
   Define Port macro, 112  
 Solid Edge symbols, 107  
 SP3D11Elbow, 1290  
 SP3D15TonCraneAsm, 172  
 SP3D1OrificeFlange, 1291  
 SP3D225DegMiterElbow, 1292  
 SP3D22Elbow, 1293  
 SP3D2WFireHydrantTy1, 564  
 SP3D2WFireHydrantTy2, 565  
 SP3D30DegElbow, 1294  
 SP3D30DegMiterElbow, 1295  
 SP3D30Elbow, 1296  
 SP3D30HCableTray, 127  
 SP3D30LongTangentElbow, 1297  
 SP3D30VCTrayInside, 128  
 SP3D30VCTrayOutside, 129  
 SP3D3OP1, 1301  
 SP3D3WayBall, 1303  
 SP3D3WayBallValve, 1305  
 SP3D3WayCheckValve, 1306  
 SP3D3WayControlValve, 1309  
 SP3D3WayDiverterVal, 1310  
 SP3D3WayGlobeValve, 1312  
 SP3D3WayPlugValve, 1313  
 SP3D3WFireHydrant, 566  
 SP3D3WFireHydrantTy2, 567  
 SP3D42inPalletAsm, 174  
 SP3D45DegAngleValve, 1314  
 SP3D45DegMiterElbow, 1315  
 SP3D45Elbow, 1316  
 SP3D45HCableTray, 130  
 SP3D45LTElbow, 1317  
 SP3D45TrimElbow, 1321  
 SP3D45UnionElbow, 1322  
 SP3D45VCTrayInside, 131  
 SP3D45VCTrayOutside, 132  
 SP3D4WayInstRootVal, 1323  
 SP3D4WayPlugValve, 1324  
 SP3D5350cRailcarAsm, 175  
 SP3D55GallonDrumAsm, 176  
 SP3D5Elbow, 1326

- SP3D5TCarryDeckCraneAsm, 177  
SP3D60DegMiterElbow, 1327  
SP3D60Elbow, 1328  
SP3D60HCableTray, 133  
SP3D60LongTangentElbow, 1329  
SP3D60VCTrayInside, 134  
SP3D60VCTrayOutside, 135  
SP3D90ConduitElbow, 154  
SP3D90DegMiterElbow, 1333  
SP3D90DegSiamese, 568  
SP3D90Elbow, 1334  
SP3D90ElbowCBs, 1335  
SP3D90HCableTray, 136  
SP3D90HExpRedCableTray, 137  
SP3D90LongTangentElbow, 1336  
SP3D90RedElbow, 1340  
SP3D90RedShortYBranch, 1341  
SP3D90ShortYBranch, 1342  
SP3D90TELbow, 1343  
SP3D90UnionElbow, 1344  
SP3D90VCableTrayInside, 138  
SP3D90VCableTrayOutside, 139  
SP3DAAdapterFlange, 1346  
SP3DAdjHCableTray, 140  
SP3DAdjVCableTray, 141  
SP3DAirCoolingCoil, 1168  
SP3DAirDistribAssemblyAsm, 355  
SP3DAirFilterHumidifier, 1170  
SP3DAirFilterR, 1172  
SP3DAnalyzer, 1347  
SP3DAngGlobeValveAsm, 1348  
SP3DAngleCheckValve, 1349  
SP3DAngleCheckValveAsym, 1350  
SP3DAngleGlobeValve, 1351  
SP3DAngleHoseValve, 1352  
SP3DAngleStopCheckValve, 1353  
SP3DAngleValve, 1354  
SP3DAngleValveL, 1355  
SP3DAnnubarTy1, 1357  
SP3DAnnubarTy2, 1359  
SP3DAutoRecircVal, 1360  
SP3DBallAsymValve, 1361  
SP3DBallGOp, 1362  
SP3DBalloonInstr, 1363  
SP3DBallValve, 1365  
SP3DBasketStrainer, 1366  
SP3DBasketStrainer2, 1367  
SP3DBellMouth, 1174  
SP3DBio45ElbowWeld, 1368  
SP3DBio90ElbowWeld, 1369  
SP3DBioClamp, 1370  
SP3DBioConcReducer, 1371  
SP3DBioEccReducer, 1372  
SP3DBioInstrumentTee, 1373  
SP3DBioShortOutletRunTee, 1374  
SP3DBioUsePoint, 1375  
SP3DBioUsePointOffset, 1377  
SP3DBlankGateValve, 1379  
SP3DBlindFlange, 1381  
SP3DBubbleDetector, 1382  
SP3DBullEyeSightIndicator, 1383  
SP3DButterflyGOp, 1385  
SP3DButterflyValve, 1386  
SP3DButterflyValveAsym, 1387  
SP3DButterflyValveL, 1388  
SP3DButterflyValveSym, 1390  
SP3DButterflyValveVAL, 1392  
SP3DButterflyValveVOH, 1393  
SP3DCap, 1394  
SP3DCenWebSaddleCompAsm, 213  
SP3DCESVVessel2PlatfAsm, 356  
SP3DCheckValve, 1396  
SP3DCI2WInstrValve, 1397  
SP3DCI3WInstrValve, 1399  
SP3DCIAannubarTy1, 1401  
SP3DCIAannubarTy2, 1403  
SP3DCIBoxInstr2Ports, 1405  
SP3DCIBoxInstr3Ports, 1407  
SP3DCIBoxInstr4Ports, 1409  
SP3DCICorioFlowMetTy3GAS, 1412  
SP3DCICorioFlowMetTy3LIQ, 1414  
SP3DCICorioFlwMtrTy2GAS, 1416  
SP3DCICorioFlwMtrTy2LIQ, 1418  
SP3DCICoriolisFlowMeterTy1, 1420  
SP3DCICylInstr2Ports, 1422  
SP3DCICylInstr3Ports, 1424  
SP3DCICylInstr4Ports, 1426  
SP3DCIDAct3WG1StyCValve, 1428  
SP3DCIDActAngleValve, 1430  
SP3DCIDActEPPAngVal, 1432  
SP3DCIDActEPPHWhAngVal, 1434  
SP3DCIDActEPPHWhGISVal, 1437  
SP3DCIDActEPPHWhTopAngVal, 1440  
SP3DCIDActEPPHWhTopGISVal, 1443  
SP3DCIDActGIStyValve, 1446  
SP3DCIDADCylActTy5Valve, 1448  
SP3DCIDAOSRAct90LSValve, 1451  
SP3DCIDouAFailCIActTy3Val, 1454  
SP3DCIDouAFailOpenActValve, 1457  
SP3DCIDouAOOrSprRetActVal, 1460  
SP3DCIDouASinCylActTy2Val, 1463  
SP3DCIDouChamberOrifice, 1466  
SP3DCIElecActTy1AngValve, 1469  
SP3DCIElecActTy1Valve, 1472  
SP3DCIElecActTy2AngVal, 1475  
SP3DCIElecActTy2Val, 1478  
SP3DCIElecActTy3AngValve, 1481  
SP3DCIElecActTy3Valve, 1484  
SP3DCIElecActTy4AngVal, 1487  
SP3DCIElecActTy4Valve, 1490  
SP3DCIElecActTy5AngValve, 1493  
SP3DCIElecActTy5Val, 1496

- SP3DCIGateVGearA, 1499  
 SP3DCIInsertionElement, 1502  
 SP3DCIInsertVenturi, 1504  
 SP3DCIInstAngValve, 1506  
 SP3DCIIIntegralOrificeTy1, 1508  
 SP3DCIIIntegralOrificeTy2, 1511  
 SP3DCILongOrShortVenturi, 1514  
 SP3DCIMagFlowmeterTy1, 1517  
 SP3DCIMagFlowmeterTy2, 1519  
 SP3DCIMagFlowmeterTy3Tr, 1521  
 SP3DCIMagFlowmeterTy4, 1523  
 SP3DCIMetDblChOriFitting, 1525  
 SP3DCIMeterRunShortVenturi, 1528  
 SP3DCIMetrurOriFlangePlate, 1531  
 SP3DCIOffsetActVal, 1534  
 SP3DCIORificePlate, 1536  
 SP3DCIPerRackPinActVal, 1538  
 SP3DCIPiActKnifeGateValTy1, 1540  
 SP3DCIPiActKnifeGateValTy2, 1542  
 SP3DCIPistonActAngVal, 1544  
 SP3DCIPistonActStCondValve, 1546  
 SP3DCIPistonActValve, 1548  
 SP3DCIRackPinionActValve, 1550  
 SP3DCIRegulatorTy1, 1553  
 SP3DCIRegulatorTy2, 1555  
 SP3DCIRegulatorTy3, 1557  
 SP3DCIRegulatorTy4, 1559  
 SP3DCIRegulatorTy5, 1561  
 SP3DCIReliefValveTy1, 1563  
 SP3DCIReliefValveTy2, 1565  
 SP3DCIReliefValveTy3, 1567  
 SP3DCIReliefValveTy4, 1569  
 SP3DCIReliefValveTy5, 1572  
 SP3DCIReliefValveTy6, 1576  
 SP3DCIReliefValveTy7, 1579  
 SP3DCIRODActEPPHWPosC1Val, 1581  
 SP3DCIRODActEPPHWPosD1Val, 1584  
 SP3DCIRODActPosA4Valve, 1587  
 SP3DCIRODActPosB4Valve, 1589  
 SP3DCIRODActPosC1Valve, 1591  
 SP3DCIRODActPosD1Valve, 1593  
 SP3DCIROPisActPosA1Valve, 1595  
 SP3DCIROPisActPosA4Valve, 1597  
 SP3DCIROPisActPosB1Valve, 1599  
 SP3DCIROPisActPosB4Valve, 1601  
 SP3DCIRotameterTy1, 1603  
 SP3DCIRotameterTy2, 1605  
 SP3DCIRotameterTy3, 1607  
 SP3DCIRotameterTy4, 1609  
 SP3DCIRotameterTy5, 1611  
 SP3DCIRotameterTy6Tr, 1613  
 SP3DCIRotameterTy7FS, 1615  
 SP3DCIRotameterTy8, 1617  
 SP3DCIRotameterTy9, 1619  
 SP3DCISimInstrIndicator, 1621  
 SP3DCITurbineMeter, 1623  
 SP3DCIVorFlowmeterTy2, 1625  
 SP3DCIVorFlowMtrTy1, 1627  
 SP3DCIVorFlowMtrTy3, 1629  
 SP3DCIVorFlowMtrTy4DH, 1631  
 SP3DCIWedgeFlElement, 1633  
 SP3DClampOnFlowSensor, 1635  
 SP3DClosedSpectBlank, 1637  
 SP3DClosurePlate, 1638  
 SP3DCIPiGuiSLCompAsm, 215  
 SP3DComplexHorCylVesselAsm, 359  
 SP3DComplexVesselAsm, 361  
 SP3DConductivitySensor, 1639  
 SP3DConduit45Elbow, 155  
 SP3DConduitCap, 156  
 SP3DConduitCoupling, 157  
 SP3DConduitCross, 158  
 SP3DConduitExpJoint, 159  
 SP3DConduitGateValve, 1641  
 SP3DConduitGateValveAsym, 1642  
 SP3DConduitHub, 160  
 SP3DConduitPlug, 161  
 SP3DConduitReducer, 162  
 SP3DConduitReducingTee, 163  
 SP3DConduitSealEYS, 164  
 SP3DConduitTee, 165  
 SP3DConduitUnion, 166  
 SP3DConduitY, 167  
 SP3DConservationVent, 1643  
 SP3DCorioFlowMeterTy2GAS, 1644  
 SP3DCorioFlowMeterTy2LIQ, 1646  
 SP3DCorioFlowMeterTy3GAS, 1648  
 SP3DCorioFlowMeterTy3LIQ, 1650  
 SP3DCoriolisFlowMeterTy1, 1652  
 SP3DCoupling, 1654  
 SP3DCross, 1655  
 SP3DCrossCableTray, 142  
 SP3DCrossGeneric, 1656  
 SP3DCrossRB, 1658  
 SP3DCrossRRB, 1660  
 SP3DCS3WayBallCtrlVal, 1662  
 SP3DCS3WayControlVal, 1664  
 SP3DCS3WayGlobeCtrlVal, 1666  
 SP3DCS3WayPlugCtrlVal, 1668  
 SP3DCS4WayPlugCtrlVal, 1670  
 SP3DCSAnalyzer, 1672  
 SP3DCSAngGlobeCtrlVal, 1674  
 SP3DCSAutoRecircVal, 1676  
 SP3DCSBallCtrlValve, 1678  
 SP3DCSBalloonInstr, 1680  
 SP3DCSBasketStrainer, 1682  
 SP3DCSExhaustHead, 1684  
 SP3DCSExpnsJointOffset, 1686  
 SP3DCSFilter, 1688  
 SP3DCSFlameArrestorTy1, 1690  
 SP3DCSFlowNozzle, 1692  
 SP3DCSFreeVent, 1694

- SP3DCSGlobeCtrlVal, 1695  
SP3DCSImpSteamTrapTy4, 1697  
SP3DCSImpSteamTrapTy5, 1699  
SP3DCSImpSteamTrapTy6, 1701  
SP3DCSImpSteamTrapTy7, 1703  
SP3DCSImpSteamTrapTy8, 1705  
SP3DCSInlineSilencer, 1707  
SP3DCSLevelIndCtrlTy3, 1709  
SP3DCSLevelIndCtrlTy4, 1711  
SP3DCSLevelIndCtrlTy6, 1714  
SP3DCSP3WayBallValve, 1716  
SP3DCSP3WayGIValve, 1718  
SP3DCSP3WRPlugValve, 1720  
SP3DCSPAtoRecValve, 1722  
SP3DCSPBallValve, 1724  
SP3DCSPBasketStrainer, 1726  
SP3DCSPButterflyVal, 1728  
SP3DCSPConeStrainer, 1730  
SP3DCSPDiaphragmVal, 1732  
SP3DCSPDressCoupling, 1734  
SP3DCSPExpnJoint, 1736  
SP3DCSPFlameArrestor, 1738  
SP3DCSPFlexHose, 1740  
SP3DCSPFIThSteamTrap, 1742  
SP3DCSPFPlateStainer, 1744  
SP3DCSPFreeVentTy1, 1746  
SP3DCSPFrVentWScreen, 1748  
SP3DCSPGlobeValve, 1750  
SP3DCSPHammerArrestor, 1752  
SP3DCSPIBktSteamTrap, 1754  
SP3DCSPInstrndicator, 1756  
SP3DCSPKnifeValve, 1758  
SP3DCSPLiThSteamTrap, 1760  
SP3DCSPlugCtrlValve, 1762  
SP3DCSPPrRelRuptdisc, 1764  
SP3DCSPROrificeUnion, 1766  
SP3DCSPRotaPlugValve, 1768  
SP3DCSPSampleCooler, 1770  
SP3DCSPSngBStrainer, 1772  
SP3DCSPSolenoidValve, 1774  
SP3DCSPSumpStrainer, 1776  
SP3DCSPSwivelJointTy1, 1778  
SP3DCSPSwivelJointTy2, 1780  
SP3DCSPSwivelJointTy3, 1782  
SP3DCSPTherSteamTrap, 1784  
SP3DCSPTSteamTrapWOS, 1786  
SP3DCSPTSteamTrapWS, 1788  
SP3DCSPTrainer, 1790  
SP3DCSPWDStreamValve, 1792  
SP3DCSPWDStRegulator, 1794  
SP3DCSPWUStreamValve, 1796  
SP3DCSPWUStRegulator, 1798  
SP3DCSPYStrainer, 1800  
SP3DCSPYStrainer2, 1802  
SP3DCSRuptureDiscVac1, 1804  
SP3DCSRuptureDiscVac2, 1806  
SP3DCSSlideCtrlValve, 1808  
SP3DCSSprayNozzle, 1810  
SP3DCSSteamTrap, 1812  
SP3DCSTempFusPlug, 1814  
SP3DCSTStrainer, 1816  
SP3DCSValve, 1818  
SP3DCSValveOpGear, 1820  
SP3DCSValveOpHwheel, 1822  
SP3DCSValveOpWrench, 1824  
SP3DCSVentSilencer, 1826  
SP3DCSVenturimeter, 1828  
SP3DCSYStrainer, 1830  
SP3DCylinderValve, 1832  
SP3DDAct3WGIStyCValve, 1834  
SP3DDActAngleValve, 1836  
SP3DDActEPPAngValve, 1838  
SP3DDActEPPHWhAngValve, 1840  
SP3DDActEPPHWhGISValve, 1842  
SP3DDActEPPHWhTopAngValve, 1844  
SP3DDActEPPHWhTopGISValve, 1846  
SP3DDActGIStyValve, 1848  
SP3DDADualCylActTy5Valve, 1850  
SP3DDelugeValve, 1852  
SP3DDiaphragmActType1, 1853  
SP3DDiaphragmActType2, 1854  
SP3DDiaphragmActType3, 1855  
SP3DDiaphragmValve, 1856  
SP3DDisconnectSwitchAsm, 364  
SP3DDistancePiece, 1858  
SP3DDivisionW2, 1175  
SP3DDivisionW3, 1177  
SP3DDoorsAsm, 366  
SP3DDouAFailClActTy3Valve, 1859  
SP3DDouAFailOpenActValve, 1861  
SP3DDouAOrSprRetActValve, 1863  
SP3DDouAOSSRAct90LSValve, 1865  
SP3DDouASinCylActTy2Valve, 1867  
SP3DDouChamberOrifice, 1869  
SP3DDouPipeExchangerAsm, 369  
SP3DDripRingTee, 1871  
SP3DE\_205CompAsm, 230  
SP3DE\_205CompVerCylEqpSkAsm, 397  
SP3DE\_210CompAsm, 232  
SP3DE\_210SimVerCylSkirtAsm, 400  
SP3DE\_215Asm, 402  
SP3DE\_215CompAsm, 234  
SP3DE\_215SimVerCylLegsAsm, 404  
SP3DE\_230CompAsm, 236  
SP3DE\_230SphVesselAsm, 406  
SP3DE\_240CompAsm, 238  
SP3DE\_240CompHorCylEqpAsm, 408  
SP3DE\_245Asm, 410  
SP3DE\_245CompAsm, 240  
SP3DE\_245SimHorCylEqpAsm, 412  
SP3DE\_305CompAsm, 242  
SP3DE\_305HorShTubeExchAsm, 414

- SP3DE\_307CompAsm, 245  
 SP3DE\_307KettleHeatXchAsm, 417  
 SP3DE\_310CompAsm, 247  
 SP3DE\_310VerShTubeExchAsm, 420  
 SP3DE\_320CompAsm, 250  
 SP3DE\_320DouPipeExchAsm, 422  
 SP3DE\_325CompAsm, 252  
 SP3DE\_325PlateExchAsm, 424  
 SP3DE\_332CompAsm, 254  
 SP3DE\_334CompAsm, 256  
 SP3DE\_405CompAsm, 258  
 SP3DE\_405HoriRotEqpAsm, 426  
 SP3DE\_410CompAsm, 260  
 SP3DE\_410VerRotEqpAsm, 429  
 SP3DEccReducer, 1872  
 SP3DEccReducingTee, 1874  
 SP3DElbolet, 1875  
 SP3DElecActTy1AngValve, 1876  
 SP3DElecActTy1Valve, 1878  
 SP3DElecActTy2AngValve, 1880  
 SP3DElecActTy2Valve, 1882  
 SP3DElecActTy3AngValve, 1884  
 SP3DElecActTy3Valve, 1886  
 SP3DElecActTy4AngValve, 1888  
 SP3DElecActTy4Valve, 1890  
 SP3DElecActTy5AngValve, 1892  
 SP3DElecActTy5Valve, 1894  
 SP3DElecBayLightAsm, 371  
 SP3DElecContSwitch, 373  
 SP3DElecEnclosureAsm, 375  
 SP3DElecFluoFix, 376, 380  
 SP3DElecHBFixture, 377  
 SP3DElecJunctionBox, 379  
 SP3DElecLiEquip01Asm, 382  
 SP3DElecLiPendantAsm, 383  
 SP3DElecPullBox, 168  
 SP3DElecSpeaker04Asm, 384  
 SP3DElecSpeaker05Asm, 385  
 SP3DElectLight01Asm, 386  
 SP3DElecTransformer, 388  
 SP3DElectricalMotor, 390  
 SP3DElecVarFreqDrive, 392  
 SP3DElecWPFixture, 393  
 SP3DElevFireMonitor, 569  
 SP3DEmergencyBeaconAsm, 395  
 SP3DEndolet, 1896  
 SP3DEndPlateCableTray, 143, 146  
 SP3DEqpEnd2TO1CompAsm, 217  
 SP3DEqpEndConeCompAsm, 218  
 SP3DEqpEndDomeCompAsm, 220  
 SP3DEqpEndFLGDCompAsm, 221  
 SP3DEqpEndFnDCompAsm, 223  
 SP3DEqpEndHemiCompAsm, 224  
 SP3DEqpEndTORCCompAsm, 225  
 SP3DEqpEndTORSCompAsm, 227  
 SP3DExhaustHead, 1897  
 SP3DExpnsJointOffset, 1898  
 SP3DExShellBodyCompAsm, 228  
 SP3DEyeWash, 571  
 SP3DFallFilmSTExAsm, 431  
 SP3DFilter, 1899  
 SP3DFireHydWMonTy1, 572  
 SP3DFireHydWMonTy2, 574  
 SP3DFireMonitor, 575  
 SP3DFlameArrestorTy1, 1900  
 SP3DFlangedElboPipet, 1902  
 SP3DFlangOlet, 1903  
 SP3DFlCrossWFFireHydOutlet, 576  
 SP3DFlowmeter, 1904  
 SP3DFlowNozzle, 1906  
 SP3DFlowSwitch, 1907  
 SP3DFITeeWFFireHydOutlet, 577  
 SP3DFluorescentLightAsm, 433  
 SP3DFoamChamberTy1, 578  
 SP3DFoamChamberTy2, 579  
 SP3DFOITorusMiterAsm, 262  
 SP3DFootValve, 1908  
 SP3DForDr2AirCoolerBayAsm, 434  
 SP3DForDr3AirCoolerBayAsm, 436  
 SP3DForDr4AirCoolerBayAsm, 438  
 SP3DForkTruckAsm, 180  
 SP3DFreeVent, 1909  
 SP3DFrEnExTyACDNCompAsm, 264  
 SP3DFrEnExTyBCompAsm, 266  
 SP3DFrEnExTyQCompAsm, 268  
 SP3DFrExEndTypeACDN, 440  
 SP3DFrExEndTypeB, 441  
 SP3DFrExEndTypeQ, 442  
 SP3DGAngleValveM, 1910  
 SP3DGateAsymValve, 1912  
 SP3DGateValExtndOlet, 1913  
 SP3DGateValve, 1914  
 SP3DGateValveAngleOp, 1915  
 SP3DGateValveAsym, 1917  
 SP3DGateValveExtnd, 1918  
 SP3DGateValveL, 1919  
 SP3DGlobeGOp, 1920  
 SP3DGlobeValve, 1921  
 SP3DGlobeValveF, 1923  
 SP3DGlobeValves, 1924  
 SP3DGroundingPaddle, 1925  
 SP3DH30DegRndLateral, 1179  
 SP3DH45DegRndLateral, 1181  
 SP3DH60DegRndLateral, 1183  
 SP3DH90TurnTranOffsetT, 1185  
 SP3DHAirhandleUnit, 1187  
 SP3DHalfCoupling, 1926  
 SP3DHCeilingDiffuser, 1189  
 SP3DHChiller, 1190  
 SP3DHCleaningBend, 1192  
 SP3DHC PumpWFNDNozAsm, 443  
 SP3DHDiskValve, 1194

- SP3DHDrVesAIXCompAsm, 269  
SP3DHeatEx2EndShellComp, 270  
SP3DHeatEx2EndShellCompAsm, 273  
SP3DHeatExHeadCompAsm, 275  
SP3DHeatExMiterHeadsCompAsm, 276  
SP3DHeatExShellCompAsm, 278  
SP3DHeatXAsm, 445  
SP3DHEccentricTee, 1195  
SP3DHElbow, 1196  
SP3DHExhaustFan, 1198  
SP3DHFIREDamper, 1200  
SP3DHHalfRndDiffuser, 1202  
SP3DHLinearGrille, 1203  
SP3DHMultiLeafDamper, 1205  
SP3DHorCenJktPumpAsm, 446  
SP3DHorDrumCompAsm, 279  
SP3DHorDrWiSaddleAsm, 448  
SP3DHoriPumpBB1Asm, 450  
SP3DHoriPumpBB2Asm, 453  
SP3DHoriPumpBB3Asm, 455  
SP3DHoriPumpBB5Asm, 457  
SP3DHoriPumpOH2Asm, 459  
SP3DHoriShellTubeExchangerAsm, 462  
SP3DHoriVesselEndsAsm, 464  
SP3DHorizontalPumpAsm, 466  
SP3DHorLiftCheckValve, 1927  
SP3DHorOffsetSaddleCompAsm, 280  
SP3DHorRotEqpADvrAsm, 469  
SP3DHorSTEExch02Asm, 471  
SP3DHorSTEExch03Asm, 473  
SP3DHorSTEExch04Asm, 476  
SP3DHoseConnection, 1928  
SP3DHoseRackSt, 581  
SP3DHoseValve, 1929  
SP3DHPresRelDamper, 1207  
SP3DHRec2RecAdapter, 1209  
SP3DHRecDiffuserRectN, 1210  
SP3DHRecDiffuserRndN, 1212  
SP3DHRecGrillRecNeck, 1214  
SP3DHRecGrillRndN, 1216  
SP3DHRecRegisterRecN, 1218  
SP3DHRecRegisterRndN, 1220  
SP3DHRectBellMouth, 1222  
SP3DHRectBranchAngRTE, 1223  
SP3DHRectFlatFlange, 1224  
SP3DHRectFlatFlangeDInc, 1226  
SP3DHRectFlatFlangeDWInc, 1228  
SP3DHRectPantWye, 1230  
SP3DHRectRTE, 1232  
SP3DHRectSleeve, 1234  
SP3DHRndCross, 1236  
SP3DHRndDiffuser, 1238  
SP3DHRndPantWye, 1240  
SP3DHRndReducer, 1242  
SP3DHRoundBranchAngRTE, 1243  
SP3DHRoundDamper, 1244  
SP3DHRoundElbow, 1246  
SP3DHRoundFlateFlangeDWInc, 1251  
SP3DHRoundFlatFlange, 1247  
SP3DHRoundFlatFlangeDInc, 1249  
SP3DHRoundRTE, 1253  
SP3DHRoundSleeve, 1255  
SP3DHSRSPtAttentor, 1257  
SP3DHSMRectDiffuser, 1259  
SP3DHSMRectRegister, 1260  
SP3DHsqrThroatElbow, 1261  
SP3DHub, 1930  
SP3DHVACCoupling, 1263  
SP3DHVACEndCap, 1264  
SP3DHVACFlatOvalRivet, 1265  
SP3DHVACFlatOvalWeld, 1266  
SP3DHVACRectRivet, 1267  
SP3DHVACRectWeld, 1268  
SP3DHVACRoundRivet, 1269  
SP3DHVACRoundWeld, 1270  
SP3DHVACSaddle, 1271  
SP3DHvacSM1PTap, 1272  
SP3DHvacSMRB, 1273  
SP3DHvacSMRoundB, 1274  
SP3DHVACSurfMount, 1275  
SP3DHWRLouvres, 1277  
SP3DImpSteamTrapTy4, 1931  
SP3DImpSteamTrapTy5, 1932  
SP3DImpSteamTrapTy6, 1934  
SP3DImpSteamTrapTy7, 1935  
SP3DImpSteamTrapTy8, 1936  
SP3DIndDr2AirCoolerBayAsm, 479  
SP3DIndDr3AirCoolerBayAsm, 481  
SP3DIndDr4AirCoolerBayAsm, 483  
SP3DInsertVenturi, 1937  
SP3DInstIndicator, 1939  
SP3DInstrStandDouCol, 485  
SP3DInstrStandSinCol, 486  
SP3DInstrStdWallMount, 487  
SP3DInstrumentTee, 1940  
SP3DIntegralOrificeTy1, 1941  
SP3DIntegralOrificeTy2, 1943  
SP3DJktdInsertFlange, 1945  
SP3DJktdRedSlipOnFlange, 1946  
SP3DKettleExchangerAsm, 488  
SP3DKettleExchNestedAsm, 282  
SP3DKnifeGateValve, 1947  
SP3DLapJointFlange, 1951  
SP3DLateral, 1952  
SP3DLateralRRB, 1953  
SP3DLattrolet, 1954  
SP3DLeftReducerCableTray, 144  
SP3DLeftWyeCableTray, 145  
SP3DLevelIndCtrlTy3, 1955  
SP3DLevelIndCtrlTy4, 1957  
SP3DLevelIndCtrlTy6, 1959  
SP3DLiftLugBPCompAsm, 284

- SP3DLiftLugFVCompAsm, 286  
 SP3DLightingFixtureBHARasm, 490  
 SP3DLightingFixtureBHDRAsm, 492  
 SP3DLightingFixtureBTARasm, 494  
 SP3DLightingFixtureBTDRAsm, 496  
 SP3DLinedTStrainerAssly, 1961  
 SP3DLongOrShortVenturi, 1962  
 SP3DLongTangentElbow, 1964  
 SP3DMagFlowmeterTy1, 1968  
 SP3DMagFlowmeterTy2, 1969  
 SP3DMagFlowmeterTy3Tr, 1970  
 SP3DMagFlowmeterTy4, 1971  
 SP3DMagneticFlowMeter, 1972  
 SP3DManWayDBotHCAsm, 287  
 SP3DManWayDHorCovAsm, 289  
 SP3DManWayDVerCovAsm, 291  
 SP3DMeterRunShortVenturi, 1974  
 SP3DMetrunkDblChOriFitting, 1976  
 SP3DMetrunkOriFlangePlate, 1978  
 SP3DMFlowController, 1979  
 SP3DMotorRoundDamper, 1279  
 SP3DMultiportDia3Way, 1981  
 SP3DMultiportDia4Way, 1983  
 SP3DMultportG2WayDia, 1985  
 SP3DMultportG4WayDia, 1986  
 SP3DMultportG7WayDia, 1988  
 SP3DNipple, 1990  
 SP3DNippolet, 1991  
 SP3DNROletG, 1992  
 SP3DNRRPad, 1993  
 SP3DOletG, 1994  
 SP3DOnBrUnionTee, 1995  
 SP3DOnRunUnionTee, 1996  
 SP3DOP\_251, 2018  
 SP3DOP\_271, 2019  
 SP3DOP\_291, 2020  
 SP3DOP\_292, 2021  
 SP3DOP\_311, 2023  
 SP3DOP\_331, 2025  
 SP3DOP\_332, 2027  
 SP3DOP\_333, 2029  
 SP3DOP\_334, 2030  
 SP3DOP\_351, 2032  
 SP3DOP\_391, 2033  
 SP3DOP\_401, 2034  
 SP3DOP\_411, 2035  
 SP3DOP\_412, 2036  
 SP3DOP\_413, 2037  
 SP3DOP\_451, 2038  
 SP3DOP\_452, 2039  
 SP3DOP\_453, 2040  
 SP3DOP\_491, 2042  
 SP3DOP\_492, 2043  
 SP3DOP\_493, 2044  
 SP3DOP\_494, 2046  
 SP3DOP\_571, 2048  
 SP3DOP\_572, 2049  
 SP3DOP\_573, 2050  
 SP3DOP\_574, 2052  
 SP3DOP\_711, 2054  
 SP3DOP\_731, 2055  
 SP3DOP\_811, 2057  
 SP3DOP\_851, 2059  
 SP3DOP\_852, 2060  
 SP3DOP\_853, 2061  
 SP3DOP\_854, 2062  
 SP3DOP3, 1997  
 SP3DOP4, 1998  
 SP3DOP5, 1999  
 SP3DOP691, 2000  
 SP3DOP9, 2001  
 SP3DOPBevelGear, 2002  
 SP3DOPChainWheel, 2003  
 SP3DOPCylinderActuator, 2005  
 SP3DOPElecActuator, 2007  
 SP3DOpenSpectBlank, 2008  
 SP3DOPExtnStem, 2010  
 SP3DOPFloorStand, 2011  
 SP3DOPHandWheel, 2012  
 SP3DOPManualHydraulic, 2013  
 SP3DOpRackAndPinion, 2015  
 SP3DOPThreadedCap, 2016  
 SP3DOPTravelingNutAc, 2017  
 SP3DOrificeFlange, 2064  
 SP3DOrificeFlange1O, 2065  
 SP3DOrificeFlangeAssembly, 2066  
 SP3DOrificePlate, 2067  
 SP3DOrificeSpacer, 2069  
 SP3DP2WAngGlobeCtrlIV, 2070  
 SP3DP2WayGlobeCtrlVal, 2071  
 SP3DP2WayPlugCtrlVal, 2072  
 SP3DP2WaySlideCtrlVal, 2073  
 SP3DP2WBallCtrlValve, 2074  
 SP3DP2WSolenoidValve, 2075  
 SP3DP3WAngGlobeCtrlIV, 2077  
 SP3DP3WBallCtrlValve, 2078  
 SP3DP3WPlugControlV, 2079  
 SP3DP4WPlugControlV, 2080  
 SP3DPaddleBlind, 2081  
 SP3DPaddleSpacer, 2083  
 SP3DPAngPressReliefV, 2085  
 SP3DParSaddleCompAsm, 293  
 SP3DPAutoRecircValve, 2087  
 SP3DPenetrationSleeve, 2088  
 SP3DPerRackPinionActValve, 2089  
 SP3DPExpnsJoint, 2090  
 SP3DPGateValExtnd, 2092  
 SP3DPiActKnifeGateValveTy1, 2093  
 SP3DPiActKnifeGateValveTy2, 2095  
 SP3DPinchValve, 2097  
 SP3DPIAvgPitotTube, 2100  
 SP3DPIInlSilencer, 2101

- SP3DPInlineSilencerTy1, 2102  
SP3DPipeSleeve, 2103  
SP3DPipet, 2104  
SP3DPistonActAngValve, 2105  
SP3DPistonActStCondValve, 2107  
SP3DPistonActValve, 2109  
SP3DPKnifeGateCtrlVal, 2111  
SP3DPIAndFrExch01Asm, 498  
SP3DPIAndFrExch02Asm, 500  
SP3DPIAndFrExch03Asm, 502  
SP3DPlateExchangerAsm, 504  
SP3DPlateFlange, 2112  
SP3DPlatformAsm, 295  
SP3DPlatformTypeACompAsm, 297  
SP3DPlatformTypeBCompAsm, 298  
SP3DPlatformTypeCCompAsm, 299  
SP3DPlatformTypeDCompAsm, 300  
SP3DPlatformTypeECompAsm, 301  
SP3DPlatformTypeFCompAsm, 303  
SP3DPlatformWithHoleAsm, 304  
SP3DPLevelIndCtrlTy5, 2113  
SP3DPlug, 2115  
SP3DPlugGOp, 2116  
SP3DPlugValve, 2117  
SP3DPlugValveAsym, 2118  
SP3DPMotOperatedVal, 2119  
SP3DPOrificePlate, 2120  
SP3DPressureGauge, 2122  
SP3DPressureRedValve, 2123  
SP3DPressureRegulator, 2128  
SP3DPressureSwitch, 2129  
SP3DPresTransmitter, 2131  
SP3DPSteamTrapTy5, 2133  
SP3DPStrThruPresRelV, 2135  
SP3DPTempFusiblePlug, 2136  
SP3DPTrap, 2137  
SP3DPumpAsm, 506  
SP3DPumpMAsm, 508  
SP3DPumpUnitHCAsm, 510  
SP3DPVacReliefValve, 2139  
SP3DPVortexFlowInstr, 2140  
SP3DRackPinionActValve, 2141  
SP3DReceptacleAsm, 513  
SP3DRecTorusMiterAsm, 306  
SP3DRedFillerFlange, 2143  
SP3DRedInstrumentTee, 2144  
SP3DReducer, 2145  
SP3DReducingCoupling, 2147  
SP3DReducingCross, 2148  
SP3DReducingInsert, 2149  
SP3DReducingLateral, 2150  
SP3DReducingTee, 2151  
SP3DReducingTeeWye, 2153  
SP3DRegulatorTy1, 2155  
SP3DRegulatorTy2, 2157  
SP3DRegulatorTy3, 2159  
SP3DRegulatorTy4, 2161  
SP3DRegulatorTy5, 2163  
SP3DReliefValveTy1, 2165  
SP3DReliefValveTy2, 2167  
SP3DReliefValveTy3, 2169  
SP3DReliefValveTy4, 2171  
SP3DReliefValveTy5, 2173  
SP3DReliefValveTy6, 2175  
SP3DReliefValveTy7, 2177  
SP3DREnExTyLNPW1CompAsm, 308  
SP3DREnExTyMSTUW2CompAsm, 310  
SP3DREnExTyQCompAsm, 312  
SP3DReturn, 2179  
SP3DRFOBellMouth, 1281  
SP3DRightWyeCableTray, 147  
SP3DRndTorusMiterAsm, 313  
SP3DRoadCross, 200  
SP3DRoadTee, 202  
SP3DRoDActEPPHWPosC1Valve, 2180  
SP3DRoDActEPPHWPosD1Valve, 2182  
SP3DRoDActPosA4Valve, 2184  
SP3DRoDActPosB4Valve, 2186  
SP3DRoDActPosC1Valve, 2188  
SP3DRoDActPosD1Valve, 2190  
SP3DRoPisActPosA1Valve, 2192  
SP3DRoPisActPosA4Valve, 2194  
SP3DRoPisActPosB1Valve, 2196  
SP3DRoPisActPosB4Valve, 2198  
SP3DRotameterTy1, 2200  
SP3DRotameterTy2, 2202  
SP3DRotameterTy3, 2204  
SP3DRotameterTy4, 2206  
SP3DRotameterTy5, 2208  
SP3DRotameterTy6Tr, 2210  
SP3DRotameterTy7FS, 2212  
SP3DRotameterTy8TrFs, 2214  
SP3DRotameterTy9, 2216  
SP3DRPad, 2218  
SP3DRuptureDiscVac1, 2220  
SP3DRuptureDiscVac2, 2221  
SP3DS2003, 2222  
SP3DS3003, 2223  
SP3DSaddle, 2224  
SP3DSaddleSupCompAsm, 315  
SP3DSafetyShower, 582  
SP3DSafShower01Asm, 515, 584  
SP3DSafShower02Asm, 516, 585  
SP3DSafShower03Asm, 517, 586  
SP3DSafShower04Asm, 519, 588  
SP3DSafShower05Asm, 521, 590  
SP3DSafShower06Asm, 523, 592  
SP3DSafShower07Asm, 525, 594  
SP3DSafShower08Asm, 527, 596  
SP3DSafShower09Asm, 529, 598  
SP3DShStRotameter, 2225  
SP3DSiamese, 600

- SP3DSingleBasketStrainer, 2226  
 SP3DSingleFrDrAirCoolerAsm, 531  
 SP3DSingleIndDrAirCoolerAsm, 533  
 SP3DSixFootWorkerAsm, 182  
 SP3DSkirtAsm, 317  
 SP3DSkirtBaseTypeACompAsm, 319  
 SP3DSkirtBaseTypeBCompAsm, 321  
 SP3DSkirtBaseTypeCCompAsm, 323  
 SP3DSkirtBaseTypeDCompAsm, 325  
 SP3DSlideValve, 2229  
 SP3DSlipFitterFloodLightAsm, 535  
 SP3DSlipOnFlange, 2230  
 SP3DSolenoidActuator, 2231  
 SP3DSpacer, 2232  
 SP3DSpectacleBlind, 2233  
 SP3DSphericalVesselAsm, 537  
 SP3DSpiralStairTankAsm, 539  
 SP3DSpiralStairTankComp, 327  
 SP3DSpraySprinkler, 601  
 SP3DSredCableTray (Straight Reducer), 148  
 SP3DStdPump, 541  
 SP3DSteamTrapTy4, 2234  
 SP3DSteamTrapTy5, 2235  
 SP3DSteamTrapTy6, 2236  
 SP3DSteamTrapTy7, 2237  
 SP3DSteamTrapTy8, 2238  
 SP3DStopCheckValve, 2239  
 SP3DStorageTankAsm, 543  
 SP3DSumpStrainer, 2240  
 SP3DSupportLegsCompAsm, 329  
 SP3DSupportLugAsm, 331  
 SP3DSweepolet, 2241  
 SP3DSwGearSectCompAsm, 332  
 SP3DSwitchGearAsm, 545  
 SP3DSwivelJointClamp, 2242  
 SP3DTankDrainValve, 2243  
 SP3DTaperSpacer1Side, 2244  
 SP3DTaperSpacer2Side, 2245  
 SP3DTechlokClamp, 2246  
 SP3DTee, 2248  
 SP3DTeeCableTray, 149  
 SP3DTeeRRB, 2250  
 SP3DTeeStrainer, 2251  
 SP3DTempBasketStrainer, 2252  
 SP3DTempContrlValve, 2255  
 SP3DTemperatureSwitch, 2256  
 SP3DTemporaryConeStrainer, 2257  
 SP3DTempTransmitter, 2260  
 SP3DTesTestSkirt, 334  
 SP3DTractorTruckAsm, 184  
 SP3DTruckTrailerAsm, 185  
 SP3DTrueY, 2261  
 SP3DTStrainer, 2263  
 SP3DTurbineMeter, 2265  
 SP3DUnion, 2267  
 SP3DUnionHead, 2268  
 SP3DUnionTail, 2269  
 SP3DVACChainWheel, 2270  
 SP3DVAFloorBox, 2271  
 SP3DVAIndicatorPost, 2272  
 SP3DValveGOT1, 2273  
 SP3DValveGOT2, 2275  
 SP3DVAWallPost, 2277  
 SP3DVCrossCabletray, 150  
 SP3DVentSilencer, 2278  
 SP3DVenturimeter, 2279  
 SP3DVentValve, 2280  
 SP3DVerDrumCompAsm, 336  
 SP3DVerDrumWiLegsAsm, 547  
 SP3DVerRotatingEquipmentAsm, 549  
 SP3DVerticalPumpAsm, 551  
 SP3DVertPumpOH3Asm, 553  
 SP3DVertShellTubeExchangerAsm, 556  
 SP3DVertVesselEndsAsm, 559  
 SP3DVesselPlatformAsm, 338  
 SP3DVesselSkirtCompAsm, 340  
 SP3DVesselwithSkirtAsm, 561  
 SP3DVictaulicClamp, 2282  
 SP3DVOITorusMiterAsm, 342  
 SP3DVorFlowmeterTy1, 2284  
 SP3DVorFlowmeterTy2, 2285  
 SP3DVorFlowmeterTy3, 2286  
 SP3DVorFlowmtrTy4DH, 2288  
 SP3DVortexFlowmeter, 2290  
 SP3DVPSCoupling, 2292  
 SP3DVPSElbow45Deg, 2293  
 SP3DVPSElbow90Deg, 2294  
 SP3DVTeeDownCableTray, 151  
 SP3DVTeeUpCableTray, 152  
 SP3DWasteAsm, 179  
 SP3DWaterFilter, 2295  
 SP3DWedgeFlowElement, 2298  
 SP3DWeighScaleAsm, 187  
 SP3DWeldPiGMLCompAsm, 344  
 SP3DWeldPiGSLCompAsm, 346  
 SP3DWeldTySMLCompAsm, 348  
 SP3DWeldTySSLCompAsm, 350  
 SP3DWNFlange, 2299  
 SP3DWyeStrainer, 2302  
 SP3DY, 2304  
 SP3DYLong, 2306  
 SP3DYStrainer, 2307  
 spacer, 2232, 2244, 2245  
 spacers  
     SP3DOrificeSpacer, 2069  
 speakers, 384, 385  
 specifications for HVAC, 76  
 Sphere sheet, 198  
 SPOlet, 2308  
 spray sprinkler  
     SP3DSpraySprinkler, 601  
 spreadsheets

- Equipment, 189
- EquipmentComponent, 211
- sprinkler
  - SP3DSpraySprinkler, 601
- SPSEqpFndMacros.BlockFndAsmDef, 2313
- SPSEqpFndMacros.BlockFndCompDef, 2314
- SPSEqpFndMacros.BlockFndDef, 2314
- SPSEqpFndMacros.BlockSlabFndAsmDef, 2315
- SPSEqpFndMacros.BlockSlabFndDef, 2315
- SPSEqpFndMacros.FrameFndAsmDef, 2316
- SPSEqpFndMacros.FrameFndDef, 2317
- SPSEqpFndMacros.OctagonFndDef, 2318
- SPSEqpFndMemSys.FrameFndnAsmWMemSysDef, 2318
- SPSFootingMacros.BoundedPierFtgAsmDef, 2319
- SPSFootingMacros.FtgGroutPadSym, 2320
- SPSFootingMacros.FtgPierSym, 2321
- SPSFootingMacros.FtgSlabSym, 2322
- SPSFootingMacros.PierAndSlabFtgAsmDef, 2323
- SPSFootingMacros.PierAndSlabFtgSym, 2325
- SPSFootingMacros.PierFtgAsmDef, 2327
- SPSFootingMacros.SlabFtgAsmDef, 2328
- SPSHandrailMacros.TypeA, 2329
- SPSHandrailMacros.TypeASideMount, 2330
- SPSHandrailMacros.TypeATopEmbedded, 2331
- SPSHandrailMacros.TypeATopMounted, 2332
- SPSLadderMacros, 2333
- SPSStairMacros, 2337
- stairs, 2337
- STD PUMP 001A, 541
- steam traps
  - SP3DCSImpSteamTrapTy4, 1697
  - SP3DCSImpSteamTrapTy5, 1699
  - SP3DCSImpSteamTrapTy6, 1701
  - SP3DCSImpSteamTrapTy7, 1703
  - SP3DCSImpSteamTrapTy8, 1705
  - SP3DCSPFIThSteamTrap, 1742
  - SP3DCSPIBktSteamTrap, 1754
  - SP3DCSPLiThSteamTrap, 1760
  - SP3DCSPTherSteamTrap, 1784
  - SP3DCSPTSteamTrapWOS, 1786
  - SP3DCSPTSteamTrapWS, 1788
  - SP3DCSSteamTrap, 1812
  - SP3DCSVenturimeter, 1828
  - SP3DImpSteamTrapTy4, 1931
  - SP3DImpSteamTrapTy5, 1932
  - SP3DImpSteamTrapTy6, 1934
  - SP3DImpSteamTrapTy7, 1935
  - SP3DImpSteamTrapTy8, 1936
  - SP3DSteamTrapTy4, 2234
  - SP3DSteamTrapTy5, 2235
  - SP3DSteamTrapTy6, 2236
  - SP3DSteamTrapTy7, 2237
  - SP3DSteamTrapTy8, 2238
  - SP3DVenturimeter, 2279
  - WOSteamTrap, 2309
- WOSteamTrap3, 2311
- stem extension, 2010
- strainers
  - SP3DBasketStrainer, 1366
  - SP3DBasketStrainer2, 1367
  - SP3DCSPFPPlateStrainer, 1744
  - SP3DCSPSngBStrainer, 1772
  - SP3DCSPSumpStrainer, 1776
  - SP3DCSPTStrainer, 1790
  - SP3DCSPYStrainer, 1800
  - SP3DCSPYStrainer2, 1802
  - SP3DCSTStrainer, 1816
  - SP3DCSYStrainer, 1830
  - SP3DLinedTStrainerAssly, 1961
- SP3DTStrainer, 2263
- SP3DYStrainer, 2307
- sumps, 2240
- String type
  - example, 91
- StructProfile, 1163
- structural symbols, 46
- Structure symbols
  - overview, 2313
- supports
  - SP3DTestSkirt, 334
- SymbolHelper
  - example, 88
- SymbolRepid, 91
- symbols, 45
  - 3D, 47
  - adding to reference data, 56
  - aspects, 71
  - cable tray, 125
  - conduit overview, 153
  - converting PDS to SP3D, 93, 94, 96
  - converting PDS to SP3D examples, 99
  - creating, 55, 61, 62, 63
  - creating with Visual Basic, 63, 65, 67
  - cross-sections, 46
  - debugging with Visual Basic, 114
  - definitions, 103
  - distributing automatically, 58
  - distributing manually, 60
  - edit occurrence, 118, 119
  - flavors, 103
  - geometry, 71
  - graphical preview, 50, 51, 52
  - hangers and supports overview, 603
  - HVAC overview, 1167
  - inputs, 72
  - nested, 61
  - occurrence properties in Visual Basic, 69
  - outputs, 71, 72
  - overview, 47
  - Piping overview, 1283
  - profiles, 46

- Solid Edge, 107
- testing, 118
- troubleshooting, 113
- variables, 67
- TA-100X80, 1253
- tangential nozzle orientation, 207
- tanks
  - SP3DTankDrainValve, 2243
- tee strainers
  - SP3DLinedTStrainerAssly, 1961
- tees
  - drip ring, 1871
  - EqualTee, 1289
  - rectangular, 1232
  - reducing instrument tee, 2144
  - SP3DBioInstrumentTee, 1373
  - SP3DBioShortOutletRunTee, 1374
  - SP3DInstrumentTee, 1940
  - SP3DReducingTee, 2151
  - SP3DTee, 2248
  - SP3DTeeRRB, 2250
- temperature
  - transmitter, 2260
- temperature switch, 2256
- templates for part classes, 66
- testing
  - debugging with Visual Basic, 114
  - editing symbol occurrence, 118, 119
- transmitter
  - pressure, 2131
- TrapezeC sheet, 206
- TrapezeR sheet, 206
- Triangle sheet, 207
- TriangularPad, 1164
- TriangularSolid sheet, 199
- troubleshooting
  - debugging with Visual Basic, 114
  - editing symbol occurrence, 118, 119
  - investigation methods, 123
  - sources of errors, 121
  - symbols, 113
  - testing symbols, 118
- TruncatedRectangular sheet, 199
- tube exchanger, 471, 473, 476
- two-way globe control valve with diaphragm actuator, 1446
- two-way globe control valve with piston actuator, 1548
- U860, 313
- U861, 306
- U862, 342
- U863, 262
- unions
  - SP3DCSPROrificeUnion, 1766
  - SP3DOnBrUnionTee, 1995
  - SP3DOnRunUnionTee, 1996
- SP3DUnion, 2267
- SP3DUnionHead, 2268
- SP3DUnionTail, 2269
- Utility\_CURVED\_PLATE, 1102
- Utility\_END\_PLATE, 1103
- Utility\_END\_PLATE\_HOLED, 1104
- Utility\_END\_PLATE\_TAPER, 1105
- Utility\_END\_PLATE\_VAR, 1106
- Utility\_FOUR\_HOLE\_PLATE, 1107
- Utility\_GEN\_3\_BOLT\_CLAMP, 1111
- Utility\_GEN\_4\_BOLT\_CLAMP, 1113
- Utility\_GEN\_4\_LIN\_BOLT\_CL, 1115
- Utility\_GEN\_CLAMP, 1117
- Utility\_GEN\_HEX\_NUT, 1119
- Utility\_GEN\_HOOD, 1120
- Utility\_GEN\_PIPE\_ATT, 1121
- Utility\_GEN\_PIPE\_ATT2, 1122
- Utility\_GEN\_REC\_STRAP, 1123
- Utility\_GEN\_U\_BOLT, 1124
- Utility\_GEN\_U\_STRAP, 1125
- Utility\_GENERIC\_L, 1108
- Utility\_GENERIC\_T, 1109
- Utility\_GENERIC\_W, 1110
- Utility\_GROUT, 1126
- Utility\_GUSSET, 1127
- Utility\_GUSSET\_NOTCHED, 1129
- Utility\_GUSSET2, 1128
- Utility\_HALF\_END\_PLATE, 1130
- Utility\_I\_BEAM\_STIFFENER, 1131
- Utility\_NOTCH\_PLATE, 1132
- Utility PIPE STRAP, 1133
- Utility\_PLATE, 1134
- Utility\_SHEAR\_TAB, 1135
- Utility\_SQUARE\_GROUT, 1136
- Utility\_TRUNNION, 1137
- Utility\_TWO\_HOLE\_PLATE, 1138
- Utility\_U\_BOLT\_PLATE, 1143
- Utility\_USER\_FIXED\_BOX, 1139
- Utility\_USER\_FIXED\_CYL, 1140
- Utility\_USER\_VARIABLE\_BOX, 1141
- Utility\_USER\_VARIABLE\_CYL, 1142
- V13, 1666
- V18, 1668
- V33, 2229
- V42, 1353
- V58, 1908
- V72, 1929
- V8, 1662
- Valve Rotary Diaphragm Actuator Position C1, 1591, 2188
- valve with rotary piston actuator, 1597, 2194
- valve with Rotary Piston Actuator, 1595, 1599, 2192, 2196
- valves
  - 45 degree angle valve, 1314
- Ball, 1286

- creating from catalog database, 86  
creating from parts, 86  
creating parametrically, 86  
multiport 4-way diaphragm, 1986  
slide, 2229  
SP3D3WayBall, 1303  
SP3D3WayBallValve, 1305  
SP3D3WayCheckValve, 1306  
SP3D3WayControlValve, 1309  
SP3D3WayGlobeValve, 1312  
SP3D3WayPlugValve, 1313  
SP3D4WayPlugValve, 1324  
SP3DAngGlobeValveAsm, 1348  
SP3DAngleCheckValve, 1349  
SP3DAngleCheckValveAsym, 1350  
SP3DAngleGlobeValve, 1351  
SP3DAngleHoseValve, 1352  
SP3DAngleStopCheckValve, 1353  
SP3DAngleValve, 1354  
SP3DAngleValveL, 1355  
SP3DAutoRecircVal, 1360  
SP3DBallAsymValve, 1361  
SP3DBallGOp, 1362  
SP3DBallValve, 1365  
SP3DBlankGateValve, 1379  
SP3DButterflyGOp, 1385  
SP3DButterflyValve, 1386  
SP3DButterflyValveAsym, 1387  
SP3DButterflyValveL, 1388  
SP3DButterflyValveSym, 1390  
SP3DButterflyValveVAL, 1392  
SP3DButterflyValveVOH, 1393  
SP3DCheckValve, 1396  
SP3DCIGateVGearA, 1499  
SP3DConduitGateValve, 1641  
SP3DConduitGateValveAsym, 1642  
SP3DCS3WayBallCtrlVal, 1662  
SP3DCS3WayControlVal, 1664  
SP3DCS3WayGlobeCtrlVal, 1666  
SP3DCS3WayPlugCtrlVal, 1668  
SP3DCS4WayPlugCtrlVal, 1670  
SP3DCSAutoRecircVal, 1676  
SP3DCSBallCtrlValve, 1678  
SP3DCSGlobeCtrlVal, 1695  
SP3DCSP3WayBallValve, 1716  
SP3DCSP3WayGIValve, 1718  
SP3DCSP3WRPlugValve, 1720  
SP3DCSPAtoRecValve, 1722  
SP3DCSPBallValve, 1724  
SP3DCSPBasketStrainer, 1726  
SP3DCSPButterflyVal, 1728  
SP3DCSPConeStrainer, 1730  
SP3DCSPDiaphragmVal, 1732  
SP3DCSPDressCoupling, 1734  
SP3DCSPExpNJoint, 1736  
SP3DCSPFlexHose, 1740  
SP3DCSPGlobeValve, 1750  
SP3DCSPKnifeValve, 1758  
SP3DCSPlugCtrlValve, 1762  
SP3DCSPRotaPlugValve, 1768  
SP3DCSPSolenoidValve, 1774  
SP3DCSPWDStreamValve, 1792  
SP3DCSPWUStreamValve, 1796  
SP3DCSSlideCtrlValve, 1808  
SP3DCSValve, 1818  
SP3DCylinderValve, 1832  
SP3DDelugeValve, 1852  
SP3DDiaphragmValve, 1856  
SP3DGateAsymValve, 1912  
SP3DGateValExtndOlet, 1913  
SP3DGateValve, 1914  
SP3DGateValveAngleOp, 1915  
SP3DGateValveAsym, 1917  
SP3DGateValveExtnd, 1918  
SP3DGateValveL, 1919  
SP3DGlobeGOp, 1920  
SP3DGlobeValve, 1921  
SP3DGlobeValveF, 1923  
SP3DGlobeValves, 1924  
SP3DHorLiftCheckValve, 1927  
SP3DKnifeGateValve, 1947  
SP3DP2WAngGlobeCtrlV, 2070  
SP3DP2WayGlobeCtrlVal, 2071  
SP3DP2WayPlugCtrlVal, 2072  
SP3DP2WaySlideCtrlVal, 2073  
SP3DP2WBallCtrlValve, 2074  
SP3DP2WSolenoidValve, 2075  
SP3DP3WAngGlobeCtrlV, 2077  
SP3DP3WBallCtrlValve, 2078  
SP3DP3WPlugControlV, 2079  
SP3DP4WPlugControlV, 2080  
SP3DPAngPressReliefV, 2085  
SP3DPAutoRecircValve, 2087  
SP3DPExpNJoint, 2090  
SP3DPiActKnifeGateValveTy1, 2093  
SP3DPiActKnifeGateValveTy2, 2095  
SP3DPIInAvgPitotTube, 2100  
SP3DPIInSilencer, 2101  
SP3DPIInSilencerTy1, 2102  
SP3DPistonActAngValve, 2105  
SP3DPistonActStCondValve, 2107  
SP3DPistonActValve, 2109  
SP3DPKnifeGateCtrlVal, 2111  
SP3DPLevelIndCtrlTy5, 2113  
SP3DPlugGOp, 2116  
SP3DPlugValve, 2117  
SP3DPMotOperatedVal, 2119  
SP3DPOrificePlate, 2120  
SP3DPSteamTrapTy5, 2133  
SP3DPStrThruPresRelV, 2135  
SP3DPTempFusiblePlug, 2136  
SP3DPTrap, 2137

- SP3DPVacReliefValve, 2139  
SP3DPVortexFlowInstr, 2140  
SP3DRackPinionActValve, 2141  
SP3DStopCheckValve, 2239  
SP3DTankDrainValve, 2243  
SP3DValveGOT1, 2273  
SP3DValveGOT2, 2275  
variable properties, 69  
variable tables, 109  
vectors, 74, 80  
vents  
  conservation, 1643  
SP3DCSFreeVent, 1694  
SP3DCSPFreeVentTy1, 1746  
SP3DCSPFrVentWScreen, 1748  
SP3DCSVentSilencer, 1826  
  SP3DVentSilencer, 2278  
vertical drum with legs, 547  
vertical oval torus miter, 342  
VerticalPad, 1165  
VerticalPipePad, 1166  
vessels  
  skirts, 340  
SP3DCESVVessel2PlatfAsm, 356  
SP3DComplexHorCylVesselAsm, 359  
SP3DComplexVesselAsm, 361  
SP3DHorDrWiSaddleAsm, 448  
victaulic clamps  
  SP3DVictaulicClamp, 2282  
Visual Basic  
  libraries, 64  
  occurrence properties, 69  
  programming notes, 74  
  projects, 64  
  variables, 67  
Visual Basic debugging tools, 114  
Visual Basic projects, 63  
  symbols, 56  
vortex flow meter, 1625, 1627, 1629, 2284, 2285, 2286  
vortex flow meter with dual heads, 1631, 2288  
vortex flowmeter, 2290  
Wall Pack Fixture, 393  
WallpackFixture01, 393  
water filters  
  SP3DWaterFilter, 2295  
weather resistant louvres, 1277  
wedge flow element, 1633, 2298  
what's new  
  3D Symbols, 38  
workbooks  
  Equipment, 189  
  EquipmentComponent, 211  
WOSteamTrap, 2309  
WOSteamTrap3, 2311