# Process, Power and Marine Division
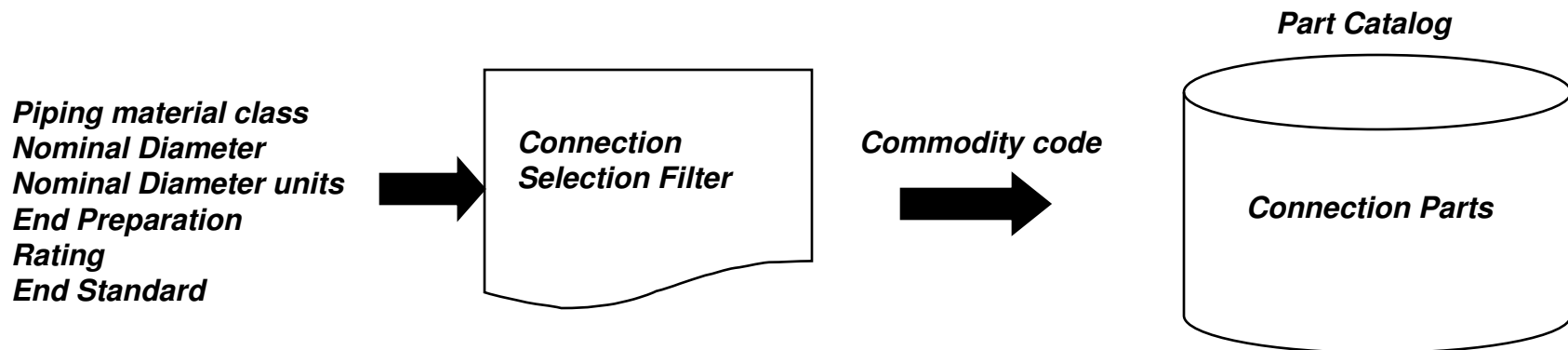
**SP3D Piping Reference Data**

*6-Connection Filters*

# Connection Selection Filters

- Gasket Selection Filter

- Bolt Selection Filter

- Nut Selection Filter

- Washer Selection Filter

- SP3D passes the input data (shown below) to the connection selection filter to use as filters to find a commodity code.

- When the commodity code is found, SP3D searches in the catalog using the commodity code to find the correct connection part.

**Piping material class**
**Nominal Diameter**
**Nominal Diameter units**      **Connection**            **Commodity code**
**End Preparation**             **Selection Filter**
**Rating**
**End Standard**

**Part Catalog**

**Connection Parts**

# Bolt Commodity Filter

- This rule enables the spec writer to define the basis for selecting the set of bolts to be used at a bolted joint in the 3D model. Bolts should be selected from the Piping Specification on the basis of size, end preparation, rating, temperature etc.

**SP3D passes the piping specification name, nominal pipe diameters,**

**end preparation, rating and end standard for both connect points to**

**the bolt selection filter and retrieves a commodity code and**

**the bolt extension option.**

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |

| IndustryCommodityCode | BoltType | MaterialsGrade | LubricationRequirements | CoatingType |
|---|---|---|---|---|
| BBZZZZZZAAYBEVZZUS | 10 | 4071 | | |
| BAZZZZZZAAYBETZZUS | 5 | 4031 | | |

# Spec Name

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is a string representing the unique name of the piping materials class for which the bolt is intended.**

# NPD From/To

**INTERGRAPH**

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |

**This is a unitted value representing the lower and upper bound of the nominal piping diameter for which this bolt applies within this piping materials class.**

# Bolt Option

INTERGRAPH

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an enumerated value that represents an optional bolt selection that has been enabled by the spec writer. A default bolt option represents that bolt, which should be used, when the piping designer has not explicitly selected one. The bolt option, if applicable, is to be selected by the piping designer.**

# Max Temp



| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**A unitted value representing the maximum temperature for which this bolt is intended within this piping materials class. A maximum temperature is required for those bolts, which are not suitable for the full range of temperature for which the piping materials class is intended**

# End Prep

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| | | | | | | | | | | | | | | | | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an enumerated value representing the end preparation, for the bolted joint. Valid values are defined in the EndPreparation sheet in allcodelist.xls**

# Pressure Rating



| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an enumerated value representing the pressure rating for the bolted joint. Valid values are defined in the PressureRating sheet in allcodelist.xls**

# End Standard

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | |

| | EndStandard ShortDescription | Codelist Number |
|---|---|---|
| 7 | Default | 5 |
| 8 | ID Duct | 10 |
| 9 | ANSI-B16.12 | 12 |
| 10 | ANSI-B16.15 | 15 |
| 11 | ANSI-B16.22 | 22 |
| 12 | ANSI-B16.23 | 23 |
| 13 | ANSI-B16.24 | 24 |
| 14 | ANSI-B16.36 | 29 |
| 15 | ANSI-B16.42 | 30 |
| 16 | ANSI-B1.20.3 | 33 |
| 17 | ANSI-B1.20.7 | 37 |
| 18 | ASTM-A74 | 45 |
| 19 | ASTM-C76 | 46 |
| 20 | ASTM-C700 | 47 |
| 21 | AWWA-C110 | 49 |
| 22 | AWWA-C115 | 50 |
| 23 | AWWA-C151 | 55 |
| 24 | AWWA-C207 Cl.B & D, ring | 60 |
| 25 | AWWA-C207 Cl.B & D, hub | 61 |
| 26 | AWWA-C207 Cl.E, hub | 62 |
| 27 | API-5LE | 70 |
| 28 | API-6A | 75 |
| 29 | API-605-B | 79 |
| 30 | MSS-SP-44-NB | 80 |
| 31 | MSS-SP-44-B | 81 |
| 32 | ASME BPE | 101 |

EndStandard / Examina

**This is an enumerated value representing the end standard, or source of the catalog data, applicable to the bolted joint.**

# Alternate End

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | 3AZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |

**These are end conditions of the mating component which is part of the bolted connection**

# Contractor Commodity Code

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |

**This is the commodity code that is intended to be used during the design phase.**

# Priority

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is a decimal value that represents the priority to be used in selecting the bolts for a bolted joint at a spec break, where the bolt requirement differs between the two piping materials classes.The bolt set with the lower value for bolt priority at the spec break will be selected.**

# Bolt Extension Option



**This is an enumerated value that is to be used to determine the length of the exposed threads for the bolt length calculation for both studs and machine bolts from the Bolt Extension rule. The bolt extension will also include any additional length required for stud tensioners.**

# Fab Category Override

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an enumerated value that represents the responsibility for fabrication or erection. The assignment of a value for this property is considered to be optional. The default Fabrication Type may be defined with the piping commodity material control data within the Piping Catalog.**

# Supply Responsibility Override

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| | | | | | | | | | | | | | | | | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an enumerated value that represents the responsibility for supply. The assignment of a value for this property is considered to be optional. The default supply responsibility may be defined with the piping commodity material control data within the Piping Catalog.**

# Comments

INTERGRAPH

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | | 1 | 7 | 10 | | |

**This is an optional string that is simply provided for the benefit of the spec writer in managing the connection commodity data. This is intended to be used as a brief description of the connection commodity, and can be used in reporting from the Piping Specification.**

# PipingNotes1

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | BoltOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | ContractorCommodityCode | Priority | BoltExtensionOption | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 36 | in | 1 | | 21 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 21 | 300 | 5 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 2 | 10 | in | 1 | | 21 | 300 | 29 | 121 | 300 | 5 | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 300 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 121 | 150 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 121 | 150 | 80 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |
| 1C0031 | 0.75 | 10 | in | 1 | | 121 | 300 | 5 | | | | BAZZZZZZAAYBETZZUS | 1 | 7 | 10 | | | |

**This is an enumerated value, i.e. the standard note number that is related to a standard note that applies to this connection commodity. Typically, notes are required to explain the use of non-default connection commodities.**

# Gasket Selection Filter

- This rule enables the spec writer to define the basis for selecting the gasket to be used at a joint in the 3D model.

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | 7 | 10 | | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | 7 | 10 | | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | 7 | 10 | | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | 7 | 10 | | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | 7 | 10 | | | |

| IndustryCommodityCode | RingNumber | NominalDiameterFrom | NominalDiameterTo | NominalDiameter | NpdUnitType | GasketIndustryStandard | GasketType | ThicknessFor3DModel | ProcurementThickness | MaterialsGrade | GasketOutsideDiameter | GasketInsideDiameter | GasketOutsideDiameterBasis | GasketInsideDiameterBasis |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GBAHAAAALBFJUS | | | | | | | | 10 | 0.0625in | 0.0625in | 3052 | | | |
| GMAHACABXBEPUS | | | | | | | | 150 | 0.125in | 0.125in | 3653 | | | |
| GMAMACABXBEPUS | | | | | | | | 150 | 0.125in | 0.125in | 3653 | | | |

**SP3D passes the piping specification name, nominal pipe diameters, end preparation, rating and end standard for both connect points to the gasket selection filter and retrieves a commodity code.**

# Gasket option

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |

| | B | D |
|---|---|---|
| 2 | GasketOption ShortDescription | Codelist Number |
| 3 | | |
| 4 | Default | 1 |
| 5 | Flat ring | 5 |
| 6 | Flat full face | 10 |
| 7 | Flat double jacketed | 15 |
| 8 | Corrugated | 20 |
| 9 | Corrugated double jacketed | 25 |
| 10 | Inlaid corrugated | 30 |
| 11 | O ring | 35 |
| 12 | BX ring | 40 |
| 13 | RX ring | 45 |
| 14 | Octagonal ring joint | 50 |
| 15 | Oval ring joint | 55 |
| 16 | Lens ring | 60 |
| 17 | Spiral wound, one ring | 65 |
| 18 | Spiral wound, two rings | 70 |
| 19 | Bridgeman | 75 |
| 20 | Delta | 80 |
| 21 | Welded membrane | 85 |
| 22 | Weld ring | 90 |
| 23 | | |

GasketOption / GasketR

**This is an enumerated value that represents an optional gasket selection that has been enabled by the spec writer. A default gasket option represents that gasket, which should be used, when the piping designer has not explicitly selected one.**

# Fluid Code

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |

**This is an optional enumerated value representing the Fluid code to be used in selecting the gasket for a bolted joint .This value is only required for those gaskets, where the selection of the gasket is dependent upon the Fluid service.**

# Schedule Thickness

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |

**This is an optional enumerated value representing the schedule (or thickness) for the associated clamp used to select the gasket at a mechanical joint.This value is only required for those gaskets, where the selection of the gasket is dependent upon the schedule of an associated clamp.**

# Priority



| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |

**This is a decimal value that represents the priority to be used in selecting the gasket for a bolted joint at a spec break, where the gasket requirement differs between the two piping materials classes. The gasket with the lower value for gasket priority at the spec break will be selected.**

**.**

# Ring Number

| SpecName | NominalDiameterFrom | NominalDiameterTo | NpdUnitType | GasketOption | MaximumTemperature | EndPreparation | PressureRating | EndStandard | AlternateEndPreparation | AlternatePressureRating | AlternateEndStandard | FluidCode | ScheduleThickness | ContractorCommodityCode | Priority | RingNumber | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | | | | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 0.75 | 24 | in | 1 | | 21 | 150 | 5 | 121 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 6 | 24 | in | 1 | | 21 | 150 | 5 | 211 | 150 | 5 | | | GMAHACABXBEPUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | | | | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 26 | 36 | in | 1 | | 21 | 150 | 80 | 21 | 150 | 81 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 80 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 121 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |
| 1C0031 | 30 | 36 | in | 1 | | 21 | 150 | 81 | 211 | 150 | 80 | | | GMAHACCABBEQUS | | | 7 | 10 | | |

| | D | F |
|---|---|---|
| 1 | | |
| 2 | ShortDescription | listNum |
| 3 | | |
| 4 | | 1 |
| 5 | Undefined | 1 |
| 6 | | 5 |
| 7 | R11 | 11 |
| 8 | R12 | 12 |
| 9 | R13 | 13 |
| 10 | R14 | 14 |
| 11 | R15 | 15 |
| 12 | R16 | 16 |
| 13 | R17 | 17 |
| 14 | R18 | 18 |
| 15 | R19 | 19 |
| 16 | R20 | 20 |
| 17 | R21 | 21 |
| 18 | R22 | 22 |
| 19 | R23 | 23 |
| 20 | R24 | 24 |

RingNumber

**This is an enumerated value representing the ring number for a ring joint gasket. This property is optional and is only required for the situation where the gasket's commodity code does not address the ring number. This is not required for any other type of gasket.**

**.**

# Nut Selection Filter

- This rule enables the spec writer to define the basis for selecting the set of nuts to be used at a bolted joint in the 3D model.

| SpecName | NutOption | MaximumTemperature | BoltType | BoltDiameter | ContractorCommodityCode | SupplementaryNutOption | SupplNutCntrCommodityCode | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 1 | | 5 | 0.25in | NAZZAAAAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.375in | NAZZABAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.5in | NAZZACAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.625in | NAZZADAAZBGAUS | | | | | | |

| IndustryCommodityCode | NutType | MaterialsGrade | NutHeight |
|---|---|---|---|
| NAZZAAAAZBGAUS | 5 | 4032 | 0.25in |
| NAZZABAAZBGAUS | 5 | 4032 | 0.375in |

**SP3D passes the piping specification name, bolt type and bolt diameter to the nut selection filter and retrieves a commodity code and the nut height option.**

# Nut option



| | NutOption ShortDescription | Codelist Number |
|---|---|---|
| | | |
| Default | 1 |
| Hex Head Nut | 5 |
| Square Head Nut | 10 |
| Half Height Hex Head Nut | 15 |
| Half Height Square Head Nut | 20 |

NutOption / NutType /

**This is an enumerated value that represents an optional nut selection that has been enabled by the spec writer. A default nut option represents that nut, which should be used, when the piping designer has not explicitly selected one.The nut option may be used for supplementary nuts.**

# Bolt Type



| | | | | | | | | | | | | | BoltType ShortDescription | BoltType LongDescription | Codelist Number |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SpecName | NutOption | MaximumTemperature | BoltType | BoltDiameter | | ContractorCommodityCode | SupplementaryNutOption | SupplNutCntrCommodityCode | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 | | | |
| | | | | | | | | | | | | | Undefined | | 1 |
| 1C0031 | 1 | | 5 | 0.25in | NAZZAAAAZBGAUS | | | | | | | | Stud Bolt | | 5 |
| 1C0031 | 1 | | 5 | 0.375in | NAZZABAAZBGAUS | | | | | | | | Machine Bolt | | 10 |
| 1C0031 | 1 | | 5 | 0.5in | NAZZACAAZBGAUS | | | | | | | | Cap Screw | | 15 |
| 1C0031 | 1 | | 5 | 0.625in | NAZZADAAZBGAUS | | | | | | | | | | |

**This is an enumerated value representing an indication of whether studs, machine bolts, or cap screws are to be used at the bolted joint.**

# Bolt Diameter



**This is a unitted value that represents the diameter of the bolts for the bolted joint**

# Supplementary Nut Option

| SpecName | NutOption | MaximumTemperature | BoltType | BoltDiameter | ContractorCommodityCode | SupplementaryNutOption | SupplNutCntrCommodityCode | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1C0031 | 1 | | 5 | 0.25in | NAZZAAAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.375in | NAZZABAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.5in | NAZZACAAZBGAUS | | | | | | |
| 1C0031 | 1 | | 5 | 0.625in | NAZZADAAZBGAUS | | | | | | |

| | B | D |
|---|---|---|
| 1 | | |
| 2 | NutOption ShortDescription | Codelist Number |
| 3 | | |
| 4 | Default | 1 |
| 5 | Hex Head Nut | 5 |
| 6 | Square Head Nut | 10 |
| 7 | Half Height Hex Head Nut | 15 |
| 8 | Half Height Square Head Nut | 20 |

NutOption / NutType /

**This is an enumerated value that indicates whether a second, supplementary nut is required for each machine bolt or each end of each stud**

# Supplementary Nut Commodity Code



**If applicable, this represents the engineering contractor's commodity code, if different from the client's commodity code, for an optional supplementary nut.**

# Washer Selection Filter

- This rule enables the spec writer to define the basis for selecting the set of washers to be used at a bolted joint in the 3D model.

| SpecName | WasherOption | MaximumTemperature | BoltDiameter | ContractorCommodityCode | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| 1C0031 | 1 | | 0.25in | WAZZAAABZZZBERUS | | | | |
| 1C0031 | 1 | | 0.375in | WAZZABABZZZBERUS | | | | |
| 1C0031 | 1 | | 0.5in | WAZZACABZZZBERUS | | | | |
| 1C0031 | 1 | | 0.625in | WAZZADABZZZBERUS | | | | |

| IndustryCommodityCode | WasherType | MaterialsGrade | WasherThickness |
|---|---|---|---|
| WAZZAAABZZZBERUS | 5 | 4001 | 0.125in |
| WAZZABABZZZBERUS | 5 | | 0.125in |

**SP3D passes the piping specification name and bolt diameter**
**to the washer selection filter and retrieves a commodity code and**
**the washer thickness option.**

# Washer option



| SpecName | WasherOption | MaximumTemperature | BoltDiameter | | ContractorCommodityCode | FabricationCategoryOverride | SupplyResponsibilityOverride | Comments | PipingNote1 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | |
| 1C0031 | 1 | | 0.25in | WAZZAAABZZZBERUS | | | | | |
| 1C0031 | 1 | | 0.375in | WAZZABABZZZBERUS | | | | | |
| 1C0031 | 1 | | 0.5in | WAZZACABZZZBERUS | | | | | |
| 1C0031 | 1 | | 0.625in | WAZZADABZZZBERUS | | | | | |

| | B | D |
|---|---|---|
| 2 | WasherOption ShortDescription | Codelist Number |
| 3 | | |
| 4 | Default | 1 |
| 5 | Flat Washer | 5 |
| 6 | Split Lock Washer | 10 |
| 7 | Conical Washer | 15 |

WasherOption / Washer

**This is an enumerated value that represents an optional washer selection that has been enabled by the spec writer. A default washer option represents that washer, which should be used, when the piping designer has not explicitly selected one.**

**INTERGRAPH**

Piping Commodity Generic Data

- Contains generic physical dimension data which is not
- specific to a particular commodity.
- Example: flanges thickness & diameter, socket and
- threaded depth, etc..


- Bolted End Generic Data
- Female End Generic Data
- Plain Piping Generic Data
- Mechanical End Generic Data

# Piping Commodity Generic Data

- Bolted End Generic Data

| NominalPipingDiameter | NominalDiameterUnits | PressureRating | EndPreparation | EndStandard | FlangeOutsideDiameter | FlangeThickness | FlangeThicknessTolerance | FlangeFaceProjection | RaisedFaceDiameter | FlangeGrooveWidth | SeatingDepth | BoltCircleDiameter | QuantityOfBoltsRequired | BoltDiameter | BodyOutsideDiameter | DrillingTemplatePattern | BoltPatternLength | BoltPatternWidth | BoltPatternOffset |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | |
| 1 | in | 125 | 11 | 5 | 4.25in | 0.4375in | 0.12in | | | | | 3.125in | 4 | 0.5in | 1.315in | | | | |
| 1.25 | in | 125 | 11 | 5 | 4.625in | 0.5in | 0.12in | | | | | 3.5in | 4 | 0.5in | 1.66in | | | | |
| 1.5 | in | 125 | 11 | 5 | 5in | 0.5625in | 0.12in | | | | | 3.875in | 4 | 0.5in | 1.9in | | | | |
| 2 | in | 125 | 11 | 5 | 6in | 0.625in | 0.12in | | | | | 4.75in | 4 | 0.625in | 2.375in | | | | |
| 2.5 | in | 125 | 11 | 5 | 7in | 0.6875in | 0.12in | | | | | 5.5in | 4 | 0.625in | 2.875in | | | | |

# Female End Generic Data

- Female End Generic Data  (Socket and Threaded)

| NominalPipingDiameter | NominalDiameterUnits | PressureRating | Schedule | EndPreparation | EndStandard | SocketDiameter | SocketDepth | SocketOffset | ThreadDepth | HubOutsideDiameter | HubThickness | BodyOutsideDiameter |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.5 | in | 200 | Undefined | 401 | 5 | 0.9548in | 0.875in | 0.0625in | | 1.243in | 1in | 0.993in |
| 0.75 | in | 200 | Undefined | 401 | 5 | 1.1708in | 1in | 0.0625in | | 1.471in | 1.125in | 1.221in |
| 1 | in | 200 | Undefined | 401 | 5 | 1.4545in | 1.125in | 0.0625in | | 1.798in | 1.25in | 1.548in |
| 1.25 | in | 200 | Undefined | 401 | 5 | 1.8085in | 1.25in | 0.0625in | | 2.173in | 1.375in | 1.923in |
| 1.5 | in | 200 | Undefined | 401 | 5 | 2.0553in | 1.375in | 0.0625in | | 2.435in | 1.5in | 2.185in |
| 2 | in | 200 | Undefined | 401 | 5 | 2.5453in | 1.5in | 0.0625in | | 2.972in | 1.625in | 2.722in |
| 3 | in | 200 | Undefined | 401 | 5 | 3.7325in | 1.875in | 0.0625in | | 4.31in | 2in | 4.06in |
| 4 | in | 200 | Undefined | 401 | 5 | 4.7603in | 2.25in | 0.0625in | | 5.412in | 2.375in | 5.162in |
| | | | | | | | | | | | | |
| 0.125 | in | Undefined | S-40 | 401 | 5 | 0.405in | 0.5in | 0.0625in | | 0.88in | 0.625in | 0.63in |
| 0.25 | in | Undefined | S-40 | 401 | 5 | 0.54in | 0.5in | 0.0625in | | 1in | 0.625in | 0.75in |
| 0.375 | in | Undefined | S-40 | 401 | 5 | 0.675in | 0.594in | 0.0625in | | 1.31in | 0.719in | 1.06in |

# Plain Piping End Generic Data

- Plain Piping Generic Data

| NominalPipingDiameter | NominalDiameterUnits | EndStandard | Schedule | PressureRating | PipingOutsideDiameter | WallThickness |
|---|---|---|---|---|---|---|
| 6 | in | 5 | 0.5625" | | 6.625in | 0.5625in |
| 8 | in | 5 | 0.5625" | | 8.625in | 0.5625in |
| 10 | in | 5 | 0.5625" | | 10.75in | 0.5625in |
| 12 | in | 5 | 0.5625" | | 12.75in | 0.5625in |
| 14 | in | 5 | 0.5625" | | 14in | 0.5625in |
| 16 | in | 5 | 0.5625" | | 16in | 0.5625in |
| 18 | in | 5 | 0.5625" | | 18in | 0.5625in |
| 20 | in | 5 | 0.5625" | | 20in | 0.5625in |
| 22 | in | 5 | 0.5625" | | 22in | 0.5625in |

# What Happens When I Place a Component?

- ## Placement of piping components is driven by the specs.
- ## How do all the pieces fit together?

# Table Look Up for a Gate Valve

**INTERGRAPH**

**Short code (GAT)
option (1)
NPD  (4 in)
1C0031**

➤

**Piping Commodity
Selection Filter**

➤

**Piping Commodity
Material Data Control**

➤

**Industry Cmdty code
Gasket & Bolt requirement.
Short description
Fabrication Category.**

**Project
Default option**

⬇

**Bolt End Generic Data
Flange Thickness
- Nut Height
- Washer Thickness
- Bolt Extension
- Bolt Diameter & Quantity
- Bolt circular diameter
- Flange Face projection**

⬅

**Gaskets
Washers
Nuts
Bolts
Connection
Commodity
Filter**

⬅

**Symbol definition
Ports data:
Rating, End Prep End Std.
Specific dimension data**

**Piping Commodity
Part Data**

⬇

**Cmdty
codies**

⬇

**Connection
Part Data**

**Mating
Mechanism**

⬇

**Mating
Parts**