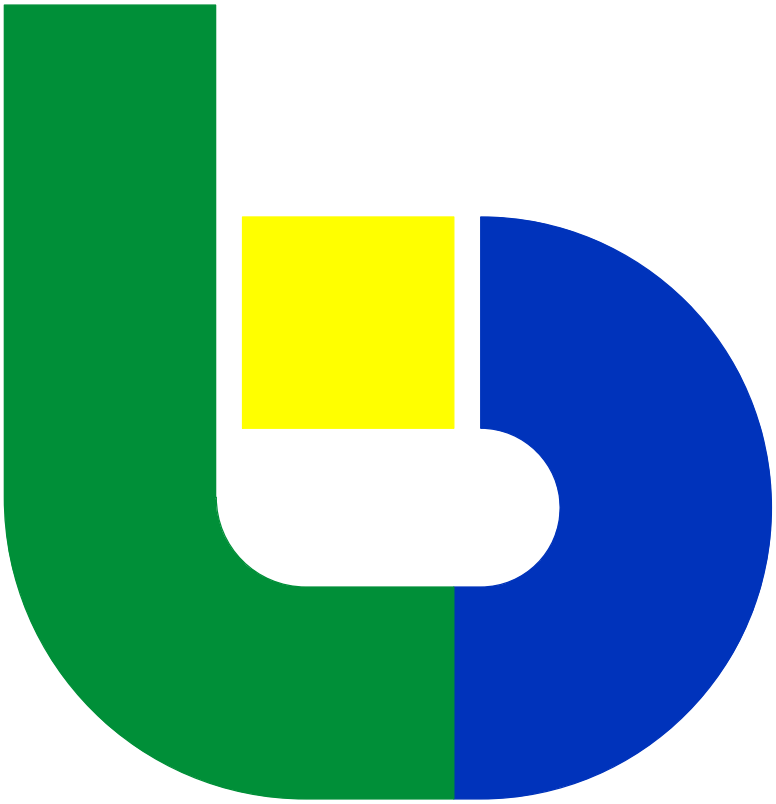
design2machine

BTLx interface description

Version: *BTLx 1.1*

Last modified: *26.07.2019*



Common Data Interface for Wood Working Machines

The following interface description is designed for the structured representation of the data relevant to the manufacturing process.
It does not contain any machine specific data. This allows the interface to be used as a common data interface.
If there is a need to prepare the data stored in this interface for some special wood working machine or some special control, then these data should be imported by a suitable CAM system and then properly processed.
This documentation is a graphical appendix to the BTLX schema. You can find this schema at

http://www.design2machine.com/btlx/btlx_11.xsd

BTLx files are identified by the ".btlx" file extension.
A BTLx file contains general data related to the project, information about the building elements as well as the relationship between them and parametric descriptions of the processings of each building element.
In order to minimize storage space requirements, the specification defines compressed BTLx files which are identified by the ".btlz" file extension. Such a file has to be a standard zip file and may only contain a single BTLx file.

For more information or questions regarding the BTLx format, please contact:

www.design2machine.com
info@design2machine.com

Content

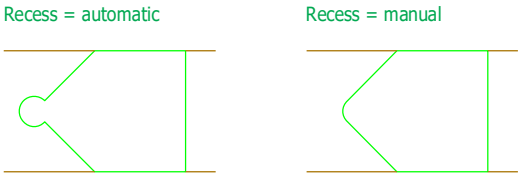
History

Date	Modification	Build	Page
23.03.2017	Lap: Definition of LeadAngle and LeadInclination	1.0	30, 31
23.03.2017	Birdsmouth: Definition of LeadAngle and LeadInclination	1.0	23, 24
13.06.2017	LongitudinalCut: Changed definiton of ToolPosition	1.0	11
06.11.2018	RidgeValleyCut: StartDepht can also be < 0	1.0	16
16.09.2019	Dovetail: Better description	1.0	58,59,60
19.05.2017	New Element for Shape. Geometry of part in X3D Format	1.1	105
17.11.2017	Birdsmouth: Correction at LeadAngle and LeadInclination	1.1	23, 24
26.07.2019	Dovetail: Better description	1.1	58,59,60

General

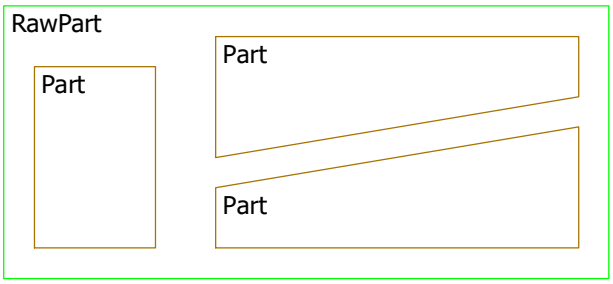
These drawings are a graphical appendix to the description in the XML schema.

Recess



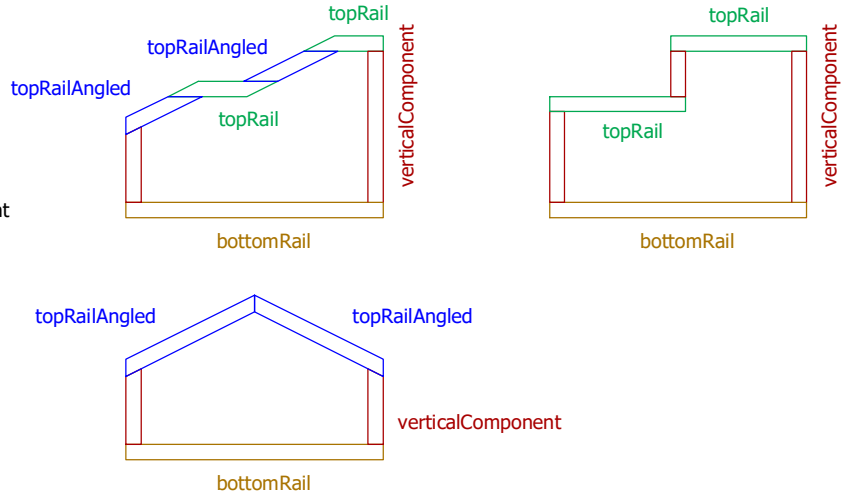
Additional manual work is necessary.

RawPart

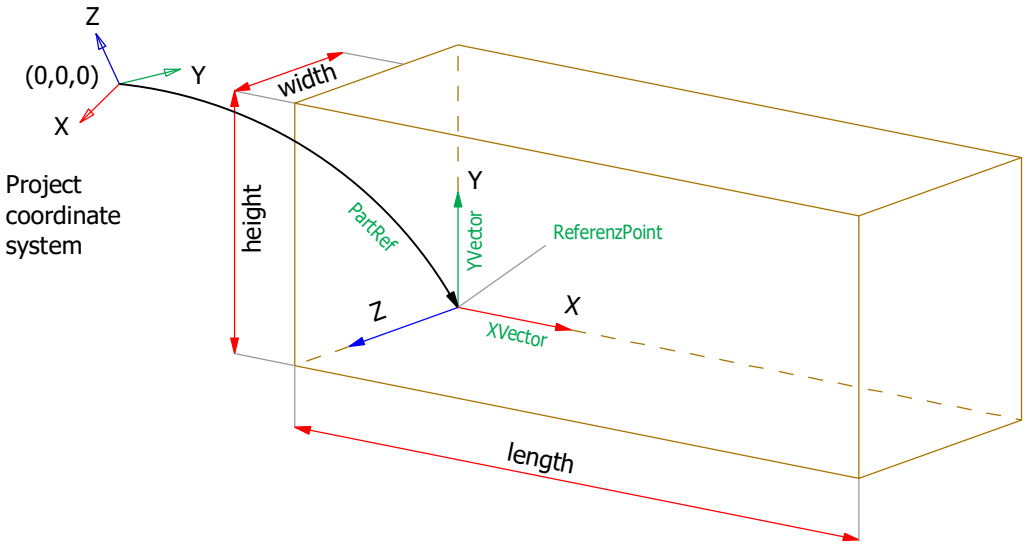


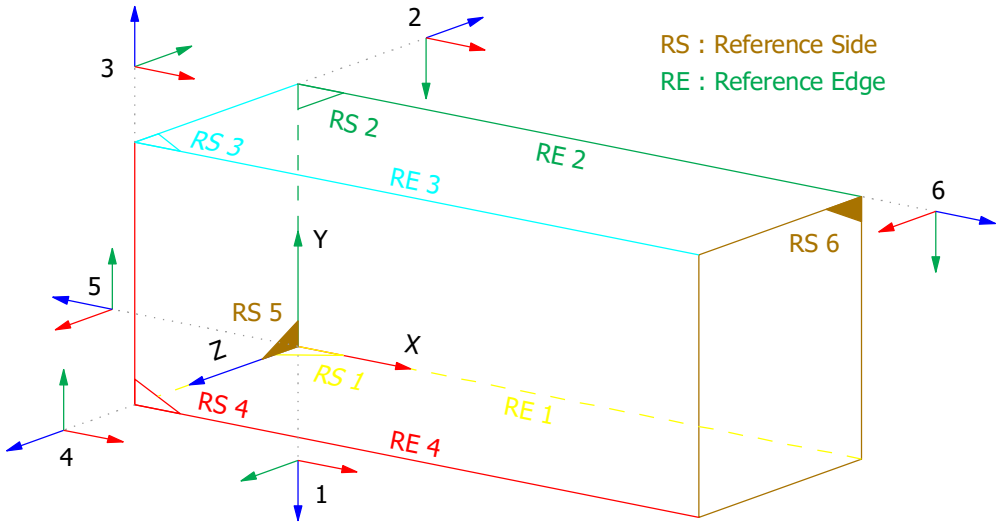
AligmentType

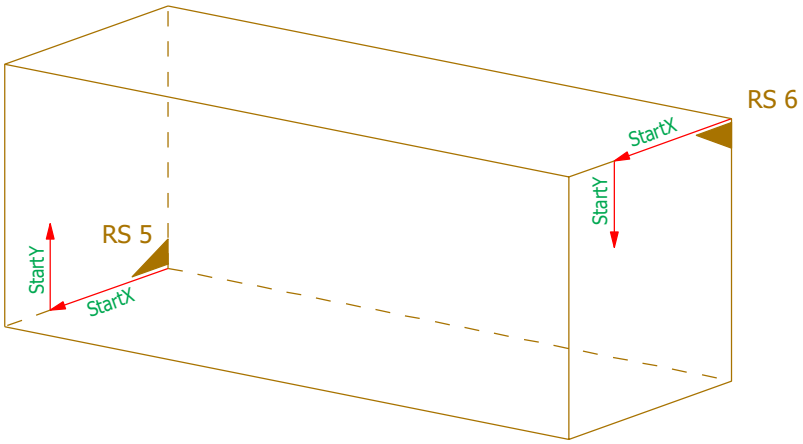
LocationType = bottomRail
or topRail
or bottomRailAngled
or topRailAngled
or horizontalComponent
or verticalComponent
or angledComponent



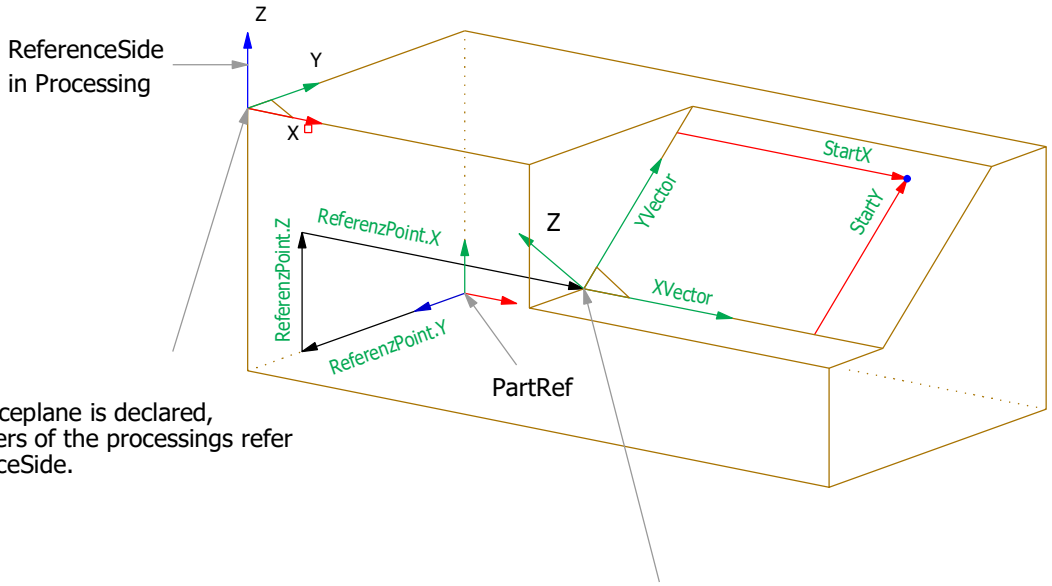
ReferenceSide







Referenceplane



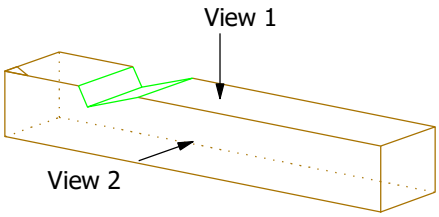
If no referenceplane is declared,
the parameters of the processings refer
to a ReferenceSide.

If there is a referenceplane declared,
the parameters of the processings refer
to this coordinate system.

The ReferencePlane refers to the PartRef.

View

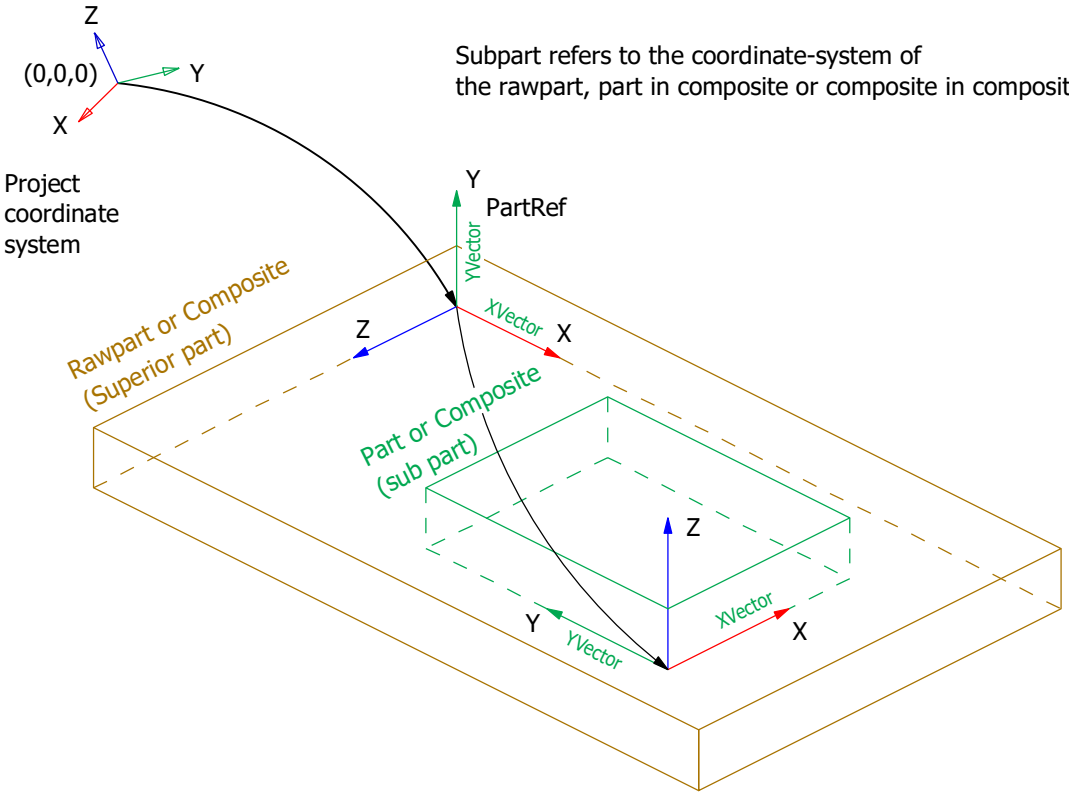
Most of the processings are drawn by a view orthogonal to the reference side.
Otherwise the zeropoint of the reference side is displayed with a brown line.



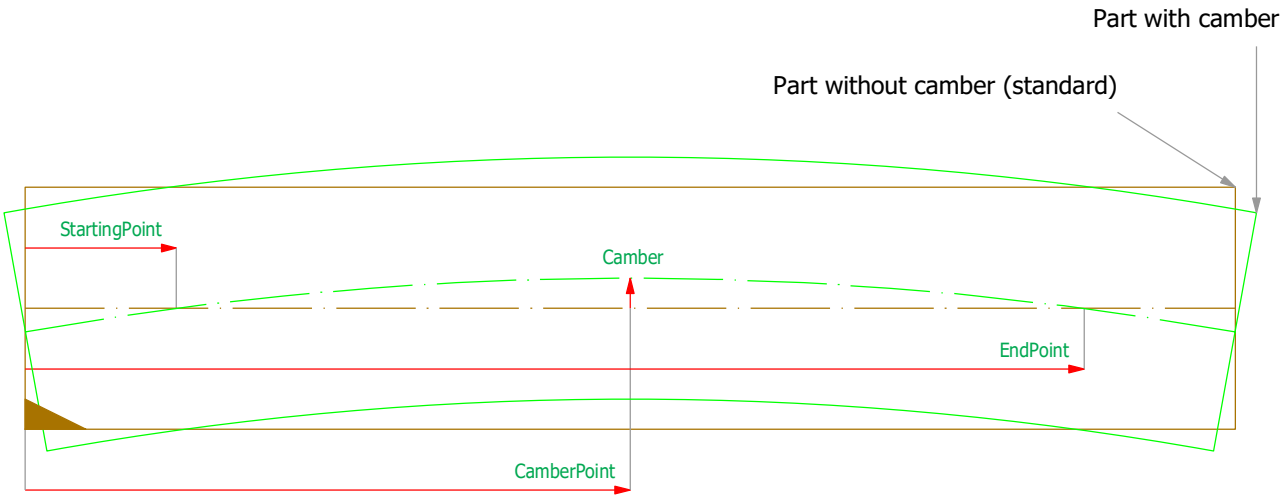
View 1

View 2

Part in a rawpart, part in composite, composite in composite



Camber

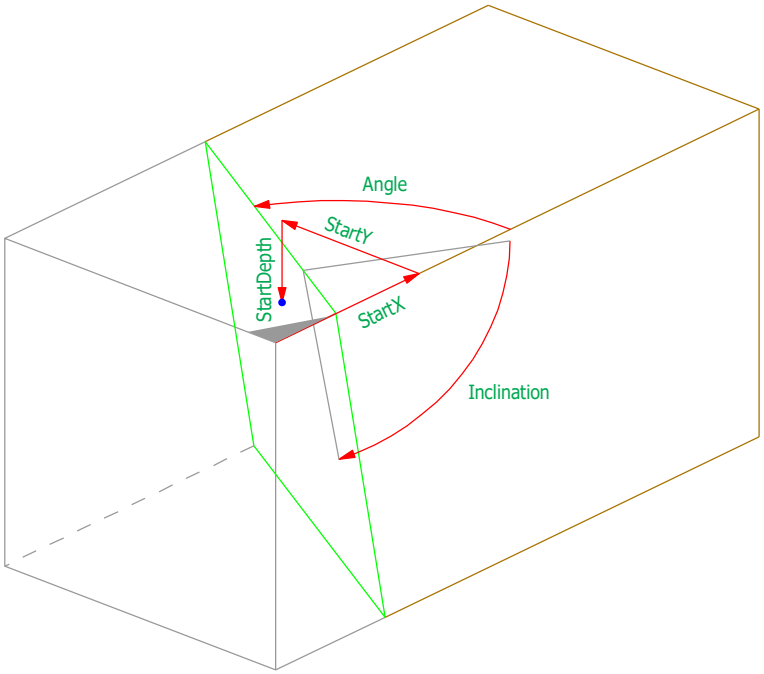


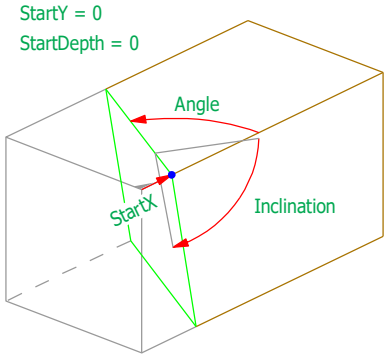
All processings are defined in the part without camber.

List of Processings

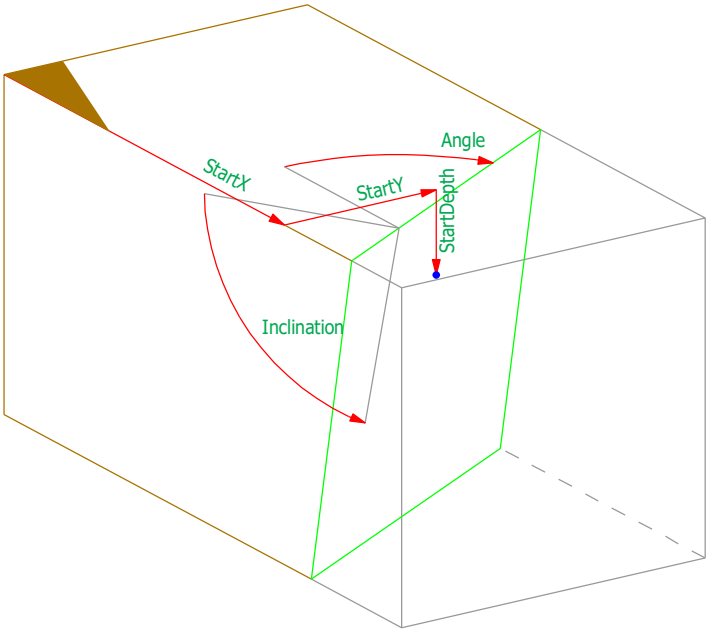
JackRafterCut

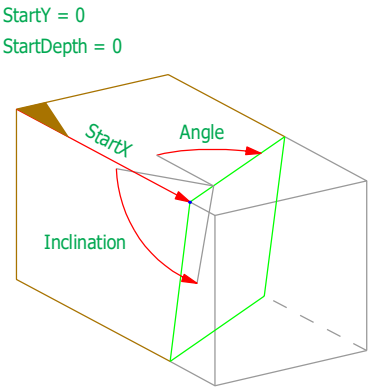
Orientation = start





Orientation = end



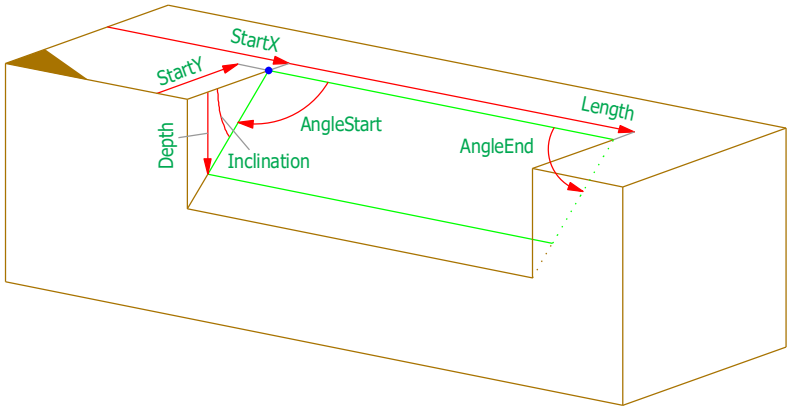


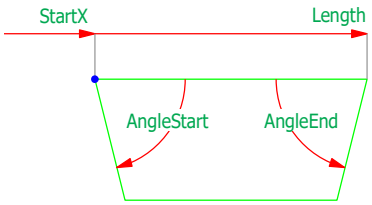
Parameters JackRafterCut

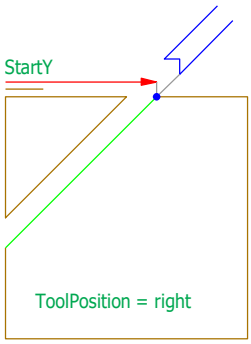
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthType	0.0	0.0	50000.0
StartDepth	WidthType	0.0	0.0	50000.0
Angle	AngleType	90.0	0.1	179.9
Inclination	AngleType	90.0	0.1	179.9

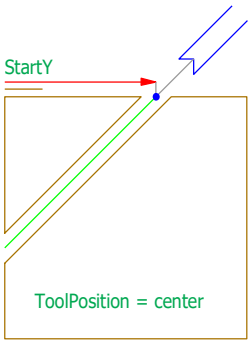
LongitudinalCut

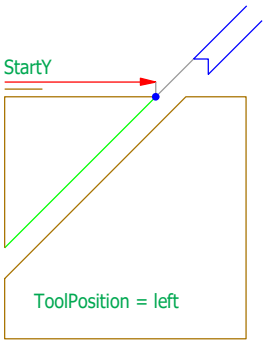
Inclination > 0



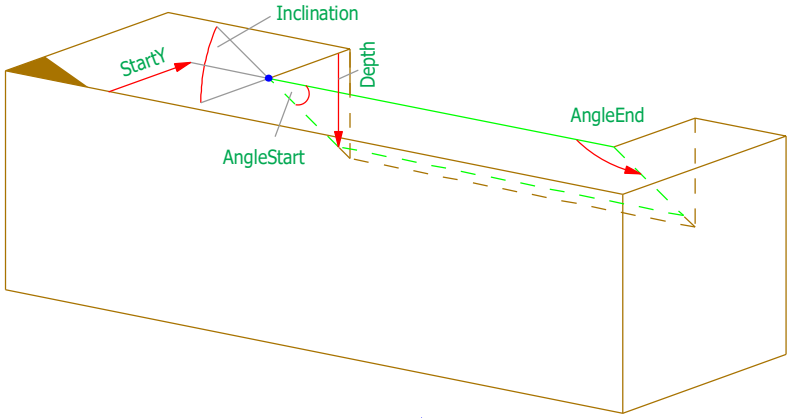


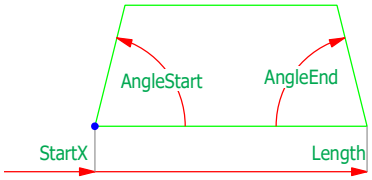


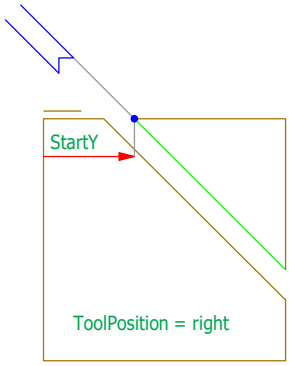


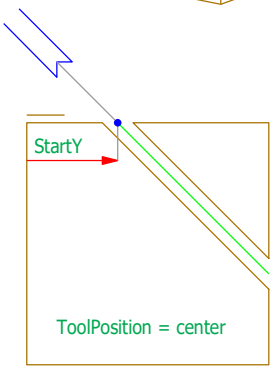


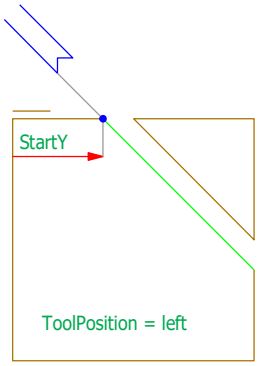
Inclination < 0





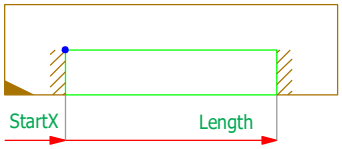
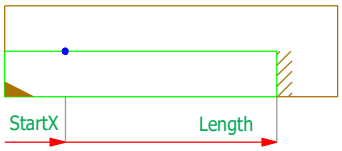
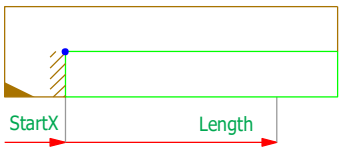
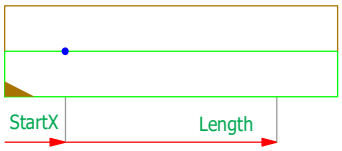






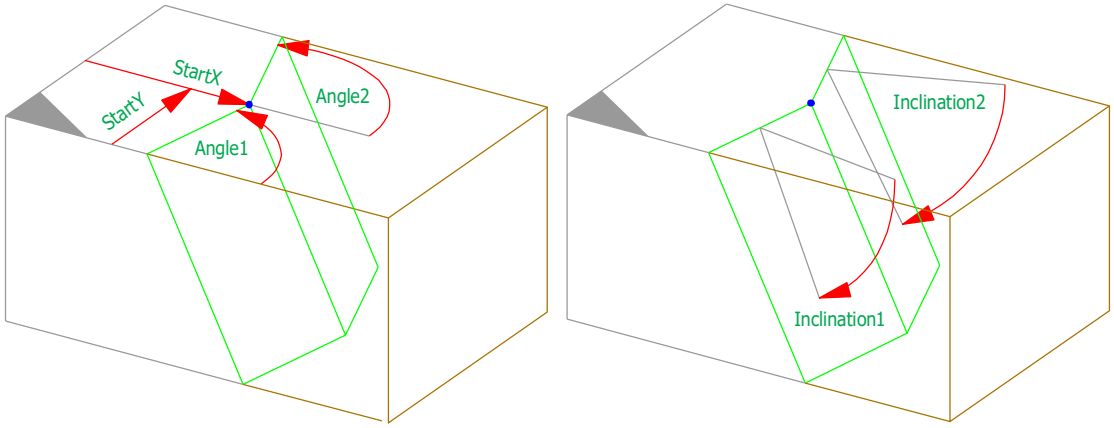
Parameters Longitudinal Cut

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthType	0.0	0.0	50000.0
Inclination	Inclination2Type	45.0	-90.0	90.0
StartLimited	BooleanType	no	no	yes
EndLimited	BooleanType	no	no	yes
Length	LengthType	0.0	0.0	100000.0
DepthLimited	BooleanType	no	no	yes
Depth	WidthType	0.0	0.0	50000.0
AngleStart	AngleType	90.0	0.1	179.9
AngleEnd	AngleType	90.0	0.1	179 .0
ToolPosition	ToolPositionType	left	left/center/right	

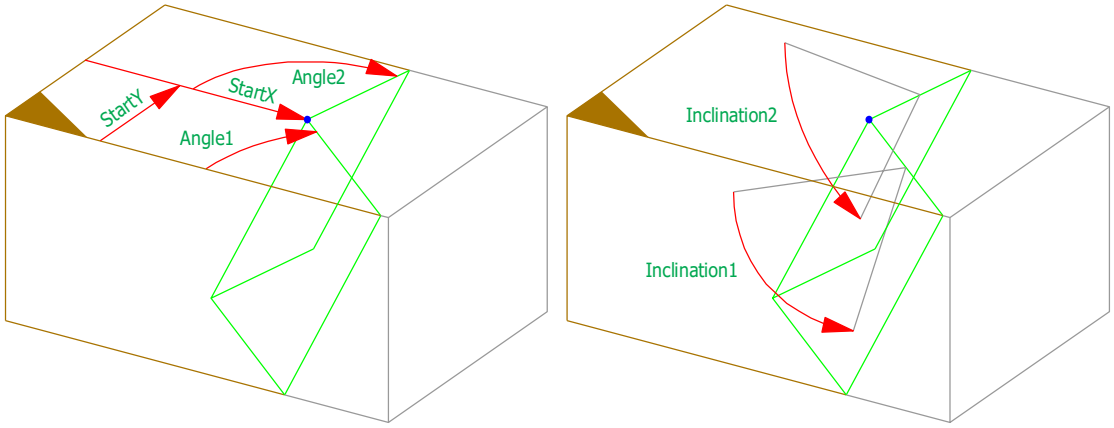
StartLimited	EndLimited	
yes	yes	
no	yes	
yes	no	
no	no	

DoubleCut

Orientation = start



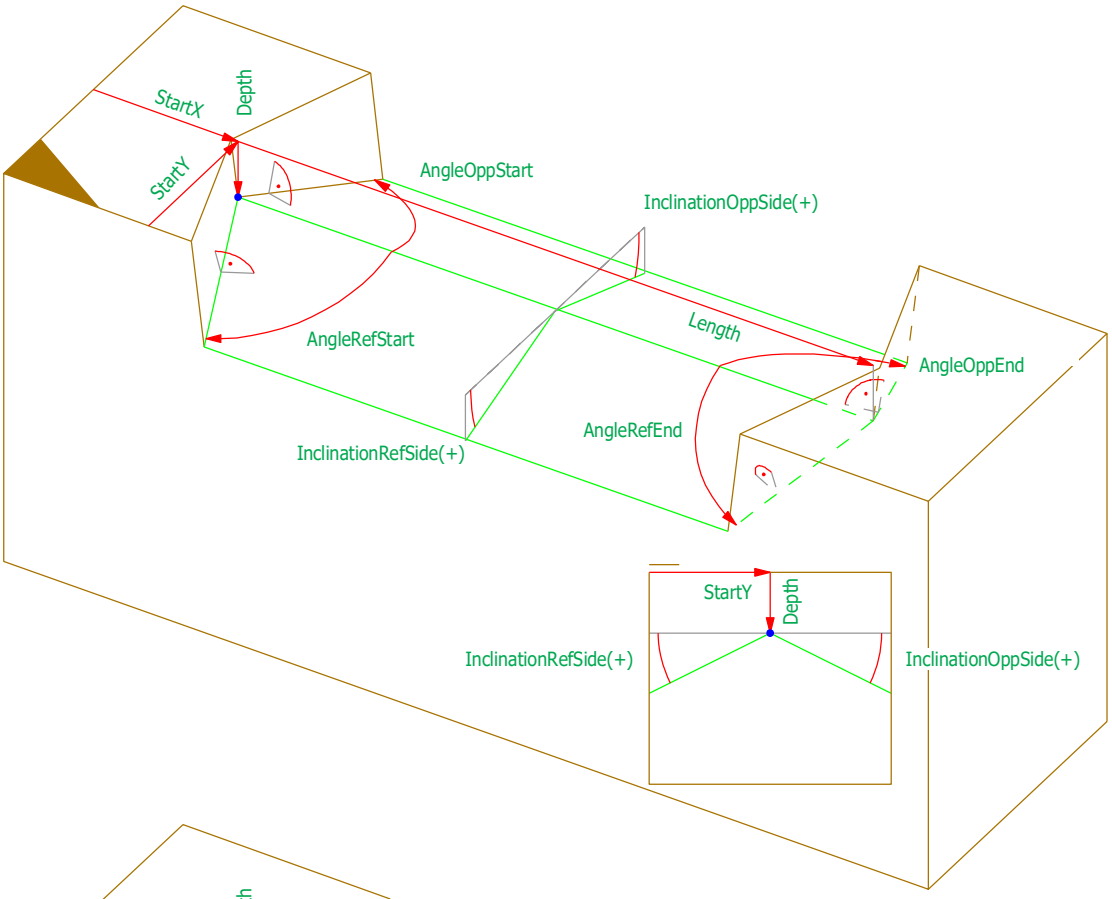
Orientation = end

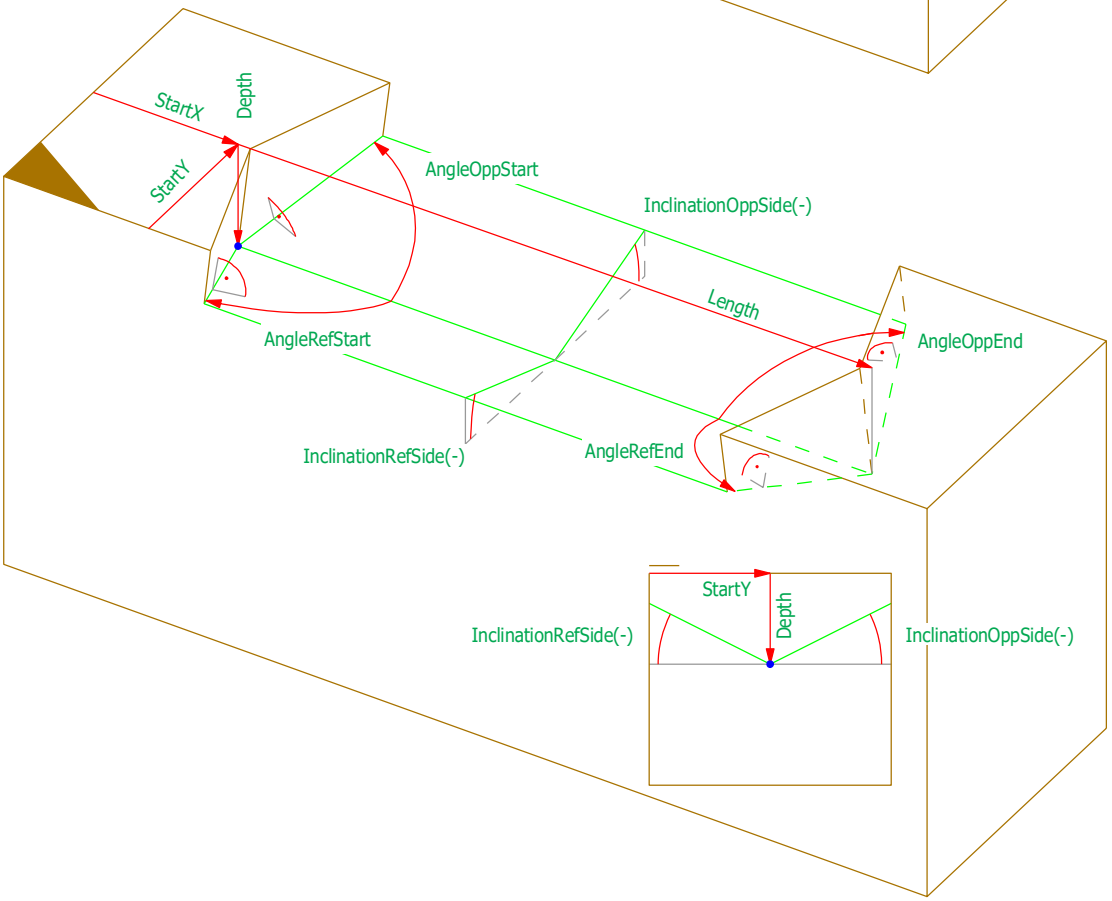


Parameters Double Cut

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	50.0	-50000.0	50000.0
Angle1	AngleType	45.0	0.1	179.9
Inclination1	AngleType	90.0	0.1	179.9
Angle2	AngleType	90.0	0.1	179.9
Inclination2	AngleType	90.0	0.1	179.9

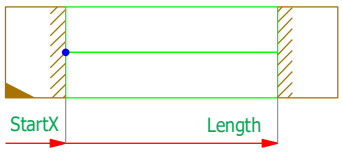
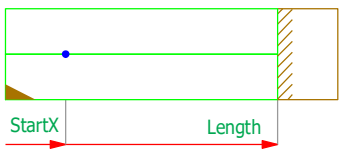
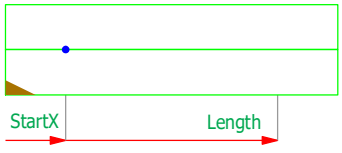
RidgeValleyCut



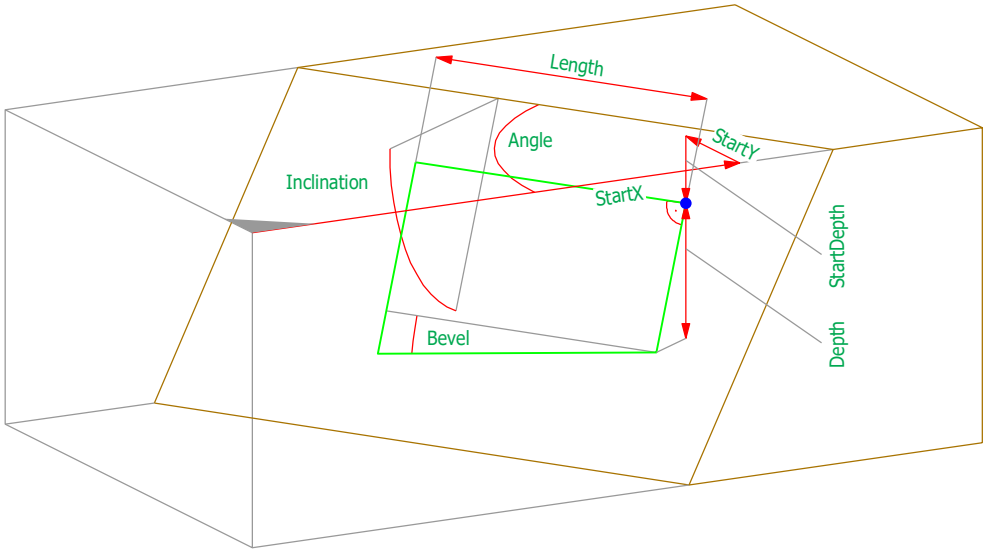


Parameters RidgeValleyCut

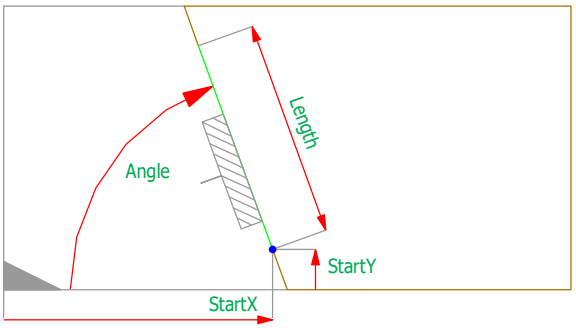
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthType	50.0	0.0	50000.0
StartDepth	WidthNType	0.0	-50000.0	50000.0
InclinationRefSide	InclinationType	45.0	-89.9	89.9
InclinationOppSide	InclinationType	45.0	-89.9	89.9
StartLimited	BooleanType	no	no	yes
EndLimited	BooleanType	no	no	yes
Length	LengthType	0.0	0.0	100000.0
AngleRefStart	AngleType	90.0	0.1	179.9
AngleRefEnd	AngleType	90.0	0.1	179.9
AngleOppStart	AngleType	90.0	0.1	179.9
AngleOppEnd	AngleType	90.0	0.1	179.9

StartLimited	EndLimited	
yes	yes	
no	yes	
yes	no	
no	no	

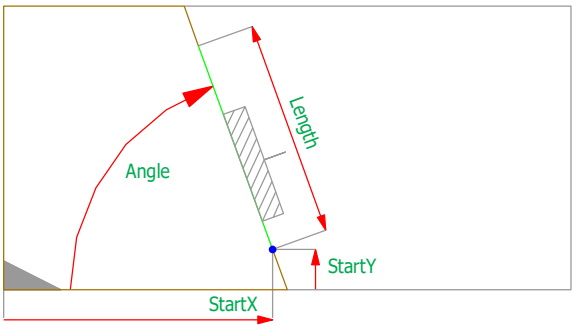
SawCut



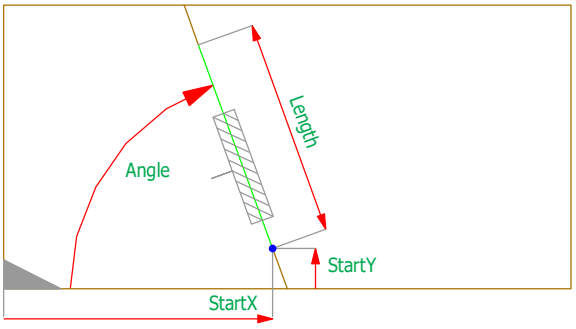
ToolPosition = left



ToolPosition = right



ToolPosition = center

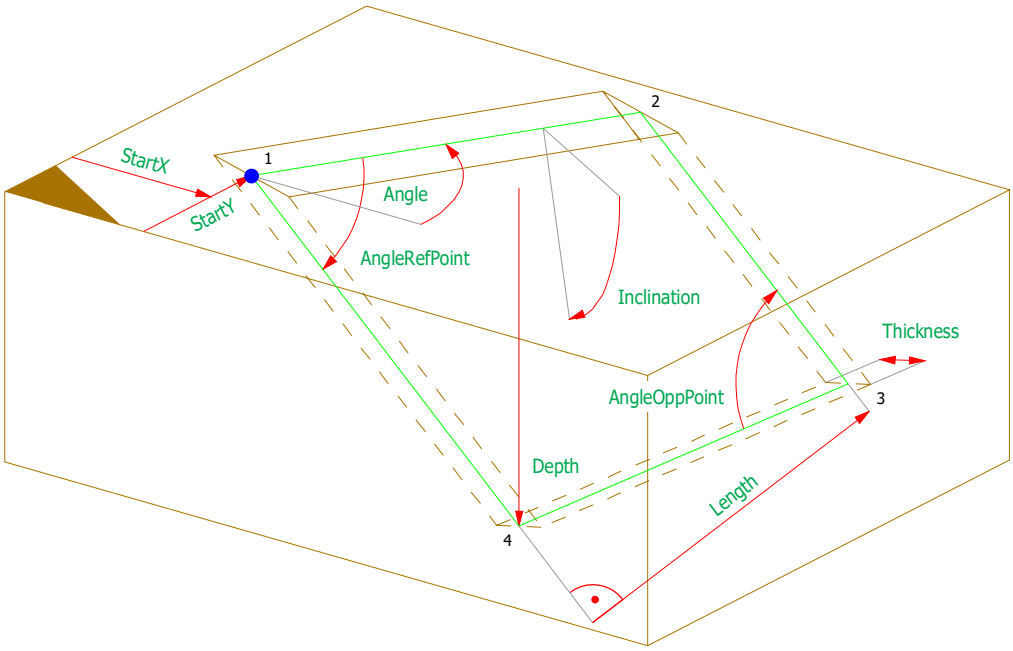


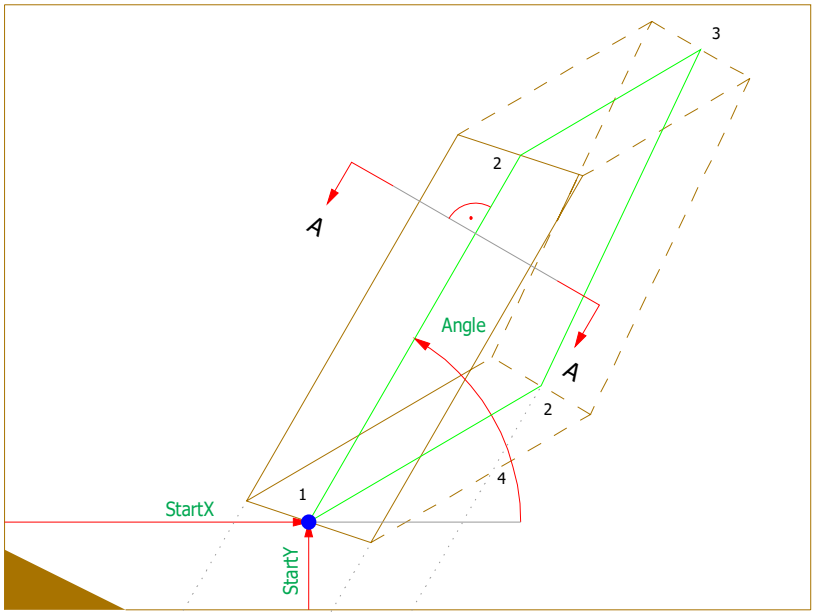
Parameters SawCut

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
StartDepth	WidthNType	0.0	-50000.0	50000.0
Angle	Angle2Type	90.0	0.0	180.0
Inclination	AngleType	90.0	0.1	179.9
Bevel	InclinationType	0.0	-89.9	89.9
Length	LengthType	0.0	0.0	100000.0
Depth	WidthType	50.0	0.0	50000.0
ToolPosition	ToolPositionType	left	left/center/right	

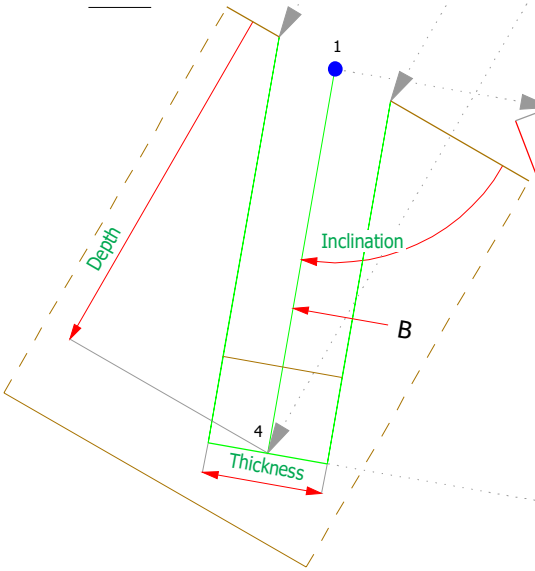
Slot

StartDepth = 0

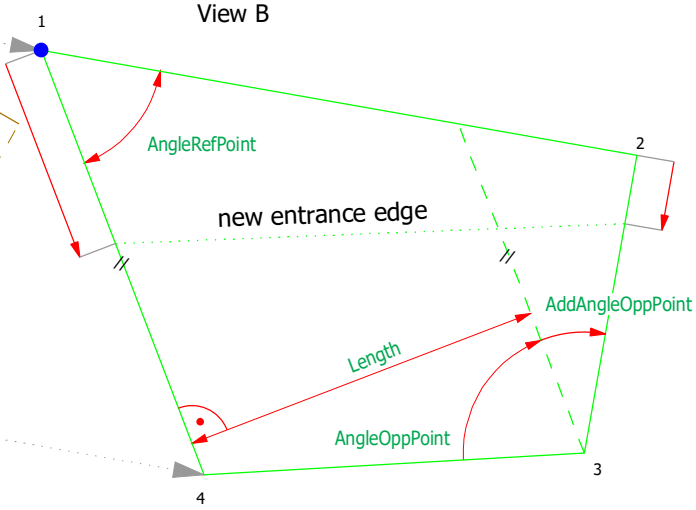




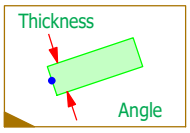
A - A



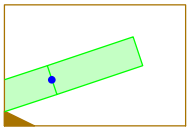
View B



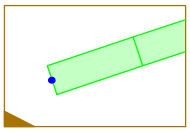
MachiningLimits



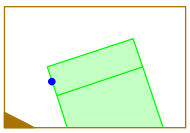
FaceLimitedStart =yes
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = yes



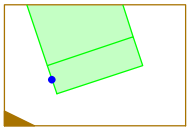
FaceLimitedStart = no



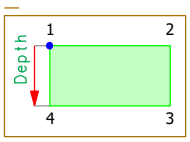
FaceLimitedEnd = no



FaceLimitedFront = no

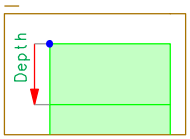


FaceLimitedBack = no

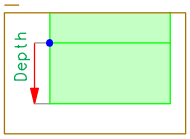


FaceLimitedTop = yes

FaceLimitedBottom = yes

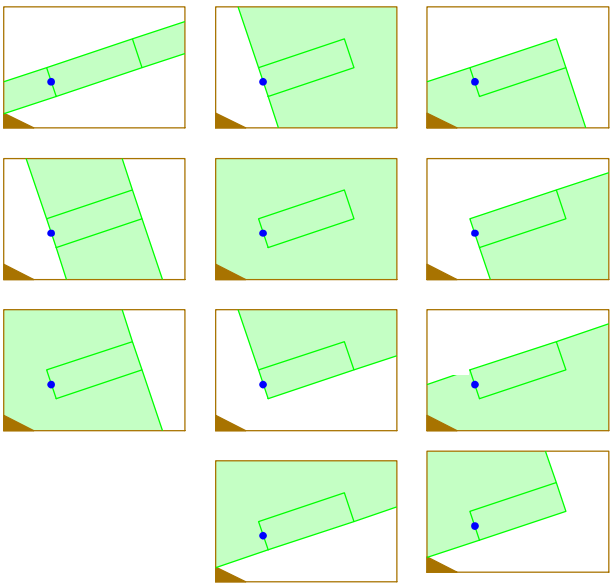


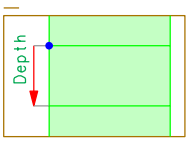
FaceLimitedBottom = no



FaceLimitedTop = no

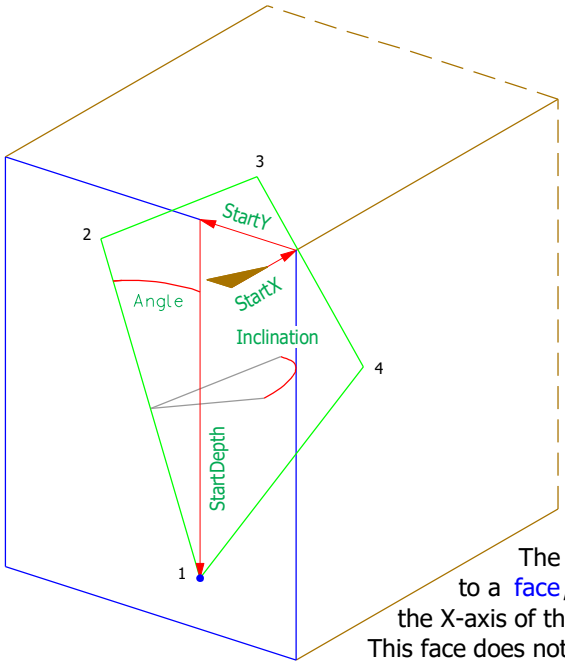
Other combinations :



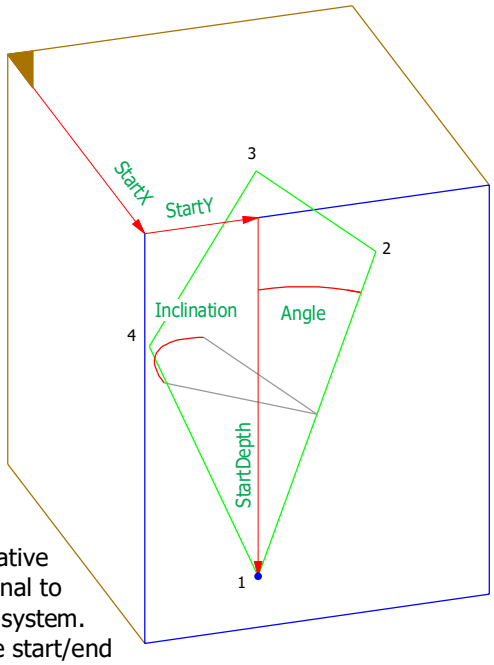


StartDepth <> 0

Orientation = start

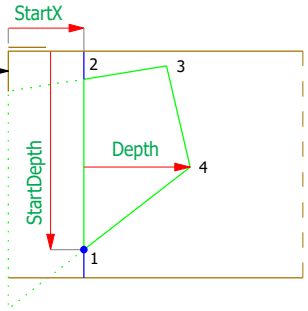


Orientation = end

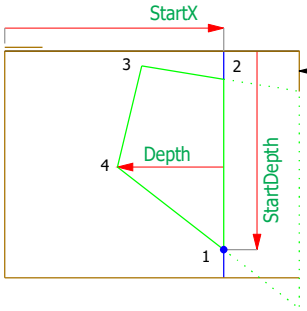


The slot is defined relative to a face, which is orthogonal to the X-axis of the part coordinate system. This face does not have to be at the start/end of the beam.

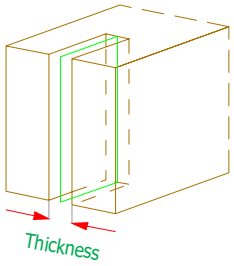
front side beam start

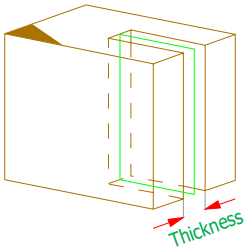


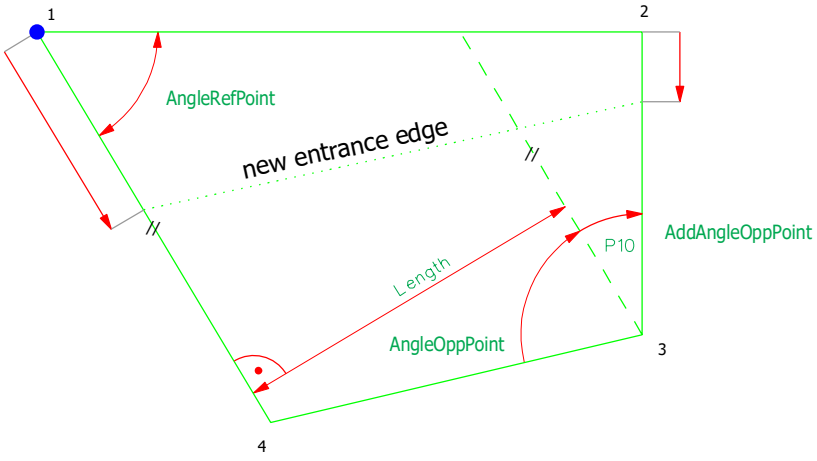
The slot is not limited towards the front sides when StartDepth <> 0.



front side beam end







Parameters Slot

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
StartDepth	WidthType	0.0	0.0	50000.0
Angle	Inclination2Type	0.0	-90.0	90.0
Inclination	AngleType	90.0	0.1	179.9
Length	LengthType	200.0	0.0	100000.0
Depth	WidthType	10.0	0.0	50000.0
Thickness	WidthType	10.0	0.0	50000.0
AngleRefPoint	AngleType	90.0	0.1	179.9
AngleOppPoint	AngleType	90.0	0.1	179.9
AddAngleOppPoint	AngleNType	0.0	-179.9	179.9
MachiningLimits	MachiningLimitType			

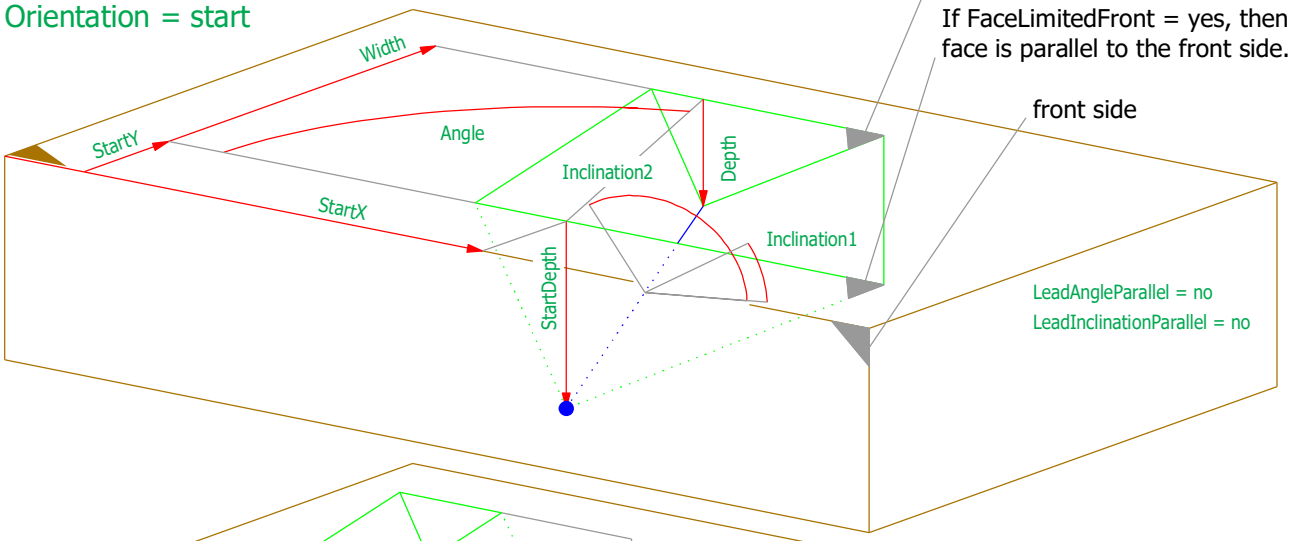
BirdsMouth

If FaceLimitedBack = yes, then this face is parallel to the front side.

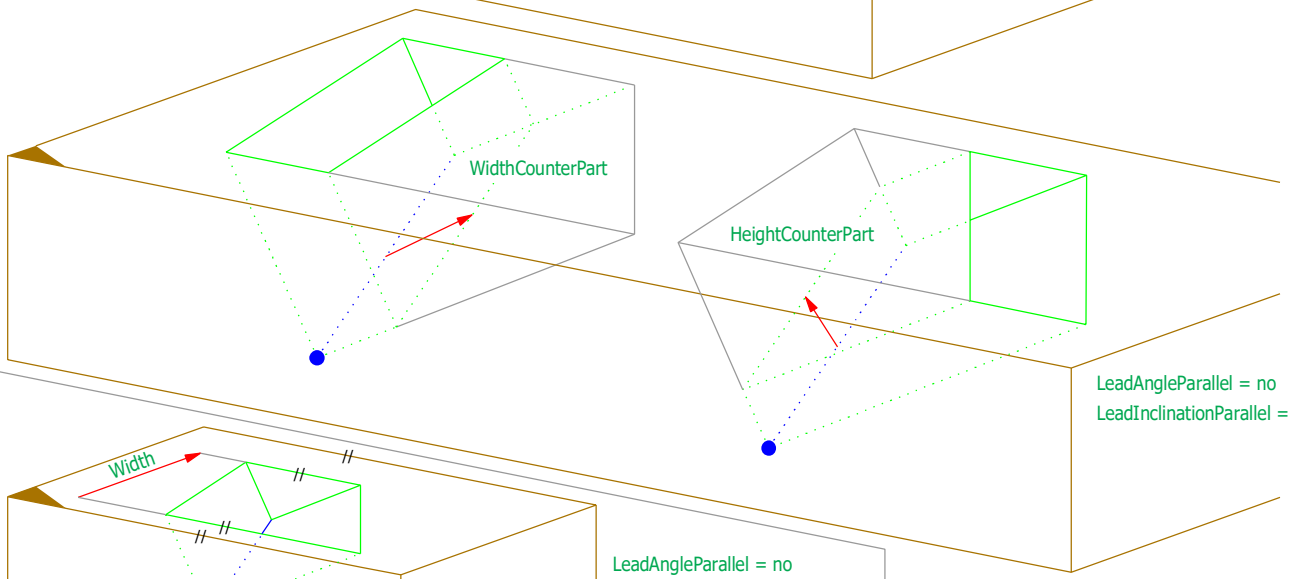
If FaceLimitedFront = yes, then this face is parallel to the front side.

front side

Orientation = start



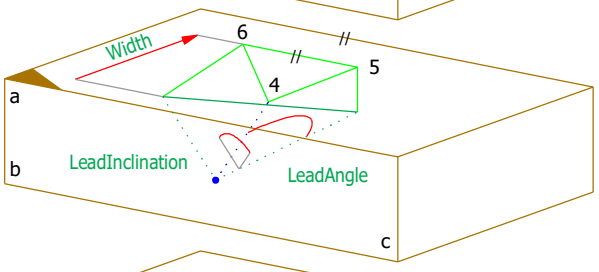
LeadAngleParallel = no
LeadInclinationParallel = no



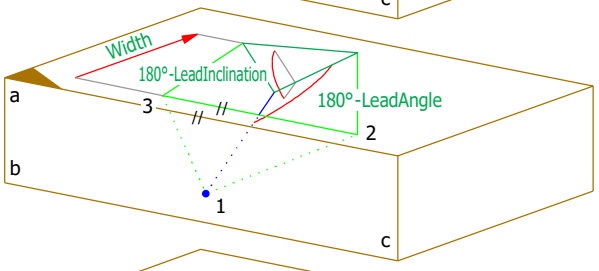
LeadAngleParallel = no
LeadInclinationParallel = no

LeadAngleParallel = no
LeadInclinationParallel = no

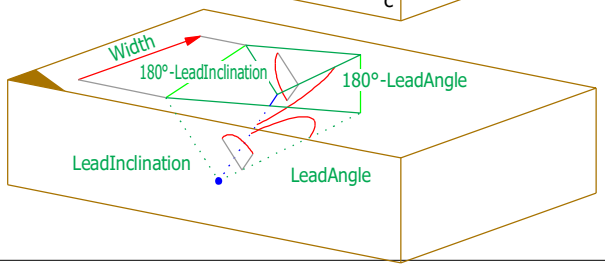
Location of LeadAngle



Face 4-5-6 || Face a-b-c
FaceLimitedFront = yes
LeadAngleParallel = yes
LeadInclinationParallel = yes



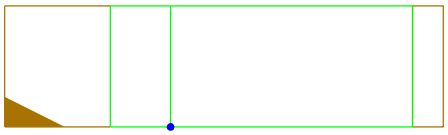
Face 1-2-3 || Face a-b-c
FaceLimitedBack = yes
LeadAngleParallel = yes
LeadInclinationParallel = yes



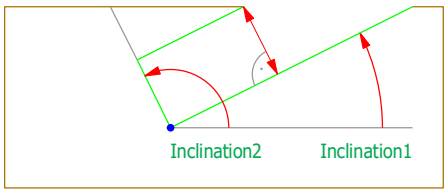
FaceLimitedFront = yes
FaceLimitedBack = yes
LeadAngleParallel = yes
LeadInclinationParallel = yes

Simple example

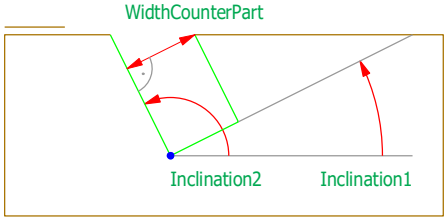
Angle = 90
StartDepth = Depth



HeightCounterPart



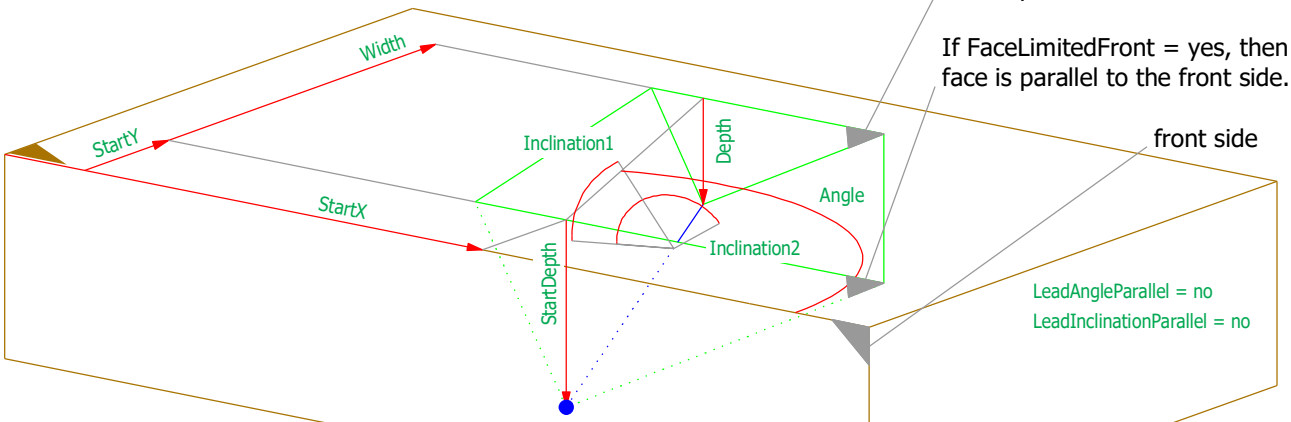
WidthCounterPart

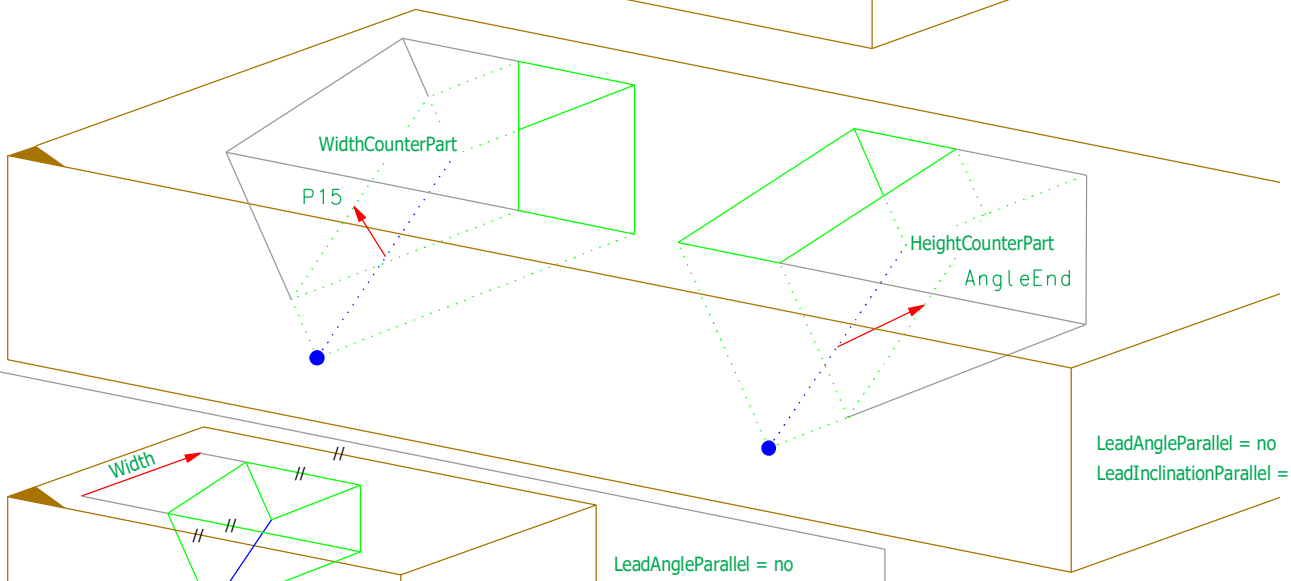


Orientation = end

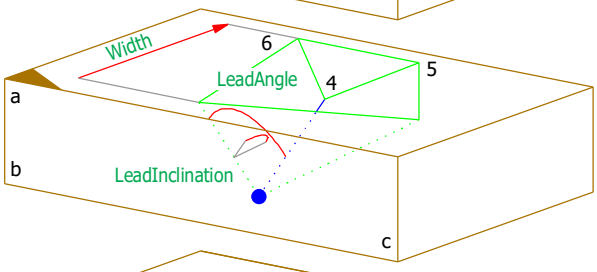
If FaceLimitedBack = yes, then this face is parallel to the front side.

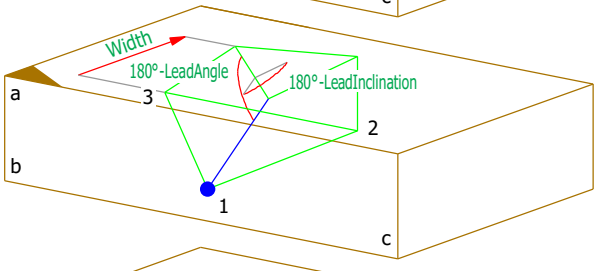
If FaceLimitedFront = yes, then this face is parallel to the front side.

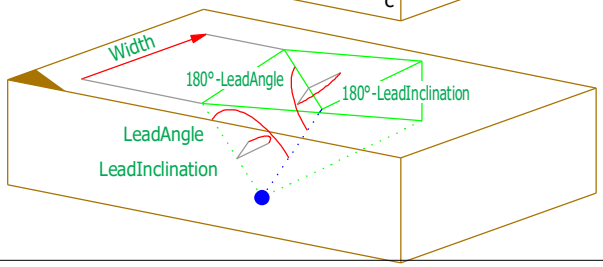




Location of LeadAngle

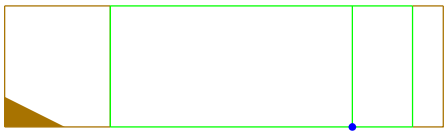




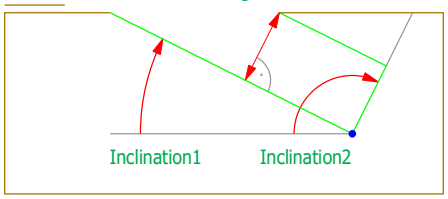


Simple example

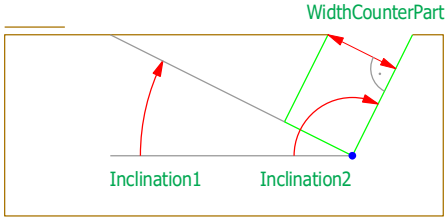
Angle = 90
StartDepth = Depth



HeightCounterPart

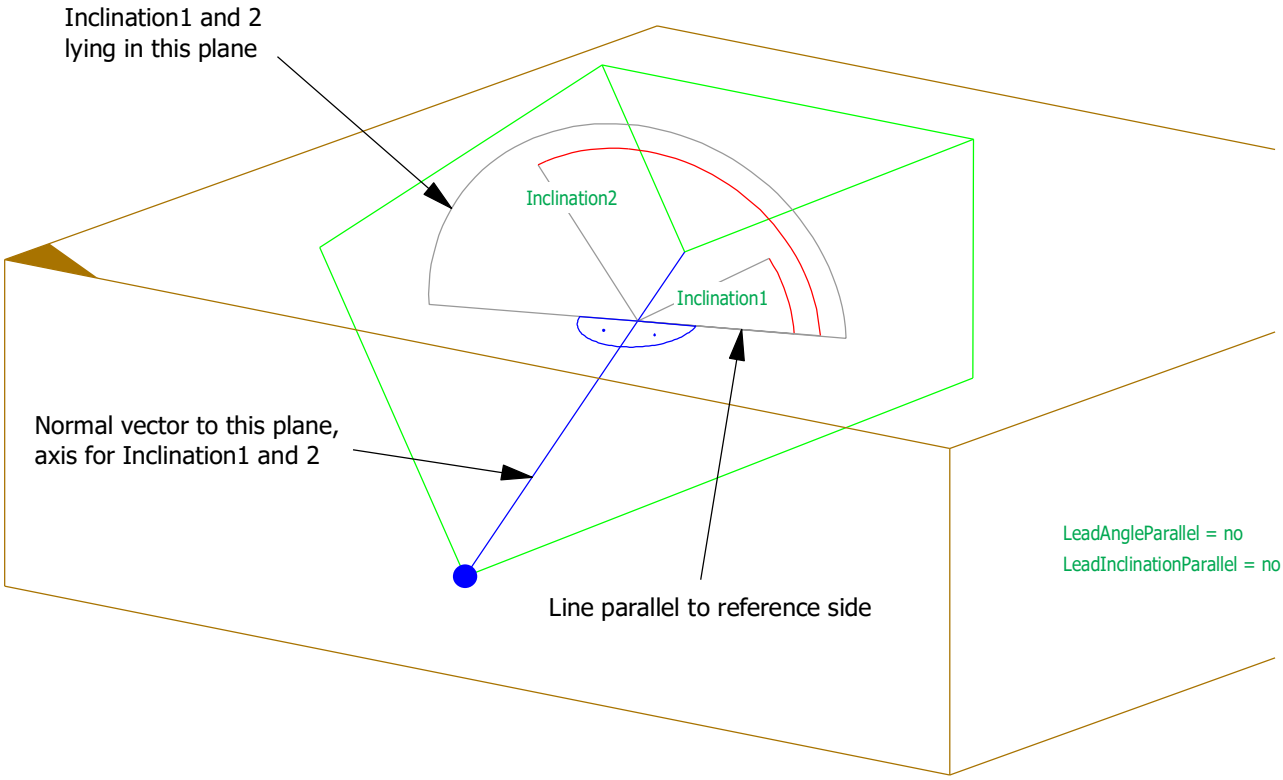


WidthCounterPart



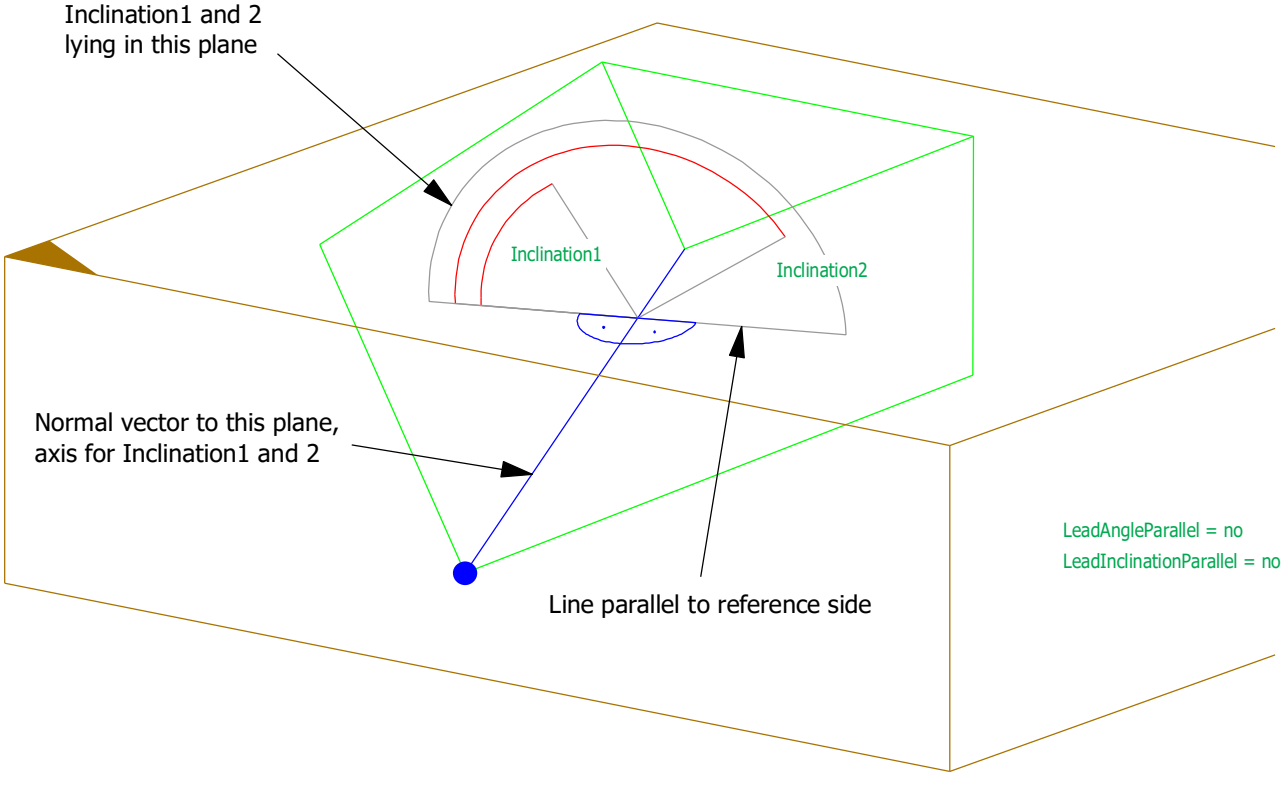
Orientation = start

Another presentation of Inclination1 and Inclination2



Orientation = end

Another presentation of Inclination1 and Inclination2

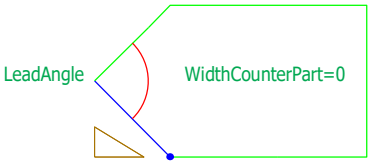


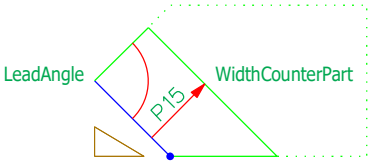
Orientation = start

Another presentation of parameters

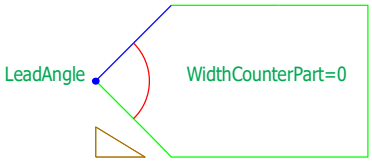
View orthogonal to face "Inclination1"

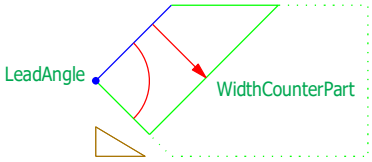
The counterpart enters at the reference edge.

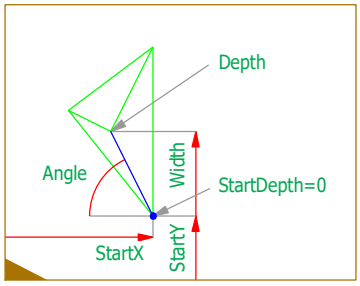


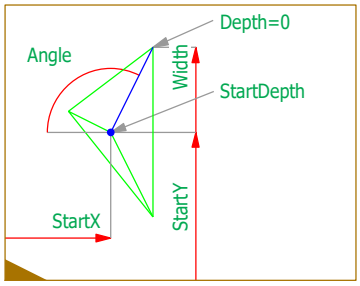


The counterpart enters at opposite of the reference edge.







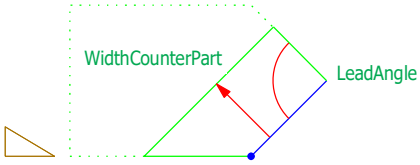


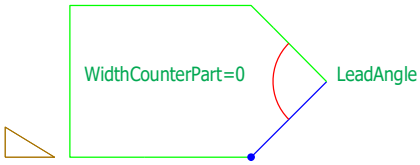
Orientation = end

Another presentation of parameters

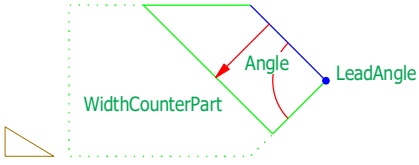
View orthogonal to face "Inclination1"

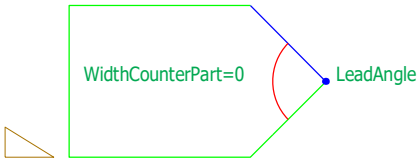
The counterpart enters at the reference edge.

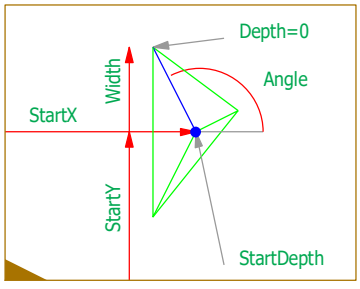


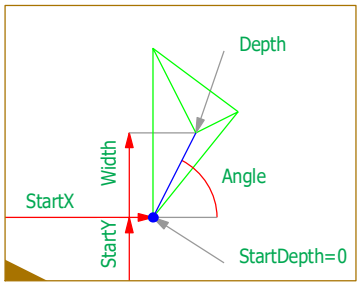


The counterpart enters at opposite of the reference edge.









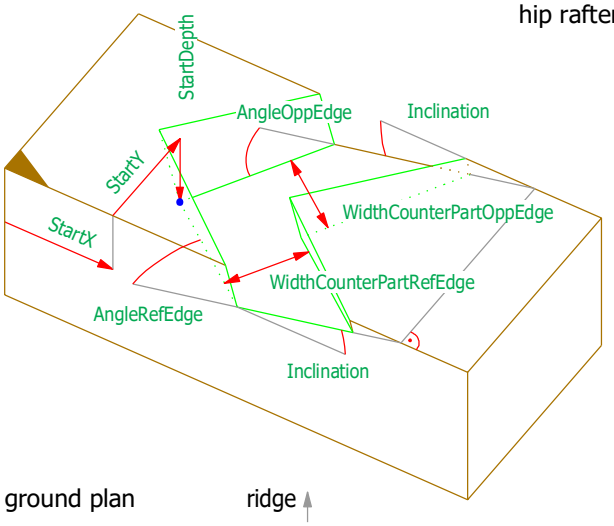
Parameters BirdsMouth

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
StartDepth	WidthType	20.0	0.0	50000.0
Angle	AngleType	90.0	0.1	179.9
Inclination1	Angle2Type	45.0	0.0	180.0
Inclination2	Angle2Type	135.0	0.0	180.0
Depth	WidthType	20.0	0.0	50000.0
Width	WidthType	0.0	0.0	50000.0
WidthCounterPartLimited	BooleanType	no	no	yes
WidthCounterPart	WidthType	120.0	0.0	50000.0
HeightCounterPartLimited	BooleanType	no	no	yes
HeightCounterPart	WidthType	120.0	0.0	50000.0
FaceLimitedFront	BooleanType	no	no	yes
FaceLimitedBack	BooleanType	no	no	yes
LeadAngleParallel	BooleanType	yes	no	yes
LeadAngle	AngleType	90.0	0.1	179.9
LeadInclinationParallel	BooleanType	yes	no	yes
LeadInclination	AngleType	90.0	0.1	179.9
RafterNailHole	BooleanType	no	no	yes

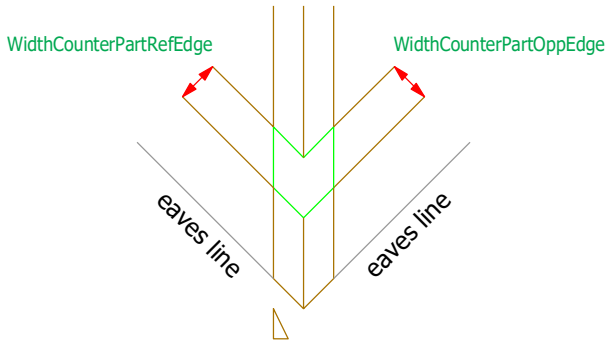
HipValleyRafterNotch

Orientation = start

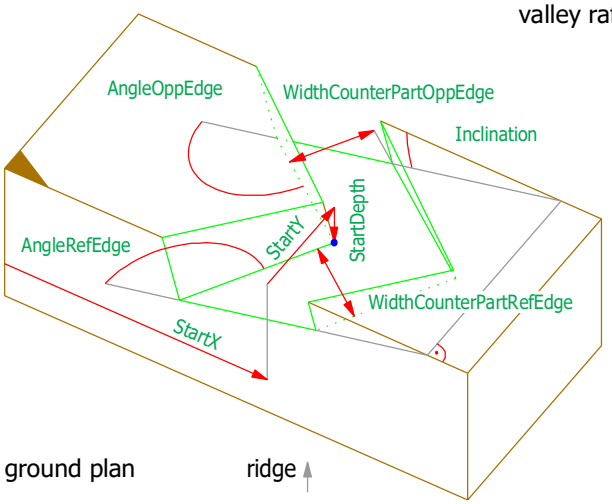
hip rafter



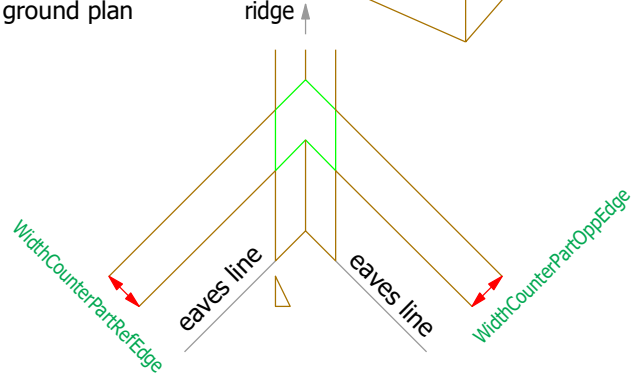
ground plan ridge



valley rafter

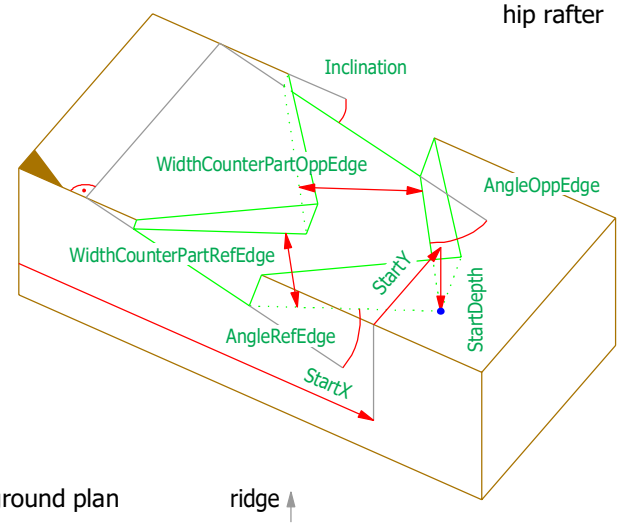


ground plan ridge

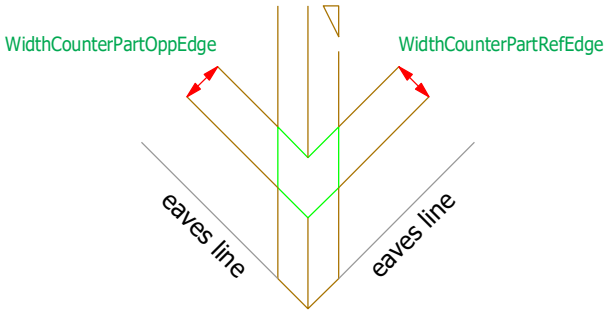


Orientation = end

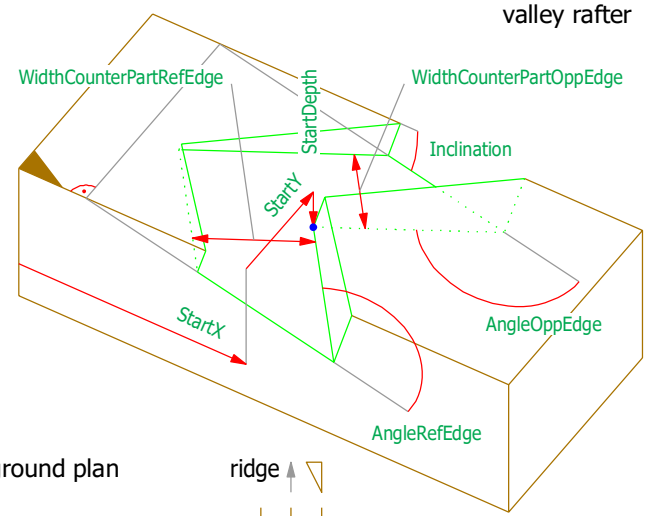
hip rafter



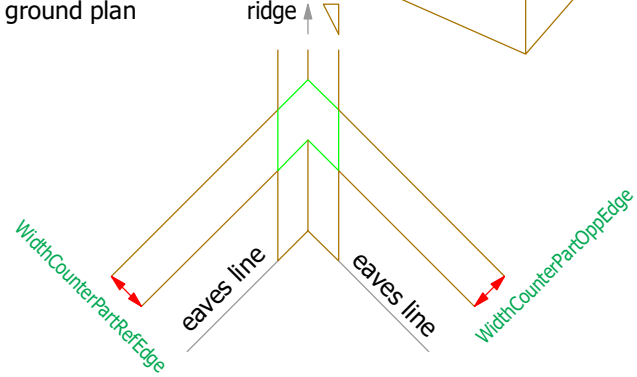
ground plan ridge



valley rafter



ground plan ridge

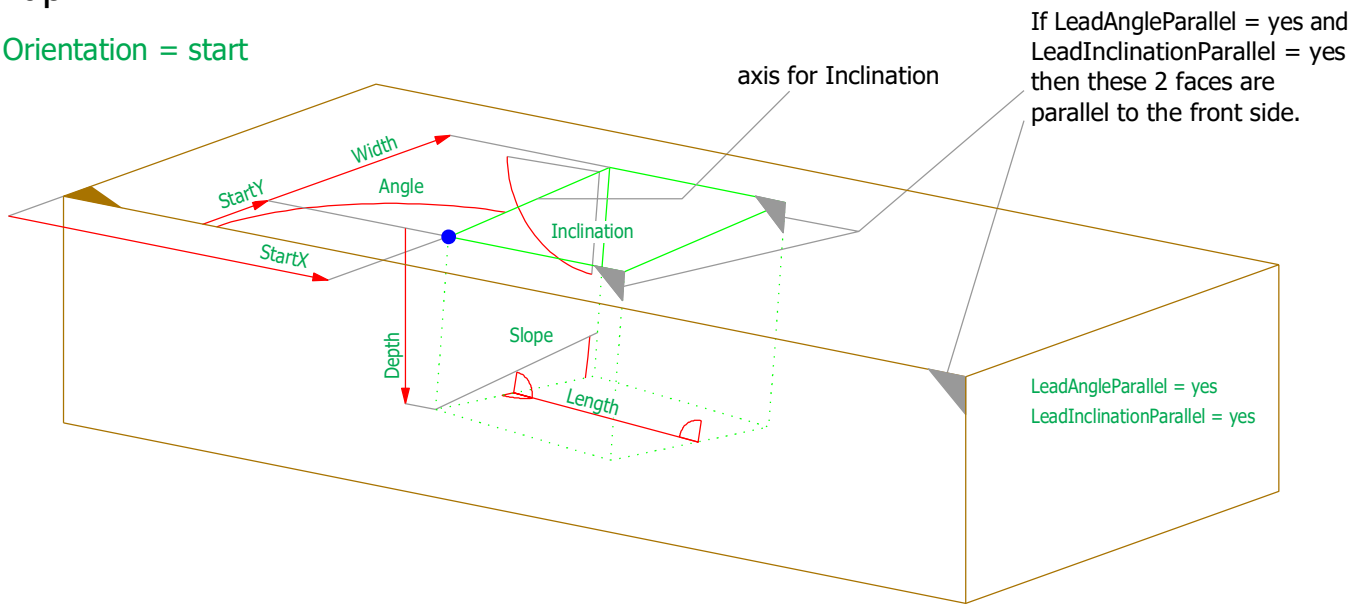


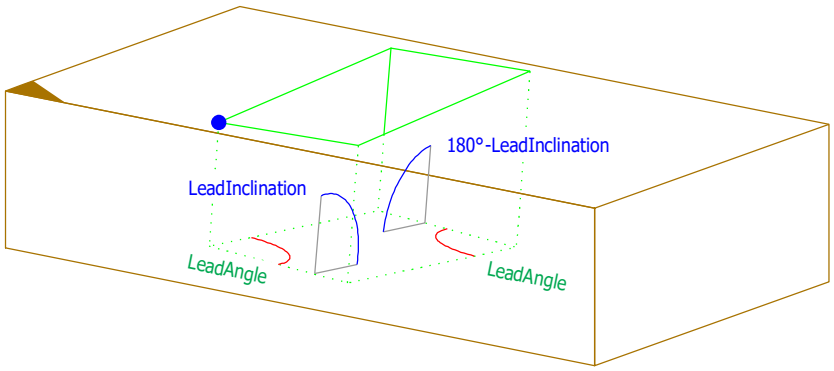
Parameters HipValleyRafterNotch

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000	100000
StartY	WidthNType	0.0	-50000	50000
StartDepth	WidthType	20.0	0.0	50000
AngleRefEdge	AngleType	45.0	0.1	179.9
AngleOppEdge	AngleType	45.0	0.1	179.9
Inclination	Angle2Type	30.0	0.0	180.0
WidthCounterPartRefEdgeLimited	BooleanType	no	no	yes
WidthCounterPartRefEdge	WidthType	0.0	0.0	50000
WidthCounterPartOppEdgeLimited	BooleanType	no	no	yes
WidthCounterPartOppEdge	WidthType	0.0	0.0	50000
RafterNailHole	BooleanType	no	no	yes

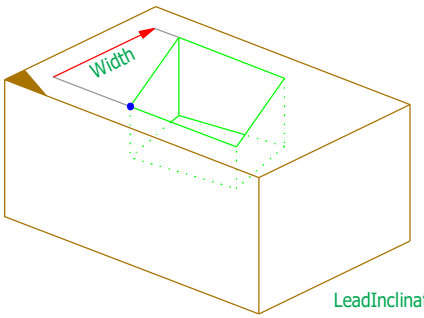
Lap

Orientation = start

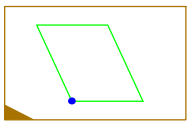




Location of LeadAngle:

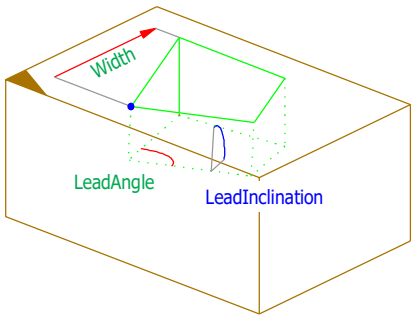


FaceLimitedBack= no

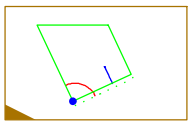


FaceLimitedFront = no

LeadAngleParallel and LeadInclinationParallel are meaningless

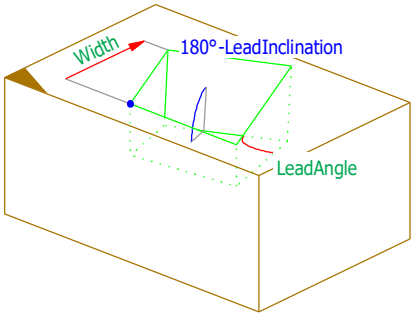


FaceLimitedBack = no

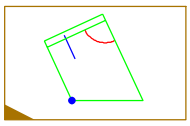


FaceLimitedFront = yes

LeadAngleParallel = no
LeadInclinationParallel = no

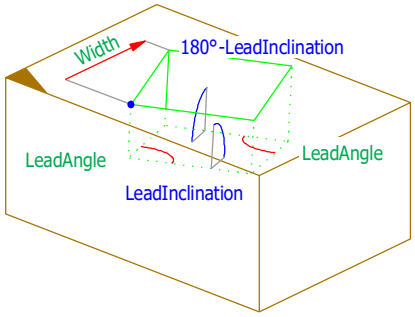


FaceLimitedBack = yes

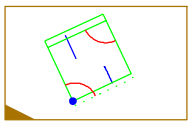


FaceLimitedFront = no

LeadAngleParallel = no
LeadInclinationParallel = no



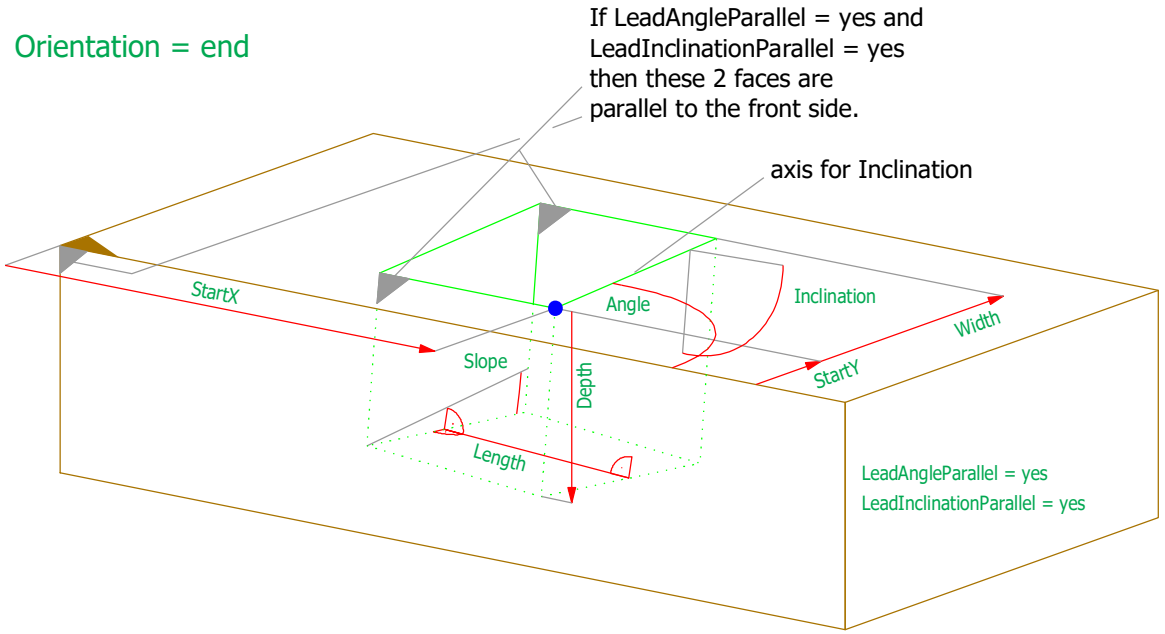
FaceLimitedBack = yes



FaceLimitedFront = yes

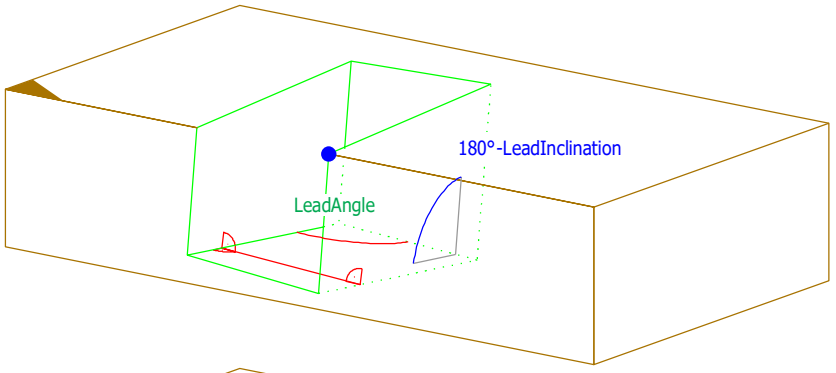
LeadAngleParallel = no
LeadInclinationParallel = no

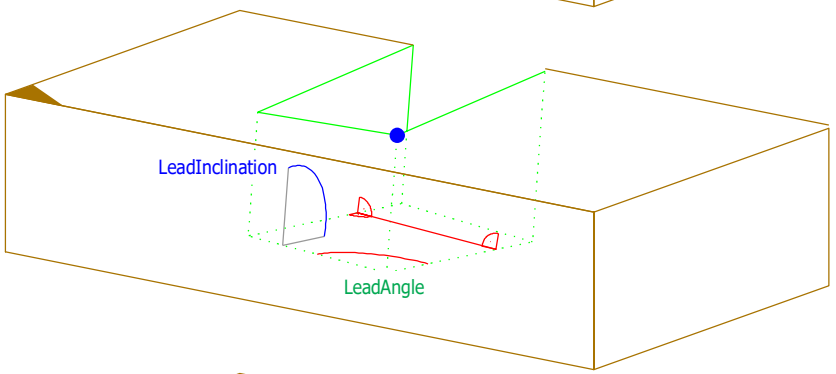
Orientation = end

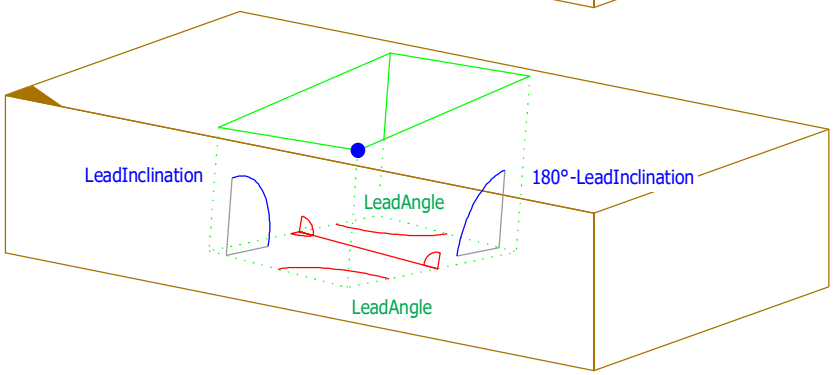


Location of LeadAngle:

LeadAngleParallel = no
LeadInclinationParallel = no



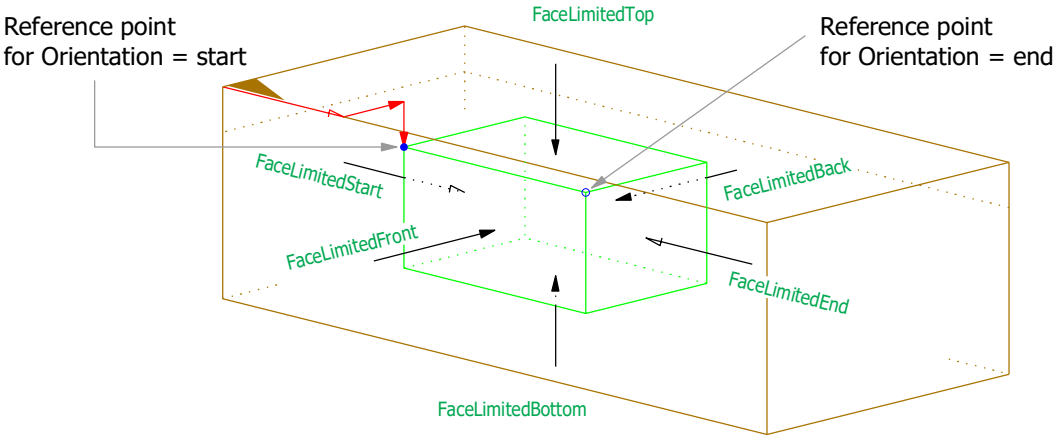


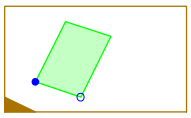


Parameters Lap

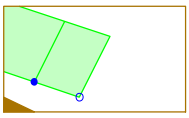
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000	100000
StartY	WidthNType	0.0	-50000.0	50000
Angle	AngleType	90.0	0.1	179.9
Inclination	AngleType	90.0	0.1	179.9
Slope	InclinationType	0.0	-89.9	89.9
Length	LengthType	200.0	0.0	100000
Width	WidthType	50.0	0.0	50000.0
Depth	WidthNType	40.0	-50000.0	50000.0
LeadAngleParallel	BooleanType	yes	no	yes
LeadAngle	AngleType	90.0	0.1	179.9
LeadInclinationParallel	BooleanType	yes	no	yes
LeadInclination	AngleType	90.0	0.1	179.9
MachiningLimits	MachiningLimitType			

MachiningLimits

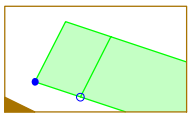




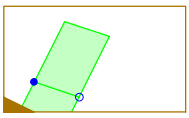
FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = yes



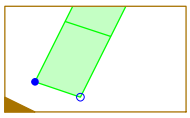
FaceLimitedStart = no
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = yes



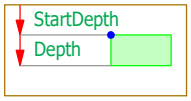
FaceLimitedStart = yes
FaceLimitedEnd = no
FaceLimitedFront = yes
FaceLimitedBack = yes



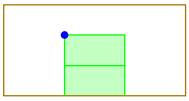
FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = no
FaceLimitedBack = yes



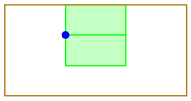
FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = no



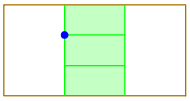
FaceLimitedBottom = yes
FaceLimitedTop = yes



FaceLimitedBottom = no
FaceLimitedTop = yes

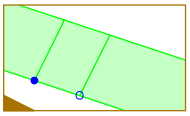


FaceLimitedBottom = yes
FaceLimitedTop = no

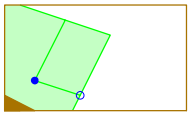


FaceLimitedTop = no
FaceLimitedTop = no

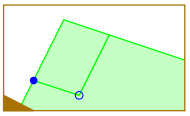
Other combinations of MachineLimits



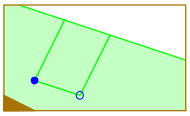
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



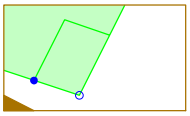
FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = yes



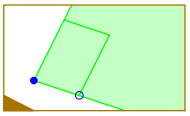
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



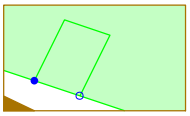
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



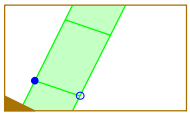
FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = yes
FaceLimitedBack = no



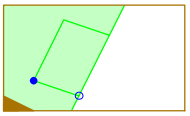
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = yes
FaceLimitedBack = no



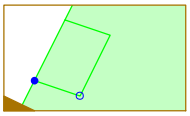
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = yes
FaceLimitedBack = no



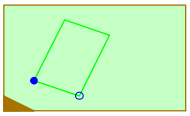
FaceLimitedStart = yes
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = no



FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = no



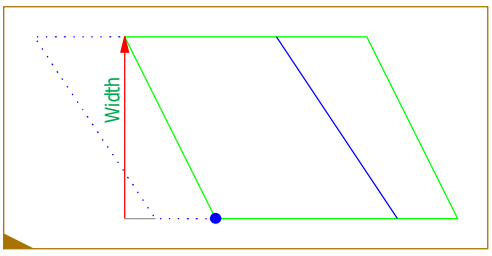
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = no



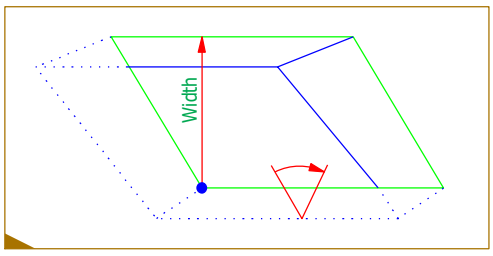
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = no

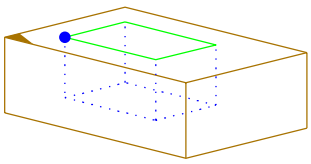
LeadAngle:

LeadAngleParallel = yes
LeadInclinationParallel = yes

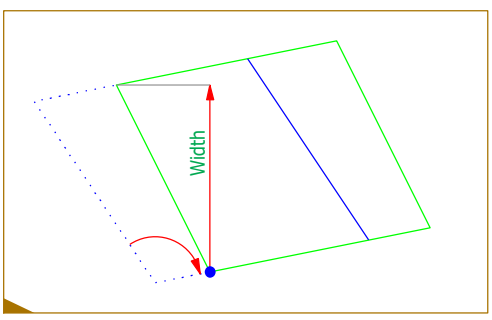


LeadAngleParallel = yes
LeadInclinationParallel = no

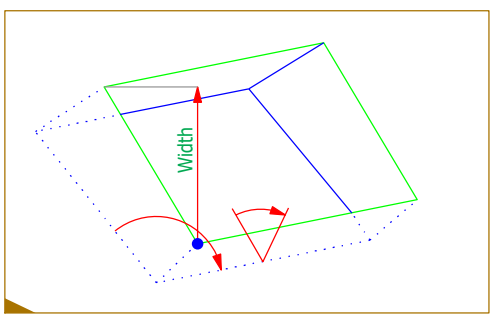




LeadAngleParallel = no
LeadInclinationParallel = yes

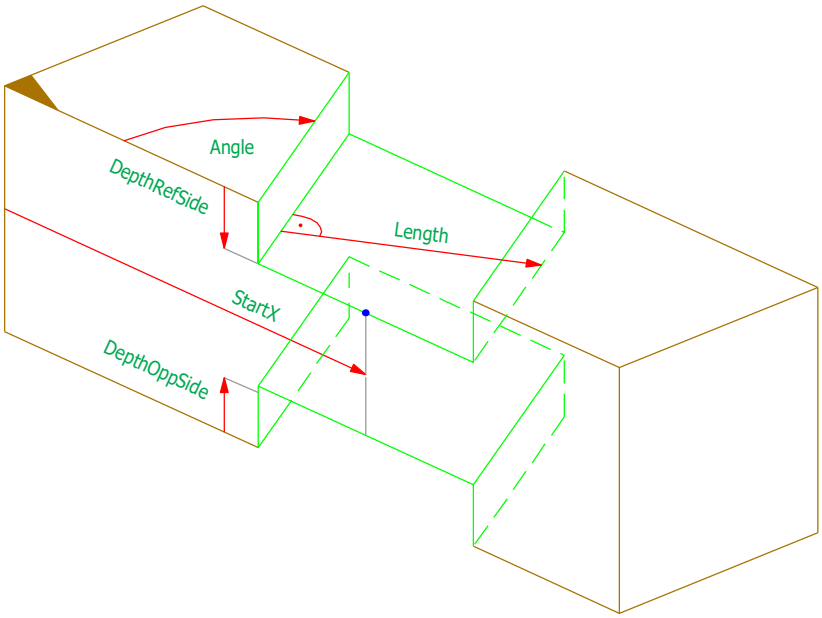


LeadAngleParallel = no
LeadInclinationParallel = no

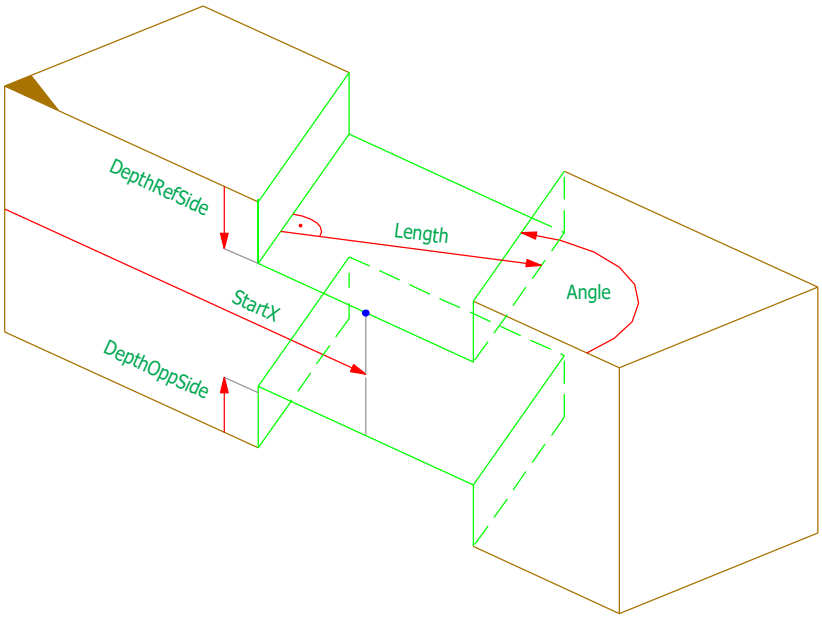


LogHouseHalfLap

Orientation = start



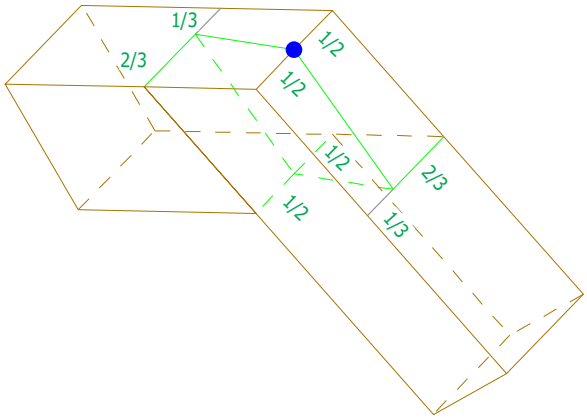
Orientation = end

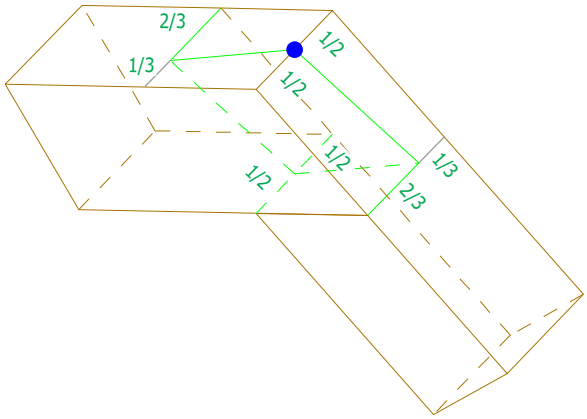


Parameters LogHouseHalfLap

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Angle	AngleType	90.0	0.1	179.9
Length	WidthType	120.0	0.0	50000.0
DepthRefSide	WidthType	20.0	0.0	50000.0
DepthOppSide	WidthType	20.0	0.0	50000.0

FrenchRidgeLap

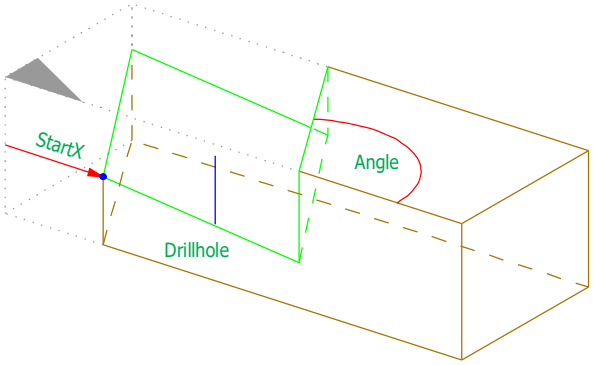




The length of the lap is equal to the width of reference side.

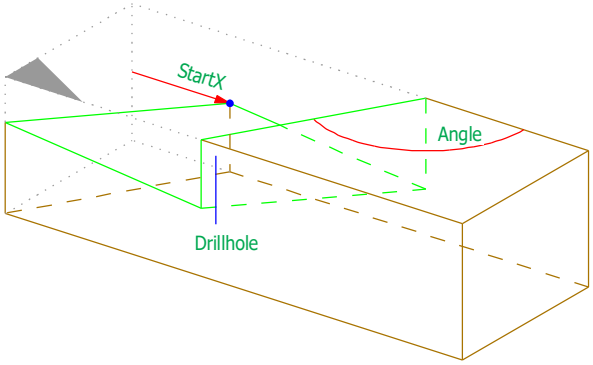
Orientation = start

RefPosition = refedge



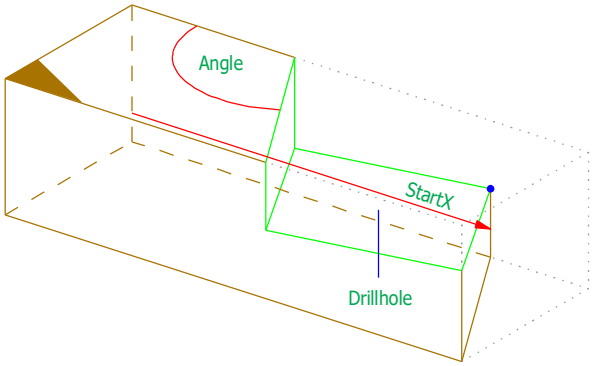
Orientation = start

RefPosition = oppedge



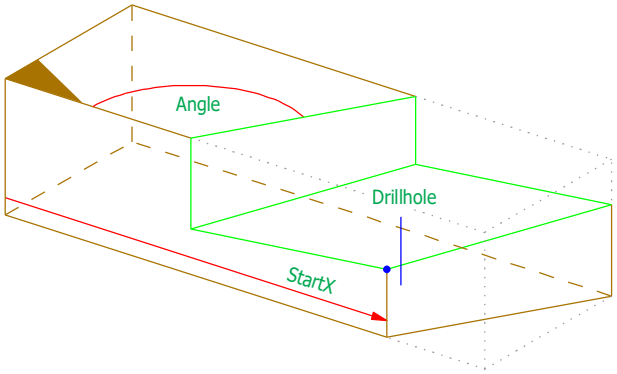
Orientation = end

RefPosition = oppedge



Orientation = end

RefPosition = refedge

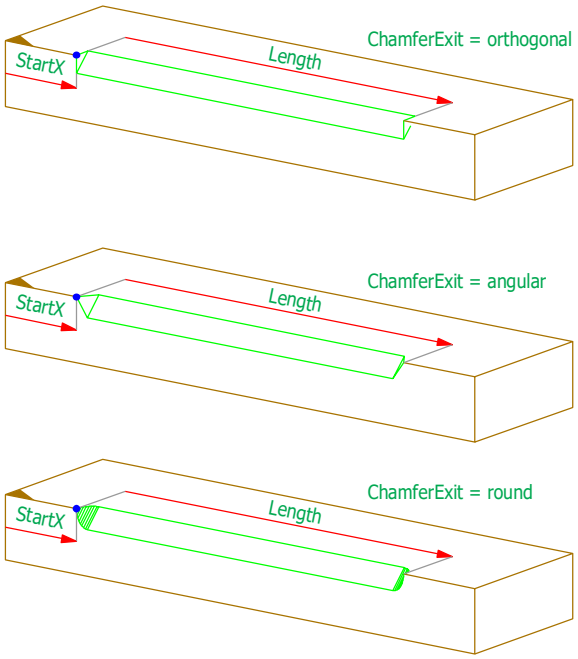


Parameters FrenchRidgeLap

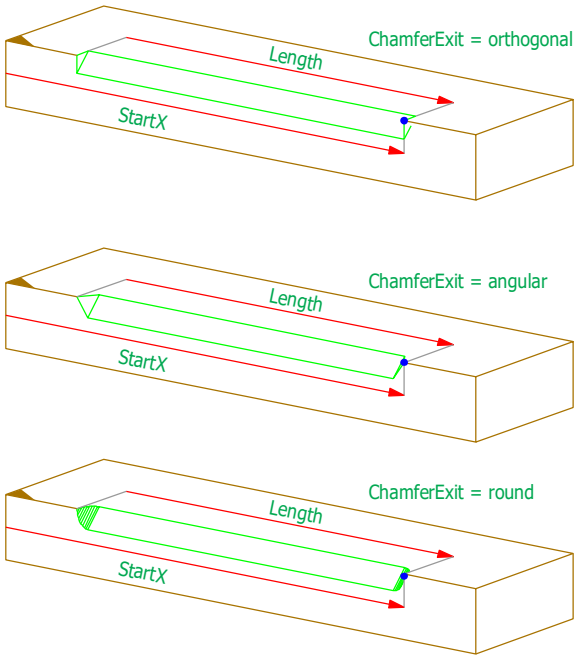
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Angle	AngleType	90.0	0.1	179.9
RefPosition	EdgePositionType	refedge	refedge	oppedge
Drillhole	BooleanType	no	no	yes
DrillholeDiam	LengthSType	0.0	0.0	1000.0

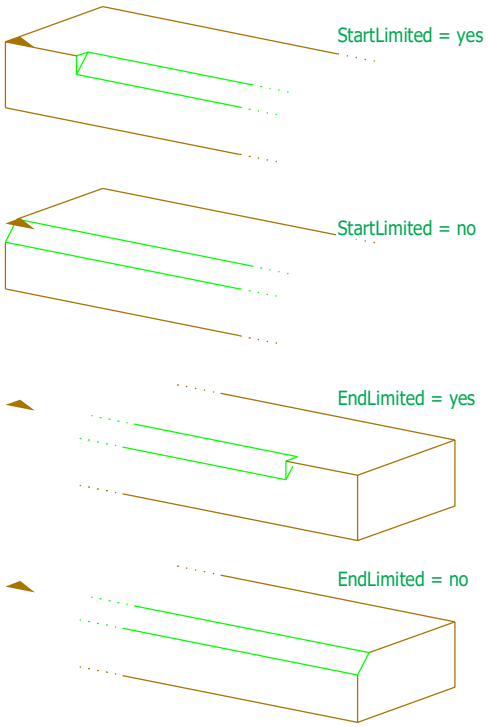
Chamfer

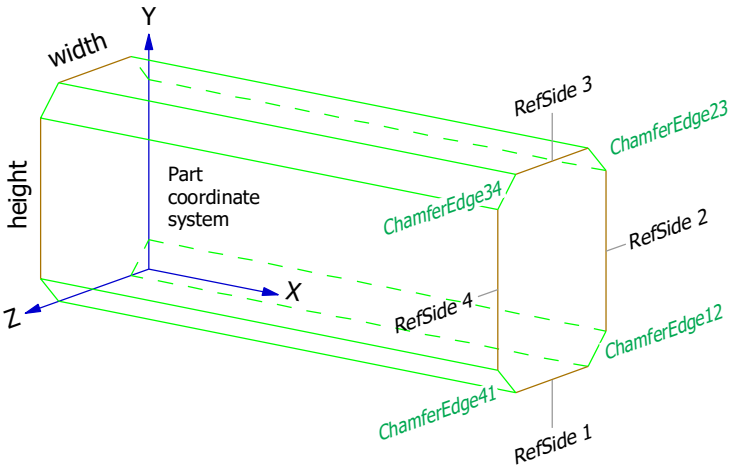
Orientation = start

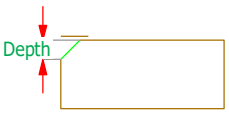


Orientation = end







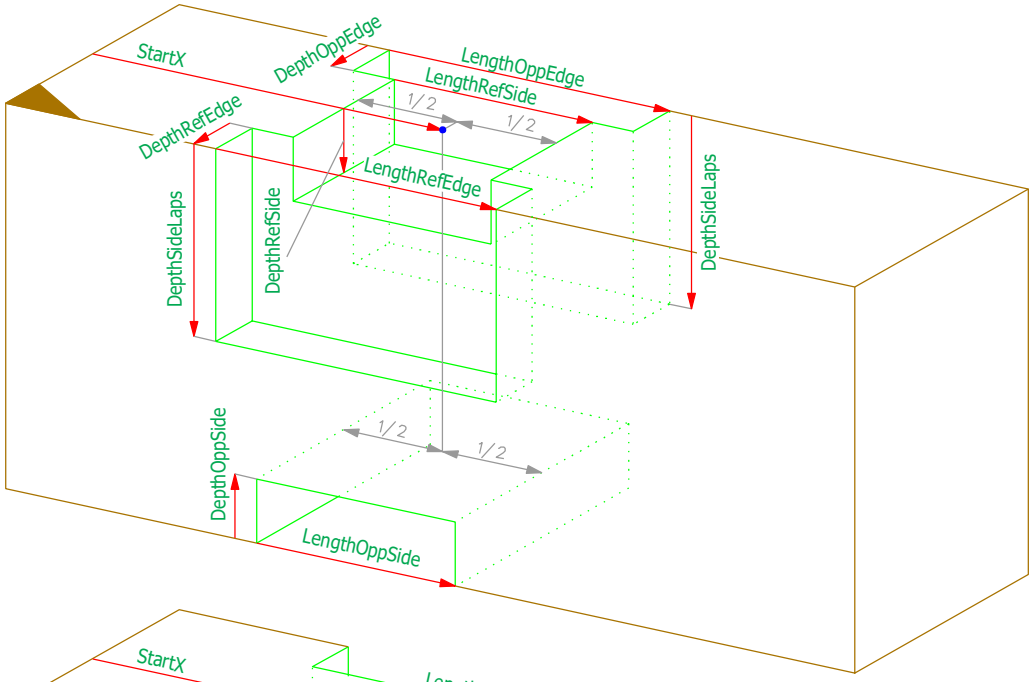


Parameters Chamfer

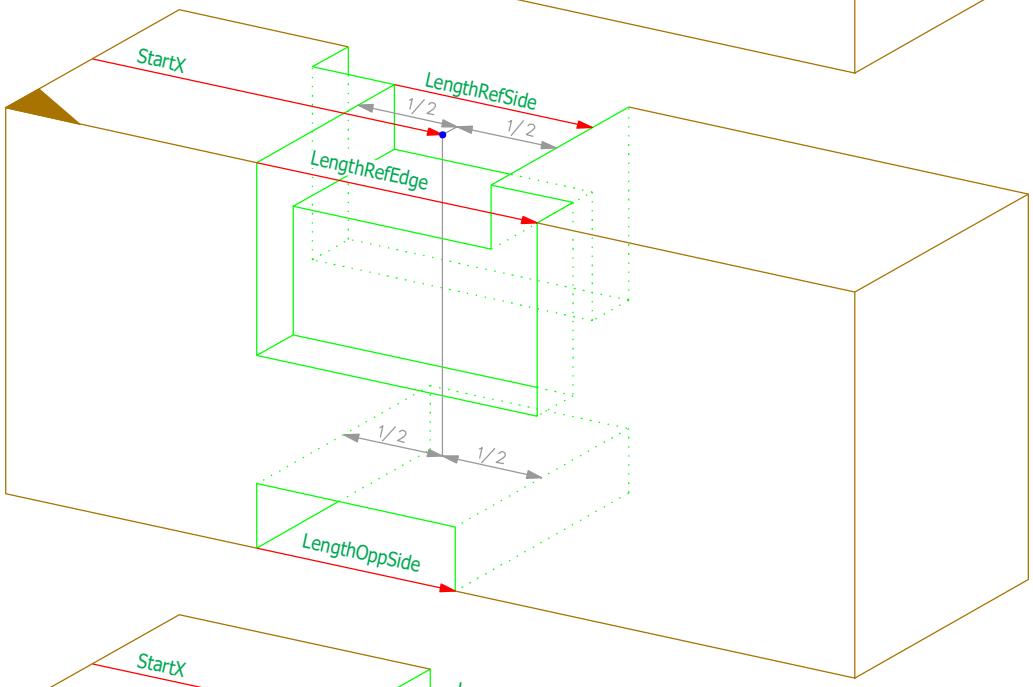
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartLimited	BooleanType	no	no	yes
EndLimited	BooleanType	no	no	yes
Length	LengthType	0.0	0.0	100000.0
Depth	double	1.0	0.0	100.0
ChamferEdge12	BooleanType	yes	no	yes
ChamferEdge23	BooleanType	yes	no	yes
ChamferEdge34	BooleanType	yes	no	yes
ChamferEdge41	BooleanType	yes	no	yes
ChamferExit	ChamferExitType	orthogonal	orthogonal/angular/round	

LogHouseJoint

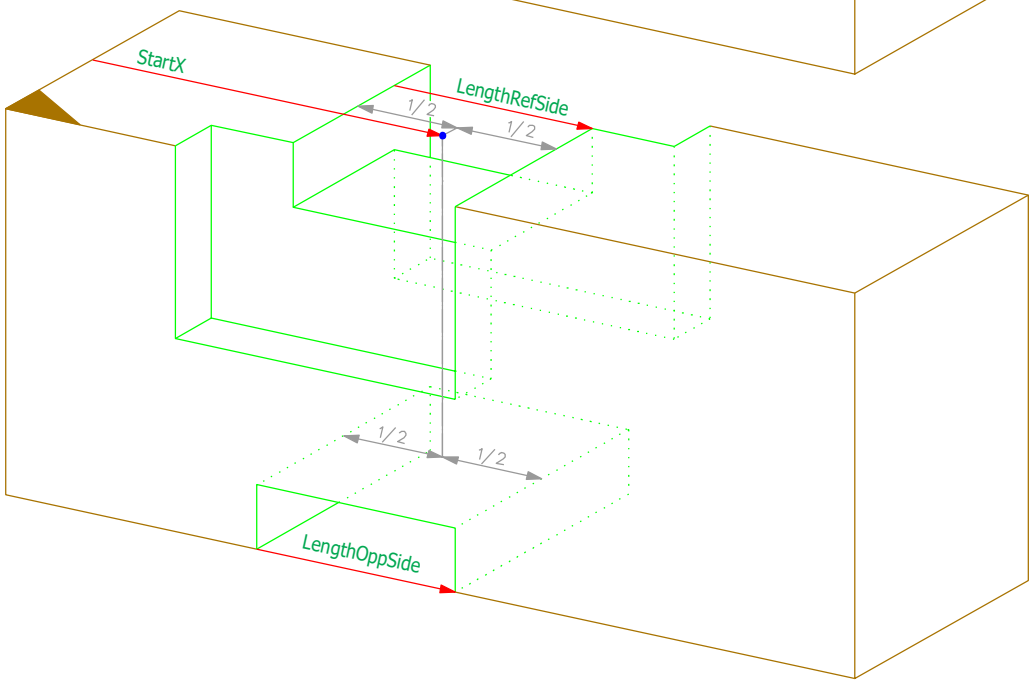
LapPosition = symmetric

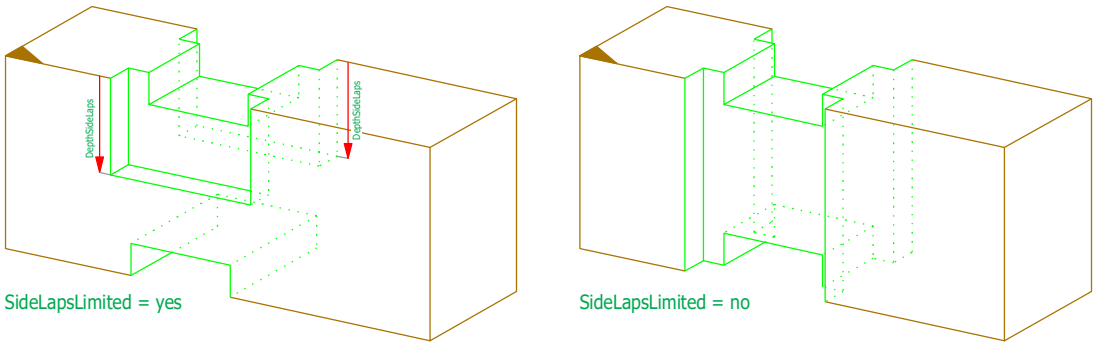


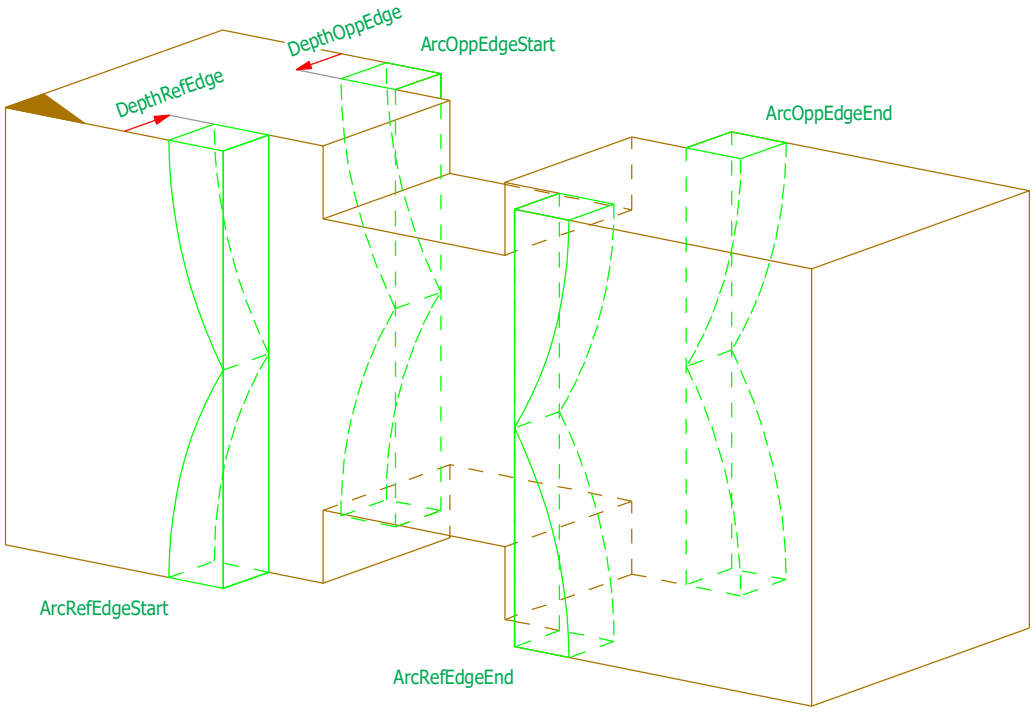
LapPosition = forward

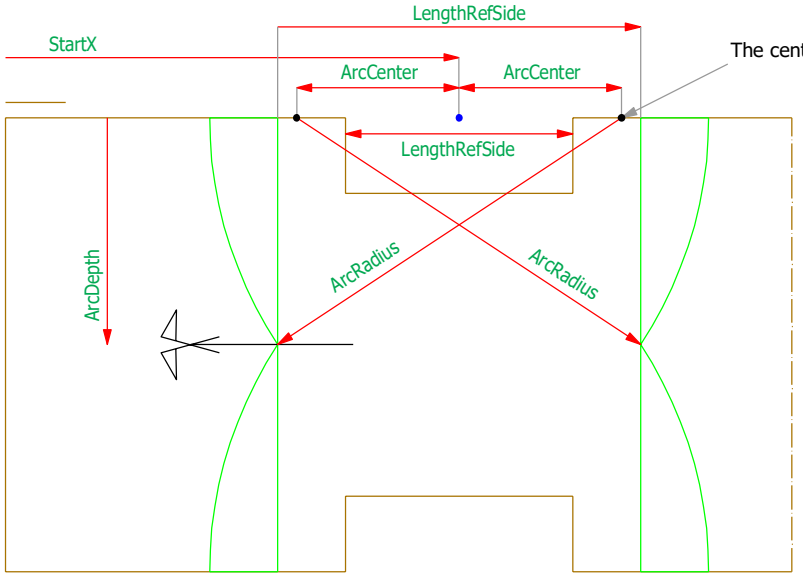


LapPosition = backward









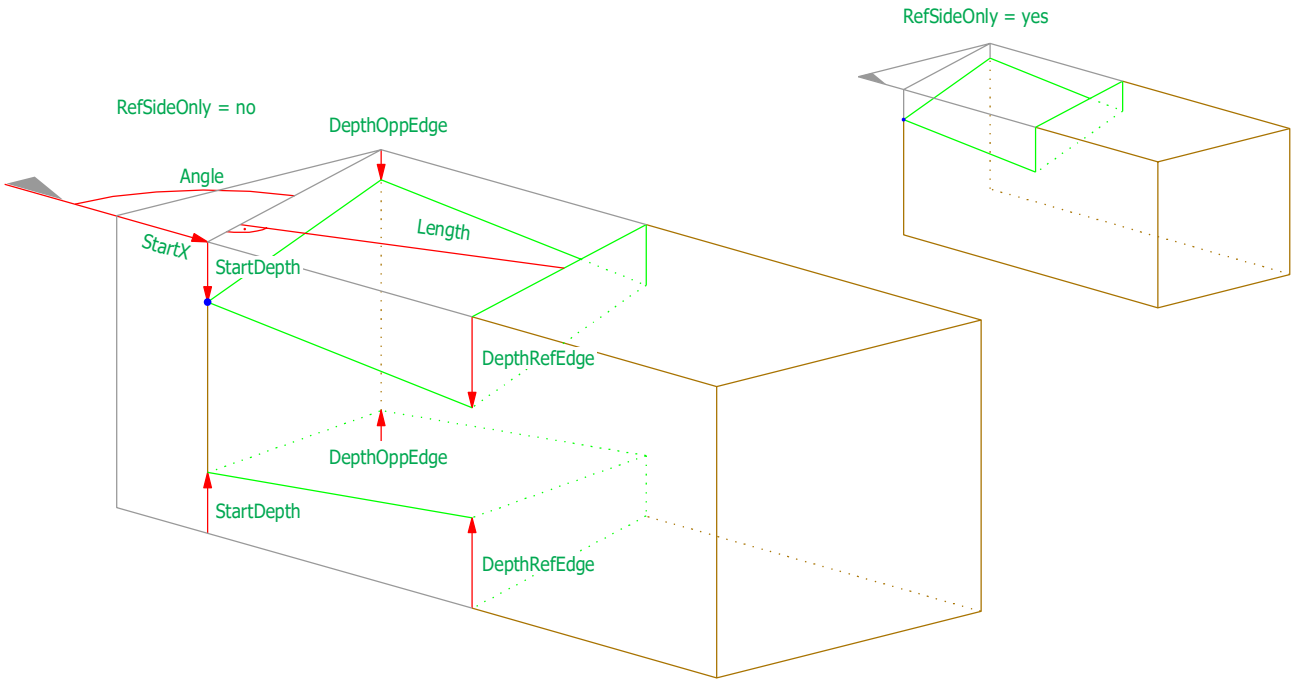
The center of the arcs are placed on the reference side.

Parameters LogHouseJoint

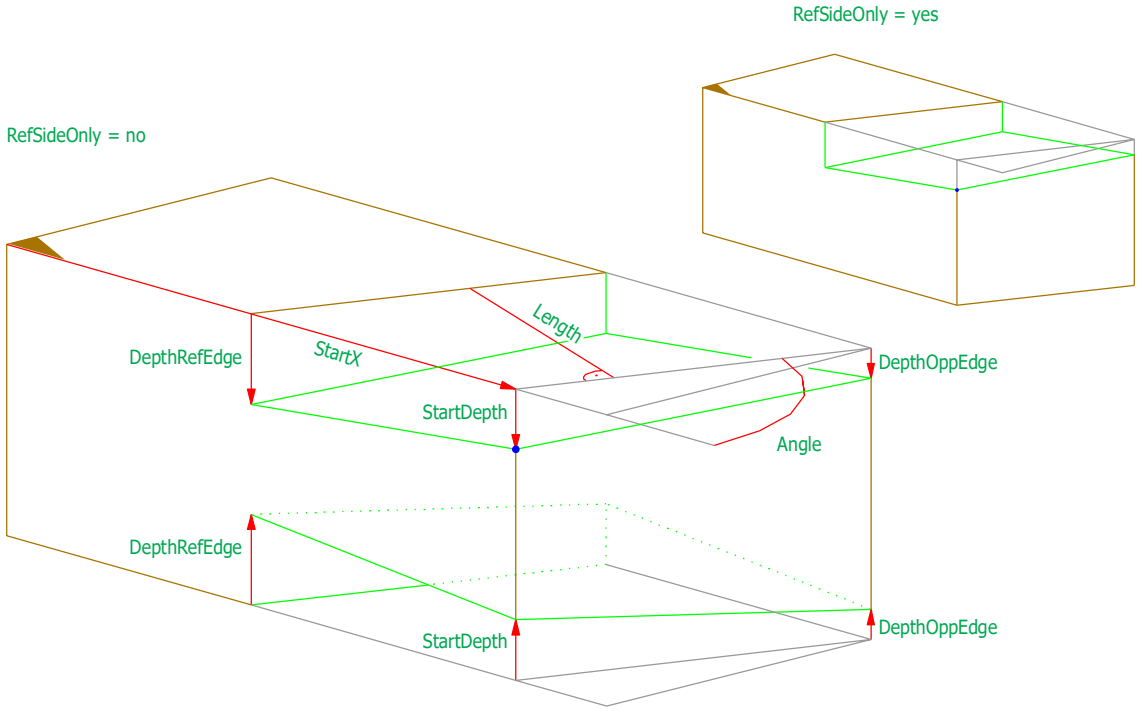
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
SideLapsLimited	BooleanType	no	no	yes
DepthSideLaps	WidthType		0.0	50000.0
LapPosition	LogLapPositionType	symmetric	symmetric/forward/backward	
LengthRefSide	WidthType	100.0	0.0	50000.0
DepthRefSide	WidthType	10.0	0.0	50000.0
LengthOppSide	WidthType	100.0	0.0	50000.0
DepthOppSide	WidthType	10.0	0.0	50000.0
LengthRefEdge	WidthType	100.0	0.0	50000.0
DepthRefEdge	WidthType	10.0	0.0	50000.0
LengthOppEdge	WidthType	100.0	0.0	50000.0
DepthOppEdge	WidthType	10.0	0.0	50000.0
Drillhole	BooleanType	no	no	yes
ArcRefEdgeStart	BooleanType	no	no	yes
ArcRefEdgeEnd	BooleanType	no	no	yes
ArcOppEdgeStart	BooleanType	no	no	yes
ArcOppEdgeEnd	BooleanType	no	no	yes
ArcRadius	WidthType	120.0	0.0	50000.0
ArcDepth	WidthNType	60.0	-50000.0	50000.0
ArcCenter	WidthType	120.0	0.0	50000.0

LogHouseFront

Orientation = start



Orientation = end

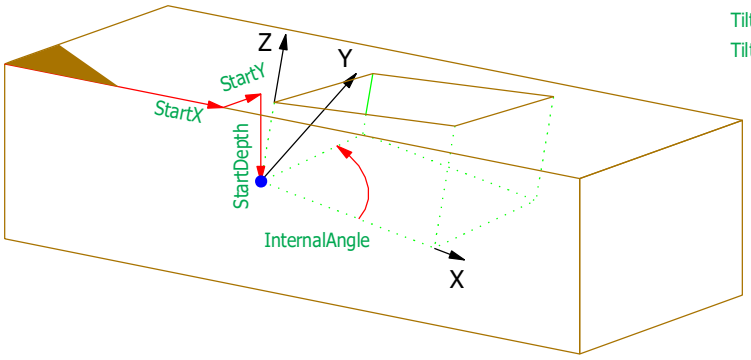


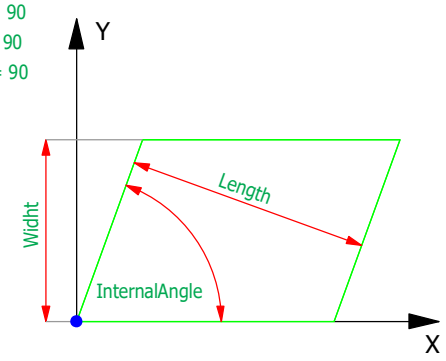
Parameters LogHouseFront

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartDepth	WidthType	20.0	0.0	50000.0
Angle	AngleType	90.0	0.1	179.9
Length	WidthType	120.0	0.0	50000.0
DepthRefEdge	WidthType	20.0	0.0	50000.0
DepthOppEdge	WidthType	20.0	0.0	50000.0
RefSideOnly	BooleanType	no	no	yes

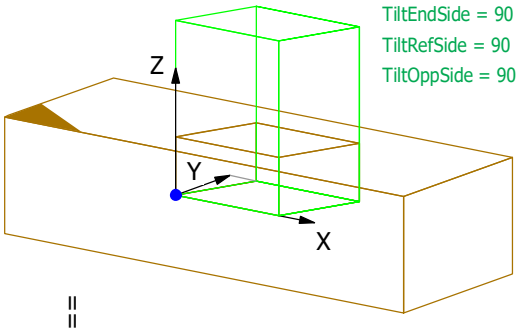
Pocket

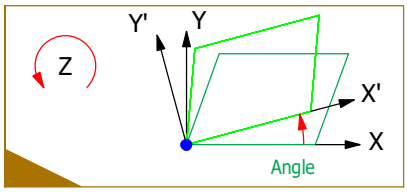
here: TiltStartSide = 90
TiltEndSide = 90
TiltRefSide = 90
TiltOppSide = 90

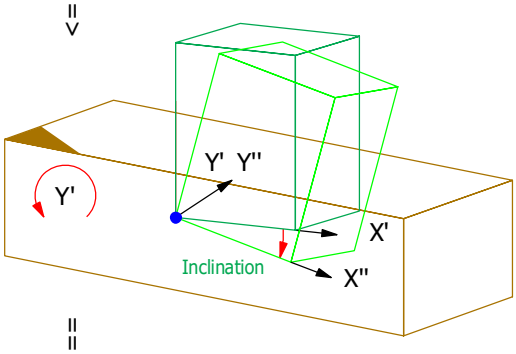


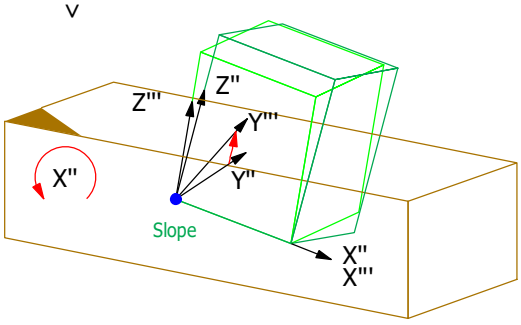


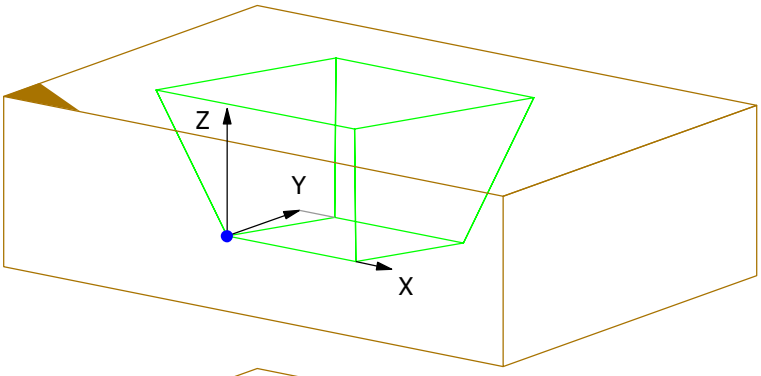
here: TiltStartSide = 90
TiltEndSide = 90
TiltRefSide = 90
TiltOppSide = 90

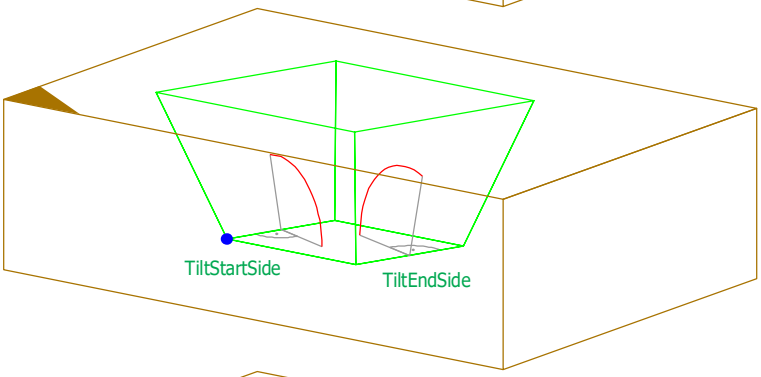


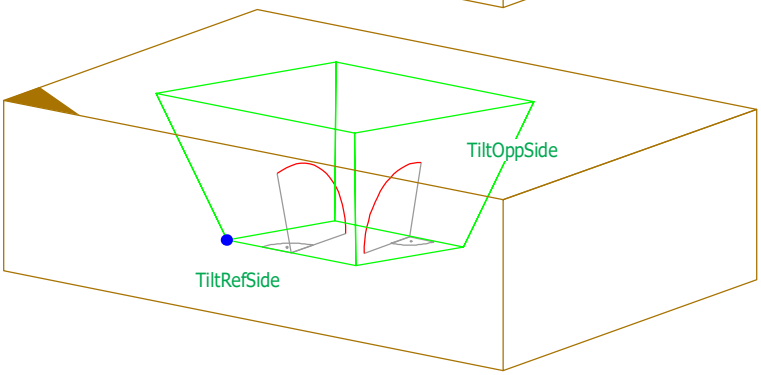








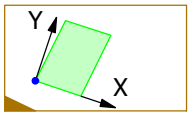




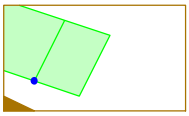
Parameters Pocket

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
StartDepth	WidthNType	0.0	-50000.0	50000.0
Angle	AngleNType	0.0	-179.9	179.9
Inclination	AngleNType	0.0	-179.9	179.9
Slope	AngleNType	0.0	-179.9	179.9
Length	LengthType	200.0	0.0	100000.0
Width	WidthType	50.0	0.0	50000.0
InternalAngle	AngleType	90.0	0.1	179.9
TiltRefSide	AngleType	90.0	0.1	179.9
TiltEndSide	AngleType	90.0	0.1	179.9
TiltOppSide	AngleType	90.0	0.1	179.9
TiltStartSide	AngleType	90.0	0.1	179.9
MachiningLimits	MachiningLimitType			

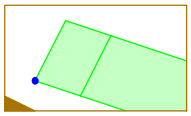
MachiningLimits



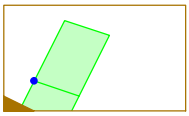
FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = yes



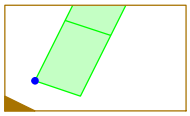
FaceLimitedStart = no
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = yes



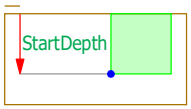
FaceLimitedStart = yes
FaceLimitedEnd = no
FaceLimitedFront = yes
FaceLimitedBack = yes



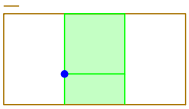
FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = no
FaceLimitedBack = yes



FaceLimitedStart = yes
FaceLimitedEnd = yes
FaceLimitedFront = yes
FaceLimitedBack = no

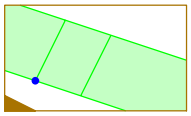


FaceLimitedBottom = yes
FaceLimitedTop = no

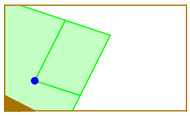


FaceLimitedBottom = no
FaceLimitedTop = no

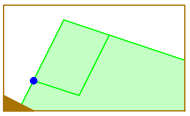
Other combinations of MachineLimits



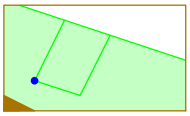
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



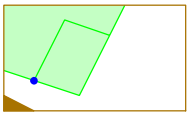
FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = yes



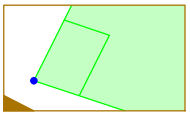
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



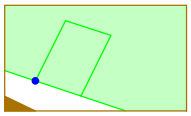
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = yes



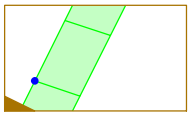
FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = yes
FaceLimitedBack = no



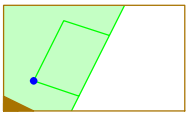
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = yes
FaceLimitedBack = no



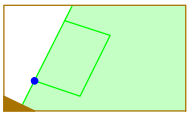
FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = yes
FaceLimitedBack = no



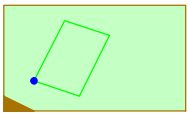
FaceLimitedStart = yes
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = no



FaceLimitedStart = no
FaceLimitedStart = yes
FaceLimitedFront = no
FaceLimitedBack = no

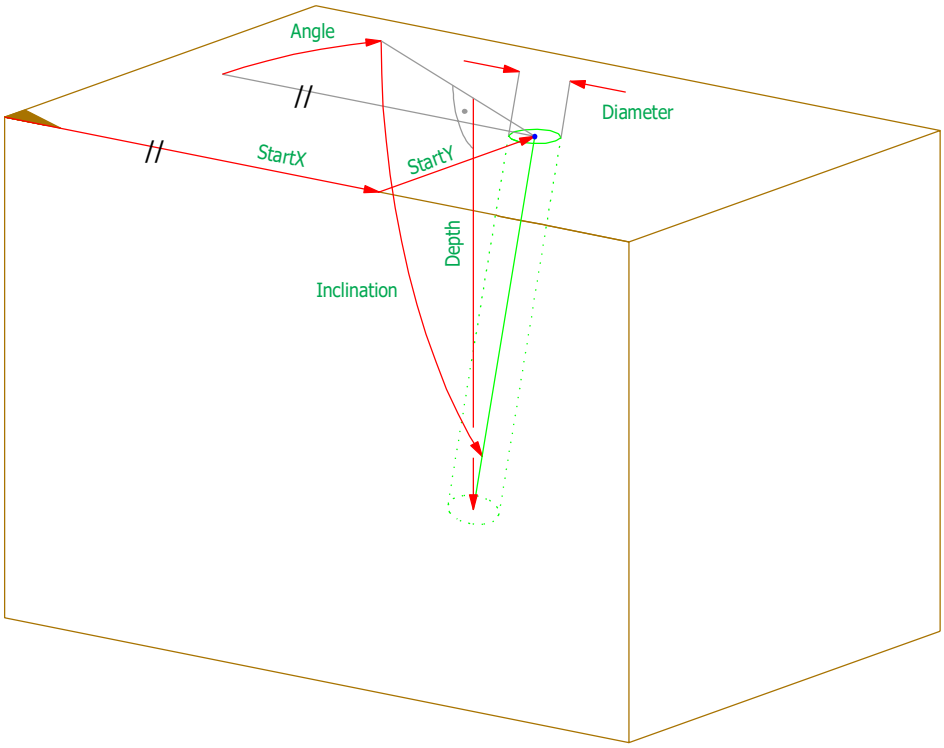


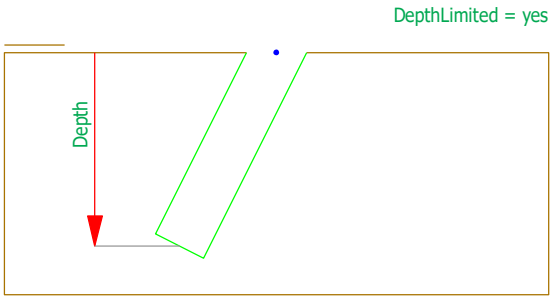
FaceLimitedStart = yes
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = no

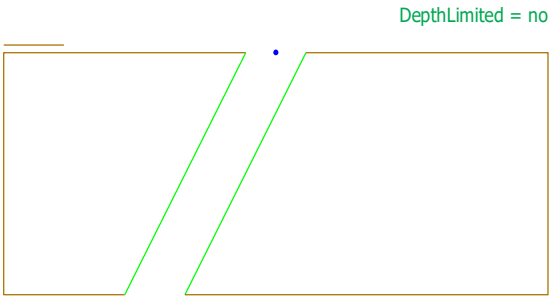


FaceLimitedStart = no
FaceLimitedStart = no
FaceLimitedFront = no
FaceLimitedBack = no

Drilling


Angle
Diameter
StartX
StartY
Depth
Inclination


DepthLimited = yes
Depth

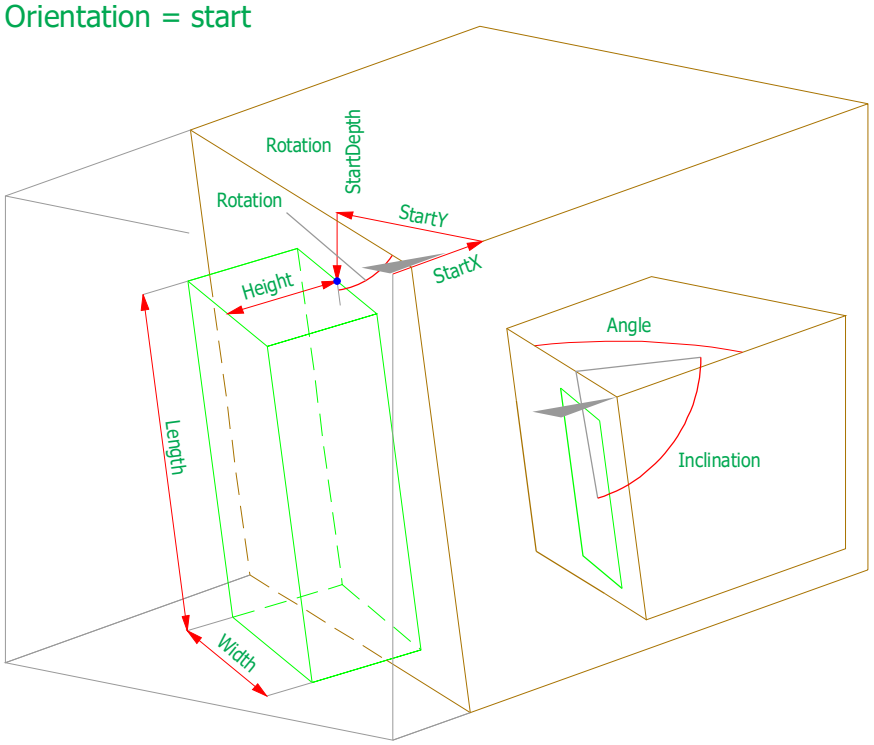

DepthLimited = no

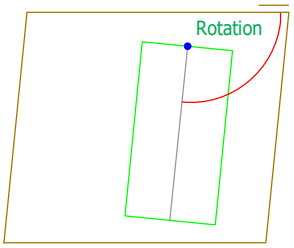
Parameters Drilling

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
Angle	Angle3Type	0	0.0	360.0
Inclination	AngleType	90.0	0.1	179.9
DepthLimited	BooleanType	no	no	yes
Depth	WidthType	50.0	0.0	50000.0
Diameter	DiameterType	20.0	0.0	50000.0

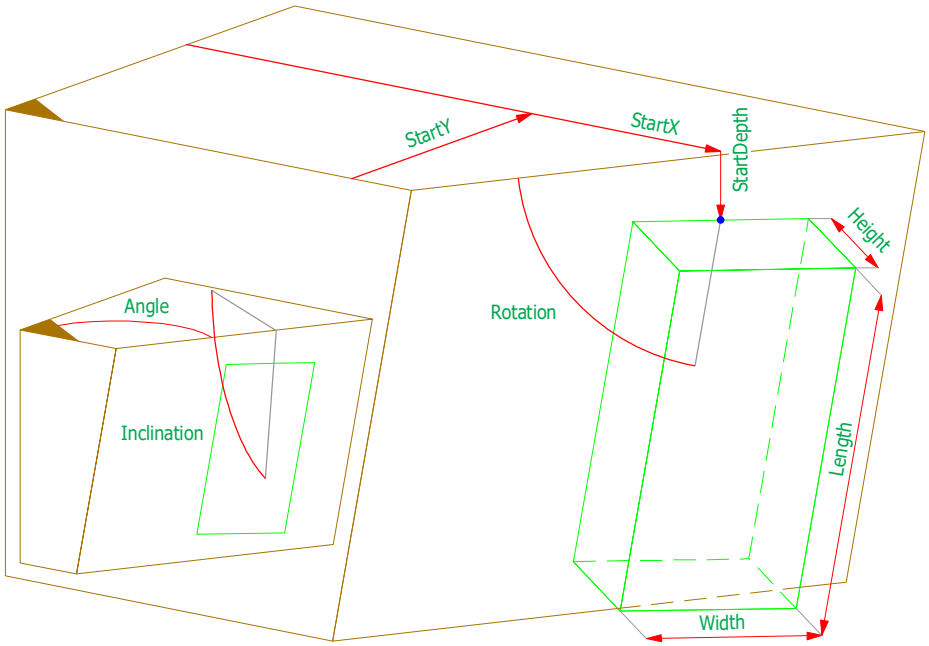
Tenon

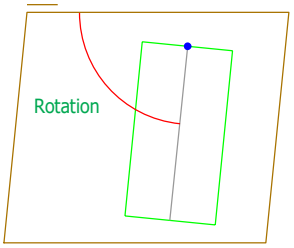
Orientation = start



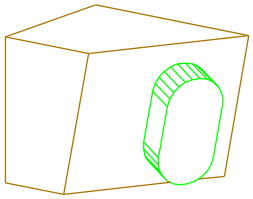


Orientation = start

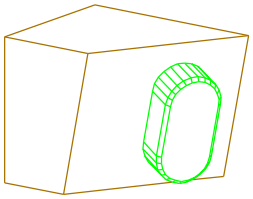




Chamfer = no

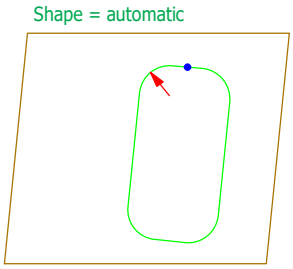


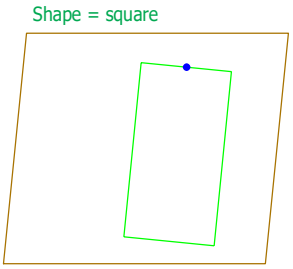
Chamfer = yes

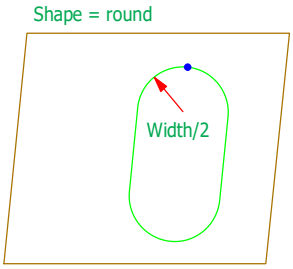


Parameters Tenon

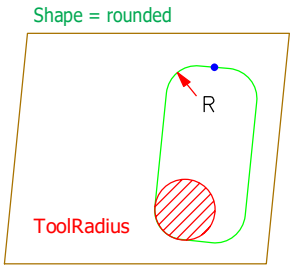
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	50.0	-50000.0	50000.0
StartDepth	WidthNType	50.0	-50000.0	50000.0
Angle	AngleType	90.0	0.1	179.9
Inclination	AngleType	90.0	0.1	179.9
Rotation	AngleType	90.0	0.1	179.9
LengthLimitedTop	BooleanType	yes	no	yes
LengthLimitedBottom	BooleanType	yes	no	yes
Length	WidthType	80.0	0.0	50000.0
Width	LengthSType	40.0	0.0	1000.0
Height	LengthSType	40.0	0.0	1000.0
Shape	TenonShapeType	automatic		
ShapeRadius	LengthSType	20.0	0.0	1000.0
Chamfer	BooleanType	no	no	yes

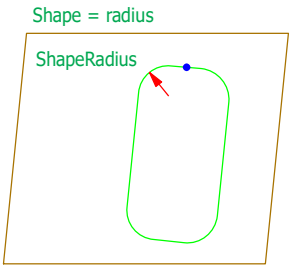


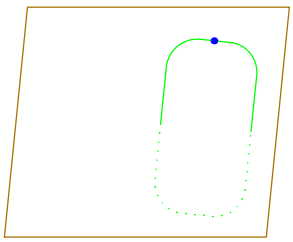


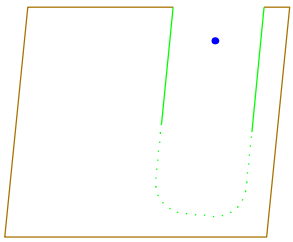


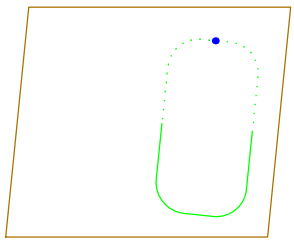
The tenon can be square, round or machine defined depending on the capabilities of the machine.

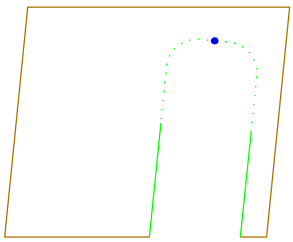






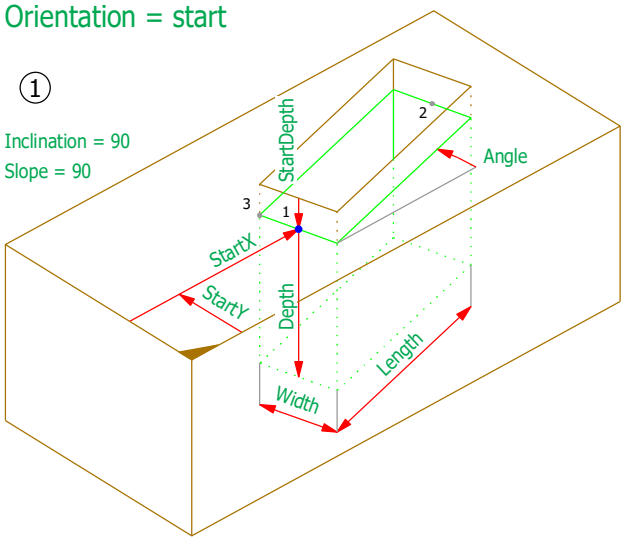


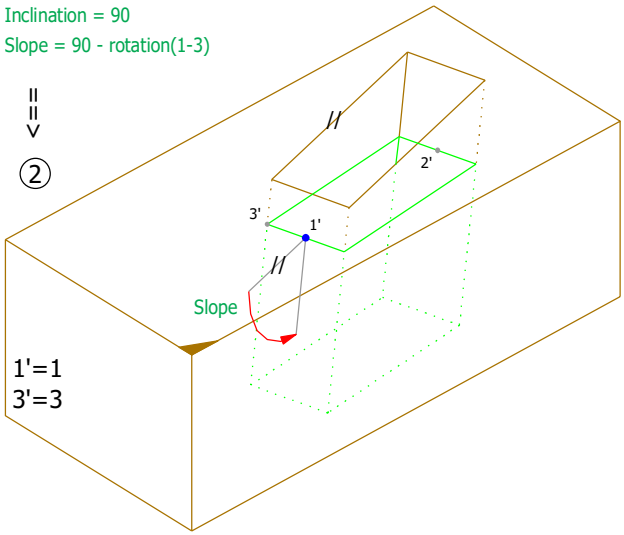


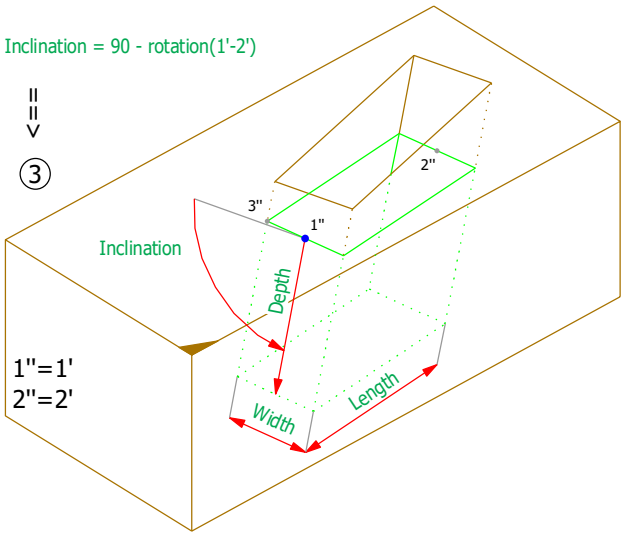


Mortise

Orientation = start



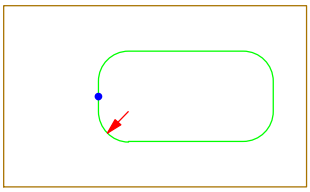




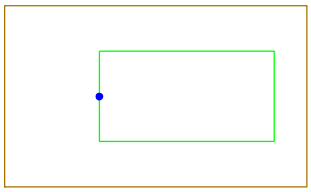
Parameters Mortise

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	50.0	-50000.0	50000.0
StartDepth	WidthType	0.0	0.0	50000.0
Angle	Angle2NType	0.0	-180.0	180.0
Inclination	AngleType	90.0	0.1	179.9
Slope	AngleType	90.0	0.1	179.9
LengthLimitedTop	BooleanType	yes	no	yes
LengthLimitedBottom	BooleanType	yes	no	yes
Length	WidthType	80.0	0.0	50000.0
Width	LengthSType	40.0	0.0	1000.0
Depth	LengthSType	40.0	0.0	1000.0
Shape	TenonShapeType	automatic		
ShapeRadius	LengthSType	20.0	0.0	1000.0

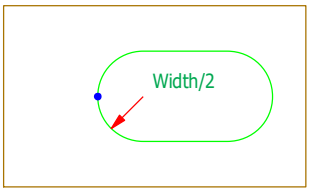
Shape = automatic



Shape = square

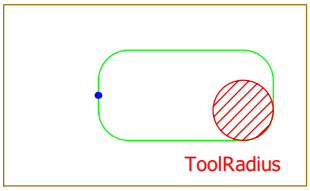


Shape = round

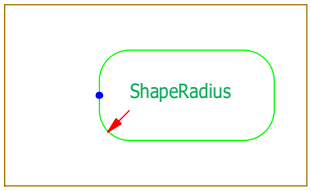


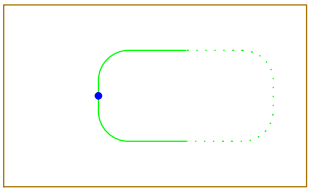
The mortise can be square, round or machine defined, depending on the capabilities of the machine.

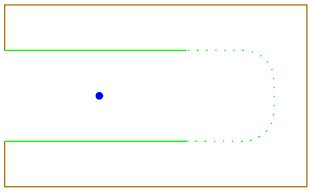
Shape = rounded

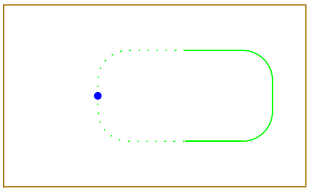


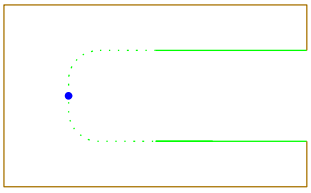
Shape = radius



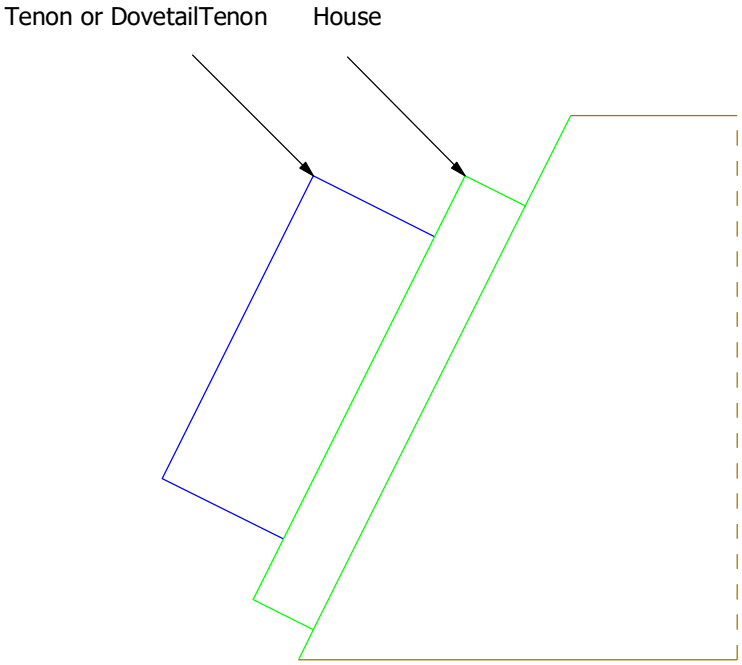


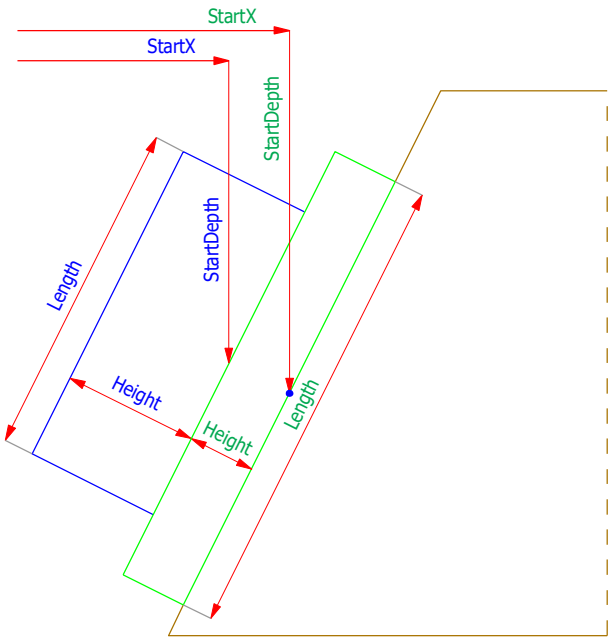






House



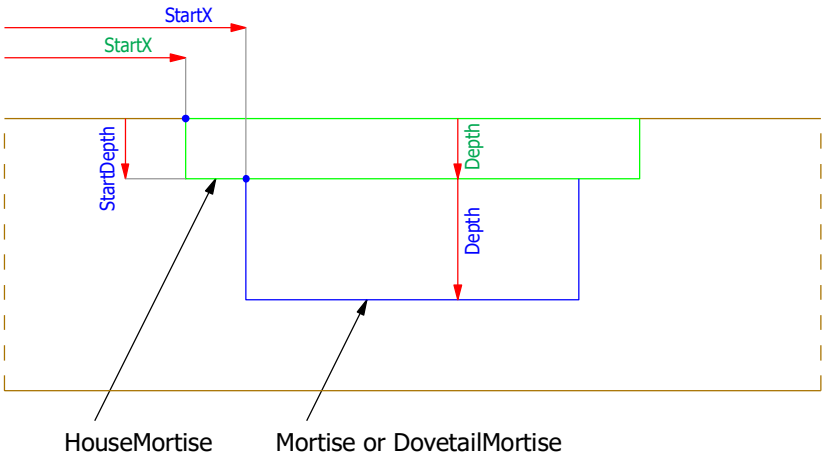


green: Parameters for House.
blue: Parameters for Tenon or DovetailTenon

Parameters House

The House has same parameters as the Tenon.

HouseMortise

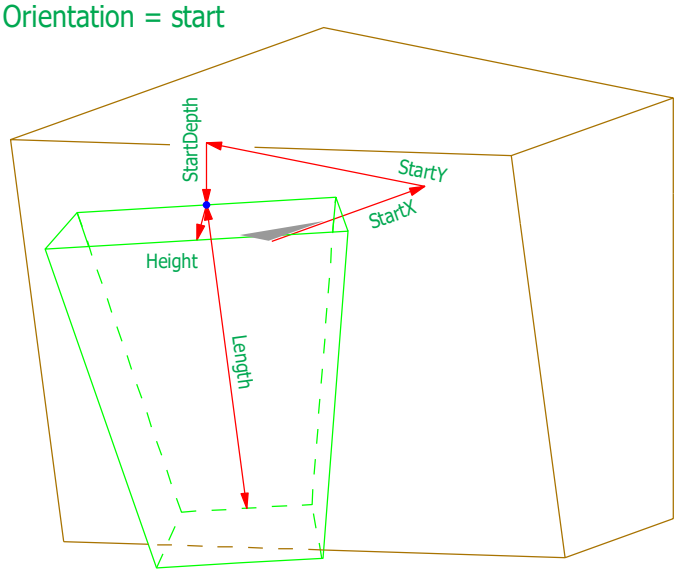


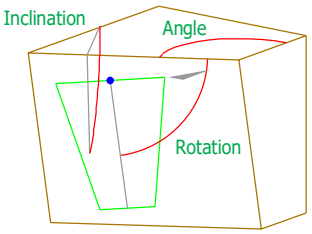
Parameters HouseMortise

The HouseMortise has same parameters as the Mortise.

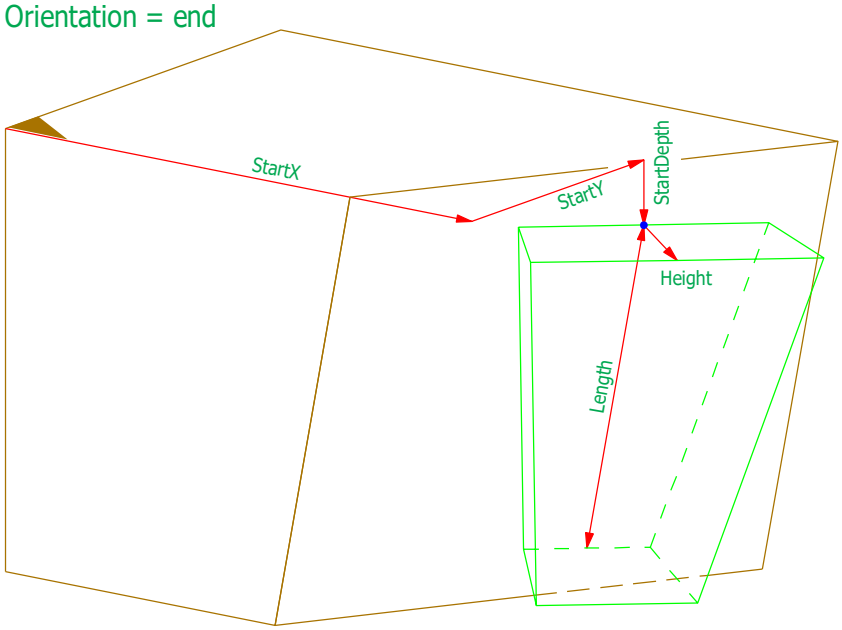
DovetailTenon

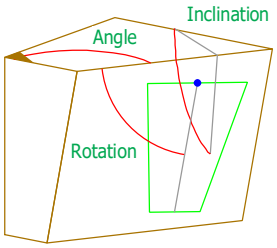
Orientation = start

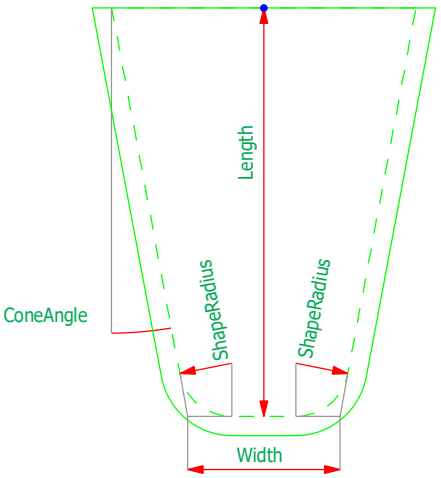




Orientation = end

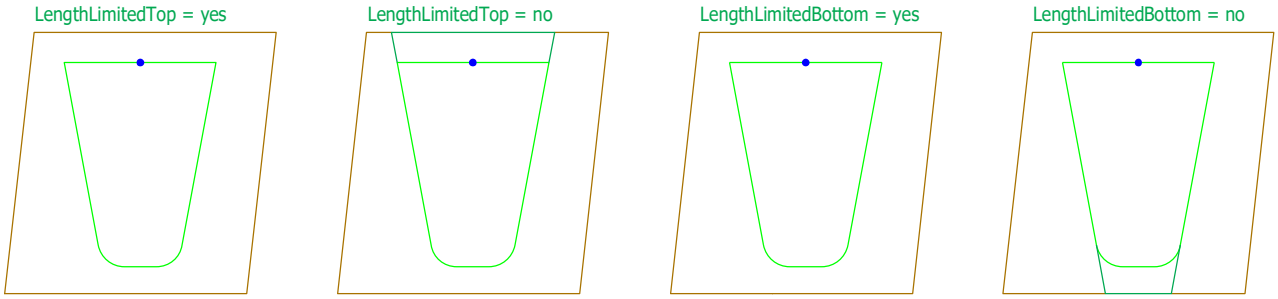


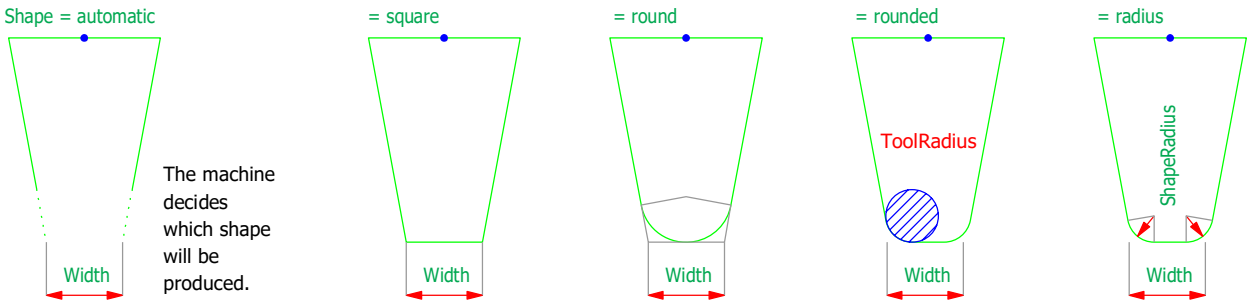




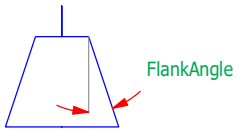
Parameters DovetailTenon

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	50.0	-50000.0	50000.0
StartDepth	WidthNType	50.0	-50000.0	50000.0
Angle	AngleType	90.0	0.1	179.9
Inclination	AngleType	90.0	0.1	179.9
Rotation	AngleType	90.0	0.1	179.9
LengthLimitedTop	BooleanType	yes	no	yes
LengthLimitedBottom	BooleanType	yes	no	yes
Length	WidthType	80.0	0.0	50000.0
Width	LengthSType	40.0	0.0	1000.0
Height	LengthSType	28.0	0.0	1000.0
ConeAngle	double		0.0	30.0
UseFlankAngle	BooleanType	no	no	yes
FlankAngle	double	15.0	5.0	35.0
Shape	TenonShapeType	automatic		
ShapeRadius	LengthSType	20.0	0.0	1000.0



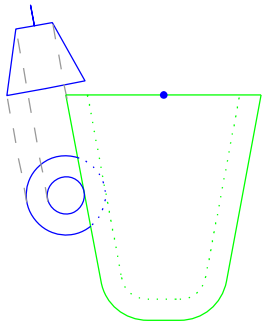


The machine decides which shape will be produced.

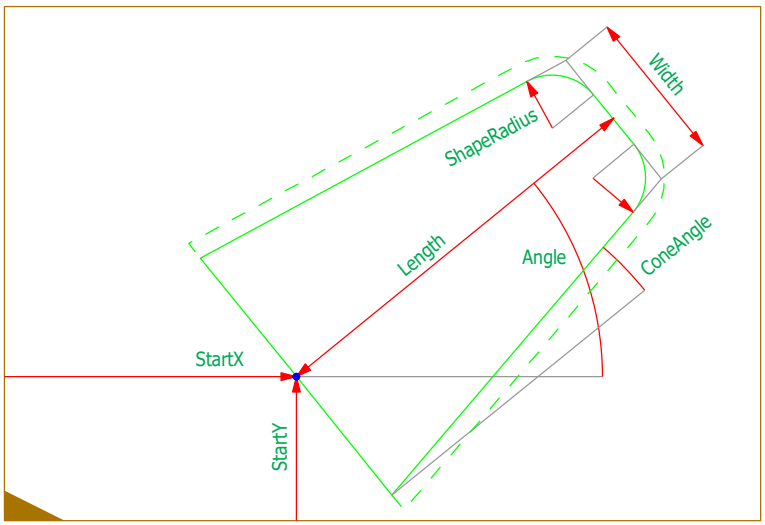


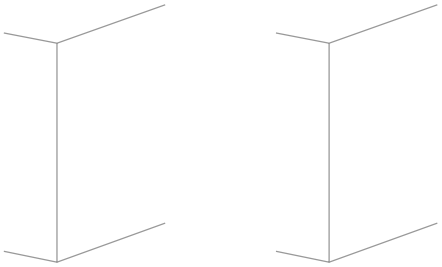
UseFlankAngle = no:
Shape of dovetail must be done with FlankAngle of the tool from machine.

UseFlankAngle = yes:
Shape of dovetail must be done with the parameter FlankAngle



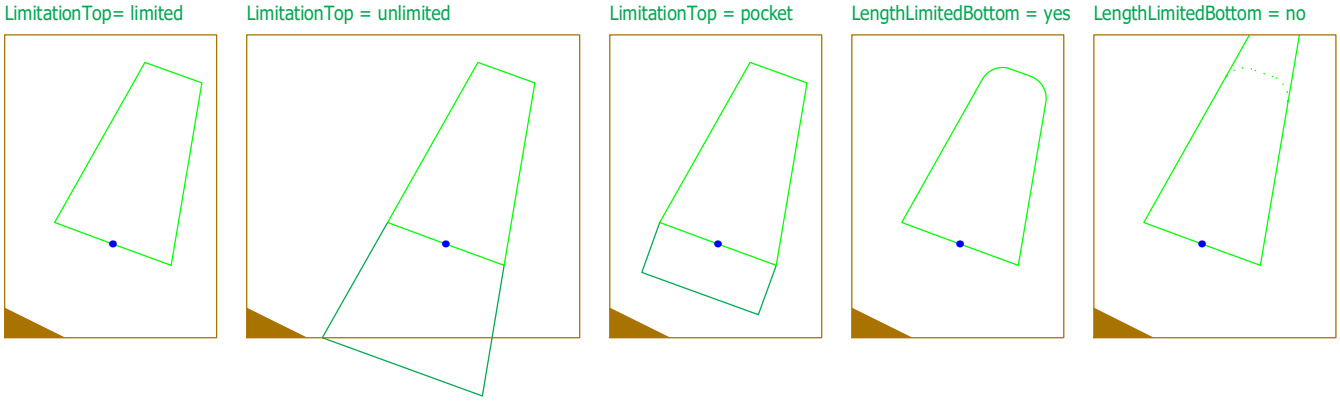
DovetailMortise

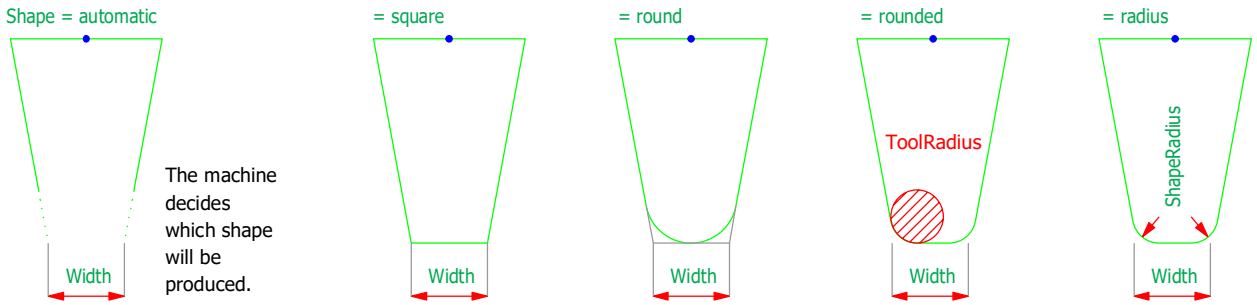




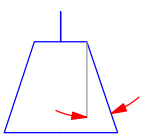
Parameters DovetailMortise

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	50.0	-50000.0	50000.0
StartDepth	WidthType	0.0	0.0	50000.0
Angle	Angle2NType	0.0	-180.0	180.0
Inclination	AngleType	90.0	0.1	179.9
Slope	AngleType	90.0	0.1	179.9
LimitationTop	LimitationTopType	limited		
LengthLimitedBottom	BooleanType	yes	no	yes
Length	WidthType	80.0	0.0	50000.0
Width	LengthSType	40.0	0.0	1000.0
Depth	LengthSType	28.0	0.0	1000.0
ConeAngle	double		0.0	30.0
UseFlankAngle	BooleanType	no	no	yes
FlankAngle	double	15.0	5.0	35.0
Shape	TenonShapeType	automatic		
ShapeRadius	LengthSType	20.0	0.0	1000.0



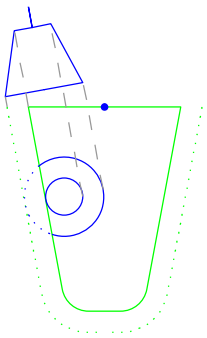


The machine decides which shape will be produced.



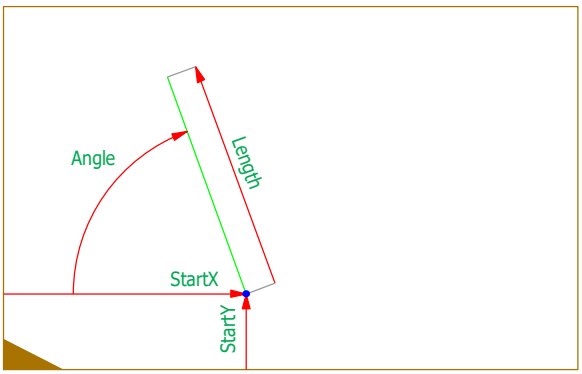
UseFlankAngle = no:
Shape of dovetail must be done with FlankAngle of the tool from machine.

UseFlankAngle = yes:
Shape of dovetail must be done with the parameter FlankAngle

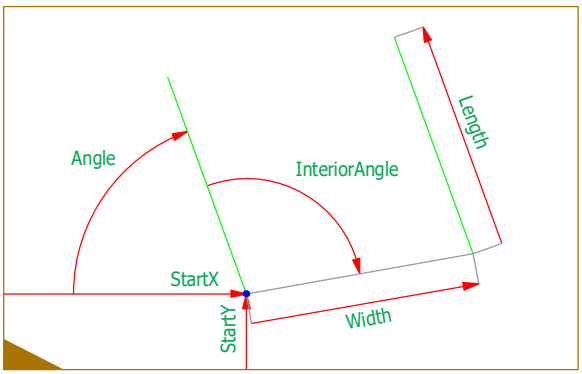


Marking

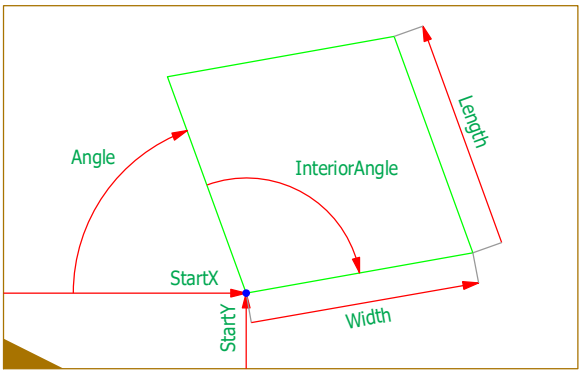
MarkingStyle = single



MarkingStyle = double



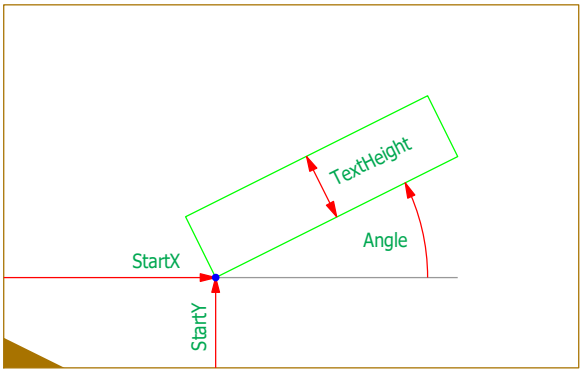
MarkingStyle = square



Parameters Marking

Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
Angle	Angle2NType	0	-180.0	180.0
LengthLimited	BooleanType	no	no	yes
Length	WidthType	20.0	0.0	50000.0
Width	WidthType	100.0	0.0	50000.0
InteriorAngle	AngleType	90.0	0.1	179.9
Style	MarkingStyleType	single	single/double/square	

Text



Text = "ABCD"

AlignmentVertical	AlignmentHorizontal: left	AlignmentHorizontal: center	AlignmentHorizontal: right
bottom	ABCD	ABCD	ABCD TextHeight
center	ABCD	ABCD	ABCD
top	ABCD	ABCD	ABCD

Text = "ABCD\nEF\nGHI"

AlignmentMultiline: left	AlignmentMultiline: center	AlignmentMultiline: right
ABCD EF GHI	ABCD EF GHI	ABCD TextHeight EF GHI

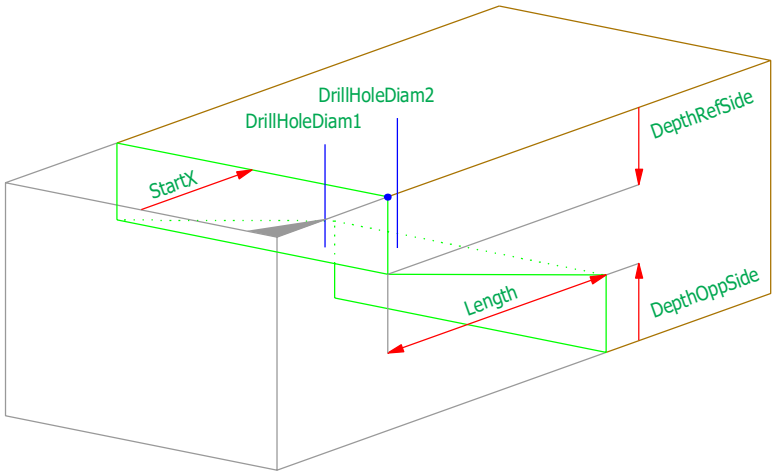
StackedMarking: no	StackedMarking: yes
ABCD	ABCD

Parameters Text

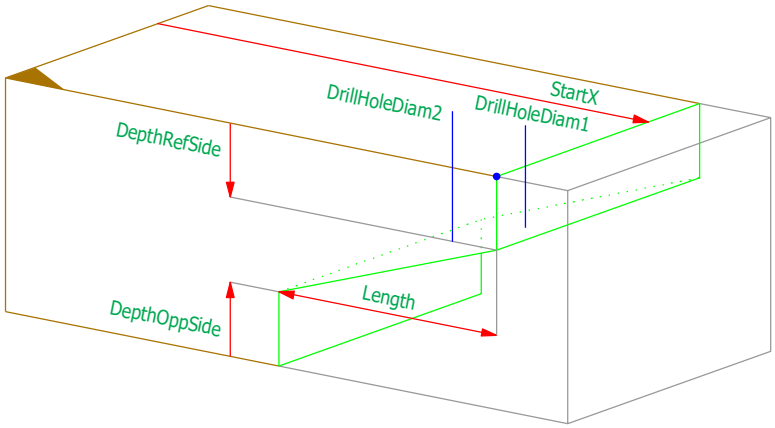
Name	Type	Default	Min	Max
StartX	LengthPosType	0	-100000	100000
StartY	WidthNType	0	-50000	50000
Angle	Angle2NType	0	-180	180
AlignmentVertical	AlignmentVerticalType	bottom		
AlignmentHorizontal	AlignmentHorizontalType	left		
AlignmentMultiline	AlignmentHorizontalType	left		
StackedMarking	BooleanType	no	no	yes
TextHeightAuto	BooleanType	yes	no	yes
TextHeight	WidthType	20	0	50000
Text	xs:string			

SimpleScarf

Orientation = start



Orientation = end

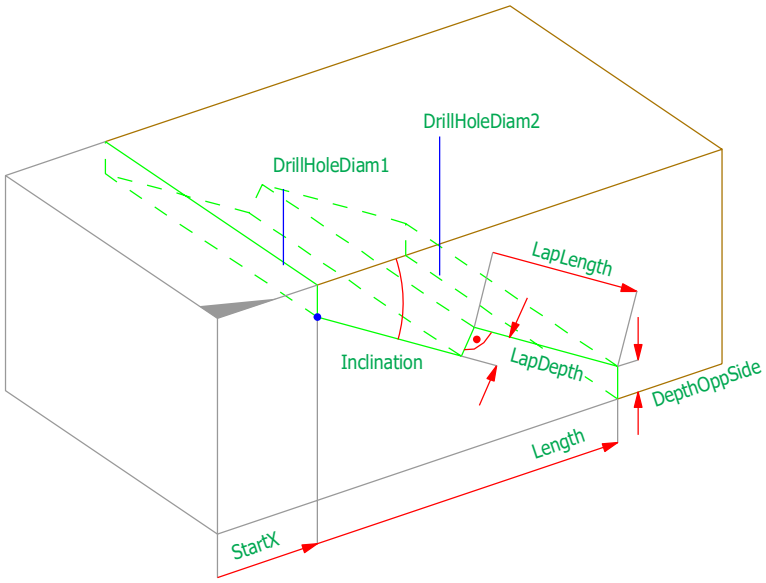


Parameters SimpleScarf

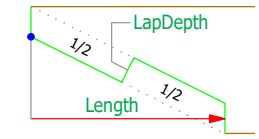
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Length	WidthType	200.0	0.0	50000.0
DepthRefSide	WidthType	20.0	0.0	50000.0
DepthOppSide	WidthType	20.0	0.0	50000.0
NumDrillHole	byte	0	0	2
DrillHoleDiam1	LengthSType	20.0	0.0	1000.0
DrillHoleDiam2	LengthSType	20.0	0.0	1000.0

ScarfJoint

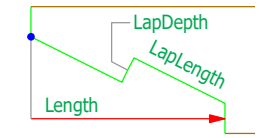
Orientation = start



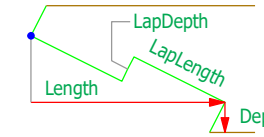
ScarfShape = classic



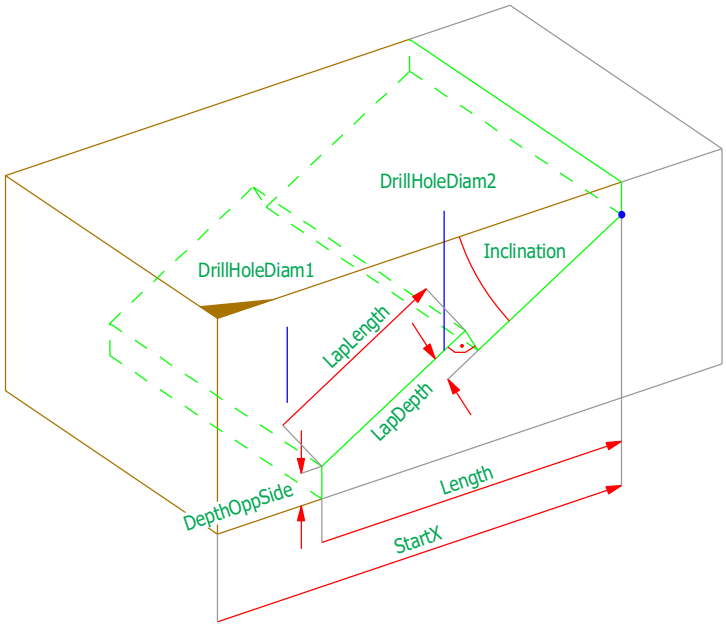
ScarfShape = refside



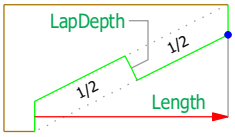
ScarfShape = baseside



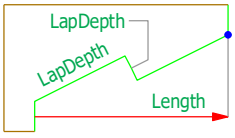
Orientation = end



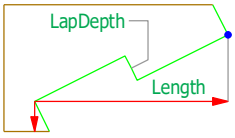
ScarfShape = classic



ScarfShape = refside



ScarfShape = baseside



DepthOppSide

Parameters ScarfJoint

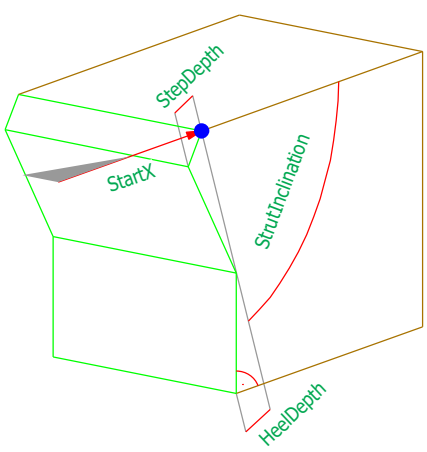
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Inclination	Inclination3Type		0.0	90.0
LapLength	WidthType	100.0	0.0	50000.0
LapDepth	WidthType	20.0	0.0	50000.0
Length	WidthType	200.0	0.0	50000.0
DepthOppSide	WidthType	20.0	0.0	50000.0
ScarfShape	ScarfShapeType	refside		
NumDrillHole	byte	0	0	2
DrillHoleDiam1	LengthSType	20.0	0.0	1000.0
DrillHoleDiam2	LengthSType	20.0	0.0	1000.0

StepJoint

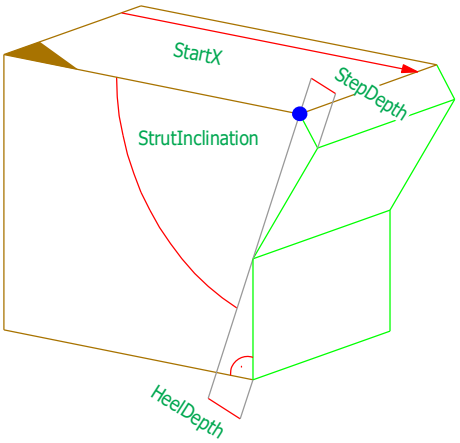
Orientation = start

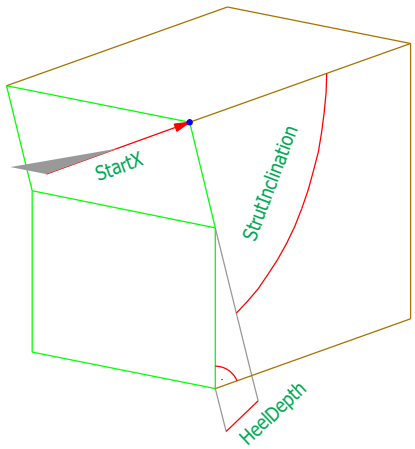
Orientation = end

Tenon = no

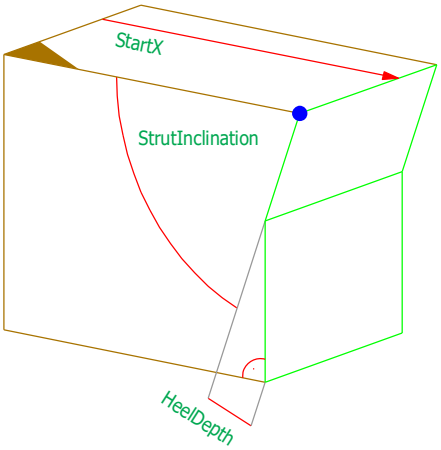


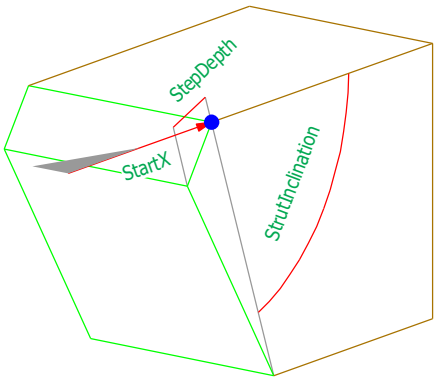
StepShape = double



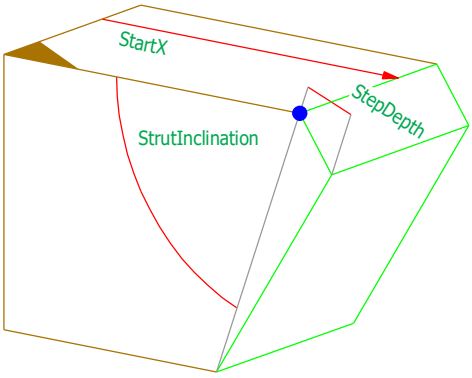


StepShape = step

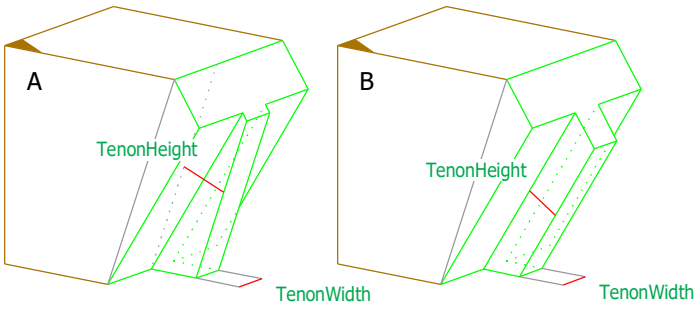




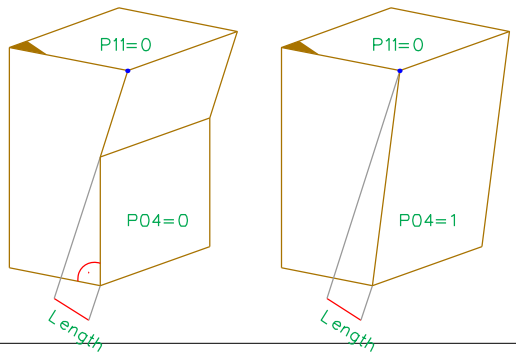
StepShape = heel



Tenon = yes

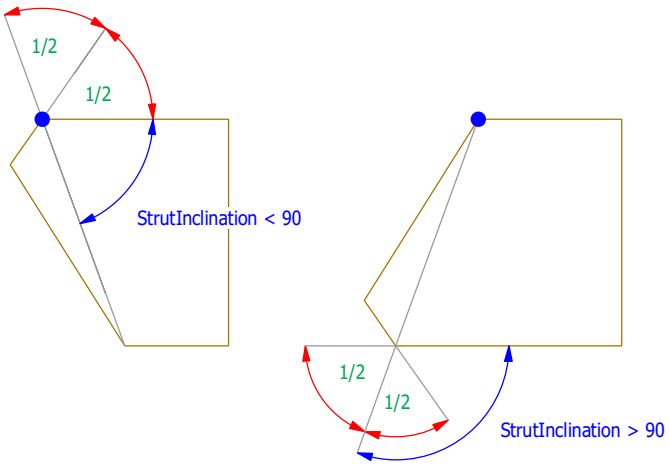


Which style (A or B) is used depends on the machine

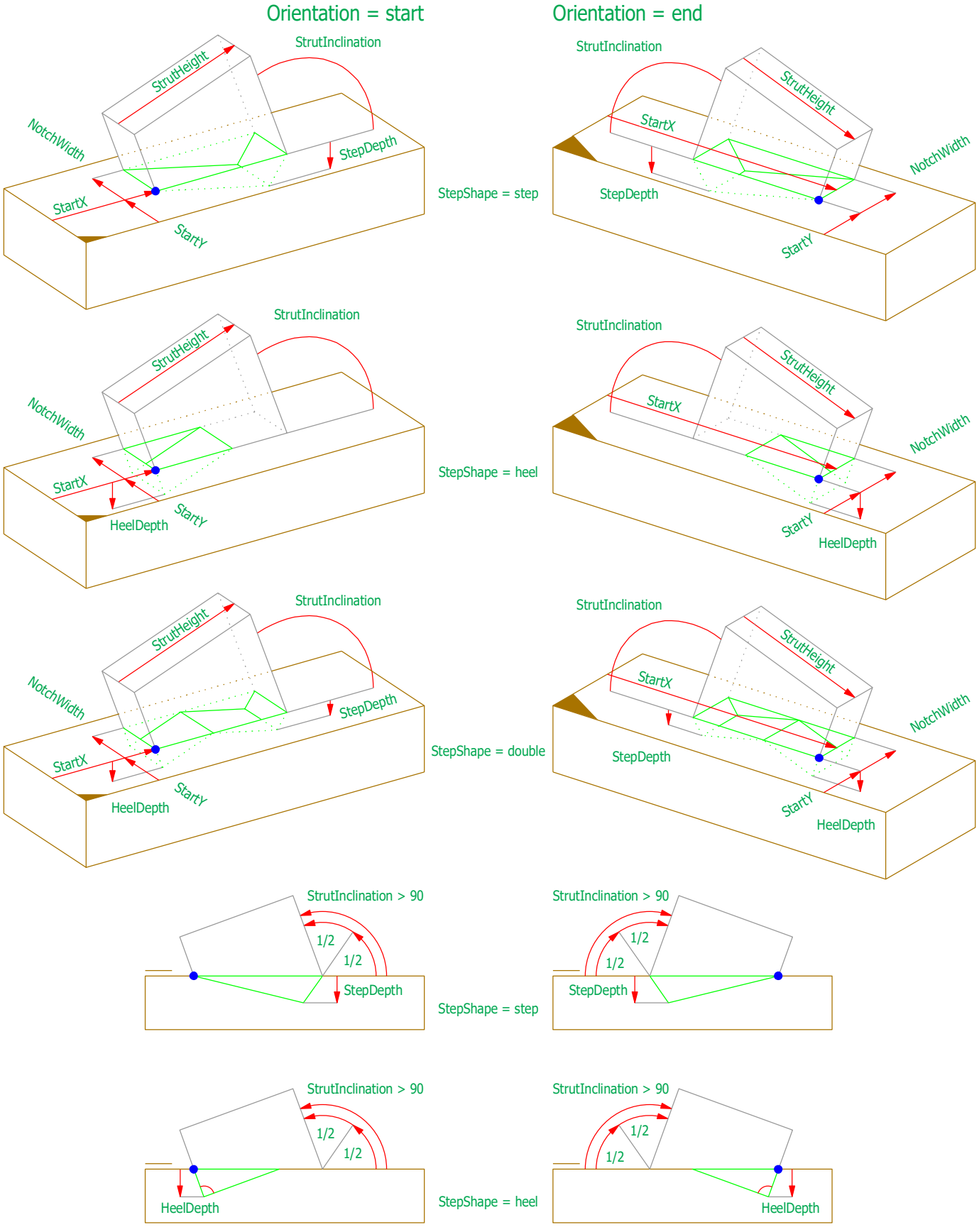


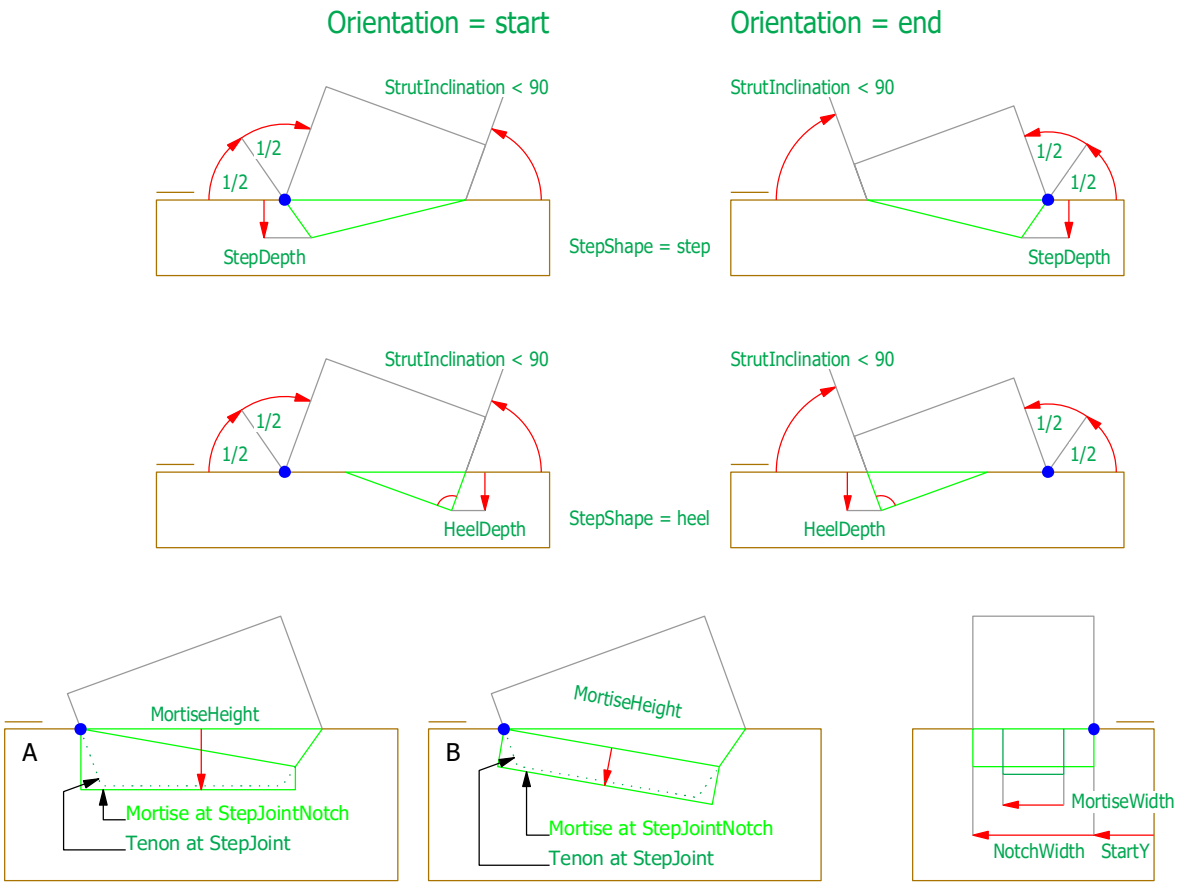
Parameters StepJoint

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StrutInclination	AngleType		0.1	179.9
StepDepth	WidthType	20.0	0.0	50000.0
HeelDepth	WidthType	20.0	0.0	50000.0
StepShape	StepShapeType	double		
Tenon	BooleanType	no	no	yes
TenonWidth	LengthSType	40.0	0.0	1000.0
TenonHeight	LengthSType	40.0	0.0	1000.0



StepJointNotch

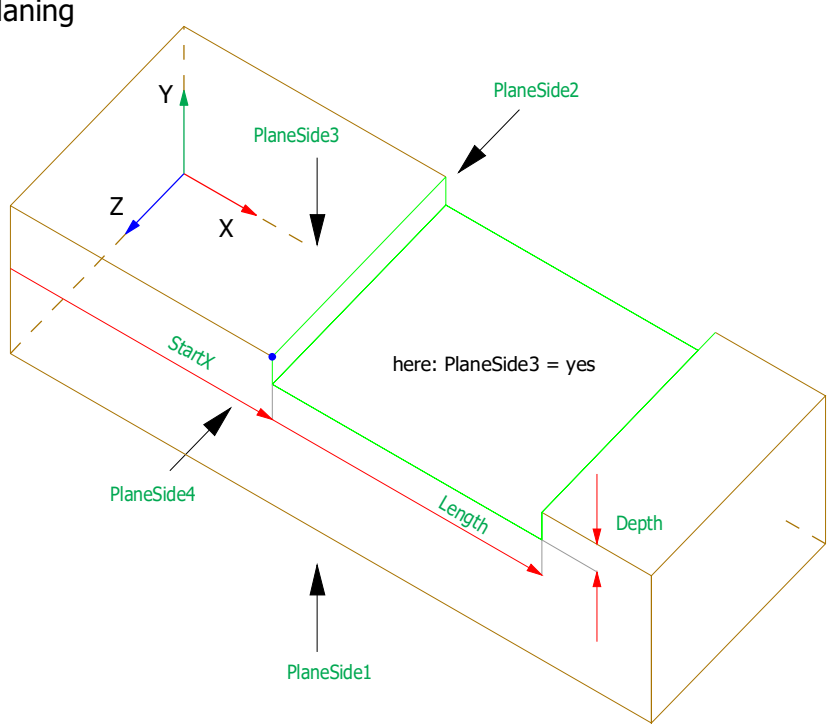


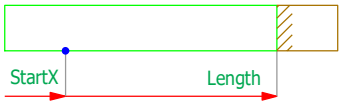
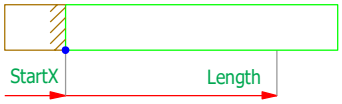


Parameters StepJointNotch

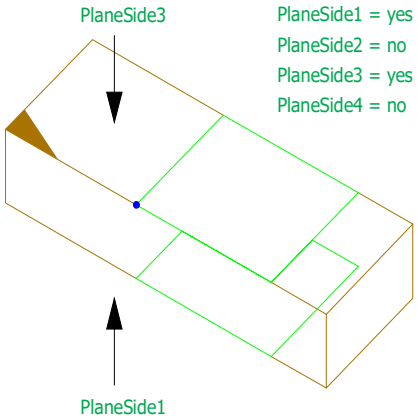
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	0.0	-50000.0	50000.0
StrutInclination	AngleType		0.1	179.9
NotchLimited	BooleanType	no	no	yes
NotchWidth	WidthType	20.0	0.0	50000.0
StepDepth	WidthType	20.0	0.0	50000.0
HeelDepth	WidthType	20.0	0.0	50000.0
StrutHeight	WidthType	20.0	0.0	50000.0
StepShape	StepShapeType	double		
Mortise	BooleanType	no	no	yes
MortiseWidth	LengthSType	40.0	0.0	1000.0
MortiseHeight	LengthSType	40.0	0.0	1000.0

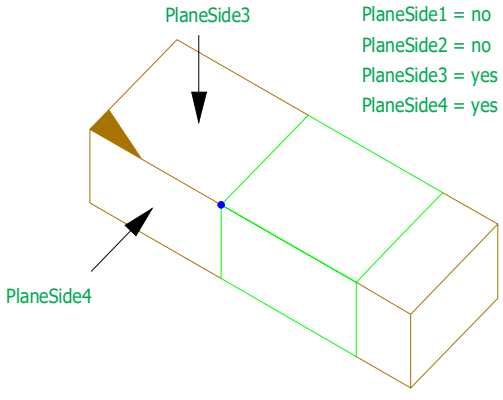
Planing



StartLimited	EndLimited	
yes	yes	
no	yes	
yes	no	
no	no	

Examples



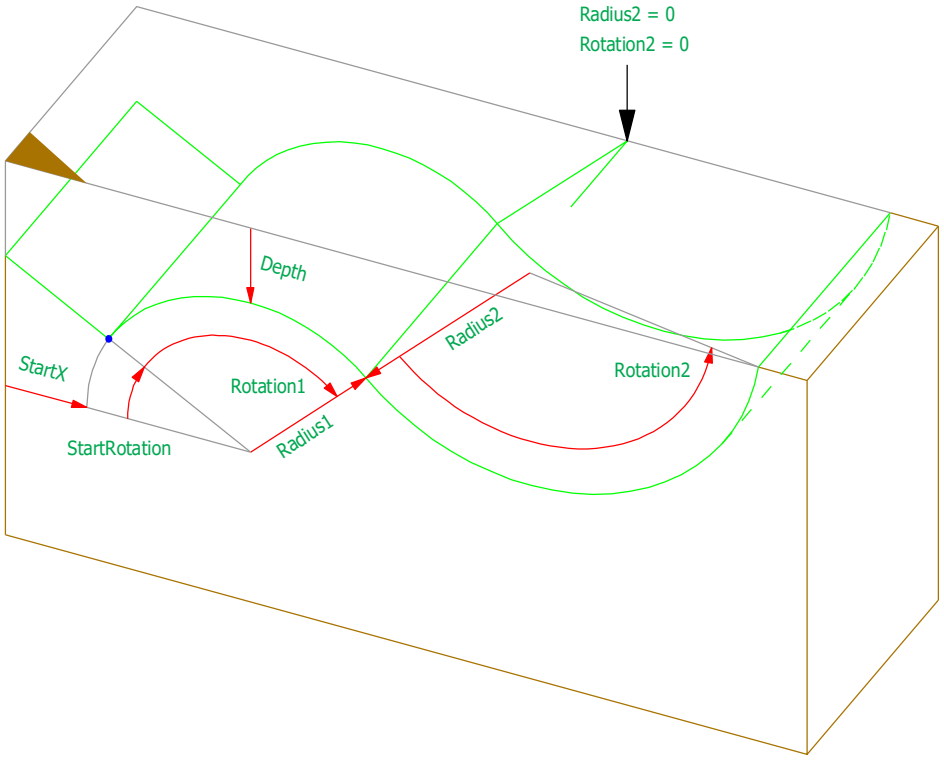


Parameters Planing

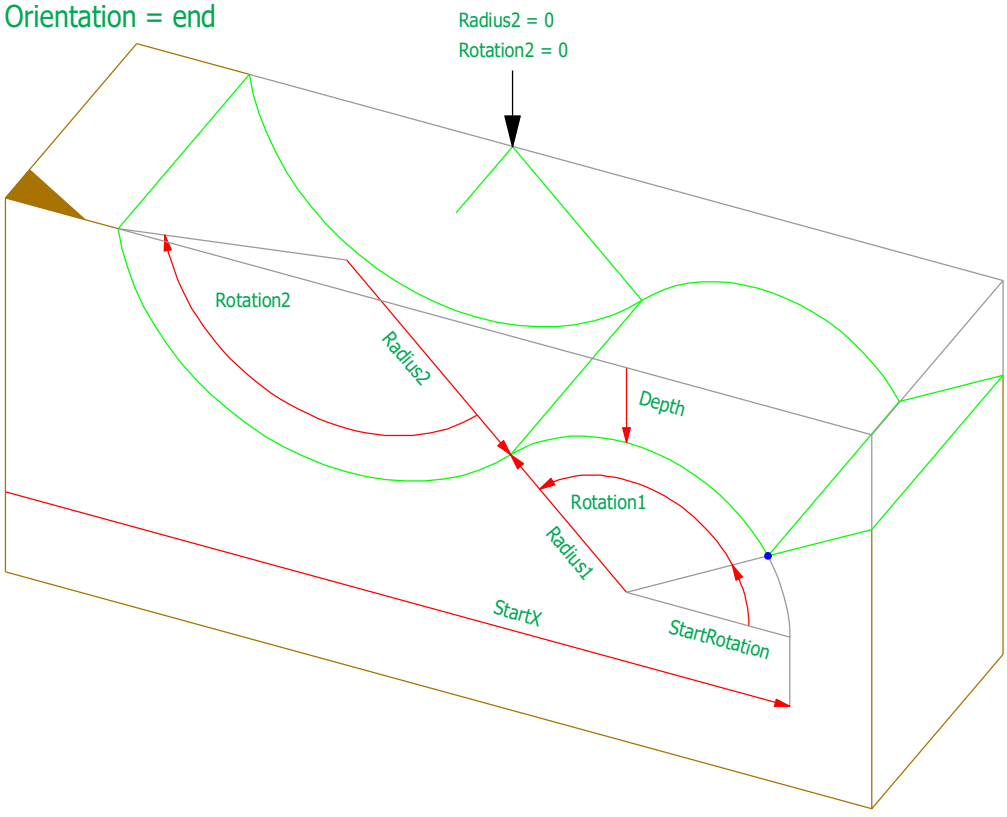
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
Length	LengthType	0.0	0.0	100000.0
Depth	double	1.0	0.0	50.0
StartLimited	BooleanType	no	no	yes
EndLimited	BooleanType	no	no	yes
PlaneSide1	BooleanType	yes	no	yes
PlaneSide2	BooleanType	yes	no	yes
PlaneSide3	BooleanType	yes	no	yes
PlaneSide4	BooleanType	yes	no	yes

ProfileFront

Orientation = start



Orientation = end

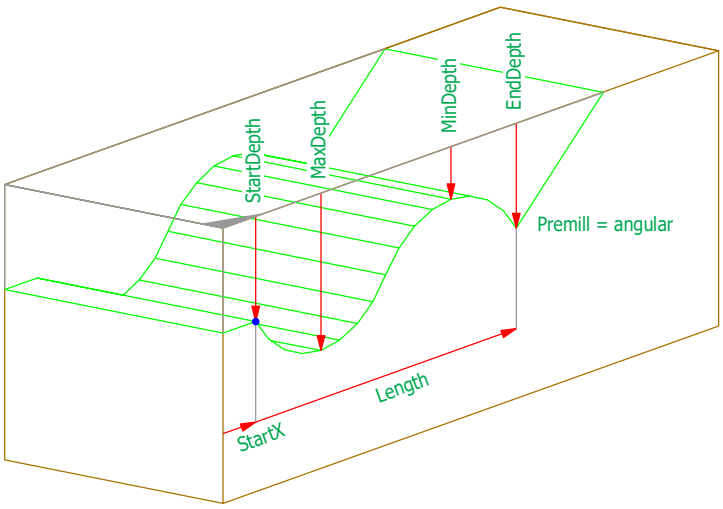


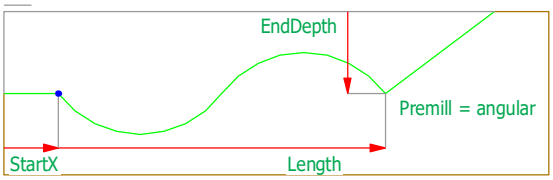
Parameters ProfileFront

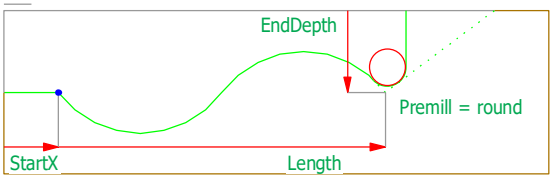
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
ArcShape	ArcShapeType	convex		
Depth	LengthSType	0.0	0.0	1000.0
StartRotation	Inclination2Type	0.0	-90.0	90.0
Rotation1	Angle2Type	90.0	0.0	180.0
Radius1	LengthSType	250.0	0.0	1000.0
Rotation2	Angle2Type	90.0	0.0	180.0
Radius2	LengthSType	250.0	0.0	1000.0

ProfileCambered

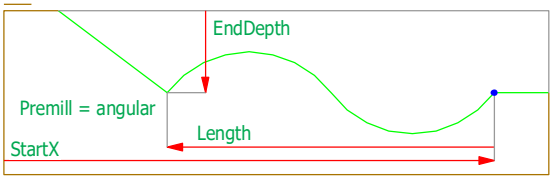
Orientation = start

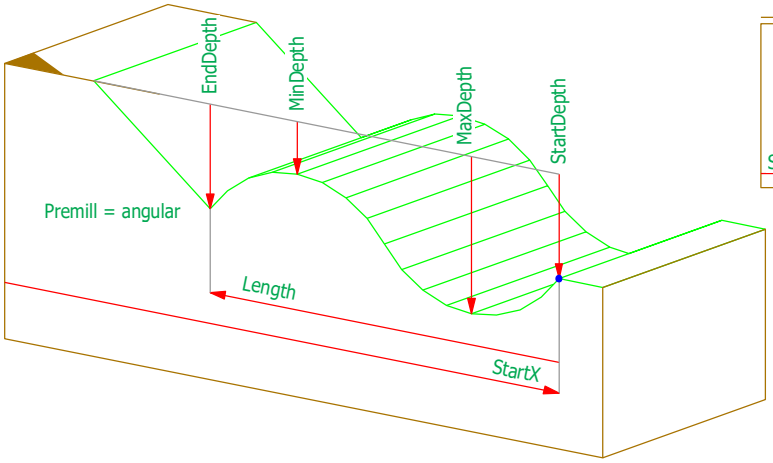


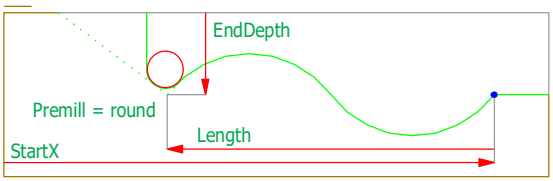




Orientation = end



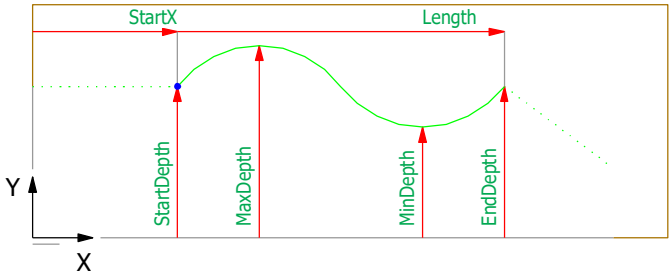




The curve is defined by a cubic polynom.

$Y = Ax^3 + Bx^2 + Cx + D$

The coefficients A, B, C and D must be calculated on the machine side.

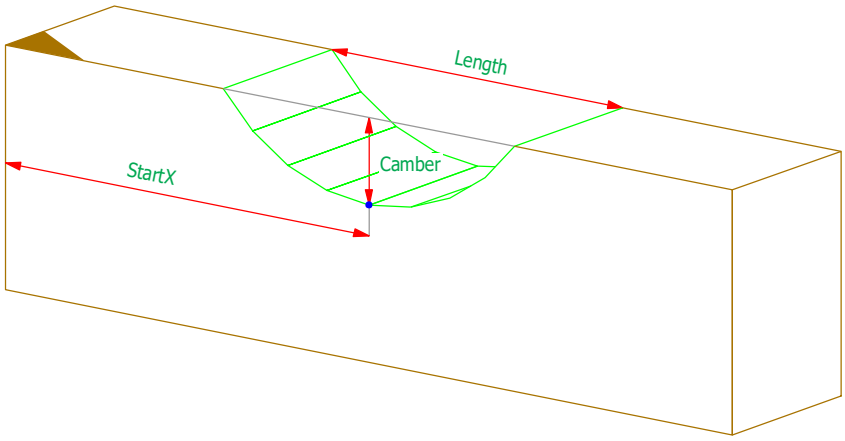


Parameters ProfileCambered

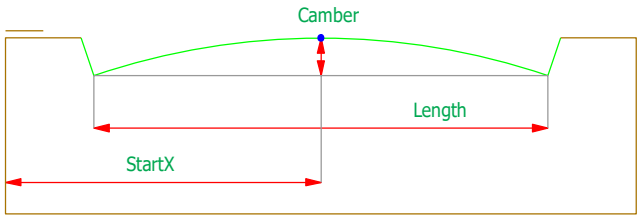
Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Length	LengthType	0.0	0.0	100000.0
StartDepth	LengthSType	40.0	0.0	1000.0
MaxDepth	LengthSType	60.0	0.0	1000.0
MinDepth	LengthSType	10.0	0.0	1000.0
EndDepth	LengthSType	40.0	0.0	1000.0
Premill	PremillType	angular	round/angular	

RoundArch

ArcShape = concave



AcrShape = convex

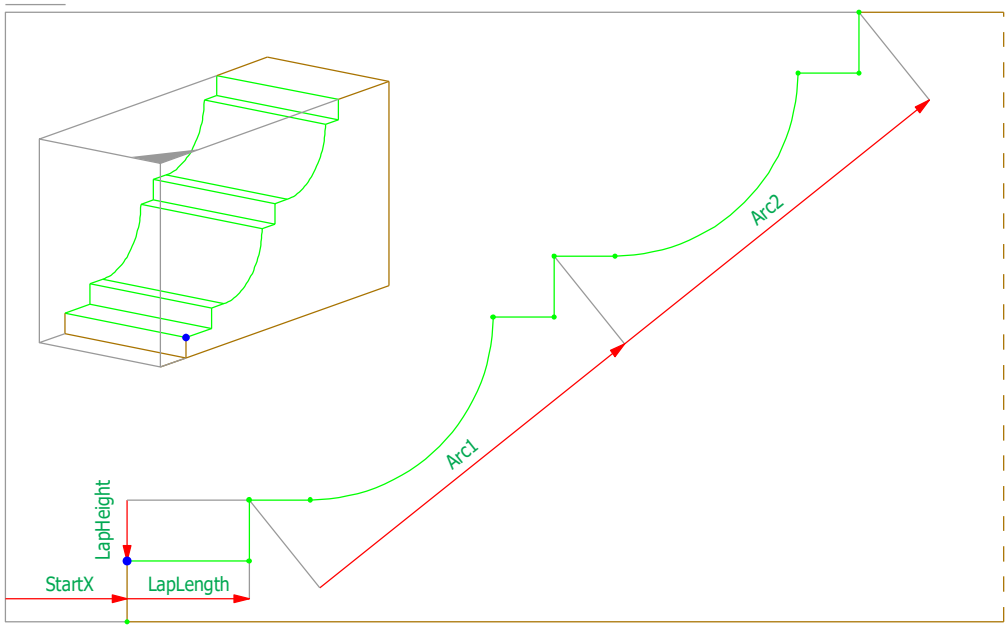


Parameters RoundArch

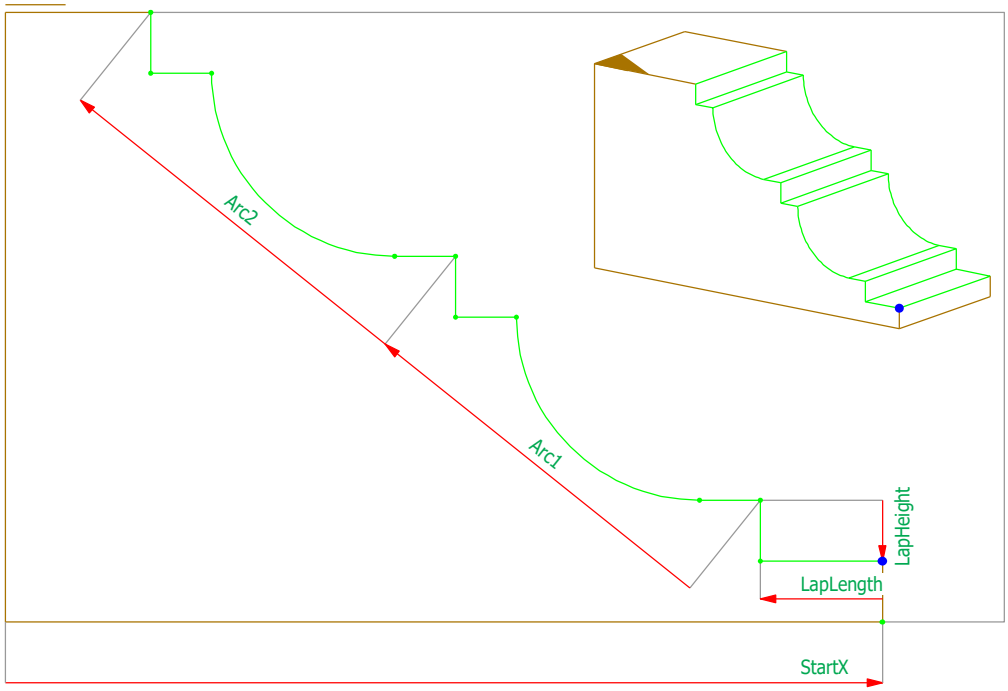
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
Length	LengthType	500.0	0.0	100000.0
Camber	LengthSType	30.0	0.0	1000.0
ArcShape	ArcShapeType	concave		
Premill	PremillType	angular	round/angular	

ProfileHead

Orientation = start



Orientation = end



Parameters ProfileHead

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
Arc2	ProfileArcType			
LapLength	LengthSType	10.0	0.0	1000.0
LapHeight	LengthSType	10.0	0.0	1000.0

ProfileArcType

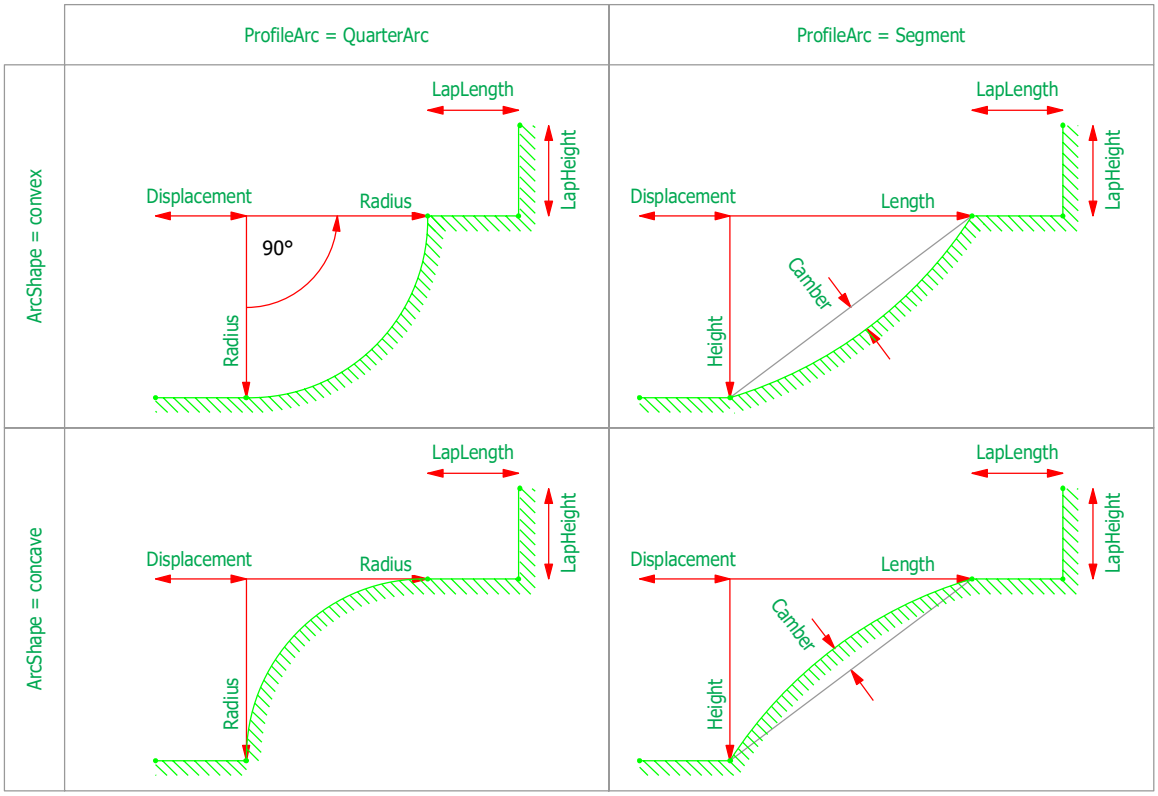
ArcShape	ArcShapeType	QuarterArc	QuarterArc/Segment	
LapLength	LengthSType	convex	convex/concave	
LapHeight	LengthSType	10.0	0.0	1000.0
Displacement	LengthSType	10.0	0.0	1000.0
		10.0	0.0	1000.0

QuarterArc

Radius	LengthSType	50.0	0.0	1000.0

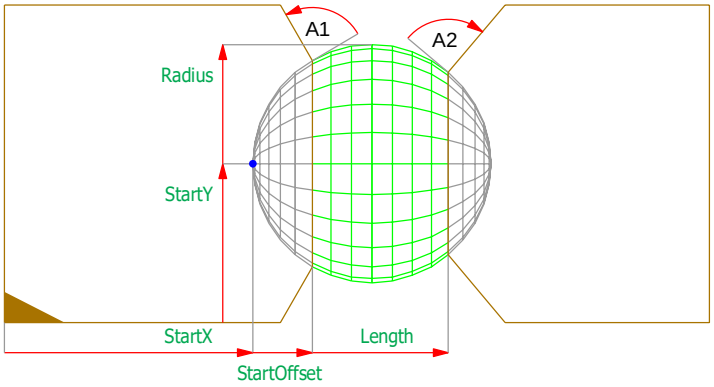
Segment

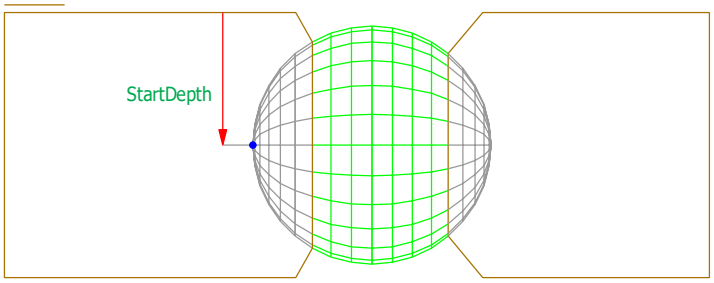
Length	LengthSType	50.0	0.0	1000.0
Height	LengthSType	50.0	0.0	1000.0
Camber	LengthSType	50.0	0.0	1000.0



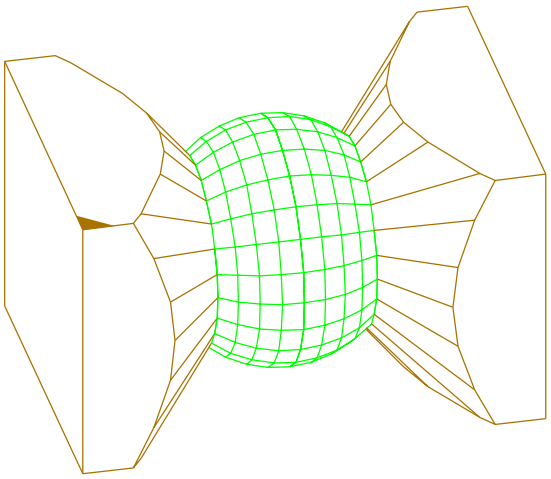
Sphere

Orientation = start

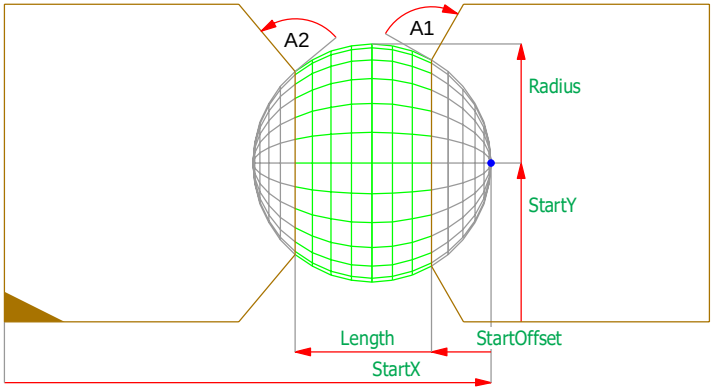


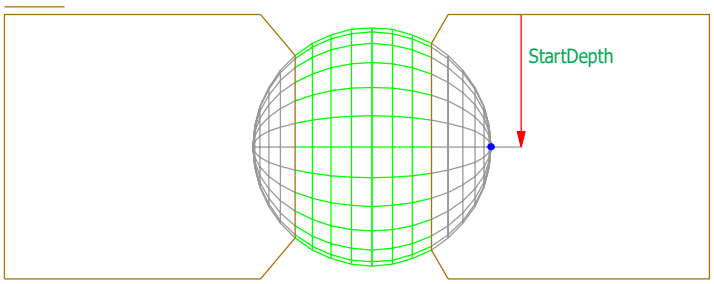


A1 and A2 are defined on the machine side. They depend on the capabilities of the machine.
In this pictures A1 and A2 are 90° .



Orientation = end

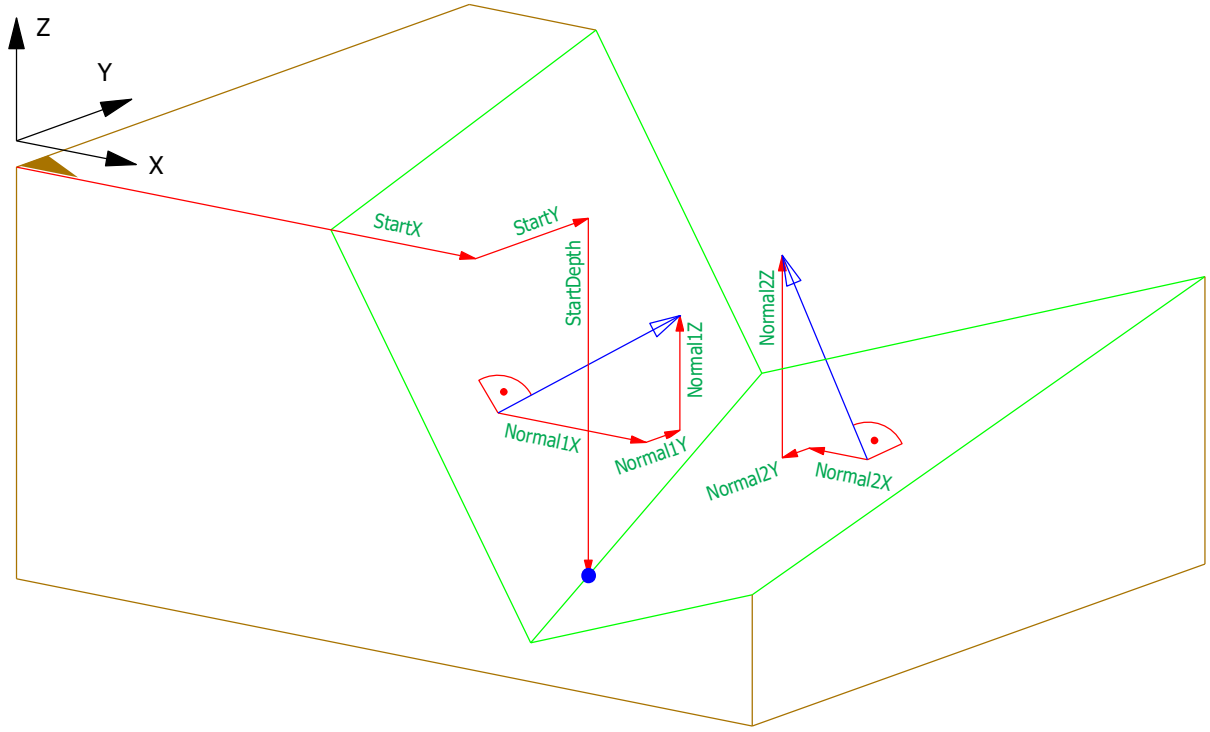




Parameters Sphere

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	60.0	-50000.0	50000.0
StartDepth	WidthNType	60.0	-50000.0	50000.0
Length	WidthType	50.0	0.0	50000.0
Radius	WidthType	50.0	0.0	50000.0
StartOffset	WidthType	0.0	0.0	50000.0

TriangleCut



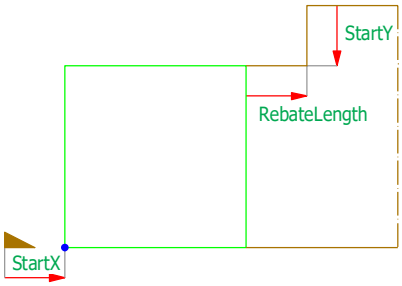
Parameters TriangleCut

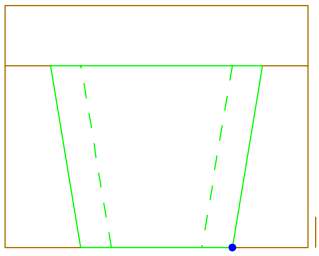
Name	Type	Default	Min	Max
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthNType	60.0	-50000.0	50000.0
StartDepth	WidthNType	60.0	-50000.0	50000.0
Normal1X	WidthNType	1.0	-50000.0	50000.0
Normal1Y	WidthNType	0.0	-50000.0	50000.0
Normal1Z	WidthNType	0.0	-50000.0	50000.0
Normal2X	WidthNType	1.0	-50000.0	50000.0
Normal2Y	WidthNType	0.0	-50000.0	50000.0
Normal2Z	WidthNType	0.0	-50000.0	50000.0

TyroleanDovetail

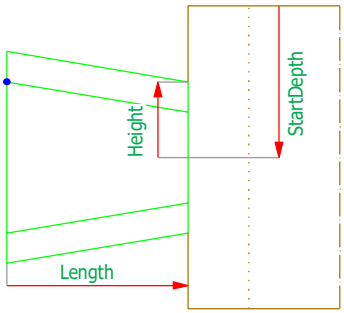
Orientation = start

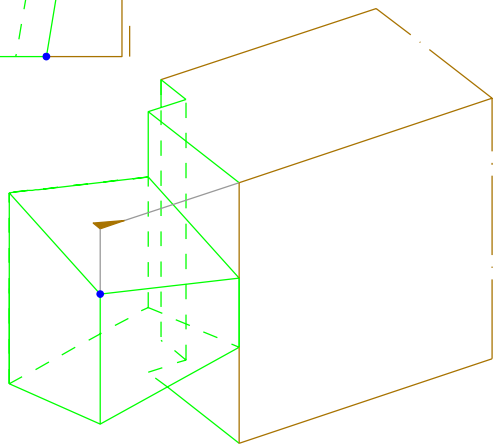
LapPosition = refedge



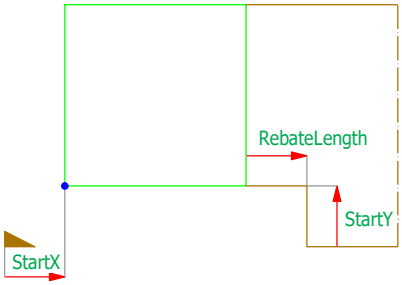


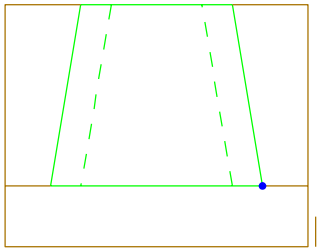
Sideview



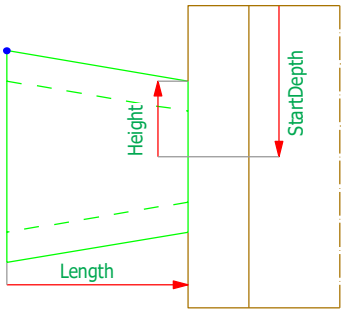


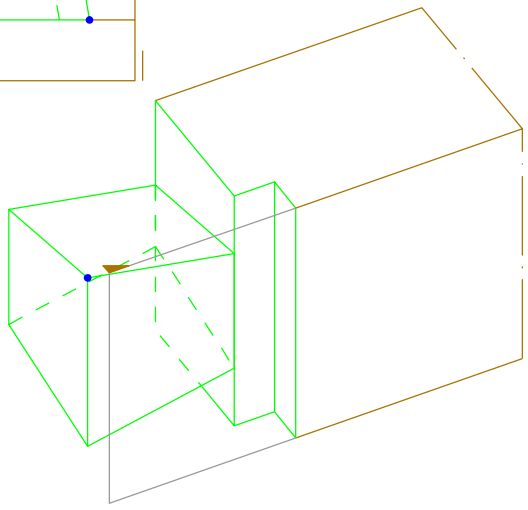
LapPosition = oppedge





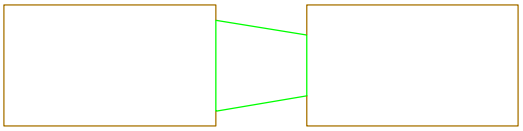
Sideview





CutOff = yes

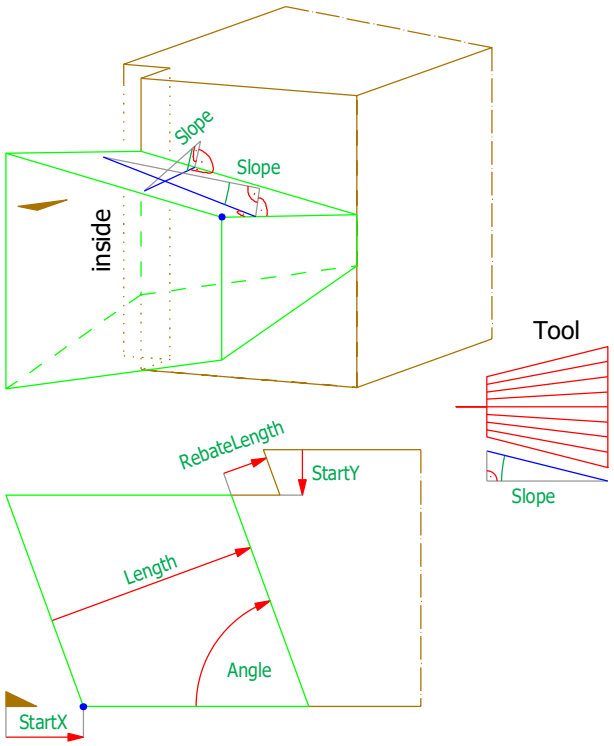
CutOff = no

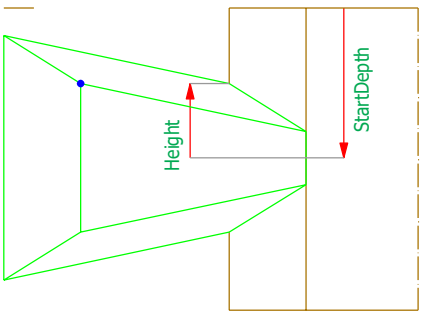


TyroleanDovetail

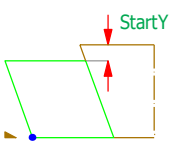
Orientation = start

LapPosition = refedge

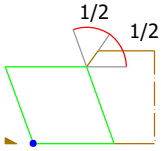




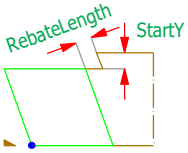
LapExit = none



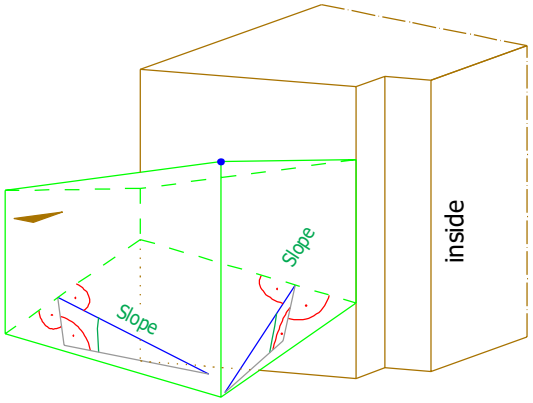
LapExit = mitre

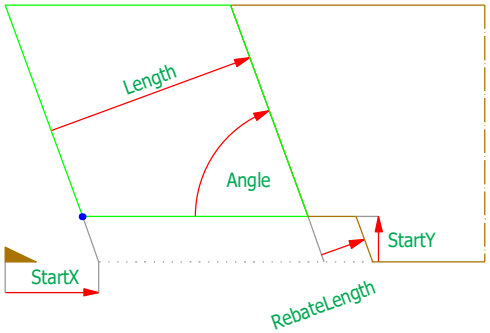


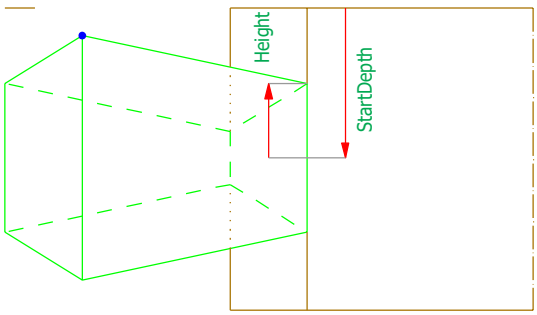
LapExit = rebate



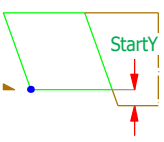
LapPosition = oppedge



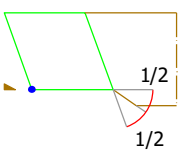




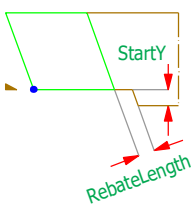
LapExit = none



LapExit = mitre



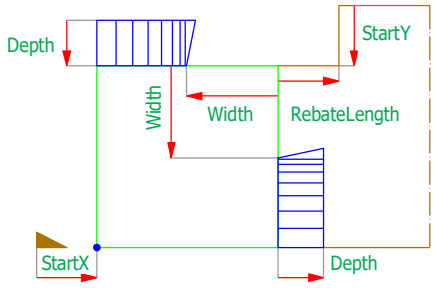
LapExit = rebate

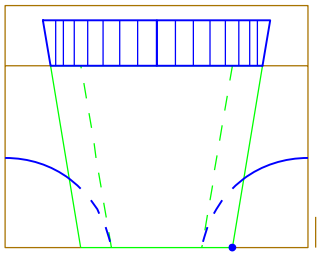


TyroleanDovetail

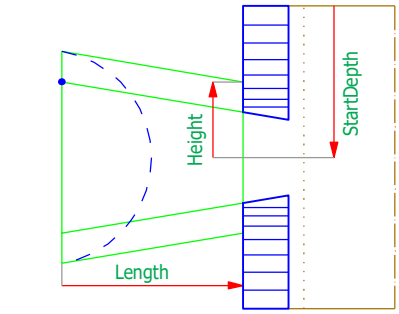
Orientation = start

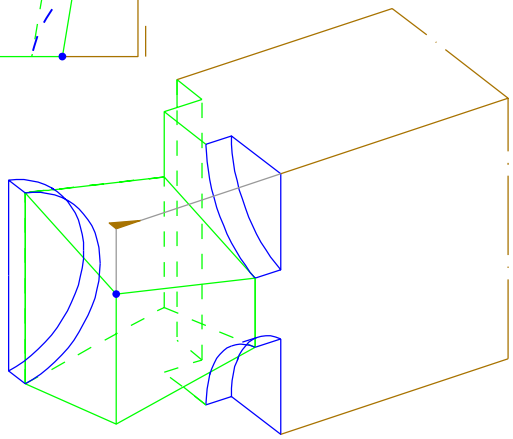
LapPosition = refedge



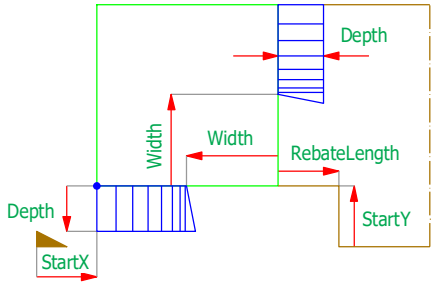


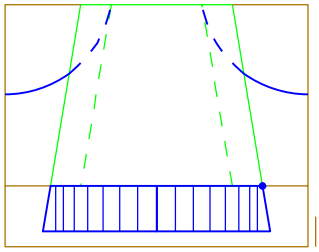
Sideview



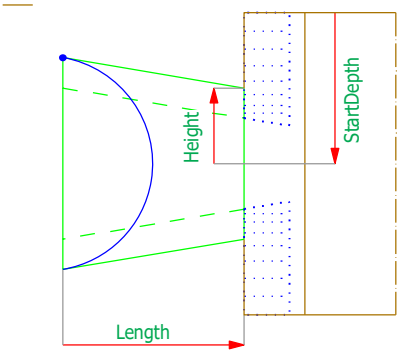


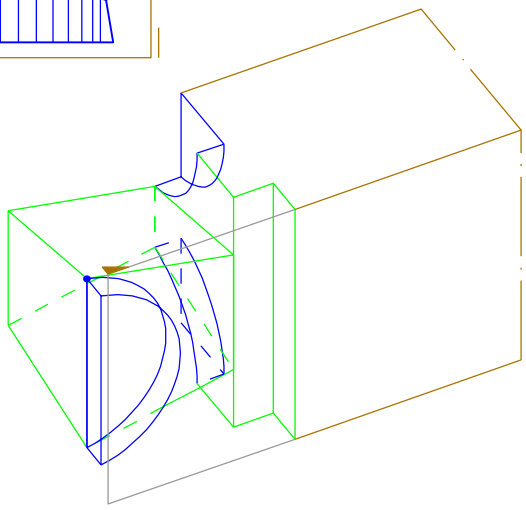
LapPosition = oppedge





Sideview

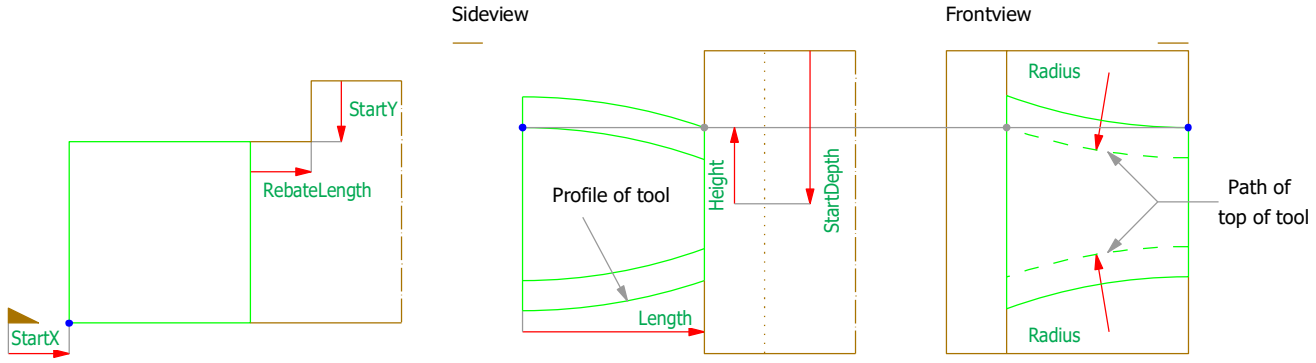




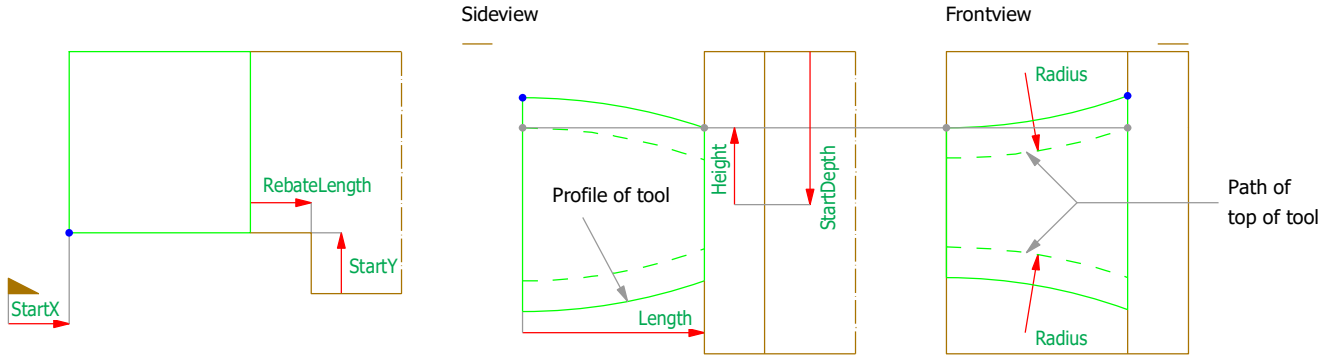
TyroleanDovetail

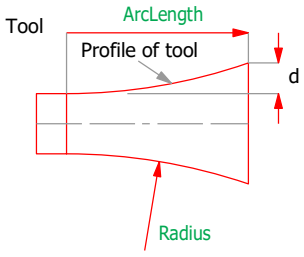
Orientation = start

LapPosition = refedge



LapPosition = oppedge



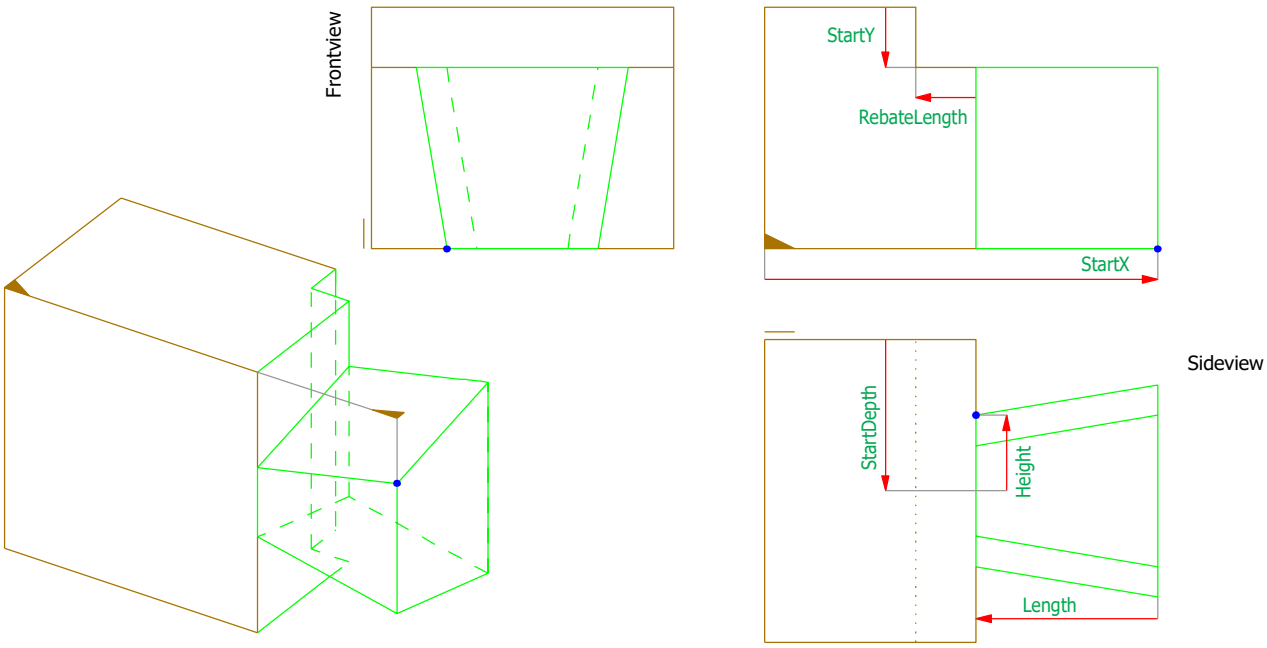


TyroleanDovetail

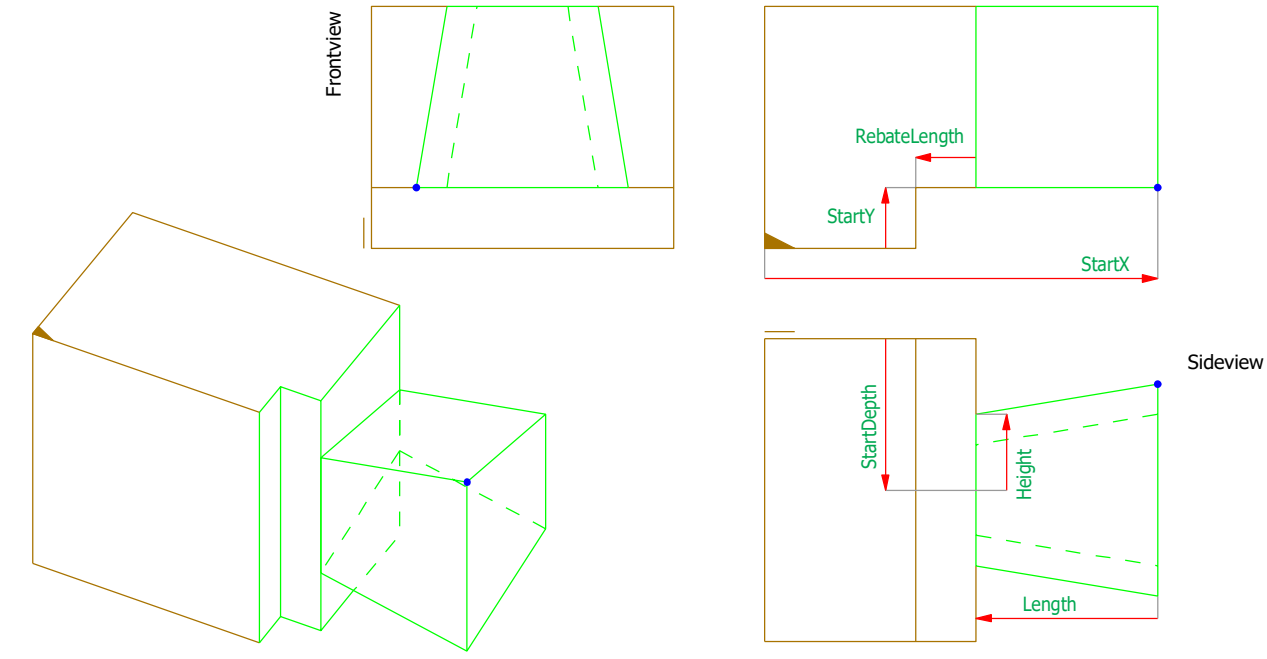
Orientation = end

CutOff = yes

LapPosition = refedge

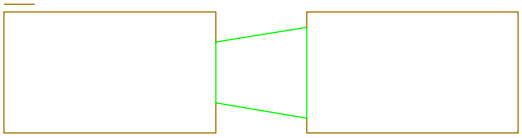


LapPosition = oppedge



CutOff = yes

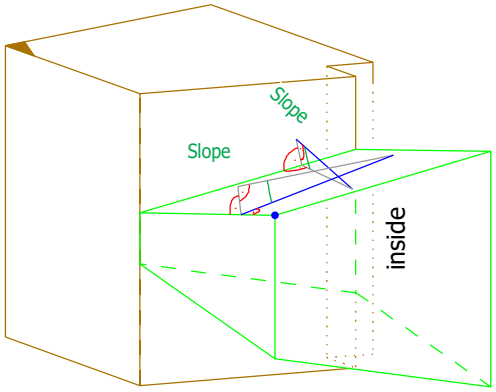
CutOff = no

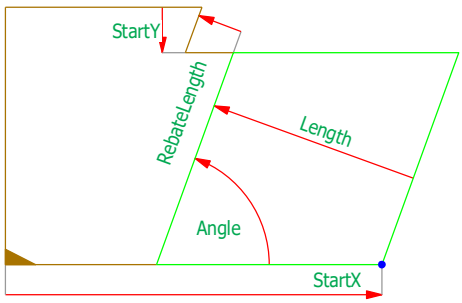


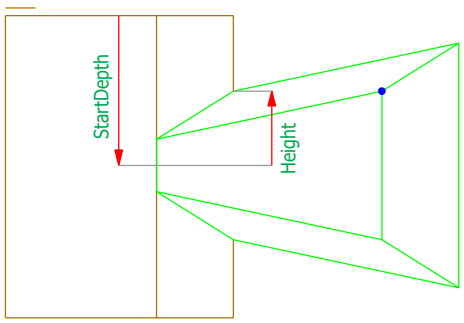
TyroleanDovetail

Orientation = end

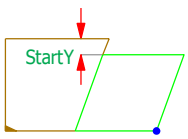
LapPosition = refedge



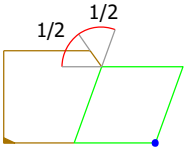




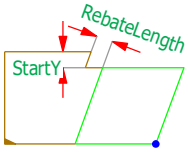
LapExit = none



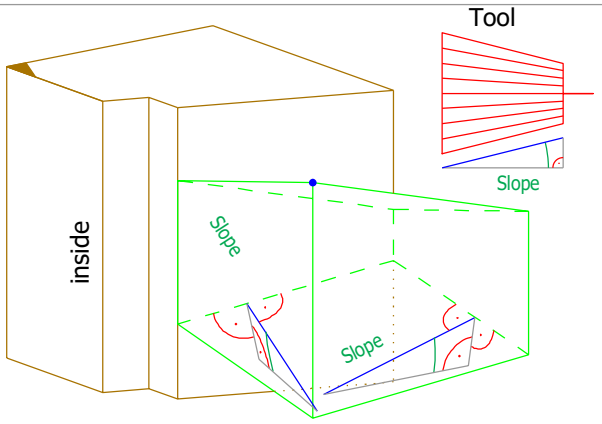
LapExit = mitre

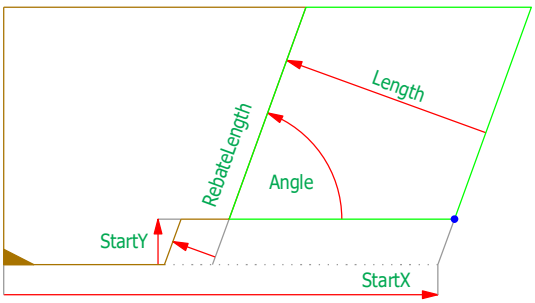


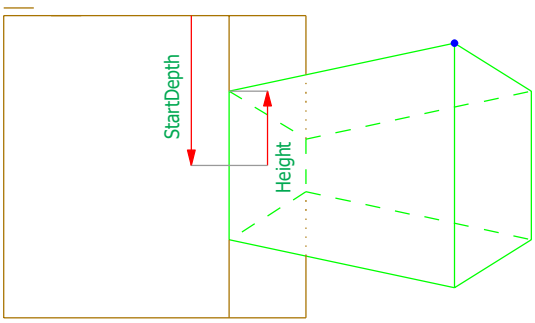
LapExit = rebate



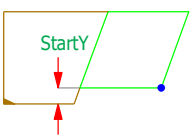
LapPosition = oppedge



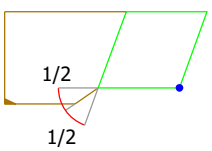




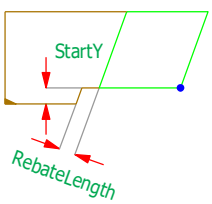
LapExit = none



LapExit = mitre



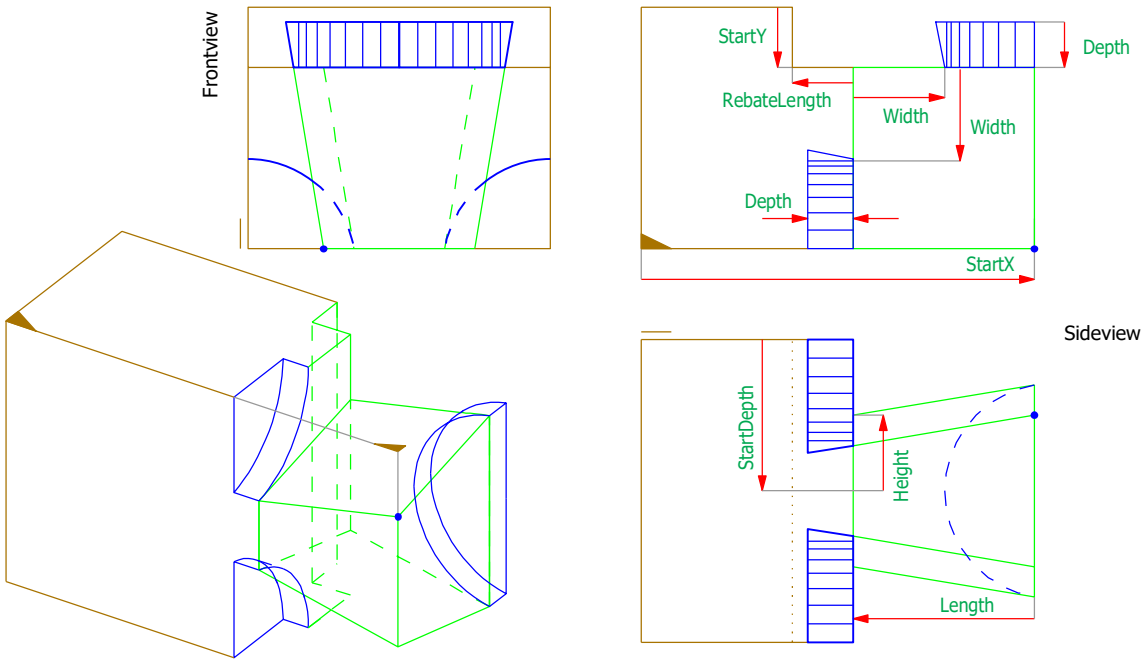
LapExit = rebate



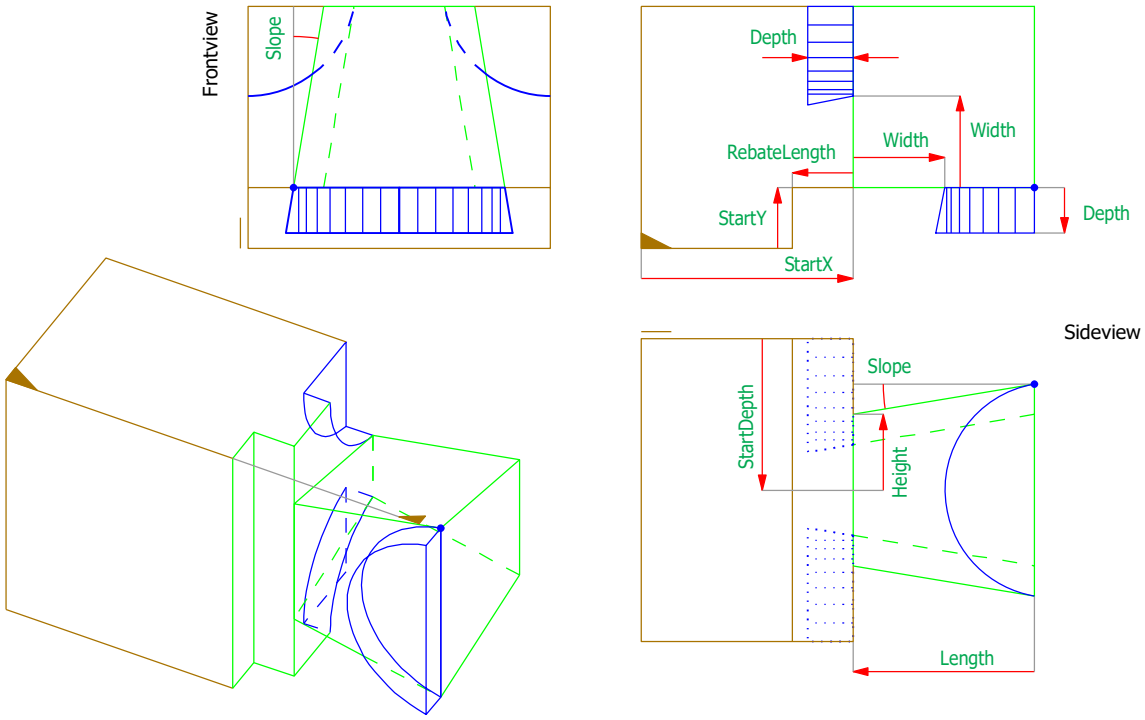
TyroleanDovetail

Orientation = end

LapPosition = refedge



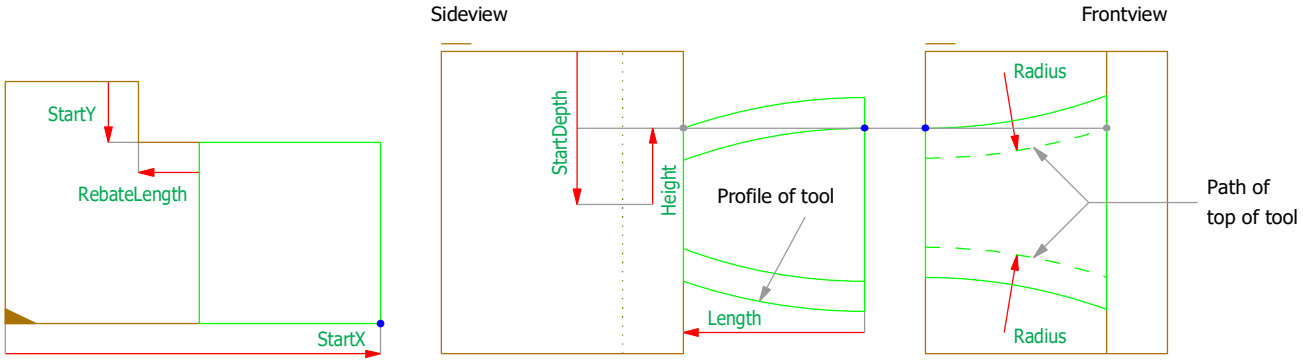
LapPosition = oppedge



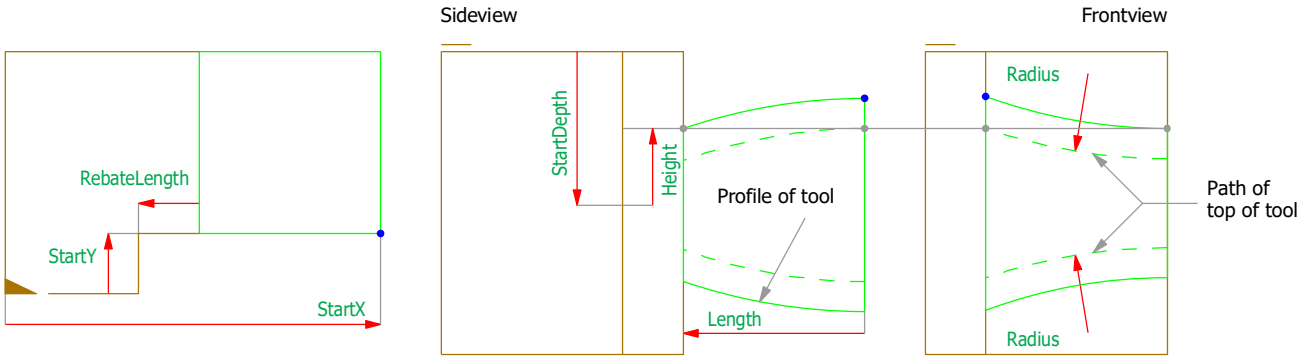
TyroleanDovetail

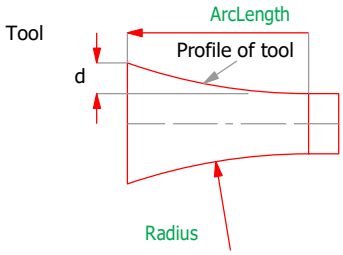
Orientation = end

LapPosition = refedge



LapPosition = oppedge





Tyrolean Dovetail

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
CutOff	BooleanType	no	no	yes
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthType	30.0	0.0	50000.0
StartDepth	WidthNType	50.0	-50000.0	50000.0
Angle	AngleType		0.1	179.9
Slope	double		0.0	45.0
Length	WidthType	150.0	0.0	50000.0
RebateLength	WidthType	10.0	0.0	50000.0
Height	WidthType	60	0.0	50000.0
LapPosition	EdgePositionType	refedge	refedge/oppedge	
LapExit	LapExitType	mitre	none/mitre/rebate	
Shape	TyroleanDovetailShapeType	angular	angular/straight	
ProcessSide	ProcessSideType	both	both/refside/oppside	

Frosch

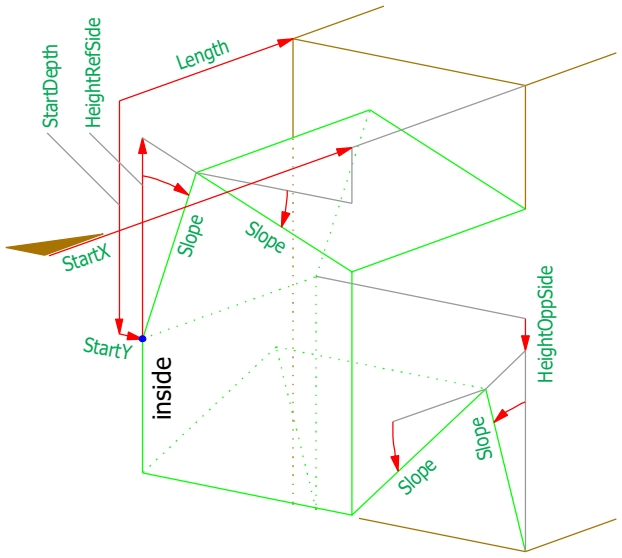
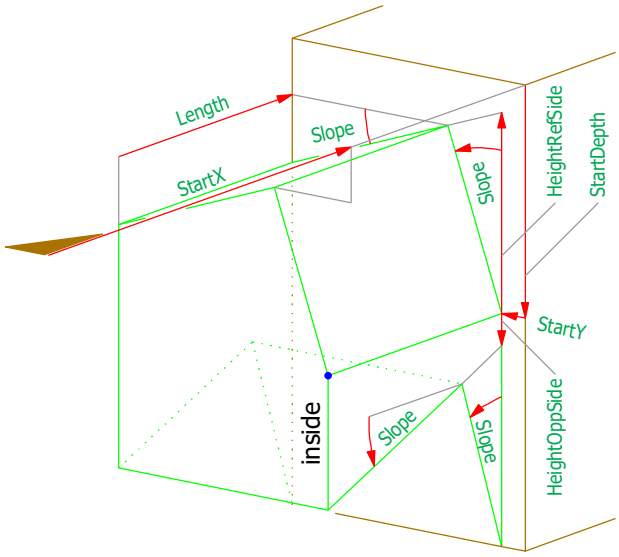
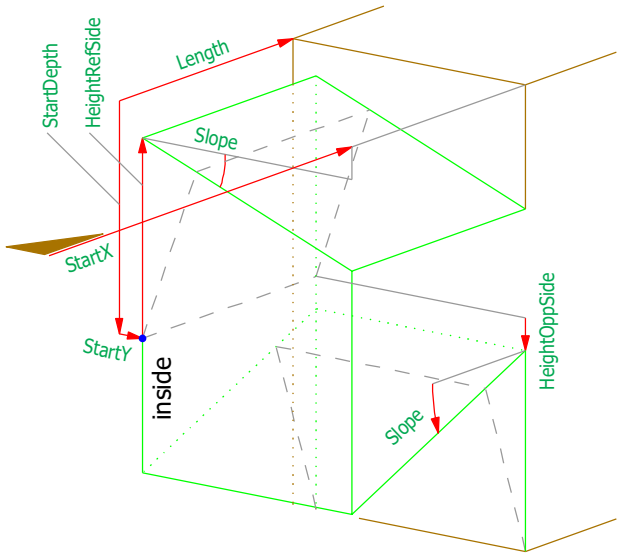
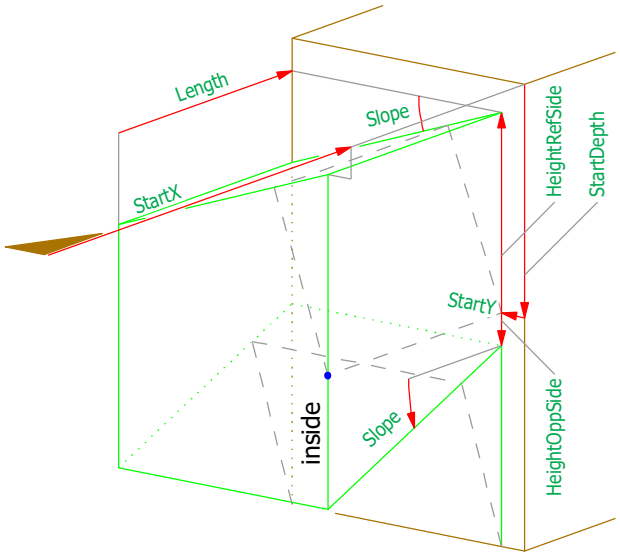
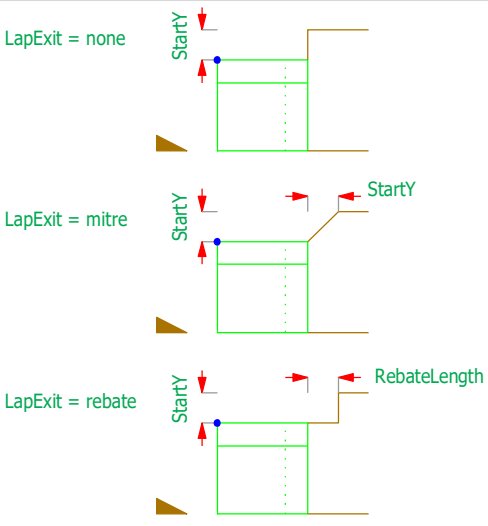
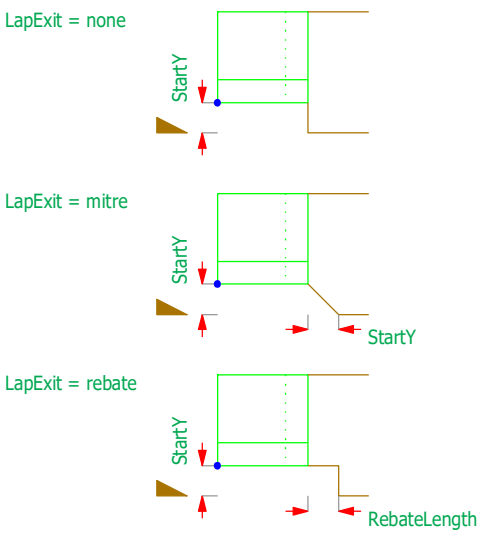
Name	Type	Default	Min	Max
Width	WidthType			
Depth	WidthType			

Klingschrot

Name	Type	Default	Min	Max
Radius	WidthType			
ArcLength	WidthType			

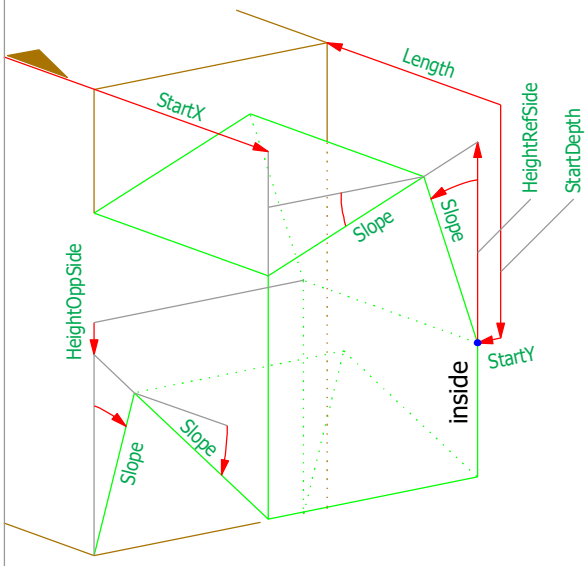
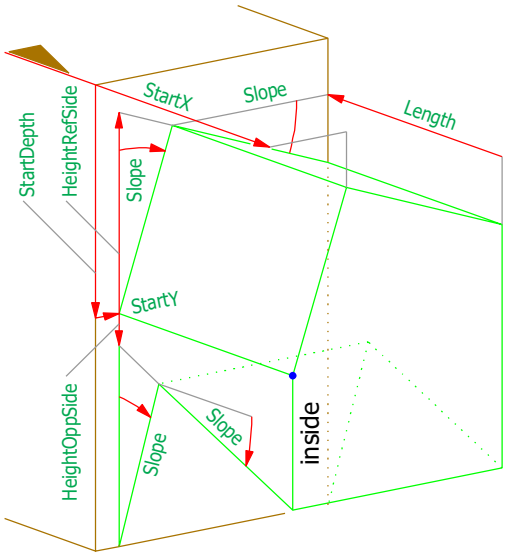
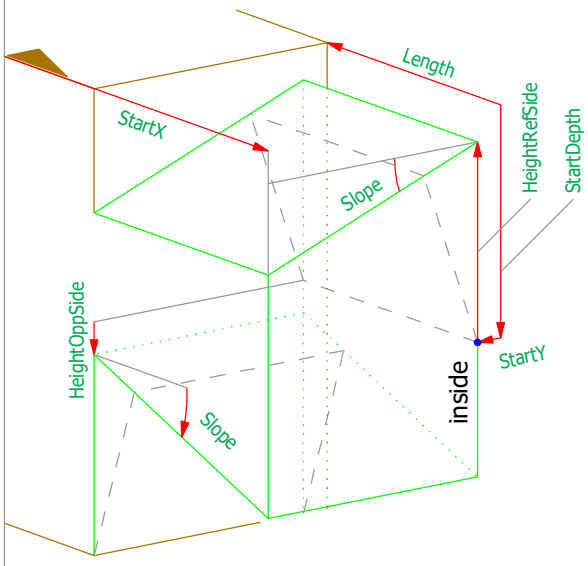
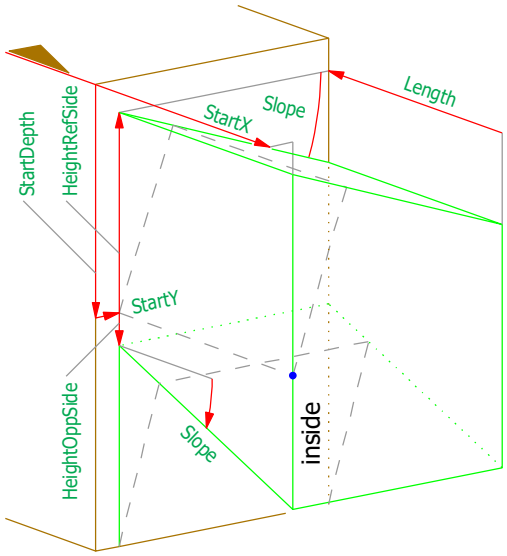
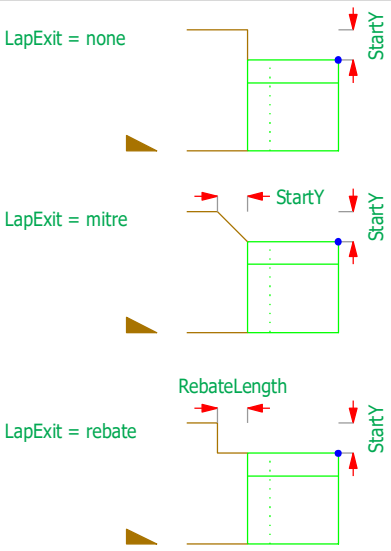
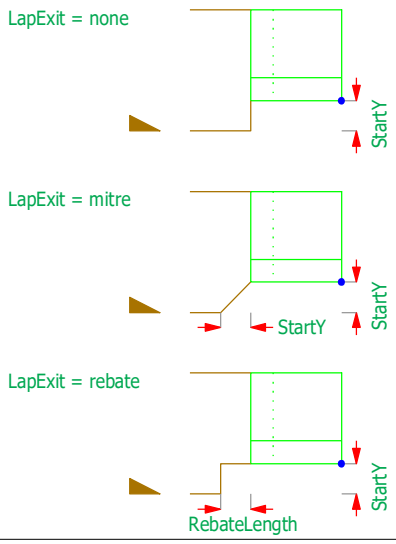
Dovetail

Orientation = start

	LapPosition = refedge	LapPosition = oppedge
Shape = european		
Shape = american		
LapExit		

Dovetail

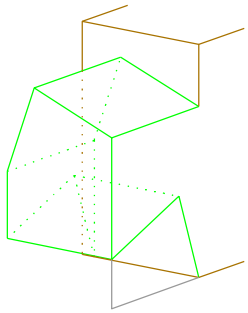
Orientation = end

	LapPosition = refedge	LapPosition = oppedge
Shape = european		
Shape = american		
LapExit		

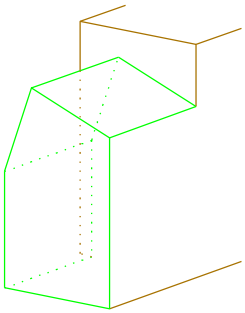
Dovetail

Name	Type	Default	Min	Max
Orientation	OrientationType		start	end
CutOff	BooleanType	no	no	yes
StartX	LengthPosType	0.0	-100000.0	100000.0
StartY	WidthType	30.0	0.0	50000.0
StartDepth	WidthNType	50.0	-50000.0	50000.0
Slope	double		0.0	45.0
Length	WidthType	150.0	0.0	50000.0
RebateLength	WidthType	10.0	0.0	50000.0
HeightRefSide	WidthType	60	0.0	50000.0
HeightOppSide	WidthType	30.0	0.0	50000.0
LapPosition	EdgePositionType	refedge	refedge/oppedge	
LapExit	LapExitType	mitre	none/mitre/rebate	
Shape	DovetailShapeType	european	european/american	
ProcessSide	ProcessSideType	both	both/refside/oppside	

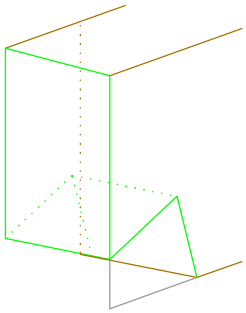
ProcessSide = both



ProcessSide = refside

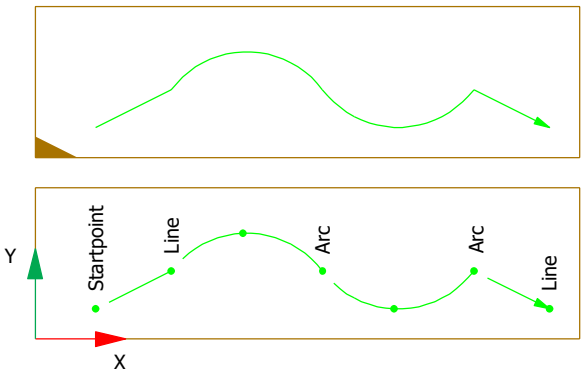


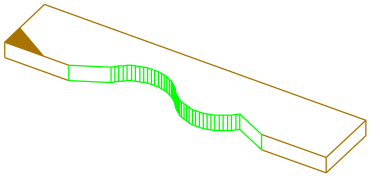
ProcessSide = oppside



SimpleContour

The elements of a SimpleContour are a Startpoint and and a list of Lines and Arcs.

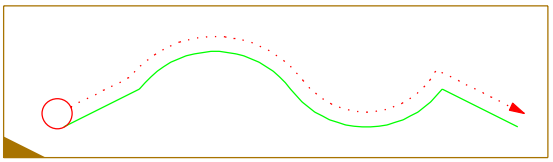




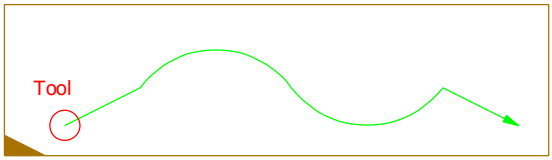
Name	Type
StartPoint Line Arc	PointType LineType Arctype

ToolPosition

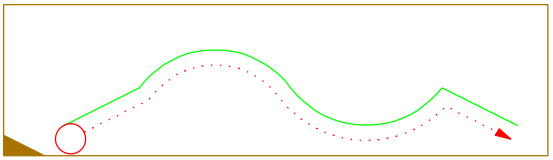
Toolposition = left



Toolposition = center

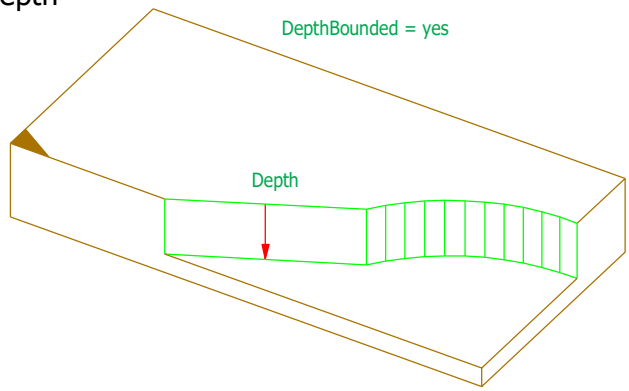


Toolposition = right

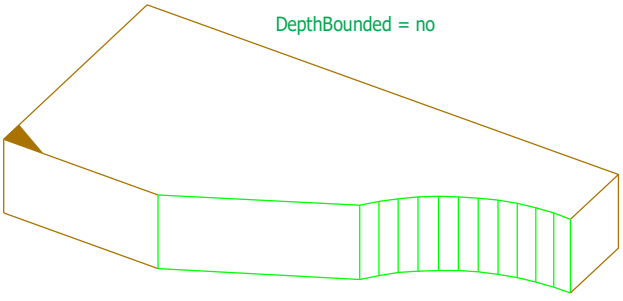


Depth

DepthBounded = yes

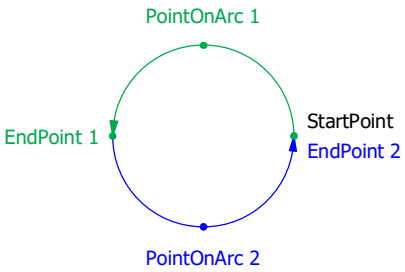


DepthBounded = no



Circle

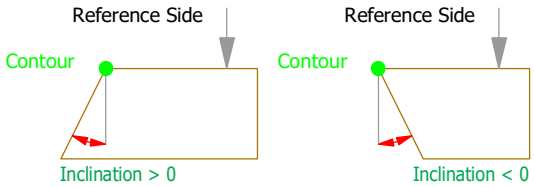
The circle must be defined with
2 arcs a 180 degrees.



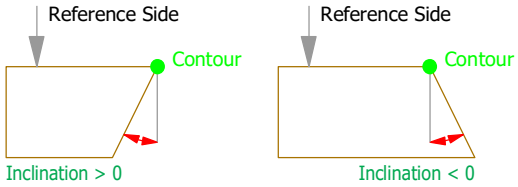
Inclination

In this view the contour is oriented away from the observer.

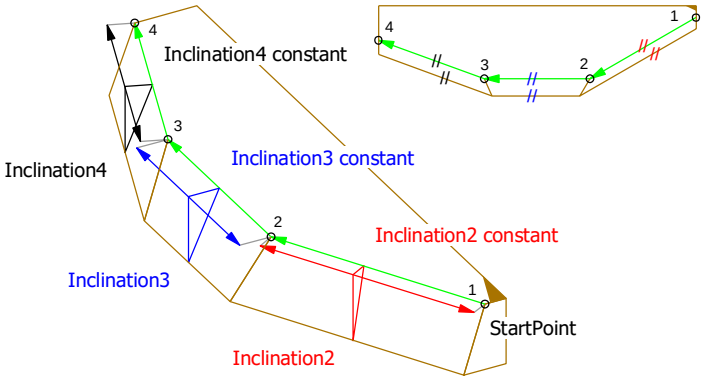
Toolposition = left or center



Toolposition = right

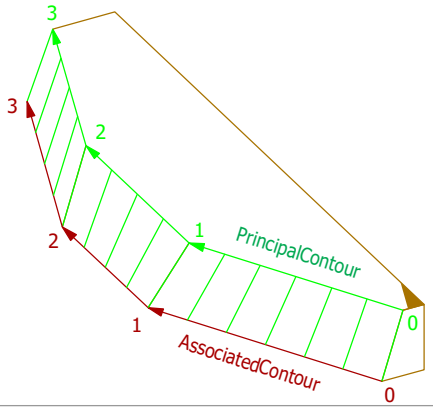


The inclination is constant over the length of the segment and is always measured from the tangent of the contour at the actual point.

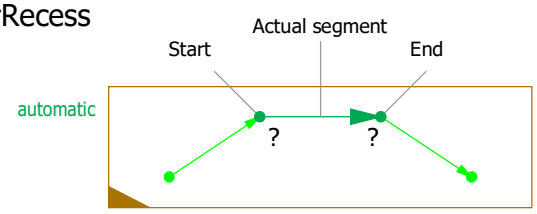


DualContour

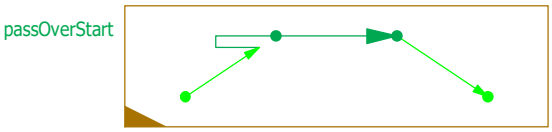
Name	Type
PrincipalContour	SimpleContourType
AssociatedContour	SimpleContourType

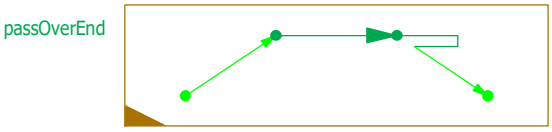


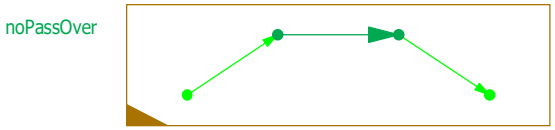
ContourRecess

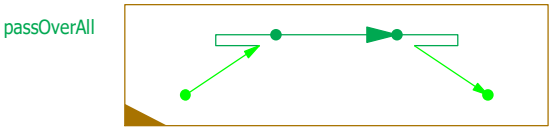


The processing at the vertexes has to be specified by the machine

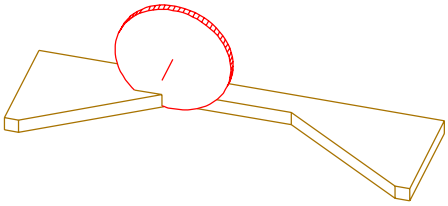


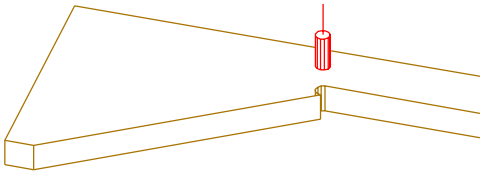




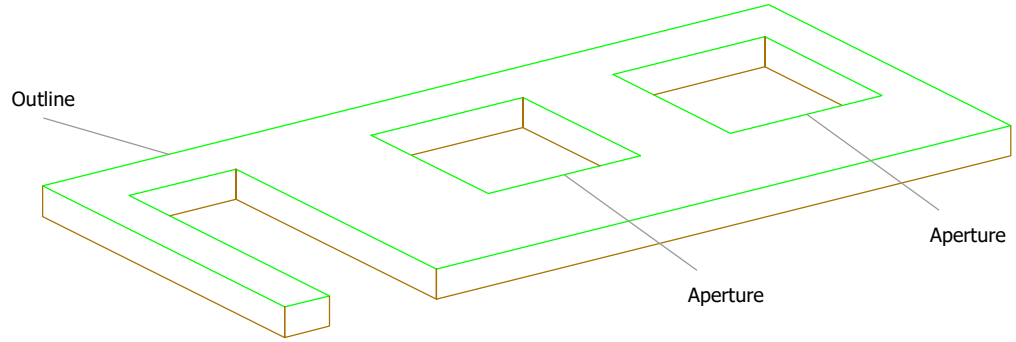


The machineside decides, how the RECESS is worked out. Examples:

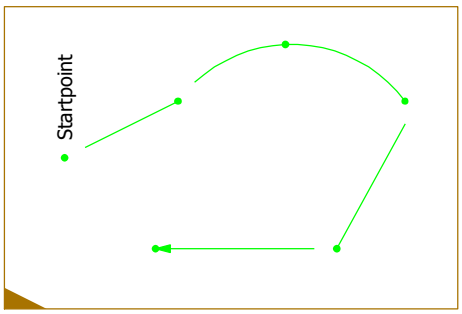




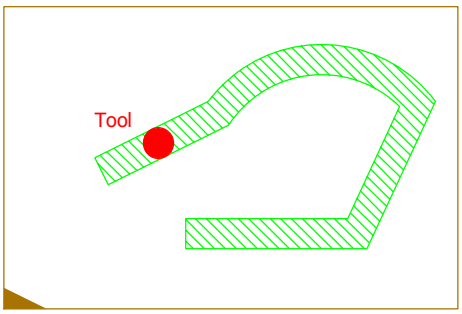
Aperture



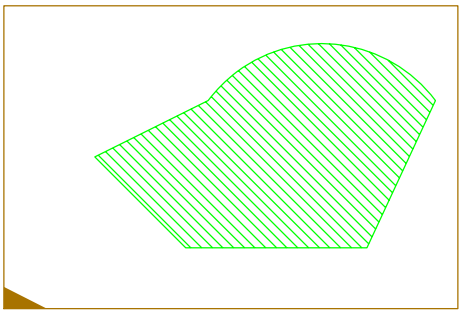
CounterSink



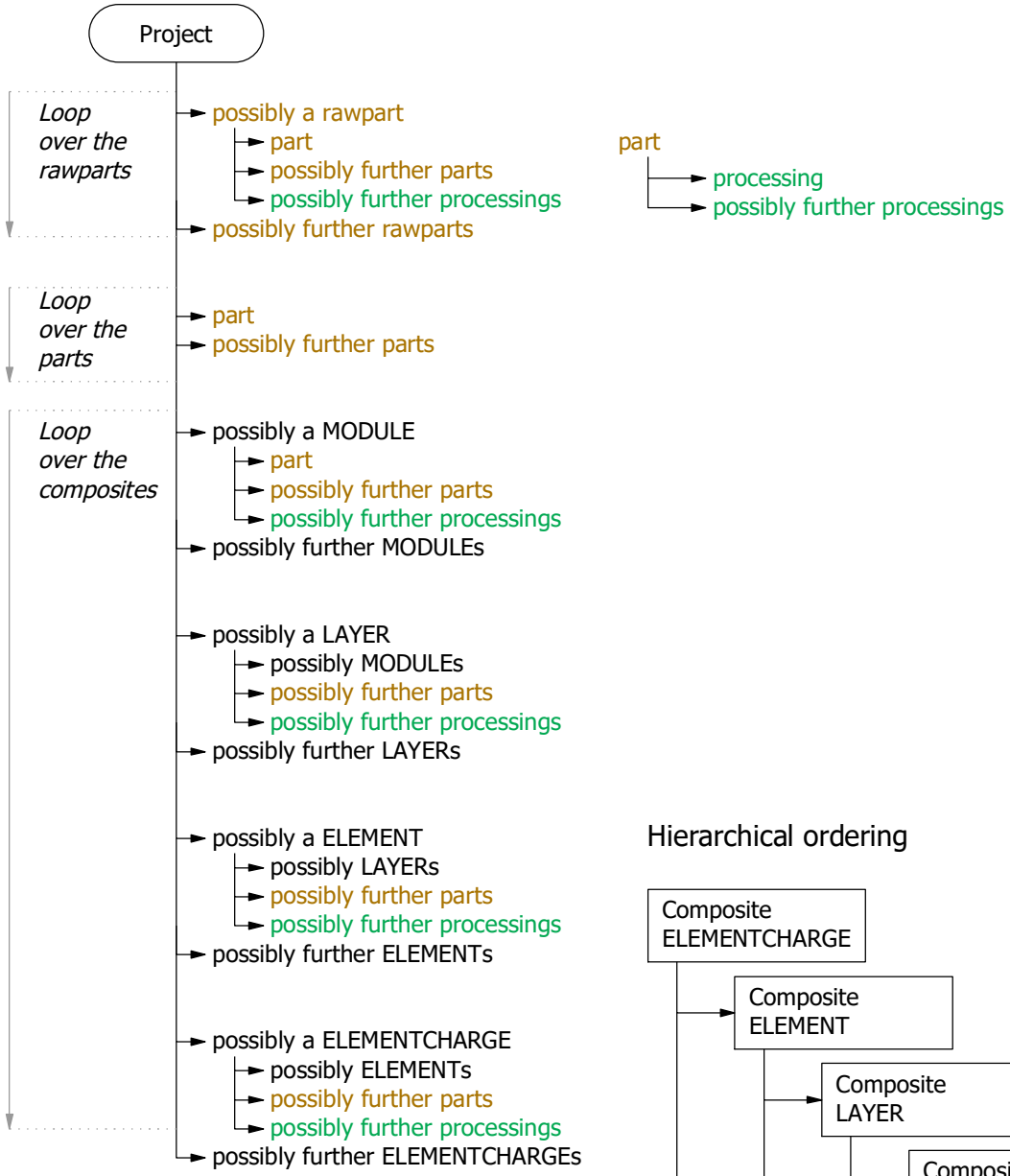
CounterSink = no



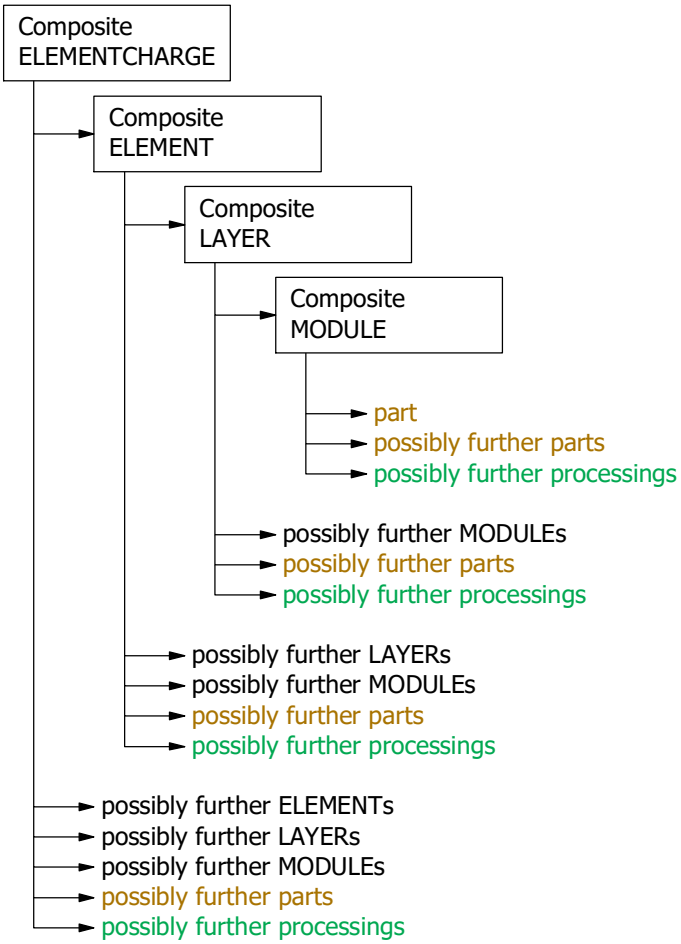
CounterSink = yes



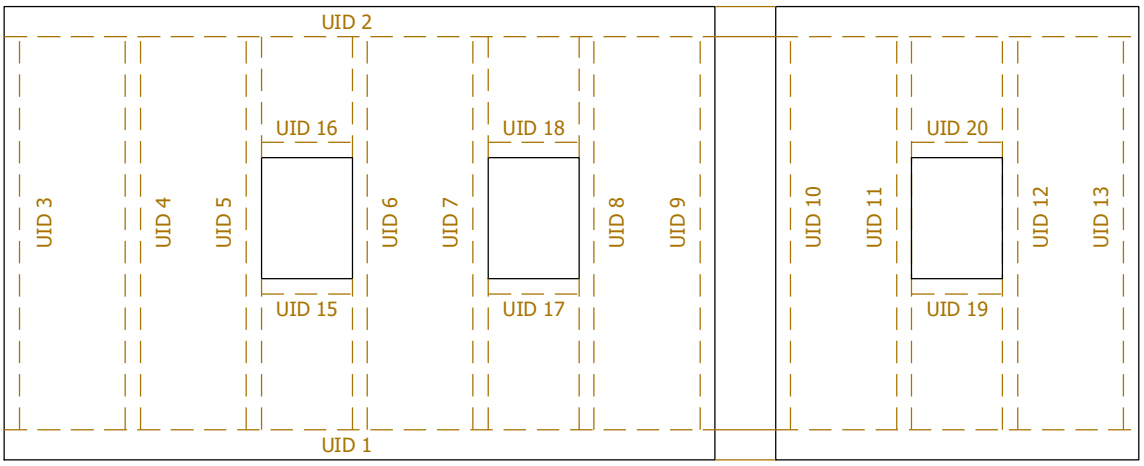
Listing in the BTLX-File



Hierarchical ordering



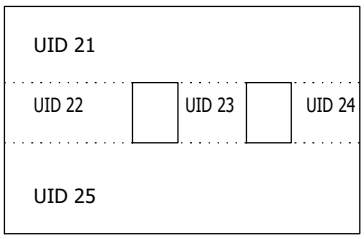
Example for a composite

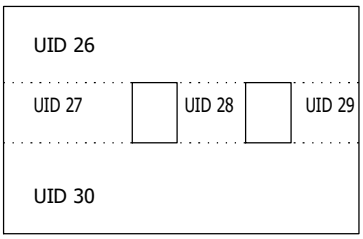


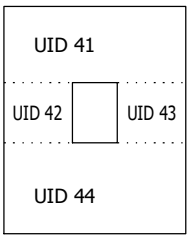
ELEMENT
UID 301

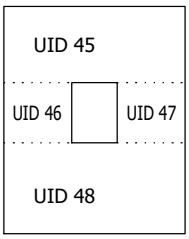
ELEMENT
UID 302

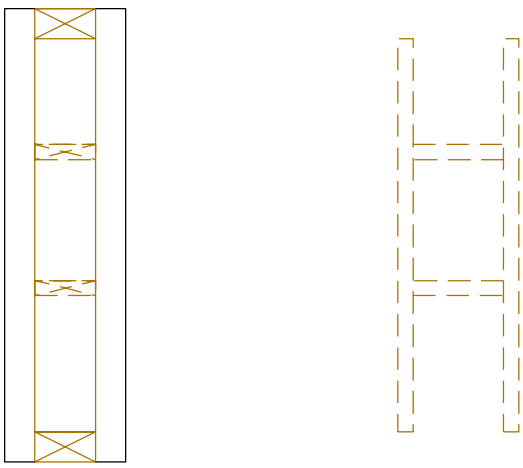
ELEMENTCHARGE
UID 401











LAYER
UID 201

LAYER
UID 202

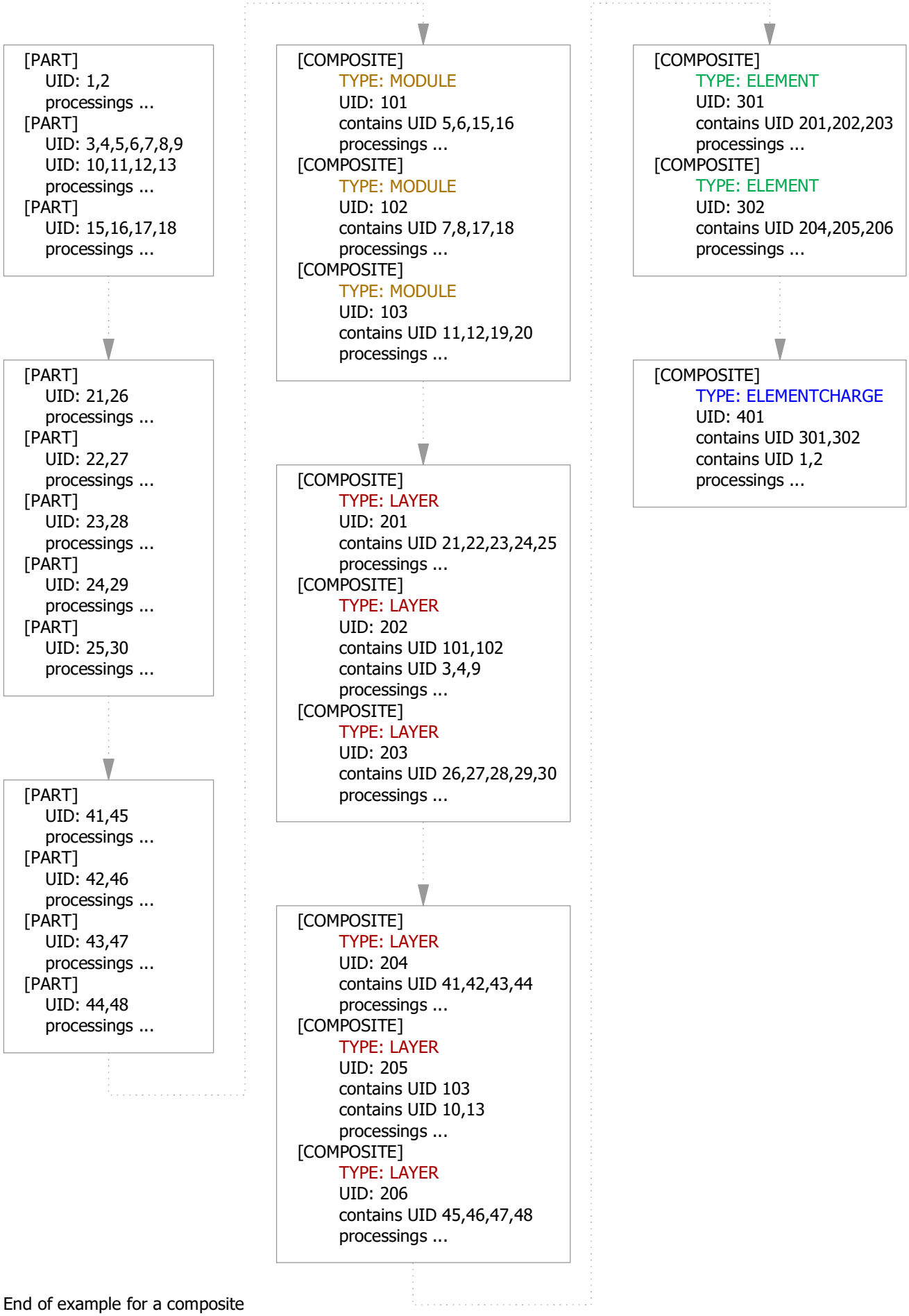
LAYER
UID 203

MODULE
UID 101
UID 102
UID 103

LAYER
UID 204

LAYER
UID 205

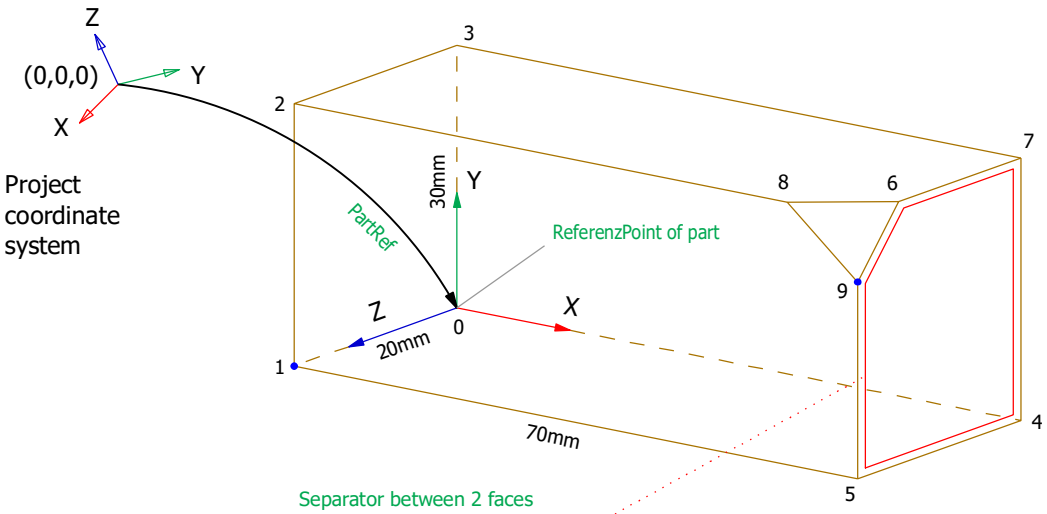
LAYER
UID 206



End of example for a composite

Geometry of part in X3D Format

With the Element <Shape> you can define the geomtry of a part.
A part is build with several faces. The volume is closed.
All points of a face are coplanar.
The coordinates of the points refer to the ReferencePoint of the part.




```
<Shape>
  <IndexedFaceSet convex="false" coordIndex="0 1 2 3 -1 4 7 6 9 5 -1 1 5 9 8 2 -1 2 8 6 7 3  -1 3 7 4 0 -1 0 4 5 1 -1 9 6 8 -1">
    <Coordinate point="0.0 0.0 0.0 0.0 0.0 20.0 0.0 30.0 20.0  0.0 30.0 0.0  70.0 0.0 0.0  70.0 0.0 20.0  70.0 30.0 15.0  70.0 30.0 0.0  61.25 30.020 70.0 22.5 20"/>
  </IndexedFaceSet>
</Shape>
```

point 1 x y z — point 9