

design2machine

btl interface description

Version: 10.5

Build: 10501

Last modified: 13.12.2012

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.

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0. Interface Architecture

The file described herein is identified by the ".btl" extension.

It contains general data related to the Project as well as parameter descriptions of the construction forms to be transferred to the wood working machines.

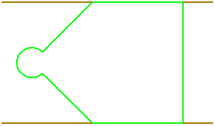
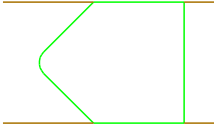
For more information or questions regarding the btl format, please contact:

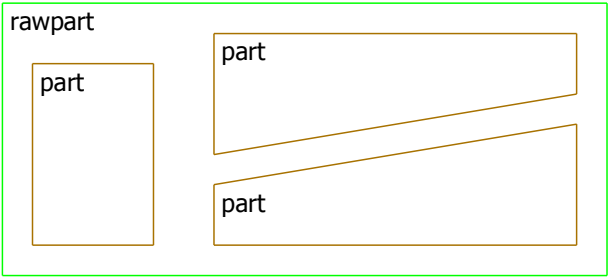
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1. Basic Structure of the btl-File

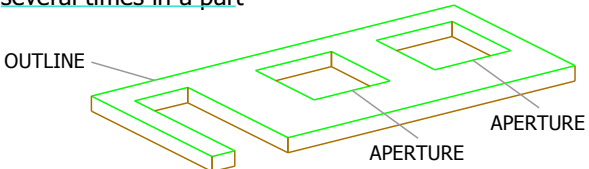
General: IDENTIFICATION INDEX : Values

| Identification Index | Datotyp | Meaning |
|---|---|--|
| VERSION: BUILD: EDITION: | BTL V10.5 (String) 10500 (String) STANDARD or PREFABRICATION | Version number Build number If this attribute is set to PREFABRICATION, the file includes extensions for the construction of prefabricated houses. For more information, see chapter 7.0. If this parameter is not set, its value is assumed to be standard. |
| [GENERAL] | | |
| PROJECTNUMBER: PROJECTNAME: PROJECTPART: PROJECTGUID: | String max.256 characters String max.256 characters String max.256 characters String 38 characters | Project number Project name Project part Globally unique Identifier If this parameter is set, it is possible to define parts for the same project in several BTL-files. The UIDs of the transformations must be unique. A UID of a transformation may appear only once in all BTL-files for this project. Example: {936DA01F-9ABD-4D9D-80C7-02AF85C822A8} |
| LISTNAME: CUSTOMER: ARCHITECT: EDITOR: DELIVERYDATE: EXPORTDATE: EXPORTTIME: EXPORTRELEASE: LANGUAGE: RANGE: | String max.256 characters String max.256 characters String max.256 characters String max.256 characters String max.256 characters String max.256 characters String max.256 characters String max.256 characters String max.256 characters STANDARD or EXTENDED | Listname Customer Architect Editor name Delivery date Export date Export time Export release Language Numbers of digits for parameter values. If RANGE is not set, its value is assumed to be STANDARD. STANDARD: Parameter type = String 8 characters EXTENDED: Parameter type = String 12 characters Number of decimals for all values with datatype "Parameter type". See 2. Caption / 8. SCALEUNIT |
| SCALEUNIT: | Integer | Describes the quality of the project. If this parameter is not set, its value is assumed to be AUTOMATIC. |
| PROCESSINGQUALITY: | AUTOMATIC, VISIBLE or FAST | Describes the quality of the project. If this parameter is not set, its value is assumed to be AUTOMATIC. |
| COMPUTERNAME: USER: SOURCEFILE: EXPORTFILE: RECESS: | String max.256 characters String max.256 characters String max.256 characters String max.256 characters AUTOMATIC or MANUAL | Computername User name Path and name of the CAD-File Path and name of the BTL-File If this parameter is not set, its value is assumed to be AUTOMATIC. |
| | | <div> <div>complete RECESS: AUTOMATIC</div>  </div> <div> <div>additional manual work RECESS: MANUAL</div>  </div> |

| Identification Index | Datatype | Meaning |
|---|--|---|
| COMMENT: | String max.256 characters | Comment. This line may appear several times. |
| <i>Loop over the rawparts</i> [RAWPART] | | |
| <p><u>The rawpart has the same parameters as a part.</u> <u>A rawpart can contain several parts. Each part can be defined with the processkey 0-300-0.</u> The processings of the part are declared in the part-definition. A rawpart can have own processings. In the BTL-File first the rawparts are declared, then the parts.</p> | | |
|  | | |
| <i>Loop over the processings for rawpart</i> | | |
| PROCESSKEY: | 0-300-0 DES | With this key a part is set to the rawpart. Subpart refers to the coordinate-system of the rawpart. DES Designation, String max. 256 characters, optional |
| REFERENCEPLANE: | OX: Parameter type OY: Parameter type OZ: Parameter type XX: Parameter type XY: Parameter type XZ: Parameter type YX: Parameter type YY: Parameter type YZ: Parameter type | Coordinate triple origin of the part-coordinate-system Direction vector of the local x axis Direction vector of the local y axis |
| PROCESSPARAMETERS: | UID: Integer | UID of the transformation of the part |
| <i>End of loop over the processings for rawpart</i> | | |
| <i>End of loop over the rawparts</i> | | |
| | | |

| Identification Index | Datotyp | Meaning |
|--|--|--|
| <i>Loop over the parts</i> [PART] | | |
| SINGLEMEMBERNUMBER: | Integer | Production number |
| ASSEMBLYNUMBER: | String max.256 characters | Assembly list number |
| ORDERNUMBER: | Integer | Order list number |
| DESIGNATION: | String max.256 characters | Name |
| ANNOTATION: | String max.256 characters | Comment |
| STOREY: | String max.256 characters | Subgroup |
| GROUP: | String max.256 characters | Group |
| PACKAGE: | String max.256 characters | Delivery package |
| MATERIAL: | String max.256 characters | Material |
| TIMBERGRADE: | String max.256 characters | Timbergrade |
| QUALITYGRADE: | String max.256 characters | Qualitygrade |
| COUNT: | Integer | Count |
| LENGTH: | Parameter type | Length |
| HEIGHT: | Parameter type | Height |
| WIDTH: | Parameter type | Width |
| COLOUR: | R: Integer G: Integer B: Integer A: Integer | Colour of the part. Values from 0 to 255 are possible. |
| PLANINGLENGTH: | Parameter type | Transparency Planinglength |
| STARTOFFSET: | Parameter type | Start offset |
| ENDOFFSET: | Parameter type | End offset |
| <i>Loop over the UIDs and transformations</i> | | |
| UID: | Integer | Unique Identifier of the part. Every UID may appear only once in the project. If COUNT > 1 for a part, there have to be COUNT UIDs. |
| TRANSFORMATION: | OX: Parameter type OY: Parameter type OZ: Parameter type XX: Parameter type XY: Parameter type XZ: Parameter type YX: Parameter type YY: Parameter type YZ: Parameter type | Coordinate triple origin of the part-coordinate-system Direction vector of the local x axis Direction vector of the local y axis The Transformation describes the position of the part in the project. UIDs and Transformations are optional, but if there are UIDs and Transformations, each UID has to have a Transformation. |
| <i>End of loop over the UIDs and transformations</i> | | |
| | | |

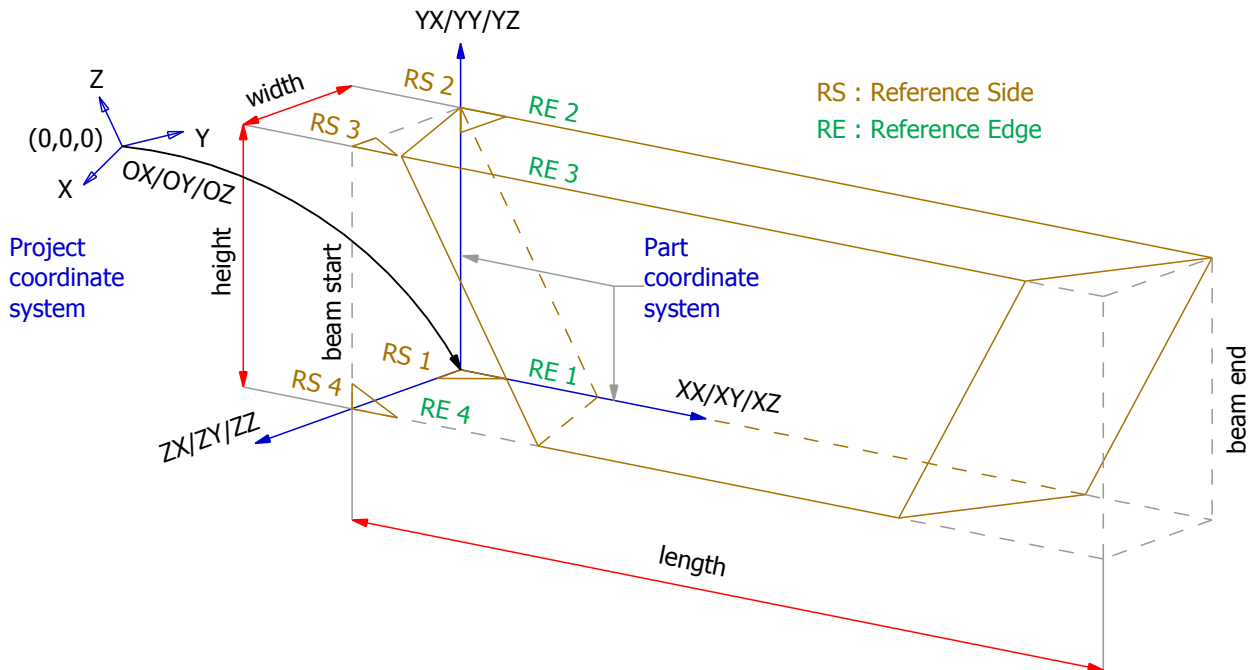
| Identification Index | Datotyp | Meaning |
|----------------------|---|--|
| CAMBER: | SIDE: Integer (1,2,3,4) P01: Parameter type P02: Parameter type P03: Parameter type | Side of part, reference side Distance from beam start to the first point of the arc on the centerline Distance from beam start to the second point of the arc on the centerline Distance from beam start to the third point of the arc on the centerline Camber at third point |
| PARTOFFSET: | P04: Parameter type P04: Parameter type P11: Parameter type P12: Parameter type P13: Parameter type P14: Parameter type | Number of reference side placed on fix clamp Offset on reference side 1 Offset on reference side 2 Offset on reference side 3 Offset on reference side 4 |
| PROCESSINGQUALITY: | AUTOMATIC, VISIBLE or FAST | Describes the quality of this part. If this parameter is not set, its value is equal to the PROCESSINGQUALITY, defined in [GENERAL]. |
| OUTLINE: | SIDE: Integer (1,2,3,4) PROCESS: YES or NO P01: Parameter type P02: Parameter type P03: Parameter type P06: Parameter type P08: Parameter type P10: Parameter type P11: Parameter type P12: Parameter type | Outline refers to the coordinate-system of a referenceside of the part If PROCESS is set to YES, then the outline must be machined. If it is set to NO, then the outline is an information about the shape of the workpart. This parameter must appear at the first segment (= point) and is valid for the whole outline. Start- / Endpoint. Inclination of this segment. Type of line. Point on arc. <u>The outline has to be a closed polygon, i.e. the endpoint of the last segment has to be the startpoint of the OUTLINE.</u> Up to 2 OUTLINES may be defined in one part (one on SIDE 1 or 3 and one on SIDE 2 or 4). One OUTLINE is a contour or a contour with an associated contour. If there is a contour with an associated contour, then the contour (first segment with type=100) should be followed directly by the associated contour (first segment with type=101). <i>For details see processing 4-250-X contour. The whole outline is composed of several OUTLINE declarations in the part.</i> |

| Identification Index | Datotyp | Meaning |
|---|---|---|
| APERTURE: | See OUTLINE | <p>The APERTURE has the same parameters like an OUTLINE. Exception: <u>APERTURE may be defined several times in a part</u></p>  <p><u>An APERTURE is only allowed if the part has an OUTLINE on the same referenceside.</u></p> |
| RECESS: | AUTOMATIC or MANUAL | If this parameter is not set, its value is equal to the RECESS, defined in [GENERAL]. |
| STOREYTYPE: ELEMENTNUMBER: LAYER: | CEILING, ROOF or WALL String max.256 characters Integer | <p>Type of storey. Element number (e.g. for roof elements) Layer. On reference side: positive number. Center Layer: 0. On opposite side: negative number. Module number.</p> |
| MODULENUMBER: | String max.256 characters | Module number. |
| COMMENT: | String max.256 characters | Comment. This line may appear several times. |
| GRAINDIRECTION: | X: Parameter type Y: Parameter type Z: Parameter type ALIGN: YES or NO | <p>Coordinate triple of grain direction. Relative to part-coordinate-system. This is necessary for the nesting process. If this parameter is not set, its values must be assumed to 1/0/0 (X/Y/Z).</p> |
| REFERENCESIDE: | SIDE: Integer (1,2,3,4) ALIGN: YES or NO | Reference side for the nesting process. |

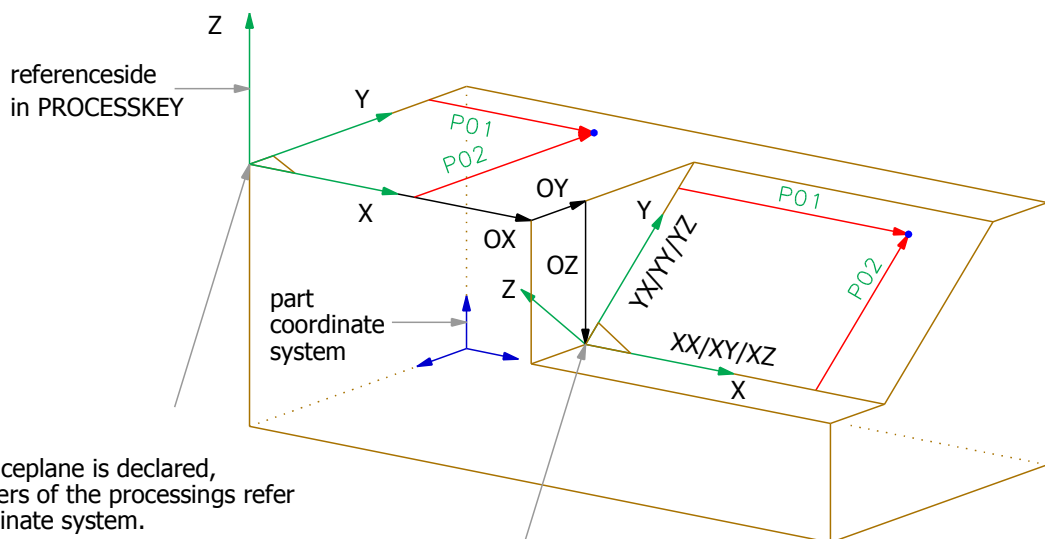
| Identification Index | Values (format) | Meaning |
|---|--|--|
| <i>Loop over the processings</i> | | |
| PROCESSKEY: | Key with format: G-KEY-S DES Example: 3-040-2 Drilling | G Group: 1,2: separating Group: 3,4: lying between KEY Key of construction form S Side of part, reference side DES Designation, String max. 256 characters, optional |
| REFERENCEPLANE: | OX: Parameter type OY: Parameter type OZ: Parameter type XX: Parameter type XY: Parameter type XZ: Parameter type YX: Parameter type YY: Parameter type YZ: Parameter type | Coordinate triple origin of the referenceside-coordinate-system Direction vector of the local x axis Direction vector of the local y axis Identifier REFERENCEPLANE is optional. If it is not set, the parameters will have these values: OX/OY/OZ = 0/0/0 XX/XY/XZ = 1/0/0 YY/YY/YZ = 0/1/0 |
| PROCESSPARAMETERS: | P01: Parameter type P02: Parameter type ... | Construction form parameters. Number and meaning of the parameters depend on the construction form to be described. See the following documentation. All parameters of the processings are optional, missing parameters have the value defined under presettings. |
| PROCESSIDENT: | Integer | Sequential number. This value appears only once in a piece, but can be set again in an other piece. |
| PROCESSINGQUALITY: | AUTOMATIC, VISIBLE or FAST | Describes the quality of this processing If this parameter is not set, its value is equal to the PROCESSINGQUALITY, defined in [PART]. |
| COMMENT: | String max.256 characters | Comment. This line may appear several times. |
| PRIORITY: | Integer | Processings with high values must be done first. Processings with low values must be done last. If priority is not set, it is assumed to be zero. If two processing have the same priority, the machine can decide in what order the processings should be done. |
| RECESS: | AUTOMATIC or MANUAL | If this parameter is not set, its value is equal to the RECESS, defined in [PART]. |
| PROCESS: | YES or NO | Describes if the processing should be produced or not. If this parameter is not set, its value is assumed to be YES. |
| <i>End of loop over the processings</i> | | |
| <i>End of loop over the parts</i> | | |
| | | |

2. Caption

1. Part coordinate system



2. Referenceplane

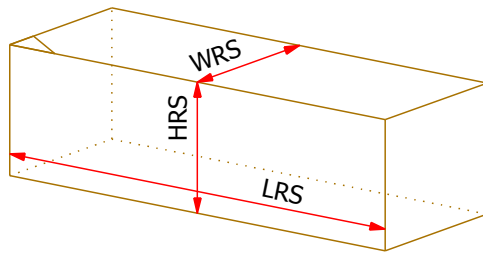


If no referenceplane is declared, the parameters of the processings refer to this coordinate system.

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

The referenceplane refers to the referenceside, which is defined in the PROCESSKEY. If the referenceside in the PROCESSKEY is zero, the referenceplane refers to the part coordinate system.

3. These abbreviations are used in the description of the parameters:



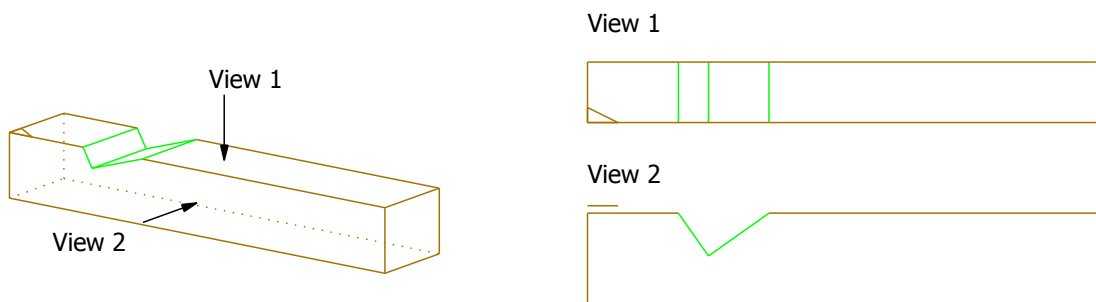
| | |
|-----|--|
| WRS | Width of Reference Side |
| HRS | Height of Reference Side or "other" component dimension |
| LRS | Length of Reference Side Length of component |

4. All parameters are described with a red line or a red arrow.

5. The parameters are shown with their positive value, if there is no special comment like (<0) or (-)

6. The values in the presets mean "mm" or "degree".

7. 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.

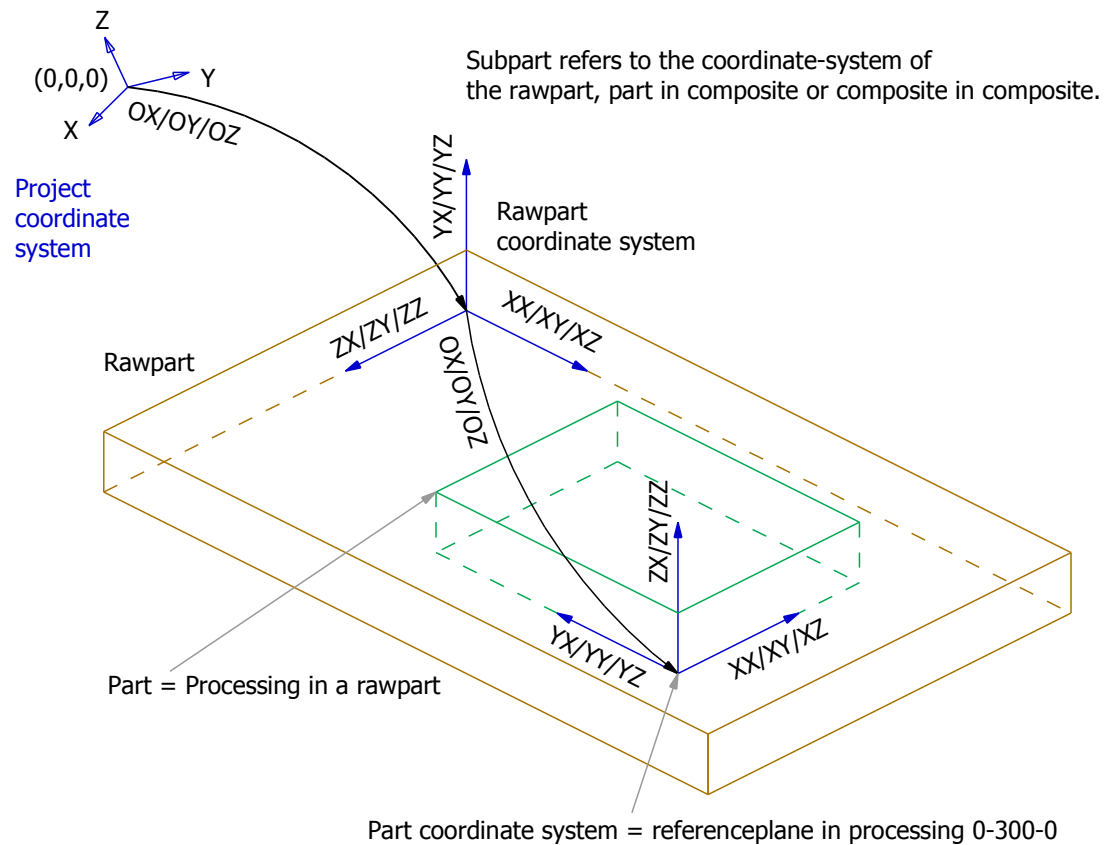


8. SCALEUNIT Position of the decimal point from the right in a "Parameter type"
The unit of metric parameters is millimeter and the unit of angles is degree.
Example: If scaleunit=1 the precision is 1/10, if scaleunit=2 the precision is 1/100.
Each Parameter with format "Parameter type" is multiplied with a scaleunit factor, rounded and written to the btl-file.
Example: If value of parameter P01 is 123.2345678mm and SCALEUNIT is 2, then P01=00012323.
And if SCALEUNIT=1, then P01=00001232.
It is same for parameters, which contain a flag, a bit or an integer value like P04 for Lap Joint.
Example: If value of parameter P04 is 15 and scaleunit is 2, then P01=00001500.
And if scaleunit=1, then P01=00000150.

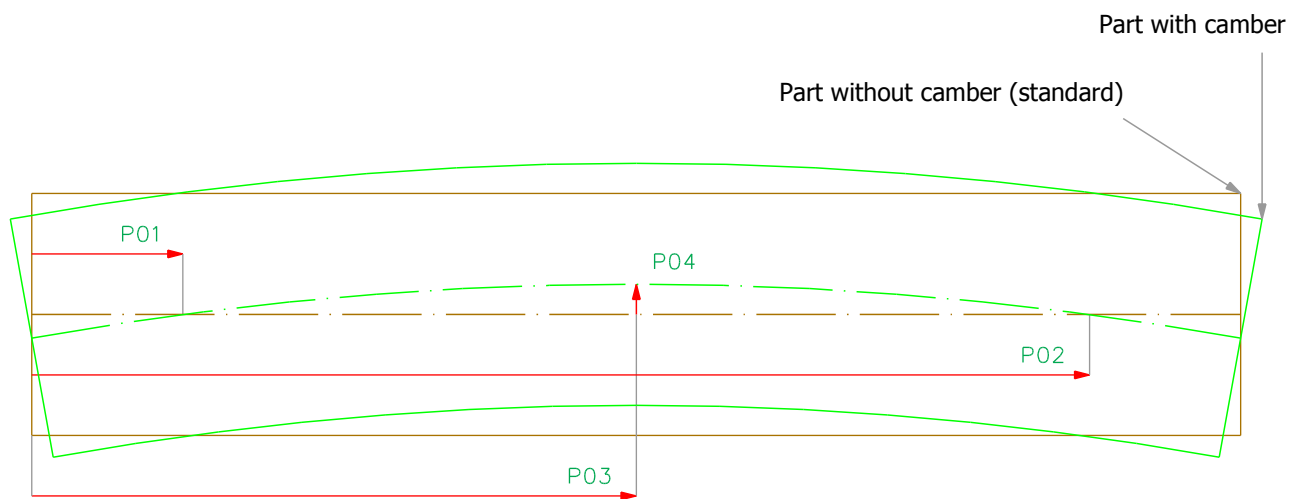
9. Examples for values in the BTL file

| Format | | example | value |
|---|------------------------------|--|--|
| String max.256 characters | Text must be in quotes | LISTNAME : "Dach" | |
| Integer | | SINGLEMEMBERNUMBER: 1 SCALEUNIT: 2 | 1 2 |
| Parameter type = String 8 characters (RANGE: STANDARD) | SCALEUNIT: 2 SCALEUNIT: 3 | P07: 00123456 P08: 00-23456 P07: 00123456 P08: 00-23456 | P07=1234,56 P08=-234,56 P07=123,456 P08=-23,456 |
| Parameter type = String 12 characters (RANGE: EXTENDED) | SCALEUNIT: 2 SCALEUNIT: 3 | P07: 000123456789 P08: 000-23456789 P07: 000123456789 P08: 000-23456789 | P07=1234567,89 P08=-234567,89 P07=123456,789 P08=-23456,789 |

10. Part in a rawpart, part in composite, composite in composite



11. Camber



All processings are defined in the part without camber.

3. Example File

```
VERSION: "BTL V10.5"
BUILD:   "10500"
[GENERAL]
PROJECTNUMBER: "043"
PROJECTNAME:   "Company Warehouse"
PROJECTPART:   ""
LISTNAME:      "Roof"
CUSTOMER:      ""
ARCHITECT:     ""
EDITOR:        "Smith"
DELIVERYDATE:  "2006-11-30"
EXPORTDATE:    "2006-09-26"
EXPORTTIME:    "09:20:11"
EXPORTRELEASE: "SEMA Holzbausoftware V10.2 (de) Build 10461"
LANGUAGE:      "DE"
SCALEUNIT:     1
COMPUTERNAME:  "My Computer"
USER:          "Jones"
COMMENT: "043"
COMMENT: "010"
COMMENT: "Company Warehouse"
COMMENT: "Sussex"
COMMENT: "Smith"
COMMENT: "15"
COMMENT: "J. Doe"
COMMENT: ""
[PART]
SINGLEMEMBERNUMBER: 1
ASSEMBLYNUMBER:     ""
ORDERNUMBER:        1
DESIGNATION:         "Purlin"
ANNOTATION:          "B:1 Nr:1"
STOREY:              "DG1"
GROUP:               "01"
PACKAGE:              "1"
MATERIAL:             "Redwood"
TIMBERGRADE:         "BSH"
QUALITYGRADE:        "S10"
COUNT:              1
LENGTH:              00146700
HEIGHT:              00002400
WIDTH:               00001800
PLANINGLENGTH:        00022700
STARTOFFSET:         00000200
ENDOFFSET:           00000200
TRANSFORMATION:      OX:00000000 OY:00000000 OZ:00000000 XX:00010000 XY:00000000
                     XZ:00000000 YX:00000000 YY:00010000 YZ:00000000
PARTOFFSET:          P04:00000010 P11:00000000 P12:00000500 P13:00000000 P14:00000000
```

PROCESSKEY: 2-010-2 Saw Cut
PROCESSPARAMETERS: P01:00000000 P02:00000000 P03:00000000 P06:00000900 P07:00000900
PROCESSIDENT: 1
PROCESSKEY: 4-090-1 Planing
PROCESSPARAMETERS: P01:00000000 P04:00001240 P11:00000000 P12:00011350
PROCESSIDENT: 2
PROCESSKEY: 4-060-3 Marking
PROCESSPARAMETERS: P01:00131250 P06:00000900 P11:00000800 P13:00000010 P14:01310740
PROCESSIDENT: 3
PROCESSKEY: 4-090-1 Planing
PROCESSPARAMETERS: P01:00135350 P04:00001240 P11:00000000 P12:00011350
PROCESSIDENT: 4
PROCESSKEY: 1-010-2 Saw Cut
PROCESSPARAMETERS: P01:00146700 P02:00000000 P03:00000000 P06:00000900 P07:00000900
PROCESSIDENT: 5
[PART]
SINGLEMEMBERNUMBER: 2
ASSEMBLYNUMBER: ""
ORDERNUMBER: 2
DESIGNATION: "Raftler"
ANNOTATION: "B:1 Nr:1"
STOREY: "DG1"
GROUP: "01"
PACKAGE: "1"
MATERIAL: "Oak"
TIMBERGRADE: "KVH"
QUALITYGRADE: "S13"
COUNT: 1
LENGTH: 00067936
HEIGHT: 00001800
WIDTH: 00000800
PLANINGLENGTH: 00014610
STARTOFFSET: 00000200
ENDOFFSET: 00000200
TRANSFORMATION: OX:00000000 OY:00000000 OZ:00000000 XX:00010000 XY:00000000
XZ:00000000 YX:00000000 YY:00010000 YZ:00000000
PARTOFFSET: P04:00000010 P11:00000000 P12:00000500 P13:00000000 P14:00000000
PROCESSKEY: 2-011-2 Double Cut
PROCESSPARAMETERS: P02:00001260 P06:00000900 P07:00000900 P08:00000350 P09:00000900
PROCESSIDENT: 1
PROCESSKEY: 4-090-1 Planing
PROCESSPARAMETERS: P01:00000000 P04:00001240 P11:00000000 P12:00014611
PROCESSIDENT: 2
PROCESSKEY: 4-020-1 Birds Mouth
PROCESSPARAMETERS: P01:00021778 P06:00000900 P07:00000350 P08:00001250
P11:00000300 P12:00000300
PROCESSIDENT: 3
PROCESSKEY: 1-010-2 Saw Cut
PROCESSPARAMETERS: P01:00067936 P02:00000000 P03:00000000 P06:00000550 P07:00000900
PROCESSIDENT: 4

4. Table of Contents, List of processings

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5. History

| Date | Modification | Build | Page |
|------------|---|-------|-----------|
| 24.10.2006 | Description of P03 for Lap Joint. | 10000 | 25 |
| | Description of P03 for Saw Cut. | 10000 | 9 |
| | Description of P08 - P15 for Block House Half Lap. | 10000 | 38 |
| 25.10.2006 | P07 for Step Joint and Step Joint Notch can be more than 90 | 10000 | 70 |
| 05.12.2006 | Free Contour added. 0/3/4-250-X | 10001 | 104 |
| 05.12.2006 | Referenceplane | 10001 | III, IV |
| 13.12.2006 | Correction of Description of P14: "P14" instead of "P13" | 10001 | 27 |
| 13.12.2006 | Description of P04 for Notch/Rabbet | 10001 | 29 |
| 06.04.2007 | Added quality for project, part and construction form | 10100 | II, III |
| | Added rawpart | 10100 | III |
| | Added camber | 10100 | IV |
| | Description of the referenceplane in a PROCESSING | 10100 | VII |
| | Recess: complete / manual processing | 10100 | V |
| | Priority | 10100 | VI |
| | Added colour for part | 10100 | IV |
| 23.04.2007 | Added processing HOUSE | 10100 | 53 |
| | Added processing HOUSE MORTISE | 10100 | 55 |
| | Added rounding to tenon | 10100 | 47 |
| | Added rounding to mortise | 10100 | 49 |
| | Added chamfer to tenon | 10100 | 47 |
| | Added processing VARIANT | 10100 | 101 |
| | Added OUTLINE to the part | 10100 | V |
| | Added COMMENT to the processing | 10100 | VI |
| 02.07.2007 | Changed Typ A at Step Joint 1/2-080-X | 10100 | 70 |
| | The Pocket 4-039-X is only defined for group 4. | 10100 | 43 |
| | Alignment of the text at Marking/Labeling 3/4-060-X. | 10100 | 64 |
| | The Profile head cambered is defined with a cubic polynom. | 10100 | 82 |
| | Defined the position of the opposite lap at Block house half lap 4-037-X | 10100 | 38 |
| 10.07.2007 | Definition of the radius at the tenon with rounding, P04=3 | 10100 | 48 |
| 12.09.2007 | New Limits of angle P06 drilling: 0/360 | 10100 | 46 |
| 20.10.2007 | The meaning of STOREY and ANNOTATION was corrected | 10100 | IV |
| 01.11.2007 | Added Triangle Cut | 10200 | 88 |
| | Added Dovetail | 10200 | 100 |
| 13.11.2007 | Added RECESS to project and processing | 10200 | II, VI |
| | Added rafter nail to Birds Mouth | 10200 | 21 |
| | Specify the angle P10 at Lap Joint | 10200 | 25, 26 |
| 25.11.2007 | Description for P04="automatic" at Tenon 1/2-050-X | 10200 | 48 |
| 10.12.2007 | New presentation of the drilling parameters | 10200 | 45 |
| 24.01.2008 | Contour: Depth only relevant at startpoint | 10200 | 104 |
| 31.01.2008 | Depth at Longitudinal Cut 0/3/4-010-X | 10200 | 4 |
| 21.04.2008 | Birds Mouth 3/4-020-X: P14/P15 are orthogonal on face. | 10200 | 18, 19 |
| 07.05.2008 | Mortise 3/4-050-X: Added P16 in the parameter list. | 10200 | 49 |
| 30.05.2008 | Block House Front: Limit of P11, P12, P13. | 10200 | 41 |
| 19.12.2008 | Definition of PROCESSINGQUALITY and RECESS. | 10300 | II, V, VI |
| | PROCESS: YES or NO in all processings possible. | 10300 | VI |
| | Block House Half Lap: Drillhole for drop rod. | 10300 | 40 |
| | Free Contour 0/3/4-250-X: Definition of Inclination P06. | 10300 | 103 |
| | New attributes for a part: STOREYTYPE, ELEMENTNUMBER, LAYER and MODULENUMBER. | 10300 | V |
| | Additional description for OUTLINE. | 10300 | V |
| 20.12.2008 | Corrected the names of the coordinate system. | 10300 | VII, IX |

| Date | Modification | Build | Page |
|------------|--|-------|-------------|
| 26.12.2008 | Additional description for Slot. | 10300 | 13 |
| | Additional description for Marking / Labeling | 10300 | 64 |
| 28.01.2009 | New description for P11 for Longitudinal Cut 0/3/4-010-X | 10300 | 4 |
| | Additional description for Slot. | 10300 | 13 |
| 24.02.2009 | New presentation of the Step Joint Notch parameters | 10300 | 72, 73 |
| 13.05.2009 | Description P03 for Drilling: P03 <> 0 instead of P03 > 0 | 10300 | 45 |
| 14.05.2009 | Contour: New description for a contour with an associating contour | 10300 | 105 |
| 17.07.2009 | 4-037-X Block House Half Lap: Add arc | 10400 | 39 |
| | G-136-X Tyrolean Dovetail: Added this new processing | 10400 | 90 |
| | G-106-X Profile Head: Added this new processing | 10400 | 86 |
| 20.07.2009 | The new parameter UID, instead of the old parameter P09, in a rawpart refers to the part. | 10400 | III |
| | UID and transformation | 10400 | IV |
| 16.10.2009 | A new parameter P04 for rounding at dovetail tenon 1,2-055-X | 10400 | 58 |
| | A new parameter P04 for rounding at dovetail mortise 3,4-055-X | 10400 | 60 |
| | A new parameter P04 for rounding at dovetail mortise front 3,4-056-X | 10400 | 62 |
| | A name for a processkey is possible | 10400 | VI |
| | A name for a processkey, which points to a subpart, is possible | 10400 | III |
| | Definition of PROCESSPARAMETERS: Added a new definition | 10400 | VI |
| | 3,4-016-X Slot: Added P04 for limits of the 4 sides of a slot | 10400 | 14 |
| 25.11.2009 | Limit of P02 at Pocket 4-039-X changed from 0/50000 to +/- 50000 | 10400 | 44 |
| 06.02.2010 | 3,4-060-X Marking: 3 new positions for the text. Bit 12,13,14 | 10400 | 64 |
| 20.04.2010 | G-013-X Saw Cut: Min/Max for P06 is +/- 180° instead of 0°/180°. | 10400 | 10 |
| 20.04.2010 | G-039-X Pocket: Min/Max for P02 is +/- 50000 instead of 0/WRS. | 10400 | 44 |
| 22.04.2010 | G-250-X Contour: A remark for the processing attributes. | 10400 | 104 |
| 11.06.2010 | Dovetail: Limits of margins P14/P15 are +/-1000 instead of 0/1000. | 10400 | 58, 60 |
| 14.06.2010 | Profile Head 3/4-103-X: Changed description of P15 in the drawing. The description in the table was correct. | 10400 | 82 |
| 31.08.2010 | G-136-X Tyrolean Dovetail: New description for inclination P09. | 10400 | 91, 95 |
| 31.08.2010 | New Identification Index EDITION for prefabrication. | 10400 | II |
| 31.08.2010 | New part type COMPOSITE for prefabrication. | 10400 | 107 - 110 |
| 31.08.2010 | G-250-X Contour: New paramaters P13, P14, P15 for walls. | 10400 | 104 |
| 28.09.2010 | G-136-X Tyrolean Dovetail: New description for P01 and P11. | 10400 | 90 - 97 |
| 30.09.2010 | G-106-X Profile Head: Correction at P12, P13 and P14. | 10400 | 87 |
| 25.11.2010 | G-060-X Marking: Limit for P04 is 0/32767. | 10400 | 65 |
| | See also modifications at 06.02.2010 | | |
| 01.12.2010 | GUID: Globally unique Identifier for the projects. | 10400 | II |
| 07.02.2011 | G-106-X Profile Head: New drawing for the contourlines. | 10400 | 87 |
| 04.04.2011 | G-010-X Longitudinal Cut: Angles P13 and P14 in face. | 10500 | 3 |
| 04.04.2011 | G-012-X Ridge or Valley Cut: Angles P13 - P16 in faces. | 10500 | 7 |
| 05.04.2011 | Outline: Associated contour and contour with inclination. | 10500 | V |
| 05.04.2011 | 3/4-030-X Half Lap: New definition of P04 for limits. | 10500 | 27 |
| 05.04.2011 | Dovetail tenon and mortise: Additional definition of P12 (diameter). | 10500 | 59,60,61 |
| 13.04.2011 | New processing: 4-061-X Text | 10500 | 67 |
| 13.04.2011 | New attributes for a part: GRAINDIRECTION and REFERENCESIDE. | 10500 | VI |
| 23.06.2011 | Subpart refers to the coordinate-system of the superior-part | 10500 | III, X, 113 |
| 01.09.2011 | New parameter RANGE in section [GENERAL] | 10500 | II, IX |
| 01.09.2011 | G-250-X Contour: Limits at thr start/end at a saw contour. | 10500 | 110 |
| 01.09.2011 | APERTUREs in an OUTLINE | 10500 | V |
| 01.09.2011 | New processing SPHERE 3/4-107-X | 10500 | 91 |
| 18.10.2011 | G-016-X Slot: new definition for limits of edges. | 10500 | 14 |
| 25.10.2011 | G-060-X Marking: New Min/Max for P04. | 10500 | 66 |
| 26.10.2011 | G-250-X Contour: Distance between start- and endpoint can be 0. | 10500 | 108 |
| 10.11.2011 | G-060-X Marking: New Min/Max for P04. | 10500 | 66 |
| 09.01.2012 | 3/4-030-X Half Lap: Influence P09/P10 on side-faces. | 10500 | 28 |
| 23.04.2012 | Contour: Additional description for associated contour | 10500 | 108 |
| 23.04.2012 | Lock-out area: Better description for P14. | 10500 | 109 |
| 06.07.2012 | G-010-X and G-012-X: New definition of P04 for limits. | 10500 | 4, 8 |
| 11.10.2012 | 3/4-036-X Chamfer: new Min/Max values for P11. | 10500 | 38 |
| 15.10.2012 | 0/3/4-013-X Saw Cut: new Min/Max values for P12. | 10500 | 10 |
| 09.11.2012 | 3/4-016-X Slot: Correction of the presentation of P12 (length) | 10500 | 11 |
| 22.11.2012 | G-250-X Contour: Use of P07 and P15. | 10500 | 108, 109 |
| 05.12.2012 | 1/2-010-X Cut: Changed limits of P06 and P07 to 0.1/179.9 | 10501 | 2 |

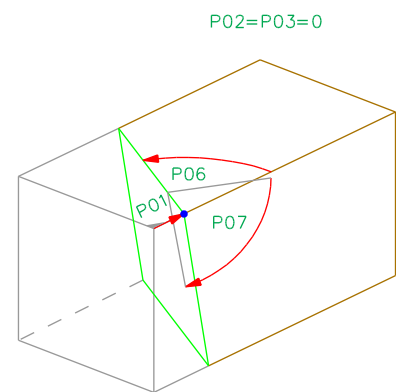
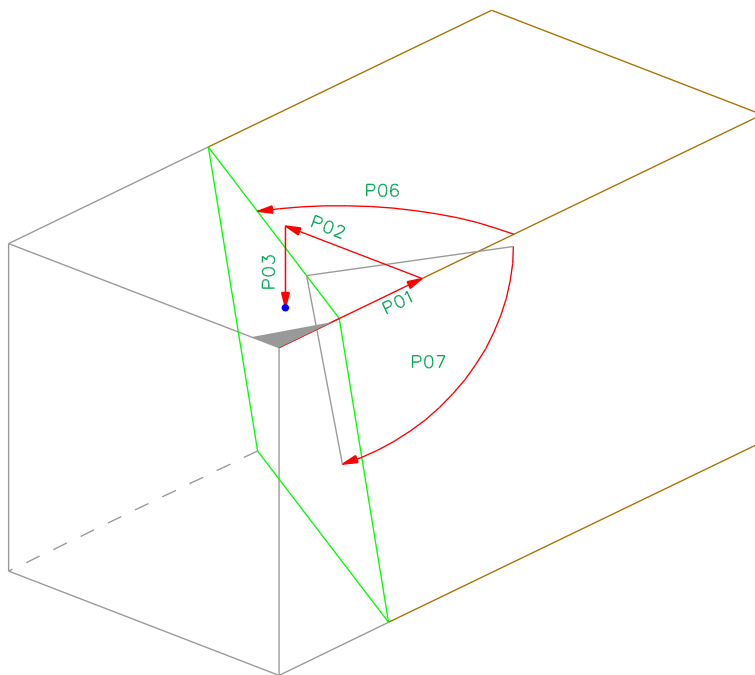
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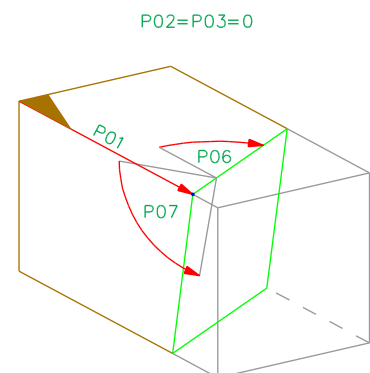
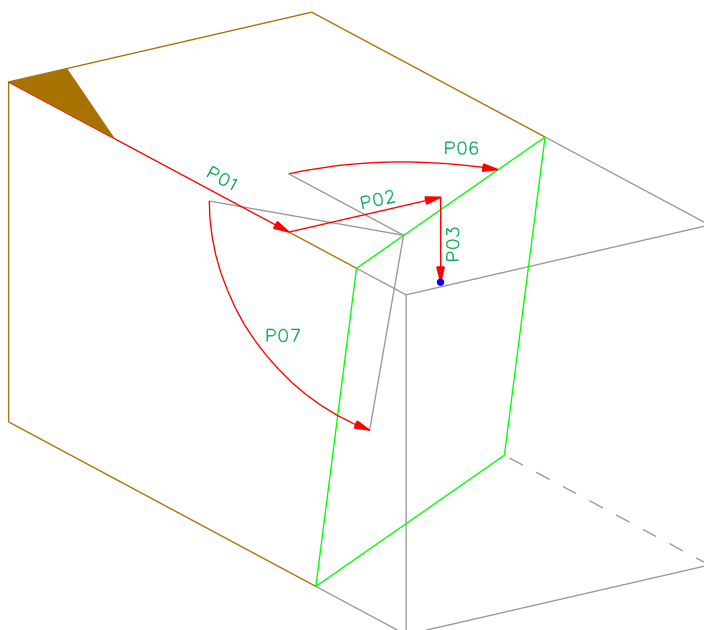
6. Description of processings

6.1 Cut 1-010-X and 2-010-X

2-010-X



1-010-X

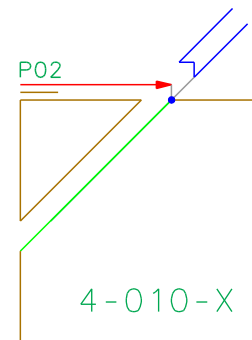
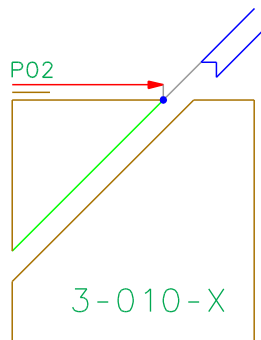
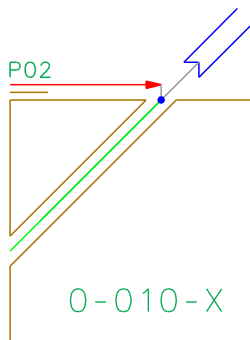
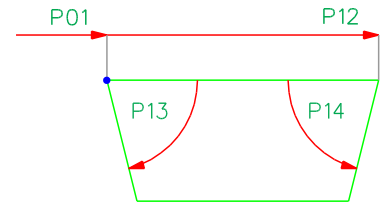
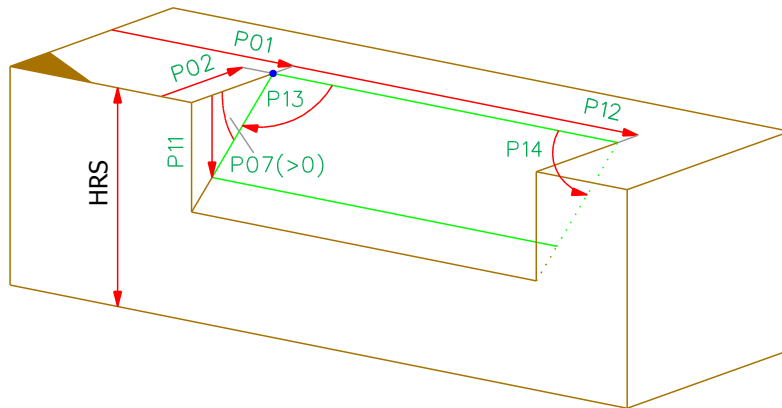
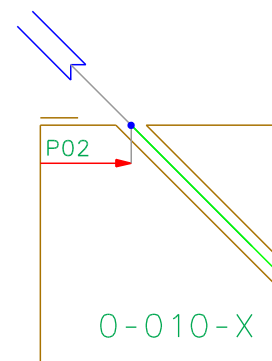
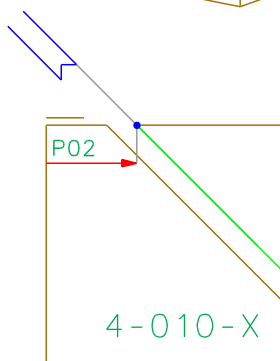
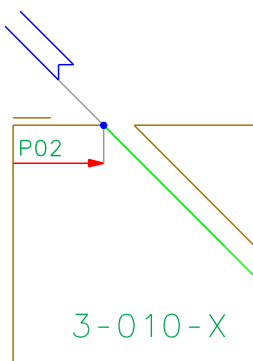
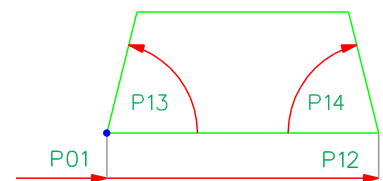
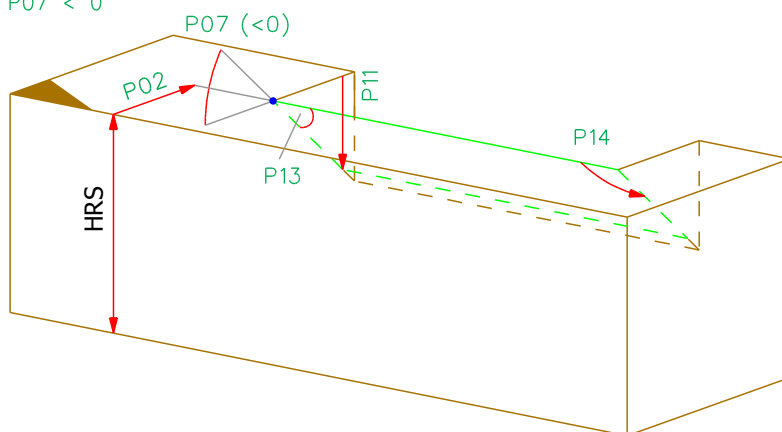


6.1 Parameters Cut

1-010-X and 2-010-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-------------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/50000 | 0 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Distance from the reference side to the reference point (orthogonal) |
| P06 | 0.1 / 179.9 | 90 | Angle between cut edge and reference edge |
| P07 | 0.1 / 179.9 | 90 | Inclination between face and reference side |

6.2 Longitudinal Cut 0-010-X / 3-010-X / 4-010-X

 $P07 > 0$  $P07 < 0$ 

6.2 Parameters Longitudinal Cut

0-010-X / 3-010-X / 4-010-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 20 | Distance from the reference edge to the reference point |
| P04 | 0/7 | 0 | Limit of the 2 ends, binary code |
| P07 | -90/90 | 45 | Inclination to the reference side |
| P11 | 0/50000 | 0 | Depth If P11 is zero, then the face of the cut dispreads to the neighbour-sides or opposite-side to referenceside. |
| P12 | 0/99999 | 0 | Length If P12 and P04 equal to zero, the processing is performed along the whole component length |
| P13 | 1/179 | 90 | Angle in face at start |
| P14 | 1/179 | 90 | Angle in face at end |

Position of the tool:

Group 0: Saw guide in the middle

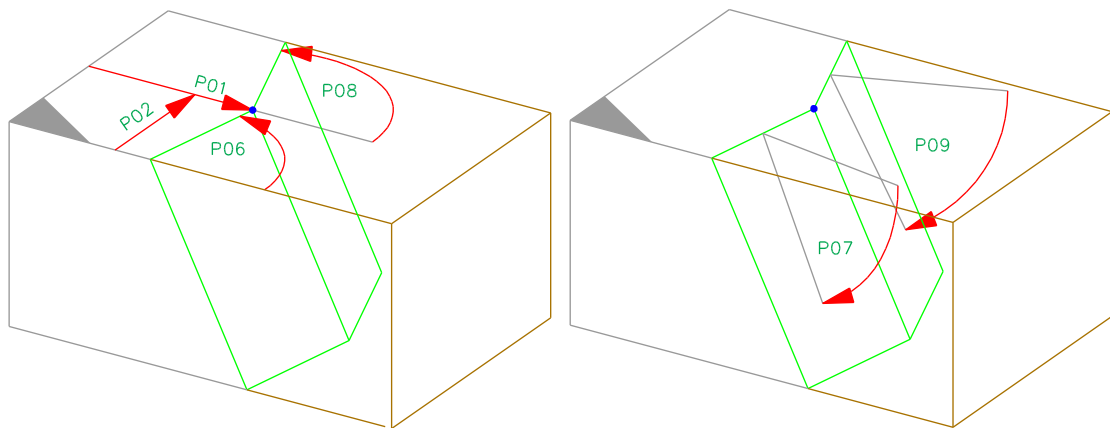
Group 3: Saw guide opposite the reference edge

Group 4: Saw guide towards the reference edge

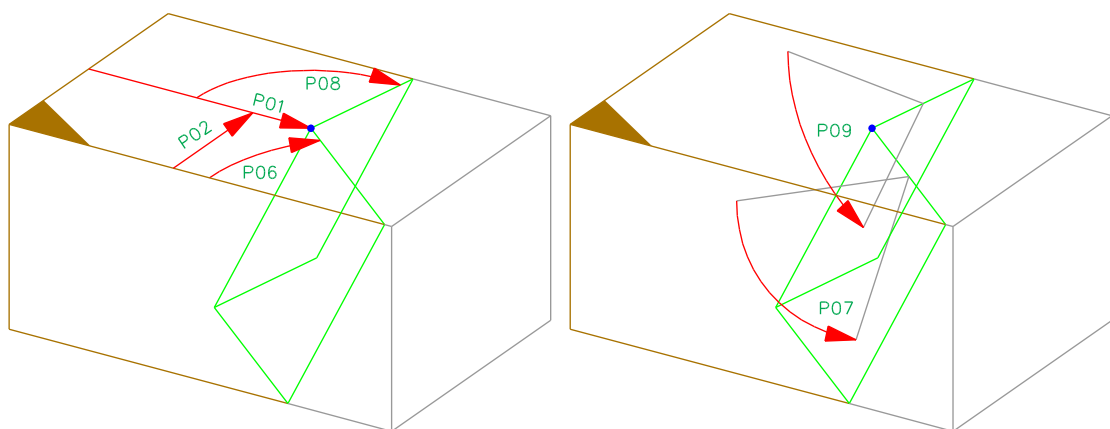
| | | | | P04 | |
|-------|---|---|---|-----|--|
| Bit | 0 | 1 | 2 | | |
| Value | 1 | 2 | 4 | | |
| 0 | 0 | 0 | 0 | 0 | P12 > 0: Length of processing P12 = 0: Processing is performed along the whole part length. |
| 1 | 0 | 0 | 0 | 1 | |
| 1 | 1 | 0 | 0 | 3 | |
| 1 | 0 | 1 | 0 | 5 | |
| 1 | 1 | 1 | 0 | 7 | |

6.3 Double Cut 1-011-X and 2-011-X

2-011-X



1-011-X



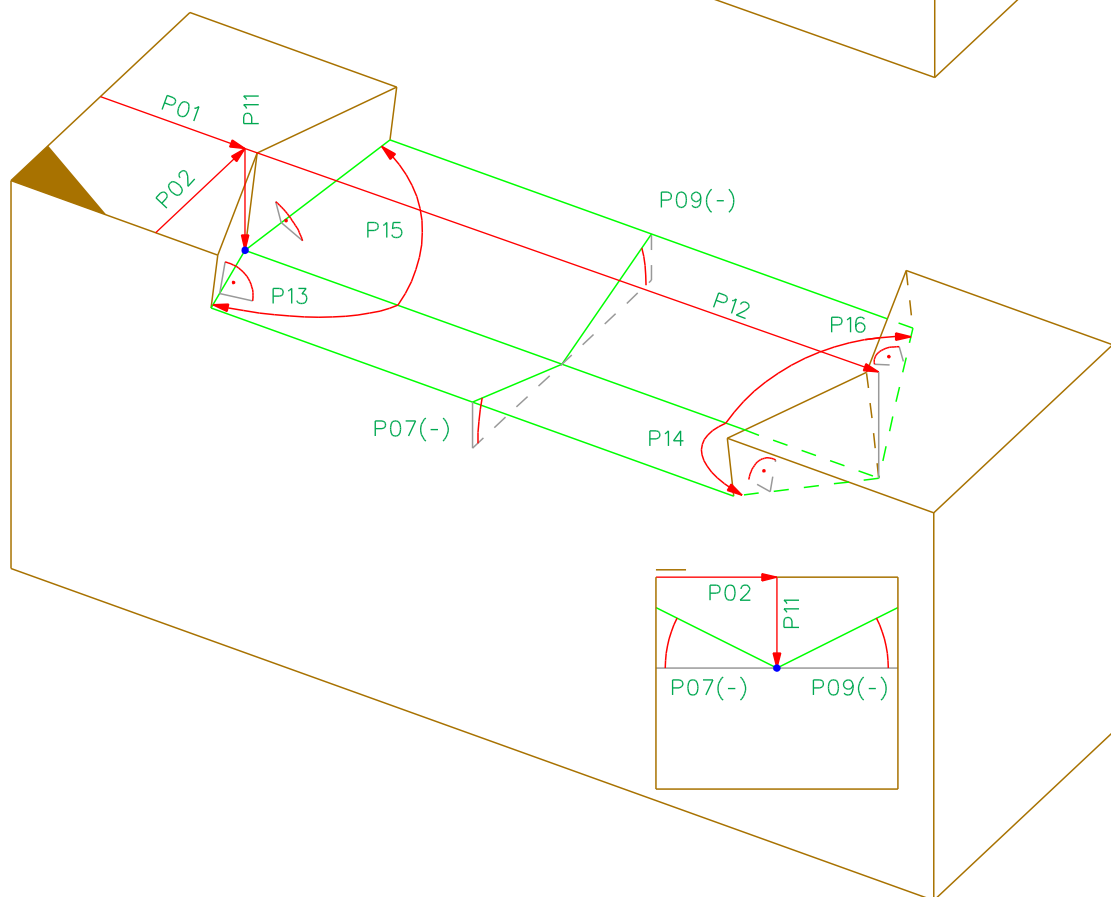
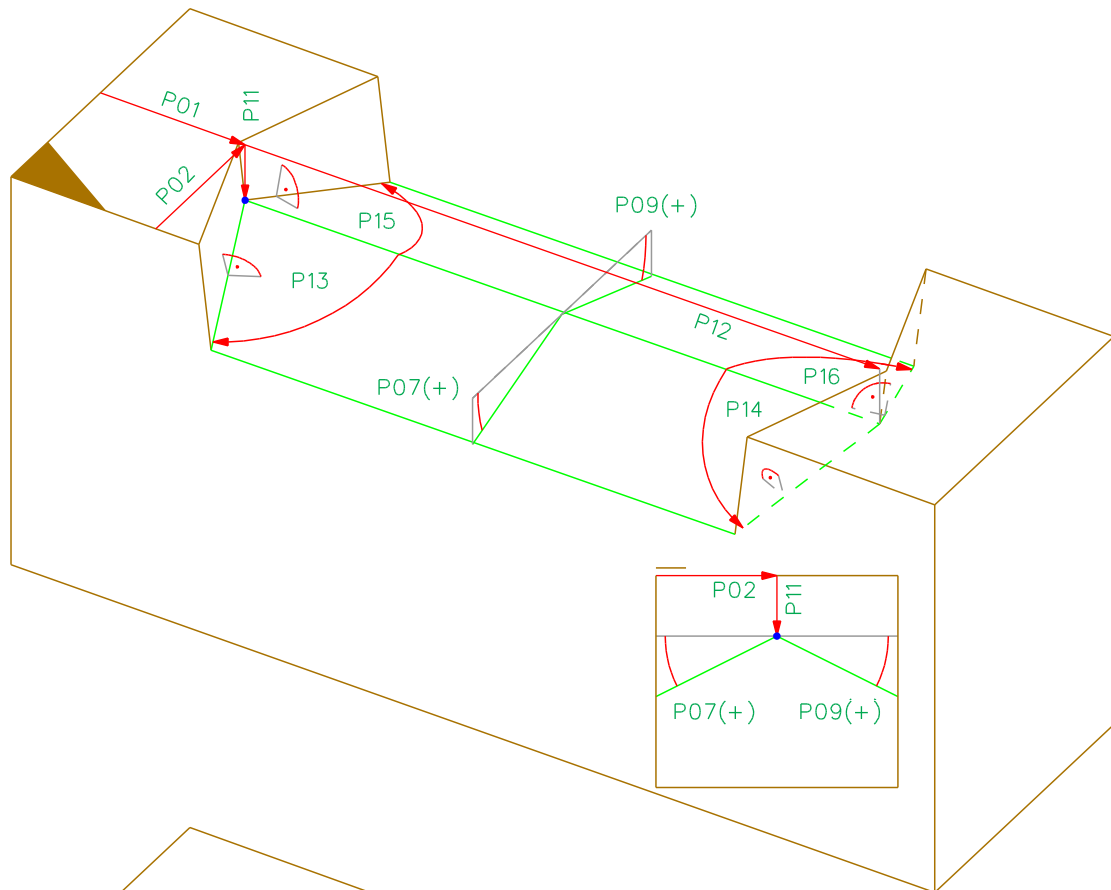
6.3 Parameters Double Cut

1-011-X and 2-011-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 50 | Distance from the reference point to the reference edge |
| P06 | 1/179 | 45 | Angle between the first cutting edge and the reference edge |
| P07 | 1/179 | 90 | Inclination of the first cutting towards the reference side |
| P08 | 1/179 | 90 | Angle between the second cutting edge and the reference edge |
| P09 | 1/179 | 90 | Inclination of the second cutting towards the reference side |

6.4 Ridge or Valley Cut 0-012-X

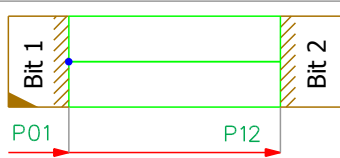


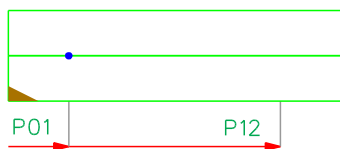
0-012-X



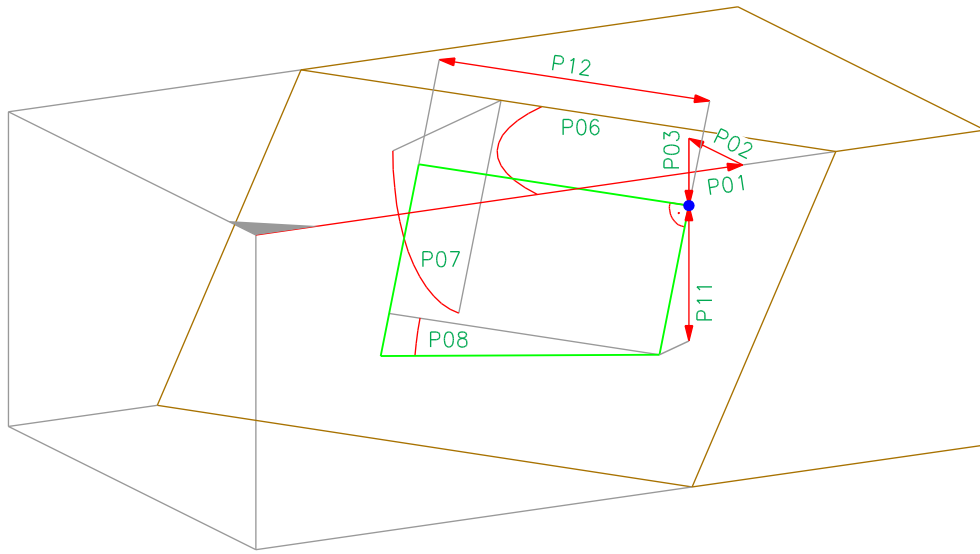
6.4 Parameters Ridge or Valley Cut

0-012-X

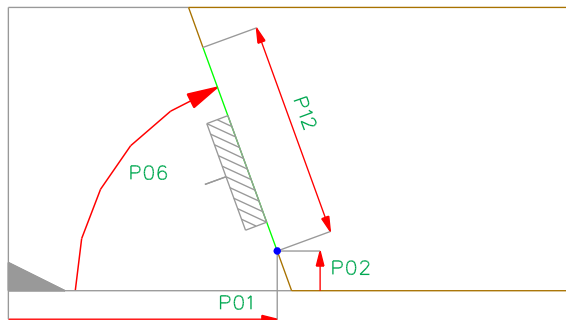
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/50000 | WRS/2 | Distance from the reference point to the reference edge |
| P04 | 0/7 | 0 | Limit of the 2 ends, binary code |
| P07 | -89/89 | 45 | Inclination between the first face and the reference side |
| P09 | -89/89 | 45 | Inclination between the second face and the reference side |
| P11 | 0/50000 | 0 | Depth |
| P12 | 0/99999 | 0 | Length If P12 and P04 equal to zero, the processing is performed along the whole component length |
| P13 | 1/179 | 90 | Angle in face at reference edge at start |
| P14 | 1/179 | 90 | Angle in face at reference edge at end |
| P15 | 1/179 | 90 | Angle in face in opposite to reference edge at start |
| P16 | 1/179 | 90 | Angle in face in opposite to reference edge at end |

| | | | | P04 | |
|-------|---|---|---|-----|--|
| Bit | 0 | 1 | 2 | | |
| Value | 1 | 2 | 4 | | |
| 0 | 0 | 0 | 0 | 0 | P12 > 0: Length of processing P12 = 0: Processing is performed along the whole part length. |
| 1 | 0 | 0 | 0 | 1 |  |
| 1 | 1 | 0 | 0 | 3 |  |
| 1 | 0 | 1 | 0 | 5 |  |
| 1 | 1 | 1 | 0 | 7 |  |

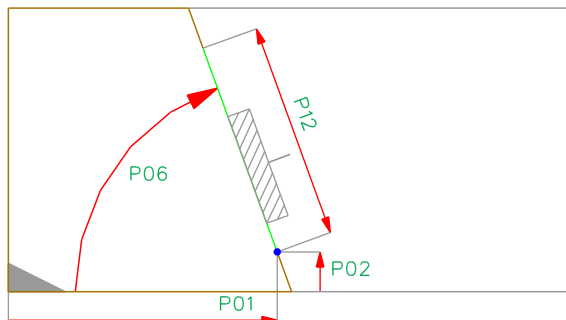
6.5 Saw Cut 0-013-X / 3-013-X / 4-013-X



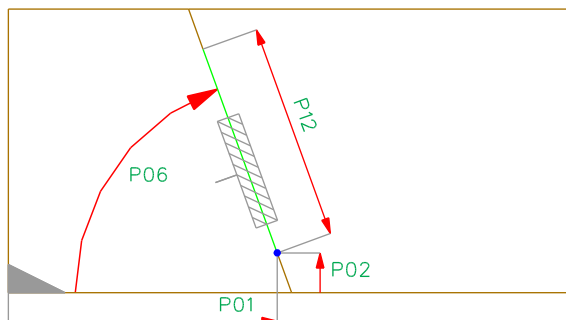
4-013-X



3-013-X



0-013-X



6.5 Parameters Saw Cut

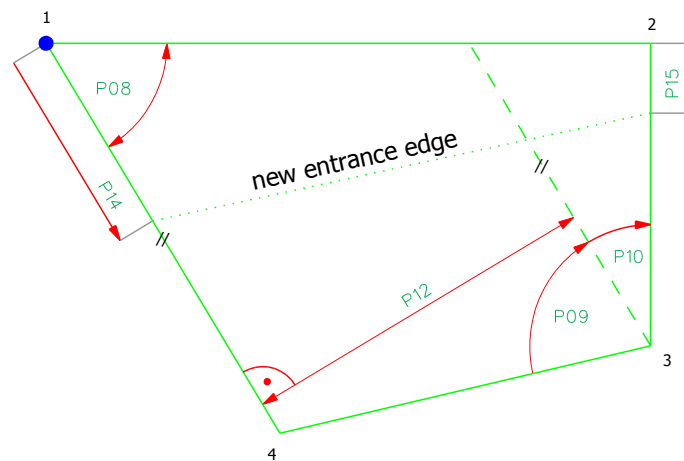
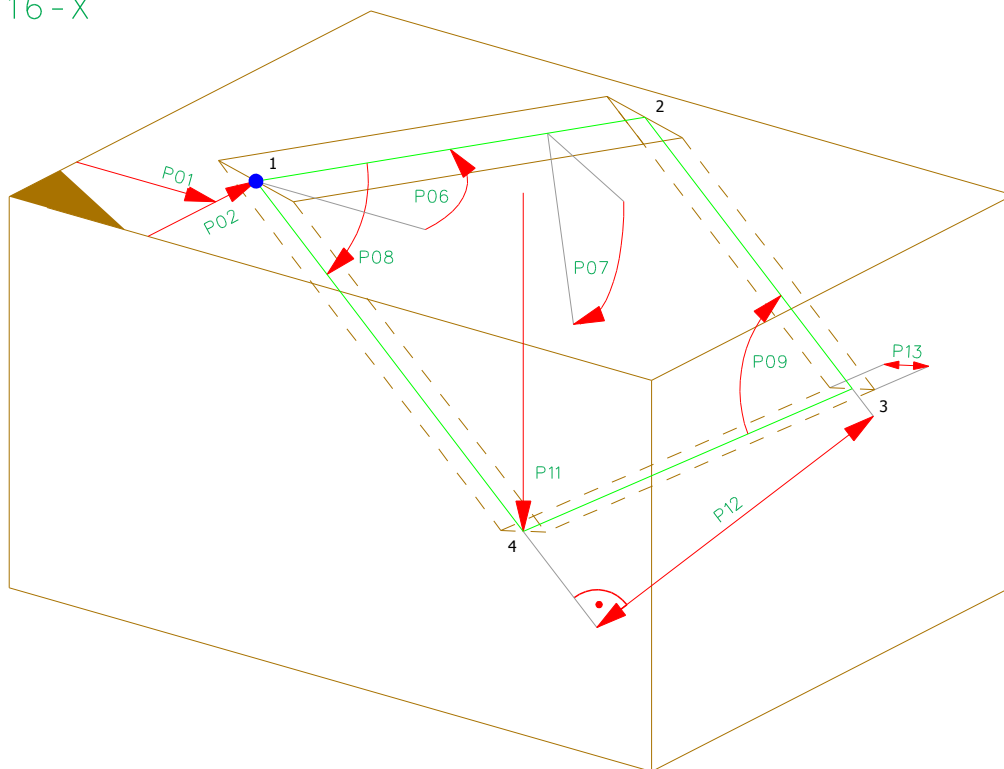
0-013-X / 3-013-X / 4-013-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference point to the reference edge |
| P03 | +/- 50000 | 0 | Displacement to the reference side |
| P06 | +/- 180 | 90 | Angle between cut edge and reference edge |
| P07 | 0/180 | 90 | Inclination to the reference side |
| P08 | -45/45 | 0 | Angle to the reference edge in the cut face |
| P11 | 0/50000 | HRS/2 | Depth, orthogonal to the reference side |
| P12 | 1/99999 | WRS | Length |

6.6 Slot 3-016-X and 4-016-X

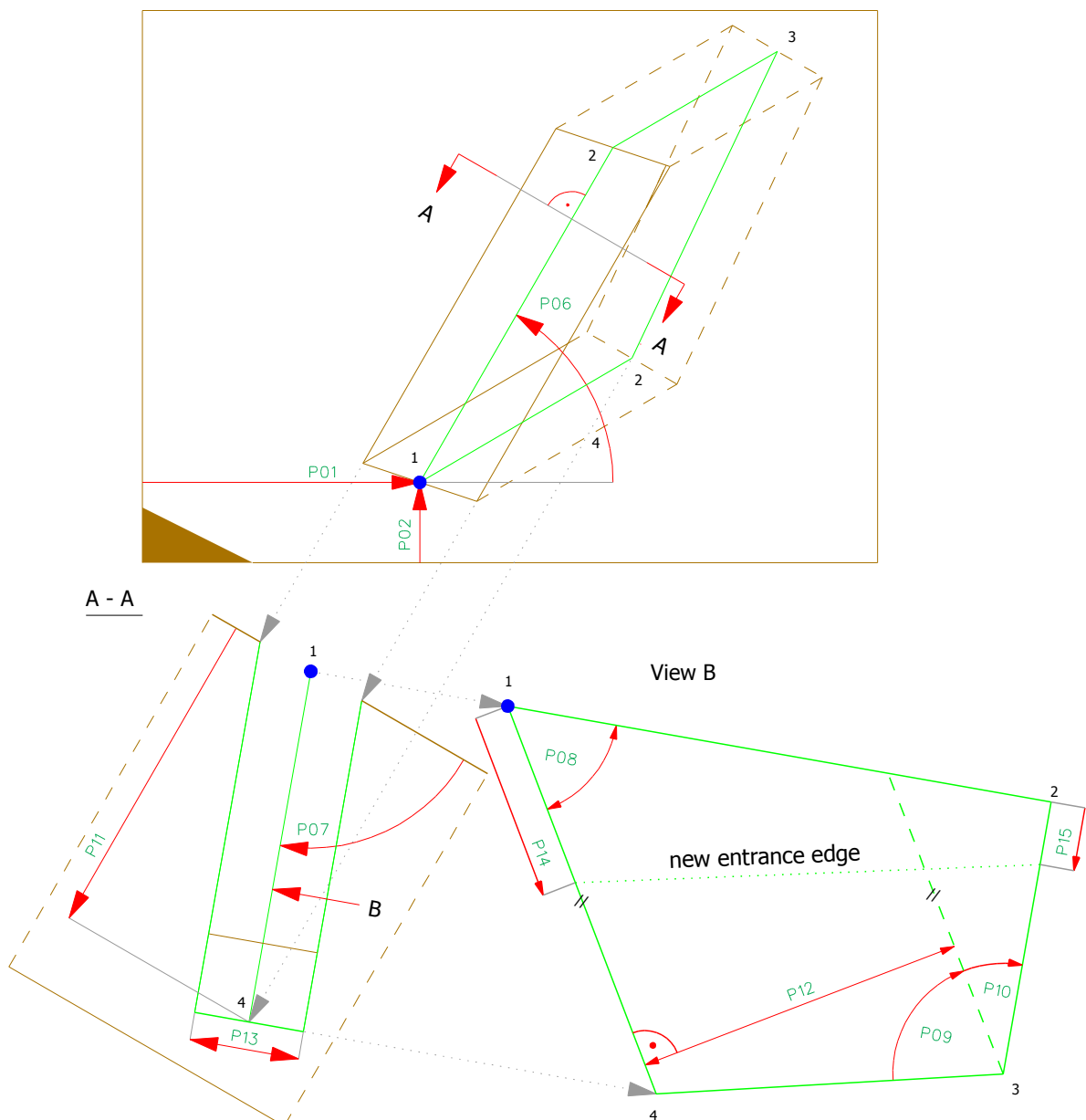
 $P03 = 0$

4-016-X



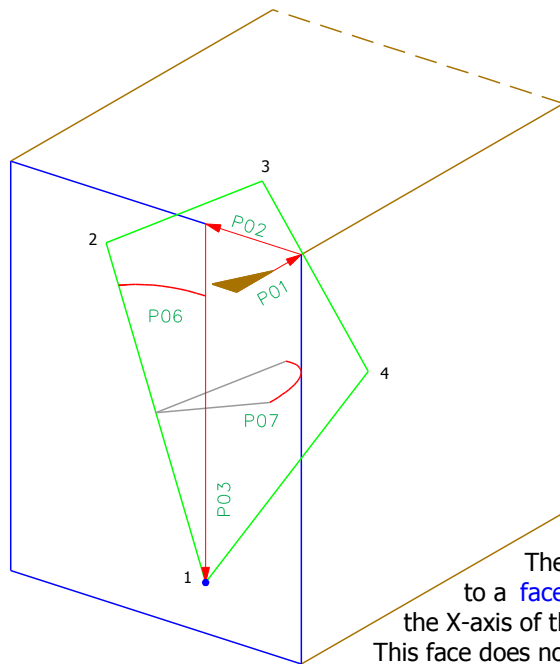
P03 = 0

4-016-X



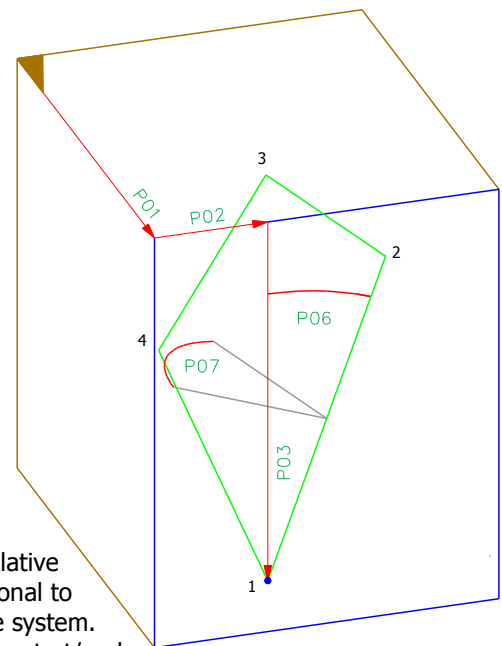
$P03 > 0$

4-016-X

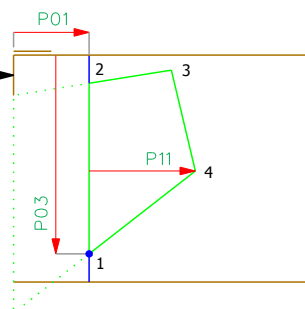


The slot is defined relative to a **face**, which is orthogonal to the X-axis of the part coordinate system. This face does not have to be at the start/end of the beam.

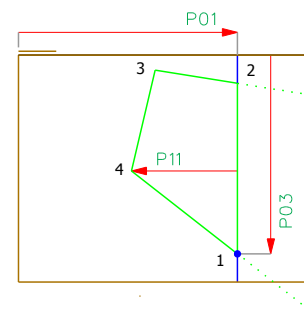
3-016-X



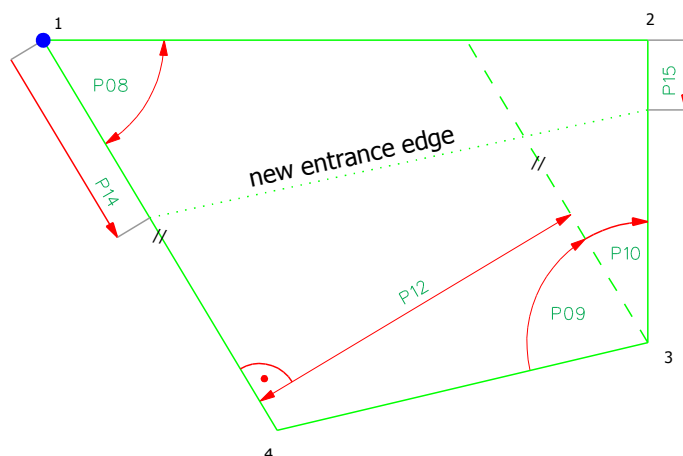
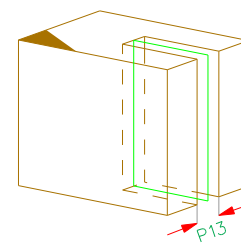
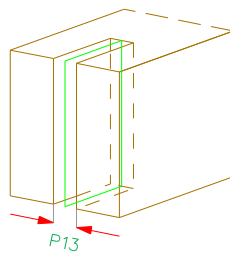
front side
beam start



The slot is not limited towards the front sides when $P03 > 0$.



front side
beam end



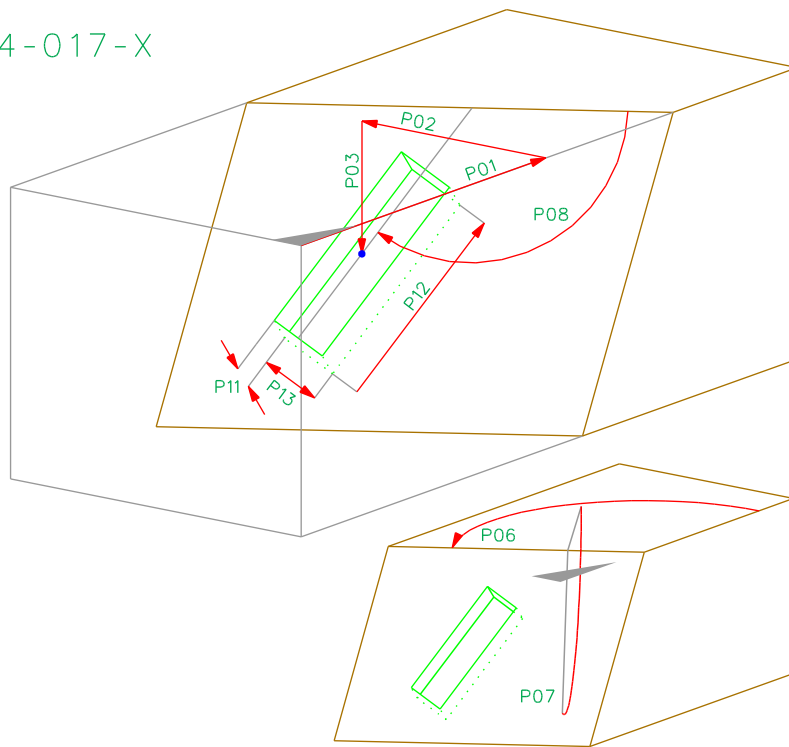
6.6 Parameters Slot

3-016-X and 4-016-X

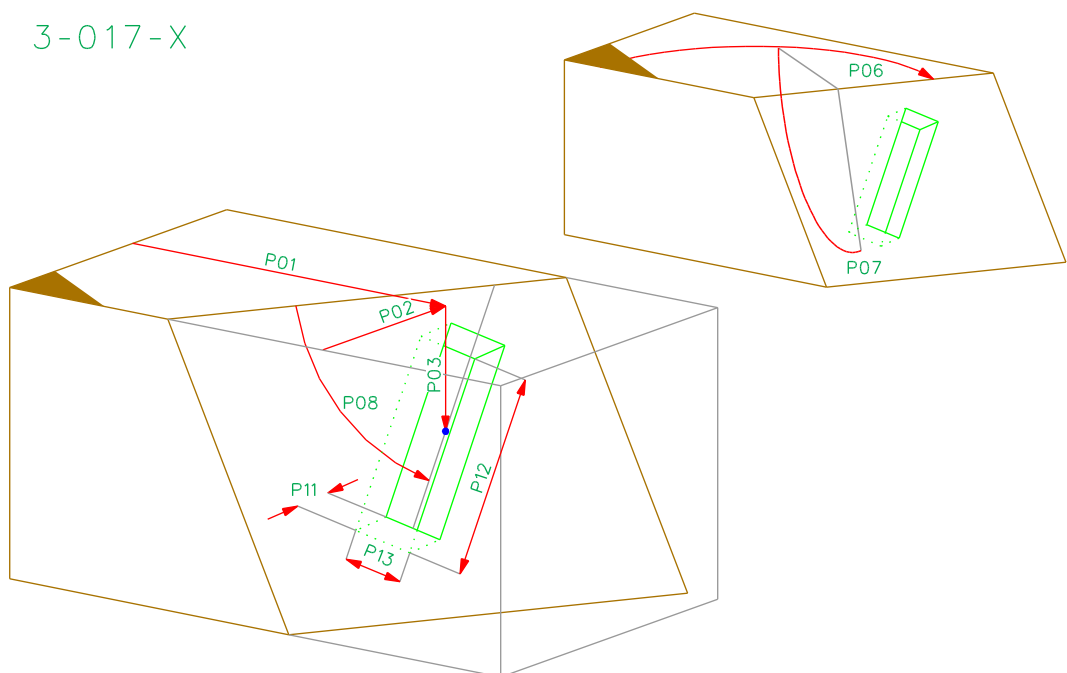
| Parameter | Min/Max | Presetting | Description |
|-----------|---------------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Distance to the reference point orthogonal to the reference side P03 = 0: Slot on one of the 4 sides of the component. P03 > 0: Slot on one of the 2 front sides of the component |
| P04 | 0/63 | 0 | Limit of the 6 faces of the slot, binary code See description of P04 for the Lap Joint 3,4-030-X |
| P06 | -90/90 | 0 | Angle to the reference edge in the reference side |
| P07 | 1/179 | 90 | Inclination to the reference side |
| P08 | 1/179 | 90 | Interior angle at reference point |
| P09 | 1/179 | 90 | Interior angle at opposite of reference point |
| P10 | 1-P09/179-P09 | 0 | Addition to P09 |
| P11 | 1/50000 | 100 | Depth orthogonal to the reference side |
| P12 | 1/99999 | 200 | Length |
| P13 | 1/50000 | 10 | Thickness |
| P14 | +/- 50000 | 0 | Displacement of the entrance edge at reference point |
| P15 | +/- 50000 | 0 | Displacement of the entrance edge at opposite of reference point |

6.7 Front Slot 3-017-X and 4-017-X

4-017-X



3-017-X



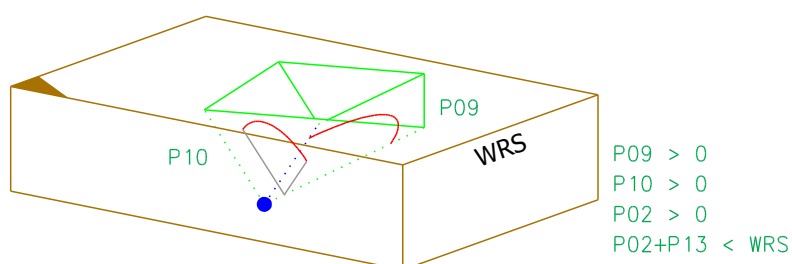
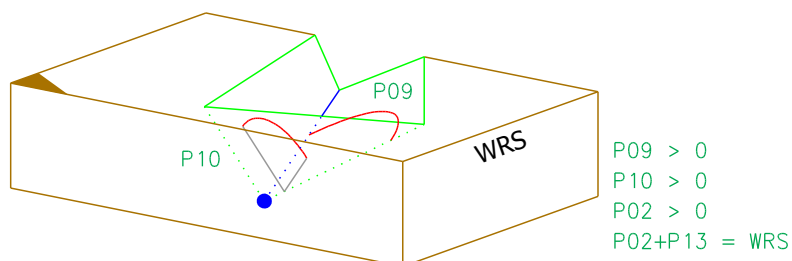
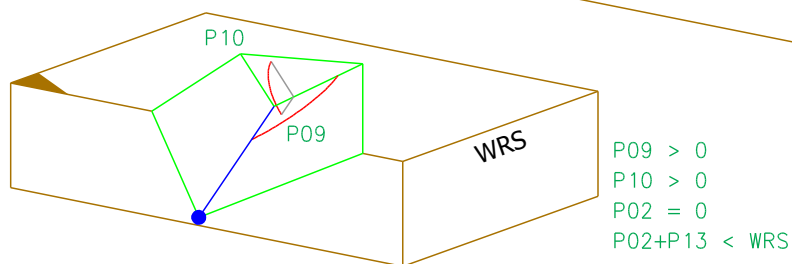
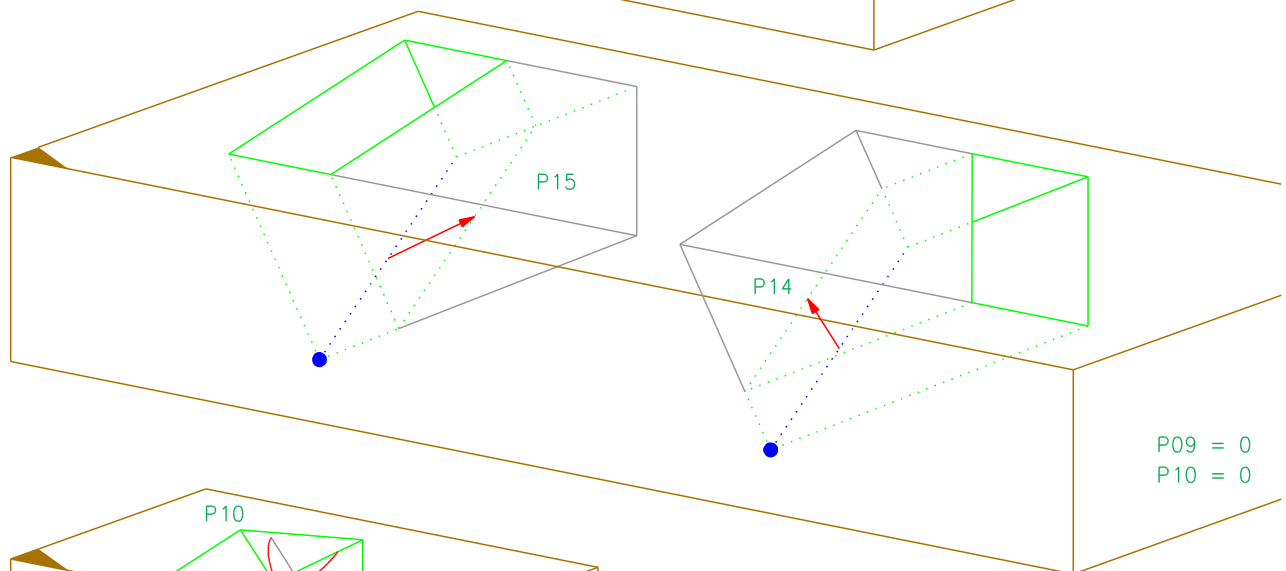
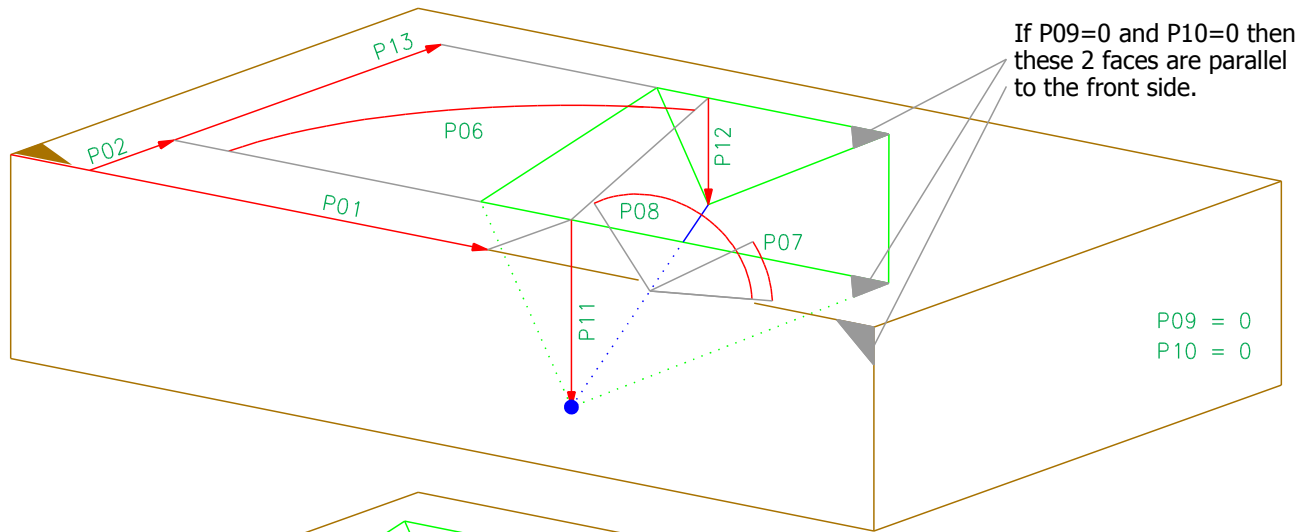
6.7 Parameters Front Slot

3-017-X and 4-017-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference point to the reference edge |
| P03 | 0/50000 | 0 | Distance to the reference point orthogonal to the reference side |
| P06 | 1/179 | 90 | Angle between cut edge and reference edge |
| P07 | 1/179 | 90 | Inclination to the reference side |
| P08 | 1/359 | 90 | Angle between the longitudinal axis of the slot and the reference side |
| P11 | 0/50000 | 20 | Depth |
| P12 | 0/50000 | 40 | Length |
| P13 | 0/50000 | 40 | Width |

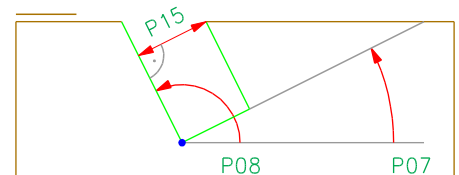
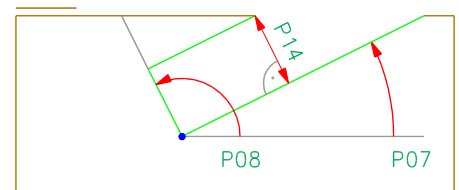
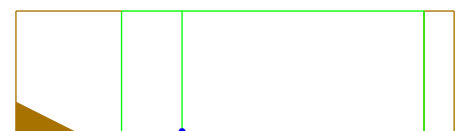
6.8 Birds Mouth 3-020-X and 4020-X

4-020-X

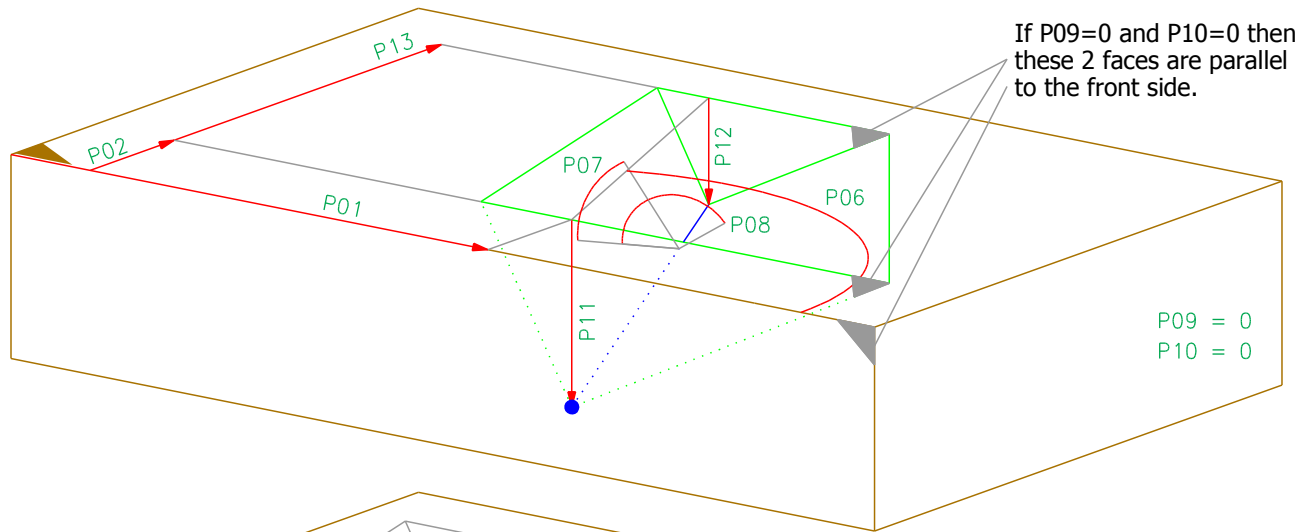


Simple example

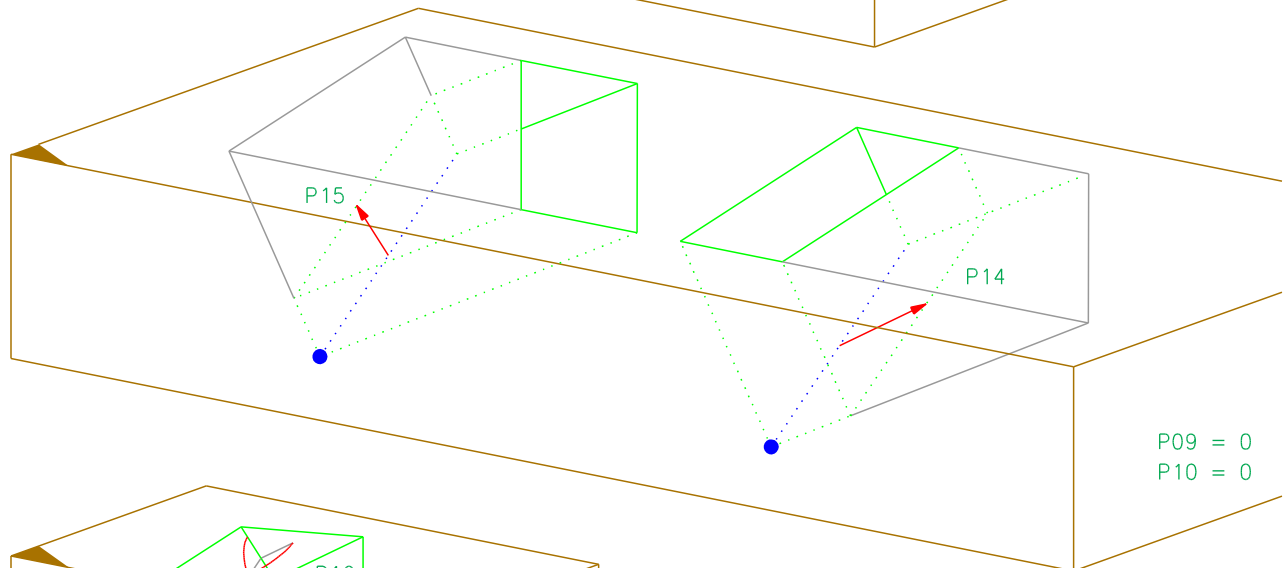
$P02=0$ $P11=P12$
 $P06=90$ $P13=WRS$



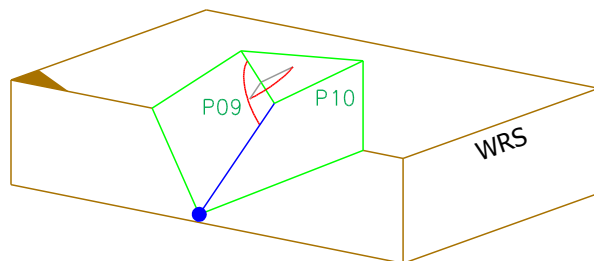
3-020-X



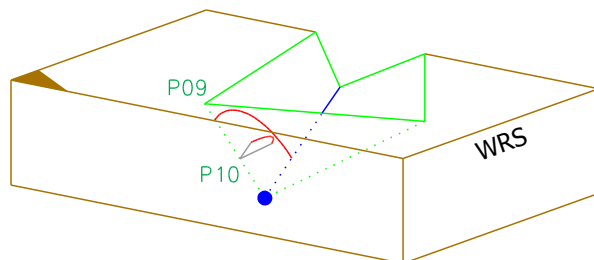
$P09 = 0$
 $P10 = 0$



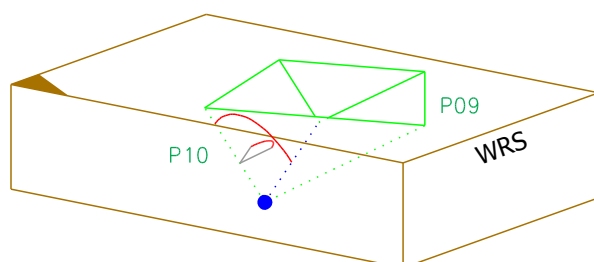
$P09 = 0$
 $P10 = 0$



$P09 > 0$
 $P10 > 0$
 $P02 = 0$
 $P02+P13 < WRS$



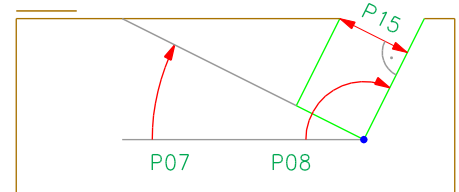
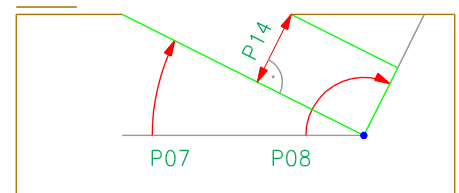
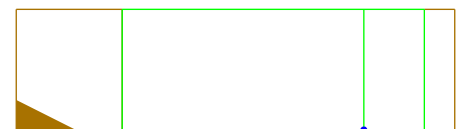
$P09 > 0$
 $P10 > 0$
 $P02 > 0$
 $P02+P13 = WRS$



$P09 > 0$
 $P10 > 0$
 $P02 > 0$
 $P02+P13 < WRS$

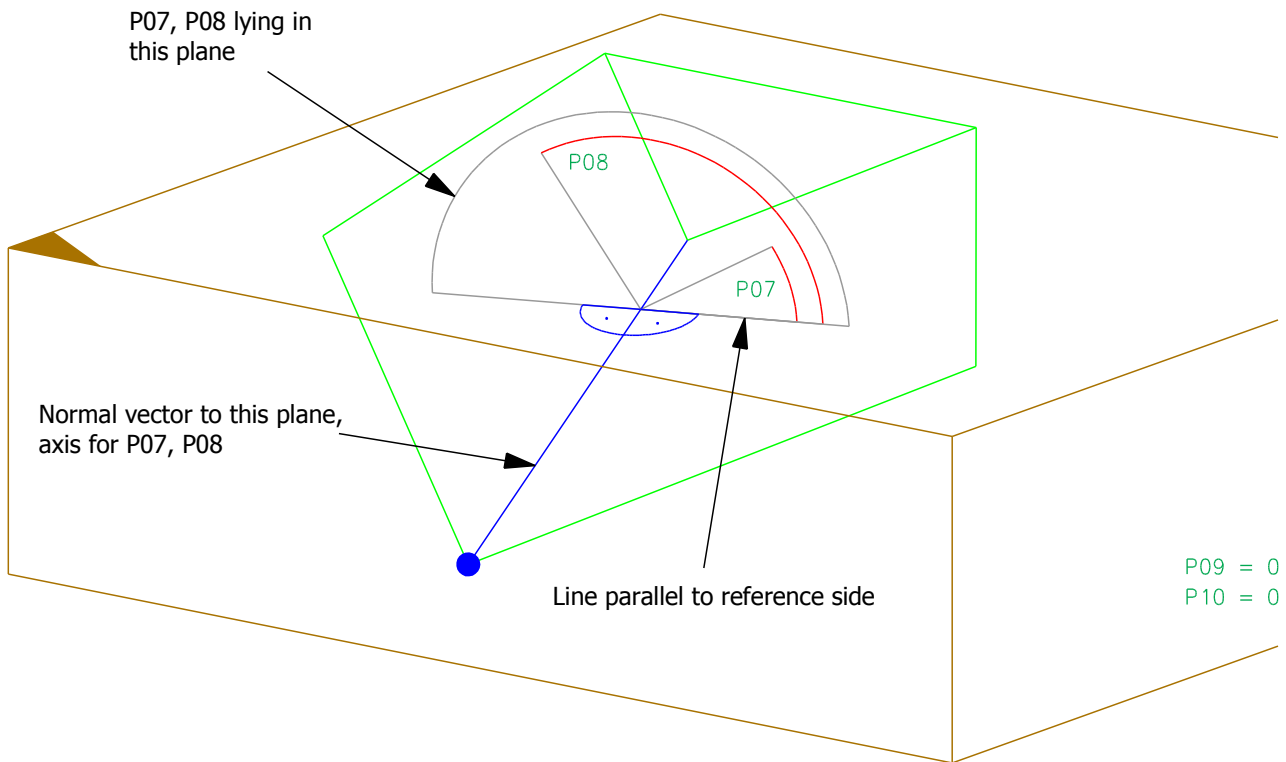
Simple example

$P02=0$ $P11=P12$
 $P06=90$ $P13=WRS$



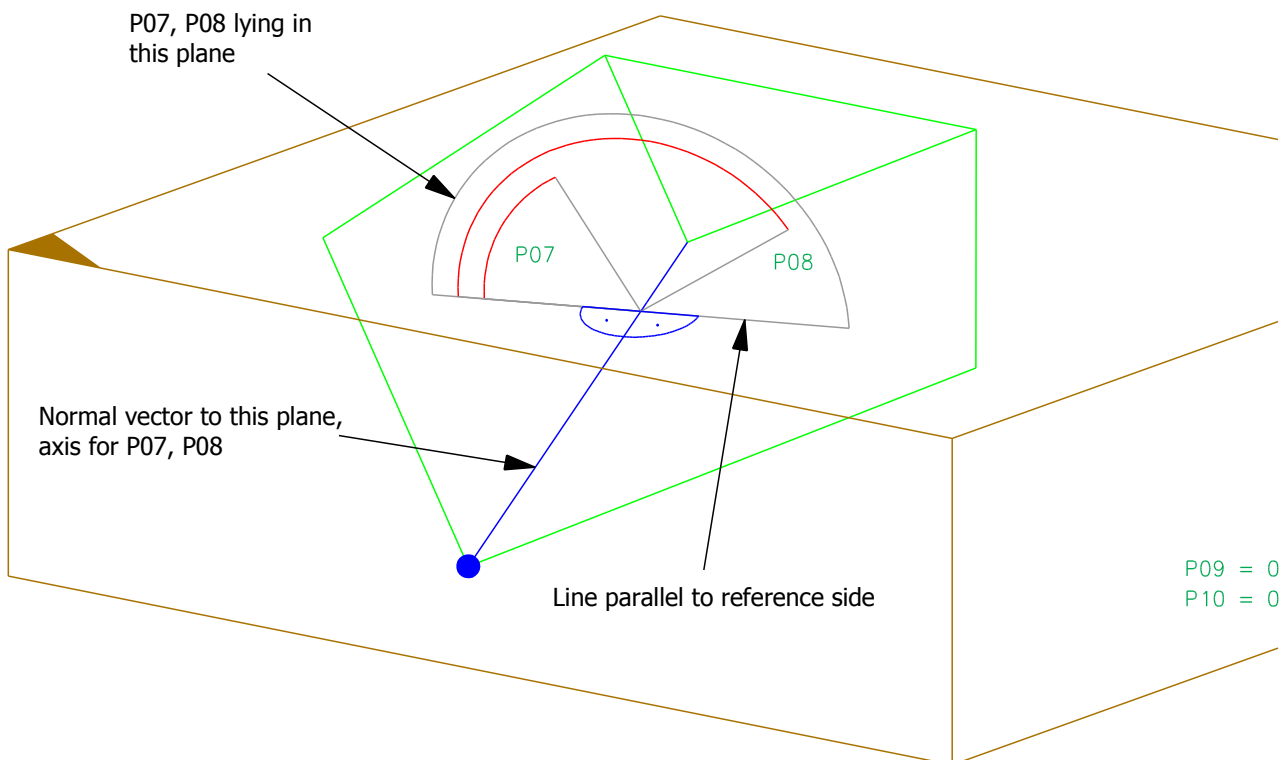
3-020-X

Another presentation of parameters P07, P08



3-020-X

Another presentation of parameters P07, P08

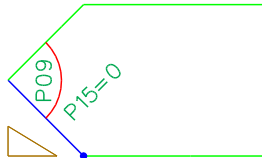


4-020-X $P09 > 0$

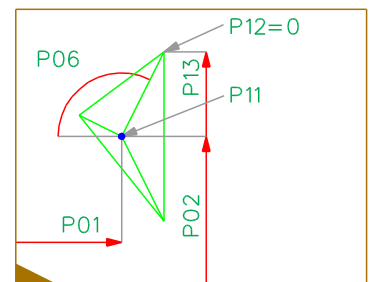
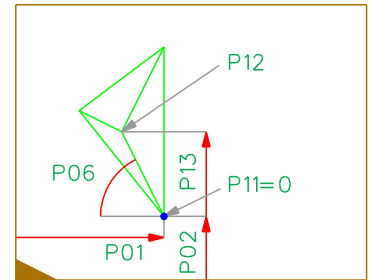
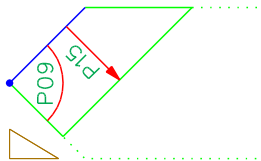
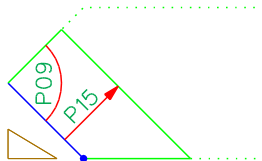
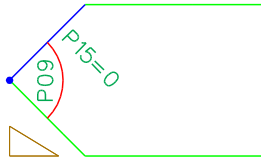
Another presentation of parameters

View orthogonal to face "P07"

The counterpart enters at the reference edge.



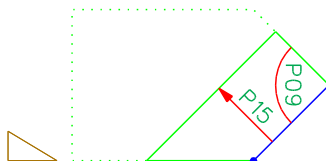
The counterpart enters at opposite of the reference edge.

3-020-X $P09 > 0$

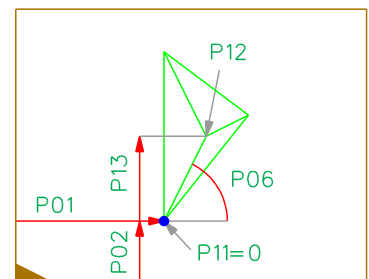
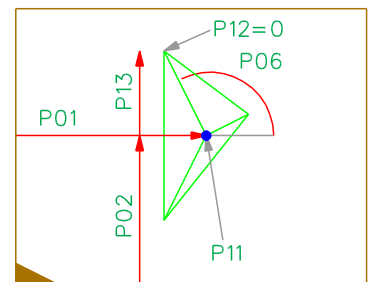
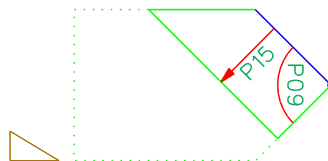
Another presentation of parameters

View orthogonal to face "P07"

The counterpart enters at the reference edge.



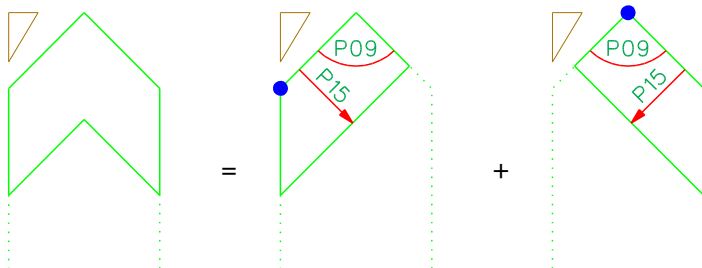
The counterpart enters at opposite of the reference edge.



6.8 Parameters Birds Mouth

3-020-X and 4-020-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P05 | 0/1 | 0 | P05=1: drillhole for rafter nail, P05=0: no drillhole The machineside defines place and direction of the drillhole. |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference area |
| P07 | 0/180 | 45 | Inclination between face 1 and reference side |
| P08 | 0/180 | 135 | Inclination between face 2 and reference side |
| P09 | 0/179 | 0 | First cut angle of the counterpart If P09 is zero, the limit face beside face 1 is parallel to component side. |
| P10 | 0/179 | 0 | First cut inclination of the counterpart If P10 is zero, the limit face beside face 1 is parallel to component side. |
| P11 | 0/50000 | 20 | Depth 1 orthogonal to reference side |
| P12 | 0/50000 | 20 | Depth 2 orthogonal to reference side |
| P13 | 0/50000 | 0 | Grooving depth in the transverse direction of the component If P13 is zero, then its value must be calculated: $P13=WRS-P02$ |
| P14 | 0/50000 | 0 | Height Counterpart. Zero means: no limit. Measurement orthogonal to face 1 (P07). |
| P15 | 0/50000 | 0 | Width Counterpart. Zero means: no limit. Measurement orthogonal to face 2 (P08). |

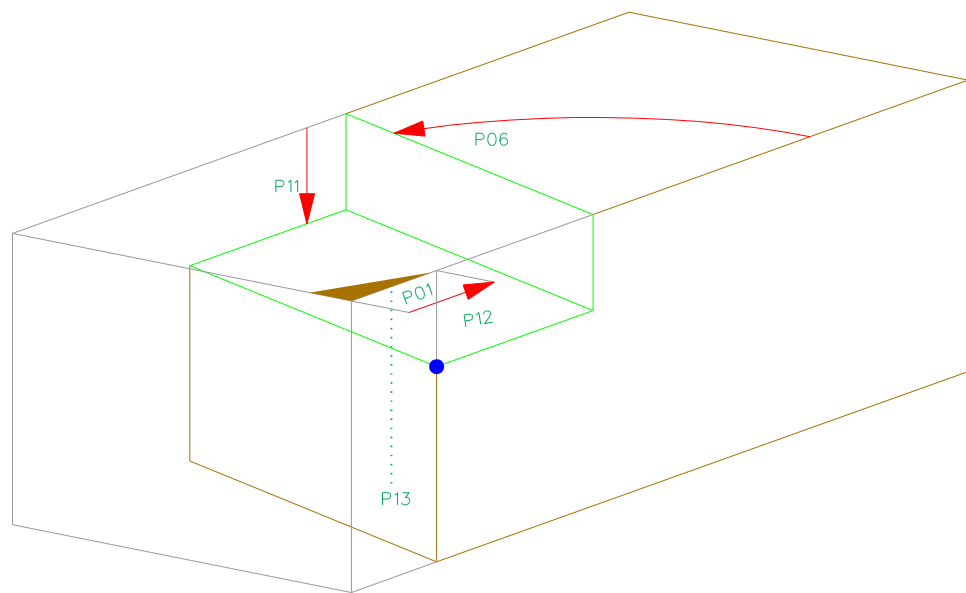


This kind of notch must be described with two notches.

6.9 Ridge Lap 1-030-X und 2-030-x

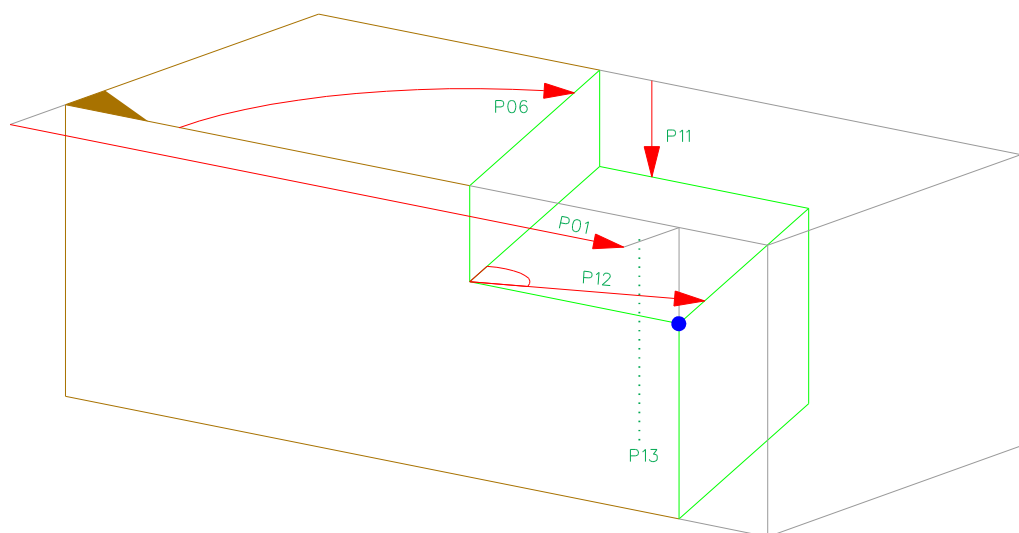
2-030-X

P02 = 0



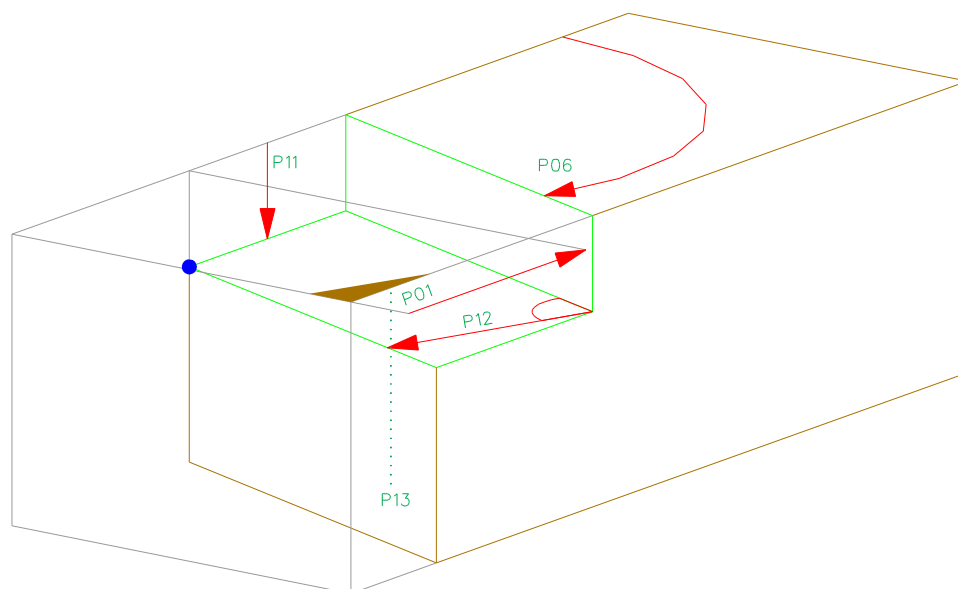
1-030-X

P02 = 0



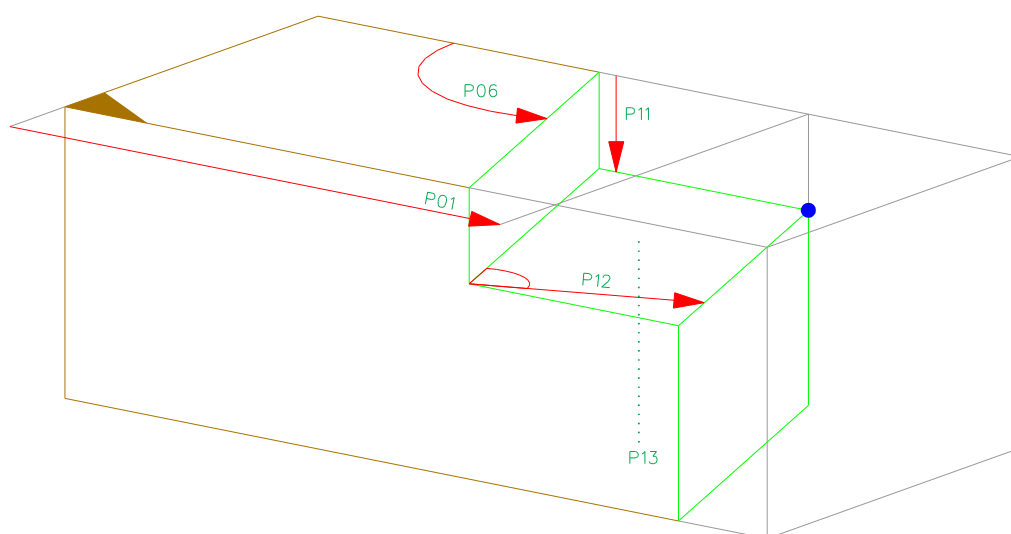
2-030-X

P02 = 1



1-030-X

P02 = 1



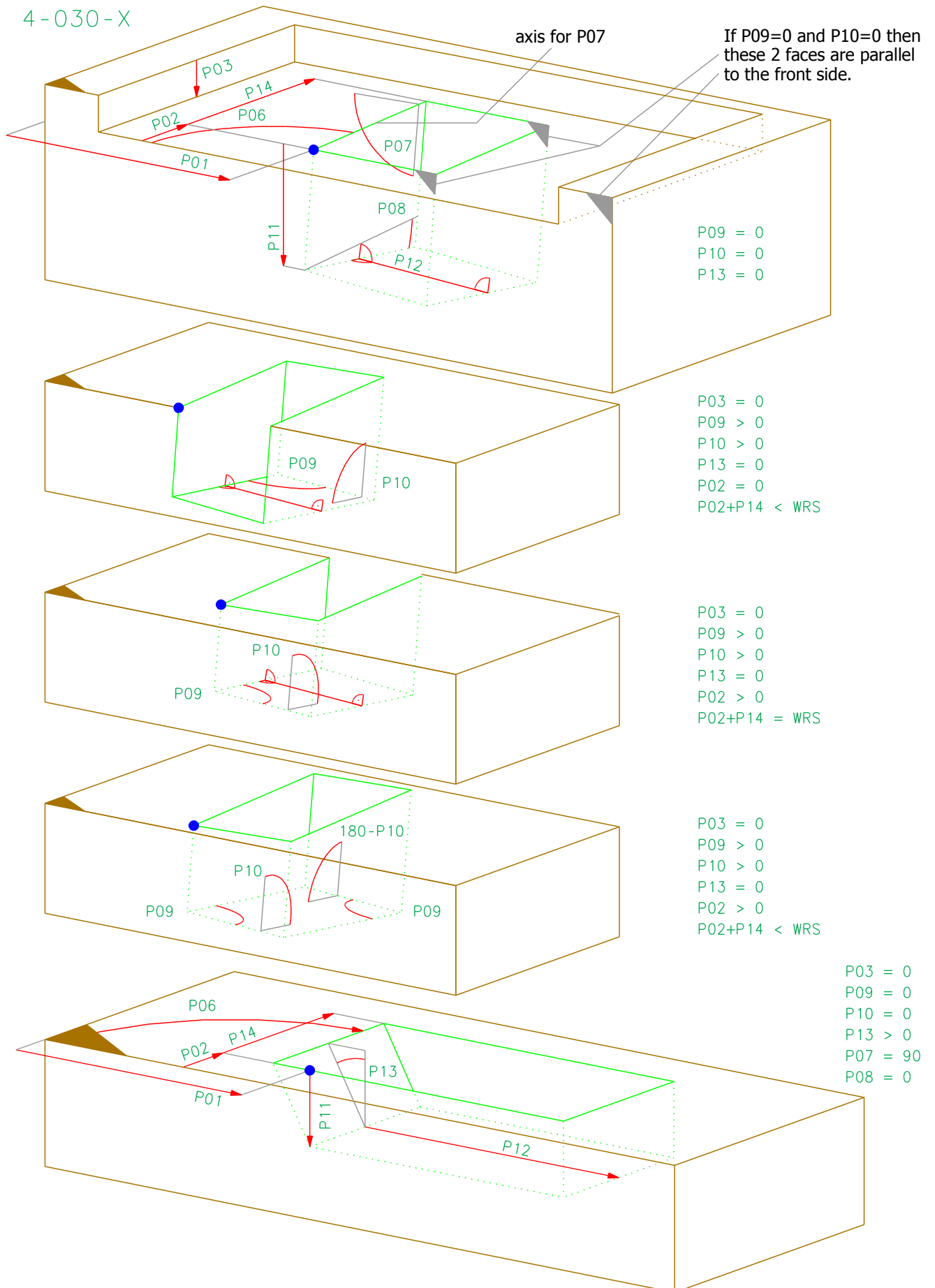
6.9 Parameters Ridge Lap

1-030-X and 2-030-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/1 | 0 | 0: Reference point on referene edge 1: Reference point on the opposite edge |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference side |
| P11 | 1/50000 | HRS/2 | Depth of Half Lap |
| P12 | 1/50000 | 100 | Width of Half Lap |
| P13 | 0/1000 | 0 | Drill hole diameter |

6.10 Lap Joint 3-030-X and 4-030-X

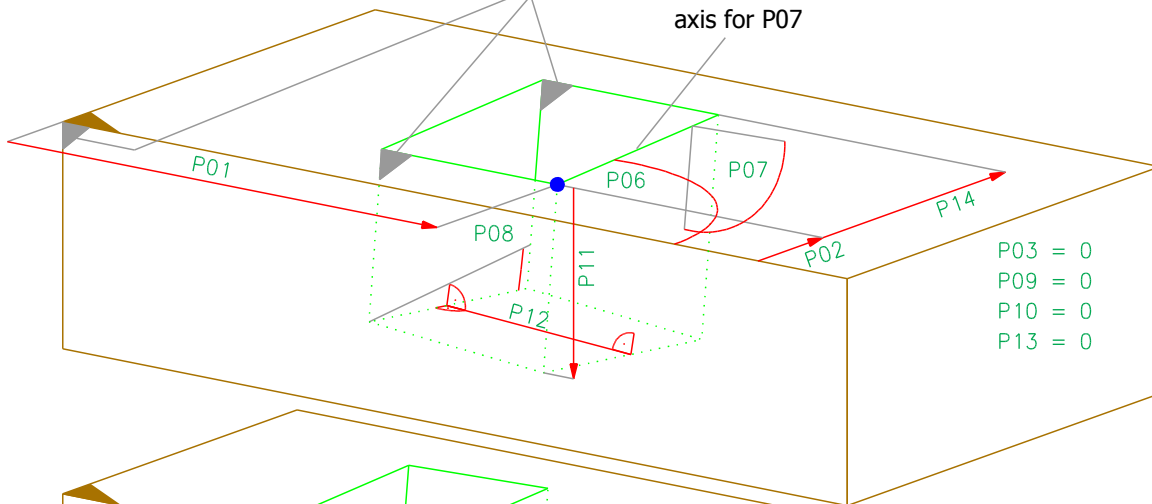
4-030-X



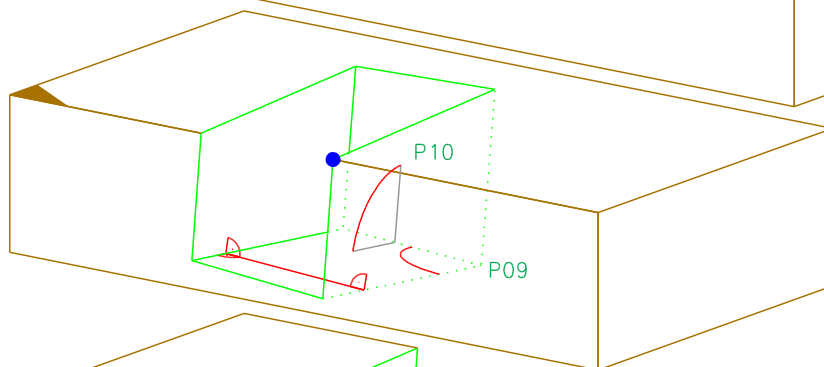
3-030-X

If $P09=0$ and $P10=0$ then
these 2 faces are parallel
to the front side.

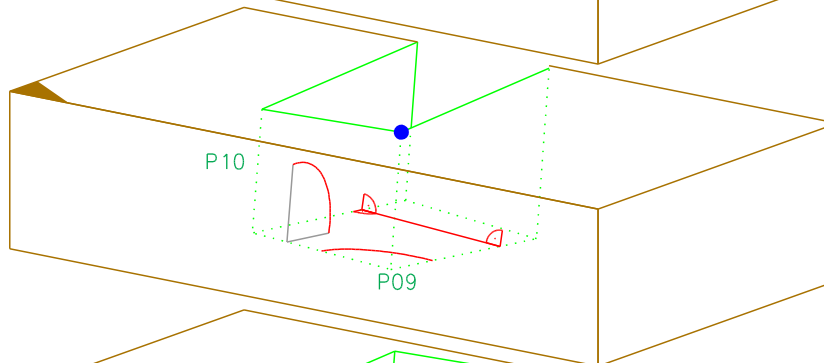
axis for P07



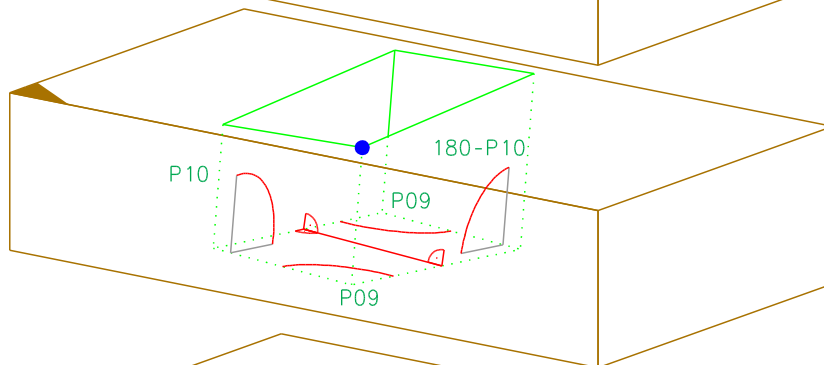
$P03 = 0$
 $P09 = 0$
 $P10 = 0$
 $P13 = 0$



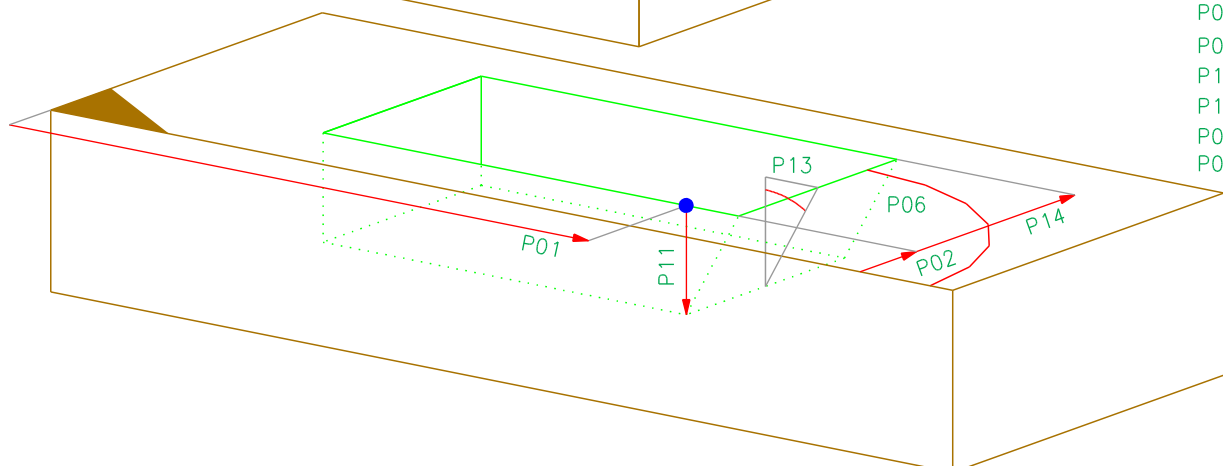
$P03 = 0$
 $P09 > 0$
 $P10 > 0$
 $P13 = 0$
 $P02 = 0$
 $P02+P14 < WRS$



$P03 = 0$
 $P09 > 0$
 $P10 > 0$
 $P13 = 0$
 $P02 > 0$
 $P02+P14 = WRS$



$P03 = 0$
 $P09 > 0$
 $P10 > 0$
 $P13 = 0$
 $P02 > 0$
 $P02+P14 < WRS$



$P03 = 0$
 $P09 = 0$
 $P10 = 0$
 $P13 > 0$
 $P07 = 90$
 $P08 = 0$

6.10 Parameters Lap Joint

3-030-X and 4-030-X

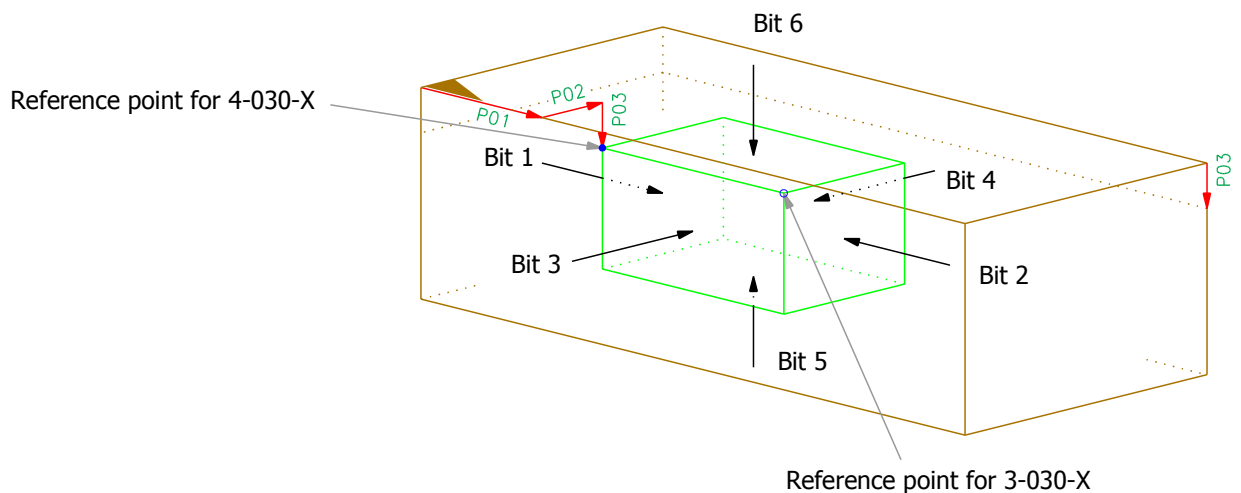
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Displacement to the reference side |
| P04 | 0/63 | 0 | Limit of the 6 faces of the lap, binary code |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference side |
| P07 | 1/179 | 90 | Inclination to the reference side |
| P08 | -89/89 | 0 | Angle between edge and reference side in face |
| P09 | 0/179 | 0 | Angle in the floor face |
| P10 | 0/179 | 0 | Angle between base face and one face of lap |
| P11 | +/- 50000 | HRS/2 | Distance from the reference side to the reference point (orthogonal) |
| P12 | 1/99999 | 100 | Length |
| P13 | 0/89 | 0 | Chamfer angle |
| P14 | 0/50000 | WRS | Grooving depth (length of the lapped scarf in transverse direction) If P14 is zero, then its value must be calculated: $P14 = WRS - P02$ |

P04

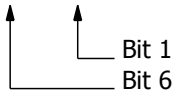
This parameter describes, if the sides of lap are limited.
This description also applies to processings 016, 032 and 039.
A lap has six faces, so the information is described with binary code.

0=face is limited
1=face is open

P04 gives no information, on which edge (or which edges) of the referenceside the lap is coming out

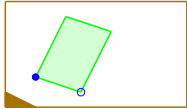


P04=0="000000"

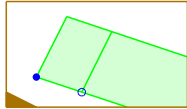


Bit 1 = $2^0 = 1$
 Bit 2 = $2^1 = 2$
 Bit 3 = $2^2 = 4$
 Bit 4 = $2^3 = 8$
 Bit 5 = $2^4 = 16$
 Bit 6 = $2^5 = 32$

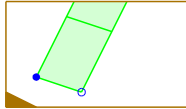
P04=0="xx0000"



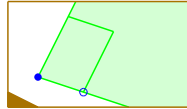
P04=2="xx0010"



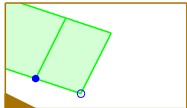
P04=8="xx1000"



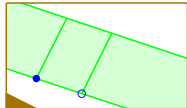
P04=10="xx1010"



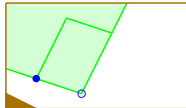
P04=1="xx0001"



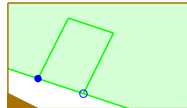
P04=3="xx0011"



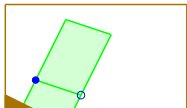
P04=9="xx1001"



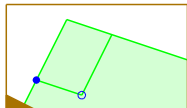
P04=11="xx1011"



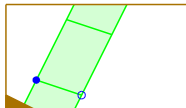
P04=4="xx0100"



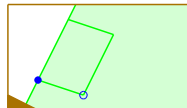
P04=6="xx0110"



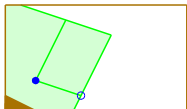
P04=12="xx1100"



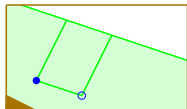
P04=14="xx1110"



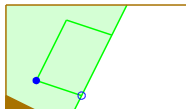
P04=5="xx0101"



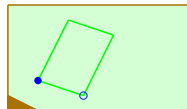
P04=7="xx0111"



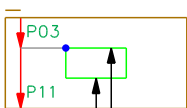
P04=13="xx1101"



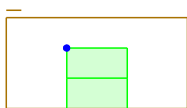
P04=15="xx1111"



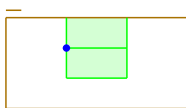
P04="00xxxx"



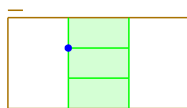
P04="01xxxx"



P04="10xxxx"



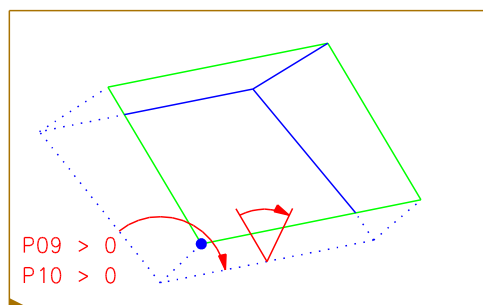
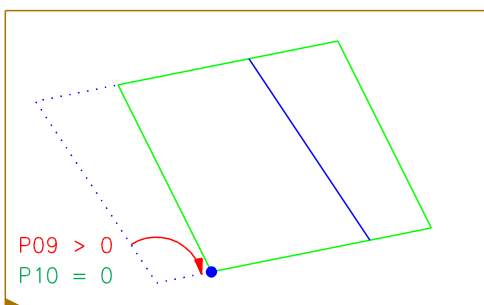
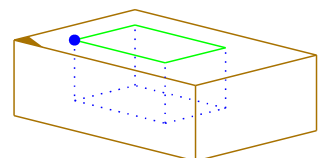
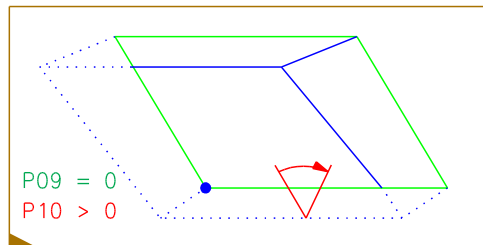
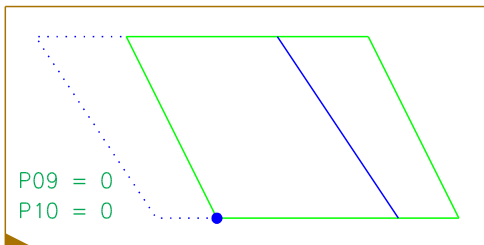
P04="11xxxx"



Bit 6 (Top of lap)
 Bit 5 (Bottom of lap)

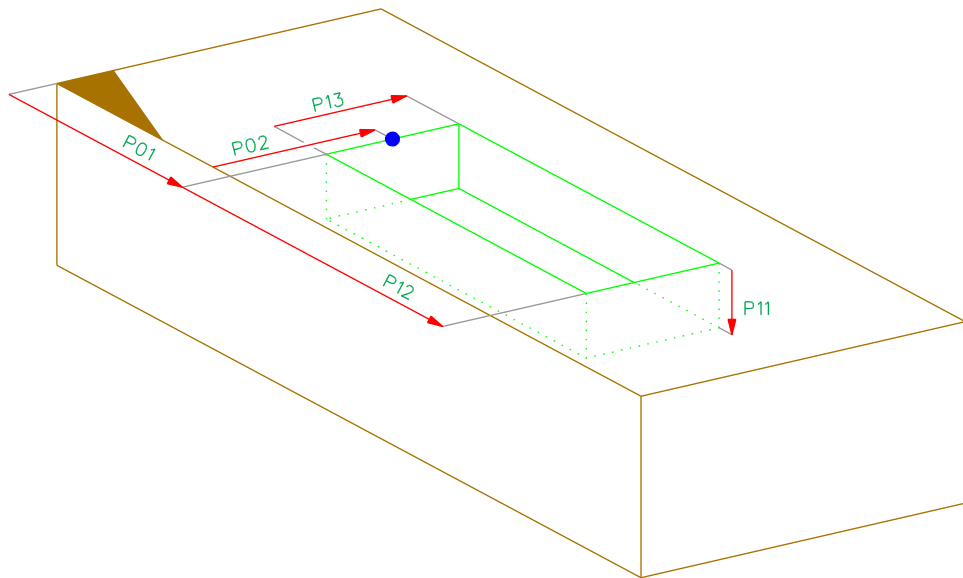
P09 / P10

Description, how P09/P10 influences the side-faces of the lap.

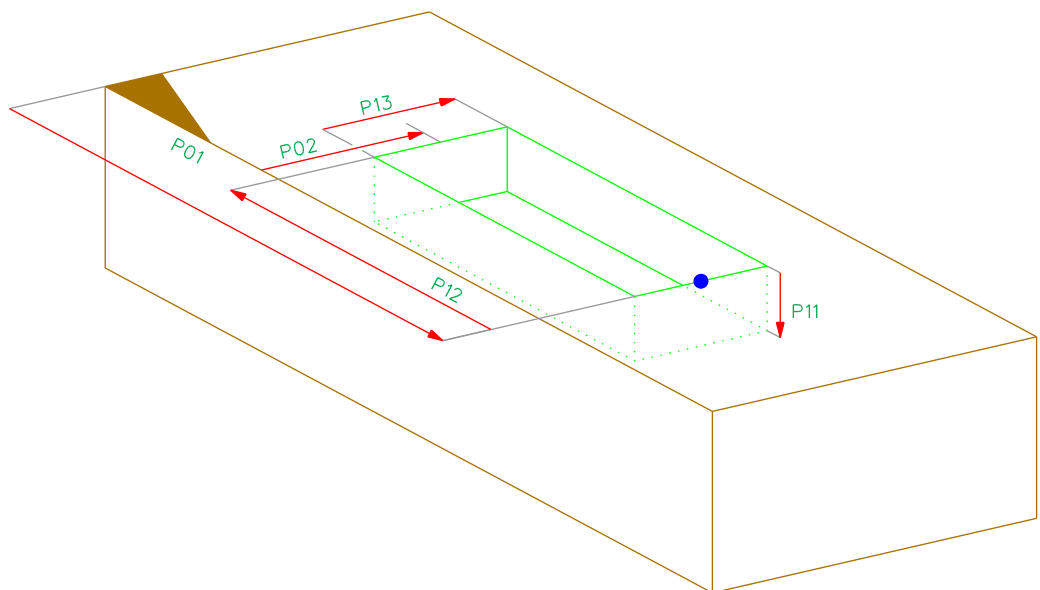


6.11 Notch/Rabbet 3-032-X and 4-032-X

4-032-X



3-032-X



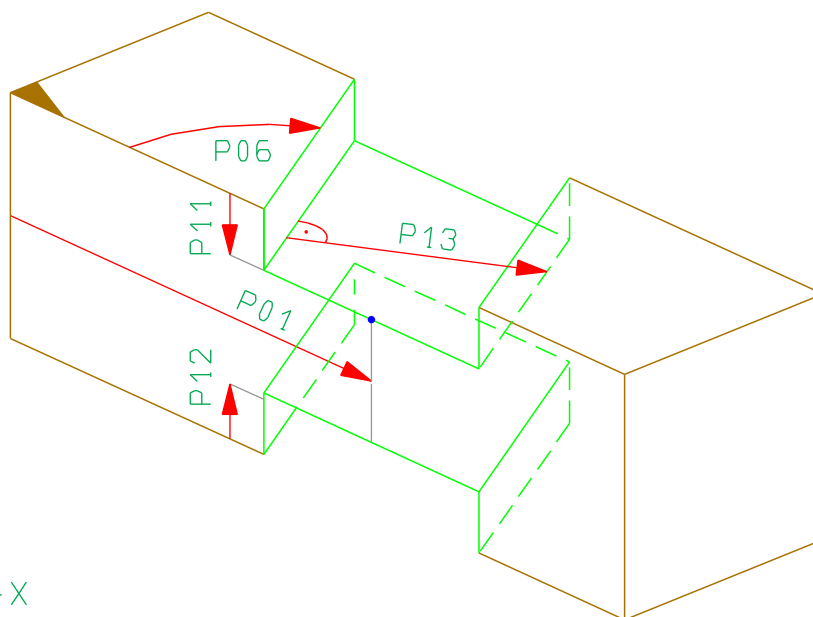
6.11 Parameters Notch/Rabbet

3-032-X und 4-032-X

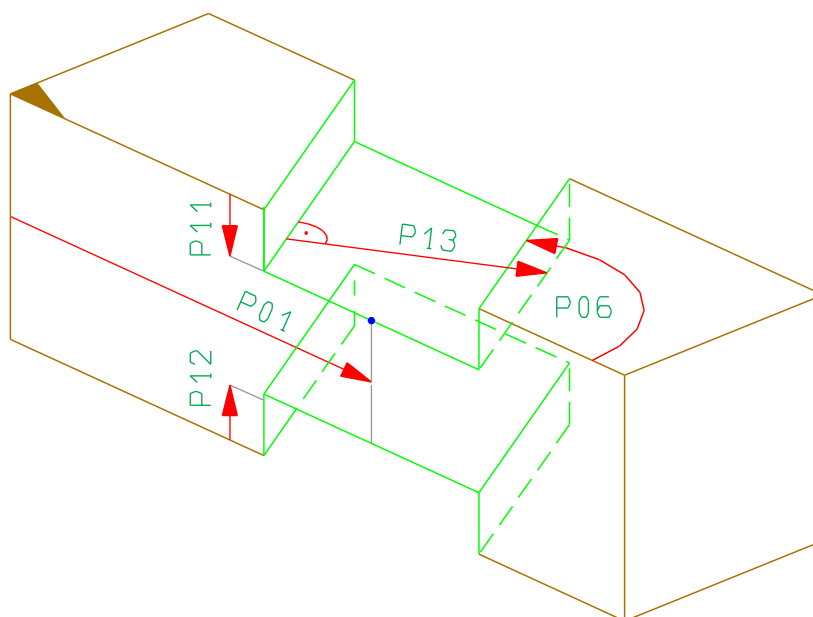
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P04 | 0/63 | 0 | Limit of the 6 faces of the notch/rabbet, binary code See description of P04 for the Lap Joint 3,4-030-X |
| P11 | 0/50000 | 20 | Notch/Rabbet depth |
| P12 | 0/99999 | 20 | Notch/Rabbet length |
| P13 | 1/50000 | 200 | Notch/Rabbet width |

6.12 Block House Half Lap, Stair Riser Dado 3-033-X and 4-033-X

4-033-X



3-033-X



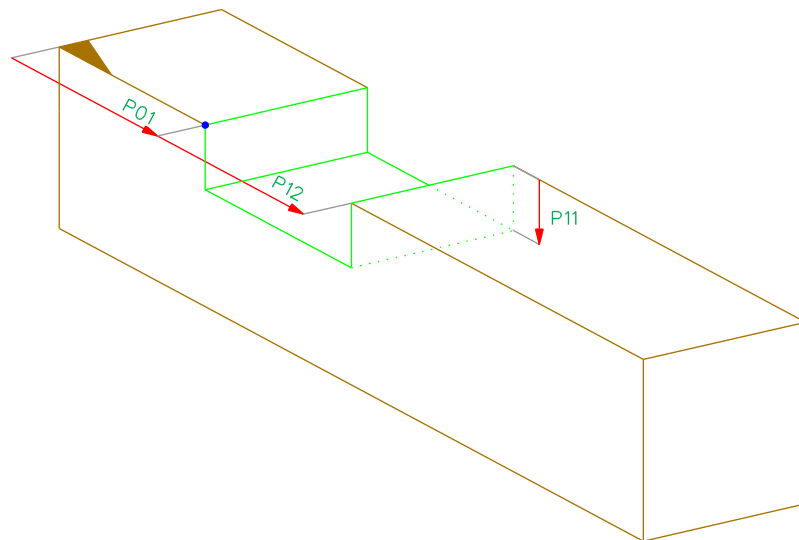
6.12 Parameters Block House Half Lap, Stair Riser Dado

3-033-X and 4-033-X

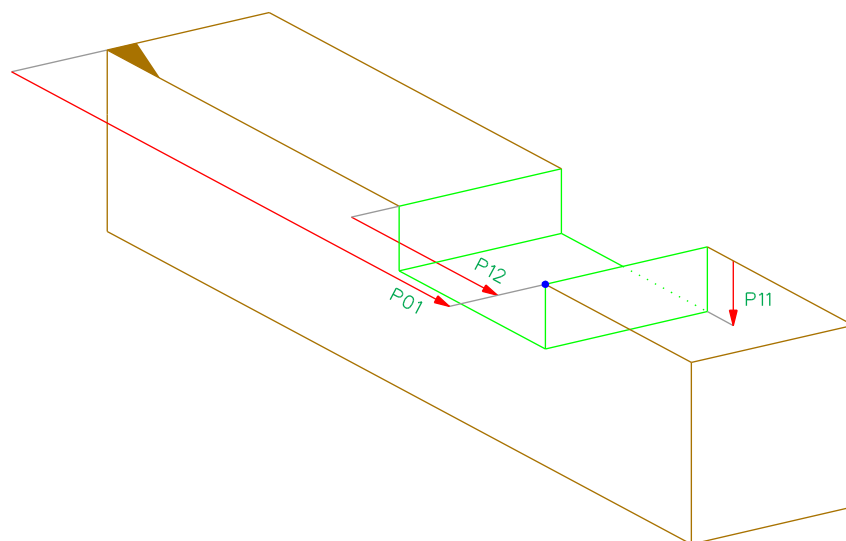
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P06 | 1/179 | 90 | Angle between cut edge and reference edge |
| P11 | 0/HWS | 20 | Depth of the Half Lap on the reference side |
| P12 | 0/HWS | 20 | Depth of the Half Lap opposite of the reference side |
| P13 | 1/50000 | WRS | Length of the Half Lap / Dado |

6.13 Seathing Cut 3-034-X and 4-034-X

4-034-X



3-034-X

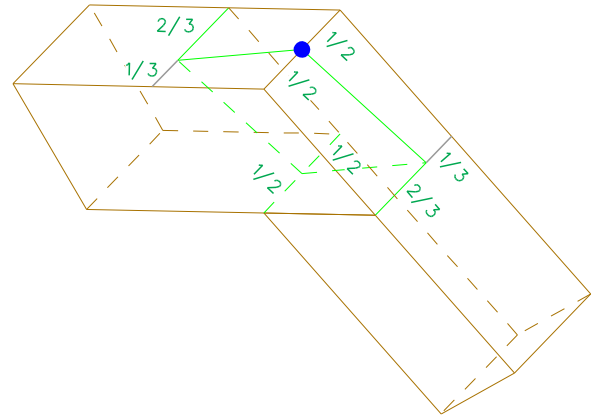
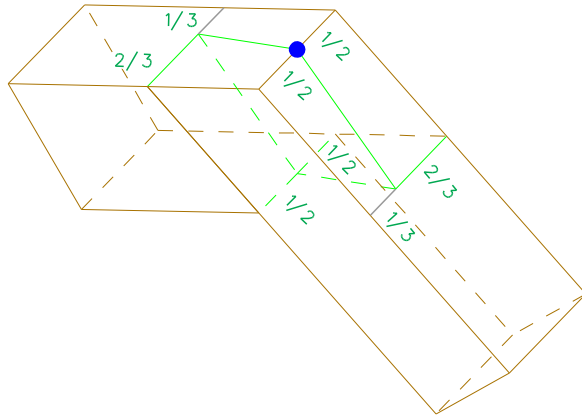


6.13 Parameters Seathing Cut

3-034-X and 4-034-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P11 | 0/HWS | 1 | Depth of Seathing Cut |
| P12 | 1/99999 | LRS | Length of Seathing Cut |

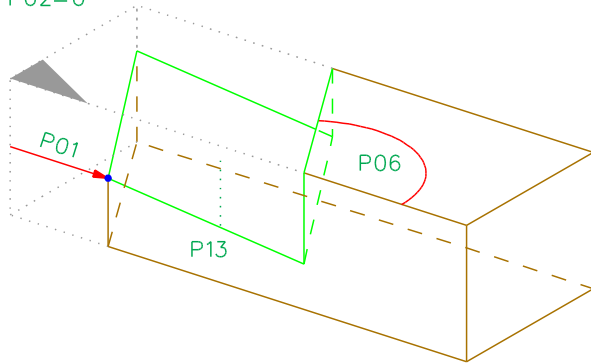
6.14 French Ridge Lap 1-035-X and 2-035-X



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

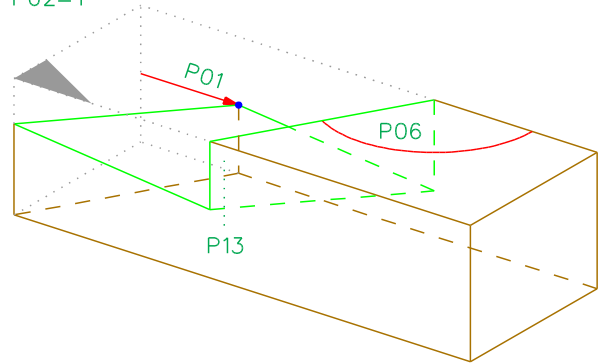
2-035-X

P02=0



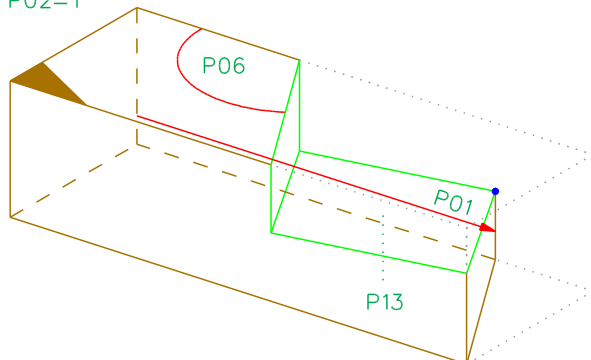
2-035-X

P02=1



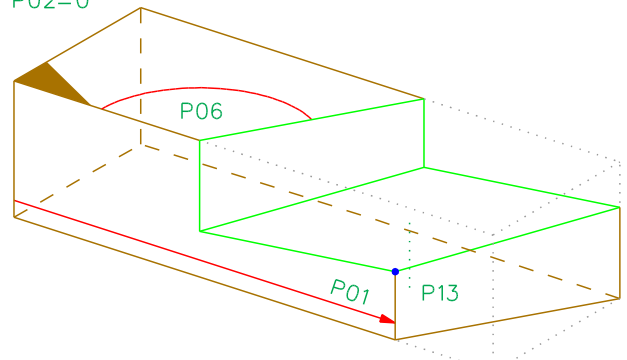
1-035-X

P02=1



1-035-X

P02=0



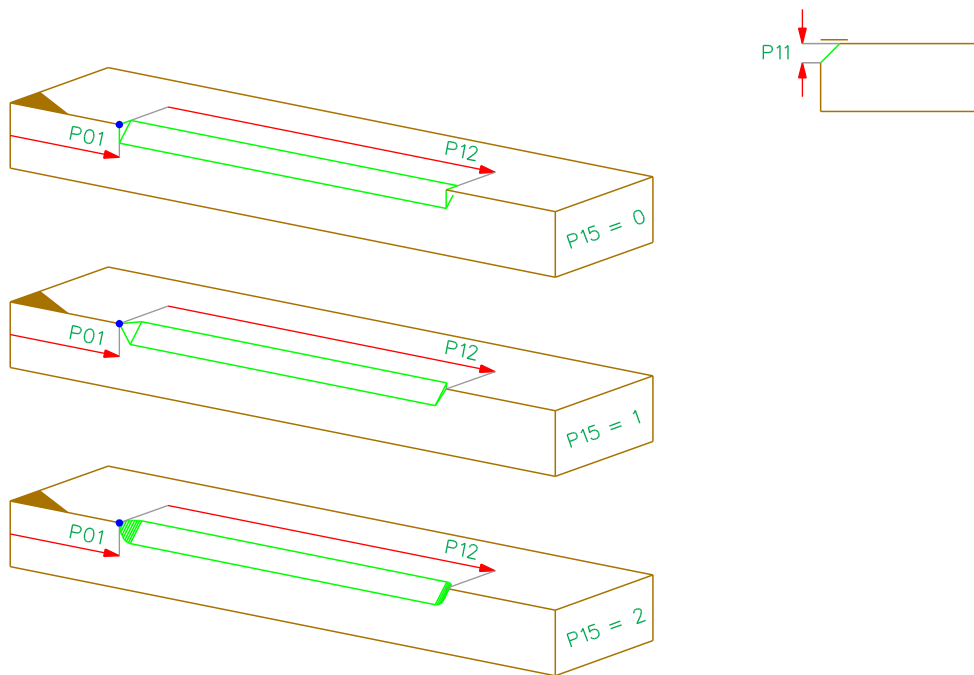
6.14 Parameters French Ridge Lap

1-035-X and 2-035-X

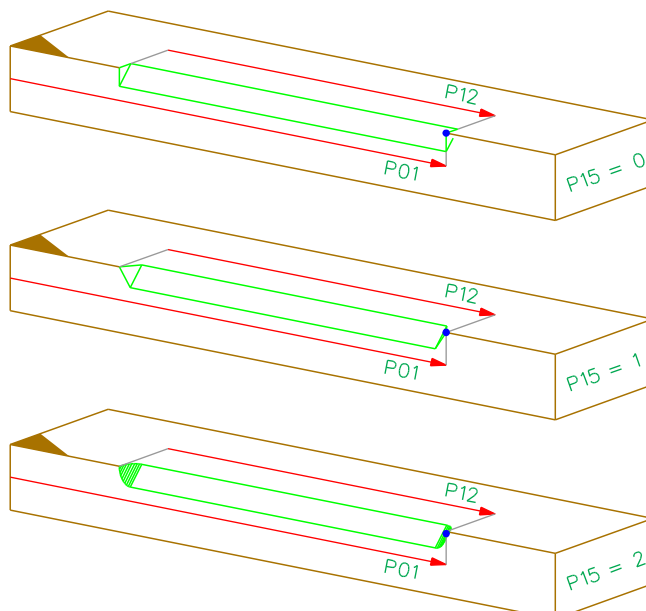
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/1 | 0 | 0: Reference point on reference edge 1: Reference point on the opposite edge |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference side |
| P13 | 0/1000 | 0 | Drill hole diameter |

6.15 Chamfer 3-036-X and 4-036-X

4-036-X



3-036-X

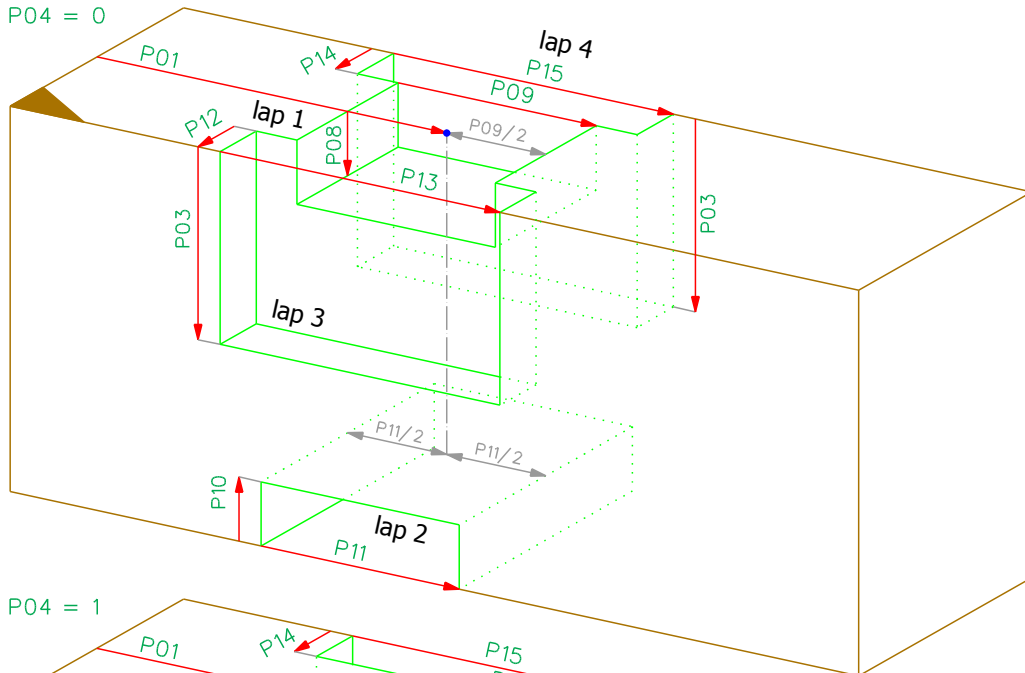
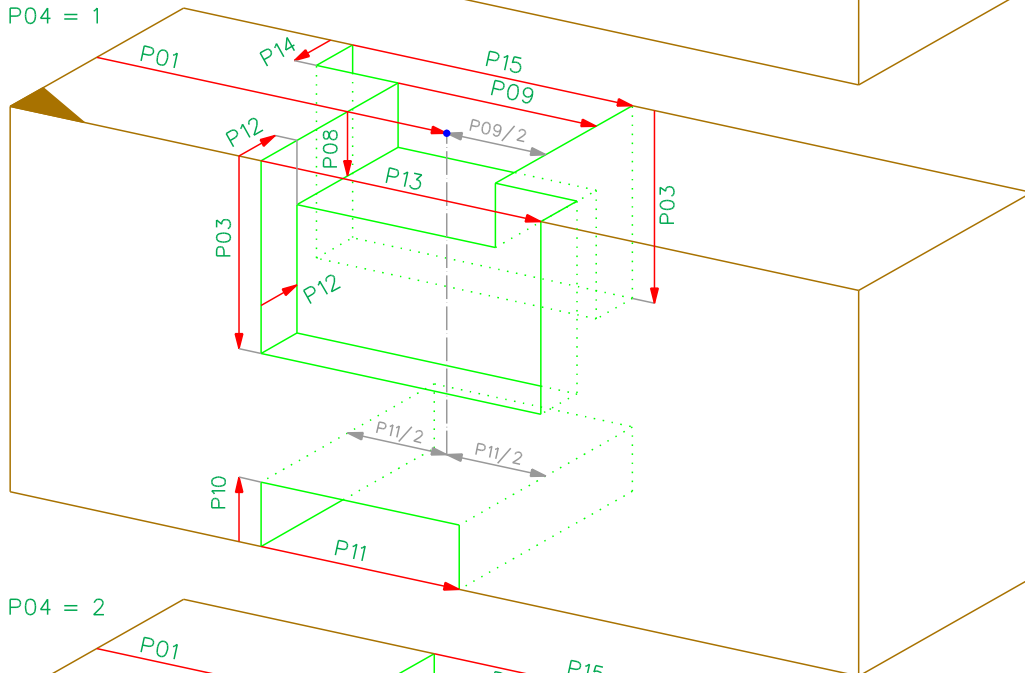
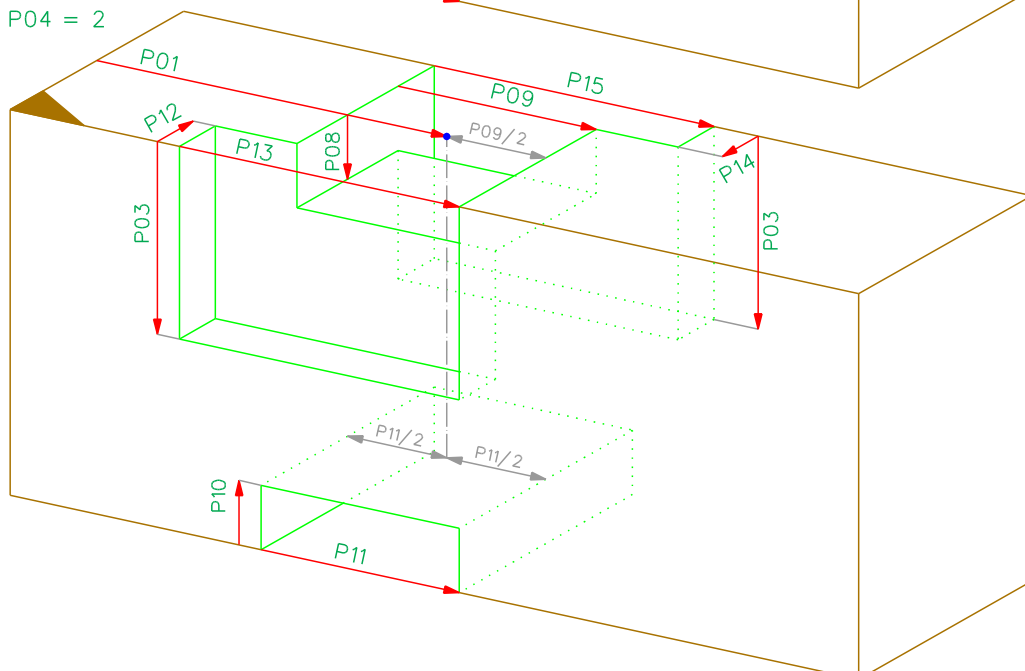


6.15 Parameters Chamfer

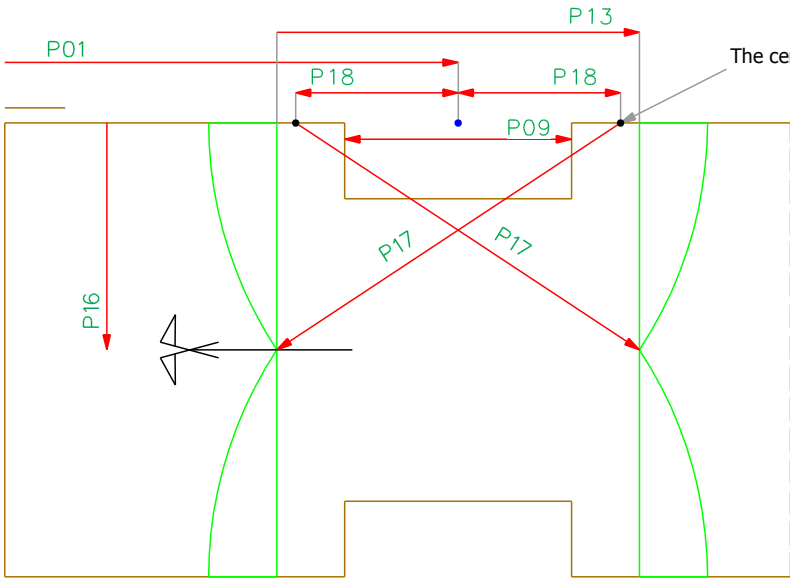
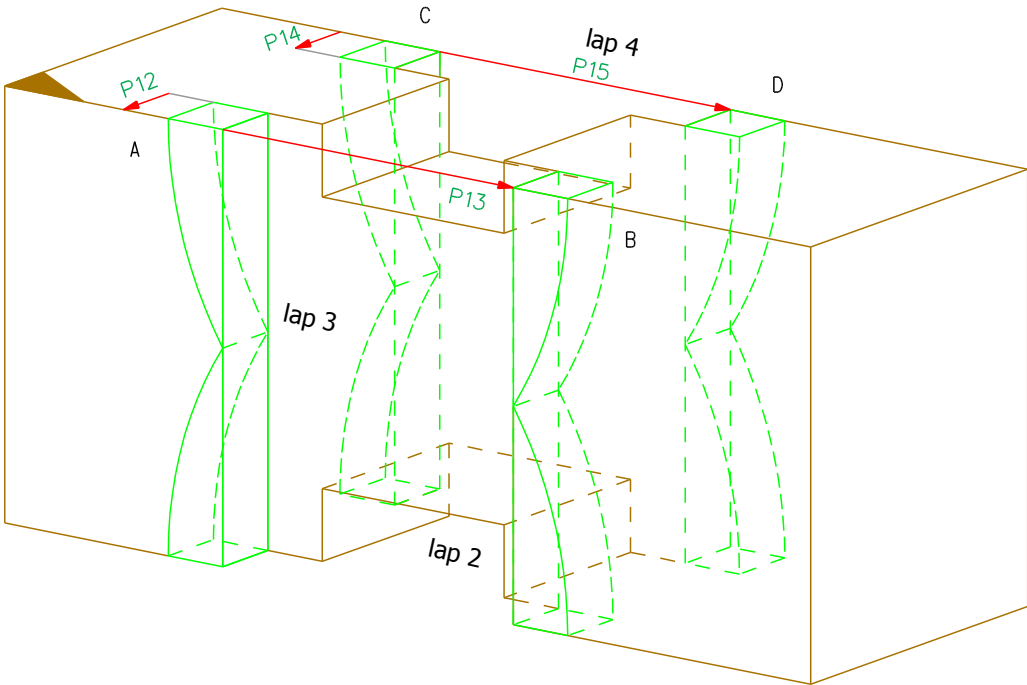
3-036-X and 4-036-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P04 | | 1 | Input of edge(s) to be beveled, binary code: Bit 0=edge 1 ; Bit 1=edge 2; Bit 2=edge 3; Bit 3=edge 4 Example: P04=9: edge 1+4; P04=3: edge 1+2 |
| P11 | 1/HRS | 1 | Depth |
| P12 | 0/99999 | LRS | Length If P12 is equal to zero, the processing is performed along the whole component length. |
| P15 | 0,1,2 | 0 | Shape for bevel exit: 0 = orthogonal, 1 = at 45 deg, 2 = round; |

6.16 Block House Half Lap 4-037-X

 $P04 = 0$  $P04 = 1$  $P04 = 2$ 

6.16 Block House Half Lap 4-037-X



| P19 | A | B | C | D |
|-----|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 |
| 1 | 0 | 0 | 0 | 1 |
| 2 | 0 | 0 | 1 | 0 |
| 3 | 0 | 0 | 1 | 1 |
| 4 | 0 | 1 | 0 | 0 |
| 5 | 0 | 1 | 0 | 1 |
| 6 | 0 | 1 | 1 | 0 |
| 7 | 0 | 1 | 1 | 1 |
| 8 | 1 | 0 | 0 | 0 |
| 9 | 1 | 0 | 0 | 1 |
| 10 | 1 | 0 | 1 | 0 |
| 11 | 1 | 0 | 1 | 1 |
| 12 | 1 | 1 | 0 | 0 |
| 13 | 1 | 1 | 0 | 1 |
| 14 | 1 | 1 | 1 | 0 |
| 15 | 1 | 1 | 1 | 1 |

6.16 Parameters Block House Half Lap

4-037-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P03 | | 0 | Depth orthogonal to reference side of the lap 2 and 4. If P03 is zero, then its value must be calculated: P03=HRS |
| P04 | | 0 | 0: all laps are symmetric to each other 1: lap on reference edge moved to end beam lap in opposite of reference edge moved to start beam 2: lap on reference edge moved to start beam lap in opposite of reference edge moved to end beam |
| P05 | 0/1 | 0 | P05=1: drillhole for drop rod, P05=0: no drillhole The machines defines place and direction of the drillhole. |
| P08 | 0/50000 | 10 | lap 1: Depth |
| P09 | 0/50000 | 100 | lap 1: Length |
| P10 | 0/50000 | 10 | lap 2: Depth |
| P11 | 0/50000 | 100 | lap 2: Length |
| P12 | 0/50000 | 10 | lap 3: Depth |
| P13 | 0/50000 | 100 | lap 3: Length |
| P14 | 0/50000 | 10 | lap 4: Depth |
| P15 | 0/50000 | 100 | lap 4: Length |
| P16 | 0/50000 | HRS/2 | Distance from end of arc orthogonal to the reference side |
| P17 | 0/50000 | HRS | Radius of arc |
| P18 | 0/50000 | HRS | Distance reference point to center of arc |
| P19 | 0/15 | 0 | Which arc (A, B,C or D) is to produced, binary code |

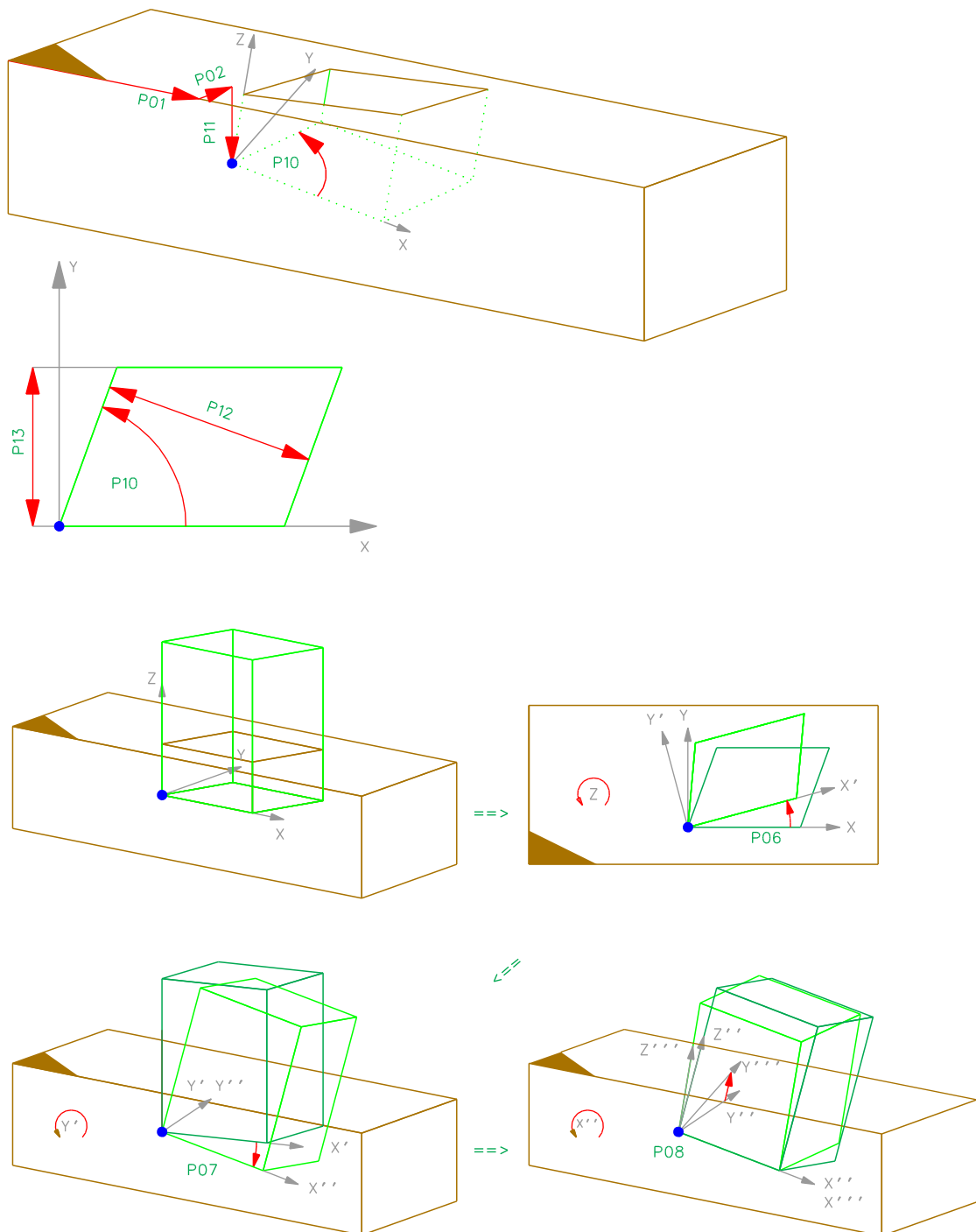
6.17 Parameters Block House Front

3-038-X and 4-038-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P04 | 0/1 | 0 | 0: only one lap on reference side 1: one lap on reference side and one on the opposite side |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference side |
| P11 | +/- 50000 | 15 | Depth at reference point |
| P12 | +/- 50000 | 10 | Depth opposite to the reference point |
| P13 | +/- 50000 | 25 | Depth at reference edge |
| P15 | 0/50000 | 100 | Length |

6.18 Pocket 4-039-X

4-039-X



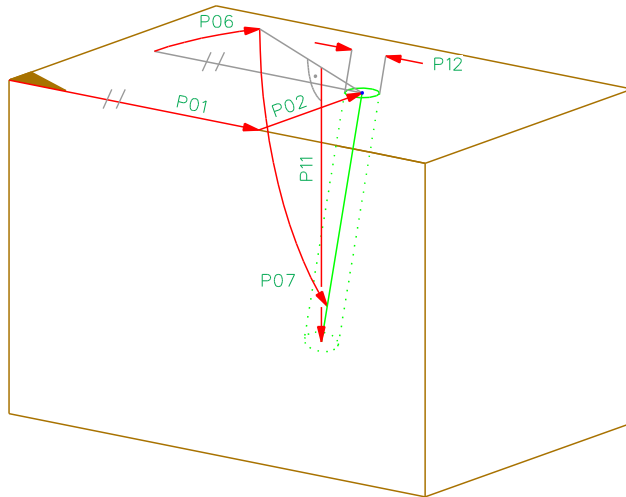
6.18 Parameters Pocket

4-039-X

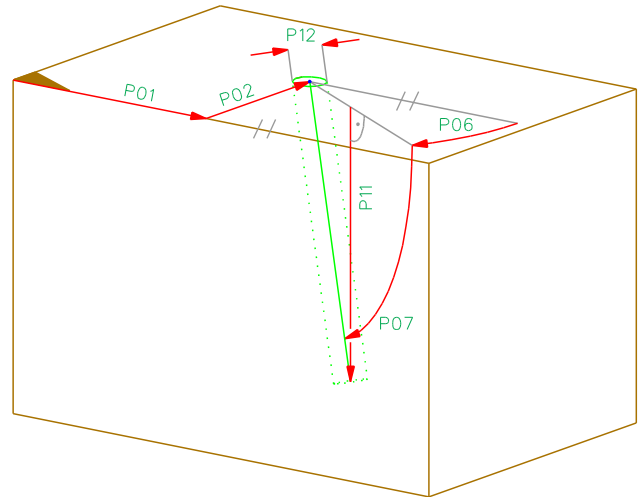
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P04 | 0/63 | 0 | Limit of the 6 faces of the pocket, binary code See description of P04 for the Lap Joint 3,4-030-X |
| P06 | -179/179 | 0 | Rotation angle around the local z-axis of the cuboid |
| P07 | -179/179 | 0 | Rotation angle around the local y-axis of the cuboid, rotated with P06 |
| P08 | -179/179 | 0 | Rotation angle around the local x-axis of the cuboid, rotated with P06 and P07 |
| P10 | 1/179 | 0 | Internal angle at the reference point |
| P11 | +/- 50000 | 20 | Depth of reference point orthogonal to reference side |
| P12 | 1/50000 | 20 | Length of Half Lap |
| P13 | 0/50000 | 100 | Width of Half Lap |

6.19 Drilling 3-040-X und 4-040-X

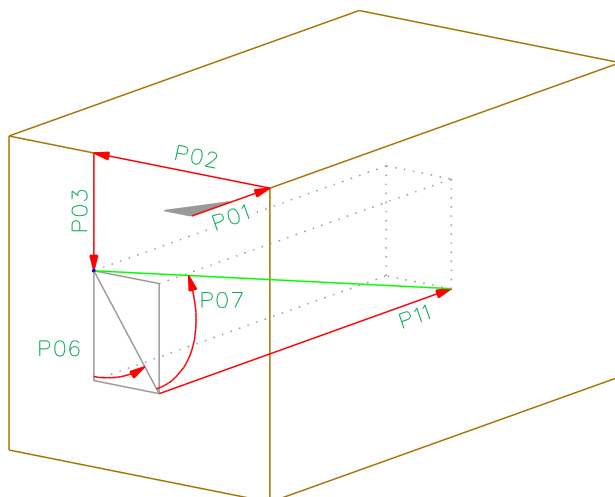
4-040-X
 $P03 = 0$



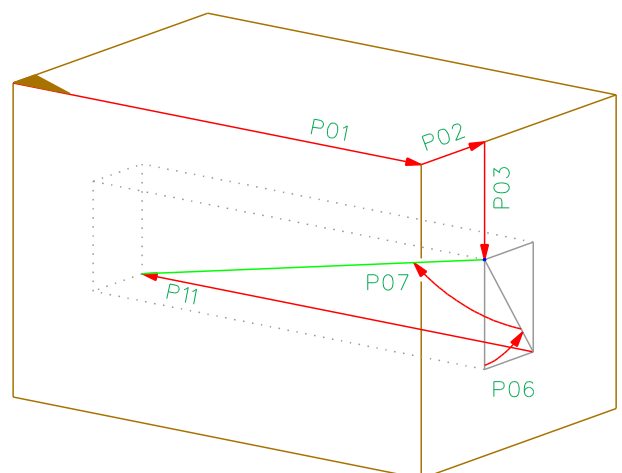
3-040-X
 $P03 = 0$



4-040-X
 $P03 \neq 0$



3-040-X
 $P03 \neq 0$



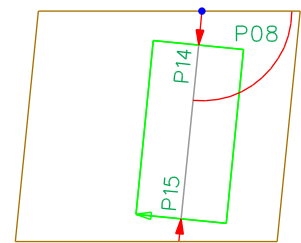
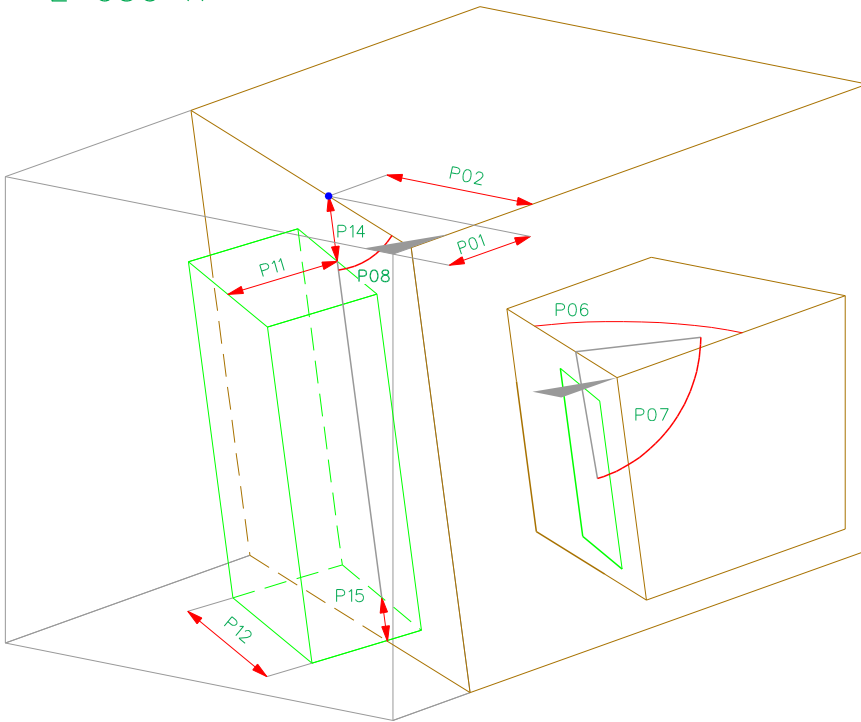
6.19 Parameters Drilling

3-040-X and 4-040-X

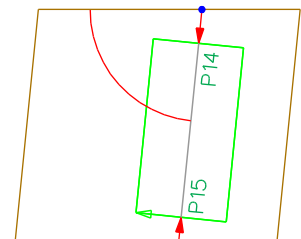
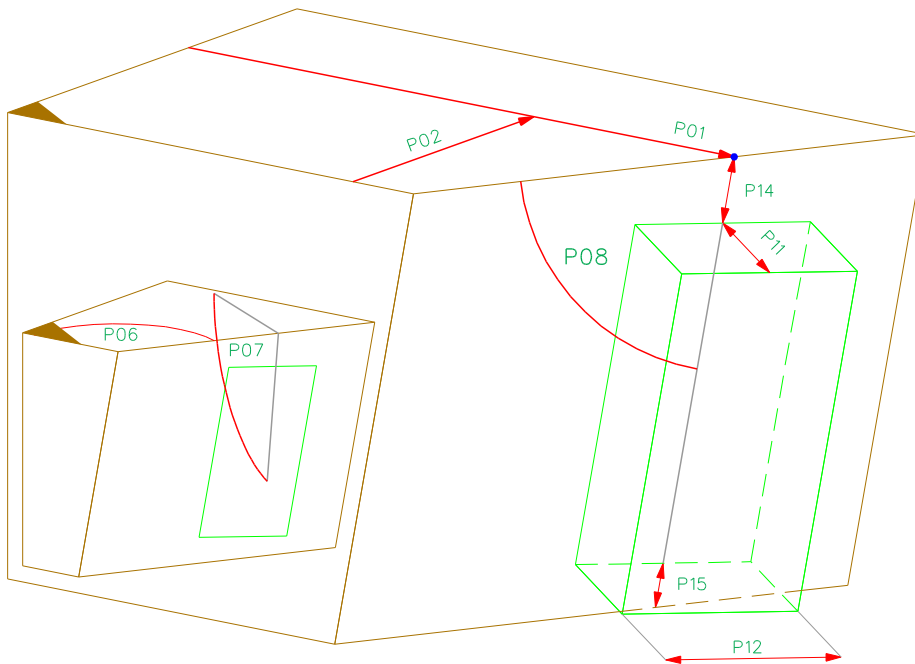
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P03 | +/- 99999 | 0 | Distance from the reference face to the reference point P03 = 0: Drilling on one of the 4 sides of the component. P03 <> 0: Drilling on one of the 2 front sides of the component |
| P06 | 0/360 | 90 | P03 = 0: Angle to the reference edge in the reference side. P03 <> 0: Angle in the front side. |
| P07 | 1/179 | 45 | Inclination between drilling and reference side P03 = 0: Inclination between drilling and reference side. P03 > 0: Inclination between drilling and front side. |
| P11 | 0/50000 | HRS | Depth, orthogonal to reference side or front side. |
| P12 | 0/1000 | 20 | Drill hole diameter |

6.20 Tenon 1-050-X and 2-050-X

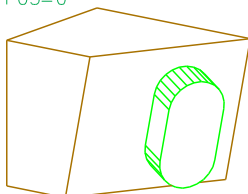
2-050-X



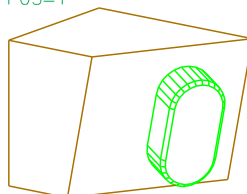
1-050-X



P05=0



P05=1

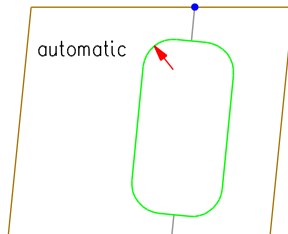


6.20 Parameters Tenon

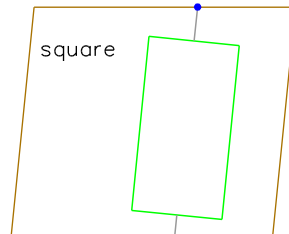
1-050-X and 2-050-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P04 | 0/1/2/3/4 | 90 | Rounding |
| P05 | 0/1 | 0 | Chamfer |
| P06 | 1/179 | 90 | Angle between cut edge and reference edge |
| P07 | 1/179 | 90 | Inclination between face and reference side |
| P08 | 1/179 | 90 | Angle between axis of the tenon and reference side |
| P10 | 0/500 | 0 | Radius for P04=4 |
| P11 | 1/1000 | 40 | Tenon height |
| P12 | 1/1000 | 40 | Tenon width |
| P14 | +/- 50000 | 0 | Margin on the reference side |
| P15 | +/- 50000 | 0 | Margin opposite the reference side |

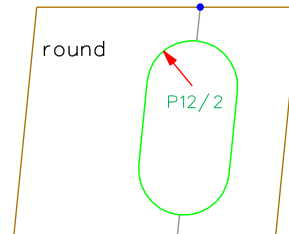
P04=0



P04=1

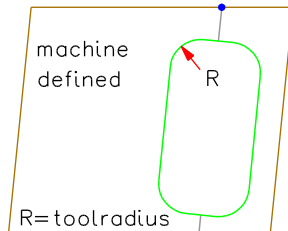


P04=2

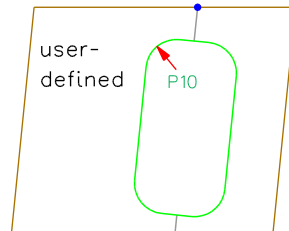


The tenon can be square, round or machine defined depending on the capabilities of the machine.

P04=3



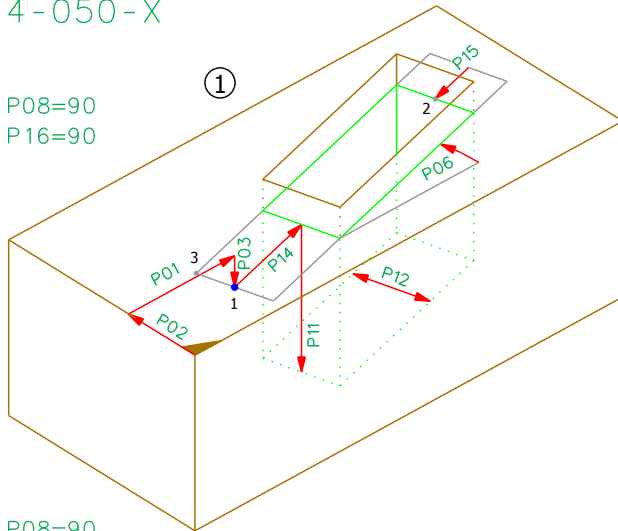
P04=4



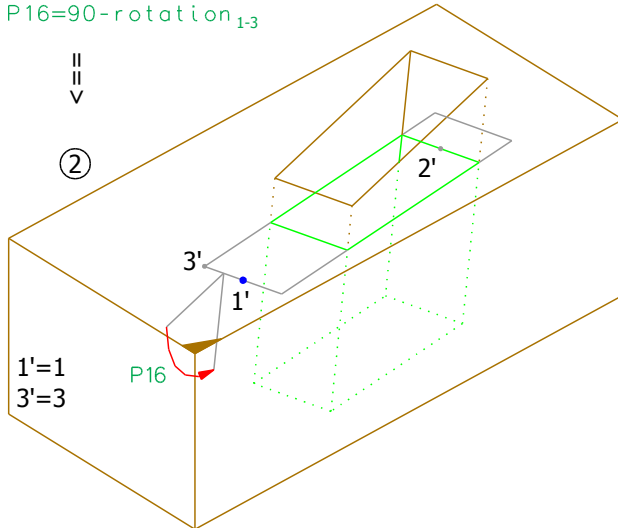
6.21 Mortise 3-050-X and 4-050-X

4-050-X

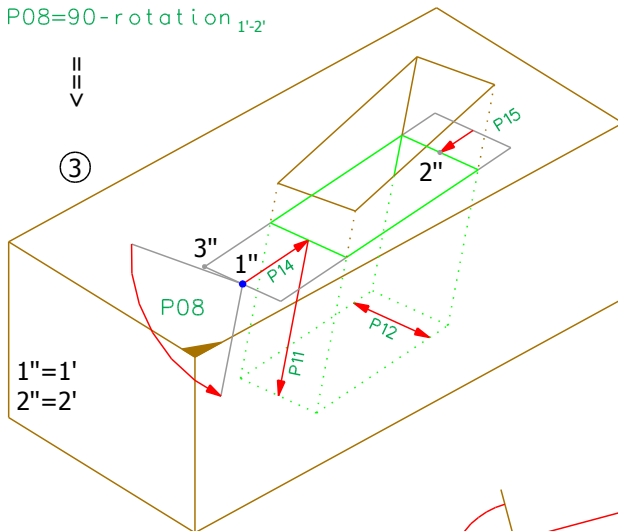
P08=90
P16=90



P08=90
P16=90-rotation₁₋₃

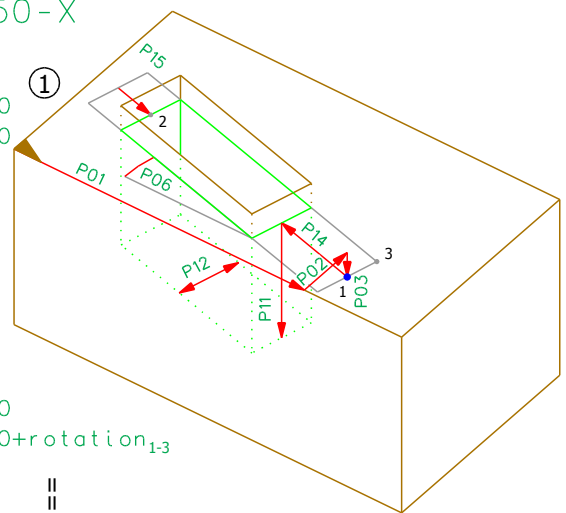


P08=90-rotation_{1'-2'}

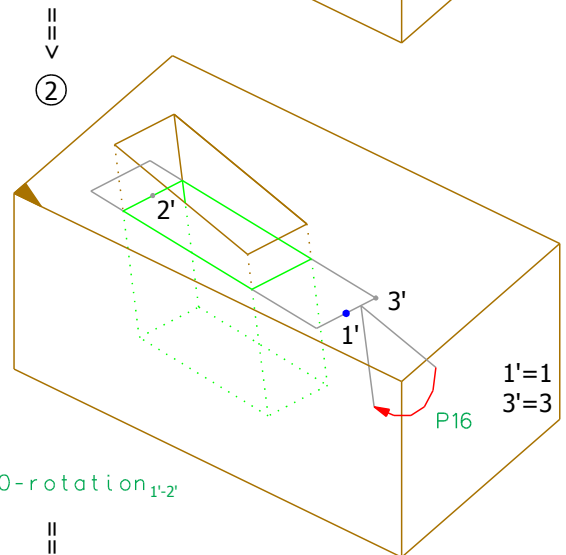


3-050-X

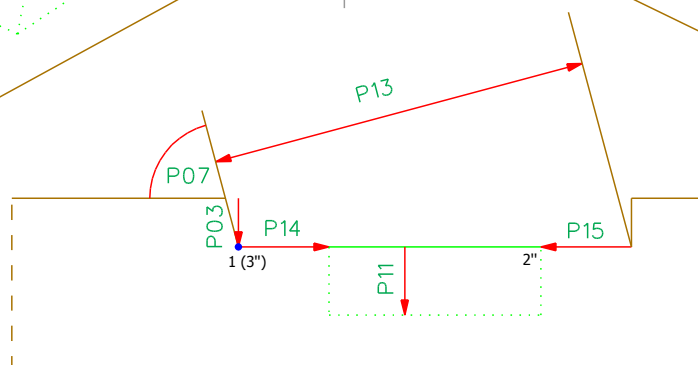
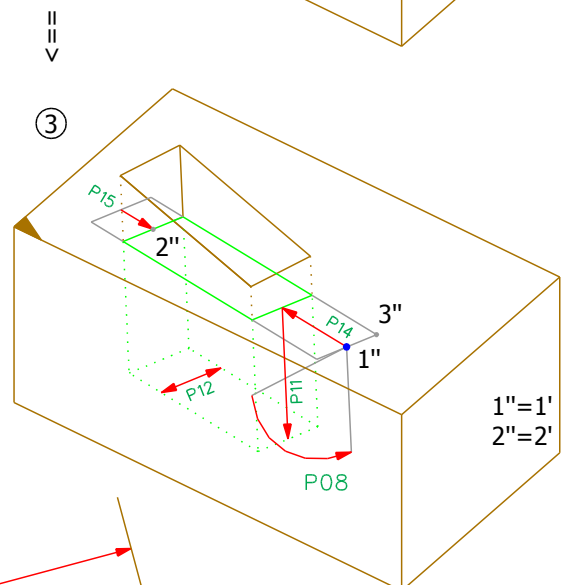
P08=90
P16=90



P08=90
P16=90+rotation₁₋₃



P08=90-rotation_{1'-2'}

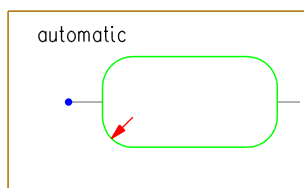


6.21 Parameters Mortise

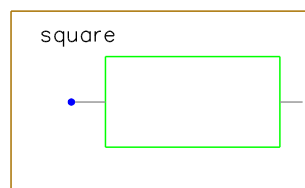
3-050-X und 4-050-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Displacement to the reference side |
| P04 | 0/1/2/3/4 | 90 | Rounding |
| P06 | +/- 180 | 0 | Angle between axis and reference edge |
| P07 | 1/179 | 90 | Inclination between strut and reference side |
| P08 | 1/179 | 90 | Inclination of hole side walls towards reference side |
| P10 | 0/500 | 0 | Radius for P04=4 |
| P11 | 0/1000 | 40 | Mortise depth |
| P12 | 0/1000 | 40 | Mortise width |
| P13 | 1/50000 | 200 | Height of strut |
| P14 | +/- 50000 | 0 | Margin on the reference point |
| P15 | +/- 50000 | 0 | Margin opposite the reference point |
| P16 | 1/179 | 90 | Inclination of hole front side towards reference side |

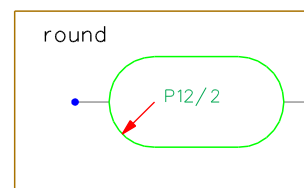
P04=0



P04=1

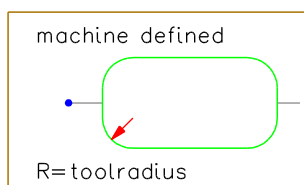


P04=2

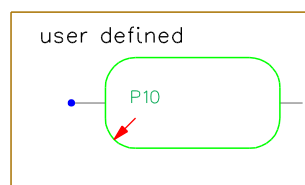


The mortise can be square, round or machine defined depending on the capabilities of the machine.

P04=3

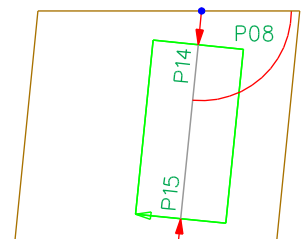
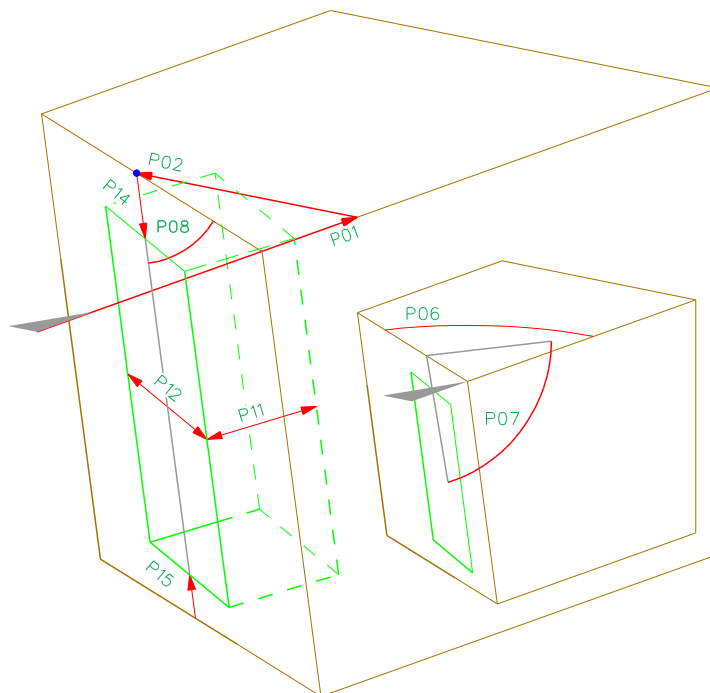


P04=4

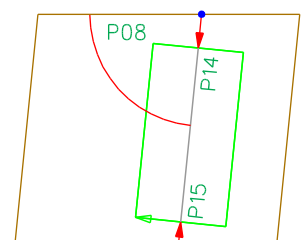
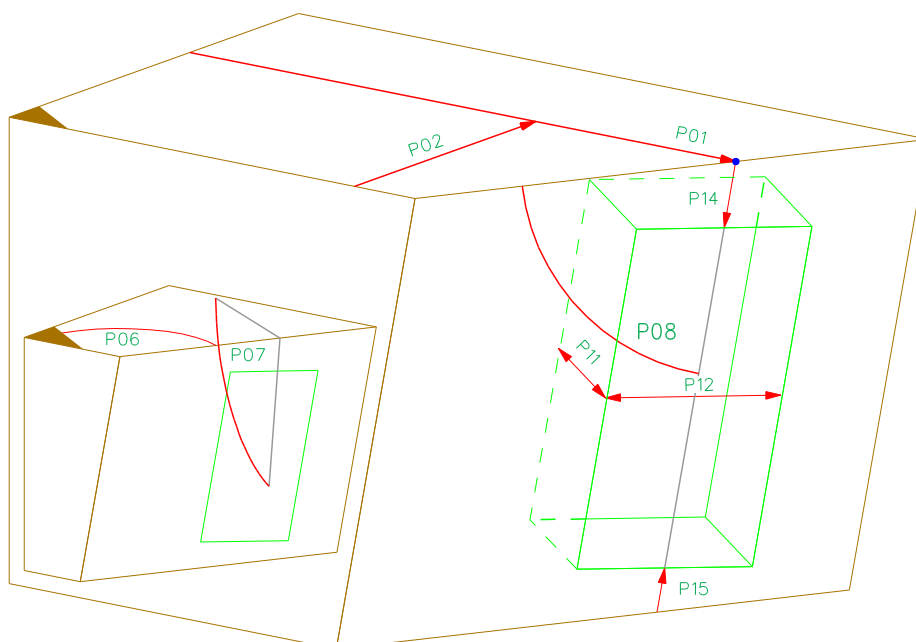


6.22 Mortise Front 3-051-X and 4-051-X

4-051-X



3-051-X

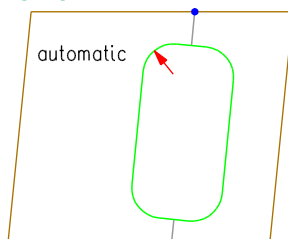


6.22 Parameters Mortise Front

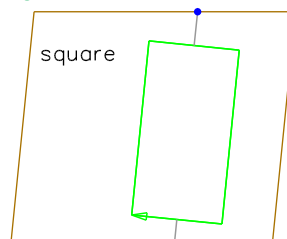
3-051-X und 4-051-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P04 | 0/1/2/3/4 | 90 | Rounding |
| P06 | 1/179 | 90 | Angle between cut edge and reference edge |
| P07 | 1/179 | 90 | Inclination between face and reference side |
| P08 | 1/179 | 90 | Angle between axis of the tenon and reference side |
| P10 | 0/500 | 0 | Radius for P04=4 |
| P11 | 1/1000 | 40 | Mortise depth |
| P12 | 1/1000 | 40 | Mortise width |
| P14 | +/- 50000 | 0 | Margin on the reference side |
| P15 | +/- 50000 | 0 | Margin opposite the reference side |

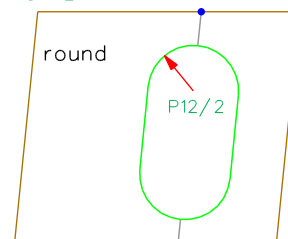
P04=0



P04=1

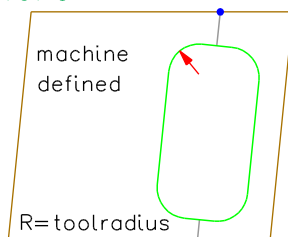


P04=2

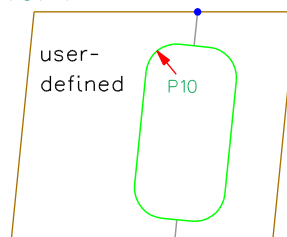


The mortise can be square, round or machine defined depending on the capabilities of the machine.

P04=3

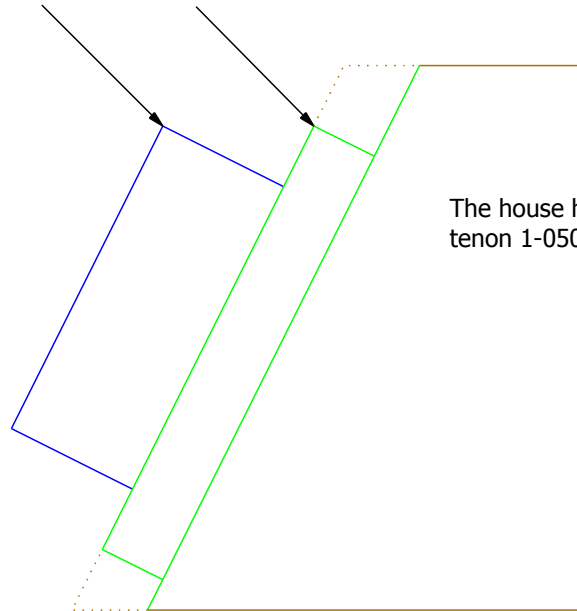


P04=4

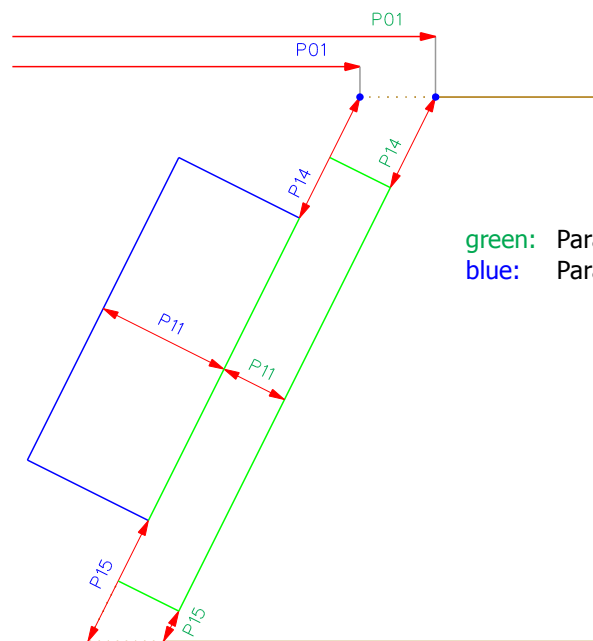


6.23 House 3-052-X and 4-052-X

tenon or dovetail tenon house



The house has the same description as the tenon 1-050-X and 2-050-X.



green: Parameters for house.

blue: Parameters for tenon or dovetail tenon

6.23 Parameters House

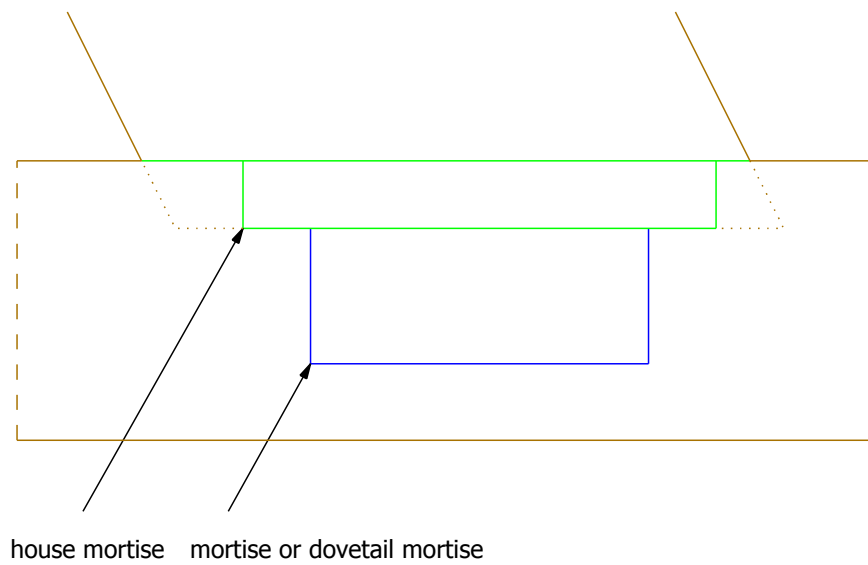
3-052-X and 4-052-X

The house has same parameters as 1-050-X and 2-050-X, except P09 and P05.

| Parameter | Min/Max | Presetting | Description |
|-----------|---------|------------|--|
| P05 | - | - | Not defined |
| P09 | 0/99999 | 0 | Processident of the associated tenon or dovetail tenon |

6.24 House Mortise 3-053-X and 4-053-X

The house mortise has the same description as the mortise 3-050-X and 4-050-X.



6.24 Parameters House Mortise

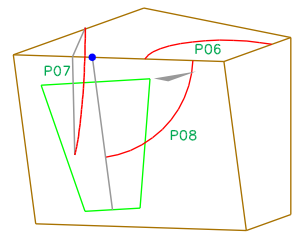
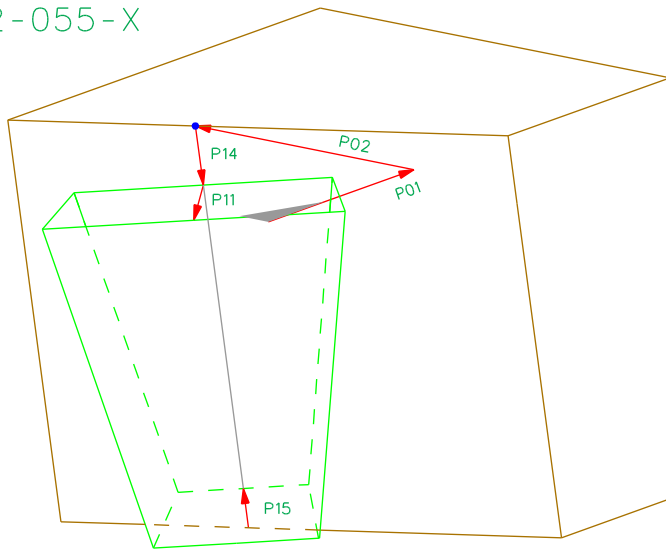
3-053-X and 4-053-X

The house mortise has same parameters as 3-050-X and 4-050-X, except P09.

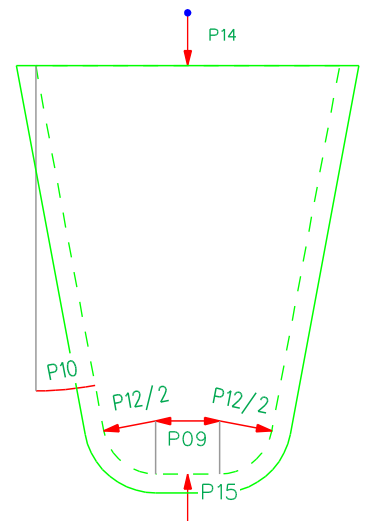
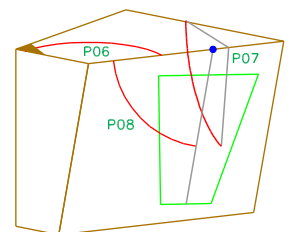
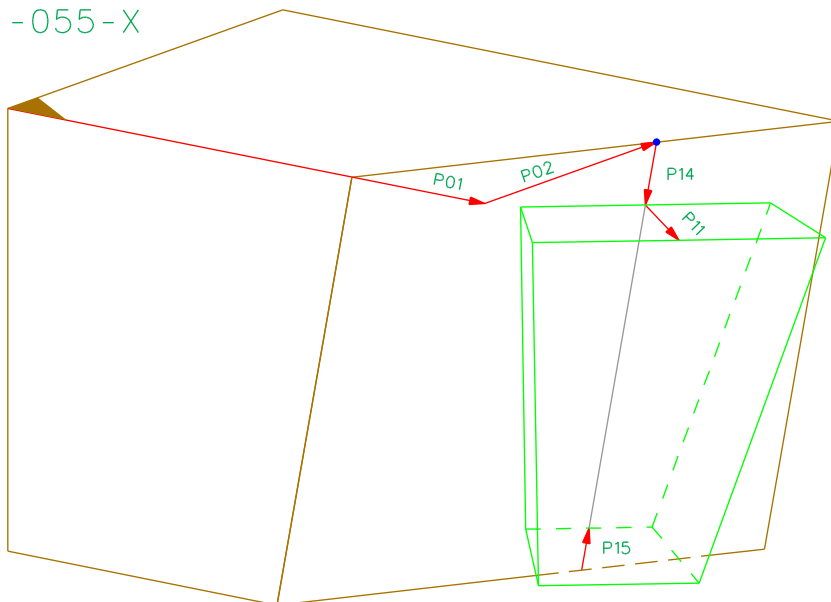
| Parameter | Min/Max | Presetting | Description |
|-----------|---------|------------|--|
| P09 | 0/99999 | 0 | Processident of the associated mortise or dovetail mortise |

6.25 Dovetail Tenon 1-055-X and 2-055-X

2-055-X



1-055-X

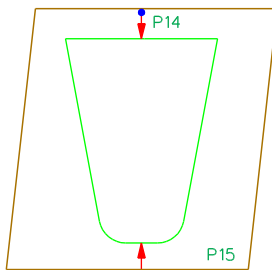


6.25 Parameters Dovetail Tenon

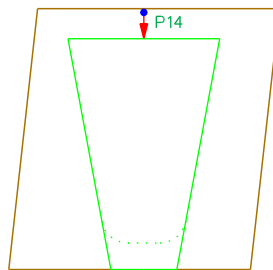
1-055-X and 2-055-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P04 | 0/1 | 0 | 0=with rounding at the bottom; 1=without rounding, unbounded |
| P06 | 1/179 | 90 | Angle between edge and reference edge |
| P07 | 1/179 | 90 | Inclination between face and reference side |
| P08 | 1/179 | 90 | Angle between axis of the tenon and reference side |
| P09 | 0/1000 | 0 | Middle flattening |
| P10 | 0/30 | 0 | Angle of cone |
| P11 | 1/1000 | 28 | Tenon height |
| P12 | 0/1000 | 45 | Diameter of the curve If P12 < 0, then the radius must be defined on the machineside. |
| P14 | +/- 50000 | 0 | Margin on the reference side |
| P15 | +/- 50000 | 0 | Margin opposite the reference side |

P04=0

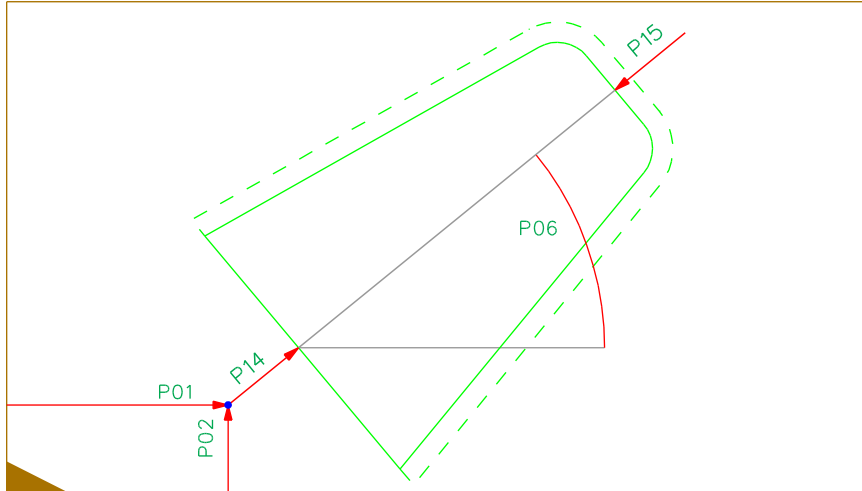


P04=1

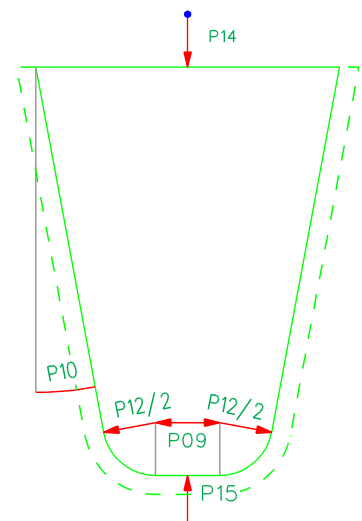
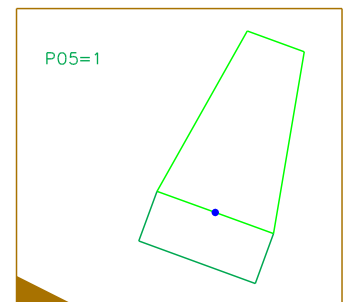
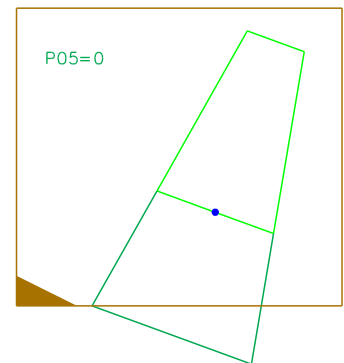
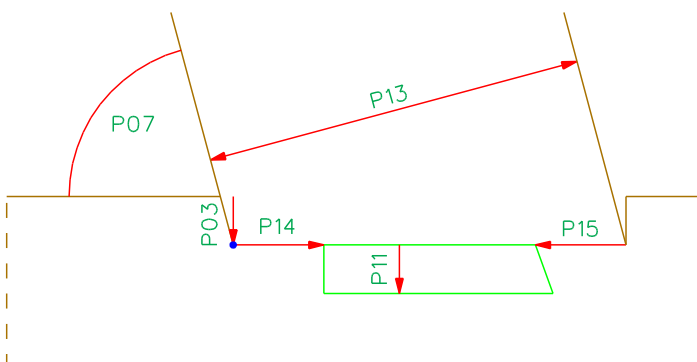
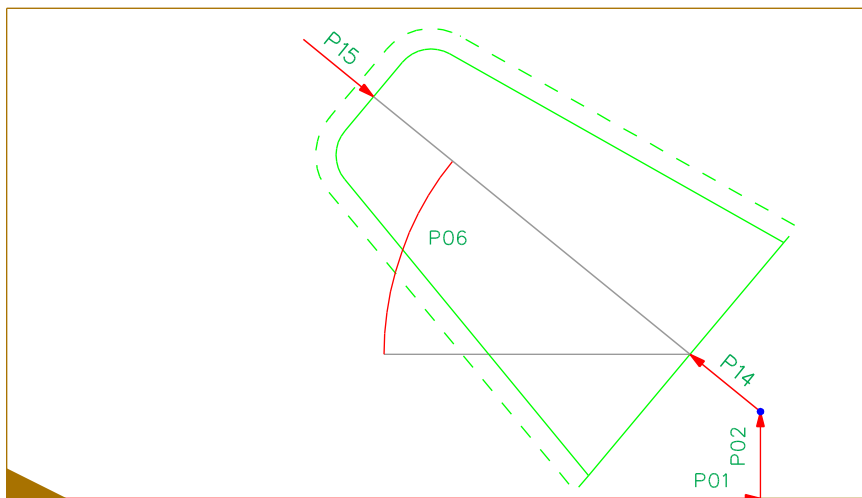


6.26 Dovetail Mortise 3-055-X and 4-055-X

4-055-X



3-055-X

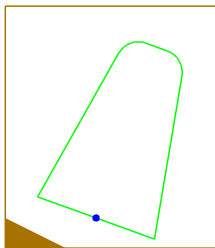


6.26 Parameters Dovetail Mortise

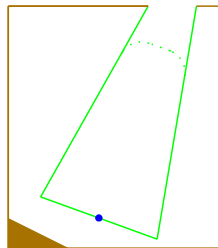
3-055-X und 4-055-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Displacement to the reference side |
| P04 | 0/1 | 0 | 0=with rounding at the bottom; 1=without rounding, unbounded |
| P05 | 0/1 | 0 | 0=with elongation; 1=with pocket |
| P06 | +/- 180 | 0 | Angle between axis and reference edge |
| P07 | 1/179 | 90 | Inclination between strut and reference side |
| P09 | 0/1000 | 0 | Middle flattening |
| P10 | 0/30 | 0 | Angle of cone |
| P11 | 1/1000 | 28 | Mortise depth |
| P12 | +/- 1000 | 45 | Diameter of the curve If P12 < 0, then the radius must be defined on the machineside. |
| P13 | 1/50000 | 200 | Height of strut |
| P14 | +/- 50000 | 0 | Margin on the reference point |
| P15 | +/- 50000 | 0 | Margin opposite the reference point |

P04=0

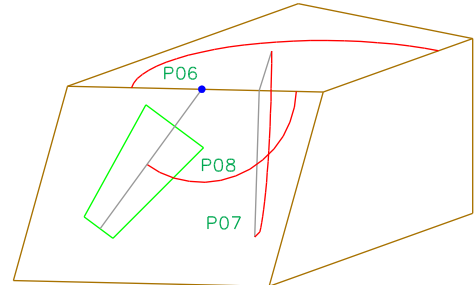
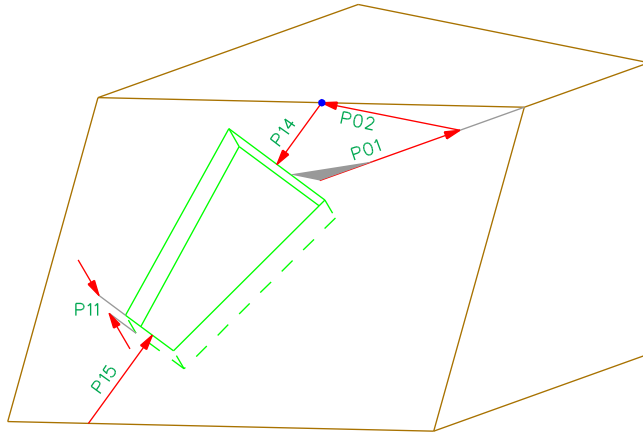


P04=1

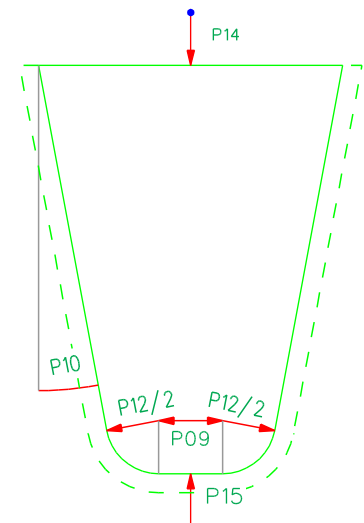
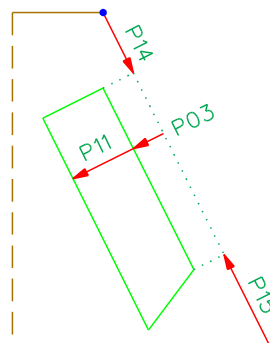
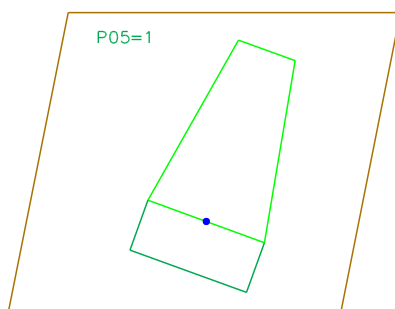
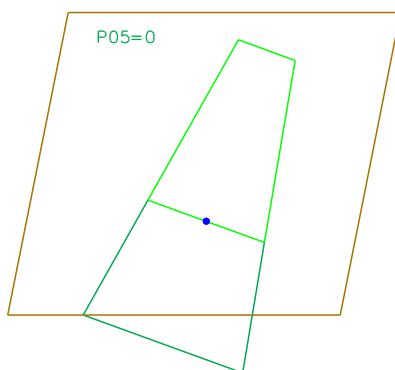
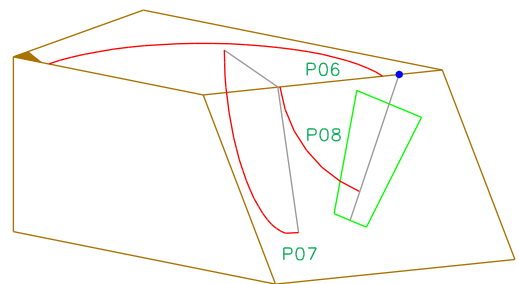
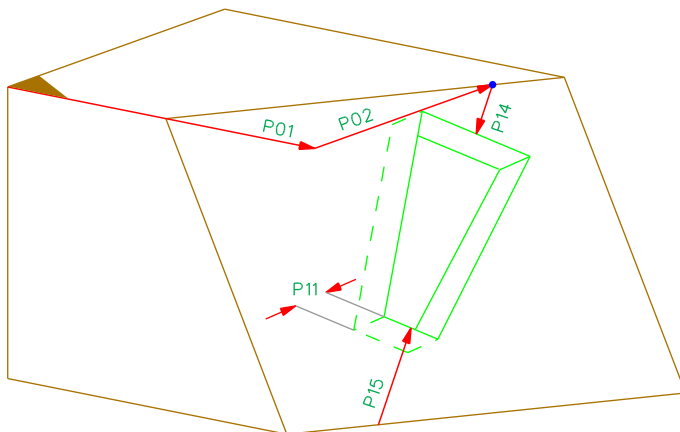


6.27 Dovetail Mortise Front 3-056-X and 4-056-X

4-056-X



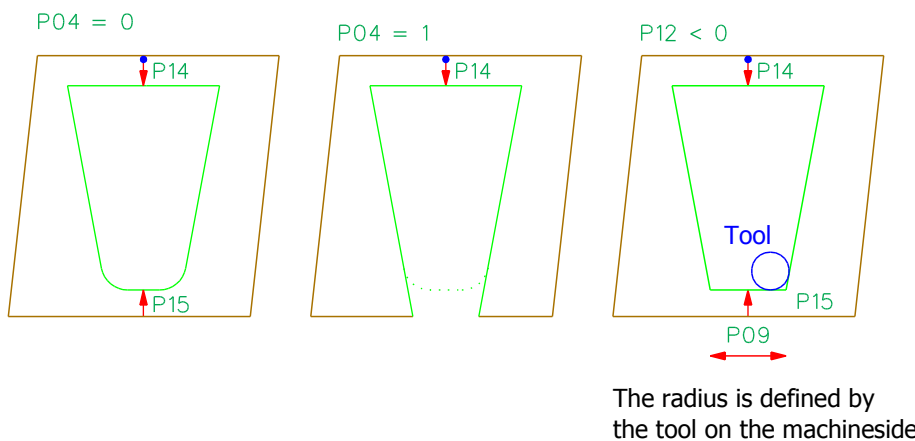
3-056-X



6.27 Parameters Dovetail Mortise Front

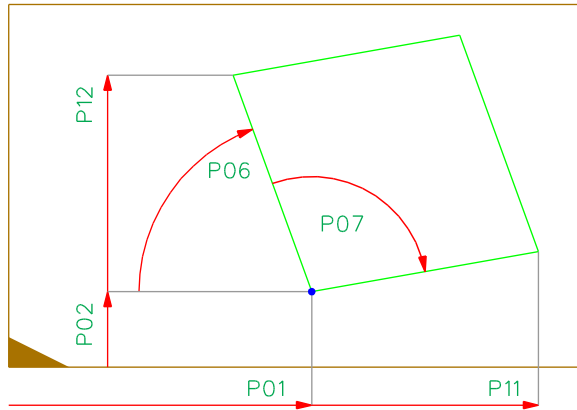
3-056-X und 4-056-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | WRS/2 | Distance from the reference edge to the reference point |
| P03 | 0/50000 | 0 | Displacement to the front side |
| P04 | 0/1 | 0 | 0=with rounding at the bottom; 1=without rounding, unbounded |
| P05 | 0/1 | 0 | 0=with elongation; 1=with pocket |
| P06 | 1/179 | 90 | Angle between cut edge and reference edge |
| P07 | 1/179 | 90 | Inclination between face and reference side |
| P08 | 1/179 | 90 | Angle between axis of the tenon and reference side |
| P09 | 0/1000 | 0 | Middle flattening |
| P10 | 0/30 | 0 | Angle of cone |
| P11 | 1/1000 | 28 | Mortise depth |
| P12 | 0/1000 | 45 | Diameter of the curve If P12 < 0, then the radius must be defined on the machineside. |
| P14 | +/- 50000 | 0 | Margin on the reference side |
| P15 | +/- 50000 | 0 | Margin opposite the reference side |

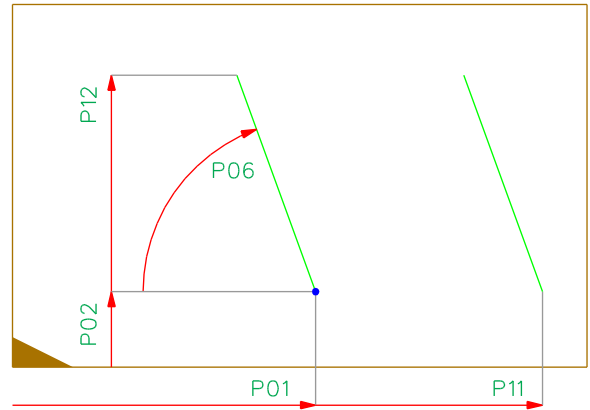


6.28 Marking / Labeling 3-060-X and 4-060-X

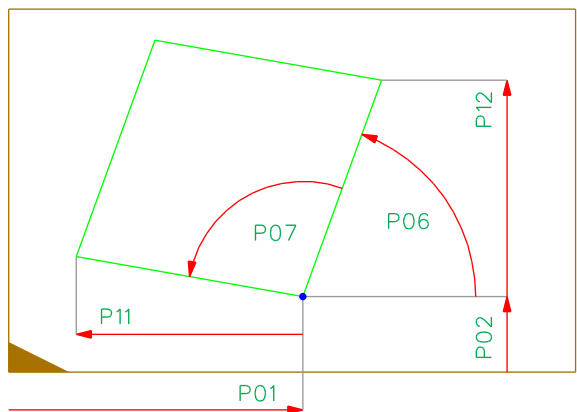
4-060-X



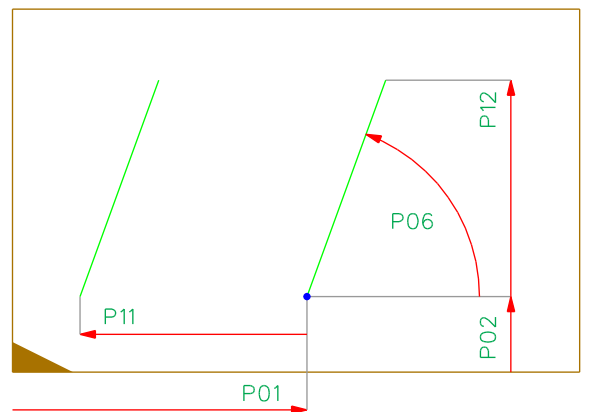
P07=0





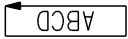


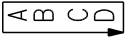
3-060-X

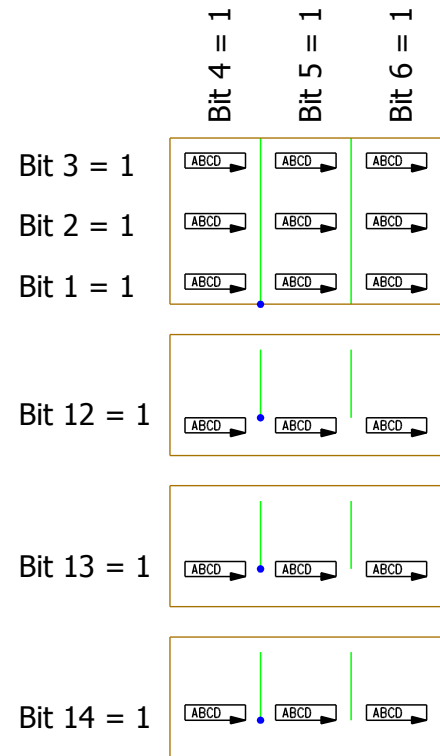


P07=0



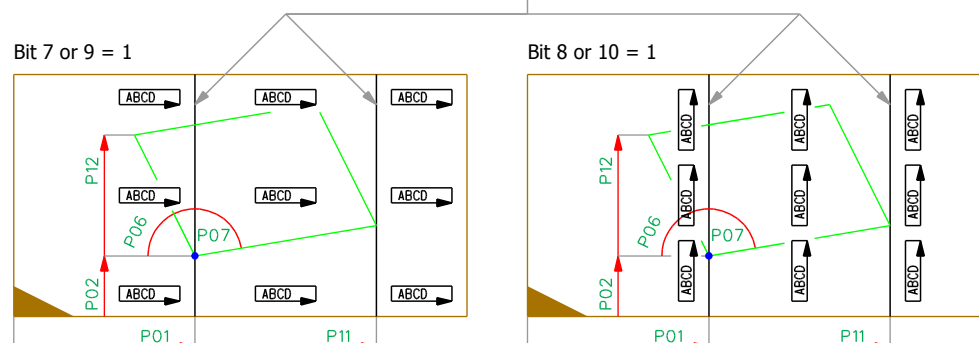
P04:

| Bit | 0 | 1 |
|-----|---|--|
| 0 | Marking | No marking |
| 1 | | Text at reference edge |
| 2 | | Text in the middle |
| 3 | | Text opposite to reference edge |
| 4 | | Text on the left side of marking |
| 5 | | Text between marking |
| 6 | | Text on the right side of marking |
| 7 | | standard  |
| 8 | | turned to right  |
| 9 | | upside down  |
| 10 | | turned to left  |
| 11 | Letters standard  | Letters vertically placed  |
| 12 | | Text below the reference point |
| 13 | | Text at the reference point |
| 14 | | Text above the reference point |



ABCD 

The text is not aligned to the edges defined by P06 / P07.
It is aligned to these edges:

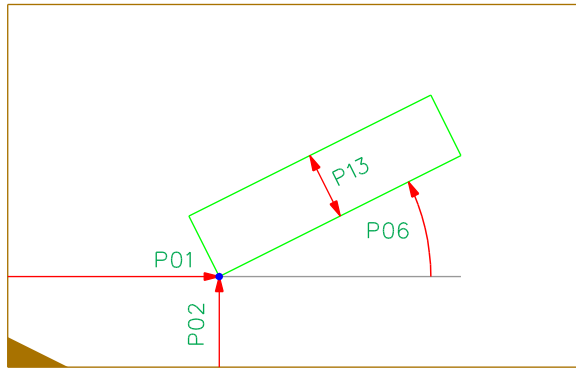


6.28 Parameters Marking / Labeling

3-060-X und 4-060-X

| Parameter | Min/Max | Presetting | Description |
|-----------|---------------------------------------|--------------------------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P04 | 0/19521 Only sensible combinations | 0 (no text) 146 (with text) | Position and alignment of the text. P04 = 0 if there is no text. |
| P06 | 1/179 | 90 | Angle between axis and reference edge |
| P07 | 0/179 | 90 | Interior angle If P07 equals zero, 2 single markings have to be produced |
| P11 | 0/50000 | 100 | Width of quadrangle If P11 equals zero, there is only a single marking |
| P12 | 0/50000 | 0 | Height of quadrangle If P12 equals zero, marking is limited by the edge opposite to the reference edge |
| P13 | 0/50000 | 200 | Height of text If P13 equals zero, the machine determines the text height. |
| P15 | | "" | Text (String max. 256 characters) Example: P15:"Rafter left" |

6.29 Text 4-061-X



P09 = 0 P10 = 0

ABCD

P09 = 1 P10 = 0

ABCD

P09 = 2 P10 = 0

ABCD

P09 = 0 P10 = 1

ABCD

P09 = 1 P10 = 1

ABCD

P09 = 2 P10 = 1

ABCD

P09 = 0 P10 = 2

ABCD

P09 = 1 P10 = 2

ABCD

P09 = 2 P10 = 2

ABCD

P13

P15: "ABCD"

P11 = 0

ABCD
EF
GHI

P11 = 1

ABCD
EF
GHI

P11 = 2

ABCD
EF
GHI

P13

P15: "ABCD\nEF\nGHI"

P12 = 0

ABCD

P12 = 1

A m U D

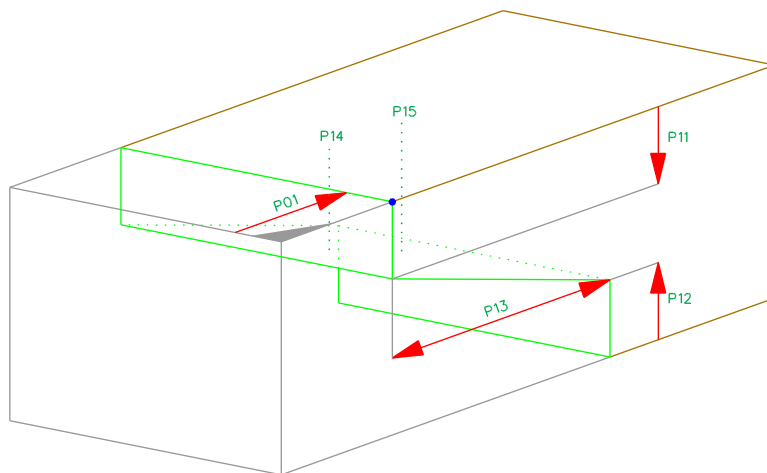
6.29 Parameters Text

4-061-X

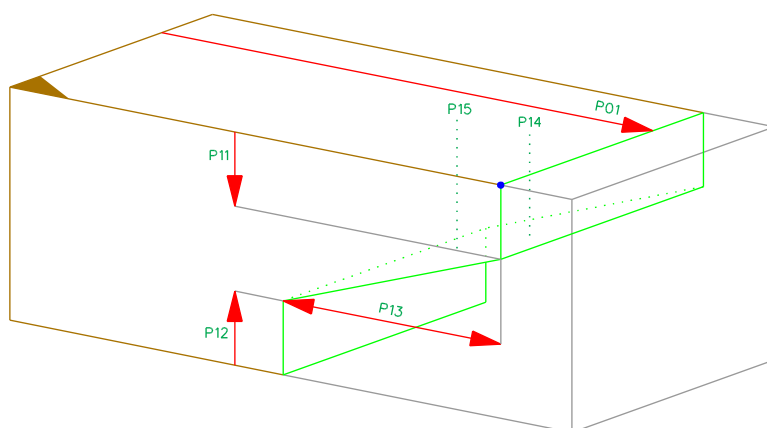
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P06 | -180/+180 | 0 | Angle between axis and reference edge |
| P09 | 0/2 | 0 | Alignment vertical 0 = bottom, 1=middle, 2=top |
| P10 | 0/2 | 0 | Alignment horizontal 0 = left, 1=middle, 2=right |
| P11 | 0/2 | 0 | Alignment in case of a multiline text 0 = left-aligned, 1=centered, 2=right-aligned A new line must be defined with this 2 letters: \n |
| P12 | 0/1 | 0 | Letters standard or horizontal placed 0 = standard, 1=letters horizontal placed |
| P13 | 0/50000 | 200 | Height of text If P13 equals zero, the machine determines the text height. |
| P15 | | "" | Text (String max. 256 characters) Example: P15:"Rafter left" |

6.30 Simple Scarf 1-070-X and 2-070-X

2-070-X



1-070-X



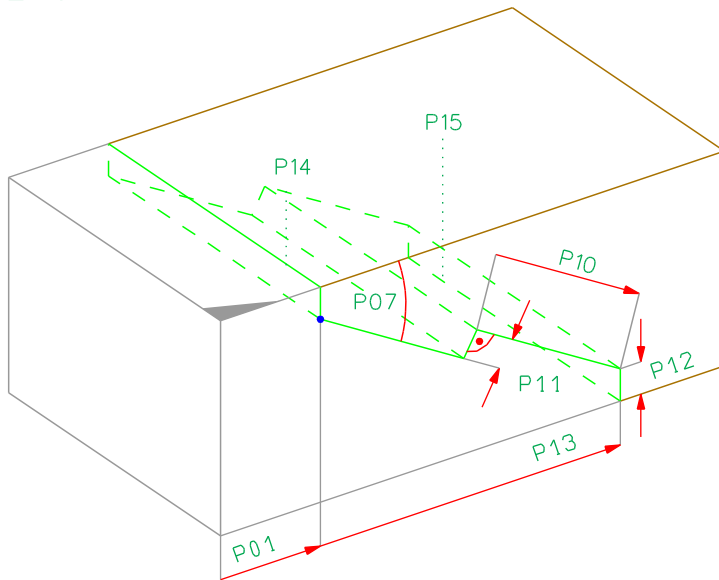
6.30 Parameters Simple Scarf

1-070-X and 2-070-X

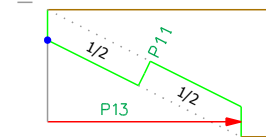
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 50000 | 0 | Distance from beam start to the reference point |
| P11 | 0/50000 | 20 | Depth at the reference side |
| P12 | 0/50000 | 20 | Depth at the opposite of reference side |
| P13 | 1/50000 | 200 | Length of the overlap |
| P14 | 0/1000 | 0 | Drilling 1 diameter P15=0: This drilling is placed at 1/2 P13 P15>0: This drilling is placed at 1/3 P13 |
| P15 | 0/1000 | 0 | Drilling 2 diameter Placed at 2/3 P13 |

6.31 Scarf Joint 1-071-X and 2-071-X

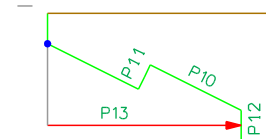
2-071-X



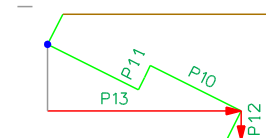
P09 = 0



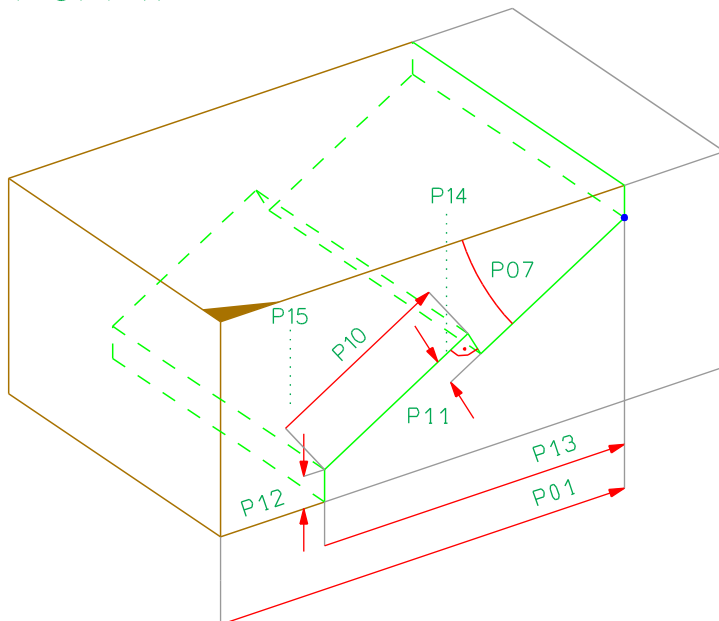
P09 = 1



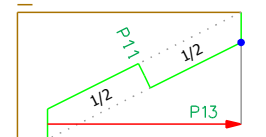
P09 = -1



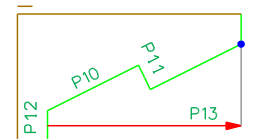
1-071-X



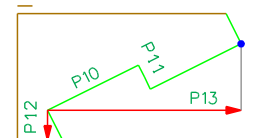
P09 = 0



P09 = 1



P09 = -1



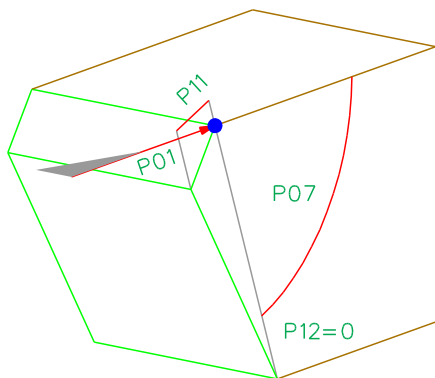
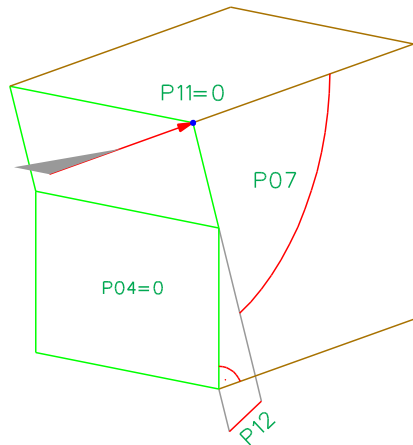
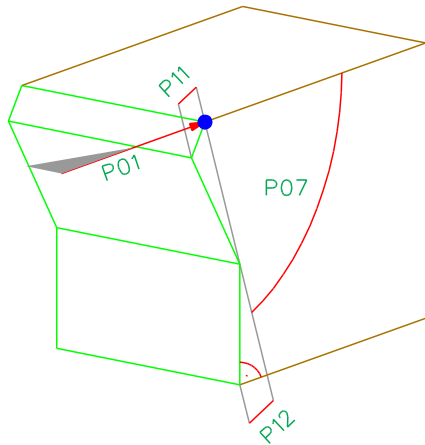
6.31 Parameters Scarf Joint

1-071-X and 2-071-X

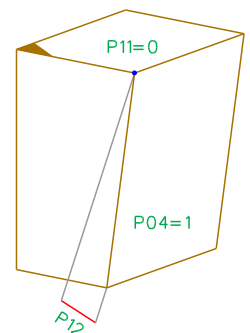
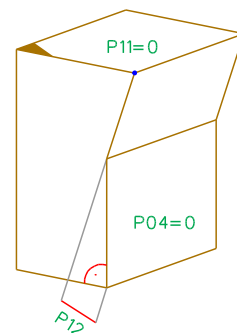
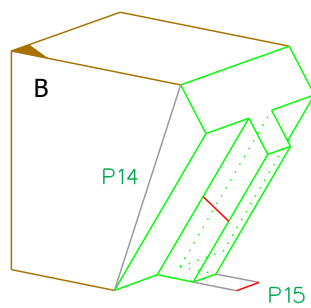
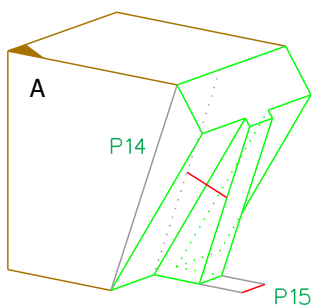
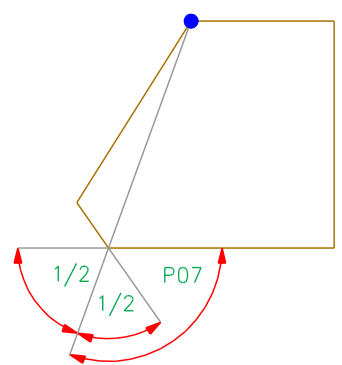
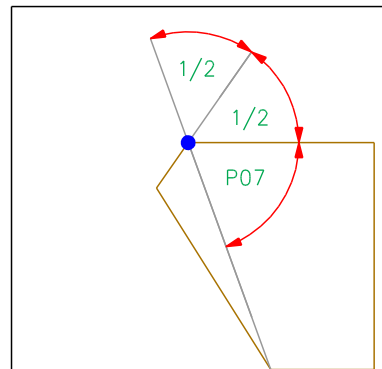
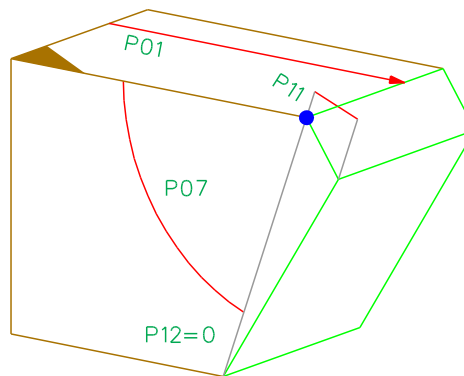
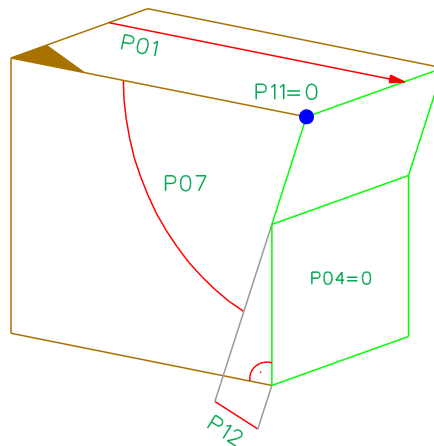
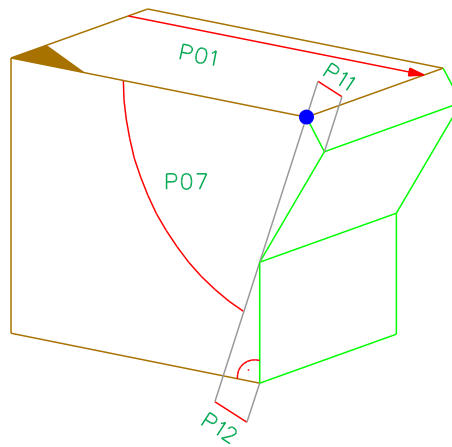
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P07 | 0/90 | 0 | Angle of inclination of the lapped scarf base |
| P09 | -1/1 | 1 | Shape of the lapped scarf or classic data identification: 1: when cutting orthogonal to reference side -1: when cutting orthogonal to base side 0: classic definition, P10 and P12 are not used |
| P10 | 0/50000 | 0 | Length of the lapped scarf base |
| P11 | 1/50000 | 20 | Depth of the lapped scarf base |
| P12 | 0/50000 | 0 | Depth of the lapped scarf base orthogonal to reference side |
| P13 | 1/50000 | 200 | Length |
| P14 | 0/1000 | 0 | Drilling 1 diameter P15=0: This drilling is placed at 1/2 P13 P15>0: This drilling is placed at 1/3 P13 |
| P15 | 0/1000 | 0 | Drilling 2 diameter Placed at 2/3 P13 |

6.32 Step Joint 1-080-X and 2-080-X

2-080-X



1-080-X



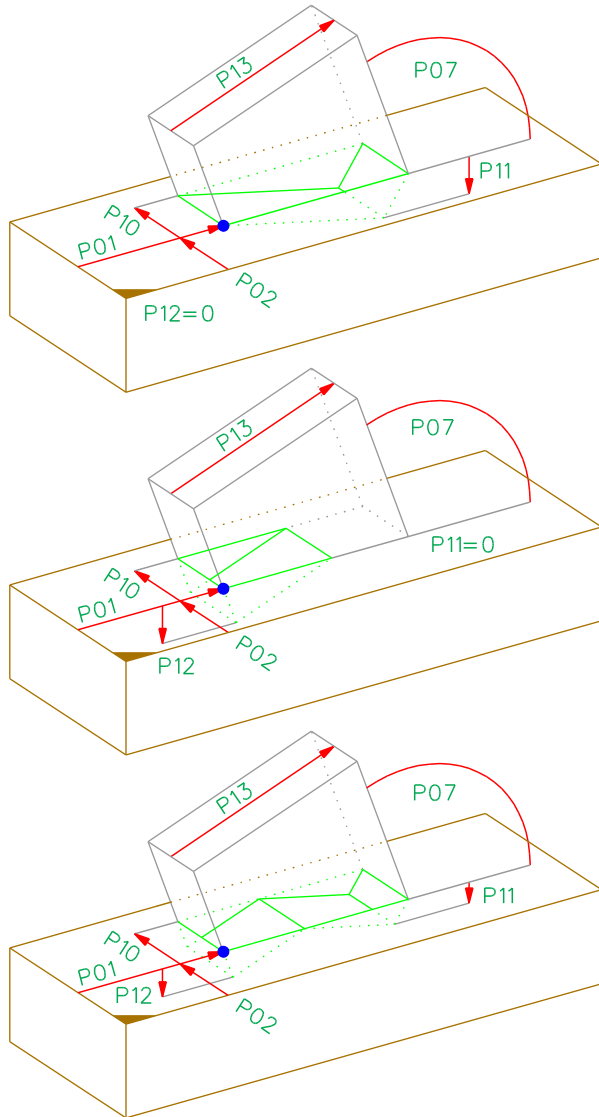
6.32 Parameters Step Joint

1-080-X and 2-080-X

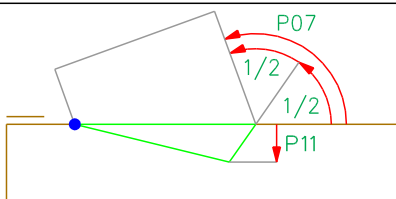
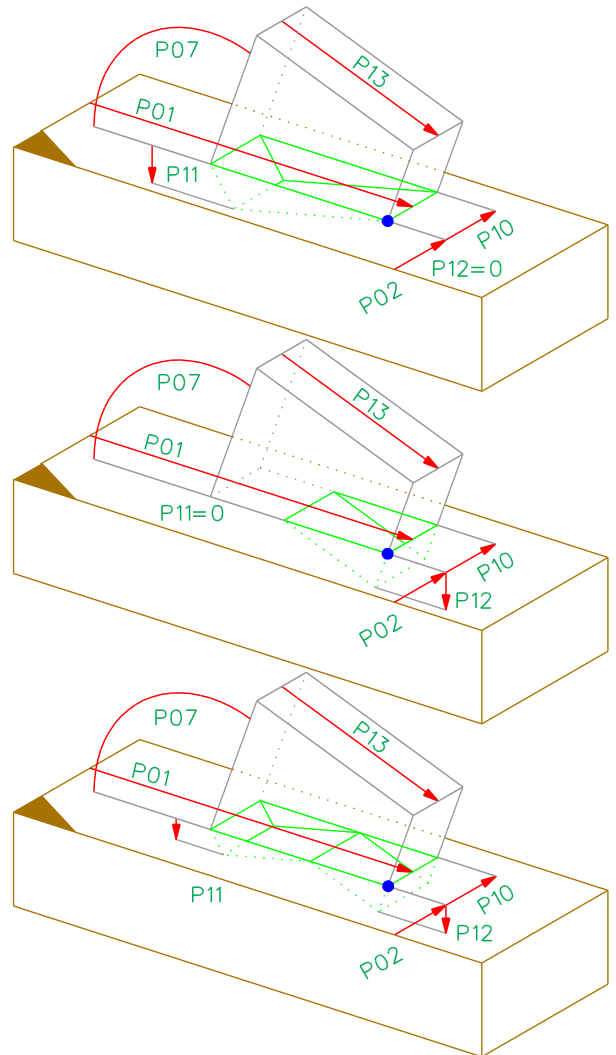
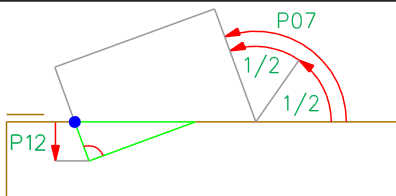
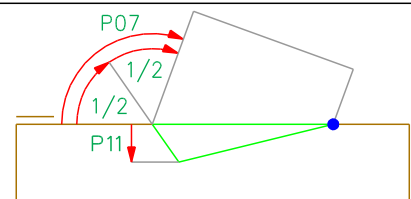
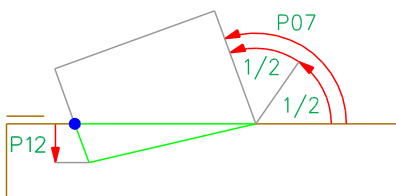
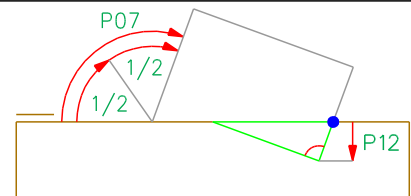
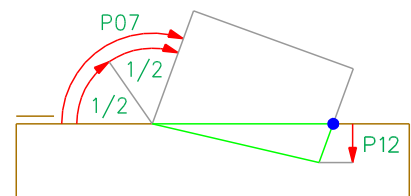
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P04 | 0/1 | 0 | Type of heel notch: 0=normal; 1=tapered |
| P07 | 1/179 | 45 | Inclination strut |
| P11 | 0/1000 | 20 | Depth step joint |
| P12 | 0/1000 | 20 | Depth heel notch |
| P14 | 0/1000 | 0 | Height tenon Which implementation (A or B) is used depends on the machine |
| P15 | 0/1000 | 0 | Width tenon |

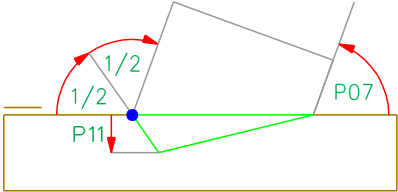
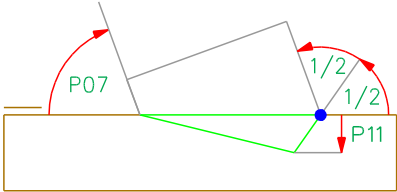
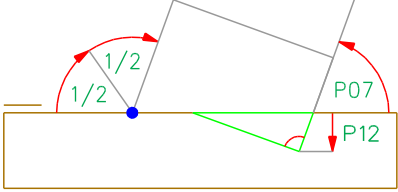
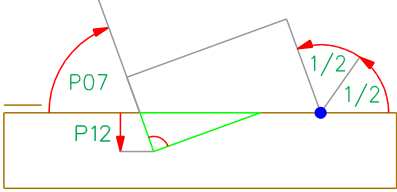
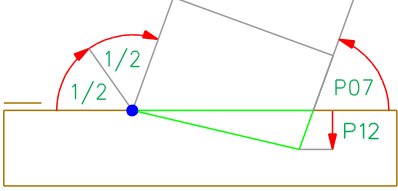
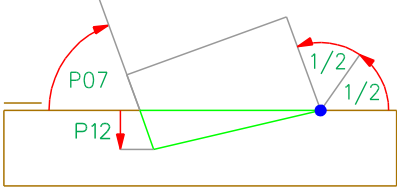
6.33 Step Joint Notch 3-080-X and 4-080-X

4-080-X



3-080-X

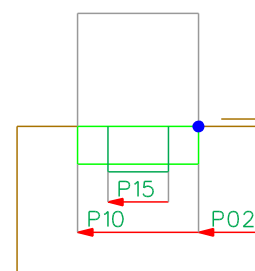
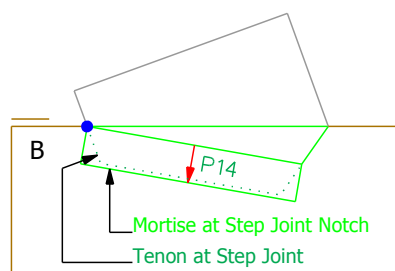
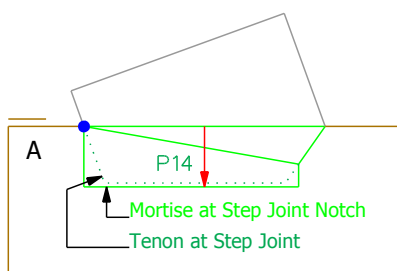
 $P07 > 90^\circ$
 $P11 > 0$
 $P12 = 0$
 $P07 > 90^\circ$
 $P11 = 0$
 $P12 > 0$
 $P04 = 0$
 $P07 > 90^\circ$
 $P11 = 0$
 $P12 > 0$
 $P04 = 1$


| 4-080-X | | 3-080-X |
|---|---|---|
|  | $P07 < 90^\circ$ $P11 > 0$ $P12 = 0$ |  |
|  | $P07 < 90^\circ$ $P11 = 0$ $P12 > 0$ $P04 = 0$ |  |
|  | $P07 < 90^\circ$ $P11 = 0$ $P12 > 0$ $P04 = 1$ |  |

6.33 Parameters Step Joint Notch

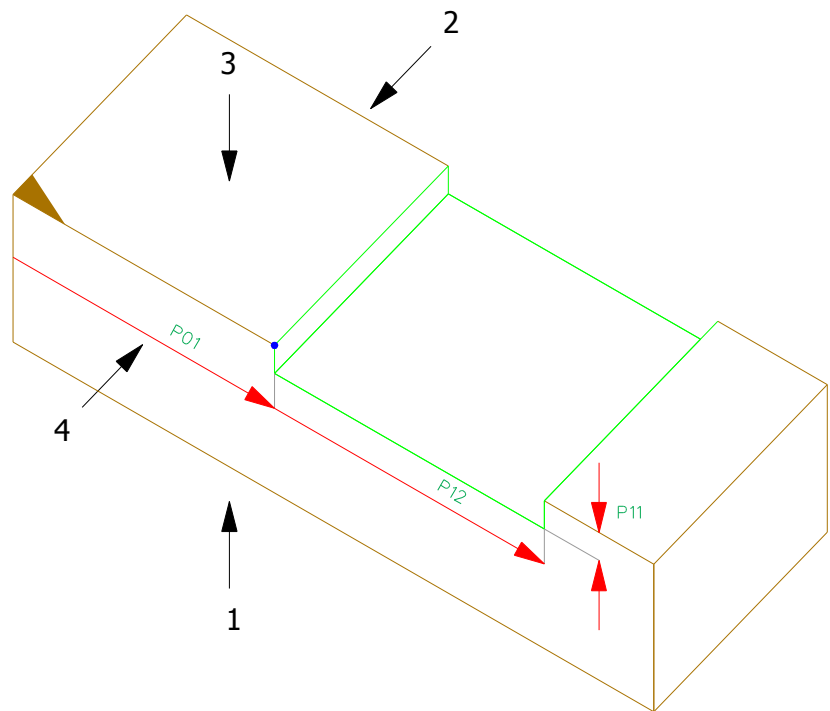
3-080-X and 4-080-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P04 | 0/1 | 0 | Type of heel notch: 0=normal; 1=tapered |
| P07 | 1/179 | 45 | Inclination between strut and reference side |
| P10 | 0/50000 | WRS | Width of the notch |
| P11 | 0/1000 | 20 | Depth step joint |
| P12 | 0/1000 | 20 | Depth heel notch |
| P13 | 1/50000 | 200 | Height of strut |
| P14 | 0/1000 | 0 | Depth of mortise Which implementation (A or B) is used depends on the machine |
| P15 | 0/1000 | 0 | Width of mortise |



6.34 Planing 3-090-X and 4-090-X

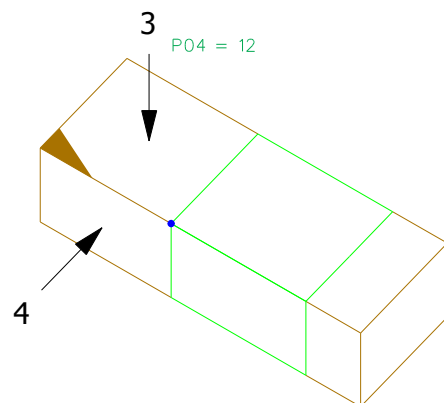
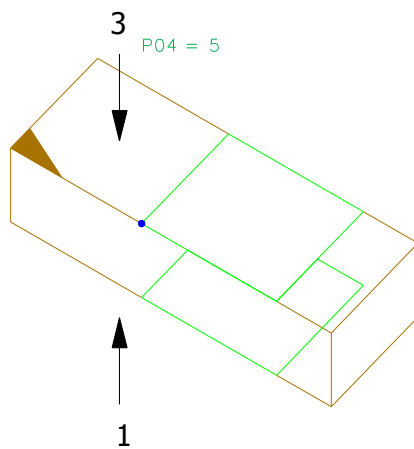
4-090-X



P04 = binary code

| | 2^0 | 2^1 | 2^2 | 2^3 |
|----------------|-------|-------|-------|-------|
| Binary | 1 | 2 | 4 | 8 |
| Reference side | 1 | 2 | 3 | 4 |

Examples

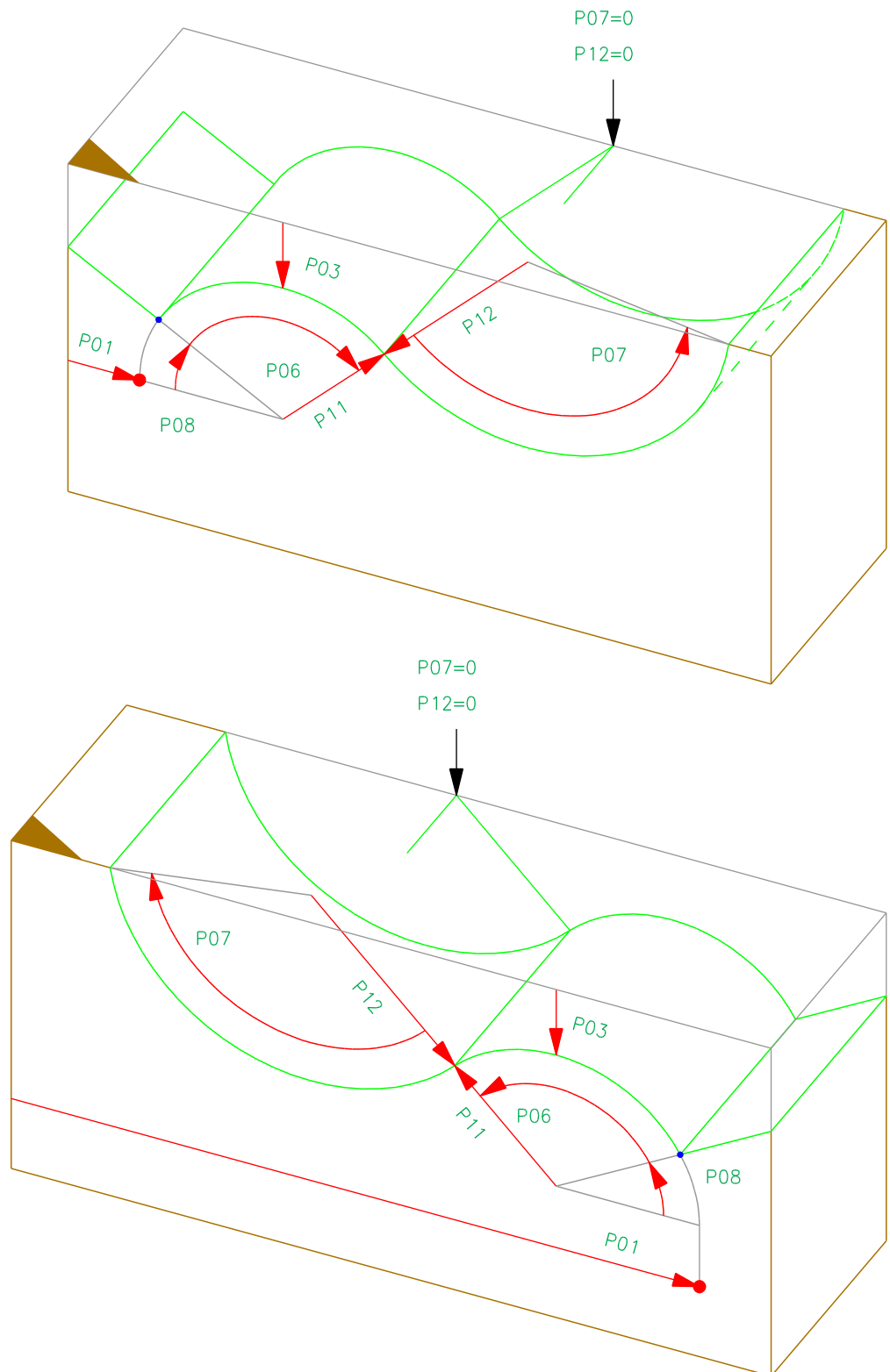


6.34 Parameters Planing

3-090-X and 4-090-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P04 | 1/15 | 15 | Specification of side(s) to be planed; binary coded |
| P11 | 0/50 | 1 | Planing depth |
| P12 | +/- 99999 | LRS | Length of the area to be planed |

6.35 Profile Front 3-100-X and 4-100-X



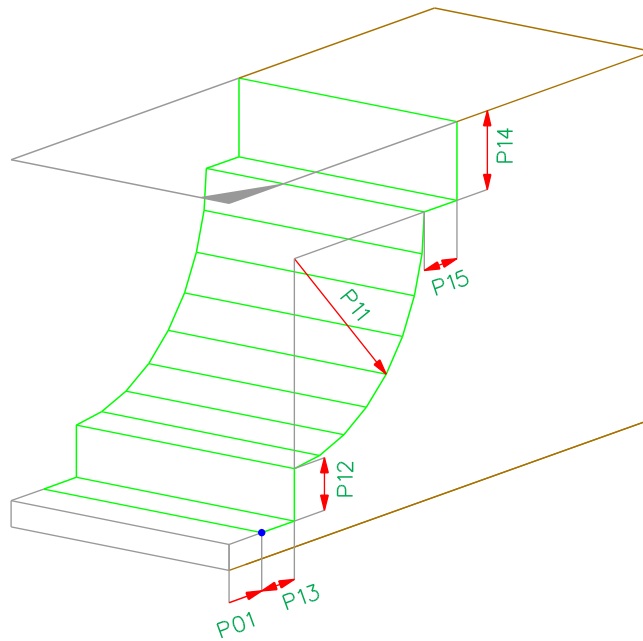
6.35 Parameters Profile Front

3-100-X and 4-100-X

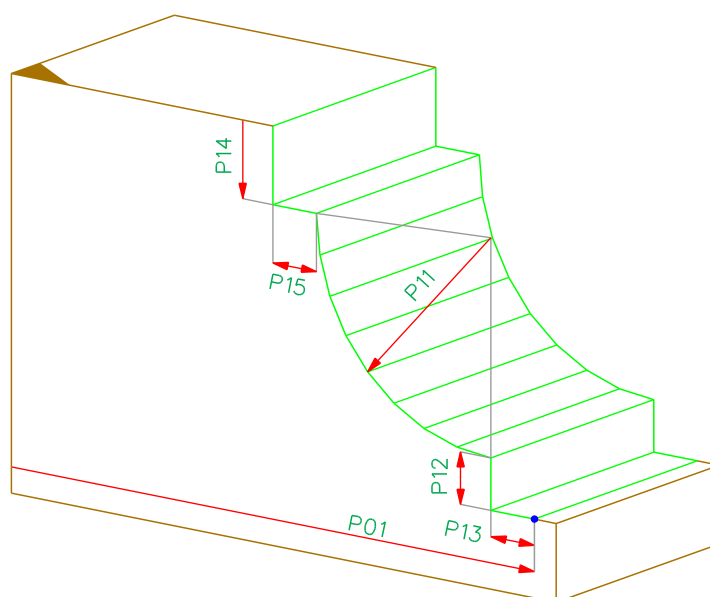
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P03 | +/- 1000 | 0 | Distance from the reference edge to the reference point |
| P06 | 0/180 | 90 | Rotation angle of the first curve of the profile |
| P07 | 0/180 | 90 | Rotation angle of the profile towards the reference edge |
| P08 | +/- 180 | 0 | Offset angle |
| P11 | +/- 1000 | 250 | Radius of the first curve |
| P12 | +/- 1000 | 250 | Radius of the second curve |

6.36 Profile Head concave 3-101-X and 4-101-X

4-101-X



3-101-X



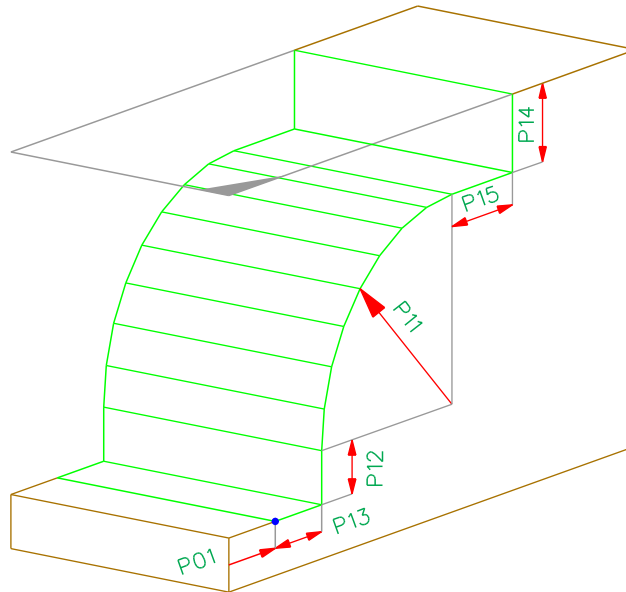
6.36 Parameters Profile Head concave

3-101-X und 4-101-X

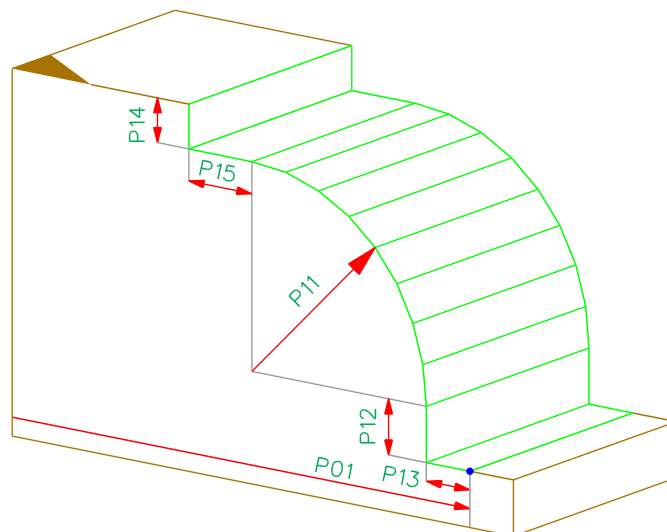
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P11 | 0/1000 | 120 | Radius |
| P12 | +/- 1000 | 20 | Depth |
| P13 | 0/1000 | 20 | Displacement |
| P14 | +/- 1000 | 20 | Depth |
| P15 | 0/1000 | 20 | Displacement |

6.37 Profile Head convex 3-102-X and 4-102-X

4 - 102 - X



3 - 102 - X



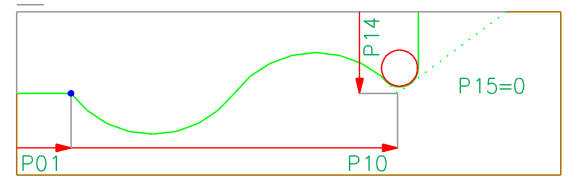
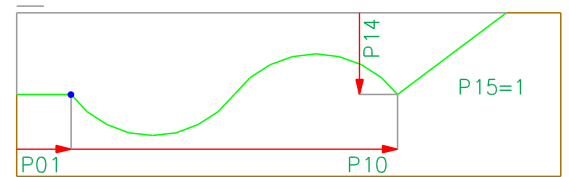
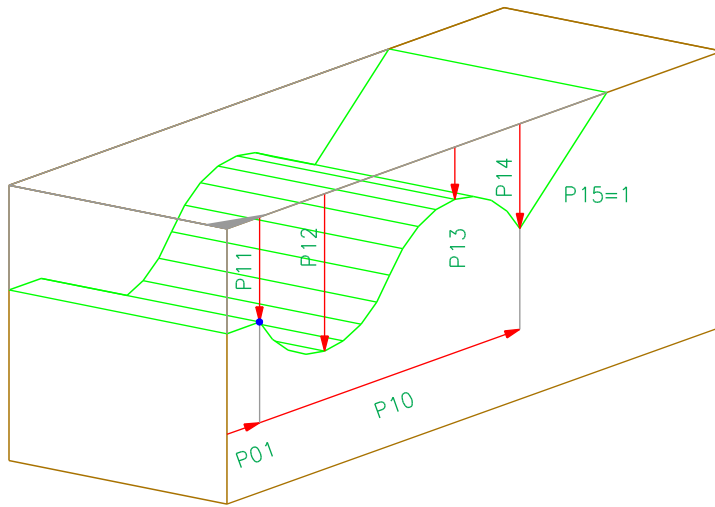
6.37 Parameters Profile Head convex

3-102-X und 4-102-X

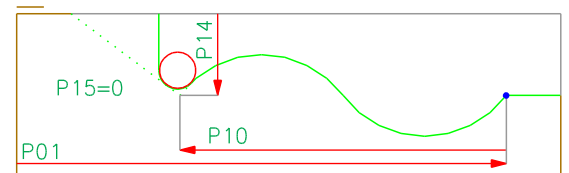
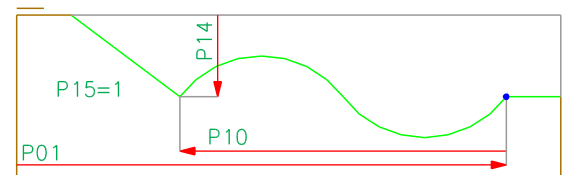
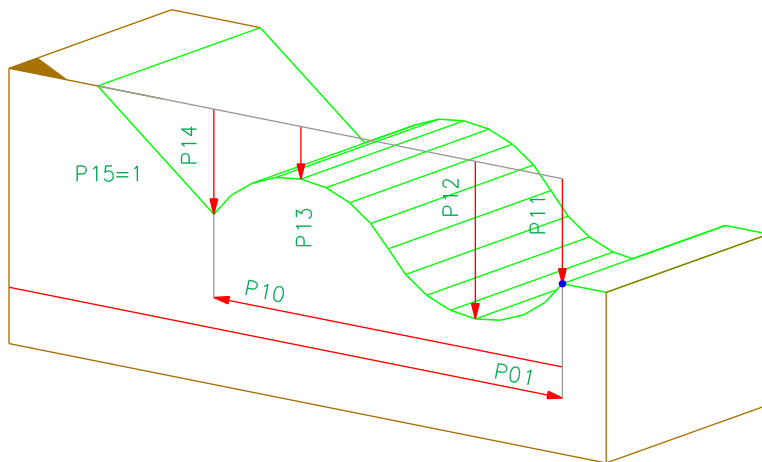
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P11 | 0/1000 | 120 | Radius |
| P12 | +/- 1000 | 20 | Depth |
| P13 | 0/1000 | 20 | Displacement |
| P14 | +/- 1000 | 20 | Depth |
| P15 | 0/1000 | 20 | Displacement |

6.38 Profile Head cambered 3-103-X and 4-103-X

4-103-X



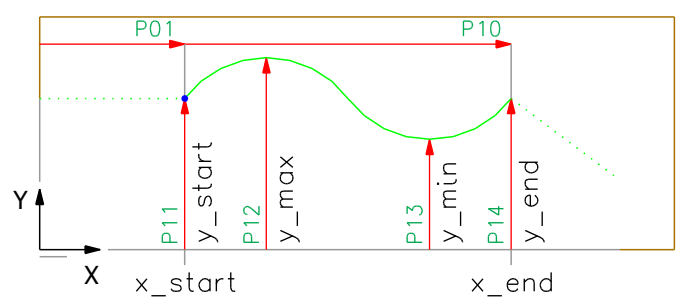
3-103-X



The curve is defined by a cubic polynomial.

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

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



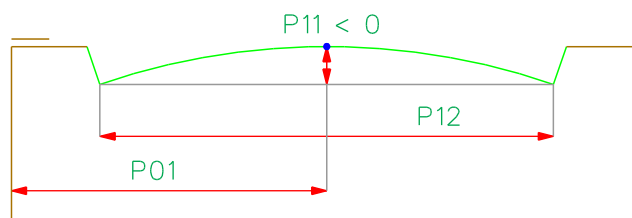
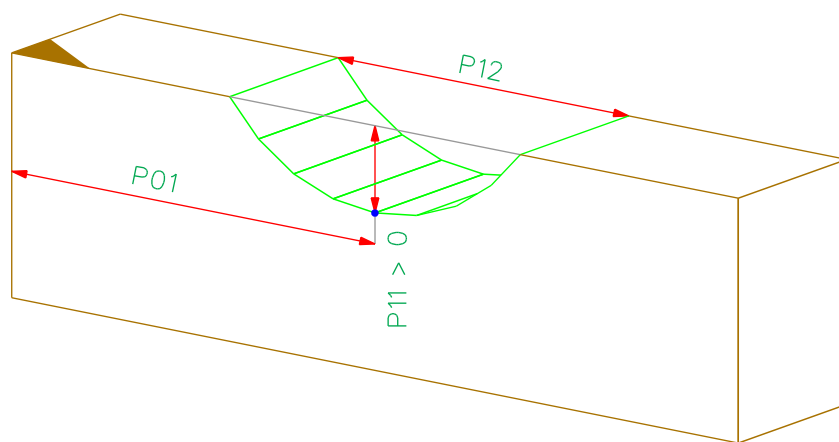
6.38 Parameters Profile Head cambered

3-103-X and 4-103-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P10 | 0/50000 | 500 | Profile length |
| P11 | +/- 1000 | 40 | Depth at the reference point |
| P12 | +/- 1000 | 60 | Maximum depth of profile |
| P13 | +/- 1000 | 10 | Minimum depth of profile |
| P14 | +/- 1000 | 40 | Depth at the profile end |
| P15 | 0/1 | 1 | Premill: 0=round; 1=angular |

6.39 Round Arch 4-104-X

4 - 104 - X



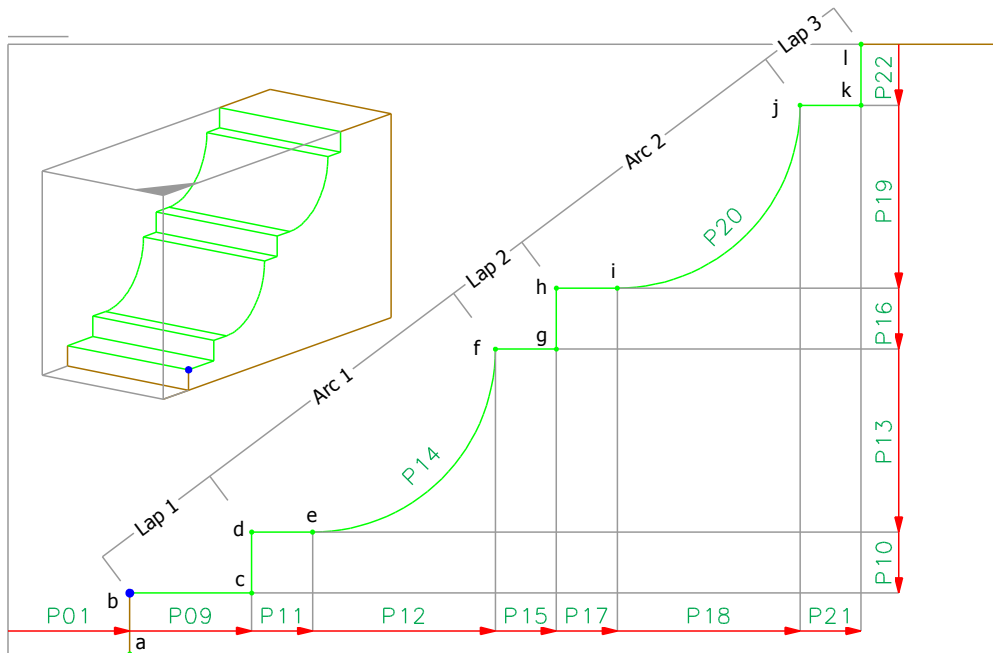
6.39 Parameters Round Arch

4-104-X

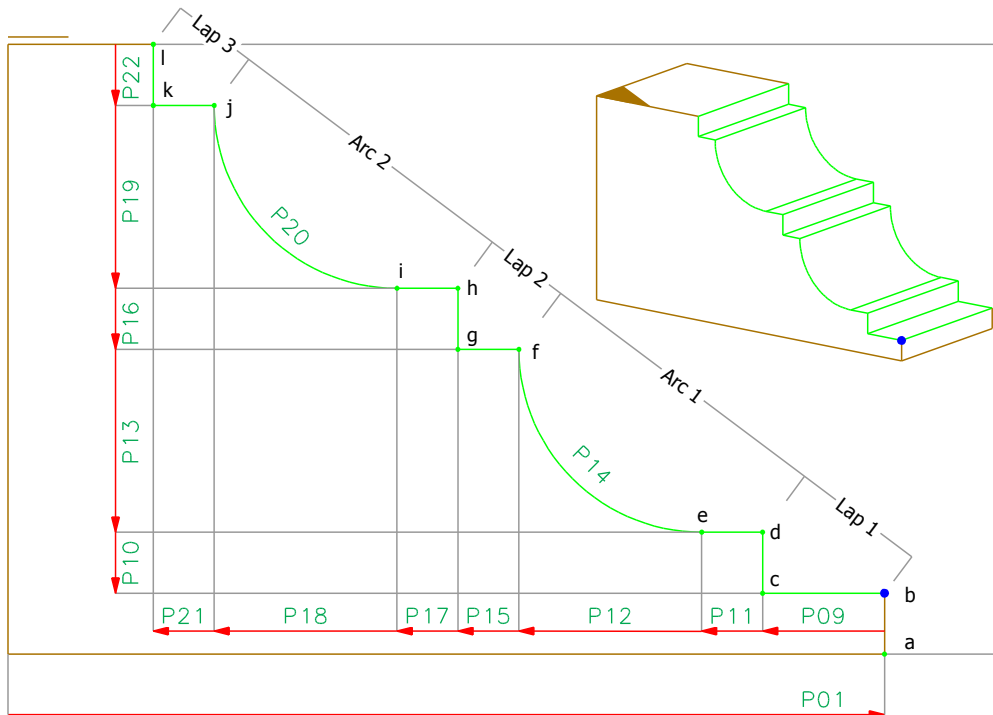
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P11 | +/- 1000 | 30 | Depth of the arch segment |
| P12 | 0/30000 | 500 | Length of the arch segment |

6.40 Profile Head 3-106-X and 4-106-X

4 - 106 - X



3 - 106 - X

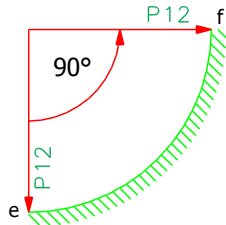


6.40 Parameters Profile Head

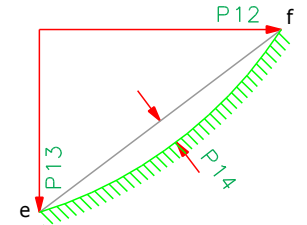
3-106-X und 4-106-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P04 | 0/3 | 1 | Type of arc (convex, concave), binary coded. See table below. |
| P09 | 0/1000 | 1/10 HRS | Length of lap 1 |
| P10 | 0/1000 | 1/10 HRS | Depth of lap 1 |
| P11 | 0/1000 | 1/10 HRS | Displacement arc 1 |
| P12 | 0/1000 | 3/10 HRS | Horizontal length arc 1 |
| P13 | 0/1000 | 3/10 HRS | Vertical length arc 1 |
| P14 | 0/1000 | 0 | Camber arc 2 |
| P15 | 0/1000 | 1/10 HRS | Length of lap 2 |
| P16 | 0/1000 | 1/10 HRS | Depth of lap 2 |
| P17 | 0/1000 | 1/10 HRS | Displacement arc 2 |
| P18 | 0/1000 | 3/10 HRS | Horizontal length arc 2 |
| P19 | 0/1000 | 3/10 HRS | Vertical length arc 2 |
| P20 | 0/1000 | 0 | Camber arc 2 |
| P21 | 0/1000 | 1/10 HRS | Length of lap 3 |
| P22 | 0/1000 | 1/10 HRS | Depth of lap 3 |

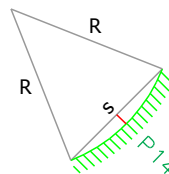
P12=Radius
P13=0
P14=0



P12>0
P13>0
P14=>0



$$R = \frac{P14}{2} + \frac{s^2}{8 * P14}$$

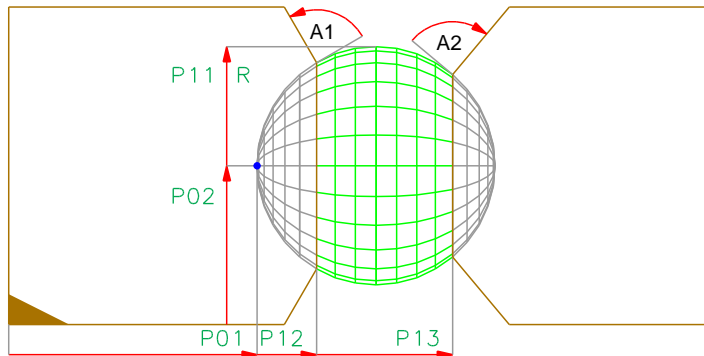


The definition for P18, P19, P20, i, j is similar to P12, P13, P14, e, f.

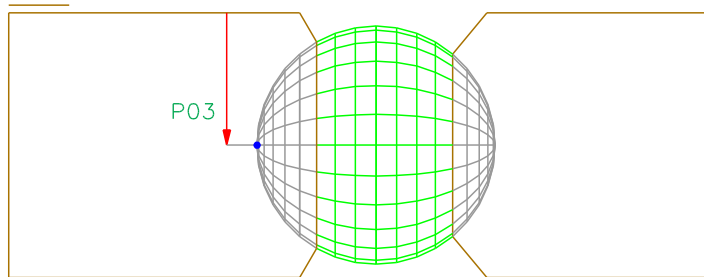
| P04 | Arc 1 | Arc 2 |
|-----|-------|-------|
| 0 | | |
| 1 | | |
| 2 | | |
| 3 | | |

6.41 Sphere 3-107-X and 4-107-X

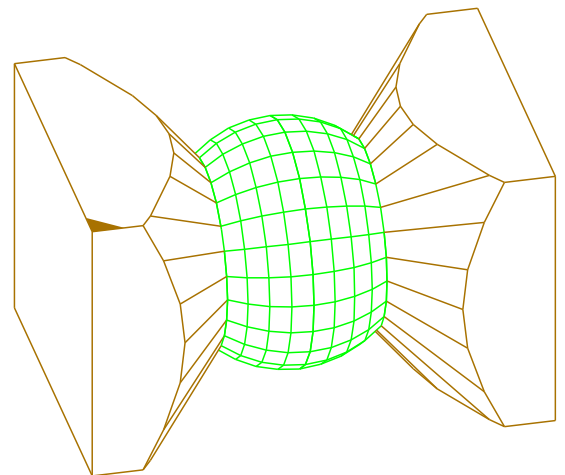
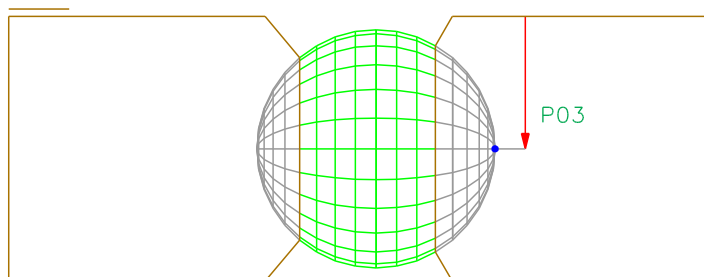
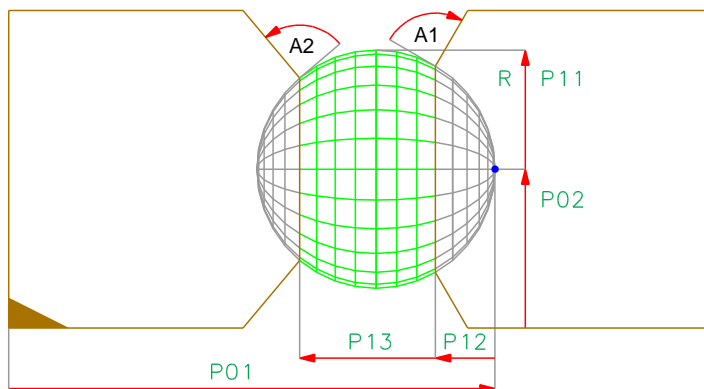
4 - 107 - X



A1: Angle between tangent on sphere and limit face at P12.
 A2: Angle between tangent on sphere and limit face at P13.
 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°.



3 - 107 - X

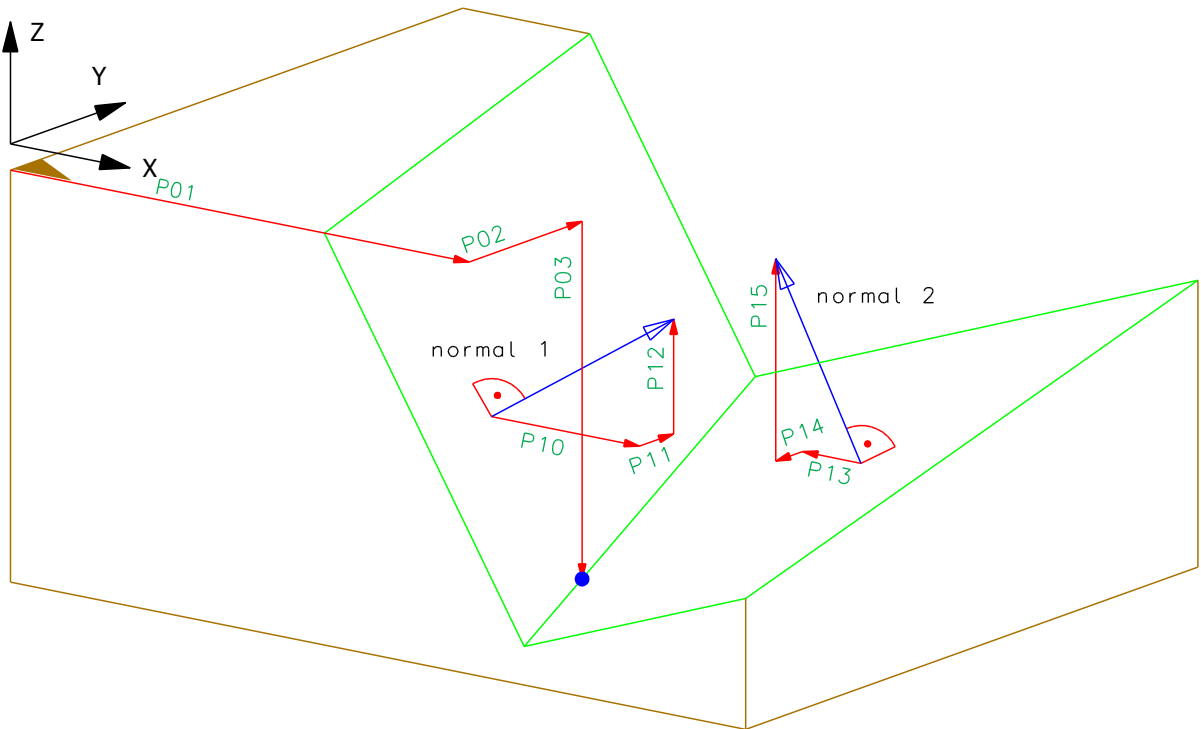


6.41 Parameters Sphere

3-107-X and 4-107-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 99999 | WRS / 2 | Distance from the reference edge to the reference point |
| P03 | +/- 99999 | HRS / 2 | Distance from the reference side to the reference point |
| P11 | +/- 99999 | WRS / 2 | Radius |
| P12 | 0/99999 | 0 | Start offset |
| P13 | 0/99999 | P11 | Length |

6.42 Triangle Cut 4-120-X



6.42 Parameters Triangle Cut

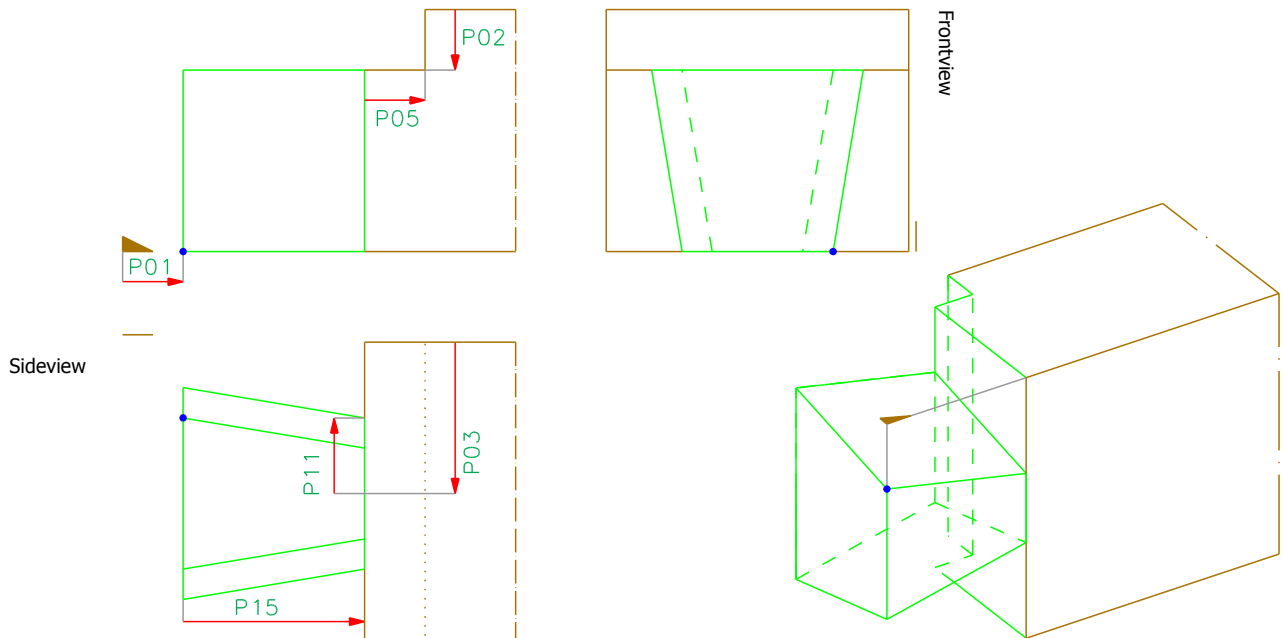
4-120-X

| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | +/- 50000 | 0 | Distance from the reference edge to the reference point |
| P03 | +/- 50000 | 0 | Distance from the reference side to the reference point |
| P10 | +/- 50000 | 1 | Normal vector 1: Length of X-component |
| P11 | +/- 50000 | 0 | Normal vector 1: Length of Y-component |
| P12 | +/- 50000 | 1 | Normal vector 1: Length of Z-component |
| P13 | +/- 50000 | -1 | Normal vector 2: Length of X-component |
| P14 | +/- 50000 | 0 | Normal vector 2: Length of Y-component |
| P15 | +/- 50000 | 1 | Normal vector 2: Length of Z-component |

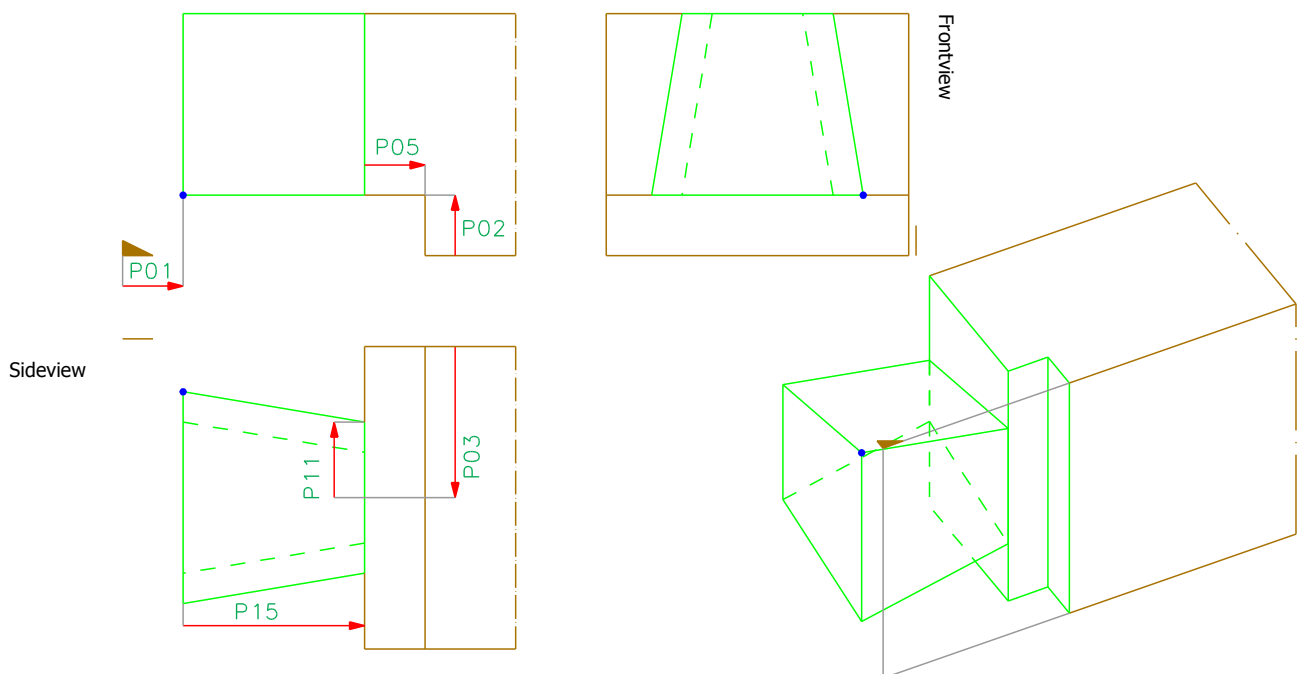
6.43 Tyrolean Dovetail 1/2/3/4-136-X

2/4-136-X

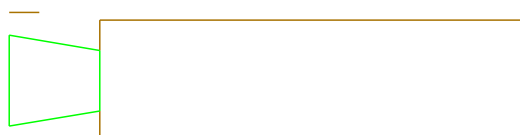
P04=1 P06=90° P07=0 P08=0 P12=0 P13=0



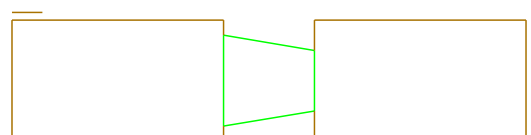
P04=0 P06=90° P07=0 P08=0 P12=0 P13=0



2-136-X



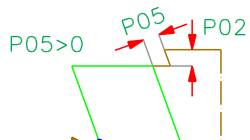
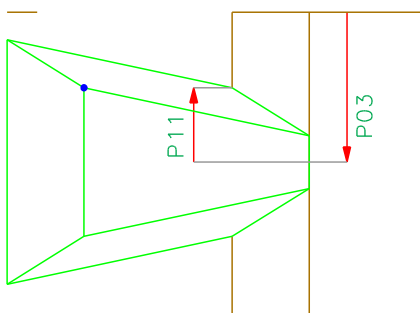
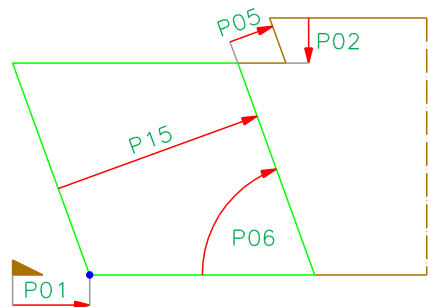
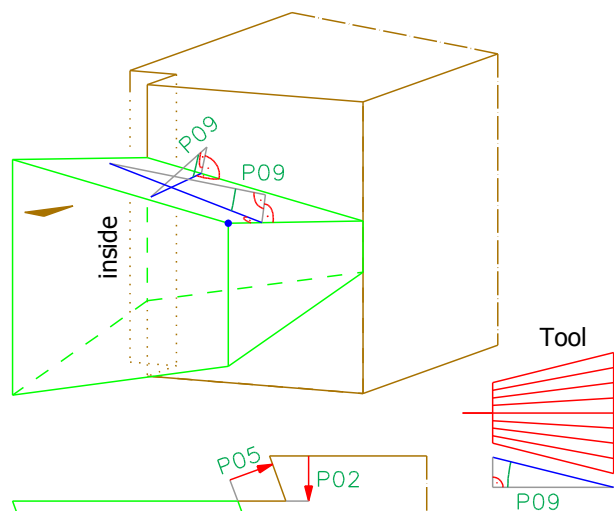
4-136-X



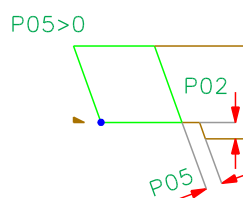
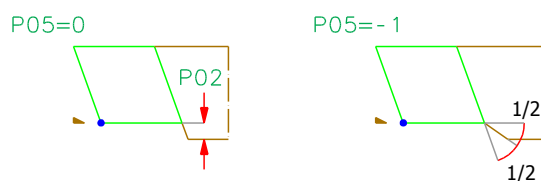
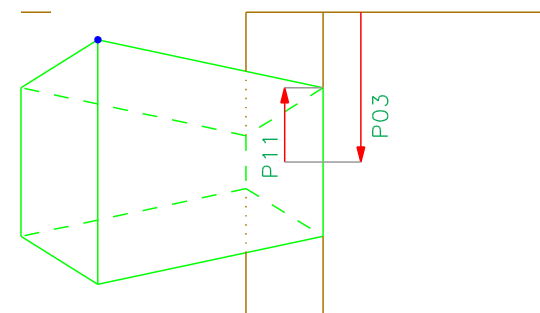
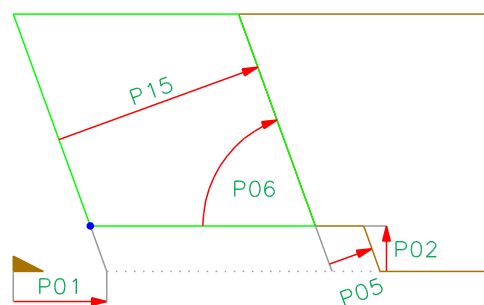
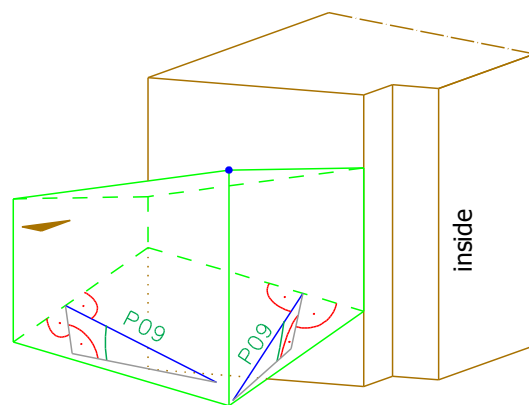
6.43 TyroleanDovetail 1/2/3/4-136-X

$$2/4 - 136 - X$$

P04=1 P06<>90° P07=0 P08=0
P12=0 P13=0



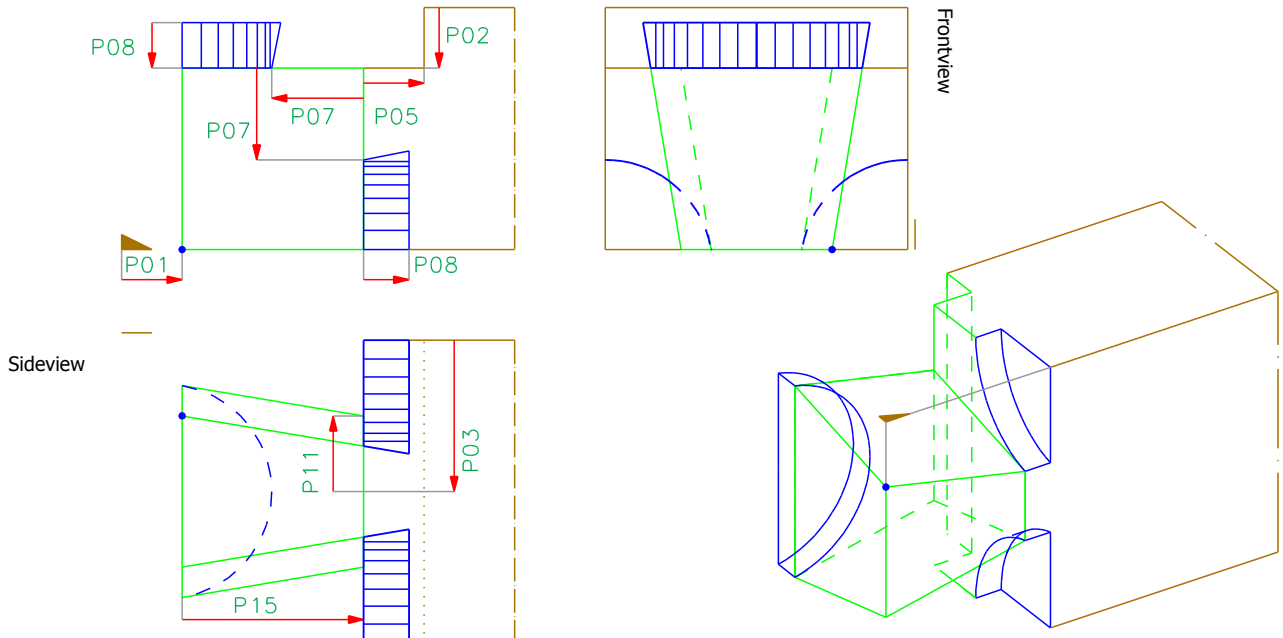
P04=0 P06<>90° P07=0 P08=0
P12=0 P13=0



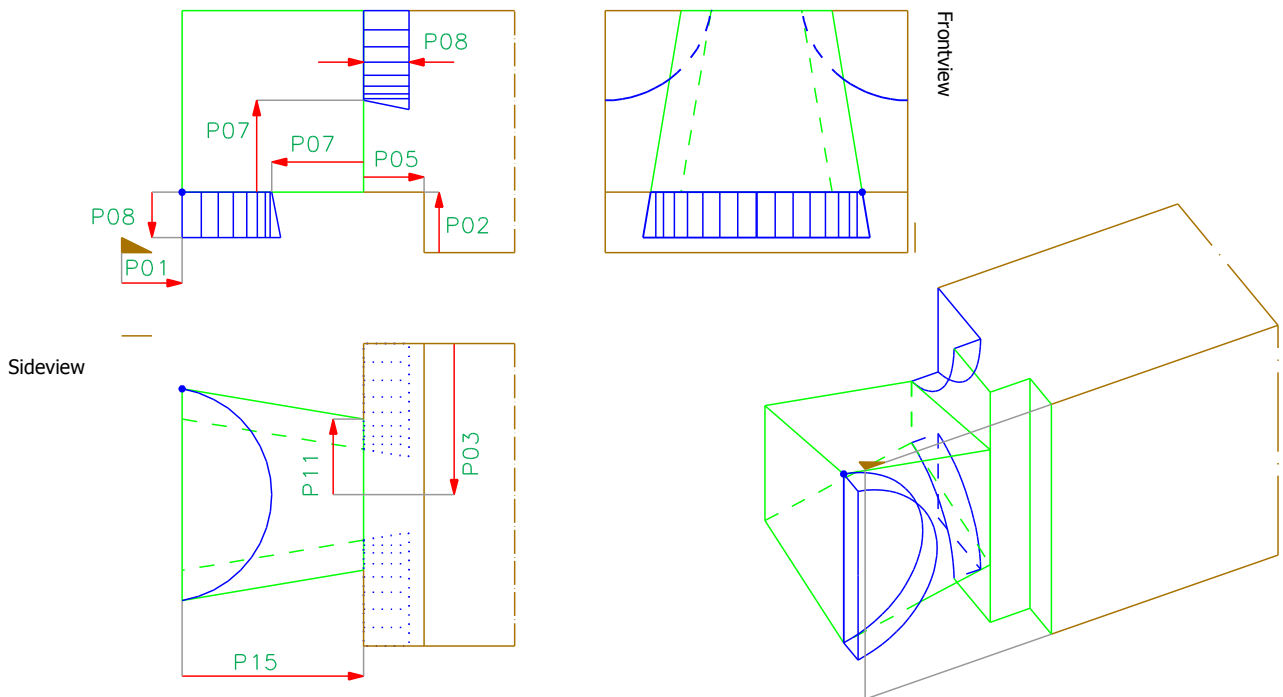
6.43 TyroleanDovetail 1/2/3/4-136-X

2/4 - 136 - X

P04=1 P06=90° P07>0 P08>0 P12=0 P13=0



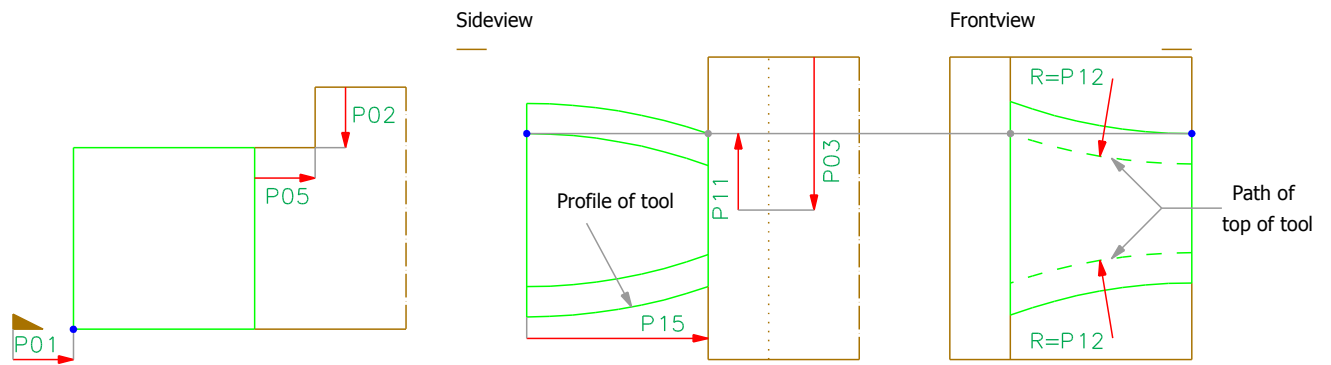
P04=0 P06=90° P07>0 P08>0 P12=0 P13=0



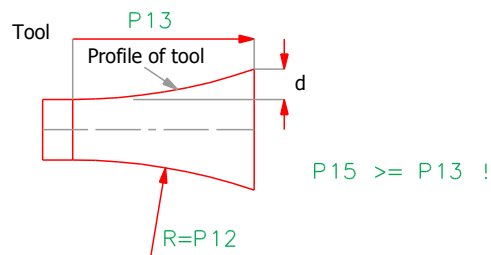
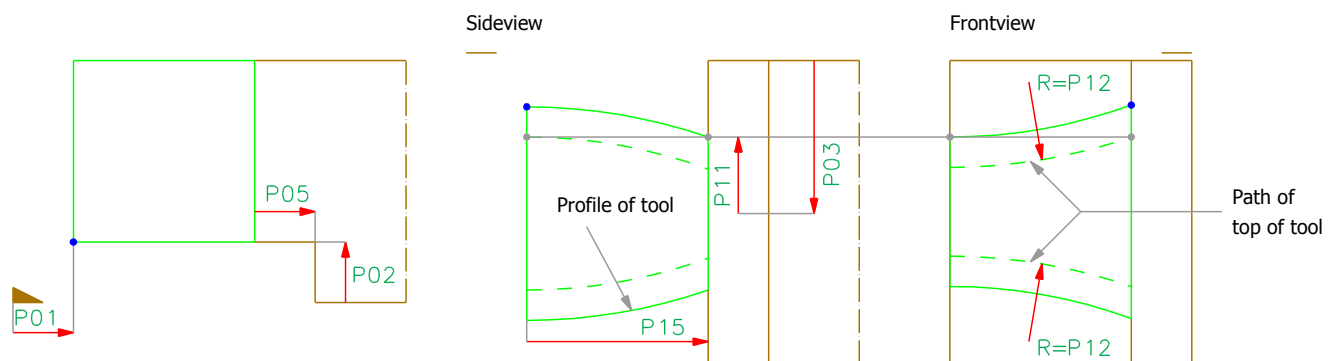
6.43 TyroleanDovetail 1/2/3/4-136-X

2/4 - 136 - X

$P04=1$ $P06=90^\circ$ $P07=0$ $P08=0$ $P12>0$ $P13>0$



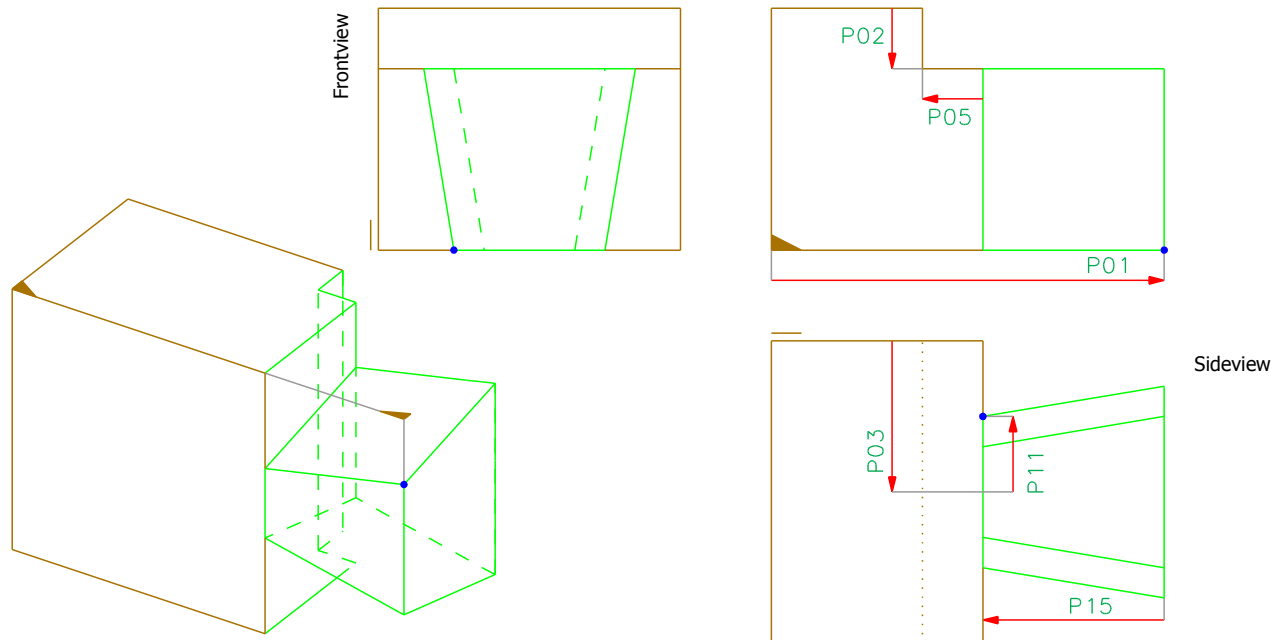
$P04=0$ $P06=90^\circ$ $P07=0$ $P08=0$ $P12>0$ $P13>0$



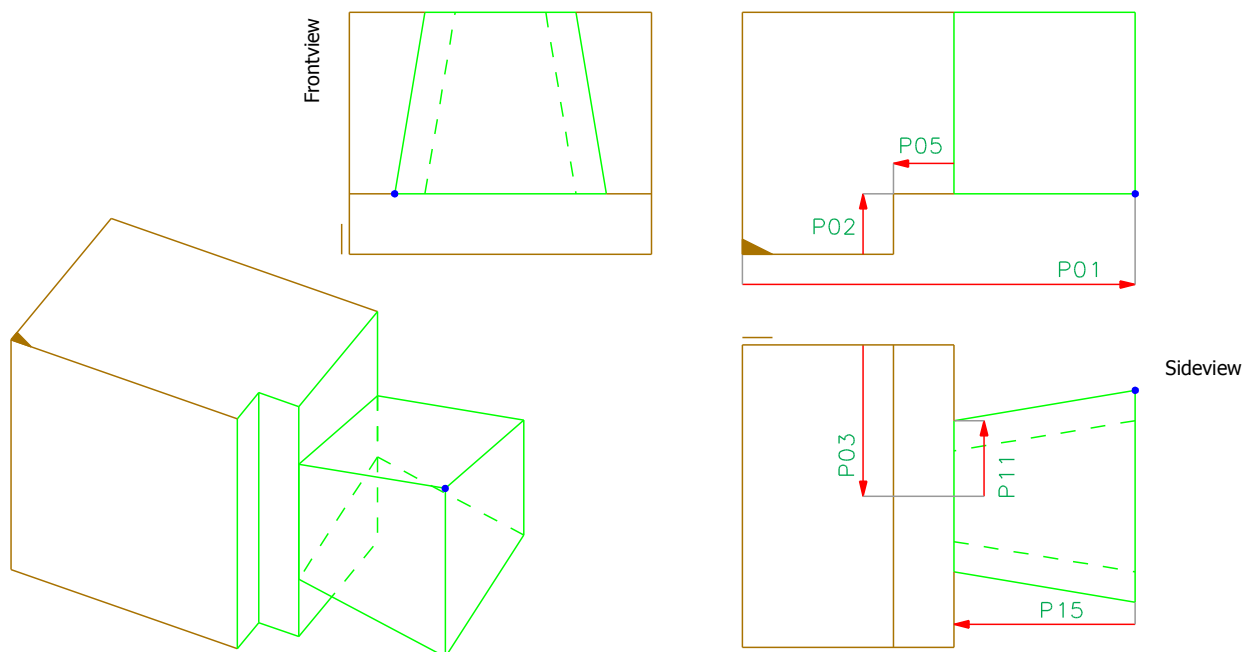
6.43 Tyrolean Dovetail 1/2/3/4-136-X

1/3-136-X

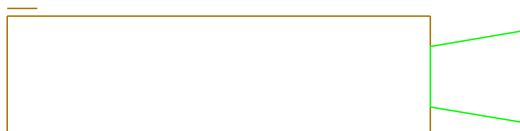
P04=1 P06=90° P07=0 P08=0 P12=0 P13=0



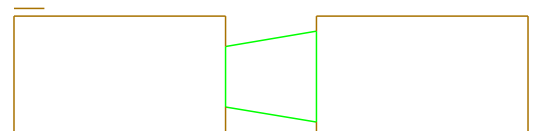
P04=0 P06=90° P07=0 P08=0 P12=0 P13=0



1-136-X



3-136-X

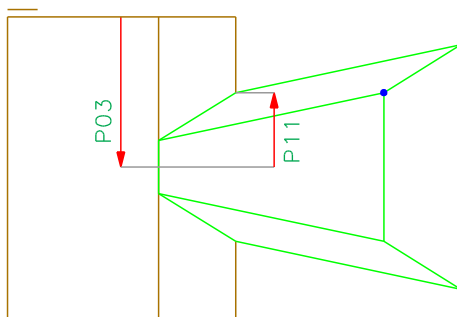
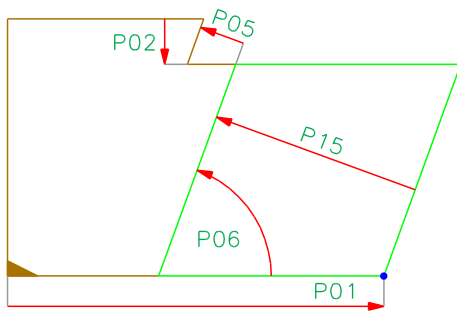
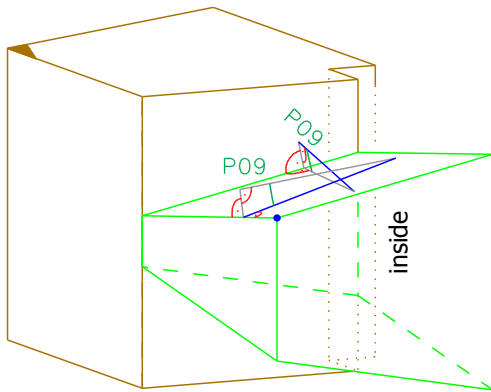


6.43 TyroleanDovetail 1/2/3/4-136-X

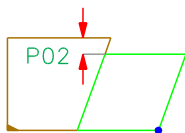
1/3-136-X

P04=1 P06<>90° P07=0 P08=0
P12=0 P13=0

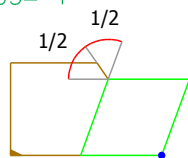
P04=0 P06<>90° P07=0 P08=0
P12=0 P13=0



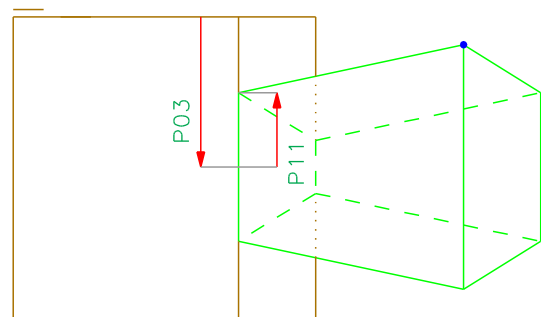
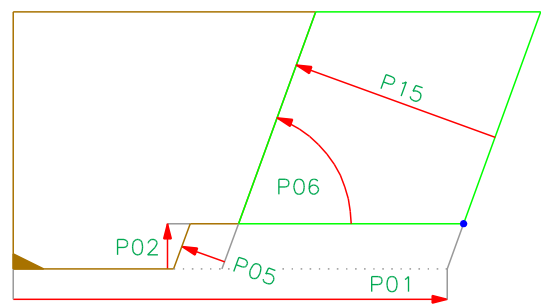
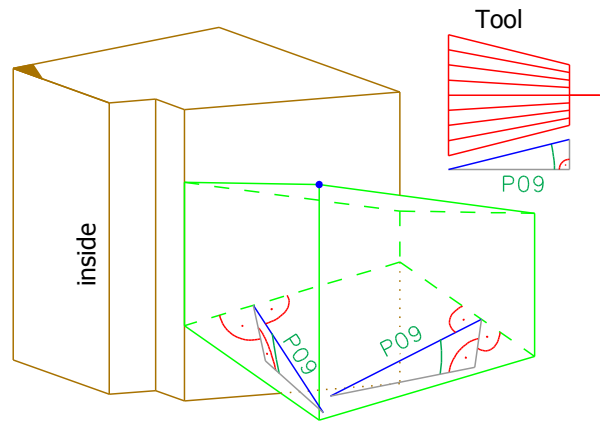
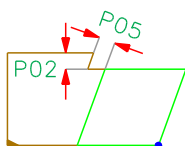
P05=0



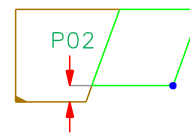
P05=- 1



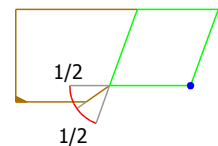
P05>0



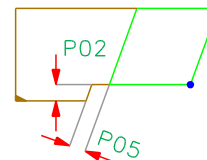
P05=0



P05=- 1



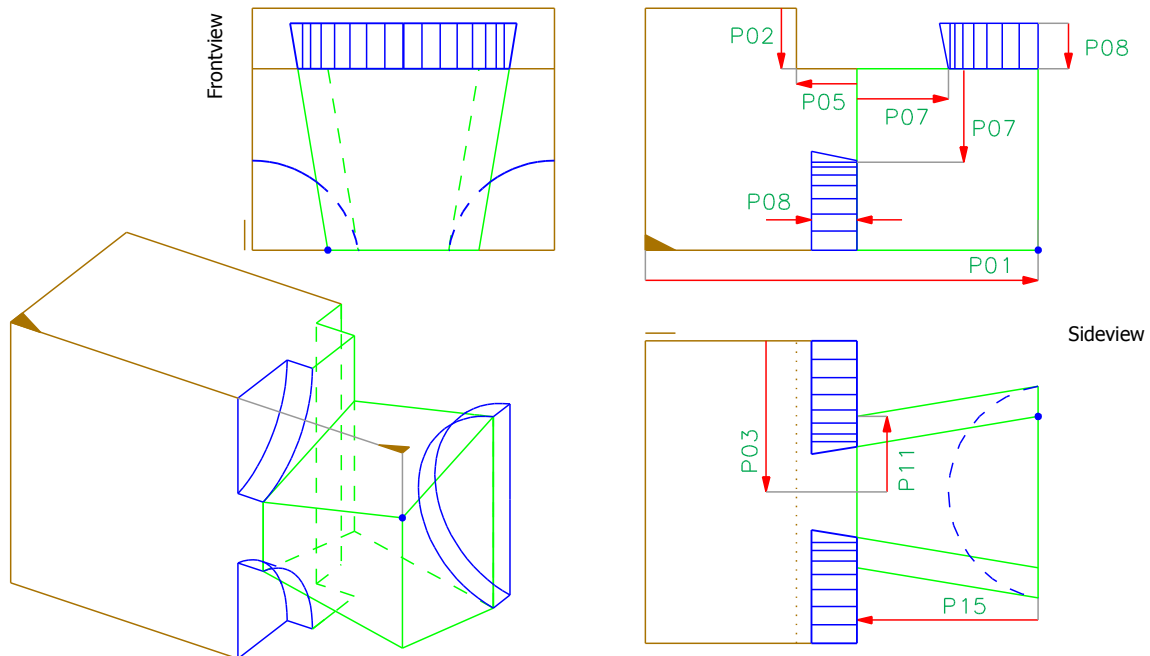
P05>0



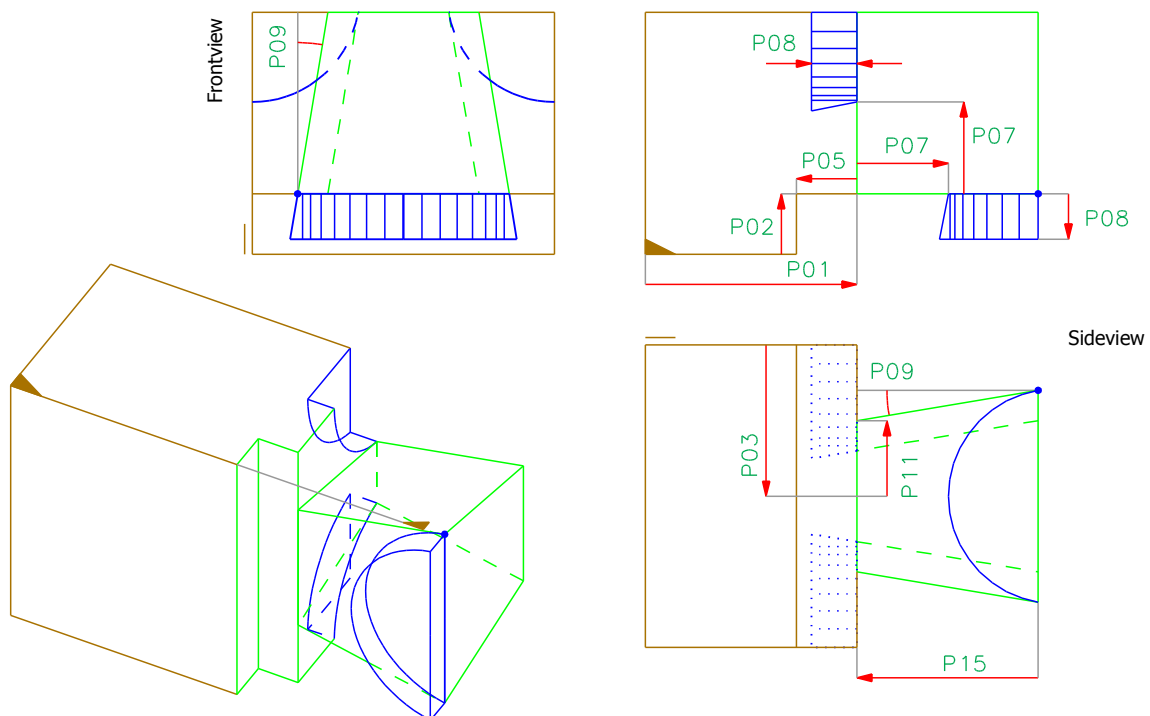
6.43 TyroleanDovetail 1/2/3/4-136-X

1/3-136-X

P04=1 P06=90° P07>0 P08>0 P12=0 P13=0

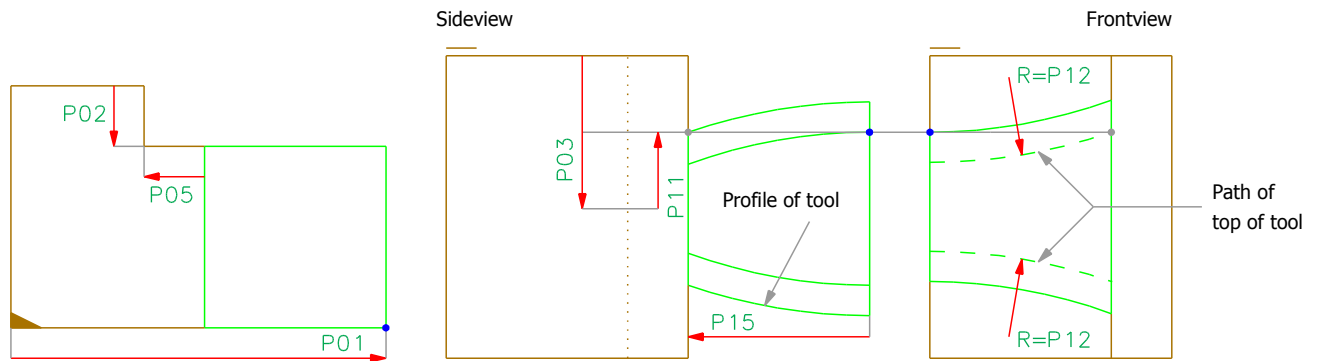
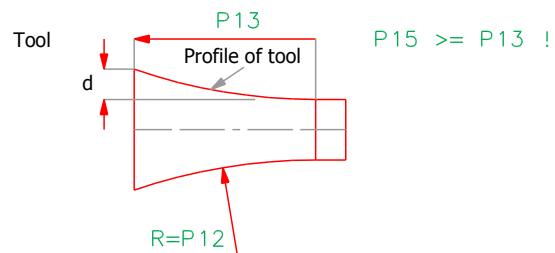
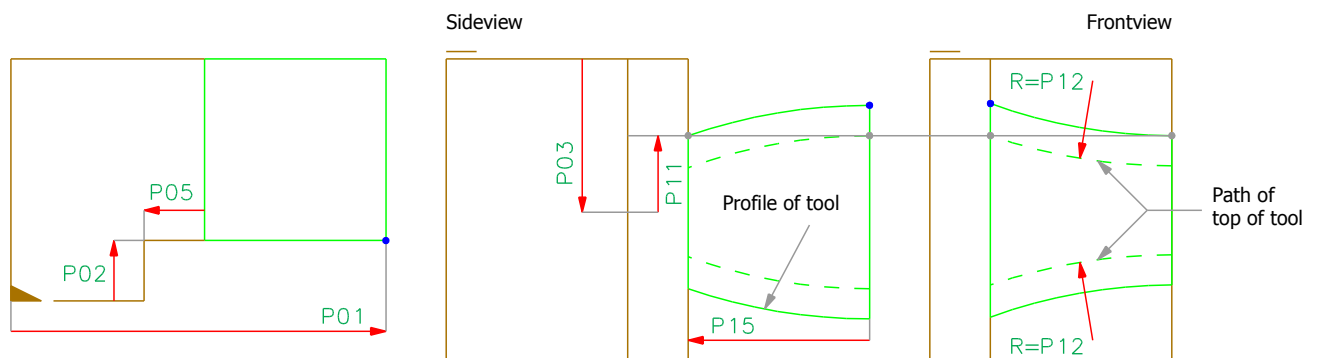


P04=0 P06=90° P07>0 P08>0 P12=0 P13=0



6.43 TyroleanDovetail 1/2/3/4-136-X

1/3 - 136 - X

 $P04=1$ $P06=90^\circ$ $P07=0$ $P08=0$ $P12>0$ $P13>0$  $P04=0$ $P06=90^\circ$ $P07=0$ $P08=0$ $P12>0$ $P13>0$ 

6.43 Tyrolean Dovetail

1/2/3/4-136-X

| Parameter | Min/Max | Presetting | Description |
|-----------|------------|------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/50000 | 30 | Distance between "inside" an side of part |
| P03 | +/- 50000 | HRS/2 | Distance orthogonal to the reference side |
| P04 | 0/1 | 0 | 0: "inside" at reference edge, 1: "inside" at opposite of reference edge |
| P05 | -1/0/50000 | 0 | 0: Without rebate or mitre -1: With mitre >0: With rebate |
| P06 | 1/179 | 90 | Angle to the reference edge in the reference side |
| P07 | 0/50000 | 0 | Width |
| P08 | 0/50000 | 0 | Depth |
| P09 | 0/45 | 15 | Inclination |
| P11 | 0/50000 | 0.25 x HRS | Height |
| P12 | 0/50000 | 0 | Radius |
| P13 | 0/50000 | 0 | Length of tool (part of arc) |
| P14 | 0/1 | 0 | 0: Angular corner joint 1: Straight T-wall connection |
| P15 | 0/50000 | WRS | Length |
| P16 | | | 0: Processing on the reference side and opposite the reference side 1: Processing only on the reference side 2: Processing only opposite the reference side |

6.44 Dovetail 1/2/3/4-138-X

2/4-138-X

| | P04=1 | P04=0 |
|-------|--|--|
| P14=0 | | |
| P14=1 | | |
| P05 | <p>P05=0</p> <p>P05=-1</p> <p>P05>0</p> | <p>P05=0</p> <p>P05=-1</p> <p>P05>0</p> |

6.44 Dovetail 1/2/3/4-138-X

1/3-138-X

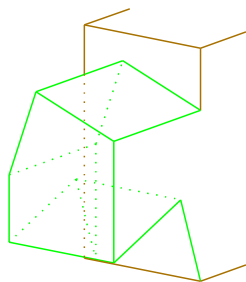
| | P04=1 | P04=0 |
|-------|-----------------|-----------------|
| P14=0 | | |
| P14=1 | | |
| P05 | <p>P05=0</p> | <p>P05=0</p> |
| | <p>P05=-1</p> | <p>P05=-1</p> |
| | <p>P05>0</p> | <p>P05>0</p> |

6.43 Dovetail

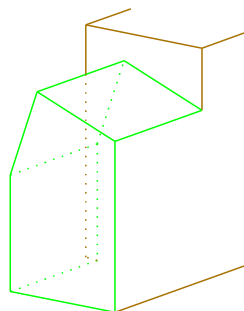
1/2/3/4-138-X

| Parameter | Min/Max | Presetting | Description |
|-----------|------------|-------------|---|
| P01 | +/- 99999 | 0 | Distance from beam start to the reference point |
| P02 | 0/50000 | 30 | Distance between "inside" an side of part |
| P03 | +/- 50000 | HRS/2 | Distance orthogonal to the reference side |
| P04 | 0/1 | 0 | 0: "inside" at reference edge, 1: "inside" at opposite of reference edge |
| P05 | -1/0/50000 | 0 | 0: Without rebate or mitre -1: With mitre >0: With rebate |
| P09 | 0/45 | 15 | Inclination |
| P11 | 0/50000 | 0.333 x HRS | Depth 1 |
| P12 | 0/50000 | 0.167 x HRS | Depth 2 |
| P14 | 0/1 | 0 | 0: European Dovetail 1: American Dovetail |
| P15 | 0/50000 | WRS | Length |
| P16 | | | 0: Processing on the reference side and opposite the reference side 1: Processing only on the reference side 2: Processing only opposite the reference side |

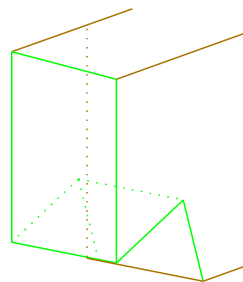
P16=0



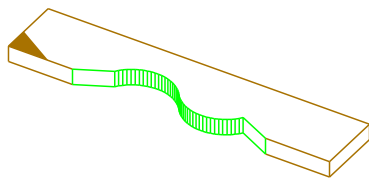
P16=1



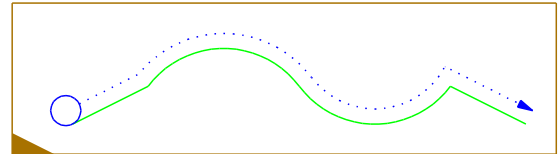
P16=2



6.45 Free Contour 0-250-X, 3-250-X, 4-250-X

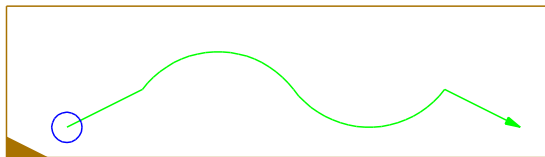


3-250-X Toolpath to the left of the contour



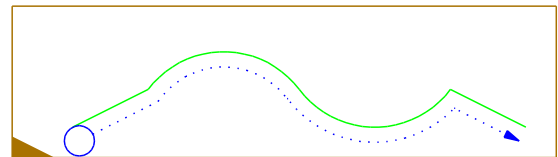
0-250-X

Toolpath on contour

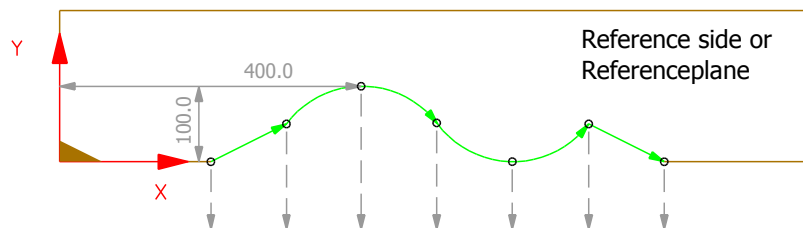


4-250-X

Toolpath to the right of the contour



example



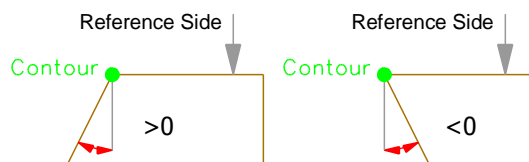
4-250-X

| PROCESSIDENT | | 1 | 2 | 3 | 4 | 5 |
|--------------|-----|-----|-------|-------|-------|-------|
| Typ | P08 | 0 | 1 | 2 | 2 | 1 |
| Next Segment | P09 | 2 | 3 | 4 | 5 | 0 |
| Endpoint | X | P01 | 200.0 | 300.0 | 500.0 | 700.0 |
| | Y | P02 | 0.0 | 50.0 | 50.0 | 50.0 |
| | Z | P03 | 0.0 | 0.0 | 0.0 | 0.0 |
| Point on arc | X | P10 | | 400.0 | 600.0 | |
| | Y | P11 | | 100.0 | 0.0 | |
| | Z | P12 | | 0.0 | 0.0 | |

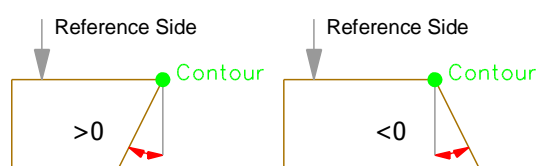
Inclination P06

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

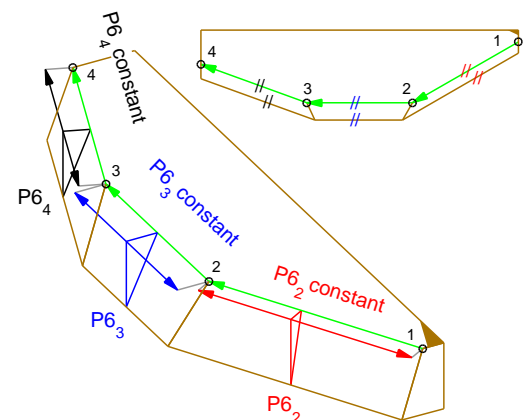
3-250-X



4-250-X



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



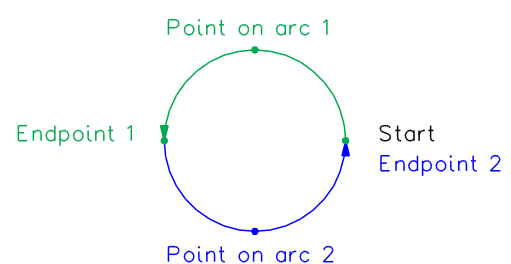
0-250-X, 3-250-X, 4-250-X

The distance between start- and endpoint in a segment can be 0.

7 Reference Side



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



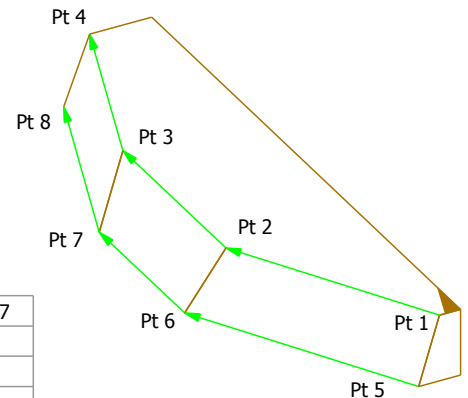
Contour with an associated contour

Upper line: Pt1 to Pt4

Lower line: Pt5 to Pt8 (associated contour)

The contour and its associated contour are defined on the same referenceside.

The contour and the associated contour are connected via the processidents of their respective starting points. The parameter P06 of the starting point of the contour (P08=100) references the associated contour, whereas the parameter P06 of the starting point of the associated contour (P08=101) references the contour.



| PROCESSIDENT | | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 |
|--------------------|-------------|------|------|------|------|------|------|------|------|
| Typ | P08 | 100 | 1 | 1 | 1 | 101 | 1 | 1 | 1 |
| Next Segment | P09 | 71 | 72 | 73 | 0 | 75 | 76 | 77 | 0 |
| Associated contour | P06 | 74 | -- | -- | -- | 70 | -- | -- | -- |
| Endpoint | P01/P02/P03 | Pt 1 | Pt 2 | Pt 3 | Pt 4 | Pt 5 | Pt 6 | Pt 7 | Pt 8 |

Processing Attributes

The processing attributes REFERENCEPLANE, PROCESSINGQUALITY, PRIORITY, RECESS and PROCESS may only be defined in the first segment (startpoint) of the contour, they are valid for the whole contour.

Contour types and the according parameters P13, P14 and P15

| Contour type | P13 | P14 | P15 | Comment |
|----------------------|-----|---|--------------|--|
| Free contour | 0 | Tool ID | | |
| Saw contour | 1 | Tool ID | Recess | P15 is allowed for all segment types |
| Mill contour | 2 | Tool ID | Recess | P15 is allowed for all segment types |
| Pen contour | 10 | Tool ID | | P05 is ignored |
| Nail (screw) contour | 20 | Tool ID | Nail spacing | P05 is ignored P15 is allowed for all segment types |
| Glue area | 30 | Tool ID | | P07 must be 1 P05 is ignored |
| Planing area | 40 | Tool ID | | P07 must be 1 |
| Plaster area | 50 | Tool ID | | P07 must be 1 |
| Lock-out area | 200 | Type of lock-out area, bit coded. P14 =0: for all processings Bit 1=1 (1): only for nailing Bit 2=1 (2): only for glueing Bit 3=1 (4): only for planing Bit 4=1 (8): only for plastering | | P07 must be 1 P05 is ignored |

If no Tool ID is specified, the machine has to select a tool.

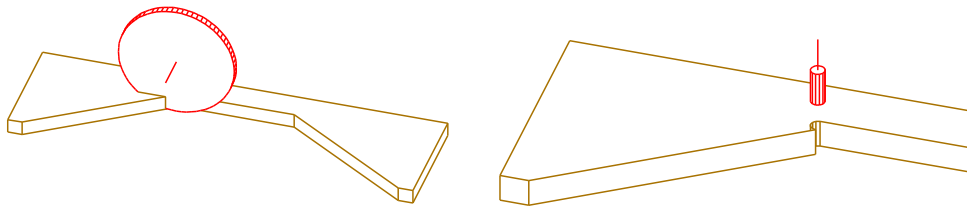
If P15 is defined for the startpoint, its value is valid for the whole contour.

If P15 is defined in a following segment, it overrides the P15 of the startpoint only for this segment.

Saw contour (P13=1) and Mill contour (P13=2)

| | | |
|-----|---|---|
| P15 | | |
| 0 | The processing at the vertexes has to be specified by the machine | <p>Actual segment</p> <p>Start End</p> |
| 1 | Do not pass over | |
| 2 | Pass over at start | |
| 3 | Pass over at end | |
| 4 | Pass over at start Pass over at end | |

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



6.46 Variant 0-900-X, 1-900-X, 2-900-X, 3-900-X, 4-900-X

With this type the user can define his own processings. In addition to the parameters of a processing he has to specify the machining by an Integer value in the PROCESSKEY line.

Example:

```
PROCESSKEY: 4-900-2      4711
COMMENT: "MyProcess"
```

Code (Integer value) of the variant
Comment or name of the variant (optional)

The parameters P01 to P15 can be used to describe the processing.

In order to avoid numbering conflicts and ensure interoperability of variants of different manufacturers, variants should be sent to design2machine. They will then be published on the design2machine homepage and will eventually be defined as a standard processing in a later BTL version.

6.46 Parameters Variant

0-900-X, 1-900-X, 2-900-X, 3-900-X, 4-900-X

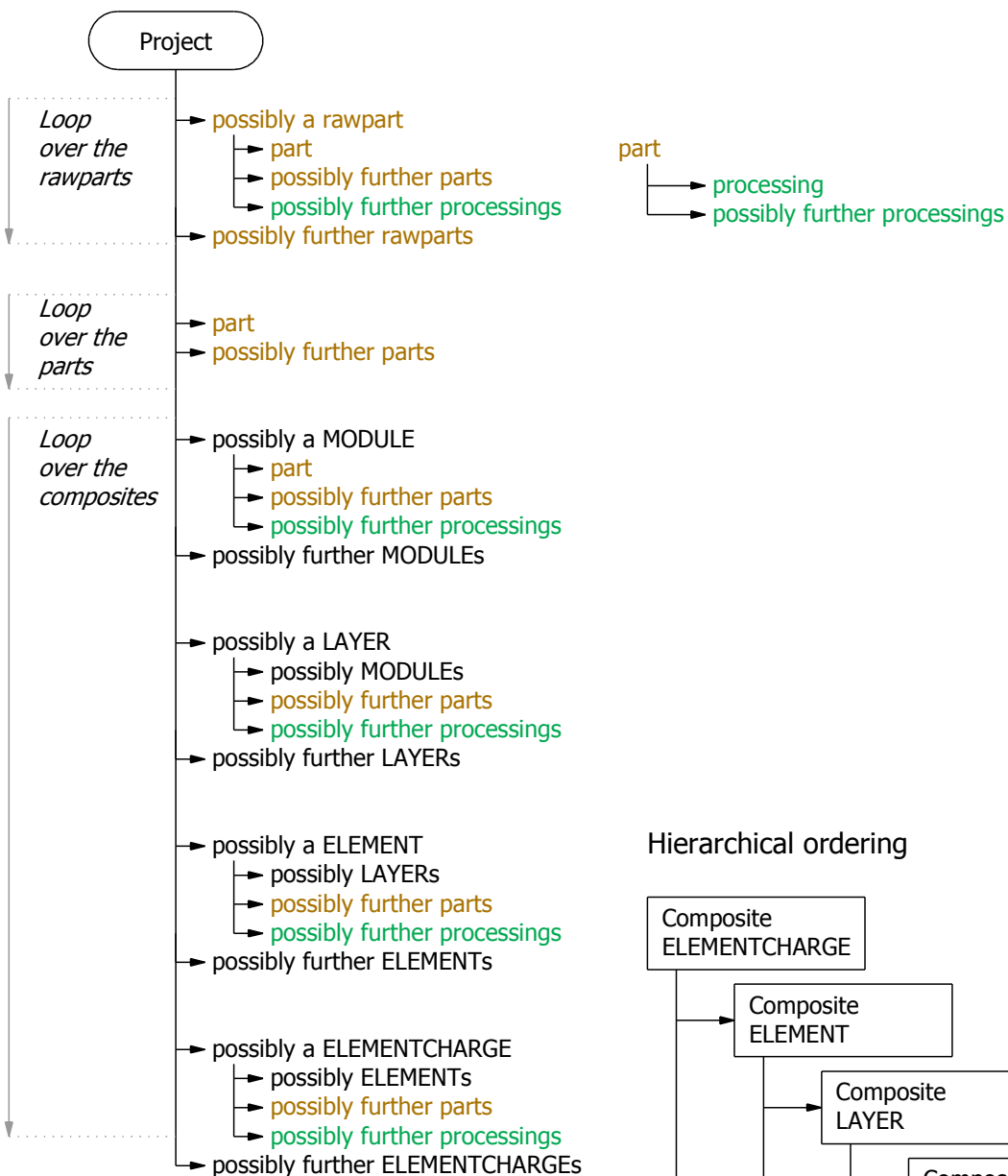
| Parameter | Min/Max | Presetting | Description |
|-----------|-----------|------------|--------------|
| P01 | +/- 99999 | 0 | user defined |
| P02 | +/- 99999 | 0 | user defined |
| P03 | +/- 99999 | 0 | user defined |
| P04 | +/- 99999 | 0 | user defined |
| P05 | +/- 99999 | 0 | user defined |
| P06 | +/- 99999 | 0 | user defined |
| P07 | +/- 99999 | 0 | user defined |
| P08 | +/- 99999 | 0 | user defined |
| P09 | +/- 99999 | 0 | user defined |
| P10 | +/- 99999 | 0 | user defined |
| P11 | +/- 99999 | 0 | user defined |
| P12 | +/- 99999 | 0 | user defined |
| P13 | +/- 99999 | 0 | user defined |
| P14 | +/- 99999 | 0 | user defined |
| P15 | +/- 99999 | 0 | user defined |

7. Prefabrication

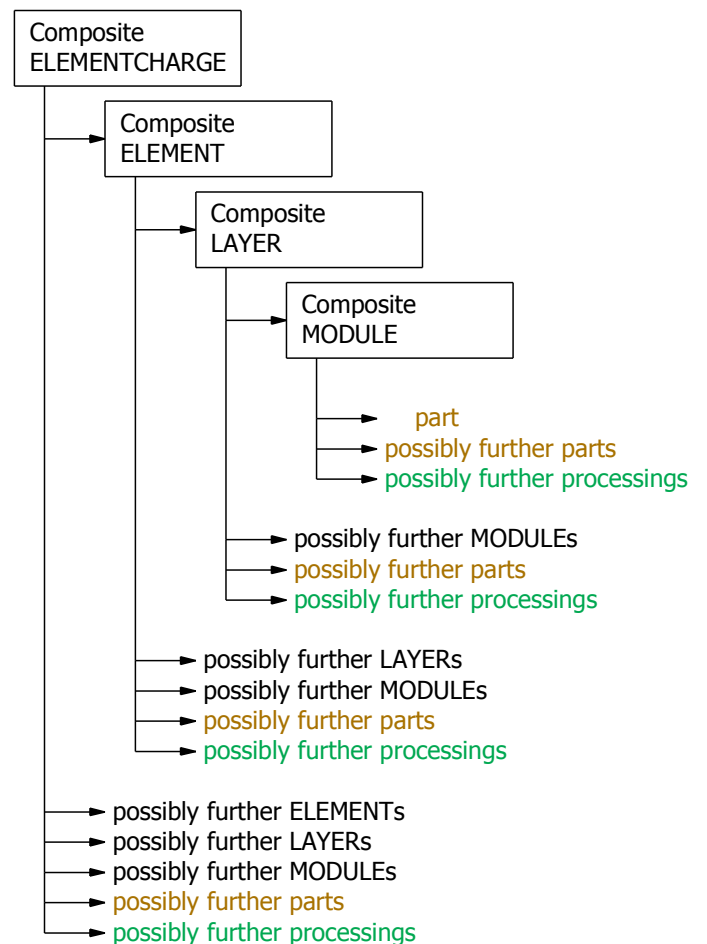
This chapter summarizes the extensions for the construction of prefabricated houses.

| Identification Index | Datatypes | Meaning |
|--|--|--|
| <i>Loop over the parts</i> [PART] ... <i>End of loop over the parts</i> | | |
| <i>Loop over the composites</i> [COMPOSITE] | | |
| <p>The composite has the same attributes as a part. It further has an attribute TYPE (see below). Composites are virtual building blocks, they simplify the composition in the prefabrication process. Each type of composite is optional, i.e. each combination of composites can be used as required by the prefabrication process.</p> <p>The composite types have a hierarchical ordering:</p> | | |
| TYPE: | MODULE | A composite of type MODULE can contain: Parts and processings. |
| | LAYER | A composite of type LAYER can contain: Composites of type MODULE, parts and processings. |
| | ELEMENT | A composite of type ELEMENT can contain: Composites of type MODULE, LAYER, parts and processings. |
| | ELEMENTCHARGE | A composite of type ELEMENTCHARGE can contain: Composites of type MODULE, LAYER, ELEMENT, parts and processings. |
| <p>In the btl file, the composites should be arranged in the order of the types, i.e. first all composites of type MODULE, then all of type LAYER, then all of type ELEMENT and last all of type ELEMENTCHARGE.</p> | | |
| <i>Loop over the processings for a composite</i> | | |
| PROCESSKEY: | 0-300-0 | With this key a part or a composite is set to the composite. Subpart refers to the coordinate-system of the superior composite. |
| REFERENCEPLANE: | OX: Parameter type OY: Parameter type OZ: Parameter type XX: Parameter type XY: Parameter type XZ: Parameter type YX: Parameter type YY: Parameter type YZ: Parameter type | Coordinate triple origin of the part-coordinate-system Direction vector of the local x axis Direction vector of the local y axis |
| PROCESSPARAMETERS: | UID: Integer | UID of the transformation of the part or composite |
| <i>End of loop over the processings for composite</i> | | |
| <i>End of loop over the composites</i> | | |
| | | |

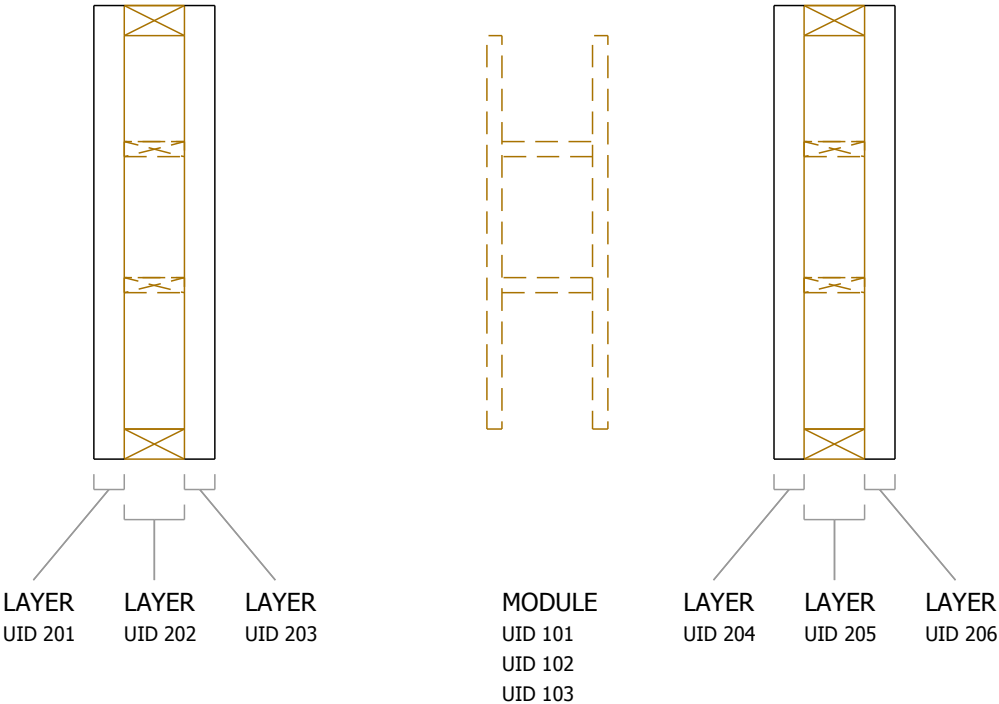
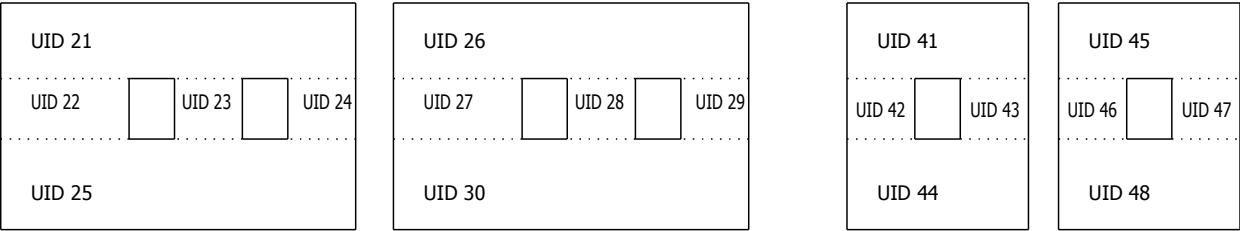
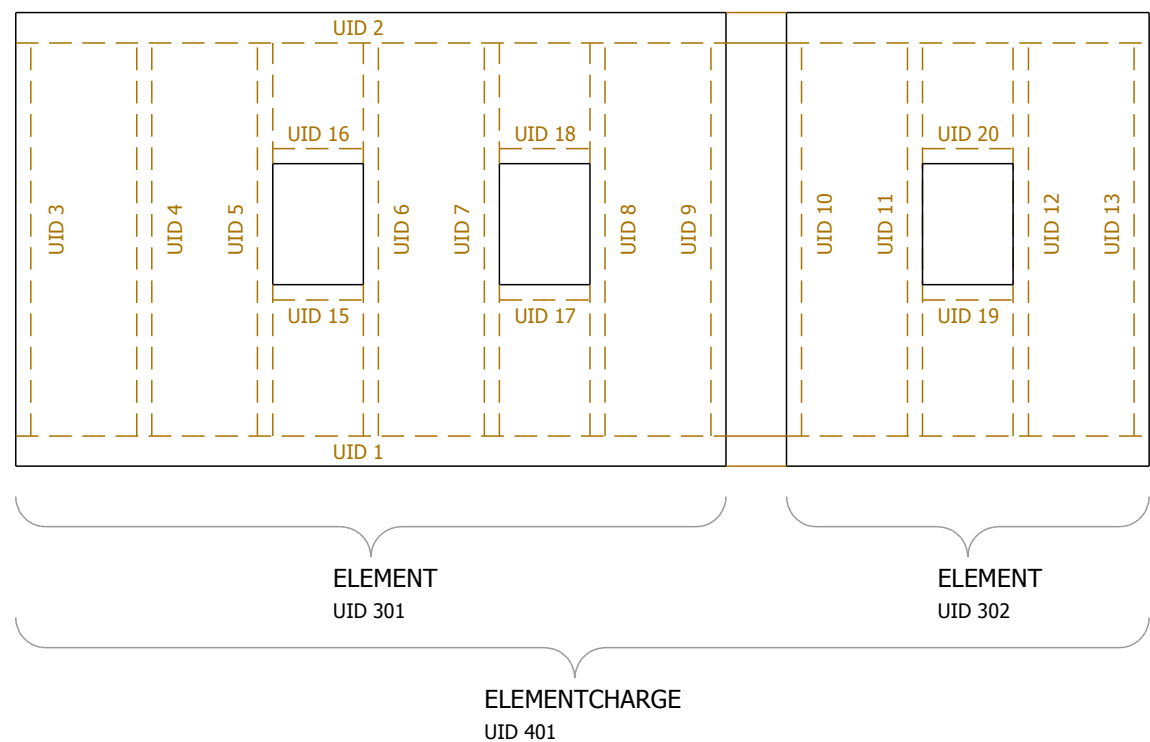
Listing in the BTL-File

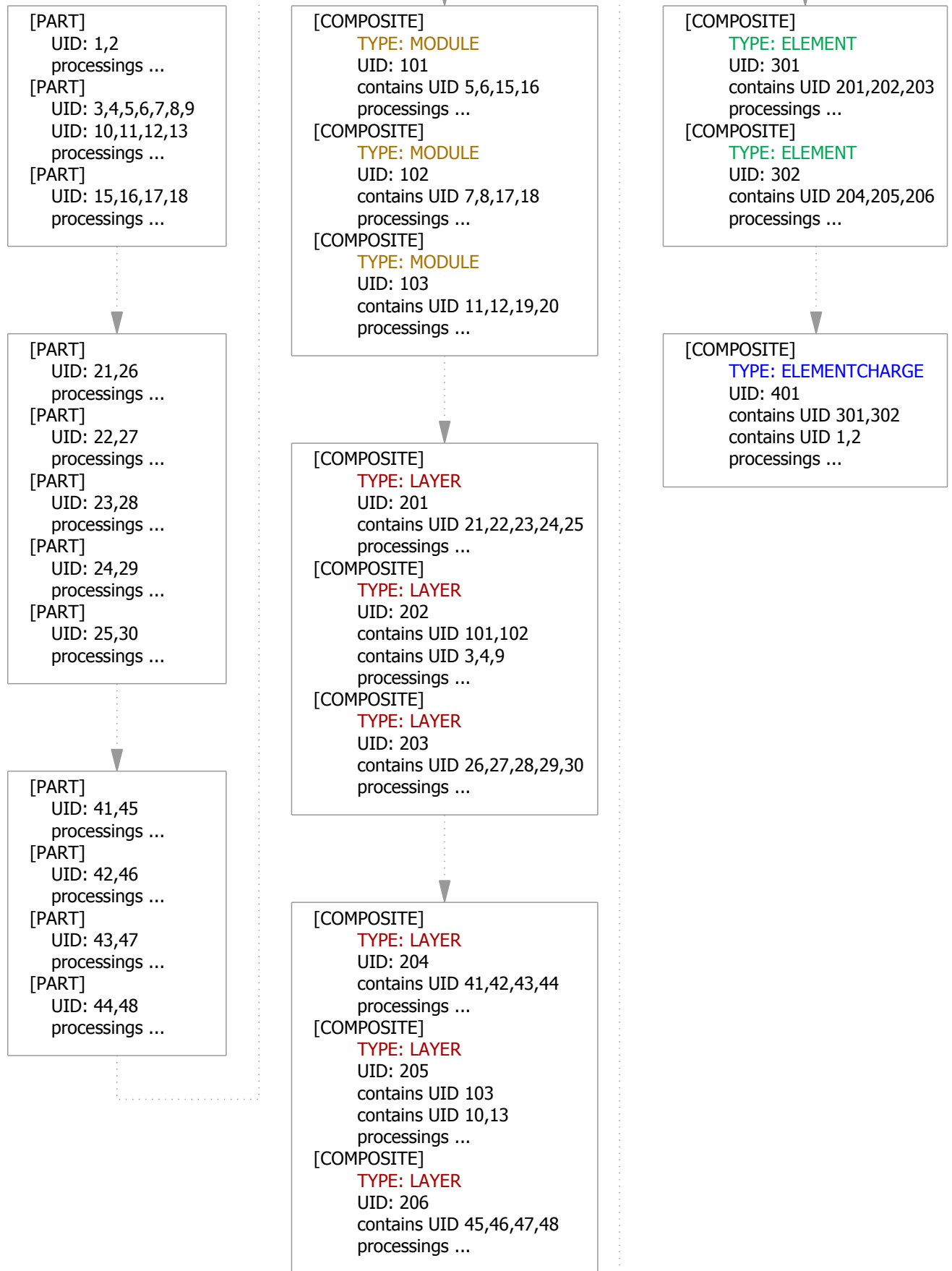


Hierarchical ordering



Example for a composite





End of example for a composite