

Training Data Maintenance/ Variable: Variable-Overview



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1. Introduction



Objective of this exercise

- Getting to know the flexibility and reducing the effort spent on data acquisition by using variables.

The abbreviations used

- **CP** Construction Principle
- **PD** Part Definition
- **_C_** Set in the name of data objects instead of “_C_”, e.g. “M_” for “Miller” to mark the data object as your own.

2. Function of the Variables

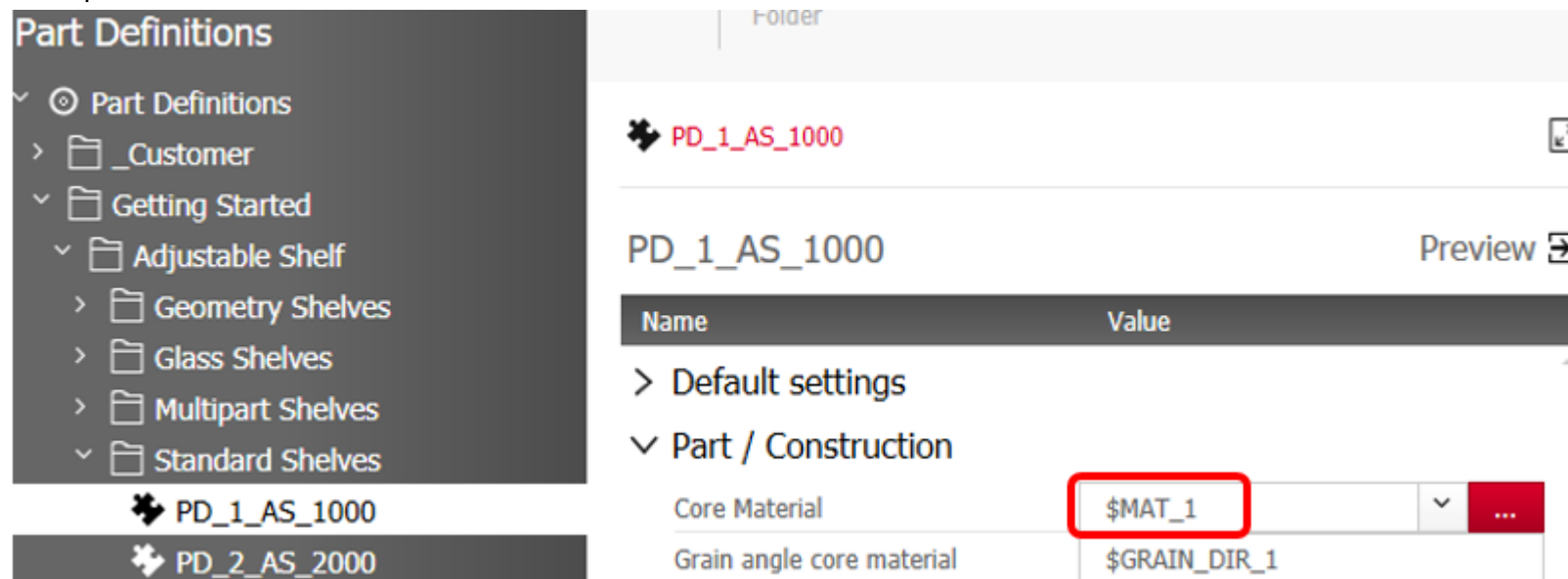
Variables function rather like “Header data” to an order or to an article. In numerous data objects (e.g. article, CP, PD, connector set, etc.) variables can be used instead of real characteristic values.

For example, a variable named “\$MAT_1” can be entered in the PD instead of a fixed assigned core material “iX_PB19_MEL_White_G”. The user can set the value of the variables “\$MAT_1” differently in every order and in every article of an order.

Without using these variables, the user would have to create an own PD for every core material.

The entry of a variable as characteristic value is always performed with a leading “\$”-Sign. If the “\$”-Sign is not set, then the system cannot identify the entered value as a variable.

Example of a PD with a variable as value for the material.



The screenshot shows the 'Part Definitions' (PD) interface. On the left is a tree view of the 'Part Definitions' structure, including folders for '_Customer', 'Getting Started', 'Adjustable Shelf', 'Geometry Shelves', 'Glass Shelves', 'Multipart Shelves', and 'Standard Shelves'. Below the tree are two PD entries: 'PD_1_AS_1000' and 'PD_2_AS_2000'. The main area displays the details for 'PD_1_AS_1000'. It includes a 'Preview' button and a table with two columns: 'Name' and 'Value'. The table has two rows: 'Default settings' and 'Part / Construction'. Under 'Part / Construction', there are two rows: 'Core Material' with the value '\$MAT_1' (highlighted with a red box) and 'Grain angle core material' with the value '\$GRAIN_DIR_1'.

Name	Value
> Default settings	
▼ Part / Construction	
Core Material	\$MAT_1
Grain angle core material	\$GRAIN_DIR_1

Setting of the variables “MAT_1” in the Variable Manager:

Name	Default Value	Order Value	Articlevalue
Getting_Started		←	←
Basic_Data		←	←
Materials_Case		←	←
Material_Back_1		←	←
Material_Case_1		←	←
X GRAIN_DIR_1	0	0	←
<input checked="" type="checkbox"/> MAT_1	iX_PB19_MEL_White_G	iX_PB19_MEL_Black_G	iX_PB19_MEL_iRed_G

By using variables, the quantity of the main data to be applied is drastically reduced. As a further result the user profits from a high flexibility when using data objects in the order or in the article.

The effect of the variable “MAT_1” on the definition of an article.

Default Value iX_FPY19_Mel_White_G:



Order Value iX_FPY19_Mel_Black_G:



Articlevalue iX_FPY19_MEL_iRed_G:



3. Maintenance of Variables in the Main Data

You find the entry to the maintenance of variables in the Element Manager.

Variables are organized in Variable Families. The setup of a family structure is similar to the folder structure in the Element Manager. The bottom level displays the variable itself with its value.

Element Manager

Structure

- Design Samples
- Variables**
 - Construction Principle
 - Hardware and Machinings
 - Materials, Surfaces, Profiles
 - Contours
 - Workflow Center
 - Calculation
 - Outputs
 - Tables
 - Document Manager
 - Reports
 - Annotation Principles
 - Dimensioning Principles
 - General Rules

Variables

- Variables
 - _Customer
 - Getting_Started
 - Article_Specific
 - Basic_Data
 - Material_Contiguous
 - Material_Glass
 - Materials_Case
 - Bed_Frame_Inside
 - Bed_Frame_Outside
 - Bed_Head_Bottom
 - Bed_Head_Top
 - Material_Back_1
 - Material_Back_2
 - Material_Back_3
 - Material_Case_1
 - GRAIN_DIR_1

MAT_1

PRF_1

SURF_1_BOT

SURF_1_TOP

Save

New Variable

New Family

Rename

Delete

MAT_1

MAT_1

Name	Value
Basic data	
Notes	Changing material type 1
Category	Please select...
Type	Material
Default Value	iX_PB19_MEL_White_G
Include to XML	No
image1	
label	

Usage

4. Which characteristic values can be controlled by variables?

Variables can be optionally created as well as optionally organized in families by the user. When inserting customer-specific variables, it is advisable to orient to the structure of the delivery data.

Every variable has a type which defines the use of the variables with the Program. The available types are predefined by the system and can be assigned when inserting a variable. The numerous types enable an extended use of variables.

new_variable

Name	Value
<div> <div>▼ Basic data</div> <div> <div>Notes</div> <div>Category</div> <div>Type</div> <div>Default Value</div> <div>Include to XML</div> <div>image1</div> <div>label</div> </div> </div>	
	<div>Please select...</div> <div>Surface</div> <div>Article</div> <div>Back</div> <div>Base</div> <div>Calculation Principle</div> <div>Color Principle</div> <div>Connection Situation</div> <div>Connector</div> <div>Crown Molding</div> <div>Design parameter</div> <div>Door</div> <div>Drawer</div> <div>Light Valances</div> <div>Material</div> <div>Number</div> <div>Part Definition</div> <div>Profile name</div> <div>Pull</div> <div>Purchased Part Definition</div> <div>Shelf/Partition</div> <div>Side</div> <div>Surface</div> <div>Text</div> <div>Work Surfaces</div>
<div>> Usage</div>	

5. Some examples for using variables in the main data

5.1 Variable of the type part definition

The front CPs usually use a variable as Part Definition

Doors

- Doors
 - Getting Started
 - Door Front Panels
 - Drawer Front Panels
 - Flap Doors
 - Standard Doors
 - Inset doors
 - Onset doors
 - Multipart doors
 - Singlepart doors
 - Doorstop default left
 - CP_SDO_H_PB_FD
 - CP_SDO_H_PM_FD

Folder

CP_SDO_H_PB_FD

CP_SDO_H_PB_FD

Name	Value
Default settings	
Type	Single door
Part Definition	\$PD_Front_Wall
Thickness of part	
Description	Onset single door, front definition, hinges, handle
Part Info	
Manufacturing Information	

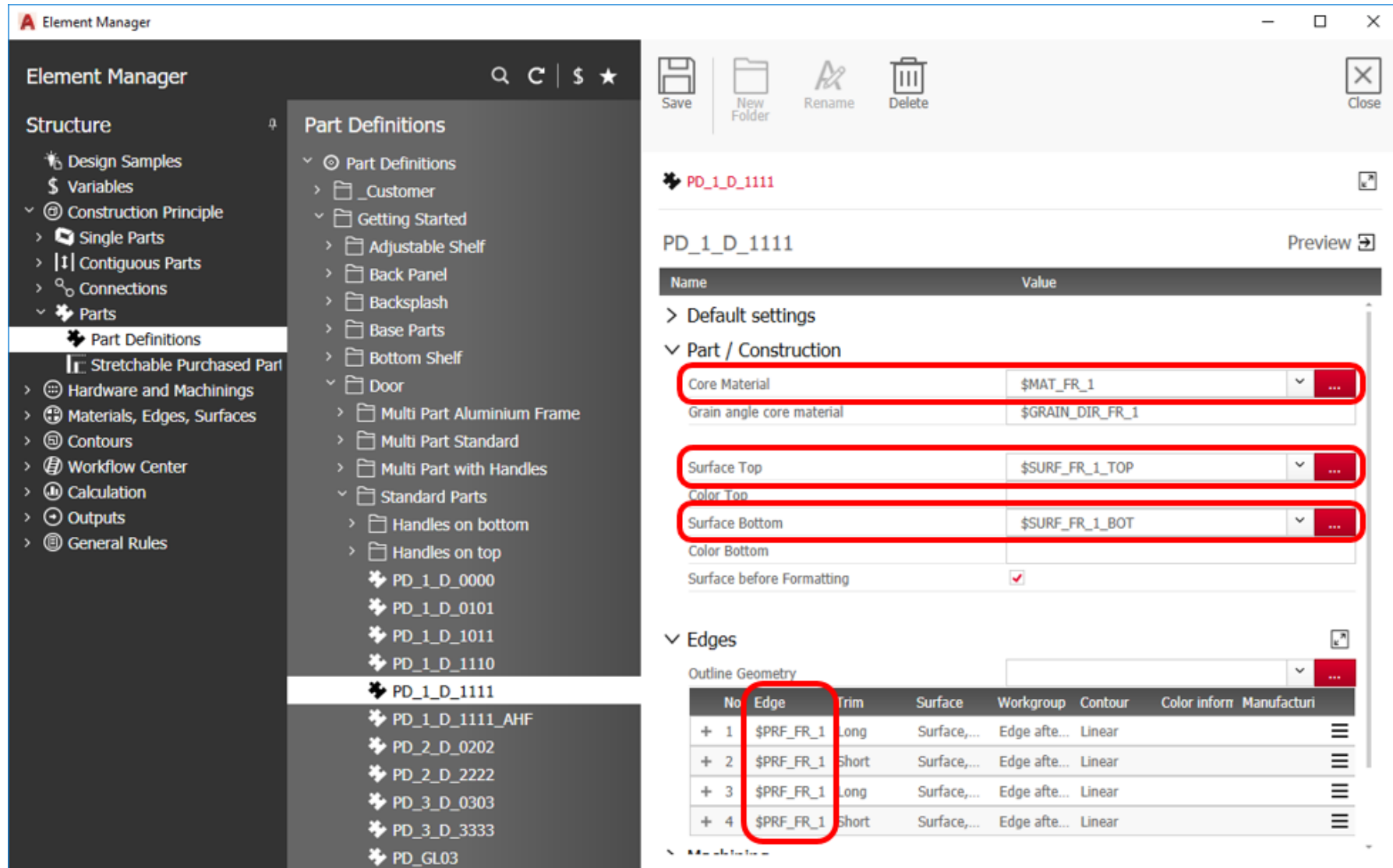


So, it's possible to use an article in an order with different Front-PD's. For the cabinet below the value for an aluminum framed door was assigned to the variable as an article related value.

Name	Default Value	Order Value	Articlevalue
Getting_Started		←	←
Basic_Data		←	←
Construction		←	←
Adjustable_Shelves		←	←
Connectors		←	←
Design_Parameter_Gaps		←	←
Doors		←	←
Hinge_Side		←	←
Wall_Front		←	←
ab Handle_Distance_Wall	0mm	0mm	←
ab Hinge_Type_Wall	STD	STD	←
PD_Front_Wall	MP_1_D_1111_B	MP_1_D_1111_B	MP_D_ALF_GL04_50x20

5.2 Variable of the types material, profile, surface

Nearly all PDs of the default data contain variables for the characteristics of material, surface and edges.



The screenshot shows the 'Element Manager' window. On the left, the 'Structure' pane shows 'Part Definitions' selected. The main pane displays a list of part definitions, with 'PD_1_D_1111' highlighted. On the right, the configuration for 'PD_1_D_1111' is shown. The 'Part / Construction' section contains several variables, and the 'Edges' section contains a table of edge data. Red boxes highlight the variables \$MAT_FR_1, \$SURF_FR_1_TOP, \$SURF_FR_1_BOT, and the edge data table.

Part Definitions List:

- Part Definitions
 - _Customer
 - Getting Started
 - Adjustable Shelf
 - Back Panel
 - Backsplash
 - Base Parts
 - Bottom Shelf
 - Door
 - Multi Part Aluminium Frame
 - Multi Part Standard
 - Multi Part with Handles
 - Standard Parts
 - Handles on bottom
 - Handles on top
 - PD_1_D_0000
 - PD_1_D_0101
 - PD_1_D_1011
 - PD_1_D_1110
 - PD_1_D_1111**
 - PD_1_D_1111_AHF
 - PD_2_D_0202
 - PD_2_D_2222
 - PD_3_D_0303
 - PD_3_D_3333
 - PD_GL03

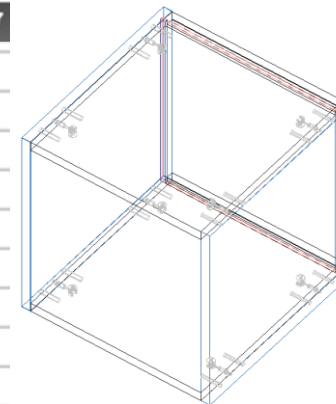
PD_1_D_1111 Configuration:

Name	Value						
> Default settings							
> Part / Construction							
Core Material	\$MAT_FR_1						
Grain angle core material	\$GRAIN_DIR_FR_1						
Surface Top	\$SURF_FR_1_TOP						
Color Top							
Surface Bottom	\$SURF_FR_1_BOT						
Color Bottom							
Surface before Formatting	<input checked="" type="checkbox"/>						
> Edges							
Outline Geometry							
No	Edge	Trim	Surface	Workgroup	Contour	Color inform	Manufacturi
+ 1	\$PRF_FR_1	Long	Surface,...	Edge afte...	Linear		
+ 2	\$PRF_FR_1	Short	Surface,...	Edge afte...	Linear		
+ 3	\$PRF_FR_1	Long	Surface,...	Edge afte...	Linear		
+ 4	\$PRF_FR_1	Short	Surface,...	Edge afte...	Linear		

6. Variable of the type connection situation

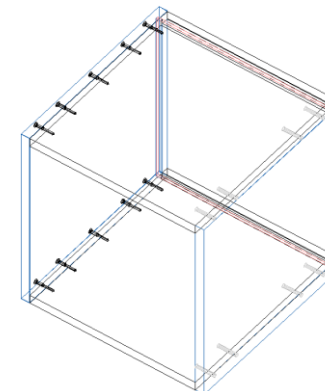
By assigning a variable of the type connection situation, e.g. to a top shelf, it is possible to change the CPs connection situation (such as dowels, Cam-Connectors or screws) via the order- or article related variables. Using variable connection situation decreases the amount of data to be maintained and also increases the flexibility of the data drastically.

Name	In order	Type	Default Value	Order Value
Connection_situation	No	Family		
C1_Bottom	No	Connection Situation	Dowel_CAM	
C1_Left	Yes	Connection Situation	Dowel_CAM	Dowel_CAM
C1_Right	Yes	Connection Situation	Dowel_CAM	Dowel_CAM
C1_Top	No	Connection Situation	Dowel_CAM	
C2_Bottom	No	Connection Situation	Dowel_CAM	
C2_Left	Yes	Connection Situation	Dowel_CAM	Dowel_CAM
C2_Right	Yes	Connection Situation	Dowel_CAM	Dowel_CAM
C2_Top	No	Connection Situation	Dowel_CAM	



The modification of the order-specific or article-specific values shows the following display:

Name	Default Value	Order Value	Articlevalue
Getting_Started			
Basic_Data			
Construction			
Connectors			
Connection_situation			
C1_Left	Dowel_CAM	Dowel_CAM	Confirmat
C1_Right	Dowel_CAM	Dowel_CAM	Dowel



7. Variable of the type connector

The variable type 'Connector' can influence order-specific and article-specific the content of connector sets, for example. A very distinctive application is the setting of the desired pull model and its position by variables of the type 'Connector' and 'Number'.

Name	In order	Type	Default Value	Order Value
Handles	No	Family		Handle_128_Horizontal
Handle design	No	Family		←
X Handle_Gap	Yes	Number	0	←
ab Handle_Position_DRW_X	Yes	Text	64mm	64mm
ab Handle_Position_Flap_X	No	Text	64mm	64mm
ab Handle_Position_X	Yes	Text	64mm	64mm
ab Handle_Position_Y	Yes	Text	140mm	124mm
X Handle_Rotation_Base	Yes	Number	0	0
X Handle_Rotation_Flap	No	Number	0	0
X Handle_Rotation_Tall	No	Number	0	0
X Handle_Rotation_Wall	Yes	Number	0	0
ab Handle_Type	Yes	Text	Hale_160_Ss_9070796	Hale_128_Ss_9070750



The modification of the order-specific or article-specific values shows the following display:

Name	In order	Type	Default Value	Order Value
Handles	No	Family		Handle_128_Vertical
Handle design	No	Family		←
X Handle_Gap	Yes	Number	0	←
ab Handle_Position_DRW_X	Yes	Text	64mm	64mm
ab Handle_Position_Flap_X	No	Text	64mm	64mm
ab Handle_Position_X	Yes	Text	64mm	128mm
ab Handle_Position_Y	Yes	Text	140mm	30mm
X Handle_Rotation_Base	Yes	Number	0	90
X Handle_Rotation_Flap	No	Number	0	0
X Handle_Rotation_Tall	No	Number	0	90
X Handle_Rotation_Wall	Yes	Number	0	90
ab Handle_Type	Yes	Text	Hale_160_Ss_9070796	Hale_128_Ss_9070750

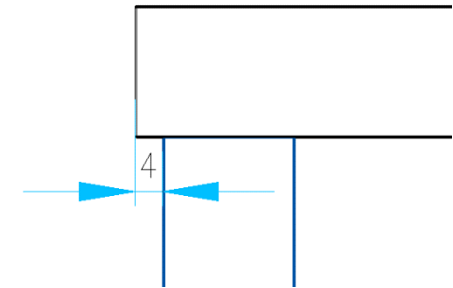


8. Variable of the type number

Variables of the type 'Number' can be used in many areas in the system.

8.1 Number variable in linear divisions

Instead of real numbers variable in linear divisions can be used. Here is a variable panel reveal as an example.



Hint

The unit of the number variables in a linear division must be separated by a 'blank space' from the name of the variable.

First Linear Division

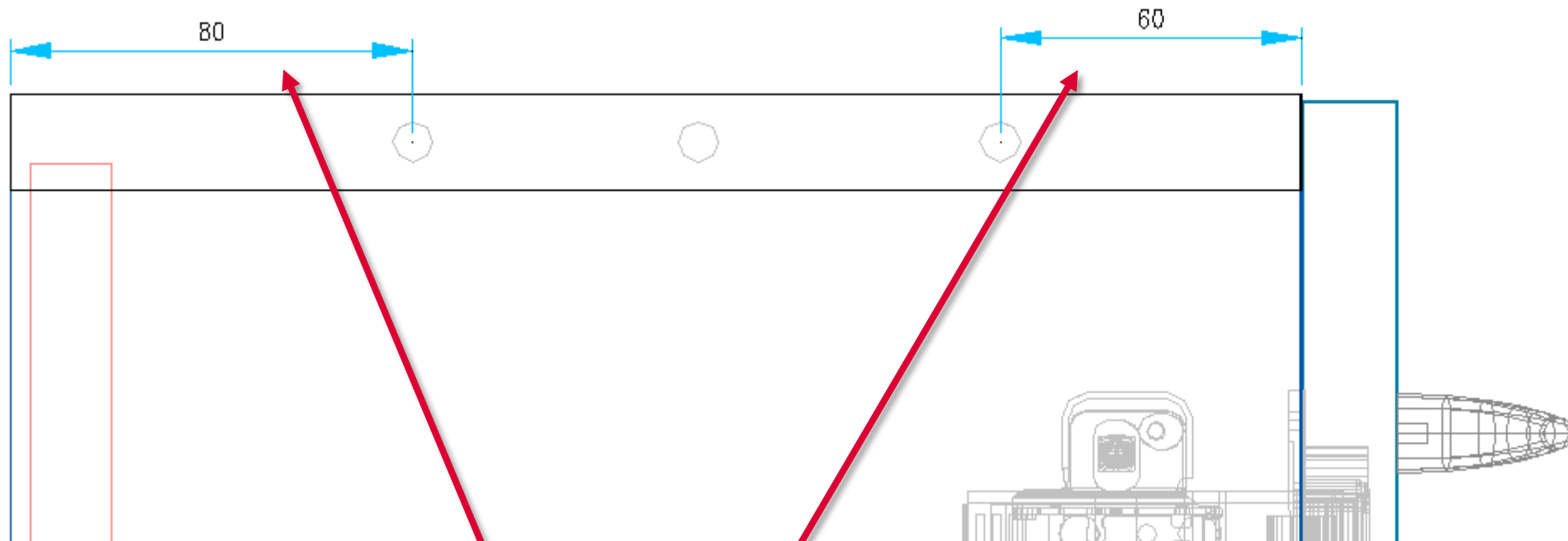
`$_EL mm:1:$_ER mm`



8.1.1 Number variable in descriptors

A variable of the type 'Number' can also be used in descriptors. A descriptor for allocating dowels is shown here as an example.

Name	Type	Default Value	Order Value
└ _Customer	Family		←
└ _C_Basic_Data	Family		←
└ _Construction	Family		←
└ _Dowel	Family		←
x _C_DSTB	Number	37	80
x _C_DSTF	Number	57	60



80

60

▼ Conditions +

No.	Description	Linear Division	
- ↓ ↑ 1 -		\$_C_DSTF mm:1:\$_C_DSTB mm	×
+	And		×
+	X	Less than or eq	200

8.2 Number variable in characteristic values

A variable of the type 'Number' can be directly applied as a characteristic value. Here is an example of the value for 'Protrusion front' for a top shelf.

▾	▢ _Protrusion	Family	←	←
x	_C_PT_TS_Left	Number	20	10 ←

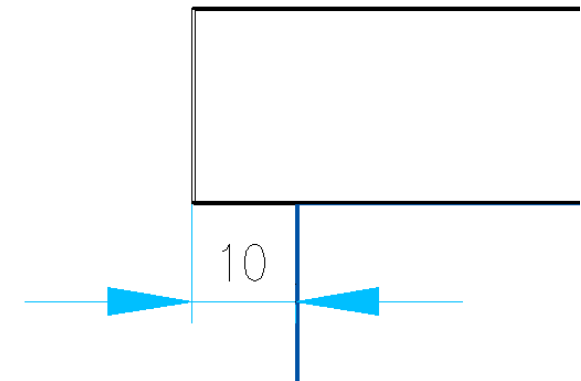
Top Shelves

- Top Shelves
 - Top shelves
 - _Customer
 - Onset
 - _C_1_TSO_1000_C1
 - _C_1_TSO_1101_C1**
 - _C_1_TSO_1111_C1
 - Rails
 - Getting Started
 - TS_STANDARD

▢ _C_1_TSO_1101_C1

_C_1_TSO_1101_C1

Name	Value
> Default settings	
v Construction	
Construction	Through Hole
Offset front	\$_C_PT_TS_Left
Offset back	0



9. Value sets

The variables of a family can be completely converted with an entry by means of a value set.

In this example the value set “**iX_PB18_MEL_Mahogany_G**” has been set for the family “Material_Front_1”. All variables of the family “Material_Front_1” obtain preset values with this entry.

Name	In order	Type	Default Value	Order Value
Material_Front_1	No	Family		iX_PB18_MEL_Mahogany_G
X GRAIN_DIR_FR_1	Yes	Number	0	←
MAT_FILL_1	No	Color Principle	iX_Walnut_M	iX_Mahogany_G
MAT_FR_1	Yes	Material	iX_PB19_MEL_Walnut_M	iX_PB18_MEL_Mahogany_G
PRF_FR_1	Yes	Profile name	iX_ABS_Walnut_2mm_M	iX_ABS_Mahogany_2mm_G
SURF_FR_1_BOT	Yes	Surface	NO_SURF	←
SURF_FR_1_TOP	Yes	Surface	NO_SURF	←