MWF-Bore 2004 / MWF-Drafting 2004

The User Manual

of the

Plug-ins for CATIA V5

moldware

Konstruktion Produktentwicklung Design

Engineering for the world of tomorrow

Preface

The years of experience within several construction areas,
like mold making, tool manufacture, plant construction and product development,
has induced us to develop individual software applications for our customers.

Resulting from the special needs of interaction between construction and manufacturing, the feature-based **MW-F B o r e** had been developed in close cooperation with the car industry. The cooperation ensures that the planning, the construction and the manufacturing implementation are congruent. By means of the MWF-Bore hole generator, the design engineer is able to insert features, like sink holes, threads, ejector holes, tempered holes, hydraulic holes, fits, or pillar guides, in the CATIA model.

By means of the **MW-F D r a f t i n g** drawing module, you are able to create documented drawing derivations of your constructions within a few minutes.

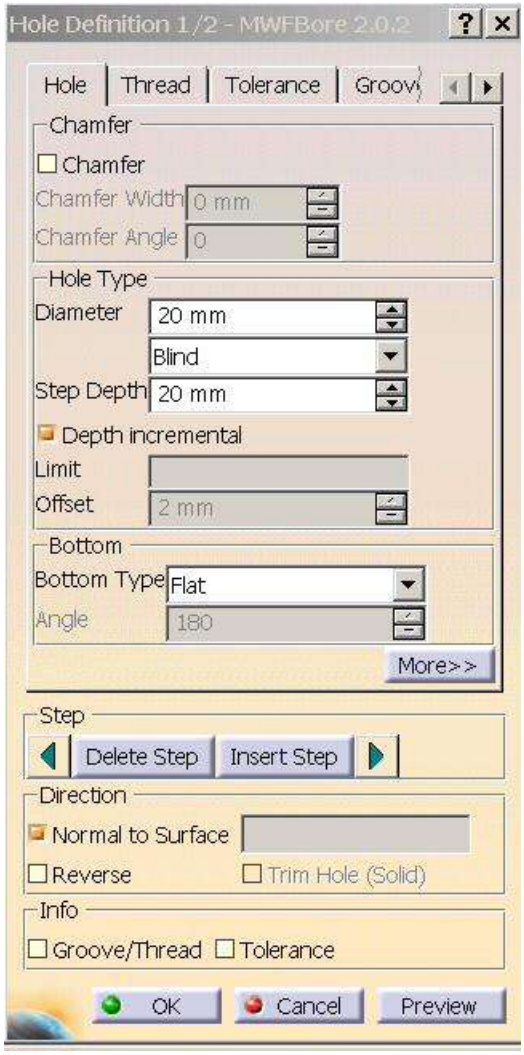
Many advantages result from it:

- The dimensioning of the holes becomes unnecessary.
- Thus, an almost resp. completely paperless manufacturing will be ensured.
- The smooth information and process chain guarantees high process security.
- The manual value input in the NC becomes unnecessary.
- A time saving of up to 70 % can be reached.
- Numbering of the holes in the individual views (optionally 1/5 or 6 sides).
- Representation of the coordinate axes.
- Optional creation of hole tables.
- Any MWF info, like name, position, tolerance and threads, can be shown in the hole table.

Contents

The MWF-Bore dialog window

Hole



The MWF-Bore dialog window \ Hole

Description of the *Hole* register card

The first figure behind the hole definition describes the current step, and the second figure defines the total number of the steps.

Example picture:

1st step of altogether 3.

The five register cards which define the hole.

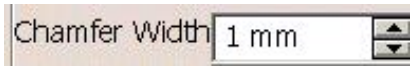
Description of the *Hole* register card.

By activating the box in front of the lettering

Chamfer,

it is possible to define

Chamfer width



and

Chamfer angle

of the chamfer.
In case of a step hole, regarding the hole type, you have to define

a diameter,

a kind of hole (e. g Blind)

as well as regarding the selection

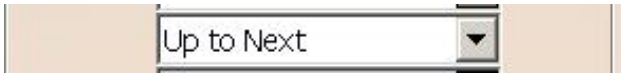
Blind

where you have to define

a Depth.

When choosing a different kind of hole,

e. g., Up to next



Up to last

or

Length of line / edge

or

Min sink depth,

it is possible to define an additional value for

Offset

The *Offset* value will be added at the end of the hole.

When choosing

Up to plane

or

Up to surface

or

Up to point

or

Up to line,

you have to mark a

Limit.

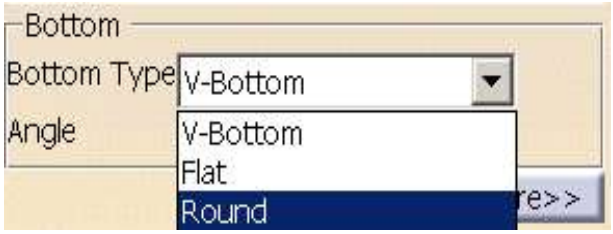
The *Bottom* can be chosen as

V-Bottom,

Flat

and

Round



When choosing

V-Bottom,

you have to define a value for

Angle

and in case of

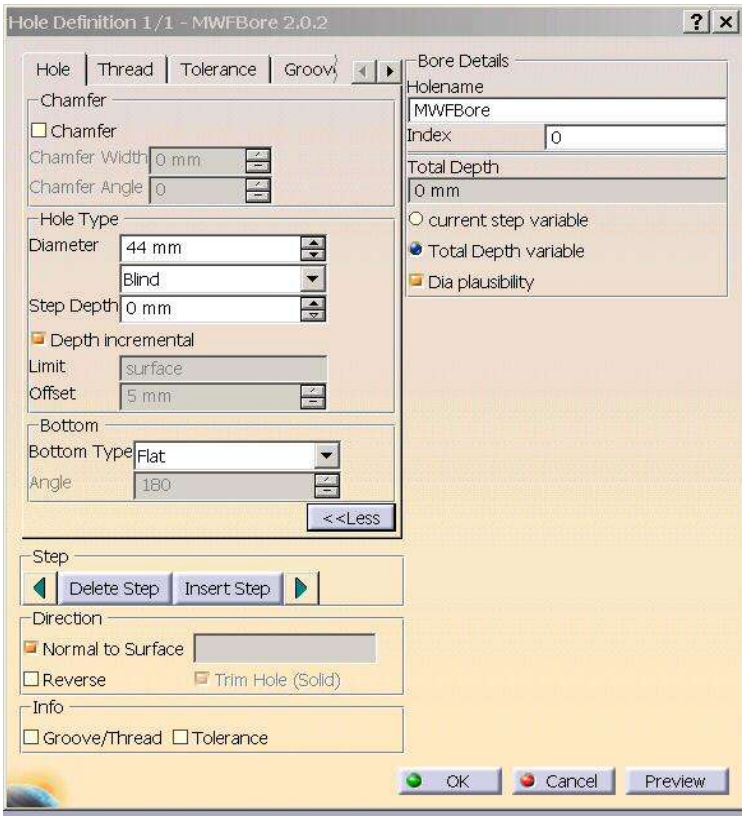
Round,

a

Radius

is to be defined.

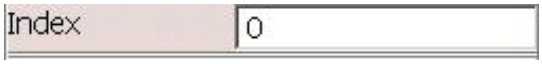
By using the button to open the hole details, additional hole-specific fields and new functionalities will be displayed.



Hole name

The hole can be named as desired. In future, the name will be taken over in other MWF-modules (Drafting, CAM Export).

Hole index



Value for index makes it possible to allocate a version number to the hole according to which can be later scanned.

Incremental depth

When choosing the option, the values for the step depth are not absolutely displayed any longer but incrementally created and edited.

Total depth

The total depth is important for the design engineer.

Variable steps

If the currently displayed step is defined as being variable, the total depth of the hole will remain constant in case of further hole changes while the step defined as being variable will be automatically varied lengthwise as required.

By activating the checkbox, this function can be switched off again.

All hole-specific values will be saved in the CATIA part.

By using tbe 

button, the hole details will be closed.

By clicking on this arrow, the next step of a hole can be edited.

By clicking on this arrow, the previous step of a hole can be edited.

deletes the current step

inserts a new hole step after the shown one

The *Direction* of the hole will be defined by

Normal to surface

and

Reverse

If none of the options is selected, for example, a body edge or also a line can be defined as direction by activating the grey text field.

Whether the respective hole step is described by

a *Groove /Thread*

or/and

a *Tolerance,*

this will be displayed in the above picture by an active box.

If the hole is created with all of its steps,

it will be filed in CATIA after clicking on the 

button.

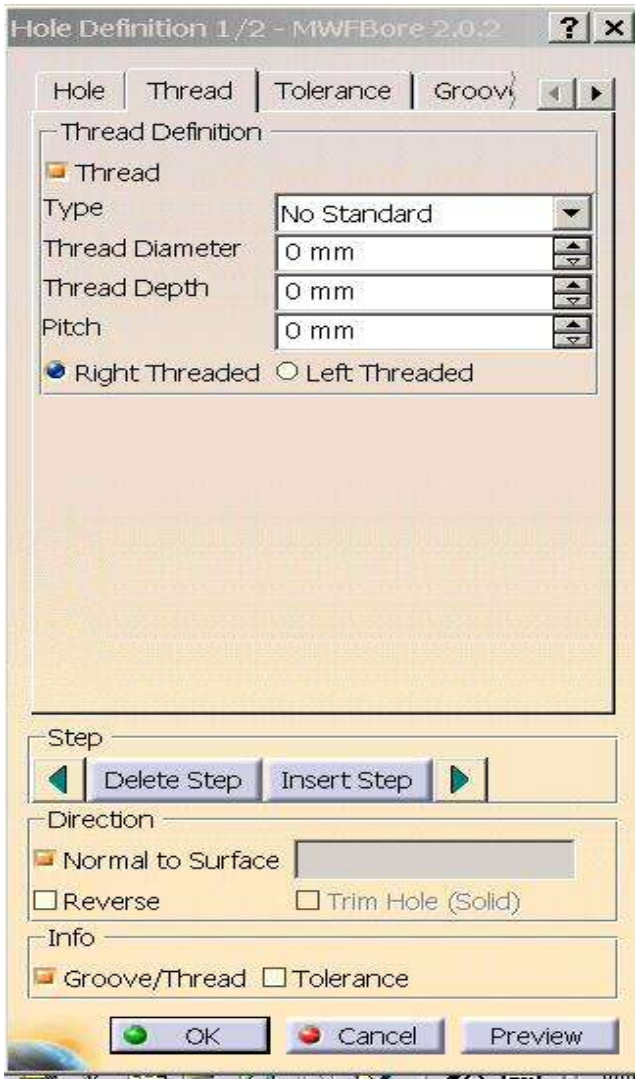
When clicking on the 

button, the whole MWF dialog window will be closed.

By using the 

button, a preview of the hole can be created.

Thread



The MWF-Bore dialog window \ Thread

Description of the *Thread* register card

By activating the box in front of the lettering

Thread,

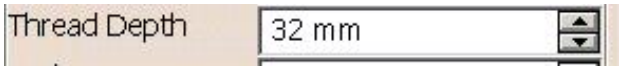
it is possible to define for the

Type No standard

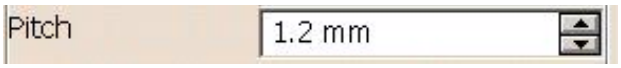
the following numerical values:

Thread Diameter,

Thread Depth,

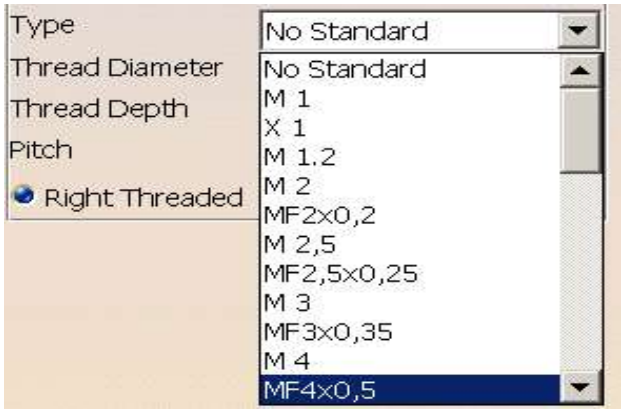


Pitch.



When choosing a standard value,

e. .g. MF 4x0,5

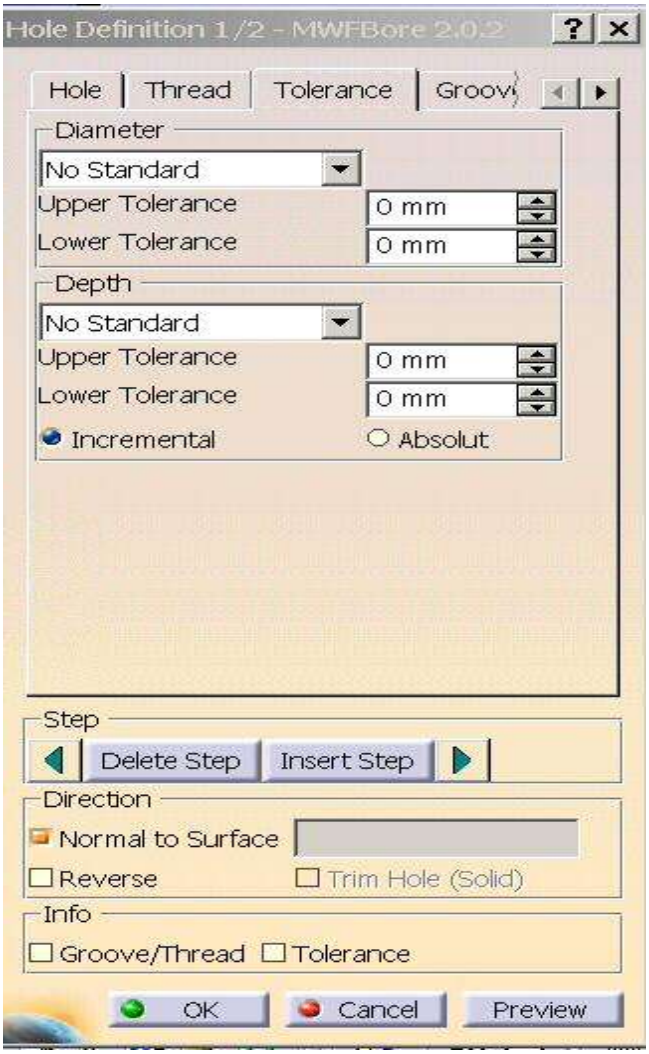


the Thread depth

can be changed.

The sense of rotation of the thread can be reversed.

Tolerance



The MWF-Bore dialog window \ Tolerance

In case of *No standard* input, concerning the

Diameter

and the

Depth,

you have to define a value for the

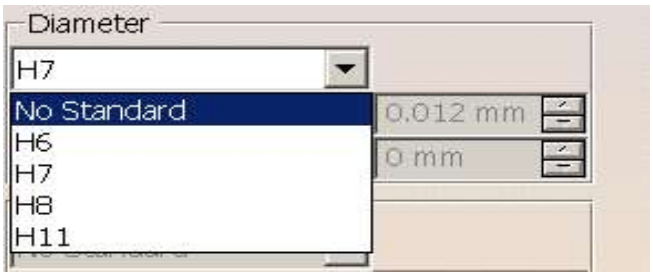
upper and

lower tolerance

The

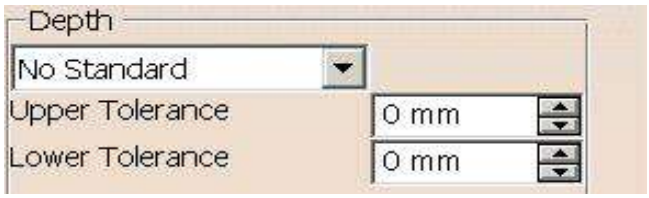
Diameter

of a *Tolerance* can be chosen from predefined values, if necessary.



The tolerance values for the

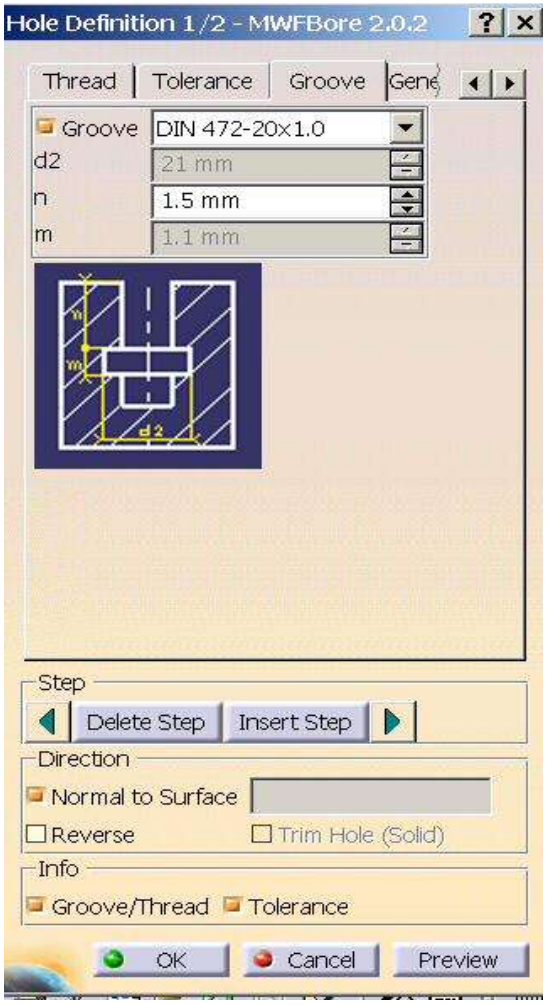
Depth,



must be always input manually.

Concerning *Incremental,* the tolerance only refers to the current step.
Concerning *Absolute*, the tolerance refers to the sum of the step lengths up to the current step.

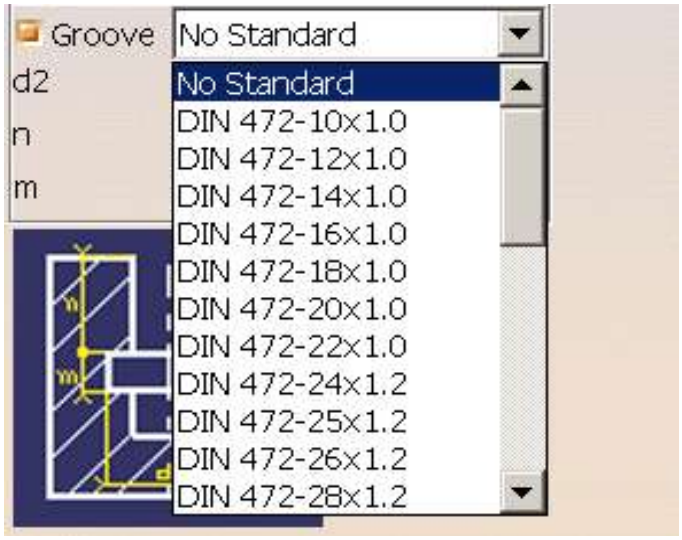
4. Groove



The MWF-Bore dialog window \ Groove

Description of the *Groove* register card

It is possible to define a groove for every step. After having activated the checkbox, a proposal according to the DIN Standards will be automatically displayed based on the diameter of the hole step.



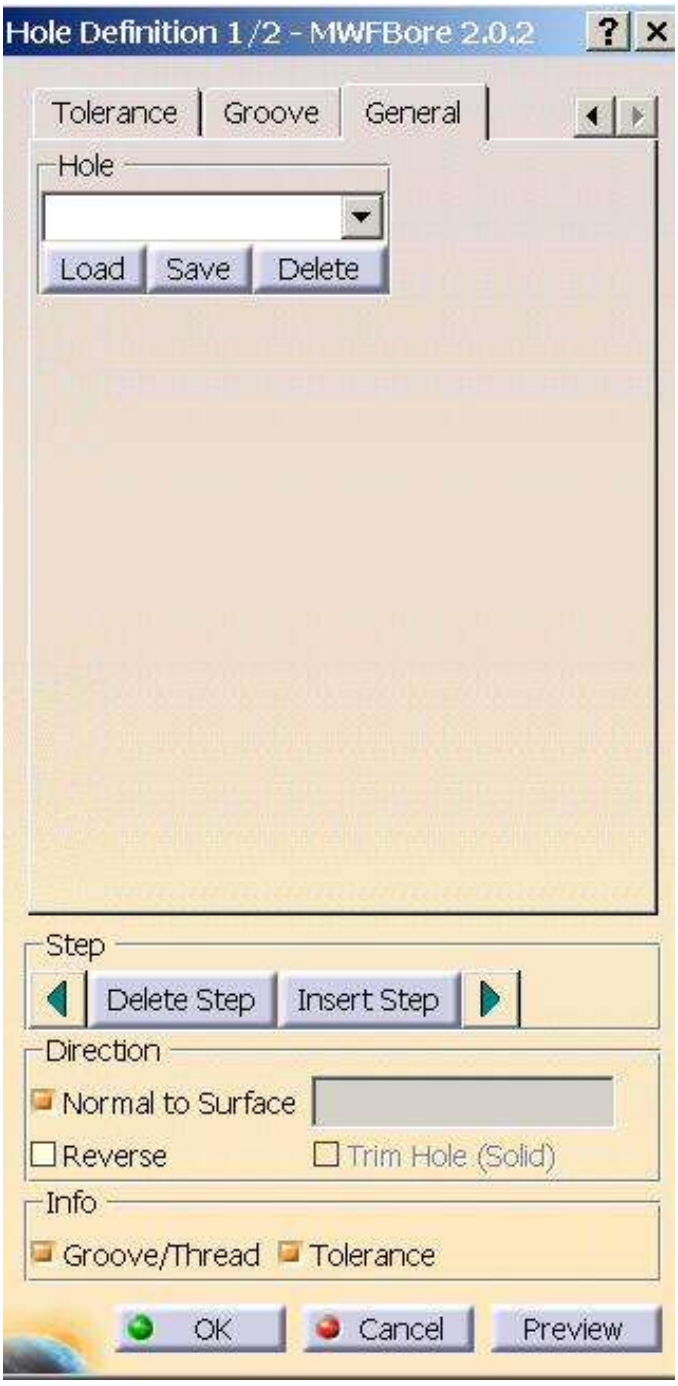
All DIN Standards can be found in the MWF database and maintained by using the MWF-Bore Administrator.

When choosing a value from the database according to the DIN Standards, only the n measurement is changeable,

i. e. the groove can be moved in the depth.

In case of *No standard* selection, all values are arbitrary.

General



The MWF-Bore dialog window \ General

Description of the *General* register card

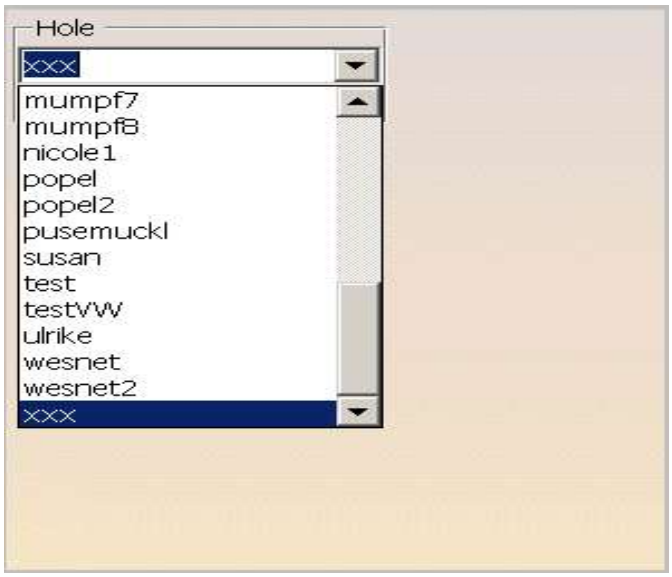
With regard to

General

already existing holes can be opened by using

resp. newly-drawn holes can be saved by using

By means of the command, holes can be removed again.



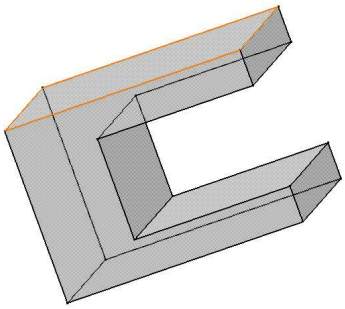
In the select box , the saved resp. loaded holes are listed.

Examples for application

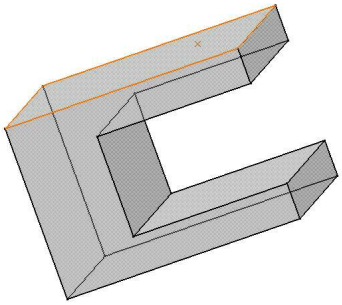
Operating of the MWF-Bore

1st possibility

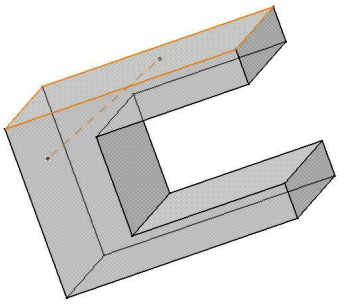
Fist a hole surface resp.



a surface and a hole central point



or a surface and a line are chosen



which had been created before.

After that, by clicking on the MWF-Bore icon,

the hole definition window will be opened

and the desired hole can be created.

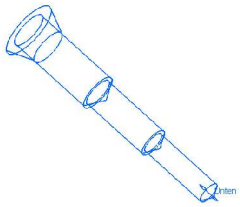
2nd possibility

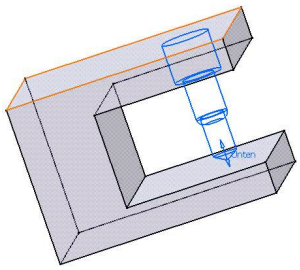
2. First the *MWF-Bore* icon will be chosen (the icon is turning orange)

and only then, a hole surface will be chosen.

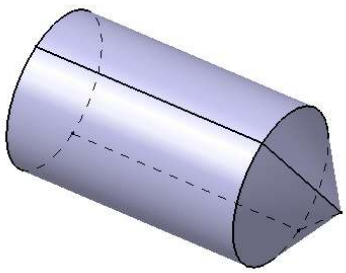
The MWF-Bore dialog window will be opened and the hole can be created.

Analogous to the CATIA functionality, a temporary preview of the hole to be created will be immediately displayed while entering the hole data in the MWF dialog. Alternatively to the input in the dialog mask, the depth of the last step can be changed by dragging at this temporary element.

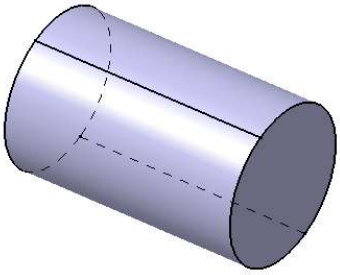




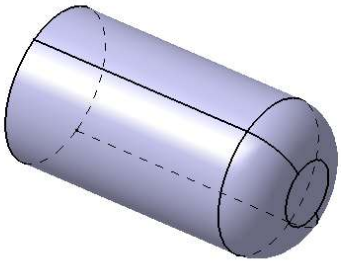
Bottom types



1. V-Bottom



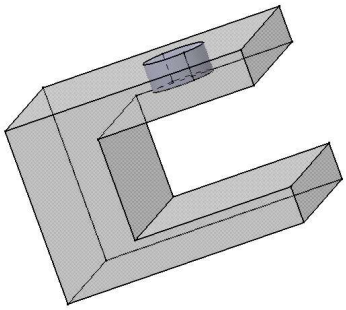
2. Flat



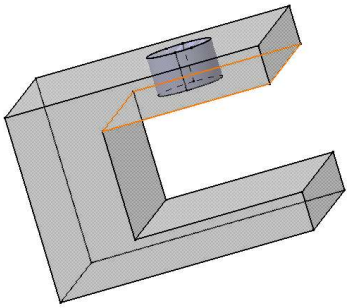
3. Round

In case of the flat bottom type, the step depth corresponds to the hole depth.
In case of the V-bottom or round bottom type, the bottom geometry of the step depth will be added.
If only an edge derounding is planned,
hole and step depth will close with the plane surface.

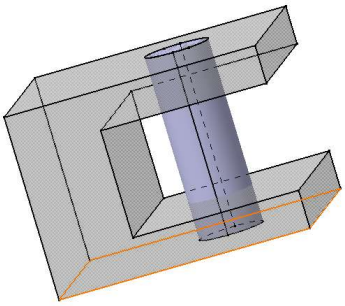
Hole types



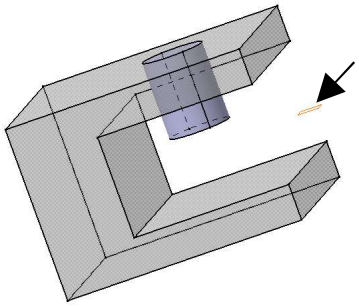
1. Blind



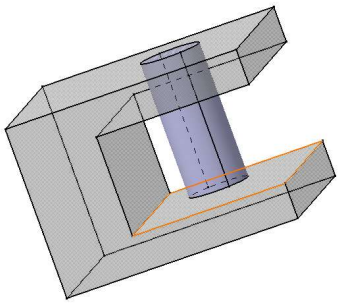
2. Up to next



3. Up to last

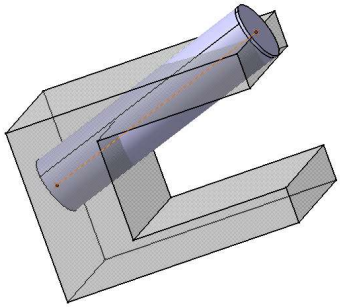


4. Up to plane

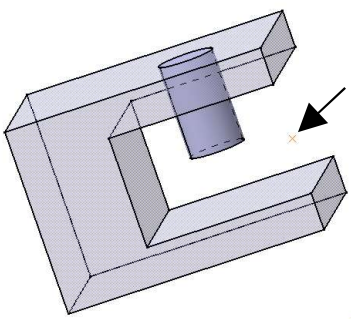


5. Up to surface

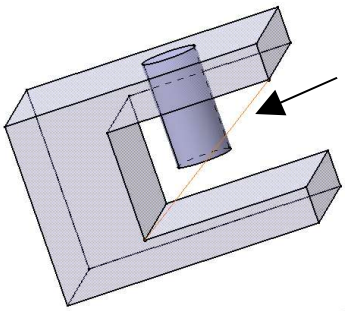
In addition to the limits usually used in CATIA, the step depth of the MWF holes can be defined by length of the line and edges, points and lines.



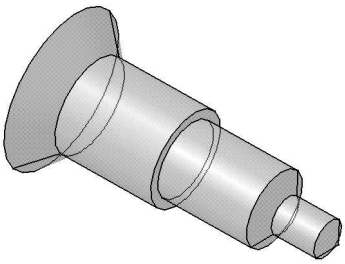
6. Length of the line/edge



7. Up to point



8. Up to line



9. Step hole

Example for a three-step hole with chamfer and V-bottom.

After having stopped the desired hole in CATIA,
it can also be repositioned via the MWF-Bore sketch
which is shown in the structural tree.

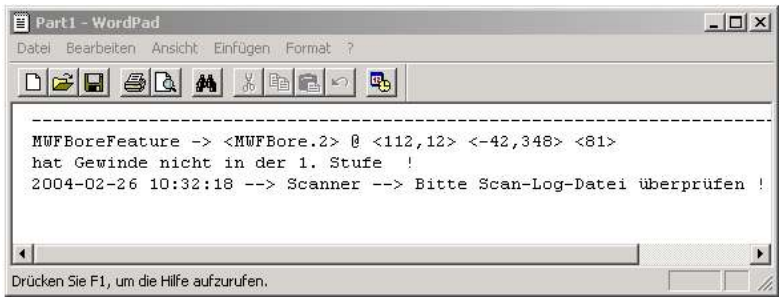
Export

By clicking on the MWF-Bore Export icon,

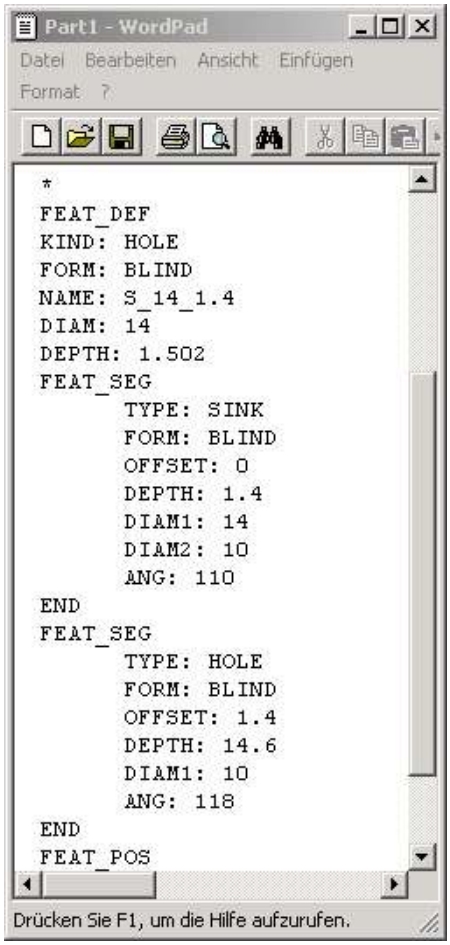
the data will be scanned. .

At the same time, two new files will be stored in the same directory
where the CATIAPart is, too.

In the *MWFLog* file,
the not-scanned holes will be listed which do not correspond to the Tebis format



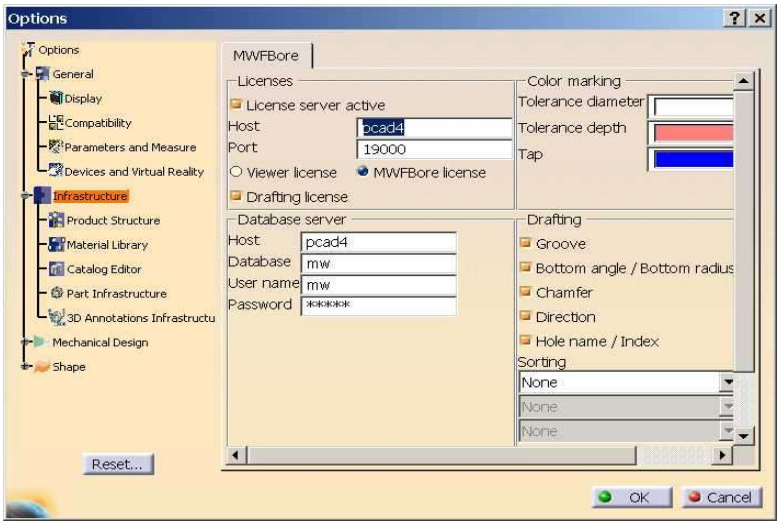
The *TFF* file
is the exchange format between MWF and Tebis.



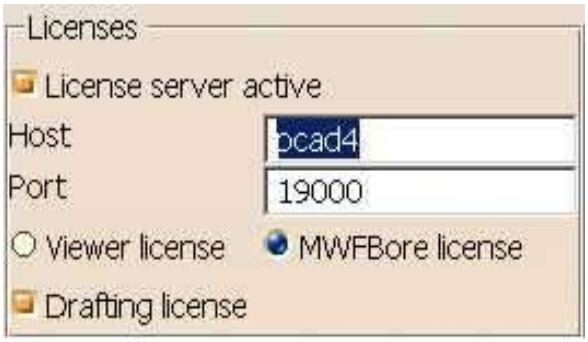
The MWF-Bore register card

Under *Tools* > *Options* > *Infrastructure*, there is now a MWF-Bore register card.

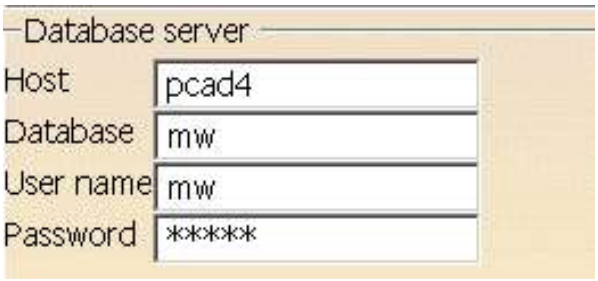
Here the user must enter the desired options.
Via the CATIA administration functionality, default values can be already entered by the administrator. The administrator can decide if the user is allowed to overwrite the entries.



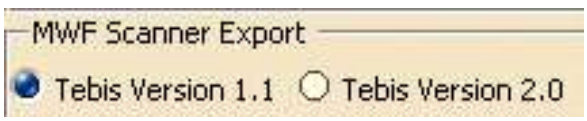
In case of an activated license server, the host name of the license server and the TCP / IP port of the communication must be entered. View and MWF-Bore are alternatively selectable. In addition, drafting license is optionally possible.



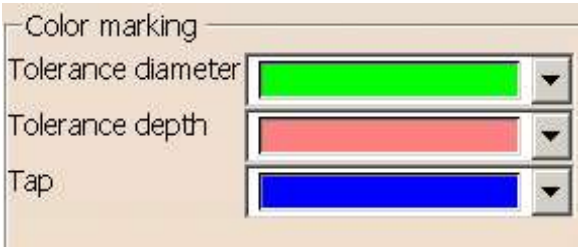
Enter the correct login data for the access to the database server.



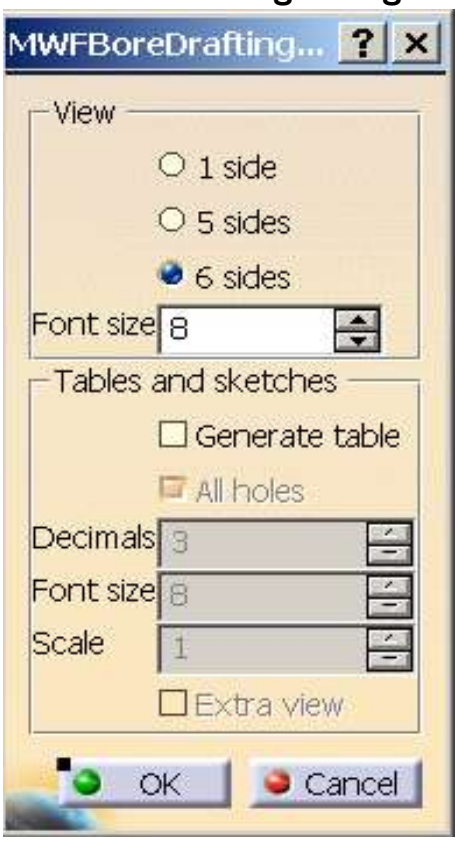
You can choose between two scanning formats (Tebis version 1.1 and Tebis version 2.0).



It is possible to choose own color settings for tolerance, depth, and thread.



The MWF-Drafting dialog window

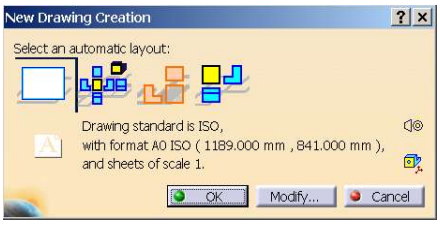


General

After having created the MWF holes in CATIA, you can change to the CATIA drafting environment via

Start > Mechanical construction > Drafting.

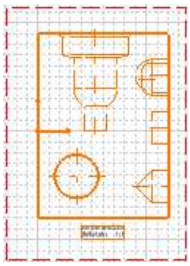
The CATIA drawing creation dialog window will be opened.



After having selected a layout and confirmed it by using 

you can change to the drafting environment.

By marking the frame of a 2D drawing,



this one will be selected.

By clicking on the

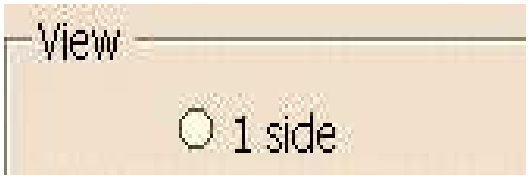
Moldware icon,

the MWF-Drafting dialog window will be opened.

In the dialog window, different views can be chosen.

View

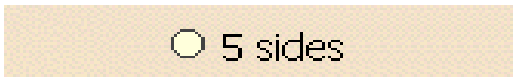
1 side



only considers the top view.

View

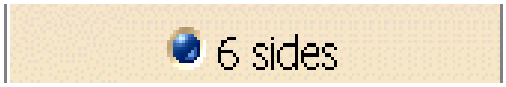
5 sides



considers all sides with the exception of the back.

View

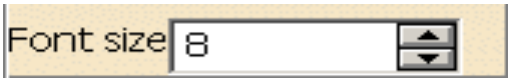
6 sides



considers all sides.

The

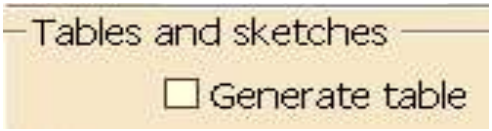
Font size



defines the lettering size of the 2D drawing.

The

Tables



can be optionally created

by activating the checkbox.

The *Decimal places*

define the number of the decimal places in the table.

The *Font size*

defines the size of the font in the table.

The

Scale

defines the scale of the drawing.

Possible input values >0 to 1.

By clicking on the button, both sketches

and tables will be created when activating.

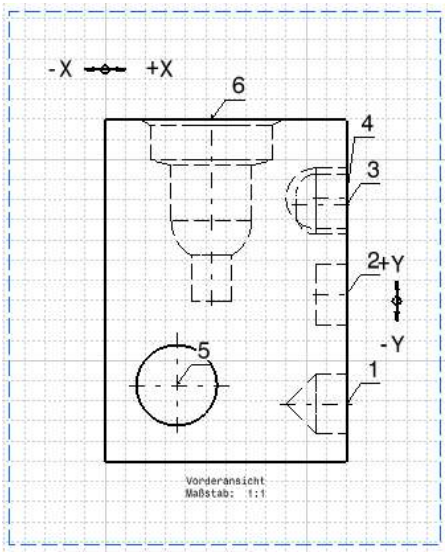
By using 

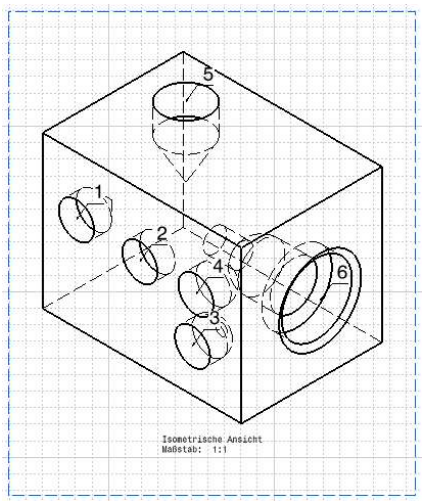
, you can close again the MWF-Drafting dialog window.

Tables and sketches

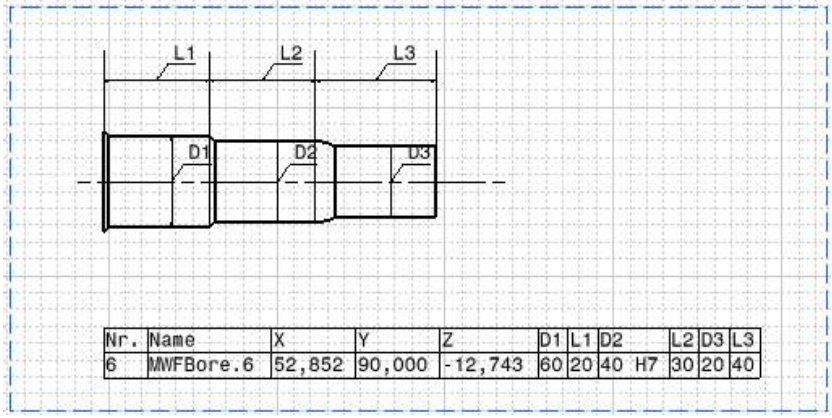
Apart from the axes (here: -x and +x as well as -y and +y), the new drawing includes

a complete topological numbering of the MWF holes.





The position of the numberings can be changed by dragging.
In addition, a separate table with an appropriate theoretical drawing of the hole will be created for every MWF hole.



Nr.	Name	X	Y	Z	D1	L1	D2	L2	D3	L3
6	MWFBore.6	52,852	90,000	-12,743	60	20	40 H7	30	20	40

You can read the following values from this table:

no.: topological numbering of the MWF hole

name: original name of the CATIA hole

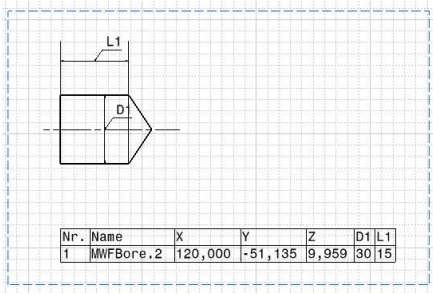
x,y,z: position of the starting central point of the MWF hole

D1: diameter of the 1st step

L1: length of the 1st step

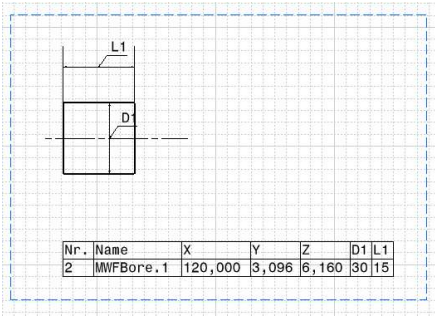
Thread and tolerances are considered within the respective D or L field of the step.

Theoretical representation of the bottom and hole types



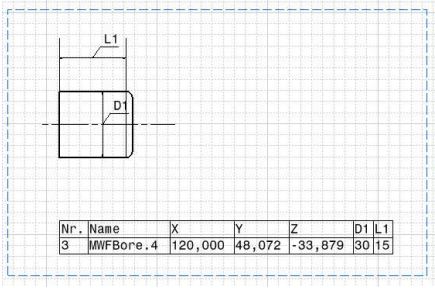
Nr.	Name	X	Y	Z	D1	L1
1	MWFBore.2	120,000	-51,135	9,959	30	15

1. V-bottom



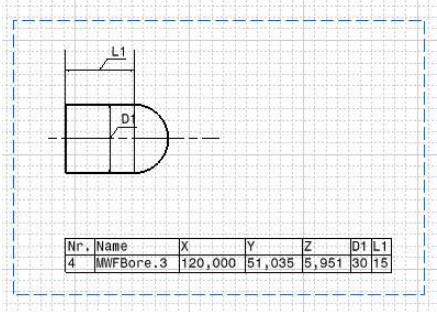
Nr.	Name	X	Y	Z	D1	L1
2	MWFBore.1	120,000	3,096	6,160	30	15

2. Flat



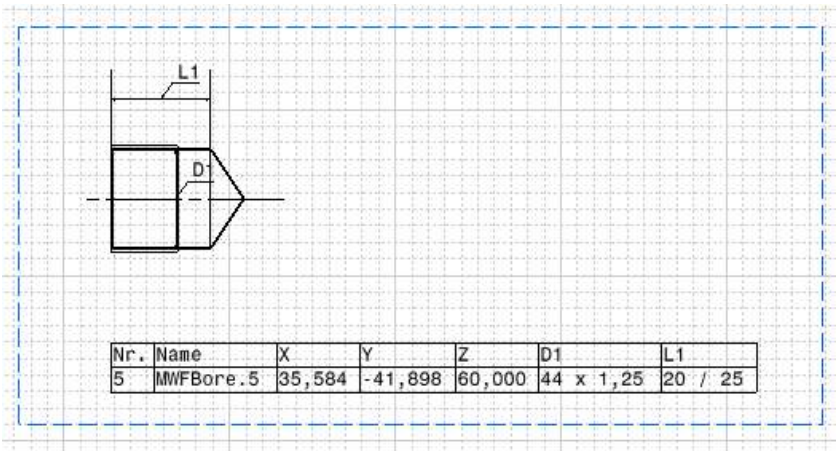
Nr.	Name	X	Y	Z	D1	L1
3	MWFBore.4	120,000	48,072	-33,879	30	15

3. Rounded



Nr.	Name	X	Y	Z	D1	L1
4	MWFBore.3	120,000	51,035	5,951	30	15

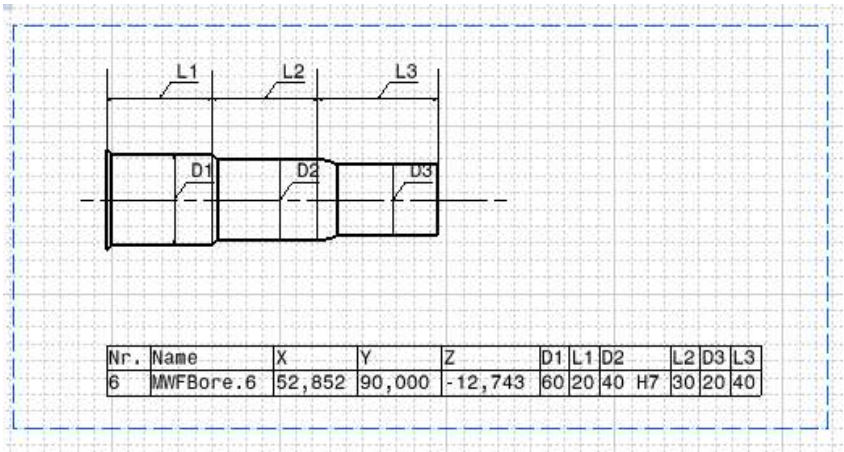
4. Round



Nr.	Name	X	Y	Z	D1	L1
5	MWFBore.5	35,584	-41,898	60,000	44 x 1,25	20 / 25

Thread

D1: 44 x 1.25
i. e. diameter of the
first step = 44
with a pitch of 1.25
L1: 20 / 25
i. e. thread depth = 20
core hole depth = 25



Nr.	Name	X	Y	Z	D1	L1	D2	L2	D3	L3
6	MWFBore.6	52,852	90,000	-12,743	60	20	40 H7	30	20	40

Step hole with tolerance n of the second step

D2: 40 H7
i. e. diameter of the second step = 40 with an ISO tolerance H7

Important: the drawing can be saved at any place. However, it is **not allowed** to move the original part of which the drawing had been created!