



NUMERIČKI UPRAVLJANE MAŠINE U OBRADI DRVETA

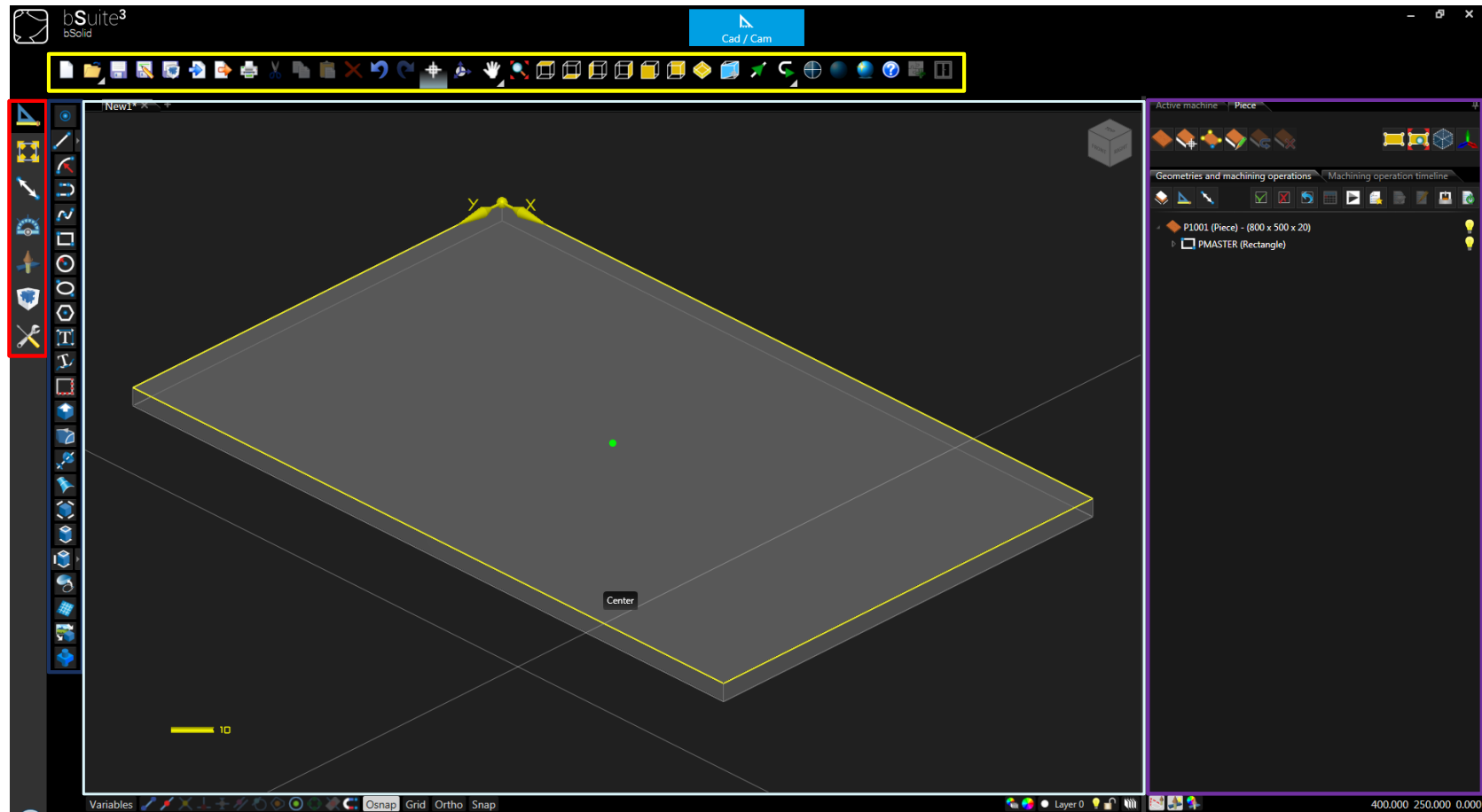
B SOLID



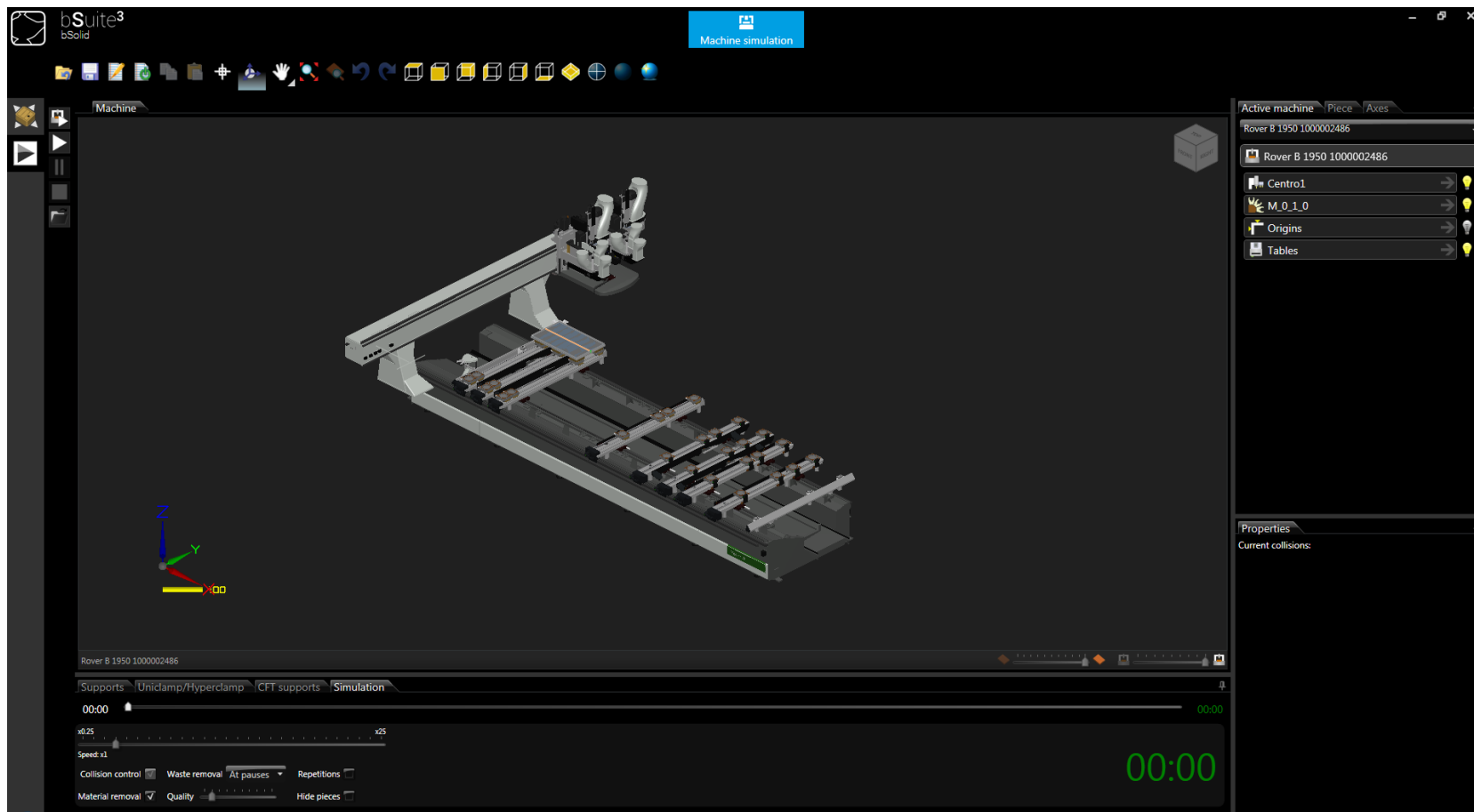
B SOLID

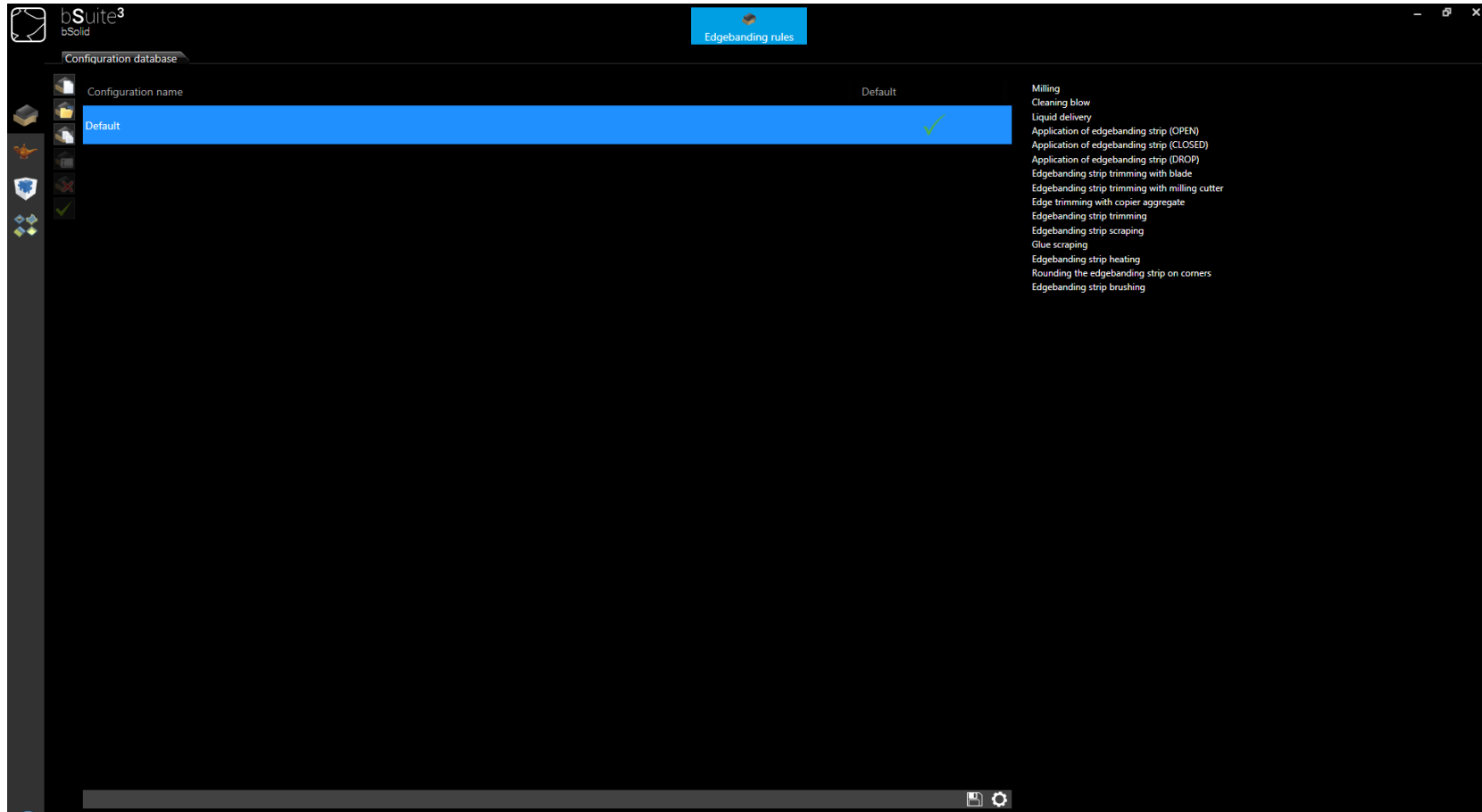
OSNOVNO OKRUŽENJE PROGRAMA

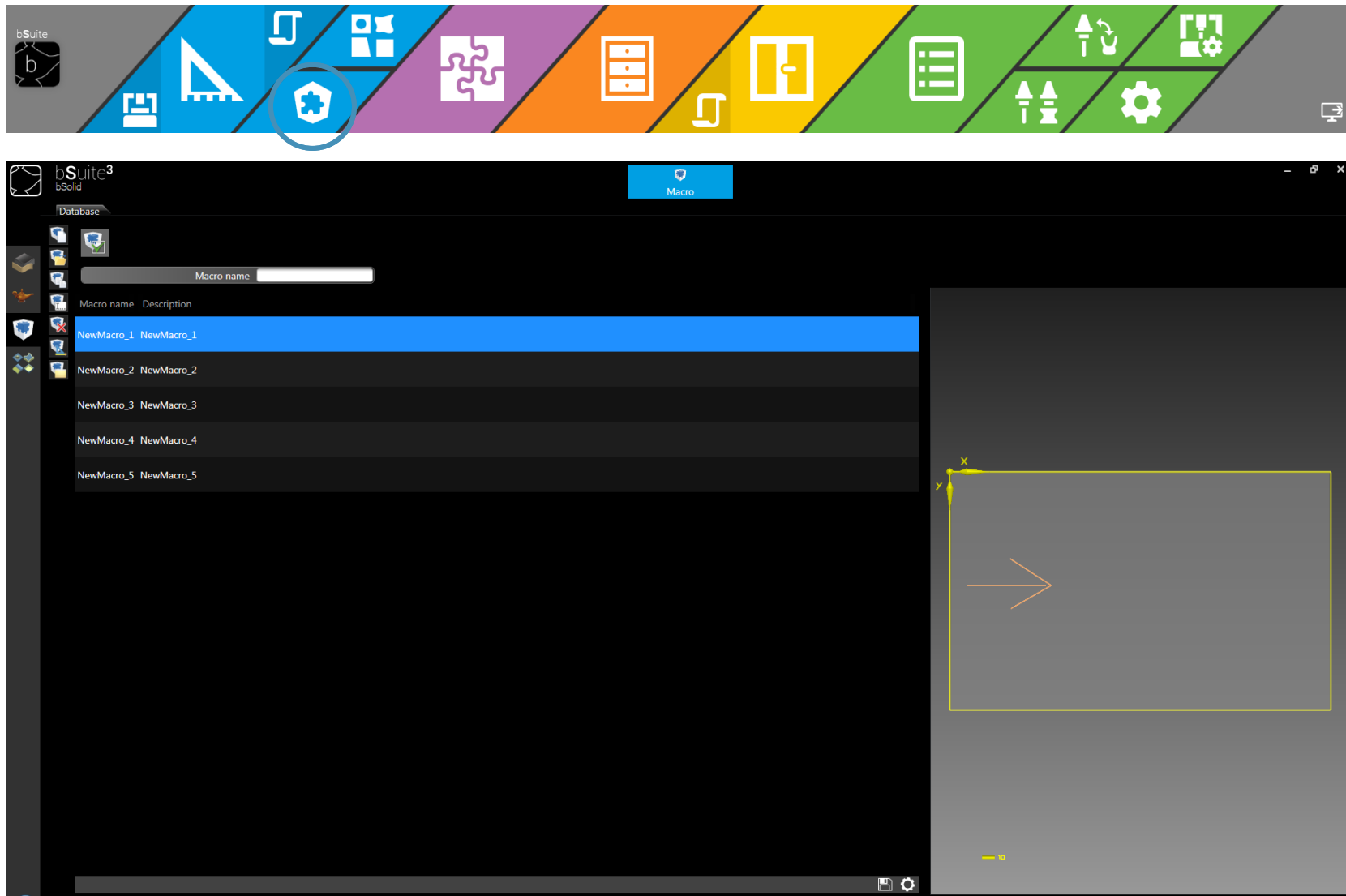


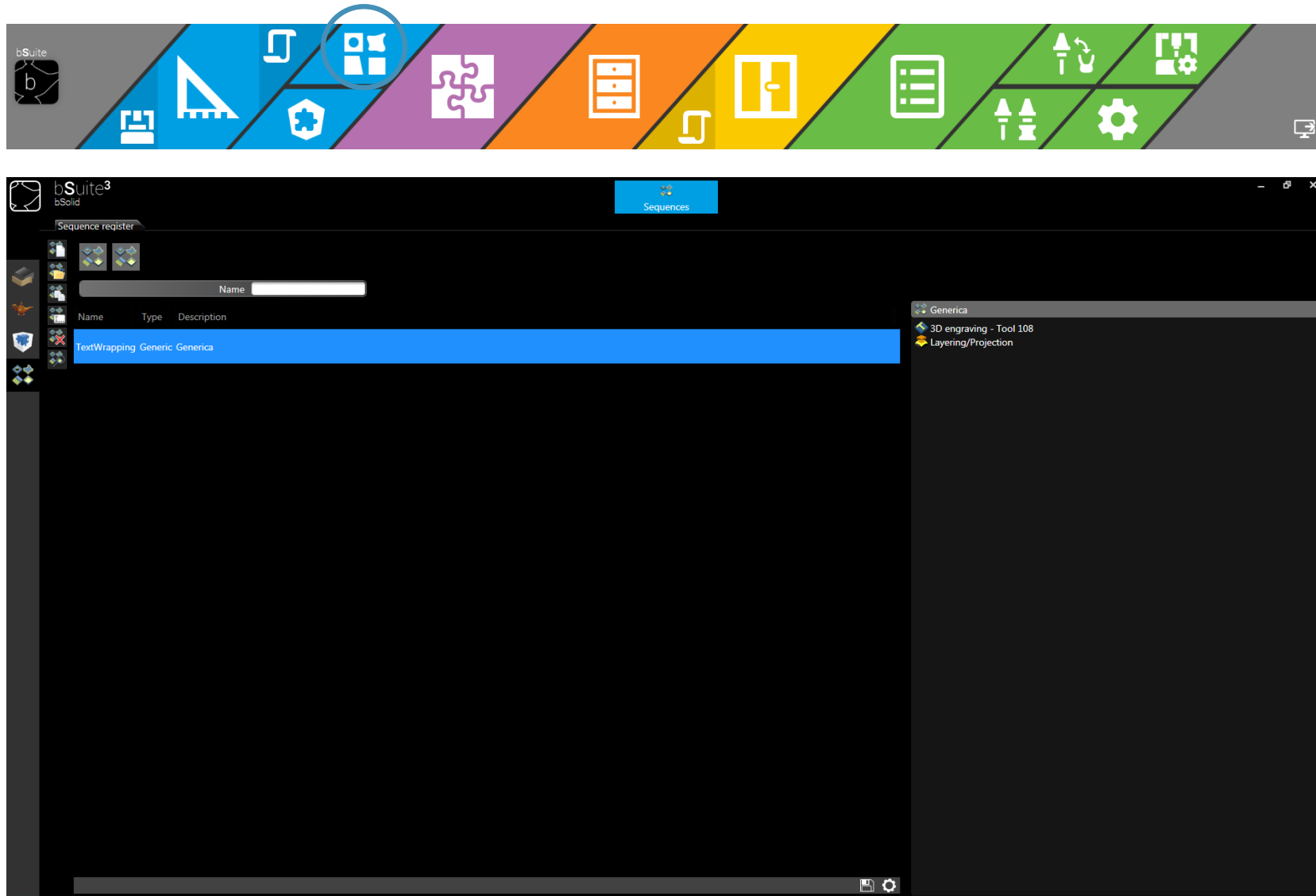


- Sidebar (First level): Main commands of CAD/CAM environment (Drawing, Modify,...).
- Sidebar (Second level): Specific commands of CAD/CAM main commands.
- Workspace: Main area used to design 2D/3D drawings and associate machinings.
- Toolbar: Commands use to manage bSolid drawings (Import/Export, Save, View commands,...).
- Right panel: Area used to manage geometries and machining operations (timeline).











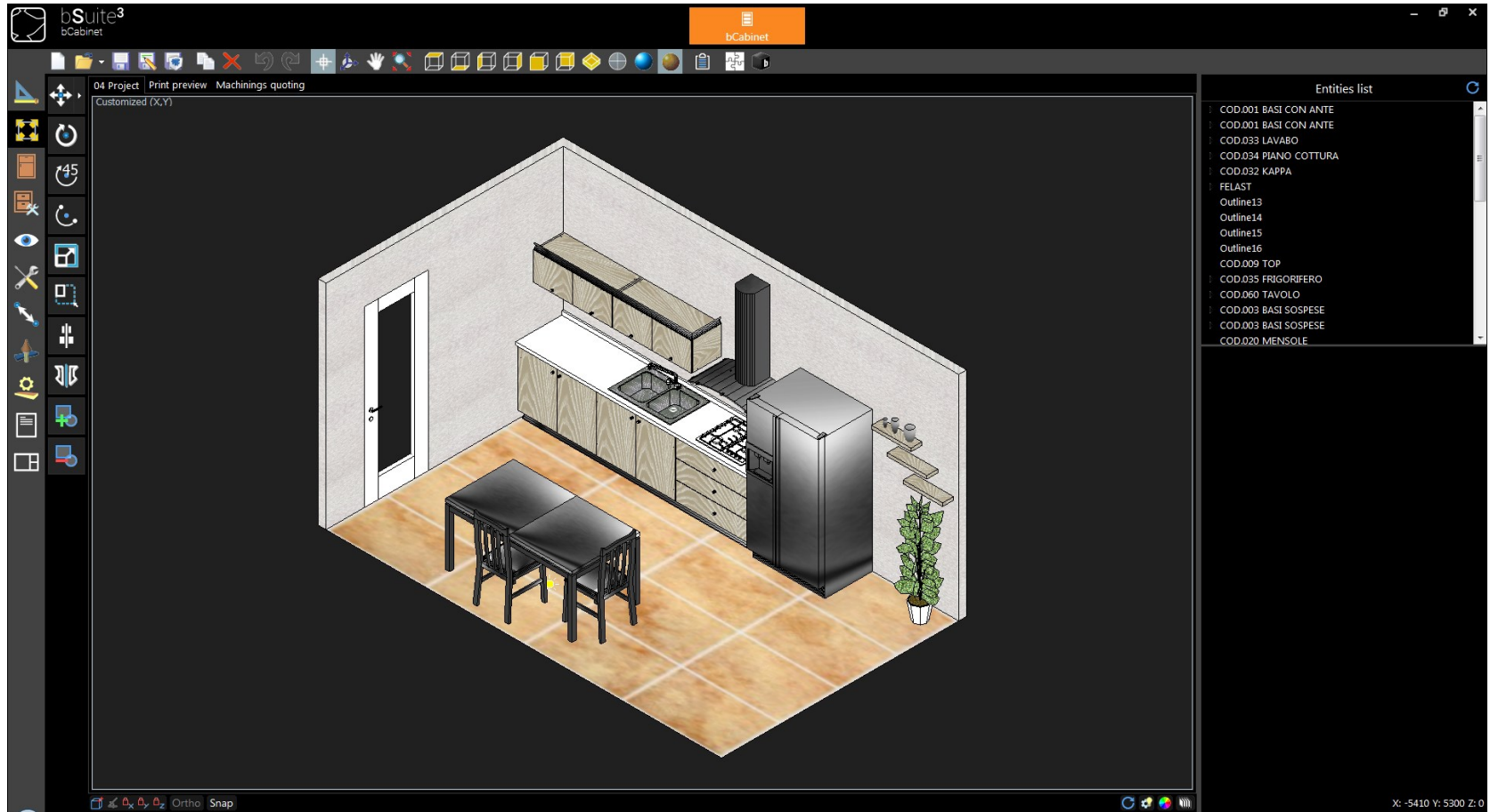
bSuite³
bVest

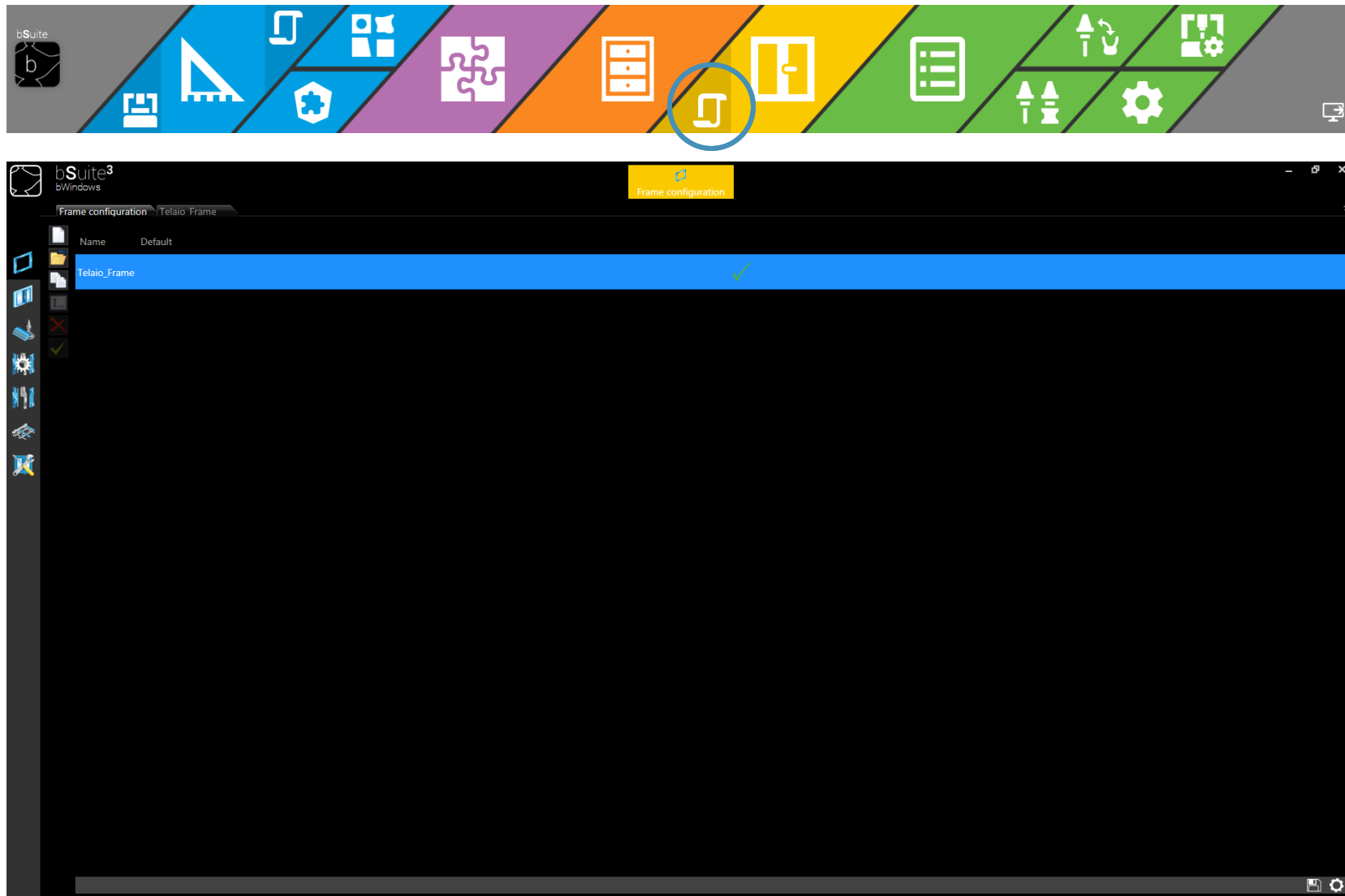
Projects

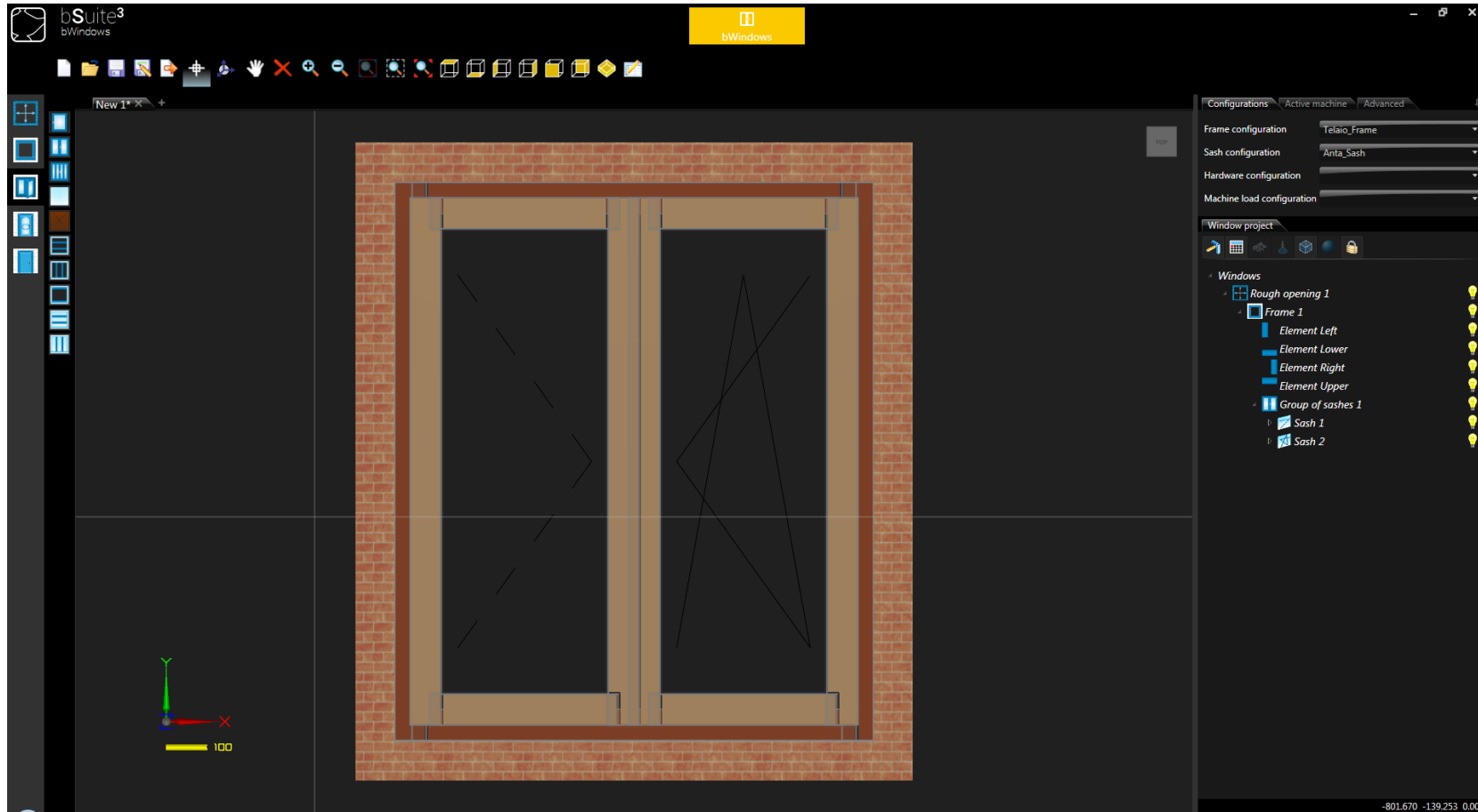
Name

Name	Description	Status	Produced
01a_Project_Algorithm_Cut_Optimization_On	Algorithm_Cut_Optimization_On	Processed	
01b_Project_Algorithm_Cut_Optimization_Off	Algorithm_Cut_Optimization_Off	Processed	
02_Project_Priority_Insert	Priority_Insert	Processed	
03a_Project_Over_Production	Over_Production	Processed	
03b_Project_Over_Production_and_Priority	Over_Production_and_Priority	Processed	
04a_Project_Multi_Shaped	Multi_Shaped	Processed	
04b_Project_Open_Profile	Open_Profile	Processed	
05a_Project_Grain	Article_Grain	Processed	
05b_Project_Grain_Error	Article_Grain_Error	Processing failed	
06_Project_Additional_Machining	Waste Crumbling Cleaning Rollers Pressure	Processed	
07_Project_Import_bCabinet	Import_bCabinet_and_Generate_Supplementary_Program_Labelling	Processed	
08_Project_Rest_and_Modify_Rest	Rest_and_Modify_Rest	Processed	
09_Project_Use_Specific_Rest	Use_Specific_Rest	Processed	
10_Project_Use_Specif_Sheet	Use_Specif_Sheet	Processed	
11_Project_Modify_Cad_Area	Modify_Cad_Area	Processed	
12_Project_Price_Estimate_Sheet	Price Estimate Sheet	Processed	
13_Project_Labelling_Articles_Rest	Labelling_Articles_Rest	Processed	
14a_Project_Cloning_Result_On_X	Cloning_Result_On_X	Processed	
14b_Project_Cloning_Result_On_Y	Cloning_Result_On_Y	Processed	
15_Project_Overall_Dimension	Overall_Dimension	Processed	
16a_Project_Insert_Direction_On_X	Insert_Direction_On_X	Processed	
16b_Project_Insert_Direction_On_Y	Insert_Direction_On_Y	Processed	
17_Project_Article_with_Variable	Article_with_Variable	Processed	
18a_Project_Article_Sequence	Article_Sequence	Processed	
18b_Project_Article_Sequence_and_Block	Article_Sequence_and_Block	Processed	
18c_Project_Article_Block_Editing_Machining	Article_Block_Editing_Machining	Processed	

[NumDatagridRowText] 26









bSuite³
bSolid

total duration 00:00:00
calculated on 0 programs of 0

Index	Label	Program	Quantity	Piece-counter	Duration
1	Label	file.bSolid Description 800x500x20	1	0	

Origin: Default

General

Label: Label

Description: Description

Path: C:\Users\it00003779\Documents\bSolid

Dimensions

LPX: 800 800

LPY: 500 500

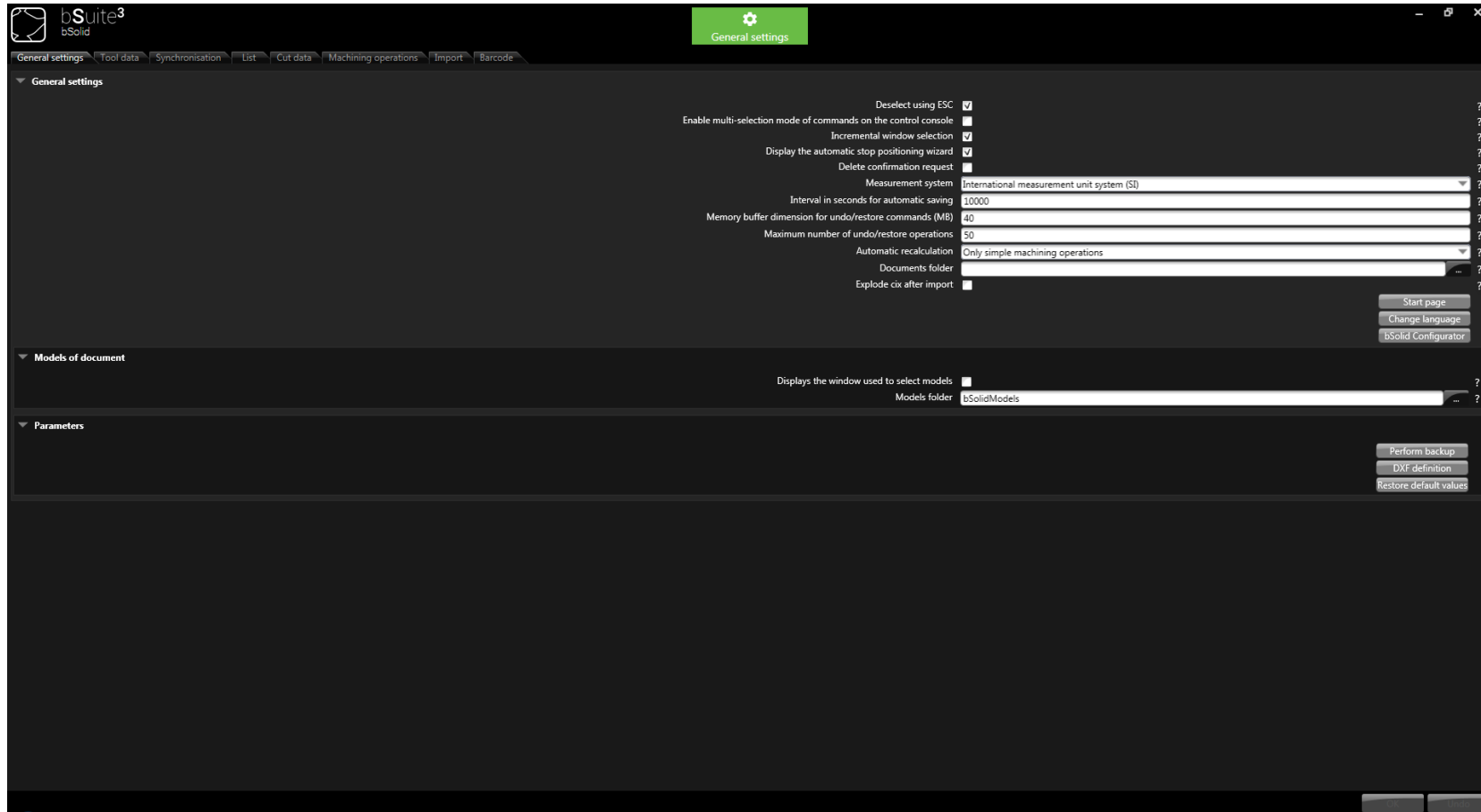
LPZ: 20 20

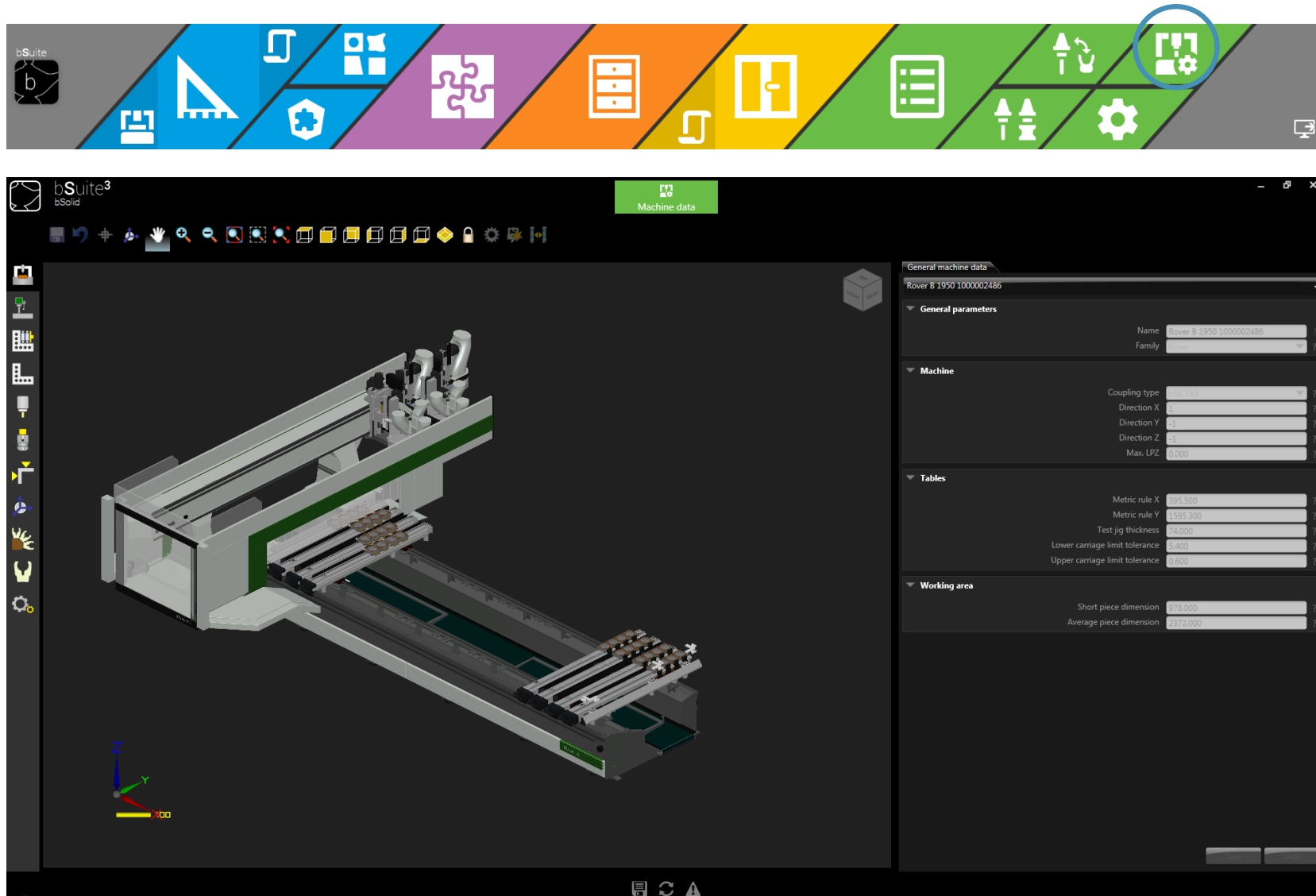


The main interface of bSuite3 bSolid is displayed. On the left, there is a sidebar with various tool icons. The main area is titled "Tool register" and contains a table of tools. A dropdown menu at the top of the table is set to "Rover B 1950 1000002486". The table lists various tools with their names, descriptions, diameters, working lengths, and the machines they are enabled for. The first row, "1_2COMP", is highlighted in blue. To the right of the table, there is a 3D model of a tool, which is a yellow cylindrical component with a black flange and a yellow shaft.

Name	Description	Diameter	Working length	Machines enabled
1_2COMP		11.85	124.54	Rover B 1950 1000002486
ALUWAVE		25	117	Rover B 1950 1000002486
CAT2		18	150	Rover B 1950 1000002486
CAT20		10	117	Rover B 1950 1000002486
CAT5		10	150	Rover B 1950 1000002486
COPY_ALUWAVE		25	117	Rover B 1950 1000002486
FORA15		15	53	Rover B 1950 1000002486
FORA35		35	53	Rover B 1950 1000002486
FORA4		4	53	Rover B 1950 1000002486
FORA5		5	53	Rover B 1950 1000002486
FORA8		8	53	Rover B 1950 1000002486
FRESAD20		20	156	Rover B 1950 1000002486
PINO		10	128	Rover B 1950 1000002486
REV6		18	136	Rover B 1950 1000002486
REV7		10	150	Rover B 1950 1000002486



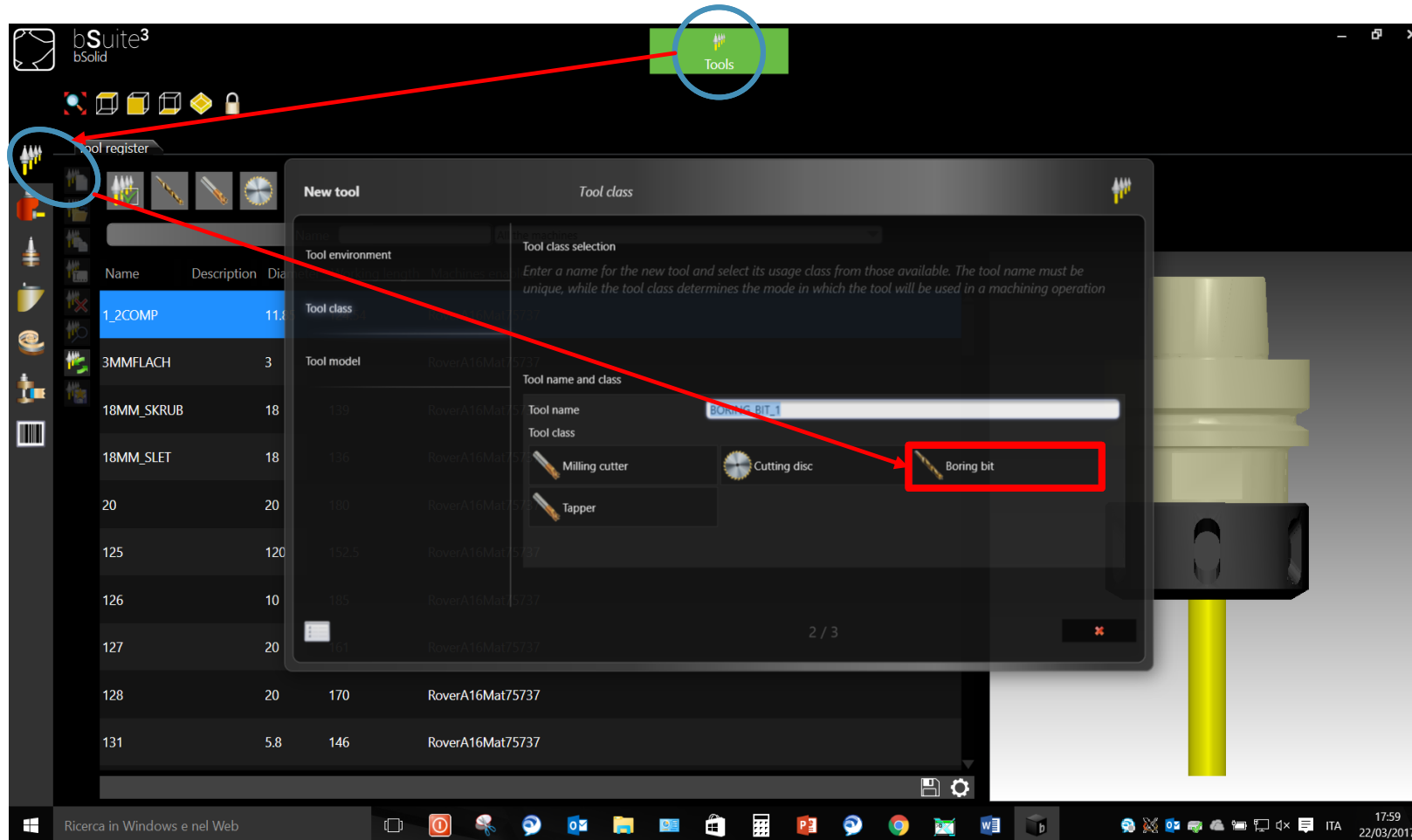




DEFINISANJE ALATA U BAZI

Tools creation

Tool class - Boring bit *



(* In order to create/edit/delete tools the proper password level must be inserted)

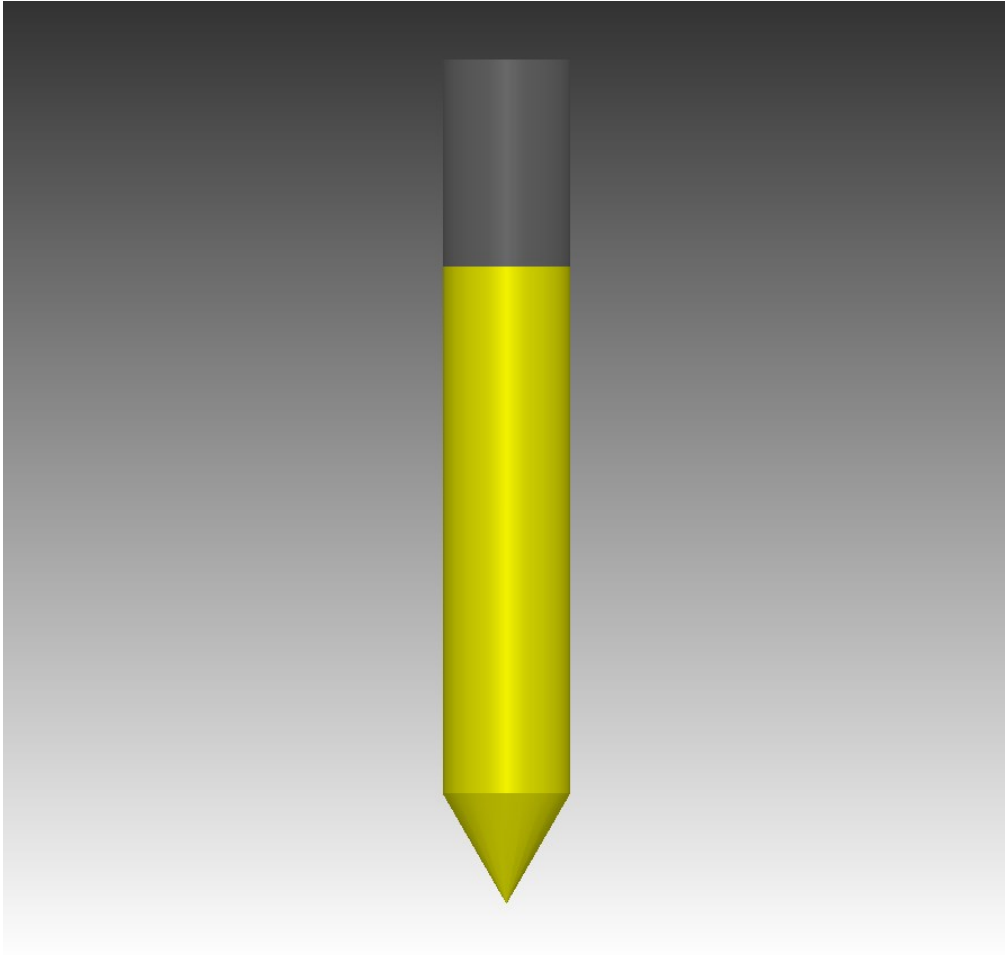
Tool model - Boring bit *



(* next slides for boring bit tool creation will be based on Through boring bit model)

Tools creation

Tool properties - Boring bit



Tool properties:

- **General Data**
- **Morphology**
- **Uses**
- **Speed**
- **Wear**
- **Control points**
- **Filters**
- **Twins**

Tool properties - General data

General data - Boring bit

General data

Name: BORING_BIT_1 ?

Diameter [mm]: 8 ?

Working length [mm]: 53 ?

Adapt drawing to length and diameter: ☐ ?

Description: ?

Direction of rotation: Clockwise ?

Tool class: Boring bit ?

Tool type: Normal ?

Material removal colour: ?

Default correction: ?

Enable integrated deflector: ☐ ?

Dimensional data

Maximum diameter [mm]: 8 ?

Maximum length [mm]: 53 ?

Maximum working depth [mm]: 0 ?

Maximum vertical step [mm]: 40 ?

Maximum horizontal step [mm]: 0 ?

Cutting thickness [mm]: 40 ?

Depth [mm]: 0 ?

Overall dimensions: 1 ?

Advanced data

Enable alternative set of data: ☐ ?

Class: b.Tool.Routing ?

Jig safety [mm]: 10 ?

Unclamp safety [mm]: 30 ?

Piercing data

Piercing distance: 0.000 ?

Piercing speed: 0.000 ?

Name: The name of the tool (can't be modified).

Diameter [mm]: The minimum useful diameter of the tool part used to perform the machining.

Working length [mm]: The tool length (in case of boring bit is the distance between the lower tip of the tool and the nose of the spindle).

Adapt drawing to length and diameter: Further details will be provided in next slides.

Direction of rotation: the rotation direction of the aggregate spindle:

- **Clockwise.**
- **Anticlockwise.**
- **From program:** based on tool rotation direction.

Tool class: the class of the tool (can't be modified).

Tool type: list of available tool types.

Material removal colour: it allow, in simulation, to specify the removal colour of machinings.

Default correction: it allow to position the tool axis with reference to the machining:

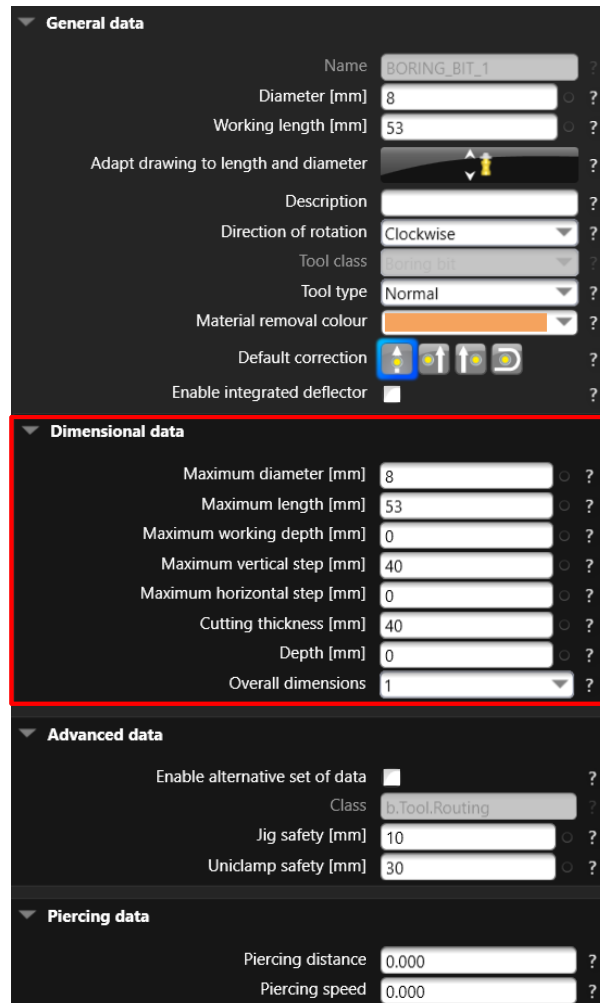
- **Centre:** it position the tool axis in the centre of the trajectory.
- **Left:** it position the tool axis at the left of the trajectory.
- **Right:** it position the tool axis at the right of the trajectory.
- **From Geometry:** it position the tool axis using the settings defined in the geometry.

Enable integrated deflector: if ticked, this indicates that the tool is a milling cutter with incorporated deflector

Integrated deflector: used to choose the deflector associated with the tool. This data field is only active if the specific integrated deflector has been created in the relevant tool environment

Tool properties - General data

Dimensional data - Boring bit



General data

Name: BORING_BIT_1 ?

Diameter [mm]: 8 ?

Working length [mm]: 53 ?

Adapt drawing to length and diameter:  ?

Description: ?

Direction of rotation: Clockwise ?

Tool class: Boring bit ?

Tool type: Normal ?

Material removal colour:  ?

Default correction:  ?

Enable integrated deflector: ☐ ?

Dimensional data

Maximum diameter [mm]: 8 ?

Maximum length [mm]: 53 ?

Maximum working depth [mm]: 0 ?

Maximum vertical step [mm]: 40 ?

Maximum horizontal step [mm]: 0 ?

Cutting thickness [mm]: 40 ?

Depth [mm]: 0 ?

Overall dimensions: 1 ?

Advanced data

Enable alternative set of data: ☐ ?

Class: b.Tool.Routing ?

Jig safety [mm]: 10 ?

Unclamp safety [mm]: 30 ?

Piercing data

Piercing distance: 0.000 ?

Piercing speed: 0.000 ?

Maximum diameter [mm]: it specify the maximum tool diameter.

Maximum length [mm]: it specify the maximum tool length; this field is used to establish the safety position of the boring unit .

Maximum working depth [mm]: it specify the maximum depth that the tool can reach during machining operations.

Maximum vertical step [mm]: it specify the maximum depth that the tool can reach during machining operations on the vertical piece faces.

Maximum horizontal step [mm]: it specify the maximum step between the horizontal movements of a machining operation.

Cutting Thickness [mm]: it specify the thickness of the cutting element.

Depth [mm]: it specify the default depth in order to be able to machine.

Overall dimension: it allow to specify a value which represents the tool encumbrance (i.e. in the tool magazine if a tool holder has a big tool (4) it implies that no other tools can be placed on adjacent tools).

Tool properties - General data

Advanced and Piercing data - Boring bit

General data	
Name	BORING_BIT_1
Diameter [mm]	8
Working length [mm]	53
Adapt drawing to length and diameter	☐
Description	
Direction of rotation	Clockwise
Tool class	Boring bit
Tool type	Normal
Material removal colour	
Default correction	☐
Enable integrated deflector	☐
Dimensional data	
Maximum diameter [mm]	8
Maximum length [mm]	53
Maximum working depth [mm]	0
Maximum vertical step [mm]	40
Maximum horizontal step [mm]	0
Cutting thickness [mm]	40
Depth [mm]	0
Overall dimensions	1
Advanced data	
Enable alternative set of data	☐
Class	b.Tool.Routing
Jig safety [mm]	10
Uniclamp safety [mm]	30
Piercing data	
Piercing distance	0.000
Piercing speed	0.000

Enable alternative set of data: it enables or disables the alternative settings for configuring the inverter data.

Class: it represents the tool classification (based on Tool class).

Jig safety [mm]: it specify the safety distance between the tool and the piece locked with the jig.

Uniclamp safety [mm]: it specify the safety distance between the tool and the piece locked with the unclamp.

Piercing distance [mm]: it specify the position at which the bit must begin to slow down before finishing the boring operation (*Figure 1*).

Piercing speed [mm]: it specify the bit speed during the piece knock-through phase (once it reaches the value set on **Piercing distance [mm]**) (*Figure 2*).

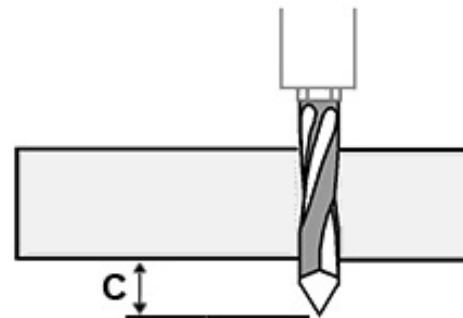


Figure 1

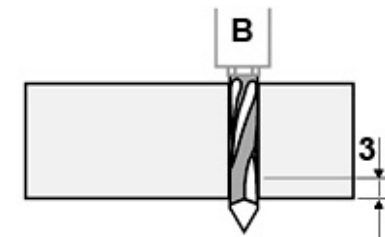


Figure 2

Tool properties - Morphology

Morphology - Boring bit

Morphology

Coupling type: (none) ?

Tool body

Body type: Cylinder ?

Cutting edge: ☐ ?

Length [mm]: 13 ?

Diameter [mm]: 8 ?

Plate radius [mm]: 0 ?

Body type: Conical ?

Cutting edge: ☒ ?

Upper diameter [mm]: 8 ?

Lower diameter [mm]: 0 ?

Length [mm]: 40 ?

Angle: 60 ?

Plate radius [mm]: 0 ?

Coupling type: List of the existing types of connection device; from the list the user can choose the type to be associated with the tool (Figure 1).

List of commands used to add (+) or remove (-) parts to the tool body; up and down arrows commands are used to interchange tool body parts (Figure 2).

Selected tool body piece is highlighted with blue colour.

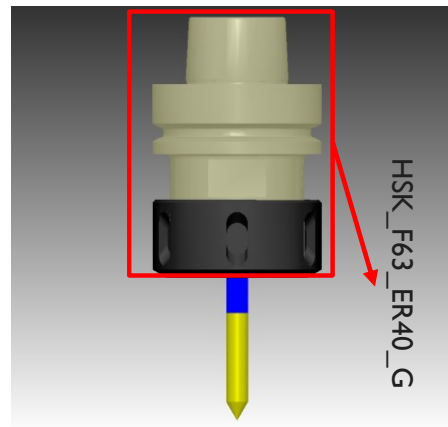
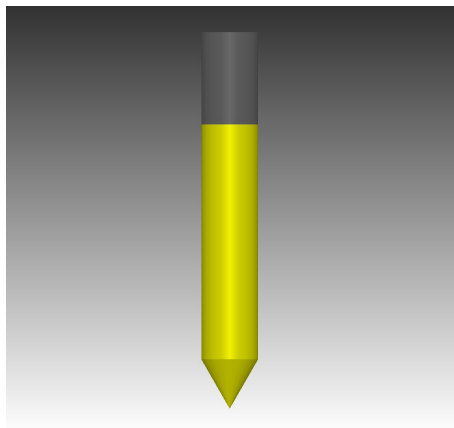


Figure 1

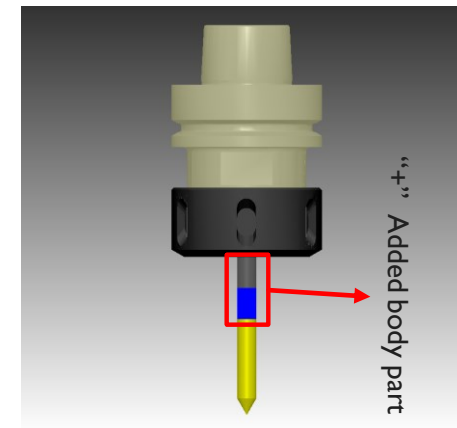


Figure 2

Tool properties - Morphology

Morphology - Boring bit

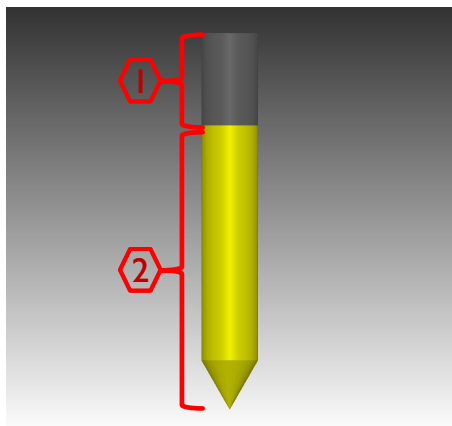
Morphology

Coupling type: (none) ?

Tool body

1 Body type: Cylinder ?
Cutting edge: ☐ ?
Length [mm]: 13 ?
Diameter [mm]: 8 ?
Plate radius [mm]: 0 ?

2 Body type: Conical ?
Cutting edge: ☒ ?
Upper diameter [mm]: 8 ?
Lower diameter [mm]: 0 ?
Length [mm]: 40 ?
Angle: 60 ?
Plate radius [mm]: 0 ?



Body type: it allow to select the geometric shape of the tool shell:

- **Cylinder:** it allow to create a cylindrical tool part (Figure I, A).
- **Spherical:** it allow to create a cylindrical tool part (Figure I, B).
- **Conical:** it allow to create a tapered tool part (Figure I, C).
- **LFC (Line, Fillet, Chamfer):** it allow to create a geometric form with a part of the profile chamfered or connected (Figure I, D).
- **From the geometry:** it allow to import the profile of a custom geometric shape.

Cutting edge: it indicates the presence or absence of the blade in the shell (yellow colour).

Other tool body parameters depends on body type and will be discussed for each specific body type.

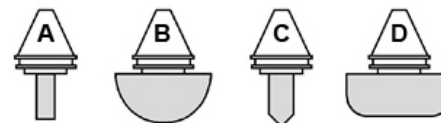


Figure I

Tool properties - Morphology

Body type - Boring bit

Body type	Cylinder	
Cutting edge	☒	?
Length [mm]	80	?
Diameter [mm]	20	?
Plate radius [mm]	0	?

Length [mm]: it specify the shell length.

Diameter [mm]: it specify the shell diameter.

Plate radius [mm]: it specify the width of the connector arc.

Body type	Conical	
Cutting edge	☒	?
Upper diameter [mm]	20	?
Lower diameter [mm]	0	?
Length [mm]	80	?
Angle	60	?
Plate radius [mm]	0	?

Upper diameter [mm]: diameter of the upper part of the tool body (Figure I, A).

Lower diameter [mm]: diameter of the lower part of the tool body (Figure I, B).

Length [mm]: it specify the shell length (Figure I, C).

Angle: it specify the cone angle (Figure I, D).

Diameter [mm]: it specify the shell diameter.

Plate radius [mm]: it specify the width of the connector arc.

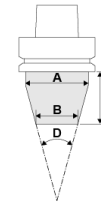


Figure I

Body type	Spherical	
Cutting edge	☒	?
Length [mm]	80	?
Diameter [mm]	20	?
Plate radius [mm]	0	?

Length [mm]: it specify the shell length.

Diameter [mm]: it specify the shell diameter.

Plate radius [mm]: it specify the width of the connector arc.

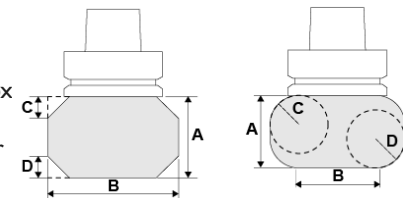
Body type	LFC Shape	
Cutting edge	☒	?
Length [mm]	20	?
Diameter [mm]	50	?
Upper chamfer	☐	?
Upper plate radius [mm]	0	?
Lower chamfer	☐	?
Lower plate radius [mm]	0	?

Length [mm]: it specify the shell length (A).

Diameter [mm]: it specify the shell diameter (B).

Upper/Lower chamfer [mm]: it enable the chamfering or enables (box not ticked) the connection of the upper/lower angles of the tool body.

Upper (C) /Lower plate radius (D) [mm]: it specify the upper/lower radius of the arc or the distance from the arc.

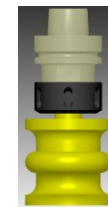


Body type	From the geometry	
Cutting edge	☒	?
File	1 - Tool Profile Drawin ...	?
Maximum length [mm]	85	?
Maximum diameter [mm]	80	?

File: the name of the file containing the geometry (right-hand part of the tool).

Maximum length [mm]: maximum length of the geometry.

Maximum diameter [mm]: maximum diameter of the geometry.



Tool properties - Uses

Uses and Speed - Boring bit

▼ Uses

Milling	☐	?
Cut	☐	?
Boring	☒	?

Milling: it specify if the tool is usable for milling machining operations.

Cut: it specify if the tool is usable for cut machining operations.

Boring: it specify if the tool is usable for boring machining operations.

▼ Speed

▼ Descent speed

Descent	3000	○ ?
Impact	0	○ ?
Min descent	3000	○ ?
Max descent	3000	○ ?

▼ Feed speed

Advance	3000	○ ?
Lead-in/lead-out speed	0	○ ?
Min advance	3000	○ ?
Max advance	3000	○ ?

▼ Rotation speed

Rotation	4000	○ ?
Min rotation	1000	○ ?
Max rotation	4000	○ ?

▼ Acceleration speed

Acceleration time	0	○ ?
Deceleration time	0	○ ?

Descent: the tool descent speed (from safety position (Figure 1, A) until it is in contact with the piece surface (Figure 1, B).

Impact: The speed at which the tool moves from the piece surface (Figure 2, A) to the machining start position (Figure 2, B).

Min descent: Minimum tool descent speed.

Max descent: Maximum tool descent speed.

Advance: the advance speed of the tool during the machining operation.

Lead-in/lead-out speed: it specify the advance speed of the tool according to lead-in/lead-out strategy.

Min advance: Minimum tool advance speed.

Max advance: Maximum tool advance speed.

Rotation: it specify the tool rotation speed (rpm).

Min rotation: it specify the minimum tool rotation speed (rpm).

Max rotation: it specify the maximum tool rotation speed (rpm).

Acceleration time: it specify the time needed to bring the tool to the set rotation speed.

Deceleration time: it specify the time needed to stop the tool rotation.

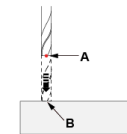


Figure 1

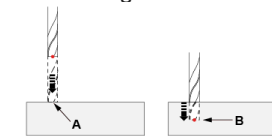


Figure 2

Tool properties - Wear

Wear and Control points - Boring bit

▼ Wear

Distance travelled	0.000	?
Tool lifespan	100	?
Check tolerance	90	?

Distance travelled: it specify, in meters, the distance travelled by the tool *.

Tool lifespan: it specify, in meters, the lifespan of the tool.

Boring: it specify, in meters, the value after which an alert will be notified to the user.

* Unless you are on machine this value will be reset whenever you close bSuite

▼ Control points

Select reference from graphic area

▼ Reference list

Name	Point_L131.07_D8.00	?
Length [mm]	131.072	?
Diameter [mm]	8.000	?
Reverse rotation	☐	?

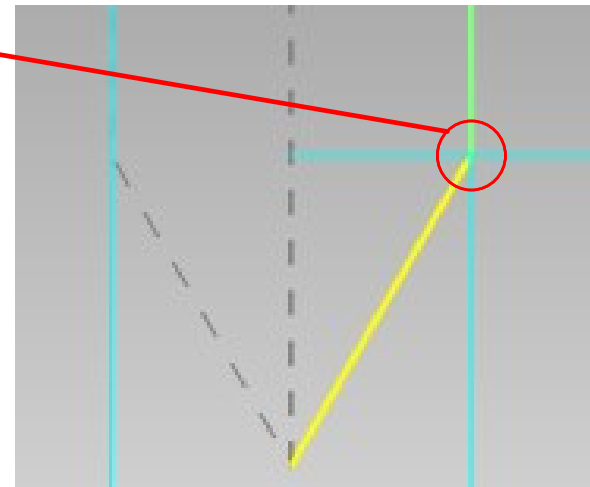
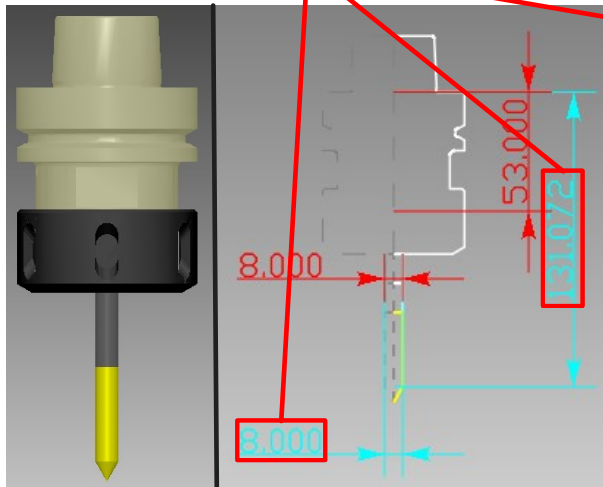
Select reference from graphic area: it activates the tool for selecting the control point in the preview area.

Name: the name of the control point created.

Length [mm]: distance between the spindle nose and the control point created.

Diameter: the diameter of the tool in the control point created.

Reverse rotation: If ticked the tool rotates in the opposite direction to the one set.



Tool properties - Wear

Filters and Twins - Boring bit

Filters

Machines:

- ☐ Rover.CG1648.52382
- ☒ Rv.B_FT.1000004947

Family filters

Value

Application filters

Family (None) ? Value ?

Check point Default ? Depth ?

User defined filters

Family ? Value ?

Check point Default ? Depth ?

Machines is the list of all available machines; by selecting one or more it will be possible to associate them the selected tool.

Family filters, **Application filters** and **User defined filters** are used in combination with bWindows / bDoor environment; with this filters the user can “tag” a specific tool to be used with a specific machining within bWindows / bDoor .

Twins

BORING_BIT_1:1

BORING_BIT_1:2

BORING_BIT_1:3

BORING_BIT_1:4

General data

Working length [mm] 53

Wear

Distance travelled 0.000

Tool lifespan 100

Check tolerance 90

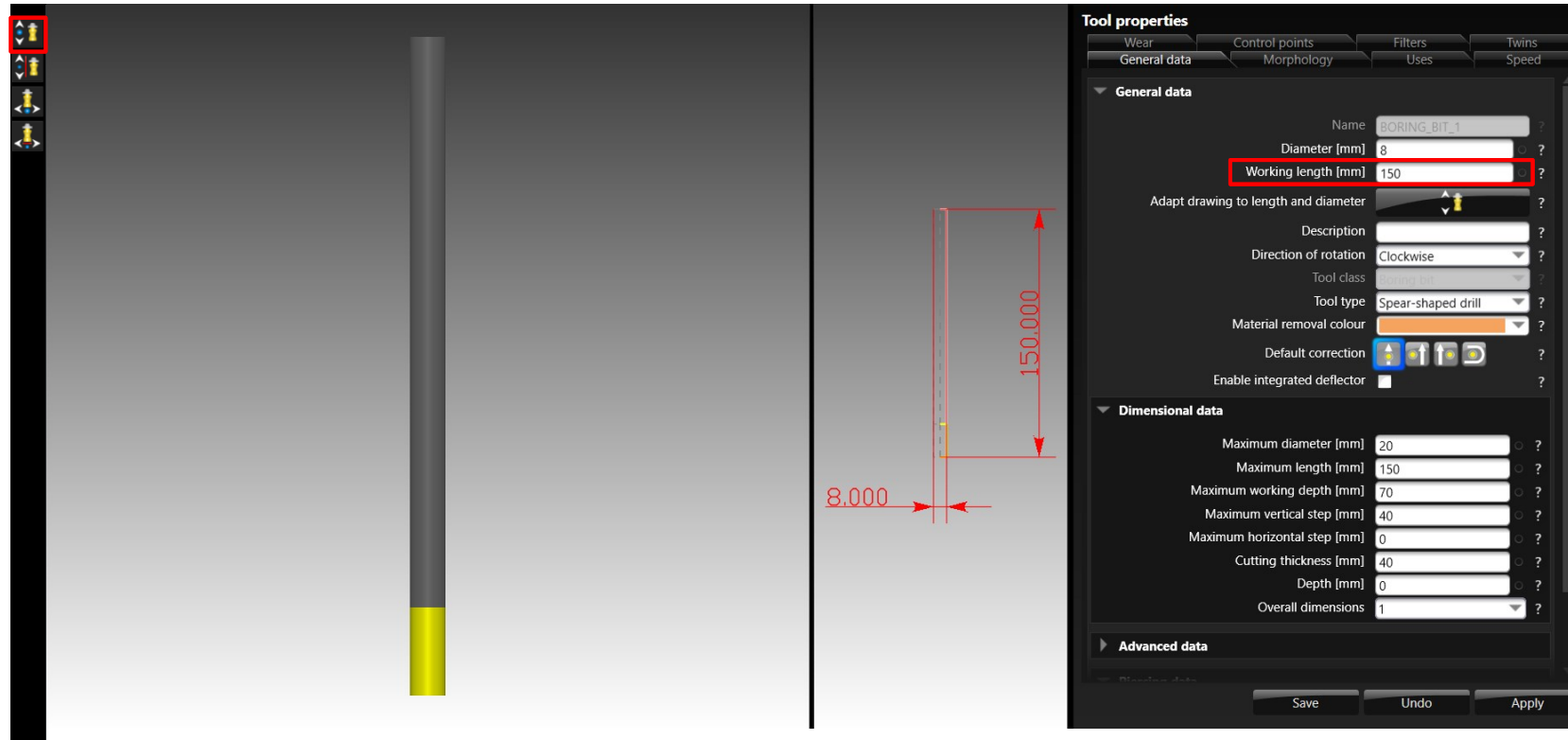
Twins are used to duplicate tools (and associated morphological characteristics) and equip them on a shared tool magazine *.

Twins allow the user to keep track of Tool lifespan and Check tolerance besides Working length parameter.

* Shared between two or more Electro spindles (TP).

Boring bit - Picker

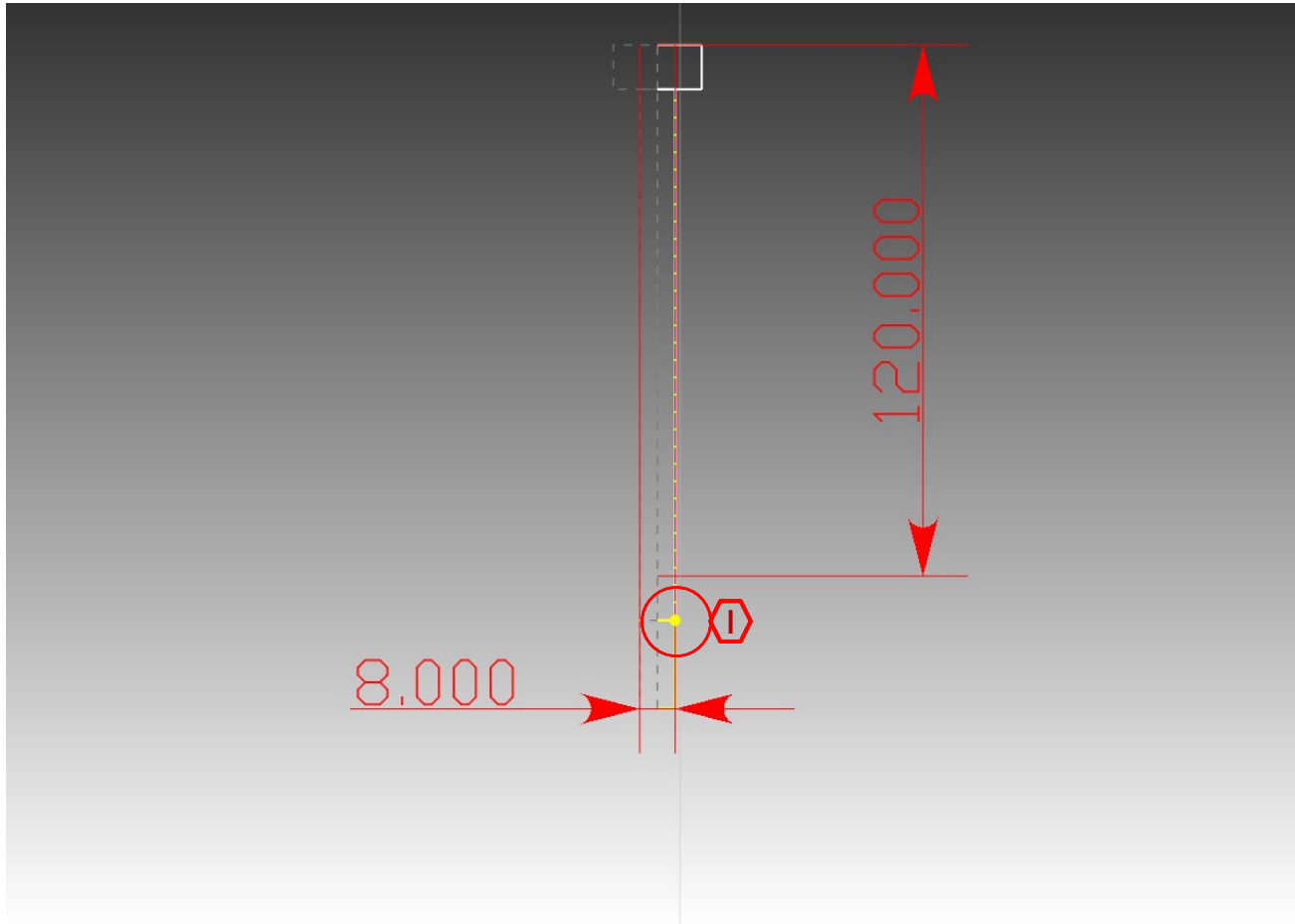
Adapt drawing to length with pick



If the working length data field has been modified user can adapt the 3D drawing and the positioned drawing to the set values (i.e. 120).

Boring bit - Picker

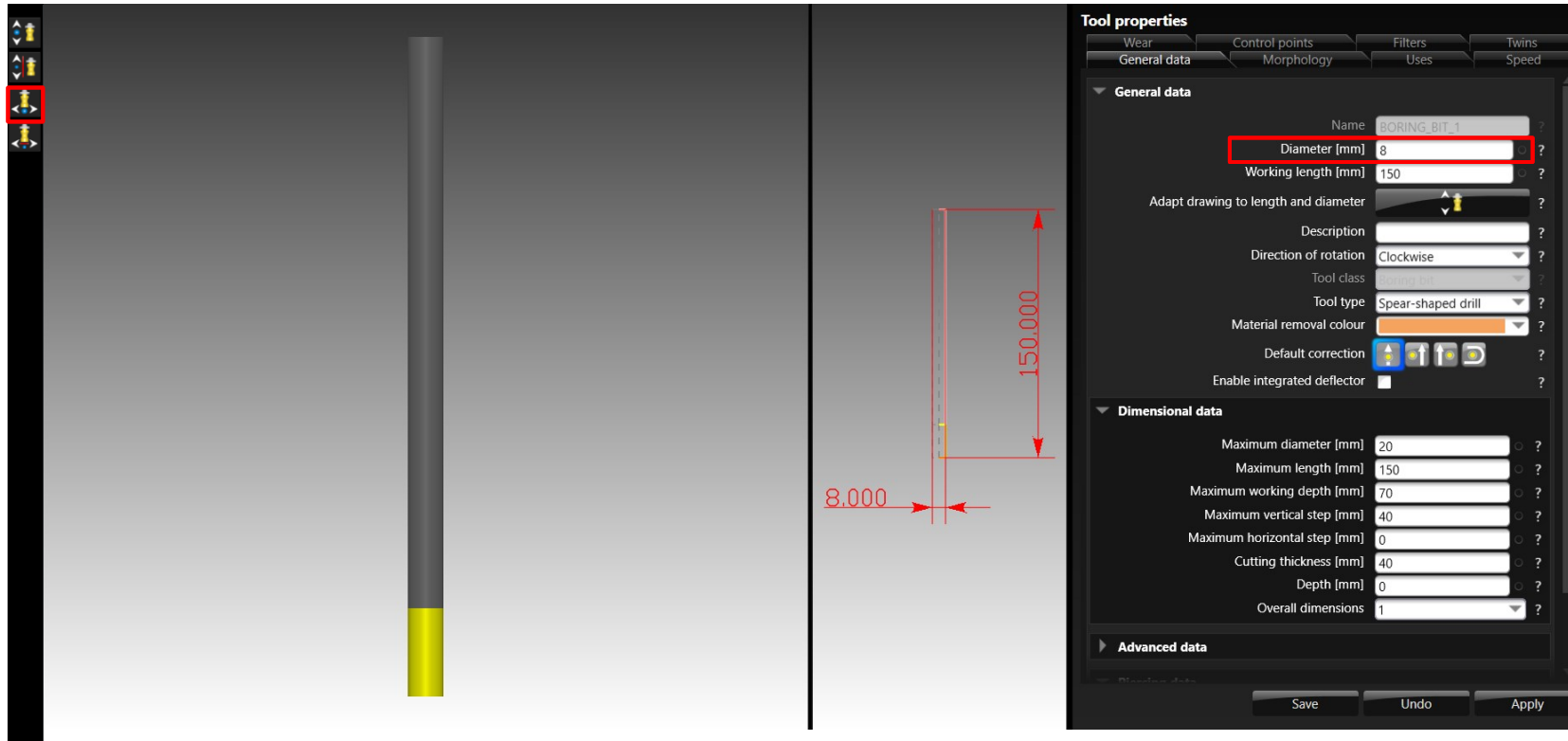
Adapt drawing to length with pick



User must now select the proper control point related to the working length parameter (I).

Boring bit - Picker

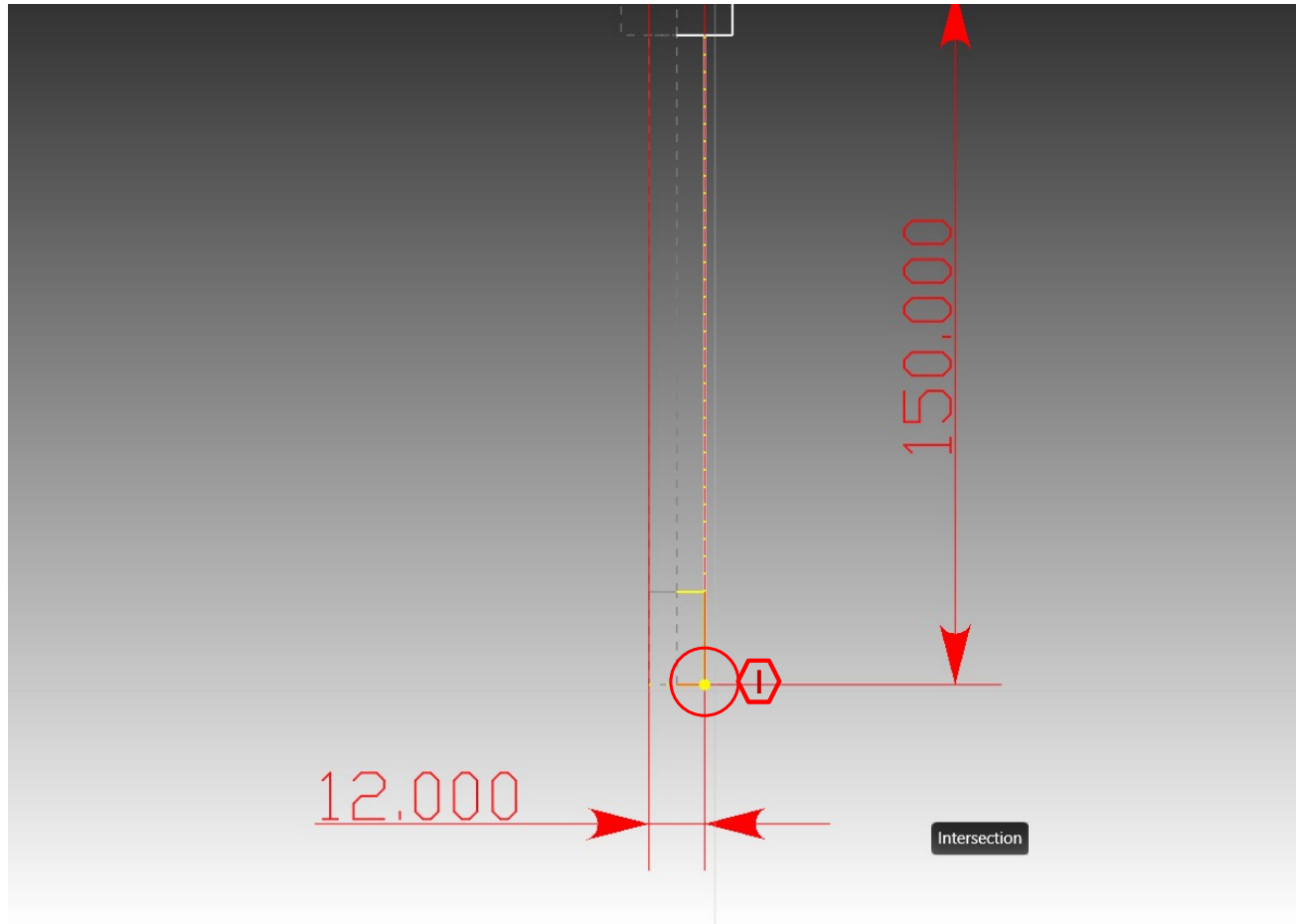
Adapt drawing to diameter with pick



If the diameter data field has been modified user can adapt the 3D drawing and the positioned drawing to the set values (i.e. 12).

Boring bit - Picker

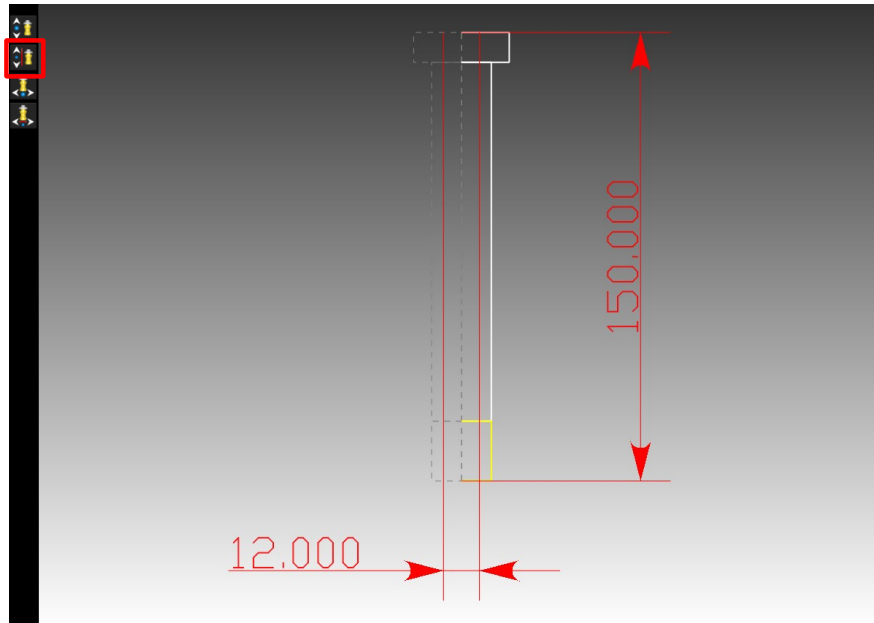
Adapt drawing to diameter with pick



User must now select the proper control point related to the diameter parameter (I).

Boring bit - Picker

Adapt length from pick on drawing



General data

Name BORING_BIT_1 ?

Diameter [mm] 12 ?

Working length [mm] 150 ?

Adapt drawing to length and diameter ?

Description ?

Direction of rotation Clockwise ?

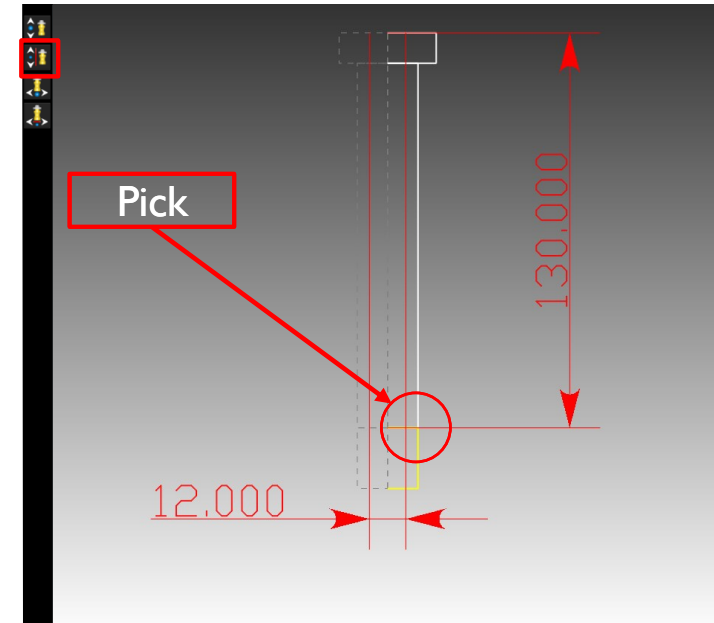
Tool class Boring bit ?

Tool type Spear-shaped drill ?

Material removal colour ?

Default correction ?

Enable integrated deflector ?



General data

Name BORING_BIT_1 ?

Diameter [mm] 12 ?

Working length [mm] 130 ?

Adapt drawing to length and diameter ?

Description ?

Direction of rotation Clockwise ?

Tool class Boring bit ?

Tool type Spear-shaped drill ?

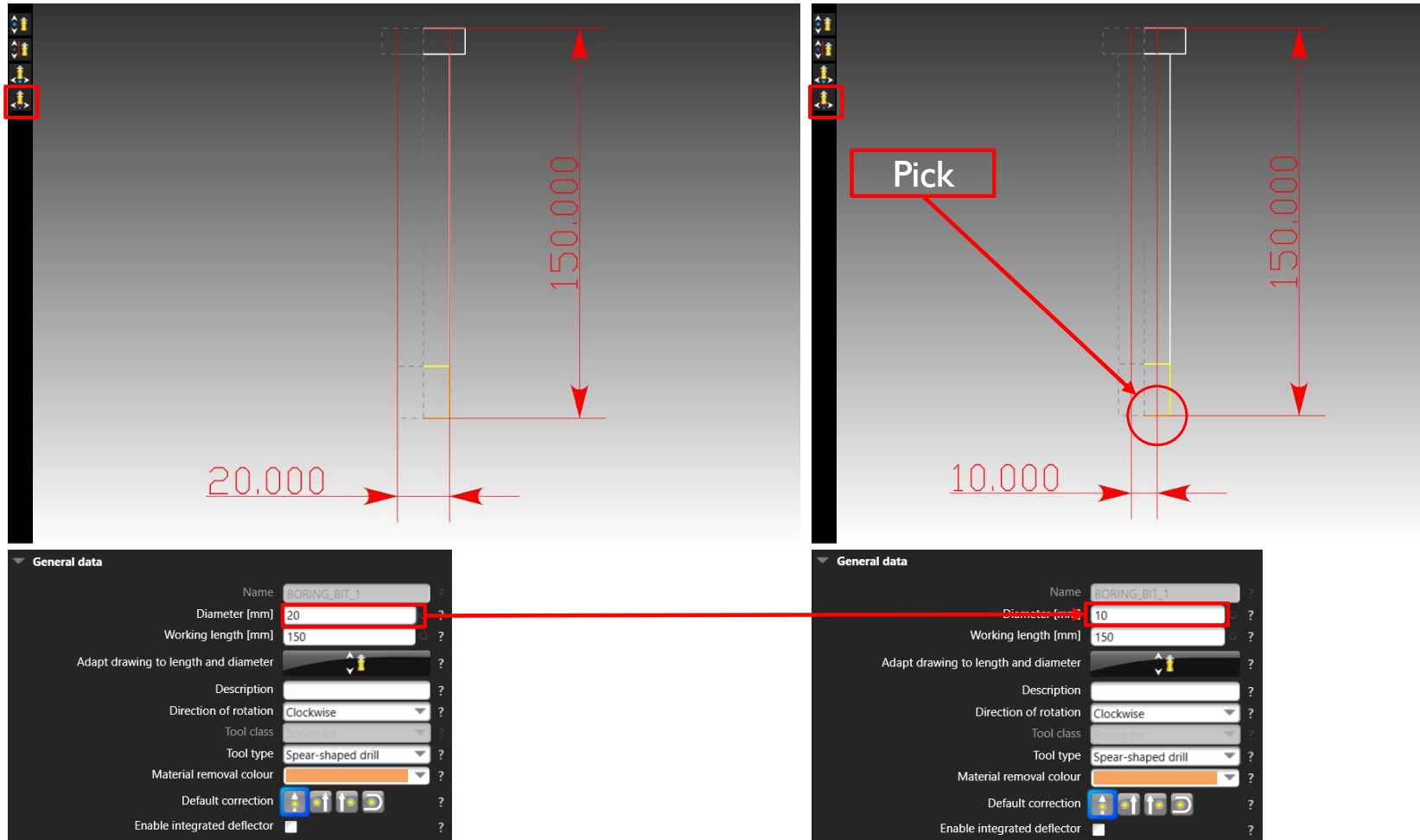
Material removal colour ?

Default correction ?

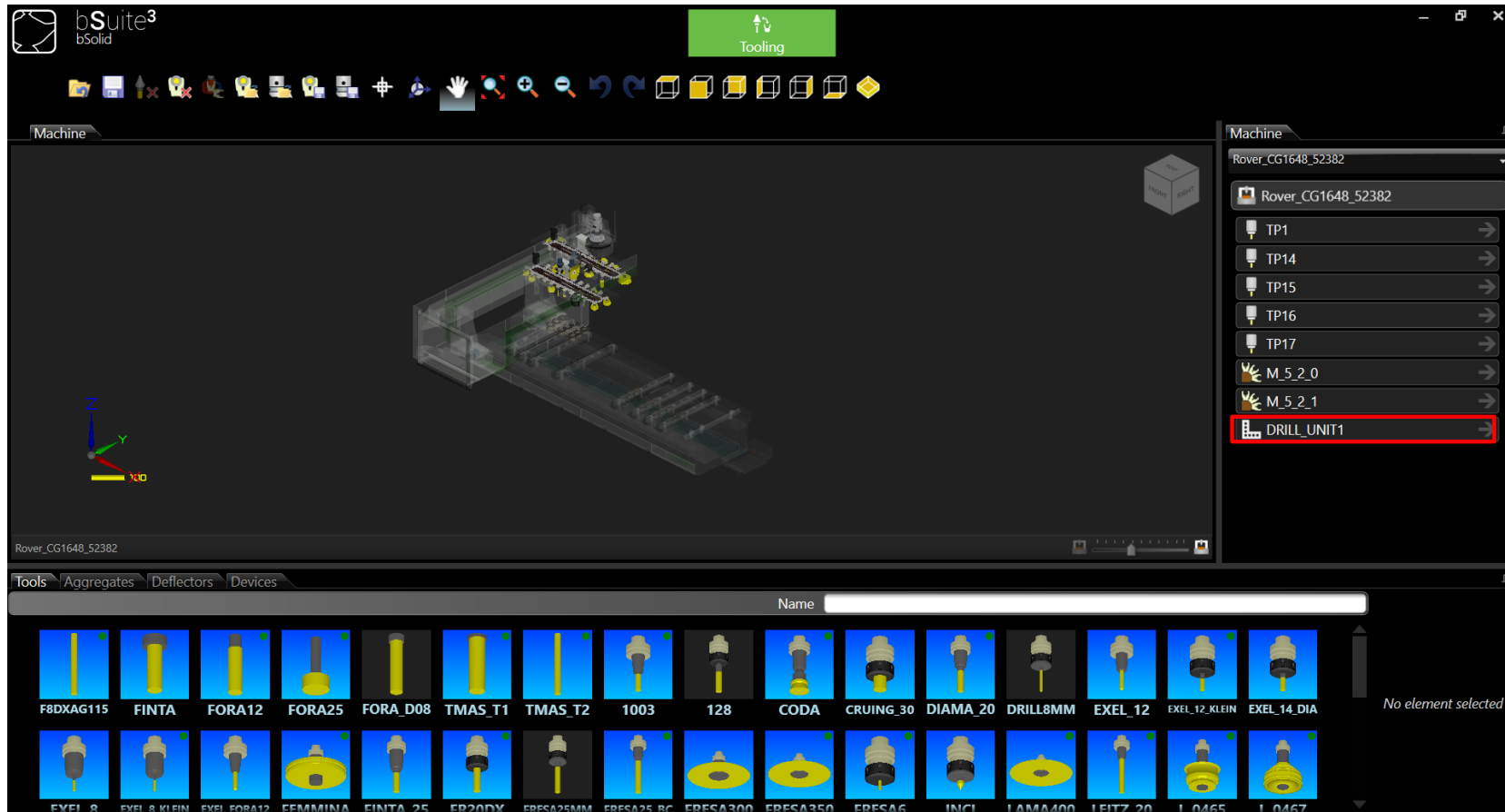
Enable integrated deflector ?

Boring bit - Picker

Adapt length from pick on drawing



Boring bit tooling - Drill Unit



Boring bit tooling - Drill Unit



Boring bit tooling - Drill Unit



In order to tool “BORING_BIT_1” user can select one or more spindle (i.e. T1 and T2) and double-click with mouse left button.

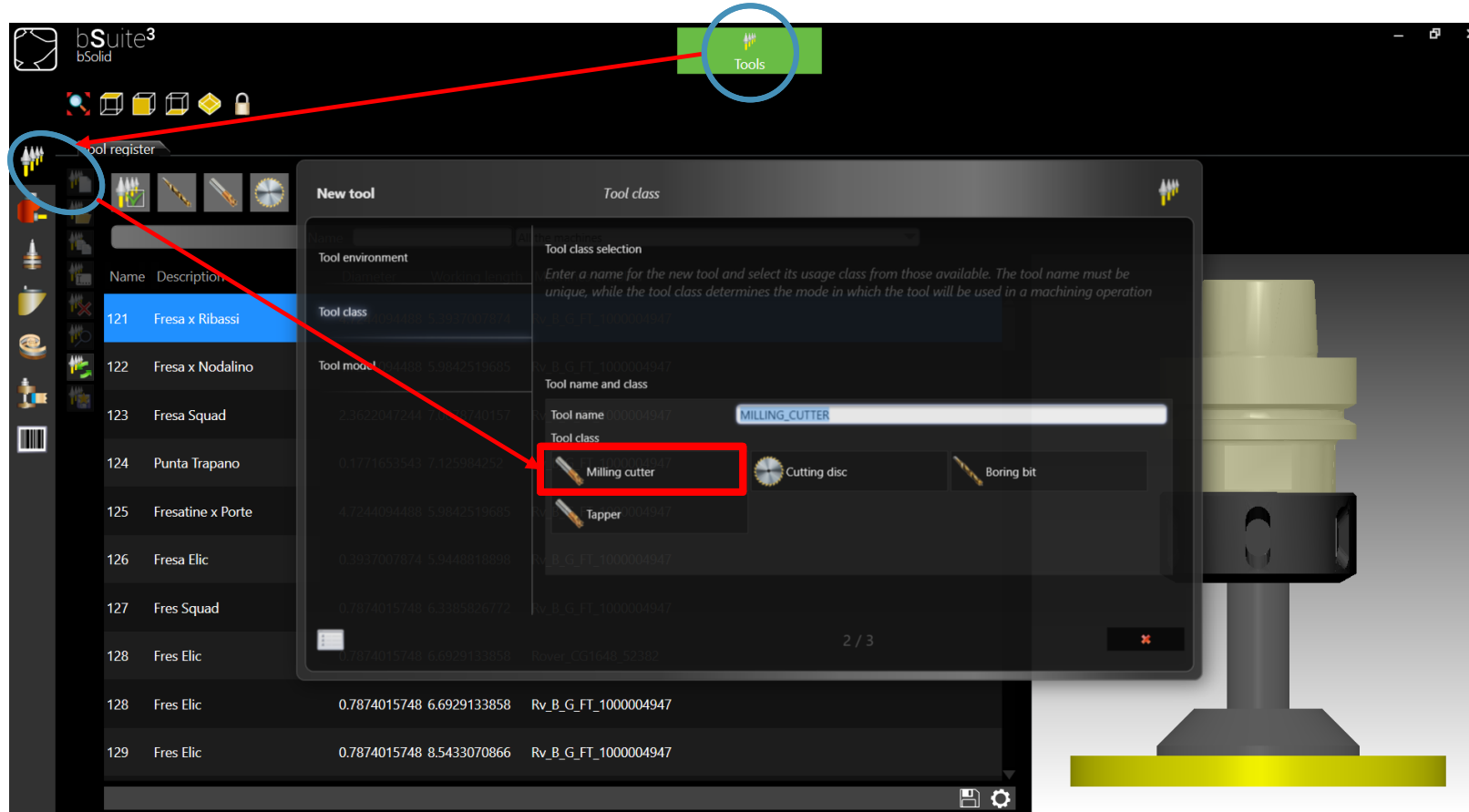
Boring bit tooling - Drill Unit



Alternatively the user can “drag and drop” selected tool into one or more available spindles.

Milling cutter creation - Tool class

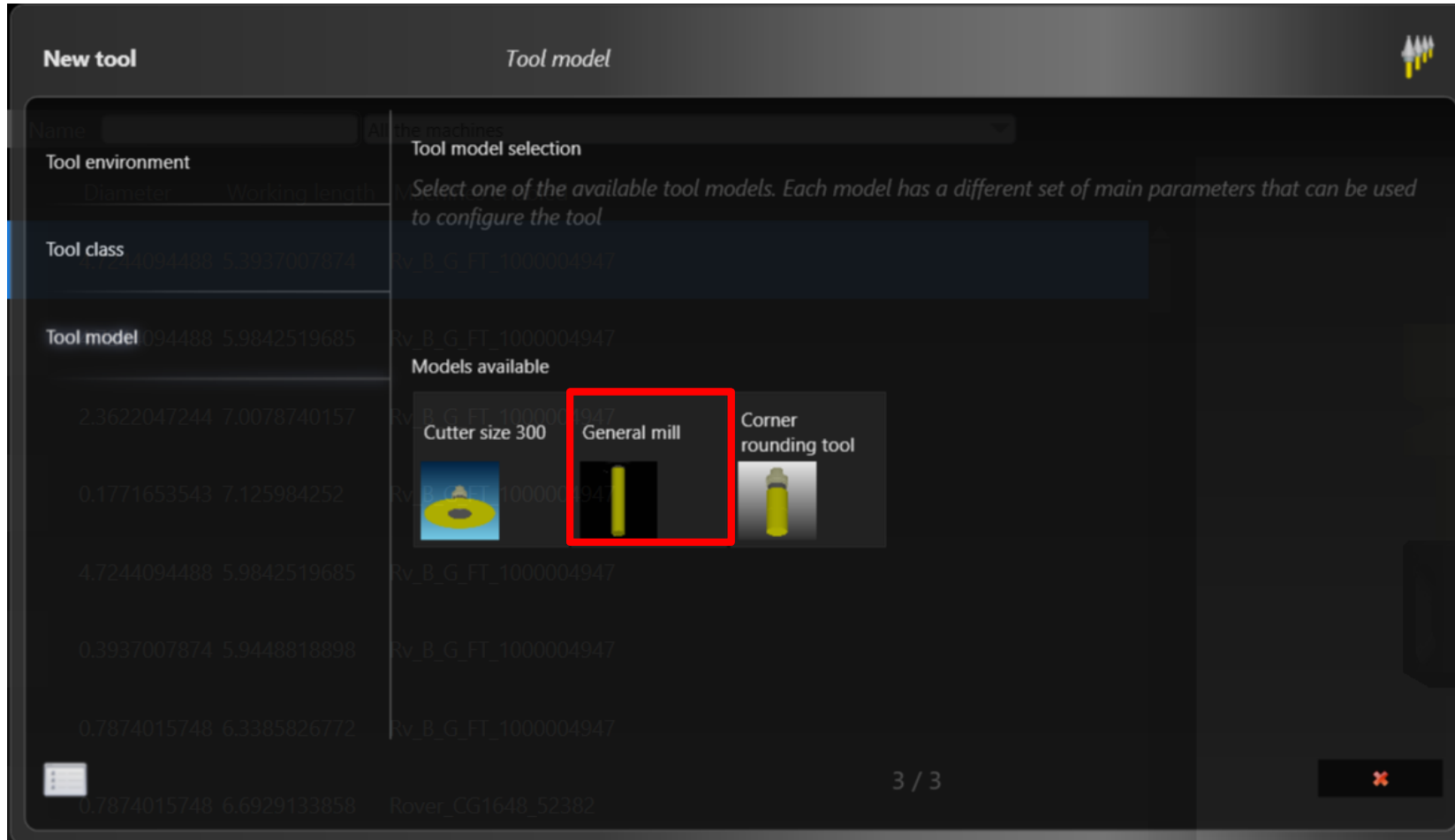
Milling cutter *



(* In order to create/edit/delete tools the proper password level must be inserted)

Milling cutter creation - Tool model

Milling cutter *



(* next slides for milling cutter tool creation will be based on General mill model)

Tool properties - General data

Milling cutter

General data

Name: BORING_BIT_1 ?

Diameter [mm]: 8 ?

Working length [mm]: 53 ?

Adapt drawing to length and diameter: ?

Description: ?

Direction of rotation: Clockwise ?

Tool class: Boring bit ?

Tool type: Normal ?

Material removal colour: ?

Default correction: ?

Enable integrated deflector: ?

Dimensional data

Maximum diameter [mm]: 8 ?

Maximum length [mm]: 53 ?

Maximum working depth [mm]: 0 ?

Maximum vertical step [mm]: 40 ?

Maximum horizontal step [mm]: 0 ?

Cutting thickness [mm]: 40 ?

Depth [mm]: 0 ?

Overall dimensions: 1 ?

Advanced data

Internal blower: ?

Enable alternative set of data: ?

Class: b.Tool.Routing ?

Jig safety [mm]: 10 ?

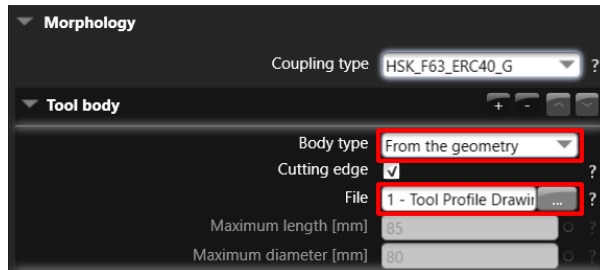
Unclamp safety [mm]: 30 ?

Same settings and parameters as boring bit creation procedure.

Internal blower: If the box is ticked, this indicates that the tool can be used with the blowing device.

Tool properties - Morphology

Milling cutter



In order to import the shape previously created (Figure 1), “From the geometry” body type must be chosen.

Finally length and diameter must be adapted from pick on drawing (Figure 2).

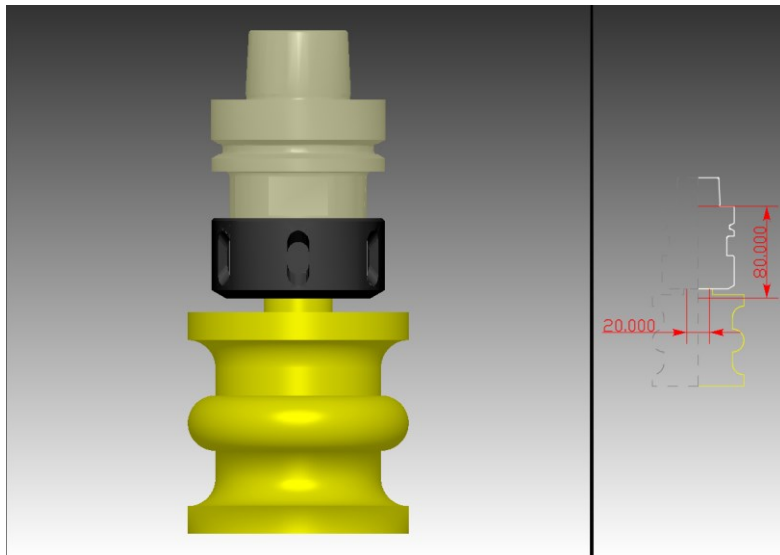


Figure 1

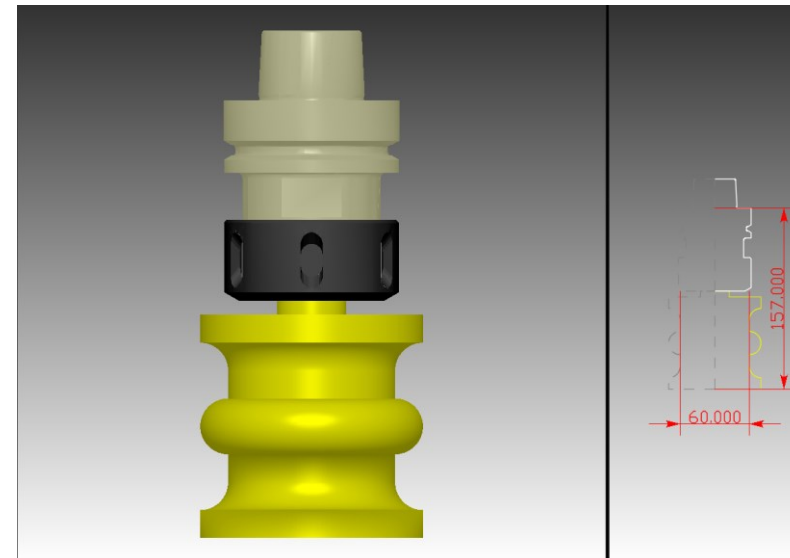


Figure 2

Tool properties - Uses/Speed

Milling cutter

▼ Uses

Milling	☒	?
Cut	☐	?
Boring	☐	?

In this case the milling cutter has been defined for milling machinings.

▼ Speed

▼ Descent speed

Descent	3000	○ ?
Impact	0	○ ?
Min descent	3000	○ ?
Max descent	3000	○ ?

▼ Feed speed

Advance	3000	○ ?
Lead-in/lead-out speed	0	○ ?
Min advance	3000	○ ?
Max advance	3000	○ ?

▼ Rotation speed

Rotation	4000	○ ?
Min rotation	1000	○ ?
Max rotation	4000	○ ?

▼ Acceleration speed

Acceleration time	0	○ ?
Deceleration time	0	○ ?

Same settings and parameters as boring bit creation procedure.

Tool properties - Wear/Control points

Milling cutter

▼ Wear

Distance travelled	0.000	?
Tool lifespan	100	?
Check tolerance	90	?

Same settings and parameters as boring bit creation procedure.

▼ Control points

Select reference from graphic area

▼ Reference list

Name	Point_L131.07_D8.00	?
Length [mm]	131.072	?
Diameter [mm]	8.000	?
Reverse rotation	☐	?

Same settings and parameters as boring bit creation procedure.

Tool properties - Filters/Twins

Milling cutter

Filters

Machines:

- ☐ Rover.CG1648.52382
- ☒ Rv.B_FT.1000004947

Family filters

Value

Application filters

Family (None) ? Value ?

Check point Default ? Depth ?

User defined filters

Family ? Value ?

Check point Default ? Depth ?

Same settings and parameters as boring bit creation procedure.

Twins

MILLING_CUTTER:1

MILLING_CUTTER:2

MILLING_CUTTER:3

MILLING_CUTTER:4

General data

Working length [mm] ?

Wear

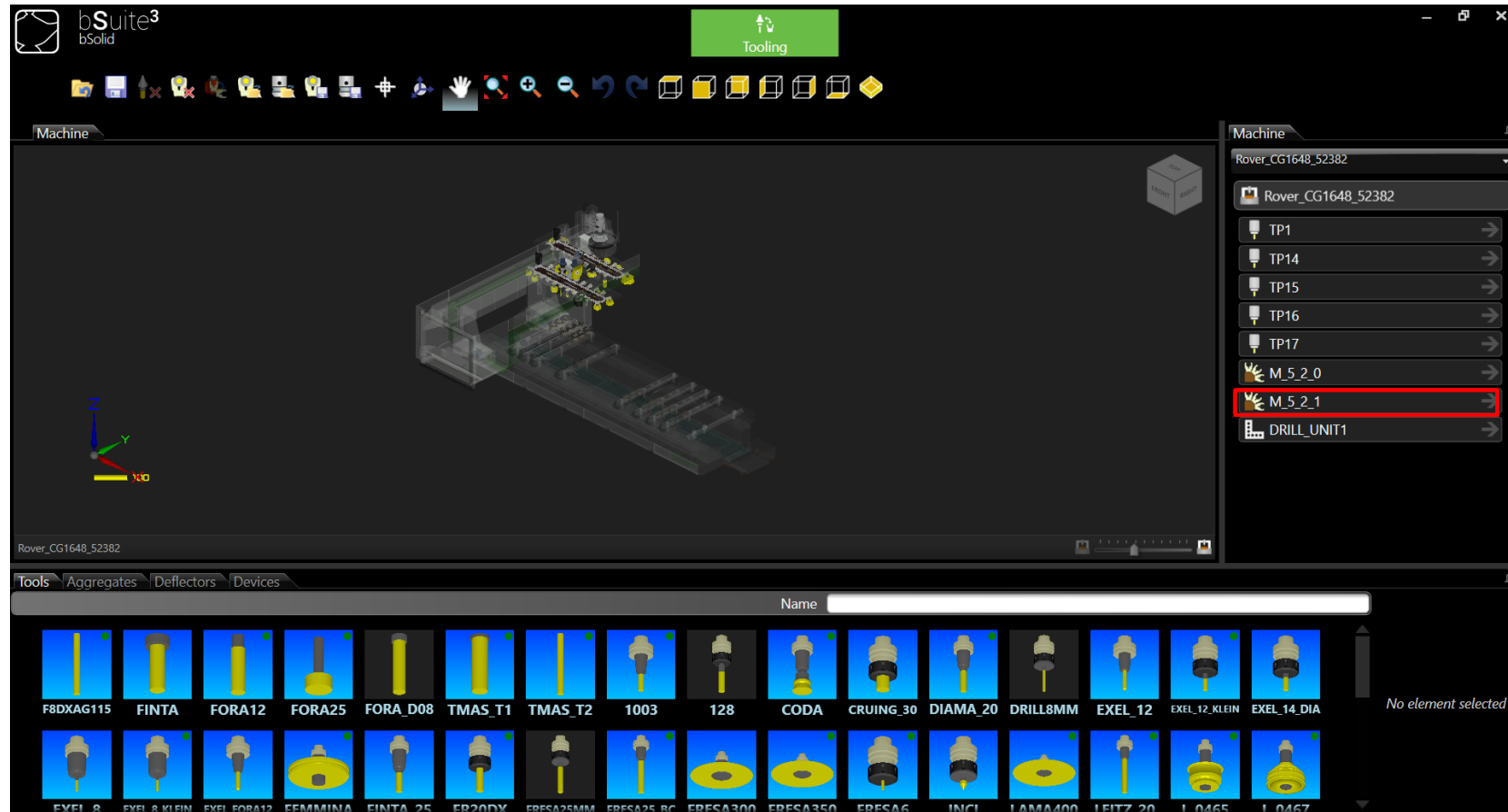
Distance travelled ?

Tool lifespan ?

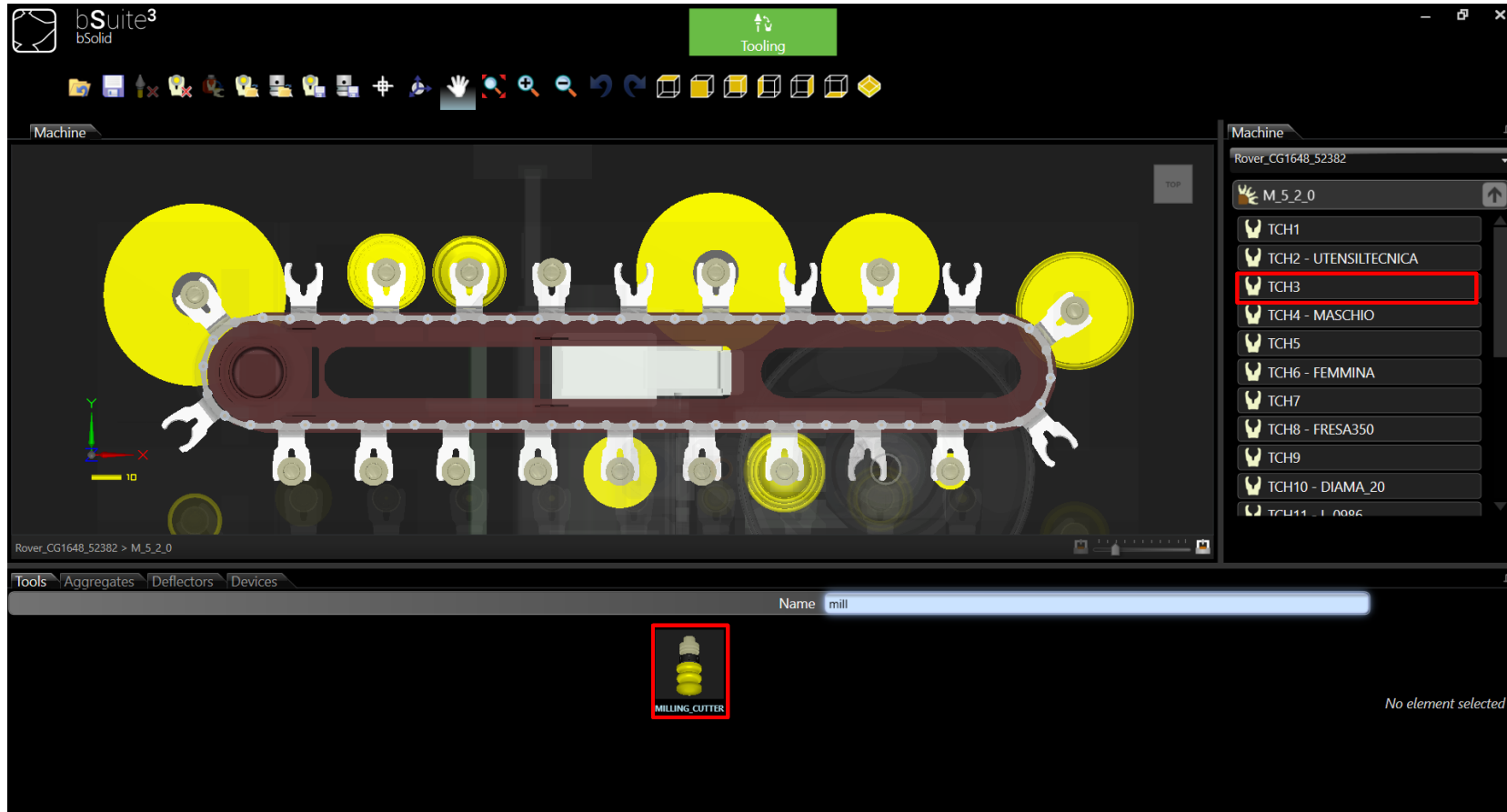
Check tolerance ?

Same settings and parameters as boring bit creation procedure.

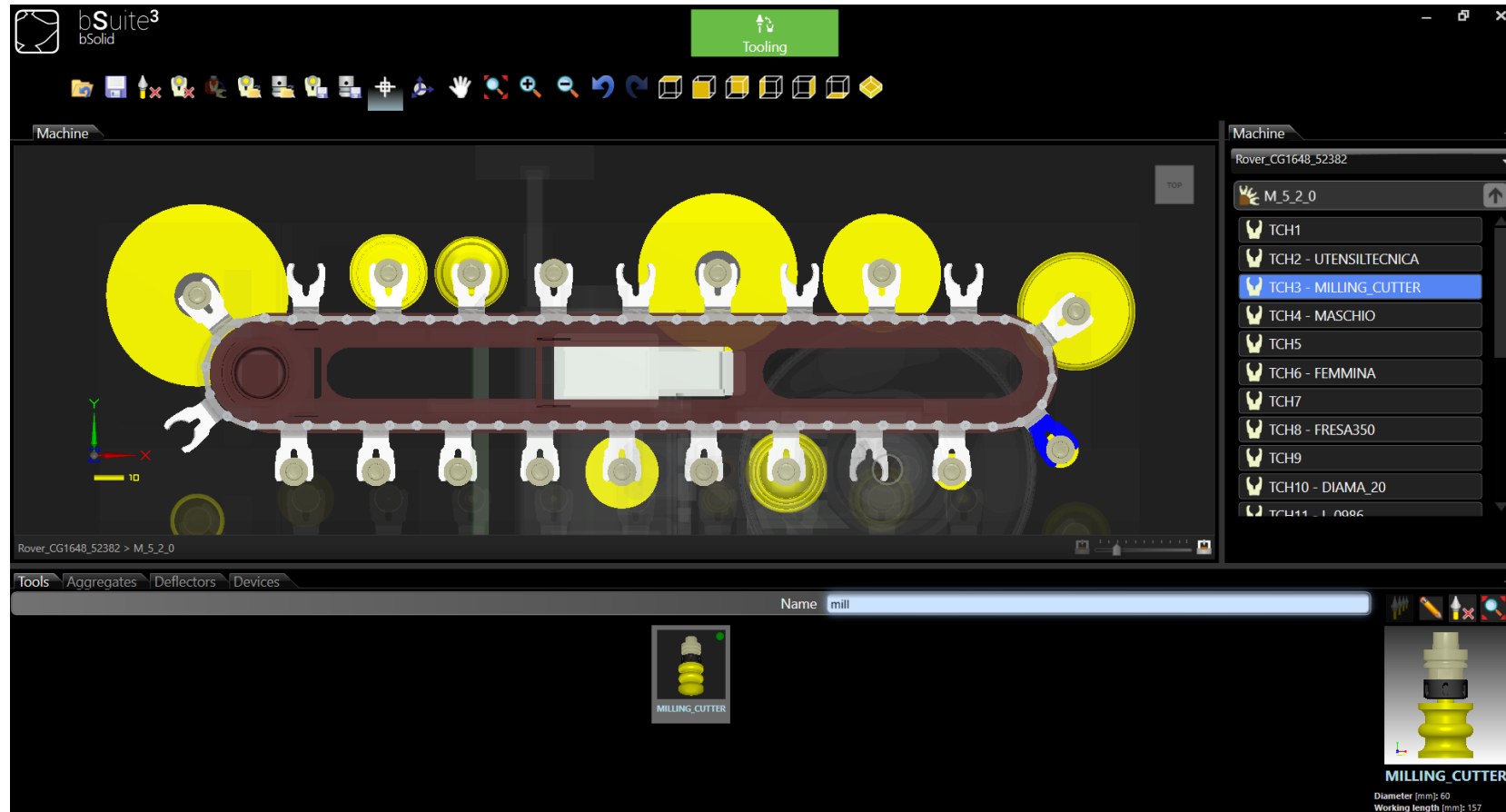
Milling cutter tooling - Tool Magazine



Milling cutter tooling - Tool Magazine

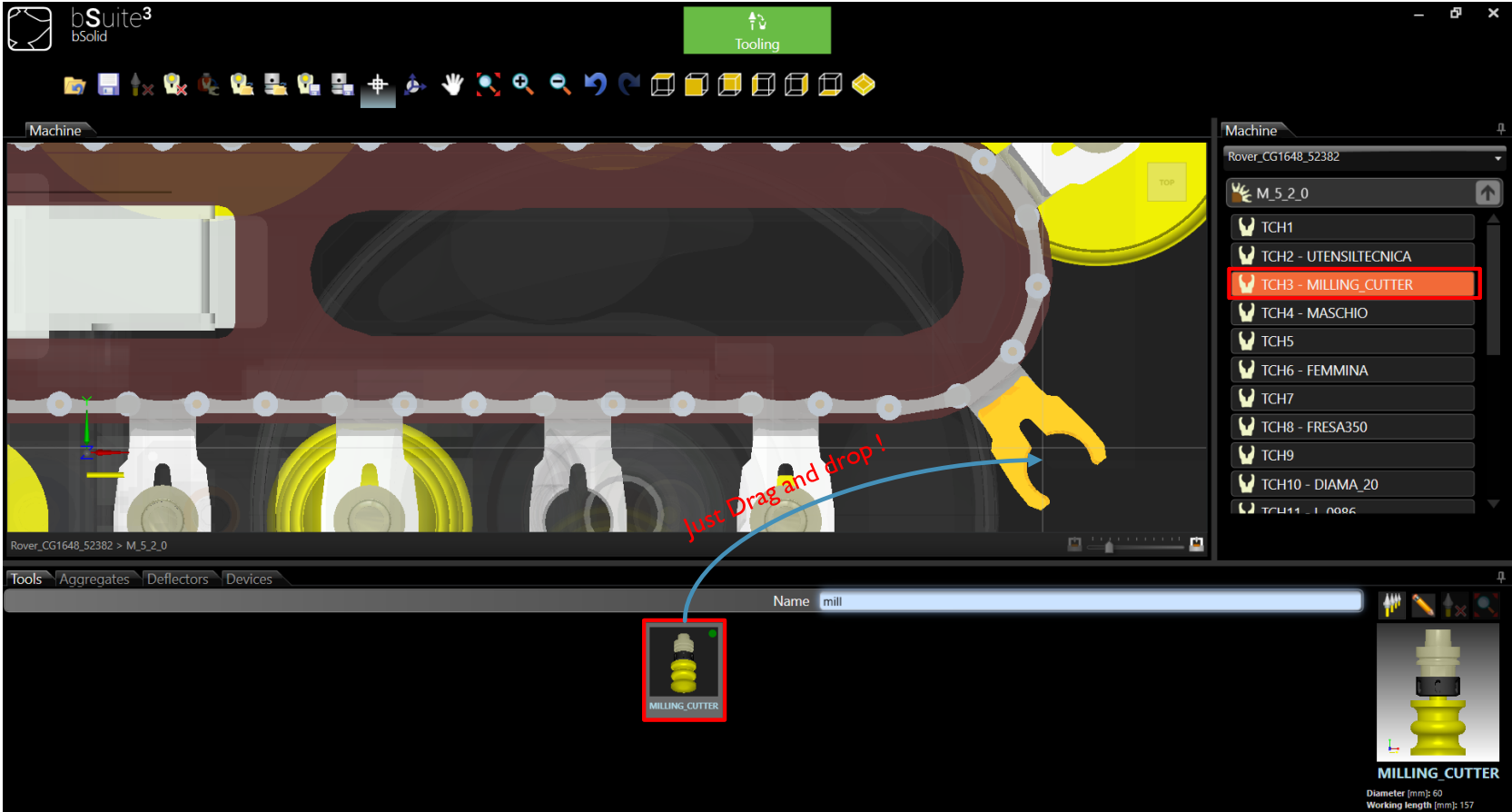


Milling cutter tooling - Tool Magazine



In order to tool "MILLING_CUTTER" user can select one tool holder (i.e. TCH3) and double-click with mouse left button.

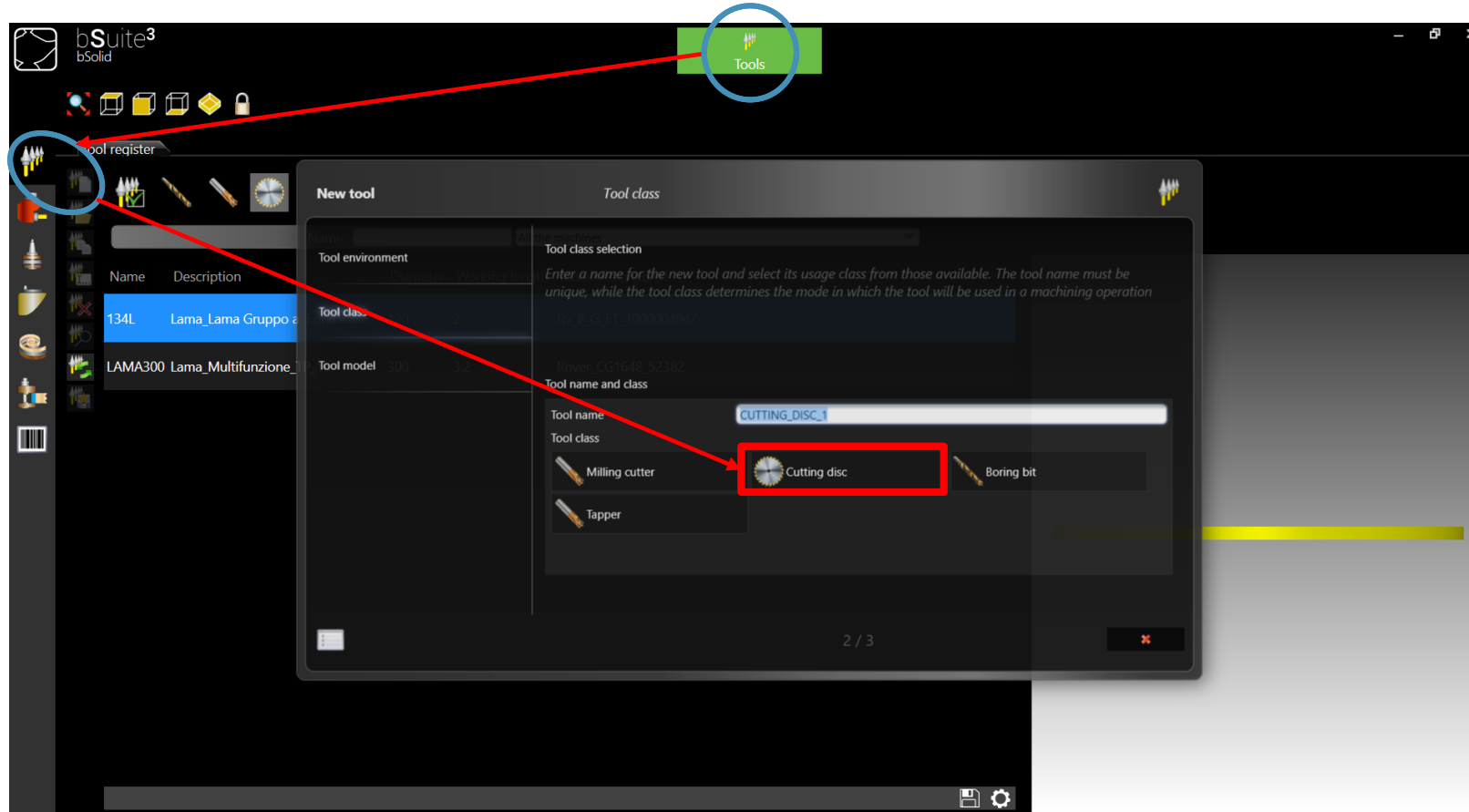
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Alternatively the user can “drag and drop” selected tool into available tool holder.

Milling cutter creation - Tool class

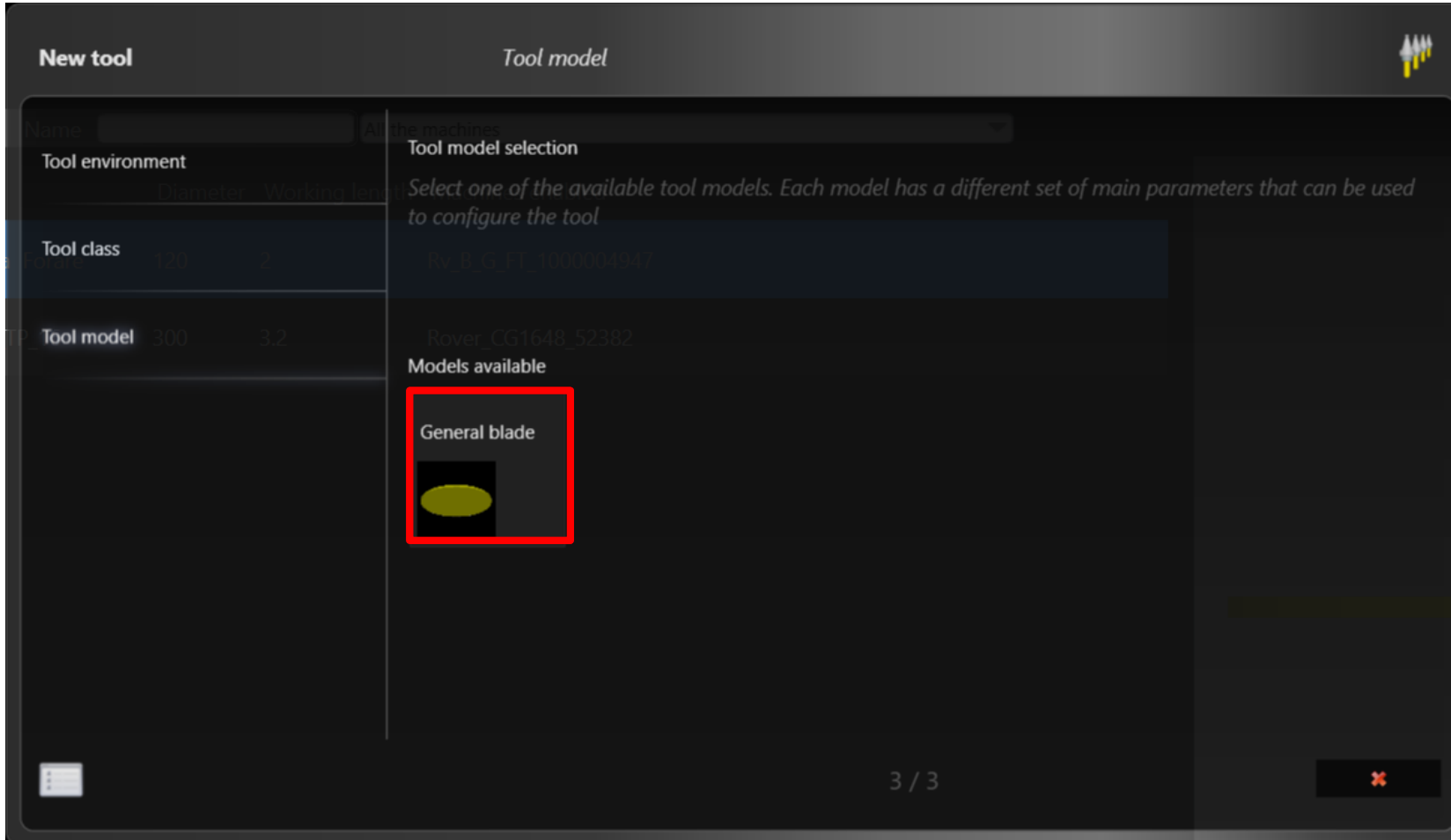
Cutting disc *



(* In order to create/edit/delete tools the proper password level must be inserted)

Milling cutter creation - Tool model

Cutting disc



New tool *Tool model*

Name: At the machines:

Tool environment	
Diameter	Working length
120	2
300	3.2

Tool class

Tool model

Tool model selection

Select one of the available tool models. Each model has a different set of main parameters that can be used to configure the tool

Ry_B_G_FT_1000004947

Rover_CG1648_52382

Models available

General blade

3 / 3

(* next slides for milling cutter tool creation will be based on General mill model)

Tool properties - General data

Cutting disc

General data

Name: CUTTING_DISC_1 ?

Diameter [mm]: 120 ?

Working length [mm]: 4 ?

Adapt drawing to length and diameter:  ?

Description: ?

Direction of rotation: Clockwise ?

Tool class: Cutting disc ?

Tool type: Blade ?

Material removal colour:  ?

Default correction:  ?

Enable integrated deflector: ☐ ?

Dimensional data

Maximum diameter [mm]: 0 ?

Maximum length [mm]: 4 ?

Maximum working depth [mm]: 0 ?

Maximum vertical step [mm]: 4 ?

Maximum horizontal step [mm]: 20 ?

Cutting thickness [mm]: 4 ?

Depth [mm]: 0 ?

Overall dimensions: 1 ?

Advanced data

Enable alternative set of data: ☐ ?

Class: b.Tool.Routing ?

Jig safety [mm]: 10 ?

Unclamp safety [mm]: 30 ?

Same settings and parameters as previous procedures.

Same settings and parameters as previous procedures.

Tool properties - Morphology

Cutting disc

Morphology

Coupling type

Tool body

Body type

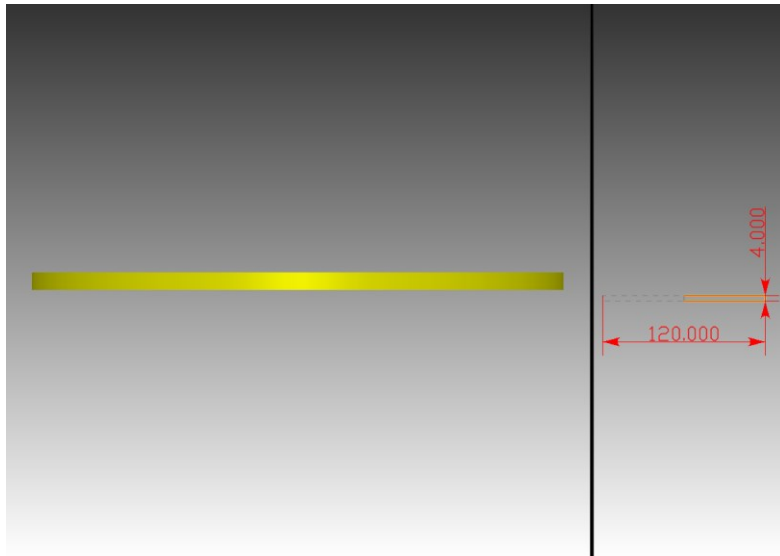
Cutting edge ☒

Length [mm]

Diameter [mm]

Plate radius [mm]

When selecting cutting disc tool the “coupling type” field will be inhibited.



As seen before user can pick from the drawing or adapt the drawing from length/diameter based on selected pick point.

Tool properties - Uses/Speed

Cutting disc

▼ Uses

Milling	☐	?
Cut	☒	?
Boring	☐	?

In this case the cutting disc has been defined for cut machinings.

▼ Speed

▼ Descent speed

Descent	3000	○ ?
Impact	0	○ ?
Min descent	3000	○ ?
Max descent	3000	○ ?

▼ Feed speed

Advance	3000	○ ?
Lead-in/lead-out speed	0	○ ?
Min advance	3000	○ ?
Max advance	3000	○ ?

▼ Rotation speed

Rotation	4000	○ ?
Min rotation	1000	○ ?
Max rotation	4000	○ ?

▼ Acceleration speed

Acceleration time	0	○ ?
Deceleration time	0	○ ?

Same settings and parameters as previous procedures.

Tool properties - Wear/Control points

Cutting disc

▼ Wear

Distance travelled	0.000	?
Tool lifespan	100	?
Check tolerance	90	?

Same settings and parameters as previous procedures.

▼ Control points

Select reference from graphic area

▼ Reference list

Name	Point_L131.07_D8.00	?
Length [mm]	131.072	?
Diameter [mm]	8.000	?
Reverse rotation	☐	?

Same settings and parameters as previous procedures.

Tool properties - Filters/Twins

Cutting disc

Filters

Machines:

- ☐ Rover.CG1648.52382
- ☒ Rv.B_FT.1000004947

Family filters

Value

Application filters

Family (None) ? Value ?

Check point Default ? Depth ?

User defined filters

Family ? Value ?

Check point Default ? Depth ?

Same settings and parameters as previous procedures.

Twins

☒ CUTTING_DISC_1:1

☐ CUTTING_DISC_1:2

☐ CUTTING_DISC_1:3

☐ CUTTING_DISC_1:4

General data

Working length [mm] ?

Wear

Distance travelled ?

Tool lifespan ?

Check tolerance ?

Same settings and parameters as previous procedures.

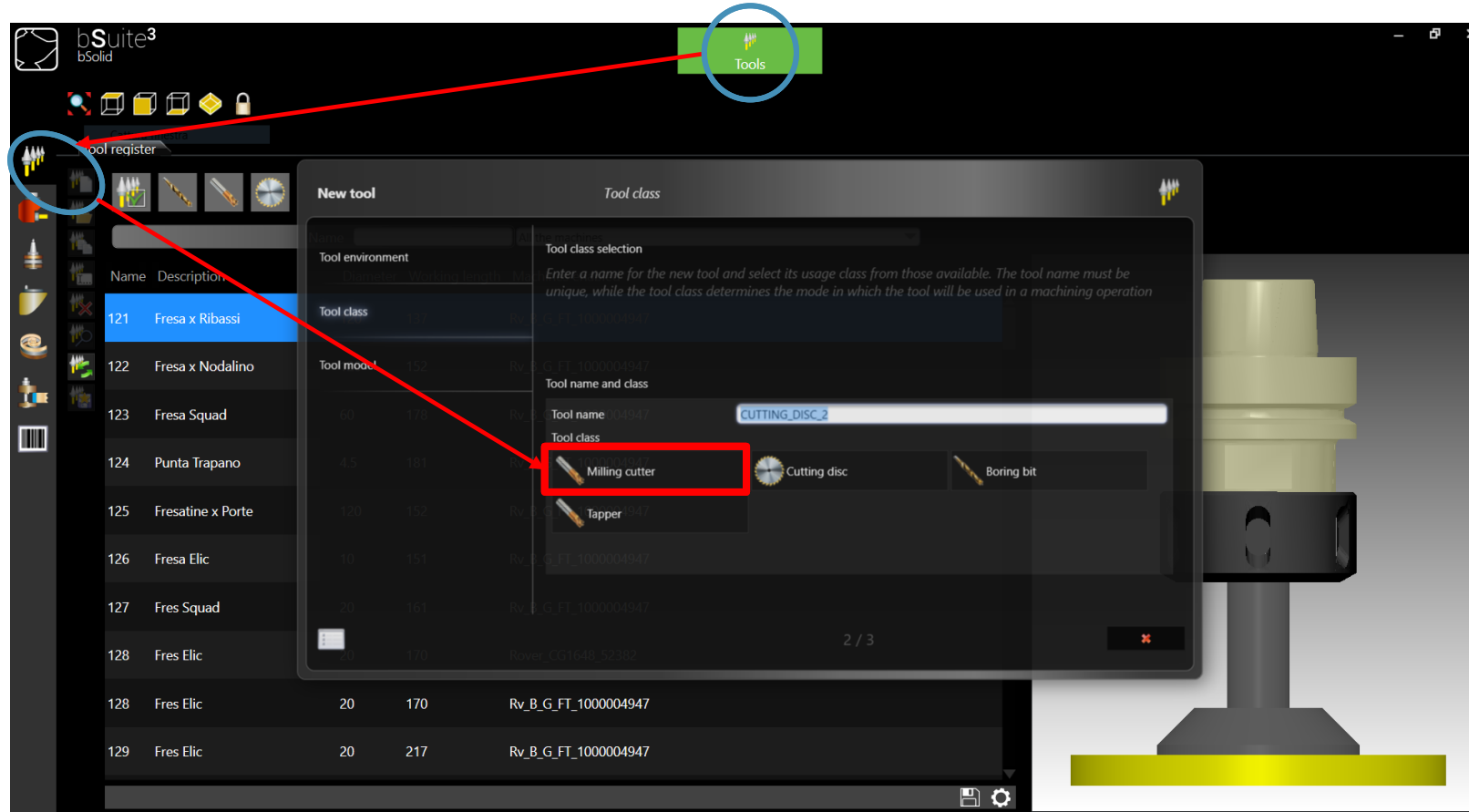
Cutting disc tooling

As seen before when designing a cutting disc its morphology will not allow to chose a cone; in order to tool a cutting disc the machine must be predisposed with a specific electro spindle (Typically TP8).
Alternatively the cutting disc can be tooled in ad-hoc aggregate.

In order to bypass this limitations the software allow to design a cutting disc as a milling cutter tool (Cutter size 300).

Milling cutter creation - Tool class

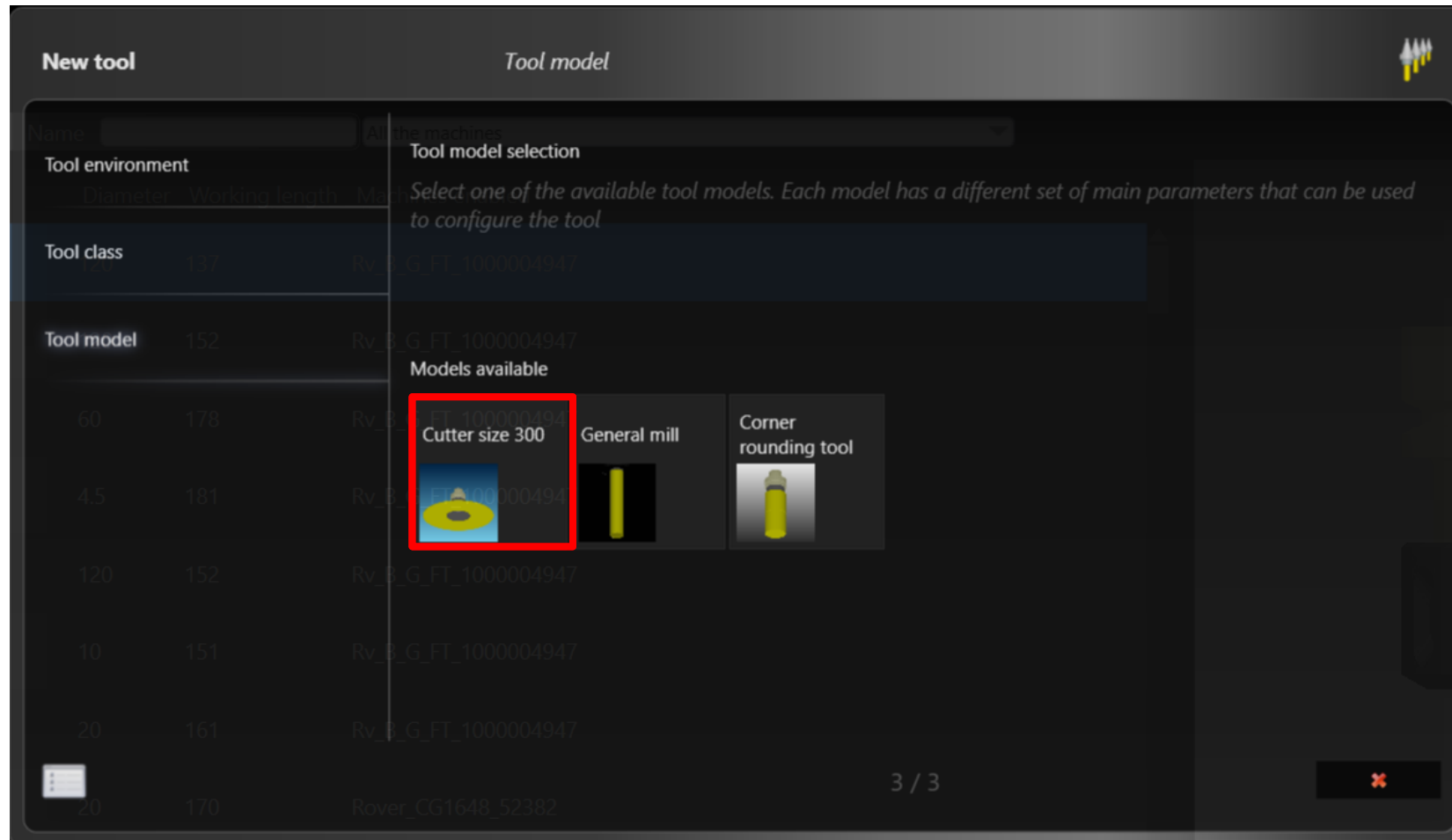
Cutter size 300 *



(* In order to create/edit/delete tools the proper password level must be inserted)

Milling cutter creation - Tool model

Cutter size 300



Tool properties - General data

Cutter size 300

General data

Name: CUTTING_DISC_2 ?

Diameter [mm]: 300 ?

Working length [mm]: 96.250000209 ?

Adapt drawing to length and diameter ?

Description: fresa lama 300 ?

Direction of rotation: Clockwise ?

Tool class: Milling cutter ?

Tool type: End mill ?

Material removal colour: [orange] ?

Default correction: [blue icon] ?

Enable integrated deflector: [checkbox] ?

Dimensional data

Maximum diameter [mm]: 300 ?

Maximum length [mm]: 101.5 ?

Maximum working depth [mm]: 4 ?

Maximum vertical step [mm]: 80 ?

Maximum horizontal step [mm]: 20 ?

Cutting thickness [mm]: 2.5 ?

Depth [mm]: 4 ?

Overall dimensions: 1 ?

Advanced data

Enable alternative set of data: [checkbox] ?

Class: b.Tool.Routing ?

Jig safety [mm]: 10 ?

Unclamp safety [mm]: 30 ?

Same settings and parameters as previous procedures.

Same settings and parameters as previous procedures.

Tool properties - Morphology

Cutter size 300

Morphology

Coupling type **HSK_F63_ERC40** ?

Tool body + - ^ v

Body type **From the geometry** ?

Cutting edge ☐ ?

File **FRESA300.bSolid** ... ?

Maximum length [mm] **69** ?

Maximum diameter [mm] **100** ?

Body type **Cylinder** ?

Cutting edge ☒ ?

Length [mm] **2.5** ?

Diameter [mm] **300** ?

Plate radius [mm] **0** ?

Body type **LFC Shape** ?

Cutting edge ☐ ?

Length [mm] **4** ?

Diameter [mm] **100** ?

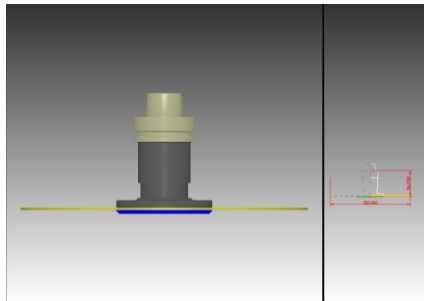
Upper chamfer ☐ ?

Upper plate radius [mm] **0** ?

Lower chamfer ☒ ?

Lower plate radius [mm] **3** ?

Now cutting disc can be coupled with a cone (and tooled in a tool magazine).



As seen before user can pick from the drawing or adapt the drawing from length/diameter based on selected pick point.

Tool properties - Uses/Speed

Cutter size 300

▼ Uses

Milling	☒	?
Cut	☒	?
Boring	☐	?

In this case the cutting disc has been defined for both milling and cut machinings.

▼ Speed

▼ Descent speed

Descent	3000	○ ?
Impact	0	○ ?
Min descent	3000	○ ?
Max descent	3000	○ ?

▼ Feed speed

Advance	3000	○ ?
Lead-in/lead-out speed	0	○ ?
Min advance	3000	○ ?
Max advance	3000	○ ?

▼ Rotation speed

Rotation	4000	○ ?
Min rotation	1000	○ ?
Max rotation	4000	○ ?

▼ Acceleration speed

Acceleration time	0	○ ?
Deceleration time	0	○ ?

Same settings and parameters as previous procedures.

Tool properties - Wear/Control points

Cutter size 300

▼ Wear

Distance travelled	0.000	?
Tool lifespan	100	?
Check tolerance	90	?

Same settings and parameters as previous procedures.

▼ Control points

Select reference from graphic area

▼ Reference list

Name	Point_L131.07_D8.00	?
Length [mm]	131.072	?
Diameter [mm]	8.000	?
Reverse rotation	☐	?

Same settings and parameters as previous procedures.

Tool properties - Filters/Twins

Cutter size 300

Filters

Machines:

- ☐ Rover.CG1648.52382
- ☒ Rv.B_FT.1000004947

Family filters

Value

Application filters

Family (None) ? Value ?

Check point Default ? Depth ?

User defined filters

Family ? Value ?

Check point Default ? Depth ?

Same settings and parameters as previous procedures.

Twins

- CUTTING_DISC_2:1
- CUTTING_DISC_2:2
- CUTTING_DISC_2:3
- CUTTING_DISC_2:4

General data

Working length [mm] 96.25

Wear

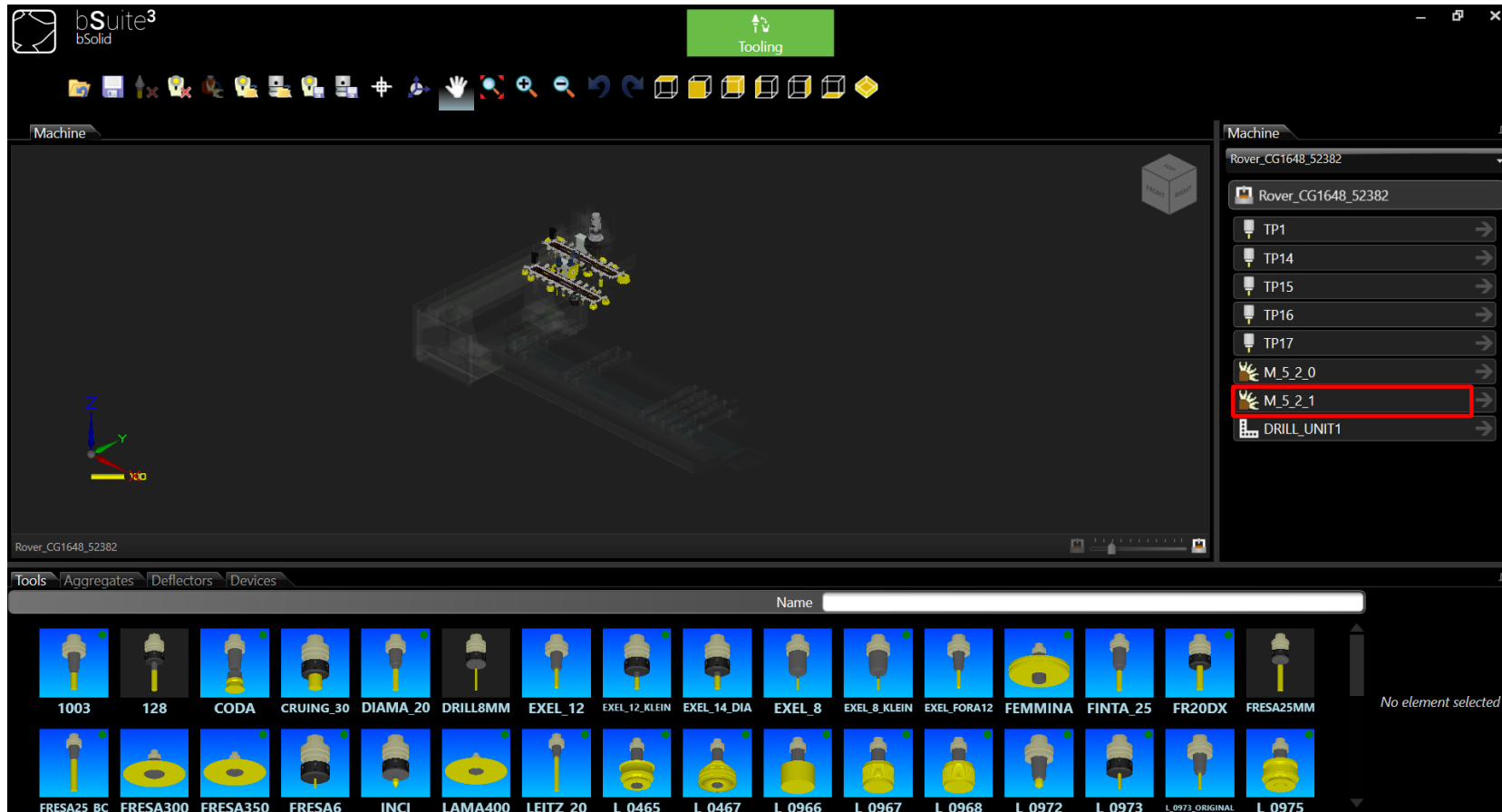
Distance travelled 0.000

Tool lifespan 0

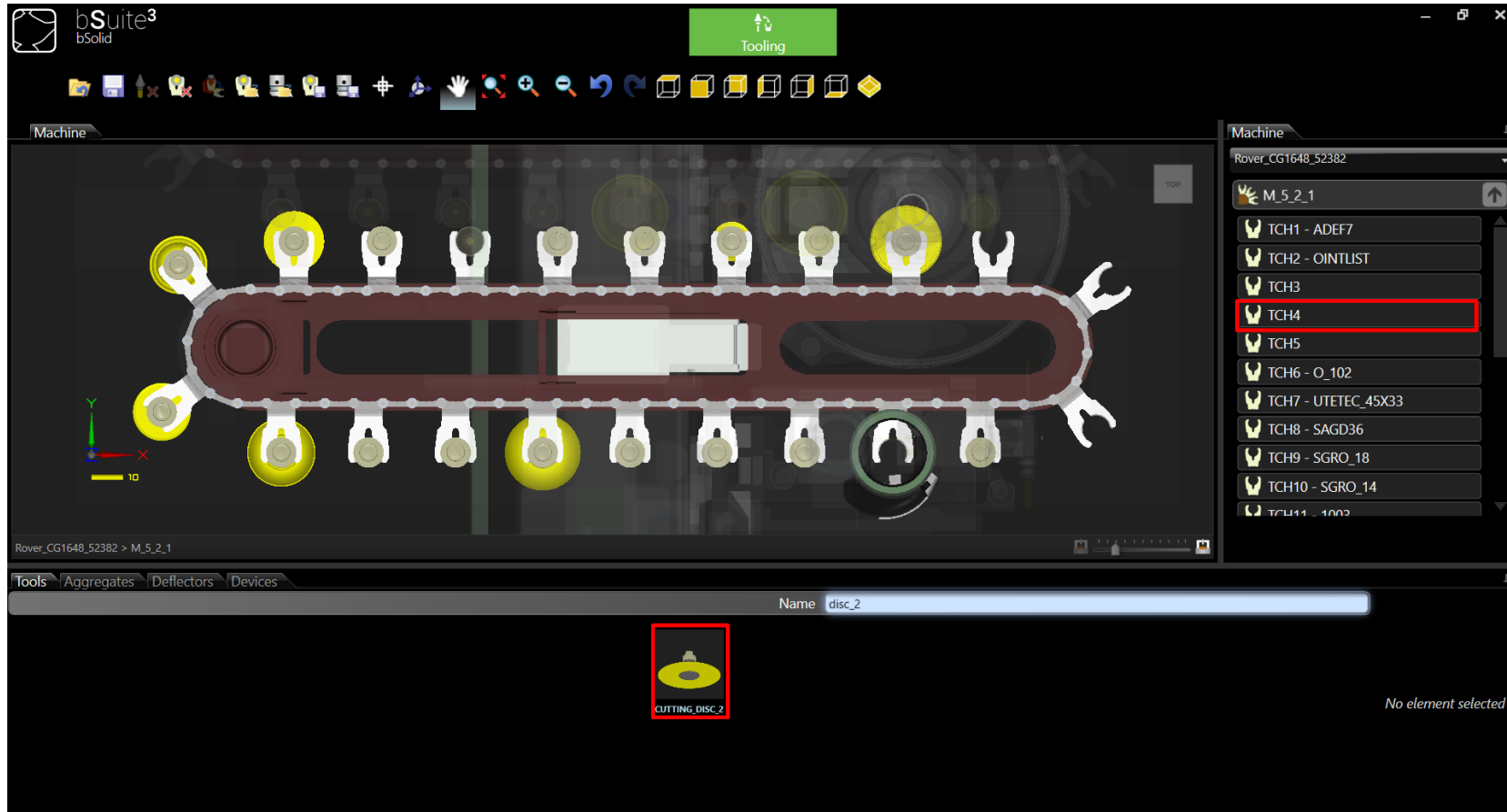
Check tolerance 0

Same settings and parameters as previous procedures.

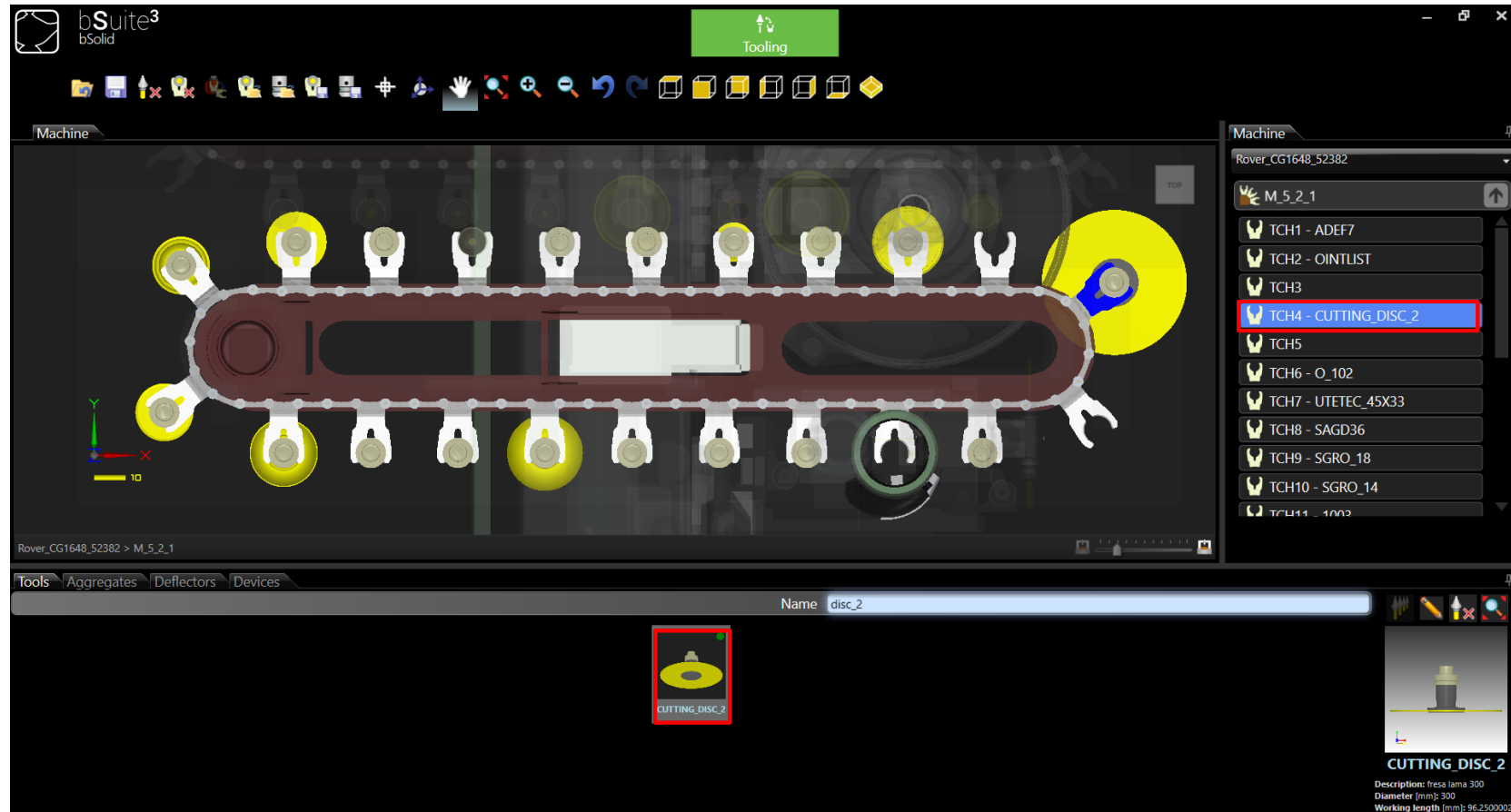
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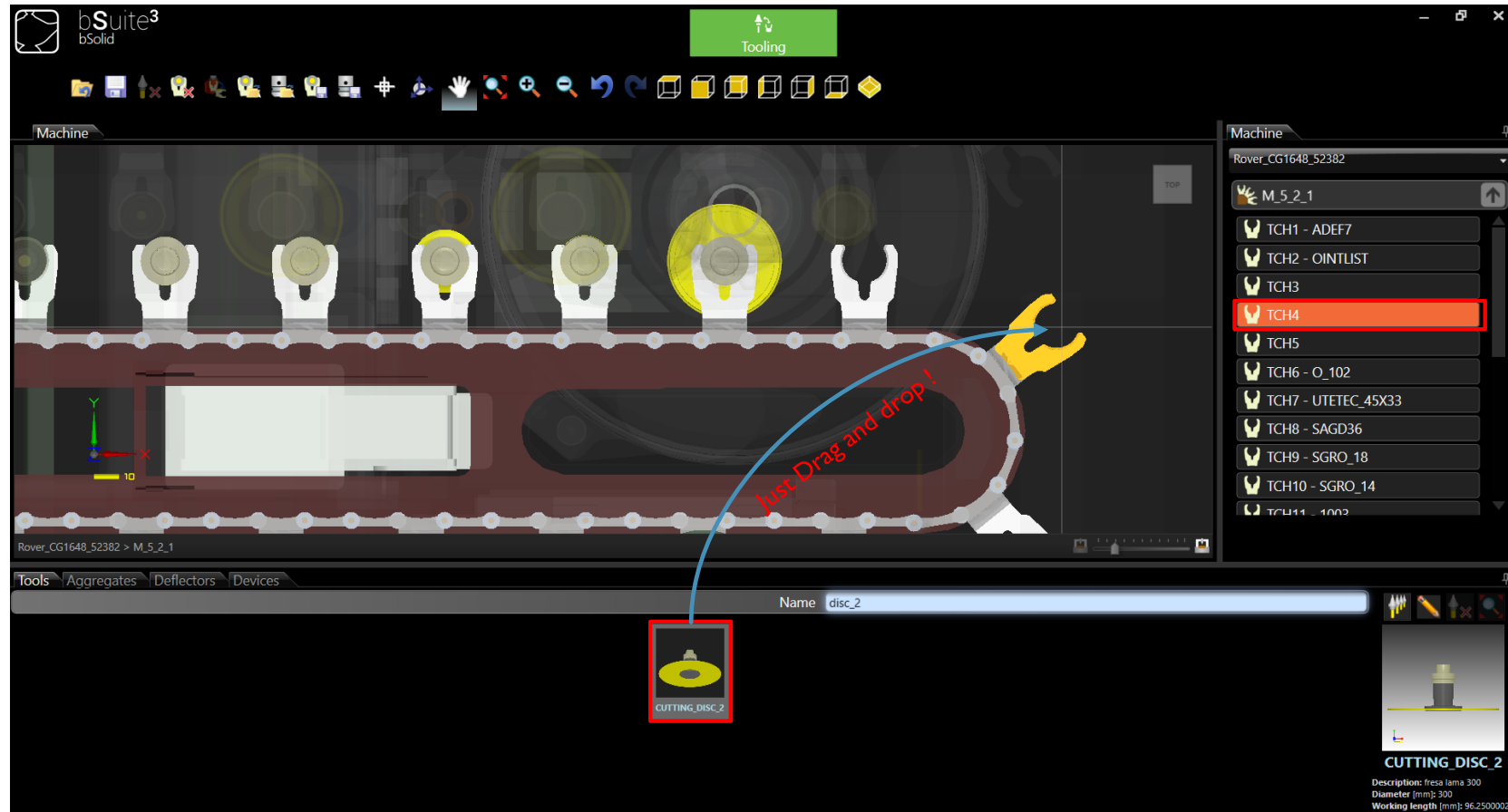


Milling cutter tooling - Tool Magazine



In order to tool “CUTTING_DISC_2” user can select one tool holder (i.e. TCH4) and double-click with mouse left button.

Milling cutter tooling - Tool Magazine



Alternatively the user can “drag and drop” selected tool into available tool holder.