

numroto®

Total solution for tool grinding

New features in NUMROTO 4.3.0 and 5.0.0

■ End mills

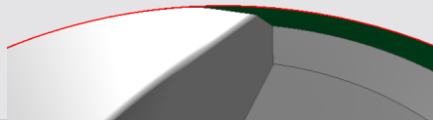
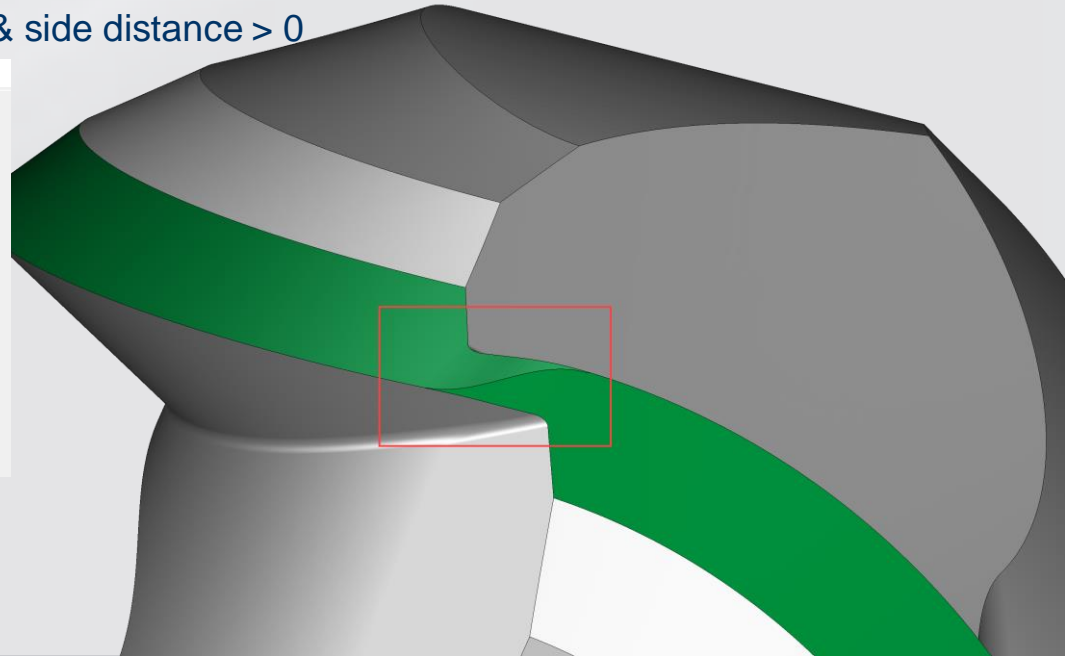
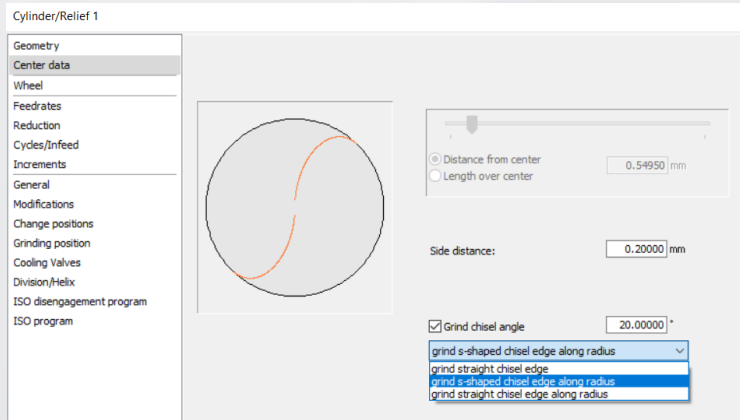
- Drills / Step drills
- Form cutters
- 3D-Simulation
- NR Draw
- Other topics
- Other general innovations
- Planned innovations



Cutting edge and chisel edge exactly on radius

(Special grinding functions, 4.3.0)

- S-shaped or straight chisel edge which follows the ball nose radius precisely
- Gashout-X and relief are precisely on the ball nose radius cutting edge
- Only for tools with 2 cutting edges to center & side distance > 0

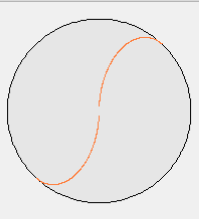


Straight chisel edge (on radius) grinding

(Special grinding functions,4.3.0)

Cylinder/Relief 1

- Geometry
- Center data
- Wheel
- Feedrates
- Reduction
- Cycles/Infeed
- Increments
- General
- Modifications
- Change positions
- Grinding position
- Cooling Valves
- Division/Helix
- ISO disengagement program
- ISO program



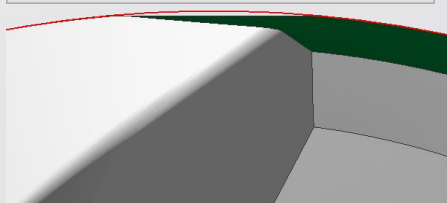
Distance from center
 Length over center

Side distance:

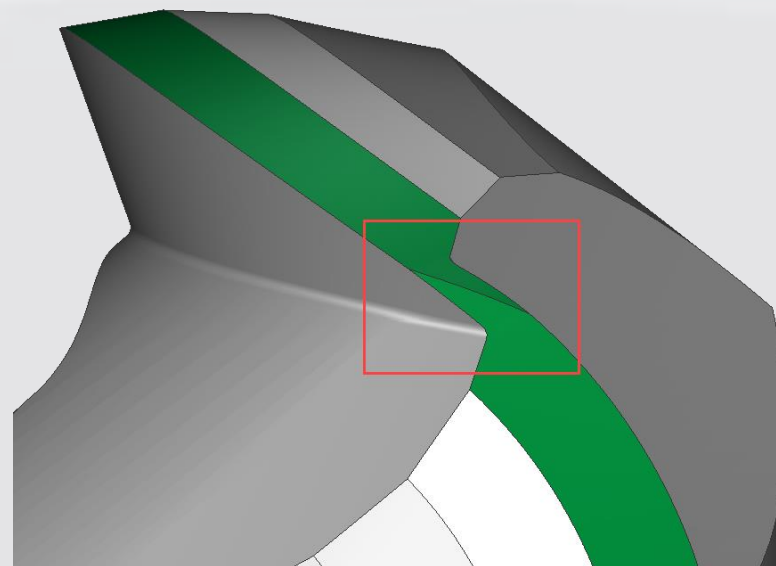
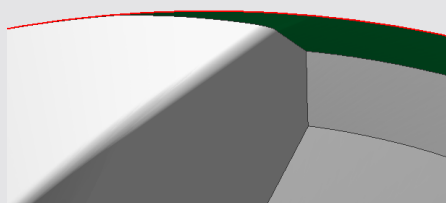
Grind chisel angle

- grind straight chisel edge along radius
- grind straight chisel edge
- grind s-shaped chisel edge along radius
- grind straight chisel edge along radius

grind straight chisel edge



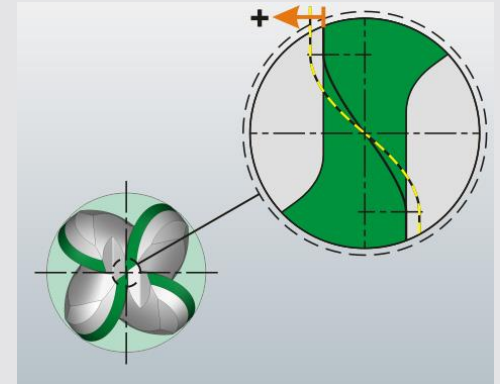
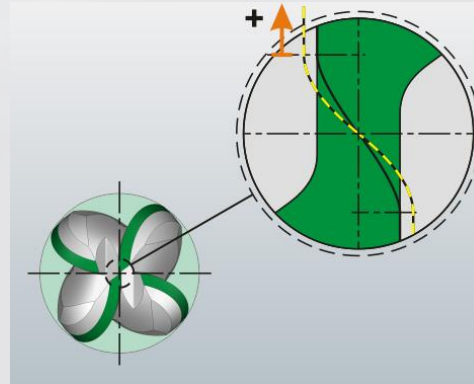
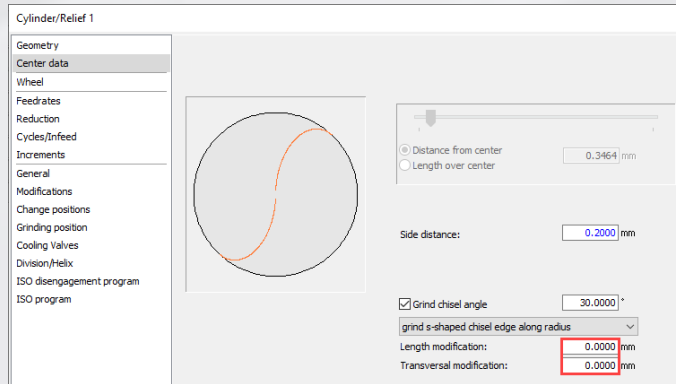
grind straight chisel edge along radius



Extension chisel edge

(Special grinding functions, 5.0.0)

- Chisel edge extension - transverse correction.
- For S-shaped and straight chisel edge.



Increment ball relief chisel edge

(5.0.0)

- Separate increments for bal relief chisel edge.

Geometry

Cylinder geometry

Teeth

Blank

Info

Attachment

Clamping

Pass over

Increments

CNC

3D

Park positions

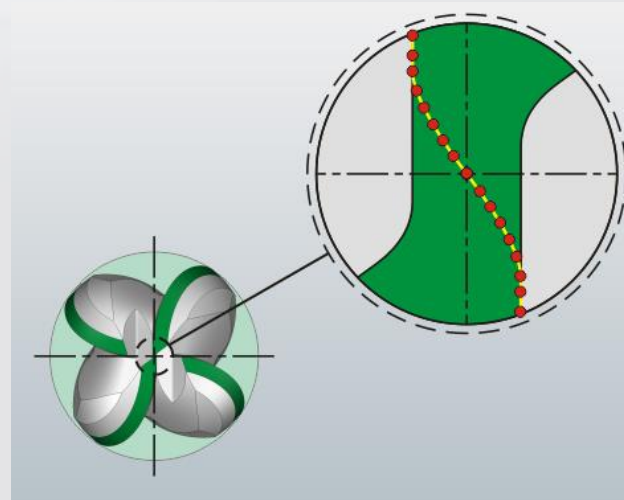
Probing-General

Probing-Position

Probing-Measuring

Probing-Runout/Lateral runout

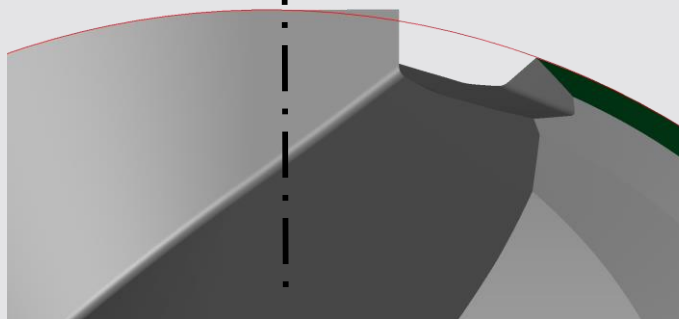
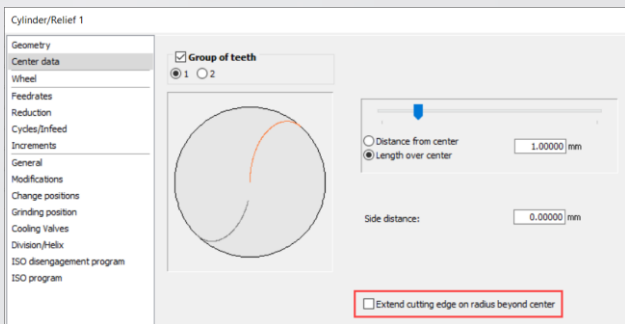
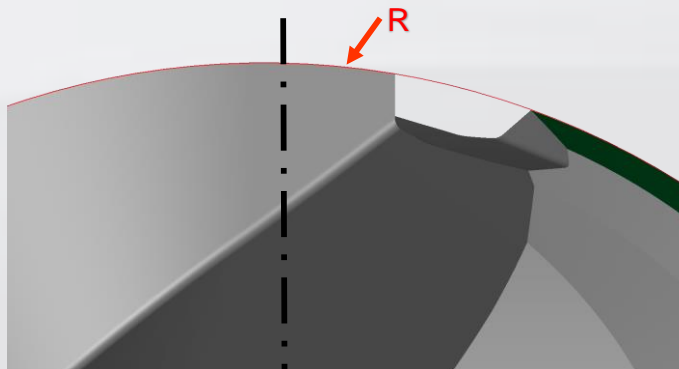
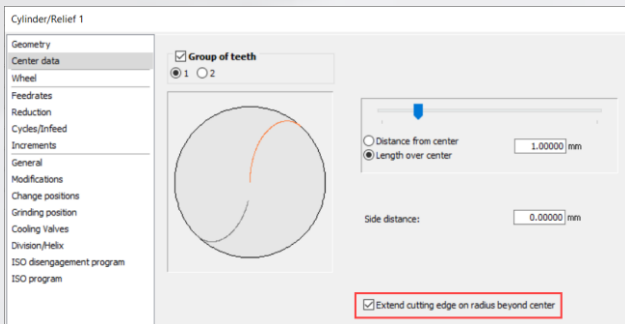
	2D-Sim	CNC/3D		
Cylinder flute:	0.1200	1.2000	mm	<input checked="" type="checkbox"/> A
Flute washout intermediate points:	5	5	Pts	<input checked="" type="checkbox"/> A
Cylinder relief:	0.8400	1.2000	mm	<input checked="" type="checkbox"/> A
Radial body relief:	0.0480	0.6000	mm	<input checked="" type="checkbox"/> A
Tip gashout:	0.0720	0.6000	mm	<input checked="" type="checkbox"/> A
Tip relief:	0.3000	0.1200	mm	<input checked="" type="checkbox"/> A
Ball/Corner radius gash out:	1.0000	0.4167	°	<input checked="" type="checkbox"/> A
Ball relief:	1.0000	0.4564	°	<input checked="" type="checkbox"/> A
Ball relief chisel edge:			20 Pts	<input checked="" type="checkbox"/> A
Tip clearance:	50	50	Pts	<input checked="" type="checkbox"/> A
Gashout widening:	50	25	Pts	<input checked="" type="checkbox"/> A
Rough profile:	1.0000	2.0000	°	<input checked="" type="checkbox"/> A
Cylindrical grinding:	30	2	Pts	<input checked="" type="checkbox"/> A
Manual grinding path:	50	2	Intermed. poi...	<input checked="" type="checkbox"/> A
Manual step face cam:	1.0000	5.0000	°	<input checked="" type="checkbox"/> A
Round clearance grinding:	2.4000	6.0000	mm	<input checked="" type="checkbox"/> A
Copy form / Independent profile:	100	50	Pts/...	<input checked="" type="checkbox"/> A
Other (linear):	1.0000		mm	<input checked="" type="checkbox"/> A
Other (degree):	5.0000		°	<input checked="" type="checkbox"/> A
Other (points):	20		Pts	<input checked="" type="checkbox"/> A



Grind cutting edge along radius past center

(Special grinding functions, 4.3.0)

- Cutting edge always precisely on radius

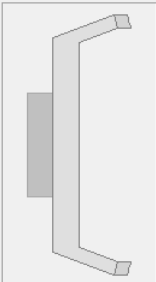







Cup wheel Typ '11V5'

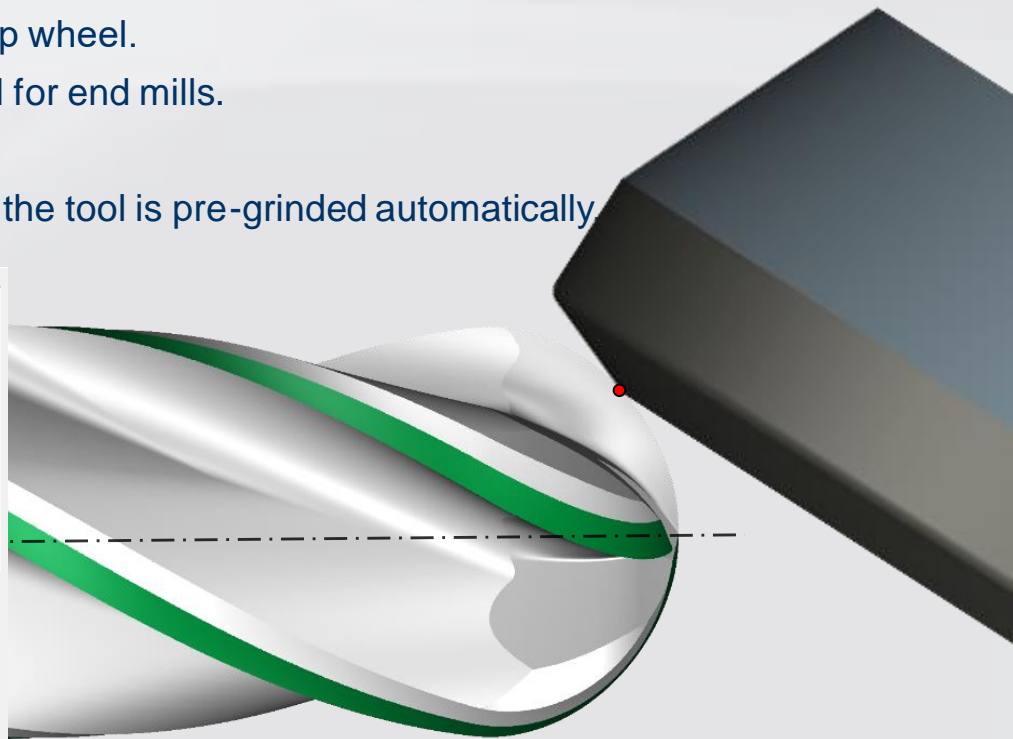
(special grinding functions, 4.3.0)

- The type '11V5' can now be used to define a cup wheel.
- The grinding wheel type can so far only be used for end mills.
- The point of grinding is on the inner wheel rim.
- By using the wheel rim on the face of the wheel the tool is pre-grinded automatically

Type:	11V5 (Wheel grinds on inside corner radius) ▼	
Diameter:	<input type="text" value="100.0000"/>	mm
Outer corner radius:	<input type="text" value="0.1000"/>	mm
Inner corner radius:	<input type="text" value="0.1000"/>	mm
Depth outside:	<input type="text" value="30.0000"/>	mm
Depth inside:	<input type="text" value="20.0000"/>	mm
Rim width:	<input type="text" value="5.0000"/>	mm
External angle:	<input type="text" value="20.0000"/>	°
Internal angle:	<input type="text" value="-15.0000"/>	°
<input checked="" type="checkbox"/> Wheel body	<input checked="" type="checkbox"/> A Rim height: <input type="text" value="5.0000"/> mm	



-  Show...
-  Package...
-  Probing...
-  Dressing...
-  Data interface...



Flute-X: Show calculated cutting angle

(5.0.0)

- The smallest (Min) and largest (Max) calculated cutting angle of all flutes is always displayed as the top value. If you open the drop-down box, the values according to helix 1 up to helix n are displayed.

Cylinder/Flute-X V2

Flute

Core

Flute washout

Wheel

Feedrates

Reduction

Cycles/Infeed

AC

Increments

General

Modifications

Change positions

Grinding position

Cooling Valves

Division/Helix

ISO disengagement program

ISO program

	Front	Rear	
Rake angle:	8.0000	8.0000 °	<input type="checkbox"/>
Measuring depth:	0.2500	0.2500 mm	<input checked="" type="checkbox"/> A
Rotation angle:	0.0000	0.0000 °	<input type="checkbox"/>
Transv. displacement:	0.0000	0.0000 mm	<input type="checkbox"/>
Land width correction:	0.0000	0.0000 mm	<input type="checkbox"/>
Length modification:	3.0000 mm	0.0000 mm	<input checked="" type="checkbox"/> A
Extension type:	Smart	Smart	

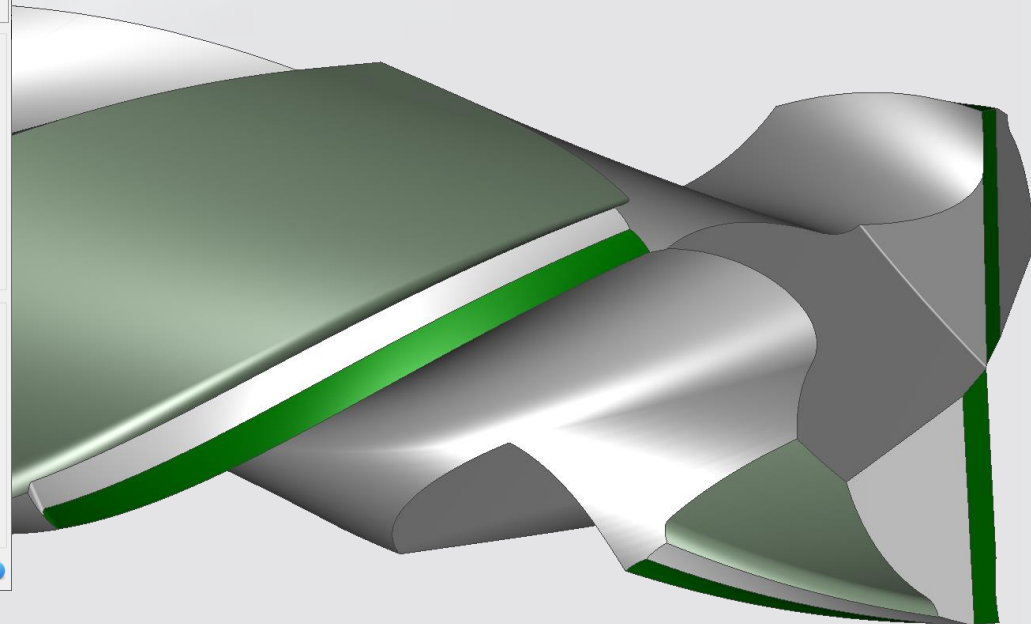
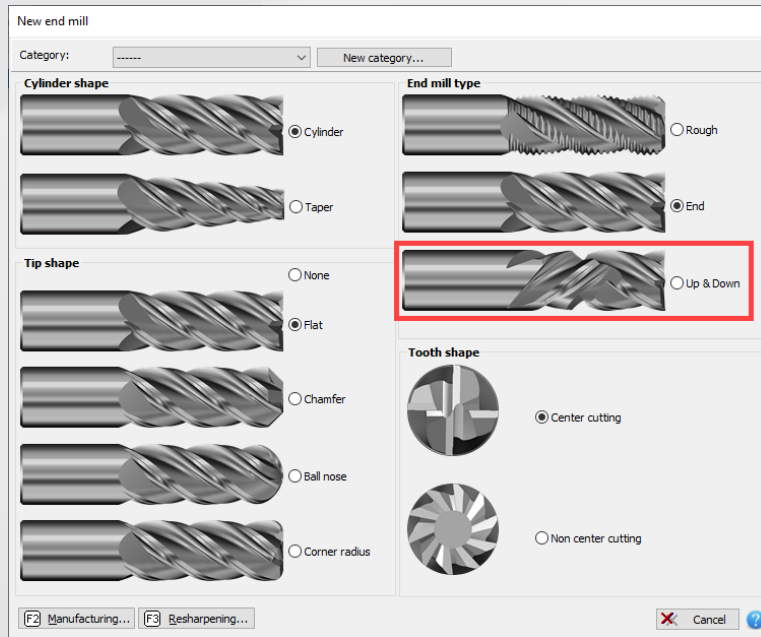
Flute land width reference:	According to land width of reliefs	
Reference relief:	3 Cylinder/Relief 2	<input checked="" type="checkbox"/> A
Calculation points for flute fitting:	25% of points	<input checked="" type="checkbox"/> A
Consider complete wheel shape:	Yes	

Calculate cutting angle:	Min: 6.26°	Max: 16.57°	Determine cutting angle
--------------------------	------------	-------------	-------------------------

Up & Down Cutters

(new option, 5.0.0)

■ New Cutter type 'Up & Down'

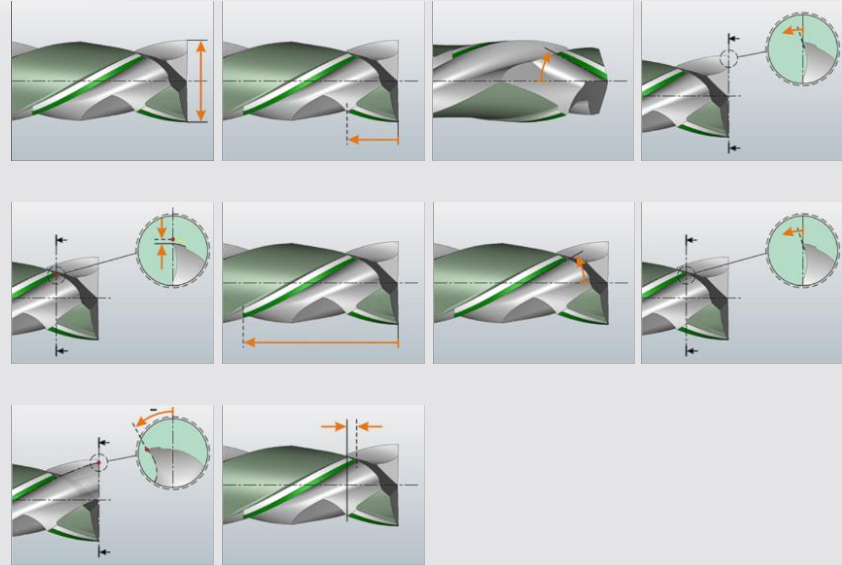


Up & Down Cutter

(new option, 5.0.0)

- With customized, simple geometry dialogue

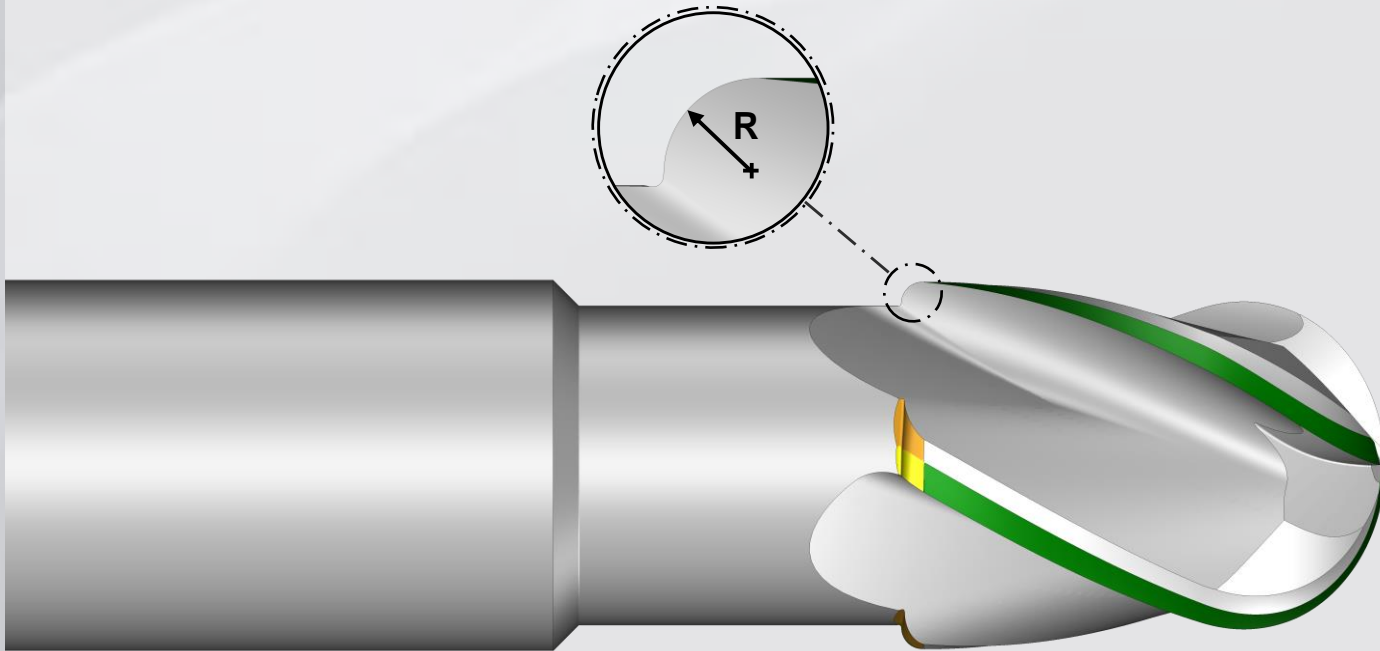
Geometry			
Geometry	Number of teeth per helix: <input type="text" value="2"/>	Number of helices: <input type="text" value="2"/>	
Blank	Center cutting teeth: <input type="text" value="2"/>	Helix type: <input type="text" value="Constant lead"/>	
Info	Outside diameter: <input type="text" value="16.00000"/> mm	Cutting direction: <input type="text" value="Right"/>	
Attachment	Taper (\emptyset): <input type="text" value="0.00000"/> mm/100mm		
Clamping			
Pass over			
Increments	Dish angle: <input type="text" value="1.00000"/> °		
CNC	Tip rotation angle <input type="text" value="0.00000"/> °		
3D			
Park positions	Defaults: <input type="text" value="Cutting edge length helix 1"/>	<input type="text" value="Overlap amount"/>	
Probing-General	<input type="button" value="Update / calculate dependent values"/>		
Probing-Position			
Probing-Measuring			
Probing-Runout/Lateral runout			
	Helix 1	Helix 2	
	Cutting edge length: <input type="text" value="10.00000"/> mm	<input type="text" value="30.00000"/> mm	
	Cutting angle: <input type="text" value="calculated"/> °	<input type="text" value="10.00000"/> °	
	Overlap amount: <input type="text" value="2.00000"/> mm	Start angle: <input type="text" value="calculated"/> °	
		Durchmesserkorrektur: <input type="text" value="0.00000"/> mm	
	Helix hand: <input type="text" value="Right"/>	<input type="text" value="Left"/>	
	Lead: <input type="text" value="87.06237"/> mm	<input type="text" value="87.06237"/> mm	
	Helix angle (cylinder start): <input type="text" value="30.00000"/>	<input type="text" value="30.00000"/> °	
	Rake angle: <input type="text" value="8.00000"/>	<input type="text" value="8.00000"/> °	
	Core diameter: <input type="text" value="8.00000"/>	<input type="text" value="8.00000"/> mm	



New operation 'Radius at end of cutting length ' for end mill

(Expected 5.0.0)

- At the end of the cutting length, a radius can be ground.



Other innovations end mill

- Separate feedrate on engage / disengage slant (5.0.0)
- Cutting and displacement angle for certain relief surface can be selected for each tooth group
- Grinding position selectable (4.2.0)
- Grinding position 'Perpendicular to surface' (4.2.0)
- Side distance is calculated more accurately on ball nose when using gash out-X (4.3.0)

Separate feedrate for engage and disengagement slant

(5.0.0)

- A separate feedrate can now be programmed for the engage and disengagement slant.

Cylinder/Relief 1

Geometry
Center data
Wheel
Feedrates
Reduction
Cycles/Infeed
Increments
General
Modifications
Change positions
Grinding position
Cooling Valves
Division/Helix
ISO disengagement program
ISO program

Machining type: 4-axis 5-axis

Ball center: 12.0000
Relief angle: 1.0000 mm
Land width: 1.0000 mm
Width of circular land: 2.0000
Cutting angle: 20.0000
Displacement angle: 0.0000
Grinding point offset: 0.0000
Length modification: Adjust center values according to distance from center

Cylinder start: 8.0000
Cylinder end: 8.0000
1.0000
0.0000
2.0000
0.0000
0.0000
1.0000

Direction: Cutting edge tangent

Eng./diseng. slant

Slant Length: 1.2000 mm Angle: 45.0000
 Slant Length: 1.2000 mm Angle: 45.0000

what should be machined

Face and cylinder
 only cylinder
 only face

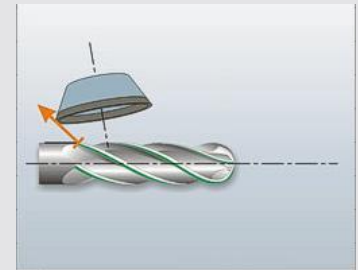
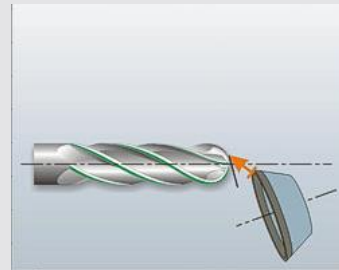
Grinding position: Tangential

Cylinder/Relief 1

Geometry
Center data
Wheel
Feedrates
Reduction
Cycles/Infeed
Increments
General
Modifications

Engagem.: 50.00 mm/min
Ball nose: 15.00 mm/min
Cylinder: 200.00 mm/min

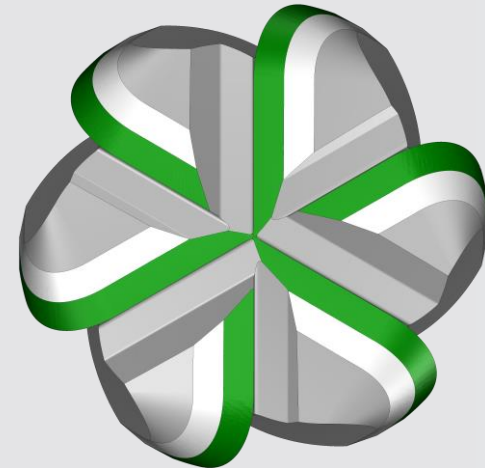
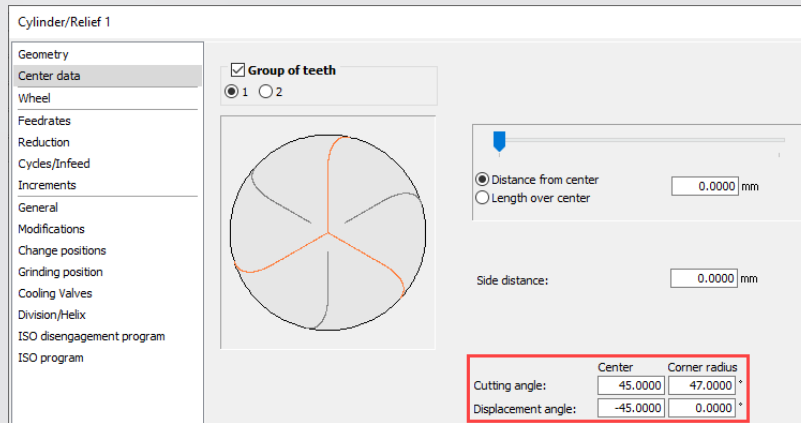
Front slant: 15.00 mm/min A
Rear slant: 200.00 mm/min A



Cutting and displacement angle

(5.0.0)

- In relief operations with several groups of teeth, it is sometimes difficult to sufficiently relieve the teeth in the center and at the same time not to grind any neighboring teeth. Until now, relief operations could only be modified by the distance from the center. More flexibility is provided by the possibility of individually programming of the displacement and cutting angle for each group of teeth.
- This can be used for the following relief operations:
 - ball nose end mills.
 - corner radius end mills.
 - End mills with flat face or corner chamfer.



Grinding position can be selected

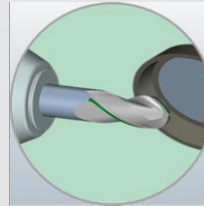
(since version 4.2.0b)

- For reliefs the grinding position can now be selected.

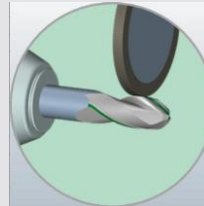
Cylinder/Relief 1

<ul style="list-style-type: none"> Geometry Center data Wheel Feedrates Cycles/Infeed Increments General Change positions Grinding position Cooling Valves Division/Helix ISO disengagement program ISO program 	<p>Machining type:</p> <p><input type="radio"/> 4-axis</p> <p><input checked="" type="radio"/> 5-axis</p> <p>Ball center: 12.00000 °</p> <p>Land width: 1.00000 mm</p> <p>Width of circular land: 35.00000 °</p> <p>Cutting angle: -35.00000 °</p> <p>Displacement angle: 0.00000 mm</p> <p>Grinding point offset: 0.00000 mm</p> <p>Length modification: 0.00000 mm</p> <p><input type="checkbox"/> Adjust center values according to distance from center</p> <p>Eng./diseng. slant</p> <p><input type="checkbox"/> Slant Length: 0.50000 mm Angle: 10.00000 °</p> <p><input type="checkbox"/> Slant Length: 1.20000 mm Angle: 45.00000 °</p> <p>what should be machined</p> <p><input type="radio"/> Face and cylinder</p> <p><input checked="" type="radio"/> only cylinder</p> <p><input type="radio"/> only face</p> <p>Grinding position: Tangential</p>	<p>Cylinder start: 9.00000</p> <p>Cylinder end: 9.00000</p> <p>Direction: Cutting edge tangent</p>
--	--	---

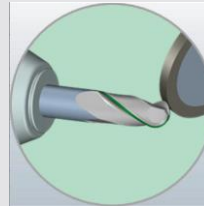
Buttons: OK, Cancel, Help



Grinding position: Tangential



Grinding position: Upper

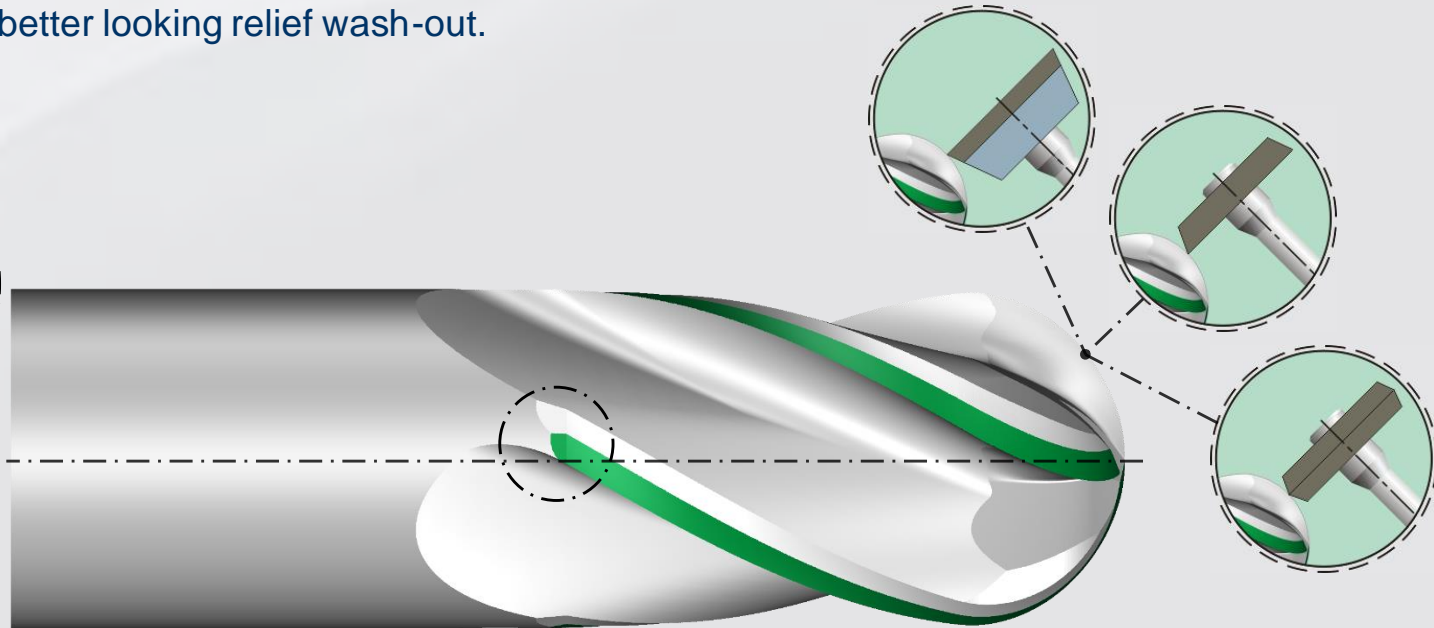


Grinding position: Perpendicular to surface

Grinding position: ‚Perpendicular to surface‘

(special grinding functions, since 4.2.0b)

- With cup wheel, peripheral wheel or point wheel.
- Peel-grinding with peripheral wheel.
→ less wheel wear, better looking relief wash-out.



New features in NUMROTO 4.3.0 and 5.0.0

- End mills
- **Drills / Step drills**
- Form cutters
- 3D-Simulation
- NR Draw
- Other topics
- Other general innovations
- Planned innovations



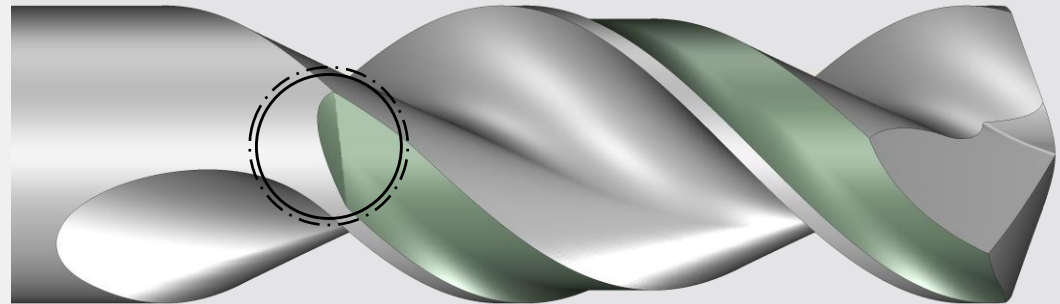
Clearance relief with disengage chamfer

(5.0.0)

- At the end of the clearance relief operation, it is now possible to programm a disengage chamfer.

Diameter 1/Clearance

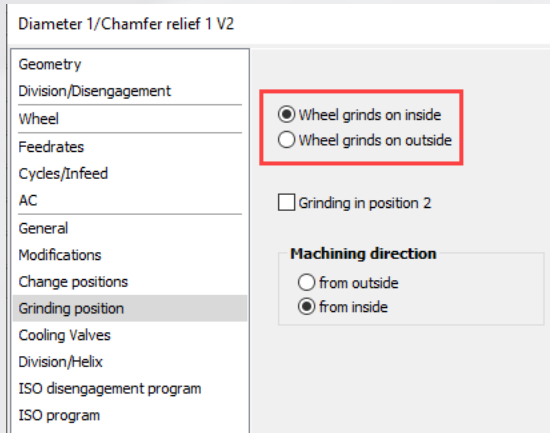
Geometry	Grinding procedure:	Peripheral grinding
Wheel	Width of circular land:	0.8000 mm
Spindle	Plunge depth:	0.2000 mm
Feedrates	Clearance width:	90.0000 °
Reduction	Number of cycles:	1
Cycles/Infeed	Length modification at start:	1.0000 mm
Increments	Length modification at end:	0.0000 mm
General	Cylinder length:	27.0000 mm <input checked="" type="checkbox"/> A
Modifications	Axial relief angle:	6.0000 ° <input checked="" type="checkbox"/> A
Change positions	Radial relief angle:	6.0000 °
Grinding position	Tilt: angle modification:	0.0000 °
Cooling Valves	Wheel positioning:	Upper
Division/Helix	<input type="checkbox"/> Position wheel to helix	
ISO disengagement program	Displacement angle offset:	0.0000 °
ISO program	Rotation angle:	0.0000 °
	<input checked="" type="checkbox"/> Slant	
	Length:	1.0000 mm
	Angle:	30.0000 °



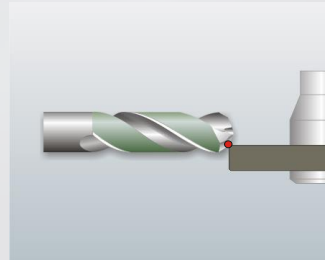
Chamfer relief - grinding wheel position inside - outside

(5.0.0)

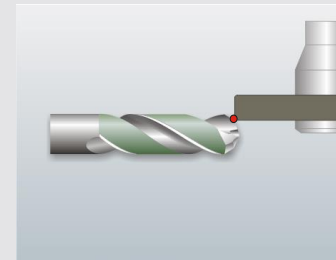
- When using a peripheral wheel, the inside - outside grinding wheel position can now be selected.



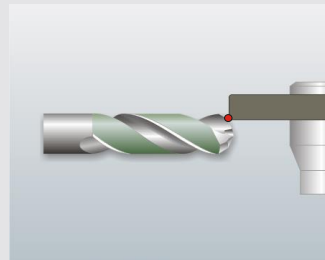
Wheel position inside (Pos-1)



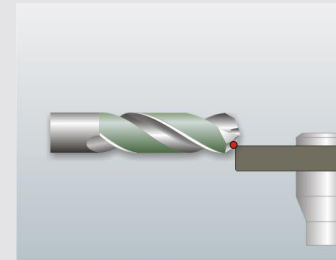
Wheel position outside (Pos-1)



Wheel position inside (Pos-2)



Wheel position outside (Pos-2)



New features in NUMROTO 4.3.0 and 5.0.0

- End mills
- Drills / Step drills
- **Form cutters**
- 3D-Simulation
- NR Draw
- Other topics
- Other general innovations
- Planned innovations



Show relief profiles

(4.3.0)

- Show relief profile based on the programmed relief angles and land width.

Relief angle definition - Relief angle A

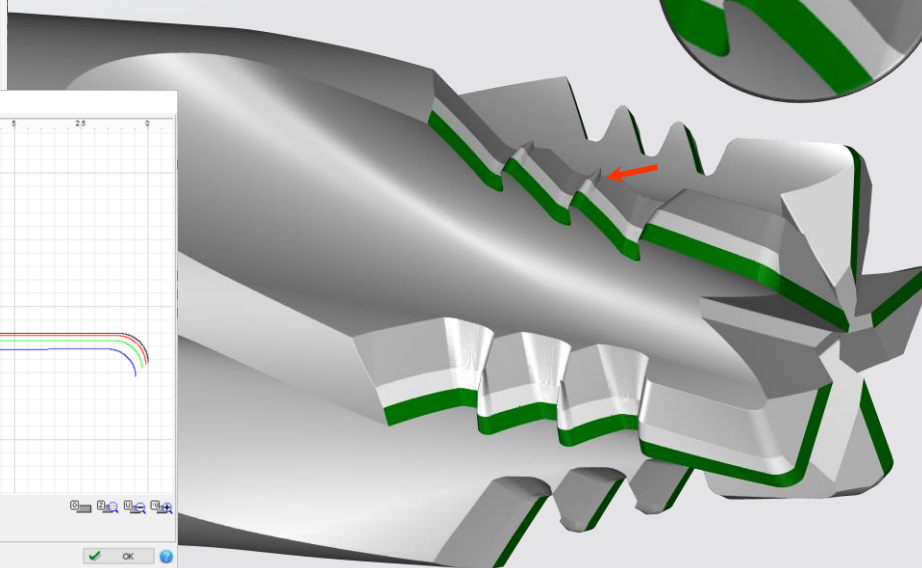
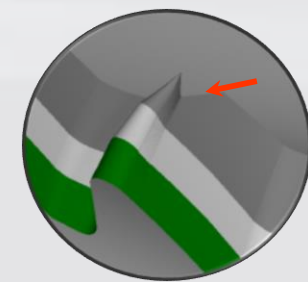
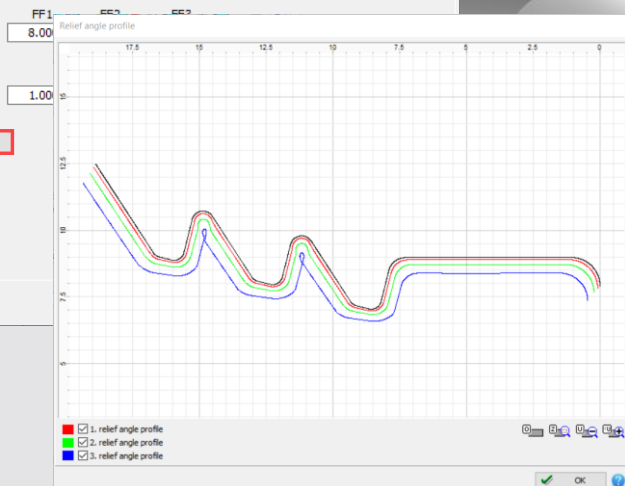
Shape: Form A

Radial normal, axial automatic, dep. on the profile slope
 Radial normal, axial programmed, independent from the profile slope
 Relief angle always vertical to surface

Radial relief angle: 8.00
Axial relief angle: 1.00

Land width: 1.00

Show relief angle profile...



Form reliefs: Range relative to profile points

(4.2.0b)

- As reference for the range of a form relief, profile points can now be selected.
- The selected range will now no longer be changed even if some profile elements are modified.

Form A/Form relief 1

Geometry

Range

Oscillate

Division/Disengagement

Wheel

Feedrates

Cycles/Infeed

Increments

General

Reference

Change positions

Grinding position

Cooling Valves

Division/Helix

ISO disengagement program

ISO program

Range measured along profile points

	Front	Rear	
Profile point:	9	11	<input type="checkbox"/> A
Relative distance:	0.00000 mm	0.00000 mm	<input type="checkbox"/> Engagement in wheel axis direction
Approach angle:	45.00000 °	90.00000 °	<input type="checkbox"/> Engagement in wheel axis direction
Engagement length:	1.50000 mm	1.50000 mm	<input type="checkbox"/> A
Engagement direction:	90.00000 °	calculated	<input checked="" type="checkbox"/> A
Machining direction:	<input checked="" type="radio"/> from front <input type="radio"/> from rear		

Start and end points All ranges

Edit profile...

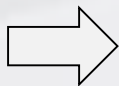
OK
 Cancel

Multiple form compensation

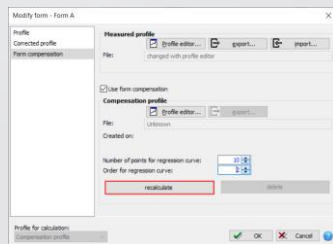
(new option, 4.1.2)



Target profile

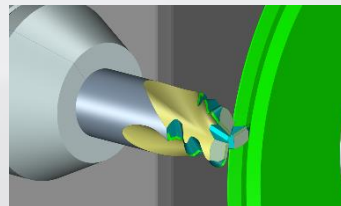
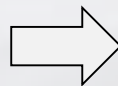


NUMROTO
Path Calculation
 without or with
 previous
Compensation Profile

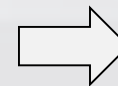


Compensation Profile
 recalculate
 and with this
Calculate new path

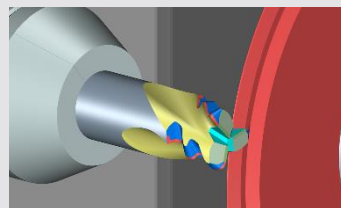
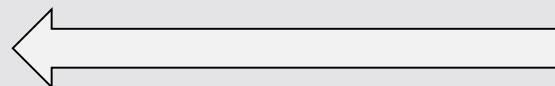
- The calculated compensation profile only shifts the point of contact.
- The grinding wheel is always oriented according to the original target profile.



Grinding



Measuring Tool



Grinding with form compensation

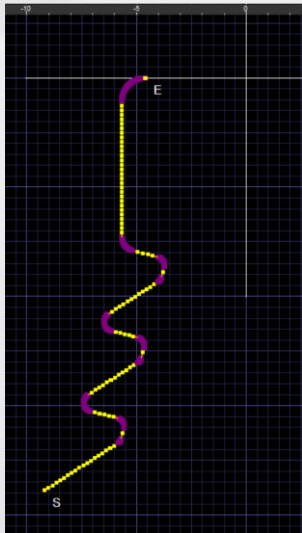
Other innovations form cutter

- Form Compensation - Automate Alignment Measuring Profile (5.0.0)
- Shortening form cutter with shear angle (5.0.0)
- Form relief - grinding in helix direction, the grinding point offset direction is now selectable (5.0.0)
- Measure in process for form relief and multi-axis oscillation (5.0.0)

Automate Alignment Measurement Profile

(5.0.0)

- When importing a DXF measurement profile, the start - end point can be swapped and the profile automatically aligned based on the settings.



Data interface

File extension: xml Folder...

Use XML data format
 Automatically generate xml file when using external calculations

Always activate modifications for new tools

Show data import warnings

Hint: Warnings will additionally be taken down into file 'temp/messdata.log'.

Adjustment of the measurement profile during import

Rotation angle: °

Mirror: Horizontal

OK Cancel ?



Import profile

File: C:\Temp\Measurement-Profile.dxf

DXF layer: 1

Number of elements: 3212

Change start(S) and end(E) point

Messprofil beim Import gemäss Einstellungen transformieren

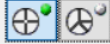
Import Cancel ?

Shorting form cutter with shear angle

(5.0.0)

- If a form cutter with pre machined flutes and shear angle is shortend, the position an side distance will be changed. In order for the software to track this, the checkbox below must be activated.

Drallverlauf - Drall A

Drall Tasten	Zähne Zähnezahl: <input type="text" value="8"/> 
	Bezugsgeometrie Durchmesser: <input type="text" value="16.0000"/> mm Länge: <input type="text" value="25.0000"/> mm Form A <input type="text" value="(20.00 x 16.00 mm)"/>
	Drall Art: <input type="text" value="Achswinkel"/> Schneidrichtung: <input type="text" value="Rechts"/> Berechnung des Schneidenverlaufs: <input type="text" value="Schnitt Rotationskörper mit Spanfläche"/>
	Achswinkel: <input type="text" value="5.0000"/> ° Radialer Winkel: <input type="text" value="0.0000"/> ° Mass vor Mitte: <input type="text" value="0.0000"/> mm
	<input checked="" type="checkbox"/> Achswinkel-Ebene beim Rücksetzen anpassen Radialer Winkel: 3.1345 ° Mass vor Mitte: -0.4374 mm Startwinkel: 3.1345 °

Form relief - grinding in helix direction^(5.0.0)

- The grinding point off-set can be new selected in the direction of the relief angle or wheel rim.

Form A/Formfreifläche 1

Geometrie

Bereich

Oszillieren

Scheibe

Vorschübe

Aufteilung/Zustellung

AC

Inkremente

Allgemeines

Korrekturen

Referenz

Umlenken

Schleifposition


Kühlventile

Teilung/Drall


ISO-Ausfahrprogramm

ISO-Programm


Positionierung u. Schleifverfahren




Schleifen mit
 Vorgabe des Rotationswinkels




Schleifen mit
 Vorgabe des Stellwinkels



Schleifen mit
 Anstellwinkel relativ zur Form



Schleifen mit
 Vorgabe des Rotations- und Stellwinkels



Schleifen in Drallrichtung

Anstellwinkel: °

Verdrehwinkel: ° Verdrehwinkel profilabhängig

Schleifpunktverschiebung: mm Richtung: Freifläche

Freifläche

Scheibenbelag

Freiwinkel-Definition: Freiwinkel A

Drallauswahl: Drall A

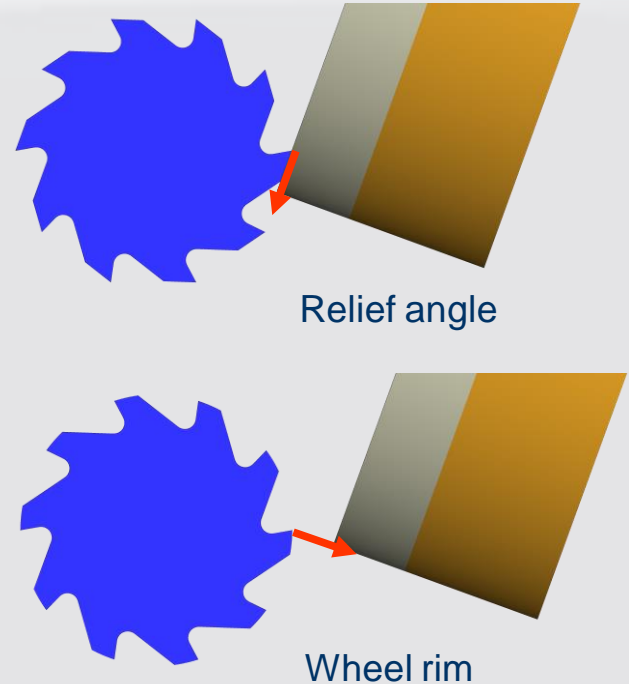
Eckenverrundung: Scheibeneckradius

Wert für Eckenverrundung: mm

Freiflächenrichtung gemäss aktuellem Formdurchmesser (Flugkreis) berechnen

[Profil bearbeiten...](#)

OK Abbrechen



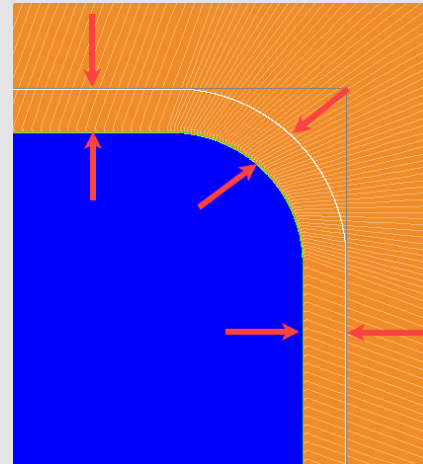
Measure in process for form relief

(5.0.0)

- For the form relief operation, the measurement in process can be used with the probe task 'Diameter'. The probed diameter difference can now be compensated not only in the diameter direction ('new culation'), but also as an stock amount (recalculation using 'stock amount'). The result is so far the same as with the compensation 'wheel compensation'. The advantage is that multi-axis oscillation can also be applied at the same time.
- Interesting also for CBN material.

Form B/Formfreifläche 1

Geometrie	Kompensation via:	Neuberechnung Aufmass
Bereich	Kompensationsystem:	Gewichtung
Oszillieren	Gewichtung wenn Messwert zu gross:	100.0000 %
Scheibe	Gewichtung wenn Messwert zu klein:	100.0000 % <input checked="" type="checkbox"/> A
Vorschübe	Maximale Anzahl Wiederholungen:	5 <input type="checkbox"/> Zyklen beim Kompensations-Schliff nie verwenden
Aufteilung/Zustellung		
AC		
Inkremente	Durchmesser	
Allgemeines	Nennwert:	12.0000 mm <input checked="" type="checkbox"/> A
Korrekturen	Obere Toleranz:	0.0100 mm
Referenz	Untere Toleranz:	-0.0100 mm
Umlenken	Zielwert:	12.0000 mm <input checked="" type="checkbox"/> A
Schleifposition		
Kühlventile	<input type="checkbox"/> Bei Unterschreiten der unteren Toleranz Schleifvorgang beenden	
Teilung/Drill		
ISO-Ausfahrprogramm		
ISO-Programm	Aktuelle Kompensation (Ø):	0.0000 mm maximal: 1.0000 mm
Tasten		
Kompensieren		



New features in NUMROTO 4.3.0 and 5.0.0

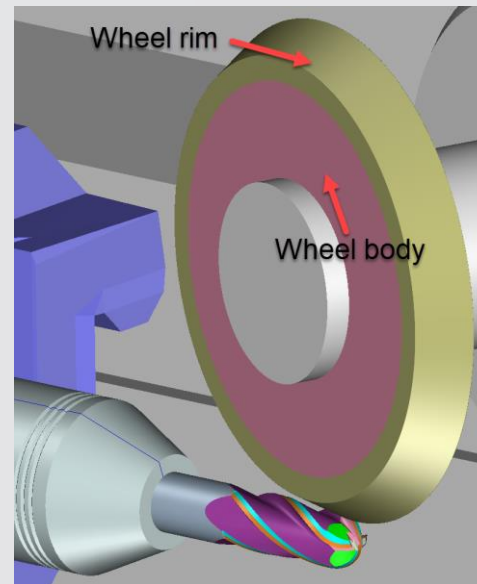
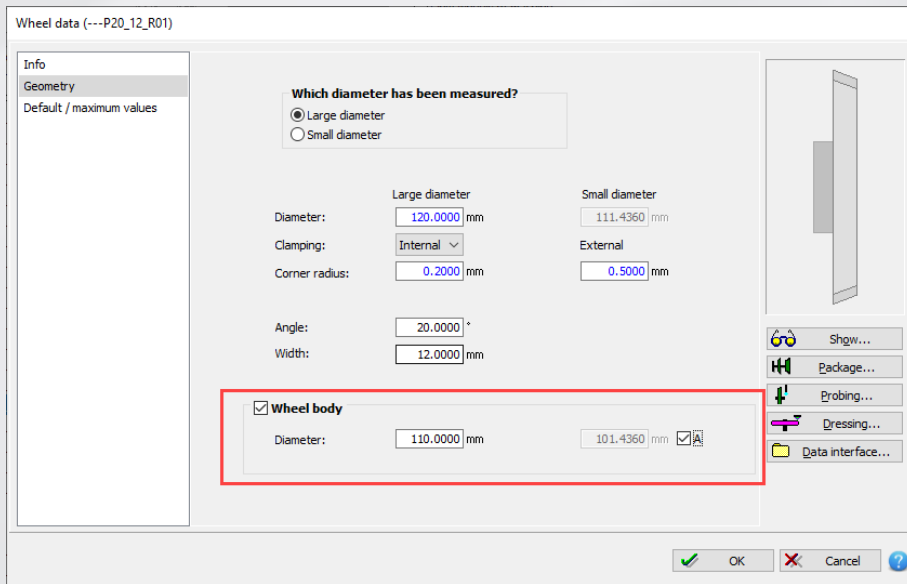
- End mills
- Drills / Step drills
- Form cutters
- **3D-Simulation**
- NR Draw
- Other topics
- Other general innovations
- Planned innovations



Display wheel body

(4.2.1)

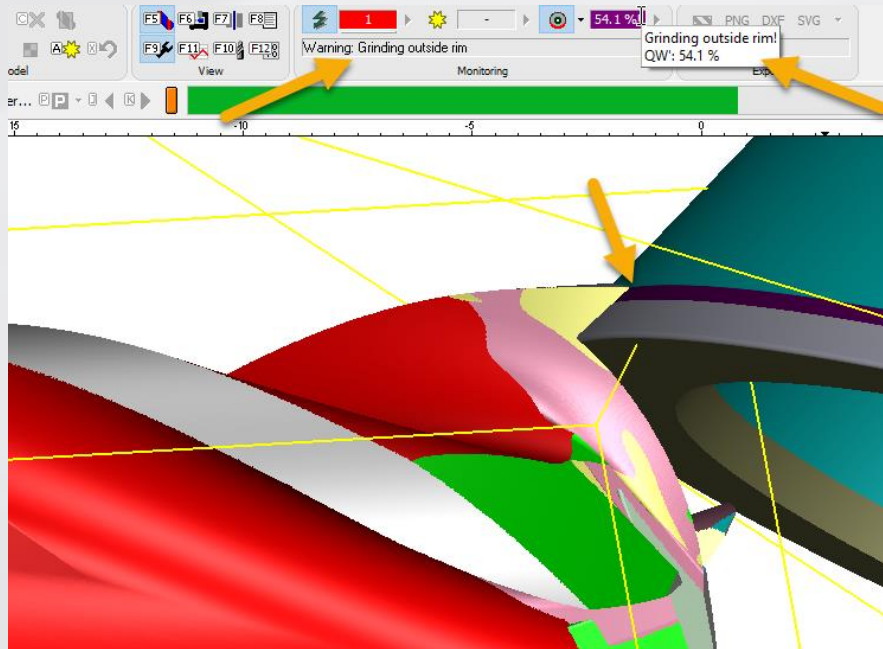
- The size of the wheel body can now be defined. This will also be considered by the 3D collision check and it will be animated in the 3D simulation.



Monitor wheel body

(NUMROTO-3D special functions 4.2.1)

- In the 3D simulation the wheel body will be monitored for collision (only if QW'-calculation is active)



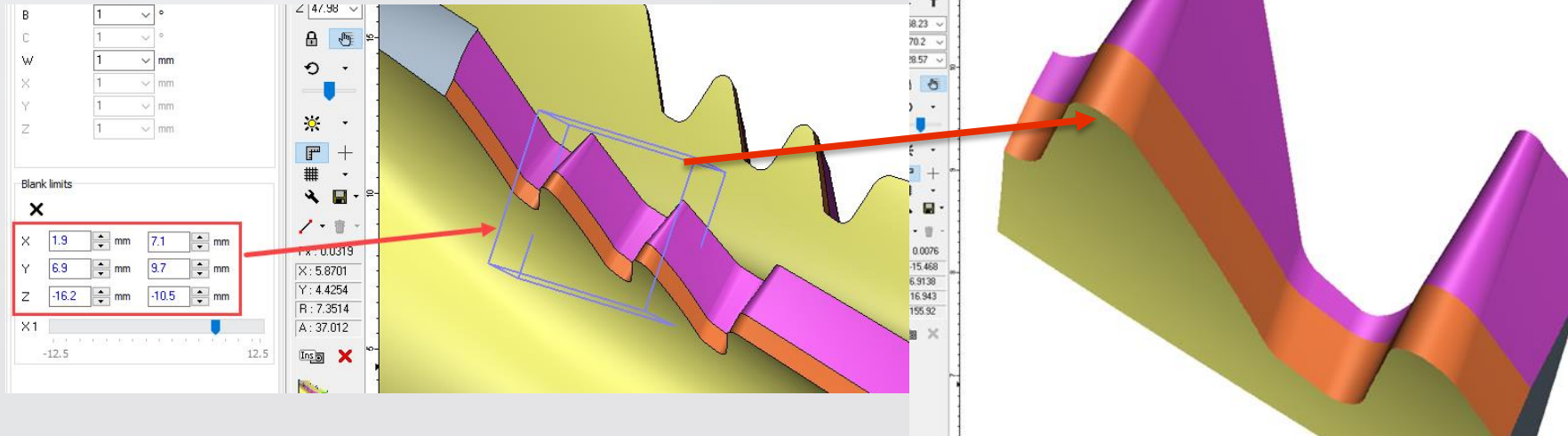
	Wheel	Rotation speed	ID	Feedrate	Collision state	Removal rate	QW'
	---P00_15 (3)	6684 / 35.00	3	80.0	●	882.77	4.34
	---P00_15	6684 / 35.00	3	30.0	●	147.33	0.64
	---P45_08	6685 / 35.00	1	50.0	●	10.94	1.52
	---P45_08 (2)	6684 / 35.00	1	25.0	●	8.00	1.02
	---P45_08 (2)	6684 / 35.00	1	30.0	●	37.52	1.26
	---T01 (2)	6684 / 35.00	4	5.0	⚡	47.70	4.09
	---T01	6684 / 35.00	4	15.0	●	0.31	0.31

Grinding outside rim

Reduce the blank to a cuboid

(4.3.0)

- Possibility to reduce the blank to a defined cuboid to get a highly accurate simulation of small details.



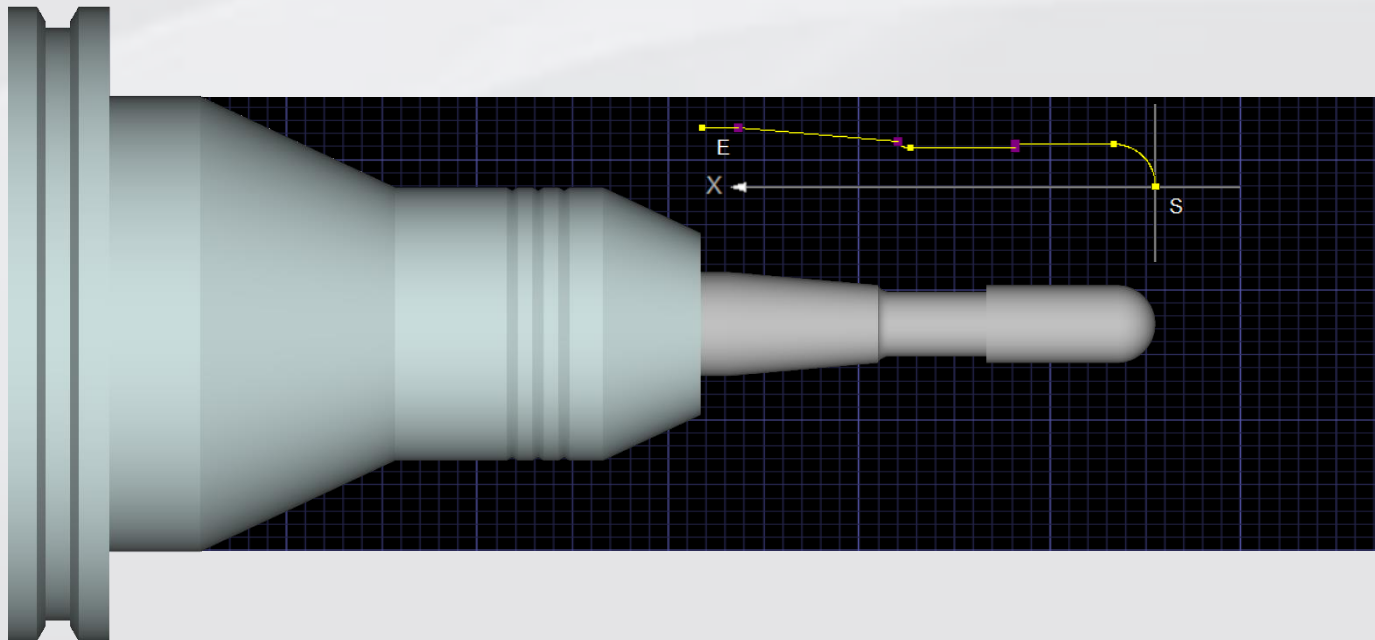
Other innovations 3D simulation

- DXF blank (2D profile), (4.2.0a)
- Simulate shortening (4.2.0a)
- Up to 15% faster simulation when using a CPU with 6 or more cores (4.3.0)
- Custom background (planned in 5.0.1)

DXF blank

(4.2.0a)

- The blank for the 3D simulation can now also be defined by a 2D profile.



3D stock amount: mm A
 Simulate shortening for resharpening
 Stock amount on diamet... mm
 Blank:
 Limit blank length

Blank Collet

Circular orientation:

Settings for 3D collision detection...

Simulate only one tooth
 Suppress reverse finishing
 Use real CNC-file
 Use grinding program splitting
 Simulate cyclic grinding
 Simulate oscillation

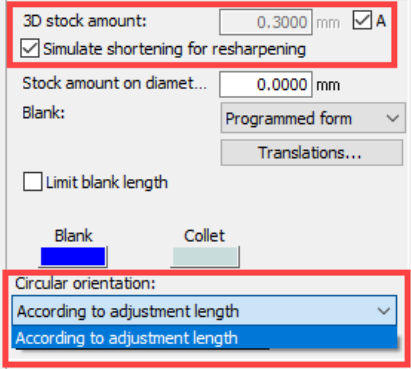
Add missing packages autom.
 Flange distance: mm
 Use un-assigned packages on spindle 1

Bild 1 von 6
 Grösse: 486 KB

Simulate shortening (Production and re-grinding)

(4.2.0a)

- Instead of the „end stock amount“ a shortening amount can be set for the 3D-simulation. This shortening amount can be linked with the shortening amount from the page ‚Manufacturing‘ or ‚Resharpending‘. This allows to recognize collisions with the collet more accurately and also has other advantages. For example for the collision check the same shortening amount will now be used as for the actual grinding.
- For the 3D simulation the effect of the shortening amount is now the same as when the tool is actually shortened on the grinding machine. Thus the shortening of pre-fluted blanks or the resharpending of cross-toothed or conical tools can be simulated exactly. When this new function has been activated, the circular orientation can only be set to ‚According adjustment length‘.

A screenshot of a software interface for 3D simulation settings. The interface is divided into several sections. The top section, highlighted with a red border, contains a text input field for '3D stock amount' set to '0.3000 mm' with a checkmark and the letter 'A' to its right, and a checked checkbox labeled 'Simulate shortening for resharpening'. Below this, there is a text input field for 'Stock amount on diamet...' set to '0.0000 mm', a dropdown menu for 'Blank:' set to 'Programmed form', and a button labeled 'Translations...'. A checkbox labeled 'Limit blank length' is unchecked. Below these are two color-coded buttons: a blue button labeled 'Blank' and a grey button labeled 'Collet'. The bottom section, also highlighted with a red border, contains a dropdown menu for 'Circular orientation:' with two options: 'According to adjustment length' (selected) and 'According to adjustment length'.

New features in NUMROTO 4.3.0 and 5.0.0

- End mills
- Drills / Step drills
- Form cutters
- 3D-Simulation
- **NR Draw**
- Other topics
- Other general innovations
- Planned innovations



User defined drawing headers

(4.2.1)

NUMROTO-Draw 3.0.0beta Build 1705 - [GrindingHub-2022_Gerade-Querschneide-schleifen_V1-Drall-45_OK]

File Ansicht Optionen ?

Überne... Exportie... Exportie... Drucken... Option... Editieren Seite Hilfe Zoom

Navigation

Struktur

- Zeichnung
 - Seite 1
 - Geometrien
 - Werkzeug Aufriss
 - Teile
 - Kugelkopf-Radius
 - Zylinder
 - Kern
 - Achse
 - Rohlingsabgrenzung
 - Rohling
 - Schaft-Abgrenzung
 - Schaft
 - Drall 1
 - Drall 2
 - Bemessungen
 - Werkzeuglänge
 - Schaft-Länge
 - Schaft-Durchmesser
 - Kerndurchmesser
 - Länge der Schneide

Eigenschaften

Zeichnung

Einstellungen

Fräser

Standardtabellen

- Eingeschaltet
- Standard
- Benutzerdefiniert

Zeichnungskopf

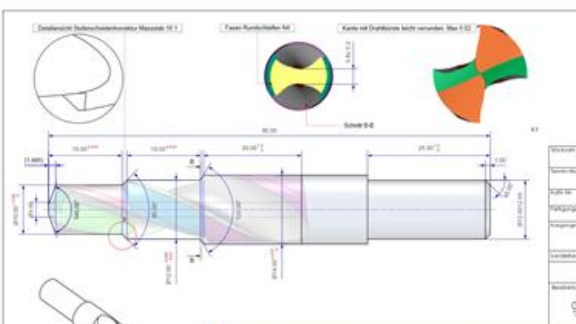
Werkzeug Parameter-Tabelle

Position des Zeichnungskopfes auf der Seite

Anordnung der Werkzeugparameter-Tabelle auf der Seite

Untere rechte Ecke

Untere linke Ecke



Material	Werkstoff	Werkstoff	Werkstoff
HM	HM	HM	HM
2:1	2:1	2:1	2:1

197716

HM-Tastfinger

1:1/500 09.07.21 JJ

10. Änderung

1:1/500 09.07.21 JJ

10. Änderung

1:1/500 09.07.21 JJ

10. Änderung

Other innovations NR-Draw

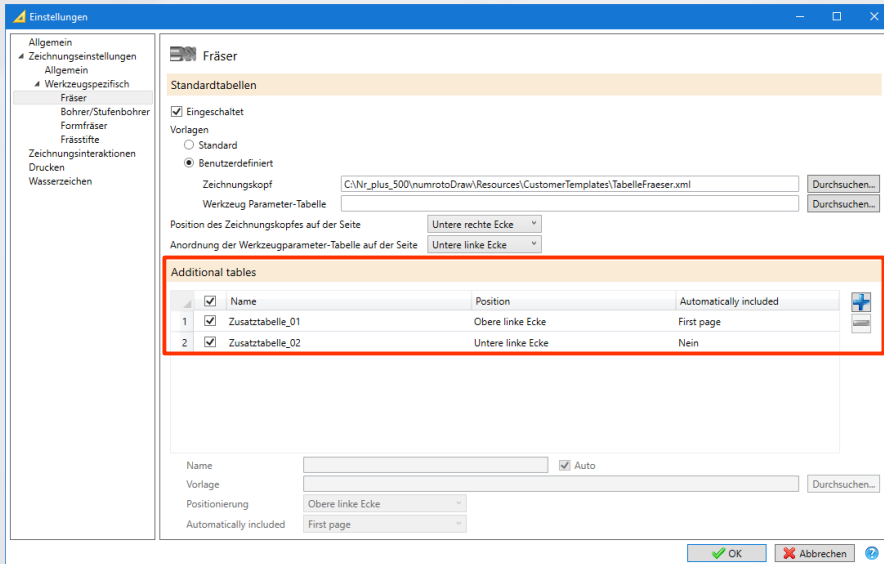
(5.0.0)

- Additional tables per tool range
- Simplified alignment of drawing elements
- New dimensioning type for relief on outside diameter
- Optimized dialog for printing
- New element 'Circles' available
- Move elements

Additional tables per tool range

(5.0.0)

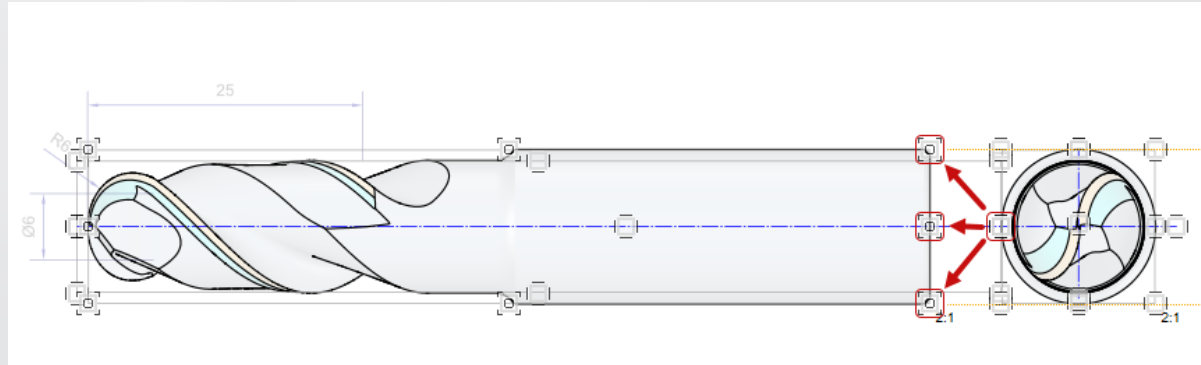
- Any number of tables can be added as defaults for each tool range (end mills, drills, form cutters and burrs).



Simplified alignment of drawing elements

(5.0.0)

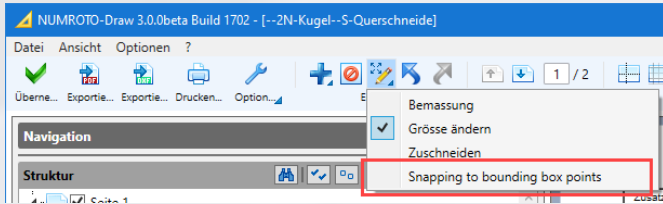
- Drawing elements can now be easily aligned with other drawing elements.
- When approaching, the snap function boxes of the individual drawing elements, snap into each other.
- After snapping in place, the element can be moved in horizontal or vertical direction using the arrow keyboard keys.



Simplified alignment of drawing elements

(5.0.0)

- The snap function is activated either via the 'Edit mode' key.

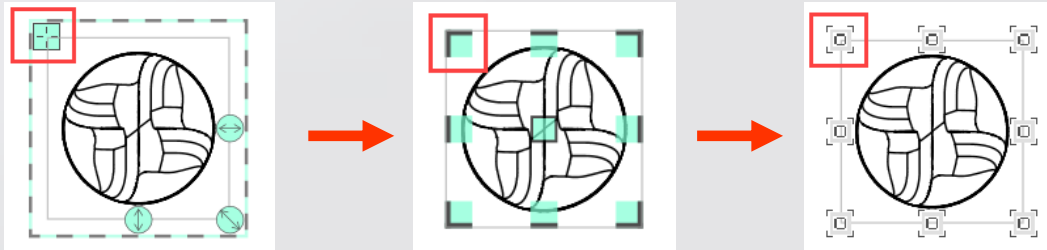


Or by 2x clicking the move and crop border box.

Displacement box

Crop Box

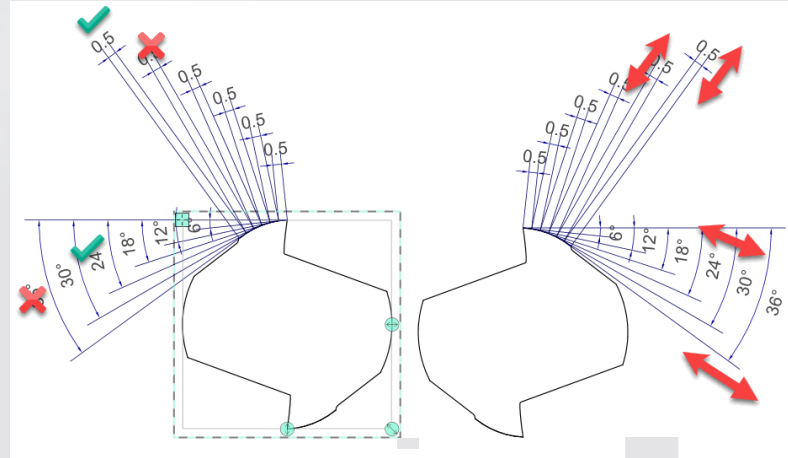
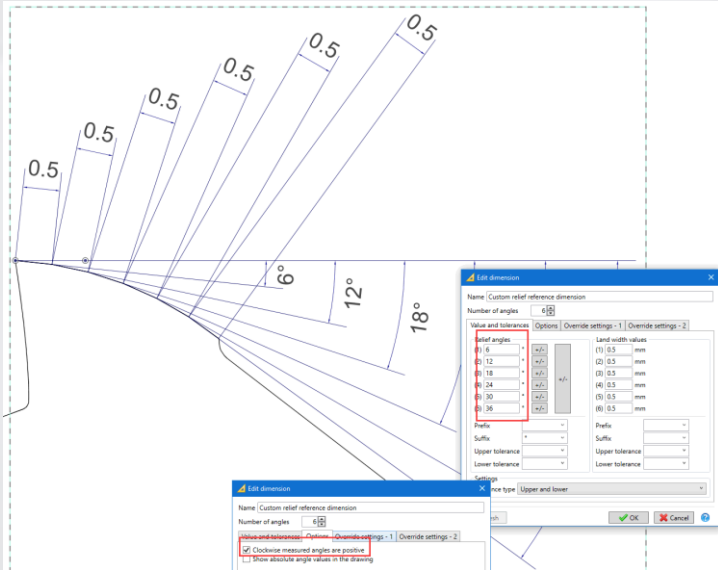
Snap function box



New dimensioning type for relief on outside diameter

(5.0.0)

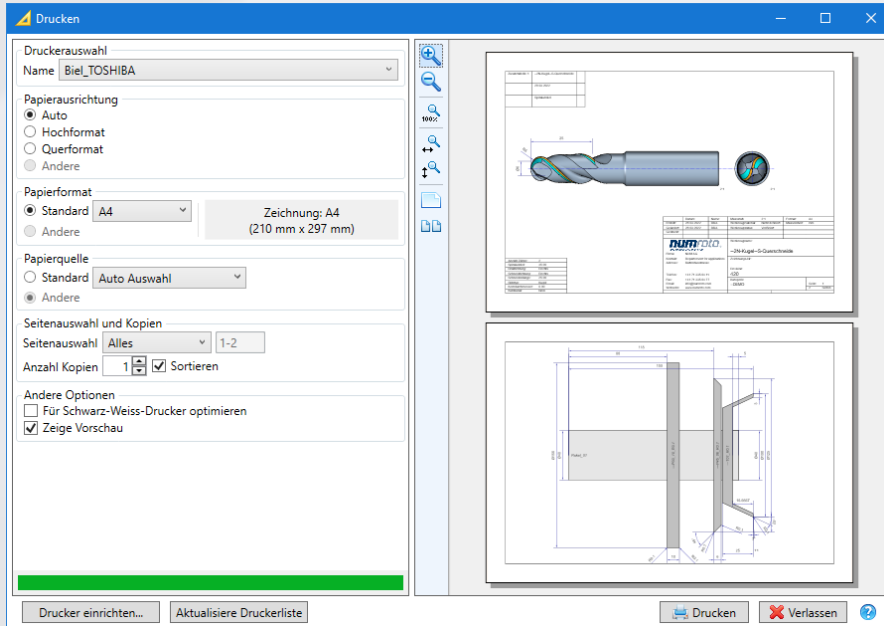
- Relief on outside diameter can now be easily dimensioned.
- The dimensions can be displayed or moved individually.



Optimized dialog for printing

(5.0.0)

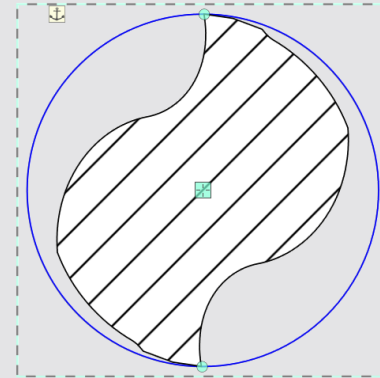
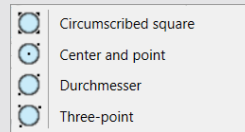
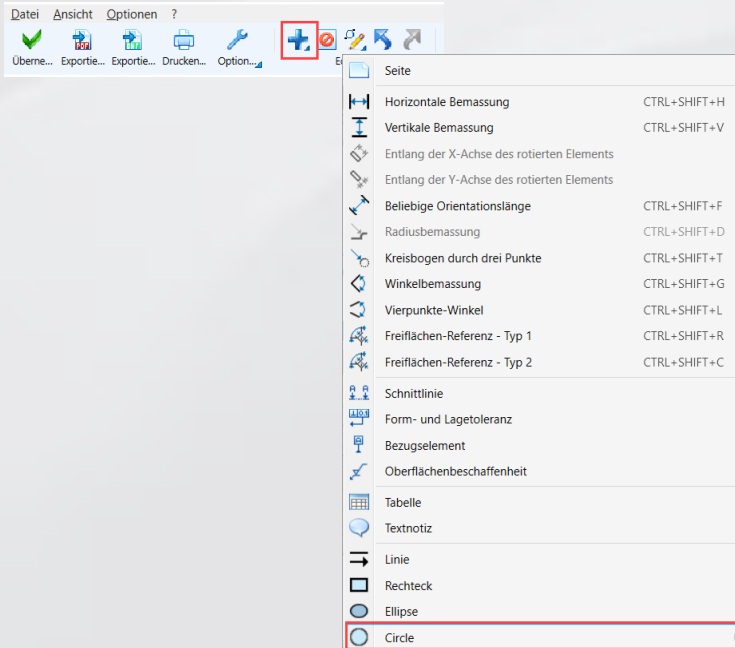
- Print quickly and easily with the new buttons and selections.



New element 'Circles' available

(5.0.0)

- Simplified way to draw a circle.



Move elements

(5.0.0)

- Move elements with keyboard arrow keys.
- Step size adjustable in the settings.

Einstellungen

Allgemein

- ▾ Zeichnungseinstellungen
 - Allgemein
 - ▾ Werkzeugspezifisch
 - Fräser
 - Bohrer/Stufenbohrer
 - Formfräser
 - Frässtifte
 - Zeichnungsinteraktionen
 - Drucken
 - Wasserzeichen

Zeichnungsinteraktionen

Allgemein

Masstabs-Anzeige automatisch aktivieren, wenn die Größe von einem Objekt manuell verändert wird

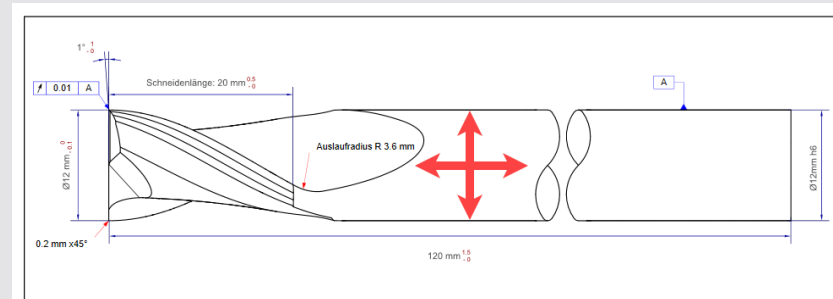
Überstreich- und Auswahlbereich px

Richtungswinkel für Fangbereich px

Farbe für Auswahl

Positioning step size mm ← **Schrittgröße Pfeiltaste**

Alternative positioning step size mm ← **Schrittgröße Ctrl+Pfeiltaste**



New features in NUMROTO 4.3.0 and 5.0.0

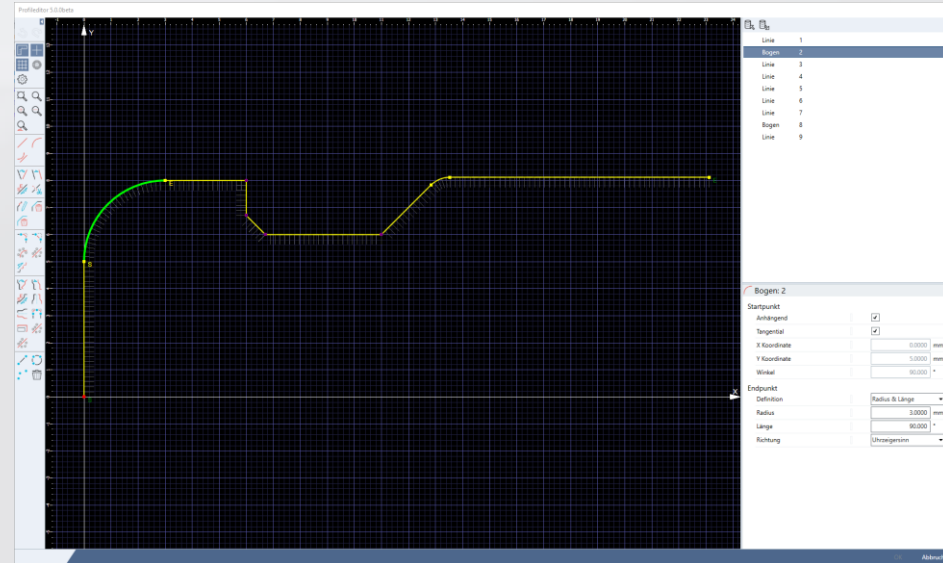
- End mills
- Drills / Step drills
- Form cutters
- 3D-Simulation
- NR Draw
- **Other topics**
- Other general innovations
- Planned innovations



Profileditor-X

(5.0.0)

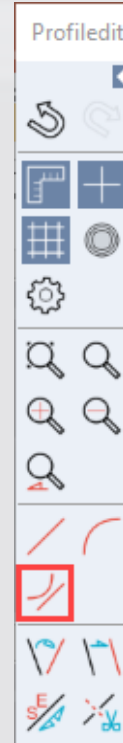
- Quick editing of the profile with mouse
- Easy-to-read table with all elements
- Multiple Layers
- Conversion Spline → Polyline
- Consistent application of attachment and tangency



Profile Editor-X : Quick editing of the profile with mouse

(5.0.0)

- This function can be used to draw a contour of lines and radii.
- By positioning the mouse (crosshairs) on the drawing, the left mouse button is used to select the starting point of the first line or radius.
- Clicking the left mouse button once activates the function for creating a line. By holding the left mouse button longer, a radius is created.
- Then, by moving the mouse horizontally, vertically or diagonally, the direction and length of the line or the direction and size of the radius is determined. By clicking the left mouse button again once, the end point is selected and a line automatically follows as a further element. If you hold the left mouse button longer, the end point is selected and a radius automatically follows as the next element.
- The upper steps can be repeated as often as required until the final contour is achieved.
- Finally, the exact size must be determined manually for each element.



Profile editor-X: easy-to-read table with all elements

(5.0.0)

- In the upper right corner the tables of individual elements and type are displayed.
- When you click on an element, the size of the element is displayed in the lower right corner.

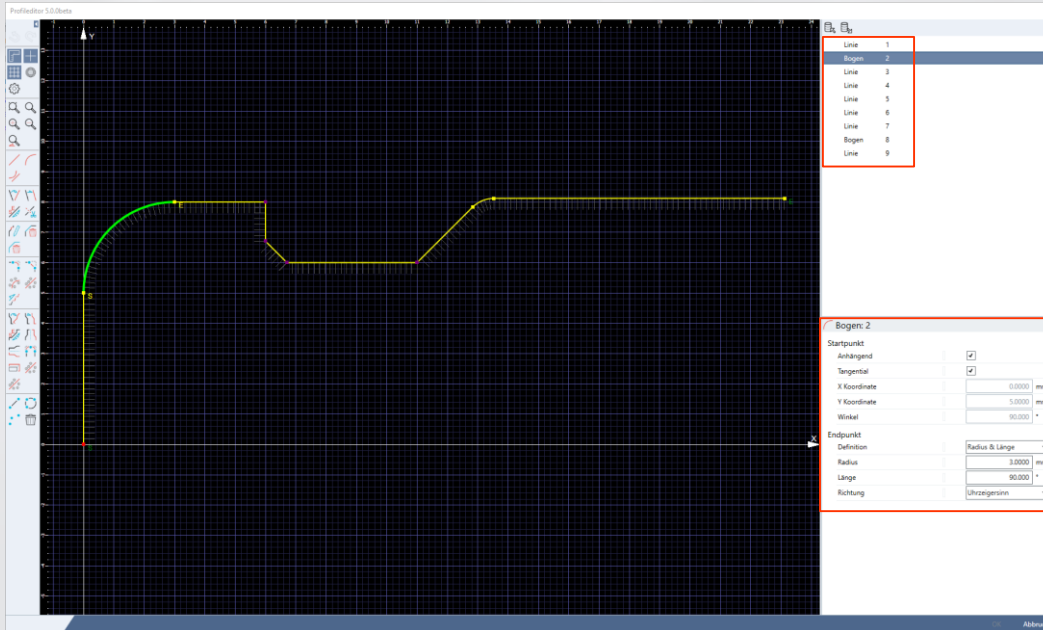


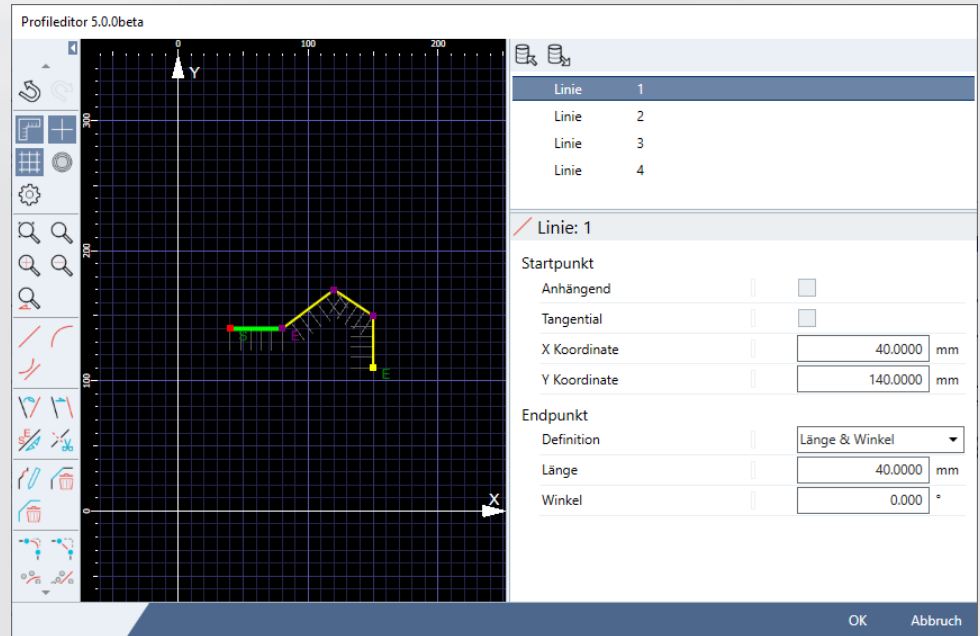
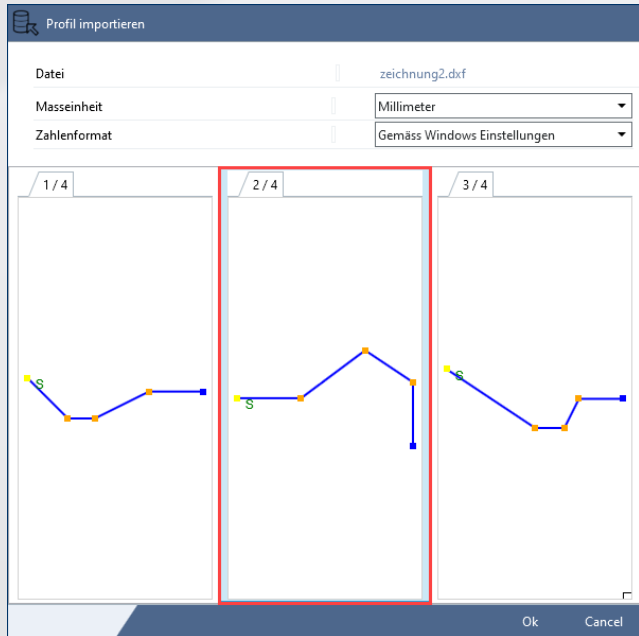
Table of all elements

Size of the element

Profile Editor-X: Multiple Layers

(5.0.0)

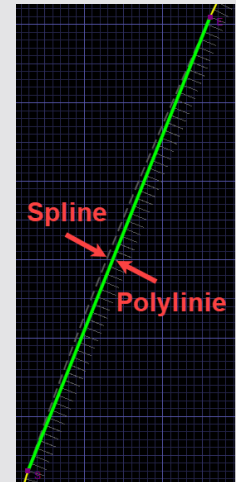
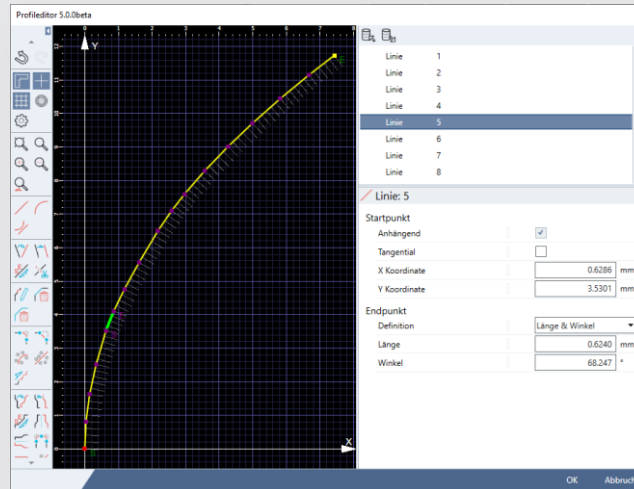
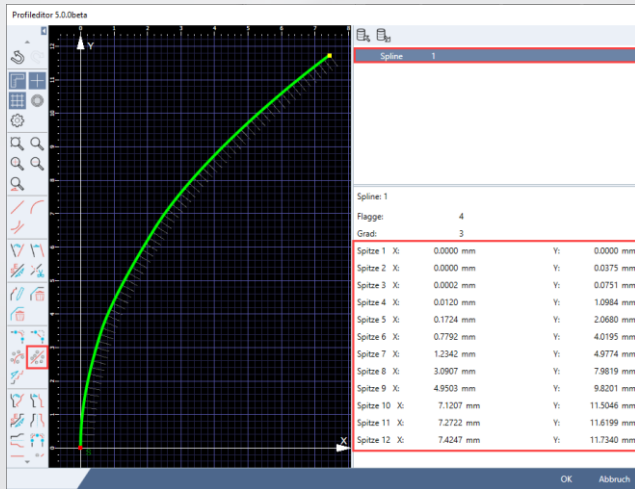
- During DXF import, all existing layers are displayed in a preview.



Profile Editor-X: Conversion Spline – Polyline

(5.0.0)

- Splines can now also be read in and segmented into lines with a maximum tolerance.



Multiuser-Server: Sybase 17 and new user management

(5.0.0)

- More rights can be defined in the user administration.
- As of Windows Server 2019, Sybase 17 is required.

Benutzer-Rollen verwalten

Verwenden Sie die unten stehende Liste, um Benutzer-Rollen und deren Zugriffsberechtigungen zu definieren.

Benutzer-Rollen:

Name	Berechtigungen
Administrator	Datenbank-Verwalter
Benutzer	Datenbank Einstellungen ändern,Datenbank Quellen verwalten,K...

Rolle hinzufügen... Rolle entfernen **Berechtigungen...**

Schließen ?

Rollenberechtigungen ändern

Welche Berechtigungen sollen dieser Rolle zugewiesen werden ?

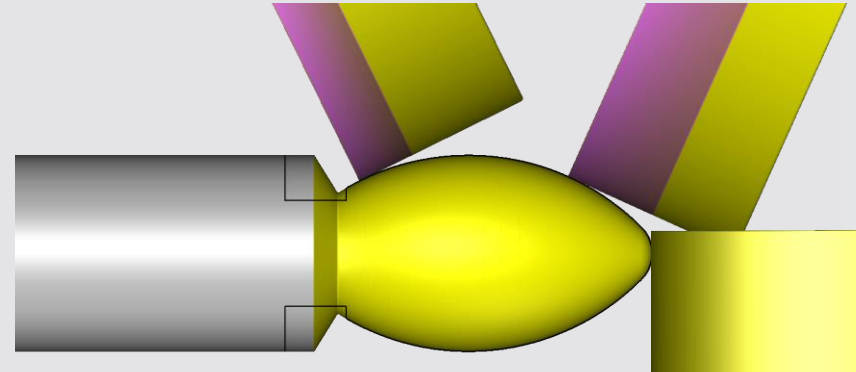
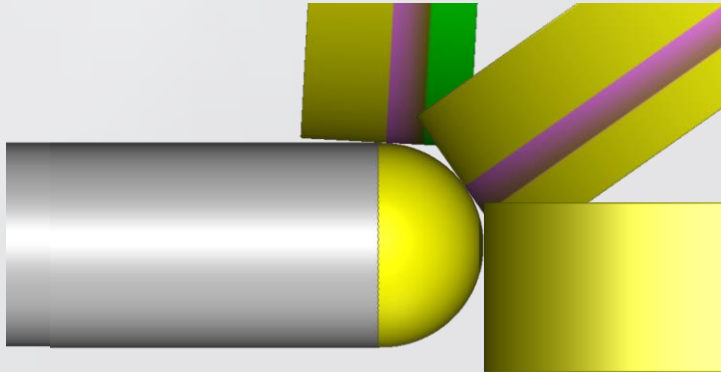
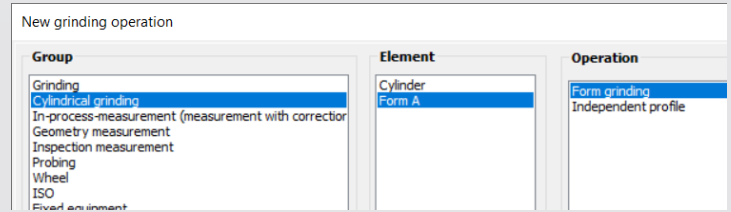
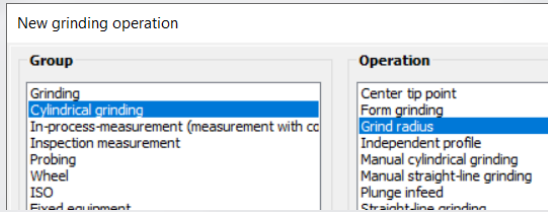
		Berechtigung
1	<input type="checkbox"/>	Datenbank-Verwalter
2	<input checked="" type="checkbox"/>	Datenbank Einstellungen ändern
3	<input checked="" type="checkbox"/>	Datenbank Quellen verwalten
4	<input type="checkbox"/>	Benutzer verwalten
5	<input type="checkbox"/>	Rollen verwalten
6	<input checked="" type="checkbox"/>	Eigenes Kennwort ändern
7	<input type="checkbox"/>	Kennwörter ändern
8	<input checked="" type="checkbox"/>	Anmelden ohne Kennwort
9	<input checked="" type="checkbox"/>	Kategorien verwalten
10	<input checked="" type="checkbox"/>	Daten exportieren
11	<input checked="" type="checkbox"/>	Daten importieren
12	<input checked="" type="checkbox"/>	Master Werkzeug Schreibschutz setzen
13	<input checked="" type="checkbox"/>	Master Werkzeug Schreibschutz entfernen
14	<input checked="" type="checkbox"/>	Master Werkzeug Schreibschutz-Kennwort entfernen
15	<input checked="" type="checkbox"/>	Master Werkzeuge lesen
16	<input checked="" type="checkbox"/>	Master Werkzeuge sehen
17	<input checked="" type="checkbox"/>	Einstellungen verändern
18	<input checked="" type="checkbox"/>	Maschinendaten verändern

OK Abbrechen ?

Cylindrical grinding perpendicular to the radius or profile

(4.3.0)

- End mills: new operation 'Radius grinding' (Cylindrical grinding perpendicular to ball nose radius)
- Form cutters: new operation 'Form grinding' (Cylindrical grinding perpendicular to profile)



Dialogue with corrections

(4.3.0)

- The same corrections can now be used for practically every operation. The list of possible corrections has been greatly expanded. (Related to operation, work piece or wheel).
- Important: These corrections should only be used with small values. With larger values, geometry deviations may occur and collisions cannot be ruled out.

Tip relief 1 - Right

Geometry	
Center data	
Wheel	
Feedrates	
Cycles/infeed	
General	
Modifications	
Change positions	
Grinding position	
Cooling Valves	
Division/Helix	
ISO disengagement program	
ISO program	

Corrections (related to operation)

Start angle correction: °

Transversal modification: mm

Corrections (related to tool)

Length modification: mm

Transversal modification: mm



Vertical correction: mm


Corrections (related to wheel)

Wheel radius correction: mm

Flange distance correction: mm

Grinding time correction: s



New features in NUMROTO 4.3.0 and 5.0.0

- End mills
- Drills / Step drills
- Form cutters
- 3D-Simulation
- NR Draw
- Other topics
- **Other general innovations**
- Planned innovations



Other general innovations (1)

(5.0.0)

- Plunging between end of cutting edge and shank
- Copy wheel packages
- Limit wheel selection
- Grinding wheel - show list of tools
- Categories for collets
- K-land probing with coolant hole needle, additional probing method selectable
- Tab page 'Blank' available on F10-Resharpener
- Form cutter – determine tooth center position
- Multi-helix end mill - Multiple helix probing

Plunging between end of cutting edge and shank

(4.3.0)

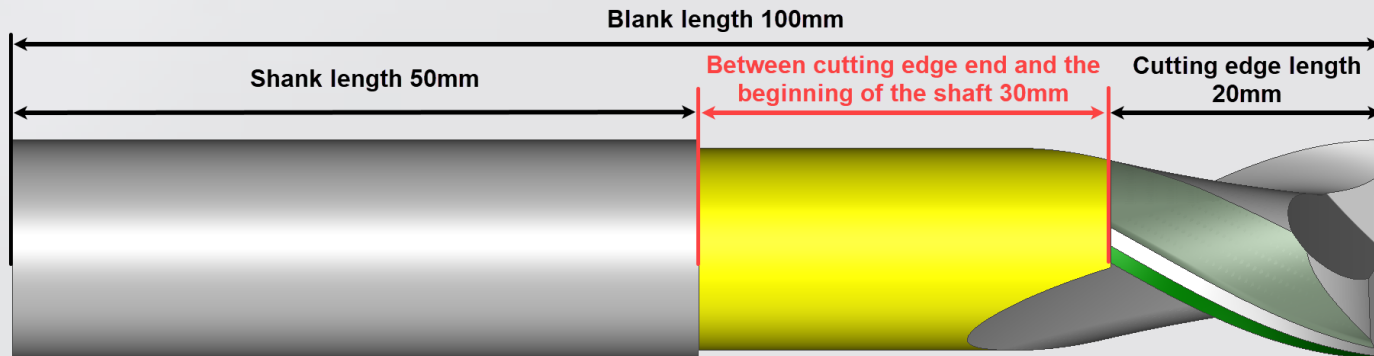
- With the operation 'Cylindrical grinding – Plunge infeed' it is now possible to grind automatically between end of cutting edge and shank.

Blank

Length:	Blank	Shank
	100.00000 mm	50.00000 mm <input type="checkbox"/> A
Diameter:	15.00000 mm <input checked="" type="checkbox"/> A	16.00000 mm
Point angle:	180.00000 ° <input type="checkbox"/> A	

CG Cylinder/Plunge infeed

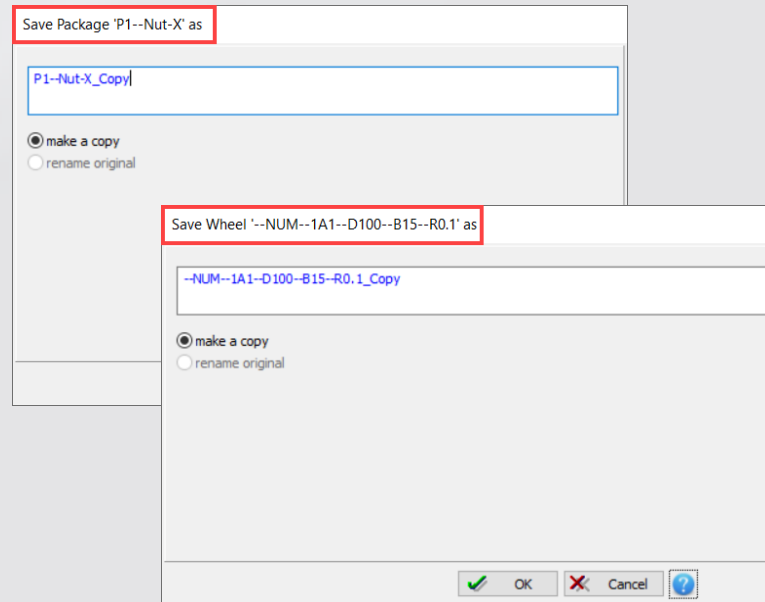
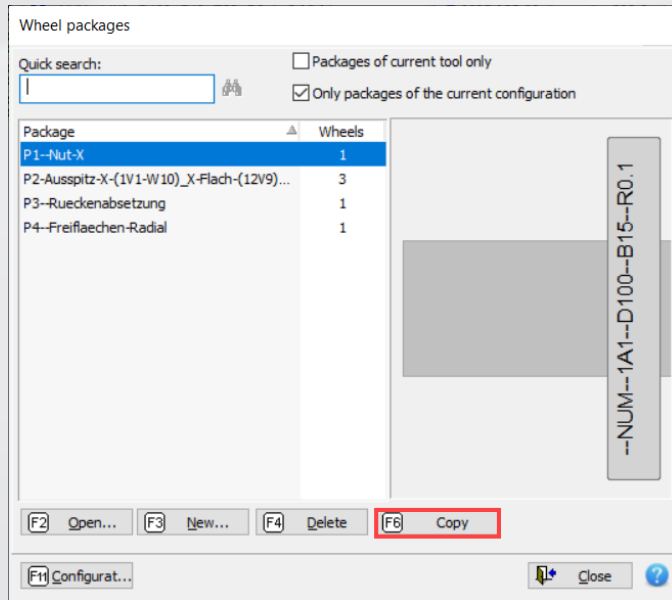
Geometry	Section	
Range / Direction	Front position	Rear position
Wheel		
Feedrates		
Cycles/Infeed	Length modification:	-17.00000 mm <input type="text"/> 30.00000 mm <input type="text"/>
Tool spindle	<input checked="" type="checkbox"/> Plunge infeed between cutting edge end and shaft	
AC	<input checked="" type="checkbox"/> Limitation:	17.00000 mm <input type="text"/>
General		
Modifications		



Copy wheel packages

(4.3.0)

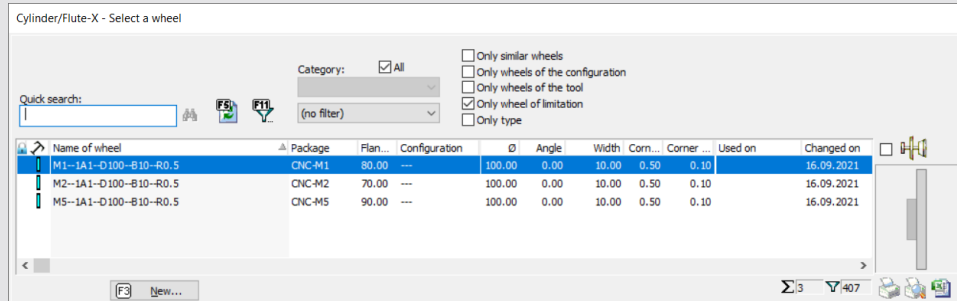
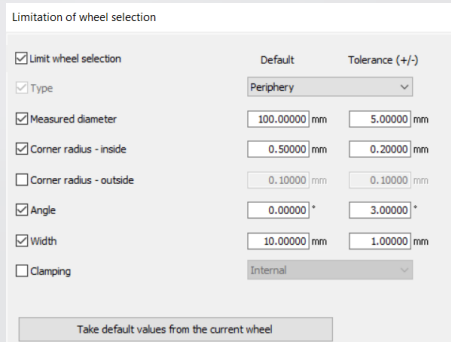
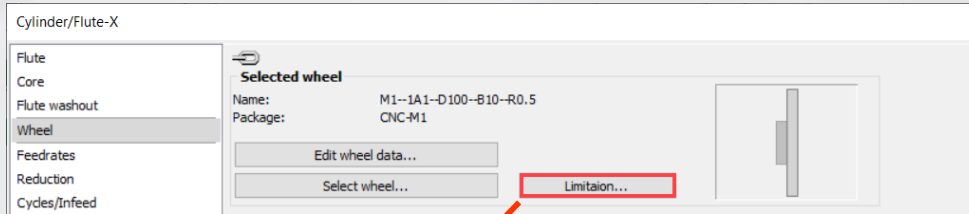
- Existing wheel packages can now be copied. The package and the wheels are automatically duplicated during this process. The names for the new package and the copied wheels can be selected individually.



Limit wheel selection

(4.2.1)

- The wheel selection can now be individually limited per operation based on various criteria. This is helpful if other wheels are to be assigned to the tool on another machine. This information is retained even if the target assignment has been deleted.



Grinding wheel - show list of tools

(5.0.0)

- On the info page of a grinding wheel, a list of all tools in which the corresponding wheel is used can be displayed.

Scheibendaten (---P00_10_R01)

Info

Name: ---P00_10_R0.1
 Kategorie: --DEMO_Scheiben
 Form: Peripherie
 Paket: Paket_01
 Material: undefiniert

Für Maschinen der Kategorie: (keine)

Historie

	Aktion	Datum	Benutzer	Version	Maschine/Keyfile
1	Erstellt	16.02.2012 9:48	DBA	3.6.0f	11432999
2	Exportiert	02.03.2018 18:16	OEM	4.0.ob	11512999
3	Importiert	14.09.2018 13:45		4.0.0h	11432999
4	Zuletzt geändert	23.03.2022 9:36	DBA	5.0.beta	11432888/11432...
5	Zuletzt verwendet	02.05.2022 8:06	DBA	5.0.beta	13802888/13802...

Anzahl Verwendungen: 81

Werkzeuge ...

OK Abbrechen

Werkzeugliste

	Name
Bohrer	SGL-SE111-D8.5
Bohrer	S-Gashout-Convex-Radius
Bohrer	HPX-SE112-D8.5
Bohrer	HPR-SE113-D8.5
Bohrer	028--SPITZE_Schutzfase_NGS_D22--
Bohrer	--S6-KuelkanalSimulation
Bohrer	--Prospekt_2012_Formbohrer
Bohrer	--NR-Draw_Flash-Stufenbohrer
Bohrer	--Formstufe-mit-Winkel-Knickspitze
Formfräser	SCHEIBENFRAESER_Multidrall
Formfräser	Fraeser_fuer_Innengewinde
Formfräser	Demo-Wendeplatte_Rundspannung_Sc
Formfräser	065--Prospekt_2012_Formfraeser_NGS_F
Formfräser	036--FLACHFORMBOHRER_NGS_F55--
Formfräser	--Stirmschneider--
Fräser	Stirn_Hohlschliff-Externe-Berechnung
Fräser	Nut_X_ganze_Scheibenform
Fräser	Kugel-mit-Ausspitzung-X-Flach-Kombi
Fräser	DXF-Rohlingsprofil

Schliessen

Categories for collets

(5.0.0)

- The collets can now be assigned to a category.

Collet

Geometry
Machine

Name:
-DEMO-STL

Type:
Profile insert clamping system

Orientation of insert:
Perpendicular to tip plane

Note:

Category:
New category...
(none)
(none)
HSK-50
Schaublin
Wendeplatten

Vertical offset (Y): 0.0000 mm
Transversal offset (X): 0.0000 mm
Length offset (Z): 65.2500 mm
Rotation offset (C): -90.0000 °

Max. stick-in depth
 DXF collet shape
 STL model for collet

STL details...

Use this collet for a new tool if several collets can be used for the programmed tool diameter.

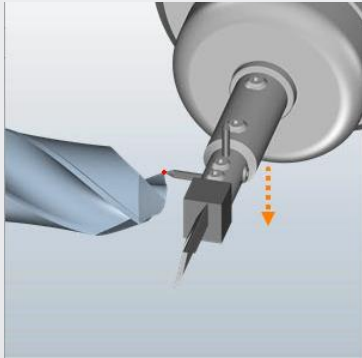
OK Cancel ?

K-land probing

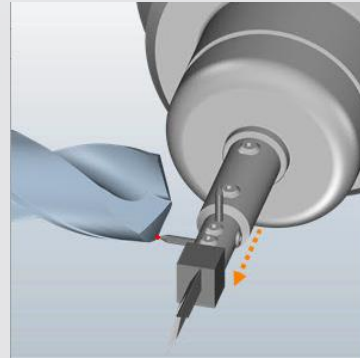
(4.3.0)

- K-land probing with coolant hole needle, additional probing method selectable

Coolant hole needle vertical (new)



Coolant hole needle transverse



Tab page 'Blank'

(5.0.0)

- The 'Blank' dialog is now available on the F10 Resharpener page. This makes it again possible to define the length of the blank.

Nachschärfen

Geometrie
Aufspannung
Rohling
Abträge
Operationen
Tastauftrag
Tasten-Allgemein
Tasten-Position
Tasten-Ausmessen
Tasten-Rundlauf/Planlauf


Werkzeugmaterial: Hartmetall


Kühlkanal

Rohling

Länge:	Rohling 77.0000 mm	Schaft 45.0000 mm	<input checked="" type="checkbox"/> A
Durchmesser:	11.8500 mm	12.0000 mm	<input checked="" type="checkbox"/> A
Spitzenwinkel:	180.0000°		<input type="checkbox"/> A

Fase am Schaft

Stern


Mantel


Datenschnittstelle... [F4] Tasten [F5] Schleifen [F6] Tasten und Schleifen

[F3] Neu... [F7] Speichern als... [OK] Normale Eingabe [Abbrechen] ?

Form cutter – determine tooth center position

(4.3.0)

- As in the drill program, it is now also possible in the form cutter program to determine the tooth center position with the measuring probe.

Geometry

Forms

Relief

Helix

Tip

Blank

Info

Attachment

Clamping

Clamping system transformatio.

Pass over

Increments

CNC

3D

Park positions

Probing-General

Probing-Position

Probing-Measuring

Probing-Runout/Lateral runout

Displacement for probing position in X: mm Y: mm A

Measuring depth in X: mm

Alignment:

Monitor clamping length modification

To the front To the end

Search long tooth

Determine middle position between teeth

Search diameter

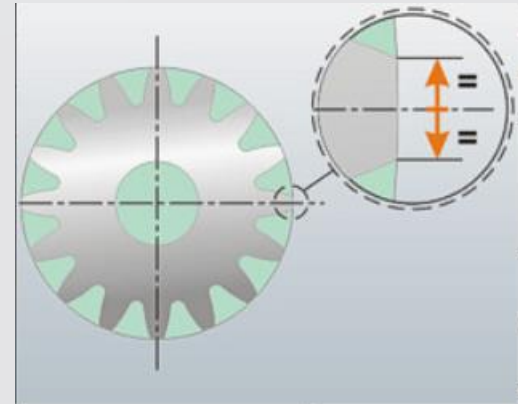
Remeasure clamping length (when resharpening)

Use vertical probe needle to probe rotation

Measure rotation before clamping length

Do not move probe by side distance to probe rotation (Probe is on tool axis position)

Determine adjustment length per tooth (only for helix A, cannot be used in conjunction with already probed values)



Probing page: Multiple helix probing

(5.0.0)

- Now it is possible to select in the probing dialog which helix must be probed (multi-helix end mill)

4.3.0

Tasten

Werkzeugdaten messen

Steigung Drall 1,2

Durchmesser

Nuttiefe

Schneidenlänge

Spanwinkel

Zahn mit grösstem Öffnungswinkel als Startzahn verwenden

Einspannung tasten

Einspannlänge

Verdrehung

Tasten...

Vorgang noch nicht gestartet

5.0.0

Tasten

Werkzeugdaten messen

Steigung Drall 1 2 3 4

Durchmesser

Nuttiefe

Schneidenlänge

Spanwinkel

Zahn mit grösstem Öffnungswinkel als Startzahn verwenden

Einspannung tasten

Einspannlänge

Verdrehung

Tasten...

Vorgang noch nicht gestartet

Other general innovations (2)

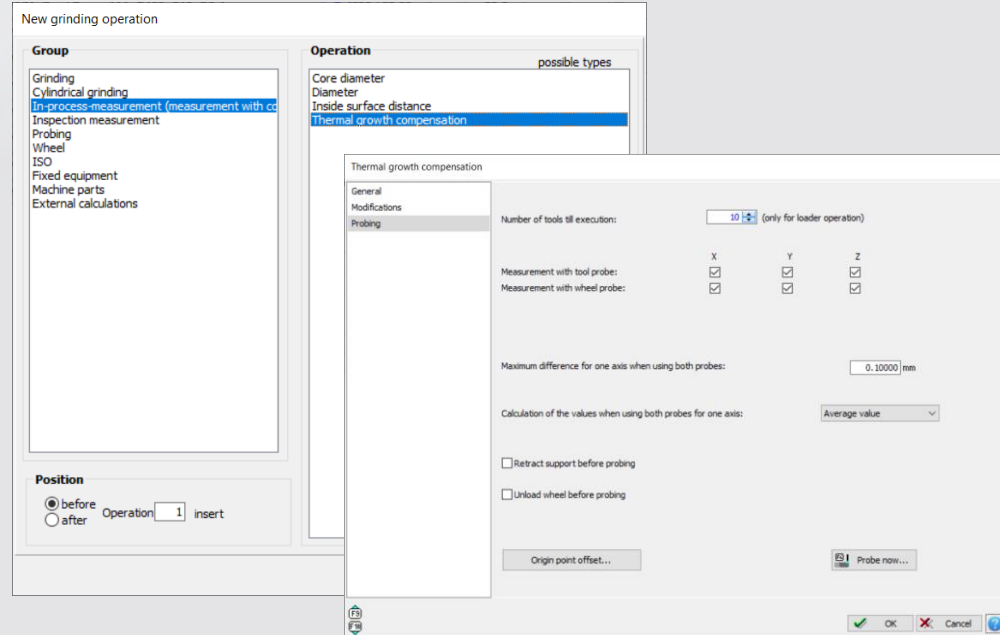
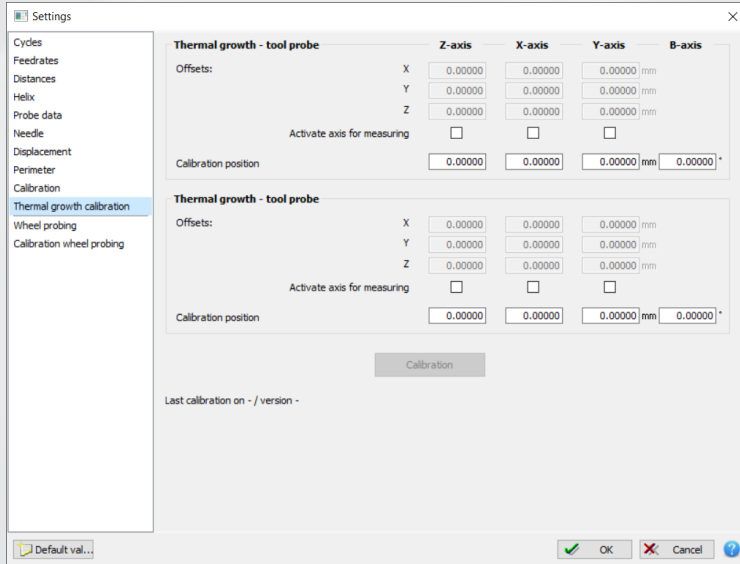
(5.0.0)

- Thermal growth compensation
- Numbering teeth
- Separate parking position for program end within NR-Control
- NUMROTO E-Mail Client
- NR-Control: display message for PC Restart
- New, additional Clamping system transformations can be added manually
- Automatically use last used machine
- Inch / mm value converted in context menu
- Intermediate stop / Park position - Flag and Strategy
- Direct import of default collets

Thermal growth compensation, new option

(new option 4.3.0)

- Automatic thermal growth compensation using the work piece or wheel probe
- This function must be adapted once for each machine kinematic



Pitch: Numbering of teeth

(5.0.0)

- Teeth are new numbered

Geometrie

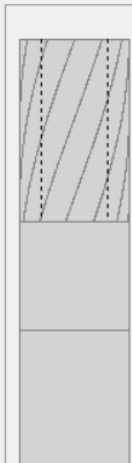
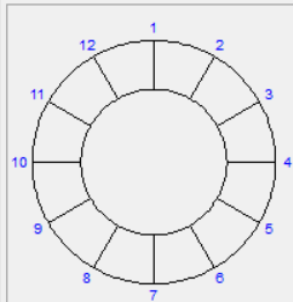
- Spitze
- Durchmesser
- Geometrie
- Teilung**
- Rohling
- Aufspannung

Startwinkel der Zähne [°]

	[°]
1	0.0000
2	30.0000
3	60.0000
4	90.0000
5	120.0000
6	150.0000
7	180.0000
8	210.0000
9	240.0000
10	270.0000
11	300.0000
12	330.0000

Startwinkel sind

- Absolut
- Relativ



Durchmesser 1/Nut

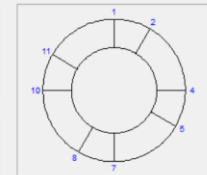
- Nut
- Kern
- Nutauslauf
- Scheibe
- Vorschübe
- Reduktion
- Aufteilung/Zustellung
- AC
- Inkremente
- Allgemeines
- Korrekturen
- Umlenken
- Schleifposition
- Kühlventile
- Teilung/Drahl
- ISO-Ausfahrprogramm
- ISO-Programm

Eigene Teilung / Zahnauswahl

Eigene Zahnauswahl

Eigener Drahlverlauf

Drahltyp: Steigung konstant
 Drahlrichtung: Rechts
 Steigung: 103.5775 /mm



Eigene Schneidrichtung

Schneidrichtung: Rechts

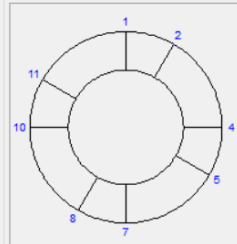
Eigene Zahnauswahl

Startwinkel der Zähne [°]

	A	[°]
1	<input checked="" type="checkbox"/>	0.0000
2	<input checked="" type="checkbox"/>	30.0000
3	<input type="checkbox"/>	60.0000
4	<input checked="" type="checkbox"/>	90.0000
5	<input checked="" type="checkbox"/>	120.0000
6	<input type="checkbox"/>	150.0000
7	<input checked="" type="checkbox"/>	180.0000
8	<input checked="" type="checkbox"/>	210.0000
9	<input type="checkbox"/>	240.0000
10	<input checked="" type="checkbox"/>	270.0000
11	<input checked="" type="checkbox"/>	300.0000
12	<input type="checkbox"/>	330.0000

Startwinkel sind

- Absolut
- Relativ



Separate parking position for NR-Control

(5.0.0)

- For NR-Control at the end of the programm a separate parking position can be defined.

Geometry

Cylinder geometry

Teeth

Division

Blank

Info

Attachment

Clamping

Pass over

Increments

CNC

3D

Park positions

Probing-General

Probing-Position

Probing-Measuring

Probing-Runout/Lateral runout

Position for:

Change of operation 1

Change of operation 2

Change of operation 3

End of program

Program end with NR-Control

Probing the tool

Use values from the entry 'Change of operation 1'

Automatic
(Use values from the settings)

Axis	Position	Sequence
X	500.0000 mm	3
Y	200.0000 mm	1
Z	650.0000 mm	2
B	0.0000 °	4
C	0.0000 °	4

Y
Z
X
B C

Sequence is used to move from the tool to the park position. When approaching the tool starting from the park position the sequence is inverted automatically.

Tip

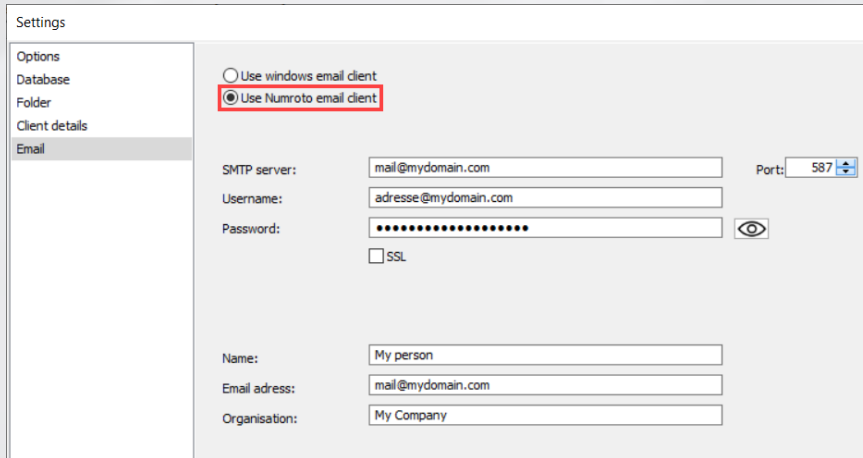
Cylinder

Probing... Data interface... OK Cancel ?

Numroto E-Mail Client

(4.3.0)

- It is no longer necessary to install an e-mail program to send notifications with NR-Control - an integrated e-mail client for sending e-mails is now available.

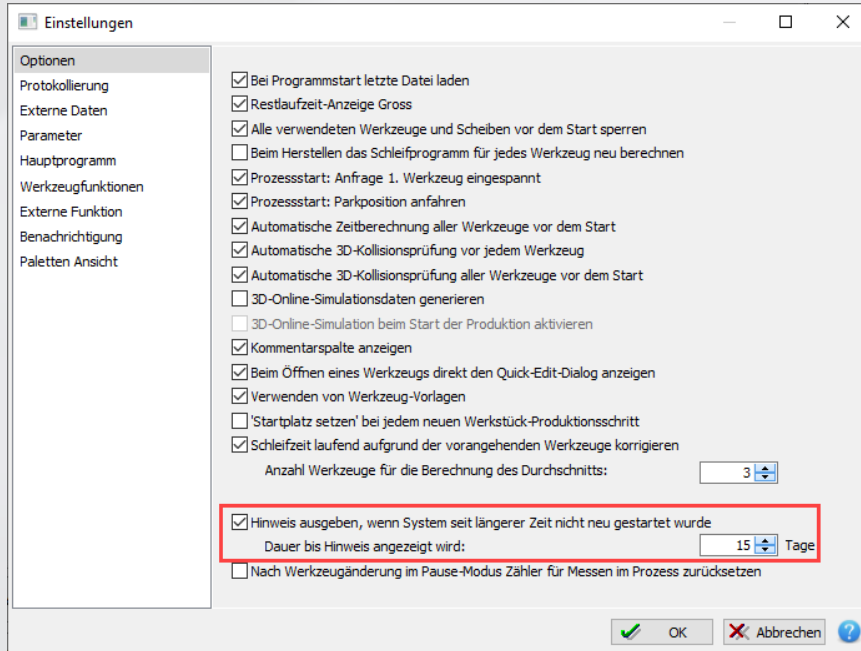


The screenshot shows the 'Settings' window for the Numroto E-Mail Client. On the left is a sidebar with a tree view containing 'Options', 'Database', 'Folder', 'Client details', and 'Email'. The 'Email' section is selected. The main area contains two radio buttons: 'Use windows email client' (unselected) and 'Use Numroto email client' (selected and highlighted with a red box). Below these are input fields for 'SMTP server' (mail@mydomain.com), 'Port' (587), 'Username' (adresse@mydomain.com), and 'Password' (masked with dots). There is an 'SSL' checkbox (unchecked) and an eye icon for password visibility. At the bottom, there are fields for 'Name' (My person), 'Email address' (mail@mydomain.com), and 'Organisation' (My Company).

NR-Control: display message for PC Restart

(4.3.0)

- Display a message if the system has not been restarted for a long time.



Adding manual inputs to the clamping system transformation

(5.0.0)

- For profile insert tools, the orientation of the insert is defined in the profile insert clamping system, and for indexable insert tools, it is defined within the page 'Orientation'. Based on this definition, the insert position is automatically selected correctly in the clamping system transformation.
- New, additional transformations can be added manually.

Bearbeitungsdaten - Spannsystem-Transformation

Plattenlage im Spannsystem: Automatisch

Liste der Transformationen

	A	Bewegung	Achse	Wert		Kommentar
1	<input checked="" type="checkbox"/>	Verschiebung	Vertikal (Y)	-50.0000	mm	Bezugsdurchmesser berücksichtigen
2	<input checked="" type="checkbox"/>	Drehung	Vertikal (Y)	0.0000	°	Anpassung Plattenlage
3	<input checked="" type="checkbox"/>	Drehung	Quer (X)	0.0000	°	Anpassung Plattenlage
4	<input checked="" type="checkbox"/>	Drehung	Längs (Z)	0.0000	°	Anpassung Plattenlage
5	<input checked="" type="checkbox"/>	Drehung	Längs (Z)	0.0000	°	Plattenlage im Halter
6	<input checked="" type="checkbox"/>	Drehung	Vertikal (Y)	0.0000	°	Plattenlage im Halter
7	<input checked="" type="checkbox"/>	Drehung	Quer (X)	0.0000	°	Plattenlage im Halter
8	<input checked="" type="checkbox"/>	Verschiebung	Vertikal (Y)	0.0000	mm	Rohlings-Offset vertikal
9	<input checked="" type="checkbox"/>	Verschiebung	Quer (X)	0.0000	mm	Rohlings-Offset quer
10	<input checked="" type="checkbox"/>	Verschiebung	Längs (Z)	0.0000	mm	Rohlings-Offset längs
11	<input checked="" type="checkbox"/>	Verschiebung	Vertikal (Y)	0.0000	mm	Plattenspannsystem-Offset vertikal
12	<input checked="" type="checkbox"/>	Verschiebung	Quer (X)	0.0000	mm	Plattenspannsystem-Offset quer
13	<input checked="" type="checkbox"/>	Drehung	Längs (Z)	5.0000	°	
14	<input checked="" type="checkbox"/>	Verschiebung	Quer (X)	1.0000	mm	

F3 F4

Automatically use last used machine

(5.0.0)

- It is now possible to automatically activate the last machine used, according to the workpiece info, when opening a tool.

Settings

Options

Window

Export/Import

2D

NUMROTO-3D

Unit

mm

Inch

Add switch in status bar

Number of decimal places

Number:

Confirm exit program

Select text in edit fields

Save filter setups

Background download of CNC program

Use different set of hot keys in resharpening dialog

Stock removal as default page in the sharpening dialog

Flag column in machining operation sequence

No preview in the tool table

Direct machine selection in the status bar

Language selection in status bar

Keep tool category selection active after it has been chosen

Keep a wheel category active after one has been chosen

Only show custom operation name in grinding operations (if available)

Using the Enter key will immediately adopt the selected entry from tool and wheel list

Use profile editor X

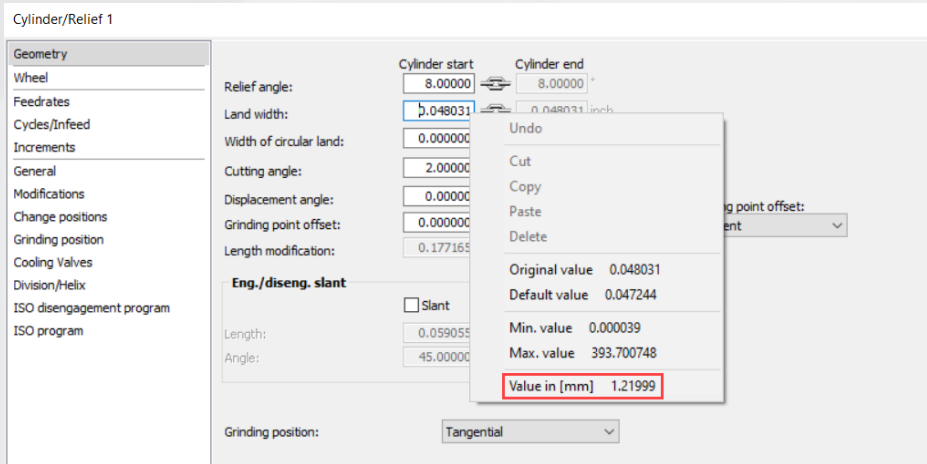
Automatically select the last machine used when opening a tool

Link NCI with function key F12

Inch / mm value converted in context menu

(4.3.0)

- The input value can be displayed in the context menu in the other measure system.



Intermediate stop / Park position - Flag and Strategy

(4.3.0)

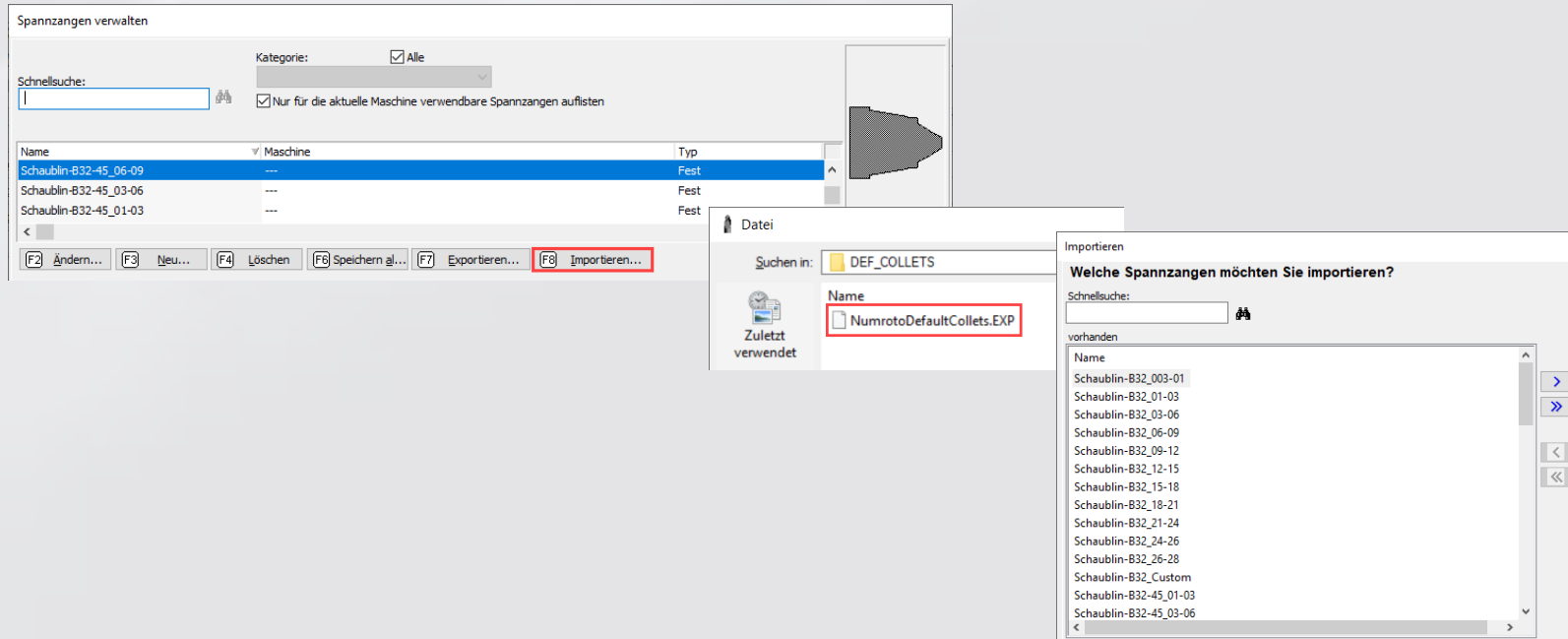
- Intermediate stop / Parkposition - Display flag and strategy for machining steps and 3D simulation separately.
- In operation-4, 'Switch to this operation step via intermediate stop' was activated manually. If now for the 3D simulation the operation-3 is deactivated, the operation-4 has to change via the parking position.

	B	3D	Fa...	Operation	Scheibe	Drehzahl	ID	Vorschub	Kollisio...	Ab...	QW'	Bahnfehler	Umlenken
1	Mantel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Nut-X	--NUM--1A1--D100--B15--R0.1	4202 / 22.00	1	80.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
2	Stirn	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Stirn-Hinterlegung	--NUM--1A1--D100--B15--R0.1	4202 / 22.00	1	50.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
3	Mantel	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Rückenabsetzung	--NUM--1V1--D100--B06--R0.1--W20--Aussen	4202 / 22.00	2	80.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
4	Stirn	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Stirn-Ausspitzung X	--NUM--1V1--D100--B06--R0.1--W20--Aussen	4202 / 22.00	2	50.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
5	Mantel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Freifläche 3	--NUM--11V9--D100--B10--T30--R0.1--Schlichten	4202 / 22.00	3	15.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
6	Mantel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Freifläche 2	--NUM--11V9--D100--B10--T30--R0.1--Schlichten	4202 / 22.00	3	15.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	
7	Mantel	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Freifläche 1	--NUM--11V9--D100--B10--T30--R0.1--Schlichten	4202 / 22.00	3	15.0	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> n	<input type="checkbox"/>	

Direct import of default collets

(5.0.0)

- When installing version 5.0.0, the collet types Schaublin W15, W20, W25, B32, B32-45 are supplied in the 'DEF_COLLETS' folder. These can be imported as required.



The screenshot displays the 'Spannzangen verwalten' (Collet Management) software interface. The main window shows a list of collet types with columns for 'Name', 'Maschine', and 'Typ'. The 'Importieren...' button is highlighted with a red box. A file selection dialog is open, showing the 'DEF_COLLETS' folder and the file 'NumrotoDefaultCollets.EXP' selected. A second dialog box titled 'Importieren' asks 'Welche Spannzangen möchten Sie importieren?' (Which collets do you want to import?). The 'Schnellauche:' field is empty, and the 'vorhanden' (available) list contains the following collet types:

Name
Schaublin-B32_003-01
Schaublin-B32_01-03
Schaublin-B32_03-06
Schaublin-B32_06-09
Schaublin-B32_09-12
Schaublin-B32_12-15
Schaublin-B32_15-18
Schaublin-B32_18-21
Schaublin-B32_21-24
Schaublin-B32_24-26
Schaublin-B32_26-28
Schaublin-B32_Custom
Schaublin-B32-45_01-03
Schaublin-B32-45_03-06

New features in NUMROTO 4.3.0 and 5.0.0

- End mills
- Drills / Step drills
- Form cutters
- 3D-Simulation
- NR Draw
- Other topics
- Other general innovations
- **Planned innovations**

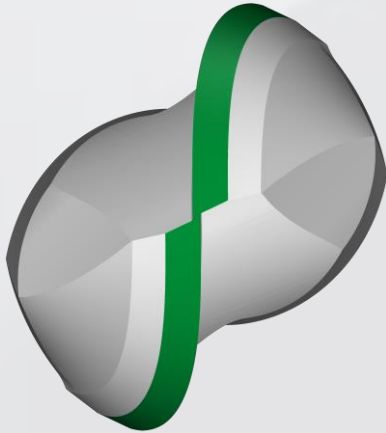


Planned innovations as of 5.0.1

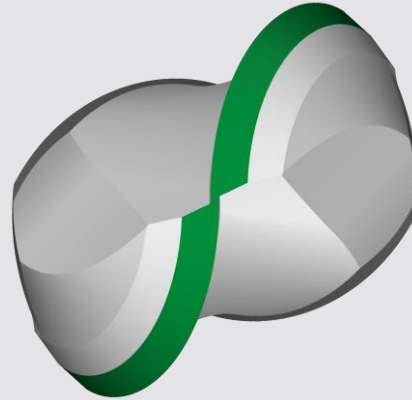
- Parabolic helix on ball nose
- Consider form wheel profile for flute X
- Complete parameter input with simple calculator
- Wheel type 11V5 also suitable for radial clearance (end mill and form cutters)
- Duplicate selected shape/clearance angle, etc.
- Display Start/end points (profile element) in tables
- Widening Preview 'Tip gash out X' and 'X Flat'
- Assign several collets to other machines
- Dialog F10 Resharpen - Automatically add tool to job list
- and much more!

Reduce helix at ball center

- For end mill with ball nose, the helix course on radius 'helix angle linear increasing' has proven itself technologically very well. With a new reduction factor, the helix course in the center of the ball can be made more straight. At 0%, everything remains as before. At 100%, the helix angle at the center of the ball is more straight. Intermediate values are also possible. In all cases, the cutting edge is always continuous.



Reduction factor 100%

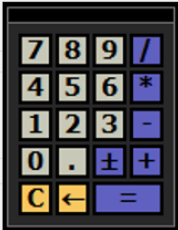


Reduction factor 0% (same as before)

Parameter input

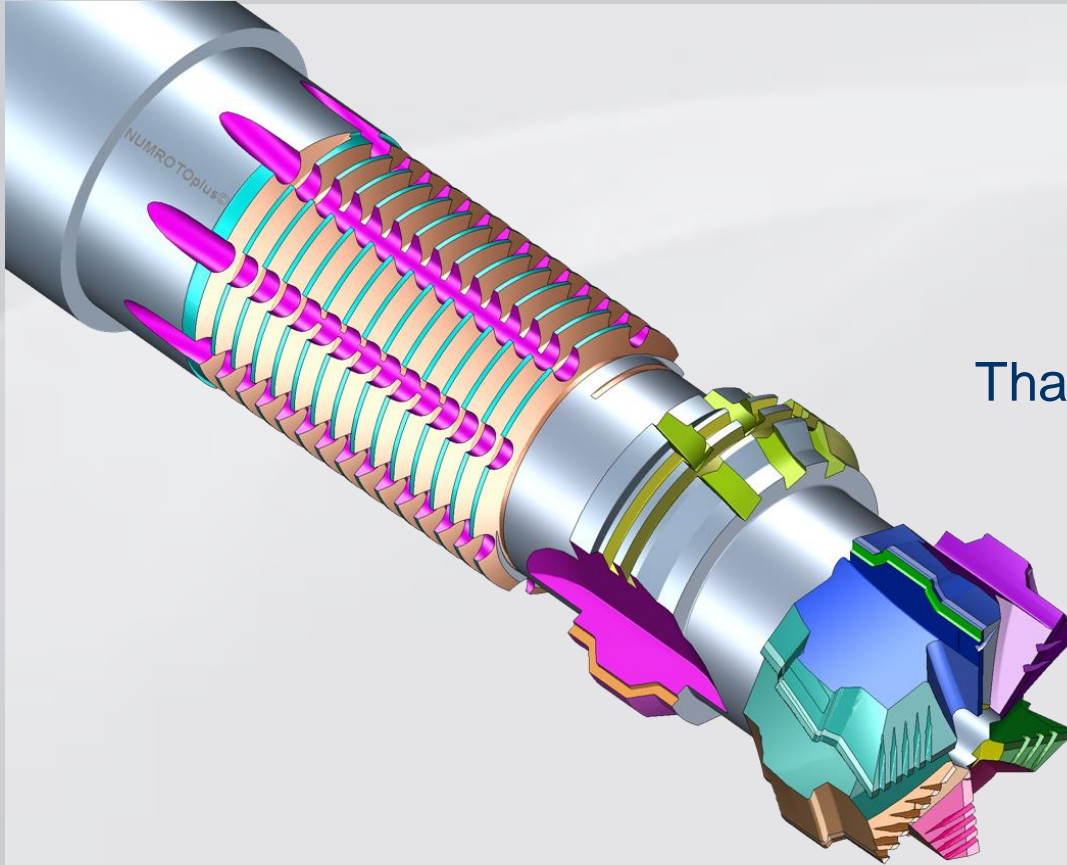
- Complete parameter input with simple calculator.

Mantel/Freifläche 1

Geometrie	Korrekturen
Scheibe	Startwinkelkorrektur: <input style="width: 80px;" type="text" value="0.0000"/> °
Vorschübe	Längskorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
Aufteilung/Zustellung	Korrekturen (bezogen auf Maschine)
Inkremente	Längskorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
Allgemeines	Querkorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
Korrekturen	Vertikalkorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
Umlenken	Korrekturen (bezogen auf Scheibe)
Schleifposition	Scheibenradiuskorrektur: <input style="width: 80px; border: 2px solid red;" type="text" value="0.0200"/> mm
Kühlventile	Flanschmasskorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
Teilung/Drall	Radiuskorrektur: <input style="width: 80px;" type="text" value="0.0000"/> mm
ISO-Ausfahrprogramm	Schleifzeitkorrektur: <input style="width: 80px;" type="text" value="0.0"/> s
ISO-Programm	

Further information:

Release Notes in the NUMROTO customer area:
www.numroto.com



Thank you for your interest!