

# INSTRUCTION MANUAL

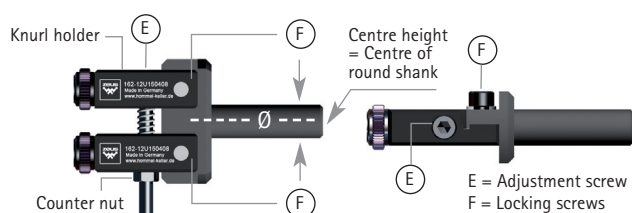
RD 2 Series / Knurling Tools 162



## 1. Assembly of knurling wheels – Knurling profile on knurling wheel (DIN 403)

Tool series	Tool direction	Knurling profile on work piece (DIN 82)		
		RAA	RGE30°	RGE45°
162	Radial	2xAA	1xBL30°/1xBR30°	1xBL45°/1xBR45°
	Radial and Axial	2xAA	1xBL30°/1xBR30°	1xBL45°/1xBR45°

## 2. Tool description

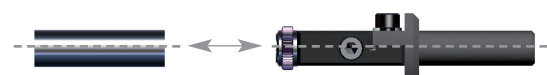


## 3. Work piece preparation

- 3.1 Concentricity: +/- 0,05 mm.
- 3.2 Chamfer work piece (minimum pitch x 30°-45°)

## 4. Clamping position

- 4.1 Clamp tool centrally to the work piece.

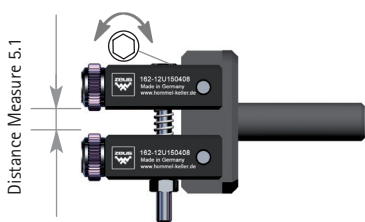


## 5. Presetting of knurling tool

- 5.1 Calculation of knurl holder distance: Pre-turn diameter of the work piece + material displacement\* - rated pitch. \*A material displacement table is available from the zeus Knurling Technology Catalogue or can be downloaded from the web: [www.zeus-tooling.de/support](http://www.zeus-tooling.de/support).

**Example:** Preturn diameter 15, Profile: RAA 1,2  
Material displacement = 0,5  
**Displace Measure 5.1 = 15 + 0,5 - 1,2 = 14,3**

- 5.2 Loosen counter nut.
- 5.3 Loosen both locking screws (F). Adjust distance (E) as shown in 5.1.



## 6. Centering of knurl holders

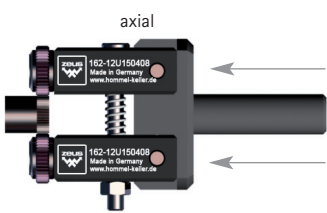
- 6.1 Clamp tool.
- 6.2 Check if both knurl holders can be moved.
- 6.3 Move carefully with the locating center between the two knurl holders, until tool is centered.



- 6.4 Tighten locking screws (F), retract tool

## 7. Knurling

- 7.1 Tighten counter screw.
- 7.2 Start auto lathe with the required parameters and move axially over the work piece until required knurling profile is achieved.

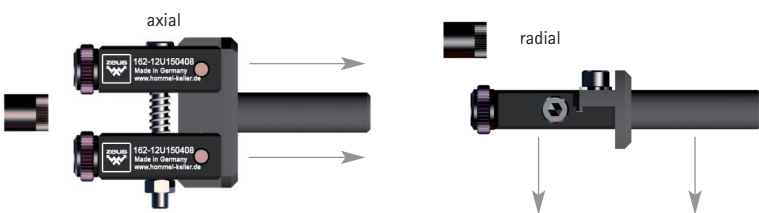


## 8. Dwell time

- 8.1 After reaching the end-position, the dwell time should not exceed more than 5-10 rotations of the work piece.

## 9. Tool retraction

- 9.1 The tool is retracted with double the feed rate. Alternatively retract radially from the work piece.



## 10. Check knurling profile – Fine adjustment

- 10.1 If the profile is not fully formed, adjust distance measure (5.1)  
Important: Divide the correcting measure equally on both knurl holders.  
(i.e. each knurl holder is adjusted separately with half the correcting measure.  
A repeated tool centering will not be necessary.

## Trouble Shooting:

Problem:	Cause:	Solution:
Profile is not fully formed.	X-Feeding too small.	Adjust setting (see 5.)
Profile is not fully formed.	Knurling wheel not axial to work piece.	Move tool to required position (see 4.)
High material displacement at end of knurling profile; profile appears squeezed. Considerable wear of knurling wheels.	X-Feeding bigger than profile depth. Knurling tool presses on work piece.	Adjust setting (see 5.)
Uneven profile sharpness.	Work piece does not run smoothly. Axial run-out.	Overspeed work piece Ø Face turning.
Wrong knurling profile.	Wrong knurling wheels assembled.	Assemble correct knurling wheels (see 1.)
Uneven profile structure.	Knurling wheels do not run smoothly - distortions occur.	Disassemble knurling wheels, clean, lubricate and reassemble.
Profile is uneven, contains drag marks and points are frayed.	Chips are rolled into the profile.	Ensure supply of sufficient cooling and lubrication! If Possible with high pressure.
Knurling profile is not sharp.	Worn knurling wheels.	Replace with new zeus knurling wheels.

Further application support (feed and speed rates, material displacement table, spare part drawings, etc.) are available from our catalogue or from the zeus Online Support. Please go to [www.zeus-tooling.de/support](http://www.zeus-tooling.de/support) for registration.

