

OPERATING MANUAL

Marking tool 421



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GENERAL INFORMATION

Please read this operating manual carefully. Correct assembly and handling of the tool will save you set-up time and allow you to achieve optimal results.

1. Area of application

Tools of all types can be labelled quickly, affordable and flexibly with this marking tool.
Markings on faces (Fig. 1, ref. 4), cylindrical outer surfaces (Fig. 1, ref. 1), bevels (Fig. 1, ref. 3) and spherical surfaces (Fig. 1, ref. 2) are possible.

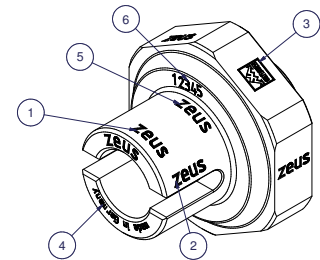


Figure 1: Area of application

2. Spring-return system

The spring-return system is perfectly suited for flexible marking of workpieces with different diameters and shapes.
With rotation of the workpiece, the marking roll rotates partially to mark the workpiece with the desired depth.

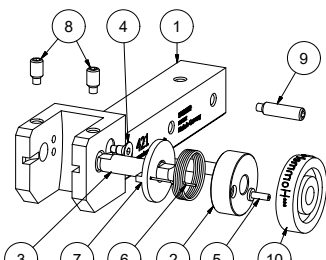


Figure 2: Short lathe variant BW421 exploded drawing

3. Selection and installation of the spring

The direction of rotation of the tool and/or axis (clockwise = CW or counter-clockwise = CCW) is crucial for selection of the correct spring (Fig. 3). With CW rotation of the workpiece, the right-hand version (Fig. 4, RIGHT) of the spring must be installed and the left-hand version (Fig. 4, LEFT) must be installed for CCW rotation.

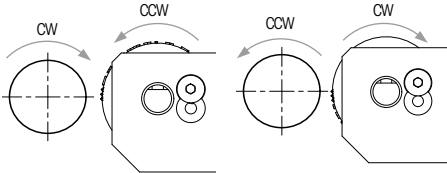


Figure 3: Direction of rotation of workpiece and marking roll

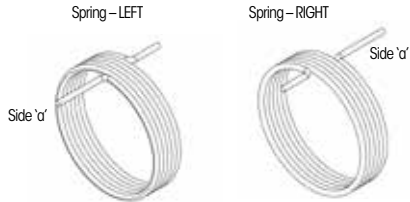


Figure 4: Spring

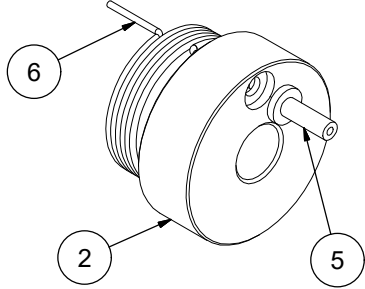


Figure 5: Spring housing assembly

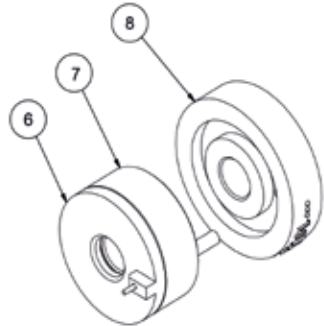


Figure 6: Assembly of marking roll

7. Position check of the marking roll unit

With use of the RIGHT spring, turn the marking roll (Fig. 7, pos. 10) until the driving pin (Fig. 5, pos. 5) is above the counterbore of the holder (cf. Fig. 7). With use of the LEFT spring, the marking roll must be turned CCW.
If the correct position has been reached, hold the marking roll in this position and screw in the stop screw (Fig. 7, pos. 4) in the threaded hole of the holder.

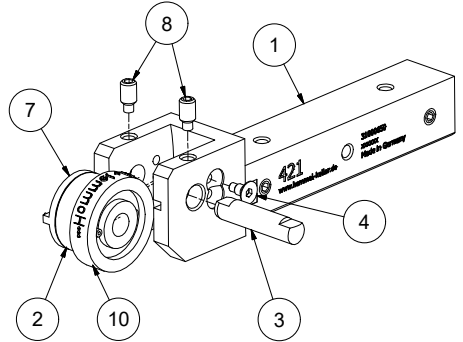


Figure 7: Assembly of marking roll unit

8. Position check of the marking roll

The first starting point of the marking roll (Fig. 7, pos. 10) must be on the centre height (top edge shank edge) of the base holder (Fig. 7, pos. 1) (cf. Fig. 8).

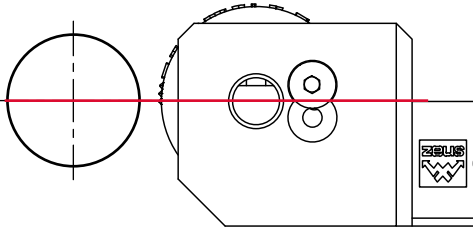


Figure 8: Marking roll positioning

9. Function check

First turn the marking roll (Fig. 7, pos. 10) by hand CCW to the mechanical stop. When you let go of the marking roll, it must return to the starting position of the marking. Now turn the marking roll slightly. During this movement the marking roll must again spring back to the starting position on its own.

10. Removing / exchanging the marking roll

For removal of the marking roll (Fig. 7, pos. 10), follow the instructions starting with no. 7 in reverse sequence. For a tool version with a different spring, adapt the procedure accordingly. Pay special attention to the rotary direction of the roll!

ASSEMBLY

4. Spring installation in spring housing

Insert the selected spring (Fig. 5, pos. 6) with the short side first into the spring housing (Fig. 5, pos. 2) and position the driving pin (Fig. 5, pos. 5) on the arm of the spring (cf. Fig. 5).

5. Installation of marking roll

Slide the marking roll (Fig. 6, pos. 8) onto the mounted assembly so that the driving pin (Fig. 5, pos. 5) is guided in the groove of the marking roll (Fig. 6, pos. 8). Then, fit the fixing disc (Fig. 6, pos. 6) with the smooth side first on the protruding spring arm (cf. Fig. 6).

6. Positioning and assembly of the marking roll

Slide the complete marking roll unit (incl. assembled spring housing) into the groove of the base holder (Fig. 7, pos. 1). During this process, insert the fixing disc (Fig. 7, pos. 7) into the corresponding recess. Then, centre the complete unit with the axle pin (Fig. 7, pos. 3) and secure with the threaded pins (Fig. 7, pos. 8). In the process, the positioning of the planar surface of the axle pin must be observed.

11. Approach of the workpiece

After the tool has been set up, the workpiece can be approached and adjusted with a rotating spindle. With rotation of the workpiece, the marking roll is driven in the opposite direction (cf. Fig. 3). Characters of the marking roll are embossed in the process. Is the marking completed, the marking roll stops in the end position. Then, if the tool is removed from the engagement, the marking roll springs to its initial position.

12. Application

This tool type can be used modularly in front of and behind the rotation centre. For marking runs on a spherical surface/in an axial direction (cf. Fig. 1, ref. 2), the complete marking tool can be clamped rotated 90°.
Note: When marking on spherical surfaces or in an axial direction, it must be ensured that the C-axis is positioned and the rotational speed is 0 rpm.

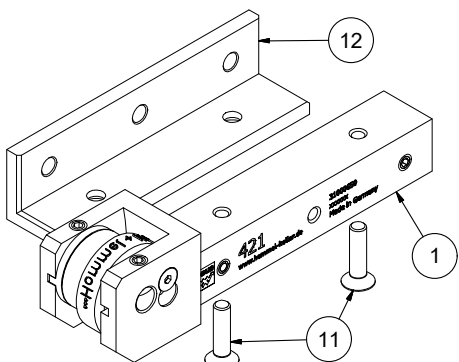


Figure 9: Shank adapter installation

APPLICATION

14. Manufacturer's recommendations

- The embossing depth or adjustment of the marking roll should be 0.075 mm relative to the radius and 0.15 mm relative to the diameter (see Table 1; embossing depth)
If used incorrectly, the spring housing and marking roll can be damaged!
- The marking roll must be parallel to the surface of the workpiece surface
- The concentricity of the workpiece must be max. 0.03 mm relative to the diameter
- The marking surfaces must be clean (free from surface contaminants)

15. Guidelines for process parameters

System	Material	Workpiece Ø	Speed n [rpm]	Radial feed rate f [mm/rotation]	Embossing depth ap-value [mm]
Spring-return	up to max. Rm = 1000 N/mm²	any	200 (marking with C-axis is possible)	f = d x π (d = workpiece diameter) High speed (possible with restrictions)	r = 0.075 Ø = 0.15

Table 1: Guidelines for process parameters

Note:
The values provided here are recommendations and must be optimised for the application.

The embossing quality and the wear of the marking rolls is dependent on:

- the combination of workpiece diameter and speed
- the feed rate
- the material
- and the application (e.g. clamping set-up- single- or double-sided)

The embossing depth must always be greater than the concentricity (Ø 0.03 mm)

16. Troubleshooting

Description of error	Cause	Solution
uneven marking	Workpiece is not running true/centre height of the tool is incorrect	Over-turn workpiece diameter/align centre height
Marking is embossed deeper/shallower on one side (right/left, top/bottom) – Right/left – Top/bottom	– Insufficient feed rate – Centre height of tool is incorrect	Check tool clamping – Check feed rate – Adjust centre height
Marking roll is hard to turn, stops at variably position	Tool is very dirty, jammed by chips, etc./no function check executed during assembly Marking roll dirty, spring is dirty	Remove, clean, re-assemble tool, perform function check. Check spring (left/right version) Clean and oil marking roll and spring
Spring return of the marking roll is not working	Spring is disconnected or defective/spring is mounted incorrectly	Remove tool, check spring for function
Marking roll can be turned more than 360°, no stop	Stop pin in the marking roll is defective or missing	Check pin/stop
Spring return too weak	Spring tension too low/dirt in tool	Adjust and check pre-tensioning of the spring Clean tool
Starting position of the marking roll changes	Threaded pin not on the clamping surface of the bearing bolt	Firmly tighten threaded pins/observe position

Table 2: Troubleshooting