

OPERATING MANUAL

Marking tool 422



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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 and 6), cylindrical outer surfaces (also up to a shoulder); (Fig. 1, ref. 1 and 5), bevels (Fig. 1, ref. 3) and spherical surfaces (Fig. 1, ref. 2) are possible.

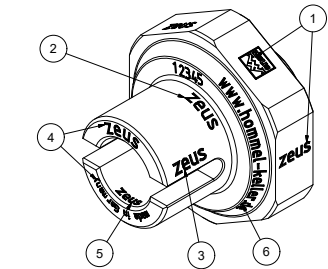


Figure 1: Area of application

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.

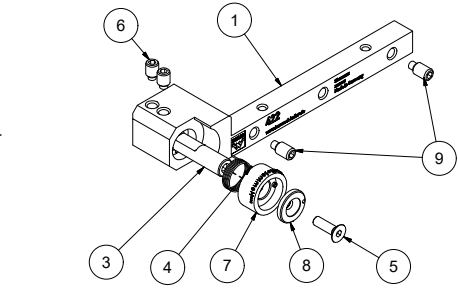


Figure 2: Short lathe variant BW422 exploded drawing

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. Insert the relevant spring with the mounting side a in the hole of the tool holder (Fig. 5).

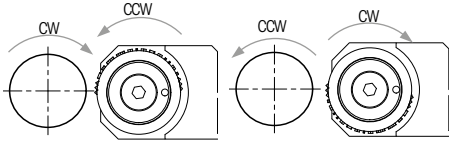


Figure 3: Direction of rotation of workpiece and marking roll

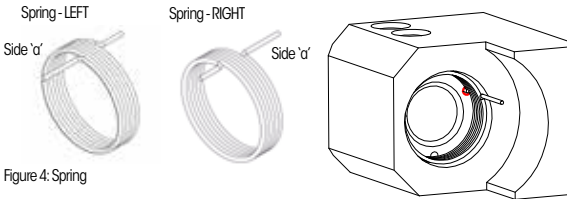


Figure 4: Spring

Figure 5: Installation of the spring

4. Assembly of stop washer / bearing bolt / marking roll

Slide the marking roll (Fig. 6, pos. 7) with the stepped bore first and the stop washer (Fig. 6, pos. 8) and the bearing bolt (Fig. 6, pos. 3) and fasten with the countersunk screw (Fig. 6, pos. 5). An additional race, behind which the marking roll is mounted, is included with the version up to a shoulder.

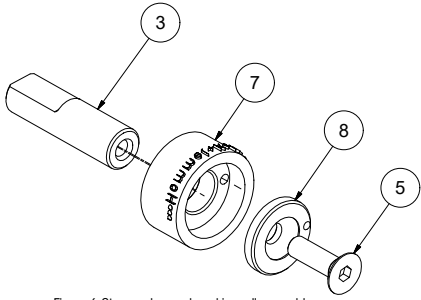


Figure 6: Stop washer and marking roll assembly

5. Assembly of marking roll unit

Slide the bearing bolt with the mounted marking roll and stop washer into the holder so that the spring arm of the spring (Fig. 7, pos. 2) is accepted by the bore of the marking roll (Fig. 7, pos. 7) (Fig. 6). In the process, turn the bearing bolt (Fig. 7, pos. 3) so that the clamping surface is flush with the threaded holes in the holder (Fig. 7, pos. 1). Then, tighten the two threaded pins (Fig. 7, pos. 6) slightly.

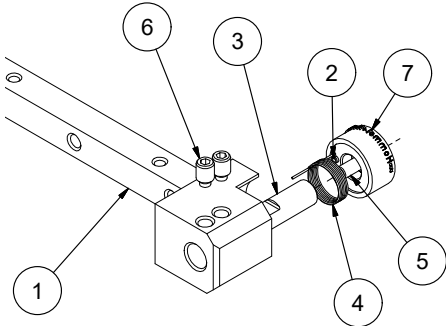


Figure 7: Installation of marking roll

6. Position check and adjustment of the roll

Loosen but do not remove the countersunk screw (Fig. 6, pos. 5). Then, when the workpiece direction of rotation is CW, turn the marking roll (Fig. 6, pos. 7) CCW until the starting point is on the centre height (shank top edge) of the tool holder (cf. Fig. 8). When the workpiece direction is CCW, turn the marking roll CW. Hold the marking roll in this position and push the nose of the stop disc (Fig. 9, ref. A) against the tensioning pin (Fig. 9, ref. B) and re-tighten with the countersunk screw (Fig. 6, pos. 5).

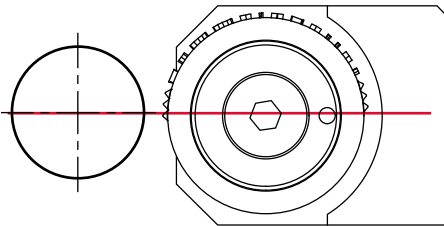


Figure 8: Alignment of the marking roll

7. Setting the axial play of the marking roll

Push the bearing bolt (Fig. 7, pos. 3) into the holder (Fig. 7, pos. 1) until the marking roll (Fig. 7, pos. 7) can still rotate easily. Hold it in this position and firmly tighten the threaded pins (Fig. 7, pos. 6).

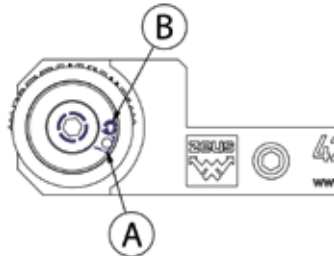


Figure 9: Marking roll positioning

8. Function check

First turn the marking roll (Fig. 7, pos. 7) 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.

9. Removing / exchanging the marking roll

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

10. 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.

11. Application

Whether the tool is a right- or left-hand version is essential when determining the insertion position (in front of or behind the rotation centre). In front of the centre of rotation corresponds to the right and behind the centre of rotation corresponds to the left-hand version. If the mark is made on a spherical surface / in the axial direction, the complete marking tool can be clamped rotated 90°.

Note:
When marking on a spherical surface or in an axial direction, it must be ensured that the C-axis is positioned and the rotational speed is 0 rpm.

12. Use of shank adapters

With use of shank adapters, the tool can be used on all machines. For this purpose, fasten the supplied shank adapter (Fig. 10, pos. 11) with the accompanying countersunk screws (Fig. 10, pos. 10) on the base shank (Fig. 10, pos. 1).

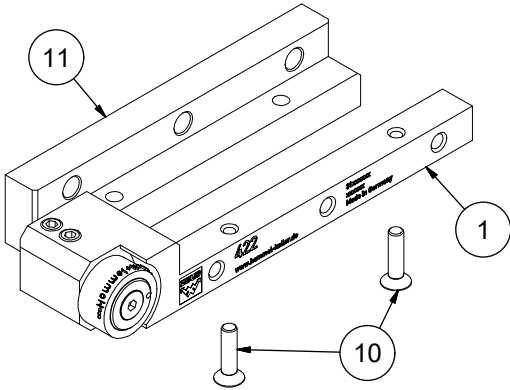


Figure 10: Shank adapter installation

13. 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)

14. 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 (working 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)

15. Troubleshooting

Description of error	Cause	Solution
uneven marking	– Run-out accuracy is outside of the recommended tolerance range – Incorrect centre height – Tool axis is not parallel with the workpiece	– Over-turn workpiece diameter – Check centre height
Marking roll turns sluggishly, 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
Marking does not turn or only turns sluggishly, stops at arbitrary position	Insufficient play or no play of the marking roll	Adjust and check play of the 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	Insufficient play or no play of the marking roll/ spring is worn out Insufficient spring tension/wrong spring is installed	Adjust and check play of the spring/ replace spring Adjust spring position in holder by one revolution/replace spring
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

ASSEMBLY

APPLICATION

IMPORTANT