

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.

GENERAL INFORMATION

### 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.

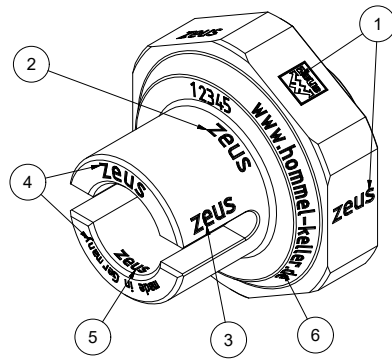


Figure 1: Area of application

### 2. Spring-return system

The spring-return system is perfectly suited for flexible marking of workpieces with different diameters and shapes. With interchangeable segments, the tool can be converted quickly and easily to changing text, numbers or characters.

With rotation of the workpiece, the carrier unit rotates partially to mark the workpiece with the desired depth.

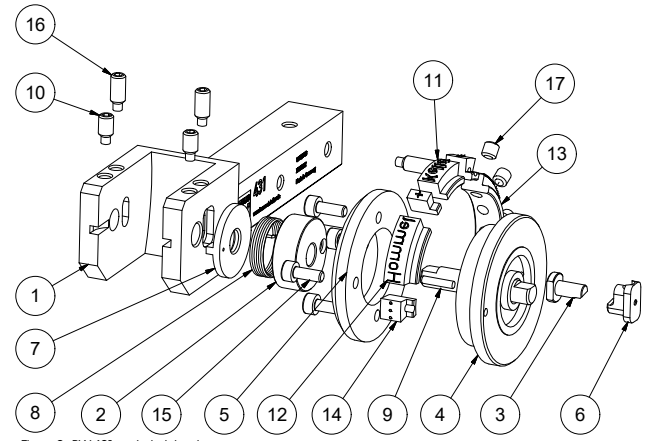


Figure 2: BW 431 exploded drawing

ASSEMBLY

### 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 torsion 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.

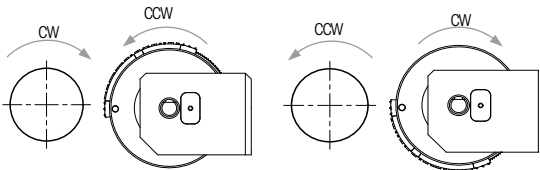


Figure 3: Direction of rotation of workpiece and carrier unit

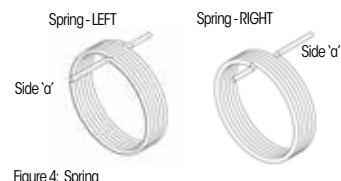


Figure 4: Spring

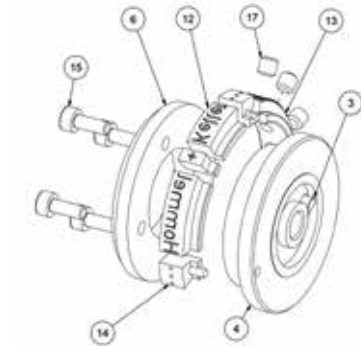


Figure 5: Installation of marking segments

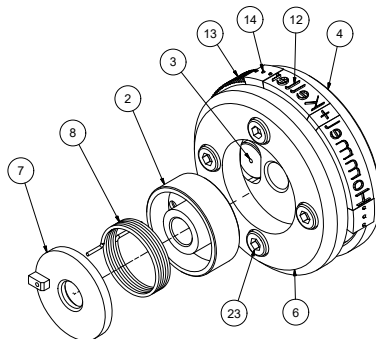


Figure 6: Installation of the spring housing

### 6. Insertion of the carrier unit

Push the complete carrier unit (including the mounted spring housing) into the holder. In the process, ensure that the nose is guided into the groove (cf. Fig. 7). Then, slide the axle pin (Fig. 7, pos. 9) into the bore of the holder and clamp with the threaded pin (Fig. 7, pos. 10).

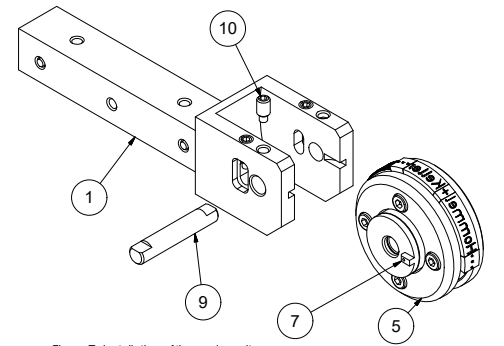


Figure 7: Installation of the carrier unit

### 7. Position the carrier unit

After the complete carrier unit was installed and fixed, it must be pre-tensioned with one rotation. Then, ensure that the surface of the fixed stop pin (Fig. 9, pos. 3) is flush with the surface of the stop (Fig. 9, pos. 6). Then, fasten with the threaded pin (Fig. 9, pos. 16).

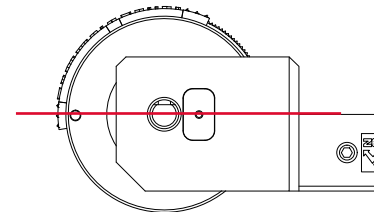


Figure 8: Marking roll unit positioning

### 8. Function check

First turn the segment holder unit by hand CCW to the mechanical stop. When you release the carrier unit, it must return to the starting position of the marking. Then, turn the segment holder unit slightly. During this movement the segment holder unit must again spring back to the starting position on its own.

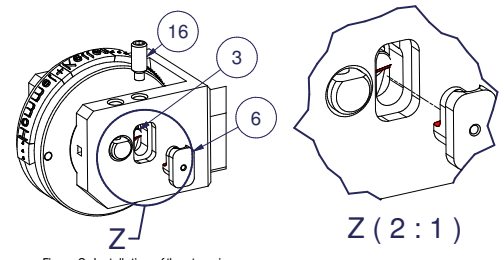


Figure 9: Installation of the stop pin

### 5. Installation of the spring housing

Slide the spring (Fig. 6, pos. 8) with the longer arm 'a' through the bore of the spring housing (Fig. 6, pos. 2). Then, slide both components into the carrier unit (cf. Fig. 6). Ensure that the arm of the spring is positioned in the bore of the stop pin (Fig. 6, pos. 3). Then, fit the fixing disc with the smooth side first onto the protruding spring arm.

### 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. As the marking is completed, the segment support unit stops in the end position. Then, if the tool is removed from the engagement, the carrier unit springs to its initial position.

### 11. Application

This tool type can be used modularly in front of and behind the rotation centre. If the labelling runs on a spherical surface or 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.

### 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. 18) with the accompanying countersunk screws (Fig. 10, pos. 19) on the base shank (Fig. 10, pos. 1).

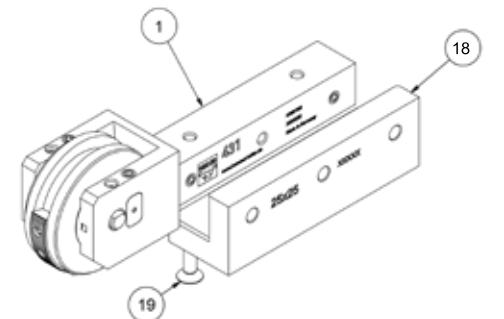


Figure 10: Shank adapter installation

### 13. Manufacturer's recommendations

- The embossing depth or adjustment of the segments 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 carrier unit and segments can be damaged!**

- The marking segments 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)

**Note:**

The segment carrier unit is also available as an E-kit: in left or right version!

Right-hand version: Art. no.: 21BHR1509

Left-hand version: Art. no.: 21BHR1510

### 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/mm <sup>2</sup>	any	200 (working with C-axis is possible)	$f = d \times \pi$ (d = workpiece diameter) High speed (possible with restrictions)	$r = 0.075$ $\varnothing = 0.15$

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 segments 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	Workpiece is not running true/surfaces are not parallel	- Over-turn workpiece diameter/ align tool
Marking roll turns sluggishly, stops at arbitrary position	- Tool is very dirty, jammed by chips, etc. - No function check executed during assembly - Segment receptacle and/or spring is dirty - Insufficient play or no play of the marking roll	- Remove, clean, re-assemble tool, perform function check. Check spring (left/right version) - Clean and oil segment receptacle and spring - Adjust and check play of the spring, replace spring if necessary
Spring return of the carrier unit is not working	- Spring is disconnected or defective - Spring installed incorrectly	Remove tool, check spring for function
Carrier unit 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 carrier unit - 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 carrier unit changes	Threaded pin not on the clamping surface of the bearing bolt	- Tighten threaded pin firmly - Observe position

Table 2: Troubleshooting

IMPORTANT