

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 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.

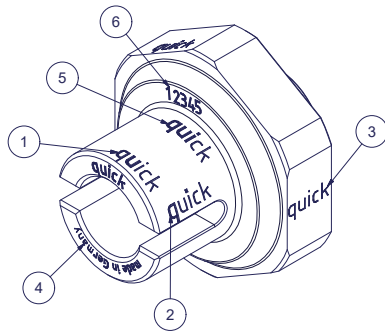


Figure 1: Area of application

2. Spring-return system

The spring-return system is perfectly suited for flexible marking of workpieces with different diameters and shapes. With 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.

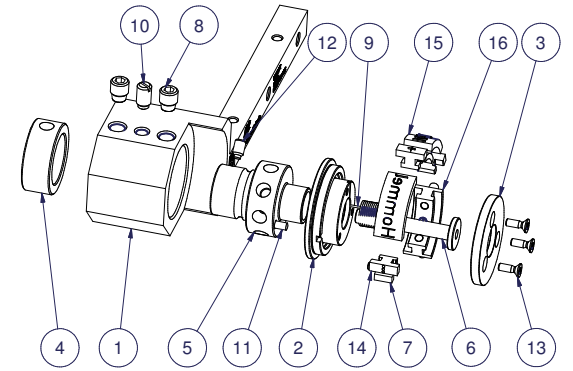


Figure 2: QBW 432 exploded drawing

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. Slide the spring (Fig. 5, pos. 9) with mounting side 'a' into the bore of the stop receptacle (Fig. 5, pos. 2). Ensure that the shorter end is positioned in the groove (Fig. 5, marked red). Then, slide the collar bolt (Fig. 5, pos. 6) into the bore and fasten with the threaded pin (Fig. 5, pos. 12). The carrier unit must have only enough play that friction-free rotation is possible.

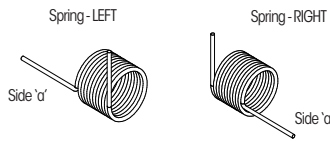


Figure 4: Spring

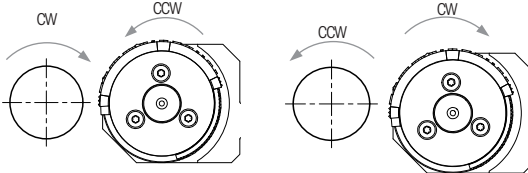


Figure 3: Direction of rotation of workpiece and marking roll

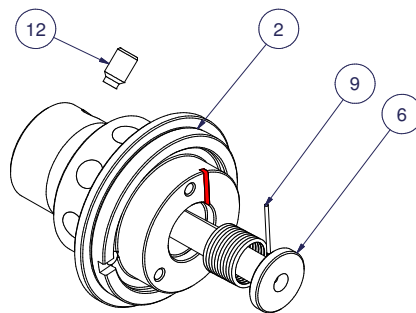


Figure 5: Installation of the spring

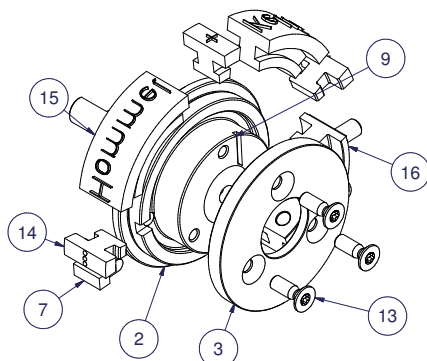


Figure 6: Installation of the segments

5. Clamping the segments

Press segments and end-segment (Fig. 6, pos. 15 and 16) flush against the segment stop (Fig. 6, pos. 7). In the process, the individual segments must align without gaps. As an additional clamping means, tighten the three threaded pins of the end segment (Fig. 6, pos. 16) and tighten the countersunk screws (Fig. 6, pos. 13) for clamping of the segment cover (Fig. 6, pos. 3).

6. Insertion and positioning of the segment carrier unit

Then, insert the complete carrier unit (incl. assembled spring housing) into the hole of the holder (Fig. 7). Ensure that the starting point is aligned at the height of the centre height (top shank edge) (Fig. 8). If the spring-mounted pressure piece (Fig. 7, pos. 10) engages in the circumferential groove of the stop washer, the carrier unit is secured axially. If necessary, the spring-mounted pressure piece (Fig. 7, pos. 10) must be re-adjusted. Then, secure the carrier unit with the threaded pin (Fig. 7, pos. 8).

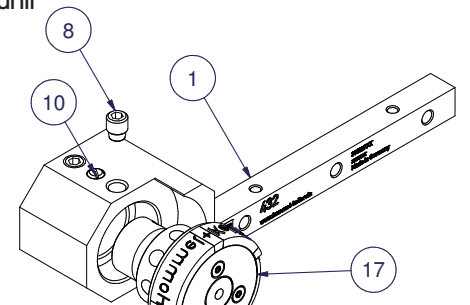


Figure 7: Installation of the carrier unit

7. Function check

First turn the carrier unit (Fig. 7, pos. 17) 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 carrier unit slightly. During this movement the carrier unit must again spring back to the starting position on its own.

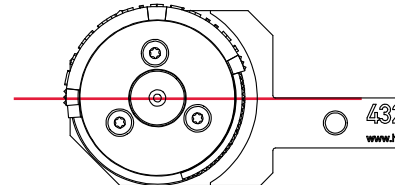


Figure 8: Positioning of the carrier unit

8. Removing / exchanging the segments, carrier unit and spring

With removal / exchange of segments, carrier unit or spring, proceed in the reverse sequence under 6.

ASSEMBLY

4. Installation of marking segments

In order to be able to install the marking segments, the countersunk screws (Fig. 6, pos. 13) and the segment cover (Fig. 6, pos. 3) must be completely removed. Then, insert the end-segment (Fig. 6, pos. 7) with the pin first into the groove of the segment receptacle (Fig. 6, pos. 2). The start segment (Fig. 6, pos. 14) is joined and attached to the segment stop. Then, the segments (Fig. 6, pos. 15) and the end-segment (Fig. 6, pos. 16) follow. **Do not screw down the end segment for the time being.** Then, the segment cover can be re-installed on the segment receptacle and fastened gently with the countersunk screws.

9. 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 carrier unit springs to its initial position.

10. Application

Whether the tool is a right-hand 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 variant. If the mark is made on a spherical surface / in the axial direction, the complete marking tool can be clamped rotated 90°.

Note: When markings 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.

APPLICATION

11. 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. 9, pos. 18) with the accompanying countersunk screws (Fig. 9, pos. 19) on the base shank (Fig. 9, pos. 1).

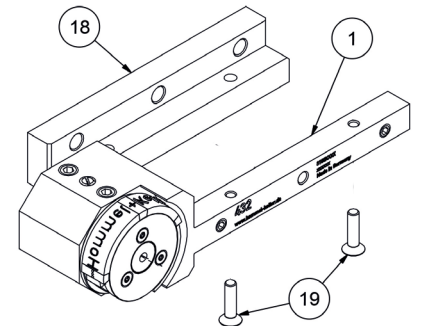


Figure 9: Shank adapter installation

12. 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 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 carrier unit is also available as an E-kit in right-hand version!

Right-hand version (Ø 30 mm): Art. no.: 21BHR1081

Left-hand version (Ø 50 mm): Art. no.: 21BHR1111

13. 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 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)

14. 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 variably 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