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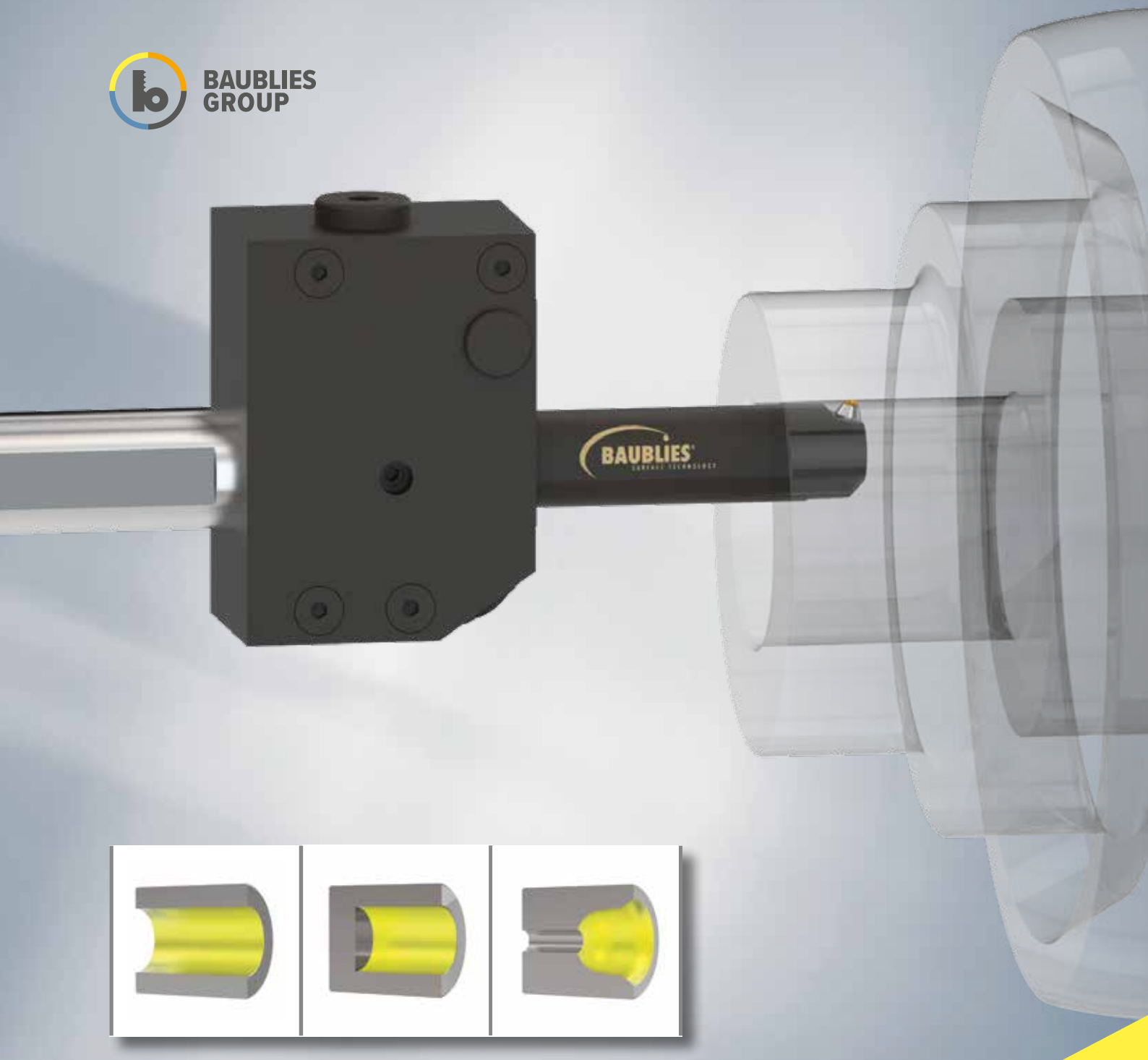

DIAMOND BURNISHING TOOL
WITH BASIC ELEMENT

For internal machining of holes
and contours

BAUBLIES®
SURFACE TECHNOLOGY

DIAMANT-GLÄTTWERKZEUGE: FÜR HÖCHSTE PRÄZISION

DIAMOND-BURNISHING TOOLS: FOR HIGHEST PRECISION

Diamant-Glättwerkzeuge erweitern das Einsatzspektrum zum Glätten und Verfestigen von Oberflächen gehärteter Werkstoffe bis über 60 HRC.
Dabei gleitet ein Diamant über die zu glättende Fläche. Sobald die Fließgrenze des Werkstoffes überschritten wird, fließen die Profilspitzen an der Werkstückoberfläche im µm-Bereich in die angrenzenden Vertiefungen.
Da die Kontaktfläche zwischen Werkstück und Diamant geringer ist als bei der Bearbeitung mittels Rollen, kann die plastische Kaltverformung bei geringerer Krafteinwirkung erfolgen.
Diamant-Glättwerkzeuge kommen in Bereichen zum Einsatz, in denen Ein- und Mehrrollenwerkzeuge aufgrund von Werkstoffeigenschaften oder der Geometrie des Werkstücks an ihre Grenzen stoßen. Diamant-Glättwerkzeuge sind sowohl für die Innen- als auch für die Außenbearbeitung verfügbar.

Diamond-burnishing tools expand the range of applications of roller burnishing technology, as even hardened materials up to approximately 60 HRC can be roller burnished.
In the process, a high-precision, micro-polished diamond glides over the surface. As soon as the yield point of the material is exceeded, the profile peaks of the workpiece surface flow into the adjacent recesses in the µm range.
Compared to the machining by means of rollers, the contact area between the workpiece and the diamond is much smaller. Therefore, plastic cold working with a reduced influence of force can take place. Baublies diamond roller burnishing tools advance into hardness and diameter areas in which conventional roller burnishing tools cannot be used due to the workpiece characteristics or geometry. With diamond-burnishing tools, all contours – internally and externally – can be roller-burnished and deep-rolled.

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DIAMANT-GLÄTTWERKZEUGE: FÜR HÖCHSTE PRÄZISION

DIAMOND-BURNISHING TOOLS: FOR HIGHEST PRECISION

VORTEILE

- Maximale Prozesssicherheit
- Höchste Oberflächengüten
- Härtere Randschichten
- Glätten von gehärteten Bauteilen
- Kein zusätzliches Equipment wie etwa Hydraulikaggregate und Leitungen erforderlich
- Zunahme der Dauerschwingfestigkeit
- Größere Traganteile durch Plateaubildung
- Höherer Widerstand der Oberflächen gegen Verschleiß und Korrosion
- Verschieben der Werkstoffermüdungsgrenzen
- Reduzierte Gleitreibungszahlen

ADVANTAGES

- Maximum process reliability
- Top surface qualities
- Harder outer layers
- Smoothing of hardened components
- No need for additional equipment such as hydraulic units
- Increase in fatigue strength
- Larger contact area ratios due to plateau formation
- Higher surface resistance to wear and corrosion
- Expanding of material fatigue limits
- Reduced sliding friction coefficients

DRÜCK- UND GLÄTTDIAMANTEN

- Verschiedene Diamanteinsätze für Glättwerkzeuge möglich
- Werkstoffe über 60 HRC können geglättet werden
- Rautiefen unter R_z 1,0 µm möglich
- Diamantausführung mit den Radien 0,4–5,0 mm; weitere auf Anfrage

PRESSING- AND BURNISHING DIAMONDS

- Various diamond inserts for burnishing tools possible
- Materials above 60 HRC can be burnished
- Roughness below R_z 1.0 µm possible
- Diamond version with the radii 0.4–5.0 mm, others available on request

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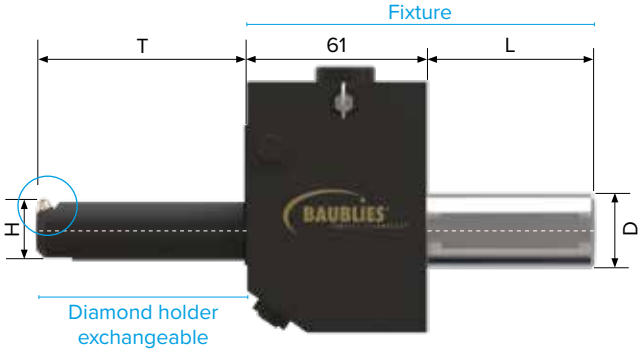
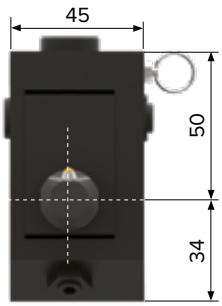
Diamond burnishing tool for internal use, with basic element

*Burnishing diamond must be ordered separately





Technical details	
Application	internal holes and contours
Standard fixture	cylindrical shank Ø 20/25/32/40 mm with clamping surface

Options
- Tailor made fixtures VDI, HSK etc.
- Tailor made diamond shape

Application parameters	
Please note that this information represents standard values which must be adapted to the individual cases.	
Speed	up to 150 m/min
Feed rate	0.05–0.2 mm/rev
Workpiece allowance	up to 0.02 mm
Tool preload	up to 1 mm
Lubrication	emulsion or oil; filtration of the lubricant (< 40 µm) can improve the surface quality and the tool life
Pre-machining of workpiece	surface roughness (R_z) up to 15 µm
Suitable for hard machining	

Diamond burnishing tools for internal use, with basic element are non-intrinsic tools for smoothening and work hardening of holes and contours.

ADVANTAGES

- Simple to use
- Compact design available for machines with limited tool space
- Can be adapted to all materials by means of four spring elements (included in delivery)
- Diamond radii from 0.4–5 mm available
- Diamond indexed for multiple machining
- Highest surface quality and hardening
- Universally applicable
- Ideal for contour machining
- For hard machining and thin-walled workpieces
- Tolerance compensation through spring-loaded design
- Changeable diamond insert
- Re-grinding of the diamond is possible
- Cost-effective/low investment

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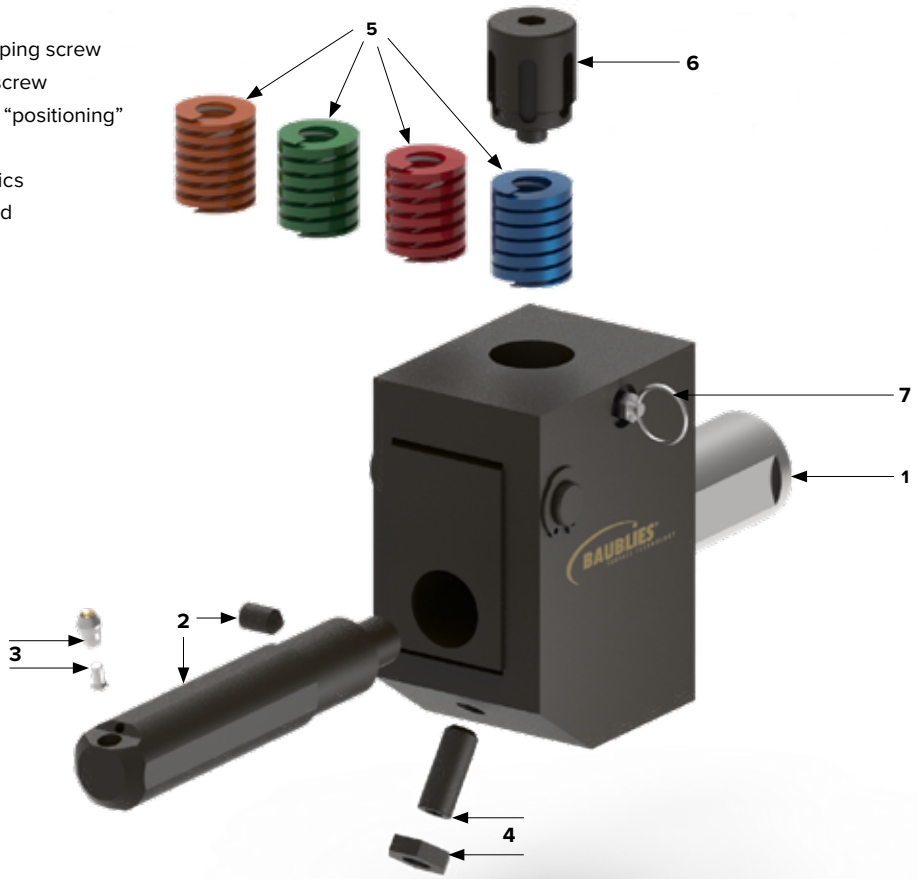
Tool assembly/handling and replacing components

1 Fixture
2 Diamond holder with clamping screw
3 Burnishing diamond with screw
4 Set screw with counternut “positioning”
5 Springs with different compression characteristics
6 Adjusting screw for preload
7 Indexing plungers



POSITIONING THE BURNISHING DIAMOND

Loosen counternut **(4)**, adjust set screw **(4)**. Position of the diamond is changed. Fix counternut **(4)**.

MODIFYING THE TOOL PRELOAD

Unlock the indexing plungers **(7)**, to increase the preload turn adjusting screw **(6)** clockwise, to decrease the preload turn screw counter-clockwise. Lock the indexing plungers.

REPLACING THE BURNISHING DIAMOND

Loosen screw **(3)**. Remove or rotate burnishing diamond into the next position.

REPLACING THE DIAMOND HOLDER

Remove set screw **(2)**, remove diamond holder **(2)** from the holder assembly **(1)**. During assembly pay attention to the correct position of the diamond holder. Fix set screw **(2)**.

EXCHANGE OF SPRINGS

Pull out indexing plungers **(7)**, unscrew the adjusting screw **(6)** and change the desired spring **(5)**.

TIP

- The preload of the tool during burnishing should be in a range between 0.1 and 0.5 mm.
- If the position is not vertical to the workpiece surface the wearpoint of the burnishing diamond is excentric and then the burnishing diamond can be used 4 times by rotating it in steps of 90°.
- Coolant must be used at any time and avoid interrupted cuts.
- If the burnishing diamond is not badly damaged (cracks) regrinding is possible.

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VARIANT

DIAMOND BURNISHING TOOL
WITH BASIC ELEMENT

For special external machining
in the area of axial recesses

BAUBLIES®
SURFACE TECHNOLOGY