

DIAMOND BURNISHING TOOL

For internal machining of
holes and contours

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

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

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

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

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.

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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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

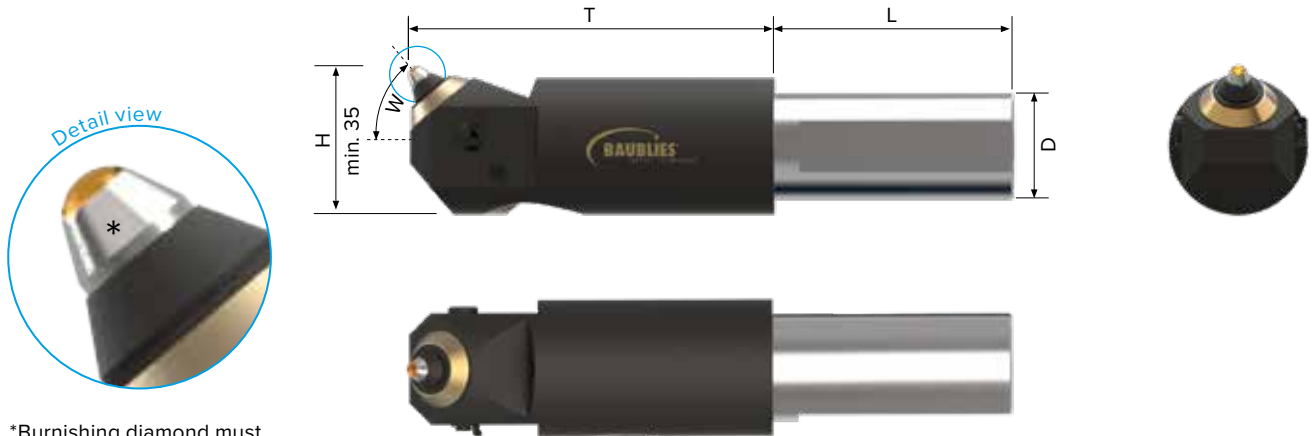
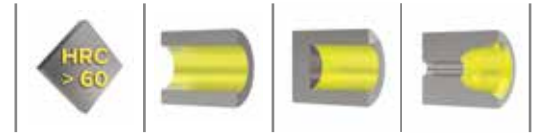
PRESSING- AND BURNISHING DIAMONDS

- 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

Radien: 0,4–5,0 mm
Radii: 0.4–5.0 mm



Diamond burnishing tool for internal use



*Burnishing diamond must be ordered separately

Technical details

Application	internal holes and contours
Standard fixture	cylindrical shank \varnothing 20/25/32/40 mm with clamping surface
Internal Coolant	

Options

- Tailor made fixtures VDI, HSK etc.
- Tailor made diamond shape
- Assembly device

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 1mm
Lubrication	emulsion or oil; filtration of the lubricant (< 40 μ m) can improve the surface quality and the tool life
Pre-machining of workpiece	surface roughness (R_z) up to 15 μ m
Suitable for hard machining	

Diamond burnishing tools for internal use are non-intrinsic tools for smoothing 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

Tool assembly/handling and replacing components

- 1 Fixture
- 2 Diamond holder
- 3 Burnishing diamond insert with screw
- 4 Slide bushing
- 5 Springs with different compression characteristics
- 6 Pin with locking ring
- 7 Set screw



Assembly device (Optional)



REPLACING BURNISHING DIAMOND

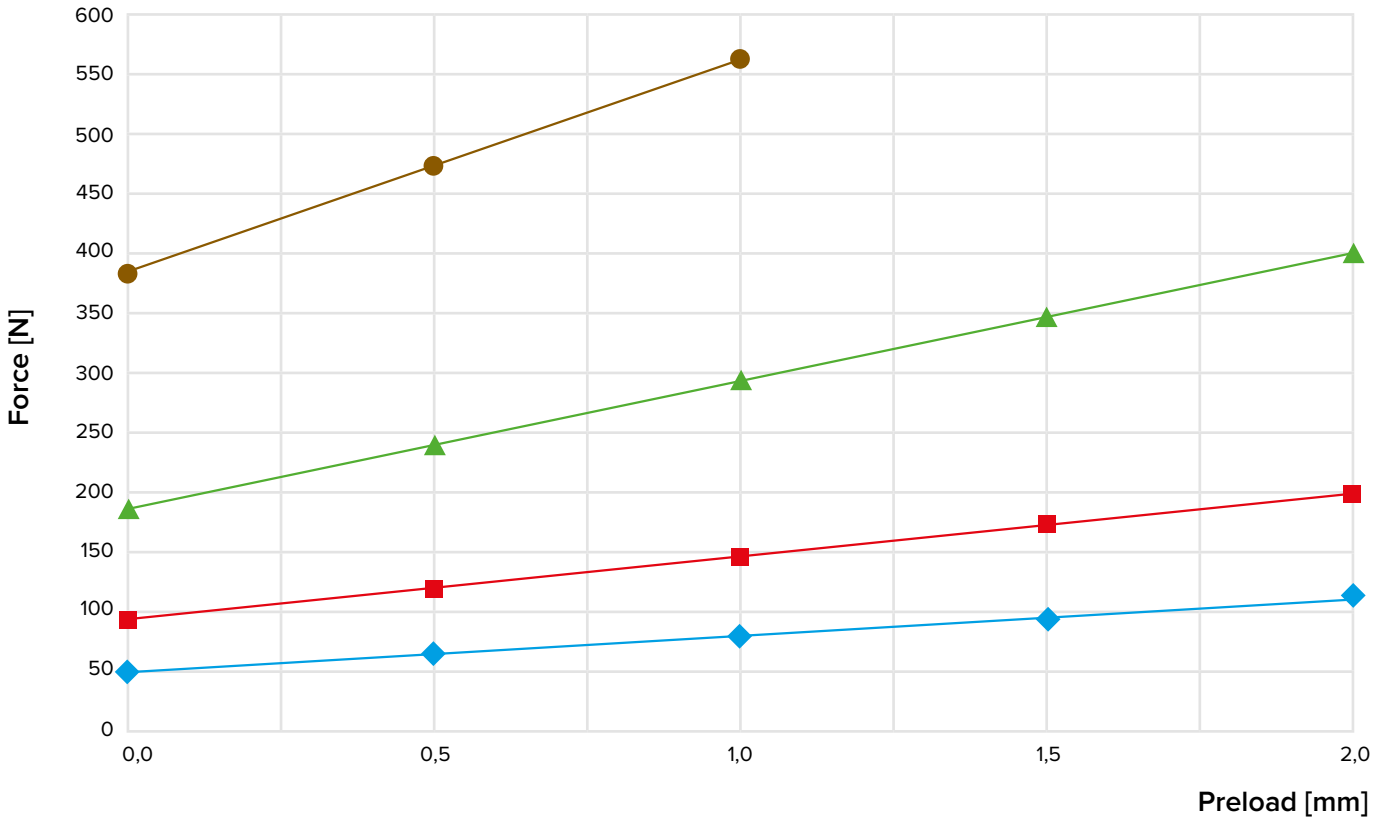
Slightly pre-load burnishing diamond **(3)** (with assembly device). Remove pin with locking ring **(6)**. Declamp burnishing diamond. Remove or rotate burnishing diamond into the next position. During assembly pay attention to the position of the pin hole in the diamond holder **(2)**. Slightly pre-load burnishing diamond (with assembly device). Insert pin with locking ring **(6)**. Declamp burnishing diamond **(3)**.

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 work-piece 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.

Information Classification Force – Spring Deflection

Force – Spring Deflection



Recommended Applications According to Material Properties

Spring colour	Force	Up to a tensile strength of
Blue 	50 – 120 N	400 MPa [N/mm ²]
Red 	90 – 200 N	1250 MPa [N/mm ²] or HRC 40
Green 	180 – 400 N	HRC 64
Brown 	380 – 570 N	Use only in special applications

EXAMPLE:

If the red spring is installed, an preload at the workpiece of 0.25 mm corresponds to a force of approximately 100 N.

Depending on the material properties the use of an according spring is recommended. The table should serve as a guideline. Usually an preload of up to 0,5 mm is used. If a higher force is required a stronger spring should be used.