

Diamond burnishing tools

For producing low microinch finishes on shafts or faces of any diameter, or on large bores.

- Four designs allow use on most turning machines, manual or CNC
- Replaceable, polished diamond insert
- Adjustable for optimum burnishing pressure



Cogsdill Diamond Burnishing Tools are simple, efficient tools designed to produce mirror-like finishes on a wide range of ferrous and non-ferrous part surfaces on most turning machines.

Set up and cycle times are short, even for unskilled operators. In all cases, the replaceable diamond insert can be changed quickly; on some models without removing the tool holder from the machine.

Four tool designs to suit your application requirements:

- **DB-1** For general purpose machining
- **DB-2** For use where work length is restricted
- **DB-3 and DB-4** For use on CNC machining centers - the tool holders are offset so that the diamond insert is on center

The Cogsdill Diamond Burnishing Tool is designed to produce high quality, low microinch burnished finishes on shafts, large bores, and faces. With most metals, a turned or ground part with a properly prepared 40 to 60 microinch finish can be burnished to a 4 to 8 microinch finish in seconds. Cast iron can usually be burnished to an 8 to 15 microinch finish.

Cogsdill Diamond Burnishing Tools can burnish virtually any size stock; from carbon steels to tool steels, cast iron to alloys, and most ferrous and non-ferrous metals. The premium quality diamond burnishing insert is polished and contoured to provide superior finishes and excellent tool life.

Since set up and operation is relatively simple, no special operator skills are required. Diamond Burnishing Tools are versatile . . . various models are designed for use

in the tool post of a manual lathe, automatic, or in CNC equipment. The tools can be used on both large and small diameters, and are ideal for short production runs. The Diamond Burnishing Tool can produce quality finishes on interrupted surfaces, such as a shaft with a keyway or the face of a flange having a series of bolt holes.

While the tool must be used with coolant, no special coolant is required. Straight oils, soluble oils, and synthetic coolants can be used to provide the necessary lubrication.



*Replaceable
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burnishing tools

diamond

How it works

The Cogsdill Diamond Burnishing Tool is mounted in the tool post of the desired machine. The diamond burnishing point is brought into contact with the workpiece at the centerline of the part and perpendicular to the surface being finished. The tool is then fed into the workpiece an additional .002 or .003 inch (.05 or .08mm) to allow the diamond insert to become disengaged from the stop in the holder. The spring, with its preload, forces the diamond against the workpiece. The tool is then fed along the surface of the rotating workpiece to produce a mirrorlike finish.

As a recommended starting point the adjusting screw should be tightened (turn clockwise) until all clearance between the push rod and the spring is removed. Then tighten the screw another 1 to 2 turns which will compress the spring to provide the necessary preload to the diamond insert. This is the recommended starting point for mild

steel. Slight adjustments in the burnishing pressure can be made, if necessary, to achieve the optimum finish. To adjust the burnishing pressure, tighten the adjustment screw to increase pressure or loosen the screw (turn counterclockwise) to reduce the pressure.

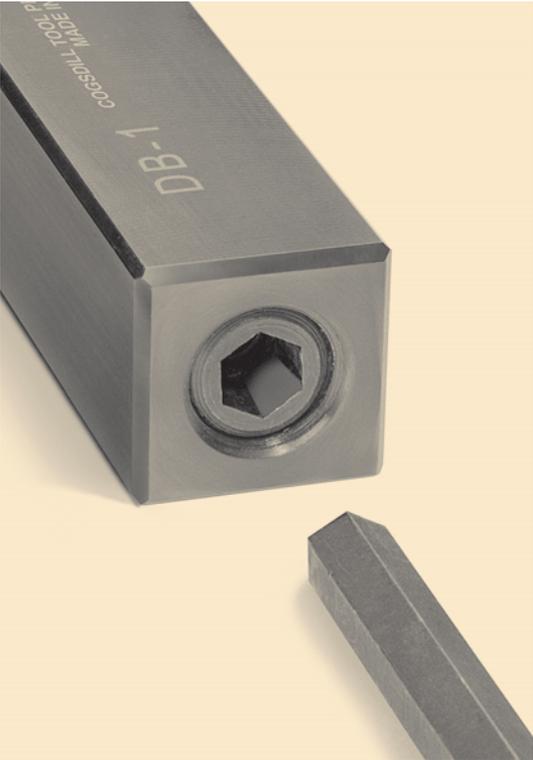
The prefinish on most metals should be approximately 40 to 60 R.M.S. for best results. A feed rate of .003 to .004 inches (.076 to .102mm) per revolution at speeds up to 750 surface feet per minute (229 surface meters per minute) is generally recommended when using the Cogsdill Diamond Burnishing Tool.

Normally, after the tool has been set to provide the .002 to .003 inch (.05 to .08mm) "interference", it can be fed onto the rotating work-piece and allowed to feed off. The slight radius of the diamond tip is sufficient to cause the tool to "climb over" the edge of the part and begin its burnishing action. Likewise, if an interrupted surface is burnished,

such as a shaft with a keyway or a flange with bolt holes, the tip of the tool will drop into the interruption but "climb up" the other edge due to the radius on the diamond.

CAUTION: It is important NOT to exceed the recommended amount of interference. An excessive projection of the diamond insert into any surface interruption could cause tool breakage, as the diamond insert could not perform its "climbing" action. (Note: Adjustment of the burnishing force does not affect the amount of interference.)

Note: Diamond burnishing tools do not have the advantage of an overlapping effect as with multi-roll tools, and for this reason slower feed rates and/or multiple passes over the part may be required in order to produce the desired finish.



Diamond Burnishing Tools are adjustable for optimum burnishing pressure. For the DB-1 and DB-2 models, the adjustment screw is located in the end of the tool. For models DB-3 and DB-4, the adjustment screw is located on the side of the tool.

Standard tool specifications

