

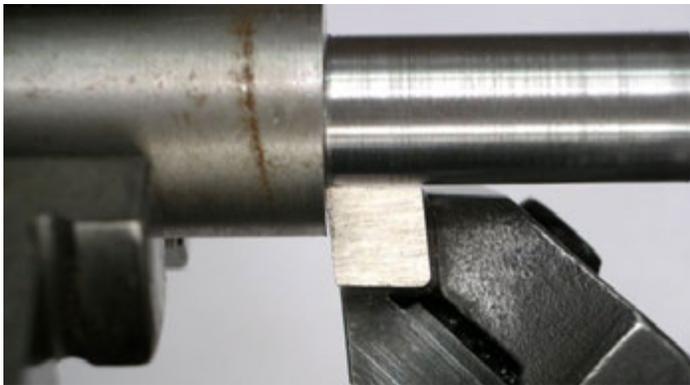
## Diamond Toolholder Features and Tips

Since only one facet of the tool bit needs to be sharpened, it's a quick and easy task to keep your lathe tools sharp. The supplied jig makes it a snap to get a correct and consistent angle on the tool. This sharpening jig is supplied with the right hand Toolholder kit. Due to the fact that the left handed tool is typically purchased to be used in addition to the right hand tool, it is not supplied with the sharpening jig.

The Diamond Toolholder can only be as good as the piece of HSS it is holding. Each tool is supplied with one piece of M42 grade, 8% cobalt HSS, from a reputable manufacturer. Cobalt tool bits are available for cutting harder materials or to provide longer wear.

### The Tool Bit

After grinding, the point of the tool will be at an angle of approximately 80°. This provides 5° of clearance on either side of the tool bit, allowing machining into a corner or step in one operation without having to rotate the tool post. Cut and face with the same tool!



Never grind the tool bit too short. Always ensure the tool bit is long enough to protrude through the bottom of the holder. The clamp can be severely damaged if there is a jam up and the tool bit has been ground too short.

Try to have about 1/4" of tool bit protruding above the holder. If the tip is too low, you will lose clearance between the body of the holder and it may rub on the workpiece. If the tool tip is set too high, you will begin to lose rigidity. It is best to put a piece of shim under the holder to get it close to center height and only use the tool tip for final adjustment.

Putting a small radius along the front corner of the tool bit will improve surface finish and increase the durability of the cutting edge. Once the radius is set it will stay the same despite multiple re-sharpenings. A small diamond

hone, available from most hardware/DIY stores, is ideal for adding the radius. A normal sharpening stone can also be used, but be careful not to wear grooves into the stone.



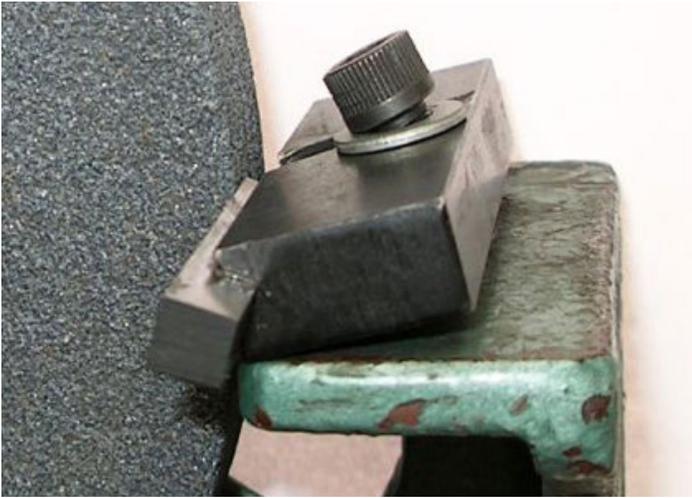
The tool bit can be ground on both ends. A radius point could be ground on one end and a sharp corner on the other. Just turn the bit over for a different profile.

### Threading

The tip can be ground to a 55° or 60° angle for threading. This is accomplished using the V-groove in the front of the grinding jig along with the clamp screw, which is used to jack the jig up or down to obtain the correct angle. Detailed instructions on sharpening normal and screw cutting tool bits are supplied with the kit.

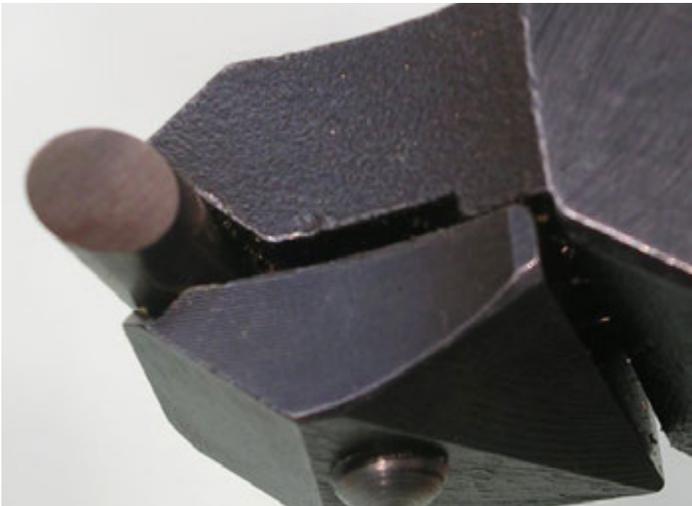


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## Round Tool Bits

The holder will accept  $\frac{1}{4}$ " or  $\frac{5}{16}$ " round HSS (depending on which holder is purchased), enabling the Diamond Toolholder to be used as a round-nose tool. The grinding jig will sharpen this too, and, of course, the radius will stay the same however many times it is re-sharpened.



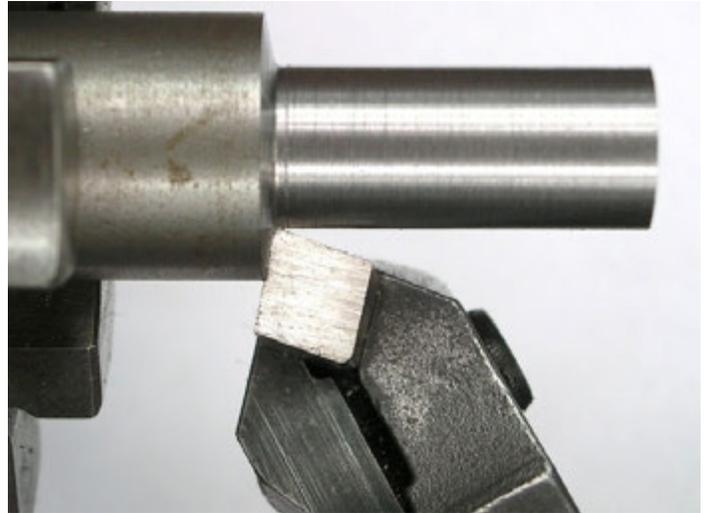
A cheap source of round HSS is broken or blunt center drills – No. 3 drills are  $\frac{1}{4}$ " in diameter.

Grind off the flutes on the bench grinder or cut them off with an angle grinder, then finish with the sharpening jig. Don't forget to leave the drill long enough to protrude through the bottom of the holder. Normal twist drills are unsuitable, as the shanks are soft, but broken  $\frac{1}{4}$ " (or  $\frac{5}{16}$ ", for the larger sized toolholders) shank end mills work fine.

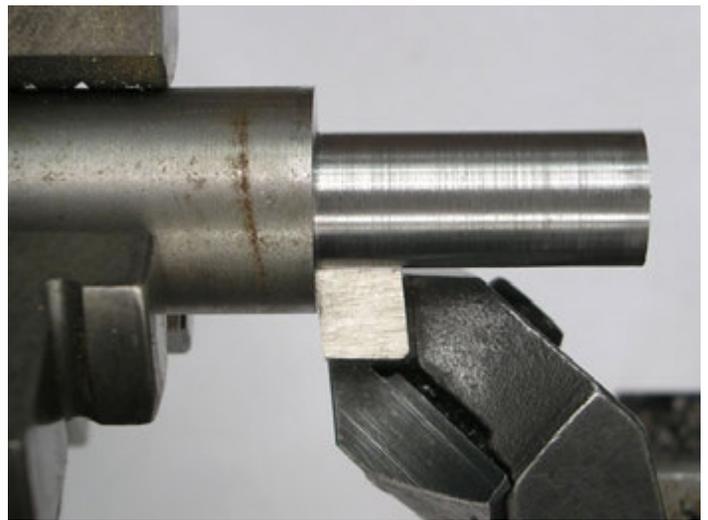
## Using the Cutter

For roughing or heavy cutting, it's best to rotate the tool post so the tool point is trailing slightly.

This will take some of the load off the point.



For finishing cuts, set the tool so the point is leading, but make sure there is still some clearance.



In the case of a severe jam, the tool bit will normally be forced down into the holder, avoiding serious damage to the workpiece and tool. In normal circumstances, the tool bit will not slip, even under heavy or intermittent cutting.