

SHERLINE
PRODUCTS
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The Purpose of Riser and Spacer Blocks

The purpose of Sherline's riser blocks is to extend the capabilities of the Sherline lathe and vertical mill. The lathe was never designed to turn metal parts of the diameters that can be accommodated with these accessories; therefore, extreme care must be taken in the form of light cuts and low RPM when turning large diameters.

"Tolerance Buildup" and Accuracy with Riser Blocks

Another point to be considered is accuracy. When you start clamping several pieces together, alignment will suffer. In the real world of machining, spindles are aligned by indicating, not with pins or keys. This wouldn't be the best way for hobbyists to start, and I believe the methods we use give our average customer machining capabilities they would have a hard time attaining on other machines without a lot of experience. As your projects get more and more complex, these methods may not be good enough. We manufacture adjustable tool holders to help eliminate some of the problems caused by misalignment. (For more information read instructions for P/N 1201, 1202 and 1203.) If you believe alignment could be a problem, machine a piece of scrap as a test piece to get the machine lined up. Don't risk a part you may have invested a lot of work in.

Some tips when using Riser Blocks

- You may have to use a little ingenuity when turning large diameters because of the limited crossslide throw on standard machines.
- The purpose of the mill riser block (P/N 1297) is to get the spindle farther out from the column. This allows you to work farther in from the edge of the part.
- There is no difference between the lathe and mill riser block except the lathe P/N 1291 comes with a corresponding tool post. The riser tool post was upgraded to a rocker tool post design as of 6/98. A

rocker tool post allows the tip of the cutting tool to be adjusted to the proper height in relation to the centerline of the part without using shims. By adjusting the two screws, the tip of the tool can be moved up or down. This is not a problem when using new, pre-sharpened 1/4" cutting tools from Sherline as the tips have been sharpened to the proper height. When using other tools or tools that have been resharpened, however, this feature makes it easy to get the tool tip properly adjusted. A 3/8" hole has also been provided for holding tools with a round shaft like Sherline's boring tools.

The Riser Tool Post for Carbide Insert Tools

Introduced in 6/98 is an optional riser tool post (P/N 1289) which is designed to hold the 3/8" round or square shafts of inserted tip carbide cutting tools like those offered by Valenite™. (For more information on inserted tip carbide tools, see the instructions for P/N 7600.)

Installation of the Headstock Riser Block

Remove the headstock by loosening the screw that holds it onto the lathe or mill and lift it straight off. Now install the riser block using the keyway to align it. Do this by pushing the riser block back towards the keyway without a twisting motion. Put the headstock back with or without the keyway depending on your next machining operation (taper cutting).

Installation of the Tailstock Riser Block

It is necessary to remove the handwheel at the end of the bed to remove the tailstock before you can install the tailstock riser block. You may have a slight problem fitting this up. It is a very difficult part to make because dovetails can't be measured or machined easily. The biggest problem we have encountered is the "tip" of the dovetail on the lathe bed may interfere with the riser block. A couple of passes with a file should fix it. (See Figure 1 on next page.) Riser



FIGURE 1—Filing corners of bed dovetail for better fit of tailstock riser block.

blocks made after 11/93 are of a two-piece design that, in most cases, eliminates this fitting problem.

NOTE: When replacing the handwheel, try to let the set screw pick up the same indentation so you don't "chew up" the end of the leadscrew shaft.

The Cutoff Tool Holder Riser Block

This is an accessory that I was somewhat reluctant to make; however, I went ahead because it has been requested by a number of customers. The problem with Sherline making it is that it could cause customers to believe we are suggesting that you can part off large diameter (over 1.0" or 25 mm) stock with our lathe. This is not the case. You should use the riser with the following thoughts in mind:

1. The only cutoff blade we recommend is one with a width of .040" or less, and thin blades such as these tend to wander on deep cuts.
2. It is difficult to get enough coolant to the cutting edge with a narrow, deep slot.
3. The Sherline 3.5" lathe simply doesn't have enough power for cutoff tools wider than .040".

Use of the Cutoff Tool Riser

My next consideration was getting enough rigidity, because the farther the cutting tool is raised above the machine bed, the greater the chance of "chatter." I knew the base area would have to be increased along with height, and it should have two hold-down screws rather than one. I also considered that cutoff tools work better inverted, because they have a tendency to lift rather than to dig in.

The end result of all these considerations is a simple riser block with two hold-down screws that mounts on the back side of the crossslide. The standard cutoff holder mounts on top with the blade upside down and reversed (the tip of the blade pointed down). See Figure 2.

The blade must be moved in or out to bring the tip to center in the same fashion as when it is used in a standard configuration, and a shim may be required to get the tip on center for really large diameters.

Parting off Large Diameters

If you want to attempt to go beyond the maximum of 1 inch diameter stock I mentioned earlier, here are some suggestions. These are especially important on hard-to-machine materials.

1. Use plenty of cutting fluid.
2. Grind the cutting tip of the blade square rather than angled so it tracks straight and doesn't cause the blade to bend or wander.

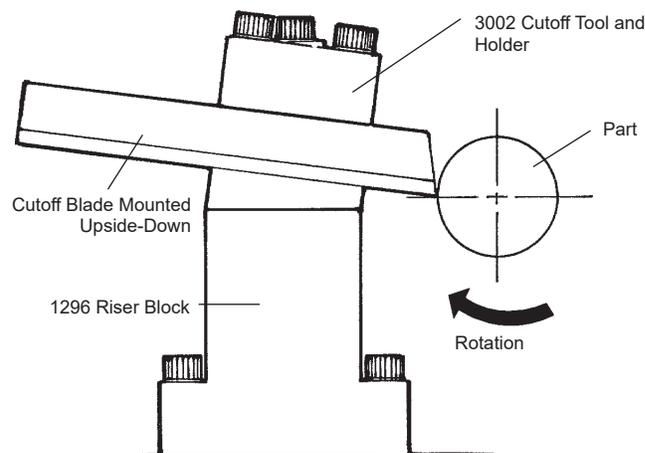


FIGURE 2—Side view of the 3002 cutoff tool holder mounted on top of the P/N 1296 riser with cutting tip pointed downward and adjusted to centerline height.. (Seen from headstock spindle.)

3. Align the blade accurately with the crossslide to assure a square cut.
4. Listen to your machine. It will tell you when you are working it too hard before it "strikes back."
5. Last, but not least, don't blame me if you break a blade!

Riser for Compound Slide

A simple riser block for the compound slide is now available as P/N 1272. It is about 1" high and allows the compound to be used on the front side of the part when the riser blocks are in place.

—Joe Martin
President and Owner

Replacement Parts List, All Risers

NO. REQ.	PART NO.	DESCRIPTION
1	11990	Rocker Tool post Center
1	12831	Tailstock Riser Body
1	12840	Tailstock Riser Clamp
1	12850	Riser Rocker Tool post Body
2	12860	10-32 x 2-1/4" SHC Screw (1288, 1289, 1291)
1	12870	Riser 3/8" Tool post Body (Use w/ 3/8" Carbide Insert Holders)
1	12950	Headstock Riser Block Body
1	12960	Cutoff Tool Post Riser Body
1	12980	1/4-20 x 3/8" Flat Head Machine Screw (1291, 1297)
1	12990	Pivot Pin (1291, 1297)
1	13910	Steady Rest Riser Body
1	13920	Steady Rest Riser Clamp
2	30561	T-Nut, Standard (1296)
1	40250	Tool Post T-Nut (1288, 1289)
1	40260	Head Key (1291, 1297)
—	40330	10-32 x 5/8" SHC Screw (1290—1 req.; 1288, 1289, 1291—2 req.; 1292—3 req.)
1	40540	5/16" -18 x 3/4" Cone Point Set Screw (1291, 1297)
1	40660	3/16" #10 Washer (1288, 1289, 1290, 1291)
2	40690	10-32 x 3/4" SHC Screws (1291, 1296)
1	40700	10/32 x 1-3/4" SHC Screw (1296)