

Tilting Angle Table

P/N 3750

Design of the Angle Plate

The angle plate attachment for the Sherline mill was designed with help, and many suggestions, from Graham Taylor of Livonia, Michigan. The multiple hole pattern allows the rotary table or mill vise to be attached directly to the table. Also included is a 3/4-16 adapter which attaches to the table, allowing you to directly mount Sherline 3-jaw or 4-jaw chucks to the angle plate as well.

The Importance of Mounting the Plate Square with the Table

The angle plate must be mounted square to the table. The mounting hole layout should be reasonably accurate, but for very close work, use an indicator to square the plate. The movement of a plate tilting at angles can be very confusing. It would be wise to consider how an error can accumulate by not having the table square. If square, as the table is tilted a given point moves in relation to only one axis but not the other. If not square, it moves in relation to both axes, making accurate machining almost impossible. For example, you might start a cut several thousandths deep at one side of a part and end up cutting nothing at the other side. To make this clear it is easier to picture what is happening if you visualize an extreme case where the table might be mounted 15° off from square. Picture the path your cutter would make if you made a pass over a part mounted that far off square and you'll see what we mean.

Always make a sketch of your setup and make sure you have the correct table angle. When using an end mill, remember that the angle of the cut depends on whether you are using the end or the side of the milling cutter. The bottom of the cutter cuts the angle indicated on the angle plate scale, while the side of the mill cutter cuts an angle equal to 90° minus the angle set on the table. (See Fig. 1.)

Mounting the Angle Plate to the Mill or Lathe Table

The hole pattern in the bottom of the angle plate has been designed to pick up the T-Slots in the mill table or in the crossslide table of the lathe when using the vertical milling column attachment. Use the T-Nuts and socket head cap screws in 4 of the 6 mounting holes on the bottom plate. Use the two center and two of the end holes for mounting to the lathe table. For the mill table, use all four end holes.

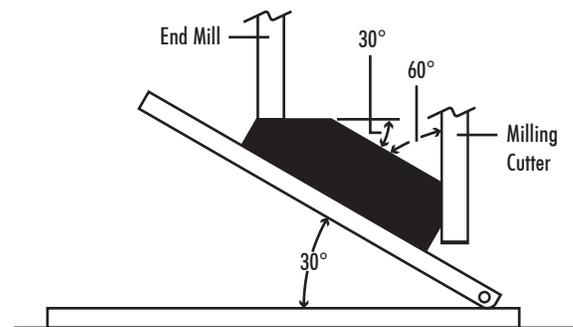


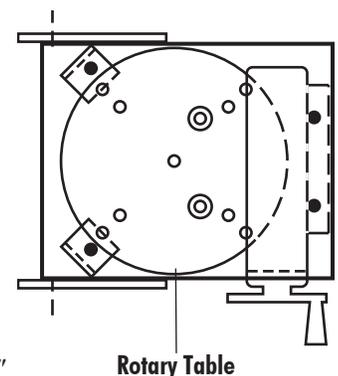
FIGURE 1—The angle of your cut is dependent on whether you are cutting with the side or end of your milling cutter.

Mounting Hold-down Devices to the Angle Plate Table

The hole pattern in the table of the angle plate has been designed to allow you to mount any of several Sherline holding devices. These include the rotary table, mill vise, 3-jaw chucks and 4-jaw chucks. This is why the hole pattern looks a bit odd. You can also drill additional 10-32 holes to meet your own unique mounting requirements. The following diagrams show which holes to use for mounting each of the accessories. As an additional feature, the rotary table location has been calculated so that when rotated to the 90° position, it comes out at the same height as the P/N 3702 rotary table tailstock, which eliminates the need for the P/N 3701 right angle attachment.

FIGURE 2—Mounting points for the rotary table. Solid black circles indicate holes used for hold down screws on this and the following diagrams. To mount the rotary table to the tilting angle table you will need two each of the following P/N's:

- 35580-Hold Down Clamp
- 40330-SHC Screw, 10-32 x 5/8"
- 40670-SHC Screw, 10-32 x 1/2"



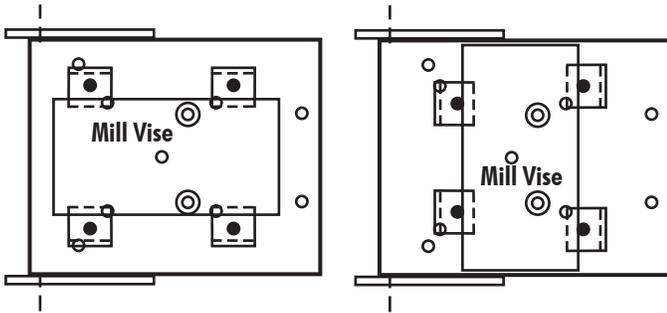


FIGURE 3a & 3b (Above)—Mounting points for the mill vise.

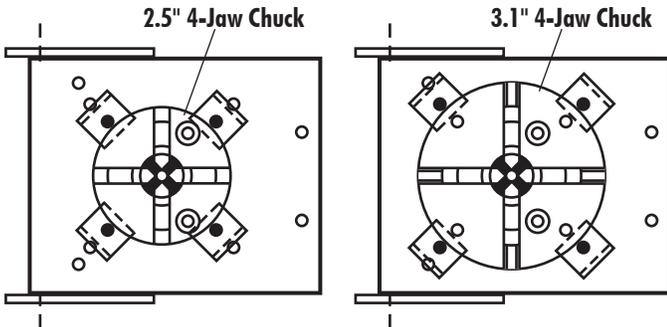


FIGURE 4—Mounting points for the 2.5" 4-jaw chuck.

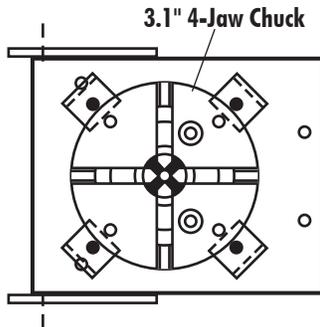


FIGURE 5—Mounting points for the 3.1" 4-jaw chuck.

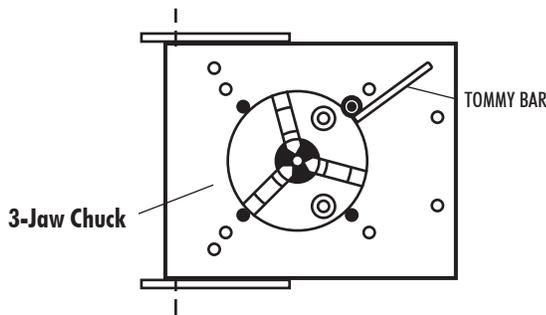


FIGURE 6—Using a Tommy Bar to keep a 3-jaw chuck from unscrewing during machining. Place the Tommy Bar in one of the holes in the upper chuck body and use a 10-32 socket head cap screw as a stop. To lock the chuck down in the proper position, put the socket head cap screw that goes into the 3/4-16 hold-down in from the bottom of the plate. Rotate the chuck to the desired position with the Tommy Bar against the stop screw and then tighten the hold-down screw to lock the chuck in place. Then set the plate to the desired angle.

Maintenance

The angle graduations are laser engraved into the stainless steel side plates so you don't have to worry about rust or solvents. Do not try to polish around the engraving. Though quite easily readable, it is not very deep and could be removed in the polishing process.

Thank you,
Sherline Products Inc.

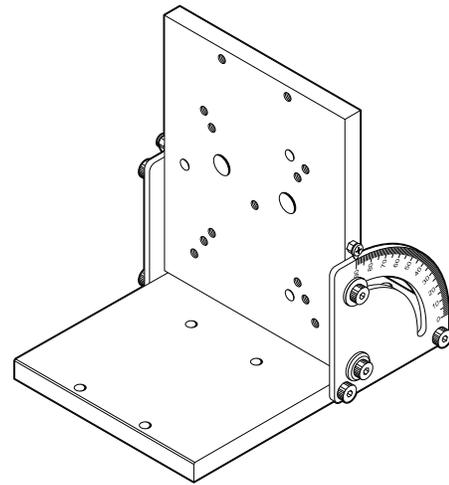
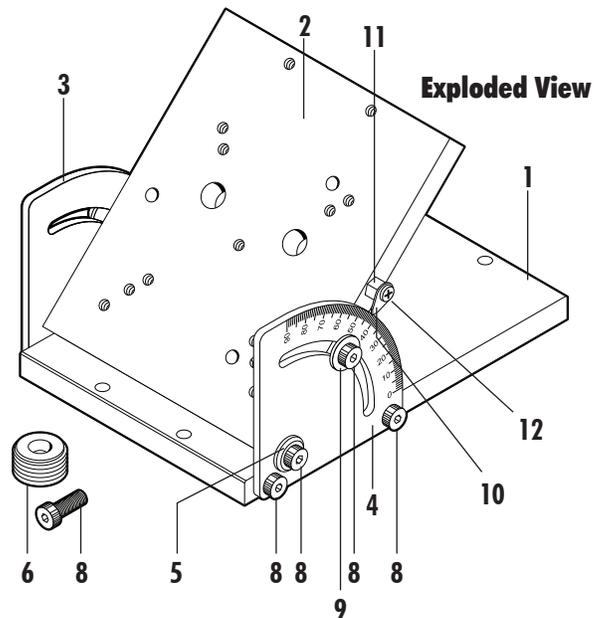


FIGURE 7—Alternative Setup

Note that by removing the four screws that hold the side plates to the base, reversing their direction and reinstalling them, the tilting plate can be reversed to allow the table to face the opposite direction in relation to the base. This may offer an advantage in some setups.



Parts List

REF. NO.	NO. REQ.	PART NO.	DESCRIPTION
1	1	37540	Tilting Angle Table Bottom Plate
2	1	37510	Tilting Angle Table Top Plate
3	1	37520	Tilting Angle Table Side Plate, Plain
4	1	37530	Tilting Angle Table Side Plate, Engraved
5	2	37550	Tilting Angle Table Bushing
6	1	37560	Tilting Angle Table 3/4-16 Chuck Hold Down
7	4	30561	10-32 T-Nuts (Not Shown)
8	13	40670	10-32 x 1/2" SHC Screw
9	2	40660	3/16" I.D. Washer
10	1	50120	Pointer
11	1	32100	10-32 hex nut
12	1	37531	8-32 x 3/8" Pan Head Phillips Screw