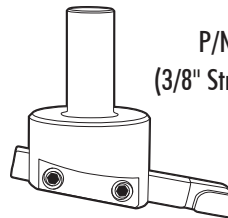


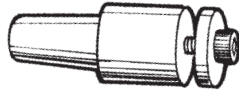
Fly Cutter P/N 3052
(#1M Taper Shaft)



P/N 3052S
(3/8" Straight Shaft)



Slitting Saw Holder P/N 3065



Fly Cutter and Slitting Saw Holder

P/N 3052, 3052S, and 3065

Both the fly cutter (P/N 3052) and the slitting saw holder (P/N 3065) are held in the spindle with a drawbolt that pulls these holders up into the Morse #1 taper. This is a "sticking" taper and it has to be removed from the spindle by backing out the drawbolt a few turns (do not disengage) and giving the bolt a few light taps with a hammer.

A fly cutter is a great way to machine flat surfaces. It can be easily sharpened and is probably the most economical way to remove material on a mill. The cutter is basically a left-handed lathe tool. We supply it with a carbide tip cutter, but there is no reason a piece of 1/4" square high speed steel wouldn't work.

As with all machining operations, it is imperative the work is securely held to the work table. A fly cutter on the Sherline can cut a path 2" (50mm) wide by .010" (.25mm) deep in aluminum without even trying. Fly cutters exert lower machining stresses on the machine than you may expect. This is because the cutter "peels" the material off with very little crushing action. If possible the cutter should swing a diameter larger than the part width. The cutter will usually take a second cut with the back side of the cutter even when the spindle is perfectly square with the table.

Chips thrown off by the fly cutter are HOT. Long sleeve shirts are advisable and eye protection is a must!

If you're machining aluminum, run the spindle at 1/2 speed, with steel use 1/4 speed, and use a feed rate that creates curly chips about .002" (.05mm) thick. You really should have some understanding of cutting speeds if you use high speed steel cutters on steels. It is very easy to exceed the cutting speed of high speed steel with a large cutter diameter. An example would be a H.S. cutter swinging a 2" (50mm) circle shouldn't exceed 200 RPM when cutting steel with a cutting speed of 100 surface Ft/Min.

$$\frac{4 \times \text{CUTTING SPEED (Ft./Min.)}}{\text{CUTTER DIAMETER (In.)}}$$

$$\frac{4 \times 100}{2} = 200 \text{ RPM}$$

NOTE: The factor of 4 used in this equation has been rounded off to allow mental calculations, the actual number should be 3.8

In metric calculations, a close approximation is:

$$\frac{300 \times \text{CUTTING SPEED (M/Min.)}}{\text{CUTTER DIAMETER (MM)}}$$

NOTE: The factor of 300 has been rounded off to simplify calculations, the actual number is 318.

P/N 3052S Fly Cutter with Straight Shaft

The 3052S Fly Cutting tool was designed for those who are using an ER-16 or 3C headstock. Our standard fly cutter holder (P/N 3052) has a #1 Morse tapered shaft and is held in the 3/4 x 16 headstock spindle with a drawbolt. The 3052S holder has a 3/8" straight shaft and is held in the spindle using a 3/8" collet.*

***NOTE:** Sherline Products does not sell 3/8" collets used with the ER-16 or 3C headstock spindles. Those are available through Hardinge Inc. or other tool supply sources.

Slitting Saws

The reason cutting speed is addressed in these instructions is that it is such an essential part of using slitting saws correctly. You must realize that when you exceed the cutting speed with high-speed steels, the dulling process can be instantaneous. It isn't that you get shorter tool life, you get "no life!" This can be expensive in time and money because slitting saws usually cost so much you don't have spares.

Another problem that happens with slitting saws is that one edge gets dull before the other. This causes the blade to deflect as it cuts. How much it deflects is somewhat a function of the blade's thickness.

A common error that can be made is putting a slitting saw on the spindle upside down when they will only cut one way.

Coolant should be used. It doesn't have to be flooded, but it should be applied liberally to keep the fine teeth from loading up.

When cutting a slot that goes into a large hole, it is possible to have the part clamp the saw blade as it cuts through. It usually doesn't cause any serious problems, just stop the spindle and back it out.

There is always a question of the best approach to use when cutting a slot with a blade that is less than .060" (1.5mm). You can cut in a series of passes, cut full depth

in one pass, or cut straight in. The method to use is up to you, experiment with scrap until you're confident you will not screw up a lot of work.

Thank you,
Sherline Products Inc.

Fly Cutter Parts List (P/N 3052-3052S)

NO. REQ.	PART NO.	DESCRIPTION
1	11930	Carbide Tool, Left
1	30490	Fly Cutter Body (#1 Morse tapered shaft)
1	30490.375	Fly Cutter Body (3/8" Straight shaft)
1	30881	1/4-20 x 5" drawbolt (w/P/N 3052 only)
1	30882	1/4-20 Bolt Washer-Oxide (w/P/N 3052 only)
2	31080	10/32 x 3/8" Set Screw

Slitting Saw Parts List (P/N 3065)

NO. REQ.	PART NO.	DESCRIPTION
1	30660	Slitting Saw Body
1	30670	Slitting Saw Cap
1	30881	1/4-20 x 5" drawbolt
1	30882	1/4-20 Bolt Washer-Oxide
2	40670	10-32 x 1/2" SHC Screw

Accessories Available for P/N 3052 & P/N 3065

NO. REQ.	PART NO.	DESCRIPTION
1	11930	Carbide Tool, Left
1	11960	HSS Tool, Left
1	3005	HSS Tool, Blank
1	3005B	HSS Tool, Blank (Set of 5)
1	7301	Slitting Saw (.010" thick, 2" dia., 140 teeth)
1	7302	Slitting Saw (.023" thick, 2" dia., 152 teeth)
1	7303	Slitting Saw (.032" thick, 2" dia., 110 teeth)
1	7304	Slitting Saw (.051" thick, 2" dia., 110 teeth)
1	7305	Slitting Saw (.014" thick, 2" dia., 152 teeth)
1	7306	Slitting Saw (.016" thick, 2" dia., 110 teeth)
1	7307	Slitting Saw (.045" thick, 2" dia., 110 teeth)
1	7308	Slitting Saw (.025" thick, 2" dia., 152 teeth)
1	7309	Slitting Saw (.057" thick, 2" dia., 110 teeth)

To find prices for the accessories listed above, please see the [Cutting Tools & Accessories Price List](#) on our website.