2127 MOUNT WITH MICROSCOPE—Note: Scope shown mounted on 5400 mill. Mill is not included with microscope or mount purchase but a discount is applied if scope and mill are purchased at the same time.

2128 MOUNT ONLY

SHERLINE PRODUCTS

INCORPORATED 1974

Mill Microscope Mount

P/N 2127 Mill Microscope Mount with Scope
P/N 2128—Mill Microscope Mount Only

Sherline Lathe Microscope Setup Instructions

Remove all the individual microscope components and boxes from microscope box. If purchased with a scope, the Sherline microscope mount is packaged separately inside the microscope box along with an improved microscope illuminator pivot and an O-ring for securing the light fixture. The microscope comes with a basic set of its own instructions for assembly as a stand-alone microscope for research or inspection purposes. For use on a Sherline mill we have some specific recommendations and a few changes to their procedure. Keep the standard base and armrests that are packaged with the microscope, as they can be used to mount the same microscope head for other inspection jobs apart from use on the lathe. The only part you will need to transfer from the standard base is the locking collar.

Assembling the microscope mount and head

1. Attach the mill mount post to the mount body using the two 10-32 x 1/2" Socket Head Cap Screws (SHCS) and washers provided. Tighten enough so that the post is angled upward about 45°.
2. Remove the safety collar from the standard base and column and reposition it about 4 inches below the top of the Sherline column. Tighten the locking screw to hold it in place. (You will adjust to final position later.)
3. Remove the lower motor mounting bracket screw from the side of the headstock.
4. Slide the mount base onto the headstock until the hole in the side lines up with the hole from which you just removed the screw. Using the longer 10-32 x 1-1/8" SHCS provided, attach the mount to the headstock.
5. Tighten the 5/16" cone point set screw against the other side of the headstock to help hold the mount in place.
6. Remove the stereo microscope upper and lower head assemblies from the box.
7. Install the binocular head into the upper bayonet seal of the stereo body and tighten the upper knurled lock screw to hold it in place. This screw will first have to be loosened so that the bayonet fitting can engage. Note that on the mill, the microscope head is installed 180° from the way it is normally used on the microscope or on the lathe mount.
8. Slide the hole in the stereo body over the mount post, sliding it down until it hits the safety collar. (It may be a tight fit.) Adjust the angle of the post and the height of the safety collar until the objective lens is about 3.75" from the tip of your cutting tool and then retighten each.
9. The objective lens comes already installed in the lower bayonet ring. Loosen the lower lock screw and rotate it so the light holder extends to the operator's right. Then relock the screw.
10. Install a light bulb (found in the Styrofoam box) into the light condenser and then slip the unit into the holder. Plug the cord into the transformer and then plug the transformer into the wall. Turn on the light and adjust its position to assure it is pointed at your work area under the objective lens. (*See the section below on "Adjusting the light" for an optional improvement to the parts provided with the microscope.)
11. Install a pair of optical eyepieces from the Styrofoam box into the two tubes in the stereo head. Use the ones marked 8^{x}/23. The ones marked 14X are too powerful for use on the mill, but they can be used if you use the microscope on its regular stand for inspection purposes. There is also a third 8x lens marked with a larger letter "x" after the "8". It has a glass linear measuring scale installed and may be used if you wish. (An alternate glass scale with a grid design is included in the small white plastic case in the corner of the Styrofoam box.)
12. Rotate the focusing knob until the number 0,6 aligns with the arrow. This is the widest field of view (least magnification). From there you can adjust to higher powers as needed for your particular job by turning the magnification knob. In most cases you will need only the lower powers.
13. Install a black plastic eye guard from the Styrofoam box onto the end of each eye tube. These protect the lenses from stains.

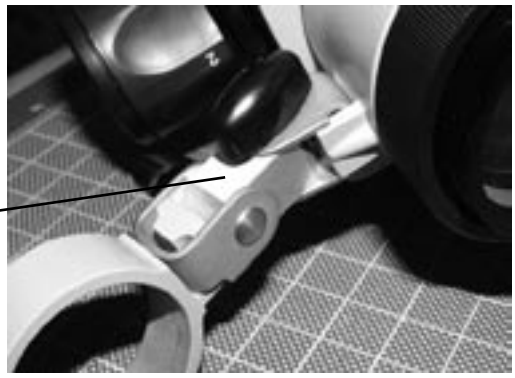


FIGURE 1—Shown here is a prototype of the modified Sherline light pivot. The final production versions have a radiused end rather than beveled corners. This solid mount gives a more secure mounting for the light than the one included with the lathe, but it is your option to install it or not.

14. The largest white box contains two arm rests that are used with the standard base. It also contains a vinyl cover that can be placed over the microscope to keep dust off it when not in use.

Adjusting the light

Installing the Alternate Pivot Mechanism—A ball joint system is provided by the microscope manufacturer to adjust the position of the light source. You can use it or you can replace it with the square aluminum bar stock piece that Sherline has provided along with the mounting base. With the standard system, the thumbscrews are supposed to provide enough friction that the light source can be positioned by hand but will stay in place when released. Even when tight there is a lot of slop in the system. With the Sherline part, the thumbscrews are loosened, the light is positioned and then the thumbscrews are tightened to lock it positively in place.

NOTE: If the bulb does not light, before assuming it is burned out, check to be sure the rear cap of the light fixture is properly oriented. Unscrew the rear cap and check that the receptical with the contact points is fully seated and the small molded boss is registered in its slot.

Installing the Optional O-Ring—The light fixture is a rather loose fit in its mounting ring. We have also provided a 1-1/8" ID O-ring that can be used to keep the fixture from coming out of its mounting ring. After slipping the light fixture into the ring, roll the O-ring onto the front end and up against the ring to keep the light in place.

The Green Filter—The light comes with a green filter installed. It was originally provided to eliminate the yellowish tinge imparted by older style light bulbs. With the brighter bulbs now provided this should no longer be a problem. Some people find the green color distracting. To remove the green filter, unscrew the filter ring from the lamp housing. Use a pick or knife blade to remove the ring clip that holds the green glass filter in place. Reinstall the threaded ring as it helps register the O-ring to keep the lamp housing in place.

Using the microscope to view your milling operation

1. Turn on the light and focus the microscope using the focusing knob on the left or right side of the stereo body.
2. Distance between the two eye tubes should be adjusted to the distance between your own two eyes so that you can see through both lenses at once. A smaller knob near the back on the right side of the binocular head makes this adjustment.
3. A ±5 diopter focusing adjustment is available on the right eye tube to adjust to your particular eyesight. Like using a pair of binoculars, first focus on the object using your left eye while adjusting the main focusing knob. Once in focus for your left eye, turn the diopter adjustment on the right tube to bring your right eye into focus.
4. The whole microscope is adjusted to center it over the end of your cutter by adjusting the angle of the mounting post and position of the head on the post. Once established, the scope can be swung around through a 90° arc to view from front or side. A thumbscrew is provided to lock the head in a given position.
5. The scope can view the part from the front or you can rotate the scope around 90° to your left. It can be locked in place at any location by turning the knurled thumbscrew at the back of the mount top piece.

Protecting the lens from chips

A adapter ring and glass filter to protect your lens during machining operations have been included with your microscope. Separate instructions for installation are supplied with the kit. Clean the glass filter periodically using soft, moist lens wipes like the ones used to clean eyeglasses.

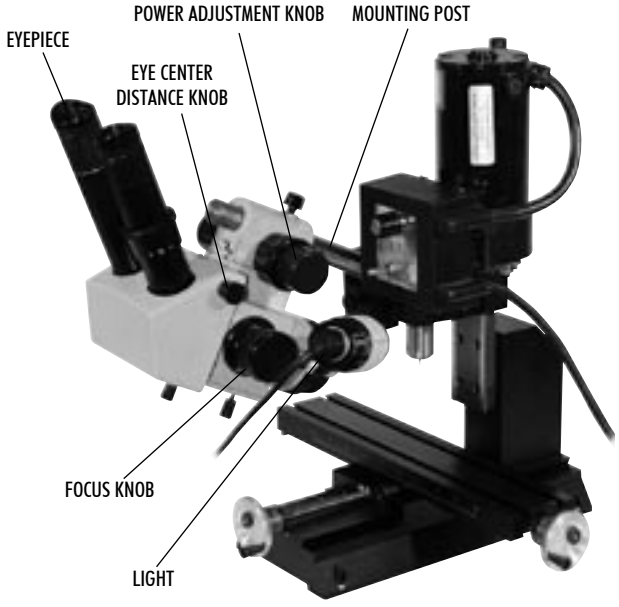
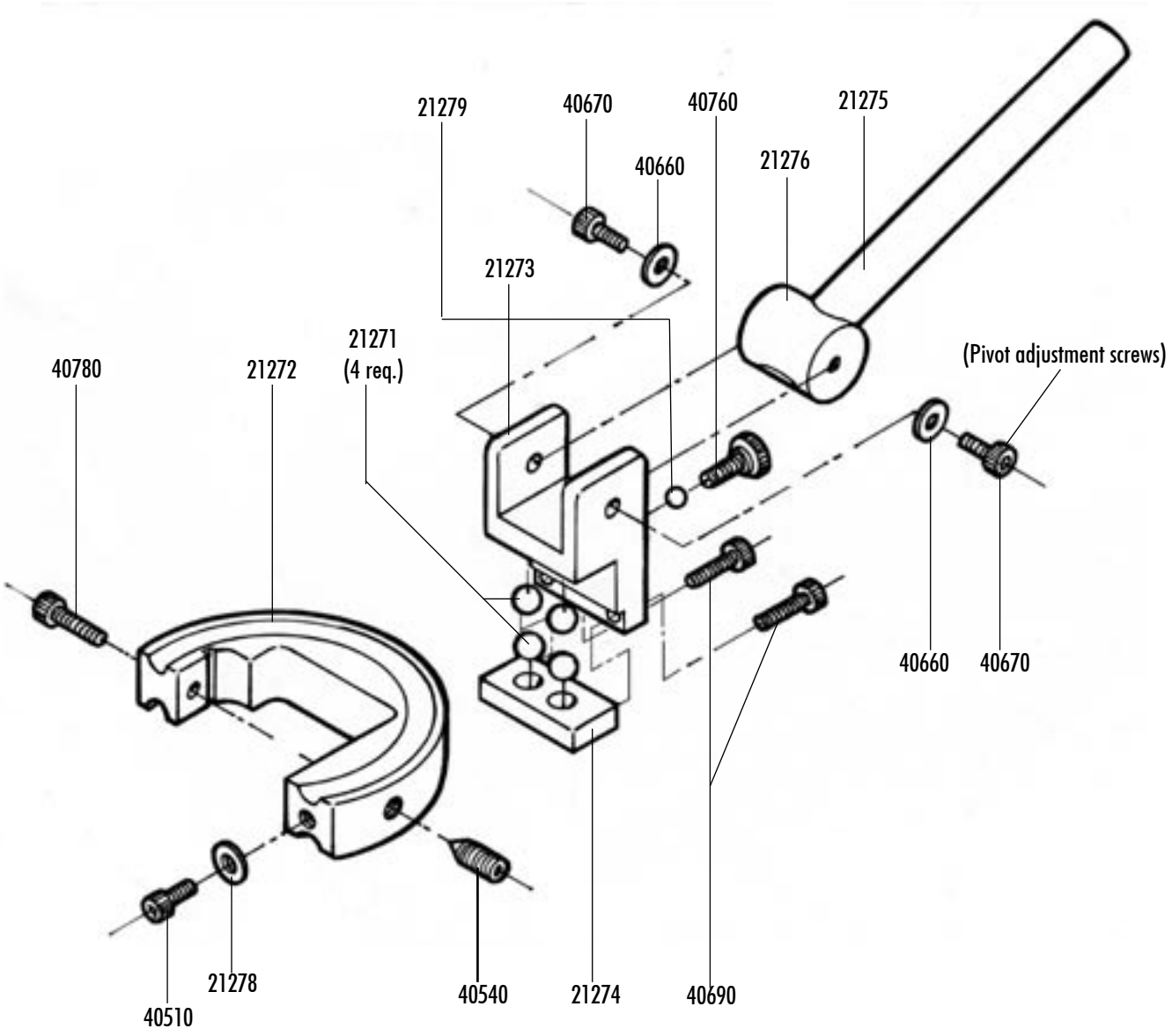


Figure 1—Component parts of the microscope when mounted to a Sherline mill.

Exploded View Parts Diagram



PART LISTING	
21271	3/8" Steel Balls (4 Req.)
21272	Microscope mill mount base
21273	Microscope mill mount top
21274	Microscope mount clamp bottom
21275	Microscple mill mount post
21276	Microscope mill mount pivot
21278	Flat washer, 1/4" ID x 9/16" OD
21279	1/8 brass ball
40510	10-32 x 3/8" SHCS
40540	5/16" Cone point set screw
40660	#10 washer
40670	10-32 x 1/2" SHCS (2 Req.)
40690	10-3x x 3/4" SHCS (2 Req.)
40760	10-32 x 5/8" Thumbscrew
40780	10-32 x 1-1/8" SHCS