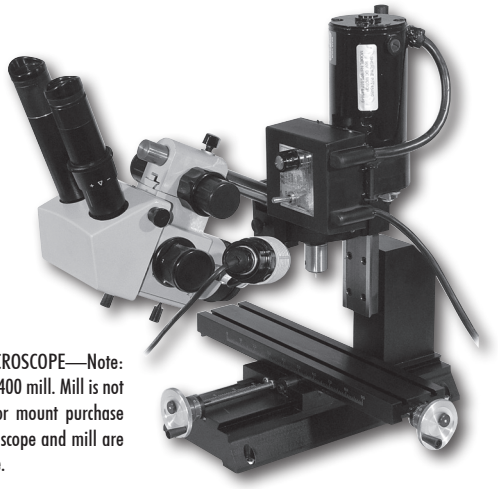


2127 MOUNT WITH MICROSCOPE—Note: Scope shown mounted on 5400 mill. Mill is not included with microscope or mount purchase but a discount is applied if scope and mill are purchased at the same time.

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 Mill Microscope Setup Instructions

Remove all the individual microscope components and boxes from shipping box. If purchased with a scope, the Sherline microscope mount is packaged separately inside the box containing the scope. The microscope comes with a basic set of its own instructions for assembly as a stand-alone microscope for 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 post 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 post is the locking collar.

A 1.5x Barlow lens and adapter ring has been provided by Sherline. This adjusts the focal distance and viewing area to a suitable size for use when machining. It may be removed when using for inspection purposes.

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 post that comes with the scope and reposition it about 4 inches below the top of the Sherline column. Tighten the thumbscrew 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 lock the mount in place.
6. Remove the stereo microscope upper and lower head assemblies from the microscope 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 will be a tight fit the first time.) Adjust the angle of the post and the height of the safety collar until the Barlow lens is about 2-3/4" from the tip of your cutting tool and then retighten each.
9. Install a pair of optical eyepieces from the Styrofoam box into the two tubes in the stereo head. Use the ones marked 8x/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.)
10. Rotate the focusing knob until the number 0,3 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 0,3 and 1.
11. Install a black plastic eye guard from the Styrofoam box onto the end of each eye tube. These protect the lenses from stains and shields extraneous light.
12. The largest white box contains the standard base. Also included is a vinyl cover that can be placed over the microscope to keep dust off it when not in use.

Installing and Adjusting the light

Most machinists have already purchased an additional light source that is focused on the work area for better vision. The high quality of the optics of this scope are such that you may already have enough light on your work area without the addition of the light provided with the microscope.

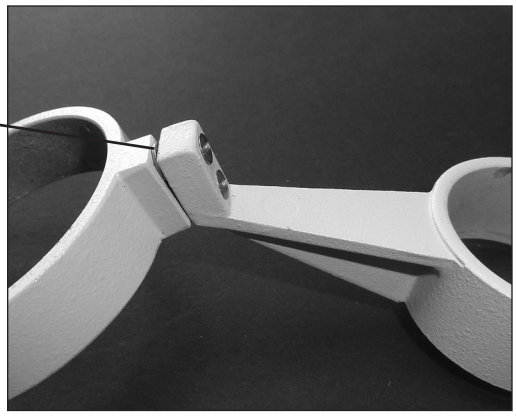


FIGURE 1—Shown here is the cast light bracket. Use one or two of the small washers provided to obtain the correct angle to focus the light on your work area.

Many find that it is unnecessary and just in the way. If, however, you do need the additional lighting, here is how it is installed.

Modifying the Light Bracket

A cast bracket is provided by the microscope manufacturer to hold the light source. It is designed to focus the light at the longer focal distance of the microscope without the additional Barlow lens in place. When using the 1.5x Barlow lens it may be necessary to change the angle of the light slightly to aim it at your work area. To do so, unscrew the two screws that hold the halves of the support together. Insert one of the small washers provided behind the top screw and reinstall. This will move the aiming point of the light closer to the scope. Note also that the filament in most bulbs is not centered, so rotating the light source in the holder will make a big difference in where the bright spot is pointed.

Installing the light

1. The objective lens comes already installed in the lower bayonet ring. Unscrew the knurled light retention ring and slip the light holder bracket over the objective lens housing. Angle it to the left side of the scope. Install the new lens adapter ring and 1.5x Barlow lens to secure the light holder in place.
2. Install one of the light bulbs found in the Styrofoam box into the light condenser and then slip the unit into the open ring of the light holder. (Handle the bulb with a tissue or piece of cloth to keep from getting fingerprints on the glass surface.) 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. Rotate the light as needed to move the aiming point. The condenser is a fairly loose fit in the holder. An O-ring has been provided to roll on over the end of the light fixture to help hold it in place if desired.

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 receptacle with the contact points is fully seated and the small molded boss is registered in its slot. The contacts must line up with the two bulb contacts when the bulb bayonet is rotated into 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 ring clip and screw the ring back on, as it helps protect the light and also registers the O-ring to keep the lamp housing in place.

Using the microscope to view your milling operation

1. 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.

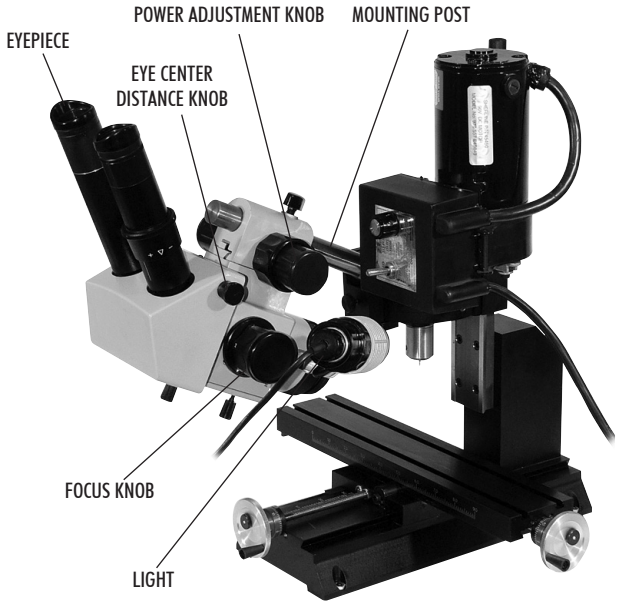
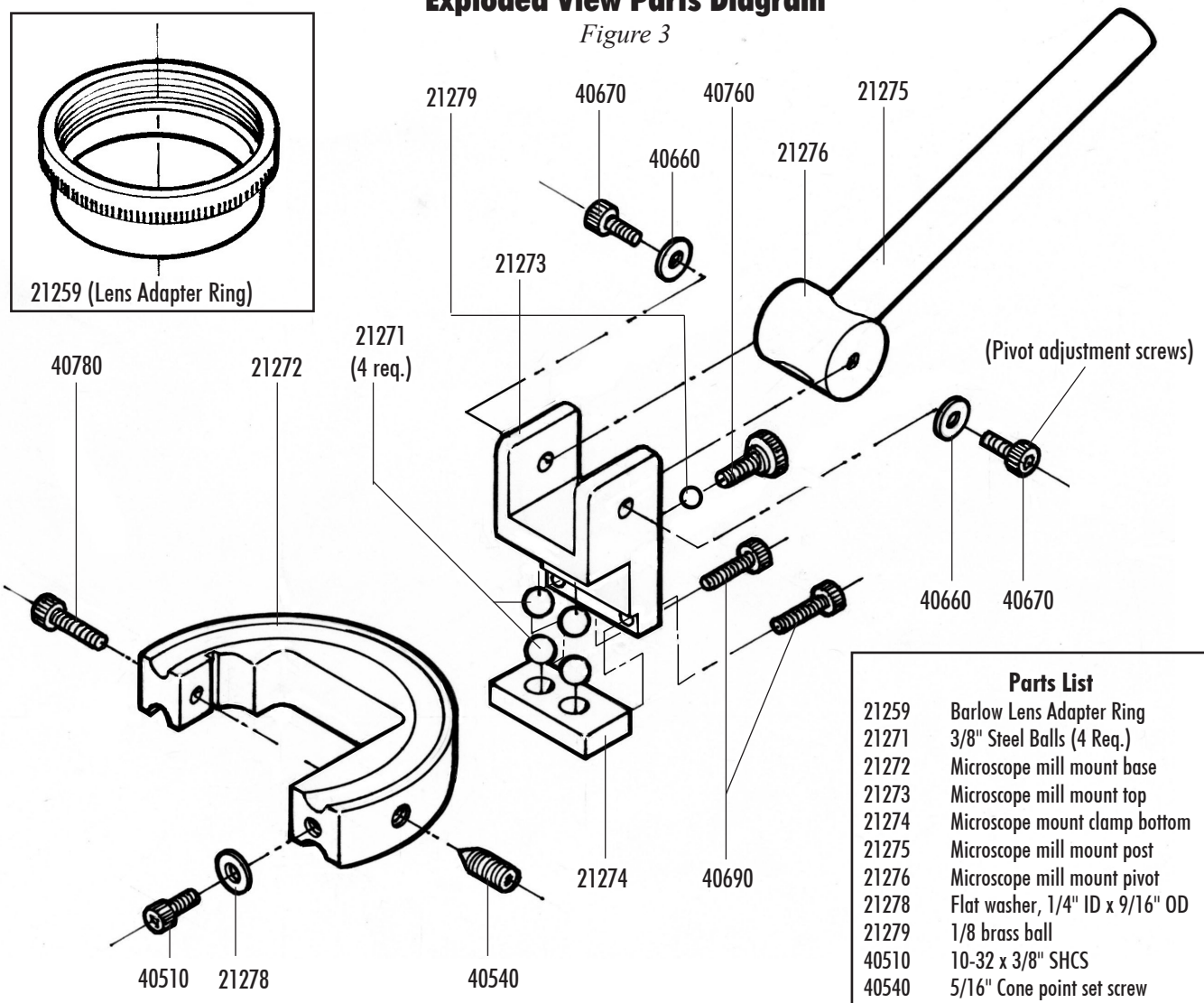


Figure 2—Component parts of the microscope when mounted to a Sherline mill.

Exploded View Parts Diagram

Figure 3



Parts List	
21259	Barlow Lens Adapter Ring
21271	3/8" Steel Balls (4 Req.)
21272	Microscope mill mount base
21273	Microscope mill mount top
21274	Microscope mount clamp bottom
21275	Microscope 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
PARTS NOT SHOWN	
21261	1.5x Barlow Lens
21262	Light Holder Spacer #4 washers (3)
21263	1-1/8" O-ring for light holder

Changing the position of the scope

When rotating the scope from the front to the side viewing position or back, you will note the balls do not rotate perfectly smoothly in the track. This is done purposely to keep the scope from rotating accidentally when in use. To move the scope around the mount, lift up slightly on the scope while rotating it.

Protecting the lens from chips

The Barlow lens will protect the expensive objective lens of your microscope from damage. The outer surface of the Barlow lens can be carefully cleaned as you would a camera lens. If you wish to further protect the Barlow lens, you can purchase and install a standard 48mm UV filter, available at any camera store.

Using the scope without the Barlow lens

Although the microscope can be used on the mill without the Barlow lens to achieve a wider field of view, doing so increases the focal distance . This moves the scope itself out to the extreme end of the mounting bar, which puts a lot of leverage on the mount. Therefore this is not recommended on the mill. When using the scope on it's own factory base for inspection purposes, however, it may be advantageous to remove the Barlow lens.

Figure 4—The microscope can also be mounted on the base that comes with it to be used as a standard inspection scope. The 1.5x Barlow lens and adapter ring (lower left) are not installed in this case. (The production adapter ring has a black anodized finish.