

**SHERLINE  
PRODUCTS**  
INCORPORATED 1974

## Lathe Microscope Mount

P/N 2125 (Scope and mount) or P/N 2126 (mount only)

### Sherline Lathe Microscope Setup Instructions

Remove all the individual microscope components and the mount from shipping box. The microscope comes with a very basic set of its own instructions for assembly as a stand-alone microscope for inspection purposes. For use on a Sherline lathe 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 is the locking collar.

A 1.5x Barlow lens and adapter ring have been included with your microscope. Installing this lens adjusts the focal distance and viewing area to a suitable size for use when machining. It may be removed when using the scope for inspection purposes on its included stand.

### Assembling the Microscope Mount and Head

1. Attach the Sherline lathe microscope base to the rear of the lathe table using the two 10-32 screws and T-nuts provided. The column tube should angle toward the operator.
2. Remove the safety collar from the standard base column (found in the large, flat white box) and reposition it about 4-1/4" inches below the top of the Sherline column. Tighten the large thumb screw to hold it in place.
3. Mount the stereo body on the column, sliding it down until it rests on the safety collar. (It is a tight fit.) Tighten the other large thumb screw behind the rack and pinion focusing system to hold the microscope in position.
4. 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.)
5. The objective lens comes pre-installed in the lower bayonet ring. Screw the adapter ring onto the objective lens. Then screw the 1.5x Barlow lens onto the adapter ring. Adjust the height of the safety collar and

microscope body until the Barlow lens is about 2.75" from the tip of your cutting tool and retighten the collar screw.

6. 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 lathe, 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.)
7. 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.
8. Install black plastic eye guards from the Styrofoam box onto the end of each eye tube to protect the lenses. It may be necessary to slightly bend the split tab on the side of each guard for more grip on the tube.
9. 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.

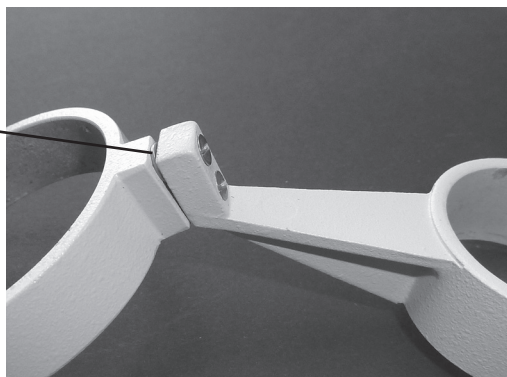
### Installing and Adjusting the Light

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. 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

A small washer is installed between the two halves of the light mount to re-aim the light when the Barlow lens is used.



*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 when using the Barlow lens.*

Barlow lens in place. When using the 1.5x Barlow lens it may be necessary to change the angle of the light slightly to re-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 focal point of 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 Fixture

1. Unscrew the lens adapter ring and Barlow lens and slip the light holder over the objective lens housing. Re-install the adapter ring to secure the light holder.
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 cast 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

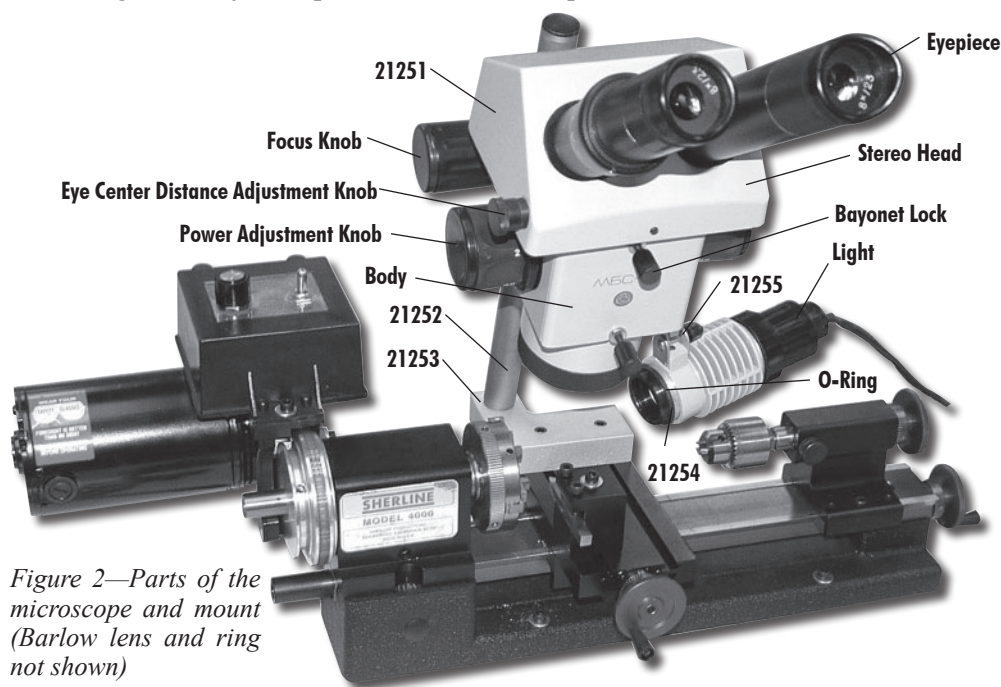
your work area under the objective lens. Rotate the light as needed to move the aiming point. The condenser is a fairly loose fit in the holder. An O-ring has been provided to help hold it in place if desired. Roll the O-ring over the end of the light fixture and up against the cast holder to secure the fixture.

**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 clip and then the threaded ring as it helps register the O-ring to keep the lamp housing in place.

#### Using the Microscope to View Your Part

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 front on the left side of the binocular head makes this adjustment.
3. A  $\pm 5$  diopter focusing adjustment is available on the left eye tube to adjust to your particular eyesight. Like using a pair of binoculars, first focus on the object using your right eye while adjusting the main focusing



*Figure 2—Parts of the microscope and mount (Barlow lens and ring not shown)*

#### Parts List

21251	Stereo Microscope, Complete
21252	Mounting Rod
21253	Mounting Base
21259	Barlow lens adapter ring
21261	1.5x Barlow Lens
21262	Small washers (3)
21263	1/1-8" ID O-Ring
30561	Short T-Nut (2 Req.)
40690	10-32 x 3/4" SHCS (2 Req.)

**NOTE:** For clarity, the photos show the base of the microscope mount as silver. The actual production parts have a black anodized finish.



knob. Once in focus for your right eye, turn the diopter adjustment on the left tube to bring your left eye into focus.

4. The whole microscope is adjusted in and out to center it over your part by loosening the T-nuts and moving the mount on the table.
5. When changing parts, make sure the safety stop on the column is tightened. Then loosen the locking screw on the back of the microscope body and rotate the head out of the way. Retighten the locking screw to keep it from swinging back until you are ready to start cutting again. On the mill, just pivoting the scope to the side in its track will probably yield enough room to work.

#### 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 cleaned as you would a camera lens. If you wish to further protect the Barlow lens itself, 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 lathe without the Barlow lens to achieve a wider field of view, doing so increases the focal distance. This moves the scope itself up to and slightly beyond the top end of the mounting bar, which may raise it too high to be practical for some people while operating the lathe. When using the scope on it's own factory base for inspection purposes, however, it may be advantageous to remove the Barlow lens.

#### Adjusting the mounting base for facing operations

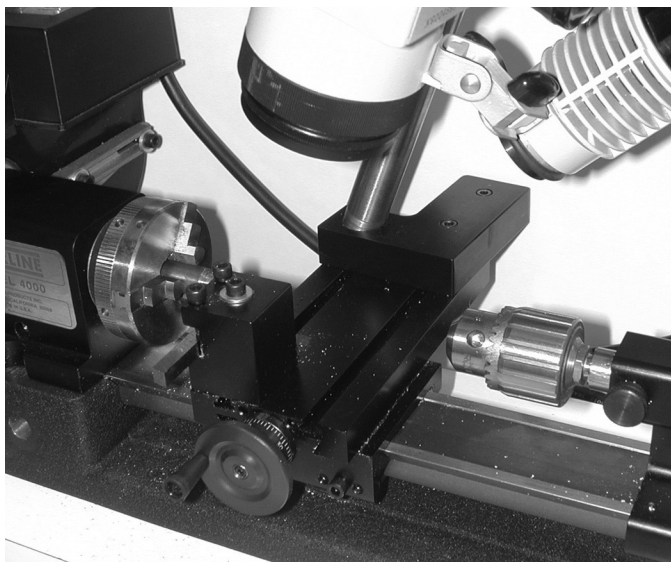
With the mount in the normal position the scope cannot be positioned to view the end of a part when doing facing operations. When setting up for a facing operation, first remove the microscope from the base post. Loosen the two screws holding the base to the table and slide the base off the table. Reinstall the base 90° counterclockwise from the



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

standard position so that the scope mounting post is now angled toward the tailstock. Mount it as far back on the table as you can using only one of the mounting screws and T-nuts in the rear table slot. Re-install the microscope on the support post and orient it so it is still facing the operator as before.

The tool post is moved to the end of the table closest to the operator to include the tool tip and part in the scope's field of vision. (See Figure 3).



*Figure 3—The microscope base is rotated 90° to provide a view of the end of a part for a facing operation. (Older style light mount and scope without the Barlow lens shown.)*

Microscope Specifications:	
OPTICAL SYSTEM: (Not including Sherline-supplied 1.5x Barlow lens. Multiply powers by 1.5 when Barlow lens installed)	<ul style="list-style-type: none"> <li>· 2.4X-47.2X Magnification for observation; 85mm-4.8mm</li> <li>· Field of view; 170mm Working distance</li> </ul>
BODY:	45° inclined binocular tube for comfortable viewing
Interpupillary adjustment:	56mm to 72mm
Dioptic focusing:	± 5, on the left eyepiece tube
Focuser type:	Rack and Pinion
ILLUMINATION:	6V / 20W illuminator, External, constant-output transformer included
OBJECTIVE:	High quality Achromatic Lenses - Built-in 0.3X, 0.5X, 1X, 2X, and 3.3X.
FOCAL DISTANCE: (Lens surface to object)	7.25" (2.75" w/ Barlow lens installed)