

**SHERLINE
PRODUCTS**
INCORPORATED 1974

Model 2000 Mill Upgrade Installation Instructions

- Column travel modification
- P/N 4017U Saddle locking lever upgrade

Why these upgrades came about

With the introduction of a new product like the Model 2000 mill, it is impossible to anticipate all the uses and setups our customers will attempt with it. After several months of feedback, we noticed several areas where customers had suggested a need for greater clearance or capacity. Some users noted that lowering the column all the way down without the column spacer block in place would sometimes cause the bottom of the rotary attachment to hit the mill vise. Also, when using small end mills, the column could not be lowered enough to get the cutter lower than the table surface for milling the side of a part even with the column extension removed. The enclosed upgrade eliminates these problems by allowing the column saddle to be lowered an additional 1.6".

The column saddle lock upgrade provides a superior method of preventing saddle movement by locking the saddle nut against the leadscrew. This is much more positive than the existing friction saddle lock. We have looked for a way to produce this for years, but it required finding a way to start a thread in exactly the same place each time so that the locking movement could be confined to a limited quadrant. A new piece of equipment in our factory now makes it possible to control this accurately, so the lock will be added to all production mills from now on. Upgrade kits will be available for all older Sherline mills. For purchasers of the "top-of-the-line" Model 2000, we have included the locking lever upgrade at no charge.

If you have been using your mill and have not encountered any problems along these lines, it is not necessary to install the upgrades at this time. If you do run into a problem where you need to lower the saddle more than it will currently go, you can always install it at that time. However, you will probably find the new column locking lever to be far superior to the old friction lock, and as long as you are going

to the trouble to replace it, you might as well install the whole upgrade at the same time.

If you do not wish to install these upgrades yourself, we will be glad to do it for you for a \$15.00 handling fee. You must pay the cost of shipping the unit to us, and we will pay for return shipping. Just return your column and saddle unit (not the whole mill) along with the upgrade package components. We will install the kit and return the column/saddle to you. We feel that most of our customers will prefer to do the job themselves as for most people it is easier than packaging the column for shipping.

Disadvantages to lowering the saddle and how to overcome them

Lowering the saddle makes it easier to work close to the table. The trade-off that always occurs with any engineering compromise is that movement at the top of the travel is limited by the same amount as is gained at the bottom. Certain tall setups that involve multiple accessories can stack up to a height that may require more clearance at the top end. You will probably find that with the upgrade in place you will operate the mill with the column spacer block in place most of the time. To achieve more height than that spacer can provide you have a choice of either purchasing a second column spacer block or removing the saddle extension for jobs that require the additional height.

Installing the saddle travel and locking lever upgrades

1. Remove the headstock/motor/speed control unit from the saddle pin.
2. Remove the four socket head cap screws that hold the column bed to the rotary attachment.
3. Remove the four socket head cap screws that hold the moveable clamp disk to the arm mount. Index the moveable clamp disk 180° so the column bed hole pattern is closer to the bottom and reinstall the four socket head cap screws.

4. Remove the Z-axis column saddle lock from the saddle.
5. Remove the leadscrew from the column bed. Do this by first removing the socket head cap screw that holds the saddle to the saddle nut. Then remove the countersunk screw at the top of the column that holds the leadscrew thrust to the column. The leadscrew, thrust and handwheel can now be removed as a unit.

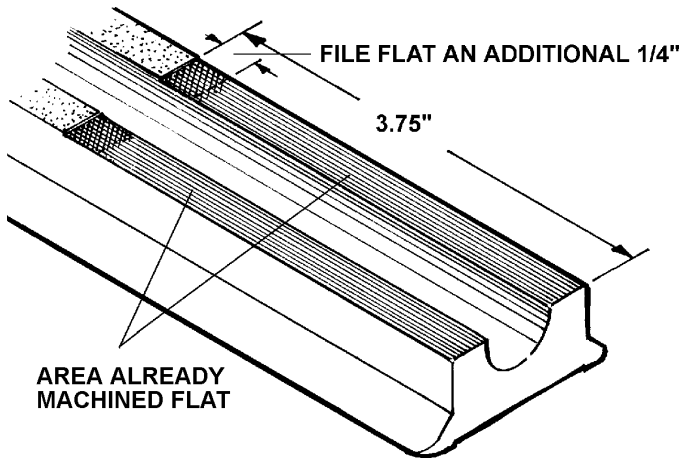


FIGURE 1—File the top end of the mounting surface of the bed flat. You will be extending the machined flat surface an additional 1/4" or so for a total of 3-3/4" of flat.

6. On the bottom of the bed, a flat has been machined with enough clearance for the existing rotary attachment. This flat will need to be extended approximately 1/4" with the use of a file. (See Fig. 1.) This will allow the lowered column to be bolted flat against the moveable clamp disk. Use a flat mill file and remove at least the same depth of material as was machined away on your column. Don't file any more of the existing machined surface than is necessary. It is OK if you go a little deeper at the top end as there is plenty of machined flat space to align the column. If you don't go deep enough, the column will not sit flat against the clamp disk.

7. The leadscrew must be shortened so that it will clear the top of the rotary column attachment. Remove the old saddle nut. Thread the new locking lever onto the leadscrew. Then thread the new saddle nut up against the locking lever. The side with the spring loaded ball should face the locking lever. By doing this now, you do not have to worry about starting it over the freshly cut thread ends.

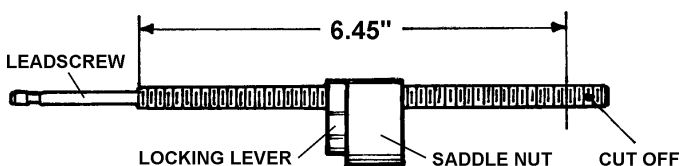


FIGURE 2—The leadscrew is shortened so that the thread length is 6.45". By threading on the locking lever and new saddle nut before making your cut, you will not have to worry about getting them started over a cut-off thread end. (Note: thrust and handwheel not shown.)

8. Mark the leadscrew with tape to show your cut location. The leadscrew should be shortened so that the new thread length is 6.45". (See Figure 2 above.) Place the leadscrew in

a vise holding it by the end that will be cut off. Use a hacksaw to remove the excess length. Clean up and bevel the cut threads slightly with a file.

9. Slide the leadscrew into the column and reattach the thrust to the column with the countersunk screw.

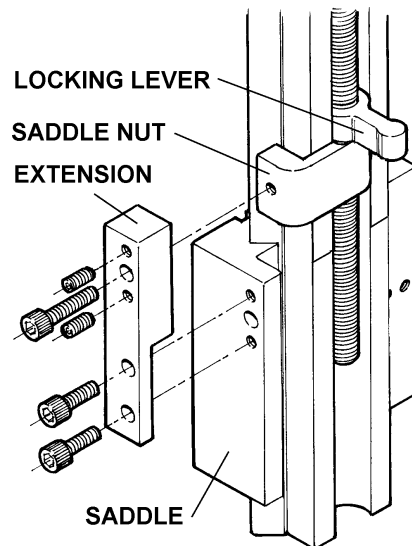


FIGURE 3—Remove the two set screws from the saddle and reinstall them in the extension. Then attach the extension to the saddle and saddle nut with socket head cap screws as shown.

10. Remove the two backlash set screws from the side of the saddle and reinstall them in the two holes in the upgrade extension. (See Figure 3.)

11. Attach the upgrade extension to the saddle with two 10-32 x 1/2" socket head cap screws going into the old set screw holes in the saddle.

12. Slide the saddle up or down on the column until the saddle nut is aligned with the hole in the upgrade extension and attach it to the extension with the 10-32 x 3/4" socket head cap screw. Do not tighten it fully until the backlash is set in step 15.

13. Check to make sure the new saddle locking lever tightens against the face of the saddle nut and is held in the "unlocked" position by the spring loaded ball when open.

14. Reattach the column bed to the moveable clamp disk using the four socket head cap screws removed earlier.

15. Adjust the Z-axis backlash using the two set screws that tighten against the saddle nut. Position the saddle at the end of its travel as close to the handwheel as possible. With the attaching screw loosened, bring each set screw into light contact with the saddle nut and retighten the attaching screw. If binding occurs, readjust the two set screws until the leadscrew moves freely.

16. Reinstall the motor/speed control unit on the saddle pin.

Your new Model 2000 mill is now ready to use. I think you will find the upgrades provide an improvement that is well worth the small amount of effort required to install them.

—Joe Martin, President and owner
Sherline Products Inc.