SHERLINE PRODUCTS
INCORPORATED 1974

Replacing the Mill DRO Leadscrew Instructions

How to Replace the DRO Leadscrew on the Mill Z-Axis

These instructions are for replacing the leadscrew on the mill. All of the DRO information is in the DRO instructions. Please refer to these instructions along with the instructions below (https://sherline.com/wp-content/uploads/2015/11/8100inst_2021.pdf).

Removing the Old DRO Leadscrew

1. First move the column saddle down about 2" (50 mm). Remove the DRO axis cover. The DRO cover is a clam shell design. On the bottom side there are (4) self-threading 2-56 screws. Remove these with a small, Phillips head screwdriver (see Figure 1).

FIGURE 1

2. Remove the 82° screw from the center of the handwheel (see Figure 2).

FIGURE 2

3. Rotate the handwheel to gain access to the 10-32 set screw. Loosen the set screw and remove the handwheel (see Figure 3).

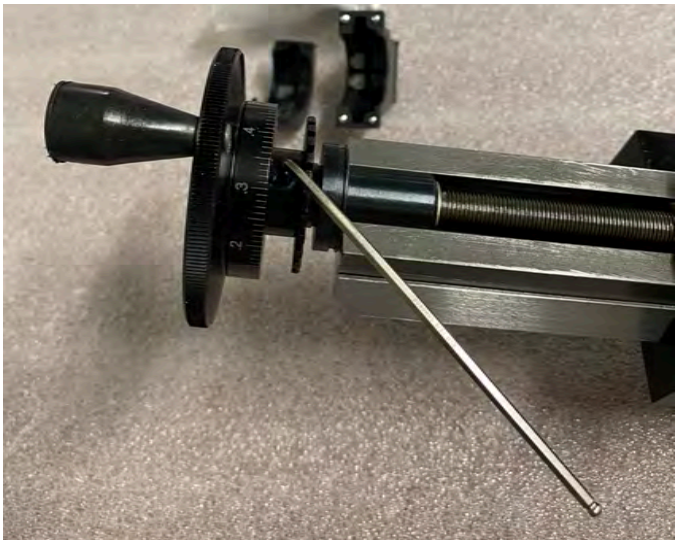

FIGURE 3

4. There may be shim washers on top of the thrust bearing in the leadscrew support. See how many shim washers there are. Remove them and set them aside (see Figure 4).

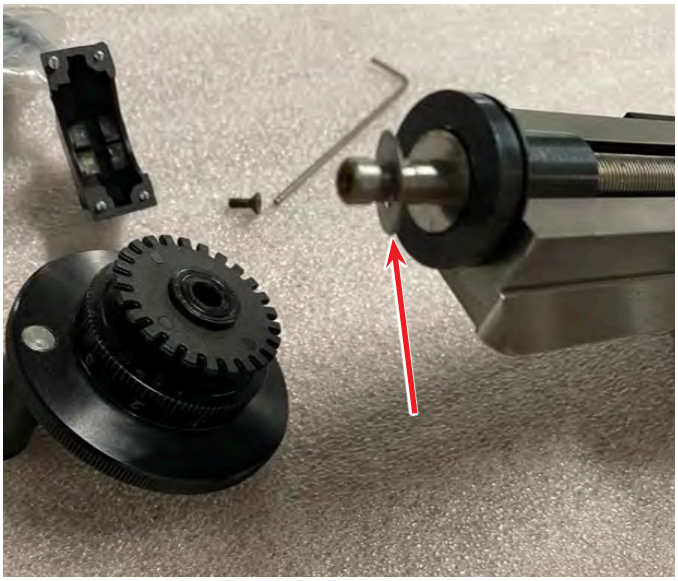

FIGURE 4

5. Remove the 10-32 82° screw from the column bed that holds the column thrust in place. Then remove the column thrust along with all of the shim washers, thrust bearing, and 1/4" washer that is on the bottom of the leadscrew support (see Figure 5).

FIGURE 5

6. Column thrust assembly parts: Shim washers, top thrust bearing washer, thrust bearing, bottom thrust bearing washer, column thrust, and 1/4" washer.

   NOTE: This is the order of assembly for all of these parts when you reassemble the machine. This order is critical (see Figure 6).

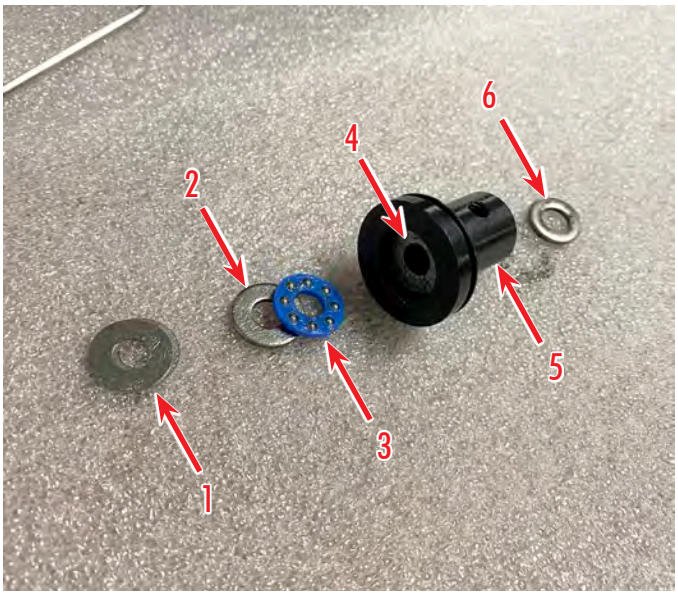

FIGURE 6—(1) Shim washers, (2) top thrust bearing washer, (3) thrust bearing, (4) bottom thrust bearing washer (still in the leadscrew support), (5) column thrust, and (6) 1/4" washer.

7. **VERY IMPORTANT NOTE:**

   DO NOT remove the saddle nut from the column saddle. The saddle nut has been aligned properly in the factory. Leave the saddle nut attached to the column saddle (see Figure 7)!

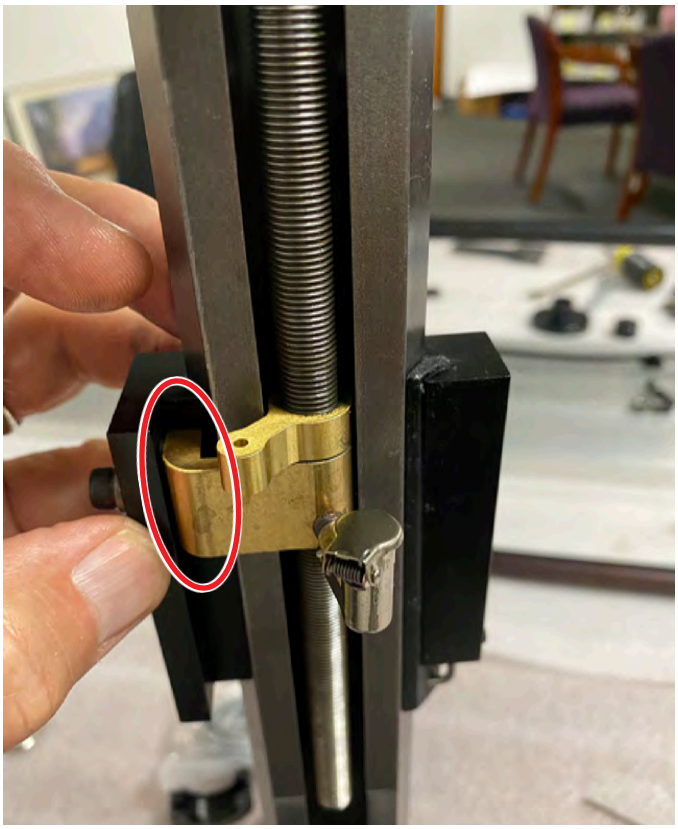

FIGURE 7—The red oval shows the location of the saddle nut.

8. Unthread the leadscrew all the way out of the saddle nut. This is easier to do with the handwheel on (see Figure 8). Put the handwheel back on the leadscrew and tighten the set screw until it is snug (no need to overtighten).

FIGURE 8

9. When the leadscrew is threaded all the way out of the saddle nut, the saddle nut "lock" will still be attached. Remove the leadscrew and saddle nut lock from the machine (see Figure 9).

FIGURE 9

10. Thread the saddle nut lock off of the leadscrew.

Installing the New Leadscrew

1. Now thread the saddle nut lock onto the new leadscrew. Be sure to have the plain side of the saddle nut lock facing towards the handwheel end of the leadscrew (as shown above. The other side of the lock has the indent hole. This side should be facing away from the handwheel (see Figure 10).

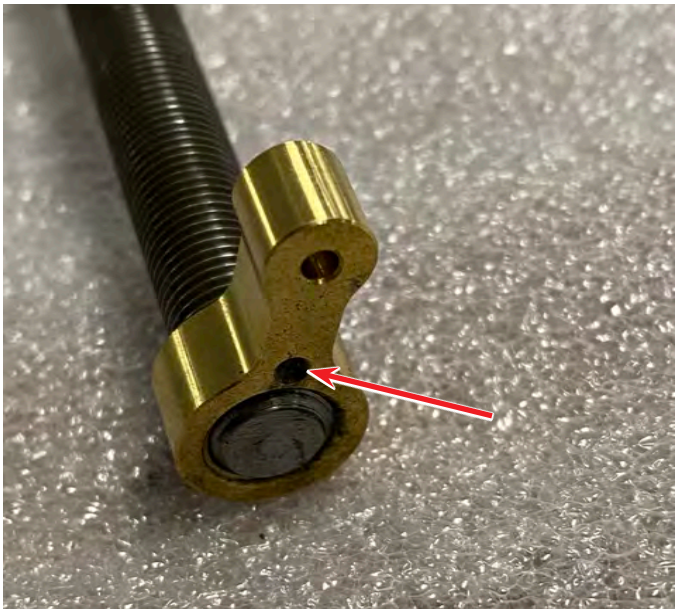

FIGURE 10

2. This part of the assembly is tricky and it needs to be done correctly. The threads in both the saddle nut and the lock are machined so they align with each other when the saddle nut lock is in the unlocked position.

   A. Thread the leadscrew through the lock so there are two or three complete threads showing below the lock (see Figure 11).

FIGURE 11

   B. Insert the leadscrew/lock assembly into the cavity in the column bed. With the lock in the unlock

position, push the leadscrew down into the top of the saddle nut (see Figure 12).

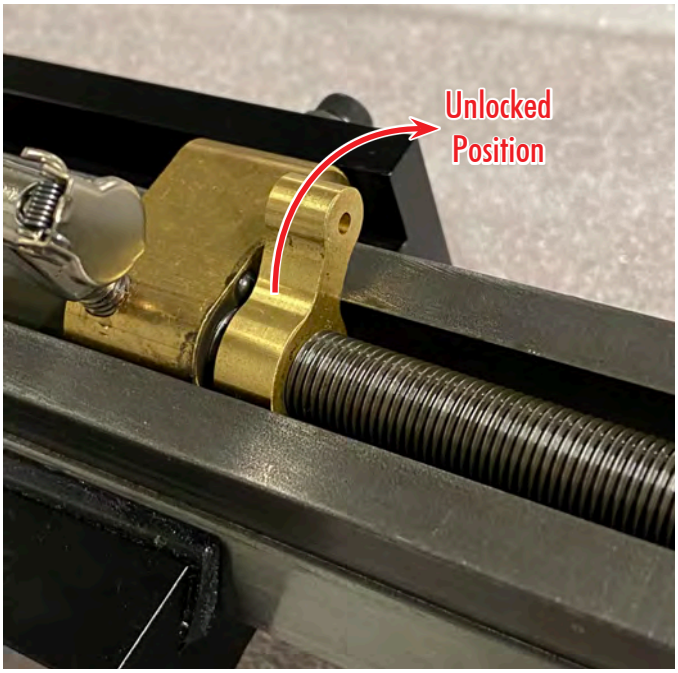

FIGURE 12

C. The leadscrew has a left-hand thread. While holding the leadscrew, so it is perpendicular to the saddle nut (very important), slowly turn the leadscrew CW while holding the saddle lock in place forcing the leadscrew into the saddle nut (see Figure 13).

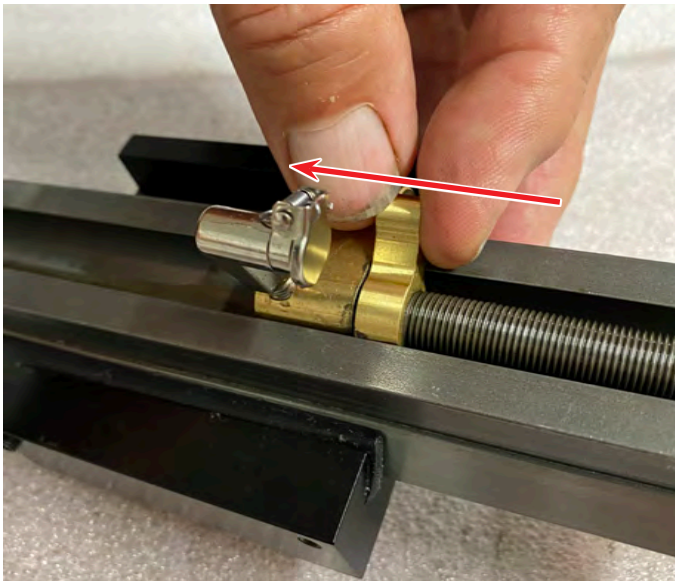

FIGURE 13

D. As you turn the leadscrew clockwise, you will feel the "lead thread" of the leadscrew "click" when it aligns with the "lead thread" of the saddle nut. Continue to turn the lead until the space between the lock and the leadscrew almost disappears. When the space is almost gone, you will feel the lead thread engage with the lead thread of the saddle nut (see Figure 14).

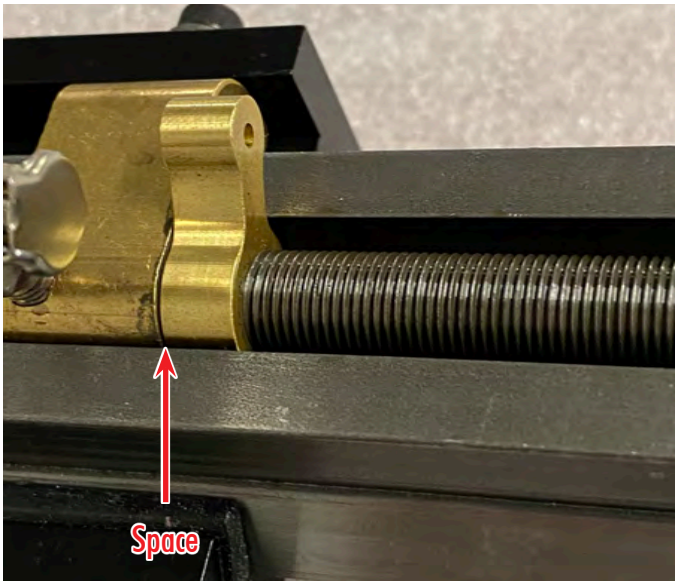

FIGURE 14

E. At this point, begin to turn the leadscrew Counter Clockwise. The leadscrew should begin to thread into the saddle nut. Again, the leadscrew must be perpendicular to the face of the saddle nut, or the leadscrew will try to cross thread the saddle nut. If you feel any resistance repeat this procedure until you feel the lead thread engage with the lead thread of the saddle nut.

3. Once the leadscrew is threaded into the saddle nut, thread the leadscrew in until it protrudes past the bottom end of the saddle nut.
4. Now pull the lock lever towards the center of the leadscrew. If the space between the lock and the saddle nut were correct when the leadscrew began threading into the saddle nut, the lock should bottom out on the top of the saddle nut and lock the leadscrew so it can't turn (see Figure 15).

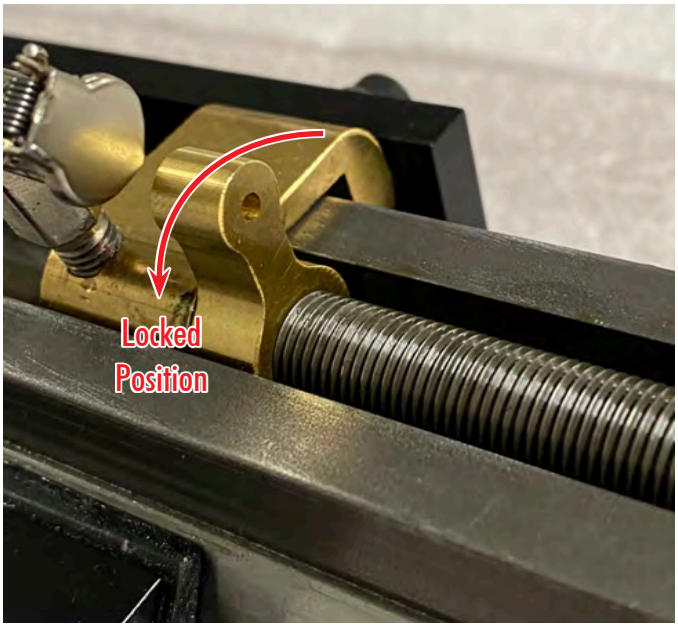

FIGURE 15

5. Move the lock lever to the unlock position. Add some 3-In-One oil (or light sewing machine oil) to the leadscrew and continue to thread the leadscrew into the saddle nut (see Figure 16).

FIGURE 16

Reinstalling the DRO Handhweel

1. Thread the leadscrew down until the threaded area at the shaft is about 1" (25 mm) below the end of the column bed. Place the 1/4" washer on the leadscrew shaft (see Figure 17).

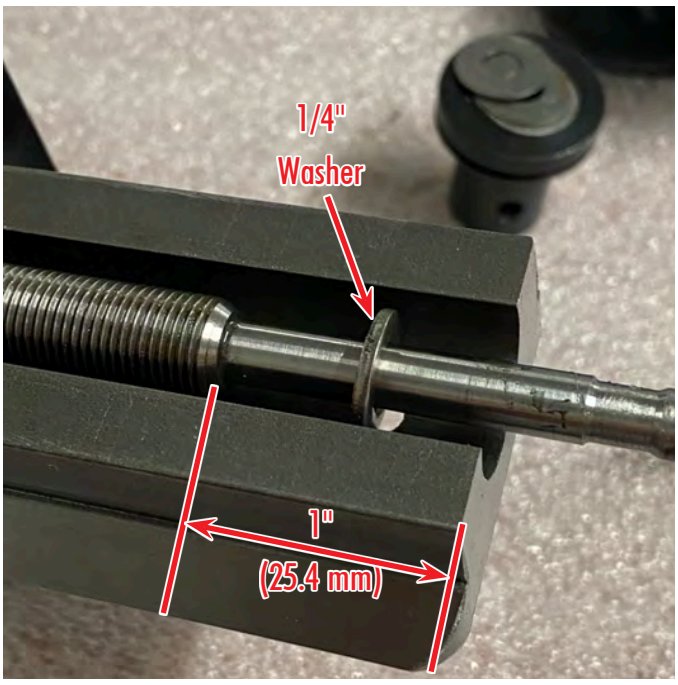

FIGURE 17

2. Now insert the rest of the column thrust assembly onto the leadscrew shaft and into the column bed (see Figure 18).

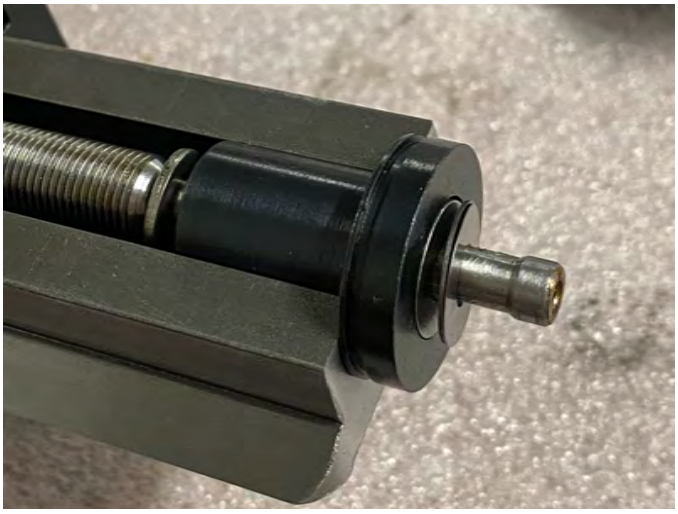

FIGURE 18

3. Turn the column thrust body until the 10-32 hole aligns with the 82° hole in the column bed (see Figure 19).

FIGURE 19

4. Thread in the 10-32 82° screw to lock the column thrust in place (see Figure 20).

FIGURE 20—The 10-32 82° screw is now in place.

5. The handwheel, column thrust, and leadscrew assembly works the same way as the slide screw assembly. All of these parts are sandwiched between the leadscrew thread shoulder and the handwheel. Pull the column saddle towards the column thrust so the 1/4" washer is pressed hard against the column thrust. Now place the handwheel onto the leadscrew shaft with the set screw facing up. Pull the handwheel and the column saddle towards each other (see Figure 21).

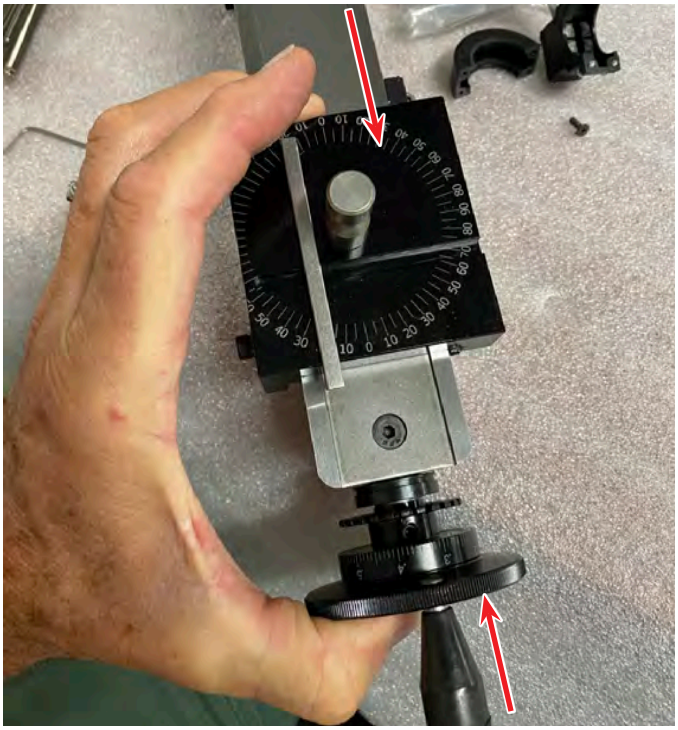

FIGURE 21

6. Now tighten the set screw in the handwheel (see Figure 22).

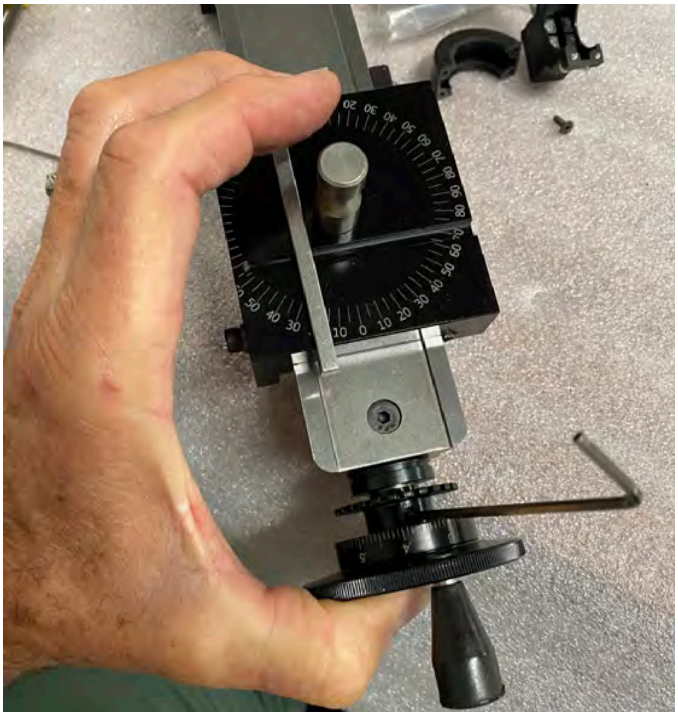

FIGURE 22

7. With the set screw tightened, turn the handwheel CW and CCW to see how much backlash there is before the column saddle changes direction. You should have .002" (.051 mm) or less if the assembly is correct.

8. Move the saddle lock lever back to the unlocked position. Now insert and tighten the center screw in the top of the handwheel. This screw should just be snug (see Figure 23).

   NOTE: If you over tighten this screw, it will compress the column thrust assembly parts even more and may result in too much compression of these parts. After you have tightened the center screw, turn the handwheel CW and CCW and feel for increased resistance. If this screw is too tight, the handwheel will be hard to turn. If so, back out the center screw a bit. If it doesn't loosen up, you will need to remove the center screw and do the previous steps, 5 and 6 again (Figures 21 and 22 respectively).

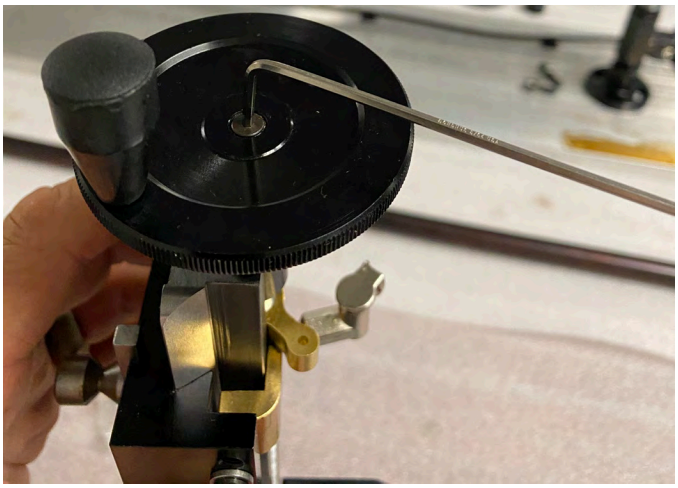

FIGURE 23

9. Insert the top half of the DRO housing on the front side of the column bed making sure that the lip side of the housing is inserted into the groove on the column thrust (see Figures 24 and 25).

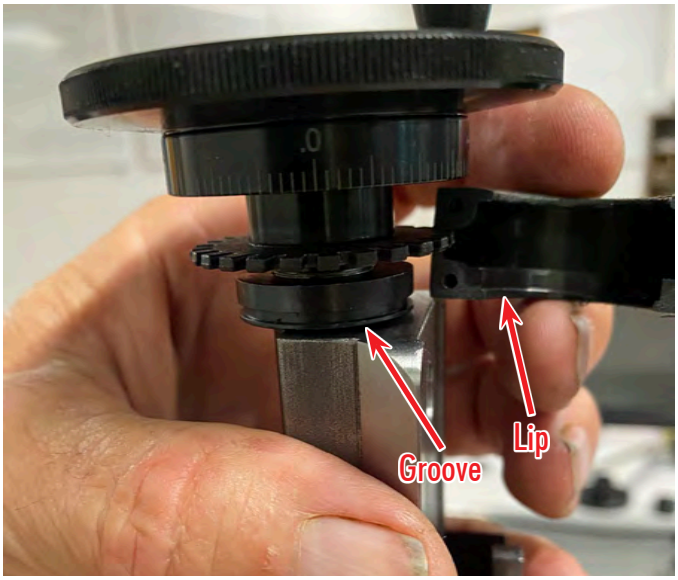

FIGURE 24

FIGURE 25

10. Insert the bottom half of the DRO housing on the backside of the column bed, again, with the lip in the column thrust groove(see Figures 26 and 27).

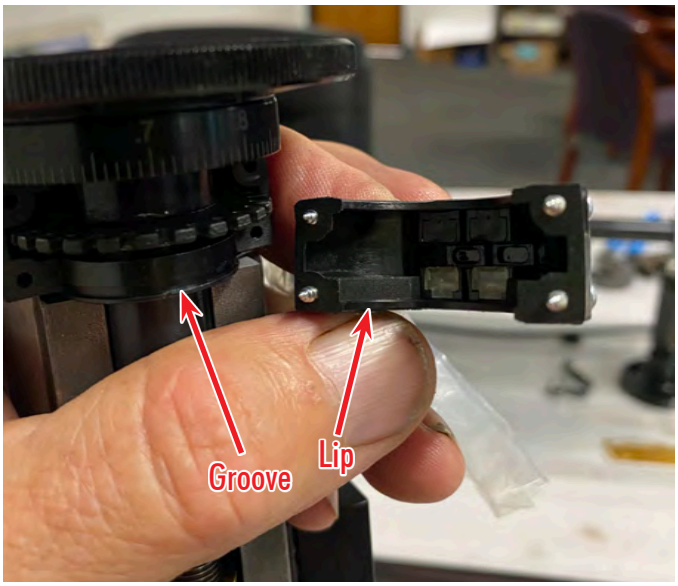

FIGURE 26

FIGURE 27

11. The (4) mounting screws are self-tapping screws and the DRO housing is plastic. There are already threads in the housing from the initial assembly. Turn the screws CCW until you feel the thread of the screw click into the existing threads in the DRO housing. Then tighten the screws. If you don't align the screw threads with the threads in the housing, you will cross thread the threaded holes in the housing. Before you tighten the screw, rotate the housing so the bottom of the housing is facing straight back from the backside of the bed (see Figure 28).

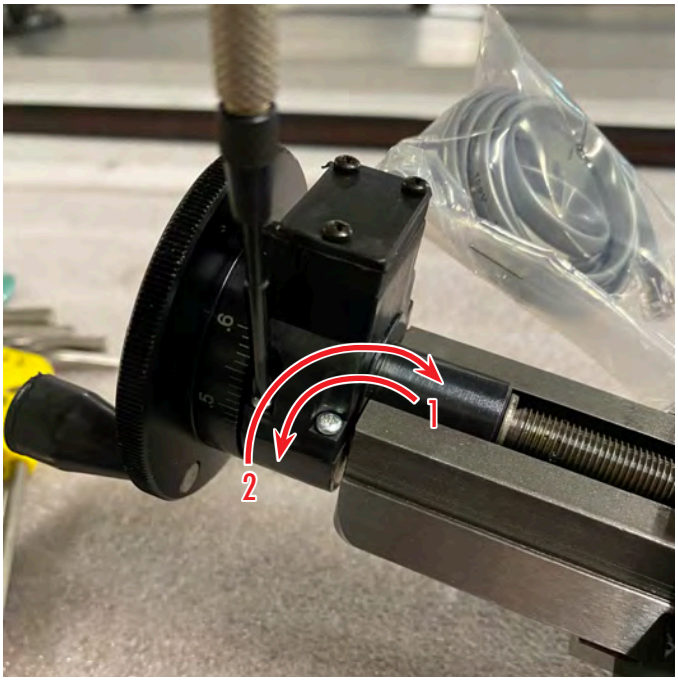

*FIGURE 28—**NOTE:** The housing is plastic. Do not overtighten the screws or you will strip the threads out of the housing. Just tighten them until they are snug.*

Thank you,
Sherline Products Inc.