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Replacing the Mill DRO Slide Screw Instructions

Replacing the Slide Screw on a DRO Mill

These instructions go over how to replace the slide screw on a DRO mill and reassemble the DRO handwheel housing.

1. Remove the DRO axis cover. All of the DRO information is in the Mill Digital Readout instructions (P/N 8100). Please refer to them (https://sherline.com/wp-content/uploads/2015/11/8100inst_2021.pdf), along with the instructions below.

   A. 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—This is the bottom view of the mill.

   B. Position the saddle so it is about 2" (50 mm) away from the end of the base. This will give you room to access all of the screws. Now rotate the handwheel until you see the 10-32 set screw. Loosen the set screw and remove the handwheel (see Figure 2).

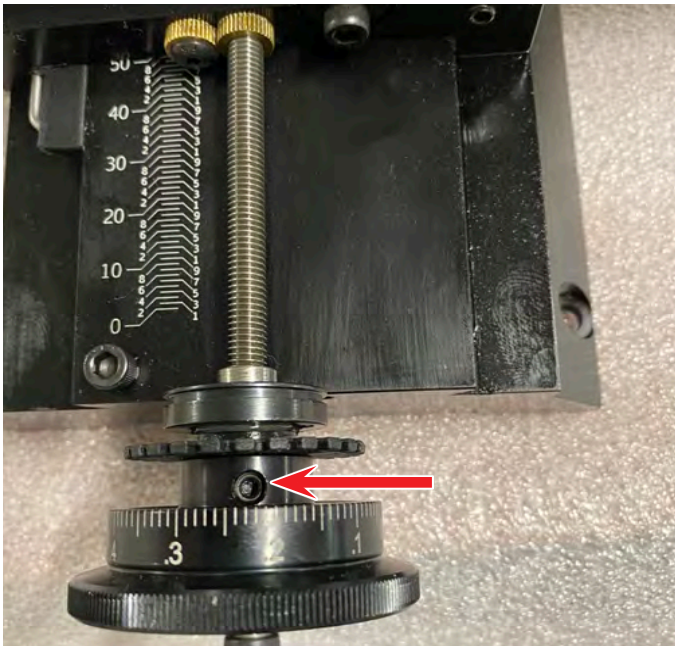

FIGURE 2—Handwheel set screw location.

   C. Once the handwheel is removed, there may be a shim washer (or two). Remove the shim washer (see Figure 3).

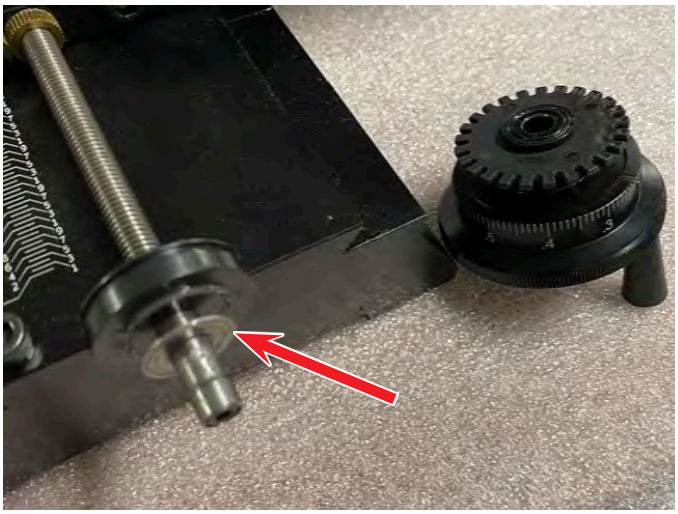

FIGURE 3—Keep the shim washer(s) hand for reassembly.

D. Remove the 8-32 locking screw and the anti-backlash lock (see Figure 4).

NOTE: The 8-32 screw may be tight and the hex in the screw may be shallow (that's how they are made). You want to use a good hex key that is not rounded off on the corners and make sure that it is seated to the full depth of the hex in the screw. You will need a 3/32" hex key.

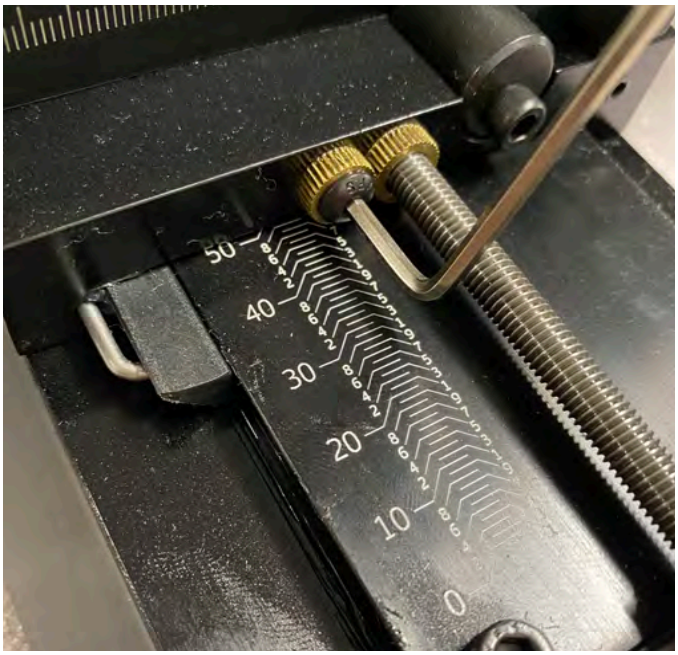

FIGURE 4—Shows the 3/32" hex key seated in the 8-32 locking screw that holds the backlash lock in place.

E. Now thread out the anti-backlash nut away from the saddle. If it is too tight to turn by hand, use a small straight blade screwdriver, insert the tip of the screwdriver into one of the knurl valleys, and lightly tap the end of the screwdriver until the anti-backlash nut turns (see Figure 5).

NOTE: The Y-axis slide screw is a left-hand thread, and the X-axis is a right-hand thread.

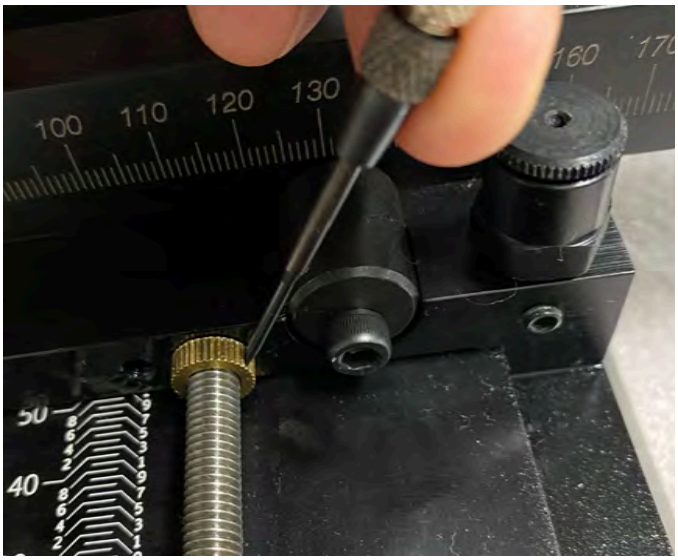

FIGURE 5

F. Using a 3/32" hex key, remove the thrust collar (see Figure 6).

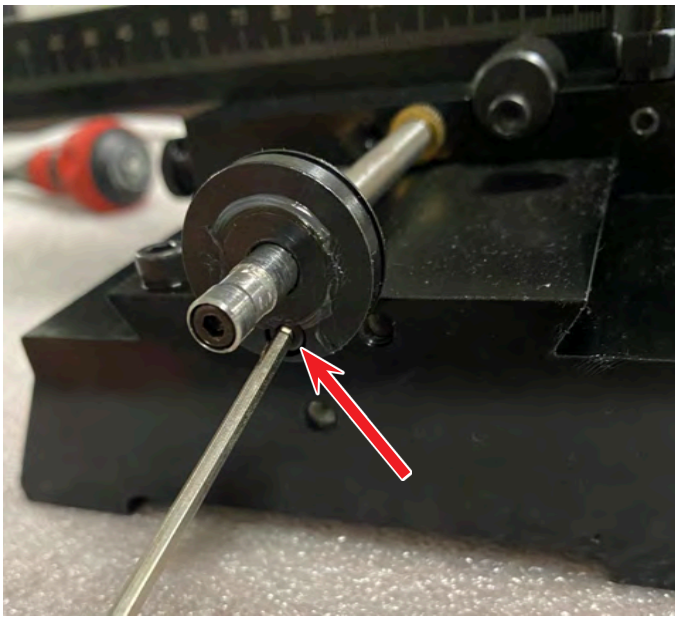

FIGURE 6

G. Unthread the slide screw from the saddle (see Figure 7).

FIGURE 7

H. Remove the anti-backlash nut from the old screw and thread it onto the new screw.

I. Apply some light oil such as "3-in-1 oil," or sewing machine oil, onto the threads of the slide screw.

Then thread the new screw assembly into the saddle. You will also thread the anti-backlash nut into the saddle until the shoulder of the nut is either against the saddle or very close to the saddle (see Figure 8).

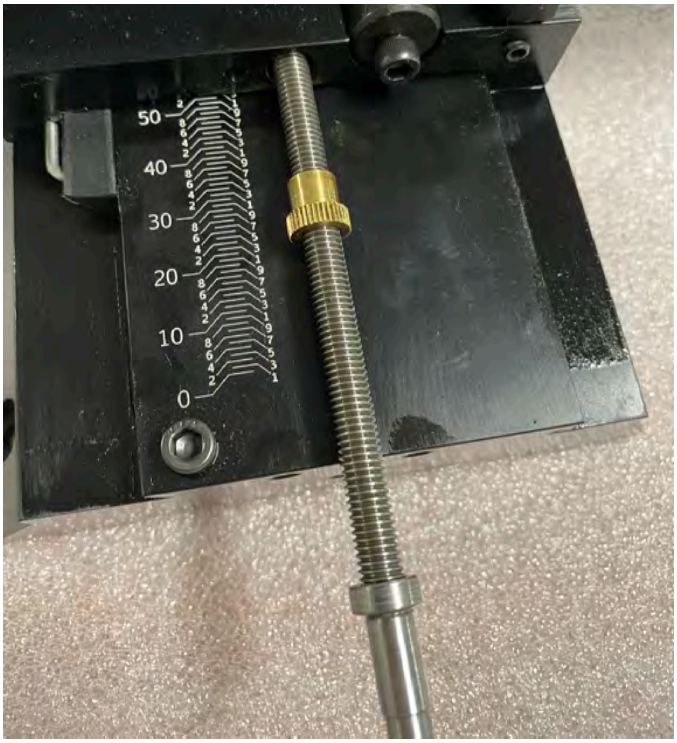

FIGURE 8

J. Now pull the saddle up close to the end of the base (see Figure 9).

NOTE: This is where the saddle needs to be in order to get the proper alignment of the thrust collar.

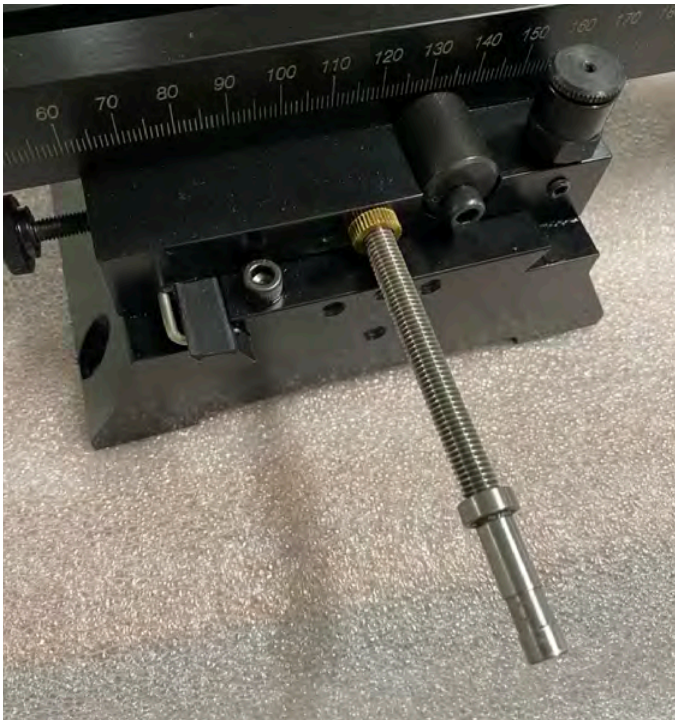

FIGURE 9

K. Place the anti-backlash locking collar next to the anti-backlash lock so the knurls align with each other. Then roll the locking collar down so the center hole aligns with the 8-32 tapped hole in the saddle (see Figure 10).

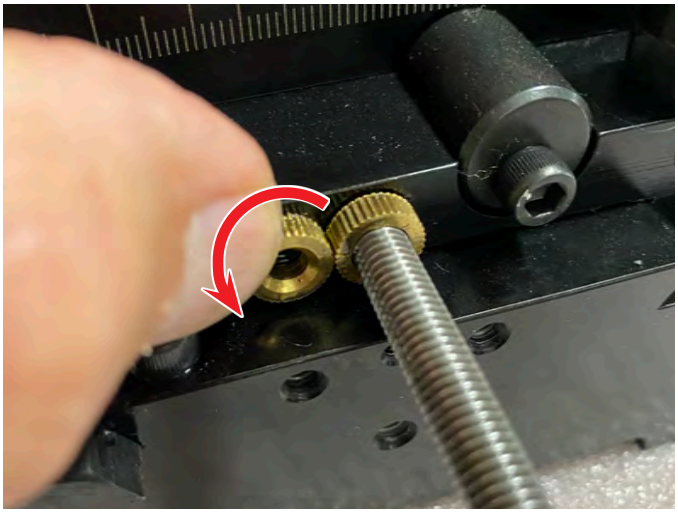

FIGURE 10—After you have aligned the knurls, roll the locking collar down until it aligns with the screw hole.

L. With the locking collar and the nut knurls aligned, insert the 8-32 screw into the locking collar (see Figure 11).

NOTE: The distance between the slide screw hole in the saddle and the 8-32 hole are very close to an "interference fit". This means that when you insert the 8-32 screw into the center hole of the locking collar, the 8-32 screw will rub against the side of the collar hole on the side of the anti-backlash nut. Because of this, the 8-32 screw will have a tendency to go in at a slight angle. Make sure that the 8-32 screw is perpendicular to the saddle when you start threading it in, or you will cross-thread the hole. If the screw starts to bind, don't force it in. Back it out and realign it. Then push the screw slightly toward the slide screw and thread it into the saddle.

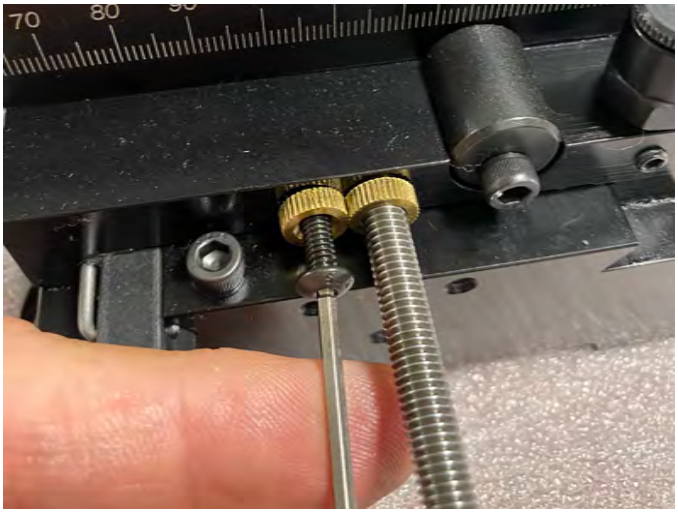

FIGURE 11—Thread the 8-32 screw into the locking collar.

M. Leave a slight gap between the head of the 8-32 locking screw so you can adjust it. Then using a small flat end screw driver tighten the anti-backlash nut (see picture). Once the nut is tight, tighten the 8-32 locking collar screw. This will lock the anti-backlash nut in place so it cannot turn (see Figure 12).

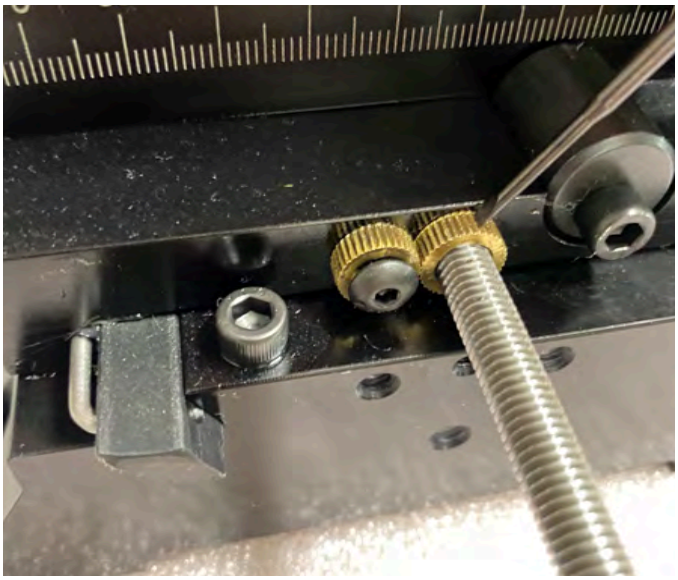

FIGURE 12

N. Use a 3/32" hex key in the end of the slide screw and turn the slide screw in toward the saddle (see Figure 13). The slide screw should turn with a bit of resistance. If it turns easily, tighten the anti-backlash nut a bit more. If it feels a bit too tight, leave the nut set where it is, and the slide screw will wear it in during use.

FIGURE 13

O. Thread the slide screw in until the adapter collar is almost to the end of the base (see Figure 14).

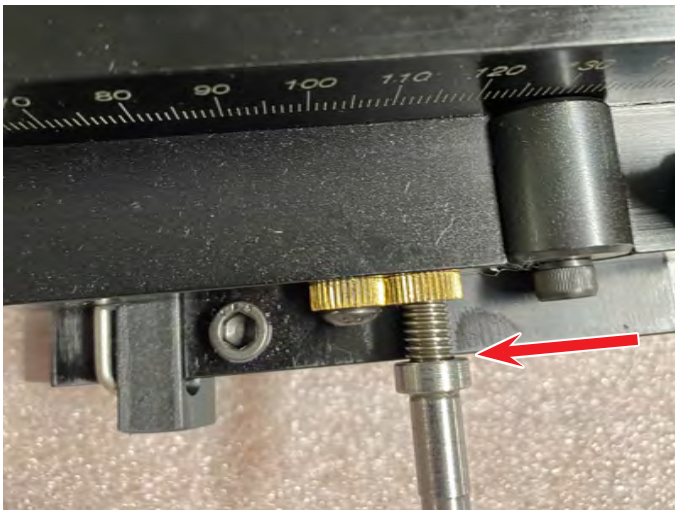

FIGURE 14—The red arrow shows the adapter close to the base.

P. Then push the saddle back a bit until three-quarters of the adapter is extended out past the end of the base (see Figure 15).

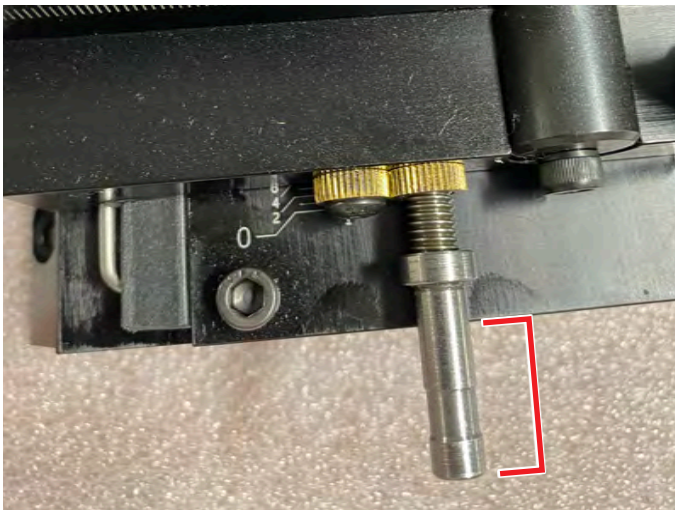

FIGURE 15

Q. Locate the thrust washer on the slide screw adapter with the groove toward the base (see Figure 16).

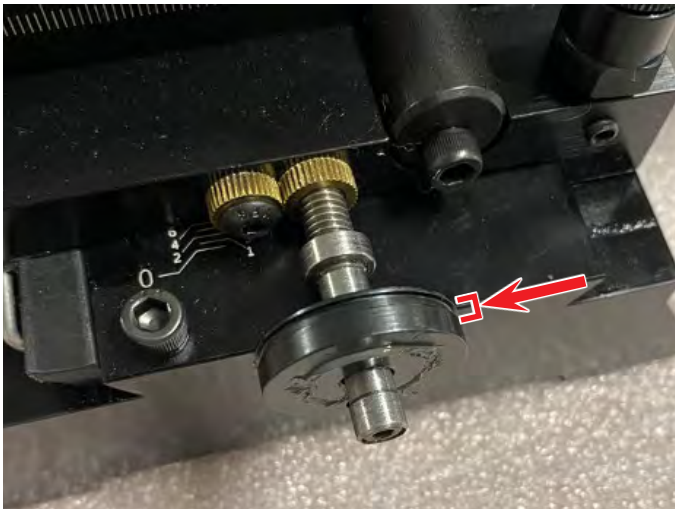

FIGURE 16—The small bracket shows the groove on the thrust collar installed nearest the base.

R. Insert the thrust collar mounting screw and leave it loose. Grab the thrust collar by the sides. You will notice that there is some play. The thrust collar will move from side to side a slight amount. Move the collar so it is in the middle of the play area (see Figure 17).

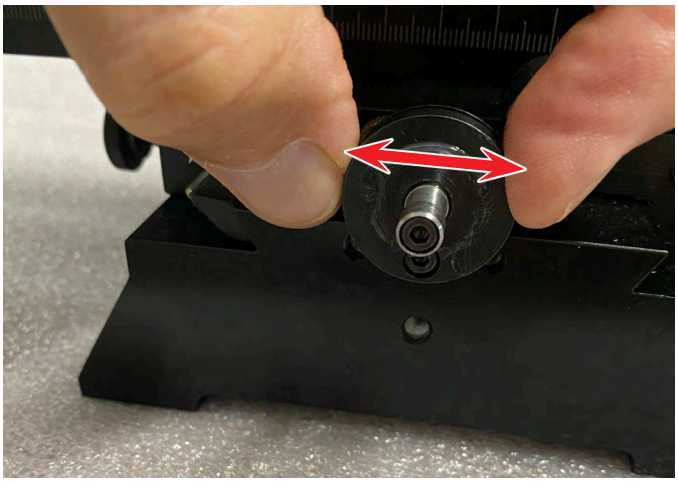

FIGURE 17

S. Once the collar is located in the middle of the play area, hold it in place, and then tighten the mounting screw (see Figure 18).

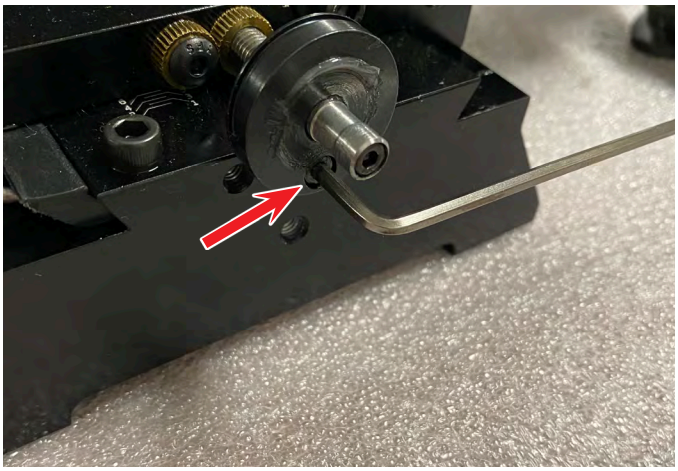

FIGURE 18

T. Place the shim washer back on (see Figure 19).

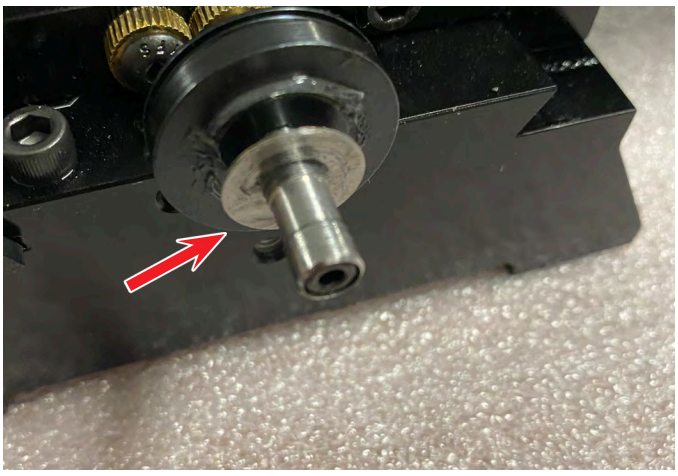

FIGURE 19

U. You will see a slight indent on the screw adapter where the set screw from the handwheel was originally set. Turn the screw so a virgin area of the collar is facing up (see Figure 20).

FIGURE 20—The red circle shows the indent.

V. Now place the handwheel on the adapter with the set screw facing up (see Figure 21).

IMPORTANT NOTE: The thrust collar is sandwiched between the collar of the adapter and the handwheel. In order to get the least amount of backlash in this assembly, you must squeeze the handwheel and the collar against the thrust collar while you are tightening the set screw in the handwheel. To do this, place your thumb on the end of the handwheel and pull the mill table toward the handwheel (like a "C" clamp) and squeeze tight. While you are forcing these parts toward each other, tighten the set screw in the handwheel.

FIGURE 21

W. Now use the handwheel to move the saddle in and out. Check the amount of free play in the handwheel before there is a change of direction in the saddle. You should be able to get the free play (backlash) to .002" (.051 mm) or less.

If you have more than .002" (.051 mm), Tighten the anti-backlash nut a bit more or readjust the handwheel/thrust collar assembly as shown previously (see Figure 22).

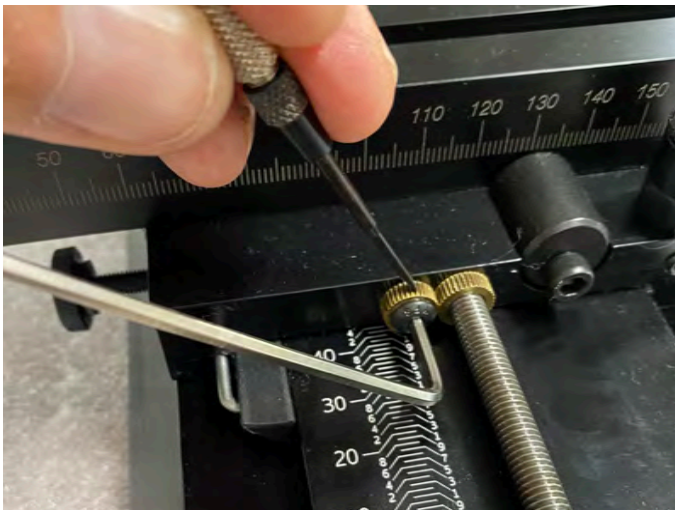

FIGURE 22

2. Assembling the DRO

A. Both the bottom and top half of the DRO housing have a ridge on one side. This ridge goes into the groove on the DRO thrust collar (see Figures 23 and 24).

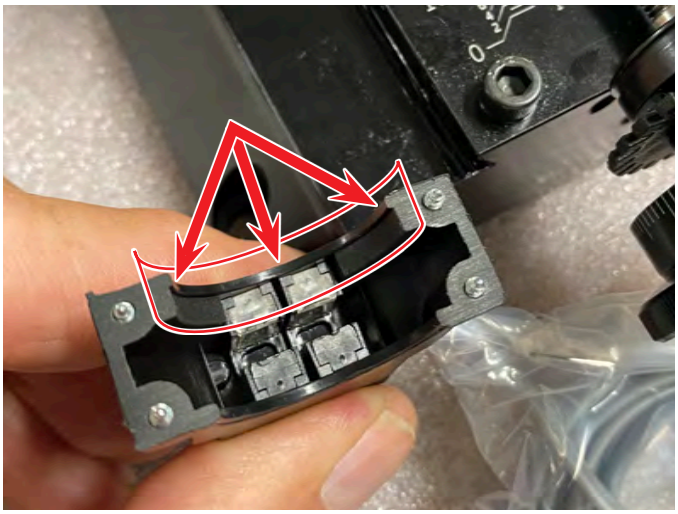

FIGURE 23—Bottom half of the DRO housing.

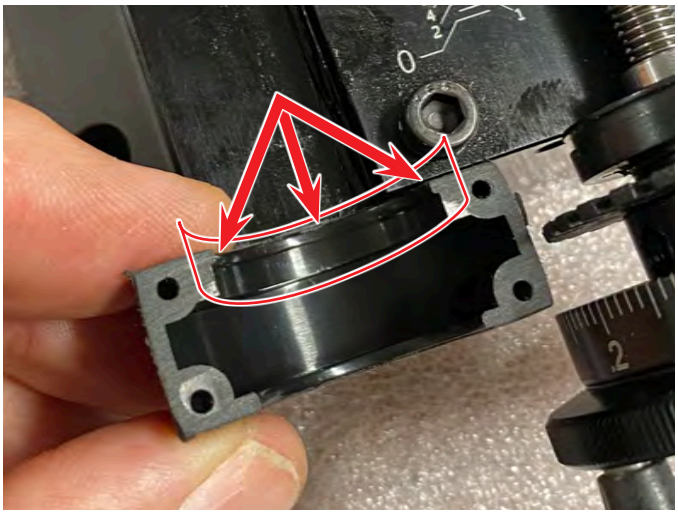

FIGURE 24—Top half of the DRO housing.

B. Take the bottom half and assemble it onto the bottom of the thrust collar with the step in the thrust collar groove. Make sure that the mounting screws are in the bottom half (see Figure 25).

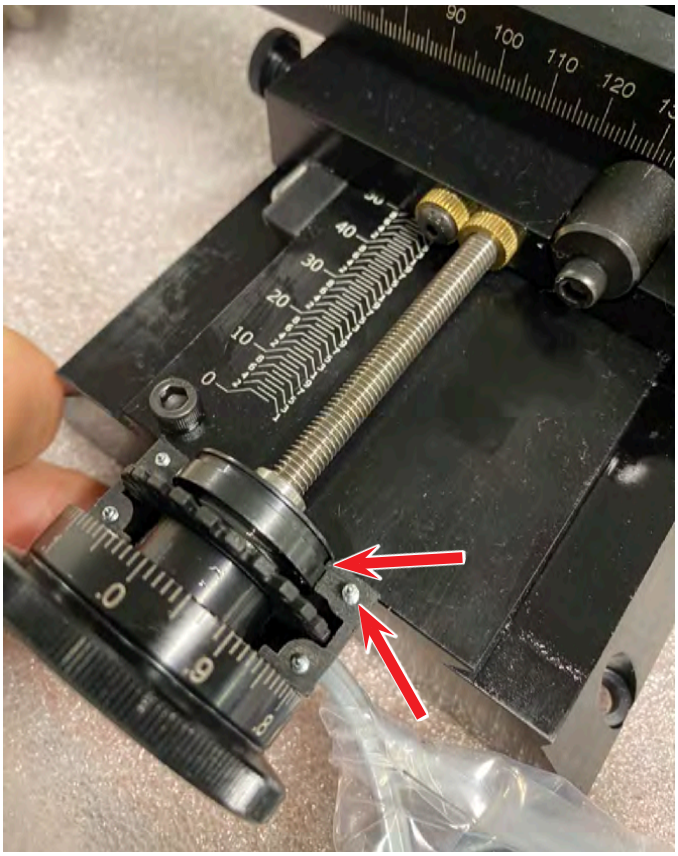

FIGURE 25

C. Place the top half onto the thrust collar with the step in the groove and press both top and bottom halves together (see Figure 26).

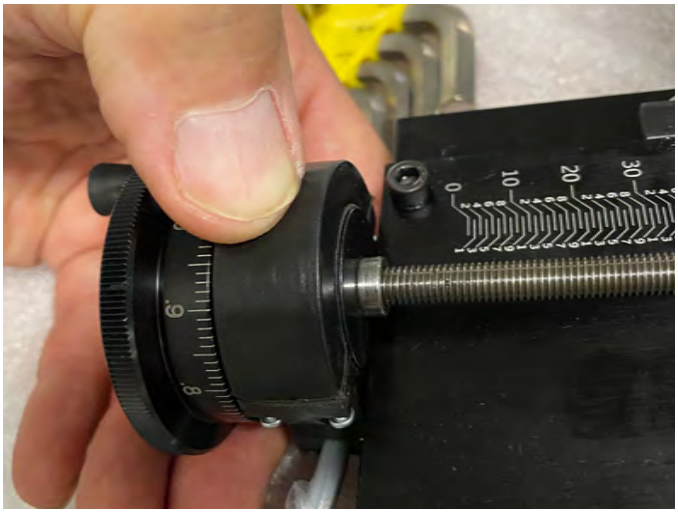

FIGURE 26

D. 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.

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.

FIGURE 27—Note the numbers and the rotational arrows:
1: Rotate the screws CCW until the screw threads align with the existing housing threads.
2: Then tighten the screws CW until snug. DO NOT overtighten.

Thank you,
Sherline Products Inc.