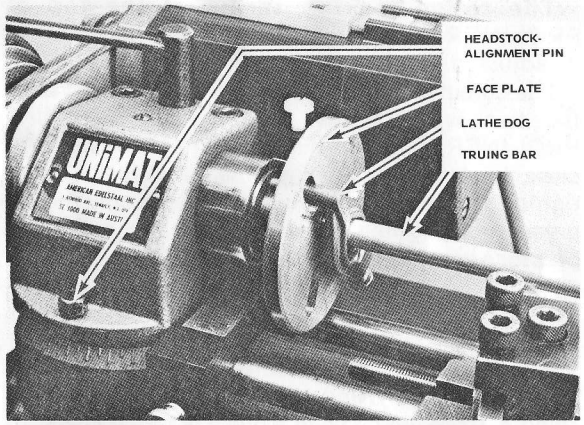


Figure 4

You're now ready to make the initial setting on PROLINER. Loosen the brass holding screw and slide PROLINER toward the face plate — until the stop screw is near the end of the spindle bearing. Then, loosen the teflon locking screw. Turn the hex-head adjusting screw counterclockwise until the stop screw contacts the spindle bearing, Fig. 5. Lock the adjusting screw with the teflon locking screw.

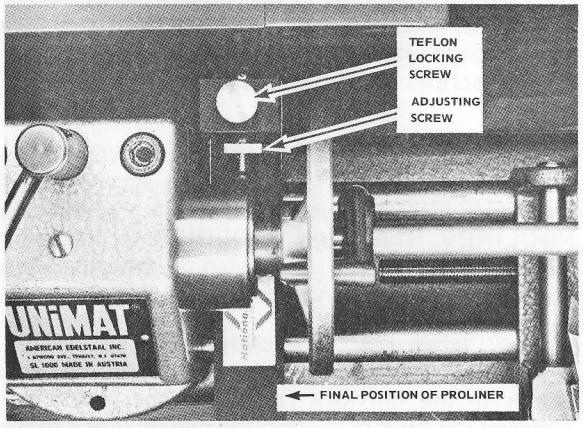


Figure 5

The next step is to set the adjusting screw to correct the difference you noted between the two ends of the truing bar. Suppose that after your first cut the spindle end of the truing bar measures .002" larger than the tailstock end. That means you'll have to turn the hex-head adjusting screw around 90 degrees. Remember, turning the adjusting screw clockwise moves the stop screw back (into PROLINER); that increases the headstock-end diameter relative to the tailstock-end diameter. Turning the adjusting screw counterclockwise moves the stop screw toward the spindle with reverse results.

To make your correction, first back off the tailstock slightly to provide some slack for the truing bar. Then, remove the headstock-alignment pin and loosen the headstock-clamping screw. Turn the headstock to move the spindle away from the stop screw of PROLINER.

Now, loosen the teflon locking screw at the top of PROLINER. Turn the adjusting screw counterclockwise if the spindle end of the truing bar is larger; turn the adjusting screw clockwise if the tailstock end is larger. In our previous example, you'd turn the adjusting screw 90 degrees counterclockwise.

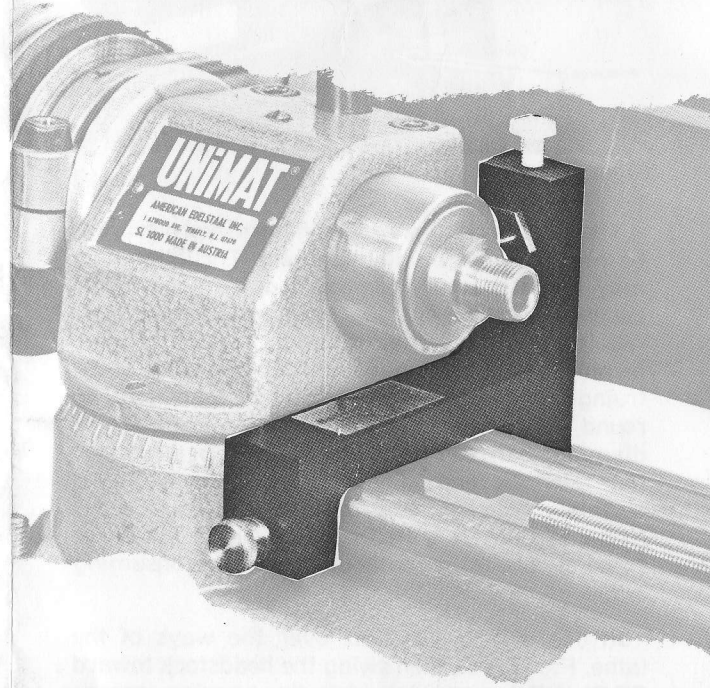
After making your adjustment, tighten the teflon locking screw. Then, push the spindle bearing against the stop screw of PROLINER. Hold the spindle bearing against the stop screw and tighten the headstock-clamping screw. Also, replace the headstock-alignment pin — just drop it into the hole in the headstock to prevent the entry of dirt. After adjusting the headstock, the two holes for the headstock-alignment pin may no longer align perfectly.

Slide the tailstock toward the headstock to tighten the truing bar. And make another light cut along the length of the truing bar. Once again measure both ends of the truing bar with a micrometer. Keep repeating the operation — measuring the truing bar and adjusting PROLINER'S adjusting screw — until the truing bar runs true.

Once the truing bar measures the same at both ends, you've found the correct adjustment for PROLINER. Here, lock the teflon locking screw in position — use a locking agent (such as Locktite or glyptol) where the threads of the locking screw enter PROLINER. Your PROLINER is now ready for use in realigning the headstock.

To make sure that PROLINER is always installed on the ways with the same pressure, you may wish to scribe or mark the brass holding screw. Just scribe or draw a line from the center of the screw straight down. You can then assure the repeatability of PROLINER for professional accuracy.

INSTRUCTIONS FOR USING NATIONAL CAMERA'S PROLINER...



...the fixture for "professional alignment" of the Unimat lathe

NATIONAL CAMERA'S PROLINER . . .

National Camera's PROLINER allows you to precisely align your Unimat headstock in seconds. Whenever you remove the headstock — perhaps to use your Unimat as a drill press, vertical miller, etc. — the spindle must be very accurately aligned the next time you set up the Unimat as a lathe. PROLINER makes it possible to accurately align the spindle for precision turning.

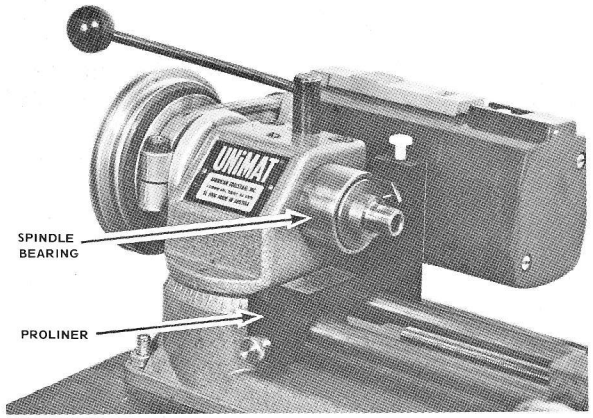


Figure 1

The headstock-alignment pin furnished with your Unimat provides rough alignment. This alignment may be satisfactory for rough cuts, but it's only accurate to about one degree of arc. Precise work requires that the lathe run dead true. One aligning technique you may have used in the past is the truing-bar technique — making delicate cuts on round stock and measuring the difference in diameter between the spindle end of the stock and the tailstock end. The truing-bar technique is certainly precise. But it's slow, tedious work. National Camera's PROLINER allows the same type of precision without the time-consuming effort.

In use, PROLINER fits over the ways of the lathe, Fig. 1. You then swing the headstock toward PROLINER until the spindle bearing comes against a stop screw. That stop screw positions the spindle parallel to the ways.

But it's first necessary to adjust PROLINER. The technique is similar to that of using the truing bar — yet you only have to do it once. You can then lock the adjustment; thereafter, PROLINER provides a permanent reference for realigning the spindle.

Parts of Proliner

The stop screw, Fig. 2, is the part that actually positions the lathe spindle. A differential thread on the adjusting screw moves the stop screw in or out — closer to the spindle or further from the spindle. The spring at the back of PROLINER prevents the stop screw from rotating.

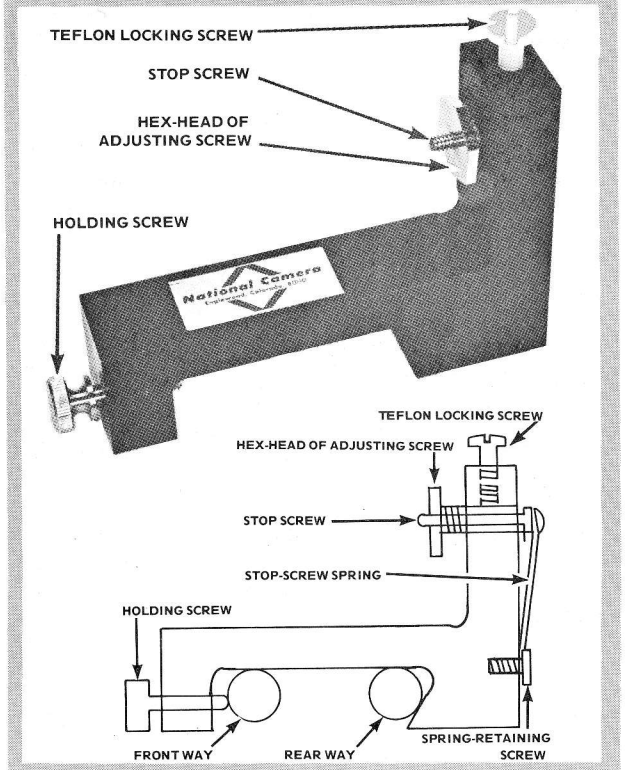


Figure 2

One complete revolution of the hex head of the adjusting screw moves the stop screw .00446". The following table relates the movement of the stop screw to the rotation of the adjusting screw.

60-degree turn moves the stop screw .000744"
90-degree turn moves the stop screw .00111"
120-degree turn moves the stop screw .00148"
180-degree turn moves the stop screw .00446"

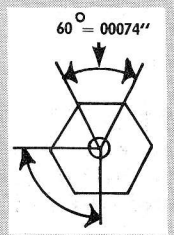


Figure 3

The teflon locking screw at the top of PROLINER locks and holds the adjusting screw in its adjusted position.

The cutout at the bottom of PROLINER fits over the two ways of the lathe. When installing PROLINER, hold it square on the rear ways — close to, but not touching, the headstock. Then, tighten the brass holding screw. Use only finger pressure to tighten the holding screw; excessive pressure could bend the lathe ways.

Setting Up Proliner

Establishing the proper setting for PROLINER is very similar to using a truing bar to align the spindle. Here, you'll need a piece of round stock. In Fig. 4, we're using brass rod that's 6" long and 1/4" in diameter. Centerdrill each end of the truing bar with a 60-degree countersink centerdrill. You can then support the truing bar between the 60-degree live center in the spindle and the dead center in the tailstock ram.

Install the headstock-alignment pin for rough alignment of the headstock. Then, loosen the spindle-locking screws and turn the spindle all the way out — as far as it will go toward the tailstock. Turning the spindle all the way out provides the maximum accuracy for alignment; after alignment, you can then return the spindle to a normal position for lathe work. Tighten the spindle-locking screws to hold the spindle in its extended position.

Loosen the teflon locking screw on PROLINER. Turn the hex-head of the adjusting screw all the way clockwise, screwing the adjusting screw into PROLINER. Then, seat PROLINER on the lathe ways as shown in Fig. 1. Tighten the brass holding screw just enough to hold PROLINER in place.

Next, screw the face plate onto the spindle. Install the live center in the spindle and the dead center in the tailstock ram. Seat the truing bar between the centers — the lathe dog mounted to the truing bar loosely engages one of the slots in the face plate, Fig. 4.

Make a light cut along the length of the truing bar. Then, measure the diameter of the truing bar at each end with a micrometer. The two diameters will probably be slightly different — that indicates that the lathe is cutting a taper. Subtracting the smaller dimension from the larger dimension tells you how much correction you must make on PROLINER'S adjusting screw.