



# CNC Lathe Leadscrew Backlash Lock

P/N 4417Z/4417ZM

*NOTE: These instructions encompass both the CNC lathe already fitted with the locking system and the retrofit kit for installing the lock on an existing lathe. If you have a lathe already fitted with the system, only the first part of the instructions regarding purpose and use will be applicable.*

## The Purpose of the Leadscrew Backlash Lock

CNC machining operations require precise leadscrew movement to producing a good part. The normal backlash of .003" to .005" can be unacceptable in these situations and a way was needed to reduce backlash to the .001" to .002" range. This solution was developed for the Z-axis on the mill, but it has been adapted here to work on the lathe as well.

Because this lever was designed to lock the column leadscrew, it was never thought of as an option that could be used to control backlash. We finally realized, however, how this lock could be used in this way. We had a prototype working the next day, and we were into production within a week. We are also pleased to report that the anti-backlash system can be added to every Sherline lathe ever built!

By locking this lever against the saddle nut, it keeps the leadscrew from turning once the headstock is positioned at the proper height for the operation. This new lever positioning system will allow you to position the locking lever in a partially locked position, removing as much backlash as you desire, and then it can be locked in that position. As wear occurs, the position of the locking lever can be adjusted.

## Using the Z-axis Lock on a CNC Lathe

The locking arm is clamped in the lock plate for shipping. Loosen the SHC Screw that holds it and remove the plastic arm. Insert the pin in the end of the plastic lever into the hole in the end of the brass Z-axis locking lever from the bottom side. Align the locking arm with the slot in the lock plate and slip it in. Move the brass locking lever to provide the desired amount of backlash. Tighten the thumbscrew to hold the plastic arm in position. Do not overtighten the thumbscrew. There is not a lot of force trying to move the arm. The arm serves only to hold the locking lever in position once you have adjusted it.

The brass locking lever is adjusted by hand as shown in Figure 1, and then the positioning arm is locked in place. Don't adjust the locking lever by moving the plastic arm directly. You will have much better feel for the amount of

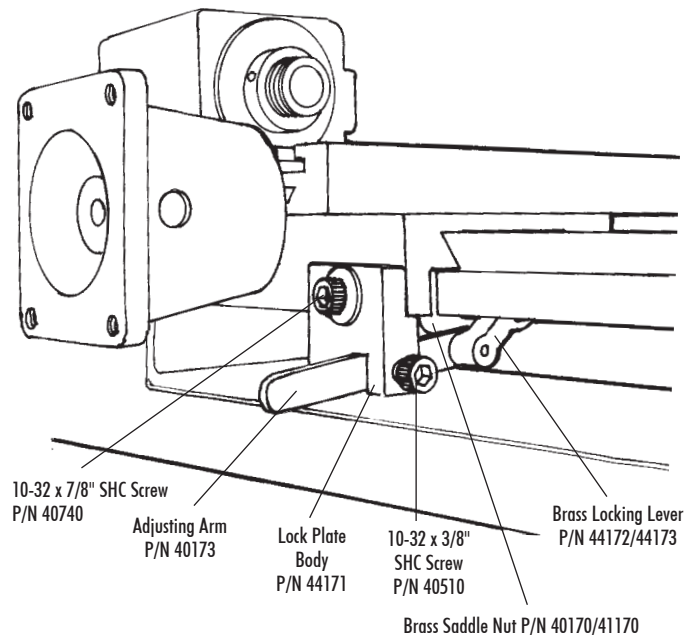


FIGURE 1—Components of the lever locking system as they are now installed on new Sherline CNC lathes.

pressure needed by adjusting the locking lever itself, and the plastic pin that engages the hole in the locking lever is not designed to exert a lot of pushing/pulling force.

## Installing a New Saddle Nut and Locking Lever on a CNC Lathe not Currently Fitted with a Locking Lever

Sherline lathes have never been fitted with locking levers on the leadscrew. This system was developed specifically for use on CNC machines. The new retrofit installation kit includes a new locking lever and a new saddle nut without a spring loaded ball to hold it in the unlocked position. The positive locking arm allows partial locking of the lever to reduce backlash to a minimum. The small detent in the locking lever that was formerly used to engage a spring-loaded ball has been retained to indicate the side of the locking lever that should be facing the saddle nut. (If the locking lever should fail to lock against the saddle nut within the available arc in the bottom of the lathe bed, check to see if the lever has been installed backwards.) Install the new saddle nut and lever as follows:

1. Remove the headstock and tailstock from the lathe.
2. Remove the socket head cap screw that attaches the saddle nut to the saddle.