



Components of the backlash upgrade kit.

**SHERLINE  
PRODUCTS**  
INCORPORATED 1974

## Mill X and Y Backlash Upgrade

P/N 5011U (Inch)

P/N 5111U (Metric)

### Purpose of the 5011U/5111U upgrade

In 1997 the old pointer style lock that adjusts backlash on the mill X- and Y-axis leadscrews was replaced with a star gear type lock to make adjustment easier. With the advent of CNC (Computer control) there has been an increased demand for reduced backlash settings. To serve this purpose, the size of the teeth on the star gear have been reduced to give a tighter fit and remove play from the backlash nut. All new Sherline machines after 6/04 include these revised star gear backlash nuts and locks, but they can be retrofitted to any Sherline mills made after 1997 when the old pointer lock system was phased out. It will not replace the pointer system as the hole centers for the lock are different.

### Installation of the backlash locks

**Manual machines**—Remove the button head screw holding each P/N 50150 star gear lock in place. Turn the handwheel clockwise for the Y-axis and counter-clockwise for the X-axis until the leadscrew is released from the nut (insert) inside the saddle. The stop screw on the bottom of the table will need to be removed (if present) so the table can be moved far enough to expose the end of the leadscrew but the table need not be removed entirely from the saddle. In the case of the Y-axis, remove the handwheel and then remove the socket head screw holding the thrust to the base in order to get the leadscrew out of the saddle. Once the leadscrew end is exposed, unscrew the old backlash nut from the leadscrew. It is not necessary to remove the X thrust collar on the table if you prefer not to. Thread on the new lock nuts, noting that one has a left-hand and the other a right-hand thread. Once the nuts are far enough up the leadscrew, reinstall the leadscrews and thrust collar and thread them into the threaded inserts inside the saddle. Using the new button head screws provided, install the new star gear locks in place of the old ones. Follow the adjustment procedure provided in your *Sherline Assembly and Instruction Guide* to adjust the backlash on your mill. Remember also to physically remove all the distance between the handwheels and the thrust collars by pulling the saddle toward the handwheel with one hand as you push the handwheel against the thrust while tightening it.

To readjust the thrust collars, bring the X-axis all the way to the left so the handwheel is as close to the saddle as possible. If it begins to get harder to turn as you get closer to the saddle, remove the handwheel and then loosen the screw holding the thrust to the table. Reinstall the handwheel and move the table as far to the left as it will go with the thrust slightly loose. This will shorten the amount of exposed leadscrew and help center the thrust. Re lock the thrust in this position and reinstall the handwheel. Repeat this on the Y-axis by bringing the saddle as close to the handwheel as you can before tightening the screw that holds the thrust to the mill base.

**CNC machines**—The procedure is much the same as above, but on the CNC Y-axis you will need to remove the stepper motor mount and leadscrew unit from the mill base in order to remove the leadscrew fully from the saddle. To do this first remove the four screws that hold the stepper motor to the mount. Align the coupler set screw with the hole in the mount and loosen the coupler set screw from the motor shaft so the motor can be removed. (Be careful when removing the motor shaft from the coupling not to put a side load on the coupler that could break it at the dampening slits.) From inside the mount, remove the two socket head cap screws that hold the mount to the mill base. Without reinstalling the motor, you can rotate the leadscrew to remove it from the insert in the saddle by using a 3/32" hex key in the bolt head in the end of the leadscrew. Now you can pull out the mount/coupler/leadscrew assembly. Remove the old backlash nut, install the new one and reverse the procedure to reattach the mount to the base.

Thank you,  
Sherline Products Inc.

Refer to the *Sherline Assembly and Instruction Guide, 7th Edition*  
(P/N 5326) page 13 for more on backlash adjustment.