

# Lubrication for Ball Screw Machines

## Lubrication Surfaces

- **Machine Slides**—Use a light oil such as sewing machine oil, or 3-in-One multi-purpose oil, on all points where there is sliding contact. This should be done immediately after each cleanup. Every ball screw machine is lubricated with Super-Lube grease on the dovetails and NSK grease on the ball screws at the factory.

**NOTE:** With the advent of newer lubricants, we have found that using 10W-30 synthetic motor oil instead of 3-in-1 oil decreases the wear on our machine's dovetail surfaces. We recommend using 10W-30 synthetic motor oil instead of 3-in-1 oil to lubricate our machines in general and specifically for machines used in industrial or light industrial applications.

- **Ball Screws**—The ball screws are not lubricated by the oiler. The ball screws are lubricate by “finger-wiping” a small amount of the recommended NSK Grease AS2 onto the ball screw. Then jog the axis back and forth to spread the grease along the entire length of the ball screw.
- **Tailstock Feed Screw**—Light oil should be placed along all threads regularly. At the same time, check that the threads are free from any metal chips.
- **Tailstock Spindle**—Wind out the spindle as far as it will go and lightly oil it with light oil.
- **Handwheels**—A few drops of light oil behind the handwheel will reduce friction between the surfaces and make operation easier and smoother.
- **Headstock Bearings**—These bearings are lubricated at the factory for the lifetime of the machine and should not need further lubrication. DO NOT break the seals.
- **Motor**—Sealed ball bearings require no maintenance.

## About the Saddle Oilers

Oil reservoirs are on the saddles of the ball screw machines to help keep critical parts lubricated. The oil reservoirs feed oil down to the dovetail surfaces of the Y-axes of the ball screw mill and chucker lathe bases, and to the dovetail surface of the ball screw lathe bed (see Figures 1 and 2).

The top dovetail surface of the saddle and the mill table or crosslide will need to be lubricated manually. This is done by placing a drop or two of oil on your finger tip. Then wipe the oil onto the bottom of the mill table/crosslide dovetail surface. Then wipe the oil onto the inner dovetail surface. Then jog the table/crosslide back and forth to spread the lubricant (see Figure 3 on page 2).

## BALL SCREW SADDLE OILER

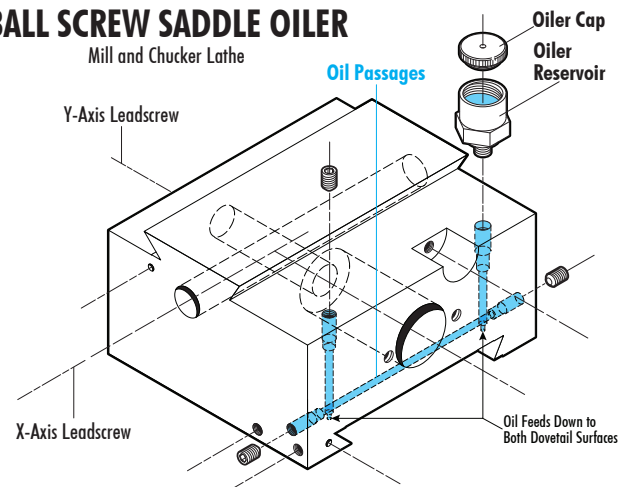


FIGURE 1—Oil passages for the ball screw mill and chucker lathe saddles are shown in blue.

## BALL SCREW SADDLE OILER

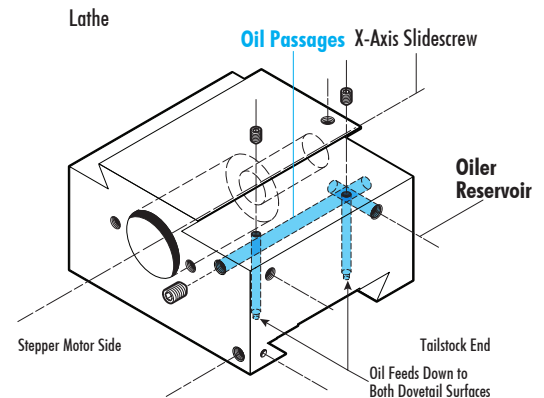


FIGURE 2—Oil passages for the ball screw lathe saddle are shown in blue.

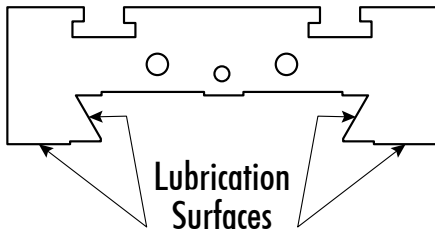


FIGURE 3—Lubrication surfaces for the mill table or crossslide.

Oil may continue to leak out after use, but the reservoir does not hold an extremely large volume of oil, so cleanup should not be a problem. Even so, we suggest that machines should be set in a metal pan like the kind used under auto engines on a garage floor. This will help contain chips, coolant and excess lubrication, making cleanup easier. They are available from any auto parts store.

#### **Additional Notes on Keeping the Ball Screws Clean**

1. The ball screws are either covered or located in areas where direct contact with chips or material dust is unlikely. However, this does not guarantee that chips and dust will not get onto the ball screws.
2. The ball screw nuts have wipers on both ends to keep contamination out of the ball nut. This is also not 100% contamination proof.
3. Materials such as plastics, fiberglass, cast iron, and other similar materials can be machined on our mills and lathes. However, the chips and dust that result from machining these materials are very abrasive. As with any machine, abrasive material chips and dust will damage the machine over time.
4. Therefore, we recommend that you do not use compressed air to remove chips/dust from your machine. We do recommend that you vacuum the chips and dust off of your machine.

#### **Special Notes for CNC Machines**

CNC demands lubrication more often than when used manually. Machine slides, and the Z-axis column in particular should be lubricated with light machine oil about every two hours during CNC use.

**CAUTION:** Do NOT use 3-in-One Penetrant or WD-40 for lubrication! These products are not lubricating oils.

#### **When NOT to Lubricate Certain Surfaces**

The mating surfaces of the arm, the column, and the column cap on the Models 2000 and 5800 mills are to be kept free from lubrication. Tightening the column bolt causes friction between these surfaces to resist movement of the arm during the forces and vibration of machining. If these smooth surfaces are lubricated, the arm or the column could move during machining even if the bolt is securely tightened. Clean these surfaces periodically with mild detergent or bathroom spray cleaner to keep a good “bite” between surfaces. The same goes for the surfaces between the “knuckle” and the ends of the swing arm. These surfaces are smooth enough that adjustment is easily accomplished with the nut loosened even without lubrication. They should be free of dirt and chips, but please resist your natural inclination to lubricate them, as they do their intended job better when dry.

Thank you,  
Sherline Products Inc.