



Ball Screw Upgrade Benefits

Below are some of the benefits obtained by upgrading your machine with ball screws.

1. The ball screw upgrade is not just an improvement of the ball screw. It is also an improvement of the saddle, and the bed (with an upgrade). The mill saddle changed from anodized aluminum on the saddle to electroless nickel with Teflon (ENT) coating. We also offer an upgrade on the column bed with the same ENT coating. The ENT coating adds rust resistance, hardness, and lubricity to the material surface. This makes for a much smoother movement of the mill, lathe, and column saddles.
2. The ball leadscrew is a C7 accuracy with a P1 preload. The linear tolerance is 50 micrometers / 300mm, or .002" / 12.0". As a comparison, our standard leadscrew has an accuracy of 150 micrometers / 300mm or .006" / 12.0".
3. The actual mechanical backlash of our machine with our standard leadscrew is .002" or less (the absolute best that you can achieve is .0015").

The actual mechanical backlash of our machine with the ball leadscrews is .001" or less (.0005" is obtainable).

4. The wear factor: Our ball nuts are not "lube-for-life," this definition can be interpreted in many different ways. Lifetime is also dictated by the amount of force exerted on the screw and the cleanliness of the environment. That being said, the amount of force that can be exerted on the ball screw with our size machine is minimal. With proper care and timely lubrication, your ball leadscrews should last a very long time.

The slide screw nuts on our standard leadscrews are brass, and they do wear out much faster. You will replace many slide nuts over the same lifetime of a ball screw, and you will need to adjust the anti-backlash as the slide screw nut wears out.

5. Rigid mount design: All three axis have a more rigid and robust mounting design, especially the Z axis which is a full box design. With the upgrade to our high torque stepper motors (P/N 67126), you can transfer the higher torque to each axis, without any backlash or flex in the mounting system.
6. The ability to "climb mill" versus "conventional mill." With less mechanical backlash in the ball leadscrew, you can climb mill with our machine without getting extreme chatter or undesirable table movement (which is caused by the cutter force taking up, and then releasing the backlash). You will also get smoother cuts on radius cuts that continue through the quadrant change of direction of the axis.

In summary, your machine will have:

1. Smoother movement.
2. Hold tighter tolerances.
3. Generate smoother radius cuts.
4. Allow you to climb mill.
5. A more rigid mounting system.
6. Longer lifetime, with higher accuracy.

Thank you,
Sherline Products Inc.