Tips for Using the Mini Mill Power Feed

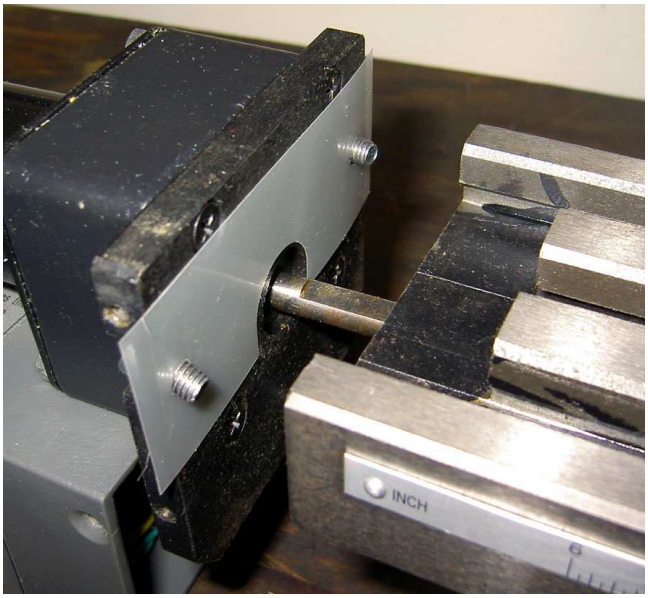
The Mini Mill Power Feed Kit comes with installation instructions. The instructions are surprisingly good considering that they were written in China. Beyond those instructions we offer the following tips for getting the most from your Mini Mill Power Feed Kit.

Installation

These tips will help you make a good installation of the power feed unit.

Chip shield

Be sure to install the clear Mylar chip guard between the drive unit and the mill table. The chip guard prevents small chips from passing through the mounting bolt slots and falling onto the circuit board. The chip guard eliminates the number one cause of failure of the mini mill power feed unit.



Gib adjustments

The best time to adjust the X-axis gib is when the X-axis feed screw is out of the machine. You should be able to move the table through its full range by hand.

Feed screw and nut fit

You might find that the new X-axis feed screw is a tight fit in the X-axis nut. If this is the case, it might help to run the nut back and forth on the screw a few times.

You can use a low-speed drill to run the screw through the nut. Follow these steps with both the X-axis feed screw and the X-axis nut out of the machine.

1. Put the key and hand wheel on the X-axis screw.
2. Tighten the first nut against the hand wheel until it is quite snug.
3. Back the first nut off until the hand wheel turns freely in the mounting bracket.
4. Install the second nut and tighten it tightly against the fist nut.
5. Start the X-axis nut on the X-axis feed screw.
6. Put the x-Axis nut in a vise. Clamp it at the bottom so the clamping force does not affect the fit of the screw in the nut.
7. Using an adapter, put a 14 mm socket on your drill motor.
8. Lubricate the X-axis screw with light oil.
9. Run the screw back and forth through the nut until it runs freely.

X-axis feed screw alignment

When you install the power feed unit you are mounting both ends of the X-axis feed screw. If all is not carefully aligned, it is bound to bind in some location. Here is a procedure that will establish a starting point for the careful adjustments that are required.

1. Install the new X-axis feed screw, but leave the mounting cap screws, as well as the setscrews that clamp the X-axis nut loose.
2. Move the table as far as it will go to the left.
3. Tighten the socket head cap screws in the X-axis feed screw mounting bracket.
4. Move the table to the right until you can access the setscrews that retain the X-axis nut.
5. Tighten the setscrews that retain the X-axis nut. These setscrews should not be very tight. The X-axis nut should be able to move slightly.
6. Move the table as far as it will go to the right.
7. Mount the power feed motor unit.

This provides a starting point from which you might need to make additional adjustments.

Torque adjustment

The power feed unit uses the increase in torque that occurs at the end of travel to trip off the motor controller. If your table does not move freely enough the overload sensor might trip prematurely. If this occurs, there are two things you can do.

- Readjust the table gibs and the X-axis feed screw alignment so less torque is needed to move the table.
- Increase the torque at which the motor controller trips.

The torque at which the motor controller trips is controlled by a potentiometer that is in the center of the motor controller circuit board. Turn the potentiometer clockwise to increase the maximum torque. Turn the potentiometer counterclockwise to decrease the maximum torque.

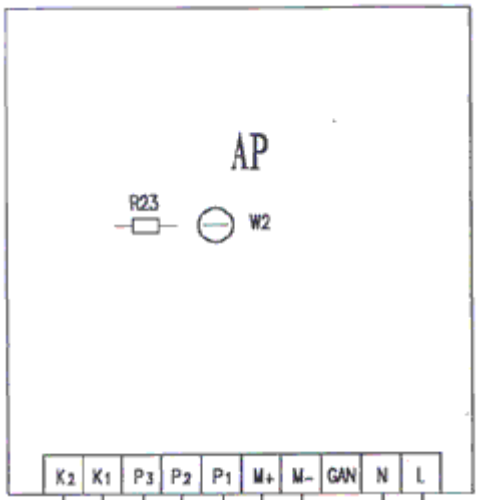
Be sure to note the initial position of the potentiometer so you can reset it to the initial value if your adjustment is not successful.

Maximum Torque Adjustment

Increasing the maximum torque

If the power feed does not develop enough torque even with the adjustment potentiometer at its full clockwise position, you can change a resistor on the circuit board to increase the maximum available torque.

1. Change the R23 resistor on the circuit board from 1.3K to 2K ohms. The resistor is labeled R23 on the circuit board, and the location is shown in the diagram below. Use a ¼ watt 2K-ohm resistor available from Radio Shack or other electronics supply house.



2. Connect a DC ammeter in series with the motor and adjust the potentiometer so that the maximum current is 1 amp. This increases the motor torque by about 30%.

Operation

Operation of the power feed is simple. There are only a few controls.

Power light	Indicates that power is applied to the unit. This light is on whenever the power feed unit is plugged in.
Fault light	Indicates that the power feed controller has tripped off. The power feed trips off when the controller measures output torque above the maximum. The fault light is on when power is initially applied to the unit.
Start button	Resets faults. Press this button to distinguish the Fault light and start the power feed drive.
Direction switch	Controls the direction that the table moves. This switch has three positions. Move it to the left to make the table go to the left. Move it to the right to make the table go to the right. Move it to the center to stop the table.
Speed knob	Controls the speed that the table moves. Turn it clockwise to increase the speed. Turn is counterclockwise to decrease the speed.

In normal operation, you set the speed you want with the Speed knob. Then use the Direction switch to move and stop the table for each cut.