

GETTING STARTED



Before you start to create, you
need to read this!

Introduction - “the necessary evil”

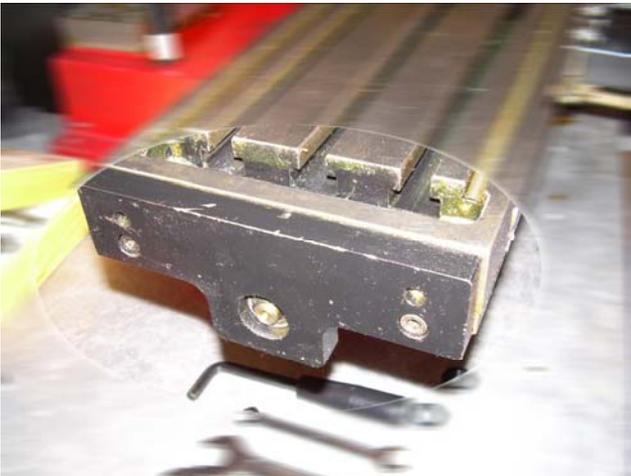
Shipping anything over water poses a challenge for metals. The sea air tends to eat away at pristine metal surfaces leaving behind rust. In order to combat this problem, manufactures use thick waxes to coat the surfaces. **These greases do no make a good working lubricant.** So it becomes necessary that we remove these waxes before working on our newly ground surfaces. This text will explain how to disassemble your machine and get it ready for production..

Before you begin anything like this, it goes without saying..... Be safe. There could be sharp edges. Wear gloves, a clear work area, and ventilation are always a good way to start.

Once you have set up your machine, now it is time to clean, lubricate and to do all final adjustments. Supplies you will need:

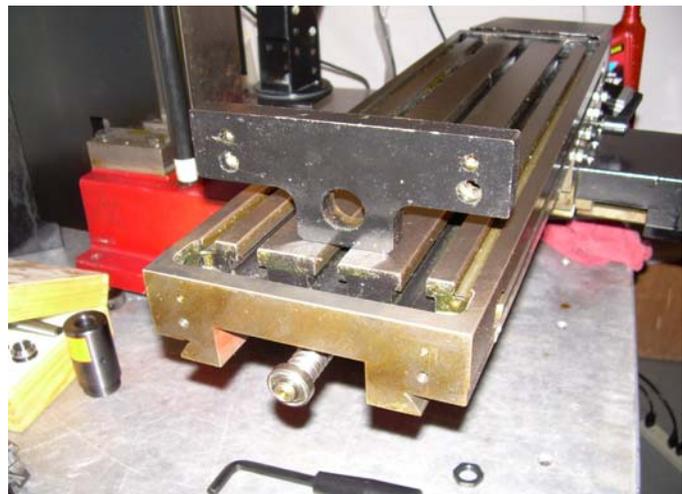
- Tooling kit that came with mill.
- Rags
- Denatured alcohol / acetone
- Philips screwdriver
- Flat head screwdriver
- Small rubber mallet
- Small machinist granite (optional)
- Lapping compound / (fine 600+ sandpaper—optional)

First step is to remove the bed. This is accomplished by removing the **bearing support plate** on the far left end of the bed. It is held on by two socket head bolts.

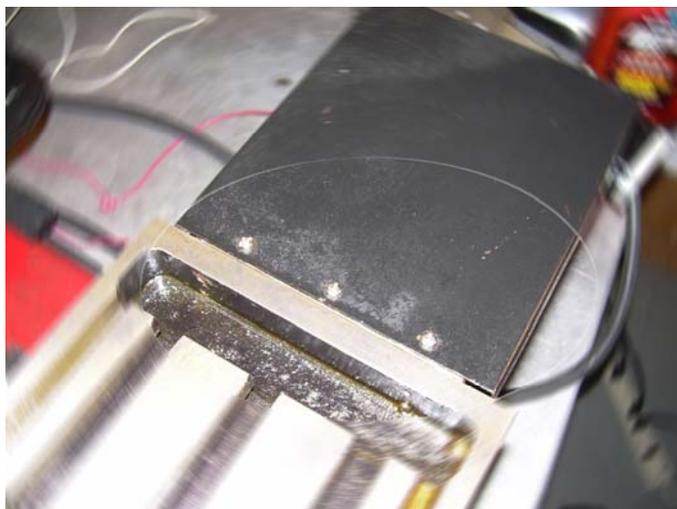


**Note: When replacing, torque to ~ 10ft/lbs. Do not try to prove your super human strength on these bolts.*

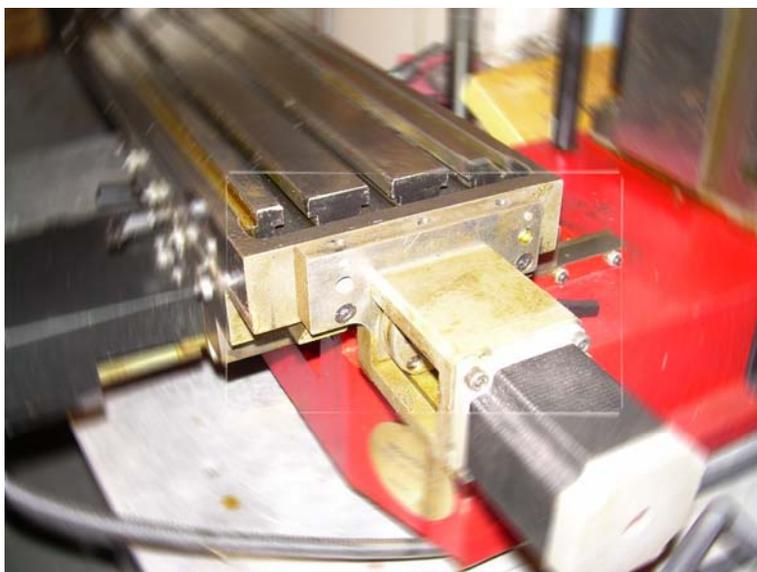
Once you have removed these bolts, you can remove the entire support plate.



Next you will want to remove the X axis dust covers, they are held on with 3 screws.



The same bolts you removed from the left side will need to be removed from the right side. The difference is, you will not be removing this plate, just the bolts.

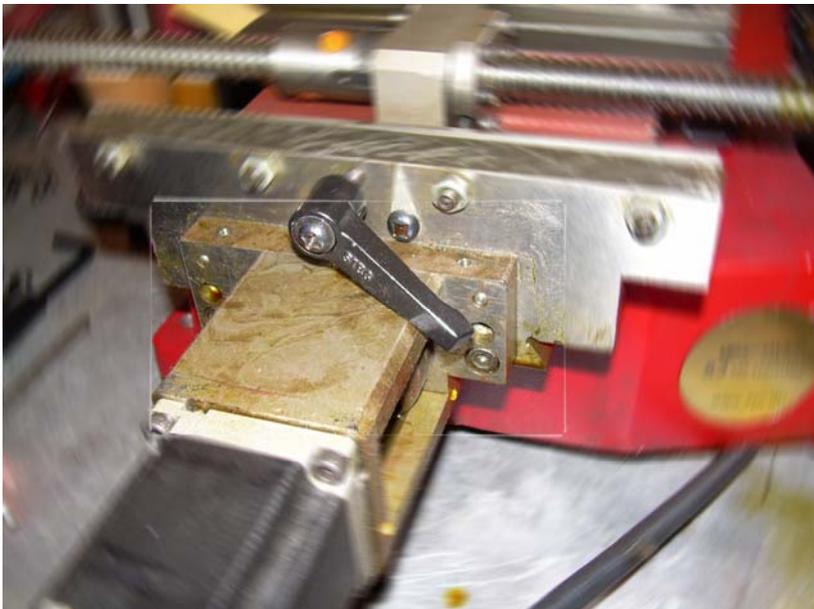


**Note: Paper cups work well to hold your loose hardware.*



Using your super human strength, pull the table to the left, separating your bed from the dowel pins in the stepper housing and end plate. At this point you can continue to slide the bed to the left, removing it from the saddle. Lay the bed on some cardboard or other soft surface on it's top. Exposing the bottom of the bed.

Remove the Y axis dust cover, exposing the front plate. Remove these two, recessed bolts. They are the same size as the y axis plates.



Push the saddle forward, away from the front plate.

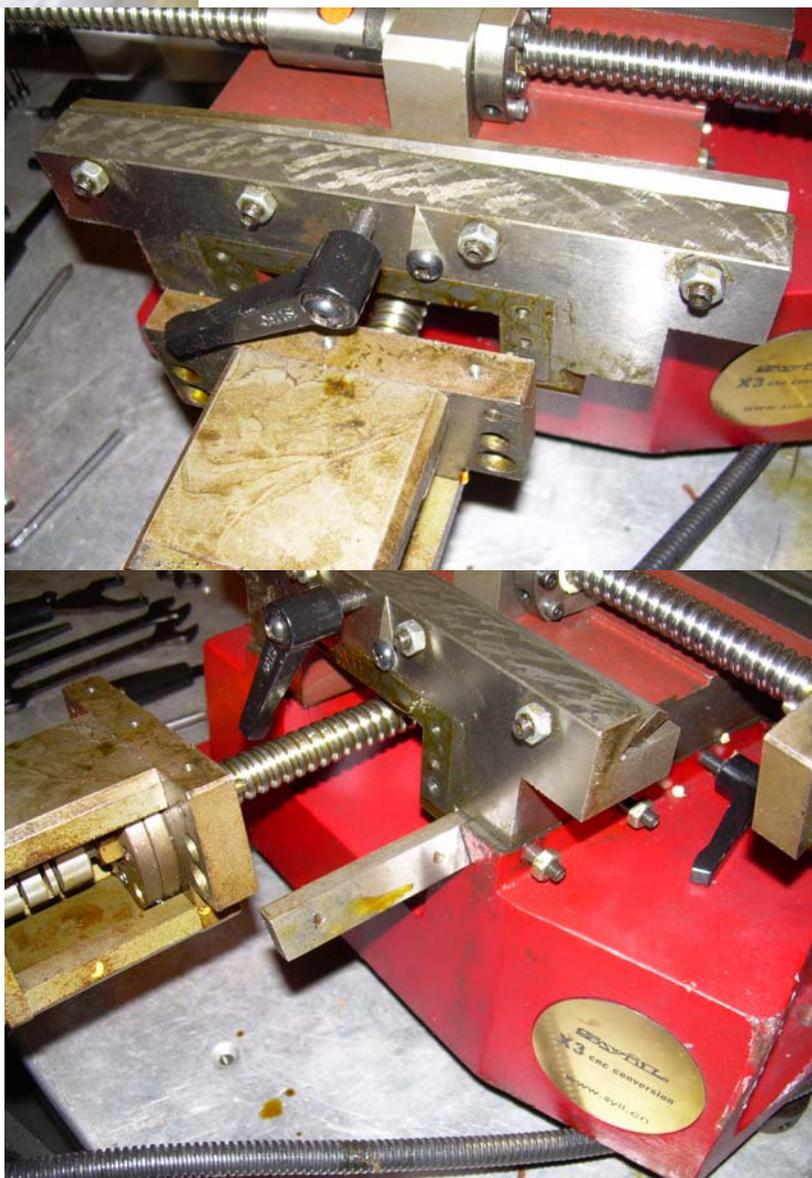
***Note:** To remove the saddle: first you must reach with your finger, from the back on the left side of the ball screw to move the optical switch. You will need to rotate the switch approximately 45 degrees up to avoid hitting it or breaking it when you lift off the saddle. It would greatly aid in the ease of this by running the y axis to it's highest y travel first. This gives you much better access to the switch.

Loosen all the gib adjusters on the side. Slide the gib out of the saddle and set it aside on a soft surface.

Grab the saddle on both front and back centers. Lift the saddle 45 degrees from the right first. Set the saddle on a soft surface.

What you have done is uncover all the working surfaces of your CNC machine. Notice that they are all covered in preservative greases. Notice the surface left from the surface grinding machines on all the ways.

The first thing to do on these surfaces is to clean, clean, clean so more. Leave no surface with any grease. The old saying is true, "cleanliness is next to godliness".



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Lapping is a [machining](#) operation, in which two surfaces are rubbed together with an [abrasive](#) between them, by hand movement or by way of a machine.

This can take two forms. The first type of lapping (traditionally called [grinding](#)), typically involves rubbing a brittle material such as [glass](#) against a surface such as [iron](#) or glass itself (also known as the "lap" or grinding tool) with an abrasive such as [aluminum oxide](#), [emery](#), [silicon carbide](#), [diamond](#), etc., in between them. This produces microscopic [conchoidal fractures](#) as the abrasive rolls about between the two surfaces and removes material from both.

The other form of lapping involves a softer material for the lap, which is "charged" with the abrasive. The lap is then used to cut a harder material—the workpiece. The abrasive embeds within the softer material which holds it and permits it to score across and cut the harder material. Taken to the finer limit, this will produce a polished surface such as a polishing cloth on an automobile, or a polishing cloth or polishing pitch upon glass or steel.

Lapping the ways on the super X3 is not necessary, but you can gain some additional benefits from it. Smoothness is enhanced, rapid traverse speed is increased.

Mach 3 is our controller of choice for several reasons:

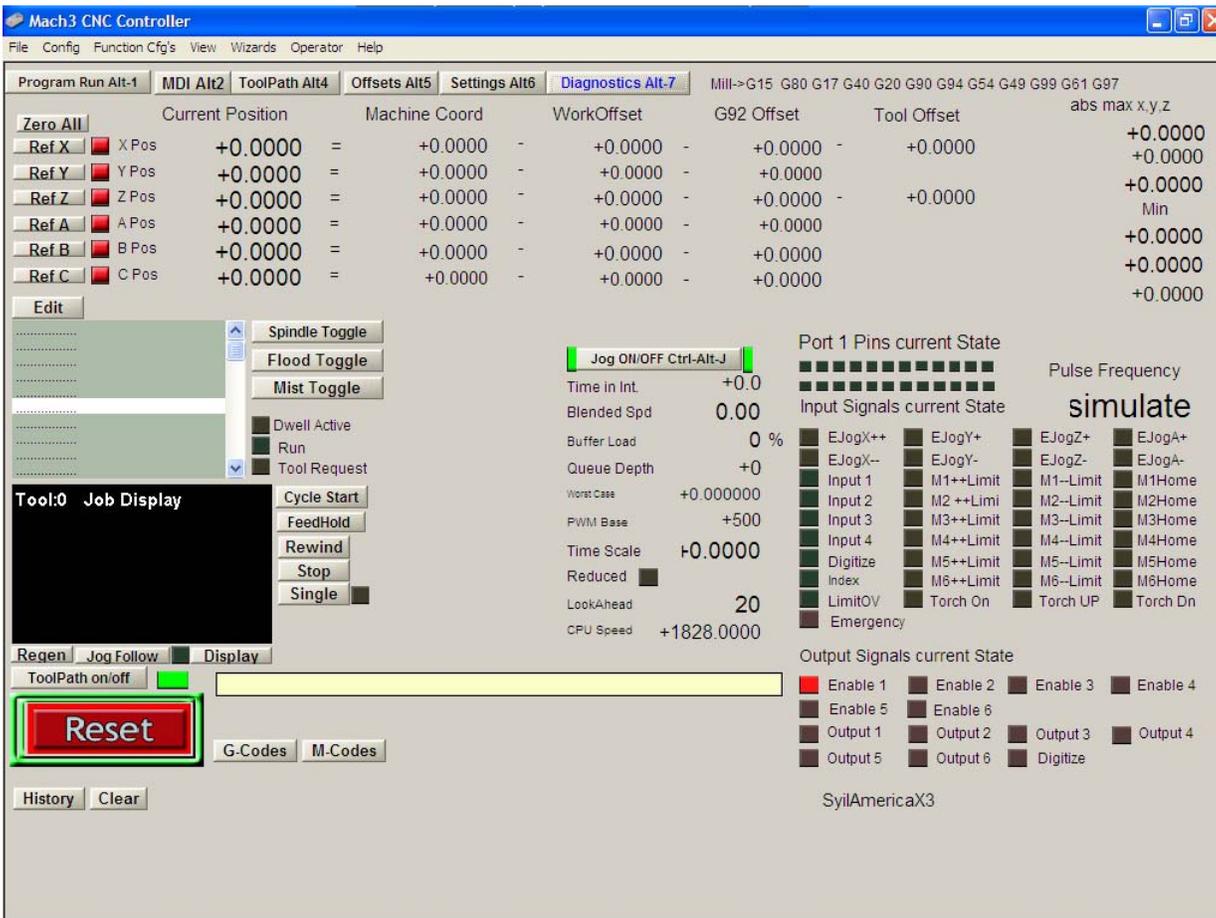
- They have a huge following and tremendous momentum
- Momentum gives us innovation
- Price is affordable
- Features are rich
- Customization
- Expansion (wizards, plugins, etc.)



Our SuperX3 profile can be downloaded from our support page on the Syil America web site. [HERE](#)

Testing your machine:

You will want to test your machine once you've got it all together and lubed. Once Mach is up and running, first page we will want to go to is the "Diagnostics" tab. The screen will look something like this:



First thing we are looking for are the LEDs under "port 1 pins current state". If your screen looks like this one. You don't have a parallel port enabled, or your machine is not connected.

Second thing we will be looking for is homing switches. They are your M1, M2, and M3 Home LEDs. If they are yellow, move the axis a few inches. If they are still on, your homing switch is not aligned or dirty. Some of the earliest machines produced in China have optical limit switches that are susceptible to oil and dirt contamination. The later type are a sealed unit.

To align the optical switches, you will need loosed the screw on the body and apply slight pressure to move the sensor about until the led is off. Then tighten the screw slightly to hold it's position.

Cleaning the older style is sometimes met with mixed results. If you have this type of switch and it becomes contaminated, call us and we will send you a sealed replacement.

