Limit Switch and Probe Kit

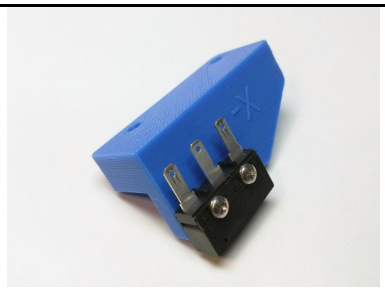
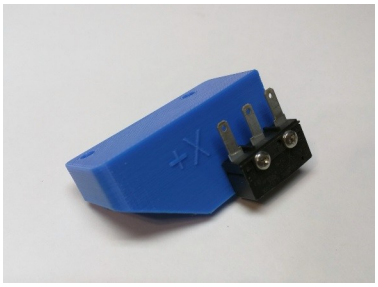
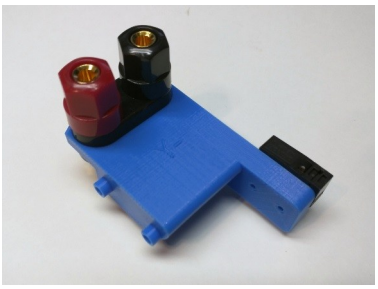
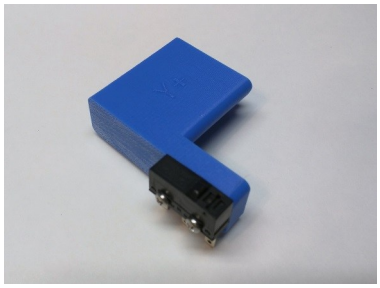
Installation Manual

Confused about something in the instructions?

Contact Andrew@AdditiveAerospace.com

Version 1.1

Parts List

 X- Limit Switch Assembly	 X+ Limit Switch Assembly	 Z+ Limit Switch Assembly
 Y- Limit and Probe Assembly	 Y+ Limit Switch Assembly	 Cable Harness
 Probe Wires	**8X**  #6 x 1/2in Plastic Screw	**2X**  #10-32 x 1/2in Socket Cap Screw

Installing Limit Switches and Probe

1. Screw the X-, X+, Y– and Y+ limit switches to the Shapeoko frame using #6 x 1/2in Plastic Screws

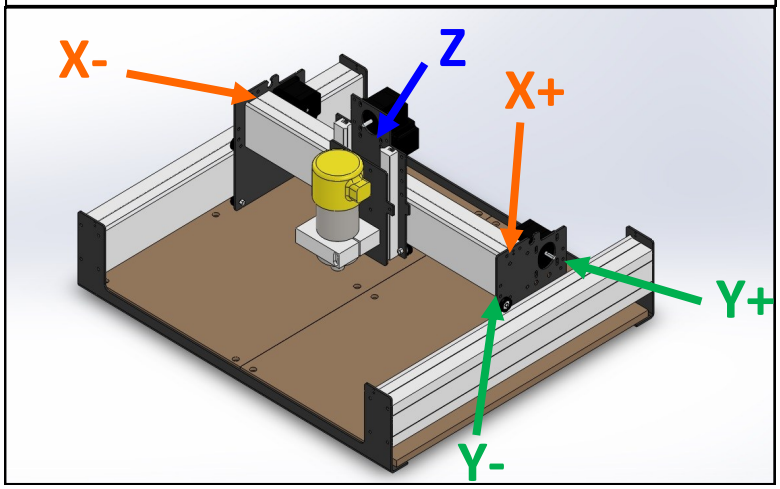
Screw the Z Mount to the Shapeoko using the #10-32 Socket Cap screws

The nubs on the 3D printed plastic mounts should fit inside the steel frame holes to align the two.

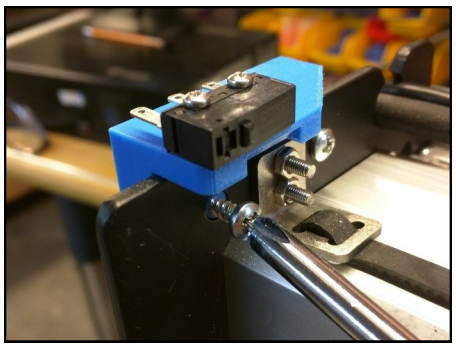
The screws should be snug, but do not excessively tighten them.

The 3D printed plastic mounts should not move once the screws are tight.

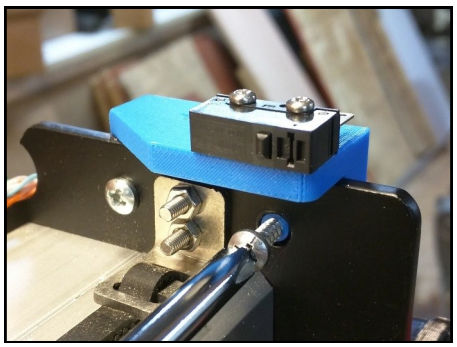
The limit switch plungers should line up with their corresponding axis plates, and be triggered when the axis are moved to their extents.



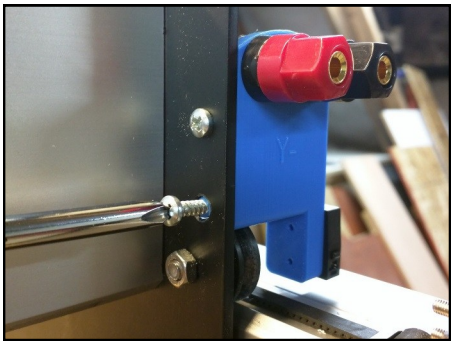
X-



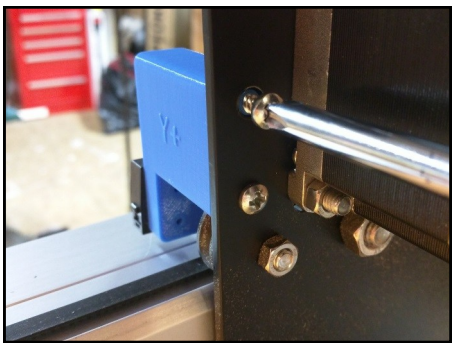
X+



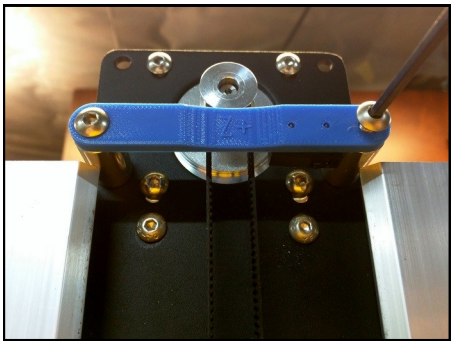
Y-



Y+



Z+



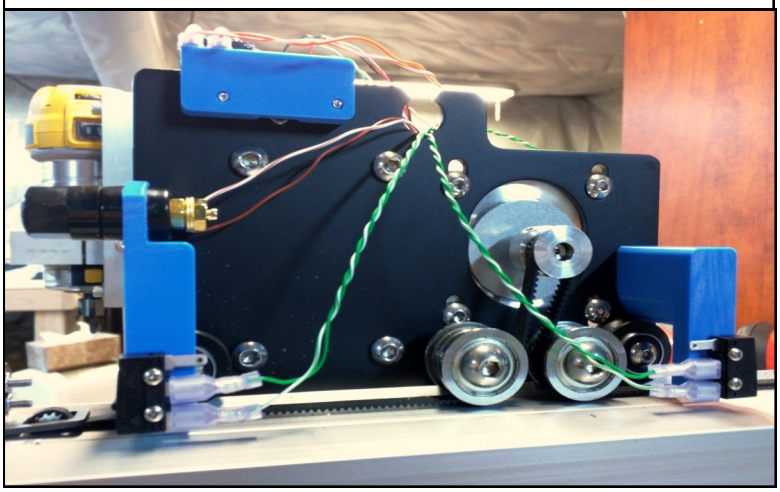
Installing Limit Switches and Probe

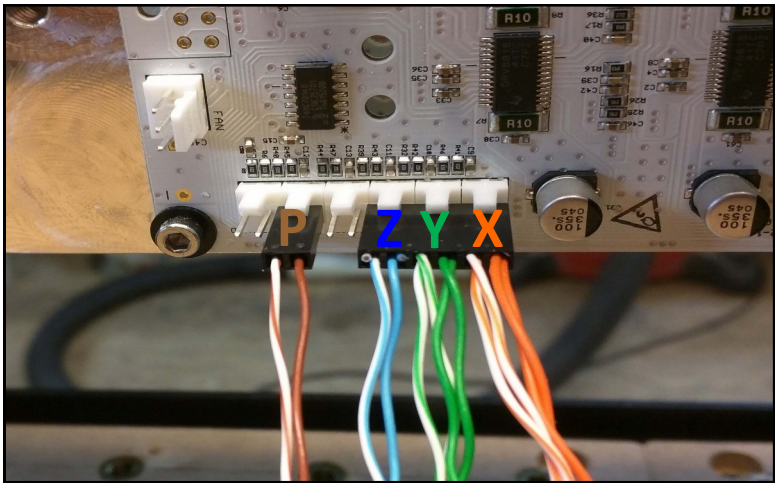
2. Plug the wiring harness into the Carbide Motion controller as shown. It is a tight fit on some machines. Rocking the connector back and forth while inserting it seems to make it a bit easier.

3. Attach each pair of Solid/Striped wires as shown to the right. Orange pairs to the X limit switches, Green pairs to the Y limit Switches, the Blue pair to the Z limit switch, and the Brown pair to the Probe

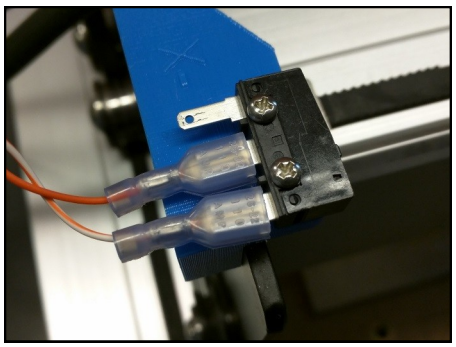
   The fast-on connectors attach to the limit switches using the terminals closest to the plunger. The order of the striped/solid wires does not matter.

   Route the wires however it is convenient for your machine, while not stressing the fast-on connectors.

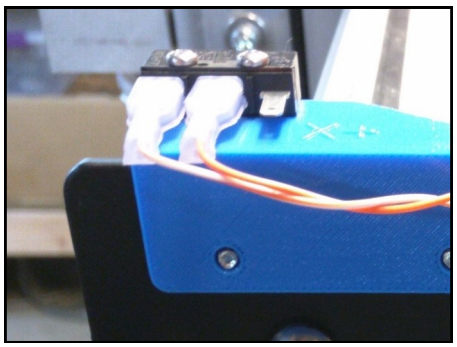




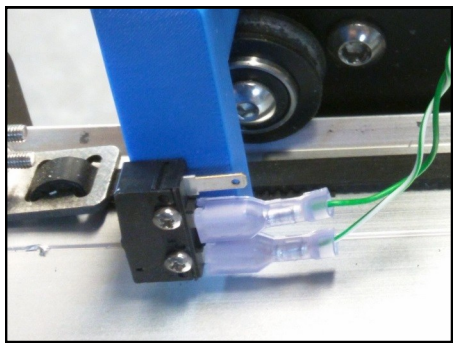
X-



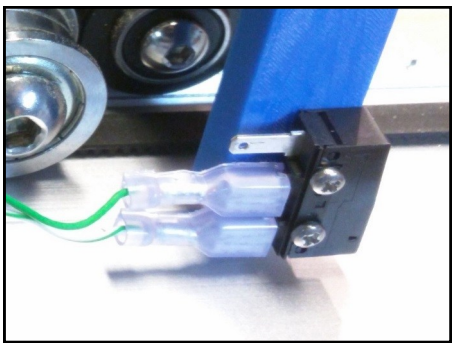
X+



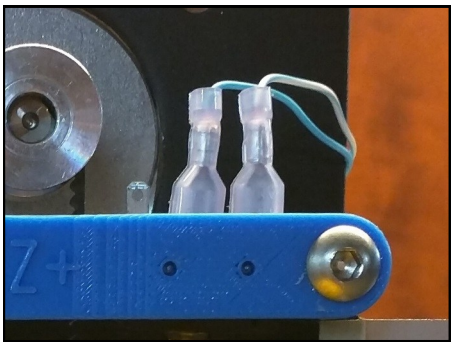
Y-



Y+



Z+



Installing Limit Switches and Probe

4. To enable homing on the Shapeoko, the settings must be changed in GRBL.

   Access the command line for the Shapeoko

   Type $20=1 into the command line and hit enter

   Type $21=1 into the command line and hit enter

   Type $22=1 into the command line and hit enter

   This enables soft limits, hard limits, and homing, respectively.

   To view that the settings were accepted, type $$ and the current board settings will be displayed.

   To home the machine, type $h in the command line and hit enter. The machine should move to the far back right corner.

   This completes the homing installation tutorial.

Using the Conductive Probe

1) Move the tool close to your probe point using the jog commands.

2) Plug the banana plugs from the probing wires into the mount on the -Y limit switch

2) Clip one wire to the conductive surface, and the other wire to the end mill. The probe will only work with conductive surfaces, otherwise an additional metallic touch plate must be used.

3) To probe, use the G38.2 command, followed by an axis, max travel distance and direction, and federate.

For instance: **G38.2 Z-15 F10**

The **probe command** moves in the **–Z** direction a max of **15mm** at a feed rate of **10mm/min**.

The tool will automatically stop when contact is made, or at **15mm** if contact is not made.

The XYZ coordinates where the tool stops will be displayed in the communication window.

I have set this command as a macro in UGS, as it is something I use often.

Manually copy the current Z position (modifying for any offset from a touch plate) into your work coordinate system.

Probe from any direction by changing the axis in the G-code. For instance, A G38.2 X15 F10 command would move the tool along the +X axis.

Remove the probe before starting the router.

This concludes the basic probing tutorial.