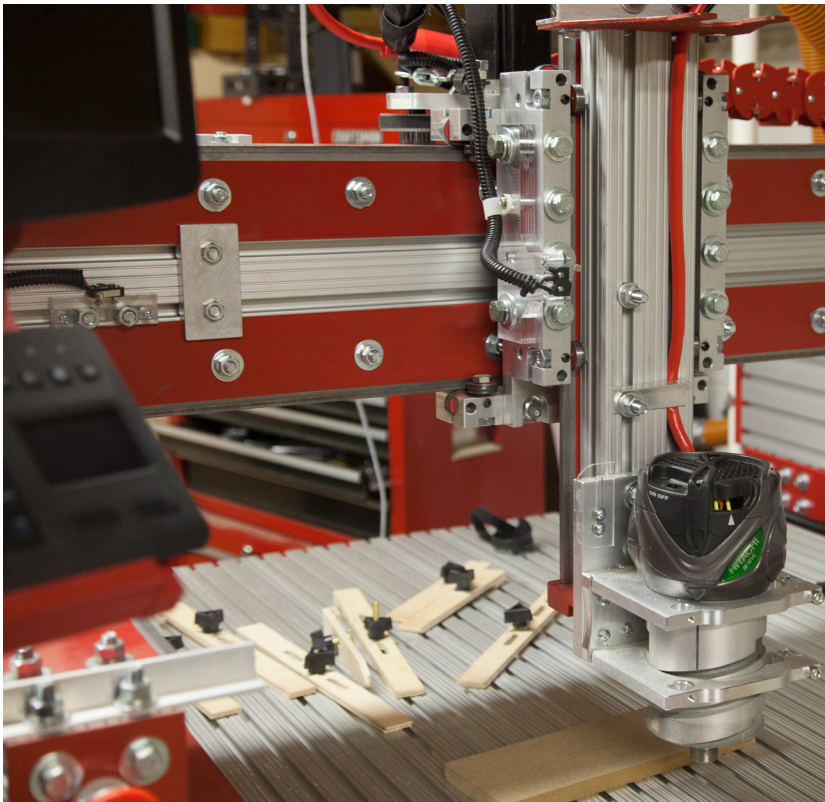


Hitachi M12VC Super-PID Conversion

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In this project, you will be shown how to convert the Hitachi M12VC router for use with the SUPER-PID2 Speed controller. Please note that this conversion will void your warranty.

Tools Needed For This Project

- Phillips screwdriver
- Wire cutters/strippers
- 1/8" Drill bit
- Hot glue gun

Other Items Needed For This Project

- White acrylic paint
- 2, Small twist on wire connectors
- 14 GA extension cord (50 foot)
- Regulated 5v power supply with hookup wire
- Super-PID2
- 2, Small tie wraps
- #6 Ring terminal

Tip

You can get a regulated 5v power source a from your PC via the USB cable or from one of the hard drive connectors inside your PC. The connector will have four wires.

Yellow = 12V

Black = GND

Black = GND

Red = 5V

You will want to use one of the black wires and the red wire.

The following three links are power supplies that can also be used.

Prerequisites

You will need to cut the 50 foot extension cord. Cut the plug (male) so that it has about 40" of cord. Strip about 2" of the outer layer of the two cut ends revealing the individual wires. Strip about 1/2" of the insulation from each wire.

You should also download the Super-PID instructions. They can be found here:

Step 1

It is best to work on your router after it has been mounted on your CNC. This will keep the business end pointed up while you perform the conversion.

Start by removing the cover. To do this remove the three screws, then lift the cover off, as shown in Figures 1 & 2.



Figure 1



Figure 2

Step 2

Lift the sensor module and switch out of the router, then remove the two screws that hold the cord clamp in place, as shown in Figure 3. Lift out the cord. Remove the two screws that hold the sensor mount in place and lift it out of the router. Remove the screw that holds the ground wire.

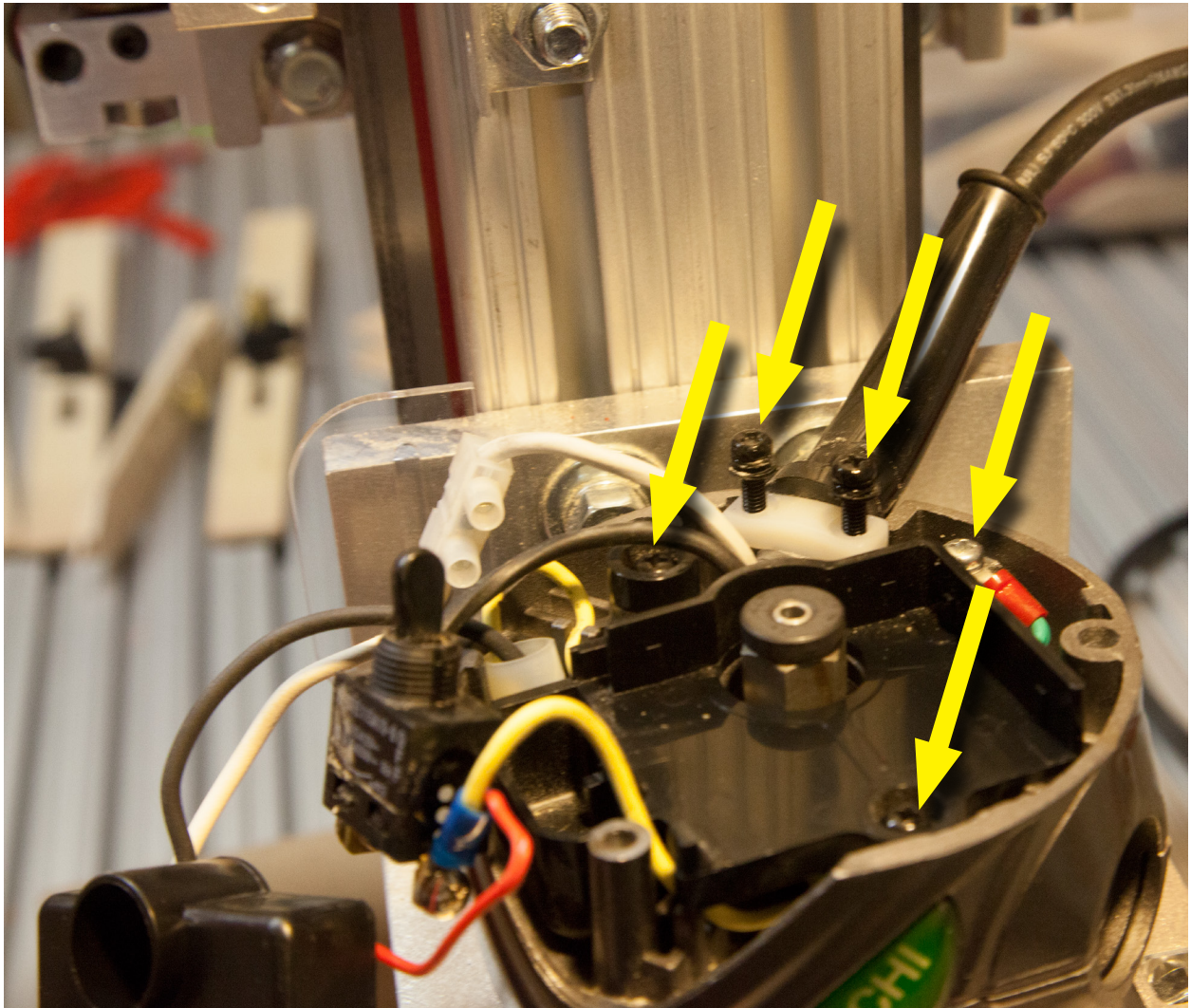


Figure 3

Step 3

Clip the yellow wires so that they are as long as possible, as shown in Figure 4. The two yellow wires are the main power input to the Hitachi M12VC.

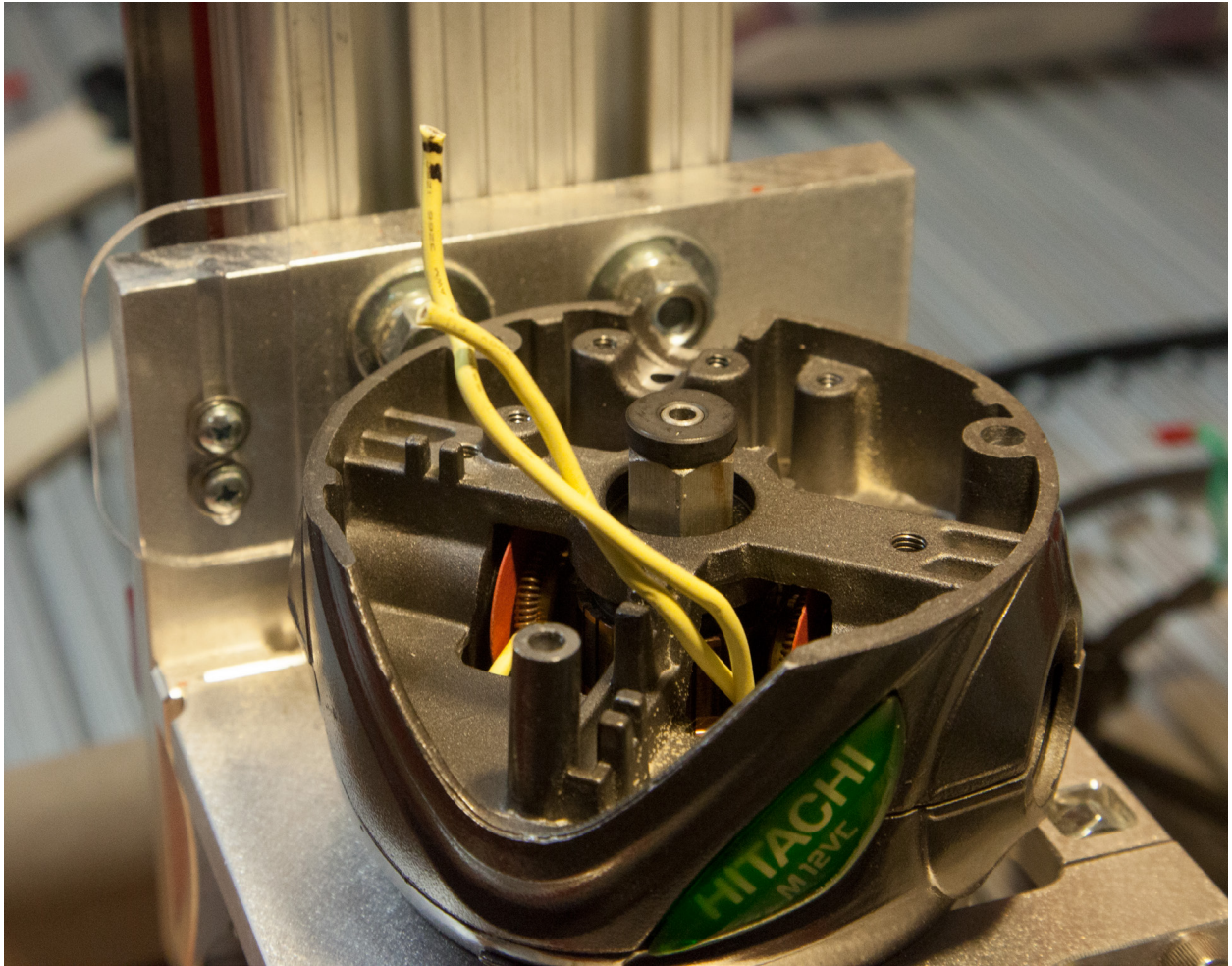


Figure 4

Step 4

Drill two 1/8" holes into the sensor mount housing as shown in Figure 5. They will be used to connect the sensor to the housing.

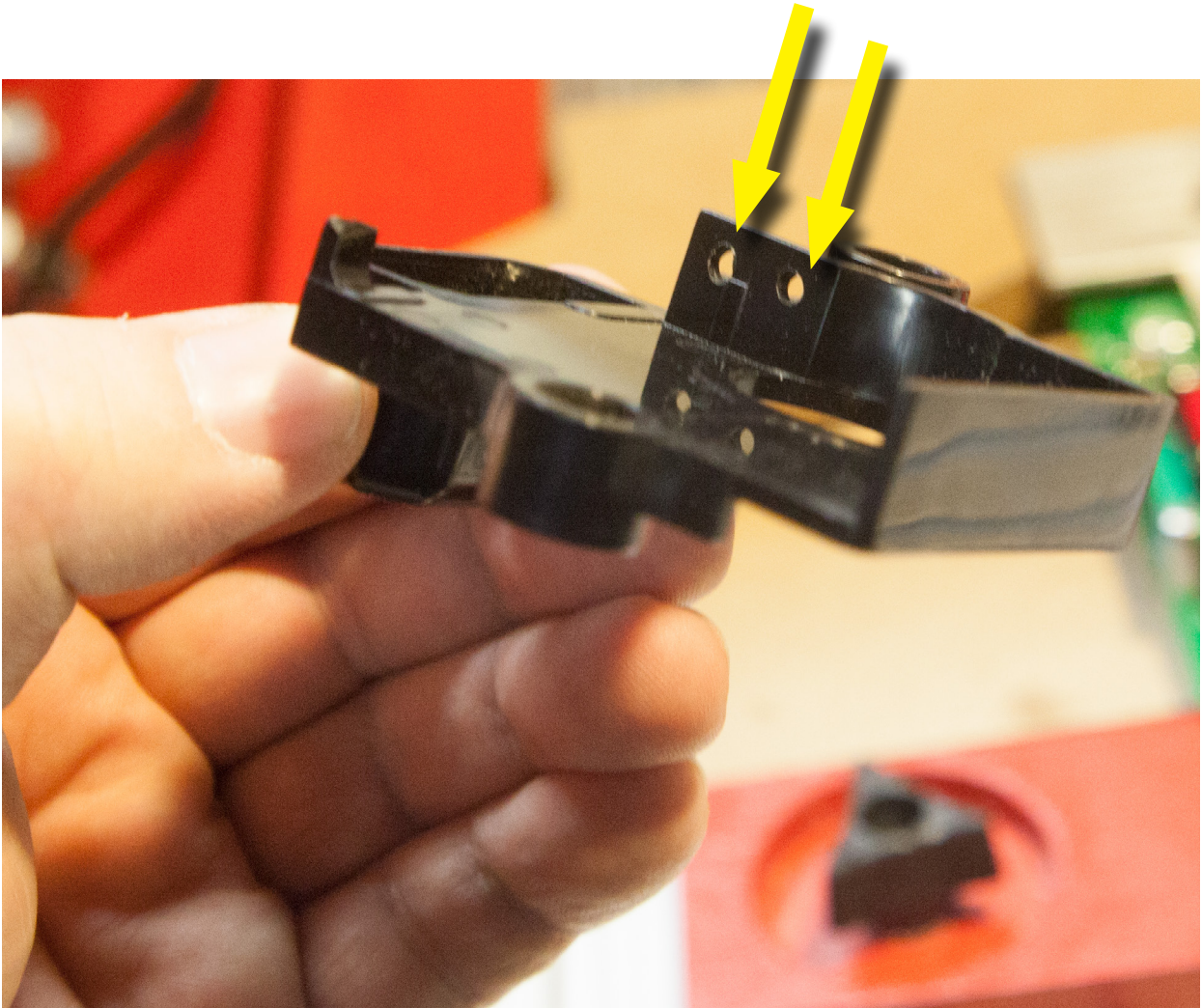


Figure 5

Step 5

There is a small round magnet on the top most part Hitachi spindle. This magnet is used with the original sensor module. Take your acrylic white paint and paint half of the magnet as shown in Figure 6.

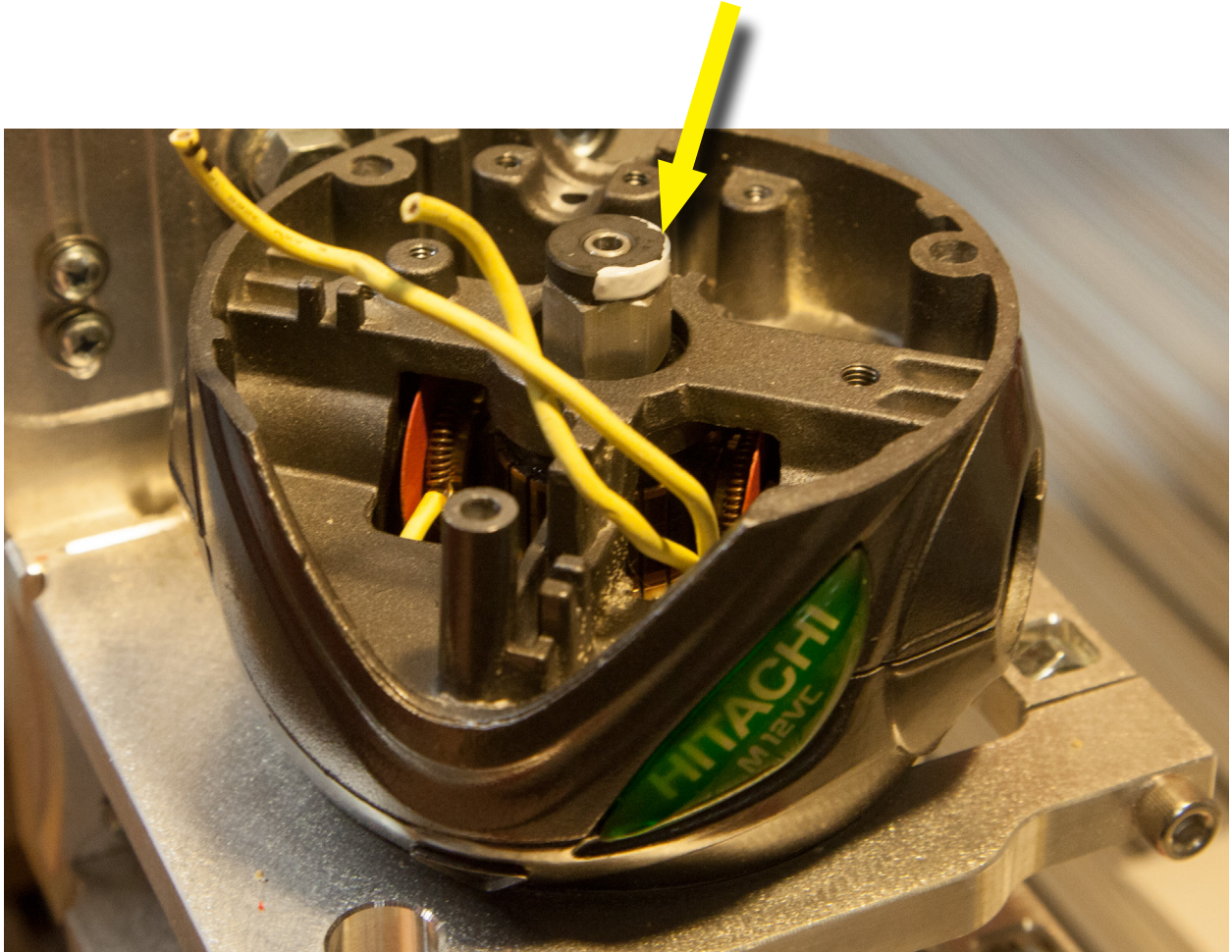


Figure 6

Step 6

Re-attach the sensor mount housing. Take the end of the SuperPID sensor and attach it to the housing as shown in Figure 7. You want to get the end of the sensor as close to the magnet as possible without touching. Rout the sensor cable around until it exits out via the cord opening.

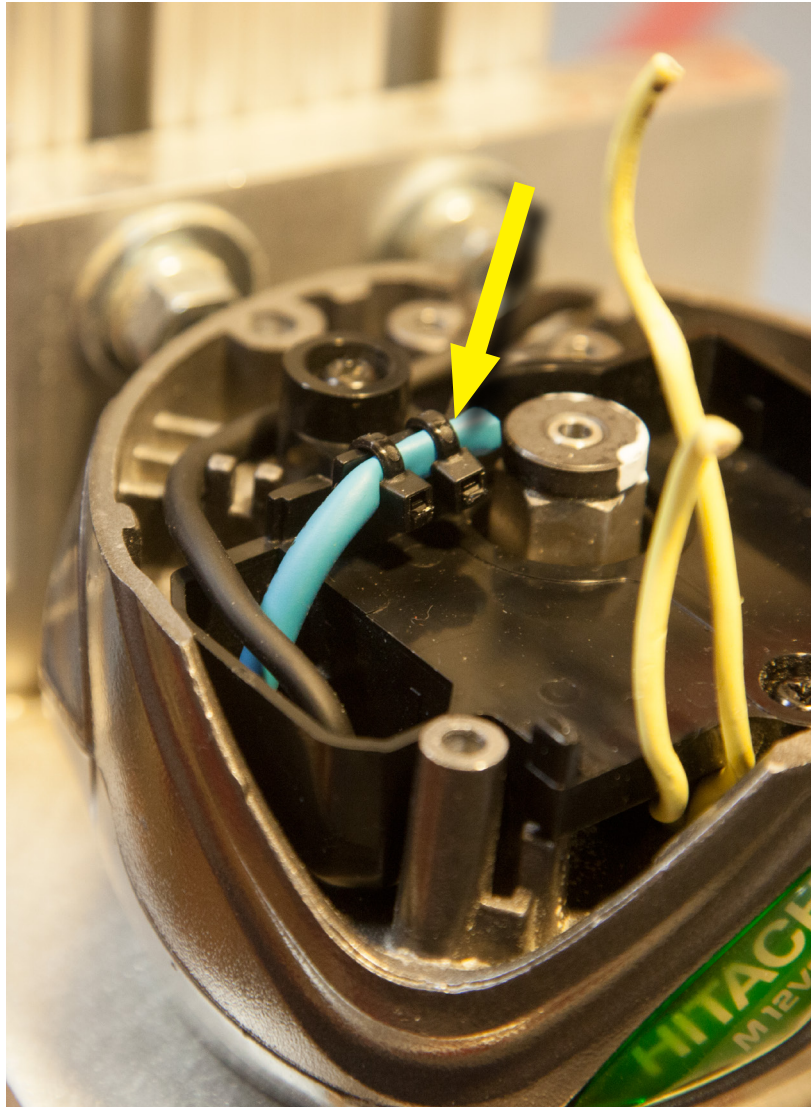


Figure 7

Step 7

Connect the sensor cable to the Super-PID. Attach a regulated 5v power source to the Super-PID.

Rotate the spindle on the router slowly. When the sensor passes over the black portion of the painted band, the display should indicate a low reading as shown in Figure 8.

When the sensor passes over the white portion of the painted band, the display should indicate a high reading as shown in Figure 9.

Adjust the sensor as necessary to achieve these readings before proceeding to the next step.

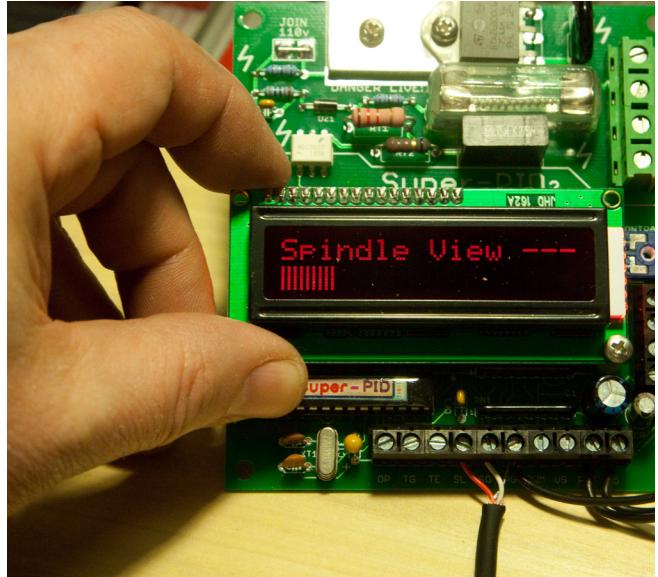


Figure 8

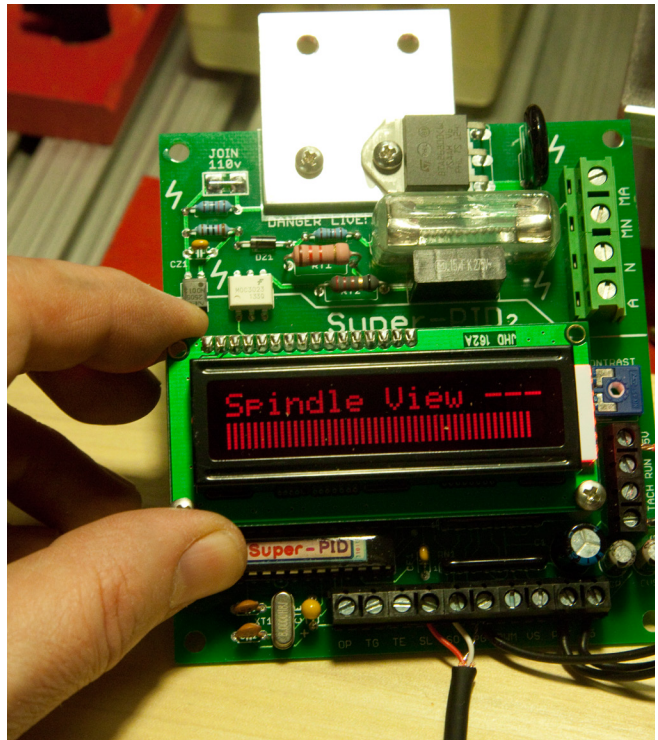


Figure 9

Step 8

Now attach your Super-PID power cord to the router using the cord clamp you removed earlier, as shown in Figure 10. The cord should sit on top of the sensor cable.

If you have not done so, strip about 1/2" of the insulation from each of the wires.

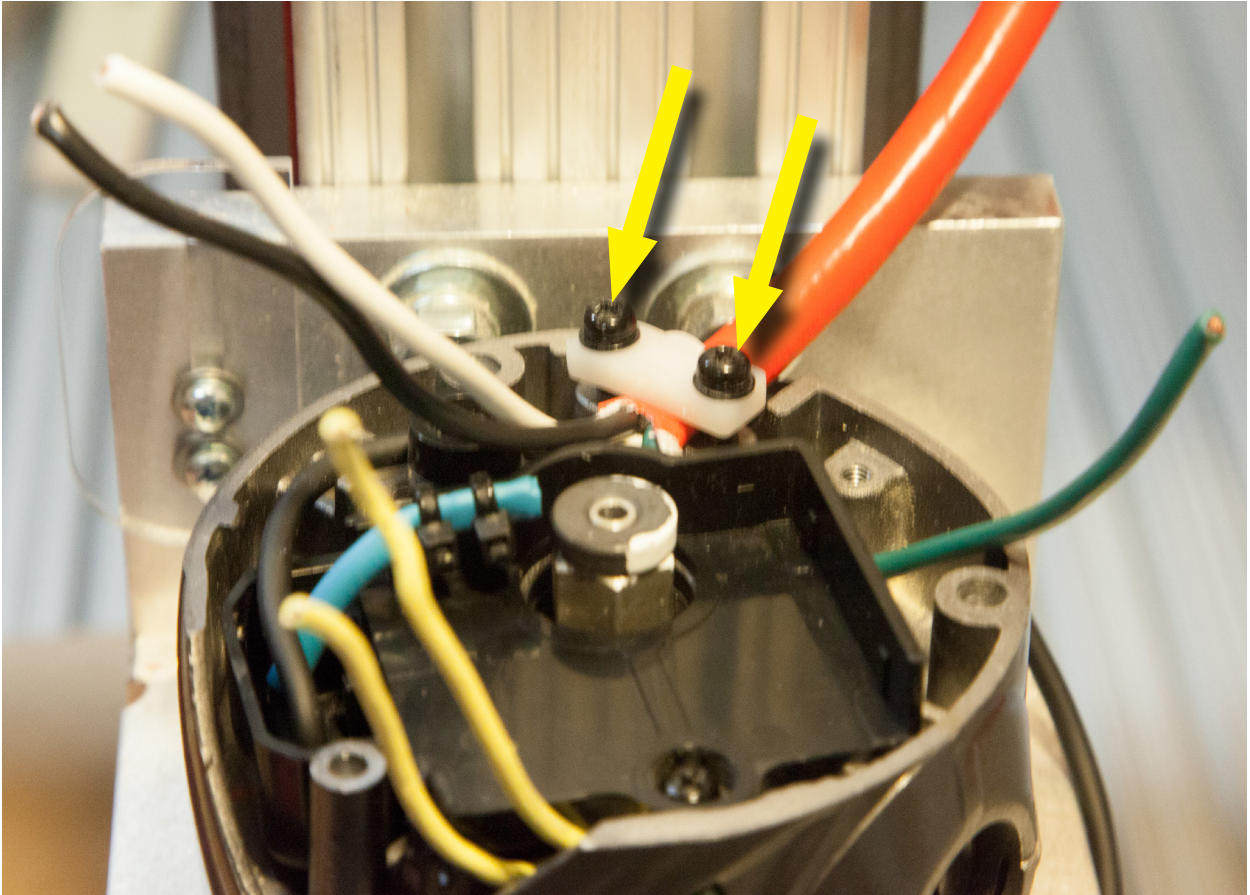


Figure 10

Step 9

Connect one of the yellow wires to the white wire from the cord. Connect the other yellow wire to the black wire from the cord. Then, twist on the two wire connectors as shown in Figure 11.

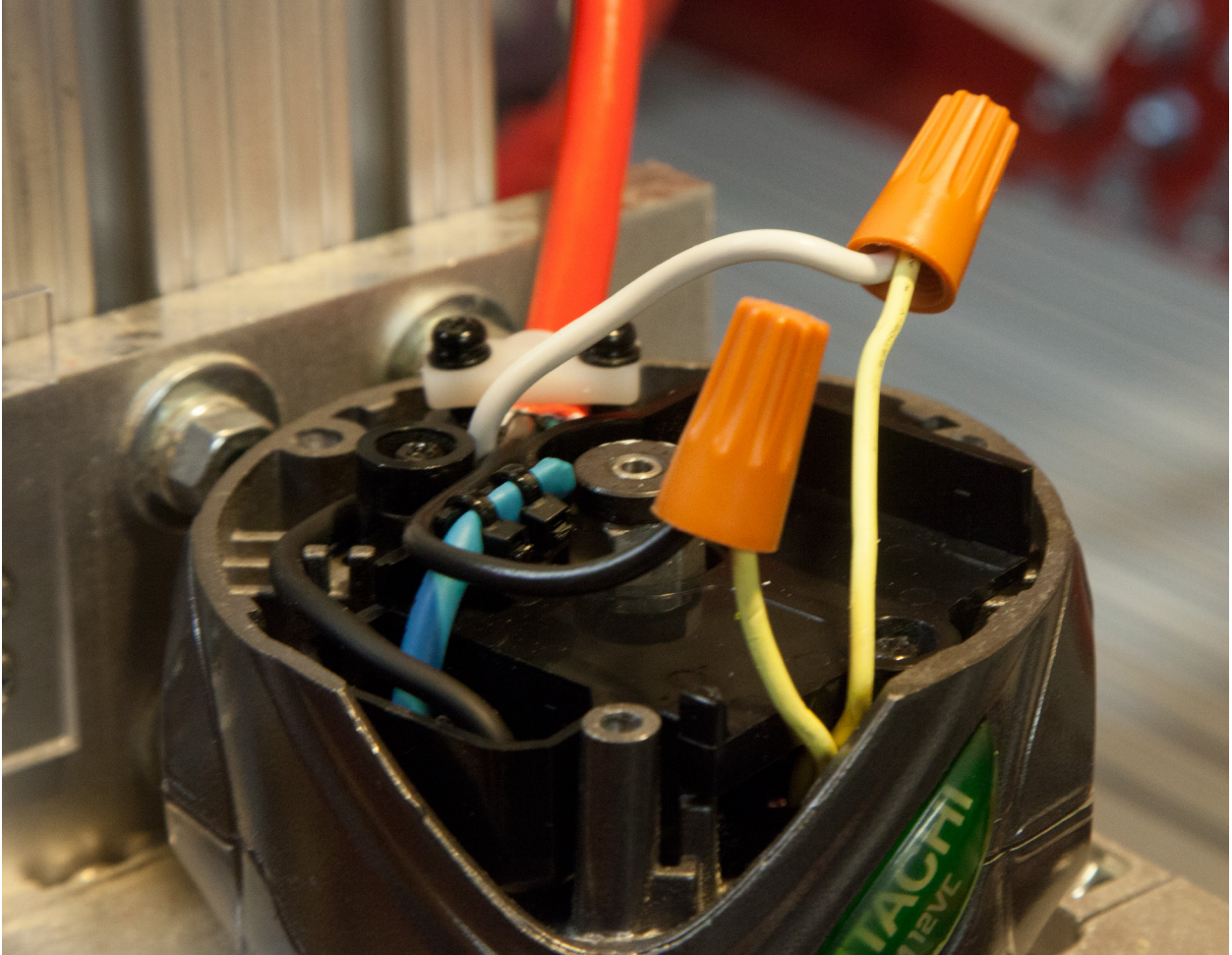


Figure 11

Step 10

Attach the #6 ring terminal to the green (ground) wire from the cord, as shown in Figure 12. If you don't have wire crimpers you can use some needle nose pliers to crimp the connector.

Attach the connector to the router case using the original screw.

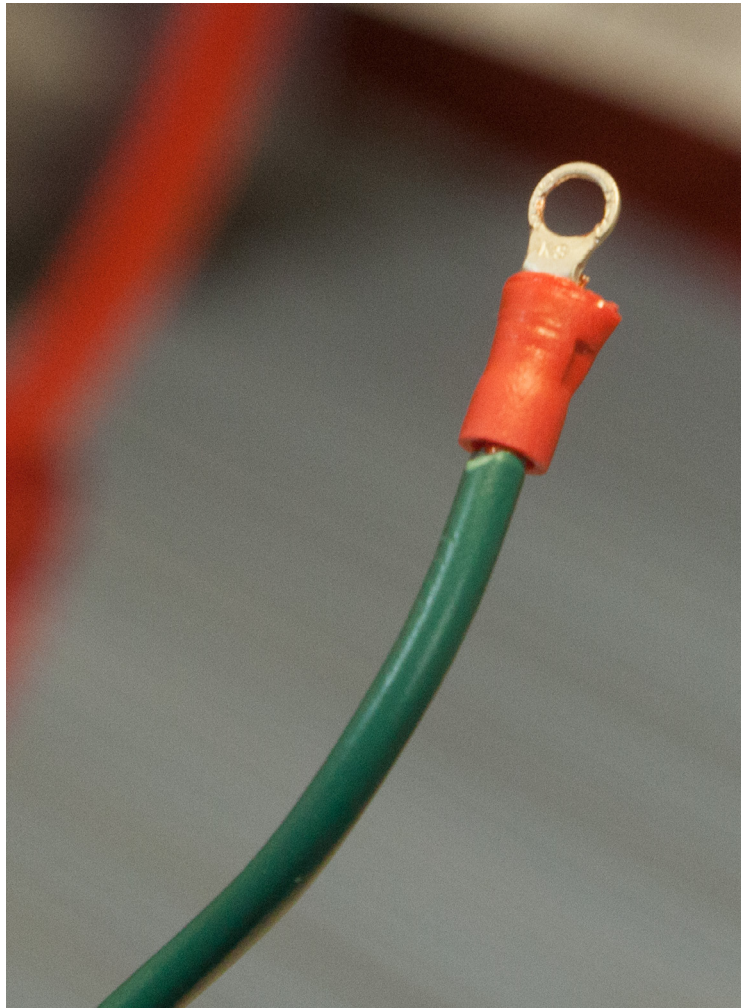


Figure 12

Step 11

Retest the sensor position and once you are happy with it add some hot glue to the underside of the cable, as shown in Figure 13.



Figure 13

Step 12

Position the two cable connectors so that they don't touch the spindle. Re-attach the top of the router. Insert the screws and tighten as shown in Figure 14.



Figure 14

Conclusion

Rout the wires up the Z beam by first running the sensor wire up the T slot in the Z beam. Then rout the power cord over top of the sensor wire as shown in Figure 15.

Be sure to visit the KRMx02 CNC web site for other Super-PID conversion instructions and videos at :

<http://www.kronosrobotics.com/krmx02/index.shtml>

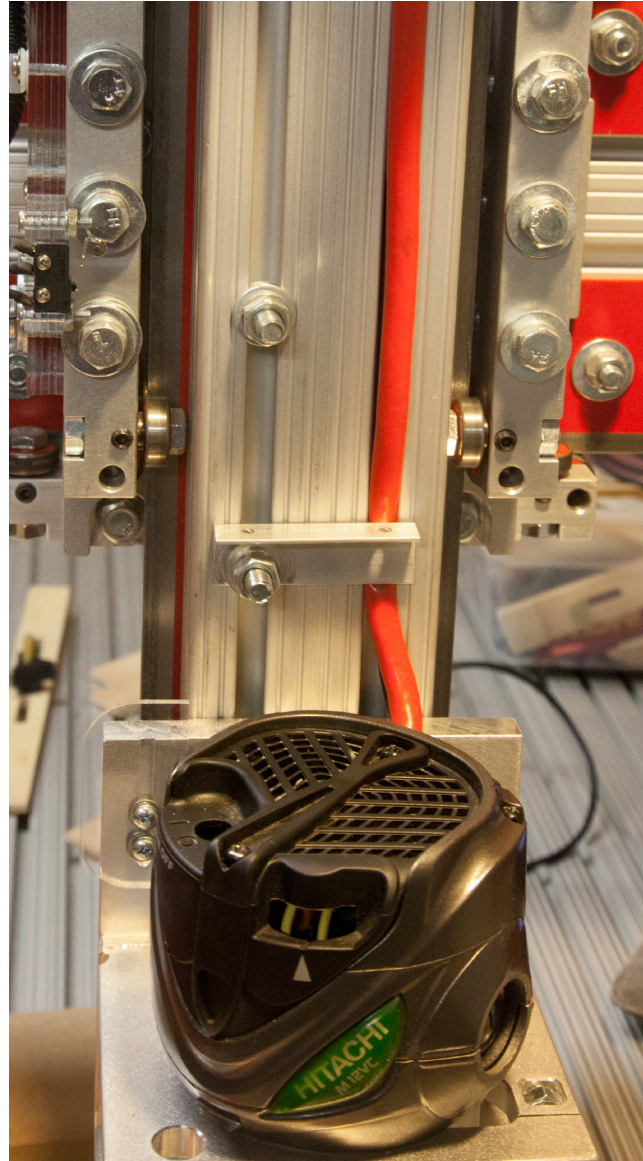


Figure 15