Dewalt DW618 Super-PID Conversion

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I n this project, you will be shown how to convert the Dewalt DW618 router for use with the Super-PID Speed controller. Please note that this conversion will void your warranty.

Tools Needed For This Project

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

Other Items Needed For This Project

- White acrylic paint
- 14 GA extension cord (25 foot)
- Regulated 5v power supply with hookup wire
- Super-PID

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 two links are power supplies that can also be used.

Prerequisites

You will need to cut the 25 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 may want to remove the lock ring from the router. This is a requirement of you want to attach an AirExchanger to the router later.

To remove the ring, remove the three screws shown in Figure 1. Once the ring has been removed you need to re-attach the screws, as they hold the spindle in place. Notice that I had to insert two 3/16"washers on each screw.

Figure 1

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

Step 1

It it 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 four screws, then lift the cover off, as shown in Figure 2.
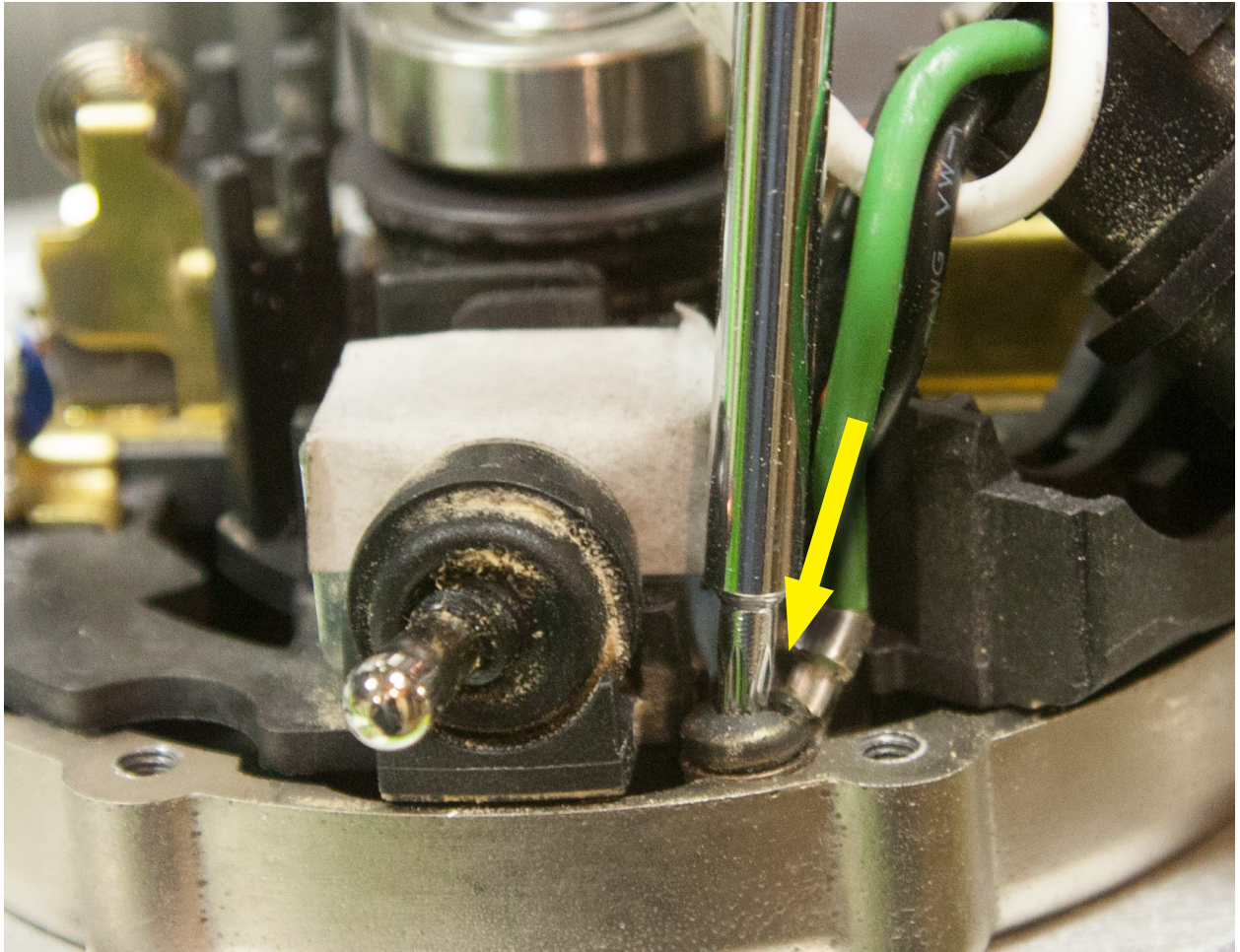

Figure 2

Kronos Robotics   Dewalt DW618 Super-PID Conversion

Step 2

Using a flat head screwdriver, remove the screw shown in Figure 3.

Figure 3

Step 3

Remove the controller, switch, and cord connector from the router. These will all lift out. There is a black wire connected to one of the brush mounts. There is a red wire connected to the other. Pull the connectors off of each mount. Every thing should lift out.

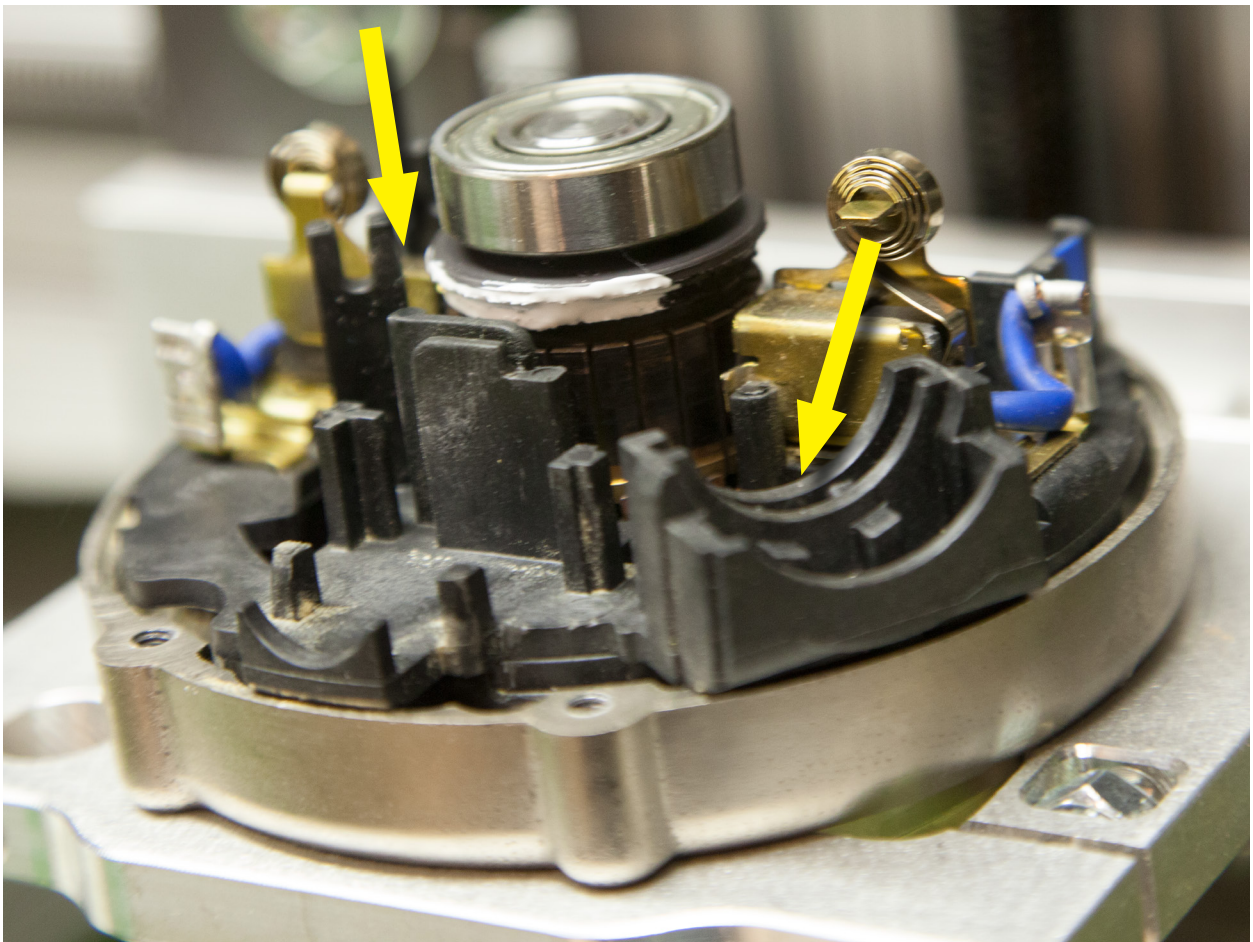With a small paint brush, paint the ring just under the bearing. Paint half way around the ring, as shown in Figure 4.

Figure 4

Step 4

Shown in Figure 5, is a small platform on the router base next to the bearing.
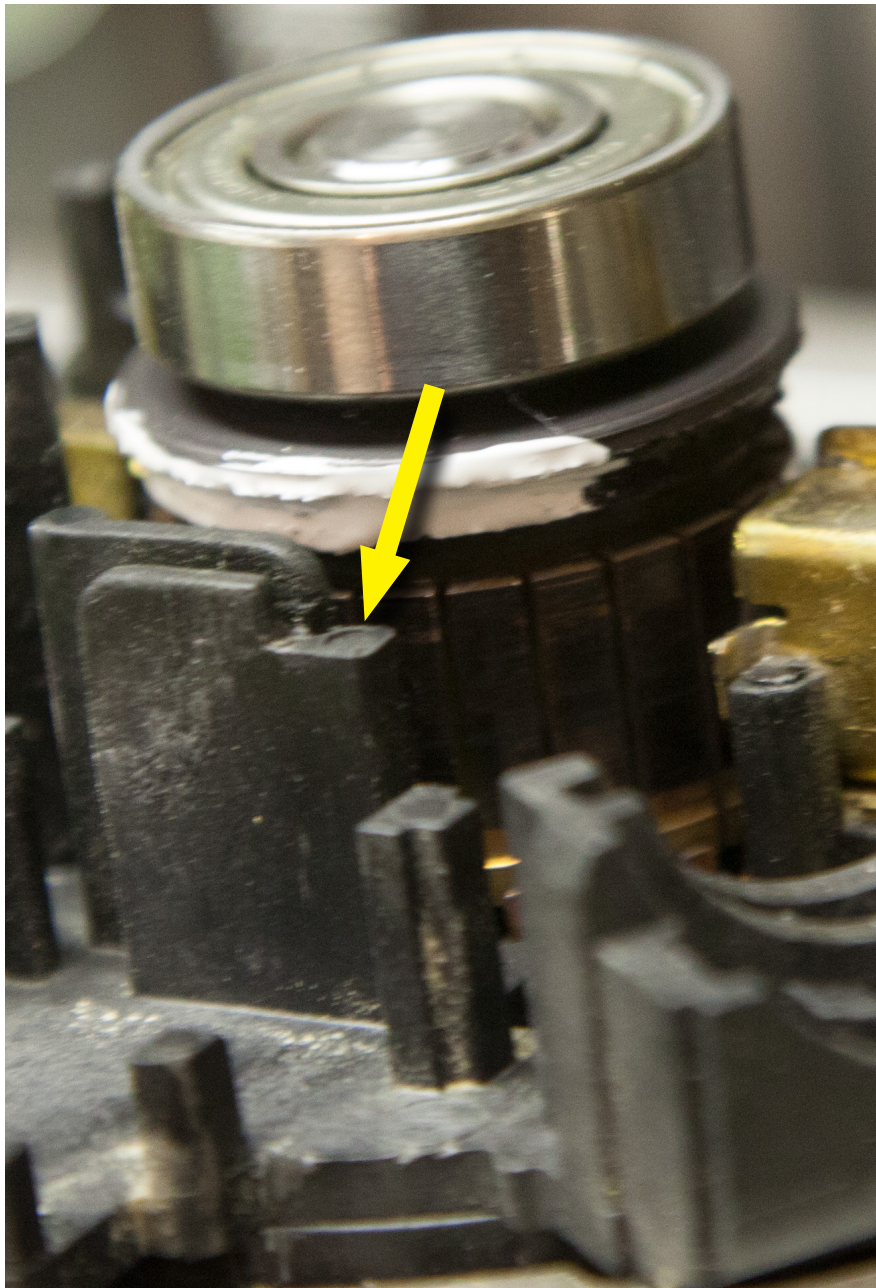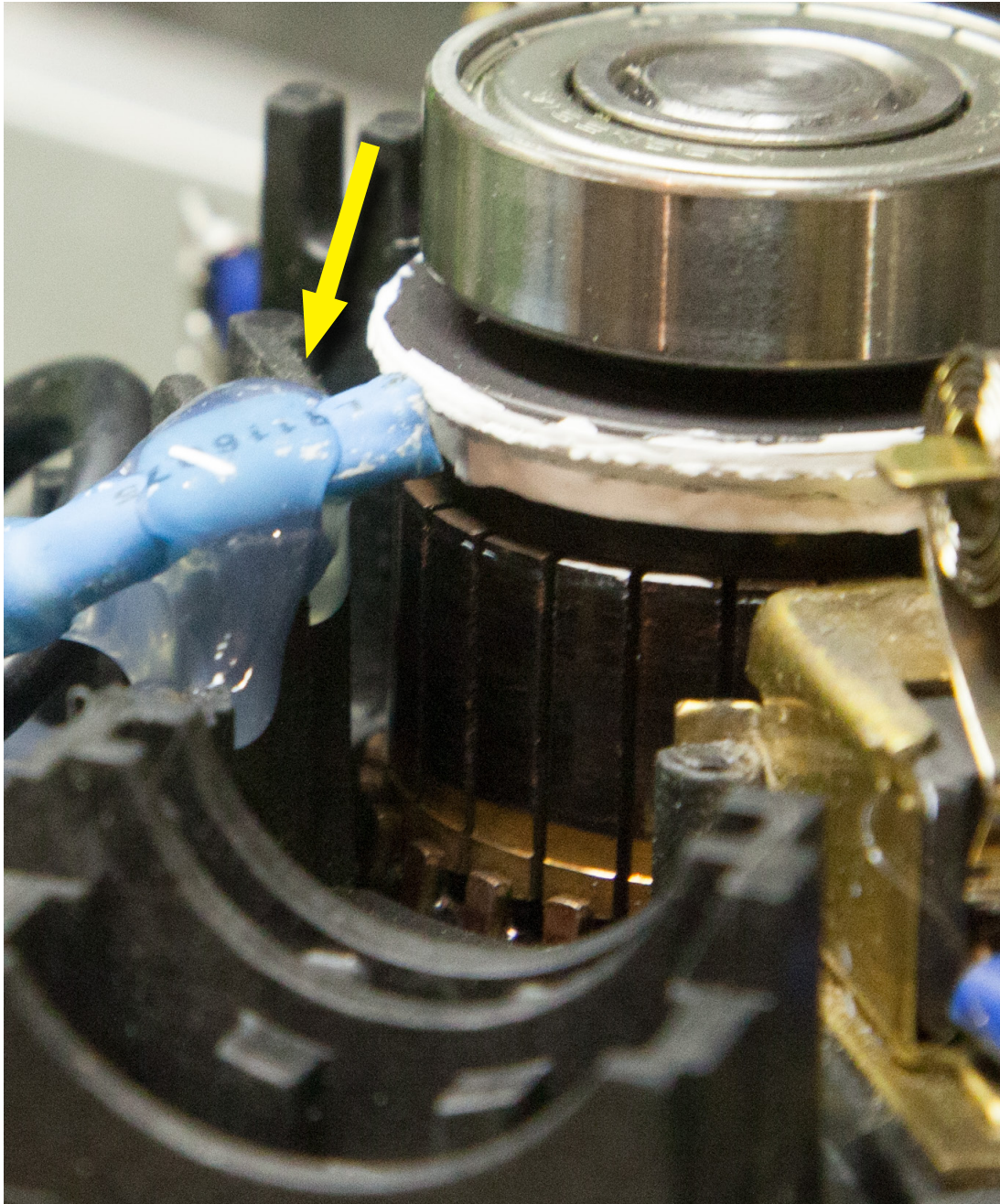

Figure 5

Step 5

Attach the sensor end of the cable to the plat form using hot glue. The goal is to get the sensor as close to the white mark as possible without touching. Before gluing refer to the hookup in Step 6. Use the SuperPID to help you get the perfect angle. Once you happy with the position glue it in place and hold until the glue is hard.

Figure 6

Step 6

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 7.

When the sensor passes over the white portion of the painted band, the display should indicate a high reading as shown in Figure 7.

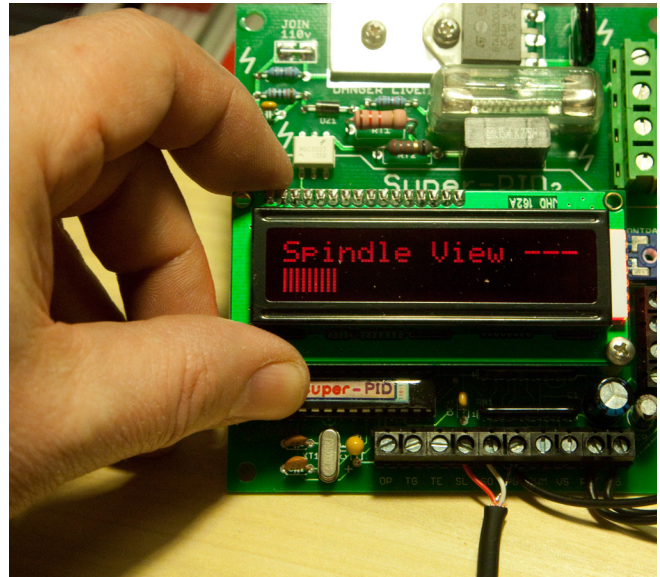Adjust the sensor as necessary to achieve these readings before preceding to the next step.
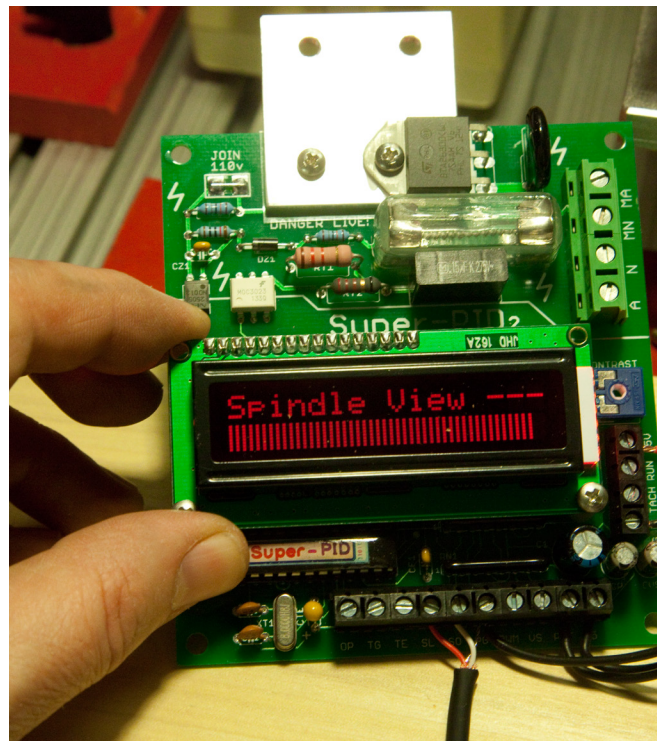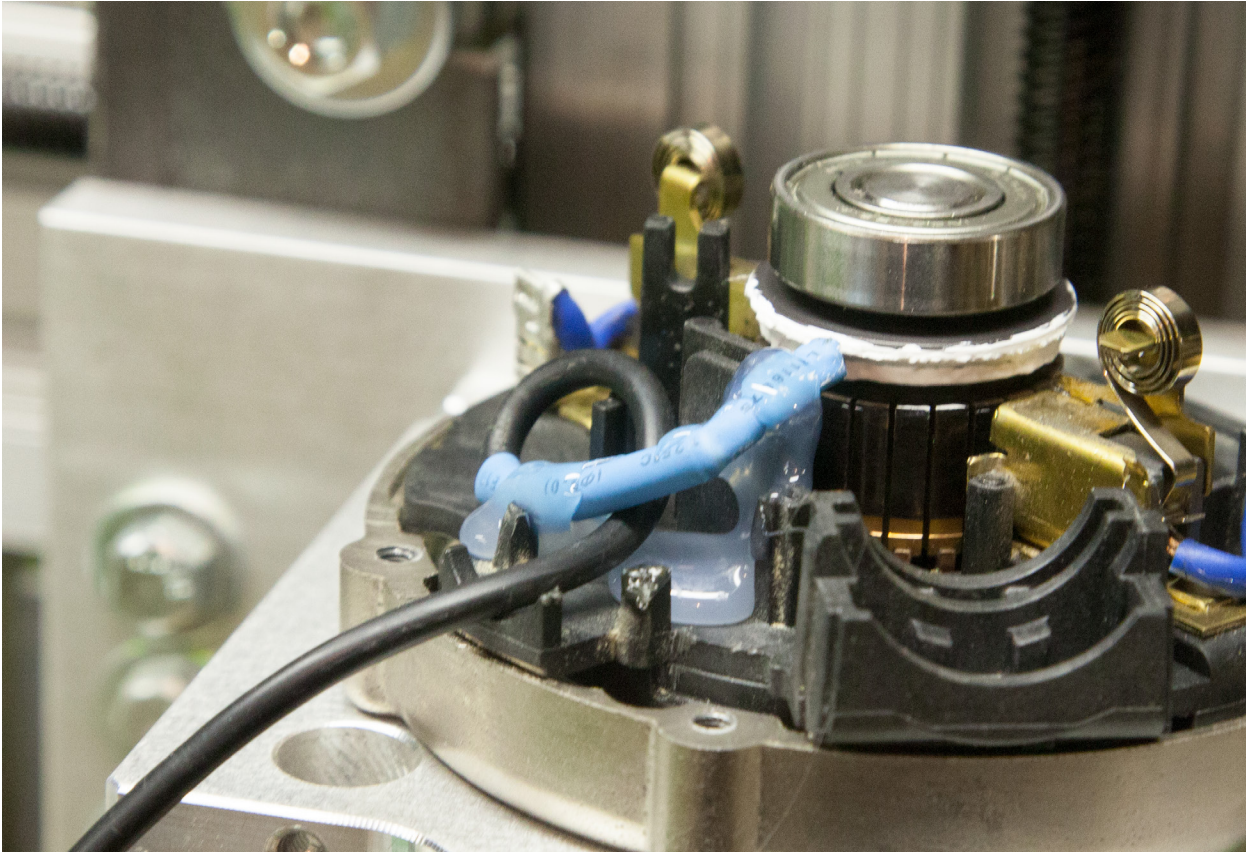

Figure 7

Figure 8

Step 7

Using hot glue to hold the sensor cable in place, twist it around as shown in Figure 9. The cable should exit the router at the point where the old switch was located.

Figure 9

Step 8

The DW618 router does not have a clamp for attaching a cord, like the other routers do. You could still install your own cord using hot glue, I want to show you how to reuse the connector. Cut the black wire off the switch and the red wire from the speed controller module.

Solder the red wire to the white wire, and the black wire to the black wire, as shown in Figure 10. Be sure to seal the connection with heat shrink or black tape.
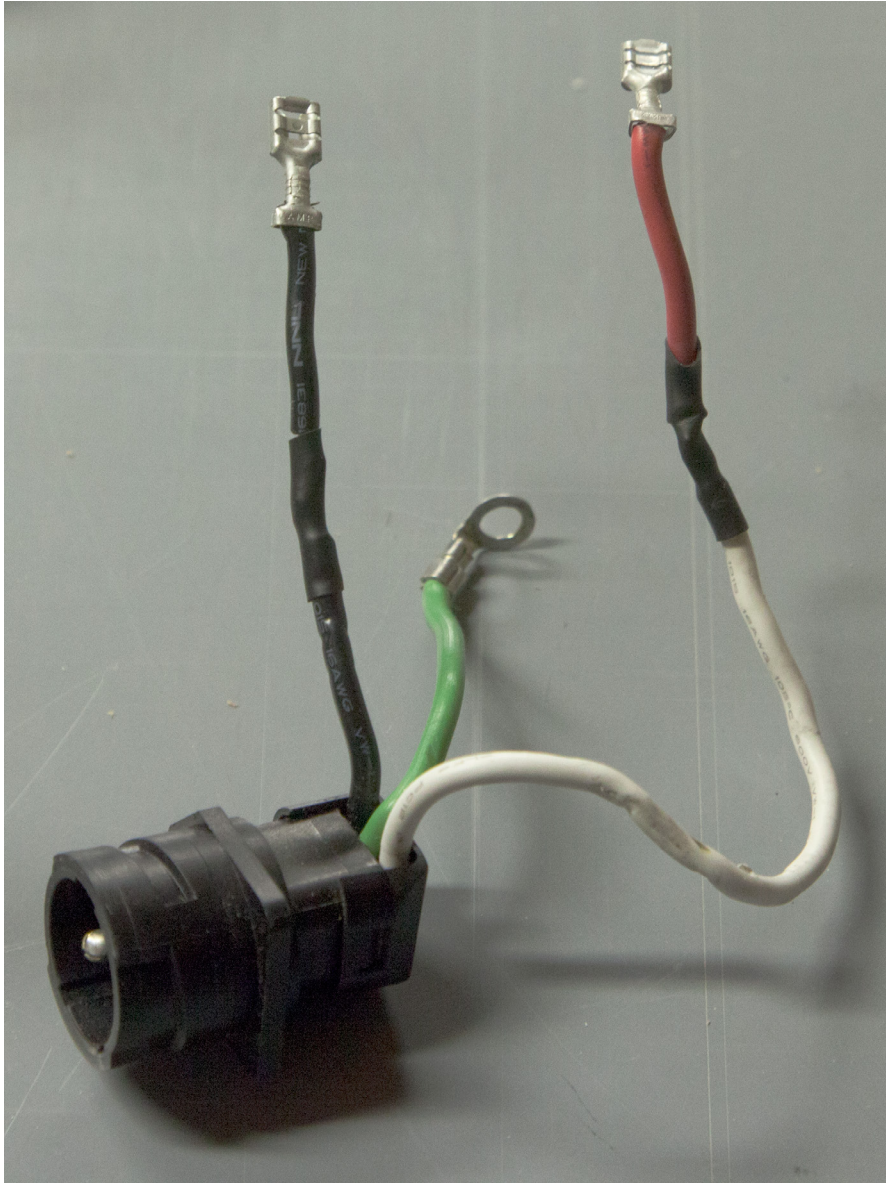

Figure 10

Step 9

Attach the red and black connectors to the positions shown in Figure 11. Connect the green ground wire back to its original position, as shown in Figure 12.
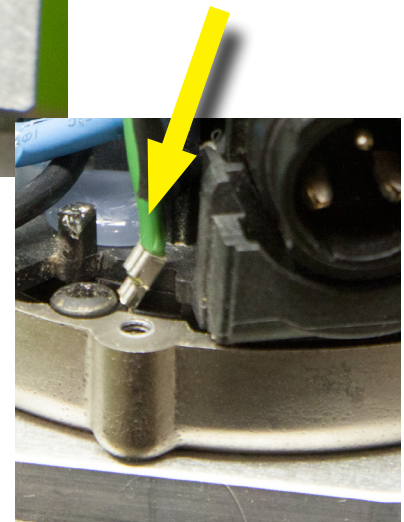

Figure 11

Figure 12

Step 10

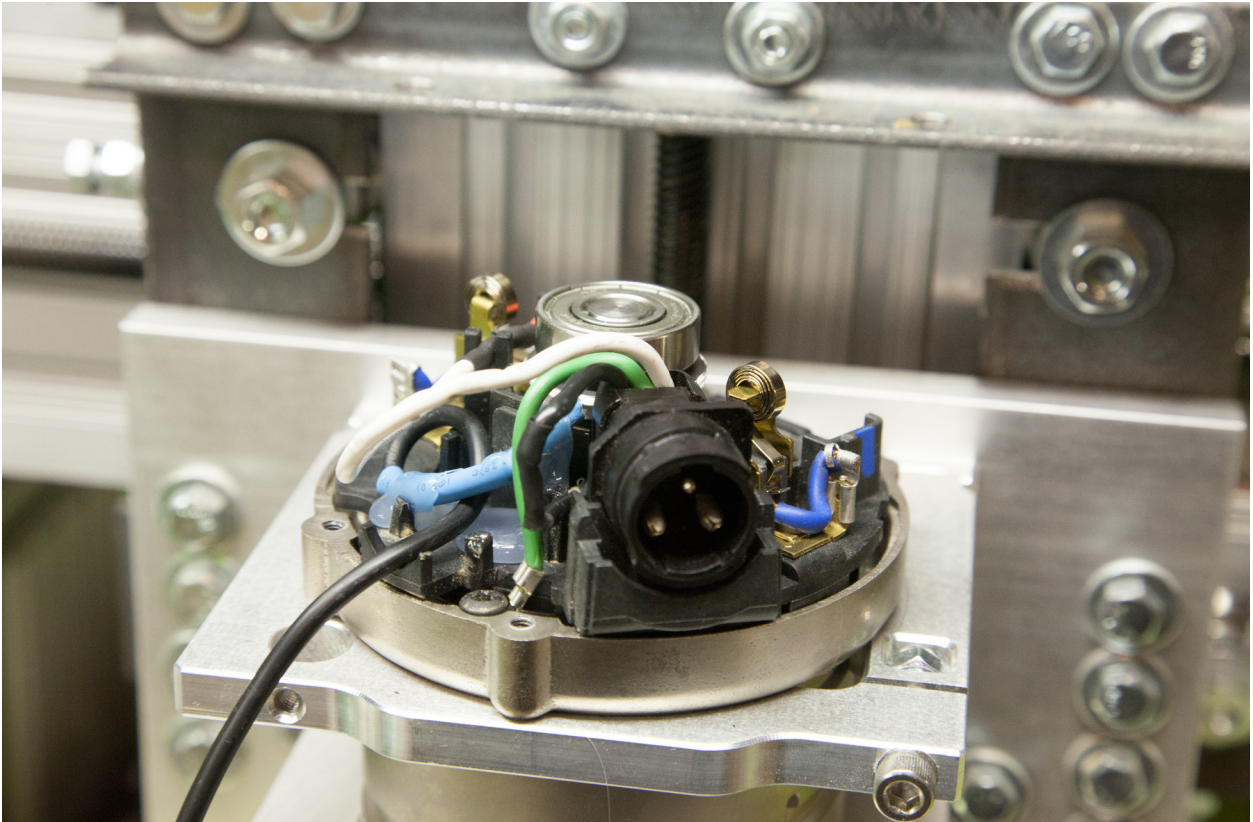Position the power connector as shown in Figure 13.

Figure 13

Step 11

Slip the cover back in place, then insert the four screws and tighten, as shown in Figure 14.

Figure 14

Step 12

Attach the original power cable to the router as shown in Figure 15.

Figure 15

Conclusion

Attach the power cable to the long end of the cord (end with female connector). Rout the router up your CNC and around to the dragon cable. Figure 16 shows some split flex tubing used to rout the power and sensor cable together.

Figure 16