There are a few more wiring tasks that must be completed before you get to the software. In this chapter, you’ll wire up the motors to their respective motor controllers, connect the external power supply to all the circuit boards that require power, and add the endstops (also known as limit switches).

When you’re done with this chapter, your machine will be complete. Your last task will be to learn about the software required to make it work.

### Required Parts Summary

For Chapter 18, you will be using the following components:

- Qty- 6 to 8 Molex extensions (6” or longer)
- Qty- 3 or 4 Molex splitters (3 or 4 will do if you also buy extensions)
- Qty-3 Endstops (one cable per endstop is typically included but check before buying)
- Qty-8 #4-5/8” wood screws
- Qty-1 #6-32 machine screw, 1-1/2” length
- Qty-2 #6-32 nuts
- Qty-4 to 10 zip ties

### Connect Motors to Motor Drivers

Each of the motors that you’ve attached has four wires that must be connected to their respective motor drivers. There are two ways to do this:

1. Use special Molex connectors (not covered here but a good option).
2. Solder the motors’ wires to the leads on the motor drivers (this option is covered in this chapter).
Option 1 is probably the easiest, but it will require that you order some special Molex connectors and use a crimper tool to insert the wires into the connectors before attaching to a motor driver. You can purchase the special Molex connectors from Mouser Electronics at www.mouser.com; the Mouser part number is 538-09-52-4044 and you will need four of them. You will also need to purchase 16 of the pins that will be crimped to the individual wires before inserting into the Molex connectors; they are #538-08-70-0012.

If you choose to use this method, you’ll also want to watch Patrick’s wiring videos at www.buildyourtools.com for the proper techniques to crimp the wires as well as the order of the wires.

The method demonstrated in this chapter requires only a solder iron and some solder. As mentioned in Chapter 14, if you’re not comfortable with soldering or lack the equipment, you can ask a friend or look online (Craigslist.com) for someone who would be willing to do the soldering for you.

There is an order for how the wires must connect to the motor drivers. If you look carefully at Figure 18-1, you’ll see on each of the motor drivers a set of four metal pins labeled ABCD.

![Figure 18-1. You will solder the four motor wires to the ABCD pins located at the bottom of the photo.](image-url)