



CNC for the desktop machinist and hobbyist.

Stepper Motor Wiring Excerpt from DIY CNC Router Plans

Rev 03

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Stepper Motor Wiring

The details for this section are based upon using the HobbyCNC Combo Kit which includes the HobbyCNC driver board, 6 conductor cable (unshielded) and stepper motors. All wire colors are very likely to change if you source other hardware.

General rules

- Keep all stepper motor wiring as short as reasonable. Eliminate all excess cabling.
- Do not run limit switch wiring in the same cable as the stepper motors
- Do double-check wire colors at both ends. The instructions below are designed to minimize this as being an issue
- NO wire nuts. Ever. Period.
- Optional but a good idea: use a quality connector at the stepper-motor end. **If not**, then twist, solder and cover with shrink tubing.

Attach cable to the PC Board

1. Strip back 2" of the outer jacket of the 6 conductor wire. Go gently and use caution to not nick the conductors within. Nicks lead to fatigue/failure points

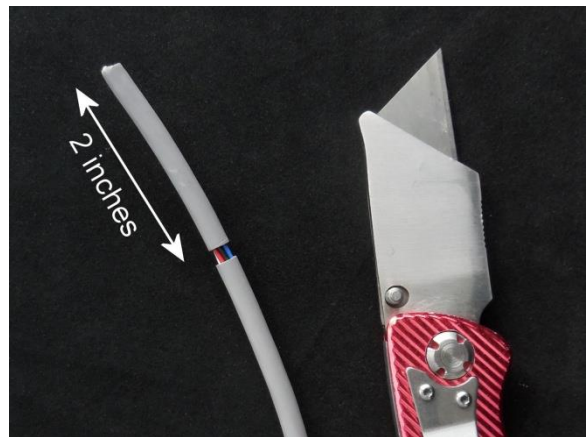


Figure 47

2. Remove the outer cover and cut out the fiber strengthening cord (on the left)

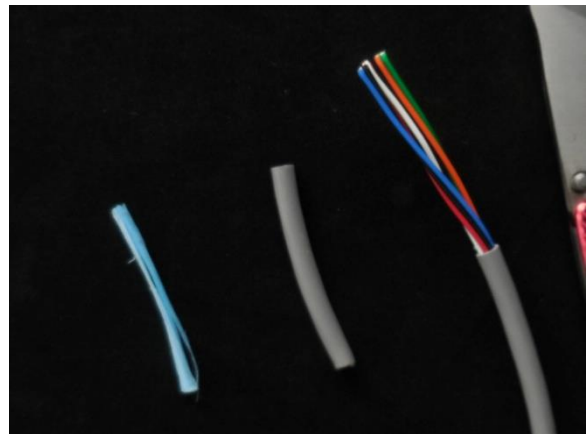


Figure 48

- Strip 1/4" from each wire, Go gently and use caution to not nick the conductors within. Nicks lead to fatigue/failure points.

Fan the wires in this order (left-to-right)
red, black, blue, orange, white, green

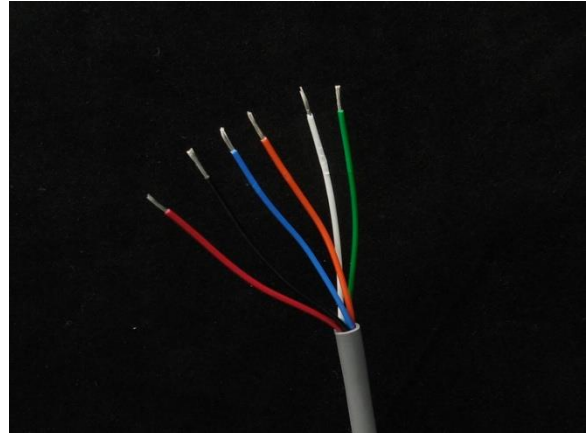


Figure 49

- Carefully insert each wire into the terminal block and tighten the screw. Make sure that insulation is NOT inside the connector.

Gently tug on each wire to confirm it is indeed captured in the clamping mechanism.

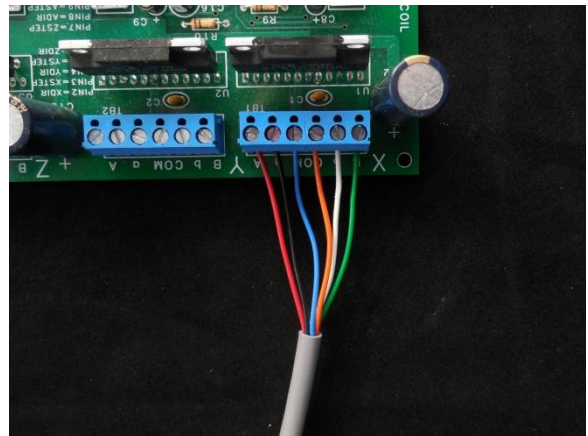


Figure 50

- Give one final, visual inspection and confirm:
 - Wires are in the proper order
red, black, blue, orange, white, green
 - no insulation is captured inside the connector
 - each wire is firmly captured (gentle tug test)
- Repeat for each remaining axis

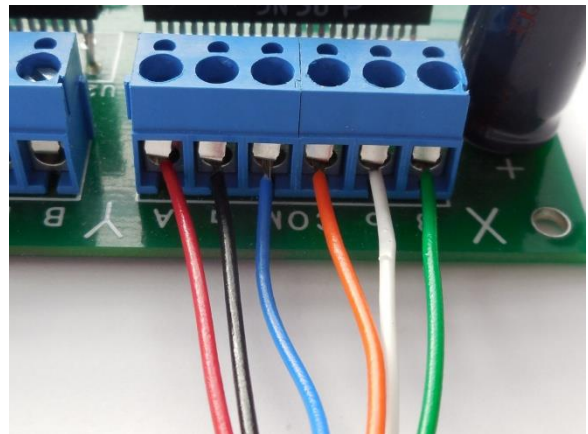
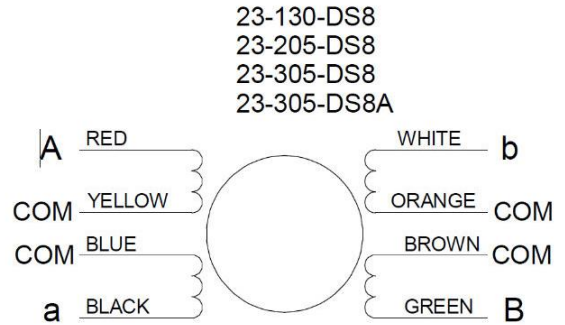


Figure 51

Stepper motor wiring

1. Follow the same first three steps from above
 - a) trim 2" from the cable outer jacket
 - b) remove strengthening cord
 - c) strip wire ends **3/8"**

Note: wire colors are for HobbyCNC motors only. Other motors will likely have different colors.



www.HobbyCNC.com

Figure 52

2. Match stepper motor wire color to cable wire color.

| Cable | Stepper |
|-------|---------|
| Red | Red |
| Black | Black |
| White | White |
| Green | Green |

Notice the heat shrink tubing is slid over the wiring before soldering. Solder and cover joint with heat-shrink tubing.

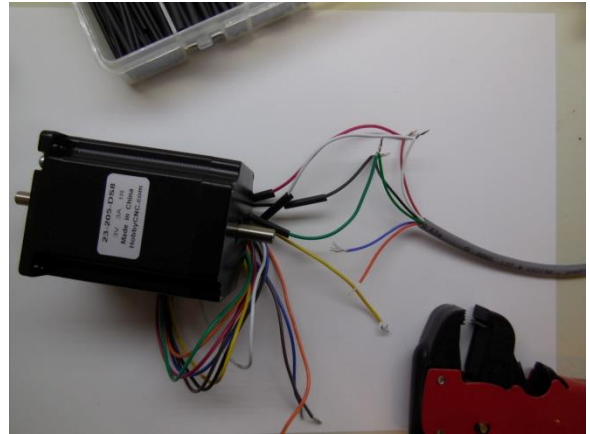


Figure 53

3. This step requires connecting **two** stepper motor wires to **one** wire in the cable.

| Cable | Stepper |
|--------|-------------------------|
| Blue | Blue and Yellow |
| Orange | Orange and Brown |

Notice the heat shrink tubing is slid over the wiring before soldering. Solder and cover joint with heat-shrink tubing.

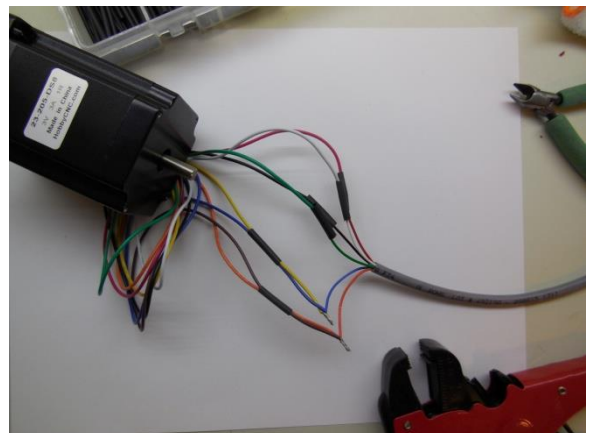


Figure 54

4. Solder the last two joints and cover with heat-shrink tubing.

Option: instead of soldering the wires together, consider using a 6-position Molex connector or similar high-current connector. This is particularly handy when you are in the design/build/modify phase

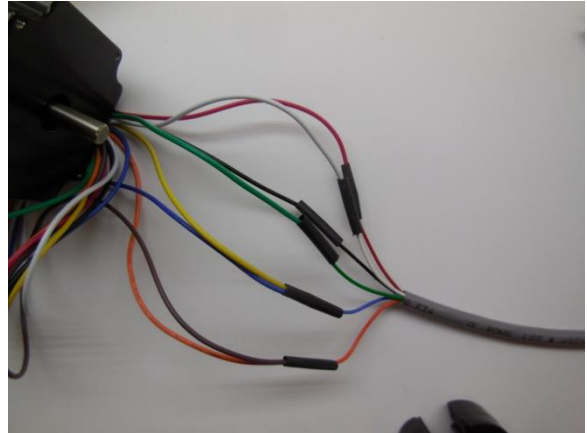


Figure 55