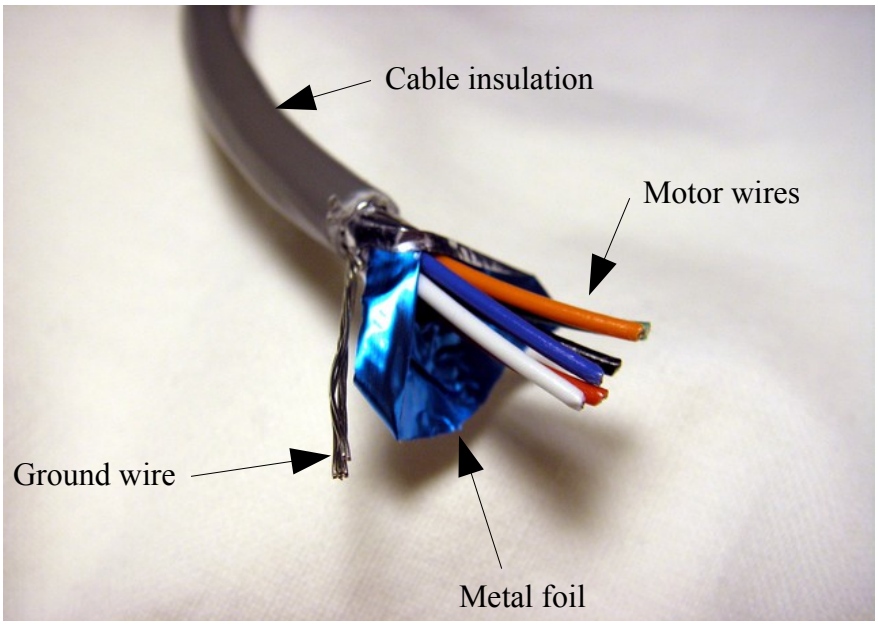
Wiring Instructions for CNC Rotary Table

If you have received a rotary table without a connector, please read the following instructions. This guide will help you attach the rotary table to your CNC controller.

Strip the end of your cable to remove the grey insulation. Peel back the metal foil. You should see something like the following picture.



Each of the items should be connected as follows:

- **Ground wire**: connect to earth ground if available. Doing this will reduce the EMI (electromagnetic interference) generated by the cable. However, this is not necessary and the rotary table will work fine without this connected. If you leave this disconnected, make sure that it doesn't accidentally come in contact with any of the other wires.
- **Metal foil**: peel back to the outer grey insulation and trim.
- **Cable insulation**: clamp to strain relief on a fixed chassis where available. This will reduce the likelihood of cable failure under mechanical stress.
- **Motor wires**: How you connect these remaining 6 wires will depend on your motor controller. Read on to figure out how.

You must know if your motor controller is made for bipolar or unipolar mode. The motor is capable of either unipolar or bipolar mode. If you have a choice in motor controllers, bipolar mode is generally preferred.

The following two sections explain the connection details for unipolar and bipolar drives respectively. Follow the appropriate section for your motor driver.

Unipolar Configuration

This section explains how to identify, connect and troubleshoot bipolar motor controllers.

Identifying Unipolar Motor Controllers

Unipolar stepper motor controllers usually have 5 or 6 terminals. These terminals are:

- A
- B
- C
- D
- GND
- GND (2nd one optional)

The exact naming scheme may be different, but the logical pattern should be the same.

Wiring Instructions

Connect each of the terminals on the motor controller to the appropriately coloured wire of the stepper motor. Use the following table.

Motor controller terminal	**Stepper motor wire**
A	Red
B	Green
C	Blue
D	Orange
GND	Black and white
GND	Black and white

Remember to set the maximum current of your motor driver to 1A. Exceeding 1A could lead to degraded performance and premature failure. Refer to your motor controller manual for details.

Troubleshooting

Problem: My motor is spinning in reverse!

If in software, you jog the rotary table forwards, and the rotary table spins backwards, there is a simple fix. Simply swap the red and green wires. Alternatively, you can swap the blue and orange wires.

Problem: I have a 6 terminal motor controller. The stepper motor is not spinning.

Swap the two ground wires. That is, swap the black and white wires.

Bipolar Configuration

This section explains how to identify, connect and troubleshoot bipolar motor controllers.

Identifying Bipolar Motor Controllers

Bipolar stepper motor controllers usually have 4 terminals. These terminals are:

- A+
- A-
- B+
- B-

The exact naming scheme may be different, but the logical pattern should be the same.

Wiring Instructions

Depending on the maximum current on your motor controller, different configurations will be preferred. If the maximum current is less than 1A, you have to use full winding configuration. Otherwise, you should use half winding configuration. Use the following table for your situation.

Motor controller terminal Setting	**Stepper motor wire Half winding Option 1**	**Stepper motor wire Half winding Option 2**	**Stepper motor wire Full winding**
A+	Black	Green	Red
A-	Red	Black	Green
B+	Blue	White	Blue
B-	White	Orange	Orange
Disconnect	Green	Red	Black
Disconnect	Orange	Blue	White
Current limit	1A	1A	0.5A

Remember to set the maximum current of your motor driver to the value listed in the table. Exceeding this limit could lead to degraded performance and premature failure. Refer to your motor controller manual for details.

It is very important to isolate the 2 disconnected wires. Use electrical tape or heat shrink to insulate them from the remaining wires.

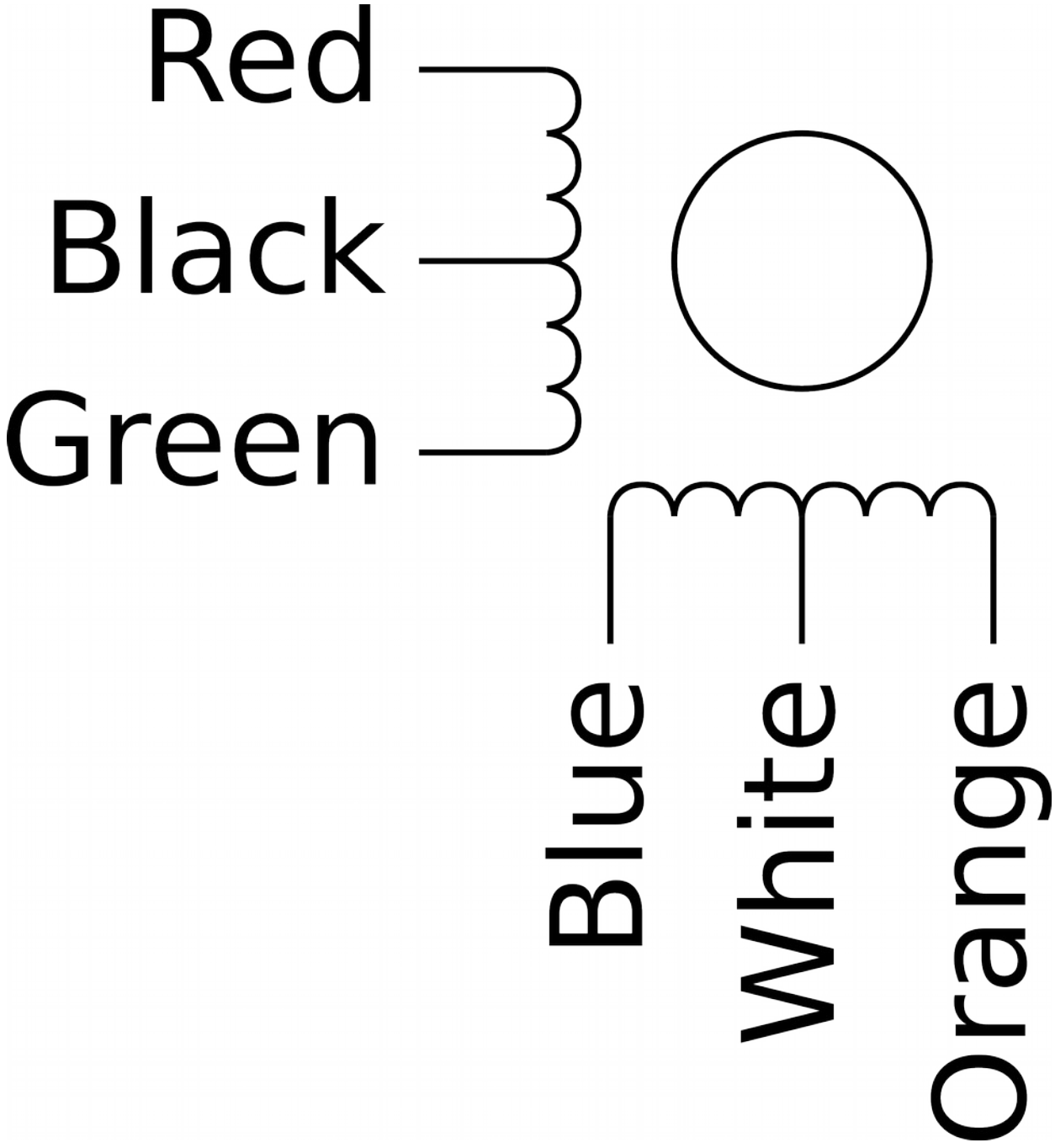
Troubleshooting

Problem: My motor is spinning in reverse!

If in software, you jog the rotary table forwards, and the rotary table spins backwards, there is a simple fix. Simply swap the A+ and A- wires. Alternatively, you can swap the B+ and B- wires.

Motor Winding Diagram

The following winding diagram is provided for your reference.



Half winding current: 1 A

Full winding current: 0.5 A