

# Control Board Relay-Thermostat Cable Manufacturing Instructions



# Materials



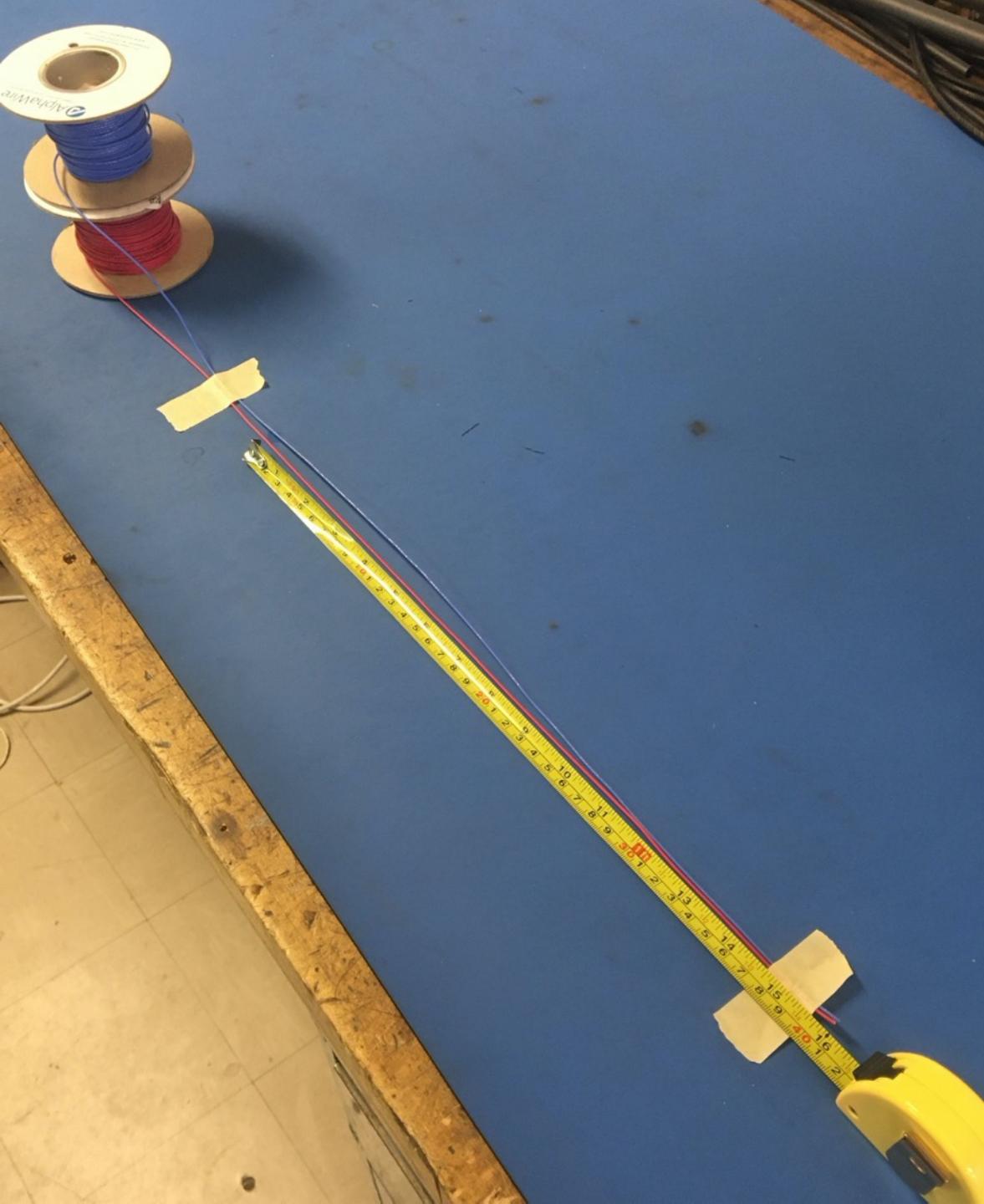
# Tools

# KK 254 Crimper



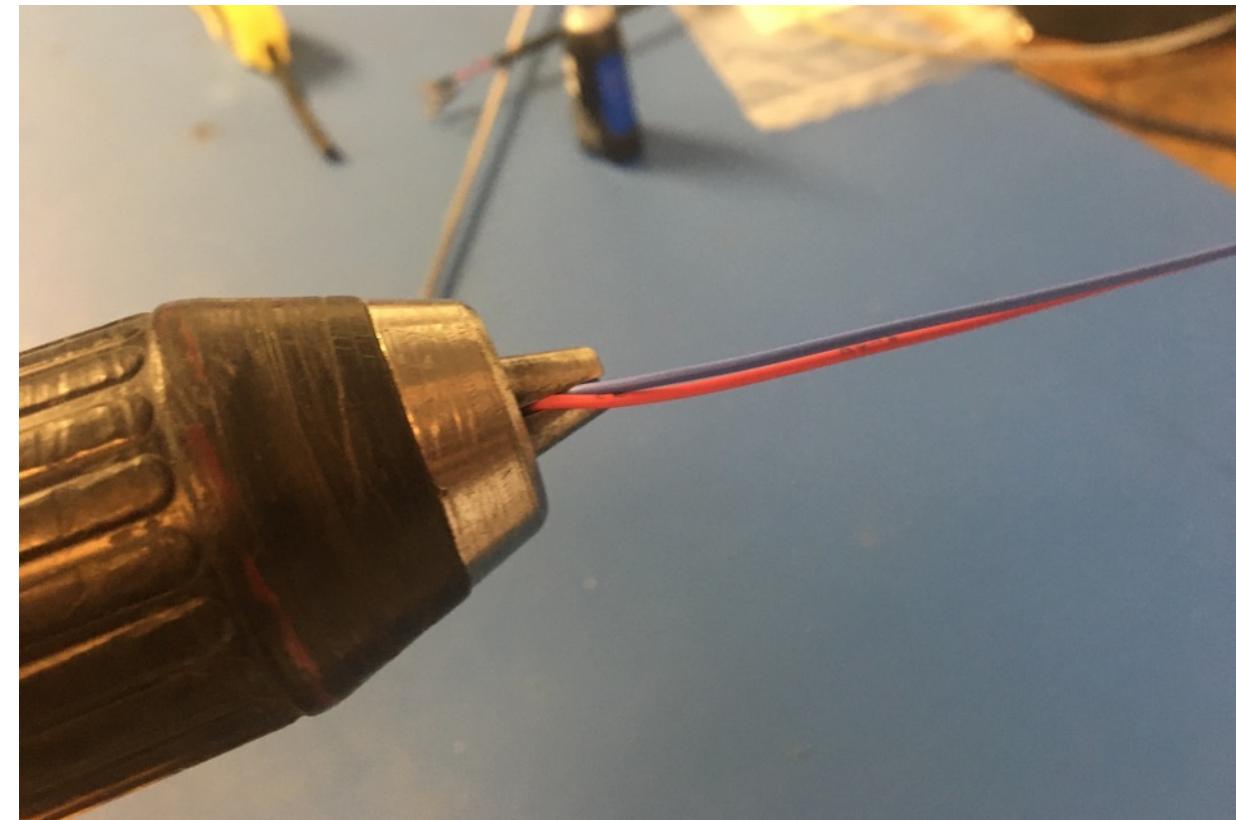
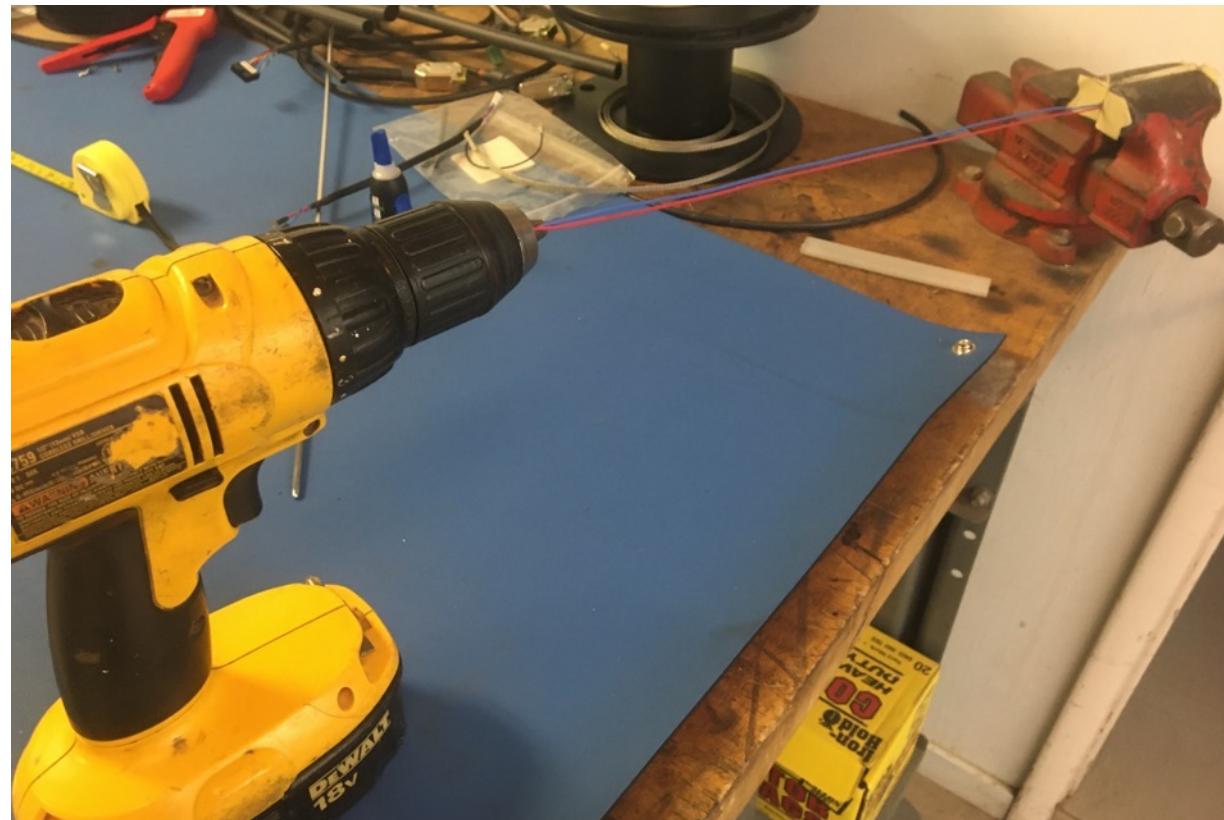
# Fork Crimper



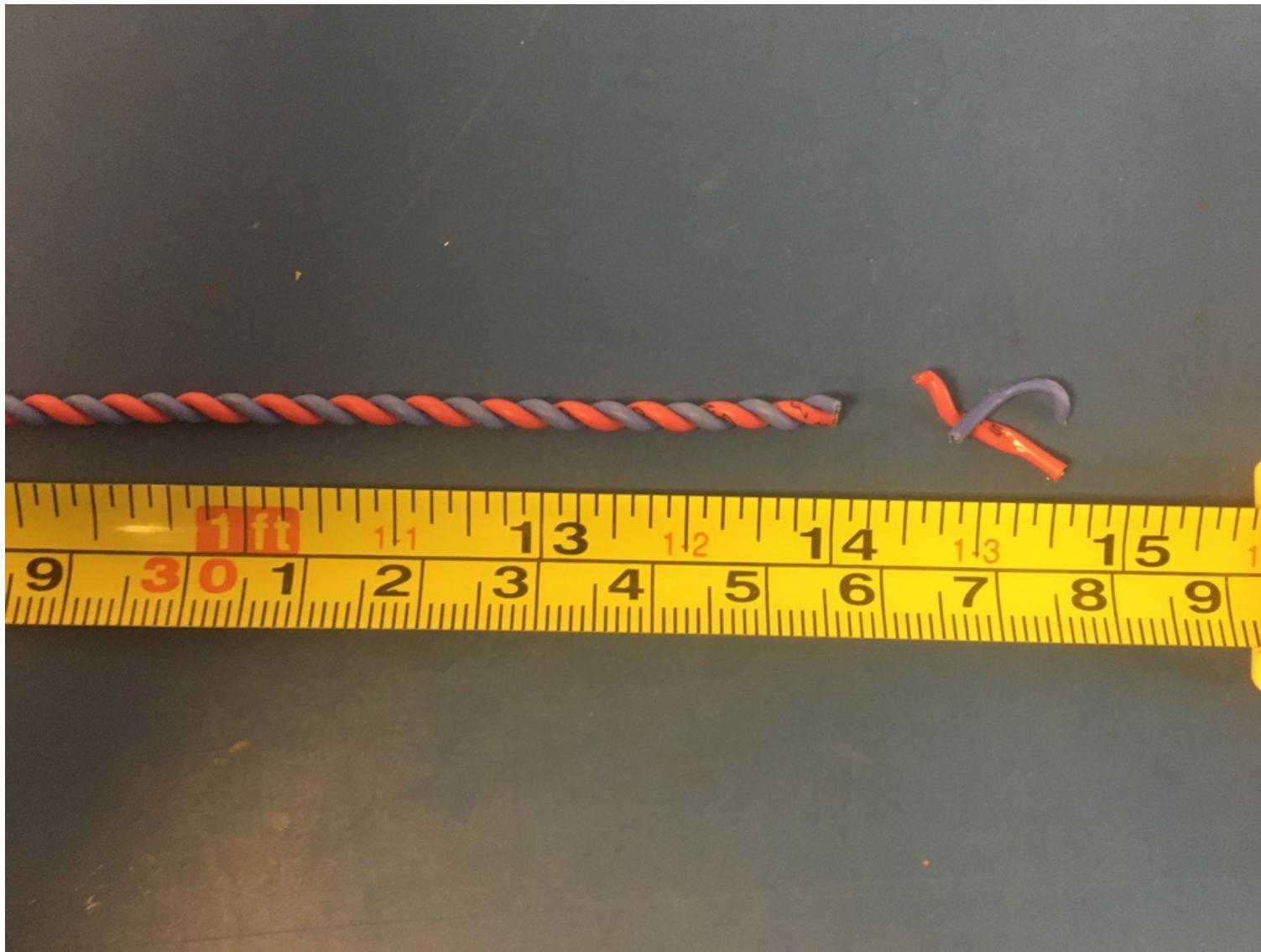


Measure out and cut 16 inches of the blue and red 20 awg wire

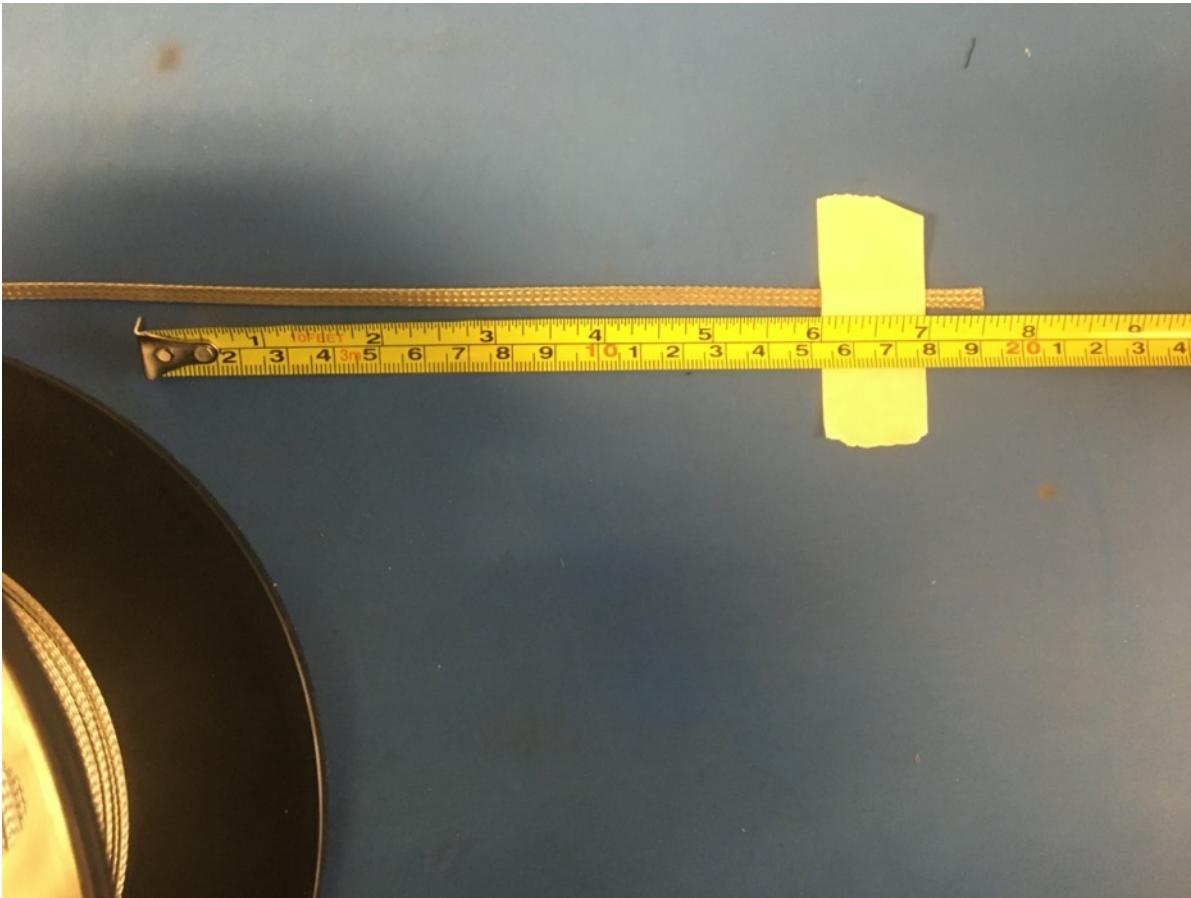
Line the workshop vise with masking tape. Put one end of the red and blue wires into the drill. Run the drill till the wires are sufficiently twisted (for reference see the next slide).



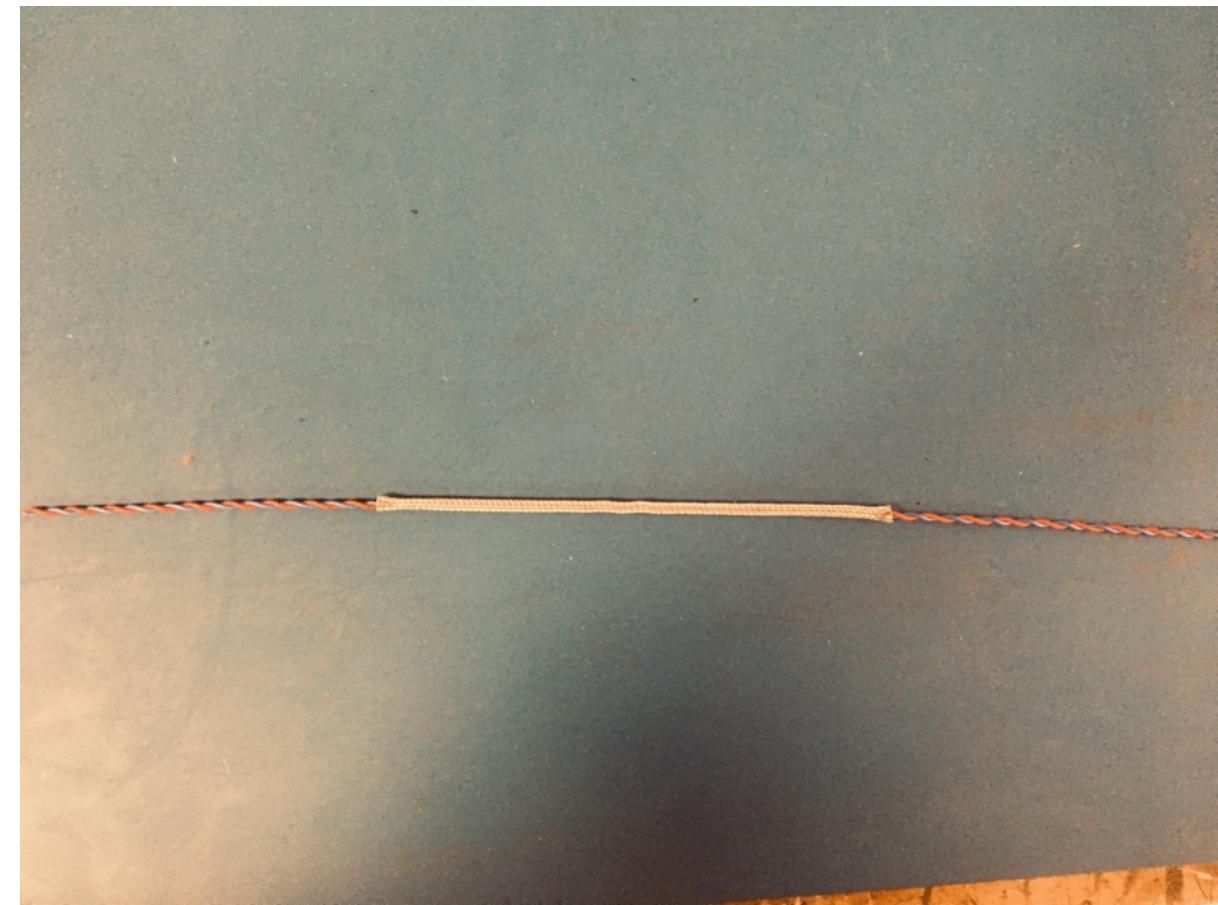
Trim the ends of the twist pair where they were in the vise and drill. Once trimmed they should measure about 14 inches.



Measure out and cut 7.5 inches of the 1/8<sup>th</sup> metal braid. Expand it using the metal rod.



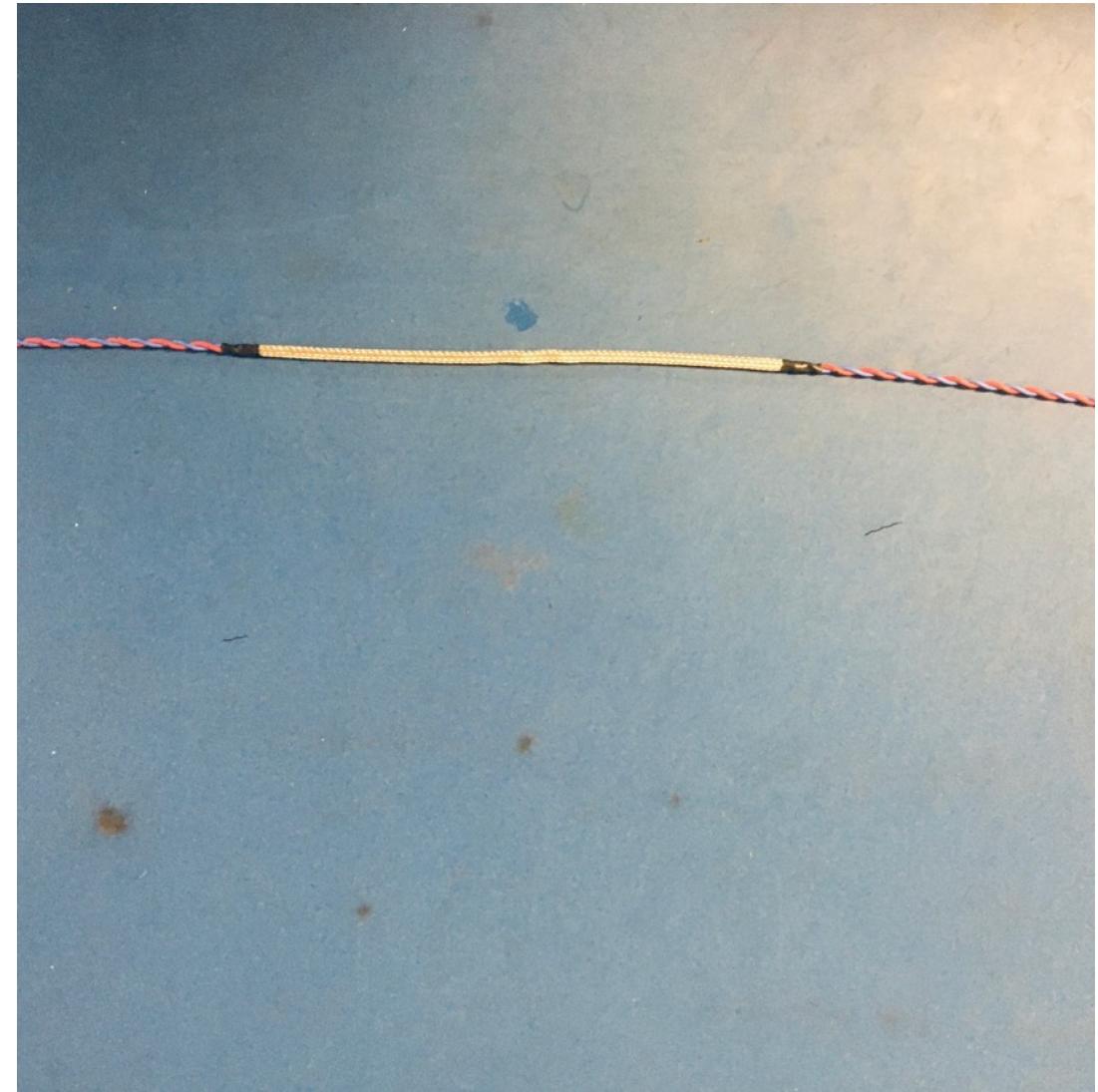
Put the twisted pair into the expanded metal braid. About 3-3.5 inches of the twisted pair should stick out from either end of the braid.



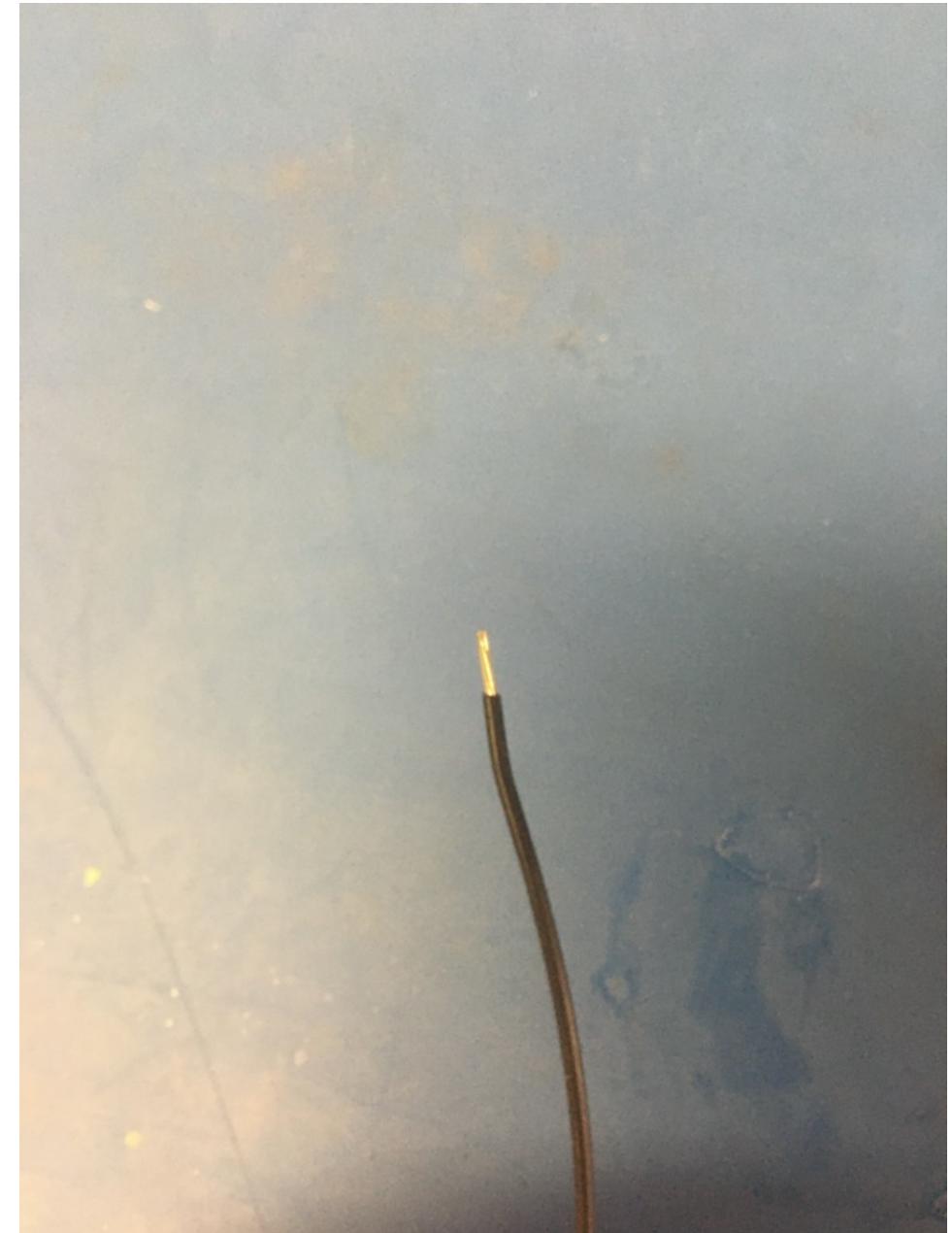
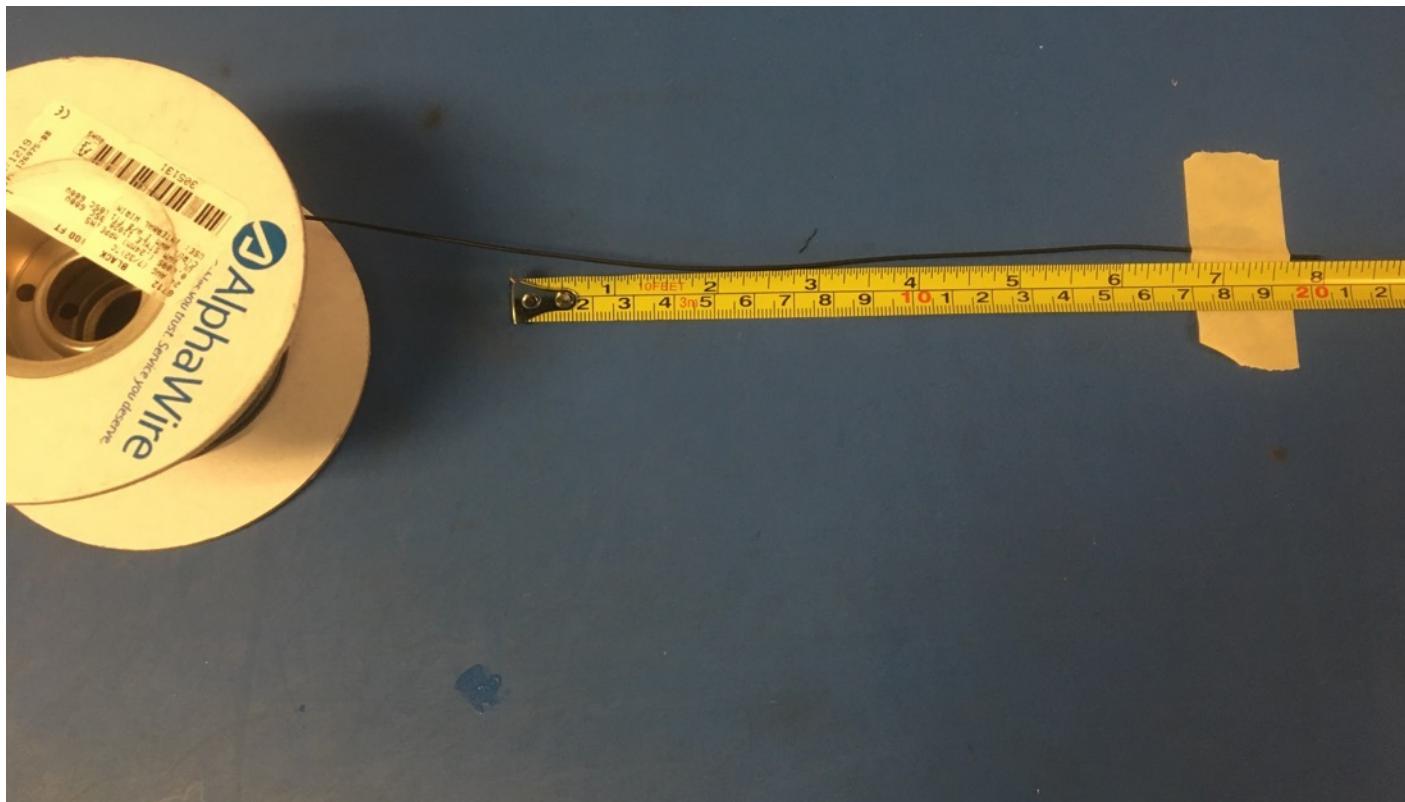
Measure out and cut two lengths of 4.8mm adhesive shrink tube each .5in long.



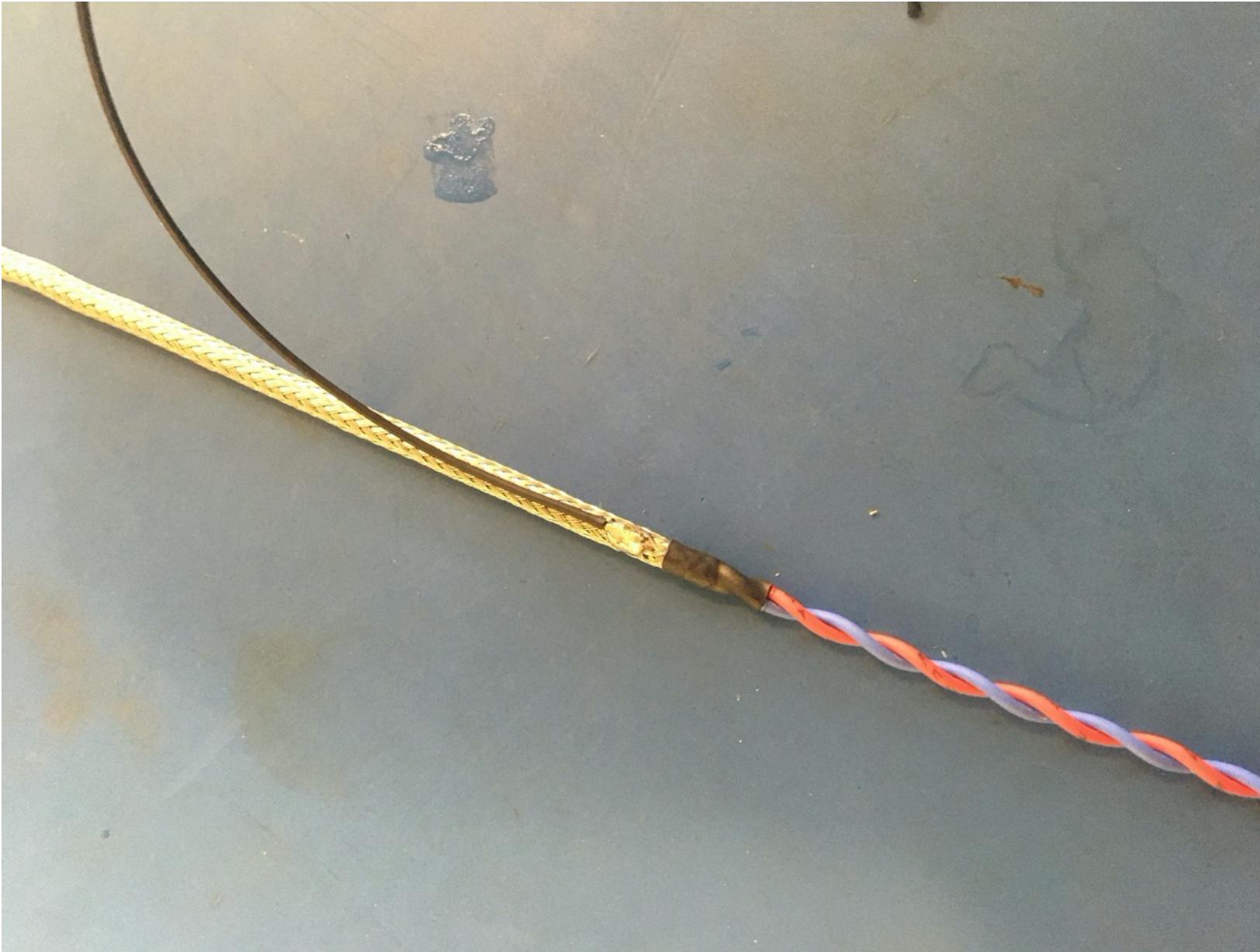
Put the shrink tube pieces onto each end of the metal braid such that the metal braid ends in midway through the shrink tube. Apply the heat gun to the shrink tube.



Measure out and cut 8 inches of black 24 awg wire. Strip 3-4mm off one end.



Solder the stripped end of the black wire onto the metal braid near one of the shrink tube joints. It does not matter which end of the harness. The black wire should be soldered so the that its length runs with that of the metal braid.



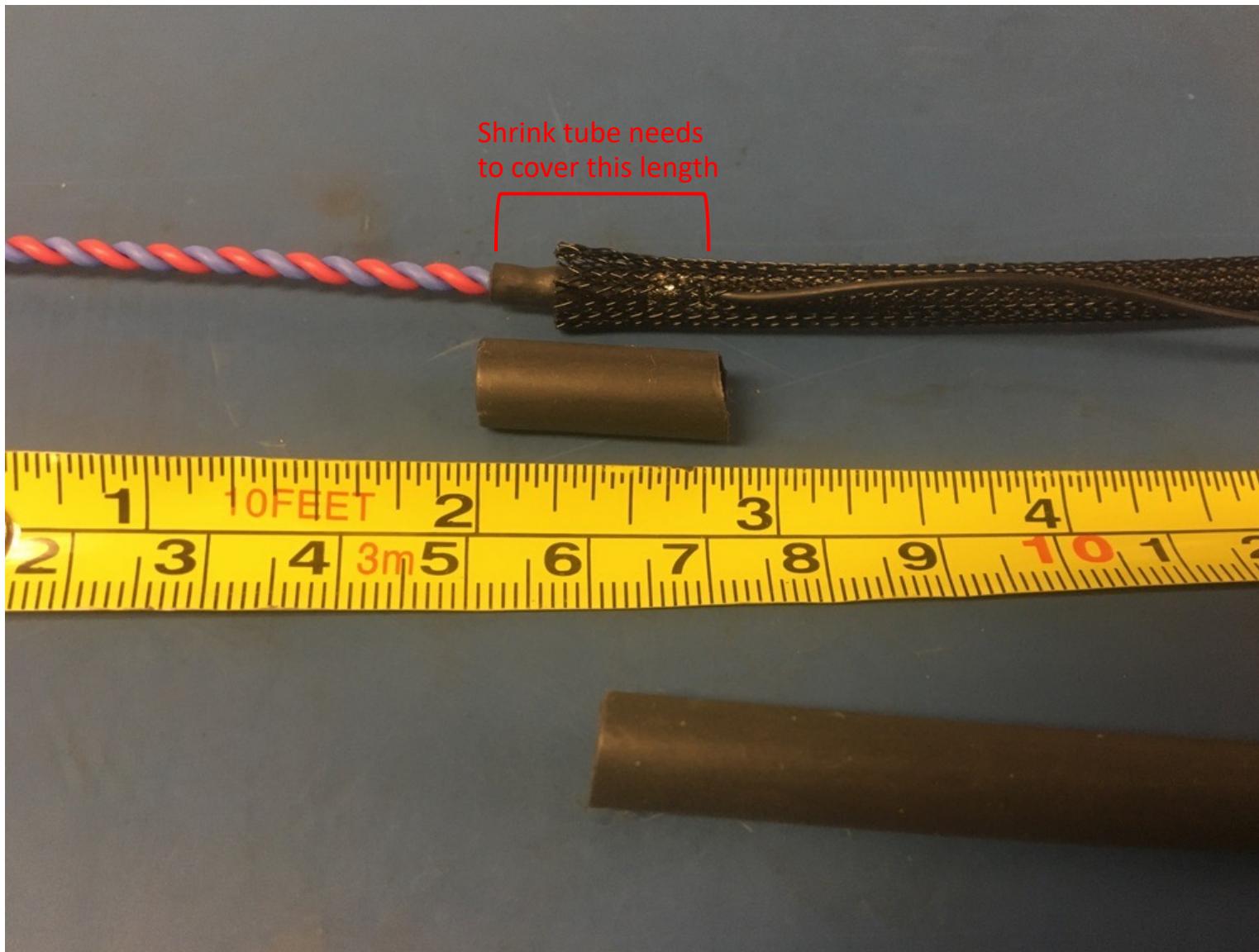


Measure out and cut 10 inches of 1/4<sup>th</sup> plastic braid.

Put the plastic braid onto the wire harness. It does not matter from which end. Thread the ground wire through one of the holes in the plastic braid so it appears as shown of the right. The plastic braid should also end midway through the metal shrink tube joint on the ground wire end.



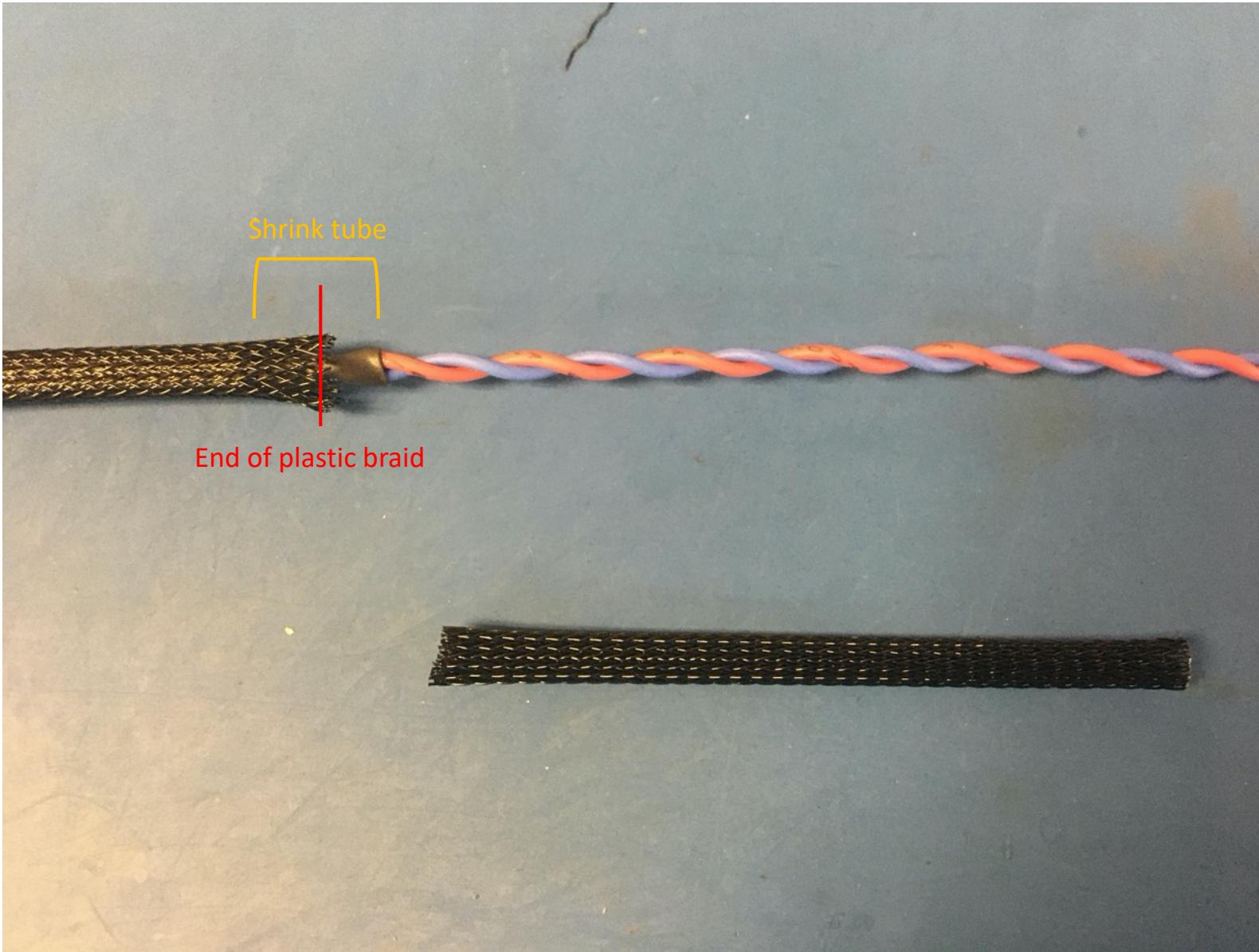
Measure out and cut .75-in of 6.4 mm adhesive shrink tube. Ensure that this length of shrink tube will cover the solder joint of the ground wire as well as the length of the metal braid shrink tube.





Put the piece of shrink tube onto the plastic braid end and apply the heat gun.

On the other end of the harness, cut the excess plastic braid so that the plastic braid end in the middle of the metal braid joint.



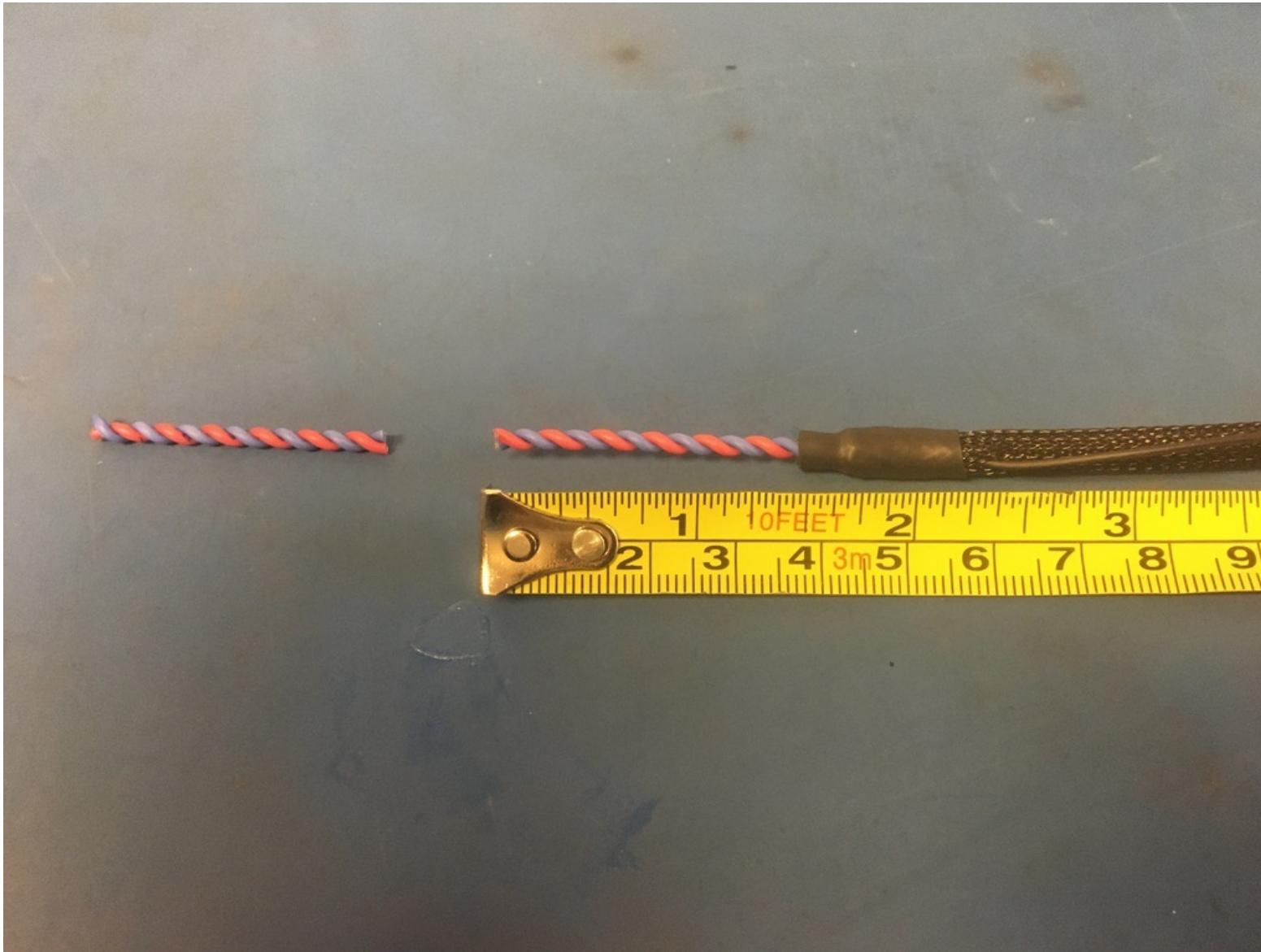
Measure out and cut .5 inches of 6.4 mm adhesive shrink tube. Place the piece of shrink tube onto the plastic braid end without the ground wire. The plastic braid should end midway through the piece of shrink tube. Apply the heat gun.



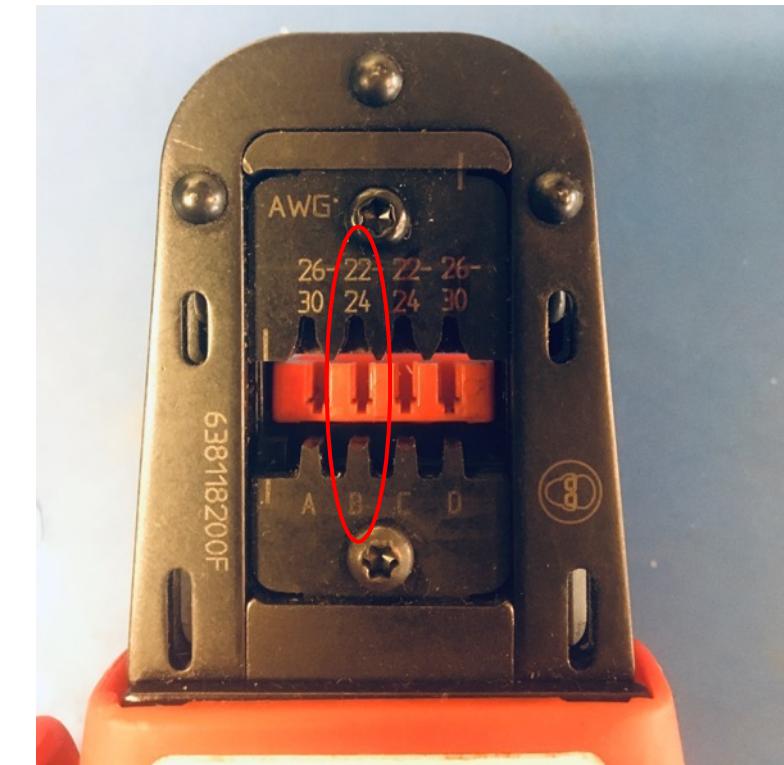
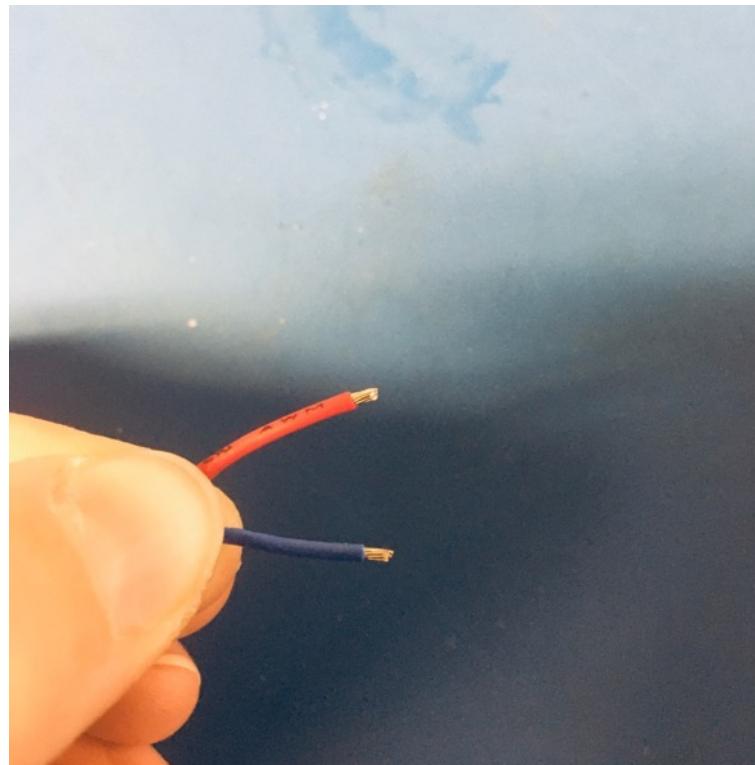
Thus far, the wire harness should appear as shown below.

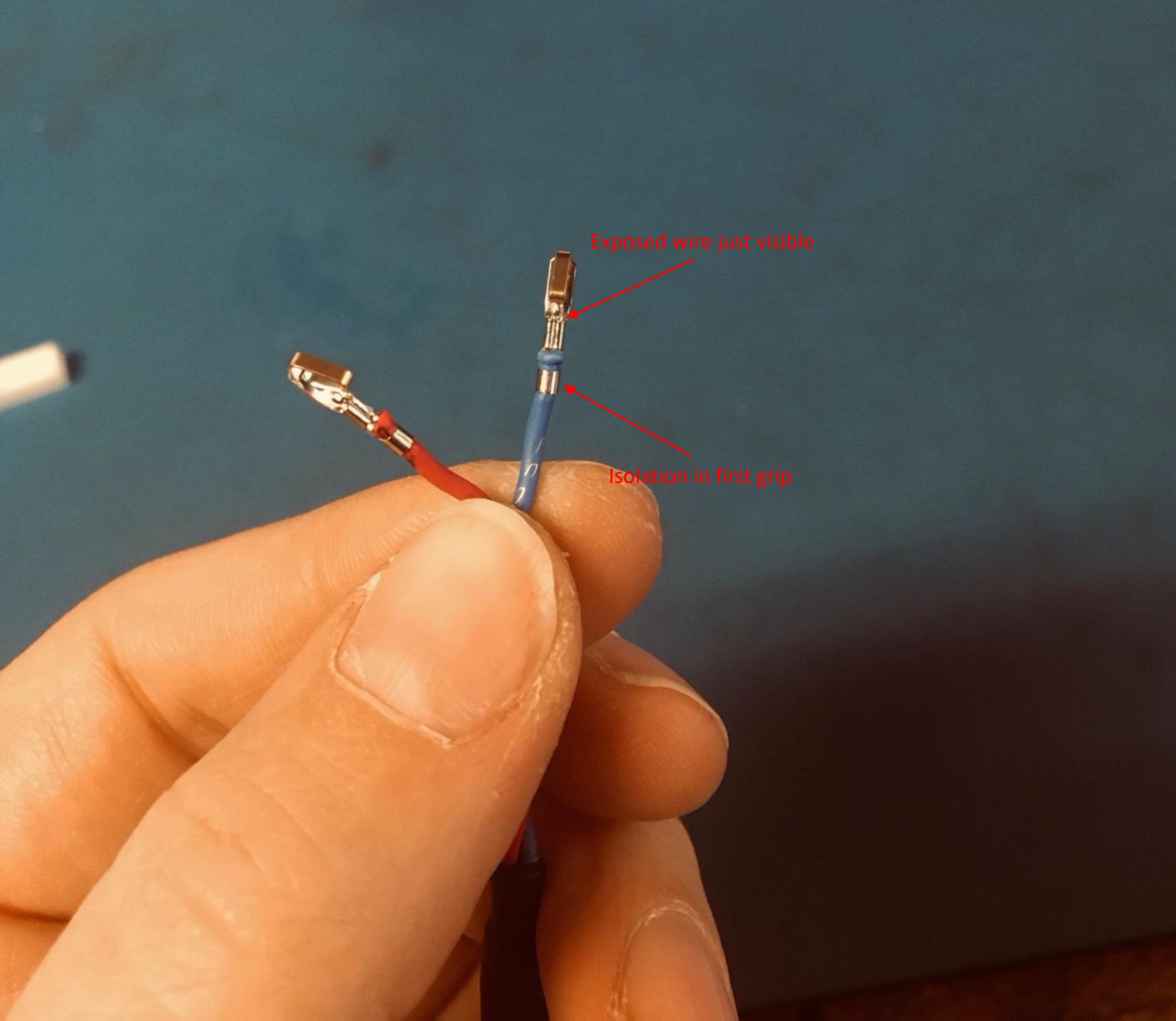


Trim twisted pair so that it now measures 1.5 inches at both ends of the harness.



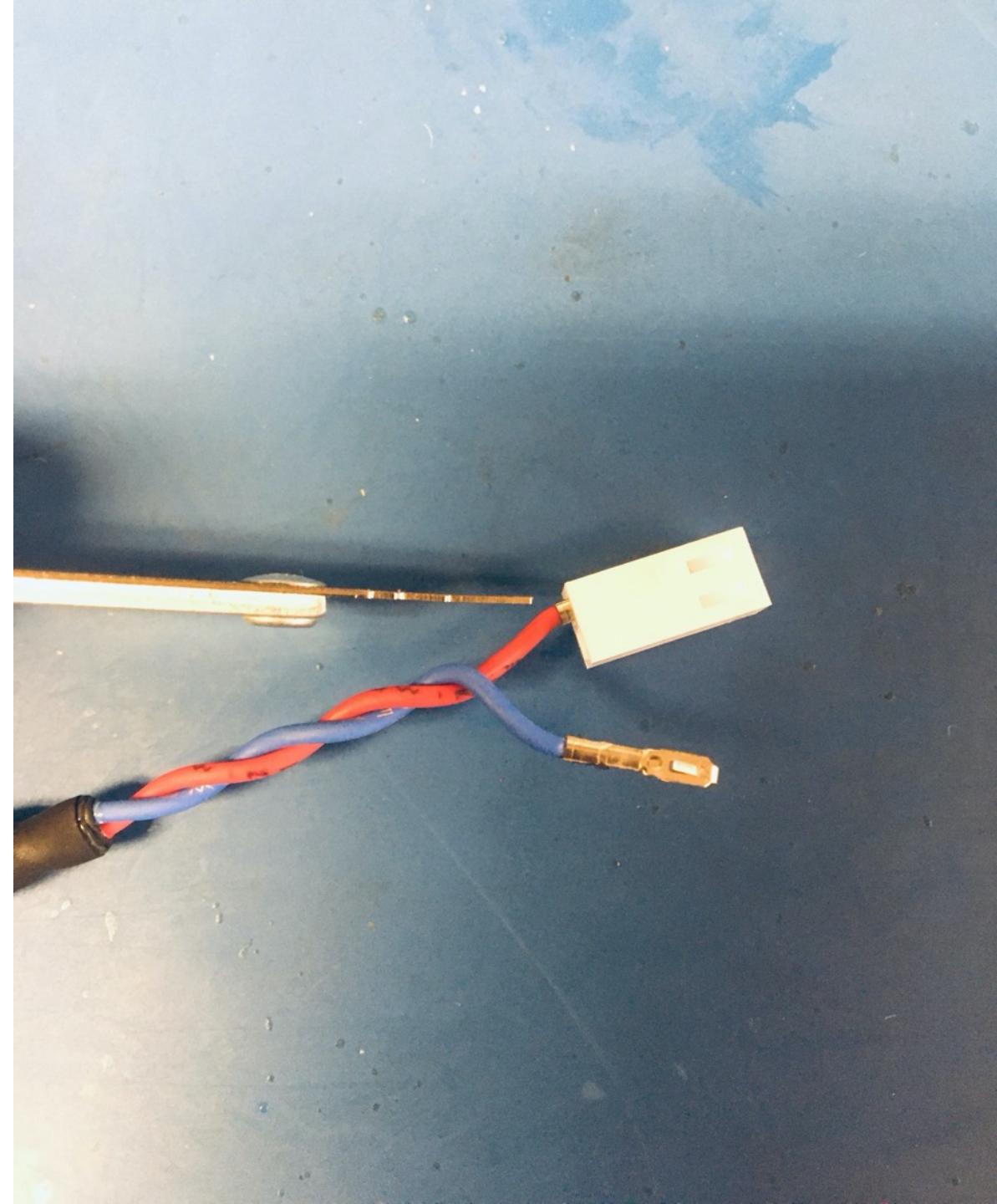
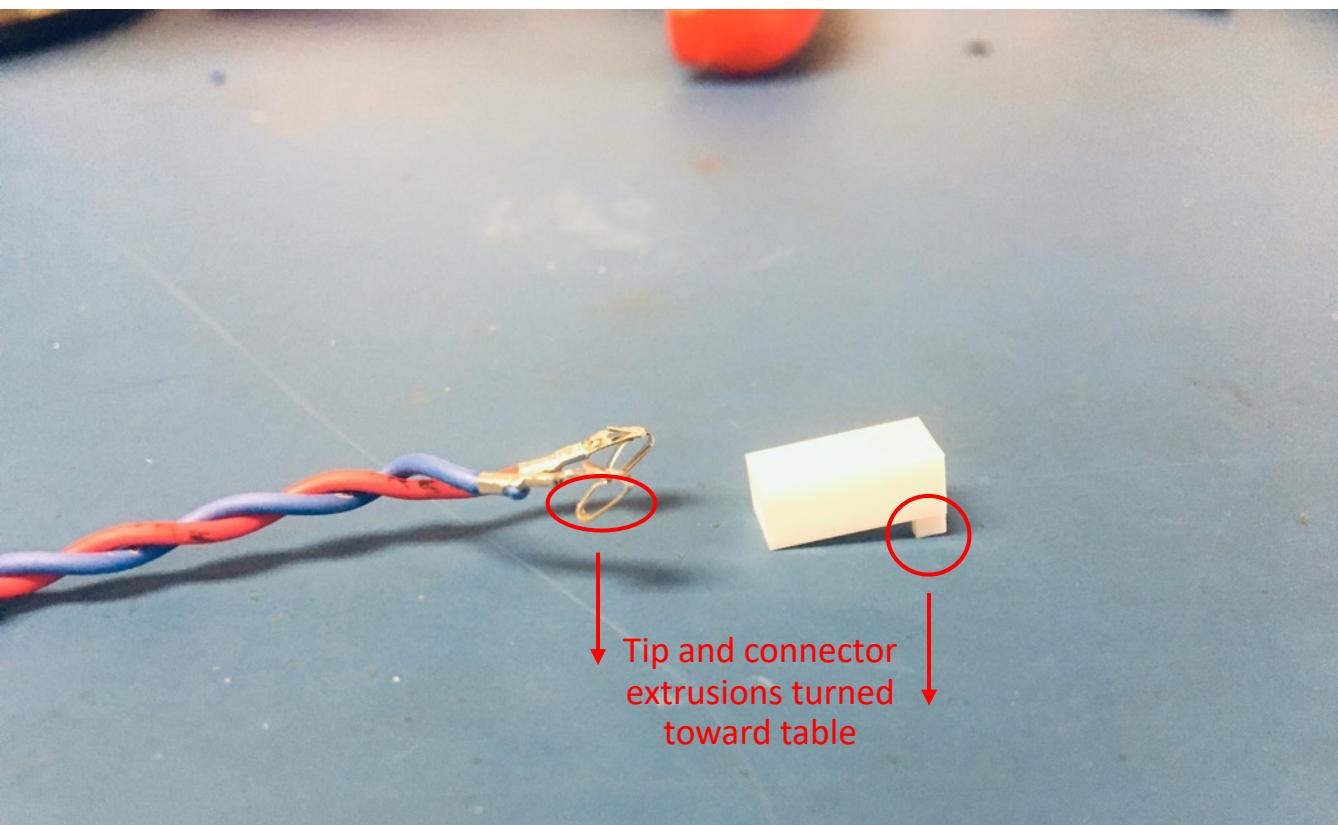
Strip the red and blue wires (about 2mm) on the ground wire end of the harness. Using the B setting on the KK 254 crimper, crimp on KK 254 tips onto the blue and red wires.





Once the wires are crimped, they should appear as shown:  
the isolation held by the first grip of the tip but not the  
second, and a bit of exposed wire peaking out the top of the  
second grip.

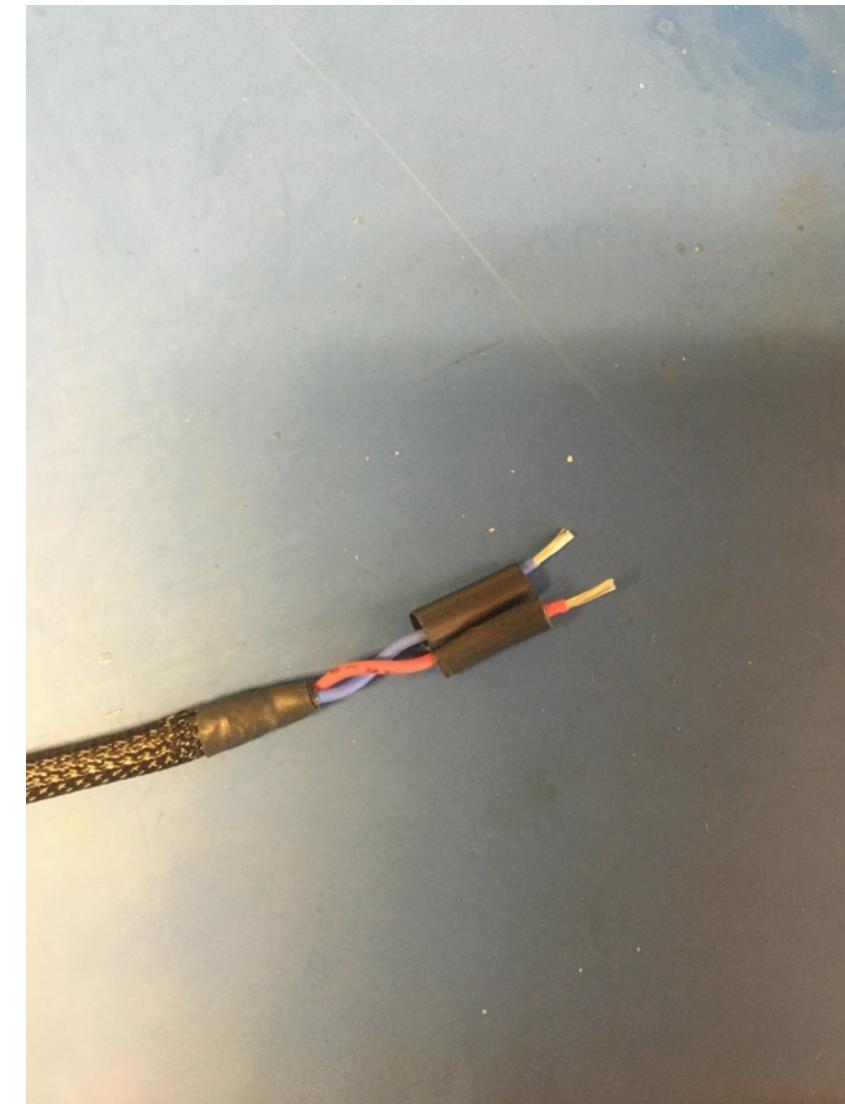
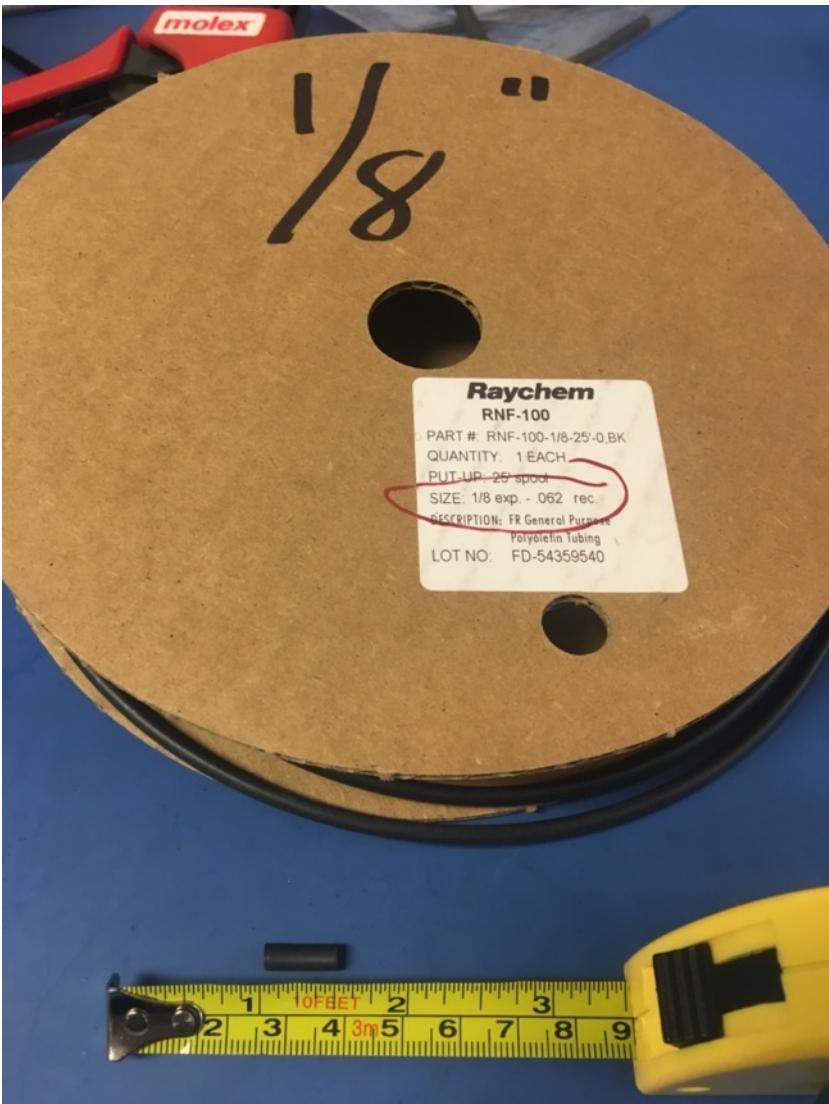
Before inserting the tips into the connector, have the extrusions of both face down. Insert the KK 254 tips into the KK 254 2 hole connector. Push each tip into the hole of the connector until it clicks. If there are difficulties with pushing the wire tip in by hand, use the metal extraction tool to push on the bottom edge of it until it clicks in place. The red wire goes in the hole on the left and blue on the right.



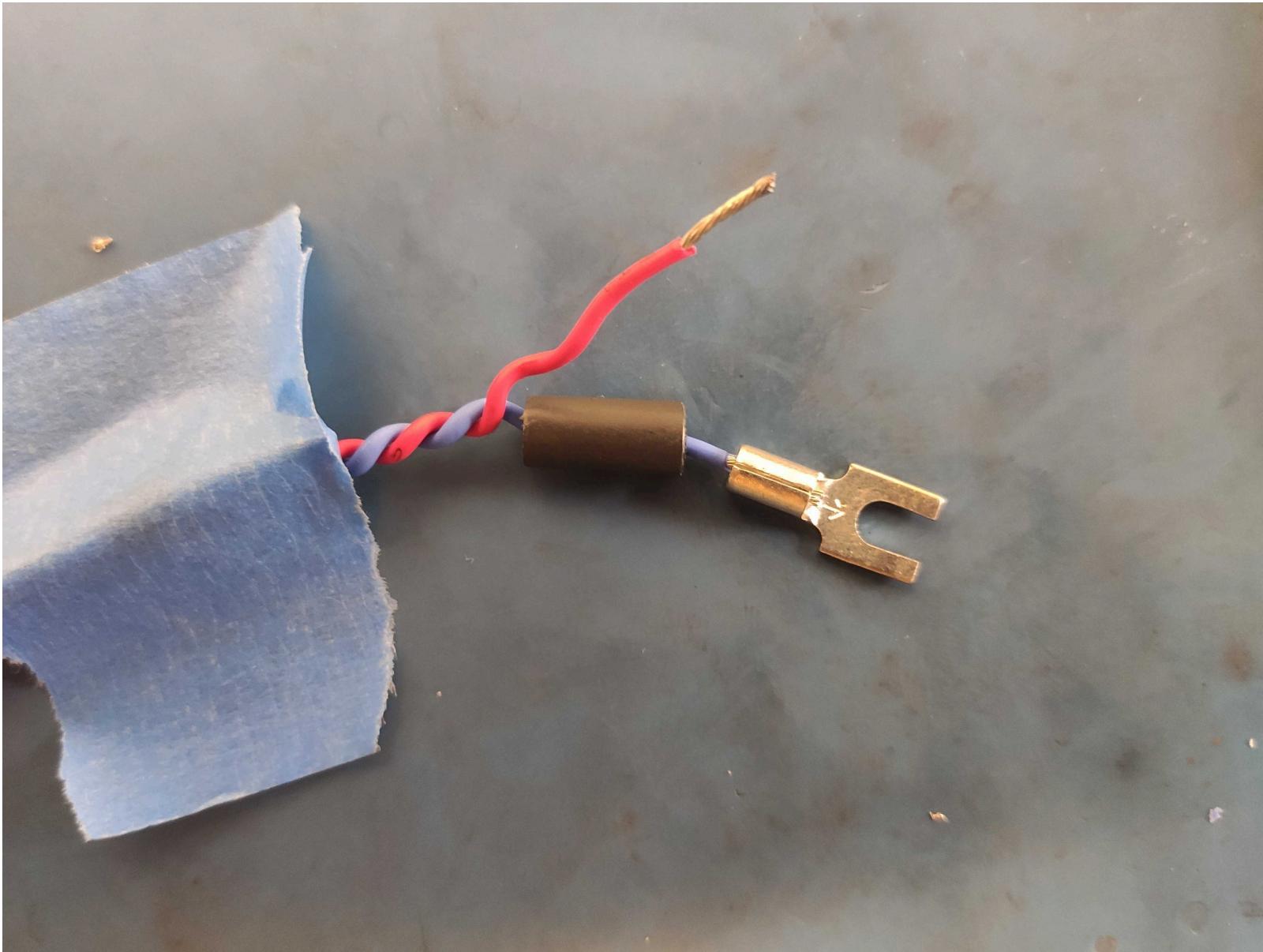


Taking the other end of the harness, strip about 8mm of isolation off the wires.

Measure out and cut two lengths of 1/8<sup>th</sup> non-adhesive shrink tube that are each .5 inches long. Put one length of shrink onto each of the stripped wires.



Place the size 6 forks onto each of the stripped wire ends as shown.



Using the fork crimper (16-14 setting) , crimp the forks onto the stripped red and blue wires. Each fork must be crimped twice: one above the other, as shown.





Move the pieces of shrink tube on the wire to cover the crimped joints. Apply the heat gun.

Wire harness complete! The ground wire will be given a tip later.

