

Control Board to Temp
Sensors Cable

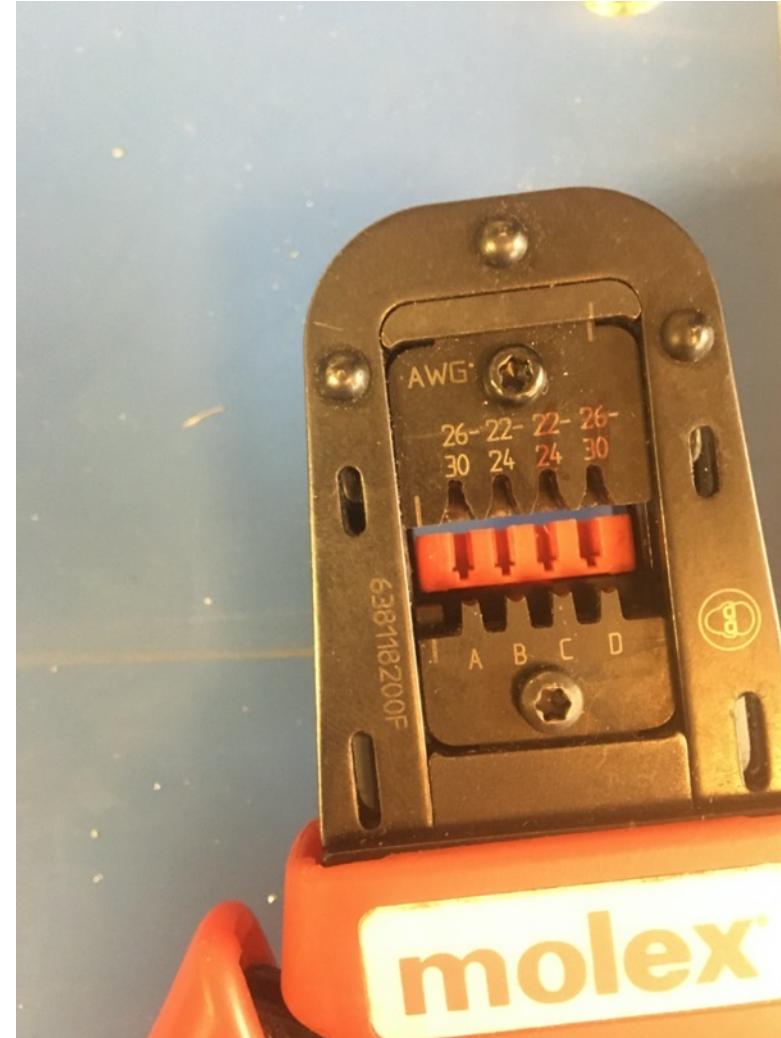


Materials

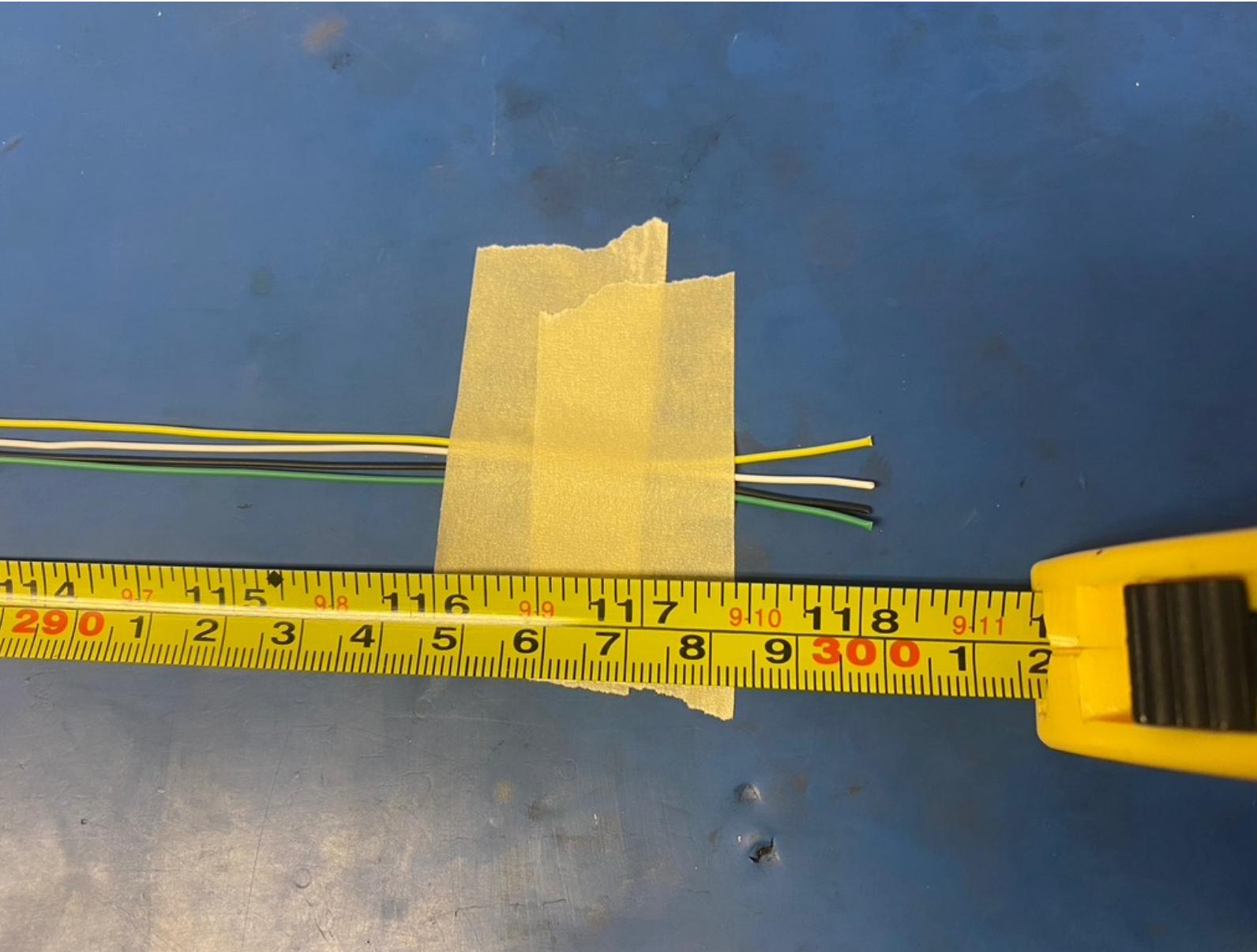


Tools

KK 254 Crimping Tool



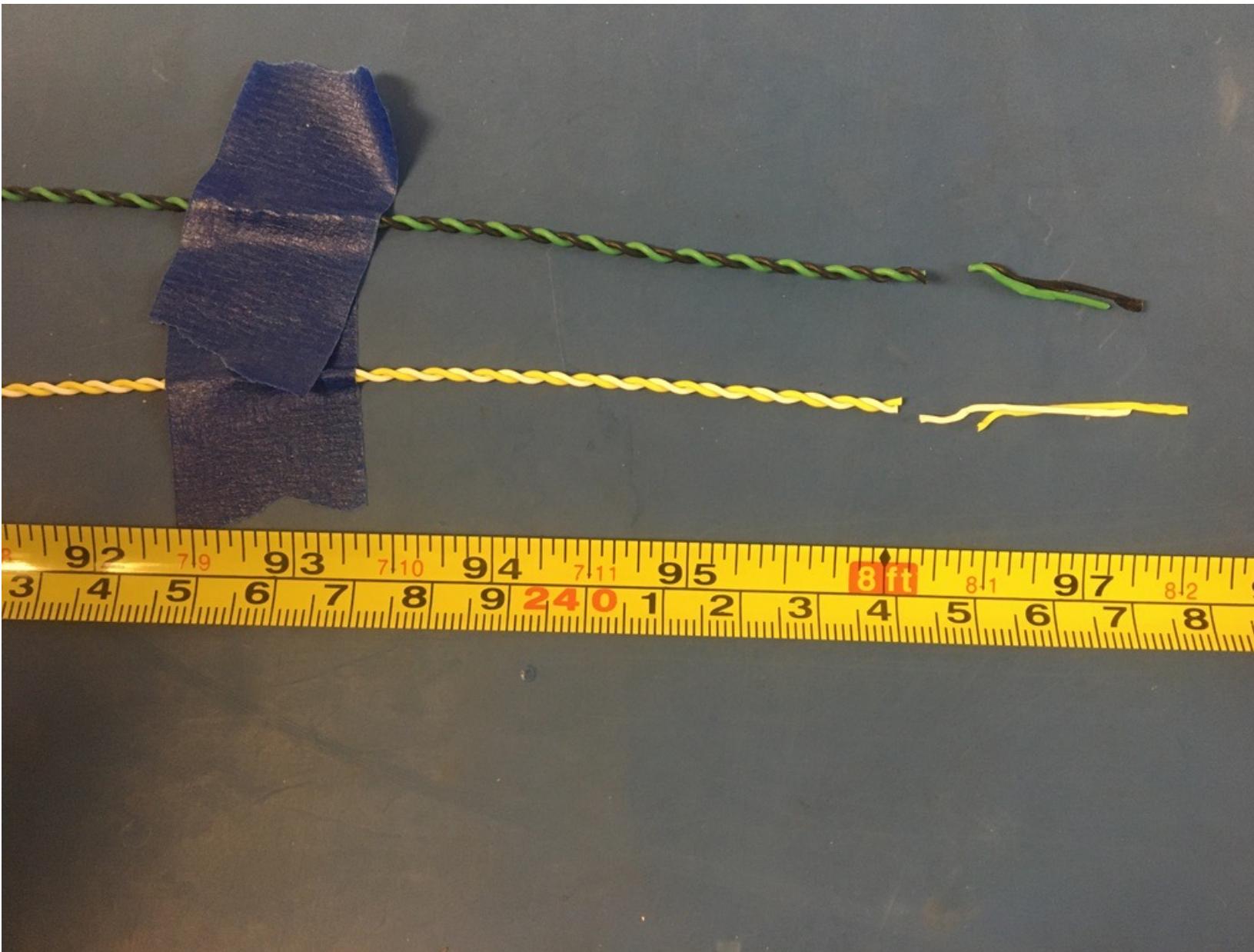
Measure out and cut 118 inches of white, yellow, black, and green 28 awg wire.



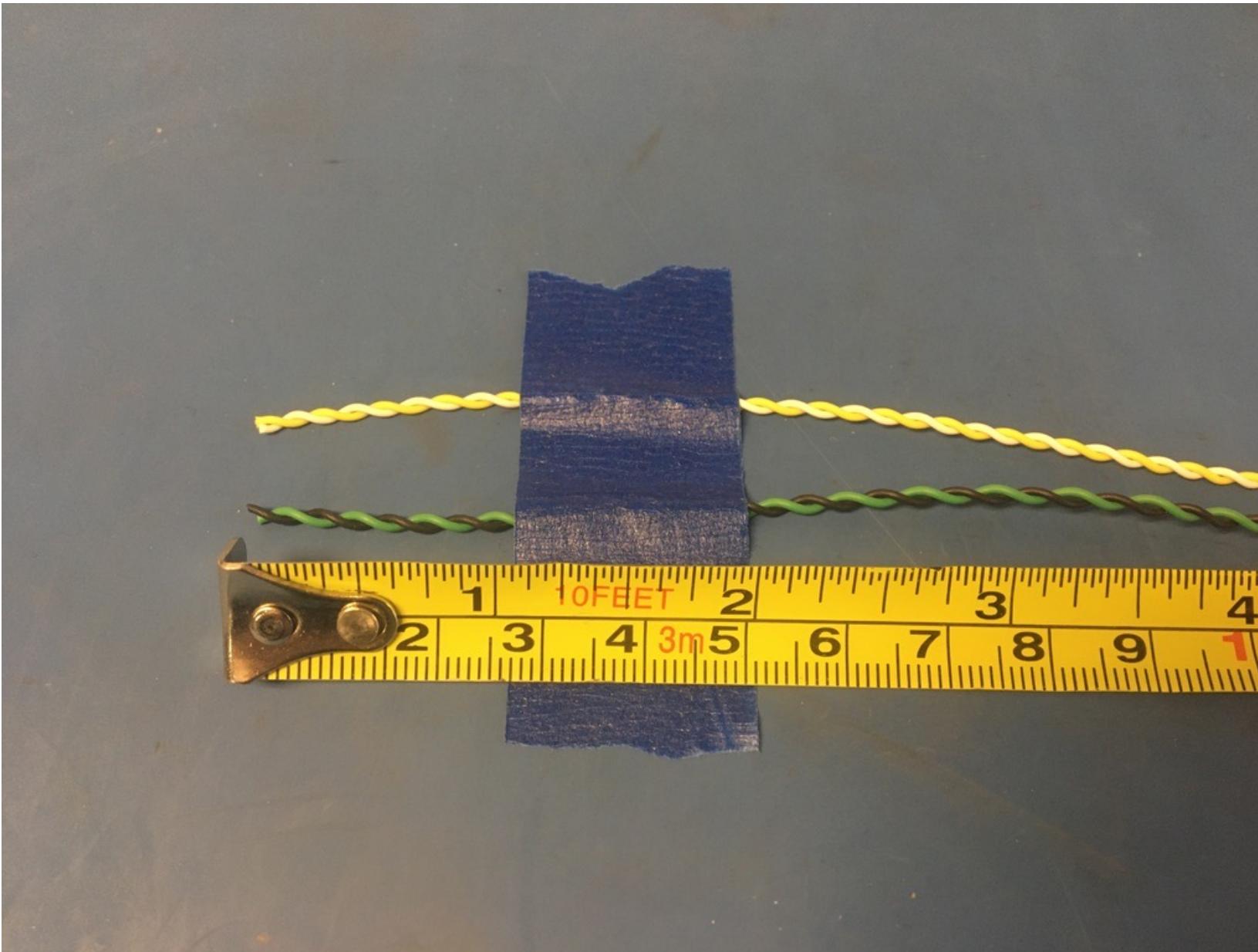
To make the twisted pairs, line the vise with masking tape. Put one end of the black and green wires into the drill. Run the drill till the wires are sufficiently twisted (for reference see the next slide). Repeat with the white and yellow wires.



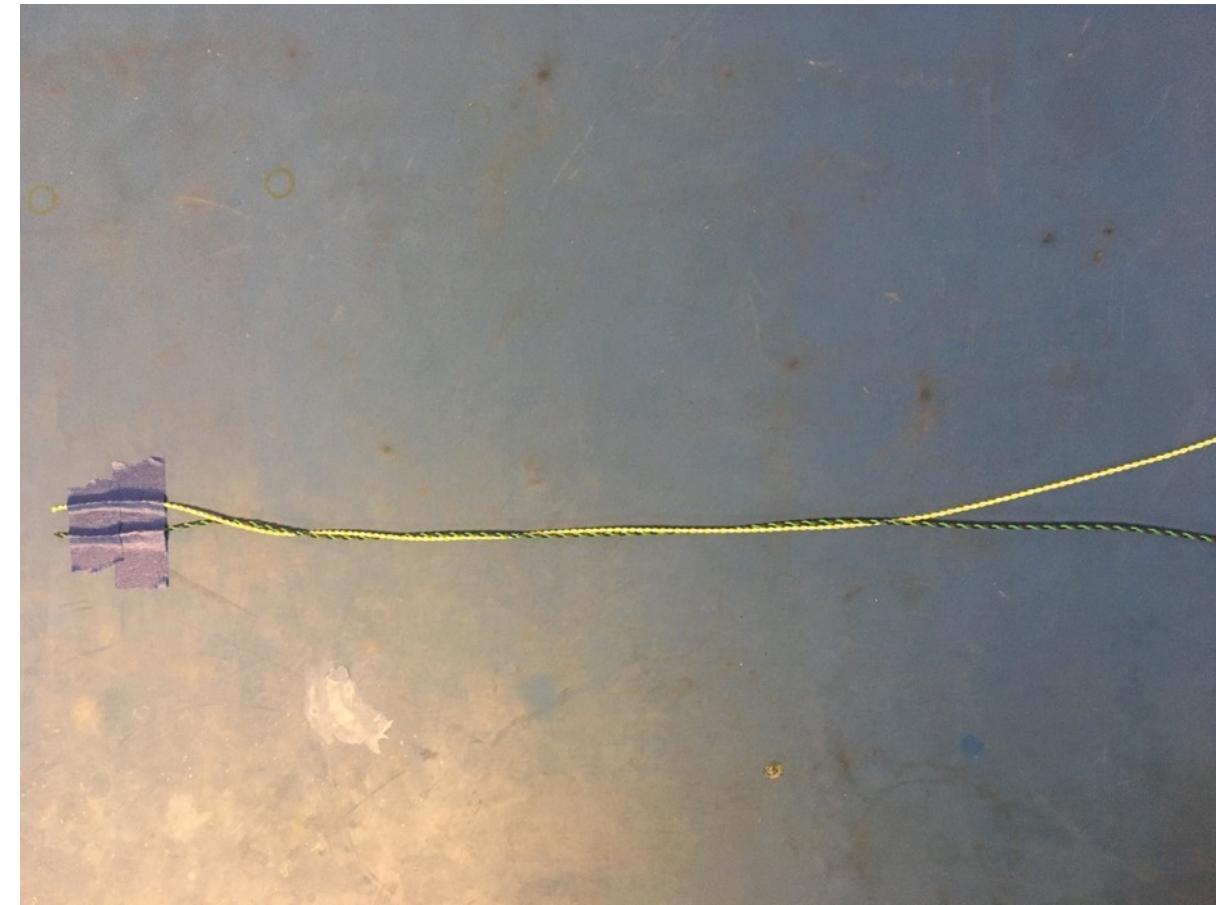
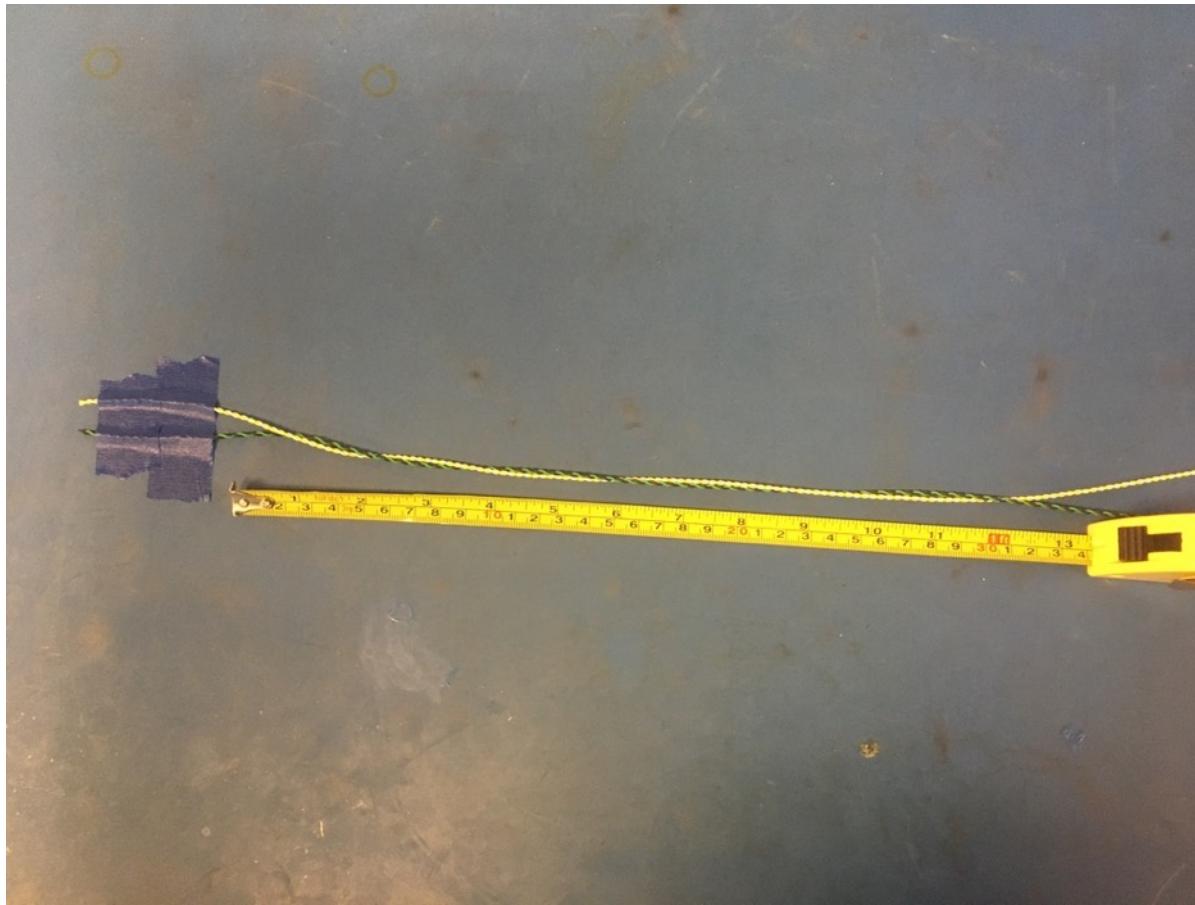
Trim the ends of each twisted pair where they were in the vise and drill. Once trimmed, they should measure about 96 inches.



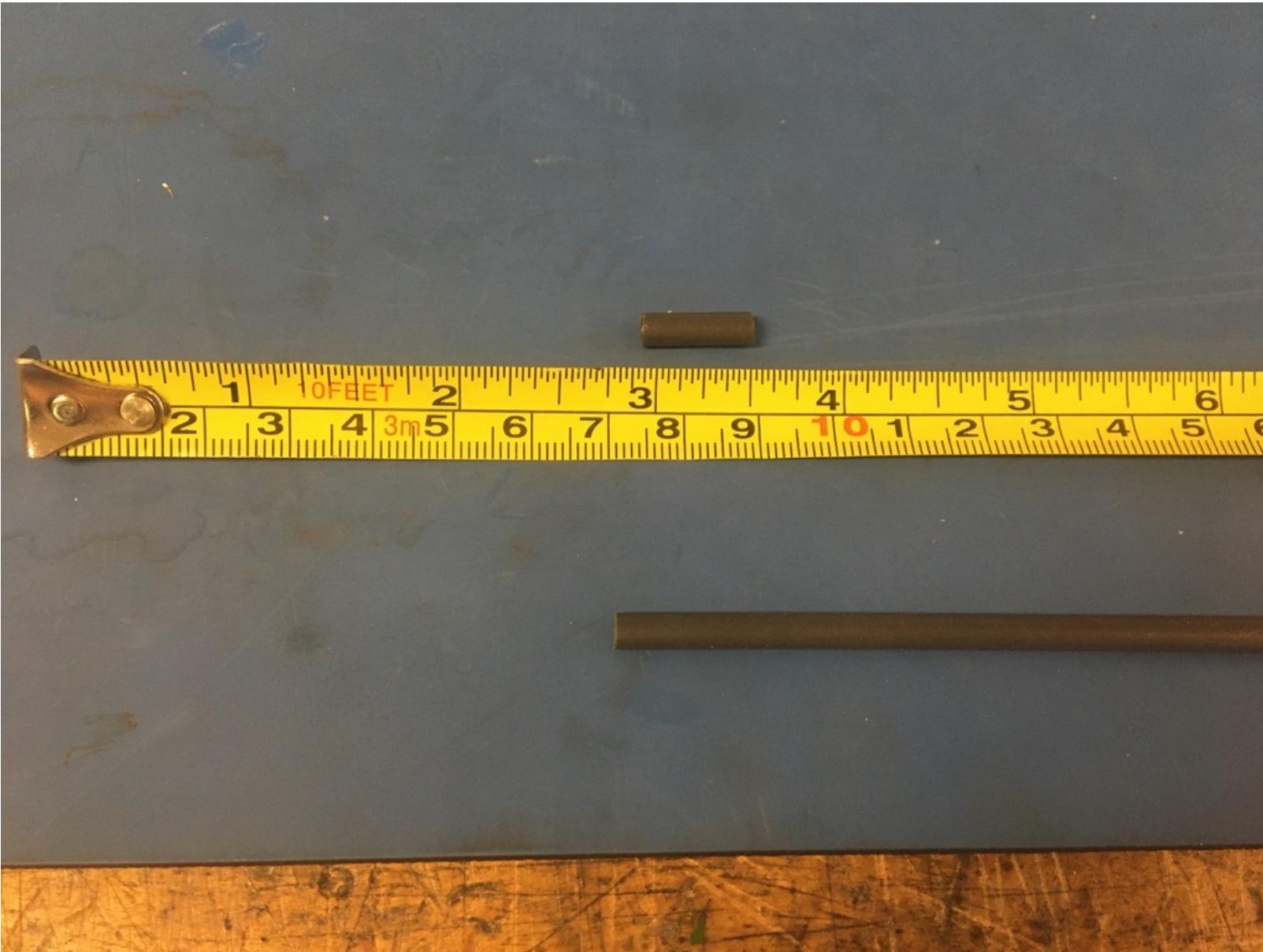
Tape the twisted pairs 2in from their ends.



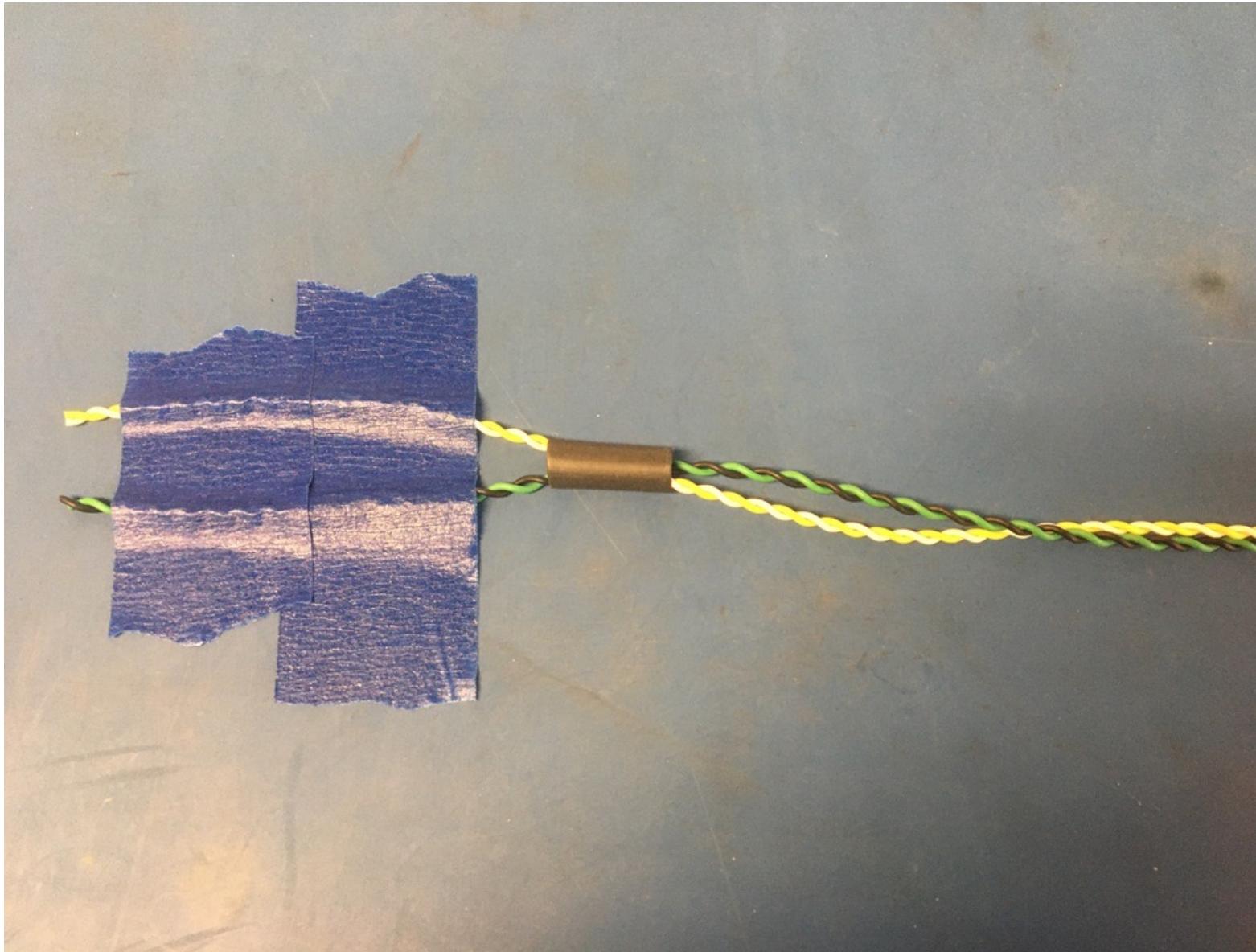
Loosely twist together the two twisted pairs. Only make this twist about a foot long for now. Be sure to twist in the same direction as the twisted pairs.



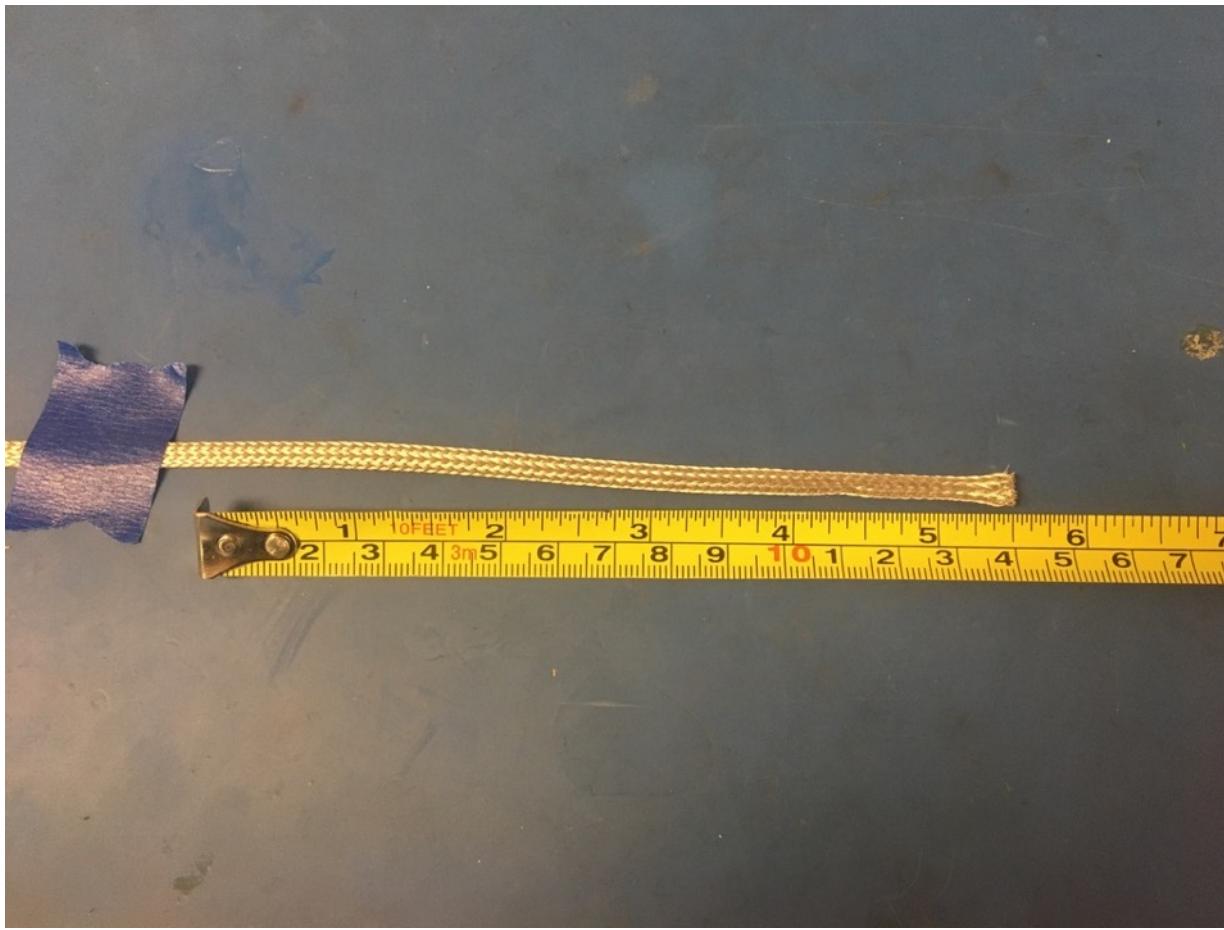
Measure out and cut six lengths of 4.8mm adhesive shrink tube each .5in long.



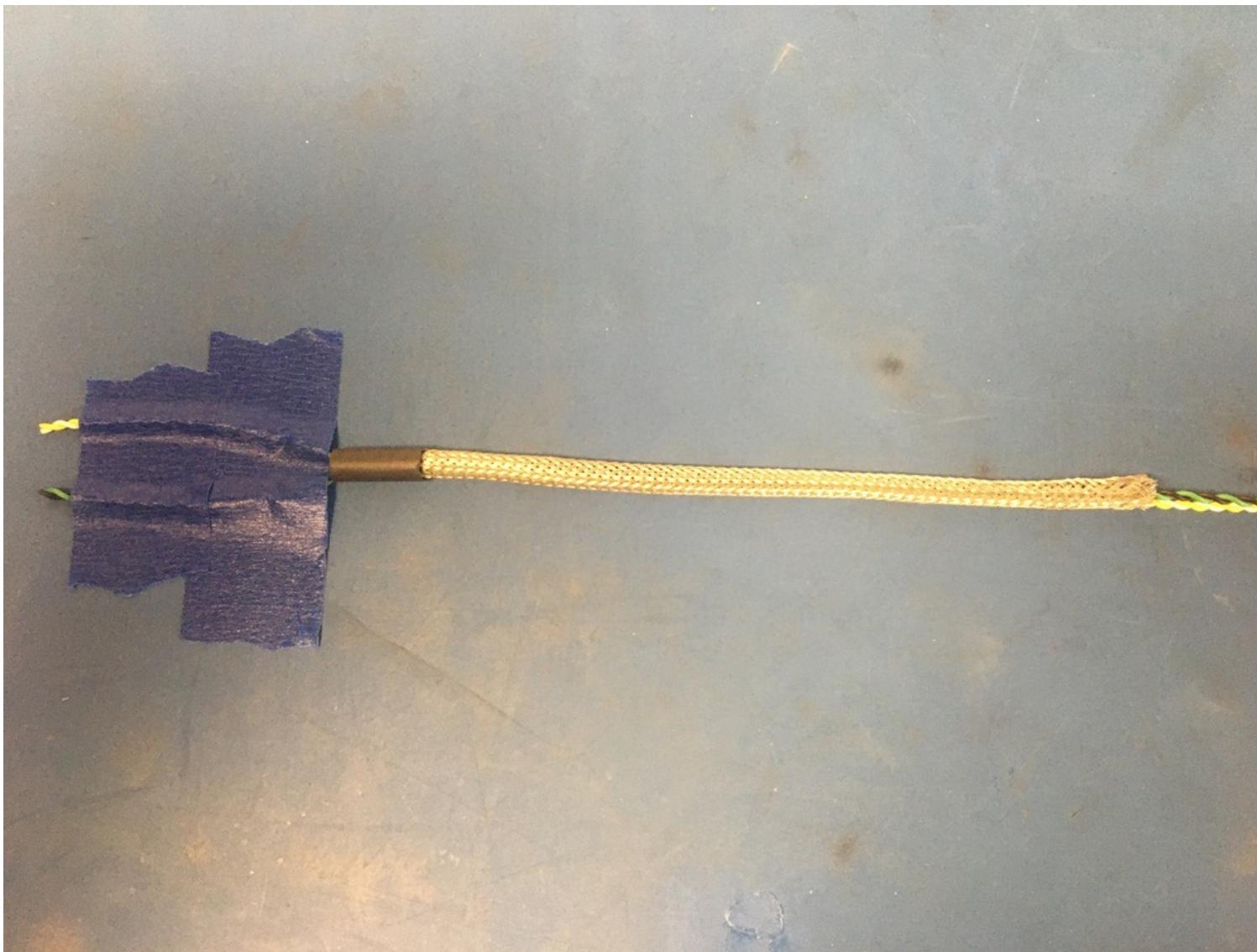
From the un-taped end of the twisted wires, thread a piece of the 4.8mm shrink tube on. Slide the piece of shrink tube all the way up to the tape at the other end.



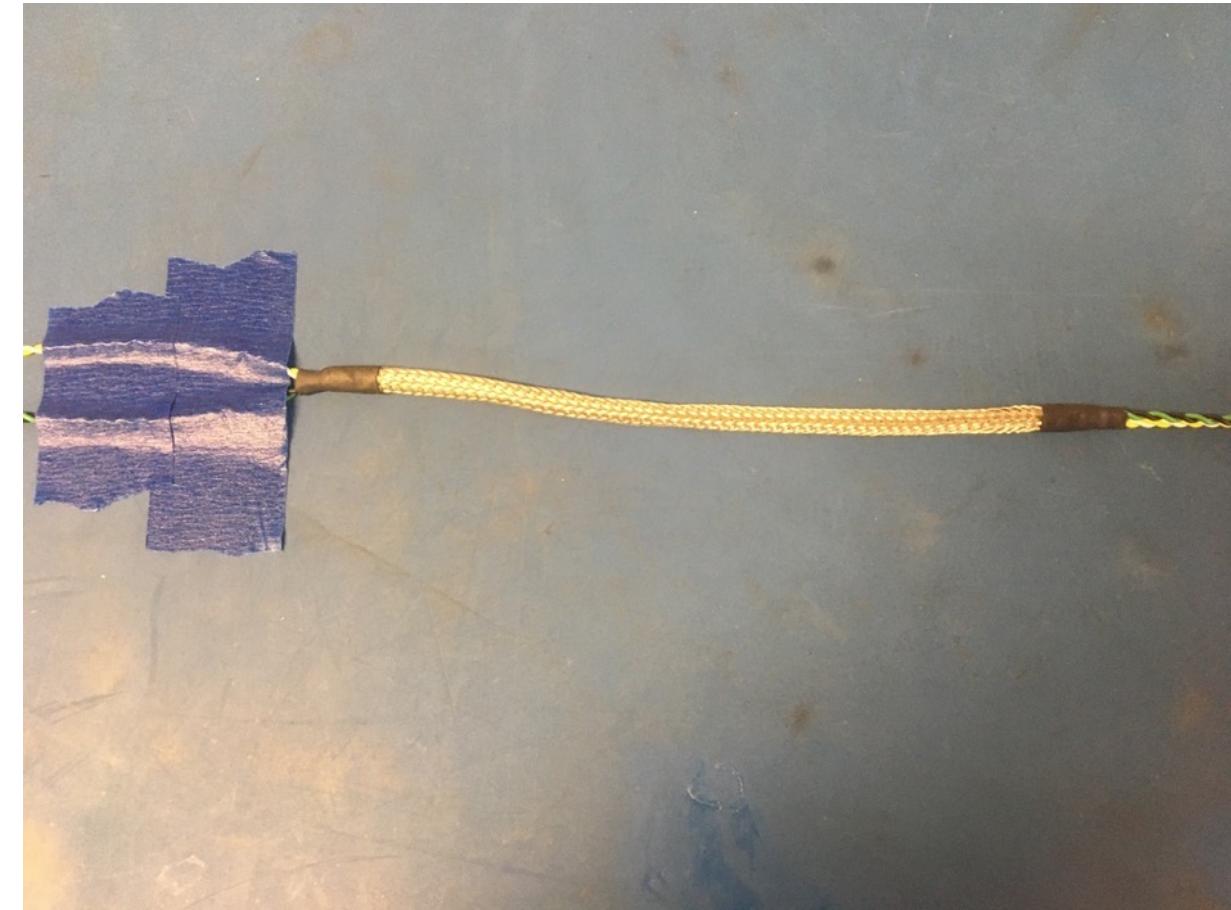
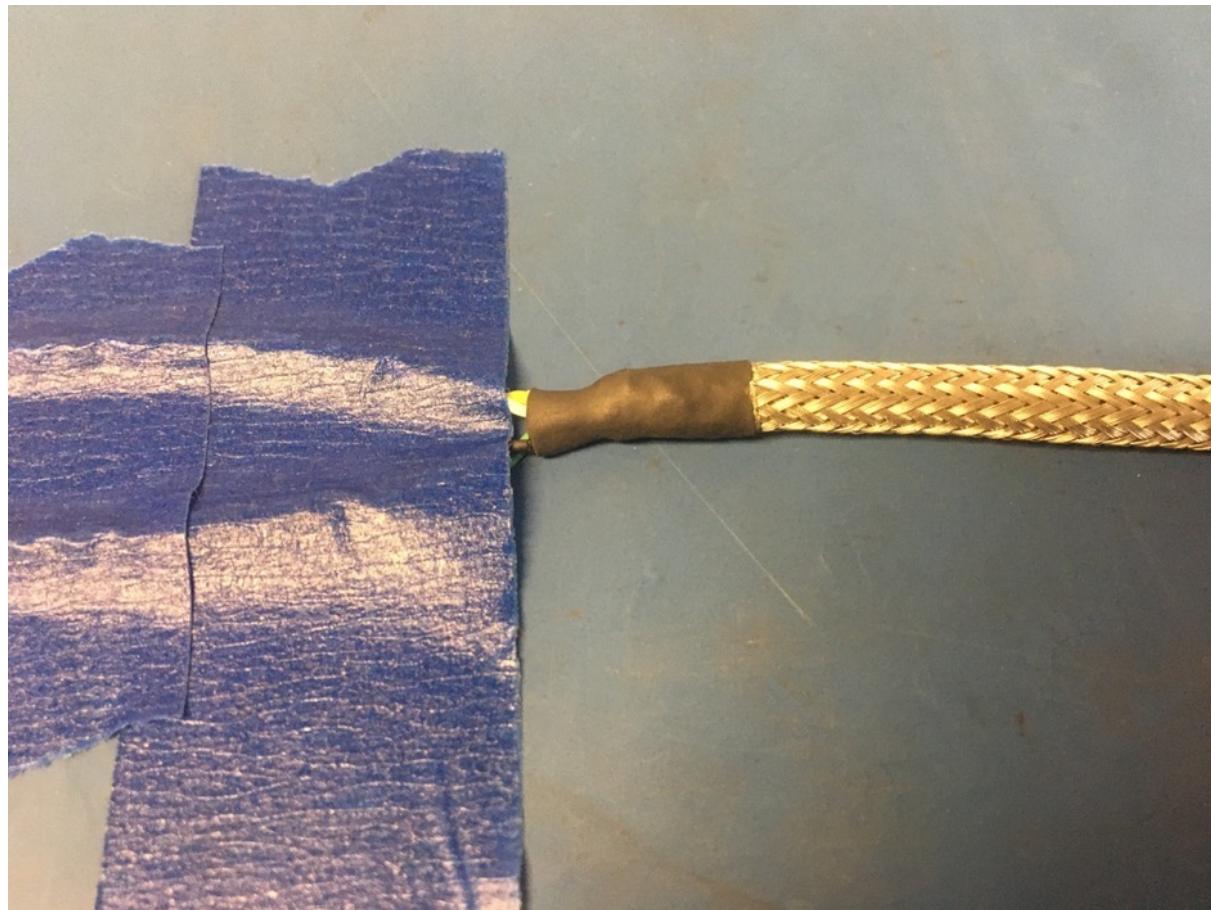
Measure out 5.5 inches of the 1/8th metal braid. Expand it using the metal rod.



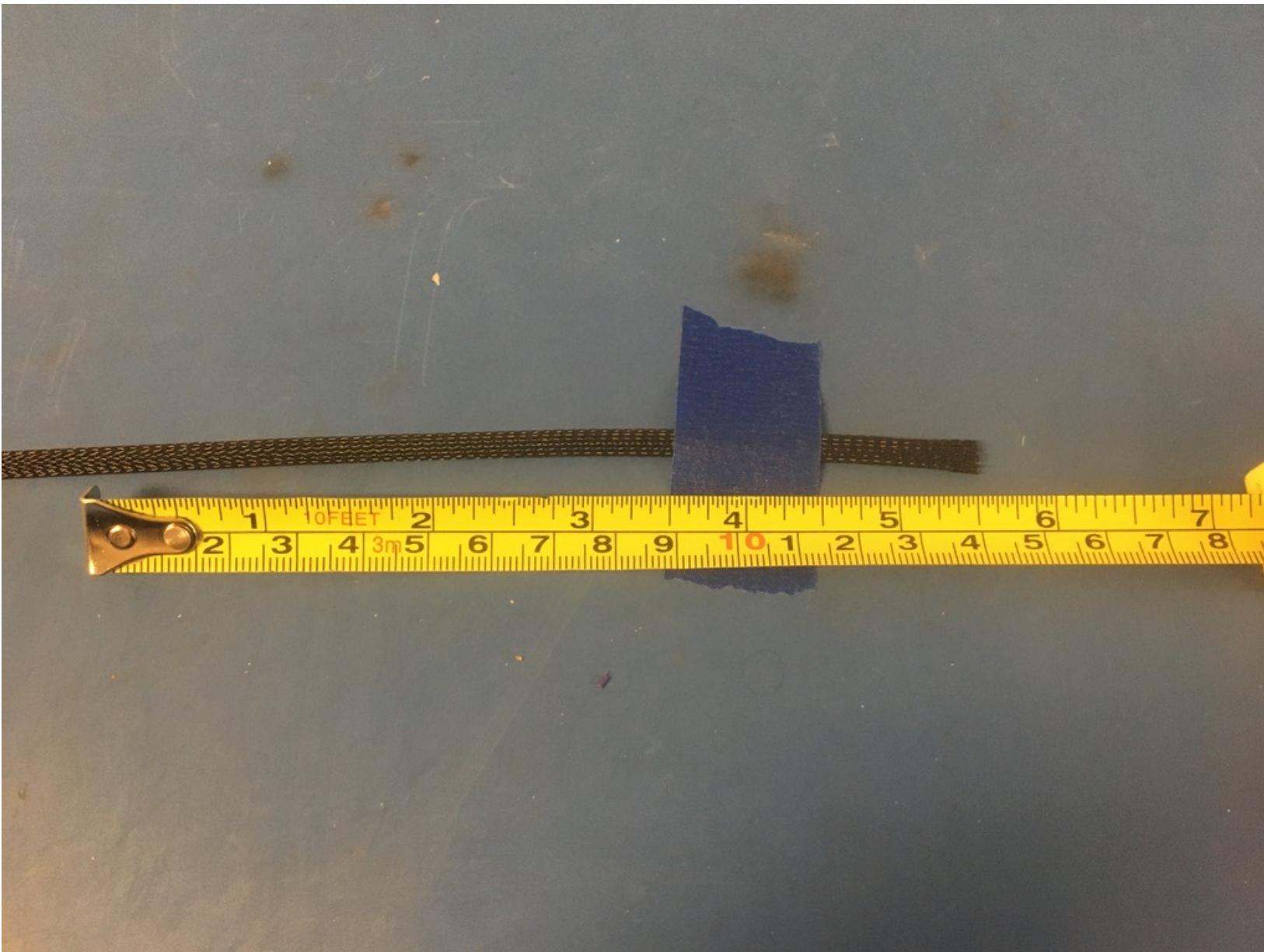
Thread the metal braid onto the un-taped end of twisted wires. Put the metal braid into the piece of shrink tube. The metal braid should end midway through the piece of shrink tube.



Apply the heat gun to shrink tube. Put another piece of the 4.8mm shrink tube onto the other end of the metal braid. Again, the metal braid should end midway through the piece of shrink tube. Apply the heat gun.



Measure out and cut 5.5 inches of 1/4th plastic braid.



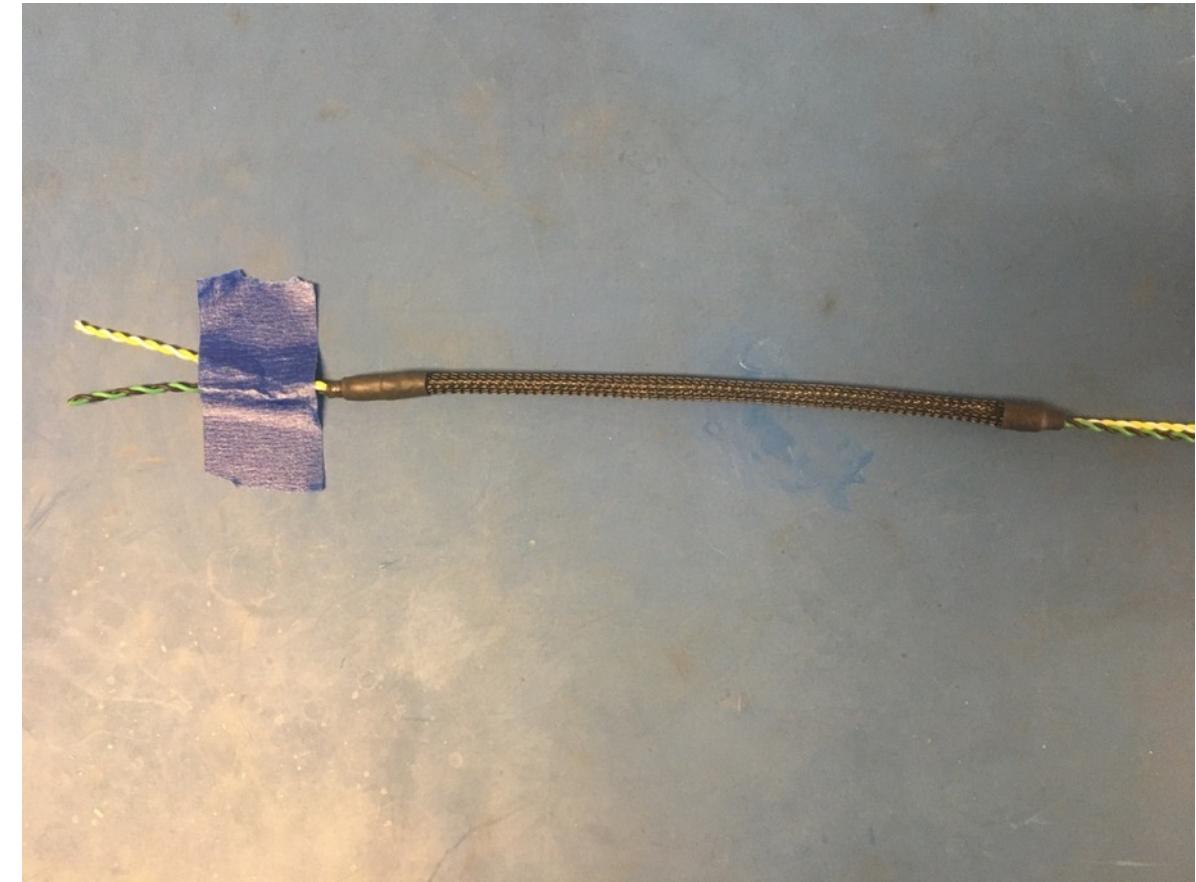
Put the plastic braid onto the twisted wire from the un-taped end. Place it over top the metal braid so that each end of the plastic braid ends midway through the metal shrink tube joints.



Measure out and cut nine lengths of 6.4mm adhesive shrink tube each .5in long.



Put two pieces of the 6.4mm shrink tube onto the twisted wires. Place the shrink tube on the plastic braid ends so that the plastic braid ends midway through the pieces of shrink tube. Apply the heat gun.

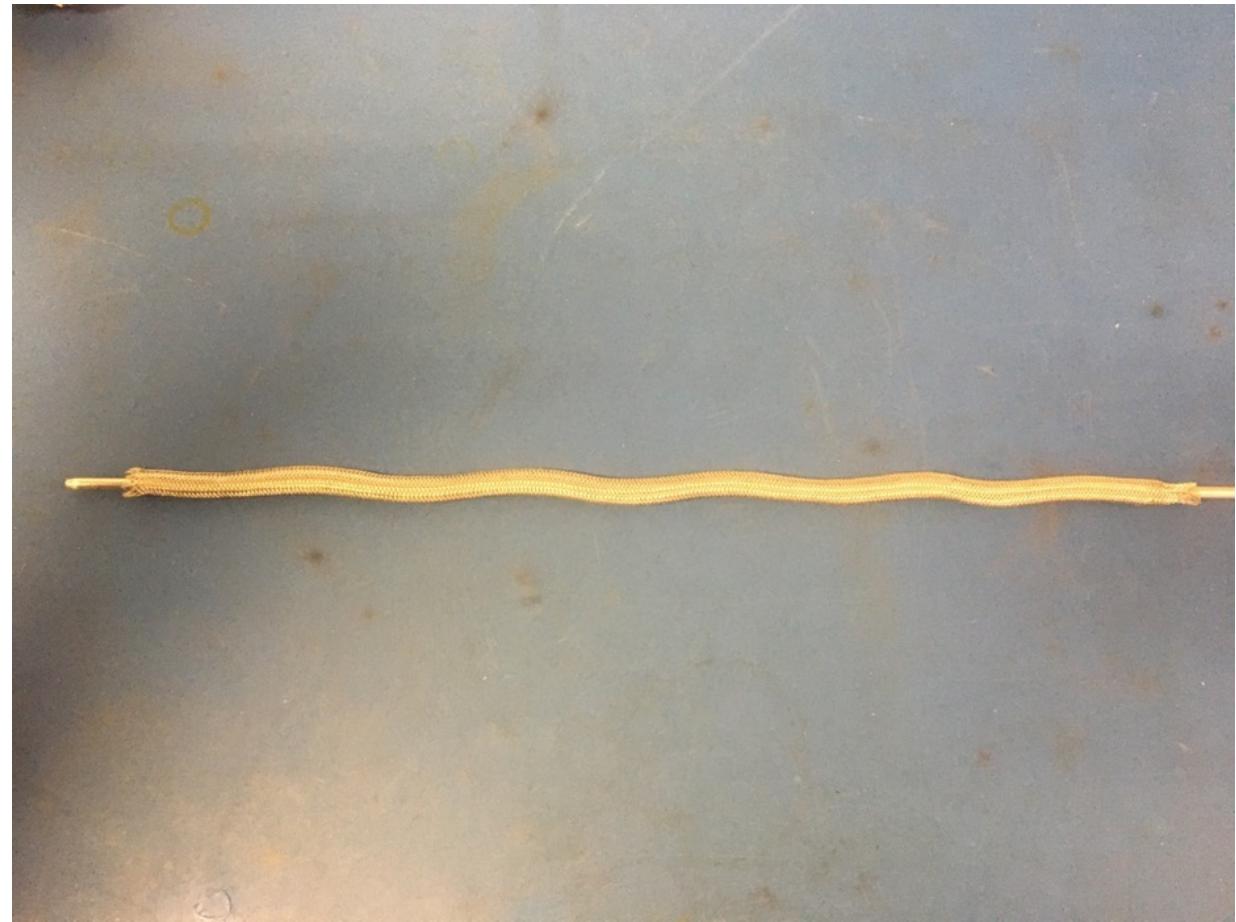




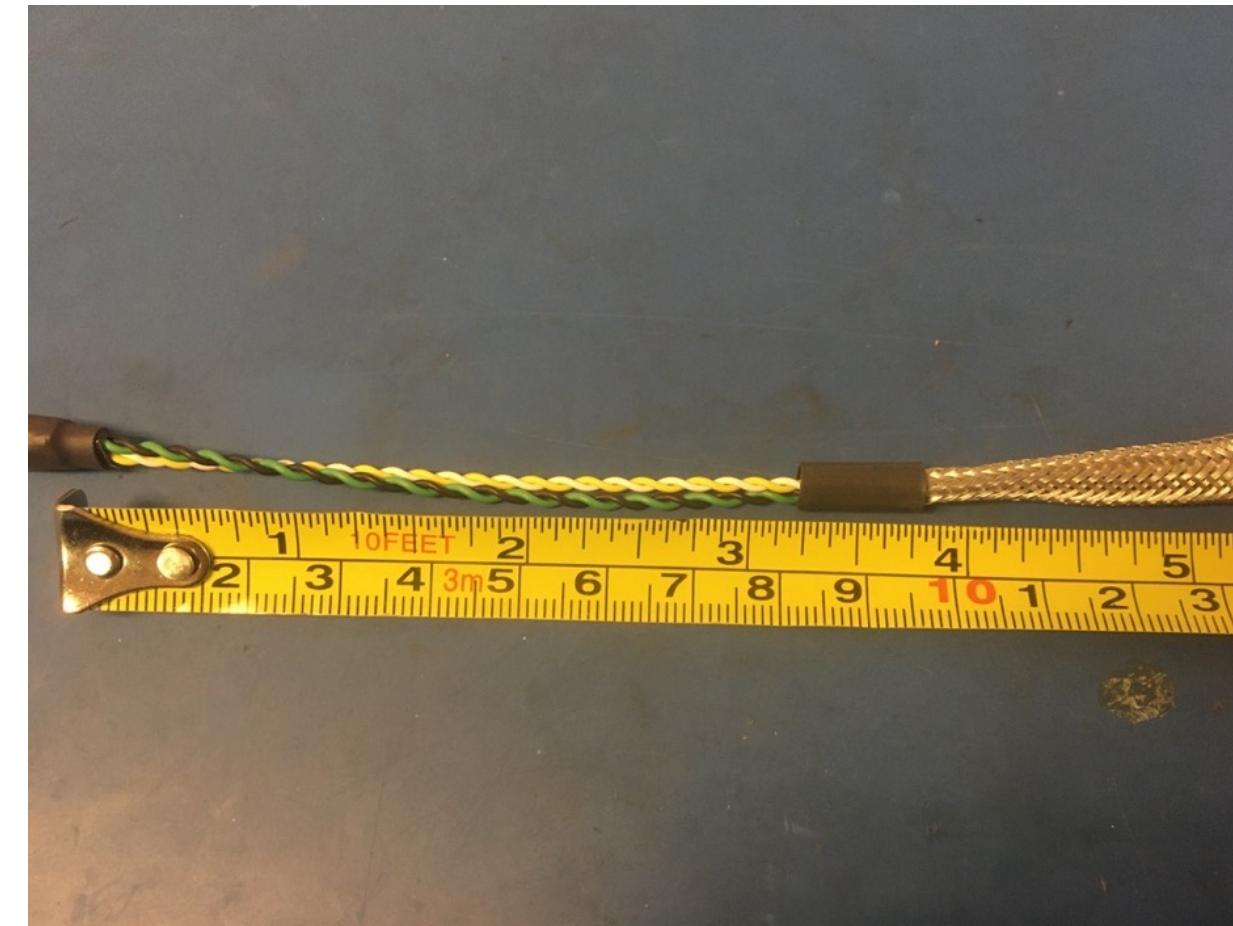
Continue the loose twist of the twisted pairs about two feet further down the harness. From the un-taped end of the harness, thread another piece of the 4.8mm shrink tube on. Slide the piece of shrink tube toward the other end of the harness until its 3.25 inches away from the end of the plastic braid shrink tube that was just applied.



Measure out 24.5 inches of the 1/8th metal braid. Expand it using the metal rod.



Thread the metal braid onto the un-taped end of the harness. Put the metal braid into the piece of shrink tube. The metal braid should end midway through the piece of shrink tube. Apply the heat gun.



Put another piece of the 4.8mm shrink tube onto the other end of the metal braid. Again, the metal braid should end midway through the piece of shrink tube. Apply the heat gun.





Thus far, the harness should appear as shown on the left.

Measure out and cut 24 inches of 1/4th plastic braid.





Put the plastic braid onto the harness from the un-taped end. Place it over top the metal braid so that each end of the plastic braid ends midway through the metal shrink tube joints.



Put two pieces of the 6.4mm shrink tube onto the harness. Place the shrink tube on plastic braid ends so that the plastic braid ends midway through the pieces of shrink tube.



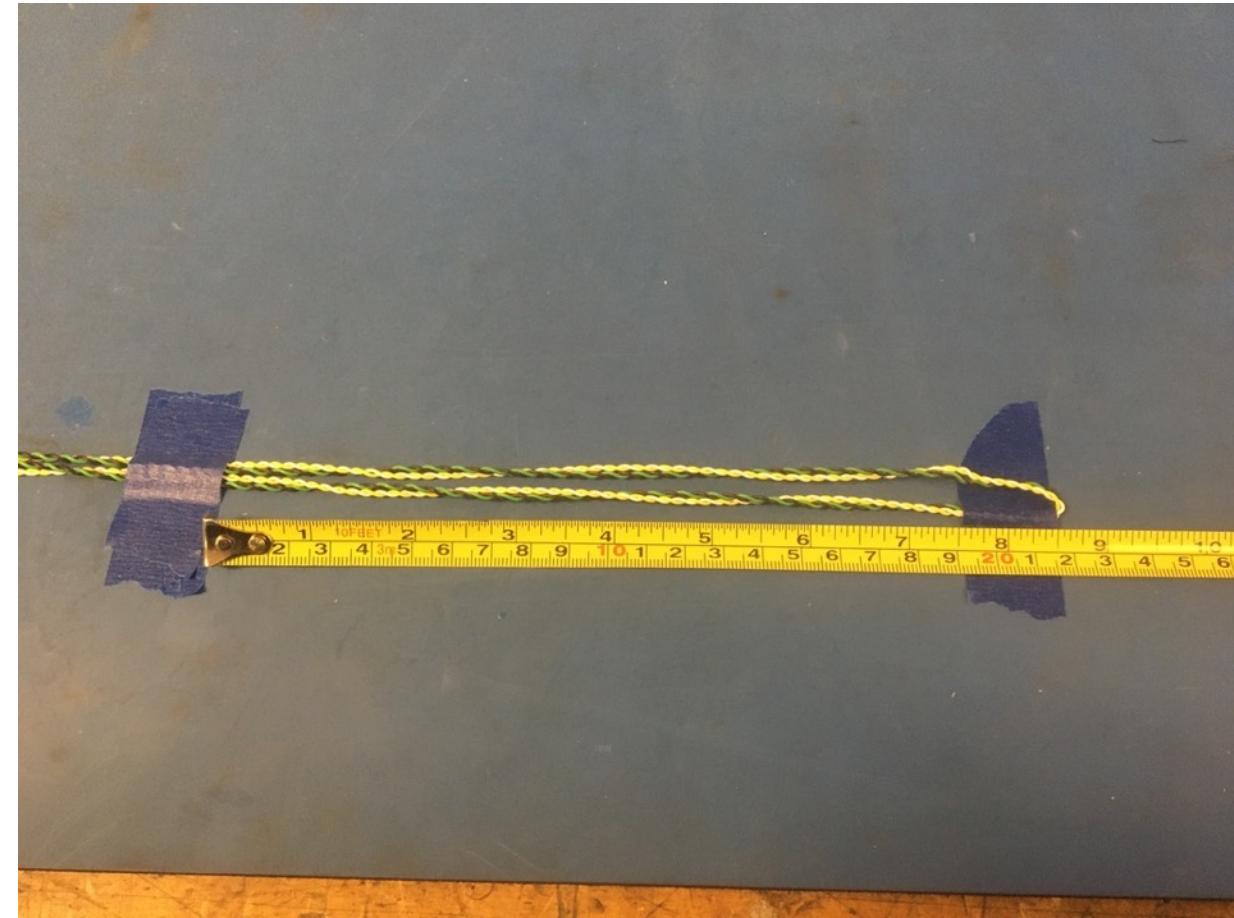
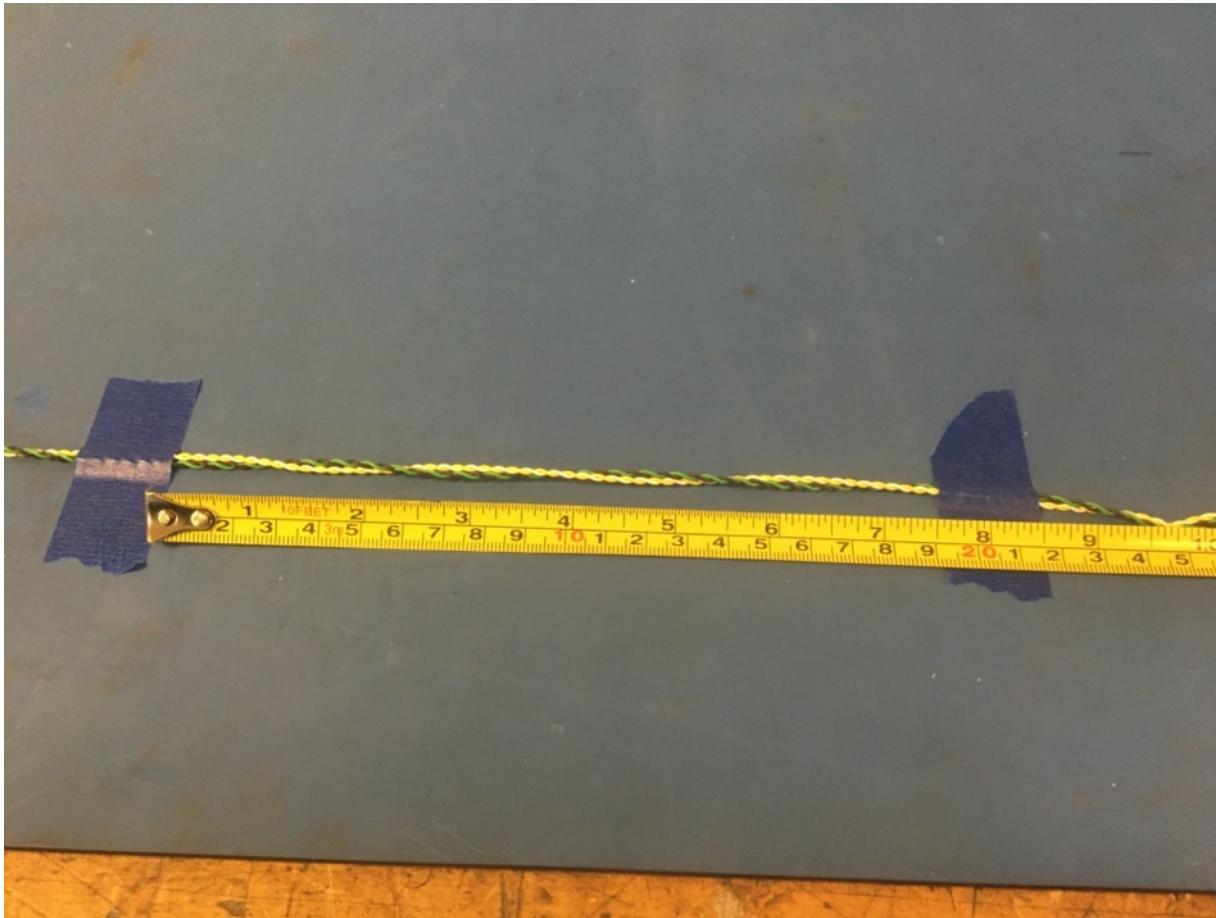


Apply the heat gun.

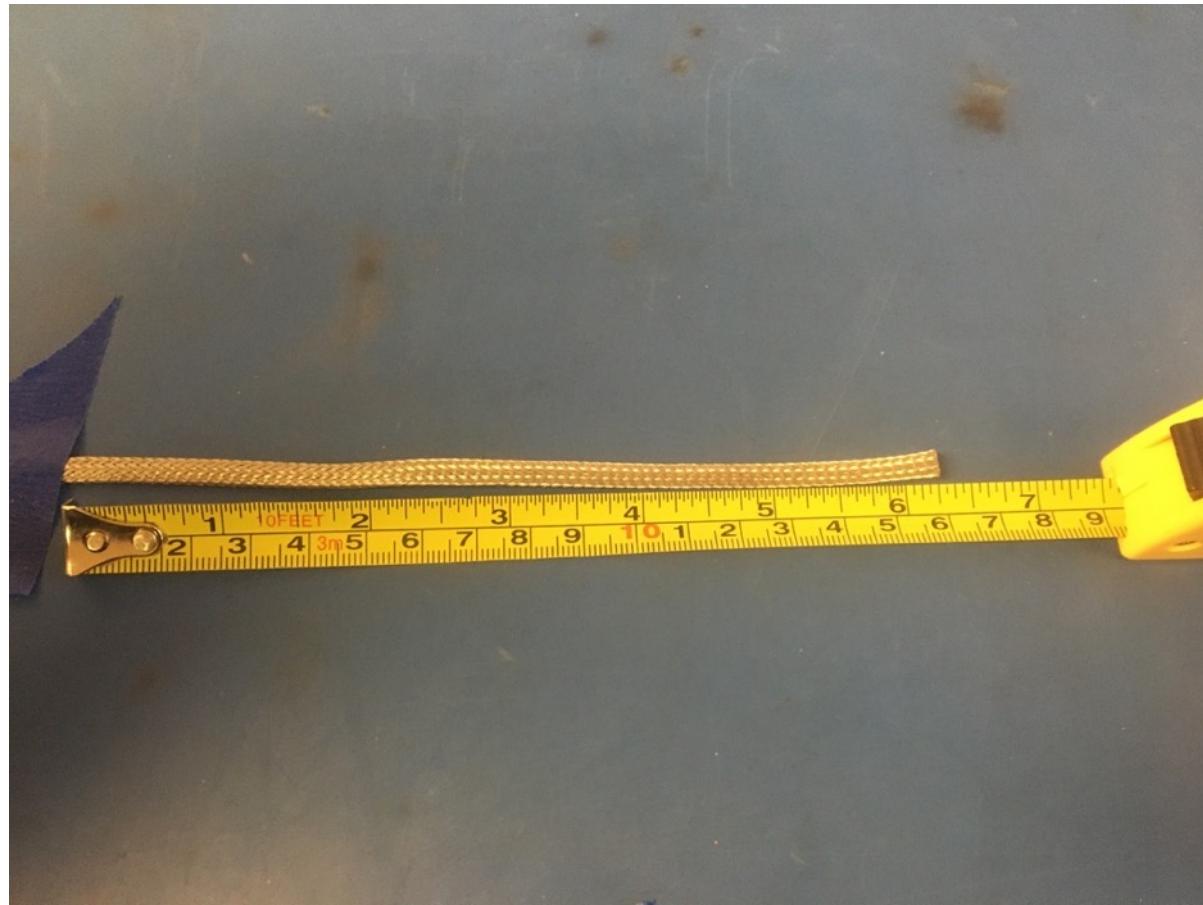
Continue the loose twist of the twisted wires for an additional 30 inches. Place a piece of tape at the 12 inch mark of the continued twist.



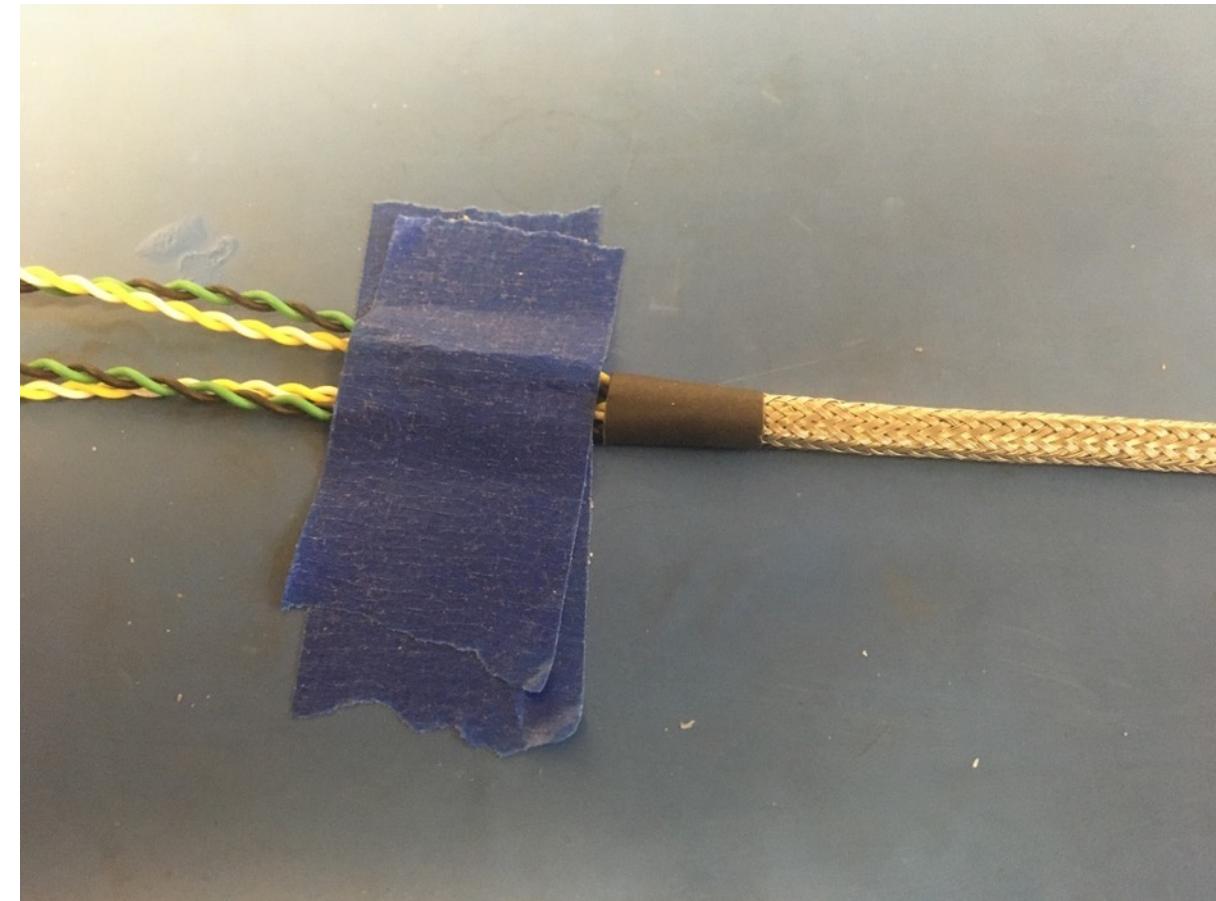
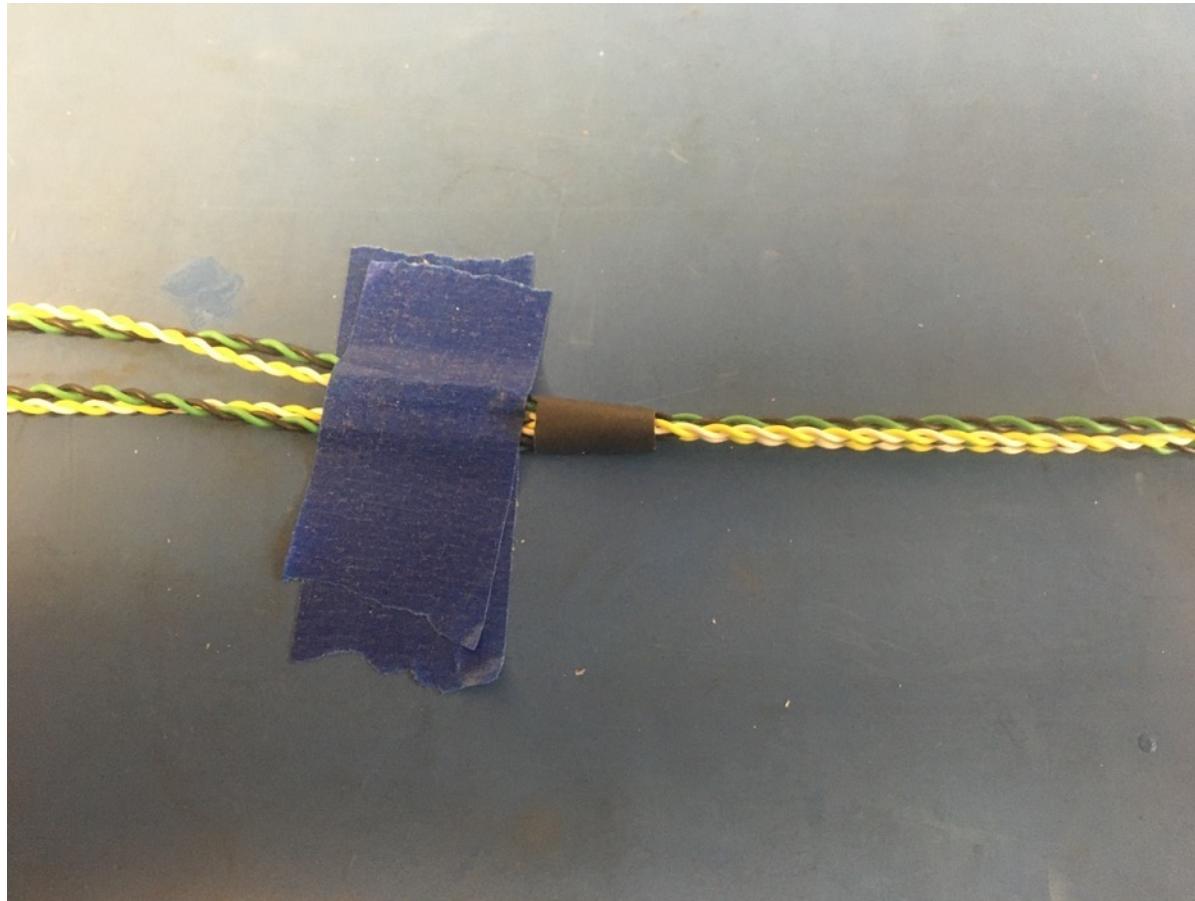
Place a second piece of tape 8.5 inches from the first piece. Then double back the continued twist as shown on the right. Tape down the end of the continued twist with a third piece of tape placed on top of the first.



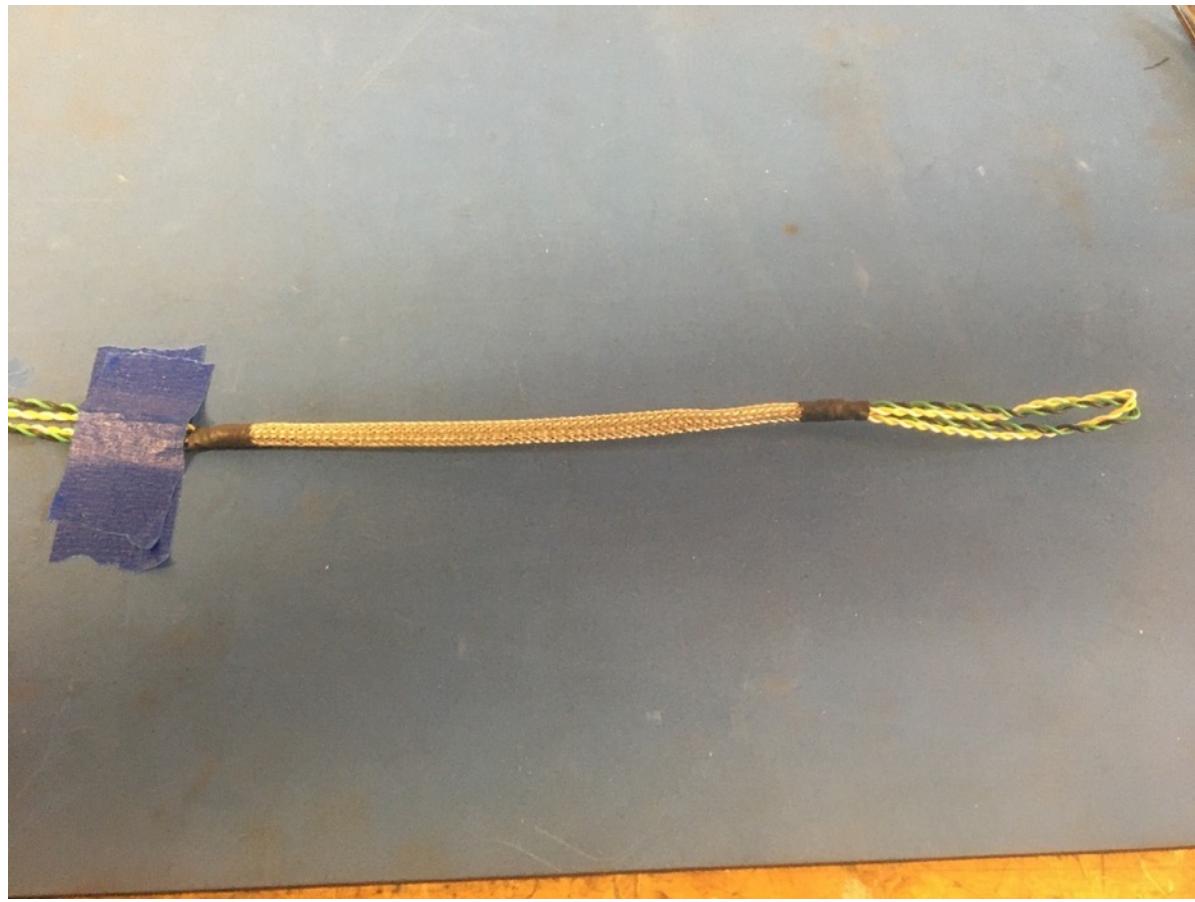
Measure out 6.25 inches of the 1/8th metal braid. Expand it using the metal rod.



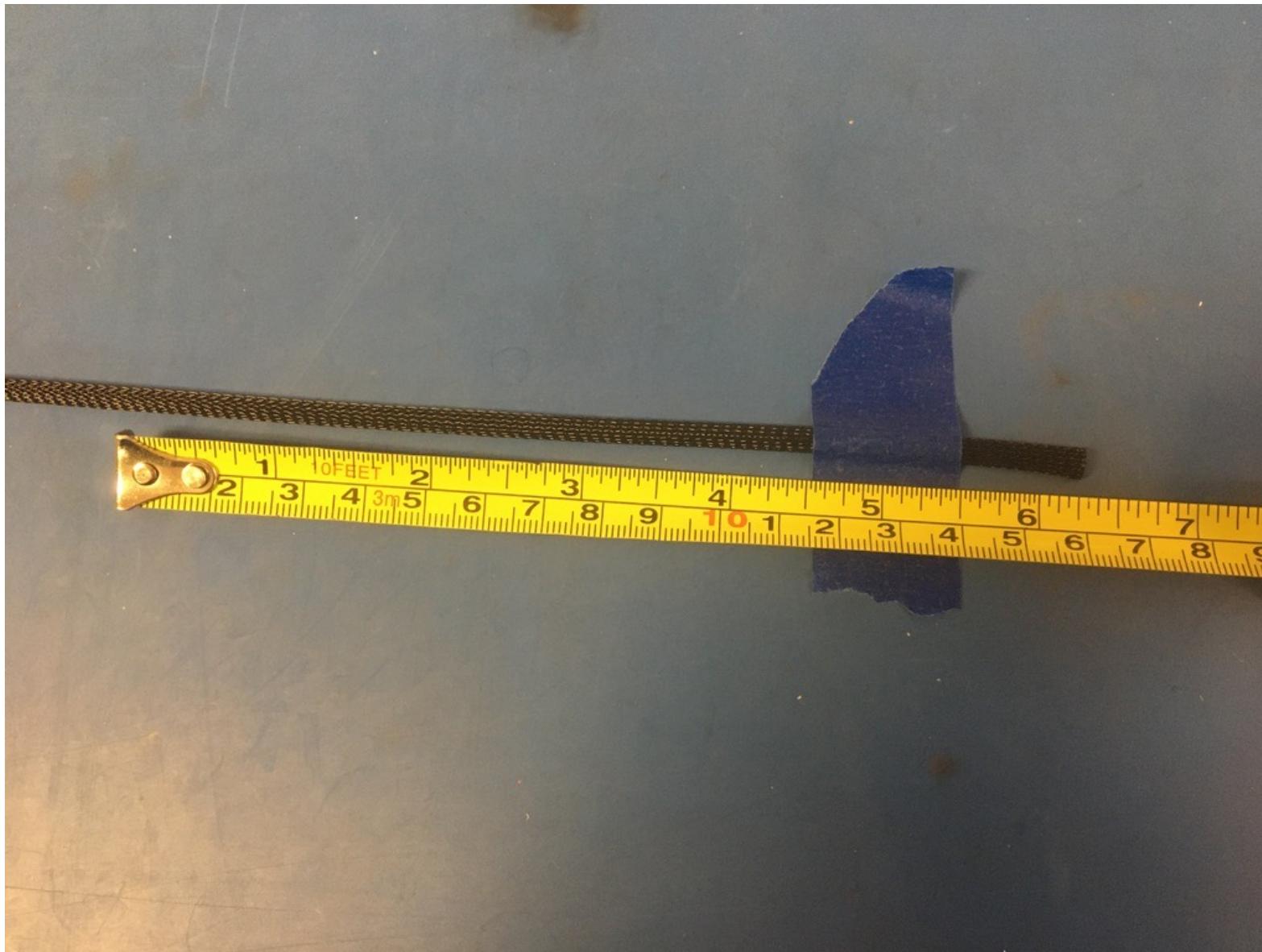
From wire loop, thread a piece of the 6.4mm shrink tube on. Slide the piece of shrink tube all the way down to the layered tape. Thread the metal braid onto the wire loop. Put the metal braid into the piece of shrink tube. The metal braid should end midway through the piece of shrink tube.



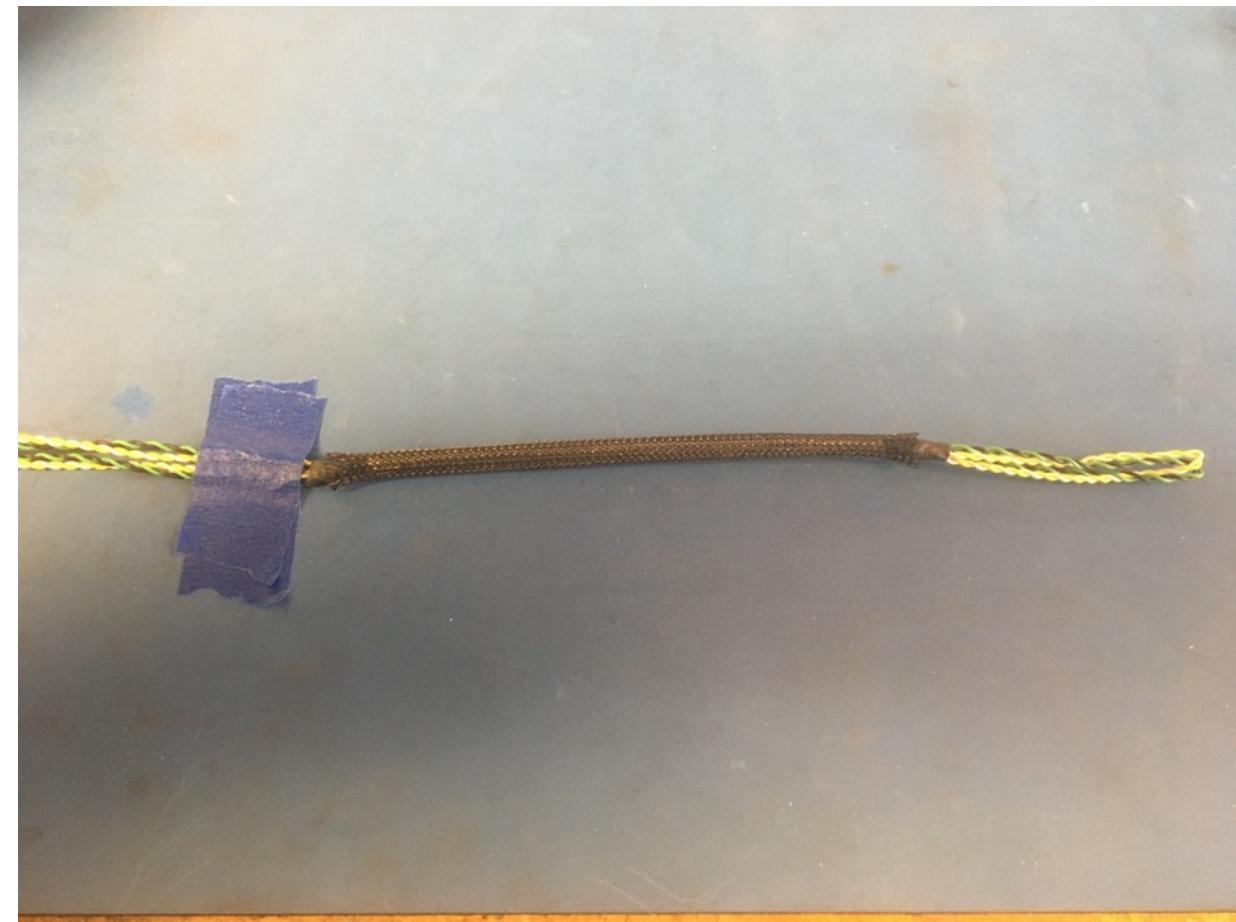
Apply the heat gun. Put another piece of the 6.4mm shrink tube onto the other end of the metal braid. Again, the metal braid should end midway through the piece of shrink tube. Apply the heat gun.



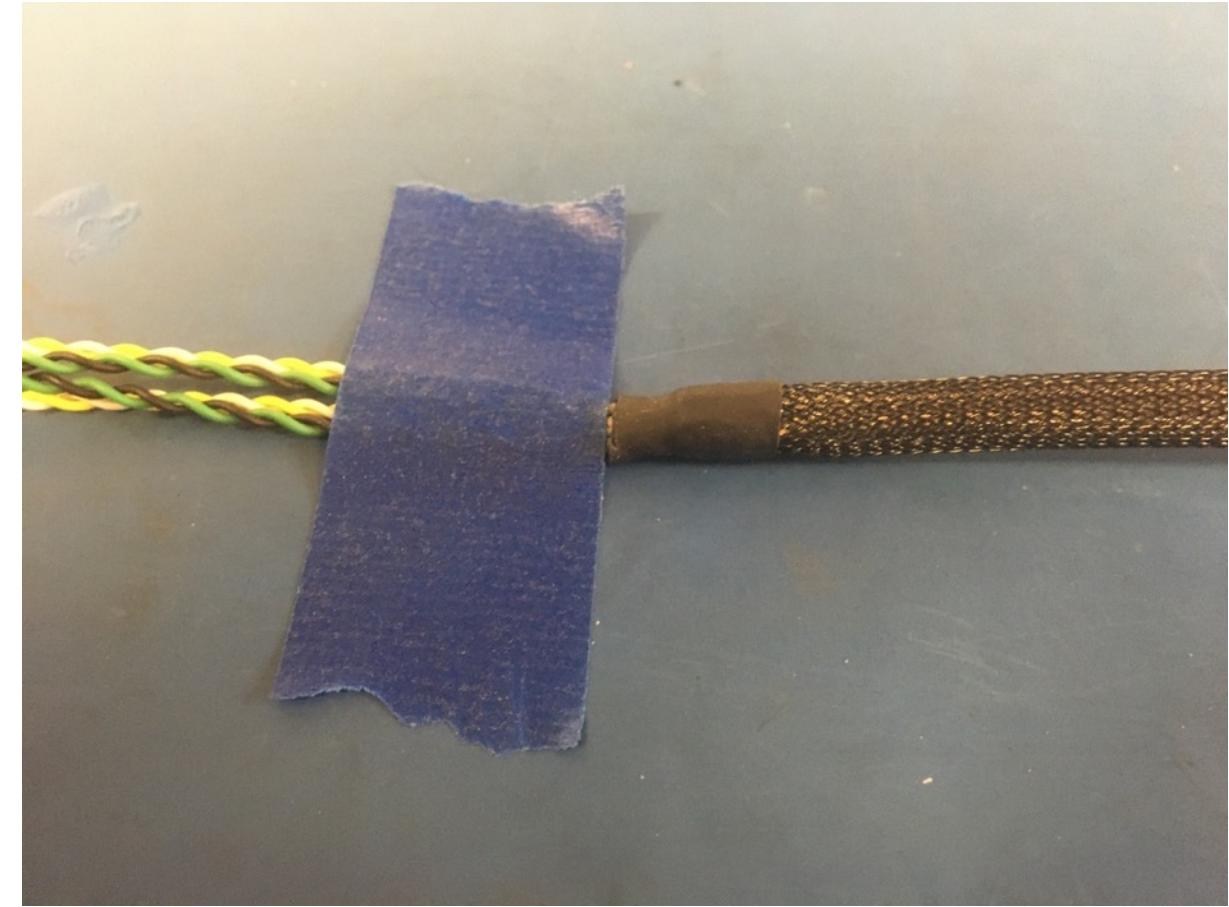
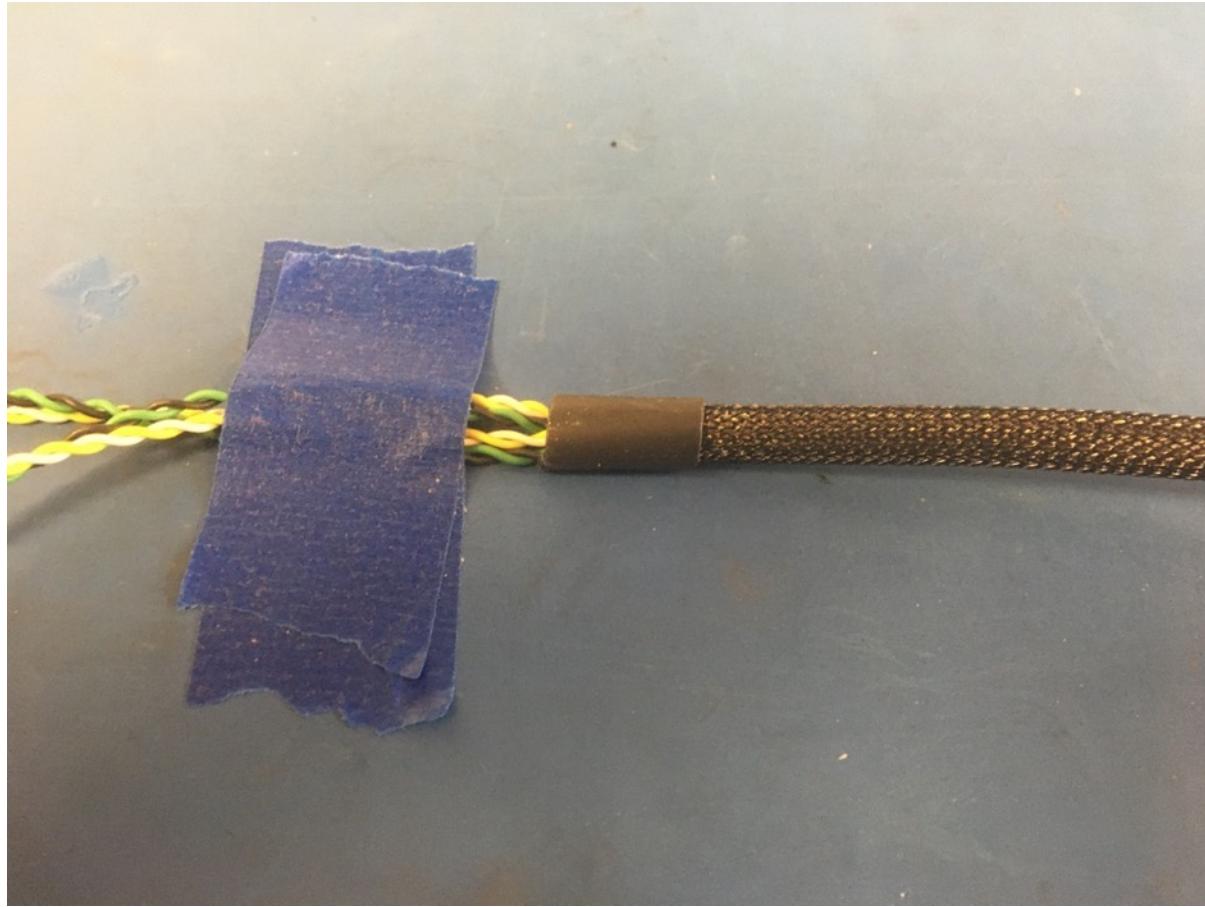
Measure out and cut 6.25 inches of 1/4th plastic braid.



Put the plastic braid onto the wire harness via the wire loop. Place it over top the metal braid so that each end of the plastic braid ends midway through the metal shrink tube joints.



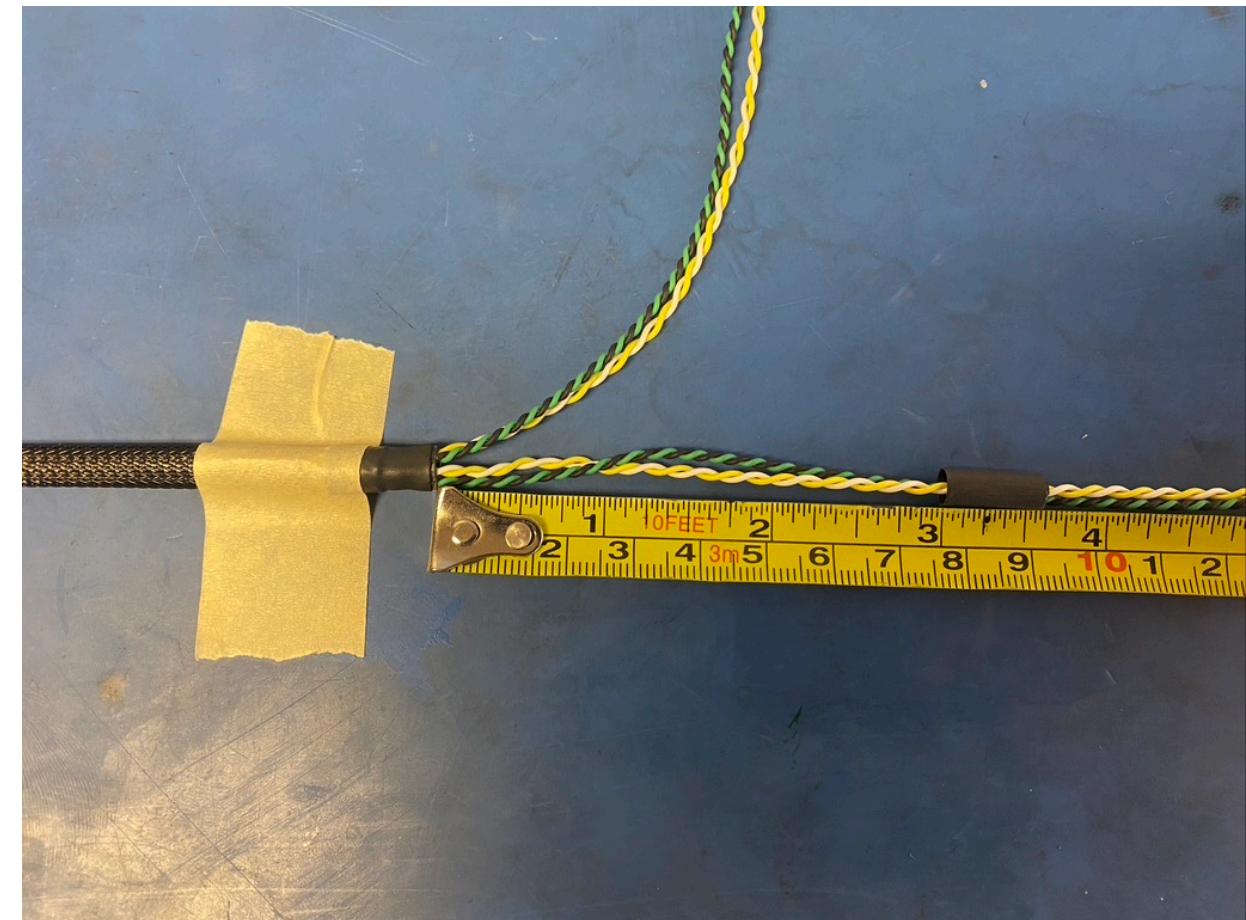
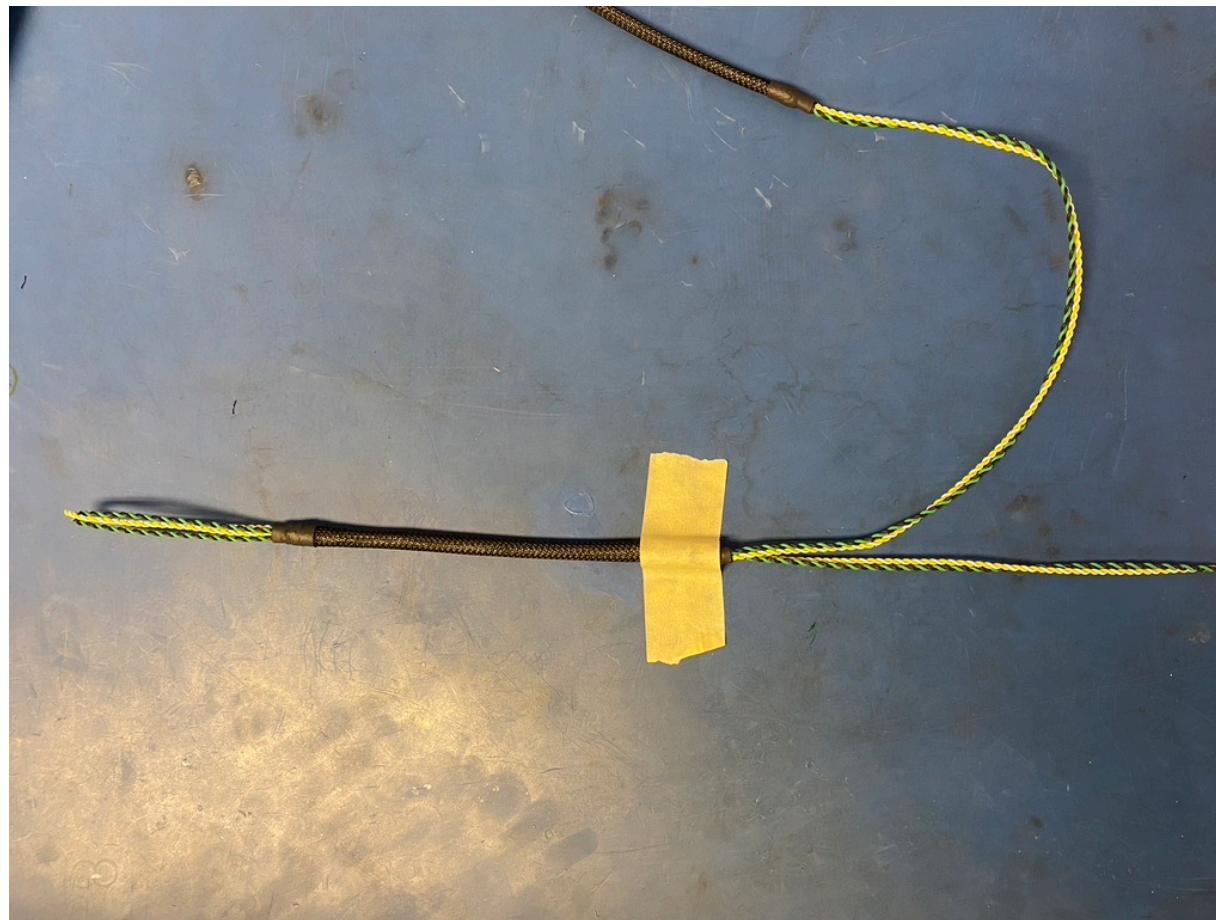
Put a piece of the 6.4mm shrink tube via the wire loop. Place the shrink tube on the plastic braid end furthest from the wire loop. The plastic braid should also end midway through the piece of shrink tube. Apply the heat gun.



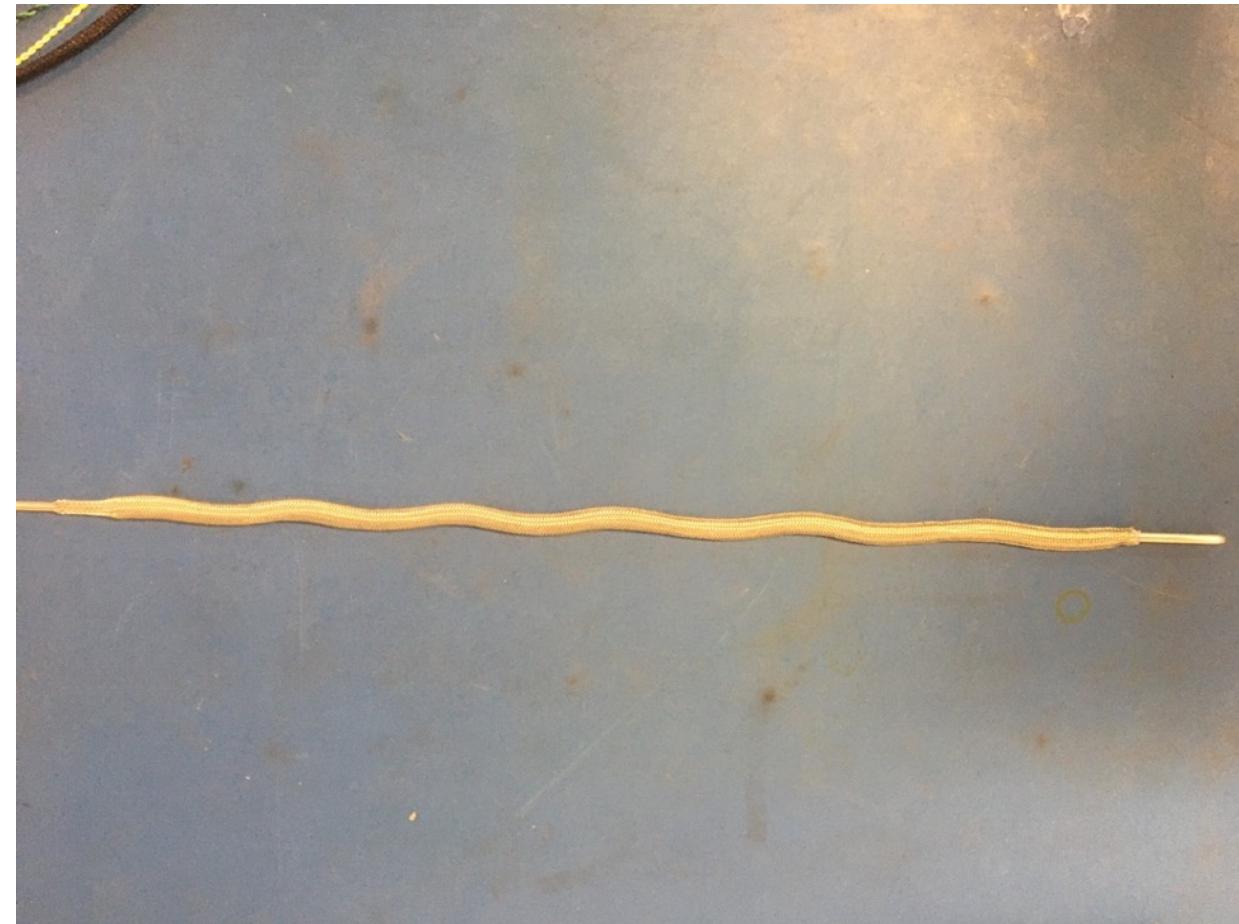
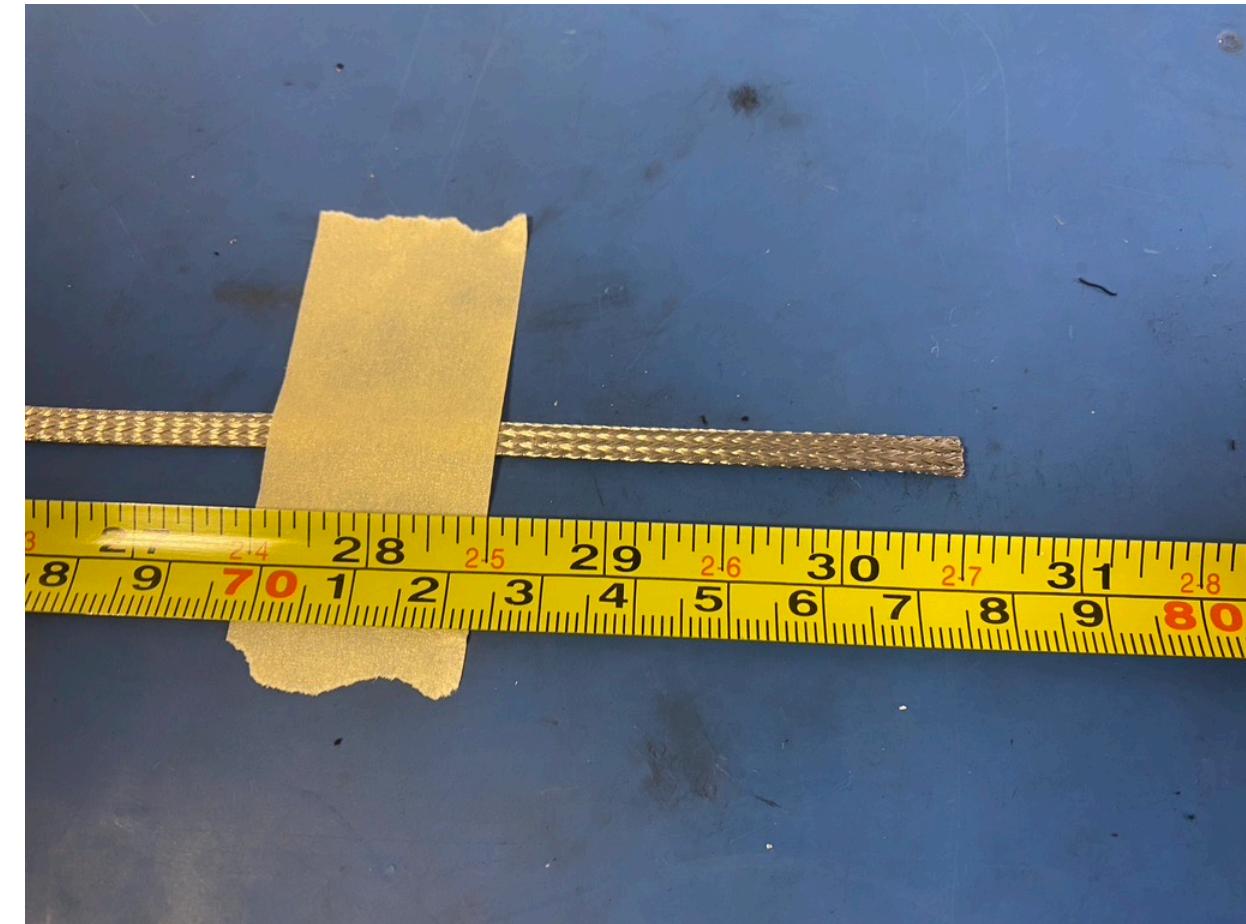
Put another piece of the 6.4mm shrink tube onto the other end of the plastic braid. Again, the plastic braid should end midway through the piece of shrink tube. Apply the heat gun.



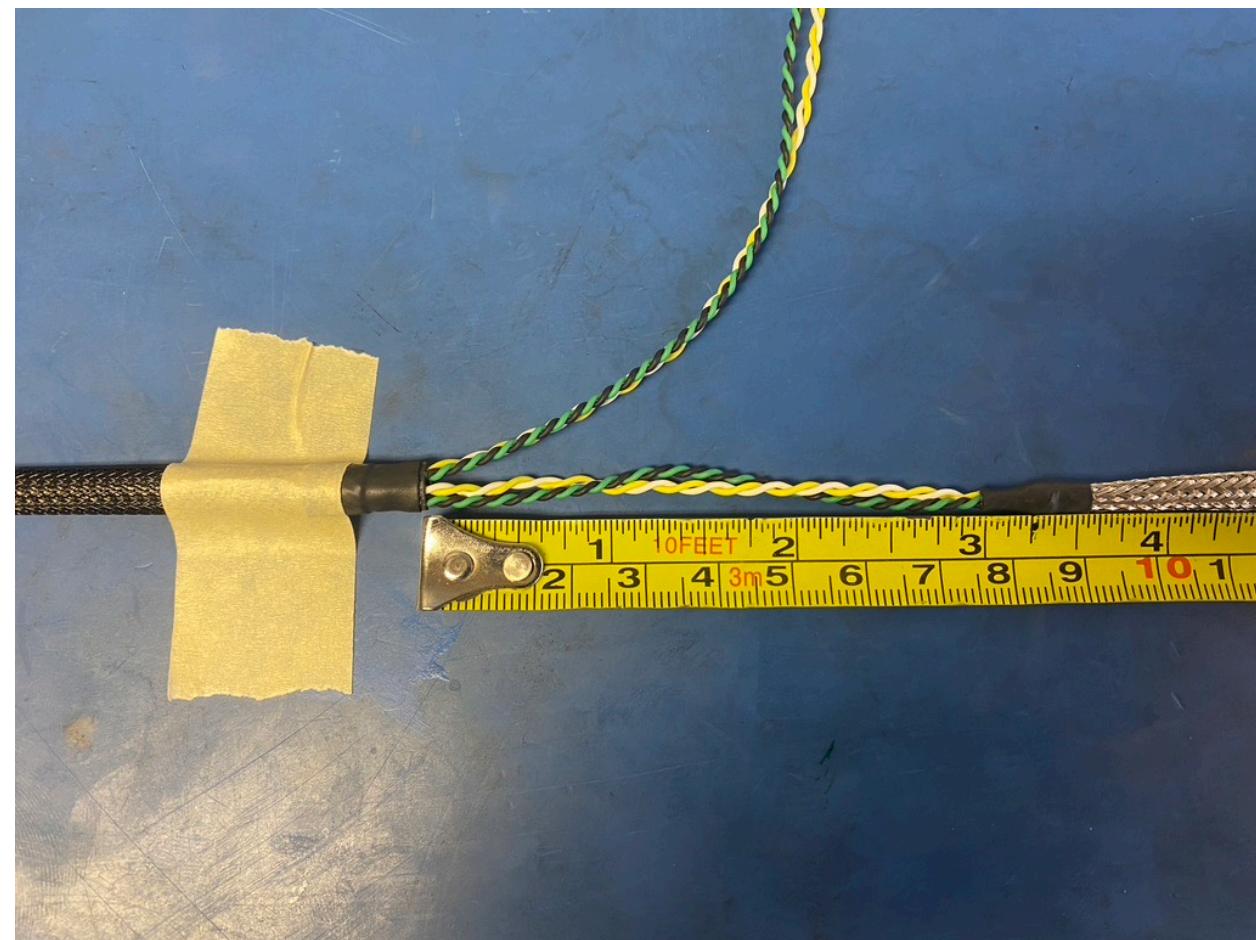
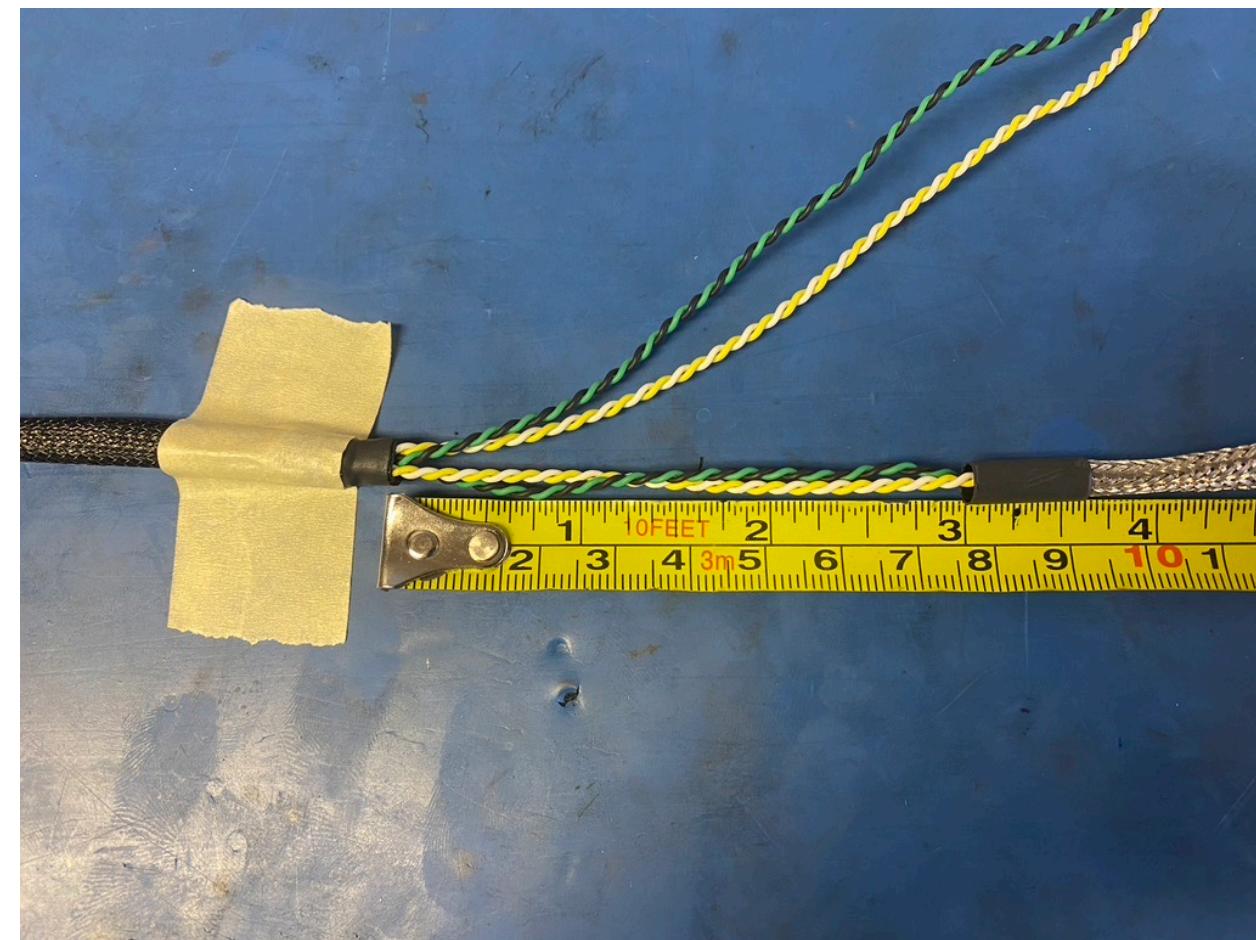
Continue the loose twist of the twisted pairs for the rest of their length. Thread a piece of the 4.8mm shrink tube onto the wire harness. Slide the piece of shrink tube toward the other end of the harness until its 3 inches away from the end of the plastic braid shrink tube that was applied on slide 35.



Measure out 30.5 inches of the 1/8th metal braid. Expand it using the metal rod.



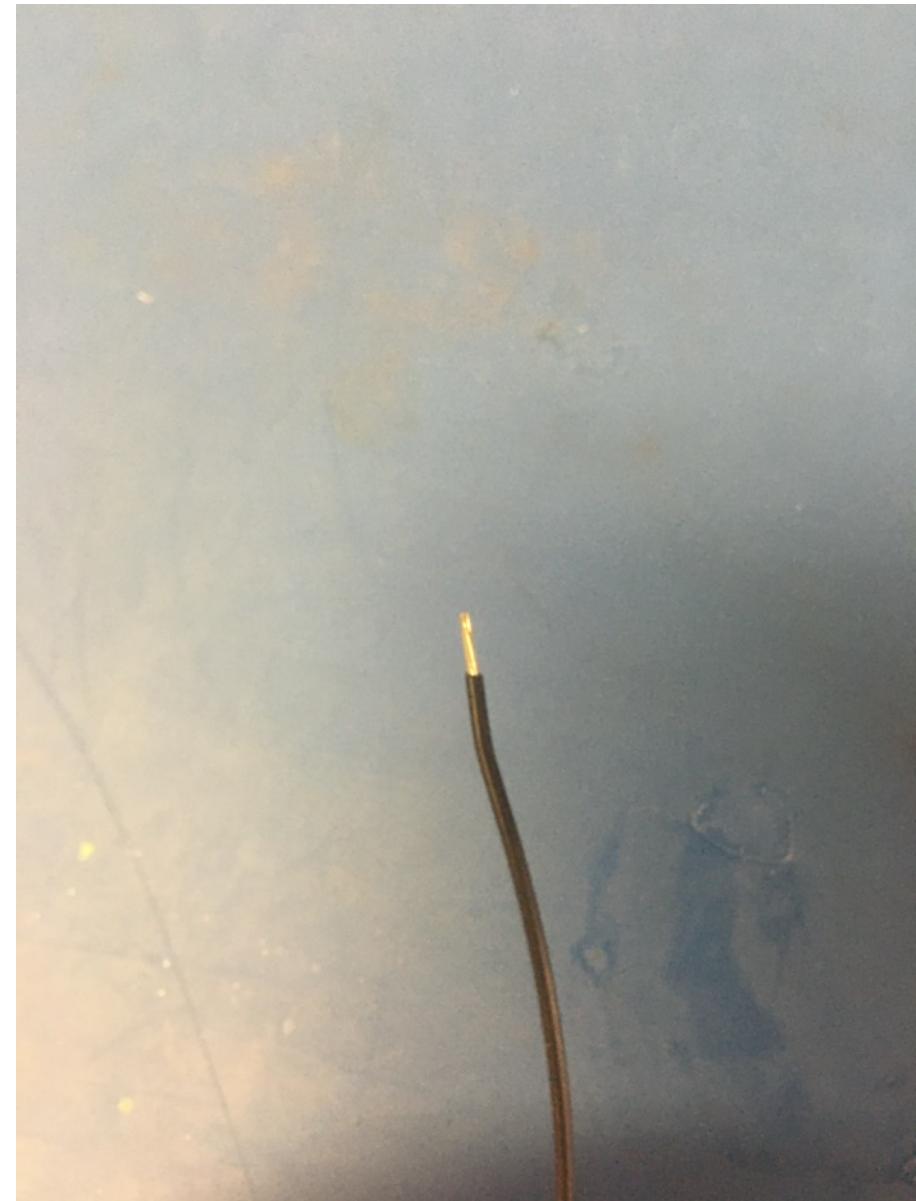
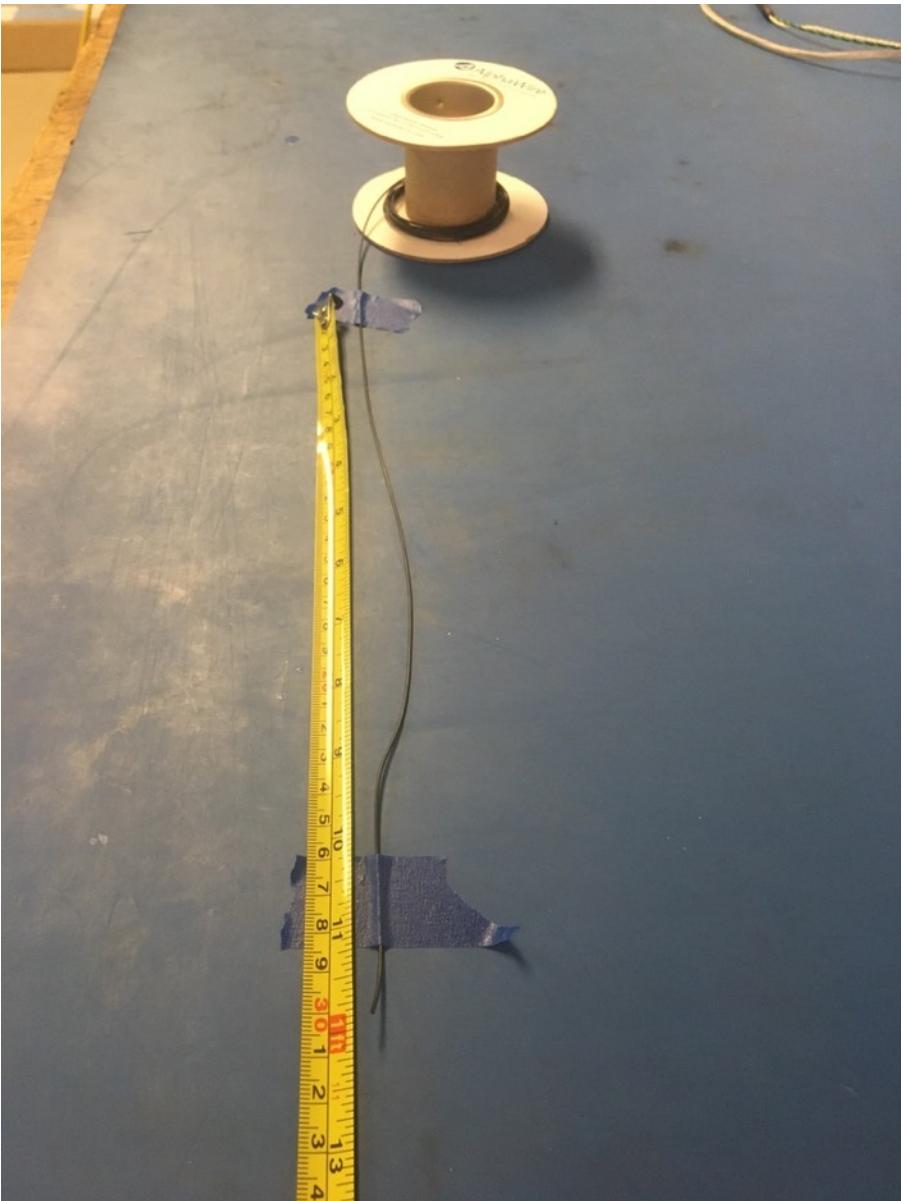
Thread the metal braid onto the wire harness. Put the metal braid into the piece of shrink tube. The metal braid should end midway through the piece of shrink tube. Apply the heat gun.



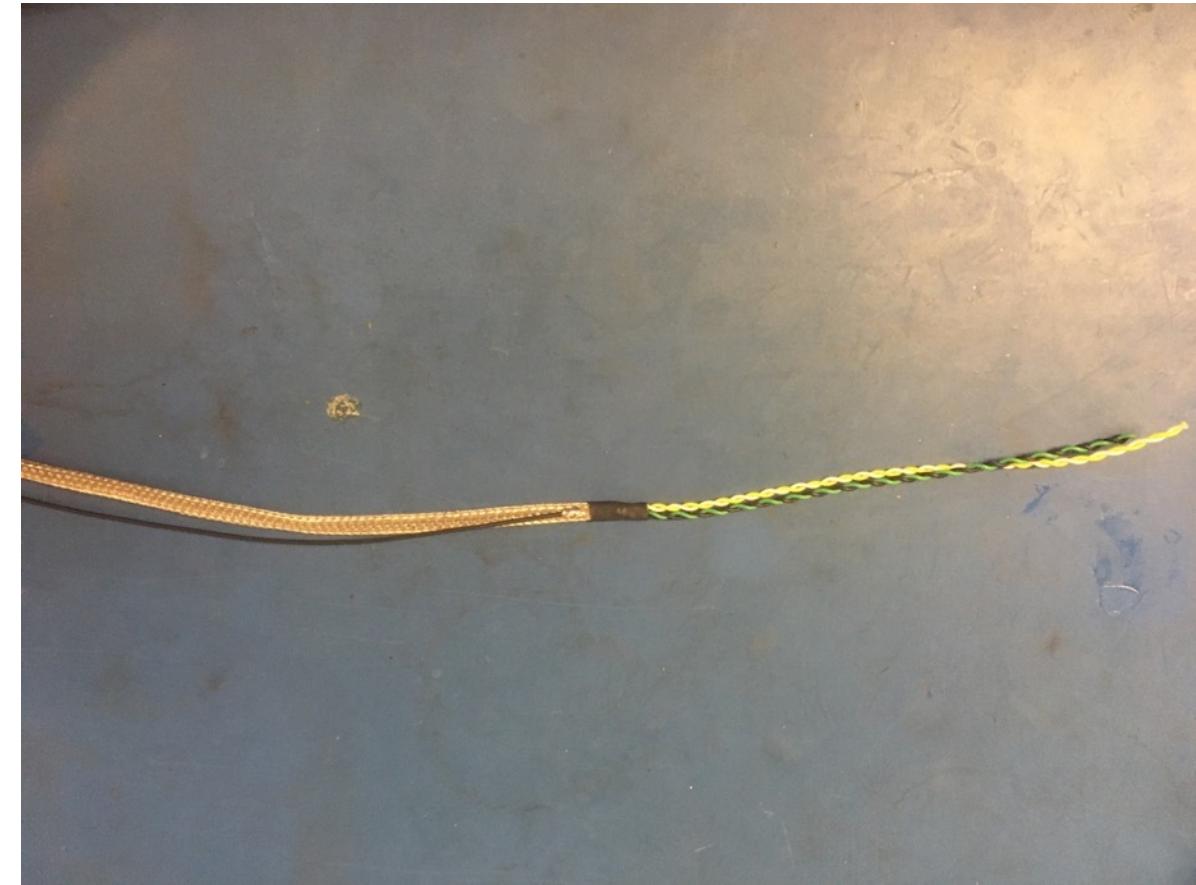
Put another piece of the 4.8mm shrink tube onto the other end of the metal braid. Again, the metal braid should end midway through the piece of shrink tube. Apply the heat gun.



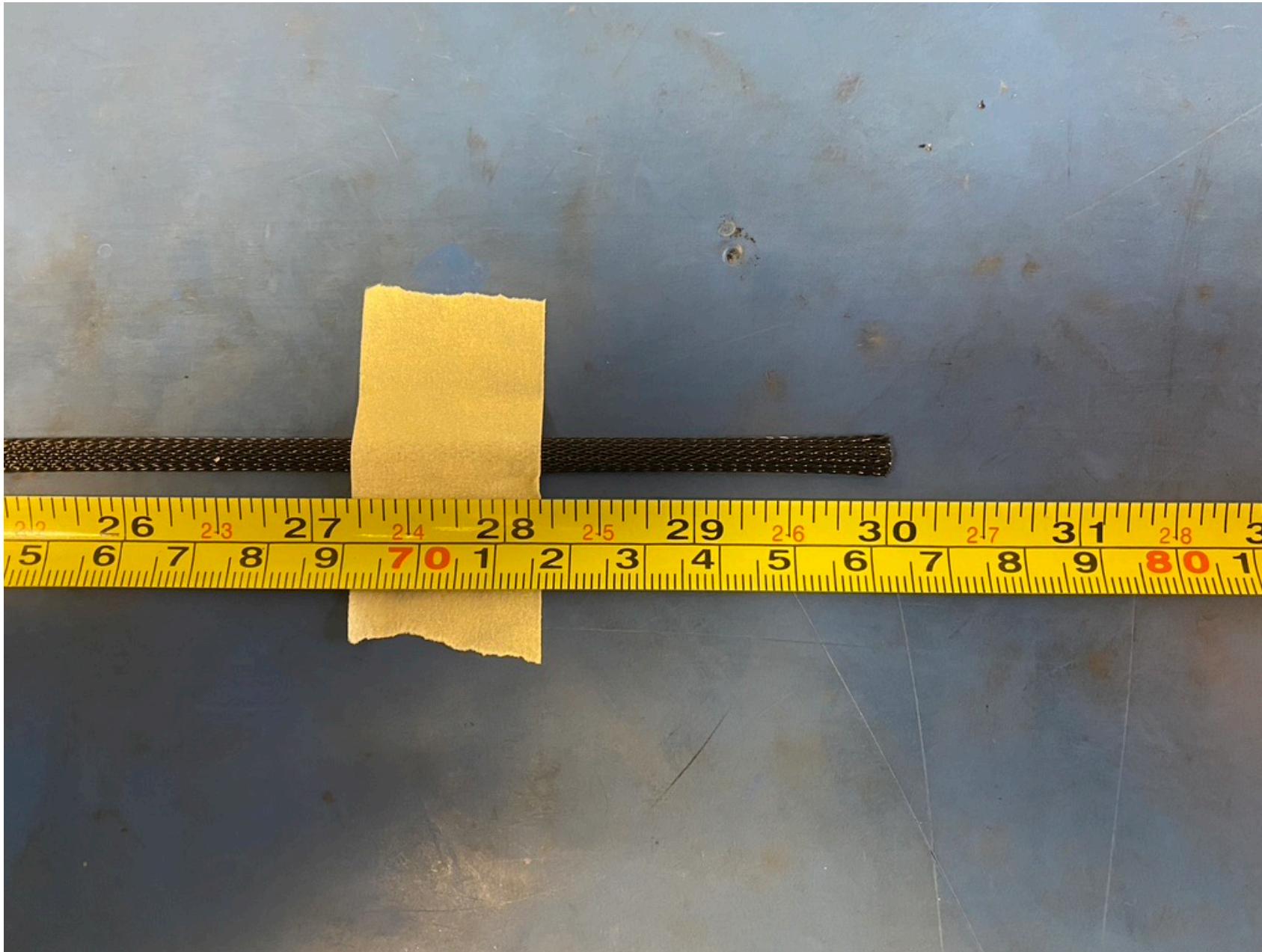
Measure out and cut 12 inches of black 24 awg wire. Strip 3-4mm off one end.

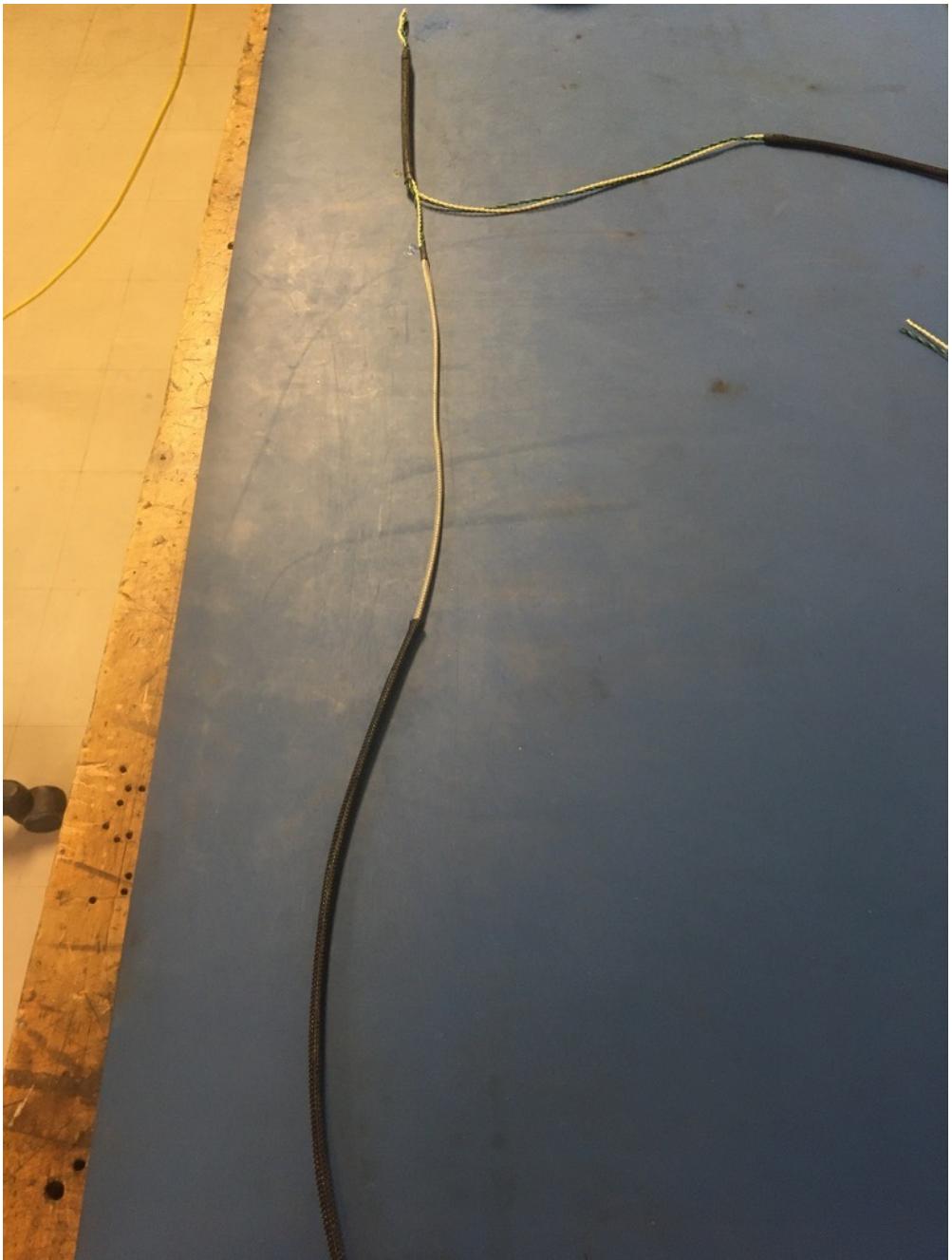


Solder the stripped end of the black wire onto the metal braid near the shrink tube joint at end of the harness. The black wire should be soldered so that its length runs with that of the metal braid.



Measure out and cut 30 inches of 1/4th plastic braid.





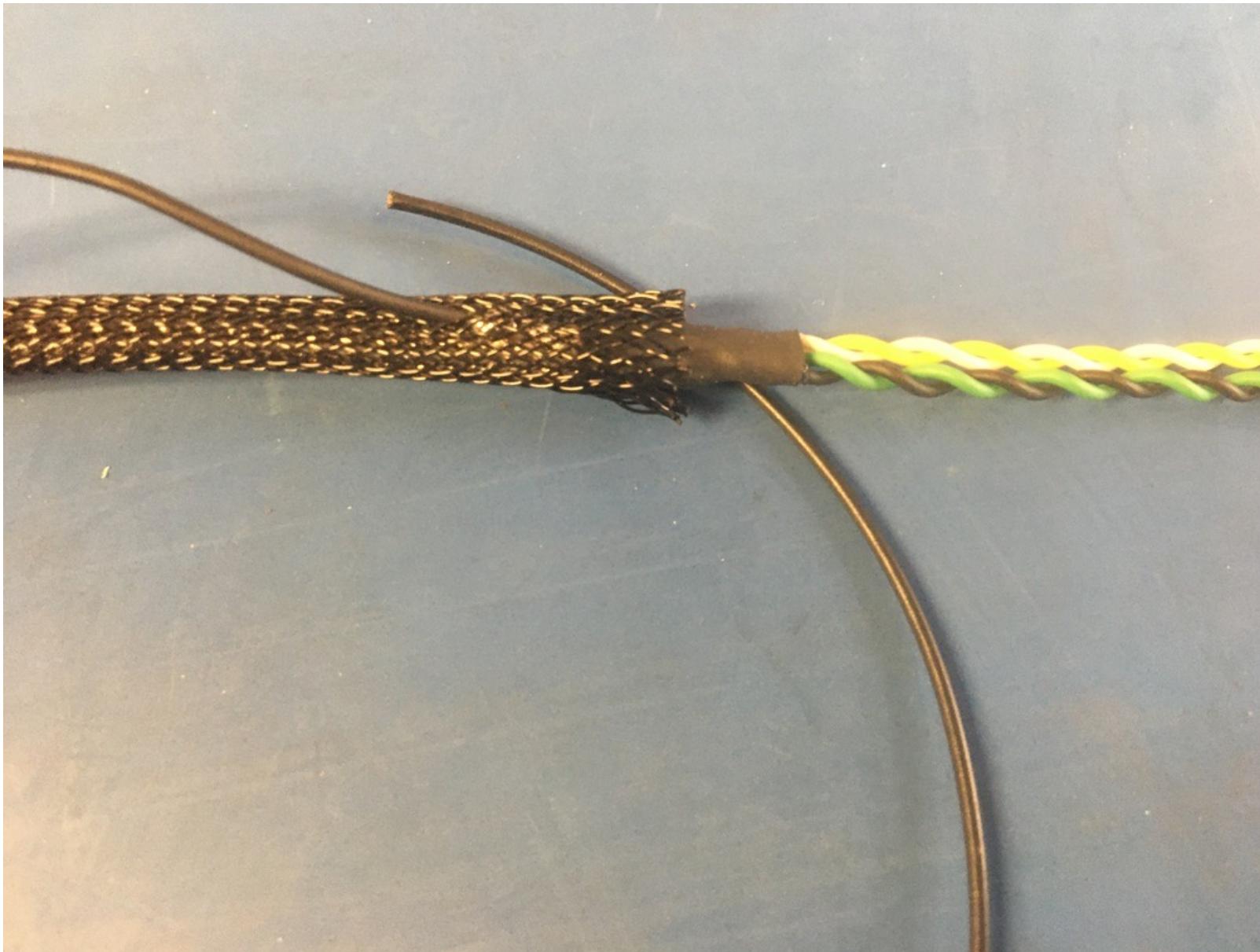
Put the plastic braid onto the wire harness. Place it over top the metal braid so that each end of the plastic braid ends midway through the metal shrink tube joints.



Put the last piece of the 6.4mm shrink tube onto the wire harness. Place the shrink tube on plastic braid end without the ground wire. The plastic braid should end midway through the piece of shrink tube. Apply the heat gun.



Thread the ground wire through one of the holes in the plastic braid so it appears as shown.



Measure out and cut one length of 6.4mm adhesive shrink tube that is 1in long. Place the piece of shrink tube onto the ground wire end of the harness. The shrink tube should be placed such that it covers the solder joint and the length of shrink tube beneath. Apply the heat gun.



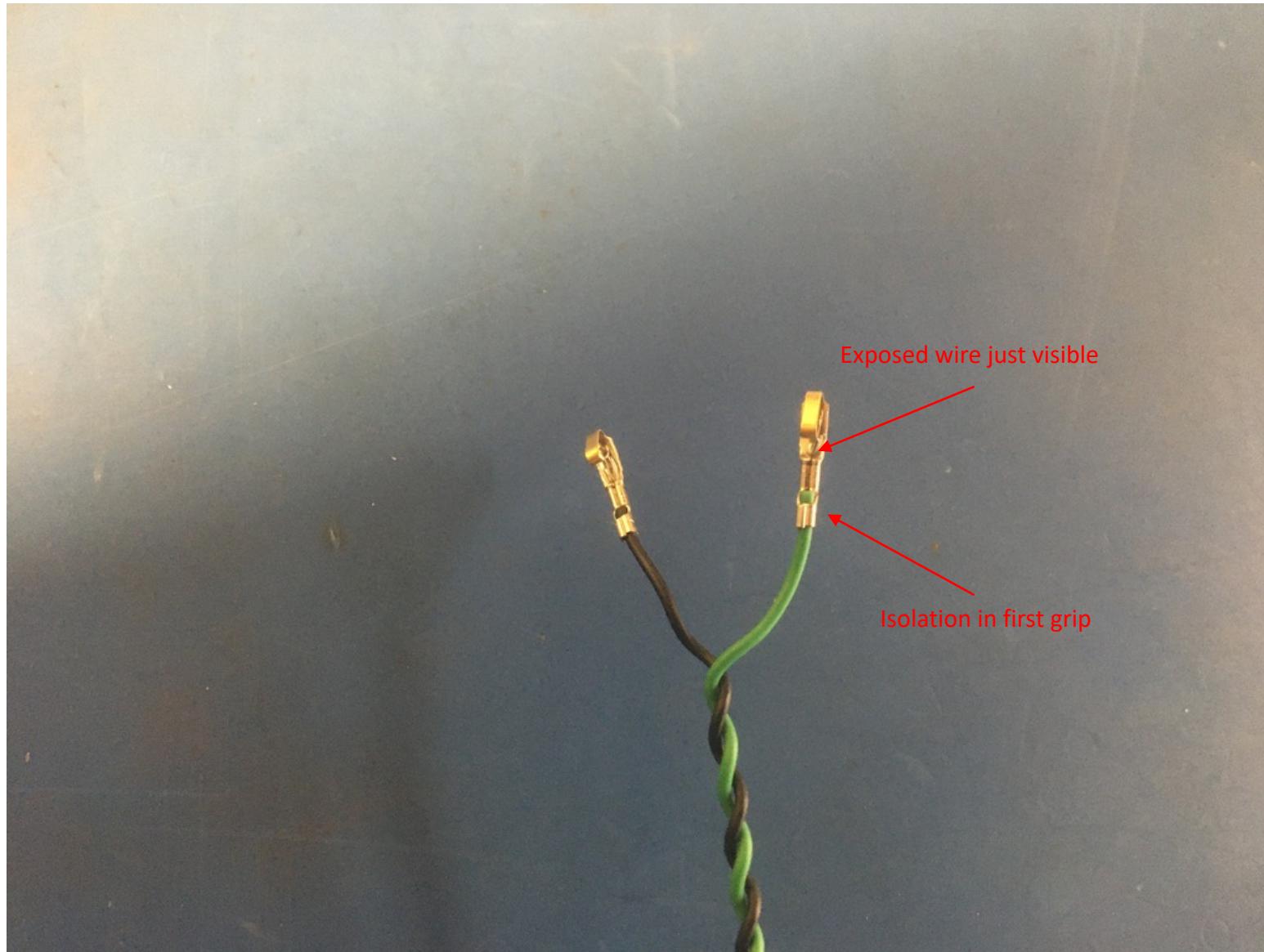
Measure and cut the ground wire end of the twisted pairs so that they measure 2.5 inches.



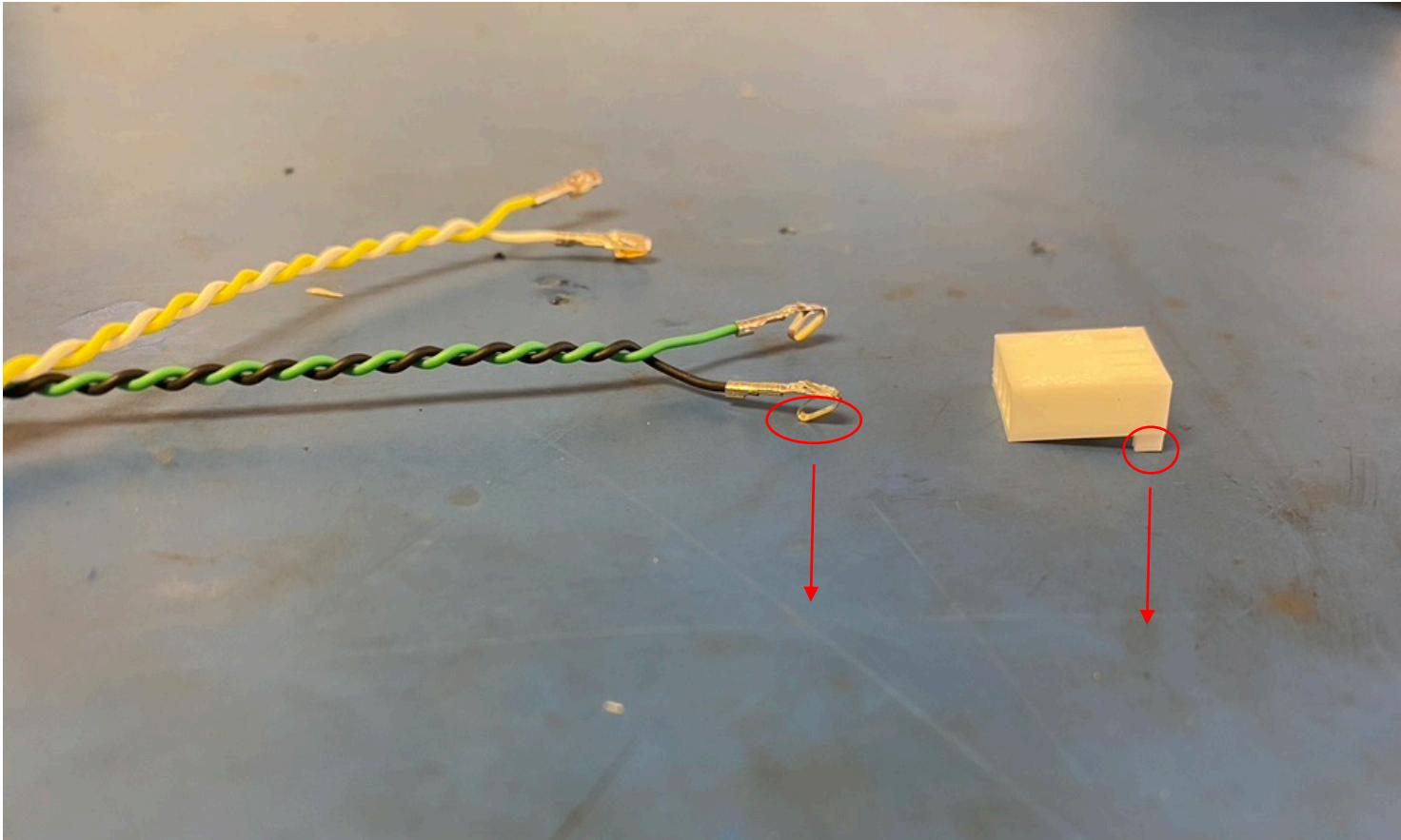
Strip all the wires (about 2-3mm). Using the KK 254 crimper, crimp on KK 254 tips. Be sure to use slot A.



Once the wire ends are crimped, they should look as shown: isolation held by the first grip but not the second and a bit of exposed wire peaking out the end of the second grip.



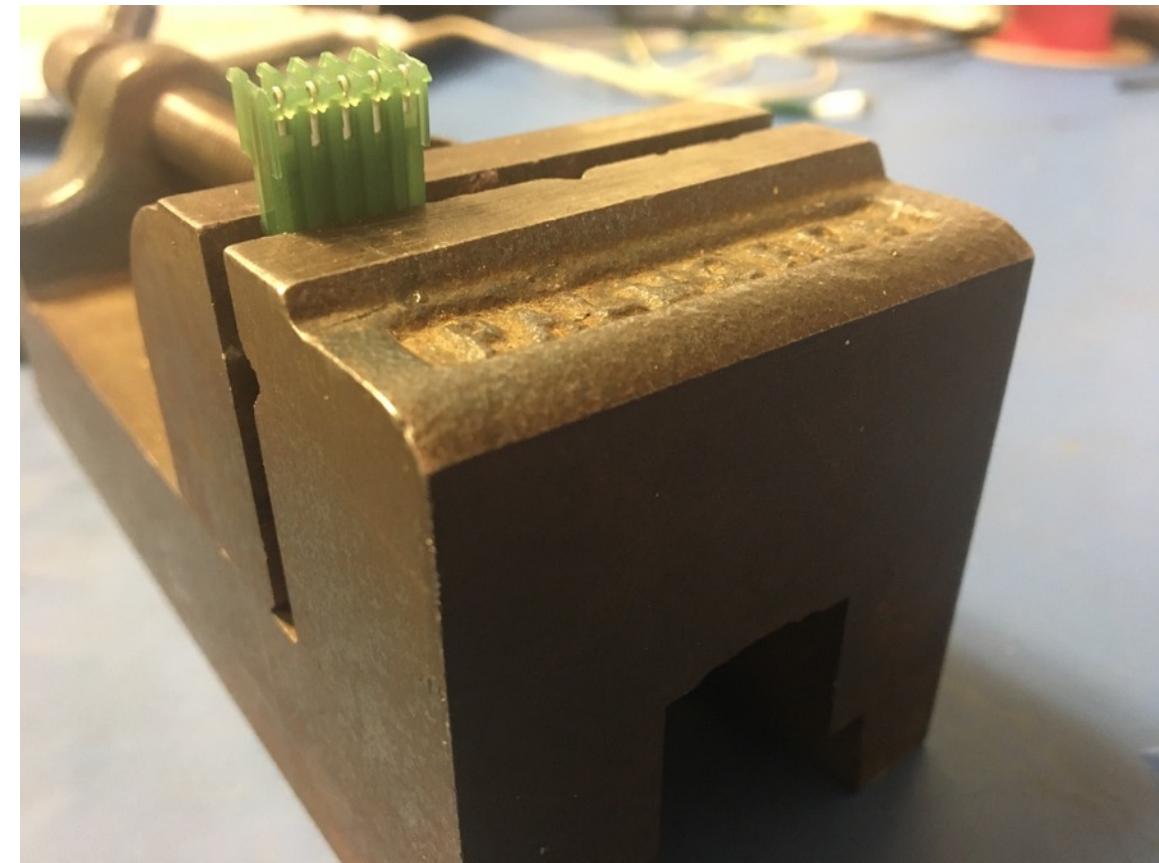
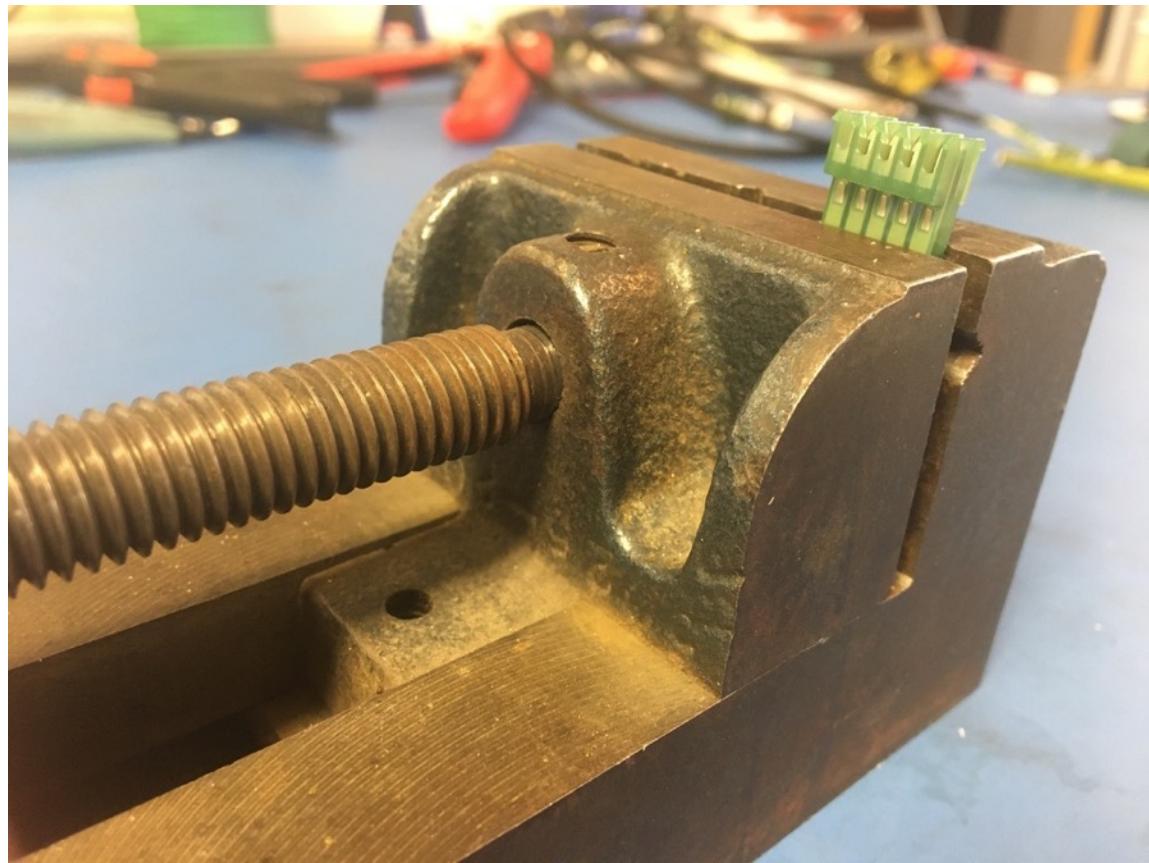
Before inserting the tips into the connector, have the extrusions of both face down. Then push each tip into the hole of the connector until the it clicks. If there are difficulties with pushing the wire tip in by hand, use the metal extraction tool to push on the bottom edge of it until it clicks in place. Please reference the accompanying pin out document to see where each wire should go.



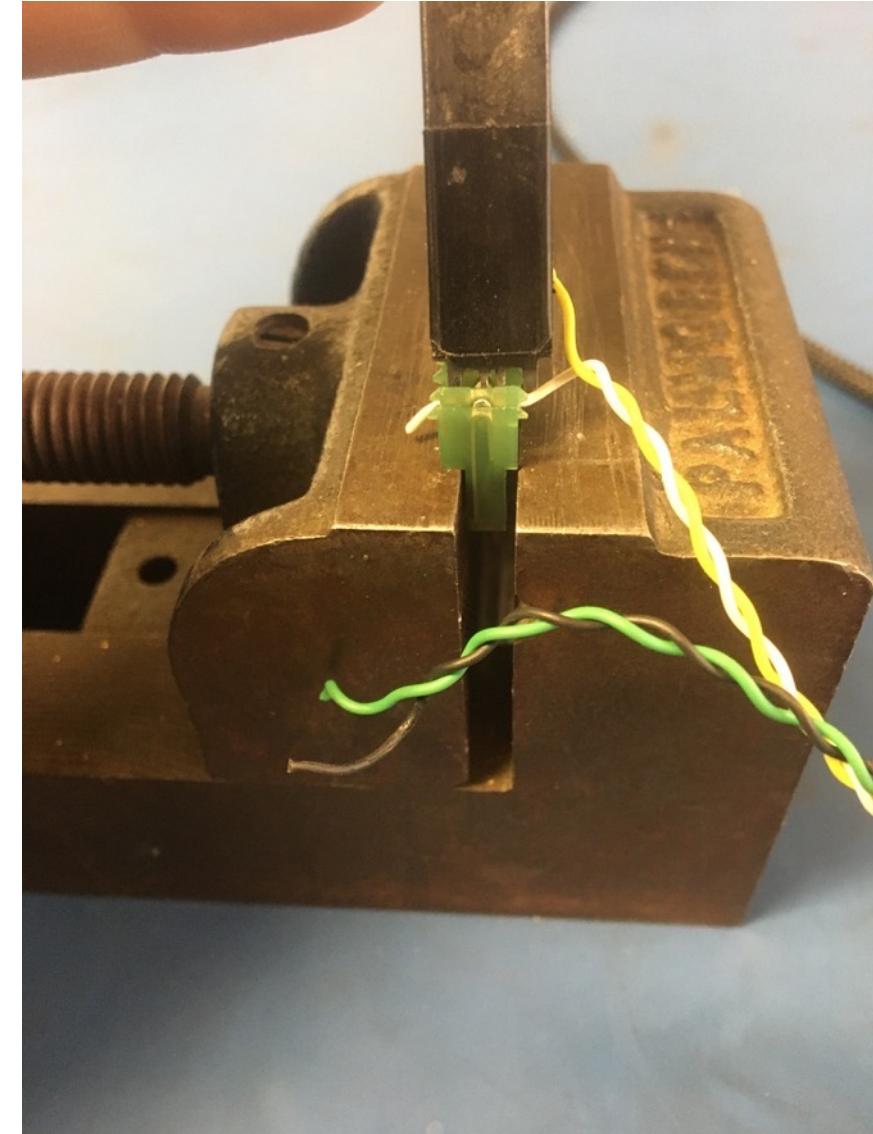
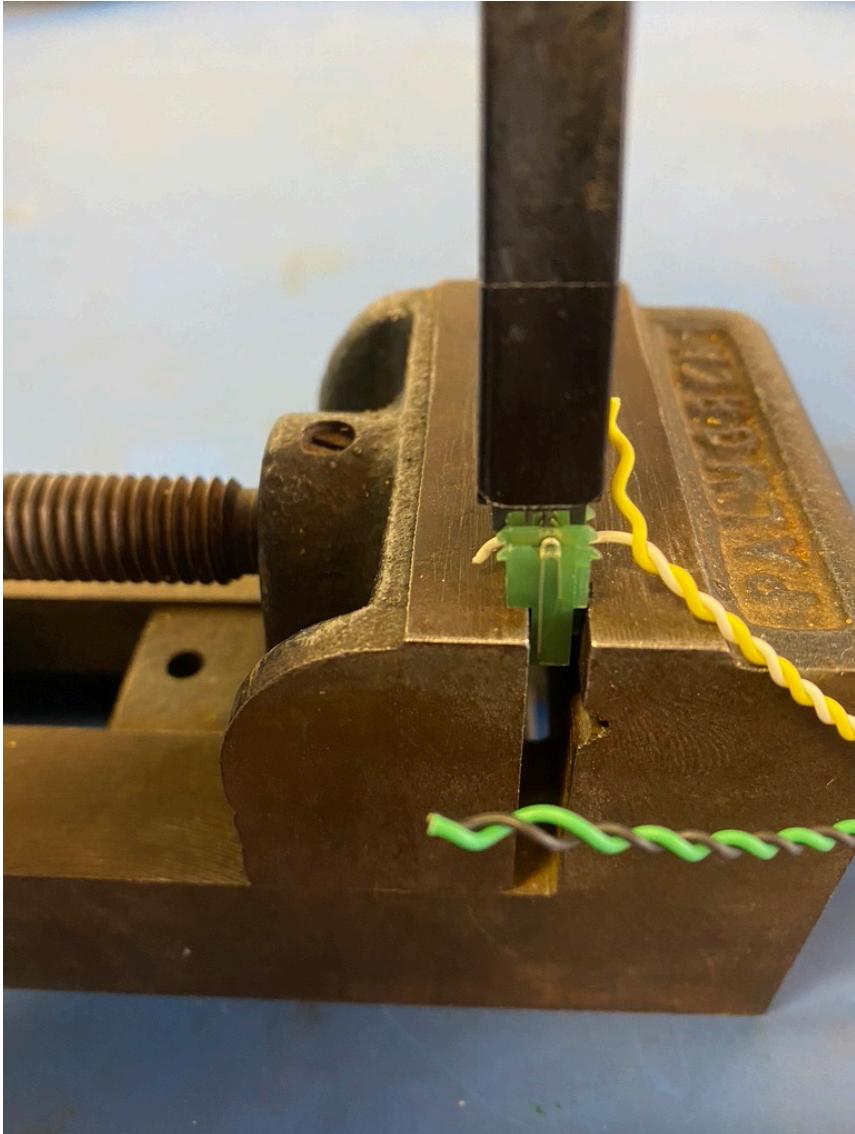


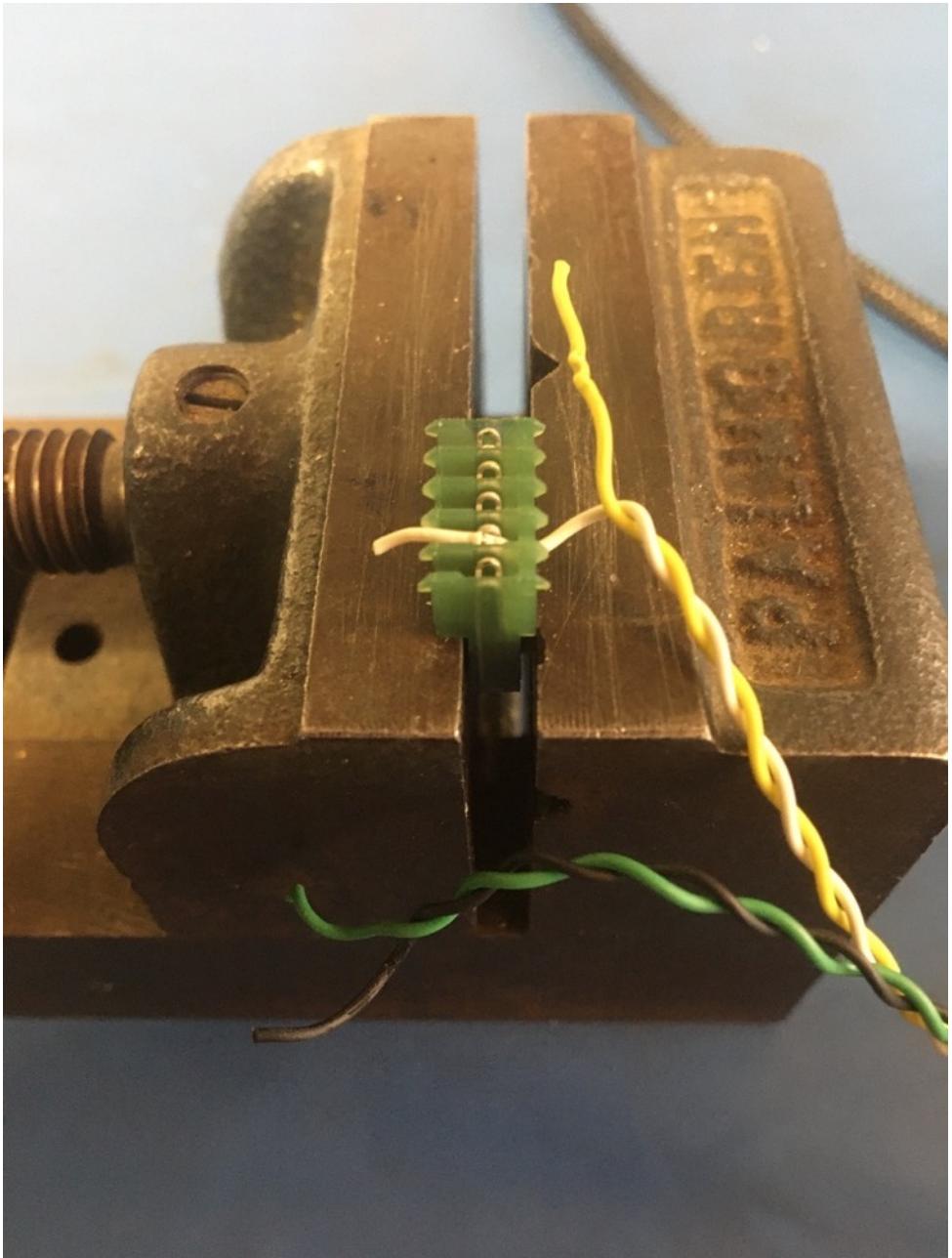
Once all the wires are inserted, the connector should appear as shown on the left.

Take one of the feed through connectors and put it in the vise as shown. The side of the connector shown on the left is considered the front of the connector.

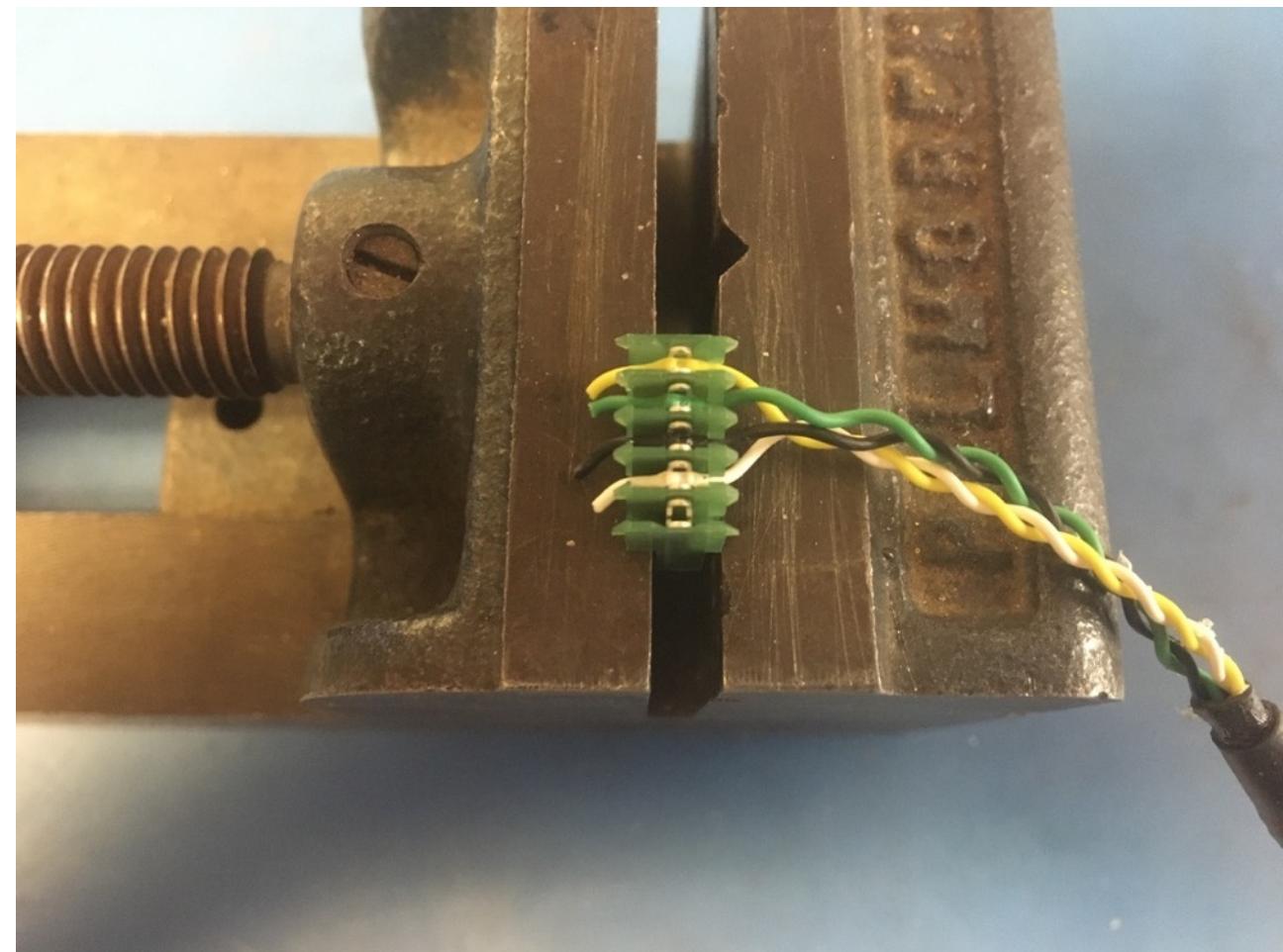


Using the T insertion tool, insert the white wire into the feed through connector. The middle two teeth of the insertion tool should be alternated in pushing on the middle of the wire (shown below) till its completely inserted. Push on the insertion tool gently to slowly insert the wire as it's easily damaged if inserted too fast.

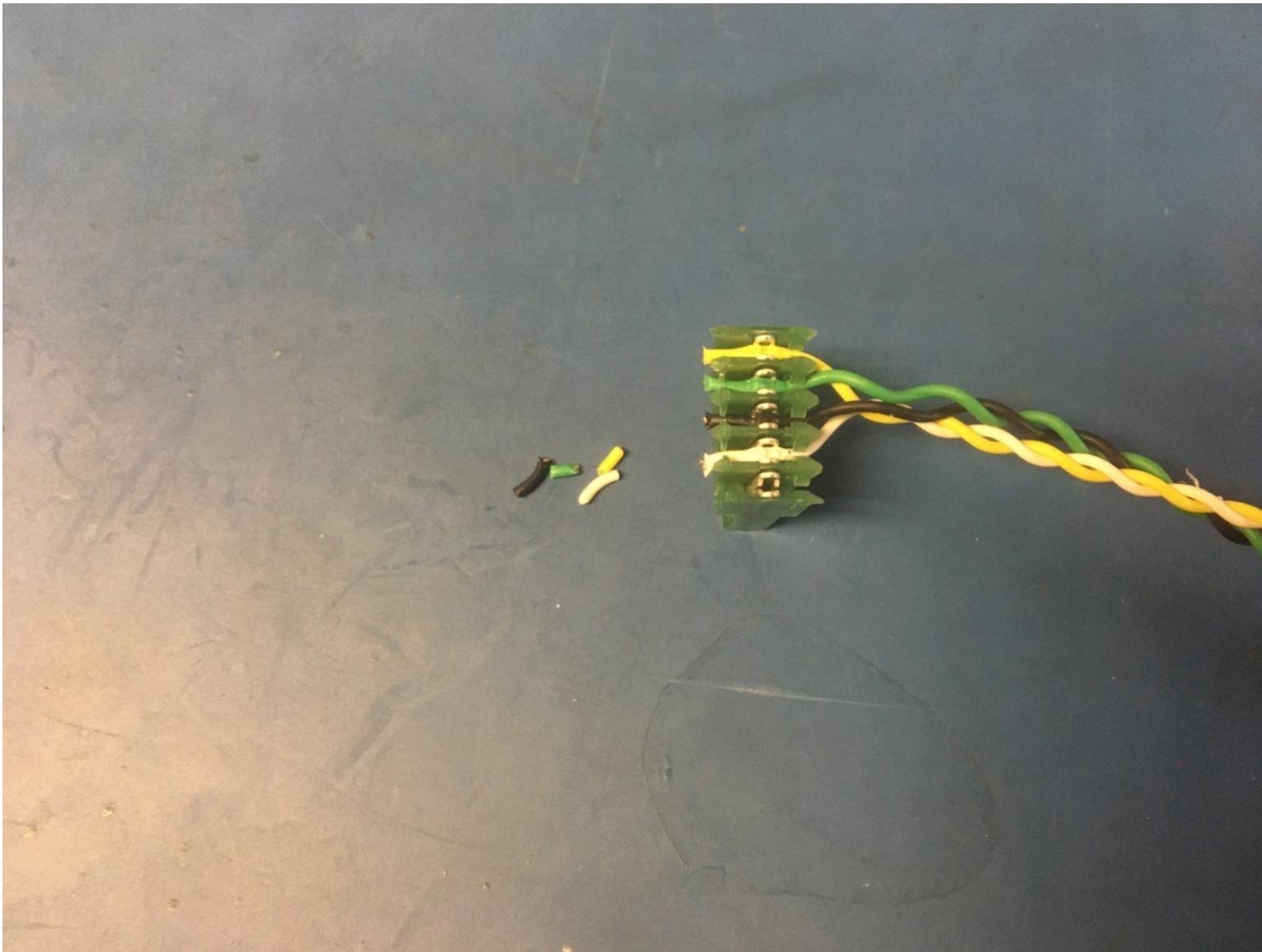




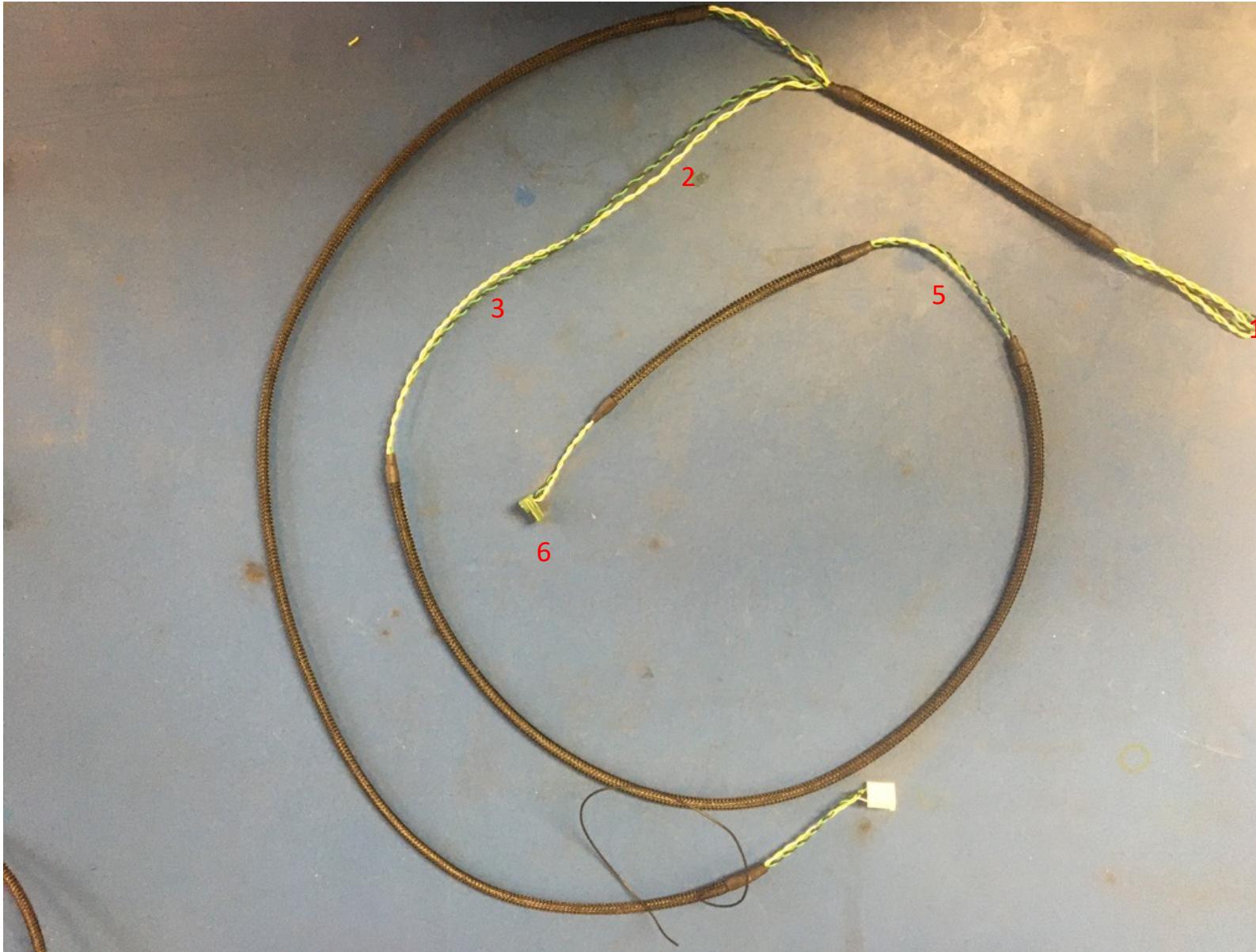
Once inserted completely, the white wire should appear as shown on the left. Proceed to insert all the wires into the connector. Once done, the connector should appear as shown on the right. The wire positions are the same for each of the subsequent feed through connectors.



Trim the ends of the wires hanging out of the connector.



The other four of the feed through connectors should be placed at the numbered locations shown below. The numbers corroborate with the sensor number they plug into on the feed.



At the next connector position (sensor 5), the connector should be placed about midway (1.5in) through the length of wire. Put the wires into the connector as previously demonstrated. When all the wires are inserted, the connector should appear as shown on the right. Be sure that the connector is facing the same direction as the first connector



At the next two connector positions (from left to right, sensor 3 and 2), the connectors should be placed at 3.25in and 8in along the length of wire. Put the wires into the connector as previously demonstrated. Make sure that the connectors are facing the same direction as the other connectors (the numbers on the connector should face away from the wire loop).





At the final connector position (sensor 1), the connector should be placed at the crux of the wire loop. Put the wires into the connector as previously demonstrated. The direction the connector faces does not matter in this case.

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

