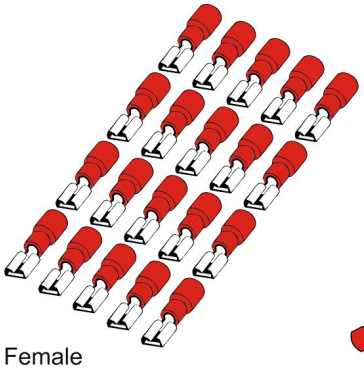
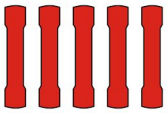
Make Wiring Harness

Items required:

96” 20 Gauge
2-conductor Wire

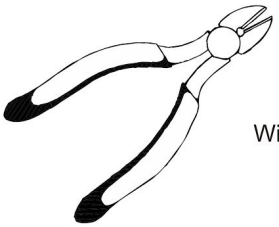


20 Female
Spade Connector

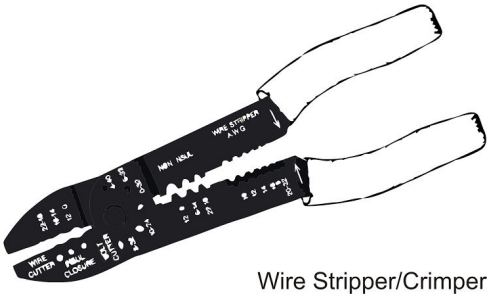


4 Butt Splice Connectors

4Female Bullet Connectors

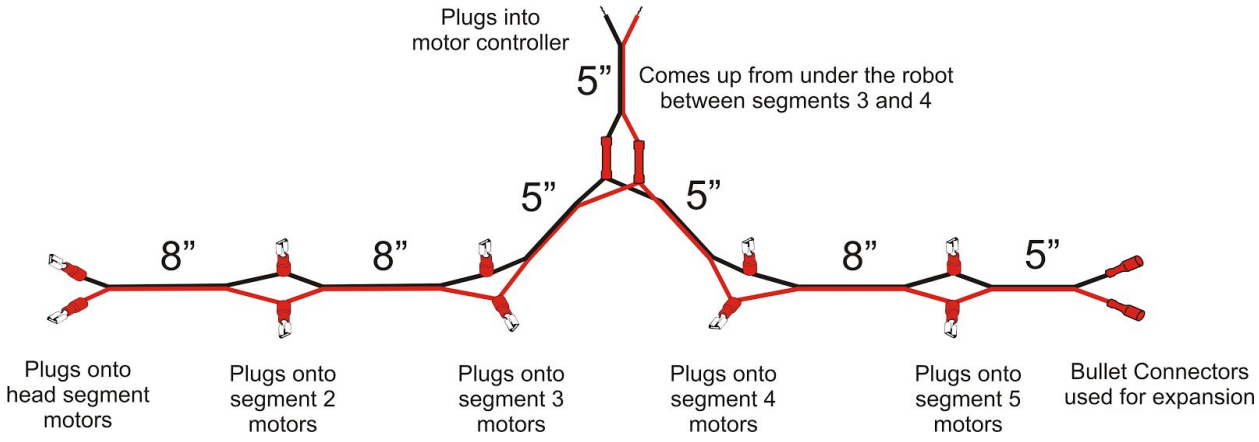


Wire Snipper

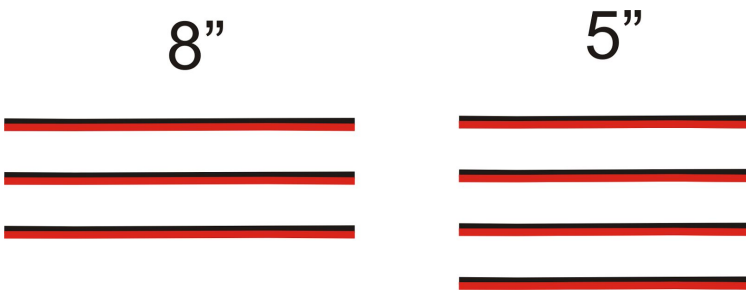


Wire Stripper/Crimper

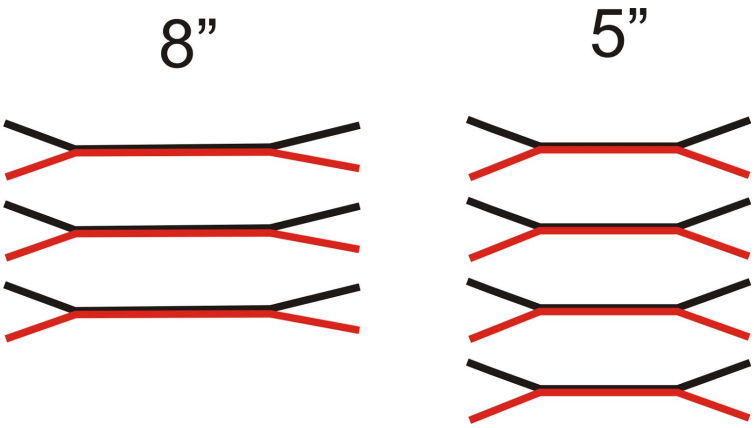
Step 1: Familiarize yourself with the diagram below to see what the wiring harness looks like when it is done. You will be making 2 wiring harnesses--one for the left side motors and one for the right side motors. These instructions will show you how to make one harness. You will then repeat steps 2-12 to make the second.



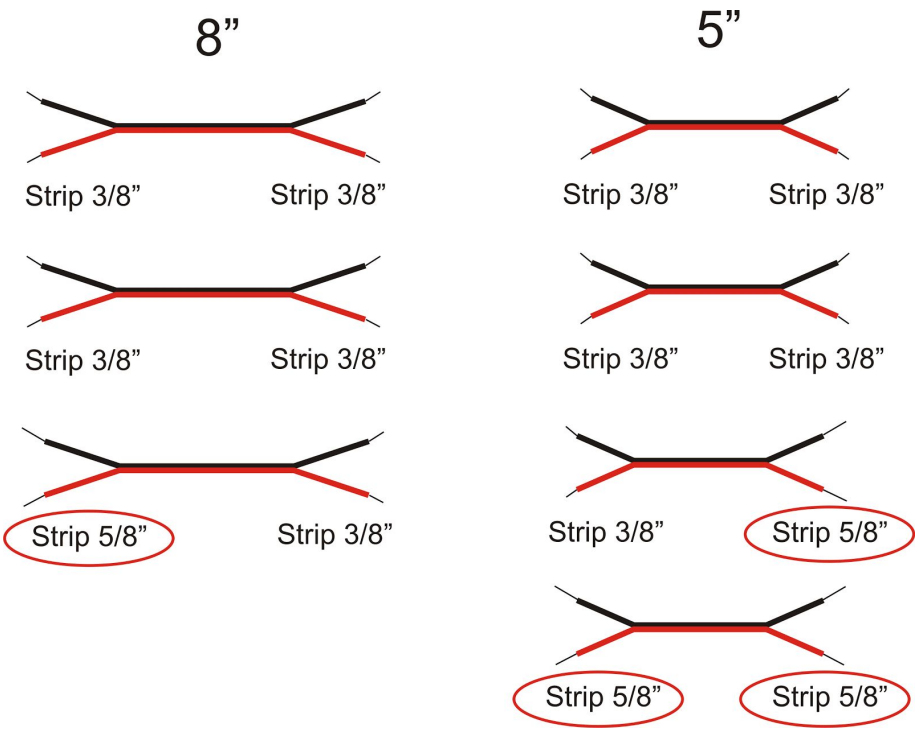
Step 2: Cut 3 pieces of wire 8” long. Cut 4 pieces of wire 5” long.



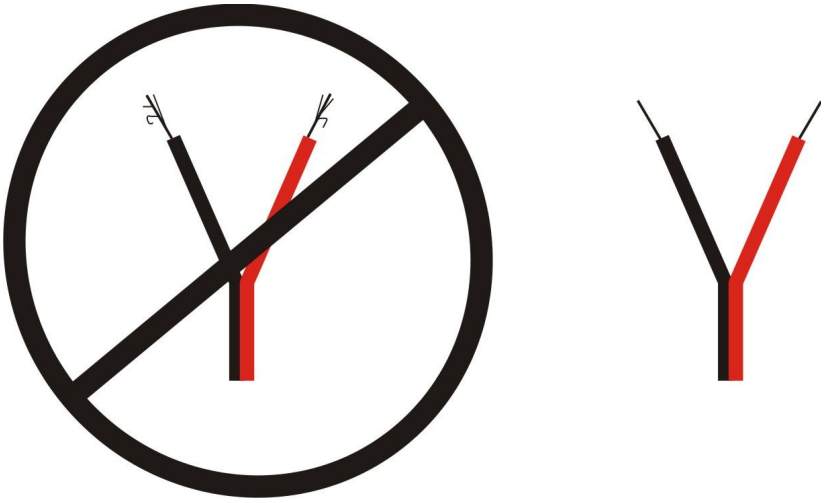
Step 3: Using your fingernail, split the ends of the wire back about 1.5”.



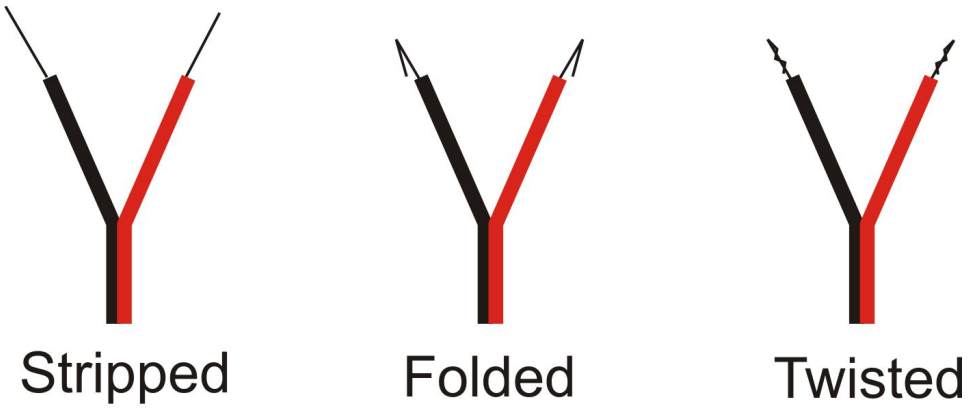
Step 4: Strip the ends of the wire as indicated below.



Step 5: Clean up all the wire ends by twisting the bare part of the wire a bit.

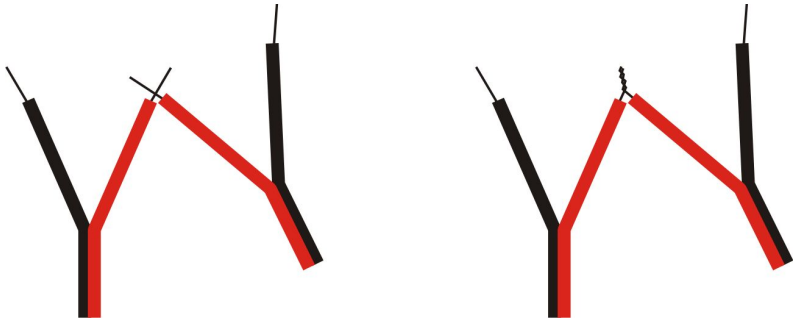


Step 6: For the wires that have ends with 5/8” stripped, fold the ends at about the halfway point and twist together. These wires will go into a connector without another wire. When a single wire is in a connector, it tends to pull out of the connector. Folding it will increases the thickness of the wire going into the connector thereby making it more secure in the connector.

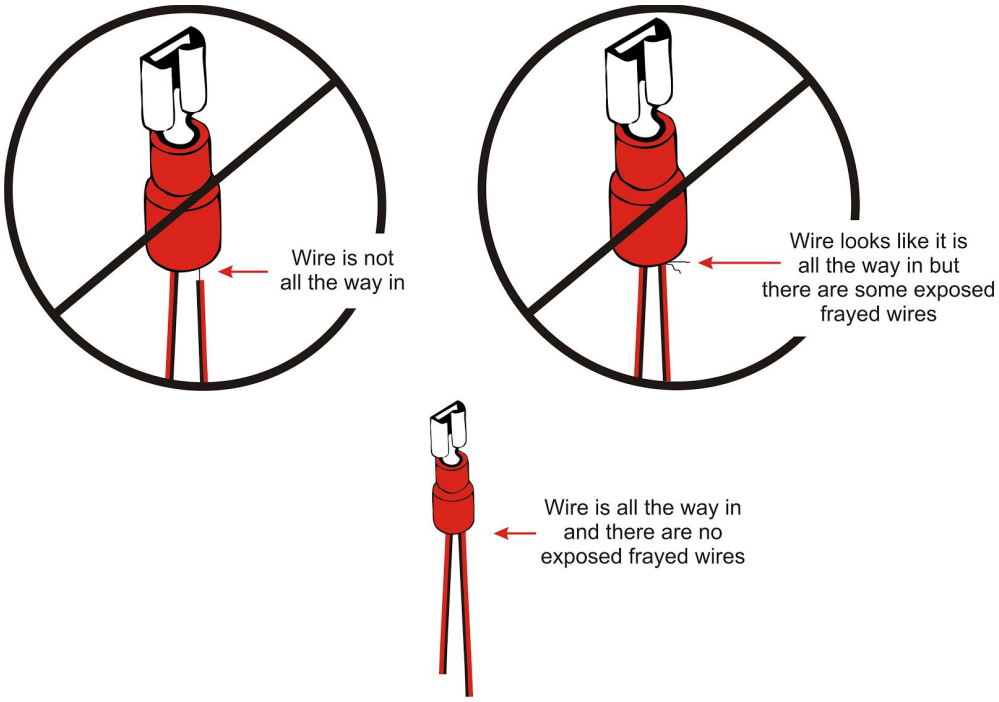


Now you will begin combining wires and crimping on the wire connectors. Following are some tips on how to successfully make the proper connections:

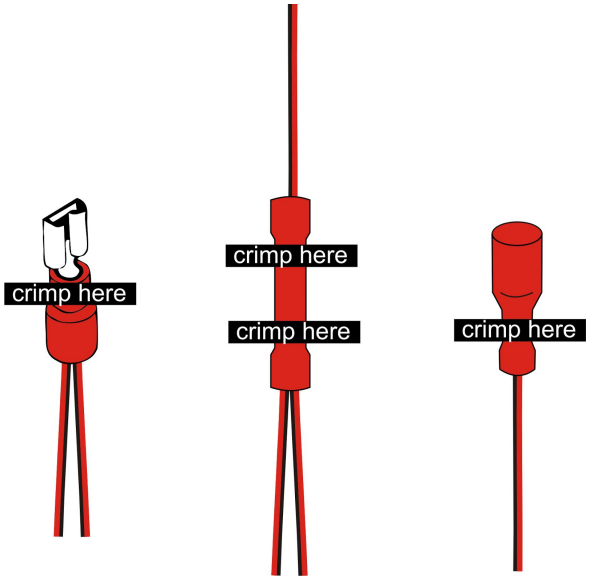
When two wires are going into a connecter, twist them together as shown here:



Always insert wires completely into the connector so that no bare wire is showing. ***Caution: Always ensure that the wires are completely in a connector before crimping it. Once it is crimped, the wire cannot be adjusted.*** There should be no exposed bare wire and the connection should feel secure. If there is some exposed wire but the connection feels secure, you can snip off frayed ends and/or cover the connection with electrical tape or shrink tubing so that there is no risk of the bare wire coming into contact with something that will cause a short.

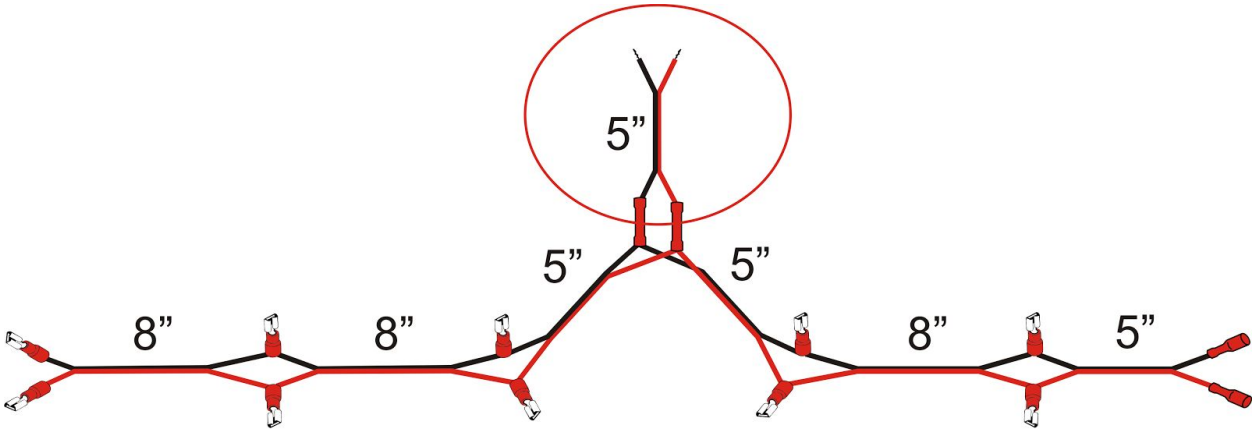


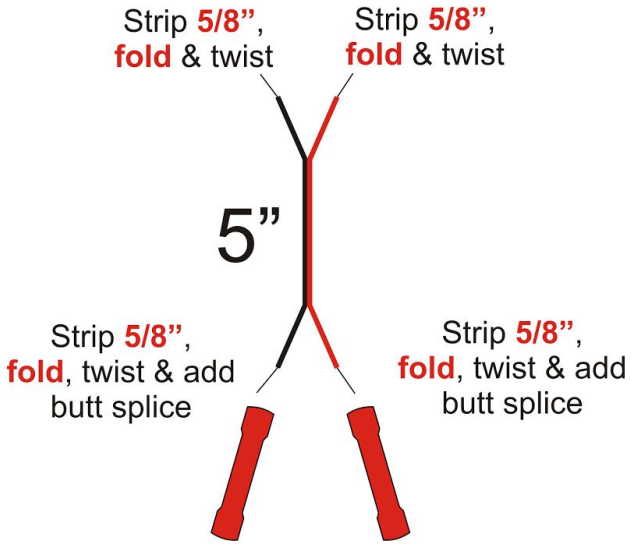
The following shows where to crimp the connectors. When crimping make sure to squeeze the crimper all the way so that the connection is secure. This requires a bit of force so younger children may require assistance.



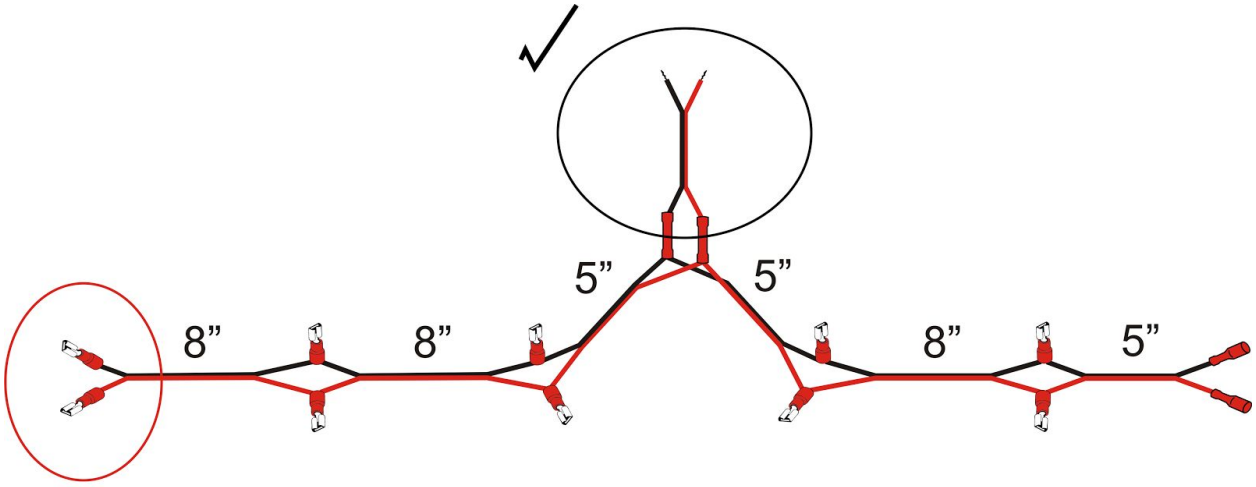
Each step below will first show you what part of the wiring harness you will be making and then show the detail of what you need to do.

Step 7: Using the piece of 5” wire that has both ends stripped to 5/8” and has folded and twisted ends, add the butt splice connectors to one end--one to the red wire and one to the black wire. Ensure the wires are all the way in and crimp.





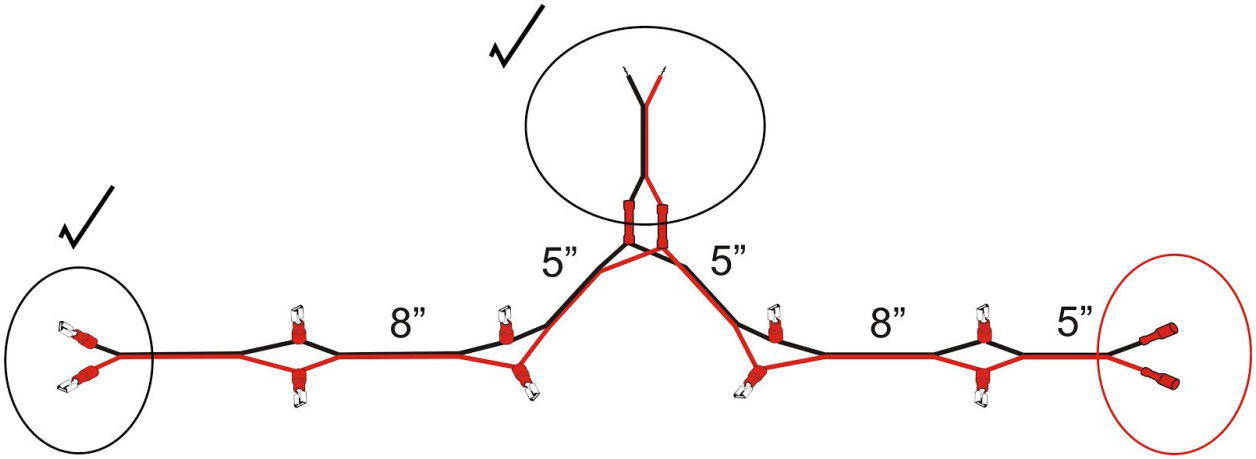
Step 8: Using the 8” piece of wire that has one end stripped to 5/8” and is folded and twisted, add the female spade connectors--one to the red wire and one to the black wire. Ensure the wires are all the way in and crimp.

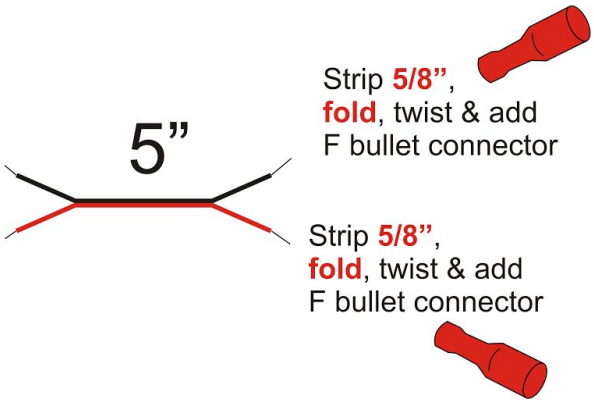


Strip **5/8”**, **fold**, twist & add spade connector

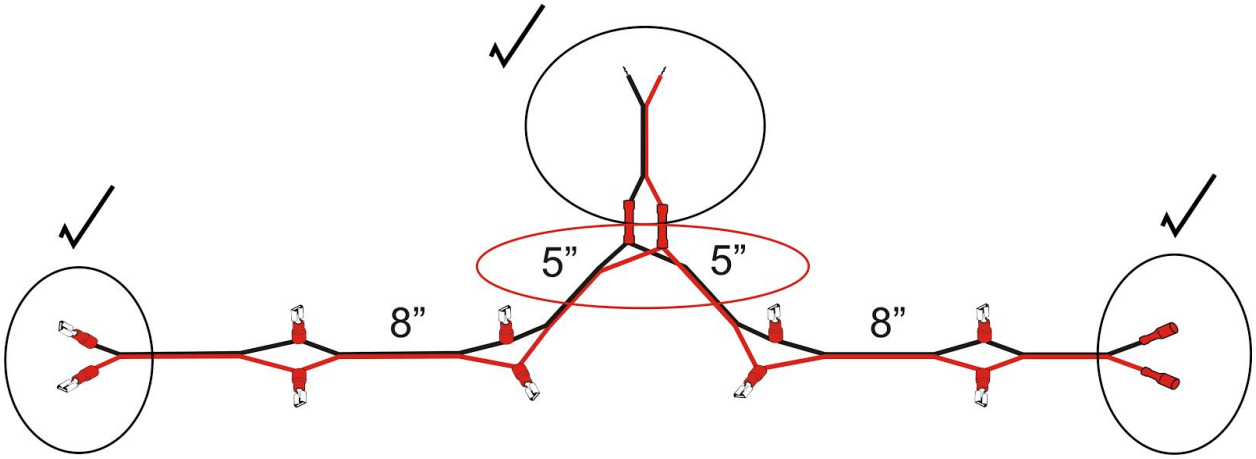
Strip **5/8”**, **fold**, twist & add spade connector

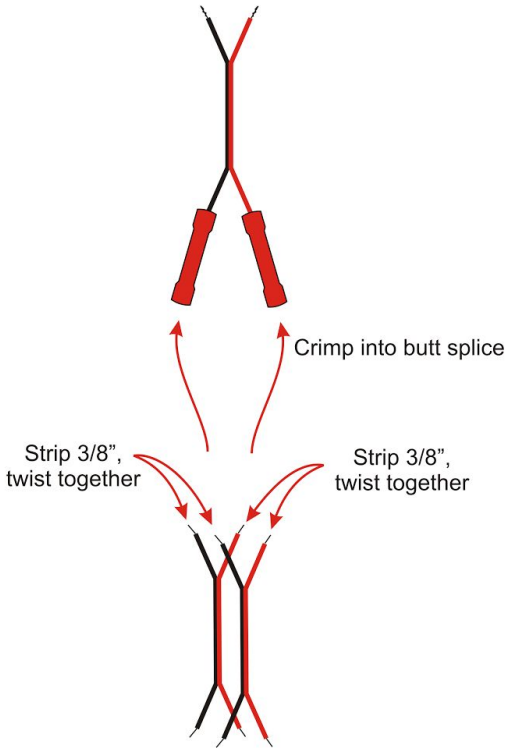
Step 9: Using the 5” piece of wire that has one end stripped to 5/8” and is folded and twisted, add the female bullet connectors--one to the red wire and one to the black wire. Ensure the wires are all the way in and crimp.



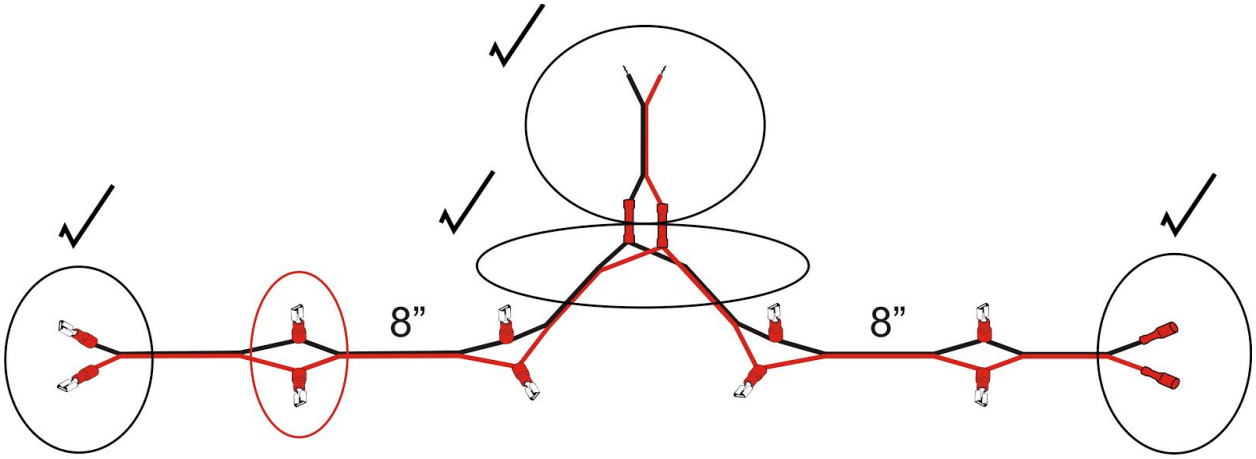


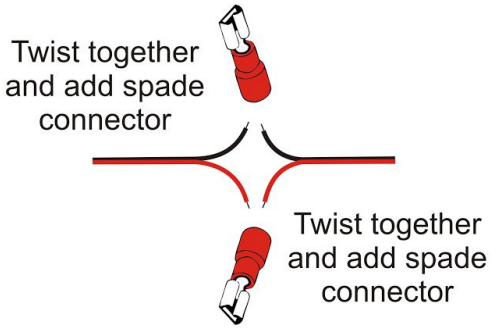
Step 10: Using two of the 5” pieces of wire that have both ends stripped to 3/8”, twist the two red ends together and the two black ends together. Take the piece you made in step 7 that has the butt splice connectors on it and insert the twisted together wire into the other end of the butt splice connector--red to red and black to black. Ensure the wires are all the way in and crimp.





Step 11: Take the remaining 2 8” wires, which should already be stripped to 3/8” on both ends, and lay them out like below with all the pieces you have already put together. Begin adding the spade connectors as shown.





Step 12: Repeat step 11 for the remaining 3 connections. Now repeat steps 2-12 to make second wiring harness.