



FORD PERFORMANCE

M-15200-RFL

2017-2019

FORD® Raptor® Off-Road LED Fog Lights

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PRIOR TO INSTALLATION READ THESE INSTRUCTION COMPLETELY
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Please visit <https://www.performanceparts.ford.com> for warranty information



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KIT CONTENTS

- (6) Fog Mounts including (18)bolts, (12)washers, (18)nuts
- (2) D-Series Flood®
- (2) D-Series Spot®
- (2) D-Series SAE®
- (2) Triple fog lights mounting brackets
- (4) bolts, (4)washers, (2)nuts
- (1) Customized wiring harness (using upfitter switches)
- (6) Ford Performance branded lens cover



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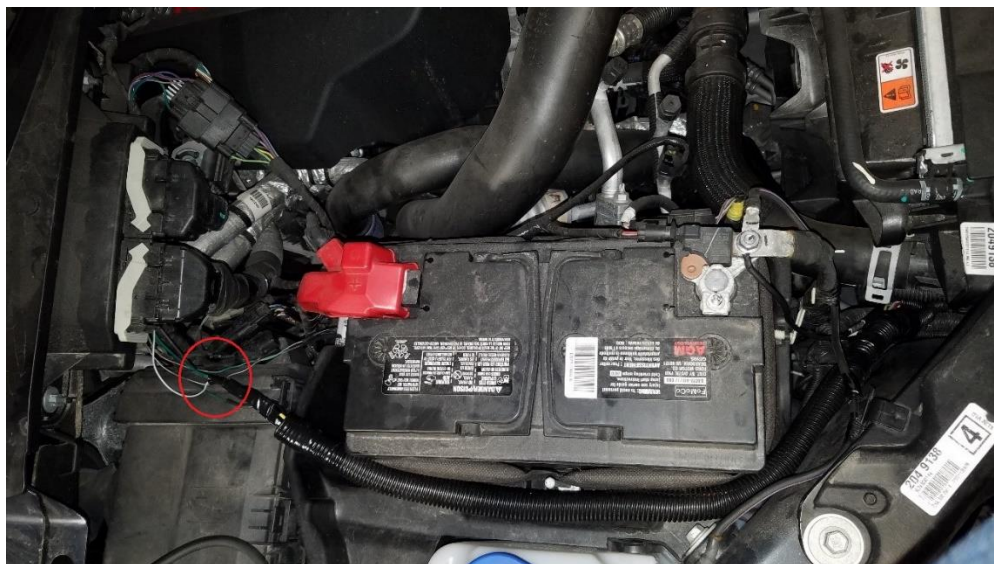
Note: This kit will use 3 of the in-vehicle upfitter switches.
Disconnect the (-) Negative Battery Terminal connection to the vehicle.

STEP 1 Install the harness provided.

- Locate the upfitter switch wiring leads next to the power control module connectors
- Connect the 3 flying leads on the harness to 3 of the 6 upfitter switch leads.

Note: Please refer to the Ford recommended splicing procedure attached at the end of this Instruction sheet.

- Use a DVOM to test key-on voltage at the lead to confirm the desired switch use.
- Each switch will be controlling a pair of lights (LH and RH).
- Route the harness properly so that the power/ground are brought close to the battery and the 6 lamps connectors close to fog light area (3 each side).



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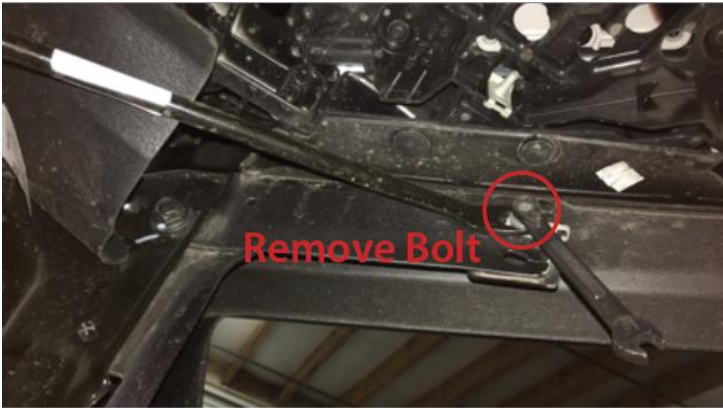
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STEP 2

Remove the 8mm head bolt on the bumper brace and on the bumper side, while simply loosening the other end of the brace to allow it to dangle.



STEP 3

Install the RIGID fog light bracket as shown. Using the provided hardware, install the M6 bolt and washer through the bumper brace.



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STEP 4

Install the provide carriage bolts and M6 flange head nut as shown. Do not fully tighten the bolts yet as further adjustment is required.



STEP 5

Install (6) extended drop mount brackets as shown, making sure to pre-install carriage bolts. Notice these brackets have a lateral slot for further adjustmet if needed.



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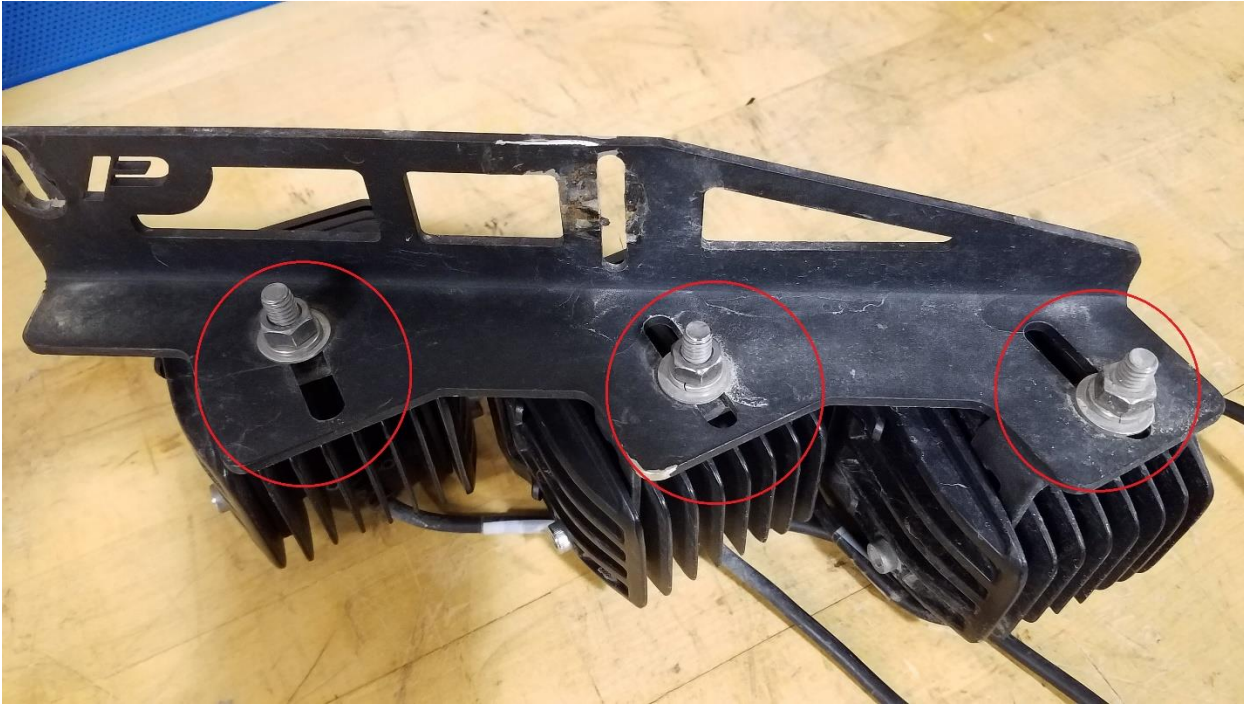
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STEP 5

Once the bracket is on, install the lights. Do not tighten the bolts shown below at first as further adjustment is needed. Install the completed fog light assembly, adjust the bracket and lights positions for proper fitment (at the slots shown in STEP 4, 5, 6) so that all 6 lens covers can be easily installed and removed and lighting beams perfectly aligned, then fully tighten all bolts.



STEP 6

Plug in the lamp connectors, make sure the wire colors matches between LH/RH (same color for far-mid-near). Connector power/ground mentioned in STEP 1.



END

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FOG LAMP ADJUSTMENT

Fog lights should be mounted on the lower half of your front end. Somewhere on or below the bumper is ideal.

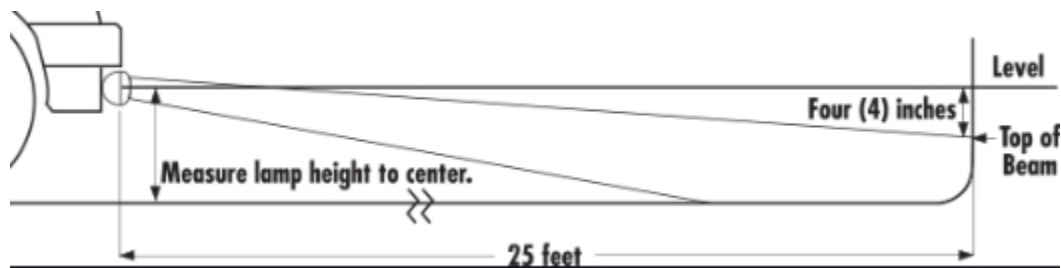
Fog forms about 2 feet off the ground ideally a fog light is below the fog formation. A fog light mounted or adjusted too high will cause a reflection of lights on the fog, reflected back to the driver.

Ideal mounting is below or under the fog, the mount varies based on vehicle, to best illuminate the road ahead.

Park on a flat surface with the lights shining on a wall 25 feet away. Use a measuring tape.

On the vehicle, measure from the center of the fog light lens to the ground. Visibly mark on the wall at that exact height taken from the vehicle. Note: the optimal level is below the fog formation line.

Adjust the fog lights so they are facing straight forward. The top of the beam is about 4 inches lower than that mark you made on the wall.



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Splicing Procedure General Information**NOTE:**

Refer to applicable wiring diagrams for circuit information.

NOTE:

This procedure contains multiple splicing techniques.

NOTE:

Review splicing procedures prior to performing any cutting/soldering/splicing.

NOTE:**Recommended Tools and Materials:**

- NAIAT-R5903 Wire Splice Tool Kit (or equivalent).
- Rotunda Soldering Gun WELD550PK (or equivalent).
- Rosin core mildly activated (RMA) solder. Do not use acid core solder.
- Coroplast PVC adhesive Tape (or equivalent).
- Mastic Patch or Liquid Sealant.

Recommended Solder Procedure**NOTE:**

When applying solder, place Rotunda Soldering Gun WELD550PK (or equivalent) under twisted (wrapped) wires until wires are hot enough to melt solder. Feed solder into wires from the top. Do not drip melted solder on to the wires, as this will cause a cold solder joint.

NOTE:

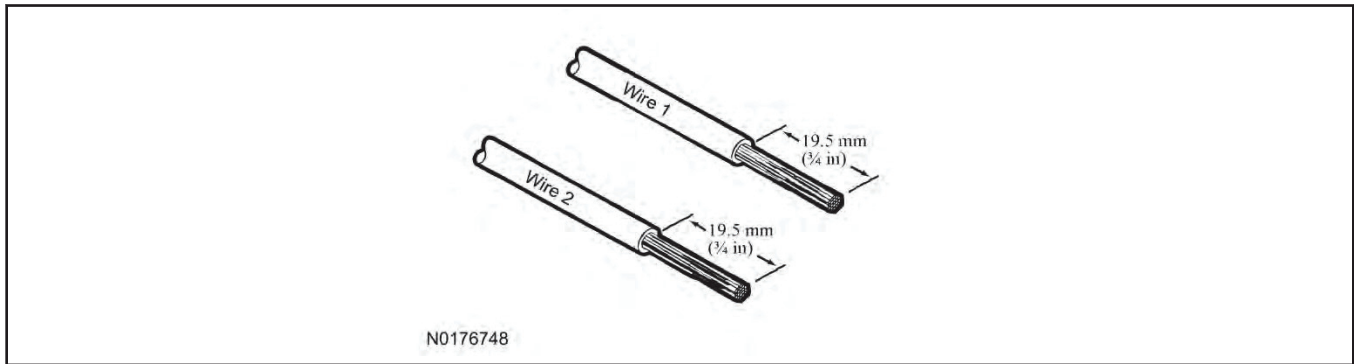
Do not over heat wire or damage to insulation may occur.

NOTE:

Use rosin core mildly activated (RMA) solder. Do not use acid core solder.

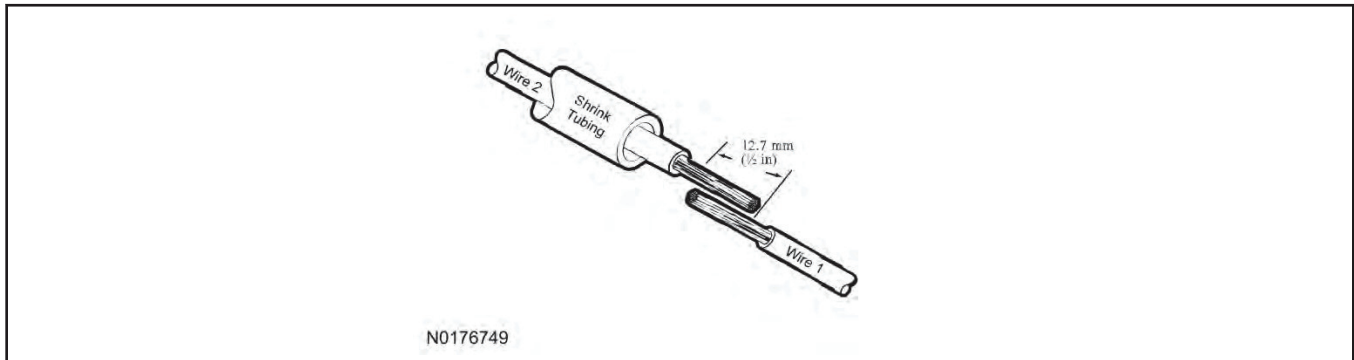
1. Disconnect battery ground cable. For additional information, refer to Workshop Manual (WSM) Section 414-01.
2. Strip wires to appropriate length.

DESCRIPTION AND OPERATION (Continued)

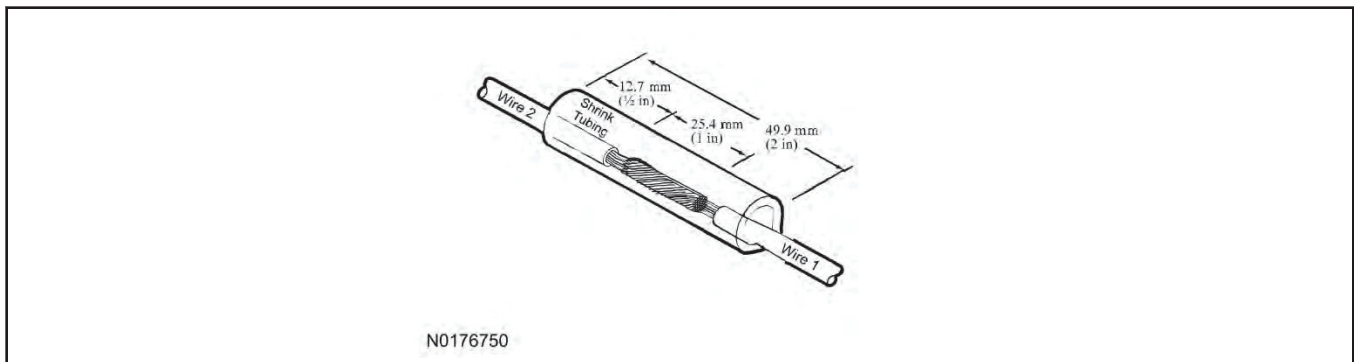
**NOTE:**

Use Motorcraft heat shrinkable tubes: Part# WT-56815 for 14-16 AWG Part# WT-56814 for 18-22 AWG.

3. Install heat shrink tubing.
4. Twist wires together.
5. Solder wires together.

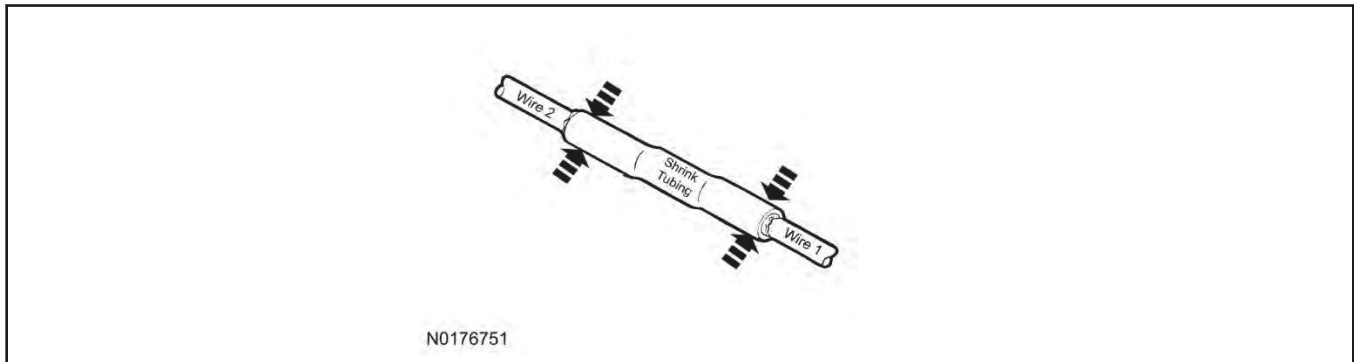


6. Overlap heat shrink tubing on both wires.

**NOTE:**

On smaller wires, use pliers to gently squeeze the ends of the heat shrink sleeve (while heat shrink is still warm) to ensure a tight fit and close any air gaps.

7. Use shielded heat gun to heat the repaired area until adhesive flows out of both ends of heat shrink tubing.

DESCRIPTION AND OPERATION (Continued)

8. Reconnect battery ground cable. For additional information, refer to WSM Section 414-01.

Solder Tap Splice Procedure (For Interior Use Only)**NOTE:**

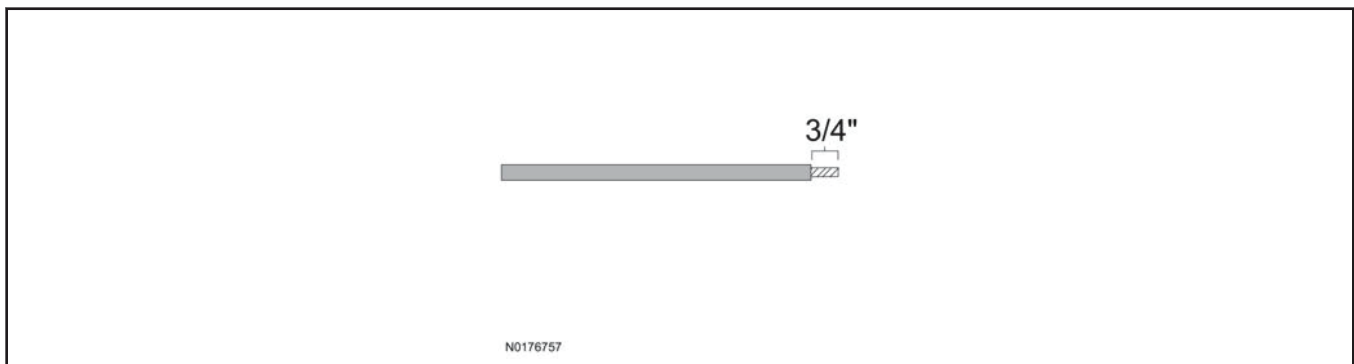
Procedure applicable with 16-22 AWG (or metric equivalent) ranges of wire involving:

- Limited working area
- Snug harnesses
- Short length wires

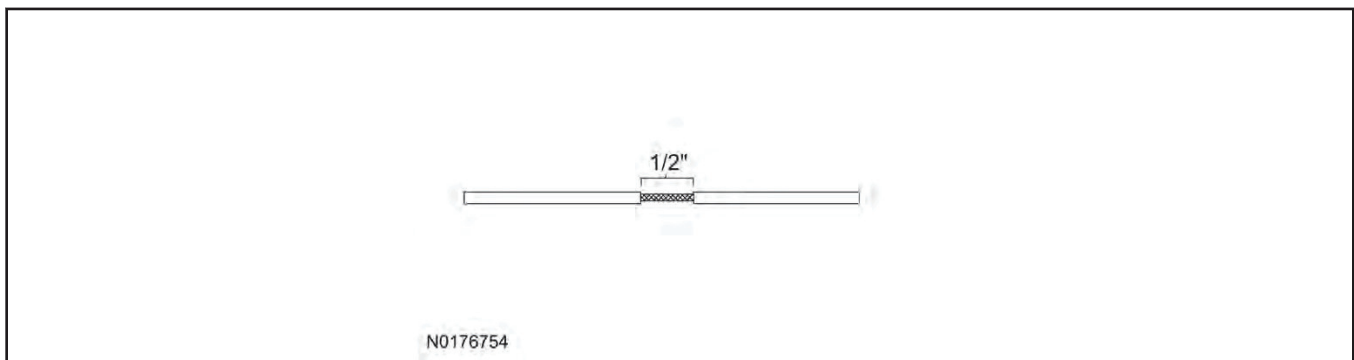
NOTE:

Do not separate the strands.

1. Strip approximately $\frac{3}{4}$ " (19.1mm) of insulation from the wire to be installed in the vehicle.

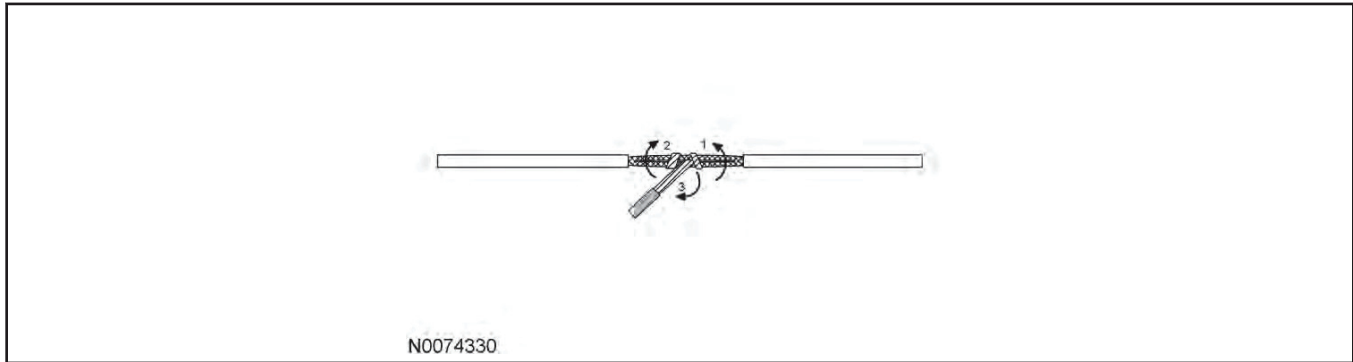


2. On the vehicle wire to be spliced into, carefully spread $\frac{1}{2}$ " (12.7mm) of insulation from the wire with the wire stripping tool. Inspect the wire for broken strands. If broken strands are present see "Wiring Repair Job Aid" for repair procedures.

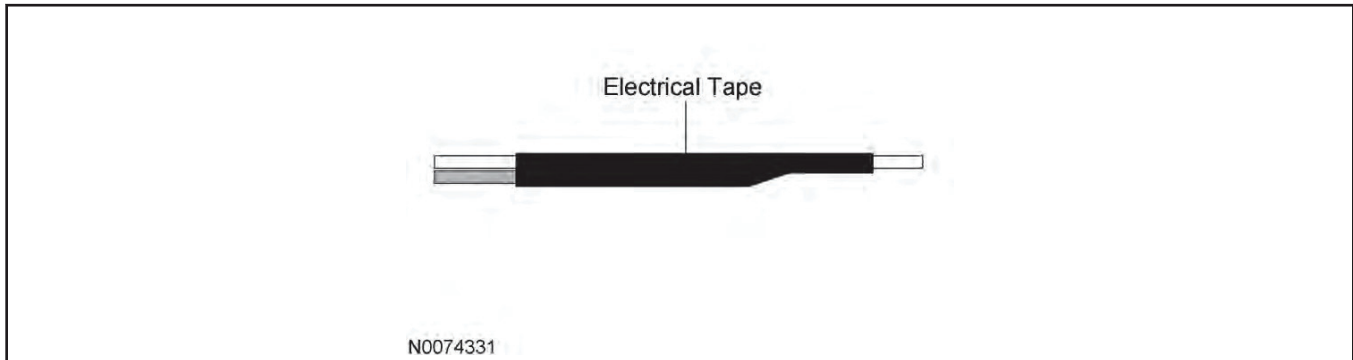


DESCRIPTION AND OPERATION (Continued)

3. Tightly wrap the new wire around the vehicle wire. Solder the wire together.



4. Wrap the connection with at least two layers of Coroplast PVC adhesive Tape (or equivalent) so the tape covers the wires approximately 2" (50.8mm). In possible wet areas such as near carpet or floor, use mastic patch or liquid sealing.
 - Tape the wires together as shown in the illustration.

**2-Wire Solder Splice/Ratcheting Crimp Tool Splice Procedure****NOTE:**

For 8-14 AWG Use The following "Ratcheting Crimp Tool Splice Procedure".

NOTE:

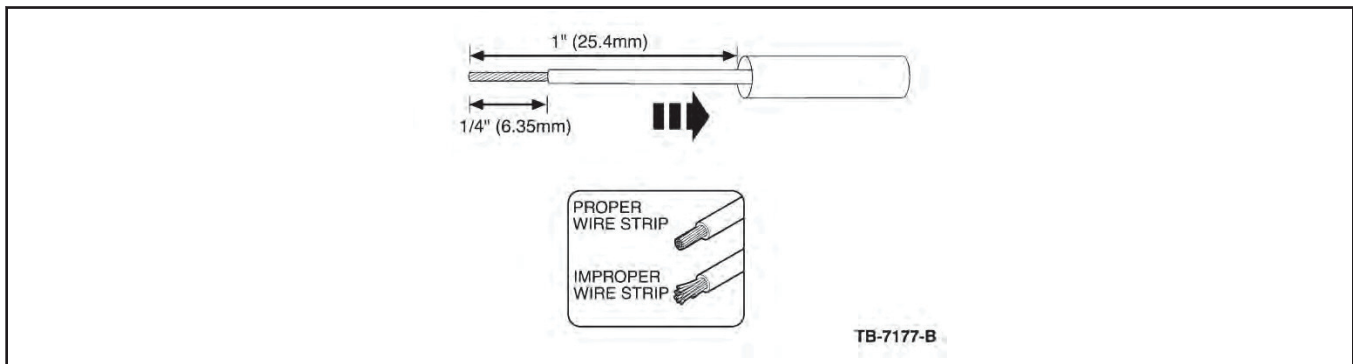
For Splicing Procedure Use Wire Splice Tool Kit (NAIAT-R5903).

1. **NOTE:**

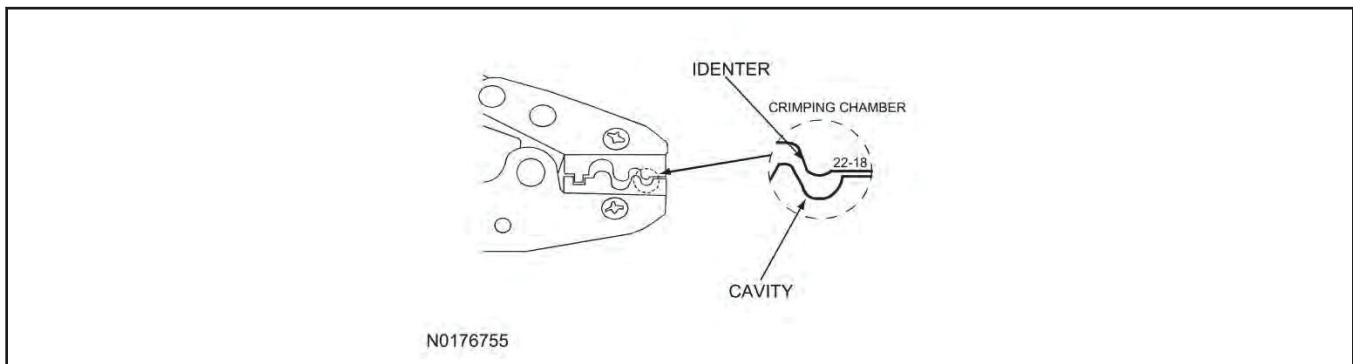
The strip length will vary depending on the butt splice and wire in harness. Refer to chart for strip lengths.

Strip 1/4" (6.35 mm) of insulation from pigtail wire end once the wire lengths are sized so repairs can be staggered. Take care not to nick or cut wire strands. Pull wire straight from stripper. If wire is pulled at an angle, wire strands may be cut off. If more than one (1) strand is cut off during stripping, cut off the end and re-strip. Slide heat shrink tubing onto one (1) of the wire ends to be crimped, must be at least 1" (25.4mm) away from the stripped end.

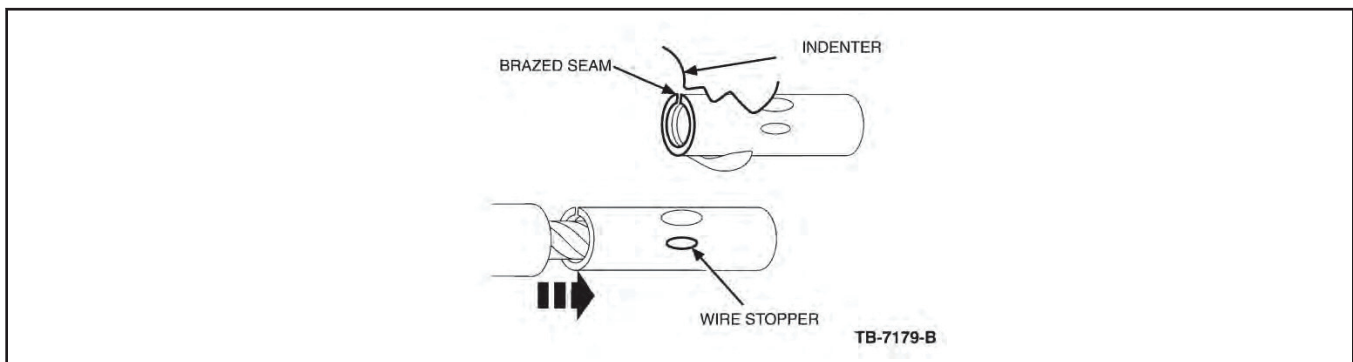
DESCRIPTION AND OPERATION (Continued)



- Identify the appropriate crimping chamber of the Rotunda NAIAT-RACT (or equivalent) by matching the wire size on the dies with the wire size stamped on the butt splice. Hold the crimping tool so the identified wire sizes are facing you. Squeeze tool handles together until the ratchet releases, then allow the jaws of the tool to open fully.



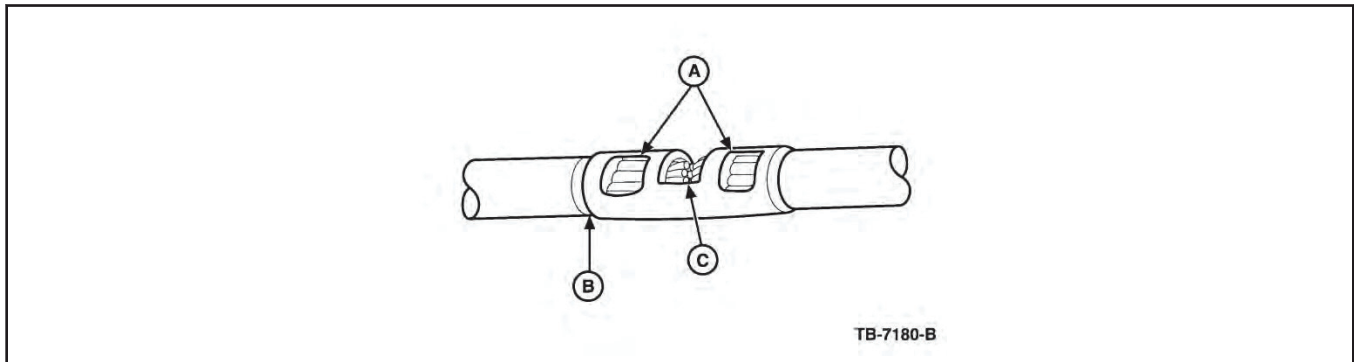
- Center one (1) end of the butt splice on the appropriate crimping chamber. If visible, be sure to place the brazed seam of the butt splice toward the indenter. Hold the butt splice in place and squeeze the tool handles together until the ratchet engages sufficiently to hold the butt splice in position (typically one (1) or two (2) clicks). DO NOT deform the butt splice. Insert stripped wire into the butt splice, making sure the insulation on wire does not enter the butt splice.



- Holding the wire in place, squeeze tool handles together until ratchet releases. Allow tool handles to open, then remove crimped butt splice. To crimp the other half of the splice, reposition the un-crimped wire barrel in the same crimping chamber, and repeat the crimping procedure. If splice cannot be turned for crimping the other half, turn the tool around. Check for acceptable crimp.

DESCRIPTION AND OPERATION (Continued)

- Crimp should be centered on each end of the butt splice. It is acceptable for crimp to be slightly off center, but not off the end of the butt splice (A).
- Wire insulation does not enter butt splice. Wire is flush with or extends slightly beyond end of butt splice (B).
- Wire is visible through inspection hole of splices (C).



5. **NOTE:**
Overlap heat shrink tubing on both wires.

NOTE:

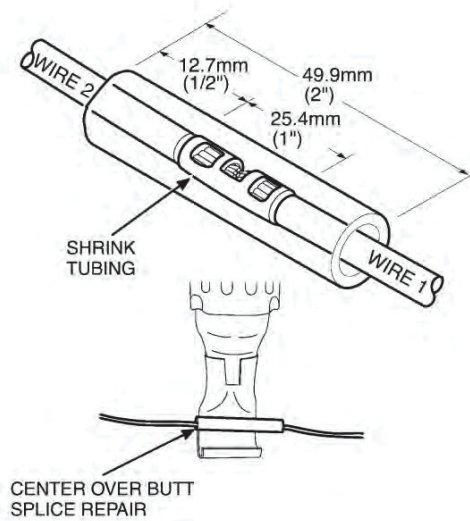
The hot melt forms an adhesive seal between the wire insulation and the heat shrink tubing, which prevents air and moisture from entering the solder point.

NOTE:

Durability of a heat shrink tubing splice is dependent on the hot melt that will appear from both ends of the tube.

Evenly position heat shrink tubing over wire repair. Use a shielded heat gun to heat the entire length of the heat shrink tubing until the hot melt appears from both ends of the tubing.

DESCRIPTION AND OPERATION (Continued)



TB-7175-D

Wire Stripping Lengths and Application Techniques

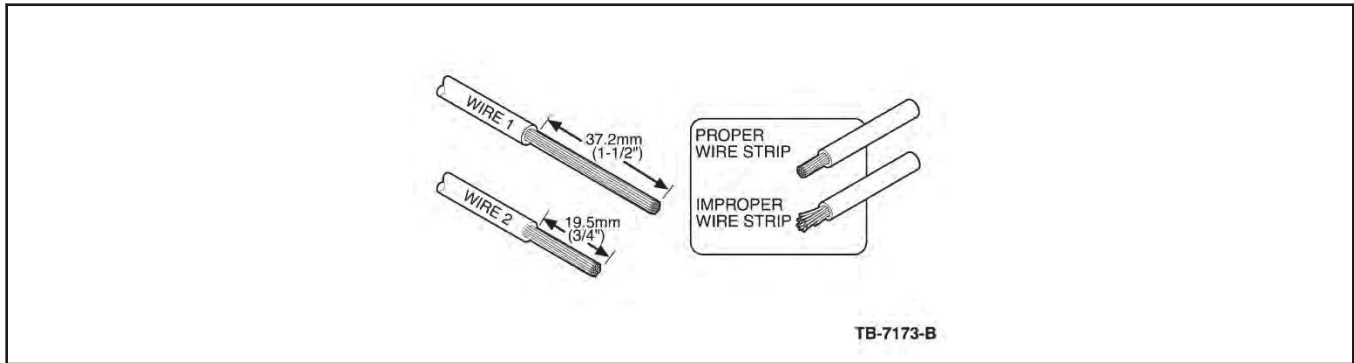
	Vehicle Wire Size										
	AWG (metric)	Butt Splice Kit	8 (8.0mm)	10 (5mm)	12 (3mm)	14 (2mm)	16 (1.5mm)	18 (0.75mm)	20 (0.5mm)	22 (0.35mm)	26 (0.13mm)
R e p a i r K i t W i r e S i z e	22 - 18 (0.35-0.75mm)	3U2Z-14A088-AB Motorcraft Part# (WT-56814)	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	Solder Only
	14 - 16 (1.5-2.0mm)	3U2Z-14A088-BA Motorcraft Part# (WT-56815)	Not Allowed	Not Allowed	Not Allowed	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	Not Allowed	Not Allowed	Not Allowed
	10 - 12 (3.0-5.0mm)	3U2Z-14A088-CA Motorcraft Part# (WT-56816)	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
	8 (8.0mm)	DU2Z-14A088-AA Motorcraft Part# (WT-56869)	1/4 in. (6mm) Strip	1/4 in. (6mm) Strip	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed

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DESCRIPTION AND OPERATION (Continued)

For 16-22 AWG wire or metric equivalent use either the above "Ratcheting Crimp Procedure" or the following "2 Wire Solder Splice Procedure".

- Strip 1 1/2" (37.2 mm) of insulation from Wire #1 and 3/4" (19.5mm) of insulation from Wire #2, taking care not to nick or cut wire strands. Pull wire straight from stripper. If wire is pulled at an angle, wire strands may be cut off during stripping. Cut off the end and re-strip.



- NOTE:**

Use rosin core mildly activated (RMS) solder. do not use acid core solder for wire repair.

NOTE:

Overlap tubing on both wires and wait for solder to cool before moving the wires.

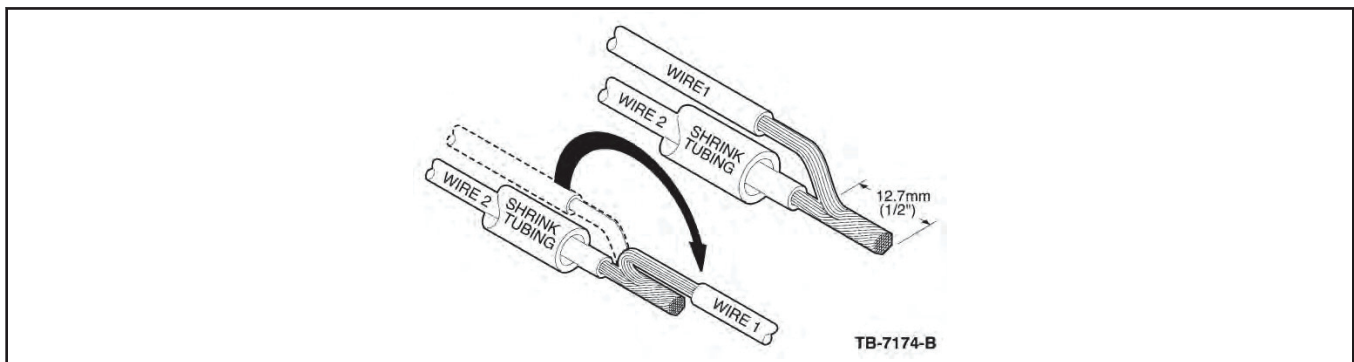
NOTE:

Durability of a heat shrink tubing splice is dependent on the hot melt that will appear from both ends of the tube.

NOTE:

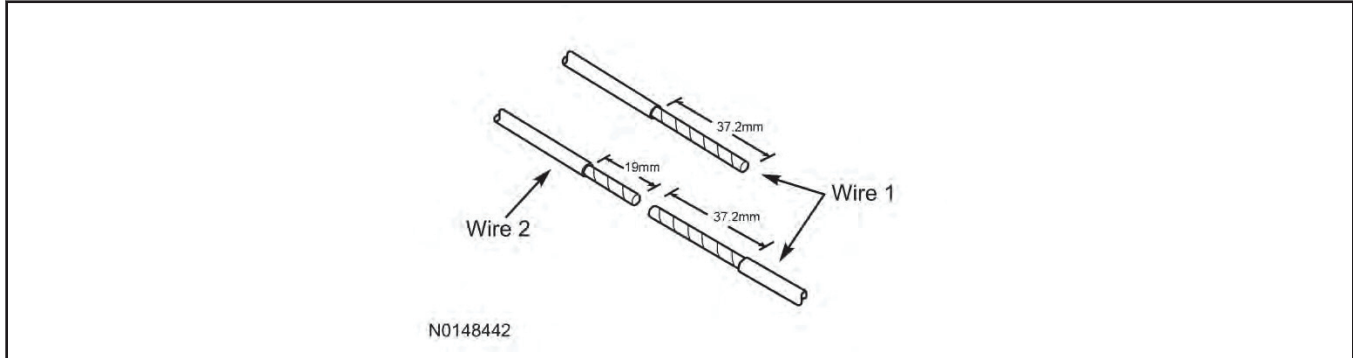
The hot melt forms an adhesive seal between the wire insulation and the heat shrink tubing, which prevents air and moisture from entering the solder point.

Install heat shrink tubing at least 1" (26 mm) away from one of the stripped ends being spliced. Twist the wires together. Solder the wires together. Bend Wire #1 back in a straight line for sealing. Inspect solder joint bond. Evenly position heat shrink tubing over wire repair. Use a shielded heat gun to heat the entire length of the heat shrink tubing until the hot melt appears from both ends of the tubing.



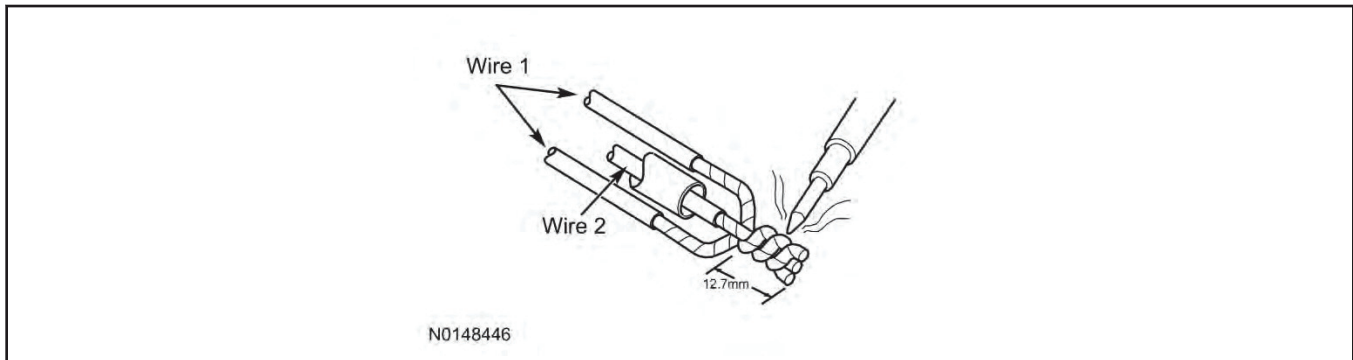
DESCRIPTION AND OPERATION (Continued)**3-Wire Solder Splice Procedure**

- Strip 1 1/2" (37.2 mm) of insulation from both sides of Wire #1 and 3/4" (19 mm) of insulation from Wire #2, taking care not to nick or cut wire strands. Pull wire straight from stripper. If wire is pulled at an angle, wire strands may be cut off during stripping. Cut off the end and re-strip.

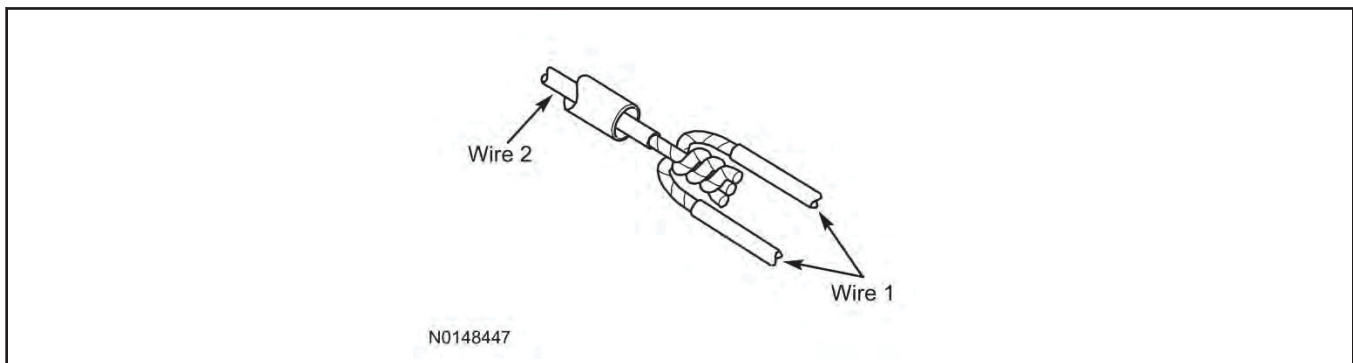


- NOTE:**
Wait for solder to cool before moving wires.

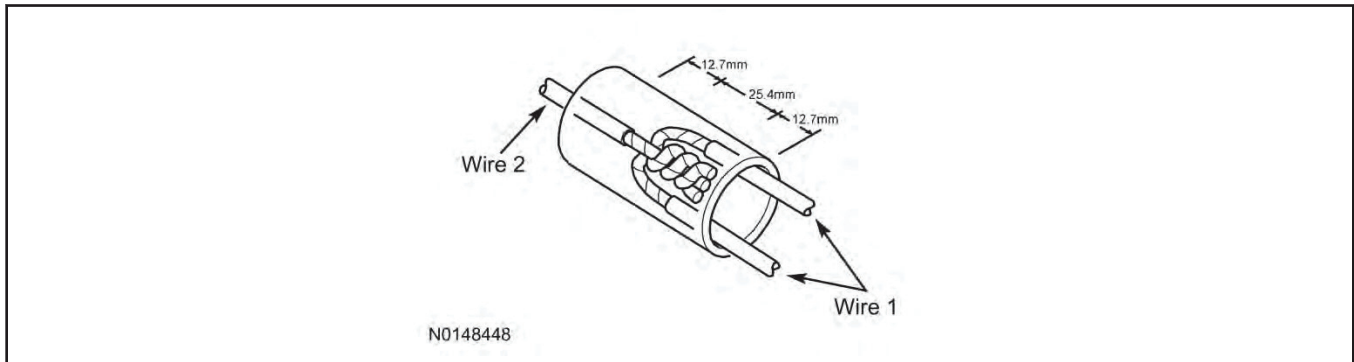
Apply heat shrink tubing to Wire #2. Twist both ends of Wire #1 around Wire #2. Solder the wires together.



- Bend Wire #1 back over the twisted wires for sealing. Inspect solder joint bond.



- Evenly position heat shrink tubing over wire repair.

DESCRIPTION AND OPERATION (Continued)**5. NOTE:**

Durability of a heat shrink tubing splice is dependent on the hot melt that will appear from both ends of the tube.

NOTE:

The hot melt forms an adhesive seal between the wire insulation and the heat shrink tubing, which prevents air and moisture from entering the solder point.

Use a shielded heat gun to heat the entire length of the heat shrink tubing until the hot melt appears from both ends of the tubing.

