

PREVOST

Instruction Sheet

IS-16903

Condenser Brushless Fans Installation H Serie Multiplex Vehicles

NOTE

This kit is intended for 2005-2009 H3 Series Multiplexed Vehicles (VIN 5-0168 to 9-1291 incl.)

MATERIAL

Kit #IS16903 includes the following parts:

Part No.	Description	Qty
7770080	RING, 455MM DIA.	2
565881	FAN CONDENSOR 12" - BRUSHLESS - AXIAL	4
504488	RIVET MGL PRDG SS 3/16X.270	30
502622	SCREW CAP HEX SS NSS M6X20 FT	16
502573	WASHER FL SS 6.4X12.5X1.6	16
563691	CONNECTOR JUNIOR POWER TIMER - SH 6 PIN	4
563692	SOCKET TERMINAL J-P-T (20-16)	16
563145	SEALING PLUG, 2.5MM AMP	8
563003	CABLE SEAL, (2.20-3.00) MCON - WHT	16
563286	ELECT WIRE TXL 18 AWG ORANGE	4 m
560669	WIRE, 16 GA. RED	15 ft
560673	WIRE, 16 GA. BLACK	3 ft
5001965	NUT SPR U N500 M6-1 0.6-4.0	8
560931	RECTIFIER(DIODE) 3 AMP-IN5404	2
562230	BUTT SPLICE 12-10	4
562228	BUTT SPLICE 16-14	5
562387	PLAS CONV .25ID BLACK SLT	14 ft
504013	CABLE TIE MOUNT, BLACK 1/4"	4
562499	SHRINK TUBING CLEAR	0.5 ft
560784	PLAS SHRINK .25-.08ID BLACK	2 ft
560785	PLAS SHRINK .375-.135ID BLACK	1 ft
504637	CABLE TIE, NYLON BLK (STD)	40
IS-16903	Instruction Sheet (EN)	1
FI-16903	Instruction Sheet (FR)	1

NOTE

Material can be obtained through regular channels.

PROCEDURE



DANGER

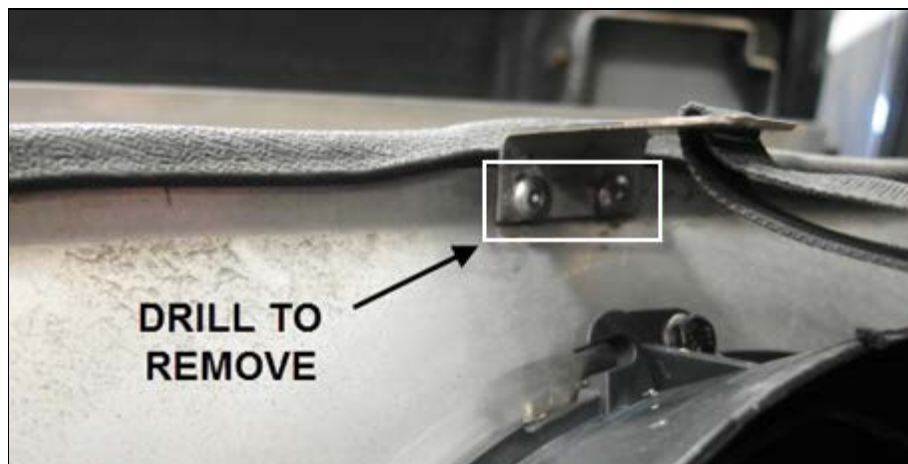
Park vehicle safely, apply parking brake, stop engine. Prior to working on the vehicle, set the ignition switch to the OFF position and trip the main circuit breakers equipped with a trip button.

PART 1: FANS TO SHROUD INSTALLATION

1. Open the condenser door and remove the retaining strap.



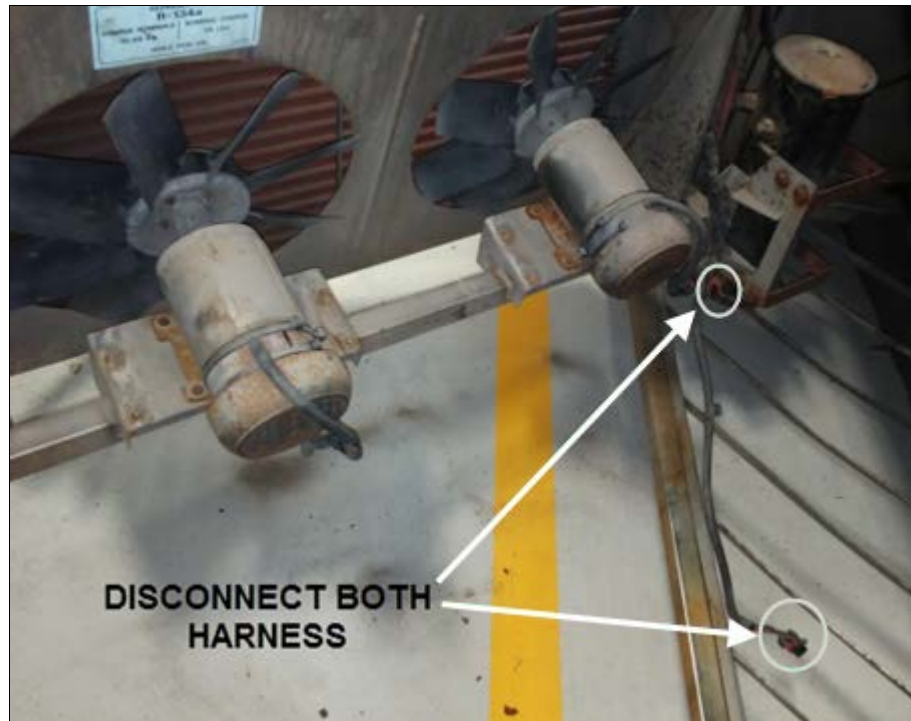
2. Remove the retaining strap bracket on the fan shroud (drill rivets).



3. Remove both fan protective shields (8 bolts on support).



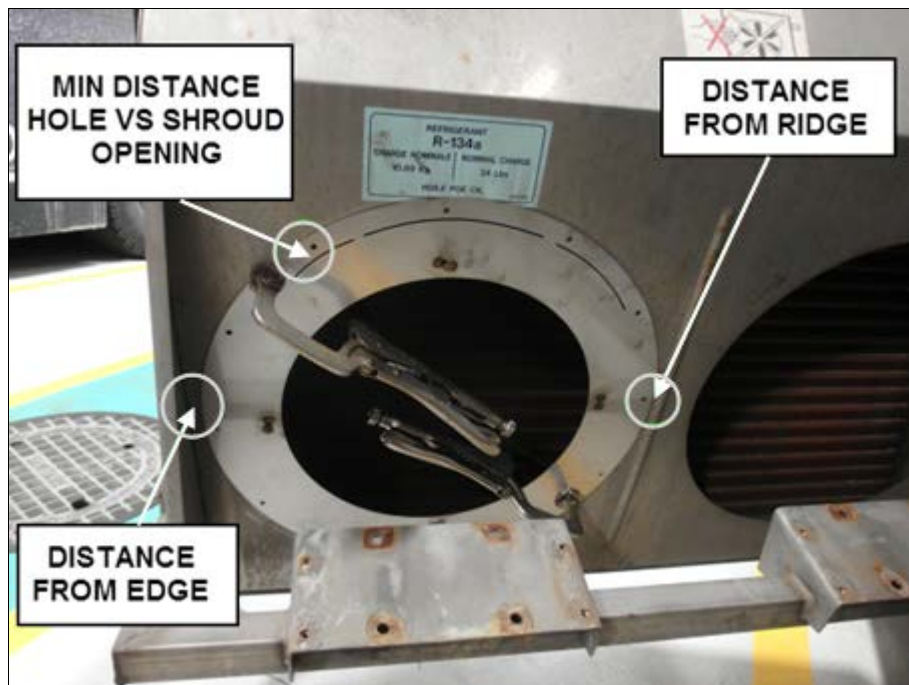
4. Disconnect both fan harness and cut harness cable ties to separate harness from fan shroud.



5. Remove the two fans from the support (remove 8 retaining bolts).



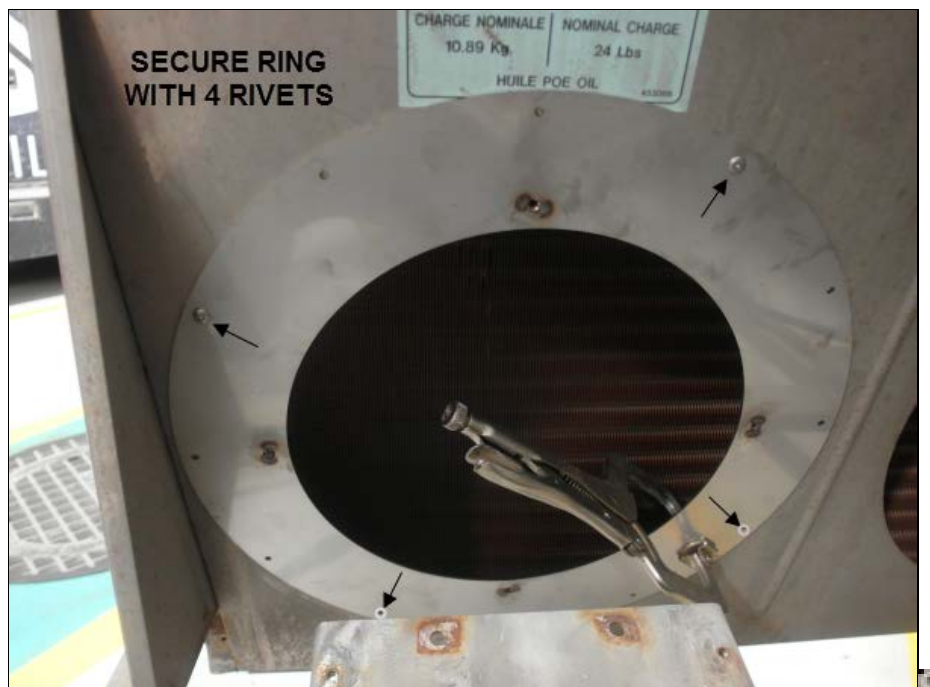
6. Position one of the two adaptor rings over the lower (exterior) fan opening. Hold the ring in place using two C-clamp pliers, make sure the ring is centered over the opening and that there's enough material around the ring rivet holes (see notes in picture below).



7. With a #11 drill bit (for 3/16" rivets), drill four (4) of the 12 rivet holes (in a cross pattern).



8. Secure the ring to the shroud using supplied rivets in the 4 previously drilled holes (remove C-clamps pliers).



9. Drill the remaining rivet holes around the adaptor ring perimeter and install rivets to finalize the ring installation.



10. Install one of the supplied fans over the ring adaptor (fan harness must be pointing toward center of fan shroud), secure the fan to the ring using supplied bolts and nuts.



11. Use the remaining ring as a template to position the upper (exterior) fan. Center the ring on the upper part of the shroud, from left to right (horizontally), *the center of the ring should match the center of the bottom fan*. Up and down (vertically), *the lower edge of the ring must not be installed more than 20mm from the lower edge of the fan shroud* as seen in the picture below. Using a sharpie or a sharp pointed tool, draw the opening position on the top part of the shroud.



12. Using a high speed cutting tool, cut the upper fan opening.



CAUTION

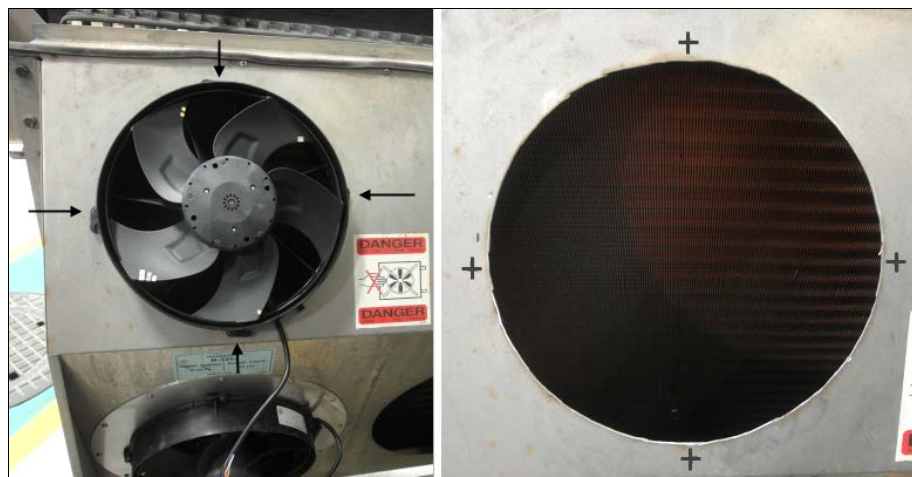
- Wear appropriate eyes and hand protection when using high speed rotary tools.
- Make sure that there is no flammable substance (liquid or solid) in the surrounding area.
- Mask vehicle painted surfaces close to the work area.



13. Carefully deburr and smooth the perimeter of the opening.



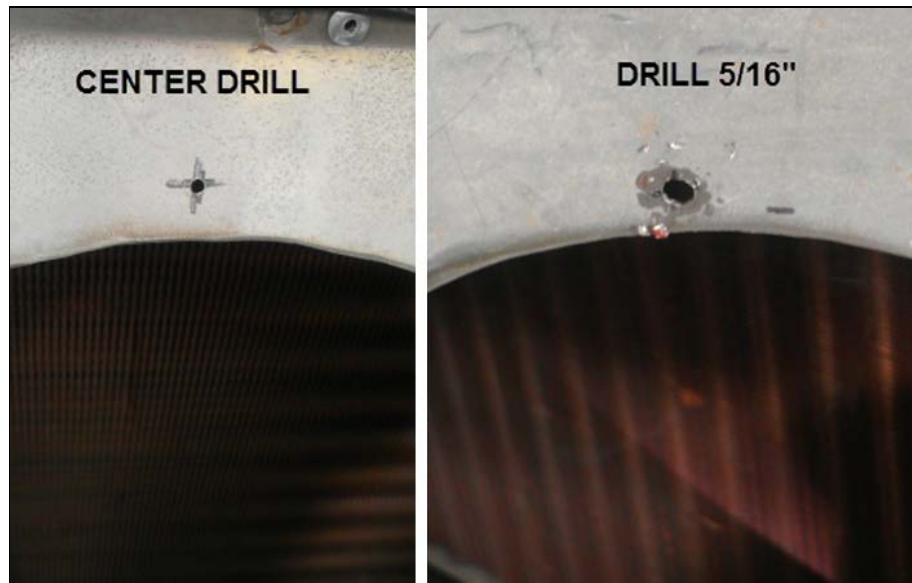
14. Center one of the fans over the opening and mark the center of the four fan mounting holes using a sharpie or pointed tool.



15. Center drill the four fan mounting holes then drill the four holes to their final diameter using a short 5/16" drill bit.

NOTE

- *A short drill bit (or a drill bit stopper) should be used to avoid drilling through the condenser core.*
- *Deburr both sides of the drilled holes.*



16. Position the supplied U type threaded insert over the holes, threaded part must be centered (grind opening perimeter as required to adjust).

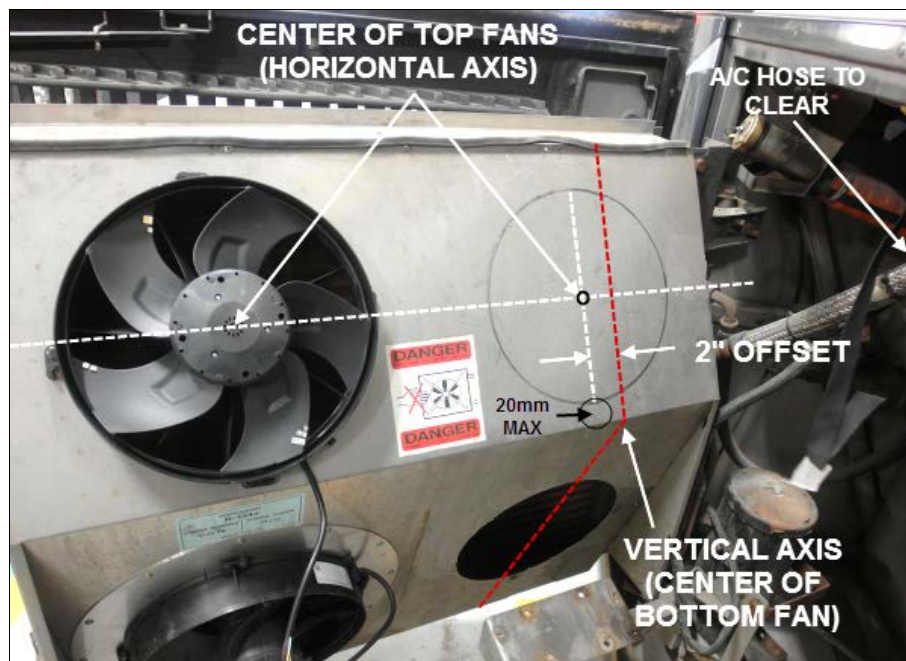


17. Position a fan over the opening (making sure the fan wiring harness is pointed toward the center of the shroud) and secure it to the shroud using supplied bolts and nuts.



18. Using the ring, scribe the position of the upper (interior) fan making sure that:

- The center of the ring fits along the horizontal axis of the exterior fan previously installed (edge of the ring must not exceed the shroud lower edge more than 20mm).
- The center of the ring is positioned with a 2 in (toward the exterior) offset when compared to the lower fan opening (vertical axis) as shown. *This offset is necessary in most applications to clear the A/C hose when the condenser door is closed.*



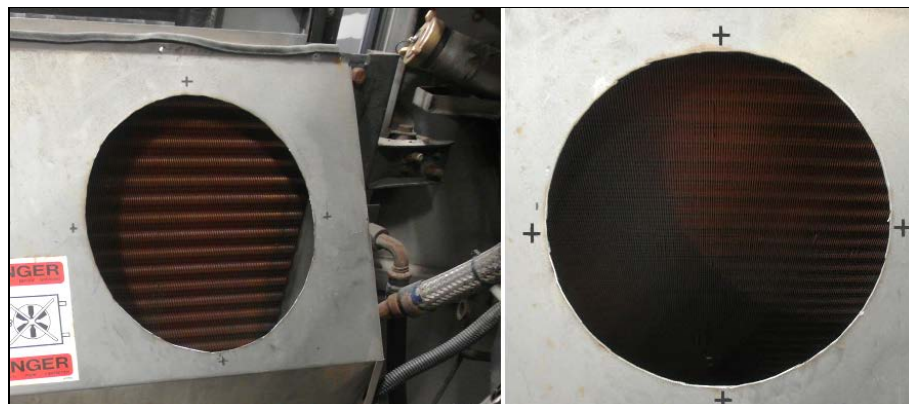
19. Using a high speed cutting tool, cut the upper fan opening and carefully deburr and smooth the perimeter of the opening.



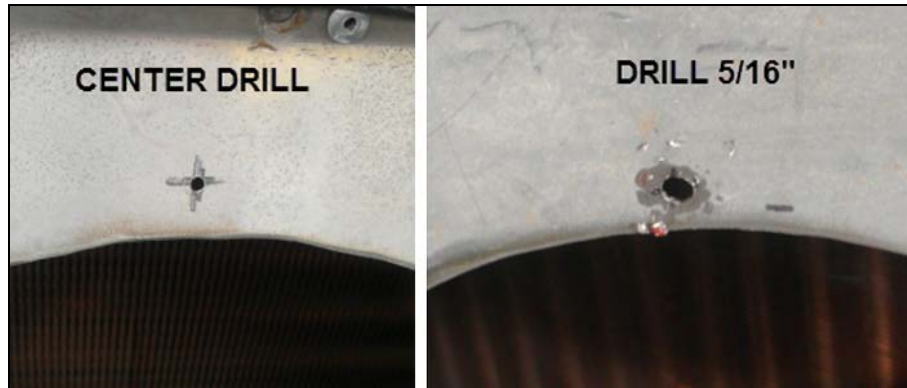
CAUTION

- Wear appropriate eyes and hand protection when using high speed rotary tools.
- Make sure that there is no flammable substance (liquid or solid) in the surrounding area.
- Mask vehicle painted surfaces close to the work area.

20. Position one of the two remaining fans over the opening, making sure the fan wiring harness is pointing toward the center of the shroud & mark the center of the four fan mounting holes using a sharpie or pointed tool.



21. Center drill the four fan mounting holes & drill the four holes to their final diameter using a short 5/16" drill bit (deburr both sides of the drilled holes).



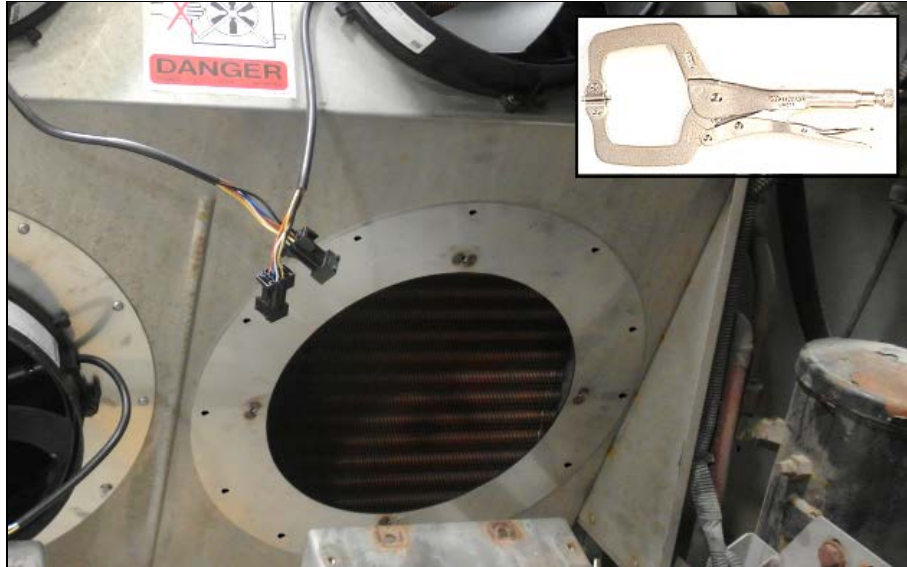
22. Position the supplied U type threaded insert over the holes, threaded part must be centered (grind opening perimeter as required to adjust).



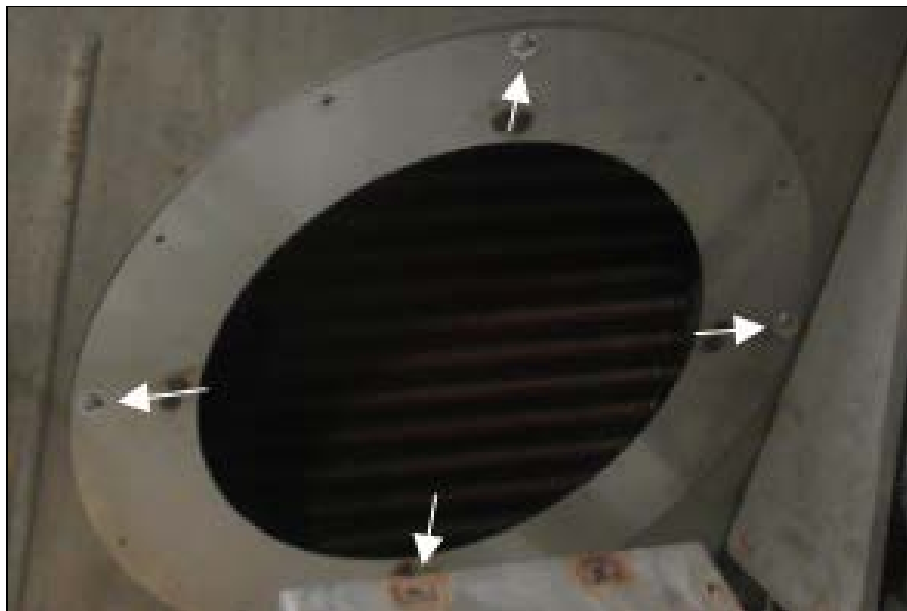
23. Position a fan over the opening, making sure the fan wiring harness is pointing toward the center of the shroud. Secure the fan to the shroud using supplied bolts and nuts.



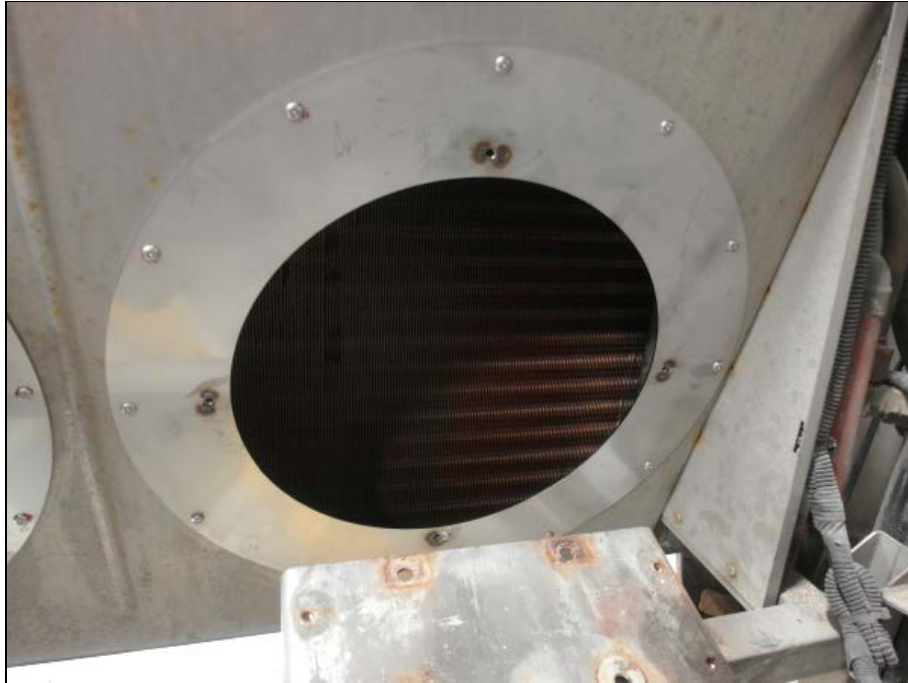
24. Position the adaptor ring over the lower (exterior) fan opening & hold the ring in place using two C-clamp pliers, make sure the ring is centered over the opening and that there's enough material around the ring rivet holes.



25. Drill the ring top, bottom and side rivet holes (4X) & secure the ring to the shroud using supplied rivets (remove C-clamps pliers).



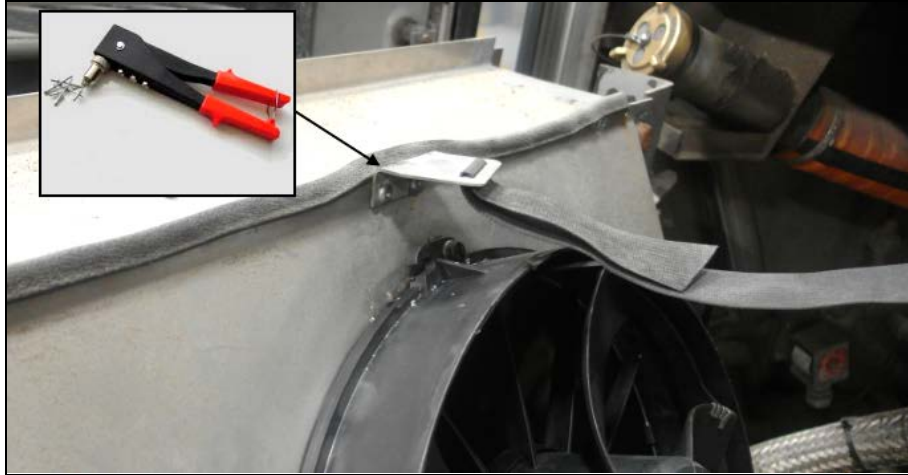
26. Drill the remaining rivet holes around the adaptor ring perimeter & install the last rivets to finalize the ring installation.



27. Install the last fan over the ring adaptor (fan harness must be pointing toward center of fan shroud), secure the fan to the ring using supplied bolts and nuts.

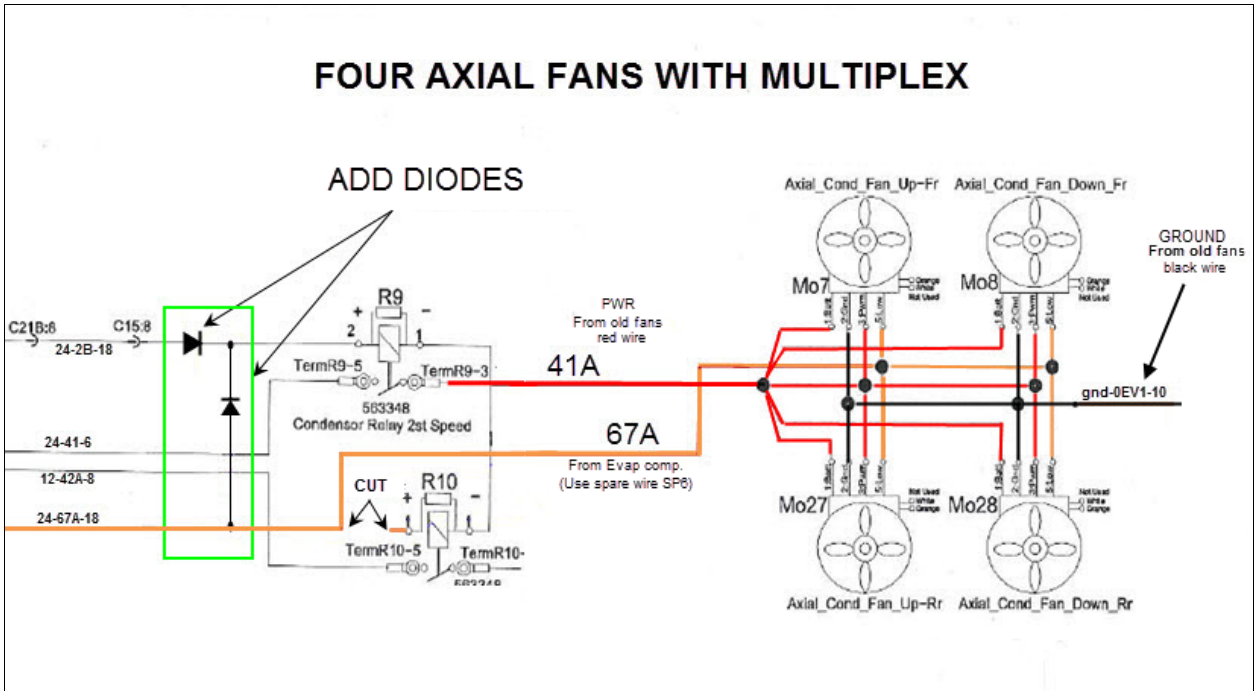


28. Reinstall the door retaining strap & bracket using the supplied rivets.

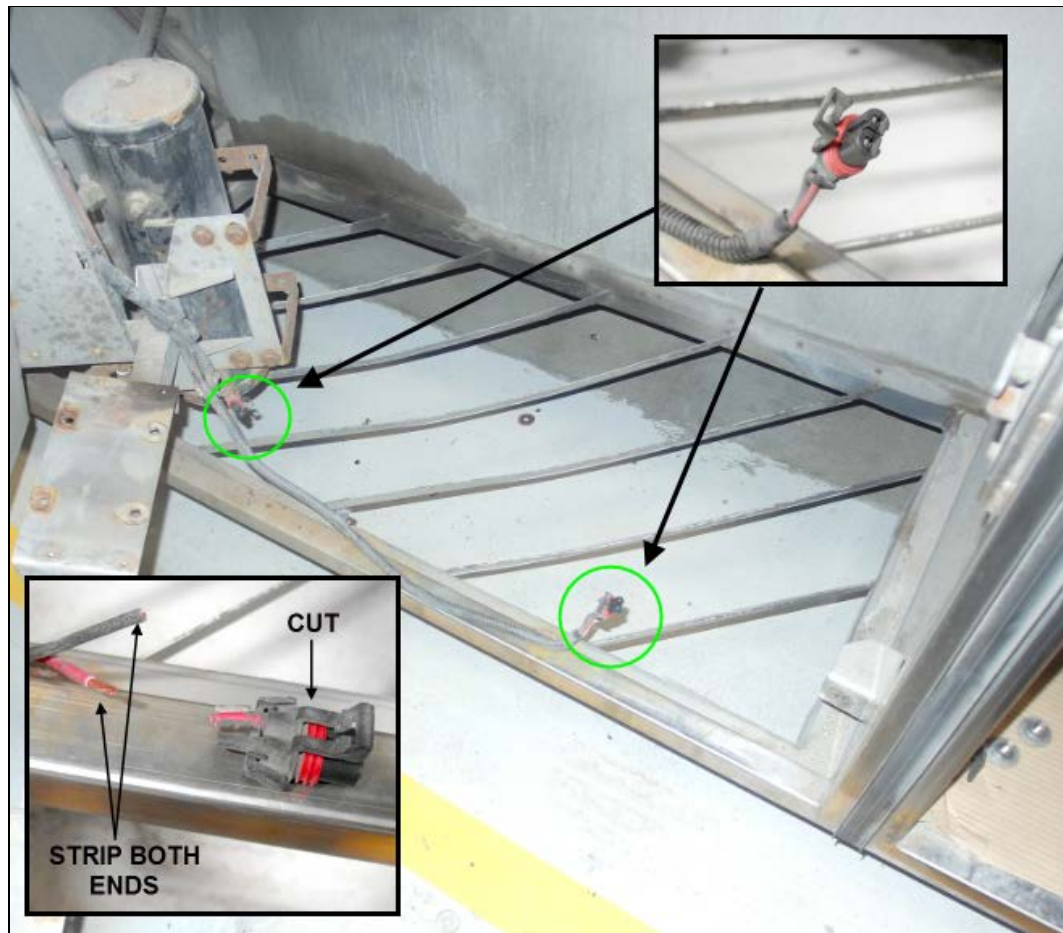


29. Open and close the condenser door to make sure the fans are not rubbing on the A/C hoses or making contact with the vehicle structure.

PART 2: FAN CONNECTIONS IN CONDENSER COMPARTMENT



1. Locate both old fan wiring connections and cut the connector at the end of each of them.



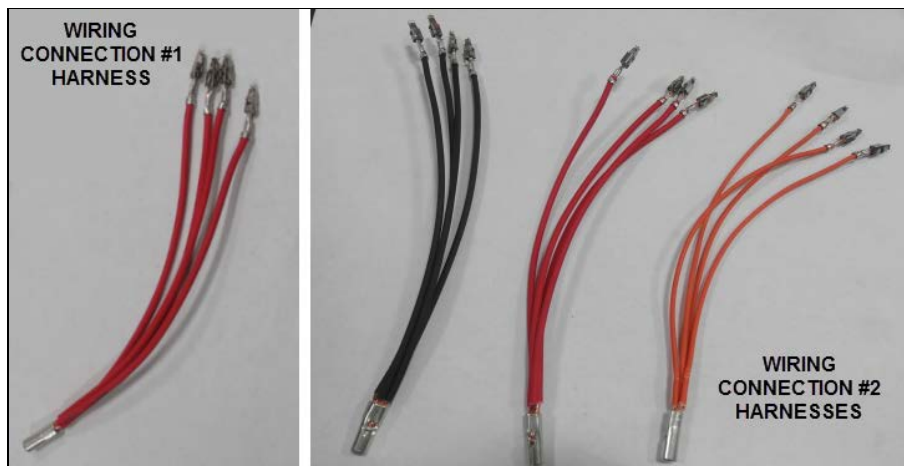
NOTE

For this procedure, the shortest wiring connection is identified as #1 and the longest as #2

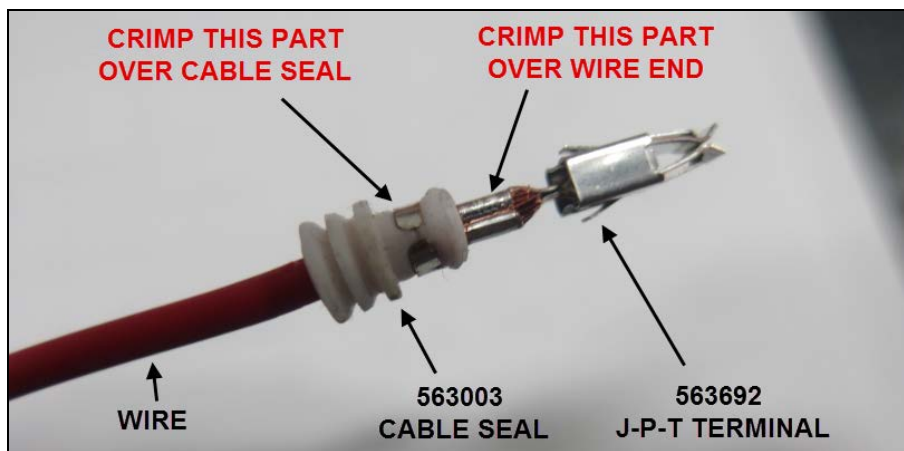
- Red power wire of wiring connection #1 is circuit 41A and will be connected to PIN 3 of each new fan connections.
- Black ground wire of wiring connection #1 will not be reused.
- Red power wire of wiring connection #2 is also circuit 41A and will be connected to PIN 1 of each new fan connections.
- Black ground wire of wiring connection #2 is will be used as a ground at PIN 2 of each new fan connection.

2. Prepare 4 new fan harnesses (each harness will have 4 connection PINs), one red harness for wiring connection #1, one red and one black harness for wiring connection #2 and an orange harness for the signal wire coming from the evaporator compartment.

Use supplied parts and follow instructions & images below to fabricate the harnesses.



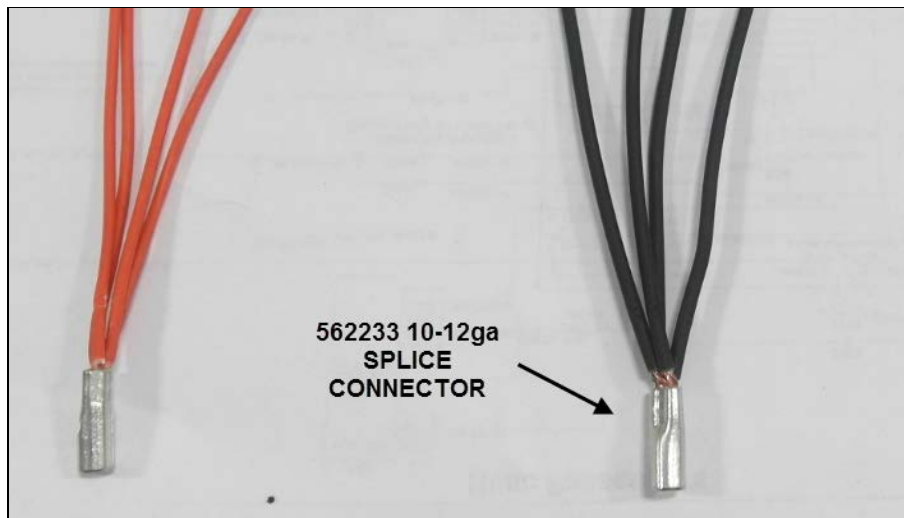
- Cut **4X** 20cm length (approx. 8 inches) of the supplied **563286** 18ga orange wire.
- Cut **4X** 20cm length (approx. 8 inches) of the supplied **560673** 16ga black wire.
- Cut **8X** 20cm length (approx. 8 inches) of the supplied **560669** 16ga red wire.
- At one end of each cut wire, insert a white cable seal **563003** and crimp a J-P-T socket terminal **563692** over the wire and the seal as shown (use appropriate crimping tool).



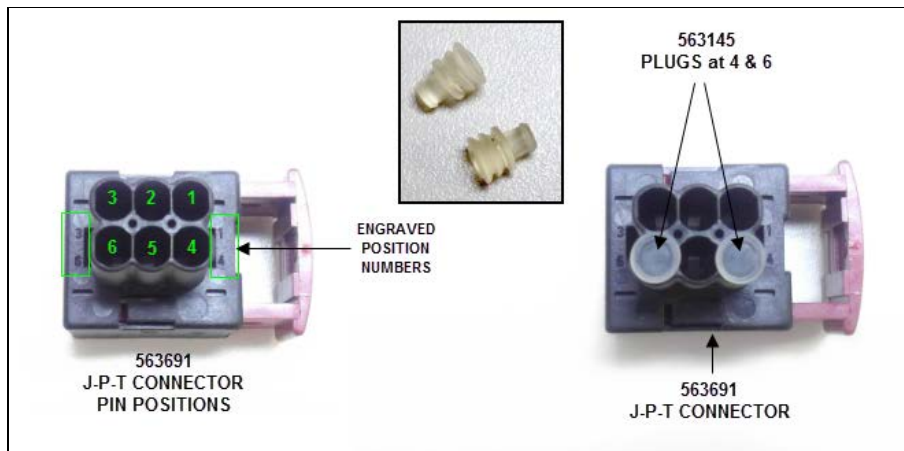
3. Twist the other end of the wires in groups of 4 wires (by color) to produce 4 small harnesses.
 - 2X red harnesses, 1X Black harness & 1X orange harness.



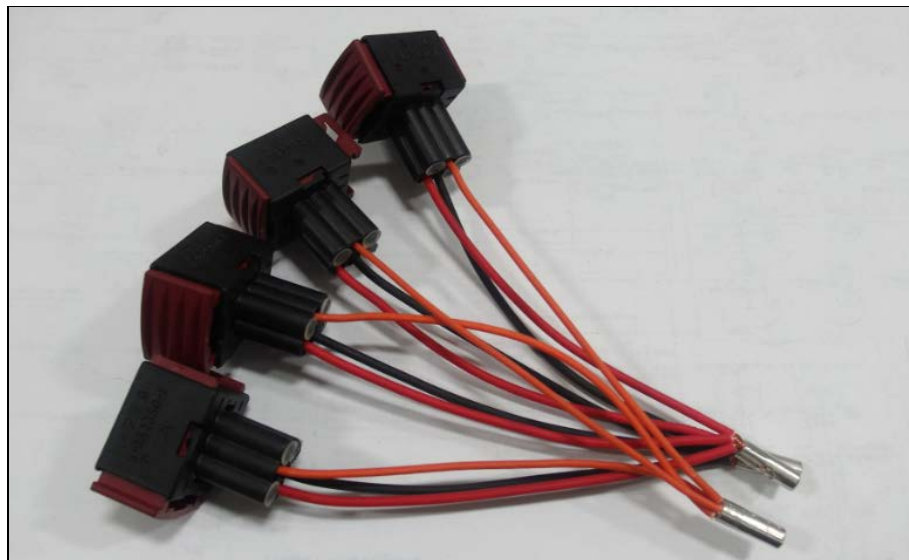
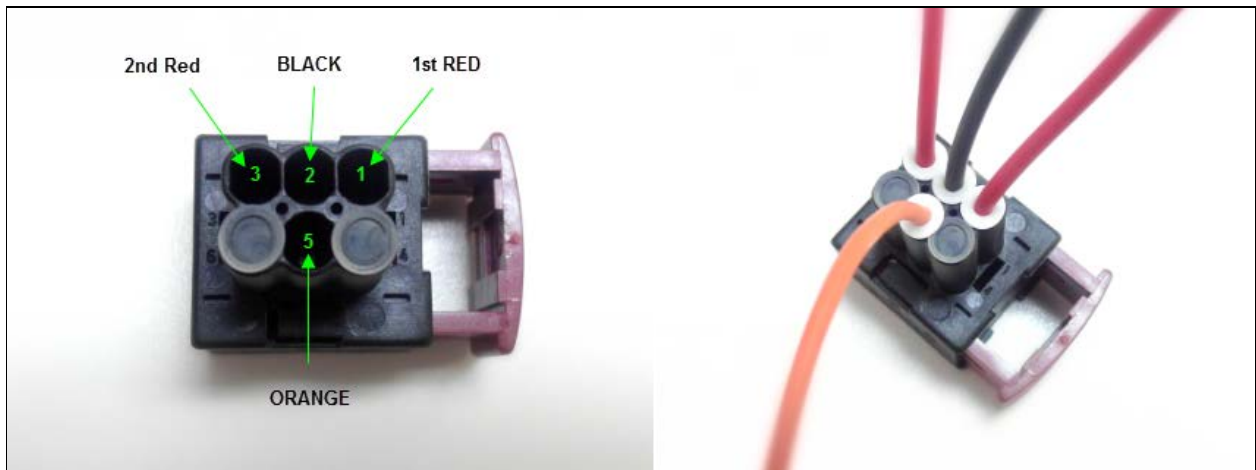
4. Crimp a **562233** 12-10ga. splice connector at the end of each harness twisted end.



5. Insert two sealing plugs (**563145**) at *position # 4 and 6* of each J-P-T connectors (**563691**).



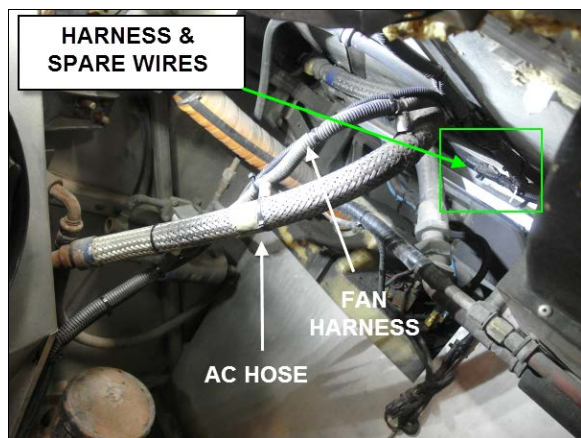
6. Insert one wire from each harness in all four J-P-T connectors following the order below.
- First red harness – All four wires in position 1 of the J-P-T connectors.
 - Black harness – All four wires in position 2 of the J-P-T connectors.
 - Second red harness – All four wires in position 3 of the J-P-T connectors.
 - Orange harness – All four wires in position 5 of the J-P-T connectors.



7. Cut a length of about 240cm (96in) of the **563296** orange 18ga. wire (strip both ends). Insert the wire in **562387** 0.25in convoluted tubing (leave a few inches at both ends of the wire).



8. In the condenser compartment, locate the **SP6** grey spare wire in the main harness & remove the shrink tubing at the end of the wire.



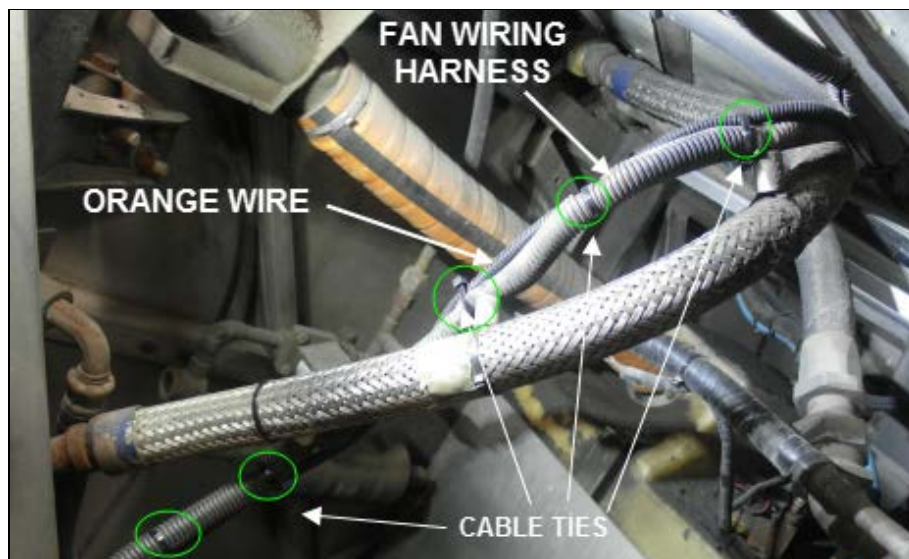
NOTE

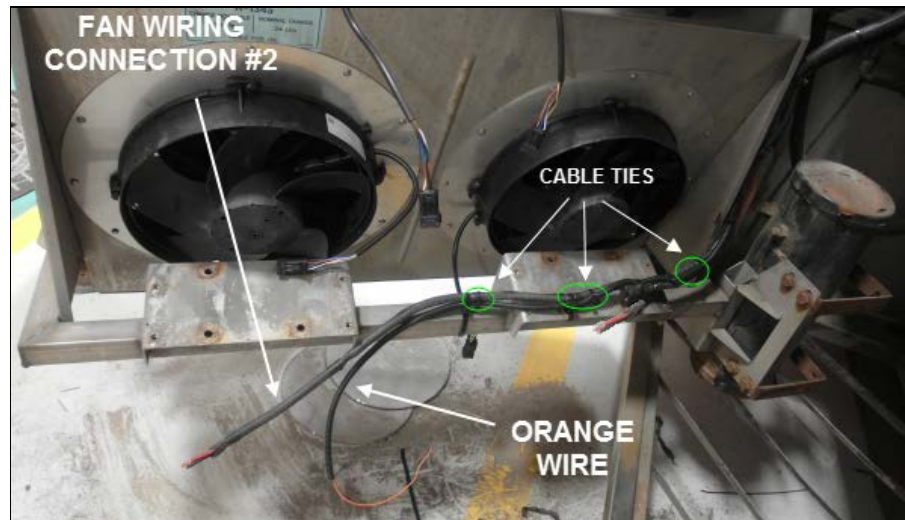
This spare wire (SP6) is passing through the other side of the vehicles (its other end is located in the evaporator compartment); this wire will be used to connect the new fans to the 67A circuit also located in the evaporator compartment.

9. Connect the previously cut **563286** orange wire to the **SP6** wire end using a **562230** splice connector, *solder the connection* and cover with a length of **560784** shrink tubing.



10. Route the orange wire along the fan harness and the #2 (long) fan connection. Secure to the harness using supplied **504637** cable ties.





11. Using a length of **560669** red 16ga. wire and a **562230** splice connector, make an extension for the #1 (short) fan connection (both fan connections should be of equal length).

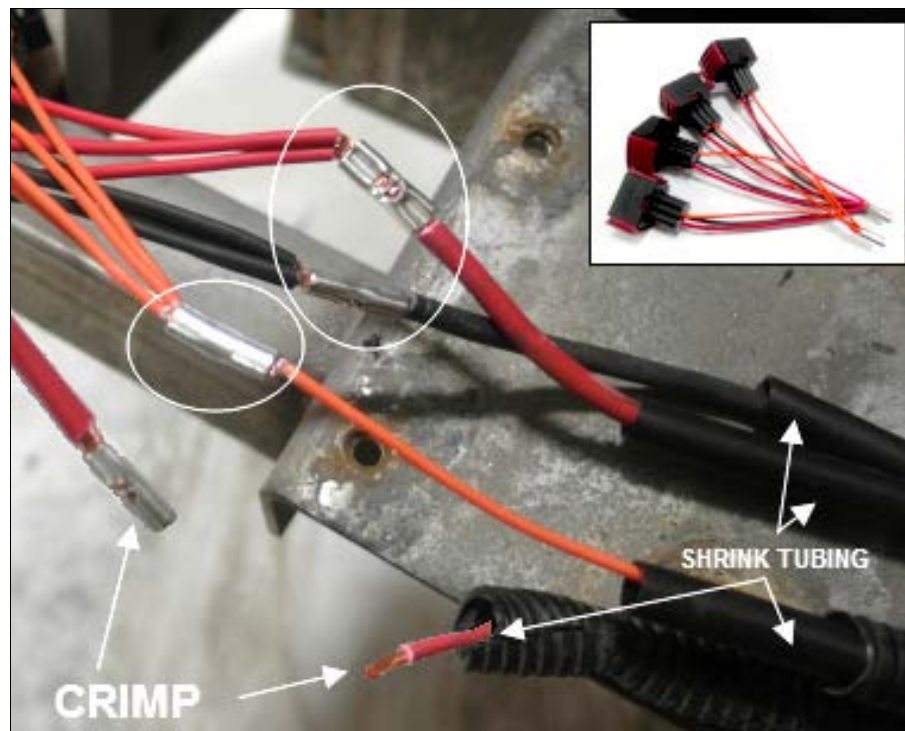
Solder the connection, put a length of **560784** shrink tubing and insert the wire in **562387** 0.25in convoluted tubing (leave a few free inches at the end of the stripped wire).



12. Crimp the end of the new fan connectors previously made to the end of the fan connection wiring harness (and orange wire). Follow this order carefully.

** IMPORTANT insert a length of **560785** shrink tubing over all wires before crimping the new fan connectors.*

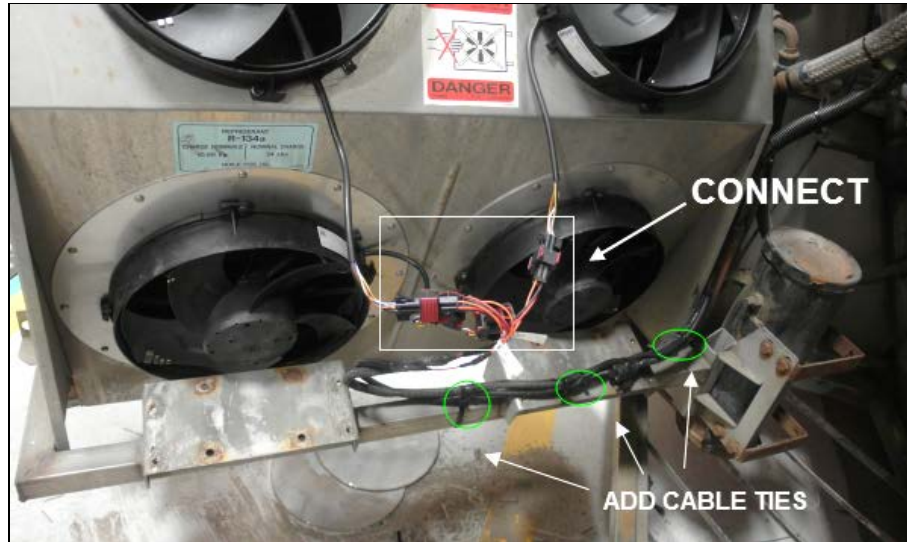
- The end of the red harness at position 1 of the connectors should be crimped to *fan connection # 2* (originally the long connection) red wire.
- End of black harness must be connected to black wire of fan *connection # 2*.
- The end of the red harness at position 3 of the connectors should be crimped to *fan connection # 1* (originally the short connection) 16ga. red wire.
- The end of the orange harness must be connected to the orange wire previously added.



13. Solder all four connections and cover them (heat) with shrink tubing.

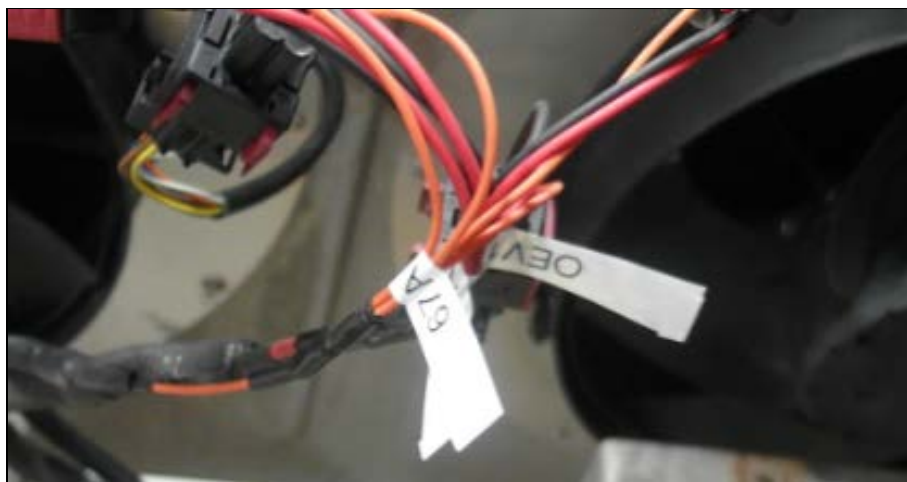


14. Connect the four fans to the new harness connectors (fans can be connected to any connector, connectors are interchangeable). Add cable ties (504637) to the harness as required to securely maintain it to the door structure.

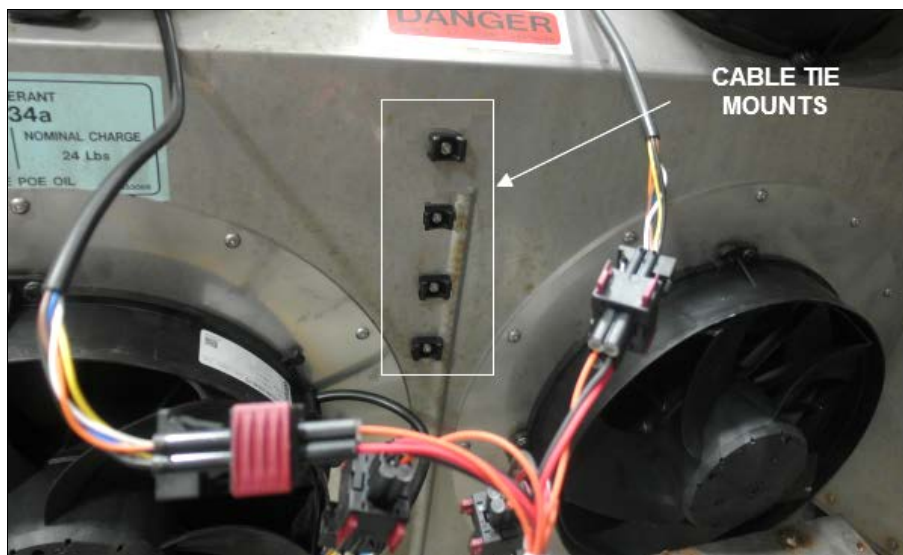


15. Label the wire for future identification (use P-touch printer or other permanent marking).

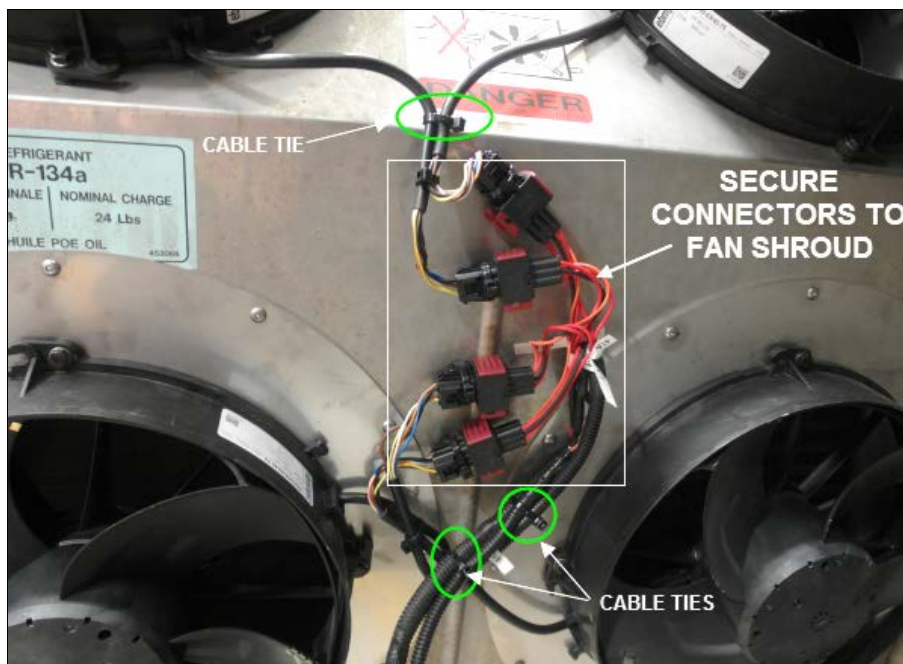
- Both red wire harnesses (from connection # 1 and # 2) should be marked as **41A**.
- The orange harness wires should be marked as **67A**
- The black wires should be marked as **OEV1** or Ground (**GND**).



16. Drill four 3/16" holes along the fan shroud central ridge and rivet in place four **504013** cable tie mounts as shown (use supplied **504488** rivets).

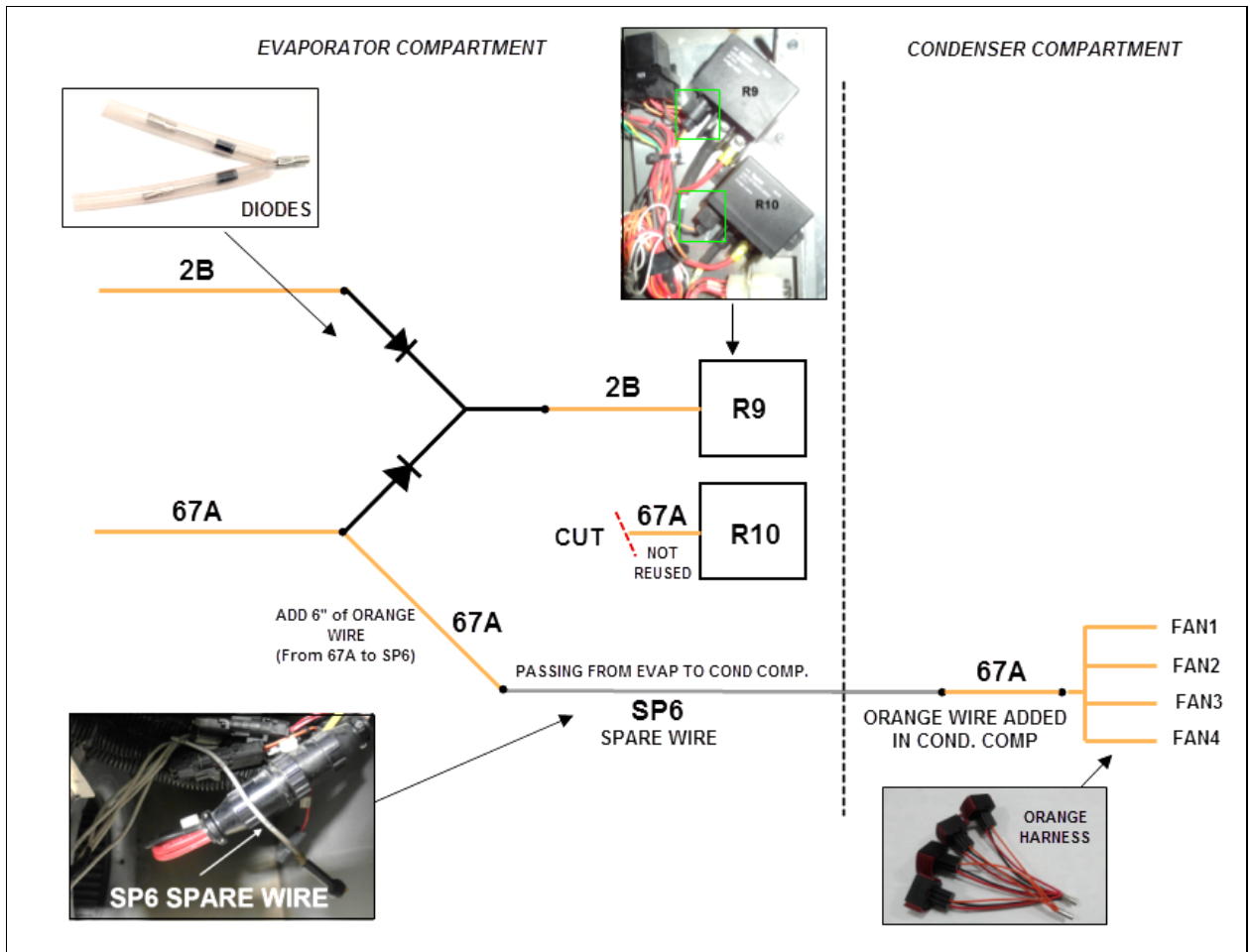
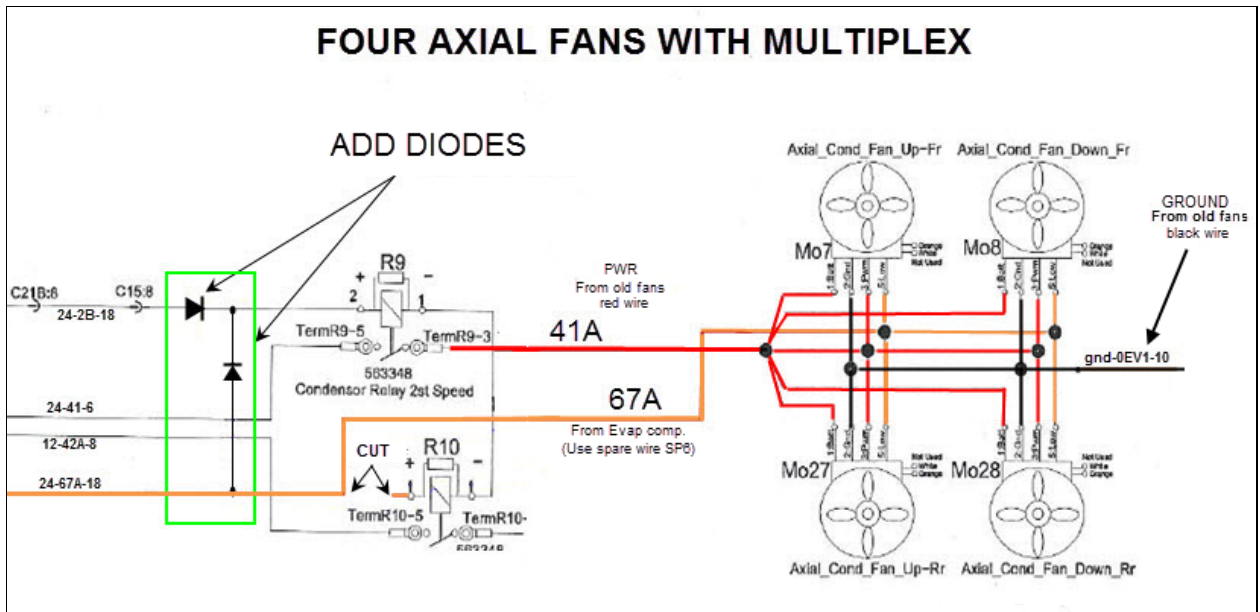


17. Secure the connectors to the cable mount using **504637** cable ties. Also add cable ties to the upper and lower fan harness to tie them together (add cable ties as required to secure all wires to the fan shroud, no cable, wire or harness should be left hanging).

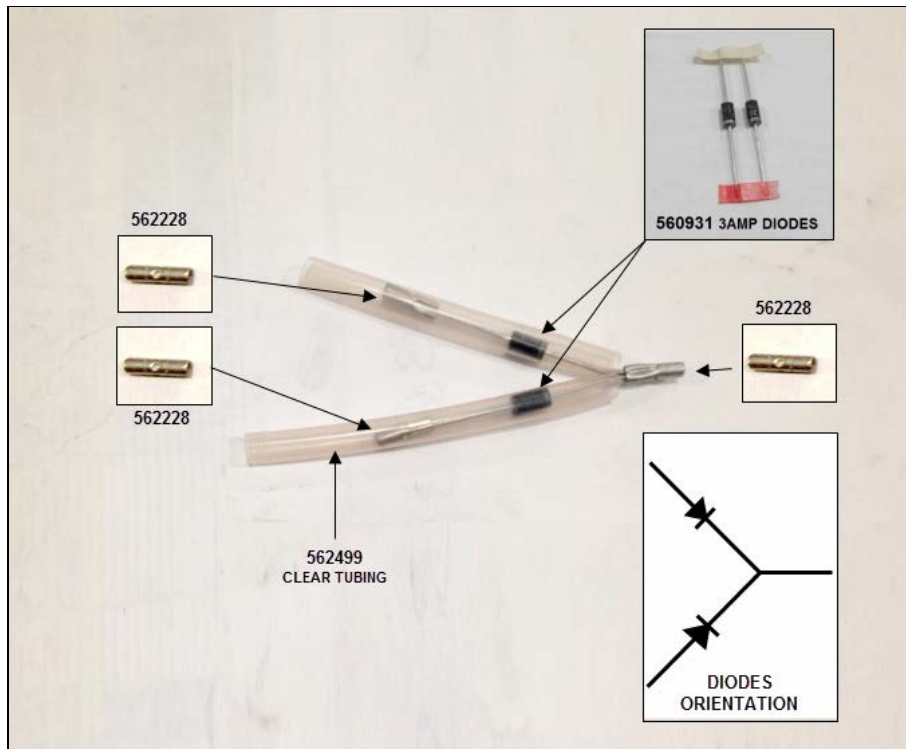


18. Open and close the condenser door several times and make sure the new fan connections are not interfering with the door movement. Correct any pinching or severe bending as necessary.

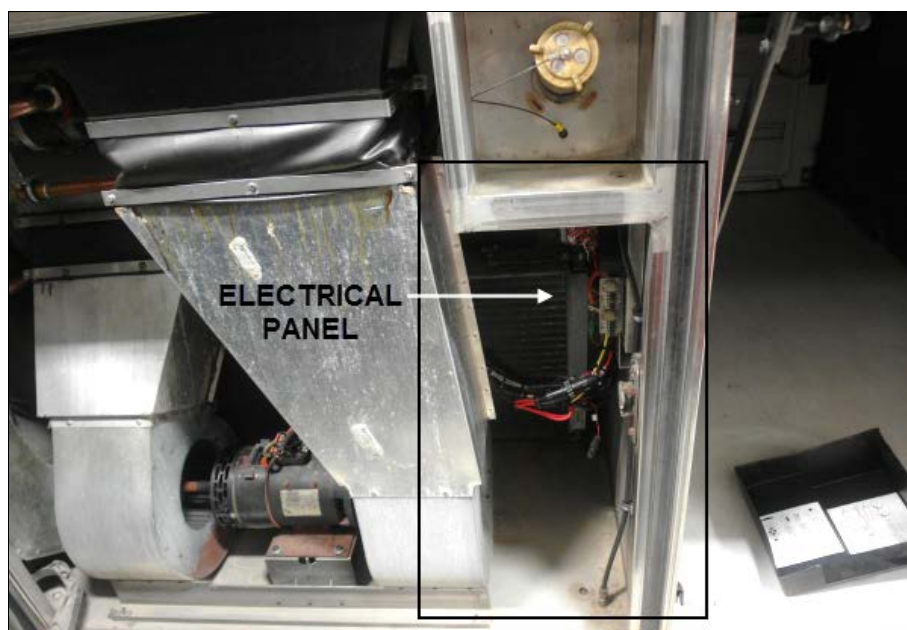
PART 3: FAN CONNECTION IN EVAPORATOR COMPARTMENT



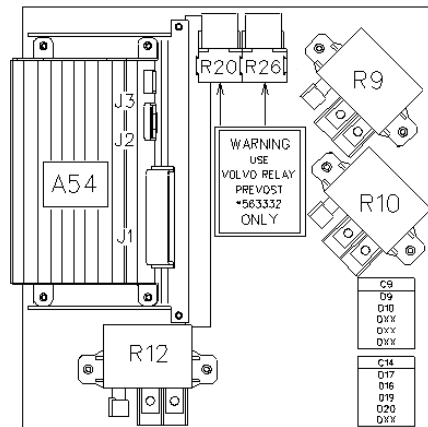
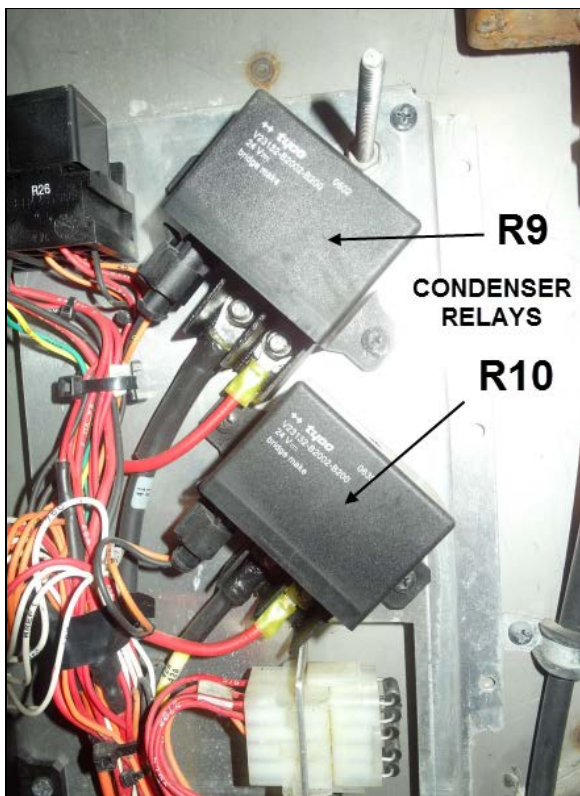
1. Crimp together with a **562228** 16-14ga. splice connector the tip of two 3 amp diodes **560931** to form an inverted "Y" wiring extension. Also add **562228** splice connectors to both ends of the diodes as shown (use appropriate crimping tool). Slide two lengths of **562499** clear tubing over the diodes. Check for proper diode's orientation.



2. Open the vehicle evaporator compartment (driver side, opposed to the condenser comp.) and locate the electrical panel (remove protective cover).



3. Locate both condenser relays (**R9 & R10**) located at the top right corner of the panel.



RELAYS

- R9 24V CONDENSOR RELAY 2ND SPEED
- R10 24V CONDENSOR RELAY 1ST SPEED
- R12 24V EVAPORATOR FAN
- R20 24V WATER PUMP RELAY
- R26 24V WATER PRE-HEATER RELAY

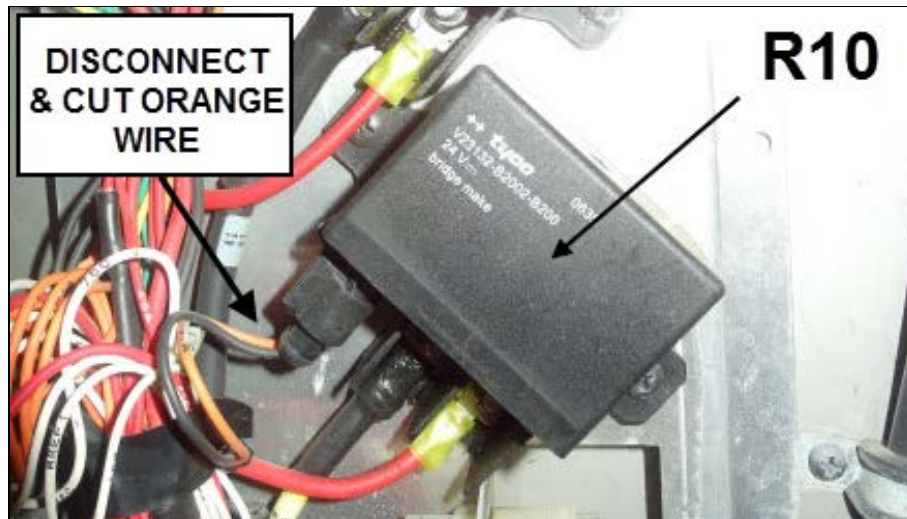
MODULE

A54 I/O-B

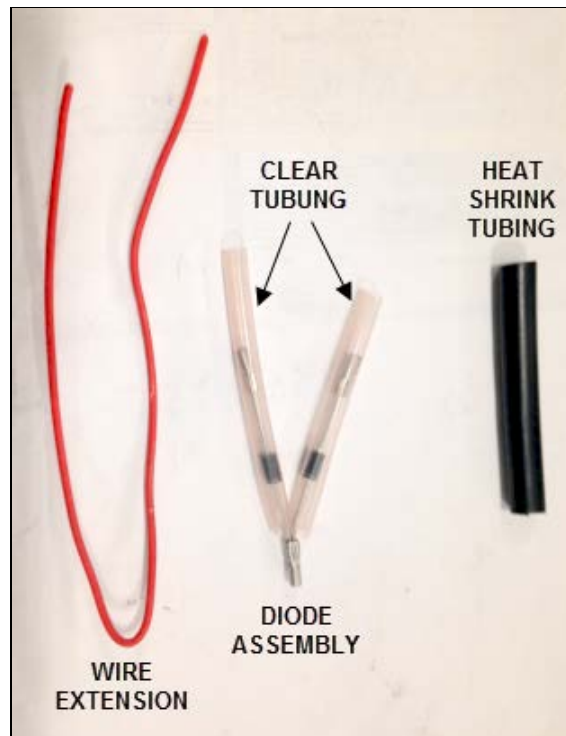
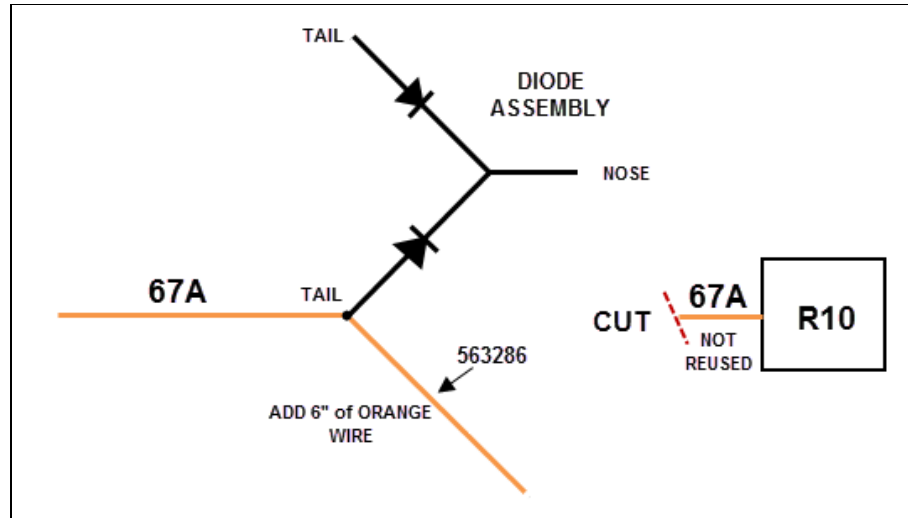
DIODES

- D9 PRE-HEAT
- D10 PRE-HEAT
- D16 LUGGAGE 3-CMPT
- D17 LUGGAGE 5-CMPT
- D19 LUGGAGE 2-CMPT
- D20 LUGGAGE 1-CMPT
- DXX NOT USED

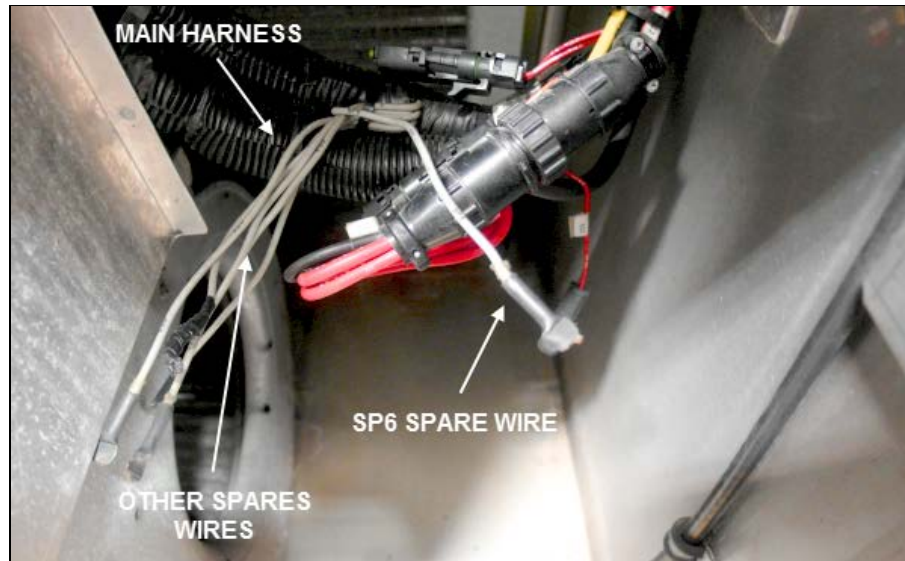
4. Disconnect the **R10** relay connector (black and orange wires) and cut the connector orange wire (**67A**) leaving about 2" of free wire, put (heat) a length of **560784** shrink tubing over it at the connector (this part of the wire/connector will not be reused). Reconnect the R10 relay.



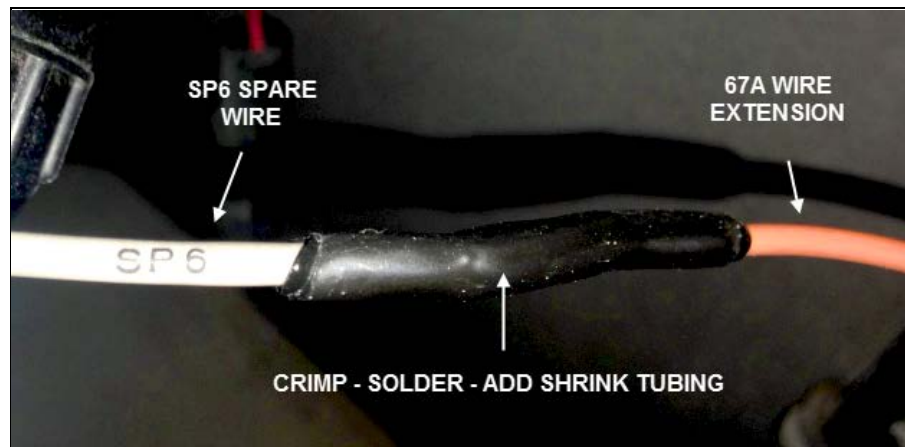
5. Strip the other end of the orange wire (**67A**) that was cut from the connector and crimp (use **562228** splice connector) to it *the tail* of one of the diode "Y" assembly and a *6" length of orange wire extension 563286* (18ga) as shown.
 - Insert **560784** shrink tubing and **562499** clear protective tubing before crimping.
 - Solder the connection.



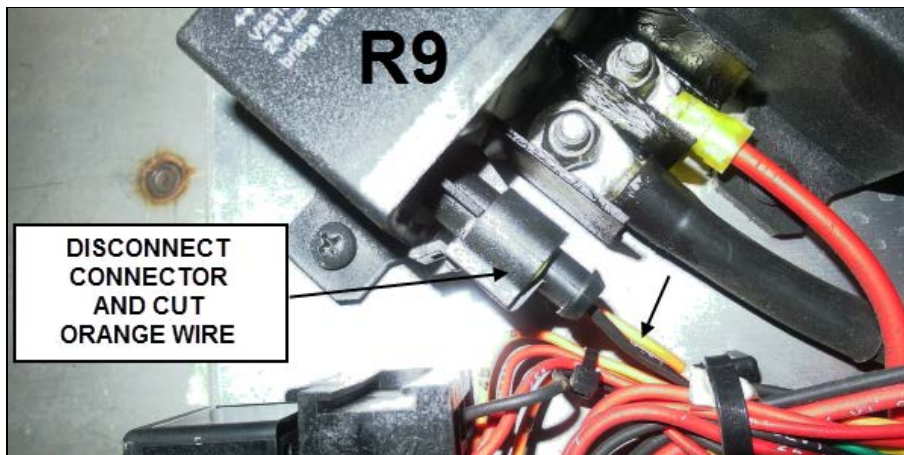
6. Locate the spare wire **SP6** in the main wiring harness and remove the shrink tubing at its end.
This spare wire is the same wire that was used in the condenser compartment to connect the fan orange wire.



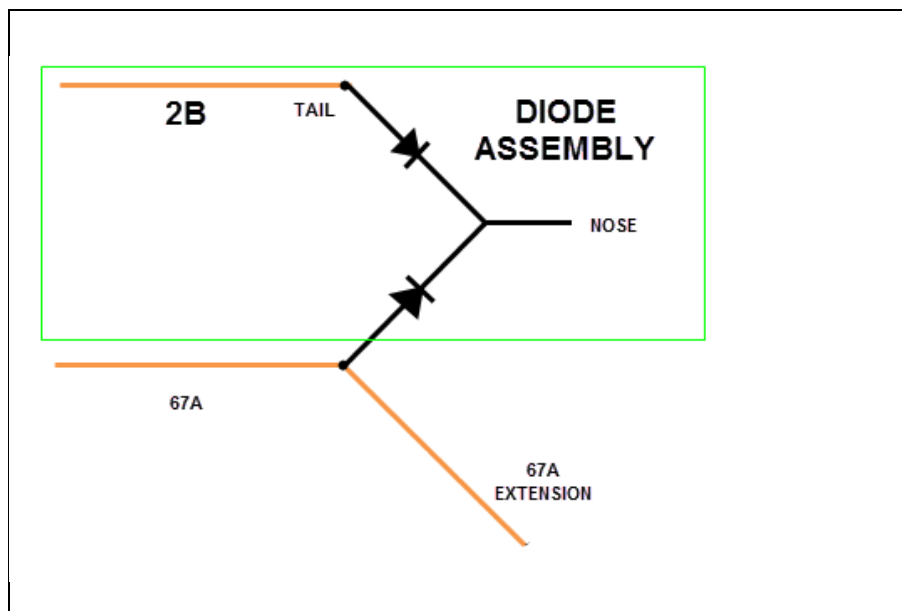
7. Crimp the end of the **67A** wire extension (use **562228** splice connector) to the spare wire **SP6**. Solder the connection (put a length of **560784** shrink tubing over the connection).



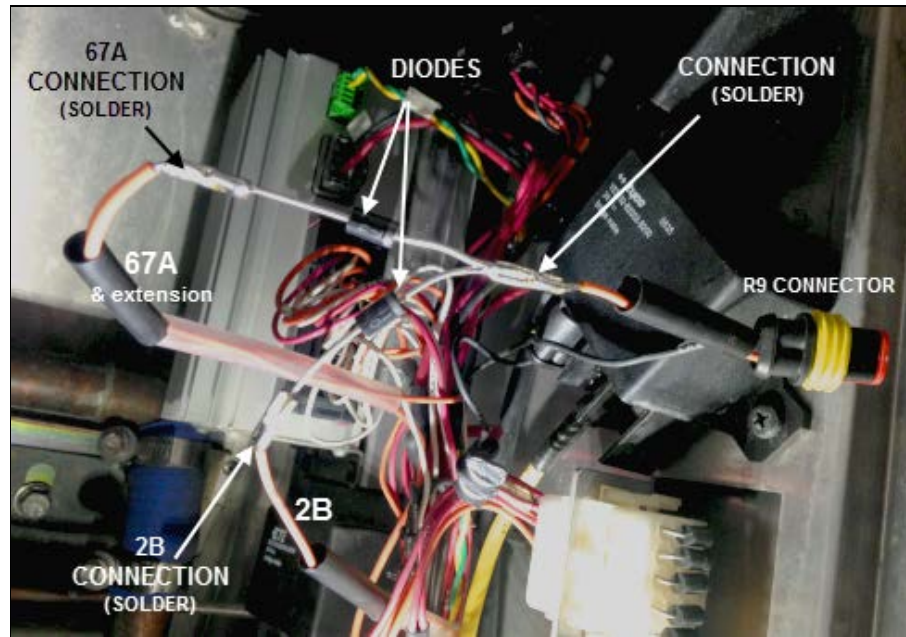
8. Disconnect the **R9** relay connector (black and orange wires) and cut the connector orange wire (**2B**) leaving about 2" of free wire at the connector. Strip the end of both **2B** wire ends (wire and connector).



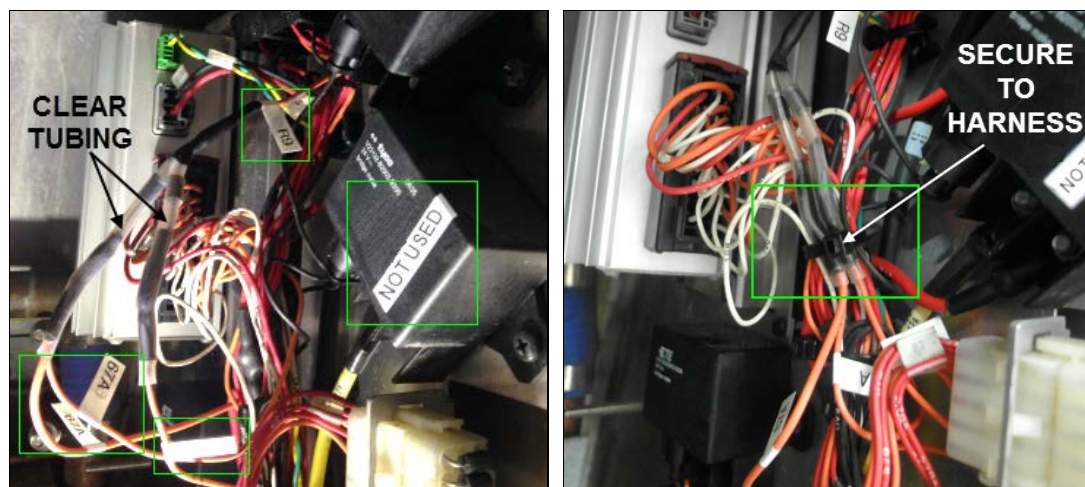
9. Insert a length of **560784** shrink tubing and **562499** clear protective tubing over the wire part of **2B**. Crimp the *wire end* of **2B** (use **562228** splice connector) to the *tail of the other diode* in the "Y" diode assembly.



10. Insert a length of **560784** shrink tubing over the 2" connector wire part of **2B** and crimp *the nose of the diodes* ("Y" diode assembly) to the *connector wire part of 2B*. Solder all connections (tail and nose).



11. Put the **560784** shrink tubing over the connections and slide **562499** clear protective tubing over the diodes. Reconnect **R9** relay and secure the new wiring as required using **504637** cable ties. Label **67A** and **2B** wires for future identification and put a label with the mention "NOT USED" on the **R10** relay.



12. Reset the main breakers and start the vehicle, check for proper operation of the condenser fans, also make sure no parts of the fan harness are hitting the fan blades and that the door open and close properly.

PARTS / WASTE DISPOSAL

Discard waste according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)