

# PREVOST


## Instruction Sheet

## IS-18909B

### CARRIER TO BITZER AC COMPRESSOR RETROFIT



REVISION B      ITEM 5060078 WAS 5002151, ITEMS 530175 and 641074 ADDED,  
SOME STEPS ADDED AND SOME UPDATED

#### APPLICATION






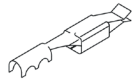



Model	VIN
X3-45 coaches Model Year : 2008-2010	 <p>From 2PCG33492<u>8C729282</u> up to X 2PCG33499<u>AC729995</u> incl. Vehicles equipped with Detroit Diesel Engine only.</p>

#### MATERIAL

Order kit # IS18909 that contains the following parts:

Part No.	Description	Qty	
7770442	COMPRESSOR SPECIAL SUPPORT	1	
630062	RUBBER BUSHING	2	
950494	BITZER COMPRESSOR	1	
067349	TOP WIRE SUPPORT	1	
950539	AC CLUTCH ASSEMBLY	1	
5001775	CAP SCREW HEXS G500 M8-1.25X25 G12.9	4	
5060078	BELT-V, 2/BX98 (SET OF 2)	1	
950521	KIT UNLOADER	1	
950493	HIGH SIDE HOSE	1	
950489	LOW SIDE HOSE	1	
501802	O'RING #16	1	
501803	O'RING #20	1	
950957	GASKET	2	
N31320-07	CLAMP LOOP TYPE	2	
474304	BOLT 1/4-20	1	

500411	WASHER ¼	2	
5001123	NUT 1/4-20	1	
950504	TRANSDUCER	2	
950030	SHRADER VALVE	3	
950498	HIGH PRESSURE SWITCH	1	
950500	ADAPTOR 7/16-20 X R134A HI-PRESS	1	
950499	ADAPTOR 7/16-20 X R134A 13MM	1	
5001338	SCREW M12X45LG	4	
500967	WASHER BEL 1/2	4	
500811	NUT STO 1/2	4	
500197	SCREW 3/8X1LG	2	
500265	NUT STO 3/8	2	
500832	FT WASHER 0.41 ID	2	
500086	SCREW 1/2X1.5LG	2	
500718	NUT STO 1/2-20	2	
500211	FLAT WASHER 1/2 ID	2	
564127	CONNECTOR, TYPE JUNIOR POWER TIMER	1	
562853	TERMINAL, SOCKET AMP	2	
563137	CABLE SEAL, (1.20-2.10) JPT - BLUE	2	
561690	CONNECTOR SOCKET 2C(WP)	1	
561578	SOCKET, FEMALE TERMINAL	2	

561565	CABLE SEAL, PED CONN. - GREEN (20-18 GA)	2	
560190	WIRE, 16 AWG, GXL, WHITE, 125 DEG	3	
563292	WIRE, 16 AWG, GXL, ORANGE, 125 DEG	6	
560786	SHRINK TUBING .5-.25ID BLACK	0.5	
560673	WIRE, 16 AWG, GXL, BLK, 125 DEG	4	
562228	BUTT SPLICE 16-14	6	
560784	SHRINK TUBING .25-.08ID BLACK	0.5	
562387	CONVOLUTED TUBING .25 ID BLACK SLT	5	
509815	FIR TREE MOUNTING (FT7 TYPE)	4	
504013	CABLE TIE MOUNT MIDDLE SIZE	4	
504810	CABLE TIE MOUNT SMALL SIZE	2	
504016	CABLE TIE, NYLON BLK (LIGHT-HEAVY)	14	
562470	RESISTOR 1000 OHMS 2 W	1	
562806	TERMINAL, SOCKET AMP (JPT) (20-18)	1	
562499	SHRINK TUBING CLEAR	0.5	
560815	RING TERMINAL #10 RED (22-18)	1	
069481	BOTTOM WIRE SUPPORT	1	
069450	MIDDLE WIRE SUPPORT	1	
504379	POP RIVET DOME SS OE 3/16X1/4	4	
504340	POP RIVET DOME SS OE 1/8X3/16	2	
950332	FILTER DRYER	1	
530175	CHECK VALVE, 1/8 NPT	1	
641074	FEMALE ELBOW 90° / NTA FITTING / #4x1/8NPT-F BR	1	
FI-18909	FEUILLE D'INSTRUCTION	1	
IS-18909	INSTRUCTION SHEET	1	

Other parts that may be required:

Part No.	Description	Qty
680038	LOCTITE 243 BLUE	AS REQ.

**NOTE**

Material can be obtained through regular channels.

**NOTE**

This bulletin only applies to the replacement of the Carrier AC compressor by a Bitzer compressor. Any other AC system problems should be treated separately.

**IMPORTANT NOTE**

Anyone who maintains, services, or repairs motor vehicle air conditioners for of any kind must be properly certified. Check the regulation applicable and make sure that the technician is certified before proceeding with this bulletin.

**PROCEDURE**

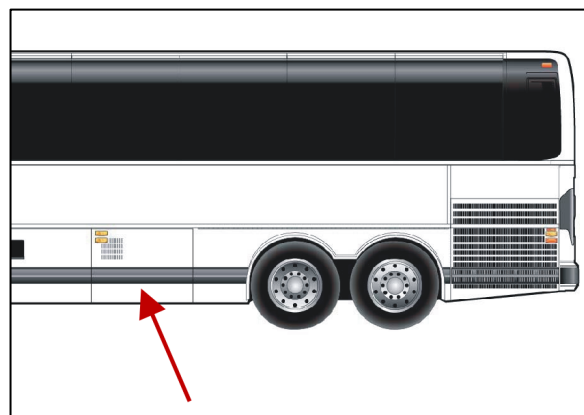


**DANGER**

Park vehicle safely, apply parking brake, stop the 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.

**REFRIGERANT REMOVAL**

1. Locate the evaporator compartment (Figure 1).



**FIGURE 1**

2. Into the evaporator compartment, locate the C24 pin connector with the plug and the C24 socket connector with the plug.
3. Remove the plug on both connectors and keep it in a safe place (Figure 2).
4. Connect the C24 pin connector with the C24 socket connector.

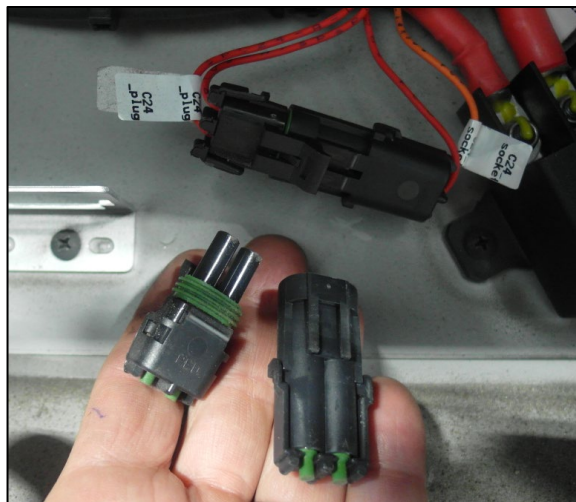


FIGURE 2

5. Locate the front service compartment (Figure 3).

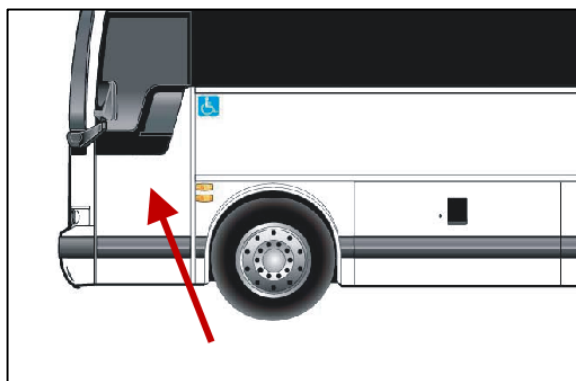


FIGURE 3

6. Into the front service compartment, locate the C44 pin connector with the plug and the C44 socket connector with the plug.
7. Remove the plug on both connectors and keep it in a safe place (Figure 4).
8. Connect the C44 pin connector with the C44 socket connector.
9. Remove all refrigerant (ref. PR10188-83 and PR10114-271).
10. From the evaporator compartment, remove filter dryer and discard it.



FIGURE 4

## CARRIER AC COMPRESSOR REMOVAL

11. Locate belt tensioner air pressure valve on the upper right corner into the engine compartment.
12. Rotate the lever to release belt tensioner air pressure.

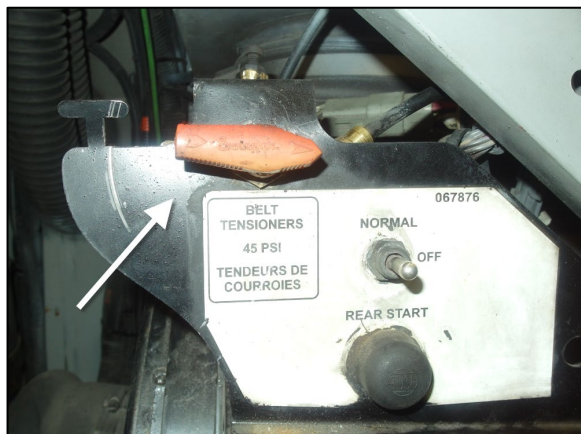


FIGURE 5

13. On the belt tensioner air pressure valve, remove the air supply tube slowly from the 45° elbow to remove air pressure.
14. Remove the 45° elbow and discard.

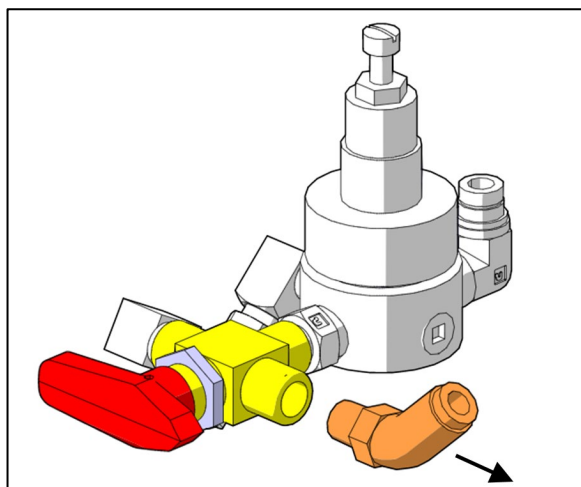


FIGURE 6

15. Install check valve (item A, Figure 7) with the arrows pointing toward the valve.
16. Install 90° elbow on the check valve (item B, Figure 7).
17. Plug the air supply tube.

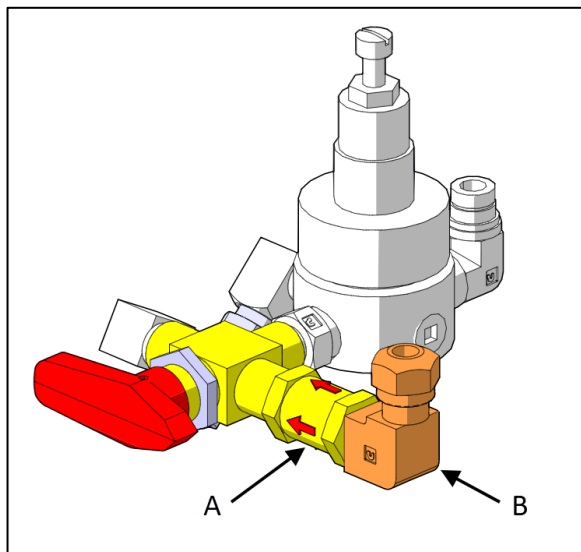


FIGURE 7

18. Disconnect high and low pressure hoses on the existing compressor.

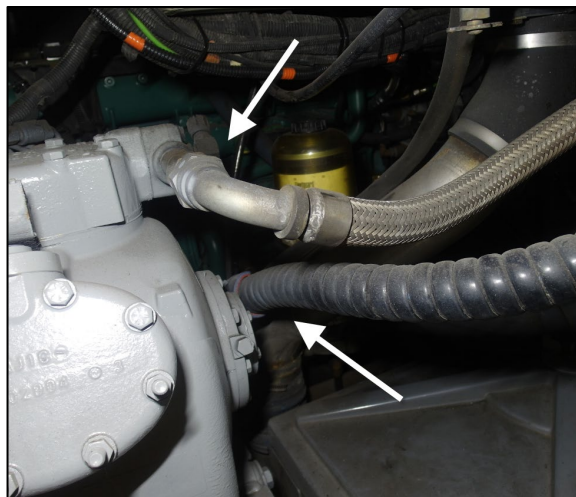


FIGURE 8

19. Disconnect high and low pressure hoses to the AC system tubes.
20. Discard the hoses.

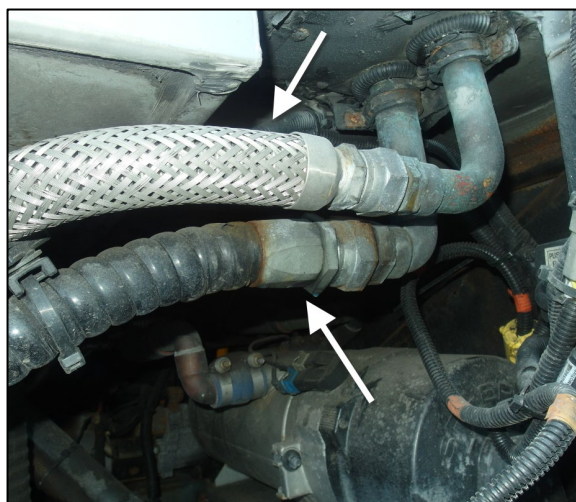


FIGURE 9

21. Cut all cable ties that secure the existing compressor wirings and connectors.
22. Locate connector L199 (Unloader RH).
23. Cut orange existing orange wire (#31) and existing black wire (#0RA4) flush to the L199 connector. Keep label L199 on the wire.

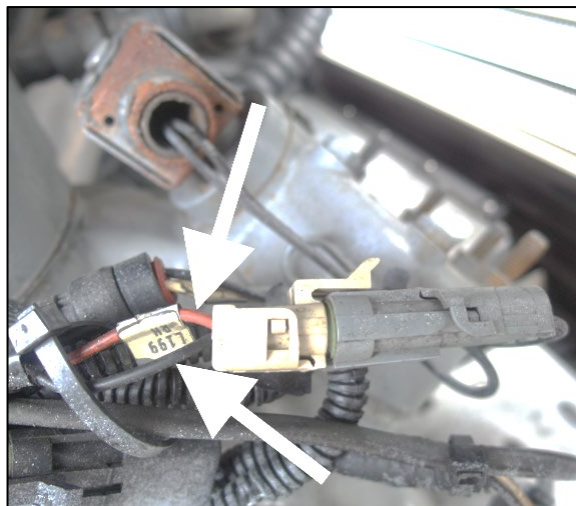


FIGURE 10

24. Locate connector L200 (Unloader LH).
25. Cut existing orange wire (#33) flush to the L200 connector.

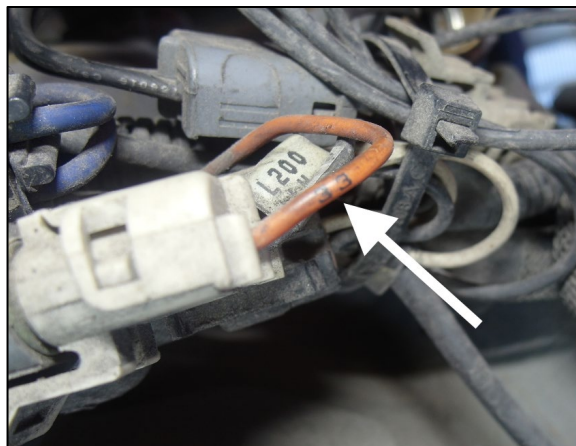


FIGURE 11

26. Install 2" of black shrink tubing on the existing orange wire #33 and heat it to make it watertight.
27. Disconnect all remaining wire connectors on the existing compressor.



FIGURE 12

28. Remove screws on the curb side.

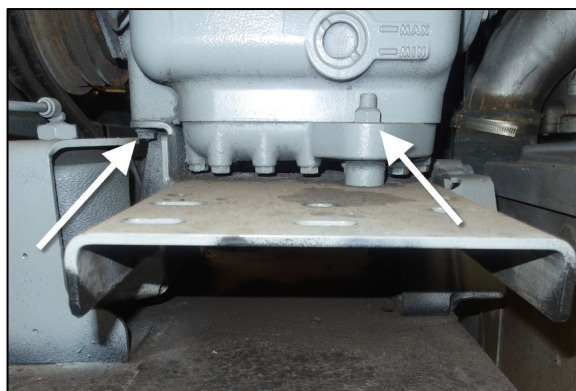


FIGURE 13

29. Remove screws on the engine side.
30. Discard existing AC compressor and existing fasteners.

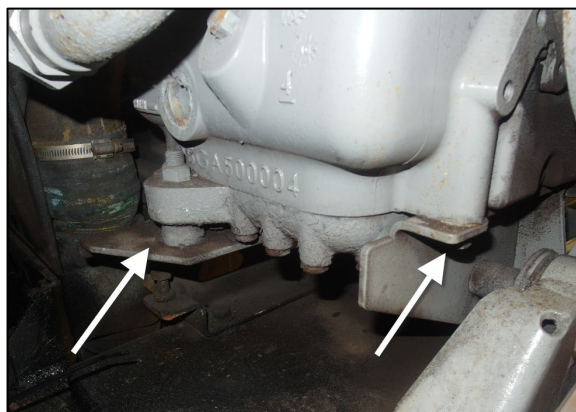


FIGURE 14



## MOUNTING THE CLUTCH ON THE COMPRESSOR

31. Before installing the clutch, dismount the oil tube on the left side of the shaft. The tube is installed on the opposite side. Keep the support and the fasteners.

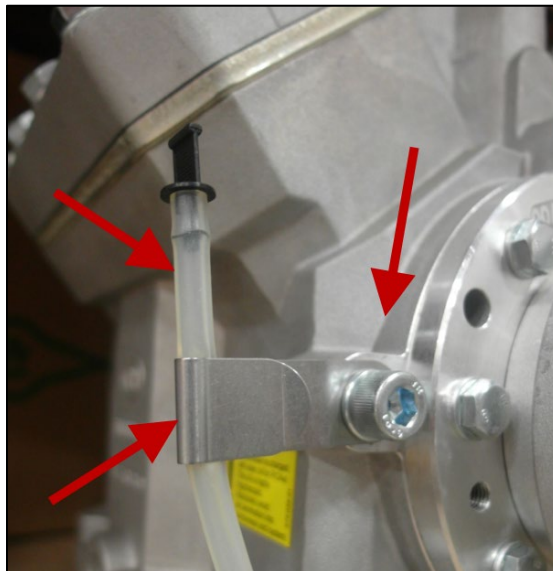


FIGURE 15

32. The flange and the shaft end must be free from dirt.  
33. Apply high temperature approved assembly grease on the shaft end for easy dismounting of the clutch. Use of Molykote G-rapid-plus or Molykote P 40 is recommended.

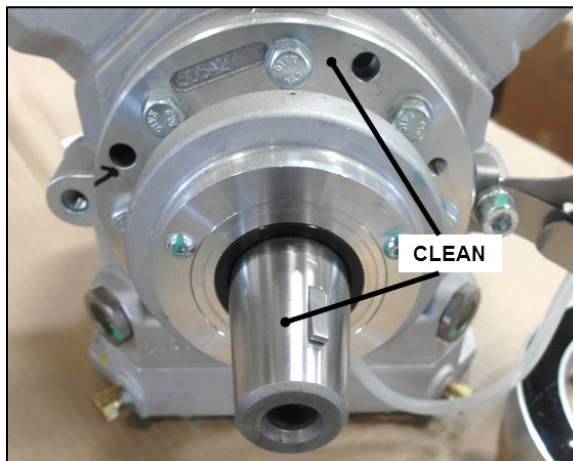


FIGURE 16

34. Install the coil. Slip the coil on the compressor flange. The cable connector must be positioned on the right side as shown in Figure 17.

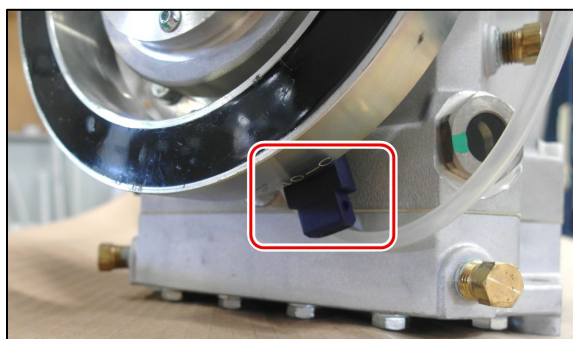


FIGURE 17

35. Fix the coil with 4 screws PN 5001775. Use Loctite 243 blue on each screw.
36. Torque the screws to a value of 20-24 lb-ft.

 **CAUTION**

Pay attention to the precise seat of the coil. A non-observance may cause the destruction of the clutch components during the operation.



FIGURE 18

37. To avoid damaging the rotor bore, make sure that the woodruff key supplied with the clutch is positioned as shown in Figure 19, otherwise, it could move when the rotor is inserted on the shaft end.

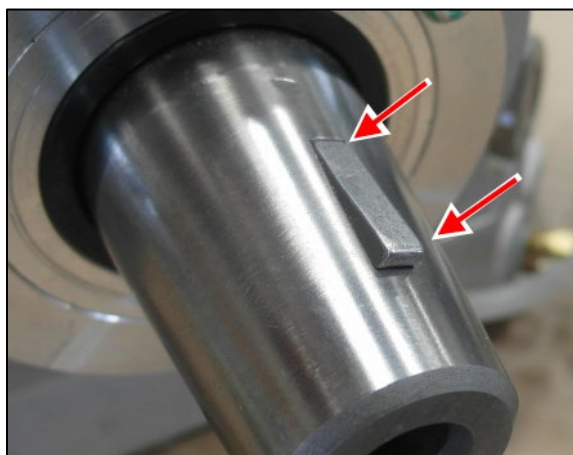


FIGURE 19

38. Carefully mount the rotor on the shaft end by hand. Never use a hammer for pressing the rotor on.

**NOTE**

*To avoid damaging the bore of the rotor, feel the engagement of the key in the keyway and slip the rotor on the shaft end of the compressor till reaching the stop.*

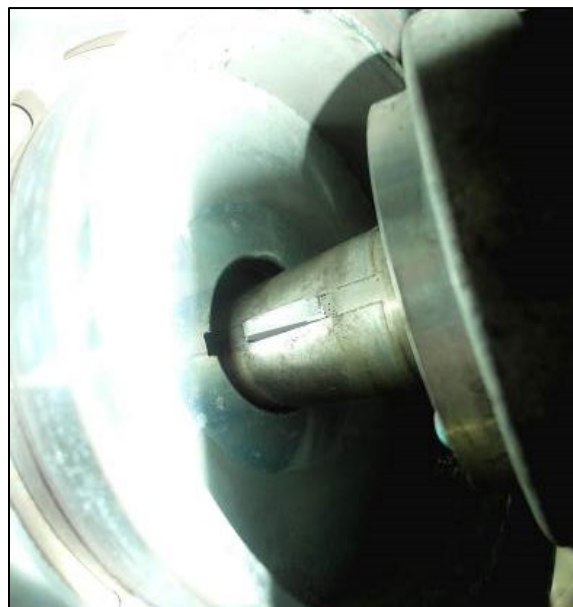


FIGURE 20

39. Fasten the rotor to the shaft end by using the M12 screw supplied with the clutch and holding-up with a wrench on the hexagonal part of the rotor. Apply blue Loctite 243 on the screw.
40. Tighten the screw to a torque value of 60 lbf-ft (81 Nm).

<b>NOTE</b>
<i>Turn rotor by hand and pay attention to the free run and the generation of noises. In case of rubbing, grinding or similar noises, dismount the rotor and check installation.</i>



FIGURE 21

41. Once properly tighten, apply a torque seal mark.

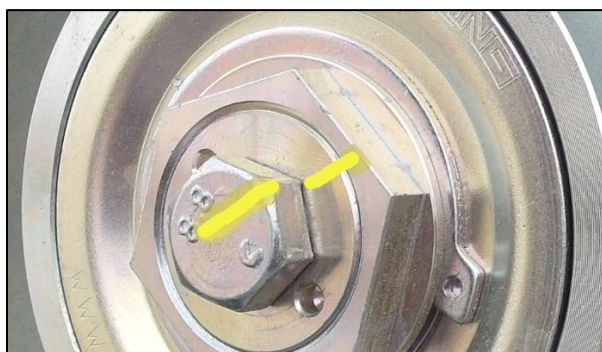


FIGURE 22

42. During cleaning or other work on the compressor, the clutch must be covered to prevent the penetration of greasy liquids, grease or dirt particles in the working gap of the clutch. No high pressure cleaning.

<b>NOTE</b>
<i>Working gap must be between these values: 0.024 in - 0.035 in (0.60 mm - 0.90 mm)</i>

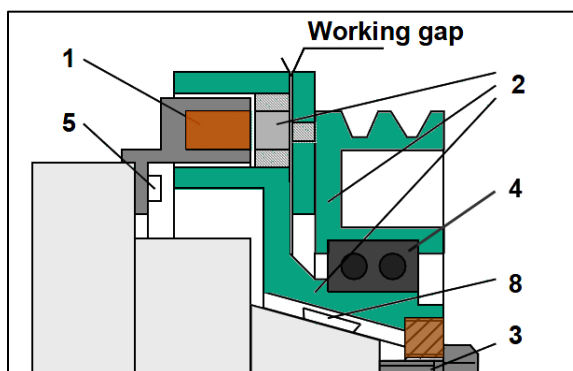
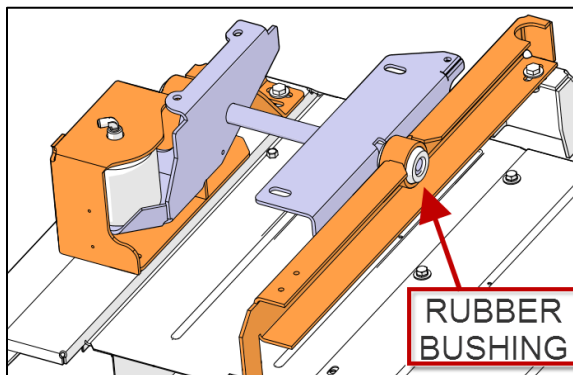


FIGURE 23

## BITZER AC COMPRESSOR INSTALLATION

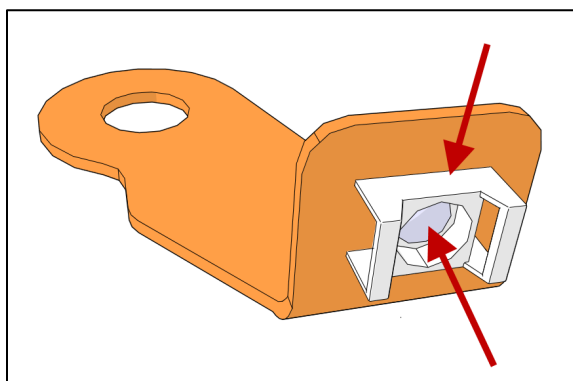
43. If necessary, replace rubber bushings PN 630062.



**FIGURE 24**

44. Install cable tie mount on the bottom wire support. Use table below for the components.

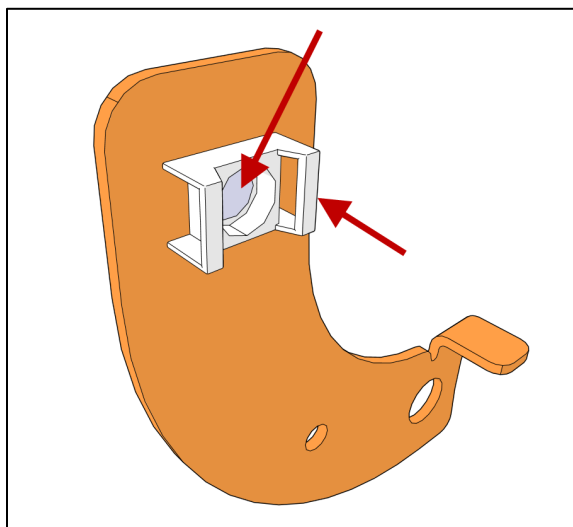
069481	BOTTOM WIRE SUPPORT	1
504340	POP RIVET 1/8"	1
504810	CABLE TIE MOUNT SMALL SIZE	1



**FIGURE 25**

45. Install cable tie mount on the middle wire support. Use table below for the components.

069450	MIDDLE WIRE SUPPORT	1
504340	POP RIVET 1/8"	1
504810	CABLE TIE MOUNT SMALL SIZE	1



**FIGURE 26**

46. Install cable tie mounts and fir tree mounting on the top wire support. Use table below for the components.

067349	TOP WIRE SUPPORT	1
504379	POP RIVET 3/16X1/4	2
504013	CABLE TIE MOUNT BLACK 1/4"	2
509815	FIR TREE MOUNTING (FT7)	2

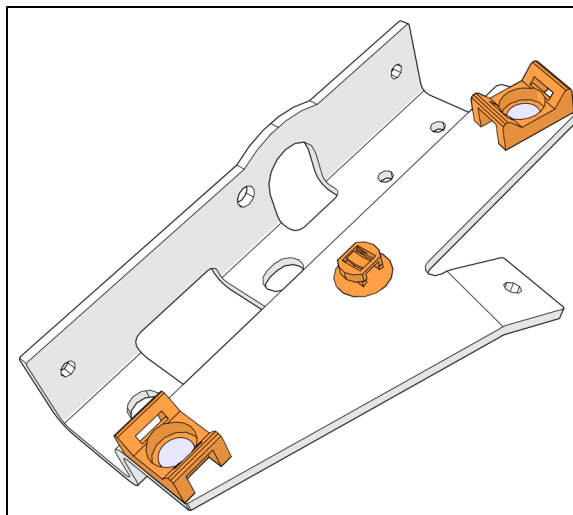


FIGURE 27

47. Prepare Carrier to Bitzer special support (PN 7770442) for installation.



FIGURE 28

48. Install special support (PN 7770442) on the existing compressor support with two screws on the pulley side. Use table below for components.

500197	SCREW 3/8X1LG	2
500265	NUT STO 3/8	2
500832	FT WASHER 0.41 ID	2

49. Do not tighten the screws.

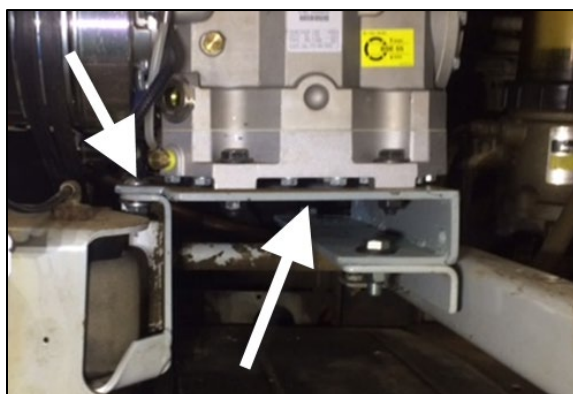


FIGURE 29

50. Complete installation of the special support (PN 7770442) on the existing compressor support with two screws on the back side. Use table below for components.

500086	SCREW 1/2X1.5LG	2
500718	NUT STO 1/2-20	2
500211	FLAT WASHER 1/2 ID	2

51. Do not tighten the screws.

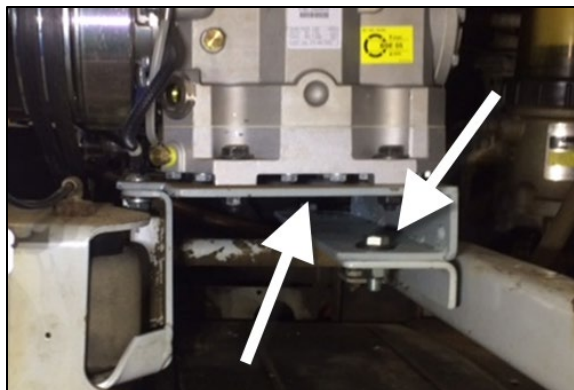


FIGURE 30

52. Install new compressor on the special support. Prepare to install the bottom wire support with the screw on the pulley side.

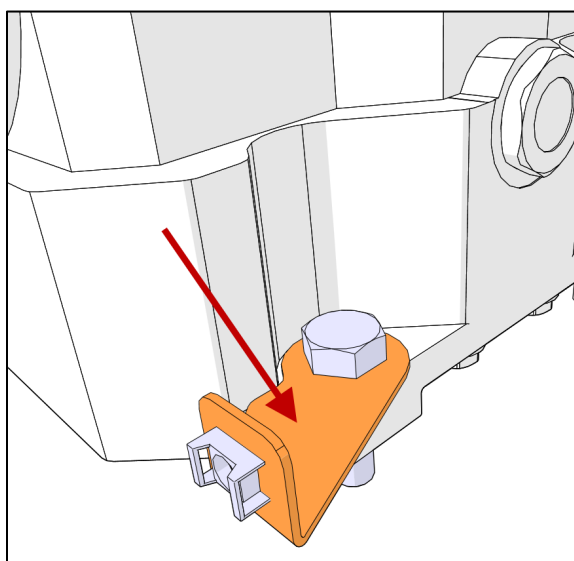


FIGURE 31

53. Install new compressor on the special support with 4 screws. Use table below for the components.

5001338	SCREW M12X45LG	4
500967	WASHER BEL 1/2	4
500811	NUT STO 1/2	4

54. Torque the screws to a value of 74 lb-ft.

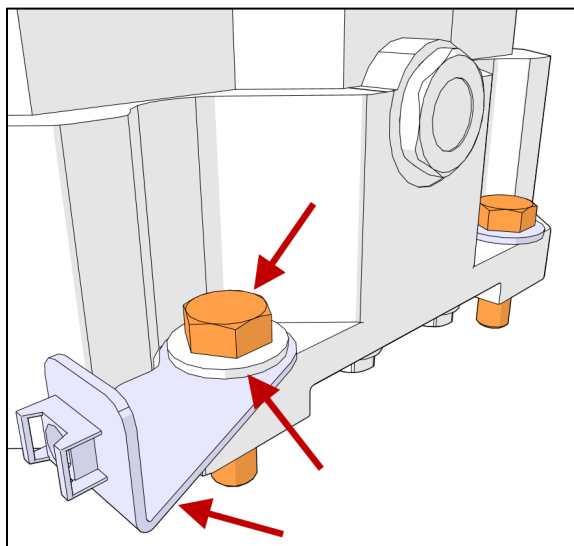


FIGURE 32

55. Check alignment between engine pulley and compressor pulley.
56. Use an electronic level for the vertical alignment and install shim if necessary.
57. Use a rule for the horizontal alignment. Compressor support has arced slot to facilitate the horizontal alignment.
58. Tighten the screws (4) that hold the special support with the existing compressor support.

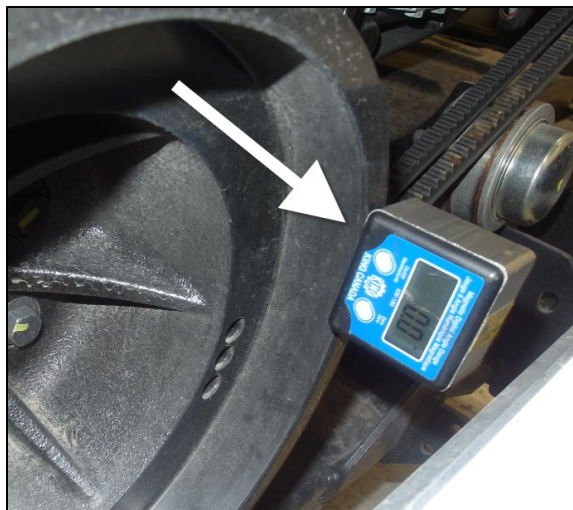


FIGURE 33

59. Clean the hose fittings and the new O'Rings.
60. Lubricate both O-Rings with compatible 134-A AC oil before installation on the fittings.
61. Install new O'Ring on the new hose fittings.



FIGURE 34

62. Connect new high-pressure hose and new low-pressure hose to the AC system tubes. Use table below for components.

950493	HIGH-PRESSURE HOSE	1
950489	LOW-PRESSURE HOSE	1
501802	O'RING #16 (DISCHARGE)	1
501803	O'RING #20 (SUCTION)	1

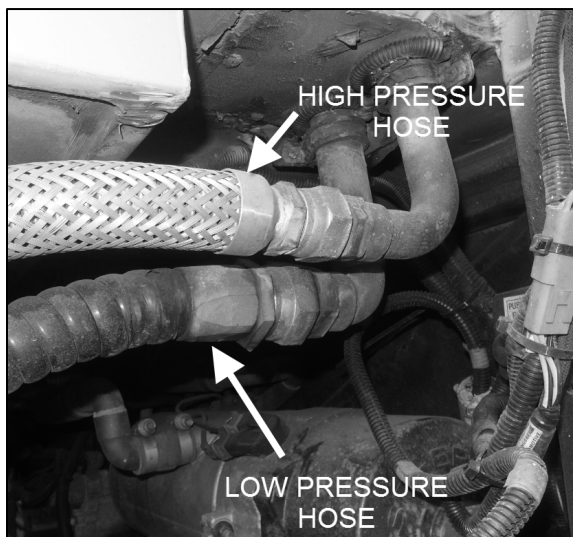


FIGURE 35

63. Add seal marks on both fittings.

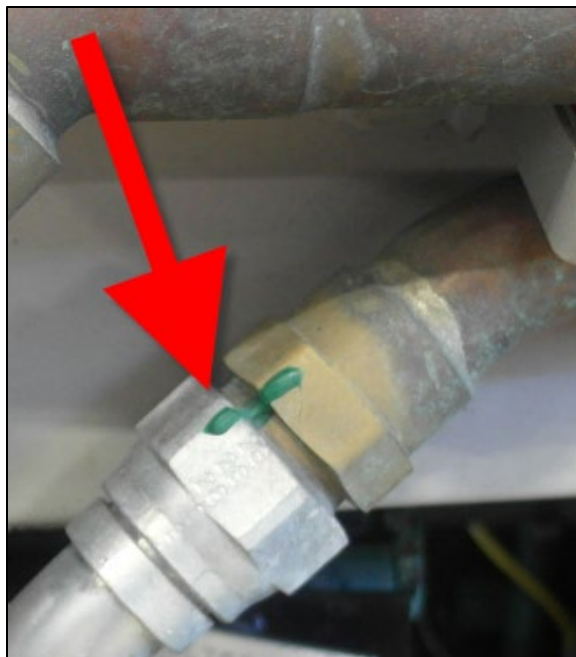


FIGURE 36

- 64. Clean hose mounting faces (new compressor and new hose flanges).
- 65. Connect high pressure hose and low-pressure hose to the AC compressor.
- 66. Use new gasket PN 950957 on both flanges
- 67. Torque flange screws to 31-35 lb-ft (42-47 Nm).
- 68. Add torque seal marks on all flange screws.

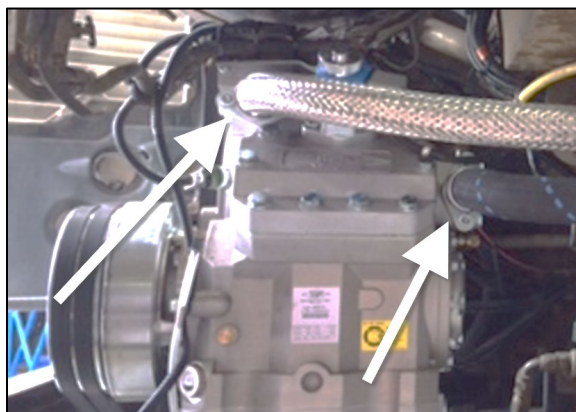


FIGURE 37

- 69. Install hose clamps around the mid-distance of the hoses as shown in Figure 38. Use table below for components.
- 70. Make sure to keep a clearance between the hoses and the side door.

N31320-07	CLAMP LOOP TYPE	2
474304	BOLT 1/4-20	1
500411	WASHER 1/4	2
5001123	NUT 1/4-20	1

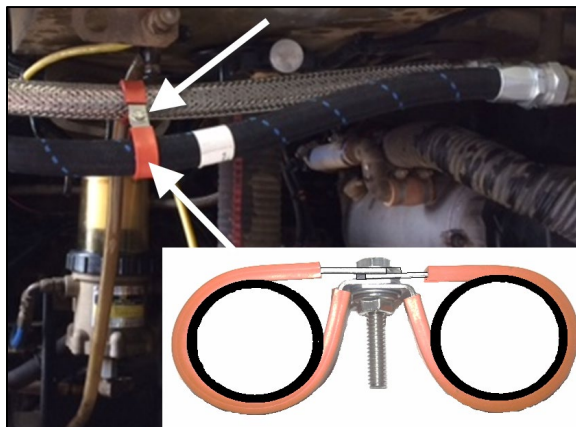
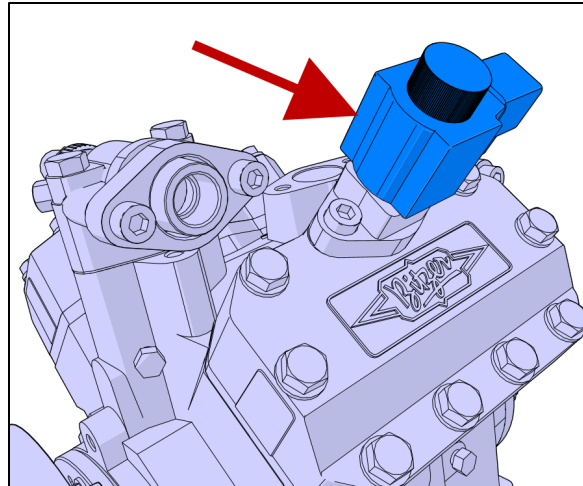


FIGURE 38

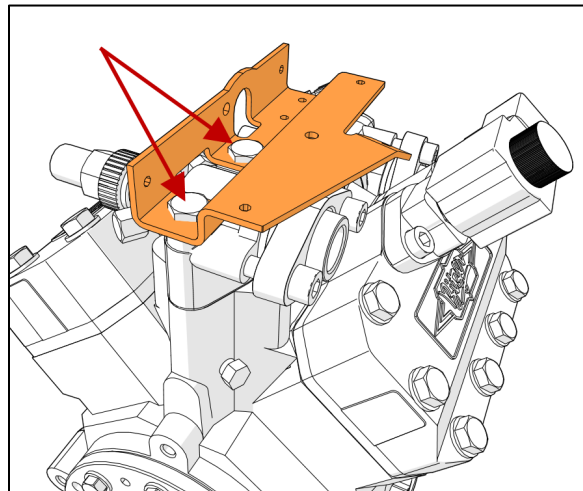


71. Install Kit Unloader (PN 950521).



**FIGURE 39**

72. Install top wire support (PN 067349). Use compressor screws (2).



**FIGURE 40**

73. Install all components (5) shown in Figure 41 on the new compressor.
74. Connect existing connector Se23 (High) and existing connector Se24 (Low) to the transducers as shown in Figure 41.

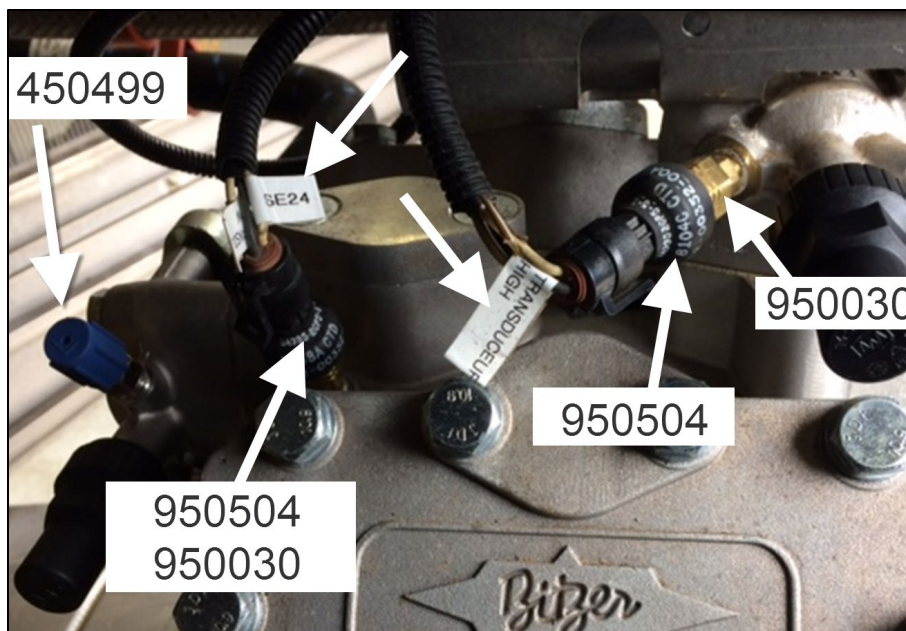


FIGURE 41

75. Install all components (3) shown in Figure 42 on the new compressor.
76. Connect the other end of PN 950498 to the existing connector Se29.

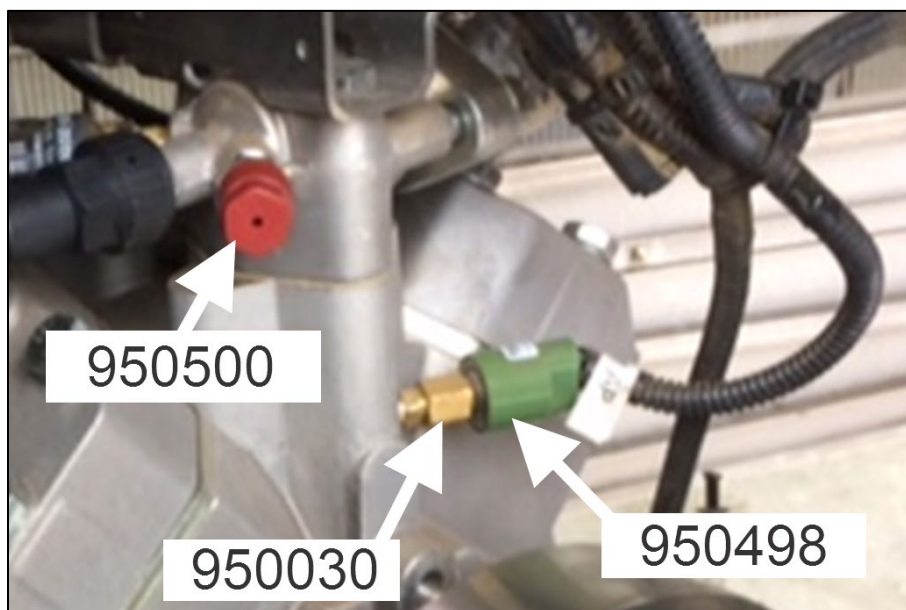


FIGURE 42

# MAKING OF WIRING A

77. Prepare material for wiring A.



FIGURE 43



FIGURE 44

78. Cut white and orange wire 36" long each.
79. Install seals on wires as shown in Figure 45.
80. Install terminals as shown in Figure 45, crimp and solder it.

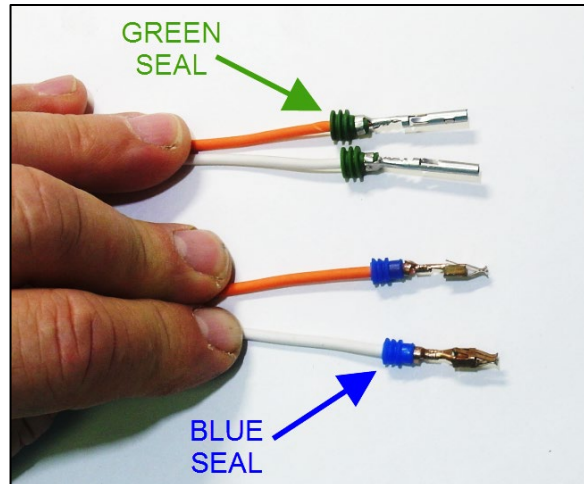


FIGURE 45

81. Install convoluted tubing (PN 562387) on the wires as shown in Figure 46.



FIGURE 46

82. Wrap the convoluted tubing and the wires together with electrical black tape as shown in Figure 47.
83. Insert orange wire terminal into pin A of connector PN 561690.
84. Insert white wire terminal into pin B of connector PN 561690.
85. Make sure the terminals are locked and the seals are positioned into the connector.
86. Lock the connector pivot.

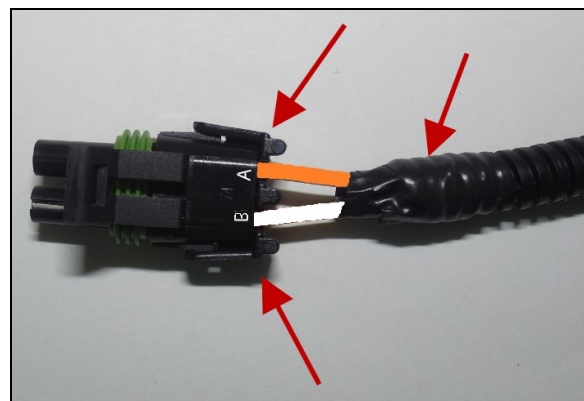


FIGURE 47

87. Use a P-Touch printer and make labels So9, 77BA and 78.
88. Attach label So9 (connector ID) on the harness as shown in Figure 48.
89. Attach label 77BA on the orange wire as shown in Figure 48.
90. Attach label 78 on the white wire as shown in Figure 48.
91. Connect new connector So9 to the existing connector So9.

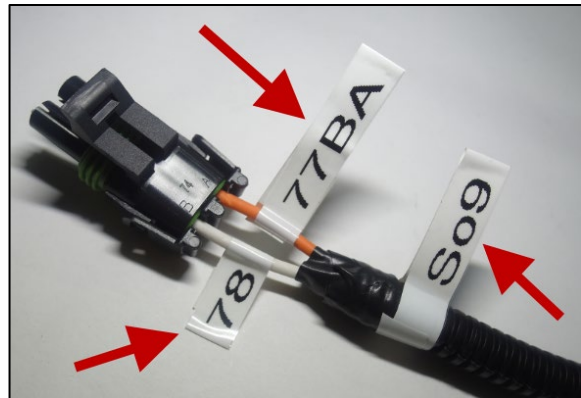


FIGURE 48

92. Slide 1.5" of shrink tubing (PN 560786) at the other end of the harness.



FIGURE 49

93. Insert orange wire terminal into pin 1 of connector PN 564127.
94. Insert white wire terminal into pin 2 of connector PN 564127.
95. Make sure the locking tabs on the terminals are oriented with the connector as shown in Figure 50.
96. Make sure the terminals are locked and the seals are positioned into the connector.

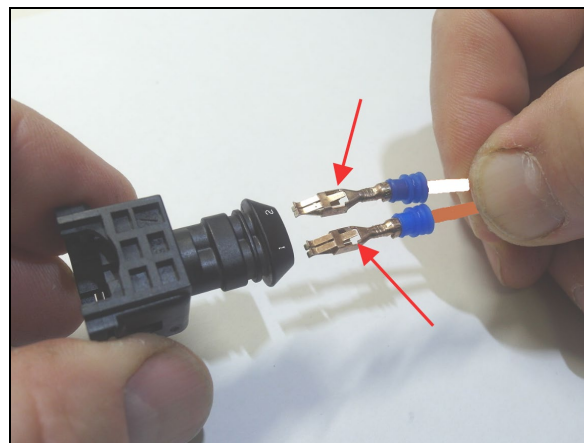


FIGURE 50

97. Move the shrink tubing over the connector to cover the whole connector neck.

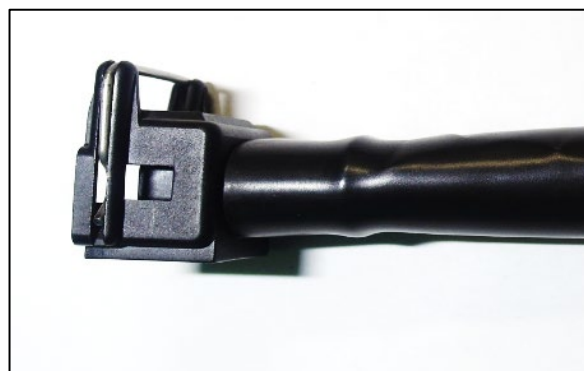


FIGURE 51

98. Heat the whole shrink tubing and before it cools down, shape an elbow just from the connector neck as shown in Figure 52.
99. Use a P-Touch printer and make label So9b.
100. Attach label So9b (connector ID) to the harness as shown in Figure 52.
101. Connect connector So9b to the clutch magnet connector.



FIGURE 52

## MAKING OF WIRING B

102. Unplug connector from the Unloader valve.
103. Remove seal and connector core with a small flat screw driver.

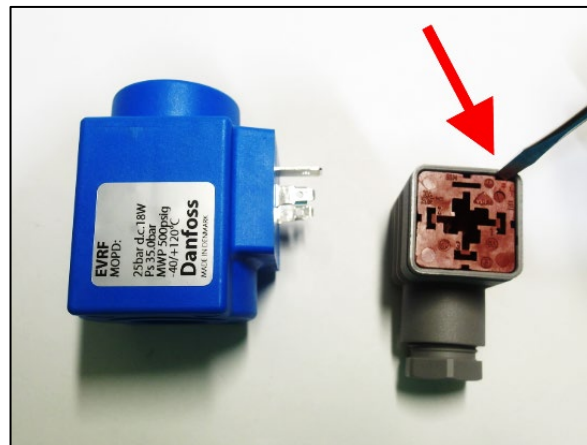


FIGURE 53

104. Cut 24" of orange wire and 24" of black wire.
105. Run the wires through the connector components as shown in Figure 54.
106. Fix orange wire with screw #1 of the connector core.
107. Fix black wire with screw #2 of the connector core.

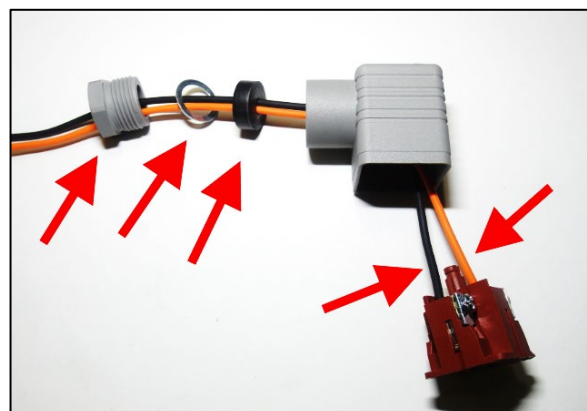


FIGURE 54

108. Install seal, flat washer and threaded collar. Tighten only with your hand.
109. Install the square seal.
110. Install 14" of convoluted tubing (PN 562387).

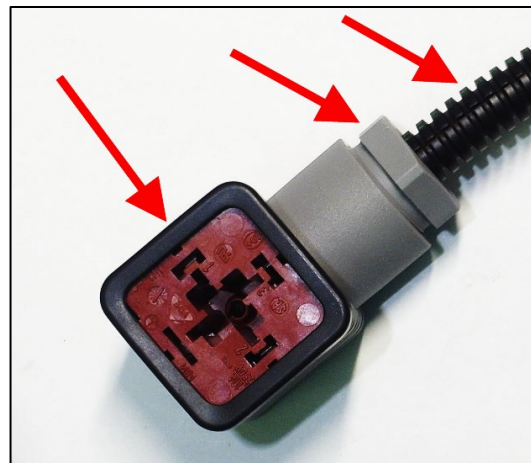


FIGURE 55

111. Wrap the wiring with hockey tape as shown in Figure 56.

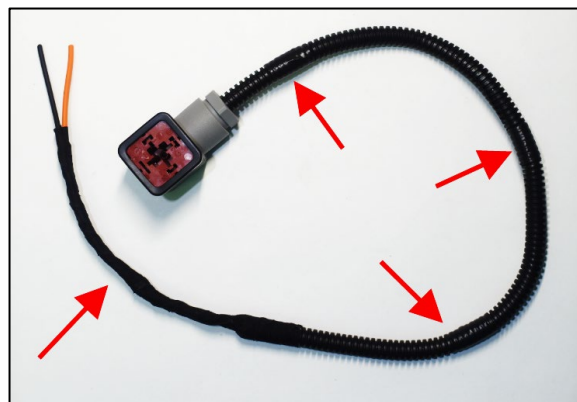


FIGURE 56

112. Use a P-Touch printer and make labels L199, ORA2 and 31.
113. Attach label L199 (connector ID) to the harness as shown in Figure 57.
114. Attach label ORA2 to the black wire as shown in Figure 57.
115. Attach label 31 to the orange wire as shown in Figure 57.
116. Connect connector L199 to the Unloader valve.
117. Insert black shrink tubing into the new wire 31 and splice this wire with the existing wire 31 (see step 23). Clamp and solder the connection. Heat the shrink tubing to make it watertight.
118. Insert black shrink tubing into the new wire ORA2 and splice this wire with the existing wire ORA2 (see step 23). Clamp and solder the connection. Heat the shrink tubing to make it watertight.

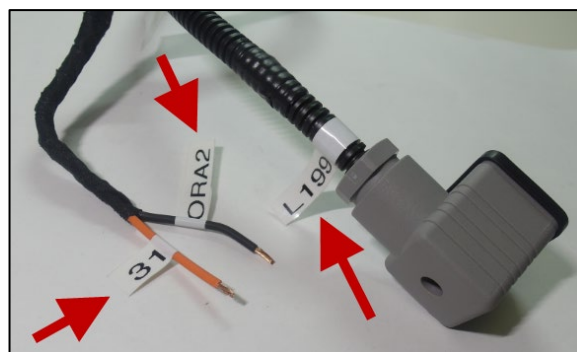


FIGURE 57

## MAKING AND INSTALLATION OF WIRE C

119. Prepare components for wire C.

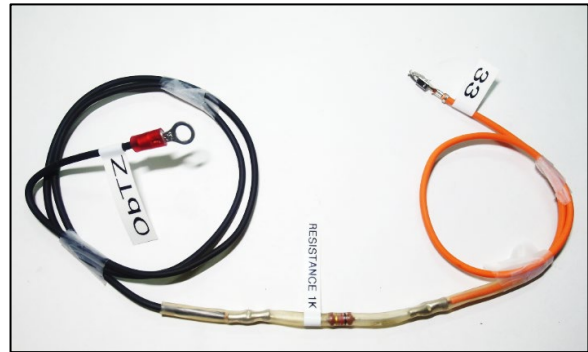


FIGURE 58



FIGURE 59



- 120. Cut 12" of orange wire.
- 121. Cut 24" of black wire.
- 122. Connect resistance with wires using two splices.
- 123. Clamp and solder both connections.

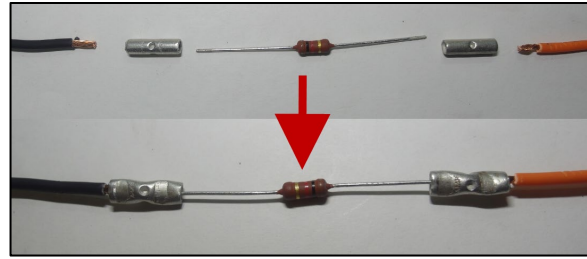


FIGURE 60

- 124. Install 6" of clear shrink tubing on the wire.
- 125. Heat the shrink tubing to lock it in place.



FIGURE 61

- 126. Install ring terminal on the black wire and socket terminal on the orange wire.
- 127. Clamp and solder both connections.



FIGURE 62

- 128. Use a P-Touch printer and make labels ObTZ, 33 and RESISTANCE 1K.
- 129. Attach label ObTZ on black wire.
- 130. Attach label 33 on the orange wire.
- 131. Attach label RESISTANCE 1K close to the resistance.

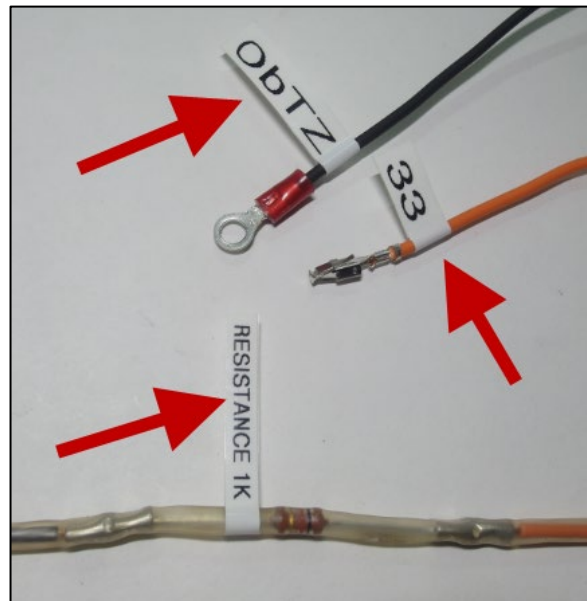


FIGURE 63

132. Locate A52 module into the rear junction box and existing orange wire #33 in pin J1:8.

133. Insert extractor (PN 683594) on the front of the connector. Remove the terminal by disengaging the flexible lock on the terminal. Gently remove the terminal from the connector by pulling on the wire.

134. Cut the terminal on the existing wire 33. Install 2" of black shrink tubing and heat it.



FIGURE 64



FIGURE 65

135. Connect new wire #33 (orange) into pin J1:8 of A52 module.

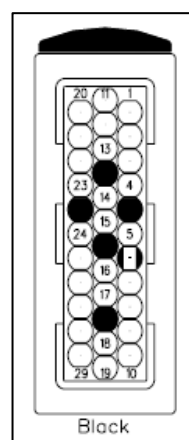


FIGURE 66

136. Connect black wire #ObTZ to the ground stud.

137. Secure all wires with cable ties.

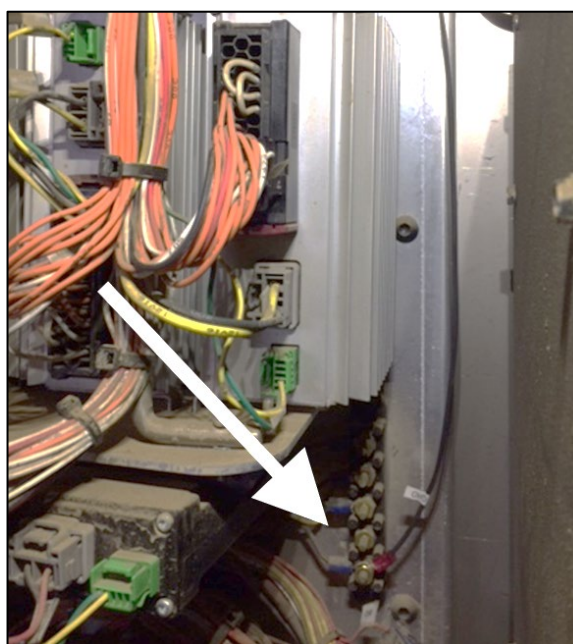


FIGURE 67

## COMPLETE THE INSTALLATION

138. Use cable a tie to secure the clutch wiring with the bottom support. Make a loop at the bottom of the wiring.

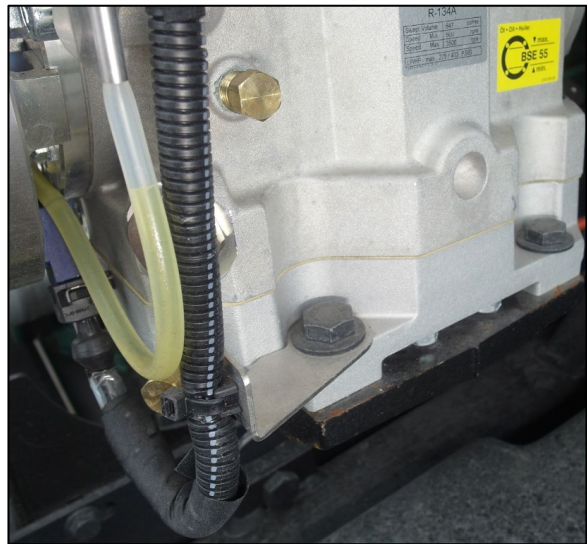


FIGURE 68

139. Install the middle support with the oil tube support (reference step 31).
140. Use cable tie to secure the clutch wiring with the middle support.
141. Use cable ties to secure all the remaining wiring with the top support.

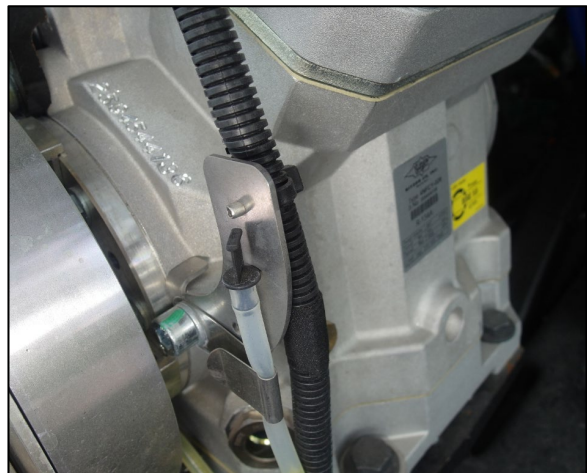


FIGURE 69

142. Install filter dryer (PN 950332) with new O'ring.

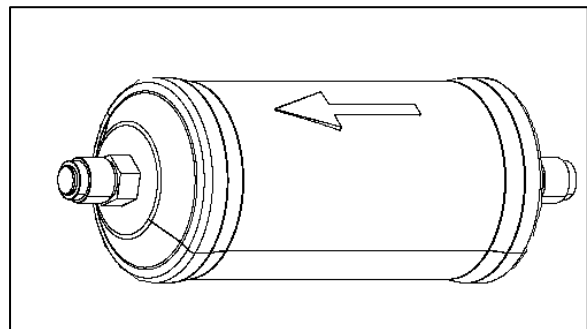


FIGURE 70

143. Install new belt.



FIGURE 71

144. Reset belt tensioner pressure releasing valve to 45 psi (310 kPa) to apply tension on the new belt.

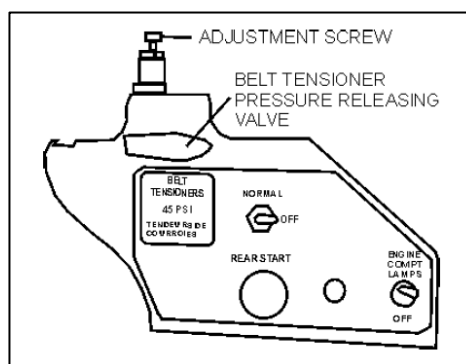


FIGURE 72

145. Adjust the upper snub pulley to slightly get in contact with the belt with a belt deflection of approximately 1/8".

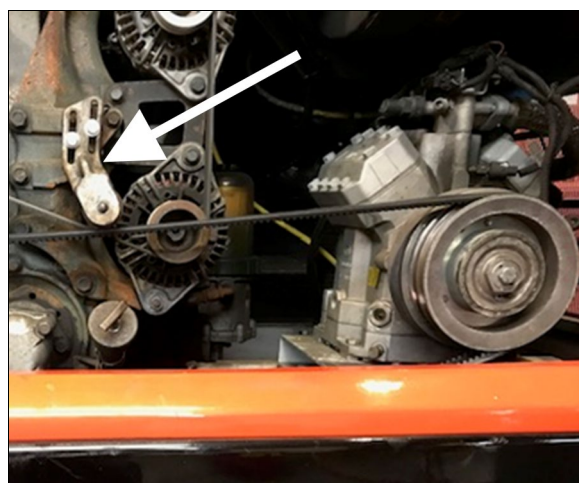


FIGURE 73

146. Locate the lower snub pulley.

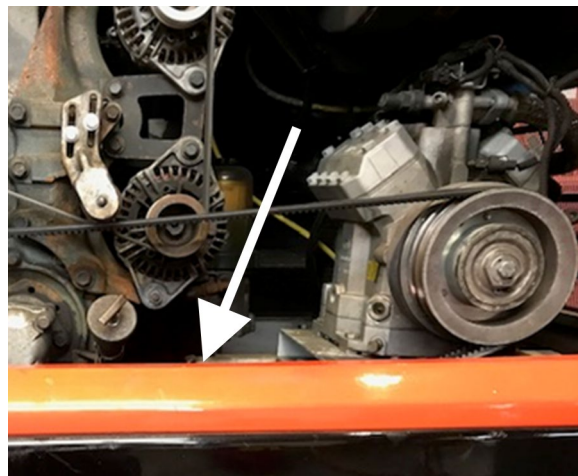


FIGURE 74

147. Dismount the pulley support (2 bolts).

148. Make the slotted holes  $\frac{1}{4}$ " longer at the bottom.

149. Reinstall the support with 2 screws, 2 flat washers and 2 lock washers

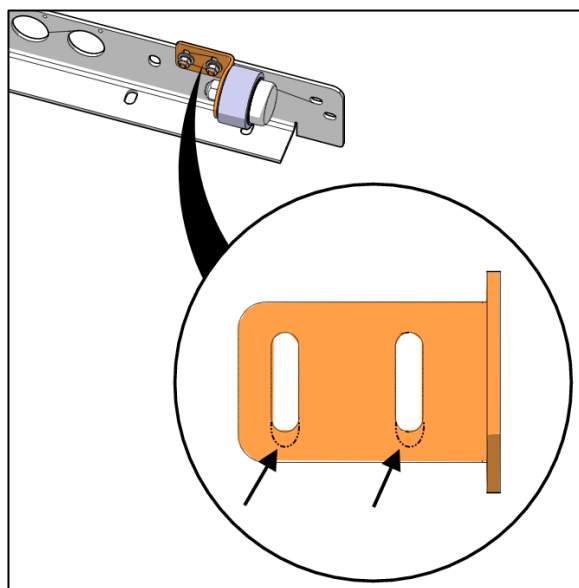


FIGURE 75

150. Adjust the lower snub pulley to slightly get in contact with the belt with a belt deflection of approximately  $\frac{1}{8}$ ".

***IMPORTANT NOTE***

*It is important to get the lower pulley perfectly aligned with both belts.*

*If it is not possible to adjust the pulley as specified in step 150, make the slotted holes longer.*

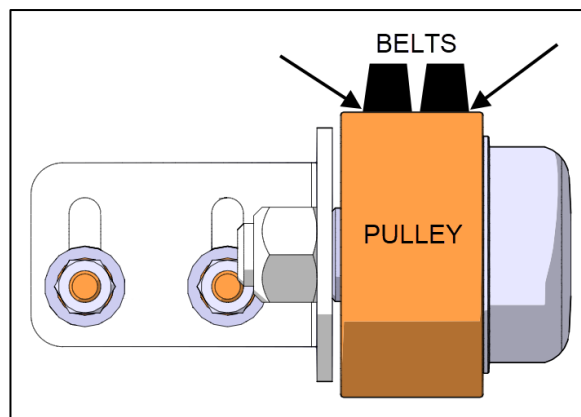


FIGURE 76

151. Tighten the screws (2).

152. Perform a pressure test on the AC system and check leaking (ref. PR10114-212). If apply, fix the leaking.

**NOTE**

This bulletin only applies to the AC compressor replacement. Any other AC system problems should be treated separately.

153. Perform the vacuum on the system (ref. PR.10114-268).
154. Fill the system with the refrigerant (ref. PR10114-264).
155. Into the evaporator compartment, disconnect the C24 pin connector with the C24 socket connector.
156. Install the corresponding plug on both connectors.
157. Use cable ties to fix the connectors with the cable tie holder (Figure 77).



FIGURE 77

158. Into the front service compartment, disconnect the C44 pin connector with the C44 socket connector.
159. Install the corresponding plug on both connectors.
160. Use cable ties to fix the connectors with existing wiring (Figure 78).
161. Bulletin is complete.

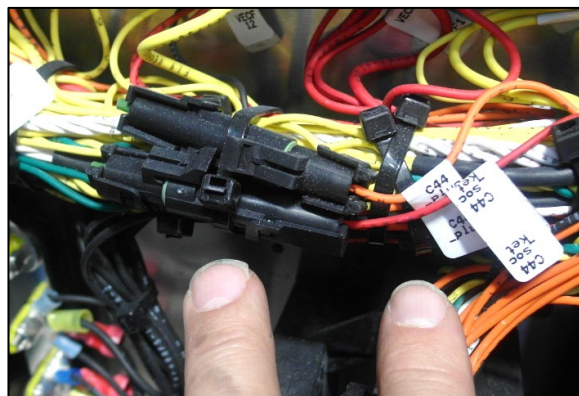


FIGURE 78

## PARTS / WASTE DISPOSAL

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