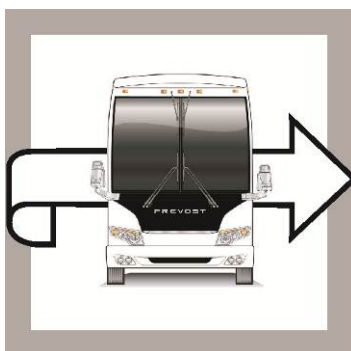




PREVOST

WARRANTY BULLETIN

WB14-06G

DATE:	SEPTEMBER 2014	SECTION :	22 - HVAC
EXPIRATION:	SEPTEMBER 2016		
SUBJECT :	"BITZER" LARGE A/C SYSTEM IMPROVEMENT		

Revision G : THIS WARRANTY BULLETIN SUPERSEDES PREVIOUS VERSION.
Oct. 23, 2015 Remove cap& unloader coil replacement. Now under WB15-19

APPLICATION

NOTICE TO SERVICE CENTERS <i>Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.</i>	
Model	VIN 
H3-41, H3-45 coaches Model Year : 2013 - 2015	<i>Single vehicle</i> 2PCH33494 <u>DC712272</u> and from 2PCH33499 <u>DC712364</u> up to 2PCH33492 <u>EC712760</u> , incl.
H3-45 VIP motorhomes Model Year : 2013 - 2014	From 2PCVS3499 <u>DC712399</u> up to 2PCVS3493 <u>EC712742</u> , incl.
X3-45 coaches Model Year : 2013 - 2014	<i>Single vehicles</i> 2PCG33491 <u>DC735388</u> , 2PCG33492 <u>DC735433</u> and from 2PCG33497 <u>EC735459</u> up to 2PCG33496 <u>EC735776</u> , incl.
X3-45 Commuter Model Year : 2014	<i>Single vehicles</i> 2PCG33491 <u>EC735571</u> , 2PCG33495 <u>EC735590</u> , 2PCG33498 <u>EC735602</u>
XLII-45 Entertainer Model Year : 2013	<i>Single vehicles</i> 2PCYS3492 <u>DC735374</u> , 2PCY33491 <u>DC735461</u> , 2PCYS3490 <u>DC735468</u> , 2PCYS3498 <u>DC735489</u>
X3-45 VIP motorhomes Model Year : 2014	<i>Single vehicles</i> 2PCBS3499 <u>EC735539</u> , 2PCBS3499 <u>EC735587</u> ,
X3-45 VIP commercial use Model Year : 2014	From 2PCCS3497 <u>EC735494</u> up to 2PCCS3498 <u>EC735778</u> , incl.
This bulletin does not necessarily apply to all the above-mentioned vehicles, some vehicles may have been modified before delivery. The owners of the vehicles affected by this bulletin will be advised by a letter indicating the Vehicle Identification Number (VIN) of each vehicle concerned.	

DESCRIPTION

On the vehicles affected by this bulletin, perform the following verifications and modifications on the A/C system.

Part of this bulletin must be carried out by qualified A/C technicians.

Order one of these two kits, depending on vehicle serial number and bulletin history:

WB14-06-1 Order this kit. Applies to all vehicles.

Kit includes parts required for the installation of remote pressure sensors and switch.

WB14-06 Order only for vehicles that have not received bulletin WB14-06 with serial number before E-5697(X series) / E-2651 (H series), included.

Kit includes all components required for an updated wiring.

Bulletin is divided in five steps, refer to detailed instructions below.

STEP 1: Unloader replacement (Step moved to Warranty Bulletin WB15-19)

STEP 2: System vacuum, wiring update, remote pressure transducer and switch installation.

STEP 3: Seal the evaporator compartment ventilation discharge duct.

STEP 4: Check Evaporator expansion valve bulb position and MUX software version.

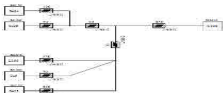
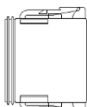
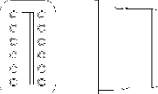
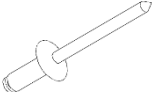
STEP 5: Dynamic A/C system test to confirm all functions operate correctly.

NOTE
<u>Any leak repair or standard A/C system maintenance is outside the scope of this bulletin and <i>should not</i> be charged to the bulletin.</u>
<u>Even if this type of work may fall under vehicle warranty, parts and labor should be placed under another operation.</u>

MATERIAL

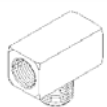
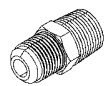
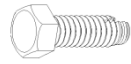
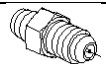
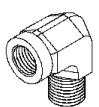
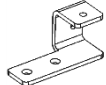
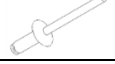
For vehicles that have not received bulletin WB14-06 and serial number before E-5697 (X series) / E-2651 (H series), included.

Kit **WB14-06** which includes the following parts:

Part No.	Description	Qty
067349 	Cable support	1
069206 	Compressor Harness	1
509815 	Christmas tree cable tie base	1
504013 	Cable tie base	3
563227 	Deutsch Socket housing, DT series, 12C, <i>black</i>	1
562887 	Deutsch Socket terminal	10
563228 	Deutsch Secondary lock, DT series, 12C	1
561996 	Deutsch terminal cavity seal plug	2
504379 	Dome pop rivet 3/16 dia x 1/4, <u>Stainless Steel</u>	3

MATERIAL

Order For All Vehicles Kit **WB14-06-1** includes the following parts:

Part No.		Description	Qty
504751		Swivel double cable tie base	5
640643		Elbow 45° 1/4 NPT F X 1/4 NPT F w/ mounting flange	2
457743		Hose #4 400mm SAE 45°F	2
501894		Tee 1/4 NPT F-M-F	1
501026		Union Fitting-Hose- compressor side SAE 45° / #4FL-Mx1/8NPT-M	2
501027		Union Fitting Hose transducer side SAE 45° FITTING / #4FL-Mx1/4NPT-M	2
501303		Bouchon 1/8 NPT	1
502848		Thread cutting screw 1/4-20 x 3/4	4
950249		Union Fitting 1/4 NPT – SAE45° Schrader Valve	3
501329		45deg Elbow fitting 1/4 NPT	1
501332		90 deg elbow fitting 1/4 NPT	1
069099		Wiring support	1
504013		Cable tie base	2
504379		Dome pop rivet 3/16 dia. x 1/4, <u>Stainless Steel</u>	2
5001241		Screw, truss Phillips #10-24x1/2 SS	5
5001180		Nut, hex, nylon #10-24 SS	5
680091		Insulating tape 1/8" x 2"	3ft
562228		Butt splice 16-14 AWG	2
560784		Double wall shrink tube .250" - .125" / Black	100mm / 4 in
560785		Double wall shrink tube .375" - .187" / Black	50 mm / 2 in.

Parts to purchase locally, required for the bulletin:

Part No.	Description	Qty
680532	Sika 221, 310ml Cartridge	A/R
680107	Loctite 567 thread sealant, 50ml	1
564099	Electrical harness tape, cloth, black, 150°C	1
-	High temperature cable tie assortment	A/R
-	"Torque seal" paint tube	A/R

Other parts that may be required depending on system condition:

Part No.	Description	Qty
561567	Pin terminal 18-16, Weather pack	A/R
950506	Gasket, Discharge Valve	1
950498	Pressure switch assy "Bitzer"	1
950504	Pressure transducer "Bitzer"	2

TOOLS

Part No.	Description	Qty
7775028 	Cap adaptor tool, 1/4 Drive	1
- 	Torque wrench 10-50 Lbf-in range	1
- 	Pop rivet gun	1
- 	Refrigerant Recovery & Recharge unit	1
	Manifold gage set	1

NOTE

Material can be obtained through regular channels.



CAUTION

State / Province / Federal regulations and laws take precedence over guidelines and instructions supplied in this document. Perform work according to best practices with safety in mind.

PROCEDURE



DANGER

Park vehicle safely, apply parking brake, stop engine and set battery master switch(es) to the OFF position prior to working on the vehicle.

STEP 1:

Unloader coil is now replaced in warranty bulletin WB15-19.



Figure 1

STEP 2:

Refrigerant must be removed from the system before installing the new wiring management bracket.



WARNING

One of the most important precautions when handling refrigerant consists in protecting the eyes. Any liquid refrigerant which may accidentally escape is approximately -40°F (-40°C). If refrigerant comes in contact with the eyes, serious injury could result. Always wear goggles to protect the eyes when opening refrigerant connections.

2.1. System vacuum



Figure 2

This step should be carried out by qualified personnel authorized to work on A/C systems. Use safe work practices when working with refrigerant. Wear long sleeves, gloves and goggles.

Perform work according to best practices and applicable laws and regulations.

Before changing the cable harness and cable guide, or relocating pressure transducers, perform recovery of the refrigerant gas to remove as much gas as possible from the system and isolate the compressor from the rest of the system.

- Connect the refrigerant recovery unit (Fig. 3) and perform refrigerant vacuum.
- Once the system is refrigerant free, close the suction line and discharge valves on the compressor;

2.1.1. *System vacuum for vehicles having the updated version of the wiring and bracket.*

Perform this step if your vehicle has the latest version of the cable management bracket (Fig. 4).

Only isolate the compressor and remove refrigerant gas in this section.

	WARNING
Risk of refrigerant contamination!	
Do not perform pressure tests with nitrogen when the compressor is isolated from the system	

After all work on compressor is completed, perform a vacuum, test for leaks and re-claim refrigerant. (Step 2.15)

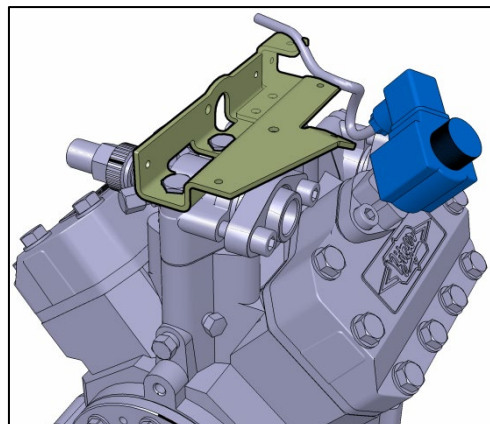


Figure 3

2.2. **C228 connector*

*Skip to next step if this connector is already on the vehicle.

Look on cable management bracket located on the right hand side of the engine. (Fig 5)

On the compressor, disconnect and remove all electrical wiring coming from engine harness to the compressor.

Ensure cleanliness for the following steps.

Make sure the circuit number is visible for identification.

On vehicle side, take the main branch leading to the old compressor pigtail. Remove loom, tape above the pigtail junction. (Fig. 6)

Cut two inches (2in.) above junction and strip the wires to install ten (10) Deutsch terminals. See table.



Figure 4 Connector C228

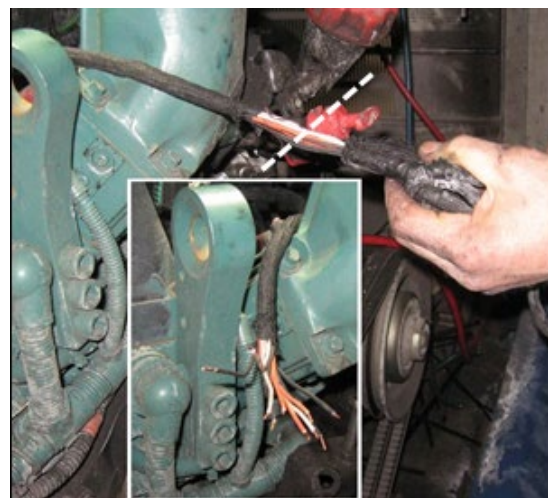


Figure 5 Vehicle harness stripping

On Deutsch connector #563227 (C228), assemble the stripped wires with terminals and insert them in the indicated positions per wire circuit (Fig 14). Note the different circuit numbers for X3-45 coaches and other models

	X3-45 Coaches	All other models	
Cavity	Circuit	Circuit	Terminal
1	77	77	562887
2	88	88	562887
3	93	79	562887
4 ¹	30	13	562887
5	77BA	77BA	562887
6	31	31	562887
7 ²	0RA2	0RA2	562887
8 ²	0RA2	0RA2	562887
9	88	88	562887
10 ¹	30	13	562887
11	-	-	561996
12	-	-	561996

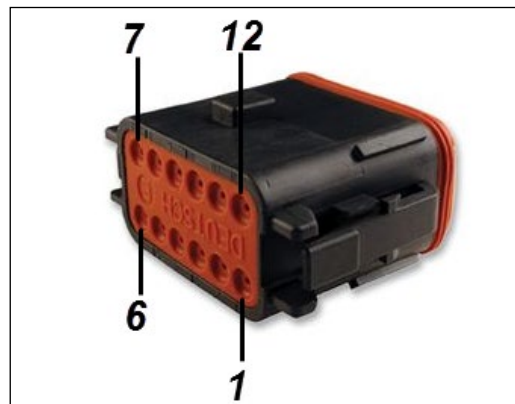


Figure 6 Connector cavity reference

¹ Positions 4 & 10: any wire printed "30 or 13"

² Positions 7 & 8: any wire printed "0RA2"

2.3. Preparation and removal of components

Remove SE23 and SE24.

At location where SE24 was installed on compressor, remove Schrader spring valve inserted in fitting. (Fig 8)

Install plug #501303 in port where SE23 was installed. Seal with Loctite 567 #680107. (Fig. 8)

Remove SE29

At location where was installed SE29, remove Schrader spring valve inserted in fitting. (Fig. 8)

If present, remove the grey elbow connector on the capacity control solenoid (Unloader). The new harness #069206 includes this connector.

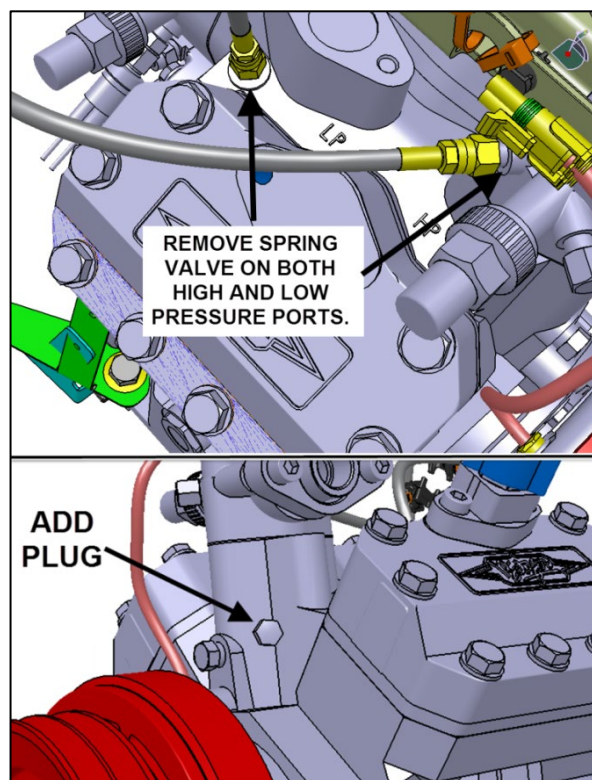


Figure 7

2.4. 640643 flanged elbow fitting assembly

* Before assembly, on Shrader valve fittings 950249, make sure valve core is fully screwed in to prevent any leaks. (Fig. 9)

Assemble one each of the two fitting assemblies (Fig 9).

Apply Loctite 567 sealant.

Rotate tee and elbow at about 15degrees from 640643 mounting flange. (Fig. 11)

Install hoses 457743 on union fittings 501027 (No sealant required on SAE 45 connections).

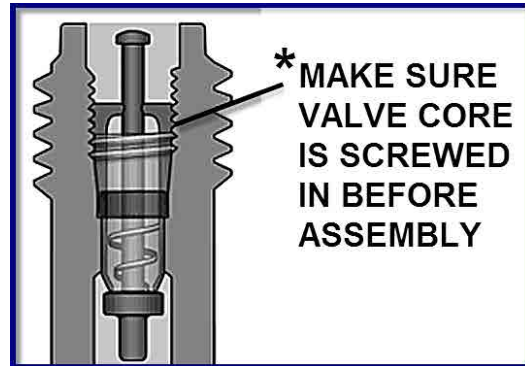


Figure 8 : 950249

Install Instruments SE23, SE24 and SE29 as shown.(Fig 10)

Test airtightness of fitting assemblies and hoses with nitrogen gas. Use soapy water to reveal any leak.

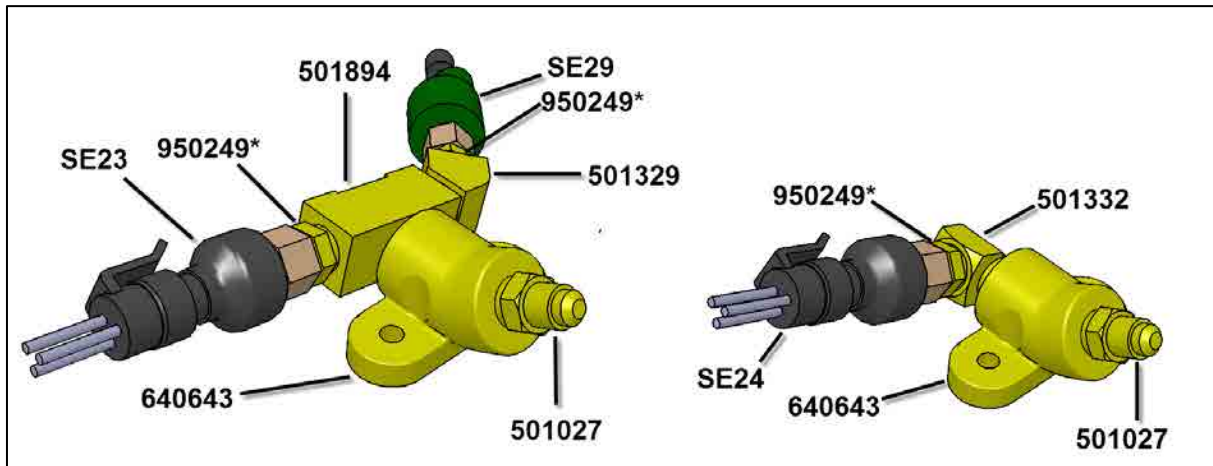


Figure 9 : Fitting Assemblies



Figure 10 Fitting Assembly Orientation.

2.5. Wiring inspection

Inspect all remaining electrical connections and wires.

- High pressure sensor #950504
- Low pressure sensor #950504
- High pressure switch #950498
- Clutch wiring

Pull on wires to make sure they are well crimped in the terminal and well seated in the connector. Repair with new "Weather Pack" terminal #561567 where required.

On the other end, make sure they are well attached to the component

Inspect wires for signs of premature wear, thermal degradation, dents, chaffing. If any of the above conditions are found, replace the component.

2.6. *Cable support pre-assembly.

***Skip this step if your vehicle already has this bracket on the compressor.**
(Fig. 12)

Place cable tie bases #504013. If you have access to a pneumatic riveter, install with Stainless Steel dome pop rivets #504379. (Fig. 12), otherwise, use screw 5001241 and nut 5001180.

Add one #509815 cable tie base with Fir tree clip in the hole located in the center of the cable support.

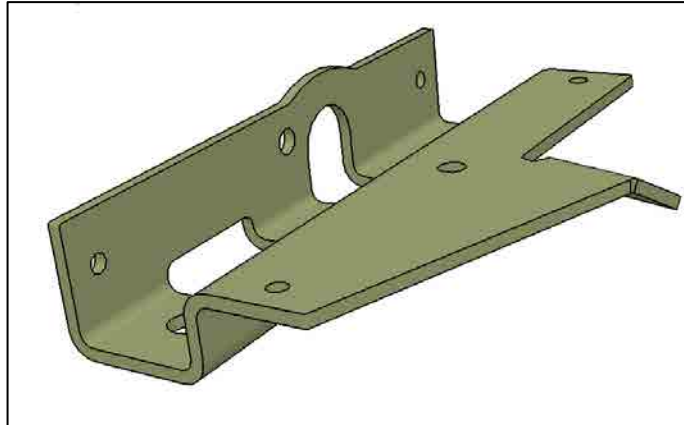


Figure 11

Important:

Do not assemble with aluminum rivets.

2.7. Additional support 069099

Addition of this support is recommended for all brackets, new and existing to route the unloader cable properly and avoid a sharp edge. You may install the bracket with screws or rivets.

If using screws, drill 7/32" holes using bracket 069099 as template. (Fig 12)

If using rivets, drill with a #10 (0.1935") drill.

Install with a pneumatic riveter if available using two #504379 rivets. Otherwise use two 5001241 screws and nut 5001180.

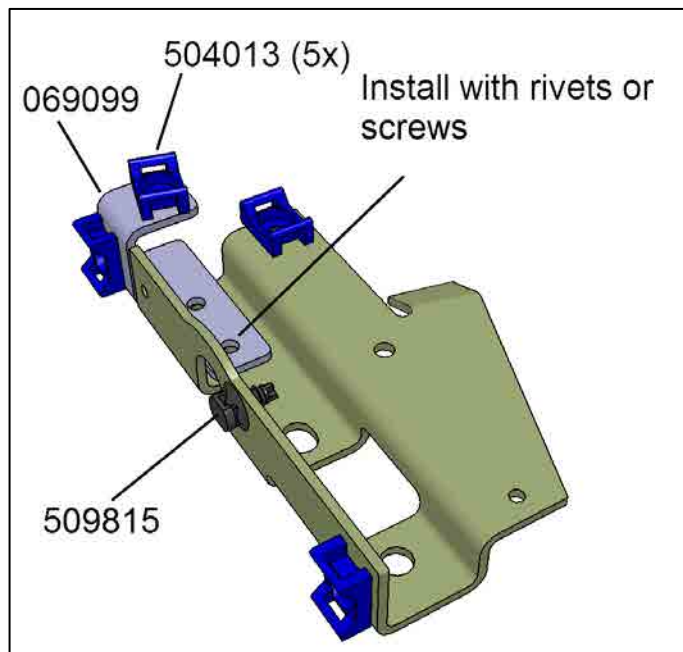


Figure 12

2.8. **Cable support installation*

***Skip this step if your vehicle already has this bracket on the compressor.**

Install new support #067349 as shown.
Torque discharge valve cover bolts to:

38-42 lbf -ft.

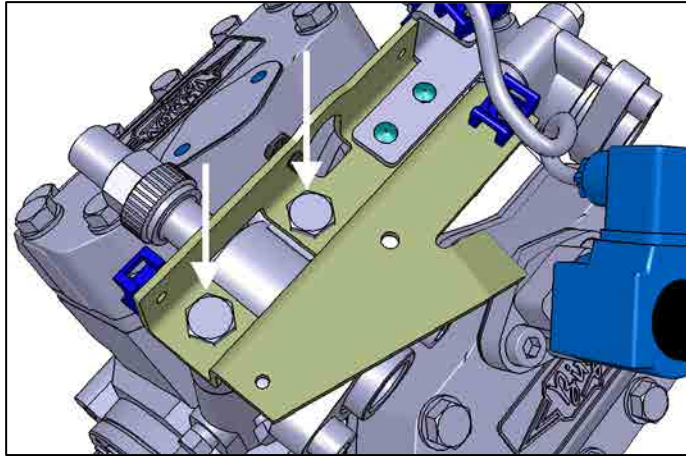


Figure 13

2.9. *H series vehicle tip*

Create some working space by undoing the grey air intake tube and attaching it higher (Fig 15)

Block both openings with a masking tape or a clean lintless cloth.

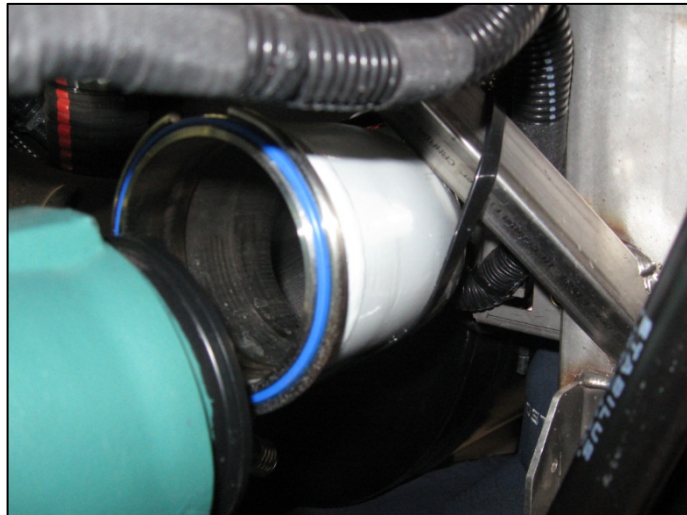


Figure 14

- 2.10.** On the right side of the engine, locate the cable management bracket. Remove cable tie anchor points. (Fig 16) Some vehicles may not have these anchors. See next step.

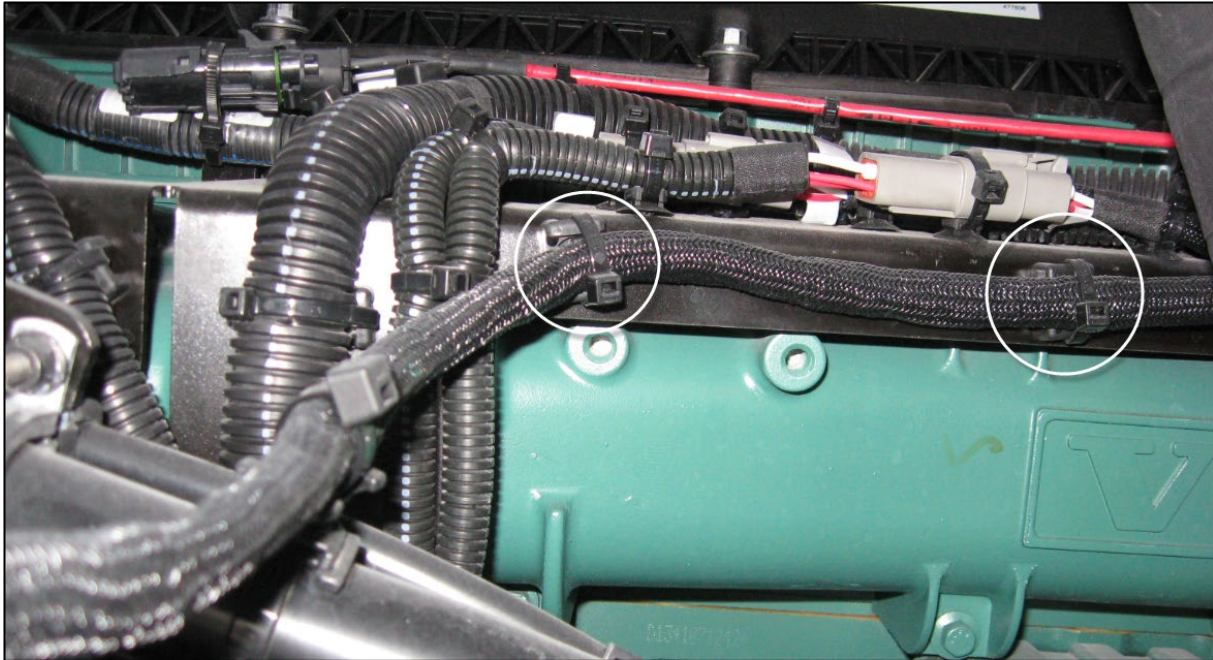
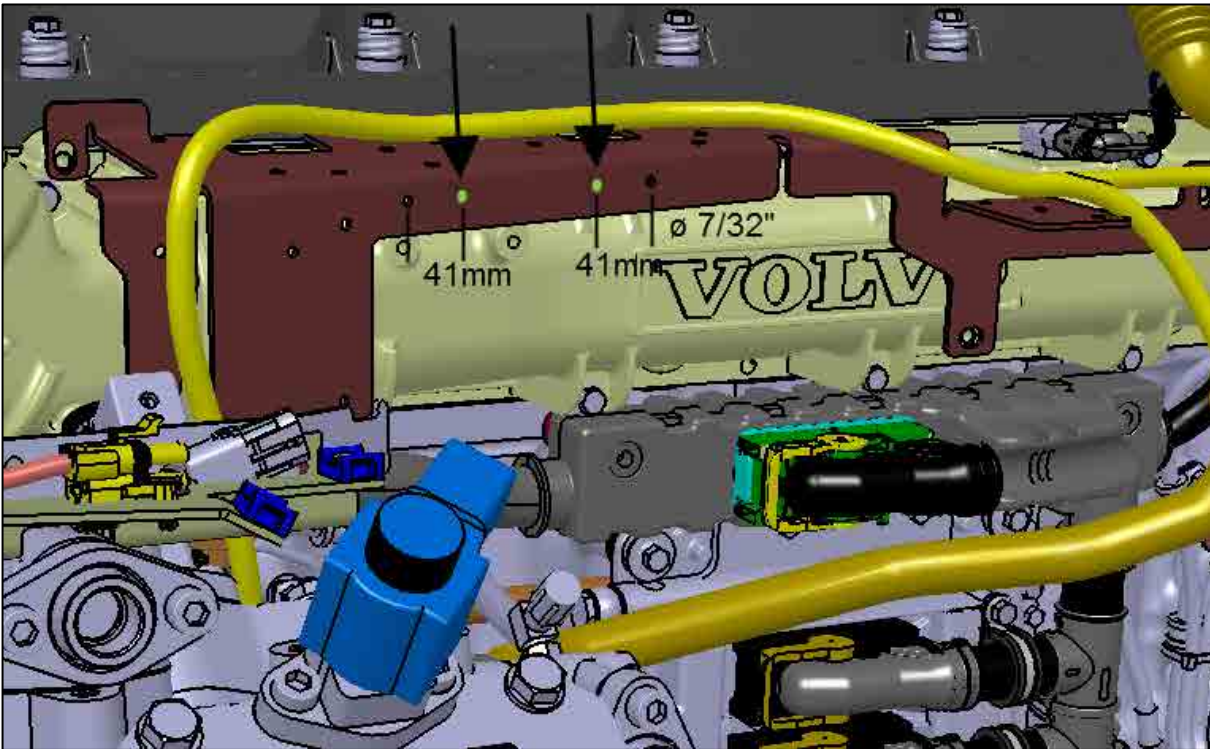


Figure 15

- 2.11.** Using cable tie anchor holes as reference, drill two new diameter $7/32''$ holes towards the center, 41mm apart.



Use flanged elbow **640643** as a drilling template to get 41mm dimension.

- 2.12.** On certain vehicles the cable support will not have reference holes. Four (4) new holes will need to be drilled. Use dimensions provided below. (Fig. 17)

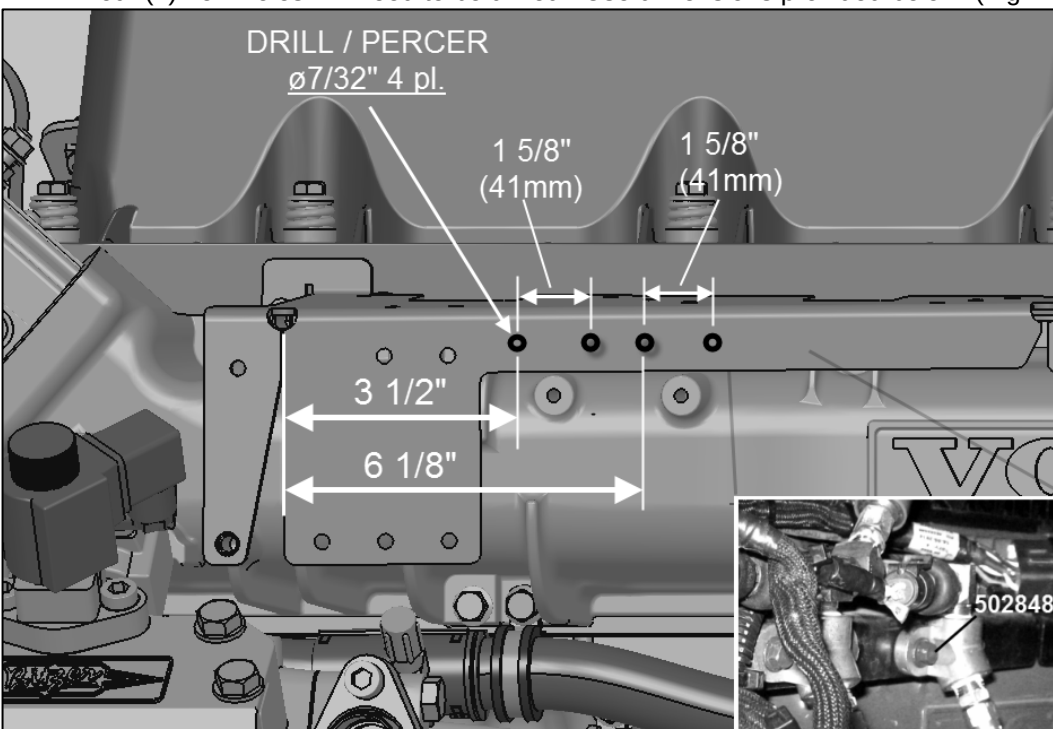


Figure 16: Drilling on the cable support

Secure fitting assemblies with thread cutting screws 502848 (Fig 17)

2.13. New harness installation

Take special care to route the harness according to the following figures.
Refer to best practices at the end of this document. Prefer larger, heat resistant cable ties over small cable ties to limit the “pinch effect”.

2.13.1. Install new harness **069206** by connecting **L199** to the unloader.

2.13.2. Secure the cable on the cable tie mounts. Route using added support **069099** (Step **2.7**) to avoid sharp edges. (Fig. 18).

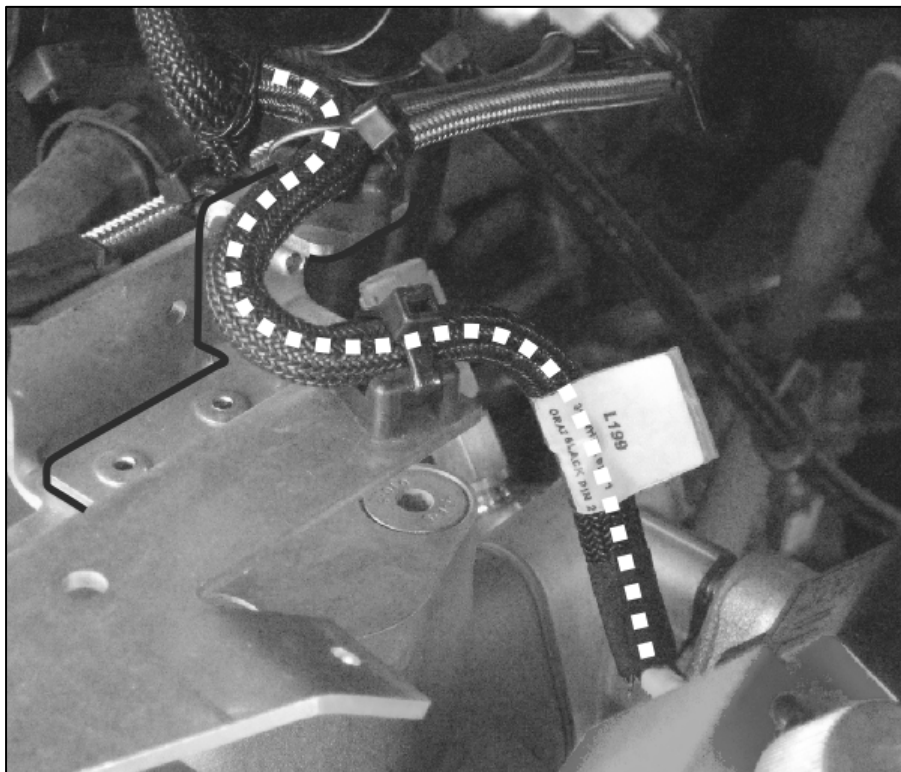


Figure 17

2.13.3. Clutch cable: write down wire color matching then cut the clutch connectors on harness and compressor.

2.13.4. Slip shrink tube #560784 over each wire. Slip an additional shrink tube #560785 over cable insulation.

2.13.5. Refer to table below if required to match wire colours. (According to VIN of vehicle).

	Clutch side	Harness side
<i>Up to E-5698 / E-2648 Excluded</i>	Blue →	White
	Brown →	Orange
<i>From E-5698 / E-2648 And up</i>	Red →	Orange
	Green →	Black

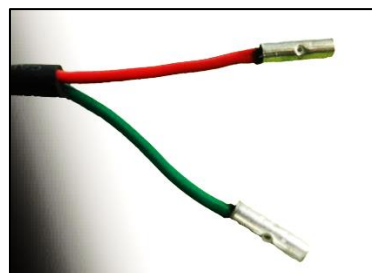


Figure 18

- 2.13.6. According to table, splice wires with butt slice #562228. Crimp and solder. Inspect to make sure you have a good crimp and solder.
- 2.13.7. Seal each wire with shrink tube. Seal over the two wires and cable isolation with the larger shrink tube. (Fig. 19)
- 2.13.8. Attach clutch cable along bracket as shown.(fig. 20)

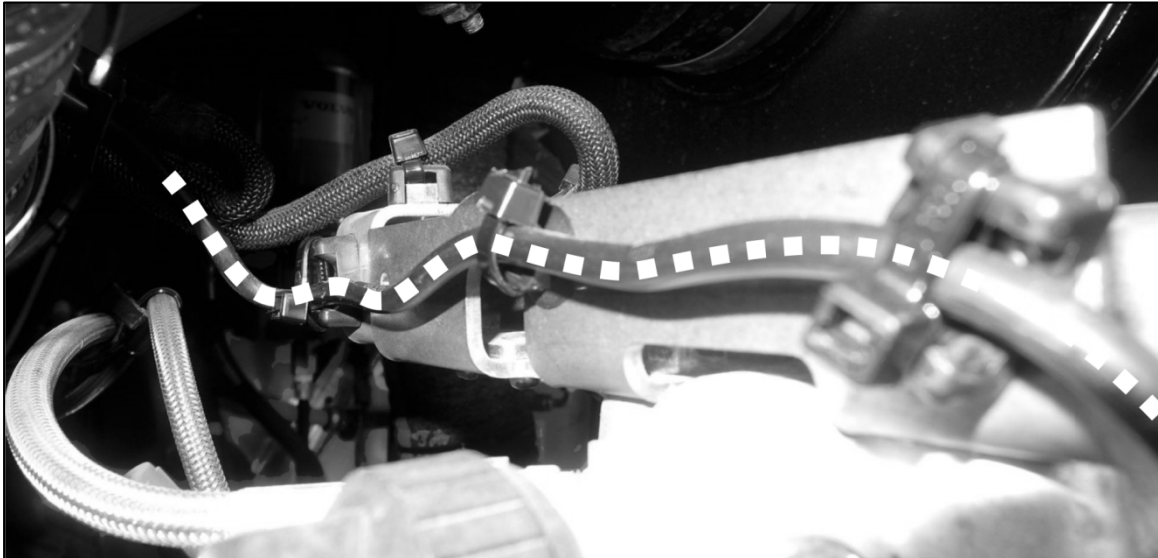


Figure 19 –Clutch cable.

- 2.13.9. Install a swivel cable tie base 504751 slightly below the flexible section of the oil fill tube and attach harness. Secure main strand of harness to cable tie base (1) and route towards engine above oil fill tube. (fig. 21).
- 2.13.10. Attach the excess length of clutch cable (2) along main strand of harness as shown in fig. 21.

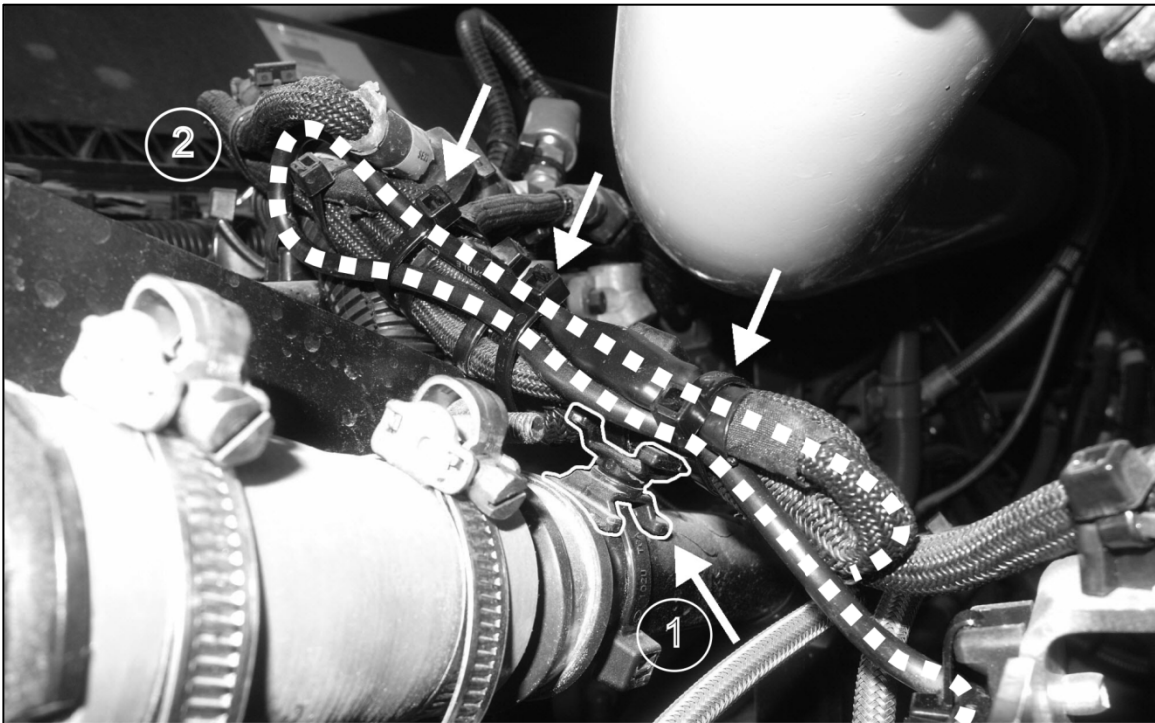


Figure 20- Cable tie base and clutch cable.

2.14. Hose installation

Test airtightness of fitting assemblies and hoses prior to installation. (Step 2.4)

Connect low pressure hose on port where SE24 was installed. High pressure hose is connected where SE29 was installed. (Fig 20, 21)

2.14.1. Hose routing.

Install three swivel cable tie bases **#504751** to secure hoses. (Fig 23)

#1: On oil fill tube before the downward bend.

#2 Oriented facing the engine on the dipstick tube or oil fill tube.

#3 On the alternator cable to prevent chaffing. (Fig 21)

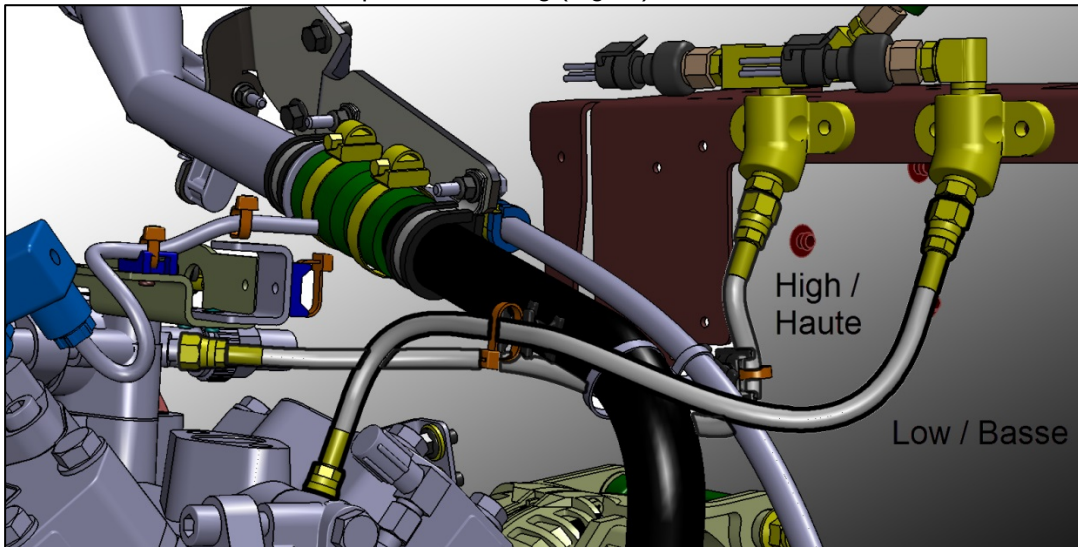


Figure 21 : Alternate hose routing.

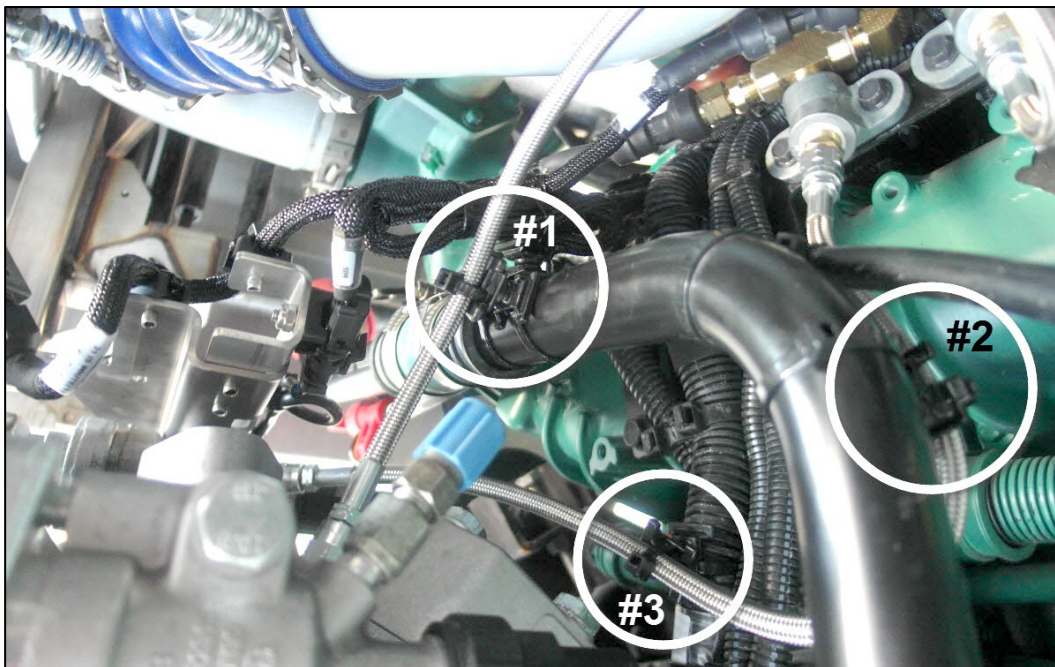


Figure 22 View from behind compressor

2.15. Connections, engine side

Route harness towards engine and connect to the transducers and switch installed on the fitting assemblies. (Fig. 24) Secure with cable ties.

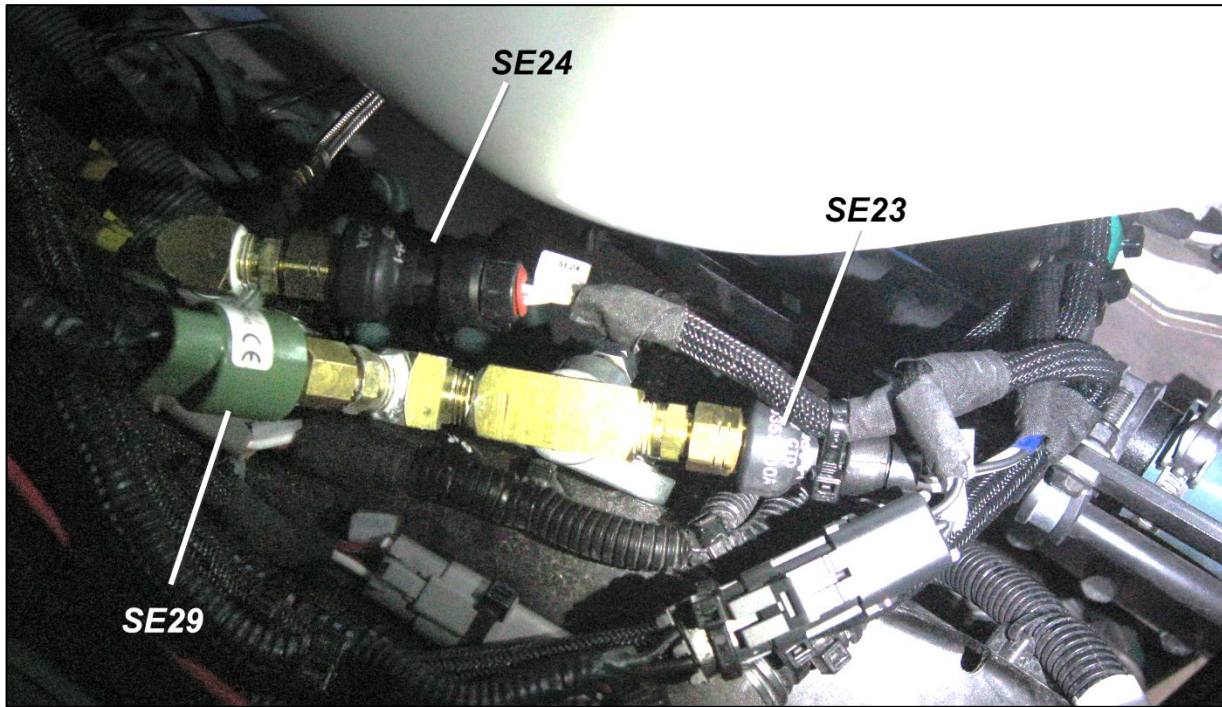


Figure 23 Harness routing to remote instruments on engine.

Connect Harness to C228 and secure connector according to best practices, making sure deconnection is possible.(Fig. 25)

Inspect Pressure Switch SE 29 connector to make sure the pins are mating.(Fig. 23)

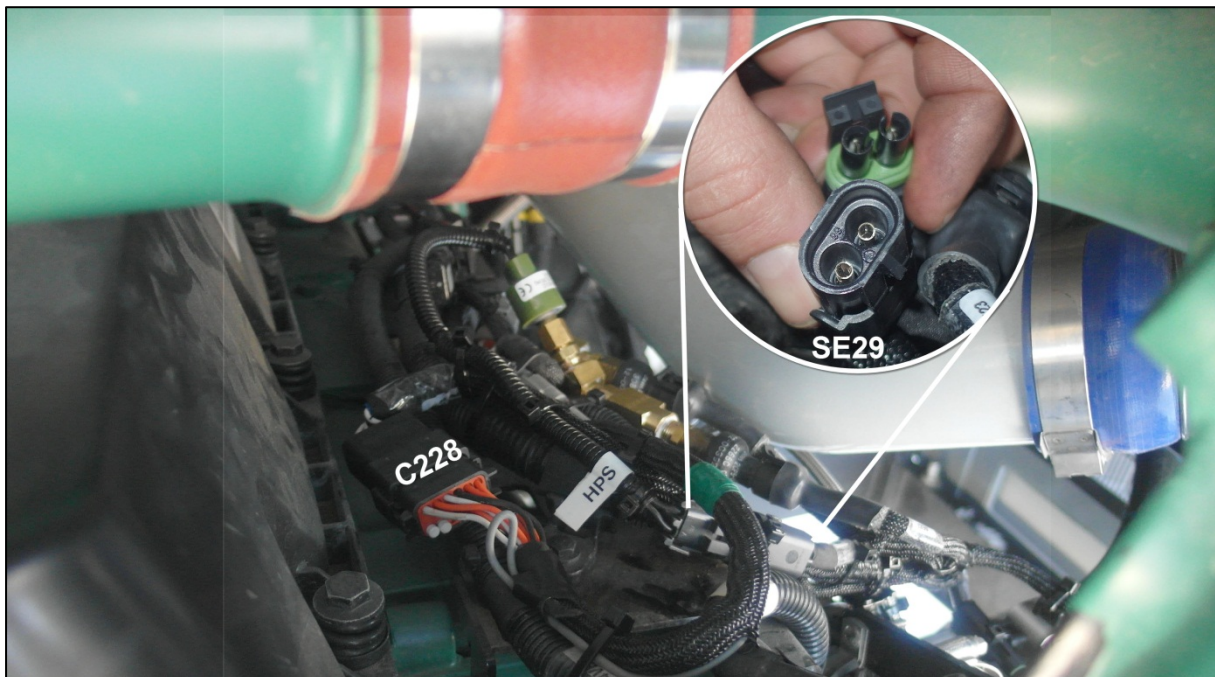


Figure 24 : SE29, C228.

2.16. Returning refrigerant in the system

Make sure system is airtight by vacuum testing.

Recharge system to the appropriate level with the refrigerant recovered earlier.

Ensure refrigerant charge is appropriate in the system.

STEP 3:

Inspect before performing any work.
Some vehicles up to **E-5526** may present a gap between the road side air flow splitter, floor and vehicle structure.

To avoid removing the passenger side floor ducts, sealing can be performed from the evaporator compartment.

Add a Sika sealant joint #680532 between discharge duct and structure and between duct and floor.



Figure 26

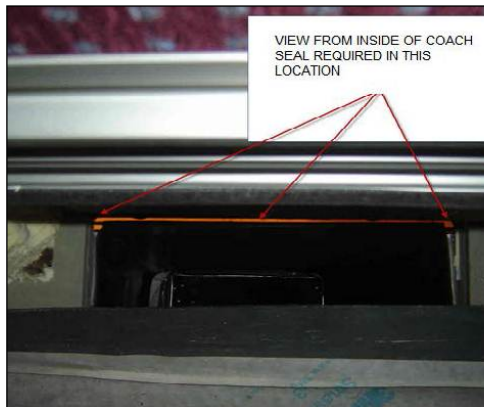


Figure 25

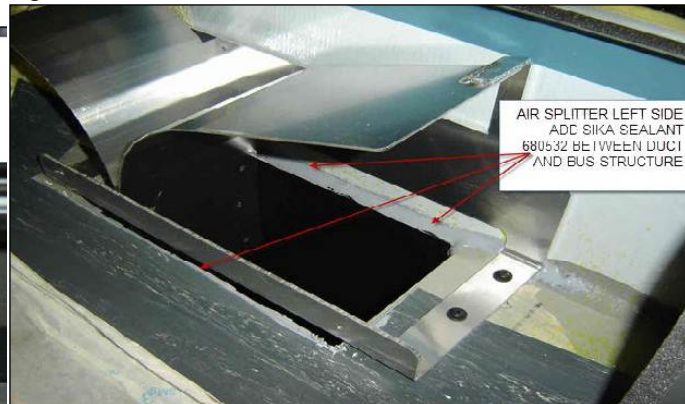


Figure 27

STEP 4:

On the evaporator, inspect the expansion valve bulb position.

Adjust to 6" from top of brass nut, as indicated in fig 31.

Clean thoroughly the contact surfaces on the tube and on the bulb with a "scotch brite" type scouring pad.

Isolate bulb and tube section with insulating tape #680091.

Verify and update MUX software Version according to table below.

Model	Mux Soft Version
H3-41, H3-45 Coaches	06100060. P32 and up
H3-45 VIP Motorhomes	06100061. P32 and up
X3-45 Coaches	06100058. P29 and up
X3-45 Commuter	06100064. P11 and up
XLII-45 Entertainer	06100061. P32 and up
X3-45 VIP	06100061. P32 and up

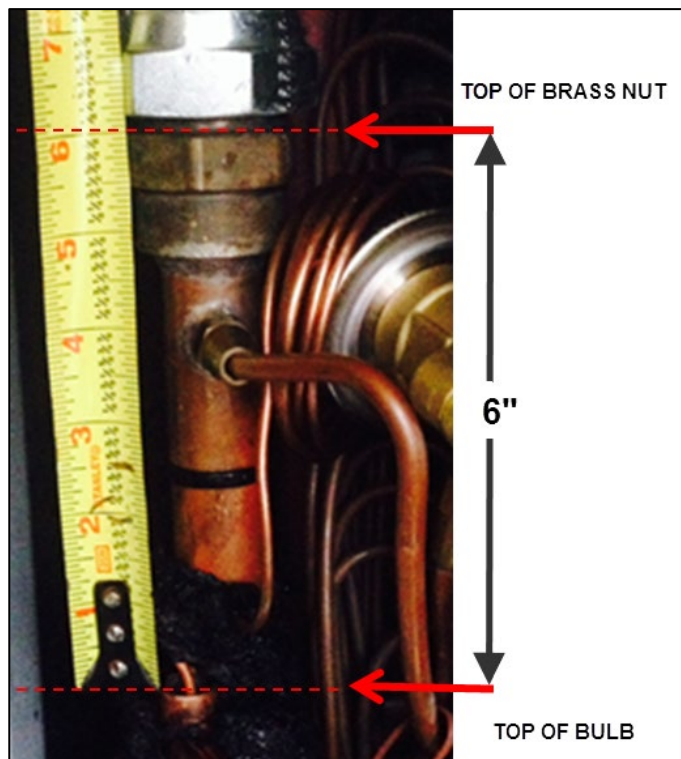


Figure 28

STEP 5:

Perform a dynamic test of the HVAC system confirming the proper operation of the various functions. Repair any leaks prior to starting the tests.

- Check **temperatures** are normal along the system lines, condenser and evaporator.
- Check and adjust **superheat** at evaporator.

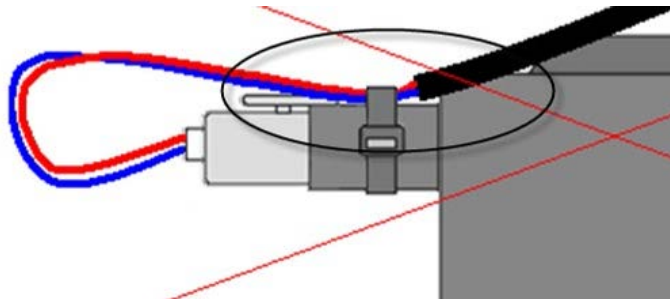
Follow guidelines in maintenance manual section 22, paragraph 9.8 "Expansion Valve - Superheat Adjustment"

- High side and low side **pressure** within acceptable values on the DID and measured on gauges.
- Confirm proper compressor **unloader** operation.
- Confirm proper **clutch** operation.
- Read active and inactive codes on the DID, take appropriate action and clear all codes.

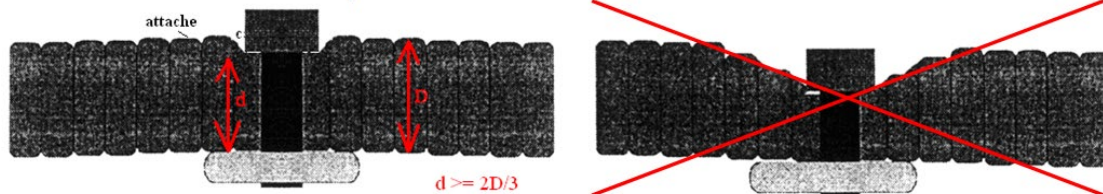
Best practices for cable securement and routing

(Source: engineering Spec 20.0)

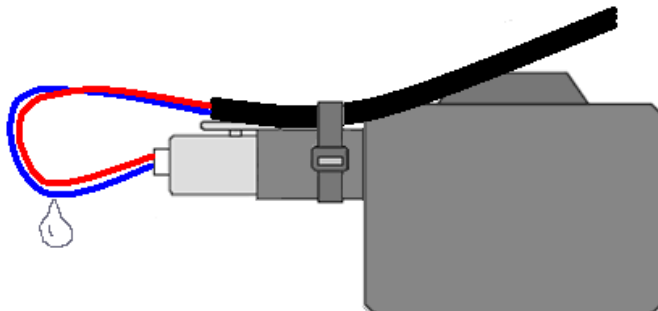
- Prefer larger cable ties over smaller cable ties in your assembly to limit local pinch effect.
- Avoid sharp edges to prevent chaffing and abrasion.
- Always attach over harness loom or corrugated tubes, not on the bare cables themselves.



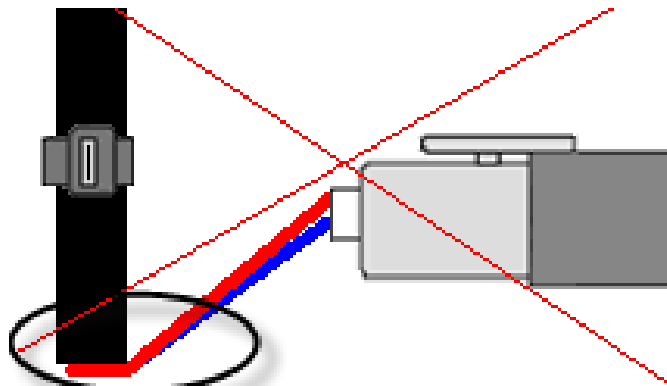
- No over-tightening of cable ties. (Must only prevent harness movement)



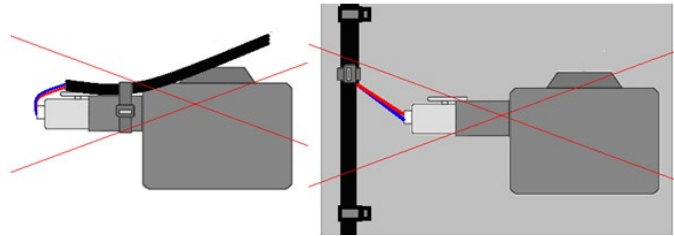
- Perform smart harness routing to prevent water intrusion in the connectors.
(nearest low point: below connector)



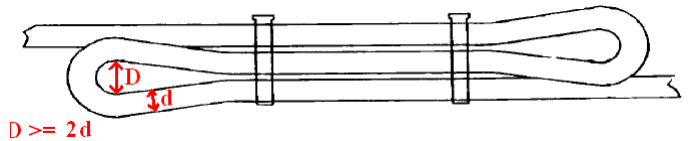
- Also avoid sharp edges of plastic corrugated tubes.



- No pulling or tension on connections.



- Avoid sharp radius routing paths.
(routing path *inside* diameter = 2 X cable diameter)



PARTS / WASTE DISPOSAL

All replaced parts must be returned to Prevost according to the Return Shipping Instructions available on <https://www.prevostcar.com/content/warranty-documents> for full reimbursement. A copy of the warranty claim form must be enclosed with the shipment.

WARRANTY

This modification is covered by Prevost's normal warranty. We will reimburse you the parts and up to 5 hours of labor for Unloader Cap Inspection, Wiring Replacement & Dynamic HVAC Test.

Should the vehicle condition require any of the optional repairs described in Table 1 below, please indicate the step number(s) in the claim description to justify the additional labor time.

Table 1

Step	Description	Optional Repairs
Step 2.1:	Unloader replacement	0.25h
Step 2.4	Wire repair / Replacement	0.5h
Step 3	Duct Sealing	0.5h
Step 4	Bulb position adjustment	1h

Please submit claim via our Online Warranty System, available at www.prevostcar.com (under Service \ Warranty section). Use Claim Type: "Bulletin/Recall" and select "Warranty Bulletin WB14-06".

OTHER

VBC Bulletin	N/A
Fail Code	22.00
Defect Code	09
Syst.Cond.	B
Causal Part	950563

Access all our Service Bulletins on
<http://prevostparts.volvo.com/technicalpublications/en/pub.asp>
or scan the QR-Code with your smart phone.

E-mail us at technicalpublications_prev@volvo.com and type
"ADD" in the subject to receive our warranty bulletins by e-mail.





Technical Bulletin (TB-0049)

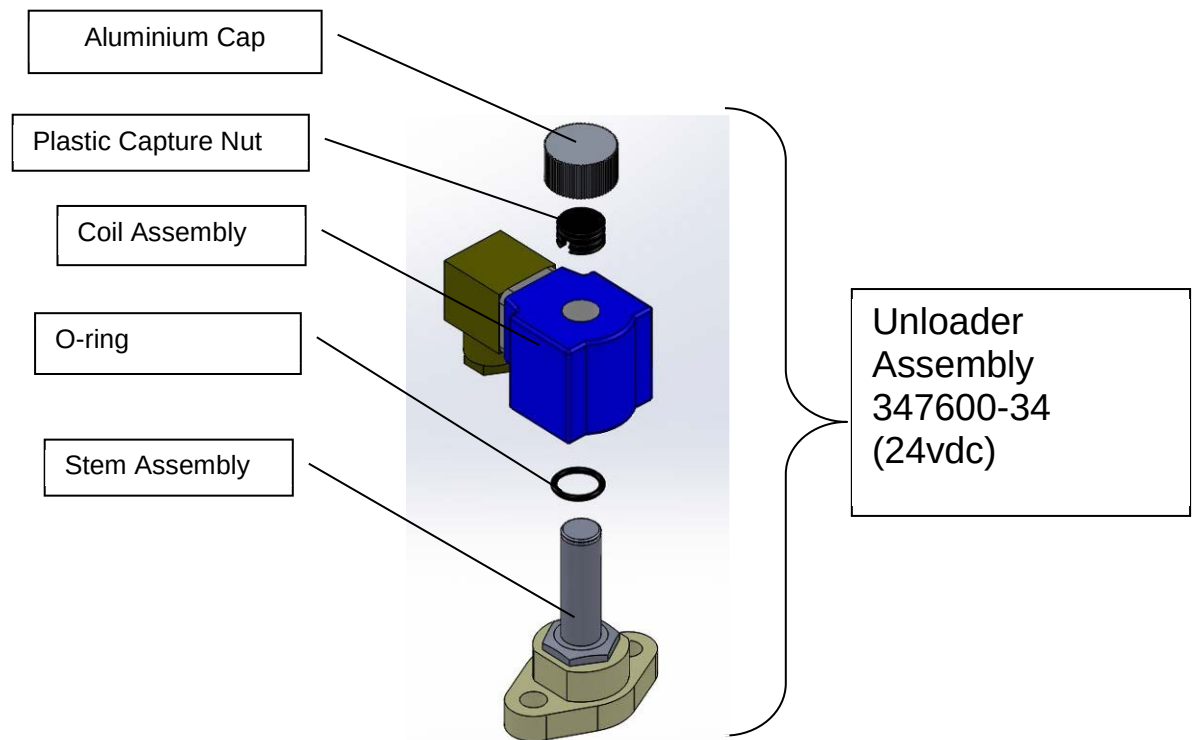
Setting Unloader Cap

Version 1, October 2012

SCOPE

Due to a number of claims relating to unloader caps coming loose, BITZER US, Inc. has developed a procedure for reliably securing the unloader cap to the unloader coil and stem assembly.

Below is typically unloader coil assembly and parts;



BITZER US, Inc.

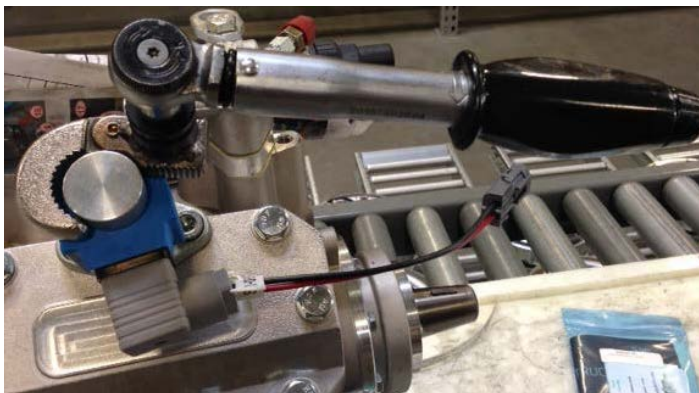
4031 Chamblee Rd, Oakwood, GA 30566
Phone: 770.503.9226 Fax: 770.503.9440

www.bitzerus.com customerservice@bitzerus.com techsupport@bitzerus.com

Field Assembly Procedure

Assembly of the coil is a fairly straightforward process. The important point is the position of the coil as assembly and setting the correct torque to keep the cap securely fastened to the stem.

- If the cap comes loose from the unloader assembly it will be necessary to replace to maintain good operating order with the unloader.
 - o The replacement part number for new cap components is 375068-02. This will include a new aluminum cap, capture nut and o-ring.
 - o All 3 parts should be replaced during the exchange
- 1. Remove the existing capture nut, coil and o-ring
- 2. Install a new o-ring over the stem assembly
- 3. Slide the coil over the stem assembly and sit on o-ring
- 4. Install capture nut onto valve stem. The capture nut “clicks” in place on the recess of the valve stem.
- 5. While holding the coil in the desired position, install and tighten the aluminum cap by hand.
- 6. Use the clamp tool and torque wrench to set the final torque on the cap;
 - a. Check torque wrench is set for **3Nm**
 - b. Hold the coil in desired position
 - c. Tighten the cap with the wrench **set at 90° to the clamp assembly** –see Figure 1 below.



Clamp and Torque Wrench



Figure 1
Torque Wrench Position
For Setting Torque