



**MAINTENANCE  
INFORMATION**

**MI16-05**

DATE :	FEBRUARY 2016	SECTION :	12 - Brakes
SUBJECT :	Bendix M-32QR ABS modulator valve replaced by new M-40QR valve.		

***IMPORTANT NOTICE***  
*This modification is recommended by PrevoSt to increase your vehicle's performance. Note that no reimbursement will be awarded for carrying out this modification.*

**APPLICATION**

All PrevoSt vehicles up to 2016 equipped with Bendix M-32QR ABS modulator valves

**MATERIAL**

MODULATOR VALVE NUMBERS:

<u>SUPERSEDED PART #</u>	DESCRIPTION	<u>NEW PART #</u>	DESCRIPTION
<b>642077</b>	Bendix M-32QR Modulator Valve	<b>640228</b>	Bendix M-40QR Modulator Valve

***NOTE***  
*Material can be obtained through regular channels.*

**DESCRIPTION**

The Bendix M-32QR modulator valve used on PrevoSt vehicles during ABS and ESC activation is now obsolete and will be replaced by the new M-40QR model.

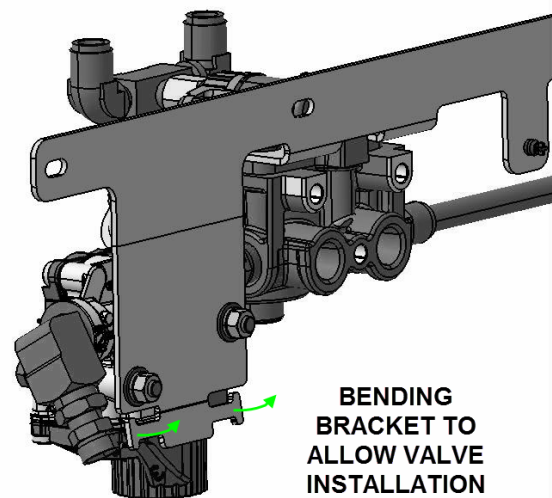
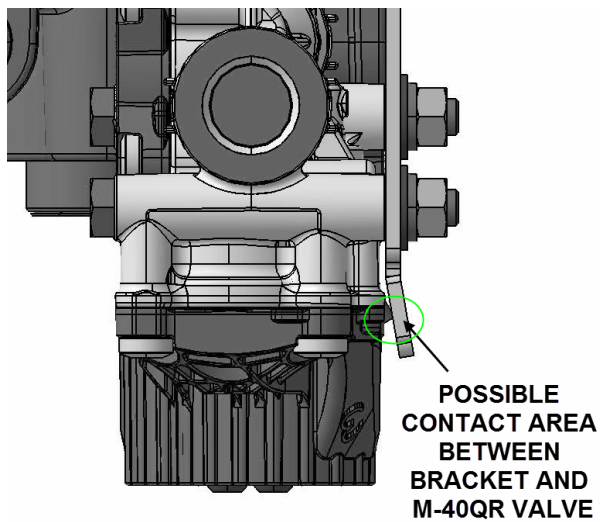
Both valves operate in a similar way and M-40QR valves are direct replacement when servicing vehicles equipped with M-32QR valves, however important points must be observed when switching valves for the first time on a vehicle.

Since the drive axle and the front suspension/axle are both using two modulator valves (one for the left brake and one for the right), it is important to replace both valves on an axle at the same time ensuring that the same valve model will be installed from side to side of the vehicle.

*Mixing valve type on the left and right sides of the vehicle may result in slight pull to one side when braking. Valves can be mixed in pair front to rear without causing problems.*

It must also be noted that slight support bracket modification may be required to install the new M-40QR valve in place of the M-32QR model (see drawing below).

Modulator valve model can be easily identified by their different side cover and exhaust section.



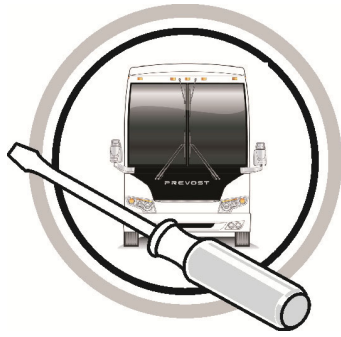
## PARTS / WASTE DISPOSAL

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



Access all our Service Bulletins on <https://secureus5.volvo.com/technicalpublications/en/pub.asp>  
Or scan the QR-Code with your smart phone.

E-mail us at [technicalpublications\\_prev@volvo.com](mailto:technicalpublications_prev@volvo.com) and type "ADD" in the subject to receive our warranty bulletins  
by e-mail.



**MAINTENANCE  
INFORMATION**

**MI16-12**

DATE :	FEBRUARY 2016	SECTION: 18 - Body
SUBJECT :	<b>GLUED FIXED THERMOS WINDOW PANE – INSTALLATION/GLUING PROCEDURE</b>	

**APPLICATION**

Model	VIN	
X3-45 COMMUTER		

**DESCRIPTION**

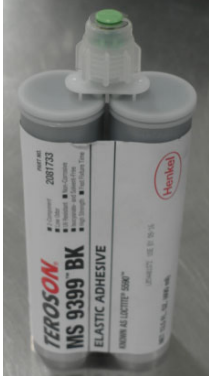
Use this procedure to perform the replacement of glued fixed thermos window. This procedure may also be used for the replacement of non-thermos fixed window as the installation method is similar.

**PRE-ASSEMBLED FIXED THERMOS WINDOW PANE**

To ensure an easy installation when replacing a broken fixed thermos window, the pre-assembled fixed thermos window **p/n 290072** should be selected as replacement part. This pre-assembled fixed thermos window comes with the upper aluminum extrusion already glued on the window pane. The aluminum extrusion will assure perfect vertical positioning and support the window pane during adhesive curing.

## MATERIAL

Part No	Description	Qty
<b>ADHESIVE</b>		
687957	TEROSON MS9399 MS-POLYMER ( <i>twin-tube 400ml</i> )	a.r.
<b>SEALANT</b>		
684685	SEALANT, SIMSON ISR 70-03 BLACK ( <i>tube 290ml</i> )	a.r.
<b>CLEANER</b>		
682989	SILICONE REMOVER 5 liters	a.r.
<b>APPLICATOR / TIP</b>		
687958	QUATTRO MIXER/APPLICATOR with V-TIP	a.r.
683655	APPLICATOR with V-TIP	a.r.
<b>CLOTH</b>		
682383	BLUE CLOTH	a.r.
682384	CHIX CLOTH	a.r.



**#687957**  
TEROSON MS9399  
MS-POLYMER



**#687958**  
QUATTRO MIXER WITH  
V-TIP



**TOOL**  
400ml DUAL CARTRIDGE  
PNEUMATIC APPLICATOR  
(PREVOST #688467)



**#684685**  
SEALANT  
SIMSON ISR 70-03  
BLACK 290ml




**#682989**  
SILICONE REMOVER  
(ANTI-SILICONE)  
5 liters



**#682384**  
CHIX CLOTH



**#682383**  
BLUE CLOTH

 <p><b>TOOL</b> <b>PUTTY KNIFE</b></p>			
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**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. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.

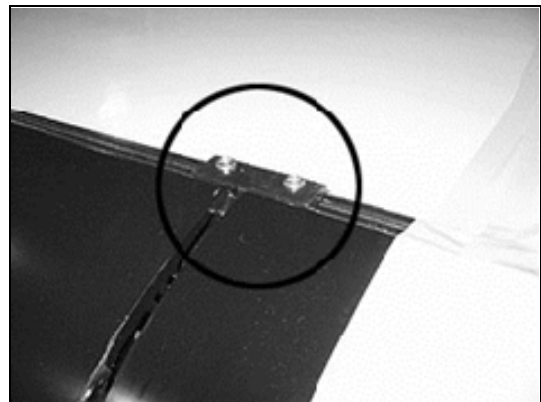
1. Inside the vehicle, remove the finishing trims around the window.
2. Remove the stopper blocks located at the top of the broken window if applicable (FIGURE 1). There may be a stopper block on the R.H. side as well as L.H. side of the window. These stopper blocks are found at the top of each emergency exit windows.

**NOTE**

*In order to reinstall the stopper blocks at their original location, identify which stopper block goes on R.H. side and which one goes on L.H. side. You may use a piece of masking tape and write down the position on it.*

**CAUTION**

Do not open an emergency window on which the stopper block has been removed. The emergency window could unhook and fall down.



**FIGURE 1: STOPPER BLOCK**

3. Remove all debris of broken window if applicable.

4. Remove adhesive/sealant on the involved structural members using a putty knife. Read the note below first:

**NOTE**

**Good adherence of glue to surface.** Remove excess of glue using a putty knife. It is acceptable leave a thin layer of glue on the surface instead of breaking the surface of adherence with the blade. If primed surface is slightly scratched: Accept as it is.

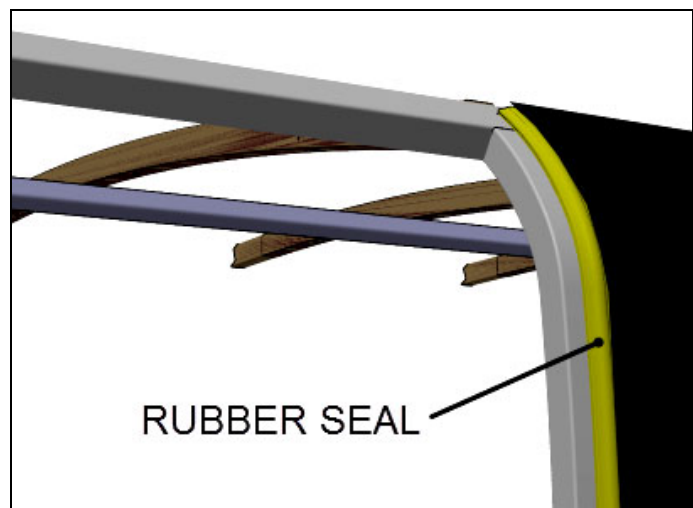
**If glue or primer become unstuck.** Remove glue locally and sand defective area

5. The vertical rubber seal found on the L.H. and R.H. side vertical members (FIGURE 2) should be left in place if in good condition. Replace damaged vertical rubber seal if applicable.

**Vertical rubber seal p/n: 293250 RUBBER SEAL1292±6.35mm LG**

**NOTE**

Rubber seal is stick to the structural member with pre-applied double face adhesive tape



**FIGURE 2**

6. To avoid weak bonding, thoroughly clean the old adhesive layer on the structural member identified in FIGURE 3 and FIGURE 4 with silicone remover p/n 682989 and clean Chix clothes. Wipe and dry surfaces with clean blue clothes.

**NOTE**

For silicone remover (anti-silicone) application technique, refer to annexed SAV00001C SURFACE PREPARATION PRODUCT GUIDE.

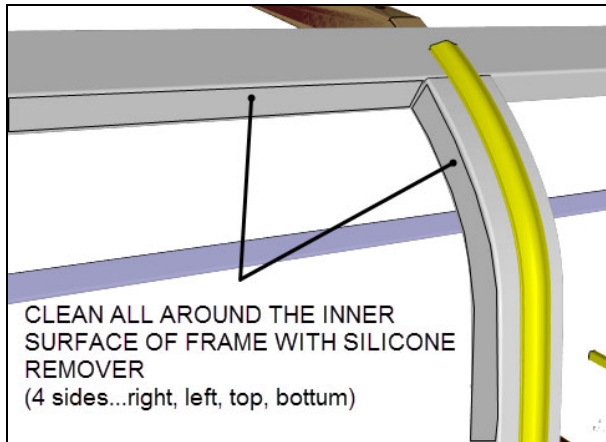


FIGURE 3

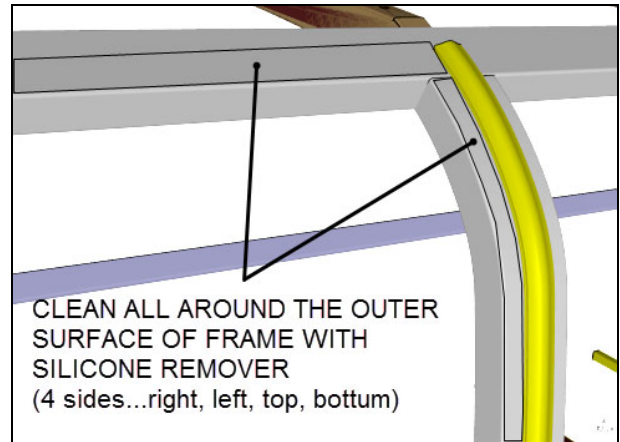


FIGURE 4

7. In preparation to adhesive application, clean the dark area on the inner side of the window pane using glass cleaner (refer to FIGURE 5).

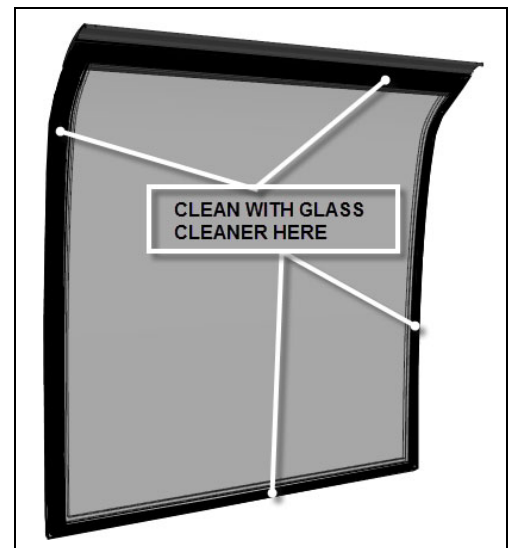


FIGURE 5

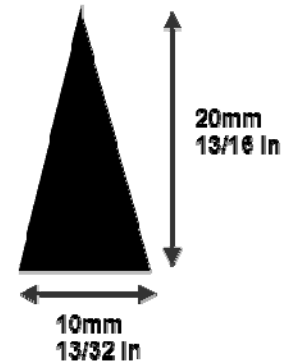
8. The adhesive must be applied in a triangular shaped bead of **20mm X 10mm** (13/16 in X 13/32 in) as shown on **FIGURE 6**.

**NOTE**

*For application technique, refer to annexed SAV00001A TRIANGULAR BEAD APPLICATION RULES.*

**ADHESIVE****#687957 TEROSON MS9399 MS-POLYMER**

- must be applied using special mixer/applicator #687958 with v-tip.
- **Open time: 18 minutes.**
- **Clamping time: 90 minutes.**
- Vehicle stop time (No driving with vehicle): 90 minutes.
- Cleaning: clean spills with **silicone remover**.
- Smoothing: use water or soapy water on a clean cloth.

**FIGURE 6**

9. Apply a **continuous** triangular bead of adhesive on R.H. and L.H. side vertical members. Apply the adhesive bead centered between the vertical member edge and the rubber extrusion (FIGURE 7).

**ADHESIVE OPEN TIME:** the time interval after application of the adhesive during which successful bonding of substrates can occur.

**ADHESIVE OPEN TIME =18 min. max TEROSON MS9399 MS-POLYMER**

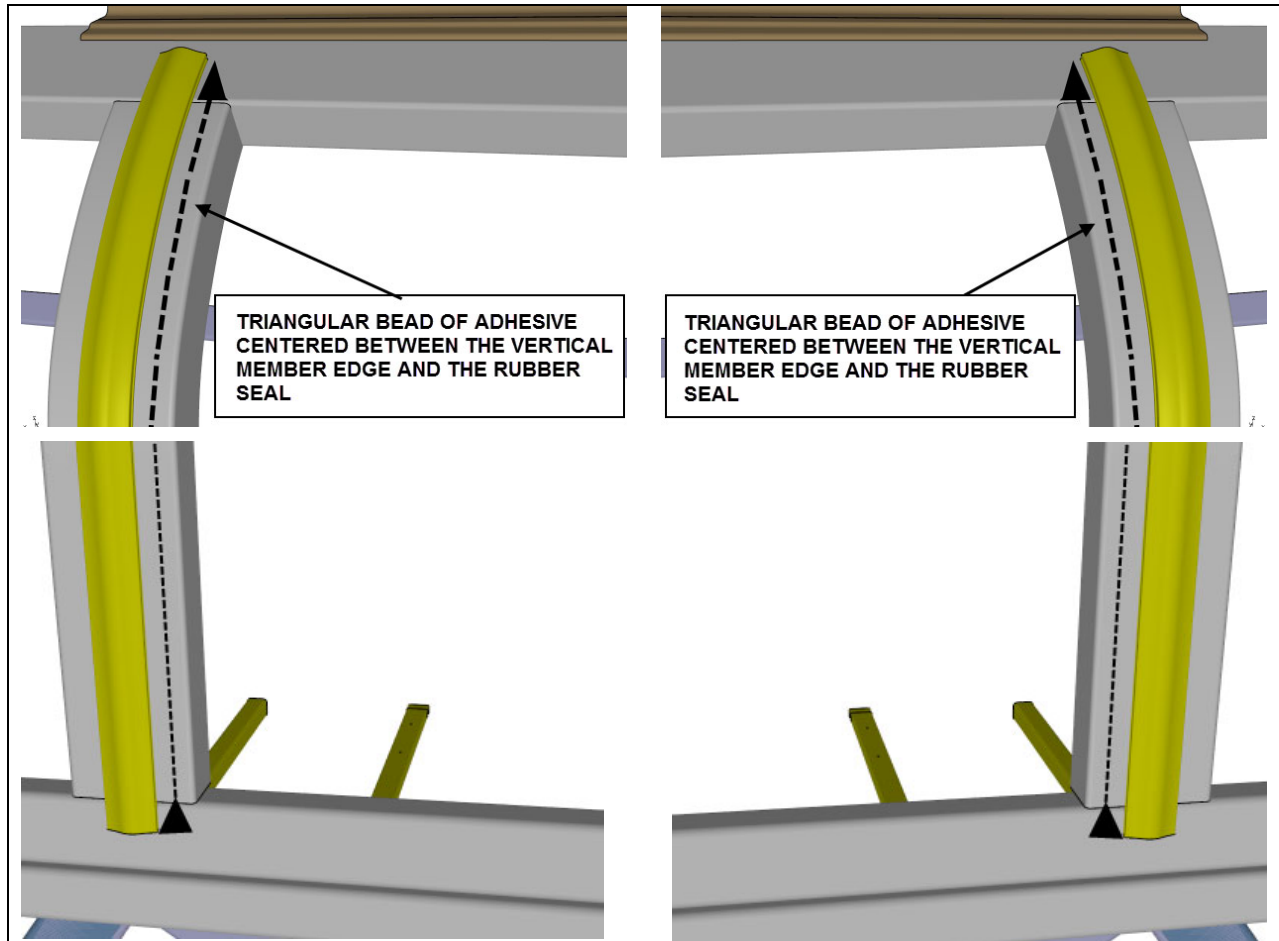


FIGURE 7

10. Apply two **continuous** triangular beads of adhesive on the upper horizontal member. Place the first bead along the edge of the horizontal member. Apply the second bead next to the first. R.H. and L.H. side vertical members (FIGURE 8).

**NOTE**

*The two adhesive beads of the upper horizontal structural members are very important and must be done carefully to prevent water infiltration. Make sure that they reach the previously done vertical beads.*

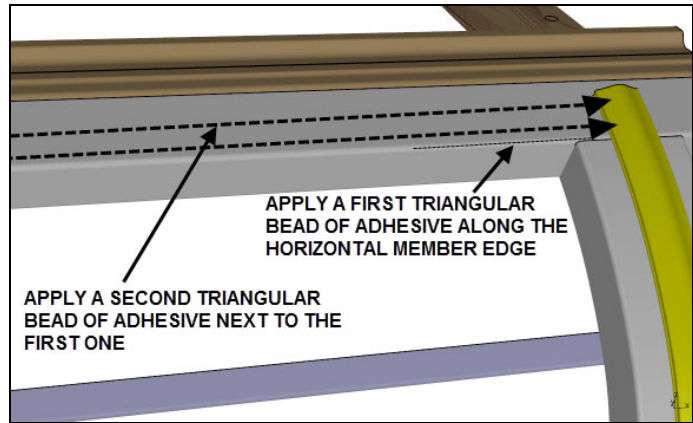


FIGURE 8

11. Apply a **continuous** triangular bead of adhesive on the lower horizontal member (FIGURE 9).

<b>NOTE</b>
<i>Make sure that the adhesive bead reaches the vertical beads previously done.</i>

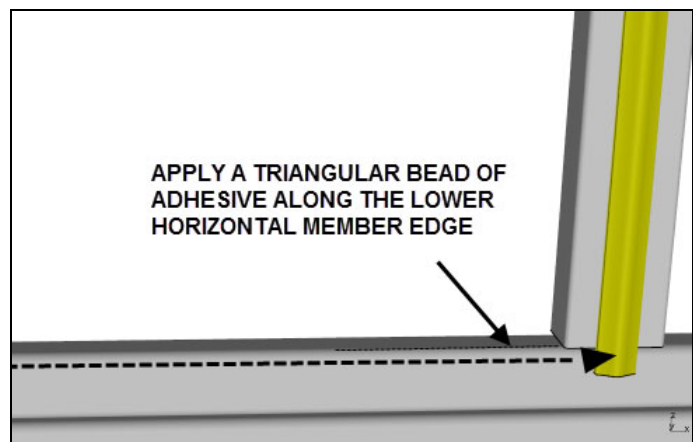


FIGURE 9

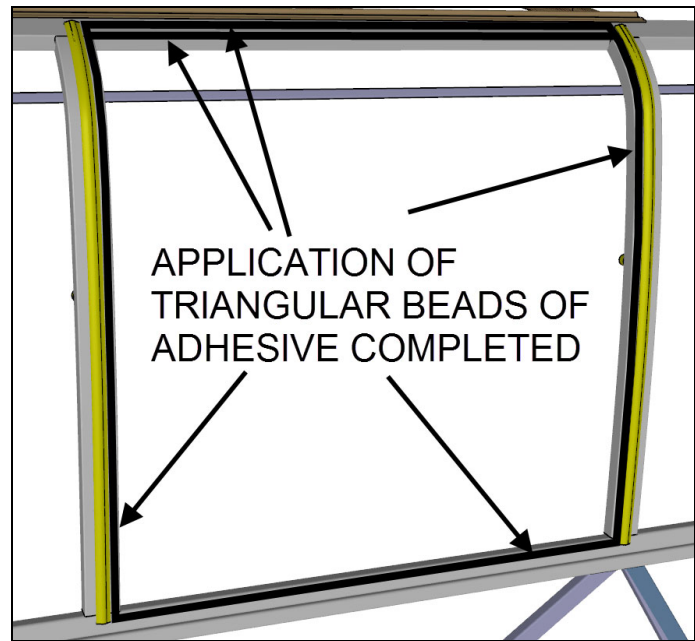


FIGURE 10

12. Install the window on the structure. Ideally, you would use suction cups (FIGURE 11) to manipulate the window. Using the aluminum extrusion already fixed to the window pane, hook the window to the rail found on the vehicle upper horizontal member (FIGURE 12). Place the window centered between the two adjacent windows before pressing the fixed window against structure. The gaps found on the right side and the left side should be equal. Wipe adhesive in excess if adhesive is visible from the outside.



FIGURE 11: HAND SUCTION CUP

**CAUTION**

*Never raise a window once it has been pressed against the structure because the adhesive joint would break.*

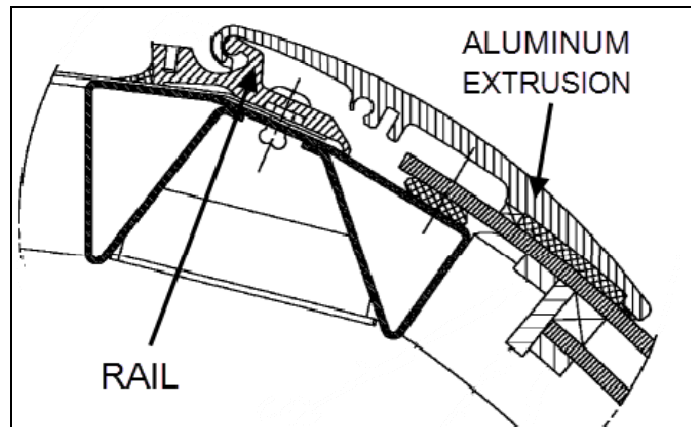


FIGURE 12

13. Check window alignment (flatness) with adjacent windows or panels. Using a small ruler (to prevent scratching, do not use metal ruler onto glass), make sure the window pane is flush with the windows located on each side of it. Allow enough clamping time for adhesive curing.

#### **TEROSON MS9399 MS-POLYMER**

- Clamping time: 90 minutes.

On FIGURE 13, a special jig equipped with suction cups is used to clamp/hold the fixed window on the structural members from inside.



FIGURE 13

14. **Allow 60 minutes before performing this step.** While the adhesive is curing, from the interior of the bus, fill the gap between the thermos window and the surrounding structural members with **sealant Simson ISR 70-03** (fill the whole window perimeter to ensure water tightness). Remove sealant in excess using putty knife/scrapper. Smooth down (FIGURE 15) the joint with finger or using clean clothes soaked with water or soapy water. Sealant bead must be fully filled, uniformly applied, flush with the thermos surface. Clean sealant in excess using silicone remover.

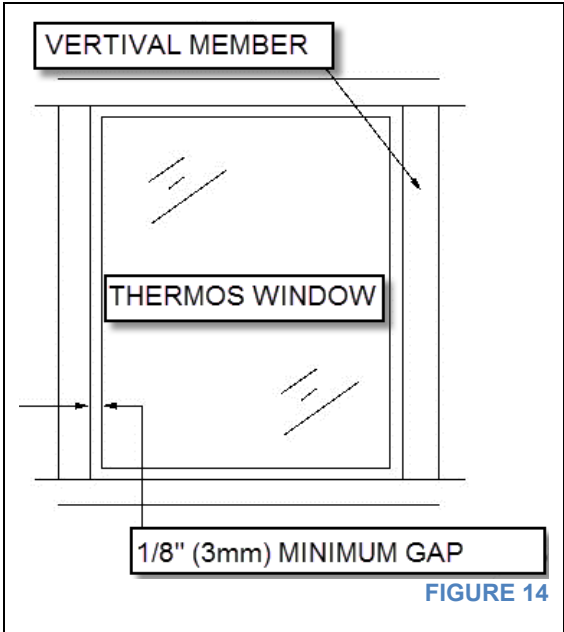


FIGURE 14

Interior tolerance: A gap of **1/8" (3mm) minimum** should be met between thermos window and structural members.

**OPEN TIME:** the time interval after application of the adhesive during which successful bonding of substrates can occur.

**SEALANT SIMSON ISR 70-03 OPEN TIME =10 minutes max**

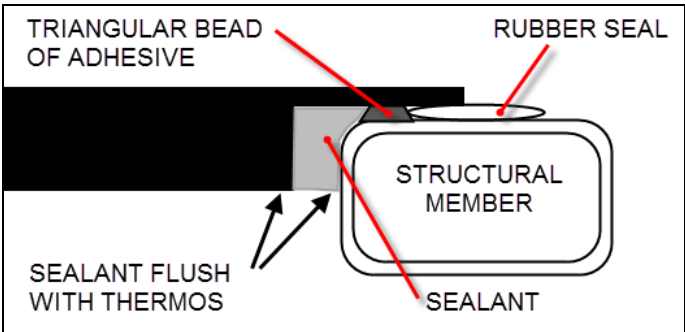


FIGURE 15

15. If applicable, reinstall the stopper blocks at their original location (FIGURE 1).

16. Allow 90 minutes of adhesive curing (vehicle stop time= 90 minutes).
17. Reinstall the interior trims.

## **PARTS / WASTE DISPOSAL**

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



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Or scan the QR-Code with your smart phone.

E-mail us at [technicalpublications\\_prev@volvo.com](mailto:technicalpublications_prev@volvo.com) and type "ADD" in the subject to receive our warranty bulletins by e-mail.

## MEMORANDUM GLUING BEST PRACTICES

SAV00001

REVISION 15  
SERVICE RELEASE 2013-09-06

### GLUING PROCEDURE (QUALIFIED PERSONNEL ONLY)

#### *Index*

SAV00001	General Health & Safety, General Remarks
SAV00001A	Triangular Joint Application
SAV00001B	<i>intentionally skipped</i>
SAV00001C	Surface Preparation Product Guide
SAV00001D	Gluing Products Guide
SAV00001E	Repair / Replacement
SAV00001F	VHB Adhesive Tape-Backed Rubber Seal Gluing
SAV00001G	Finishing Joint Smoothing
SAV00001H	Product Date Verification Guide

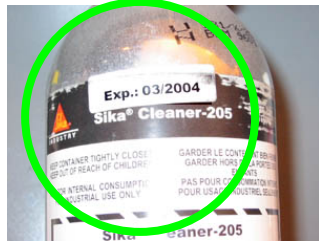
#### General health and safety guidelines

<p><b>DISCARD</b></p>  <p><b>AS PER P908</b></p>	<p><b>WEAR</b></p>  <p><b>GLOVES</b></p>	<p><b>WEAR</b></p>  <p><b>SAFETY GLASSES</b></p>
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## General Remarks



**No  
Back and forth**

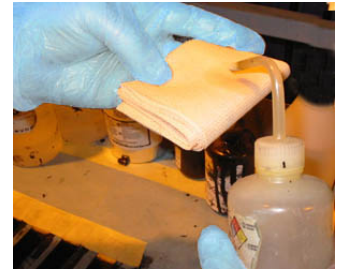
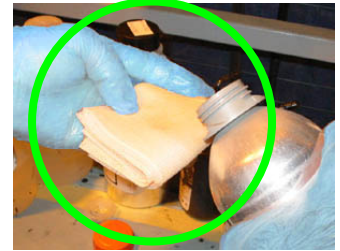


**Verify expiration  
date**

**See H**



**Do not use  
straight from the  
bottle**



**Work Place**

- No excessive dust (mind the ventilation).
- Air blast forbidden. (Sprays dust in the work environment and contaminates surfaces by oil in the pneumatic system).
- All products containing silicone are forbidden.

Temperature and humidity %: Standard is 23°C (73°F) and 50% of relative humidity.

Effects of temperature;

>23°C (73°F) and/or >50% drying time and job time are reduced

<23°C (73°F) and/or <50% drying time and job time are increased

Keep in mind that it is forbidden to use products, parts, to prepare and/or glue surfaces if temperature is below 15°C (59°F).

**Using Sika Products and Solvent in Nalgene Bottles**

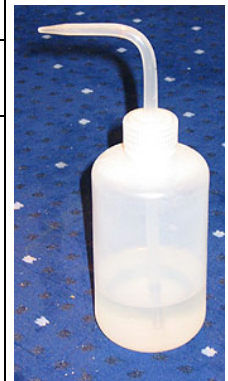
**Primer  
206G+P**

Insert a ball in Nalgene bottle. This will enable mixing of product.

**Preservation  
of all  
products**

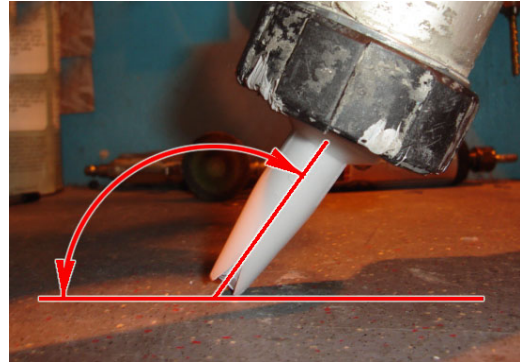
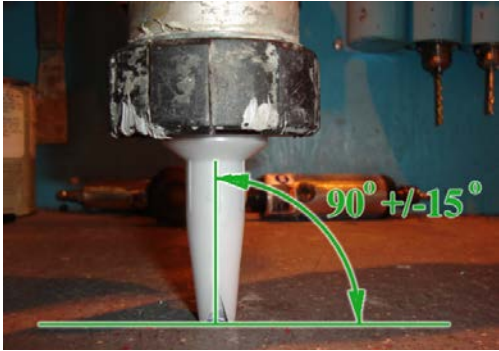
Put a cap when not in use. Surrounding air and humidity will cause product to dry and evaporate.

Discard all products starting to curdle (liquid state becoming gelatinous or lumpy).

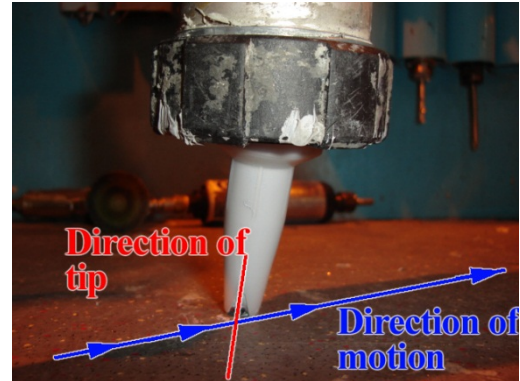
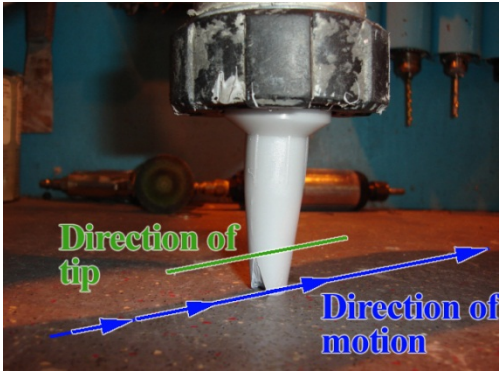


### SAV00001A Triangular Bead Application Rules

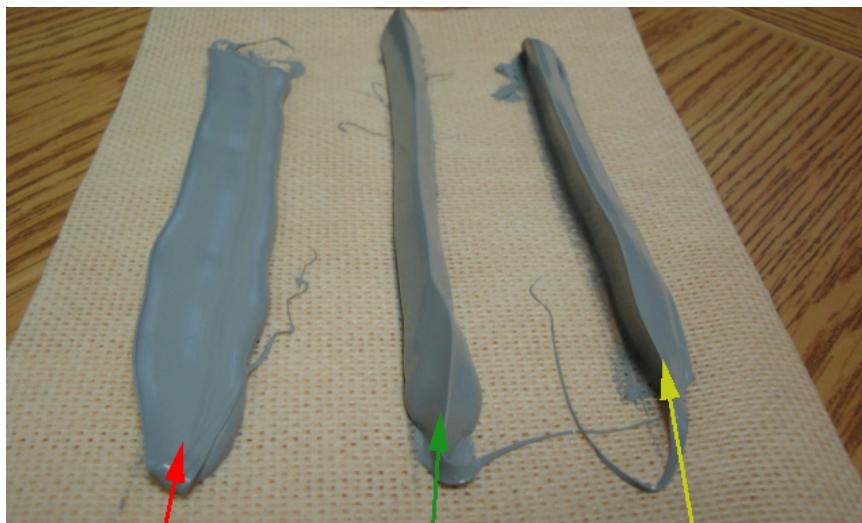
Nozzle must be as perpendicular to the surface as possible



Nozzle must be positioned to follow the direction of movement (towards the rear not side)



### Bead Appearance



Unacceptable

Perfect

Max acceptable

SAV00001C Surface preparation product guide

**Anti-silicone (or alcohol)**

	<p><b>1. Apply</b></p> <p>CHIX cloth</p>		<p><b>2. Dry immediately</b></p> <p>Blue cloth</p>
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Note: Do not use over long distances. Turn cloth over. Clean until Chix cloth comes out clean.



Unacceptable



Unacceptable



Maximum acceptable

<p><b>3. Allow drying</b> (Mandatory)</p>	<p>Minimum time: Until product evaporation</p>	
	<p>After 2 hours: Start cleaning operation again</p>	
<p>Before applying any other product</p>	<p>If surface seems dusty, greasy or with finger marks, start cleaning operation again.</p>	

**Sika 205**

	<p><b>1. Apply</b></p> <p>CHIX cloth</p>
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<p><b>2. Allow evaporation</b> (Mandatory)</p>	<p>Minimum time</p>	<p>- For a smooth surface (aluminum, stainless, steel, fiberglass (gel coat side), etc.):</p>	<p>2 minutes</p>
		<p>- For a porous surface (fiberglass (non gel coat side), etc.)</p>	<p>10 minutes</p>
<p>After 2 hours: Reactivate surface with Sika 205</p>			

Before applying any other product If surface seems dusty, greasy or with finger marks, start operation again.

## Sika Aktivator

Glass



Plastic spatula

CHIX cloth

CHIX cloth

Other material (plastic, paint, etc)



CHIX cloth

CHIX cloth

**1. Apply & wipe immediately**

Leave ½" to 2" between the 2 cloths

**2. Allow evaporation**

Do not use pads supplied in the box.



**Mandatory** Minimum time: 5 minutes

After 2 hours : Remove dust using Chix cloth & repeat application

**Before applying any other product**

If surface seems dusty, dust using dry Chix cloth & repeat application.

If surface seems greasy or with finger marks, start operation again.

## Glass cleaner



**1. Spray**  
(Essex, Sprayway or Sika)



**2. Dry**

BLUE cloth

**3. Allow evaporation**

**Mandatory**

Minimum time : Complete evaporation of product

After 2 hours : Start cleaning operation again

**Before applying any other product**

If surface seems dusty, greasy or with finger marks, start cleaning operation again.

## Sika Remover 208

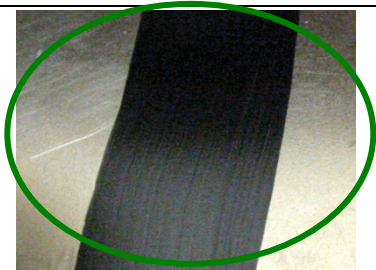
This product is specially designed to remove fresh sealant and Sika adhesive from a surface. This product has the advantage of not contaminating the sealant.

## Sika Primer 206 G+P, 210-T or 215



1. Shake bottle to mix product
2. Apply a thin layer

CHIX cloth



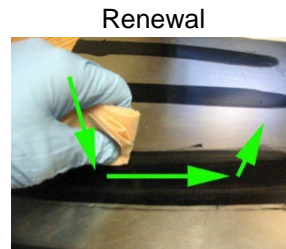
Even application, no drips no miss.



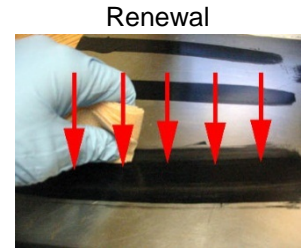
Uneven. Apply again locally onto missing areas after waiting drying time



Dripping, avoid excessive accumulation



Continuous Movement



No tapping






### 3. Allow drying

Do not use pads supplied in the box.




Mandatory	206 G+P	Minimum time : 10 minutes
		After 2 hours: Remove dust using damp CHIX cloth (pure water)
		After 8 days : Reactivate with Aktivator as per section "C"
Mandatory	210-T	Minimum time: 10 minutes
		After 2 hours: Remove dust using damp CHIX cloth (pure water)
		After 8 days : Reactivate with Aktivator as per section "C"
		After 1 year : Throw away the part
Mandatory	215	Minimum time : 20 minutes
		After 2 hours : Remove dust using damp CHIX cloth (pure water)
Before applying any other product		If surface seems dusty, dust using damp Chix cloth (pure water).
		If surface seems greasy or with finger marks, reactivate with Aktivator.

## Sanding

	 <p>Scotchbrite grey 7446 or SIA P-110</p>	 <p>Scotchbrite grey 7446 or SIA P-110</p>	 <p>Sand belt coarse grit</p>
Smooth surface:	<p>Use orbit sander</p> 	<p>Use orbit sander</p> 	<p>Use belt sander</p> 
Ridged surface:	<p>Sand bottom of creases by hand</p> 		
Important aspects to follow	<p>Change paper or belt on a regular basis as per procedure. In the case of Stainless steel, eliminate reflection (mirror image).</p>		
Maximum delay between sanding and surface preparation, otherwise start operation again	<p>Stainless = 7 days Aluminum and 3cr12 = 4hrs Fiberglass = No delay</p>		

## Simson Primer M

	<p><b>1. Apply</b> <span style="border: 1px dashed black; padding: 2px;">Chiffon CHIX</span></p>
<p><b>2. Allow to evaporate</b></p>	
Mandatory	<p>Minimum time; 10 minutes After 3 hours: Sand surface with scotchbrite. Clean with anti-silicone. Repeat application of primer M.</p>
Before applying any other product	<p>If surface seems dusty, greasy or with finger marks, start operation again.</p>

## Plexus Primer PC-120



**1.** Apply

CHIX cloth

**2.** Allow to evaporate

**Madatory**

Minimum time; 2 minutes

Maximum time; 24 hrs. : Past this delay, repeat sanding and repeat application of primer PC-120.

**Before applying any other product**

If surface seems dusty, greasy or with finger marks, start operation again.

## Loctite Primer 450



**1.** Apply

CHIX cloth

**2.** Allow to evaporate (Madatory)

Minimum time

- Smooth surfaces (aluminum, stainless, steel, fiber glass (gel coat side), etc...):

2 minutes

- For porous surface (fiber glass (non gel coat side), etc...)

10 minutes

After 3 hours: Sand surface with scotchbrite. Clean with anti-silicone. Repeat application of primer 450.

**Before applying any other product**

If surface seems dusty, greasy or with finger marks, start operation again.

## Loctite Primer Terostat 8519P



**1.** Apply

CHIX cloth

**2.** Allow to evaporate (Madatory)

Minimum time : 2 minutes

After one hour: Clean with alcohol. Repeat application of primer 8519P

**Before applying any other product**

If surface seems dusty, greasy or with finger marks, clean with alcohol start operation again.(30 minutes minimum between both applications)

### 3M Primer 94



- 1.** Shake bottle to mix product
- 2.** Apply CHIX cloth

**3.** Allow to evaporate  
(Mandatory)

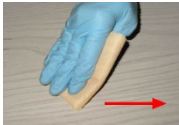
Minimum time : 5 minutes

After 2 hours: Repeat application.

**Before applying any other product**

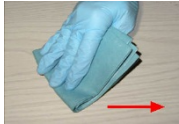
If surface seems dusty, greasy or with finger marks, clean with alcohol start operation again.(30 minutes minimum between both applications)

### Alodine 5700



- 1.** Apply a thin coat
- 2.** Wait 15 seconds

CHIX cloth



- 3.** Remove excess with clean and dry cloth to even-out product quantity

Blue cloth

**3.** Allow to evaporate  
(Mandatory)

Minimum time : 2 minutes

After 4 hours: Sand surface with scotchbrite. Clean with anti-silicone.  
Repeat application of Alodine 5700.

**Before applying any other product**

If surface seems dusty, greasy or with finger marks, clean with alcohol start operation again.(30 minutes minimum between both applications)

**SAV00001D Gluing product guide**

**A SIKA TACK ULTRAFast II GLUE- 310ML TUBE (#683885)**

**Heating Sika Ultrafast II**

Sika Authorized ovens only. (Max 80°C, 176°F). **Minimum time: 1 hour Max time: 5hrs. Note: TUBE may be heated several times up to max heating time.**

Glue	Work time *	Clamping time	Vehicle stop time (No driving with vehicle)
Sika 252	30 min. max.	According to procedure	24 hrs. minimum
Sika 221(BLACK) + booster	20 min. max.	90 min	4 hrs. minimum
Sika 254 + booster (pump)	25 min. max.	According to procedure	2.5 hrs. minimum
Sika Ultrafast II	10 min. max.	According to procedure	6 hrs. minimum
Sika 255	15 min. max.	According to procedure	24 hrs. minimum
Sika STP or PC + booster (pump)	15 min. max.	According to procedure	2 hrs. minimum
Sika 221	30-45 min. max.	According to procedure	24 hrs. minimum

\*Temperature and humidity will modify work time

<b>Smoothing</b>	Water or soapy water (authorized soap: #680339 concentration 5%).
<b>Cleaning (spills)</b>	Use Sika 208. (Do not use anti-silicone or alcohol)
<b>Paint</b>	Seal joint can be coated with paint or primer only when dry to the touch.

**CHECK "BEST BEFORE "DATE = REFER TO H**

**B SIMSON ISR 70-03 GLUE, BLACK, TUBE(#684685)  
SIMSON ISR 70-03 GLUE, GREY, TUBE (#684517)**

<b>Open time</b>	Simson 70-03 = 10 min. maximum
<b>Cleaning (spills)</b>	Anti-silicone
<b>Smoothing</b>	Water or soapy water (authorized soap: #680339 concentration 5%).
<b>Paint</b>	Seal joint can be coated with paint or primer only when dry to the touch.

**CHECK "BEST BEFORE "DATE = REFER TO H**

**C PLEXUS MA530 METHACRYLATE GLUE, 400 ML (#687956)  
PLEXUS MA832GB METHACRYLATE GLUE, 380ML (#684743)  
PLEXUS PC120 PRIMER, 944 ML (#687955)**

<b>Open time</b>	MA-832 = 12 à 15 minutes      MA-530 = 30 minutes
<b>Cleaning (spills)</b>	Anti-silicone

**CHECK "BEST BEFORE "DATE = REFER TO H**

**SAV00001E Repair / Replacement**

**Repair (Sika product or Simson)**

During winter season, condensation and cold can influence the gluing parameters. The working area must be at a sufficient temperature. It will be necessary to preheat the zone mechanically (radiant heat lamp, hot air gun) or bring the vehicle to room temperature. See Section 1: General Remarks.

<b>Remove part</b>	<b>Use a knife, Zip Gun or braided windshield wire</b>	
<b>Cleaning</b>	<b>If required, remove dirt, dust, sand, calcium, grease using Anti-silicone</b>	
<b>Remove former glue</b>	<b>Good adherence of glue to surface</b>	<b>If glue or primer become unstuck</b>
	Remove excess of glue using a scraper. It is acceptable and recommended to keep a small layer of glue on the surface instead of breaking the surface of adherence with the blade. <u>If primed surface is slightly scratched: Accept as it is.</u>	Remove glue locally and sand defective area
<b>Surface Preparation</b>	1. Make sure surfaces are clean. Use anti-silicone if necessary.	Prepare surface locally as per procedure.
	2. Sika only; if primer was partially removed: Add primer locally.	
	3. Sika only; reactivate all surfaces with Sika Aktivator	
<b>Paint / waiting time</b>	See SAV0001D depending on glue/sealant type used.	

**SAV00001F VHB adhesive-backed rubber seal gluing**

To activate the adhesion process, pressure must be applied on the seal. Use a roller or other appropriate tool. Glue also requires an activation time to achieve bond force.

**Surface preparation;**

Depending on the procedure or particular set-up

*When positioning the rubber seal with the backing liner on, make sure the backing liner is clean and dust free to avoid contaminating the receiving surface. Clean with a CHIX cloth or wet blue cloth (pure water).*

**Roller use;**

Roller shape: according to procedure or particular set-up.

Pressure: Press hard on the roller (about 15 pounds). Apply roller minimum 2x.

**Bonding force vs time;**

50% of maximum bonding force after 20 minutes,

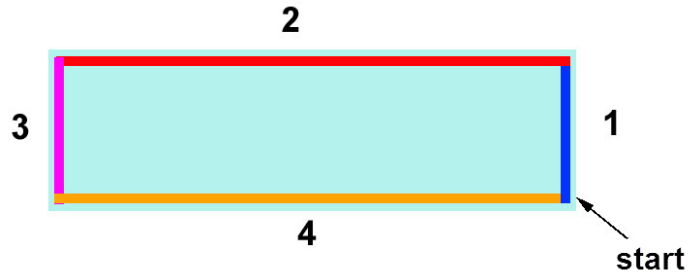
90% after 24 hours

100% after 72 hours.

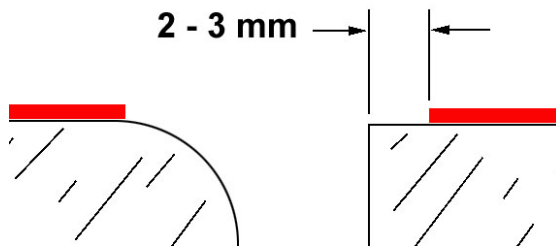
**SAV00001G Finishing joint**

**MASKING TAPE APPLICATION**

Tip : Always install tapes in the same sequence and direction, one above the other. This allows easy removal in one stroke



For round corners, install masking tape at start of radius  
 For sharp corners; install 2 to 3 mm away from edge (To have edge of corner embedded in joint)



**Surface preparation**

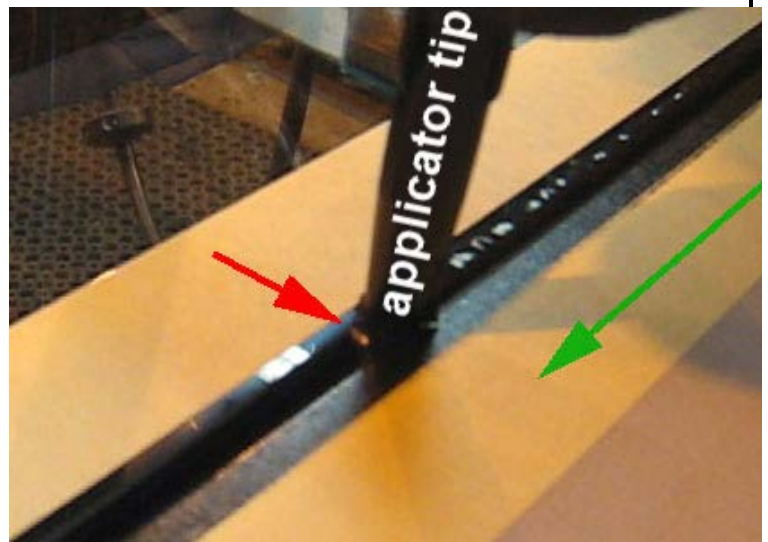
According to procedure

**Sealant application**

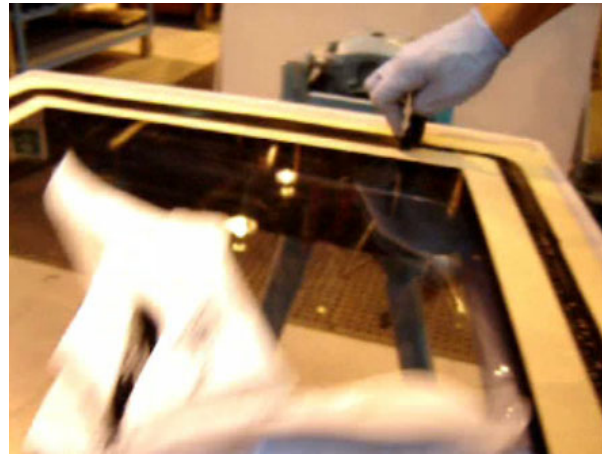
Sealant product according to specific procedure

Fill cavity

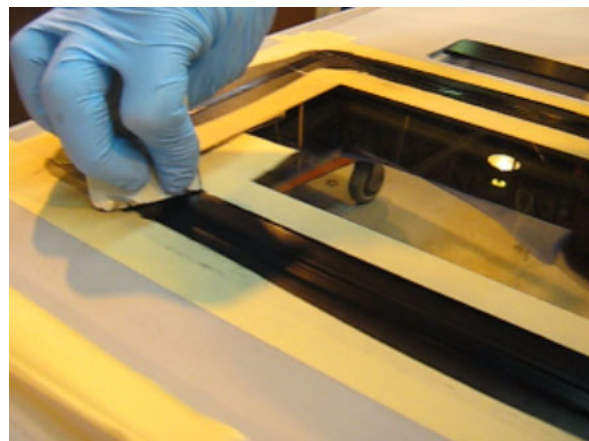
You must create a continuous flow in front of the applicator tip. If this is not the case, you are advancing too rapidly.



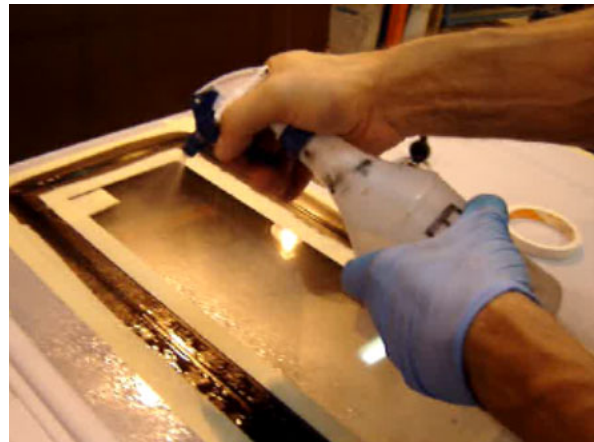
Remove excess with a plastic spatula and cloth.



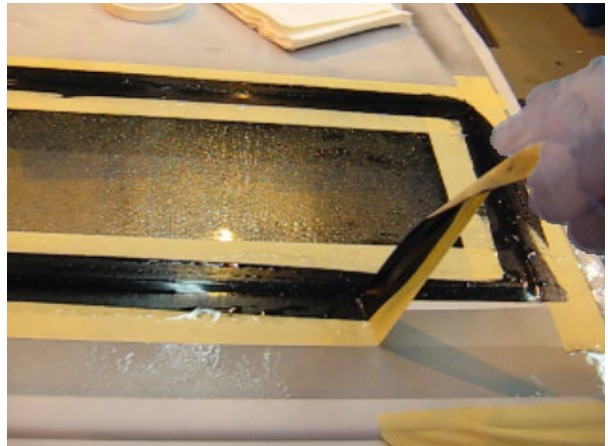
Smooth-out joint with a plastic spatula.  
*Proceed in a continuous movement (No stopping).*



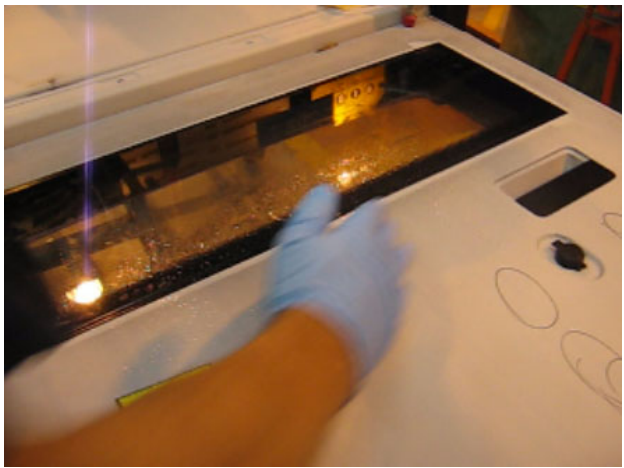
Spray pure water on joint. Smooth out joint with wet fingers.








Remove masking tape.



Spray joint with pure water. Smooth out joint with wet fingers.



SAV00001H Product Date Verification Guide

<p><b>A</b></p>	<p>SIKAFLEX 221 GREY TUBE (#680532)</p>	<p>SIMSON ISR 70-03 GLUE GREY SAUSAGE. 600ML (#685126)</p>	<p>SIKAFLEX 252 BLACK TUBE (#682462) SIKAFLEX 252 BLACK SAUSAGE (#683083) SIKA TACK ULTRAFLEX II - 310ML TUBE (#683885)</p>
<p><u>Europe</u> 11 = month November / 07 = year 2007</p> 	<p><u>Europe</u> BB = Best Before 03= month march / 11 = year 2011</p> 	<p><u>United states (USA)</u> 05 = month may / 04 = 4<sup>th</sup> day / 11 = year 2011</p> 	
<p><b>B</b></p>	<p>SIMSON ISR 70-03 BLACK, TUBE (#684685) SIMSON ISR 70-03 GREY, TUBE (#684517)</p>  <p>BB = Best before 07 = month July / 08 = year 2008</p>	<p>SIMSON Primer "M", 500 ML (#685154)</p>  <p>BB = Best before 04 = month April / 12 = year 2012</p>	

**PROCEDURE NO: SAV00001H**

**REVISION 15**

<p><b>C</b></p> <p><b>PLEXUS METHACRYLATE (#687956 &amp; 682444)</b></p>	<p><b>PLEXUS METHACRYLATE MA832GB, 380ML (#684743)</b></p>	<p><b>PLEXUS PC120 PRIMER, 944 ML (#687955)</b></p>
<p>Shelf life is 7 months from the date of manufacture. =&gt; # LOT<b>110</b>111 =&gt; Date 2011-Oct. + 7 month = <b>May 2012</b></p>	<p>Shelf life is 10 months from the date of manufacture. =&gt; # LOT<b>110</b>221 =&gt; Date 2011-Oct. + 10 month = <b>August 2012</b></p>	<p>Shelf life is 13 months from the date of manufacture. =&gt; # LOT<b>105</b>031 =&gt; Date 2011-May + 13 month = <b>June 2012</b></p>



**D BUTYL ALUM. TUBE 11 OZ. (#680096)**



1<sup>st</sup> character = month  
**A** = January    **B** = February    **C** = March    **D** = April    **E** = May  
**F** = June        **G** = July        **H** = August    **I** = September    **J** = October  
**K** = November    **L** = December

2<sup>nd</sup> character = year  
 Add **18 month**

Ex: **G** = month July / **10** = year 2010  
 Expiration date is: **January 2012**

PROCEDURE NO: SAV00001H

REVISION 15

<p><b>E</b></p> <p>LOCTITE MS-POLYMER 5590, 400ML (#687957)</p> <p>USE BY 03 = month mairs 09 = year 2009</p> 	<p>LOCTITE MS-POLYMER 5590, PART A (#687961)</p> <p>USE BY 25 = 25th day 01 = month Jan. 11 = 2011</p> 	<p>LOCTITE MS-POLYMER 5590, PART B (#687962)</p> <p>USE BY 30 = 30<sup>th</sup> day 01 = month Jan. 11 = 2011</p> 	<p>LOCKTHREAD LOCTITE (#680038 &amp; #680100)</p>   <p>Example: L3(1)KAB7940 L3 = Puerto Rico Production year 1 = 2011 month K = November (A = Jan, B = Feb, etc.) characters 3-6 = lot #</p> <p>Expiration date is 2 yr after fabrication date, so in this example: November 2013</p>
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<p><b>F</b></p> <p>USE BEFORE 11 = month November 26 = 26th day 2015 = year 2015</p>	<p>Henkel Alodine 5700 (#687982)</p> 
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**MAINTENANCE  
INFORMATION**









**MI16-16**

DATE :	FEBRUARY 2016	SECTION :	01 - Engine
SUBJECT :	<b>VOLVO D13 ENGINE – STARTER REMOVAL AND INSTALLATION</b>		

**DESCRIPTION**

This procedure applies to current Melco 105P70 starter part number #21212425.

**REQUIRED TOOLS**

<p><b>RATCHET EXTENSION BAR</b></p> 	<p><b>RATCHET AND SOCKET SET – METRIC</b></p> 
<p><b>CORDLESS DRILL</b></p> 	<p><b>BRASS WIRE CUP BRUSH</b></p> 
<p><b>TORQUE WRENCH</b></p> 	<p><b>CUTTING PLIERS</b></p> 
<p><b>VOLTMETER / MULTIMETER</b></p> 	<p><b>METRIC OPEN END WRENCH SET</b></p> 

## PROCEDURE – STARTER REMOVAL AND INSTALLATION



### DANGER

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

## RISK OF ELECTRICAL SHOCK

1. The starter is connected to the batteries through master relay R1. If the ignition switch is in the OFF position and the battery master switch (master cut-out) is set to the OFF position, there should not be electrical power to the starter **B** (batt) terminal. However, a faulty master relay R1 could eventually leave the battery power circuit closed, thus electrical power would be present at the starter **B** terminal.
2. Using a voltmeter or multimeter, probe the starter **B** terminal and the **ground** terminal. Make sure that the voltage reading is 0 volt prior disconnecting the starter cables (FIGURE 2).

## STARTER REMOVAL

3. While proceeding from under the vehicle, gain access to the starter (item 29 on FIGURE 1) on the turbocharger side (street side).

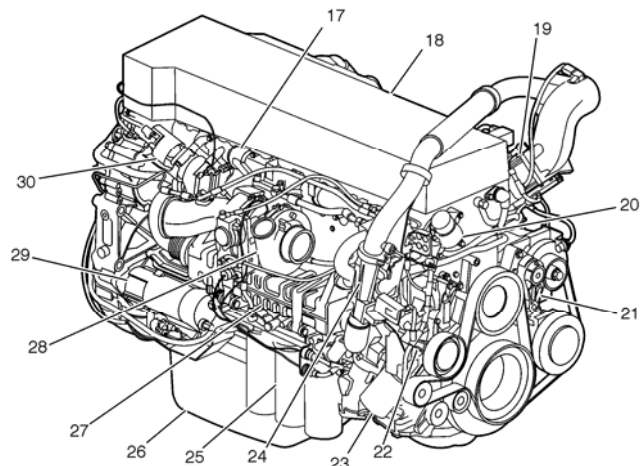


FIGURE 1: D13H ENGINE OVERVIEW, TURBO SIDE

4. On the starter, disconnect circuits **0C**, **101** and **101B** (see FIGURE 2). Properly clean cable lugs as applicable using a brass wire cup brush, a Scotch-Brite pad or an emery cloth. Remove old Color Guard Rubber Coating as much as possible.

**IMPORTANT: keep hardware for later use**

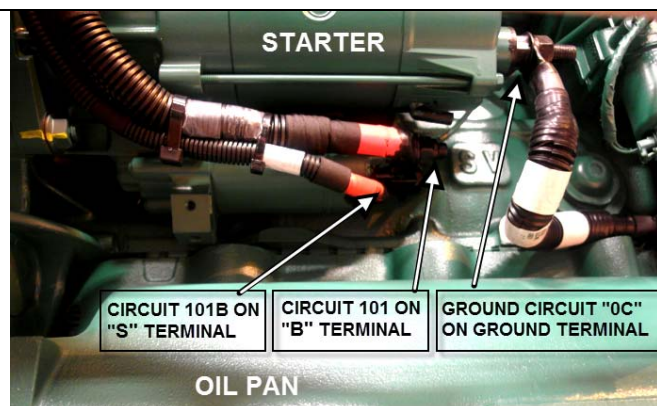


FIGURE 2

5. Using a 18mm socket, unscrew three bolts fastening the starter to the flywheel housing (FIGURE 3).
6. Detach the starter from the flywheel housing.

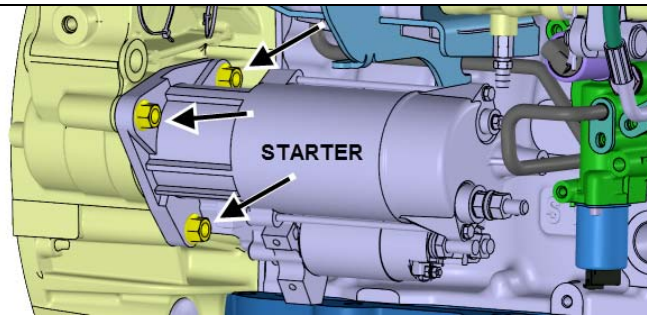


FIGURE 3

## STARTER INSTALLATION

1. If the starter is replaced with a brand new starter, prepare the new starter as follows (refer to FIGURE 5).
  - a) Remove the second nut on the ground terminal (FIGURE 5). Keep for later use.
  - b) Remove the jumper cable connected to the ground terminal (FIGURE 5).
  - c) Make sure that the three nuts identified on FIGURE 5 are tightened to a torque of **22 lbf-ft**.
  - d) Reinstall the jumper cable to the ground terminal.
  - e) Install a nylon tie mount p/n 504013 on the starter. Refer to FIGURE 6 for proper location. Secure the nylon tie mount with one screw p/n 502817 (FIGURE 7).

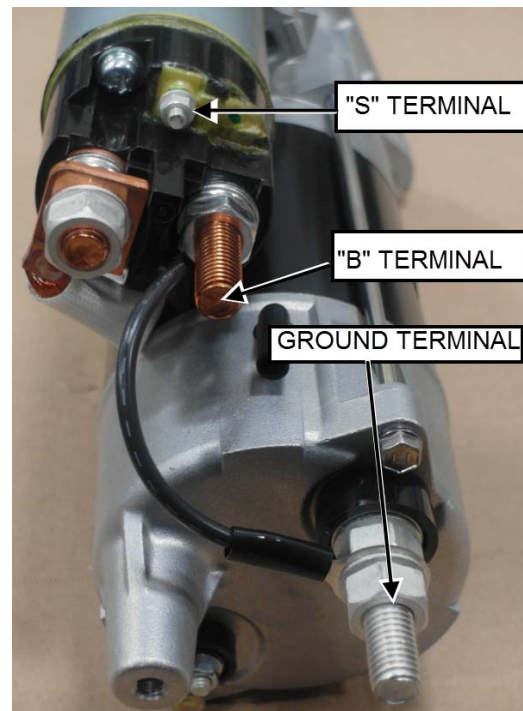


FIGURE 4 : TERMINAL IDENTIFICATION

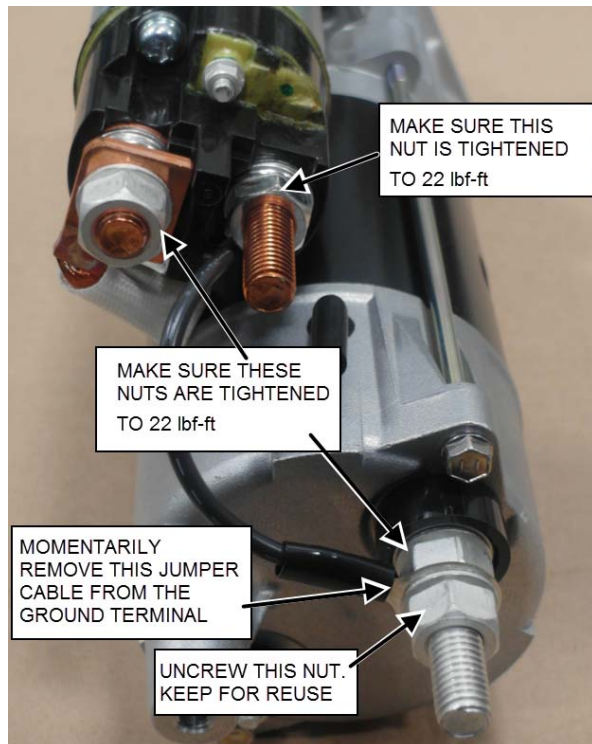


FIGURE 5

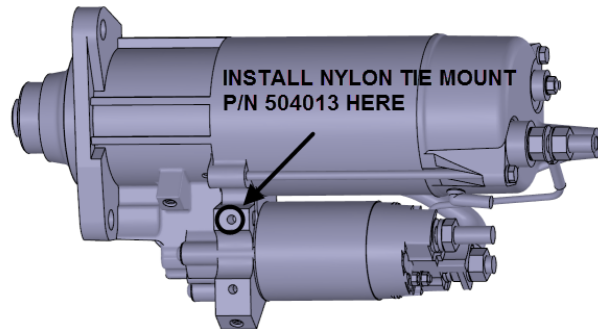


FIGURE 6

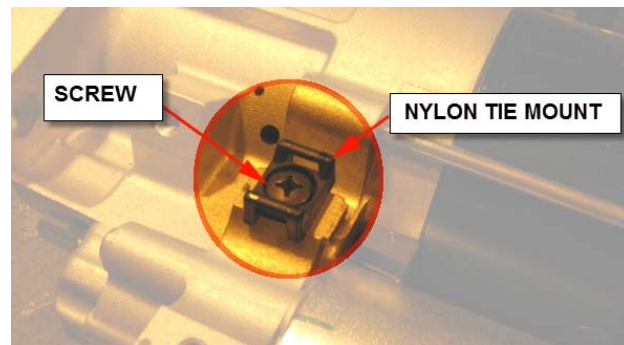


FIGURE 7

2. Install the replacement starter with the solenoid located on the underside of the starter motor as shown on **FIGURE 8**.
3. Hand tighten the three mounting nut.  
*Flange nut M12 p/n 990942 qty: 3*
4. Once the starter is properly seated on the flywheel housing, torque the three mounting nuts to a torque of **44 lbf-ft**.

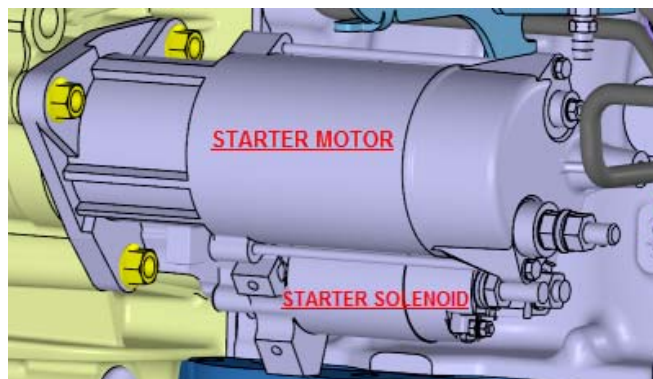


FIGURE 8

### **INSTALLATION OF CIRCUIT 0C**

5. Connect the ground cable (circuit 0C) to the ground terminal first. Make sure the ground cable extends vertically downward from the terminal as shown on **FIGURE 9**.
6. Secure the ground cable lug with the nut previously removed at step 1-a. Tighten to a torque of **22 lbf-ft**.

*M12 hex nut p/n 983717*

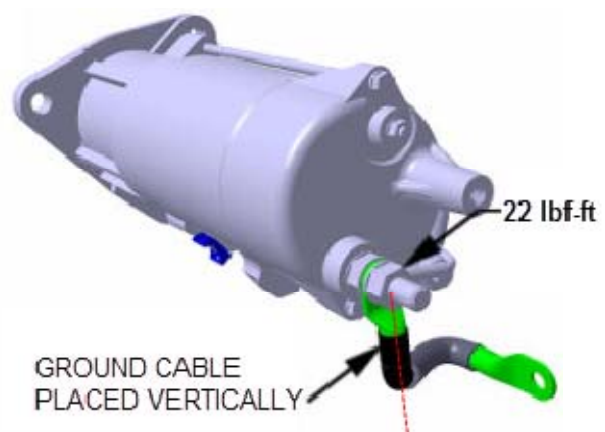


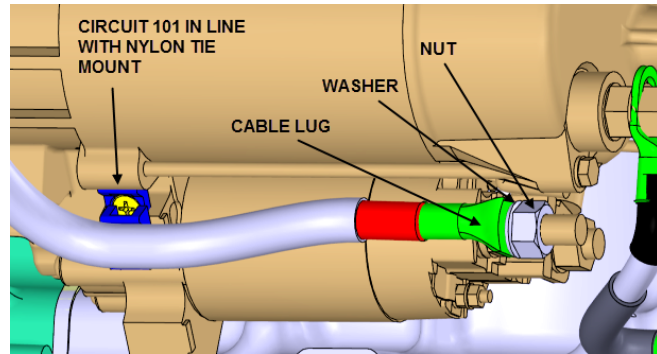
FIGURE 9

### **INSTALLATION OF CIRCUIT 101**

7. Connect circuit **101** to **B** terminal (FIGURE 4 & FIGURE 5). Position circuit **101** cable to be in line with the nylon tie mount on the starter.
8. Place the washer against circuit **101** cable lug and secure cable lug and washer with the nut. Tighten the nut to a torque of **22 lbf-ft**.

*washer p/n 500958 qty:1*

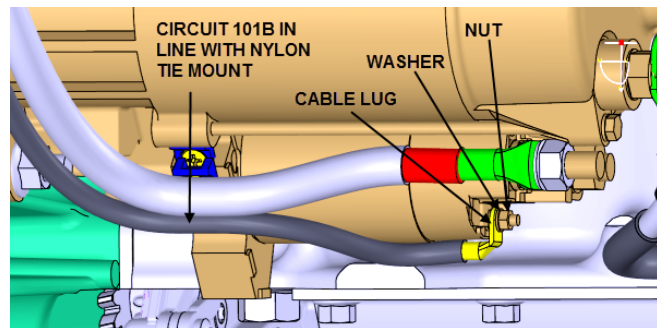
*nut p/n 5001761 qty:1*



**FIGURE 10**

### **INSTALLATION OF CIRCUIT 101B**

9. If not already done, remove the nut and washer provided with the brand new alternator on **S** terminal (FIGURE 4).
10. Connect circuit **101B** to **S** terminal. Position circuit **101B** cable to be in line with the nylon tie mount on the starter.
11. Place the provided washer against circuit **101** cable lug and then secure cable lug and washer with the nut provided. Tighten the nut to **35 lbf-in**.



**FIGURE 11**

12. Secure circuit **101** and **101B** to the tie mount using one nylon tie *p/n 504016*.
13. Tie circuit **101** and **101B** together using one nylon tie *p/n 504637* as shown on FIGURE 12.



**FIGURE 12**

14. Apply anti-corrosion compound or **Color Guard Rubber Coating** (Prevost *p/n 684013*) on starter terminals, cable lugs and nuts (see FIGURE 13 to FIGURE 15).



**FIGURE 13**



FIGURE 14



FIGURE 15

## FUNCTIONAL TEST

1. Reset main circuit breakers if applicable. Set the battery master switch (master cut-out) to the ON position and start the engine.

## PARTS / WASTE DISPOSAL

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



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Or scan the QR-Code with your smart phone.

E-mail us at [technicalpublications\\_prev@volvo.com](mailto:technicalpublications_prev@volvo.com) and type "ADD" in the subject to receive our warranty bulletins by e-mail.

# Special Bulletin

# SP15-304E

Date	Expiration	Release	Page
01.2015	01.2017	7	1(19)


REVISION E THIS REVISION SUPERSEDES THE PREVIOUS VERSION  
 For vehicles from F-7000, use power cable 3/0 p/n 069282

## ALTERNATOR REPLACEMENT WITH BOSCH HD10PLBH 150A Prevost vehicles

### DESCRIPTION

On the vehicles affected by this bulletin, the Bosch HD10 alternators need to be replaced with new Bosch HD10PLBH 150 Amps alternators.

### MODEL YEAR(S) AND VEHICLES INVOLVED

Model	VIN 																				
NYCT X3-45 Commuter coaches Model Year : 2012, 2014, 2015	From 2PCG33495CC735053 up to 2PCG33495CC735232 incl.  And  <table border="0"> <tr> <td>4RKG33495F9737000</td> <td>4RKG3349XF9737011</td> </tr> <tr> <td>4RKG33499F9737002</td> <td>4RKG33491F9737012</td> </tr> <tr> <td>4RKG33490F9737003</td> <td>4RKG33493F9737013</td> </tr> <tr> <td>4RKG33492F9737004</td> <td>4RKG33495F9737014</td> </tr> <tr> <td>4RKG33494F9737005</td> <td>4RKG33497F9737015</td> </tr> <tr> <td>4RKG33496F9737006</td> <td>4RKG33499F9737016</td> </tr> <tr> <td>4RKG33498F9737007</td> <td>4RKG33490F9737017</td> </tr> <tr> <td>4RKG3349XF9737008</td> <td>4RKG33492F9737018</td> </tr> <tr> <td>4RKG33491F9737009</td> <td>4RKG33494F9737019</td> </tr> <tr> <td>4RKG33498F9737010</td> <td>4RKG33494F9737022</td> </tr> </table>	4RKG33495F9737000	4RKG3349XF9737011	4RKG33499F9737002	4RKG33491F9737012	4RKG33490F9737003	4RKG33493F9737013	4RKG33492F9737004	4RKG33495F9737014	4RKG33494F9737005	4RKG33497F9737015	4RKG33496F9737006	4RKG33499F9737016	4RKG33498F9737007	4RKG33490F9737017	4RKG3349XF9737008	4RKG33492F9737018	4RKG33491F9737009	4RKG33494F9737019	4RKG33498F9737010	4RKG33494F9737022
4RKG33495F9737000	4RKG3349XF9737011																				
4RKG33499F9737002	4RKG33491F9737012																				
4RKG33490F9737003	4RKG33493F9737013																				
4RKG33492F9737004	4RKG33495F9737014																				
4RKG33494F9737005	4RKG33497F9737015																				
4RKG33496F9737006	4RKG33499F9737016																				
4RKG33498F9737007	4RKG33490F9737017																				
4RKG3349XF9737008	4RKG33492F9737018																				
4RKG33491F9737009	4RKG33494F9737019																				
4RKG33498F9737010	4RKG33494F9737022																				
<i>The above list of VIN was valid at the time of publishing this document. Please refer to SAP for most recent information about outstanding vehicles</i>																					

## MATERIAL

Order the following parts:




Part No.	Description	Qty
069222	POWER CABLE 3/0 (CIRCUIT 102A) <i>vehicles from C-5053 up to C-5232 (90 first busses)</i>	1
069282	POWER CABLE 3/0 (CIRCUIT 102A) <i>vehicles starting from F-7000 (2nd contract)</i>	1
502573	WASHER, FLAT M6 STAINLESS STEEL	2
504637	CABLE TIE	15
507664	CABLE TIE, DOUBLE LOOP	12
509491	CABLE TIE, WIDE	10
564590	ADAPTER	1
564593	ALTERNATOR, BOSCH HD10PLBH 28V 150A	2
5001182	NUT, M6 STAINLESS STEEL	2
5001341	WASHER, FLAT M8 STAINLESS STEEL	3
5001787	NUT, M8 STAINLESS STEEL	2
500169	SCREW, CAP ¼-20 x 1 ½ GR5	3
502716	NUT, NYRT ¼-20	3
509490	DOUBLE-TIE MOUNT, HELLERMANN TYTON, GREY	3
504751	ANCHOR, DOUBLE SWIVEL HELLERMANN TYTON	1

Other parts or products that **may** be required:

Part No.	Description	
684013	COLOR GUARD RUBBER COATING, 14.5 OZ CAN	
5001853	BOLTS, ALTERNATOR MOUNTING M12 x 130mm lg	QTY: 2
5001728	NUTS, ALTERNATOR MOUNTING M12	QTY: 2
680038	LOCTITE 243, BLUE	
685353	TORQUE SEAL, YELLOW	
680335	ANTI-SEIZE COMPOUND	

Date	Expiration	Release	Page
01.2015	01.2017	7	3(19)

## REQUIRED TOOLS

<b>RATCHET AND SOCKET SET - METRIC</b> 	<b>TORQUE WRENCH</b> 
<b>BRASS WIRE CUP BRUSH</b> 	

## SPECIAL TOOLS REQUIRED TO TIGHTEN THE ALTERNATOR PULLEY MOUNTING NUT



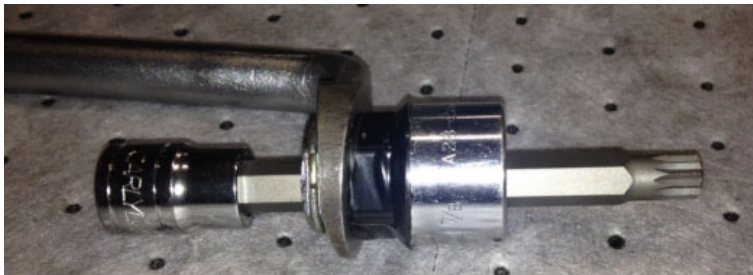
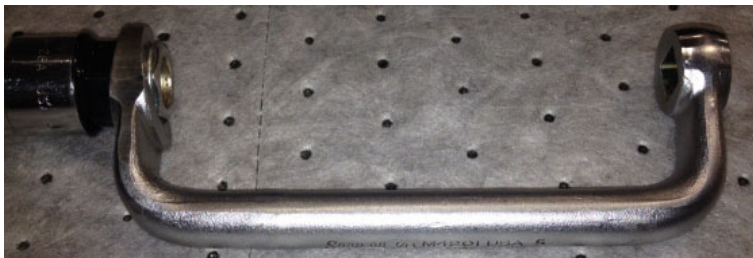
**METRIC 10mm 12-POINTS SPLINE DRIVE LONG (CARLYLE SLTS3810M AVAILABLE FROM NAPA )**



**OFFSET 7/8 WRENCH (CYLINDER HEAD WRENCH), SNAP-ON PART NUMBER M4201**

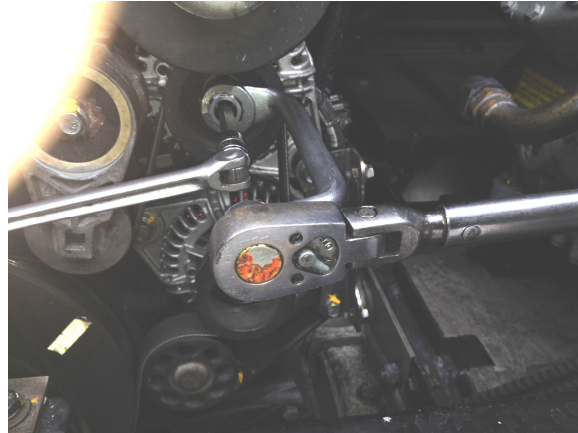


**7/8 SOCKET (PART NUMBER WA28-28A)**



**OFFSET 7/8 WRENCH FITTED WITH 7/8 SOCKET AND 10mm 12-POINTS SPLINE DRIVE**

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USING THE CYLINDER HEAD WRENCH WITH A RATCHET AND A FLEX SOCKET WRENCH

## PROCEDURE



### DANGER

Park vehicle safely, apply parking brake, stop engine. In the battery box, set the battery cut-off switch to the OFF position prior to working on the vehicle.

1. Remove the A/C compressor belts and then remove A/C compressor idler pulley bracket assembly (3 bolts to be removed, FIGURE 1).



FIGURE 1

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2. Remove the alternator belt (FIGURE 2).
3. Unscrew the alternator pulley mounting nut (FIGURE 2).
4. Remove the alternator pulley (2 pulleys) (FIGURE 2).

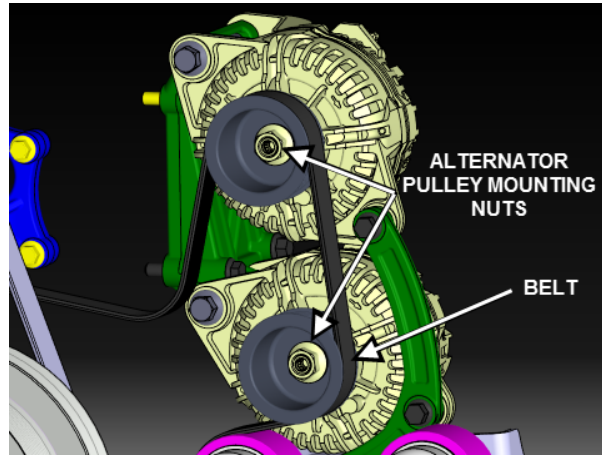


FIGURE 2

5. Remove the existing alternators. To do so, unscrew identified mounting bolts on FIGURE 3 and retain for reuse if in good condition.
6. Identify alternator cables and then disconnect cables. Properly clean cable ring terminals as applicable using a brass wire cup brush, a Scotch-Brite pad or an emery cloth. Take note that the existing power cable identified 102A connected to the upper alternator will not be reused.



BRASS WIRE CUP BRUSH

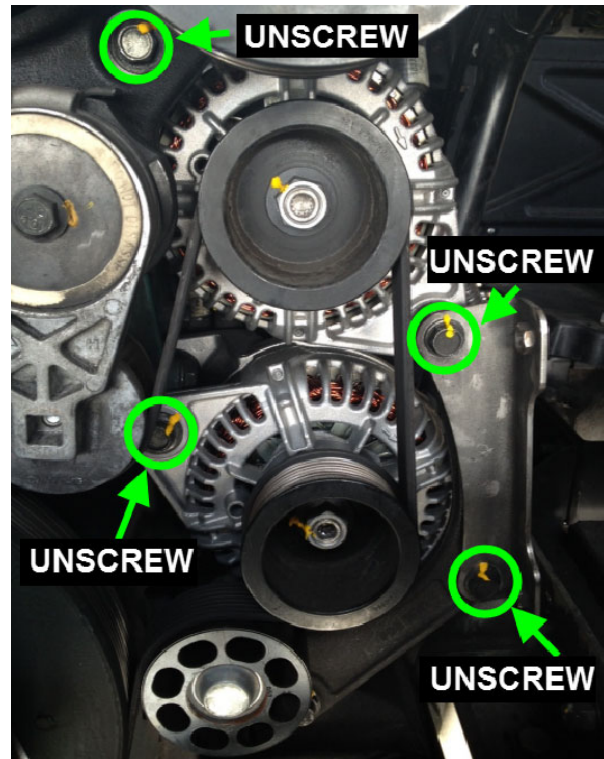


FIGURE 3

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- Install new alternators. Fix lower and upper alternators loosely to alternator supports using bolts **C**. Apply anti-seize compound inside the alternator mounting ears and inside the sleeves found on the support attached to the engine (see location **C** on **FIGURE 4**). Also, mount arched support loosely onto alternators using bolts **B** (**FIGURE 4**). If applicable, install stone guard.

**NOTE: Reuse existing bolts unless they are not in good condition (damaged, pitted, eroded).**

For reference:

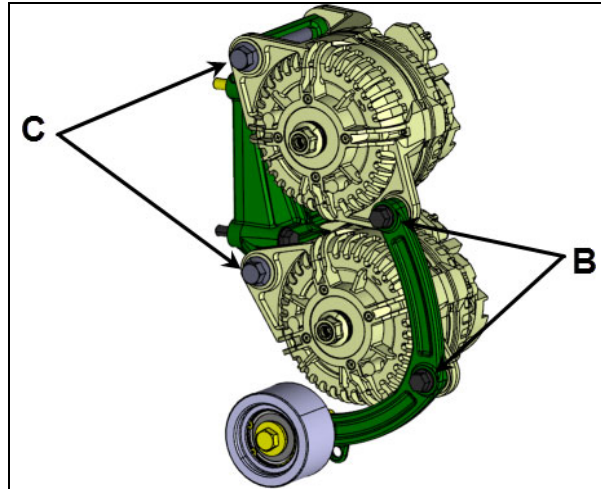
C= nut M12 #5001728

C= bolt M12 #5001853

B= nut M10 #5001727

B= bolt M10 #5001801 (upper one)

B= bolt M10 #5001843 (lower one)



**FIGURE 4**

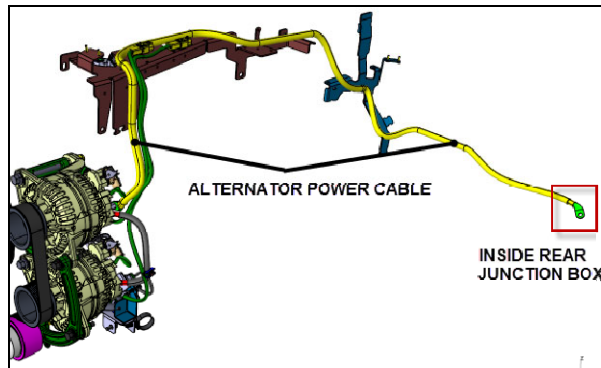
- Replace the existing power cable (circuit 102A) (**FIGURE 5**) with new power cable (#069222 or #069282 as applicable). This cable is routed from the upper alternator B1+ stud terminal up to the 24VI junction block in the rear junction box (**FIGURE 6**, **FIGURE 7**, **FIGURE 8**).

**NOTE:** The red junction block rubber cap is identified "BUSSMAN".

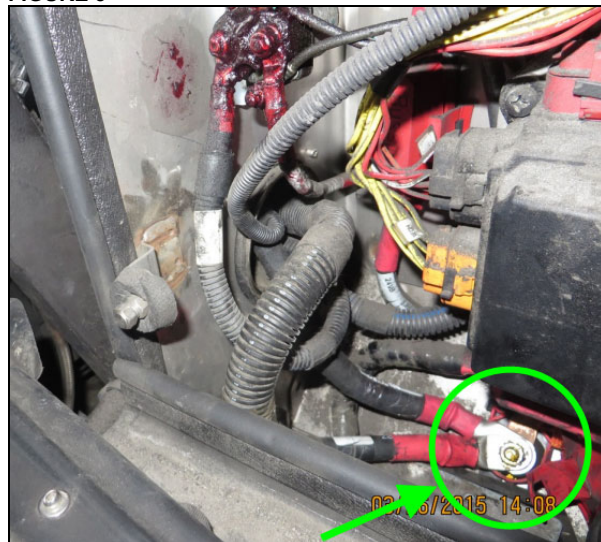
- While removing 102A, separate the AFSS LTD wire from power cable. It will be reinstalled on new power cable 102A similarly using appropriate nylon ties later on.
- It is recommended to install the new power cable simultaneously with the removal of former power cable already there in order to use up to a certain point, the same attachment points and to place appropriate nylon ties at the same locations. Start in the rear junction box.

Installation of power cable 3/0 will required the use of 3 HellermannTyton double-tie mounts #509490 and corresponding hardware: 3x cap screw #500169, 3x nylon insert nut #502716, 3x wide nylon tie #509491 and 3x nylon tie #504637. Use **FIGURE 9**, **FIGURE 10**, **FIGURE 11**, **FIGURE 12**, **FIGURE 13** as reference to complete the installation.

HellermannTyton double-tie mounts mounting screw torque: **8 lbf-ft.**



**FIGURE 5**



**FIGURE 6: POWER CABLE 102A CONNECTED TO BUSSMAN JUNCTION BLOCK - *TORQUE 10 lbf-ft.* APPLY YELLOW TORQUE SEAL AND THEN APPLY COLOR GUARD RUBBER COATING**

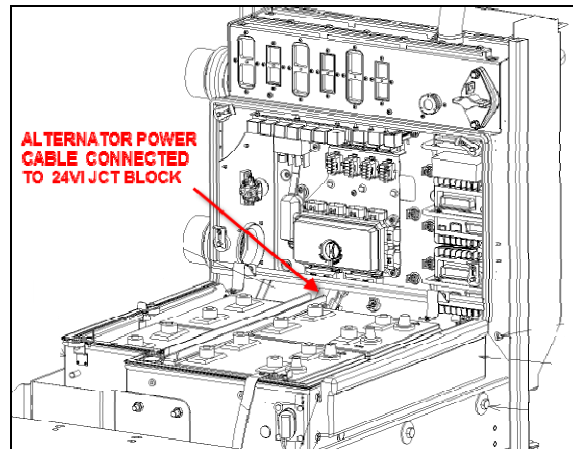


FIGURE 7

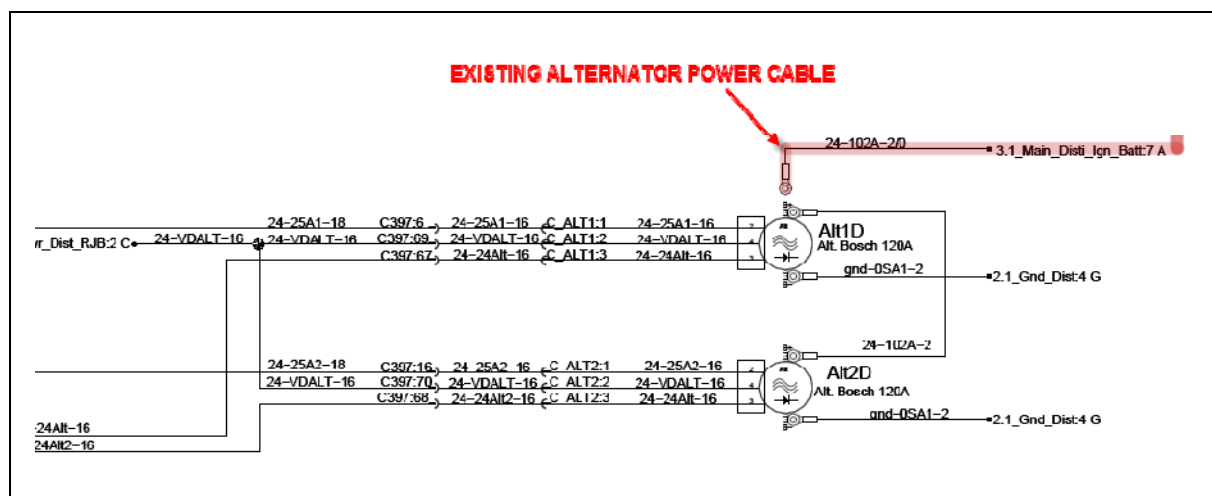
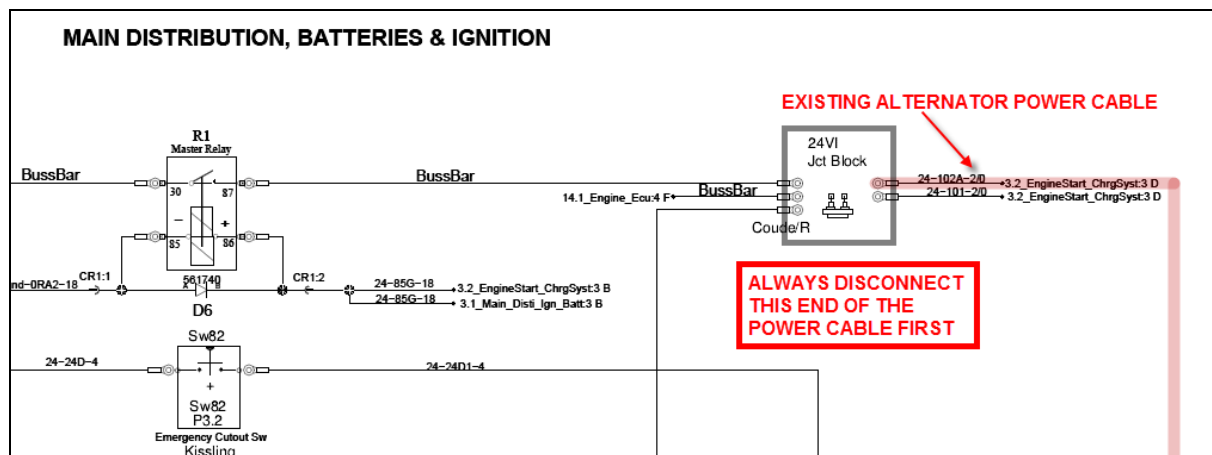
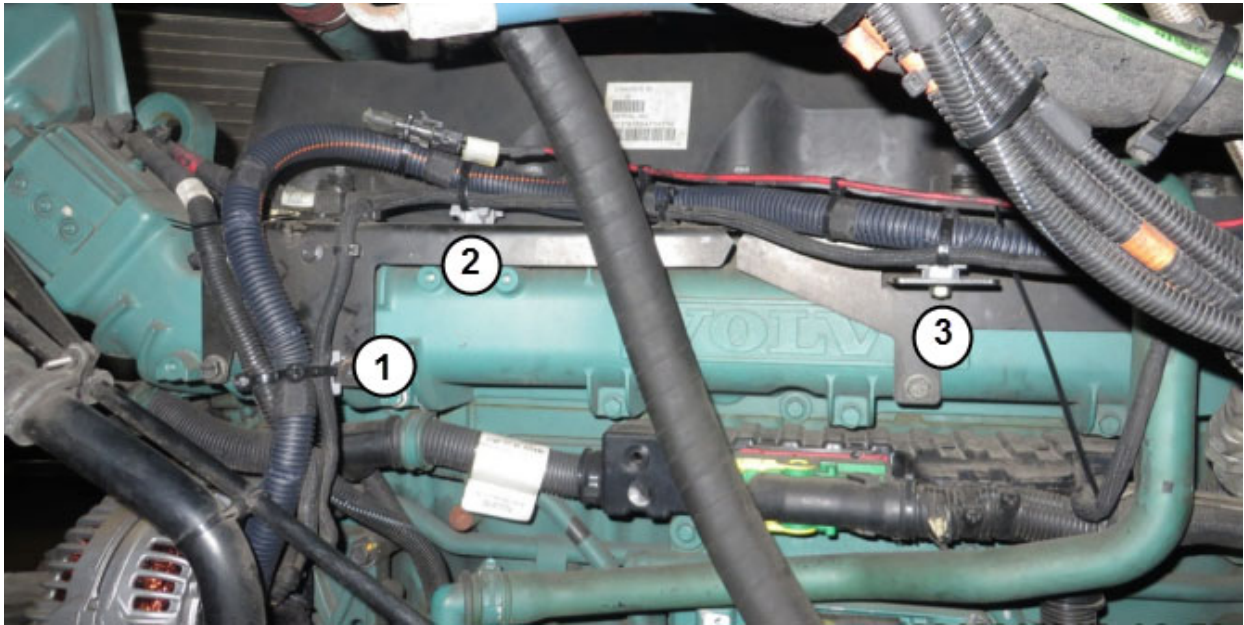


FIGURE 8

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**FIGURE 9: POWER CABLE ATTACHED TO #1, #2, #3 DOUBLE-TIE MOUNT AND PROPER NYLON TIES INSTALLATION**

HellermannTyton double-tie mounts mounting screw torque: **8 lbf-ft.**

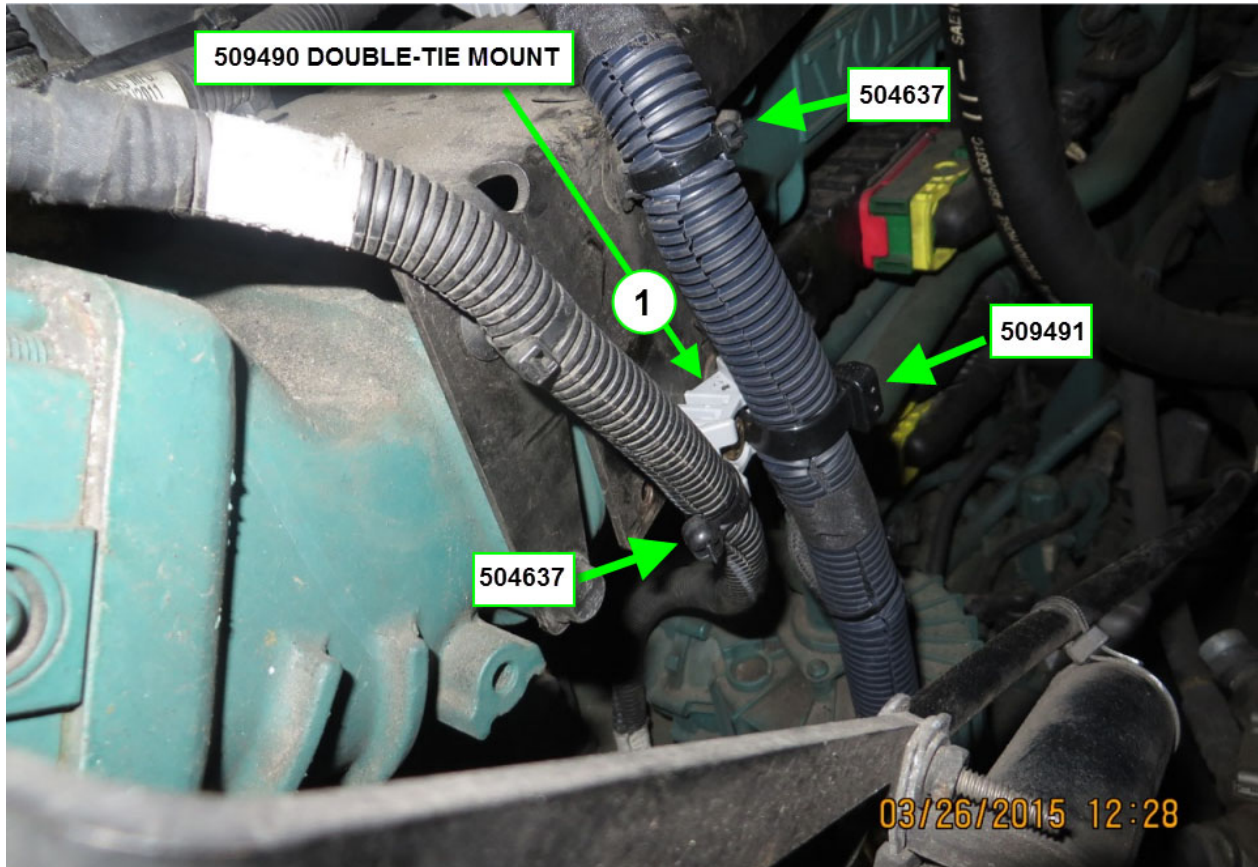


FIGURE 10: POWER CABLE ATTACHED TO #1 DOUBLE-TIE MOUNT AND PROPER NYLON TIES INSTALLATION

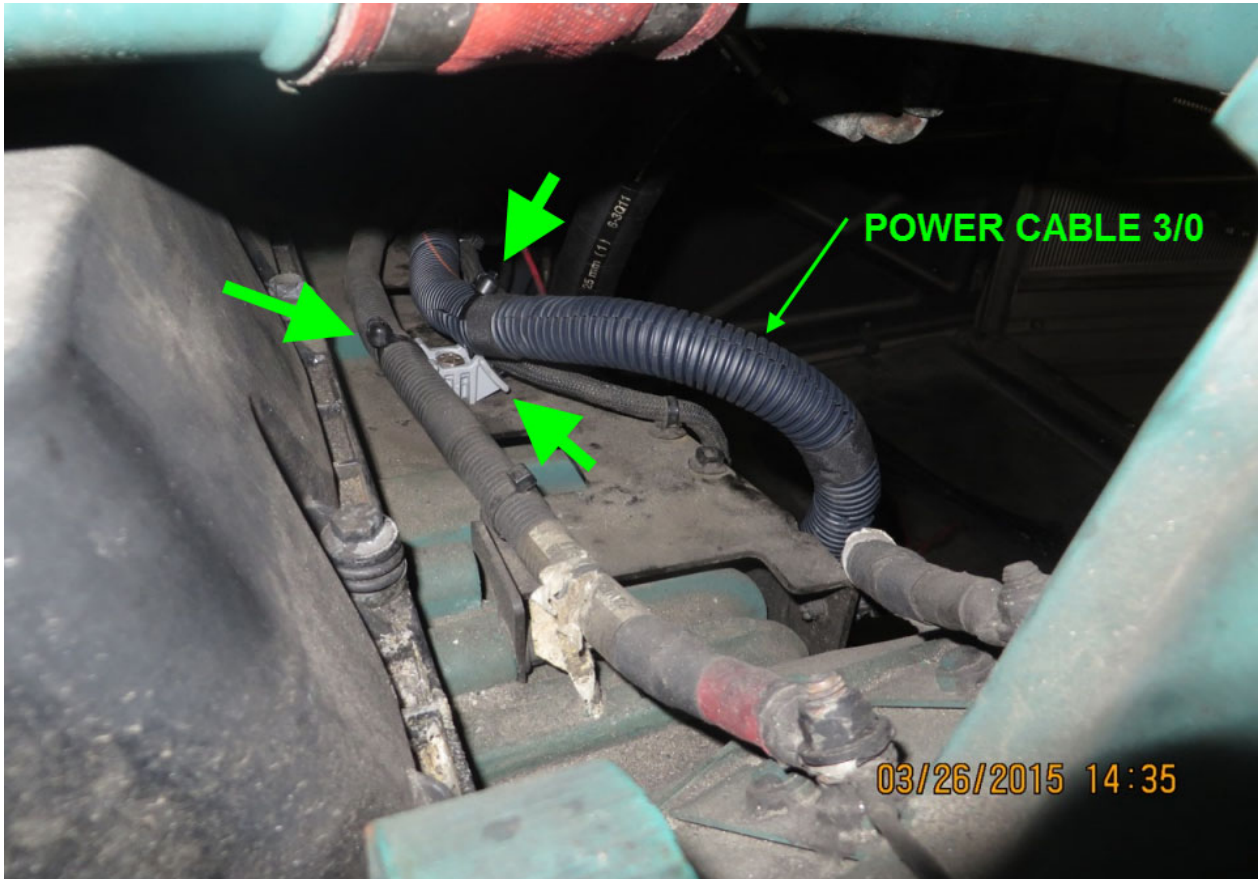


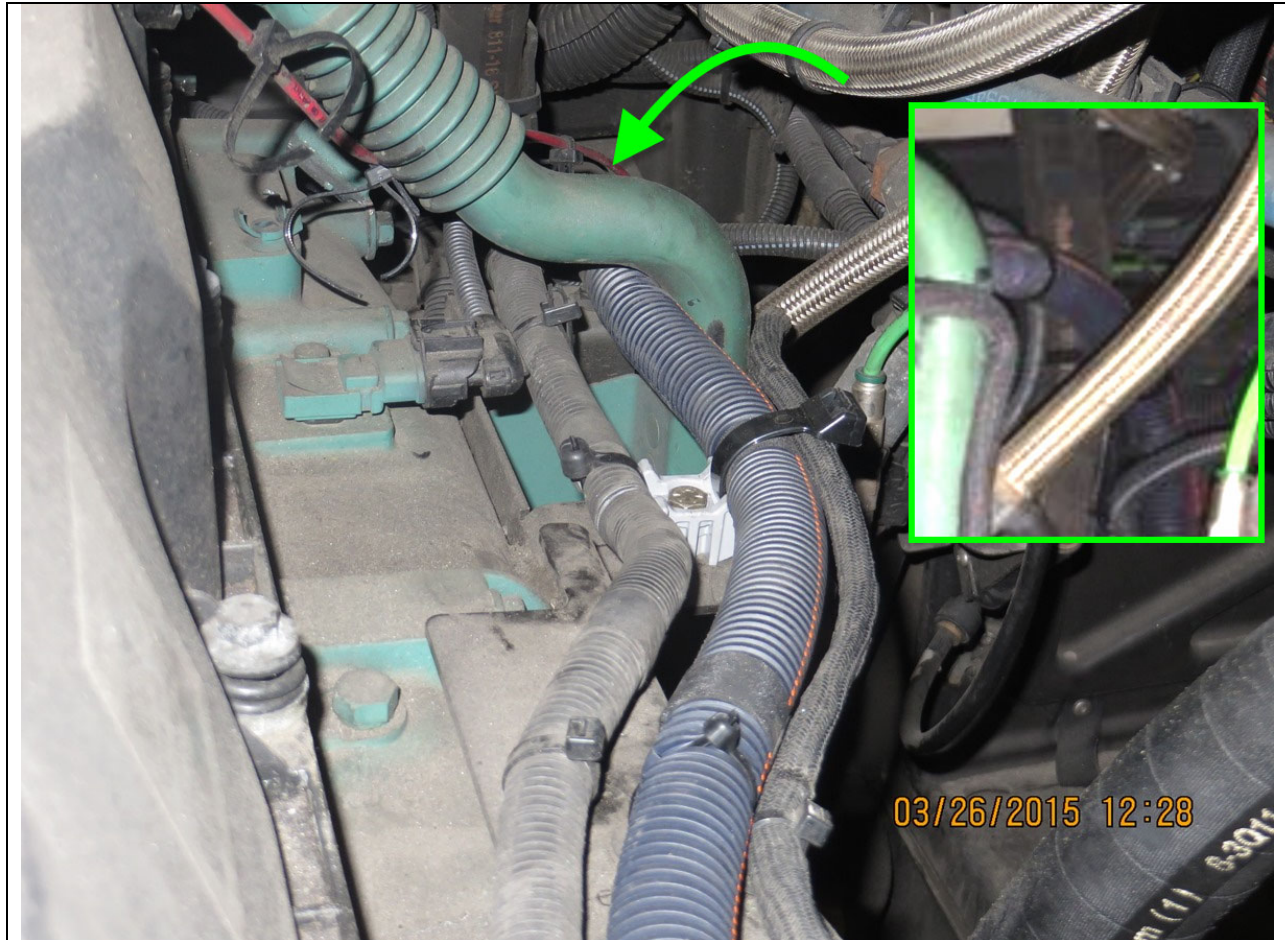
FIGURE 11: POWER CABLE ATTACHED TO #2 DOUBLE-TIE MOUNT AND PROPER NYLON TIES INSTALLATION



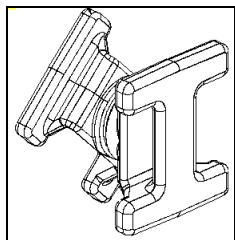
FIGURE 12: POWER CABLE ATTACHED TO #2 DOUBLE-TIE MOUNT AND PROPER NYLON TIES INSTALLATION



FIGURE 13: POWER CABLE ATTACHED TO #2, #3 DOUBLE-TIE MOUNT AND PROPER NYLON TIES INSTALLATION



**FIGURE 14: USING DOUBLE SWIVEL ANCHOR AND 2 WIDE NYLON TIES, SECURE THE POWER CABLE TO THE AIR COMPRESSOR INLET HOSE**



**DOUBLE SWIVEL ANCHOR**

9. Reinstall the LTD along the power cable using double-loop nylon ties #507664. For proper installation and location, refer to FIGURE 9 to FIGURE 13. You can also refer to the pictures of the production line standard installation; see FIGURE 15 to FIGURE 19 to do so.

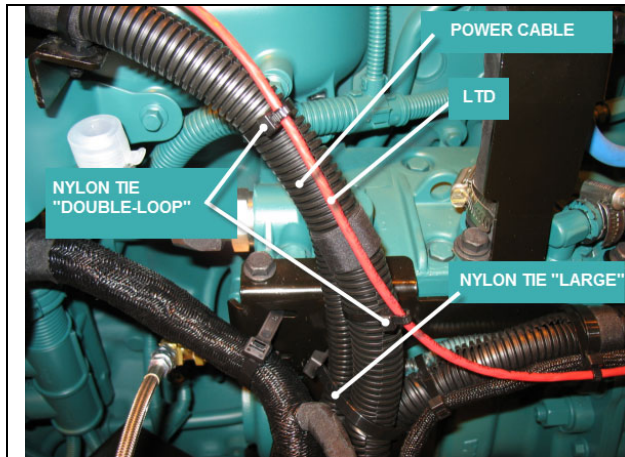


FIGURE 15

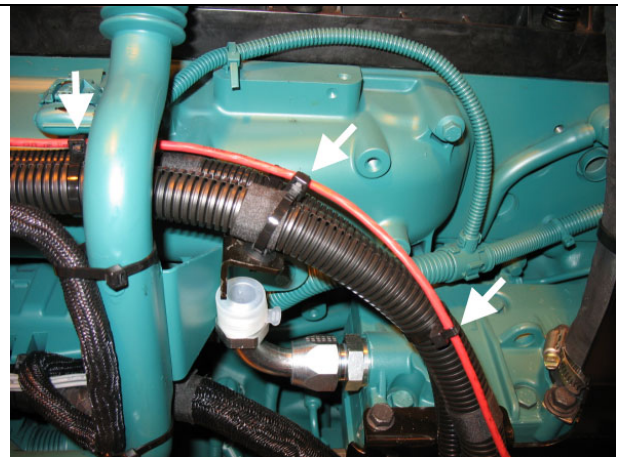


FIGURE 16

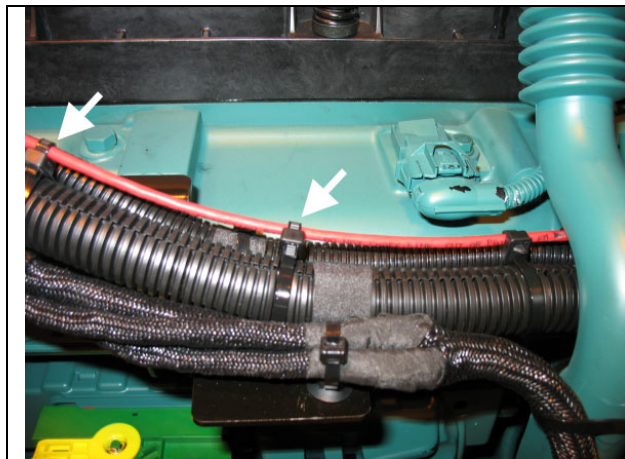


FIGURE 17

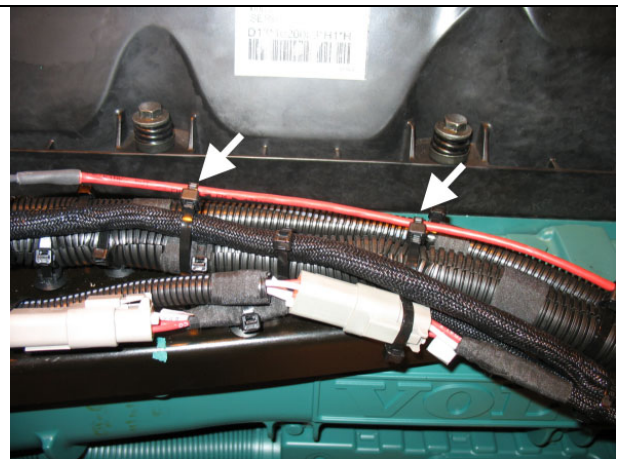


FIGURE 18



FIGURE 19

10. In order to assure proper installation, it is important to tighten the alternator mounting bolts in proper sequence. Use Loctite 243 blue on threads (FIGURE 20). Once properly torqued, apply yellow torque seal.

1<sup>st</sup> Bolt/Nut B, 43 lbf-ft (2x).

2<sup>nd</sup> Bolt/Nut C, 74 lbf-ft (2x).

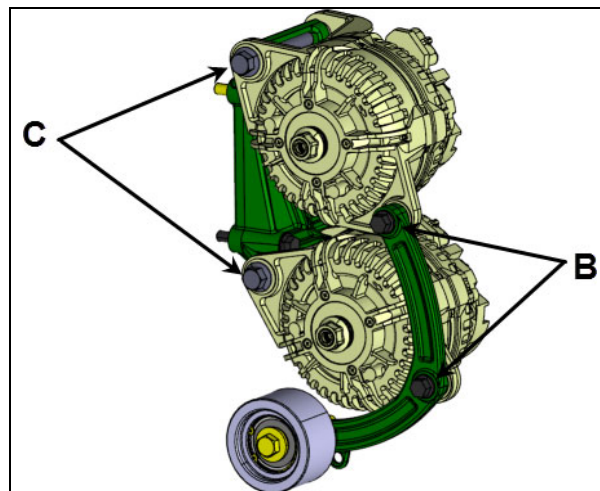
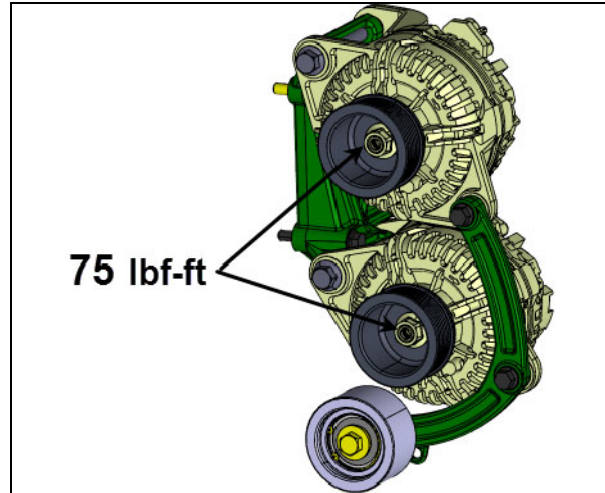


FIGURE 20

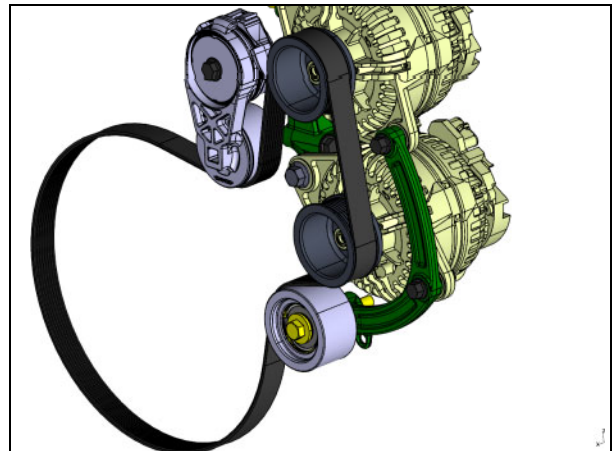
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11. Mount pulley onto alternators (**FIGURE 21**). Use Loctite 243 blue on threads. Tighten pulley mounting nut to **75 lbf-ft** using Prevost tool and a M10 12-points spline drive mounted on a torque wrench (refer to the end of this document for details concerning special tools). Once properly torqued, apply yellow torque seal.



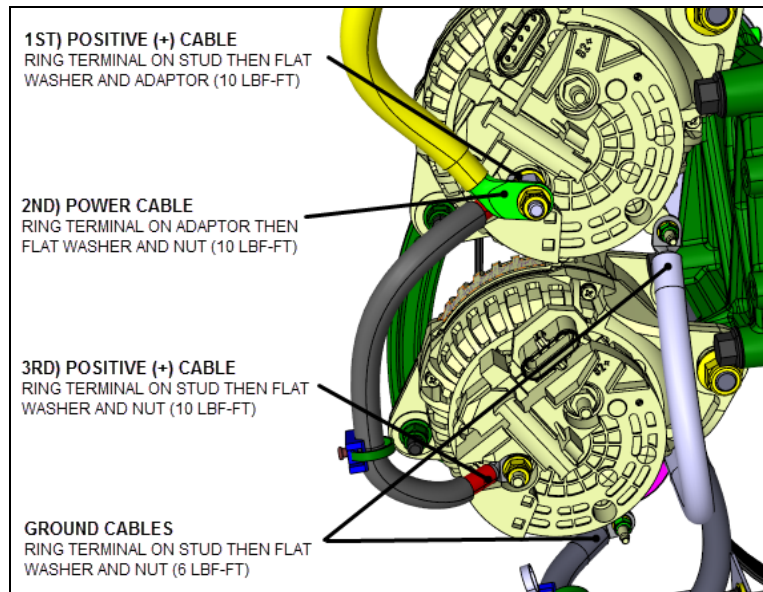
**FIGURE 21**

12. Install the alternator belt (**FIGURE 22**)



**FIGURE 22**

13. Cable connection overview. Upper and lower alternator (**FIGURE 23**).



**FIGURE 23**

## UPPER ALTERNATOR - (use new hardware for cable connection)

### 14. Power cable and jumper (positive) cable.

- Install jumper cable (a.k.a. positive cable) onto **B1+** stud terminal on upper alternator (FIGURE 24).
- Place one new flat washer #5001341 against the cable ring terminal (FIGURE 24).
- Screw and tighten the adapter stud #564590 (torque: 10 lbf-ft) (FIGURE 24) prior installing power cable.
- Fit the power cable terminal onto adaptor stud, place one new flat washer #5001341 against the power cable terminal and screw a new nut #5001787 (nut torque: 10 lbf-ft) (FIGURE 24).

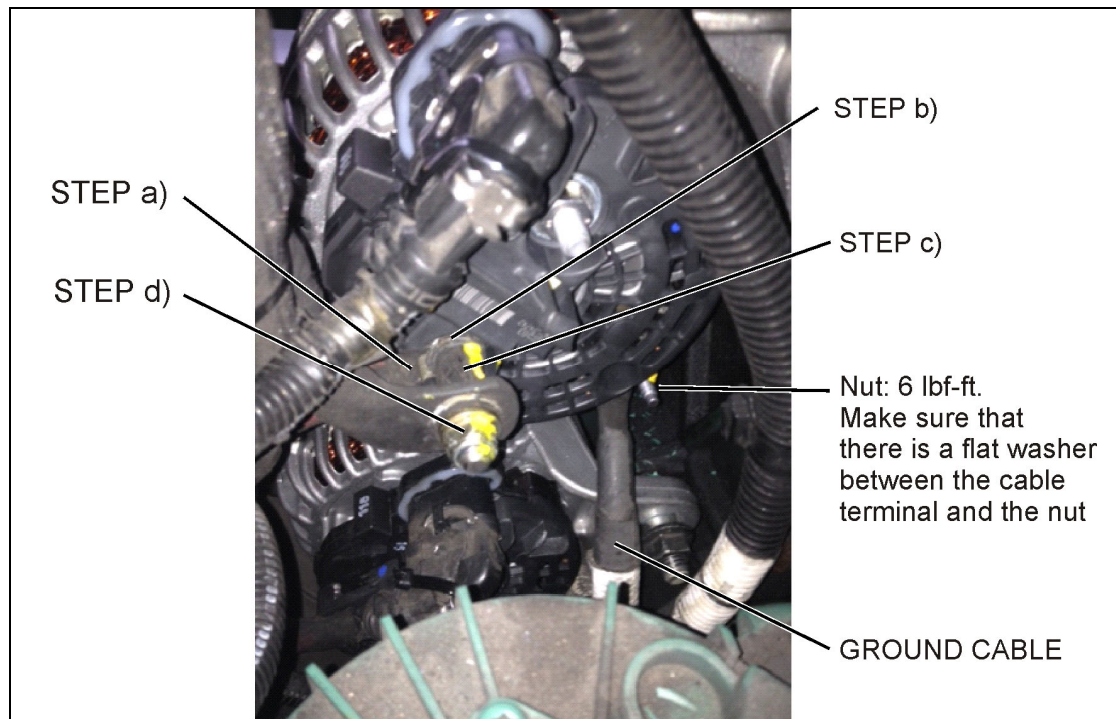


FIGURE 24

- Fit the ground cable onto the alternator ground stud, place one new flat washer #502573 against the ground cable terminal and screw a new nut #5001182 (nut torque: 6 lbf-ft) (FIGURE 24).
- Plug alternator harness onto alternator connector and secure using nylon cable ties (FIGURE 25).

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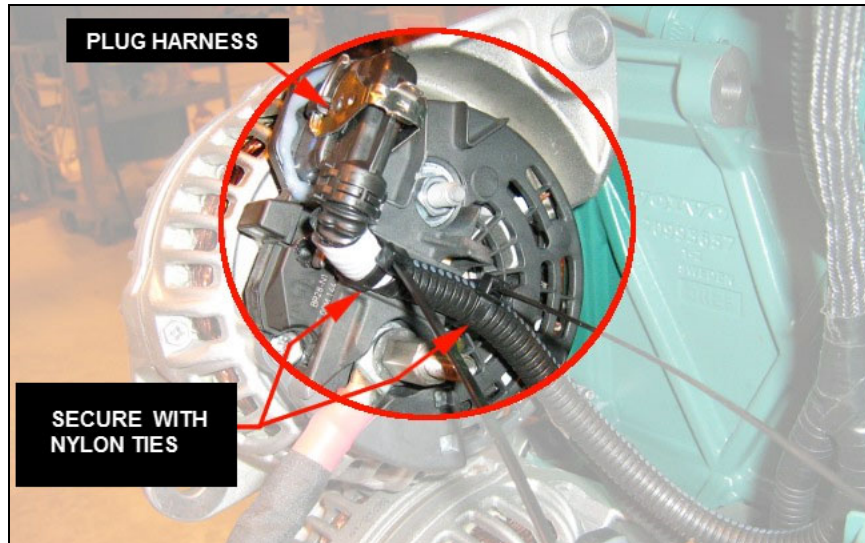


FIGURE 25

## LOWER ALTERNATOR - (use new hardware for cable connection)

### 17. Jumper (positive) cable.

- Fit jumper cable (positive cable) onto **B1+** stud terminal on lower alternator (FIGURE 26).
- Place one new flat washer #5001341 against the cable ring terminal and screw new nut #5001787 (nut torque: 10 lbf-ft) (FIGURE 26).
- Fit the ground cable onto the alternator ground stud, place one new flat washer #502573 against the ground cable ring terminal and screw a new nut #5001182 (nut torque: 6 lbf-ft) (FIGURE 26).

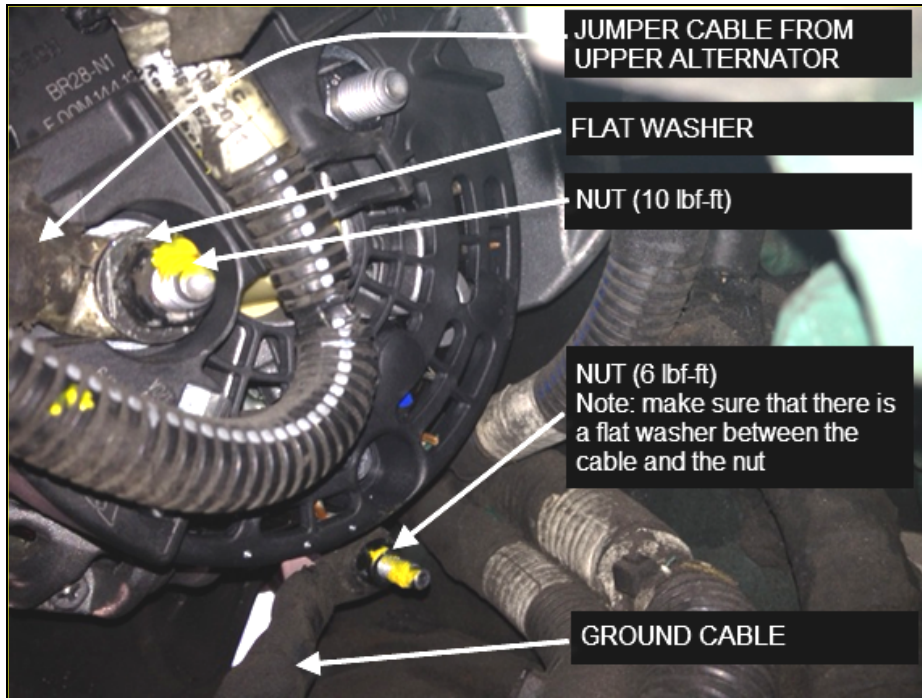


FIGURE 26

18. Plug lower alternator harness onto lower alternator connector and secure using two nylon cable ties #504637 (FIGURE 27).

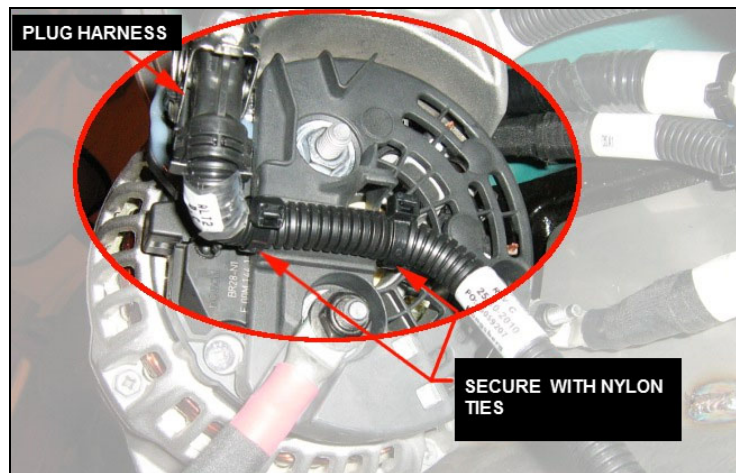


FIGURE 27

19. Apply torque seal according to normal procedure. Apply anti-corrosion compound on alternator terminals and cable ring terminals or use color guard rubber coating #684013 if available.
20. Reinstall the A/C compressor idler pulley bracket assembly (FIGURE 28). Apply Loctite 243 on threads. Reinstall the A/C compressor belts.
21. Finally, check that all cables are properly installed, start engine and check for proper functioning. Check for proper functioning of charging system.

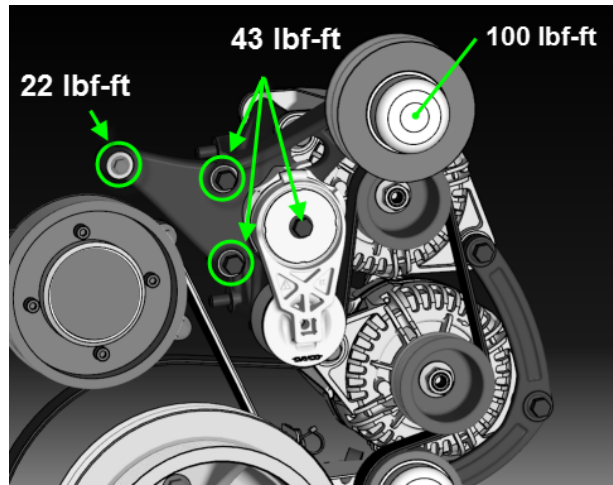


FIGURE 28

## PARTS / WASTE DISPOSAL

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

## ESTIMATED TIME

The time required to perform this special bulletin is approximately four (4.0) hours.

## OTHER

VBC Bulletin	N/A
Fail Code	06.01
Defect Code	09
System Condition	B
Causal Part	564119

Prevost engages in a continuous program of testing and evaluating to provide the best possible product. Prevost, however, is not committed to, or liable for updating existing products.

# Special Bulletin

# SP16-301

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Revision \_: This document supersedes previous revisions.

## VARIABLE GEOMETRY TURBOCHARGER (SRA) - ACTUATOR REPLACEMENT

Prevost vehicles

### DESCRIPTION

On the vehicles affected by this bulletin, replace the turbocharger actuator (SRA).

### MODEL YEAR(S) AND VEHICLES INVOLVED

<b>NOTICE TO SERVICE CENTERS</b>	
<i>Verify vehicle eligibility by checking warranty bulletin status with <b>SAP</b> or via <b>ONLINE WARRANTY SYSTEM</b> available on Service / Warranty tab of Prevost website.</i>	
Model	VIN
X3-45 Commuter Model Year : 2012	From 2PCG33495CC73 <b>5053</b> up to 2PCG33495CC73 <b>5232</b> 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.	

### MATERIAL NEEDED

Order kit "SP16-301" which consists in:

Part No.	Description	Qty
85013731	ACTUATOR, TURBOCHARGER – SERVICE KIT	1

<b>NOTE</b>
<i>Material can be obtained through regular channels.</i>

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## 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. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.



## PREPARATION

1. Apply the parking brake and shift the transmission to neutral. Shut off all electrical loads. Turn the ignition key to the OFF position.
2. Open the engine compartment door. Set the rear start selector switch to the OFF position (FIGURE 1).

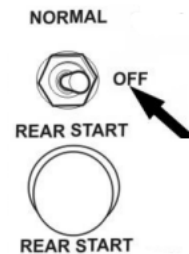


FIGURE 1

3. Using pressure wash equipment, clean the turbocharger actuator while it is still mounted.

**Note:** Make sure all electrical connections and coolant pipes in the area of the turbocharger actuator are securely fastened.

4. Use a coolant extractor (FIGURE 2) to drain the coolant from the engine. An alternate method is to drain the coolant into a suitable container using the drain hose.



FIGURE 2

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## GAINING ACCESS TO THE AREA

- In order to reach the turbocharger area, the radiator coolant return pipe shown on FIGURE 3 along with the furthest flexible hose must be removed.

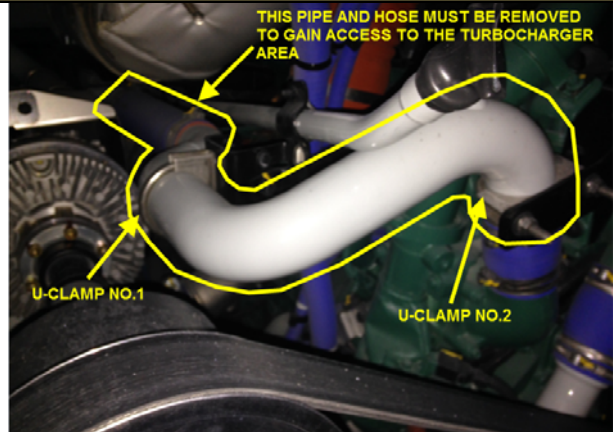


FIGURE 3

- Loosen the hose clamps (4 clamps) shown on FIGURE 4.
- Remove the two (2) U-clamps shown on FIGURE 4.
- Take the pipe out and the flexible hose with it.

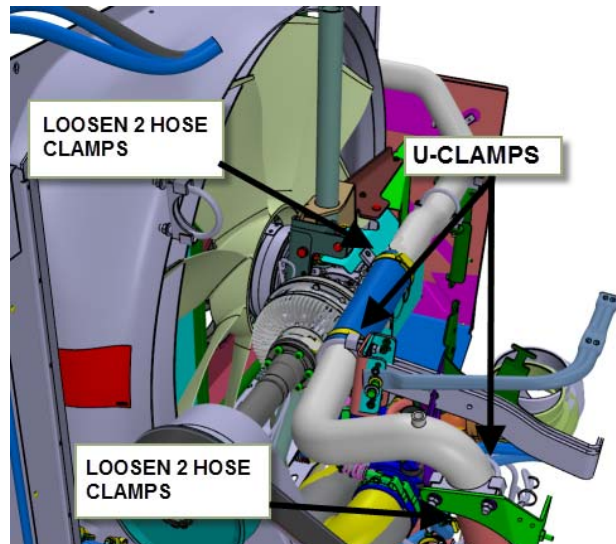


FIGURE 4

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## REMOVAL

9. Disconnect the actuator assembly electrical connector at the wiring harness (FIGURE 5). Cut any tie straps as needed.

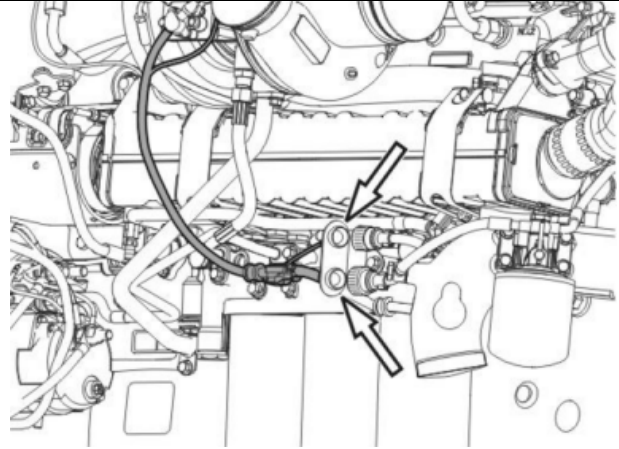


FIGURE 5

10. Disconnect the coolant lines from the actuator (FIGURE 6).

**Caution:** Protect the insides of the actuator assembly and the exposed parts from contamination when removed. Failure to do so can result in component malfunction or failure.

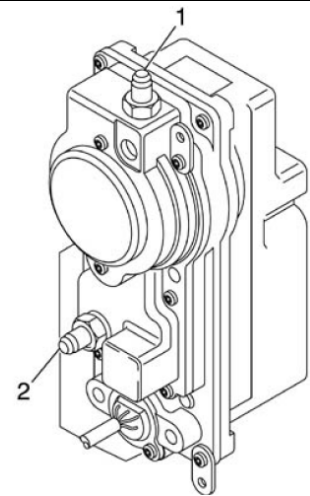


FIGURE 6

- 1) Coolant Return Port
- 2) Coolant Inlet Port

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11. Remove the actuator from the turbocharger.  
Remove and discard the gasket (FIGURE 7).

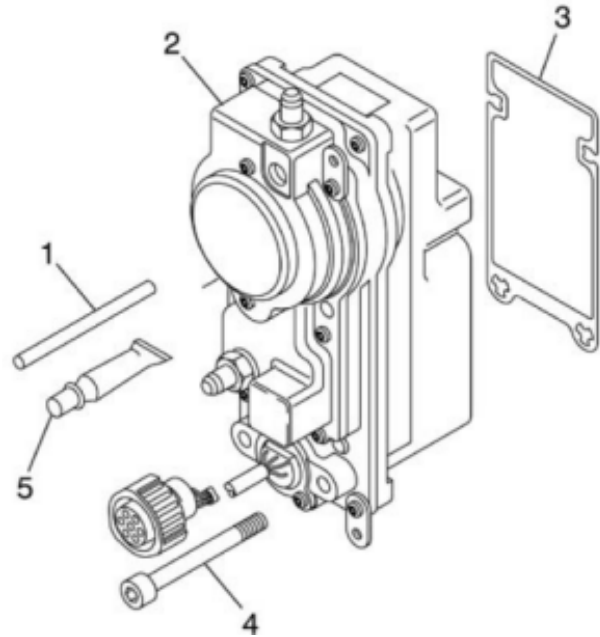


FIGURE 7

- 1) Alignment Pin
- 2) Actuator Housing
- 3) Gasket
- 4) Screw (4 Required)
- 5) Grease Applicator Tube

## INSTALLATION

12. Using gloves, manually rotate the turbocharger sector gear back and forth (counterclockwise and clockwise) (FIGURE 8). It should be noted that when the sector gear is at the end of travel, or at an end stop, it can require significant force to overcome friction then, start its motion in the opposite direction. This is normal and not cause for concern. Apply more force to move the sector gear. Once in motion, the sector gear movement should be smooth, without binding or sticking until it reaches its end of travel (end stop).

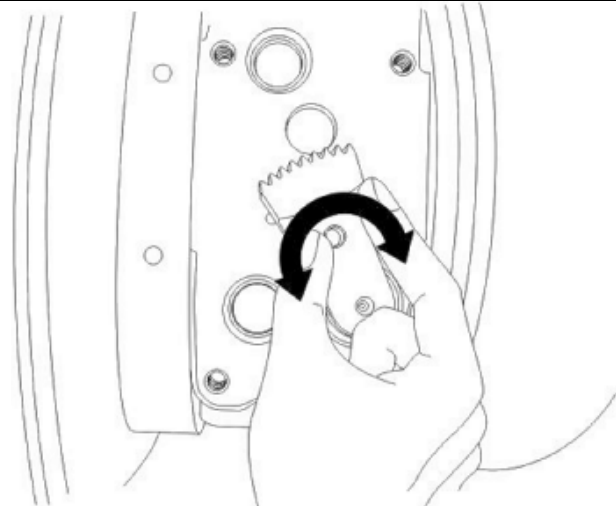


FIGURE 8

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13. Rotate the sector gear fully counterclockwise until contact is made with the end stop of the variable geometry internal mechanism. 1/4 to 3/4 of the 3mm (0.118 inch) reference hole should be visible at the edge of the sector gear nearest the turbine housing (FIGURE 9).

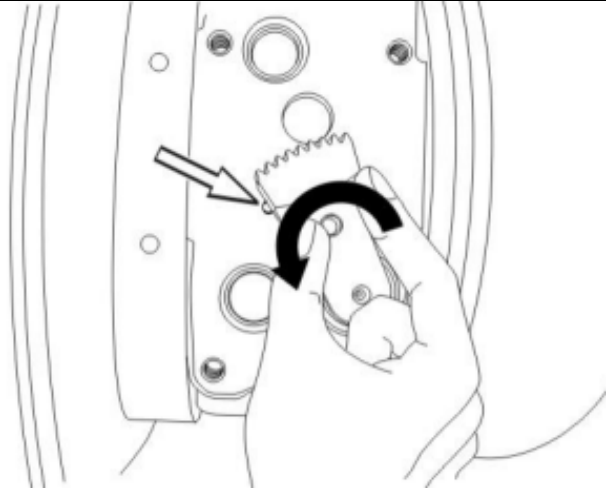


FIGURE 9  
ALIGNMENT HOLE INSPECTION, 3MM (0.118 INCH) HOLE

14. For turbochargers manufactured without the small 3mm (0.118 inch) alignment hole, a portion (half) of the 5mm (0.197 inch) alignment hole should be exposed at the compressor housing side of the sector gear when the sector gear is fully rotated toward the turbine housing (FIGURE 10).

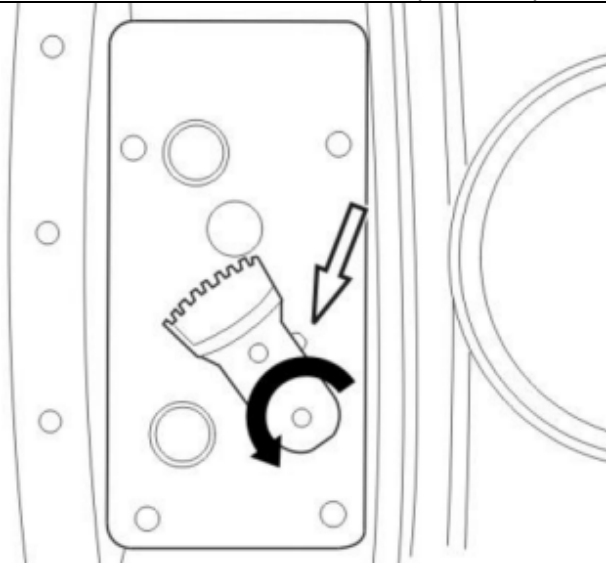


FIGURE 10  
ALIGNMENT HOLE INSPECTION, 5MM (0.197 INCH) HOLE

15. Rotate the sector gear fully clockwise. Make sure that the alignment pin fits through the sector gear into the alignment hole in the housing (FIGURE 11). The diameter of the alignment hole is 5mm (0.197 inch).

**Note:** If the sector gear does not align properly with the alignment hole or does not rotate properly in either direction, replace the turbocharger.

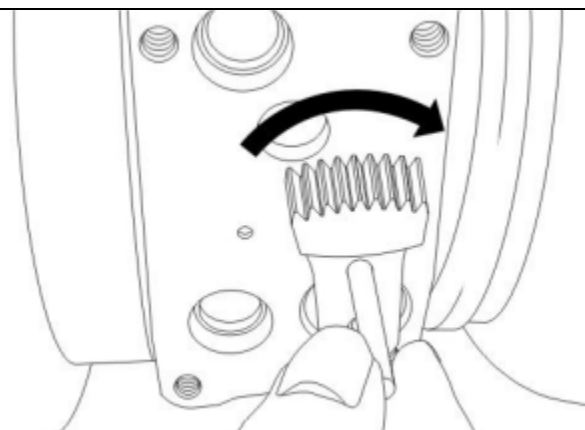


FIGURE 11

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16. Lubricate the sector gear teeth using the grease applicator tube that comes in the installation kit (FIGURE 12).

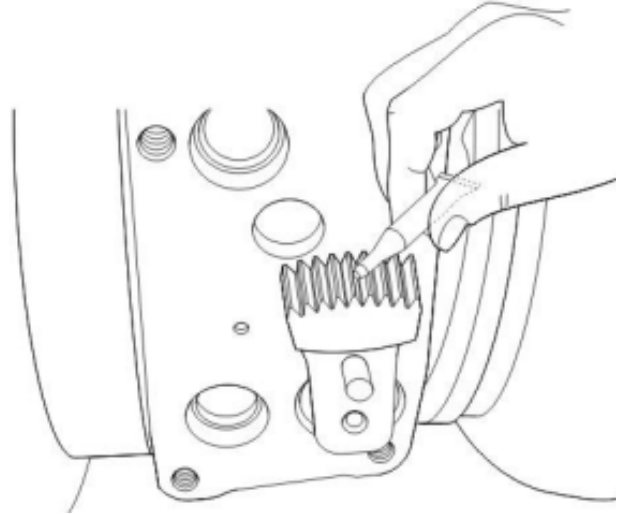


FIGURE 12

17. Remove the alignment pin without disturbing the position of the sector gear. The gear must not be moved from this position (FIGURE 13).

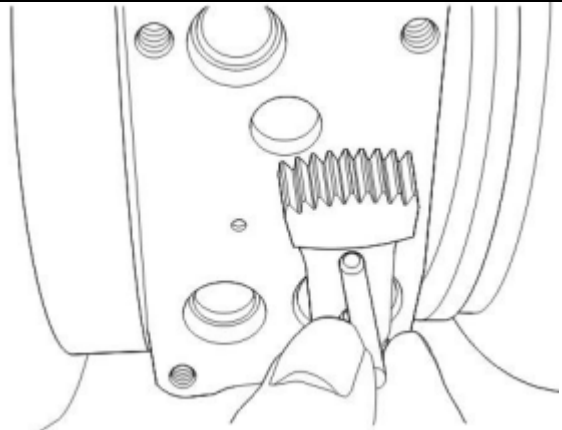


FIGURE 13

18. Connect the actuator electrical wiring harness connector to the engine wiring harness connector. Install tie straps as needed to secure the harness (FIGURE 14).

19. Connect the VCADS Pro PC to the vehicle diagnostic data connector and turn the ignition switch ON. Using the directions in VCADS Pro, command the actuator to the install position. Turn OFF the ignition switch when done.

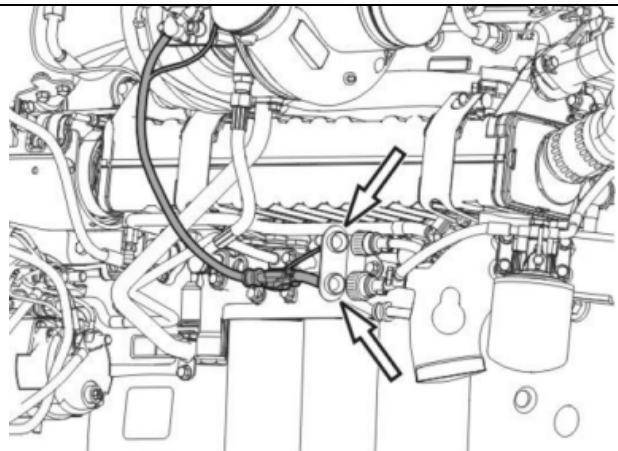


FIGURE 14

**Note:** Do not disturb the actuator drive gear after the gear is in the install position. Proper calibration of the actuator drive gear to the turbocharger sector gear must be maintained for proper operation.

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20. Install two new mounting screws diagonally across the actuator. Place a new gasket over the protruding screws at the back of the actuator (FIGURE 15).

**Note:** Always use the new screws and gasket provided in the actuator installation kit.

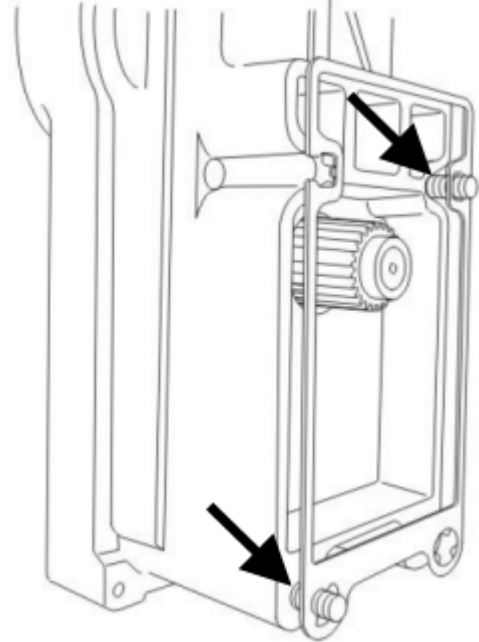


FIGURE 15

21. Carefully align the actuator with the turbocharger and install it into position. Hold the actuator in place and hand tighten the two screws. Install the two remaining new screws and finger-tighten. Use the following steps to tighten the screws (FIGURE 16).

**Tighten the screws in the pattern shown to 27 in-lbf (3 Nm)**

**Tighten the screws in the pattern shown to 97 in-lbf (11 Nm)**

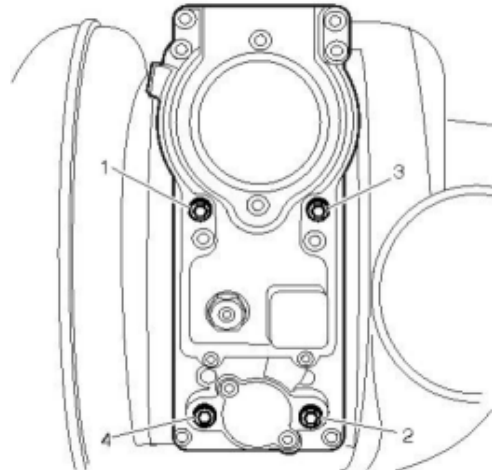


FIGURE 16

22. Connect the VCADS Pro PC to the diagnostic data connector and turn ON the ignition switch. Using the on screen directions in VCADS Pro, perform the VGT calibration procedure. If the actuator is installed correctly, the procedure indicates a successful VGT calibration. If the calibration fails, either the pre-positioning of the actuator drive gear is incorrect, the sector gear positioning is incorrect, the actuator is faulty or the turbocharger sector gear and nozzle ring mechanism is damaged. Turn OFF the ignition switch when done.
23. If the actuator is suspected of being faulty and requires replacement, follow the preceding installation steps with the new actuator.

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24. Connect the coolant lines to the actuator and tighten the fittings (FIGURE 17).

**coolant inlet & return port fitting:**

**12±3 Nm (9±2 lbf-ft)**

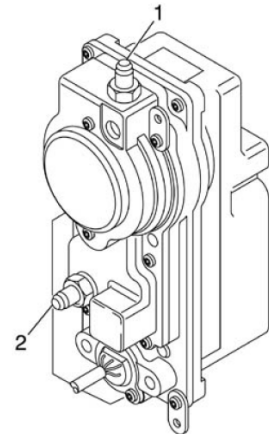


FIGURE 17

- 1) Coolant Return Port
- 2) Coolant Inlet Port

## REINSTALLATION OF COOLANT PIPE

25. Reinstall the coolant pipe loosely (A on FIGURE 18).

26. Place the two (2) hose clamps (B on FIGURE 18).

**Note: Pay attention to the position of the clamp. Refer to FIGURE 19.**

**Do not tighten to final torque**

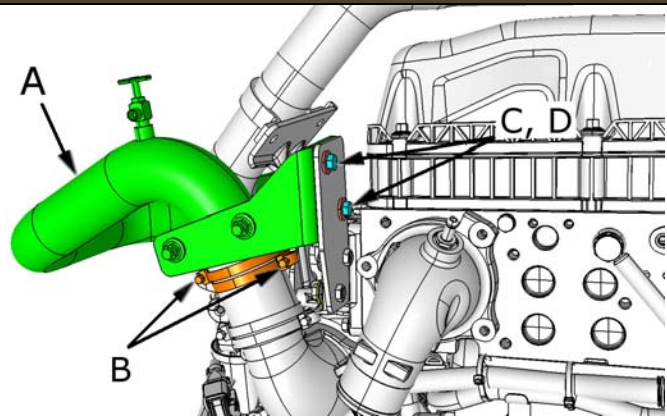


FIGURE 18

27. Connect the flexible hose at the furthest end of the coolant pipe.

28. Reinstall the U-clamps (2 U-clamps) loosely (FIGURE 19).

**Do not tighten to final torque**

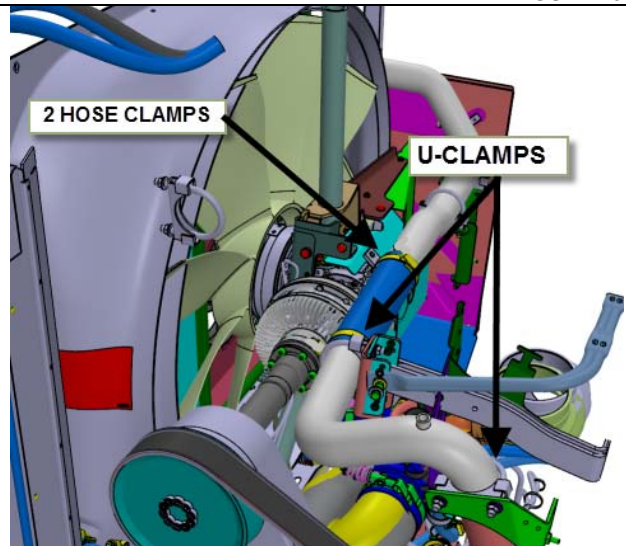


FIGURE 19

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*Note: Pay attention to the position of the hose clamps. Refer to FIGURE 20. The screw should be oriented to 45°.*

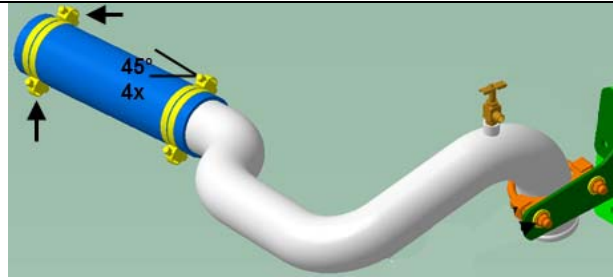


FIGURE 20

29. Place a 13/64" (5mm) shim between the coolant pipe and the EGR pipe so that a functional clearance will remain once the clamps and U-clamps will be tightened (FIGURE 21).
30. Tighten the U-clamps. No specific torque value for this piece of hardware.
31. Tighten the hose clamps to 30 lbf-in.
32. Replenish the cooling system.

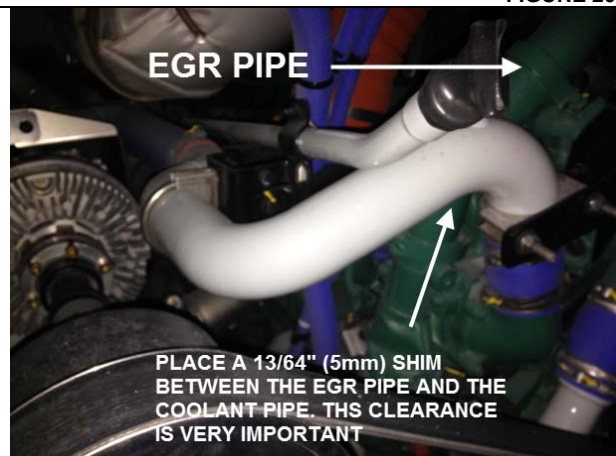


FIGURE 21

33. Use the coolant extractor to refill the cooling system.

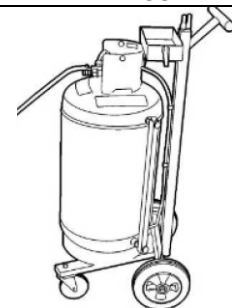


FIGURE 22

34. Reset the main circuit breakers equipped with a trip button if applicable. Set the battery master switch (master cut-out) to the ON position.
35. Turn the ignition key to the ON position. Set the starter selector switch to the rear start position.
36. Press the starter push-button switch (FIGURE 23). Release push-button after the engine starts. Check for leaks and proper operation. After shutdown, replenish fluids as necessary.
37. Set the starter selector switch to the NORMAL position. Close the engine compartment door.

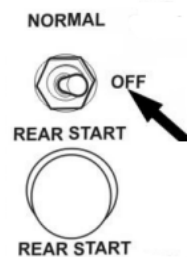


FIGURE 23

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## PARTS / WASTE DISPOSAL

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

## ESTIMATED TIME

The time required to perform this special bulletin is approximately six (6) hours.

## OTHER

VBC Bulletin	N/A
Fail Code	01.00-2
Defect Code	09
System Condition	B
Causal Part	021517180

Prevost engages in a continuous program of testing and evaluating to provide the best possible product. Prevost, however, is not committed to, or liable for updating existing products.

# Special Bulletin

# SP16-302

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Release 01: Draft release

PRESSURE CAP REPLACEMENT

Prevost vehicles

## DESCRIPTION

On the vehicles affected by this bulletin, replace the pressure cap on the surge tank.

## MODEL YEAR(S) AND VEHICLES INVOLVED

<b>NOTICE TO SERVICE CENTERS</b>	
<i>Verify vehicle eligibility by checking warranty bulletin status with <b>SAP</b> or via <b>ONLINE WARRANTY SYSTEM</b> available on Service / Warranty tab of Prevost website.</i>	
Model	VIN
X3-45 Commuter Model Year : 2014 - 2016	The following individual vehicles: 2PCG33495EC73 <u>5590</u> , 2PCG33498EC73 <u>5602</u> And from 4RKG33497 <u>F9737001</u> up to 4RKG33491 <u>G9737299</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.	

## MATERIAL NEEDED

Order kit # SP16-302:

Part No.	Description	Qty
551018	Pressure cap 13 psi	1

### NOTE

Material can be obtained through regular channels.

## PROCEDURE



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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. On Commuter type vehicles, set the battery master switch (master cut-out) to the OFF position.



## WARNING

Before undergoing work, make sure the coolant has cooled down. The sudden release of pressure from a heated cooling system can result in loss of coolant and possible personal injury (scalding) from the hot liquid.

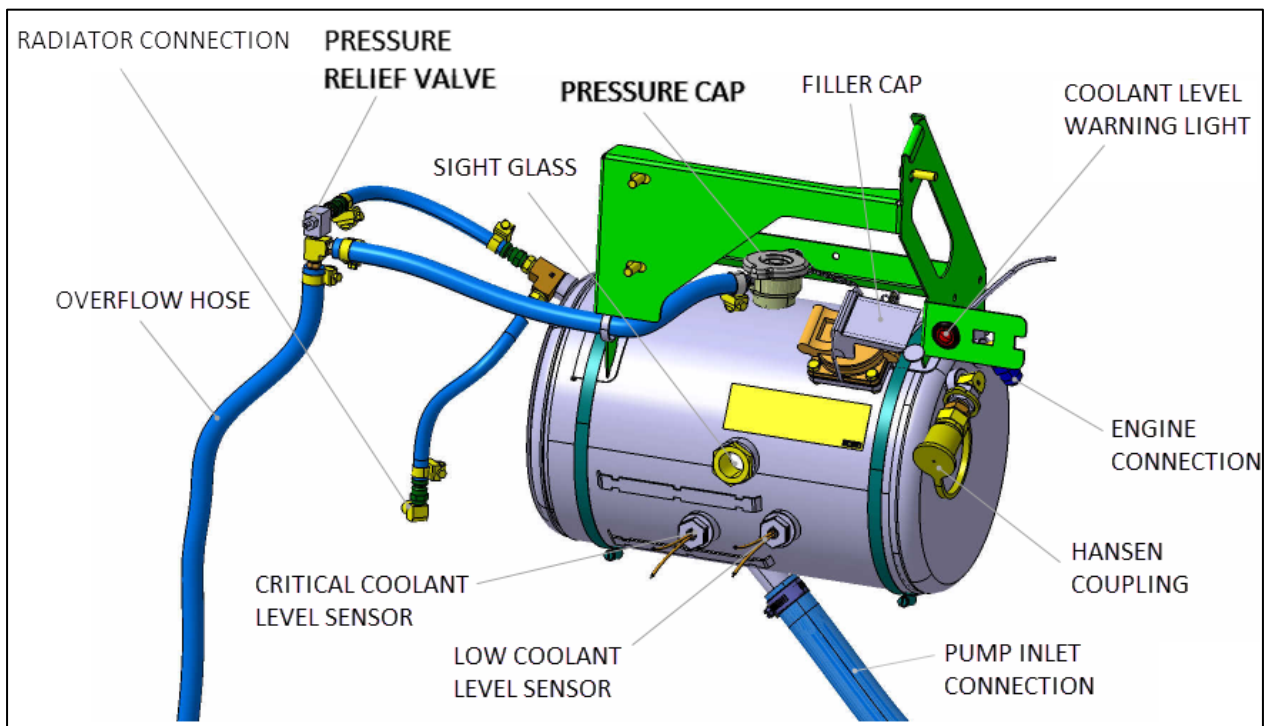


Figure 1

1. Relieve cooling system pressure by depressing the pressure relief valve button, left of the surge tank.(Fig. 1)
2. *Heed the safety warning above.*
3. Unscrew the pressure cap from the surge tank.

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4. Release the “S” hook by widening using long nose pliers.



Figure 2

5. On the new cap head, drill a **3/16”** hole on one prong. Choose a similar location as the original cap. (Fig. 3)
6. Install the “S” hook in the newly drilled hole and bend the “S” closed with pliers.
7. Install the new cap on the surge tank.



Figure 3 (image for reference only)

8. Re-pressurize the system by the “Hansen” coupling. (Fig. 1) Do not exceed **15 psi**.
9. Ensure the pressure cap relieves system pressure at the proper value (13 psi)

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## PARTS / WASTE DISPOSAL

Return replaced parts to Prevost with A.F.A. for full reimbursement. Discard waste according to applicable environmental regulations (Municipal/State[Prov.]/ Federal)
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## ESTIMATED TIME

The time required to perform this special bulletin is approximately 30 minutes.

## OTHER

VBC Bulletin	N/A
Fail Code	05.07
Defect Code	09
System Condition	B
Causal Part	21528785

Prevost engages in a continuous program of testing and evaluating to provide the best possible product. Prevost, however, is not committed to, or liable for updating existing products.