PREVOST

April 5th 2016

Mr Larry Long Associate Administrator for Enforcement, National Highway Traffic Safety Administration (NHTSA) 1200 New Jersey Avenue S.E. Washington, D.C. 20590 e-mail address: tsb@dot.gov

Mr Long:

Per Chapter V – National Highway Traffic Safety Administration, Department of Transportation, Part 579 - Reporting of information and communications about potential defect, under 579.5 Notices, bulletins, customer satisfaction campaigns, consumer advisories and other communications, Prevost is submitting an electronic copy of documentations sent to our customers during **the month of March 2016**.

a. Vehicle Brand: Prevost (EWR# 000650)

MI16-06	New Auto Engine Brake
MI16-07	Linnig LLW203 Fan Clutch and Seals Replacement Kits
Mi16-15	New TPMS Sensor and Valves
Mi16-17A	Twin Bosch HD10 Alternator Removal and Installation
SP16-301B	Variable Geometry Turbocharger (SRA) - Actuator Replacement
SP16-306	Inner Fender Panel Replacement
SP16-304	Battery Decal Replacement

Vehicle Brand: Volvo Bus (EWR# 000799)

N/A

Do not hesitate to contact me should you have questions or comments. Best Regards,

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MAINTENANCE INFORMATION

MI16-06

DATE : FEBRUARY 2016 SECTION: 07 - TRANSMISSION SUBJECT : New Auto Engine Brake

APPLICATION

Model	VIN	
X3-45 coaches Model Year : 2016 and up		From 2PCG33492 <u>G</u> C73 <u>6019</u>
X3-45 VIP motorhomes Model Year : 2016 and up		From 2PCBS3492GC736017
X3-45 VIP commercial use Model Year : 2016 and up		From 2PCC33492GC736018
H3-41, H3-45 coaches Model Year : 2016 and up		From 2PCH33491 <u>G</u> C71 <u>3190</u>
H3-45 VIP motorhomes Model Year : 2016 and up		From 2PCV33491 G C71 <u>3189</u>

DESCRIPTION

Volvo Engine Brake (VEB) with Automatic control mode

A new Automatic control mode is now available on Prevost vehicles equipped with the Volvo Engine Brake (VEB),

When running in AUTO (2) mode (which is the default mode set at vehicle start-up), the engine brake is gradually applied to 100% brake power when the driver *pushes the brake pedal*. Since AUTO (2) mode will not reduce vehicle momentum unless the brakes are applied, it will have no impact on fuel consumption.

The driver can also choose two other modes using the steering wheel switches; Engine brake LOW O and engine brake HIGH O.

When set to the engine brake LOW 0 mode, 50% of the engine brake power will be applied when the driver *releases the accelerator pedal*. Using engine brake HIGH 0 will apply 100% of the braking power.

It must be noted that since engine brake LOW O and engine brake HIGH O will reduce vehicle speed upon release of the throttle pedal, they may negatively impact fuel consumption if used for extended periods of time.

NOTE



On vehicles equipped with an optional engine brake switch, it is possible to deactivate the engine brake (OFF mode). To do so, the driver must press the engine brake switch located on the left side of the dashboard.

To reactivate the AUTO (2) mode, the switch must be pressed again (cycling of the ignition switch would have the same effect). The driver can also directly switch from the OFF mode to the engine brake LOW (1) or HIGH (2) mode using the steering wheel.

NOTE

When using engine brake LOW 0 or HIGH 0 mode, pressing the steering switch OFF button will switch back to the default AUTO 0 mode.

DRIVER PEDALS	ENGINE BRAKE MODE	ENGINE BRAKE FORCE
ANY POSITION	With engine brake switch	0%
ACCELERATOR PEDAL RELEASED		0%
BRAKE PEDAL PUSHED		100%
ACCELERATOR PEDAL RELEASED		50%
	(2)	100%

ENGINE BRAKE FORCE APPLIED VS SELECTED MODE AND DRIVER PEDAL POSITION.

NOTE

Engine brake is safe to use in any road conditions including adverse conditions.

Cruise control and engine brake

When cruise control is enabled by the driver, the engine brake mode is forced to AUTO (A) mode and the engine brake will progressively engage up to 100% if the selected cruise speed is exceeded by approximately 2 Km/h (1.25 mph). Manually switching to engine brake LOW (D) or HIGH (D) using the steering switches will deactivate the cruise control.

CRUISE CONTROL & SPEED	ENGINE BRAKE MODE	ENGINE BRAKE FORCE
CRUISE	With engine brake switch	0%
+ CRUISE SPEED SET	A	up to 100%
+ 2 Km/h		N/A
	(2)	N/A

ENGINE BRAKE FORCE APPLIED WITH CRUISE CONTROL

NOTE

On vehicles equipped with the Allison transmission, if cruise control is enabled, the current engine brake mode is saved in the vehicle computer (MCM) memory and the engine brake mode is set to AUTO mode (A). When the cruise control is disabled, the engine brake mode changes back to the mode saved in the MCM memory.



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MAINTENANCE INFORMATION

MI16-07

DATE :	MARCH 20	016	SECTIO	N: 05 - Co	oling		
SUBJECT	: Linnig	LLW203	Angled	Gearbox	Clutch	and	Seals
	Replac	ement Kits	6				

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

Model	
X3-Series Vehicles	All vobiolog og uipped with Lippig LLW/202 Apple Coor Poy
H3-Series Vehicles	All vehicles equipped with Lithig LLW203 Angle Gear Box

DESCRIPTION

Prevost is now offering a clutch replacement kit for vehicles equipped with a Kendrion (Linnig) LLW203 Series fan clutch and gearbox assembly.

This kit will allow the replacement of the clutch alone, without the need to purchase a complete assembly.

Along with this clutch kit, a complete seal replacement kit for the gearbox input and output shaft is also being released to maximise the gearbox service life.

Procedure below describes the steps required to proceed to the clutch replacement (manufacturer's instructions are also included with the clutch kit).

MATERIAL

Order the following kits:

Part No	Description	Qty
551016	Repair Kit, Radial Shaft Seals	1
551017	Clutch Replacement kit	1

Other parts that may be required:

Part No.	Description	Qty
551015	Tool Kit, Gearbox	1



PROCEDURE

\triangle

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.







PARTS / WASTE DISPOSAL

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

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MAINTENANCE INFORMATION

MI16-15

DATE :MARCH 2016SECTION: 13 – Wheels, Hubs and TiresSUBJECT :New TPMS Sensor and Valves

APPLICATION

All Prevost vehicles equipped with a Tire Pressure Monitoring System (TPMS).

NOTICE TO SERVICE CENTERS Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.				
Model VIN				
X Series vehicles Model Year : Up to 2016		Built before 2PCG33499GC736065		
H Series Vehicles Model Year : Up to 2016		Built before 2PCH33492GC713277		

DESCRIPTION

The Beru sensors used on Prevost vehicles to monitor tire pressure (TPMS system) are being replaced by new Huf sensors and their corresponding stainless valves stems.

Since the older and newer sensors are using different valve stems, replacement of a defective sensor on older vehicles will require the use of a new kit number (valve stem and sensor assembly).

The table below provides a quick overview between the older and newer part numbers depending on wheel application. Replacement and complementary part numbers are also provided.

NOTE

Older valve stem numbers are still available when the old sensor is not defective.

It must be noted that for the new style sensor to work with the existing vehicle TPMS system, a *firmware update must be done to the vehicle TPMS ECU* and that the *sensors ID# must be modified manually* through the TPMS screen in the vehicle. The procedure below provides step by step instructions required to perform these modifications along with links to the downloadable ECU update file.

NOTE

-The ECU firmware update will only need to be loaded once on the vehicle.

-Old sensor ID# modification will only need to be done once on the vehicle.

-Every time a new sensor type will be installed, its ID# will have to be modified following the instructions below.

-New and old sensors can be installed on the same vehicle.

* See Part 2 of this procedure for complete instructions

MATERIAL

Order one of the following kits (new assembly part #):

Wheel Application	Old Valve & Sensor assembly part #	New Valve & Sensor assembly part #	Valve type	New replacement valve #
Super Single Alu 14"	651125	650022		650013
365 Alu 10.5"	651127	650023		650014
315 Alu 9"	651123	650021		650015
Old 315 Alu 9" wheel	651088	650021		650015
315 Steel 8.25" wheel		650024	a the	650017
315 Steel 9" wheel	651089	650020		650018

Other parts that may be required:

Sensor Only	Old part # 564078	New part # 560032	Model TSSRE 4Nd Model TSSRE 4Nd MODE MODE TSSRE 4Nd MODE TSSRE 4
Mounting bolt	Old part # 651084	New part # 650019	
Dielectric grease	Part # 685324		AGGETTIE Dialectric Drasse * average * averagetter * averagetter * averagetetee *
Thread locker (Loctite 243)	Part # 6	80038	

NOTE

Material can be obtained through regular channels.

PROCEDURE

DANGER

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

PART 1 VALVE AND SENSOR INSTALLATION

- 1. Apply dielectric grease to the valve O-ring, threads and locking nut flange (this is particularly important on aluminum wheels to avoid galvanic corrosion).
- 2. Install the valve on the wheel making sure that the tip is correctly positioned.
 - Torque locking nut to 119.5 +/- 13.5 in-lb (13.5 +/- 1.5 Nm) for aluminum wheels
 - Torque locking nut to 35.5 +/- 9 in-lb (4 +/- 1 Nm) for steel wheels
- 3. Install the sensor inside the wheel making sure it is seated properly.
- 4. Secure the sensor to the valve stem using the supplied T20 hollow Torx screw (use Loctite 243 on the threads) and torque the screw to *35in-lb* (4Nm)

PART 2 FIRMWARE UPDATE AND SENSOR ID SETTING

NOTE	
To perform ECU firmware update, BERU F1 System Truck Tyre V2.11 must be installed of connected to the vehicle TPMS ECU.	on a laptop
You can download TRUCK TYRE 2.11 here: <u>Truck Tyre 2.11</u> *** Download to desktop and rename pdf extension to exe***	
🔁 304_trucktyre_2.11_std.pdf 🛛 🚽 🖓 304_trucktyre_2.11_std.exe	

1. Download the firmware update file on the laptop that will be used to connect TRUCK TYRE 2.11 to the vehicle. Update file can be found here: <u>TruckTyre Firmware Update File</u>

NOTE	
Use the <u>download</u> 🕑 function, not the <u>open or view</u> 👁 function	

2. **IMPORTANT**; with the firmware update file downloaded on the laptop; <u>rename the ".pdf" file extension</u> <u>to ".fwr"</u>.

1 301_prevos	ttpms_02_30_18.pdf	
	301_prevosttpms_02_30_18.fwr 2016-03-07 9:4	.7
	Rename	
	If you change a file name extension, the file might become unusable Are you sure you want to change it?	е.
	Yes No	
		01_prevosttpms_02_30_18.fwr

3. With the ignition at the ON position, remove red cap protecting the ECU connector and connect the laptop to the vehicle TPMS ECU located at the top right corner of the front junction box.

4. Open TRUCK TYRE 2.11 on the laptop.

BERU F1 Systems: Truck Tyre Configuration	Utility V2.08				- 🗆 ×
File Settings					
About Assign Sensors Modify Permit List U	odate Permit List Position Ser	nsor Live Update	Errors Configurat	ion Simulation Bootloader	NV Setu
BER		E1	VSTE	MS	
Т	echnical Centre Owen Ro	ad Diss Norfolk Er	ngland IP22 4ER		
1	Telephone +44(0)1379 64	16200 Fax +44(0)1379 646900		
SEE NOTE BELOW	Email Address: t	yre@f1systems.c	om		
	Web Site: ww	/w.f1systems.com	n		
BERU F1 SYS	STEMS: Truck Tyre	e Diagnostic	/Configurat	ion Utility	-
	Version:	2.08 Build: 1			
	Release time: 1	6/08/2007 07:33	04		
	Convright (C) 20	06 DEDITE1 Curt	ome		
	copyright (C) 20	So benor 1 Syst	ente		
Ratus: Idle	Pr	essure: Gauge	Units: °C / Bar	System: Comms Closed	1171
File:					

NOTE

Sensor assignment can only be done through the dash display, never from the TruckTyre software

NOTE
Communication Port Error Message
When opening Truck Tyre on a laptop, the system will check for compatibility between the program and the laptop communication port (Truck Tyre default port is set to 1).
If the laptop used is not set to work with communication port 1, an error message will be displayed and the program com port will have to be manually changed to match the one used by the laptop. To do so, follow the steps below (<i>required only if an error message is displayed</i>).
 First open the laptop control panel and open the device manager. Locate the Port icon and expend it. Take note of the computer port value (Com).

- Back to Truck Tyre main page, open the setting menu located at the top left corner of the screen (just above the "About" tab).
- Click on the "com port" option to open the port setting box and enter the value of the laptop com port previously noted. Click OK to confirm the action and close the box.

About Assign Sensors Modify Permit List Update Permit List Position Sensor Live Update Error:	Comm Port Settings
Settings Comm Port Connect	Comm Poet 4 DK f1Systems
Gauge Pressure Temperature Units Pressure Units Recall Last Page Auto Upload Parameters from ECU Email Address: tyre@f1systems.com Web Site: www.f1systems.com	Wwen Road Diss Norfolk England IP2 Telephone +44(0)1379 646200 Fax +44(0)1379 646 Email Address: tyre@bf1systems.com Web Site: www.bf1systems.com BERU f1systems.c
BERU F1 SYSTEMS: Truck Tyre Diagnostic/Co	Version: 2.11 Builder
The laptop and Truck Tyre should now be able to c TPMS ECU.	communicate and connect to the vehicle

5. Open the Bootloader tab at the right corner of the menu.

-	
About Assign Sensors	Modify Permit List Update Permit List Position Sensor Live Update Errors Configuration Simulation Bootloader Terminal ERU f1systems Bootloader Version 1.0 Release Date: 28/10/2003 Copyright (C) 2008 BERU f1systems
	Update Firmware Programming Status
	Update Firmware Programming Status

6. Click on the "Update Firmware" button to start the process. You will be prompted to select the file to be programmed into the ECU (choose file downloaded at step one of this procedure and converted to .fwr). From this point on the process is automatic and a "download completed" message will show-up at the end (you can watch the download progress through the programming status bar at the bottom of the screen).

ile Settings					
Nout Assign Sensors Modify Permit	List Update Permit List Posit	f15yst	Errors Configura Ems	tion Simulation Bootlo.	ader Terminal
	BERU f1	systems Bootload	er		
		Version 1.0			
	Relea	se Date: 28/10/2003			
	Copyright	(C) 2008 BERU f1syste	ms		
	U	odate Firmware			
	D	ogramming Status			
	1.000	- 22/ 00 - 26	- 20	115	14

7. Inside the vehicle locate the TPMS screen at the lower left of the dashboard.

- PRESS OK TO ENTER

 SETTINGS MENUS

 SENSORS BATTERY

 ANTENNA STATUS

 SETTINGS

 OK

 OK

 Settings Menu

 Settings Menu</td
- 8. On the TPMS screen, scroll down to the SETTING/SET WHEEL ID menu.

9. In the WHEEL ID menu, choose the wheel with the *new sensor* (in this case 1 : 1 is Front Left Tire) and replace the new sensor first character (should be "4") by "0". Press Accept then OK.

Set Wheel ID	Set Wheel ID		
CHOOSE AXLE & WHEEL 1: 1 OLD VALUE: 4600055642 NEW VALUE: 4600055642	CHOOSE AXLE & WHEEL 1:1 OLD VALUE: 4600055642 NEW VALUE: 0600055642		
ACCEPT EXIT	ACCEPT EXIT		

10. In the same menu, replace all other old sensor first digit by "0". Press ACCEPT then OK.

NOTE

Every time a wheel ID is learned, the first digit has to be changed by a "0" again

11. Exit the Sensor ID menu to go back to the main menu, all sensors should now be displayed on the TPMS screen.

PARTS / WASTE DISPOSAL

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MAINTENANCE INFORMATION

MI16-17A

DATE :	FEBRUARY	2016	SECTION :	06 - Electrical
SUBJECT :	TWIN BOSCH		HD10	ALTERNATOR
	REMOV	AL AND IN	STALLAT	ON

REVISION A: THIS WARRANTY BULLETIN SUPERSEDES PREVIOUS VERSION. Addition of recommendation to apply a light coat of high temperature grease to the A/C compressor shaft to facilitate dismantling.

DESCRIPTION

Use this procedure for the removal and installation of the twin Bosch HD10 (120A or 150A) installation.

CONTENT

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PART 2 – PULLEY REMOVAL / INSTALLATION	17
PART 3 – ASSEMBLY INSTRUCTIONS FOR ELECTROMAGNETIC CLUTCH – LINNIG LA16	19

REQUIRED TOOLS

METRIC OPEN END WRENCH SET	RATCHET AND SOCKET SET – METRIC
HEX BIT SOCKET SET – METRIC	TORQUE WRENCH
JAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	er senter and a senter a se
SOFT FACED HAMMER	1 ⁵ / ₈ OPEN END WRENCH
	3
BELT TENSION GAUGE	1/2 SQUARE DRIVE BREAKER BAR
	Autor
voltmeter / MUI TIMETER	CUTTING PLIERS

See "SPECIAL TOOLS REQUIRED TO TIGHTEN THE ALTERNATOR PULLEY MOUNTING NUT" in PART 2

PART 1 -TWIN BOSCH ALTERNATOR REMOVAL / INSTALLATION

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

- The alternator 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 alternator terminals. However, a faulty master relay R1 could eventually leave the battery power circuit closed, thus electrical power would be present at the alternator terminals.
- 2. Using a multimeter, probe the alternator **B1+** terminal and the ground terminal. Make sure that the voltage reading is <u>0 volt</u> prior disconnecting the alternator cables.

GAINING ACCESS TO THE ALTERNATORS

- 3. Loosen bolt A.
- 4. Unscrew and remove bolt B.
- 5. Remove the drive belt mechanical tensioner assembly (FIGURE 2).
- 6. Remove the A/C compressor drive belts (2 side-by-side belts).

Note: Keep hardware for reuse

ALTERNATOR REMOVAL

7. Unscrew and remove bolt **C** (FIGURE 3).

8. At this point, identify the type of clutch installed on your vehicle.

LANG TYPE: SHARP EDGE COIL

LINNIG TYPE: ROUND EDGE COIL

FIGURE 4

9. As an alternate way to confirm **LANG** type clutch, locate "LANG" engraving on the hub center

FIGURE 5

- If a LINNIG type clutch is installed, refer to "PART 3 - ASSEMBLY INSTRUCTIONS FOR ELECTROMAGNETIC CLUTCH – LINNIG LA16". Remove the Linnig clutch.
- 11. Remove the LANG electromagnetic clutch assembly (FIGURE 6).

FIGURE

12. Hold the rotor with the 1 5/8 wrench. Loosen and remove the M12 rotor mounting screw with a 30mm socket.

REMOVING THE M12 SCREW

For the next step, use rotor extractor tool <u>#7770159</u> preferably. If the tool is not available, use a M16x50 mm hex head bolt. (Prevost #5001372).

- 13. Screw the extractor tool into the straining washer only until the rotor pops off the tapered shaft. Then work the rotor off the shaft by hand with help from soft faced mallet as needed.
- 14. Loosen the fastening screws (4x) of the coil and pull the coil off the retainer.

PULL OFF THE ROTOR WITH TOOL #7770159 (shown) or M16 BOLT

TAKE OFF THE ROTOR

FIGURE 8

FIGURE 9

- 15. Unscrew and remove two socket cap screws E (FIGURE 10).
- 16. Put the reinforcement bracket aside.

- 17. Remove the alternator drive belt. To do so, rotate the automatic belt tensioner using a ½ square drive breaker bar.
- 18. Remove the alternator belt tensioner bracket assembly. To do so, remove the three bolts identified with arrows on **FIGURE 11**.
- 19. Put the alternator drive belt aside.
- 20. Disconnect the alternator cables. Properly clean cable ring terminals as applicable using a brass wire cup brush, a Scotch-Brite pad or an emery cloth.

Keep hardware for reuse.

21. Remove the existing alternators. To do so, unscrew the four (4) mounting bolts identified on **FIGURE 13**.

Keep hardware for reuse.

ALTERNATOR INSTALLATION

22. Apply anti-seize compound (Prevost p/n: 680335) inside the alternator mounting ears (FIGURE 14) and inside the sleeves on the alternator support (FIGURE 15).

 Install the alternators. Fix lower and upper alternators <u>loosely</u> to alternator supports using bolts **C**. Also, mount arched support <u>loosely</u> onto alternators using bolts **B** (FIGURE 16).

Use Loctite 243 Blue on threads.

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

For reference:

- C= NUT M12 p/n 5001761 (2X)
- C= BOLT M12x160 p/n 5001853 (2X)
- B= NUT M10 p/n 5001930 (2X)

B= BOLT M10x45 p/n 5001800 (2X)

24. In order to assure proper installation, it is important to tighten the alternator mounting bolts in proper sequence (FIGURE 17).

Tighten bolt **B** first, then finish with bolt **C**

- 25. Connect jumper cable **B** to **B1+** stud terminal of the upper alternator and the lower alternator using hardware shown on FIGURE 18.
 - a) Install jumper cable **B** onto **B1+** stud terminal on upper alternator.
 - b) Place one flat washer **D** against the jumper cable lug.
 - c) Screw and tighten the adapter stud C.
 - d) Fit jumper cable **B** onto **B1+** stud terminal on lower alternator.
 - e) Place one flat washer **D** against the jumper cable **B** lug and screw nut **E**.

- B : JUMPER CABLE p/n 067835
- C : STUD ADAPTER p/n 564590 torque: 10 lbf-ft
- D: FLAT WASHER p/n 5001341
- E: NUT M8 p/n 5001787 torque: 10 lbf-ft
- Reinstall the (+) power cable A. To do so, connect power cable A to the upper alternator
 B1+ stud terminal. Refer to FIGURE 19.
 - a) Fit the (+) power cable lug onto adaptor stud, place one flat washer **D** against the power cable terminal and screw nut **E**.

A: (+) POWER CABLE D: FLAT WASHER P/N 5001341 E: NUT M8 P/N 5001787 <u>torque: 10 lbf-ft</u>

27. Fit the ground cables onto their respective alternator ground studs. For each alternator, place one flat washer F against the ground cable lug and screw nut G.

FIGURE 20

F: FLAT WASHER P/N 502573 G: NUT M6 P/N 5001182 torque: 6 lbf-ft **H : GROUND CABLES**

28. On the upper alternator, plug alternator harness onto alternator connector and secure using nylon cable ties P/N 504637 positioned as shown by red arrows on FIGURE 21. NOTE: one nylon tie is used to block the connector locking mechanism in order to unlocking and

29. On the lower alternator, plug alternator harness onto alternator connector and secure using nylon cable ties P/N 504637 positioned as shown by red arrows on FIGURE 22.

unwanted

prevent

disconnection.

NOTE: one nylon tie is used to block the connector locking mechanism in order to prevent unwanted unlocking and disconnection

FIGURE 21

- 30. Apply anti-corrosion compound or **Color Guard Rubber Coating** (Prevost p/n: 684013) on alternator terminals, cable lugs and nuts.
- 31. Mount the alternator belt tensioner bracket assembly <u>loosely</u> using previously removed bolts I & J (FIGURE 23).

I: SCREW CAP HEXF M8-1.25X50 G10.9 p/n 500796 qty.1 J: SCREW CAP HEXF M10-1.25X55 G10.9 p/n 5001801 qty.2

32. Install the reinforcement bracket. Use two previously removed cap screws **E** and flat washers. <u>DO NOT apply final torque at this moment</u>.

Note: Use blue Loctite 243 on threads.

Note: Once thread locker is applied, do not wait too long before applying final torque. Final tightening will be done in the next following steps.

Cap screw E according to clutch type

Lang clutch screw E p/n 5001616

Torque 40 lbf-ft (54 N-m)

LINNIG clutch screw E p/n 502949

Torque 32 Ibf-ft (43 N-m)

FIGURE 24

33. Continue with the installation of the reinforcement bracket as shown using previously removed hardware (bolt C finger tightened and flat washer). <u>DO NOT apply final torque at this moment</u>.

Note: Use Blue Loctite 243 on threads.

Note: Once thread locker is applied, do not wait too long before applying final torque.

34. If bolts C & E (see two previous steps) are difficult to align in the hole, the compressor may be moved. Loosen the compressor mounting bolts (4x) at the base (see FIGURE 26

FIGURE 25

STREET SIDE COMPRESSOR MOUNTING BOLTS

MOUNTING BOLTS

- 35. Snug bolts C & E (FIGURE 24 & FIGURE 25).
- 36. Snug compressor mounting bolts at the base.
- 37. Snug bolts I & J indicated with arrows on FIGURE 27.

Note: Use blue Loctite 243 on threads.

- 38. Tighten the compressor mounting bolts to **74 Ibf-ft.** (100 N-m).
- 39. Tighten the three bolts shown on FIGURE 28 to prescribed torque.

40. Tighten bolts **C** and bolt **E** (refer to FIGURE 29).

Lang clutch: E= 40 lbf-ft (54 N-m)

Linnig clutch: E= 32 lbf-ft (43 N-m)

C= **74** *Ibf-ft* (100 *N-m*)

41. Reinstall the alternator belt. To do so, rotate the automatic tensioner using a ½ square drive breaker bar and install the belt as shown on FIGURE 30.

42. Reinstall tensioner, bolt and washer **B** and bolt and nut **A**. Do not tighten these bolts at this moment as the belt tension adjustment will be done later in this procedure.

43. Install the electromagnetic clutch coil (for Linnig clutch, refer to PART 3). Position cable lead near the 2 o'clock position.

44. Slip the coil on the retainer on the compressor flange. Fasten the coil with 4 cap screws #5001775 to the compressor.

Use blue Loctite 243.

Caution: parts should be clean and free from debris. Pay attention to the precise seat of coil. The coil should sit flush with the face of the compressor.

F: Coil mounting cap screws torque: 22 lbf-ft

45. Mount the rotor on the shaft end.

The flange and the shaft end of the compressor must be clean and free from dirt.

The flange and the shaft end of the compressor must be free from dirt. Apply high temperature approved assembly grease on the shaft end for easy dismounting of the clutch. Lang recommends the use of Molykote G-rapidplus or Molykote P 40.

46. Carefully mount the rotor on the shaft end by hand.

Never use a hammer for pressing the rotor on.

Align the key on the compressor shaft with the keyway on the pulley bore. To avoid damaging the bore of the rotor, feel the engagement of the key in the keyway and slip the rotor on the shaft end of the compressor till reaching the stop (FIGURE 32).

The Woodruff key on the shaft end and the groove in the location hole of the rotor must be flush.

- 47. Fasten the rotor to the shaft end using the M12 screw and by holding-up with a wrench on the rotor.
- 48. Turn rotor by hand and pay attention to the free run and the generation of noises. In case of grinding or similar noises, dismount the clutch and check installation.

USE BLUE LOCTITE 243 ON THREADS

FIGURE 35 G: ROTOR MOUNTING SCREW torque 60 LBF-FT (81 N-M)

49. Reinstall A/C compressor drive belts.

A belt strand tension gauge is needed. Belt tension should be within the following range:

- 90-100 lbs <u>new</u> belts (mean of 2 belt values)
- 75-85 lbs <u>used</u> belts (mean of 2 belt values)

Single 5VX810 belt (FIGURE 37)

- 150-160 lbs <u>new belt</u>
- 120-130 lbs <u>used</u> belt

 Apply blue Loctite 243 on bolt B threads and then hand-tighten bolt B. Adjust belt tension using bolt A. Use the jam nut at the base of bolt A to keep proper tension adjustment.

Note: Once thread locker is applied, do not wait too long before applying final torque.

When proper tension is achieved, tighten bolt **B** to **43 lbf-ft**. (58 N-m).

FIGURE 37

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. Make sure that the charging system is working normally.

On the instruments cluster, the alternator telltale

lilluminates if the alternators are not charging.

PART 2 – PULLEY REMOVAL / INSTALLATION

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

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

PULLEY REMOVAL / INSTALLATION

- 1. Unscrew the alternator pulley mounting nut (FIGURE 38).
- 2. Remove the alternator pulley (2 pulleys).

FIGURE 38

 Mount pulley onto alternators. Use Loctite 243 blue on threads. Tighten pulley mounting nut to 75 lbf-ft using special tools and a M10 12points spline drive mounted on a torque wrench.

PART 3 – ASSEMBLY INSTRUCTIONS FOR ELECTROMAGNETIC CLUTCH – LINNIG LA16

Assembly instruction:

- 1. Attach coil according to instruction manual of the compressor manufacturer. Connect cable in a way that avoids contact with hot components (only if coil contents a cable). t max = 105°C
- 2. Remove circlip and holding-down bolt from clutch- assembly. Slide clutch-assembly onto compressor shaft. Look through the center-hole for a correct position of the compressor shaft key in the rotor-keyway. Rotor should turn freely without touching the coil. Consider the control mark! Insert and tighten holding-down bolt M12 (tightening torque Ma = 85 Nm, Ma = 63 lbs-ft). Hold down the rotor with an open-ended spanner or ring spanner WAF41. Insert circlip.
- 3. Slide pulley over the stud screws (1) and bolt on with nuts M8 DIN 934-8 (2) (only for LA16.3; for other LA16 is pulley integrated part of the clutch).
- 4. Connect cable respectively connector. The connection is independent of polarity. Allowed operating voltage 21–32 VDC.

Disassembly instruction:

For disassembly grease circlip (do not remove circlip) and turn the holding-down bolt left to loosen. Hold down the rotor with an open-ended spanner or ring spanner WAF41. In this way the clutch will be disconnected from the cone-shaft.

PARTS / WASTE DISPOSAL

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

Access all our Service Bulletins on <u>https://secureus5.volvo.com/technicalpublications/en/pub.asp</u> 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.

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Revision B: This document supersedes previous revisions. Procedure modified as per JZ

VARIABLE GEOMETRY TURBOCHARGER - ACTUATOR REPLACEMENT (SRA)

Prevost vehicles

DESCRIPTION

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

MODEL YEAR(S) AND VEHICLES INVOLVED

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

NOTE

Material can be obtained through regular channels.

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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.	NORMAL OFF REAR START		
2.	Open the engine compartment door. Set the rear start selector switch to the OFF position (FIGURE 1).	REAR START 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

5. In

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GAINING ACCES	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.	U-CLAMP NO.1	THIS PIPE AI TO GAIN ACT AREA	U-CLAMP NO.2	EMOVED CHARGER		
				FIGURE 3		
Loosen the hose clamps (4 clamps) shown on FIGURE 4.		-				
Remove the two (2) U-clamps shown on FIGURE 4.	LOOSEN 2 H CLAMPS	OSE	U-CLAMF	S		

- 6. <u>Lo</u> FIG
- 7. Re FIG

FIGURE 4

- 8. To ease removal, remove the transmission dipstick tube clamp identified on FIGURE 5 (see also FIGURE 6: DIPSTICK TUBE CLAMP REMOVED).
- 9. Take the coolant pipe out and the flexible hose with it.

FIGURE 5: TRANSMISSION DIPSTICK TUBE CLAMP

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FIGURE 6: DIPSTICK TUBE CLAMP REMOVED

REMOVAL

1) Coolant Return Port

2) Coolant Inlet Port

10. Disconnect the actuator assembly electrical connector at the wiring harness (FIGURE 7). Cut any tie straps as needed.

FIGURE 7

11. Disconnect the coolant lines from the actuator (FIGURE 8).

<u>Caution:</u> 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.

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12. Unscrew the four hex socket head bolts (item 4) holding actuator to the turbocharger and remove the actuator. Remove and discard the gasket (FIGURE 9).	1 			3 FIGURE 9
	1) Alignment Pir	า		

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

INSTALLATION

the 13. Using gloves, manually rotate turbocharger sector gear back and forth (counterclockwise and clockwise) (FIGURE 10). 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).

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14. 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 11).

ALIGNMENT HOLE INSPECTION, 3MM (0.118 INCH) HOLE

15. 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 12).

16. 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 13). 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.

ALIGNMENT HOLE INSPECTION, 5MM (0.197 INCH) HOLE

FIGURE 12

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IMPORTANT NOTE: Make sure that the actuator and turbocharger housing mating surfaces (where the gasket sits) are clean and smooth (see the mating surface on the turbocharger housing on FIGURE 14).

17. Lubricate the sector gear teeth using the grease applicator tube that comes in the installation kit (FIGURE 15).

18. Remove the alignment pin without disturbing the position of the sector gear. The gear must not be moved from this position (FIGURE 16).

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- 19. Connect the actuator electrical wiring harness connector to the engine wiring harness connector. Install tie straps as needed to secure the harness (FIGURE 17).
- 20. Connect the VCADS Pro PC (PTT) to the vehicle diagnostic data connector and turn the ignition switch ON. Using the on screen directions in VCADS Pro, perform the <u>VGT</u> calibration procedure. Perform the actuator drive gear install position, which is step 2 of the calibration procedure.

VGT CALIBRATION

PTT OPERATION NUMBER: 2551-07-03-01

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.

Turn the ignition switch to the OFF position when done.

21. Install two new mounting screws diagonally across the actuator. Place a new gasket over the protruding screws at the back of the actuator (FIGURE 18).

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

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FIGURE 17

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 22. Carefully align the actuator with the turbocharger a install it into position. Hold the actuator in place a hand tighten the two screws. Install the two remain new screws and finger-tighten. Use the following st to tighten the screws (FIGURE 19). a) tighten the screws in the pattern shown to: 27 lbf (3 Nm) b) tighten the screws in the pattern shown to: 97 	and and ing eps <i>in-</i>			3
<i>b)</i> digiten the screws in the pattern shown to: <i>y</i> <i>lbf</i> (11 Nm) Once properly torqued, apply torque seal		1-10		2
				FIGURE 19

23. Turn the ignition key back ON. Using the on screen directions in VCADS Pro, complete the final step of the VGT calibration procedure. If the actuator is installed correctly, the procedure indicates a successful VGT calibration with a green check mark.

The SRA runs from full open to close nozzle positions to ensure proper calibrated SRA travel.

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.

- 24. If the actuator is suspected of being faulty and requires replacement, follow the preceding installation steps with the new actuator.
- 25. Connect the coolant lines to the actuator and tighten the fittings (FIGURE 20).

coolant inlet & return port fitting: Torque 9±2 lbf-ft (12±3 Nm)

Once properly torqued, apply torque seal

Coolant Return Port
 Coolant Inlet Port

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- 30. 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 24).
- 31. Tighten the U-clamps. No specific torque value for this piece of hardware.
- 32. Tighten the hose clamps to 30 lbf-in.
- 33. Reinstall the transmission dipstick tube clamp.
- 34. Replenish the cooling system.
- 35. Use the coolant extractor to refill the cooling system.

- 36. Reset the main circuit breakers equipped with a trip button if applicable. Set the battery master switch (master cut-out) to the ON position.
- 37. Turn the ignition key to the ON position. Set the starter selector switch to the rear start position.
- Press the starter push-button switch (FIGURE 26). Release push-button after the engine starts. Check for leaks and proper operation. To check proper operation, use PTT VGT function test, Operation 2551-08-03-02.
- 39. After shutdown, replenish fluids as necessary.
- 40. Set the starter selector switch to the NORMAL position. Close the engine compartment door.

NORMAL

FIGURE 26

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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	В
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.

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03 2016	03 2018	0	1(3)

Initial release

14 mars 2016

BATTERY DECAL REPLACEMENT

Prevost vehicles

DESCRIPTION

On the vehicles affected by this bulletin, replace the battery connection decal by a new version.

MODEL YEAR(S) AND VEHICLES INVOLVED

NOTICE TO SERVICE CENTERS Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.		
Model VIN		
X3-45 Commuter The following individual vehicles: 2PCG33495EC73 <u>5590</u> , 2PCG33498EC73 <u>5602</u> . Model Year : 2014 - 2016 And from 4RKG33497F9737001 up to 4RKG33497G9737209 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 SP16-304:

Part No.	Description	Qty
060144	DECAL,M4 EL BATTERY CONNECTION	2

NOTE
Material can be obtained through regular channels.

SP16-304

Date	Expiration	Release	Page
03 2016	03 2018	0	2(3)

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) Open the engine compartment curb-side door (Fig. 1, Item 2,)

Figure 1

2) Locate instruction decal on the battery cover. (Fig. 2, 3)

Figure 2:Battery cover instruction decal

Figure 3: Decal location

3) Remove and store the covers following instructions on the decal.

- 4) On the battery access door, remove existing decal #069416.
- 5) Clean the surface and affix new decal #060144.

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Date

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Release

- 6) Open the battery access door.
- 7) On the inside of the access door, remove existing decal **#069416**.
- 8) Clean the surface and affix new decal #060144.
- 9) Close battery access door.
- 10) Place covers back in place
- 11) Close the engine compartment curb-side door.

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 30 minutes.

OTHER

VBC Bulletin	N/A
Fail Code	06.11
Defect Code	09
System Condition	В
Causal Part	069416

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.

Date	Expiration	Release	Page
03.2015	03.2017	0	1(3)

INNER FENDER PANEL REPLACEMENT

Prevost vehicles

DESCRIPTION

On the vehicles affected by this bulletin, replace an access panel aft of the tag axle wheel, road side.

MODEL YEAR(S) AND VEHICLES INVOLVED

NOTICE TO SERVICE CENTERS Verify vehicle eligibility by checking warranty bulletin status with SAP or via ONLINE WARRANTY SYSTEM available on Service / Warranty tab of Prevost website.	
Model	VIN
X3-45 Commuter Model Year : 2014 - 2017	Vehicle population not determined yet. Pending production retrofit
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 SP16-306 which includes the following parts:

Part No.	Description	Qty
050018	Access trap door assembly	1

NOTE

Material can be obtained through regular channels.

PROCEDURE

SP16-306

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	03.2015	03.2017	0	2(3)
Park vehicle safely, apply parking brake, stop e switch to the OFF position and trip the main cire type vehicles, set the battery master switch (ma	engine. Prior to wo cuit breakers equip aster cut-out) to the	orking on the vehi oped with a trip b e OFF position.	icle, set the igr utton. On Com	nition muter
 Release the rear road side (left) fender (Fig 1) by pushing the spring rods. 				

	Figure 1
2) On the inside of the fender, next to the front lock, depress the secondary lock lever (Fig. 2) to fully release the fender.	Figure 2 Secondary lock (Curb side shown)

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		03.2015	03.2017	U	3(3)
3)	Lift all the way up until support arm keeps the fender in the "up" position.				
4)	Remove the four screws holding the access panel in place. (Fig. 2) Keep for re-use.		-		
5)	Slide out and discard panel.	(and 1)	in or		
6)	Replace by new access panel 050018.				
7)	Secure new panel with the previously reserved screws.	-			
8)	Close the fender in reverse order and make sure it is secured in the "closed" position	Figure 3			
		Figure 3			

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 15 minutes.

OTHER

VBC Bulletin	N/A
Fail Code	18.10
Defect Code	09
System Condition	В
Causal Part	053455

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.