



SERVICE BULLETIN

SB1227

ADDRESSEES	: Owners and operators of coaches listed under 'Application'
COACH/BUS MODEL	: TD925US, C2045, T2100 Series
BULLETIN TYPE	: Service Information
MANUAL	: Maintenance Manual
SECTION/CHAPTER	: Electrical system
DATE	: March 13, 2009
SUBJECT	: Engine mounted alternator – mounting bracket fastener retention check
TERMS & CONDITIONS	: Should repairs be necessary, the regular terms and conditions apply for units covered by the Van Hool normal warranty.

APPLICATION:

This Service Bulletin is applicable to Van Hool TD925US, C2045, and T2100 units that have been equipped with a Cummins ISM07 engine and cast alternator mounting bracket part #11063204.

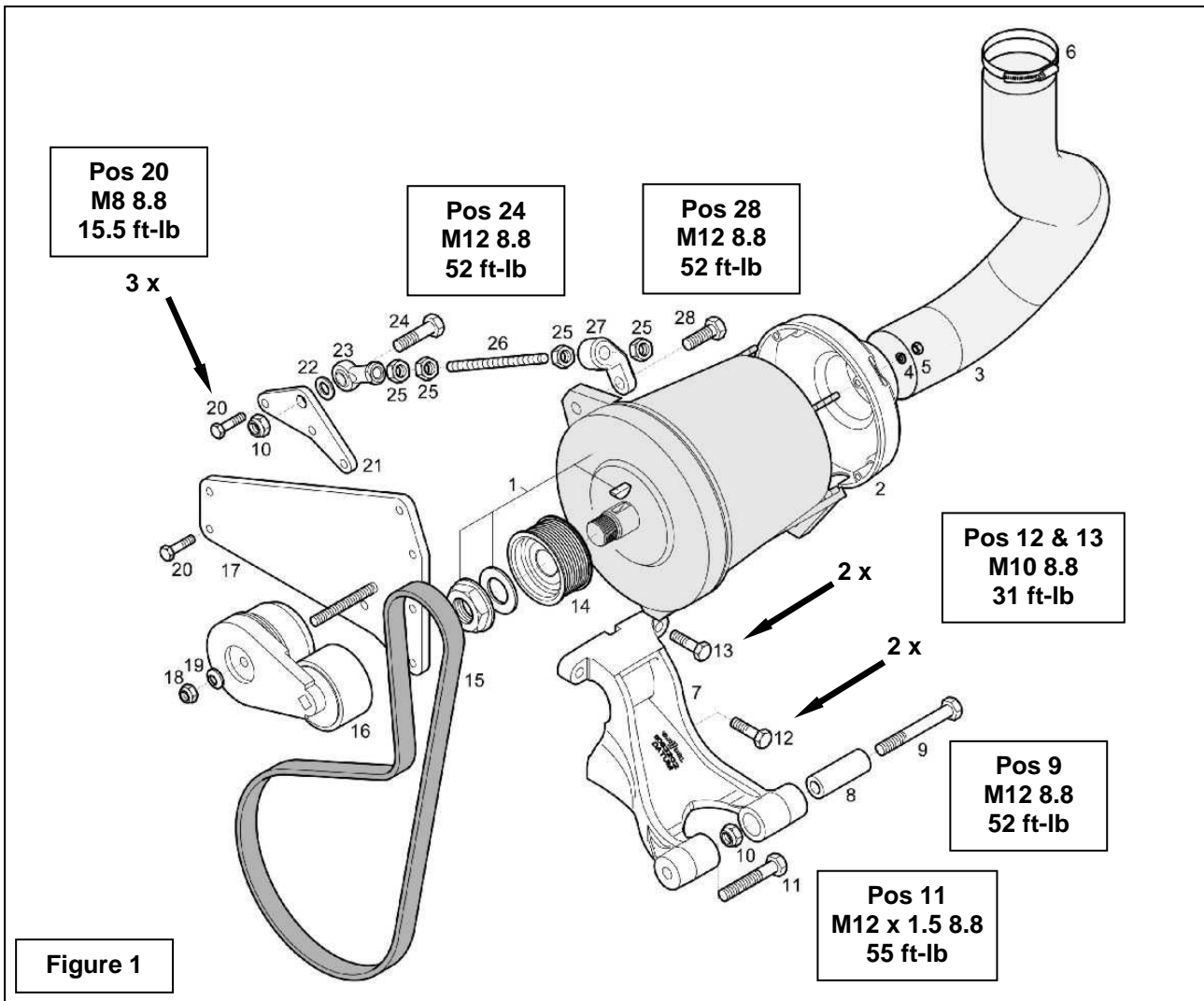
DESCRIPTION:

1. It has been determined that on a number of occasions the fasteners securing the alternator mounting brackets to the engine (arrows, Figure1) had worked loose as a result of vibrations.
2. To address the issue it is necessary to check fastener retention during the next service interval at the latest in order to ensure system performance.
3. Please refer to the procedure below for further instructions.
4. If the fastener retention check fails the test described in this Service Bulletin, please follow the instructions outlined in the attached Work Procedure WP573 "To improve the retention of the alternator mounting bracket".

PROCEDURE:

1. General:

- This job should be executed by an experienced automotive technician.
- For more information refer to the Maintenance Manual and the Operating Manual.
- Throughout the procedure reference is made to the Parts Manual, section 1402.02-0016 "Alternator installation".
- Unserviceable parts pertaining to the subject of this Work Procedure should be replaced as a matter of course.



2. Special tools, equipment or services:

- 3/8 drive flex ratchet torque wrench ranging from 5 to 75 ft-lb with .5 ft-lb increments.

3. Preparations:

- Park the coach on a level surface with the front wheels straight. Apply the parking brake and shut down the engine.
- Switch off all systems and turn off the battery master switch.
- Put a “DO NOT OPERATE” tag on the instrument panel.
- Switch off the batteries with the battery disconnect switch.
- Read the entire procedure before beginning to work.

CAUTION: When working in the engine compartment, turn the starter motor inhibitor switch to “starter motor disabled” for the steps, which do not require engine operation.
CAUTION: Observe safe shop practices at all times.

4. To check the alternator bracket retention:

- 1) In the engine compartment, remove the alternator drive belt as described in the Maintenance Manual, Chapter 2.46 “Alternator secured to engine block: to replace belt”.

- 2) Slacken the turnbuckle adjuster.
Undo and remove the fasteners securing the alternator upper ear to the turnbuckle adjuster (position 28, Figure 1).
- 3) Slacken the fasteners securing the lower alternator pivots to alternator bracket #11063204 (positions 9 and 11, Figure 1).
Swing the alternator away from the engine.
- 4) Refer to the OE fastener torque reference chart and to Figure 1.

Fastener torque reference chart

Description	Torque (ft-lb)
Bolt, M8 x 1.25 x 30 mm, grade 8.8, DIN 933	15.5
Bolt, M10 x 1.5 x 30 mm, grade 8.8, DIN 933	31
Bolt, M10 x 1.5 x 35 mm, grade 8.8, DIN 933	21
Bolt, M12 x 1.75 x 45 mm, grade 8.8, DIN 933	52

- 5) Using a 3/8 drive flex ratchet torque wrench check that the fasteners securing the alternator mounting brackets (positions 12, 13, 20, Figure 1) to the engine are still properly tightened.

CAUTION: Using a mirror, make sure that the bolt heads meet the bracket pad faces dead flat.

- 6) Check that the through bolt of turnbuckle adjuster ball joint (position 24, Figure 1) is torqued to 52 ft-lb.
- 7) If the fastener retention complies with the specifications, reinstall the alternator and drive belt referring to the Maintenance Manual:

Chapter 4.46 "Alternator secured to engine block: to replace belt"

Chapter 4.46 "Alternator secured to engine block: to adjust tension arm of automatic belt tensioner after installing new belt"

Chapter 14.2 "Alternator: to fit or exchange alternator".

- 8) If the fastener retention fails any of the above checks, disassemble the alternator set-up, inspect the parts and reassemble them referring to the attached Work Procedure WP573 "To improve the retention of the alternator mounting bracket" which provides remedial action and installation guidelines.

Procedure complete.

INFORMATION HANDLING:

Important supplements to and modifications of the technical information not yet included in the manual, are communicated by means of Service Bulletins.

File the Service Bulletins at the back of your manual, in numerical order.

To make sure that you will be reminded of the Bulletins that have appeared in the meantime while paging the manual, mark the pages concerned by hand with the Service Bulletin number.

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WORK PROCEDURE WP573 TD925US, C2045, T2100 – Electrical system

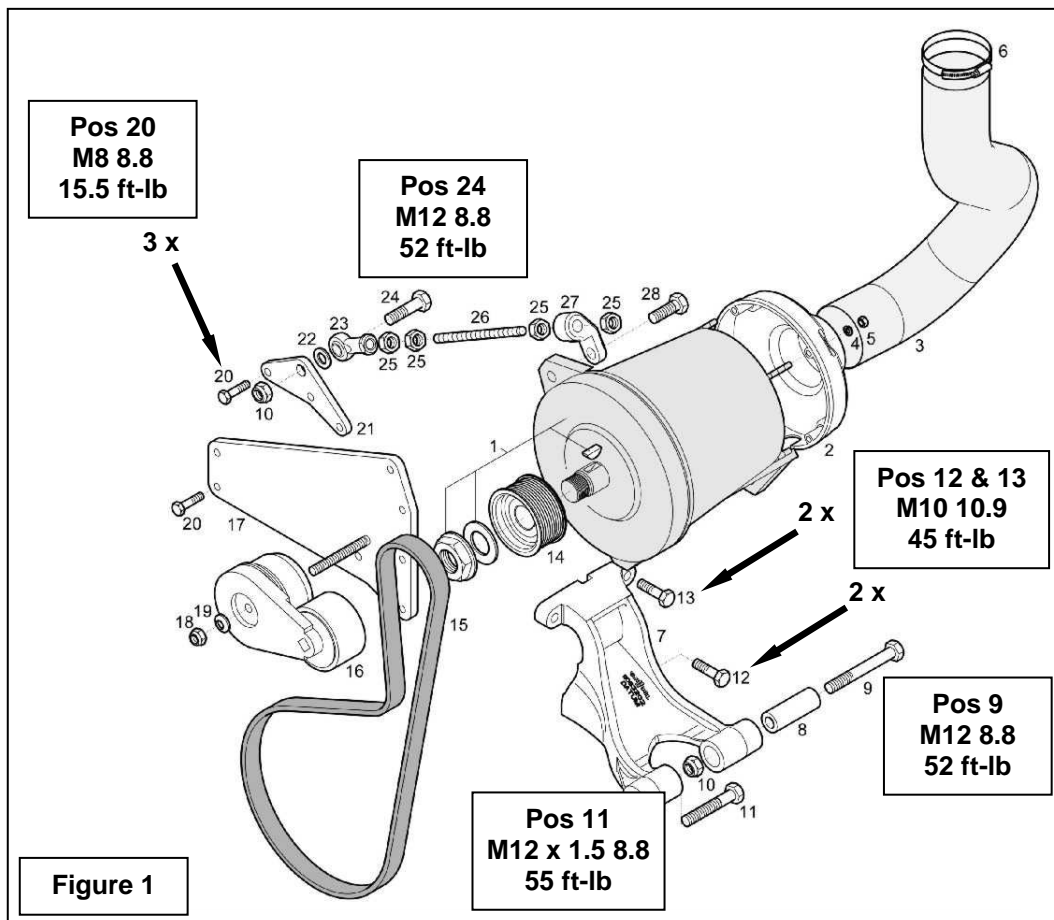
To improve the retention of the alternator mounting bracket

APPLICATION:

This Work Procedure is applicable to Van Hool TD925US, C2045, and T2100 units that have been equipped with a Cummins ISM07 engine and cast alternator mounting bracket part #11063204.

DESCRIPTION:

1. It has been determined that on a number of occasions the fasteners securing the alternator mounting brackets to the engine (arrows, Figure1) had worked loose as a result of vibrations.



2. To address the issue it is necessary to inspect and correct composing parts of the assembly in order to ensure system performance.
3. Please refer to the alternator hardware installation guidelines and materials list provided in this Work Procedure.

MATERIAL:

Reference is made to the Parts Manual, section 1402.02-0016 "Alternator installation".

Old parts

Reference	Description	Qty.	Refer to
VH 660224503	Bolt, M10 x 1.5 x 30 mm, grade 8.8, DIN 933	2	12, Figure 1
VH 660224601	Bolt, M10 x 1.5 x 35 mm, grade 8.8, DIN 933	2	13, Figure 1
VH 660629103	Washer, 13 x 24 x 2.5 mm, DIN125	1	22, Figure 1

New parts

Reference	Description	Qty.	Refer to
VH 11149701	Bolt, M10 x 1.5 x 30 mm, grade 10.9, DIN 933	2	12, Figure 1
VH 10527474	Bolt, M10 x 1.5 x 35 mm, grade 10.9, DIN 933	2	13, Figure 1
VH 10580793	Washer, Belleville spring lock, Nomel 551241, class E, for grade 10.9 M12 bolts, 24.3 mm outer diameter, 1.6 mm thick	2	Figure 4
VH 10718745	Thread locker, Loctite 243 (medium strength)	#	N/S

- Parts may be purchased through regular channels.
- Parts/Waste disposal: discard old material according to applicable environmental regulations.

PROCEDURE:

1. General:

- This job should be executed by an experienced automotive technician.
- For more information refer to the Maintenance Manual and the Operating Manual.
- Throughout the procedure reference is made to the Parts Manual, section 1402.02-0016 "Alternator installation".
- Unserviceable parts pertaining to the subject of this Work Procedure should be replaced as a matter of course.

2. Special tools, equipment or services:

- 3/8 drive flex ratchet torque wrench ranging from 5 to 75 ft-lb with .5 ft-lb increments.

3. Preparations:

- Park the coach on a level surface with the front wheels straight.
- Switch off all systems and turn off the battery master switch.
- Put a "DO NOT OPERATE" tag on the instrument panel.
- Switch off the batteries with the battery disconnect switch.
- Read the entire procedure before beginning to work.

CAUTION: When working in the engine compartment, turn the starter motor inhibitor switch to “starter motor disabled” for the steps, which do not require engine operation. Observe safe shop practices at all times.

4. Remedial action and installation guidelines:

Disassemble the alternator set-up, inspect and correct or replace the composing parts as necessary, and reinstall them as per the guidelines below.

Alternator bracket 11063204

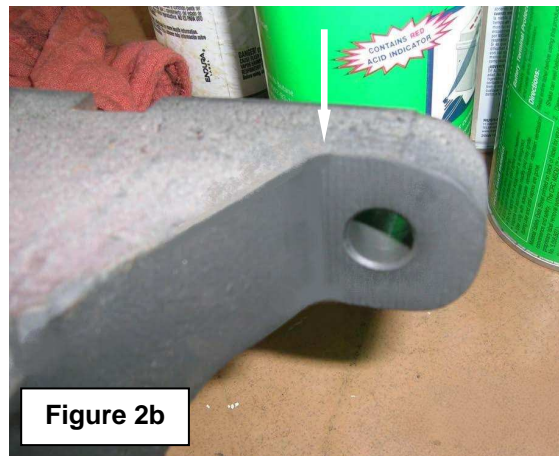
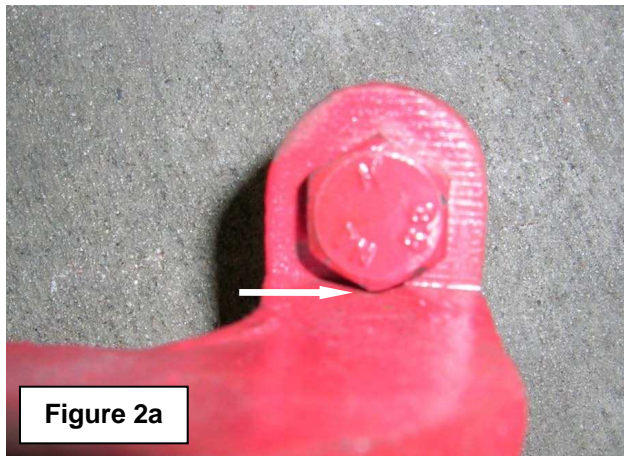
- In order to be able to tighten the fasteners to the proper torque a socket and torque wrench should be used.

Whenever the location of the mounting bolt through holes in the pads does not permit the fitment of a socket over the bolt head the pad faces should be enlarged by grinding to accept one (Figures 2a through 2d).

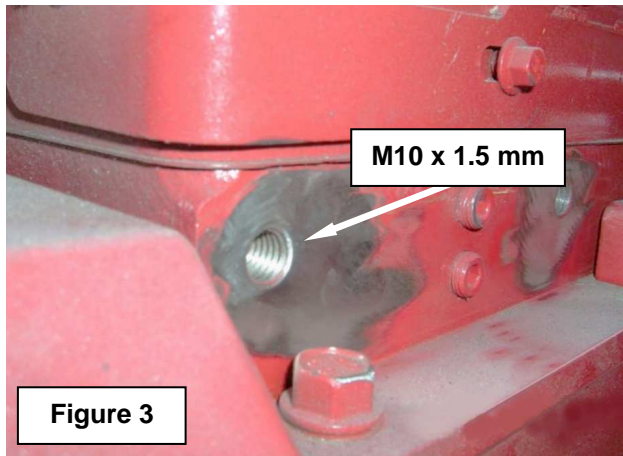
Take care to provide an ample radius between the pad and the bracket body in order to prevent notching (Figure 2b).

Do not undercut and avoid sharp edges and grooves as these will start cracks.

Make sure the mating face for the bolt head is dead flat.



- The bracket pad and engine mating faces should be true and clean and free of paint and debris (Figure 3).
Clean the threaded holes in the engine block with An M10 x 1.5 mm thread chaser, then remove all debris from them with compressed air (Figure 3).



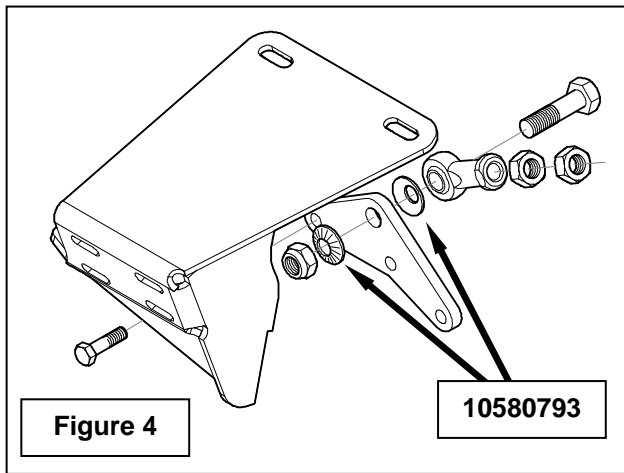
Repair fastener torque reference chart

Description	Torque (ft.lb)
Bolt, M8 x 1.25 x 30 mm, grade 8.8, DIN 933	15.5
Bolt, M10 x 1.5 x 30 mm, grade 10.9, DIN 933	45
Bolt, M10 x 1.5 x 35 mm, grade 10.9, DIN 933	45
Bolt, M12 x 1.75 x 45 mm, grade 8.8, DIN 933	52

- Referring to the repair fastener torque reference chart, replace the OE fitted grade 8.8 bolts by 10.9 grade M10 x 1.5 bolts.
Upper mounting bolts should be 35 mm long, the lower ones 30 mm (12 and 13, Figure 1).
- Check the depth of threaded holes in the engine block first in order to make sure that the bolts don't bottom out.
- If necessary use hardened flat washers to adjust thread length.
- As a safety measure apply a dab of Loctite 243 thread locker (medium strength) on the threads.
- If there is any damage to bushing 11063465 (8, Figure 1) or bolts 660246505 (9, Figure 1) and 660251045 (11, Figure 1) replace these as a matter of course.

Turnbuckle adjuster bracket 11043715, coolant tube bracket 11088950, ball joint 634303230, flat washer 660629103

- Referring to the repair fastener torque reference chart, use new bolts 660222503 (M8 x 1.25 x 30 mm, grade 8.8, DIN 933) to secure these brackets to the engine.
- Check the depth of threaded holes in engine block first in order to make sure that the bolts don't bottom out.
If necessary use hardened flat washers to adjust thread length.
- As a safety measure apply a dab of Loctite 243 thread locker (medium strength) on the threads.
- The mating faces of these brackets and of the engine should be true and clean and free of paint and debris.
- Clean the threaded holes in the engine block with a thread chaser, then remove all debris from them with compressed air.
- When attaching the turnbuckle adjuster ball joint to bracket 11043715, use a new bolt 660226801 (M12 x 1.75 x 45 mm, grade 8.8, DIN 933) and lock nut 660207406 (M12 x 1.75, grade 8.8, DIN 980).
Delete single plain washer 660629103.
Fit conical Belleville spring lock washers instead, one on each side of the bracket, as shown in Figure 4.



One washer should fit between the ball joint and the bracket with the ribbed side facing the ball joint.
One washer should fit between the bracket and the M12 lock nut with the ribbed side facing the nut.

Procedure complete.

DISCLAIMER:

The procedures contained herein are not exclusive. Van Hool cannot possibly know, evaluate, or advise the transportation industry of all conceivable ways in which a procedure may be undertaken or of the possible consequences of each such procedure. Other procedures may be as good, or better, depending upon the particular circumstances involved.

Each carrier who uses the procedures herein must first satisfy itself thoroughly that neither the safety of its employees or agents, nor the safety or usefulness of any products, will be jeopardized by any procedure selected.

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