SERVICE BULLETIN
1236

ADDRESSEES	**:** Owners and operators of coaches listed under 'Application'
VEHICLE MODEL	**:** T2145 and C2045 with Detroit Diesel DDEC VI engine
VEHICLE SECTION	**:** Exhaust system
BULLETIN TYPE	**:** Field Change Program
DATE	**:** March 30, 2010
SUBJECT	**: Exhaust pipe support bracket change**
TERMS & CONDITIONS	**:** Refer to the warranty section further in this Bulletin.

APPLICATION:

Model	VIN
T2145	44667 → 44690
C2045	46789 → 46928

DESCRIPTION:

1. On the above-mentioned units it is necessary to replace the (transmission mounted) exhaust pipe support bracket assembly (Figures 1 and 2a) by a more flexible design (Figure 2b). The latter is better suited to compensate for the changes in pipe length during the heating-up/cooling-down cycles.

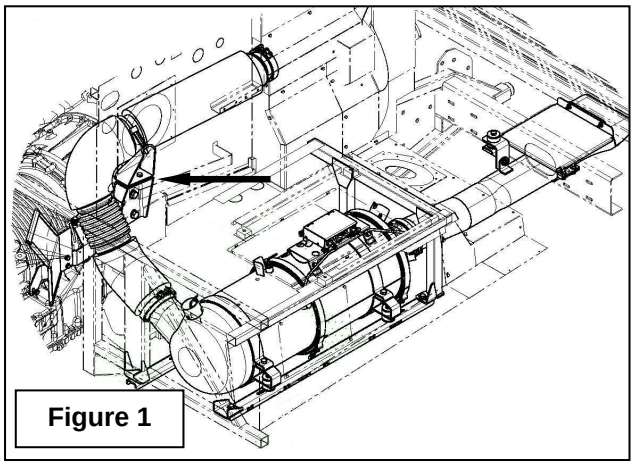

Figure 1

Figure 2a

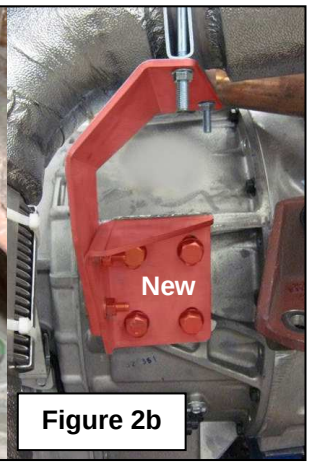

Figure 2b

2. In order to avoid damage to the exhaust pipe and restore its useful service life, please replace the OE fitted bracket assemblies on your coach by new, referring to the materials list and the step-by-step instructions further in this Bulletin.

   CAUTION: Failure to replace the OE fitted rigid bracket assemblies by flexible ones may result in the exhaust pipe cracking at the fuel doser valve.

Description continued on page 3.

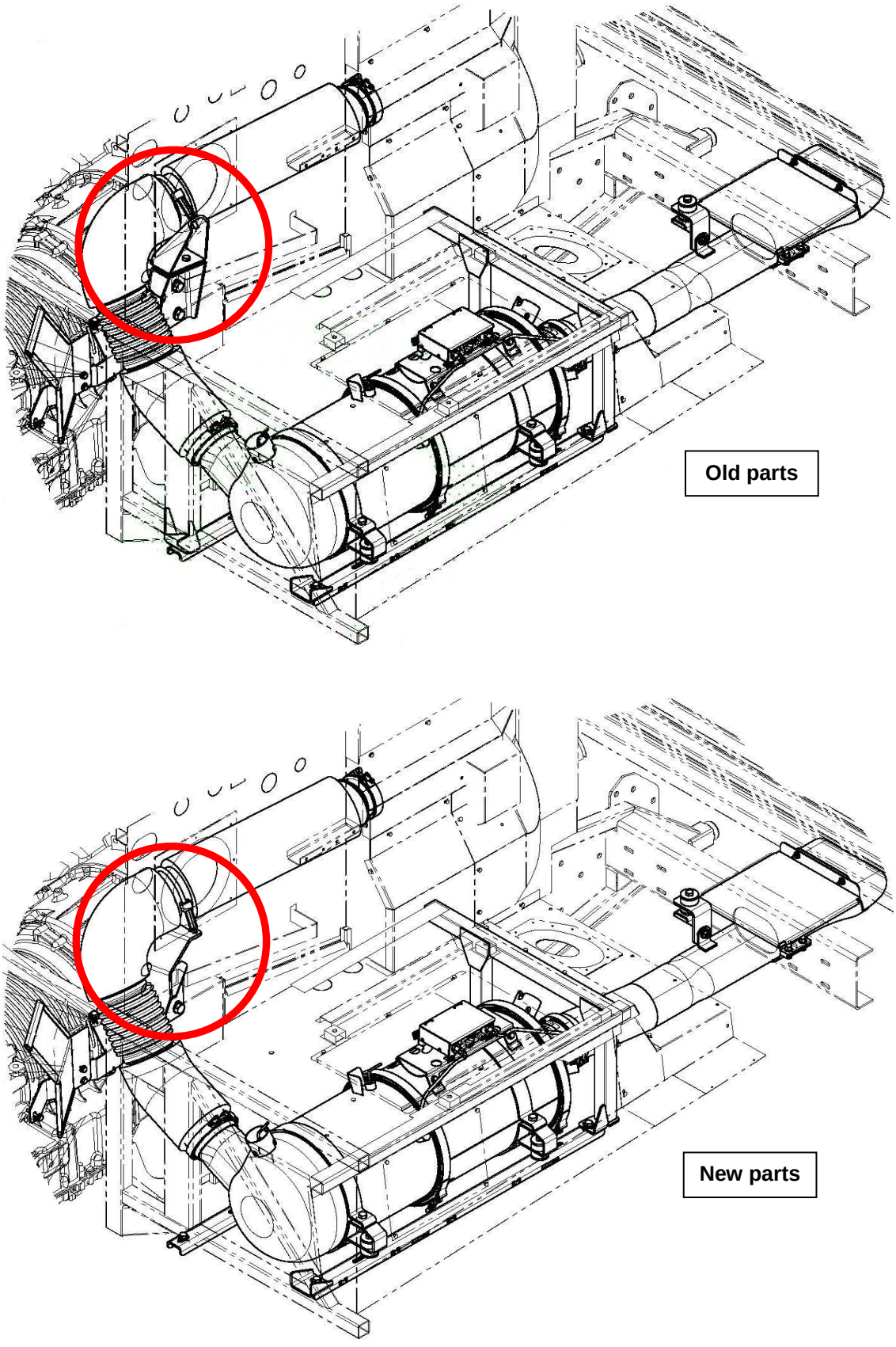

Figure 3 : T2145 and C2045 with Detroit Diesel DDEC VI engine and Allison B500 transmission – exhaust pipe support bracket assembly, old and new.

Description continued from page 1.

3. The new bracket assemblies have been cut into production as from VIN 46930.

MATERIAL:

Old parts (Figure 4, installation on units with Allison transmission shown)

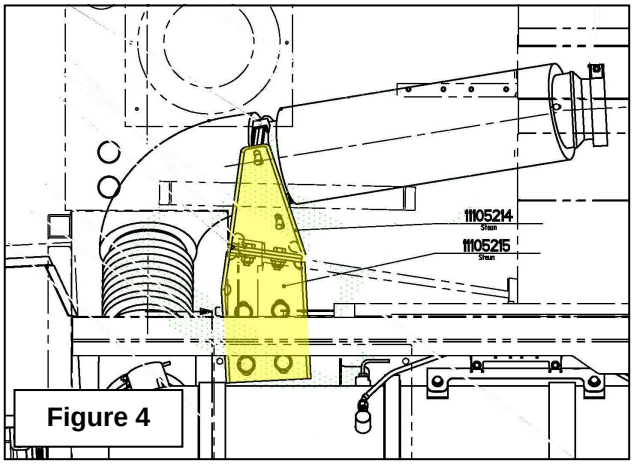

Figure 4

VH reference	Description	Qty.	Application
11105214	Bracket, exhaust pipe support, upper	1	Units w/ Alison B500 transmission
11105215	Bracket, exhaust pipe support, lower	1	
11077918	Bracket, exhaust pipe support	1	Units w/ AS Tronic transmission

New parts (Figure 5, installation on units with Allison transmission shown)

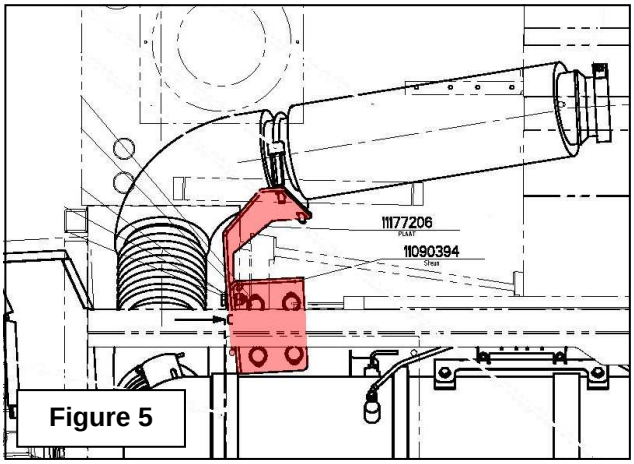

Figure 5

VH reference	Description	Qty.	Application
11177206	Bracket, exhaust pipe support, upper	1	Units w/ Alison B500 transmission
11090394	Bracket, exhaust pipe support, lower	1	
660226601	Bolt, M12 x 1.75 x 35 mm, grade 8.8	2	
660207406	Nut, M12 x 1.75, grade 8.8	2	
660629203	Washer, M12, 13 x 30 x 6 mm	4	
11177914	Bracket, exhaust pipe support	1	Units w/ AS Tronic transmission

Material continued on next page.

Material continued from previous page.

Replacement parts

VH reference	Description	Qty.	Application
11044804	Pipe, exhaust, doser valve to after treatment system	1	All units

- Old and new parts are interchangeable.
- Part #11044804 will be supplied on a one for one exchange basis only.
- Parts/Waste disposal: discard old material according to applicable environmental regulations.

PROCEDURE: To replace the exhaust pipe support bracket assembly

Important! Depending on the type of transmission and coach mileage, please perform repairs as follows:

Transmission	Mileage	Action
B500	Less than 25,000	1. Inspect pipe 2. Replace pipe if damaged 3. Replace bracket assembly
	More than 25,000	1. Replace pipe 2. Replace bracket assembly
ZF AS Tronic	All mileages	1. Inspect pipe 2. Replace pipe if damaged 3. Replace bracket assembly

NOTE: If you do not have the expertise to perform present procedure, do not hesitate to go to your nearest ABC Customer Care & Parts Source service center.

1. General:

- Job technician's qualifications/expertise: exhaust system, after treatment system (muffler).
- To remove/reinstall the exhaust pipe the aid of an assistant is required.
- For more information refer to the service literature that comes with the coach.

2. Special tools, equipment or services:

- During the removal and installation of the pipe the use of compensator locating shells (part #10997061, Figure 6) is required in order to avoid putting undue stress on this critical part.

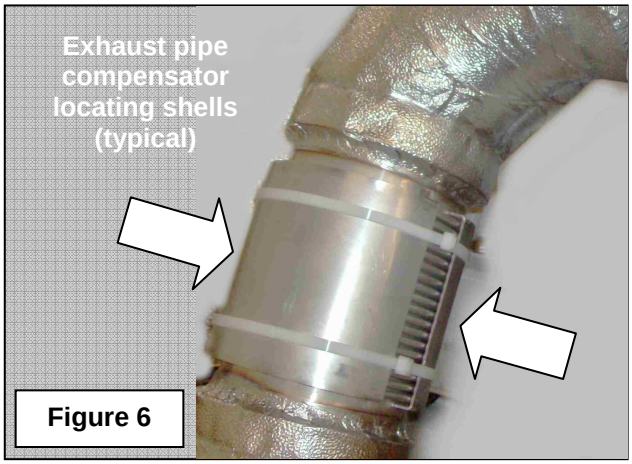

Figure 6

3. Preparations:

1) Park the coach on a level-surfaced service pit with the front wheels straight.
When using portable post lifts instead of a service pit, lower the suspension first.
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.

2) Read the entire procedure before beginning to work.

3) Open the rear most left-hand door giving access to the compartment that contains the air filter, the batteries, the charge air cooler, and the radiator (Figure 7).

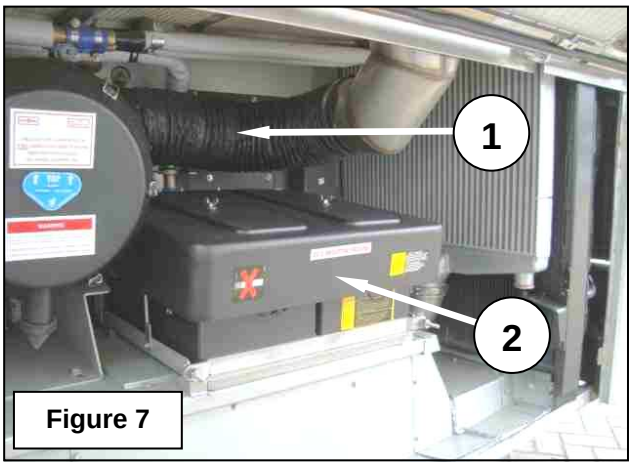

Figure 7

NOTE: If access to the turbocharger cowling proves to be too cumbersome, it may be preferable to detach the hose between the air intake duct and the air filter (1, Figure 7). It may also be preferable to remove both batteries (2, Figure 7) and the battery carrier.

CAUTION: To disconnect the batteries before removal proceed as follows:
1. Disconnect the battery equalizer ground cable. 2. Disconnect the battery ground cable. 3. Disconnect the battery positive cable.
To reconnect the batteries, proceed in reverse order.

4) Undo and remove the fasteners securing the turbocharger cowling (Figure 8) to the back wall of the compartment.
Recover the fasteners.
Remove the cowling from the compartment.

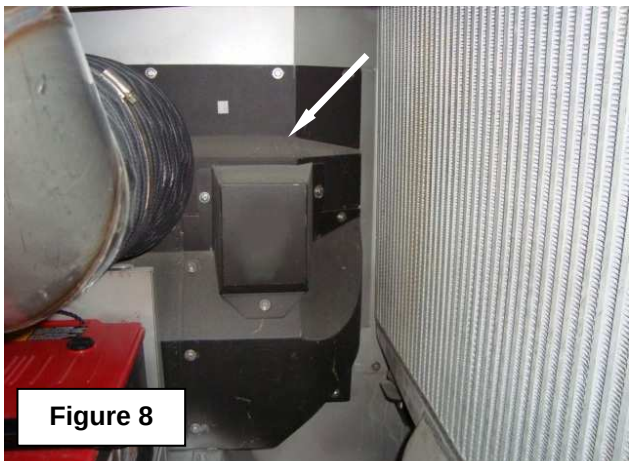
Figure 8

<u>NOTE</u>: The fuel doser valve to which the exhaust pipe is attached, is bolted to the turbocharger turbine manifold (Figure 9a).

5) Check the condition of exhaust pipe in order to determine the type of repair required.
If the pipe is undamaged, replace the support bracket assembly only.
If the pipe shows cracks (Figure 9b), it should be replaced, and a new support bracket assembly should be fitted.

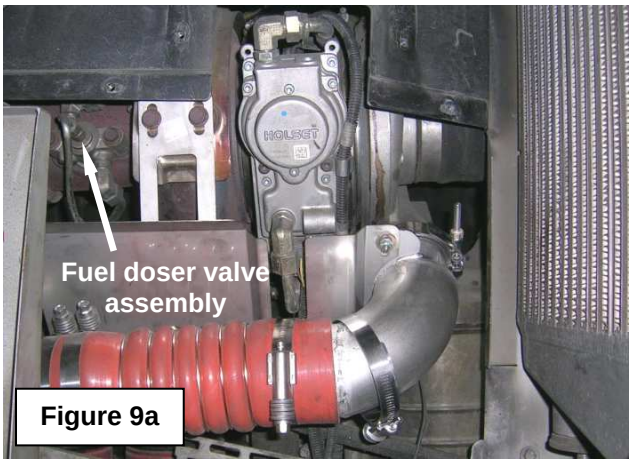

Figure 9a

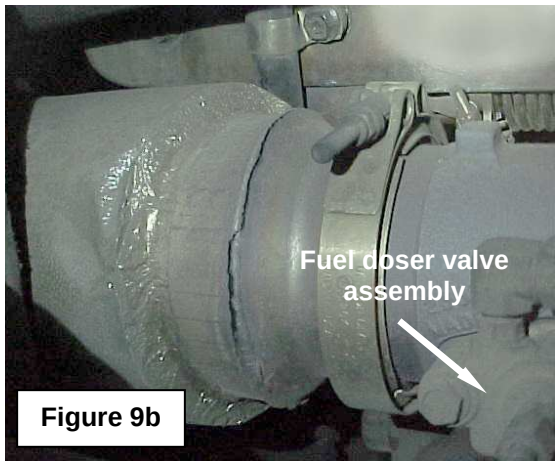

Figure 9b

6) Inside the coach, undo and remove the flathead Allen bolts securing the trap door in front of the rear bench (Figure 10a).
Remove the trap door, exposing the air intake pipe and the exhaust pipe (Figure 10b).


Figure 10a

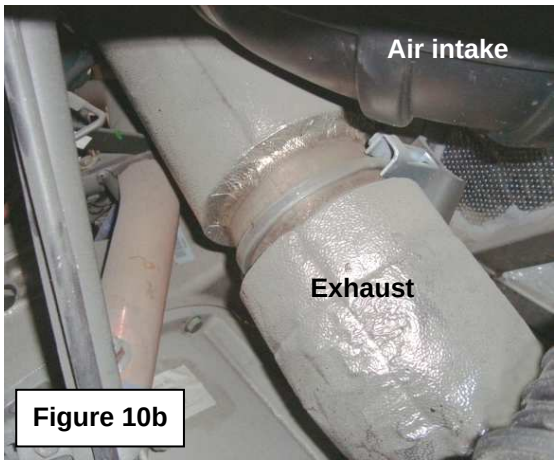

Figure 10b

<u>HAZARD ALERT MESSAGES</u>:

Read and observe all <u>CAUTIONS and NOTES</u> in this publication.
They provide information that can help prevent serious personal injury, damage to components, or both.

<u>CAUTION</u>: To avoid personal injury, make sure components have cooled down sufficiently before starting work.

<u>CAUTION</u>: The after treatment device and the exhaust pipe each have a considerable weight. To avoid personal injury and/or damage to the vehicle or component, use suitable lifting equipment and work with an assistant to handle them.

<u>CAUTION</u>: When working in the engine compartment, turn the starter motor inhibitor switch to "starter motor disabled" (Figure 11).

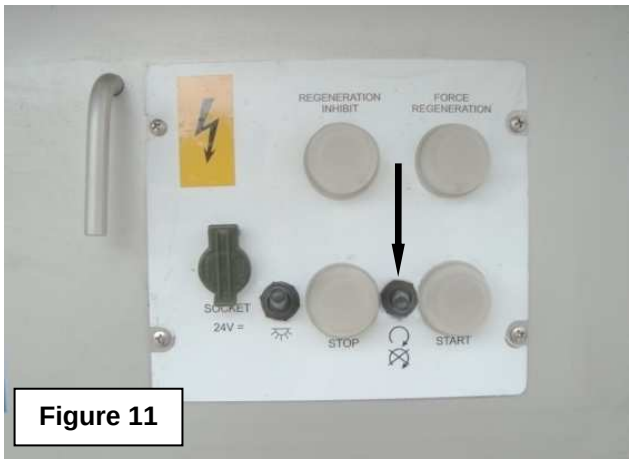

Figure 11

<u>CAUTION</u>: Observe safe shop practices at all times

4. <u>To replace the exhaust pipe support bracket assembly</u>:

<u>NOTE</u>: This part of the procedure describes the replacement of the bracket assembly as found on units equipped with Allison B500 transmission.
The replacement of the exhaust support bracket for units equipped with ZF AS Tronic transmission is done in a similar manner but is less involved. The new ZF AS Tronic bracket is a direct replacement but slimmed down version of the old one (without reinforcing strips). It also uses the same mounting points as the old one.

1) Working through the aperture of the trap door inside the passenger compartment, locate the guillotine clamp assembly securing the center part of the exhaust pipe (Figure 12a).

   <u>NOTE</u>: The guillotine clamp assembly comprises of a U-clamp, a saddle and two nuts.

   Undo and remove the nuts securing the U-clamp to the exhaust pipe support bracket (Figures 112b). Withdraw the U-clamp and recover the nuts.

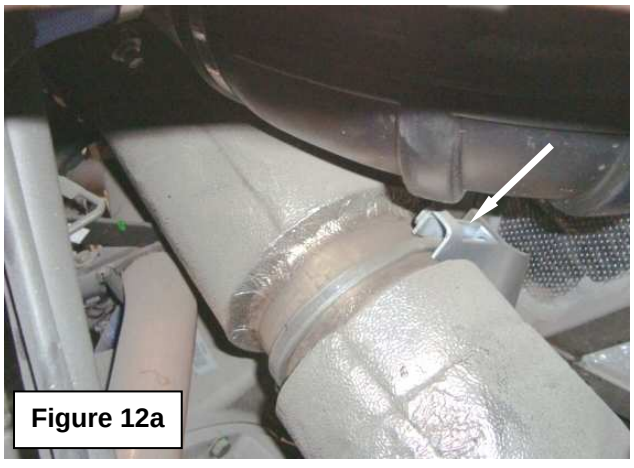

Figure 12a

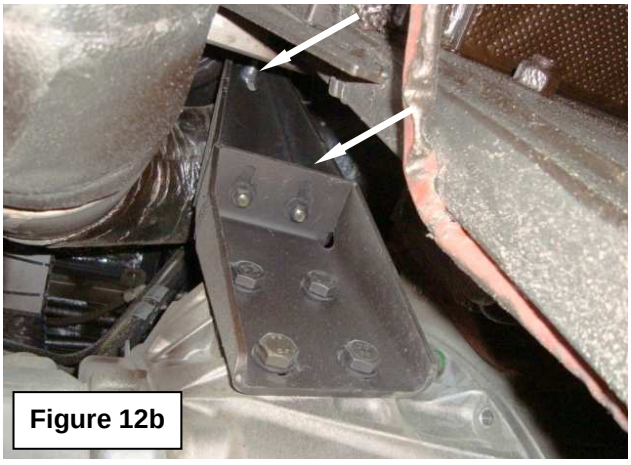

Figure 12b

2) Working underneath the coach, undo and remove the four bolts securing the exhaust pipe support bracket to the transmission (Figure 12c, overleaf).
   Recover the guillotine clamp saddle (1, Figure 12d) and the M16 bolts.
   Also recover the washers (2, Figure 12d) which may be reused to make minor adjustments later in the procedure.

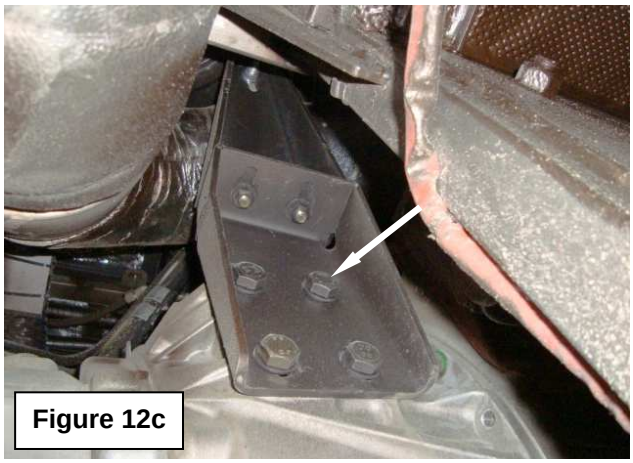

Figure 12c

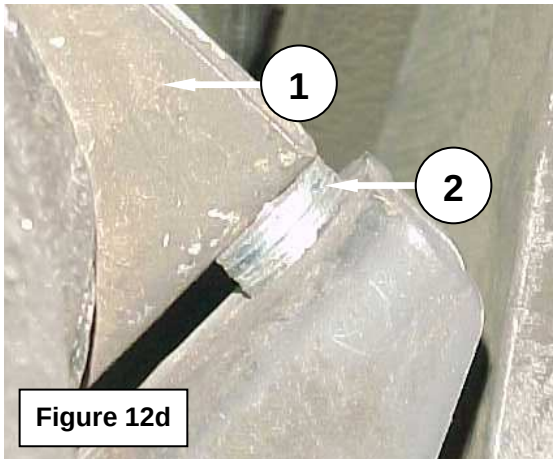

Figure 12d

3) Pre-assemble brackets #11177206 and #11090394 for a loose fit as shown in Figures 13a and 13b using the M12 fasteners from the material's list.
Make sure the bolt heads face the compensator (arrow, Figure 13b).

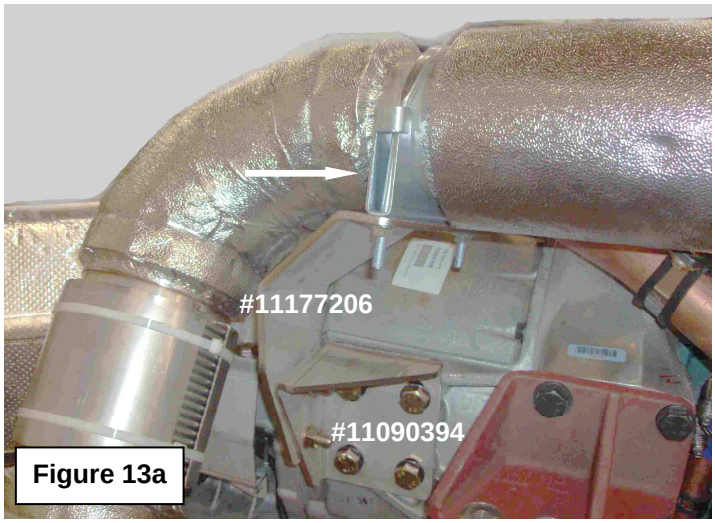

Figure 13a

Figure 13b

4) Attach the new bracket assembly to the transmission for a loose fit using the recovered M16 bolts. Make sure to use some form of ant-seize compound on the threads.

5) With bracket #11177206 in its lowest possible position, assemble the guillotine clamp by first installing the saddle between the bracket assembly and the pipe, then by having an assistant slip the U-clamp over the pipe (arrow, Figure 13a).
Run-up the U-clamp nuts until the clamp and saddle fit snuggly on the pipe.

6) Adjust the vertical position of brackets #11177206 and #11090394 making use of the slots provided in them.
It may be necessary to install washers between the saddle and the bracket assembly to obtain a perfect fit. The aim is to ensure a stress and strain-free installation of the pipe and the bracket assembly.

Tighten the U-clamp nut to a torque of 18 ft.lbf.
Tighten the M16 bolts to 133 ft.lbf.
Tighten the M12 fasteners to a torque of 52 ft lbf.

The installation of the new bracket assembly is now complete.

5. To remove a faulty exhaust pipe:

1) Locate the sensor cables overhead the after treatment device.
Detach and disconnect the connectors shown in Figures 14a and 14b.
Remove cable ties as required to allow the after treatment device to be lowered onto the shop floor.

Figure 14a

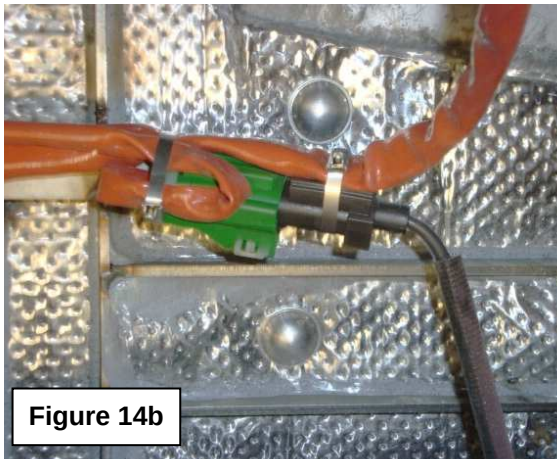

Figure 14b

CAUTION: During the removal and installation of the pipe it is necessary to install compensator locating shells in order to avoid putting undue stress on this critical part.
Failure to install the shells may cause the compensator to become damaged during handling.

2) Install the compensator locating shells as shown in Figure 6.
Secure with cable ties.

3) Slacken the V-band clamp securing the exhaust pipe to the after treatment device inlet (Figure 15).
Fully undo the clamp nut, and remove and recover the clamp.

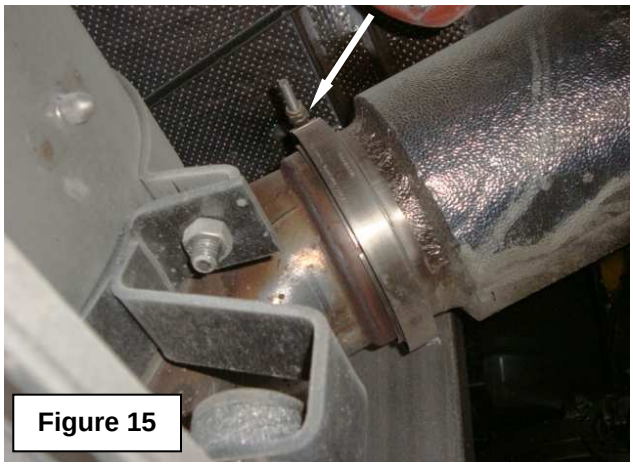

Figure 15

4) Undo and remove the fasteners securing the tailpipe to its support bracket (Figure 16, overleaf).
Recover the fasteners.

Continued on next page.

Figure 16

5) Install a transmission jack underneath the after treatment device and raise it so it takes the weight off the device.
At the four corners, undo and remove the fasteners securing the after treatment device skid to the chassis (Figure 17).
Carefully lower the after treatment device onto the shop floor and store it in a safe place, taking care not to drop it, or allow anything to impact it.
It may be necessary to raise the coach to obtain sufficient clearance.

Figure 17

6) At the fuel doser valve assembly, make a mark across the crack in order to enable the repair shop to correctly reposition the parts after removal (Figure 18).

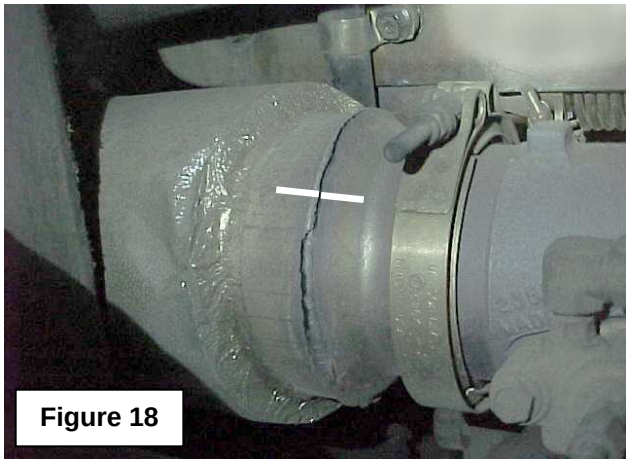

Figure 18

7) Slacken the V-band clamp securing the pipe to the doser valve assembly (Figure 19). Fully undo the clamp nut, and remove and recover the clamp.

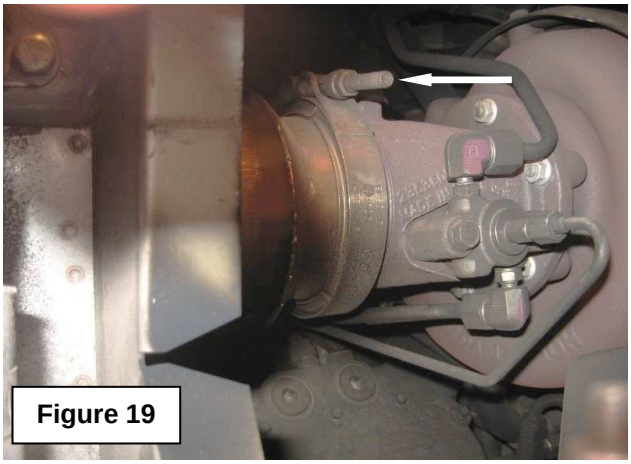

Figure 19

8) During this step have an assistant hold the pipe steady with a sling.
Remove the guillotine clamp and the exhaust pipe support bracket as explained in section 4. “To replace the exhaust pipe support bracket assembly”.

9) With the aid of an assistant, carefully remove the pipe from the vehicle through the aperture above the reinforcing plate at the bottom of the chassis (Figure 20).

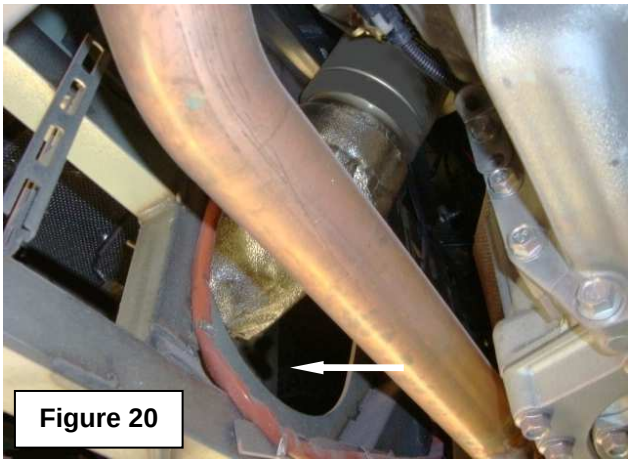

Figure 20

6. <u>To install a replacement exhaust pipe while fitting a new pipe support bracket assembly</u>:

1) Assemble the exhaust pipe support bracket for a loose fit as explained in section 4. “To replace the exhaust pipe support bracket assembly”.

2) Check that the new exhaust pipe had been provided with compensator locating shells. If not fitted, install them and secure them with cable ties.

3) With the aid of an assistant, carefully bring the new pipe into position on the vehicle, manoeuvring it through the aperture above the reinforcing plate at the bottom of the chassis.

4) During this step have an assistant hold the pipe steady with a sling.
Line up the pipe with the doser valve assembly.
Install the exhaust pipe support bracket for a loose fit as explained in section “4. To replace the exhaust pipe support bracket assembly”.
Fit the guillotine clamp assembly for a loose fit.

5) Install the V-band clamp securing the pipe to the doser valve assembly.
   Do not fully tighten to allow adjustment.

6) Using a transmission jack, carefully reinstall the after treatment device and tailpipe in reverse order to removal. Do not fully tighten the fasteners and line up the exhaust pipe with the after treatment device inlet in the process.

7) Install the V-band clamp securing the exhaust pipe to the after treatment device inlet.
   Do not fully tighten to allow adjustment.

8) Adjust the position of the pipe as required to obtain a stress and strain-free installation.

9) Once satisfied with the position of the pipe, check that the V-band clamps sit snuggly on the pipe flanges.

10) Continue the installation of the exhaust pipe support bracket and guillotine clamp assembly as explained in “4. To replace the exhaust pipe support bracket assembly”.

11) Tighten all clamps to the torque specified:

    Guillotine clamp: tighten the U-clamp nuts to a torque of 18 ft.lbf.
    V-band clamps: tighten the nuts to a torque of 80 in.lbf.

12) Tighten the fasteners securing the after treatment device skid to the chassis to a torque of 30 ft.lbf.
    Tighten the tailpipe support bracket bolt to a torque of 30 ft.lbf.

13) Remove the compensator locating shells.

14) Reconnect the sensor cables overhead the after treatment device.
    Secure the cables to the chassis with ties.

15) Remove all tools and close all doors.

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.

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.

WARRANTY:

1. Terms and conditions:

Van Hool will accept warranty claims for this repair as follows:

Parts:

- Parts may be obtained from your nearest ABC Customer Care & Parts Source dealership.
- Part #11044804 will be supplied on a one for one exchange basis only.
  In order to be eligible for a free assembly, the old part must be returned.

Labor allowance:

- Bracket replacement only: 1.0 (one) hour of labor will be awarded per coach repaired.
- Bracket and part #11044804 replacement: 5.0 (five) hours of labor will be awarded per coach repaired.

Campaign expiration date: Service Bulletin issue date + 6 months

2. Claim references:

- Causal parts: 11105214, 11105215, 11077918
- Job code: A25654V

Claim submission: Contact ABC Customer Care & Parts Source for guidance.

Monitoring and performance: The claim records pertaining to this Bulletin will be used to determine that the remedy has been executed in accordance with the manufacturer's instructions and to evaluate the status of this Field Change Program.

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