



# SERVICE BULLETIN

SB1204

<b>ADDRESSEES</b>	: ABC Customer Care and Parts Source Owners and operators of coaches listed under 'Application'
<b>COACH/BUS MODEL</b>	: T2145
<b>BULLETIN TYPE</b>	: Product Improvement
<b>SECTION/CHAPTER</b>	: Section 11 – Body and accessories
<b>DATE</b>	: June 18, 2007
<b>SUBJECT</b>	: <b>Cooling fan tie rod bracket</b>
<b>TERMS &amp; CONDITIONS</b>	: No claims will be accepted with reference to this Bulletin.

## APPLICATION:

Model	Engine	VIN
T2145	Cummins	44109 →
	Detroit Diesel	43972 →
	Caterpillar	44801 →

## DESCRIPTION:

1. As from the above-mentioned units an improved anchor bracket for the cooling fan tie rod has been cut into production. The new bracket has a revised shape, with larger radii than the previously used brackets, virtually eliminating cracks caused by notching (Figure 1).

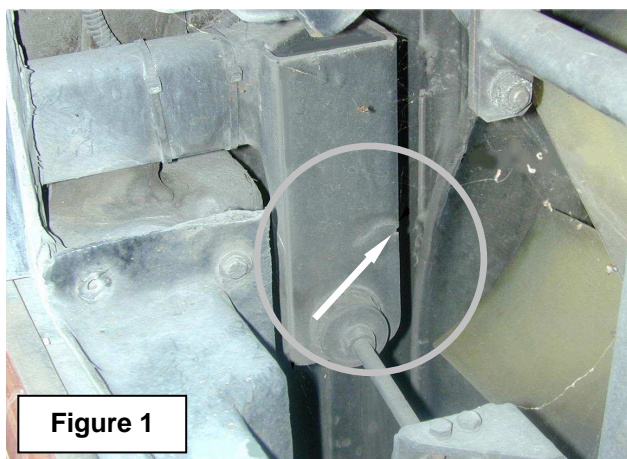


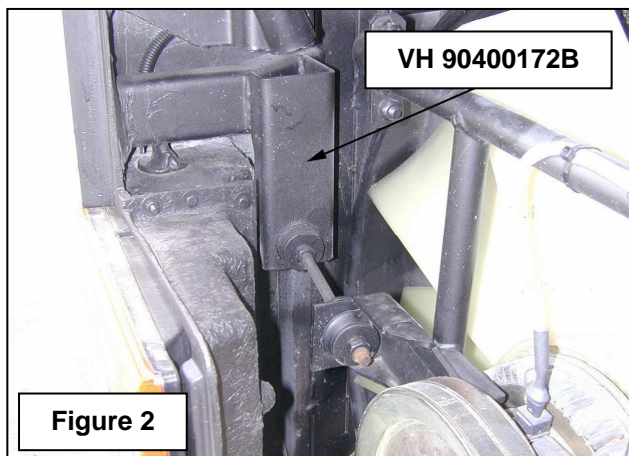
Figure 1

2. For field coaches equipped with an old style bracket that is subject to cracking, a reinforcing sleeve has been made available, which welds to the bracket exterior.
3. Refer to the procedure further in this Bulletin for fitting instructions.

## **PARTS AND PRODUCTS:**

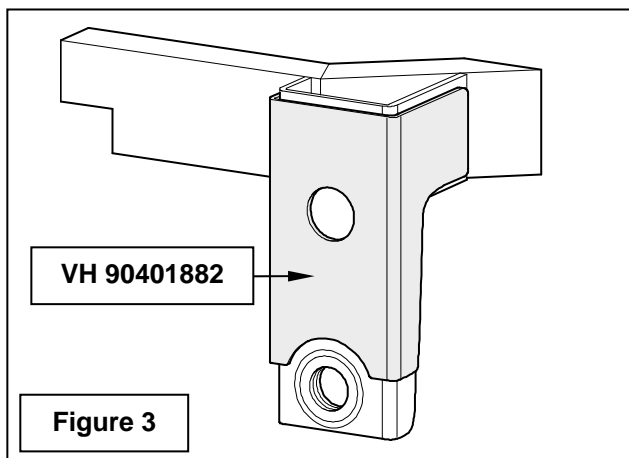
### **Old parts (Figure 1)**

<b>VH reference</b>	<b>Description</b>	<b>Qty.</b>
VH 90400172	Cooling fan tie rod bracket, steel, 22 mm hole	1
VH 90400172A	Cooling fan tie rod bracket, stainless steel, 28 mm hole	1



### **New parts (Figure 2)**

<b>VH reference</b>	<b>Description</b>	<b>Qty.</b>
VH 90400172B	Cooling fan tie rod bracket, stainless steel, 28 mm hole, revised	1



### **Retrofit parts (Figure 3)**

<b>VH reference</b>	<b>Description</b>	<b>Qty.</b>
VH 90401882	Sleeve, weld-on reinforcing, for brackets 90400172 and 90400172A	1

- Old and new parts are interchangeable, but only the new will be offered for service replacement.
- Retrofit parts will be made available through regular channels.
- Parts and products disposition: discard according to applicable environmental regulations.

## **PROCEDURE:**

### **To reinforce the cooling fan tie rod bracket**

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:**

- This job should be executed by an experienced welder.
- For more information refer to the Maintenance Manual, the Spare Parts Manual, and the Operating Manual.

#### **2. Special tools, equipment or services:**

- This job requires the use of MIG welding equipment, a 3" cutter and an angle grinder.

#### **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.
- 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".

**CAUTION:** Observe safe shop practices at all times.

#### **4. Shop practice and safety rules:**

##### **Welding data:**

Welding data: Refer to AWS A5.9-93

- Steel: Stainless 304L
- Wire section: 1.0 mm
- Wire feed: 2.9-8.4 m/min
- Current: 80-190 A
- Gas: 88% Ar + 10% He + 2% CO<sub>2</sub>

##### **Welding safety rules:**

The following information pertaining to welding should be read before beginning any such procedure. The prohibitions and requirements contained herein must be followed during such procedure.

- Welding must be done only by a qualified and experienced person.
- It is the responsibility of the welder to make sure that his/her personal safety equipment and the welding equipment he/she is using are in a condition that will not endanger his/her health and safety or the health and safety of others.

- Adequate ground contact and barriers must be positioned as required to protect components (wiring, air-lines, hydraulic lines, fuel lines etc.) from damage due to heat, contact by weld spatter, arcing or other potentially damaging events associated with welding.
- The following precautions must be taken to protect the vehicle's electronic equipment:
  - FIRST disconnect the wires from the GND (ground) terminal of the battery equalizer.
  - Disconnect the batteries (disconnect ground cable first, reconnect ground cable last).
  - Disconnect the engine, transmission and brake system ECU's.
  - Disconnect the HVAC and combustion heater ECU's.
  - Disconnect the MUX nodes.
  - On shell units, also disconnect the suspension ECU if the vehicle is equipped with an electronic control unit.
  - For any other electronic equipment (radio, video, ICE...) refer to the OEM prescriptions.
  - Keep the ground clamp as close as possible to the work and make sure the clamp makes perfect contact with the drive axle housing.
  - Make certain the welder is properly grounded.
- Never look at the arc unless wearing a suitable helmet or face shield.
- Wear protective clothing and gloves.
- Do not permit bystanders, unless they are wearing protective gear.
- Never weld while standing in water or on damp ground.
- Have adequate ventilation.
- Do not adjust machine settings while the machine is under load.
- Keep cables tight in the sockets.
- Do not touch hot metal.
- Do not allow the welding rod/wire to touch anything but the work.
- Make sure there is nothing flammable near the working area.
- Always have a fire extinguisher of the correct type available.

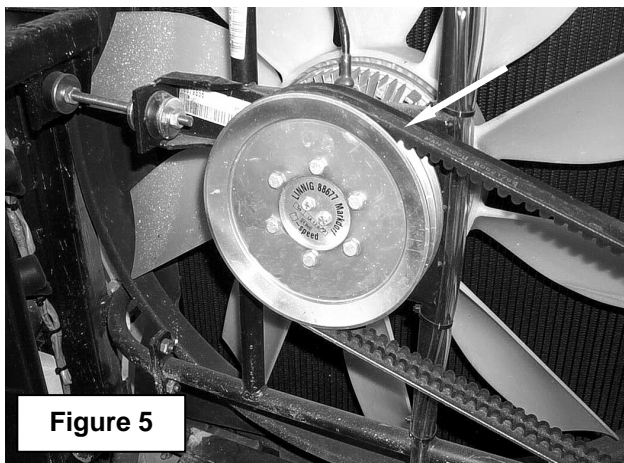
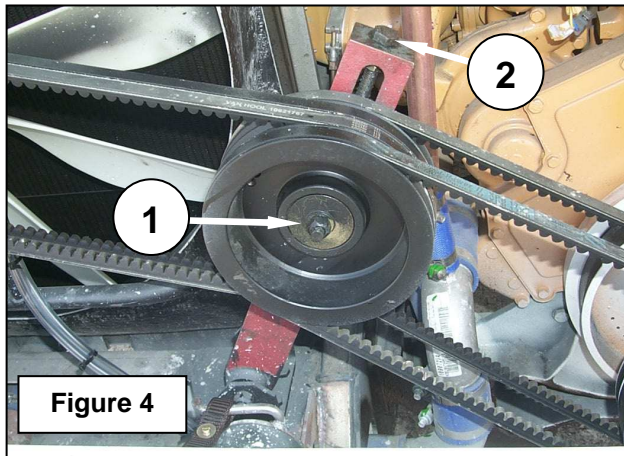
### **Grinding safety rules:**

Grinders can be dangerous. When improperly used, they are responsible for many serious and lasting injuries to the eyes, hands, face and body. Therefore you must always observe the following safety rules:

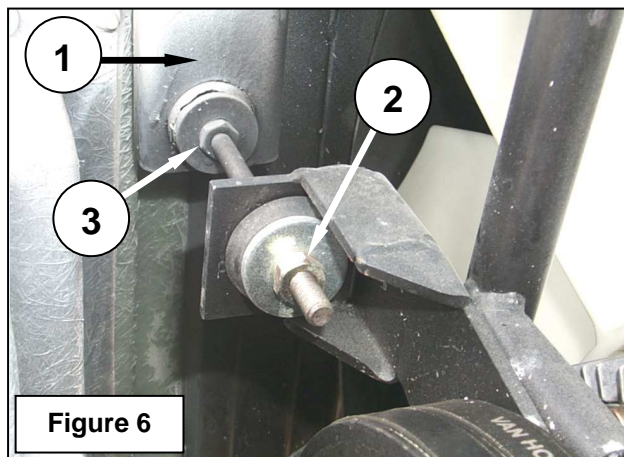
- Always wear eye protection (safety goggles, face shield). Wear leather gloves.
- Adequate barriers must be positioned as required to protect components (glass, wiring, air-lines, hydraulic lines, fuel lines, drive shaft etc.) from damage by grinding sparks.
- Before doing any grinding on the coach, thoroughly clean the affected area.
- Keep abrasive discs tight, clean and true.
- Allow grinder to reach full rpm before using.
- Do not put aside the grinder until the wheel has completely stopped revolving.
- Never strike a grinding wheel while revolving. It may shatter and explode.
- Do not grind in the presence of explosive vapors (gasoline, paint thinner, batteries...)
- Before installing a new grinding disc, disconnect the electric mains or air supply line.
- When installing a new disc make certain:
  - It is designed for the rpm of the grinder.
  - It has the correct size.
  - It is properly fixed.
- Never remove the grinding disc guard.

**5. To prepare the tie rod bracket for welding:**

- 1) Open the engine compartment door and locate the idler pulley (1, Figure 4) and the drive belt tensioner (2, Figure 4).  
Slacken the idler pulley hub nut.  
Turn the adjuster hex head counter clockwise to slacken the drive belts.  
Detach the drive belts from the cooling fan clutch pulley (Figure 5).



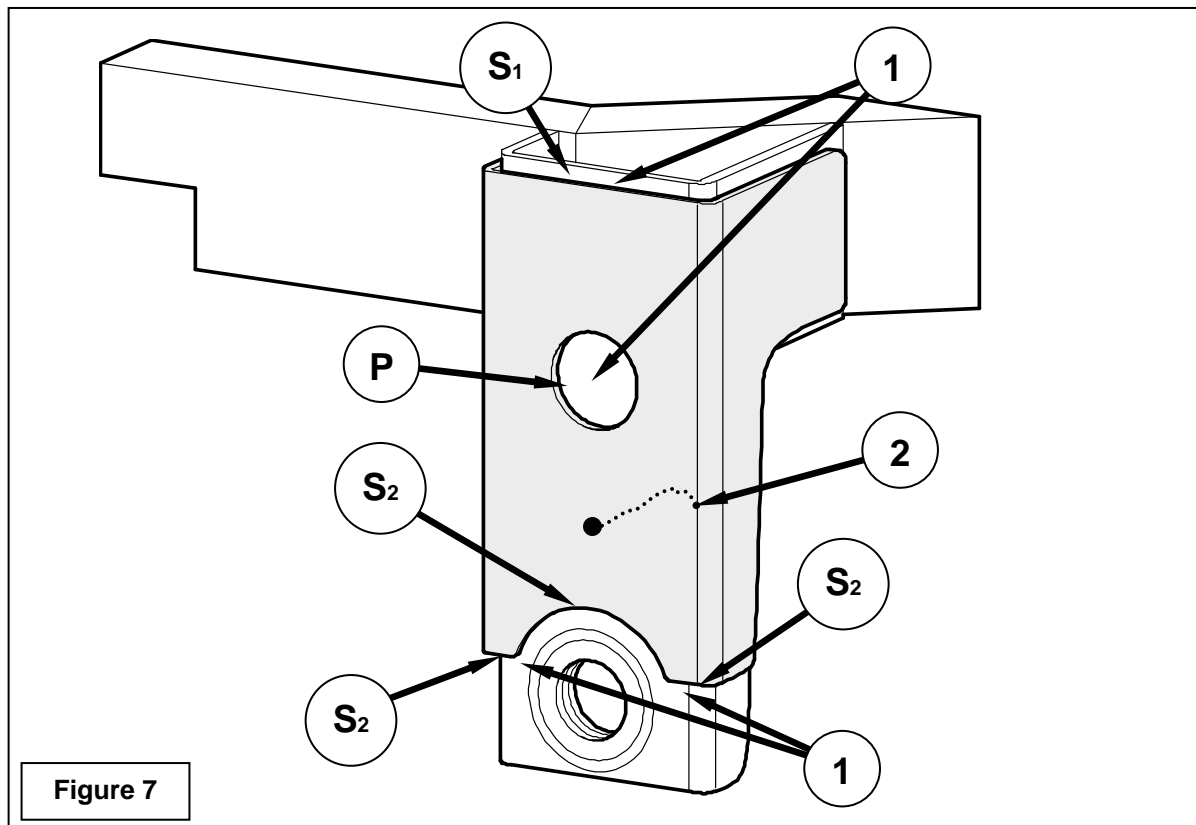
- 2) A tie rod assembly connects the cooling fan frame to a bracket that has been welded to the coach frame (1, Figure 6).



- 3) Undo and remove the tie rod outer nuts, top hat washers and rubber bushes (2, Figure 6), both at the cooling fan and at the chassis.  
Back up the inner nuts and washers (3, Figure 6).  
Remove the tie rod and recover all tie rod mounting hardware.

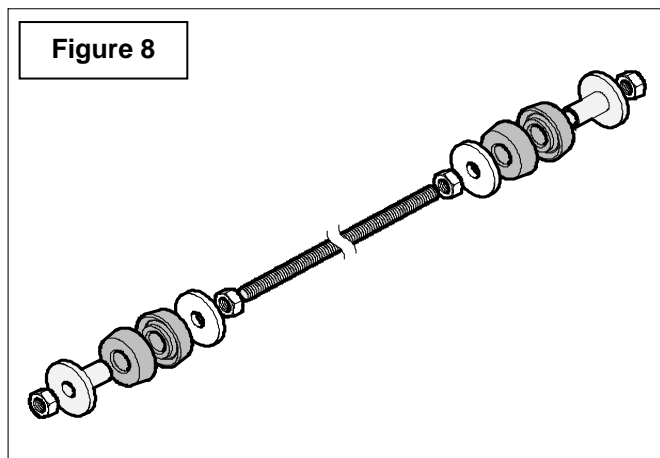
**6. To install reinforcing sleeve VH 90401882:**

- 1) Refer to the grinding safety rules elsewhere in this Bulletin.  
Grind the exterior of the bracket to bare metal along the upper and lower edges and in the center to provide a proper surface for welding on the reinforcing sleeve (1, Figure 7).



- 2) Using a suitable drill bit, drill a 5/32-inch diameter hole at the end of the crack to stop it from progressing any further.  
With a 3" cutter, cut through the notch and the crack (2, Figure 7).
- 3) Refer to the welding safety rules elsewhere in this Bulletin.  
Disconnect the batteries and electronics.  
Install barriers to protect surrounding equipment.  
Install the MIG welder.
- 4) Weld the notch and crack (2, Figure 7).  
Allow the weld to cool.  
Dress the weld with a grinder.
- 5) Place the reinforcing sleeve over the bracket as shown in Figure 7.  
Secure with Vise Grip pliers.
- 6) Tack weld the sleeve in place.  
Remove the Vise Grip pliers.

- 7) Plug weld the hole in the center of the sleeve (see arrow marked 'P').
- 8) Seam weld the sleeve upper edges (S<sub>1</sub>, Figure 7).
- 9) Stitch weld in the locations indicated by the arrows marked 'S<sub>2</sub>' in Figure 7.
- 10) Remove all welding equipment and barriers.
- 11) Cover the sleeve and the tie rod bracket with a coat of black chassis paint.  
Allow bracket and reinforcing sleeve to cool.
- 12) Referring to Figure 8, reassemble and reinstall the tie rod assembly.  
Adjust tie rod length with the inner nuts.  
Tighten the tie rod outer nuts with one wrench to a torque of 30 ft.lbf (40 Nm) while holding the inner nuts with a second wrench.



- 13) Reinstall the drive belts and adjust belt tension by turning the adjuster hex head clockwise.  
Belt tension half way between pulleys: 90 to 110 lbf (per belt).  
Tighten the idler pulley hub nut to a torque between 43 and 57 ft.lbf.
- 14) Turn the starter motor inhibitor switch to “starter motor enabled” then close the engine compartment door.
- 15) Reconnect the batteries and electronics.

*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.

**SERVICE INFORMATION:**

Service Bulletins are issued to supplement or supersede information in the Van Hool manuals.

Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.