



Service Bulletin No. 1089

Circulate to listed addressees

COACH MODEL	: T2140, T2145, and S2145
BULLETIN TYPE	: Field Change Program: NHTSA campaign number 01V-176
MANUAL & SECTION	: Maintenance Manual: Chapter 11 - Body and accessories Spare Parts Manual: Section 753309 - Wiper
PARTS BOOK REVISION	: Yes
DATE	: October 31st, 2001
SUBJECT	: Windshield wiper linkage
TERMS & CONDITIONS	: Refer to the customer notification letter. Parts and labor allowance will be provided as per warranty information in this Bulletin.

APPLICATION :

The retrofit action subject of this Bulletin is applicable to the following units :

Model	Engine	VIN
T2140	Cummins	40130 → 40147
	Detroit Diesel	40588 → 40610
T2145	Cummins	43362 → 43500
		44001 → 44256
		44261 → 44262
	Detroit Diesel	43730 → 43999 44501 → 44565
S2145	Not specified	42201 → 42225

DESCRIPTION :

Van Hool have determined that the windshield wiper actuating lever may become disengaged from the wiper motor shaft. If this occurs, the windshield wipers will cease functioning. The procedure in this Bulletin provides the necessary information to remedy this condition.

Service personnel : please read, initial and circulate

Service Manager	Parts Manager	Warranty Administrator	Workshop Foreman	Service Technician

PARTS :

Old parts

Part No.	Description	Qty.
VH 10584586	Clamp	1
VH 10584587	Bell crank	1
VH 10739392	Bolt, 6x1x30 mm	2
VH 10739394	Nut, self-locking, 6x1 mm	2

New parts

- Order one kit VH 10766252 for one coach to modify. The kit is suited for T2140, T2145 and S2145 coaches only and contains the following parts:

Part No.	Description	Qty.
VH 10766250	Clamp, embossed "BRB"	1
VH 10766247	Bell crank, embossed "BRB"	1
VH 10739392	Bolt, 6x1x30 mm	2
VH 10739394	Nut, self-locking, 6x1 mm	2
VH 10757900	Dust cap, wiper motor	1

- Parts will be forwarded to customers free of charge.
- Old and new parts are directly interchangeable.
- Only new parts will be offered as service replacements for this application.
- New bell crank and clamp can be identified by a "BRB" mark.
- Always use genuine maintenance products and parts. Do not accept imitations.

PROCEDURE :

1. General :

The time required to replace the linkage bell crank and clamp, and install the wiper motor dust cap is approximately 0.45 hour.

2. Additional tools/equipment required :

A torque wrench with a 5 to 35 ft.lbf range is needed.

3. Preparations :

- Park the coach on a level surface, apply the parking brake and shut down the engine.
- Make sure the wiper switch is in the off position.
- Switch off all systems and turn off the ignition switch and the battery master switch.
- Read the entire procedure before beginning to work.

CAUTION : Observe safe shop practices at all times.

4. To replace wiper linkage bell crank and clamp :

To remove the old wiper linkage bell crank and clamp

- 1) Undo and remove the two nuts securing the main and idler windshield wiper arm (see Figure 1) on the right-hand side of the coach. Separate the washer tube from its fitting. Remove both wiper arms.

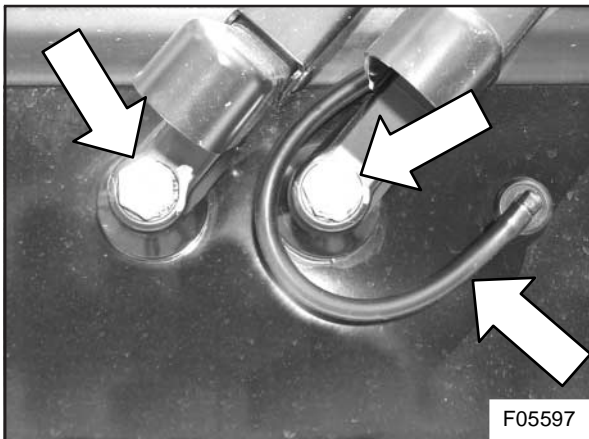


Figure 1: Wiper arm nuts and washer tube

- 2) Repeat step 1 for the left-hand wiper arm.
- 3) Open the road map compartment. Undo and remove the machine screws securing the two compartment door check straps (see Figure 2).

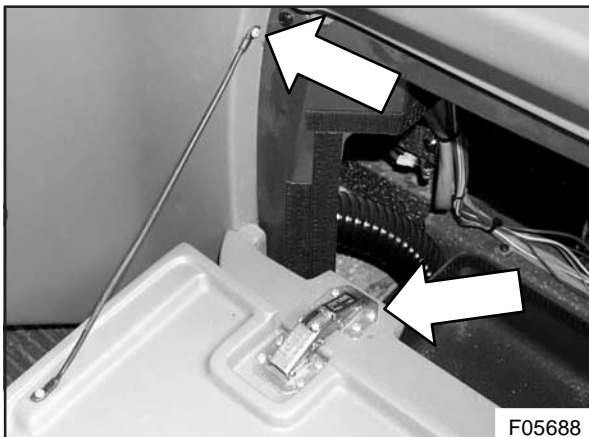


Figure 2: Road map compartment door check strap and hinge

- 4) Undo and remove the machine screws securing the door hinges to the road map compartment (see Figure 2).
- 5) Remove the compartment door.

- 6) Pull out the compartment liner, which is attached to the compartment back wall through Velcro strips (see Figure 3).

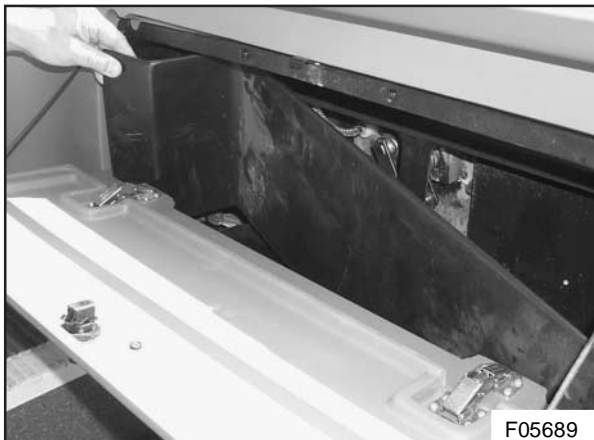


Figure 3: Compartment liner removal

- 7) Locate the bell crank and clamp behind the wiper motor mounting bracket (see Figures 4 and 6). With the wipers in the parking position and the wiper motor switched off, the bell crank and bracket are horizontal, i.e. parallel to the coach floor (see Figure 5). Carefully take note of their installation.

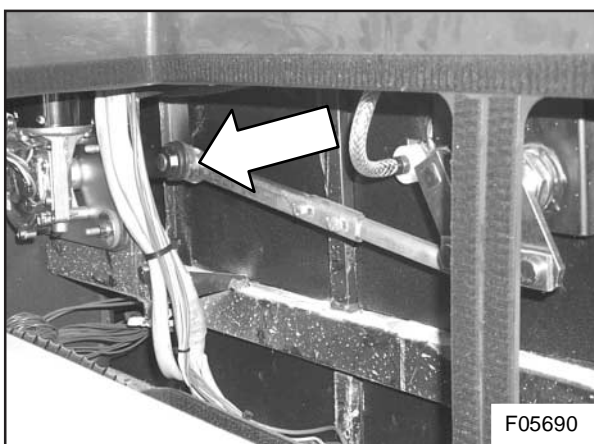


Figure 4: Bell crank and clamp location

CAUTION: Take care not to bend the wiper tie bar. Do not damage the knuckle bearings or dust caps. Bent tie bars, tie bars with damaged knuckle bearings or torn dust caps should be replaced by new tie bars.

- 8) With a 1¹/₁₆" open-end wrench, lever the right-hand wiper tie bar from the bell crank knuckle joint (see Figure 5).
Make sure to recover the dust cap.
Take note of its installation.

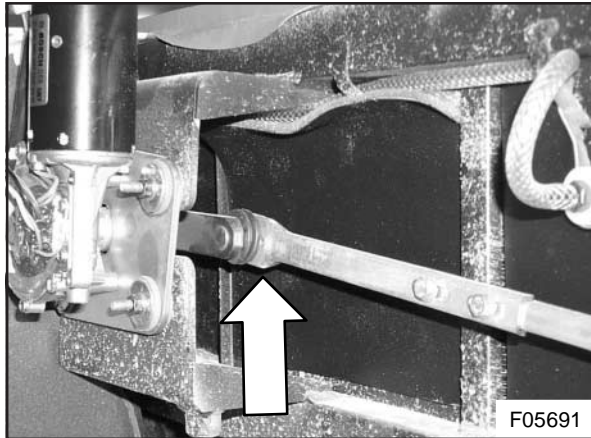


Figure 5: RH wiper tie bar inner knuckle

NOTE: Due to the limited accessibility of the T2100 wiper linkage it will be necessary to rotate the bell crank and clamp several times through a certain number of degrees by operating the wiper motor during the disassembly/assembly process. If any of the suggested bell crank and clamp positions in the procedure proves to be awkward for a particular step, sound judgement should prevail and another, more suitable position should be chosen.

CAUTION: Do not attempt to rotate the bell crank and clamp manually. Doing so will offset the automatic return to the parking position of the wiper motor. Use wiper, master and ignition switches only.

CAUTION: Wiper, master and ignition switches should be operated by the same technician changing the wiper linkage.

CAUTION: Never attempt to operate the motor while working on the wiper linkage at the same time.

CAUTION: Always make sure the master switch is off before continuing to work. If any power is supplied to the motor it may automatically recycle and go back to park while trying to lever the wiper tie bar off.

- 9) Switch the wiper switch to the slow wiping position. Turn the ignition on.
- 10) Using the master switch, activate the wiper motor and rotate the bell crank and clamp through 180° so that the left-hand tie rod becomes accessible.
Figure 6 shows the bell crank and clamp after ¼ turn has been completed (for the sake of clarity the picture has been taken from the front of the coach).
Turn off the wiper switch again.
Make sure the master switch is off.

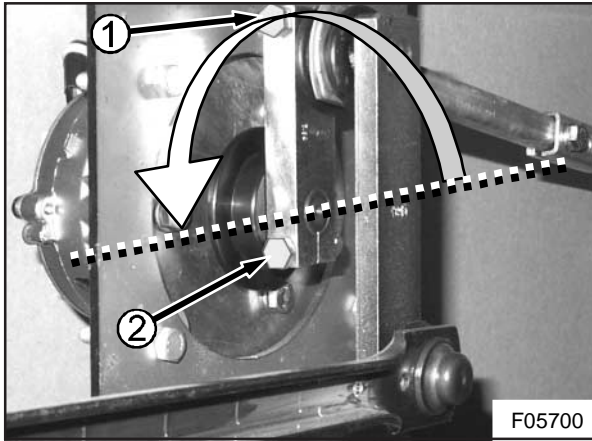


Figure 6: Bell crank and clamp after ¼ turn has been completed (left-hand tie bar up)

- 11) With a 10 mm box wrench and a socket and ratchet undo the bolt and nut securing the bell crank to the clamp (see 1, Figure 6).
- 12) With a large screwdriver, separate the bell crank from the clamp.

CAUTION: Take care not to bend the wiper tie bar. Bent tie bars should not be straightened, but must be replaced by new ones. Do not damage the knuckle bearing or dust caps. Damaged knuckle bearings are unserviceable. So the entire wiper tie bar has to be replaced. Dust caps are not available as service parts.

- 13) Install Vise-Grip pliers on the bell crank close to the splined knuckle joint to provide a fulcrum. Firmly hold the Vise-Grip pliers and, using a 1¹/₁₆" open-end wrench, lever the left-hand wiper tie bar from the bell crank knuckle joint. Make sure to recover the dust caps. Take note of their installation.
- 14) With a 10 mm box wrench and a socket and ratchet, undo the bolt and nut securing the clamp to the wiper motor shaft (see 2, Figure 6). Remove the clamp.
- 15) Salvage the old bell crank and clamp for certification purposes (See Warranty Information).

To install the wiper motor dust cap

To further improve wiper motor protection, a motor shaft dust cap should be fitted.

Install the motor shaft dust cap VH 10757900 (see Figure 7) by simply pushing it on the shaft as shown in Figure 8. Proper dust cap installation is shown in Figure 9.

NOTE: There is no need to remove the motor from the coach in order to fit the dust cap. In Figure 8, dust cap installation is shown with the motor out of the coach for the sake of clarity.



Figure 7: Wiper motor dust cap VH 10757900



Figure 8: Wiper motor dust cap installation (for the sake of clarity shown with the motor out of the coach)

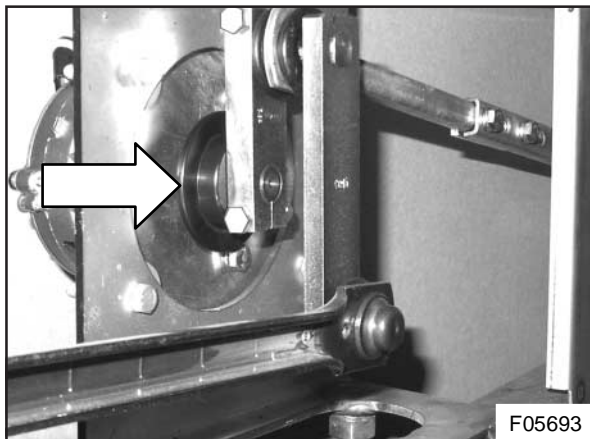


Figure 9: Wiper motor dust cap installation

To install the new wiper linkage bell crank and clamp

- Reassembly is the reverse of disassembly.
- The new bell crank and clamp have been marked “BRB” (see Figure 10).
- Lightly lubricate the bell crank knuckles before installing the tie bars.
- Mind the tie bar dust cap installation.
- Make sure the bell crank knuckle shaft does not protrude through the clamp. The shaft end should be *flush* with the clamp.

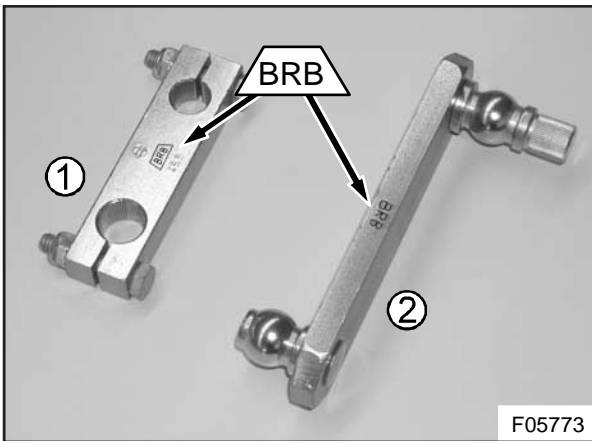


Figure 10: Clamp (1) and bell crank (2) with "BRB" mark.

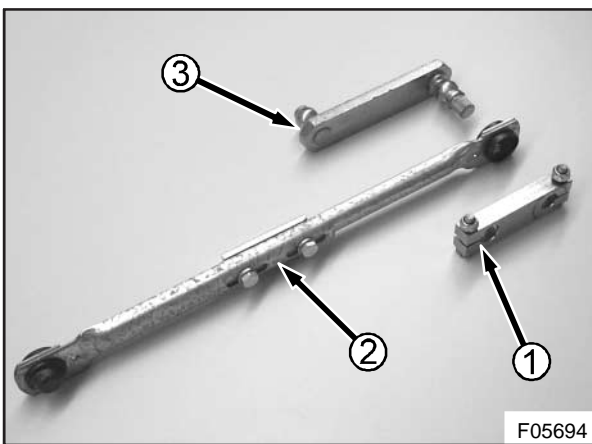


Figure 11: Relative position of wiper linkage parts

1. Clamp motor shaft mounting hole
2. Left-hand tie bar
3. Right-hand tie bar knuckle joint



Figure 12: Bell crank and clamp assembled with left-hand tie bar

To install the new bell crank and clamp, proceed as follows:

- 1) To reset the wiper motor to the parking position, switch on the master and ignition switches. Switch the wiper motor to the slow wiping position using the wiper switch. Switch the wiper motor off again. Turn off the master and ignition switches.

CAUTION: Do not switch off the motor using the master and ignition switches. When doing so, the motor will not return to the parking position.

- 2) Install the clamp horizontally on the wiper motor shaft with the knuckle joint mounting hole pointing towards the driver's seat (see Figure 13). Make sure the motor shaft end is *flush* with the clamp.

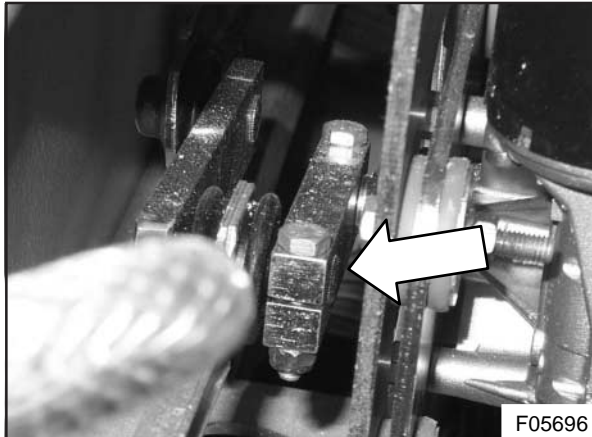


Figure 13: Linkage installed horizontally

- 3) Tighten the motor shaft bolt of the clamp to a torque of 9 to 11 ft.lbf (12 to 15 Nm).

CAUTION: Never install used fasteners for this application. Always fit new bolts and nuts.

- 4) Lightly lubricate the splined knuckle joint before installing the left-hand tie bar. Install the dust caps and click the left-hand tie bar over the splined knuckle joint using rib joint pliers.
- 5) Push the knuckle joint in the splined hole of the clamp so that both are parallel and horizontal (see Figure 13).
- 6) Lightly lubricate the bell crank knuckle joint before installing the right-hand tie bar. Reconnect the right-hand tie bar to the bell crank knuckle joint using rib joint pliers.
- 7) Switch the wiper switch to the slow wiping position. Turn on the ignition.
- 8) Using the master switch, activate the wiper motor and rotate the bell crank and clamp through 180° so that the bell crank knuckle bolt becomes accessible. Make sure all switches are off.

CAUTION: Do not attempt to rotate bell crank and clamp manually. Doing so will offset the automatic return to the parking position of the wiper motor. Use wiper, master and ignition switch only.

- 9) Tighten the bell crank knuckle bolt of the clamp to a torque of 9 to 11 ft.lbf (12 to 15 Nm).

CAUTION: Never install used fasteners for this application. Always fit new bolts and nuts.

- 10) Reset the wiper motor to the parking position by switching it to slow wiping and off again. Check that the bell crank and clamp are horizontal, with the right-hand wiper arm tie bar knuckle pointing to the coach access door (see Figure 14).

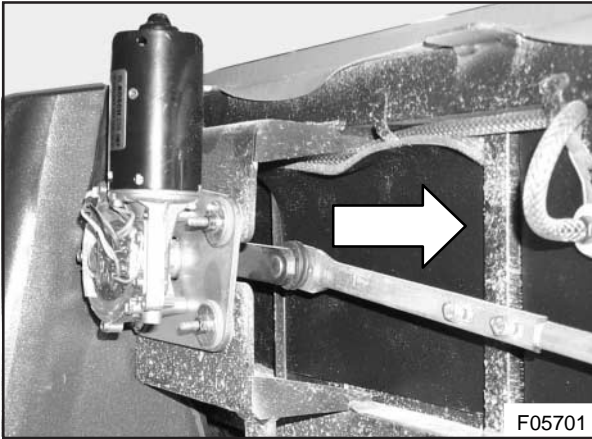


Figure 14: Wiper linkage, final installation with right-hand wiper tie bar pointing towards coach access door

- 11) Reinstall the road map compartment liner and door. Refit the check straps.
- 12) Reinstall the left- and right-hand wiper arm assemblies. Before tightening the nuts, position the wiper arms as shown in Figure 15. The wiper blades should be about $3 \frac{5}{32}$ inch (80 mm) from the windshield center post (on a dry windshield).

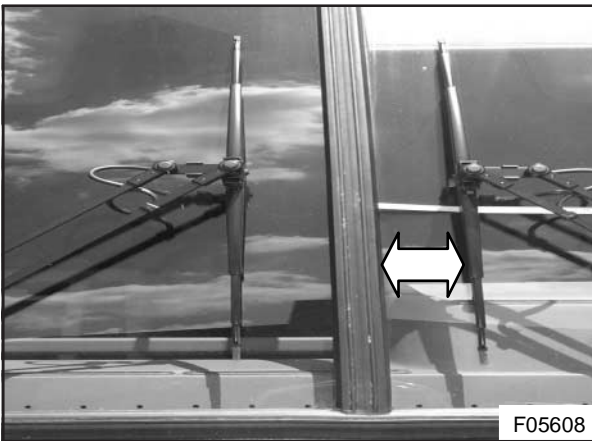


Figure 15: Wiper to windshield center post distance: $3 \frac{5}{32}$ inch

- 13) Tighten the wiper arm nuts to a torque of 18 ft.lbf (25 Nm). Reconnect the washer tubes to their respective fittings.
- 14) Check wiper arm and washer operation.

Procedure complete.

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.

WARRANTY INFORMATION :

- Causal parts : VH 10584586 and VH 10584587
- Job code : F50500H
- Parts disposition : please return old parts without the "BRB" mark to ABC Coach Inc, free of charge.
- Owners are required to certify on the standard notification document attached to this Bulletin that the recall remedy has been executed in accordance with the manufacturer's instructions.

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

- Parts will be forwarded to customers free of charge.
- Labor allocation : 1 hour per coach.
- Expiration date : November 1st, 2002.

Contact ABC Coach Inc. for guidance on claim submission.

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