SERVICE BULLETIN

SB1208

ADDRESSEES	: Owners and operators of coaches listed under 'Application'
COACH/BUS MODEL	: T2145 and C2045 Enhanced
BULLETIN TYPE	: Service Information
CHAPTER/SECTION	: Section 3 – Drive train Chapter 6.6 - Clutch
DATE	: October 8, 2007
SUBJECT	**: ZF-AS Tronic – clutch component lubrication**
TERMS & CONDITIONS	: No claims will be accepted with reference to this Bulletin.

References: ZF-AS Tronic service information letter ZFF/ZF S&S 2007-02-16
ZF-AS Tronic Release Fork Greasing Procedure 2006-05-05

APPLICATION:

The service information subject of this Bulletin is applicable to all T and C coaches equipped with a ZF-AS Tronic transmission.

DESCRIPTION:

1. To ensure lasting shifting quality and promote smooth and reliable operation of the ZF-AS Tronic transmission, it is necessary to lubricate the clutch release mechanism at regular intervals. In most cases it suffices to take this precautionary measure once a year, or during the 60,000-mile service interval.

2. The procedure in this Bulletin shows how to lubricate the clutch release mechanism parts.

   Note that two procedures have been provided: one for transmissions equipped with solid tip lever type clutch fork VH 10878690 and pivot shaft VH 10953613, and one for transmissions with OE roller clutch fork or repair kit VH 11028475.

3. Transmissions with roller clutch fork have been cut into production as from following units:

Model	Engine	VIN
C2045E	Cummins	46129 →
	Detroit Diesel	46803 →
	Caterpillar	47528 →

Model	Engine	VIN T2140	VIN T2145
T2100E	Cummins	TBD	TBD
	Detroit Diesel	TBD	TBD
	Caterplillar	N/A	TBD

PARTS AND PRODUCTS:

New

VH reference	Description	Qty.
VH 10878690	Clutch fork, solid tip lever type	1
VH 10953613	Pivot shaft, to suit VH 10878690	1
VH 660865517	Grease, Optimol Olista Longtime 3EP	#
VH 11028475	Repair kit ZF 1328 298 008, includes clutch release bearing, roller clutch fork, fork pivot shaft, and grease Optimol Olista Longtime 3EP	1

- Parts and products may be purchased from your nearest ABC Customer Care & Parts Source service center.
- Parts and products disposition: discard according to applicable environmental regulations.

PROCEDURE:

To lubricate the clutch release mechanism

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. Gear engagement issues:

Following symptoms may be attributed to a lack of lubrication of the clutch release mechanism:

1. Hard shifting when:

   → engaging drive from neutral (coach rocks/vibrates).
   → engaging first or second from third to drive off (coach rocks/vibrates).
   → changing up.
   → changing down.

2. Gear grinding noise.

   NOTE: Gear grinding noise can also be caused by insufficient pressure in the clutch actuator air system.

3. Loud noise from the transmission when slowing down and bringing the coach to a stop.

4. A combination of several or all of the above.

2. General:

- This job should be executed by a technician experienced in transmission repair.

- For more information refer to the Maintenance Manual, the Spare Parts Manual, and the Operator's Guide Book.

Procedure continued on next page.

3. Special tools, equipment or services:

- No special tools, equipment or services are required.

4. Preparations:

- Park the coach on a level-surfaced service pit with the front wheels straight.
  If portable post lifts are going to be used, lower the suspension first.
- Place the transmission in neutral.
- 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.
- By means of the drain valve, bleed the air pressure from the "Astronic" auxiliaries tank supplying the clutch servo.
  For location of the air tanks, refer to the maintenance manual.
- Read the entire procedure before beginning to work.

CAUTION: The transmission electronics operate the clutch actuator each time the ignition is switched on, and the pushrod moves outwards with great force (5,500 lbf). Therefore a possible safety hazard may exist, which can cause bodily injury when removing the clutch servo assembly from the transmission, while the ignition is being switched on inadvertently.

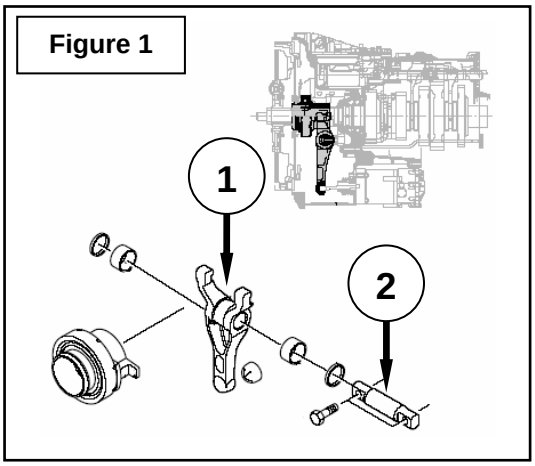
CAUTION: Make absolutely sure that both the master switch and the battery disconnect switch are OFF when working on the clutch actuator.

CAUTION: Observe safe shop practices at all times.

5. To remove the clutch release fork, pivot and actuator rod:

NOTE: The clutch release fork (1, Figure 1), pivot (2, Figure 1), and clutch actuator rod (1, Figure 2) can be accessed by removing the clutch inspection cover (2, Figure 2).

Figure 1



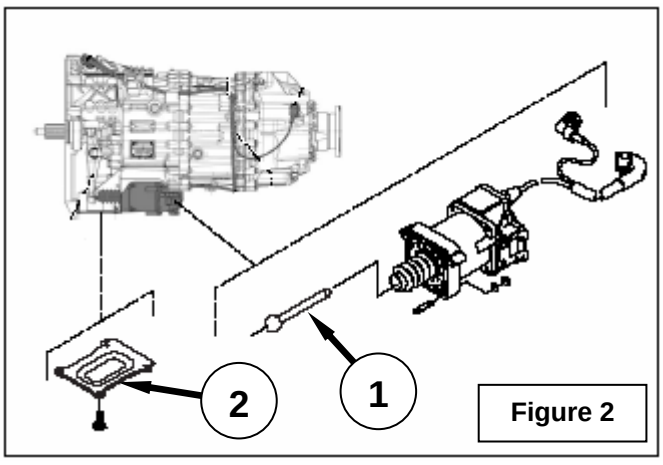


Figure 2

1) Undo and remove the bolts securing the inspection cover to the clutch housing. Remove the cover (Figure 3).

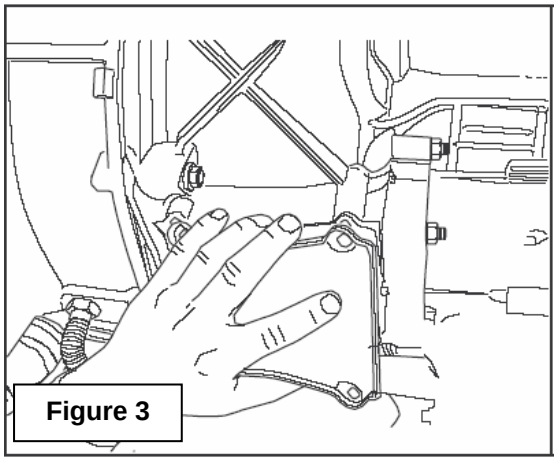


Figure 3

2) Undo and remove the clutch actuator vent plug to release all air pressure from the clutch actuator (Figure 4).

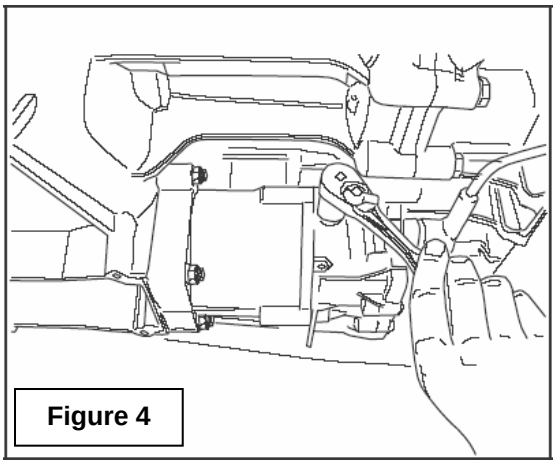


Figure 4

3) Pry-back the clutch fork and reinstall the vent plug (Figure 5). This compresses the return spring and removes the load on the fasteners.

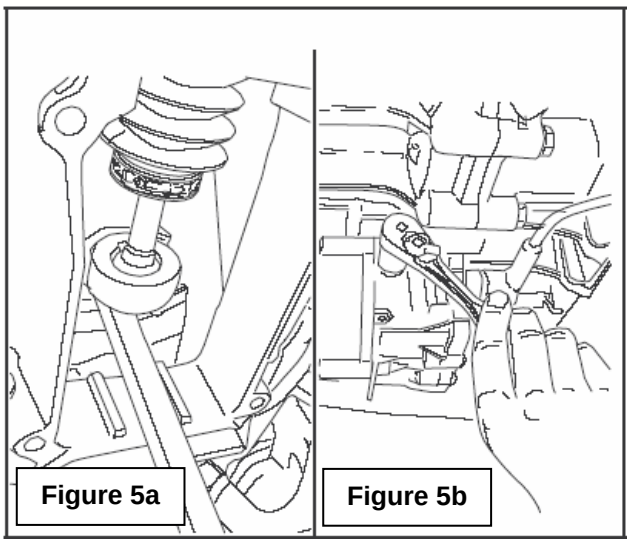


Figure 5a

Figure 5b

4) Undo and remove the four nuts securing the actuator assembly to the clutch bell housing (Figure 6). Withdraw the actuator and tie it out of the way.

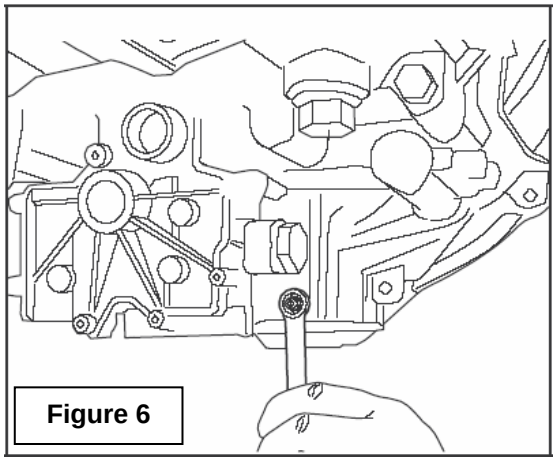


Figure 6

5) Working through the clutch inspection opening and using a 19 mm wrench undo and remove the bolts securing the release fork assembly to the transmission (Figure 7). Remove the assembly.

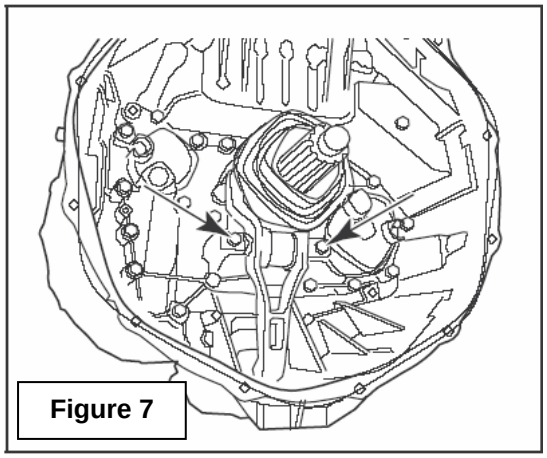


Figure 7

6. <u>To inspect and lubricate and reinstall the clutch release fork, pivot and actuator rod</u>:

1) Remove the clutch actuator rod from the clutch fork (1, Figure 8). Remove the pivot from the clutch fork (2, Figure 8). Thoroughly clean all parts in a parts washer.

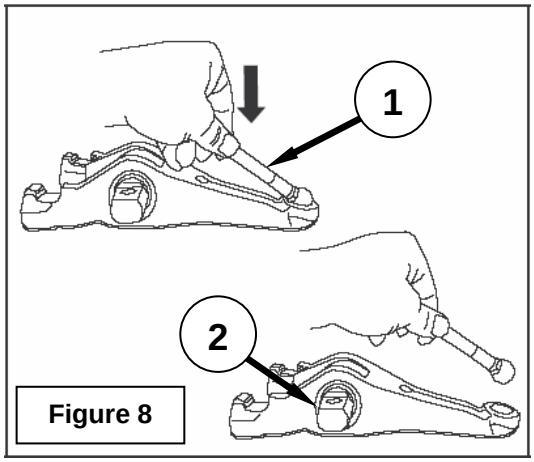


Figure 8

2) Inspect the fork, the pivot and actuator rod for damage and wear.
Pay close attention to the release fork to release bearing mating surfaces.
Replace if worn (Figure 9a and 9b) by a roller tip type clutch fork (repair kit VH 11028475).

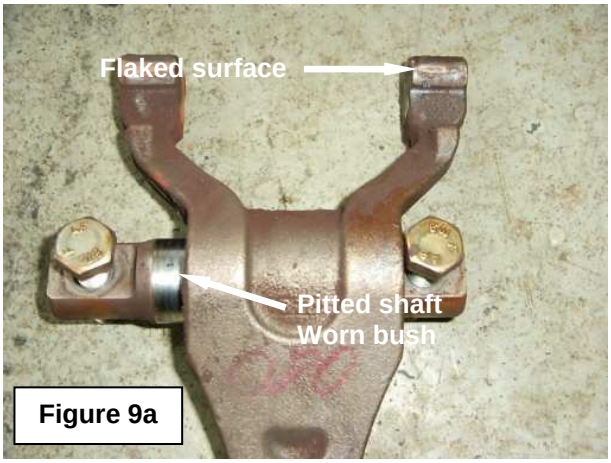


Figure 9a

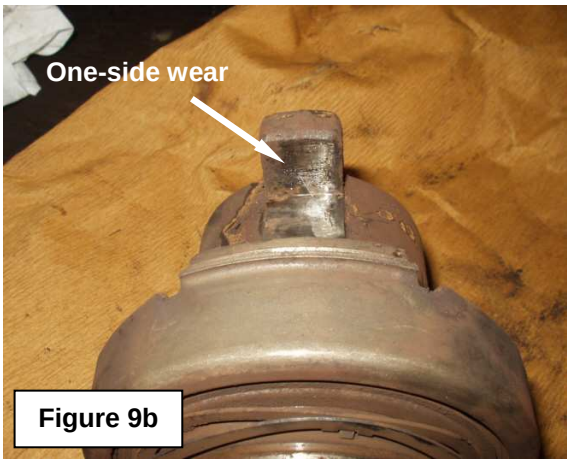


Figure 9b

<u>NOTE</u>: Only use Optimol Olista Longtime 3EP VH 660865517 to lubricate the clutch release fork assembly.

3) Lightly lubricate all parts as indicated in 'ZF-AS Tronic Clutch operating mechanism grease application' which has been attached to this Bulletin.

Note that two procedures have been provided: one for transmissions equipped with solid tip lever type clutch fork VH 10878690 and pivot shaft VH 10953613 (Attachment 1), and one for transmissions with OE roller tip clutch fork or repair kit VH 11028475 (Attachment 2).

Lever type clutch fork VH 10878690 and pivot shaft VH 10953613

Lubricate the two fork tips, the two inside surfaces of the fork where the fork contacts the release bearing, the release bearing edges, the pivot shaft and the actuator rod ball joint socket.
Make sure the release fork rotates freely on the pivot shaft without undue play.

OE roller tip clutch fork or repair kit VH 11028475

Lubricate the two inside surfaces of the fork where the fork contacts the release bearing.
Lubricate the edges of the release bearing.
Lubricate the actuator rod ball joint socket.
DO NOT lubricate the fork roller surfaces.
DO NOT lubricate the fork pivot shaft.
DO NOT lubricate the release bearing to input cover hub surfaces.
This surface is coated with Teflon.

4) As a precaution, measure the clutch actuator rod length.
The length is related the coach engine model (refer to the chart below).
Too short a push rod will hamper clutch operation.

VH reference	Rod length overall	Application
VH 10944151	145.0 mm (5-11/16-inch)	USA (Cummins, Detroit Diesel, Caterpillar)

When the rod is of the correct length, lubricate both ends with Optimol Olista Longtime 3EP grease and reinstall it into the ball joint socket (Figure 10).

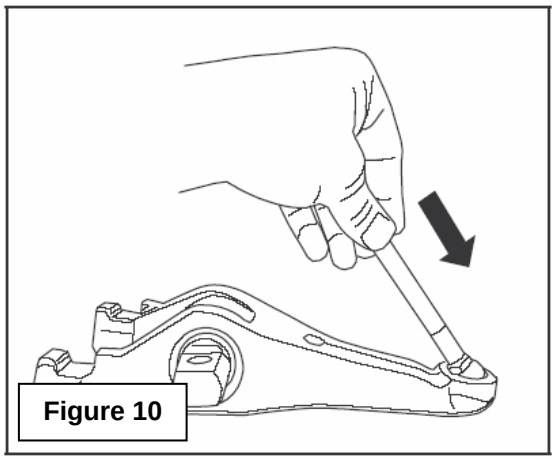


Figure 10

5) Working through the clutch inspection opening, reinstall the fork assembly in reverse order to removal.
Tighten the pivot retaining bolts (Figure 11) to a torque of 85 ft.lbf (115 Nm).

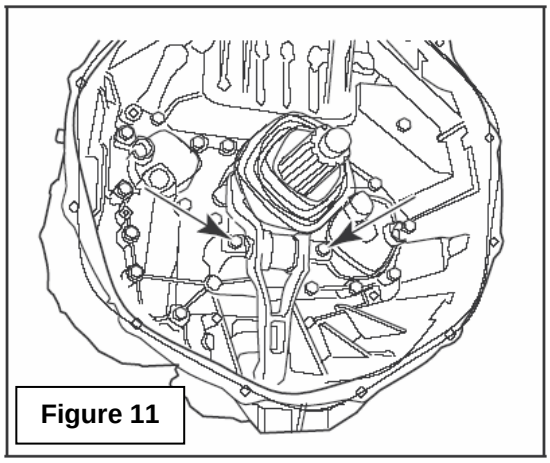


Figure 11

7. <u>To test and reinstall the clutch actuator</u>:

1) Undo and remove the clutch actuator vent plug (Figure 12).

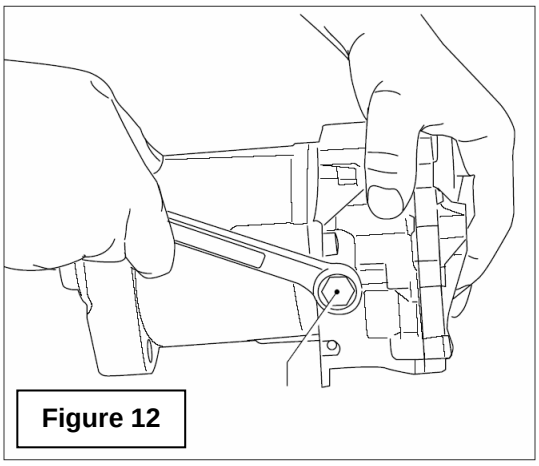


Figure 12

2) Press the piston all the way back in and reinstall the vent plug (Figures 13a and 13b).
The piston should stay in.
If the piston moves back out, the inside solenoid is leaking and the actuator needs to be replaced.

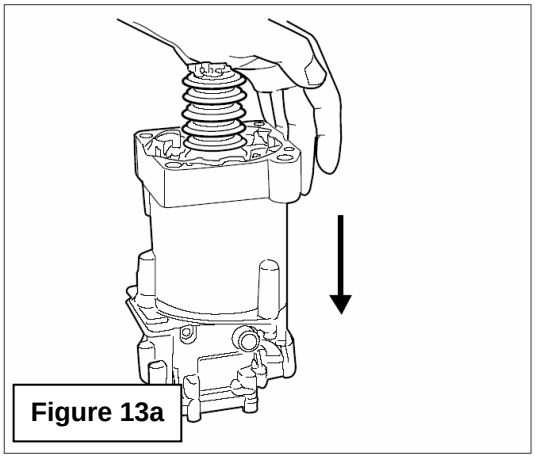


Figure 13a

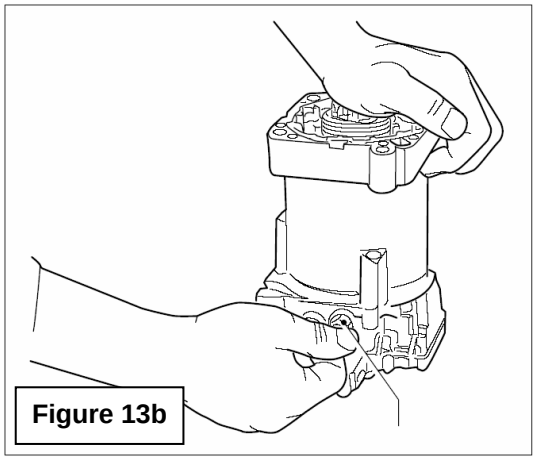


Figure 13b

3) With the piston all the way in, reinstall the actuator assembly onto the transmission bell housing (Figure 14).
Make sure the actuator rod sits correctly in the ball joint cup of the release fork and in the clutch actuator.
Tighten the nuts crosswise to a torque of 17 ft lbf (23 Nm).

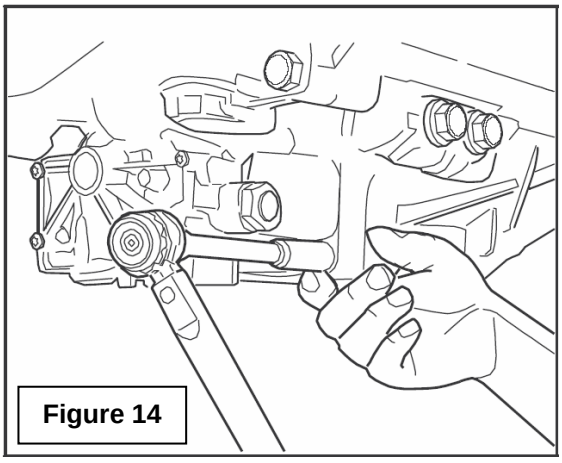


Figure 14

4) Loosen the vent plug and wait until the piston is extended.
Re-check that the actuator rod sits correctly in the ball joint cup of the release fork and in the clutch actuator.
Retighten the vent plug to a torque of 16 ft.lbf (22 Nm).

Procedure continued on next page.

5) Reinstall the clutch inspection cover (Figure 15).
Tighten the nuts crosswise to a torque of 17 ft lbf (23 Nm).

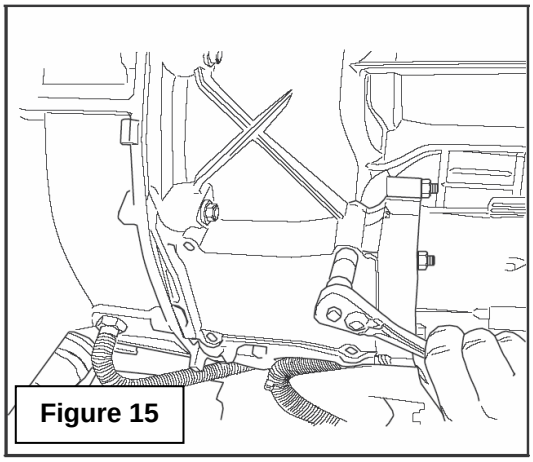


Figure 15

6) Start the engine and allow the air system to charge.
Perform a road test to check that the transmission operates normally.

Procedure complete.

ATTACHMENTS:

Attachment 1: ZF-AS Tronic Clutch operating mechanism grease application points (solid tip clutch fork)
Attachment 2: ZF-AS Tronic Clutch operating mechanism grease application points (roller tip clutch fork)

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.

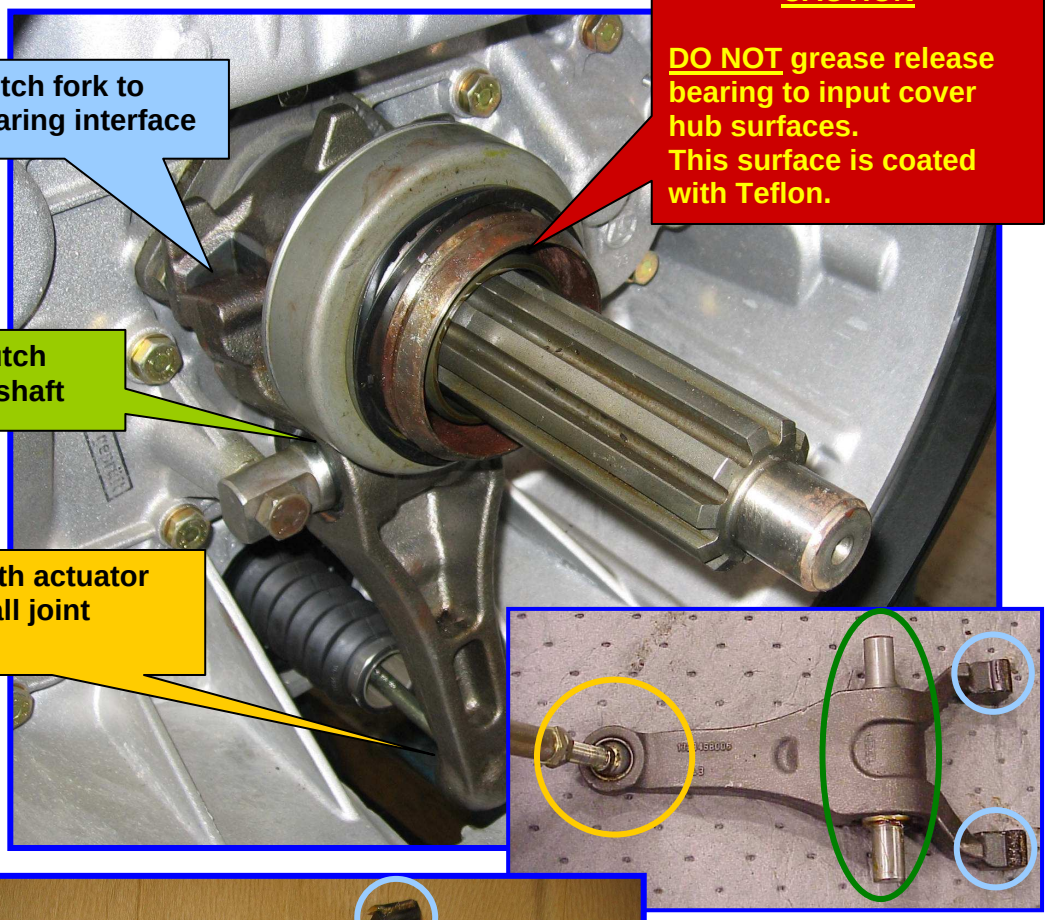
SERVICE INFORMATION:

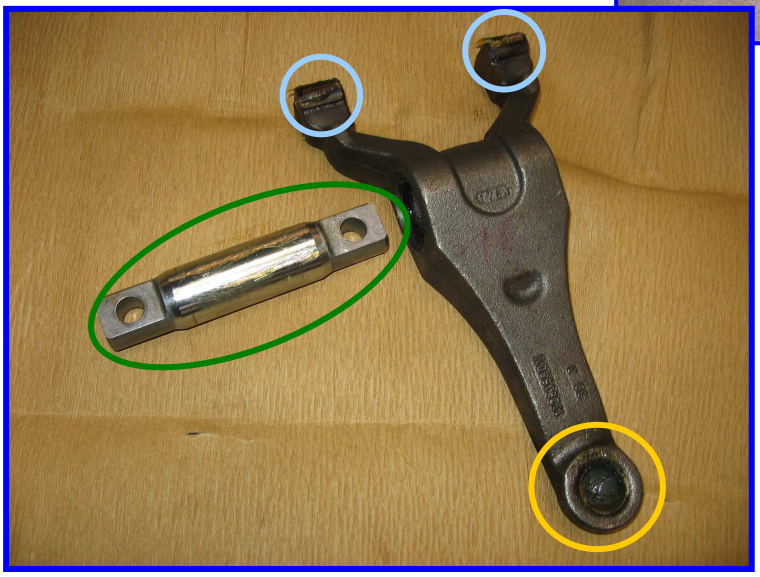
Service Bulletins are issued to supplement or supersede information in the Van Hool manuals. Note Service Bulletin number, date and subject on the register at the end of the relevant chapter(s). File Service Bulletin separately for future reference.

ZF-AS TRONIC

Clutch operating mechanism grease application points

(solid tip clutch fork – transmission in situ)





Approved ZF lubricant
Optimol Olista Longtime 3EP
VH 660865517

Important

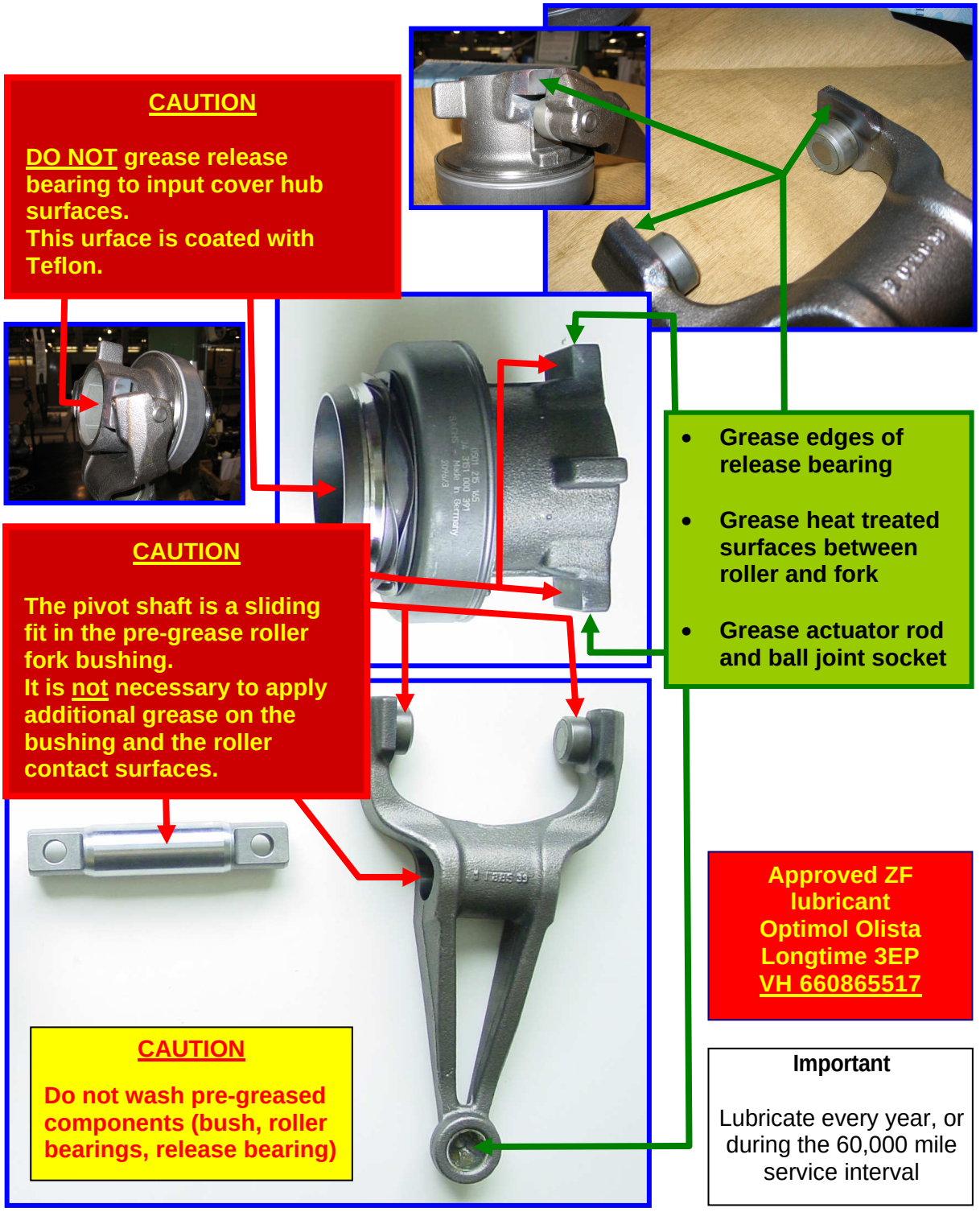
Lubricate every year, or during the 60,000 mile service interval

Attachment 1

ZF-AS TRONIC

Clutch operating mechanism grease application points

(roller tip clutch fork – transmission in situ)



CAUTION

DO NOT grease release bearing to input cover hub surfaces.
This urface is coated with Teflon.

- **Grease edges of release bearing**
- **Grease heat treated surfaces between roller and fork**
- **Grease actuator rod and ball joint socket**

CAUTION

The pivot shaft is a sliding fit in the pre-grease roller fork bushing.
It is not necessary to apply additional grease on the bushing and the roller contact surfaces.

Approved ZF lubricant
Optimol Olista Longtime 3EP
VH 660865517

CAUTION

Do not wash pre-greased components (bush, roller bearings, release bearing)

Important

Lubricate every year, or during the 60,000 mile service interval

Attachment 2

THIS PAGE HAS BEEN LEFT BLANK INTENTIONALLY