CAUTION
If the transmission actuator or upper section of the transmission actuator is replaced, the following should be noted.
- **Reprogram the transmission actuator**
- **Transfer vehicle parameters from removed transmission or re-enter.**

Removing Transmission Actuator

⚠ DANGER
Only work on the transmission actuator if the ignition is off.

1 Switch off ignition

CAUTION
If vehicle-specific parts (e.g. fuel pump, coolant pipe, exhaust pipe, or steering pump) have to be removed, please contact the vehicle manufacturer.

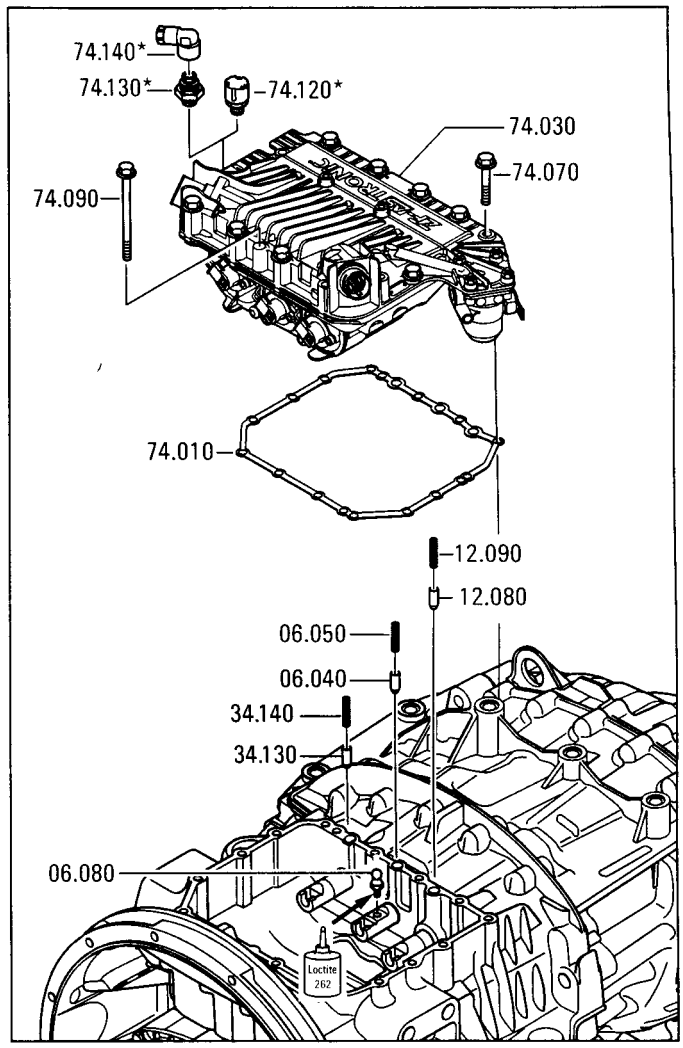
2 Disconnect electric plug connection from transmission actuator.

⚠ DANGER
Protective glasses must be worn when removing the compressed air line from the transmission actuator.
Compressed air will escape!
Risk of injury from particles of dirt.

3 Remove compressed air line from transmission actuator's pressure relief valve.

4 Remove breather **(74.120)** or angle piece **(74.140)** and Cannon plug **(74.130)** from transmission actuator **(74.030)** if these parts are being replaced.

5 Remove 15 M8 hex bolts **(74.090; 74.070)** from transmission actuator **(74.030)**.



*depends on the parts list

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Remote Breather

CAUTION

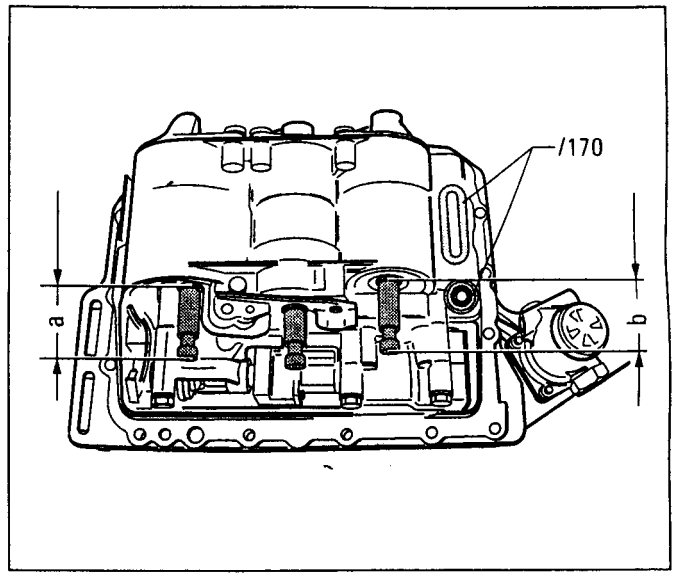
The profile seals (/170) and compression springs (06.050; 34.140 and 12.090) may fall into the transmission housing.

NOTE

Both profile seals **(/170)** are contained in sealing kit 0501 319 864.

6 Take transmission actuator **(74.030)** off transmission housing and make note of **measurements "a" and "b"** for later installation.

7 Remove compression springs **(06.050; 34.140** and **12.090)**.



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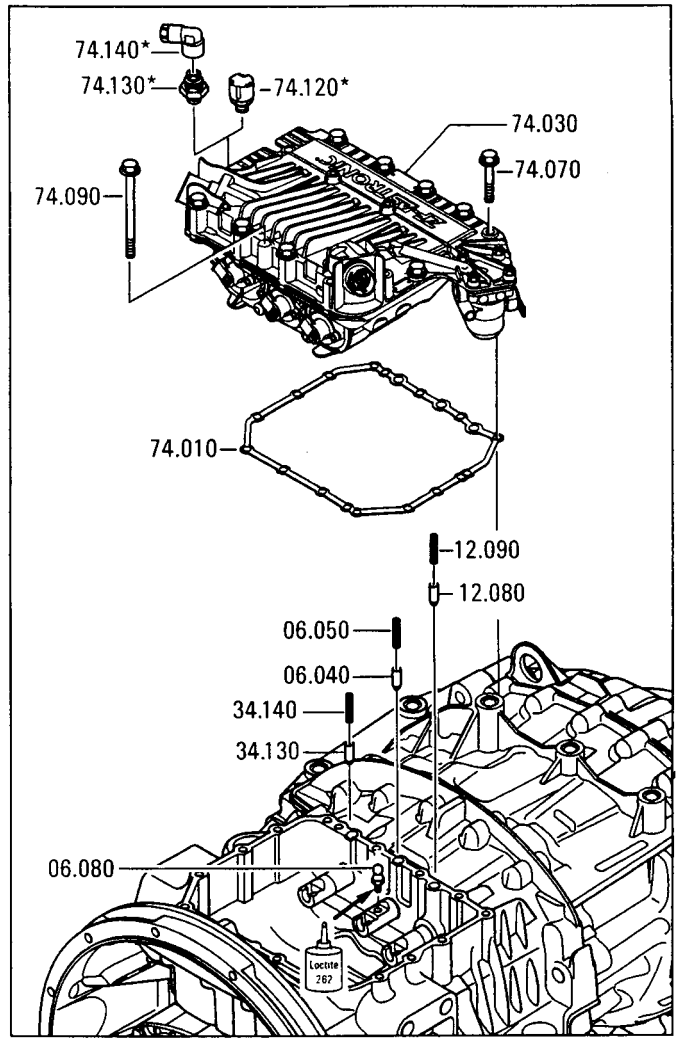
NOTE

Cover transmission opening, otherwise dirt may fall into the transmission.

8 Remove seal **(74.010)** and clean sealing surfaces on transmission housing and transmission actuator.

9 If seal residue or dirt has fallen into the detent pin holes **(06.040; 34.130** and **12.080)**, these must be removed and cleaned.

10 Remove ball bolt **(06.080)** if damaged.



*depends on the parts list

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Fitting Transmission Actuator

1 If the ball bolt is being replaced, coat the thread of ball bolt (**06.080**) with **Loctite no. 262.**
Tighten ball bolt to 23 Nm.

NOTE
If using costly peripheral attachments, such as flatbeds, crossbars etc. we would advise checking the transmission with the ZF-Testman pro test software once removed from the vehicle. After checking with ZF-Testman pro, load the volume production program depending on parts list and engine (can be downloaded via ZF-ServiceLine).

2 Move piston rod (**4**) on transmission actuator into central position (Neutral). The correct position is reached when slight resistance can be felt when pulling out the piston rod **(4)**.

3 Transfer measurements **"a"** and **"b"** from the removed transmission actuator to the piston rods (**3** and **5**).

4 Selector gate **(6)** and piston rod (**4**) must be one above the other (flush). Ensure that the profile seals **(/170)** on the transmission actuator are inserted.

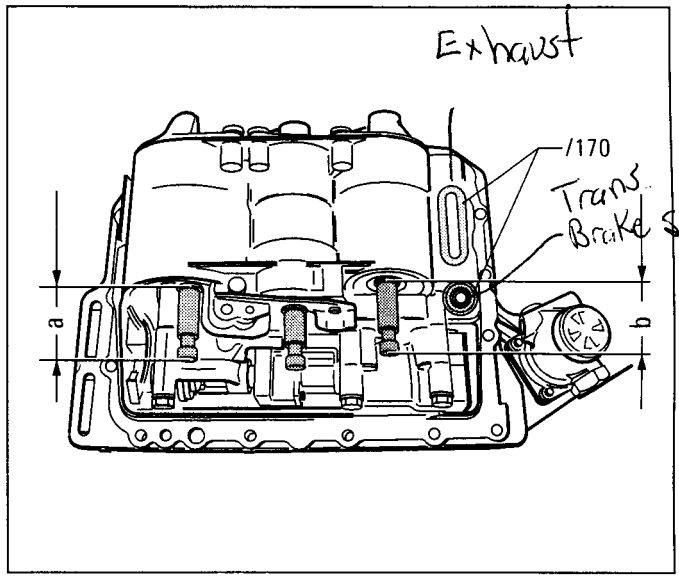
Legend

Piston rod **(3)** = shifts the splitter group (GV)
Piston rod **(4)** = shifts the basic transmission
Piston rod **(5)** = shifts the range change group (GP)
Selector gate **(6)** = selects the shift gate

NOTE
With the 12-speed version, do not slide the central shift rail (**06.010**) too far into the transmission, otherwise the gearshift finger may fall into the transmission.

Legend

12.010 Shift rail (GV)
06.010 Shift rail for basic transmission
34.010 Shift rail (GP)
06.080 Ball bolt



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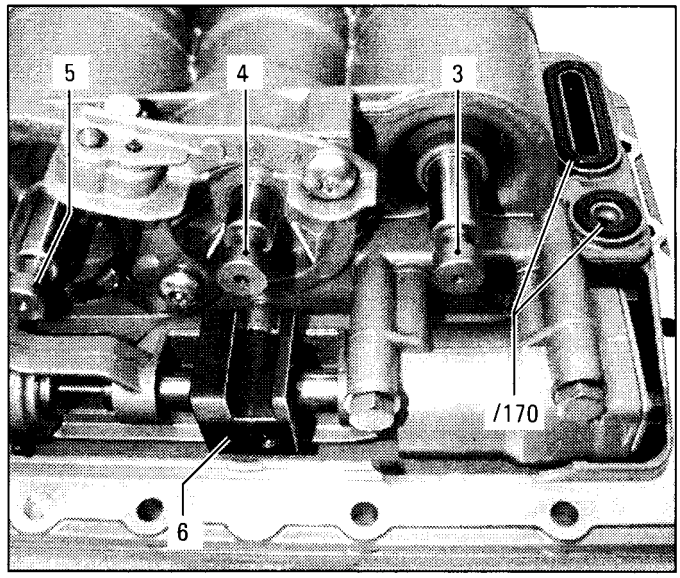

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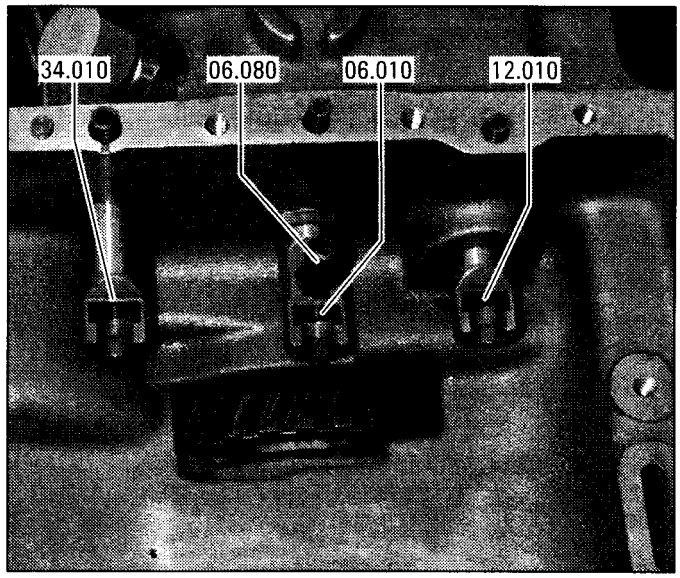

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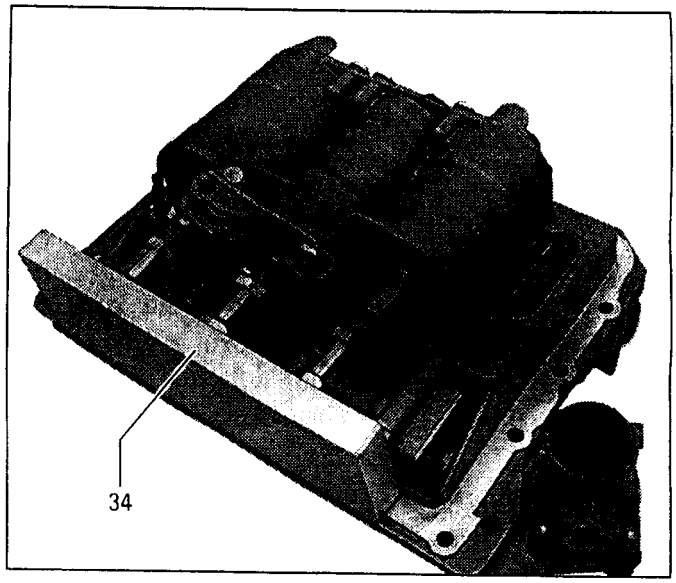
Alternative: If measurements **"a"** and **"b"** can no longer be established, the transmission actuator can be fitted using setting aid **(34) 1X56 138 244.** In-house production following sketch, see special tools.On request, tool **1X56 138 244** can also be supplied by ZF.
Adjust the transmission actuator's piston rods **(3, 4,** and **5)** so that they are in contact with the setting aid **(34)**. Move the GV and GP gear shift rails in the transmission towards the output. Move the central gear shift rail into Neutral. Selector gate **(6)** and piston rod **(4)** must be one above the other (flush). Ensure that the profile seals on the transmission actuator are inserted.



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5 Place new seal **(74.010)** on transmission housing.

6 Insert detent pins **(06.040; 34.130** and **12.080)** – if not yet fitted – and compression springs **(06.050; 34.140** and **12.090)**.

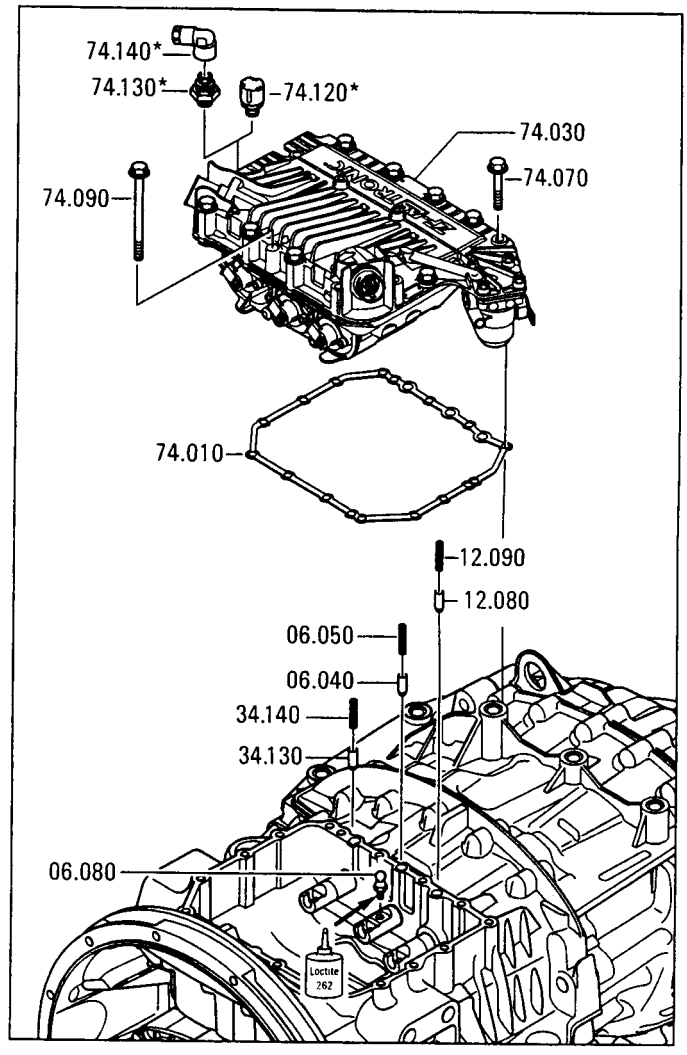
NOTE
The compression springs **(06.050; 34.140** and **12.090)** must be of the same length (around 50 mm). If deviances are found, replace compression springs.

7 Attach transmission actuator **(74.030)** ensuring that piston rods of transmission actuator reach into gear shift rails of transmission. The upright ball bolt **(06.080)** reaches into the selector gate.

CAUTION
You must be able to push the transmission actuator by hand until it reaches the transmission's thrust surface. Forcefully pulling down with screws will inevitably result in damage.

8 Evenly tighten M8 hex bolts **(74.090** and **74.070)** to 23 Nm.

9 Depending on parts list:
Tighten Cannon plug **(74.130)** to 18 Nm and secure angled piece **(74.140)** and/or tighten breather **(74.120)** to 10 Nm.



*depends on the parts list

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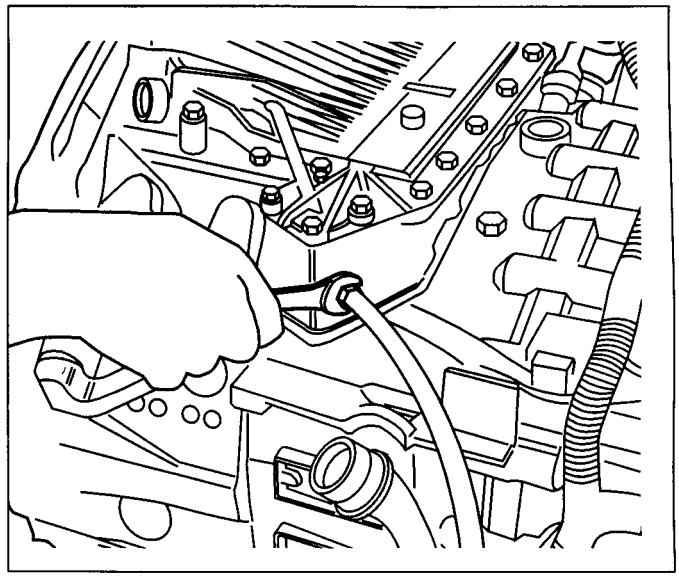
10 Connect air line to transmission actuator's pressure relief valve.
Tightening torque M_A = 34 Nm.

11 Re-connect up wiring harness at transmission and vehicle ends otherwise functions cannot be tested.

NOTE
Ensure that the connectors are snapped into place and fitted without traction relief.



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Final check:

Has the transmission actuator been reprogrammed?

Refit vehicle-specific parts as far as possible. The diagnosis unit can only be used to test the transmission actuator once the engine is running and there is a sufficient reserve of air. The system then undertakes a number of calibration processes. This may take up to 5 minutes. The following errors may then be displayed: Piston rod not attached with errors 132, 134, etc. or teaching-in error for gear, gate, GP, GV sensors with ignition on.