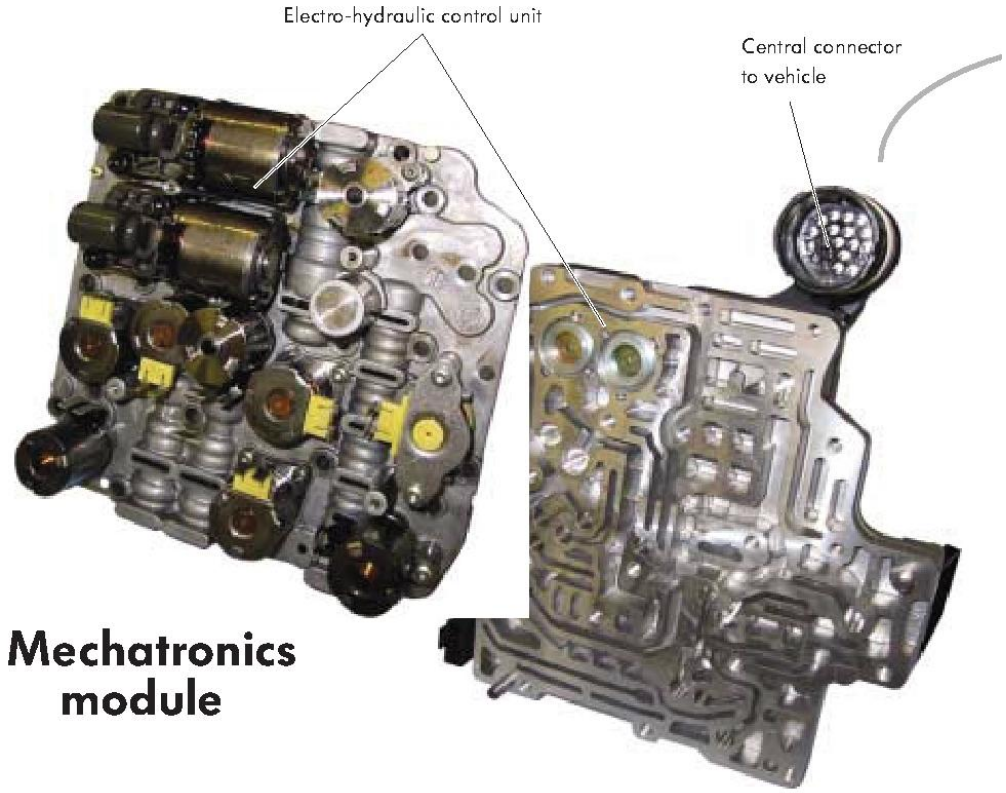
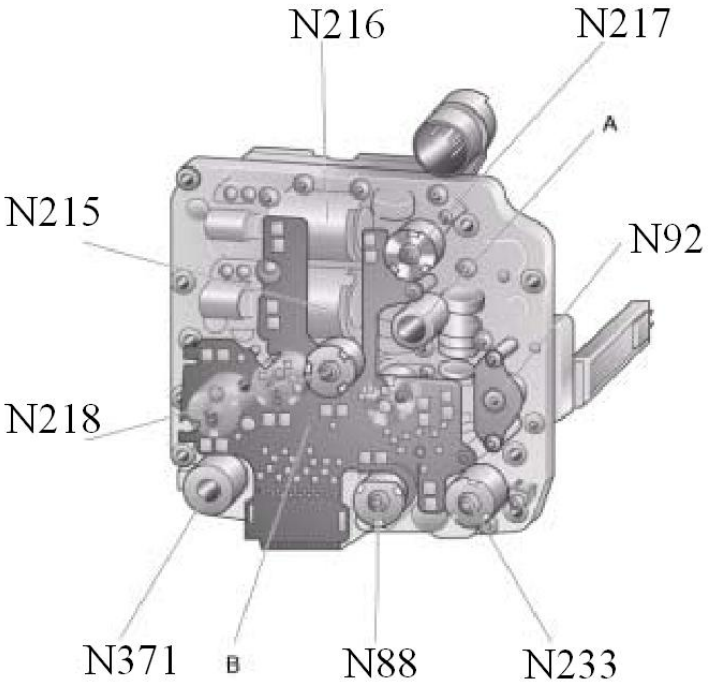
Model 1 – 02E DQ250

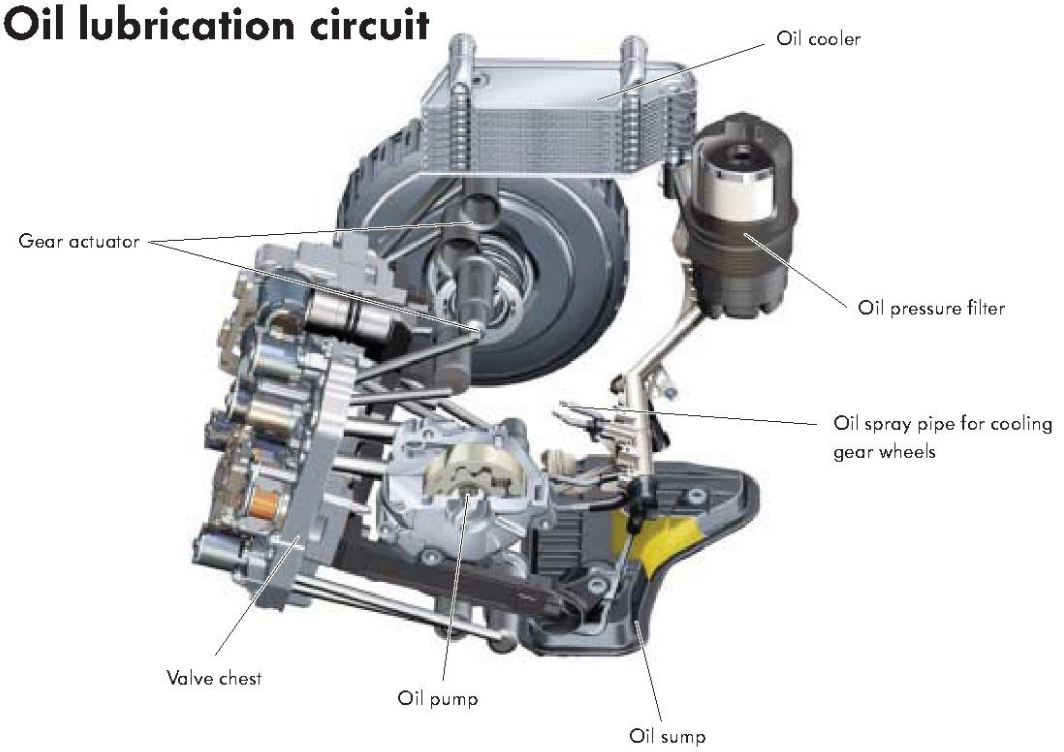


Electro-hydraulic control unit

N88 - Solenoid valve 1 (gear actuator valve)
N89 - Solenoid valve 2 (gear actuator valve)
N90 - Solenoid valve 3 (gear actuator valve)
N91 - Solenoid valve 4 (gear actuator valve)
N92 - Solenoid valve 5 (multiplexer valve)
N215 - Pressure control valve 1 (clutch K1)
N216 - Pressure control valve 2 (clutch K2)
N217 - Pressure control valve 3 (main pressure)
N218 - Pressure control valve 4 (cooling oil)
N233 - Pressure control valve 5 (safety 1)
N371 - Pressure control valve 6 (safety 2)
A - Pressure release valve
B - Printed circuit



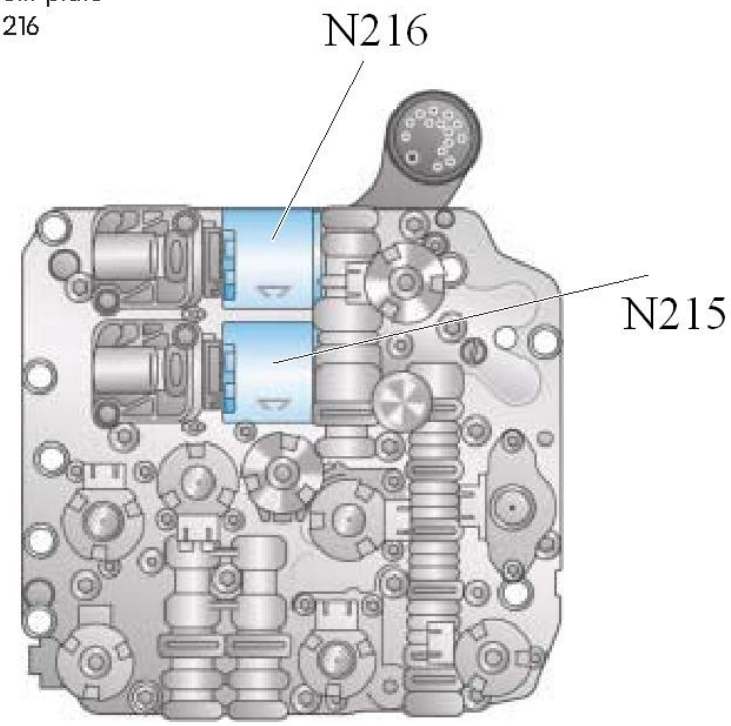
Oil lubrication circuit



Pressure control valve 1 N215 and pressure control valve 2 N216 (clutch valves)

The pressure control valves N215 and N216 are located in the mechatronics electro-hydraulic control unit.
They are modulation valves and generate the control pressure for the multi-plate clutches – pressure control valve N215 controls multi-plate clutch K1 and pressure control valve N216 controls multi-plate clutch K2.

The basis for calculation of clutch pressure is the current engine torque.
The control unit adapts the clutch pressure to the current friction variable of the multi-plate clutches.

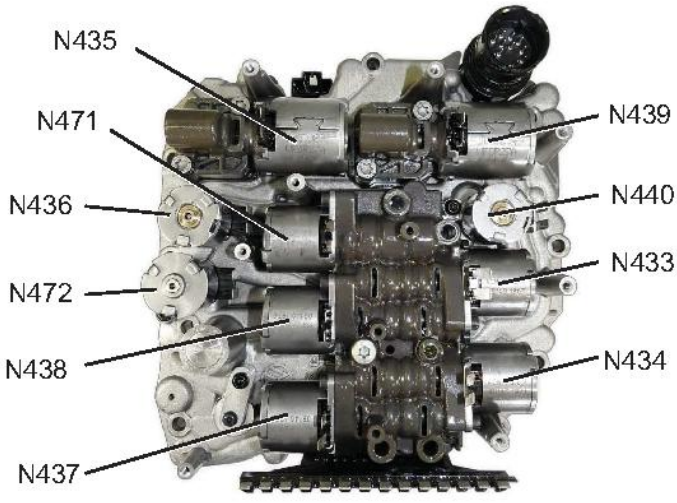


Effects of signal failure

In the event of pressure valve failure, the affected gearbox section is isolated. This fault will be displayed in the dash panel insert.

Model 2 – 0BH 0BT DQ500

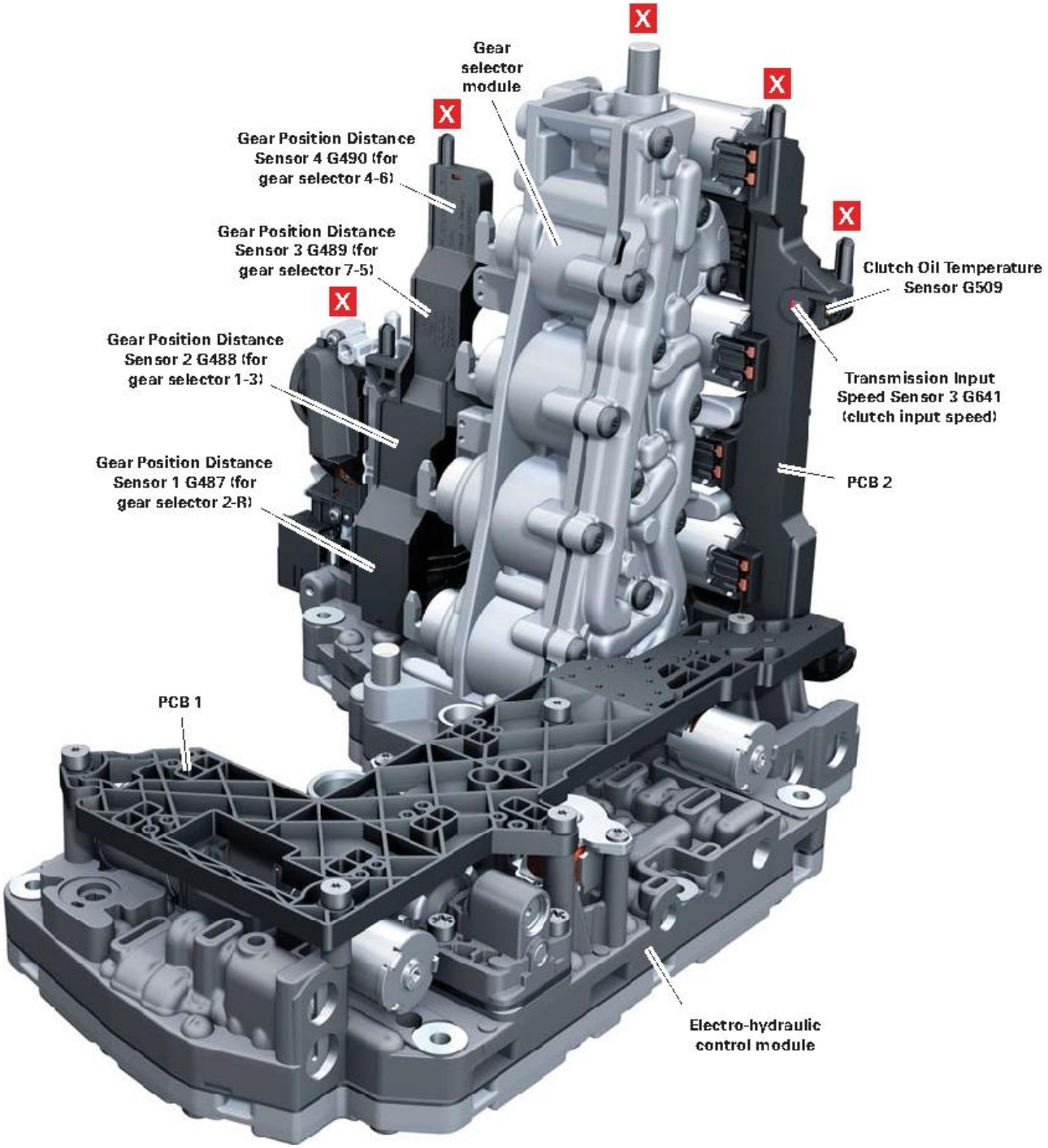
Solenoid valves of the mechatronic unit



N435	Valve 3 in sub-gearbox 1 (clutch valve K1)
N471	Valve for cooling oil
N436	Valve 4 in sub-gearbox 1 (safety valve)
N472	Main pressure valve
N438	Solenoid valve 4 (gear actuator D R-4)
N437	Solenoid valve 3 (gear actuator B 2-6)
N439	Valve 3 in sub-gearbox 2 (clutch valve K2)
N440	Valve 4 in sub-gearbox 2 (safety valve)
N433	Valve 1 in sub-gearbox 1 (gear actuator A 1-5)
N434	Valve 2 in sub-gearbox 1 (gear actuator C 7-3)

Model 3 – 0B5 DL501

Direct Shift Gearbox Mechatronic J743



Hydraulic Component Overview

This illustration shows the electro-hydraulic control module, together with all components activated by the actuators.

N433 Sub Transmission 1 Valve 1 (for gear selector 1-3)

N434 Sub Transmission 1 Valve 2 (for gear selector 7-5)

N435 Sub Transmission 1 Valve 3 (for clutch valve K1, activation)

N436 Sub Transmission 1 Valve 4 (for pressure regulation in sub-gearbox 1)

N437 Sub Transmission 2 Valve 1 (for gear selector 2-R)

N438 Sub Transmission 2 Valve 2 (for gear selector 4-6)

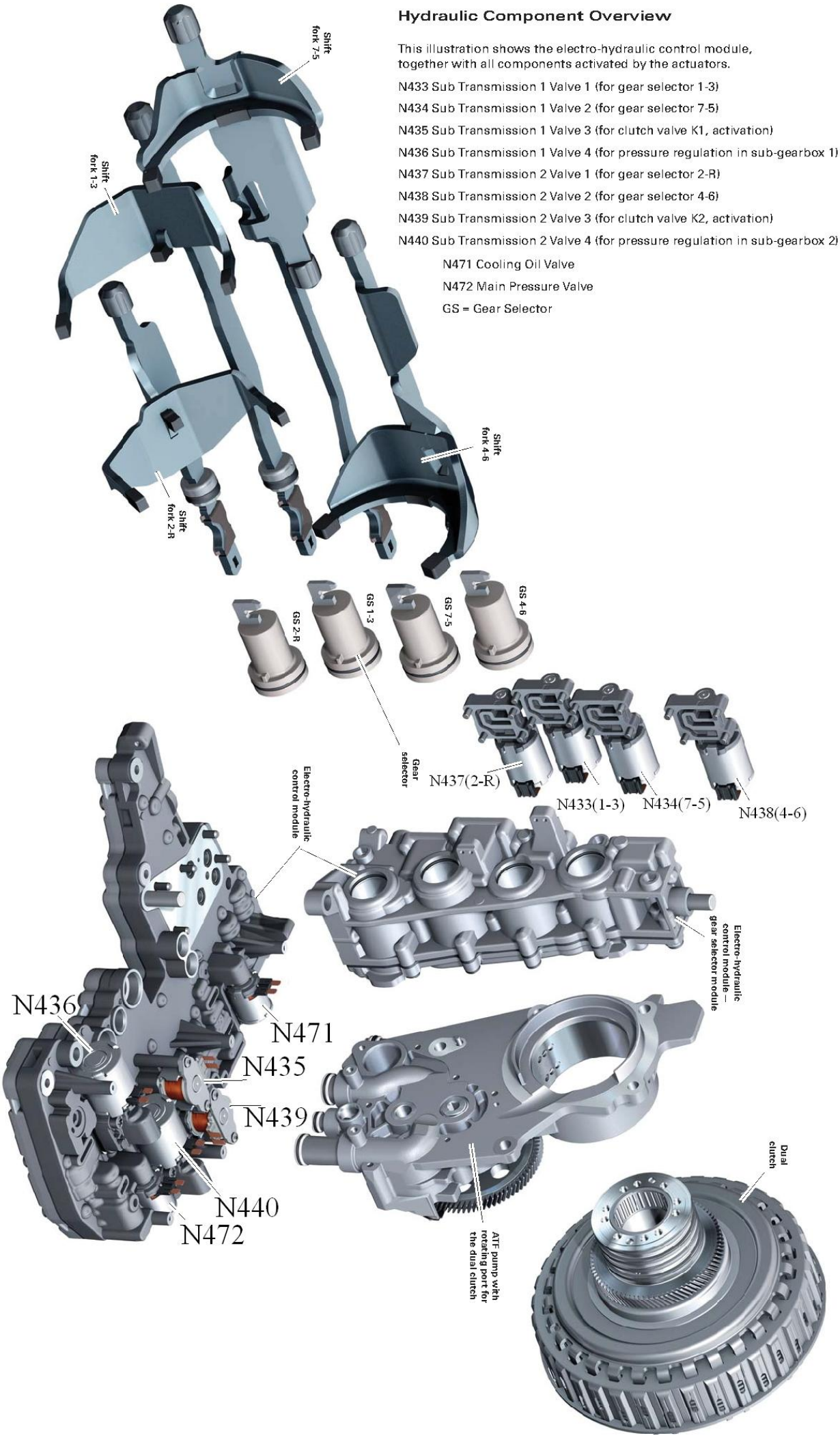
N439 Sub Transmission 2 Valve 3 (for clutch valve K2, activation)

N440 Sub Transmission 2 Valve 4 (for pressure regulation in sub-gearbox 2)

N471 Cooling Oil Valve

N472 Main Pressure Valve

GS = Gear Selector



The 02E(DQ250) ,0BH(DQ500) and 0B5(DL501) are adaptive learn transmissions. The TCM can adapt the upshift and downshift pressure for each shift as well as the initial engagement into drive and reverse. Whenever the transmission is rebuilt or the valve body is changed, the shift adapts should be cleared and the vehicle should be driven to relearn the new adapts.

Clearing the shift adapts and reset values:

The preferred way is to use a factory scan tool(VAG-COM or VAS 5051) with VCDS Ver. 10.64 or equivalent to return the shift adapts to basic settings. The following guide is to use the VAG-COM to follow.

1) 1.1 ATF Temperature within 30℃~100℃. You can observe that in 02 Auto Trans – Measuring blocks 019.
   1.2 Selector Lever in P
   1.3 Ignition ON
   1.4 Engine ON (Idling) for one minute or more
   1.5 Brake Pedal operated (hold for the whole procedure)
   1.6 Throttle Pedal not operated

2) *Setup Transmission Tolerances(Synch. Point. Measurement)*
   Group 060
   When you go to Basic Settings 060 and click GO. Wait until the numbers quit moving and the trans will quit making noises. Basic Settings switches to On when finished. Wait until Basic Settings has switched to ON and all numbers have stopped moving. This may take one minute.

3) *Setup Transmission Tolerances(Engaged Calibration)*
   Group 061
   It is the same as the last step in Group 60.

4) *Clutch Adaption*
   4.1 Control Module Software version <0800
   Group 062
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

   4.2 Control Module Software version >=0800
   Group 067
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

5) *Reset Values (Clutch Safety Function)*
   Group 068
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

6) *Reset Values (Pressure Adaptation)*
   Group 065
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

7) *Reset Values (Steering Wheel Paddle Installation)*
   Group 063
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

8) *Reset Values (ESP & Tip Cruise Control Installation)*
   Group 069
   [Go!]
   Activate the Basic Setting.
   [ON/OFF/Next]

9) [Done, Go Back]
   Switch off Ignition, wait 10 Seconds and switch it back on.
   [Fault Codes - 02]
   Check and clear fault codes after successful test.
   [Close Controller, Go Back - 06]
   Perform the Defined Test Drive.

★ *Relearning the new shift adapts:*

1. Fluid Temperature 30~100 °C (86~210 °F), see Measuring Blocks, Group 019.
2. Do Not use Cruise Control.
3. Drive in Tiptronic Mode from stand still up to 6th Gear.
4. While doing that make sure to drive in Gears 3 or 5 for approx. 5 minutes and also in 4 or 6 for approx. 5 minutes.
5. The engine speed window for all gears is 1200 - 3500 RPM (for clutch calibration).
6. Perform one sharp braking followed by a full throttle acceleration (oil return check) while in Drive, Not Tiptronic Mode.
7. Evaluate creep and starting-off points.
8. Check for leaks.

Important Notes:

- Some modules do not require the use if the [ON/OFF/Next] button. If an Error is displayed after clicking the button, or the Basic Settings status does not switch to On, let the selected group and procedure finish on its own.
- ***It is normal for the transmission to make noise while the tolerances are adapting. Do not exit or abort the Basic Settings sequence prematurely if you hear clacking noises.***
- Customers with TDI's have reported that an RPM range of 2000-2500 rpm is sufficient.
- If the test drive cannot be performed in the recommended way or the necessary time, any remaining adaptations will be performed automatically during normal driving, it needs 2 days more.
- ***Our research has shown that 02E may need to be driven continually for at least 30 min, up and down the gears, to completely relearn the shift adapts.***
- ***VW warns that during the learning process, shift quality may deteriorate before it gets getter.***
- ***TCM will not relearn the shift adapts when codes are present or if the transmission is not at operating temperature.***