38-1

Oil pan, oil strainer and valve body, removing and installing

WARNING!

Do not run engine with the oil pan removed or without ATF filling and do not tow vehicle.

Notes:

- *Always replace a soiled or faulty valve body.*
- *Rules of cleanliness for working on automatic transmissions* ⇒ *page 37-148* .
- *General repair notes* ⇒ *page 00-27* .
- *Coat O-rings and sealing rings with ATF. Other lubricating substances lead to functional problems in the hydraulic transmission control.*

Removed parts, overview

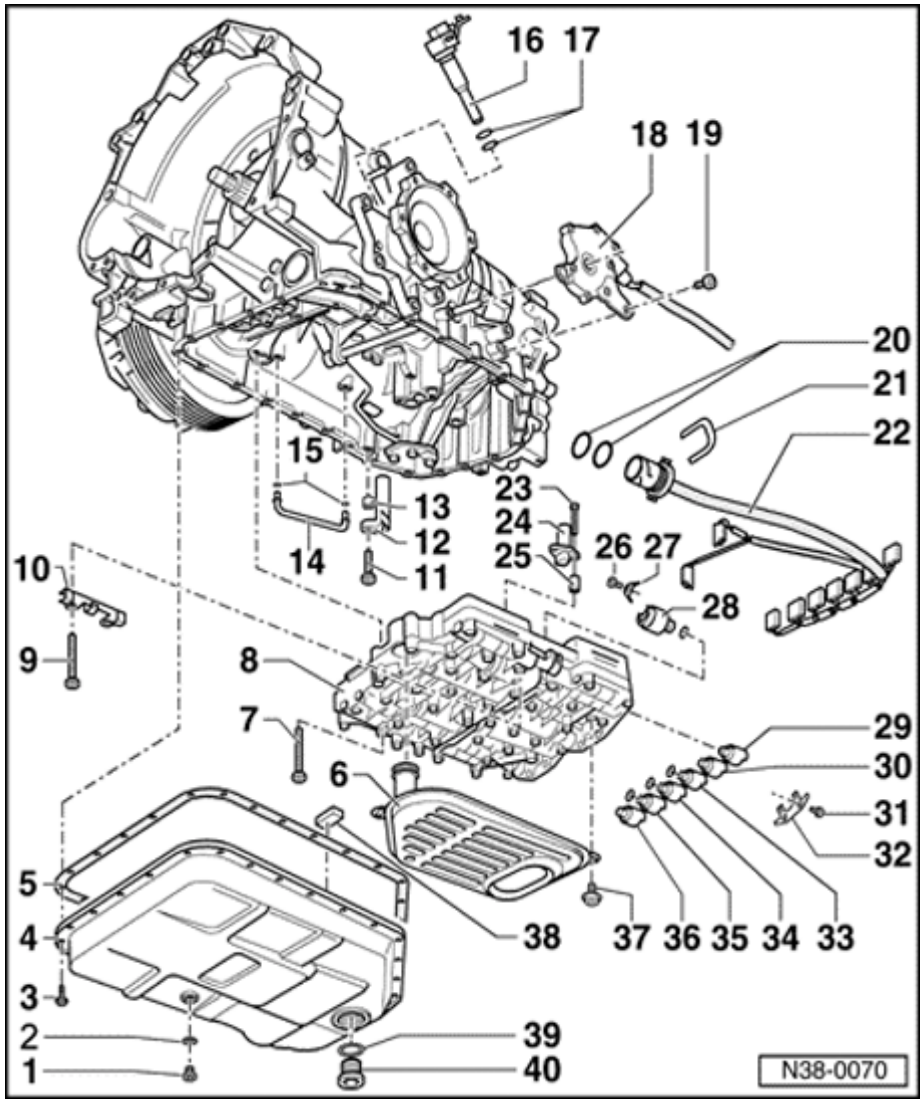
Notes:

- *There is a distinction made between two types of transmission. Transmissions with hydraulic control E17, the sensor for transmission RPM (inductive sensor) is secured to bottom of valve body. Transmissions with hydraulic control E18/2, the sensor for transmission RPM (hall effect sensor) is secured to transmission housing behind valve body.*

- *Information regarding which transmission is installed can be found in tables ⇒ Page 00-4 onward.*

Overview of the removed parts for transmission with Park/Neutral Position (PNP) Switch -E17- ⇒ page 38-3

Overview of the removed parts for transmission with hydraulic control E18/2 ⇒ page 38-11



Overview of the removed parts for transmission with Park/Neutral Position (PNP) Switch -E17-

1 - Drain plug - 40 Nm

- 5 mm socket-head bolt
- Remove to drain ATF ⇒ page 38-20

2 - Seal

- Always replace

3 - Bolt - 10 Nm

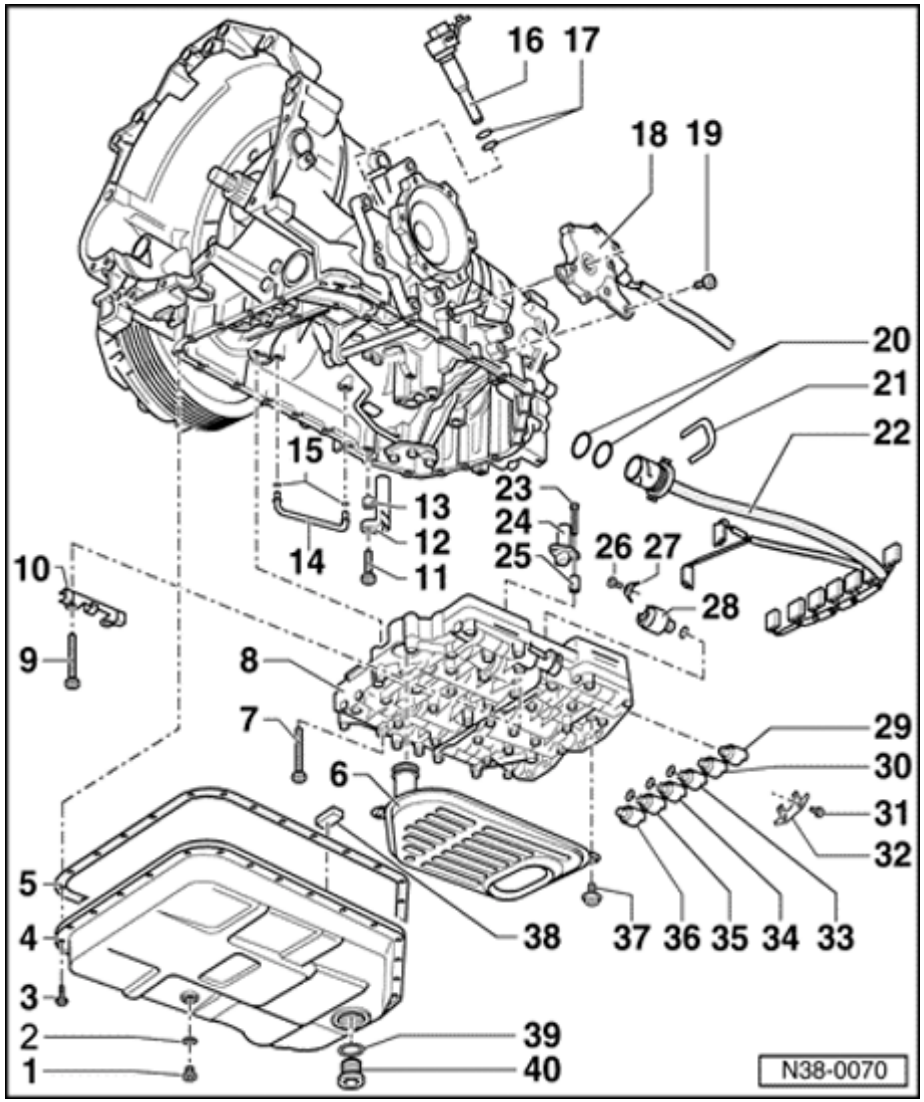
- Tighten bolts for oil pan in several stages in diagonal sequence

4 - Oil pan

- Removing and installing ⇒ page 38-19

5 - Gasket

- Always replace



6 - ATF-strainer

- Removing and installing ⇒ page 38-21

7 - Bolt - 8 Nm

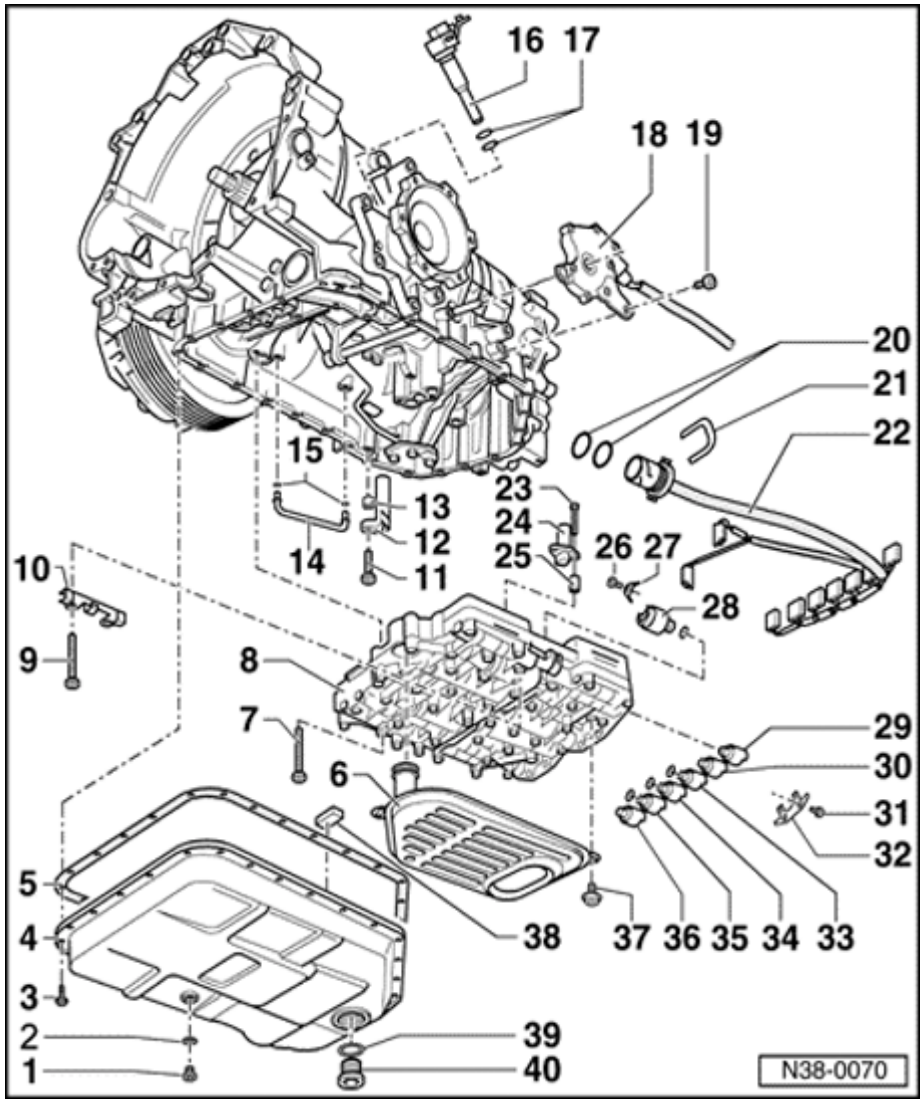
- For mounting valve body: 1 bolt M6 x 30, 16 bolts M6 x 60
- Observe tightening sequence ⇒ page 38-26

8 - Valve body

- Removing and installing ⇒ page 38-22
- Allocation according to transmission code letters

⇒ *Parts Catalog*

9 - Bolt - 8 Nm



10 - Bracket

- For wiring harness
- Hook in wiring harness
- Mounted with valve body bolts

11 - Bolt - 6 Nm

12 - Transmission Vehicle Speed Sensor (VSS) -G38-

- Removing and installing ⇒ page 38-40

13 - Spacer sleeve

- Height: 8 mm

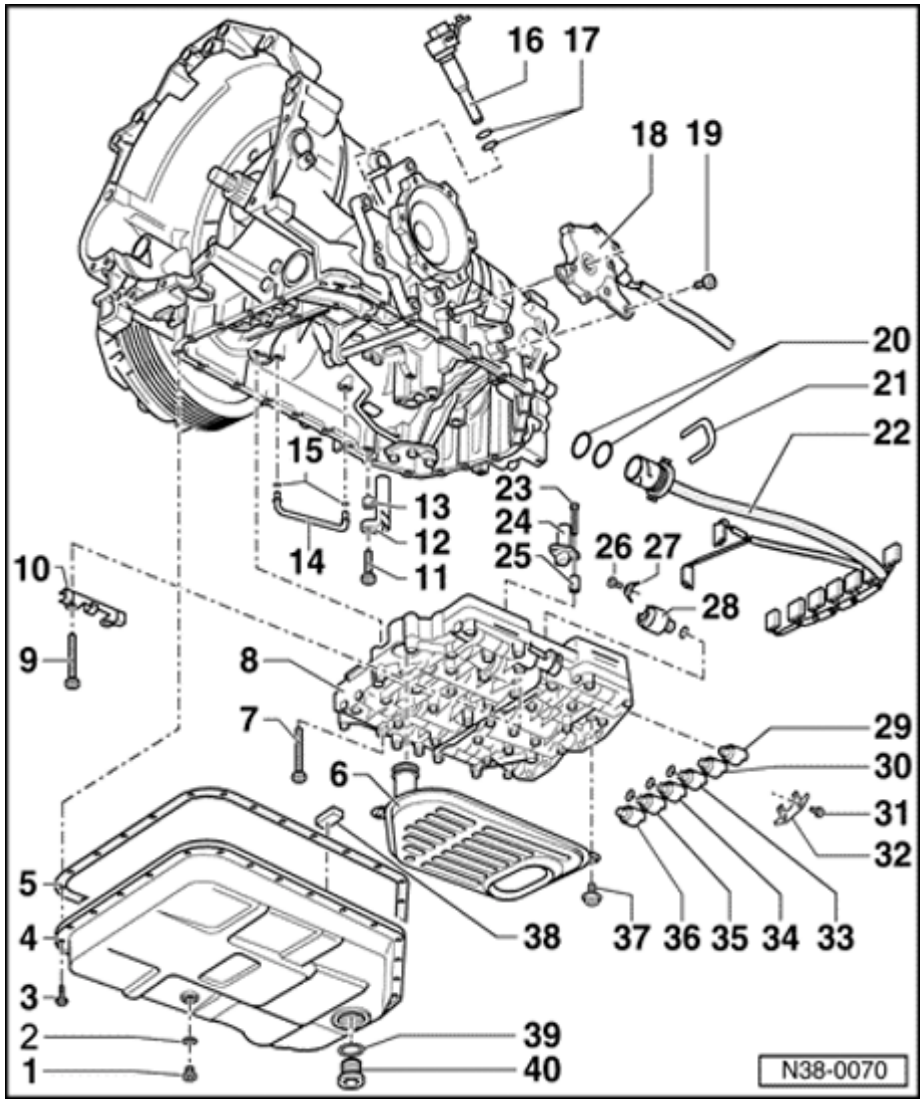
14 - Inner oil line

- Always replace
- Removing and installing ⇒ page 38-29

15 - O-ring

- Always replace

38-6



16 - Speedometer Vehicle Speed Sensor (VSS) -G22-

- Removing and installing ⇒ page 38-35

17 - O-ring

- Always replace
- Coat with Vaseline

18 - Multi-Function Transmission Range (TR) Switch -F125-

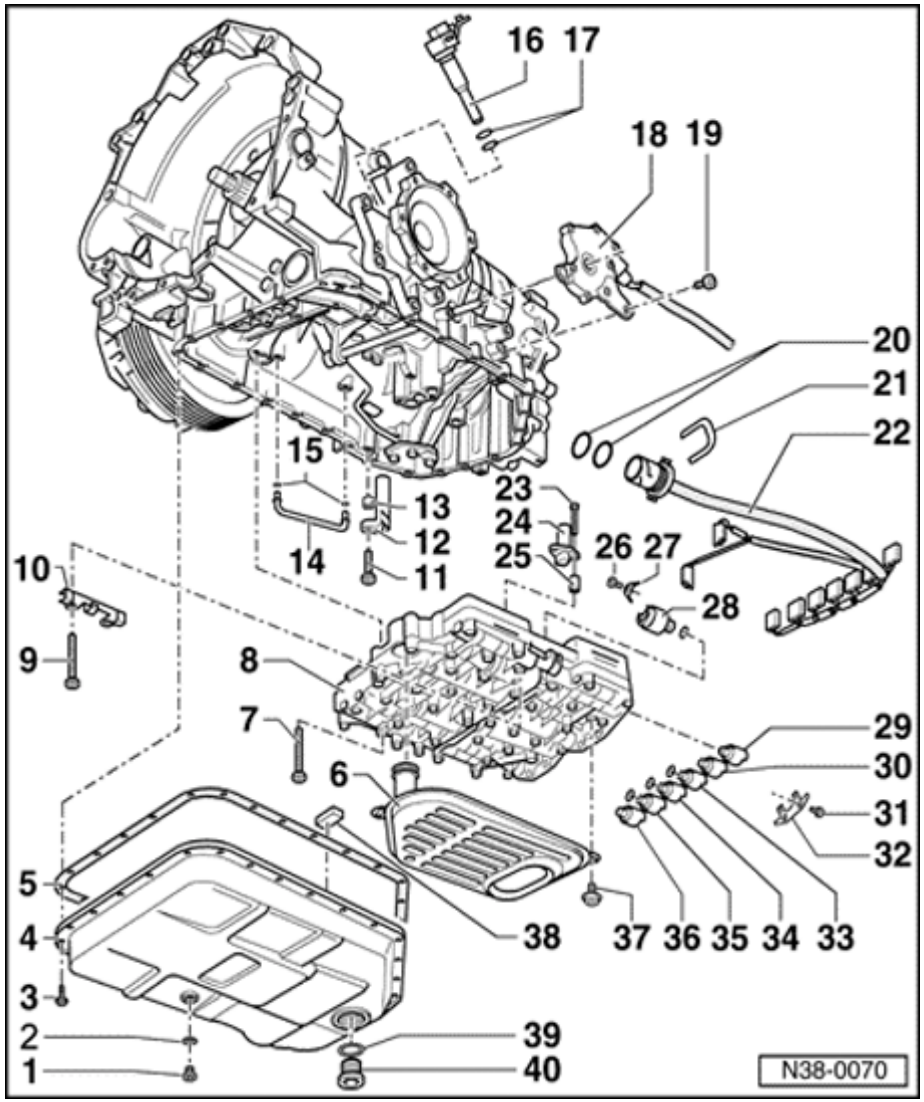
- Removing and installing ⇒ page 38-33
- Replacing shift rod sealing ring ⇒ page 38-31

19 - Bolt - 8 Nm

20 - O-ring

- Always replace

21 - Locking clamp



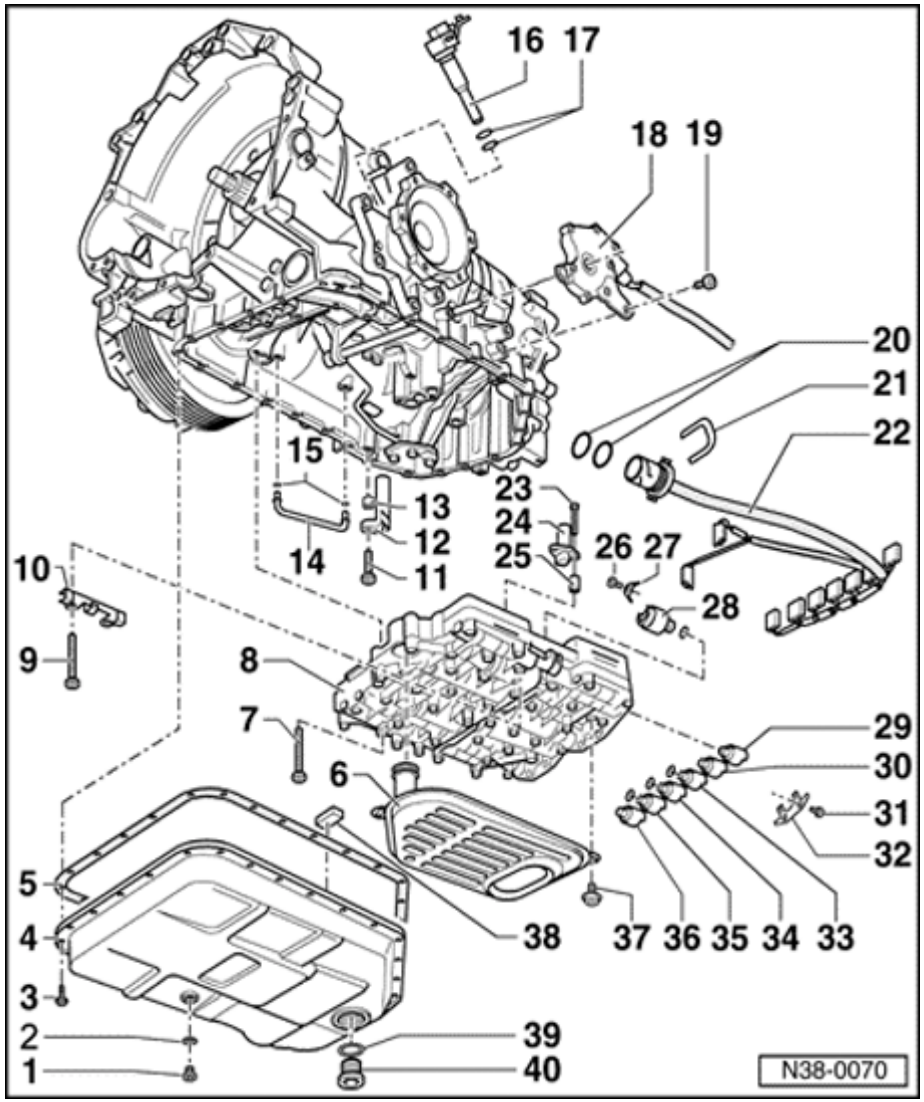
22 - Wiring harness

- Always replace ⇒ page 38-42
- Transmission Fluid Temperature Sensor - G93- is integrated into the wiring harness
- Remove and install valve body to install ⇒ page 38-22
- Unhook from bracket for wiring harness, item 10
- Installation position wiring harness connector: Flat part of rear collar points toward oil pan, the tabs at collar are horizontal

23 - Bolt - 6 Nm

24 - Sensor for transmission RPM -G182-

- Removing and installing ⇒ page 38-36



25 - Spacer sleeve

- Height: 20 mm

26 - Bolt - 6 Nm

27 - Bracket

- For solenoid valve

28 - Solenoid Valve 4 -N91-

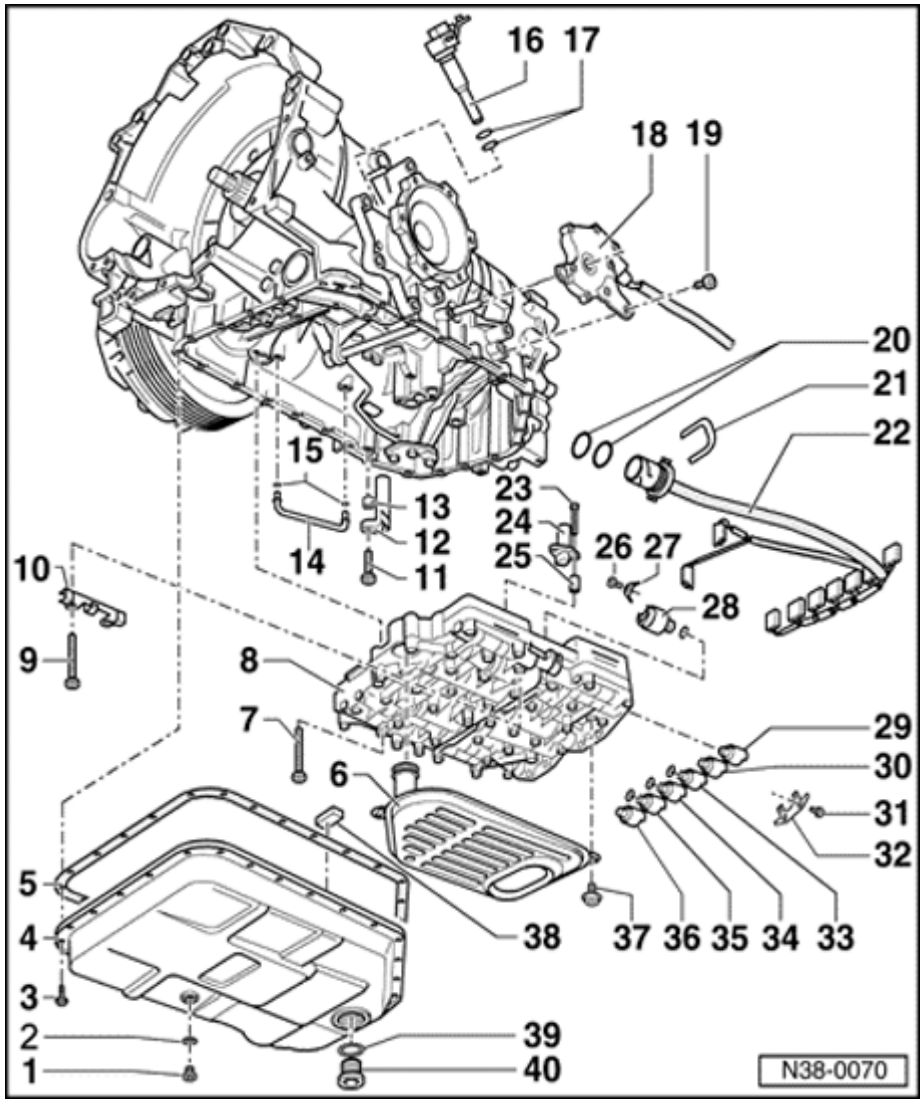
- With O-ring
- Remove and install valve body to install ⇒ page 38-22

29 - Solenoid valve 3 -N90-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19

30 - Solenoid valve 2 -N89-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19



31 - Bolt - 6 Nm

32 - Bracket

- For solenoid valves

33 - Solenoid Valve 6 -N93-

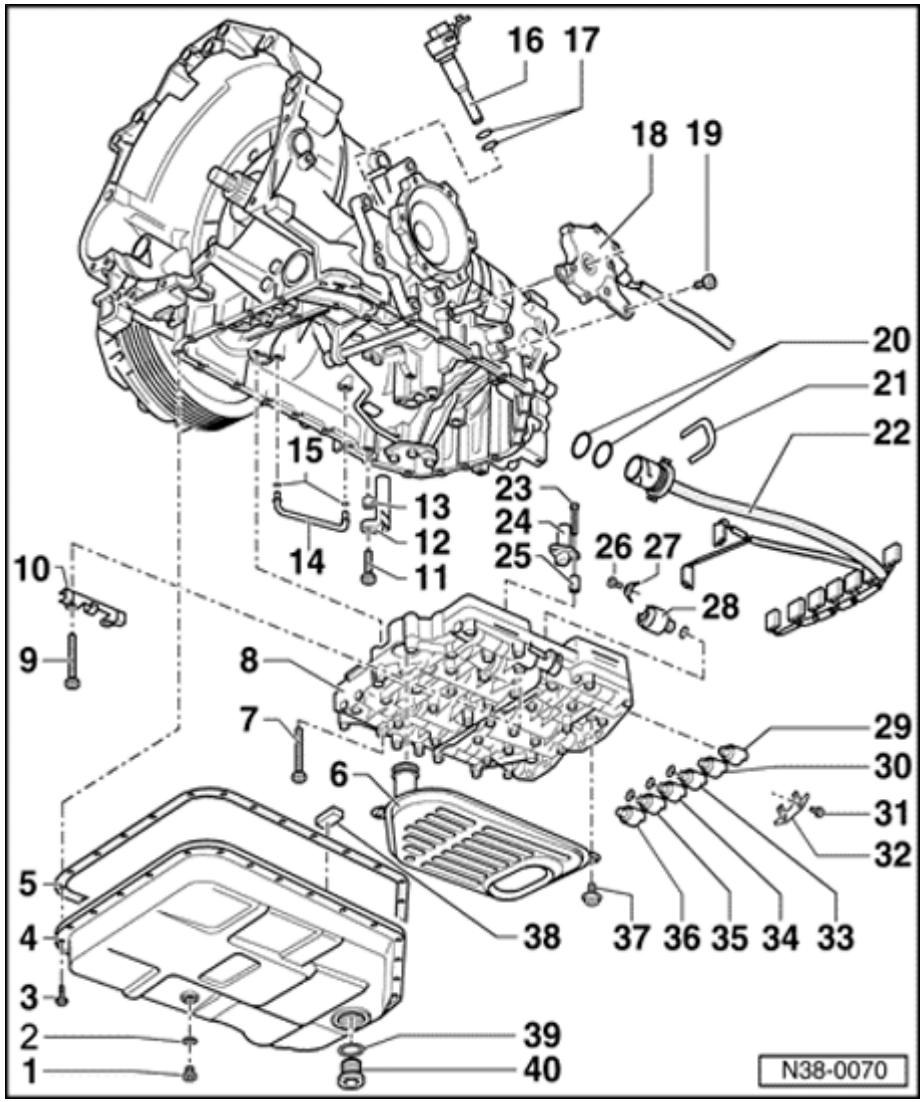
- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19

34 - Solenoid Valve 7 -N94-

- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19

35 - Solenoid valve 5 -N92-

- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19



36 - Solenoid valve 1 -N88-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19 and unbolt guide plate for park locking mechanism
- When installing, do not tighten bolts for guide plate (23 Nm) in selector lever position "P".

37 - Bolt - 6 Nm

38 - Magnet

- 4 pieces in the oil pan recesses

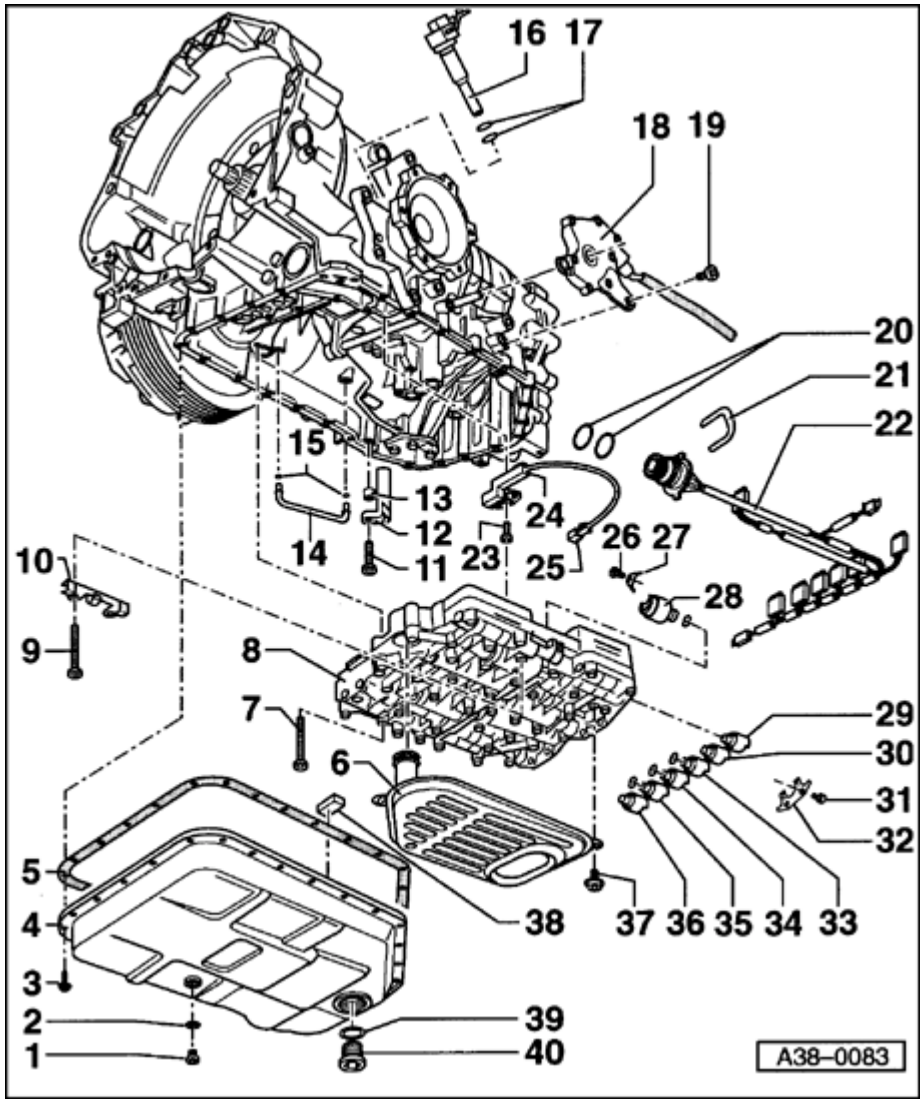
39 - O-ring

- Always replace

40 - ATF check plug - 80 Nm

- 17 mm socket-head bolt

38-11



Overview of the removed parts for transmission with hydraulic control E18/2

1 - Drain plug - 40 Nm

- 5 mm socket-head bolt
- Remove to drain ATF ⇒ page 38-20

2 - Seal

- Always replace

3 - Bolt - 10 Nm

- Tighten bolts for oil pan in several stages in diagonal sequence

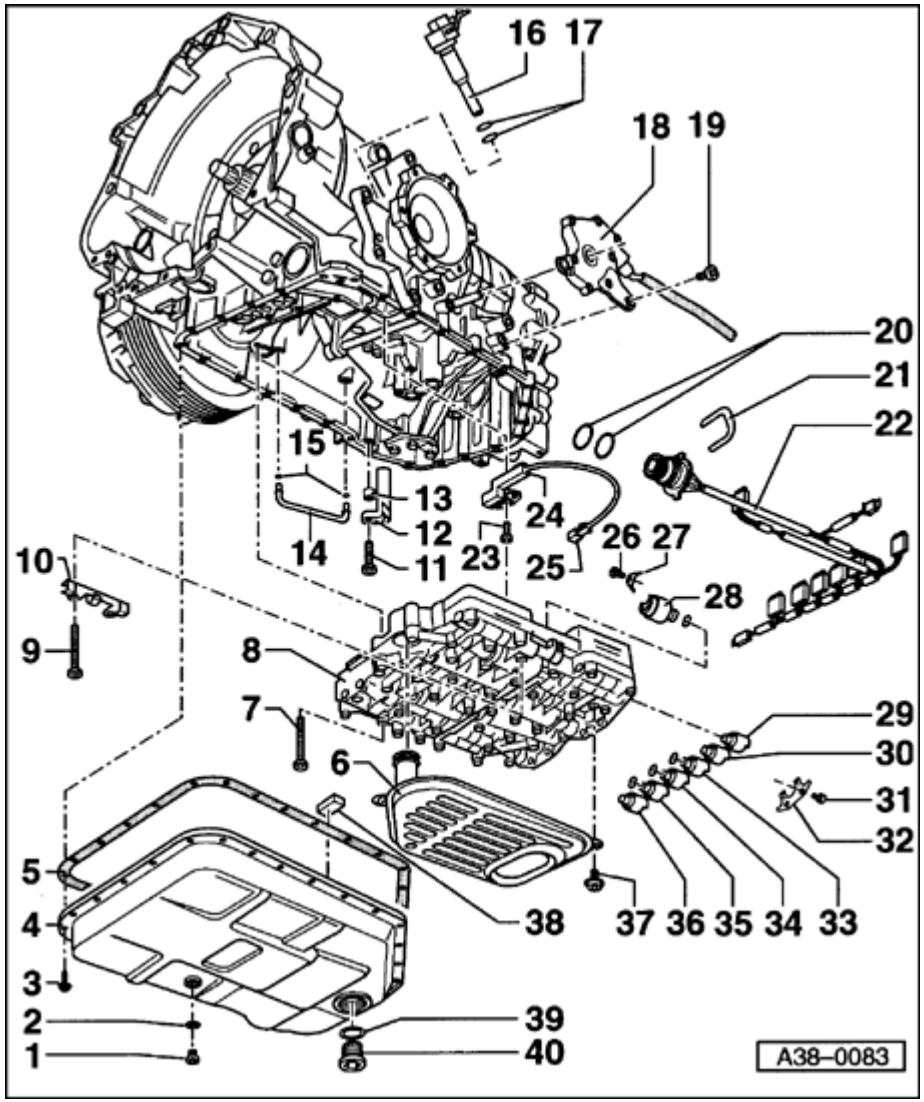
4 - Oil pan

- Removing and installing ⇒ page 38-19

5 - Gasket

- Always replace

38-12



6 - ATF-strainer

- Removing and installing ⇒ page 38-21

7 - Bolt - 8 Nm

- For mounting valve body: 1 bolt M6 x 30, 16 bolts M6 x 60
- Observe tightening sequence ⇒ page 38-26

8 - Valve body

- Removing and installing ⇒ page 38-22
- Allocation according to transmission code letters

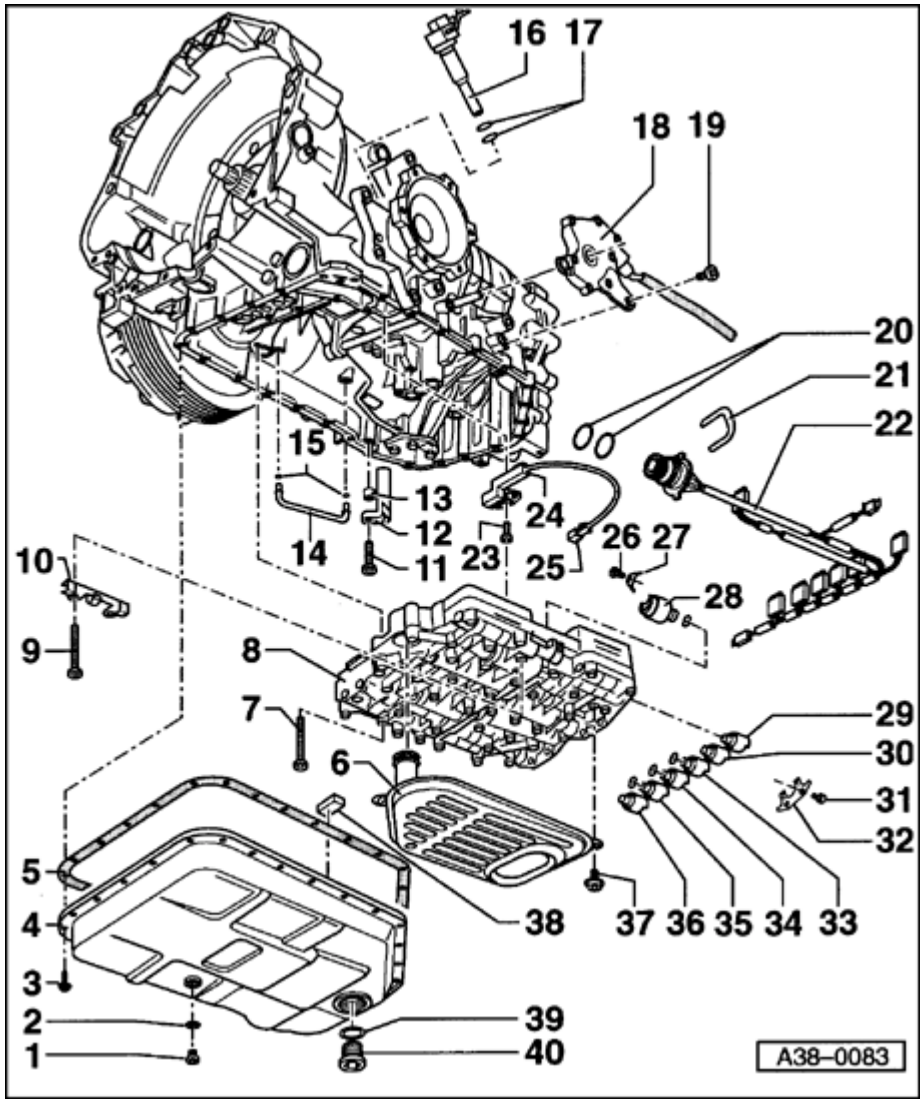
⇒ *Parts Catalog*

9 - Bolt - 8 Nm

10 - Bracket

- For wiring harness
- Hook in wiring harness
- Mounted with valve body bolts

38-13



11 - Bolt - 6 Nm

12 - Transmission Vehicle Speed Sensor (VSS) -G38-

- Removing and installing ⇒ page 38-40

13 - Spacer sleeve

- Height: 8 mm

14 - Inner oil line

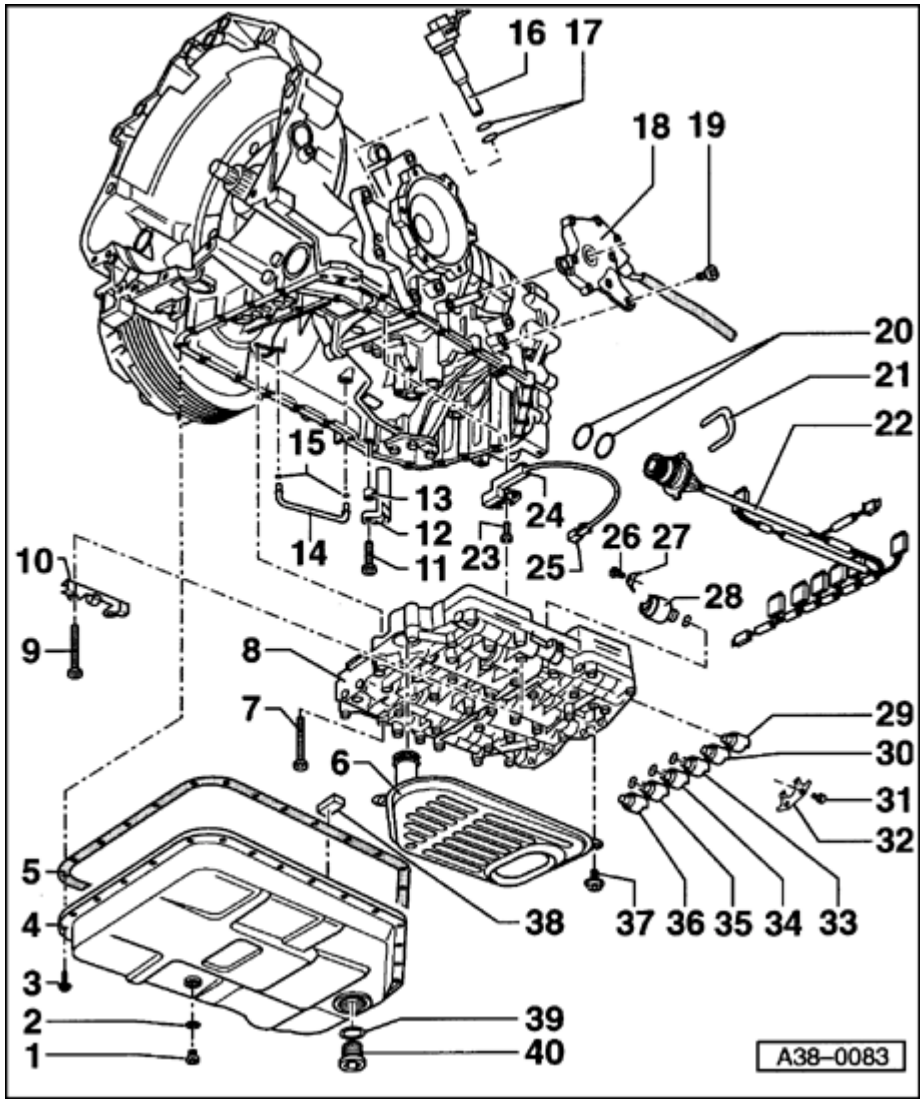
- Always replace
- Removing and installing ⇒ page 38-29

15 - O-ring

- Always replace

16 - Speedometer Vehicle Speed Sensor (VSS) -G22-

- Removing and installing ⇒ page 38-35



17 - O-ring

- Always replace
- Coat with Vaseline

18 - Multi-Function Transmission Range (TR) Switch -F125-

- Removing and installing ⇒ page 38-33
- Replacing shift rod sealing ring ⇒ page 38-31

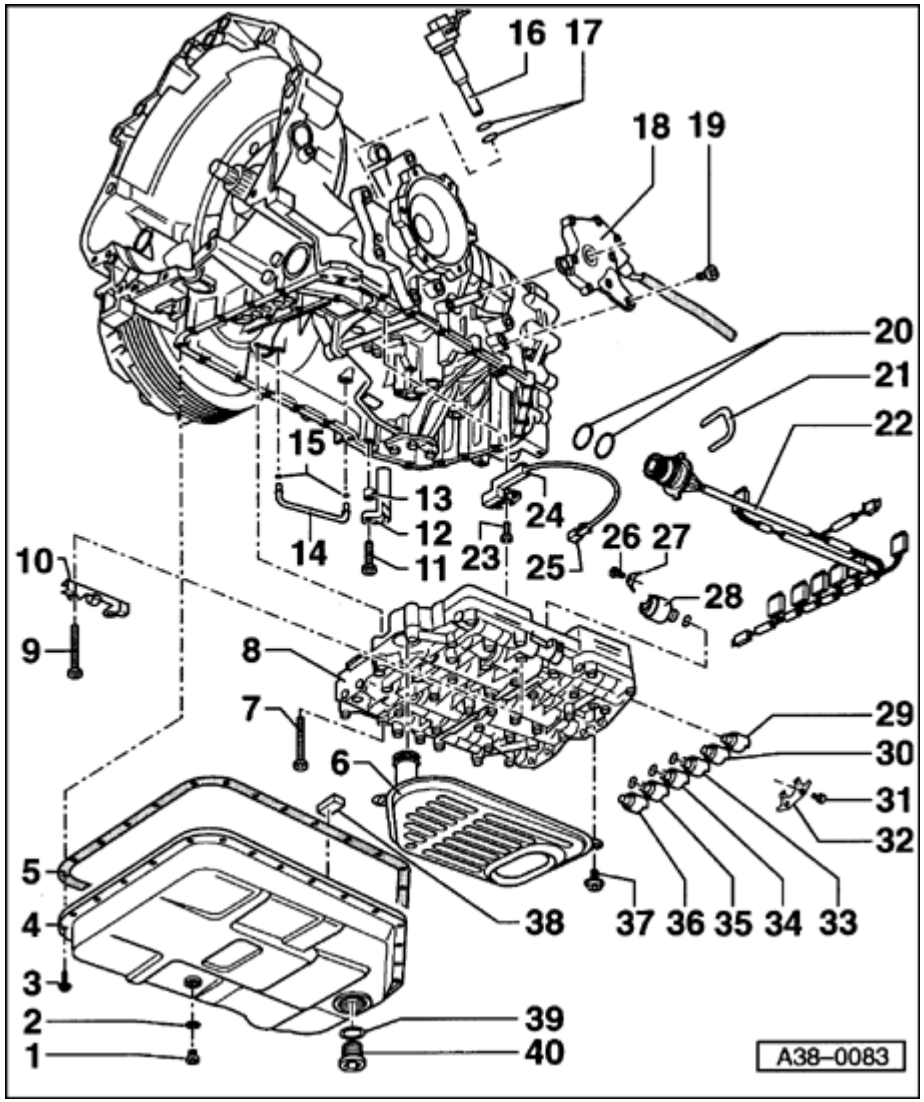
19 - Bolt - 8 Nm

20 - O-ring

- Always replace

21 - Locking clamp

38-15



22 - Wiring harness in transmission

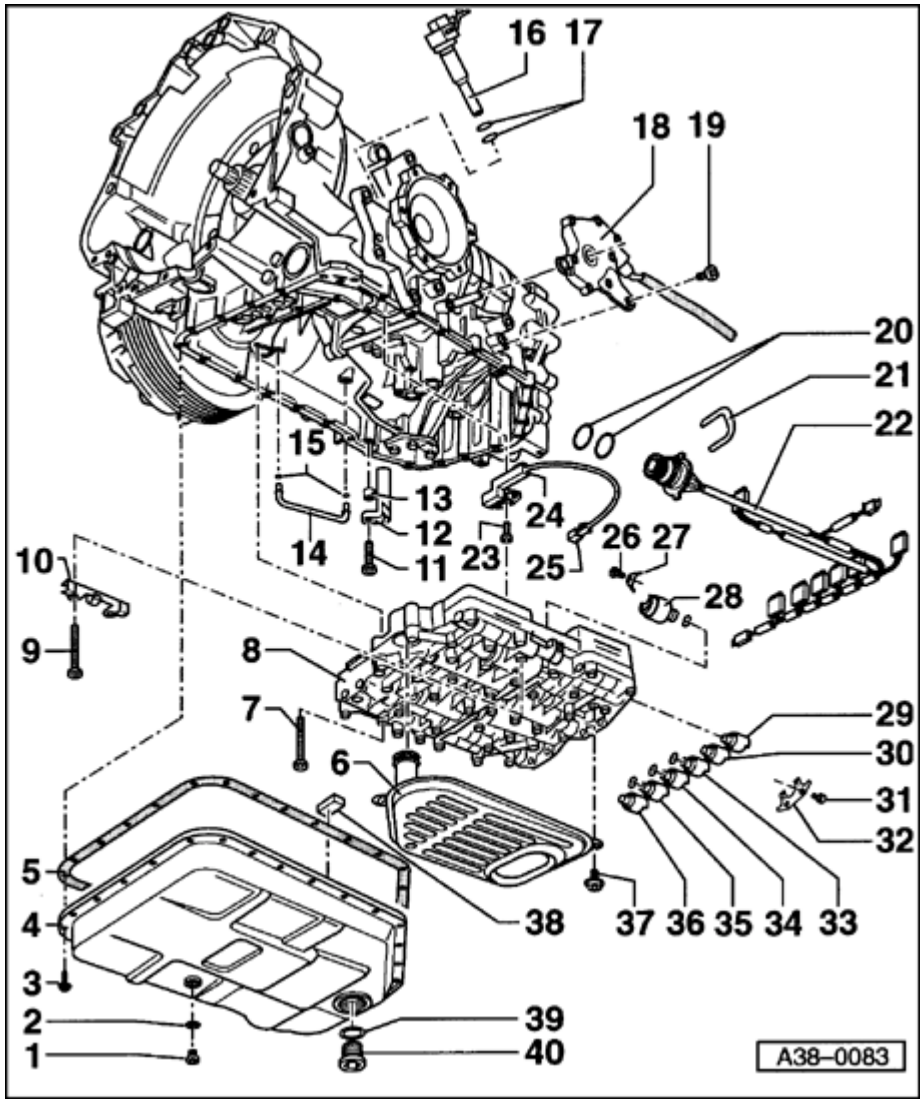
- Always replace ⇒ page 38-42
- Transmission Fluid Temperature Sensor - G93- is integrated into the wiring harness
- Remove and install valve body to replace ⇒ page 38-22
- Unhook from bracket for wiring harness, item 10
- Installation position wiring harness connector: Flat part of rear collar points toward oil pan, the tabs at collar are horizontal

23 - Bolt - 9 Nm

24 - Sensor for transmission RPM -G182-

- Removing and installing ⇒ page 38-36

38-16



25 - Connector

- Is connected at wiring harness in transmission
- Must be disconnected before removing the valve body

26 - Bolt - 6 Nm

27 - Bracket

- For solenoid valve

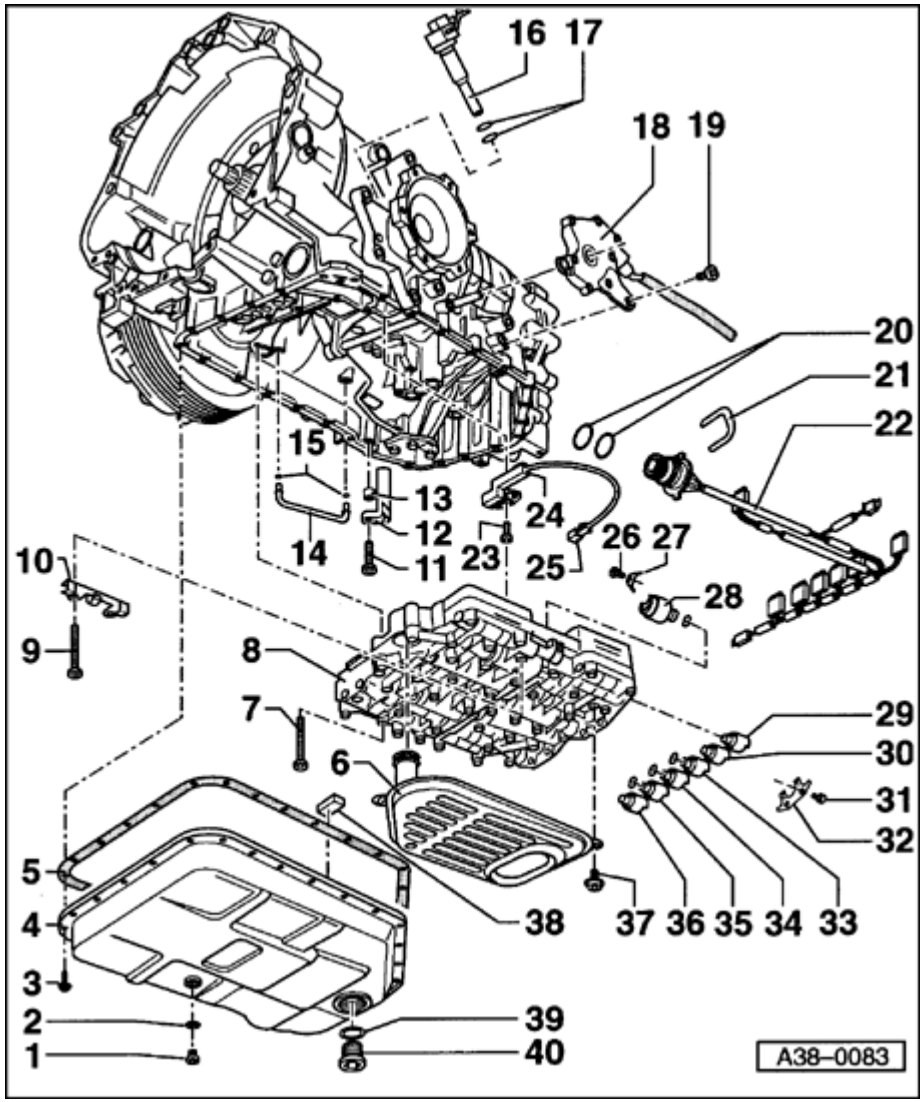
28 - Solenoid Valve 4 -N91-

- With O-ring
- Remove and install valve body to replace ⇒ page 38-22

29 - Solenoid valve 3 -N90-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19

38-17



30 - Solenoid valve 2 -N89-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19

31 - Bolt - 6 Nm

32 - Bracket

- For solenoid valves

33 - Solenoid Valve 6 -N93-

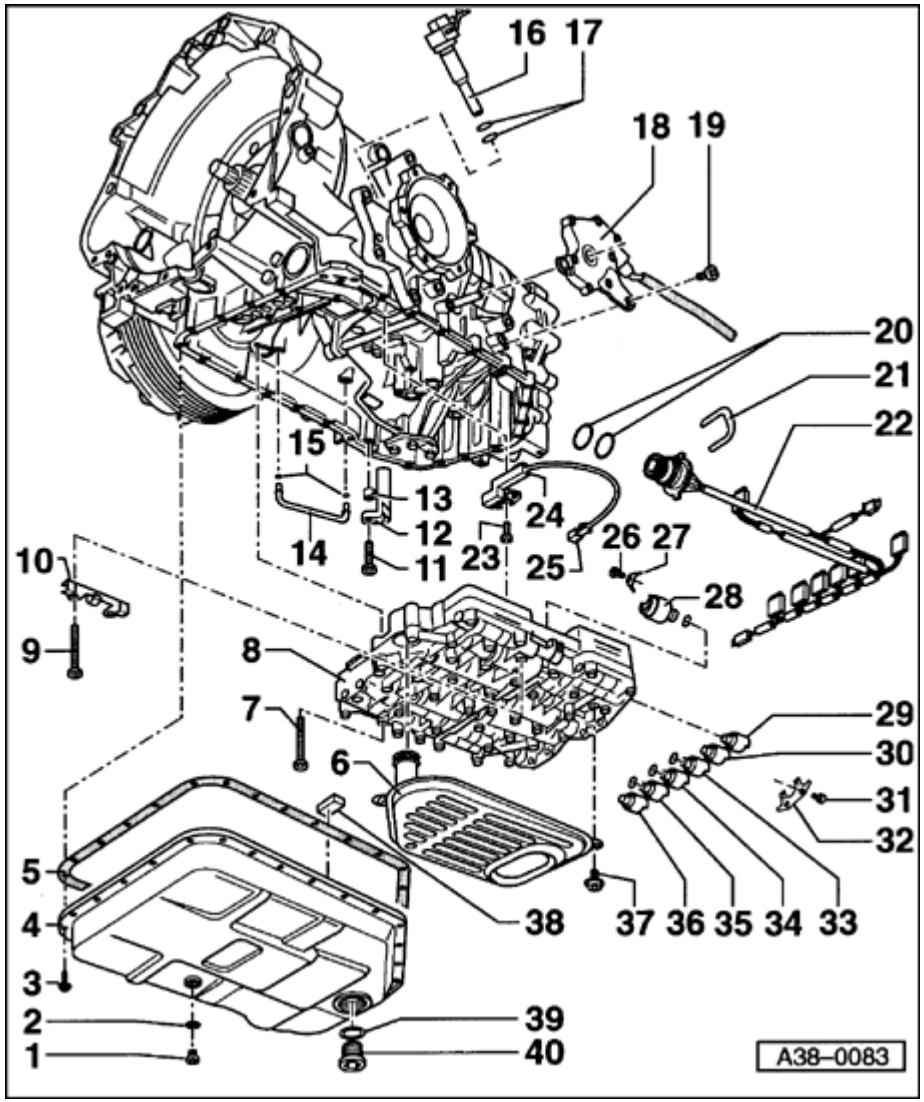
- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19

34 - Solenoid Valve 7 -N94-

- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19

35 - Solenoid valve 5 -N92-

- With O-ring
- Remove and install oil pan to replace ⇒ page 38-19



36 - Solenoid valve 1 -N88-

- Without O-ring
- Remove and install oil pan to replace ⇒ page 38-19 and unbolt guide plate for park locking mechanism
- When installing, do not tighten bolts for guide plate (23 Nm) in selector lever position "P".

37 - Bolt - 6 Nm

38 - Magnet

- 4 pieces in the oil pan recesses

39 - O-ring

- Always replace

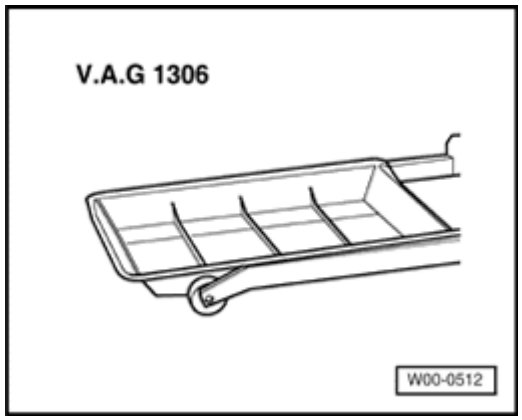
40 - ATF check plug - 80 Nm

- 17 mm socket-head bolt

38-19

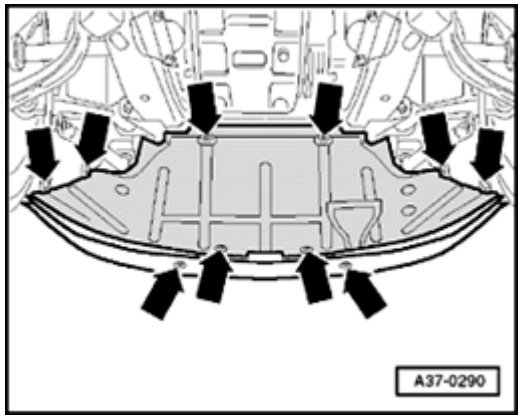
Oil pan, removing and installing

Special tools and equipment

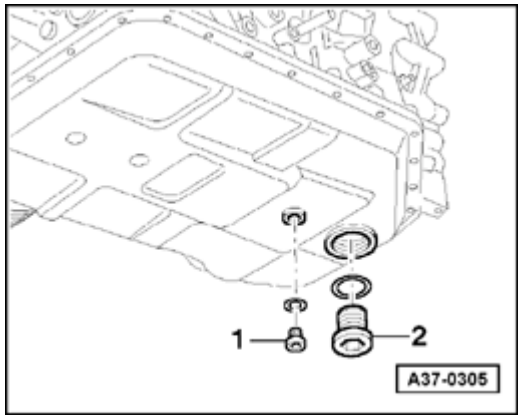


- VAG1306 drip tray

Removing



- Remove noise insulation panel (arrows).
- Place VAG1306 drip tray under transmission.



- Remove ATF drain plug -1- and drain ATF.
- Loosen bolts of oil pan in diagonal sequence.

Installing

Installation is reverse of removal, noting the following:

- Clean all 4 magnets in oil pan recesses. Ensure full surface contact of the magnets on the oil pan.
- Replace gaskets.

Note:

Drain plug and oil seal must both be replaced.

- Fill up ATF ⇒ page 37-140 .

Tightening torques

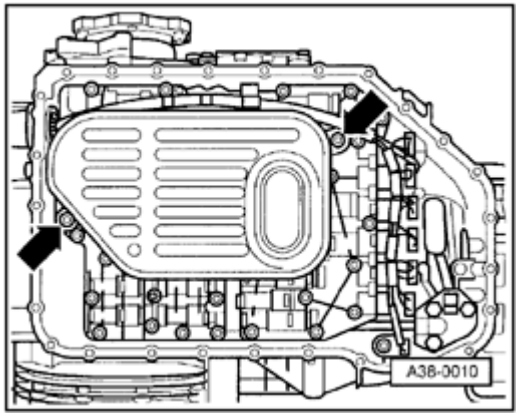
Component	Nm
Drain plug to oil pan	40
Oil pan to transmission housing (diagonally in sequence)	 10

38-21

Oil strainer, removing and installing

Removing

- Removing oil pan ⇒ page 38-19 .



- Removing oil strainer bolts (arrows).
- Pull oil strainer off of valve body.

Installing

- Lightly coat seal on suction collar of oil strainer with ATF.
- Carefully press suction collar of oil strainer into the opening at valve body up to stop.
- Bolt on oil strainer.
- Installing oil pan ⇒ page 38-20 .
- Fill up ATF ⇒ page 37-140 .

Tightening torque

Component	Nm
Oil strainer to valve body	6

38-22

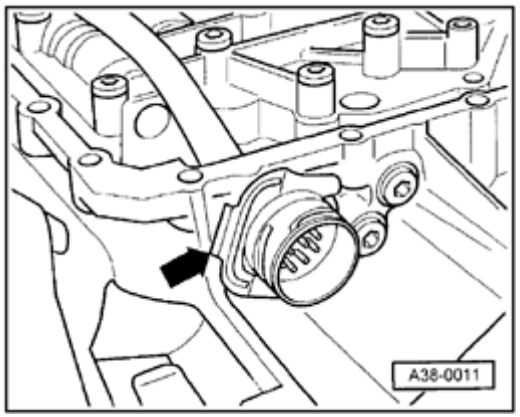
Valve body, removing and installing

Notes:

- *Always replace a soiled or faulty valve body.*
- *General repair notes* ⇒ *page 00-27* .
- *Rules of cleanliness for working on automatic transmissions* ⇒ *page 37-148* .

Removing

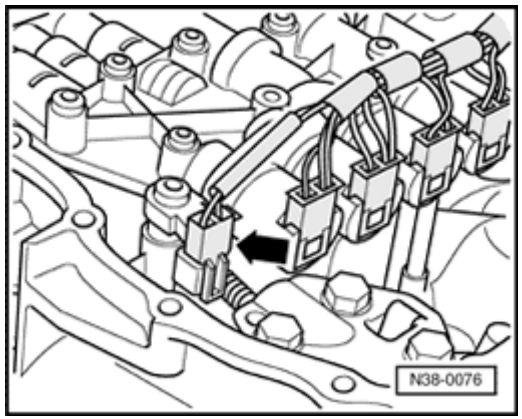
- Removing oil pan ⇒ page 38-19 .
- Removing oil strainer ⇒ page 38-21 .



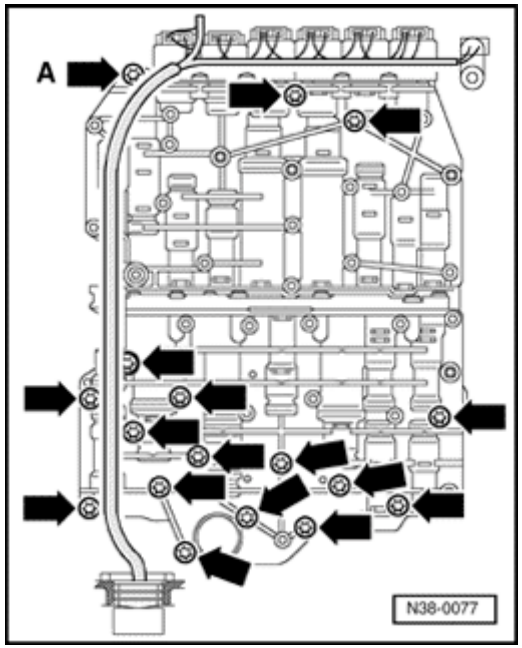
- Disconnect clip for wiring harness connectors (arrow).

38-23

Only for Park/Neutral Position (PNP) Switch - E17-



- Disconnect harness connector from Transmission Vehicle Speed Sensor (VSS) -G38- (arrow).



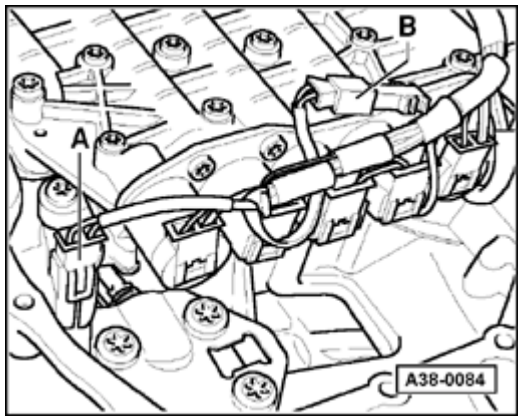
- Loosen mounting bolts (arrows) of valve body and remove valve body with wiring harness.

Notes:

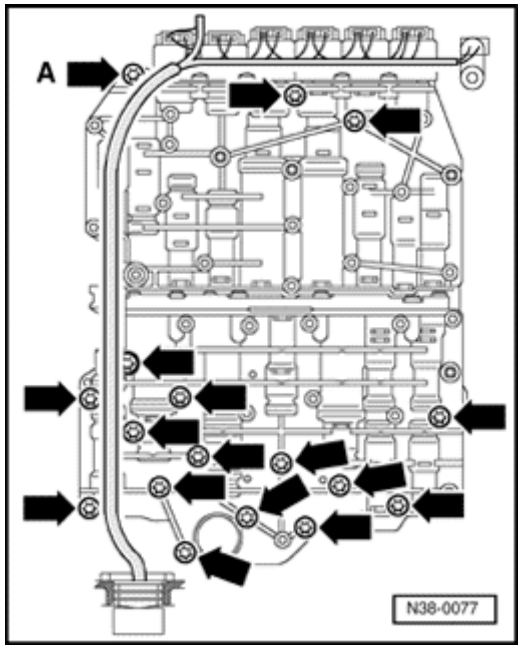
- *Only the marked mounting bolts (arrows) must be loosened.*
- *When loosening other bolts, the function of the valve body can be influenced or the valve body splits up.*
- *The bolt (arrow) A is shorter and thinner than the other bolts. Observe allocation.*

38-24

Only for transmission with hydraulic control E18/2



- Disconnect harness connector from Transmission Vehicle Speed Sensor (VSS) -G38- (-A-).
- Disconnect harness connector from Sensor for transmission RPM - G182- (-B-).



- Loosen mounting bolts (arrows) of valve body and remove valve body with wiring harness.

Notes:

- *Only the marked mounting bolts (arrows) must be loosened.*
- *When loosening other bolts, the function of the valve body can be influenced or the valve body splits up.*
- *The bolt (arrow A) is not installed on transmissions with hydraulic control E18/2 and can therefore be disregarded.*

All:

- Remove valve body from transmission while advancing the wiring harness connector.

Note only for Park/Neutral Position (PNP) Switch -E17-:

Do not place the removed valve body on the Sensor for transmission RPM at rear of valve body. Danger of damage.

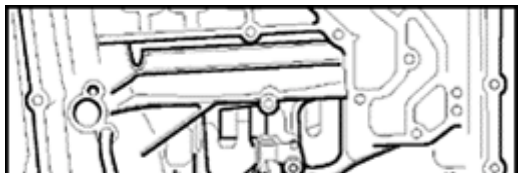
Installing

- Lightly coat O-rings of wiring harness connector with ATF.

- Insert wiring harness connector into transmission housing.

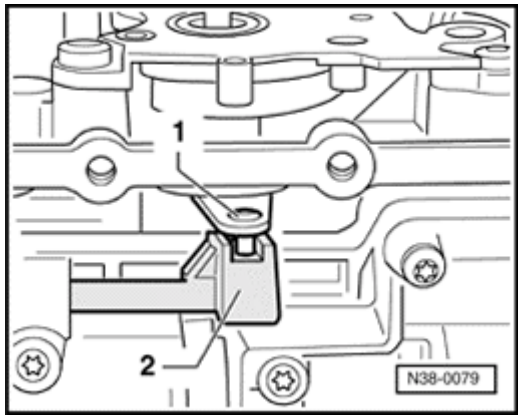
  - Installation position: Flat part of rear collar points downward, the tabs at collar are horizontal

Only for transmission with hydraulic control E18/2

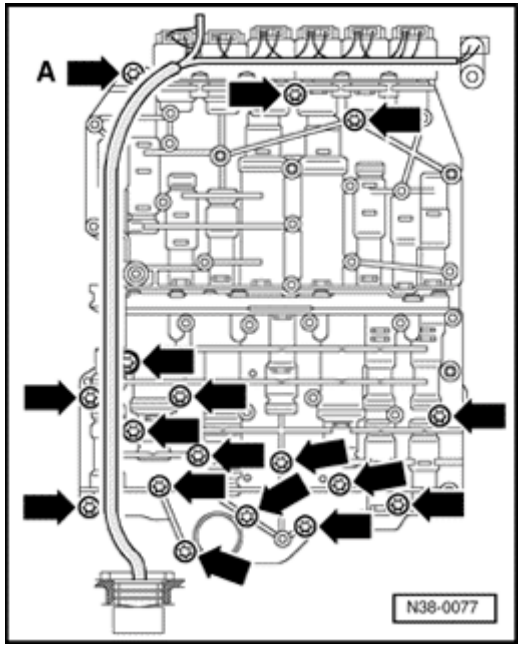


- Route wire with connector -C- according to illustration, so that the wire is not pinched when installing the valve body.

All:



- Set valve body in place without force while placing bolt of notched disc -1- into the groove of the selector register -2-.



- Next, tighten valve body bolts (arrows) by hand.

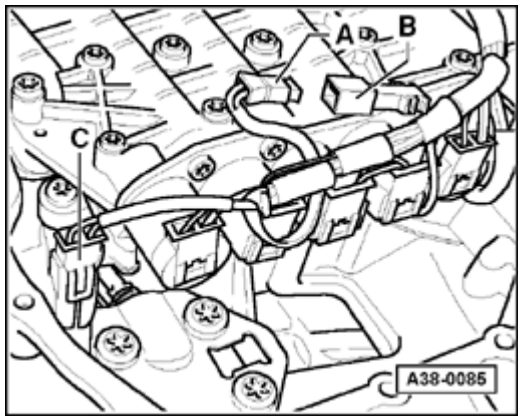
Notes:

On transmissions with Park/Neutral Position (PNP) Switch -E17-, the bolt (arrow A) is shorter and thinner than the other bolts. Observe allocation.

The bolt (arrow A) is not installed on transmissions with hydraulic control E18/2 and can therefore be disregarded.

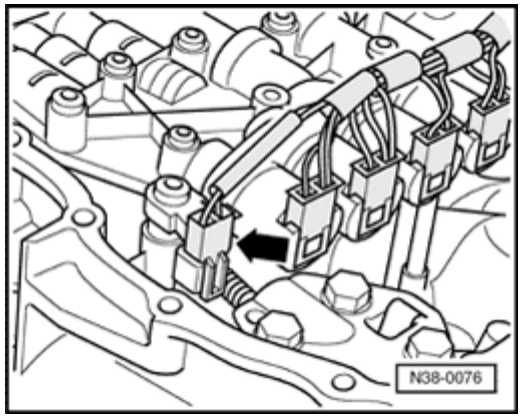
- Then tighten valve body bolts from inside out to final tension.

Only for transmission with hydraulic control E18/2

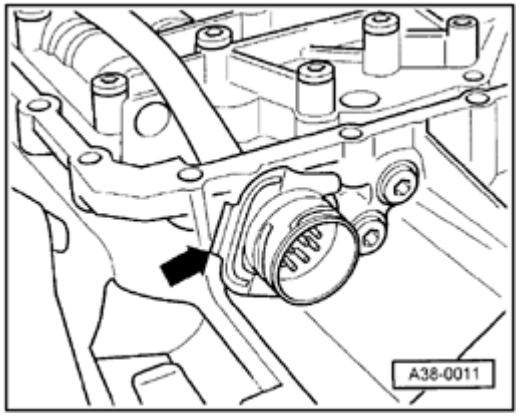


- Pull wiring with connector -B- of Sensor for transmission RPM -G182- between valve body and wiring harness upward.
- Connect connector -B- to connector -A- at wiring harness.
- Connect connector -C- to Transmission Vehicle Speed Sensor (VSS) -G38-.

Only for Park/Neutral Position (PNP) Switch -E17-



- Connect connector (arrow) to Transmission Vehicle Speed Sensor (VSS) -G38-.



All:

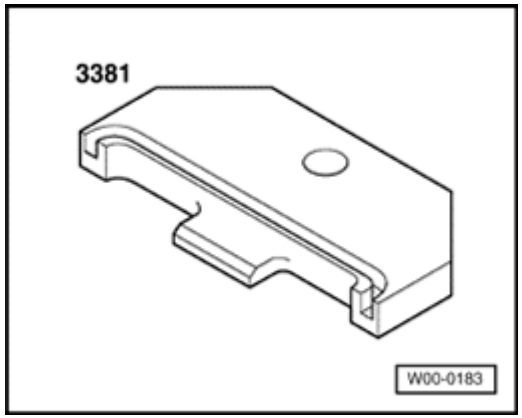
- Connect clip to wiring harness connector (arrow).
- Installing oil strainer ⇒ page 38-21 .
- Installing oil pan ⇒ page 38-20 .
- Fill up ATF ⇒ page 37-140 .

Tightening torque

Component	Nm
Valve body to transmission housing (from inside out)	8

Oil line inside transmission, removing and installing

Special tools and equipment



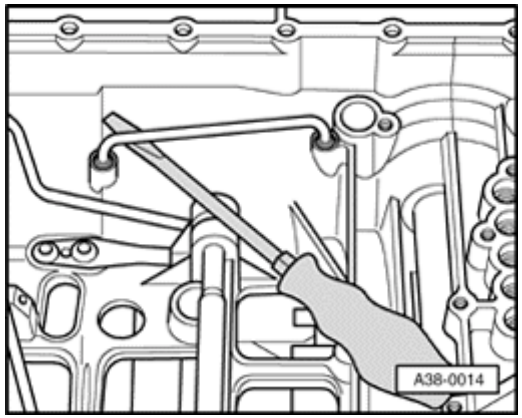
- 3381oil line installer

Notes:

- *Faulty O-rings at inner oil line allow ATF to enter the differential, which becomes over-filled and oil escapes at differential vent.*
- *A removed oil line generally must be replaced.*
- *The oil line must only be inserted using 3381oil line installer. Otherwise there is a risk of leaks because of bending of the oil line.*

Removing

- Removing valve body ⇒ page 38-22 .

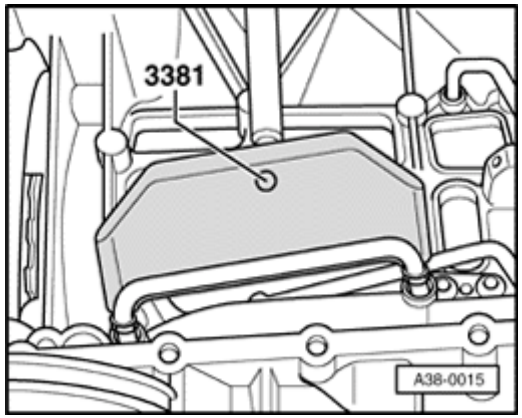


- Lever off inner oil line evenly from transmission housing.

Installing

Installation is reverse of removal, noting the following:

- Replace O-rings.



- Insert oil line into 3381 oil line installer.
- Drive oil line into transmission housing by lightly tapping on the 3381 oil line installer up to stop using a plastic mallet.

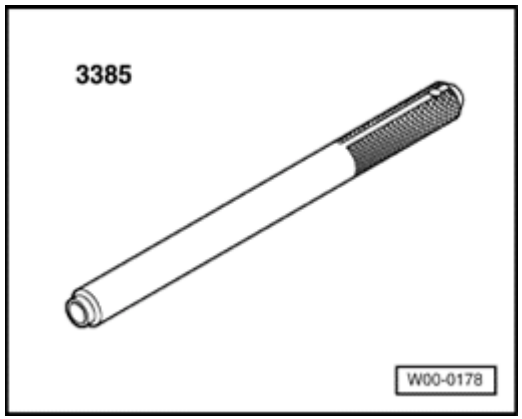
Notes:

- *The open side of 3381 oil line installer faces toward the outer wall of the transmission.*
- *Do not cant oil line. Drive in both line ends uniformly.*

- Installing valve body ⇒ page 38-25 .
- Fill up ATF ⇒ page 37-140 .
- Checking oil level in front final drive ⇒ page 39-1 .

Shift rod seal, replacing

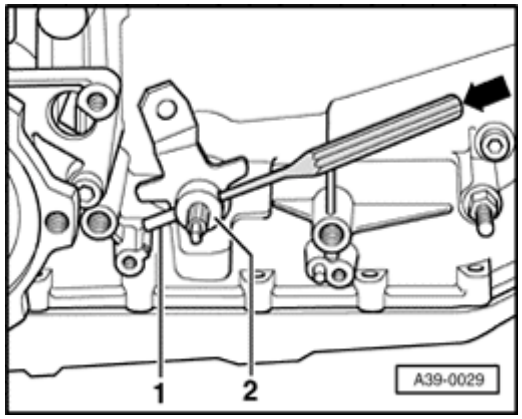
Special tools and equipment



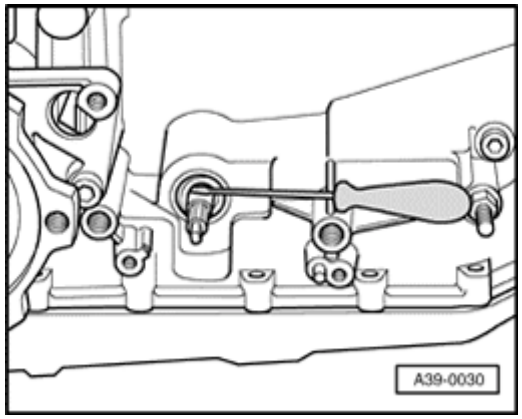
- 3385 sealing ring installer

Removing

- Removing left transmission support ⇒ page 37-125 .
- Removing Multi-Function Transmission Range (TR) Switch -F125- ⇒ page 38-33 .



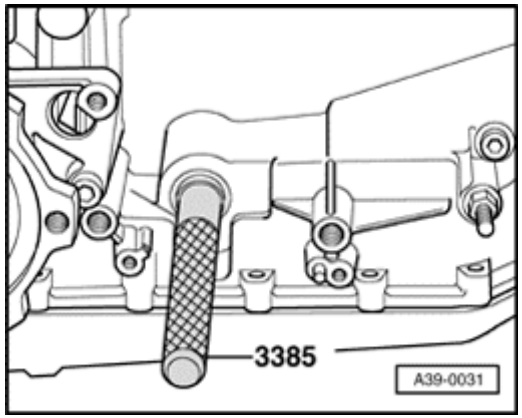
- Drive out spring dowel sleeve -1- at lever/shift rod -2- in direction of travel toward the front (arrow), until the lever/shift rod can be pulled off the shift rod.



- Pierce sealing ring using a small screwdriver and pull out.

Installing

- Coat outer circumference and gap between sealing lips with ATF.
  - Installation position: The open side of the sealing ring faces the transmission.



- Slide new sealing ring onto 3385 sealing ring installer without canting and drive in up to stop of pressure piece.
- Installing Multi-function switch ⇒ page 38-33 .
- Drive back spring dowel sleeve with transmission not yet removed in opposite direction through the lever.
- Slide transmission shift lever onto shift rod and drive in spring dowel sleeve.
- Installing left transmission support ⇒ page 37-125 .

38-33

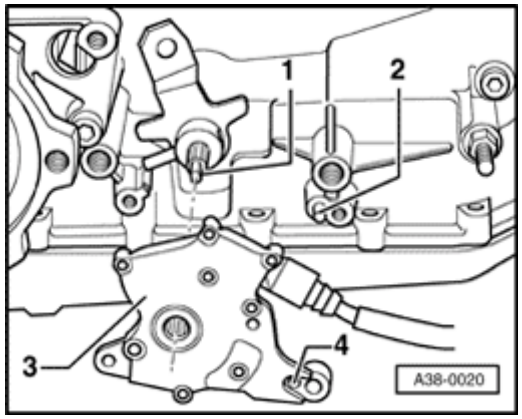
Multi-Function Transmission Range (TR) Switch -F125-, removing and installing

Removing

- Removing left transmission support ⇒ page 37-125 .

- Unbolt Multi-Function Transmission Range (TR) Switch -F125- from transmission and pull off from shift rod.

Installing

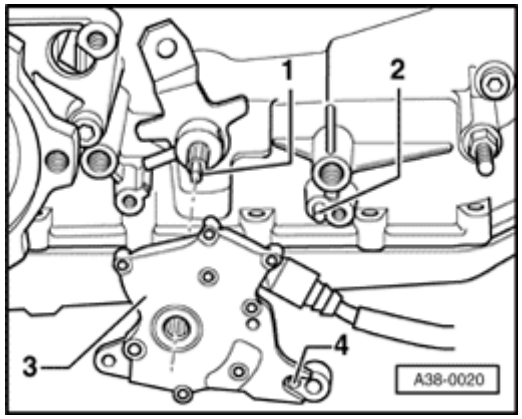


- Connect Multi-Function Transmission Range (TR) Switch -F125- on shift rod. Flap part at splines in switch -3- must align with flat part of shift rod -1-.

Note:

Set Multi-Function Transmission Range (TR) Switch -F125- onto shift rod in centered manner. Do not cant and do not set with force. Risk of damage at switch terminals.

38-34



- Rotate switch until the alignment hole -4- at switch housing can be fitted on the alignment pin -2- at transmission housing.
- Installing left transmission support ⇒ page 37-125 .

Tightening torques

Component	Nm
multi-function Transmission Range (TR) switch -F125- to transmission	8

38-35

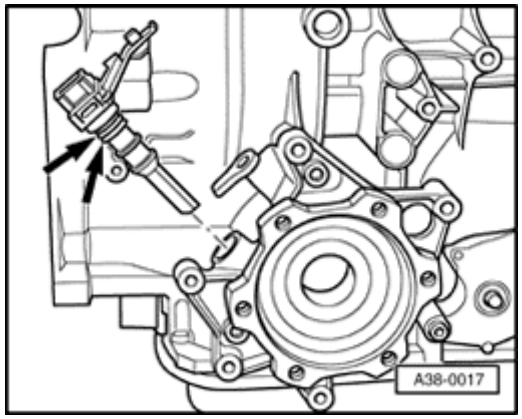
Speedometer Vehicle Speed Sensor (VSS) -G22-, removing and installing

Removing

- Disconnect harness connector from Speedometer Vehicle Speed Sensor (VSS) -G22-.

- Push retaining bracket of sensor downward, turn and pull sensor out.

Installing



- Replace sealing rings (arrows).
- Insert O-rings with grease.
- Insert sensor.
- Engage retaining bracket at mounting bracket for flange shaft.

38-36

Sensor for transmission RPM -G182-, removing and installing

Note:

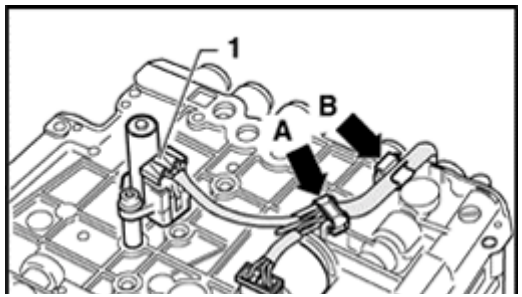
- *There is a distinction made between two types of transmission. Transmissions with hydraulic control E17, the sensor for transmission RPM (inductive sensor) is secured to bottom of valve body. Transmissions with hydraulic control E18/2, the sensor for transmission RPM (hall effect sensor) is secured to transmission housing behind valve body.*

- *Information regarding which transmission is installed can be found in tables ⇒ page 00-4 onward.*

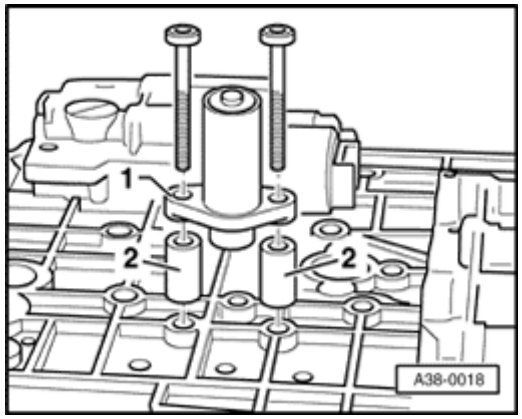
For transmissions with hydraulic control E17

Removing

- Removing valve body ⇒ page 38-22 .



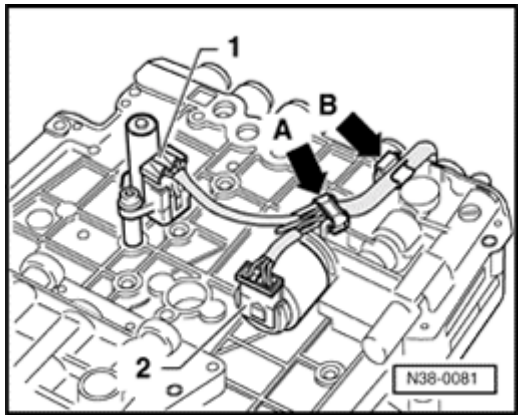
- Turn valve body on its back side and loosen connector at Sensor for transmission RPM -1-.



- Unbolt Sensor for transmission RPM -1- at valve body.

Installing

- Tighten Sensor for transmission RPM -1- using spacer sleeves -2- (height: 20 mm) to 7 Nm.
  - Installation position: Sensor-side with the connector terminals points to valve body center.



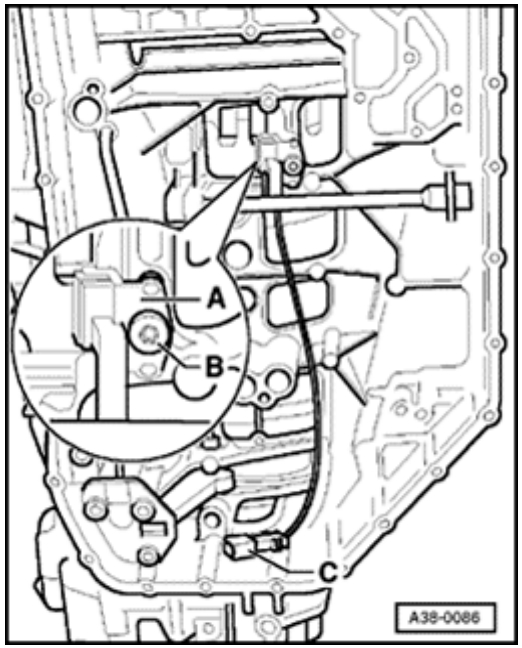
- Connect connector to Sensor for transmission RPM -1-.
- Installing valve body ⇒ page 38-25 .
- Fill up ATF ⇒ page 37-140 .

38-38

For transmissions with hydraulic control
E18/2

Removing

- Removing valve body ⇒ page 38-22 .

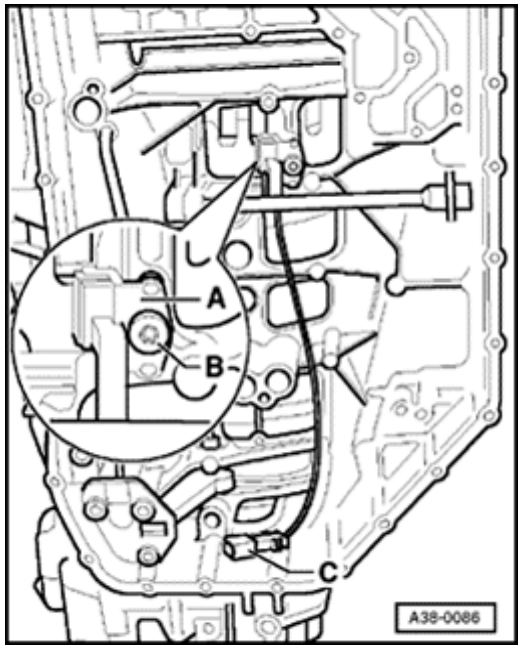


- Unbolt Sensor for transmission RPM -A- from transmission.

Installing

- Bolt on Sensor for transmission RPM -A- at transmission via bolt -B-. Tightening torque is 9 Nm.

38-39

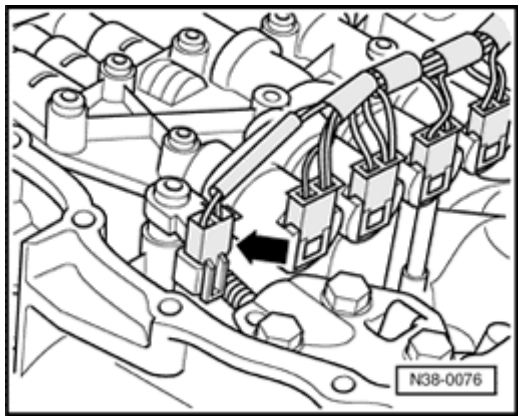


- Route wire with connector -C- according to illustration, so that the wire is not pinched when installing the valve body.
- Installing valve body ⇒ page 38-25 .
- Fill up ATF ⇒ page 37-140 .

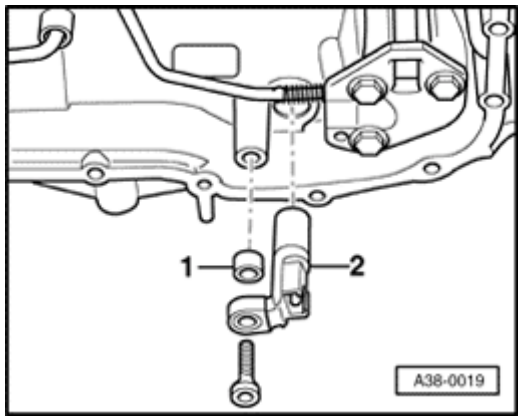
Transmission Vehicle Speed Sensor (VSS) -G38-, removing and installing

Removing

- Removing oil pan ⇒ page 38-19 .



- Disconnect harness connector from Transmission Vehicle Speed Sensor (VSS) -G38- (arrow).

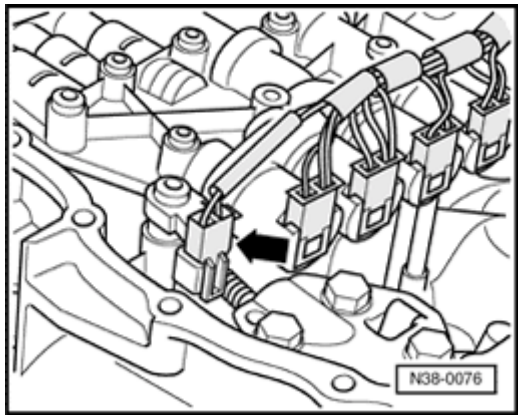


- Remove Transmission Vehicle Speed Sensor (VSS) -2-.

Installing

- Install and tighten Transmission Vehicle Speed Sensor (VSS) -2- using spacer sleeve -1- (height: 8 mm) to 6 Nm.

38-41



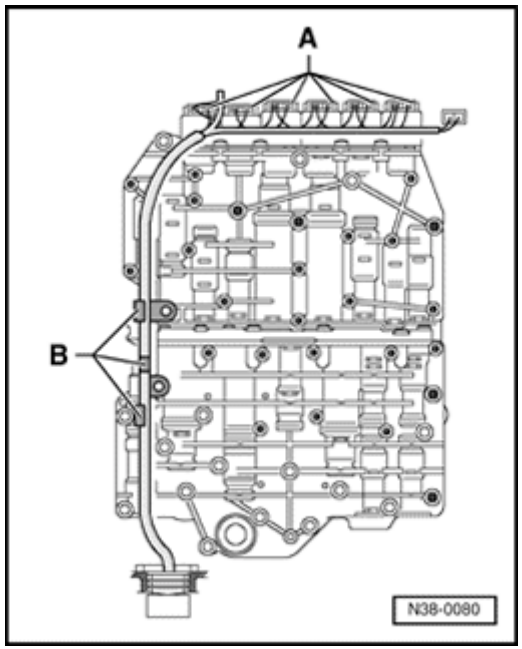
- Connect connector at Transmission Vehicle Speed Sensor (VSS) - G38-.
- Installing oil pan ⇒ page 38-20 .
- Fill up ATF ⇒ page 37-140 .

38-42

Wiring harness in transmission, removing and installing

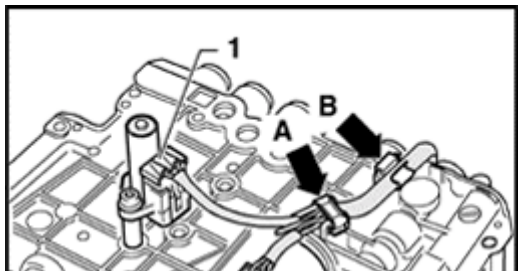
Removing

- Removing valve body ⇒ page 38-22 .



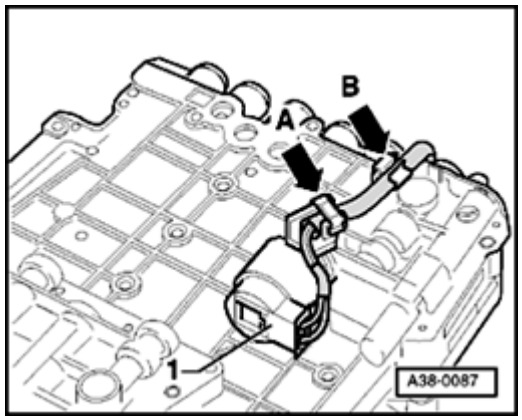
- Lever out retainer straps of connectors at solenoid valves using a small screwdriver and disconnect connectors -A- in sequence.
- Unhook wiring harness at side retainer straps -B- of valve body.

Only for Park/Neutral Position (PNP) Switch -E17-



- Turn valve body on its back side and loosen connector at Sensor for transmission RPM -1-.
- Remove retaining clip (arrow A) and unclip wiring harness from retaining clip (arrow B).
- Disconnect connector -2- from Solenoid Valve 4 -N91-.

38-43



Only for transmission with hydraulic control E18/2

- Turn valve body on its back side and loosen connector at Sensor for transmission RPM -1-.
- Remove retaining clip (arrow A) and unclip wiring harness from retaining clip (arrow B).

Installing, valid for all:

Installation is reverse of removal, noting the following:

- When installing, connect connectors of wiring harness to the corresponding solenoid valves.
- Clip wiring harness into the respective retaining clips. In case of deviations, the wiring harness can be pinched during installation of the valve body.
- Installing valve body ⇒ page 38-25 .
- Fill up ATF ⇒ page 37-140 .

Transmission Fluid Temperature Sensor -G93-, replacing

Note:

Transmission Fluid Temperature Sensor -G93- is integrated in the transmission wiring harness.

Removing

- Remove wiring harness in transmission ⇒ page 38-42 .

Installing

Installation is the reverse of removal. Also carry out the following procedure.

- Replace wiring harness with a new one.