2005-2007 TRANSMISSION

6 Spd. Automatic Transmission 09G - Jetta (A5 Platform)

00 - GENERAL, TECHNICAL DATA

GENERAL INFORMATION

General Information

General Repair Notes --> **General Repair Notes**

Transmission --> **Transmission**

Torque Converter --> **Torque Converter**

ATF --> **ATF**

Transmission Control Module (TCM) J217 with fuzzy logic --> **Transmission Control Module (TCM) J217 with Fuzzy Logic**

Control Modules in Vehicle --> **Control Modules in Vehicle**

Information on 09G Transmission --> **Information on 09G Transmission**

Tools --> **Tools**

Transmission --> **Transmission**

Gaskets, Seals, and Oil --> **Gaskets, Seals and Oil**

Nuts and Bolts --> **Nuts and Bolts**

Electrical Components --> **Electrical Components**

Guided Fault Finding, Vehicle Self-Diagnosis and Testing --> **Guided Fault Finding, Vehicle Self-Diagnosis and Testing**

General Repair Notes

To ensure correct and successful transmission repairs, the greatest care and cleanliness, as well as the use of good and correct tools is essential. The basic rules for safety must be observed during repair work.

A number of generally valid instructions applicable for the various repair procedures, which were formerly repeated a number of times at numerous places in the article, are summarized here. They apply to this article.

Transmission

The 6-speed automatic transmission 09G has six hydraulically actuated forward gears. The 2nd, 3rd, 4th, 5th

and 6th gears, when locked up, become mechanically driven gears by eliminating torque converter slip.

Torque Converter

The torque converter is equipped with a lock-up clutch. The lock-up clutch locks up depending on load and speed. The 2nd, 3rd, 4th, 5th and 6th gears can be driven mechanically (without slip).

ATF

The ATF is filled for life. The ATF need not be changed during a service.

Use only ATF which has been ordered as a part from Electronic Parts Catalog "ETKA".

The ATF levels in the planetary transmission and final drive are checked and topped off together.

Transmission Control Module (TCM) J217 with Fuzzy Logic

The gear change points, which are dependent on the driving situation and driving resistance, are determined automatically.

Advantages:

- Gear changes are consumption orientated.
- Maximum engine output is always available.
- Individual adaptation of gear change points in all driving situations.
- Gear change points are infinitely variable.

Control Modules in Vehicle

The installation locations of all vehicle control modules and other useful information can also be found in --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.

Information on 09G Transmission

For information regarding the design and function of this transmission, refer to 851503 Automatic Transmission 09G.

Tools

A summary of the special tools and workshop equipment used in the article precedes each repair procedure and can be found in "Special Tools".

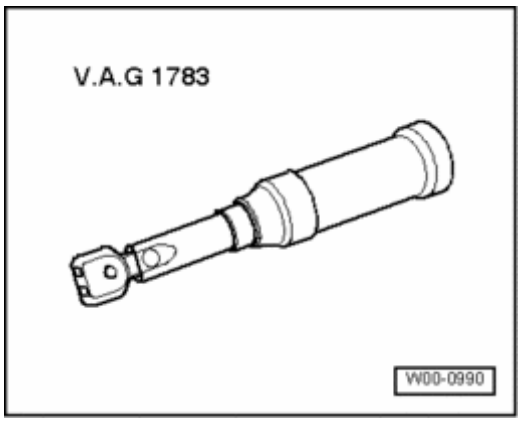

Fig. 1: Torque Wrench V.A.G 1783
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Uncertainty often occurs with smaller bolts having low tightening forces. Torque wrench V.A.G 1783 can be used with these bolts.

Transmission

- If transmission covers have been removed or transmission has no fluid, do not run engine or tow vehicle.
- First thoroughly clean connecting points and surrounding areas and then loosen bolts.
- When installing the transmission, ensure that dowel sleeves between the engine and transmission are correctly located.
- Place removed parts on a clean surface. Cover parts to prevent soiling. Use plastic sheeting and paper. Use lint-free cloths only!
- Install only clean parts; do not remove new parts from packaging until immediately before installing.
- If repair work cannot be performed immediately, carefully cover or seal components.
- With transmission removed, secure torque converter against falling out.

Transmissions with and without filler tube

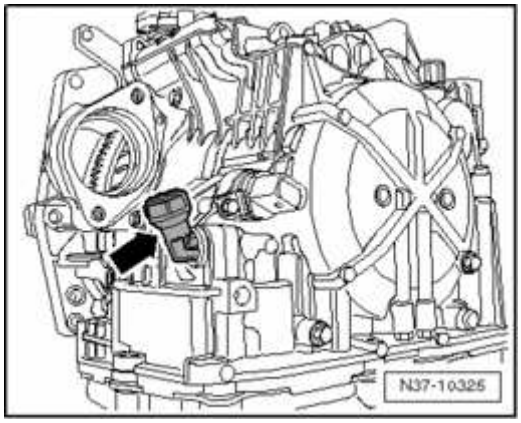

Fig. 2: Example Of Filler Tube As It Is Installed In Older Transmissions
Courtesy of VOLKSWAGEN UNITED STATES, INC.

As of April 2006 the filler tube was eliminated.

Here is an example with a filler tube as it is installed in older transmissions. This tube has been discontinued.

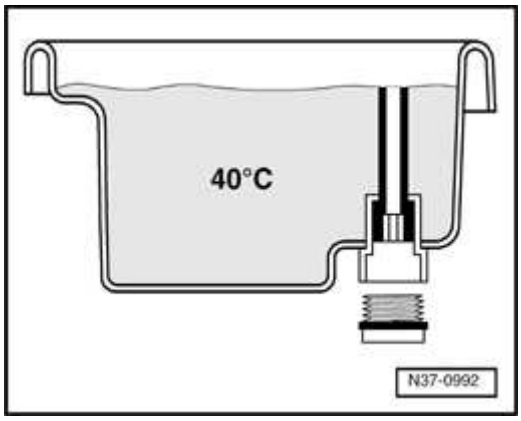

Fig. 3: Example Of Filler Tube As It Is Installed In Transmissions
Courtesy of VOLKSWAGEN UNITED STATES, INC.

This old filler opening with the red cap is not needed because ATF can be drained or filled as required through the bottom hole. The height of this tube determines the level of the ATF.

The tube must be removed to drain the fluid.

- After installation, check ATF level and top off --> **ATF Level, Checking and Topping Off**.
- Capacities --> **Capacities**.

Gaskets, Seals and Oil

- Always replace O-rings, seals and gaskets.

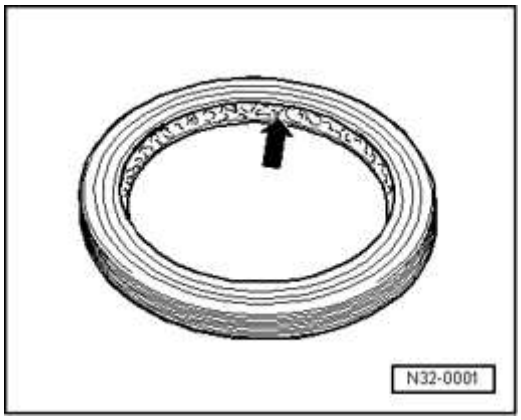

Fig. 4: Identifying Space Between Oil Seal Sealing Lips
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing a radial oil seal, coat sealing lips and area between these with *sealing grease G 052 128* .
- Open side of oil seal faces oil.
- After installing, check ATF level.

CAUTION: Be careful when working with oil. Dispose of drained oil according to regulations. Remember: one drop of oil will contaminate 1,000 liters of water.

Nuts and Bolts

- Loosen and tighten securing nuts and bolts for covers and housings diagonally.
- Torque settings are specified for unoiled bolts and nuts.
- Threads of bolts secured with locking fluid must be cleaned with a wire brush. Then insert bolts with locking fluid AMV 185 100 A1.
- Use a thread chaser to clear residual locking fluid from all threaded holes into which self-locking bolts are to be installed. Otherwise there is a danger of bolts shearing when subsequently being removed.
- Always replace self-locking bolts and nuts.

Electrical Components

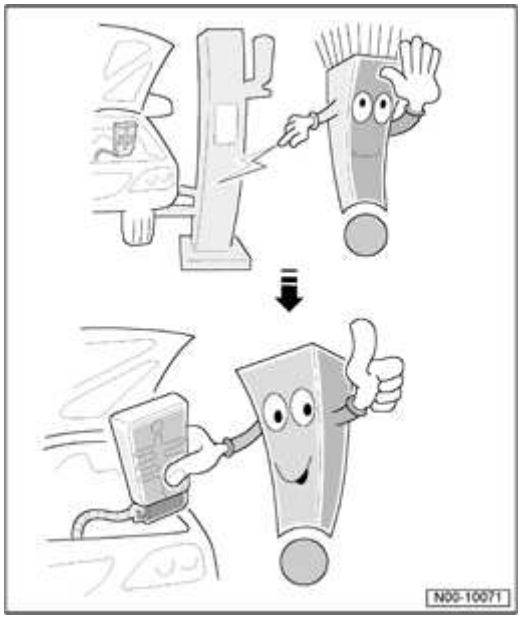

Fig. 5: Attention: Before Beginning Work On Electrical Components, Discharge Static Electricity By Touching A Grounded Object (Example Lifting Platform)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

You have probably at some time received an electrical shock when touching a metal object. This is due to the electrostatic charge of the human body. This charge can disturb the function of electrical components of the transmission and of the selector mechanism.

- Before beginning work on electrical components, touch a grounded object, for example a water pipe or lifting platform. Do not touch connectors or open electronic components directly.

Guided Fault Finding, Vehicle Self-Diagnosis and Testing

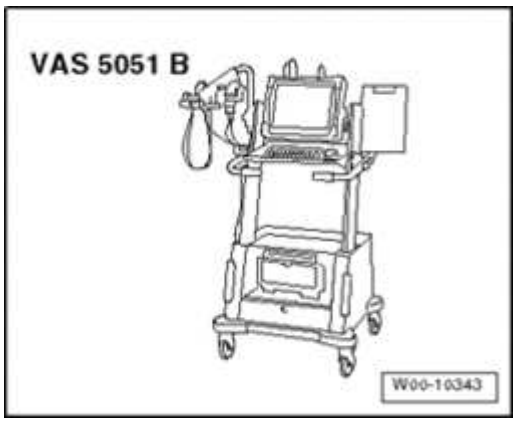

Fig. 6: Special Tool - Vehicle Diagnosis, Testing And Information System - VAS 5051 B
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Before making repairs to the automatic transmission, determine the cause of the fault as precisely as possible with the aid of "Guided Fault Finding".

Guided Fault Finding is carried out using vehicle diagnosis, testing and information system VAS 5051B --> **Tester, Connecting**.

The Guided Functions will guide you to the ATF temperature in shortest way possible --> **Tester, Connecting**.

TRANSMISSION IDENTIFICATION

Transmission Identification

The "6-speed automatic transmission 09G" is installed in the Jetta from 2005 on and the Jetta Wagon from 2008 on.

Transmission Codes --> **Transmission Codes**

Identification codes, engine allocation, gear ratios --> **Identification Codes, Engine Allocation, Gear Ratios**

Transmission Codes

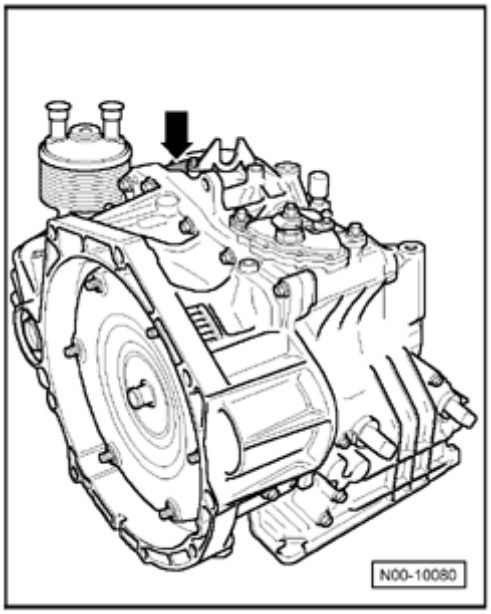

Fig. 7: Locating Transmission Codes
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Code letters - **arrow** -

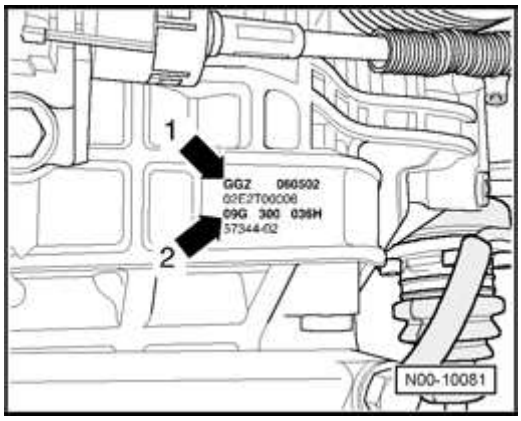

Fig. 8: Locating Code Letters
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Code letters - **arrow 1** -

"6-speed automatic transmission 09G" - **arrow 2** -

Example:

GGZ	08	05	02
I	I	I	I
Identification code	Day	Month	Year - **2002** - of manufacture

The transmission code also appears on vehicle identification plates.

ATF

The ATF in the transmission is good for the life of the vehicle. The ATF does not require changing as part of maintenance.

Only use ATF that is available as a replacement part in the Electronic Parts Catalog "ETKA".

The ATF levels in the planetary gearbox and in the final drive are checked and filled together.

Transmission Control Module (TCM) J217 with DSP

Determining the driving situation and driving resistance-dependent shift point occurs automatically.

Advantages:

- Gear changes are consumption orientated
- Maximum engine output is always available
- Individual adaptation of shift points in all driving situations
- Gear shift points are infinitely variable

Vehicle control modules

The installed locations of all vehicle control modules and other useful information can also be found in Electrical Wiring Diagrams, Troubleshooting Component Locations.

CAPACITIES

Capacities

Planetary Transmission and Final Drive --> **Planetary Transmission and Final Drive**

Planetary Transmission and Final Drive

Capacities	"6-speed automatic transmission 09G"
Initial filling	approx. 7.0 l
Change	Filled for life no change
Lubricant	ATF is available as a part. Therefore the part number for it can be found in the Electronic Parts Catalog "ETKA".

IDENTIFICATION CODES, ENGINE ALLOCATION, GEAR RATIOS

Identification Codes, Engine Allocation, Gear Ratios

"Automatic transmission 09G"	
Identification code	HDN , HFU , HRM , JCT , JUJ
Engine	2.5 L - 110 kW

GENERAL REPAIR INSTRUCTIONS

General repair instructions

To ensure flawless and successful transmission repairs, the greatest care and cleanliness as well as the use of good and proper tools is essential. Basic safety precautions also apply when performing vehicle repairs.

A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in the Repair Article, are summarized here. They apply to this Repair Article.

Tools

A complete list of special tools and equipment used is listed before each repair description.

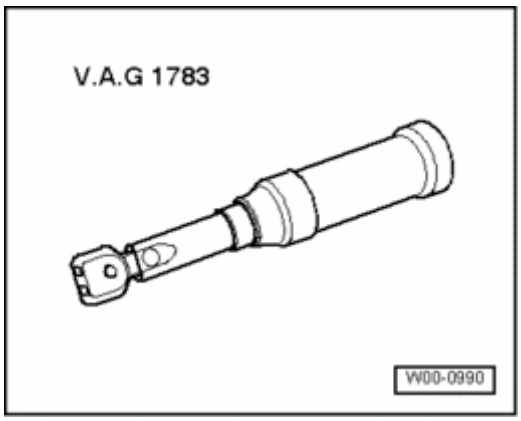

Fig. 9: Torque Wrench V.A.G 1783
Courtesy of VOLKSWAGEN UNITED STATES, INC.

For smaller bolts with minimal tightening torques, uncertainties often exist. For these bolts, torque wrench V.A.G 1783 can be used.

Transmission

- If the oil pan cover is removed from transmission or if the transmission does not contain oil, do not start the engine and do not tow the vehicle.
- Always clean connection points and the vicinity around them first, and then loosen.
- When installing ensure that the alignment sleeves between the engine and transmission are correctly located.
- Place removed parts on a clean surface. Cover the parts to prevent soiling. Use sheeting or paper. Do not use fluffy cloths!
- Only install clean parts: Remove replacement parts from packaging immediately prior to installation and not before.
- Carefully cover or plug opened components if repairs cannot be performed immediately.

Gaskets, seals and oil

- Always replace o-rings, seals and gaskets.

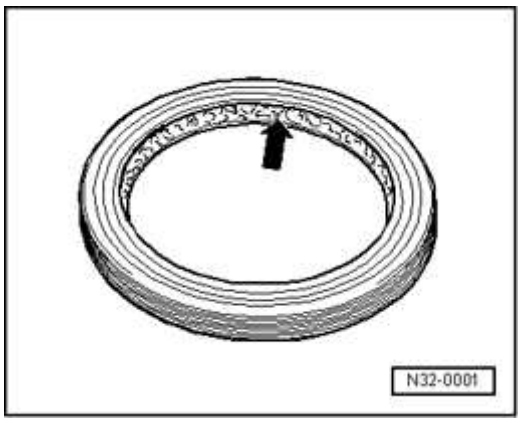

Fig. 10: Identifying Space Between Oil Seal Sealing Lips
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing a radial shaft seal, coat the sealing lips and the space between them with *sealing grease G 052 128* .
- The open side of the seals face toward the oil.
- After installing, check ATF level.

NOTE:

- **Always dispose of drained oil properly. One drop of oil can contaminate 1000 liters of drinking water!**

Bolts and nuts

- Loosen and tighten bolts and nuts for securing covers and housings in a diagonal sequence.
- The tightening torques stated apply to unoiled bolts and nuts.
- Clean threads of bolts that were applied with locking fluid using a wire brush. Then apply sealant AMV 185 100 A1 to bolts when inserting.
- Use a thread tap to remove remains of locking fluid from all threaded holes in which self-locking bolts are to be screwed. Otherwise there is a risk that the bolts will shear the next time they are removed.
- Replace self-locking bolts and nuts.

Electrical components

You have probably received an electrical shock at one time when touching a metal item. The reason for this is the electrostatic charge that is built up in the human body. This charge can lead to malfunctions when contacting the electrical components of the transmission and the gear selector.

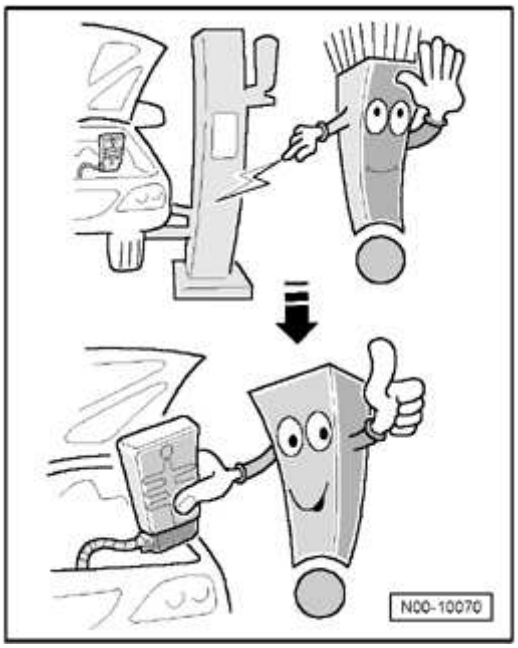

Fig. 11: Touching Grounded Object Before Beginning Work On Electrical Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

An electrostatic charge that can build up in the human body causes an electrical shock when a metal item is touched. This charge can lead to vehicle malfunctions when contacting the electrical components of the transmission and selector lever.

- Touch a grounded object, e.g. vehicle hoist or building water pipe, before working on electrical components. Do not make direct contact with connector contacts or open electronic components.

Guided fault finding, On Board Diagnostic (OBD) and measuring technology

Before beginning any service work on the automatic transmission, the cause of damage should be pinpointed using "Guided fault finding".

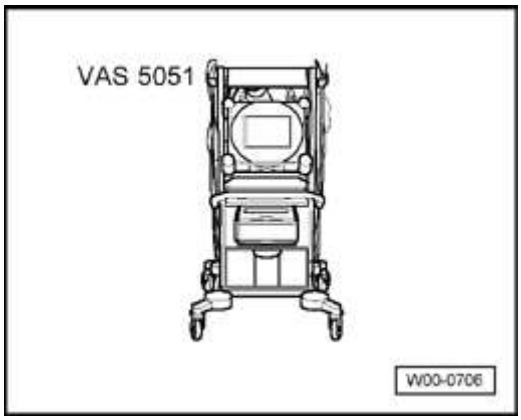

Fig. 12: VAS 5051 Vehicle Diagnosis, Testing & Information System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The Guided fault finding is performed with the Vehicle diagnosis, testing and information system VAS 5051.

32 - TORQUE CONVERTER

TORQUE CONVERTER

Torque Converter

Identification of Torque Converter --> **Identification of Torque Converter**

Torque Converter, Draining --> **Torque Converter, Draining**

Torque Converter Oil Seal, Removing and installing --> **Torque Converter Oil Seal, Removing and Installing**

Torque Converter, Installing --> **Torque Converter, Installing**

Identification of Torque Converter

There are various torque converters. They are identified by codes.

Torque converter/transmission allocation Electronic Parts Catalog "ETKA"

Torque Converter, Draining

Special tools, testers and auxiliary items required

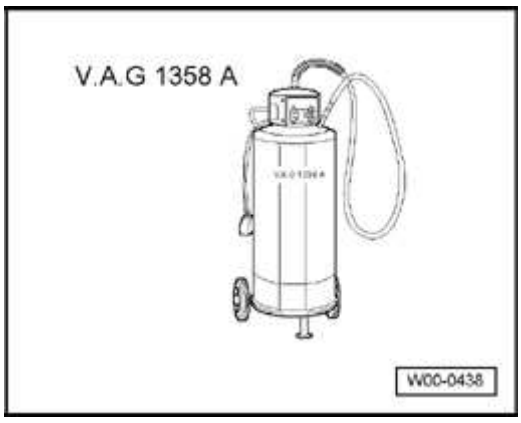

Fig. 13: Oil Extractor V.A.G 1358 A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- V.A.G 1358 A Oil extraction unit
- V.A.G 1358 A/1 Oil extraction probe

- Extract ATF from torque converter using V.A.G 1358 A and probe V.A.G 1358 A/1.

Torque Converter Oil Seal, Removing and Installing

Special tools, testers and auxiliary items required

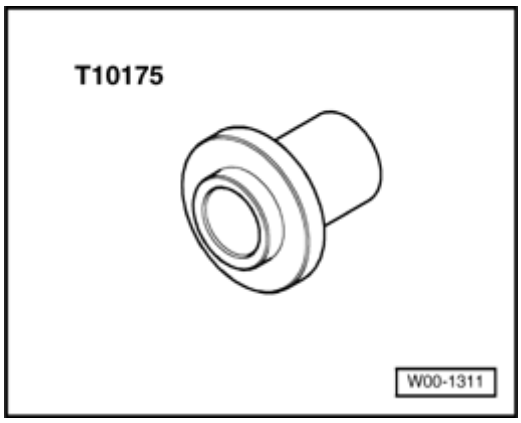

Fig. 14: Thrust Piece T10175
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T10175

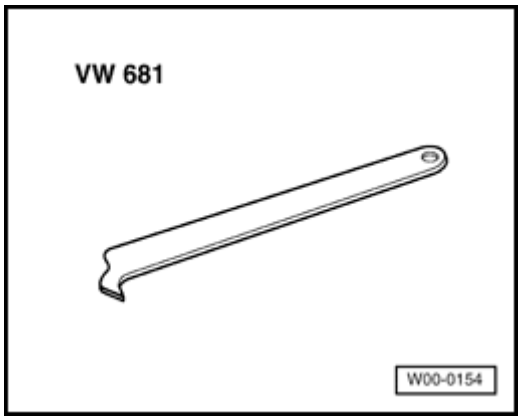

Fig. 15: Special Tool - Oil Seal Extractor Lever VW 681
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Oil seal extractor lever VW 681

Removing

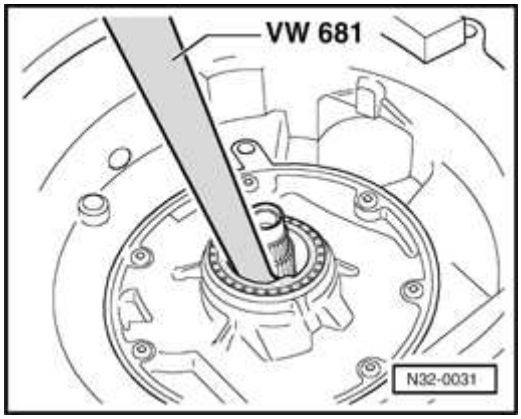

Fig. 16: Removing Torque Converter Oil Seal Using Special Tool VW 681
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry out seal with lever VW 681.

Installing

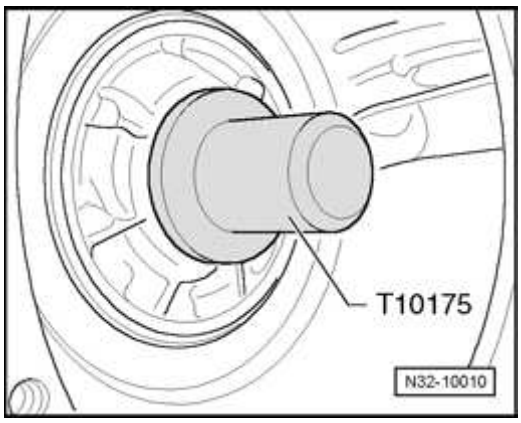

Fig. 17: Driving In Seal Flush Using Thrust Piece T10175
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in seal flush thrust piece T10175.

Torque Converter, Installing

- Carefully push on torque converter hub via oil seal to first stop.

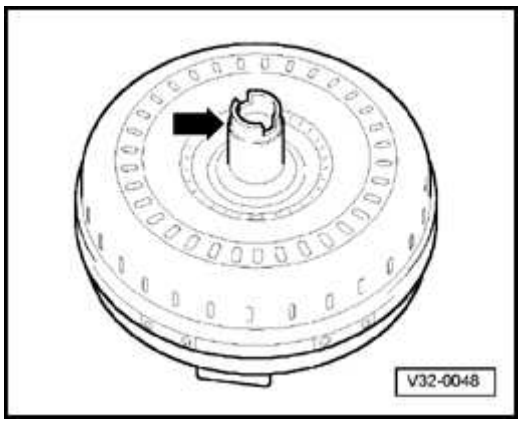

Fig. 18: Inspect Torque Converter Hub For Irregular Grooves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn torque converter towards transmission using light pressure until notch in hub - **arrow** - engages in follower of pump gear and torque converter can be felt to slip in place.

The torque converter is properly inserted when it can easily be turned by hand and is seated equally deep in transmission around the entire circumference.

CAUTION: If the torque converter is improperly installed, the follower of the converter or ATF pump will be destroyed when the transmission is bolted onto the engine.

VEHICLE DIAGNOSIS, TESTING AND INFORMATION SYSTEM VAS 5051 , CONNECTING AND SELECTING FUNCTIONS

Vehicle diagnosis, testing and information system VAS 5051 , connecting and selecting functions

Special tools, testers and auxiliary items required

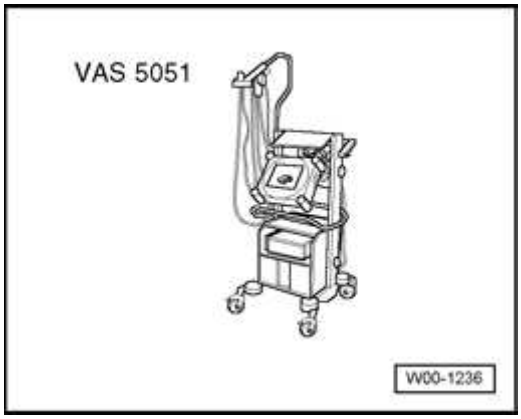

Fig. 19: VAS 5051 Vehicle Diagnosis, Testing and Information System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnostic, testing, and information system VAS 5051

CAUTION:

- **During a test drive always secure testing and measuring equipment on the back seat.**
- **These devices may only be operated by a passenger during a test drive.**
- **If test equipment is operated from the front passengers seat, the person sitting in the passengers seat could be injured in an accident by a possible deployment of the airbag.**

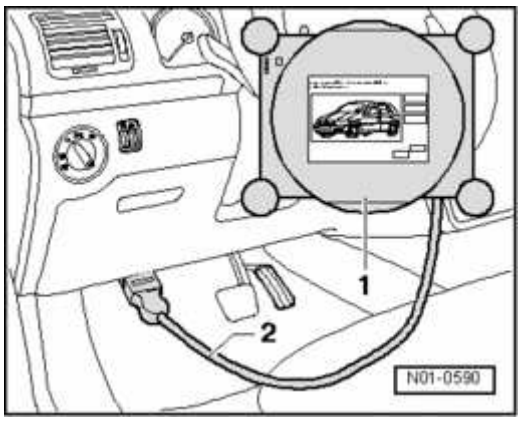

Fig. 20: Identifying VAS 5051 And VAS 5051/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Connect Vehicle diagnosis, testing and information system VAS 5051 - **1** - as follows:

- Plug connector of diagnostic cable - **2** - into vehicle Data Link Connector (DLC).

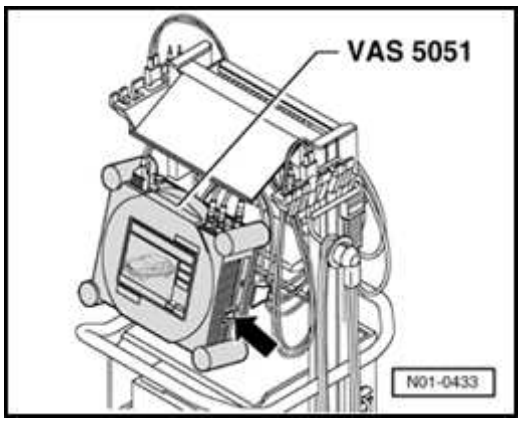

Fig. 21: Identifying Volkswagen Tester VAS 5051, On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch Vehicle diagnosis, testing and information system VAS 5051 on - **arrow** -.

The Vehicle diagnosis, testing and information system VAS 5051B is ready for operation when the operating mode selections are displayed.

- Switch on ignition.
- Touch Guided fault finding on screen.
- Select one after another:

- Brand
- Model
- Model year
- Version

- Engine code

- Confirm data entered.

Wait until Vehicle diagnosis, testing and information system VAS 5051B has interrogated all control modules in vehicle.

- Press -->
- Press Go to and select "Function/component selection" function.
- Follow instructions on screen to start functions desired.
- Select "Chassis" on the display

- Select "Brake system" on the display
- Select "01-On Board Diagnostic (OBD) capable systems" indicated on the display
- Select "Anti-lock Brake System (ABS)" indicated on the display
- Select "Function" indicated on the display

Now, all possible functions of the Anti-lock Brake System (ABS) equipped on this vehicle will be displayed.

- Select the desired function on the display

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TESTER, CONNECTING

Tester, Connecting

Volkswagen offers various devices such as

- Vehicle diagnosis, testing and information system VAS 5051
- Vehicle diagnosis, testing and information system VAS 5051B
- Tester VAS 5051/11A
- Vehicle diagnosis and service information system VAS 5052
- Diagnostic system VAS 5053

The operation of these devices is described in the respective users manuals.

The following description refers to the vehicle diagnosis, testing and information system VAS 5051 --> **Vehicle Diagnosis, Testing, and Information System VAS 5051, Connecting**.

Vehicle Diagnosis, Testing, and Information System VAS 5051, Connecting

Special tools, testers and auxiliary items required

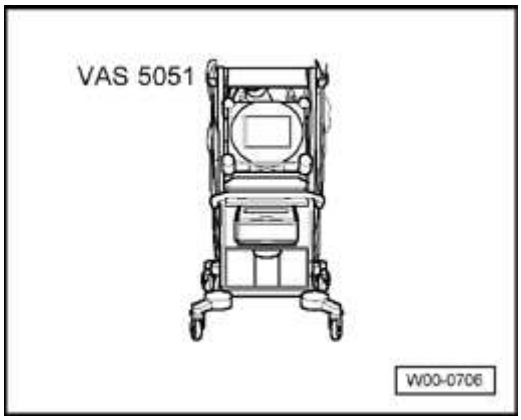

Fig. 22: VAS 5051 Vehicle Diagnosis, Testing & Information System
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Vehicle diagnosis, testing and information system VAS 5051

CAUTION:
- **During a road test, always secure testing and measuring equipment on the back seat.**
- **These devices may be operated only by a passenger during a test drive.**

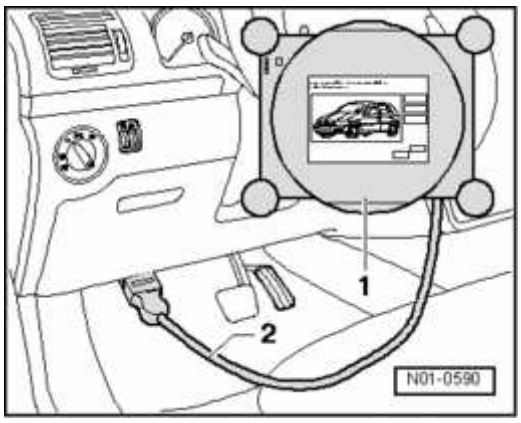

Fig. 23: Identifying VAS 5051 And VAS 5051/1
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push connector of diagnosis cable VAS 5051/1 - **2** - or VAS 5051/3 onto Data Link Connector (DLC).

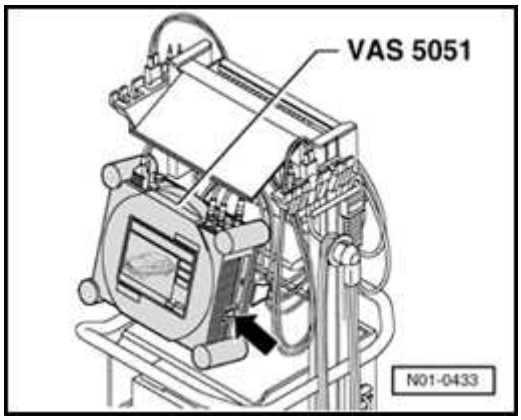

Fig. 24: Identifying Volkswagen Tester VAS 5051, On Switch
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Switch on tester - **arrow** -.

The tester is ready for use when it is possible to choose between the buttons Guided Functions and Guided Fault Finding on right of screen.

Depending on equipment and version of tester, other functions may be displayed such as:

- ElsaWin
- Testing
- Self-diagnosis

The tester is now ready for use.

- Switch on ignition.
- Touch a button on screen to start desired function.

ELECTRICAL/ELECTRONIC COMPONENT LOCATIONS

Electrical/Electronic Component Locations

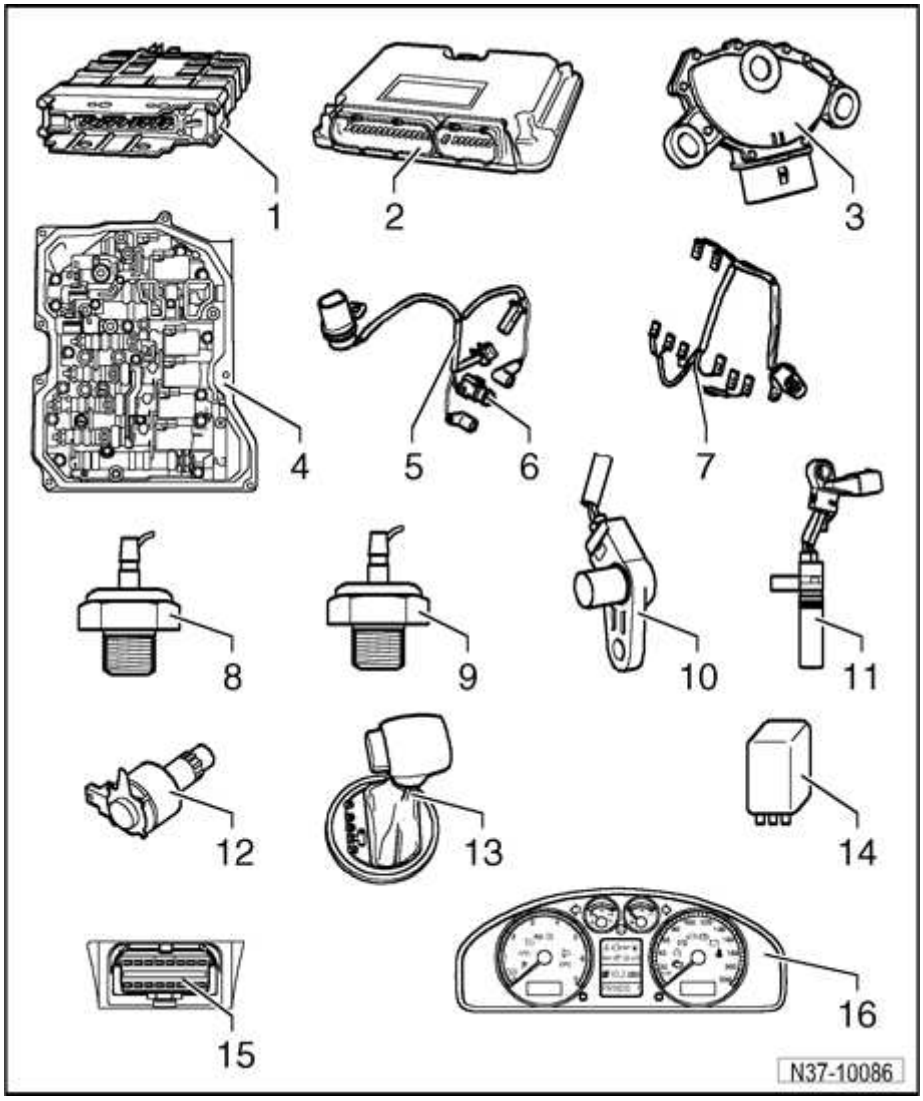

Fig. 25: Electrical/Electronic Components And Component Locations
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Transmission Control Module (TCM) J217

- The control module transmits and receives data from data bus.
- Location and removing and installing --> **Transmission Control Module (TCM) J217 - arrow -**
- Can be checked using "Guided Fault Finding" of VAS 5051

2 - Engine Control Module (ECM)

- The control module transmits and receives data from the data bus
- Location and removing and installing (Gasoline engines) -->
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BPY, BWA -- JETTA (A5 PLATFORM)
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.5 LITER 5-CYL. 4V ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BGP, BGQ -- JETTA (A5 PLATFORM)

or (Diesel engines) --> **23 - DIESEL FUEL INJECTION**

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

- Location --> **Multi-Function Transmission Range (TR) Switch F125**
- Can be checked using "Guided Fault Finding" of VAS 5051
- Removing, installing and adjusting --> **Multi-Function Transmission Range (TR) Switch**.

4 - Valve body

- Location --> **Valve body**
- Components can be checked using "Guided Fault Finding" of VAS 5051

5 - Wiring harness, 8-pin

- For sensors
- With Transmission Fluid Temperature Sensor G93
- Location --> **Wiring harness, 8-pin**

6 - Transmission Fluid Temperature Sensor G93

- Location --> **Wiring harness, 8-pin**
- Can be checked using "Guided Fault Finding" of VAS 5051

7 - Wiring harness, 14-pin

- For solenoid valves
- Location --> **Wiring harness, 14-pin**

8 - Automatic Transmission Hydraulic Pressure Sensor 1 G193

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"
- Location --> **Automatic Transmission Hydraulic Pressure Sensor 1 G193 and Automatic Transmission Hydraulic Pressure Sensor 2 G194**

9 - Automatic Transmission Hydraulic Pressure Sensor 2 G194

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"
- Location --> **Automatic Transmission Hydraulic Pressure Sensor 1 G193 and Automatic Transmission Hydraulic Pressure Sensor 2 G194**

10 - Transmission Input Speed (RPM) Sensor G182

- Location --> **Transmission Input Speed (RPM) Sensor G182 and Transmission Output Speed (RPM) Sensor G195**

- Can be checked using "Guided Fault Finding" of VAS 5051

11 - Transmission Output Speed (RPM) Sensor G195

- Location --> **Transmission Input Speed (RPM) Sensor G182 and Transmission Output Speed (RPM) Sensor G195**
- Can be checked using "Guided Fault Finding" of VAS 5051

12 - Shift lock solenoid N110

- Location: Shift lock solenoid is located in selector mechanism.
- Can be checked using "Guided Fault Finding" of VAS 5051

13 - Tiptronic switch F189

- Location --> **Tiptronic switch F189**
- Can be checked using "Guided Fault Finding" of VAS 5051

14 - Power Supply Relay (terminal 50) J682

- In E box in engine compartment --> Electrical Wiring Diagrams, Troubleshooting and Component Locations.

15 - Data Link Connector (DLC)

- Location --> **Data Link Connector (DLC)**

16 - Transmission Range (TR) Display Y6

- Location --> **Transmission Range (TR) Display Y6**
- Removing and installing --> **90 - INSTRUMENTS** .

Transmission Control Module (TCM) J217 - arrow -

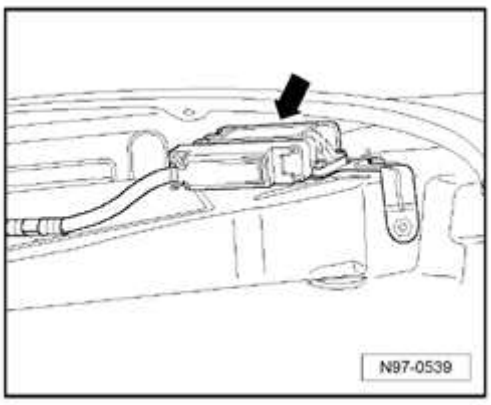

Fig. 26: Transmission Control Module (TCM) J217
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Control module is located in front left wheel housing.

- Wheel housing liner must be removed for removing and installing.

Multi-Function Transmission Range (TR) Switch F125

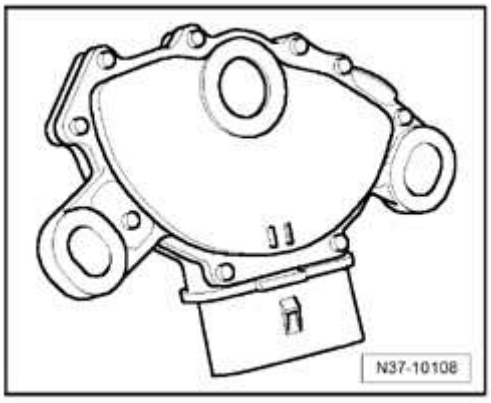

Fig. 27: Multi-Function Transmission Range (TR) Switch F125
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Multi-Function Transmission Range (TR) Switch is located on top of transmission.

Valve body

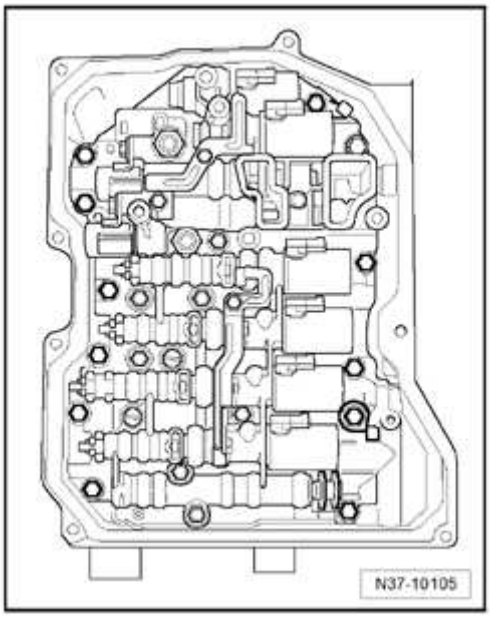

Fig. 28: Valve Body
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Valve body is bolted to underside of transmission housing and covered by pan.

Solenoid valves N88 and N89 as well as pressure control valves N90 , N91 , N92 , N93 , N282 and N283 are secured to valve body.

Wiring harness, 8-pin

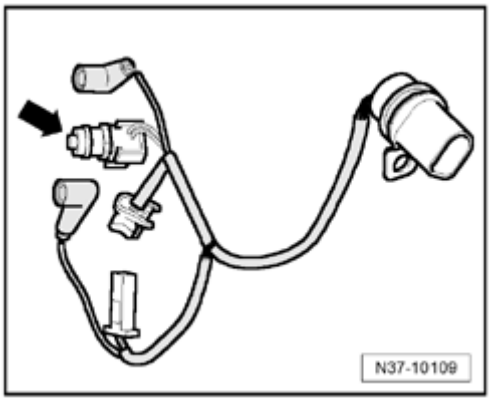

Fig. 29: Wiring Harness, 8-Pin
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wiring harness for sensors
- With integrated Transmission Fluid Temperature Sensor G93 - **arrow** -

Location: Wiring harness is attached to valve body in transmission.

Wiring harness, 14-pin

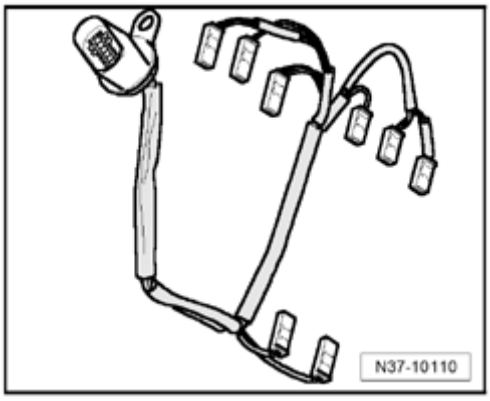

Fig. 30: Wiring Harness, 14-Pin
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wiring harness for solenoid valves.

Location: Wiring harness is attached to valve body in transmission.

Automatic Transmission Hydraulic Pressure Sensor 1 G193 and Automatic Transmission Hydraulic Pressure Sensor 2 G194

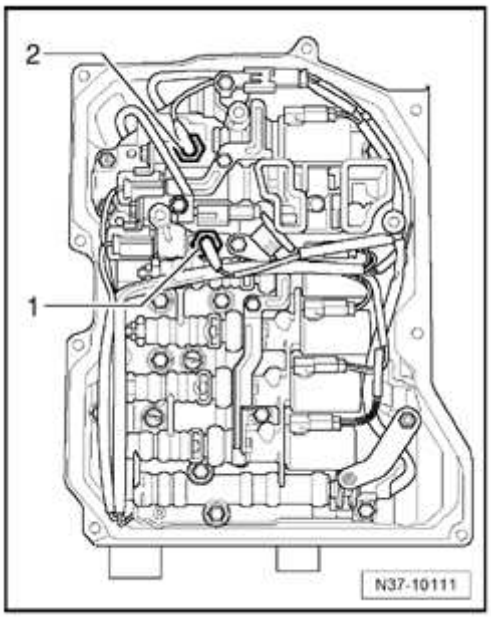

Fig. 31: Automatic Transmission Hydraulic Pressure Sensor 1 G193, And Sensor 2 G194
Courtesy of VOLKSWAGEN UNITED STATES, INC.

This sensor is not installed in all transmissions.

Location: If transmission is equipped with this sensor, it is located in valve body.

1 - Automatic Transmission Hydraulic Pressure Sensor 1 G193

2 - Automatic Transmission Hydraulic Pressure Sensor 2 G194

Transmission Input Speed (RPM) Sensor G182 and Transmission Output Speed (RPM) Sensor G195

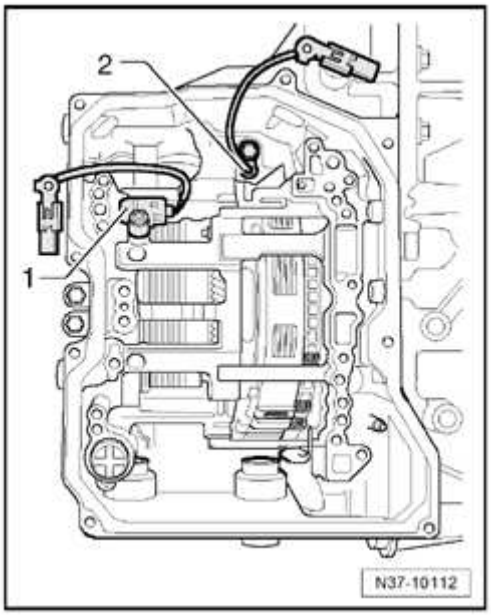

Fig. 32: Transmission Input Speed (RPM) Sensor G182 And Output Speed (RPM) Sensor G195
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Sensors are installed in transmission housing above valve body.

1 - Transmission Input Speed (RPM) Sensor G182

2 - Transmission Output Speed (RPM) Sensor G195

Tiptronic switch F189

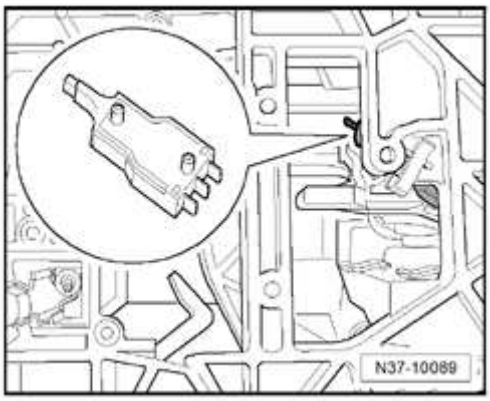

Fig. 33: Tiptronic Switch F189
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Tiptronic switch is integrated into selector mechanism.

In vehicles with a multifunction steering wheel, buttons on steering wheel and their cable connections must also be checked.

Data Link Connector (DLC)

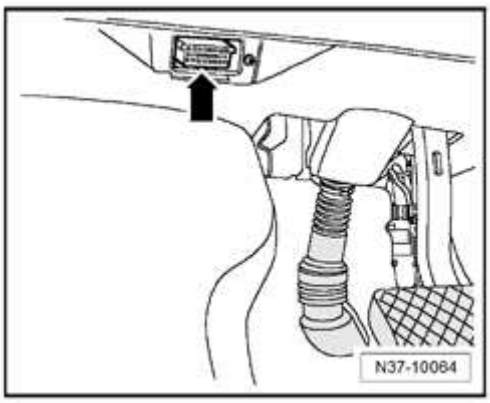

Fig. 34: Data Link Connector (DLC)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: Data Link Connector (DLC) - **arrow** - is located on left below driver storage compartment.

Transmission Range (TR) Display Y6

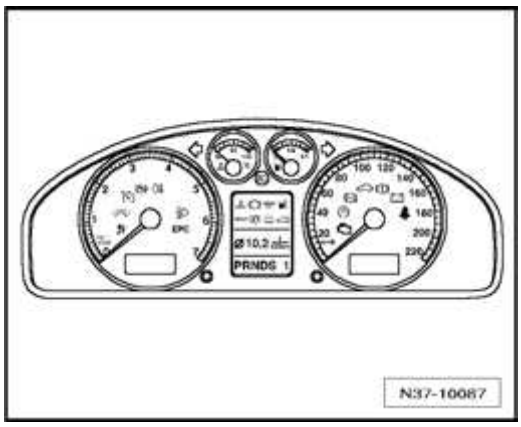

Fig. 35: Transmission Range (TR) Display Y6
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Location: In instrument cluster

Shift mechanism, overview

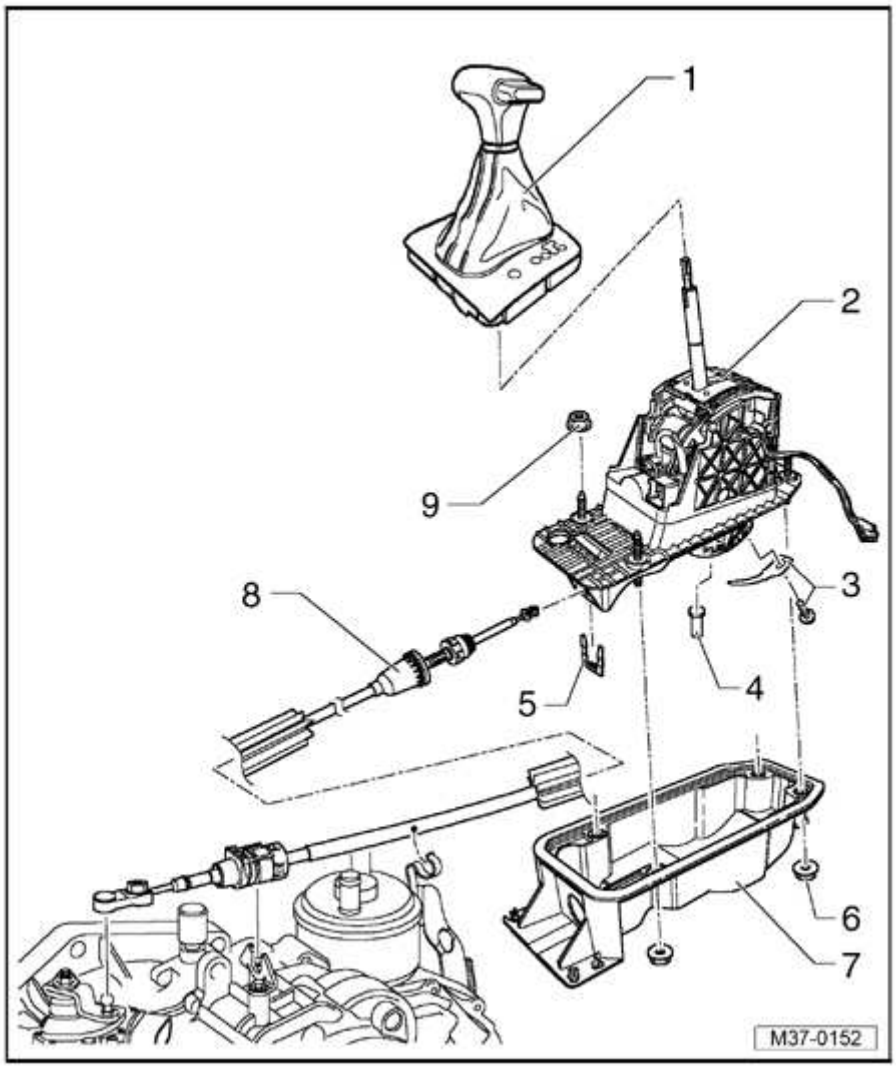

Fig. 36: Shift Mechanism, Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Handle with cover

- Removing and installing --> **Handle with cover, removing and installing**

2 - Shift mechanism with selector lever

- Removing and installing --> **Shift mechanism, removing and installing**

3 - Bolt with spring

- 3 Nm

4 - Pin

- Removing --> **Selector lever cable, removing and installing**
- Do not grease

5 - Securing plate

- Always replace after removing

6 - Nut

- 9 Nm
- Qty. 4

7 - Selector housing

- With gasket

8 - Selector lever cable

- Do not grease selector lever cable.
- Removing and installing --> **Selector lever cable, removing and installing**
- Checking --> **Selector lever cable, checking**
- Adjusting --> **Selector lever cable, adjusting**

9 - Hex nut with washer

- 8 Nm
- Qty. 4

Handle with cover, removing and installing

Removing

- Place selector lever in position "P".

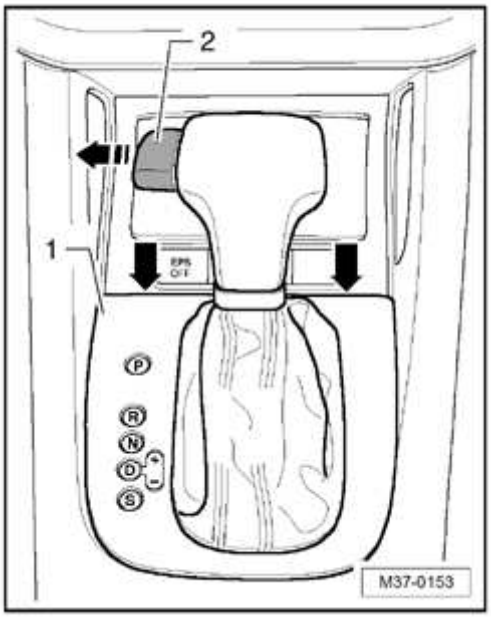

Fig. 37: Handle With Cover, Removing And Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry cover - **1** - out from center console - **arrows** -.
- Pull out button - **2** - past pressure point in direction of - **arrow** - and secure it with a cable tie or suitable wire.

This will prevent the button from accidentally being pushed into handle.

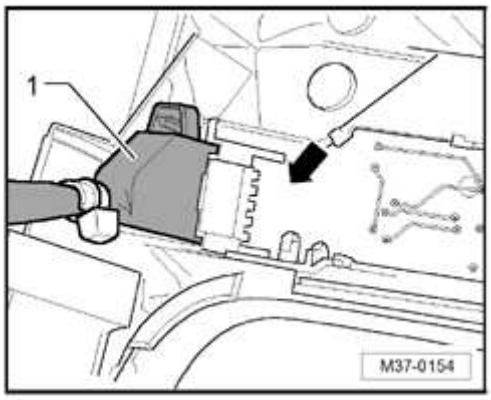

Fig. 38: Circuit Board And Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate connector - **1** - at circuit board of cover. Counterhold on circuit board when disconnecting - **arrow** -.
- Lift sleeve upward.

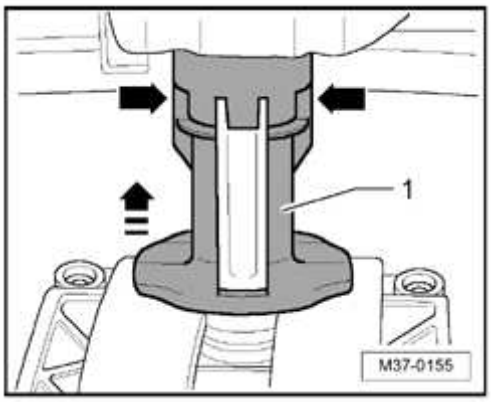

Fig. 39: Removing Handle From Selector Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press securing device - **1** - inward - **arrows** - at sides and then push it upward in direction of - **arrow** - .
- Remove handle from selector lever.

Installing

If the button is pushed in when the handle is removed, pull the button out past the pressure point and hold it in place with a cable tie or a suitable wire.

Before installing the handle, make sure the securing device is positioned at the upper end point.

- Set handle with cover onto selector lever and push it onto selector lever up to stop.

NOTE:

- **When pushing the handle down, it must engage noticeably twice.**

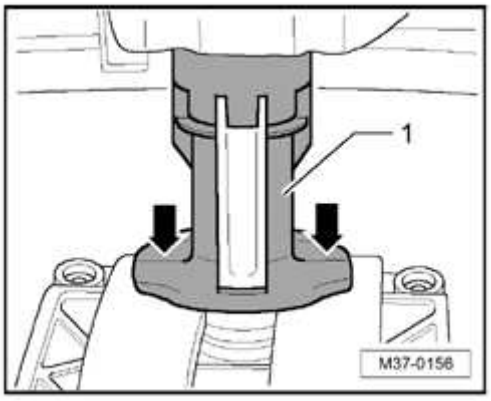

Fig. 40: Identifying Securing Device
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push securing device - **1** - down until it engages - **arrows** -.

NOTE:

- **Verify immediately that the handle is sufficiently secured. The securing device - 1 - must only protrude a few millimeters over the selector lever.**

- Connect circuit board connector, remove cable tie/wire from button of handle and push button past pressure point into handle.
- Install cover into center console. First press cover into retainers of center console at front by ashtray/storage compartment and then at rear.

Shift mechanism, removing and installing

NOTE:

- **After installation, check the selector lever cable for ease of movement and adjust.**

Removing

- Remove center console --> **68 - INTERIOR EQUIPMENT** .
- Remove selector lever cable from transmission --> **Selector lever cable, removing and installing**.
- Remove front exhaust pipe with catalytic converter --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .
- Remove heat shield from under vehicle.
- Disconnect harness connectors.
- Remove 4 nuts of shift mechanism and remove mechanism.

Installing

Installation is in reverse order of removal.

Tightening torque of nuts: 8 Nm

- Check selector lever cable --> **Selector lever cable, checking**.
- Adjust selector lever cable --> **Selector lever cable, adjusting**.

Selector lever cable, removing and installing

Removing

- Place selector lever in position "S".
- Remove battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

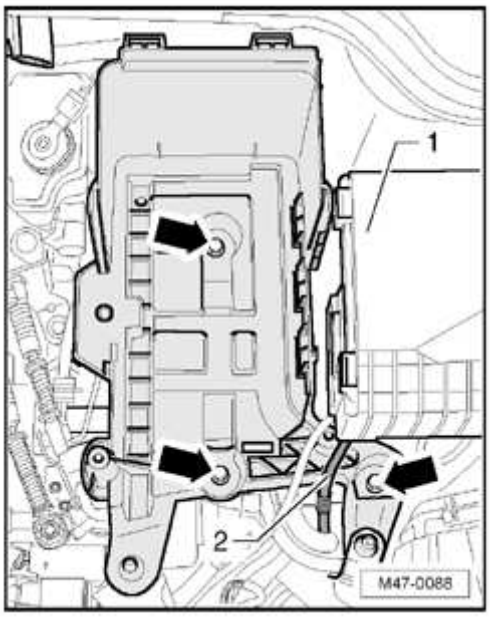

Fig. 41: Identifying Cover Of E-Box, Wire & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Open cover - **1** - of electronics box and unfasten wiring - **2** -.
- Remove bolts - **arrows** - and remove battery holder from vehicle.

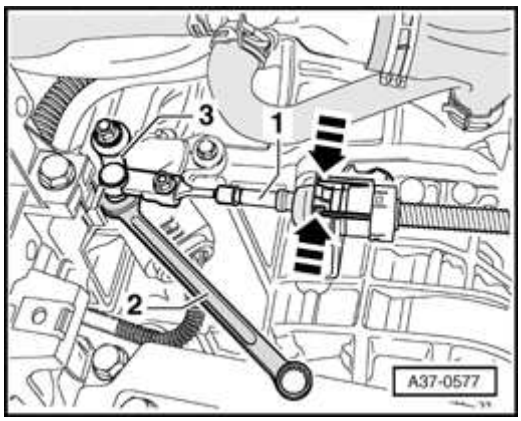

Fig. 42: Prying Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off selector lever cable - **1** - from lever - **3** - using an open end wrench - **2** -.
- Press retainers together in direction of - **arrow** - and remove selector lever cable from mounting bracket.
- Unhook selector lever cable from retainer behind oil cooler.
- Raise vehicle.

- Remove front exhaust pipe with catalytic converter --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .
- Remove heat shield from under vehicle.

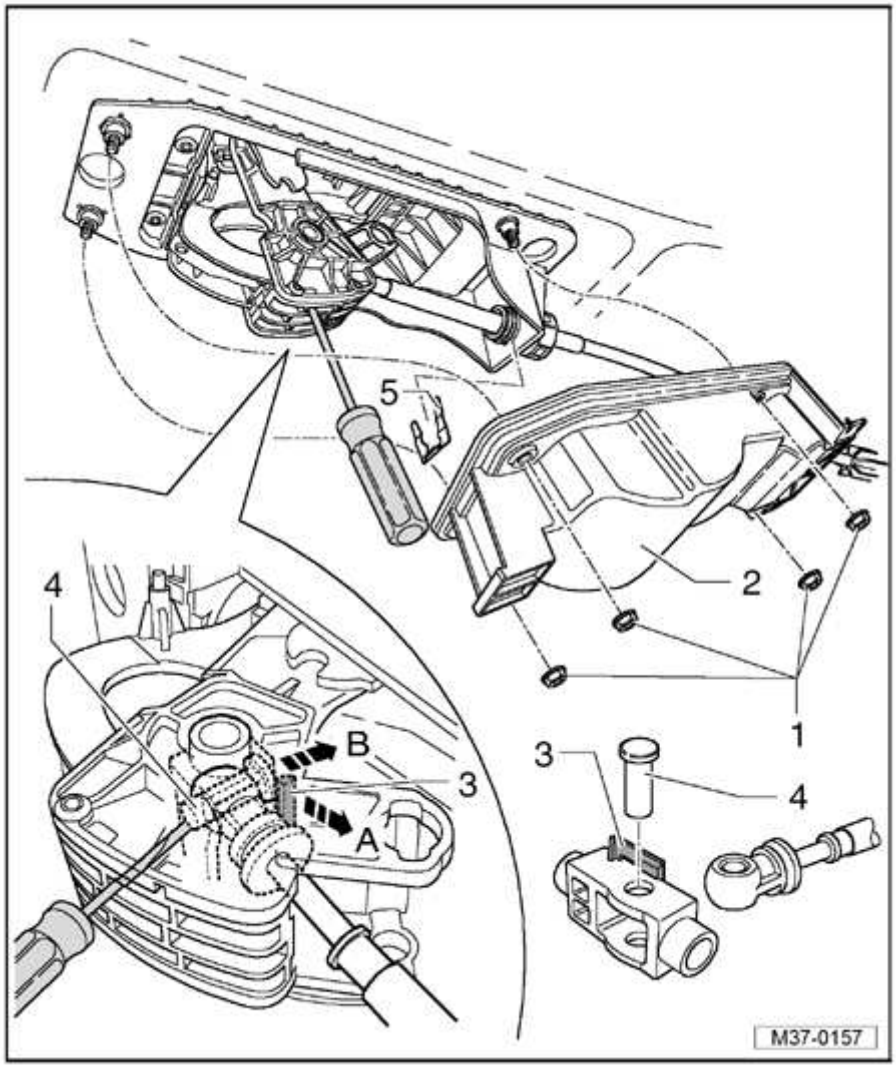

Fig. 43: Removing Nuts And Pushing Selector Housing As Far Forward As Possible On Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nuts - **1** - and push selector housing - **2** - as far forward as possible on selector lever cable.

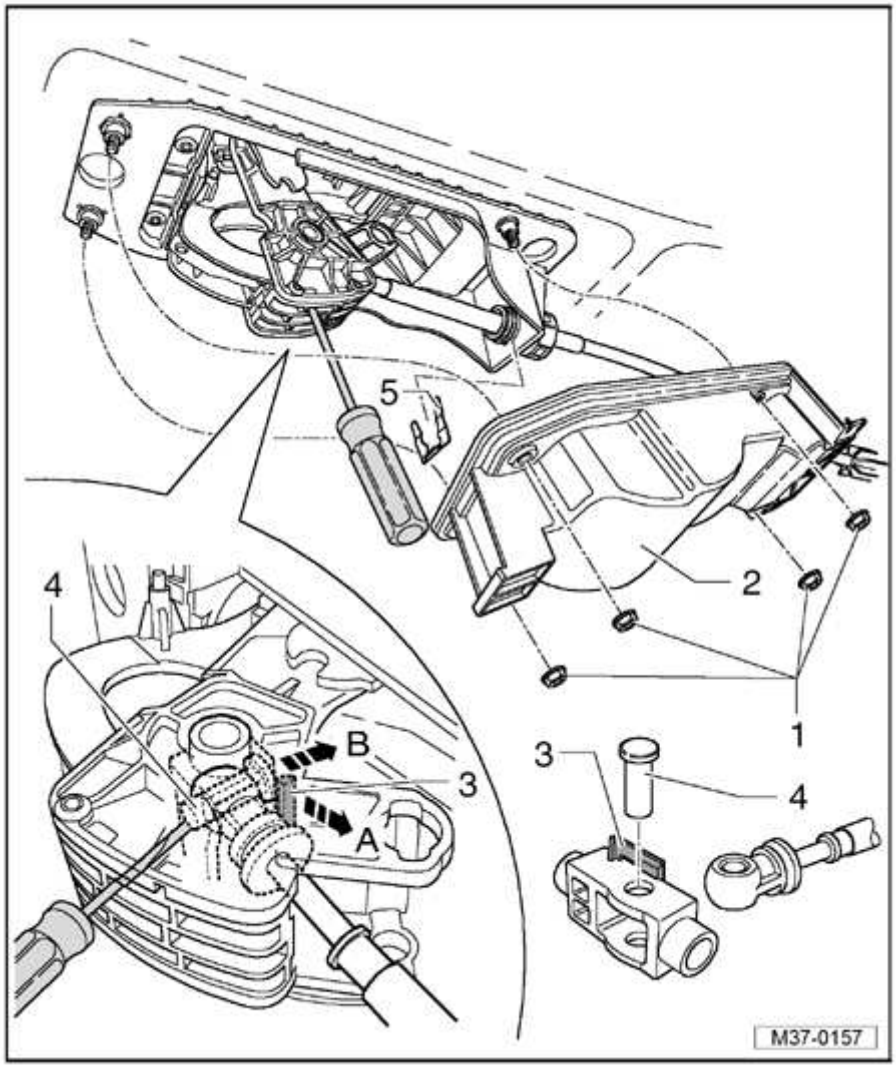

Fig. 44: Pulling Securing Clip In Direction Of - Arrow A - (Max. 5 Mm)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Gently pull securing clip - **3** - in direction of - **arrow A** - (max. 5 mm).

NOTE:

- **Make sure that the securing clip only moves a maximum of 5 mm in direction of - arrow A -. If this dimension is exceeded it is possible that the securing clip may break off. If this happens replace the complete shift mechanism.**

- Using a screwdriver, press out pin - **4** - in direction of - **arrow B** -.

NOTE:

- **The pin can slip out of its guide when pushing out. Reinstall it in the same position.**

- Remove securing plate - **5** -.
- Remove selector lever cable.

Installing

- Loosen adjustment screw of cable.

Do not grease selector lever cable and route it free of tension.

- Check protective sleeve for damage; sleeve can only be replaced together with selector lever cable.
- Verify that protective sleeve is correctly seated and do not install it twisted.
- Hook selector lever cable into retainer behind oil cooler.
- Guide selector lever cable with protective sleeve into cover. Do not damage protective sleeve when guiding in.

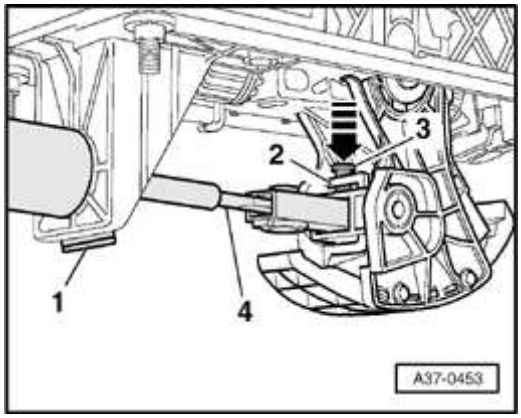

Fig. 45: Inserting End Of Selector Lever Cable Into Joint Of Selector Lever
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert end of selector lever cable - **4** - into joint of selector lever.
- Press pin - **3** - downward in direction of - **arrow** -.
- Verify that securing clip - **2** - secures pin.
- Install new securing plate - **1** - for selector lever cable to shift mechanism.

- Installation position: angled end of securing plate faces inside of shift mechanism.

- Insert protective sleeve of selector lever cable into cover.
- Install selector housing and heat shield.
- Install front exhaust pipe with catalytic converter --> **26 - EXHAUST SYSTEM, EMISSION CONTROLS** .
- Clip selector lever cable into support bracket on transmission and press cable onto selector lever.

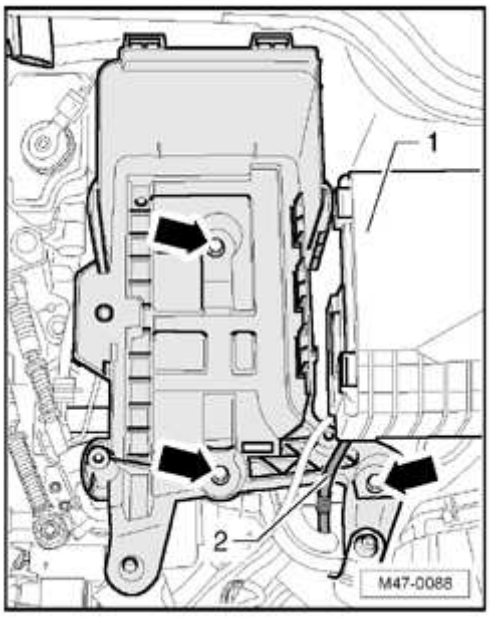

Fig. 46: Identifying Cover Of E-Box, Wire & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set battery holder into vehicle and fasten it with bolts - **arrows** -.
- Fasten wiring - **2** - to electronics box and close cover - **1** -.
- Install battery --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .
- Check selector lever cable --> **Selector lever cable, checking**.
- Adjust selector lever cable --> **Selector lever cable, adjusting**.

Tightening torque	
Battery holder to structure	20 Nm

Selector lever cable, checking

To check the selector lever cable for ease of movement, remove it from the transmission and position the removed end so that it has no interference.

NOTE:

- **Do not grease the connection of the selector lever cable!**

- Place selector lever in position "P".

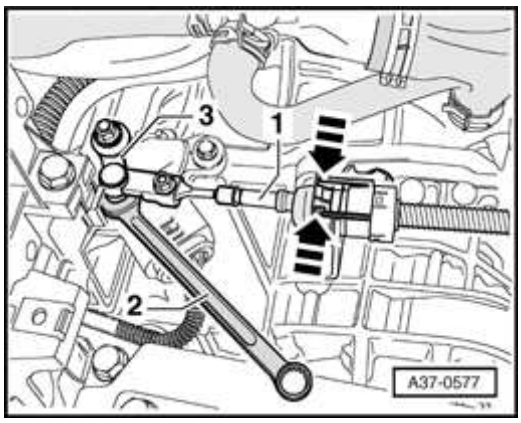

Fig. 47: Prying Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off selector lever cable - **1** - from lever - **3** - using an open end wrench - **2** -.
- Press retainers together in direction of - **arrow** - and remove selector lever cable from mounting bracket.

NOTE:

- **To improve clarity, the battery and battery box are shown removed. However, the work procedure can be performed with the battery and battery box installed.**

- Switch ignition on and depress brake pedal.
- Shift selector lever from "P" to "S" multiple times and return it to "P".

- While shifting, selector lever must move with ease.

- Attach selector lever cable again.
- Adjust selector lever cable --> **Selector lever cable, adjusting**.

Selector lever cable, adjusting

Special tools, testers and auxiliary items required

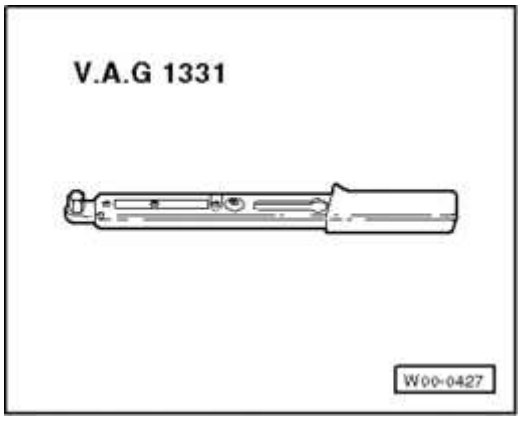

Fig. 48: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

Adjust selector lever cable if:

- Selector lever cable was removed from the transmission.
- Engine and/or transmission were removed and installed.
- Cable or shift mechanism were removed and installed.
- Engine/transmission were moved in their mounts, for example, were installed free of stress.

Adjusting

- Switch ignition off.
- Place selector lever in position "P".

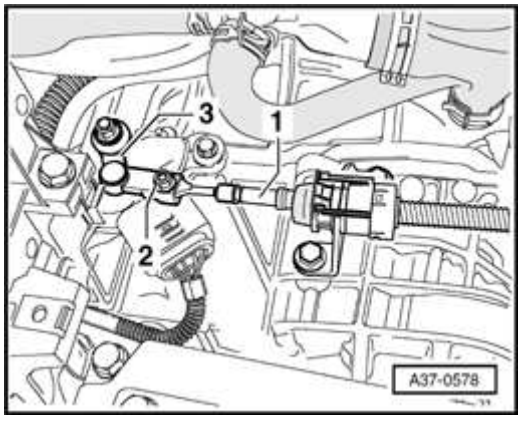

Fig. 49: Identifying Selector Lever Cable At Transmission Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **2** - on cable - **1** -.

NOTE:

- **To improve clarity, the battery and battery box are shown removed. However, the work procedures can be performed with the battery and battery box installed.**

- Tip handle of selector lever back and forth slightly, but do not shift it out of "P" under any circumstances.
- Move selector shaft lever - **3** - on transmission into "P" position (push lever rearward).

NOTE:

- **To be sure that the transmission is in "P" position (park lock is engaged), lift the vehicle. It must not be possible to turn both front wheels in the same direction.**

- Tighten bolt - **2** - to 15 Nm.

Selector lever, manually releasing

Do not remove handle.

- Unclip shifter cover and hold it aside.
- Depress brake pedal or apply parking brake.

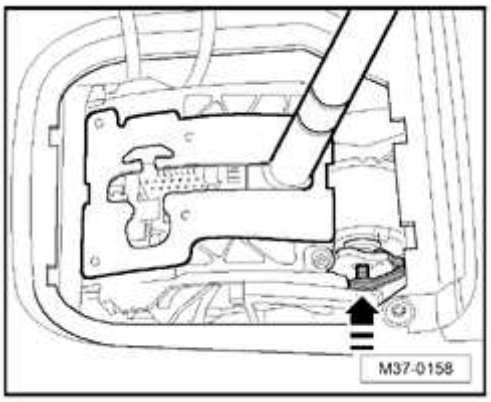

Fig. 50: Selector Lever, Manually Releasing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Push on yellow plastic piece in direction of - **arrow** -.
- Lever can now be shifted out of "P" position.

Selector lever mechanism, checking

In selector lever positions "R" , "D" and "S" , the starter motor will not operate.

It must only be possible to start the vehicle in the selector lever positions "P" and "N" with the button in the selector lever handle not pressed.

For speeds exceeding 5 km/h and shifting into selector lever position "N" , the shift lock solenoid must not engage to lock the selector lever. The selector lever can be shifted into a driving gear.

For speeds below 5 km/h (almost a standstill) and shifting into selector lever position "N" , the shift lock solenoid must only engage after approx. 1 second. The selector lever cannot be shifted out of "N" position until the brake pedal is depressed.

Selector lever in position "P" and ignition switched on

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of position "P" with button depressed. Shift lock solenoid blocks selector lever.

- Brake pedal depressed:

Shift lock solenoid releases selector lever. It is possible to shift into a driving gear. Shift selector lever slowly from "P" to "S" and, while doing this, check whether display in instrument cluster shows correct selector lever position.

Selector lever in position "N" and ignition switched on

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of position "N" with button depressed. Shift lock solenoid blocks selector lever.

- Brake pedal depressed:

Shift lock solenoid releases selector lever. It is possible to shift into a driving gear.

Selector level in "Tiptronic" position

- Move selector lever into Tiptronic gate:

The illumination of "D" symbol in selector lever display must go out, and the "+" and "-" symbols must light up.

The selector lever position display in the instrument cluster must change from "P R N D S" to "6 5 4 3 2 1" when selector lever is moved into Tiptronic gate.

Ignition and lights switched on

The respective symbol in selector lever cover lights up.

Selector lever position indicator

Simultaneous lighting of all segments of the Transmission Range (TR) selector lever display indicates the transmission is in the emergency running mode.

MULTI-FUNCTION TRANSMISSION RANGE (TR) SWITCH

Multi-Function Transmission Range (TR) Switch

For removing multi-function TR switch, refer to --> **Multi-Function TR Switch, Removing**.

For installing multi-function TR switch, refer to --> **Multi-Function TR Switch, Installing**.

For adjusting multi-function TR switch, refer to --> **Multi-Function TR Switch, Adjusting**.

Multi-Function TR Switch, Removing

- Move selector lever to position "N".
- Switch off ignition.
- Do not open cooling system.

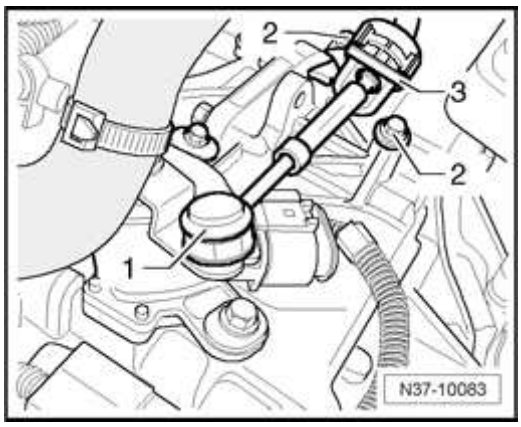

Fig. 51: Identifying Selector Lever Cable Lock And Selector Lever Cable
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press selector lever cable locks - **3** - together and pull selector lever cable up out of support bracket.
- Pull selector lever cable - **1** - off selector shaft lever by hand.
- Do not bend or kink selector lever cable.
- Pull connector off Multi-Function Transmission Range (TR) Switch F125.

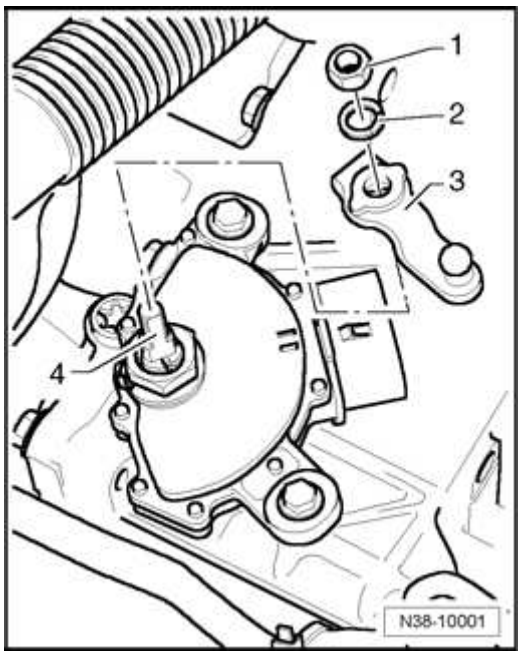

Fig. 52: Removing/Installing Spring Ring And Lever At Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **1** -.
- Remove spring ring - **2** - and lever - **3** - from selector shaft - **4** -.

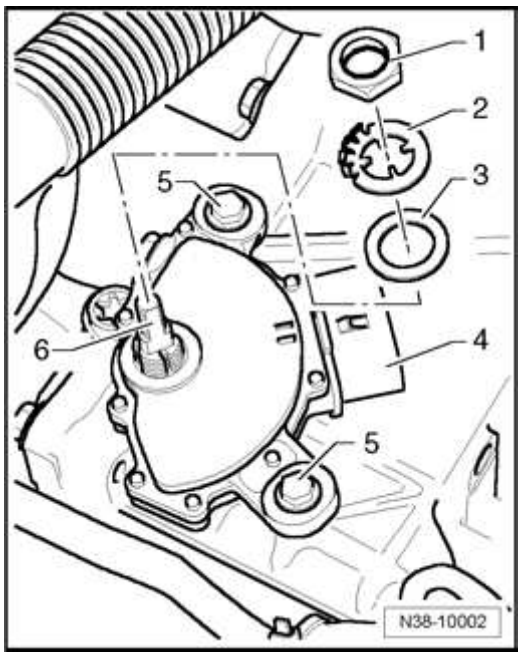

Fig. 53: Removing/Installing Multi-Function Transmission Range (TR) Switch At Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully bend back hooks of lock washer - **2** - using a screwdriver.
- If hooks are broken off, replace lock washer.
- Remove nut - **1** -.
- Remove bolt - **5** -.

- Pull Multi-Function Transmission Range (TR) Switch - **4** - , together with washers - **2** - and - **3** - , off selector shaft - **6** -.

Multi-Function TR Switch, Installing

Special tools, testers and auxiliary items required

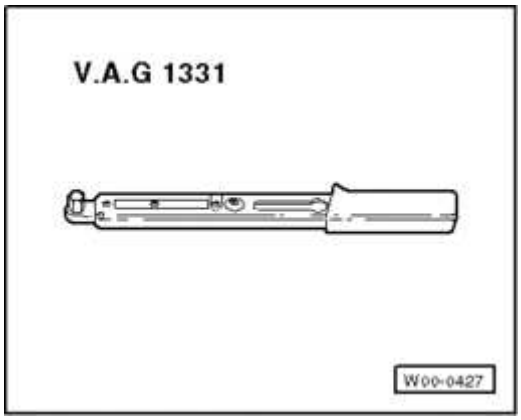

Fig. 54: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

Install in reverse order of removal. During this step, observe the following:

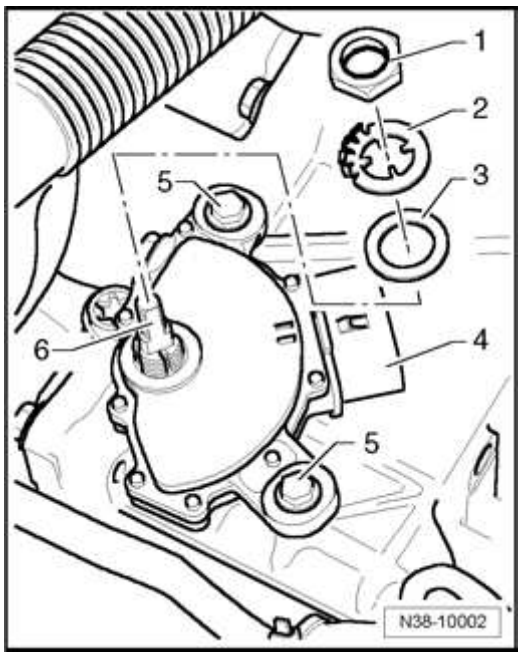

Fig. 55: Removing/Installing Multi-Function Transmission Range (TR) Switch At Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place Multi-Function Transmission Range (TR) Switch - **4** - on selector shaft - **6** -.
- Tighten securing bolts - **5** - for Multi-Function Transmission Range (TR) Switch hand-tight.
- Carefully bend back hooks of lock washer - **2** -.
- Put washers - **2** - and - **3** - on selector shaft - **6** -.

- Install washer - **2** - with hooks pointing up.
- Install washer - **2** - with long, narrow guides in long, narrow recesses of selector shaft - **6** -.
- Tighten nut - **1** - to 7 Nm.
- Secure nut - **1** - by bending up hooks on lock washer - **2** -.

- If hooks are broken off, replace lock washer.

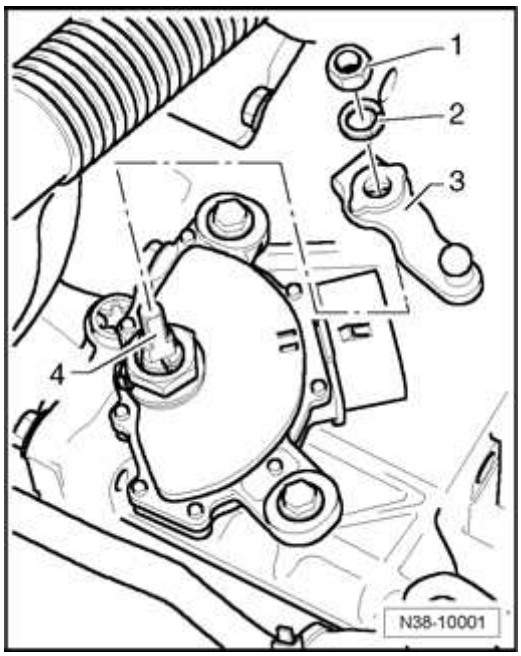

Fig. 56: Removing/Installing Spring Ring And Lever At Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place lever - **3** - on selector shaft - **4** -.
- Use lever - **3** - to shift transmission to "P" position, i.e. press lever - **3** - backwards to stop opposite direction of travel.
- Now use lever - **3** - to shift transmission to "N" position. To do this, push lever - **3** - two detent positions forwards in direction of travel.
- Place spring ring - **2** - and nut - **1** - on selector shaft - **4** -.
- Tighten nut - **1** - to 13 Nm.
- Check selector mechanism --> **Selector Mechanism**.

Multi-Function TR Switch, Adjusting

Adjustment Prerequisites

Special tools, testers and auxiliary items required

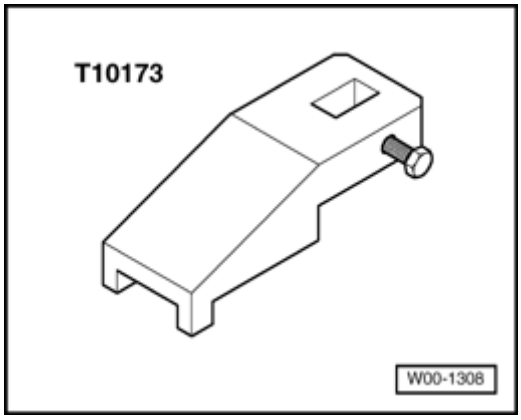

Fig. 57: Setting Gauge T10173

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Setting gauge T10173

- Move selector lever to position "N".
- Do not kink selector lever cable.

Adjustment Prerequisites

- Selector lever cable is disconnected from selector shaft lever.
- Selector shaft is set to "N" position.
- Securing bolts for Multi-Function Transmission Range (TR) Switch F125 have been loosened.
- Selector shaft lever has been removed.

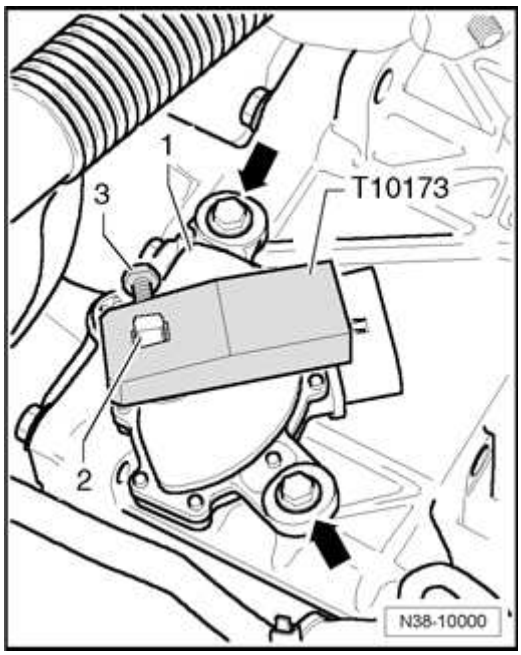

Fig. 58: Adjustment Tool Attached Onto Shift Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place setting gauge on selector shaft - **2** - and turn Multi-Function Transmission Range (TR) Switch - **1** - until setting gauge engages in lug on Multi-Function Transmission Range (TR) Switch connector.
- Secure setting gauge on selector shaft - **2** - with bolt - **3** -.
- Tighten bolts - **arrows** - to 6 Nm.
- Remove setting gauge.

- Continue installation in reverse order of removal --> **Multi-function Transmission Range (TR) switch F125 , installing**.

Transmission, attaching to assembly stand

Special tools, testers and auxiliary items required

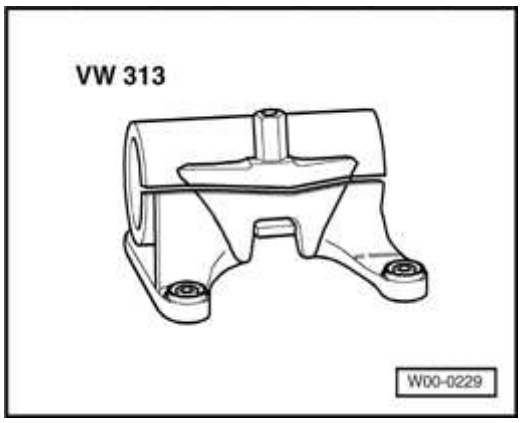

Fig. 59: Holding Fixture VW 313
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Holding fixture VW 313

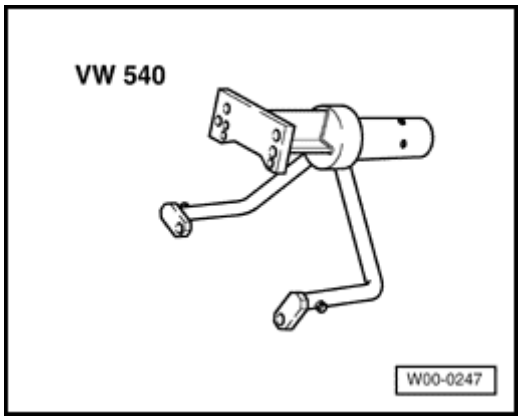

Fig. 60: Holding Fixture VW 540
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Holding fixture VW 540

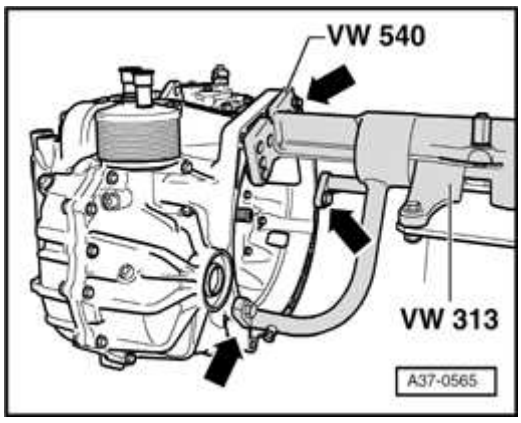

Fig. 61: Secure Transmission To Holding Fixture VW 540 And VW 313
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Secure transmission to holding fixture VW 540 - **arrows** - and place into holding fixture VW 313.
- To install, use shop crane VAS 6100 with shackle 10 - 222 A/12 --> **Transmission, Transporting**.

CAUTION: The center of gravity of the transmission is outside the center of rotation at the holding fixture. When rotating the transmission, have a second technician hold the transmission housing to prevent it from swinging around and possibly causing injury.

NOTE:

- **If filled, rotate transmission on assembly stand so that the oil pan is at top. Seal the transmission housing vents.**

SELECTOR MECHANISM

Selector Mechanism

CAUTION: Before working on vehicle with engine running, move selector lever into position "P" and apply parking brake.

Selector Mechanism, Overview --> **Selector Mechanism, Overview**

Selector Mechanism with Selector Lever, Removing and Installing --> **Selector Mechanism with Selector Lever, Removing and Installing**

Selector Lever Cable, Removing and Installing --> **Selector Lever Cable, Removing and Installing**

Selector Lever Cable, Checking --> **Selector Lever Cable, Checking**

Selector Lever Cable, Adjusting --> **Selector Lever Cable, Adjusting**

Selector Lever, Emergency Release --> **Selector Lever, Emergency Release**

Selector Mechanism, Checking --> **Selector Mechanism, Checking**

Selector Mechanism, Overview

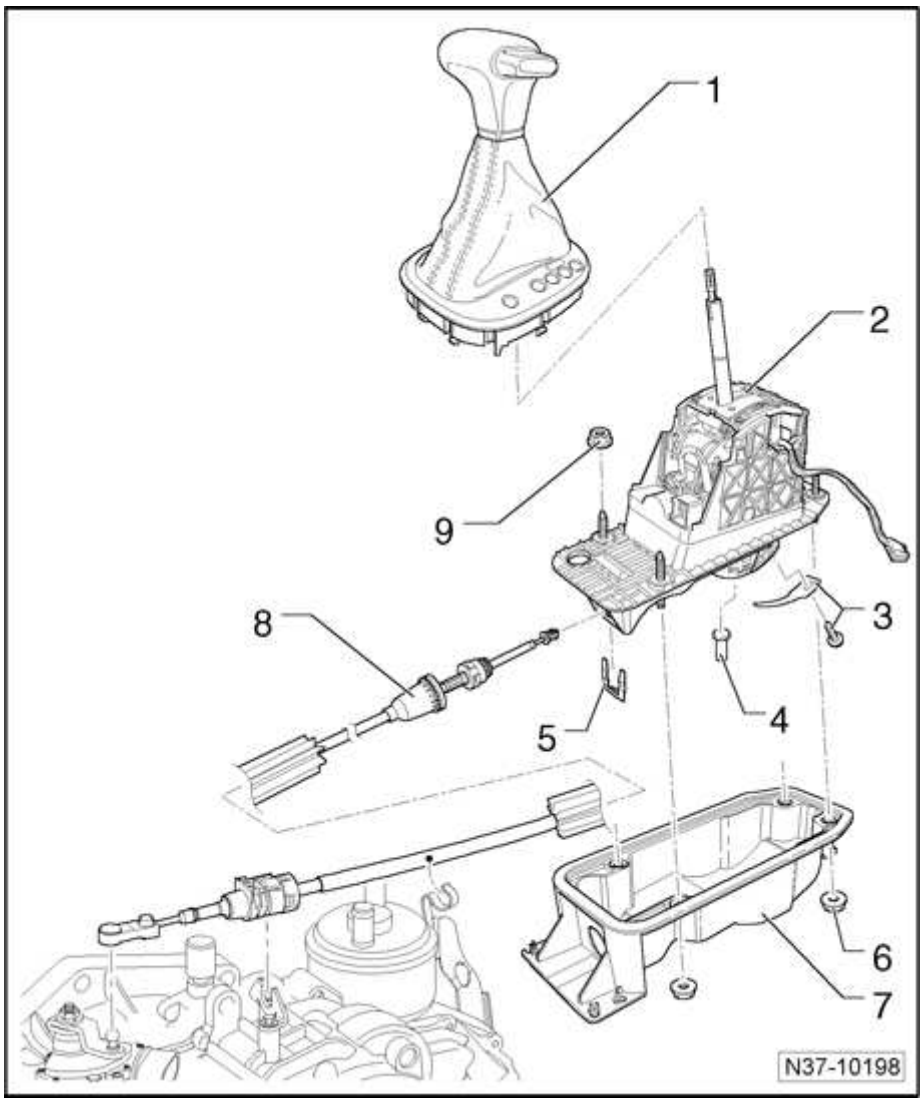

Fig. 62: Selector Mechanism, Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Selector cover with knob

- Do not remove knob without reason. For emergency release, only the cover needs to be unclipped --> **Selector Lever, Emergency Release**.
- Before removing handle, pull button out past its rest position and secure it with a cable tie or appropriate wire. This will prevent the button from being accidentally pressed into the knob.
- If button is pressed into removed handle

  - Before installing knob, pull out button past felt pressure point.

2 - Selector mechanism with selector lever

- Removing and installing --> **Selector Mechanism with Selector Lever, Removing and Installing**

3 - Bolt with spring

- 3 Nm

4 - Pin

- Removing --> **Selector Lever Cable, Removing and Installing**
- Do not grease

5 - Locking plate

- Always replace after removing

6 - Nut

- 9 Nm
- Qty. 4

7 - Selector lever housing

- With seal

8 - Selector lever cable

- Cable must not be greased
- Removing and installing --> **Selector Lever Cable, Removing and Installing**
- Checking --> **Selector Lever Cable, Checking**
- Adjusting --> **Selector Lever Cable, Adjusting**

9 - Hex nut with washer

- 8 Nm
- Qty. 4

Selector Mechanism with Selector Lever, Removing and Installing

NOTE:

- **Following installation, cable must be checked for ease of movement and be adjusted.**

- Remove center console --> **68 - INTERIOR EQUIPMENT** .
- Remove Bowden cable from transmission --> **Selector Lever Cable, Removing and Installing**.
- Remove parts of exhaust system under heat shield (Gasoline engines) -->
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BPY, BWA -- JETTA (A5 PLATFORM)
  - **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.5 LITER 5-CYL. 4V ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BGP, BGQ -- JETTA (A5 PLATFORM)

  or (Diesel engines) --> **23 - DIESEL FUEL INJECTION** .
- Remove heat shield beneath vehicle.

- Remove 4 nuts for selector mechanism from above.

Torque setting for nuts: 8 Nm

- After installing, check cable --> **Selector Lever Cable, Checking**.

Selector Lever Cable, Removing and Installing

NOTE:

- **Following installation, cable must be checked for ease of movement and be adjusted.**

Removing

- Move selector lever to position "S" position.

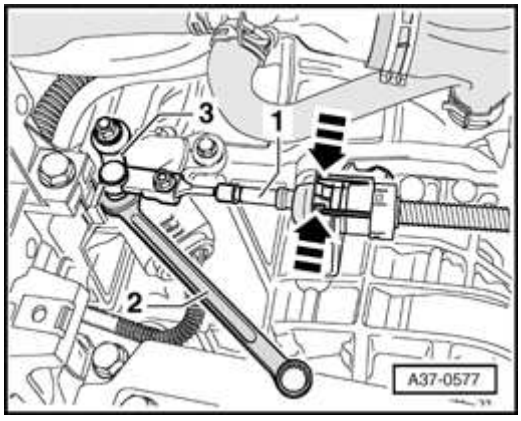

Fig. 63: Prying Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lever cable - **1** - off lever - **3** - using an open wrench - **2** -.
- Press catches together - **arrows** - and remove cable from cable support bracket.
- Raise vehicle.

To remove cable and/or selector mechanism, heat shield and, if necessary, parts of exhaust system must now be removed (Gasoline engines) -->

- **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BPY, BWA -- JETTA (A5 PLATFORM)
- **24 - MULTIPORT FUEL INJECTION (MFI)** for 2.5 LITER 5-CYL. 4V ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BGP, BGQ -- JETTA (A5 PLATFORM)

or (Diesel engines) --> **23 - DIESEL FUEL INJECTION** .

- Remove heat shield.
- Remove - **selector housing** - beneath selector lever.

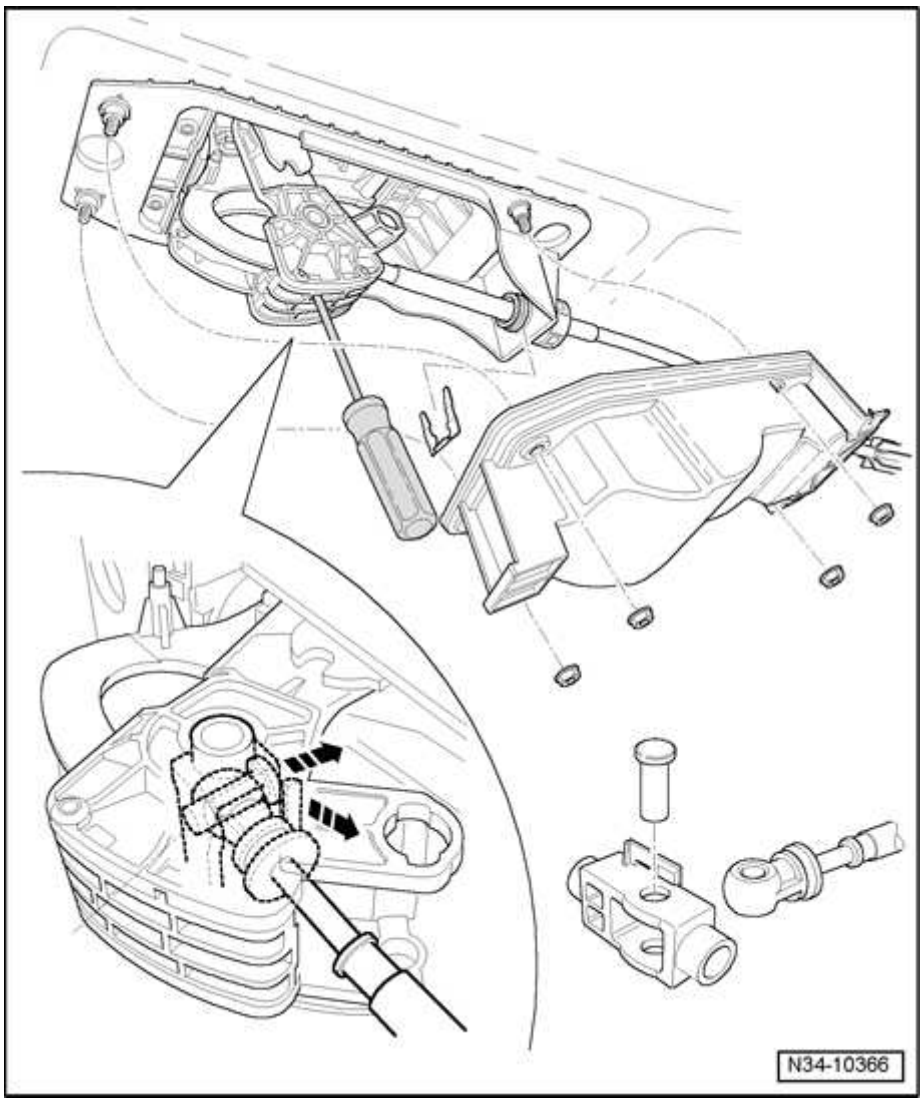

Fig. 64: Removing Selector Lever Cable From Shift Mechanism
Courtesy of VOLKSWAGEN UNITED STATES, INC.

In order to remove cable, - **pin** - must be pressed up with a - **screwdriver** -.

- At the same time, press forward securing tab holding - **pin** - - **arrows** -.
- Remove securing clip. Always replace securing clip.
- Remove selector lever cable.

Installing

- Loosen adjusting screw of cable.

Do not grease cable.

- Route selector lever cable free of tension, insert in support bracket on transmission but do not secure yet.
- Also clip cable into retainer. Ensure that retainer does not contact oil cooler.

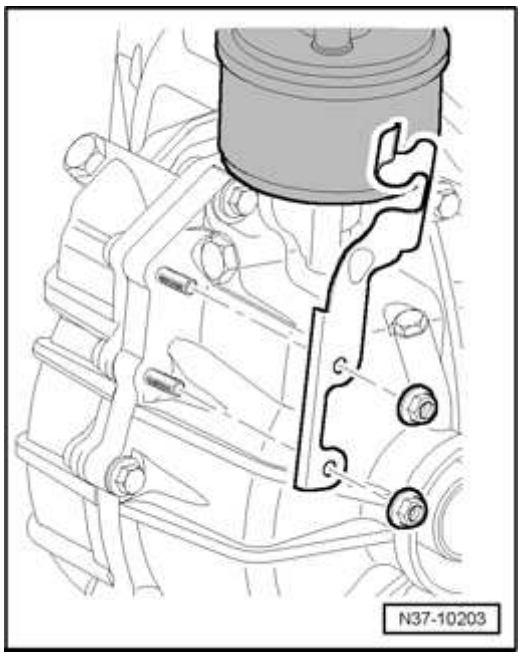

Fig. 65: Identifying Selector Lever Cable Retainer And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Nuts** - 8 Nm

- Secure cable to selector lever using pin and secure to support bracket of selector mechanism using new securing clip.
- Install selector housing, heat shield and exhaust system.
- After installing, check cable --> **Selector Lever Cable, Checking**.

Selector Lever Cable, Checking

Brief description

To check smoothness of selector lever cable, remove cable from transmission and set down removed end in such a way that it does not hit anything.

Then move selector lever and reinstall cable.

Then selector lever cable must be adjusted --> **Selector Lever Cable, Adjusting**.

Do not grease cable connection!

- Move selector lever to position P position.

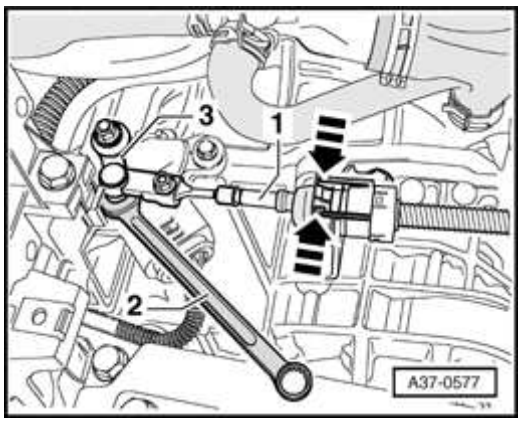

Fig. 66: Prying Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Lever cable - **1** - from selector shaft lever - **3** - using an open jaw spanner - **2** -.
- The cable is removed from support bracket by pressing catches together - **arrows** -.
- Move selector lever repeatedly from P to S and back to P.

- Selector lever must move easily.

- Reinstall cable.
- Adjust cable!

Selector Lever Cable, Adjusting

Special tools, testers and auxiliary items required

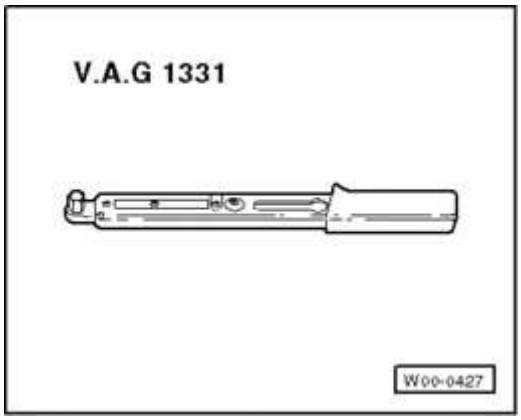

Fig. 67: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

The selector lever cable must be adjusted if

- The selector lever cable is removed from transmission.
- The engine and/or transmission is removed and installed.
- The cable itself or selector mechanism is removed and installed.

- The position of engine and transmission is shifted, for example to install it free of tension.

Adjusting

- Move selector lever to "P" position.

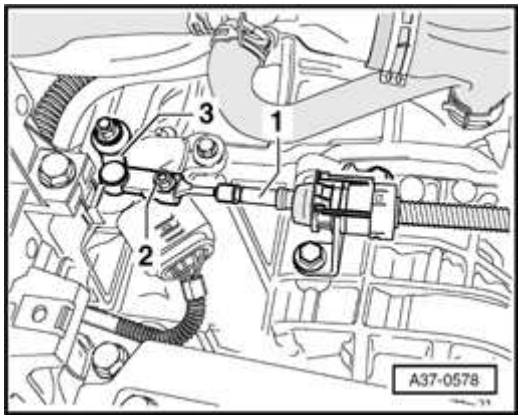

Fig. 68: Identifying Selector Lever Cable At Transmission Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen bolt - **2** - for cable - **1** -.
- Gently push knob of selector lever forwards and backwards but under no circumstances must you shift out of "P".

In this way inner cable of Bowden cable finds it optimal position.

- Set selector shaft lever - **3** - to "P" on transmission (push lever backwards).

NOTE:

- **To be sure that the transmission is in "P" (parking lock engaged), raise vehicle. It should not be possible to turn both front wheels together in the same direction.**

- Tighten bolt - **2** - to 15 Nm.

Selector Lever, Emergency Release

Do not remove knob.

- Unclip selector cover and hold to side.
- Depress brake pedal or set parking brake.

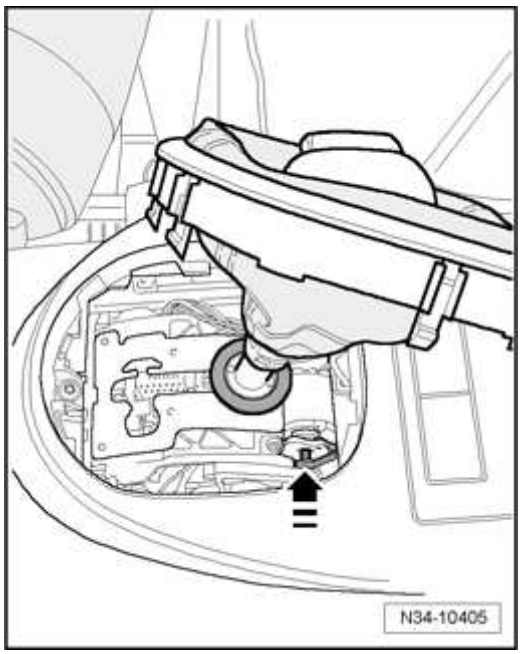

Fig. 69: Identifying Selector Lever Emergency Release
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press yellow plastic wedge from right to left.

Lever can now be moved from position P.

Knob, Removing and Installing

Knob, Removing and Installing

It is possible with all knobs that the button is pressed into the knob. Never install a knob with the button pressed in.

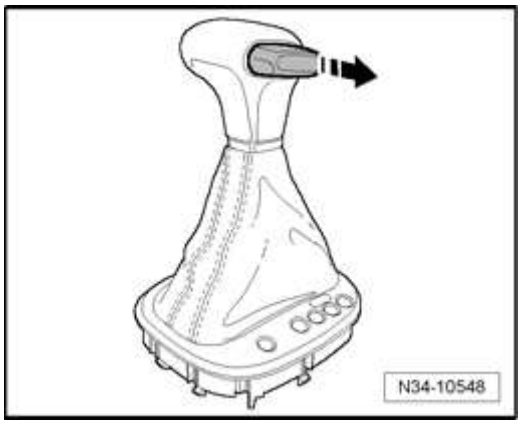

Fig. 70: Pulling Button Past Pressure Point
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before removal, pull button out past its pressure point.
- Secure button against being pressed in with a cable tie or wire.
- Unclip cover.

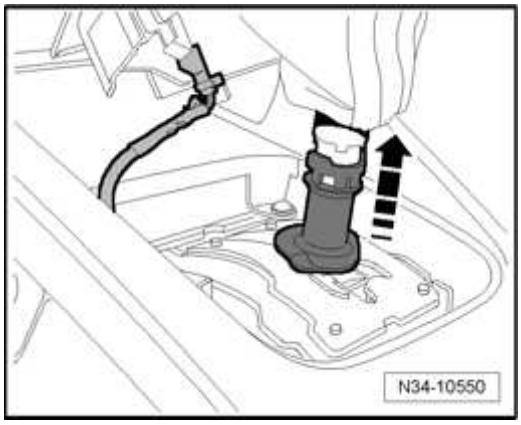

Fig. 71: Disengaging Knob
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release knob.
- After installation, engage knob again and press down plastic part below knob again.

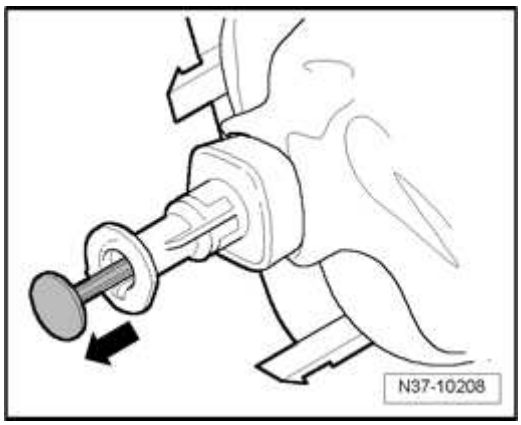

Fig. 72: Disconnecting Connector From Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove transport guard of a new knob after releasing knob.
- Pull connector from cover.
- Pull off knob upwards.
- After installation, engage knob again and press down plastic part below knob again.

Selector Mechanism, Checking

The starter must not operate in selector lever positions "R" , "D" or "S".

When travelling at speeds above 5 km/h and shifting into selector lever position "N" , solenoid for selector lever lock must not engage and block selector lever. Selector lever can be shifted into a driving range.

When vehicle is moving at speeds below 5 km/h (almost stationary) and selector lever is shifted to position "N" , the solenoid for selector lever lock should only engage after about 1 second. Selector lever cannot be shifted out of "N" position until brake pedal is depressed.

Selector Lever in "P" Position and Ignition Switched On

Selector Lever in "N" Position and Ignition Switched On

Selector Lever in "N" Position and Ignition Switched On

Ignition and Light Switched On

Transmission Range (TR) Display

Selector Lever in "P" Position and Ignition Switched On

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of "P" position when button is pressed. Solenoid for selector lever lock blocks selector lever.

- Brake pedal depressed:

Solenoid for selector lever lock releases selector lever. It is possible to shift into a driving gear. Slowly shift selector lever from "P" through to "S" , checking whether selector lever position in instrument cluster corresponds to selector lever position.

Selector Lever in "N" Position and Ignition Switched On

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of "N" position with push button pressed. Solenoid for selector lever lock blocks selector lever.

- Brake pedal depressed:

Solenoid for selector lever lock releases selector lever. It is possible to shift into a driving gear.

Selector Lever in Position "Tiptronic"

- Shift selector lever into Tiptronic gate.

The illuminated "D" symbol in selector mechanism cover must go out and "+" and "-" symbols must light up.

When selector lever is shifted into Tiptronic gate, Transmission Range (TR) Display in the instrument cluster must change from "P R N D S" to "6 5 4 3 2 1".

Ignition and Light Switched On

The respective symbol in shift mechanism cover lights up.

Transmission Range (TR) Display

Simultaneous illumination of all Transmission Range (TR) Display segments indicates that the transmission is in transmission emergency running mode.

TRANSMISSION, REMOVING AND INSTALLING

Transmission, Removing and Installing

Removing transmission, vehicles with 2.5 L - 110 kW engine --> **Transmission, Vehicles with 2.5 L - 110 kW Engine, Removing**

Installing transmission, vehicles with 2.5 L - 110 kW engine --> **Transmission, Vehicles with 2.5 L - 110 kW Engine, Installing**

Torque settings --> --> **Torque Settings, Transmission to Engine**

Transmission, Vehicles with 2.5 L - 110 kW Engine, Removing

- Before beginning with removal, if possible print out a diagnosis log. Before sending back removed transmission in the usual manner, secure log to transmission.

Brief description

The transmission is removed downwards separately. The engine remains in vehicle.

Battery tray, air filter and engine cover are removed from above. Engine and transmission must then be supported so that left assembly mounting can be removed.

Noise insulation is removed and drive axles are pressed off from below. Transmission is lowered using transmission jack.

NOTE:

- **The subframe is not to be removed.**

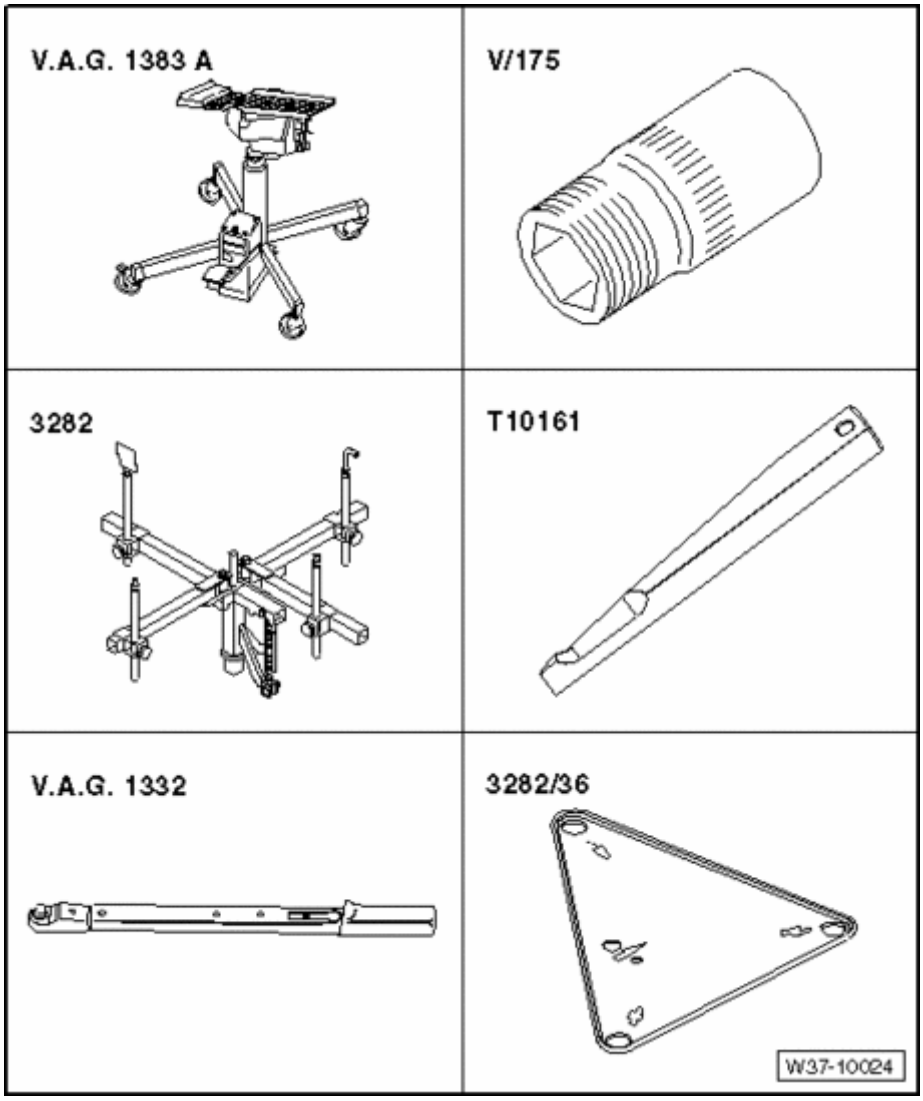

Fig. 73: Identifying Special Tools -- Transmission, Removing (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Engine/transmission jack V.A.G 1383 A
- Torque wrench V.A.G 1332
- Transmission support 3282
- Adjustment plate 3282/36
- Insert V/175
- Wedge T10161

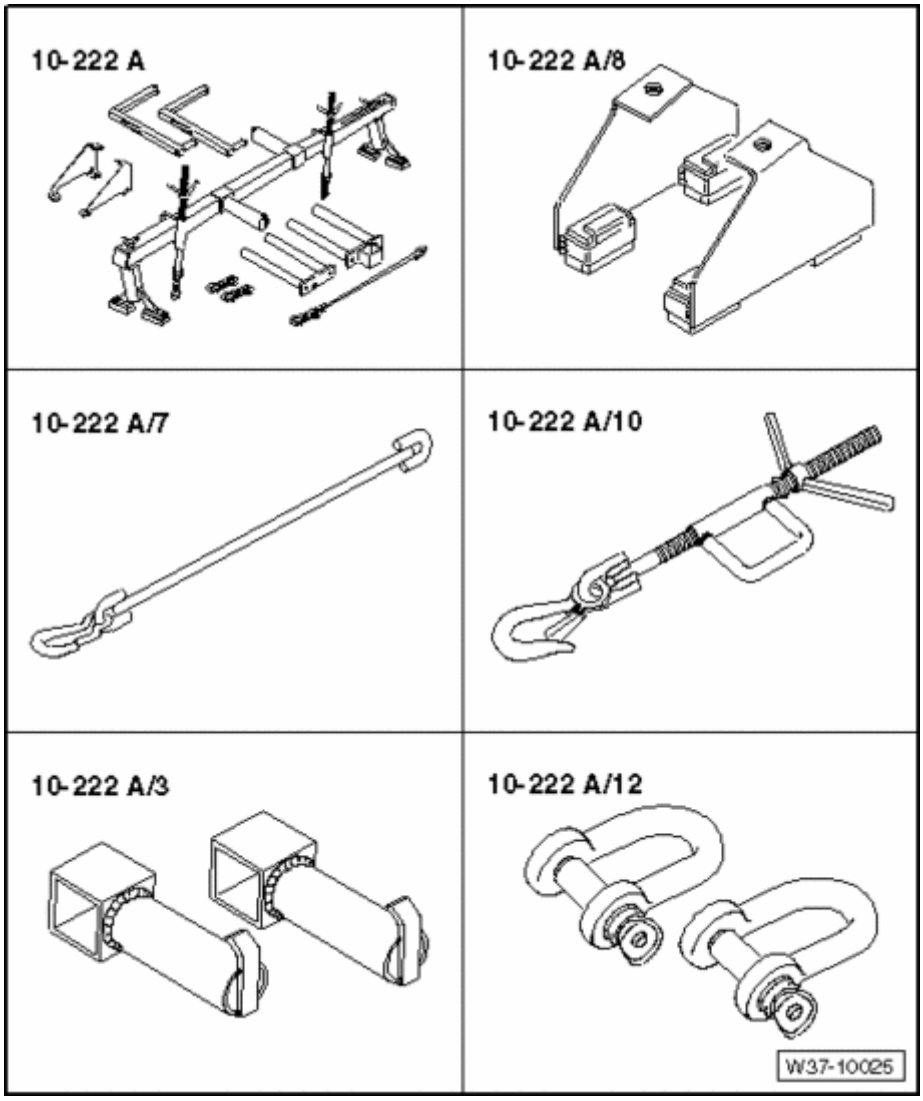

Fig. 74: Identifying Special Tools -- Transmission, Removing (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Support bracket 10 - 222 A
- Adapter 10 - 222 A/8
- Adapter 10 - 222 A/3
- Hook 10 - 222 A/10

- Shackle 10 - 222 A/12
- Adapter 10 - 222 A/7
- Socket key T03003

Special tools, testers and auxiliary items required

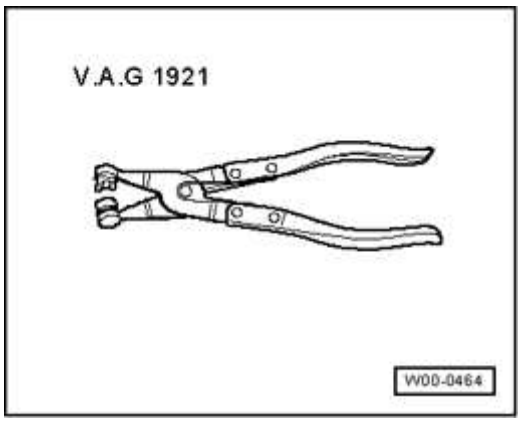

Fig. 75: Hose Clip Pliers V.A.G 1921
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hose clamp pliers V.A.G 1921

Removing

- Before beginning with removal, if possible, print out a diagnosis log. Before sending back removed transmission in the usual manner, secure log to transmission.
- Move selector lever to position P position.
- Raise vehicle. All 4 supports of lifting platform must be at same height.

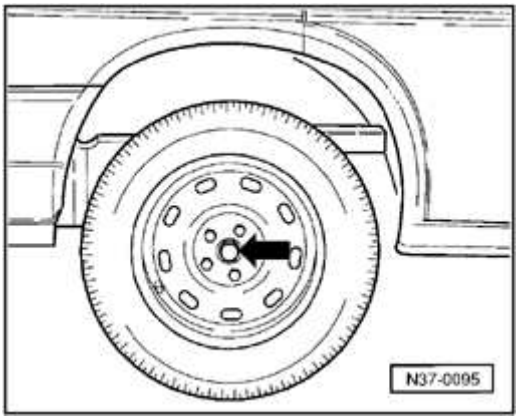

Fig. 76: Left Drive Axle Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Depress brake pedal to remove bolt for left drive axle - **arrow** - (second technician required).

NOTE:

- **After this, do not set vehicle on the ground any more --> 40 - FRONT SUSPENSION .**

- Remove air filter with engine cover.

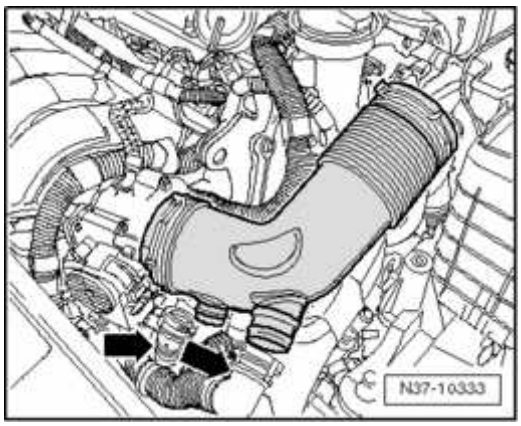

Fig. 77: Identifying Intake Hose And Throttle Valve Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull off hoses - **arrows** - and remove intake hose from throttle valve unit.
- Remove battery and battery tray --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

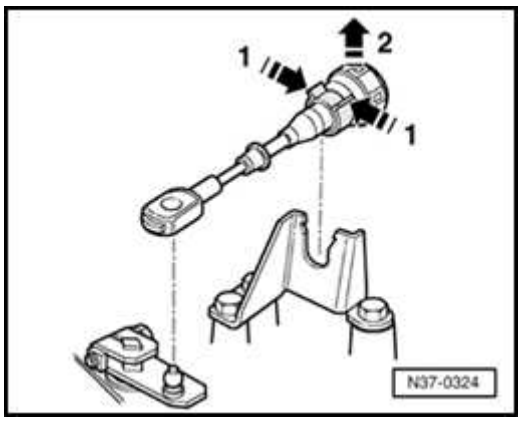

Fig. 78: Identifying Cable Disengaged And Removed From Mounting Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release selector lever cable from transmission by hand - **1** - and pull out of cable support bracket - **2** -.

Work with care to avoid bending cable. Do not use pliers, or retaining tabs on cable support bracket may break off.

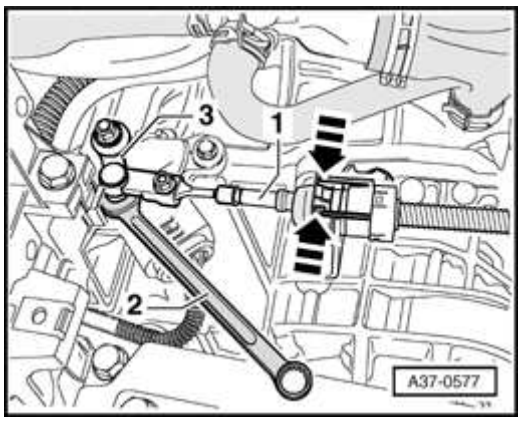

Fig. 79: Prying Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Then pry cable off ball head using wrench - **2** -.
- Disconnect electrical connections to transmission and starter.

- Multi-Function Transmission Range (TR) Switch
- Starter motor
- Ground (GND) cable to bracket

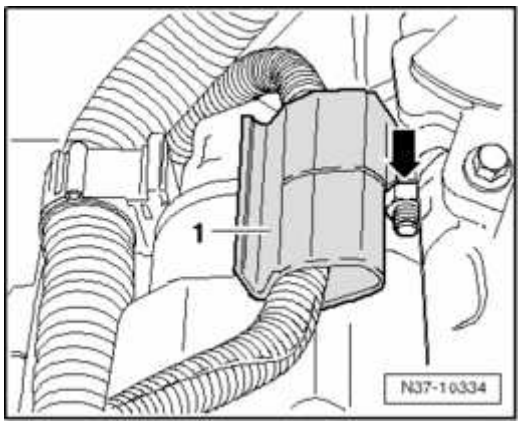

Fig. 80: Identifying Harness Retainer From Starter Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove wiring retainer - **1** - from starter bolt - **1** -.
- Remove upper starter motor bolt.
- Remove upper engine/transmission connecting bolts.

To support engine and transmission:

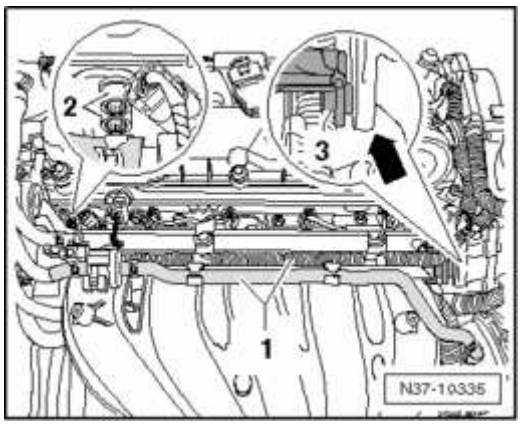

Fig. 81: Identifying Wires, Engine And Transport Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove wiring - **1** - from transportation bracket - **3** -.

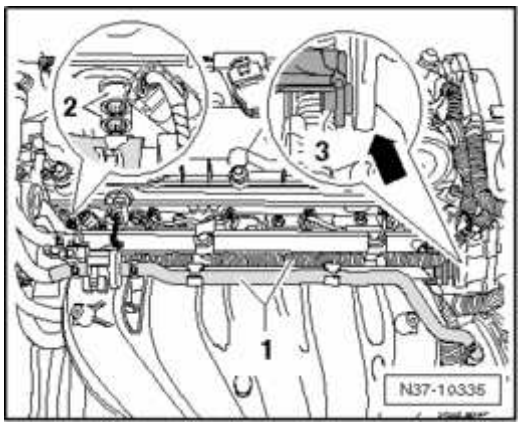

Fig. 82: Identifying Wires, Engine And Transport Strap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove transportation bracket - **3** - from engine - **2** - and pull out of eye - **arrow** -.
- Attach a shackle 10 - 222 A/12 in this eye.

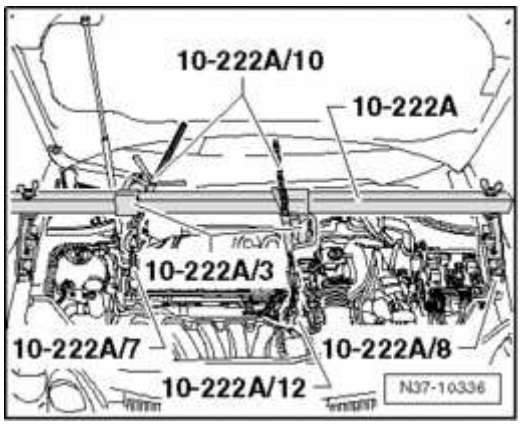

Fig. 83: Engine Support 10 - 222A/7/10 Installed
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Set up support device 10 - 222 A.
- Extend right hook 10 - 222 A/10 using adapter 10 - 222 A/7.

The hook faces downwards and will later be hooked into engine block.

- Remove noise insulation tray.
- Remove lower part of left wheel housing liner.
- Remove heat shield above right drive axle.

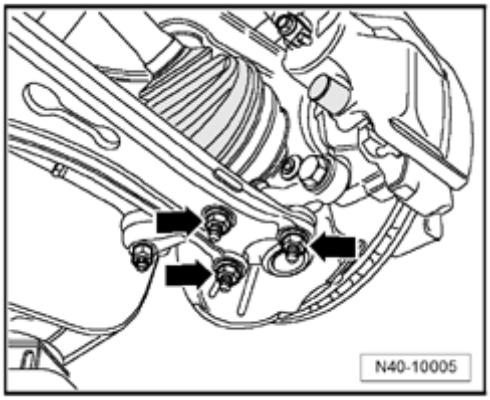

Fig. 84: Identifying Lower Control Arm And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove - **nuts** - from lower suspension links on both sides.

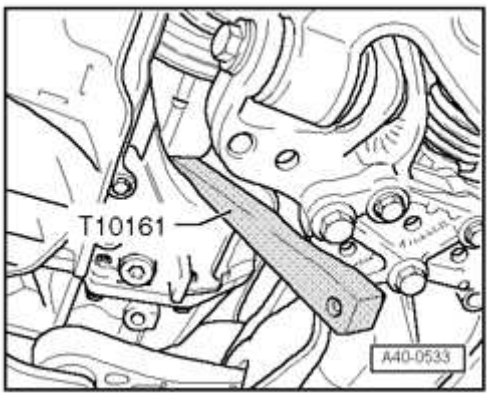

Fig. 85: Wedge Tool T10161 Attached Between Transmission Housing And Triple Roller Joint
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press both drive axles out of transmission.
- Remove left drive axle.
- Raise right axle as far as possible and secure in this position.

Plastic cable ties are a very good choice because surface protection of shaft must not be damaged.

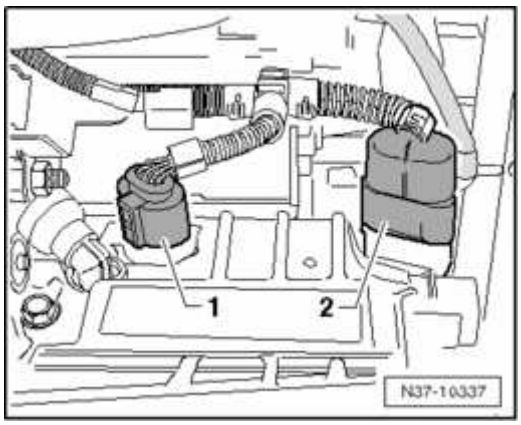

Fig. 86: Identifying Electrical Connectors At Transmission

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Now pull electrical connectors - **1** - and - **2** - off transmission.

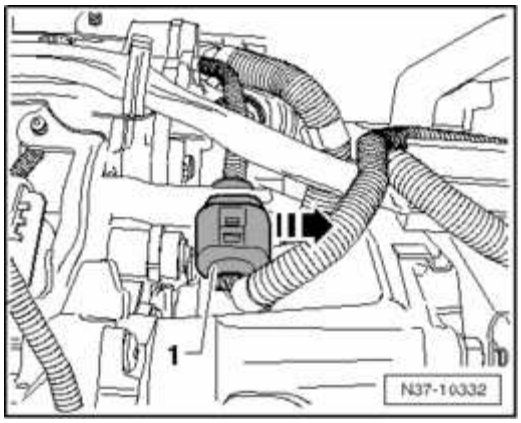

Fig. 87: Identifying Connector Under Starter
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull connector beneath starter - **1** - out of retainer and separate.
- Remove retainer from lower starter bolt.
- Remove lower starter bolt and remove starter.

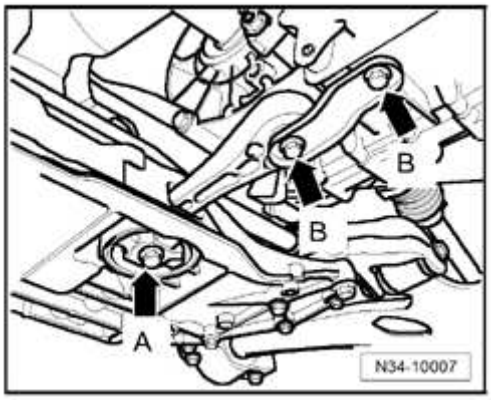

Fig. 88: Identifying Pendulum Support And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove pendulum support , first - **A** - and then - **B** -.
- Drain coolant.

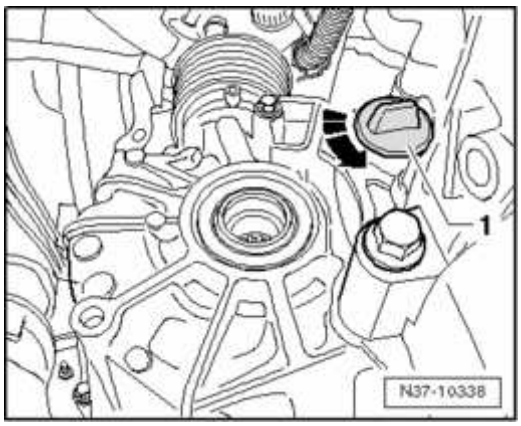

Fig. 89: Rotating Cover Cap
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn cap - **1** - in direction of - **arrow** - and remove.

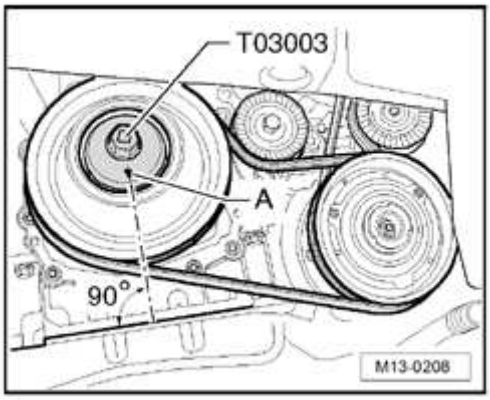

Fig. 90: Turn Crankshaft 60 Degrees Using Socket Key T03003
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove six - **torque converter nuts** - using insert V/175. Turn crankshaft 60 ° using Socket key T03003 for each nut in turn.

NOTE:

- **Continue turning the engine carefully!**

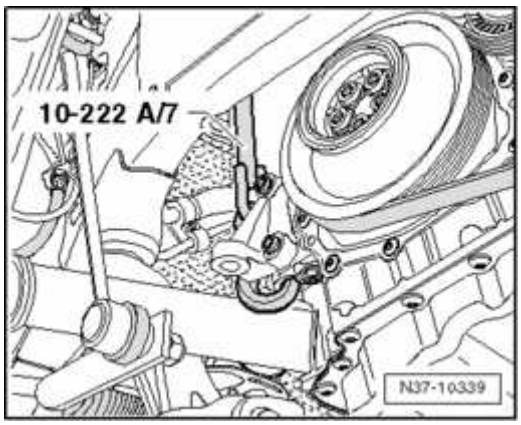

Fig. 91: Adapter 10 - 222 A/7 Engaged On Engine Block
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Hook adapter 10 - 222 A/7 into engine block.
- Pull coolant hoses off ATF cooler.

Tighten right spindle one turn (more is not necessary).

- Support engine and transmission with left spindle. Do not raise.

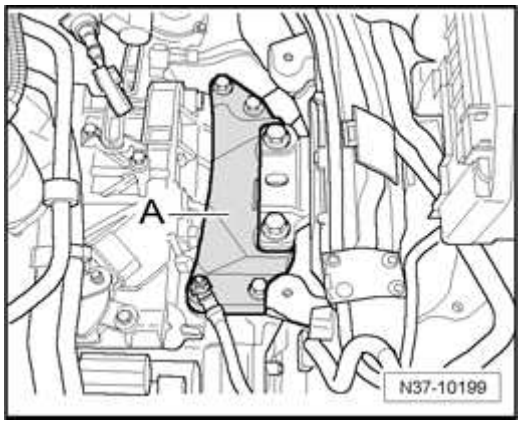

Fig. 92: Identifying Left Assembly Mounting Console
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket - **A** -.
- Now remove assembly mounting bracket. To do this, lower engine and transmission slightly via left spindle of support bracket 10 - 222 A.

Six turns are sufficient.

- Remove lower engine/transmission connecting bolts.
- Leave an easily accessible bolt in for safety purposes.
- Before you now remove final connecting bolt, support transmission with engine/transmission jack V.A.G 1383 A , transmission support 3282 and adjustment plate 3282/36.
- Only now is the final bolt removed.

- Carefully push transmission off engine.

NOTE:

- **Observe torque converter. It must be removed together with transmission.**

Transmission, Vehicles with 2.5 L - 110 kW Engine, Installing

- Check whether dowel sleeves are pressed into engine flange.
- Check seating of intermediate plate between engine and transmission. The plate must make contact with the engine along its entire perimeter when it is pressed gently with both hands against the engine. If the top does not contact the engine, it is not properly engaged behind the drive plate.

Continue installation in reverse order of removal.

The engine and transmission should be mounted tension-free in assembly mounting. The correct procedure is described in (Gasoline engines) -->

- **10 - ENGINE - ASSEMBLY** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BPY, BWA -- JETTA (A5 PLATFORM)
- **10 - ENGINE - ASSEMBLY** for 2.5 LITER 5-CYL. 4V ENGINE MECHANICAL, FUEL INJECTION IGNITION, ENGINE CODE(S): BGP, BGQ -- JETTA (A5 PLATFORM)

or (Diesel engines) --> **10 - ENGINE - ASSEMBLY** .

- Replace all bolts of left assembly mounting.
- First install all bolts by hand.

During installation, first bolt bracket to transmission with 40 Nm plus an additional 90 ° torque.

When two bracket bolts are tightened to vehicle, a screwdriver may be inserted between two bolts to adjust to previous seating. These two larger bolts are tightened to 60 Nm plus an additional 90 °.

Torque settings, transmission to engine --> **Torque Settings, Transmission to Engine**

- Adjust selector lever cable --> **Selector lever cable, adjusting**.
- After installing, check ATF level --> **ATF Level, Checking and Topping Off**.
- Carry out basic settings. To do this
- Connect vehicle diagnosis, testing and information system VAS 5051 and then select "Perform basic settings" under Guided Functions.

Torque Settings, Transmission to Engine

Vehicles with 2.5 L - 110 kW engine.

Torque Settings, Vehicles with 2.5 L - 110 kW Engine

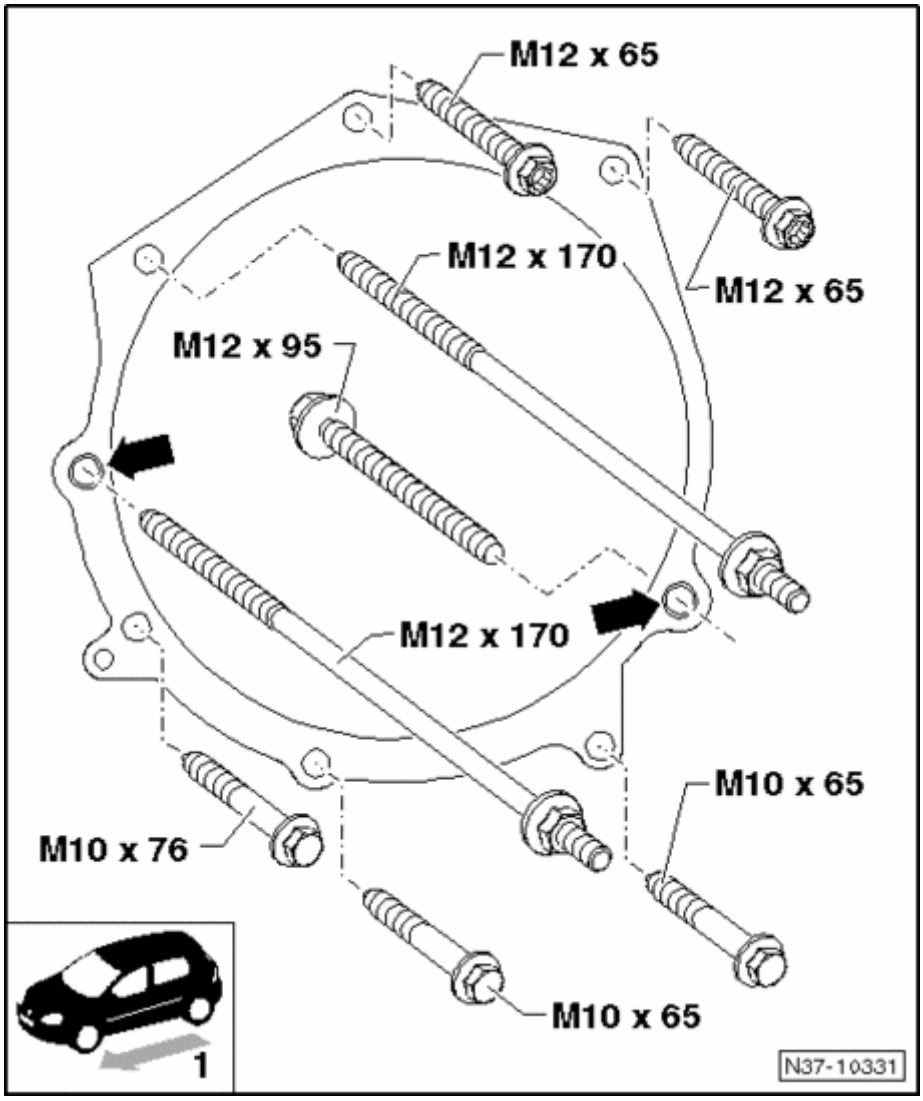

Fig. 93: Tightening Torques, Transmission To Engine (Vehicles with 2.5L - 110 kW Engine)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Direction of travel

- Drive plate to torque converter

  - 60 Nm
  - Qty. 6; remove and install with insert V/175.

- M12 bolts

  - 80 Nm
  - 65 Nm if you use socket T10179.

- M10 bolts

  - 40 Nm
  - These bolts are located in lower flange.

- Two alignment sleeves in engine - **arrows** -

  - Ensure that retainer does not contact oil cooler.

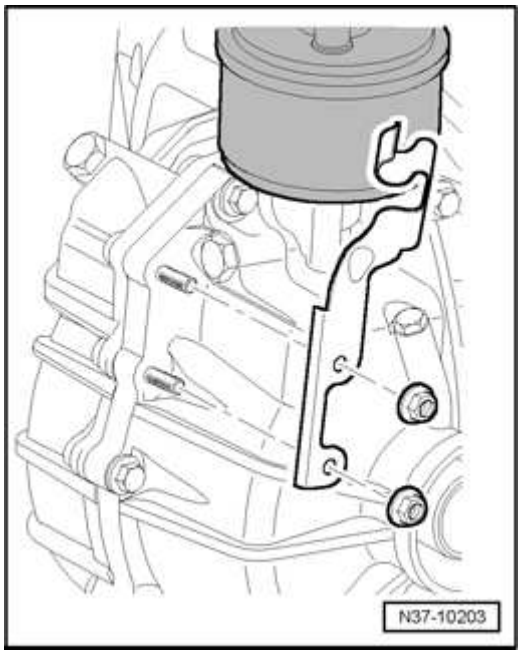

Fig. 94: Identifying Selector Lever Cable Retainer And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Nuts** - 8 Nm

TRANSMISSION, TRANSPORTING

Transmission, Transporting

Special tools, testers and auxiliary items required

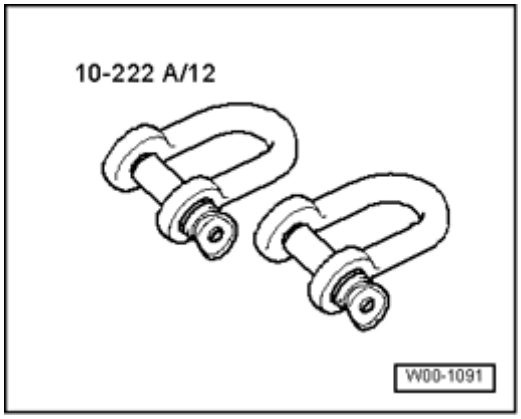

Fig. 95: Identifying Special Tools - Shackle 10 - 222 A/12
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Shackle 10 - 222 A/12

Shackle 10-222 A/12 can be used to transport automatic transmission and set up transmission support 3282.

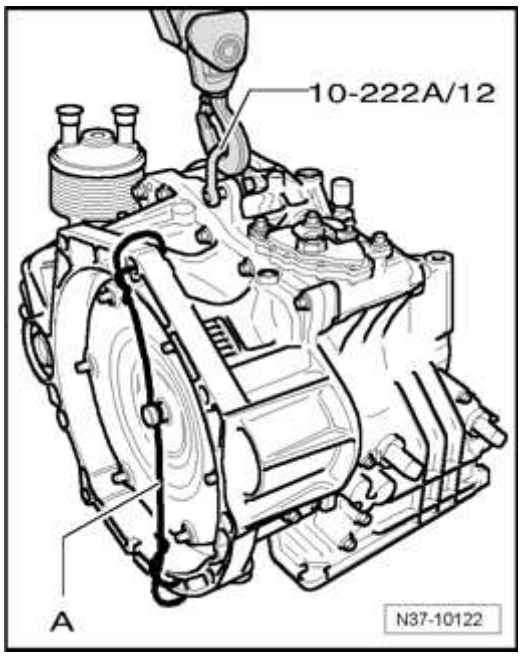

Fig. 96: Securing Torque Converter From Falling Out Using A Wire
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- During transportation, protect torque converter - **arrow** - from falling out, e.g. with a wire - **A** -.

ATF LEVEL, CHECKING AND TOPPING OFF

ATF Level, Checking and Topping Off

Observe these notes as well.

- About this repair article --> **General Information**
- About ATF --> **ATF**
- About filler tube --> **Transmissions with and without filler tube**

ATF Level, Checking --> **ATF Level, Checking**

ATF, Topping Off --> **ATF, Topping Off**

ATF, Draining and Filling --> **ATF, Draining and Filling**

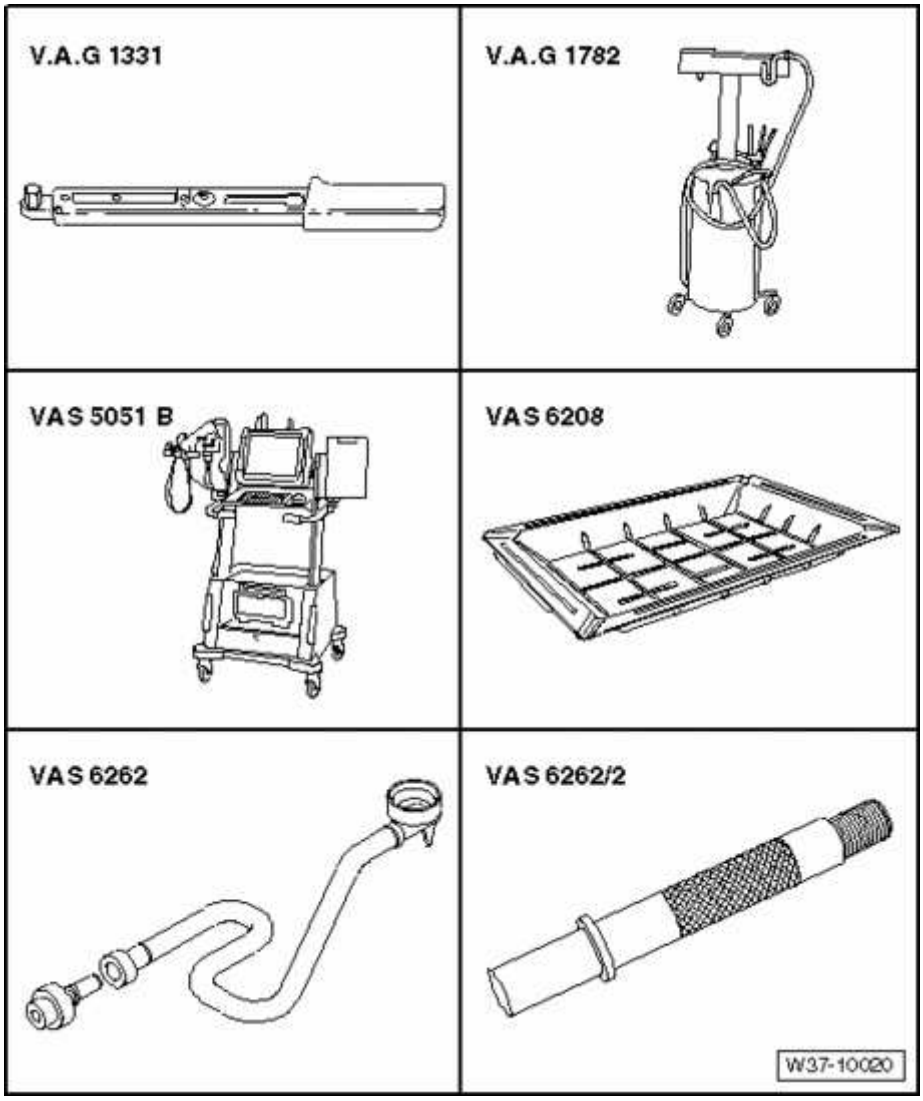

Fig. 97: Identifying Special Tools - ATF Level, Checking
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Special tools, testers and auxiliary items required

- Torque wrench V.A.G 1331
- Used oil collection and extraction unit V.A.G 1782
- Vehicle diagnosis, testing and information system VAS 5051
- Drip tray for workshop hoist VAS 6208
- Adapter for filling oil VAS 6262
- Adapter VAS 6262/2

If ATF must be added, use only ATF listed in Electronic Parts Catalog "ETKA" .

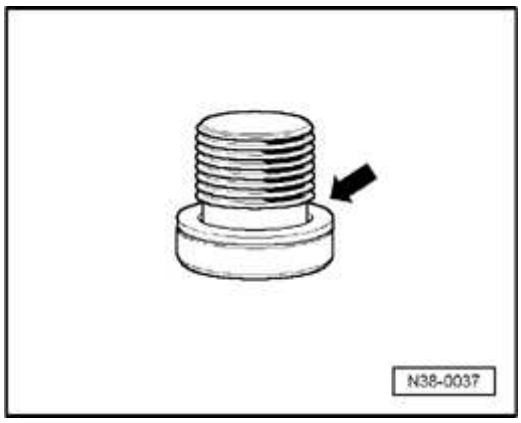

Fig. 98: Identifying ATF Level Plug Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If ATF level is checked, oil seal - **arrow** - on ATF inspection plug must always be replaced.

ATF Level, Checking

- Switch off engine.

The ATF temperature should not be more than approx. 30 ° C at start of test.

- Transmission not in emergency running mode; ATF temperature not above approximately 30 ° C.
- Vehicle must be standing level
- Selector lever in "P".

- Connect tester and continue switching until it is ready for operation --> **Tester, Connecting**.
- Press right Guided Functions.
- Then select vehicle, transmission and Check ATF level.
- Press -->.

- Start engine.
- Raise vehicle.
- Place drip tray under transmission.
- Press -->.

If a test temperature between 35 ° C and 45 ° C is displayed:

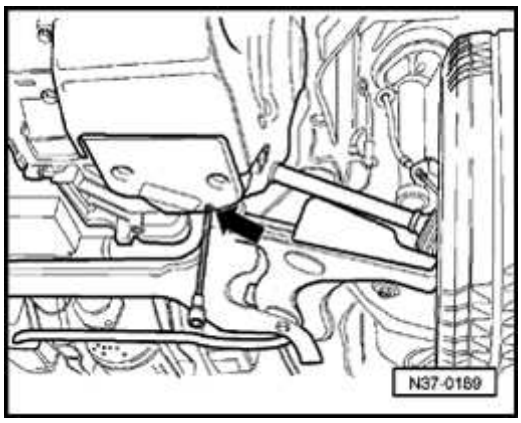

Fig. 99: ATF Level Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF inspection plug from oil pan.

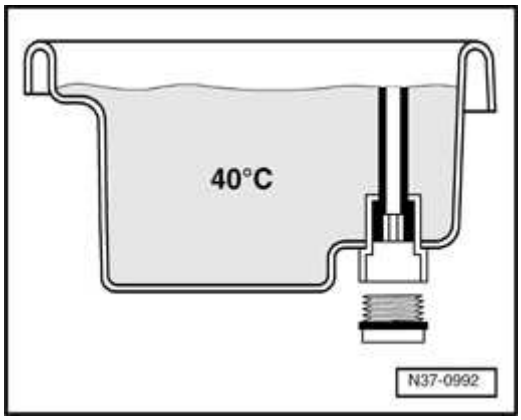

Fig. 100: Example Of Filler Tube As It Is Installed In Transmissions
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The ATF present in the overflow tube runs out.

If ATF drips out of drilling:

ATF does not need topping off.

- Install new seal to plug and tighten to 15 Nm. This completes ATF check.

If no ATF drips out of inspection hole:

- Top off ATF --> **ATF, Topping Off**.

ATF, Topping Off

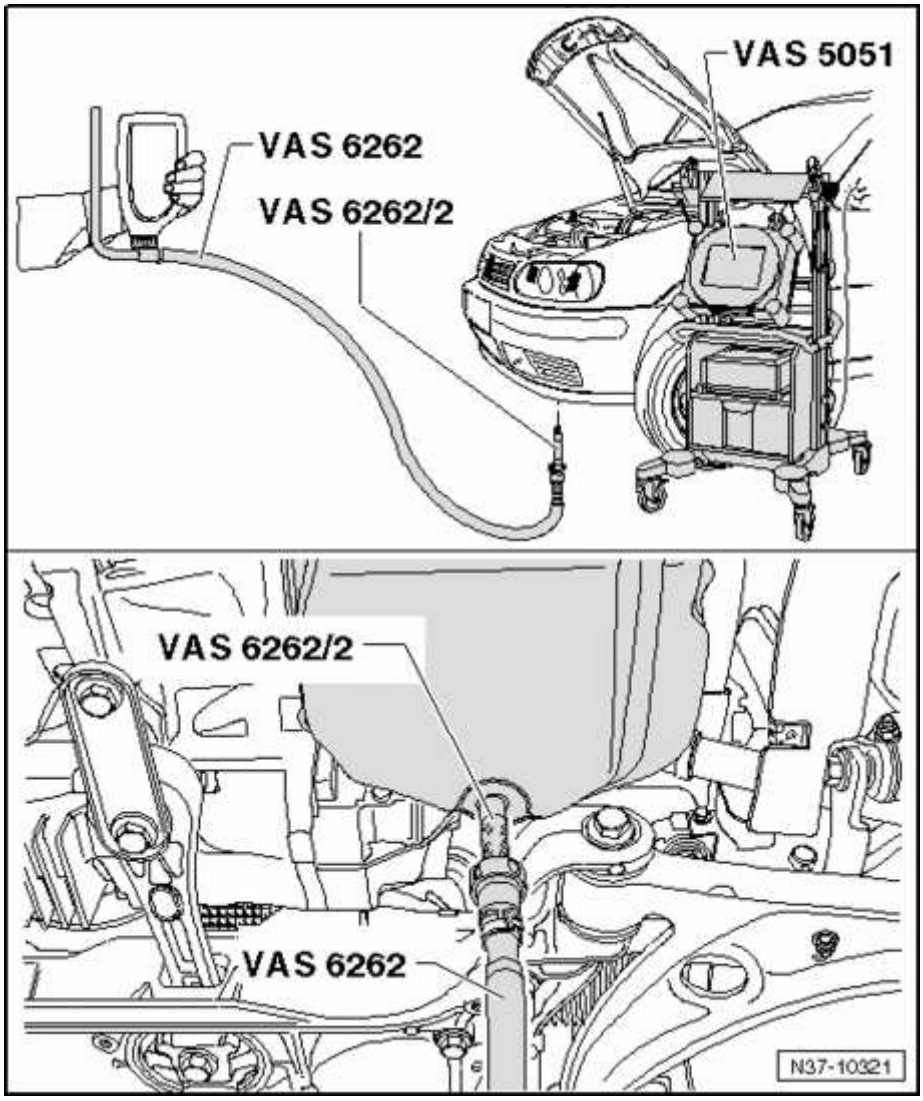

Fig. 101: Topping Off ATF, Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With engine running , install adapter for filling oil VAS 6262/2 hand-tight.
- Add 1 L of ATF.
- Pull off adapter for oil filling VAS 6262 at quick-release connection and check:

If ATF now flows out of hole in adapter:

ATF does not need topping off.

- Drain ATF until it drips.
- Install new seal to plug and tighten to 15 Nm. This completes ATF check.

If no ATF drips out:

- Add another liter --> **ATF, Topping Off**.

CAUTION: An ATF level which is too low or too high will impair the function of the

transmission. But if the transmission was 2 liters low, it must be carefully inspected. There is probably a major leak.

ATF, Draining and Filling

- Switch off engine.

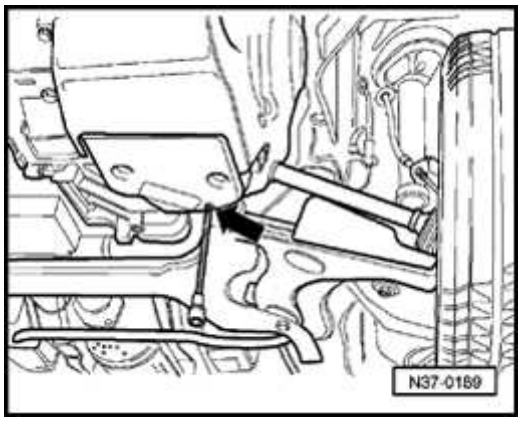

Fig. 102: ATF Level Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF inspection plug from pan - **arrow** -.

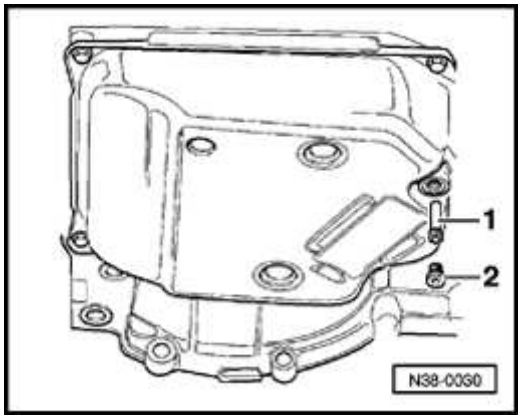

Fig. 103: Identifying ATF Overflow Pipe And Sealing Plug
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove overflow tube - **1** - through inspection hole.
- Drain ATF.
- Install overflow tube.
- Install plug hand-tight.

- Add 3 liters of ATF Electronic Parts Catalog "ETKA" through filler tube.
- Start engine, shift through all selector lever positions with vehicle stationary, leaving selector lever in each position for about 10 seconds.
- Finally, check ATF level and top off --> **ATF Level, Checking and Topping Off**.

38 - AUTOMATIC TRANSMISSION - GEARS, HYDRAULIC CONTROLS

OIL SEAL FOR SELECTOR SHAFT, REPLACING

Special tools, testers and auxiliary items required

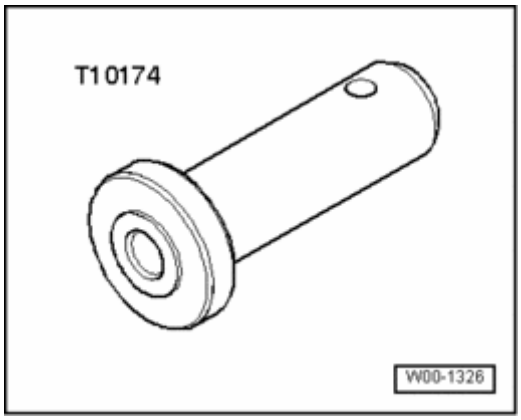

Fig. 104: Thrust Piece T10174
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thrust piece T10174

- Remove Multi-Function Transmission Range (TR) Switch F125.
- Carefully lever out selector shaft seal using a screwdriver. Do not damage selector shaft.

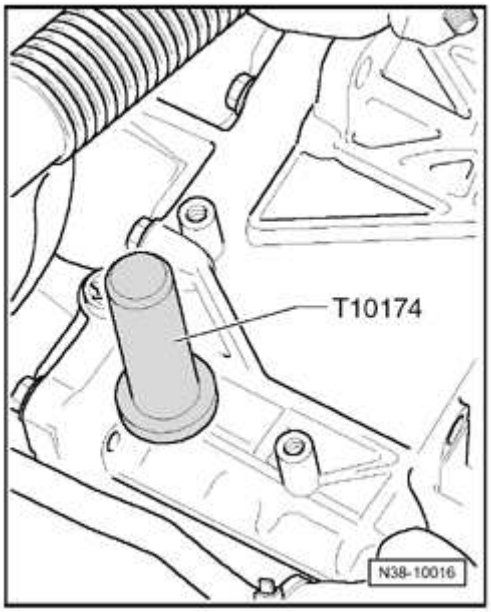

Fig. 105: New Gasket Driven In Until Stop Using Thrust Piece T10174
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drive in new seal to stop with thrust piece - **T10174** - , taking care not to cant seal.
- Adjust Multi-Function Transmission Range (TR) Switch F125.

ATF PAN

ATF Pan

ATF Pan, Removing and Installing --> **ATF Pan, Removing and Installing**

ATF Pan, Removing and Installing

ATF Pan, Removing

ATF Pan, Installing

Special tools, testers and auxiliary items required

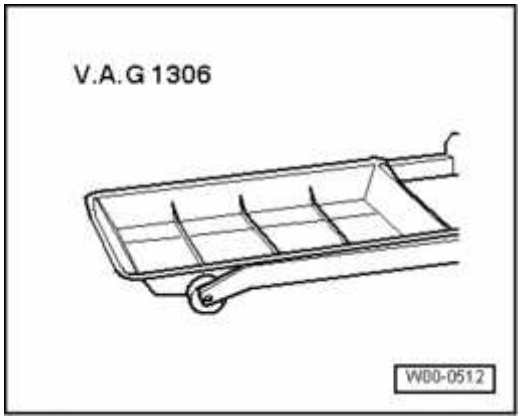

Fig. 106: Drip Tray V.A.G 1306
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drip tray V.A.G 1306

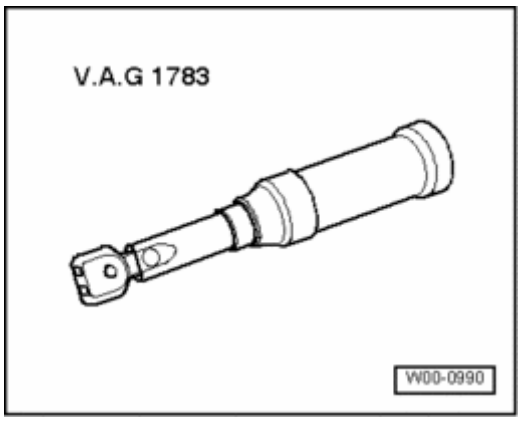

Fig. 107: Torque Wrench V.A.G 1783
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1783

ATF Pan, Removing

- Remove noise insulation below engine.
- Place drip tray V.A.G 1306 underneath.
- Remove ATF inspection plug - **A** -.

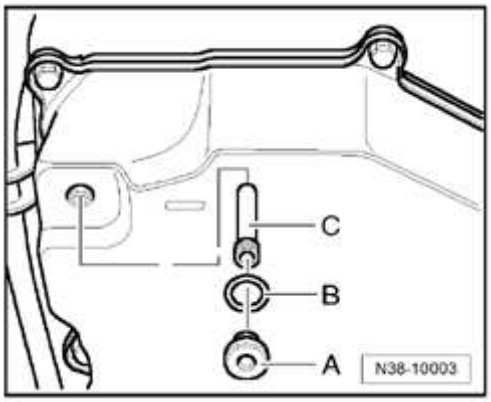

Fig. 108: Identifying Overflow Tube, Check Plug And Sealing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove overflow tube - **C** - and allow remaining ATF to drain.

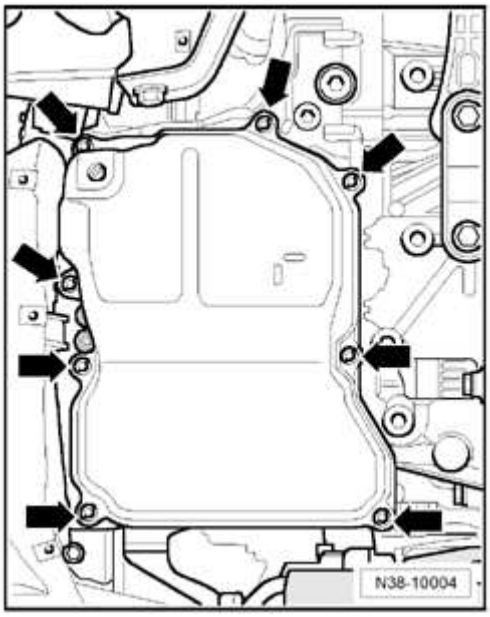

Fig. 109: Locating Oil Pan Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen oil pan bolts - **arrows** - diagonally.
- Remove oil pan together with gasket.

ATF Pan, Installing

Install in reverse order of removal. During this step, observe the following:

- Clean two magnets in recesses of oil pan. Ensure that magnets are seated correctly in pan.
- Install oil pan with new gasket.
- Ensure that oil pan gasket is seated correctly.
- Lines must not become trapped when positioning oil pan.

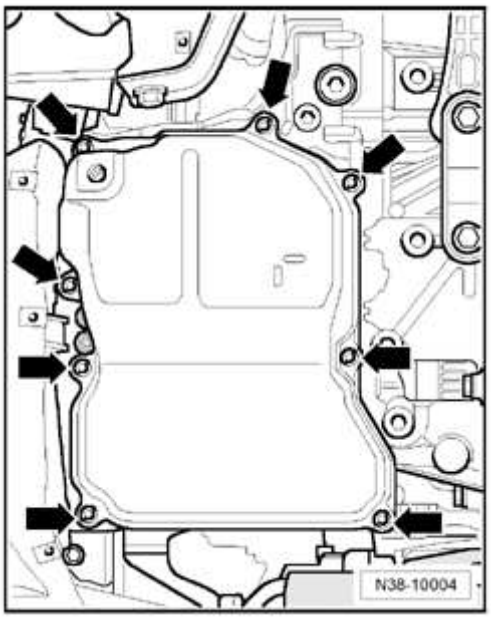

Fig. 110: Locating Oil Pan Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten pan bolts - **arrows** - diagonally in several stages; torque specification.

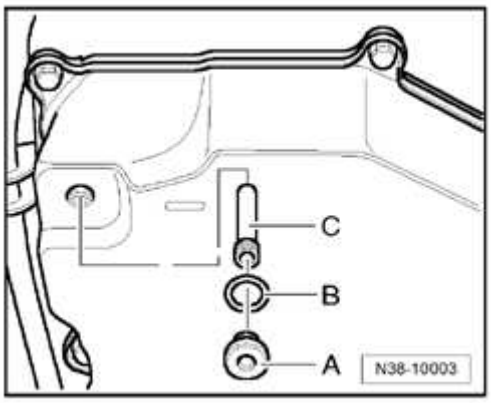

Fig. 111: Identifying Overflow Tube, Check Plug And Sealing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install overflow tube - **C** - ; torque specification.
- Insert seal - **B** - for inspection plug - **A** -.
- Instal inspection plug - **A** - hand-tight with new seal - **B** -.
- Fill with ATF; check ATF level and top off --> **ATF Level, Checking and Topping Off**.

ATF STRAINER

ATF Strainer

ATF Strainer, Removing and Installing --> **ATF Strainer, Removing and Installing**

ATF Strainer, Removing and Installing

ATF Strainer, Removing

ATF Strainer, Installing

ATF Strainer, Removing

- Remove oil pan --> **ATF Pan**.

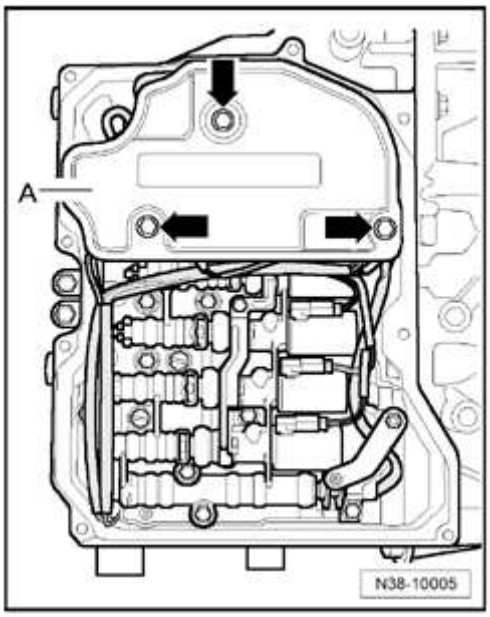

Fig. 112: Oil Filter Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove ATF strainer bolts - **arrows** -.
- Pull ATF strainer - **A** - off valve body.

ATF Strainer, Installing

- Thinly coat seals on intake neck of ATF strainer with ATF.
- The ATF strainer must be replaced if seals are loose or faulty.

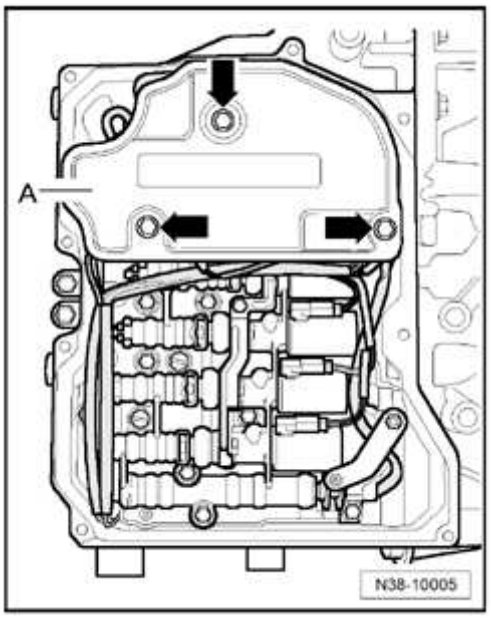

Fig. 113: Oil Filter Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place ATF strainer - **A** - onto valve body and tighten bolts - **arrows** - ; torque specification.
- Install oil pan --> **ATF Pan**.
- Fill with ATF; check ATF level and top off --> **ATF Level, Checking and Topping Off**.

VALVE BODY

Valve Body

Assembly Overview --> **Assembly Overview**

Removing and installing valve body --> **Valve Body, Removing and Installing**.

Wiring Harness with 14-pin Connector, Removing and Installing --> **Wiring Harness with 14-pin Connector, Removing and Installing**

Wiring Harness with 8-pin Connector, Removing and Installing --> **Wiring Harness with 8-pin Connector, Removing and Installing**

Transmission Input Speed (RPM) Sensor G182 , Removing and installing --> **Transmission Input Speed (RPM) Sensor G182 , Removing and installing**

Transmission Output Speed (RPM) Sensor G195 , Removing and Installing --> **Transmission Output Speed (RPM) Sensor G195 , Removing and Installing**

Solenoid valve identification

Sensor identification.

Torque settings

CAUTION: Do not run engine or tow vehicle with pan removed or when there is no ATF in transmission.

- The valve body and wiring harnesses can also be removed when transmission is installed.
- Moisten O-rings with ATF before fitting. Other lubricants lead to malfunction of transmission hydraulics.
- Always replace a valve body which is fouled or faulty.
- Do not use fluffy cloths.
- After pan has been installed, the ATF level must be checked and topped off --> **ATF Level, Checking and Topping Off**.

Assembly Overview

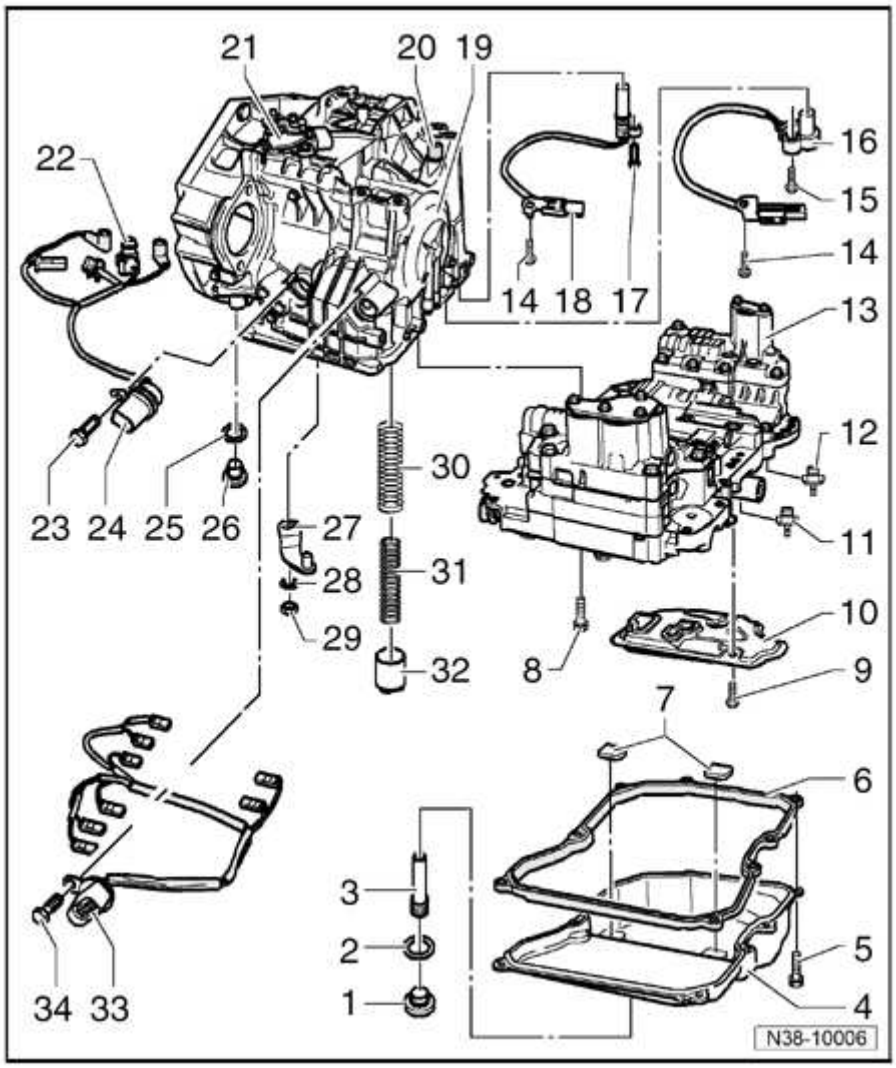

Fig. 114: Valve Body -- Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - ATF inspection plug

- Checking ATF level and topping off --> **ATF Level, Checking and Topping Off**
- Torque setting

2 - Seal

- Always replace

3 - Overflow tube

- Remove to drain ATF
- Torque setting

4 - Oil pan

- Removing and installing --> **ATF Pan**

5 - Bolt

- Tighten oil pan bolts diagonally in several stages
- Torque setting

6 - Seal

- Always replace

7 - Magnet

- Qty. 2 in depressions in pan
- Clean before installing

8 - Bolt

- For securing valve body in transmission
- Qty. 12, various lengths
- Always replace bolts
- Torque setting

9 - Bolt

- Qty. 3
- For securing strainer to valve body
- Torque setting

10 - ATF strainer

- Removing and installing --> **ATF Strainer**

11 - Automatic Transmission Hydraulic Pressure Sensor 1 G193

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"

12 - Automatic Transmission Hydraulic Pressure Sensor 2 G194

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"

13 - Valve body

- Removing and installing --> **Valve Body, Removing and Installing**
- Solenoid valve identification
- Allocation Electronic Parts Catalog "ETKA"

14 - Bolt

- Torque setting

15 - Bolt

- Torque setting

16 - Transmission Input Speed (RPM) Sensor G182

- Removing and installing --> **Transmission Input Speed (RPM) Sensor G182 , Removing and installing**

17 - Bolt

- Torque setting

18 - Transmission Output Speed (RPM) Sensor G195

- Removing and installing --> **Transmission Output Speed (RPM) Sensor G195 , Removing and Installing**

19 - Transmission housing

- Shown without oil cooler here.

20 - Breather cap

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

- Removing and installing --> **Multi-Function Transmission Range (TR) Switch**
- Adjusting --> **Multi-function Transmission Range (TR) switch F125 , adjusting**

22 - Transmission Fluid Temperature Sensor G93

23 - Bolt

- Torque setting

24 - Wiring harness with 8-pin connector

- With O-ring on connector; always replace O-ring
- With Transmission Fluid Temperature Sensor G93
- For sensor G182
- For sensor G195
- For Automatic Transmission Hydraulic Pressure Sensor 1 G193 and Automatic Transmission Hydraulic Pressure Sensor 2 G194
- Sensor locations
- Removing and installing --> **Wiring Harness with 8-pin Connector, Removing and Installing**
- Allocation Electronic Parts Catalog "ETKA"

25 - Seal

- Always replace

26 - ATF drain plug

- Torque setting

27 - Selector lever

- For selector shaft
- Removing and installing --> **Valve Body, Removing and Installing**

28 - Washer

29 - Nut

- Note nut installation position
- Torque setting

30 - Large spring

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"

31 - Small spring

32 - Damper piston

33 - Wiring harness with 14-pin connector

- With O-ring on connector; always replace O-ring
- For solenoid valves
- Solenoid valve locations and wiring harness routing
- Removing and installing --> **Wiring Harness with 14-pin Connector, Removing and Installing**

34 - Bolt

- Torque setting

Torque settings

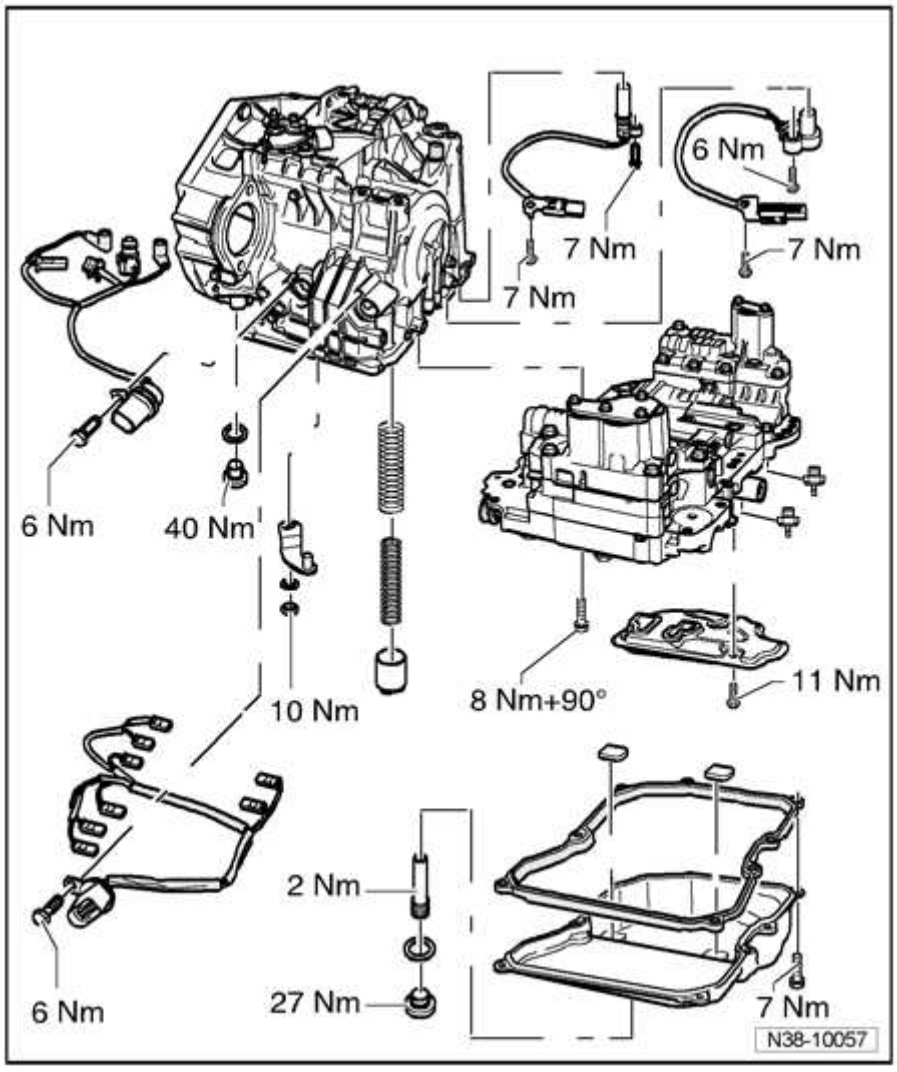

Fig. 115: Valve Body -- Torque Specifications
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Solenoid valve identification

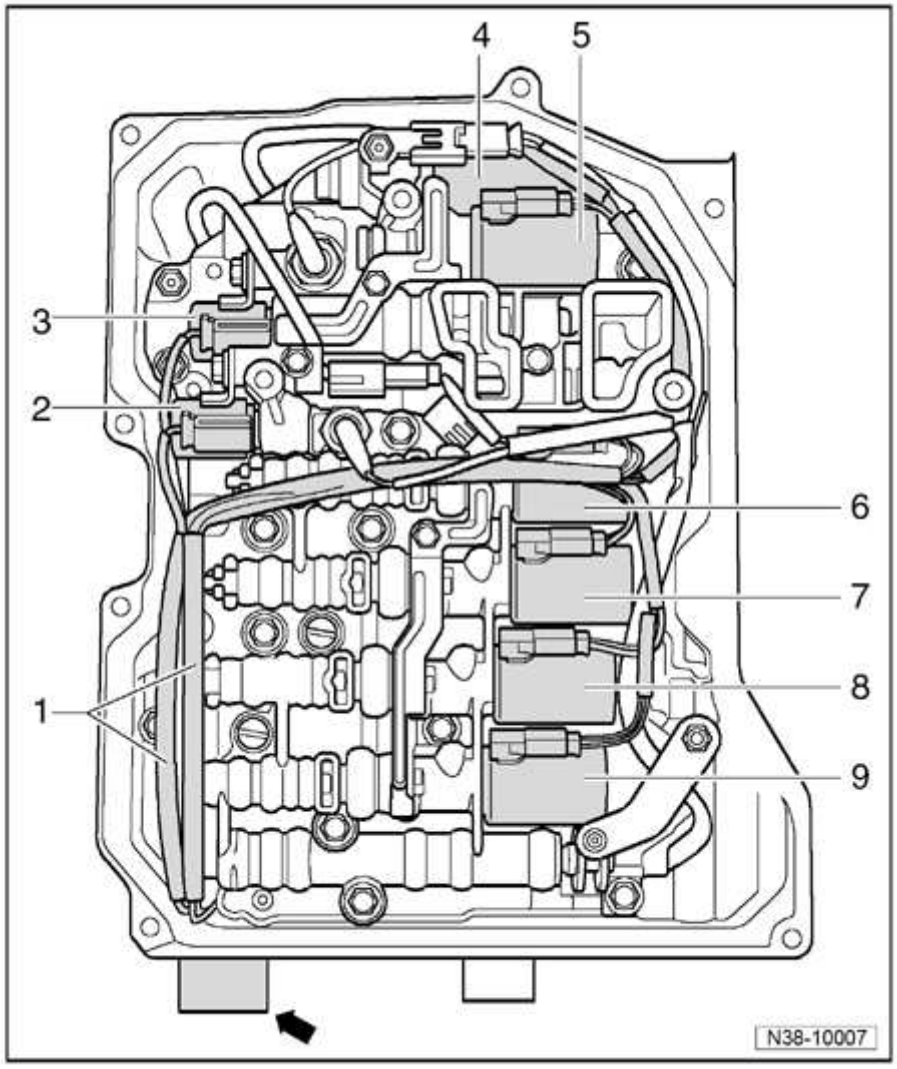

Fig. 116: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Wiring harness for solenoid valves with 14-pin connector - **arrow** -

- Removing and installing --> **Wiring Harness with 14-pin Connector, Removing and Installing**

2 - Solenoid valve 1 N88

3 - Solenoid valve 2 N89

4 - Solenoid valve 4 N91

5 - Solenoid valve 6 N93

6 - Solenoid valve 5 N92

7 - Solenoid valve 9 N282

8 - Solenoid valve 10 N283

9 - Solenoid valve 3 N90

Sensor identification

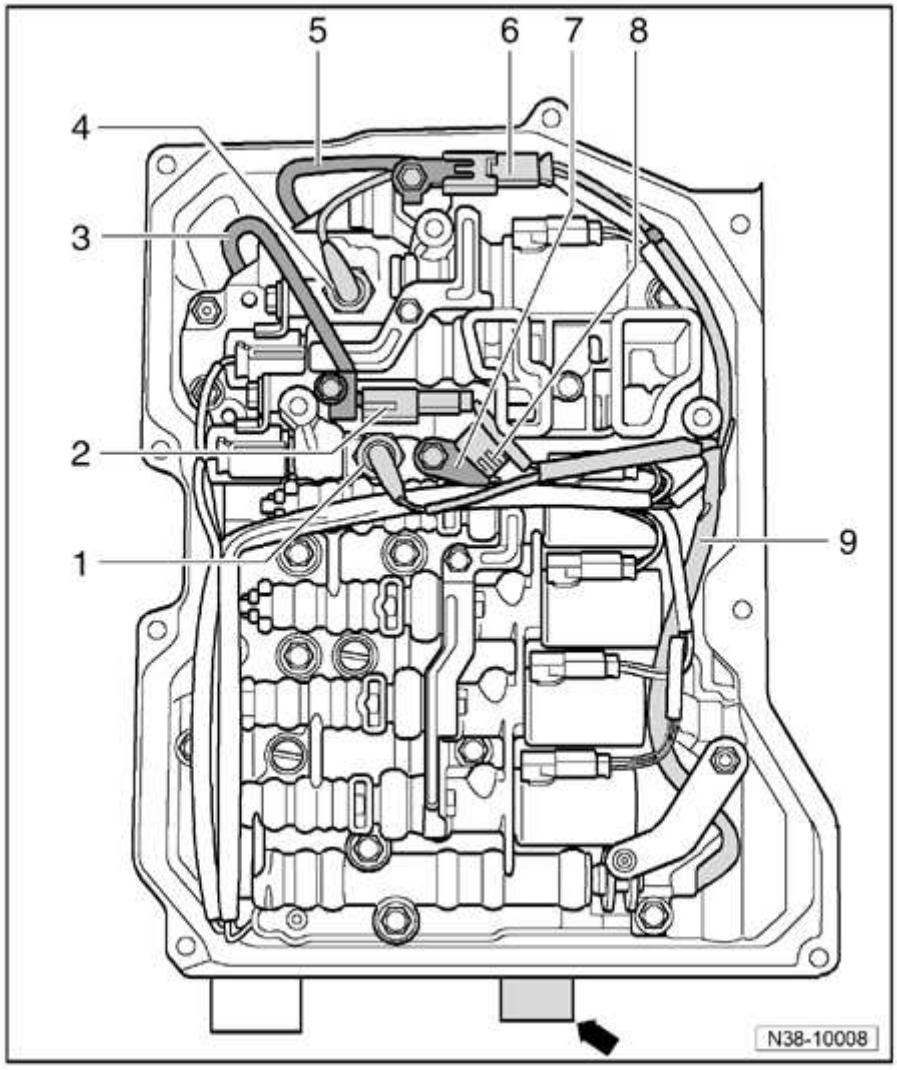

Fig. 117: Identification Of Sensors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Automatic Transmission Hydraulic Pressure Sensor 1 G193

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"

2 - Connector to Transmission Input Speed (RPM) Sensor G182

3 - Wire on Transmission Input Speed (RPM) Sensor G182

4 - Automatic Transmission Hydraulic Pressure Sensor 2 G194

- Not installed in all transmissions
- Allocation Electronic Parts Catalog "ETKA"

5 - Wire on Transmission Output Speed (RPM) Sensor G195

6 - Connector to Transmission Output Speed (RPM) Sensor G195

7 - Bracket for Transmission Fluid Temperature Sensor G93

8 - Transmission Fluid Temperature Sensor G93

9 - Wiring harness for sensor with 8-pin connector - **arrow** -

- Removing and installing --> **Wiring Harness with 8-pin Connector, Removing and Installing**

Valve Body, Removing and Installing

Special tools, testers and auxiliary items required

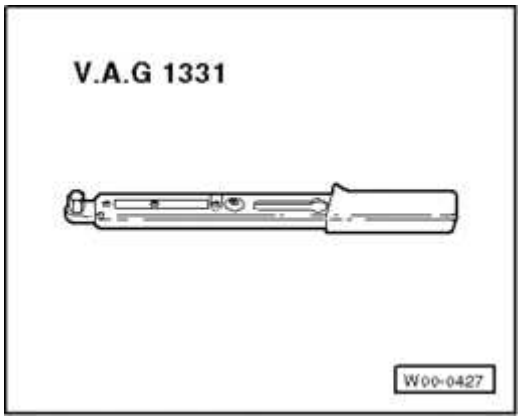

Fig. 118: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

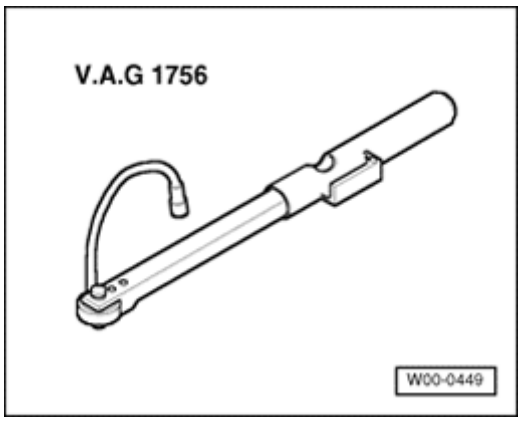

Fig. 119: Angle Wrench V.A.G 1756
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Angle wrench V.A.G 1756

Valve Body, Removing

- First check whether a coded radio is installed. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery Ground (GND) cable --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .
- Remove oil pan --> **ATF Pan**.
- Remove ATF strainer --> **ATF Strainer**.

- Draw a sketch of all sensors and solenoid valves with their respective connectors analogous to figure.
- Before separating connectors at sensors and solenoid valves, solenoid valve or sensor and respective connector must be identified.

CAUTION: This sketch and identification are absolutely vital to prevent inadvertently interchanging sensor and solenoid valve when reinstalling valve body.

Under certain circumstances, interchanging connectors may lead to destruction of the transmission.

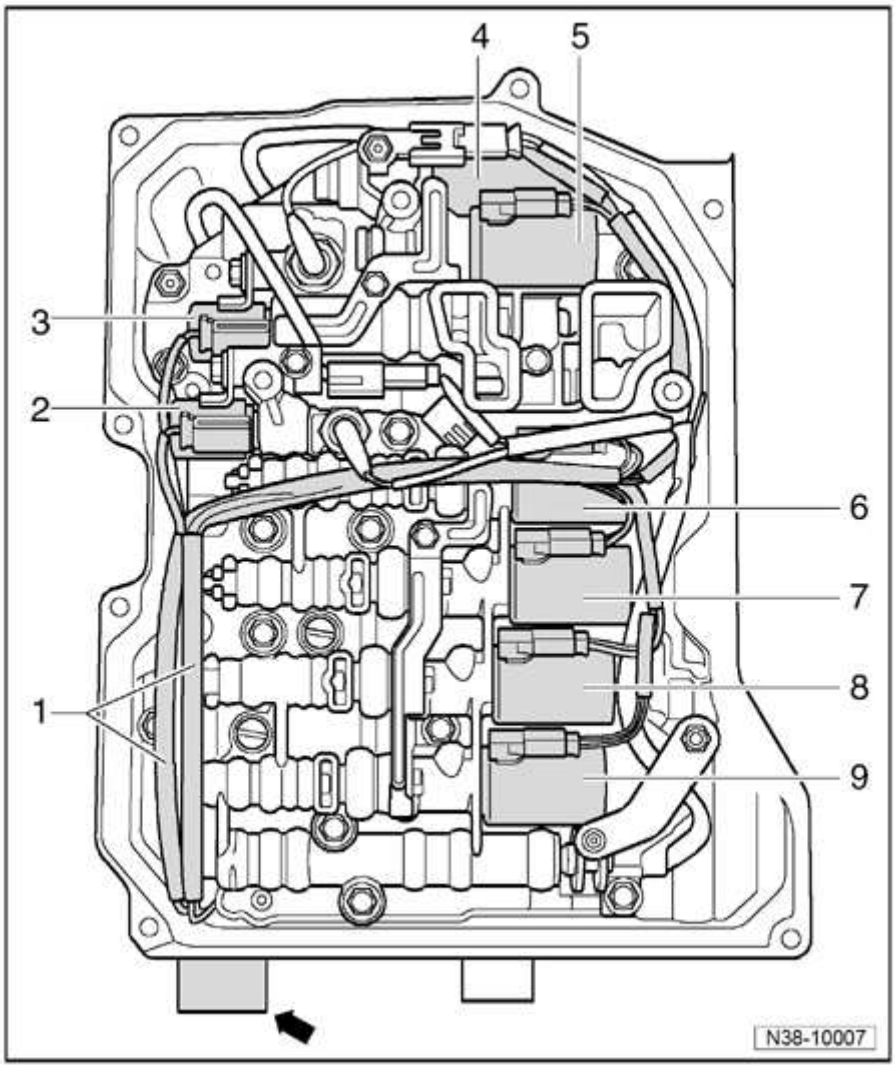

Fig. 120: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using a small screwdriver, lever out retaining tabs on solenoid valve connectors - **2** - to - **9** - and pull off connectors.

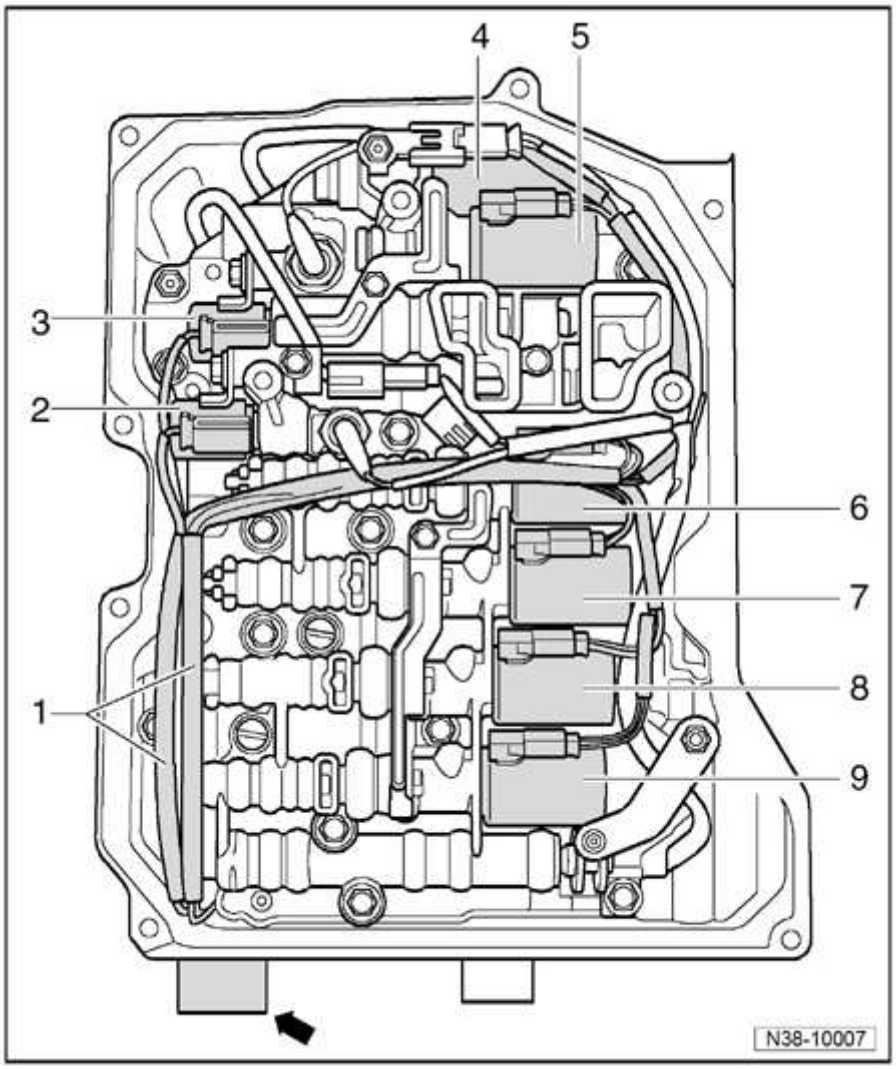

Fig. 121: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If a connector is damaged, the wiring harness or valve body together with solenoid valves must be replaced.
- Remove connectors from automatic transmission hydraulic pressure sensors - **1** - and - **4** -.

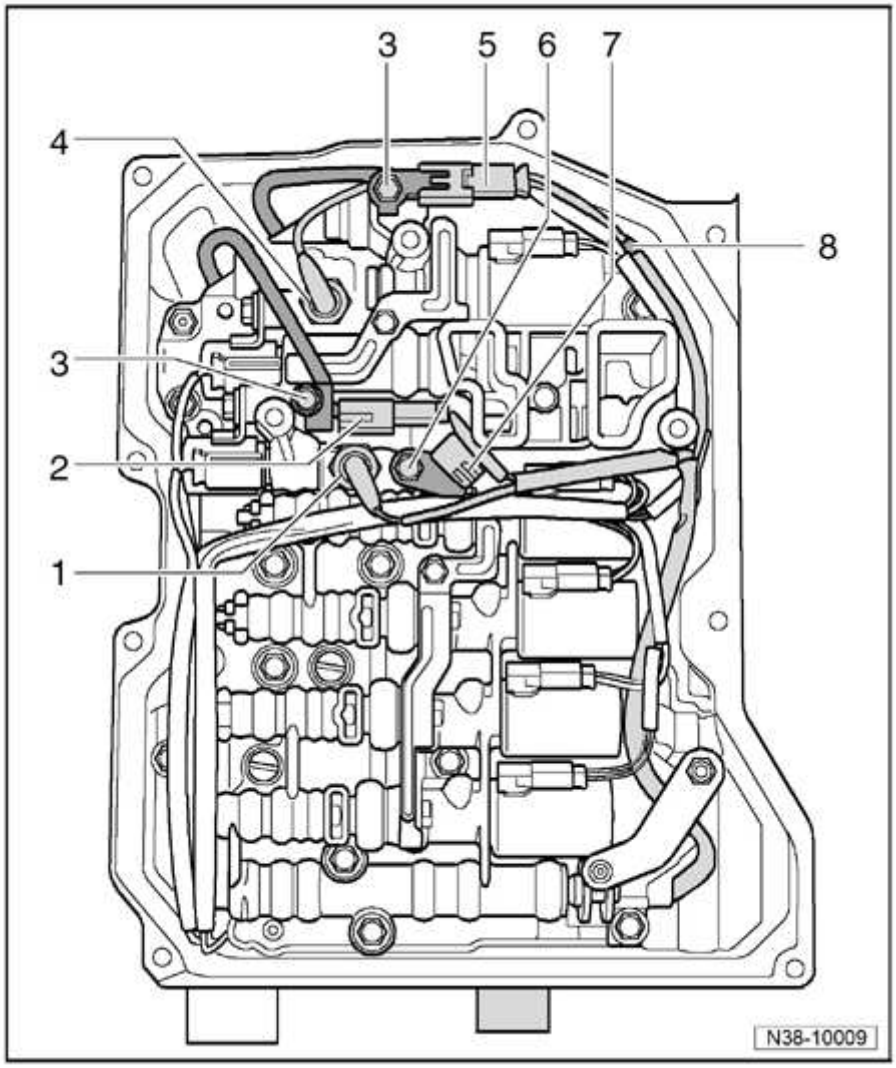

Fig. 122: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate connectors - **2** - and - **5** -.

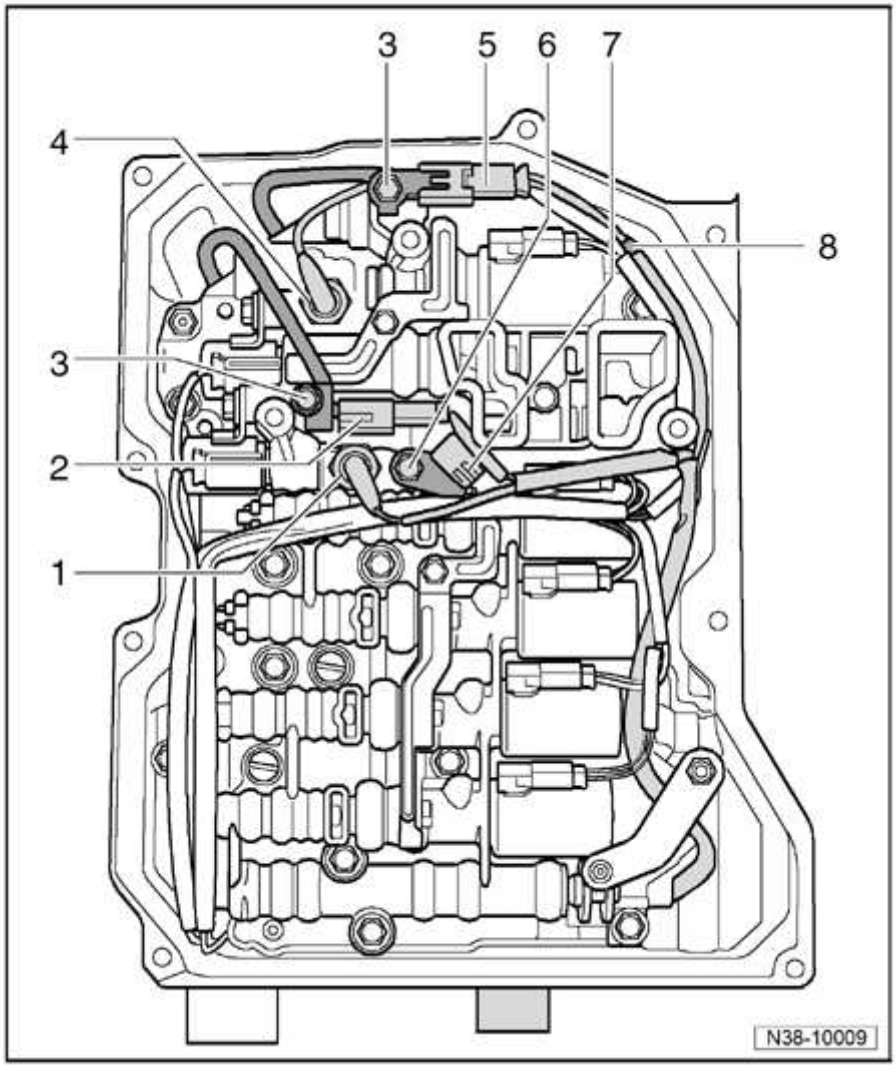

Fig. 123: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bracket bolts - **3** -.
- If a connector is damaged, the wiring harness or Transmission Input Speed (RPM) Sensor G182 or Transmission Output Speed (RPM) Sensor G195 must be replaced.
- Remove bolt - **6** -.
- For reinstallation, note bracket fastening on ATF temperature sensor G93 - **7** -.

- Carefully pull ATF temperature sensor G93 - **7** - out of valve body together with bracket.
- Detach wiring harness from bracket - **8** -.

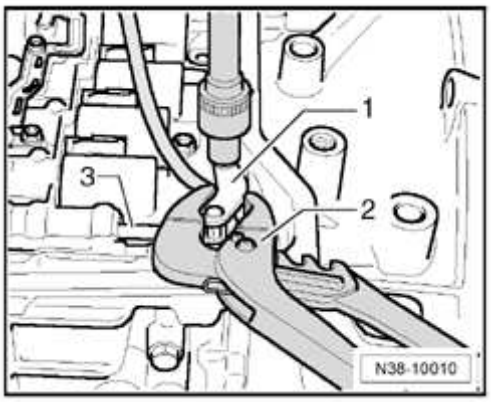

Fig. 124: Remove/Install Selector Lever On Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove selector lever - **1** - from selector shaft.
- In the process, carefully grip transmission selector lever - **1** - with pliers - **2** - so that torque is not transferred to Multi-Function Transmission Range (TR) Switch F125.
- Note spool valve - **3** - on valve body into which selector lever engages so that this is not damaged.

The bolts are of different lengths and must be replaced.

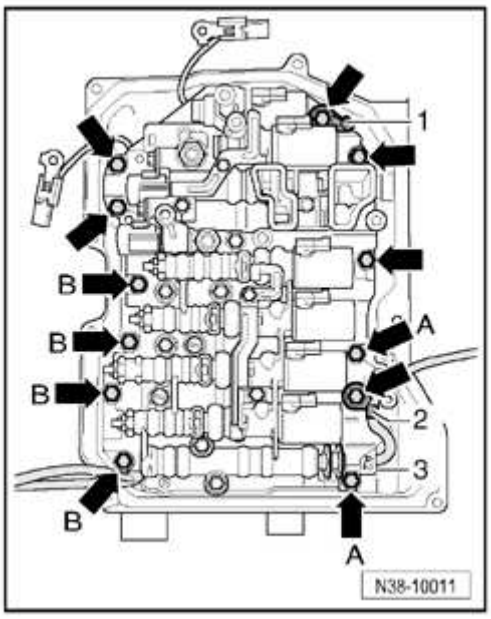

Fig. 125: Identifying Valve Body Bolts To Be Loosened
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Only identified securing bolts - **arrows** - may be loosened.

If other bolts are loosened, the function of the valve body is impeded or the valve body falls to pieces.

- Loosen valve body fastening bolts - **arrows** - , - **arrows A** - and - **arrows B** - diagonally and carefully remove valve body.
- Remove brackets - **1** - and - **2** -.

- **3** - valve body designation, e.g. A2 in this case.

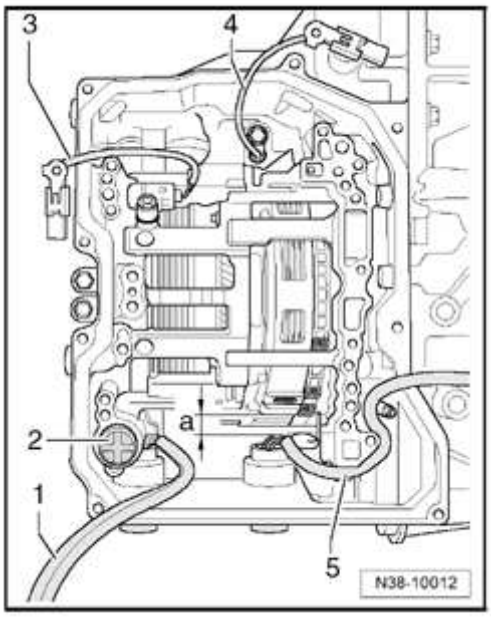

Fig. 126: Valve Body Wiring Harness And Damping Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When removing valve body, secure damper piston - **2** - to prevent it from falling out or remove together with the two springs if necessary.

Valve Body, Installing

- Routing of wires must be noted precisely to prevent them from being trapped when valve body is positioned.

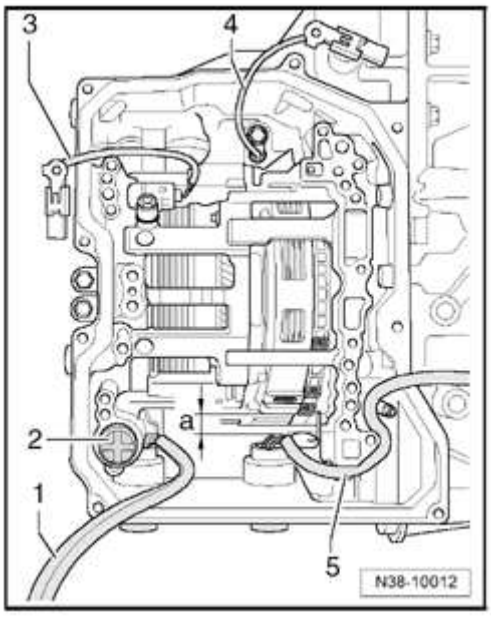

Fig. 127: Valve Body Wiring Harness And Damping Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Route wiring harness - **5** - in specified recess in transmission according to figure.

The distance - **a** - must be maintained to prevent wiring harness - **5** - from coming into contact with planetary transmission and thereby becoming damaged during vehicle operation.

- Route wiring harnesses - **1** - , - **3** - , - **4** - and - **5** - over edge of transmission according to figure.
- Secure wiring harnesses to transmission with adhesive tape.
- Ensure that damper piston - **2** - is installed in transmission in position shown.
- If damper piston - **2** - has been removed, it must be cleaned together with two springs and installed in accordance with , and.

- Coat damper piston - **2** - and mounting in transmission with ATF.
- Insert springs into one another and insert into damper piston.
- Insert damper piston with springs into mounting in transmission.
- To prevent damper piston from falling out, press it, if necessary, into transmission until valve body is positioned.

- Do not use force to position valve body.

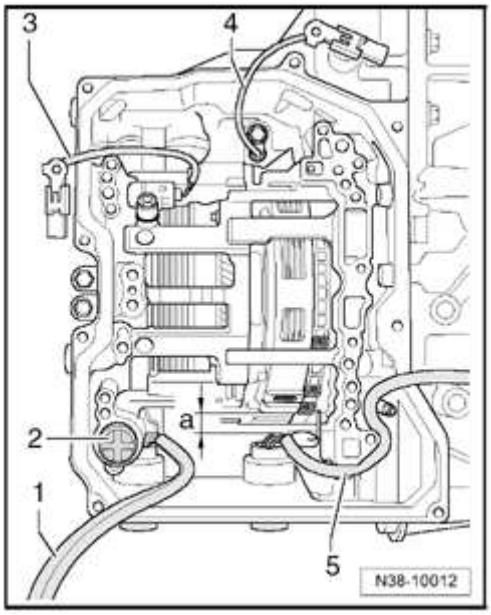

Fig. 128: Valve Body Wiring Harness And Damping Plunger
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ensure that wiring harnesses - **1** - , - **3** - , - **4** - and - **5** - are not trapped by valve body.

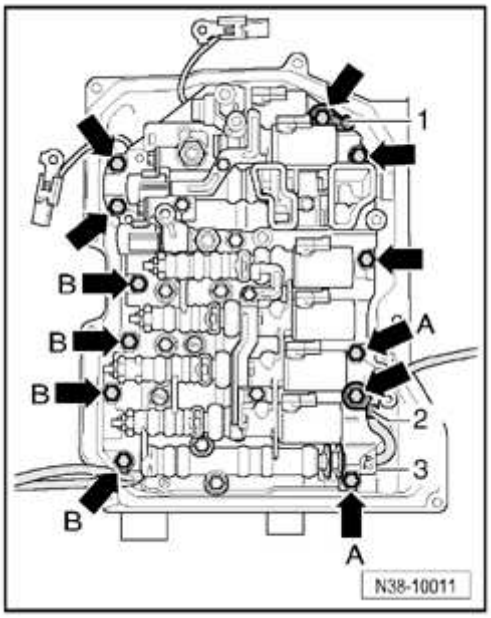

Fig. 129: Identifying Valve Body Bolts To Be Loosened
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- All bolts - **arrows** - for securing valve body must be inserted.
- Note the different bolt lengths:

Bolts - **arrows** -	M 6x21
Bolts - **arrows A** -	M 6x16
Bolts - **arrows B** -	M 6x28

- Tighten brackets - **1** - and - **2** - for wiring harness hand-tight with new bolts.
- Tighten remaining, new bolts for valve body - **arrows** - , - **arrows A** - and - **arrows B** - hand-tight.

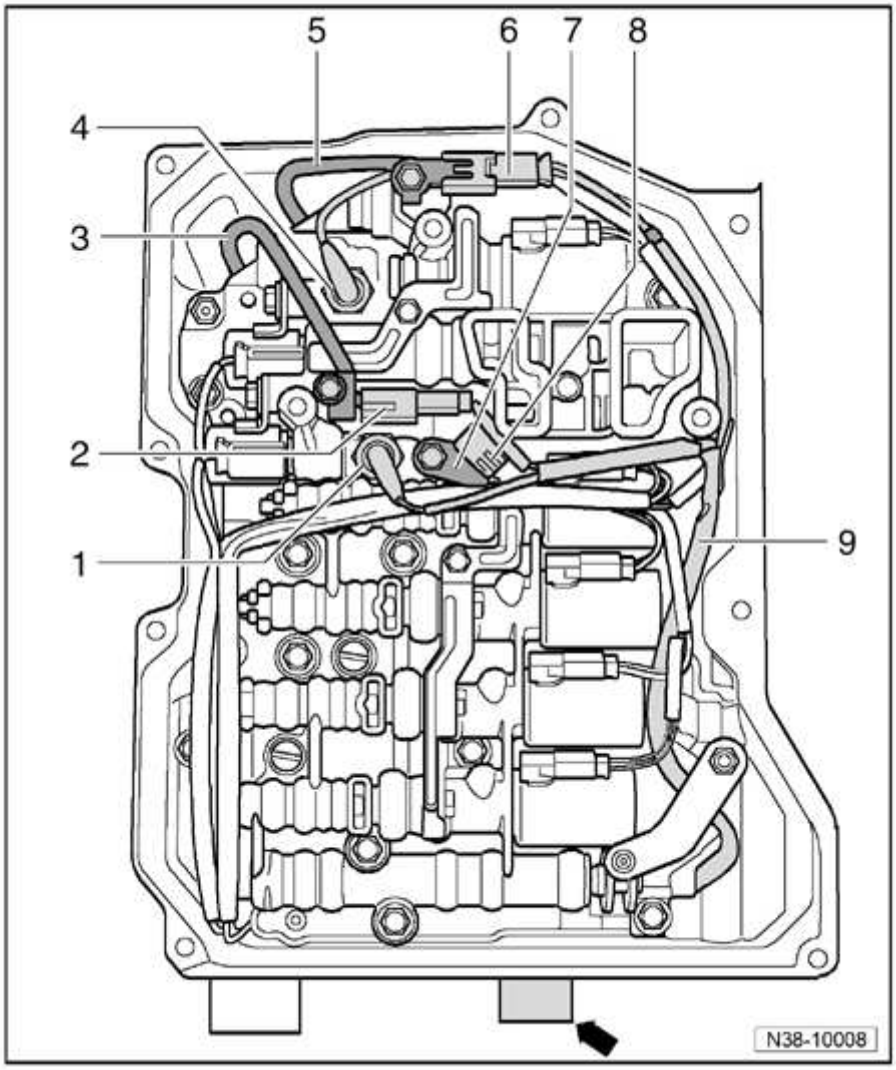

Fig. 130: Identification Of Sensors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If lines - **3** - , - **5** - and - **9** - are too short to be connected to sensors or bolted to intended points on valve body, they have been incorrectly routed or trapped by valve body. Remove valve body again and route cables correctly.

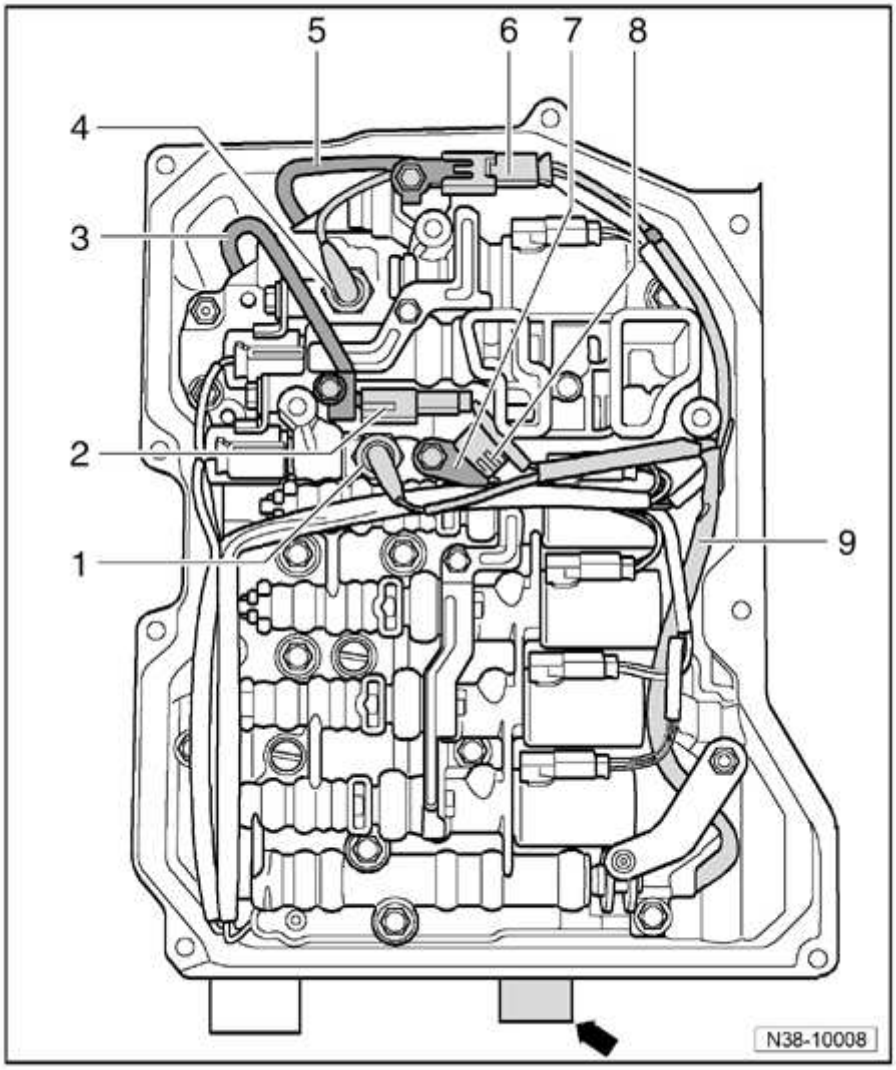

Fig. 131: Identification Of Sensors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ensure that none of the wires - **3** - , - **5** - and - **9** - is trapped.

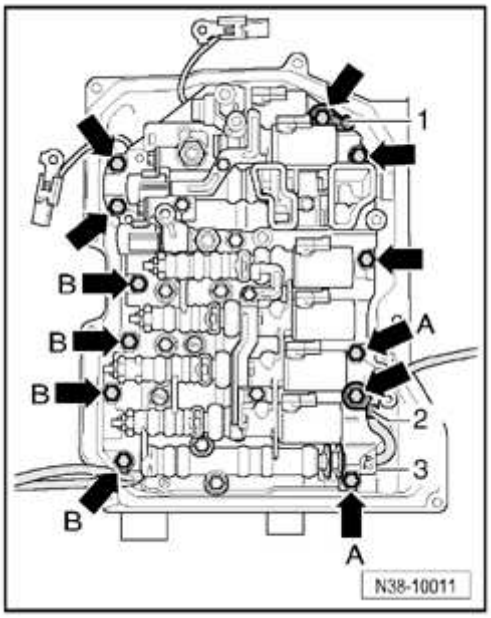

Fig. 132: Identifying Valve Body Bolts To Be Loosened
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten new bolts - **arrows** - , - **arrows A** - and - **arrows B** - from inside to outside to specified torque.

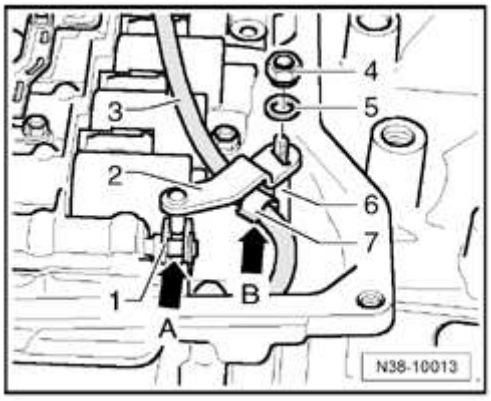

Fig. 133: Identifying Wiring Harness, Bracket, Selector Lever And Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach wiring harness - **3** - to bracket - **7** - - **arrow B** -
- Place selector lever - **2** - onto selector shaft - **6** -.

Ensure that selector lever pin - **2** - engages in spool valve - **1** - - **arrow A** -. If necessary, position spool valve accordingly.

- Set washer - **5** - and nut - **4** - on selector shaft - **6** -.

Centering collar of nut must face washer and run into washer on tightening.

Wiring harness must be routed beneath selector lever.

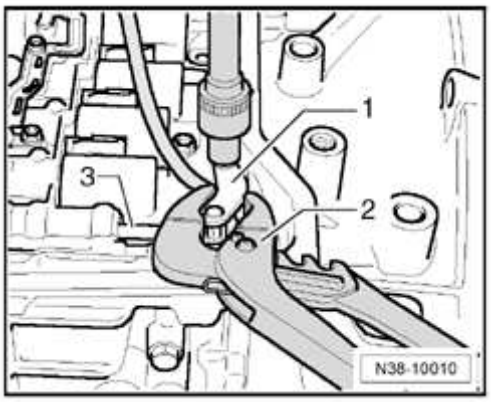

Fig. 134: Remove/Install Selector Lever On Selector Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Tighten selector lever nut - **1** - to specified torque.
- In the process, carefully grip transmission selector lever - **1** - with pliers - **2** - so that torque is not transferred to Multi-Function Transmission Range (TR) Switch F125.
- Note spool valve - **3** - on valve body into which selector lever engages so that this is not damaged.

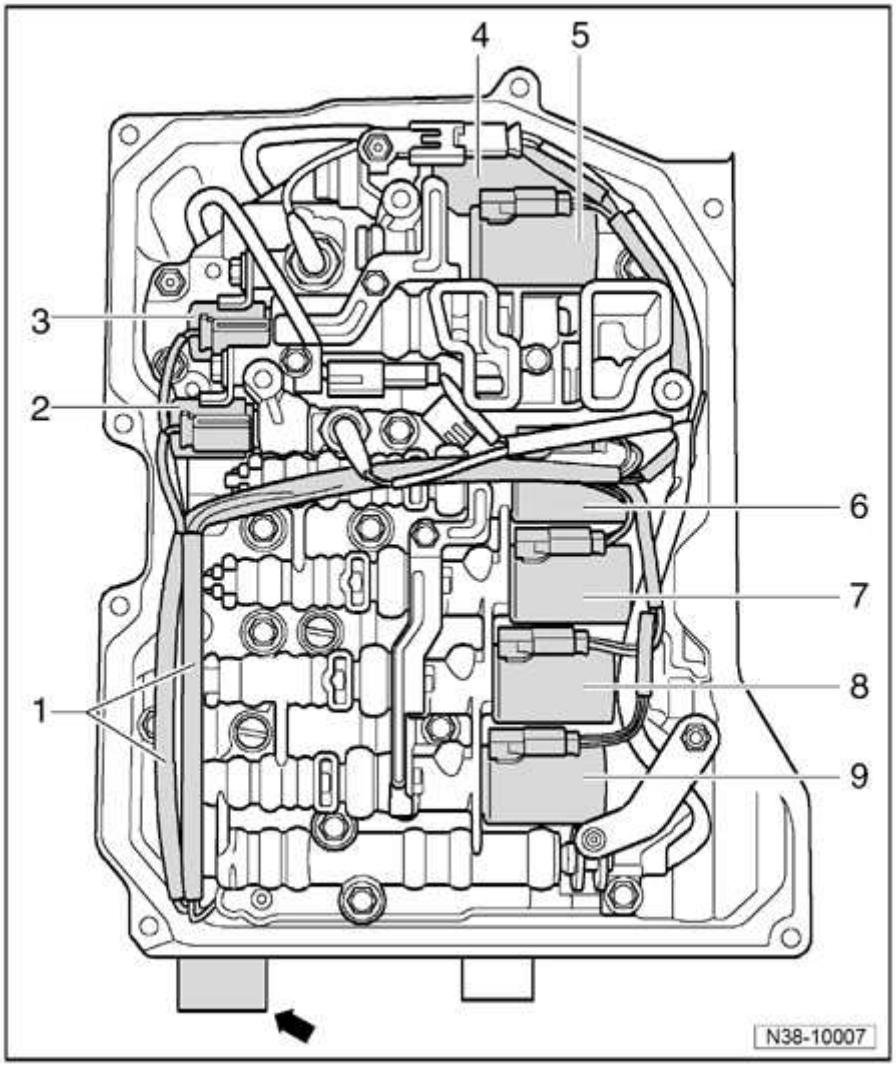

Fig. 135: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Join connectors to solenoid valves - **2** - to - **9** - according to identifying marks which you have previously made.

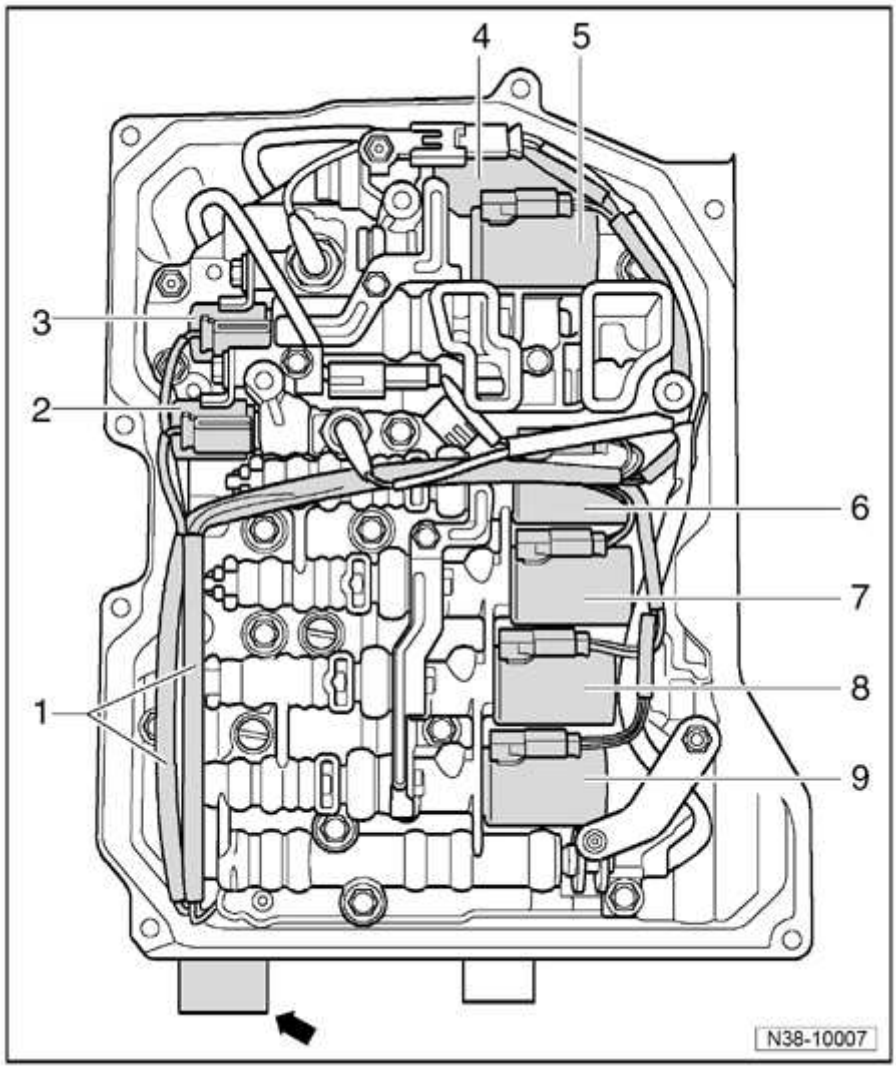

Fig. 136: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

CAUTION: Under certain circumstances, interchanging connectors may lead to destruction of the transmission.

If a connector is damaged, the wiring harness or the valve body together with the solenoid valves must be replaced.

- Route wiring harness - **1** - as shown in figure.

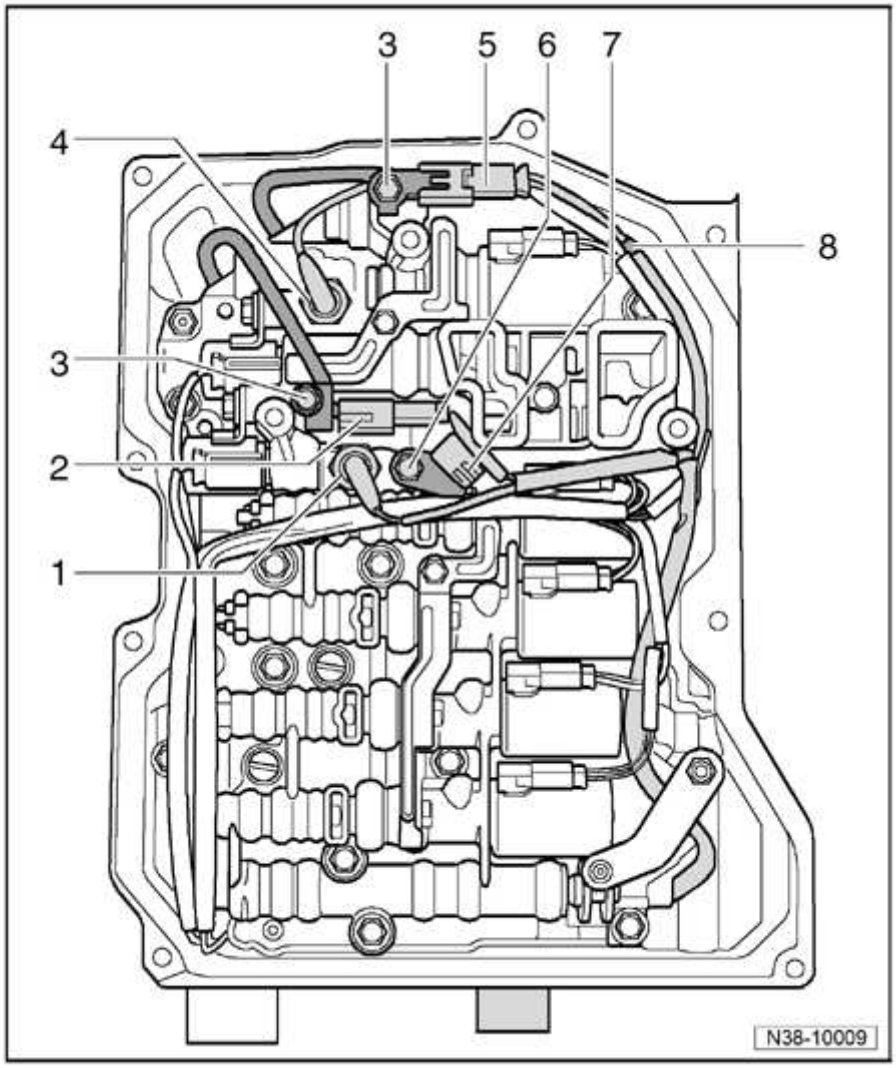

Fig. 137: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Join connectors - **2** - and - **5** -.

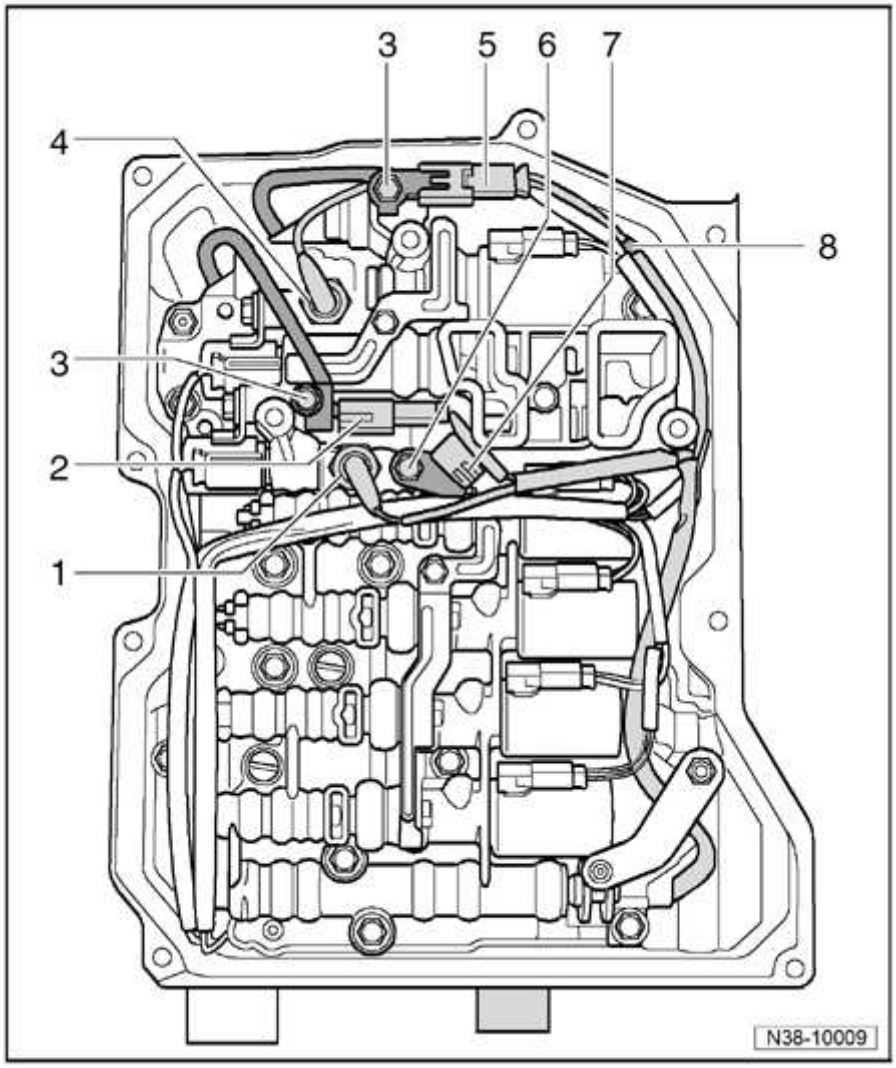

Fig. 138: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The mating part of connectors must bear the same identification as respective connector itself.

- Place bracket onto ATF temperature sensor G93 - **7** -.
- Insert ATF temperature sensor G93 in valve body together with bracket.
- Tighten bolt - **6** - to specified torque.
- Join connectors to automatic transmission hydraulic pressure sensors - **1** - and - **4** -.
- Tighten bolts - **3** - for connector retainers - **2** - and - **5** - ; torque specifications.

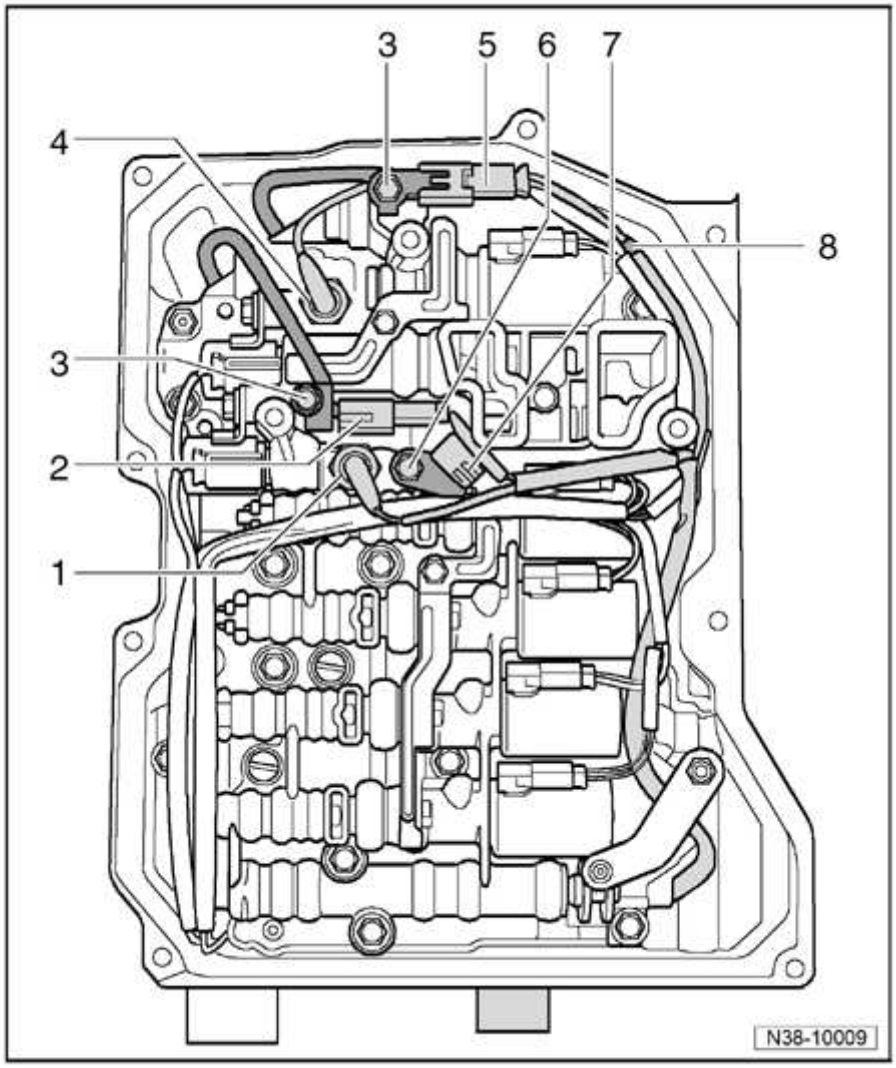

Fig. 139: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If cables are too short to be bolted on, they have been incorrectly routed or trapped by the valve body. Remove valve body again and route cables correctly.

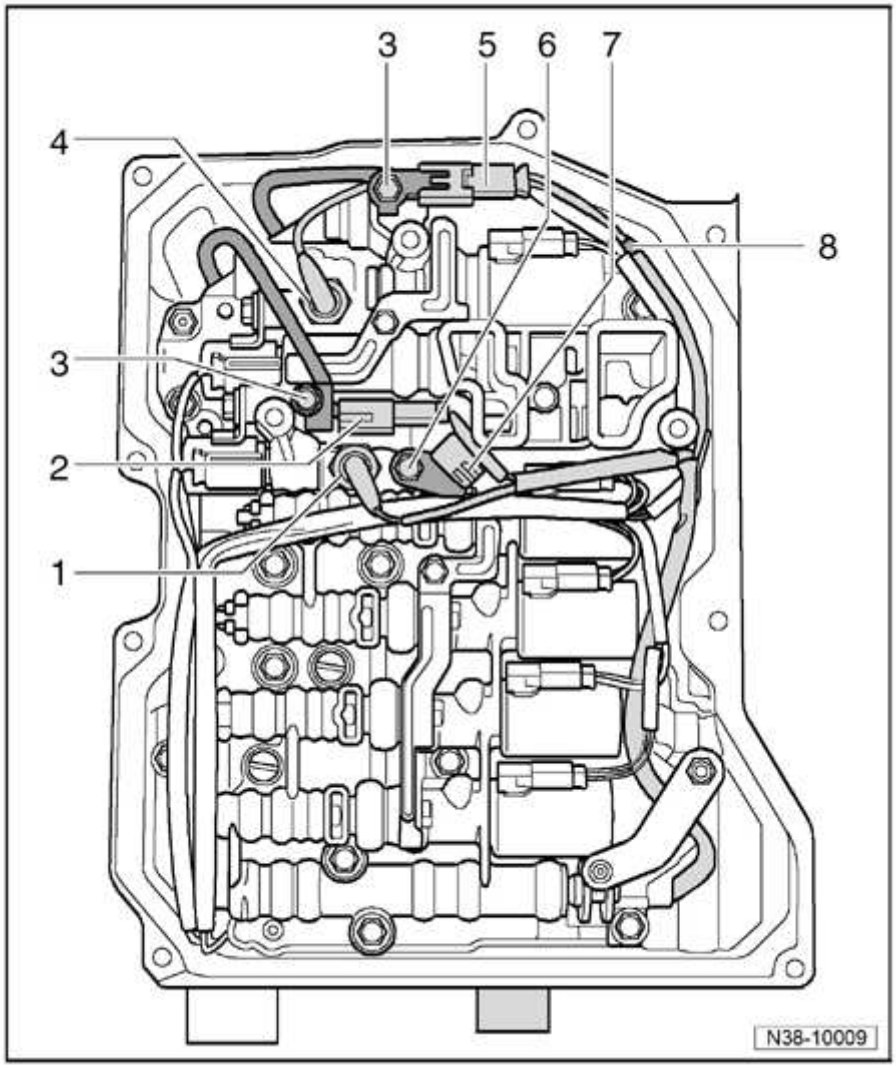

Fig. 140: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach wiring harness to retainer - **8** - and route it as shown in figure.
- Install ATF strainer --> **ATF Strainer**.
- Install oil pan --> **ATF Pan**.
- With ignition switched off, connect battery Ground (GND) cable --> **27 - STARTER, GENERATOR, CRUISE CONTROL** .

- Fill with ATF; check ATF level and top off --> **ATF Level, Checking and Topping Off**.
- Connect VAS 5051 and continue to advance until "Function/component selection" is displayed.
- Then press "Drive (Repair group 01; 10...26; 28...39)".
- Then "6-speed automatic transmission 09G".

- Press "01 - Self-diagnosis".
- Press "Functions".
- Press "Basic setting".

Wiring Harness with 14-pin Connector, Removing and Installing

Wiring Harness with 14-pin Connector, Removing

- Remove oil pan --> **ATF Pan**.
- Remove ATF strainer --> **ATF Strainer**.
- Draw a sketch of all sensors and solenoid valves with their respective connectors analogous to figure.
- Before separating connectors at solenoid valves, solenoid valve and respective connector must be identified.

CAUTION: This sketch and identification are absolutely vital to prevent inadvertently interchanging sensor and solenoid valve connector when reinstalling the wiring harness.

Under certain circumstances, interchanging connectors may lead to destruction of the transmission.

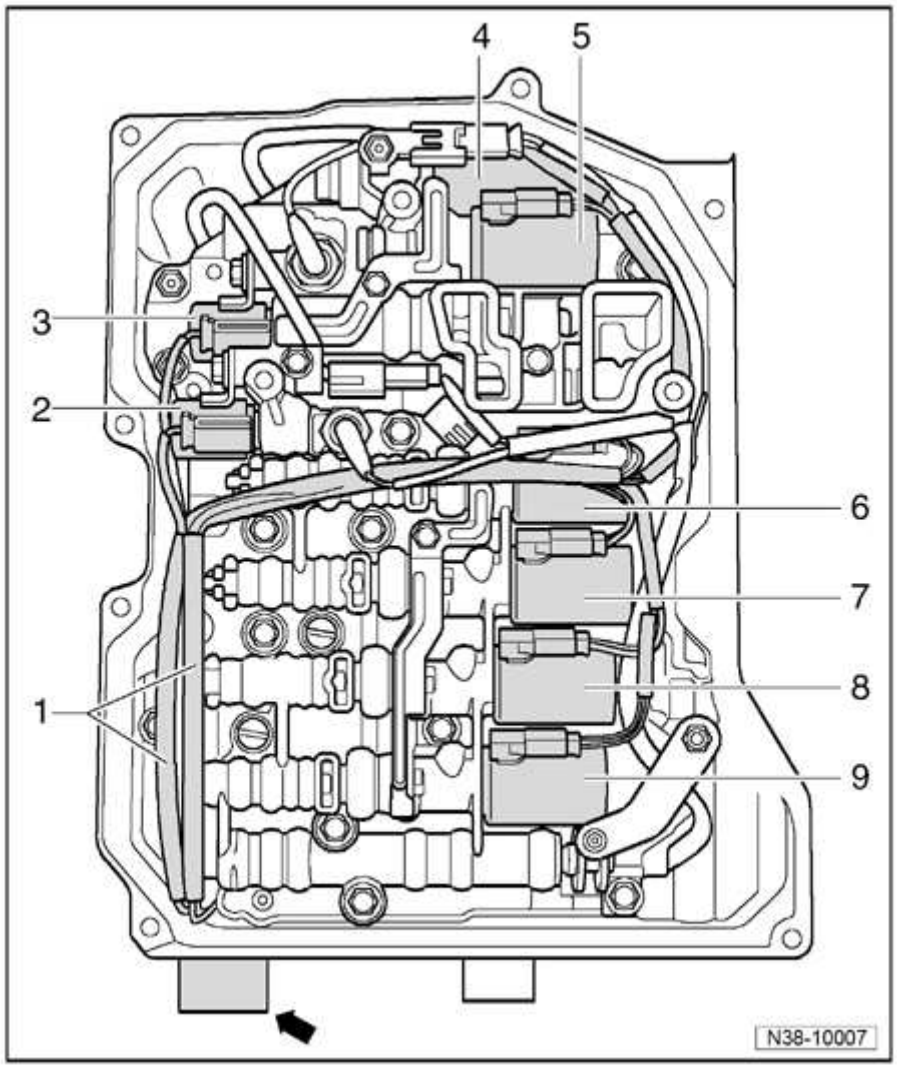

Fig. 141: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Using a small screwdriver, pry out retaining tabs on solenoid valve connectors - **2** - to - **9** - and pull off connectors.

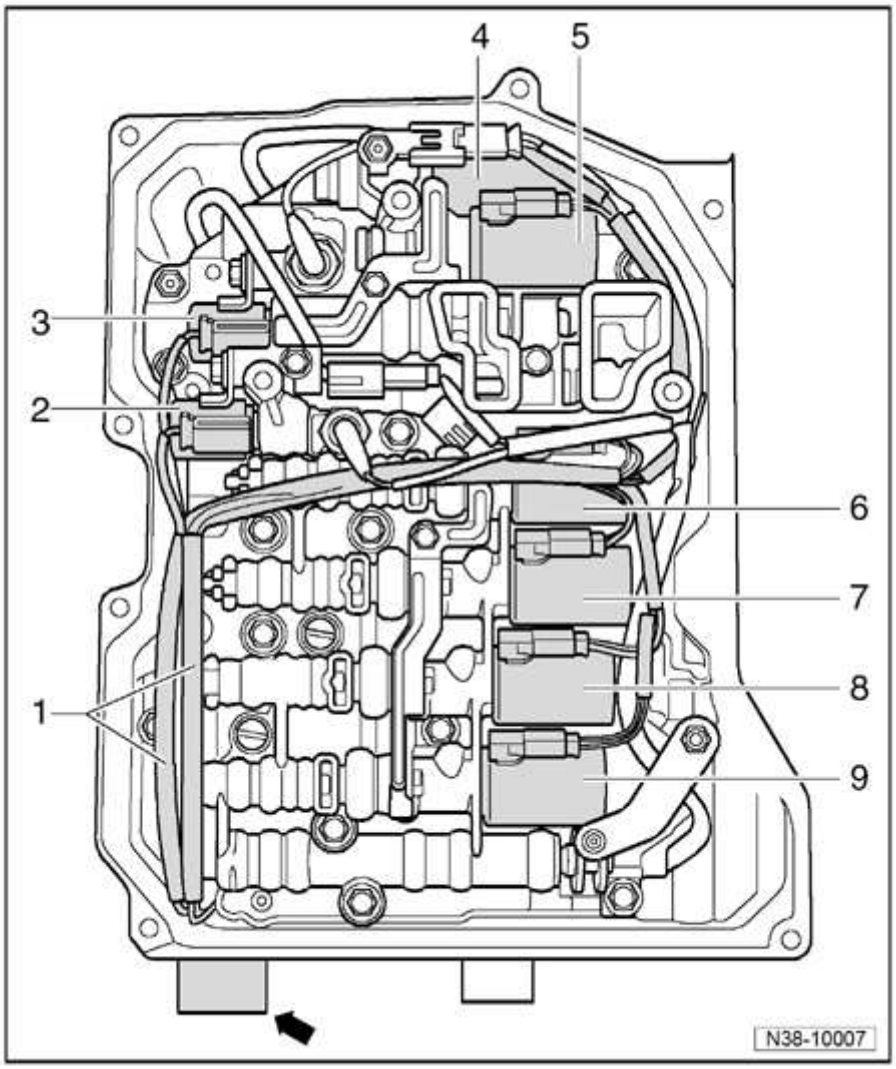

Fig. 142: Identification Of Solenoid Valves
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If a connector is damaged, the wiring harness or valve body together with solenoid valves must be replaced.

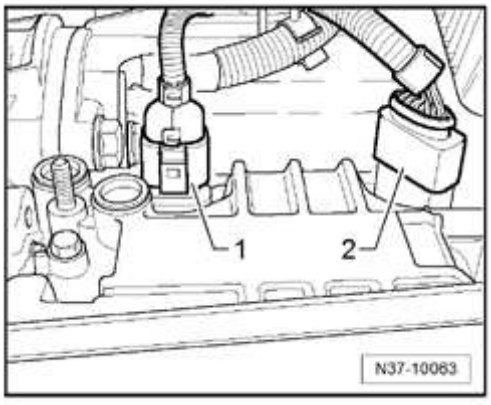

Fig. 143: Identifying 8-Pin G68 and 14-Pin G93 Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull connector - **2** - from transmission connector.
- Remove bolt for 14-pin transmission connector.
- Pull connector and wiring harness outwards out of transmission housing.

Wiring Harness with 14-pin Connector, Installing

Install in reverse order of removal. During this step, observe the following:

- Replace O-ring on connector.
- Press connector with new O-ring into transmission to stop.
- Tighten bolt for 14-pin transmission connector; torque specification.
- Tighten bolts for transmission speed sensor connector retainers; torque specifications.
- Tighten bolt for Transmission Fluid Temperature Sensor G93 bracket to specified torque.
- Install ATF strainer --> **ATF Strainer**.
- Install oil pan --> **ATF Pan**.

Wiring Harness with 8-pin Connector, Removing and Installing

Wiring Harness with 8-pin Connector, Removing

- Remove oil pan --> **ATF Pan**.
- Remove ATF strainer --> **ATF Strainer**.
- Remove connectors from automatic transmission hydraulic pressure sensors - **1** - and - **4** -.

Sensors - **1** - and - **4** - are not installed in all transmissions.

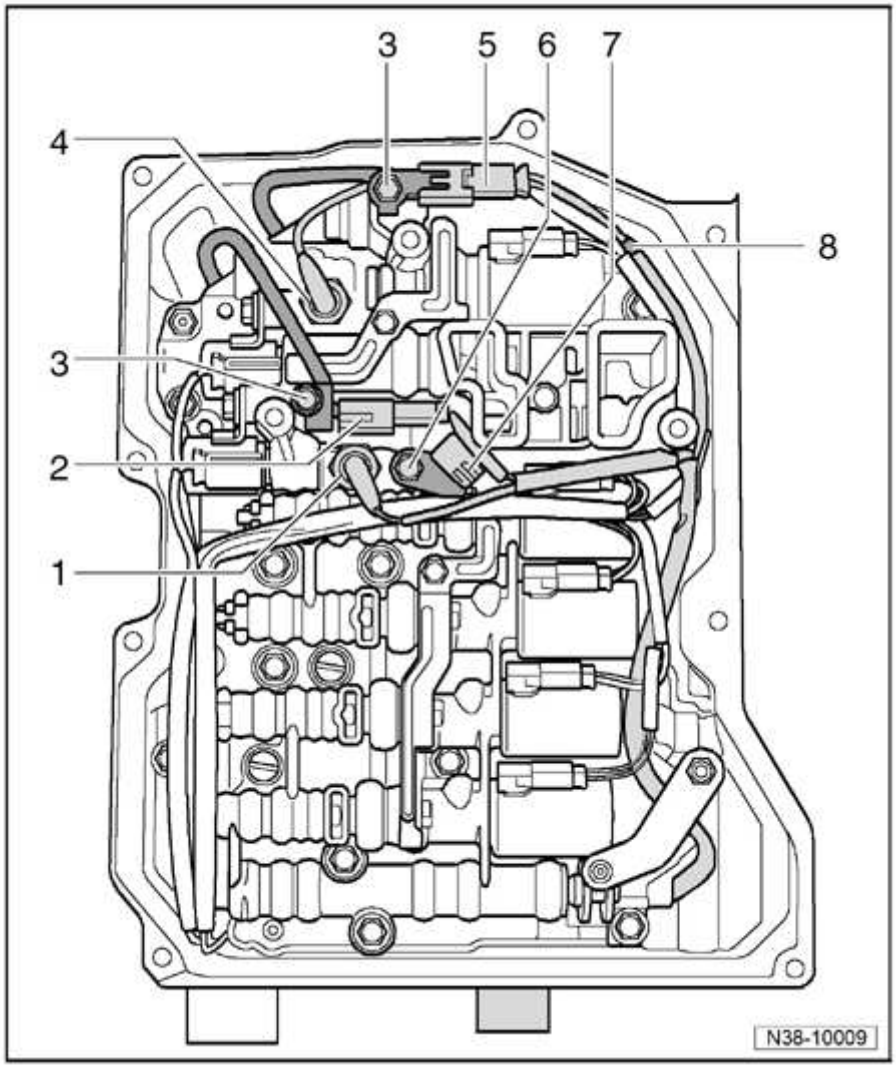

Fig. 144: Valve Body Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Separate connectors - **2** - and - **5** -.
- If a connector is damaged, the wiring harness or Transmission Input Speed (RPM) Sensor G182 or Transmission Output Speed (RPM) Sensor G195 must be replaced.
- Remove bolt - **6** -.
- For reinstallation, note bracket fastening on ATF temperature sensor G93 - **7** -.

- Carefully pull ATF temperature sensor G93 - **7** - out of valve body together with bracket.
- Detach wiring harness from bracket - **8** -.

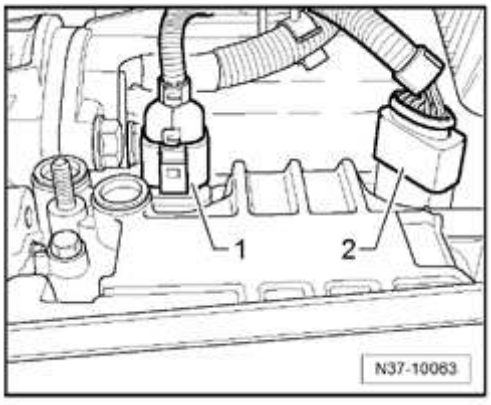

Fig. 145: Identifying 8-Pin G68 and 14-Pin G93 Electrical Harness Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pull connector - **1** - from transmission connector.
- Remove bolt for 8-pin transmission connector.
- Pull connector and wiring harness outwards out of transmission housing.

Wiring Harness with 8-pin Connector, Installing

Install in reverse order of removal. During this step, observe the following:

- Replace O-ring on connector.
- Press connector with new O-ring into transmission to stop.
- Tighten bolt for 8-pin transmission connector; torque specification.
- Tighten bolt for Transmission Fluid Temperature Sensor G93 bracket to specified torque.

- Install ATF strainer --> **ATF Strainer**.
- Install oil pan --> **ATF Pan**.

Transmission Input Speed (RPM) Sensor G182 , Removing and installing

Transmission Input Speed (RPM) Sensor G182 , Removing

- Remove valve body --> **Valve Body, Removing and Installing**.

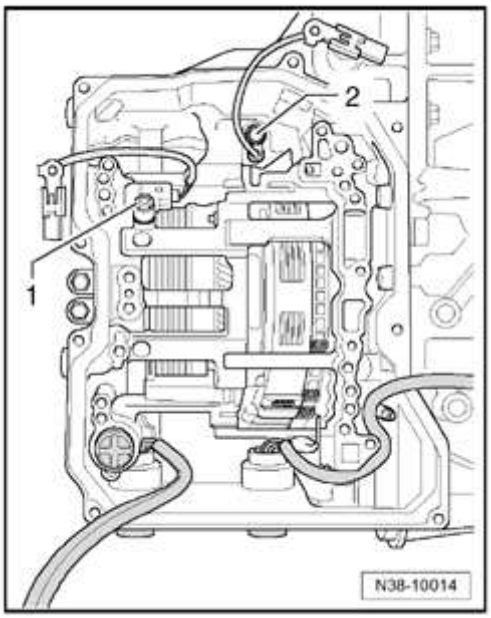

Fig. 146: Transmission Input G182 & Output G195 Speed (RPM) Sensors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **1** - from Transmission Input Speed (RPM) Sensor G182.
- Pull sensor out of transmission.

Transmission Input Speed (RPM) Sensor G182 , Installing

Install in reverse order of removal. During this step, observe the following:

- Press sensor into transmission to stop.
- Tighten bolt - **1** - for Transmission Input Speed (RPM) Sensor G182 ; torque specifications.
- Install valve body.

Transmission Output Speed (RPM) Sensor G195 , Removing and Installing

Transmission Output Speed (RPM) Sensor G195 , Removing

- Remove valve body --> **Valve Body, Removing and Installing**.

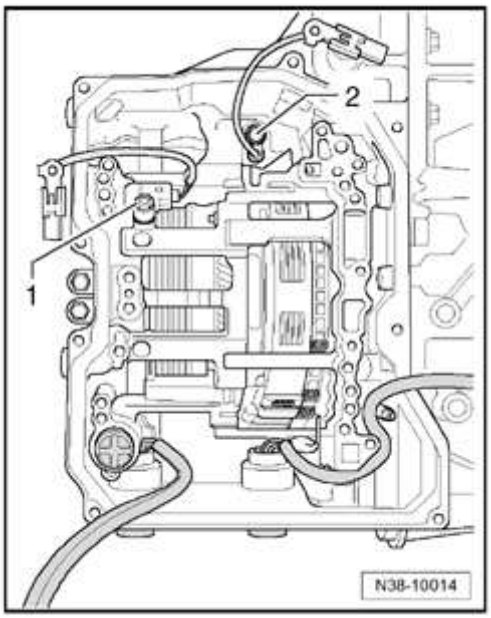

Fig. 147: Transmission Input G182 & Output G195 Speed (RPM) Sensors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **2** - from Transmission Output Speed (RPM) Sensor G195.
- Pull sensor out of transmission.

Transmission Output Speed (RPM) Sensor G195 , Installing

Install in reverse order of removal. During this step, observe the following:

- Press sensor into transmission to stop.
- Tighten bolt - **2** - for Transmission Output Speed (RPM) Sensor G195 ; torque specifications.
- Install valve body.

MULTI-FUNCTION TRANSMISSION RANGE (TR) SWITCH F125 , SERVICING

Multi-function Transmission Range (TR) switch F125, removing

- Place selector lever in position "N".
- Switch ignition off.

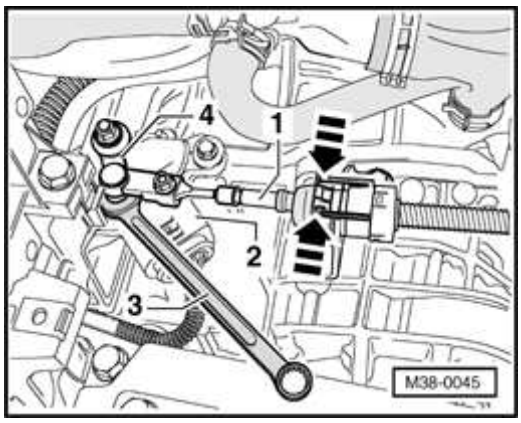

Fig. 148: Prying Off Selector Lever Cable From Lever/Selector Shaft Using A 10 mm Open-End Wrench
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Pry off selector lever cable - **1** - from lever - **4** - using an open end wrench - **3** -.
- Press retainers together in direction of - **arrow** - and remove selector lever cable from mounting bracket.

NOTE:

- **To improve clarity, the battery and battery box are shown removed in the illustration. However, the work procedures can be performed with the battery and battery box installed.**
- **Do not bend or kink the selector lever cable.**

- Disconnect connector - **2** - from Multi-function Transmission Range (TR) switch F125.

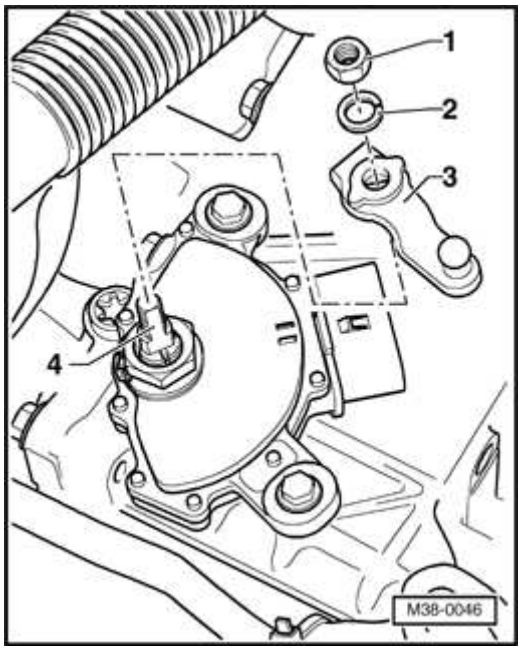

Fig. 149: Removing Compression Spring And Lever From Shift Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **1** -.
- Remove spring lock washer - **2** - and lever - **3** - from selector shaft - **4** -.

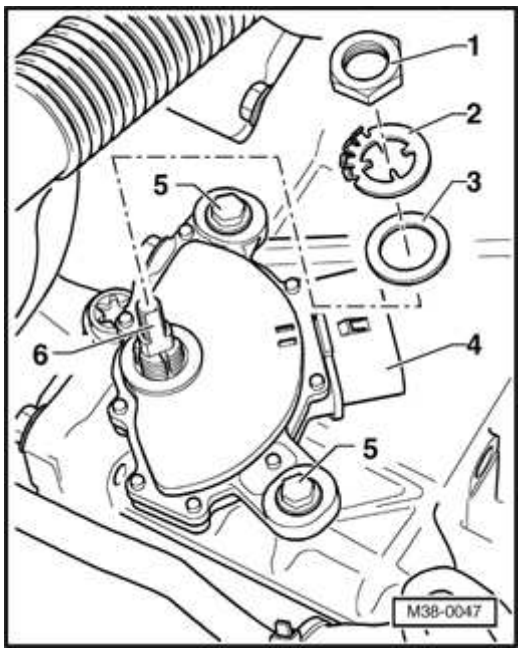

Fig. 150: Removing/Installing Multi-Function Transmission Range (TR) Switch -F125- At Shift Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Bend back hooks of lock washer - **2** - using a screwdriver.

NOTE:

- **Replace the lock washer if the hooks breaks when bending.**

- Remove nut - **1** -.
- Remove bolts - **5** -.
- Pull Multi-function Transmission Range (TR) switch F125 - **4** - with washers - **2** - and - **3** - off of selector shaft - **6** -.

Multi-function Transmission Range (TR) switch F125 , installing

Special tools, testers and auxiliary items required

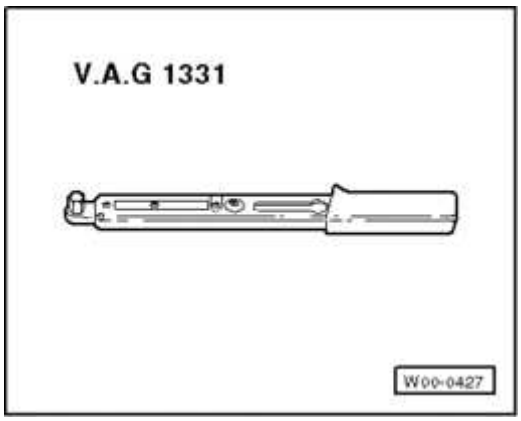

Fig. 151: Torque Wrench V.A.G 1331
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Torque wrench V.A.G 1331

Installation is in reverse order of removal. Note the following:

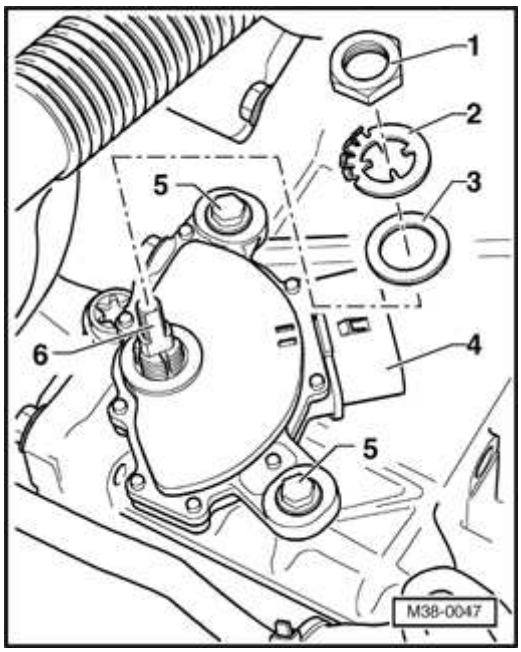

Fig. 152: Removing/Installing Multi-Function Transmission Range (TR) Switch -F125- At Shift Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach Multi-function Transmission Range (TR) switch F125 - **4** - to selector shaft - **6** -.
- Fasten bolts - **5** - hand-tight for Multi-function Transmission Range (TR) switch F125.
- Bend up hooks of lock washer - **2** - slightly.
- Place washers - **2** - and - **3** - onto selector shaft - **6** -.
- Set washer - **2** - in place with hooks facing upward.
- Place washer - **2** - with thin inner guides into thin recesses on selector shaft - **6** -.
- Tighten nut - **1** - to 7 Nm.
- Secure nut - **1** - by bending in hooks on lock washer - **2** -.

NOTE:

- **Replace the lock washer if it breaks when bending the hooks.**

- Adjust Multi-function Transmission Range (TR) switch F125 --> **Multi-function Transmission Range (TR) switch F125 , adjusting**.

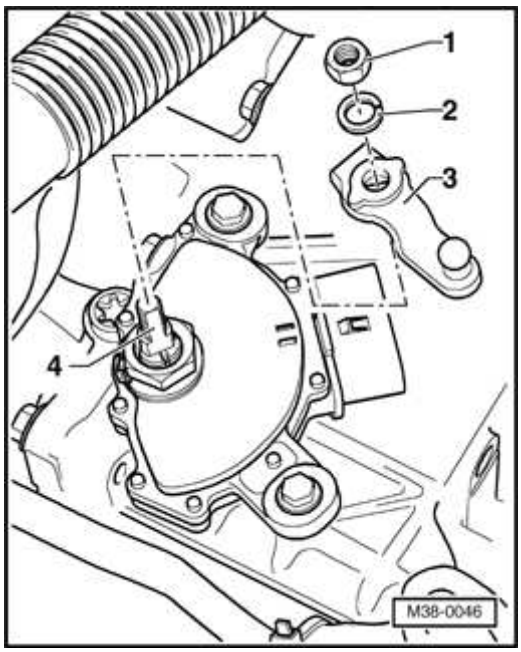

Fig. 153: Removing Compression Spring And Lever From Shift Rod
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Attach lever - **3** - onto selector shaft - **4** -.
- Shift lever - **3** - of transmission to "P" position; this means moving lever - **3** - opposite of driving direction, pushing lever toward rear up to stop.
- Shift lever - **3** - of transmission to "N" position. Do this by moving lever - **3** - two engagement points forward in driving direction.
- Place spring lock washer - **2** - and nut - **1** - onto selector shaft - **4** -.
- Tighten nut - **1** - to 13 Nm.
- Clip selector lever cable into support bracket on transmission and press cable onto selector lever.

Multi-function Transmission Range (TR) switch F125 , adjusting

Special tools, testers and auxiliary items required

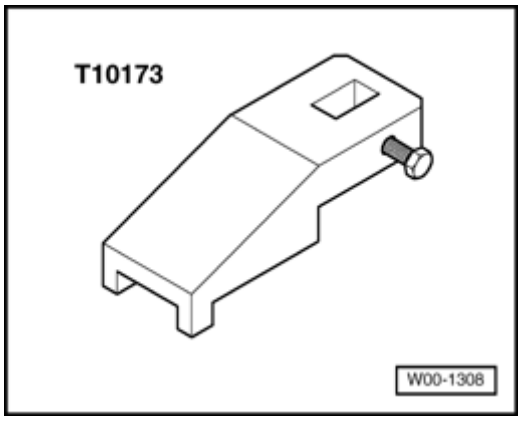

Fig. 154: Setting Gauge T10173
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Setting gauge T10173

- Place selector lever in position "N".

NOTE:

- **Do not kink the selector lever cable.**

Requirements

- Selector lever cable is disconnected from selector shaft lever
- Selector shaft is in "N" position
- Bolts for Multi-function Transmission Range (TR) switch F125 are loosened
- Selector shaft lever is removed

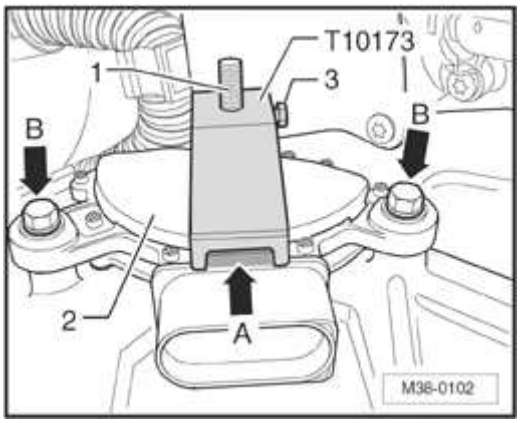

Fig. 155: Adjusting Multi-function Transmission Range (TR) switch F125 Using Setting Gauge T10173
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place setting gauge T10173 onto selector shaft - **1** - and turn Multi-function Transmission Range (TR) switch F125 - **2** - far enough so that gauge engages on tab - **arrow A** - of Multi-function TR switch connector.
- Secure setting gauge on selector shaft - **1** - with bolt - **3** -.
- Tighten bolts - **arrows B** - to 6 Nm.
- Remove setting gauge.

- Install selector shaft lever --> **Multi-Function TR Switch, Installing**.

39 - FINAL DRIVE, DIFFERENTIAL

OIL SEALS FOR FLANGE SHAFTS, REPLACING

Oil Seals for Flange Shafts, Replacing

Oil Seals for Flange Shafts, Replacing --> **Oil Seals for Flange Shafts, Replacing**

(Transmission installed)

Only left-hand side is described here. Replacing oil seal on right-hand side is nearly identical.

- Right drive axle remains in wheel bearing; remove left drive axle. Use thrust piece T10177 on right side and thrust piece T10176 on left.

Oil Seals for Flange Shafts, Replacing

Special tools, testers and auxiliary items required

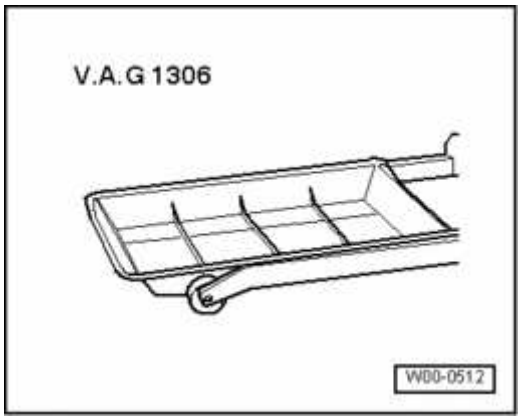

Fig. 156: Drip Tray V.A.G 1306
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Drip tray V.A.G 1306

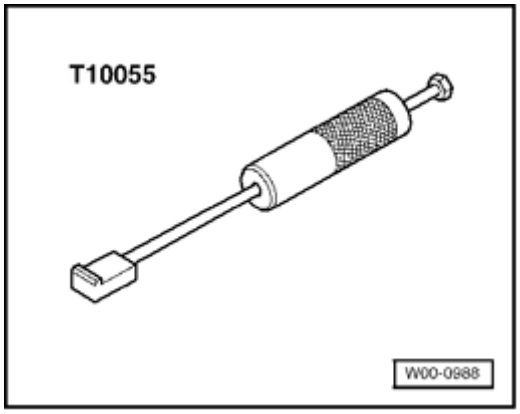

Fig. 157: Puller T10055
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Puller T10055
- Thrust piece T10176

Flange Shaft Oil Seal, Removing

- Remove noise insulation tray.
- Place drip tray V.A.G 1306 underneath.

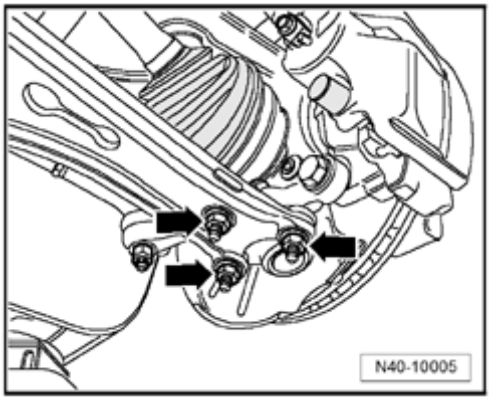

Fig. 158: Identifying Lower Control Arm And Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark position of - **nuts** - securing control arm to suspension strut.

Relocate this position during assembly if at all possible.

- Remove lower suspension link from suspension strut.
- Press drive axle out of transmission. For procedure, --> **40 - FRONT SUSPENSION** .

Right-hand side

- Raise right drive axle as far as possible and secure in this position.

The surface protection of shaft must not be damaged; plastic cable ties are therefore very good.

Left-hand side.

NOTE:

- **Do not set vehicle on the ground --> 40 - FRONT SUSPENSION .**

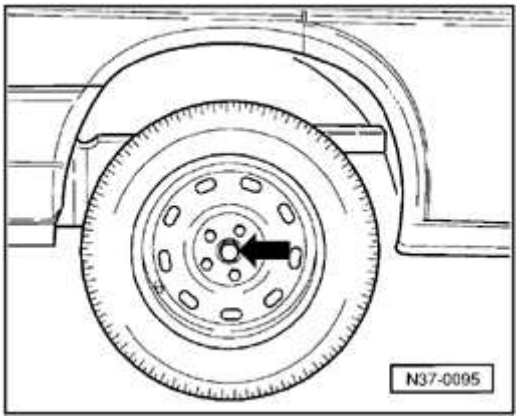

Fig. 159: Left Drive Axle Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Depress brake pedal to remove bolt for left drive axle - **arrow** - (second technician required).
- Remove left drive axle.

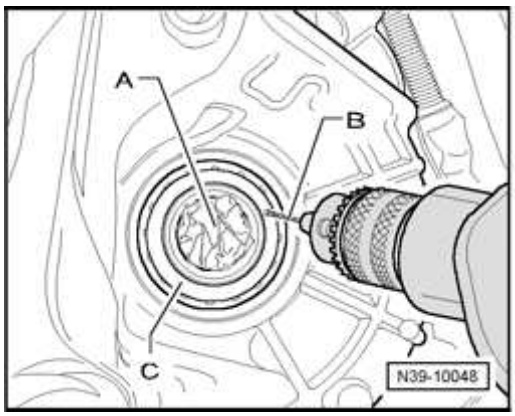

Fig. 160: Drilling Hole Into Outer Metal Ring Of Drive Axle Sealing Ring Drive Axle And Identifying Cloth In Seal Opening
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Seal drive axle aperture on transmission with a clean cloth - **A** -.
- Carefully drill a hole (size 2 to 4 mm) - **B** - into outer sheet metal ring - **C** - of oil seal.

NOTE:

- **Grease drill - B - so that metal chips adhere.**
- **Drill only through sheet metal ring - C - because transmission may otherwise be damaged.**

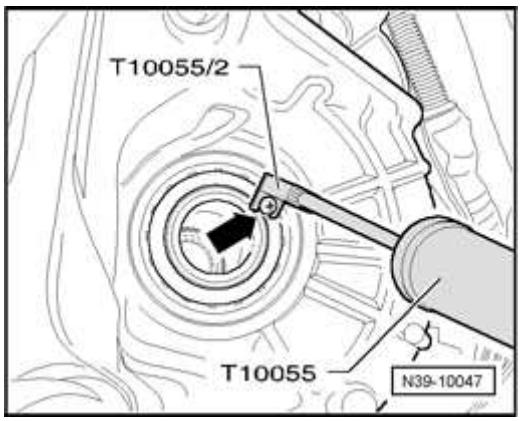

Fig. 161: Install/Remove Metal Bolt At Drilled Hole Of Sealing Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install a self-tapping screw, approx. 4 mm in diameter, into hole drilled in oil seal - **arrow** -.

NOTE:

- **Do not install sheet metal screw too far to avoid damaging bearing behind it.**

- Pull out oil seal using puller T10055 and adapter T10055/2.
- Remove cloth and carefully clean transmission and drive axle aperture.

No iron chips must enter transmission or drive axle aperture; vacuum up chips if necessary.

If only the sheet metal ring of seal could be pulled out, carefully lever out rest of seal with a screwdriver.

Flange Shaft Oil Seal, Installing

Install in reverse order of removal. During this step, observe the following:

- Apply ATF to circumference and sealing lips of oil seal.

Installation position:

Open side of oil seal faces transmission.

- Press oil seal in straight as far as possible by hand.

Left-hand side

- Drive oil seal in to stop with thrust piece T10176 , taking care not to cant oil seal.

Right side

- Drive oil seal in to stop with thrust piece T10177 , taking care not to cant oil seal.
- Install drive shaft --> **40 - FRONT SUSPENSION** .
- Finally, check ATF level and top off --> **ATF Level, Checking and Topping Off**.
- Install noise insulation.