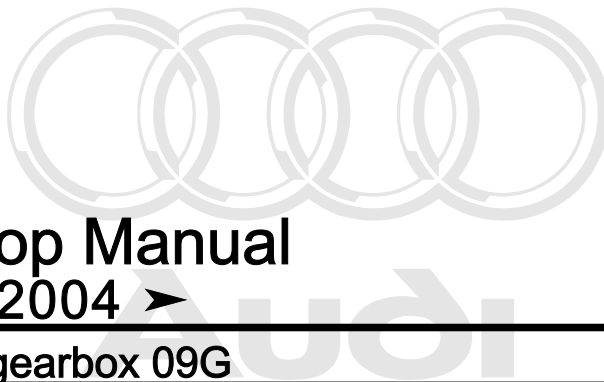




Workshop Manual

Audi A3 2004 ➤

Automatic gearbox 09G

Edition 03.2012

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List of Workshop Manual Repair Groups

Repair Group

- 00 - Technical data
- 32 - Torque converter
- 37 - Controls, housing
- 38 - Gears, control
- 39 - Final drive - front differential



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Technical information should always be available to the foremen and mechanics, because their careful and constant adherence to the instructions is essential to ensure vehicle road-worthiness and safety. In addition, the normal basic safety precautions for working on motor vehicles must, as a matter of course, be observed.

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00 – Technical data

1 Gearbox identification

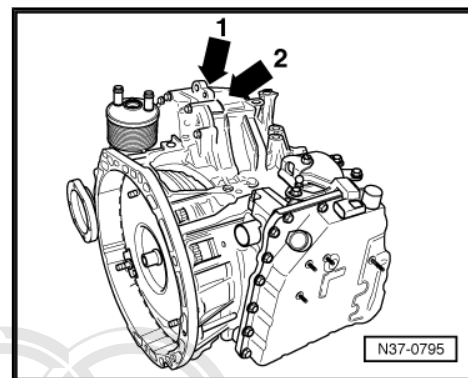
The „Automatic 6-speed Gearbox 09G“ is installed in the Audi A3 2004 ►. Allocation ⇒ [page 3](#).

Location on gearbox

Code letters and gearbox details (arrows 1 and 2)

Example of a gearbox:

FXA	Gearbox code letters
02H2T00144	Manufacturer's serial number 02 : manufacturing year 2002 H : Production month from A = January to M = December 2T : Designation of gearbox model at AISIN (manufacturer), 2T = 09G 00144: serial number in the production month, here: 144th gearbox in August
09G 300 035G	Gearbox part number
AISIN AW	Manufacturer: AISIN



The gearbox code letters are also given on the vehicle data stickers.

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2 Notes on the automatic 6-speed gearbox 09G

Gearbox

The automatic gearbox 09G is equipped with 6 hydraulically activated forward gears. When the lock-up clutch is closed, the 2nd, 3rd, 4th, 5th and 6th gears become mechanically driven gears by cutting out the torque converter slip.

Torque converter

The torque converter is equipped with a lock-up clutch. The lock-up clutch is closed dependent on load and speed.

ATF

The ATF is filled for life. The ATF need not be changed as part of a service.

The planetary gearing and final drive have a common filling; the ATF level is checked and filled up for both sections of the gearbox together ⇒ [page 71](#).

- ◆ Only the ATF available as a replacement part may be used in the automatic gearbox 09G. Other oils cause faults and/or failure of the gearbox, ATF replacement part number ⇒ [page 4](#).

Self-diagnosis

Before performing repairs to the automatic gearbox, determine the cause of the fault as precisely as possible using „Guided Fault Finding“.

„Guided Fault Finding“ is performed using the vehicle diagnostic testing and information system -VAS 5051-.

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Variation of gear-change points for gradients

An additional gear change map automatically selects gear changes for gradients depending on accelerator pedal position and driving speed.

- ◆ Gear change map for extreme uphill gradients is matched to engine output.
- ◆ Gear change map for extreme downhill gradients is matched to the braking effect of the engine.
- ◆ Increased engine braking effect can also be obtained by directly selecting a specific gear via the tiptronic function, e.g. when towing a trailer on downhill gradients.

3 Code letters, gearbox allocation, ratios, equipment

Automatic gearbox			09G	09G	09G
Gearbox	Code letters		GJX	GJZ, HFT, HTP, JUH, KGK	GJY, GSY, HFS, HTN, JTY, KGJ
	Manufactured	from to	Model year 2003	Model year 2003 up to 2008	Model year 2003 up to 2008
Torque converter	Code letters		QAAA	QHAA	QJAA
Allocation	Model		Audi A3 2004 >	Audi A3 2004 >	Audi A3 2004 >
	Engine		4-cylinder 1.6 ltr. - FSI 85 kW	4-cylinder 2.0 ltr. - FSI 110 kW	4-cylinder 1.6 ltr. 2V 75 kW
Ratios	1st gear		4.148	4.148	4.148
	2nd gear		2.370	2.370	2.370
	3rd gear		1.556	1.556	1.556
	4th gear		1.155	1.155	1.155
	5th gear		0.859	0.859	0.859
	6th gear		0.686	0.686	0.686
	Reverse gear		3.393	3.393	3.393
Intermediate drive	No. of teeth	Input gear	49	49	49
		Output gear	52	52	52
	Ratio		1.061	1.061	1.061
Final drive	No. of teeth	Pinion shaft	15	15	15
		Final drive gear	61	61	58
	Ratio		4.067	4.067	3.867



4 Capacities in planetary gearbox and final drive

Capacities	Automatic gearbox 09G
Initial filling	5.9 ltr. (filled for life)
Oil change	No change required, lifetime filling Change only after repair, if oil pan has been removed
Lubricant	ATF Part number: ⇒ Parts catalogue

Planetary gearbox and final drive are checked and topped up together ⇒ [page 71](#) .

Only the ATF available as a replacement part may be used for the automatic gearbox 09G. Other types of oil cause malfunctions and/or failure of the gearbox.

5 Notes on tow-starting and towing



WARNING

If the vehicle has to be towed, the selector lever must be set to position N and the vehicle must not be towed further than 50 km or at a speed in excess of 50 km/h, as the gearbox would otherwise suffer irreparable damage.



Note

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It is not possible to start the engine by means of tow-starting, for instance in the case of insufficient battery charge or if the starter is not working.

If battery has been removed or is empty and you wish to tow the vehicle please note that you will have to manually release the selector lever from position „P“ in order to be able to move it from „P“ to „N“ ➔ [page 39](#) .

6 Repair instructions

The maximum possible care and cleanliness and proper tools are essential for satisfactory and successful gearbox repairs. The usual basic safety precautions also naturally apply when carrying out repair work.

To avoid unnecessary repetition, a number of generally applicable instructions for the various repair procedures are summarised here. They apply to the work described in this Manual.

Special tools

For a compilation of the special tools used in this Workshop Manual refer to ⇒ "Special tools" and the binder "Workshop equipment".

Environmental and waste disposal regulations for oil

- ◆ Gear oil and any other type of oil must be handled with care.
- ◆ Dispose of drained oil properly.
- ◆ Always adhere to statutory environmental and waste disposal regulations.
- ◆ Observe the information shown on the packaging of the oil.

Gearbox

- ◆ Do not run engine or tow vehicle with oil pan removed or when there is no ATF in the gearbox.
- ◆ When renewing the automatic gearbox the ATF ⇒ [page 71](#) must be checked and topped up, if necessary. Filling quantities and specification ⇒ [page 4](#).
- ◆ If gearbox has been removed from vehicle, secure torque converter to prevent it from falling out.
- ◆ Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- ◆ Check position of torque converter (installed depth) before installing gearbox ⇒ [page 11](#).
- ◆ When installing gearbox, ensure that dowel sleeves are fitted correctly.
- ◆ Place removed parts on a clean surface and cover them over. Use sheeting and paper. Use lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components: do not remove replacement parts from packaging until just before installation.

O-rings, oil seals, gaskets

- ◆ Always install new O-rings, oil seals and gaskets.
- ◆ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Always replace paper gaskets. Completely remove old gasket and clean sealing surfaces thoroughly.
- ◆ Lightly lubricate the outer circumference and sealing lip of seals with ATF before installing.
- ◆ Lightly lubricate O-rings with ATF before installation to prevent them getting crushed during assembly.

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- ◆ Do not use any other lubricants where ATF is used. Otherwise, there is a risk of problems occurring in the gearbox hydraulics.
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ After installing, check ATF level, rectify as necessary.

Circlips

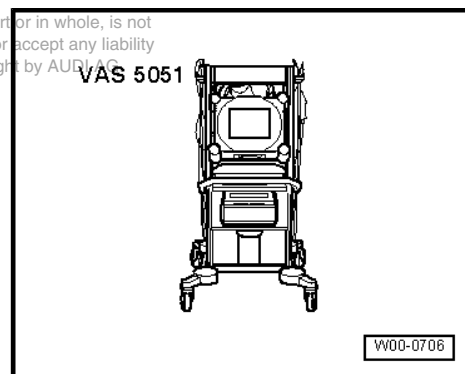
- ◆ Do not overstretch circlips; renew if necessary.
- ◆ Circlips must be properly seated in the base of the groove.

Nuts, bolts

- ◆ Loosen bolts in reverse sequence to the specified tightening sequence.
- ◆ Nuts and bolts which secure covers and housings should be loosened and tightened in diagonal sequence and in stages if no tightening sequence is specified.
- ◆ Renew self-locking nuts.
- ◆ Use a wire brush to clean the threads of bolts which are secured with locking fluid. Then lubricate bolts with locking compound -AMV 185 101 A1- again before fitting.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.

Guided Fault Finding, Vehicle Self-Diagnosis and Test Instruments

- ◆ Before servicing the automatic gearbox, the exact cause of the failure must be determined as precisely as possible via the vehicle diagnostic, testing and information system -VAS 5051- in the modes „Guided Fault Finding“, „vehicle self-diagnosis“ and „testing system“.





7 Rules for cleanliness when working on the gearbox

- ◆ Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- ◆ Place removed parts on a clean surface and cover them over. Use sheeting and paper. Use lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components; do not remove replacement parts from packaging until just before installation.
- ◆ Always install new O-rings, oil seals and gaskets.
- ◆ Lightly lubricate O-rings with ATF or vaseline before inserting to prevent them from getting crushed during assembly.
- ◆ Use only ATF for parts running in ATF. Other lubricants will cause malfunction of the gearbox hydraulics.
- ◆ After installation check the level of ATF in planetary gearbox and top up if necessary ⇒ [page 71](#).

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32 – Torque converter

1 Torque converter

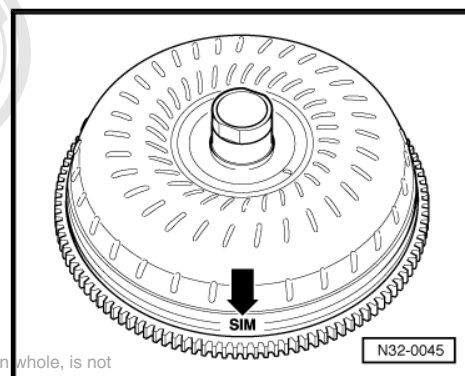


- ◆ *Repair instructions ➔ [page 6](#).*
- ◆ *Lightly lubricate seals with ATF. Other types of lubricant will cause the gearbox hydraulics to malfunction.*

1.1 Identification of torque converter

There are various types of torque converter. They are marked with code letters -arrow-.

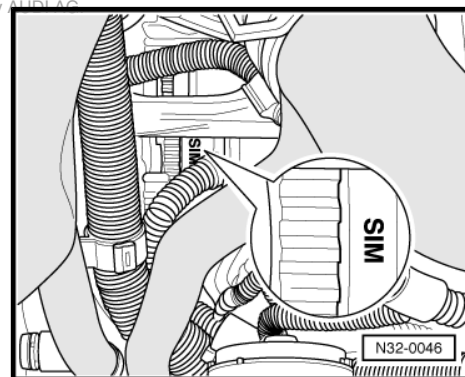
Torque converter/gearbox allocation ➔ [page 3](#).



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1.1.1 Torque converter code letters

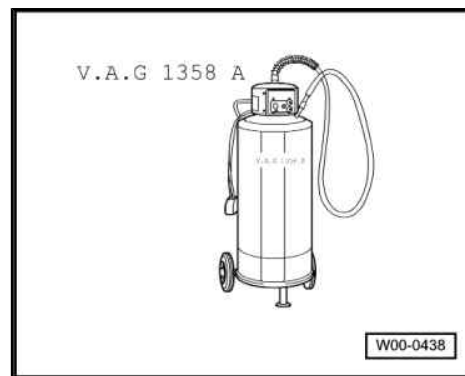
(Gearbox fitted in vehicle)



1.2 Draining torque converter

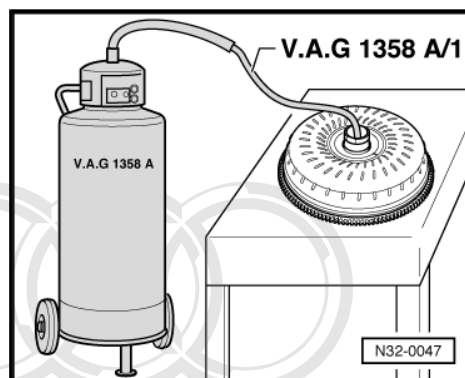
Special tools and workshop equipment required

- ◆ Oil extractor -V.A.G 1358 A-



If the ATF has become contaminated by abrasion, or when performing a major gearbox overhaul, drain the torque converter as follows:

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

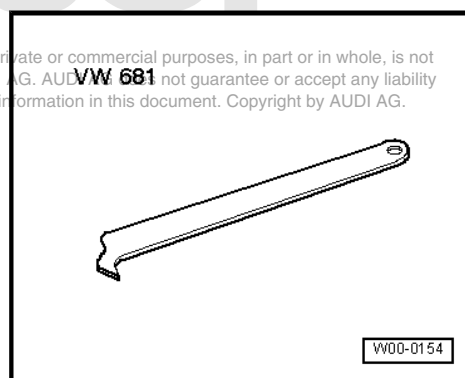


1.3 Removing and installing oil seal for torque converter

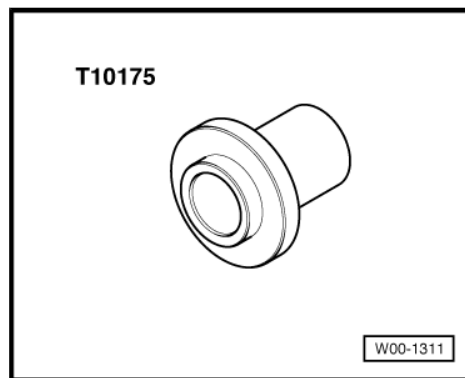
Special tools and workshop equipment required

- ◆ Oil seal extractor lever -VW 681-

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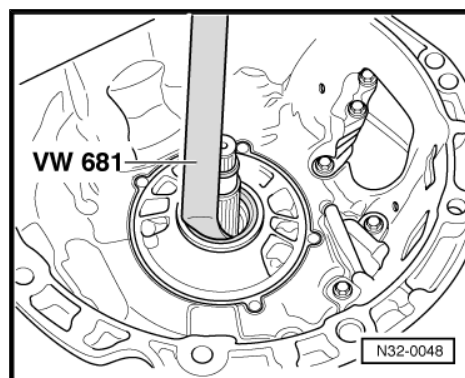


- ◆ Thrust piece -T10175-



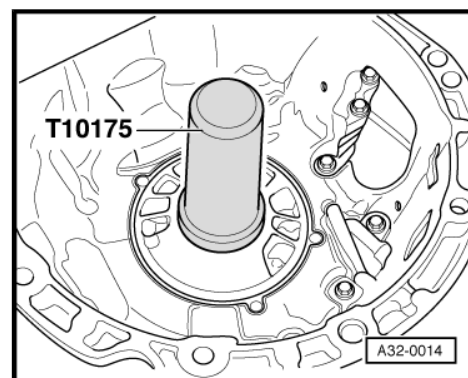
Removing oil seal for torque converter

- Pry out oil seal using oil seal extractor lever -VW 681- .



Installing oil seal for torque converter

- Drive oil seal for torque converter in flush with thrust piece - T10175- .



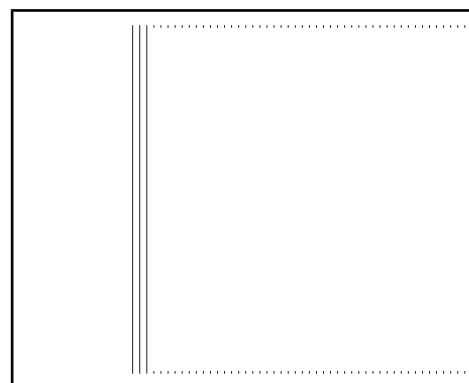
1.4 Checking torque converter

- Check torque converter hub -arrow- for scoring.



Note

The torque converter is welded together and must be renewed as a complete unit in the event of any damage or defects.



1.5 Installing torque converter

Special tools and workshop equipment required

- ◆ Depth gauge

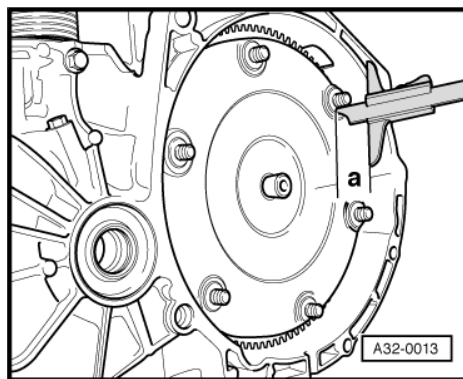
Procedure

- Push the torque converter hub through the oil seal onto the gearbox shaft as far as the first stop.
- Push torque converter into torque converter bellhousing by hand, turning it so that torque converter hub engages in slots of internal gear of ATF pump. You should feel the torque converter slide into place.

- Use a depth gauge to measure the distance -a- between flange on gearbox housing and contact surface of torque converter stud.
- The torque converter has been installed correctly, if distance -a- is at least 19.5 mm.
- Please ensure that distance -a- remains unchanged during subsequent assembly work. The torque converter must not slip forwards.

**WARNING**

If the torque converter is not fitted correctly, the torque converter drive lugs or the ATF pump will be seriously damaged when the gearbox is joined to the engine.



When you then install the gearbox, adhere to the following instructions.

**WARNING**

Before and while you are tightening the bolts on the engine/gearbox flange keep checking that the torque converter can still be rotated behind the drive plate. If the converter cannot be turned, it must be assumed that it has not been installed correctly and the drive lugs on the converter or the ATF pump will be damaged during final tightening of bolted connections.

Tightening torque for securing torque converter to drive plate

⇒ [page 62](#) .



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37 – Controls, housing

1 Electrical/electronic components and fitting locations

1 - Automatic gearbox control unit -J217-

- ☐ Fitting location and removing and installing ➔ [page 18](#)
- ☐ Control unit is checked by self-diagnosis

2 - Diagnostic connection

- ☐ Fitting location ➔ [page 14](#)

3 - Selector lever lock solenoid -N110-

- ☐ Fitting location ➔ [page 15](#)
- ☐ Checked via self-diagnosis

4 - Valve body

- ☐ Fitting location ➔ [page 15](#)
- ☐ Removing and installing ➔ [page 95](#)
- ☐ Identification of solenoid valves ➔ [page 91](#)

5 - Wiring harness with 8-pin connector and integrated gearbox oil temperature sender - G93-

- ☐ Fitting location: the wiring harness is attached to the valve body
- ☐ Gearbox oil (ATF) temperature sender -G93- is checked via self-diagnosis

- ☐ Removing and installing ➔ [page 107](#)

6 - Wiring harness with 14-pin connector

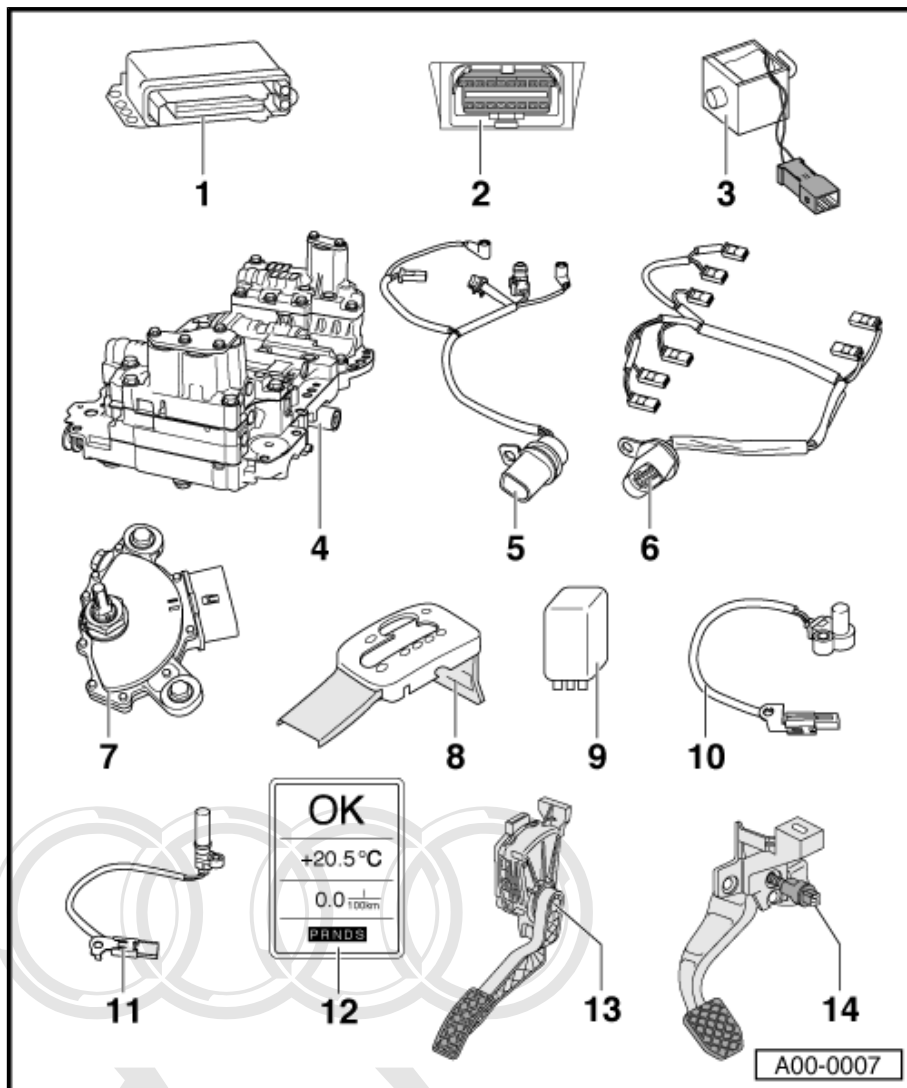
- ☐ For solenoid valves and gearbox sensors
- ☐ Fitting location: the wiring harness is attached to the valve body
- ☐ Designation of solenoid valves and routing of wiring harness ➔ [page 91](#)
- ☐ Removing and installing ➔ [page 105](#)

7 - Multifunction switch -F125-

- ☐ Fitting location ➔ [page 15](#)
- ☐ Checked via self-diagnosis
- ☐ Removing and installing ➔ [page 112](#)

8 - Selector mechanism cover

- ☐ Removing and installing ➔ [page 23](#)
- ☐ The tiptronic switch -F189- is integrated in the selector mechanism, fitting location ➔ [page 16](#)



9 - Starter inhibitor relay -J207-

- ❑ Fitting location ⇒ [page 16](#)

10 - Gearbox input speed sender -G182-

- ❑ Fitting location ⇒ [page 17](#)
- ❑ Checked via self-diagnosis
- ❑ Removing and installing ⇒ [page 109](#)

11 - Gearbox output speed sender -G195-

- ❑ Registers gearbox output speed
- ❑ Fitting location ⇒ [page 16](#)
- ❑ Checked via self-diagnosis
- ❑ Removing and installing ⇒ [page 110](#)

12 - Selector lever position display -Y6-

- ❑ Fitting location ⇒ [page 17](#)
- ❑ If selector lever position display does not light up, this indicates that gearbox is in emergency running mode with gearbox control unit inactive.
- ❑ If all segments of selector lever position display light up together, this indicates that gearbox is in emergency running mode with gearbox control unit active.
- ❑ Removing and installing ⇒ Electrical system; Rep. gr. 90

13 - Kickdown switch -F8-

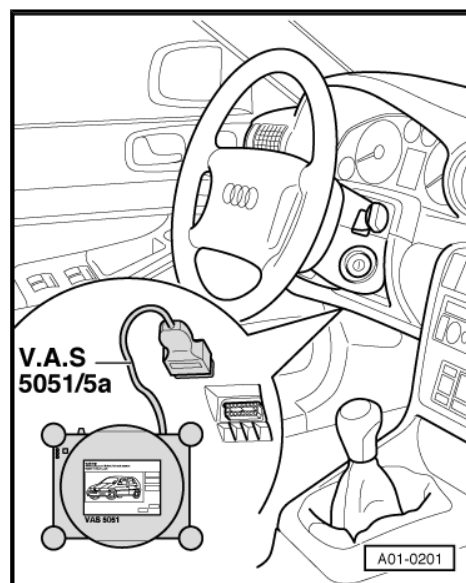
- ❑ Fitting location ⇒ [page 17](#)
- ❑ Checked via self-diagnosis
- ❑ Signal transmission from engine control unit to gearbox control unit via CAN bus
- ❑ Removing and installing accelerator pedal module ⇒ Rep. gr. 20

14 - Brake light switch -F-

- ❑ Fitting location ⇒ [page 18](#)
- ❑ Signal transmission from engine control unit to gearbox control unit via CAN bus
- ❑ Checked via self-diagnosis
- ❑ Removing and installing ⇒ Brake system; Rep. gr. 46

Diagnostic connection

Fitting location: The diagnostic connection is located below the knee padding to the left of the steering wheel.

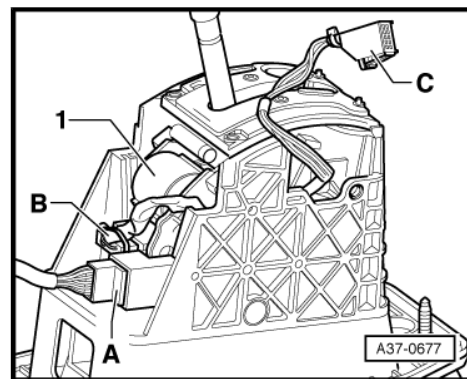


Selector lever lock solenoid -N110-

Fitting location: the selector lever lock solenoid -N110- -item 1- is located in the selector mechanism.

The solenoid is integrated in the selector mechanism; it is therefore not possible to renew only the solenoid on its own. It can only be removed or installed together with the selector mechanism

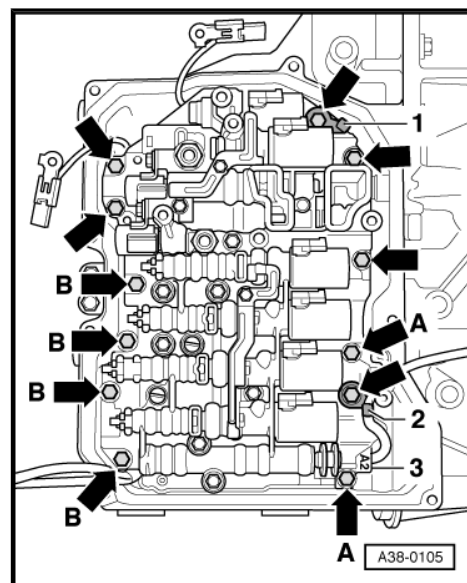
⇒ [page 38](#) .



Valve body

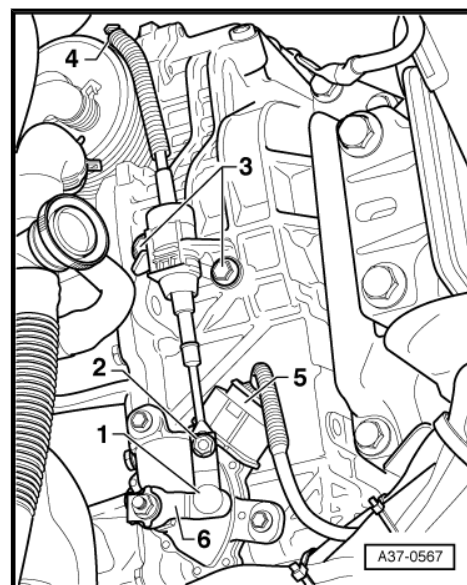
Fitting location: the valve body is bolted to the underside of the gearbox housing and covered by the gearbox oil pan.

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Multifunction switch -F125-

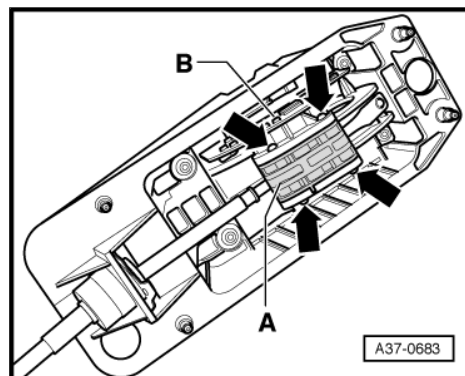
Fitting location: the multi-function switch is located at the top of the gearbox. The connector -item 5- is plugged in directly on the multi-function switch.



tiptronic switch -F189-

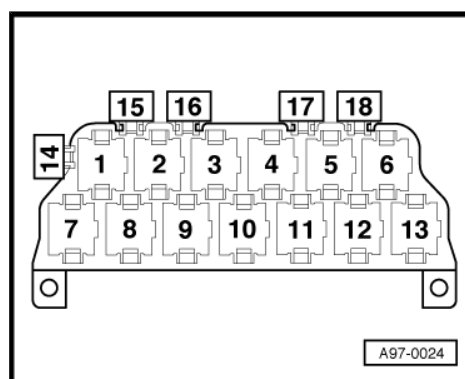
Fitting location: the tiptronic switch -F189- is integrated in the printed circuit -B- of the selector mechanism.

The tiptronic switch -F189- is integrated in the selector mechanism; it is therefore not possible to renew only the switch on its own. It can only be removed or installed together with the selector mechanism ⇒ [page 38](#) .



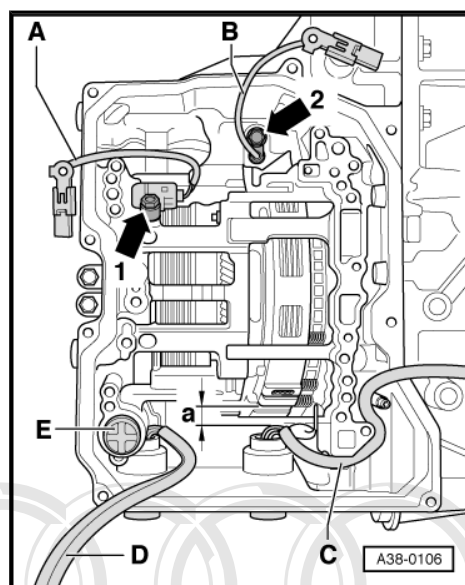
Starter inhibitor relay -J207-

Fitting location: on the 13-position relay carrier ⇒ Current flow diagrams, Electrical fault finding and Fitting locations



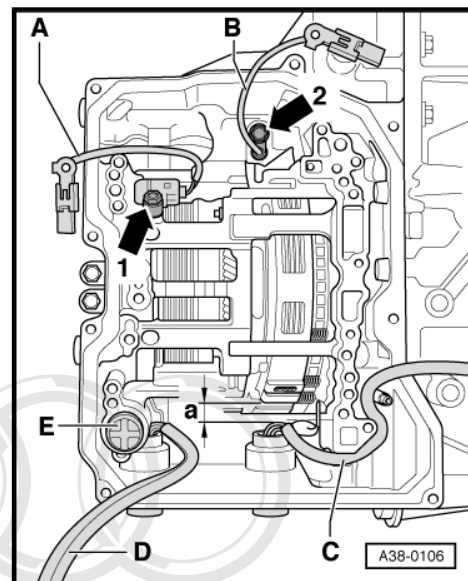
Gearbox output speed sender -G195-

Fitting location: the gearbox output speed sender -G195- -arrow 2- is fixed to the gearbox housing behind the valve body.



Gearbox input speed sender -G182-

Fitting location: the gearbox input speed sender -G182-
-arrow 1- is fixed to the gearbox housing behind the valve body.



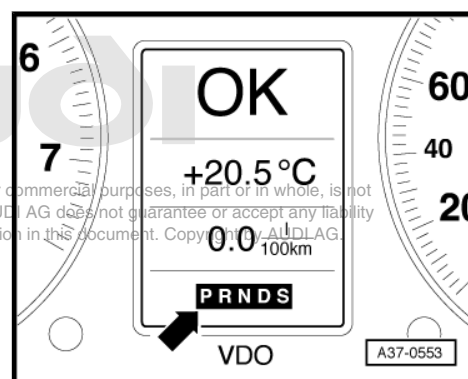
Selector lever position display -Y6-

Fitting location: integrated into instrument cluster



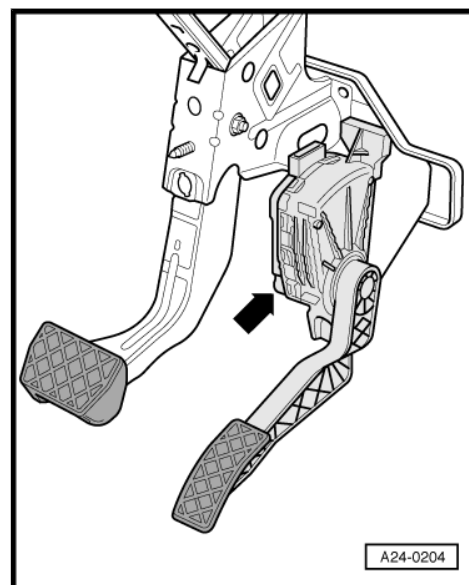
Note

The selector lever position display -Y6- can only be renewed together with the instrument cluster.



Kickdown switch -F8-

Vehicles with petrol engine are not equipped with this switch. Instead, the engine control unit stores a specific value obtained from the accelerator position sender -G79- / accelerator pedal position sender -2- -G185- .

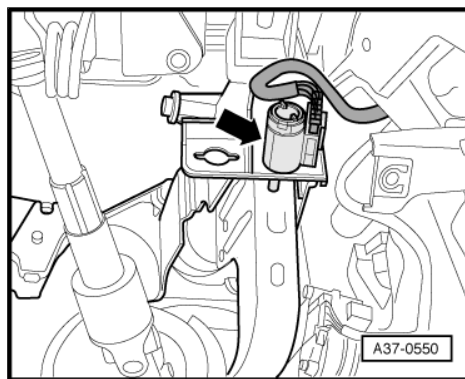


Brake light switch -F-

Fitting location: the brake light switch -F- -arrow- is located on pedal cluster.

**Note**

To ensure a secure fit, the switch may only be fitted once.

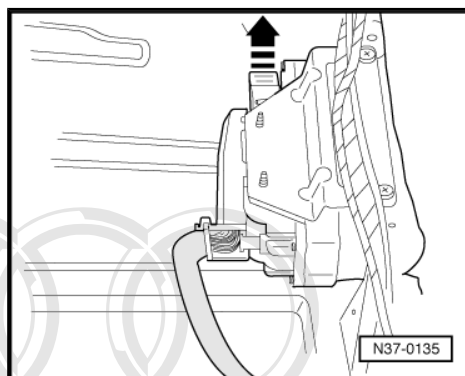


1.1 Removing and installing automatic gearbox control unit -J217-

Fitting location: the control unit is located in wheel housing (front left).

Removing control unit

- Remove front wheel (left-side).
- Remove wheel housing liner (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 .
- Release connector in -direction of arrow- and unplug it from gearbox control unit.



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- Detach the wiring for turn signal -1- from the bracket on the gearbox control unit.
- Disconnect side-mounted left turn signal -5- from the wing panel and pull it outwards to the side.
- Remove bolts -3-.

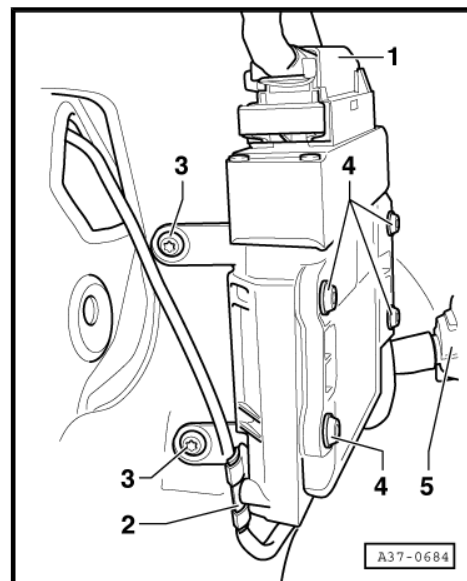
i Note

The control unit is still engaged at the back.

- Push control unit up together with mounting bracket and take it off in the direction of the turn signal opening.
- Remove bolts -4-.
- Detach control unit from mounting bracket.

i Note

When the connectors for the gearbox control unit are disconnected, this resets the adaption values in the gearbox control unit. When it is put back into operation, the control unit has to relearn these adaption values. During this „learning process“ the gear change quality may not be as good as usual.



Installing control unit

Perform installation in reverse sequence of removal.

Component	Nm
Gearbox control unit to mounting bracket 4 bolts, -item 4-	3
Mounting bracket to vehicle 2 bolts, -item 3-	3

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2 Servicing selector mechanism



WARNING

Before working on vehicle while engine is running, shift selector lever into position „P“ and apply handbrake.

2.1 Checking selector mechanism

- ◆ It should not be possible to operate the starter while the selector lever is in position „S“, „D“ or „R“ or in the tiptronic position.
- ◆ On right-hand drive vehicles the starter should not operate in selector lever positions „P“ and „N“ when the locking button in the selector lever handle is pressed.
- ◆ When travelling at speeds above 5 km/h and shifting into selector lever position „N“, the solenoid for the selector lever lock must not engage and block the selector lever. The selector lever can be shifted into a driving gear.
- ◆ When travelling at speeds below 5 km/h (almost stationary) and shifting into selector lever position „N“, the solenoid for the selector lever lock should only engage after about 1 second. Selector lever cannot be shifted out of position „N“ until brake pedal is depressed.

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Selector lever in „P“ position and ignition switched on:

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of position „P“. 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. Shift selector lever slowly from position „P“ through „R, N, D and S“ and check whether the display in the dash panel insert shows the correct selector lever position in each case.

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“. 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 „D“, ignition and lights switched on:

- Shift selector lever into tiptronic gate:

The illuminated „D“ symbol in the selector lever position display should go out and the „+“ and „-“ symbols should light up.

The selector lever position indicator in the dash panel insert should switch from „PRNDS“ to „654321“ when the selector lever is shifted into the tiptronic gate.

- Move the selector lever in the tiptronic gate to „+“ and „-“.

The selector lever position indicator in the dash panel insert should then also change to the corresponding higher or lower gear.

- Check selector lever cable and adjust if necessary
⇒ [page 21](#) .
- Check ignition key removal lock ⇒ [page 22](#) .

2.2 Checking and adjusting selector lever cable

Checking

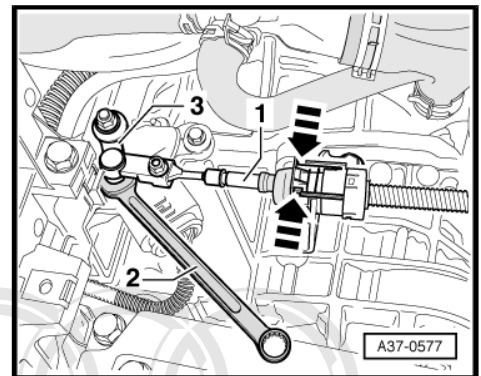
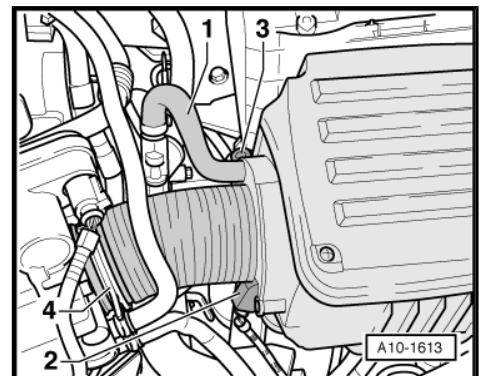
- Shift selector lever into position „P“.

Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and electrical connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

All vehicles:

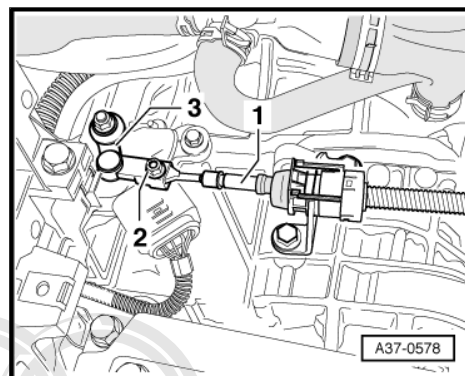
- Use an open-end spanner (10 mm) -item 2- or similar to lever selector lever cable -1- off selector shaft lever -3-.
- Press together the retainers on the support bracket of the selector lever cable -arrows- and pull the selector lever cable out of the support bracket on the gearbox.
- Put the selector lever cable aside in such a way that the end can move freely.
- ◆ Do not bend or kink the selector lever cable.
- Move selector lever from „P“ to „S“.
- Check front protective sleeve on selector lever cable for damage, if necessary renew cable.
- Shift selector lever into position „P“.
- Selector mechanism and selector lever cable should move smoothly, if necessary renew selector lever cable (⇒ [page 33](#)) or service selector mechanism.
- Carefully press selector lever cable onto selector shaft lever and insert in support bracket on the gearbox.



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Adjusting

- Shift selector lever into position „P“.
- Loosen bolt -2- at the front ball socket of the selector lever cable -1-.
- While it is in position „P“ move the selector lever slightly forwards and backwards, but under no circumstances shift from „P“ into another gear.
- Move selector shaft lever -3- on gearbox to „P“, i.e. push selector shaft lever all the way back (opposite the direction of travel).



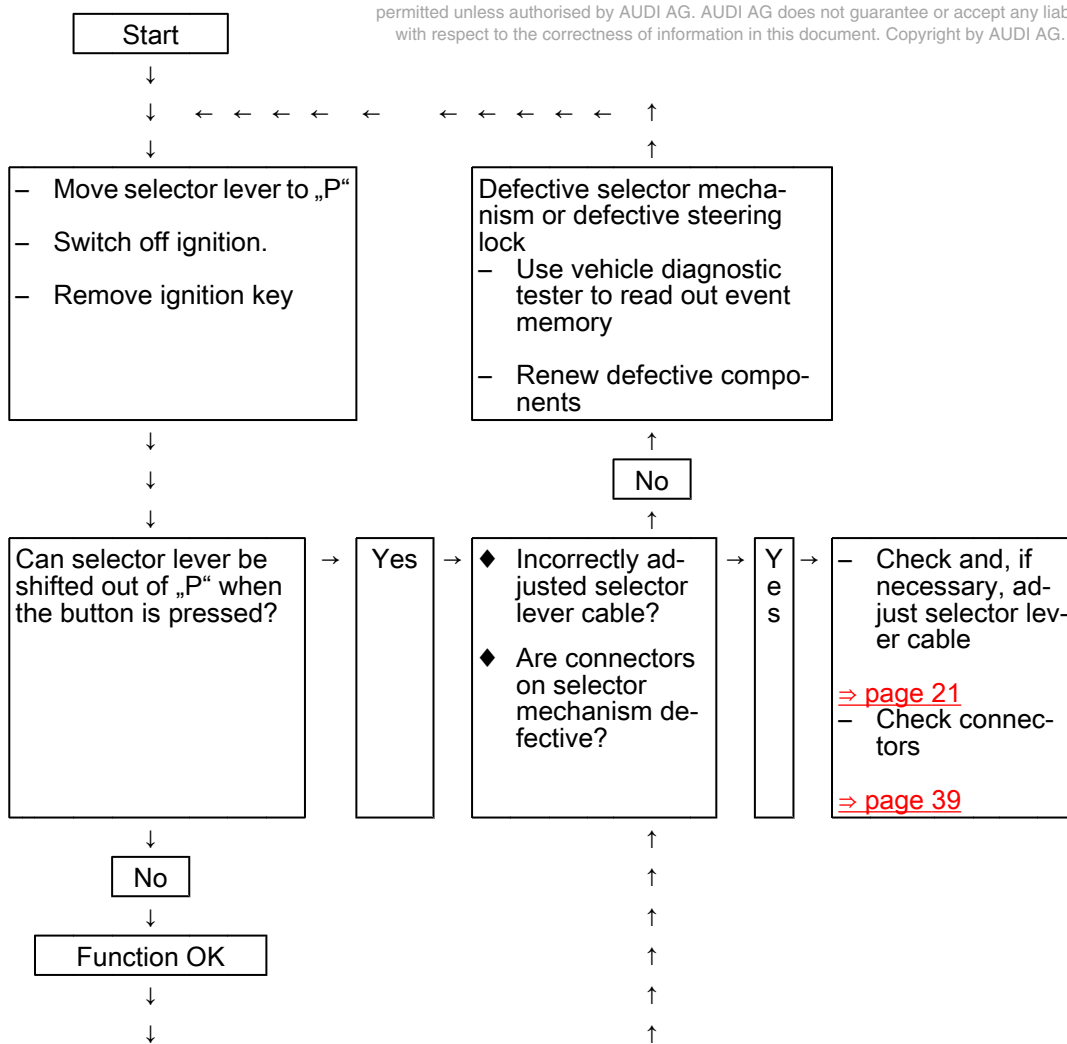
Note

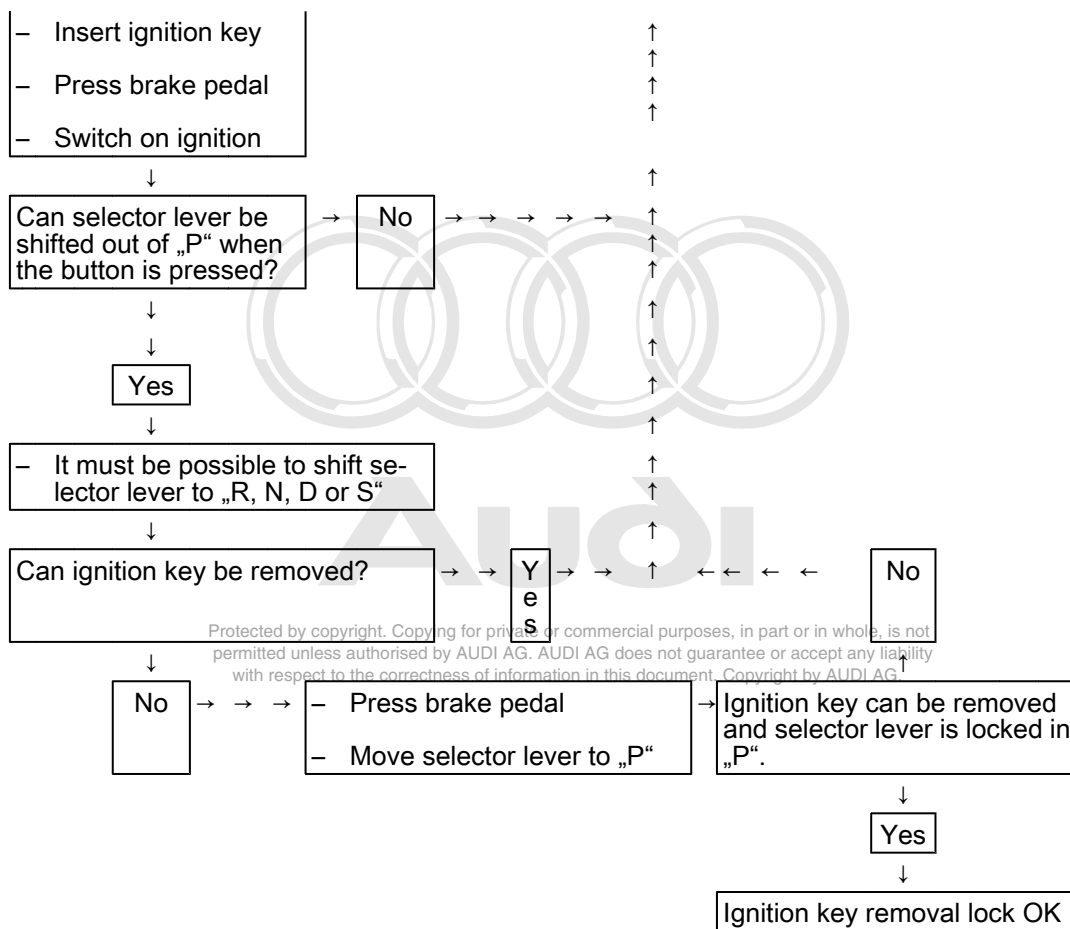
Detent lever must engage in parking lock gear, both front wheels are locked (cannot be turned together in one direction).

- Tighten bolt -2- (13 Nm).
- Check selector mechanism ⇒ [page 20](#) .

2.3 Checking function of ignition key removal lock

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2.4 Dismantling and assembling selector mechanism - exploded view of components

Note

Lubricate all bearings and moving surfaces with grease -G 000 450 02-.

The vehicle is fitted with an electrical ignition key removal lock, not a mechanical one with a Bowden cable.

- ◆ Checking operation of ignition key withdrawal lock
⇒ [page 22](#).

1 - Selector lever handle

- ☐ Removing and installing
⇒ [page 25](#)

2 - Sleeve

- ☐ Clips into selector lever handle
- ☐ Prevents the selector lever handle from being pulled off

3 - Upper cover

- ☐ Includes symbol panel
- ☐ Clipped onto frame
⇒ [Item 6 \(page 24\)](#) .
- ☐ With selector indicator and tiptronic gate
- ☐ Removing and installing
⇒ [page 38](#)

4 - Symbol insert

- ☐ Clipped onto cover

5 - Printed circuit for cover

- ☐ Removing and installing
⇒ [page 38](#)
- ☐ Can be checked in „Guided fault finding“, using vehicle diagnostic, testing and information system -VAS 5051- .

6 - Frame

- ☐ With sliding cover
- ☐ Removing and installing
⇒ [page 38](#)

7 - Buffer stop for selector lever

- ☐ Clipped onto selector mechanism

8 - Nut, 10 Nm

- ☐ 4x
- ☐ For securing selector mechanism to body

9 - Selector mechanism (shift unit)

- ☐ Removing and installing ⇒ [page 38](#)
- ☐ With integrated tiptronic circuit for selector mechanism, do not touch
- ☐ With integrated tiptronic switch -F189- and selector lever lock solenoid -N110- , which can both be checked in „Guided fault finding“, using the vehicle diagnostic, testing and information system -VAS 5051- .
- ☐ Renew selector mechanism ⇒ [page 38](#) if tiptronic switch -F189- is defective
- ☐ Renew selector mechanism ⇒ [page 38](#) if selector lever lock solenoid -N110- is defective

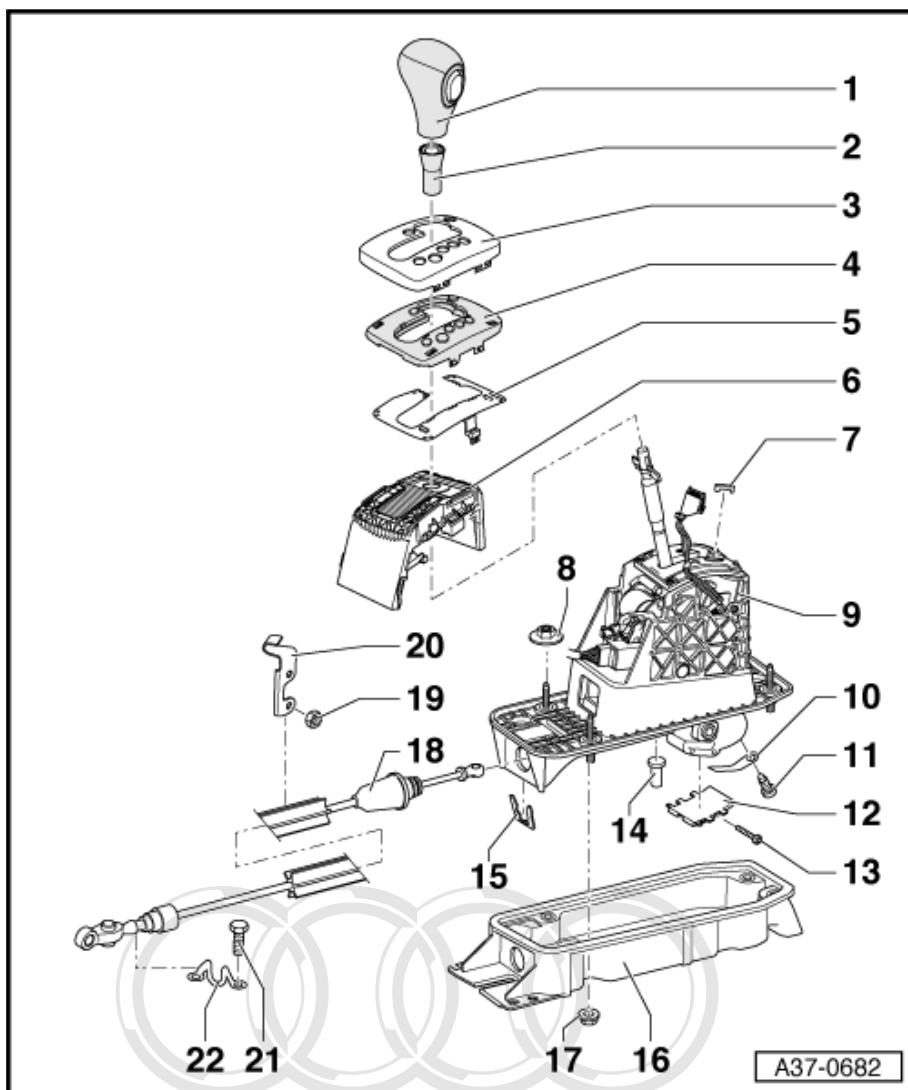
10 - Detent spring

11 - Bolt, 3.5 Nm

12 - Detent plate

13 - Bolt, 3.5 Nm

- ☐ 4x
- ☐ For securing detent plate to selector mechanism



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14 - Pivot pin

- ☐ For securing selector lever cable to selector mechanism

15 - Locking plate

- ☐ For securing selector lever cable to shift unit
- ☐ Renew

16 - Cover

- ☐ For selector mechanism
- ☐ With glued-on gasket

17 - Self-locking nut, 9 Nm

- ☐ For securing cover to selector mechanism
- ☐ 4x
- ☐ Renew

18 - Selector lever cable

- ☐ Do not bend or kink
- ☐ If the protective sleeve is damaged, the selector lever cable must be renewed
- ☐ Checking and adjusting ⇒ [page 21](#)
- ☐ Removing and installing ⇒ [page 33](#)
- ☐ Do not lubricate cable eye and ball socket

19 - Nut, 13 Nm

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- ☐ For securing bracket ⇒ [Item 20 \(page 25\)](#) to gearbox

20 - Bracket

- ☐ For selector lever cable

21 - Bolt, 23 Nm

- ☐ Secures support bracket to gearbox
- ☐ 2x

22 - Support bracket

- ☐ Secures selector lever cable to gearbox

2.5 Removing and installing selector lever handle

Removing selector lever handle

- Shift selector lever to position „D“.

- Turn the sleeve -1- to the left and push it down as far as it will go.
- Pull button -2- out of selector lever handle -3- carefully, just far enough to be able to insert a cable tie between button and selector lever handle.



Note

Under no circumstances pull button out further, as selector lever handle would then become damaged.

- Use the cable tie to secure the button in its pulled position -arrow-, as shown in the illustration.
- Remove selector lever handle by pulling it off to the top.

Installing selector lever handle

Installation is carried out in reverse sequence; note the following:

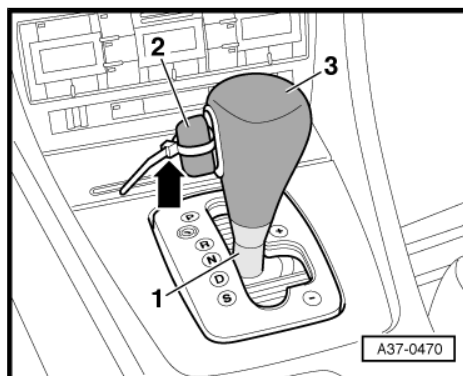
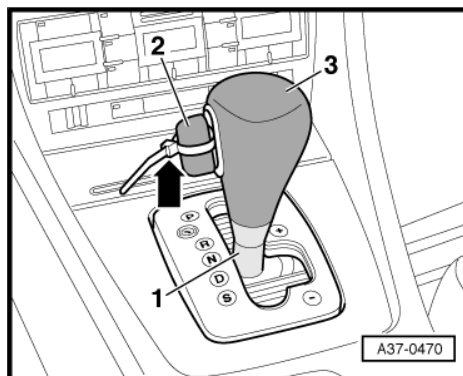
- Shift selector lever to position „D“.



Note

- ◆ *To install the selector lever handle -3- the button -2- has to be pulled out to the stop and must be secured with either a cable tie -arrow- or with the assembly aid supplied together with the new handle.*
- ◆ *If, by mistake, the button has not been secured, it must not be pulled out of the selector lever handle using mechanical tools. Position a compressed air gun at the bottom of the handle and press the button out with compressed air.*

- Fit selector lever handle -3- fully onto selector lever; button -2- points towards the driver. The handle must engage in the annular groove on the selector lever.
- Remove the cable tie -arrow- or assembly aid; the button mechanism will then engage in the vertical groove on the selector lever. If necessary, press the button into the selector lever handle.
- Pull sleeve -1- upwards and clip it in by turning it to the right.



2.6 Removing and installing selector mechanism cover

Removing selector mechanism cover

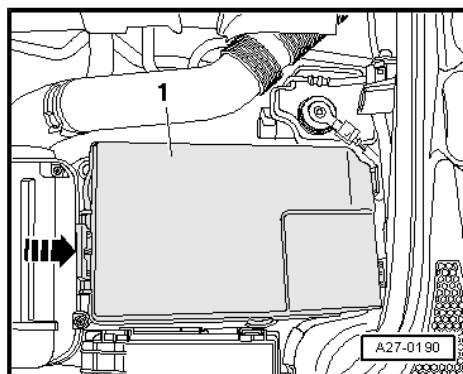
- Remove selector lever handle ⇒ [page 25](#).
- Press release tab -arrow- and remove cover -1- over battery.



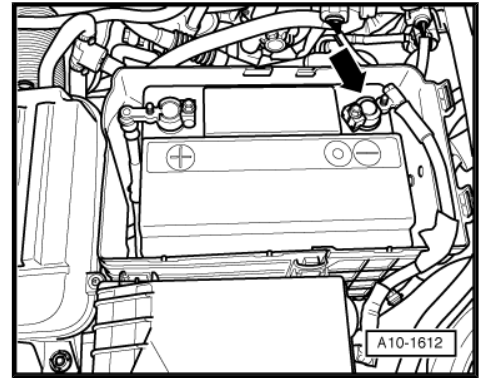
WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

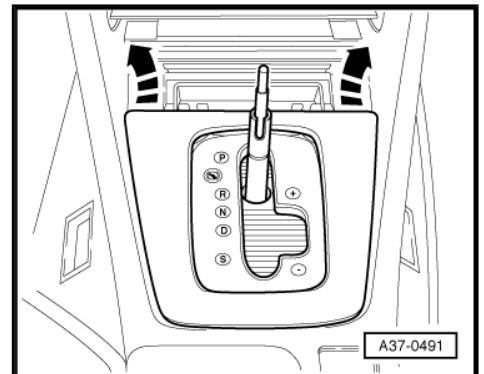
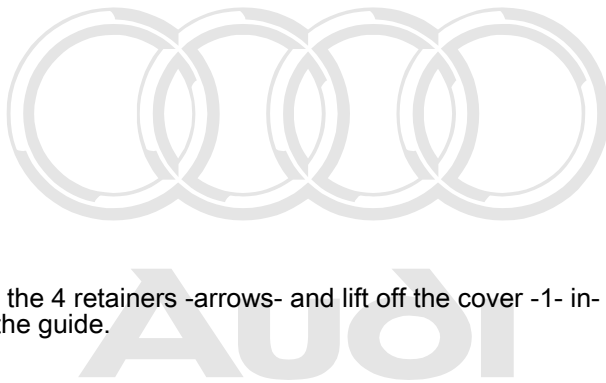
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- With ignition switched off, disconnect earth wire -arrow- at battery.

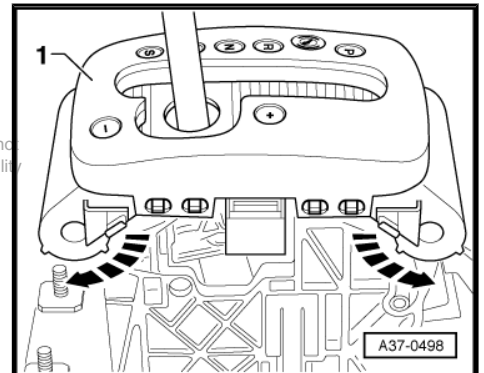


- Open the ashtray on the centre console and remove the trim -arrows-.



- Release the 4 retainers -arrows- and lift off the cover -1- including the guide.

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- Detach the connector -C- from the printed circuit on the cover.

Installing selector mechanism cover

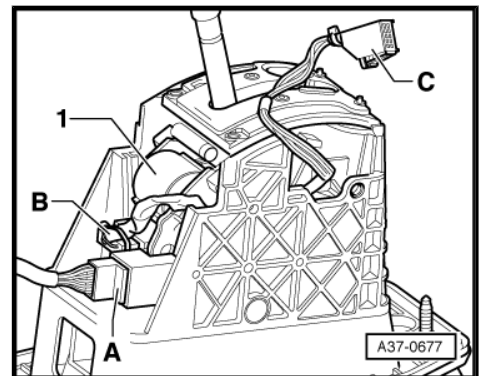
Installation is carried out in reverse sequence; note the following:

- Attach the connector -C- to the printed circuit on the cover.



Note

When attaching the connector make sure the contact pins on the printed circuit are not bent and that the retaining lugs on the cover do not break off.



- Install selector lever handle ➔ [page 25](#) .
- Follow steps required after connecting battery ➔ Electrical system; Rep. gr. 27 .

2.7 Removing and installing printed circuit on cover

Removing printed circuit from cover

- Remove selector mechanism cover ⇒ [page 26](#) .
- Press down the locking hooks -arrows- and pull the cover -2- off the guide -1-.
- Remove printed circuit from cover.

Installing printed circuit on cover

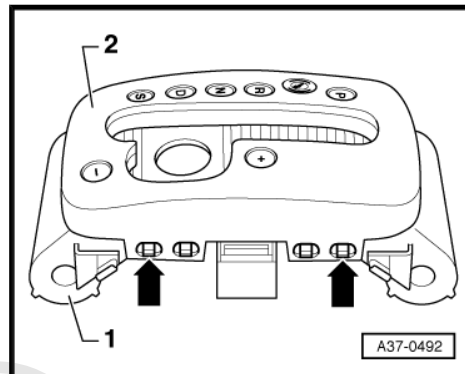
Installation is carried out in reverse sequence; note the following:



Note

Make sure the retaining lugs on the guide do not break off when attaching the cover.

- Install selector mechanism cover ⇒ [page 26](#) .



2.8 Removing and installing selector mechanism

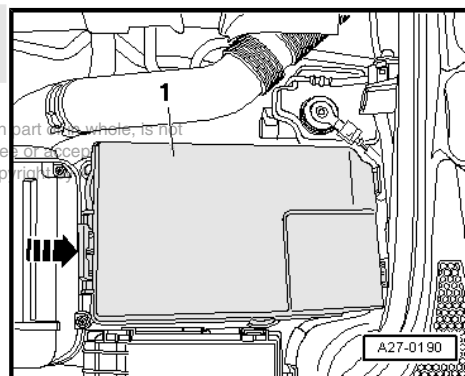
Removing selector mechanism

- Remove selector lever handle ⇒ [page 25](#) .
- Press release tab -arrow- and remove cover -1- over battery.

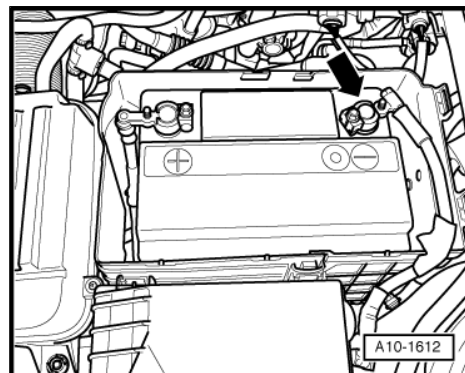


WARNING

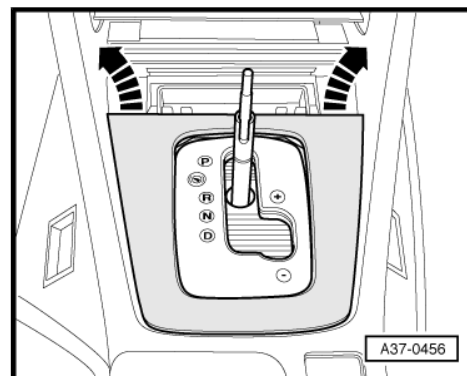
Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27 .



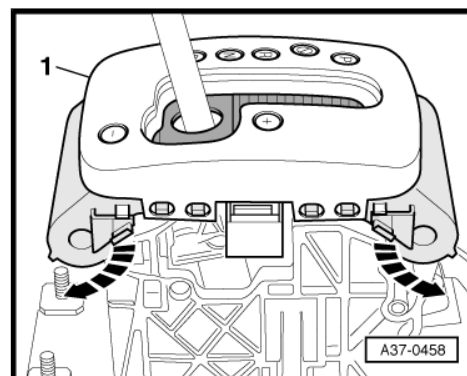
- With ignition switched off, disconnect earth wire -arrow- at battery.



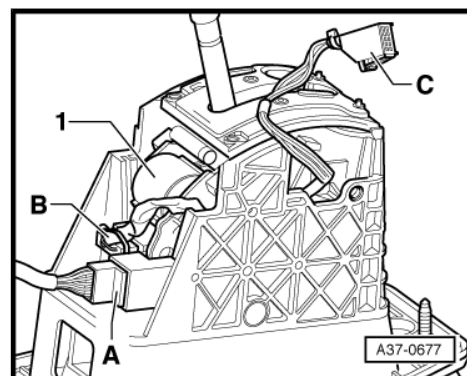
- Open the ashtray on the centre console and remove the trim -arrows-.
- Remove ashtray/storage compartment in front of selector mechanism ⇒ General body repairs, interior; Rep. gr. 68 .



- Release the 4 retainers -arrows- and lift off the cover -1- including the guide.

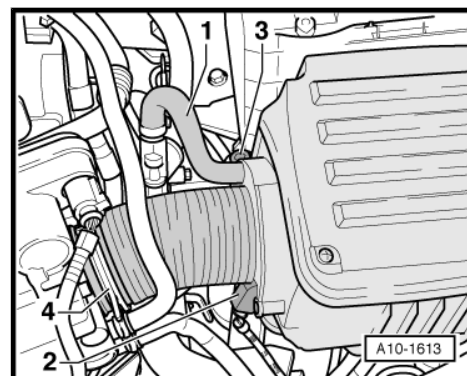


- Detach the connector -C- from the printed circuit on the cover.
- Detach connector -A- leading from the selector mechanism to the vehicle's wiring harness.



Vehicles with 2.0 ltr. FSI engine:

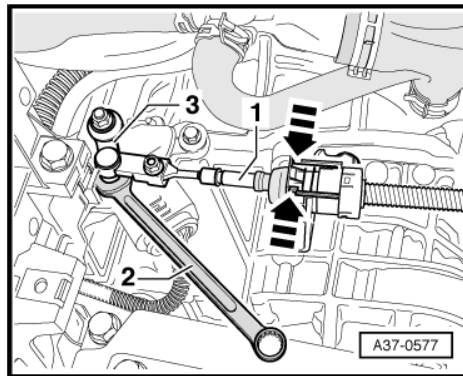
- Disconnect hose -1- and electrical connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.



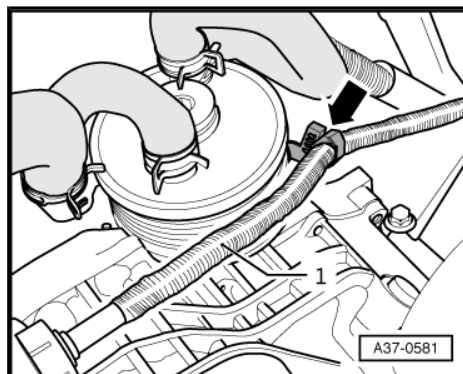
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All vehicles:

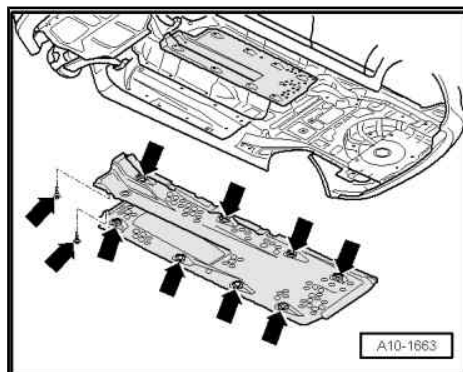
- Use an open-end spanner (10 mm) -item 2- or similar to lever selector lever cable -1- off selector shaft lever -3-.
- Press together the retainers on the support bracket of the selector lever cable -arrows- and pull the selector lever cable out of the support bracket on the gearbox.



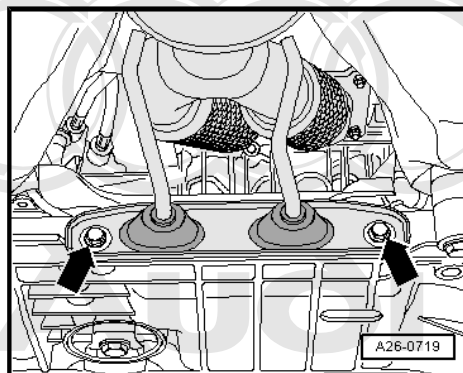
- Detach selector lever cable -1- from gearbox at clip -arrow-, making sure you do not kink or bend selector lever cable.



- Remove covers on vehicle underside -arrows- (left and right).



- Unbolt support bracket for exhaust system -arrows-.



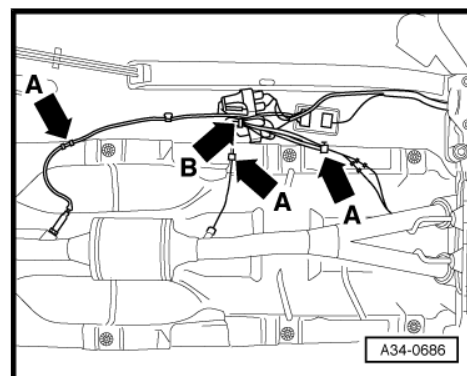
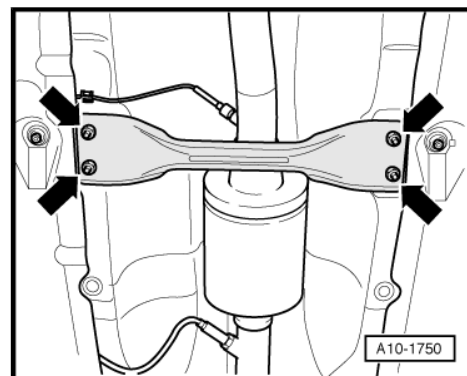
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- Remove front tunnel cross-piece on vehicle underside -arrows-.



- Unclip all wiring at heat shield -arrows A-.
- Cut open cable tie -arrow B-.

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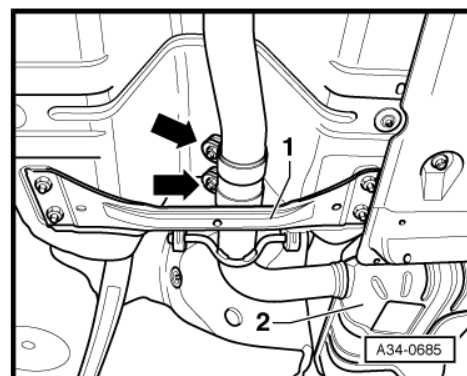
- Remove rear tunnel cross-piece on vehicle underside -1-.
- Take up weight of front section of exhaust system at catalytic converter using engine/gearbox jack -V.A.G 1383 A- .



Note

To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 30°.

- Disconnect exhaust system at clamp -arrows-.



Note

A second mechanic is required for removing the rear section of the exhaust system.

- Detach rear silencer -2- at rubber mountings and remove rear section of exhaust system.
- Lower front section of exhaust system slightly using engine and gearbox jack -V.A.G 1383 A- . Make sure there is sufficient clearance for Lambda probe wiring.

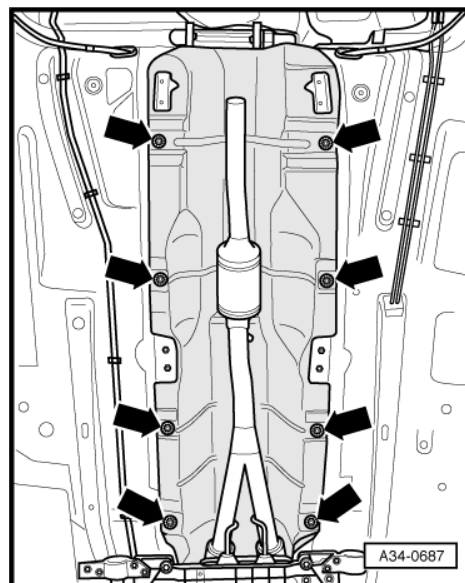
All vehicles:

- Release clips -arrows- and pull out heat shield from the rear.



Note

The assistance of a second mechanic is required to detach the selector mechanism under the vehicle.

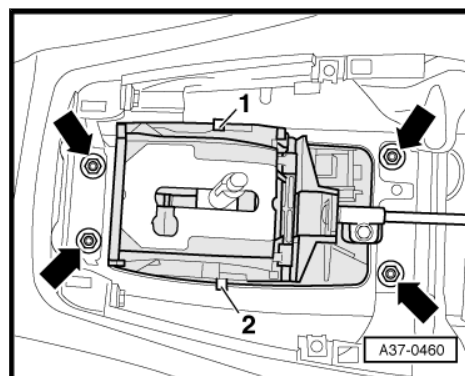


- Remove nuts -arrows-.
- Detach selector mechanism together with selector lever cable by pulling them off downwards; make sure you do not kink or bend selector lever cable.



Note

It is possible to renew selector mechanism without renewing selector lever cable; to do so, you first have to separate selector lever cable from selector mechanism. Removing selector lever cable ⇒ [page 33](#).



Installing selector mechanism

Installation is carried out in reverse sequence; note the following:

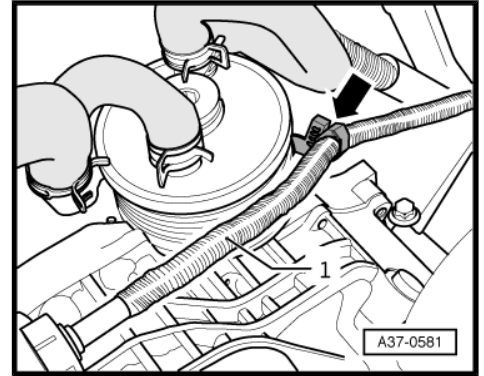
For tightening torques for bolts and nuts as well as information on whether bolts and nuts have to be renewed refer to

⇒ [„2.4 Dismantling and assembling selector mechanism - exploded view of components“, page 23](#).

- Insert selector lever cable in support bracket on the gearbox and carefully push onto selector shaft lever. Take care not to bend selector shaft lever, otherwise precise adjustment of selector mechanism will no longer be possible.
- Do not bend or kink the selector lever cable.

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- Hook selector lever cable -1- into clip -arrow- on gearbox. When routing the selector lever cable ensure a clearance of at least 5 mm from ATF cooler.
- Install exhaust system and ensure stress-free alignment ⇒ Engine, mechanics; Rep. gr. 26 .
- Install selector lever handle ⇒ [page 25](#) .
- Install selector mechanism cover ⇒ [page 26](#) .
- Follow steps required after connecting battery ⇒ Electrical system; Rep. gr. 27 .
- Check operation of ignition key withdrawal lock ⇒ [page 22](#) .
- Adjust selector lever cable ⇒ [page 21](#) .
- Check selector mechanism ⇒ [page 20](#) .

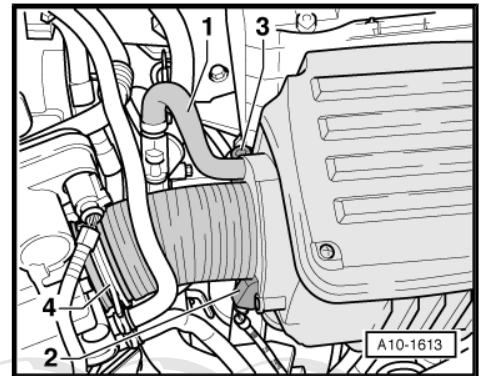


2.9 Removing and installing selector lever cable

Removing selector lever cable

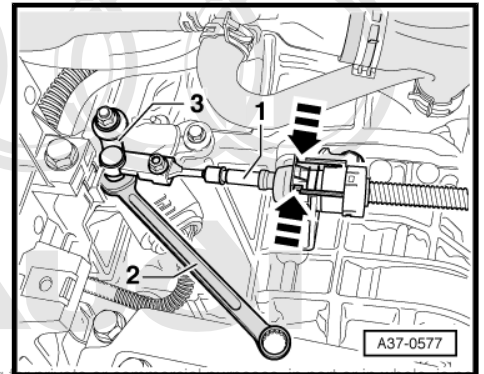
Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

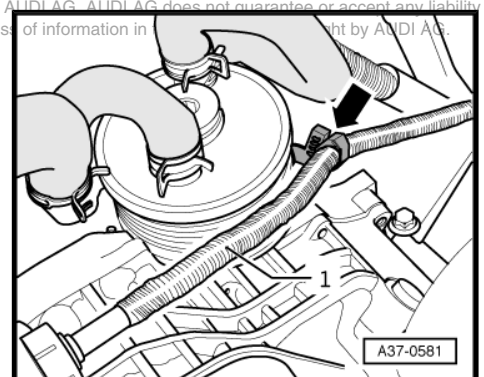


All vehicles:

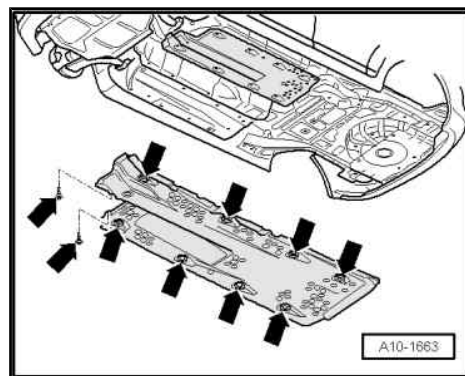
- Use an open-end spanner (10 mm) -item 2- or similar to lever selector lever cable -1- off selector shaft lever -3-.
- Press together the retainers on the support bracket of the selector lever cable -arrows- and pull the selector lever cable out of the support bracket on the gearbox.



- Detach selector lever cable -1- from gearbox at clip -arrow- making sure you do not kink or bend selector lever cable.

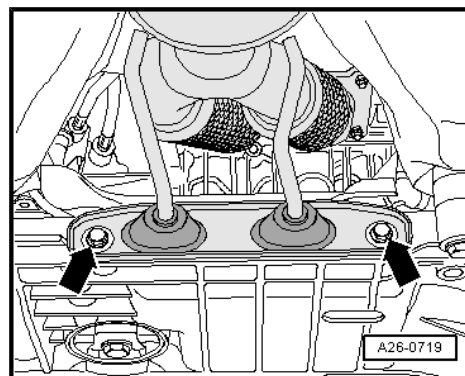


- Remove covers on vehicle underside -arrows- (left and right).

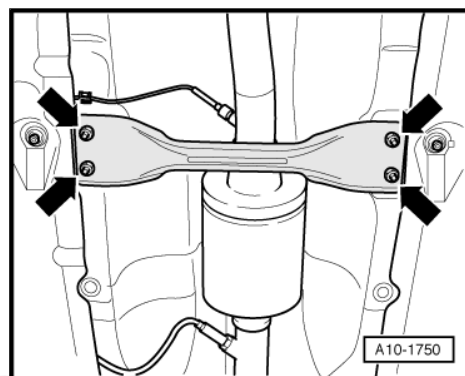


Vehicles with 2.0 ltr. FSI engine:

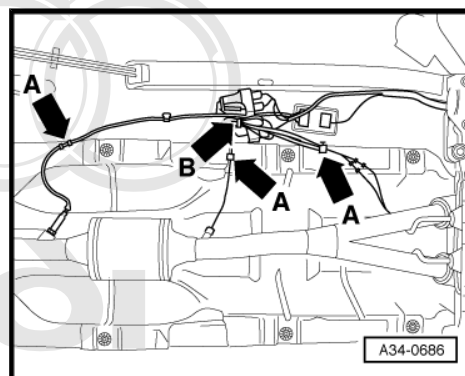
- Unbolt support bracket for exhaust system -arrows-.



- Remove front tunnel cross-piece on vehicle underside -arrows-.



- Unclip all wiring at heat shield -arrows A-.
- Cut open cable tie -arrow B-.



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- Remove rear tunnel cross-piece on vehicle underside -1-.
- Take up weight of front section of exhaust system at catalytic converter using engine/gearbox jack -V.A.G 1383 A- .

i Note

To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 30°.

- Disconnect exhaust system at clamp -arrows-.

i Note

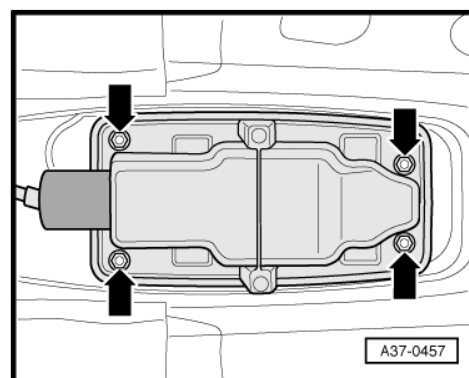
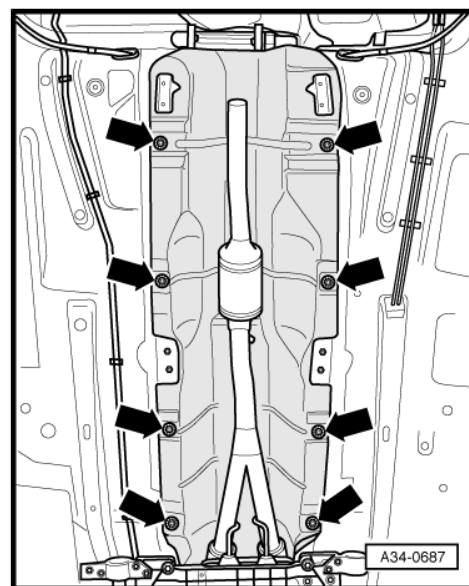
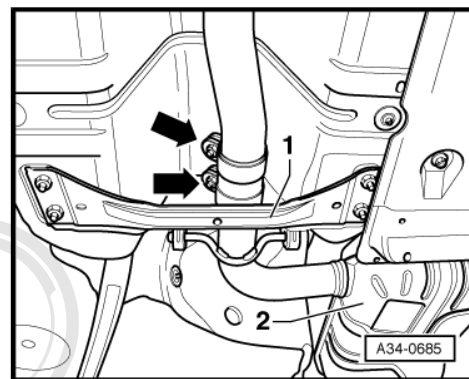
A second mechanic is required for removing the rear section of the exhaust system.

- Detach rear silencer -2- at rubber mountings and remove rear section of exhaust system.
- Lower front section of exhaust system slightly using engine and gearbox jack -V.A.G 1383 A-. Make sure there is sufficient clearance for Lambda probe wiring.

All vehicles:

- Release clips -arrows- and pull out heat shield from the rear.
- Shift selector lever to position „S“.

- Unscrew cover on underside of selector mechanism -arrows-.
- Carefully push cover including protective sleeve forwards over selector lever cable. Take care not to damage the protective sleeve.

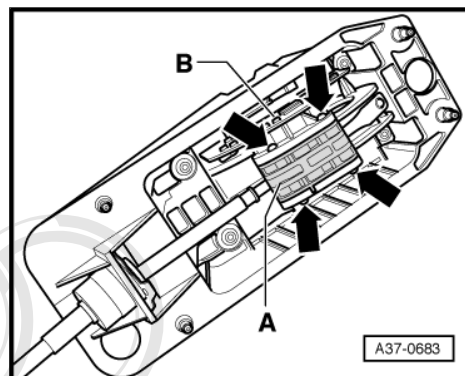


- Remove bolts -arrows-.



WARNING

- ◆ **Make sure you never touch the printed circuit -B- of the selector mechanism with your fingers, as the discharge of static electricity could destroy the electronic components on the printed circuit.**
- ◆ **The printed circuit can only be renewed together with the selector mechanism!**



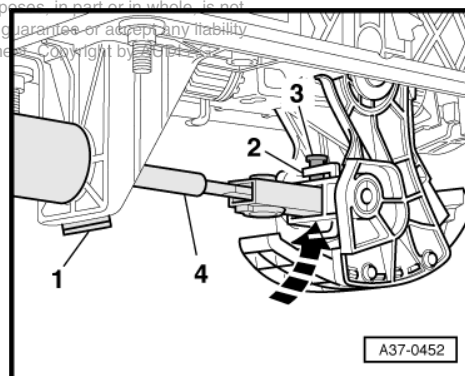
- Remove detent plate -A- from selector mechanism.



Note

The detent plate is engaged with retaining lugs on the left and right.

- Remove retaining clip -1- for selector lever cable by pulling it off downwards at the selector mechanism.
- Pull plastic securing spring -2- slightly forwards and press pin -3- upwards, but only as far as is necessary -arrow-.



Note

Ensure that pin is not pressed out completely.

- Pull selector lever cable -4- out of selector mechanism.



Note

Do not bend or kink the selector lever cable.

Installing selector lever cable

Installation is carried out in reverse sequence; note the following:



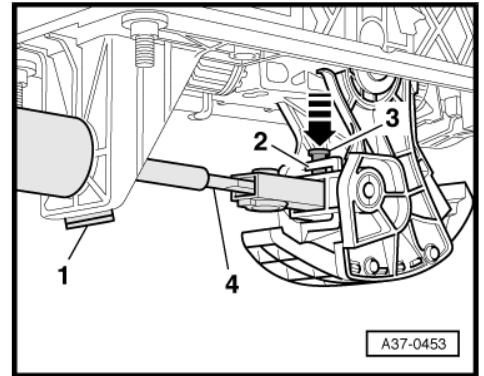
Note

- ◆ **Check the protective sleeve for damage; the protective sleeve can only be renewed together with the selector lever cable.**
- ◆ **Check that the protective sleeve is not twisted and is fitted correctly.**

For tightening torques for bolts and nuts as well as information on whether bolts and nuts have to be renewed refer to

⇒ „2.4 Dismantling and assembling selector mechanism - exploded view of components“, page 23 .

- Insert end of selector lever cable -4- in joint on selector lever.
- Push pin -3- down -arrow-.
- Check that plastic securing spring -2- has locked the pin.
- Fit new retaining clip -1- for selector lever cable on selector mechanism.
- Installation position: The angled end of the retaining clip faces to the inside of the selector mechanism.



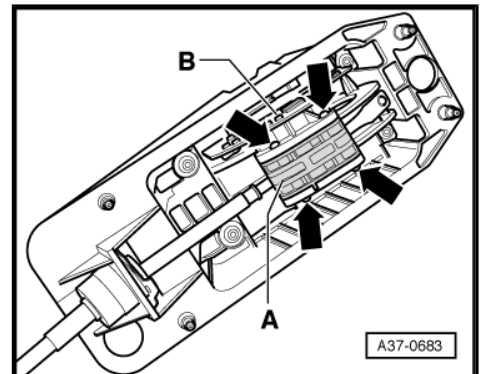
- Install detent plate -A-.



Note

The detent plate is engaged with retaining lugs on the left and right.

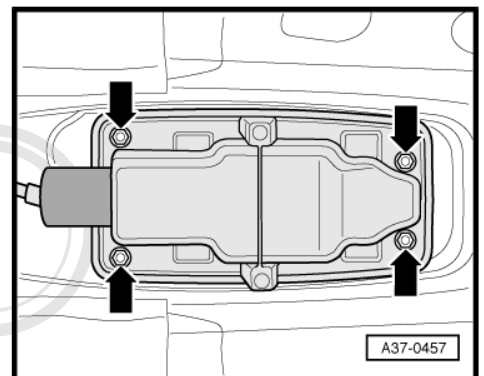
- Install bolts -arrows-.



WARNING

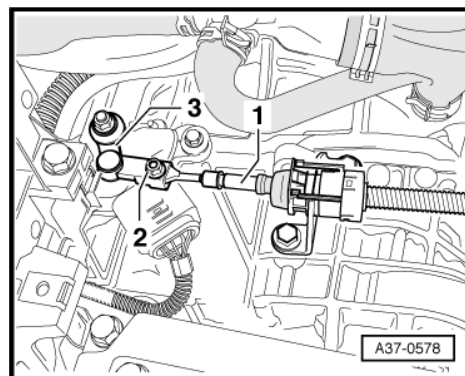
- ◆ ***Make sure you never touch the printed circuit -B- of the selector mechanism with your fingers, as the discharge of static electricity could destroy the electronic components on the printed circuit.***
- ◆ ***The printed circuit can only be renewed together with the selector mechanism!***

- Shift selector lever into position „P“.
- Secure cover with attached gasket to shift unit (hand-tight). When doing this check that gasket makes full contact.
- Secure cover to underside of selector mechanism -arrows-.
- Insert protective sleeve on selector lever cable in cover.

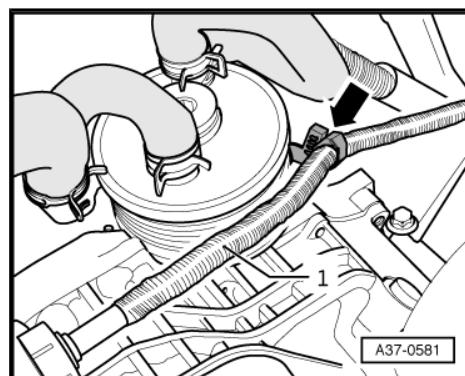


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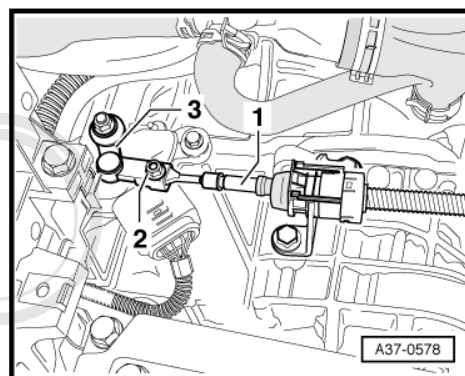
- Push selector shaft lever -3- on gearbox towards rear as far as possible into position „P“ (in illustration: as far as possible to the right) until parking lock engages. Both front wheels must be blocked (cannot both be turned simultaneously in the same direction).



- Hook selector lever cable -1- into clip -arrow- on gearbox. When routing the selector lever cable ensure a clearance of at least 5 mm from ATF cooler.



- Loosen bolt -2- at the front ball socket of the selector lever cable -1-.
- Insert selector lever cable in support bracket on the gearbox and carefully push onto selector shaft lever. Take care not to bend selector shaft lever, otherwise precise adjustment of selector mechanism will no longer be possible.
- Tighten bolt -2- to 13 Nm.
- Move selector lever from „P“ to „S“ and back again.
- Selector mechanism and selector lever cable must move freely. If necessary renew selector lever cable or service selector mechanism.



- Install exhaust system and ensure stress-free alignment ⇒ Engine, mechanics; Rep. gr. 26 .

- Install selector lever handle ⇒ [page 25](#) .

- Follow steps required after connecting battery ⇒ Electrical system; Rep. gr. 27 .

- Check selector mechanism ⇒ [page 20](#) .

2.10 Removing and installing tiptronic switch -F189-

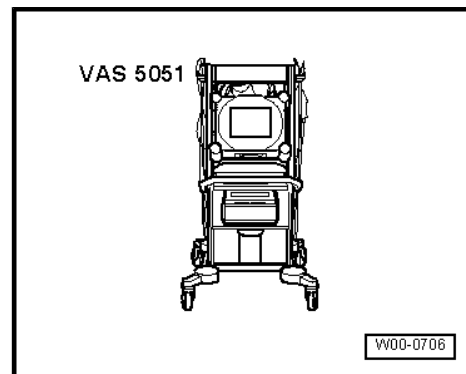
The tiptronic switch is integrated in the selector mechanism; it is therefore not possible to renew only the switch on its own. To renew it you must renew the selector mechanism ⇒ [page 28](#) .

2.11 Removing and installing selector lever lock solenoid -N110-

The selector lever lock solenoid is integrated in the selector mechanism; it is therefore not possible to renew only the solenoid on its own. To renew it you must renew the selector mechanism ⇒ [page 28](#) .

2.12 Checking connectors on selector mechanism

- Before checking and servicing the connectors, the exact cause of the failure must be determined as precisely as possible via the vehicle diagnostic, testing and information system -VAS 5051- in the modes „Guided Fault Finding“, „vehicle self-diagnosis“ and „testing system“.
- Before checking connectors, all control units in vehicle should be checked for fault entries; if necessary eliminate faults.



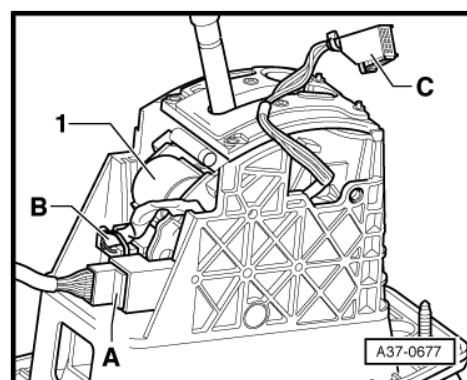
Electrical connectors on selector mechanism

A - 10-pin electrical connector for wiring from selector mechanism to automatic gearbox control unit -J217-

B - 4-pin connector for wiring to selector lever lock solenoid - N110- and selector lever locked in position P switch -F319-

C - 10-pin connector for wiring to cover of selector mechanism

- Check operation of ignition key withdrawal lock ➔ [page 22](#) .



2.13 Manual release of selector mechanism from position „P“

The selector lever lock solenoid -N110- locks the selector lever in position „P“. The selector lever can then only be shifted out of position „P“ when the ignition is on / the engine is running, the brake pedal is depressed and the button on the selector lever handle is pressed

➔ [„2.1 Checking selector mechanism“, page 20](#) .

In the event of malfunctions in the supply voltage to the selector lever lock solenoid (discharged battery or defective fuse) or if the solenoid is defective the selector lever cannot be shifted out of position „P“, i.e. the vehicle cannot be moved, as the parking lock is engaged.

In this case:

- Check fuses ➔ Current flow diagrams, Electrical fault finding and Fitting locations.
- Check battery voltage ➔ Electrical system; Rep. gr. 27 .

If fault finding has not been successful and selector lever can still not be shifted from „P“ the solenoid can be released manually. However, if the selector lever is then moved back to „P“ it will remain locked in position „P“ once again.

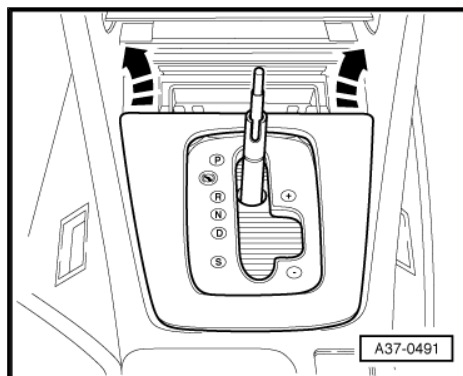
Manual release

- Open the ashtray on the centre console and remove the trim -arrows-.

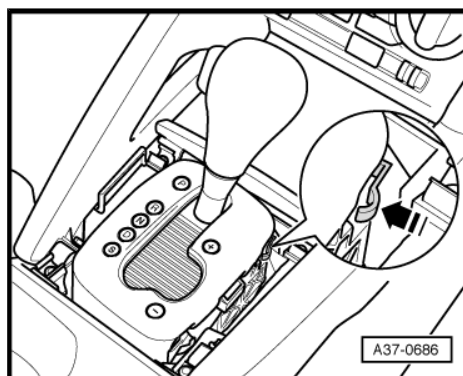


Note

When removing the cover ensure it does not get scratched or damaged.



- Take screwdriver from vehicle tool kit and carefully insert it from the top into the opening (retaining lug) on the side of the cover -arrow-.



- Use the screwdriver -1- to release the selector lever lock solenoid -A-.
- To do so press lever -B- inwards -arrow- with the screwdriver and keep it in this position. The solenoid will then release the selector lever.



WARNING

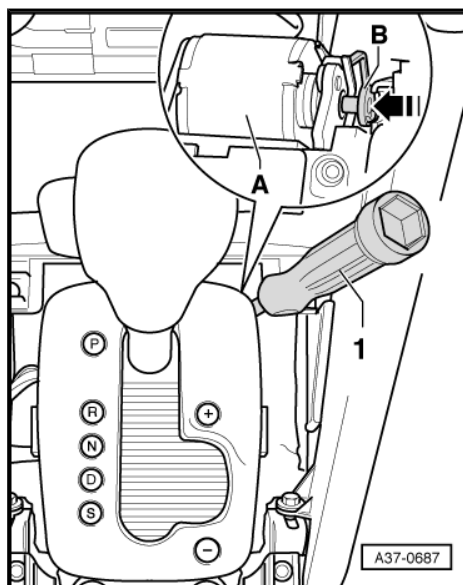
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If parts of the selector mechanism are damaged, the selector mechanism has to be renewed as a complete unit.



Note

In the illustration the selector lever lock solenoid is shown without the selector mechanism cover. However, the cover does not have to be removed in order to manually release the solenoid.

- Now press button on selector lever knob and shift selector lever out of „P“.



Note

However, if the selector lever is now moved back to „P“ the selector lever lock solenoid will once again mechanically lock it in position „P“.

3 Removing and installing gearbox

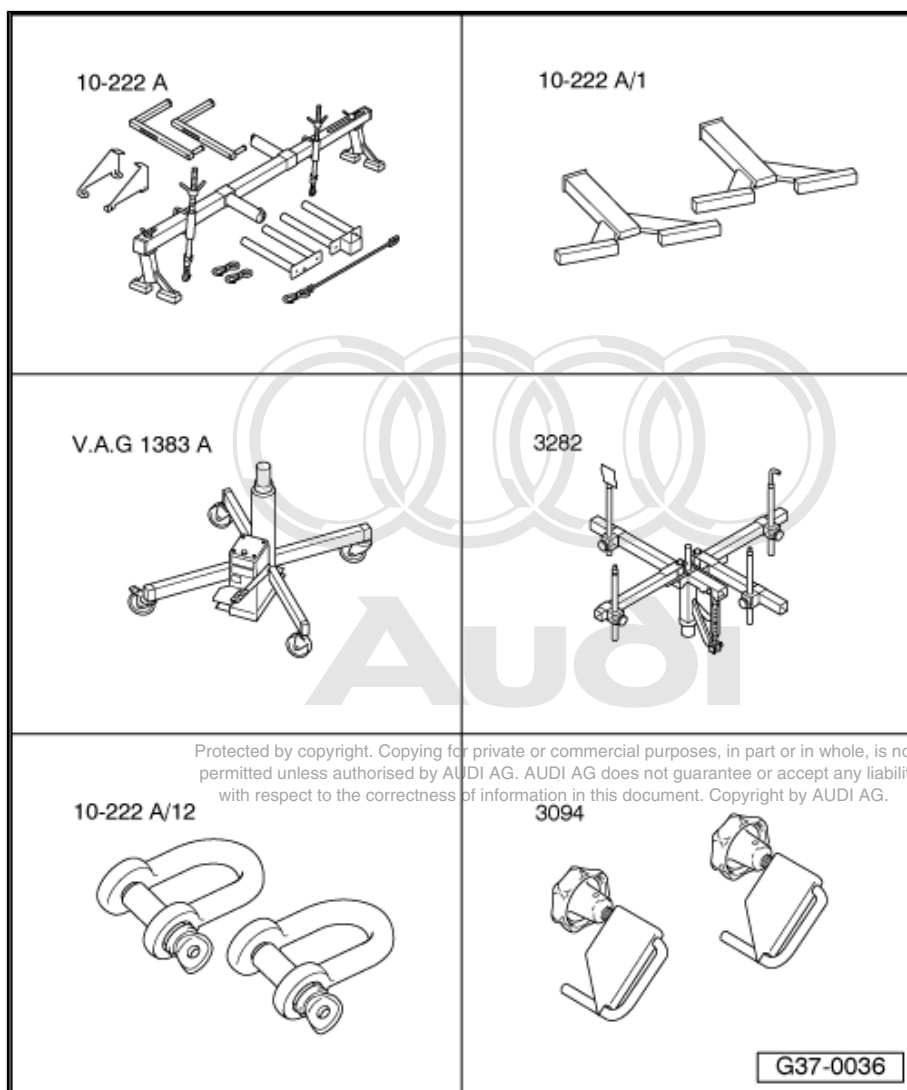
Overview:

- ◆ ➤ „3.1 Special tools, test and measuring appliances and auxiliary items required“, page 41
- ◆ ➤ „3.2 Removing gearbox on vehicles with 1.6 ltr. engine“, page 42
- ◆ ➤ „3.3 Removing gearbox on vehicles with 2.0 ltr. FSI engine“, page 51
- ◆ ➤ „3.4 Installing gearbox“, page 59

3.1 Special tools, test and measuring appliances and auxiliary items required

Special tools and workshop equipment required

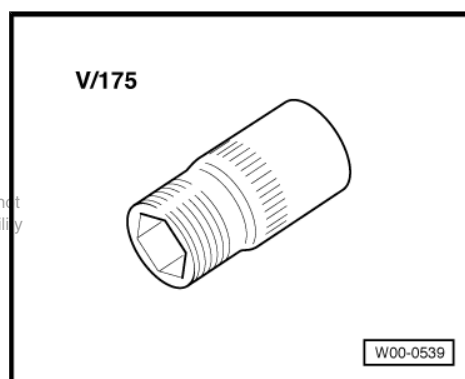
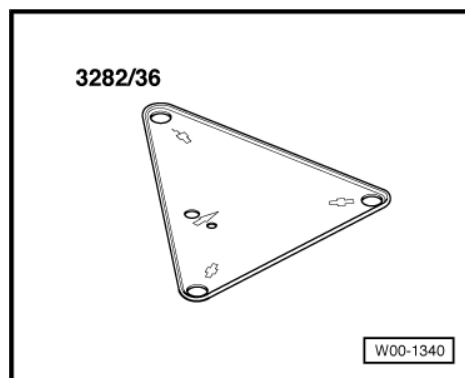
- ◆ Support bracket -10-222 A-
- ◆ Rack -10-222 A/1-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Gearbox support -3282-
- ◆ Shackle -10-222 A/12-
- ◆ Hose clamps, up to Ø 25 mm -3094-





- ◆ Adjustment plate -3282/36-
- ◆ Deep socket insert, 15 mm -V/175-

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3.2 Removing gearbox on vehicles with 1.6 ltr. engine

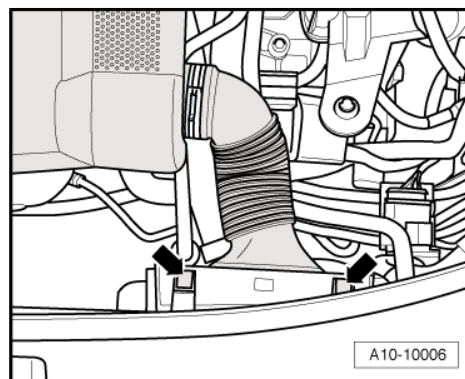
⇒ „3.1 Special tools, test and measuring appliances and auxiliary items required“, page 41



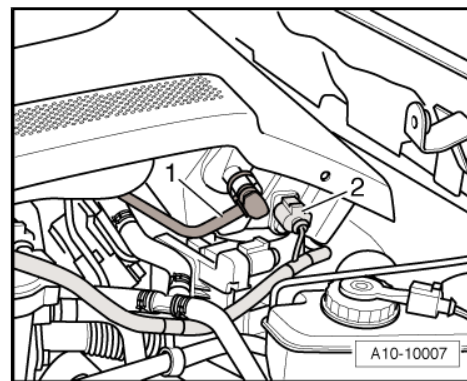
Note

All cable ties which are released or cut open when removing the gearbox must be refitted in the same position when installing the gearbox.

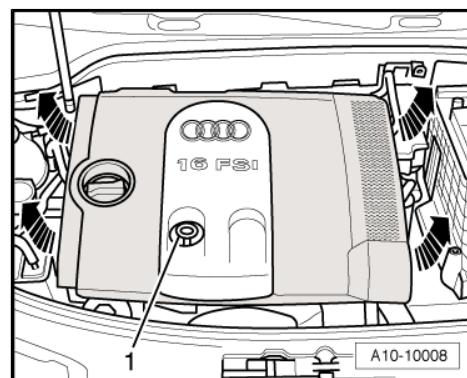
- Shift selector lever to position „P“.
- Unclip air intake hose from air duct -arrows-.



- Unplug electrical connector at intake air temperature sender -2- -G299- .
- Detach vacuum hose -1- from actuator for intake air preheater.



- Pull dipstick -1- out of guide tube.
- Remove engine cover panel with air cleaner housing -arrows-.
- Re-insert dipstick in guide tube.

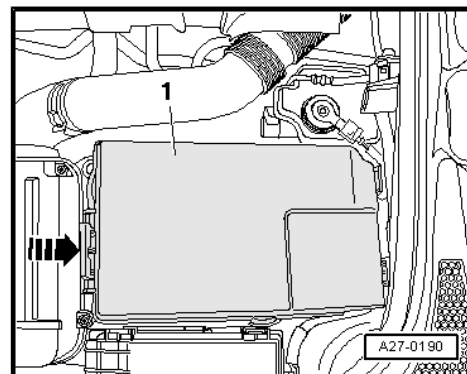


- Press release tab -arrow- and remove cover -1- over battery.

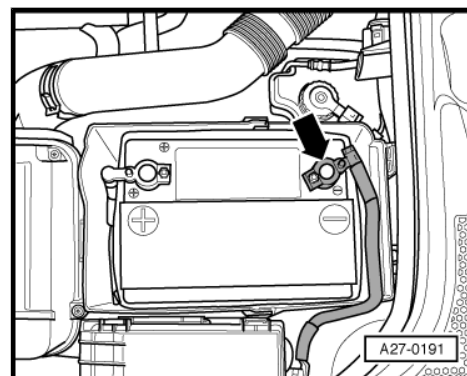


WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27 .

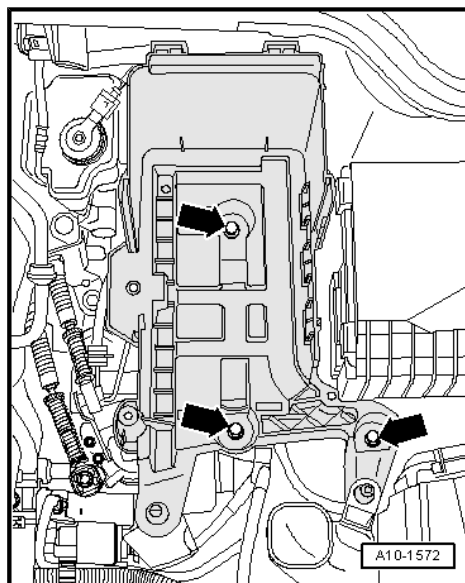


- With ignition switched off, disconnect earth wire -arrow- at battery.

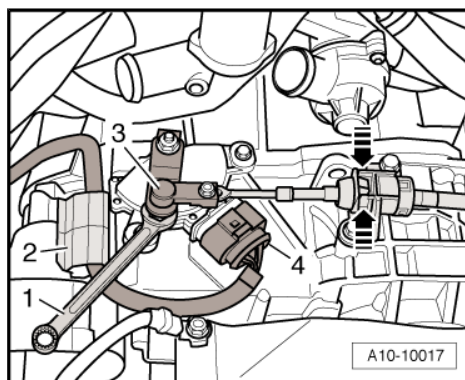


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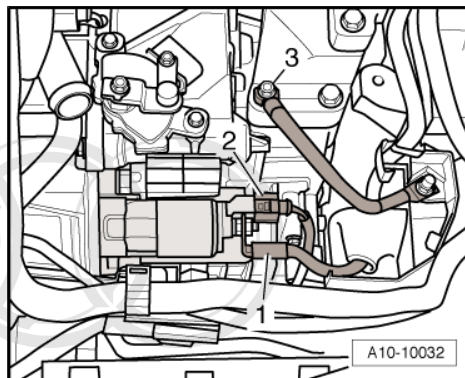
- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows-.



- Use an open-end spanner (10 mm) -item 1- or similar to lever selector lever cable -3- off selector shaft lever.
- Press together the retainers on the support bracket of the selector lever cable -arrows- and pull the selector lever cable out of the support bracket on the gearbox.
- Unplug electrical connector -4- and move electrical wiring clear at bracket -2-.
- Unscrew support bracket for gearshift cable from gearbox.



- Unscrew earth wire -3-.
- Detach electrical wires -1- and -2- at starter and move them clear.



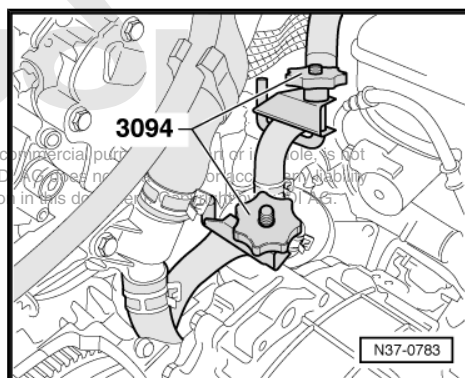
- Mark hoses leading to ATF cooler to avoid confusion when re-installing.



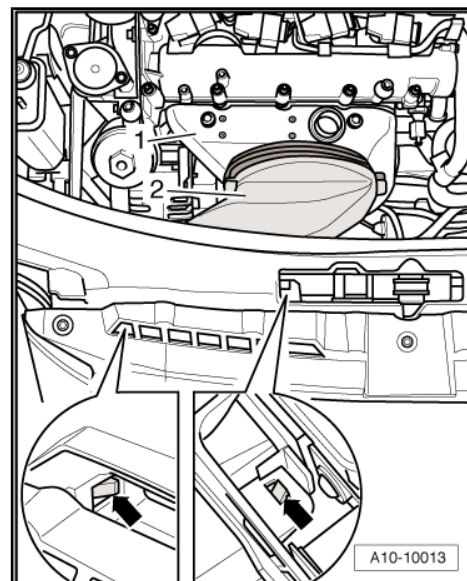
Note

Depending on the version, the vehicle may be fitted with a small plastic tube in the supply line to the ATF cooler. This tube has to be re-fitted as part of installation.

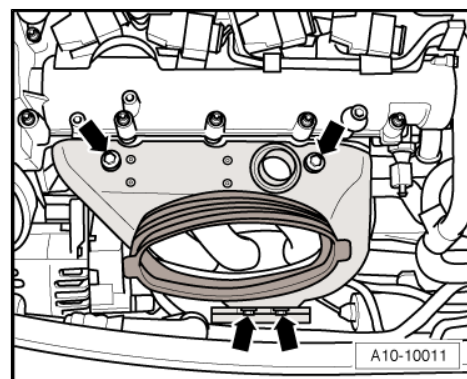
- Clamp off ATF cooler hoses using hose clamps -3094- and detach at ATF cooler.
- Seal off ATF cooler with clean plugs.



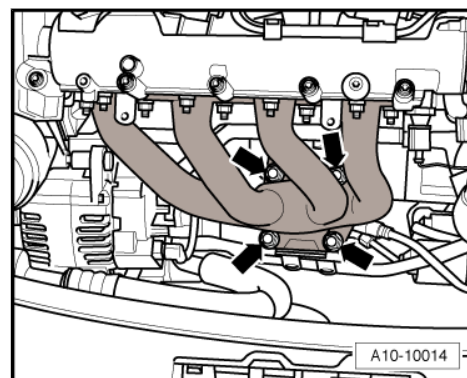
- Detach rubber bellows-1- from air duct -2-.
- Release both retainer tabs -arrows- and remove air duct.



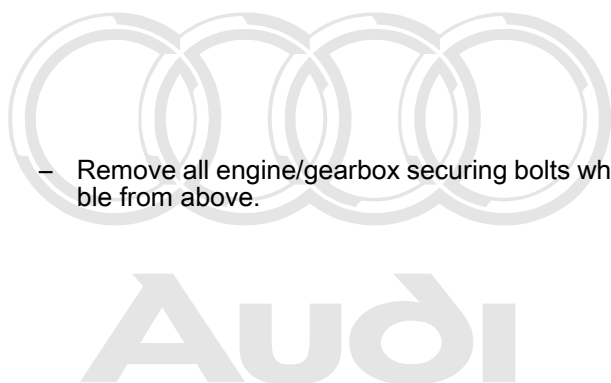
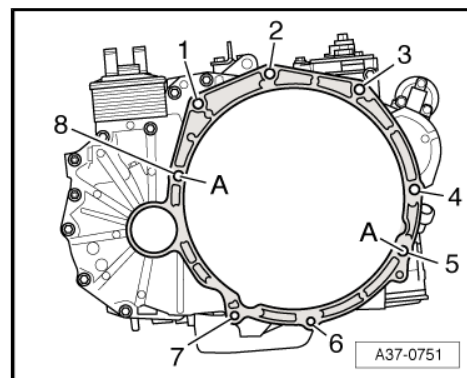
- Unscrew warm air collector plate -arrows-.



- Unbolt front exhaust pipe from exhaust manifold -arrows-.

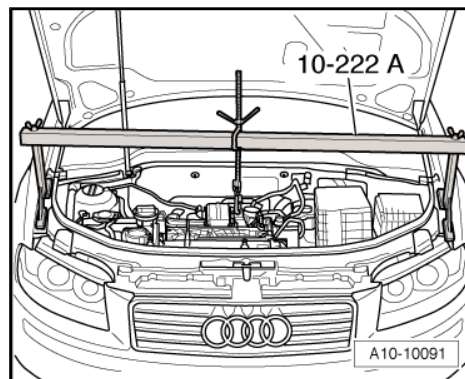


- Remove all engine/gearbox securing bolts which are accessible from above.

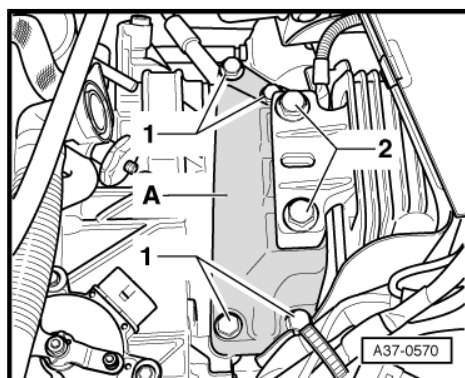


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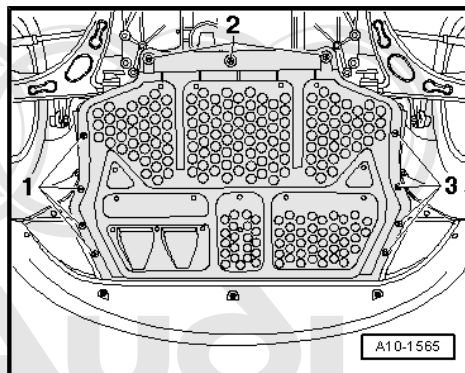
- Set up support bracket -10-222 A- on wing mounting flanges.
- Hook spindle of support bracket into engine lifting eye (left-side).
- Take up weight of engine with spindle; do not lift.



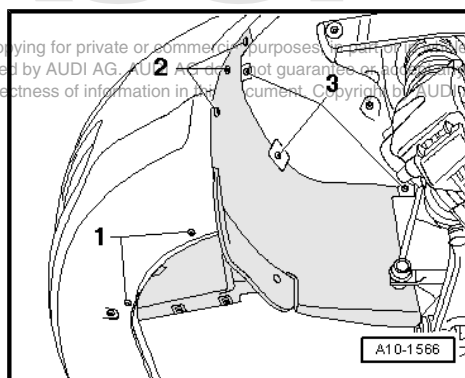
- Remove gearbox bracket -A-, to do so unscrew bolts -1- and -2-.



- Remove both front wheels.
- Remove centre noise insulation -fasteners 1 ... 3-.

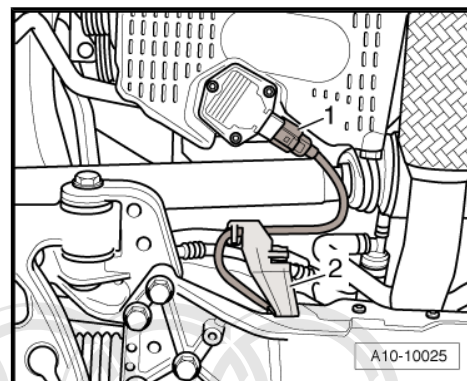


- Remove noise insulation (left and right) -fasteners 1 ... 3-.

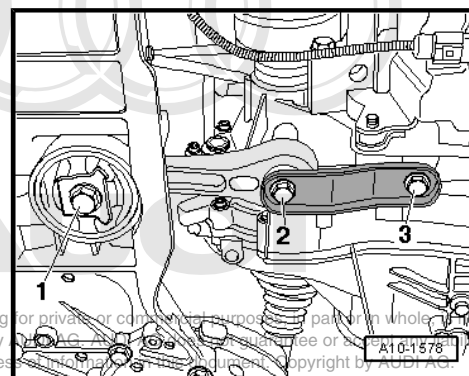


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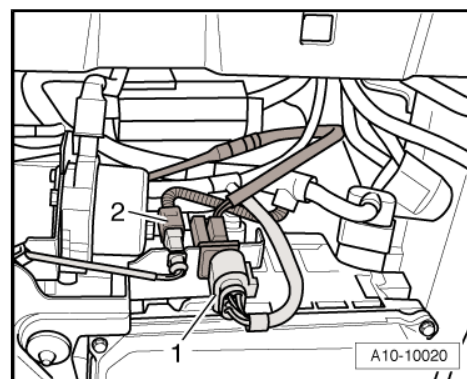
- Unplug electrical connector -1- at oil level/oil temperature sender -G266- .
- Unclip bracket -2- for electrical wiring to oil level/oil temperature sender -G266- at subframe.



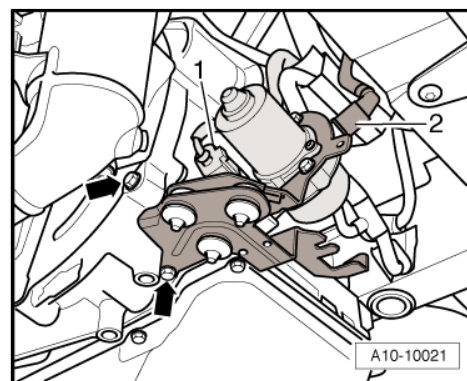
- Remove bolts -1 ... 3- and detach pendulum support.



- Unplug electrical connector -2- for Lambda probe -G39- and electrical connector -1- for exhaust gas temperature sender -1- -G235- .



- Detach electrical connector -1-.
- Pull off vacuum hose -2-.
- Unscrew bolts -arrows- and remove vacuum pump for brake servo.

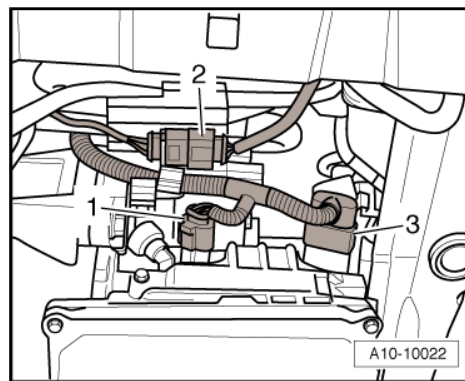


- Unplug electrical connectors -1- and -3- at automatic gearbox.
- Unscrew bracket for electrical wiring from bottom bolt securing starter.
- Tie bracket and electrical wiring to the front.



Note

-Item 2- can be disregarded.

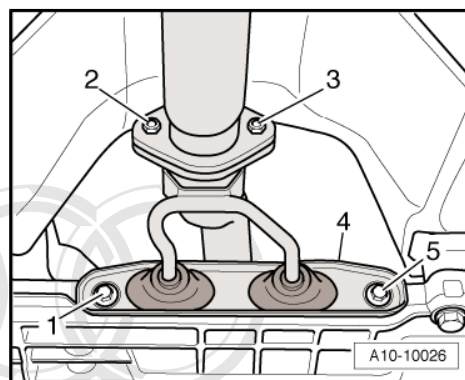


- Remove nuts -2- and -3- from exhaust system flange.
- Detach exhaust system at flange.
- Remove bolts -1- and -5-.
- Pull bracket -4- for exhaust system off pins on front exhaust pipe.



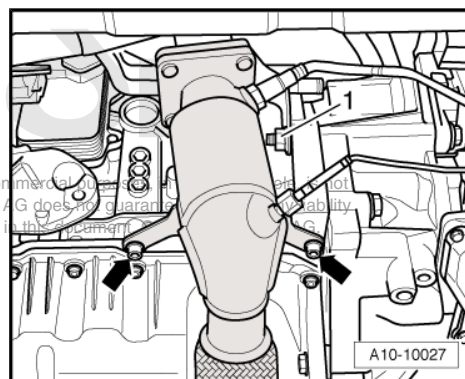
Note

To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 30°.

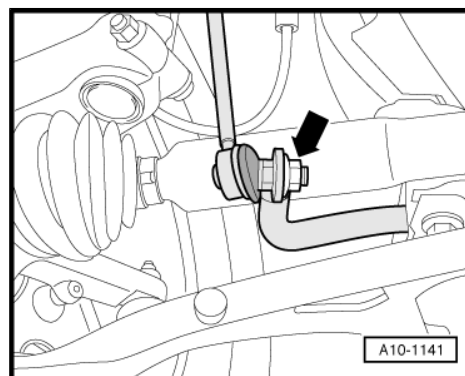


- Remove bolts -arrows-, swivel front exhaust pipe forwards and detach.
- Unscrew nuts -1- and detach support for exhaust manifold.

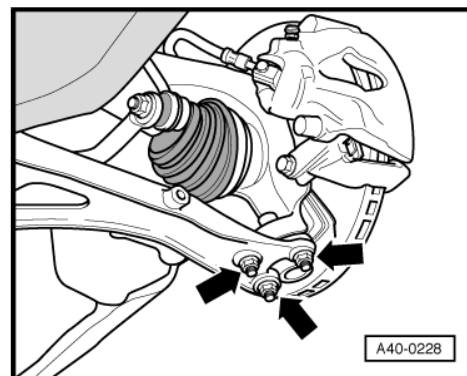
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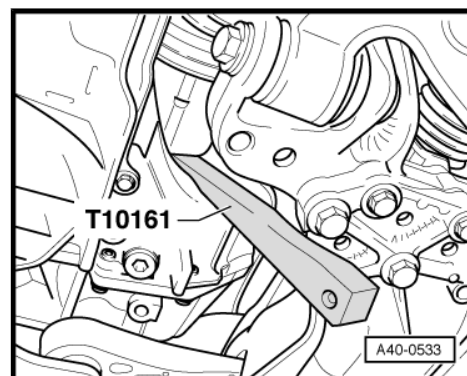
- Unscrew nuts -arrow- on both sides of vehicle and detach coupling rods from anti-roll bar.



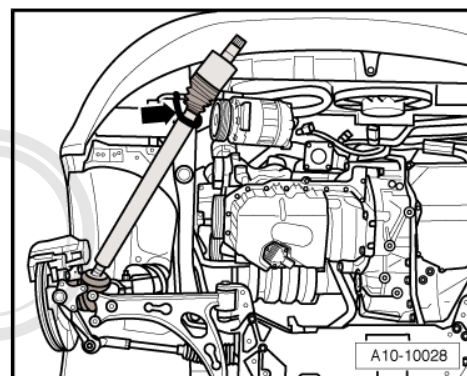
- Remove nuts -arrows- on swivel joint (left-side).
- If fitted, remove nut on bracket for front left vehicle level sender -G78- .
- Unhook wishbone from swivel joint.



- Swivel suspension strut outwards, at the same time pressing drive shaft out of wheel bearing unit with special tool -T10161-, tapping it lightly if necessary.



- Swivel drive shaft forwards, pulling engine/gearbox assembly forwards with force.
- Tie drive shaft to longitudinal member -arrow-.
- Repeat procedure on other side of vehicle.



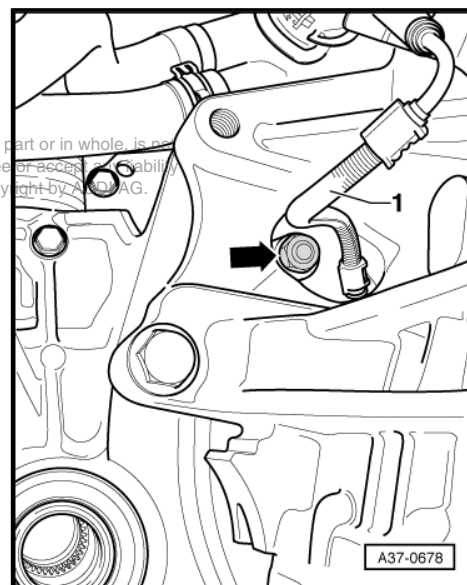
- Remove cover cap from opening for torque converter nuts.
- Remove the 6 nuts -arrow- from torque converter. To do so, turn crankshaft 60° further in each case.



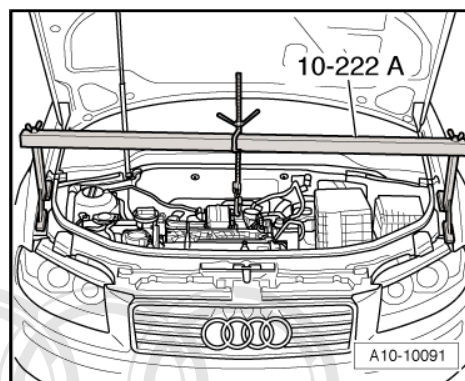
Note

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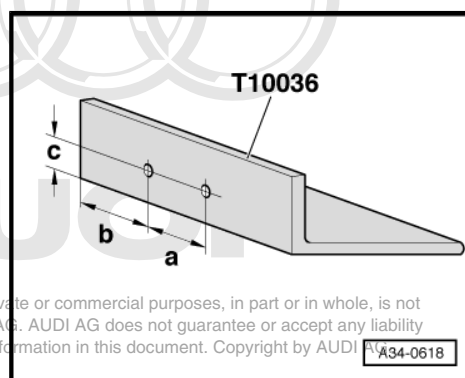
- ◆ Ensure that hose/pipe -1- does not get damaged when removing nuts.
- ◆ If the 6 nuts have not all been removed from torque converter, the torque converter will be pulled out when you remove the gearbox from the engine.



- Lower engine/gearbox assembly by approx. 50 mm using spindle.

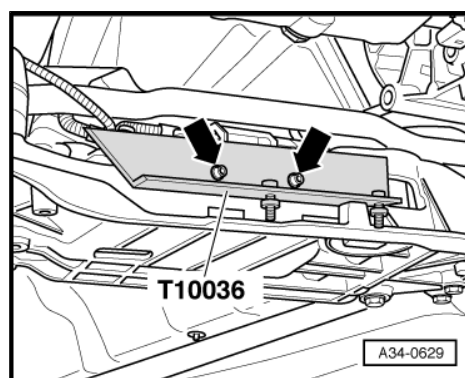


- Drill two 7 mm diameter holes in support -T10036-, as illustrated.
 - Distance -a- = 70 mm
 - Distance -b- = 98 mm
 - Distance -c- = 11 mm

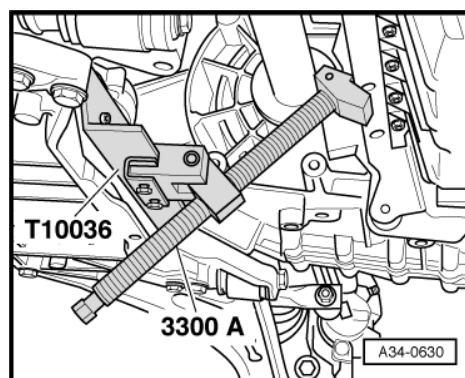


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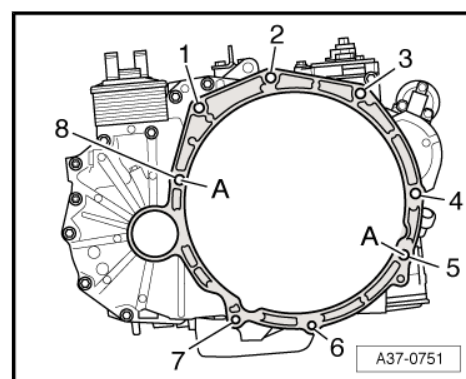
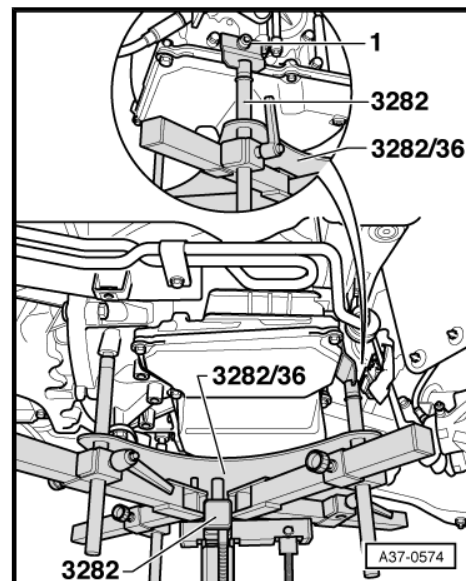
- Bolt support -T10036- onto subframe -arrows- using two M6×20 bolts.



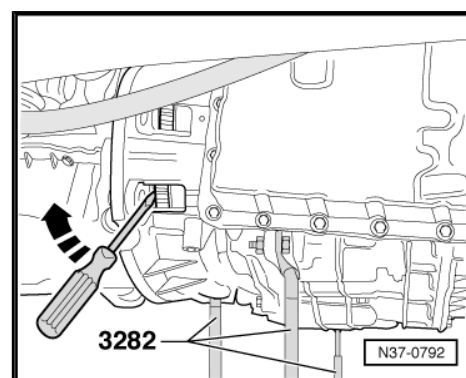
- Bolt engine support -3300 A- onto support -T10036- .
- Press engine approx. 50 mm towards front of vehicle using spindle of engine support.



- Set up gearbox support -3282- on engine and gearbox jack -V.A.G 1383 A- .
 - Place adjustment plate -3282/36- on gearbox support -3282- (adjustment plate only fits in one position).
 - Align arms of gearbox support to coincide with holes in adjustment plate.
 - Attach support elements as illustrated on adjustment plate.
 - Place engine/gearbox jack -V.A.G 1383 A- under vehicle; arrow symbol faces in direction of travel.
 - Position adjustment plate so it is parallel with gearbox.
 - Secure gearbox to gearbox support -3282- with bolt -1-.
 - Support the gearbox by lifting the gearbox jack from below.
-
- Remove remaining securing bolts between engine and gearbox.



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- Push gearbox off engine and at the same time press torque converter out of drive plate.
 - Press torque converter against ATF pump -arrow-.
 - Carefully pivot gearbox towards subframe.
 - Then carefully lower gearbox and guide it downwards past the subframe.
 - When lowering the gearbox, change position of gearbox using the spindles on gearbox support -3282- .
 - Secure the torque converter to prevent it from falling out.



3.3 Removing gearbox on vehicles with 2.0 ltr. FSI engine

⇒ „3.1 Special tools, test and measuring appliances and auxiliary items required“, page 41



Note

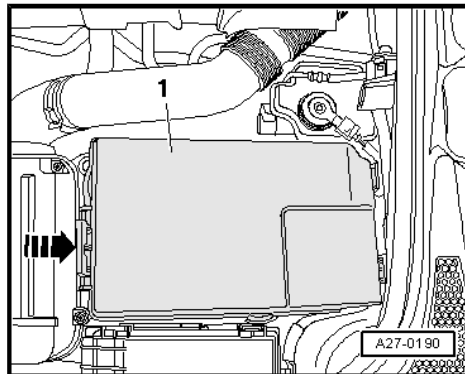
All cable ties which are released or cut open when removing the gearbox must be refitted in the same position when installing the gearbox.

- Shift selector lever to position „P“.

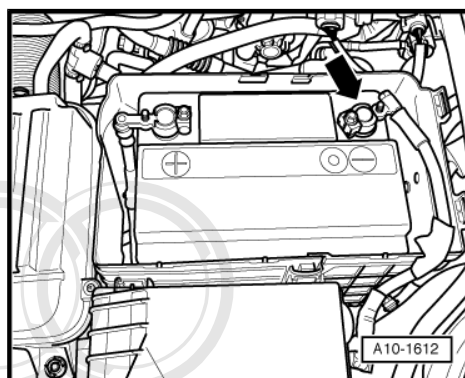

WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

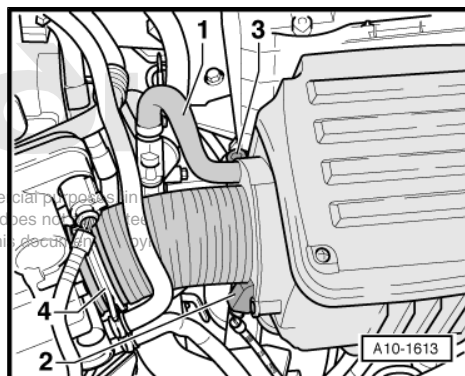
- Press release tab -arrow- and remove cover -1- over battery.



- With ignition switched off, disconnect earth wire -arrow- at battery.

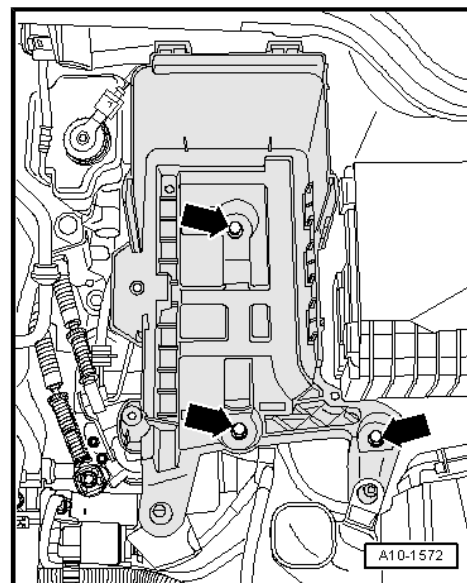


- Disconnect hose -1- and electrical connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

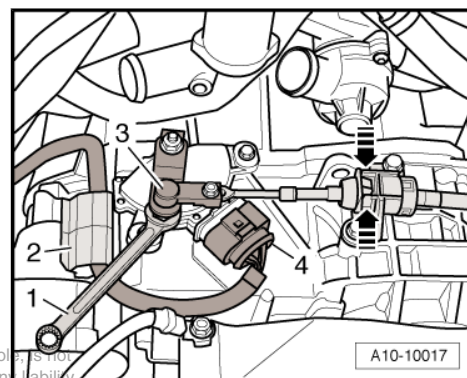


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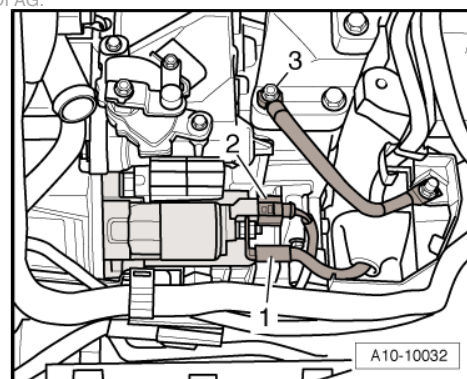
- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows-.



- Use an open-end spanner (10 mm) -item 1- or similar to lever selector lever cable -3- off selector shaft lever.
- Press together the retainers on the support bracket of the selector lever cable -arrows- and pull the selector lever cable out of the support bracket on the gearbox.
- Unplug electrical connector -4- and move electrical wiring clear at bracket -2-.
- Unscrew support bracket for gearshift cable from gearbox.



- Unscrew earth wire -3-.
- Detach electrical wires -1- and -2- at starter and move them clear.



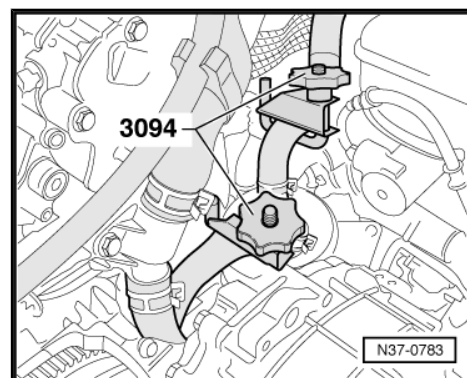
- Mark hoses leading to ATF cooler to avoid confusion when re-installing.



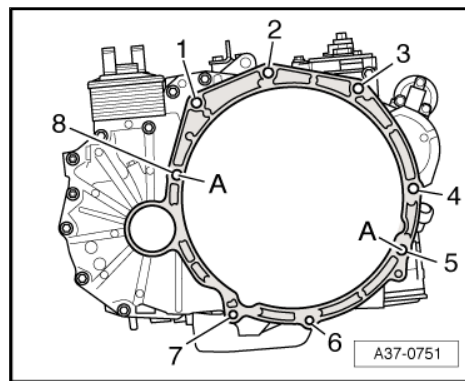
Note

Depending on the version, the vehicle may be fitted with a small plastic tube in the supply to the ATF cooler. This tube has to be re-fitted as part of installation.

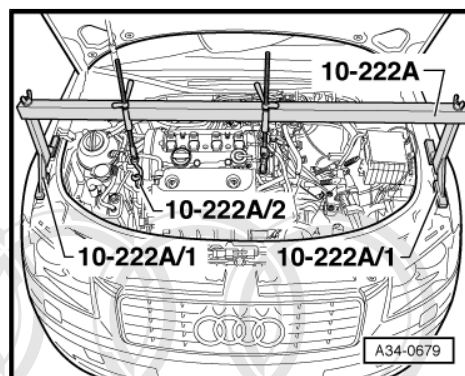
- Clamp off ATF cooler hoses using hose clamps -3094- and detach at ATF cooler.
- Seal off ATF cooler with clean plugs.



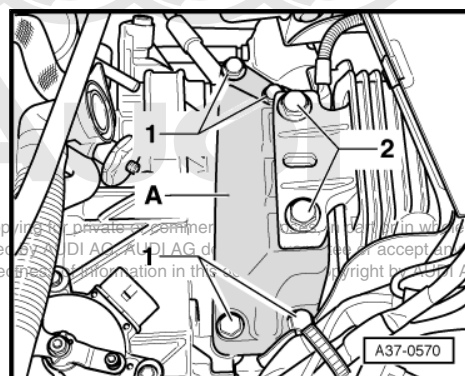
- Remove all engine/gearbox connecting bolts which are accessible from above.



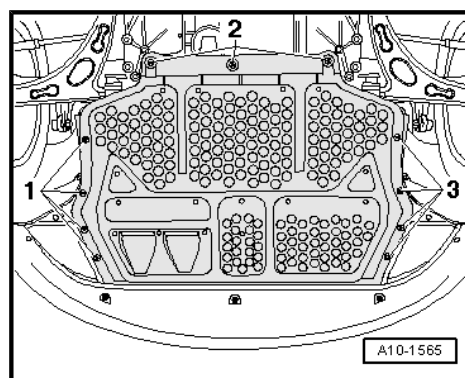
- Set up support bracket -10-222 A- on wing mounting flanges. Spindles face to the front.
- Hook spindles of support bracket into engine lifting eyes; use hook -10-222 A/2- for lifting eye (right-side).
- Take up weight of engine evenly with both spindles; do not lift.



- Remove gearbox bracket -A-, to do so unscrew bolts -1- and -2-.

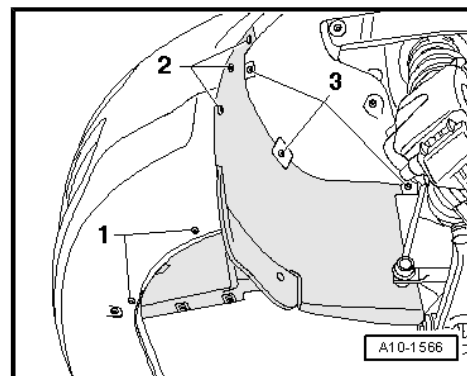


- Remove both front wheels.
- Remove centre noise insulation -fasteners 1 ... 3-.

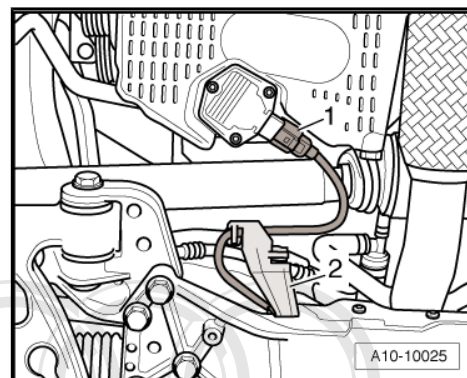


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- Remove noise insulation (left and right) -fasteners 1 ... 3-



- Unplug electrical connector -1- at oil level/oil temperature sender -G266- .



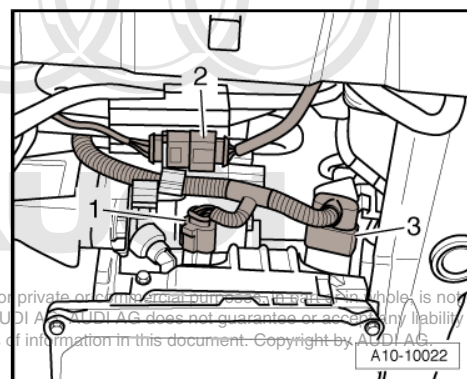
- Unplug electrical connectors -1- and -3- at automatic gearbox.
- Unscrew bracket for electrical wiring from bottom bolt securing starter.
- Tie bracket and electrical wiring to the front.



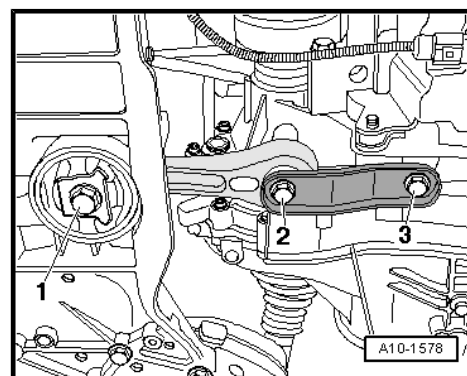
Note

-Item 2- can be disregarded.

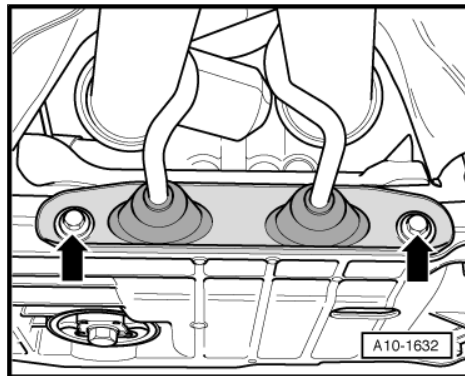
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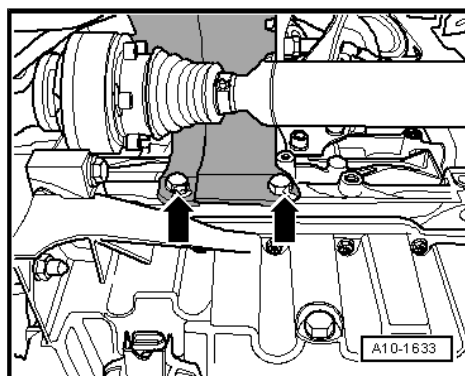
- Remove bolts -1 ... 3- and detach pendulum support.



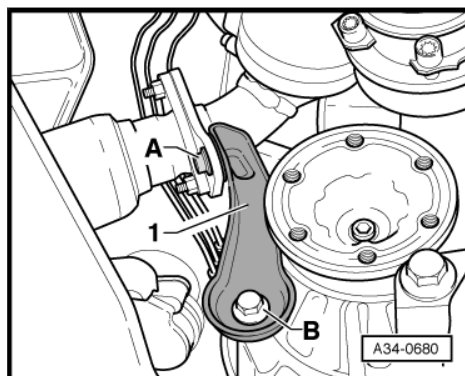
- Unbolt support bracket for exhaust system -arrows-.



- Unbolt heat shield for drive shaft (right-side), to do so remove bolts -arrows-.



- If fitted, remove bolts -A- and -B- and take out strut -1-.



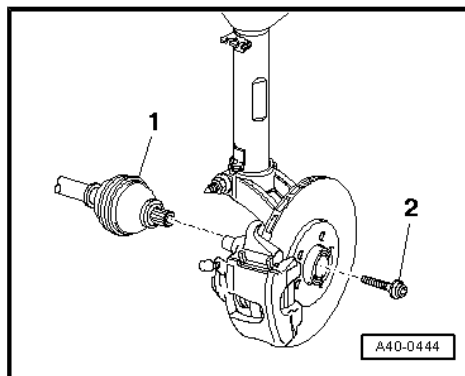
- Have a second mechanic apply the footbrake.



WARNING

The wheel bearing must not be under load (vehicle must not be standing on its wheels) when slackening the flange bolt for the drive shaft.

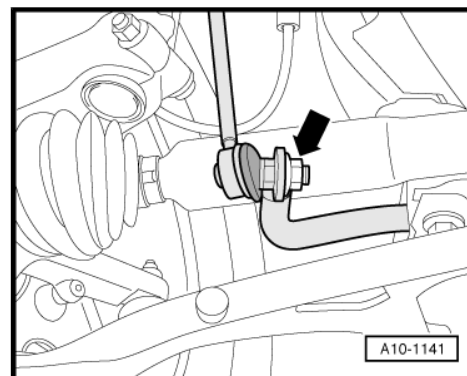
- Remove flange bolt -2- from drive shafts (left and right) -1-.



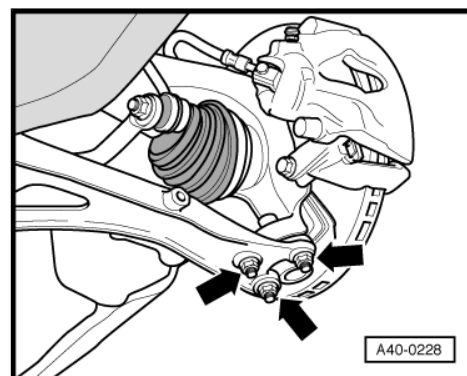
Audi

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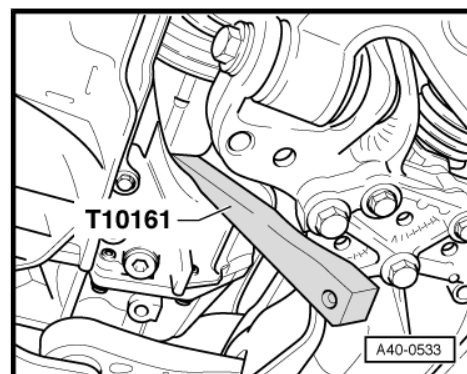
- Unscrew nuts -arrow- on both sides of vehicle and detach coupling rods from anti-roll bar.



- Remove nuts -arrows- on swivel joint (left-side).
- If fitted, remove nut on bracket for front left vehicle level sender -G78-.
- Unhook wishbone from swivel joint.



- Swivel suspension strut outwards, at the same time pressing drive shaft out of wheel bearing unit with special tool -T10161-, tapping it lightly if necessary.
- Remove drive shaft.
- Repeat procedure on other side of vehicle.

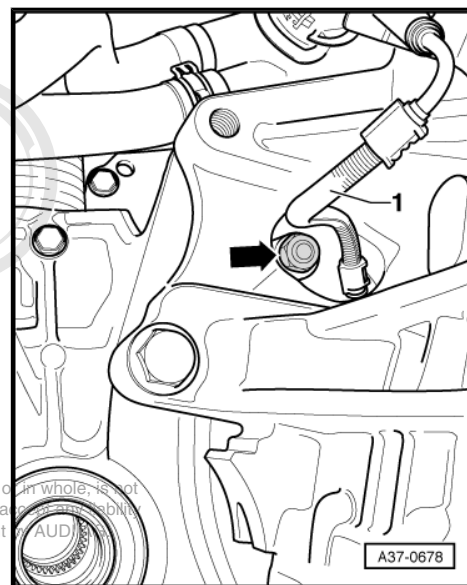


- Remove cover cap from opening for torque converter nuts.
- Remove the 6 nuts -arrow- from torque converter. To do so, turn crankshaft 60° further in each case.



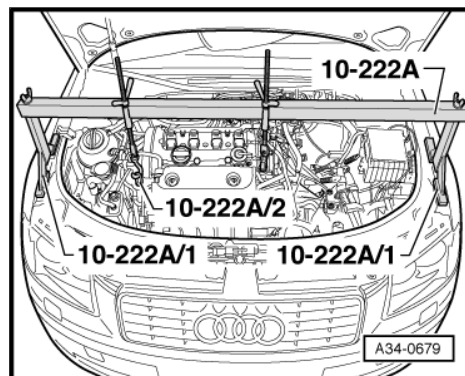
Note

- ◆ Ensure that hose/pipe -1- does not get damaged when removing nuts.
- ◆ If the 6 nuts have not all been removed from torque converter, the torque converter will be pulled out when you remove the gearbox from the engine.

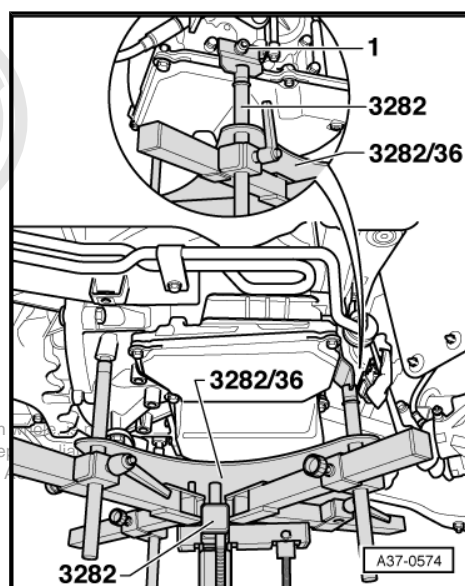


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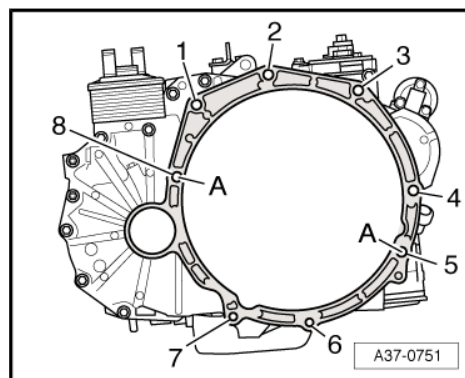
- Lower the engine/gearbox assembly by approx. 50 mm using the spindles.



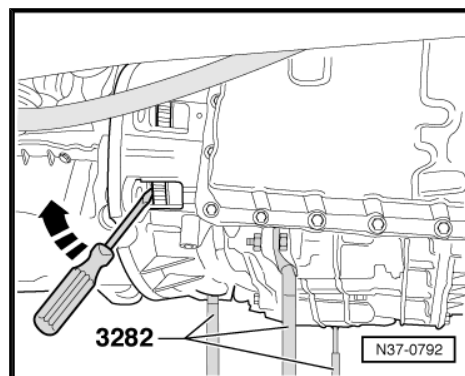
- Set up gearbox support -3282- on engine and gearbox jack - V.A.G 1383 A- .
- Place adjustment plate -3282/36- on gearbox support -3282- (adjustment plate only fits in one position).
- Align arms of gearbox support to coincide with holes in adjustment plate.
- Attach support elements as illustrated on adjustment plate.
- Place engine/gearbox jack -V.A.G 1383 A- under vehicle; arrow symbol faces in direction of travel.
- Position adjustment plate so it is parallel with gearbox.
- Secure gearbox to gearbox support -3282- with bolt -1-.
- Support the gearbox by lifting the gearbox jack from below.



- Remove remaining securing bolts between engine and gearbox.



- Push gearbox off engine and at the same time press torque converter out of drive plate.
- Press torque converter against ATF pump -arrow-.
- Carefully pivot gearbox towards subframe.
- Then carefully lower gearbox and guide it downwards past the subframe.
- When lowering the gearbox, change position of gearbox using the spindles on gearbox support -3282- .
- Secure the torque converter to prevent it from falling out.



3.4 Installing gearbox

⇒ „3.1 Special tools, test and measuring appliances and auxiliary items required“, page 41

Perform installation in reverse sequence of removal. Note the following:

Note

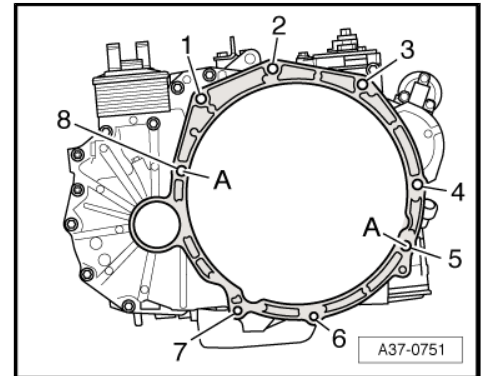
- ◆ *Renew self-locking nuts and bolts when performing assembly work.*
 - ◆ *Renew oil seals and gaskets, and bolts which are tightened by turning through a specified angle.*
 - ◆ *Secure all hose connections with the correct hose clips (as original equipment); refer to ⇒ Parts catalogue .*
 - ◆ *All cable ties which are released or cut open during removal must be fitted in the same position when installing.*
- Before installing the gearbox ensure that the torque converter has been correctly fitted in the gearbox ⇒ [page 11](#) .



WARNING

If the torque converter is not fitted correctly, the torque converter drive lugs or the ATF pump will be seriously damaged when the gearbox is joined to the engine.

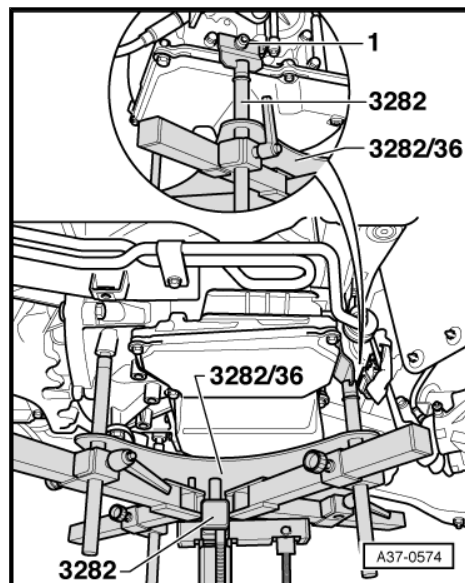
- Before installing, ensure that dowel sleeves -A- are correctly located.



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To install automatic gearbox 09G set up gearbox support -3282- with adjustment plate -3282/36- .

- Align arms of gearbox support according to holes in adjustment plate.
- Secure support elements as illustrated on adjustment plate -3282/36- .
- Secure gearbox to gearbox support -3282- with bolt -1-.
- Raise gearbox carefully and move to installation position using gearbox support -3282- .
- Install all engine/gearbox securing bolts which are accessible from below ⇒ „3.4.1 Tightening torques“, page 62 .

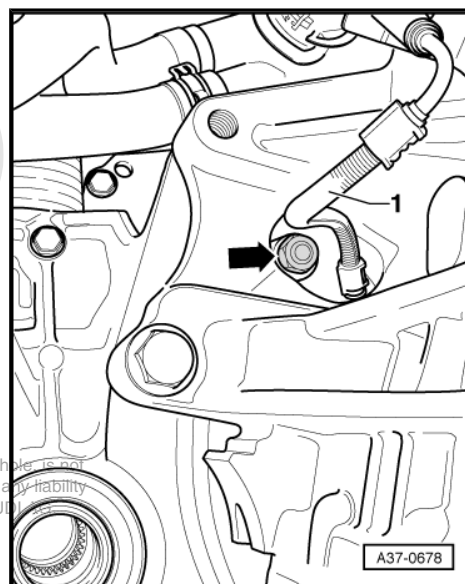


- Use socket -V/175- (15 mm) to install the 6 nuts -arrow- securing torque converter to drive plate ⇒ page 63 .
- The nuts must always be renewed.
- To do so, turn crankshaft 60° further in each case.



WARNING

If a nut should fall into the opening of the torque converter it has to be removed. It may be necessary to separate the gearbox from the engine once more.



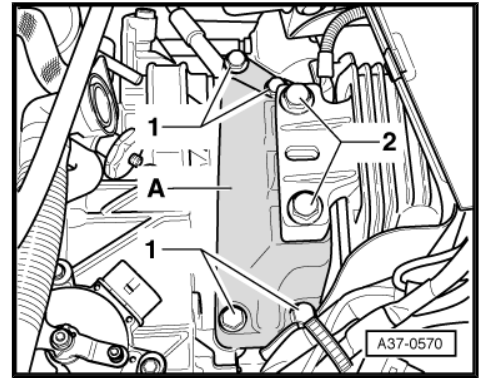
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- Install assembly mounting as follows:
- Place gearbox bracket -A- between gearbox and gearbox mounting.
- Pull gearbox up to gearbox support with spindle on support bracket.



WARNING

Before tightening bolts -1- and -2- gearbox mounting and gearbox bracket must be aligned in an absolutely parallel position, otherwise the threads will be damaged. If necessary, push gearbox up at rear with trolley jack.



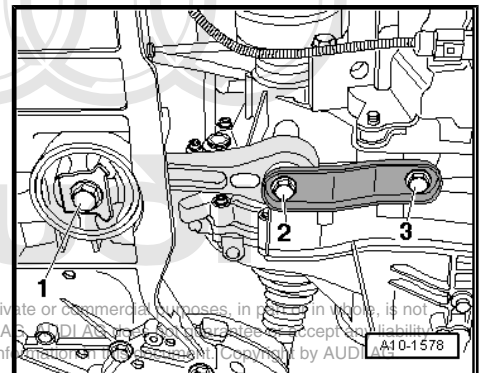
- Use new bolts.
- Install gearbox bracket -A- ➔ [page 63](#) .



WARNING

Support bracket -10-222 A- must not be removed until all bolts on left and right assembly mountings have been tightened to specified torque.

- Install pendulum support ➔ [page 68](#) .
- Use new bolts.
- Install the remaining bolts for securing engine/gearbox ➔ [„3.4.1 Tightening torques“, page 62](#) .
- Install drive shafts ➔ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Install starter ➔ Electrical system; Rep. gr. 27 .



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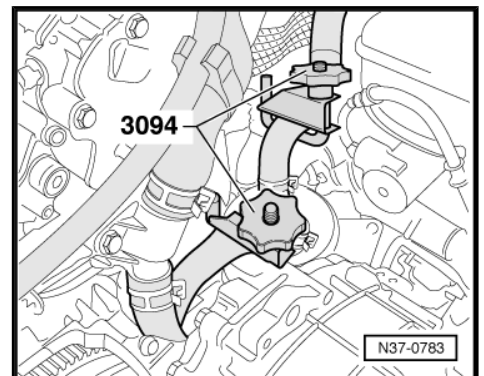
- Install hoses on ATF cooler according to markings on cooler.



Note

Depending on the version, the vehicle may be fitted with a small plastic tube in the supply line to the ATF cooler. This tube has to be re-fitted as part of installation.

- Install battery ➔ Electrical system; Rep. gr. 27 .
- Check and top up ATF level ➔ [page 71](#) .
- Check selector lever cable setting and adjust if necessary ➔ [page 21](#) .
- Check coolant level in cooling system ➔ Engine, mechanics; Rep. gr. 19 .



3.4.1 Tightening torques

Vehicles with 2.0 ltr. FSI engine (85 kW):

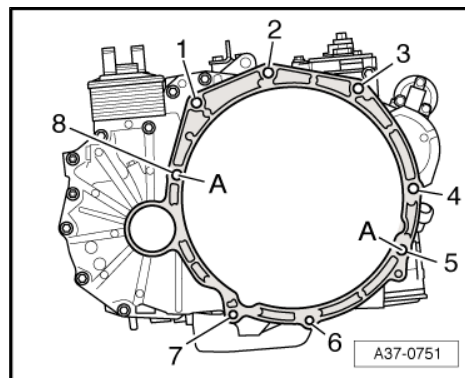
Gearbox to engine

Item	Bolt	Qty.	Nm
1	M12 x 55	1	80
2	M12 x 55	1	80
3 ¹⁾ 2)	M12 x 165	1	80
4 ¹⁾ 2)	M12 x 165	1	80
5	M10 x 65	1	40
6	M10 x 55	1	40
7	M10 x 55	1	40
8	M12 x 85	1	80
A	Dowel sleeves for centralising		

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1) Bolt with stud M8.

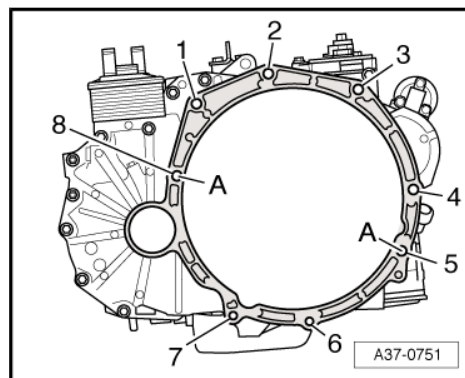
2) This bolt also secures starter to gearbox.



Vehicles with 1.6 ltr. FSI engine (85 kW):

Gearbox to engine

Item	Bolt	Qty.	Nm
1	M12 x 55	1	80
2	M12 x 55	1	80
3	M12 x 55	1	80
4	M12 x 180 Bolt with stud M8 Also secures starter to gearbox If there is a nut at the end of bolt (from engine side) it must also be tightened to 80 Nm.	1	80
5	M12 x 80	1	80
6	M10 x 50	1	40
7	M10 x 50	1	40
8	M12 x 80	1	80
A	Dowel sleeves for centralising		



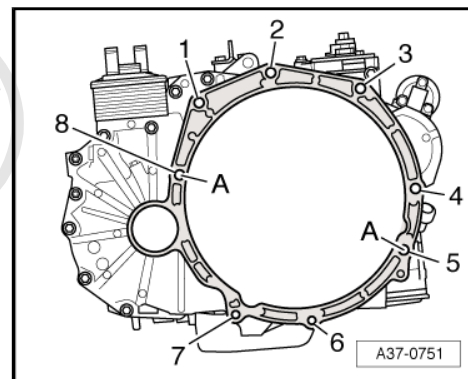
Vehicles with 1.6 ltr., 2-valve engine (75kW):

Gearbox to engine

Item	Bolt	Qty.	Nm
1	M12 x 55	1	80
2	M12 x 55	1	80
3 ³⁾ 4)	M12 x 165	1	80
4 ³⁾ 4)	M12 x 165	1	80
5	M10 x 65	1	40
6	M10 x 55	1	40
7	M10 x 55	1	40
8	M12 x 100	1	80
A	Dowel sleeves for centralising		

3) Bolt with stud M8.

4) This bolt also secures starter to gearbox.



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Gearbox bracket to gearbox and gearbox mounting

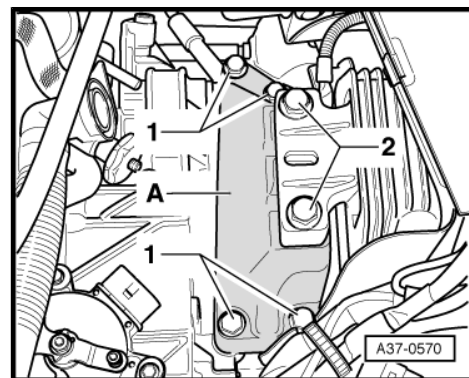
Component	Nm
Gearbox bracket -A- to gearbox, bolts -1-, renew bolts	40 + 90° ⁵⁾
Gearbox bracket -A- to gearbox mounting, bolts -2-,renew bolts	60 + 90° ⁵⁾

5) 90° = one quarter turn.



Note

Install engine/gearbox mountings stress-free ➔ Engine, mechanics; Rep. gr. 10 .

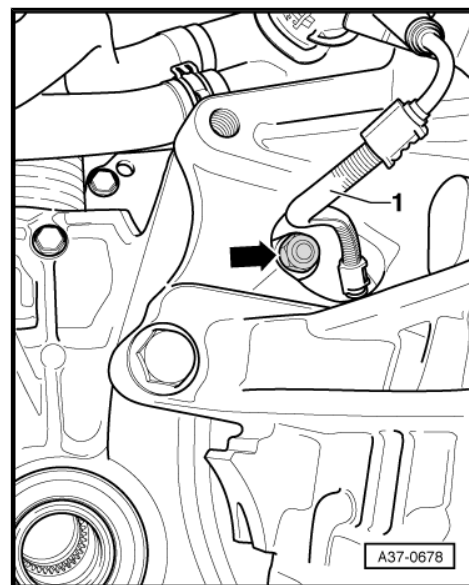


Torque converter to drive plate

Component	Nm
Torque converter to drive plate, 6 nuts -arrow-, renew nuts	57

All remaining bolted connections

Component		Nm
Bolts/nuts	M6	10
	M8	20
	M10	45
	M12	65



4 Gearbox mounting

Overview:

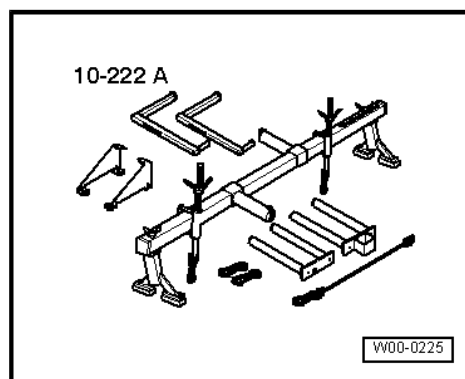
- ◆ ⇒ „4.1 Removing and installing gearbox mounting“, page 64
- ◆ ⇒ „4.2 Removing and installing pendulum support“, page 68

4.1 Removing and installing gearbox mounting

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Special tools and workshop equipment required

- ◆ Support bracket -10-222 A-



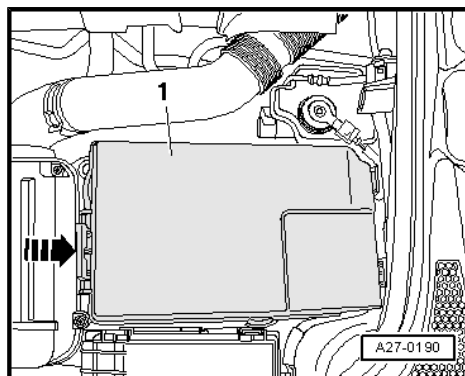
Removing gearbox mounting

- Press release tab -arrow- and remove cover -1- over battery.

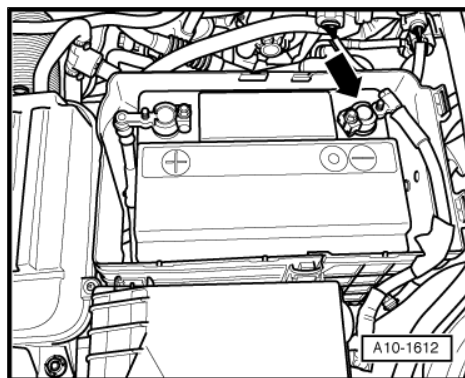


WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

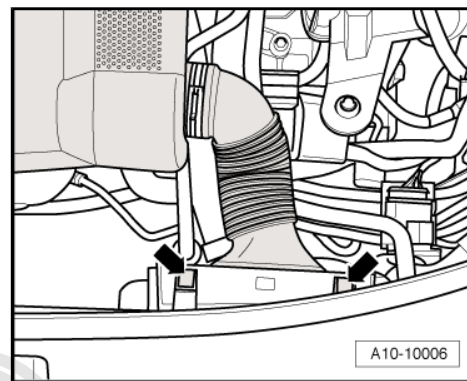


- With ignition switched off, disconnect earth wire -arrow- at battery.

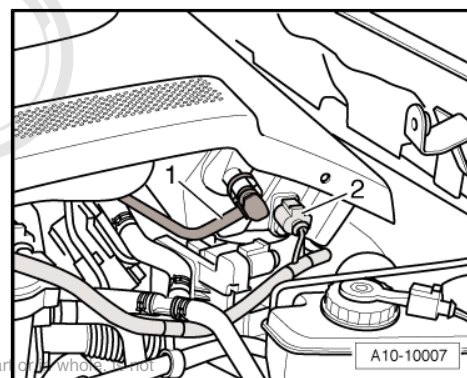


Vehicles with 1.6 ltr. FSI engine:

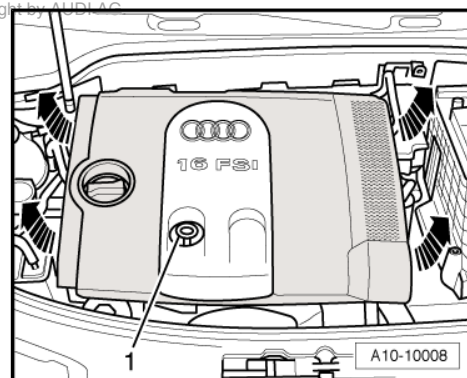
- Unclip air intake hose from air duct -arrows-.



- Unplug electrical connector at intake air temperature sender -2- -G299- .
- Detach vacuum hose -1- from actuator for intake air preheater.

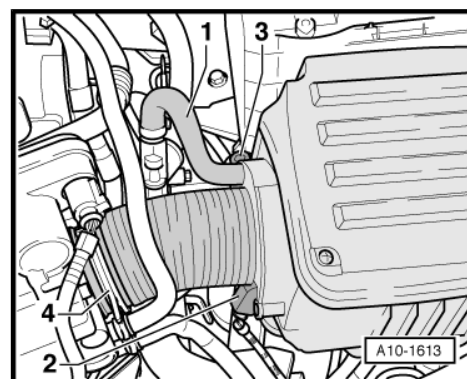


- Pull dipstick -1- out of guide tube.
- Remove engine cover panel with air cleaner housing -arrows-.
- Re-insert dipstick in guide tube.



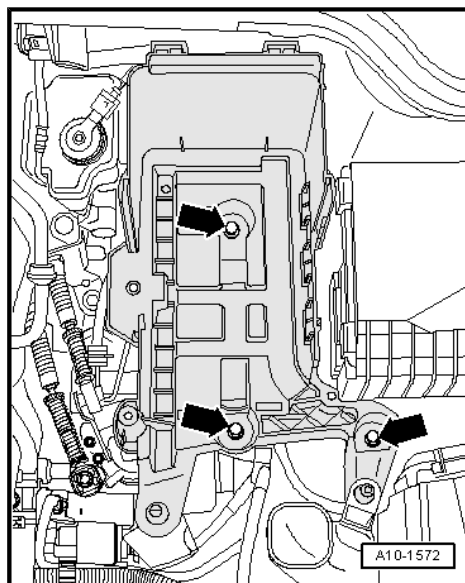
Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and electrical connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

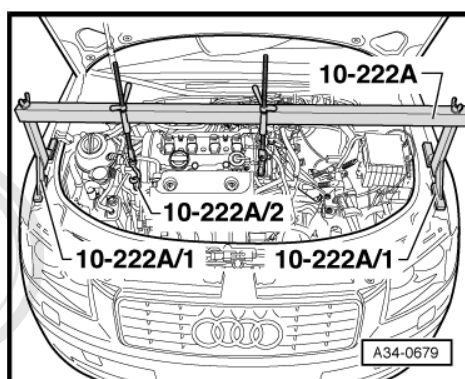


All vehicles:

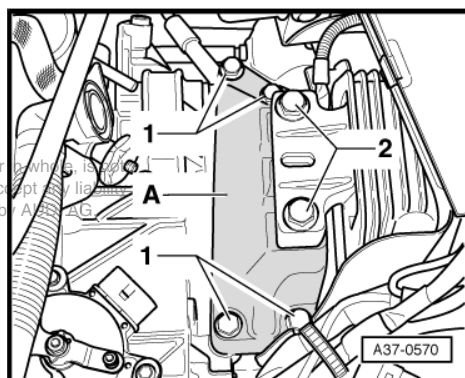
- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows-.



- Set up support bracket -10-222 A- on wing mounting flanges. Spindles face to the rear.
- Hook spindles of support bracket into engine lifting eyes; use hook -10-222 A/2- for lifting eye (right-side).
- Take up weight of engine evenly with both spindles; do not lift.



- Unscrew bolts -2- to release the gearbox bracket -A- from the gearbox mounting.



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- Remove all components to obtain access to bolts -1-.
- Remove bolts -1-.
- Take off gearbox mounting -A-.

Installing gearbox mounting

Perform installation in reverse sequence of removal. Note the following:

Component	Nm
Gearbox mounting -A- to body, bolts -1-, renew bolts	40 + 90° ⁶⁾

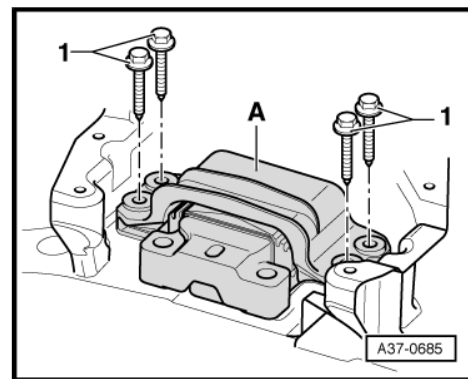
6) 90° = one quarter turn.

- Pull gearbox up to gearbox support with spindle on support bracket.



WARNING

Before tightening bolts between gearbox mounting and gearbox bracket, the mounting and bracket must be aligned in an absolutely parallel position, otherwise the threads will be damaged. If necessary, push gearbox up at rear with trolley jack.



Gearbox bracket to gearbox mounting

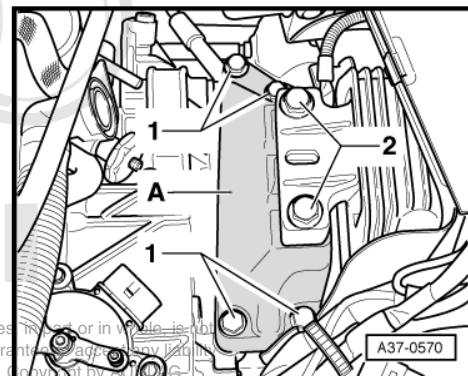
Component	Nm
Gearbox bracket -A- to gearbox mounting, bolts -2-, renew bolts	60 + 90° ⁷⁾

7) 90° = one quarter turn.



Note

Install engine/gearbox mountings stress-free → Engine, mechanics; Rep. gr. 10.



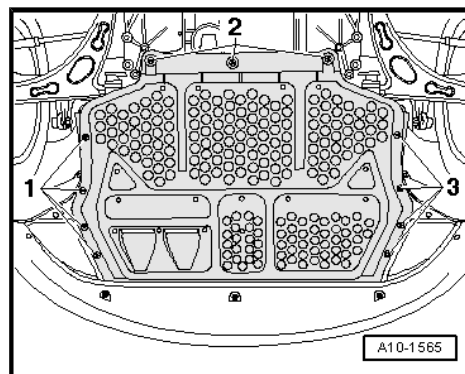
WARNING

Support bracket -10-222 A- must not be removed until all bolts on left and right assembly mountings have been tightened to specified torque.

4.2 Removing and installing pendulum support

Removing pendulum support

- Remove centre noise insulation -fasteners 1 ... 3-.



- Remove bolts -1 ... 3- and detach pendulum support.

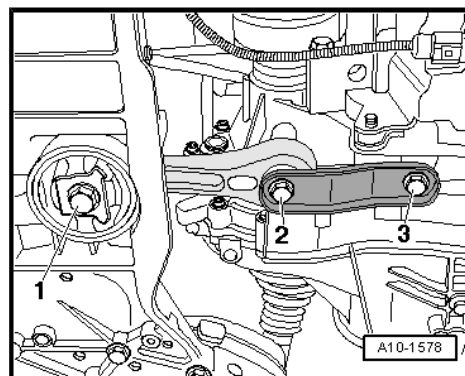
Installing pendulum support

Perform installation in reverse sequence of removal. Note the following:

- Bolt pendulum support onto gearbox first, and then secure to subframe.

Component	Nm
Pendulum support to subframe -item 1-, renew bolts	100 + 90° ⁸⁾
Pendulum support to gearbox -item 2- and -item 3-, renew bolts	50 + 90° ⁸⁾

8) 90° = one quarter turn.

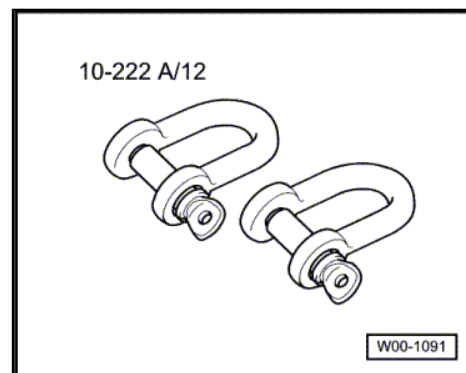


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5 Transporting automatic gearbox

Special tools and workshop equipment required

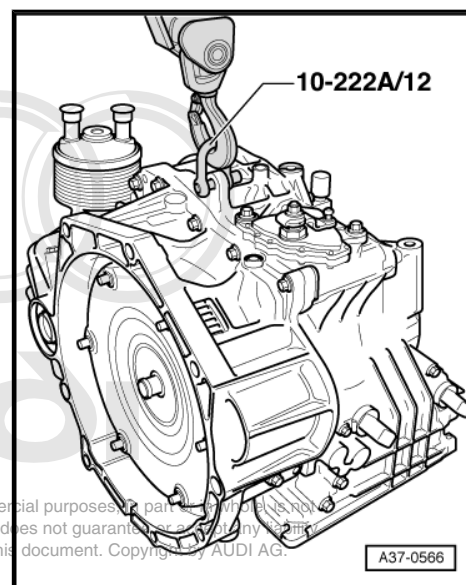
- ◆ Shackle -10-222 A/12-



5.1 Procedure

Shackle -10-222 A/12- can be used to transport the automatic gearbox and also when setting up gearbox support -3282- .

- Secure the torque converter to ensure it does not fall out during transport.
- Secure shackle -10-222 A/12- to gearbox housing.



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6 Securing gearbox to assembly stand

Special tools and workshop equipment required

- ◆ Engine and gearbox support -VW 540-



- ◆ Support clamp -VW 313-

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- Secure gearbox to engine and gearbox support -VW 540- -arrows- and fit into support clamp -VW 313- .
- You can use workshop hoist -V.A.G 1202 A- to fit gearbox into support clamp
⇒ „5 Transporting automatic gearbox“, page 69 .



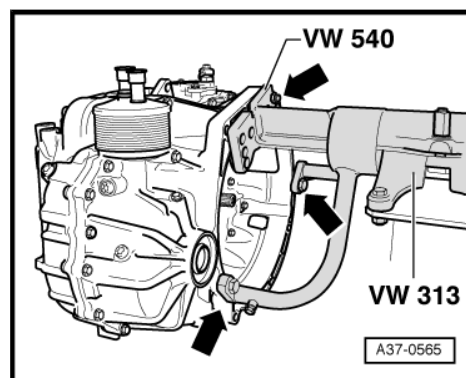
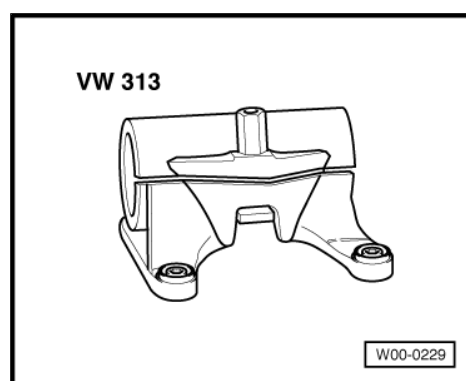
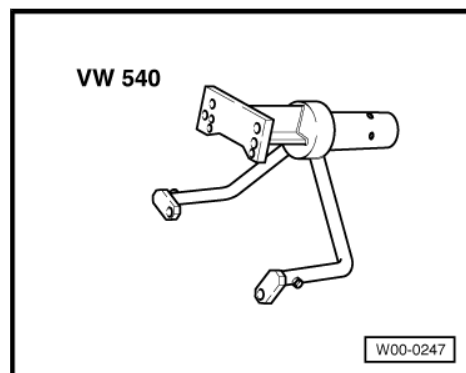
WARNING

The centre of gravity of the gearbox is outside the pivot centre of the support clamp. A second mechanic has to hold the gearbox housing when it is being turned to prevent it from swinging round.



Note

If filled gearbox is turned on the assembly stand so that oil pan points upwards, vent holes on gearbox housing must be sealed.



7 ATF level in gearbox

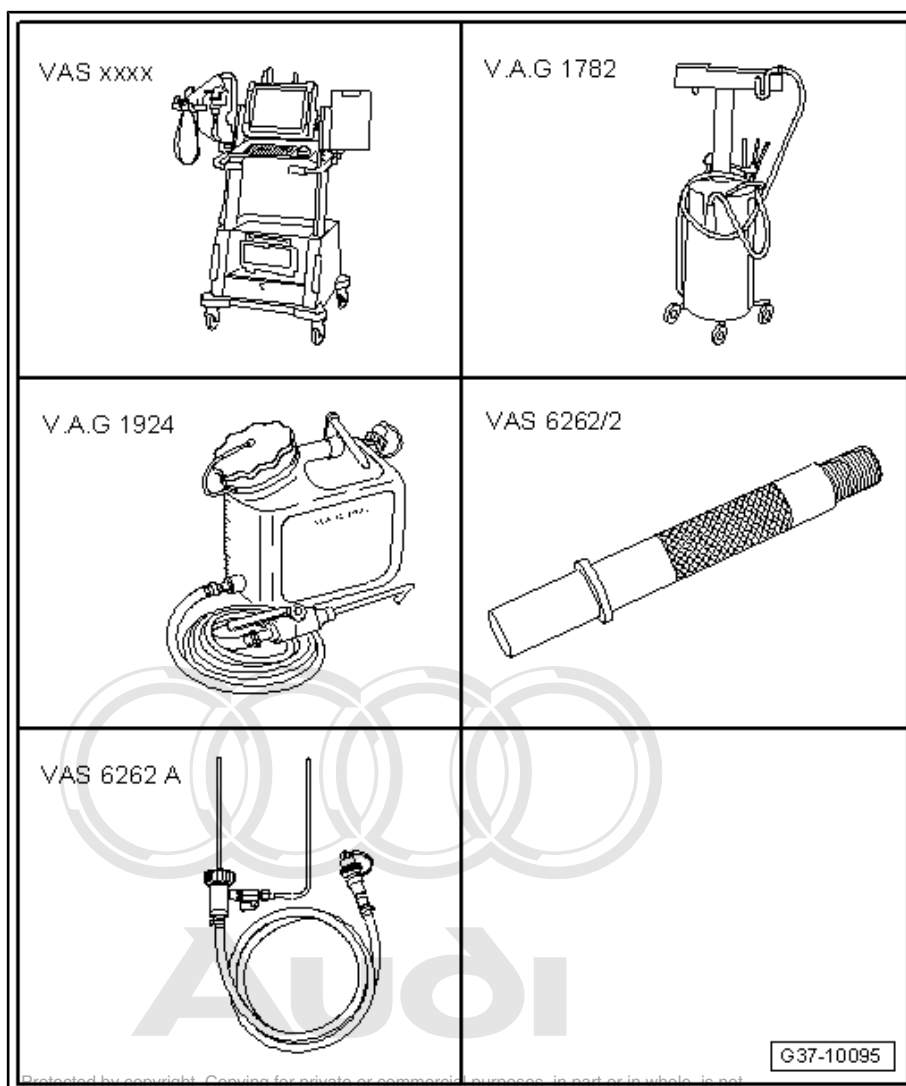
Overview:

- ◆ ⇒ „7.1 Special tools, test and measuring appliances and auxiliary items required“, page 71
- ◆ ⇒ „7.2 Reading out ATF temperature from vehicle diagnostic tester“, page 72
- ◆ ⇒ „7.3 Checking and correcting ATF level“, page 73
- ◆ ⇒ „7.4 Changing ATF or filling up after performing repairs“, page 80

7.1 Special tools, test and measuring appliances and auxiliary items required

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- ◆ Used oil collection and extraction unit -V.A.G 1782-
- ◆ ATF filling unit - V.A.G 1924- for gearbox with filler pipe
- ◆ Adapter for filling ATF oil - VAS 6262/2- for gearbox without filler pipe
- ◆ Adapter for oil filling -VAS 6262 A- for gearbox without filler pipe; measuring ⇒ page 72
- ◆ If necessary, additional adapter -VAS 6262/6- for gearbox without filler pipe
- ◆ 1 litre ATF container (genuine replacement part); for part number refer to ⇒ Electronic parts catalogue ; for gearbox without filler pipe
- ◆ Safety goggles
- ◆ Protective gloves (acid resistant)



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Measure length of breather pipe on adapter for oil filling -VAS 6262 A- and shorten if necessary.

To ensure that breather pipe of adapter for oil filling -VAS 6262 A- does not make contact with bottom of oil container, breather pipe must be shortened to dimension -a-.

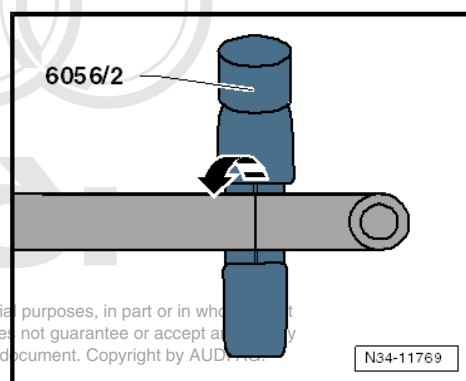
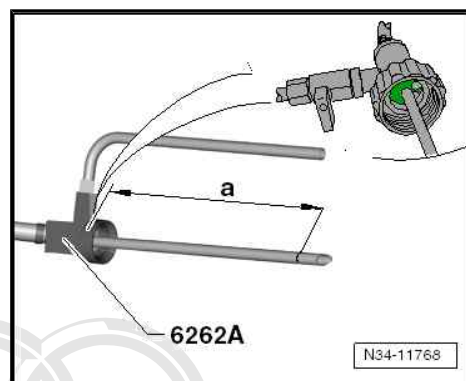
- Dimension -a- = 210 mm



Note

Dimension -a- is measured from stem (green area in magnified view) of adapter for oil filling -VAS 6262 A-.

- Mark length on breather pipe and shorten breather pipe using pipe cutter -6056/2-.
- Clean adapter for oil filling -VAS 6262 A-.



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7.2 Reading out ATF temperature from vehicle diagnostic tester

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester

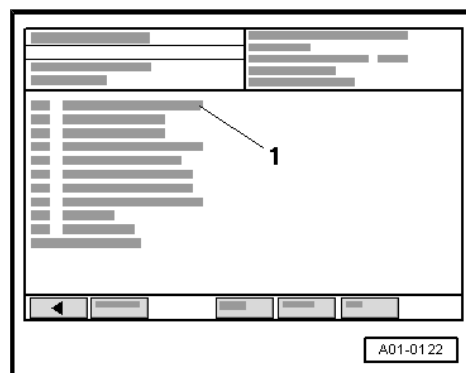
Test conditions

- Gearbox must not be in emergency running (backup) mode.
- Vehicle must be level (horizontal).
- Selector lever in position „P“, engine idling.
- Air conditioner and heating system switched off.
- Vehicle diagnostic tester connected up; Vehicle self-diagnosis and vehicle system „02 - Gearbox electronics“ selected.
- The ATF temperature at the beginning of the test must not be higher than 30°C. If necessary, first allow the gearbox to cool down.

ATF temperature reading

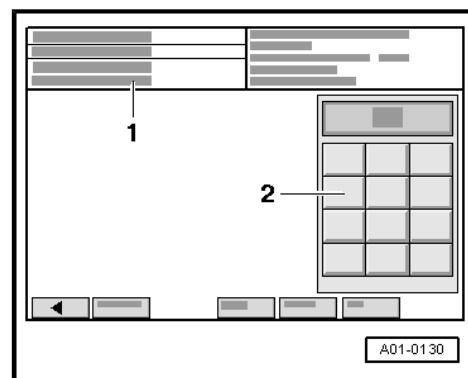
Display on diagnostic tester :

- From list -1-, select diagnostic function „08 - Read measured value block“.



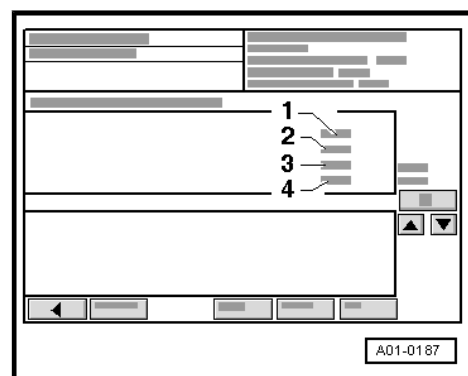
Display on diagnostic tester :

- 1 - Enter display group
- Use keypad -2- to enter „6“ for „Display group number 6“ and confirm by touching  key.



Display on diagnostic tester :

- Reading for ATF temperature is shown in display zone -1-.



7.3 Checking and correcting ATF level

Special tools, test and measuring appliances and auxiliary items required ➔ [page 71](#)

Procedure



Note

- ◆ Please refer to ➔ [„6 Repair instructions“, page 6](#).
- ◆ Please refer to ➔ [„7 Rules for cleanliness when working on the gearbox“, page 8](#).
- ◆ Please refer to general notes on „Environmental and waste disposal regulations for oil“ ➔ [page 6](#).



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Risk of injury

- ◆ Wear safety goggles.
- ◆ Wear protective gloves (acid resistant).
- ◆ When working close to the radiator maintain a safe distance from the fan - fan may switch on automatically.

Accidents can be caused if a gear is inadvertently engaged while the engine is running.

- ◆ Before working on vehicle when engine is running, shift selector lever into position „P“ and apply handbrake.

**Caution*****Risk of damage to gearbox***

- ◆ ***The engine must NOT be started if there is only little or no ATF left in the gearbox after repair work or after excessive loss of ATF.***
- ◆ ***After repair work or after excessive loss of ATF, put a suitable amount of ATF into the gearbox before proceeding.***
- ◆ ***Use only the ATF available as a replacement part for automatic gearbox 09G; for allocation, refer to ⇒ Electronic parts catalogue .***
- ◆ ***Other types of oil cause malfunctions and/or failure of the gearbox.***
- ◆ ***The adapter for oil filling -VAS 6262 A- must be clean; the ATF must not be mixed with any other types of lubricant.***

**Note**

- ◆ *The ATF temperature is taken from the reading on the vehicle diagnostic tester .*
 - ◆ *The ATF level will vary according to the ATF temperature.*
 - ◆ *If the ATF level is checked when the ATF temperature is too low, this will result in overfilling.*
 - ◆ *If the level is checked when the ATF temperature is too high, this will result in underfilling.*
 - ◆ *Both overfilling and underfilling will impair the function of the gearbox.*
 - ◆ *The ATF level is checked at the ATF inspection plug.*
 - ◆ *The ATF level is correct if a small amount of fluid comes out at the ATF inspection plug when ATF temperature is between 35°C and 45°C, or 50°C in hot climates (the fluid level rises due to expansion as it warms up).*
- Drive vehicle onto a four-column lifting platform or over an inspection pit in order for it to be absolutely horizontal.



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- Remove noise insulation (centre) by releasing fasteners -1 ... 3-.
- Place used oil collection and extraction unit -V.A.G 1782- below gearbox.

Test conditions

- Gearbox not in backup mode (emergency running mode)
- ATF temperature not above approx. 30 °C
- Vehicle must be absolutely horizontal (on a four-pillar lifting platform or over an inspection pit).
- Selector lever is in position „P“.
- Extraction hoses of an exhaust gas extractor connected and extractor switched on.
- Engine idling.
- Air conditioner and heating system switched off.
- Read out ATF temperature from vehicle diagnostic tester
⇒ [page 72](#) .

Checking ATF level

- Start engine and let it idle.
- With brake pressed, select all gear positions „P, R, N, D, S“ one after the other at idling speed, maintaining each position for at least 10 seconds.
- Shift selector lever into position „P“.

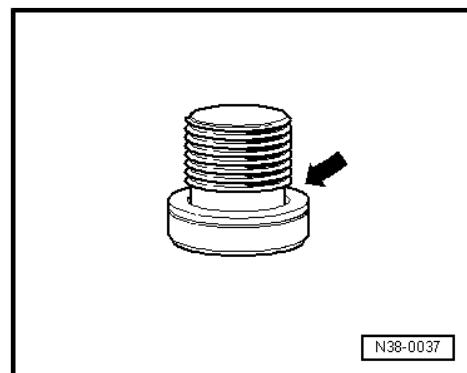
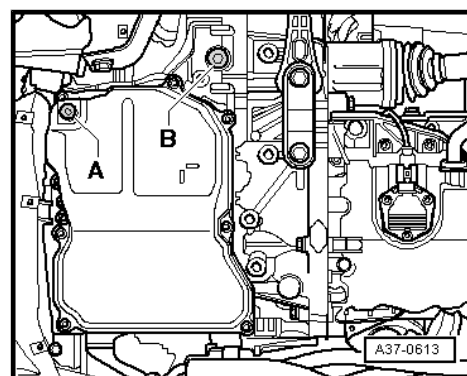
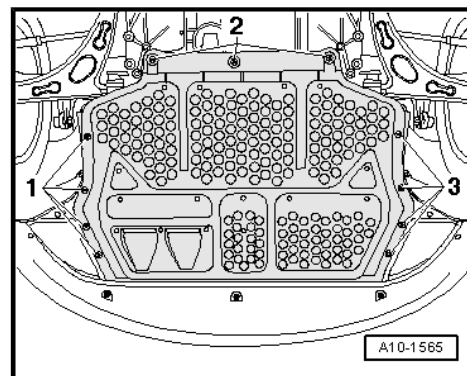


WARNING

Wear safety goggles.

- When ATF reaches temperature of 35°C, unscrew ATF inspection plug -A-.

- Always renew the seal -arrow- for the ATF inspection plug.



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ATF in overflow pipe -arrow 2- will drain off first.

If ATF continues to come out through ATF inspection opening via overflow pipe before ATF has reached a temperature of 40°C, the ATF level is OK.

- Tighten ATF inspection plug -arrow 1- with a new seal. The ATF check is now completed.

Component	Nm
ATF inspection plug -1- at gearbox oil pan, re-new seal	15



Note

ATF inspection plug must be screwed in again at the latest when ATF reaches temperature of 45°C (countries with hot climates: 50°C).

If still no ATF emerges from ATF inspection opening via the overflow pipe -arrow 2- when ATF has reached 45°C, ATF level needs topping up:

Filling with ATF, conditions:

- Engine idling
- ATF inspection plug -arrow 1- removed



Note

- ◆ Do not re-use drained-off ATF.
- ◆ Check the ATF temperature on the vehicle diagnostic tester while checking the ATF level or filling the gearbox with ATF.
- ◆ If the engine is switched off with the ATF inspection plug -arrow 1- removed, ATF will flow through the overflow pipe -arrow 2-.
- ◆ The ATF inspection plug must be screwed in again at the latest when temperature reaches 45°C (hot climates: 50°C). If necessary, switch off engine, allow gearbox to cool down and repeat the test.

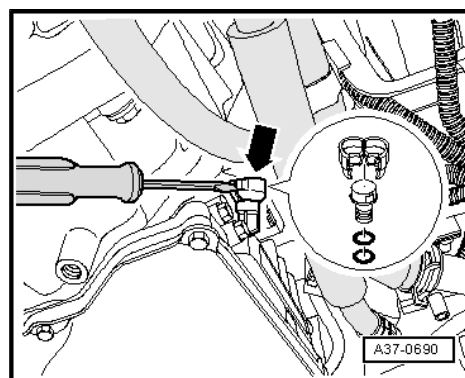
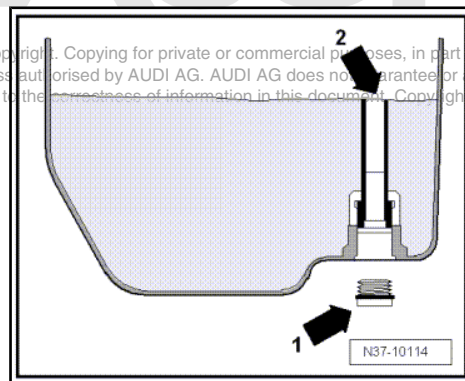
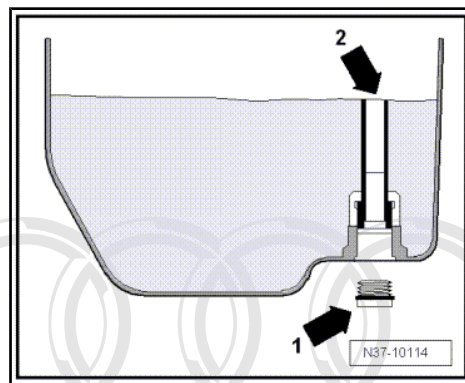
Distinguishing gearboxes with filler pipe -arrow- and without filler pipe



Note

Filler pipe is located at front of gearbox, below starter.

- ◆ Topping up ATF for gearbox with filler pipe -arrow- ➔ [page 77](#)
- ◆ Topping up ATF for gearbox without filler pipe (ATF filling via ATF inspection plug) ➔ [page 78](#)



Topping up ATF for gearbox with filler pipe -arrow-:

Note

Filler pipe is located at front of gearbox, below starter.

- Fill ATF filling unit -V.A.G 1924- with the ATF for the automatic gearbox 09G ⇒ Electronic parts catalogue .

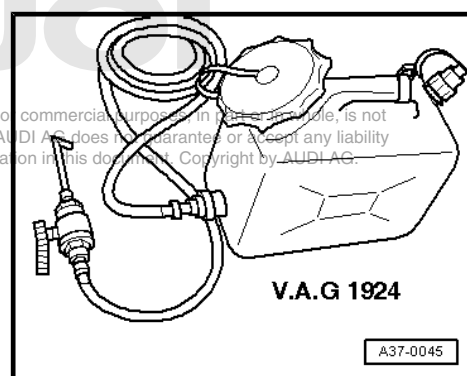
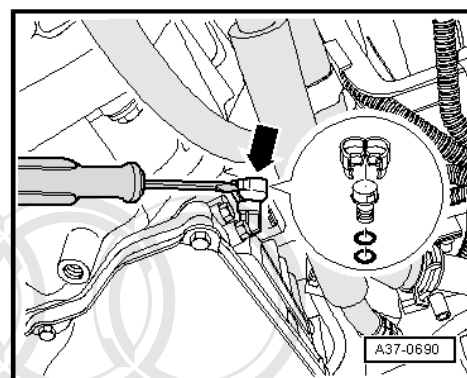


WARNING

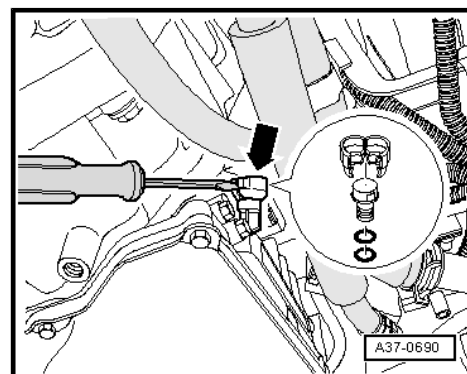
The ATF filling unit must be clean and the ATF must not be mixed with other types of ATF!

- Secure reservoir for ATF filling unit -V.A.G 1924- as high as possible on vehicle.

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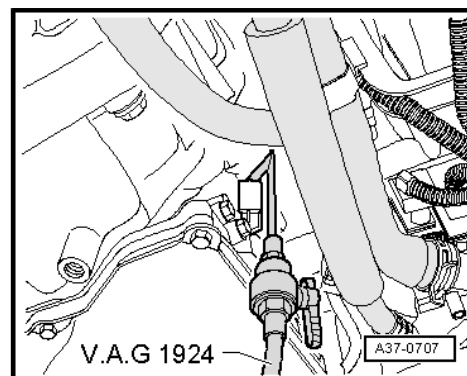
- Use screwdriver to prise off cap -arrow- securing sealing plug.
- Always renew cap, as catch on cap gets destroyed.
- Pull off sealing plug from filler pipe.



- Attach hook of ATF charging device -V.A.G 1924- to opening of filler pipe.

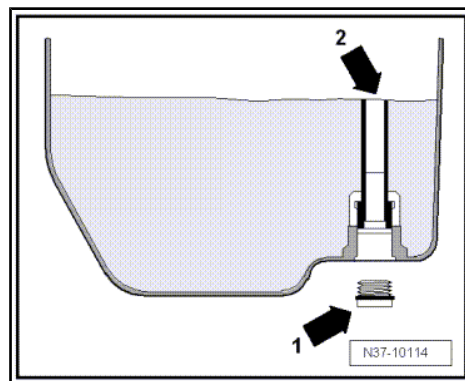
Note

The ATF level must not be too low or too high, otherwise this would impair the function of the gearbox.



- Fill in ATF using -V.A.G 1924- , until, at a temperature between 35°C and 45°C, ATF starts to emerge from inspection opening via the overflow pipe -arrow 2-.
- Tighten ATF inspection plug -arrow 1- with a new seal. The ATF check is now completed.

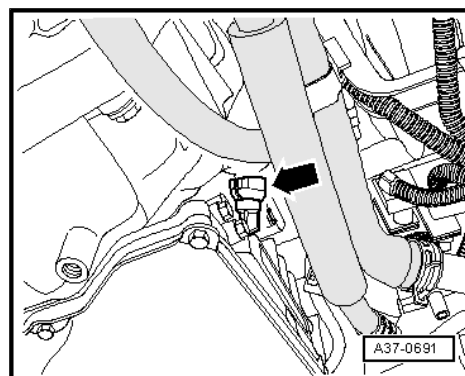
Component	Nm
ATF inspection plug -1- at gear-box oil pan, renew seal	15



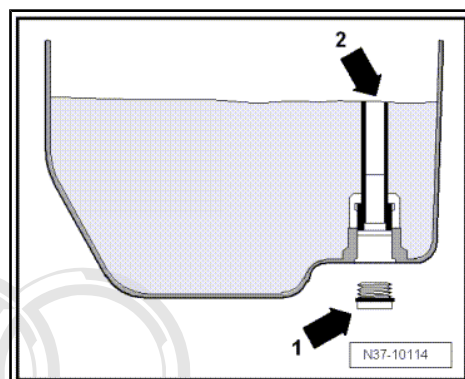
- Insert sealing plug into filler pipe.
- Install new securing cap -arrow- and make sure it engages.


WARNING

Always renew securing cap. The securing cap secures the sealing plug.


Topping up ATF for gearbox without filler pipe:

If still no ATF emerges from ATF inspection opening via the overflow pipe -arrow 2- when ATF has reached 40 °C, ATF level needs topping up.



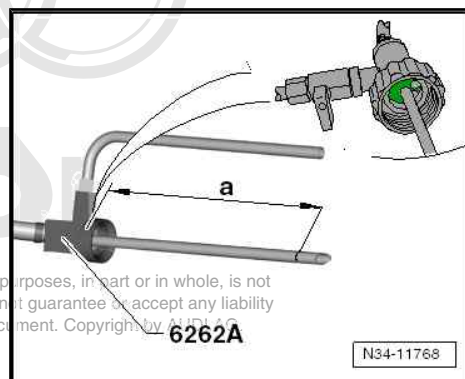
- Measure length of breather pipe on adapter for oil filling -VAS 6262 A- and shorten if necessary ⇒ [page 72](#) .


WARNING

The ATF filling unit must be clean and the ATF must not be mixed with other types of ATF!

Select correct type ⇒ Electronic parts catalogue .

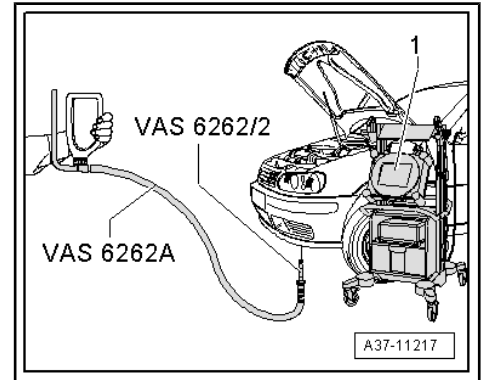
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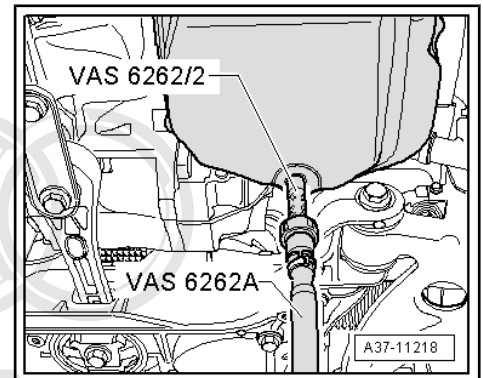
- Shake container before opening.
- Screw container onto adapter for oil filling -VAS 6262 A- .

Note

If thread on container does not fit onto adapter for oil filling -VAS 6262 A- , use additional adapter -VAS 6262/6- .



- With engine running, screw adapter for filling ATF oil -VAS 6262/2- into ATF inspection hole (hand-tight).
- Hold container with adapter for oil filling -VAS 6262 A- as high as possible over gearbox and let ATF run into gearbox.

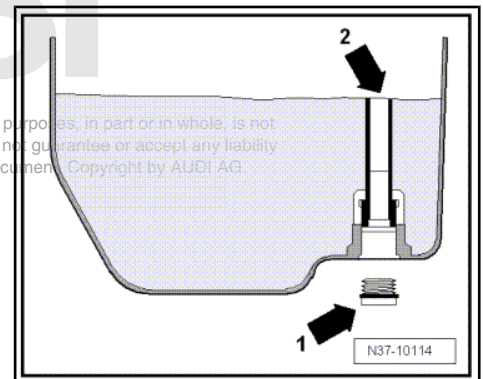


- To check whether enough fluid has run into gearbox, detach quick-release coupling on adapter for oil filling -VAS 6262 A- at regular intervals and plug the connection with a finger or a clean plug.

ATF in overflow pipe -arrow 2- and in adapter for oil filling -VAS 6262/2- will drain off first.

If ATF continues to come out through ATF inspection opening via overflow pipe before ATF has reached a temperature of 40°C, the ATF level is OK.

- Unscrew adapter for filling ATF oil -VAS 6262/2- .
- Allow ATF to drain off until it drips.
- Fit new seal on plug and tighten. The ATF check is now completed.



Component	Nm
ATF inspection plug -1- at gearbox oil pan, renew seal	15

If no more ATF emerges from ATF inspection hole via overflow pipe when ATF has reached 40°C:

- Re-connect adapter for oil filling -VAS 6262 A- to adapter for filling ATF oil -VAS 6262/2- .
- Top up with ATF, check until ATF level is correct ➤ [page 79](#) .

Continued for gearboxes with and without filler pipe:

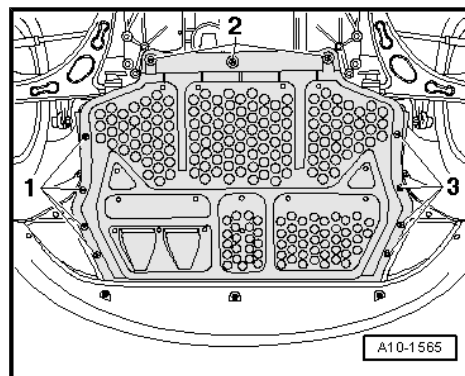


Caution

The ATF level must not be too low or too high, otherwise this would impair the function of the gearbox.

If the ATF level is more than 1 litre too low, check gearbox for leaks.

- Install noise insulation (centre) -fasteners 1 ... 3-.



7.4 Changing ATF or filling up after performing repairs

Special tools, test and measuring appliances and auxiliary items required ➔ [page 71](#)

Procedure



Note

- ◆ Please refer to ➔ [„6 Repair instructions“, page 6](#).
- ◆ Please refer to ➔ [„7 Rules for cleanliness when working on the gearbox“, page 8](#).
- ◆ Please refer to general notes on „Environmental and waste disposal regulations for oil“ ➔ [page 6](#).



WARNING

Risk of injury

- ◆ Wear safety goggles.
- ◆ Wear protective gloves (acid resistant).
- ◆ When working close to the radiator maintain a safe distance from the fan - fan may switch on automatically.

Accidents can be caused if a gear is inadvertently engaged while the engine is running.

- ◆ Before working on vehicle when engine is running, shift selector lever into position „P“ and apply handbrake.



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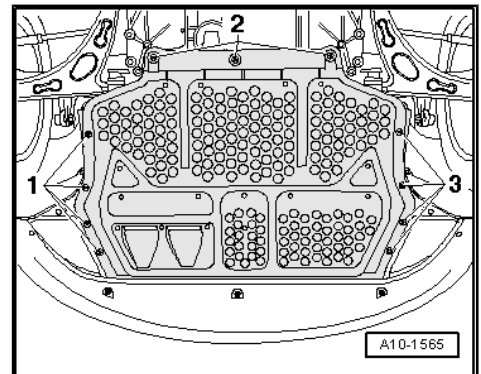


Caution

Risk of damage to gearbox

- ◆ *The engine must NOT be started if there is only little or no ATF left in the gearbox after repair work or after excessive loss of ATF.*
- ◆ *Use only the ATF available as a replacement part for automatic gearbox 09G; for allocation, refer to ➔ Electronic parts catalogue.*
- ◆ *Other types of oil cause malfunctions and/or failure of the gearbox.*
- ◆ *The adapter for oil filling -VAS 6262 A- must be clean; the ATF must not be mixed with any other types of lubricant.*

- Drive vehicle onto a four-column lifting platform or over an inspection pit in order for it to be absolutely horizontal.
- Remove noise insulation (centre) by releasing fasteners -1 ... 3-.



Draining ATF

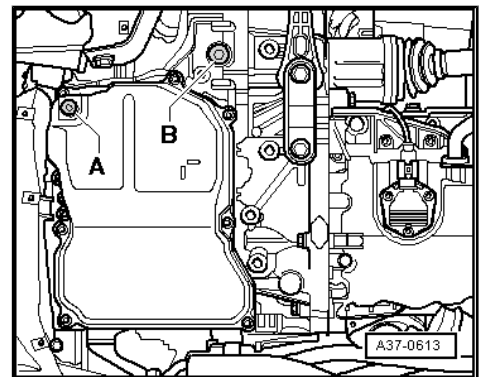
- Engine not running.



Note

Drain plug -B- is not fitted on some versions; in this case, the entire ATF is drained via the ATF inspection plug -A-.

- Place used oil collection and extraction unit -V.A.G 1782- below gearbox.



WARNING

Wear safety goggles.

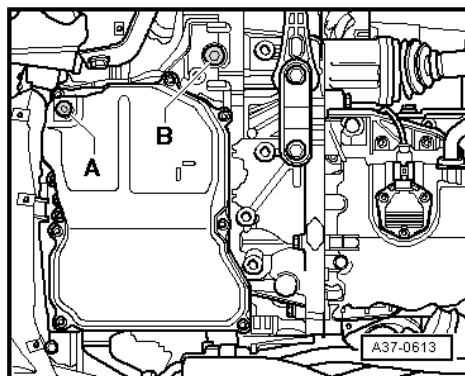
Vehicles with drain plug:

- Remove drain plug -B-.
- Drain ATF.
- Renew the seal on the ATF drain plug.
- Screw in drain plug -B-.

Component	Nm
ATF drain plug -B- to gearbox, M18	39

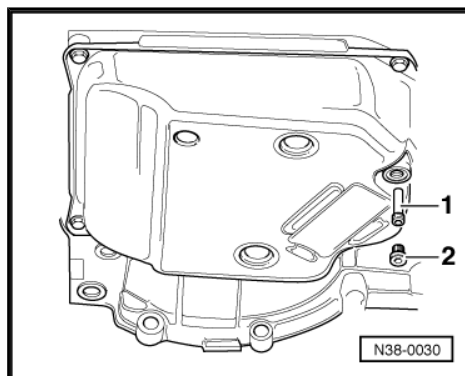
For all vehicles:

- Unscrew ATF inspection plug -A-.



- Unscrew overflow pipe -1- (hexagon key, 5 mm) and allow remaining ATF to drain.
- Install overflow pipe -1- using hexagon key (5 mm).

Component	Nm
Overflow pipe -1- in oil pan	1



Filling with ATF

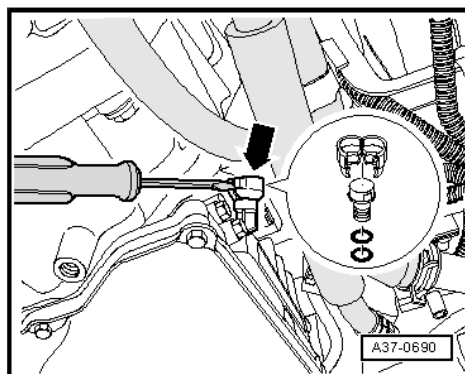
When filling up gearbox with ATF, distinguish between gearbox with filler pipe -arrow- and gearbox without filler pipe:

- ♦ Topping up ATF for gearbox with filler pipe ⇒ [page 82](#)
- ♦ Topping up ATF for gearbox without filler pipe ⇒ [page 84](#)



Note

Filler pipe is located at front of gearbox, below starter.



Topping up ATF for gearbox with filler pipe -arrow-:

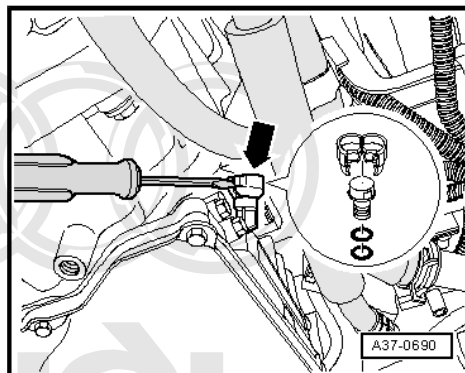
- Use screwdriver to prise off cap -arrow- securing sealing plug.



Note

Filler pipe is located at front of gearbox, below starter.

- Always renew cap, as catch on cap gets destroyed.
- Pull off sealing plug from filler pipe.



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- Fill ATF filling unit -V.A.G 1924- with the ATF for the automatic gearbox 09G ➔ Electronic parts catalogue .



WARNING

The ATF filling unit must be clean and the ATF must not be mixed with other types of ATF!

- Secure reservoir for ATF filling unit -V.A.G 1924- as high as possible on vehicle.
- Attach hook of ATF charging device -V.A.G 1924- to opening of filler pipe.



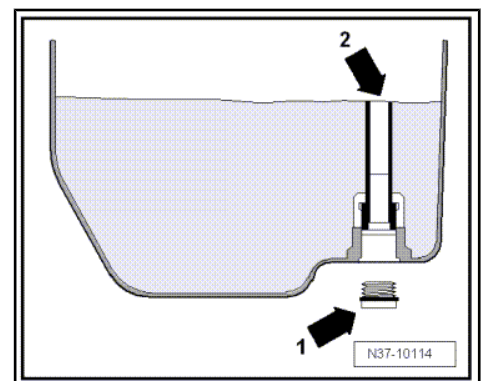
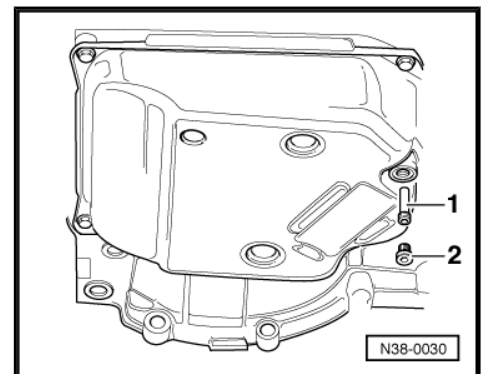
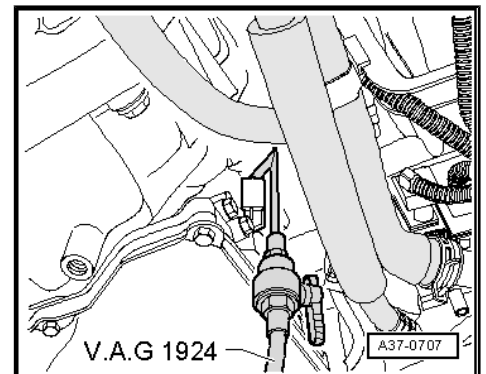
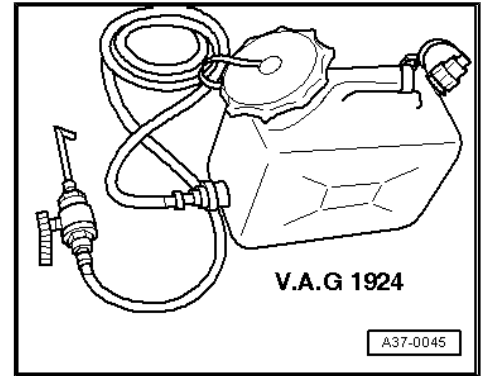
Note

The ATF level must not be too low or too high, otherwise this would impair the function of the gearbox.

Requirement:
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- ATF inspection plug -2- removed.
- Overflow pipe -1- screwed in with 1 Nm.

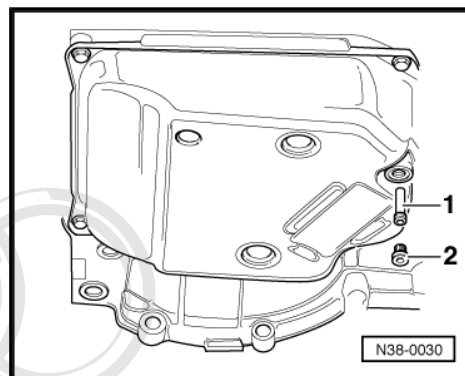
- Fill in ATF using -V.A.G 1924- until ATF starts to emerge from inspection opening via the overflow pipe -arrow 2-.
- Shift selector lever into position „P“.
- Start engine.
- Continue to fill in ATF using -V.A.G 1924- until ATF comes out of inspection hole again.
- Tighten ATF inspection plug.
- With brake pressed, select all gear positions „P, R, N, D, S“ one after the other at idling speed, maintaining each position for at least 10 seconds.
- Shift selector lever into position „P“.
- Continue to fill in ATF using -V.A.G 1924- until ATF comes out of inspection hole again.
- Then check and top up ATF level ➔ [page 73](#) .



Filling up ATF for gearbox without filler pipe:

Requirement:

- ATF inspection plug -2- removed.
- Overflow pipe -1- screwed in with 1 Nm.



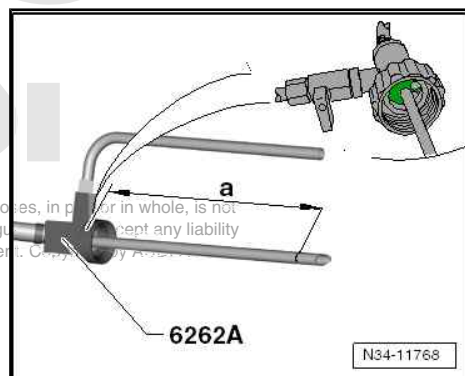
- Measure length of breather pipe on adapter for oil filling -VAS 6262 A- and shorten if necessary ⇒ [page 72](#) .



WARNING

The ATF filling unit must be clean and the ATF must not be mixed with other types of ATF!

Select correct type ⇒ *Electronic parts catalogue* .

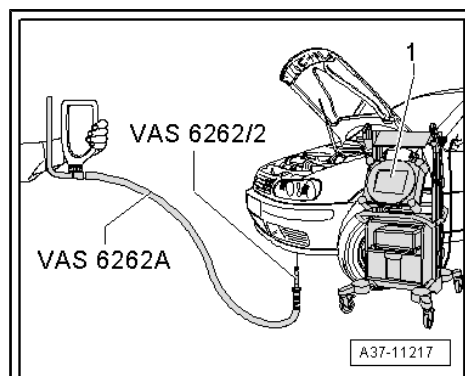


- Shake container before opening.
- Screw container onto adapter for oil filling -VAS 6262 A- .

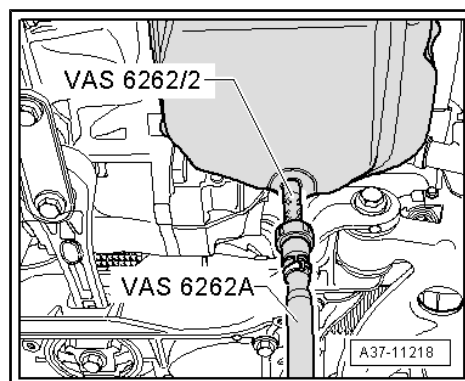


Note

If thread on container does not fit onto adapter for oil filling -VAS 6262 A- , use additional adapter -VAS 6262/6- .



- Screw adapter for filling ATF oil -VAS 6262/2- into ATF inspection hole (hand-tight).
- Hold container with adapter for oil filling -VAS 6262 A- as high as possible over gearbox.
- Using adapter for oil filling -VAS 6262 A- , fill up with 3 litres of ATF for automatic gearbox 09G ⇒ *Electronic parts catalogue* .
- Shift selector lever into position „P“.
- Start engine.
- With brake pressed, select all gear positions „P, R, N, D, S“ one after the other at idling speed, maintaining each position for at least 10 seconds.
- Shift selector lever into position „P“.
- Then check and top up ATF level ⇒ [page 73](#) .



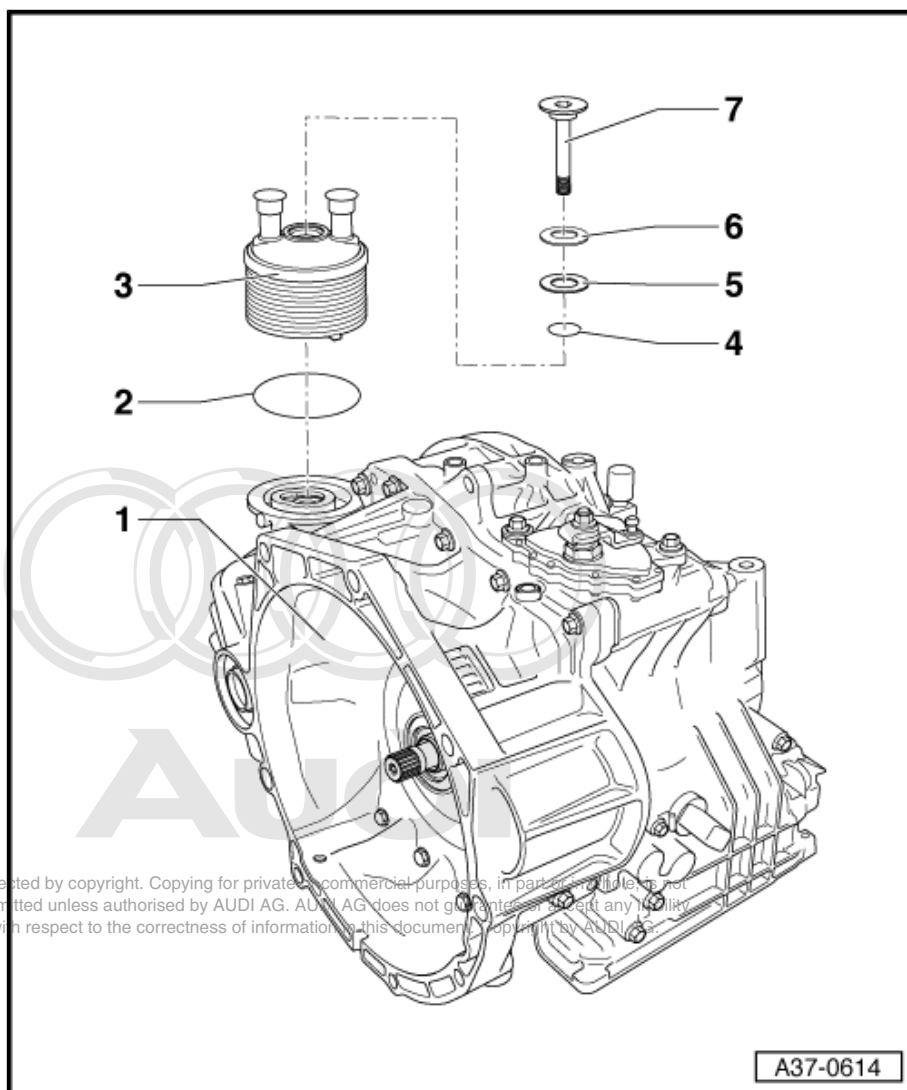
8 Removing and installing ATF cooler

Overview:

- ◆ ➔ „8.1 ATF cooler - exploded view of components“, page 85
- ◆ ➔ „8.2 Removing and installing ATF cooler“, page 85

8.1 ATF cooler - exploded view of components

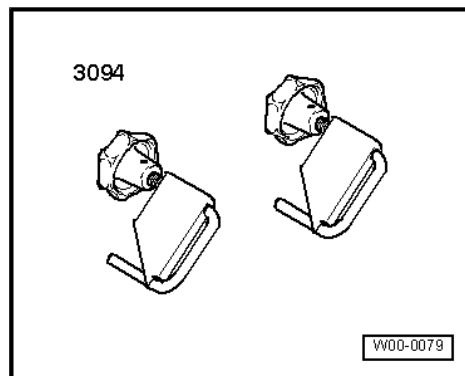
- 1 - Gearbox housing
- 2 - O-ring
 - ☐ Renew
- 3 - ATF cooler
 - ☐ Removing and installing
➔ page 85
- 4 - O-ring
 - ☐ Renew
- 5 - Washer
- 6 - Dished spring
 - ☐ Installation position:
must lie on washer
➔ Item 5 (page 85), the
raised side of the con-
vex washer must face
upwards.
- 7 - Bolt, 36 Nm



8.2 Removing and installing ATF cooler

Special tools and workshop equipment required

- ◆ Hose clamps, up to Ø 25 mm -3094-

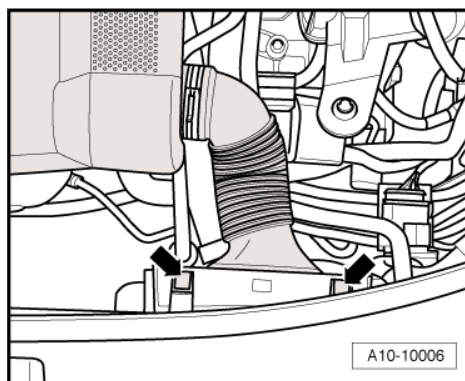


Removing ATF cooler

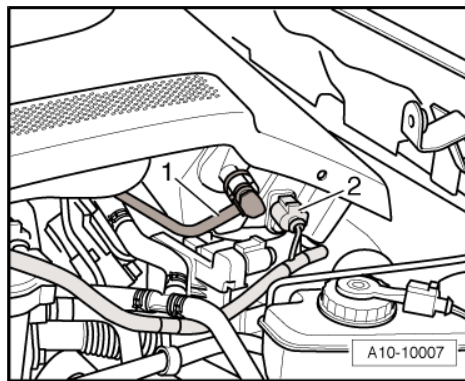
Vehicles with 1.6 ltr. FSI engine:

- Unclip air intake hose from air duct -arrows-.

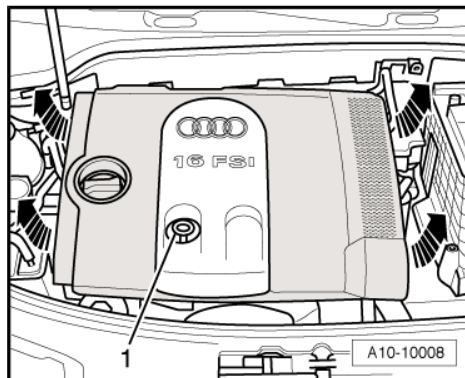
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- Unplug electrical connector at intake air temperature sender -2- -G299- .
- Detach vacuum hose -1- from actuator for intake air preheater.

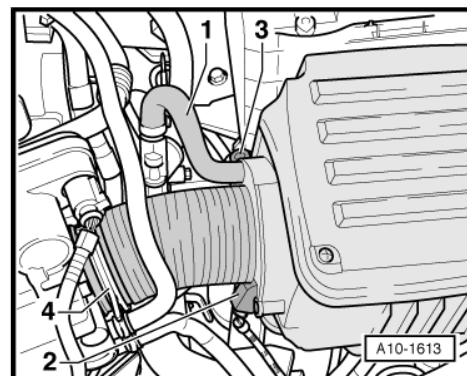


- Pull dipstick -1- out of guide tube.
- Remove engine cover panel with air cleaner housing -arrows-.
- Re-insert dipstick in guide tube.



Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and electrical connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.



All vehicles:

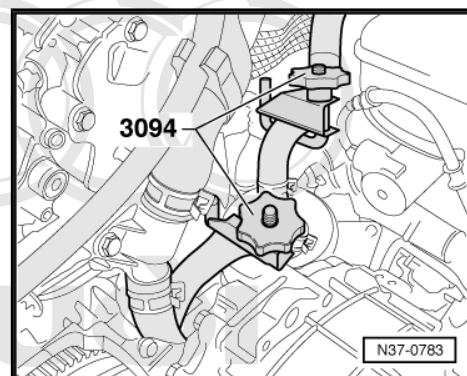
- Mark hoses leading to ATF cooler to avoid confusion when re-installing.



Note

Depending on the version, the vehicle may be fitted with a small plastic tube in the supply to the ATF cooler. This tube has to be re-fitted as part of installation.

- Clamp off ATF cooler hoses using hose clamps -3094- and detach at ATF cooler.

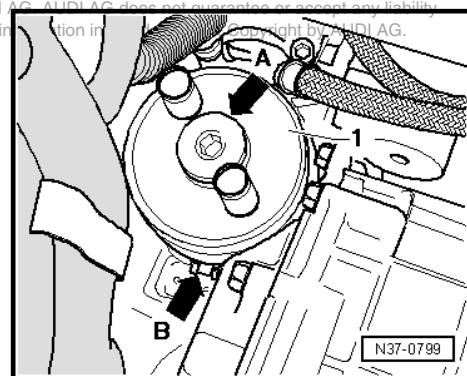


- Remove ATF cooler -1- from gearbox -arrow A-

Installing ATF cooler

Perform installation in reverse sequence of removal. Note the following:

- Renew O-rings on ATF cooler.
- The convex washer ⇒ [Item 6 \(page 85\)](#) must be installed in such a way that it lies on the other washer ⇒ [Item 5 \(page 85\)](#) and the raised side of the convex washer faces upwards.
- When installing ATF cooler -1- insert lug -arrow B- in slot on gearbox housing.



Component	Nm
ATF cooler to gearbox, bolt -arrow A-	36

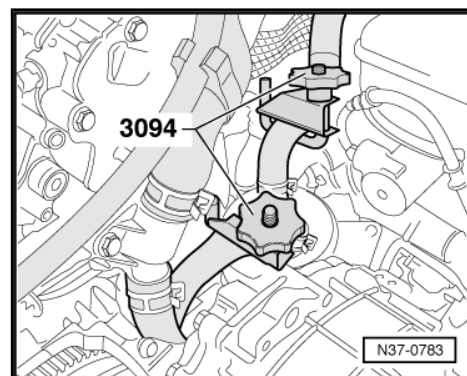
- Install hoses on ATF cooler according to markings on cooler.



Note

Depending on the version, the vehicle may be fitted with a small plastic tube in the supply to the ATF cooler. This tube has to be re-fitted as part of installation.

- Check coolant level in cooling system ⇒ Engine, mechanics; Rep. gr. 19 .
- Then check and top up ATF level ⇒ [page 71](#) .



38 – Gears, control

1 Oil pan, ATF strainer and valve body

Overview:

- ◆ ⇒ „1.1 Oil pan, ATF strainer, valve body and internal wiring harnesses - exploded view of components“, page 88
- ◆ ⇒ „1.2 Removing and installing oil pan“, page 92
- ◆ ⇒ „1.3 Removing and installing ATF strainer“, page 95
- ◆ ⇒ „1.4 Removing and installing valve body“, page 95
- ◆ ⇒ „1.5 Removing and installing wiring harness with 14-pin connector“, page 105
- ◆ ⇒ „1.6 Removing and installing wiring harness with 8-pin connector and integrated gearbox oil temperature sender G93“, page 107
- ◆ ⇒ „1.7 Removing and installing gearbox input speed sender G182“, page 109
- ◆ ⇒ „1.8 Removing and installing gearbox output speed sender G195“, page 110



WARNING

Do not run engine or tow vehicle with oil pan removed or when there is no ATF in the gearbox.



Note

- ◆ Always renew valve body if it has collected dirt or if it is defective.
- ◆ Rules for cleanliness when working on the automatic gearbox ⇒ [page 8](#)
- ◆ General repair instructions ⇒ [page 6](#).
- ◆ Lightly lubricate O-rings and seals with ATF. Other types of lubricant will cause the gearbox hydraulics to malfunction.
- ◆ It is possible to remove valve body and wiring harnesses with 8-pin and 14-pin connector without removing gearbox.

1.1 Oil pan, ATF strainer, valve body and internal wiring harnesses - exploded view of components

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1 - ATF inspection plug M10 - 27 Nm

- ☐ Renew seal
⇒ [Item 2 \(page 89\)](#) .
- ☐ Check and top up ATF level ⇒ [page 71](#)

2 - Seal

- ☐ Renew

3 - Overflow pipe - 1 Nm

- ☐ Screw into oil pan with hexagon key (5 mm)

4 - Oil pan

- ☐ Removing and installing
⇒ [page 92](#)

5 - M6 bolt - 7 Nm

- ☐ 8 x, for securing the oil pan with oil pan gasket to gearbox housing

6 - Gasket

7 - Magnet

- ☐ 2 x, in recesses in oil pan
- ☐ Clean before installing

8 - M6 bolt - 11 Nm

- ☐ 3x, for securing ATF strainer to valve body

9 - ATF strainer

- ☐ Removing and installing
⇒ [page 95](#)

10 - Bolts M6

- ☐ 12x, of different lengths, for securing valve body to gearbox
- ☐ Renew
- ☐ Note correct assignment ⇒ „1.4 Removing and installing valve body“, [page 95](#)

11 - Valve body

- ☐ Removing and installing ⇒ [page 95](#)
- ☐ Identification of solenoid valves ⇒ [page 91](#)

12 - M6 bolt - 5.5 Nm

13 - Gearbox input speed sender -G182-

- ☐ with wiring and 2-pin connector
- ☐ Removing and installing ⇒ [page 109](#)

14 - M6 bolt - 5.5 Nm

15 - Gearbox output speed sender -G195-

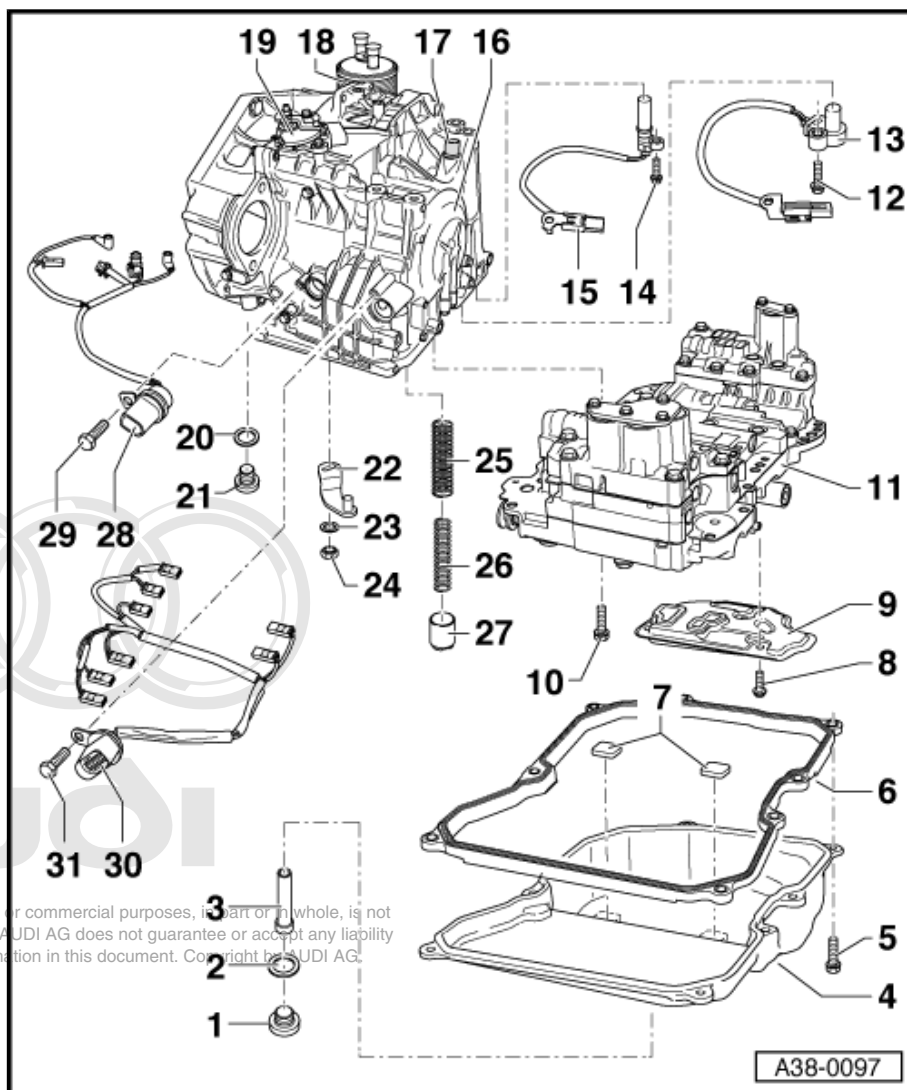
- ☐ with wiring and 2-pin connector
- ☐ Removing and installing ⇒ [page 110](#)

16 - Gearbox housing

17 - ATF breather

18 - ATF cooler

- ☐ Removing and installing ⇒ [page 85](#)



19 - Multifunction switch -F125-

- ☐ Checked via self-diagnosis
- ☐ Removing and installing ⇒ [page 112](#)
- ☐ Adjusting ⇒ [page 115](#)

20 - Seal

- ☐ Renew

21 - ATF drain plug M18, 39 Nm**22 - Lever**

- ☐ For selector lever shaft, inside gearbox on valve body
- ☐ Removing and installing ⇒ [„1.4 Removing and installing valve body“, page 95](#)

23 - Washer**24 - Nut, 10 Nm**

- ☐ Note installation position ⇒ [„1.4 Removing and installing valve body“, page 95](#)

25 - Large spring

- ☐ Different versions possible

26 - Small spring

- ☐ Depending on version

27 - Damper piston**28 - Wiring harness with 8-pin connector and integrated gearbox oil temperature sender -G93-**

- ☐ with O-ring on electrical connector
- ☐ Renew O-ring
- ☐ Connected components ⇒ [page 92](#)
- ☐ Removing and installing ⇒ [page 107](#)

29 - M6 bolt -5.5 Nm**30 - Wiring harness with 14-pin connector**

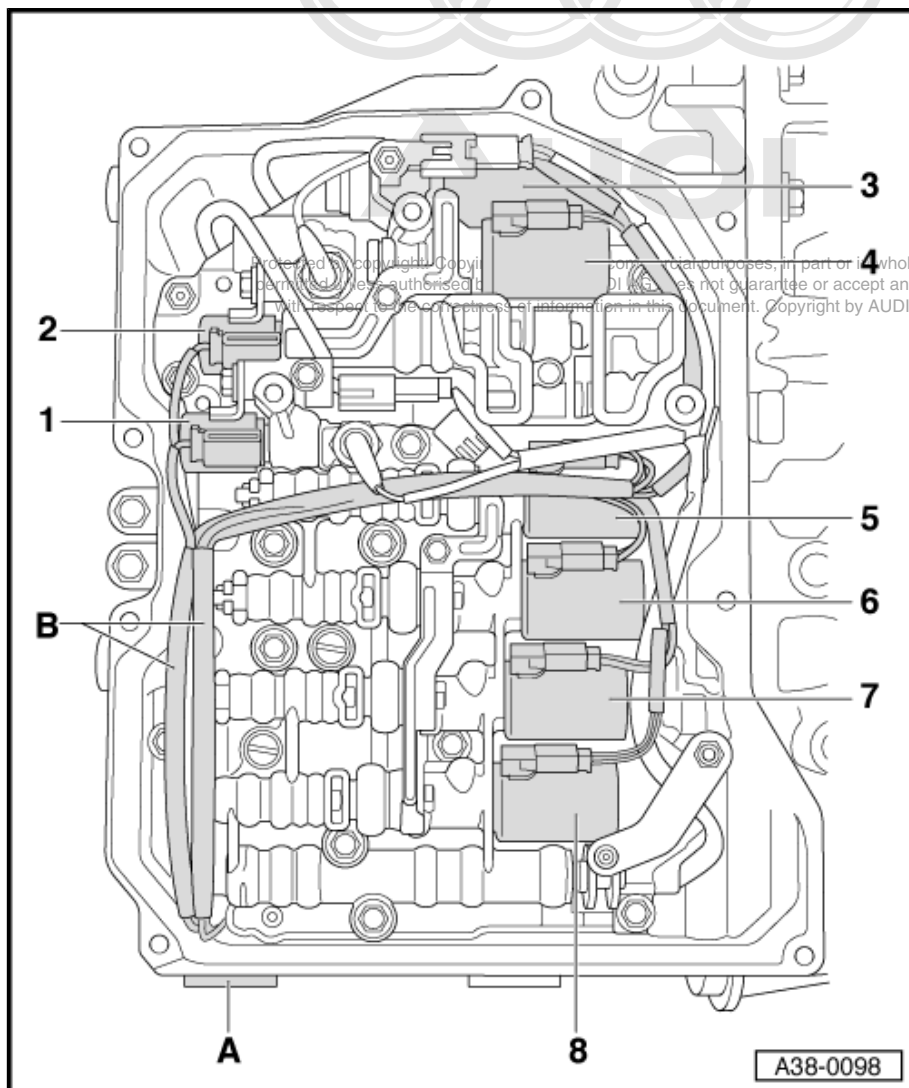
- ☐ with O-ring on electrical connector
- ☐ Renew O-ring
- ☐ Connected components ⇒ [page 91](#)
- ☐ Removing and installing ⇒ [page 105](#)

31 - M6 bolt -5.5 Nm

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1.1.1 Components on wiring harness of 14-pin connector

- 1 - Solenoid valve 1 -N88-
- 2 - Solenoid valve 2 -N89-
- 3 - Solenoid valve 4 -N91-
- 4 - Solenoid valve 6 -N93-
- 5 - Solenoid valve 5 -N92-
- 6 - Solenoid valve 9 -N282-
- 7 - Solenoid valve 10 -N283-
- 8 - Solenoid valve 3 -N90-
- A - 14-pin connector
- B - Wiring harness leading to 14-pin connector



1.1.2 Components on wiring harness of 8-pin connector

1 - Sender 1 for hydraulic pressure -G193-

2 - Connector to gearbox input speed sender -G182-

3 - Wiring at gearbox input speed sender -G182-

4 - Sender 2 for hydraulic pressure -G194-

5 - Wiring at gearbox output speed sender -G195-

6 - Connector to gearbox output speed sender -G195-

7 - Bracket for gearbox oil temperature sender -G93-

8 - Gearbox oil temperature sender -G93-

- ❑ Is integrated in wiring harness

⇒ [Item B \(page 92\)](#)

A - 8-pin connector

B - Wiring harness leading to 8-pin connector

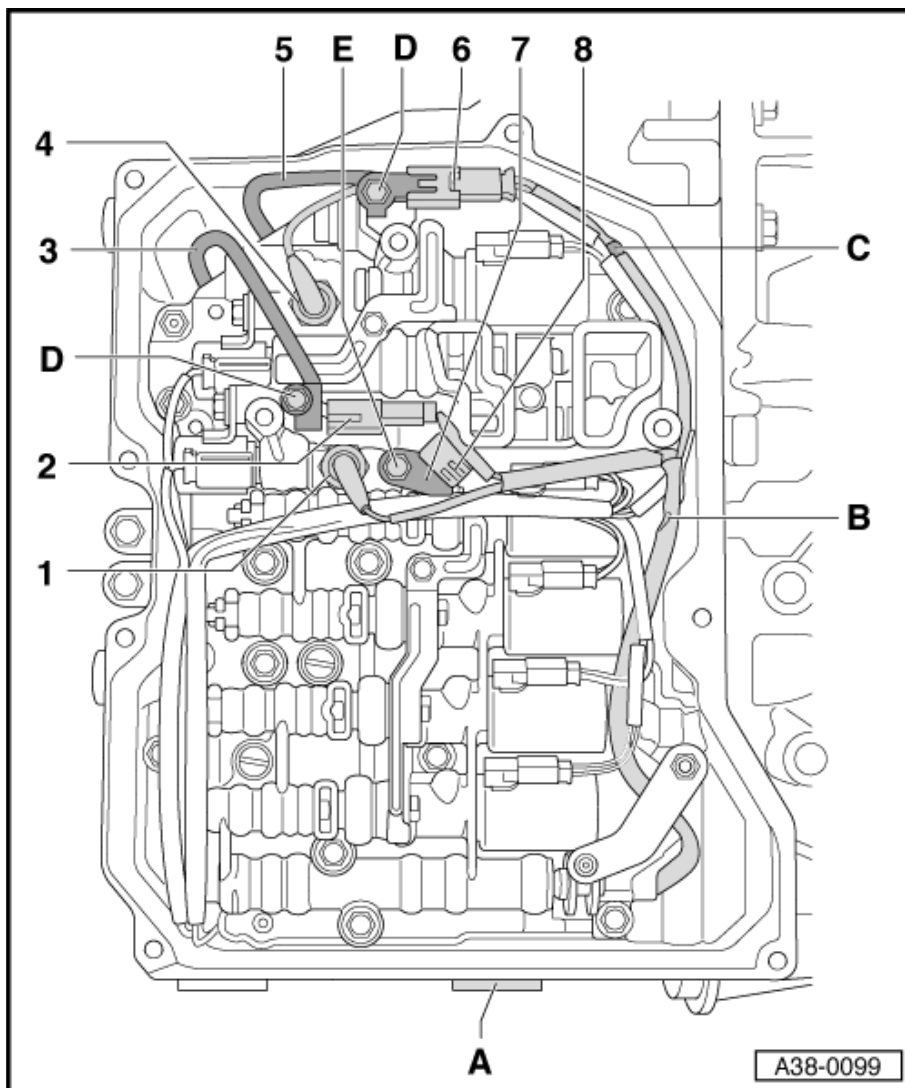
- ❑ Removing and installing wiring harness leading to 8-pin connector

⇒ [page 107](#)

C - Bracket for wiring harness

D - M5 bolt, 7 Nm

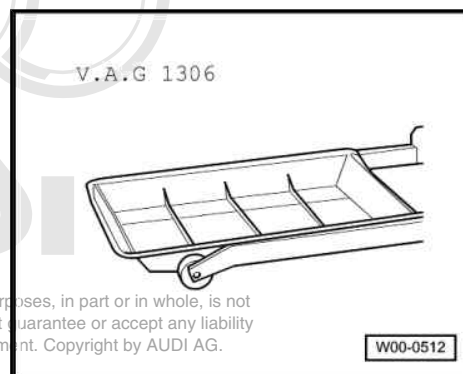
E - M6 bolt -11 Nm



1.2 Removing and installing oil pan

Special tools and workshop equipment required

- ◆ Drip tray -V.A.G 1306-



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- ◆ Safety goggles

 Note

- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)
- ◆ *General repair instructions* ⇒ [page 6](#).

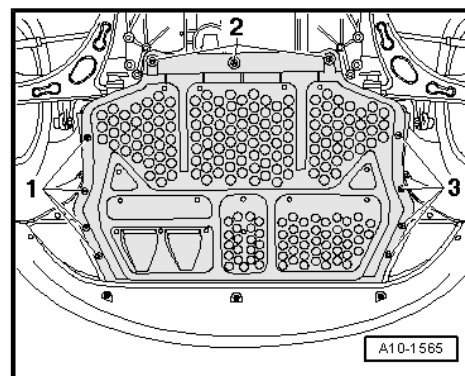
Remove oil pan

- Remove centre noise insulation -fasteners 1 ... 3-.
- Place drip tray -V.A.G 1306- under the gearbox.

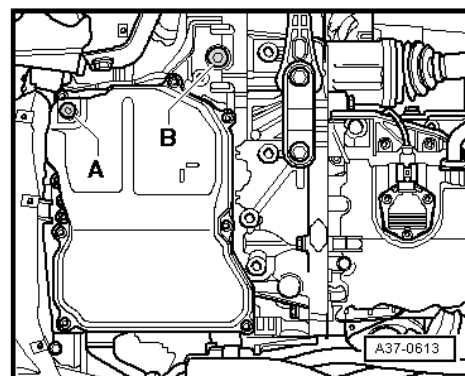


WARNING

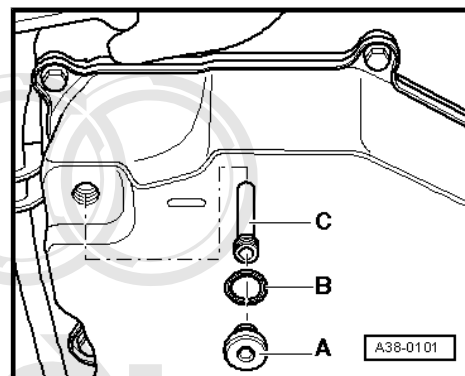
Wear safety goggles.



- Remove ATF drain plug -B- and allow ATF to drain off.
- Remove ATF inspection plug -A-.



- Unscrew overflow pipe -C- (hexagon key, 5 mm) and allow remaining ATF to drain.



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- Loosen the 8 bolts on oil pan -arrows- in diagonal sequence.



WARNING

There is still some ATF left in oil pan, as it cannot all drain off through opening -A-.

- Remove oil pan together with oil pan gasket.

Installing oil pan

Installation is carried out in reverse sequence; note the following:

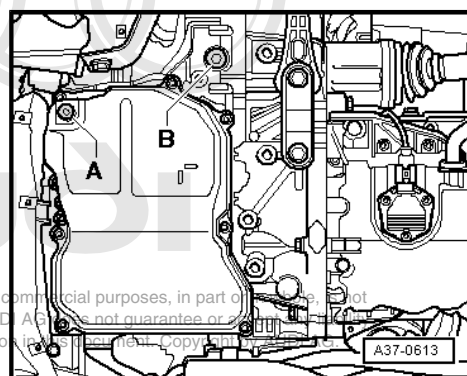
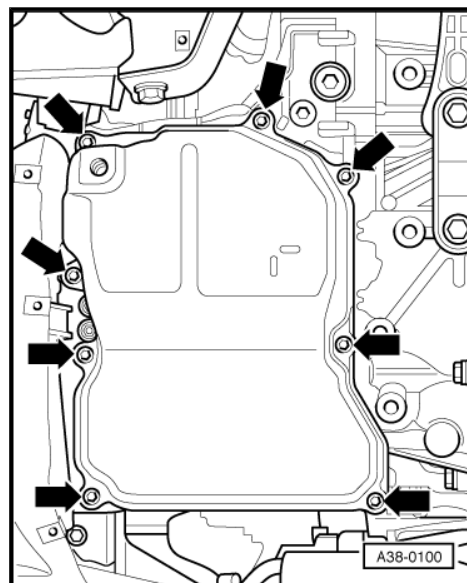
- Clean the two magnets ⇒ [Item 7 \(page 89\)](#) in recesses on oil pan. Ensure that magnets make full contact with oil pan.



Note

It is essential that magnets are fitted at specified points in oil pan.

- Clean gasket and sealing surfaces and remove any oil residue.
- Make sure gasket for oil pan is fitted correctly.
- When fitting oil pan, take care not to trap any wires.
- Secure the 8 bolts on oil pan -arrows- in diagonal sequence.
- Renew the seal on the ATF drain plug.
- Install ATF drain plug -B-.

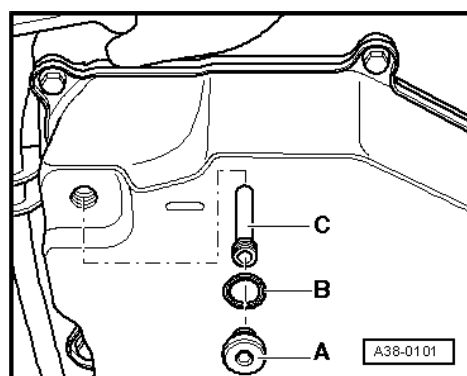


- Install overflow pipe -C- using hexagon key (5 mm).
- Fill up with ATF; check ATF level and top up ⇒ [page 71](#).
- The seal -B- on ATF inspection plug must be renewed after checking ATF.

Tightening torques

Component	Nm
ATF drain plug to oil pan, M18	39
Overflow pipe in oil pan	1
ATF inspection plug to oil pan, M10	27
Oil pan to gearbox housing, 8x M6 bolts	7 ⁹⁾

9) Tighten in stages and in diagonal sequence.



1.3 Removing and installing ATF strainer



Note

- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)
- ◆ *General repair instructions* ⇒ [page 6](#).

Removing ATF strainer

- Remove oil pan ⇒ [page 92](#).
- Unscrew bolts for ATF strainer -arrows-.
- Detach ATF strainer -A- from valve body.

Installing ATF strainer

- Apply a thin coating of ATF to the seals around the intake neck of ATF strainer (rear side).



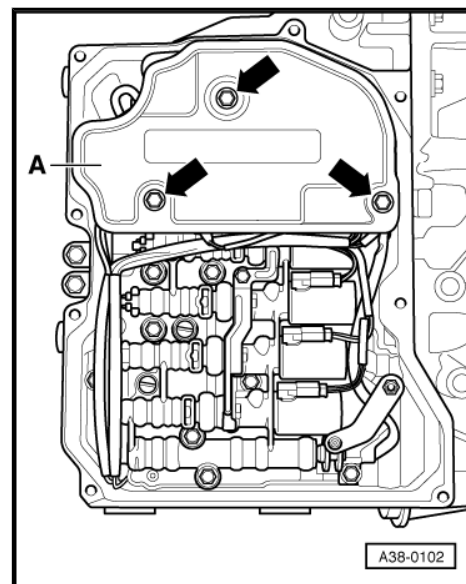
Note

If seals between rear side of ATF strainer and valve body are defective or are no longer properly secured at ATF strainer, ATF strainer must be renewed.

- Place ATF strainer on valve body and bolt on -arrows-.

Component	Nm
ATF strainer to valve body 3 x bolts M6 -arrows-	11

- Install oil pan ⇒ [page 94](#).
- Fill up with ATF; check ATF level and top up ⇒ [page 71](#).



1.4 Removing and installing valve body

Special tools and workshop equipment required

- ◆ Safety goggles



Note

- ◆ *Always renew valve body if it has collected dirt or if it is defective.*
- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)
- ◆ *General repair instructions* ⇒ [page 6](#).

Removing valve body

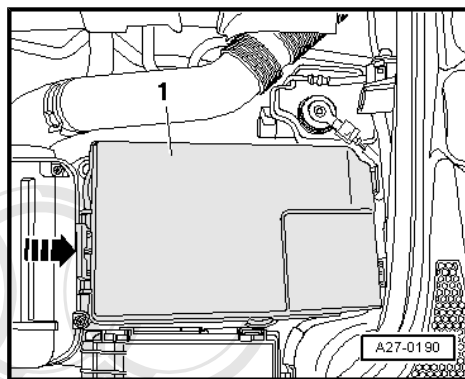


WARNING

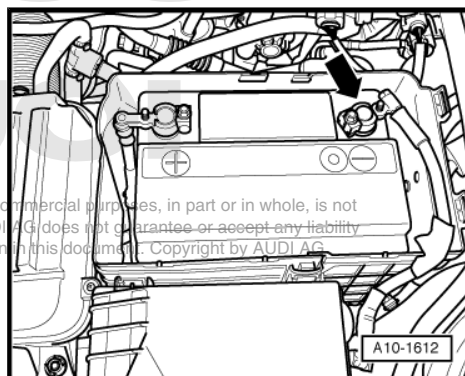
Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

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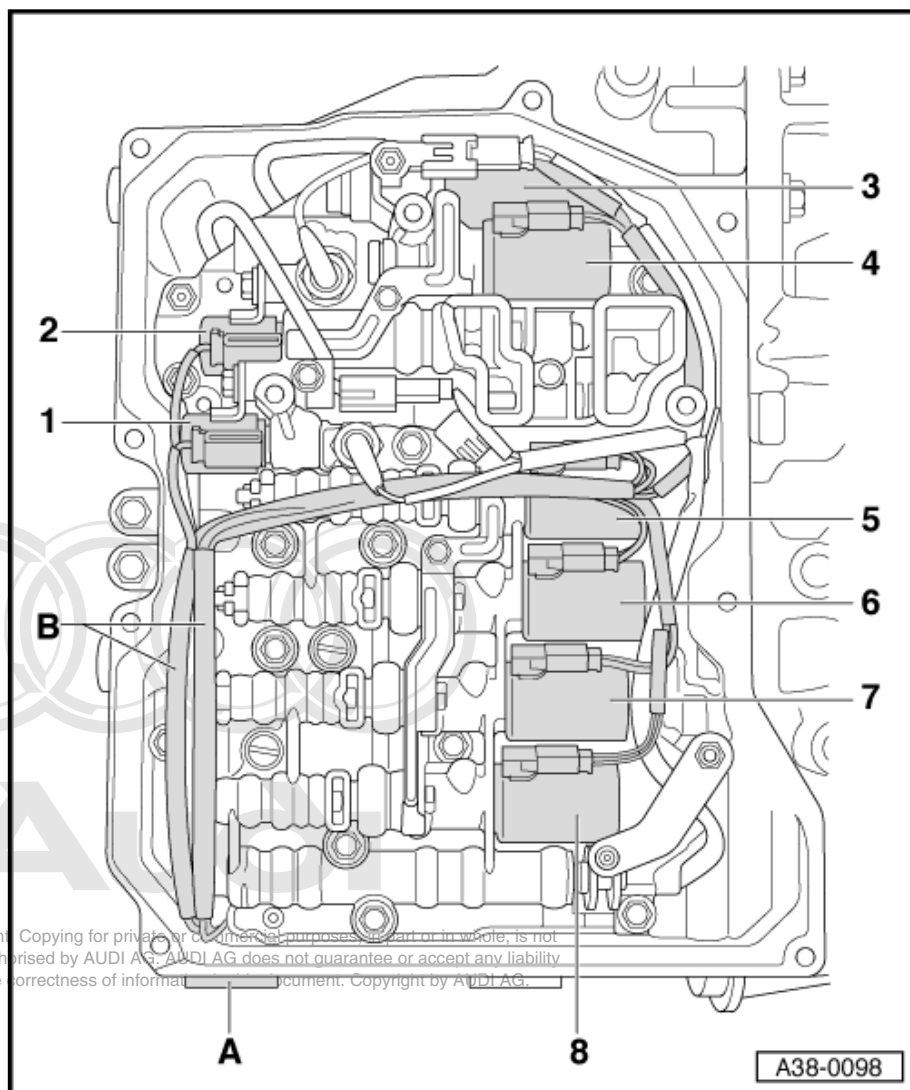
- Press release tab -arrow- and remove cover -1- over battery.



- With ignition switched off, disconnect earth wire -arrow- at battery.
- Remove oil pan ⇒ [page 92](#) .
- Remove ATF strainer ⇒ [page 95](#) .



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- Make a sketch based on the illustration. Include all solenoid valves and their connectors and mark all connectors in different colours. Then also mark the corresponding wires in the appropriate colours.



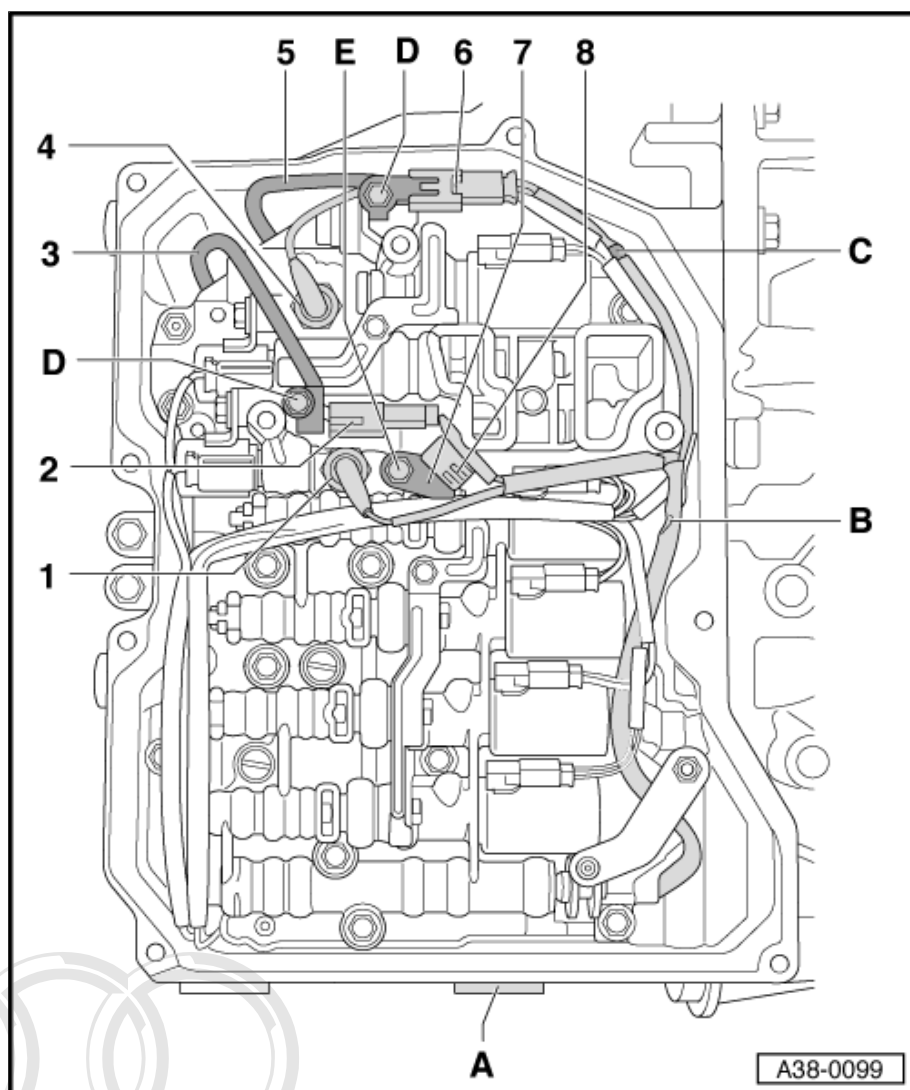
Note

- ◆ *It is essential you have this sketch to ensure that the connectors on the solenoid valves are not interchanged by mistake when the valve body is re-installed.*
- ◆ *Interchanging the connectors could under some circumstances destroy the gearbox.*
- Using a small screwdriver, carefully lever out retaining tabs on solenoid valve connectors -items 1 to 8- and then pull off connectors.



Note

If connectors are damaged, wiring harness with 14-pin connector and/or valve body with solenoid valves will have to be renewed.



- Unscrew the 3 bolts -D- and -E-.

Carefully pull off or pull apart the following connectors.

- Detach connector -1- at hydraulic pressure sender -G193- .
- Pull apart connector -2- to gearbox input speed sender -G182- .
- Detach connector -4- at hydraulic pressure sender -2- -G194- .
- Pull apart connector -6- to gearbox output speed sender -G195- .
- Carefully pull gearbox oil temperature sender -G93- -item 8- together with bracket -7- out of valve body.



Note

For reinstallation purposes, note the attachment of the bracket at gearbox oil temperature sender -G93- .

- Disengage wiring harness at bracket -C-.

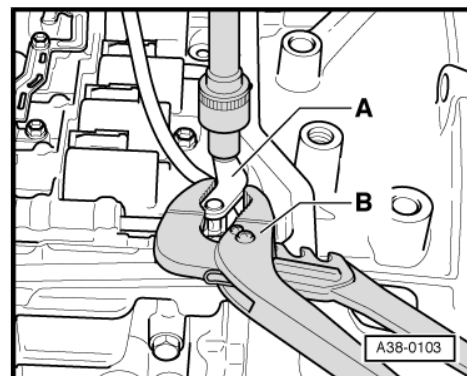
i Note

If connectors are damaged, wiring harness with 8-pin connector and/or gearbox input speed sender -G182- and/or gearbox output speed sender -G195- must be renewed (depending on defective connector).

- Remove gearbox selector lever -A- at selector shaft.

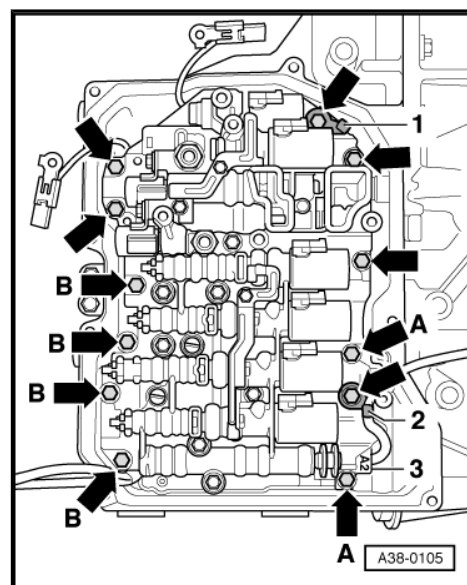
i Note

- ◆ *In so doing, carefully keep hold of gearbox selector lever -A- with universal pliers -B-, so that torque is not transferred to multi-function switch -F125-.*
- ◆ *Ensure that the spool valve on the valve body which the gearbox selector lever engages in is not damaged.*



- Unscrew securing bolts -arrows- on valve body in diagonal sequence and carefully remove valve body.
- Detach brackets -1- and -2-.

3 - Identification marking on valve body, here e.g. „A2“



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Note

- ◆ The bolts differ in length and have to be renewed, please note when installing.
- ◆ Only loosen the securing bolts indicated in the illustration -arrows-.
- ◆ If other bolts are loosened, this may affect the operation of the valve body or the valve body could come apart.
- ◆ When removing the valve body you may need to secure the damper piston -E- so that it cannot fall out or, alternatively, remove it together with the two springs.

Installing valve body



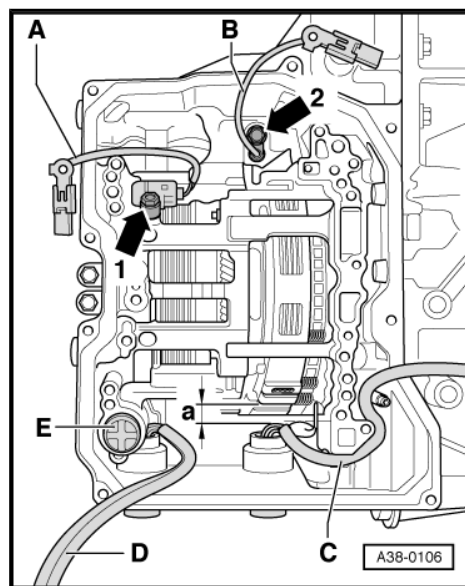
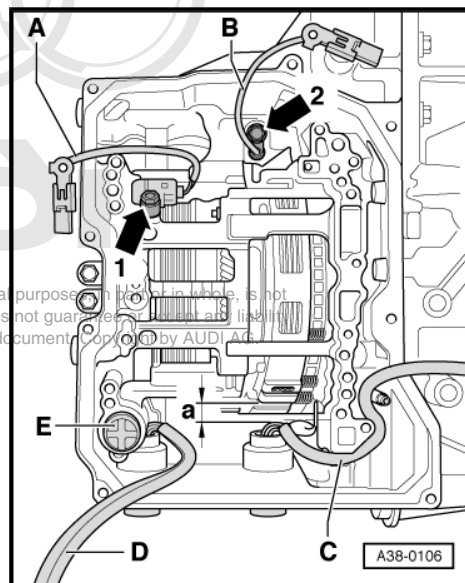
Note

- ◆ Specified routing of wires must be carefully adhered to so that wires do not get trapped or damaged when fitting valve body.
 - ◆ Damaged or crushed wires must always be renewed.
- Route wiring harness -C- (with 8-pin connector) in recess on valve body as shown in illustration.
 - Wiring harness -C- must not make contact with planetary gearbox. Sufficient clearance -a- must be maintained so that, when vehicle is being driven, wiring harness does not chafe against planetary gearbox and become damaged.
 - Route wiring harnesses -A-, -B- and -D- across edge of gearbox as shown in illustration.
 - Make sure that damper piston -E- has been fitted into gearbox correctly, as shown in illustration.



Note

- ◆ If damper piston -E- has been removed you must clean it together with the two springs and install it according to [⇒ Item 27 \(page 90\)](#), [⇒ Item 26 \(page 90\)](#) and [⇒ Item 25 \(page 90\)](#).
- ◆ To reinstall, fit the two springs into one another, lubricate the outer wall of the damper piston and the opening in the gearbox with ATF and fit all components into the gearbox.
- ◆ If necessary, press the damper piston into the gearbox (secure against falling out) until the valve body is fitted.

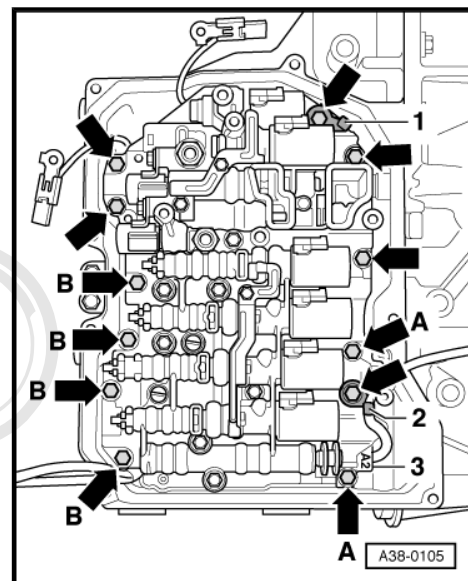


- Fit valve body without applying force.
- Wiring harnesses must not be trapped by valve body, crushed wires must always be renewed.
- All bolts for securing valve body have to be renewed.
- Secure brackets for wiring harnesses -1- and -2- with correct bolts (hand-tight).
- Secure remaining bolts on valve body -arrows- (hand-tight).
- Note differing bolt lengths:

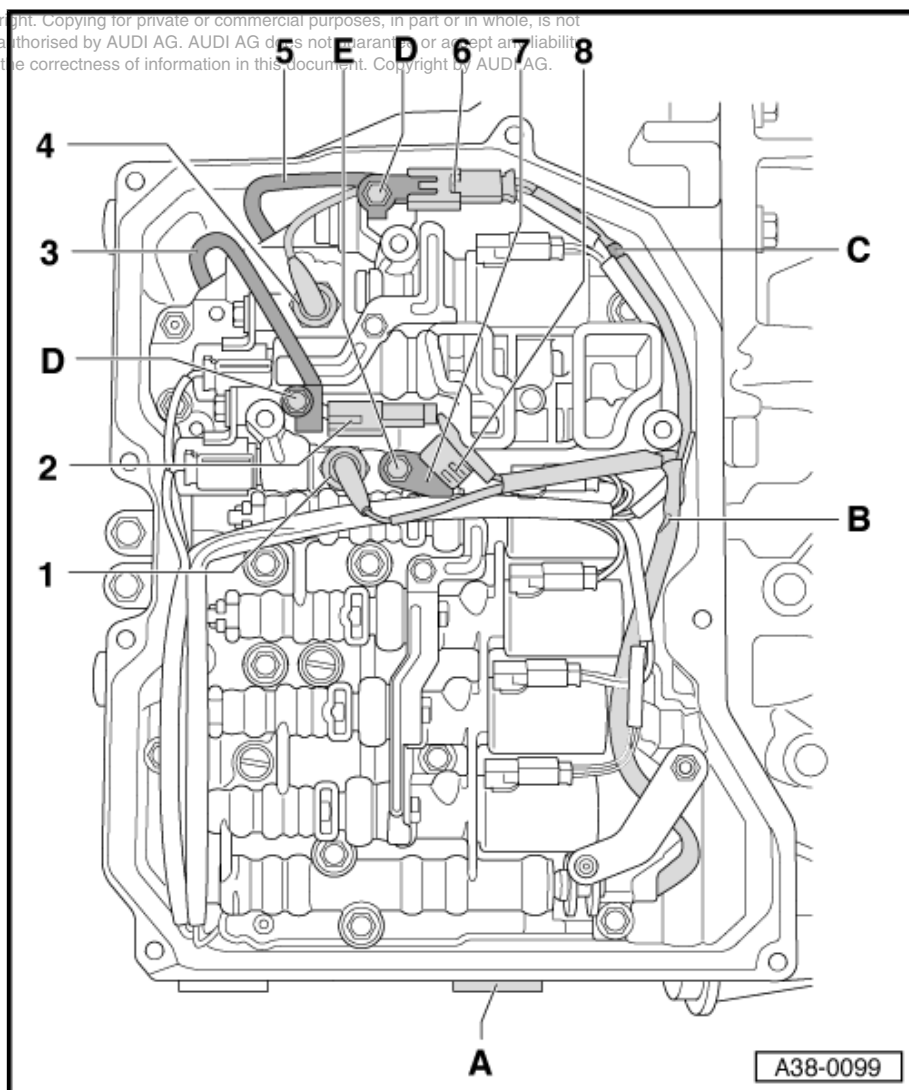
Arrow - bolt M 6 x 21

Arrow A - bolt M 6 x 16

Arrow B - bolt M 6 x 28



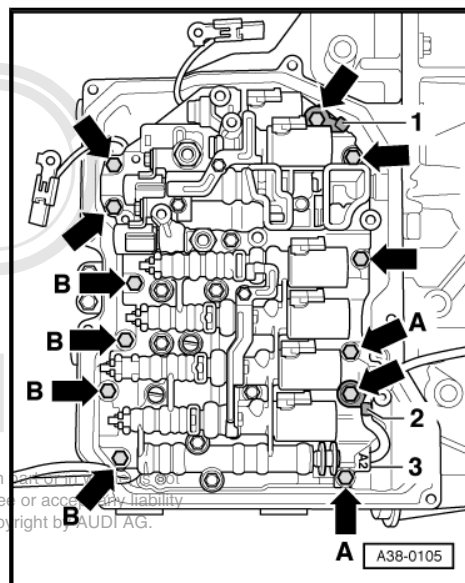
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Note

- ◆ If wire -3- (to gearbox input speed sender -G182-) is too short to be able to secure connector -2- to valve body at specified location, wiring was routed incorrectly or is trapped by valve body. In that case you must remove valve body once more and route wiring correctly.
- ◆ Crushed wires have to be renewed.
- Make absolutely sure that no wires have been trapped.
- Then tighten bolts -arrows- for valve body (starting from the outside and working inwards) to their final tightening torque
⇒ [page 105](#) .



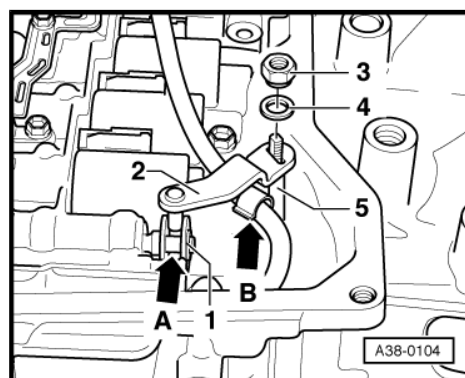
- Secure wiring harness in bracket -B-.
- Fit gearbox selector lever -2- onto selector shaft -5-.



Note

Make sure that pin on gearbox selector lever -2- engages in spool valve -1- (-arrow A-). You may have to move the spool valve in or out of the valve body accordingly.

- Fit washer -4- and nut -3- onto selector shaft.



Note

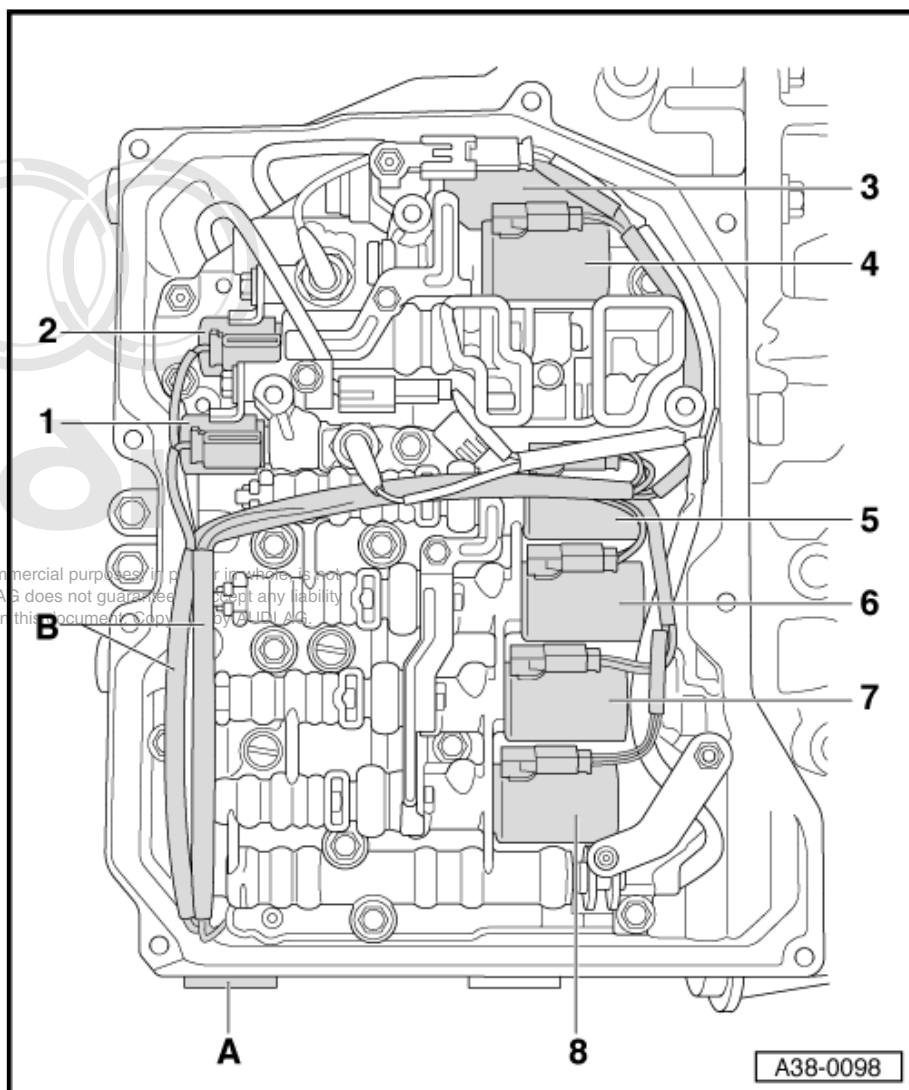
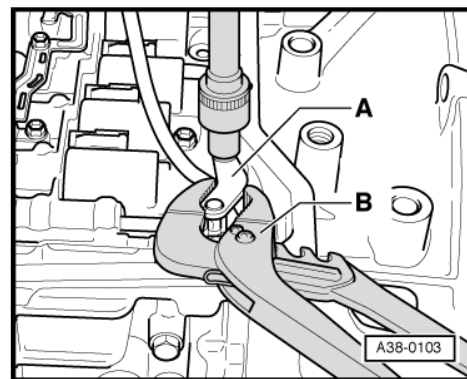
- ◆ The centring collar on nut has to point in direction of washer and must fit into washer when it is screwed on.
- ◆ Wiring harness must be routed to run below gearbox selector lever.

- Tighten nut to 10 Nm.



Note

- ◆ *In so doing, carefully keep hold of gearbox selector lever -A- with universal pliers -B-, so that torque is not transferred to multi-function switch -F125-.*
- ◆ *Ensure that the spool valve on the valve body which the gearbox selector lever engages in is not damaged.*

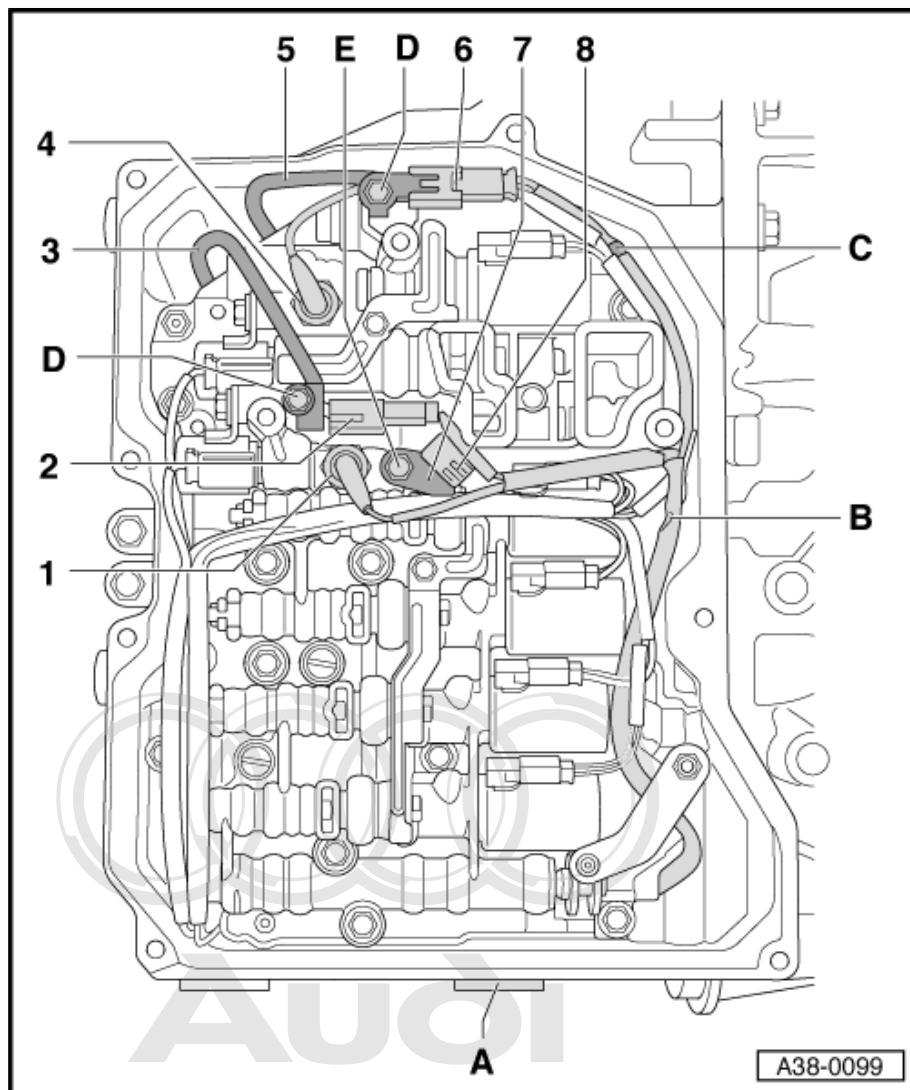


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- Fit connectors -1 to 8- onto solenoid valves according to the sketch you made earlier. Pay particular attention to the colours of the connectors and wires.
- Route wiring harness -B- as shown in illustration.


Note

Interchanging the connectors could under some circumstances destroy the gearbox.



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- Attach connectors -2-.
- Attach connectors -6-.


Note

Counterparts of connectors must have same colour as connectors.

- Fit bracket -7- onto gearbox oil temperature sender -G93- -item 8-.
- Fit gearbox oil temperature sender -G93- together with bracket into valve body and secure with bolt (M6) -item E- (tighten to 11 Nm).

- Fit connectors -1- and -5- onto pressure senders (must be straight).
- Secure connectors -2- and -6- onto valve body with bolts M5 -item D- (tightening torque: 7 Nm).



Note

- ◆ *If wire -3- (to gearbox input speed sender -G182-) is too short to be able to secure connector -2- to valve body at specified location, wiring was routed incorrectly or is trapped by valve body. In that case you must remove valve body once more and route wiring correctly.*
- ◆ *Crushed wires have to be renewed.*
- Hook wiring harness -B- into bracket -C- and route it as shown in illustration.
- Install ATF strainer ⇒ [page 95](#) .
- Install oil pan ⇒ [page 94](#) .
- Follow steps required after connecting battery ⇒ Electrical system; Rep. gr. 27 .
- Fill up with ATF; check ATF level and top up ⇒ [page 71](#) .

Tightening torques

Component	Nm
Valve body to gearbox housing (starting from outside, working inwards) bolts M6, note different bolt lengths	8 + 90° ¹⁰⁾ ¹¹⁾
Gearbox selector lever to selector shaft (nut)	10
Gearbox oil temperature sender -G93- (bolt M6 with bracket to valve body)	11
2 x connectors for speed senders (bolt M5 to valve body)	7

10) Renew bolts.

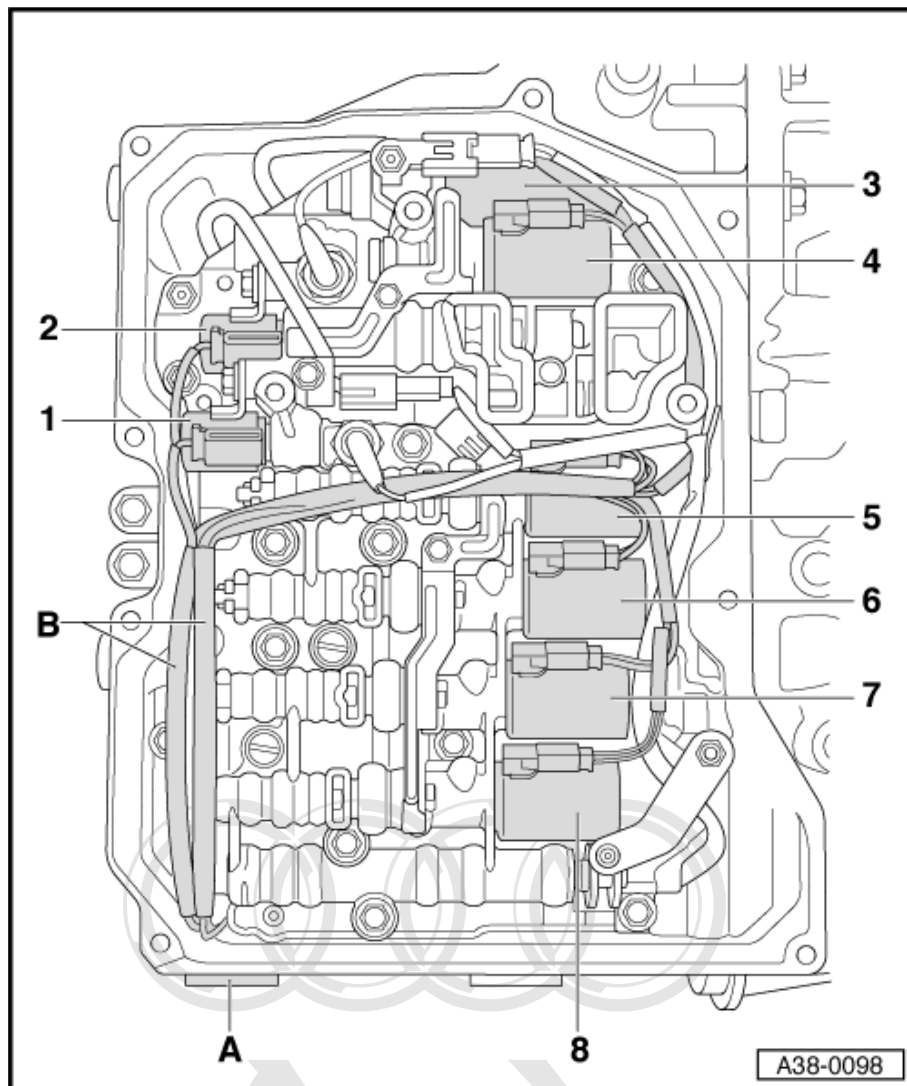
11) 90° = one quarter turn.

1.5 Removing and installing wiring harness with 14-pin connector

A - 14-pin connector

B - Wiring harness leading to 14-pin connector

- Designation of solenoid valves and routing of wiring harness
⇒ [page 91](#)



Note

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- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)
- ◆ *General repair instructions* ⇒ [page 6](#).

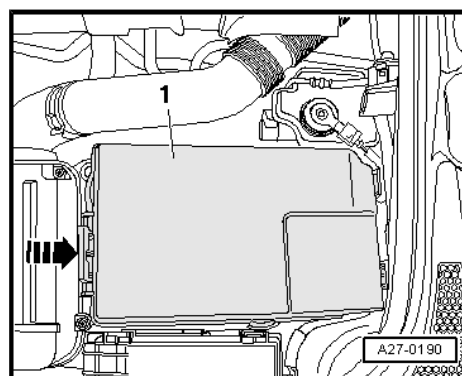
Removing wiring harness with 14-pin connector



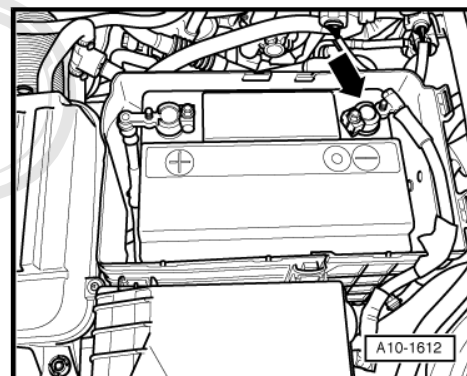
WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

- Press release tab -arrow- and remove cover -1- over battery.

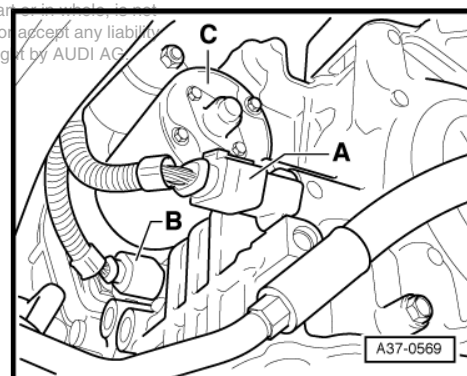


- With ignition switched off, disconnect earth wire -arrow- at battery.
- Remove oil pan ➔ [page 92](#) .
- Remove ATF strainer ➔ [page 95](#) .
- Remove valve body ➔ [page 95](#)



When gearbox is installed:

- Detach 14-pin connector -A- from gearbox connector.



Gearbox removed or installed:

- Remove bolt securing 14-pin connector to outside of gearbox housing.
- Pull connector out of gearbox housing and carefully guide wiring harness -D- out behind.

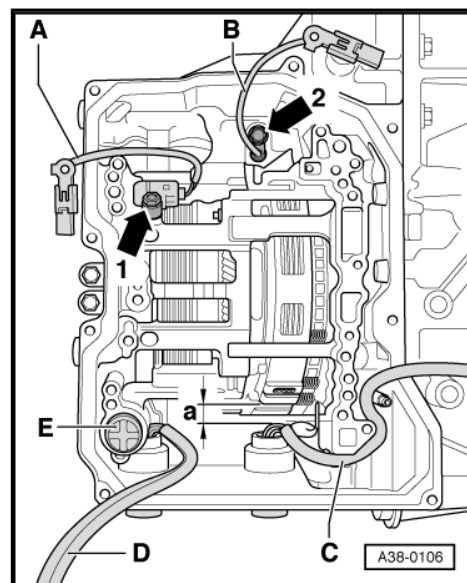
Installing wiring harness with 14-pin connector

Installation is carried out in reverse sequence; note the following:

- Renew O-ring on connector.
- Lubricate O-ring lightly with ATF.
- Press connector with O-ring fitted into gearbox as far as it will go.

Tightening torque

Component	Nm
Securing bolt for 14-pin connector	5.5

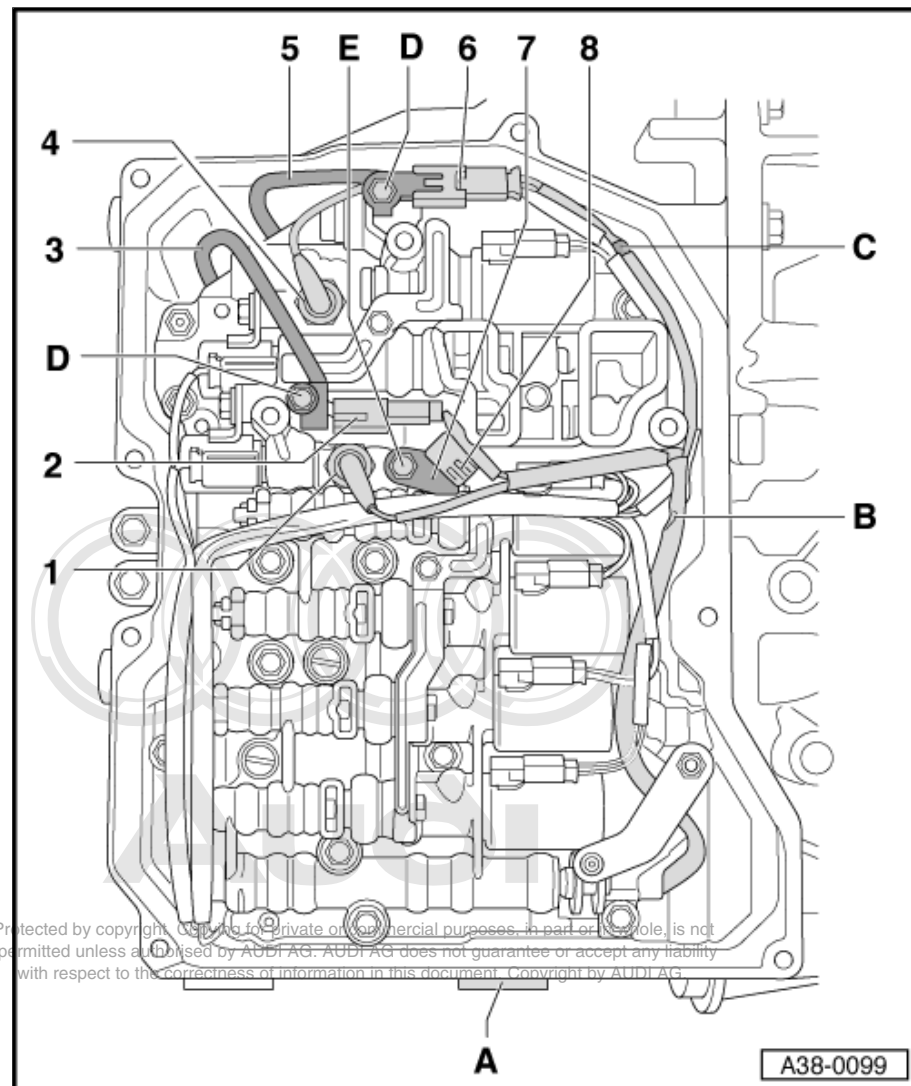


1.6 Removing and installing wiring harness with 8-pin connector and integrated gearbox oil temperature sender -G93-

A - 8-pin connector

B - Wiring harness leading to 8-pin connector

- ❑ Components on wiring harness ⇒ [page 92](#)



Note

- ◆ Rules for cleanliness when working on the automatic gearbox ⇒ [page 8](#)
- ◆ General repair instructions ⇒ [page 6](#).

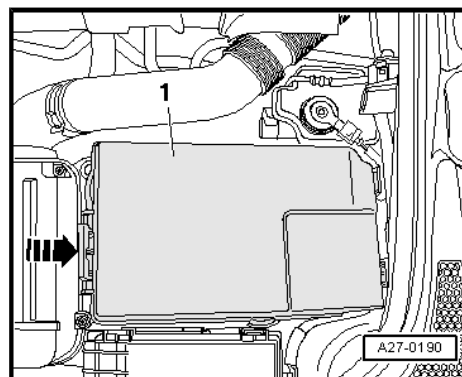
Removing wiring harness with 8-pin connector



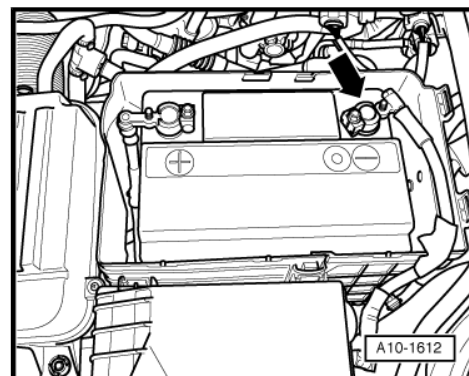
WARNING

Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27.

- Press release tab -arrow- and remove cover -1- over battery.

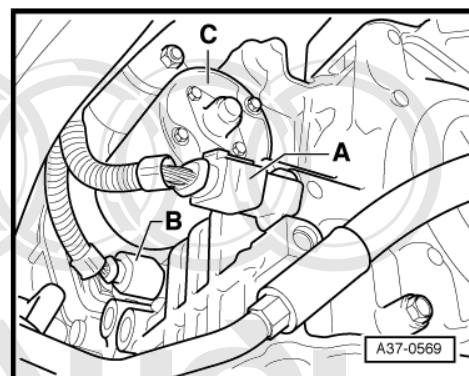


- With ignition switched off, disconnect earth wire -arrow- at battery.
- Remove oil pan ➔ [page 92](#) .
- Remove ATF strainer ➔ [page 95](#) .
- Remove valve body ➔ [page 95](#)



When gearbox is installed:

- Detach 8-pin connector -B- from gearbox connector.



Gearbox removed or installed:

- Remove bolt securing 8-pin connector to outside of gearbox housing.
- Pull connector out of gearbox housing and carefully guide wiring harness -C- out behind.

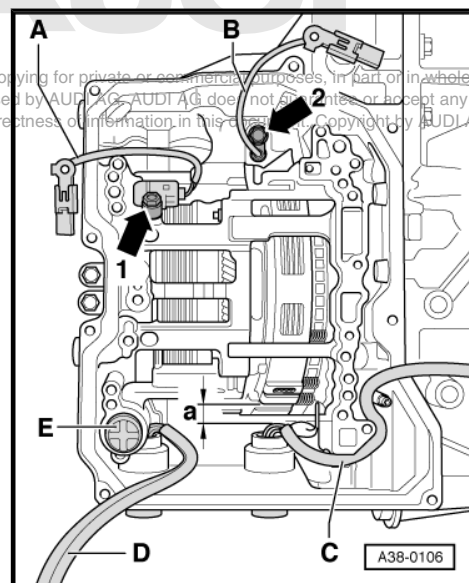
Installing wiring harness with 8-pin connector

Installation is carried out in reverse sequence; note the following:

- Renew O-ring on connector.
- Lubricate O-ring lightly with ATF.
- Press connector with O-ring fitted into gearbox as far as it will go.

Tightening torque

Component	Nm
Securing bolt for 8-pin connector	5.5



1.7 Removing and installing gearbox input speed sender -G182-



Note

- ◆ *Rules for cleanliness when working on the automatic gearbox*
➔ [page 8](#)
- ◆ *General repair instructions* ➔ [page 6](#) .

Removing gearbox input speed sender -G182-

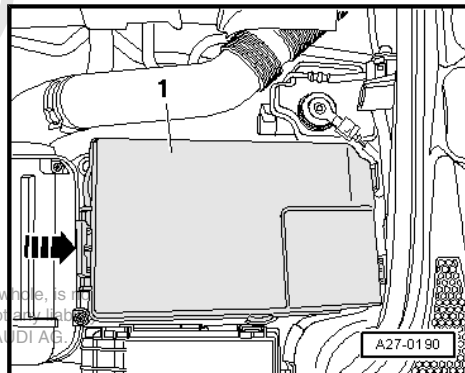


WARNING

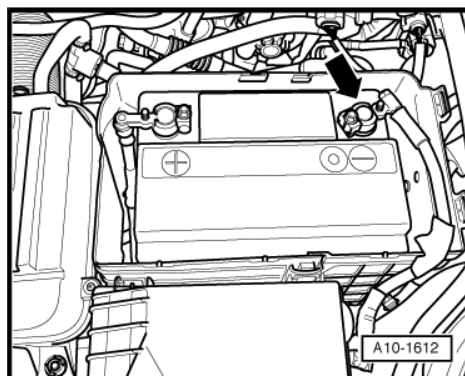
Follow steps required when disconnecting battery ➔ Electrical system; Rep. gr. 27.

- Press release tab -arrow- and remove cover -1- over battery.

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- With ignition switched off, disconnect earth wire -arrow- at battery.
- Remove oil pan ➔ [page 92](#).
- Remove ATF strainer ➔ [page 95](#).
- Remove valve body ➔ [page 95](#)



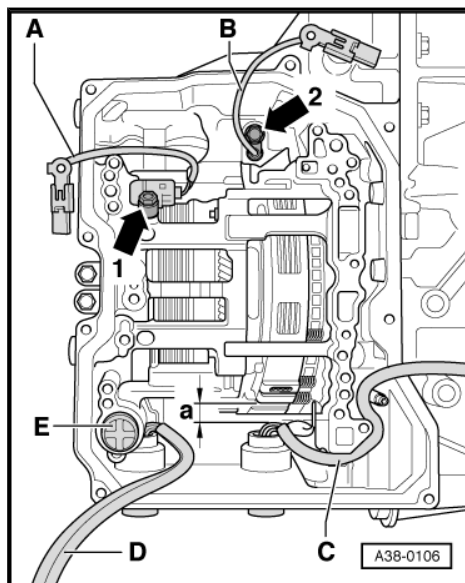
- Remove bolt -1-.
- Pull gearbox input speed sender -G182- with wire -A- out of gearbox.

Installing gearbox input speed sender -G182-

Installation is carried out in reverse sequence; note the following:

- Carefully push gearbox input speed sender -G182- into gearbox as far as it will go.

Component	Nm
Gearbox input speed sender -G182- to gearbox, bolt M6	5.5



1.8 Removing and installing gearbox output speed sender -G195-



Note

- ♦ *Rules for cleanliness when working on the automatic gearbox ➔ [page 8](#)*
- ♦ *General repair instructions ➔ [page 6](#).*

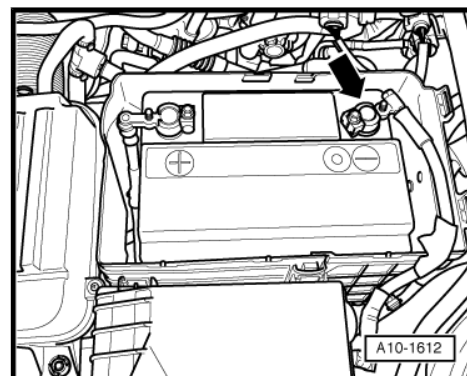
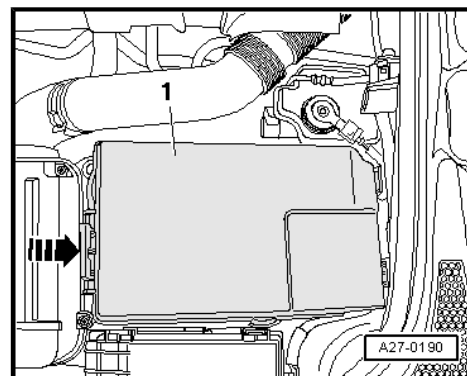
Removing gearbox output speed sender -G195-



WARNING

Follow steps required when disconnecting battery ➔ Electrical system; Rep. gr. 27.

- Press release tab -arrow- and remove cover -1- over battery.
- With ignition switched off, disconnect earth wire -arrow- at battery.
- Remove oil pan ➔ [page 92](#).
- Remove ATF strainer ➔ [page 95](#).
- Remove valve body ➔ [page 95](#).



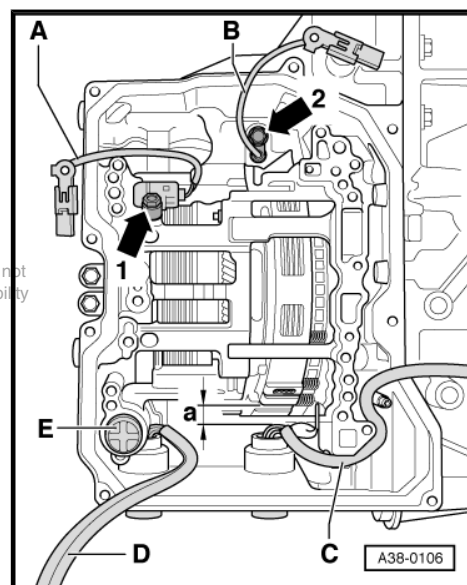
- Remove bolt -2-.
- Pull gearbox output speed sender -G195- with wire -B- out of gearbox.

Installing gearbox output speed sender -G195-

Installation is carried out in reverse sequence; note the following:

- Lightly lubricate O-ring at sender with ATF.
- Carefully push gearbox output speed sender -G195- into gearbox as far as it will go.

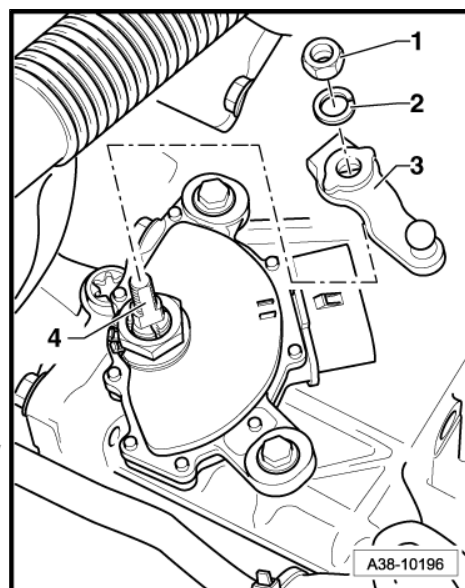
Component	Nm
Gearbox output speed sender -G195- to gearbox, bolt M5	6.5



2 Exploded view - multi-function switch -F125-

Selector shaft lever

- 1 - Nut, 12.5 Nm
- 2 - Washer
- 3 - Selector shaft lever
- 4 - Selector shaft



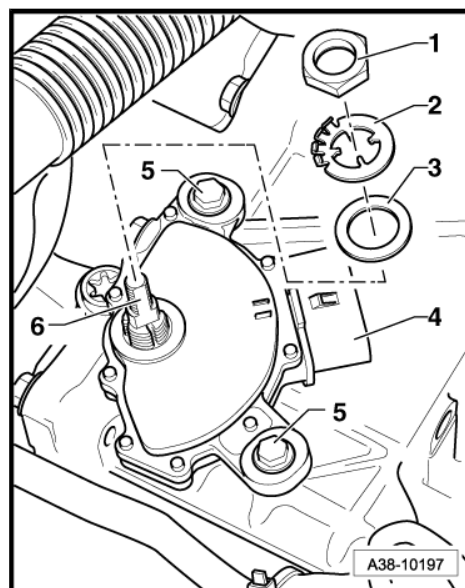
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Multifunction switch -F125-

- 1 - Nut, 7 Nm
- 2 - Securing clip
- 3 - Washer
- 4 - Multifunction switch -F125-
- 5 - Bolts, 5.5 Nm
- 6 - Selector shaft

◆ ⇒ [„2.1 Removing and installing multifunction switch F125 “, page 112](#)

◆ ⇒ [„2.2 Adjusting multifunction switch F125 “, page 115](#)



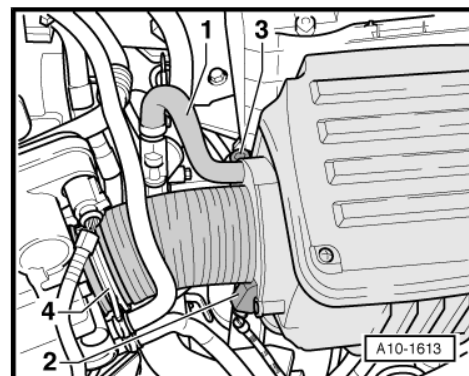
2.1 Removing and installing multifunction switch -F125-

Removing

- Shift selector lever into position „N“.
- Switch off ignition.

Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.



All vehicles:

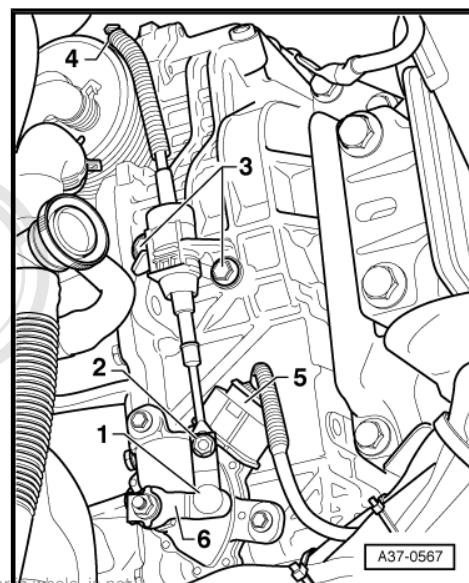
- Use an open-end spanner (10 mm) or similar to lever selector lever cable -1- off selector shaft lever -6-. Make sure you do not bend or kink selector lever cable.



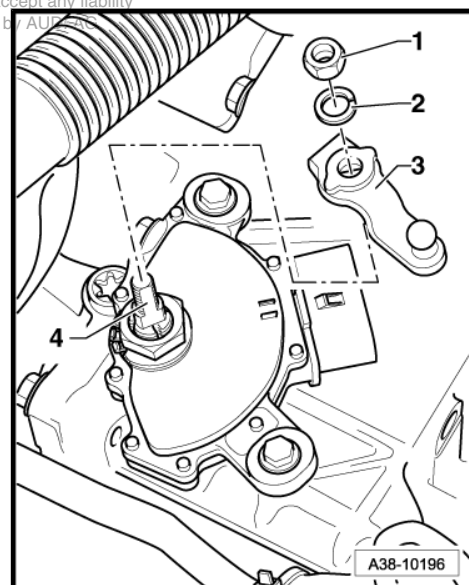
Note

Do not loosen bolt -2-.

- Detach connector -5- at multi-function switch.



- Remove nut -1-, with respect to the correctness of information in this document. Copyright by Audi AG.
- Detach washer -2- and selector shaft lever -3- from selector shaft -4-.



- Bend back hooks on securing clip -2- with a screwdriver.



Note

Should one or more of the hooks on the securing clip break off, the securing clip must be renewed.

- Detach nut -3- with washers -2- and -1-.
- Remove the two bolts -B- and lift multi-function switch -A- off the selector shaft.

Installing

Perform installation in reverse sequence of removal. Note the following:

Tightening torques ⇒ [page 112](#)

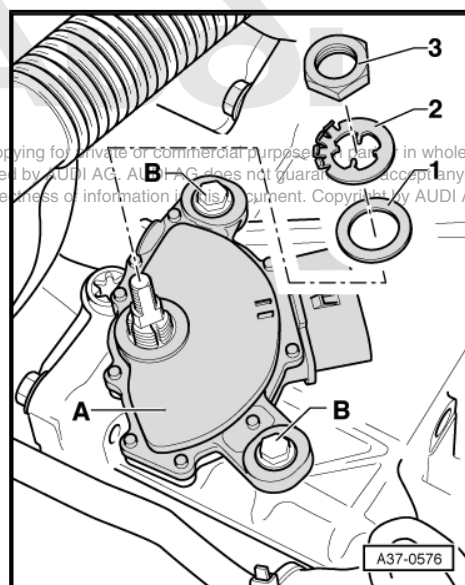
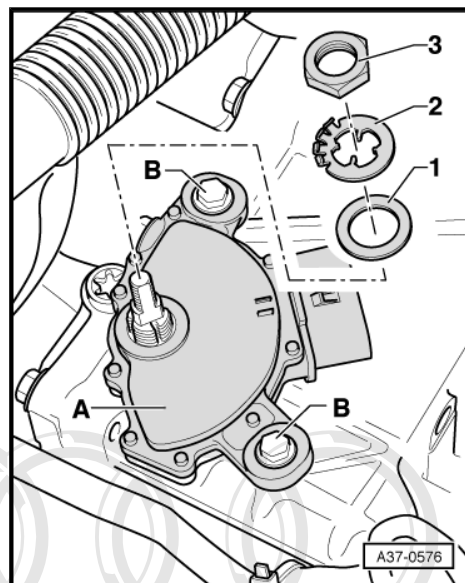
- Fit multifunction switch -F125- onto selector shaft.
- Tighten securing bolts -B- for multi-function switch (hand-tight).
- Fit washers -1-, -2- and nut -3- onto selector shaft.
- Secure nut by bending up hooks on securing clip -2-.



Note

Should one or more of the hooks on the securing clip break off, the securing clip must be renewed.

- Adjust multi-function switch -F125- ⇒ [page 115](#) .

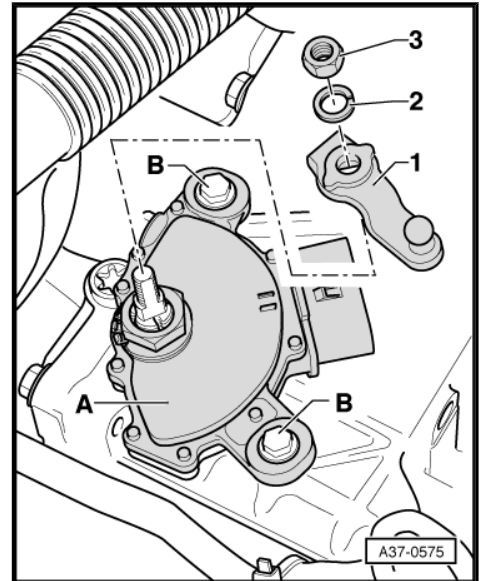


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- Install selector shaft lever -1-.



Gearbox must remain in position „N“, if necessary shift back to position „N“.



- Fit connector -5- onto multi-function switch.
- Press selector lever cable -1- onto selector shaft lever -6-, making sure you do not bend or kink the selector lever cable.

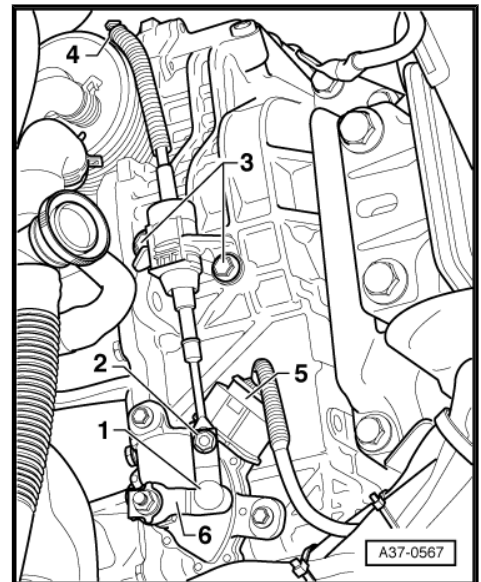


You may have to shift the selector shaft lever into the correct position before you can press the selector lever cable onto the shaft lever.

- Check adjustment of selector lever cable ⇒ [page 21](#).

Tightening torques

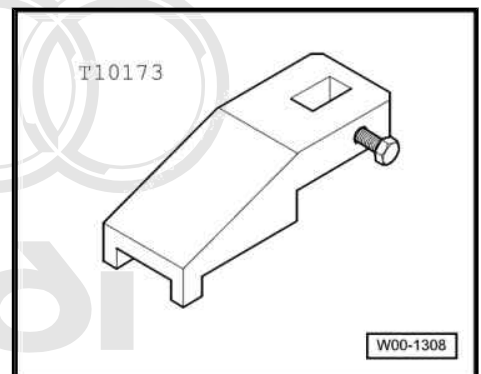
Component	Nm
Multi-function switch -F125- to selector shaft	7
Selector shaft lever to selector shaft	12.5



2.2 Adjusting multifunction switch -F125-

Special tools and workshop equipment required

- ◆ Setting gauge -T10173-



Preparation

- Shift selector lever into position „N“.
- Switch off ignition.

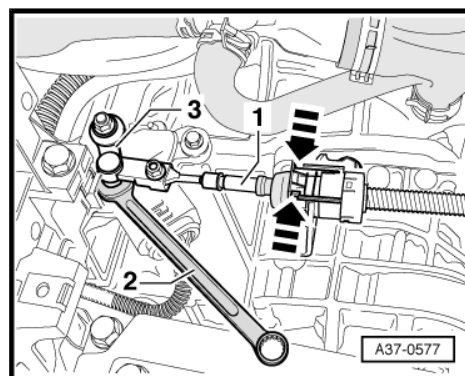
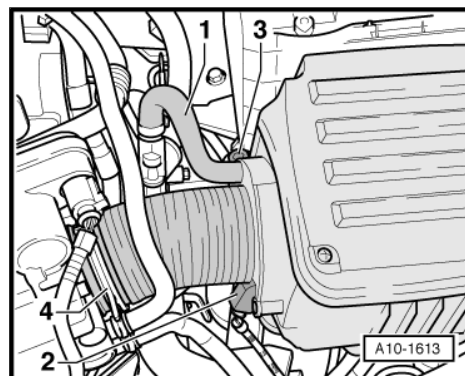
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Vehicles with 2.0 ltr. FSI engine:

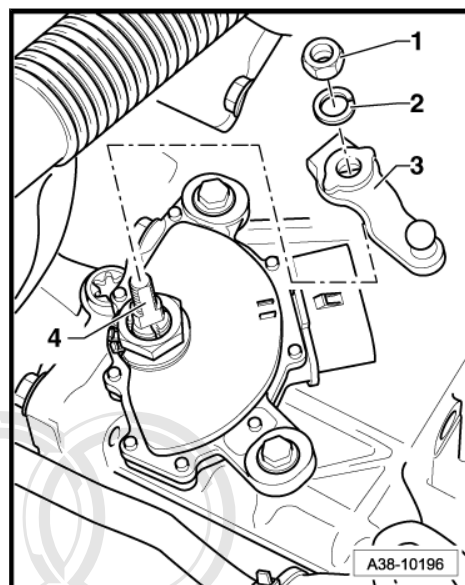
- Disconnect hose -1- and connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

All vehicles:

- Use an open-end spanner (10 mm) -item 2- or similar to lever selector lever cable -1- off selector shaft lever -3-. Make sure you do not bend or kink selector lever cable.



- Remove nut -1-.
- Detach washer -2- and selector shaft lever -3- from selector shaft -4-.



Adjusting

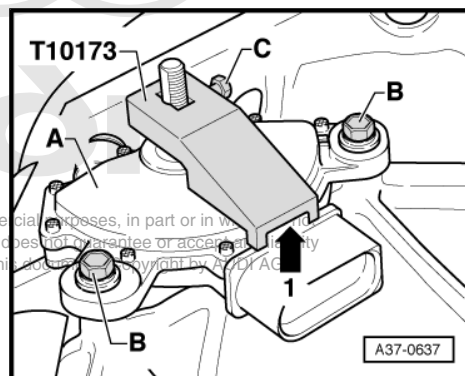
- Tightening torques ⇒ [page 112](#)
- Loosen the two bolts -B-.



Note

Do not unscrew completely.

- Fit setting gauge -T10173- onto selector shaft.



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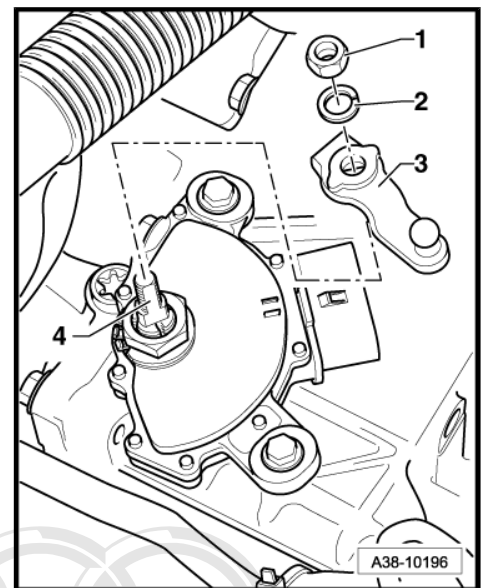
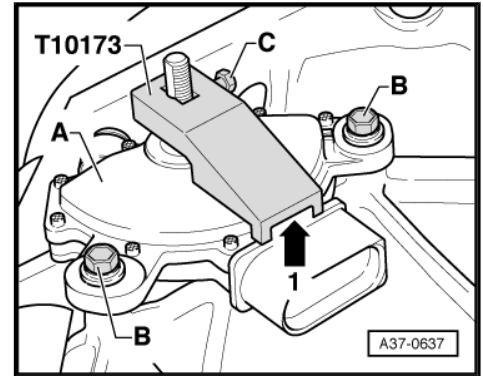
- Turn multi-function switch -A- until lug on connector -arrow 1- engages in groove on setting gauge -T10173- .

If lug on connector cannot engage in groove on setting gauge, this is due to fact that gearbox is no longer in position „N“. In this case you must shift gearbox into position „N“, using setting gauge.

- To do so, turn setting gauge in either direction until lug on connector -arrow 1- engages in groove on setting gauge - T10173- (if necessary also turn multi-function switch -A- slightly).
- Hold setting gauge -T10173- in position on selector shaft with knurled screw -C-.
- Fit the two bolts -B-.
- Remove setting gauge from selector shaft.

The remaining installation steps are performed in reverse order.

- Fit selector shaft lever -3- and washer -2- onto selector shaft -4-.
- Tighten nut -1-.



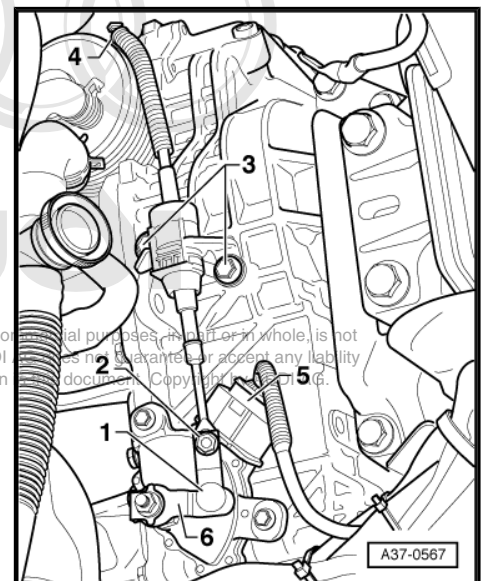
- Press selector lever cable -1- onto selector shaft lever -6-, making sure you do not bend or kink the selector lever cable.

Note

You may have to shift the selector shaft lever into the correct position before you can press the selector lever cable onto the shaft lever.

- Check adjustment of selector lever cable ➔ [page 21](#) .

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39 – Final drive - front differential

1 Renewing flange shaft oil seals

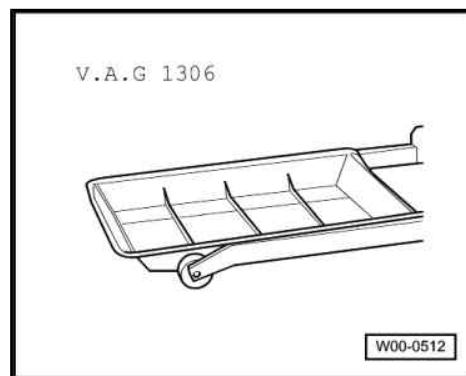
It is possible to change oil seals without removing gearbox.

1.1 Renewing flange shaft oil seal (left-side)

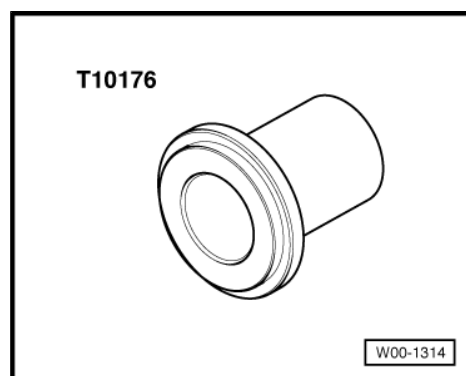
The oil seal can be renewed with the gearbox installed.

Special tools and workshop equipment required

- ◆ Drip tray -V.A.G 1306-



- ◆ Thrust piece -T10176-

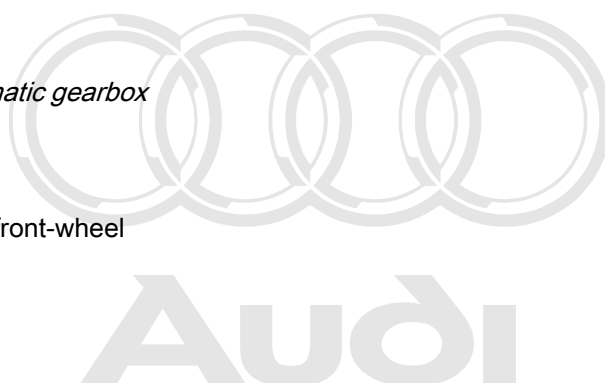


1.1.1 Procedure



Note

- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)
- ◆ *General repair instructions* ⇒ [page 6](#).
- Remove drive shaft (left-side) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .

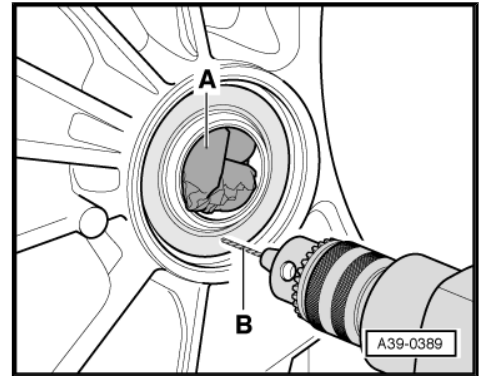


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- Close opening for drive shaft on gearbox with a clean cloth -A-.
- Place drip tray -V.A.G 1306- under the gearbox.
- Use a commercially available metal drill -B- ($\varnothing$ 2 to 4 mm) to drill a hole into the outer metal ring on oil seal.

Note

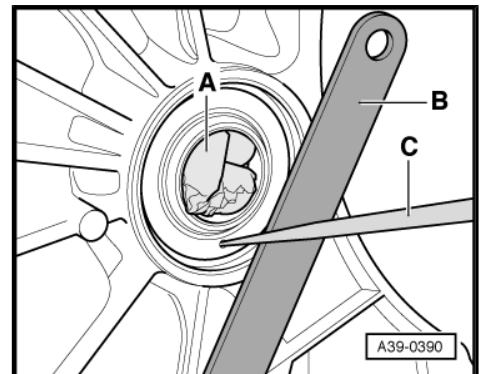
Only drill into the metal ring, so that gearbox does not get damaged.



- Use a flat drill -C- to prise off oil seal at drilling.

Note

While you are prising off oil seal hold a support lever -B- to surface of housing to avoid damage.



- Remove cloth -A- and clean gearbox thoroughly.

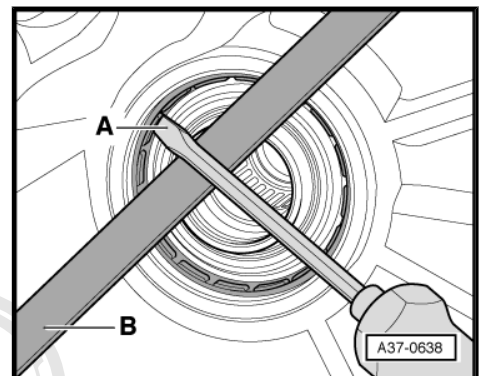


WARNING

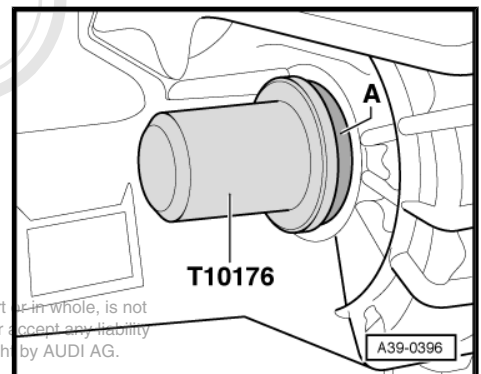
No metal shavings must be allowed to enter gearbox or opening for drive shaft; if necessary, vacuum out shavings.

If it was only possible to remove metal ring on oil seal, not complete seal:

- Prise off the rest of oil seal with a screwdriver -A-.
- Lightly lubricate outer circumference and sealing lips of new oil seal with ATF.
- Installation position: open side of oil seal points towards gearbox
- Fit new oil seal by hand, keeping it straight and pushing it in as far as it will go, so that oil seal is properly secured in gearbox housing.



- Fit thrust piece on centre of oil seal -A-.
- Drive in new oil seal until thrust piece contacts stop, ensuring that seal remains straight.
- Install drive shaft (left-side) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Check and top up ATF level ⇒ [page 71](#) .



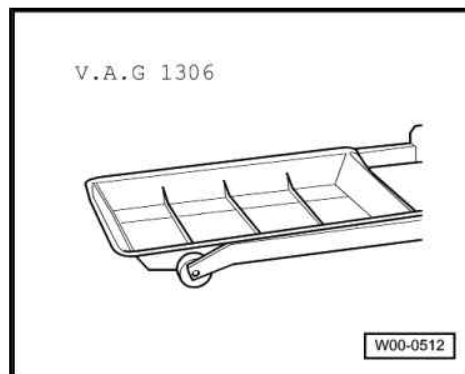
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1.2 Renewing flange shaft oil seal (right-side)

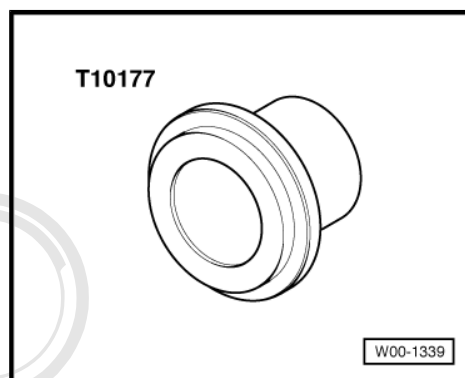
The oil seal can be renewed with the gearbox installed.

Special tools and workshop equipment required

- ◆ Drip tray -V.A.G 1306-



- ◆ Thrust piece -T10177-



1.2.1 Procedure

Note

- ◆ *Rules for cleanliness when working on the automatic gearbox*
⇒ [page 8](#)

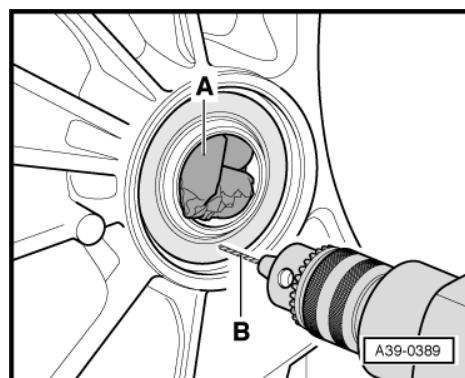
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- ◆ *General repair instructions* ⇒ [page 6](#).

- Remove drive shaft (right-side) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Close opening for drive shaft on gearbox with a clean cloth -A-.
- Place drip tray -V.A.G 1306- under the gearbox.
- Use a commercially available metal drill -B- (Ø 2 to 4 mm) to drill a hole into the outer metal ring on oil seal.

Note

Only drill into the metal ring, so that gearbox does not get damaged.



- Use a flat drill -C- to prise off oil seal at drilling.



Note

While you are prising off oil seal hold a support lever -B- to surface of housing to avoid damage.

- Remove cloth -A- and clean gearbox thoroughly.

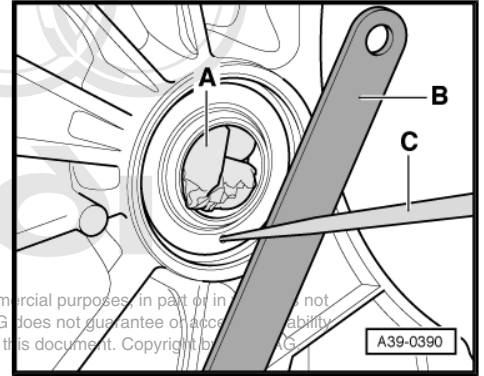


WARNING

No metal shavings must be allowed to enter gearbox or opening for drive shaft; if necessary, vacuum out shavings.

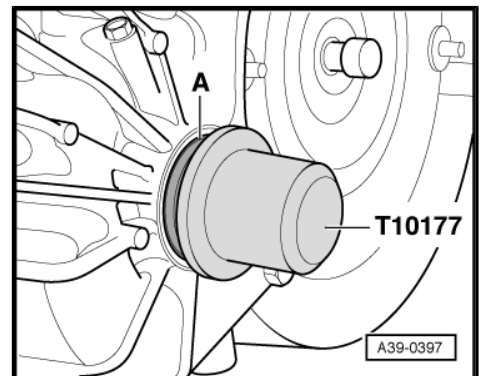
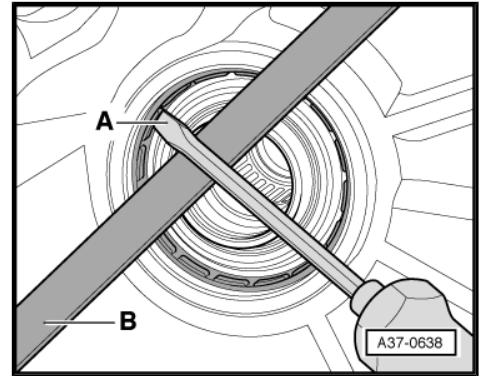
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A39-0390



If it was only possible to remove metal ring on oil seal, not complete seal:

- Prise off the rest of oil seal with a screwdriver -A-.
- Lightly lubricate outer circumference and sealing lips of new oil seal with ATF.
- Installation position: open side of oil seal points towards gearbox
- Fit new oil seal by hand, keeping it straight and pushing it in as far as it will go, so that oil seal is properly secured in gearbox housing.
- Fit thrust piece -T10177- on centre of oil seal -A-.
- Drive in new oil seal until thrust piece contacts stop, ensuring that seal remains straight.
- Install drive shaft (right-side) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Check and top up ATF level ⇒ [page 71](#) .

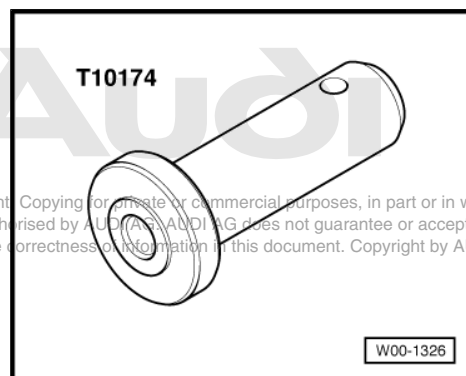


2 Renewing selector shaft oil seal

2.1 Renewing selector shaft oil seal

Special tools and workshop equipment required

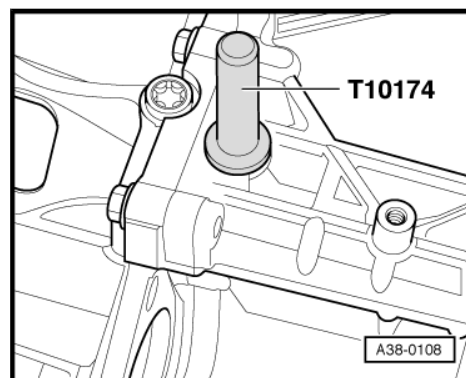
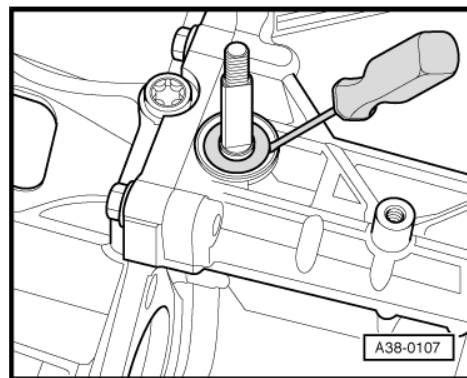
- ◆ Thrust piece -T10174-



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2.1.1 Procedure

- Remove multifunction switch -F125- ⇒ [page 112](#) .
 - Remove oil seal with screwdriver, making sure you do not damage selector shaft.
 - Lightly lubricate outer circumference and sealing lips of new oil seal with ATF.
 - Installation position: open side of oil seal points towards gear-box
-
- Drive in new oil seal until thrust piece -T10177- contacts stop, ensuring that seal remains straight.
 - Install ⇒ [page 112](#) and adjust ⇒ [page 115](#) multi-function switch -F125- .



3 Definitions

These explanations refer only to this assembly group: Automatic gearbox 09G. These definitions are not necessarily generally valid.

3.1 Explanation of terms

3.1.1 ATF (Automatic Transmission Fluid)

Gear oil for automatic gearbox

3.1.2 ATF level

The „level“ of ATF in gearbox. To measure the ATF level, please refer to the information given in the Workshop Manual.

3.1.3 Brakes

They brake and hold certain rotating parts in the gearbox. Unlike the clutches, the brakes are supported on the gearbox housing.

3.1.4 Torque converter

The torque converter transfers the engine torque to the automatic gearbox and acts as a hydraulic drive-away clutch. The torque converter also contains the lock-up clutch.

3.1.5 Self-diagnosis

The control unit for automatic gearbox -J217- is capable of:

- ◆ identifying faults,
- ◆ reacting to faults,
- ◆ storing faults,
- ◆ recording measured values and making them visible in the data block.

3.1.6 Performing self-diagnosis

- Connect vehicle diagnostic testing and information system -VAS 5051- and perform guided fault finding or self-diagnosis.

3.1.7 Clutches

The gearbox clutches together with the brakes engage the individual gears.

3.1.8 Wiring

Routing of electric wiring and components in vehicle.

3.1.9 Selector lever lock solenoid -N110-

The selector lever lock solenoid -N110- is located in the selector mechanism, near the selector lever. Prevents (involuntary) shifting of the selector lever from positions „P“ and „N“ as long as the brake pedal is not depressed.

3.1.10 Solenoid valves

The solenoid valves open and close the oil channels to the clutches and brakes.

3.1.11 Multifunction switch -F125-

The multi-function switch -F125- is bolted onto selector shaft on gearbox housing. It is an electrical switch and passes on the gears set via the selector lever to the gearbox control unit. It must be correctly adjusted

⇒ „2.2 Adjusting multifunction switch F125 “, page 115 .

3.1.12 Parking lock

With a stationary vehicle and the selector lever in the „P“ position, the parking lock gear is blocked mechanically and secures the vehicle against (accidentally) rolling away.

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3.1.13 Planetary gearbox

The planetary gearbox is the mechanical component of the automatic gearbox in which the gears are shifted via clutches and brakes without interrupting the flow of power.

3.1.14 Valve body

The valve body is located at the bottom of the gearbox and is enclosed by the ATF pan (oil pan). Its valves regulate the hydraulic pressure and distribute it via the oil channels to the coupling elements (clutches and brakes).

3.1.15 Automatic gearbox control unit -J217-

The control unit for automatic gearbox -J217- defines the shift points. The functioning of the gearbox is monitored by self-diagnosis. If a component or sensor fails, an emergency running programme ensures that the vehicle can still be driven.

3.1.16 Torque converter lock-up clutch

The torque converter lock-up clutch is installed in the torque converter. When it is not yet closed only part of the engine torque is transferred to the gearbox - this is referred to as torque converter slip. When the clutch is closed the total engine torque is mechanically transferred to the gearbox. For more detailed information refer to the relevant Self-study programme.