

Workshop Manual Audi Q3 2012 ➤

6-speed automatic gearbox 09M

Edition 02.2016

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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 - 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 Identification

(ARL004612; Edition 02.2016)

⇒ [“1.1 Gearbox identification”, page 1](#)

⇒ [“1.2 Identification of torque converter”, page 1](#)

⇒ [“1.3 Bevel box identification”, page 2](#)

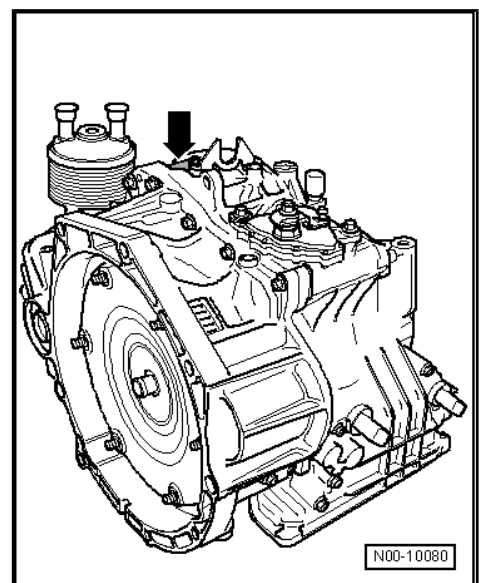
1.1 Gearbox identification

Code letters and date of manufacture of gearbox -arrow-

Example:

Identification markings on 09G gearboxes

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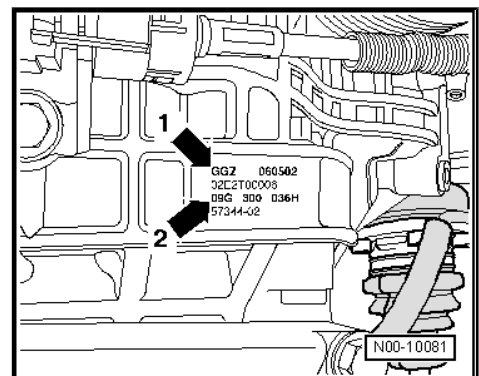


Code letters -arrow 1-

6-speed automatic gearbox 09G -arrow 2-

GGZ	06	05	02
Code letters	Day	Month	Year -2002- of manufacture

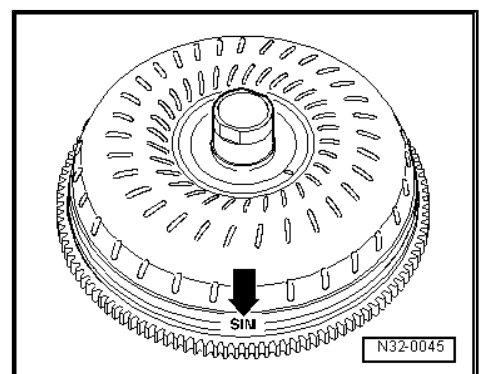
The gearbox code letters are also given on the vehicle data stickers.



1.2 Identification of torque converter

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

Torque converter/gearbox allocation ⇒ Electronic parts catalogue .



2 Safety precautions

⇒ [“2.1 General safety precautions”, page 3](#)

⇒ [“2.2 Safety precautions when using testers and measuring instruments during a road test”, page 4](#)

⇒ [“2.3 Safety precautions when tow-starting and towing”, page 4](#)

2.1 General safety precautions

Observe the following precautions to avoid possible injury and/or damage to the vehicle:



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

- ◆ ***Before performing any work with the engine running, set the gearbox to position “P” and pull up the parking brake button to apply the electromechanical parking brake.***

Danger from toxic exhaust gases when engine is running.

- ◆ ***When the engine is running, the exhaust system must always be connected to the exhaust gas extractor.***

The radiator fans can start running by themselves – risk of injury.

- ◆ ***Unplug electrical connectors before working in vicinity of radiator cowl.***

Observe the following precautions to avoid possible injury and/or irreparable damage to electrical and electronic components:

- ◆ Switch off ignition before disconnecting and connecting test equipment.



Caution

When disconnecting the battery there is a risk of irreparable damage to electronic components.

- ◆ ***Observe the correct procedure for disconnecting the battery.***
- ◆ ***Always switch off the ignition before disconnecting the battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .***

2.2 Safety precautions when using testers and measuring instruments during a road test



WARNING

Accidents can be caused if the driver is distracted by test equipment or if test equipment is not secured.

Injuries can be caused if the passenger's airbag is triggered in a collision.

- *The use of test equipment while driving causes distraction.*
- *There is an increased risk of injury if test equipment is not secured.*
- ◆ *Always secure test equipment to the rear seat with a strap and have it operated from there by a second person.*

2.3 Safety precautions when tow-starting and towing



Caution

Risk of gearbox damage if vehicle is not towed correctly.

- *Move selector lever to position N.*
- *Do not tow further than 50 km.*
- *Do not tow at speeds of over 50 km/h.*



Note

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 21](#) .



3 Repair instructions

⇒ [“3.1 General repair instructions”, page 5](#)

⇒ [“3.2 Rules for cleanliness”, page 6](#)

⇒ [“3.3 Gaskets, seals, oil seals”, page 7](#)

⇒ [“3.4 Nuts, bolts”, page 7](#)

⇒ [“3.5 Electrical components”, page 7](#)

⇒ [“3.6 Contact corrosion”, page 7](#)

3.1 General repair instructions

For more detailed information about the automatic gearbox 09M refer to:

- ◆ ⇒ Self-study programme No. 309 ; 6-speed automatic gearbox 09G/09K/09M

Gearbox

The 6-speed automatic gearbox 09M has six hydraulically activated forward gears. When the lock-up clutch is closed in 2nd, 3rd, 4th, 5th or 6th gear, power is transmitted by a direct mechanical connection, which eliminates 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. The 2nd, 3rd, 4th, 5th and 6th gears can be driven mechanically (no slip).

3.1.1 Special tools

For a complete list of special tools used in this Workshop Manual
⇒ Workshop equipment and special tools

Sometimes there is uncertainty if bolts need to be tightened to a low tightening torque. You can tighten these bolts with torque wrench - V.A.G 1783- .



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3.1.2 Gearbox

- ◆ If covers are removed from gearbox, or if gearbox has no fluid, do not run engine and do not tow vehicle.
- ◆ Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- ◆ When installing the gearbox, ensure that the dowel sleeves between the engine and the gearbox are correctly located.
- ◆ Place removed components on a clean surface and cover them to protect them from dirt. Use sheeting, paper or lint-free cloths.
- ◆ Only install clean components: do not remove replacement parts from packaging until just before installation.

- ◆ Carefully cover or seal open components if repairs cannot be completed immediately.
- ◆ If gearbox has been removed from vehicle, secure torque converter to prevent it from falling out.

3.1.3 ATF

(Automatic Transmission Fluid)



Note

Oil must be handled with care. Dispose of drained oil properly.

The ATF is filled for life and does not need to be changed during maintenance work.

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 52](#).

- ◆ Only the ATF available as a replacement part may be used for the automatic gearbox 09M. Other types of oil will cause malfunctions and/or failure of the gearbox; for ATF part number refer to ⇒ Electronic parts catalogue “ETKA”.

ATF and detecting faults via ATF check

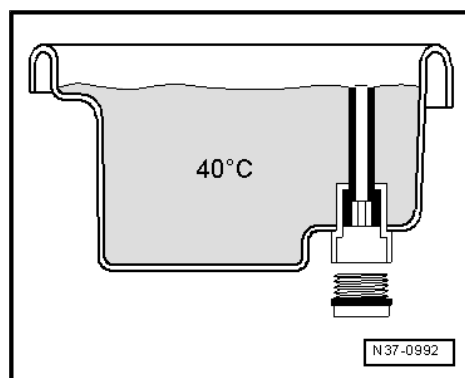
Do not use any additives in the ATF and do not add any other types of ATF.

ATF which has been drained off must not be reused.

The height of this riser pipe determines the ATF level.

Riser pipe must be removed to drain fluid.

- ◆ After installation, check ATF level and top up as required ⇒ [page 52](#).
- ◆ Capacities ⇒ [page 13](#)



3.2 Rules for cleanliness

- ◆ 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 or lint-free cloths.
- ◆ Use commercially available lint-free cloths for cleaning, such as the “WYPALL X70 / WORKHORSE” cloth from Kimberly-Clark Professional.
- ◆ Seal off open lines and connections immediately with clean plugs or protective caps from engine bung set - VAS 6122-.
- ◆ Use cleaning fluid - D 009 401 04- to clean the gearbox and its components.
- ◆ Only install clean components: do not remove replacement parts from packaging until just before installation.
- ◆ Use only ATF for parts running in ATF. Other lubricants will cause malfunction of the gearbox hydraulics.

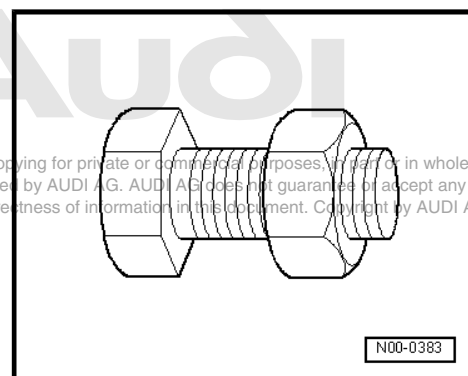
3.3 Gaskets, seals, oil seals

- ◆ Always install new oil seals and gaskets.
- ◆ Before installing oil seals, fill the area between the sealing lips half full with sealing grease - G 052 128- .
- ◆ Open side of oil seals faces towards oil.
- ◆ Lightly lubricate O-rings with ATF before installation to prevent them from being crushed during assembly.



3.4 Nuts, bolts

- ◆ Loosen bolts in reverse sequence to the specified tightening sequence.
- ◆ Nuts and bolts for securing covers and housings **must be loosened and tightened in diagonal sequence.**
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.
- ◆ Use a wire brush to clean the threads of bolts which are secured with locking fluid. Then apply locking fluid - AMV 185 101 A1- to bolts again before fitting.
- ◆ Use a thread tap to remove any remaining locking fluid from all threaded holes which will accommodate self-locking bolts. Otherwise there is a risk that the bolts will shear off the next time they are removed.
- ◆ Always renew self-locking bolts and nuts.



3.5 Electrical components



Caution

Risk of damage to electrical components due to electrostatic discharge.

- ***Discharge static electricity before working on electrical components.***
- ***Touch an earthed object such as a water pipe or lifting platform.***
- ***Do not touch connector contacts with your hands.***

3.6 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used on the vehicle (bolts, nuts, washers etc.).

For this reason, only fasteners with a special surface coating are fitted.

Rubber or plastic parts and adhesives also consist of non-conductive materials.

If you are not sure whether used parts can be re-installed, always fit new parts ⇒ Electronic parts catalogue .



Please note:

- ◆ Use only genuine spare parts: these have been fully tested and are compatible with aluminium.
- ◆ We recommend the use of accessories approved by Audi.
- ◆ Damage resulting from contact corrosion is not covered by the warranty.



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4 Electrical components

⇒ **"4.1 Overview of fitting locations - electrical components", page 9**

4.1 Overview of fitting locations - electrical components

1 - Automatic gearbox control unit - J217-

- ☐ Control unit transmits and receives data via data bus

- ☐ Fitting location, removing and installing ⇒ [page 10](#)

2 - Engine control unit

- ☐ Control unit transmits and receives data via data bus
- ☐ Fitting location, removing and installing ⇒ Petrol engines; Rep. gr. 24 ; Engine control unit; Removing and installing engine control unit - J623- , or ⇒ Diesel engines; Rep. gr. 23 ; Engine control unit; Removing and installing engine control unit - J623-

3 - Multifunction switch - F125-

- ☐ Fitting location ⇒ [page 10](#)
- ☐ Removing and installing ⇒ [page 35](#)
- ☐ Adjusting ⇒ [page 37](#)

4 - Valve body

- ☐ Fitting location ⇒ [page 10](#)

5 - Wiring harness for senders

- ☐ With gearbox oil temperature sender - G93-
- ☐ Fitting location ⇒ [page 11](#)

6 - Gearbox oil temperature sender - G93-

- ☐ Fitting location ⇒ [page 11](#)

7 - Wiring harness for solenoid valves

- ☐ Fitting location ⇒ [page 11](#)

8 - Selector lever lock solenoid - N110-

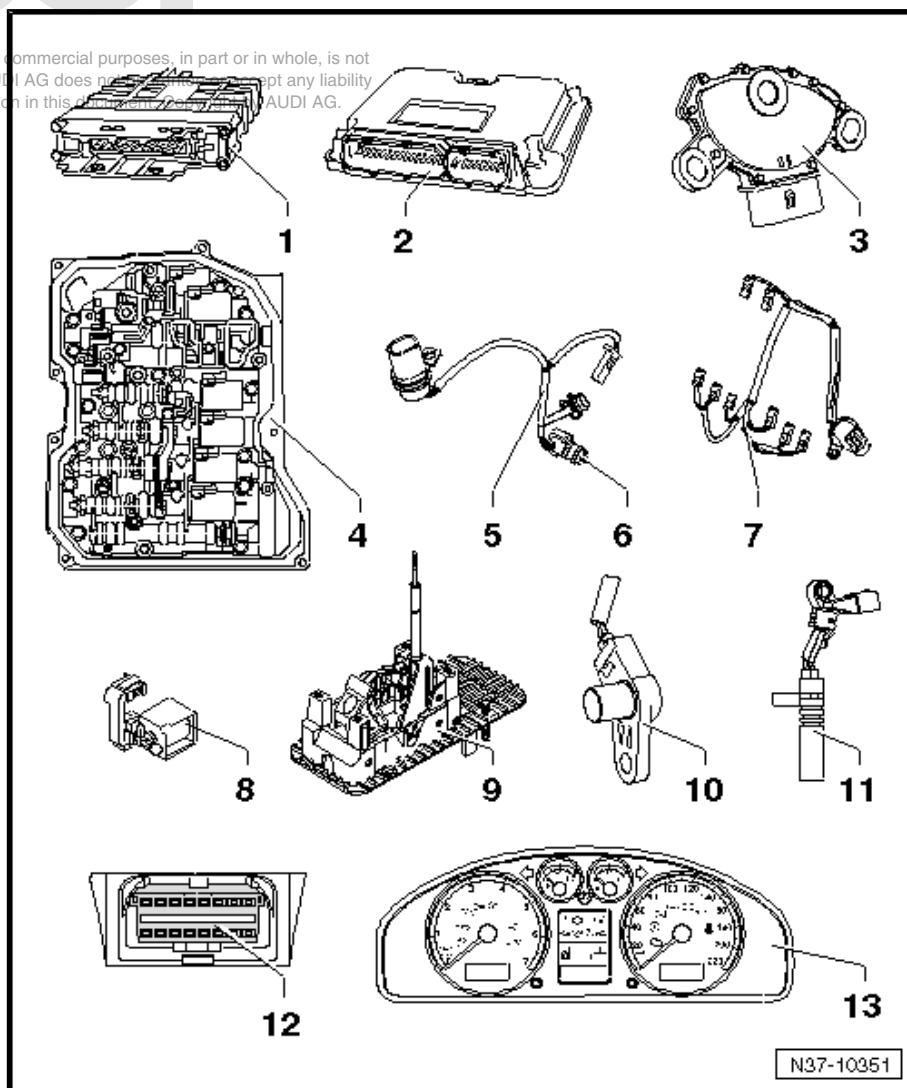
- ☐ Fitting location: selector lever lock solenoid is located in selector mechanism.

9 - Selector mechanism

- ☐ With tiptronic switch - F189- ; renew selector mechanism if tiptronic switch is defective
- ☐ Removing and installing ⇒ [page 22](#)

10 - Gearbox input speed sender - G182-

- ☐ Fitting location ⇒ [page 11](#)



- ❑ Removing and installing ⇒ [page 112](#)

11 - Gearbox output speed sender - G195-

- ❑ Fitting location ⇒ [page 11](#)
- ❑ Removing and installing ⇒ [page 112](#)

12 - Diagnostic connection

- ❑ Fitting location ⇒ [page 11](#)

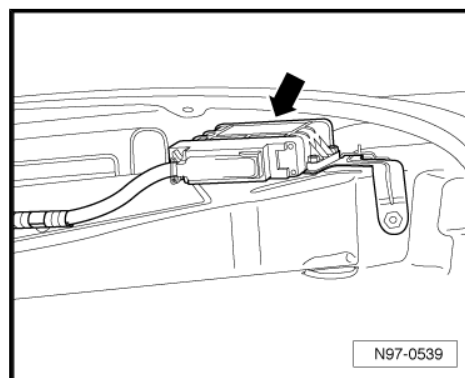
13 - Selector lever position display - Y6-

- ❑ Fitting location ⇒ [page 12](#)
- ❑ Removing and installing ⇒ Electrical system; Rep. gr. 90 ; Dash panel insert; Exploded view - dash panel insert

Automatic gearbox control unit - J217- -arrow-

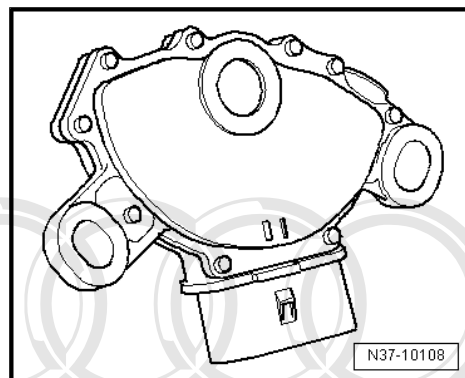
Fitting location: Control unit is located in wheel housing (front left).

- Before removing this component, the wheel housing liner must be removed.



Multifunction switch - F125-

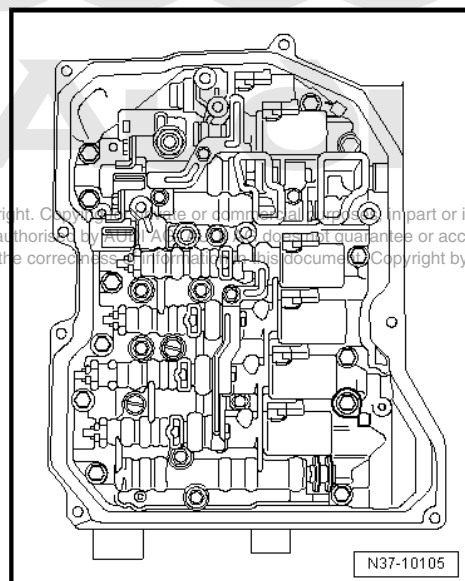
Fitting location: Multi-function switch is located on upper side of gearbox.



Valve body

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

Solenoid valves - N88- and -N89- and pressure regulating valves - N90- , -N91- , -N92- , -N93- , -N282- and -N283- are attached to valve body.

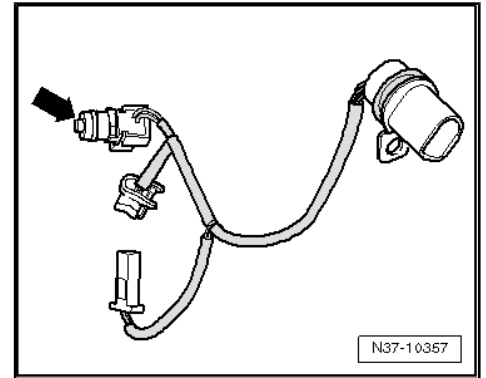


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Wiring harness for senders

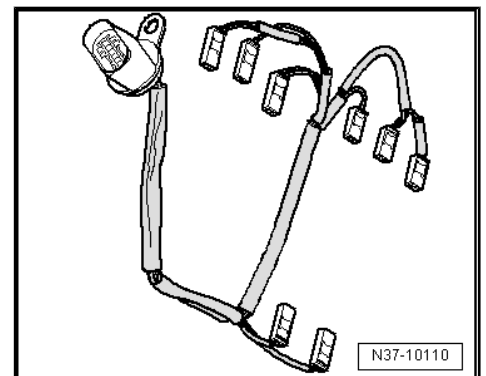
- ◆ With integrated gearbox oil temperature sender - G93-
-arrow-

Fitting location: The wiring harness is attached to the valve body in the gearbox.



Wiring harness for solenoid valves

Fitting location: The wiring harness is attached to the valve body in the gearbox.



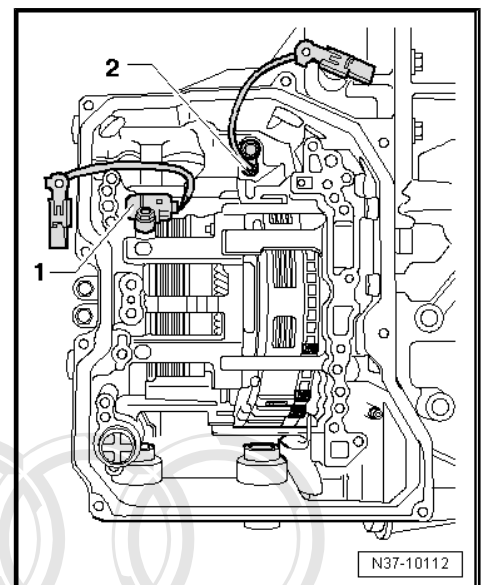
Gearbox input speed sender - G182- and gearbox output speed sender - G195-

Fitting location: The senders are fitted above the valve body in the gearbox housing.

- 1 - Gearbox input speed sender - G182-
- 2 - Gearbox output speed sender - G195-

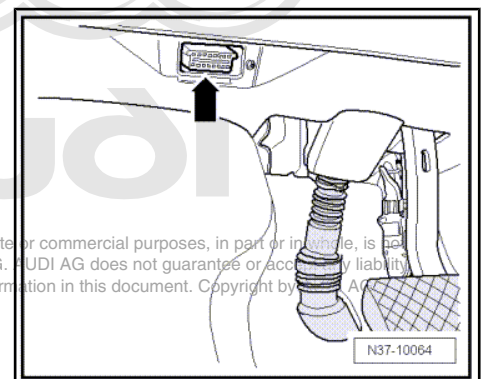
⇒ [“2.5 Removing and installing gearbox input speed sender G182”, page 112](#)

⇒ [“2.6 Removing and installing gearbox output speed sender G195”, page 112](#)



Diagnostic connection

Fitting location: Diagnostic connection -arrow- is located on left below storage compartment (driver's side).

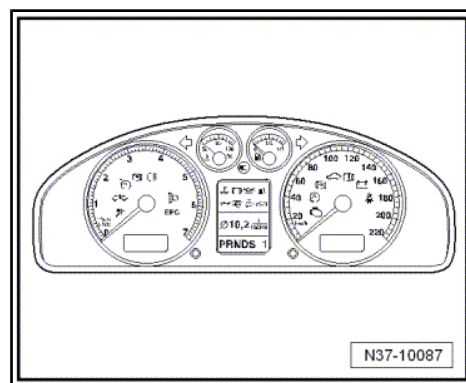


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Selector lever position display - Y6-

Fitting location: In dash panel insert



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5 Technical data

⇒ [“5.1 Capacities”, page 13](#)

5.1 Capacities

⇒ [“5.1.1 Capacities - vehicles with front-wheel drive”, page 13](#)

⇒ [“5.1.2 Capacities - vehicles with four-wheel drive”, page 13](#)

5.1.1 Capacities - vehicles with front-wheel drive

Planetary gearbox and final drive are checked and topped up together ⇒ [page 52](#) .

Capacities	Planetary gearbox and final drive
Initial filling	Approx. 7.0 ltr.
Fluid change	Filled for life, no change
Lubricant	ATF is obtainable as a replacement part. For the part number, refer to ⇒ Electronic parts catalogue .

5.1.2 Capacities - vehicles with four-wheel drive

Planetary gearbox and final drive are checked and topped up together ⇒ [page 52](#) .

Capacities	Planetary gearbox and final drive	Bevel box (front)
Initial filling	Approx. 7.0 ltr.	Approx. 0.9 ltr.
Fluid change	Filled for life, no change	Filled for life, no change
Lubricant	ATF is obtainable as a replacement part. For the part number, refer to ⇒ Electronic parts catalogue .	The gear oil is obtainable as a replacement part. For the part number, refer to ⇒ Electronic parts catalogue .

32 – Torque converter

1 Torque converter

⇒ [“1.1 Identification of torque converter”, page 14](#)

⇒ [“1.2 Removing and installing torque converter”, page 14](#)

⇒ [“1.3 Draining torque converter”, page 15](#)

⇒ [“1.4 Removing and installing oil seal for torque converter”, page 16](#)

⇒ [“1.5 Checking torque converter”, page 17](#)

1.1 Identification of torque converter

⇒ [“1.2 Identification of torque converter”, page 1](#)

1.2 Removing and installing torque converter

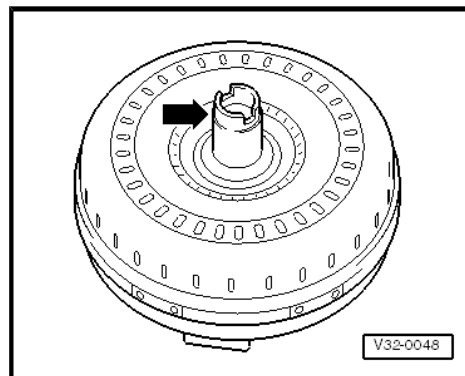
- Remove gearbox ⇒ [page 66](#).
- Take out torque converter.

Installing:

- Carefully press torque converter hub through oil seal as far as first stop.
- Turn torque converter towards gearbox by pressing gently, until slots on torque converter hub -arrow- engage in drive lugs on pump gear and torque converter slides a noticeable distance inwards.

The hub is correctly fitted if it can be turned by hand easily and if its insertion depth in the gearbox is even all around.

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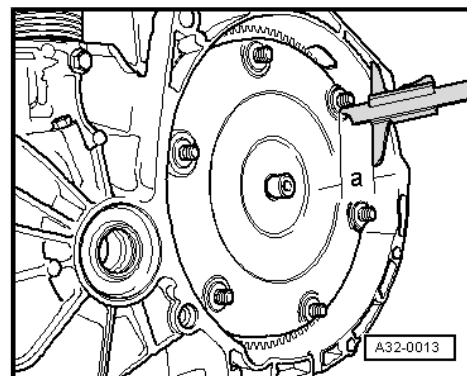


- Use a depth gauge to measure the distance -a- between flange on gearbox housing and contact surface of torque converter stud.
- The torque converter has been installed correctly if distance -a- is at least 19.5 mm.
- It is important to ensure that distance -a- remains unchanged during subsequent assembly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



Caution

If the torque converter is installed incorrectly and you attempt to bolt the gearbox to the engine by force, the torque converter and the ATF pump will be damaged irreparably.



When you subsequently install the gearbox, it is particularly important to observe the following instructions.



Caution

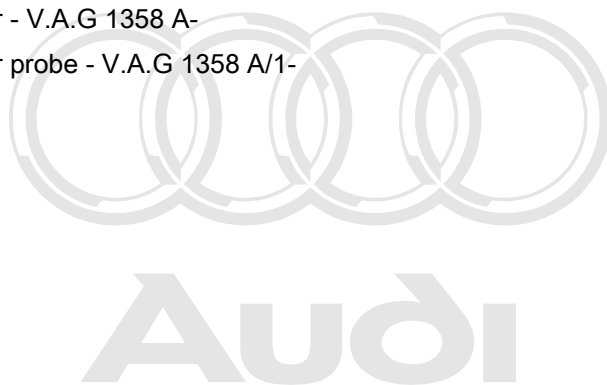
Before and while you are tightening the bolts on the engine/gearbox flange keep checking that the torque converter can still be rotated behind the drive plate. If the torque converter cannot be rotated, you must assume that it is not installed correctly; this means that the drive lugs on the converter or the ATF pump will be damaged irreparably when the bolts are tightened to their final torque.

- Install gearbox ➔ [page 90](#) .
- Checking ATF level and topping up ➔ [page 52](#)

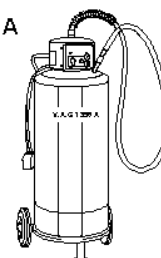
1.3 Draining torque converter

Special tools and workshop equipment required

- ◆ Oil extractor - V.A.G 1358 A-
- ◆ Oil extractor probe - V.A.G 1358 A/1-



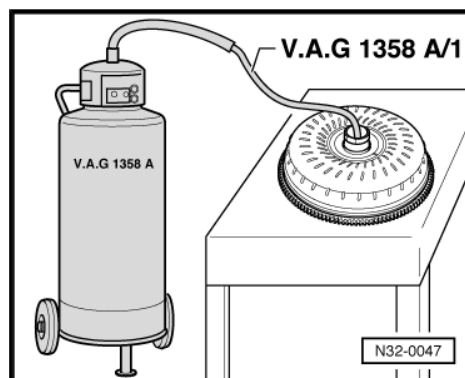
V.A.G 1358 A



VW00-0438

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



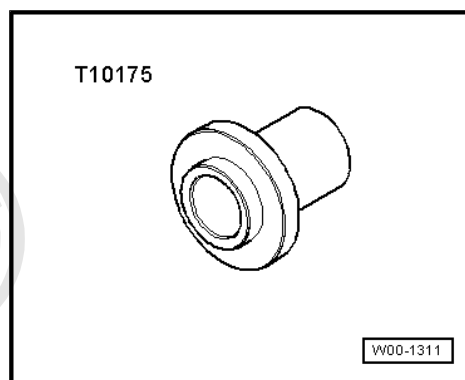
1.4 Removing and installing oil seal for torque converter

Special tools and workshop equipment required

- ◆ Oil seal extractor lever - VW 681-



- ◆ Thrust piece - T10175-



Removing oil seal

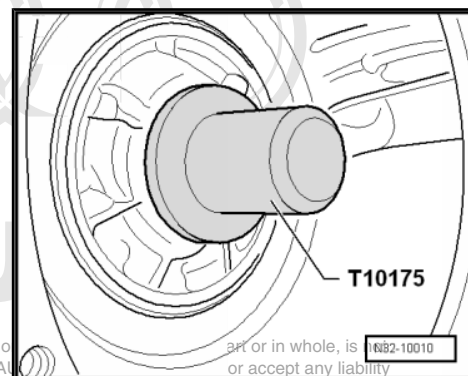
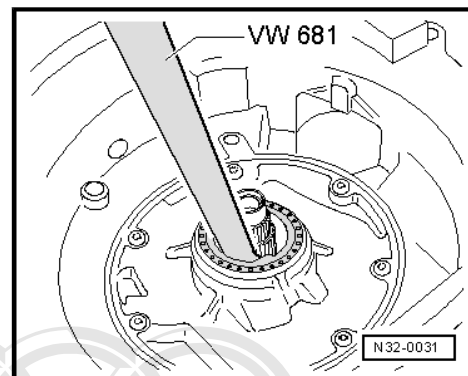
- Remove gearbox ⇒ [page 66](#) .
- Take out torque converter.

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

Installing oil seal

- Drive oil seal in with thrust piece - T10175- until it is flush.
- Install torque converter ⇒ [page 14](#) .
- Install gearbox ⇒ [page 90](#) .



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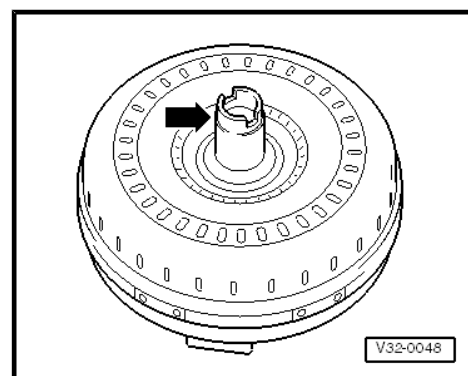
1.5 Checking torque converter

- Check torque converter hub -arrow- for scoring.



Note

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



37 – Controls, housing

1 Selector mechanism

⇒ [“1.1 Exploded view - selector mechanism”, page 18](#)

⇒ [“1.2 Exploded view - selector lever handle”, page 20](#)

⇒ [“1.3 Checking selector mechanism”, page 20](#)

⇒ [“1.4 Manual release from position P”, page 21](#)

⇒ [“1.5 Removing and installing selector mechanism”, page 22](#)

⇒ [“1.6 Removing and installing selector lever handle”,
page 28](#)

⇒ [“1.7 Moving interlock button on selector lever handle into in-
stallation position”, page 30](#)

⇒ [“1.8 Checking and adjusting selector lever cable”, page 32](#)

⇒ [“1.9 Removing and installing multifunction switch”, page 35](#)

⇒ [“1.10 Adjusting multifunction switch”, page 37](#)

⇒ [“1.11 Renewing selector shaft oil seal”, page 38](#)

1.1 Exploded view - selector mechanism



WARNING

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

- ◆ *Prior to performing work with engine running, move selector lever to position “P” and pull up parking brake button to apply the electromechanical parking brake.*

1 - Shift unit

- ☐ With integrated selector lever - E313- with selector lever sensors control unit - J587- , selector lever locked in position P switch - F319- and selector lever lock solenoid - N110-
- ☐ Can be checked via Guided Fault Finding function ⇒ Vehicle diagnostic tester
- ☐ Selector lever cable can only be renewed together with complete shift unit ⇒ [page 22](#)
- ☐ Do not grease selector lever cable
- ☐ Manual release from position P ⇒ [page 21](#)
- ☐ Removing and installing selector mechanism ⇒ [page 22](#)

2 - Bracket

- ☐ For selector lever cable

3 - Nut

- ☐ 2x
- ☐ 8 Nm

4 - Bolt

- ☐ 20 Nm

5 - Cable support bracket

- ☐ For selector lever cable

6 - Bolt

- ☐ Adjuster screw for selector lever cable
- ☐ 12 Nm

7 - Bracket for ATF cooler

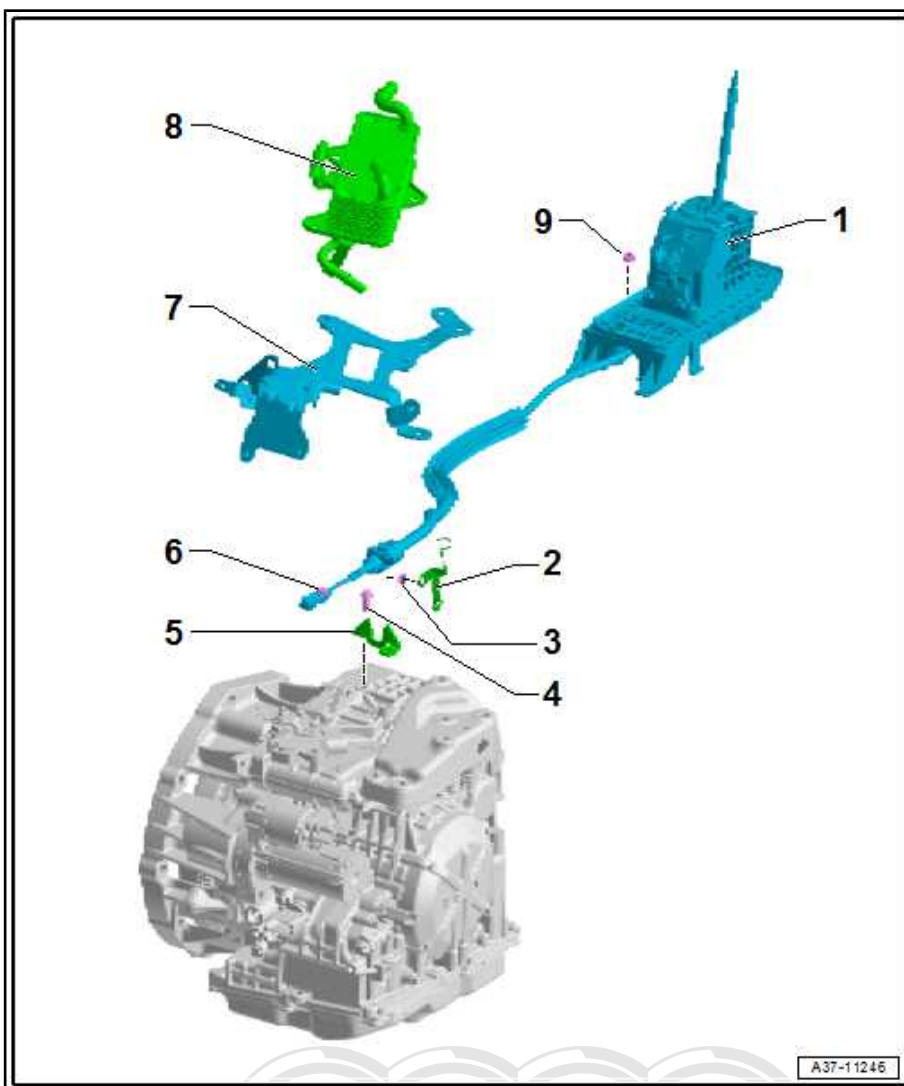
- ☐ Must be removed so that selector lever cable can be removed/installed on gearbox ⇒ [page 44](#)

8 - ATF cooler

- ☐ Must be removed so that selector lever cable can be removed/installed on gearbox ⇒ [page 41](#)

9 - Nut

- ☐ 4x
- ☐ Secures selector mechanism to body
- ☐ 8 Nm



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1.2 Exploded view - selector lever handle

1 - Trim frame with selector lever position display - Y26-

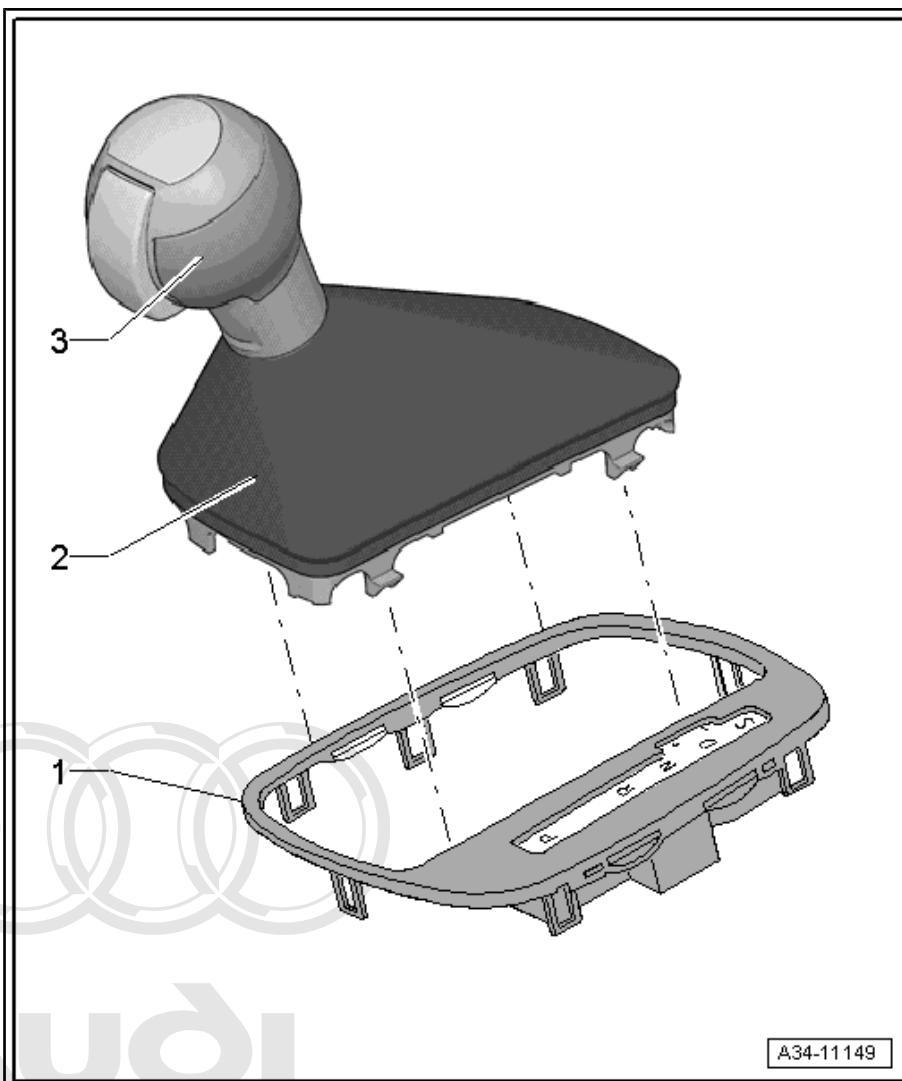
- ❑ Removing and installing
⇒ Electrical system;
Rep. gr. 96 ; Lights; Re-
moving and installing
selector lever position
display - Y26-

2 - Selector lever boot

- ❑ Remove and install to-
gether with
⇒ [Item 3 \(page 20\)](#)

3 - Selector lever handle

- ❑ Removing and installing
⇒ [page 28](#)



A34-11149

1.3 Checking selector mechanism

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It should not be possible to operate the starter while the selector lever is in position "D", "S", "R" or in the "tiptronic gate".

On right-hand drive vehicles the starter should not operate in selector lever positions "P" and "N" when the interlock 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. The selector lever cannot be shifted out of "N" position until the brake pedal is pressed.

Selector lever in position "P" and ignition switched on

- Brake pedal not applied:

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

- Brake pedal applied:

Selector lever lock solenoid releases selector lever. It is possible to shift into a driving gear. Shift selector lever slowly from position "P" to position "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 applied:

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

- Brake pedal applied:

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

Selector lever in "tiptronic" position

- Shift selector lever into tiptronic gate:

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

The selector lever position indicator in the dash panel insert should switch from "P R N D S" to "6 5 4 3 2 1" when the selector lever is shifted into the tiptronic gate.

1.4 Manual release from position P

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



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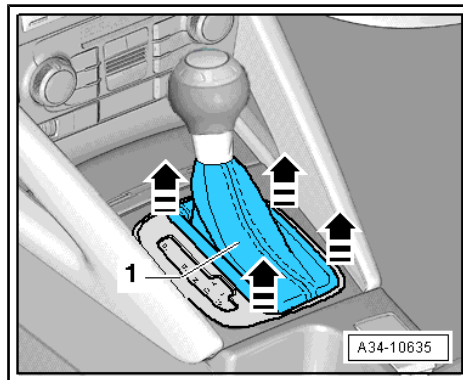


Note

- ◆ *If the battery is disconnected or discharged, the selector lever cannot be shifted from position "P". In this case, the vehicle cannot be pushed or towed.*
- ◆ *When you operate the manual release mechanism the selector lever lock solenoid - N110- will release the lock without current supply.*

Procedure

- Pull up parking brake button to apply electromechanical parking brake.
- Unclip selector lever boot on both sides by hand or using removal wedge - 3409- and turn inside out over selector lever handle -arrows-.

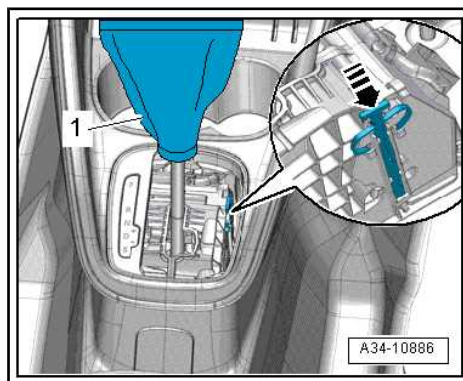


- Using a suitable screwdriver or similar, release selector lever lock solenoid - N110- -arrow- and at the same time press and hold interlock button and move selector lever out of position "P".



Note

However, if the selector lever is now moved back to "P" the selector lever lock solenoid - N110- will once again mechanically lock it in position "P". The solenoid must be released once again.



1.5 Removing and installing selector mechanism

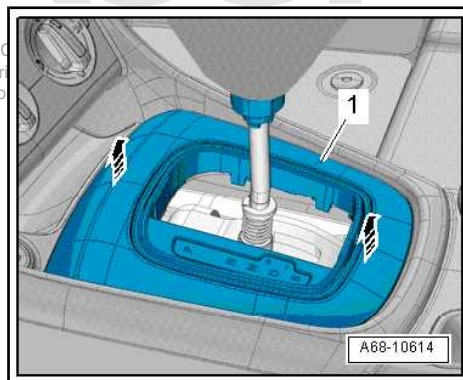
Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm - 3094-

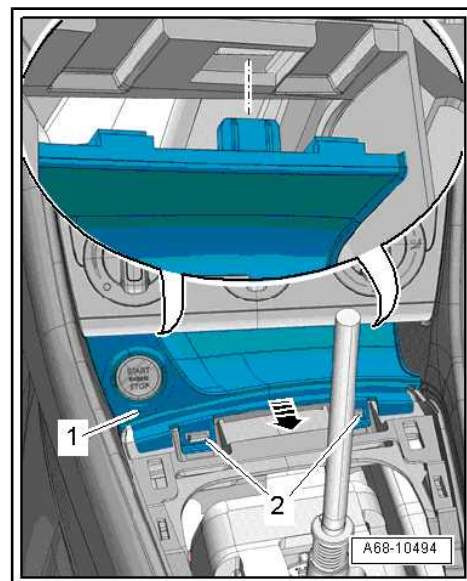


Removing

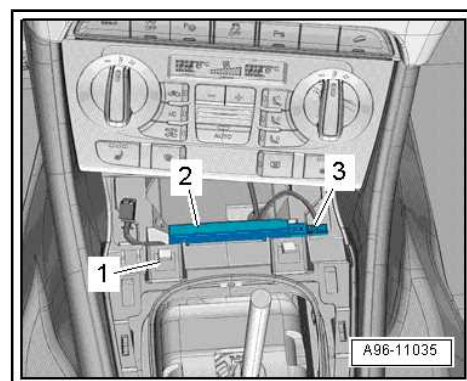
- Remove selector lever handle with selector lever boot ⇒ [page 28](#).
- Carefully unclip centre console insert -1- upwards -arrows-.
- Unplug electrical connector to selector lever position display - Y26- and detach centre console insert -1-.



- Remove centre console storage box (front) ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console storage box (front) .



- If fitted, detach bracket with interior aerial 1 for entry and start system - R138- from studs (front) on selector mechanism ⇒ Electrical system; Rep. gr. 94 ; Entry and start authorisation; Removing and installing interior aerial 1 for entry and start system - R138- .
- If fitted, detach noise insulation from selector mechanism.

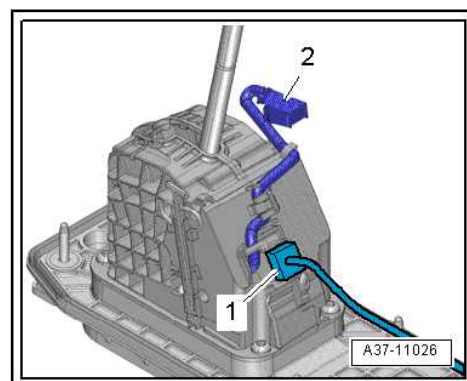


- Unplug electrical connector -1- between shift unit and vehicle wiring harness.

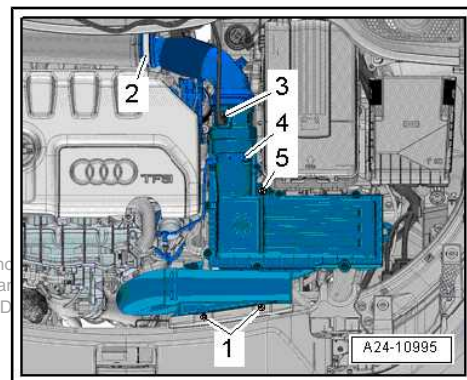


Note

-Item 2- can be disregarded.



- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.



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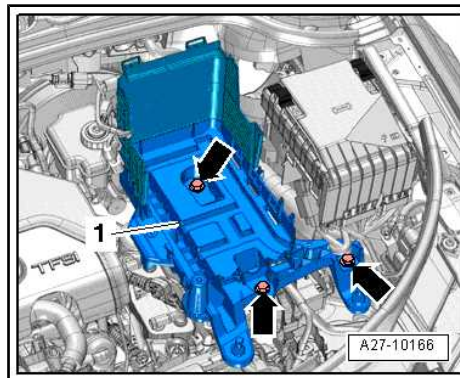
- Remove battery and battery tray -1- ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



WARNING

Risk of scalding from hot steam and hot coolant.

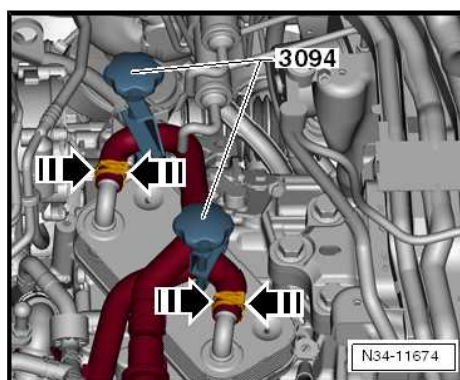
- ◆ *The cooling system is under pressure when the engine is hot.*
- ◆ *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*



Note

Place a cloth on the ATF cooler and gearbox to catch escaping coolant.

- Clamp off coolant hoses leading to ATF cooler using hose clamps -3094- . Then release hose clips -arrows- and disconnect hoses.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



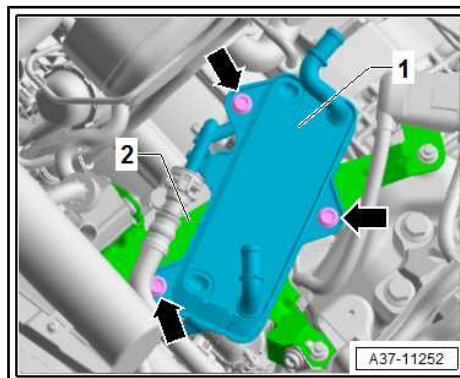
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- Remove ATF cooler -1- from bracket -2- for ATF cooler -arrows-.



Note

- ◆ *Leave ATF lines in their installation position on the ATF cooler.*
- ◆ *Leave ATF cooler in position on the gearbox.*
- Then remove bracket -2- for ATF cooler ➔ [page 44](#) .

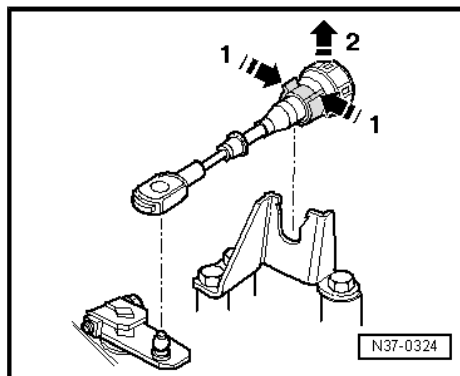


- Release selector lever cable carefully by hand from gearbox -arrows 1- and pull out of cable support bracket in direction of -arrow 2-.

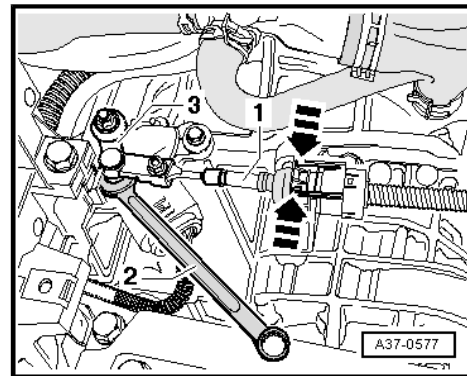


Note

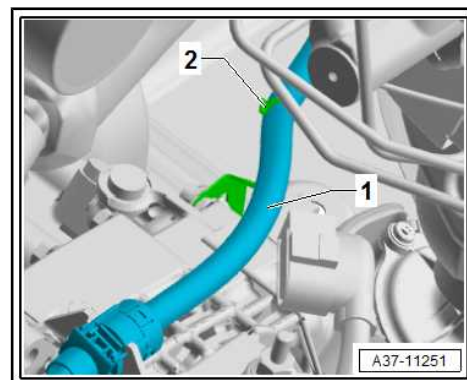
- ◆ *Do not bend or kink the selector lever cable.*
- ◆ *Do not use pliers as this could cause the retaining tabs on the cable support bracket to break off.*



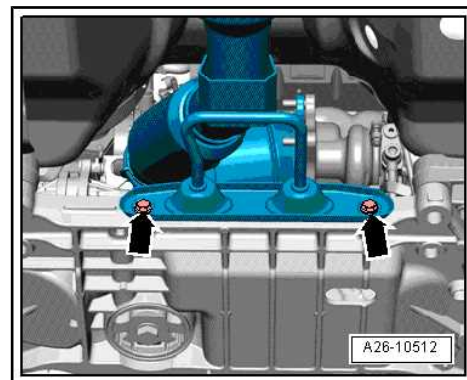
- Then pry selector lever cable -1- off gearbox selector lever -3- using an open-end spanner -2- or similar.



- Press selector lever cable -1- out of retainer -2- on gearbox.
- Raise vehicle.



- Remove bolts -arrows- for exhaust pipe bracket from sub-frame.



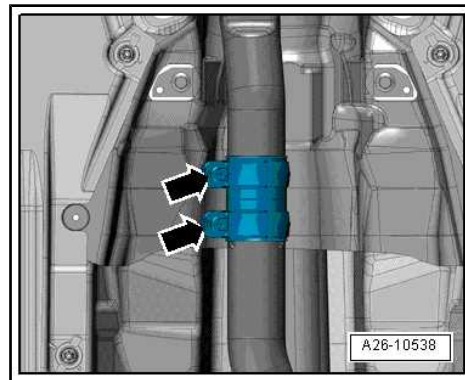
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- Loosen nuts -arrows- and move clamp towards rear.

**Caution**

Risk of damage to flexible joint.

- ◆ *The flexible joint in the front exhaust pipe must not be bent further than 10°.*



- Tie up front exhaust pipe to left side of vehicle.
- Remove rear section of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .

Vehicles with four-wheel drive

- Remove heat shield below propshaft ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield .
- Remove propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .

Continued for all vehicles

- Detach heat shield from underbody and slide it towards rear until selector mechanism can be accessed ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Removing and installing heat shield for floor .



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 Note

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

- Remove nuts -arrows- in vehicle interior.
- Detach shift unit together with selector lever cable from below.

Installing

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

 Note

- ◆ *Do not bend or kink the selector lever cable.*

- ◆ *Do not grease the selector lever cable.*
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- Carefully press selector lever cable onto gearbox selector lever and insert it in cable support bracket.
- Install heat shield under shift unit ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield .

Vehicles with four-wheel drive

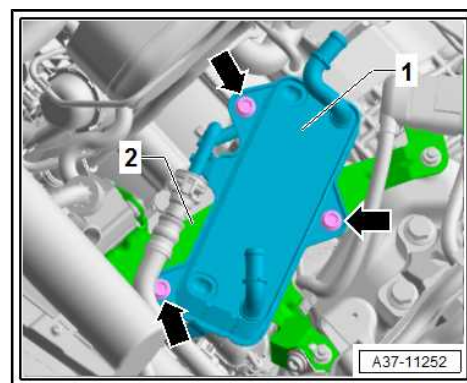
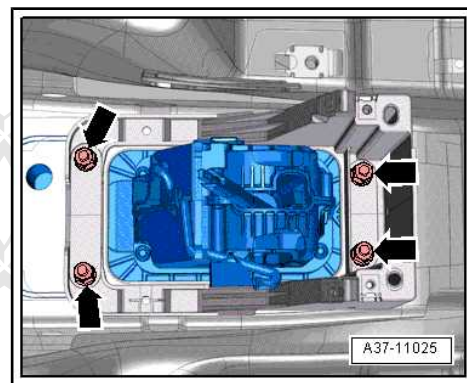
- Install propshaft ⇒ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .
- Install heat shield for propshaft ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield .

Continued for all vehicles

- Install exhaust system and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Stress-free alignment of exhaust system .
- Install centre console storage box (front) ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console storage box (front) .
- Install selector lever handle ⇒ [page 28](#) .
- Adjust selector lever cable ⇒ [page 32](#) .
- Check selector mechanism ⇒ [page 20](#) .
- Fit bracket -2- for ATF cooler and ATF cooler -1- on gearbox ⇒ [page 44](#) .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Check coolant level ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .

Tightening torques

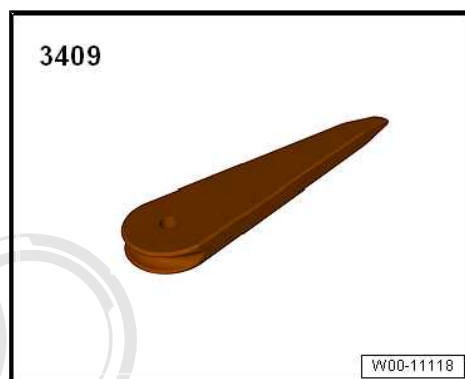
- ◆ ⇒ [“1.1 Exploded view - selector mechanism”, page 18](#)



1.6 Removing and installing selector lever handle

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



- ◆ Thin cable tie or assembly aid for interlock button on handle. A new selector lever handle is supplied with the assembly aid pre-fitted.

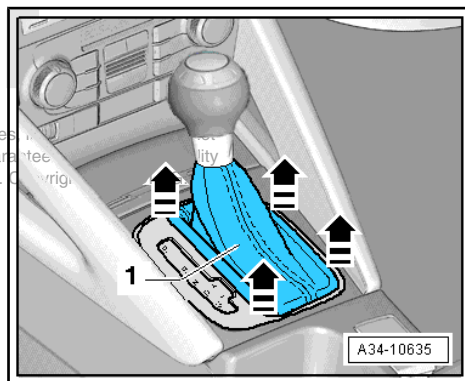
Removing



Note

The selector lever handle is removed together with the selector lever boot -1-.

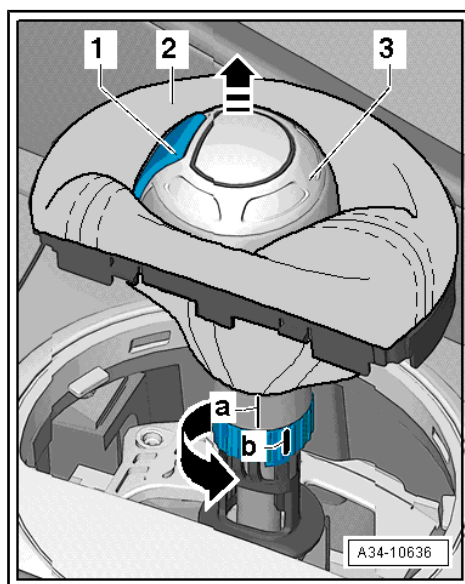
- Pull up parking brake button to apply electromechanical parking brake.
- Shift selector lever into position “N” and switch off ignition.
- Unclip selector lever boot on both sides by hand or using removal wedge - 3409- -arrows-.
- Turn selector lever boot -2- inside out over selector lever handle -3-.
- Turn locking ring as far as stop in direction of -arrow- so that markings -a- and -b- are no longer in line.



Caution

Risk of damage to the selector mechanism.

- ◆ *Do not touch the interlock button -1- on the selector lever handle when pulling off the handle.*
- ◆ *Otherwise the selector lever handle or the pull rod of the selector mechanism will be damaged when the handle is pulled off.*



- Pull off selector lever handle together with selector lever boot, taking care not to touch interlock button -arrow-.

Interlock button -arrow- will be pressed outwards and lock while the selector lever handle is being removed. Interlock button -arrow- on selector lever handle must not be pressed inwards when the handle is removed.

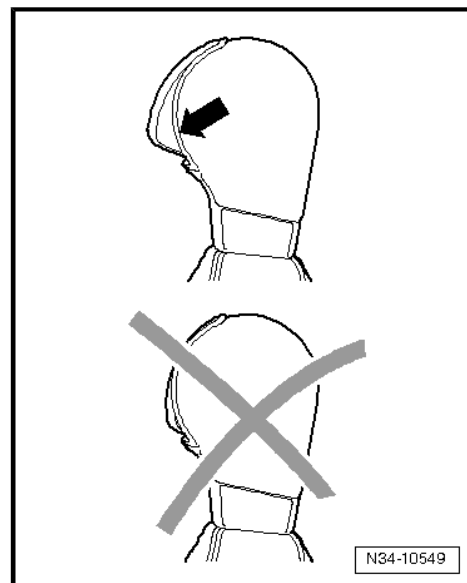
Installing



Caution

Risk of damage to the selector mechanism.

- ◆ **Interlock button -arrow- on selector lever handle must not be pressed inwards when the handle is removed.**
- ◆ **Interlock button -arrow- on selector lever handle must protrude and must not be touched during installation.**
- ◆ **Otherwise the selector lever handle or the pull rod of the selector mechanism will be damaged when the handle is installed.**



Note

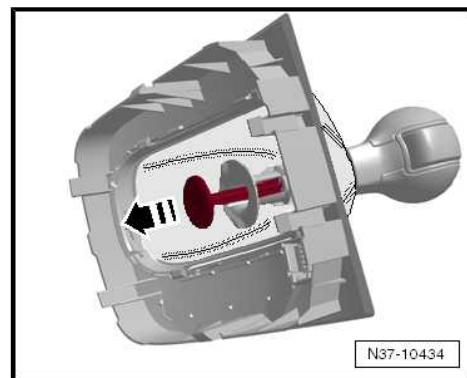
New handles are supplied with an assembly aid. Remove assembly aid shortly before installation by pulling it out.

- Shift selector lever into position “N”.

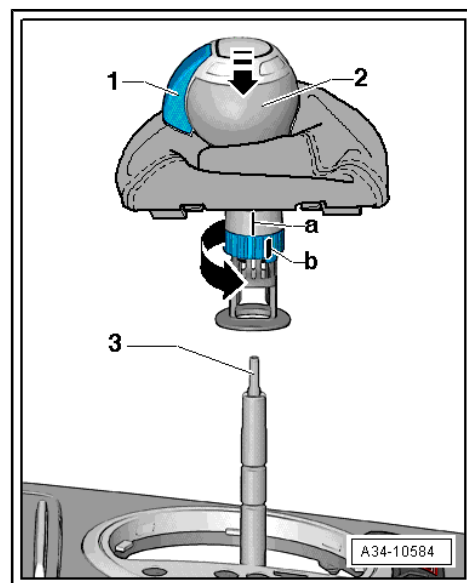


Note

The selector lever can be moved by pulling the release rod -3-.



- Turn selector lever boot inside out over selector lever handle -2-.
- Turn locking ring as far as stop in direction of -arrow- so that markings -a- and -b- are no longer in line.
- With interlock button -1- facing towards front of vehicle, push selector lever handle fully onto selector lever without touching interlock button -1-.
- The handle must engage in the annular groove on the selector lever.



- Turn locking ring in direction of -arrow- until it engages (press handle if necessary); markings -a- and -b- should be in line.



Caution

Risk of damage to selector lever handle

The locking ring can only be turned when the handle has been pushed on all the way.



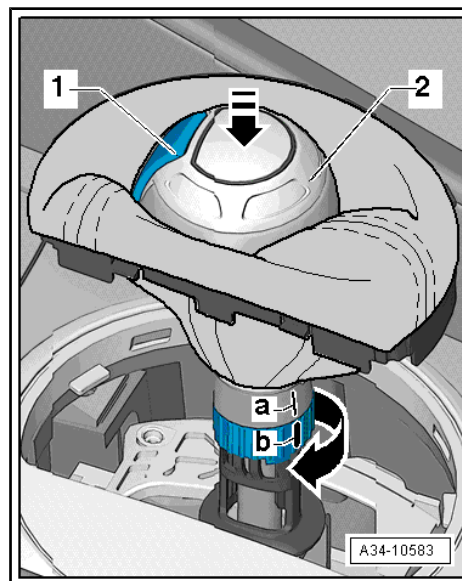
Note

- ◆ The handle is not locked until the locking ring has been turned. Only then should you press the interlock button on the handle.
- ◆ There may be increased resistance when you press the interlock button for the first time after installation.

- Press interlock button -1- on selector lever handle.

To check button mechanism:

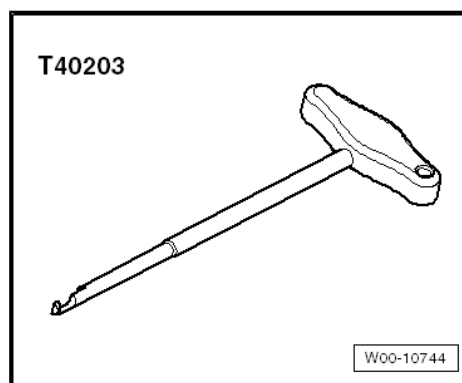
- Switch on ignition and move selector lever to positions “R” and “S”.
- If the selector lever cannot be moved into the above positions, the handle must be removed again.
- Pull selector lever boot -1- down and clip onto trim frame -2- with selector lever position display -Y26-.
- Check selector mechanism ⇒ [page 32](#).



1.7 Moving interlock button on selector lever handle into installation position

Special tools and workshop equipment required

- ◆ Release tool - T40203-



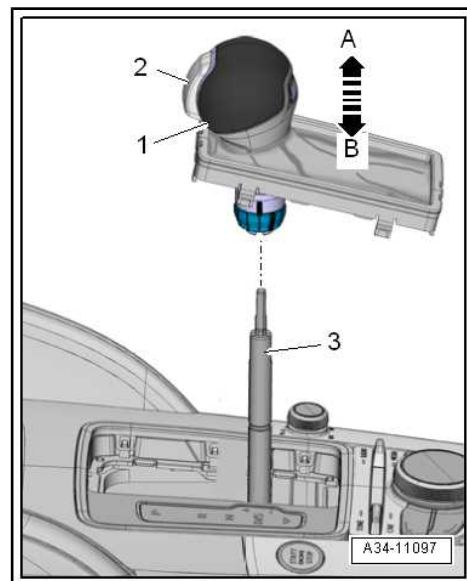
Procedure

- Installation position: The interlock button -2- must protrude from the selector lever handle.



Note

If the interlock button has been pressed in, it must be moved back into its installation position so that the selector lever handle can be installed.



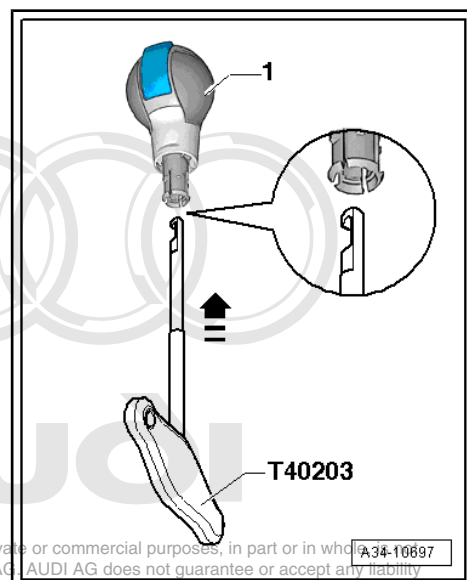
- Carefully insert release tool - T40203- into selector lever handle -1- as far as stop -arrow-.



Note

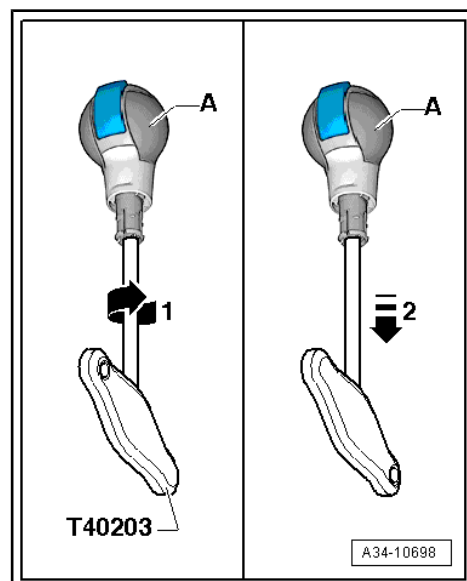
For illustration purposes, the selector lever handle is shown without selector lever boot. The selector lever boot cannot be removed from the handle.

- Recess on release tool - T40203- should face interlock button, hook should point towards left.



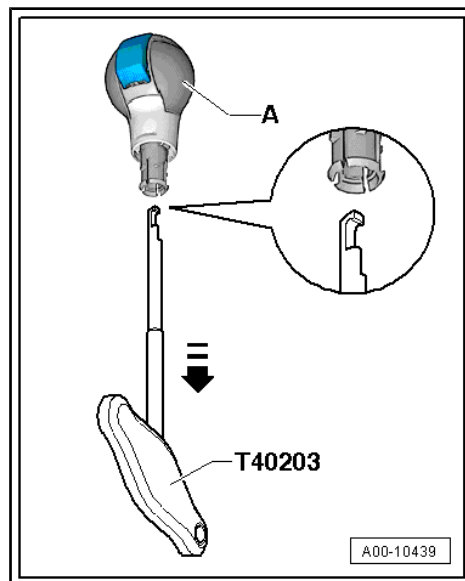
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- Hold selector lever handle -A- and turn release tool - T40203- 180° in direction of -arrow 1-.
- Hold selector lever handle and carefully pull out release tool - T40203- -arrow 2-.

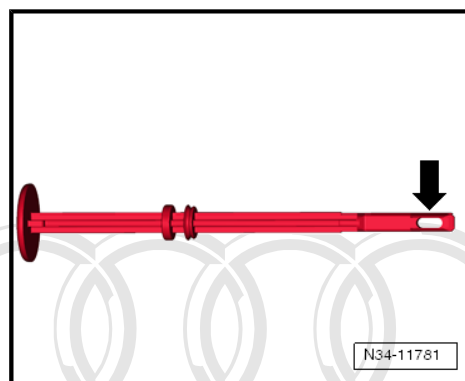


- When pulling out release tool - T40203- , interlock button on selector lever handle -A- is pressed out and locked in position.
- Do not touch interlock button before installing selector lever handle so that interlock button is not pressed in again.

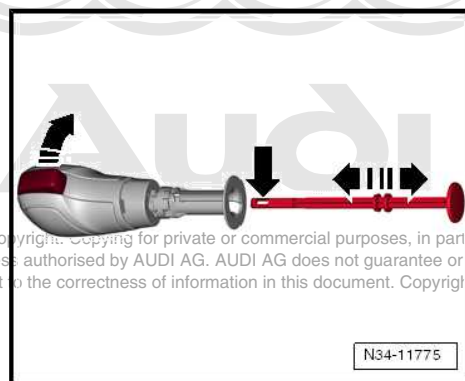
Alternative method - moving handle into installation position with assembly aid:



When using assembly aid, make sure that it has an eye -arrow- at the front; other types of assembly aid are not suitable.



- Press and hold interlock button and slide assembly aid (with eye -arrow-) in all the way until assembly aid engages, and then release interlock button. When you pull out the assembly aid, the interlock button engages in its installation position.

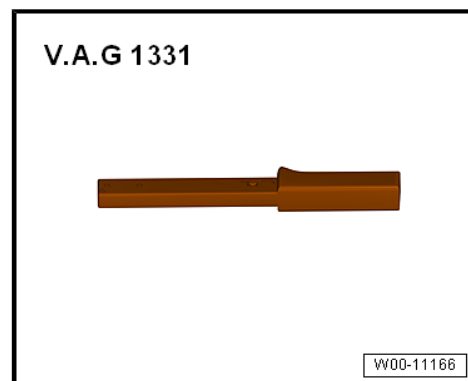


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1.8 Checking and adjusting selector lever cable

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



Checking selector lever cable

Selector lever cable must be removed from gearbox to check whether it can move freely. The removed end must be laid down so that it does not come into contact with anything.

Then move selector lever and then reinstall selector lever cable.

Selector lever cable must then be adjusted ⇒ [page 34](#) .

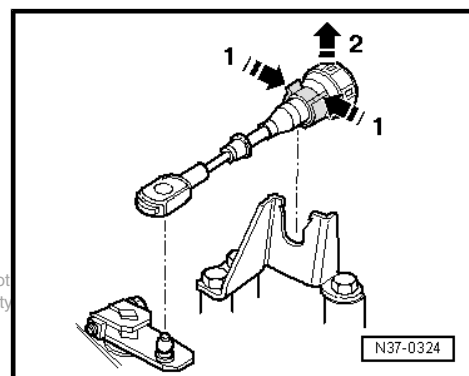
Do NOT grease selector lever cable connection.

- Move selector lever to position »P«.
- Remove bracket for ATF cooler from gearbox ⇒ [page 44](#) .
- Release selector lever cable carefully by hand from gearbox -arrows 1- and pull out of cable support bracket in direction of -arrow 2-.



Note

- ◆ Do not bend or kink the selector lever cable.
- ◆ Do not use pliers as this could cause the retaining tabs on the cable support bracket to break off.



- Then pry selector lever cable -1- off gearbox selector lever -3- using an open-end spanner -2- or similar.
- Move selector lever from »P« to »S« and back to »P« several times.
- The selector lever should operate smoothly.
- If the battery has been removed, the selector lever must be released manually ⇒ [page 21](#) .
- Attach selector lever cable again.

Adjusting selector lever cable

The selector lever cable must be adjusted if:

- ◆ The selector lever cable has been detached from the gearbox.
- ◆ The engine and/or gearbox have been removed and installed.
- ◆ The cable or the selector mechanism has been removed and installed.
- ◆ The position of the engine/gearbox assembly has been altered, e.g. installed so it is free of stress.

Adjusting:

- Shift selector lever into position "P".
- The bracket for the ATF cooler has been detached from the gearbox ⇒ [page 44](#) .
- If the battery has been removed, the selector lever must be released manually ⇒ [page 21](#) .
- Loosen adjuster screw -2- for selector lever cable -1-.
- Turn both front wheels in one direction, e.g. by pushing the vehicle forwards, until the detent lever in the gearbox engages in the parking lock gear.
- The parking lock has engaged when it is no longer possible to rotate both wheels in the same direction.
- Carefully move selector lever forwards and backwards slightly, but without shifting to another selector lever position.



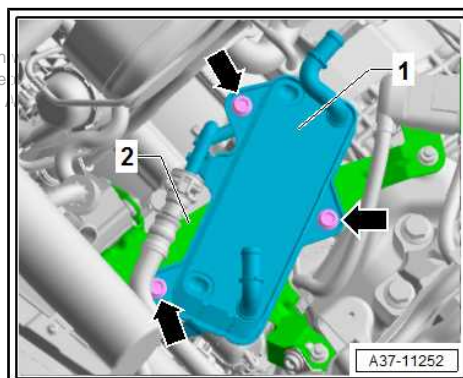
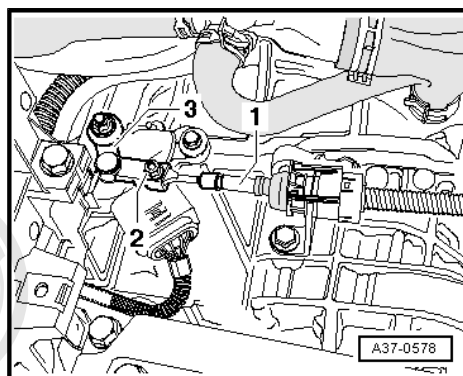
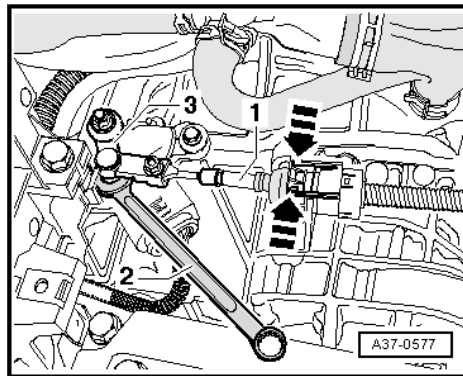
Note

The selector lever cable is then relieved of strain.

- Tighten adjuster screw -2-, taking care not to alter position of selector lever cable.
- Fit bracket -2- for ATF cooler and ATF cooler -1- on gearbox ⇒ [page 44](#) .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - selector mechanism", page 18](#)



1.9 Removing and installing multifunction switch

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



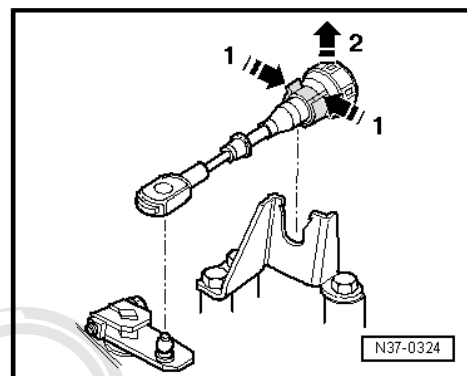
Removing multifunction switch - F125- :

- Pull up parking brake button to apply electromechanical parking brake.
- Shift selector lever into position “N” and switch off ignition.
- Remove bracket for ATF cooler from gearbox ⇒ [page 44](#) .
- Release selector lever cable carefully by hand from gearbox -arrows 1- and pull out of cable support bracket in direction of -arrow 2-.

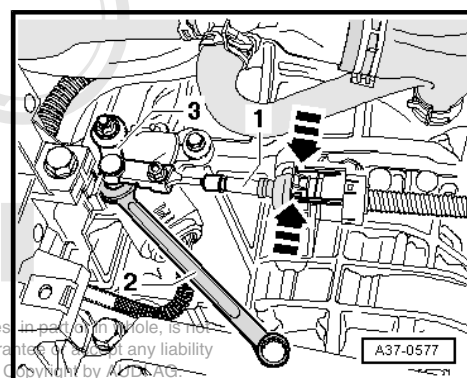


Note

- ◆ *Do not bend or kink the selector lever cable.*
- ◆ *Do not use pliers as this could cause the retaining tabs on the cable support bracket to break off.*

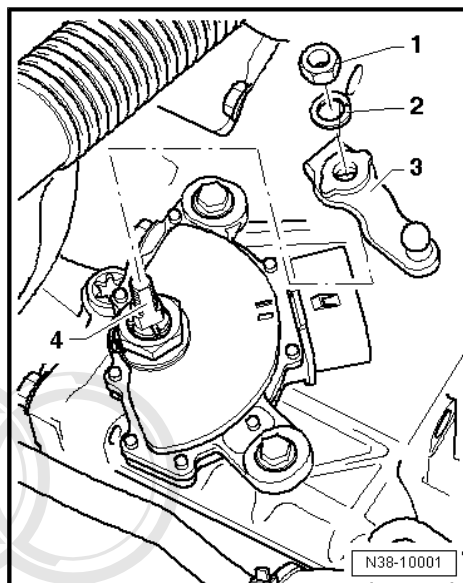


- Then pry selector lever cable -1- off gearbox selector lever -3- using an open-end spanner -2- or similar.
- Unplug connector from multifunction switch - F125- .



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- Remove nut -1-.
- Pull spring ring -2- and gearbox selector lever -3- off selector shaft -4-.

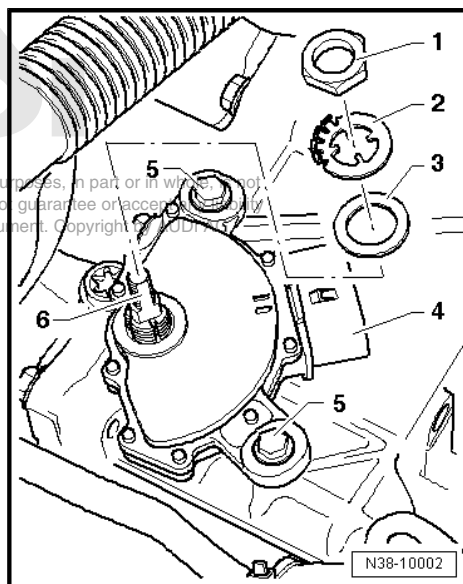


- Bend back hooks of lock washer -2- using a screwdriver.
- Should any hooks on the lock washer break off, the lock washer must be renewed.
- Remove nut -1-.
 - Unscrew bolts -5-.
 - Pull multifunction switch -4- off selector shaft -6- with washers -2- and -3-.

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Installing multifunction switch - F125- :

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

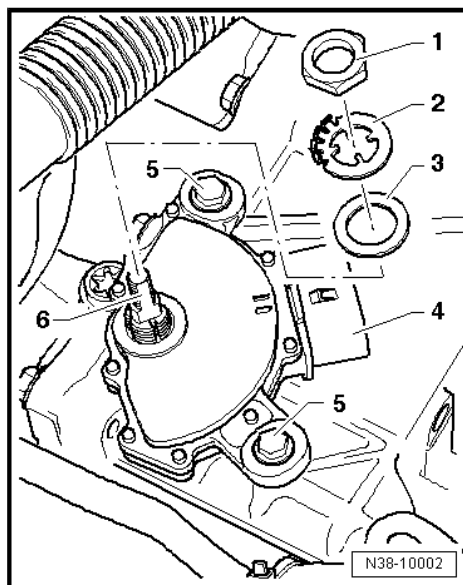


- Fit multifunction switch -4- onto selector shaft -6-.
- Tighten securing bolts -5- for multifunction switch hand-tight to gearbox.
- Fit washers -2- and -3- onto selector shaft -6-.
- Fit washer -2- with hooks pointing upwards.
- Fit washer -2- with long thin guides into long thin recesses on selector shaft -6-.
- Tighten nut -1- to specified torque.
- Secure nut -1- by bending up hooks on lock washer -2-.

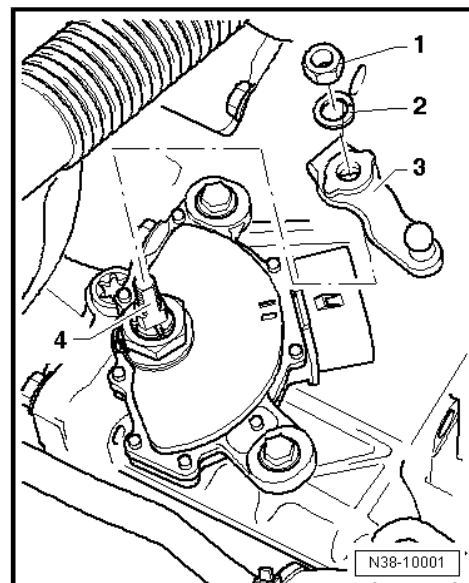


Note

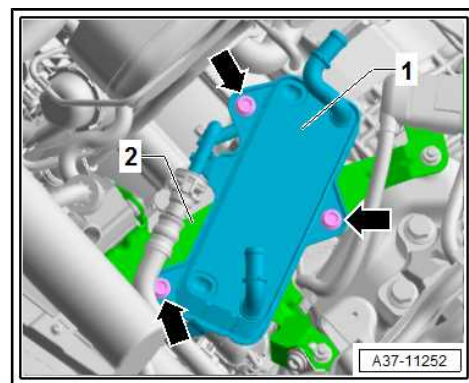
- ◆ *Should one or more of the hooks on the lock washer break off, the lock washer must be renewed.*
- ◆ *Adjust multifunction switch - F125- before fitting gearbox selector lever onto selector shaft ⇒ [page 37](#).*



- Fit gearbox selector lever -3- on selector shaft -4-.
- Shift gearbox into position “P” using gearbox selector lever -3-. To do this, press gearbox selector lever -3- towards rear of vehicle as far as stop.
- Then shift gearbox into position “N” using gearbox selector lever -3-. To do so, press gearbox selector lever -3- two positions forward in direction of travel.
- Fit spring ring -2- and nut -1- onto selector shaft -4-.
- Tighten nut -1- to specified torque.
- Check selector mechanism ⇒ [page 20](#) .



- Fit bracket -2- for ATF cooler and ATF cooler -1- on gearbox ⇒ [page 44](#) .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



Tightening torques

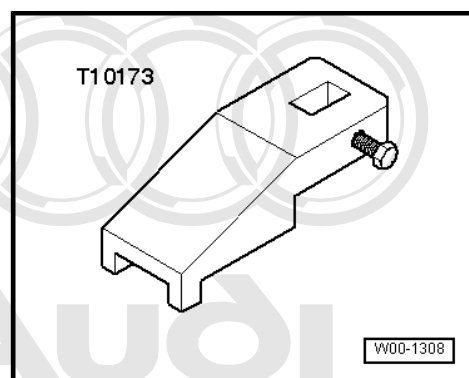
Component	Nm
Multi-function switch - F125- to selector shaft	7
Gearbox selector lever to selector shaft	13

- ◆ ⇒ [“1.1 Exploded view - selector mechanism”, page 18](#)

1.10 Adjusting multifunction switch

Special tools and workshop equipment required

- ◆ Setting gauge - T10173-



- Shift selector lever into position “N”.
- Do not kink selector lever cable.

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Requirements before starting adjustment:

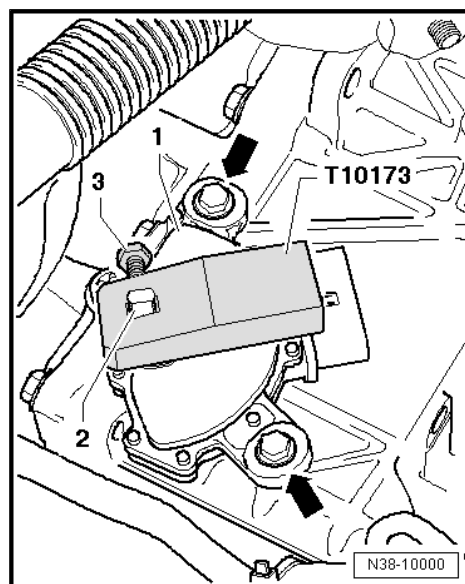
- Selector lever cable must be detached from gearbox selector lever.
- Selector shaft must be in position "N".
- Bolts securing multifunction switch - F125- must be loosened.
- Gearbox selector lever must be detached from selector shaft.

Procedure:

- Fit setting gauge - T10173- on selector shaft -2- and turn multifunction switch -1- as far as necessary for setting gauge to engage on lug on connector on multifunction switch .
- Hold setting gauge - T10173- in position on selector shaft -2- with bolt -3-.
- Tighten bolts -arrows- to specified torque.
- Detach setting tool - T10173- .
- Perform remaining installation operations in reverse order of removal ⇒ [page 35](#) .

Tightening torques

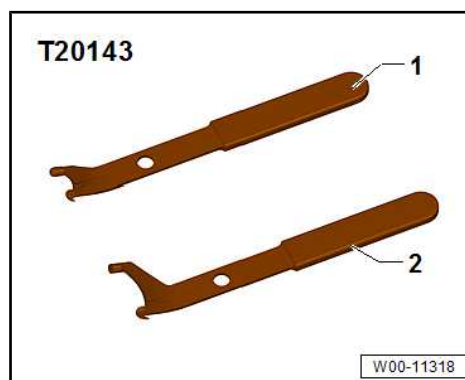
Component	Nm
Multifunction switch - F125- to gearbox	6



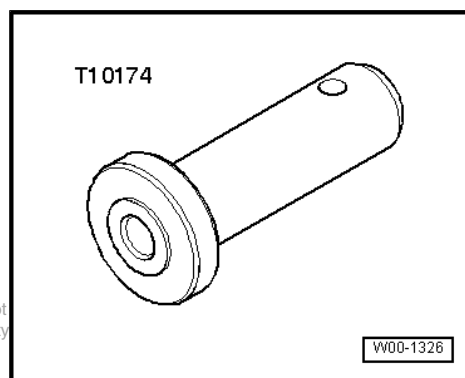
1.11 Renewing selector shaft oil seal

Special tools and workshop equipment required

- ◆ Extractor tool - T20143/1-

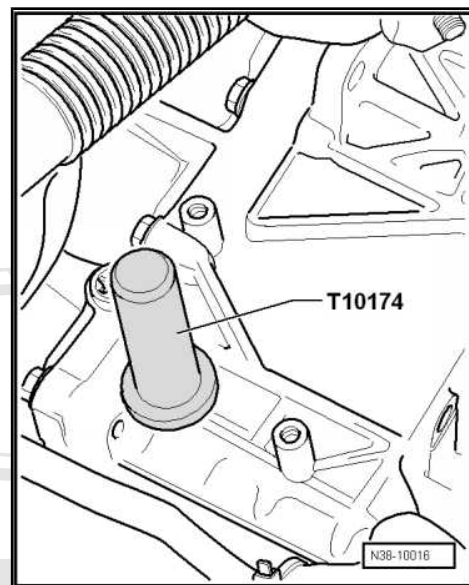


- ◆ Thrust piece - T10174-



- Remove multifunction switch - F125- ⇒ [page 35](#) .

- Carefully lever out selector shaft oil seal using extractor tool - T20143/1- . Take care not to damage selector shaft.
- Drive in new oil seal onto stop using thrust piece - T10174- , ensuring that seal is kept straight.
- Install multifunction switch -F125- → [page 35](#)



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2 ATF circuit

⇒ "2.1 Exploded view - ATF circuit", page 40

⇒ "2.2 Removing and installing ATF cooler", page 41

⇒ "2.3 Removing and installing bracket for ATF cooler", page 44

⇒ "2.4 Removing and installing ATF lines", page 47

2.1 Exploded view - ATF circuit

1 - Bolt

- 9 Nm

2 - ATF cooler

- Removing and installing
⇒ page 41

3 - Nut

- Follow correct tightening sequence

4 - Spacer

- For ATF lines on gearbox
- Clip spacer on after installing ATF lines

5 - ATF supply line

- Attached to ATF cooler with quick-release coupling
- Renew if leaking
- Removing and installing
⇒ page 47

6 - ATF return line

- Attached to ATF cooler with quick-release coupling
- Renew if leaking
- Removing and installing
⇒ page 47

7 - Bolt

- 20 Nm

8 - O-ring

- Lubricate with ATF

9 - Bolt

- For securing ATF line to bracket for ATF cooler
- 20 Nm

10 - Bolt

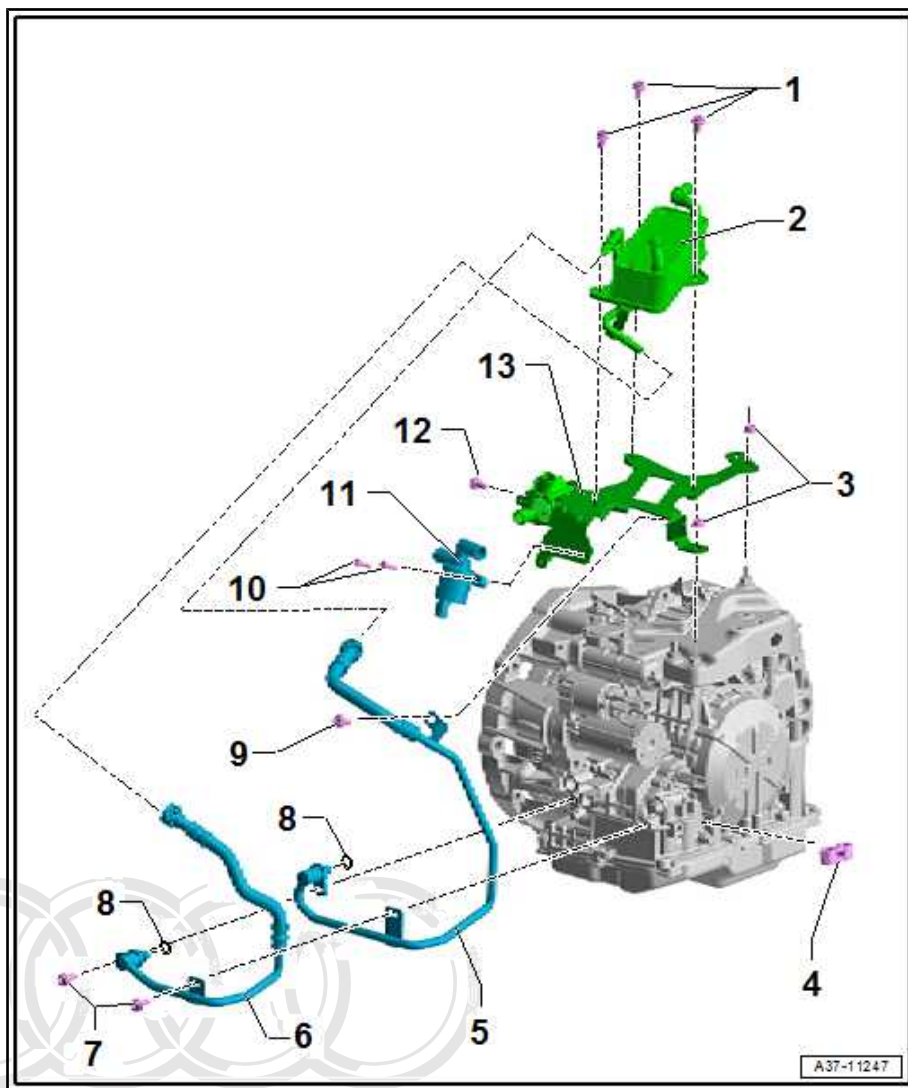
- 9 Nm

11 - Solenoid valve

- Must be detached before removing/installing bracket for ATF filter; do not release coolant hoses

12 - Bolt

- 24 Nm



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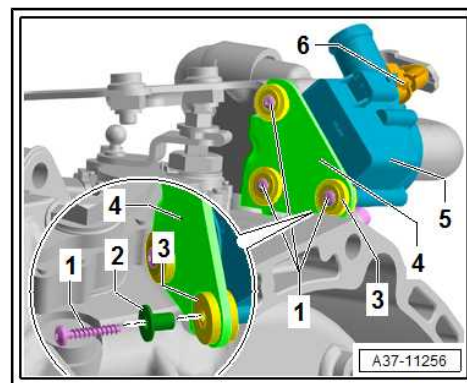
- ❑ For securing bracket for ATF cooler to gearbox
- ❑ Follow correct tightening sequence

13 - Bracket for ATF cooler

- ❑ Removing and installing ⇒ [page 44](#)
- ❑ Exploded view - securing continued coolant circulation pump to bracket for ATF cooler ⇒ [page 41](#)

Exploded view - securing continued coolant circulation pump to bracket for ATF cooler

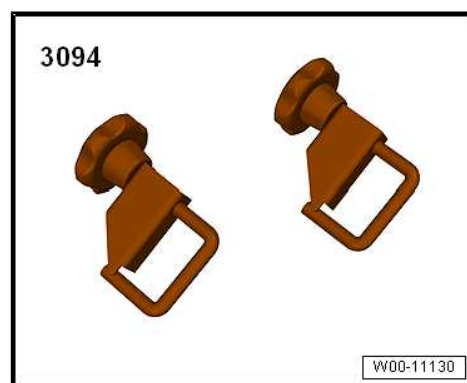
- 1 - Bolt; 1.5 Nm
- 2 - Sleeve
- 3 - Rubber grommet
- 4 - Bracket for ATF cooler
- 5 - Continued coolant circulation pump
- 6 - Connector



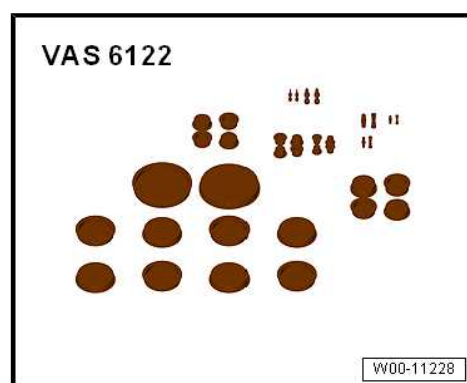
2.2 Removing and installing ATF cooler

Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm - 3094-



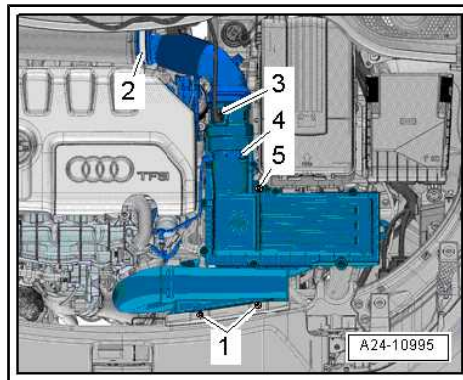
- ◆ Engine bung set - VAS 6122-



Removing

- Bring front wheels into straight-ahead position.
- Shift selector lever into position "P".
- Switch off ignition.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.

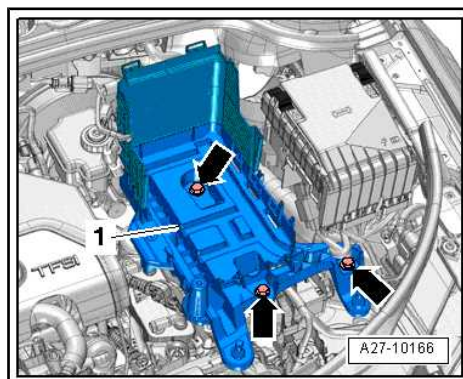


- Remove battery and battery tray -1- ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .


WARNING

Risk of scalding from hot steam and hot coolant.

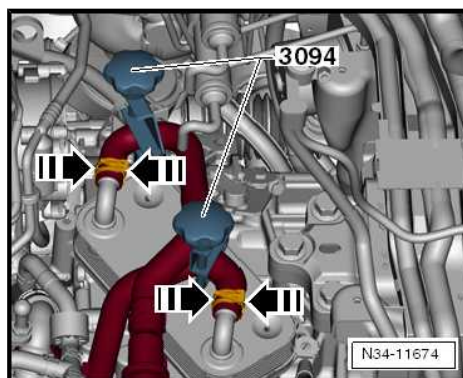
- ◆ *The cooling system is under pressure when the engine is hot.*
- ◆ *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*


Note

Place a cloth on the ATF cooler and gearbox to catch escaping coolant.

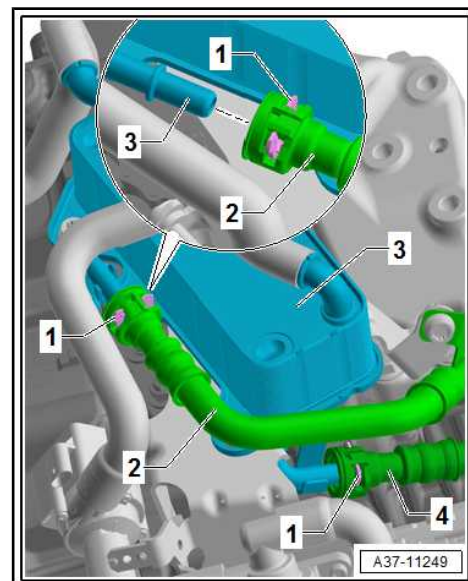
- Clamp off coolant hoses leading to ATF cooler using hose clamps - 3094- . Then release hose clips -arrows- and disconnect hoses.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

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Disconnect ATF lines from connections on ATF cooler as follows:

- First press quick-release coupling for corresponding ATF line -2- and -4- as far as it will go onto connection on ATF cooler -3-.
- Then press clip -1- down carefully as far as it will go; this will release the quick-release coupling.
- Disconnect ATF lines from ATF cooler -3-.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

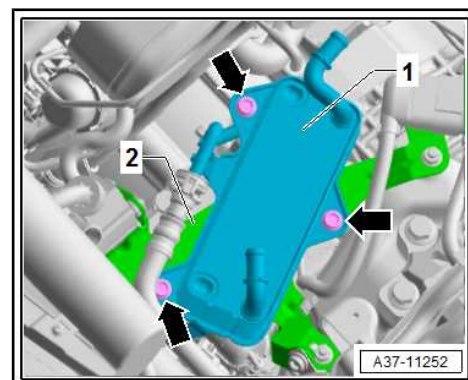


- Detach ATF cooler -1- from bracket -2- for ATF cooler -arrows- and remove.

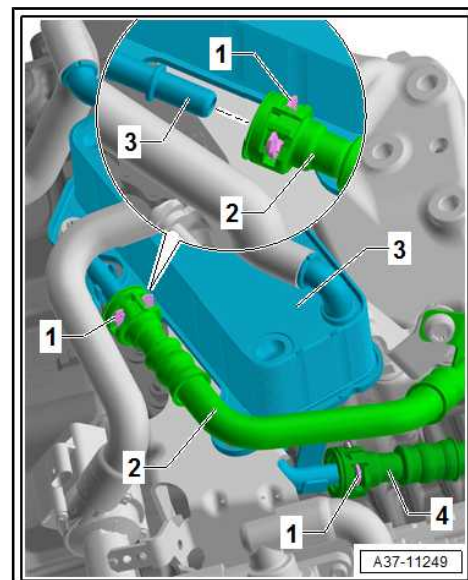
Installing:

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

- Install and secure ATF cooler.

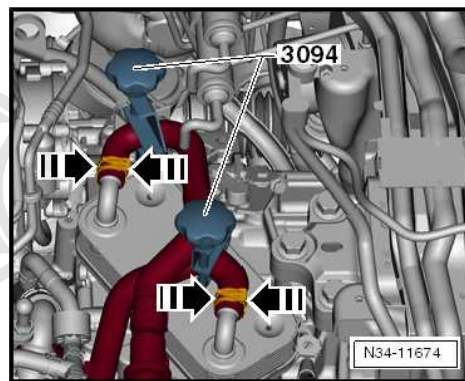


- Then apply ATF to connections -3- on ATF cooler.
- Push on ATF lines -2- and -4- as far as stop and press down clip -1-.
- Pull on ATF lines to check they are securely fitted.



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- Attach coolant hoses to ATF cooler and secure with hose clips -arrows-. Remove hose clamps - 3094- .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Check coolant level ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check and top up ATF level ⇒ [page 52](#) .



2.3 Removing and installing bracket for ATF cooler

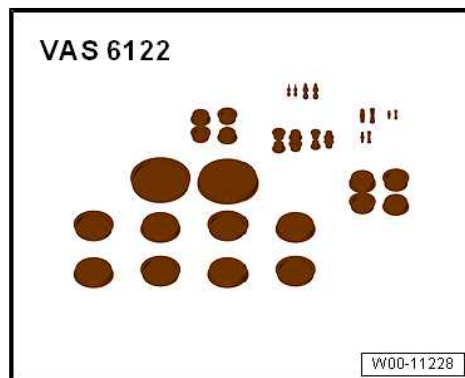
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Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm - 3094-



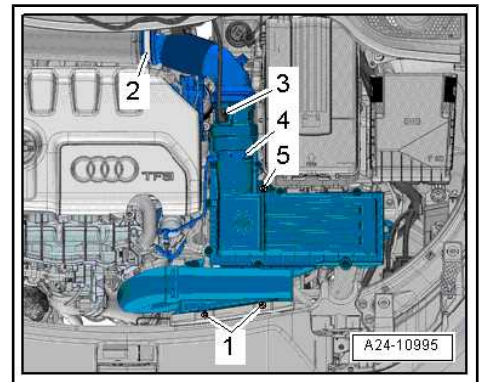
- ◆ Engine bung set - VAS 6122-



Removing

- Bring front wheels into straight-ahead position.
- Shift selector lever into position "P".
- Switch off ignition.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.



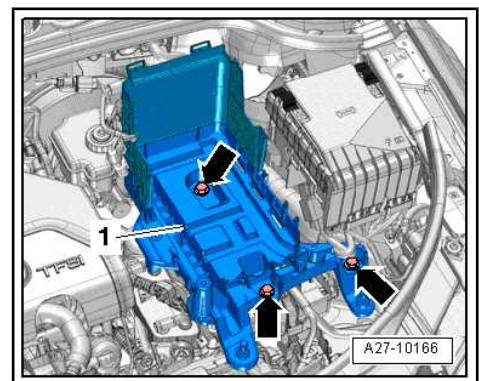
- Remove battery and battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



WARNING

Risk of scalding from hot steam and hot coolant.

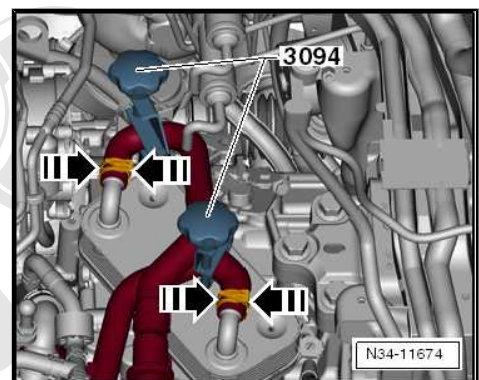
- ◆ *The cooling system is under pressure when the engine is hot.*
- ◆ *Cover filler cap on expansion tank with a cloth and open carefully to release pressure.*



Note

Place a cloth on the ATF cooler and gearbox to catch escaping coolant.

- Clamp off coolant hoses leading to ATF cooler using hose clamps - 3094- . Then release hose clips -arrows- and disconnect hoses.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

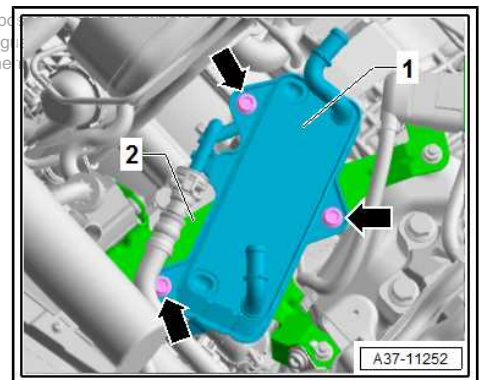


- Remove ATF cooler -1- from bracket -2- for ATF cooler -arrows-.



Note

Leave ATF lines in their installation position on the ATF cooler.



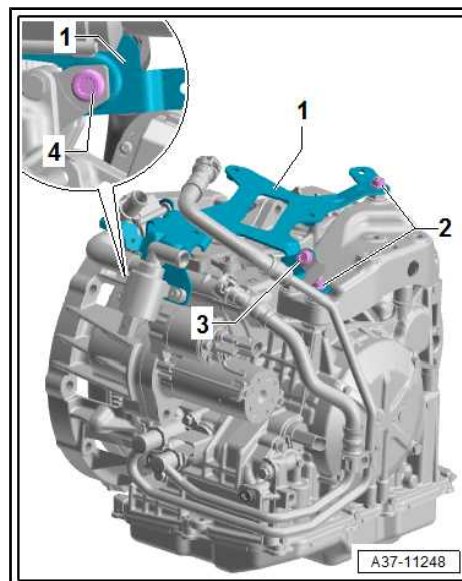
- Remove bolt -3- for ATF line at bracket -1- for ATF cooler.



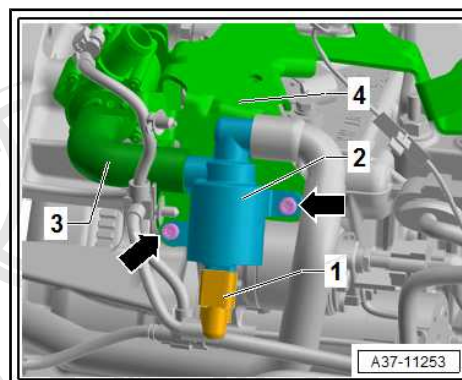
Note

Before continuing removal procedure for bracket for ATF cooler, tie up ATF cooler to one side if necessary.

- Remove nuts -2- and bolt -4- securing bracket for ATF cooler to gearbox.
- Unclip coolant line at bracket (front).



- Unplug connector -1- and detach solenoid valve -2- from bracket -4- for ATF cooler -arrows-. Coolant hoses -3- remain connected to solenoid valve and continued coolant circulation pump.



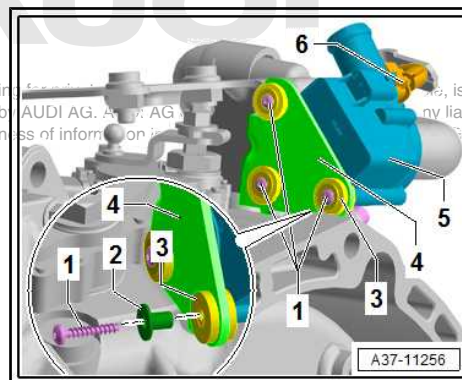
- Unplug connector -6- and detach continued coolant circulation pump -5- from bracket -4-; to do so, remove bolts -1-.
- Remove bracket for ATF cooler.

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Note

- ◆ *If removing the gearbox, place the ATF cooler on the gearbox.*
- ◆ *Before fitting the continued coolant circulation pump, check that the rubber grommets -3- and sleeves -2- are installed in the bracket -4- for the ATF cooler.*

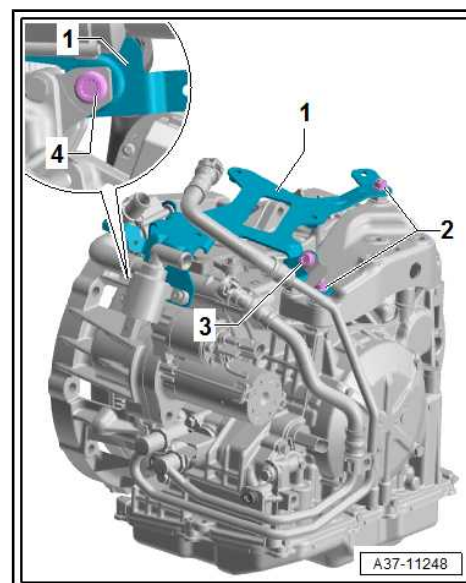


Installing

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

- Fit solenoid valve and continued coolant circulation pump to bracket for ATF cooler.

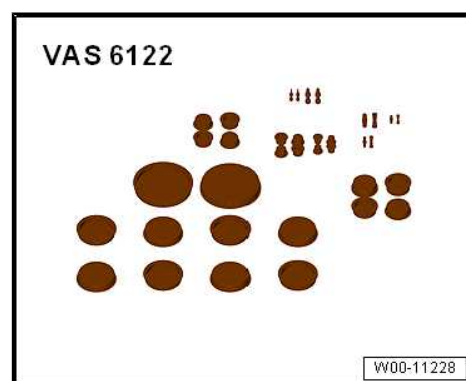
- Screw in nuts -2- and bolt -4- securing bracket for ATF cooler to gearbox so that they are hand-tight.
- First tighten bolt -4- and then nuts -2- to specified torque.
- Then secure ATF cooler to bracket for ATF cooler and tighten bolt -3- for ATF line to bracket.
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Check coolant level ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check and top up ATF level ⇒ [page 52](#) .



2.4 Removing and installing ATF lines

Special tools and workshop equipment required

- ◆ Engine bung set - VAS 6122-



- ◆ Drip tray for workshop hoist - VAS 6208-

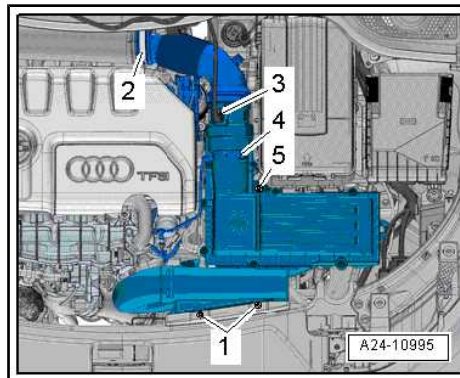


Removing

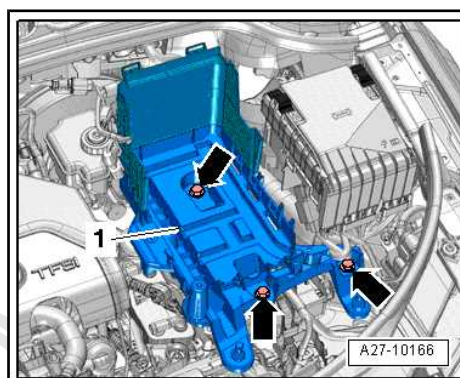
- Bring front wheels into straight-ahead position.
- Shift selector lever into position "P".
- Switch off ignition.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery

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- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.



- Remove battery and battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

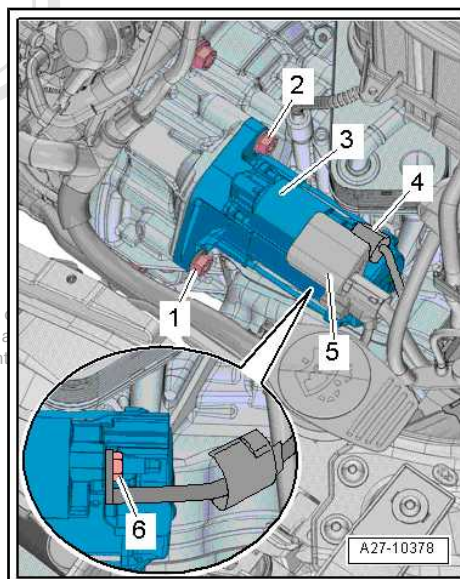


- Disconnect electrical wires -4 ... 6- from starter -3- and move them clear ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .



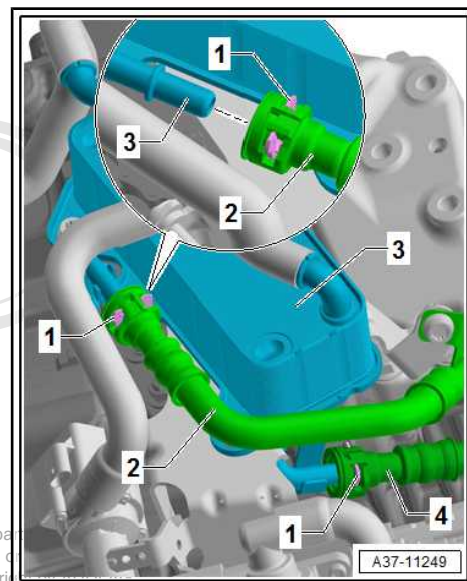
Note

- ◆ Do not loosen bolts -1 and 2-; the starter remains installed.
- ◆ Unclip wires from brackets on starter and move them clear.
- ◆ Place a cloth on the bracket for ATF cooler and on the gearbox to catch escaping ATF.



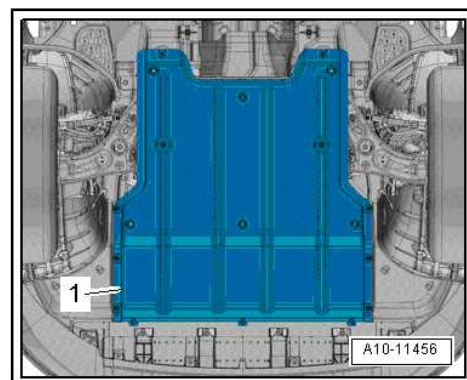
Disconnect ATF lines from connections on ATF cooler as follows:

- First press quick-release coupling for corresponding ATF line -2- or -4- as far as it will go onto connection on ATF cooler -3-.
- Then press clip -1- down carefully as far as it will go; this will release the quick-release coupling.
- Disconnect ATF lines from ATF cooler -3-.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Raise vehicle.

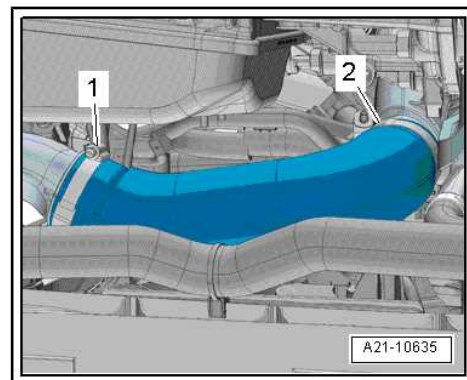


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- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



- Release hose clips -1 and 2- and remove air hose (if necessary).



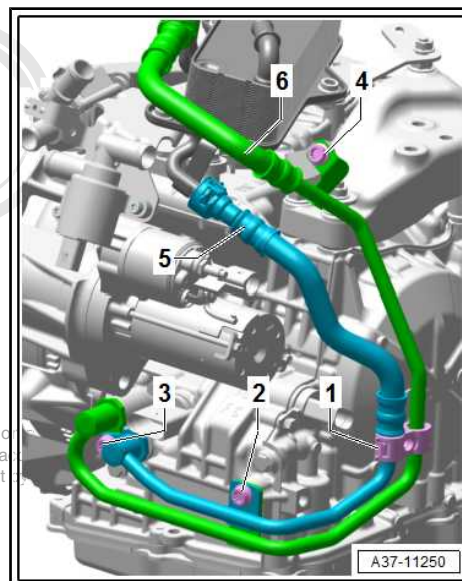
- Detach spacer -1- from ATF lines.
- Remove bolts -2- and -3-.
- Remove bolt -4- for ATF supply line -6- at bracket for ATF cooler.
- Place drip tray - VAS 6208- under the gearbox.
- Disconnect ATF return line -5- and ATF supply line -6- from gearbox and remove them downwards.

Installing

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

- Lightly lubricate O-rings for ATF lines with ATF.

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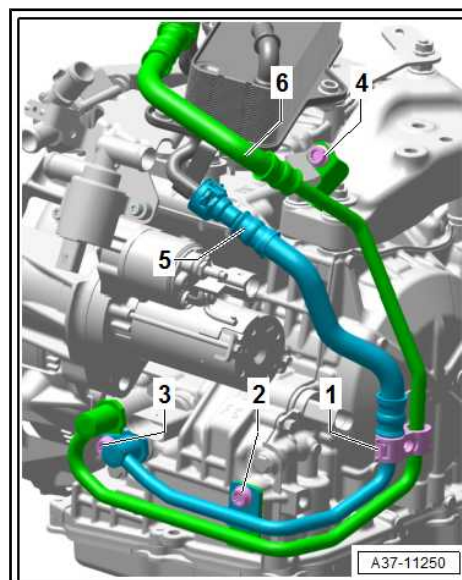


- First insert ATF supply line -6- and then ATF return line -5- into gearbox as far as they will go.
- Screw in bolts -2- and -3- hand-tight.

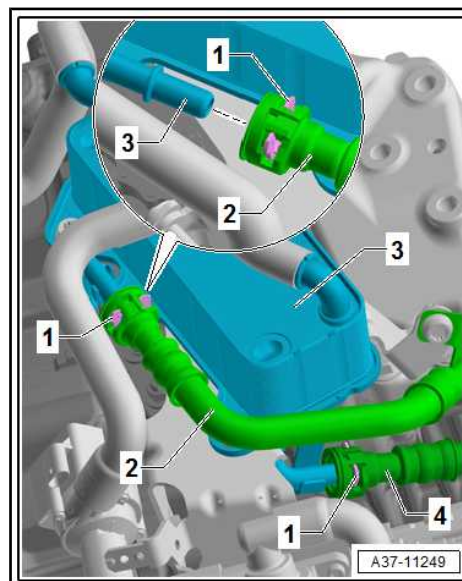


Note

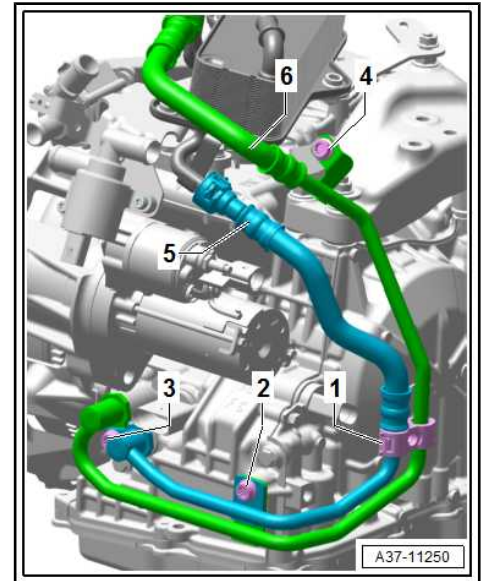
Disregard items -1 and 4- in illustration.



- Then apply ATF to connections -3- on ATF cooler.
- Push on ATF lines -2- and -4- as far as stop and press down clip -1-.
- Pull on ATF lines to check they are securely fitted.



- Screw in bolt -4- for ATF supply line -6- at bracket for ATF cooler.
- Tighten bolts -2 ... 4- to specified torque.
- Then attach spacer -1- to ATF lines.
- Connect electrical wires to starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Check and top up ATF level ⇒ [page 52](#) .
- Install wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .



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3 ATF

⇒ [“3.1 Checking ATF level”, page 52](#)

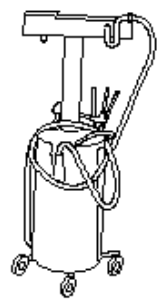
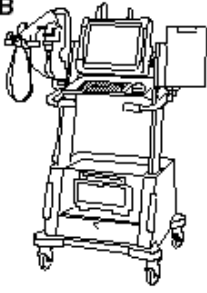
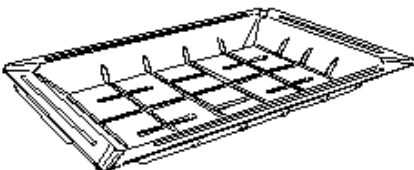
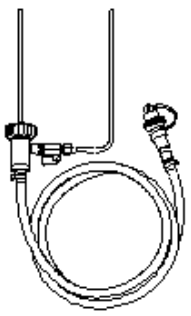
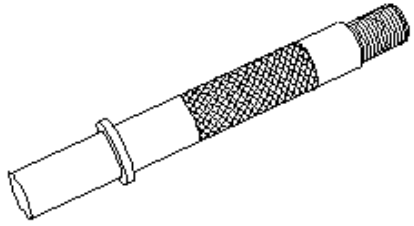
⇒ [“3.2 Topping up ATF”, page 54](#)

⇒ [“3.3 Draining and filling ATF”, page 55](#)

3.1 Checking ATF level

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-
- ◆ Used oil collection and extraction unit - V.A.G 1782-
- ◆ Vehicle diagnostic, testing and information system - VAS 5051-
- ◆ Drip tray for workshop hoist - VAS 6208-
- ◆ Adapter for oil filling - VAS 6262 A-
- ◆ Adapter - VAS 6262/2-
- ◆ Not illustrated: pipe cutter - VAS 6056/2-

V.A.G 1331 	V.A.G 1782 
VAS 5051 B 	VAS 6208 
VAS 6262 A 	VAS 6262/2 

W34-10210

Use only the ATF available as a replacement part ⇒ [Electronic parts catalogue](#) .

Checking ATF level

- Switch off engine.

The ATF temperature should not be above approx. 30° C at the start of the test.

- Gearbox not in back-up mode; ATF temperature not above approx. 30° C
- Vehicle standing on level surface
- Selector lever at position “P”

– Using the ⇒ Vehicle diagnostic tester in Guided Fault Finding mode, go to Function/Component Selection and select the following menu items:

- ◆ Drive system
- ◆ 6-speed automatic gearbox 09M
- ◆ 01 - Self-diagnosis-compatible systems
- ◆ 02 - Gearbox electronics 09M | J217
- ◆ 02 - Gearbox electronics, Functions
- ◆ 02 - ATF level check

– Follow instructions on screen.

– Start engine.

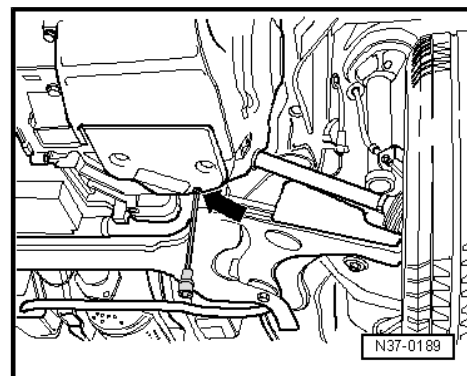
– Raise vehicle.

– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

– Place drip tray -VAS 6208- underneath gearbox.

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

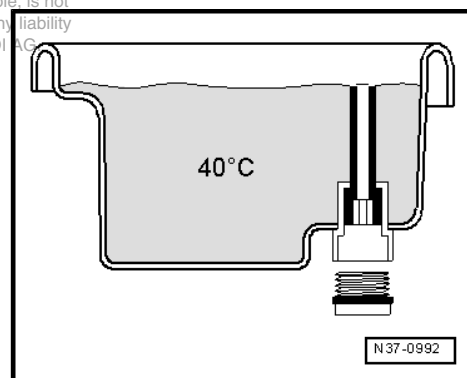
– Remove ATF inspection plug in oil pan.



The ATF present in the overflow pipe runs out.
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If ATF continues dripping out of hole:

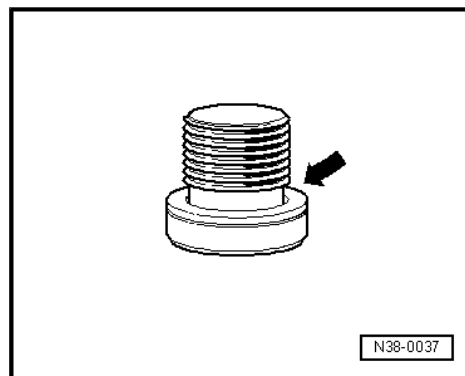
ATF does not need to be filled up.



- Renew seal -arrow- for ATF inspection plug.
- Tighten ATF inspection plug to 27 Nm. The ATF check is now completed.

If no ATF drips out of hole:

- Top up ATF ⇒ [page 54](#) .



3.2 Topping up ATF

Shortening breather pipe of adapter for oil filling - VAS 6262 A- :

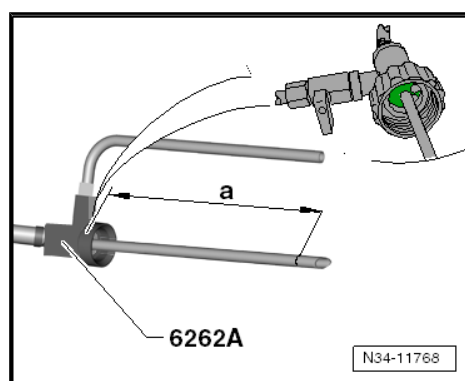
- To ensure that breather pipe of adapter for oil filling - VAS 6262 A- does not make contact with bottom of oil container, breather pipe must be shortened to dimension -a-.

Dimension -a- = 210 mm

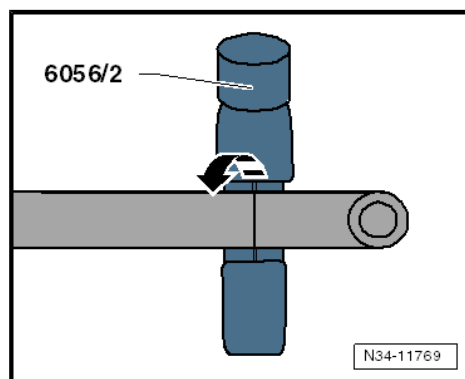


Note

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



- Mark dimension -a- on breather pipe and shorten pipe with pipe cutter - VAS 6056/2- .



- With engine running, screw in adapter for oil filling - VAS 6262/2- hand-tight.
- Shake oil containers before opening.
- Before screwing adapter for oil filling - VAS 6262 A- onto oil container, note instructions relating to breather pipe
⇒ [page 54](#) .
- Fill with 1 ltr. of ATF.
- Pull adapter for oil filling - VAS 6262- off at quick-release coupling and check:

If ATF now comes out of hole in adapter:

ATF does not need to be filled up.

- Allow ATF to drain off until it drips.
- Fit new seal on ATF inspection plug and tighten to 27 Nm. The ATF check is now completed.

If no ATF comes out:

- Add another litre.



Caution

Too much or too little ATF in the gearbox may cause malfunctions.



Note

If a large quantity of ATF is lost, the gearbox must be checked for leaks.

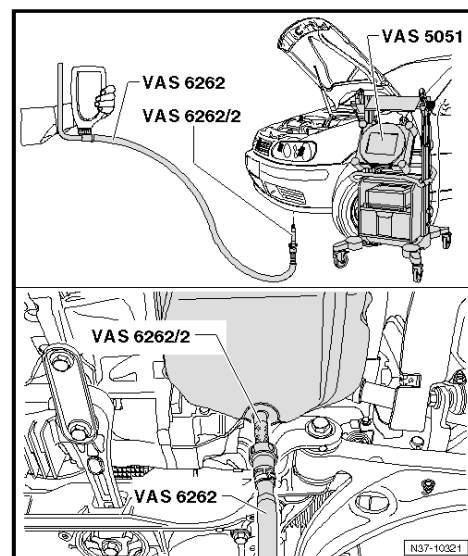
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

3.3 Draining and filling ATF

Special tools and workshop equipment required

- ◆ Vehicle diagnostic, testing and information system - VAS 5051-
- ◆ Drip tray for workshop hoist - VAS 6208-

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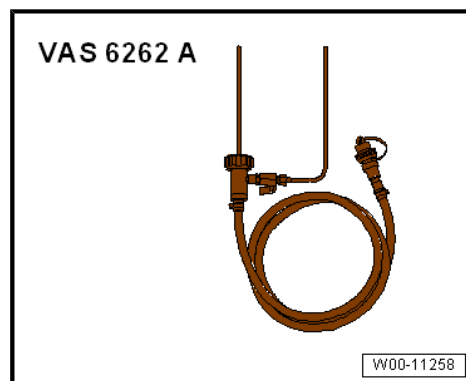


VAS 6208



WV00-11209

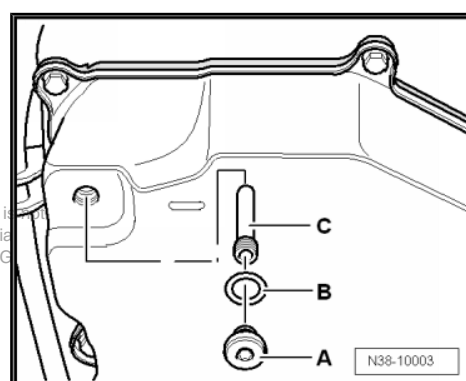
◆ Adapter for oil filling - VAS 6262 A-



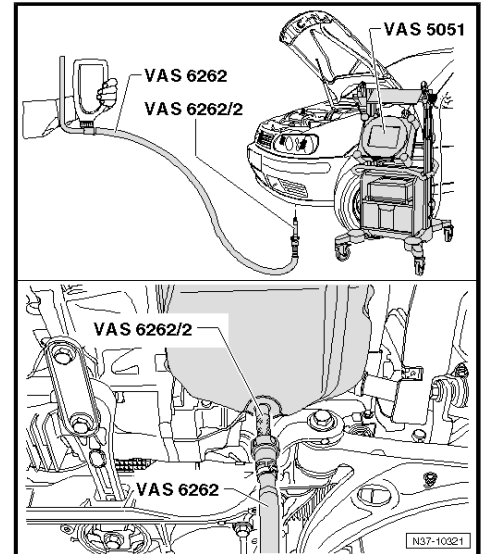
◆ Adapter - VAS 6262/2-



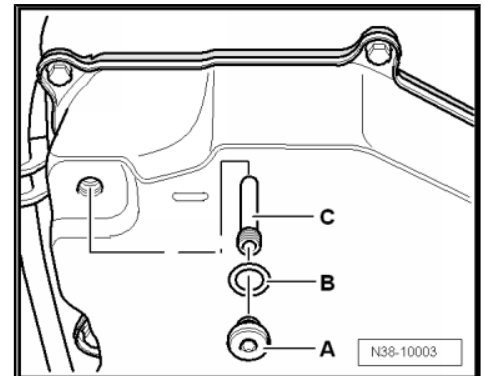
- Switch off engine.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Unscrew ATF inspection plug -A-.
- Always renew seal -B-.
- Unscrew overflow pipe -C-.
- Drain ATF.
- Screw in overflow pipe -C-.



- Screw in adapter for oil filling - VAS 6262/2- hand-tight.
- Shake oil containers before opening.
- Before screwing adapter for oil filling - VAS 6262 A- onto oil container, note instructions relating to breather pipe
⇒ [page 54](#) .
- Add 3 litres of ATF ⇒ Electronic parts catalogue .



- Screw in ATF inspection plug -A- with new seal -B- hand-tight.
- Switch on engine and shift selector lever through all positions, leaving it in each position for approx. 10 seconds.
- Then check ATF level ⇒ [page 52](#) .

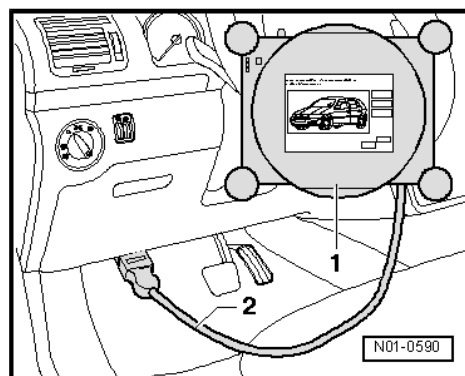


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4 Connecting vehicle diagnostic tester and selecting functions

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- Fit connector of diagnostic cable - VAS 5051/1- -2- or - VAS 5051/3- onto diagnostic connection.



- Switch tester on -arrow-.

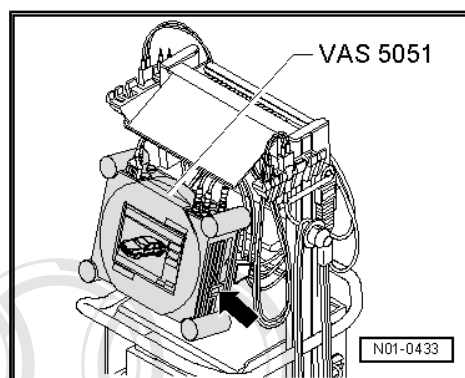
The tester is ready for use if it is possible to select »right« on the screen between the symbols/buttons Guided Functions and Guided Fault Finding.

Depending on the version of the tester, it may also be possible to display other functions such as:

- ◆ Elsawin
- ◆ Test Instruments
- ◆ Self-diagnosis

Once the tester is ready for use:

- Switch on ignition.
- Touch a symbol or button on the screen to start the required function.



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5 Bevel box

⇒ ["5.1 Removing bevel box", page 59](#)

⇒ ["5.2 Installing bevel box", page 62](#)

5.1 Removing bevel box

- With vehicle still standing on its wheels, loosen twelve-point bolt (right-side) -arrow- 90° (maximum). Do not loosen any further, as this would damage the wheel bearing ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Loosening and tightening bolt securing drive shaft .



Note

Do not lower the vehicle onto the ground after loosening the bolt.

- Raise vehicle so that all four supports of the lifting platform are at the same height.

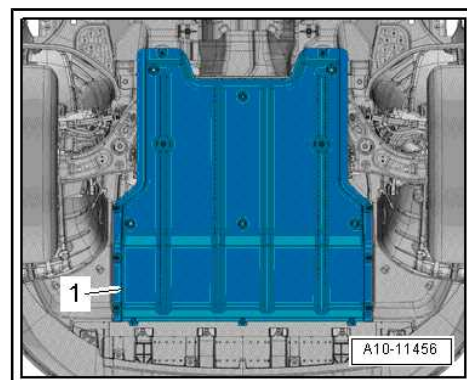
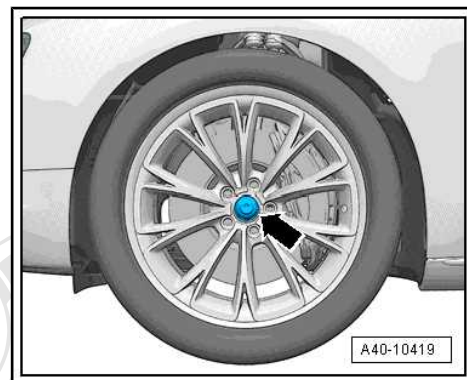


Note

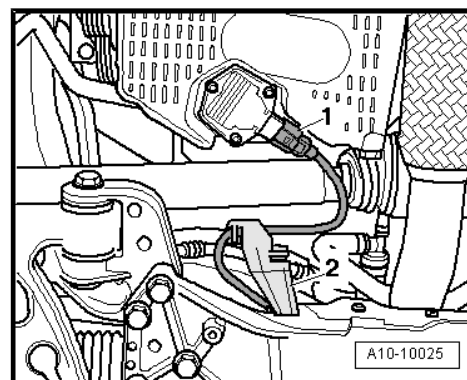
To ensure that the propshaft can subsequently be rotated and loosened:

- Move selector lever to position »N«.
- Switch off ignition.
- Remove front right wheel.
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

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



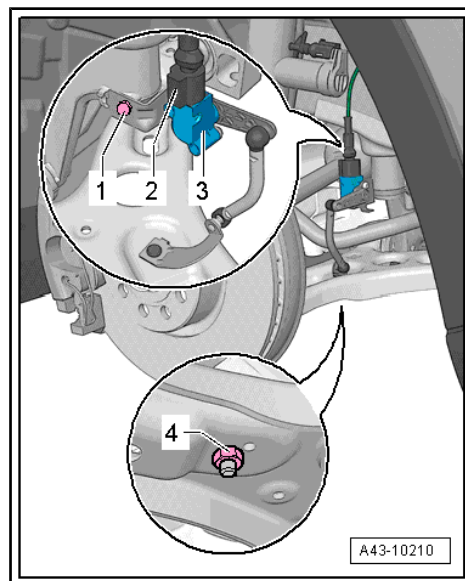
- If fitted, unscrew nut -4- for bracket for front right vehicle level sender - G289- .



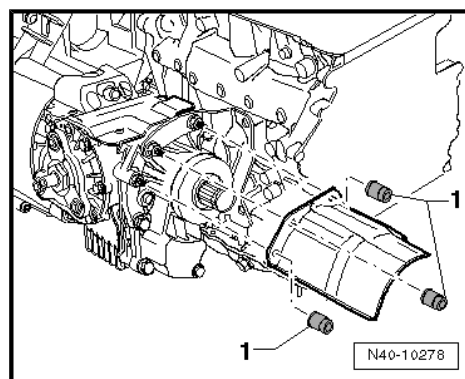
Note

-Items 1, 2, and 3- can be disregarded.

- Remove drive shaft (right-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

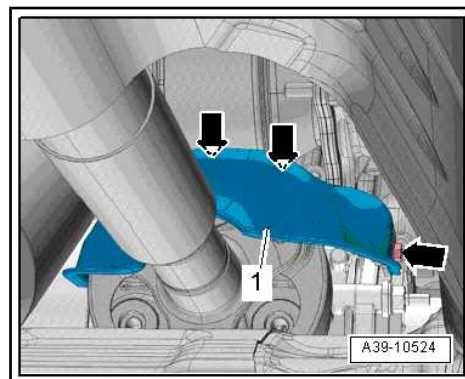


- Remove nuts -1- and detach heat shield for drive shaft (right-side).

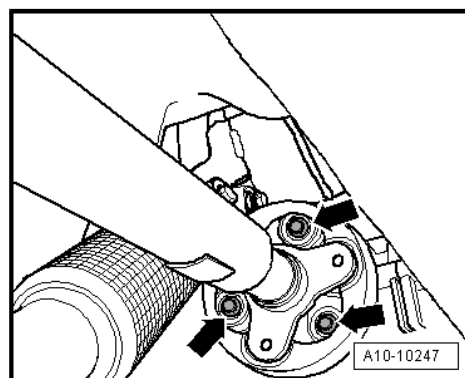


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- Remove bolts -arrows- and detach heat shield -1-.

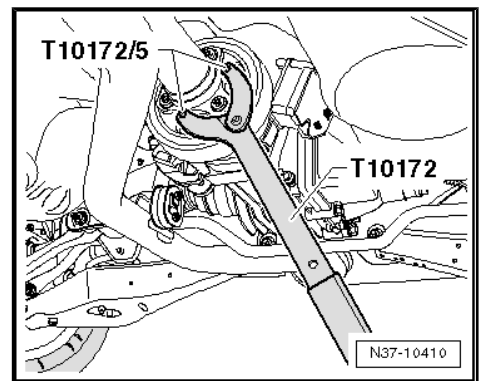


- Mark position of flexible coupling relative to bevel box output flange for re-installation.
- Remove bolts -arrows- securing propshaft flexible coupling to bevel box.

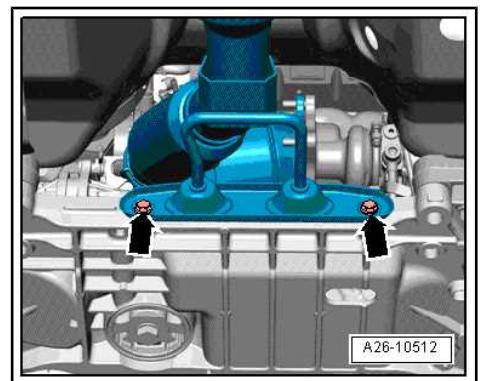


 Note

- ◆ *Counterhold at rear final drive when loosening and tightening propshaft bolts.*
- ◆ *Rotate the propshaft by simultaneously turning the rear wheels until the next bolt to be loosened is accessible.*



- Remove bolts -arrows- for exhaust pipe bracket from sub-frame.



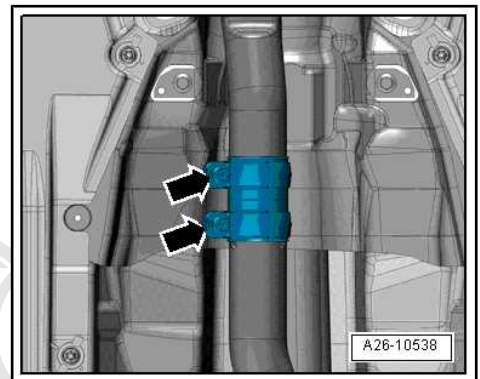
- Loosen nuts -arrows- and move clamp towards rear.



Caution

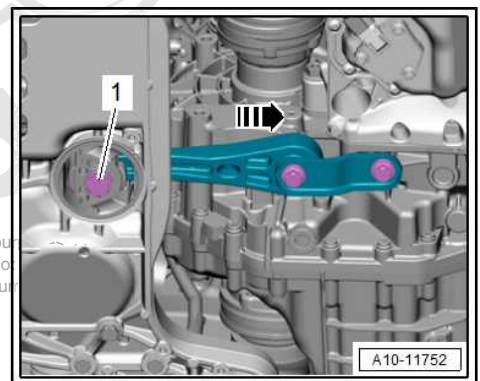
Risk of damage to flexible joint.

- ◆ *The flexible joint in the front exhaust pipe must not be bent further than 10°.*



- Tie up front exhaust pipe.

- Remove bolt -1- for pendulum support and push engine/gear-box assembly forwards -arrow- until it is possible to re-install bolt.



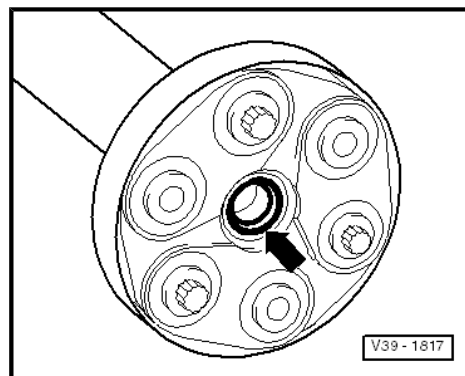
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- Detach propshaft from bevel box and prop it up against heat shield for steering rack using a suitable piece of wood.


Caution

The seal -arrow- in the propshaft flange can be damaged.

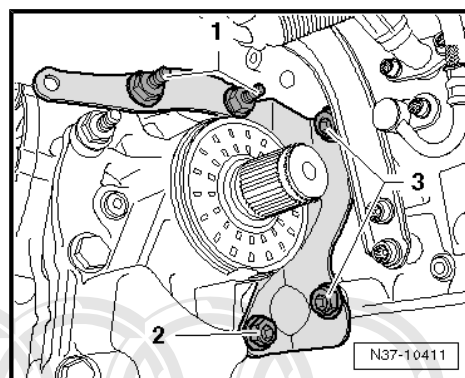
- ◆ *Push propshaft towards the rear and to the right side of the vehicle as far as possible.*


Note

If seal is damaged propshaft must be renewed.

- Unscrew bolts -1 ... 3- and detach gearbox carrier.

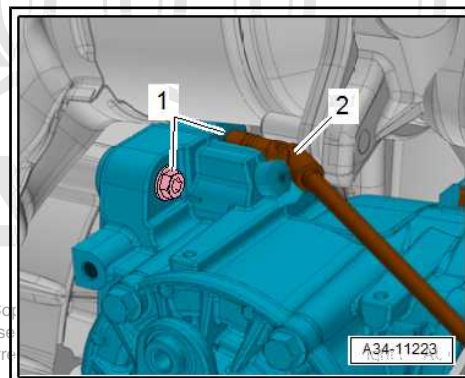
–



- Remove top bolts -1- securing bevel box to gearbox.


Note

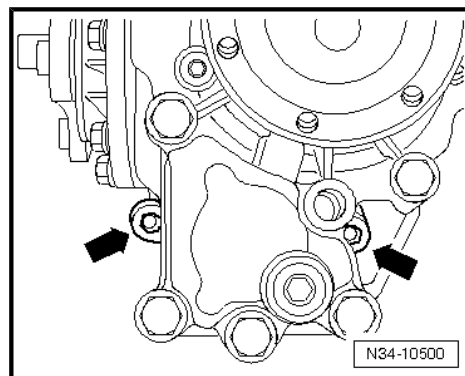
Use a jointed socket wrench -2- to unscrew bolts.



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- Unbolt bevel box at bottom of gearbox -arrows-.
- Carefully press bevel box off gearbox and remove downwards.



5.2 Installing bevel box

Special tools and workshop equipment required

- ◆ Grease for clutch plate splines - G 000 100-

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

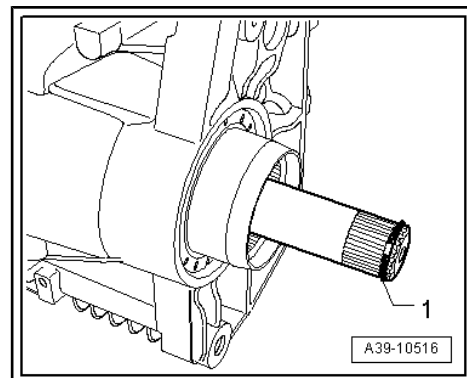
- Fit new circlip -1- on stub shaft on gearbox side.



Caution

Risk of damage to gearbox or bevel box.

- ◆ *To enable the circlip -1- on the stub shaft to engage properly in the differential bevel gear, strike the end face of the splined shaft with a plastic hammer.*
- ◆ *Do not attempt to pull the bevel box onto the gearbox by force by tightening the securing bolts.*



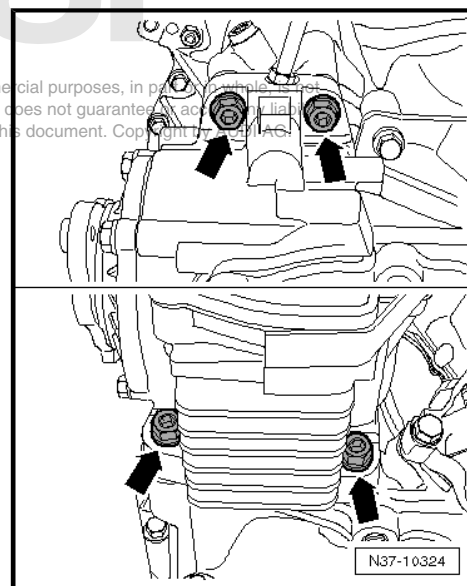
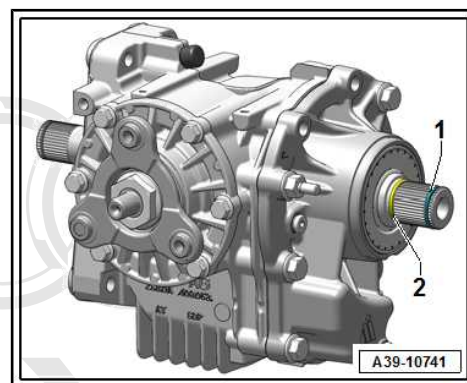
- Insert bevel box and press onto gearbox as far as stop.
- Fit new circlip -1- and new O-ring -2- on stub shaft (right-side).
- Lubricate splines on stub shaft with grease for clutch plate splines - G 000 100- .



Note

If the splines are not aligned (and the bevel box can therefore not be pressed onto the gearbox), turn the stub shaft.

- If the splines are correctly positioned and the components are located centrally, the bevel box will slide against the gearbox onto the stop.
- Secure bevel box with new bolts -arrows-: first screw in hand-tight and then tighten to specified torque ⇒ [page 64](#) .
- Install gearbox carrier. Note fitting location and tightening sequence for bolts ⇒ [page 64](#) .
- Check oil level in bevel box ⇒ [page 130](#) .



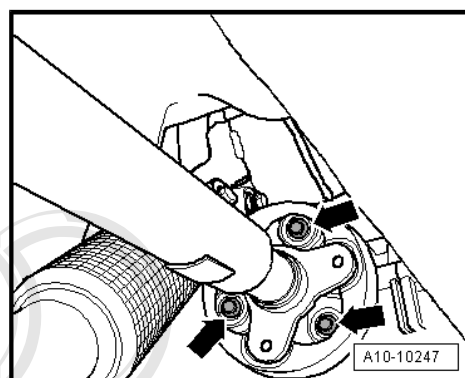
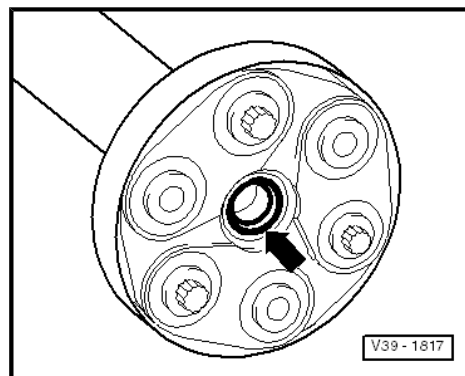


Caution

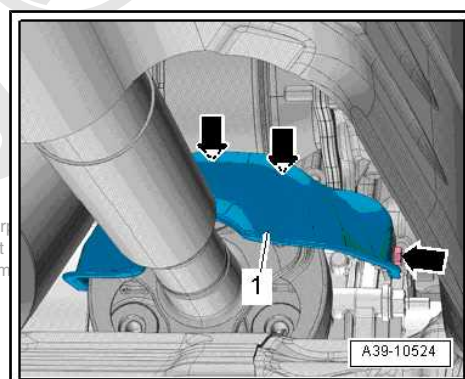
The seal -arrow- in the propshaft flange can be damaged.

- ◆ *Press engine/gearbox assembly towards plenum chamber partition panel; at the same time carefully inserting guide pin on bevel box into propshaft flange.*

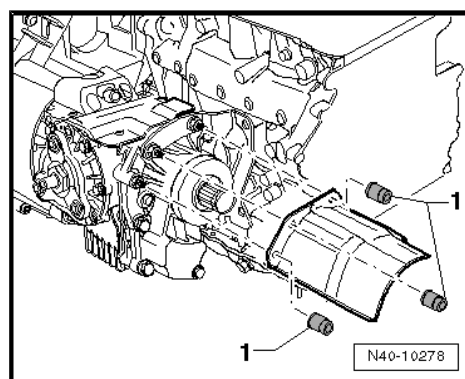
- Secure pendulum support to subframe with a new bolt; for tightening torque refer to ➔ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings .
- Bolt propshaft to bevel box -arrows- ➔ Rear final drive; Rep. gr. 39 ; Propshaft; Removing and installing propshaft .



- Install heat shield -1- for flexible coupling/propshaft -arrows-.



- Install heat shield for drive shaft (right-side). Tighten bolts -1- to specified torque ➔ [page 64](#) .
- Install drive shaft (right-side) ➔ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Assemble exhaust system and perform stress-free alignment ➔ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Install noise insulation ➔ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .
- Fit front wheel (right-side) ➔ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .



Tightening torques

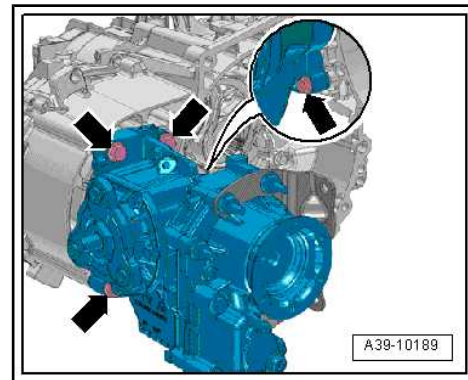
Securing bevel box to gearbox - tightening torque



Renew bolts which are tightened by turning through a specified angle.

- Tighten bolts in stages as follows:

Stage	Bolts	Tightening torque/tightening angle
1.	-arrows-	Screw in by hand until contact is made
2.	-arrows-	40 Nm in diagonal sequence
3.	-arrows-	Turn 90° further in diagonal sequence



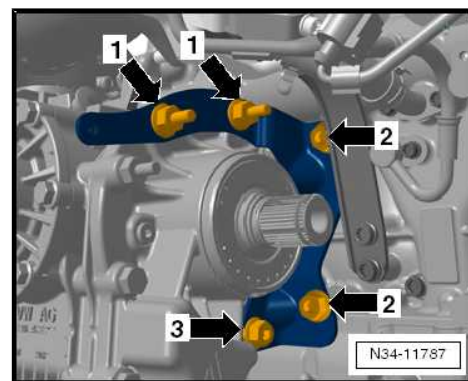
Securing gearbox carrier to engine and bevel box - tightening torque and sequence

- Install bolts as follows:

- 1 - M10 x 45
- 2 - M10 x 21
- 3 - M20 x 45

- Tighten bolts in stages as follows:

Stage	Bolts	Tightening torque
1.	-1, 3-	Screw in by hand until contact is made
2.	-2-	40 Nm
3.	-1, 3-	40 Nm
Heat shield for drive shaft to bevel box		20 Nm
Heat shield for flexible coupling/propshaft to bevel box		9 Nm



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6 Removing and installing gearbox

⇒ [“6.1 Removing gearbox”, page 66](#)

⇒ [“6.2 Installing gearbox”, page 90](#)

⇒ [“6.3 Tightening torques for gearbox”, page 92](#)

6.1 Removing gearbox

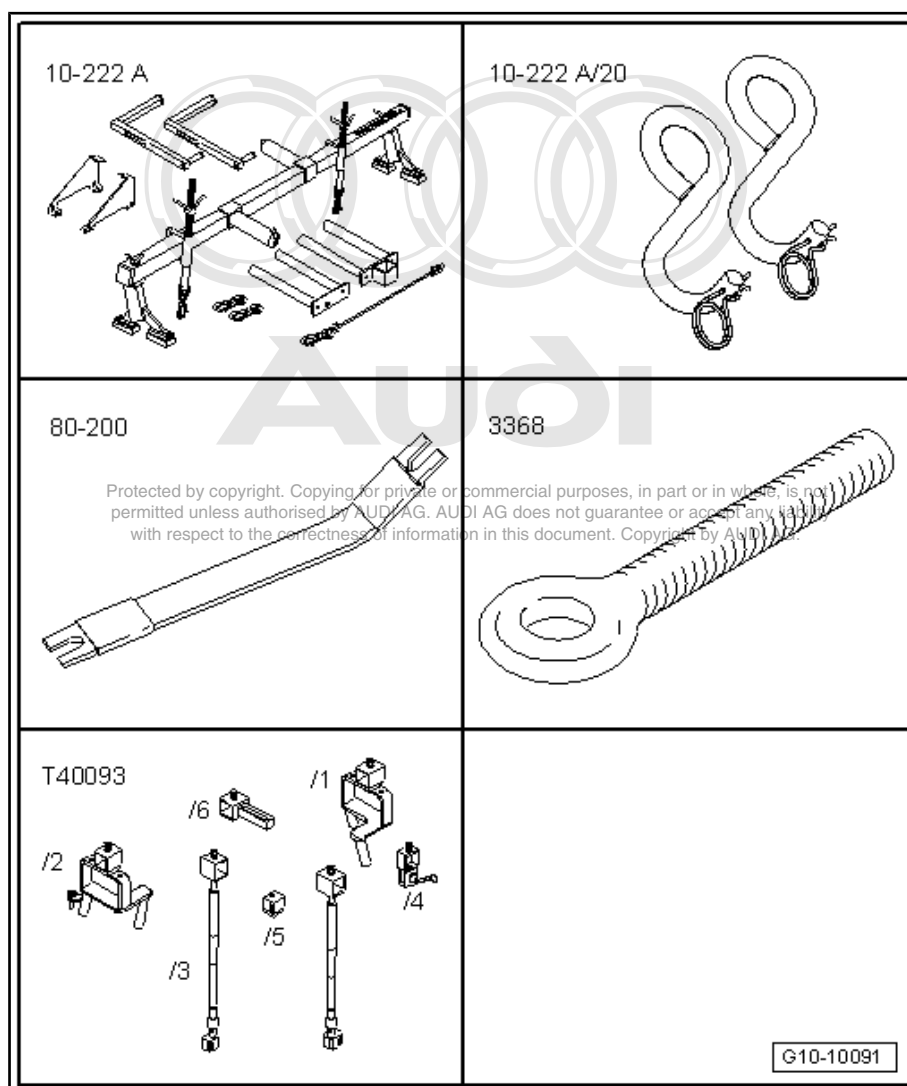
⇒ [“6.1.1 Removing gearbox, vehicles with front-wheel drive”, page 66](#)

⇒ [“6.1.2 Removing gearbox, vehicles with four-wheel drive”, page 77](#)

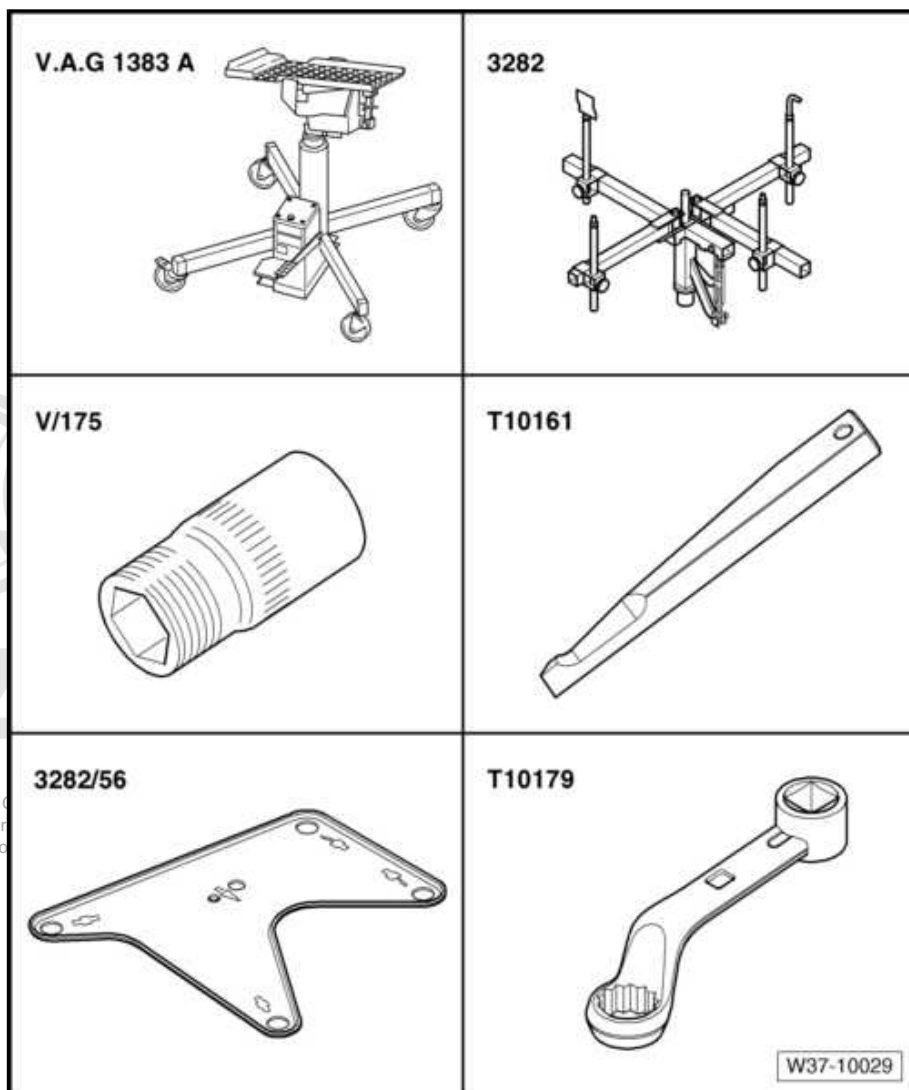
6.1.1 Removing gearbox, vehicles with front-wheel drive

Special tools and workshop equipment required

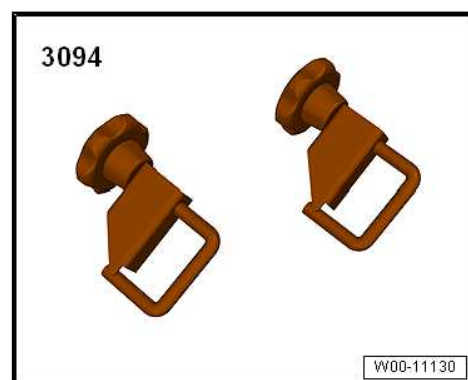
- ◆ Support bracket - 10 - 222 A-
- ◆ Adapters - 10 - 222 A /20-
- ◆ Removal lever - 80 - 200-
- ◆ Eye-head bolt - 3368-
- ◆ -T40093/6- from engine support supplement set - T40093-
- ◆ Flange nut M10 or nut with washer



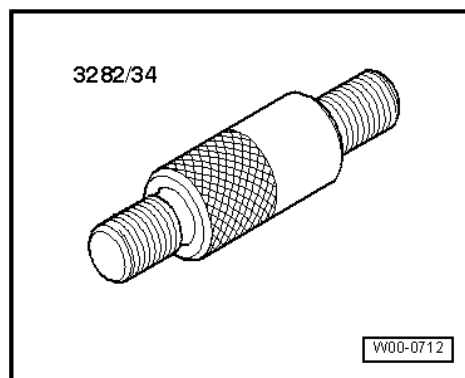
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Gearbox support - 3282-
- ◆ Socket - V/175-
- ◆ Wedge - T10161-
- ◆ Adjustment plates - 3282/56-
- ◆ Tool insert (18 mm) - T10179-



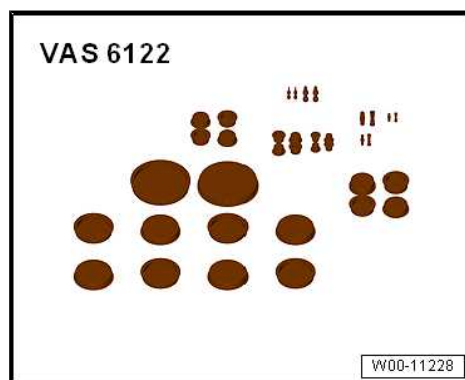
- ◆ Hose clamps, up to 25 mm - 3094-



◆ Pin - 3282/34-



◆ Engine bung set - VAS 6122-



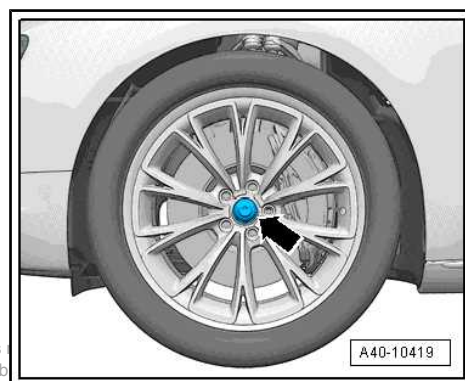
i Note

- ◆ Note ⇒ ["3 Repair instructions", page 5](#).
- ◆ All cable ties which are released or cut open during removal must be fitted in the same position when installing.
- With vehicle still standing on its wheels, loosen twelve-point bolt (left-side) -arrow- 90° (maximum). Do not loosen any further, as this would damage the wheel bearing ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Loosening and tightening bolt securing drive shaft .

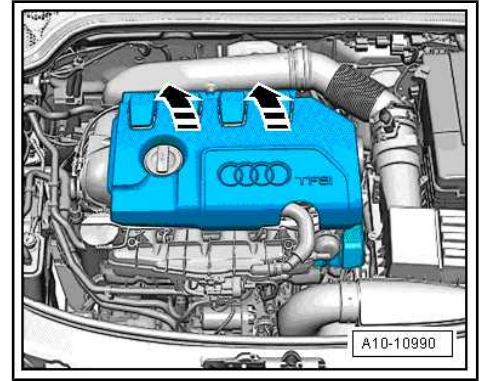
i Note

Do not lower the vehicle onto the ground after loosening the bolt.

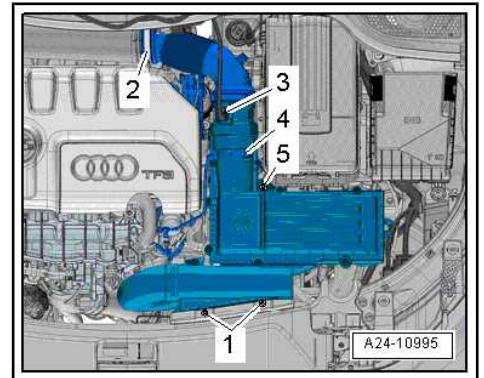
- Raise vehicle slightly so that all four supports of the lifting platform are at the same height.
- Bring front wheels into straight-ahead position.
- Shift selector lever into position "P".
- Switch off ignition.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



- Remove engine cover panel -arrows- ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

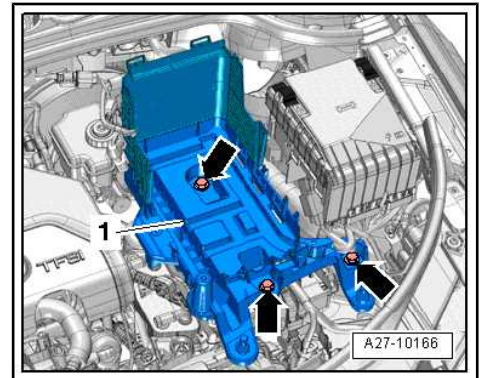


- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.



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- Remove battery and battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Detach earth wire from bolt securing gearbox mounting.



- Disconnect electrical wires -4 ... 6- from starter -3- and move them clear ➔ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .



Note

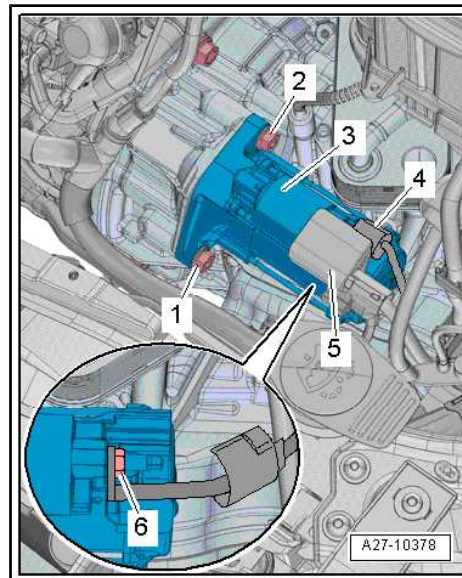
- ◆ Do not loosen bolts -1 and 2-; the starter remains installed.
- ◆ Unclip wires from brackets on starter and move them clear.
- ◆ Place a cloth on the ATF cooler and gearbox to catch escaping coolant.



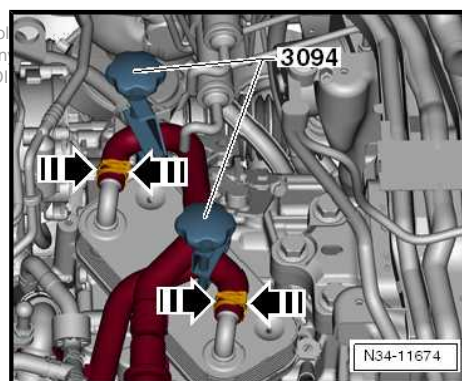
WARNING

Risk of scalding from hot steam and hot coolant.

- ◆ The cooling system is under pressure when the engine is hot.
- ◆ Cover filler cap on expansion tank with a cloth and open carefully to release pressure.



- Clamp off coolant hoses leading to ATF cooler using hose clamps -3094-. Then release hose clips arrows- and disconnect hoses.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

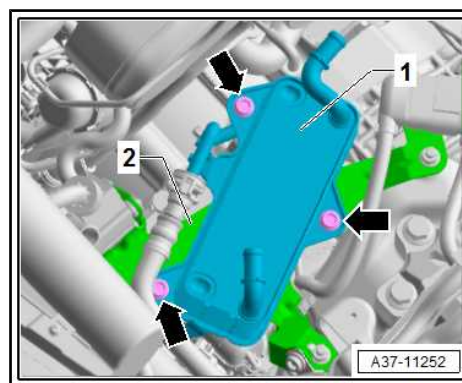


- Remove ATF cooler -1- from bracket -2- for ATF cooler -arrows-.



Note

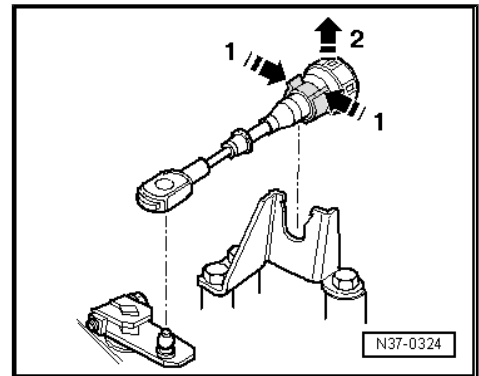
- ◆ Leave ATF lines in their installation position on the ATF cooler.
- ◆ Leave ATF cooler in position on the gearbox.
- Then remove bracket -2- for ATF cooler ➔ [page 44](#) .



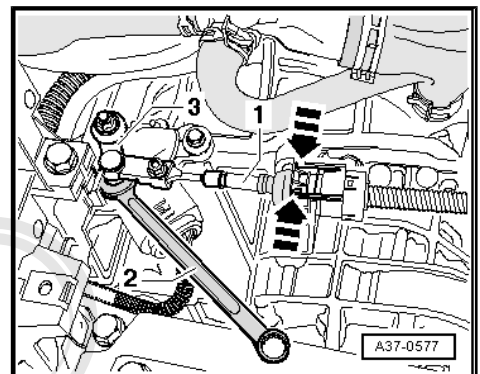
- Release selector lever cable carefully by hand from gearbox -arrows 1- and pull out of cable support bracket in direction of -arrow 2-.

 Note

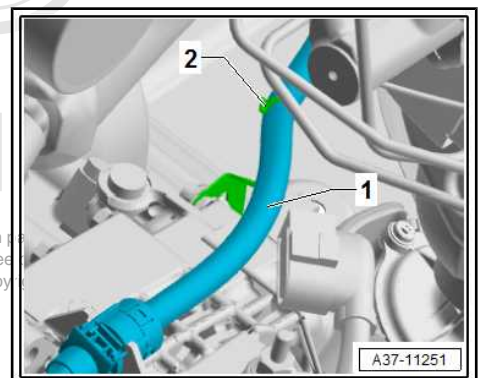
- ◆ *Do not bend or kink the selector lever cable.*
- ◆ *Do not use pliers as this could cause the retaining tabs on the cable support bracket to break off.*



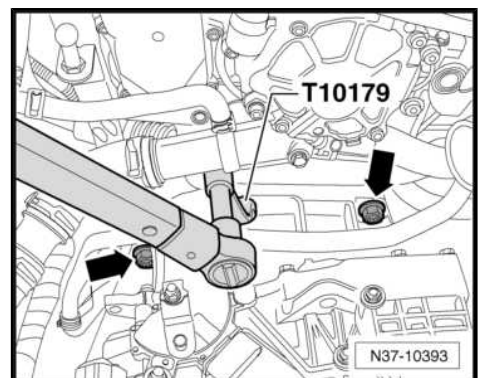
- Then pry selector lever cable -1- off gearbox selector lever -3- using an open-end spanner -2- or similar.
- Unplug connector from multifunction switch - F125- .



- Press selector lever cable -1- out of retainer -2- on gearbox.

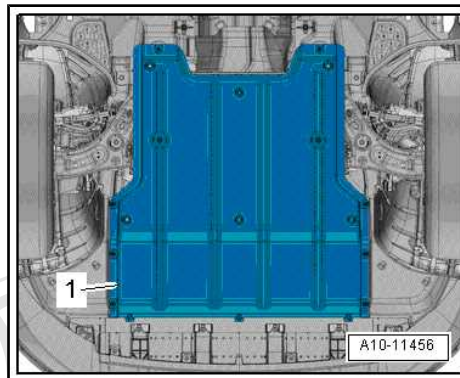


- Remove bolts (top) -arrows- securing gearbox to engine.
- Raise vehicle.
- Remove both front wheels.

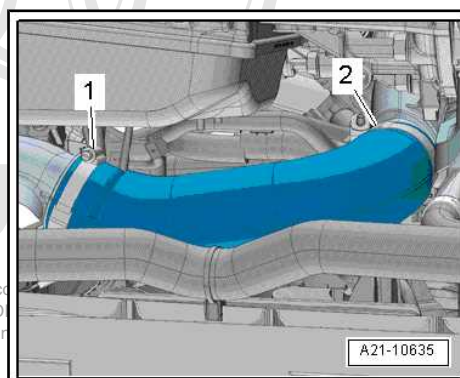


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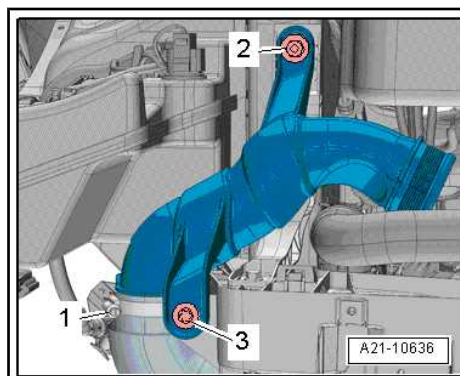
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



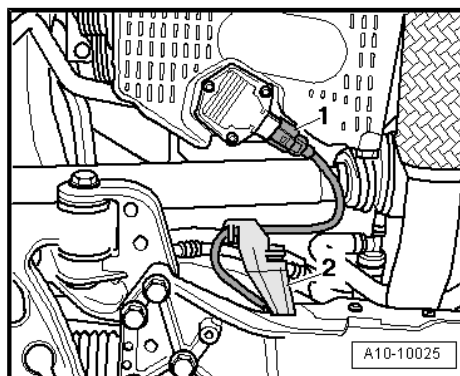
- Release hose clips -1 and 2- and remove air intake hose.



- Unscrew nut -2- and bolt -3-.
- Release hose clip -1- and detach air pipe.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



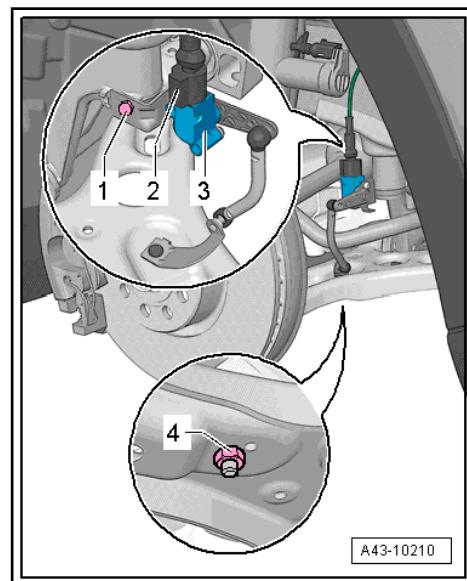
- Unplug electrical connector -1- at oil level and oil temperature sender - G266- .
- Unclip bracket -2- for electrical wiring leading to oil level and oil temperature sender - G266- at subframe.



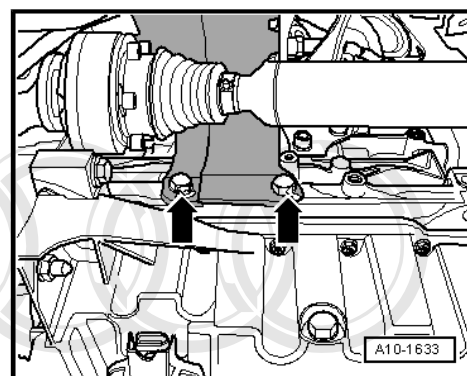
- If fitted, unscrew nut -4- for bracket for front right vehicle level sender - G289- .

 Note

-Items 1, 2, and 3- can be disregarded.

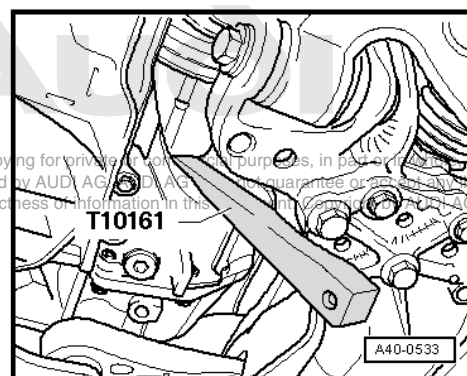


- Remove heat shield for drive shaft (right-side) -arrows- (if fitted) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .

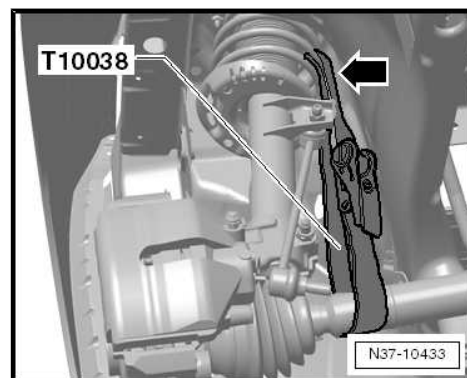


- Press both drive shafts off gearbox.
- Remove drive shaft (left-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

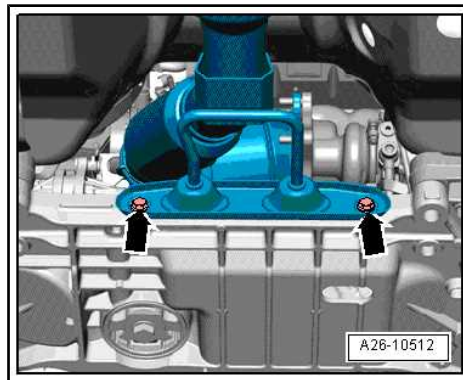
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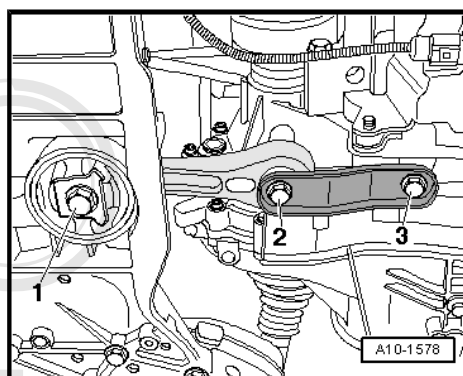
- Detach drive shaft (right-side) from gearbox and tie up as high as possible on suspension strut ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



- Remove bolts -arrows- for exhaust pipe bracket from sub-frame.

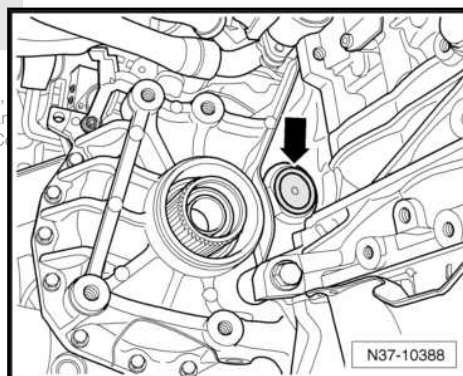


- Remove bolts -1, 2, 3- and detach pendulum support.
- Unplug the two electrical connectors to gearbox which are easily accessible from below.



- Pull out sealing plug -arrow-.

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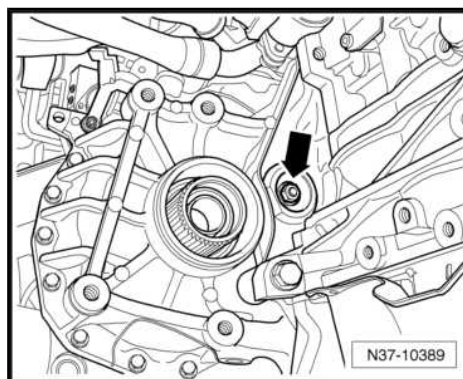
- Remove 6 torque converter nuts -arrow- through opening using socket -V/175-. When doing so, counterhold at starter ring gear with a screwdriver.



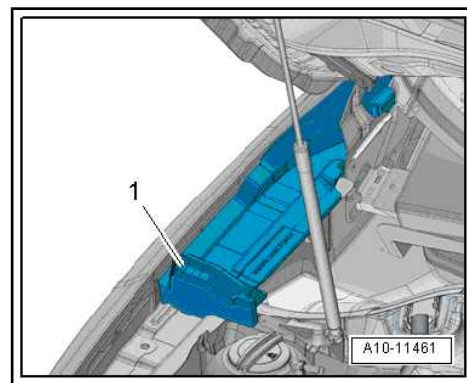
Note

Use the appropriate commercially available tools to continue rotating engine at pulley.

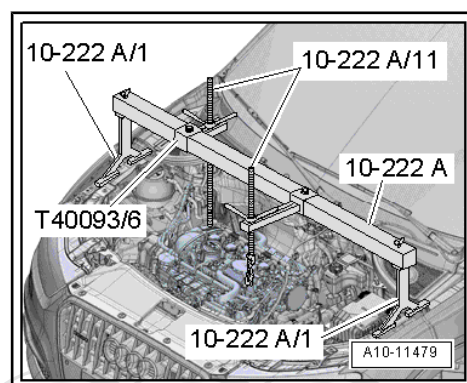
- Remove bolts (bottom) securing gearbox to engine, with exception of bolt underneath opening for drive shaft (right-side) ⇒ [page 76](#).
- Lower vehicle.



- Unclip sealing element -1- on both sides using removal lever - 80 - 200- .



- Set up support bracket - 10 - 222 A- with racks - 10 - 222 A / 1- on wing mounting flanges, as shown in illustration.



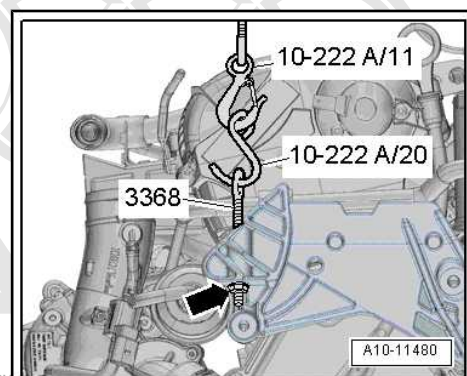
- Engage hook of spindle (left-side) in engine lifting eye.



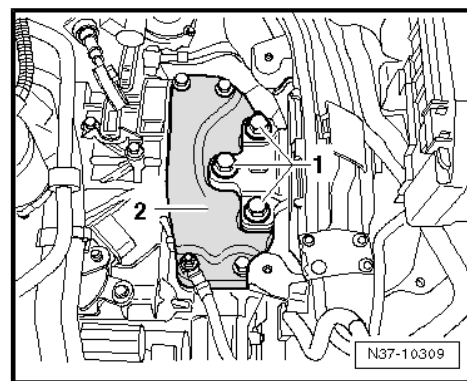
WARNING

Risk of accident if threaded attachment comes loose.

- ◆ *To ensure that the eye-head bolt - 3368- is securely attached, screw on a flange nut or nut with washer -arrow- at least 6 turns.*



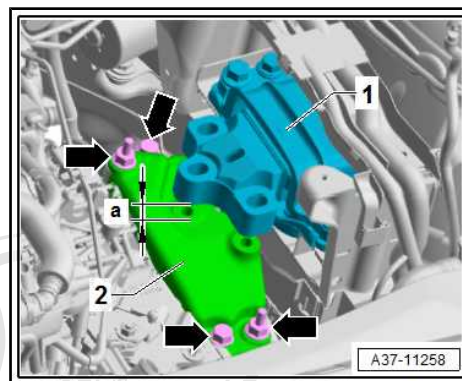
- Secure eye-head bolt - 3368- with M10 flange nut or nut with washer to engine support as shown in illustration.
- Hook spindle - 10 - 222 A /11- with adapter - 10 - 222 A /20- (right-side) onto eye-head bolt - 3368- .
- Take up weight of engine/gearbox assembly evenly with both spindles; do not lift.
- Remove bolts -1- securing gearbox mounting to gearbox bracket.



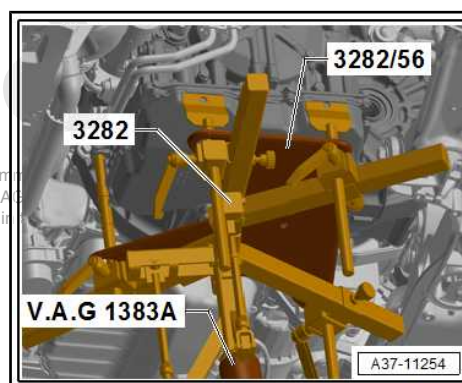
- Lower engine/gearbox assembly using left-hand spindle of support bracket - 10 - 222 A- until distance -a- is obtained between gearbox bracket -2- and gearbox mounting -1-.
- Dimension -a- = 40 ... 45 mm
- Unbolt gearbox bracket -2- from gearbox -arrows- and remove.

To remove automatic gearbox 09M, set up gearbox support - 3282- with adjustment plate - 3282/56- and fit onto engine and gearbox jack - V.A.G 1383 A- .

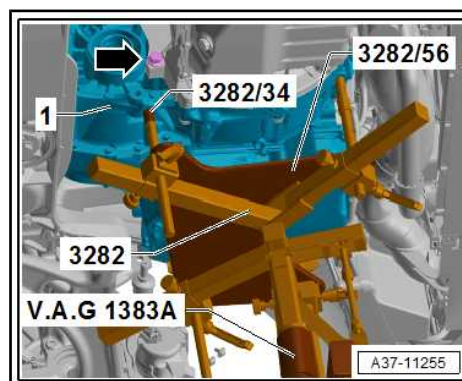
- Align arms of gearbox support according to holes in adjustment plate - 3282/56- .
- Secure support elements as illustrated on adjustment plate - 3282/56- .
- Place engine and gearbox jack - V.A.G 1383 A- underneath gearbox.
- The »arrow symbol« on the adjustment plate - 3282/56- points in the direction of travel.



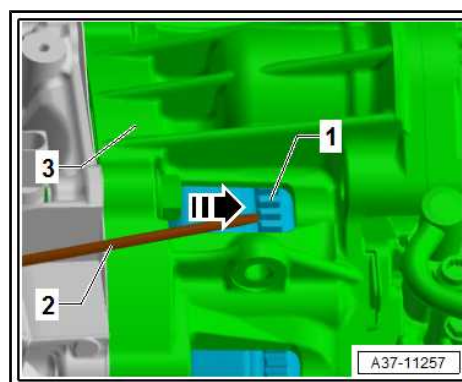
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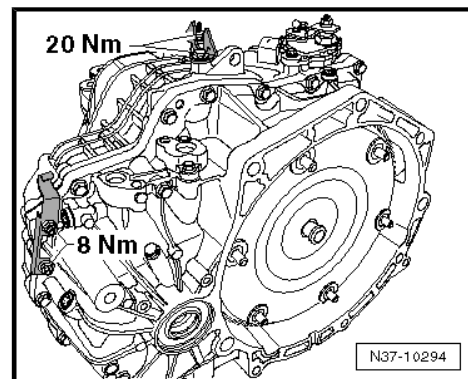
- Screw pin - 3282/34- into gearbox.
- Support gearbox -1- by lifting from underneath with engine and gearbox jack - V.A.G 1383 A- .
- Remove final bolt -arrow- securing engine to gearbox.



- Press gearbox -3- off engine; to do so, press torque converter -1- against gearbox in direction of -arrow- using a screwdriver -2- or similar tool.
- Carefully lower gearbox, making sure there is sufficient clearance from other components.
- Secure torque converter to prevent it from falling out
⇒ [page 94](#) .



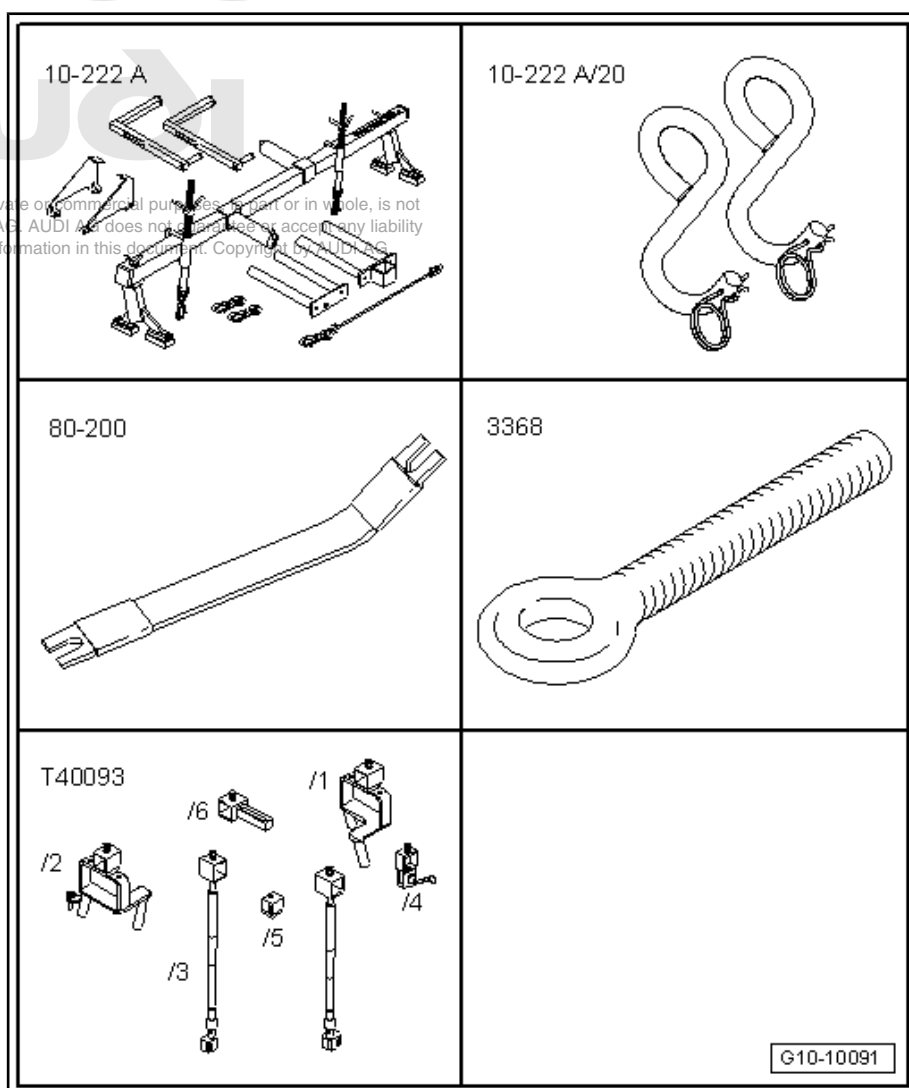
- If installing a new gearbox, transfer any attached parts to new gearbox where appropriate.
- ◆ Starter with bracket for wiring harness
- ◆ Support bracket for selector lever cable
- ◆ Bracket for selector lever cable



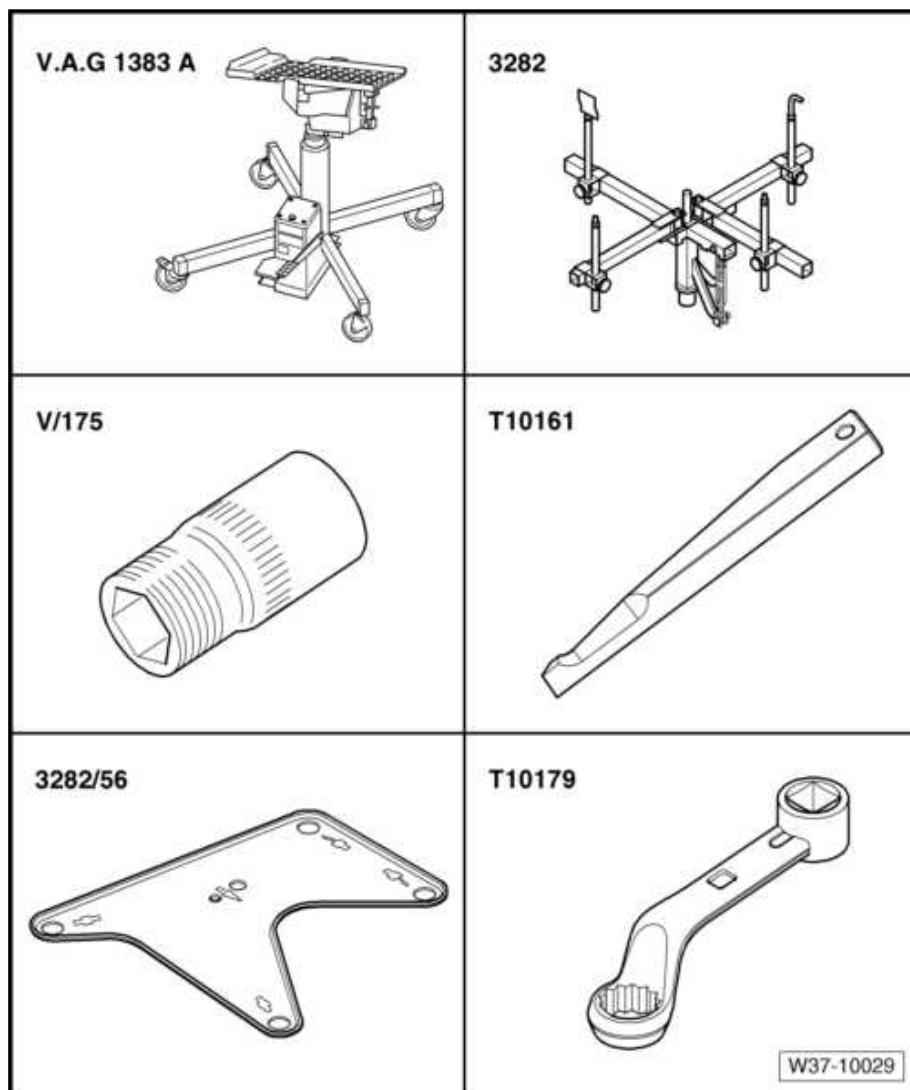
6.1.2 Removing gearbox, vehicles with four-wheel drive

Special tools and workshop equipment required

- ◆ Support bracket - 10 - 222 A-
- ◆ Adapters - 10 - 222 A /20-
- ◆ Removal lever - 80 - 200-
- ◆ Eye-head bolt - 3368-
- ◆ -T40093/6- from engine support supplement set - T40093-
- ◆ Flange nut M10 or nut with washer



- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Gearbox support - 3282-
- ◆ Socket - V/175-
- ◆ Wedge - T10161-
- ◆ Adjustment plates - 3282/56-
- ◆ Tool insert (18 mm) - T10179-

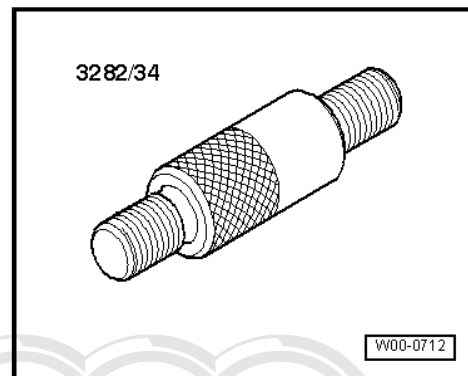


- ◆ Hose clamps, up to 25 mm - 3094-

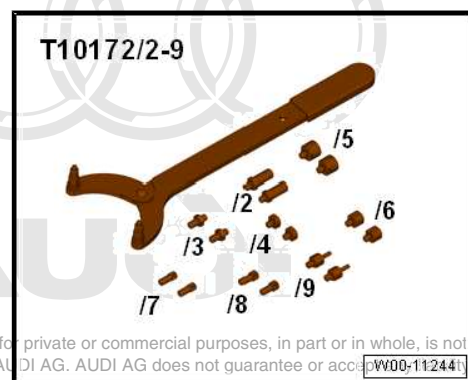


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◆ Pin - 3282/34-

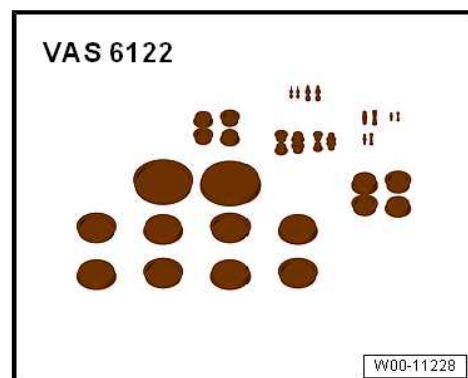


◆ Counterhold tool - T10172-



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◆ Engine bung set - VAS 6122-



Note

- ◆ Note ⇒ *["3 Repair instructions", page 5](#)*.
- ◆ *All cable ties which are released or cut open during removal must be fitted in the same position when installing.*

- With vehicle still standing on its wheels, loosen twelve-point bolt (both sides) -arrow- 90° (maximum). Do not loosen any further, as this would damage the wheel bearing ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Loosening and tightening bolt securing drive shaft .



Note

Do not lower the vehicle onto the ground after loosening the bolt.

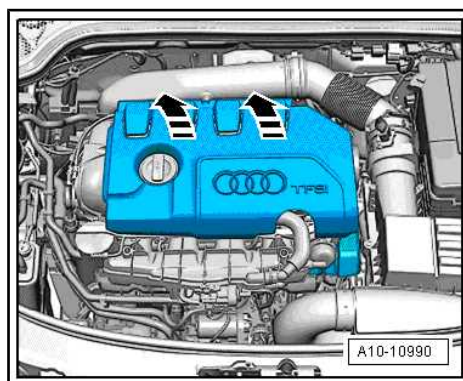
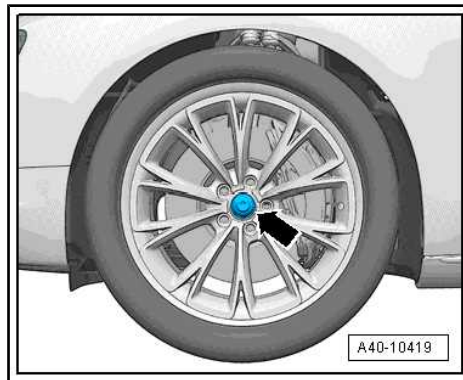
- Raise vehicle slightly so that all four supports of the lifting platform are at the same height.
- Bring front wheels into straight-ahead position.



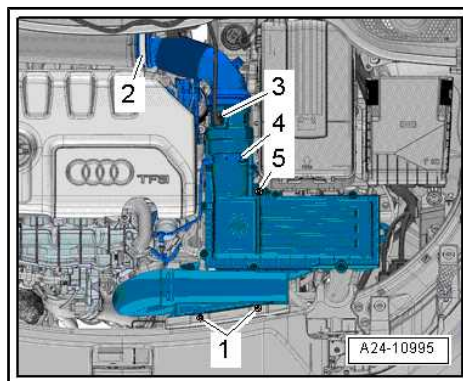
Note

To ensure that the propshaft can subsequently be rotated and loosened:

- Shift selector lever into position “N”.
- Switch off ignition.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Remove engine cover panel -arrows- ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

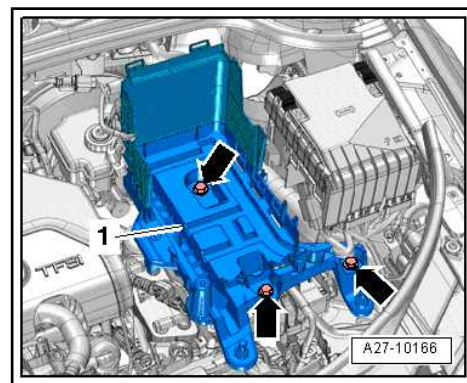


- Unplug electrical connector -3- from air mass meter - G70- .
- Pull off hose -4-.
- Release hose clip -2- and remove air hose.
- Remove bolts -1, 5- and detach air cleaner housing.



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- Remove battery and battery tray -1- ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Detach earth wire from bolt securing gearbox mounting.



- Disconnect electrical wires -4 ... 6- from starter -3- and move them clear ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

 Note

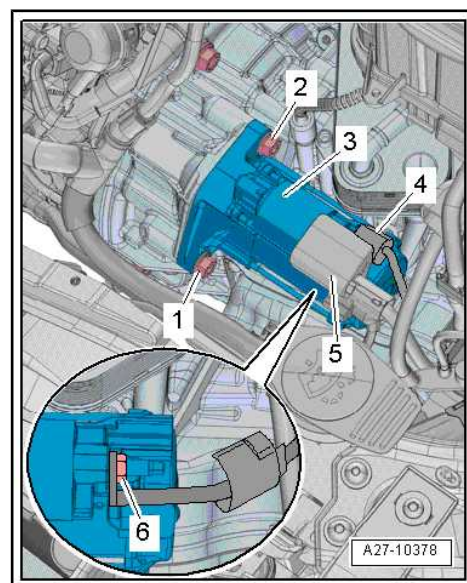
- ◆ Do not loosen bolts -1 and 2-; the starter remains installed.
- ◆ Unclip wires from brackets on starter and move them clear.
- ◆ Place a cloth on the ATF cooler and gearbox to catch escaping coolant.



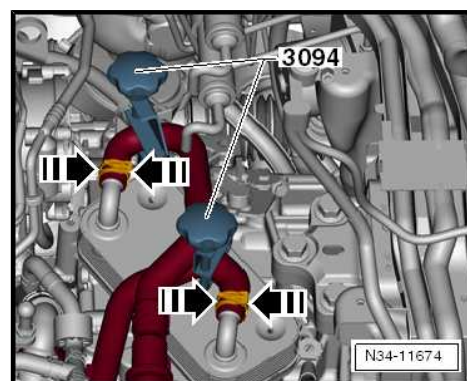
WARNING

Risk of scalding from hot steam and hot coolant.

- ◆ The cooling system is under pressure when the engine is hot.
- ◆ Cover filler cap on expansion tank with a cloth and open carefully to release pressure.



- Clamp off coolant hoses leading to ATF cooler using hose clamps - 3094- . Then release hose clips -arrows- and disconnect hoses.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .

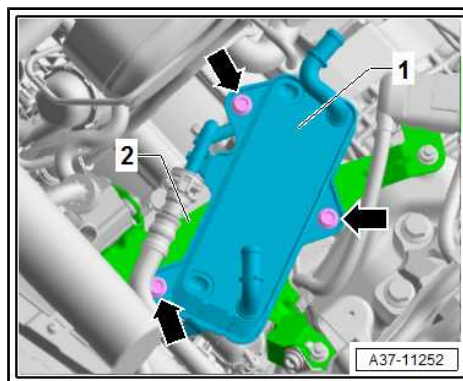


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- Remove ATF cooler -1- from bracket -2- for ATF cooler -arrows-.

 Note

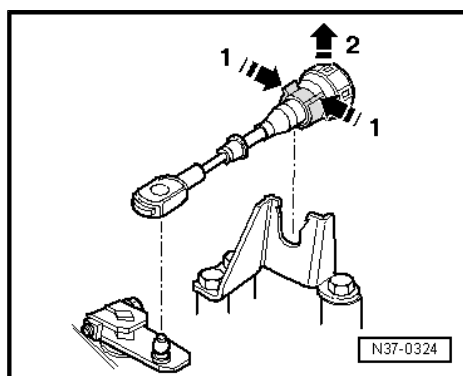
- ◆ *Leave ATF lines in their installation position on the ATF cooler.*
- ◆ *Leave ATF cooler in position on the gearbox.*
- Then remove bracket -1- for ATF cooler ➔ [page 44](#) .



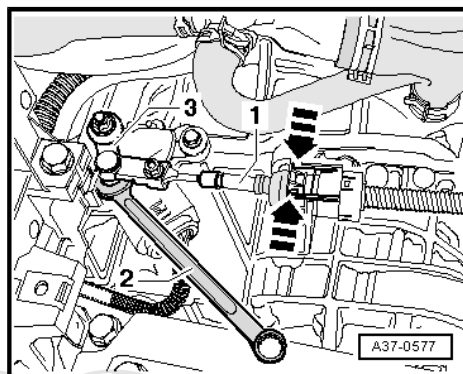
- Release selector lever cable carefully by hand from gearbox -arrows 1- and pull out of cable support bracket in direction of -arrow 2-.

 Note

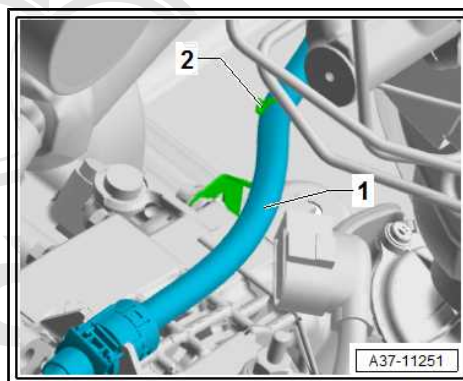
- ◆ *Do not bend or kink the selector lever cable.*
- ◆ *Do not use pliers as this could cause the retaining tabs on the cable support bracket to break off.*



- Then pry selector lever cable -1- off gearbox selector lever -3- using an open-end spanner -2- or similar.
- Unplug connector from multifunction switch - F125- .

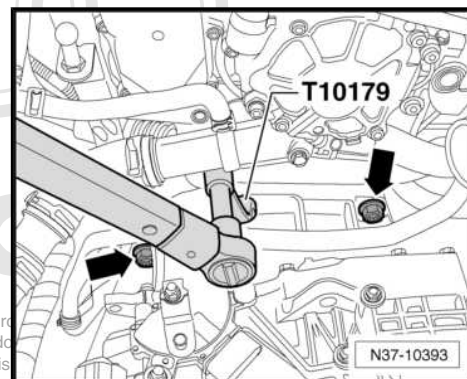


- Press selector lever cable -1- out of retainer -2- on gearbox.



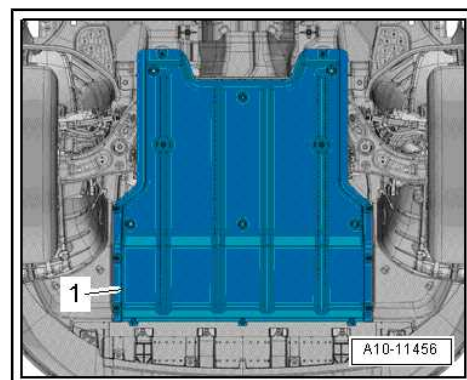
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- Remove bolts (top) -arrows- securing gearbox to engine.
- Raise vehicle.
- Remove both front wheels.

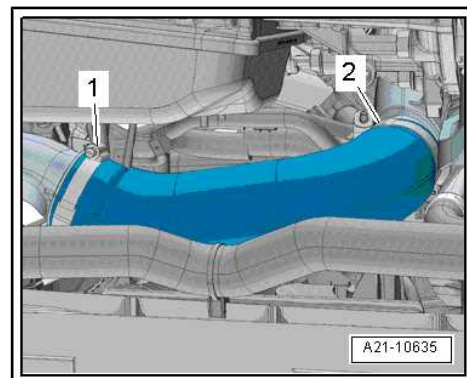


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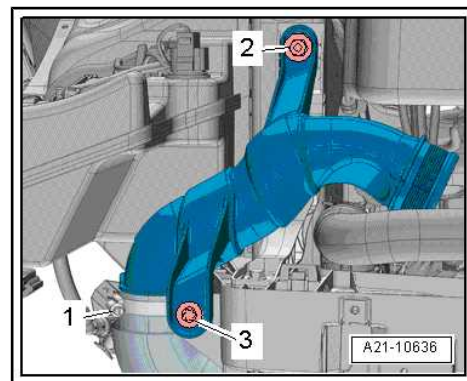
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel spoiler (front left and front right) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



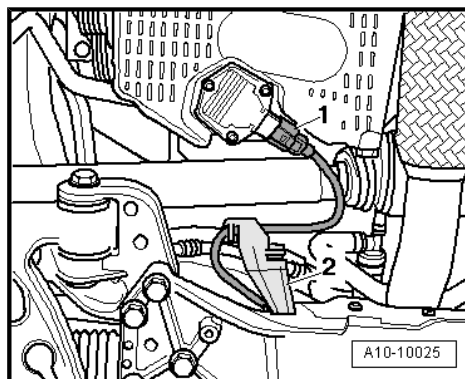
- Release hose clips -1 and 2- and remove air intake hose.



- Unscrew nut -2- and bolt -3-.
- Release hose clip -1- and detach air pipe.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .



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

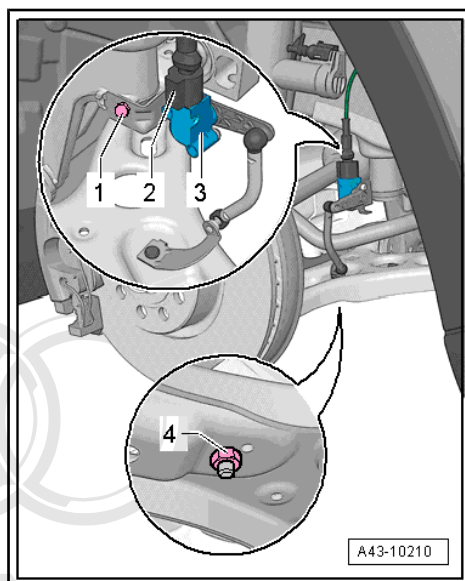


- If fitted, unscrew nut -4- for bracket for front right vehicle level sender - G289- .



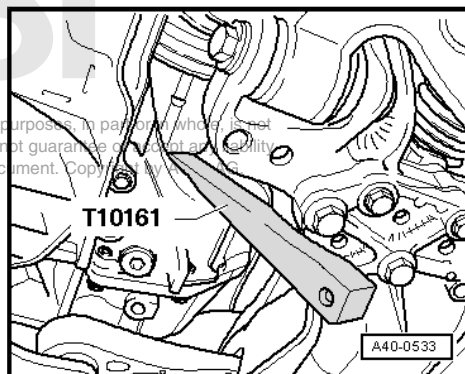
Note

-Items 1, 2, and 3- can be disregarded.

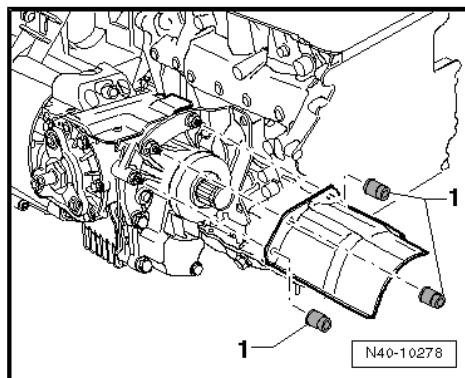


- Press both drive shafts off gearbox.
- Remove drive shaft (both sides) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

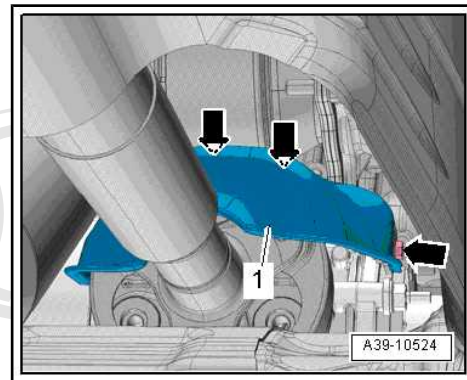
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- Remove nuts -1- and detach heat shield for drive shaft (right-side).

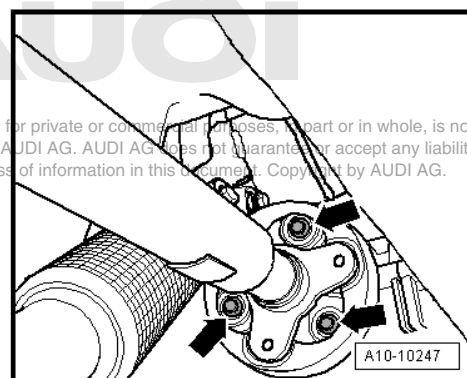


- Remove bolts -arrows- and detach heat shield -1-.



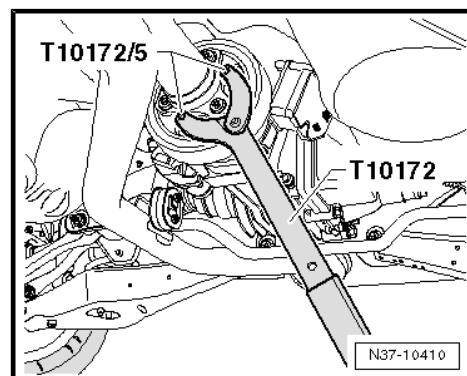
- Mark position of flexible coupling relative to bevel box output flange for re-installation.
- Remove bolts -arrows- securing propshaft flexible coupling to bevel box.

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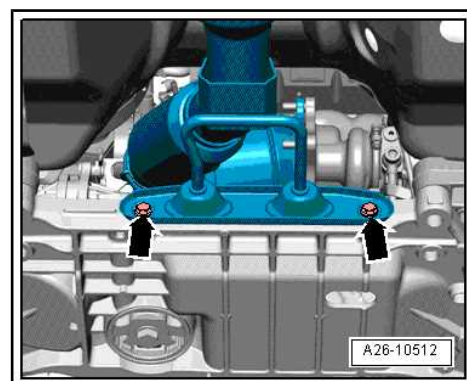


Note

- ◆ *Counterhold at rear final drive when loosening and tightening propshaft bolts.*
- ◆ *Rotate the propshaft by simultaneously turning the rear wheels until the next bolt to be loosened is accessible.*



- Remove bolts -arrows- for exhaust pipe bracket from sub-frame.



- Loosen nuts -arrows- and move clamp towards rear.



Caution

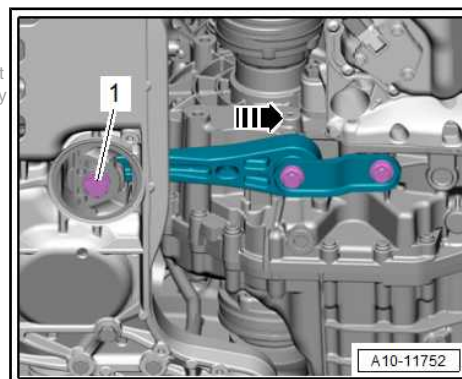
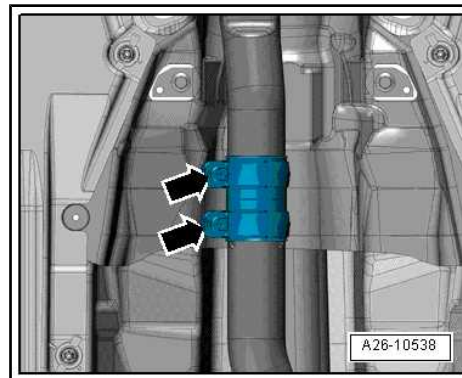
Risk of damage to flexible joint.

- ◆ **The flexible joint in the front exhaust pipe must not be bent further than 10°.**

- Tie up front exhaust pipe.

- Remove bolt -1- for pendulum support and push engine/gearbox assembly forwards in direction of -arrow- until it is possible to re-install bolt -1-.

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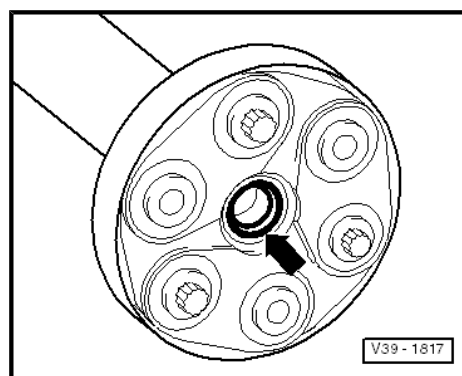
- Detach propshaft from bevel box and prop it up against heat shield for steering rack using a suitable piece of wood.



Caution

The seal -arrow- in the propshaft flange can be damaged.

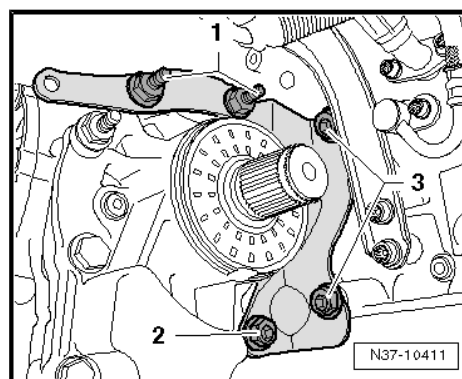
- ◆ **Push propshaft towards the rear and to the right side of the vehicle as far as possible.**



Note

If seal is damaged propshaft must be renewed.

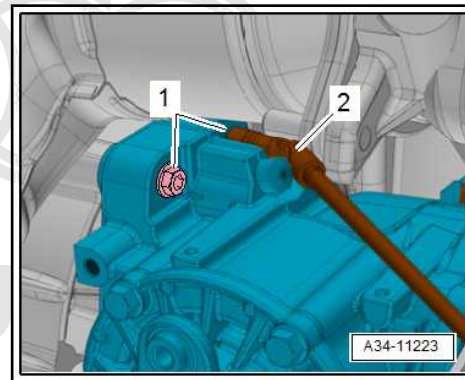
- Unscrew bolts -1 ... 3- and detach gearbox carrier.



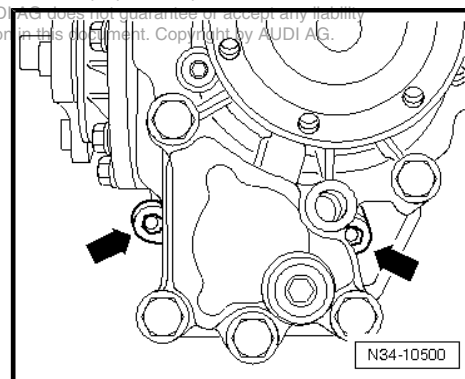
- Remove top bolts -1- securing bevel box to gearbox.



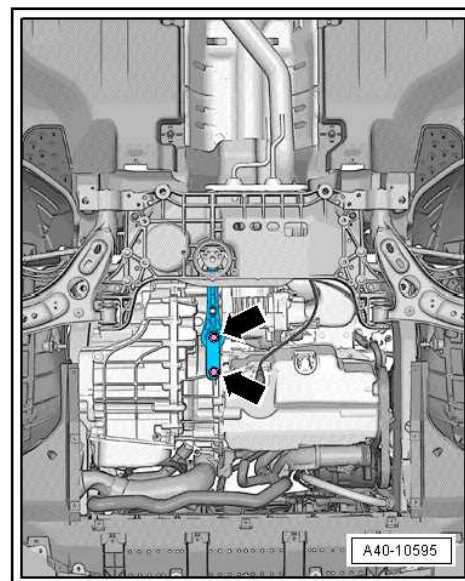
Use a jointed socket wrench -2- to unscrew bolts.



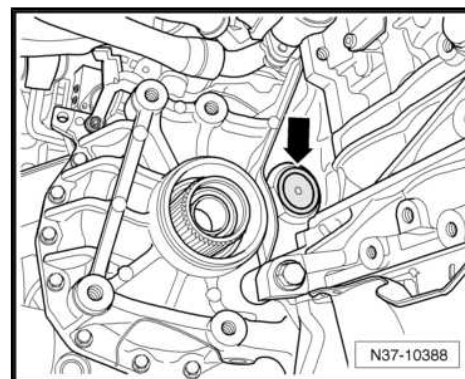
- Unbolt bevel box at bottom of gearbox -arrows-.
- Carefully press bevel box off gearbox and remove downwards.



- Remove bolts -arrows- and detach pendulum support from gearbox.
- Unplug the two electrical connectors to gearbox which are easily accessible from below.



- Pull out sealing plug -arrow-.



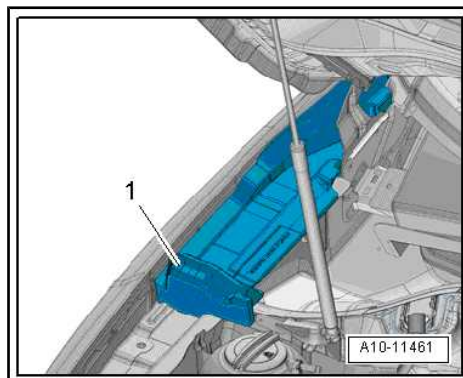
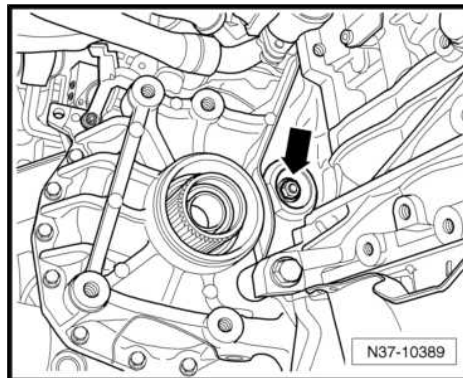
- Remove 6 torque converter nuts -arrow- through opening using socket - V/175- . When doing so, counterhold at starter ring gear with a screwdriver.



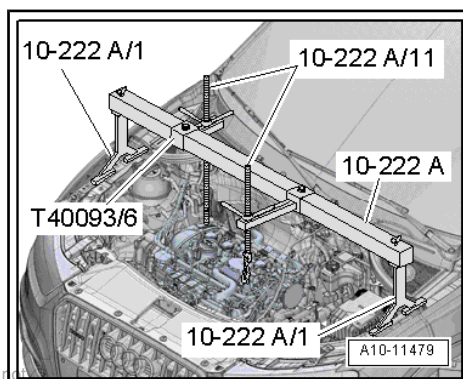
Note

Use the appropriate commercially available tools to continue rotating engine at pulley.

- Remove bolts (bottom) securing gearbox to engine, with exception of bolt underneath opening for drive shaft (right-side) ⇒ [page 89](#) .
- Lower vehicle.
- Unclip sealing element -1- on both sides using removal lever - 80 - 200- .



- Set up support bracket - 10 - 222 A- with racks - 10 - 222 A / 1- on wing mounting flanges, as shown in illustration.



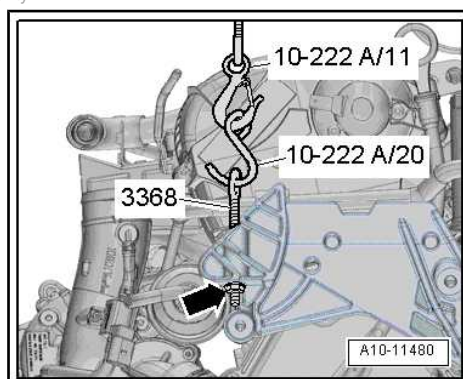
- Engage hook of spindle (left-side) in engine lifting eye.



WARNING

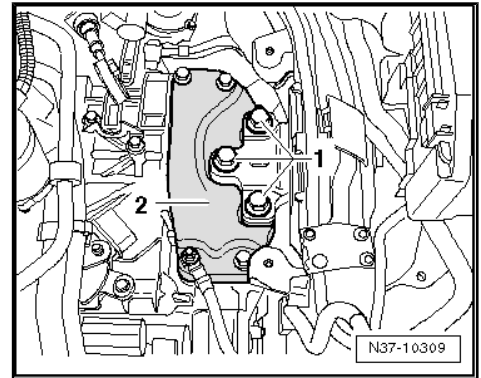
Risk of accident if threaded attachment comes loose.

- ◆ To ensure that the eye-head bolt - 3368- is securely attached, screw on a flange nut or nut with washer -arrow- at least 6 turns.



- Secure eye-head bolt - 3368- with M10 flange nut or nut with washer to engine support as shown in illustration.
- Hook spindle - 10 - 222 A / 11- with adapter - 10 - 222 A / 20- (right-side) onto eye-head bolt - 3368- .
- Take up weight of engine/gearbox assembly evenly with both spindles; do not lift.

- Remove bolts -1- securing gearbox mounting to gearbox bracket.



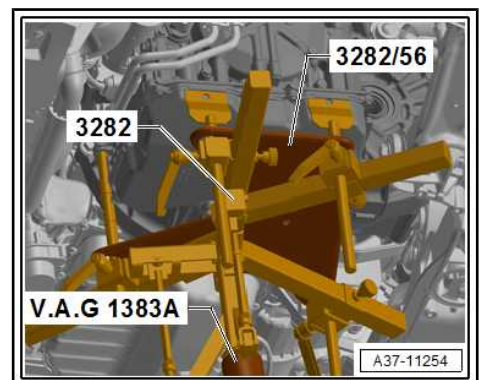
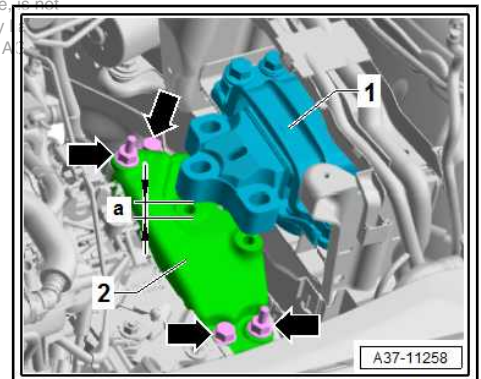
- Lower engine/gearbox assembly using left-hand spindle of support bracket -10- 222 A- until distance -a- is obtained between gearbox bracket -2- and gearbox mounting -1-.

- Dimension -a- = 40 ... 45 mm

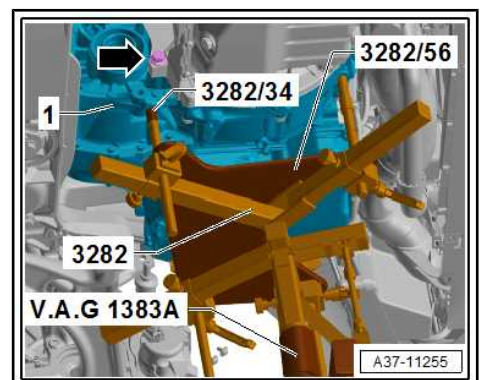
- Unbolt gearbox bracket -2- from gearbox -arrows- and remove.

To remove automatic gearbox 09M, set up gearbox support - 3282- with adjustment plate - 3282/56- and fit onto engine and gearbox jack - V.A.G 1383 A- .

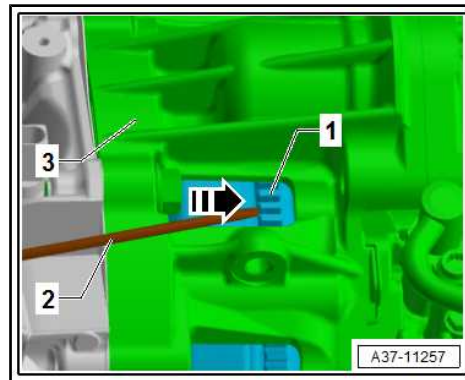
- Align arms of gearbox support according to holes in adjustment plate - 3282/56- .
- Secure support elements as illustrated on adjustment plate - 3282/56- .
- Place engine and gearbox jack - V.A.G 1383 A- underneath gearbox.
- The »arrow symbol« on the adjustment plate - 3282/56- points in the direction of travel.



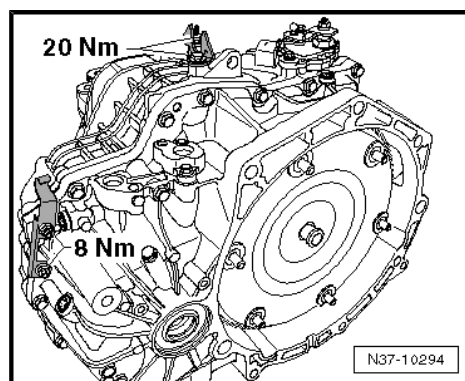
- Screw pin - 3282/34- into gearbox.
- Support gearbox by lifting from underneath with engine and gearbox jack - V.A.G 1383 A- .
- Remove final bolt -arrow- securing engine to gearbox.



- Press gearbox -3- off engine; to do so, press torque converter -1- against gearbox in direction of -arrow- using a screwdriver -2- or similar tool.
- Carefully lower gearbox, making sure there is sufficient clearance from other components.
- Secure torque converter to prevent it from falling out
⇒ [page 94](#) .



- If installing a new gearbox, transfer any attached parts to new gearbox where appropriate.
- ◆ Starter with bracket for wiring harness
- ◆ Support bracket for selector lever cable
- ◆ Bracket for selector lever cable



6.2 Installing gearbox



Note

- ◆ *The special tools required are listed in the procedure for ⇒ [“6.1 Removing gearbox”, page 66](#) .*
- ◆ *Renew bolts which are tightened by turning through a specified angle.*
- ◆ *Renew self-locking nuts and bolts, and O-rings, seals, and gaskets.*
- ◆ *Secure all hose connections with the correct hose clips (as original equipment); refer to ⇒ *Electronic parts catalogue* .*
- ◆ *Re-attach all cable ties at the same locations when re-installing.*

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

- Tightening torques
⇒ [“6.3 Tightening torques for gearbox”, page 92](#)
- If no dowel sleeves for aligning engine/gearbox centrally are in the cylinder block, install dowel sleeves ⇒ [page 92](#) .

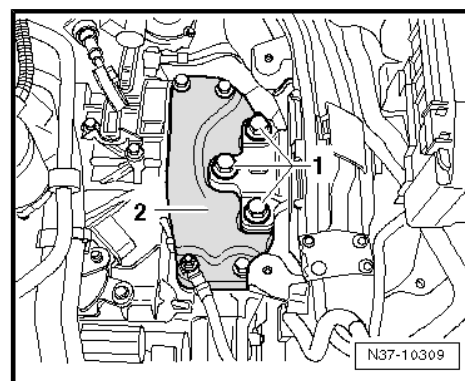
Make sure that torque converter is fitted correctly ⇒ [page 14](#) . You must be able to turn it by hand easily and its insertion depth in the gearbox must be even all around.

- Carefully raise gearbox using engine and gearbox jack - V.A.G 1383 A- and position correctly using gearbox support - 3282- .
- Join gearbox to engine, taking care not to trap wiring or other connections.

 Note

- ◆ *It should be possible to bring the engine and gearbox together by hand so that the two flanges make contact all round.*
- ◆ *If this is not the case, readjust the gearbox support so that the engine and gearbox are fully in line.*
- ◆ *Carefully turn engine while gearbox is being guided onto engine. Starter ring gear can be held in place from outside with a screwdriver. This allows studs of torque converter to locate in holes in drive plate.*

- Secure gearbox to engine and torque converter to drive plate.
- Detach gearbox support - 3282- from gearbox.
- Bolt gearbox bracket -2- onto gearbox.
- Raise engine/gearbox assembly via spindles of support bracket - 10 - 222 A- .
- Align engine/gearbox assembly in installation position. To do so, raise engine/gearbox assembly until gearbox makes full contact with gearbox mounting.
- Screw in bolts -1- initially hand-tight.
- Check adjustment of assembly mountings. Adjust assembly mountings if necessary ⇒ Rep. gr. 10 ; Assembly mountings; Adjusting assembly mountings .



WARNING

Risk of accident.

- ◆ *Do not remove support bracket - 10-222 A- until all bolts securing the engine/gearbox mountings have been tightened to the specified torque.*

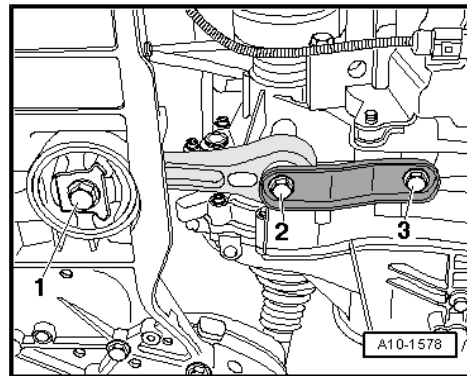
Vehicles with four-wheel drive

- Install bevel box ⇒ [page 62](#) .

Continued for all vehicles

- Install drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Install heat shield for drive shaft (if fitted) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .

- Install pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings .
- Install wheel spoilers (front) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Perform stress-free alignment of exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Stress-free alignment of exhaust system .
- Install air pipes and air hoses ⇒ Rep. gr. 21 ; Charge air system; Exploded view - charge air system .
- Install selector lever cable on gearbox ⇒ [page 22](#) .
- Adjust selector lever cable ⇒ [page 32](#) .
- Install bracket for ATF cooler ⇒ [page 44](#) .
- Electrical connections and routing ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing .
- Observe measures required after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Check coolant level ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .
- Check ATF level after installing ⇒ [page 52](#) .
- Fit wheels ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .
- Perform basic setting. To do so, connect ⇒ Vehicle diagnostic tester and select "Perform basic setting" in Guided Functions mode.



6.3 Tightening torques for gearbox



Note

- ◆ *Tightening torques apply only to lightly greased, oiled, phosphated or black-finished nuts and bolts.*
- ◆ *Additional lubricant such as engine or gear oil may be used, but do not use graphite lubricant.*
- ◆ *Do not use parts which have been degreased.*
- ◆ *Tolerance for tightening torques is $\pm 15\%$.*



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Gearbox to 2.0 ltr. TFSI engine



Note

- ◆ Dowel sleeves in engine are indicated by -arrows-.
- ◆ Note different bolt lengths when removing and installing.
- ◆ Length of bolts may differ from length stated in illustration.

1 - Direction of travel

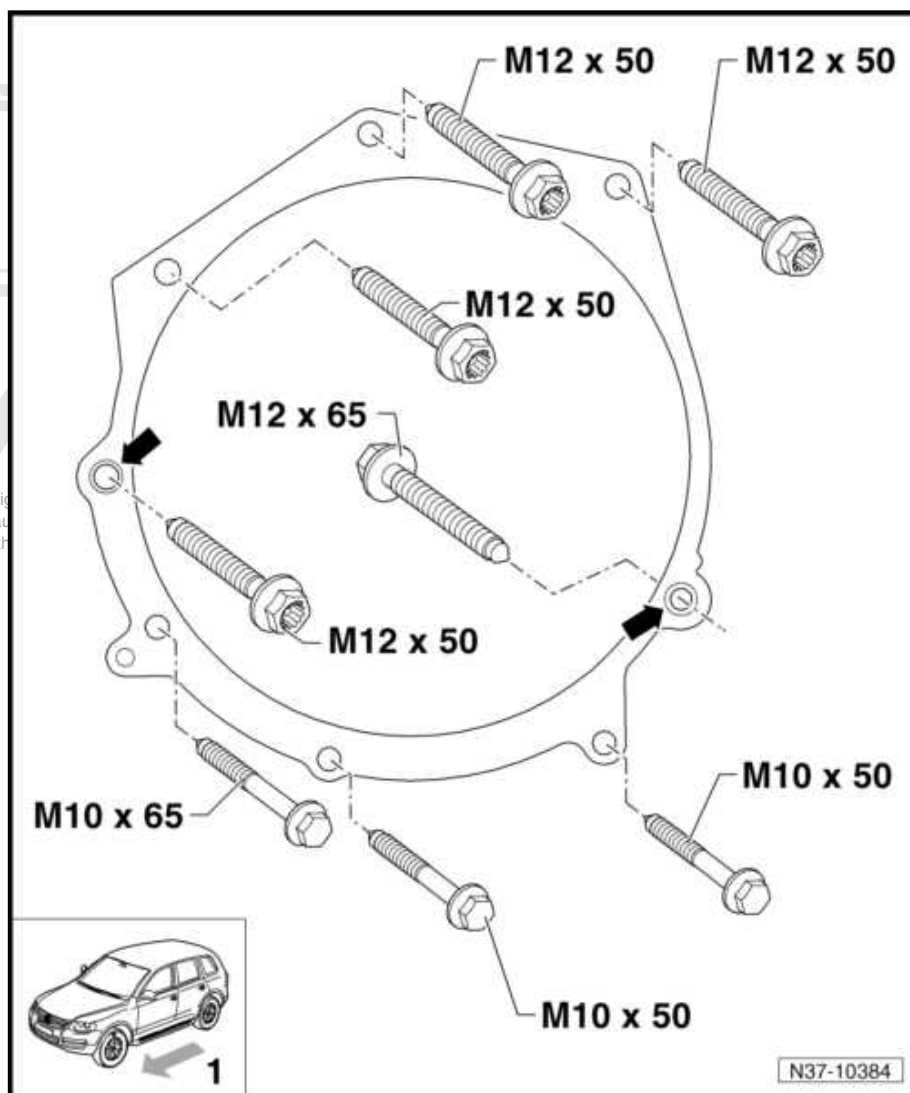
M12 - Bolts

- 80 Nm
- 65 Nm: if using tool insert (18 mm) - T10179-

M10 - Bolts

- These bolts are located in flange (bottom)
- 40 Nm

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Component	Nm
Gearbox bracket to gearbox (use new bolts)	40 +90°
Gearbox bracket to gearbox mounting (use new bolts)	60 +90°
Drive plate to torque converter	60
Earth strap to bolt securing gearbox mounting	25
Bracket for selector lever cable to gearbox	8
Selector cable support bracket to gearbox	20

7 Transporting gearbox

Special tools and workshop equipment required

- ◆ Shackle - 10-222 A/12-

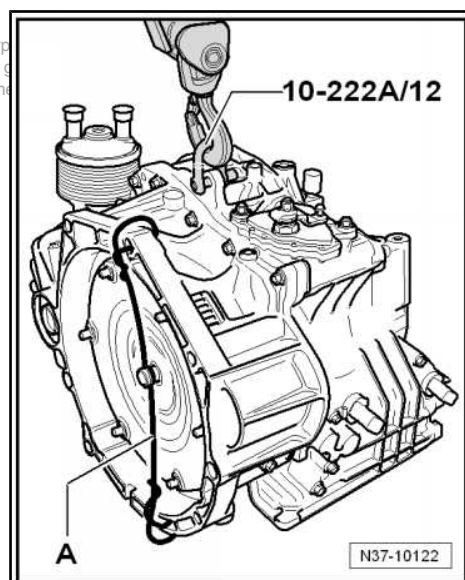


- ◆ Workshop hoist - VAS 6100-



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

- Secure torque converter with a wire -A- or similar when transporting to prevent it falling out.



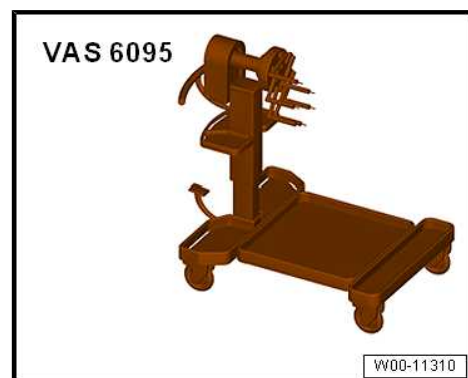
8 Securing to engine and gearbox support

Special tools and workshop equipment required

- ◆ Engine and gearbox support - VW 540-



- ◆ Engine and gearbox support - VAS 6095-

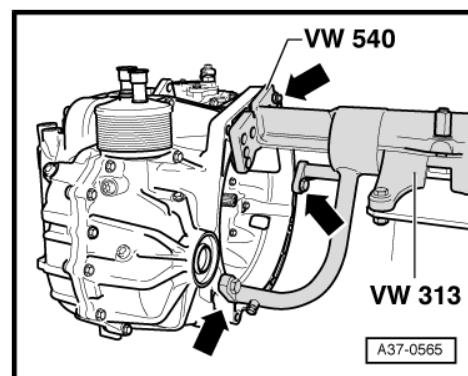


- Secure gearbox to engine and gearbox support - VW 540-arrows- and fit into engine and gearbox support - VAS 6095- .
- You can use workshop hoist - V.A.G 1202 A- to fit gearbox into support clamp => [page 94](#) .



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.

9 Assembly mountings

⇒ "9.1 Exploded view - assembly mountings", page 96

9.1 Exploded view - assembly mountings

1 - Engine support

2 - Bolt

- ☐ Renew
- ☐ Tightening torque ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

3 - Engine mounting

- ☐ With support arm
- ☐ Removing and installing ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

4 - Bolt

- ☐ Renew
- ☐ Tightening torque ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

5 - Bolt

- ☐ Renew
- ☐ Tightening torque ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

6 - Bolt

- ☐ Renew
- ☐ Tightening torque ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

7 - Pendulum support

- ☐ Removing and installing ⇒ Engine, mechanics; Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

8 - Bolt

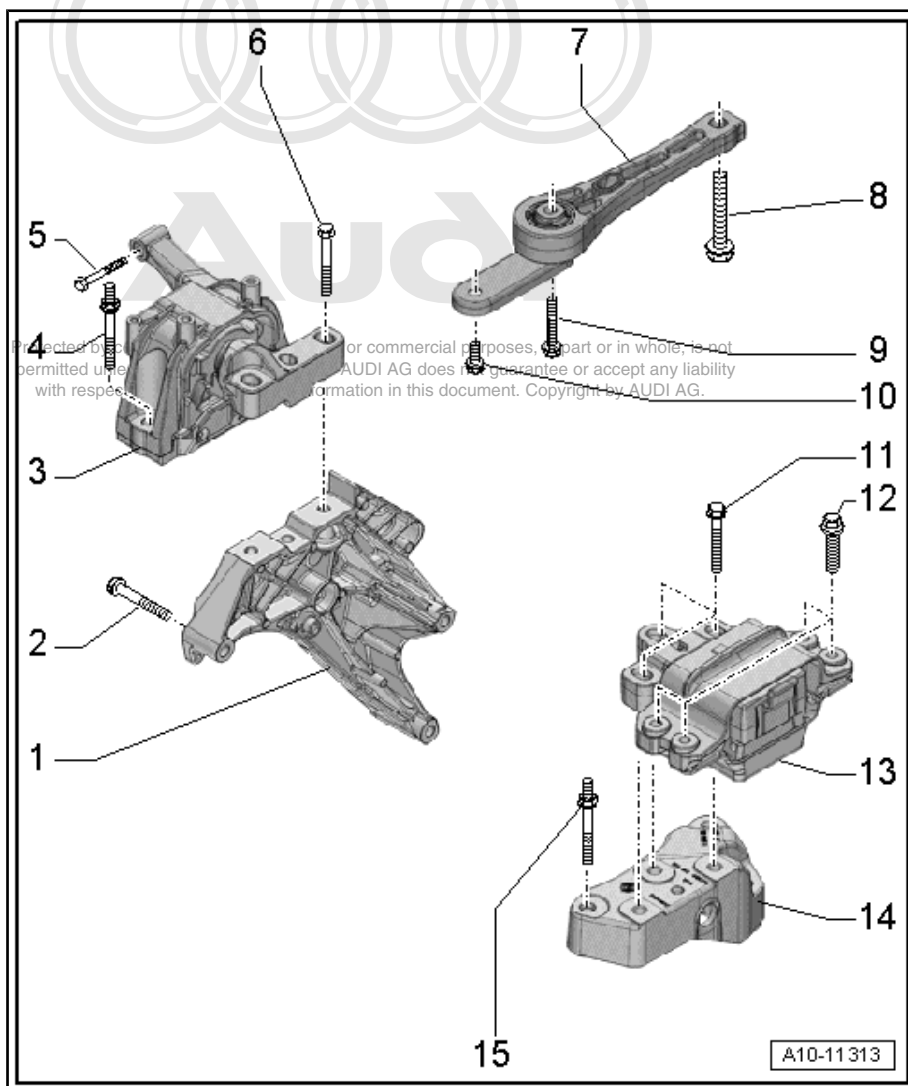
- ☐ 100 Nm + 90°
- ☐ Renew

9 - Bolt

- ☐ 60 Nm + 90°
- ☐ Renew

10 - Bolts

- ☐ 50 Nm + 90°



- ☐ Renew

11 - Bolt

- ☐ 60 Nm + 90°
- ☐ Renew

12 - Bolt

- ☐ 40 Nm + 90°
- ☐ Renew

13 - Gearbox mounting

- ☐ With support arm

14 - Gearbox bracket

- ☐ Different versions available; for correct version refer to ⇒ Electronic parts catalogue

15 - Bolt

- ☐ 40 Nm + 90°
- ☐ Renew



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38 – Gears, control

1 ATF system

⇒ [“1.1 Removing and installing oil pan”, page 98](#)

⇒ [“1.2 Removing and installing ATF strainer”, page 99](#)

1.1 Removing and installing oil pan

Special tools and workshop equipment required

◆ Drip tray for workshop hoist - VAS 6208-

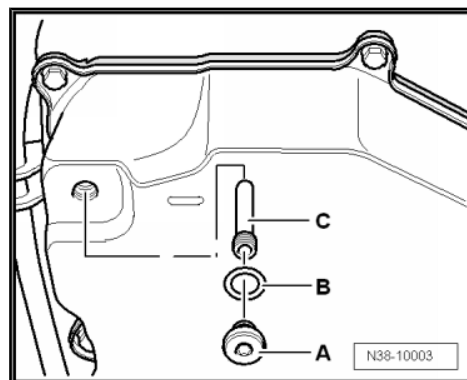


◆ Torque wrench - V.A.G 1783-



Removing:

- Remove noise insulation underneath engine ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Place drip tray for workshop hoist - VAS 6208- underneath.
- Remove ATF inspection plug -A-.
- Unscrew overflow pipe -C- and allow remaining ATF to drain off.



- Loosen bolts on oil pan -arrows- in diagonal sequence.
- Remove oil pan together with gasket.

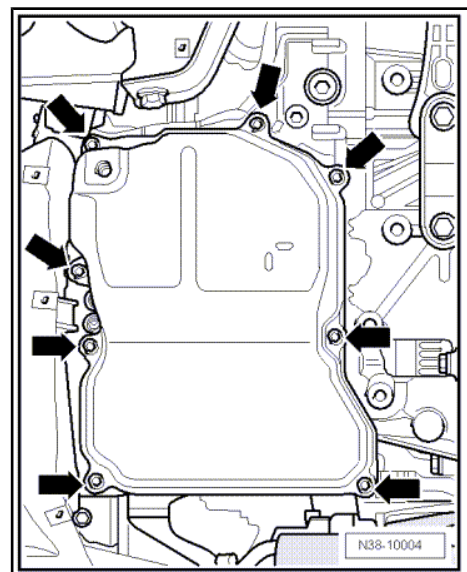
Installing:

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

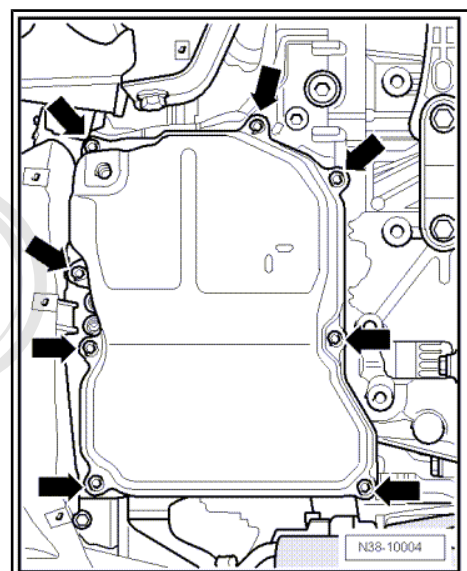
- Clean the two magnets in recesses on oil pan. Ensure that magnets make full contact with oil pan.
- Check gasket for damage. Also check if all spacer bushes are present (8x).

If this is not the case, renew gasket.

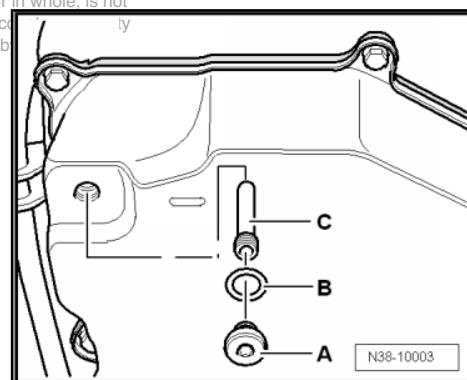
- Fit oil pan with gasket, ensuring that no wiring is trapped.
- Ensure that oil pan gasket is seated correctly.



- Tighten bolts for oil pan -arrows- diagonally in stages
⇒ [page 103](#).



- Screw in overflow pipe -C-.
- Renew seal -B- for ATF inspection plug -A-.
- Fill up with ATF, then check ATF level and top up if necessary
⇒ [page 52](#).



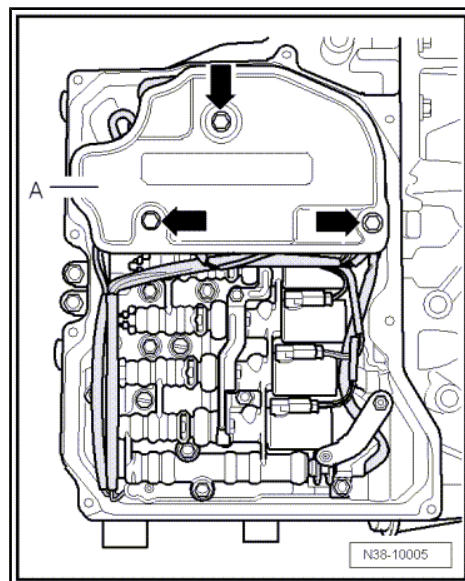
1.2 Removing and installing ATF strainer

- Remove oil pan ⇒ [page 98](#).

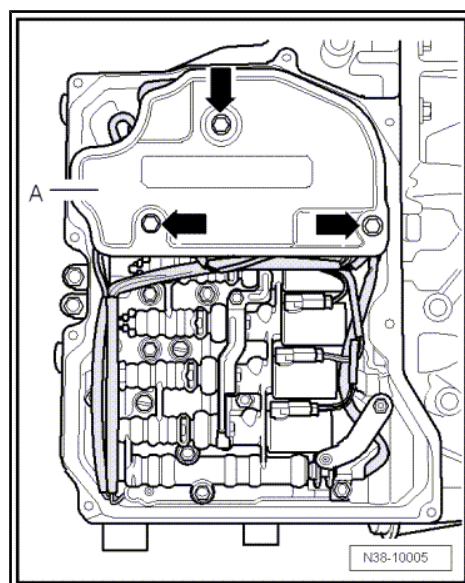
- Remove bolts -arrows- for ATF strainer.
- Detach ATF strainer -A- from valve body.

Installing:

- Apply a thin coating of ATF to seals on intake neck of ATF strainer.
- If seals are loose or defective, ATF strainer must be renewed.



- Fit ATF strainer -A- on valve body and secure bolts -arrows- ⇒ [page 103](#) .
- Install oil pan ⇒ [page 98](#) .
- Fill up with ATF, then check ATF level and top up if necessary ⇒ [page 52](#) .



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2 Valve body

⇒ [“2.1 Exploded view - valve body”, page 101](#)

⇒ [“2.2 Removing and installing valve body”, page 103](#)

⇒ [“2.3 Wiring layout on valve body”, page 109](#)

⇒ [“2.4 Removing and installing wiring harness for solenoid valves and senders”, page 111](#)

⇒ [“2.5 Removing and installing gearbox input speed sender G182”, page 112](#)

⇒ [“2.6 Removing and installing gearbox output speed sender G195”, page 112](#)

2.1 Exploded view - valve body

1 - ATF inspection plug

- ☐ Check and top up ATF level ⇒ [page 52](#)
- ☐ Tightening torque: 27 Nm

2 - Seal

- ☐ Always renew

3 - Overflow pipe

- ☐ Remove to drain ATF
- ☐ Tightening torque: 2 Nm

4 - Oil pan

- ☐ Removing and installing ⇒ [page 98](#)

5 - Bolt

- ☐ Tighten oil pan bolts in several stages and in diagonal sequence
- ☐ Tightening torque: 7 Nm

6 - Gasket

- ☐ With spacer bushes (8x)
- ☐ Check before installing
- ☐ Renew gasket if brittle, cracked or deformed

7 - Magnet

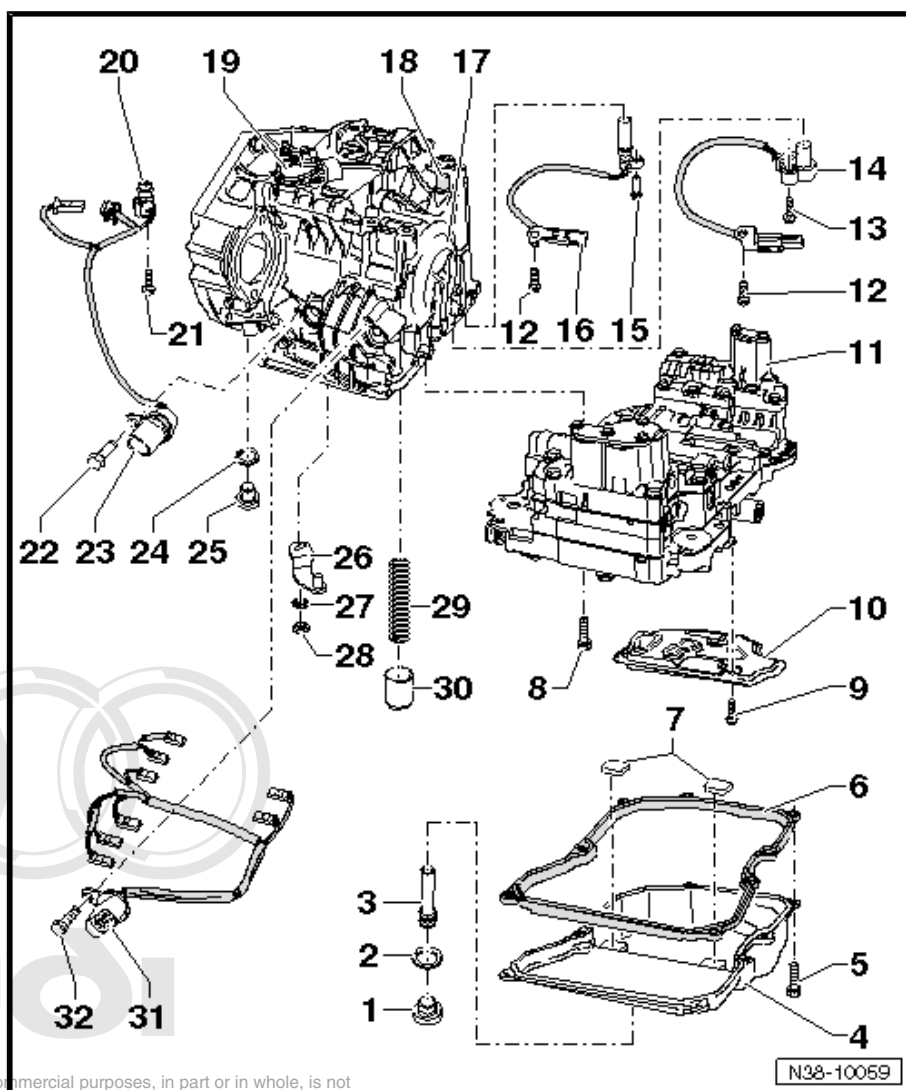
- ☐ In recesses in oil pan (2x)
- ☐ Clean before installing oil pan

8 - Bolt

- ☐ For securing valve body to gearbox
- ☐ 12x, different lengths ⇒ [page 108](#)
- ☐ Always renew bolts
- ☐ Tightening torque: 8 Nm + 90°

9 - Bolt

- ☐ 3x
- ☐ For securing ATF strainer to valve body



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N38-10059

- ☐ Tightening torque: 11 Nm

10 - ATF strainer

- ☐ Removing and installing ⇒ [page 99](#)

11 - Valve body

- ☐ Removing and installing ⇒ [page 103](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue “ETKA”

12 - Bolt

- ☐ Tightening torque: 7 Nm

13 - Bolt

- ☐ Tightening torque: 6 Nm

14 - Gearbox input speed sender - G182-

- ☐ Removing and installing ⇒ [page 112](#)

15 - Bolt

- ☐ Tightening torque: 7 Nm

16 - Gearbox output speed sender - G195-

- ☐ Removing and installing ⇒ [page 112](#)

17 - Gearbox housing

- ☐ Illustrated without ATF cooler

18 - Breather cap

19 - Multifunction switch - F125-

- ☐ Removing and installing ⇒ [page 35](#)
- ☐ Adjusting ⇒ [page 37](#)

20 - Gearbox oil temperature sender - G93-

- ☐ Integrated in wiring harness
- ☐ Tightening torque ⇒ [page 103](#)
- ☐ Removing and installing ⇒ [page 111](#)
- ☐ Wiring layout ⇒ [page 109](#)

21 - Bolt

- ☐ Tightening torque: 6 Nm

22 - Bolt

- ☐ Tightening torque: 6 Nm

23 - Wiring harness for senders

- ☐ With gearbox oil temperature sender - G93-
- ☐ For gearbox input speed sender - G182-
- ☐ For gearbox output speed sender - G195-
- ☐ Always renew seal on connector housing
- ☐ Removing and installing ⇒ [page 111](#)
- ☐ Wiring layout ⇒ [page 109](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue “ETKA”

24 - Seal

- ☐ Always renew

25 - ATF drain plug

- ☐ Tightening torque: 40 Nm

26 - Gearbox selector lever

- ☐ For selector shaft
- ☐ Removing and installing ⇒ [page 103](#)

27 - Washer

28 - Nut

- ☐ Installation position: centring collar points towards washer ⇒ [Item 27 \(page 103\)](#)
- ☐ Tightening torque: 10 Nm

29 - Spring

- ☐ For correct version, refer to ⇒ Electronic parts catalogue "ETKA"

30 - Damper piston

31 - Wiring harness for solenoid valves

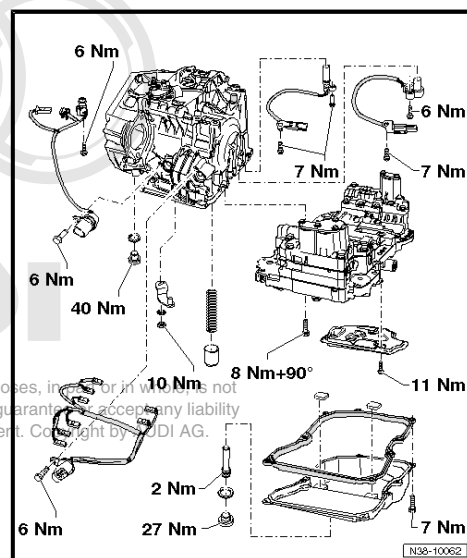
- ☐ Always renew seal on connector housing
- ☐ Removing and installing ⇒ [page 111](#)
- ☐ Wiring layout ⇒ [page 109](#)

32 - Bolt

- ☐ Tightening torque: 6 Nm

Tightening torques

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2.2 Removing and installing valve body



Caution

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

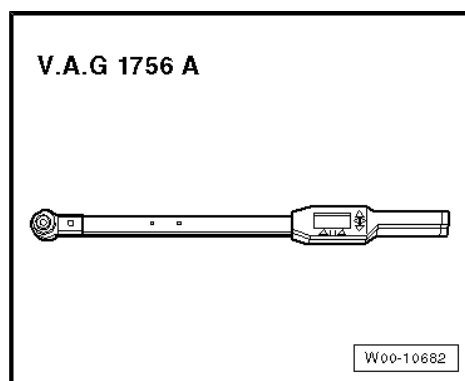
- ◆ The valve body and the wiring harnesses can also be removed when the gearbox is installed in the vehicle.
- ◆ Lubricate seals with ATF. Other types of lubricant will cause the gearbox hydraulics to malfunction.
- ◆ Always renew valve body if it has collected dirt or if it is defective.
- ◆ Only use lint-free cloths.
- ◆ After installing oil pan, check ATF level and top up
⇒ [page 52](#).

Special tools and workshop equipment required

◆ Torque wrench - V.A.G 1331-



◆ Torque wrench - V.A.G 1756 A-



Removing:

- Remove oil pan ➔ [page 98](#) .
- Remove ATF strainer ➔ [page 99](#) .

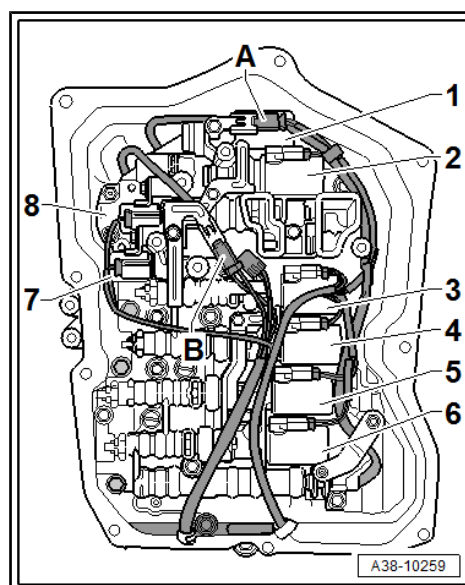


Caution

If a connector is damaged, wiring harness/valve body with solenoid valves must be renewed.

- Unplug connectors from solenoid valves -1 to 8-.

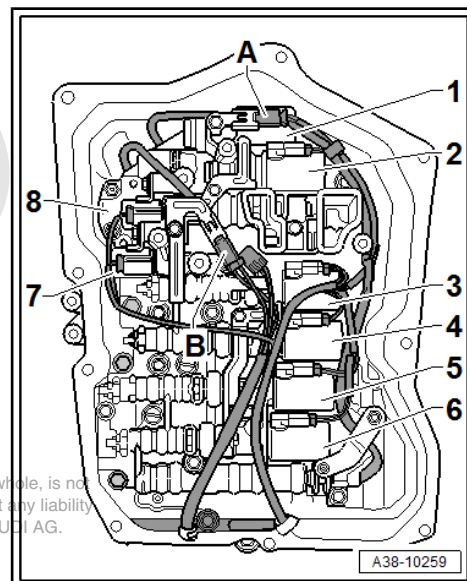
A flat-bladed screwdriver with a diameter of 2.5 mm is suitable for releasing the connector housings on the solenoid valves.



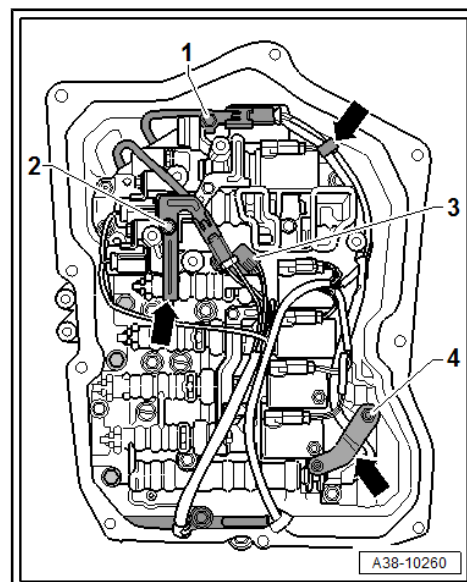
- Unplug connectors -A and B-.



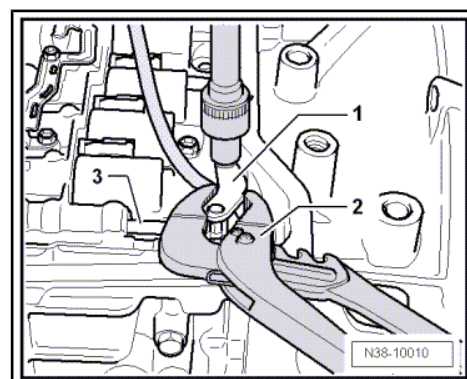
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- Remove bracket for connectors -1 and 2-.
- Unbolt gearbox oil temperature sender - G93- -3- and pull it carefully out of valve body.
- Detach gearbox selector lever -4- at selector shaft.



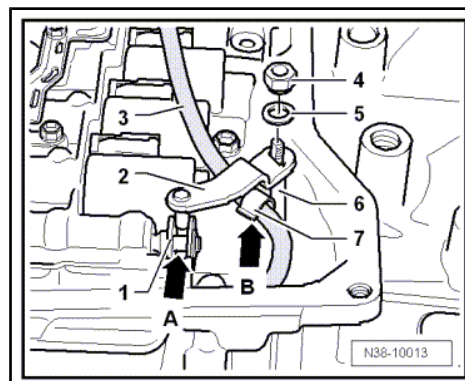
- Hold gearbox selector lever -1- carefully with pliers -2-, so that torque is not transferred to multifunction switch - F125- .



- Ensure that manual selector valve -A- on valve body in which gearbox selector lever engages is not damaged.

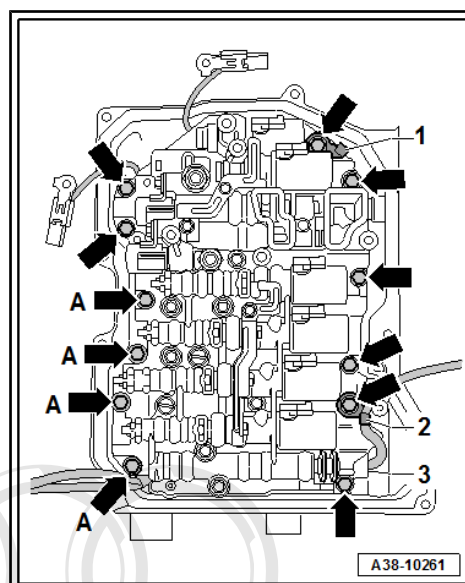
Even the slightest damage to the manual selector valve will cause malfunctions.

- Therefore, always slide manual selector valve into valve body, secure against falling out and never interchange.

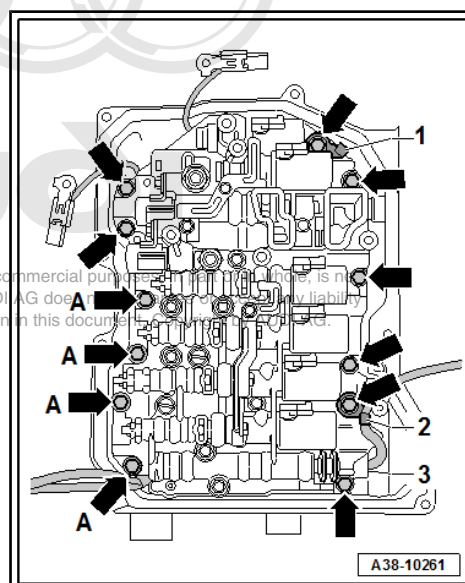


- Loosen the 12 bolts indicated by -arrows-.

If other bolts are loosened, this may affect the operation of the valve body or the valve body could come apart.



- Detach brackets -1- and -2-.
- Unbolt valve body and remove.

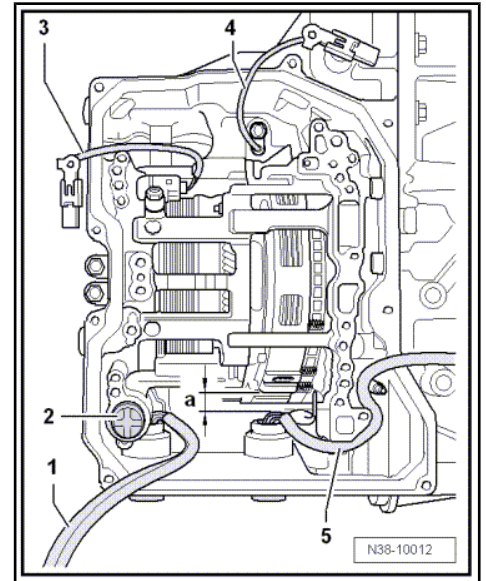


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- Watch out for damper piston -2- when detaching valve body.
- Take out piston with spring.

Installing:

To ensure that no wiring is trapped during installation:

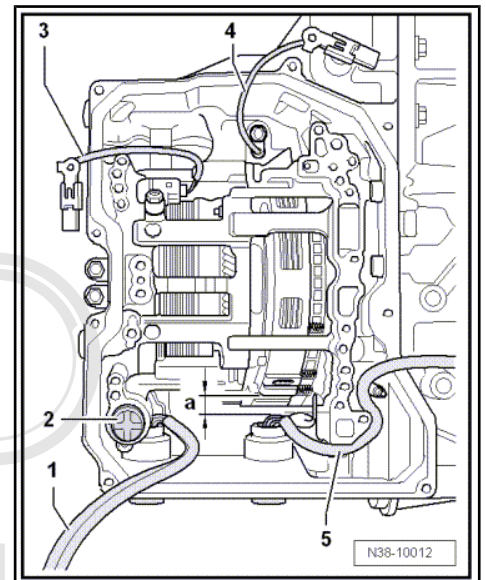


- Route wires -1-, -3-, -4- and -5- (as shown in illustration) and secure.

Distance -a- must be maintained so that, when vehicle is being driven, wiring harness -5- does not contact planetary gearbox and become damaged.

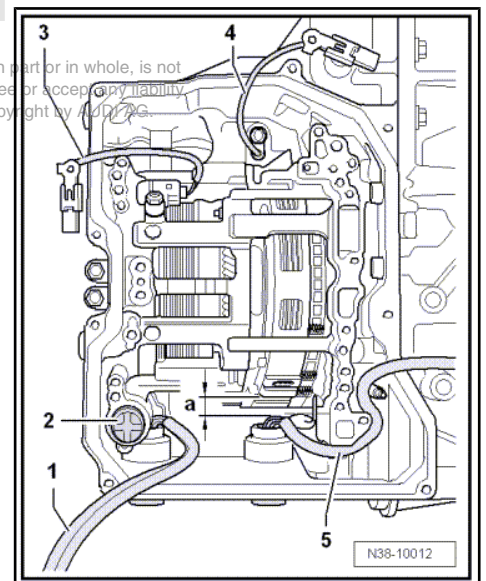
The valve body is secured with bolts of three different lengths.

- Before fitting valve body, group bolts by length.



- Coat damper piston -2- with ATF and insert together with spring.

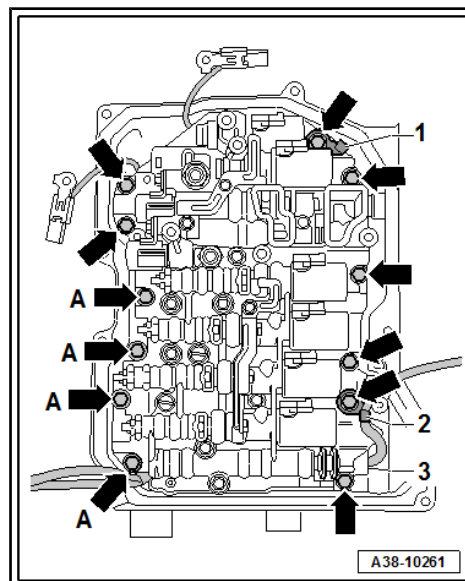
- Insert valve body carefully and fit using two bolts.



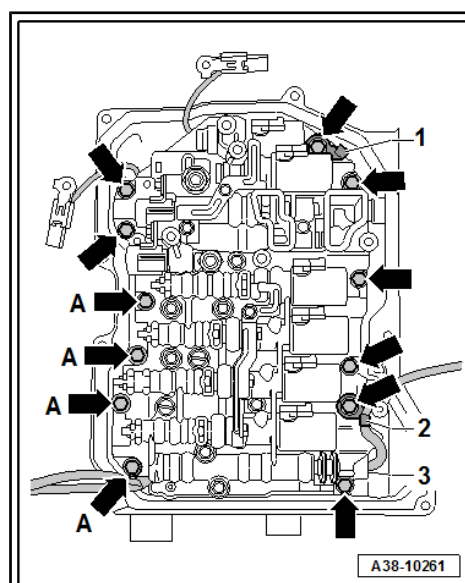
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Bolt lengths and installation position on valve body

- Bolts -arrows- 8 of type M 6×21
- Bolts -arrows A- 4 of type M 6×28
- Ensure that no wires are trapped.

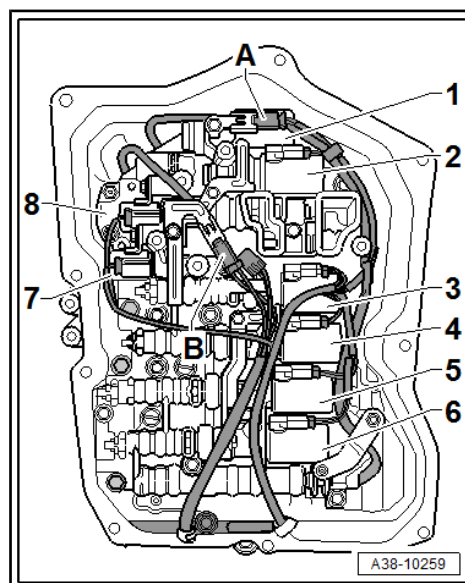


- Install remaining bolts and brackets -1- and -2- and tighten by hand.

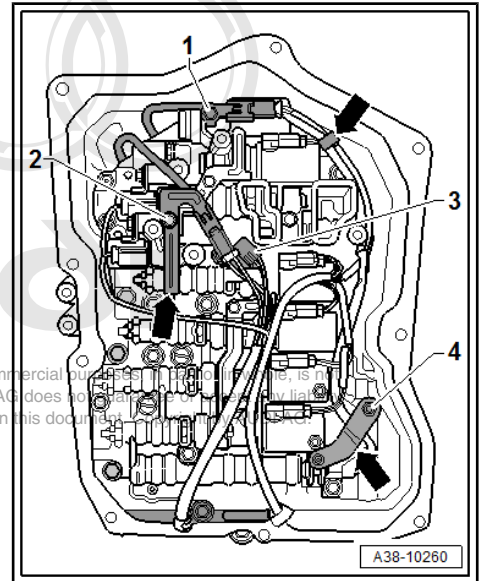


- Fit connectors -A and B- together.
- Plug in connectors -1 to 8- at solenoid valves.

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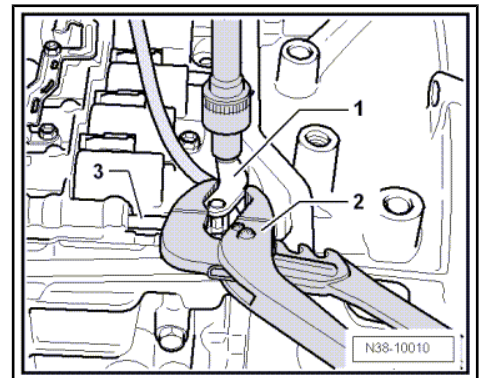


- Install and secure gearbox oil temperature sender - G93- -3-; tightening torque [⇒ page 103](#) .
- Secure bracket for connectors -1 und 2-; tightening torque [⇒ page 103](#) .
- Tighten valve body in diagonal sequence (starting at inside and working outwards); tightening torque [⇒ page 103](#) .
- Install gearbox selector lever.



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- Tighten nut for gearbox selector lever -1-; tightening torque [⇒ page 103](#) .
- Hold gearbox selector lever -1- carefully with pliers -2-, so that torque is not transferred to multifunction switch - F125- .
- Install ATF strainer [⇒ page 99](#) .
- Install oil pan [⇒ page 98](#) .
- Fill up with ATF; check ATF level and top up [⇒ page 52](#) .
- Connect [⇒ Vehicle diagnostic tester](#) and perform basic setting in [\[Guided Functions\]](#) mode.



2.3 Wiring layout on valve body

Wiring layout and connectors

1 - Solenoid valve 4 - N91-

- ☐ Wire colours to valve:
green/brown

2 - Solenoid valve 6 - N93-

- ☐ Wire colours to valve:
green/grey

3 - Solenoid valve 5 - N92-

- ☐ Wire colours to valve:
yellow/violet

4 - Solenoid valve 9 - N282-

- ☐ Wire colours to valve:
red/blue

5 - Solenoid valve 10 - N283-

- ☐ Wire colours to valve:
white/black

6 - Solenoid valve 3 - N90-

- ☐ Wire colours to valve:
green/blue

7 - Solenoid valve 1 - N88-

- ☐ Wire colour to valve:
white

8 - Solenoid valve 2 - N89-

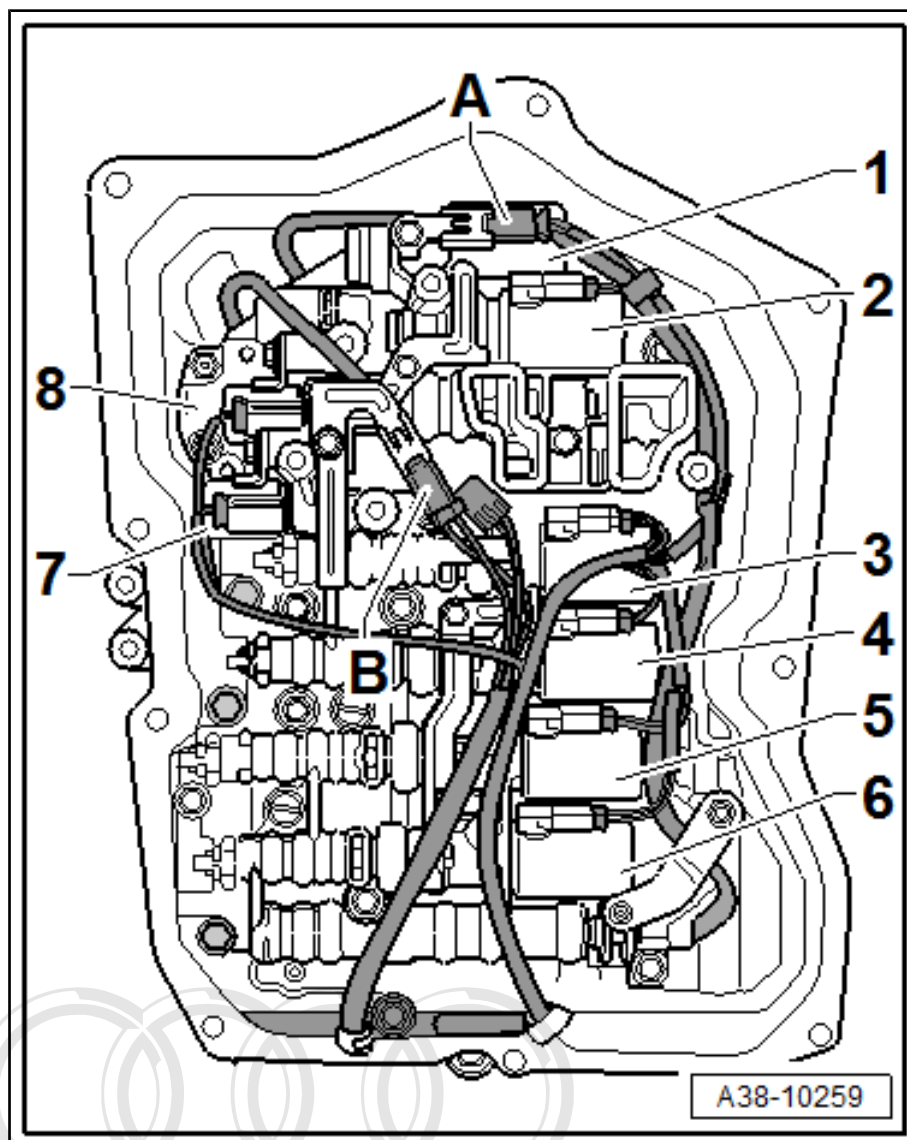
- ☐ Wire colour to valve:
black

A - Connector for gearbox output speed sender - G195-

- ☐ Wire colours to valve:
blue/orange

B - Connector for gearbox input speed sender - G182-

- ☐ Wire colours to valve:
white/red



Brackets for connectors, wiring retainers



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1 - Bracket for connector for gearbox output speed sender - G195-

- Tightening torque
⇒ [page 103](#)

2 - Bracket for connector for gearbox input speed sender - G182-

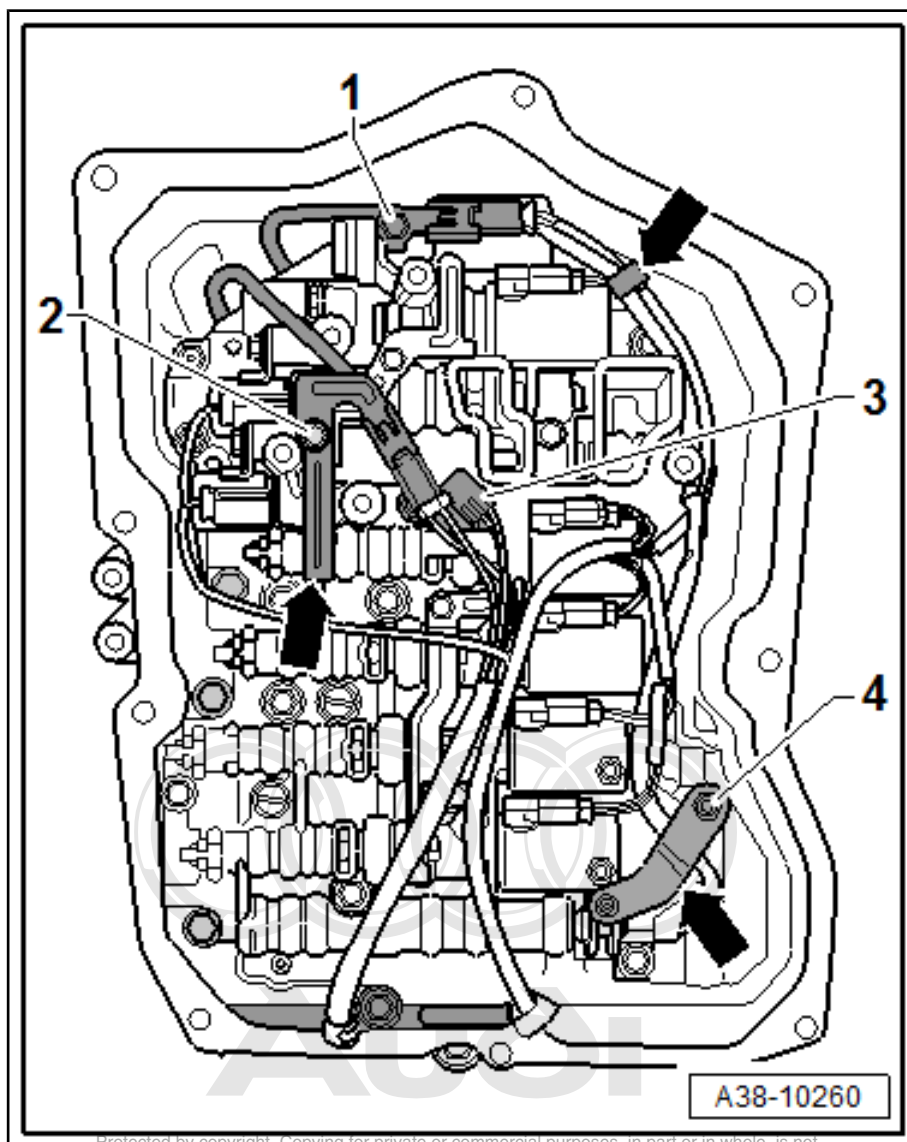
- Tightening torque
⇒ [page 103](#)

3 - Gearbox oil temperature sender - G93-

- Wire colours on sender:
orange/orange

4 - Gearbox selector lever

- Tightening torque
⇒ [page 103](#)



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2.4 Removing and installing wiring harness for solenoid valves and senders

Removing:

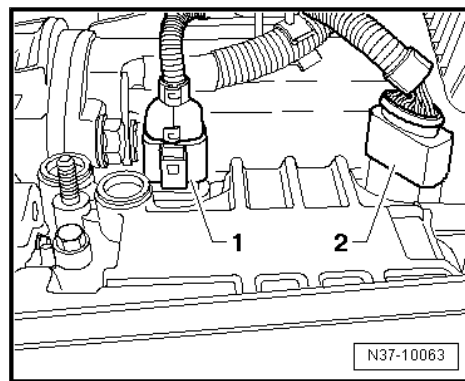
- Drain ATF ⇒ [page 52](#) .
- Remove oil pan ⇒ [page 98](#) .
- Remove ATF strainer ⇒ [page 99](#) .
- Remove valve body ⇒ [page 103](#) .
- Unplug connector from gearbox.
- 1- Connector for senders in gearbox

-2- Connector for solenoid valves

- Unbolt connector housing from gearbox.
- Pull connector housing outwards out of gearbox housing with wiring harness.

Installing:

- Renew seal on connector housing.
- Guide wiring harness carefully into gearbox from outside.
- Coat seal on connector housing with ATF and press connector housing into gearbox as far as it will go.
- Secure connector housing; tightening torque ⇒ [page 103](#) .
- Install valve body ⇒ [page 103](#) .
- Install ATF strainer ⇒ [page 99](#) .
- Install oil pan ⇒ [page 98](#) .
- Fill up with ATF; check ATF level and top up ⇒ [page 52](#) .



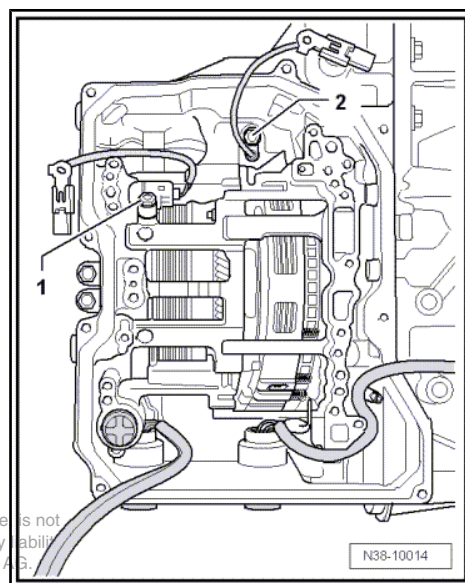
2.5 Removing and installing gearbox input speed sender - G182-

Removing:

- Remove valve body ⇒ [page 103](#) .
- Remove bolt -1- from gearbox input speed sender - G182- .
- Pull sender out of gearbox.

Installing:

- Press sender into gearbox as far as stop.
- Tighten bolt -1- for gearbox input speed sender - G182- ; tightening torque ⇒ [page 103](#) .
- Install valve body ⇒ [page 103](#) .



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2.6 Removing and installing gearbox output speed sender - G195-

Removing:

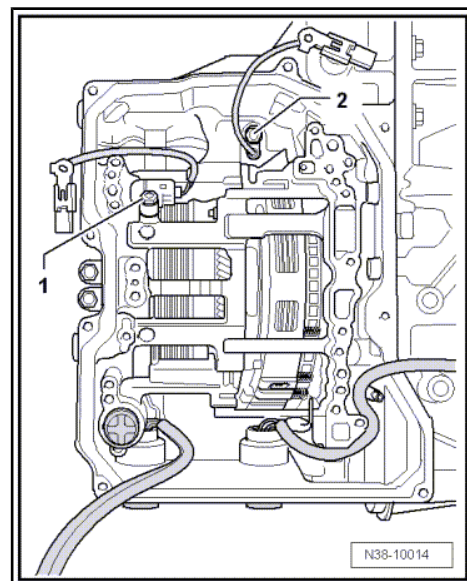
- Remove valve body ⇒ [page 103](#) .

- Remove bolt -2- from gearbox output speed sender - G195- .
- Pull sender out of gearbox.

Installing:

- Press sender into gearbox as far as stop.
- Tighten bolt -2- for gearbox output speed sender - G195- ;
tightening torque ⇒ [page 103](#) .
- Install valve body ⇒ [page 103](#) .

Tightening torques ⇒ [page 103](#)



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39 – Final drive - differential

1 Bevel box

⇒ "1.1 Exploded view - bevel box", page 114

⇒ "1.2 Renewing oil seals for bevel box", page 115

1.1 Exploded view - bevel box

1 - Oil seal

- ☐ On bevel box (left-side) between gearbox and bevel box
- ☐ Before renewing, remove bevel box
⇒ [page 59](#)
- ☐ Renewing ⇒ [page 115](#)
- ☐ Also renew inner oil seal
⇒ [Item 2 \(page 114\)](#) if leaking

2 - Oil seal

- ☐ For stub shaft on bevel box (left-side)
- ☐ Before renewing, remove bevel box
⇒ [page 59](#)
- ☐ Renewing ⇒ [page 119](#)
- ☐ Also renew outer oil seal
⇒ [Item 2 \(page 114\)](#) if leaking

3 - Bevel box

- ☐ Removing ⇒ [page 59](#)
- ☐ Installing ⇒ [page 62](#)

4 - Oil seal

- ☐ For stub shaft on bevel box (right-side)
- ☐ Oil seal can be renewed with bevel box in vehicle
- ☐ Renewing ⇒ [page 117](#)

5 - Circlip

- ☐ Renew
- ☐ Fit in annular groove in stub shaft

6 - O-ring

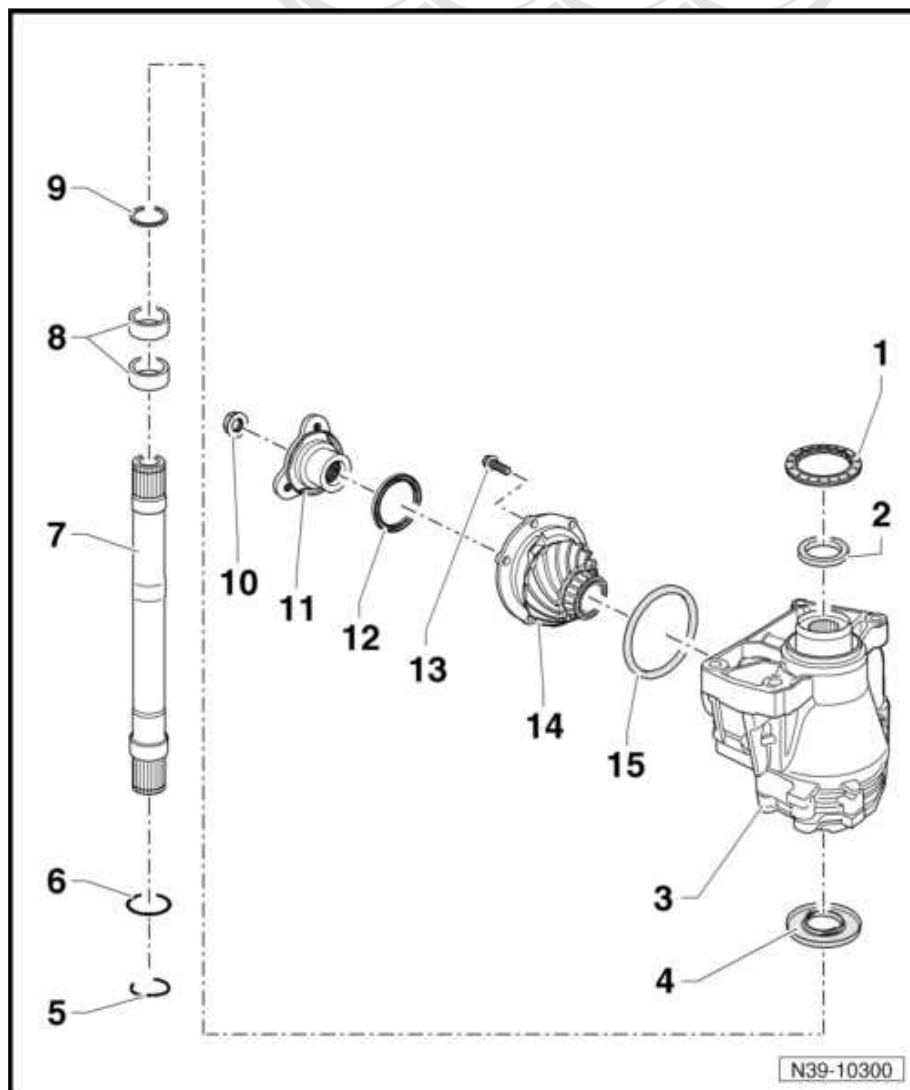
- ☐ Renew
- ☐ Fit in annular groove in stub shaft

7 - Stub shaft (right-side)

- ☐ Before removing/installing, remove bevel box ⇒ [page 59](#)
- ☐ Removing and installing ⇒ [page 127](#)

8 - Needle bearing (polygon bearing)

- ☐ Does not turn easily when stub shaft (right-side) is removed; this does not indicate a fault
- ☐ Acoustic check can only be performed when installed



- ☐ Check for damage such as cracking in outer race
- ☐ Renewing ⇒ [page 127](#)

9 - Circlip

- ☐ Renew after removal

10 - Nut

- ☐ Removing and installing ⇒ [page 122](#)
- ☐ Renew after removal
- ☐ Install with locking fluid; for locking fluid refer to ⇒ Electronic parts catalogue
- ☐ 480 Nm

11 - Output flange

- ☐ For bevel box
- ☐ Removing and installing ⇒ [page 122](#)

12 - Oil seal

- ☐ For output flange on bevel box
- ☐ Before renewing, remove bevel box ⇒ [page 59](#)
- ☐ Renewing ⇒ [page 122](#)

13 - Bolt

- ☐ Tighten diagonally
- ☐ 25 Nm

14 - Pinion housing

- ☐ With shaft bevel gear
- ☐ Pinion housing can only be fitted in one position
- ☐ Installing: Place pinion housing loosely on bevel box, fit all bolts by hand and then tighten bolts alternately

15 - O-ring

- ☐ To renew, unscrew bolts ⇒ [Item 13 \(page 115\)](#) and carefully lever off pinion housing at projecting webs on outside edge
- ☐ Do not remove nut ⇒ [Item 10 \(page 115\)](#) and output flange ⇒ [Item 11 \(page 115\)](#)

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1.2 Renewing oil seals for bevel box

⇒ [“1.2.1 Renewing oil seal between gearbox and bevel box \(on bevel box, left-side\)”, page 115](#)

⇒ [“1.2.2 Renewing oil seal for stub shaft on bevel box \(right-side\)”, page 117](#)

⇒ [“1.2.3 Renewing oil seal for stub shaft on bevel box \(left-side\)”, page 119](#)

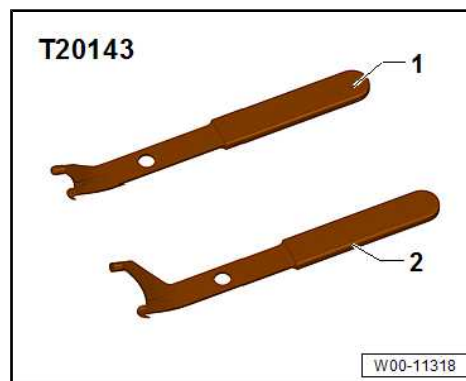
⇒ [“1.2.4 Renewing oil seal for output flange”, page 122](#)

⇒ [“1.2.5 Renewing needle bearings \(polygon bearings\) for stub shaft \(right-side\)”, page 127](#)

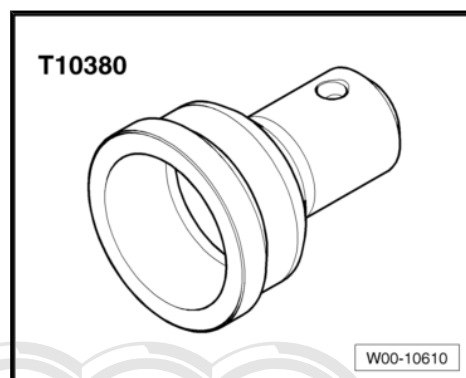
1.2.1 Renewing oil seal between gearbox and bevel box (on bevel box, left-side)

Special tools and workshop equipment required

◆ Extractor tool - T20143-



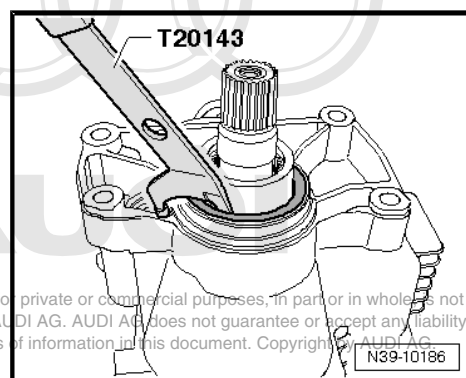
◆ Thrust piece -T10380-



◆ Sealing grease - G 052 128 A1-

Procedure

- Bevel box removed ➔ [page 59](#) .
- Pull oil seal out of bevel box using extractor tool - T20143/1- or - T20143/2- .

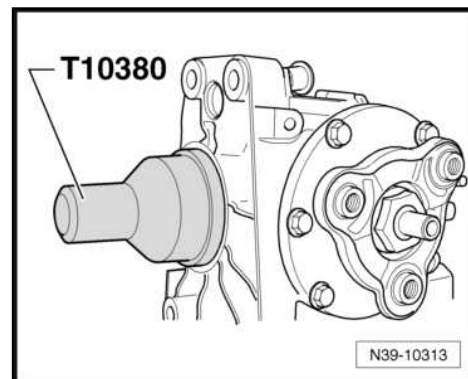


- Lubricate outer circumference of new oil seal with gear oil.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



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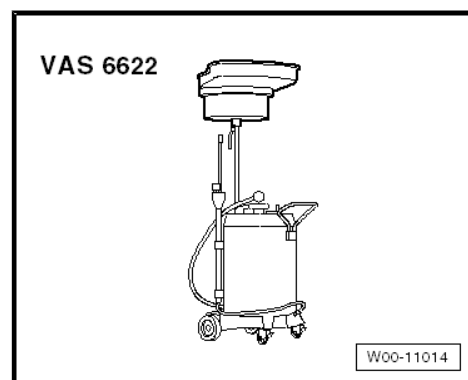
- Drive in oil seal as far as stop using thrust piece - T10380- .
- Install bevel box ⇒ [page 62](#) .
- Check oil level in bevel box ⇒ [page 130](#) .



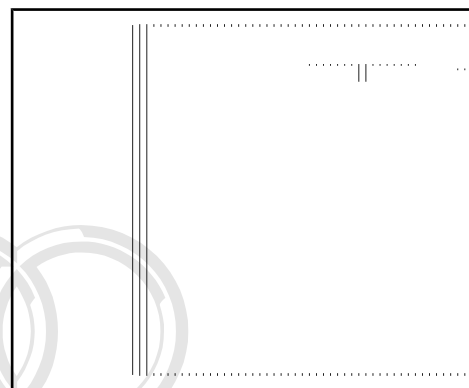
1.2.2 Renewing oil seal for stub shaft on bevel box (right-side)

Special tools and workshop equipment required

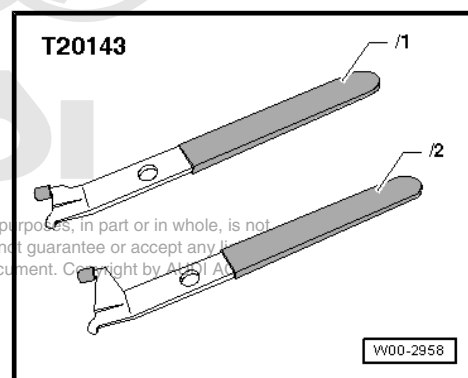
- ◆ Used oil collection and extraction unit - VAS 6622-



- ◆ Thrust piece - T10143-



- ◆ Extractor tool - T20143-



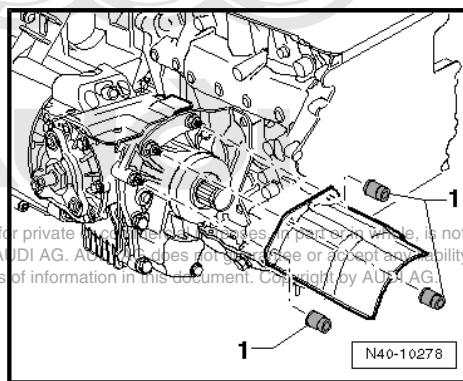
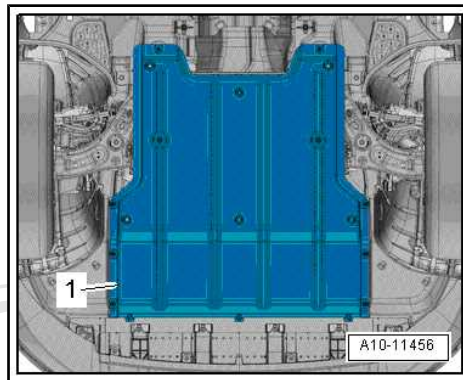
- ◆ Sealing grease - G 052 128 A1-
- ◆ Grease for stub shaft splines ⇒ Electronic parts catalogue

Removing



Note

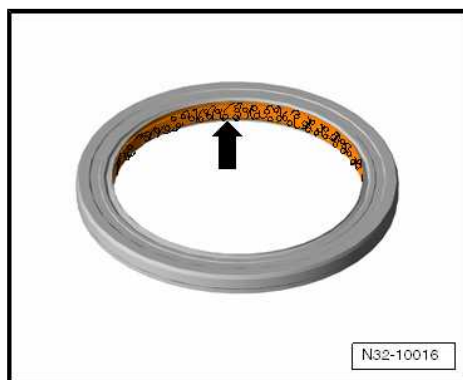
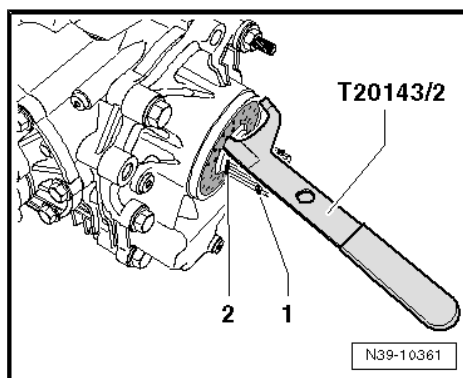
- ◆ *Bevel box must be installed.*
- ◆ *Note ⇒ "3 Repair instructions", page 5 .*
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove drive shaft (right-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Remove nuts -1- and detach heat shield for drive shaft (right-side).
- Place used oil collection and extraction unit - VAS 6622- below bevel box.



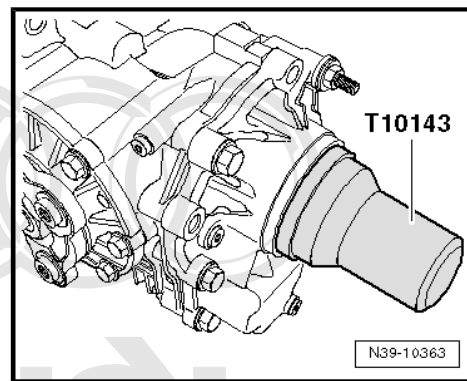
- Detach circlip -1- and O-ring -2- from stub shaft.
- Pry out oil seal.

Installing

- Lightly oil outer circumference of new oil seal.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .

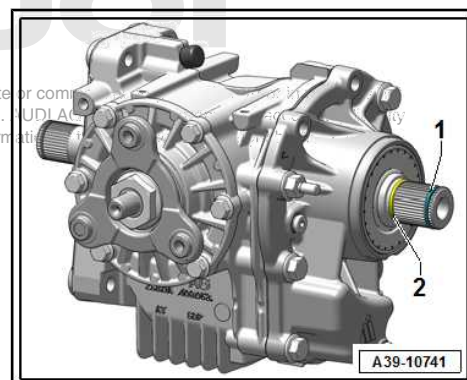


- Drive in oil seal onto stop (take care to keep seal straight).



- Fit new circlip -1- and new O-ring -2-.
- Grease splines of stub shaft.
- Check oil level in bevel box ⇒ [page 130](#)

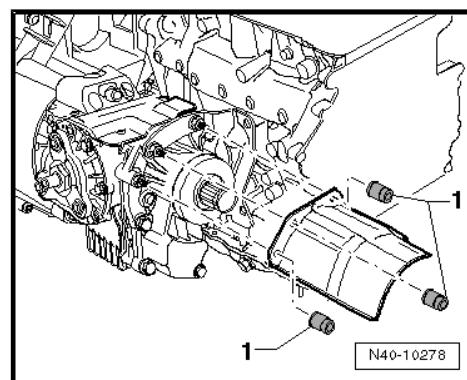
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- Install heat shield for drive shaft (right-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

Tightening torques

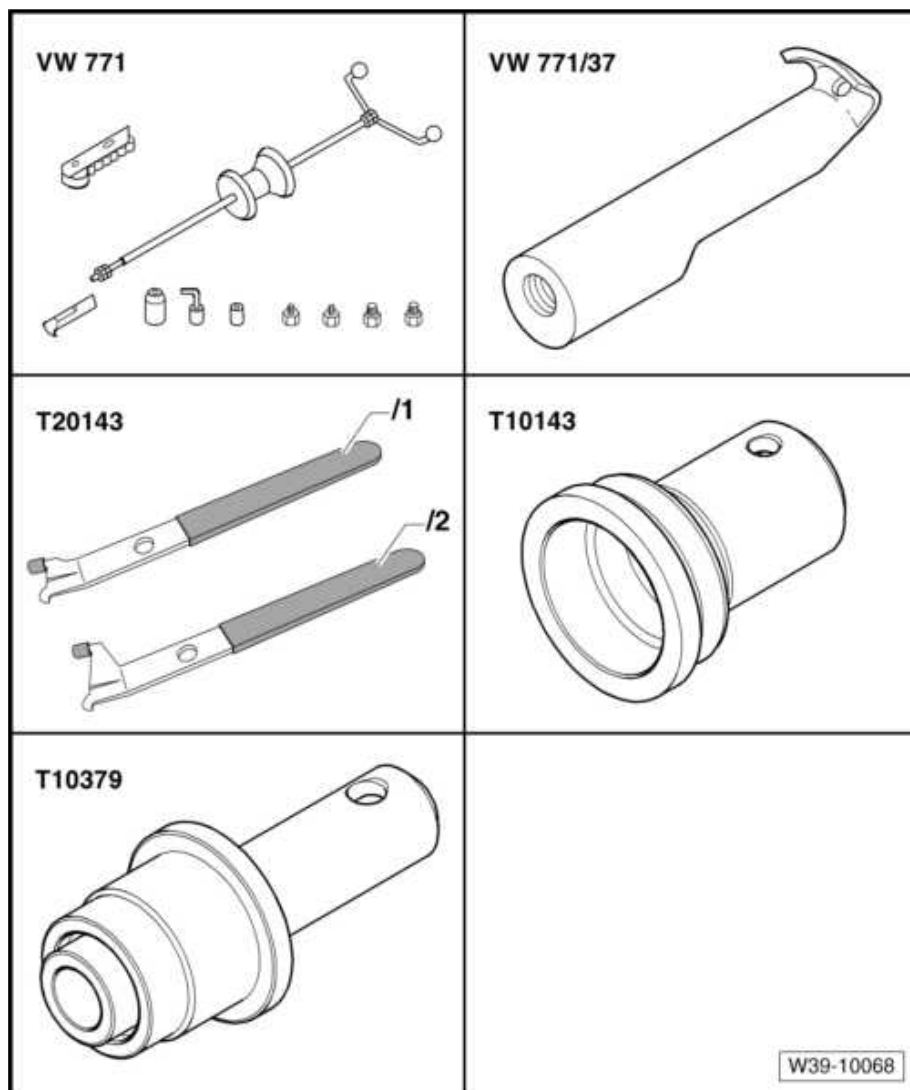
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft



1.2.3 Renewing oil seal for stub shaft on bevel box (left-side)

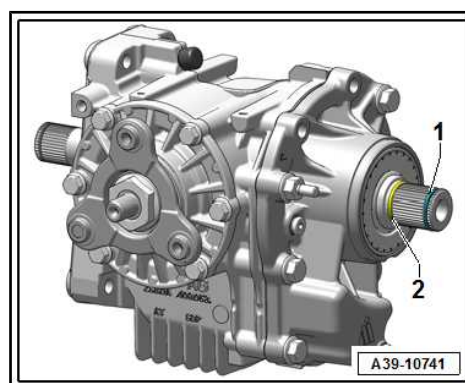
Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor tool - VW 771/37-
- ◆ Extractor tool - T20143-
- ◆ Thrust piece - T10143-
- ◆ Thrust piece - T10379-
- ◆ Grease for stub shaft ⇒ Electronic parts catalogue
- ◆ Sealing grease - G 052 128 A1-



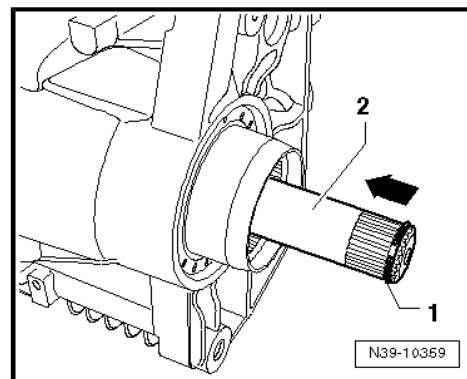
Procedure

- Bevel box removed ⇒ [page 59](#)
- Detach circlip -1- and O-ring -2- from stub shaft.

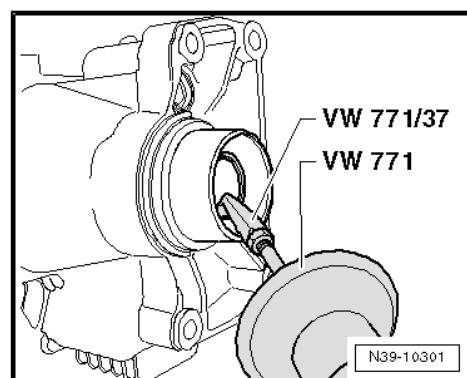


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- Detach circlip -1- from stub shaft -2-.
- Carefully drive out stub shaft using plastic hammer -arrow-.



- Pull out stub shaft oil seal on gearbox side.

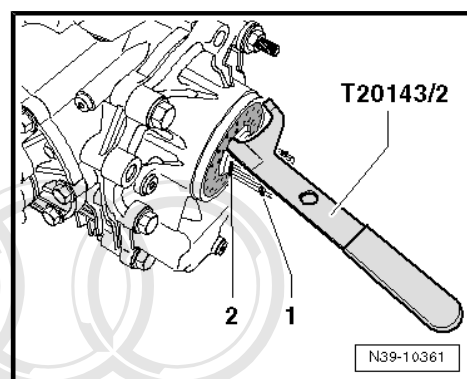


- Lever out stub shaft oil seal on drive shaft side.

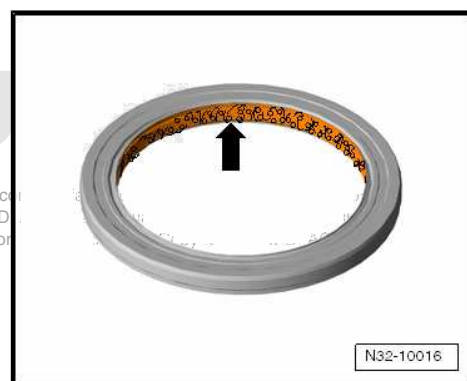


Note

-Items 1 and 2- can be disregarded.

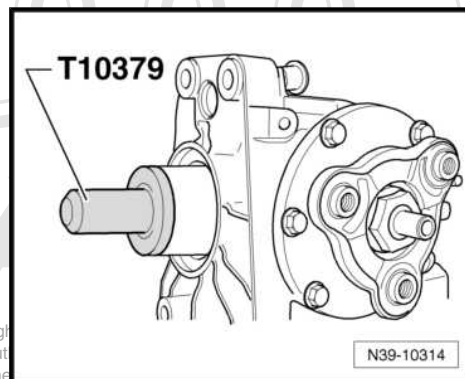


- Lubricate outer circumference of new oil seal with gear oil.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



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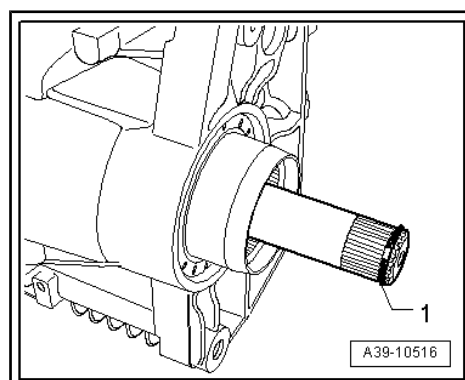
- Drive in oil seal on gearbox side as far as stop.



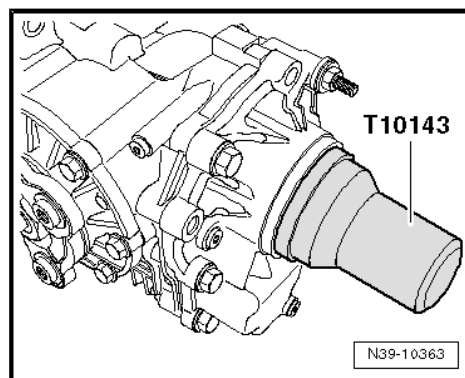
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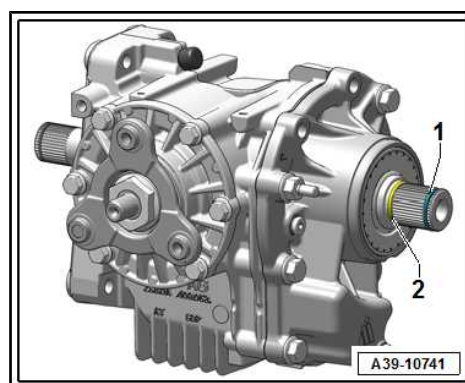
- Carefully drive stub shaft into bevel box as far as stop using plastic hammer.
- Fit new circlip -1- on stub shaft on gearbox side.



- Drive in oil seal on drive shaft side as far as stop.



- Fit new circlip -1- and new O-ring -2-.
- Grease splines of stub shaft.
- Install bevel box ⇒ [page 62](#) .
- Check oil level in bevel box ⇒ [page 130](#) .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



1.2.4 Renewing oil seal for output flange

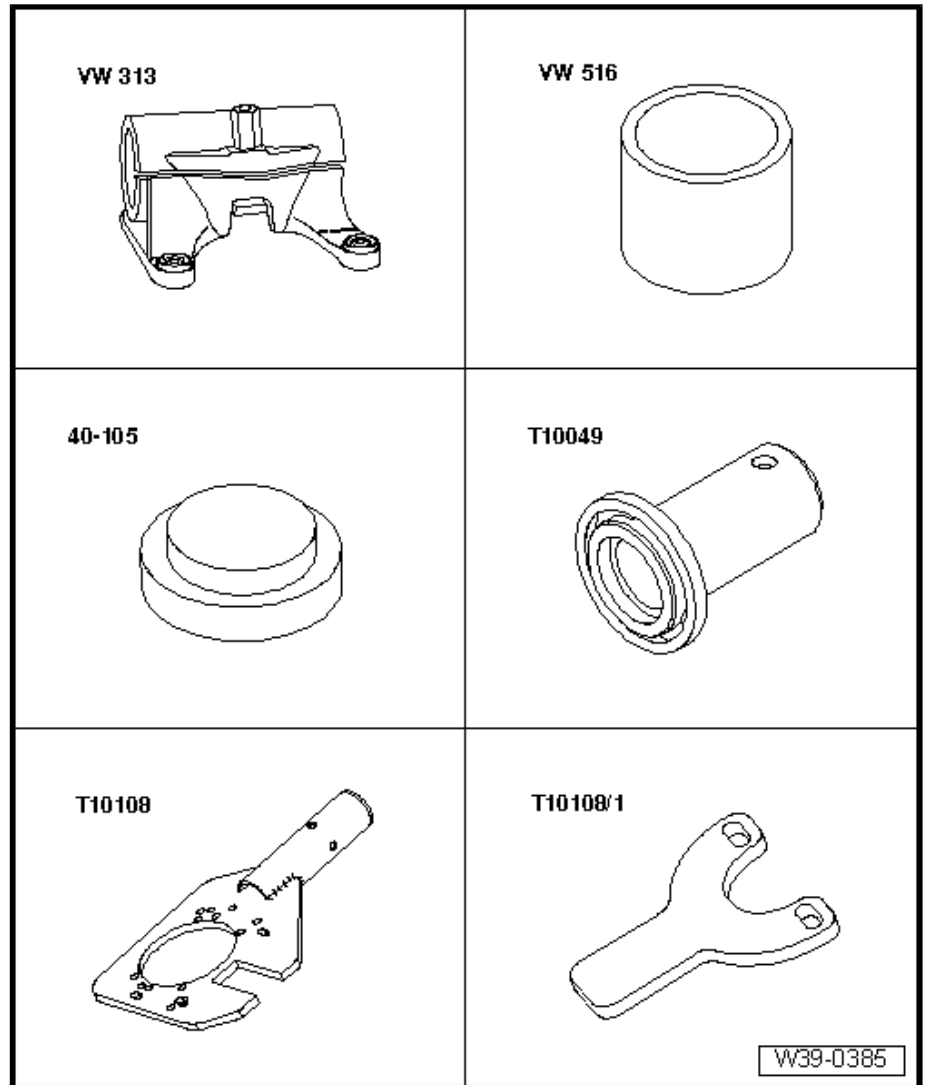


Note

The oil seal can only be renewed with the bevel box removed.

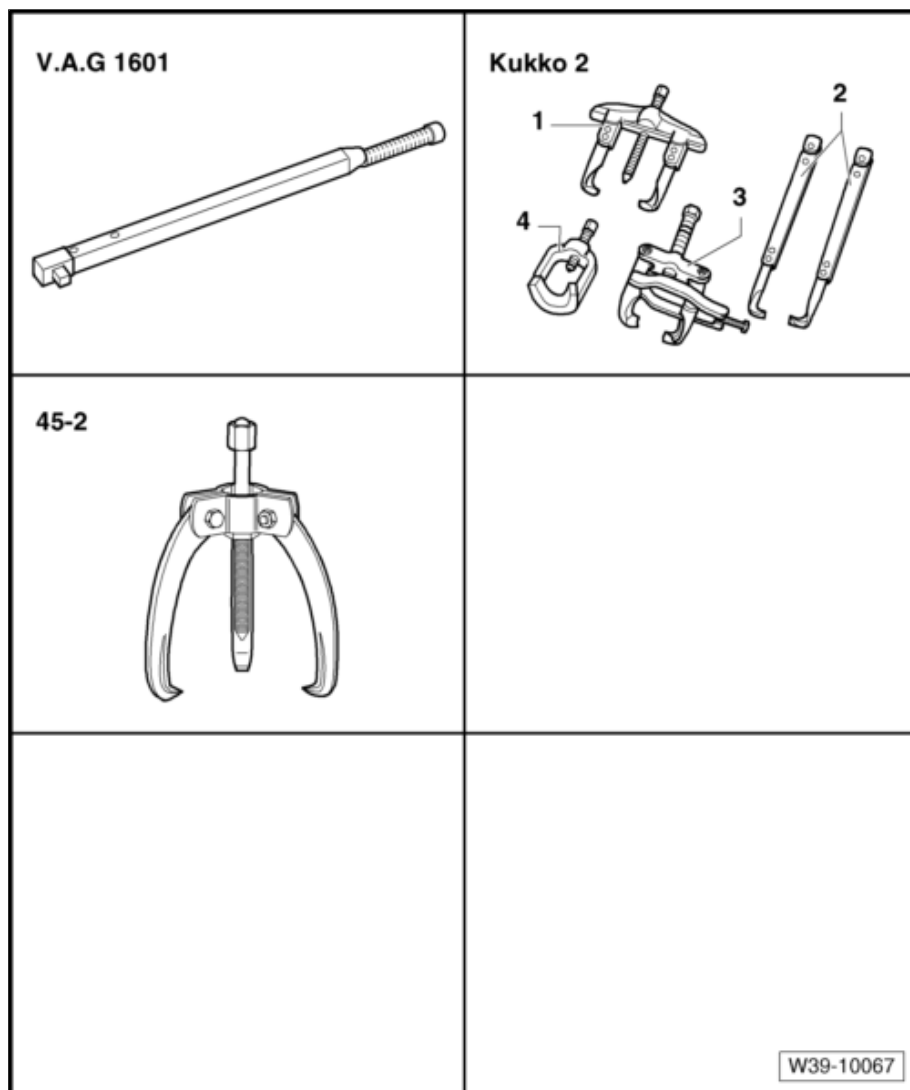
Special tools and workshop equipment required

- ◆ Support clamp - VW 313-
- ◆ Tube - VW 516-
- ◆ Thrust plate - 40-105-
- ◆ Thrust piece - T10049-
- ◆ Gearbox support - T10108-
- ◆ Support plate - T10108/1-

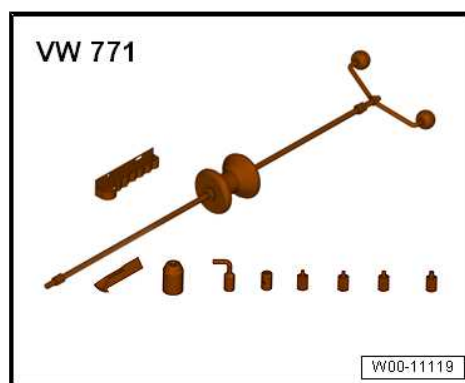


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- ◆ Torque wrench - V.A.G 1601-
- ◆ -1- Two-arm puller - Kukko 20/10-
- ◆ Three-arm puller - Kukko 45-2-



- ◆ Multi-purpose tool - VW 771-



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- ◆ Extractor tool - VW 771/37-



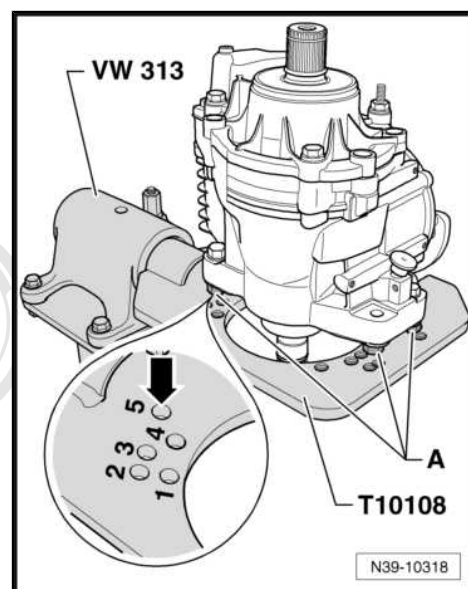
- ◆ Sealing grease - G 052 128 A1-
- ◆ Bolts (2x) M 10 x 30
- ◆ Nuts (4x) M 12 x 10

Removing:

- Remove bevel box → [page 59](#) .
- Place bevel box on hole marked -5- -arrow- in gearbox support - T10108- .

A - Place nuts M 12 x 10 (4x) between bevel box and gearbox support . Nuts function as spacers.

- Then align bevel box with hole opposite and secure.
- Place drip tray for workshop hoist - VAS 6208- underneath.
- Drain gear oil from bevel box.

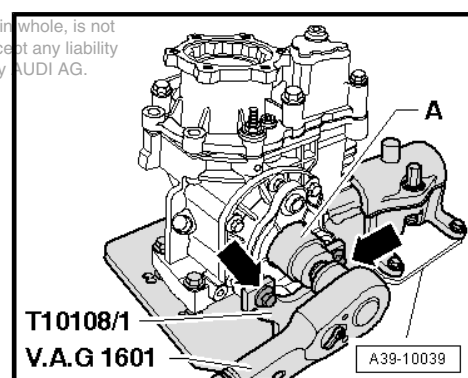


- Lock bevel box output flange with support plate T10108/1 by screwing in M 10 x 30 bolts -arrows-.

- Unscrew hexagon bolt for output flange.

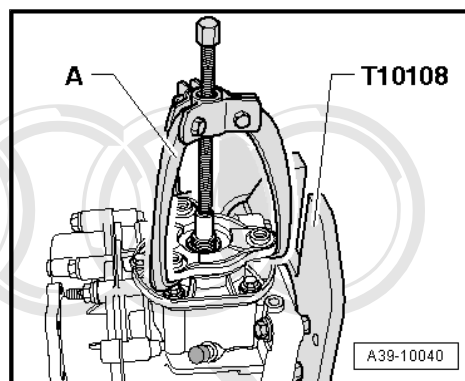
A - 36 mm socket for 3/4" drive

- Swing bevel box so that output flange points upwards.



- Remove output flange from shaft bevel gear of bevel box.

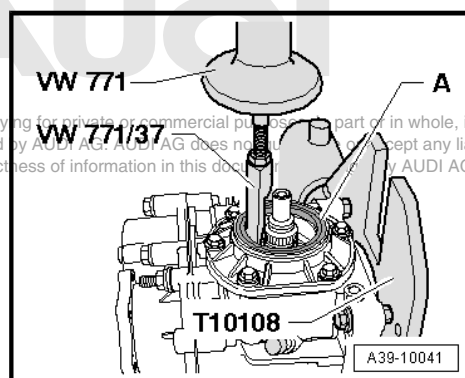
A - Three-arm puller , e.g. -Kukko 45-2-



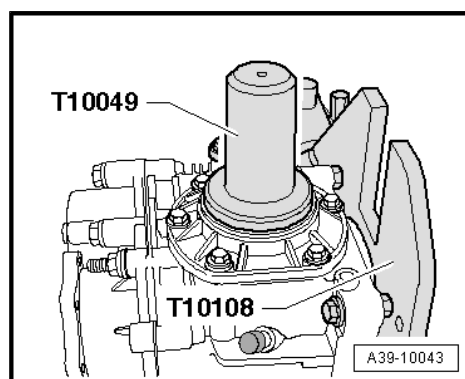
- Pull out oil seal -A- for output flange.
- Clean any residue of locking fluid from thread of shaft bevel gear.

Installing:

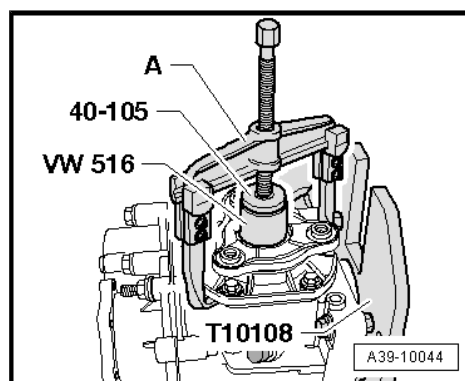
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- Drive in new oil seal as far as stop using thrust piece - T10049- .
- Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .



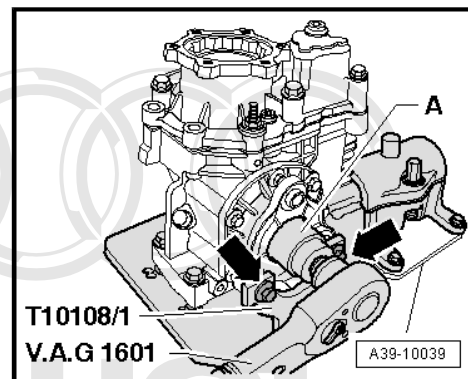
- Pull in output flange using two-arm puller -A-.
- A - Two-arm puller , e.g. -Kukko 20/10-
- Place puller hooks at bottom of pinion housing.
- Coat threads of new hexagon nut with locking fluid D 000 600.



- Tighten new hexagon nut for output flange to specified torque
⇒ [Item 10 \(page 115\)](#) .

A - 36 mm socket for 3/4" drive

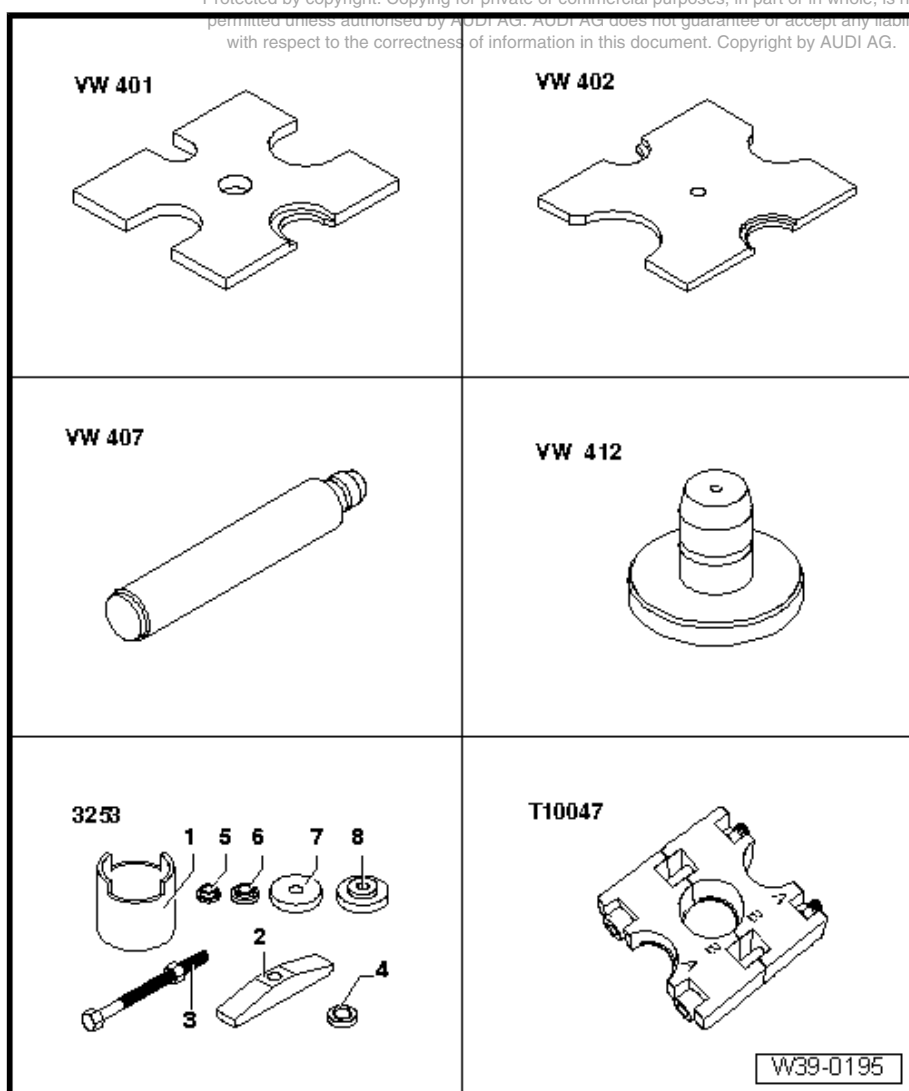
- Install bevel box ⇒ [page 62](#) .
- Check oil level in bevel box ⇒ [page 130](#) .



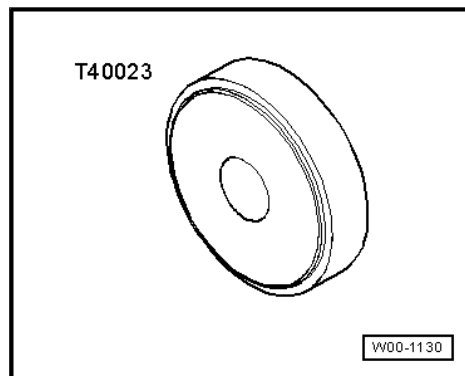
1.2.5 Renewing needle bearings (polygon bearings) for stub shaft (right-side)

Special tools and workshop equipment required

- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ -3253/5- from assembly tool - 3253-
- ◆ Clamp - T10047-

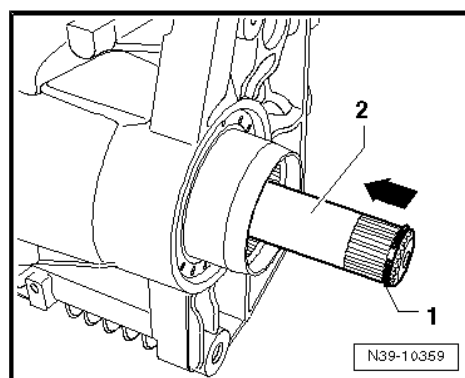


◆ Thrust piece - T40023-

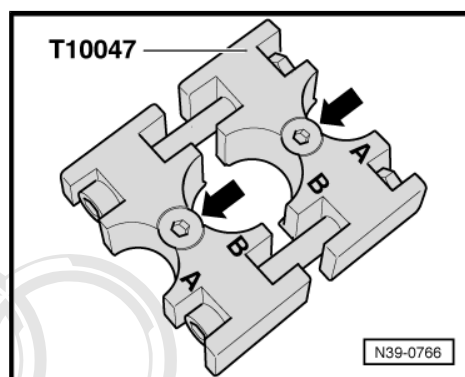


Removing

- Remove bevel box ⇒ [page 59](#) .
- Detach circlip -1- from stub shaft -2-.
- Carefully knock out stub shaft -2- in direction of arrow using a plastic hammer.

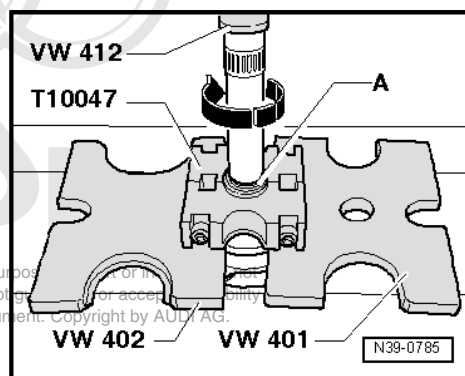


- Assemble assembly tool - T10047- , as shown in illustration.
- Marks “B” on both parts of tool face each other.
- The stepped shoulders -arrows- must then be below the bearing.
- Screw parts together as far as stop.



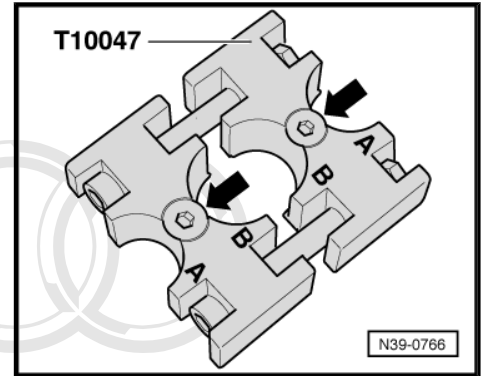
- Remove circlip -A-.
- Rotate shaft when pressing off -arrow- to prevent contact surface of needle bearings on shaft from being damaged.

Installing



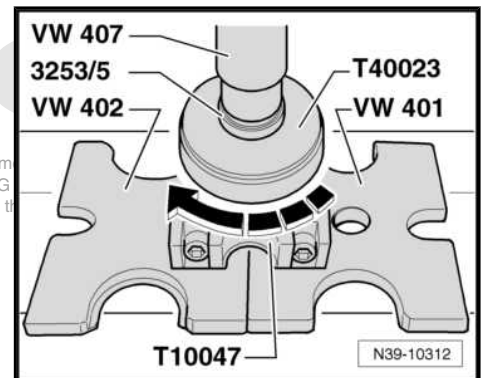
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- Assemble assembly tool - T10047- , as shown in illustration.

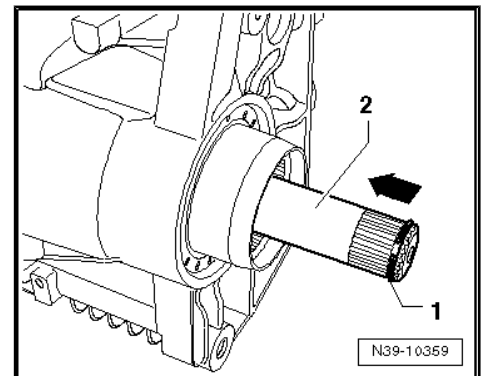


- Rotate shaft when pressing on -arrow- to prevent contact surface of needle bearings on shaft from being damaged.
- Secure needle bearings in position with new circlip.
- Carefully drive in stub shaft as far as stop using plastic hammer.

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- Fit new circlip -1- on stub shaft.
- Install bevel box ⇒ [page 62](#) .



2 Gear oil

⇒ "2.1 Checking gear oil level", page 130

⇒ "2.2 Draining and filling gear oil", page 131

2.1 Checking gear oil level



Note

- ◆ The bevel box is secured to the side of the gearbox and has a separate self-contained oil filling.
- ◆ For gear oil specifications, refer to ⇒ Electronic parts catalogue.

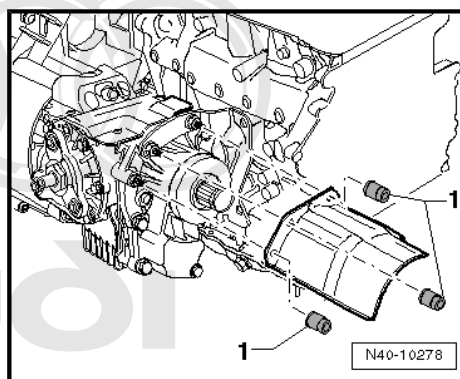
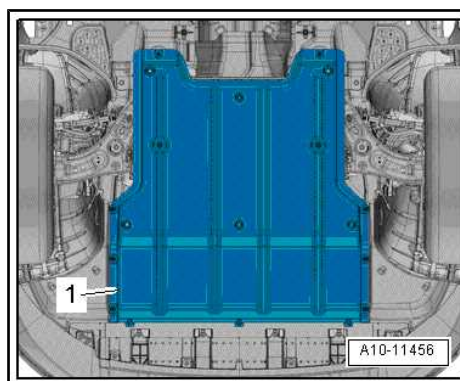
Procedure



Note

Renew screw plug for oil filler hole.

- Vehicle must be absolutely horizontal (on a four-pillar lifting platform or over an inspection pit).
- Engine not running.
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation.
- Remove nuts -1- and detach heat shield for drive shaft (right-side).

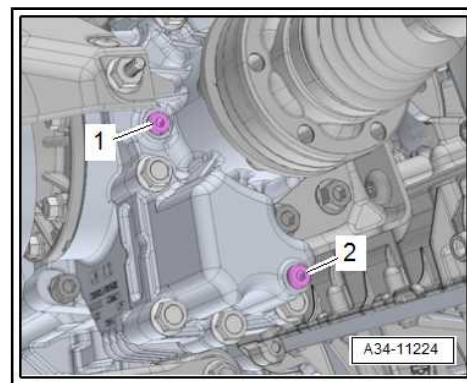


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 Note

Place a cloth below to catch escaping gear oil.

- Remove screw plug -1- from oil filler hole.
- Specification: gear oil level up to bottom lip of filler hole.
- Top up gear oil as necessary ⇒ [page 131](#) .



 Note

- ◆ *Carefully remove any traces of escaped oil on bevel box.*
- ◆ *-Item 2- can be disregarded.*

Tightening torques

- ◆ Oil filler plug ⇒ [Fig. "Tightening torques", page 134](#)
- ◆ Heat shield for drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft
- ◆ Exploded view of noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.2 Draining and filling gear oil

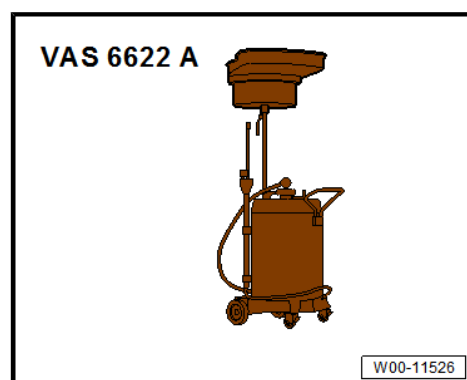
 Note

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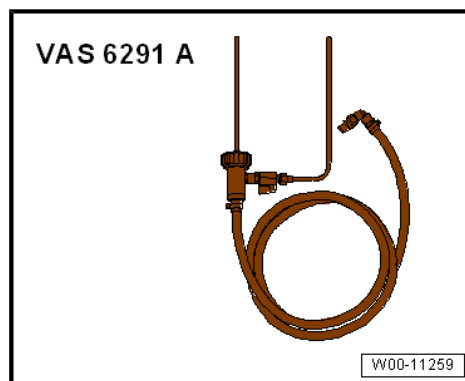
- ◆ *The gear oil in the bevel box only needs to be drained if repairs are required. An oil change is not normally required.*
- ◆ *For gear oil specifications, refer to ⇒ Electronic parts catalogue .*

Special tools and workshop equipment required

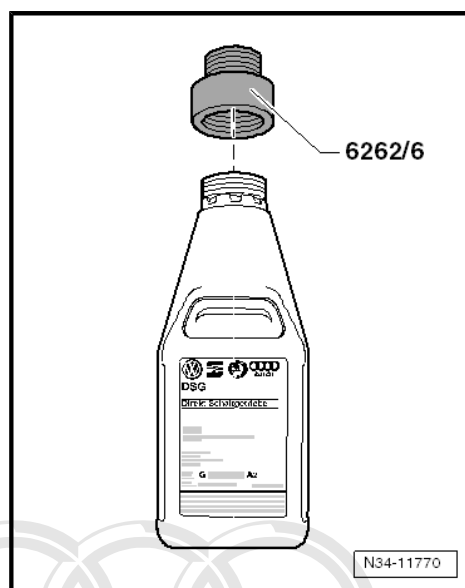
- ◆ Used oil collection and extraction unit - VAS 6622A-



- ◆ Charging device for Haldex coupling 2 - VAS 6291 A- with adapter -VAS 6291/3-



- ◆ For some oil containers, an additional adapter - VAS 6262/6- must be used.



- ◆ Safety goggles
- ◆ Protective gloves (acid resistant)

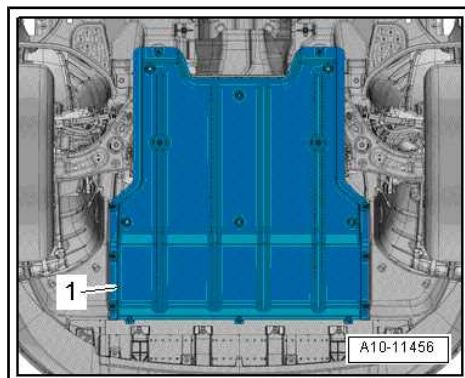
Draining



Note

Renew oil drain plug and oil filler plug.

- Vehicle must be absolutely horizontal (on a four-pillar lifting platform or over an inspection pit).
- Engine not running.
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .



- Place used oil collection and extraction unit - VAS 6622A- below gearbox.



WARNING

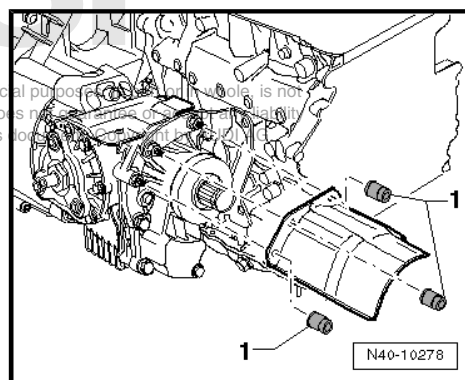
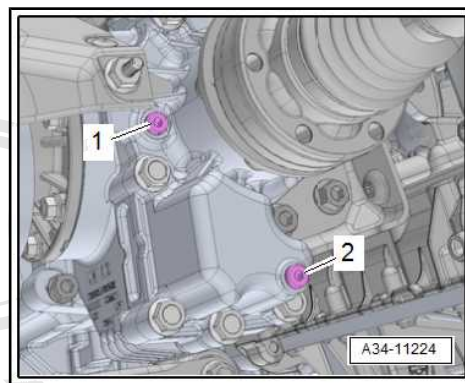
Hot gear oil can cause burns.

- ◆ *Wear safety goggles.*
- ◆ *Wear protective gloves (acid resistant).*

- Remove oil drain plug -2- and allow gear oil to drain off.
- Tighten new oil drain plug.

Filling

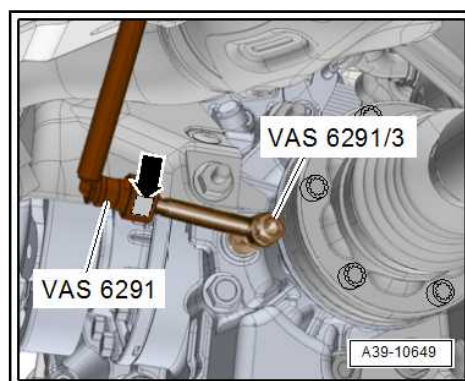
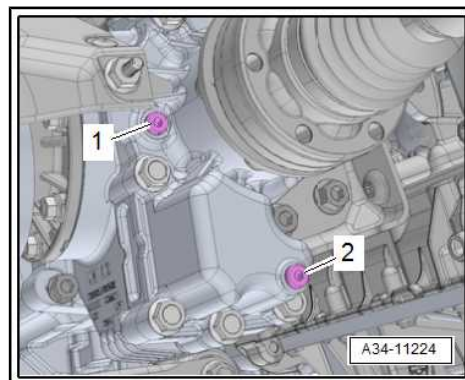
- Remove nuts -1- and detach heat shield for drive shaft (right-side).
- Route hose for charging device for Haldex coupling 2 - VAS 6291 A- through engine compartment.



Note

Leave used oil collection and extraction unit - VAS 6622A- in position below gearbox to catch escaping gear oil.

- Remove screw plug -1- from oil filler hole.
- Screw in adapter -VAS 6291/3- as far as stop.
- Connect elbow joint of charging device for Haldex coupling 2 - VAS 6291 A- to adapter -VAS 6291/3- , making sure it engages.
- The hose must not hang down.

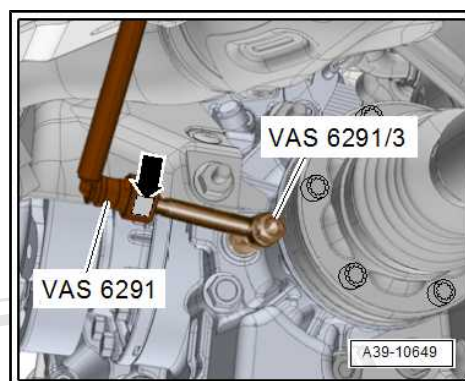
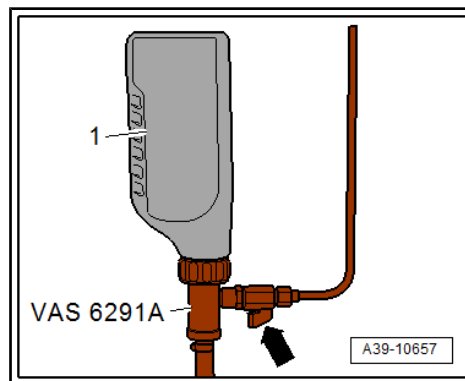


- Make sure that valve -arrow- is closed.
- Screw oil container -1- onto charging device for Haldex coupling 2 - VAS 6291 A- .


Note

For some oil containers, an additional adapter -VAS 6262/6- must be used.

- Open valve -arrow- and hold up oil container as shown in illustration.
- The bevel box will now be filled.
- When bevel box is filled correctly oil will emerge at adapter - VAS 6291/3- .
- When gear oil comes out at adapter - VAS 6291/3- , put down oil container so that excess oil can drain back into container.
- When oil stops flowing back, detach charging device for Haldex coupling 2 - VAS 6291 A- .
- Screw in old oil filler plug and tighten slightly.
- Start engine, engage a gear and allow gearbox to turn for approx. 2 minutes.
- Switch off engine and remove oil filler plug.
- Check oil level and fill gear oil up to bottom lip of filler hole again if necessary.
- Tighten new oil filler plug.

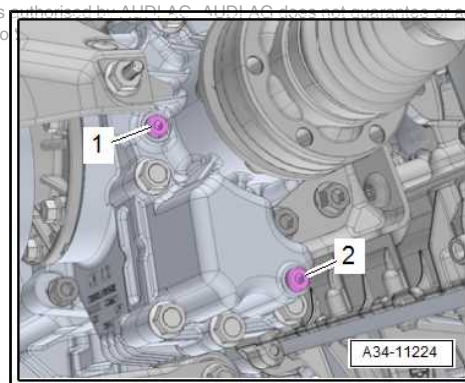

Note

Carefully remove any traces of escaped oil on bevel box.

Tightening torques

- Oil filler plug
 - Renew
 - 15 Nm
 - Oil drain plug
 - Renew
 - 15 Nm
- ◆ Heat shield for drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing heat shield for drive shaft
 - ◆ Exploded view of noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

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3 Oil seals

⇒ ["3.1 Overview of fitting locations - oil seals", page 135](#)

⇒ ["3.2 Renewing oil seal \(left-side\)", page 136](#)

⇒ ["3.3 Renewing oil seal \(right-side\)", page 138](#)

3.1 Overview of fitting locations - oil seals

1 - Gearbox

2 - Oil seal (right-side)

- ☐ Renewing on vehicles with front-wheel drive
⇒ [page 138](#)
- ☐ Renewing large oil seal (right-side) on vehicles with four-wheel drive
⇒ [page 139](#)

3 - Small oil seal (right-side)

- ☐ Renewing on vehicles with four-wheel drive
⇒ [page 139](#)

4 - Oil seal

- ☐ For selector shaft
- ☐ Renewing ⇒ [page 38](#)

5 - Stub shaft (right-side)

- ☐ For four-wheel drive vehicles

6 - Needle bearing (polygon bearing)

- ☐ Does not turn easily when stub shaft (right-side) is removed; this does not indicate a fault
- ☐ Acoustic check can only be performed when installed
- ☐ Check for damage such as cracking in outer race
- ☐ Renewing ⇒ [page 127](#)

7 - Oil seal

- ☐ For stub shaft on bevel box (right-side)
- ☐ For four-wheel drive vehicles
- ☐ Renewing ⇒ [page 117](#)
- ☐ Renew together with -item 9- ⇒ [page 119](#)

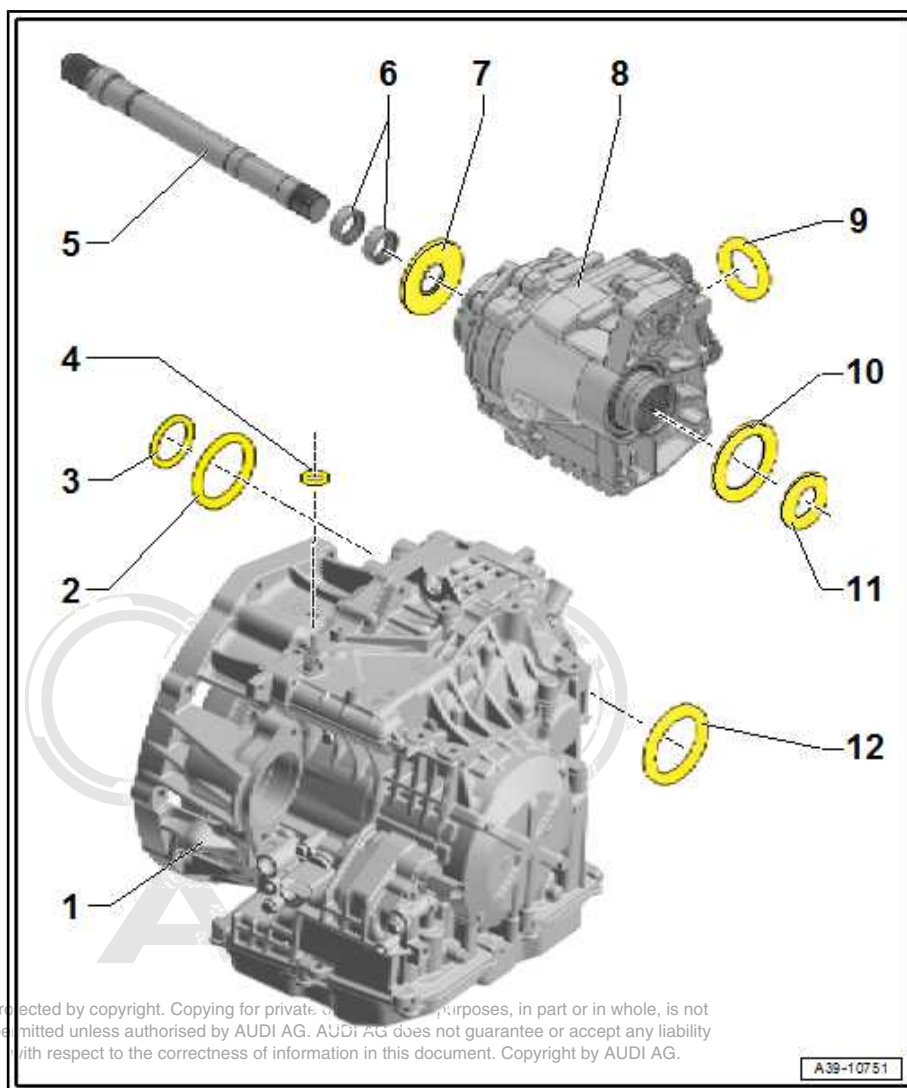
8 - Bevel box

9 - Oil seal

- ☐ For output flange
- ☐ For four-wheel drive vehicles
- ☐ Renewing ⇒ [page 122](#)

10 - Oil seal

- ☐ On bevel box (left-side) between gearbox and bevel box



- ☐ For four-wheel drive vehicles

- ☐ Renewing ⇒ [page 115](#)

11 - Oil seal

- ☐ For stub shaft on bevel box (left-side)

- ☐ For four-wheel drive vehicles

- ☐ Renew together with -item 3- ⇒ [page 119](#)

12 - Oil seal (left-side)

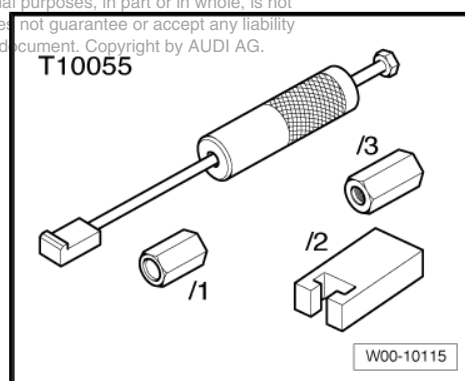
- ☐ Renewing ⇒ [page 136](#)

3.2 Renewing oil seal (left-side)

Special tools and workshop equipment required

- ◆ Puller - T10055-

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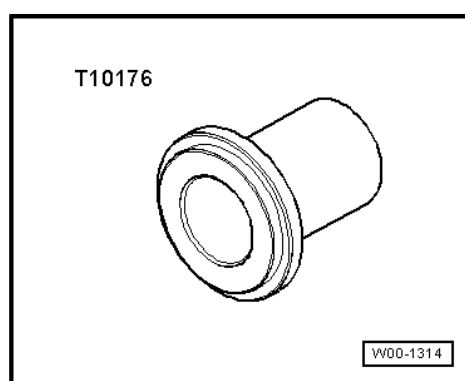
- ◆ Adapter - T10055/2-

- ◆ Electric drill (commercially available)

- ◆ Metal drill bit Ø 2 ... 4 mm, commercially available

- ◆ Sealing grease - G 052 128 A1-

- ◆ Thrust piece - T10176-



Procedure

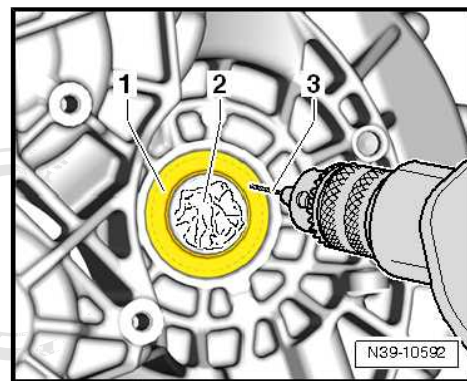
- Remove drive shaft (left-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Apply grease to drill bit -3- so that drilling swarf adheres to drill bit.



Caution

Risk of damage to bearing behind oil seal.

- ◆ **Take care to drill only through the metal ring of the oil seal.**
- ◆ **Do not screw in the self-tapping screw too far.**



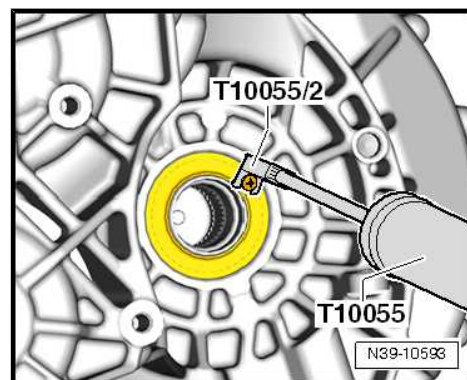
- Seal off opening for drive shaft on gearbox with a clean cloth -2-.
- Using drill bit $\varnothing$ 2 ... 4 mm, carefully drill hole in outer metal ring -1- of oil seal.
- Screw self-tapping screw (approx. 4 mm $\varnothing$) into hole drilled in oil seal.
- Pull out oil seal using puller - T10055- and adapter - T10055/2- .



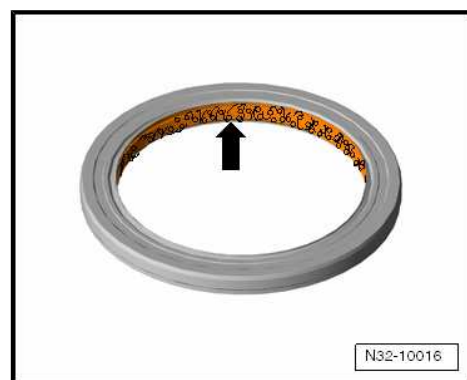
Caution

Risk of damage to gearbox

- ◆ **No metal particles must be allowed to enter the gearbox or the opening for the drive shaft. If necessary, vacuum out particles before proceeding.**



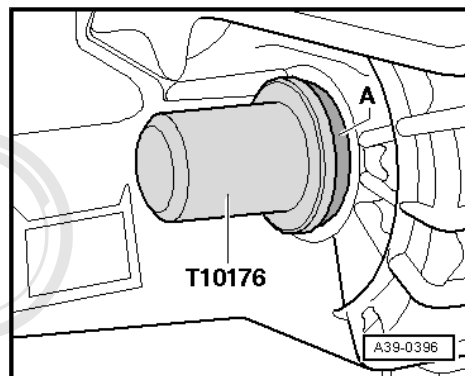
- Carefully remove cloth, taking care not to let metal particles drop into gearbox.
- Thoroughly clean gearbox and opening for drive shaft.
- Lightly lubricate outer circumference and sealing lips of new oil seal with gear oil.
- Installation position: open side of oil seal points towards gearbox
- Fit oil seal by hand, keeping it straight and pushing it in as far as it will go, so that oil seal is held in gearbox housing.



- Drive in oil seal onto stop using thrust piece - T10176- . Take care to keep seal straight when installing.
- Check gear oil level and top up as required ⇒ [page 52](#) .

Tightening torques

- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint



3.3 Renewing oil seal (right-side)

⇒ [“3.3.1 Renewing oil seal \(right-side\) - vehicles with front-wheel drive”, page 138](#)

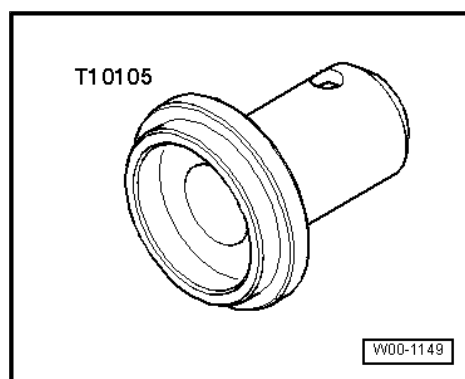
⇒ [“3.3.2 Renewing oil seals \(right-side\) - vehicles with four-wheel drive”, page 139](#)

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3.3.1 Renewing oil seal (right-side) - vehicles with front-wheel drive

Special tools and workshop equipment required

- ◆ Thrust piece - T10105-

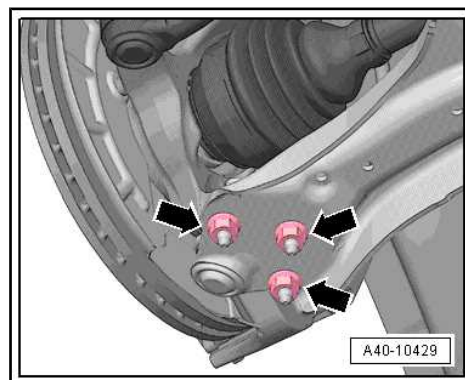


Removing oil seal:

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .
- Mark position of nuts -arrows- securing lower wishbone to suspension strut.

Re-install in the same position during assembly.

- Unbolt lower wishbone from suspension strut.
- Place drip tray for workshop hoist - VAS 6208- underneath.
- Press drive shaft off gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

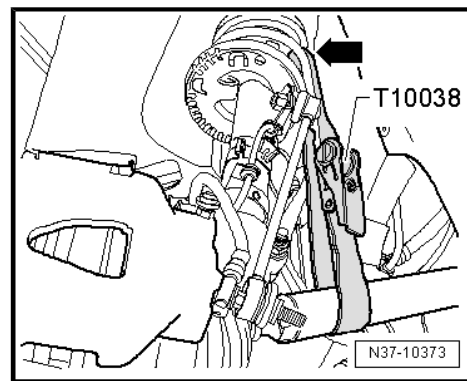


- Position drive shaft (right-side) as high up as possible and tie up to suspension strut in this position.
- Carefully lever out oil seal; be careful not to damage shaft in gearbox.

Installing oil seal:

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

- Lightly lubricate outer circumference and sealing lips of oil seal with ATF.
- Drive in oil seal onto stop using thrust piece - T10105- . Take care to keep seal straight when installing.
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Check and top up ATF level ⇒ [page 52](#) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Removing and installing underbody trim .

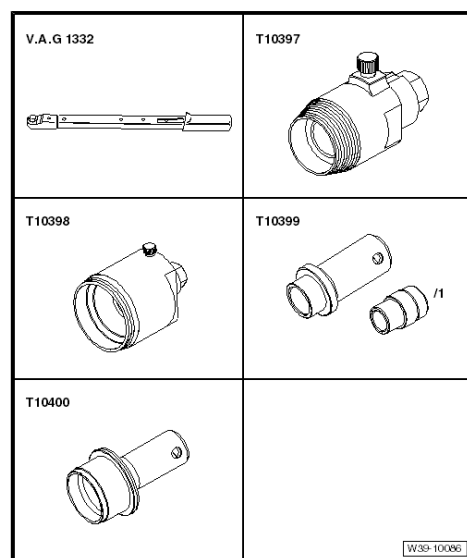


3.3.2 Renewing oil seals (right-side) - vehicles with four-wheel drive

Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1332-
- ◆ Oil seal extractor - T10397-
- ◆ Oil seal extractor - T10398-
- ◆ Assembly tool - T10399-
- ◆ Thrust piece - T10400-

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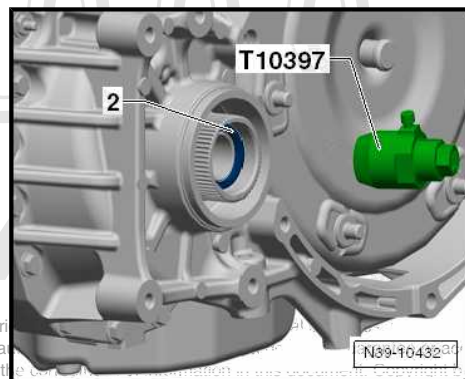


- Remove bevel box ⇒ [page 114](#) .

Removing small oil seal

- Lock oil seal extractor - T10397- in place with knurled screw and apply torque wrench.

- Screw oil seal extractor into oil seal -2-.



- Release oil seal extractor with knurled screw and keep turning it.
- Pull out oil seal.



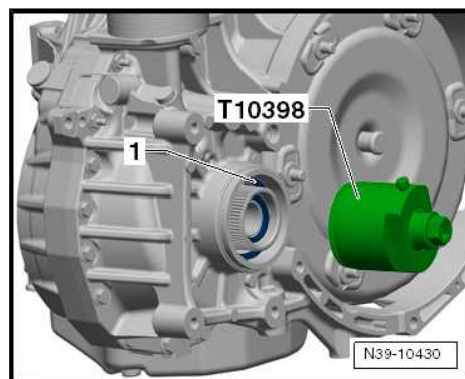
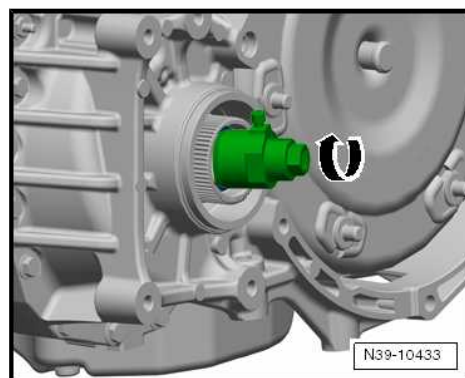
Note

If the oil seal slips:

- Apply oil seal extractor again and pull out oil seal.

Removing large oil seal

- Lock oil seal extractor - T10398- in place with knurled screw and apply torque wrench.
- Screw oil seal extractor into oil seal -1- and tighten to 100 Nm.



- Release oil seal extractor with knurled screw and keep turning it.
- Pull out oil seal.

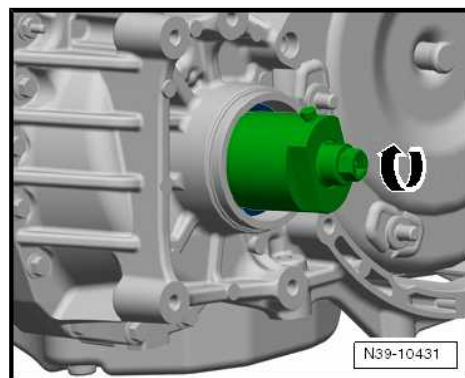


Note

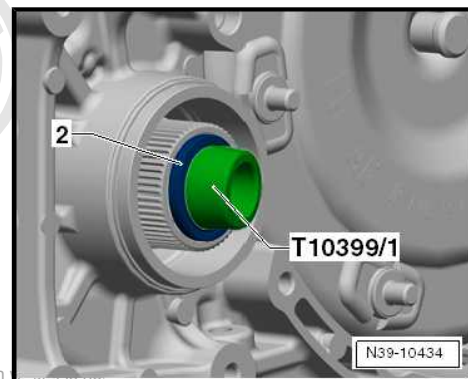
If the oil seal slips:

- Screw oil seal extractor into oil seal and tighten to 120 Nm.
- Pull out oil seal.

Installing small oil seal



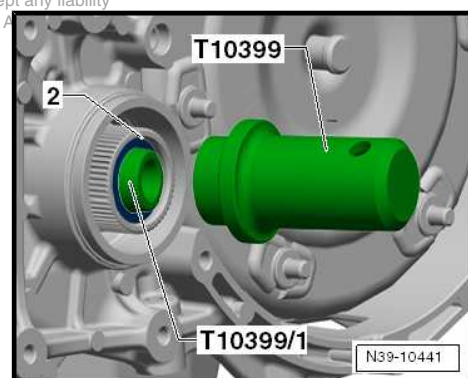
- Insert assembly tool - T10399/1- .
- Fit oil seal -2- onto assembly tool - T10399/1- .



- Drive seal in onto stop using assembly tool - T10399- .

Installing large oil seal

- Fit oil seal -1- onto thrust piece - T10400- .



Spring -arrow- faces away from thrust piece.

- Drive in seal onto stop.
- Now rotate thrust piece in gearbox before beginning to pull it out.
- Install bevel box ⇒ [page 114](#) .
- Check and top up ATF level ⇒ [page 52](#) .

