

Workshop Manual

Audi Q3 2012 ➤

Audi Q3 China 2013 ➤

6-speed dual clutch gearbox 02E

Edition 09.2013



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List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

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

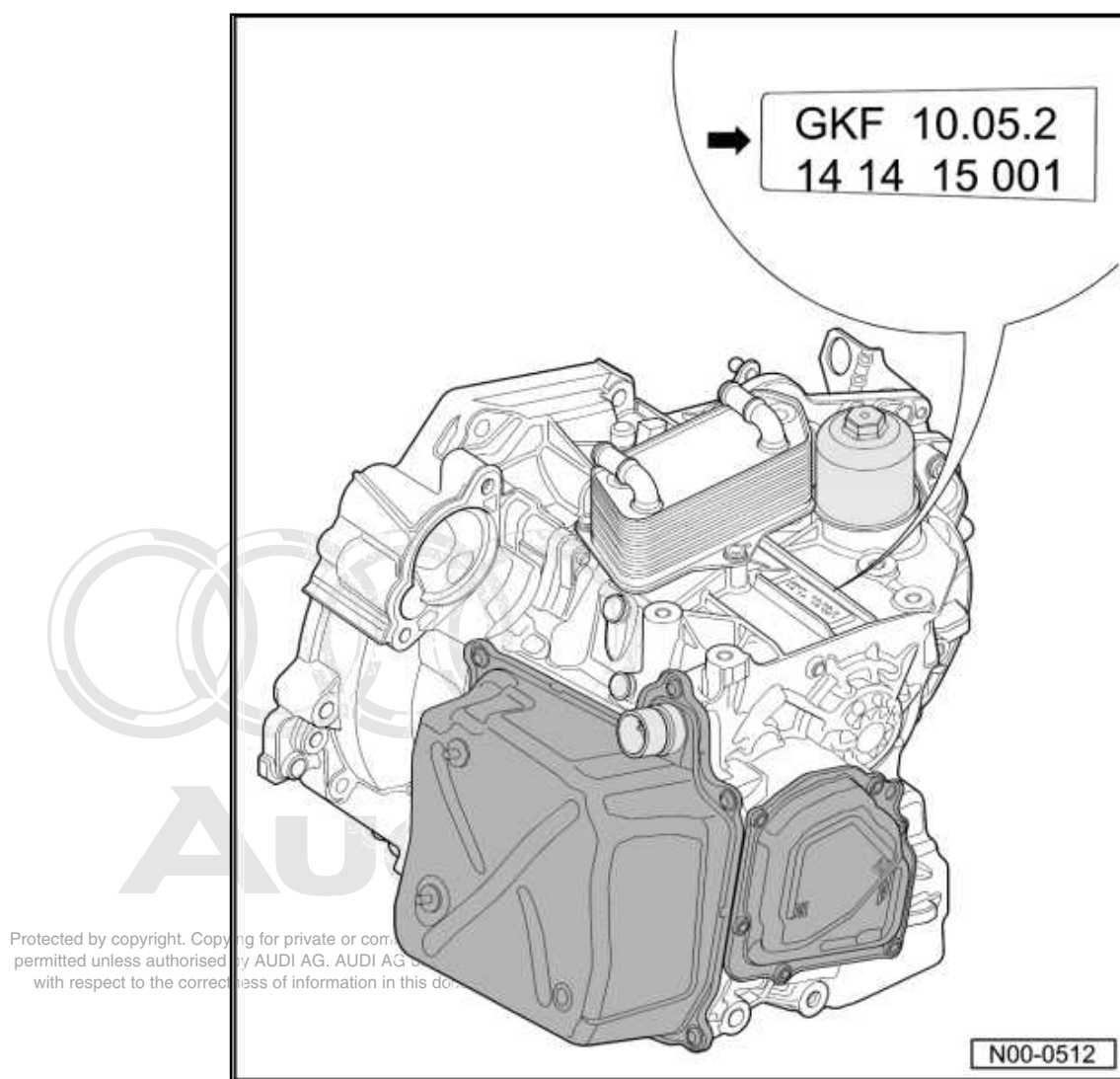
1 Identification

(ARL003385; Edition 09.2013)

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

1.1 Gearbox identification

The 6-speed dual clutch gearbox 02E is installed in the Audi Q3
2012 ►. Allocation ⇒ [page 3](#) .

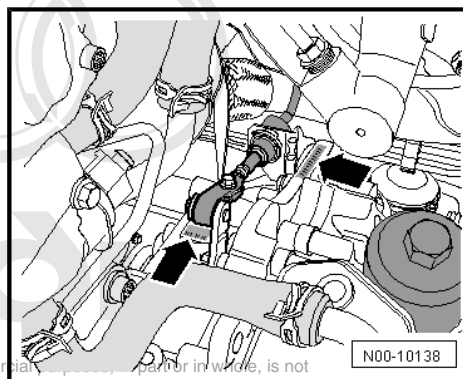


The following details are given at the top of the gearbox (example):



Note

- ◆ *The gearbox code letters can only be read when the gearbox support is detached and pushed towards rear. Removing and installing gearbox support ➔ [page 42](#) .*
- ◆ *Depending on the version, there may be additional code letters at the top of the gearbox in the vicinity of the selector lever cable -arrows-.*
- ◆ *The code letters for the gearbox are also given on the vehicle data stickers.*
- ◆ *Location of vehicle data stickers ➔ **Maintenance, Booklet** 821 .*



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2 Technical data

⇒ "2.1 Allocation of gearbox to engine", page 3

⇒ "2.2 Calculating gear ratios", page 3

⇒ "2.3 Capacities", page 3

2.1 Allocation of gearbox to engine

Dual clutch gearbox		02E front-wheel drive		
Gearbox	Code letters	NUV		
Allocation	Model	Audi Q3 2012 ►		
	Engine	1.4 ltr. TFSI 110 kW		
Ratios	Final drive I for 1st to 4th gear	72 : 15 = 4.800		
Z ₂ : Z ₁	Final drive II for 5th/6th gear and reverse gear	72 : 20 = 3.600		
The following data can be found in the ⇒ Electronic parts catalogue . ♦ Production dates ♦ Individual gear ratios ♦ Allocation of drive shaft flanges				

2.2 Calculating gear ratios

Example:

	6th gear	Final drive
Driving gear	ZG ₁ = 44	ZA ₁ = 17
Driven gear	ZG ₂ = 35	ZA ₂ = 71

$i = Z_2 : Z_1$ (Z₁ = number of teeth on driving gear, Z₂ = number of teeth on driven gear)

$i_G = \text{gear ratio} = ZG_2 : ZG_1 = 35 : 44 = 0.795$

$i_A = \text{axle ratio} = ZA_2 : ZA_1 = 71 : 17 = 4.176$

$i_{ov} = \text{overall ratio} = i_G \times i_A = 0.795 \times 4.176 = 3.320$

2.3 Capacities

Capacities	Gear oil section
Initial filling	6.9 ltr.
Oil change	Approx. 5.2 ltr.
Change after removing and installing mechatronic unit with gearbox installed	3...4 ltr.
Change interval	⇒ Maintenance tables
Lubricant	For gear oil specifications for dual clutch gearbox 02E refer to ⇒ Electronic parts catalogue .

- Check gear oil level (manual gearbox) ⇒ page 72 .
- Draining and filling gear oil ⇒ page 77



Caution

Risk of damage to gearbox

- ◆ ***Use only the gear oil available as a replacement part for the 6-speed dual clutch gearbox 02E ⇒ Electronic parts catalogue .***
- ◆ ***Other types of oil cause malfunctions and/or failure of the gearbox.***
- ◆ ***Both underfilling and overfilling will impair the function of the gearbox.***



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3 Safety precautions

⇒ [“3.1 General safety precautions”, page 5](#)

⇒ [“3.2 Safety precautions when working on vehicles with start/stop system”, page 5](#)

⇒ [“3.3 Safety precautions when using testers and measuring instruments during a road test”, page 6](#)

⇒ [“3.4 Notes on tow-starting and towing”, page 6](#)

3.1 General safety precautions

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



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, pull up parking brake button to apply the electromechanical parking brake.*

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

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



Caution

When disconnecting the battery there is a risk of serious 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 .*

3.2 Safety precautions when working on vehicles with start/stop system

Please note the following when working on vehicles with start/stop system:



WARNING

Risk of injury due to automatic engine start on vehicles with start/stop system.

- ◆ *On vehicles with activated start/stop system (this is indicated by a message in the instrument cluster display), the engine may start automatically on demand.*
- ◆ *Therefore it is important to ensure that the start/stop system is deactivated when performing repairs (switch off ignition, if required switch on ignition again).*

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

Observe the following precautions if test equipment has to be used when road-testing the vehicle.



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.*

3.4 Notes on tow-starting and towing



Caution

Risk of irreparable damage to gearbox.

- ◆ *When the vehicle is towed, the selector lever must be set to position "N" and the vehicle must not be towed for a distance of more than 50 km or at a speed in excess of 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.



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4 Repair instructions

⇒ [“4.1 General notes”, page 7](#)

⇒ [“4.2 Safety functions of gearbox control unit”, page 8](#)

⇒ [“4.3 Rules for cleanliness”, page 9](#)

⇒ [“4.4 General repair instructions”, page 9](#)

⇒ [“4.5 Contact corrosion”, page 11](#)

4.1 General notes

Gearbox

- ◆ The engine torque is transferred to the dual clutch via the flywheel. The flywheel and the dual clutch are connected by splines. The two combined components perform the function of a dual-mass flywheel.
- ◆ The layout of the gearbox is basically similar to that of a 6-speed manual gearbox. The two multi-plate dry clutches are regulated hydraulically and actuated alternately so that the gearbox is operated like an automatic gearbox, i.e. the gears are engaged automatically (or manually via the tiptronic function). There is no clutch pedal.
- ◆ Both clutches are disengaged when the ignition is switched off. The 1st gear on gear train half 1 and the reverse gear on gear train half 2 are engaged.



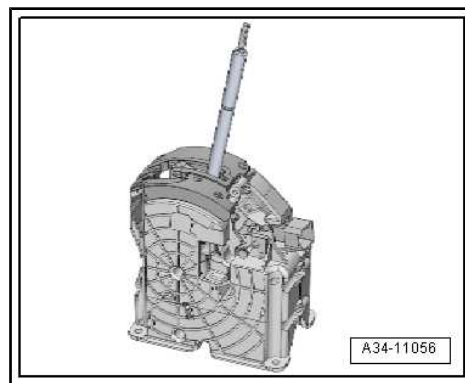
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Selector mechanism

The selector lever position is no longer transmitted mechanically to the gearbox via the selector lever cable and multi-function switch (gear sensor), as on the automatic gearbox. The selector lever positions and gear changes are transmitted to the gearbox control unit via CAN bus from a separate control unit in the shift unit. This means that gear shifts are effected without a cable. Exception: In selector lever position "P" the selector lever cable is used to mechanically engage the parking lock.

Gear oil (gearbox and bevel box)

The 6-speed dual clutch gearbox and front final drive have a common filling of gear oil.



Caution

Risk of damage to gearbox

- ◆ *Use only the gear oil available as a replacement part for the 6-speed dual clutch gearbox 02E ➔ Electronic parts catalogue .*
- ◆ *Other types of oil cause malfunctions and/or failure of the gearbox.*

Variation of gear-change points for gradients

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

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

4.2 Safety functions of gearbox control unit

In the event of a failure of one or more components or sensors, the control unit J743 will activate appropriate backup functions. This enables the gearbox to continue operating without damage, but will impair the operation and smoothness of the gearshifts.

Faults detected by the gearbox are classified in four different categories.

- 1 - The fault is stored in the memory and one of the backup programs is activated. The gear selection indicator in the instrument cluster will continue to show the currently engaged selector lever position in the normal way. The driver can continue to drive the vehicle (with certain restrictions), and the condition is not critical to the safety of the vehicle or to the gearbox itself. If at all, the driver will only notice the fault if he experiences driveability problems, and will then automatically contact an Audi Service Partner.
- 2 - Certain positions on the gear selection indicator in the instrument cluster start to flash. This is to inform the driver that this particular selector lever position is currently not available. Example: position "D" will start flashing if the selector lever is moved from position "R" to position "D" while the vehicle is still rolling backwards. To avoid damage to the gearbox, the mechatronic unit for dual clutch gearbox - J743- prevents 1st gear from being engaged while the ve-

hicle is moving backwards. 1st gear will only be engaged when the vehicle comes to a standstill.

- 3 - The complete gear selection indicator lights up and flashes; the currently engaged selector lever position is highlighted. This shows the driver that a temporary critical fault in the gearbox has been detected. Example: the gearbox has been overloaded or overheated, for instance by towing an excessively heavy load. The driver can continue to drive the vehicle when the gearbox has cooled off, but will need to avoid placing a heavy load on the transmission.
- 4 - The gear selection indicator flashes; the currently engaged selector lever position is no longer indicated. This shows the driver that a critical and permanent fault in the gearbox has been detected. It may no longer be possible to use all gears, so this condition is critical to the safety of the vehicle and to the gearbox itself. This display is intended to warn the driver that he should contact an Audi Service Partner.

4.3 Rules for cleanliness

- ◆ Carefully clean connection points and the surrounding area with engine cleaner or brake cleaner and dry thoroughly before opening.
- ◆ Use cleaning fluid - D 009 401 04- to clean the gearbox and its components.
- ◆ Use 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- .
- ◆ Place removed parts on a clean surface and cover them over. Use sheeting and paper. Use lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components: do not remove replacement parts from packaging until just before installation.
- ◆ Protect unplugged electrical connectors against dirt and moisture and make sure connections are dry when attaching.

4.4 General repair instructions

- ◆ Proper tools and the maximum possible care and cleanliness are essential for satisfactory repairs to the transmission units. The usual basic safety precautions also naturally apply when carrying out repair work.
- ◆ To avoid repetition, a number of generally applicable instructions for the various repair procedures are summarised here. They apply to the work described in this Manual.

Guided Fault Finding, Vehicle self-diagnosis and Test Instruments

- ◆ Before servicing the gearbox, the cause of the failure must be determined as accurately as possible using the functions Guided Fault Finding, Vehicle Self-diagnosis and Test Instruments ⇒ Vehicle diagnostic tester.

Special tools

For a complete list of special tools used in this Workshop Manual please refer to ⇒ "Workshop equipment and special tools" .



Environmental and waste disposal regulations for oil

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

Gearbox

- ◆ Do not run the engine or tow the vehicle with the gear oil pan removed or when there is no gear oil in the gearbox.
- ◆ Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- ◆ When installing gearbox, ensure that dowel sleeves are fitted correctly.

O-rings, oil seals and gaskets

- ◆ Always renew O-rings, seals and gaskets.
- ◆ In certain cases, seals are also referred to as oil seals.
- ◆ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Thoroughly clean housing joint surfaces before assembling.
- ◆ Always replace paper gaskets. Completely remove old gasket and clean sealing surfaces thoroughly.
- ◆ Lightly lubricate the outer circumference and sealing lip of oil seals with gear oil before installing.
- ◆ Lightly lubricate O-rings with gear oil or vaseline before installation to prevent them from getting crushed during assembly.
- ◆ Do not use any other lubricants where gear oil is specified. Otherwise, there is a risk of problems occurring in the gearbox hydraulics.
- ◆ The open side of the oil seal should face the side containing the fluid.
- ◆ When installing a new oil seal, position the seal such that the sealing lip does not contact the shaft in the same place as the old seal (make use of installation depth tolerances).
- ◆ Observe rules for cleanliness ➔ [page 9](#).

Locking elements

- ◆ Do not over-stretch circlips.
- ◆ Renew circlips which have been damaged or over-tensioned.
- ◆ Circlips must be properly seated in the base of the groove.

Nuts, bolts

- ◆ Loosen bolts in reverse sequence to the specified tightening sequence.
- ◆ Nuts and bolts which secure covers and housings should be loosened and tightened in diagonal sequence and in stages if no tightening sequence is specified.
- ◆ Renew self-locking nuts.



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- ◆ 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 bolt threads before installing.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.

4.5 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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30 – Clutch

1 Clutch

⇒ [“1.1 Exploded view - dual clutch”, page 12](#)

⇒ [“1.2 Removing dual clutch”, page 14](#)

⇒ [“1.3 Installing dual clutch”, page 17](#)

1.1 Exploded view - dual clutch

- ◆ The dual clutch consists of two sets of plates, or clutch packs. The larger clutch pack (located on the outside) is designated “K 1” (clutch 1), and controls the torque flow for reverse gear and gears »1«, »3« and »5«. The smaller set of plates (on the inside) is designated “K 2” (clutch 2), and controls the torque flow for gears »2«, »4« and »6«.
- ◆ Any work performed on the dual clutch requires extra care: all the parts are balanced and matched together in production. If the components are rotated out of their original positions when repairing, this will cause imbalance and impair the smoothness of the gear changes and reduce the service life of the unit.

Replacement parts



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1 - Dual clutch

- ☐ With circlip



Caution

*The clutch plates can slip out of position inside the dual clutch unit.
The dual clutch unit must not be dismantled at present.*

The drive plate (top section of dual clutch) of a new clutch is not secured with the circlip, it is only a "close fit" in the clutch.

The drive plate must remain engaged between the splines of the outer plate carrier.

If the drive plate is loosened, the plates can slip out of position inside the dual clutch unit, and it may then not be possible to adjust the dual clutch correctly during installation.

- ☐ Removing ➔ [page 14](#)
- ☐ Installing ➔ [page 17](#)

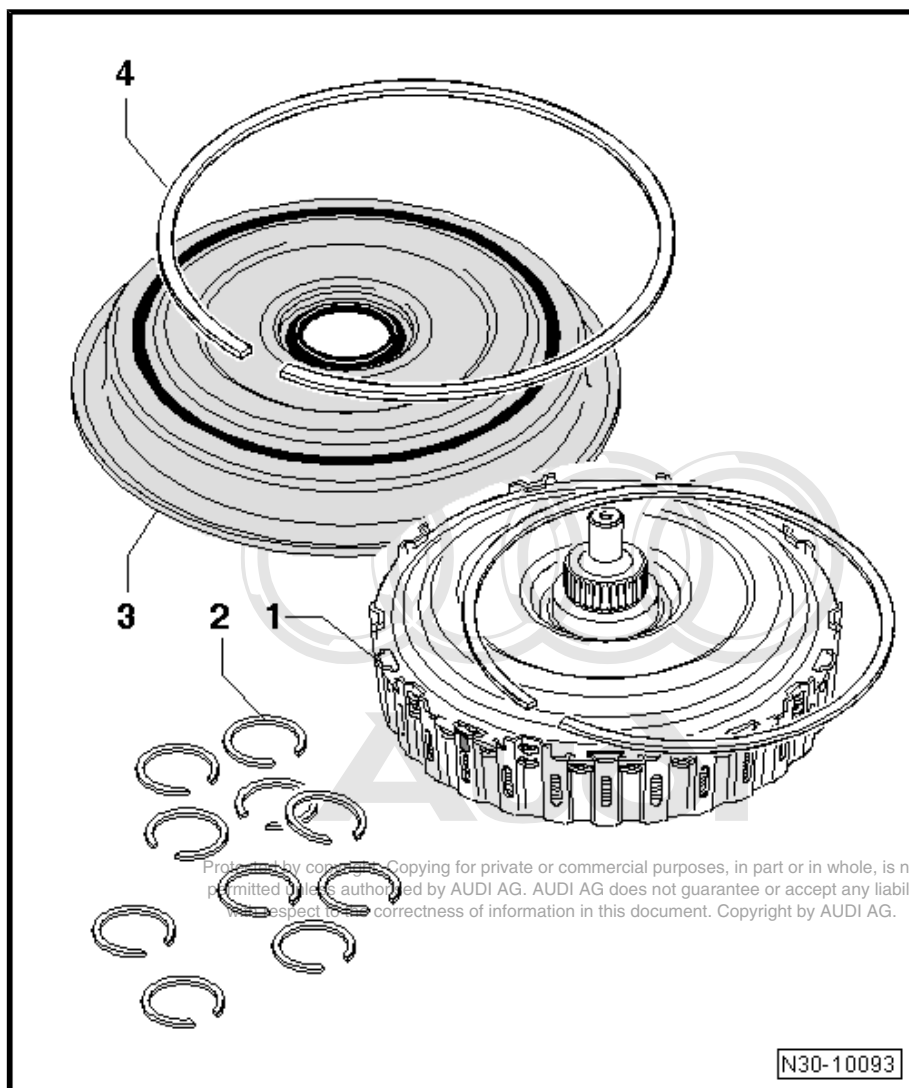
2 - Circlips

- ☐ 10x, with different thicknesses for adjusting dual clutch
- ☐ Determining correct thickness when installing dual clutch ➔ [page 20](#)

3 - Clutch end cover

4 - Corrugated ring

- ☐ For clutch end cover



N30-10093

Component parts of dismantled dual clutch



Caution

The clutch plates can slip out of position inside the dual clutch unit.

1 - Outer plate carrier with clutch housing.

2 - Seals

□ 4x

3 - Inner plate carrier



Caution

The clutch plates can slip out of position.

the inner plate carrier is lifted or taken out, the plates can slip out of position inside the clutch. It will then no longer be possible to adjust the clutch correctly.

4 - Outer plates

□ 4x

5 - Inner plates

□ 4x

6 - Thrust washer

7 - Circlip

□ Fit a new circlip of the same thickness if the original circlip is removed in order to re-install the clutch plates.

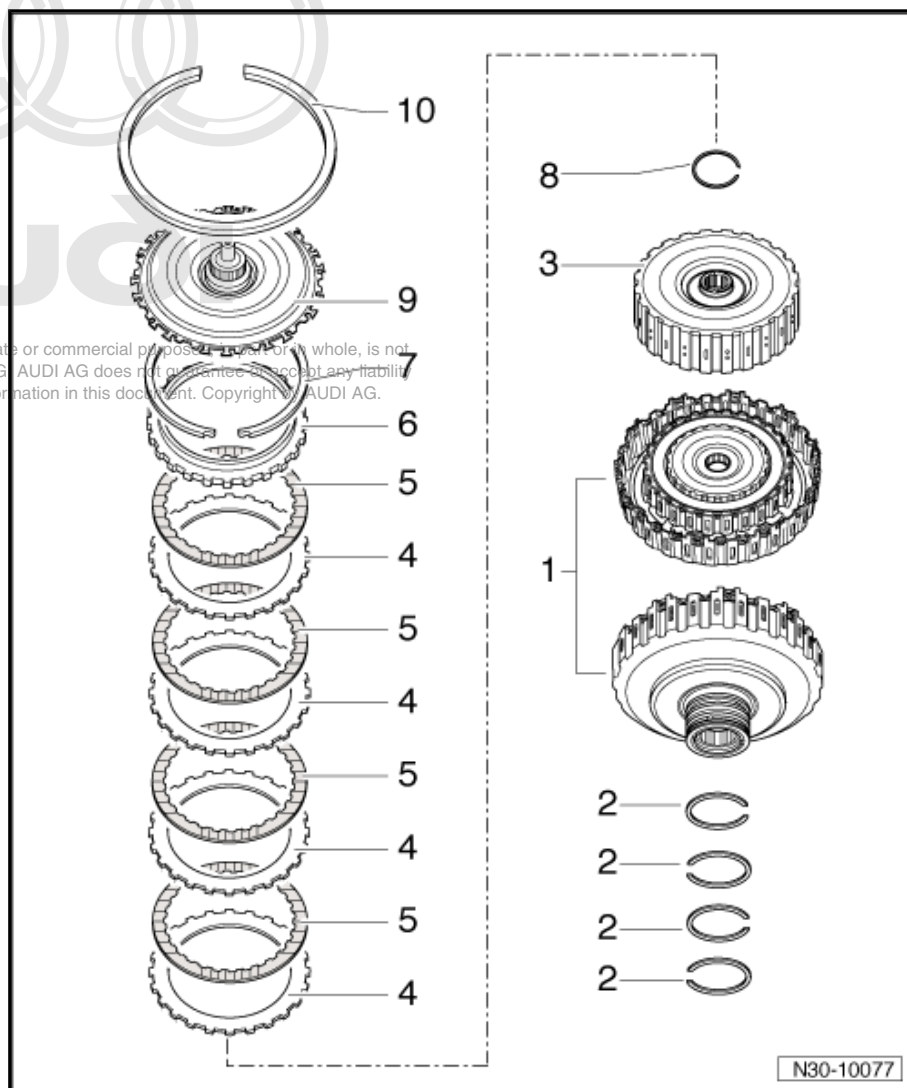
8 - Circlip

□ Determining correct thickness when installing multiple clutch
⇒ [page 20](#)

9 - Drive plate

10 - Circlip

□ Renew after removal

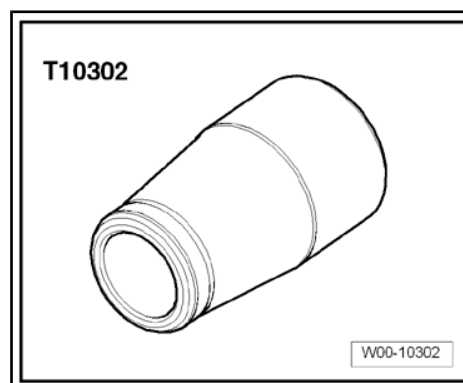


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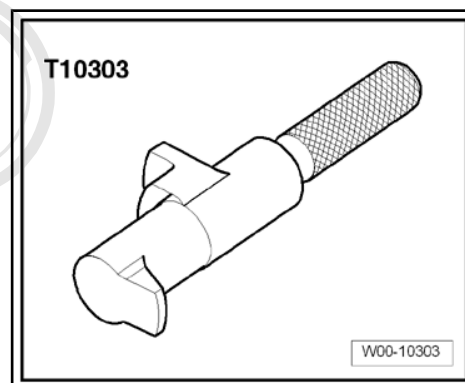
1.2 Removing dual clutch

Special tools and workshop equipment required

- ◆ Assembly sleeve - T10302- for clutch end cover without bush



◆ Retaining pin - T10303-



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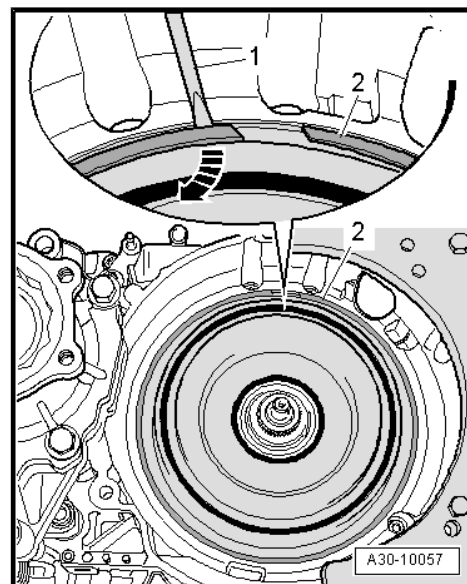


Note

Assembly sleeve - T10302- must be cleaned before use; do not use an assembly sleeve if it is scratched.

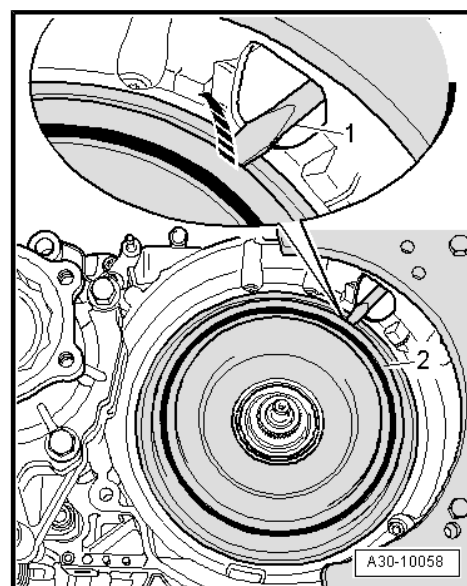
Procedure

- Gearbox secured in a vertical position on engine and gearbox support ➔ [page 53](#) .
- Drain off gear oil ➔ [page 77](#) .
- Renew gear oil filter ➔ [page 68](#) .
- Pry out and detach corrugated ring -2- for clutch end cover using a screwdriver -1- -arrow-.
- Working through aperture for starter motor, pry out and detach clutch end cover -2- using a screwdriver -1- or other suitable lever -arrow-.

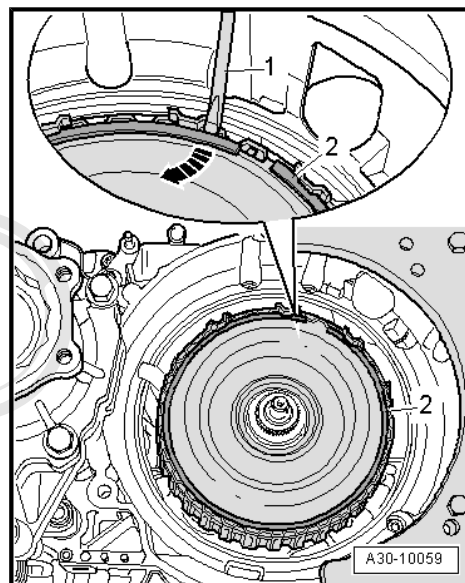


Note

Always renew clutch end cover.

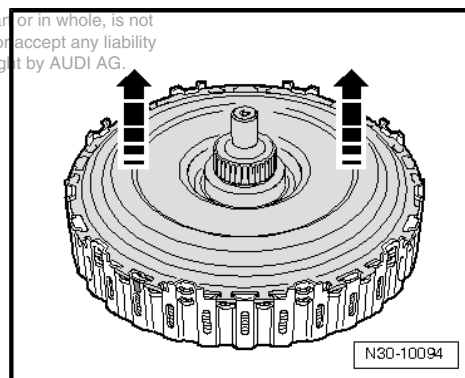


- Pry out circlip -2- for drive plate using a screwdriver -1- -arrow-.



- Detach drive plate -arrows-.

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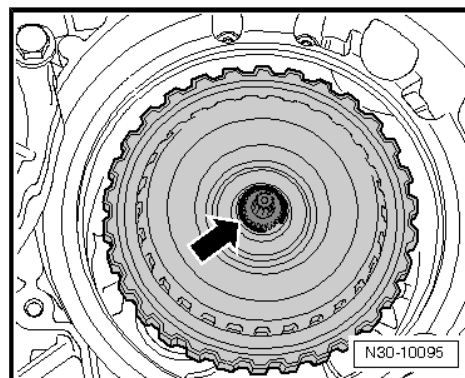


- Pry out circlip -arrow- using a screwdriver or long-nose pliers.



Note

Always renew circlip.

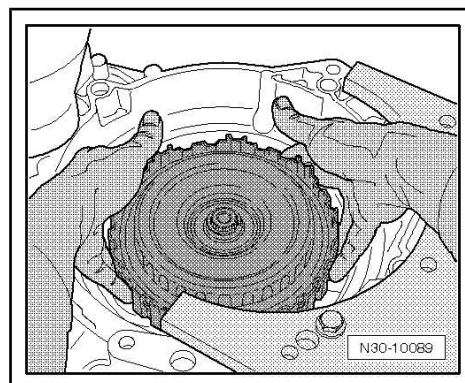


Caution

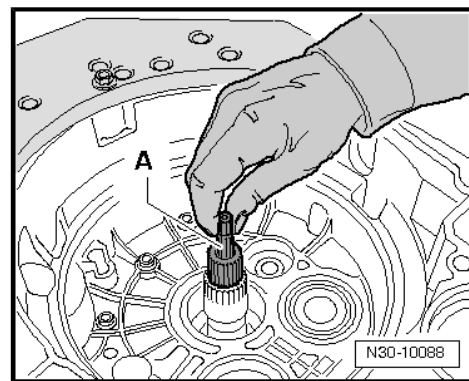
Risk of damage to the dual clutch.

- ◆ ***Make sure that no parts of the dual clutch fall out. Do NOT turn the dual clutch over!***

- Carefully take dual clutch out of gearbox housing.
- After removing dual clutch, check whether clutch housing was damaged during removal.



- Pull out pump shaft -A- and place to one side.



1.3 Installing dual clutch

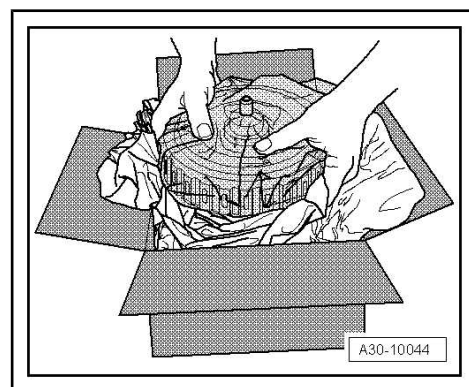
Procedure



Caution

The clutch plates can slip out of position inside the dual clutch unit.

- ◆ *If the drive plate becomes detached from the splines in the outer plate carrier, the clutch plates can slip out of position in the multiple clutch. It will then no longer be possible to adjust the clutch correctly.*
- ◆ *To prevent the clutch plates from slipping inside the multiple clutch unit, keep the drive plate pressed into the outer plate carrier with both thumbs during all following steps.*



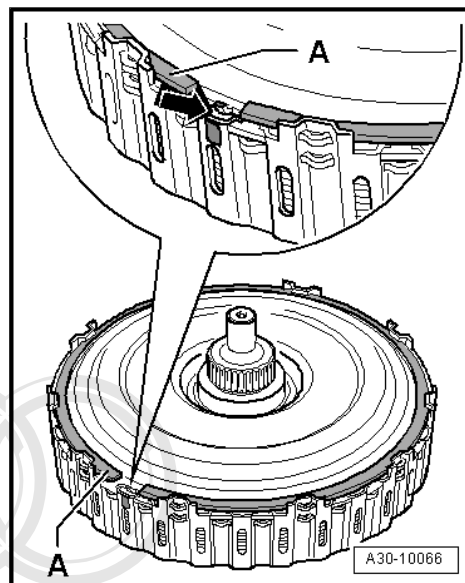
Note

The circlip for the drive plate that is supplied with the replacement parts is fitted at a later stage.

- Take new circlip for drive plate out of packaging and place to one side.
- Take dual clutch out of packaging, holding drive plate in position.

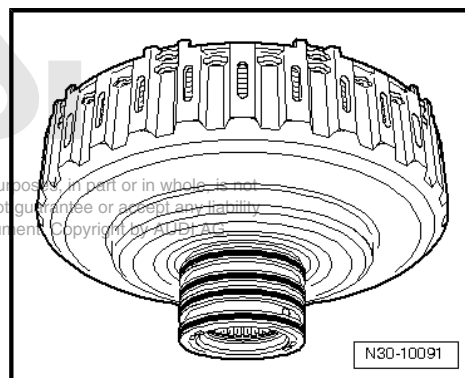
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- First fit old circlip -A- for drive plate from removed dual clutch.
- Installation position: the lug on the drive plate and the colour-marked splines on the outer plate carrier must be located between the ends of the circlip.
- Using a screwdriver, check that circlip is fully engaged.

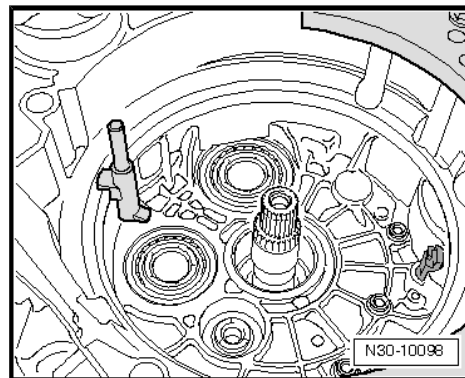


- Check that the 4 oil seals on the hub on the underside of the dual clutch are correctly seated; engage in position if necessary.
- Installation position: joints of seals should be offset

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- Apply retaining pin - T10303- to seat of clutch end cover as illustrated.

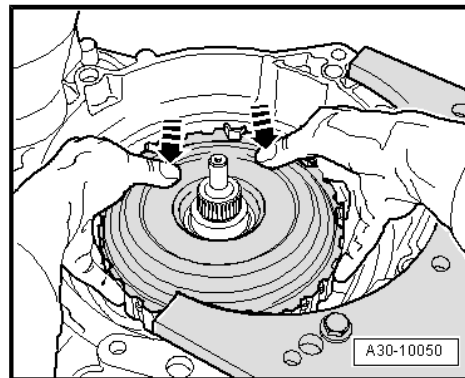


- Install dual clutch in clutch housing (turn and move up and down as required), at the same time keeping the drive plate pressed into the outer plate carrier with both thumbs -arrows-.



Note

Do not allow the dual clutch to drop into the inner plate carrier.

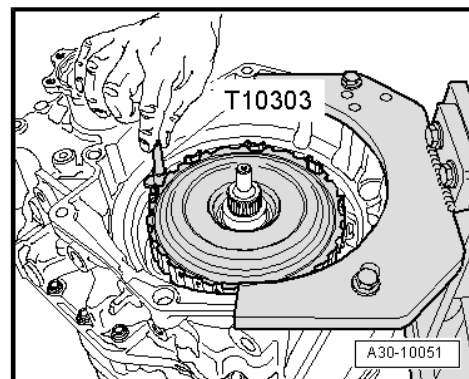


- Have a second mechanic hold the retaining pin - T10303- as illustrated until the clutch end cover is installed.



Note

The dual clutch must not be turned from this point onwards, as this would turn the retaining pin - T10303- out of position.

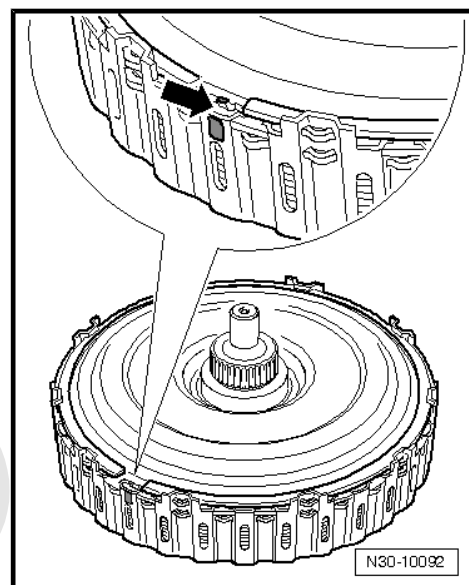


- Check whether the projecting lug -arrow- on the drive plate is positioned between the colour-marked splines on the outer plate carrier.
- If no marking is provided, use waterproof pen to mark position of drive plate in relation to outer rim of outer plate carrier as illustrated so it can be re-fitted in the same position.

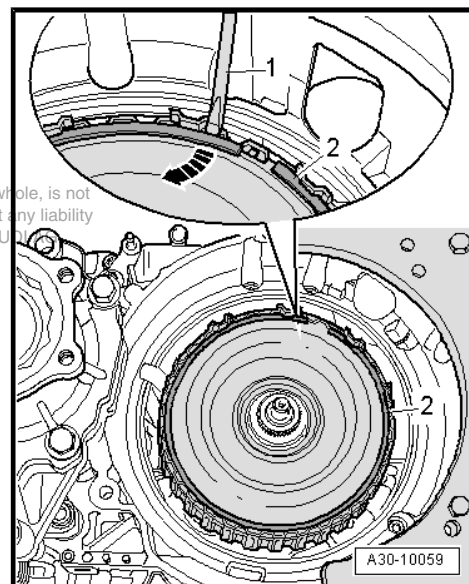


Note

When re-assembling, the lug on the drive plate must be located again at this marked position.



- Pry out old circlip -2- using a screwdriver -1- -arrow-.



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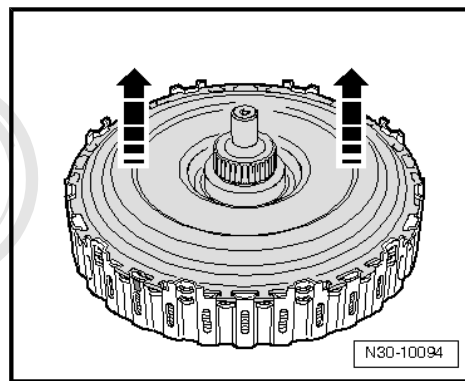


Caution

The clutch plates can slip out of position inside the dual clutch unit.

- ◆ *If the inner plate carrier is taken out or lifted, the plates can slip out of position inside the clutch. It will then no longer be possible to adjust the clutch correctly.*

- Lift out drive plate -arrows-; if necessary lever it carefully out of splines on outer plate carrier using a screwdriver.
- Place drive plate to one side.



Adjusting dual clutch (determining thickness of circlip)

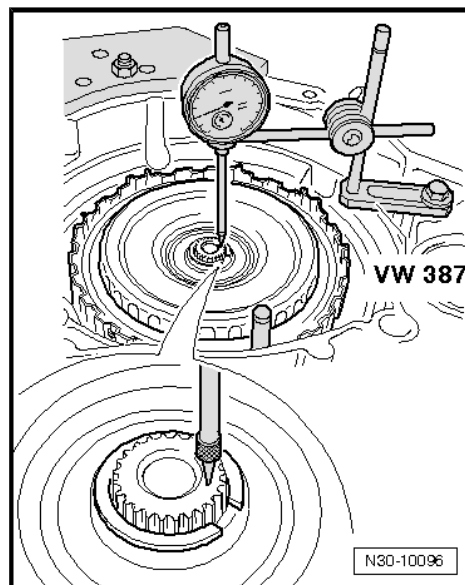
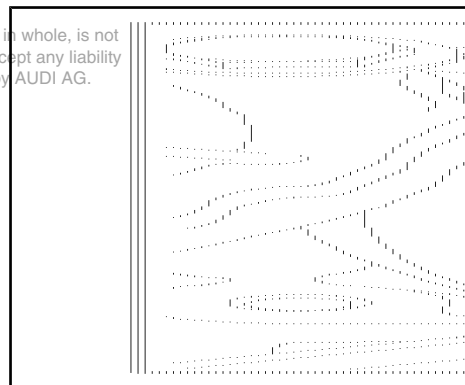
- Select the 2 mm thick circlip from the circlips supplied with the unit.



Note

The 2 mm circlip is fitted provisionally for measurement purposes and will be replaced later with the final circlip of the required thickness.

- Fit circlip of 2 mm thickness -arrow-.
- Secure universal dial gauge bracket - VW 387- to gearbox flange.
- For 1st measurement, apply tip of dial gauge to end of input shaft as shown in illustration.
- Preload dial gauge to 2 mm and set to "0".
- Lift up dual clutch as far as it will go.
- Note reading on dial gauge (= axial clearance of input shaft).



- For 2nd measurement, apply tip of dial gauge to hub of inner plate carrier as shown in illustration.

 Note

The tip of the dial gauge must not contact the circlip.

- Preload dial gauge to 2 mm and set to “0”.
- Lift up dual clutch as far as it will go.
- Take reading and note down measured value.

The thickness of the new circlip is calculated according to the following formula:

$$\text{Circlip} = 2\text{nd measured value} - 1\text{st measured value} + 1.85 (= \text{constant value})$$

The thickness of the new circlips is graduated in steps of 0.1 mm. When selecting the required circlip, round up or down to the nearest 10th of a millimetre as required. In other words, values up to 0.049 are rounded down and values of 0.050 and above are rounded up.

Example:

- ◆ Calculated value for new circlip is 2.27 mm: round up to the nearest 10th and select circlip with a thickness of 2.3 mm.
- ◆ Calculated value for new circlip is 2.24 mm: round down to the nearest 10th and select circlip with a thickness of 2.2 mm.

 Note

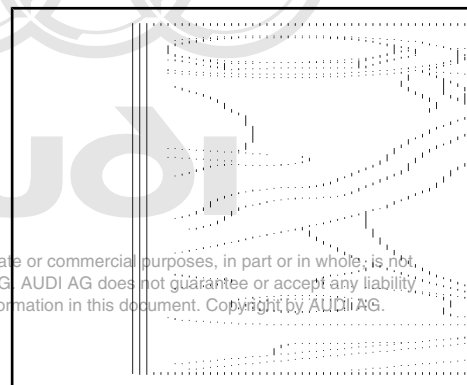
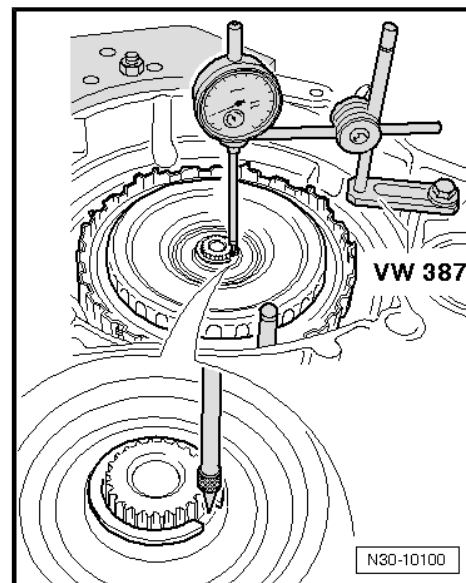
If the calculated thickness of the new circlip is exactly 2.0 mm, the circlip fitted previously for taking the measurement does not have to be removed.

- Remove provisionally fitted circlip (2 mm) and fit new circlip with thickness as calculated above.

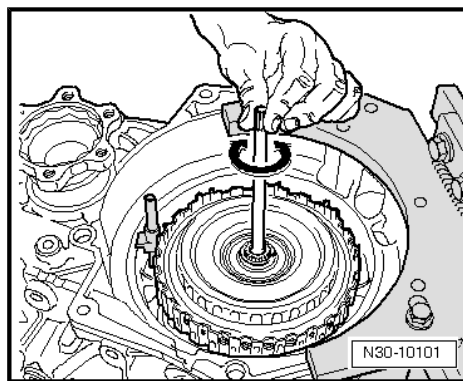
 Note

- ◆ *Circlips must not be used more than once.*
- ◆ *The removed (provisional) circlip and all remaining circlips should be disposed of.*

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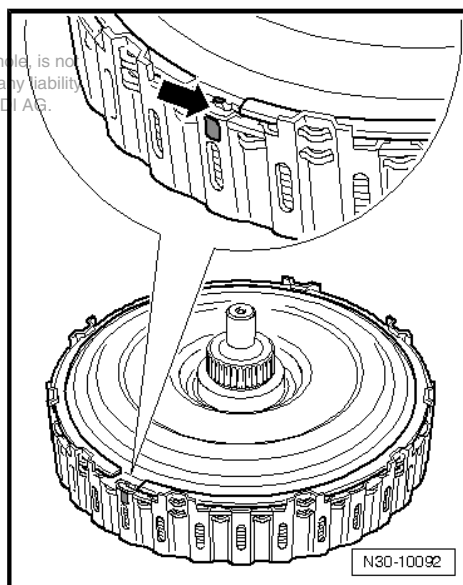


- Install pump shaft. When installing, lift the shaft and turn it slightly -arrow- so that it slides in and engages fully in the splines.

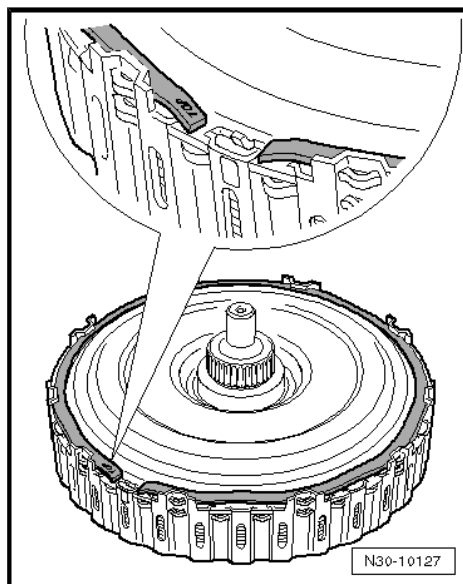


- Install drive plate in dual clutch.

- The projecting lug -arrow- on the drive plate must be positioned between the colour-marked splines on the outer plate carrier, or the marks made earlier in this procedure.



- Fit new circlip for drive plate.
- Installation position: the lug on the drive plate and the colour-marked splines on the outer plate carrier (or the corresponding marks made previously) must be located between the ends of the circlip.
- Using a screwdriver, check that circlip is fully engaged.
- Take out retaining pin - T10303- between dual clutch and housing.



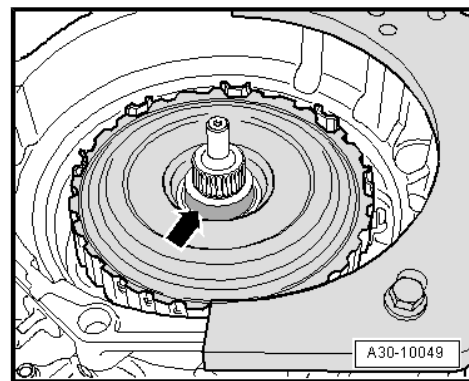


Caution

Leakage can occur at the contact surface of the clutch end cover.

- ◆ **Thoroughly degrease running surface -arrow- on drive plate for internal seal of clutch end cover.**

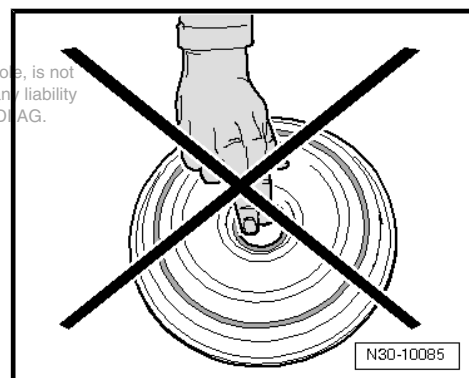
- Clean the contact surface for the outer seal of the clutch end cover.



Caution

Leakage can occur at the internal seal for the clutch end cover.

- ◆ **To ensure that the internal seal remains absolutely free of grease, do not touch the seal with your hands.**

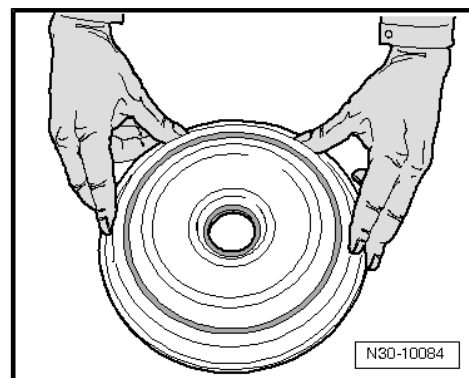


- Take the clutch end cover out of its packaging, only taking hold of it on the outside as illustrated.
- Clean end of gearbox shaft.

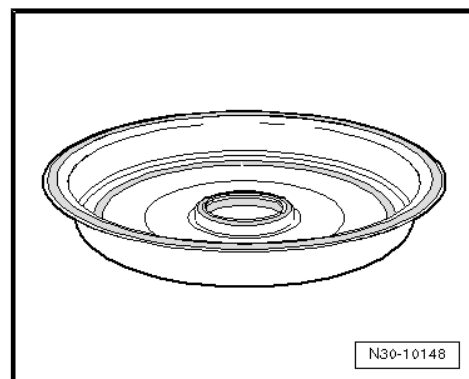


Note

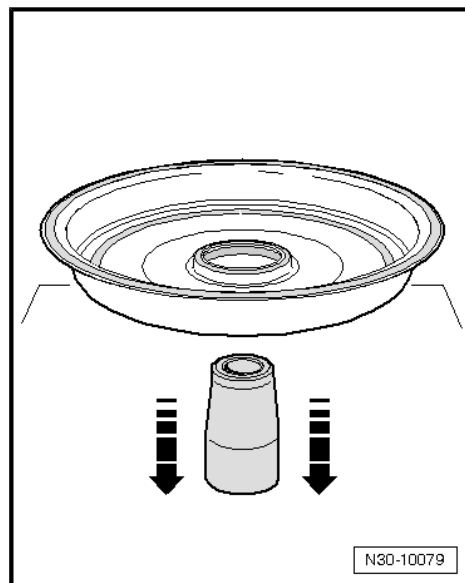
- ◆ **Using gear oil, lightly lubricate the outer seal for the clutch end cover only.**
- ◆ **If there are any stickers on the inside or the outside of the clutch end cover, remove them thoroughly.**



Clutch end cover without bush:



- Place assembly sleeve - T10302- on a flat surface.
- The internal seal in the new clutch end cover must be pre-formed before installation; this is done by guiding the clutch end cover, with the outside downwards, horizontally and uniformly over the assembly sleeve - T10302- .
- Lift assembly sleeve - T10302- out of clutch end cover.



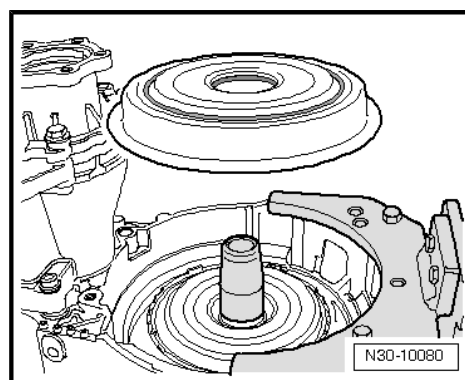
- Fit assembly sleeve - T10302- over end of dual clutch shaft.



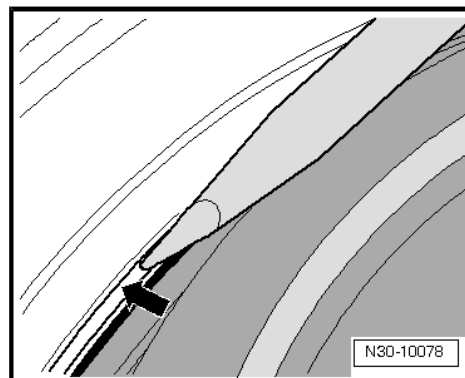
Caution

Clutch end cover can be damaged.

- ◆ *Do not attempt to drive on the clutch end cover with a hammer.*

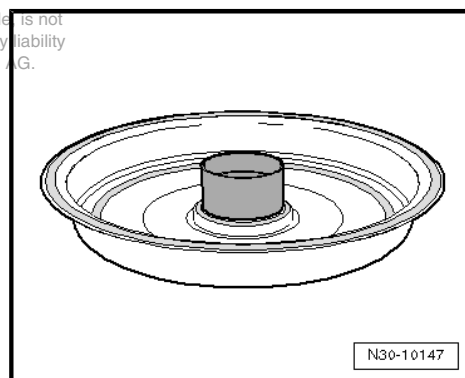


- Guide clutch end cover with the outside upwards horizontally over assembly sleeve - T10302- and press cover uniformly onto its seat.
- If necessary use a screwdriver to lever the clutch end cover carefully into its seat as illustrated -arrow- so that the corrugated ring can be fitted.
- Install corrugated ring for clutch end cover in gearbox housing, always holding the ring in place on the opposite side so that it remains in its groove.
- Using a screwdriver, check that corrugated ring is fully engaged.
- Remove assembly sleeve - T10302- .



Clutch end cover with bush (assembly aid)

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- Fit clutch end cover with bush.

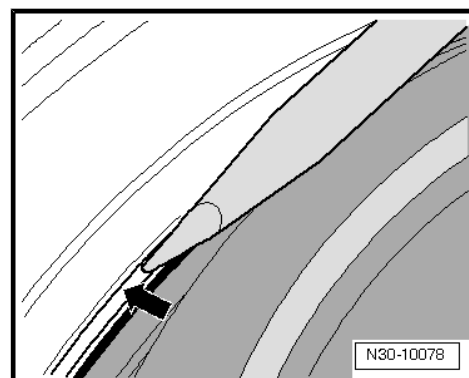
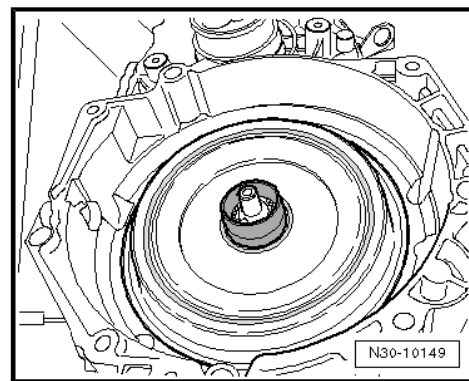


Caution

Clutch end cover can be damaged.

- ◆ *Do not attempt to drive on the clutch end cover with a hammer.*

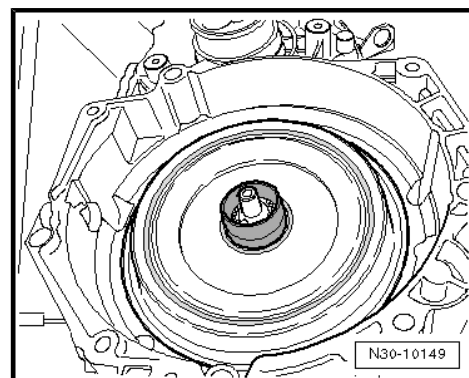
- Press clutch end cover evenly onto its seat.
- If necessary use a screwdriver to lever the clutch end cover carefully into its seat as illustrated -arrow- so that the corrugated ring can be fitted.
- Install corrugated ring for clutch end cover in gearbox housing, always holding the ring in place on the opposite side so that it remains in its groove.
- Using a screwdriver, check that corrugated ring is fully engaged.



- Remove bush (assembly aid).

Continuation for both types of clutch end cover:

- After installing gearbox, fill up with dual clutch gearbox oil
⇒ [page 77](#) .
- Perform basic setting ⇒ Vehicle diagnostic tester, Guided Functions.



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34 – Controls, housing

1 Selector mechanism

⇒ [“1.1 Exploded view - selector lever handle”, page 26](#)

⇒ [“1.2 Exploded view - selector mechanism”, page 27](#)

⇒ [“1.3 Manual release from position P”, page 28](#)

⇒ [“1.4 Removing and installing selector lever handle”, page 28](#)

⇒ [“1.5 Removing and installing selector mechanism”, page 31](#)

⇒ [“1.6 Checking selector mechanism”, page 33](#)

⇒ [“1.7 Checking and adjusting selector lever cable”, page 36](#)

1.1 Exploded view - selector lever handle

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

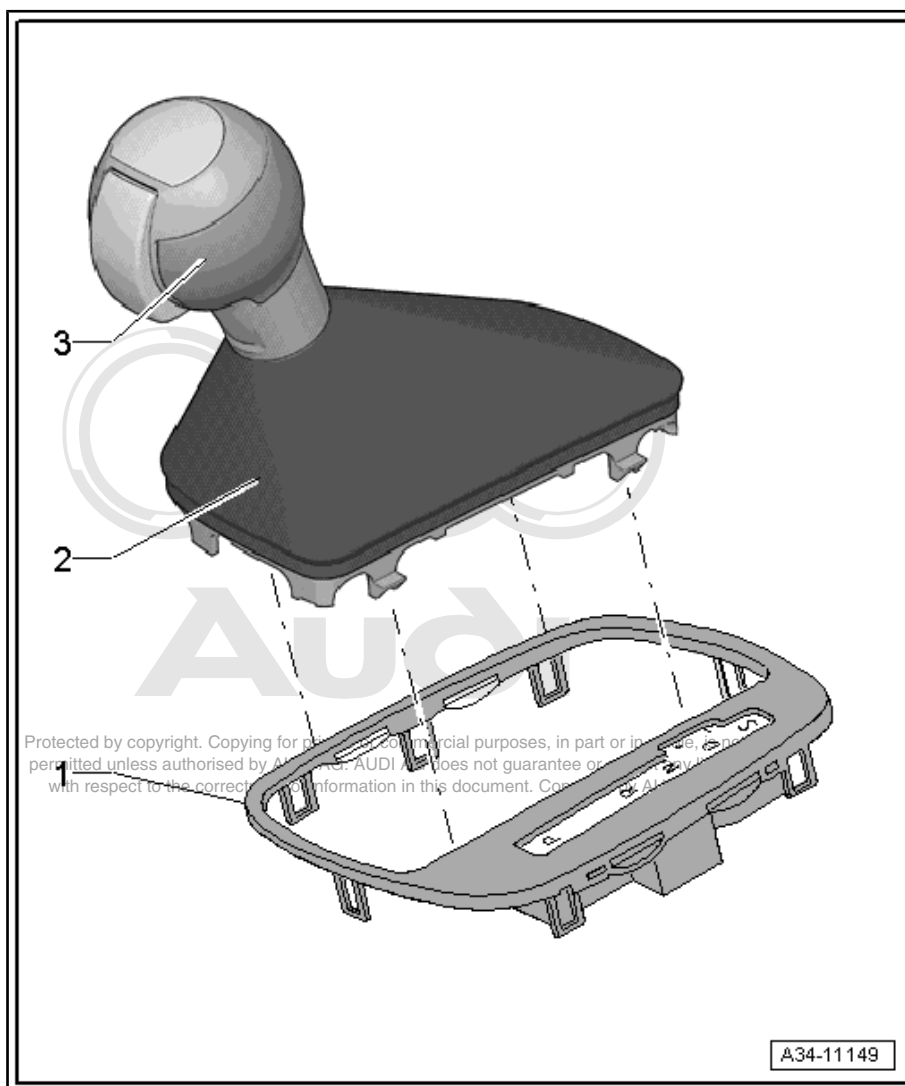
- ❑ Removing and installing: ⇒ Electrical system; Rep. gr. 96 ; Lights; Removing and installing selector lever position display - Y26-

2 - Selector lever boot

- ❑ Removing and installing
⇒ [“1.4 Removing and installing selector lever handle”, page 28](#)

3 - Selector lever handle

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



1.2 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 - Nut

- ☐ 20 Nm

2 - Gearbox selector lever

3 - Bolts

- ☐ 20 Nm

4 - Cable support bracket

5 - Securing clip

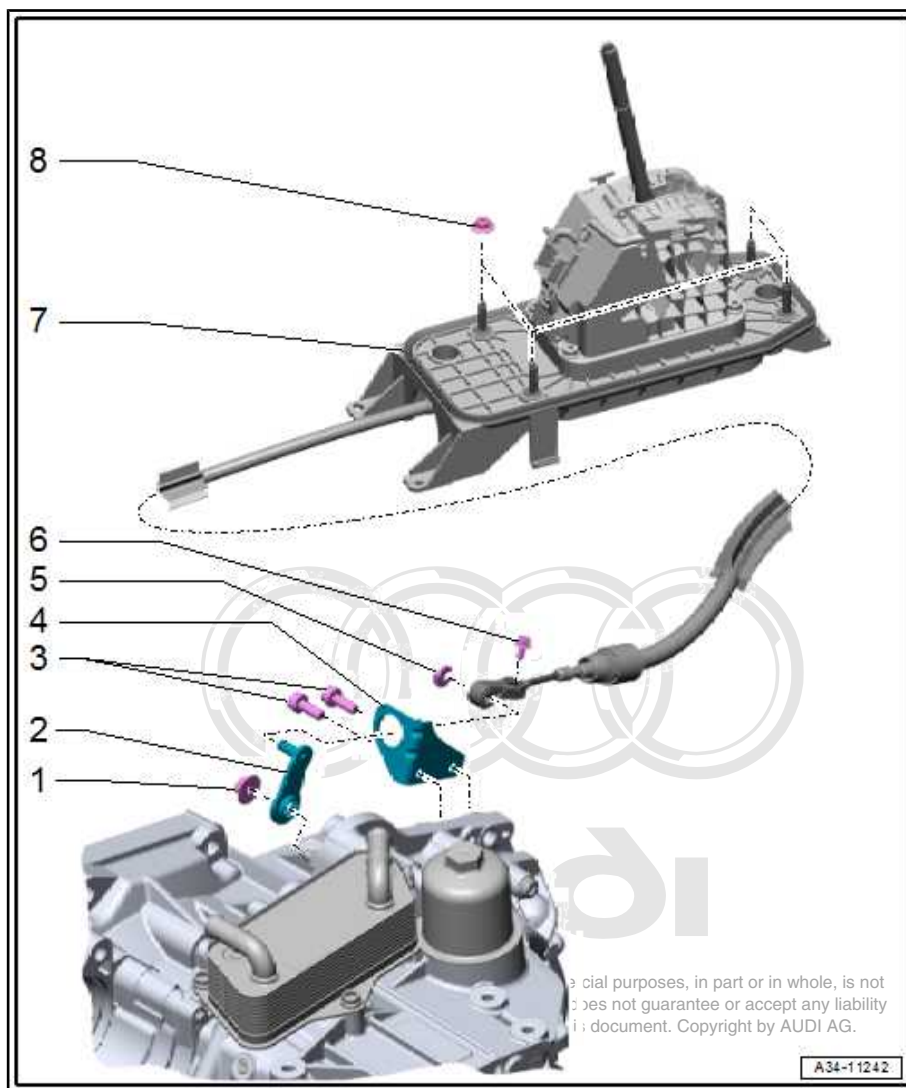
- ☐ Renew

6 - Bolt

- ☐ 12 Nm

7 - 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
- ☐ The 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 only be renewed together with shift unit as a complete unit ⇒ [page 31](#)



- ☐ Selector lever cable can only be renewed together with complete shift unit ⇒ [page 31](#)
- ☐ Do not grease selector lever cable
- ☐ Manual release from position P ⇒ [page 28](#)
- ☐ Removing and installing selector mechanism ⇒ [page 31](#)

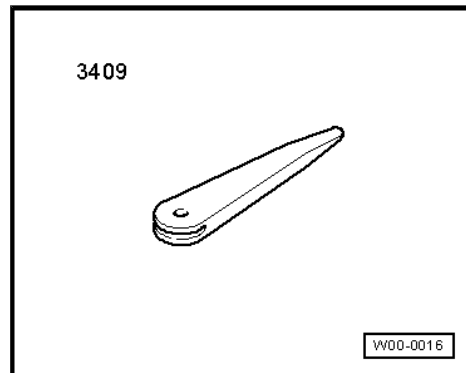
8 - Nut

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

1.3 Manual release from position P

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-

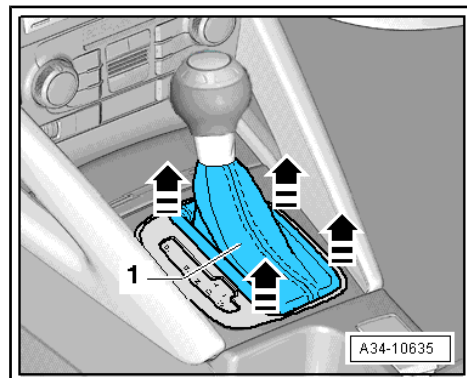


Note

- ◆ *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-.

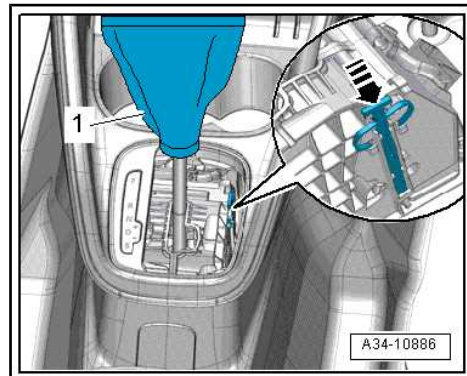


- Using a suitable screwdriver or similar, release selector lever lock solenoid - N110- -arrow- and at the same time press and hold interlock button and move selector lever out of position "P".



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.

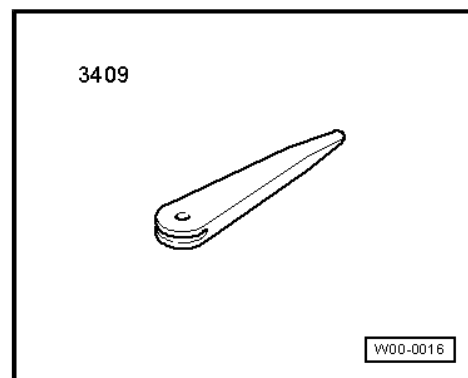


1.4 Removing and installing selector lever handle

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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.

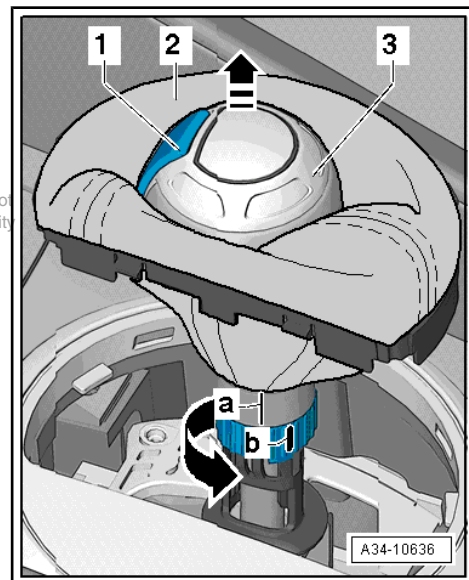
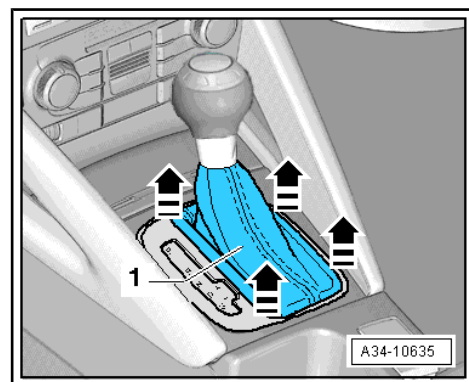
Removing



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 -1-.

Interlock button -1- will be pressed outwards and lock while the selector lever handle is being removed. Do not press in the interlock button -1- on the selector lever handle when the handle is removed.

Installing



Caution

Risk of damage to the selector mechanism.

- ◆ **Do not press in the interlock button -1- on the selector lever handle when the handle is removed.**
- ◆ **Interlock button -1- 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.**

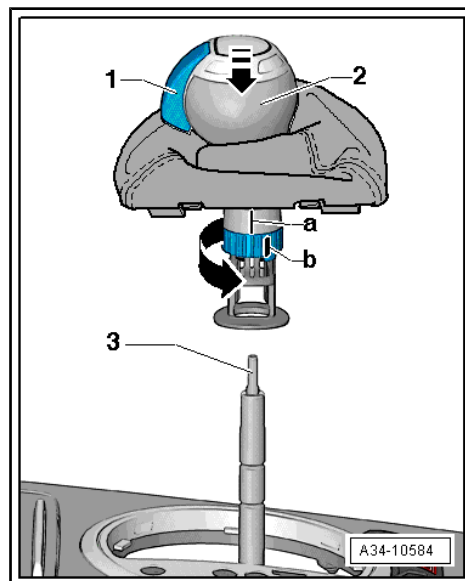
- Shift selector lever into position “N”.



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.



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



Caution

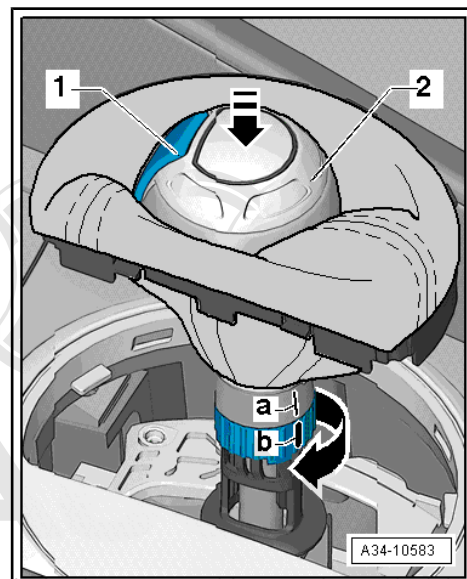
Risk of damage to selector lever handle

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.

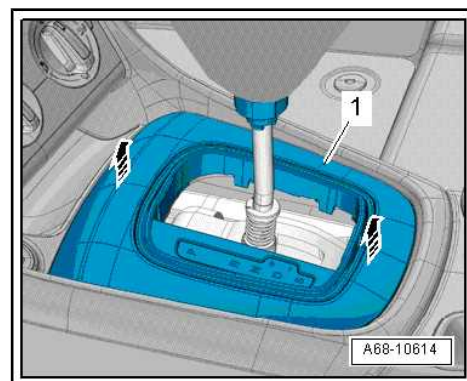
To check button mechanism:

- 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 ⇒ [page 28](#).
- Pull selector lever boot -1- down and clip onto trim frame -2- with selector lever position display - Y26-.
- Check selector mechanism ⇒ [page 33](#).

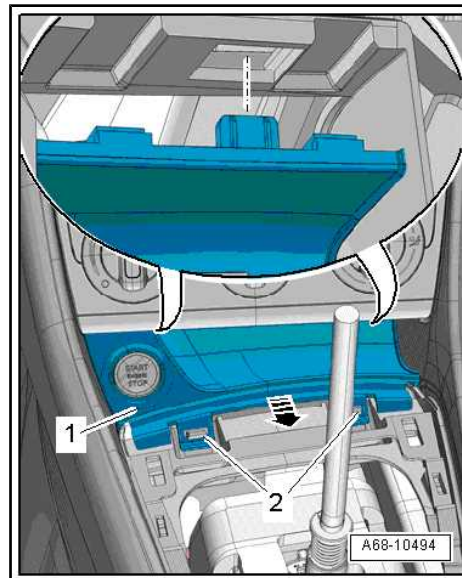
1.5 Removing and installing selector mechanism

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) .

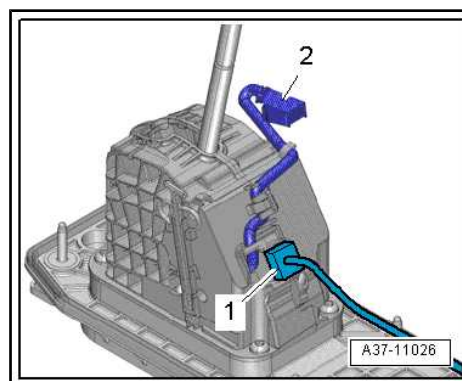


- Unplug electrical connector -1- between shift unit and vehicle wiring harness.

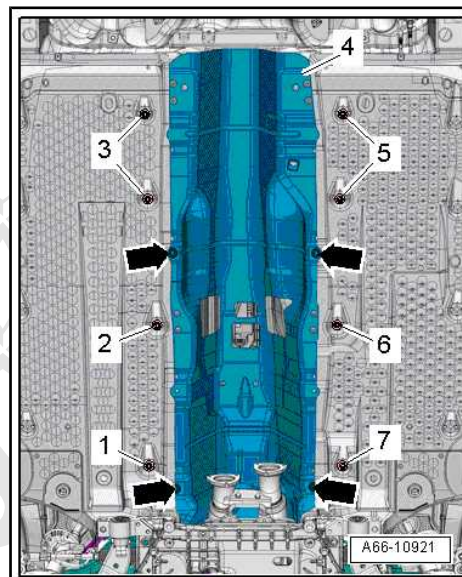


Note

-Item 2- can be disregarded.



- Remove heat shield for underbody ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Removing and installing heat shield for floor .



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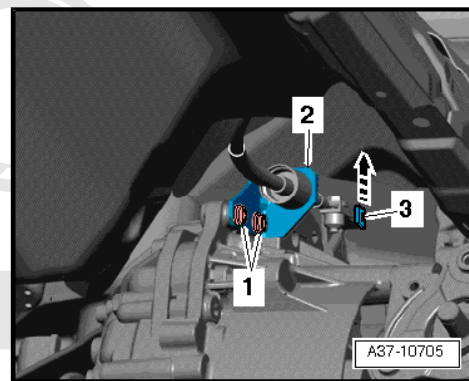
- Remove bolts -1- for cable support bracket.



Caution

Risk of damage to selector lever cable.

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



- Pull off securing clip -3- -arrow- and detach selector lever cable from gearbox.



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-Item 2- can be disregarded.



Note

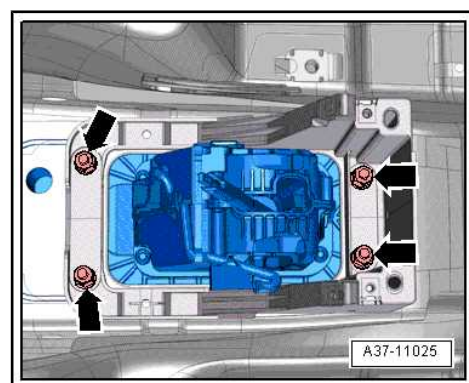
The assistance of a second mechanic is required to detach the shift unit from below.

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



Note

Do not bend or kink the selector lever cable.



Installing

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

- 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 with selector lever boot
⇒ [page 28](#) .
- Adjust selector lever cable ⇒ [page 36](#) .
- Check selector mechanism and ignition key removal lock
⇒ [page 33](#) .

Tightening torques

- ◆ ⇒ [“1.2 Exploded view - selector mechanism”, page 27](#)
- ◆ ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield

1.6 Checking selector mechanism

Overview:

- ◆ 1. Checking operation of selector mechanism ⇒ [page 34](#)
- ◆ 2. Checking ignition key removal lock ⇒ [page 35](#)
- ◆ 3. Checking door locking disable ⇒ [page 35](#)

- ◆ 4. Checking interlock button on selector lever handle
⇒ [page 36](#)
- ◆ 5. Checking connectors on selector mechanism ⇒ [page 36](#)

1. Checking operation of selector mechanism

- It should not be possible to operate the starter while the selector lever is in position “D”, “S”, “R” or in the “tiptronic gate”.
- 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 2 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 depressed.

Selector lever in position “P”:

- Pull up parking brake button to apply electromechanical parking brake.
- Switch off ignition.
- The selector lever is locked and cannot be shifted out of “P” position, even when the interlock button on the handle is pressed in.
- Switch on ignition.
- Do not depress brake pedal.
- The selector lever is locked and cannot be shifted out of “P” position, even when the interlock button on the handle is pressed in. Selector lever lock solenoid - N110- blocks selector lever.
- Press and hold brake pedal.
- Selector lever lock solenoid - N110- releases selector lever. It is possible to shift into a driving gear. With interlock button on selector lever handle pressed, shift selector lever slowly from “P” position through “R, N, D and S” and check whether the selector lever position display in the dash panel insert and in the centre console shows the correct selector lever position in each case.

Selector lever in position “N” and ignition switched on:

- Do not depress brake pedal.
- After a short delay: Selector lever is locked and cannot be shifted out of “N” position even when pressing the interlock button on the selector lever handle. Selector lever lock solenoid - N110- blocks selector lever.
- Depress brake pedal.
- Selector lever lock solenoid - N110- releases selector lever. Shifting into position “D” or “R” is possible.

Selector lever in position “D”, ignition switched on:

- Shift selector lever into “tiptronic gate”.
- The illuminated “D” symbol in the selector lever position display - Y26- should go out and the “+” and “-” symbols should light up.
- The selector lever position display in the dash panel insert should change from “D” to “M1” when the selector lever is moved into the “tiptronic gate”.



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Selector lever in position "D", ignition switched on:

- Press interlock button on selector lever handle.
- Shifting into position "S" is possible.

If results do not match specifications:

- Perform Guided Fault Finding ⇒ Vehicle diagnostic tester.
- Adjust selector lever cable ⇒ [page 36](#) .
- Check interlock button on selector lever handle ⇒ [page 36](#) .

2. Checking ignition key removal lock on vehicles with ignition key

- Pull up parking brake button to apply electromechanical parking brake.
- Do not depress brake pedal.
- Switch on ignition.
- Press and hold brake pedal.
- When interlock button in selector lever handle is pressed, it should be possible to move selector lever out of position "P" without "catching".
- Switch off ignition.
- It should not be possible to remove the ignition key when the selector lever is in any position other than "P".
- Shift selector lever into position "P".
- Pull out ignition key.
- It should only be possible to remove ignition key in selector lever position "P".
- It should not be possible to shift selector lever out of "P" position with interlock button pressed and foot brake depressed.

If the ignition key removal lock does not function as described:

- Fault finding ⇒ Vehicle diagnostic tester, Guided Fault Finding.

3. Checking door locking disable - vehicles with keyless locking and starting system

- Switch on ignition.
- Do not move selector lever to position "P"; select e.g. position "N".
- Switch off ignition.
- A warning message should be displayed in the instrument cluster.
- The vehicle cannot be locked.
- Shift selector lever into position "P".
- The vehicle can now be locked.

If results do not match specifications:

- Fault finding ⇒ Vehicle diagnostic tester, Guided Fault Finding.
- Adjust selector lever cable ⇒ [page 36](#) .
- Check interlock button on selector lever handle ⇒ [page 36](#) .

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4. Checking interlock button on selector lever handle

Check that interlock button moves freely:

- Interlock button should move easily when pressed without force.
- Interlock button should spring back fully on its own when released.
- If specified results are not obtained, check that selector lever handle is correctly installed ⇒ [page 28](#) .
- Check whether selector lever is bent.

Function test:

- Ignition switched on

Press the interlock button on the selector lever handle to move the handle into the positions listed below; it should not be possible to move the selector lever into these positions unless the interlock button is pressed.

- ◆ “P” to “R” (also depress brake pedal)
- ◆ “N” to “R” (brake pedal also has to be depressed after a short delay when vehicle is stationary)
- ◆ “R” to “P”

If results do not match specifications:

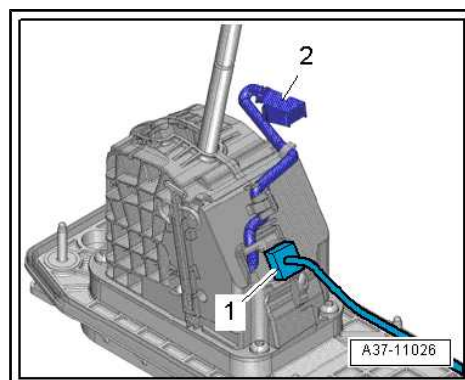
- Check whether selector lever handle is correctly installed ⇒ [page 28](#) .
- Check electrical connectors on selector mechanism.
- Check selector lever lock solenoid - N110- ⇒ Vehicle diagnostic tester, [Guided Fault Finding](#).
- Adjust selector lever cable ⇒ [page 36](#) .

5. Checking connectors on selector mechanism

Before repairing or checking connectors, check all control units in vehicle for entries in event memory ⇒ Vehicle diagnostic tester; [Guided Fault Finding](#); repair faults as required.

Before checking the connectors, all the control units in the vehicle should be checked for entries in the event memory; repair faults as necessary ⇒ Vehicle diagnostic tester.

- Check connectors according to ⇒ Current flow diagrams, Electrical fault finding and Fitting locations.
- 1 - Electrical connector for wiring from shift unit to gearbox (with CAN bus wire) and to selector lever lock solenoid - N110- and selector lever locked in position P switch - F319-
- 2 - Electrical connector for selector lever position display - Y26-



1.7 Checking and adjusting selector lever cable

Test conditions

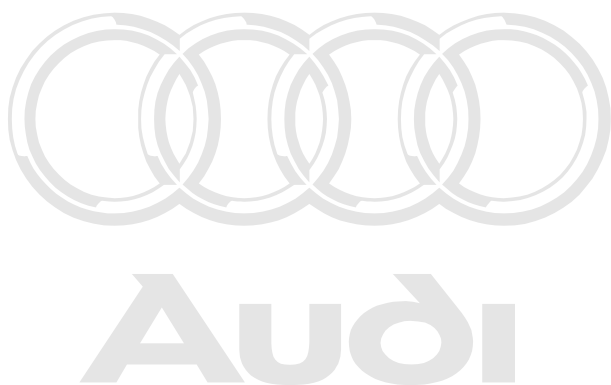
- Selector mechanism and selector lever cable operate smoothly when changing gears.

- Sleeve on selector lever cable is undamaged.

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 selector lever cable has been removed and installed with the selector mechanism.
- ◆ The selector lever cable has been removed and installed.
- ◆ The position of the engine/gearbox assembly has been altered, e.g. installed so it is free of stress.
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Shift selector lever into position "P".



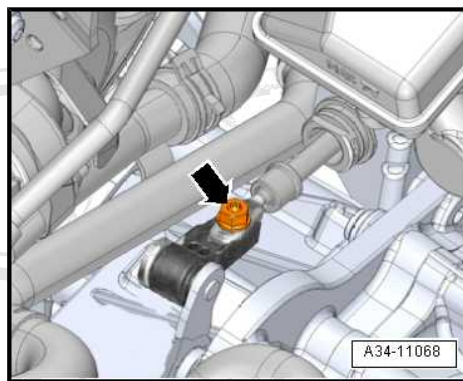
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- Loosen bolt -arrow- for adjustment of selector lever cable.
- Move gearbox selector lever into position “P” on gearbox. To check this position, press gearbox selector lever towards rear of vehicle as far as stop.



Note

To be sure that the gearbox is in “P” (parking lock engaged), lift vehicle. It should not be possible to turn both front wheels simultaneously in the same direction.



- To release tension in selector lever cable, carefully move selector lever slightly forwards and backwards, without shifting into a different position.
- Tighten adjuster screw -arrow-, taking care not to alter position of selector lever cable.

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Checking adjustment of selector lever cable

- Keep button pressed, while pulling selector lever approx. 5 mm to the rear out of position “P”. Then keep lever in this position, do not move it into “R”.
- Release selector lever.
 - The selector lever should spring back into position “P” by itself.
- Shift selector lever into position “N”.
- Keep button pressed, while pulling selector lever approx. 5 mm to the rear out of position “N”. Then keep lever in this position, do not move it into “D”.
- Release selector lever.
 - The selector lever should spring back into position “N” by itself.
- Keep button pressed, while pushing selector lever approx. 5 mm to the front out of position “N”. Then keep lever in this position, do not move it into “R”.
- Release selector lever.
 - The selector lever should spring back into position “N” by itself.
- Repeat the adjustment if the selector lever does not react as described.
- Check selector mechanism ⇒ [page 33](#) .

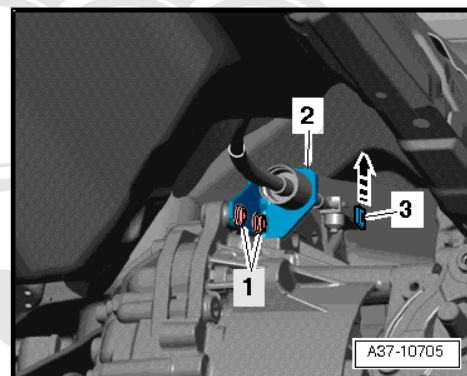
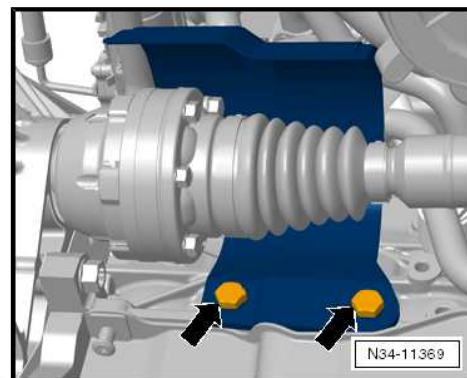
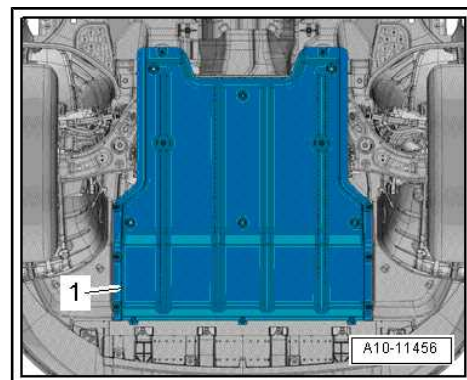
Tightening torques

- ♦ ⇒ [“1.2 Exploded view - selector mechanism”, page 27](#)
- ♦ ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing

1.8 Renewing selector shaft oil seal

Procedure

- Gearbox in vehicle
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove bolts -arrows- and detach heat shield for drive shaft (right-side).
- Detach retaining clip -2-.
- Press securing clip -3- upwards -arrow- and detach.
- Press selector lever cable off gearbox selector lever and pull out of support bracket.



Note

- ◆ For illustration purposes, the fitting location is shown from the rear.
- ◆ -Item 1- can be disregarded.



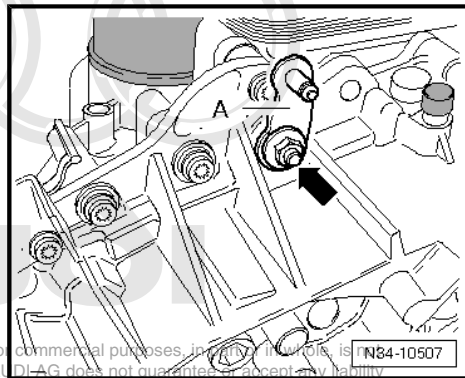
Caution

Risk of damage to selector lever cable.

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

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- Remove nut -arrow-.
- Carefully pry gear selector lever -A- off selector shaft.



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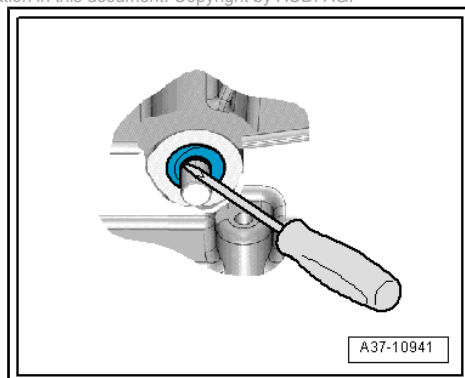


Caution

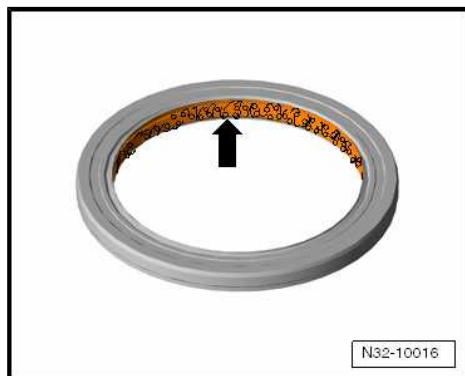
Risk of damage to running surface of selector shaft.

- ◆ ***Apply screwdriver with care.***

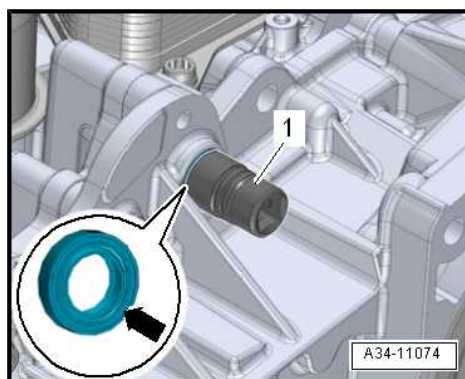
- Push a small screwdriver through the seal and pull it out.



- Lightly lubricate outer circumference and sealing lips of new oil seal with gear oil.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease ⇒ Electronic parts catalogue .



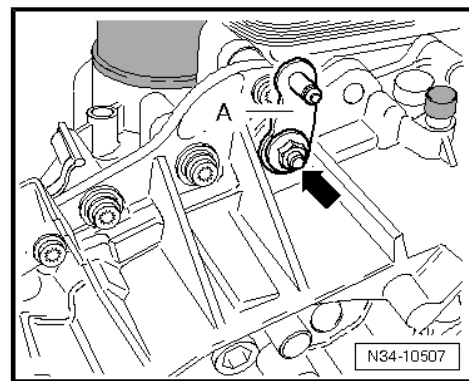
- Drive in oil seal onto stop using socket (15 mm) -item 1-; take care to keep seal straight when installing.
- Closed side of seal -arrow- faces outwards.



- Fit gearbox selector lever -A- on selector shaft and tighten nut -arrow-.
- The gearbox selector lever can only be fitted in one position on the splines.
- Press selector lever cable onto gearbox selector lever and adjust selector lever cable ⇒ [page 36](#) .

Tightening torques

- ◆ ⇒ [“1.2 Exploded view - selector mechanism”, page 27](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



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2 Removing and installing gearbox

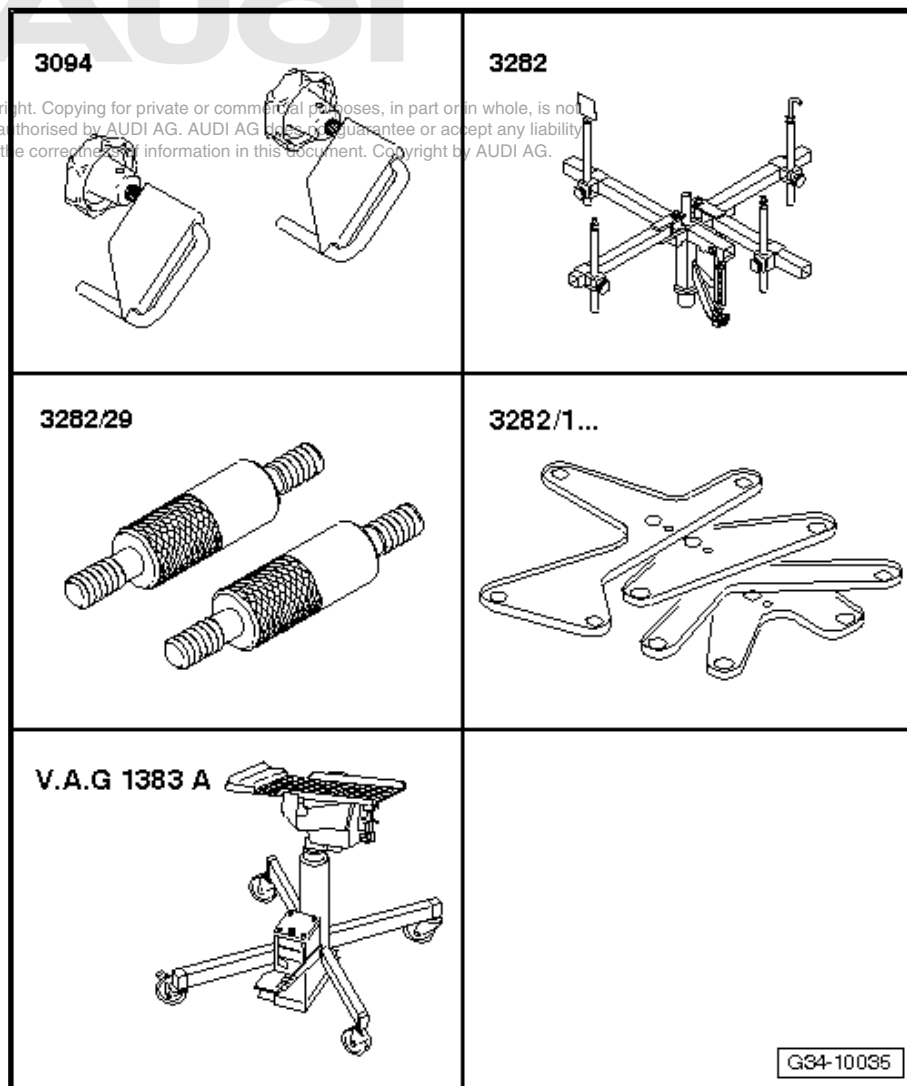
⇒ "2.1 Removing gearbox", page 42

⇒ "2.2 Installing gearbox", page 48

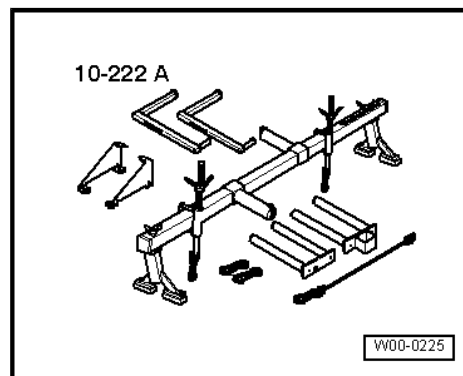
2.1 Removing gearbox

Special tools and workshop equipment required

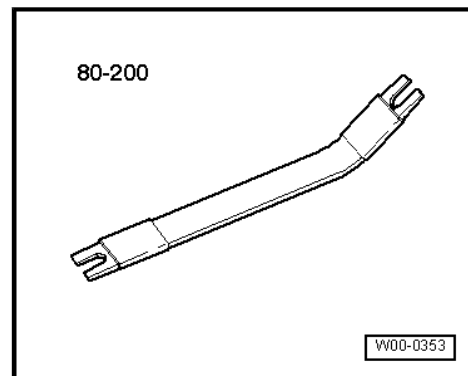
- ◆ Hose clamps, up to 25 mm - 3094-
- ◆ Gearbox support - 3282-
- ◆ Pins - 3282/29-
- ◆ Adjustment plate - 3282/42 A-
- ◆ Engine and gearbox jack - V.A.G 1383 A-



- ◆ Support bracket - 10 - 222 A-



◆ Removal lever - 80 - 200-

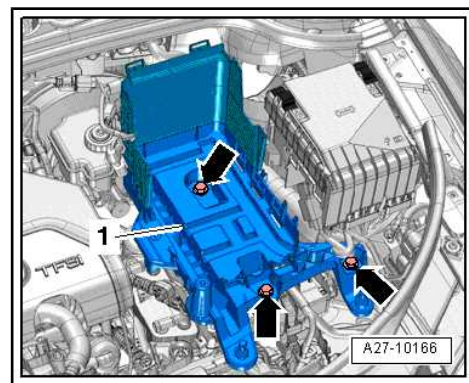


Procedure



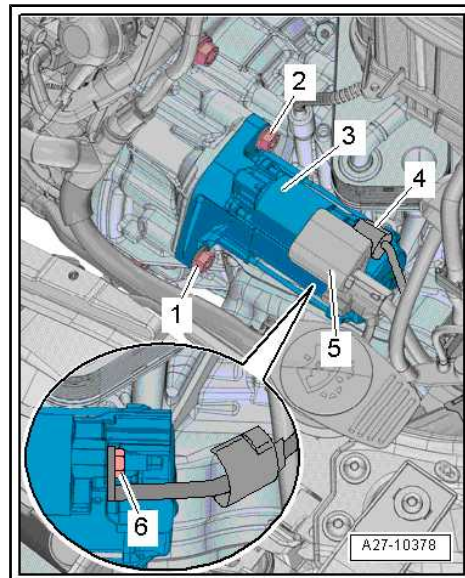
Note

- ◆ *Observe general notes ➔ [page 7](#).*
 - ◆ *Observe rules for cleanliness ➔ [page 9](#).*
 - ◆ *Refer to general repair instructions ➔ [page 9](#).*
 - ◆ *Re-attach all cable ties at the same locations when re-installing.*
- Shift selector lever into position “P”.
 - Pull up parking brake button to apply electromechanical parking brake.
 - Switch off ignition.
 - Remove battery and battery tray -1- ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

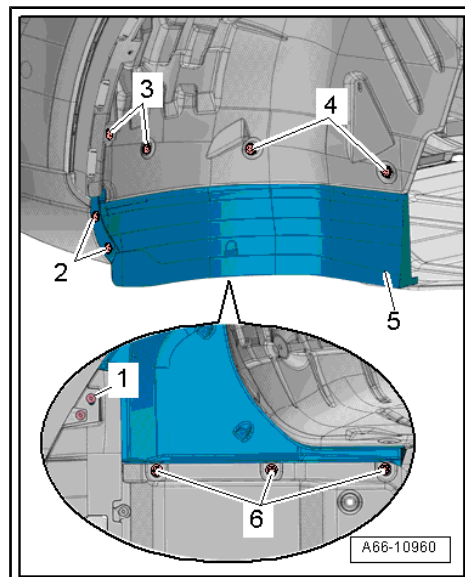


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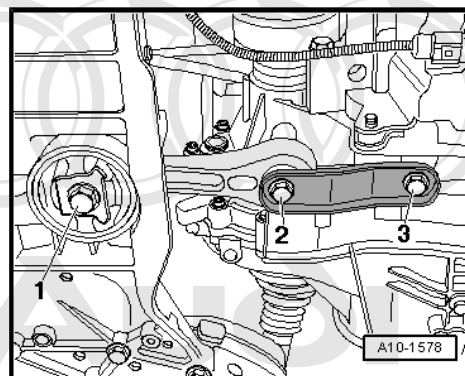
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter



- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Exploded view - wheel housing liner (front) .
- Remove flange shaft (left-side) ⇒ [page 87](#) .
- Remove flange shaft (right-side) ⇒ [page 90](#) .



- Remove pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support .



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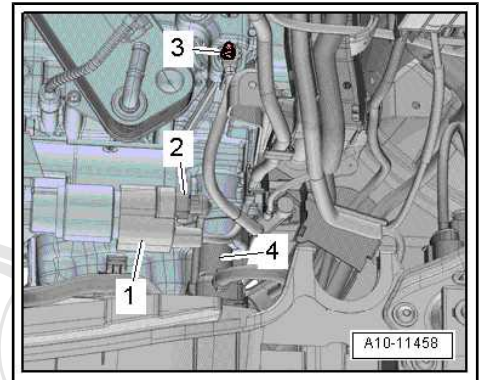
- Remove nut -3- and detach earth wire.



Caution

The control unit (mechatronic unit) can be damaged by electrostatic discharge.

- ◆ *Do not touch contact pins in gearbox connector with bare hands.*



- Touch a suitable earthed object with your hand (without gloves) to discharge any static electricity.
- Turn fastener anti-clockwise and unplug electrical connector -4- on gearbox.



Note

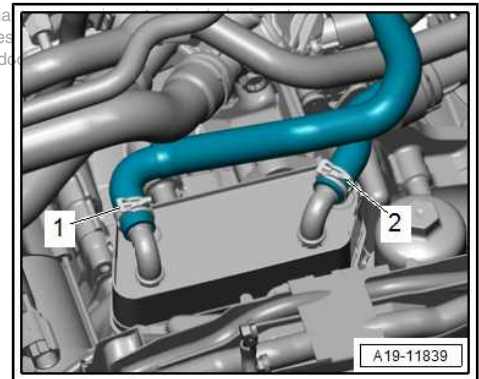
-Items 1 and 2- can be disregarded.



Note

Place a cloth below to catch escaping coolant.

- Clamp off coolant hoses using hose clamps -3094- , release hose clips -1 and 2- and disconnect coolant hoses.

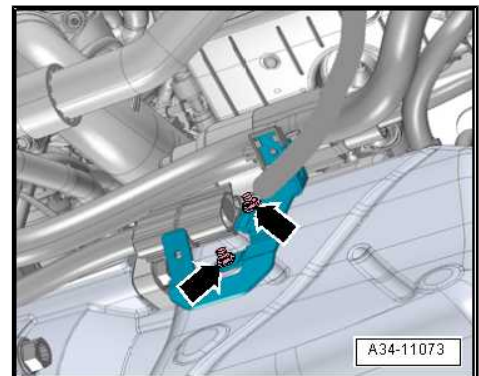


- Remove nuts -arrows- and detach bracket at front of oil pan.



Note

The studs are welded to the front of the oil pan.

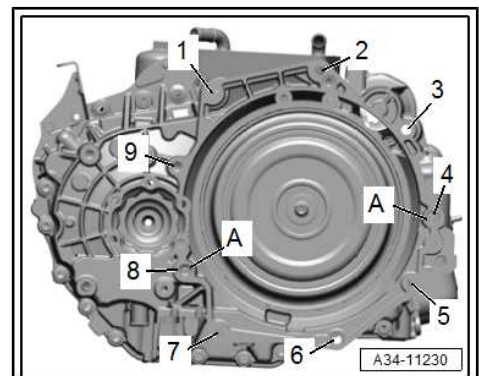


- Remove bolts -1, 2, 3- securing gearbox to engine.

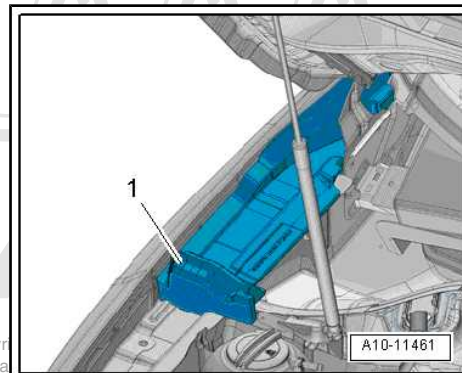


Note

Bolt -3- is located in aperture for starter.



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

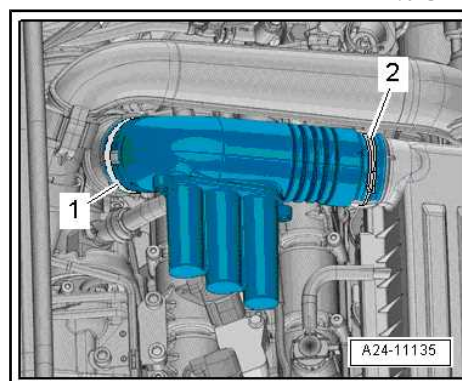


- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Release hose clip -1- and detach air pipe.

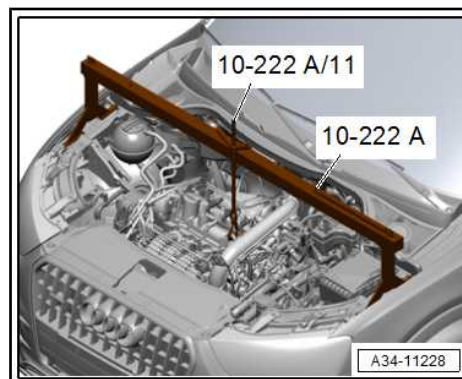


Note

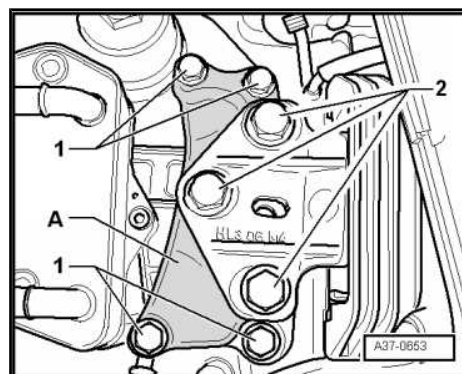
-Item 2- can be disregarded.



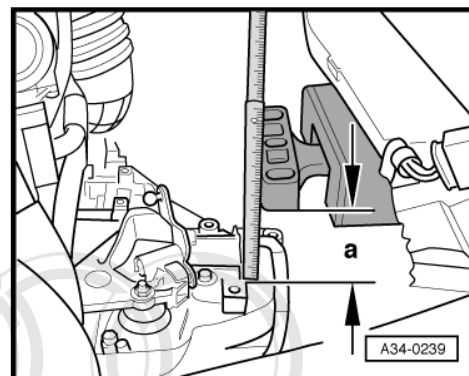
- Set up support bracket - 10 - 222 A- with spindle -10 - 222 A / 11- on wing mounting flanges, as shown in illustration.
- Engage hook of spindle (left-side) in engine lifting eye.
- Take up weight of engine/gearbox assembly slightly with spindle; do not lift.



- Remove bolts -1, 2- and detach gearbox support -A-.



- Lower engine/gearbox assembly using spindle - 10 - 222 A / 11- until distance -a- is obtained between gearbox housing and gearbox mounting.
- Dimension -a- = 65 mm (maximum)



- Remove bolts -1- for cable support bracket.

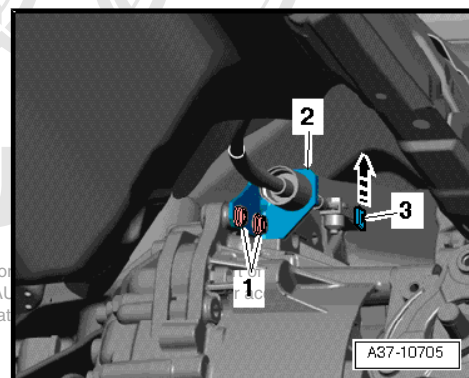


Caution

Risk of damage to selector lever cable.

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

- Pull off securing clip -3- -arrow- and detach selector lever cable from gearbox.

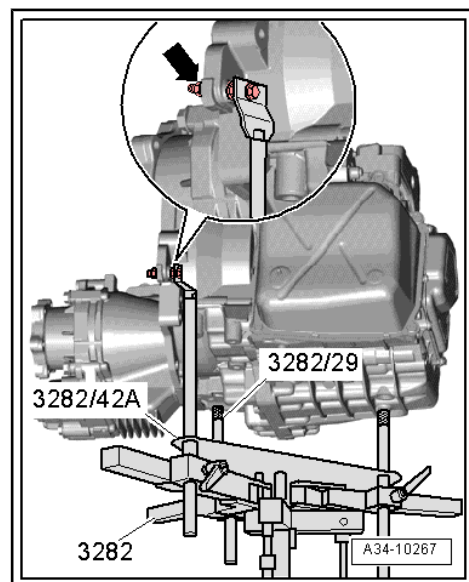


Note

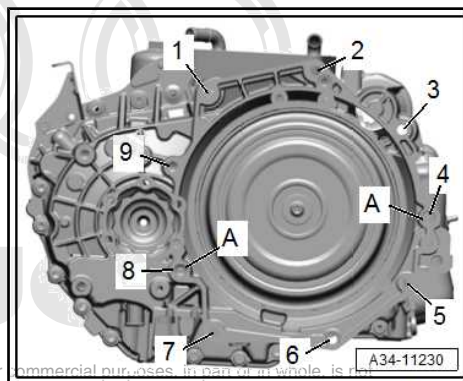
-Item 2- can be disregarded.

To remove dual clutch gearbox 02E, set up gearbox support - 3282- with adjustment plate - 3282/42 A- .

- Set up gearbox support - 3282- on engine and gearbox jack - V.A.G 1383 A- .
- Align arms of gearbox support according to holes in adjustment plate - 3282/42 A- .
- Secure support elements as illustrated on adjustment plate - 3282/42 A- . However, use "retainer plate with drilling" as front support element.
- Place engine and gearbox jack - V.A.G 1383 A- underneath vehicle.
- The arrow symbol on the adjustment plate points in the direction of travel.
- Align gearbox support - 3282- parallel with gearbox.
- Screw pin - 3282/29- into gearbox.
- Secure "retainer plate with drilling" firmly to gearbox as illustrated -arrow-.
- Insert last support element in gearbox as illustrated.
- Support gearbox by lifting from underneath with engine and gearbox jack - V.A.G 1383 A- .



- Remove remaining engine/gearbox securing bolts -4 ... 9-.
- Press gearbox off dowel sleeves.
- Pull gearbox off engine.
- Carefully lower gearbox using engine and gearbox jack - V.A.G 1383 A- .
- While lowering gearbox, adjust position of gearbox using spindles on gearbox support - 3282- .
- If necessary, press engine forwards slightly.



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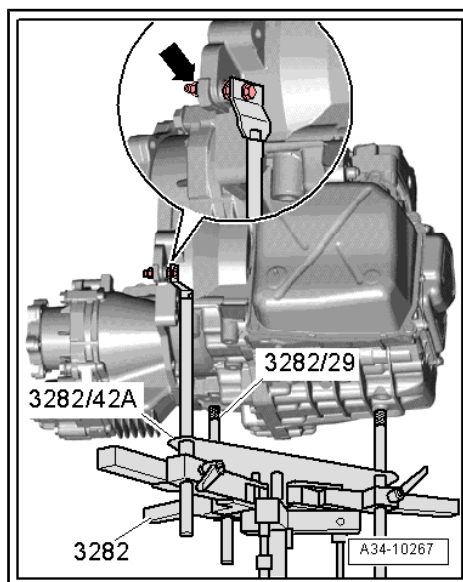
2.2 Installing gearbox

Procedure

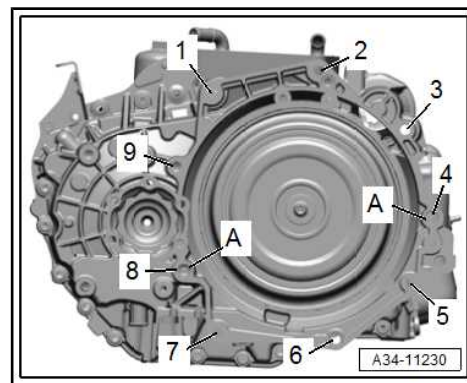


Note

- ◆ *Renew bolts which are tightened by turning through a specified angle.*
 - ◆ *Renew self-locking nuts and bolts, and seals, O-rings 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.*
- Place gearbox on gearbox support - 3282- and secure in position.
 - Clean input shaft splines and hub, remove corrosion and lubricate splines with only a very thin coating of grease ⇒ Electronic parts catalogue . It is important to remove excess grease.



- Check that dowel sleeves -A- for centralising engine/gearbox are in the cylinder block; install any missing dowel sleeves.



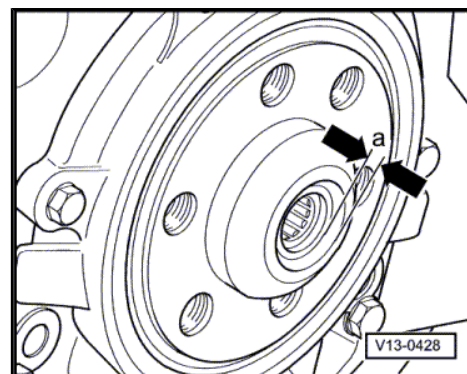
- Check condition of needle bearing in crankshaft; renew if necessary ➔ Rep. gr. 13 ; Crankshaft; Renewing needle bearing in crankshaft .



Note

If the needle bearing in the crankshaft is damaged, the gears cannot be shifted correctly because the clutch is supported by this bearing.

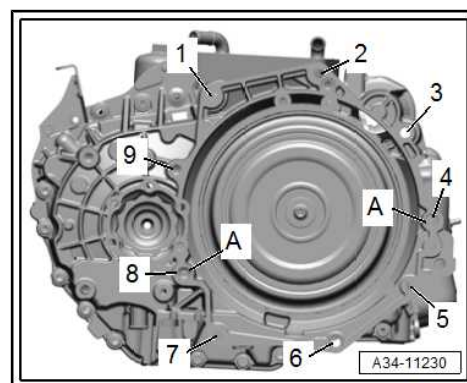
- Carefully raise gearbox using engine and gearbox jack - V.A.G 1383 A- and position correctly using gearbox support - 3282- .
- Join gearbox to engine, taking care not to trap wiring or other connections.
- Secure gearbox to engine.



Note

The bolt -3- is only accessible through the opening where the starter has been removed.

- Adjust assembly mountings ➔ Rep. gr. 10 ; Assembly mountings; Adjusting assembly mountings .
- Detach gearbox support - 3282- from gearbox.
- Detach support bracket - 10 - 222 A- from engine.
- Install flange shaft (left-side) ➔ [page 87](#) .
- Install flange shaft (right-side) ➔ [page 90](#) .
- Install wheel spoiler (front left) ➔ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Exploded view - wheel housing liner (front) .
- Install pendulum support ➔ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support
- Fill up with coolant ➔ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



2.3 Tightening torques for gearbox



Note

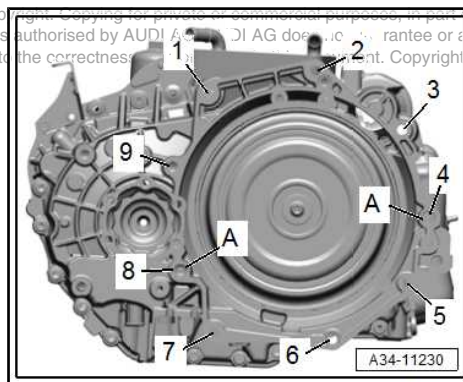
- ◆ *Tightening torques apply only to lightly greased, oiled, phosphated or black-finished nuts and bolts.*
- ◆ *Additional lubricant such as engine or gear oil may be used, but do not use graphite lubricant.*
- ◆ *Do not use parts which have been degreased.*
- ◆ *Tolerance for tightening torques is $\pm 15\%$.*
- ◆ *Renew bolts which are tightened by turning through a specified angle.*
- ◆ *Renew self-locking nuts and bolts, and seals, O-rings 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.*

Component	Nm
Bolts and nuts	M6 9
	M7 15
	M8 20
	M10 40
	M12 65

Dual clutch gearbox to engine:

Item	Bolt	Nm
1, 3 ¹⁾	M12x55	80
2	M12x65	80
4, 8, 9	M12x70	80
5, 6, 7	M10x50	40
A	Dowel sleeves for centralising	
• ¹⁾ Bolt is only accessible through opening of removed starter.		

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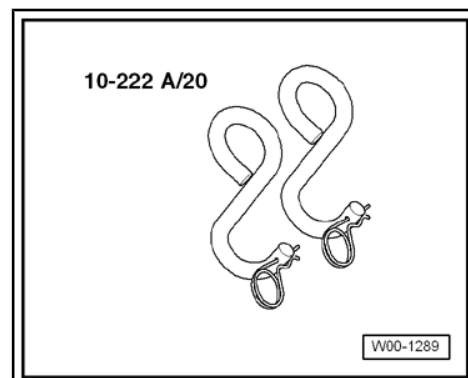


- ◆ ➔ ["5.1 Exploded view - assembly mountings", page 55](#)
- ◆ Support bracket for selector lever cable
➔ ["1.2 Exploded view - selector mechanism", page 27](#)
- ◆ ➔ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing
- ◆ ➔ Electrical system; Rep. gr. 27 ; Starter; Exploded view - starter
- ◆ ➔ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery

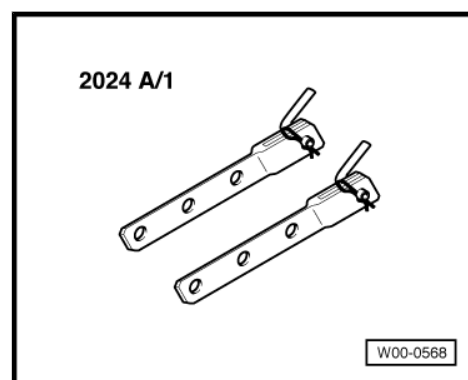
3 Transporting gearbox

Special tools and workshop equipment required

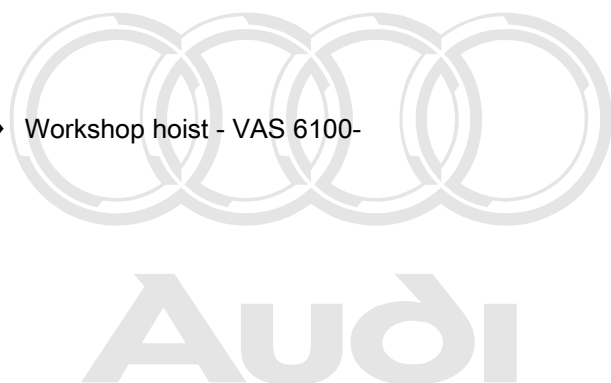
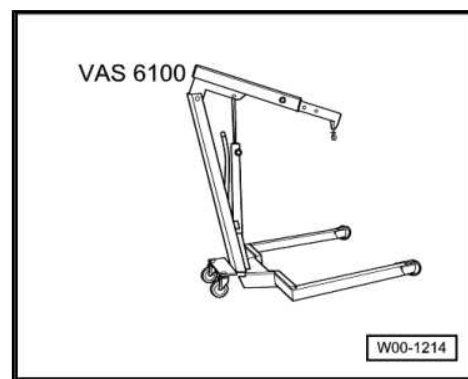
- ◆ Adapters - 10 - 222 A /20-



- ◆ Hook -2024 A /1-



- ◆ Workshop hoist - VAS 6100-



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Procedure

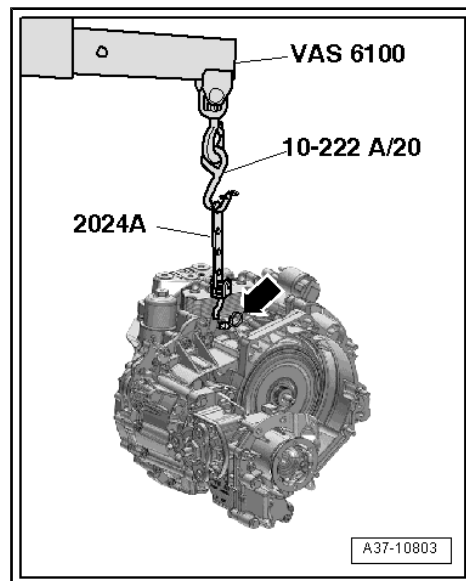
- Engage hook of lifting tackle - 2024 A- at gearbox lifting eye and secure with retaining clip -arrow-.
- Engage workshop hoist - VAS 6100- in hook -2024 A /1- with adapter - 10 - 222 A /20- .



Caution

The gearbox oil cooler can be damaged when the gearbox is transported.

◆ *Guide gearbox as required when transporting.*

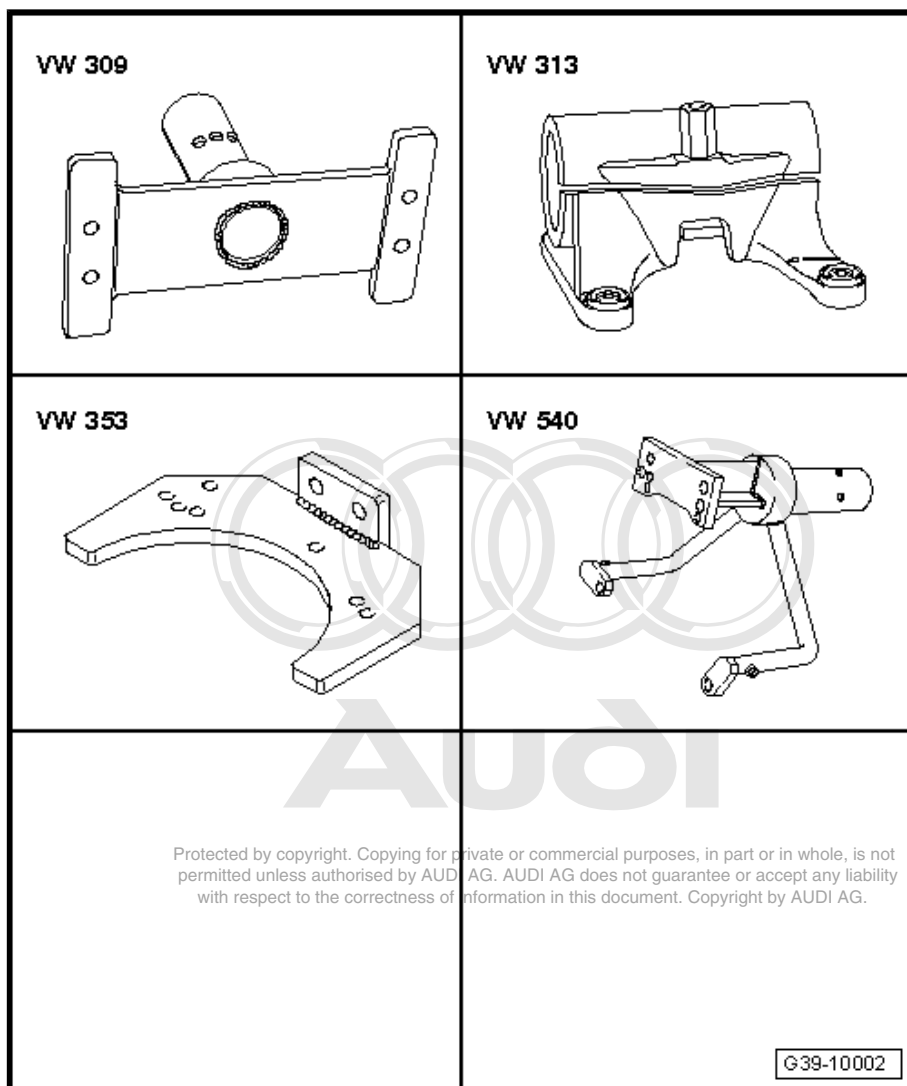


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4 Securing to engine and gearbox support

Special tools and workshop equipment required

- ◆ Support plate - VW 309-
- ◆ Support clamp - VW 313- , or
- ◆ Engine and gearbox support - VAS 6095-
- ◆ Gearbox support - VW 353-
- ◆ Engine and gearbox support - VW 540-



Securing gearbox in horizontal position

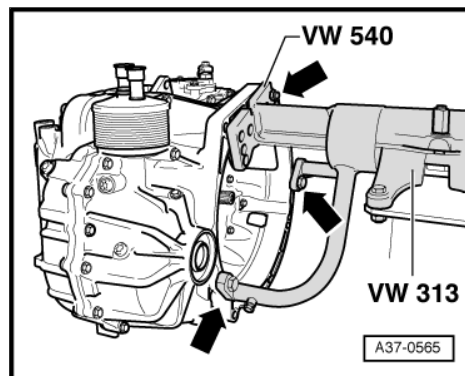
- Secure gearbox to engine and gearbox support - VW 540-
-arrows-.
- Using workshop hoist - VAS 6100- , insert gearbox into support
clamp - VW 313- or engine and gearbox support - VAS 6095- .



WARNING

*The gearbox can swing round suddenly in the support clamp -
VW 313- .*

- ◆ *The centre of gravity of the gearbox is outside the pivot
centre of the support clamp. A second mechanic is there-
fore required to hold the gearbox housing when the gear-
box is rotated in the clamp.*



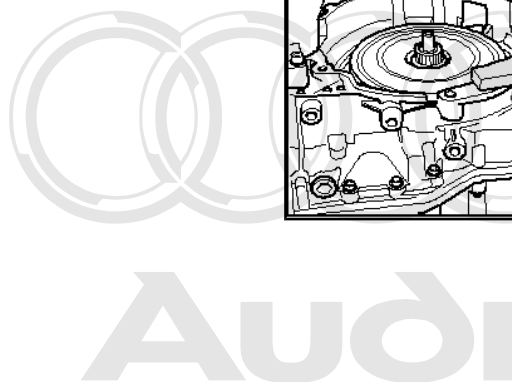
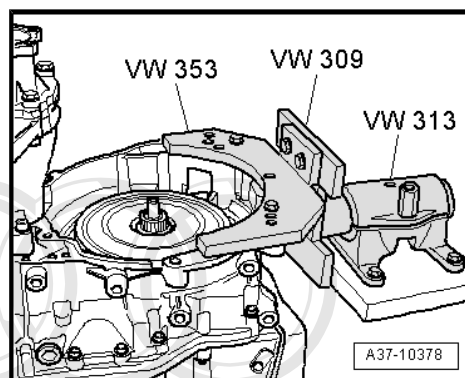
Caution

*Oil can escape when the gearbox is rotated in the support
clamp.*

- ◆ *The breathers on the gearbox housing must be sealed off
if the gearbox (with oil filling) is turned on the engine and
gearbox support so that the oil pan faces upwards.*

Securing gearbox in vertical position

- Secure gearbox to gearbox support - VW 353- and fit into sup-
port clamp - VW 309- or engine and gearbox support - VW
313- using support plate - VAS 6095- .



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5 Assembly mountings

⇒ ["5.1 Exploded view - assembly mountings", page 55](#)

5.1 Exploded view - assembly mountings

1 - Bolt

- ❑ Tightening torque ⇒
Rep. gr. 10 ; Assembly
mountings; Exploded
view - assembly mount-
ings

2 - Engine support

- ❑ Removing and installing
⇒ Rep. gr. 10 ; Assem-
bly mountings; Explod-
ed view - assembly
mountings

3 - Engine mounting

- ❑ With support arm
- ❑ Removing and installing
⇒ Rep. gr. 10 ; Assem-
bly mountings; Remov-
ing and installing engine
mounting

4, 5, 6 - Bolts

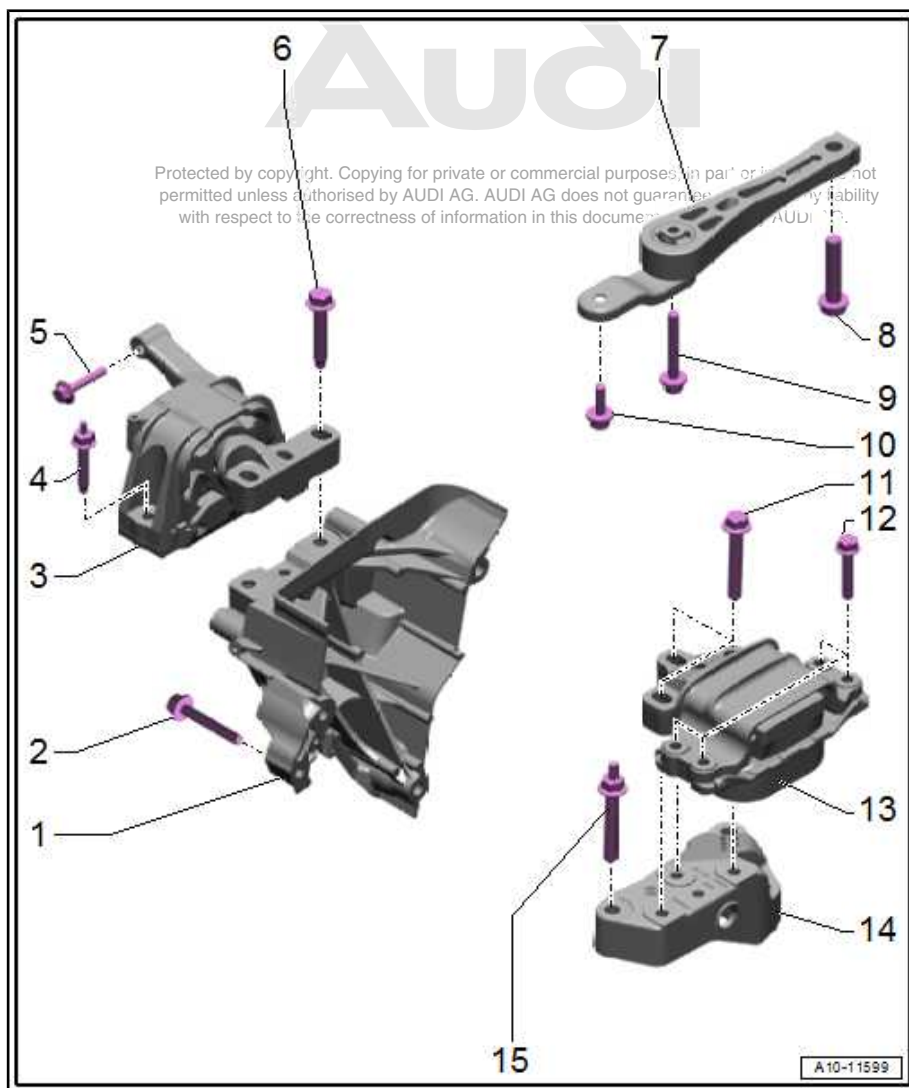
- ❑ Tightening torque ⇒
Rep. gr. 10 ; Assembly
mountings; Exploded
view - assembly mount-
ings

7 - Pendulum support

- ❑ Removing and installing
⇒ Rep. gr. 10 ; Assem-
bly mountings; Remov-
ing and installing pendu-
lum support

8, 9, 10 - Bolts

- ❑ Tightening torque ⇒
Rep. gr. 10 ; Assembly





mountings; Exploded
view - assembly mountings

11 - Bolt

- ☐ Renew after removal
- ☐ 60 Nm +90°

12 - Bolt

- ☐ Renew after removal
- ☐ 60 Nm +90°

13 - Gearbox mounting

- ☐ With support arm
- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing gearbox mounting

14 - Gearbox support

- ☐ Removing ⇒ [“2.1 Removing gearbox”, page 42](#)
- ☐ Installing ⇒ [“2.2 Installing gearbox”, page 48](#)

15 - Bolt

- ☐ Renew after removal
- ☐ 60 Nm +90°

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6 Mechatronic unit

⇒ ["6.1 Exploded view - mechatronic unit", page 57](#)

⇒ ["6.2 Removing and installing oil pan", page 58](#)

⇒ ["6.3 Removing and installing mechatronic unit", page 60](#)

6.1 Exploded view - mechatronic unit

1 - Drain plug and inspection plug

- ☐ 45 Nm

2 - Seal

- ☐ Renew after removal

3 - Overflow pipe

- ☐ 3 Nm

4 - Bolt

- ☐ 10x
- ☐ Renew after removal
- ☐ Tightening torque and sequence ⇒ [page 58](#)

5 - Oil pan

- ☐ Removing and installing ⇒ [page 58](#)

6 - Bolt

- ☐ 5x
- ☐ Renew after removal
- ☐ Tightening torque and sequence ⇒ [page 58](#)

7 - Gasket

- ☐ Renew after removal

8 - Mechatronic unit for dual clutch gearbox - J743-

- ☐ With O-rings on connector
- ☐ Renew O-rings after removal
- ☐ Removing and installing ⇒ [page 60](#)

9 - Breather cap

- ☐ Fitted onto breather pipe

10 - Breather pipe

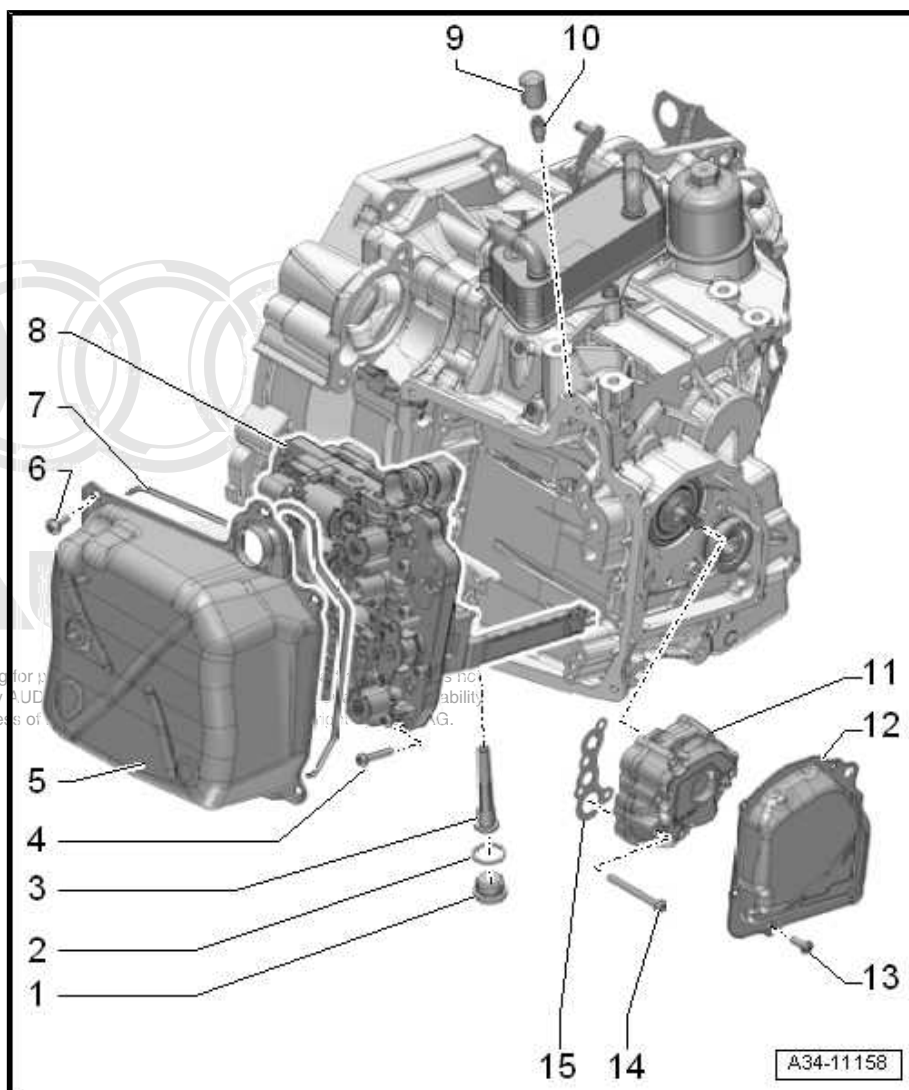
- ☐ Pressed into gearbox
- ☐ Renew after removal

11 - Gear oil pump

- ☐ Removing and installing ⇒ [page 68](#)
- ☐ Install with new gasket

12 - Cover for gear oil pump

- ☐ With gasket
- ☐ Renew after removal



- ☐ Removing and installing ⇒ [“7.4 Removing and installing gear oil pump”, page 68](#)

13 - Bolt

- ☐ 4x
- ☐ Renew after removal
- ☐ Tightening torque and sequence ⇒ [page 66](#)

14 - Bolt

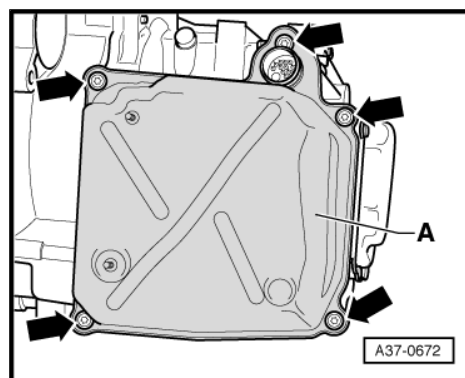
- ☐ 4x
- ☐ Different versions available; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Renew after removal
- ☐ Tightening torque and sequence ⇒ [page 66](#)

15 - Gasket

- ☐ Renew after removal

Tightening torque and sequence for oil pan

- Tighten bolts -arrows- for oil pan -A- diagonally in stages to final torque of 16 Nm.



Tightening torque and sequence for mechatronic unit for dual clutch gearbox - J743-

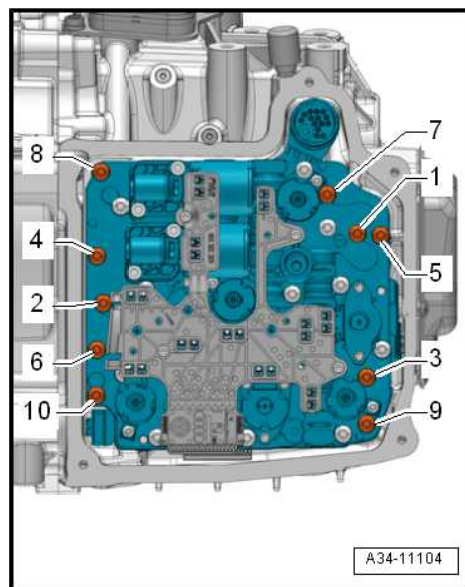


Note

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

- Tighten bolts in stages in the sequence shown:

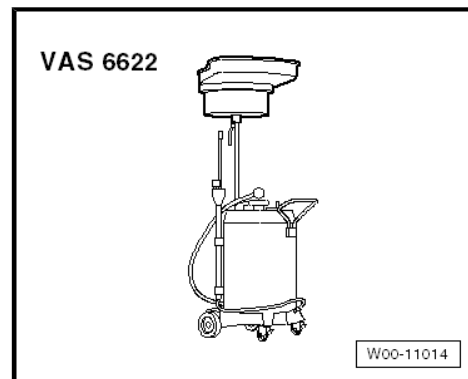
Stage	Bolts	Tightening torque/tightening angle
1.	-1 ... 10-	5 Nm
2.	-1 ... 10-	Turn 90° further



6.2 Removing and installing oil pan

Special tools and workshop equipment required

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



Removing



Caution

Risk of damage to gearbox

- ◆ *Do not run the engine or tow the vehicle with the gearbox oil pan removed or when there is no gear oil in the gearbox.*



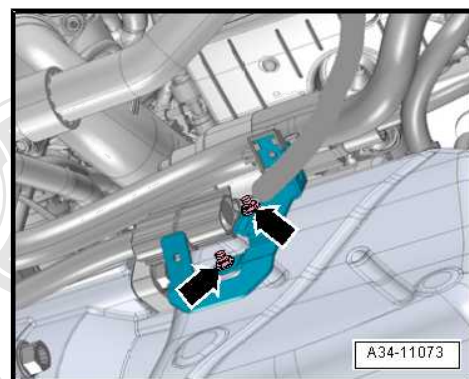
Note

- ◆ *Observe rules for cleanliness ➔ [page 9](#) .*
- ◆ *Refer to general repair instructions ➔ [page 9](#) .*
- Drain off gear oil ➔ [page 77](#) .
- Remove nuts -arrows- and detach bracket at front of oil pan.



Note

The studs are welded to the front of the oil pan.

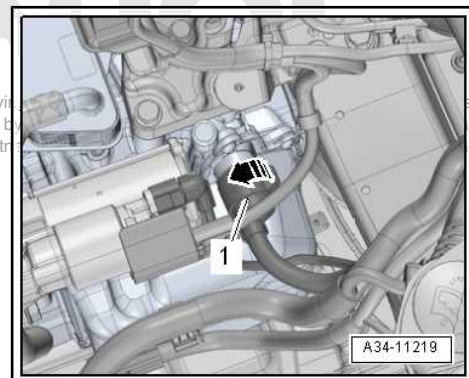


Caution

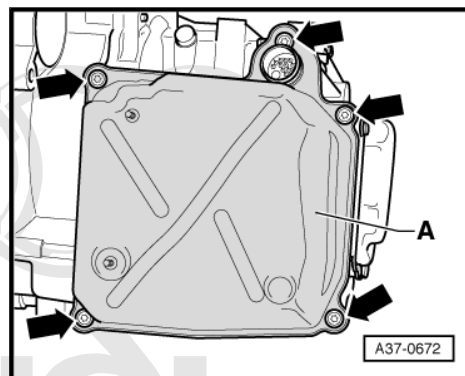
The control unit (mechatronic unit) can be damaged by electrostatic discharge.

- ◆ *Do not touch contact pins in gearbox connector with bare hands.*

- Touch a suitable earthed object with your hand (without gloves) to discharge any static electricity.
- Turn fastener cap anti-clockwise -arrow- and unplug electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- .



- Place used oil collection and extraction unit - VAS 6622- below gearbox.
- Slacken bolts -arrows- in diagonal sequence.
- Take off oil pan -A- together with oil pan gasket, allowing remaining gear oil in oil pan to drain off into used oil collection and extraction unit - VAS 6622- .



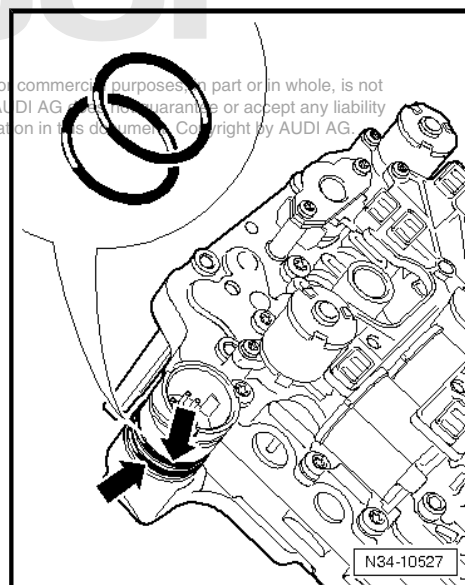
Installing

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



Note

- ◆ *Renew gasket and bolts for gearbox oil pan.*
- ◆ *Renew O-rings -arrows- on connector for mechatronic unit for dual clutch gearbox - J743- .*
- Clean sealing surfaces; they must be free from oil and grease.
- Lightly lubricate O-rings on electrical connector for mechatronic unit for dual clutch gearbox - J743- with gear oil.
- Fit oil pan -A- with oil pan gasket and tighten bolts
⇒ [page 58](#) .
- Fill up with gear oil ⇒ [page 77](#) and check gear oil level
⇒ [page 72](#) .



Tightening torques

- ◆ ⇒ [Fig. “Tightening torque and sequence for oil pan”](#), [page 58](#)

6.3 Removing and installing mechatronic unit

Removing



Caution

Risk of damage to gearbox

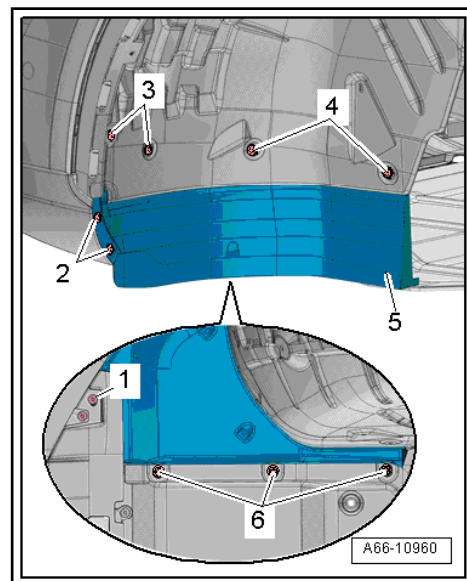
- ◆ *Do not run the engine or tow the vehicle with the gearbox oil pan removed or when there is no gear oil in the gearbox.*



Note

- ◆ *Observe rules for cleanliness ⇒ [page 9](#) .*
- ◆ *Refer to general repair instructions ⇒ [page 9](#) .*
- Remove oil pan ⇒ [page 58](#) .

- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Exploded view - wheel housing liner (front) .



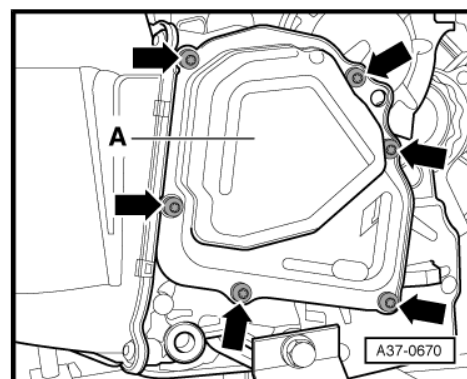
- Unscrew bolts -arrows- and detach cover -A- for gear oil pump.



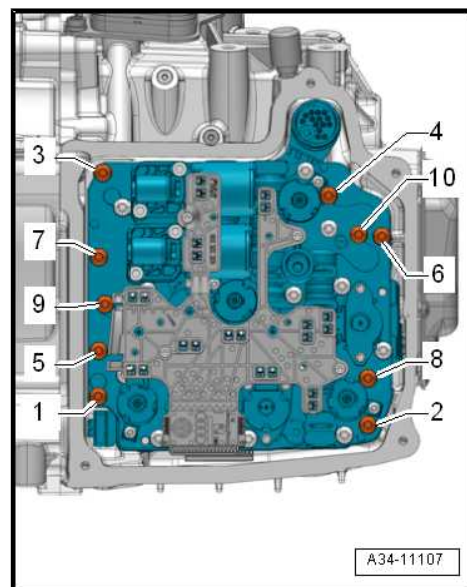
Caution

Risk of irreparable damage to mechatronic unit.

- ◆ *The long sender »arm« will be damaged when the mechatronic unit is pulled out if the cover for the gear oil pump is not removed.*



- Loosen and remove bolts in the sequence -1 ... 10-.



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Caution

Mechatronic unit for dual clutch gearbox - J743- can be irreparably damaged by electrostatic discharge.

- ◆ ***Do not touch contact pins in electrical connector for mechatronic unit for dual clutch gearbox - J743- with bare hands.***

- Touch vehicle earth with your hand (without gloves) to discharge any static electricity.
- Carefully pull the mechatronic unit out of the gearbox housing until the long sender »arm« is clear of the gearbox housing.
- Carefully swivel out mechatronic unit downwards.



Caution

The mechatronic unit can be damaged.

- ◆ ***Take care not to break off the lugs on the sender »arm«.***

- Put down the mechatronic unit correctly.



Caution

The mechatronic unit can be damaged.

- ◆ ***Do not lift the mechatronic unit by the sender »arm« or put down the unit so it rests on the sender arm.***

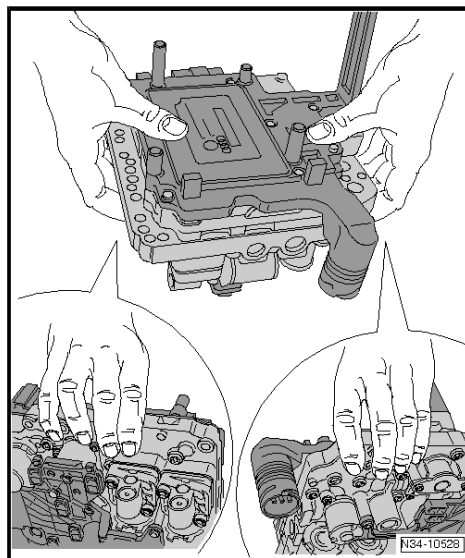
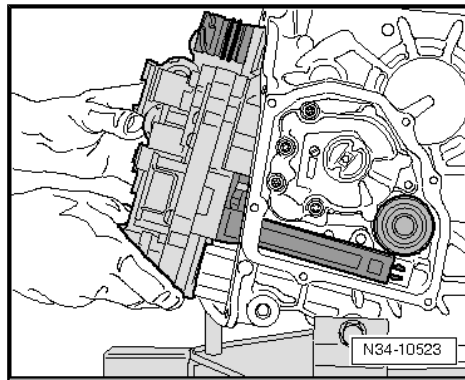


Note

The mechatronic unit must be renewed if the sender »arm« is damaged.

Installing

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

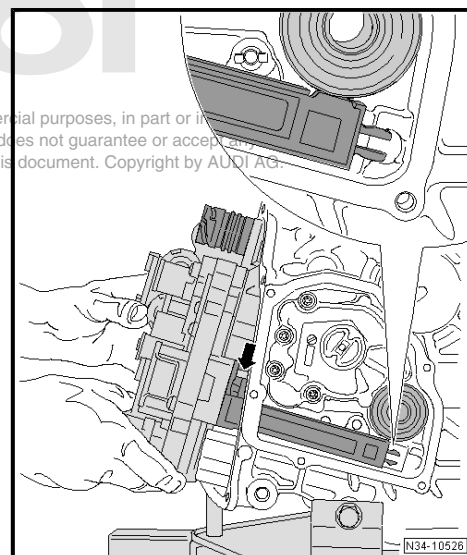
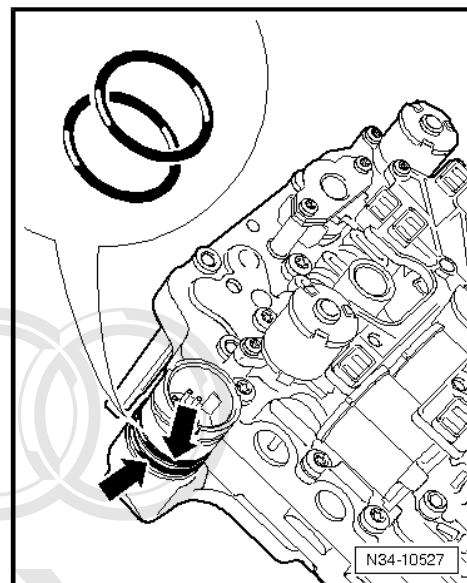




Note

- ◆ *Renew bolts which are tightened by turning through a specified angle.*
- ◆ *Renew cover for gear oil pump.*
- ◆ *Renew O-rings -arrows- on connector for mechatronic unit for dual clutch gearbox - J743- .*
- ◆ *The O-rings are supplied with the replacement unit if the mechatronic unit for dual clutch gearbox - J743- is being renewed.*

- Carefully fit mechatronic unit for dual clutch gearbox - J743- in gearbox housing.
- The mechatronic unit must be fitted onto the dowel pins -arrow-.
- The »sender arm« must fit in the guide in the gearbox housing as shown in the detail view.



- Tighten bolts for mechatronic unit for dual clutch gearbox - J743- ⇒ [page 58](#) .
- Install oil pan ⇒ [page 58](#) .
- Attach electrical connector for mechatronic unit for dual clutch gearbox - J743- and turn retainer to secure connector.
- Install cover for gear oil pump ⇒ [page 68](#) .



Caution

Risk of engine damage due to overheating.

- ◆ ***If coolant has been drained off, just fill up with gear oil but do not start the engine at this stage.***
- ◆ ***Start the engine only when the cooling system has been filled.***



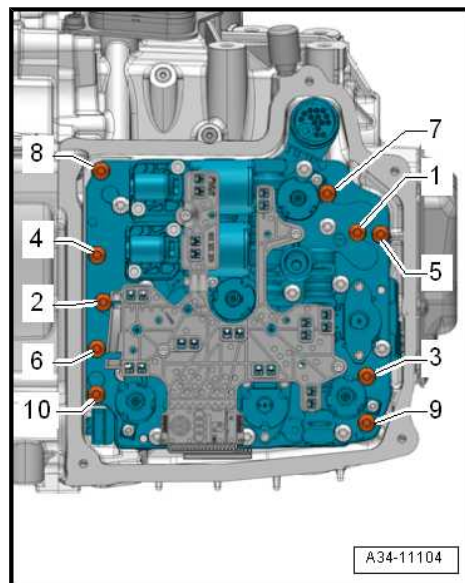
Note

Change gear oil if dirty.

- Fill up with gear oil ⇒ [page 77](#) and check gear oil level ⇒ [page 72](#) .
- Perform basic setting ⇒ Vehicle diagnostic tester, Guided Functions.

Tightening torques

- ◆ ⇒ [“6.1 Exploded view - mechatronic unit”, page 57](#)



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7 Gear oil circuit

⇒ [“7.1 Overview - gear oil circuit”, page 65](#)

⇒ [“7.2 Removing and installing gear oil cooler”, page 66](#)

⇒ [“7.3 Removing and installing gear oil filter”, page 68](#)

⇒ [“7.4 Removing and installing gear oil pump”, page 68](#)

7.1 Overview - gear oil circuit

1 - Gearbox

2 - O-rings

- ☐ Renew after removal

3 - Bolt

- ☐ Renew after removal
- ☐ 20 Nm +45° further

4 - Gear oil cooler

- ☐ Removing and installing
⇒ [page 66](#)

5 - Filter housing

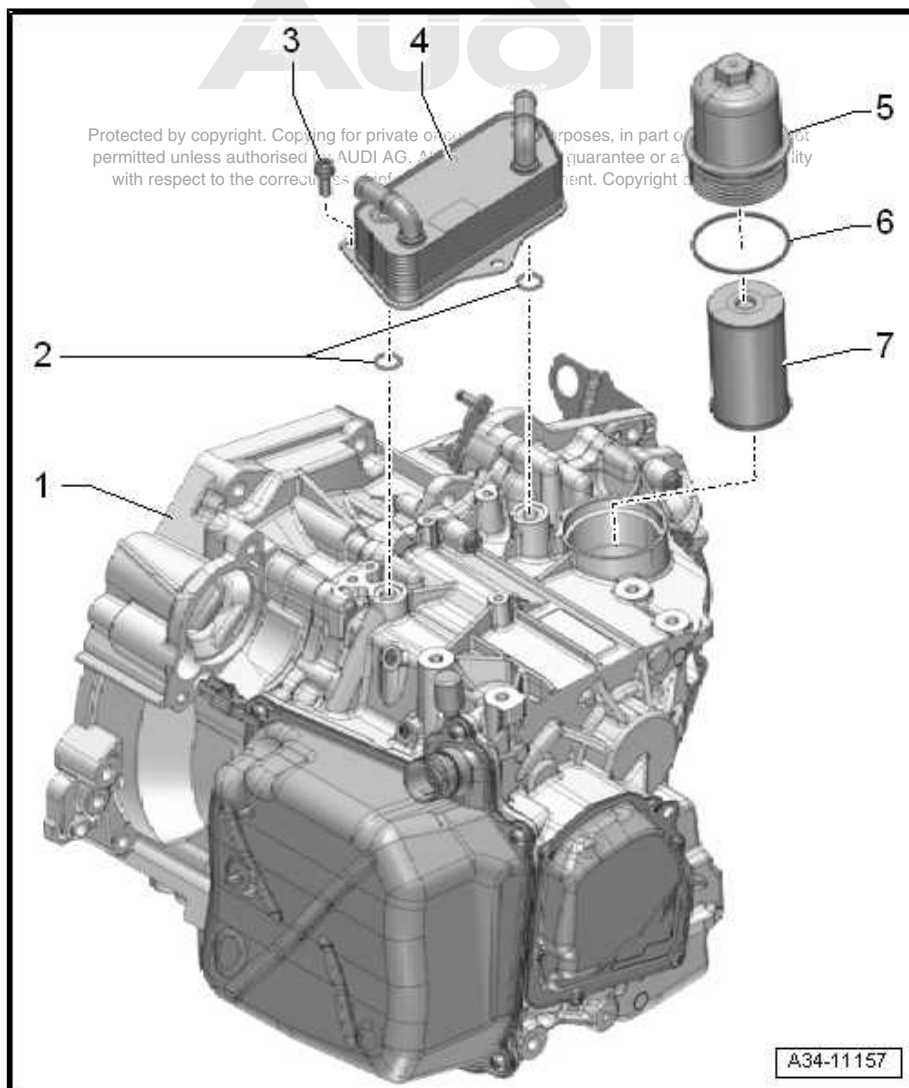
- ☐ Removing and installing
⇒ [page 68](#)
- ☐ 20 Nm

6 - O-ring

- ☐ Renew after removal

7 - Filter element

- ☐ Removing and installing
⇒ [page 68](#)
- ☐ With O-ring on intake neck
- ☐ Renew O-ring after removal



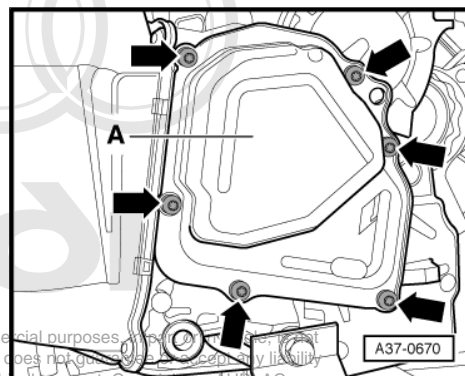
Tightening torque and sequence for cover for gear oil pump

- Tighten bolts -arrows- for cover -A- for gear oil pump diagonally in stages to final torque of 8 Nm.



Note

Renew bolts.



Tightening torque and sequence for gear oil pump

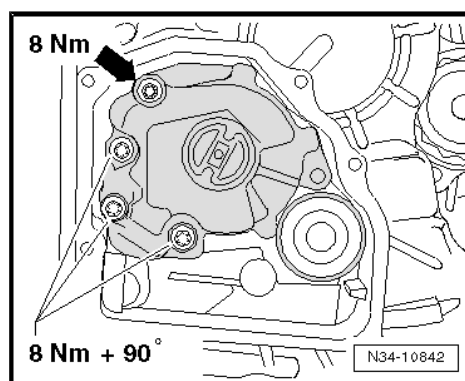


Note

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

- Tighten bolts in stages as follows:

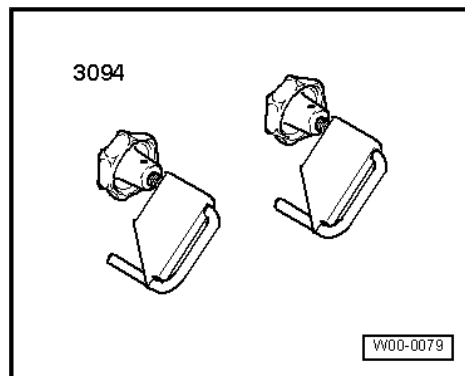
Stage	Bolts	Tightening torque/tightening angle
1.	Countersunk-head bolts (top)	8 Nm using special wrench, long reach - T10054-
2.	Pan-head bolts	8 Nm
3.	Pan-head bolts	Turn 90° further



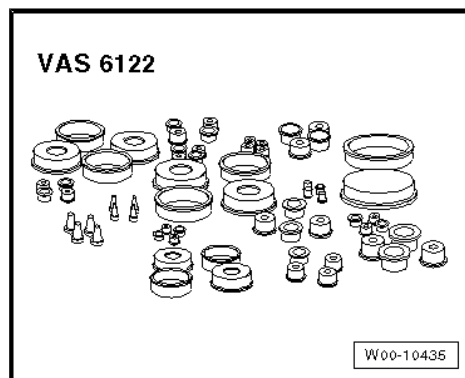
7.2 Removing and installing gear oil cooler

Special tools and workshop equipment required

- ♦ Hose clamps, up to 25 mm - 3094-



- ♦ Engine bung set - VAS 6122-



Removing

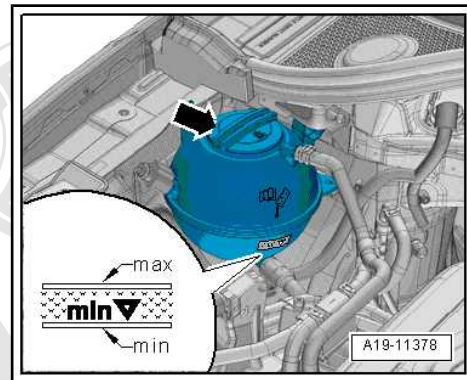


WARNING

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.*

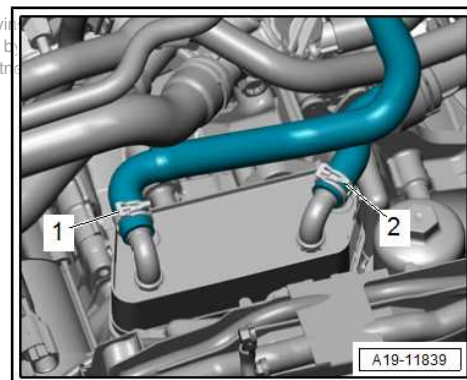
- Open filler cap -arrow- on expansion tank.



Note

Place a cloth below to catch escaping coolant.

- Clamp off coolant hoses at gear oil cooler using hose clamps -3094- .
- Release hose clips -1, 2- and disconnect coolant hoses from gear oil cooler.
- Seal off open lines and connections with clean plugs from engine bung set - VAS 6122- .
- Remove bolts -A-.
- Detach gear oil cooler -B- together with two O-rings -C- from gearbox.



Caution

Risk of contamination of gear oil.

- ◆ *Do not allow coolant to drip into gearbox.*

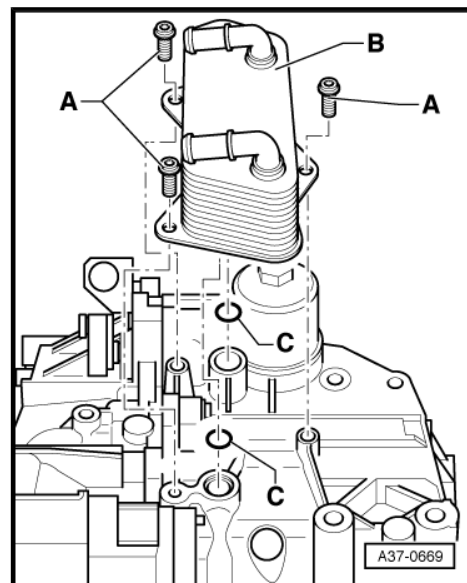
Installing

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



Note

- ◆ *Renew bolts for gear oil cooler.*
- ◆ *Renew O-rings*
- Check gear oil level (manual gearbox) ⇒ [page 72](#) .
- Check coolant level ⇒ Rep. gr. 19 ; Cooling system/coolant; Draining and filling cooling system .



Tightening torques

- ◆ ⇒ [“7.1 Overview - gear oil circuit”, page 65](#)
- ◆ ⇒ Rep. gr. 21 ; Charge air system; Exploded view - charge air system
- ◆ ⇒ Rep. gr. 23 ; Air cleaner; Exploded view - air cleaner housing or ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing

7.3 Removing and installing gear oil filter

The gear oil filter must be renewed in the following cases:

- ◆ The maintenance interval has been reached ⇒ Maintenance tables .
- ◆ Coolant has mixed with the gear oil.
- ◆ Metal particles are found in the gear oil.
- ◆ The clutch is burnt out or mechanically defective.

Removing

- Remove air cleaner housing ⇒ Rep. gr. 23 ; Air cleaner; Removing and installing air cleaner housing or ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



Caution

Risk of contamination from escaping gear oil.

- ◆ **A residual amount of oil remains in the filter. This comes out when the filter housing is unscrewed.**
- ◆ **Before unscrewing the filter housing, cover the area round the oil filter with a sufficient number of cloths.**

- First unscrew filter housing -arrow- approx. 7 turns.
- Wait approx. 10 seconds. This will enable the oil in the filter housing to drain back into the gearbox.
- Now detach filter housing and filter element (but not before).

Installing

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



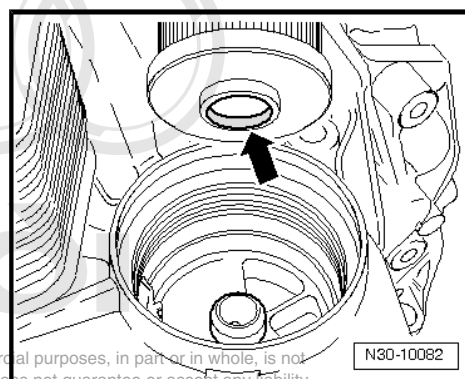
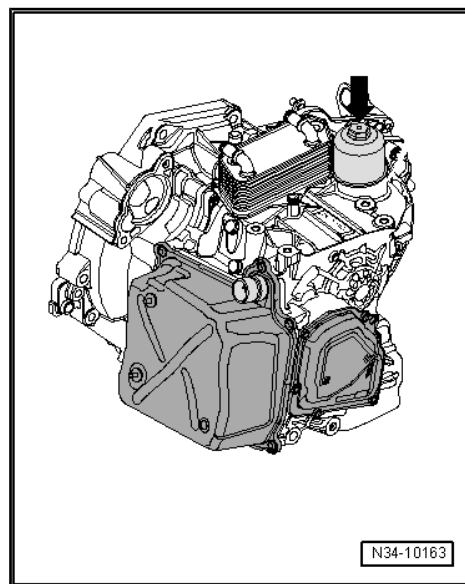
Note

Thoroughly clean off any oil that has spilled on gearbox.

- Install filter element with intake neck -arrow- facing downwards.
- Tighten filter housing.
- Check gear oil level (manual gearbox) ⇒ [page 72](#) .

Tightening torques

- ◆ ⇒ [“7.1 Overview - gear oil circuit”, page 65](#) .
- ◆ ⇒ Rep. gr. 23 ; Air cleaner; Exploded view - air cleaner housing or ⇒ Rep. gr. 24 ; Air cleaner; Exploded view - air cleaner housing

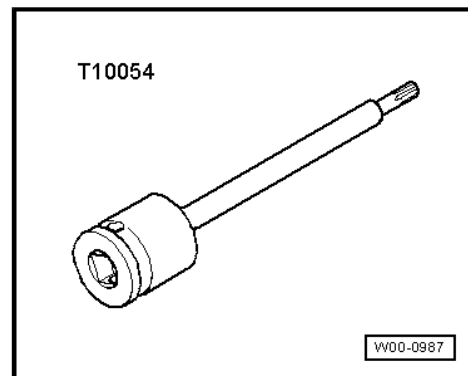


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7.4 Removing and installing gear oil pump

Special tools and workshop equipment required

- ◆ Special wrench, long reach - T10054-



Removing



Caution

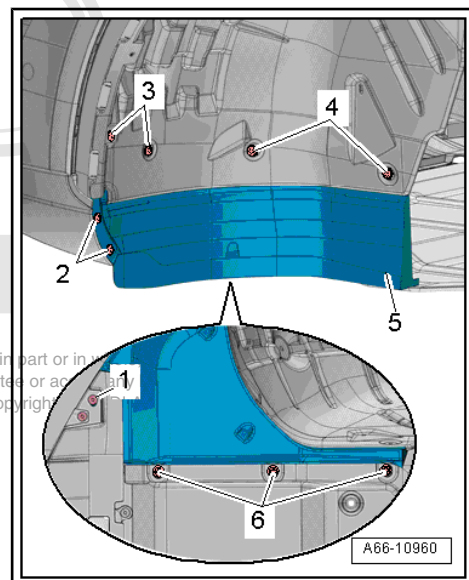
Risk of damage to the gearbox.

- ◆ *Do not run the engine or tow the vehicle with the gearbox oil pan removed or when there is no gear oil in the gearbox.*



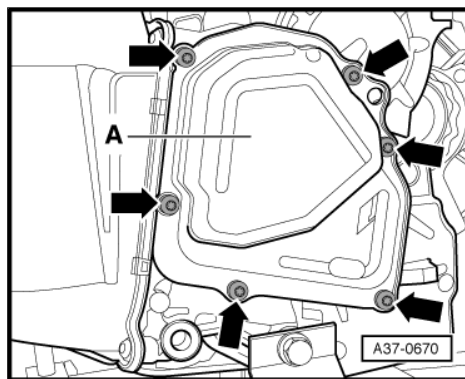
Note

- ◆ *Observe rules for cleanliness ⇒ [page 9](#).*
- ◆ *Refer to general repair instructions ⇒ [page 9](#).*
- Drain off gear oil ⇒ [page 77](#) and leave used oil collection and extraction unit - VAS 6622- in position below gearbox.
- Remove wheel spoiler (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Exploded view - wheel housing liner (front) .

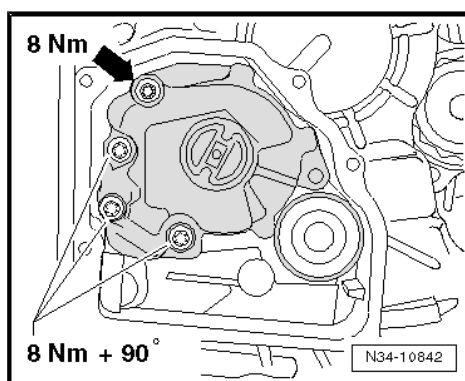


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- Remove bolts -arrows- and detach cover -A- for gear oil pump, allowing remaining gear oil in cover to drain off into used oil collection and extraction unit - VAS 6622- .



- Unscrew bolts; for top bolt -arrow-, use special wrench, long reach - T10054- .
- Pull gear oil pump off dowel pins and drive shaft.

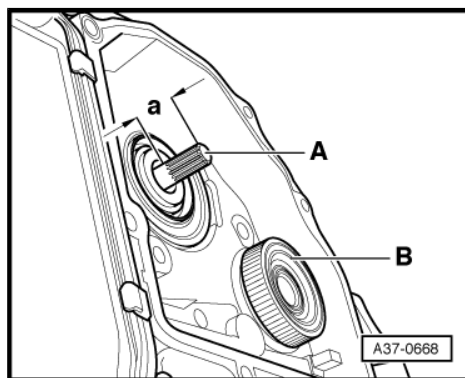
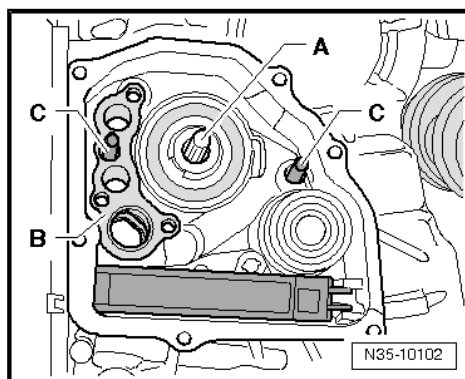


Installing

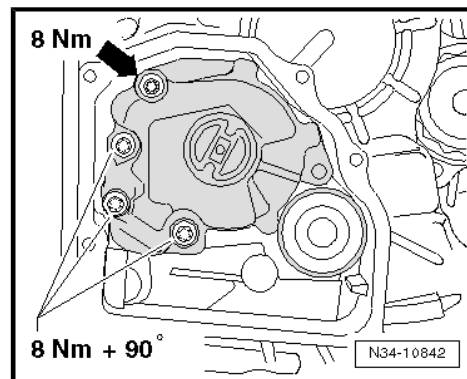
Installation is carried out in reverse sequence; note the following:

Note

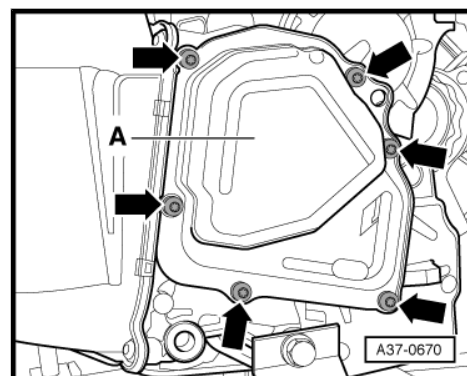
- ◆ Renew bolts for gear oil pump and for cover for gear oil pump.
- ◆ Renew gasket -B- and cover for gear oil pump.
- Check that dowel sleeves -C- are fitted in gearbox housing.
- Slide drive shaft -A- for gear oil pump into gearbox as far as stop, turning shaft slightly as required.
- If drive shaft -A- for gear oil pump is inserted correctly, dimension -a- = approx. 23 mm.
- If necessary, carefully remove any metal particles on sender wheel -B- (the sender wheel must not be demagnetised).
- Remove paper gasket between gear oil pump and gearbox.
- Remove remaining pieces of paper gasket and clean inside of gearbox.
- Clean sealing surfaces; they must be free from oil and grease.
- Fit new paper gasket between gear oil pump and gearbox, if necessary, apply gear oil to hold it in place while assembling.



- Fit gear oil pump onto drive shaft and secure with bolts
⇒ [page 66](#) .



- Clean sealing surface between gearbox housing and cover for gear oil pump.
- Fit cover -A- for gear oil pump and secure with bolts
⇒ [page 66](#) .
- Install wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Fill up with gear oil ⇒ [page 77](#) and check gear oil level
⇒ [page 72](#) .



Tightening torques

- ◆ ⇒ Fig. ““Tightening torque and sequence for gear oil pump””,
[page 66](#)
- ◆ ⇒ Fig. ““Tightening torque and sequence for cover for gear oil
pump””, [page 66](#)



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8 Gear oil

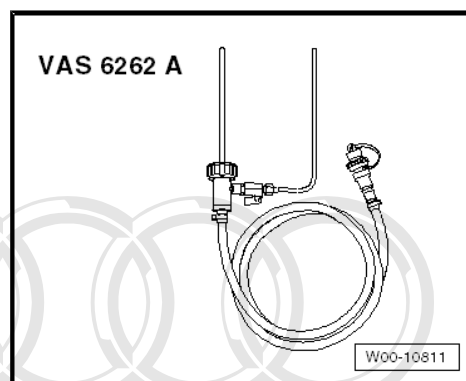
⇒ ["8.1 Checking gear oil level", page 72](#)

⇒ ["8.2 Draining and filling gear oil", page 77](#)

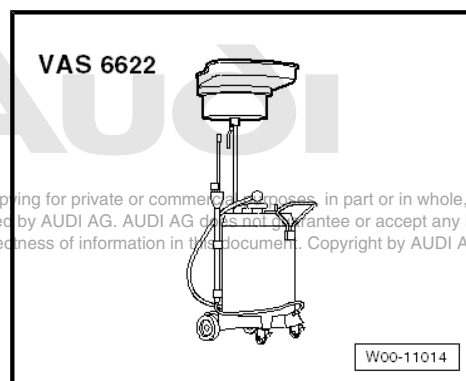
8.1 Checking gear oil level

Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- ◆ Adapter for oil filling - VAS 6262 A-



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



- ◆ 1 litre container of original gear oil for dual clutch gearbox 02E;
for part number refer to ⇒ Electronic parts catalogue



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

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

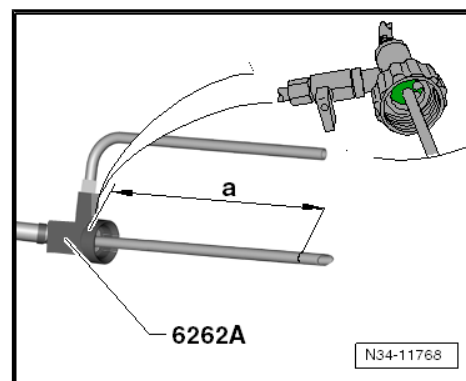
To ensure that breather pipe of adapter for oil filling -VAS 6262 A- does not make contact with bottom of oil container, breather pipe must be shortened to dimension -a-.

- Dimension -a- = 210 mm



Note

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



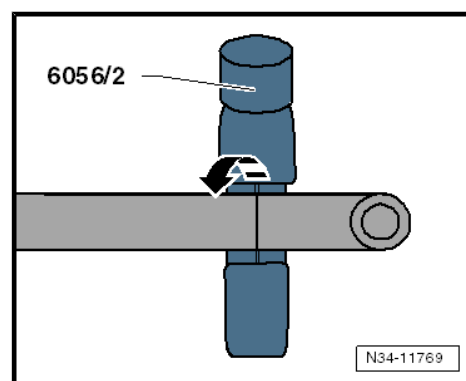
- Mark length on breather pipe and shorten breather pipe using pipe cutter -VAS 6056/2- .

Procedure



Note

- ◆ Observe general notes ⇒ [page 7](#) .
- ◆ Observe rules for cleanliness ⇒ [page 9](#) .
- ◆ Note regulations for the disposal of oil ⇒ [page 9](#) .



WARNING

Risk of injury

- ◆ *Even when the ignition is switched off, the radiator fans can start up without warning due to accumulated heat in the engine compartment, etc.*
- ◆ *Wear safety goggles.*
- ◆ *Wear protective gloves (acid resistant).*



Caution

Risk of damage to gearbox

- ◆ *The engine must not be started if significant oil loss has occurred (e.g. during repairs) and there is little or no oil left in the gearbox.*
- ◆ *In this case, you must pre-fill the gearbox with gearbox oil.*

Test conditions

- Gearbox not in backup mode (emergency running mode)
- Vehicle must be absolutely horizontal (on a four-pillar lifting platform or over an inspection pit).
- Selector lever at position "P".
- Parking brake button must be pulled up to apply the electro-mechanical parking brake.
- Noise insulation -1- must be removed ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Extractor hose(s) of an exhaust gas extractor (switched on) must be connected.
- Engine idling.
- Air conditioner and heating system switched off.
- Vehicle diagnostic tester is connected ⇒ Vehicle diagnostic tester.
- Gear oil temperature 35 ... 45 °C

Reading off gearbox oil temperature:

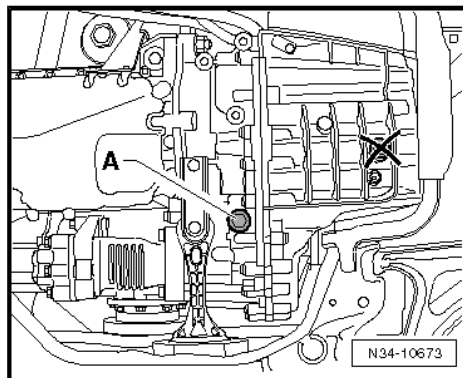
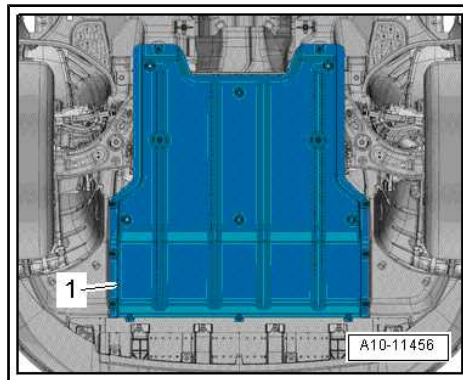


Note

- ◆ *The gear oil level varies according to the oil temperature: if the oil temperature is too low, this will result in overfilling; if it is too high this will result in underfilling.*
- ◆ *Both overfilling and underfilling will impair the function of the gearbox.*
- Read off gear oil temperature ⇒ Vehicle diagnostic tester, Guided Functions, Check oil level.

Checking gear oil level

- Press and hold brake pedal.
- With brake pressed, select all gear positions "P, R, N, D/S" one after the other at idling speed, maintaining each position for at least 3 seconds.
- Place used oil collection and extraction unit - VAS 6622- below gearbox.
- When gear oil reaches a temperature of 35 °C, unscrew oil drain plug and inspection plug -A-.



- The gear oil that has collected in the overflow pipe -arrow 2- will drain off first.

 Note

Regardless of the gear oil level itself, a certain amount of gear oil will always drain off when drain plug and inspection plug -arrow 1- is opened.

- Check that overflow pipe is securely screwed into gearbox.

 Note

If the overflow pipe is not correctly secured, the oil level cannot be read correctly.

- Allow excess gear oil to drain off.
- The gear oil level is correct if a small amount of oil drains out when the oil temperature is between 35 and 45 °C (the oil level rises as the oil temperature continues to increase).

 Note

- ◆ *Every 30 seconds a small surge of oil will come out of the overflow pipe regardless of the oil level (cause: intermittent cooling oil supply to the clutch). The surge of oil is no indication for the correct oil level and should therefore be disregarded.*
- ◆ *Do not re-use drained-off gear oil.*

- If gear oil level is OK, carry out final steps ➔ [page 76](#) .

Filling up with gear oil

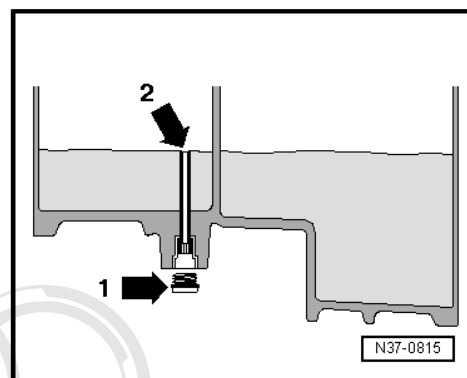
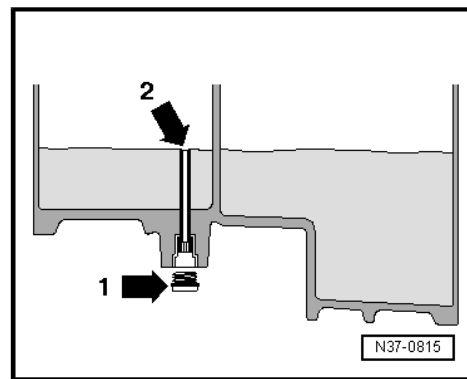
- If no gear oil drains out of opening for drain plug and inspection plug -arrow 1- when the oil temperature is between 35°C and 45°C, top up gear oil as follows.



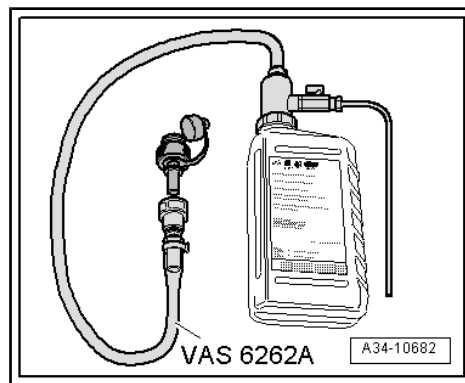
Caution

Risk of damage to gearbox

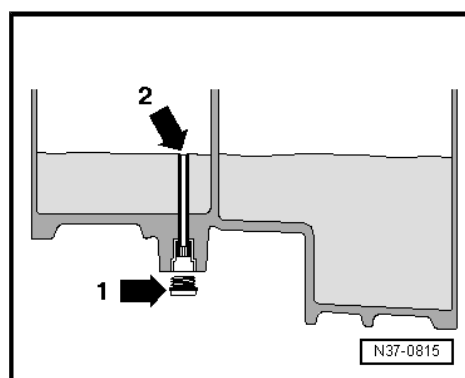
- ◆ *Use only the gear oil available as a replacement part for dual clutch gearbox 02E ➔ **Electronic parts catalogue** .*
- ◆ *Other types of oil cause malfunctions and/or failure of the gearbox.*
- ◆ *The adapter for oil filling must be clean; the gear oil must not be mixed with any other types of oil.*



- Before screwing adapter for oil filling -VAS 6262 A- onto container of gear oil, measure length -a- of breather pipe and shorten if necessary ➔ [page 73](#) .
- Shake container before opening.
- Screw gear oil container onto adapter for oil filling - VAS 6262 A- .



- Screw adapter for oil filling - VAS 6262 A- hand-tight into opening for drain plug and inspection plug -arrow 1-.
- Hold container with adapter for oil filling - VAS 6262 A- as high as possible over gearbox and fill up gearbox with gear oil.
- To check whether enough oil has run into gearbox, detach quick-release coupling on adapter for oil filling - VAS 6262 A- at regular intervals and plug the connection with a finger or a clean plug.
- The gear oil that has collected in the overflow pipe -arrow 2- will drain off first.



Note

- ◆ *Regardless of the gear oil level itself, a certain amount of gear oil will always drain out at the drain plug and inspection plug -arrow 1-.*
- ◆ *Every 30 seconds a small surge of oil will come out of the overflow pipe regardless of the oil level (cause: intermittent cooling oil supply to the clutch). The surge of oil is no indication for the correct oil level and should therefore be disregarded.*
- ◆ *Do not re-use drained-off gear oil.*
- The gear oil level is correct if a small amount of oil drains out when the oil temperature is between 35 and 45 °C (the oil level rises as the oil temperature continues to increase).
- If gear oil level is OK, carry out final steps ➔ [page 76](#) .

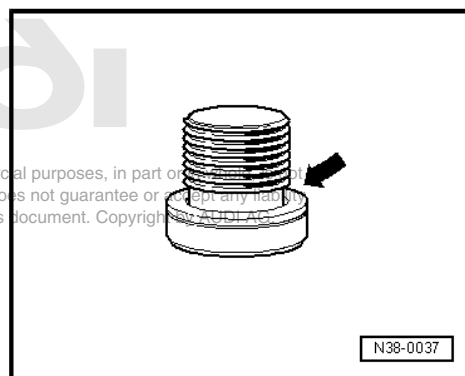
Final steps

- Unscrew adapter for oil filling - VAS 6262 A- from gearbox.



Note

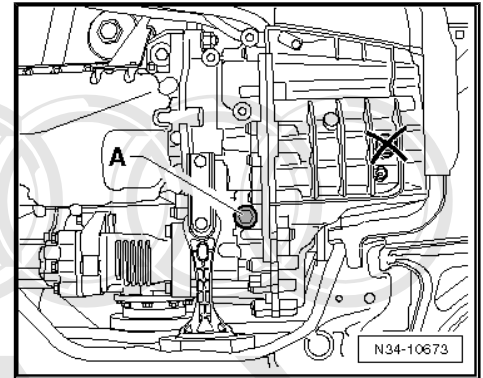
Renew seal -arrow- for gear oil drain plug and inspection plug.



- Tighten drain plug and inspection plug -A-.
- Switch off ignition and unplug diagnostic connector.

Tightening torques

- ◆ ⇒ [“7.1 Overview - gear oil circuit”, page 65](#) .
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

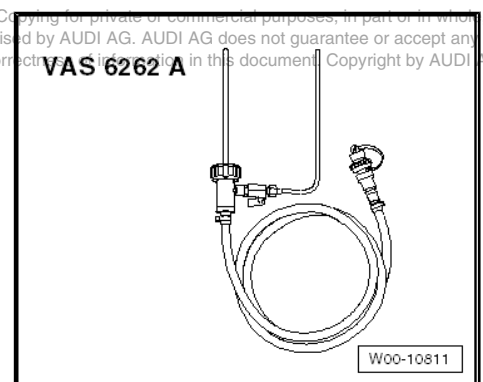


8.2 Draining and filling gear oil

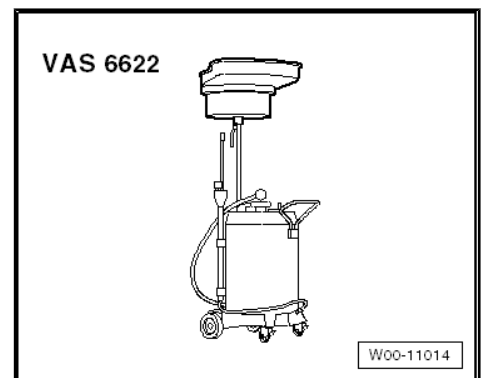
Special tools and workshop equipment required

- ◆ Adapter for oil filling - VAS 6262 A-

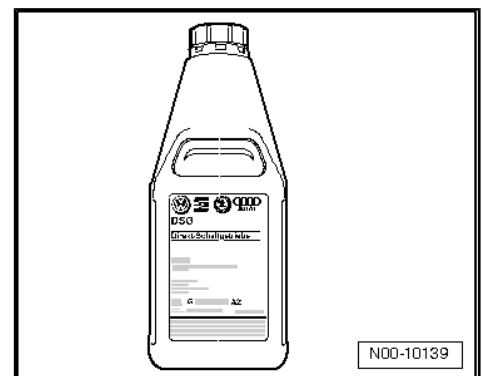
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- ◆ Used oil collection and extraction unit - VAS 6622-



- ◆ 1 litre container of original gear oil for dual clutch gearbox 02E; for part number refer to ⇒ Electronic parts catalogue



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

Procedure



Note

- ◆ Observe general notes ⇒ [page 7](#) .
- ◆ Observe rules for cleanliness ⇒ [page 9](#) .
- ◆ Note regulations for the disposal of oil ⇒ [page 9](#) .



WARNING

Risk of injury

- ◆ Even when the ignition is switched off, the radiator fans can start up without warning due to accumulated heat in the engine compartment, etc.
- ◆ Wear safety goggles.
- ◆ Wear protective gloves (acid resistant).



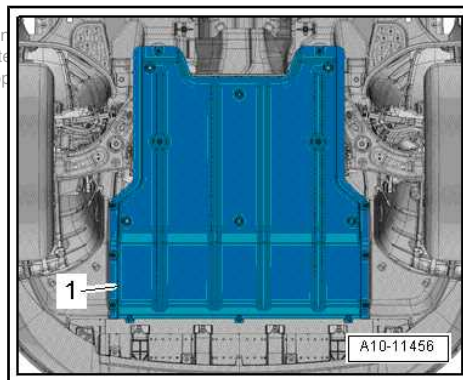
Caution

Risk of damage to gearbox

- ◆ The engine must not be started if significant oil loss has occurred (e.g. during repairs) and there is little or no oil left in the gearbox.
- ◆ In this case, you must pre-fill the gearbox with gearbox oil.

Requirements

- Vehicle must be absolutely horizontal (on a four-pillar lifting platform or over an inspection pit).
- Selector lever is in position "P".
- Parking brake button must be pulled up to apply the electro-mechanical parking brake.
- Engine not running.
- Noise insulation -1- must be removed ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- The gear oil filter must always be renewed when changing the gear oil.

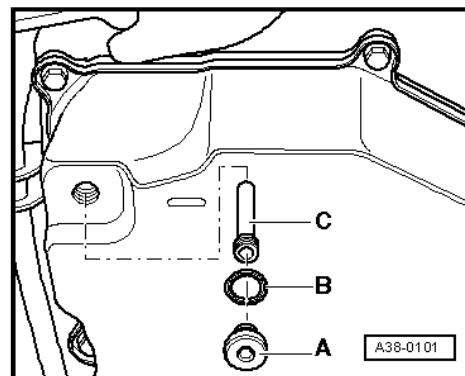


Note

Observe all safety precautions, notes and test requirements
⇒ [page 72](#) .

Draining off gear oil

- Renew gear oil filter ➔ [page 68](#) .
- Place used oil collection and extraction unit - VAS 6622- below gearbox.
- Unscrew drain plug and inspection plug -A-.
- Unscrew overflow pipe -C- from opening for drain plug and inspection plug.
- Drain off remaining gear oil.
- Screw in overflow pipe again.



Filling up with gear oil

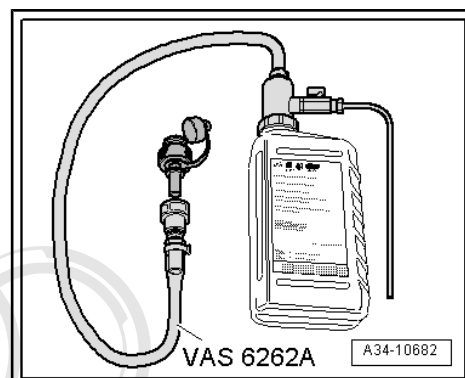


Caution

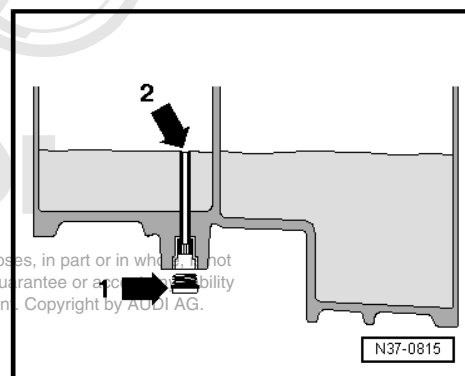
Risk of damage to gearbox

- ◆ *Use only the gear oil available as a replacement part for dual clutch gearbox 02E ➔ [Electronic parts catalogue](#) .*
- ◆ *Other types of oil cause malfunctions and/or failure of the gearbox.*
- ◆ *The adapter for oil filling must be clean; the gear oil must not be mixed with any other types of oil.*

- Before screwing adapter for oil filling -VAS 6262 A- onto container of gear oil, measure length -a- of breather pipe and shorten if necessary ➔ [page 73](#) .
- Shake container before opening.
- Screw gear oil container onto adapter for oil filling - VAS 6262 A- .



- Screw adapter for oil filling - VAS 6262 A- hand-tight into opening for drain plug and inspection plug -arrow 1-.
- Hold container with adapter for oil filling - VAS 6262 A- as high as possible over gearbox and fill up gearbox with approx. 5.2 ltr. of gear oil.
- Move selector lever to position “P” and pull up parking brake button to apply electromechanical parking brake.
- Press and hold brake pedal.
- Start engine and run at idling speed.
- With brake pressed, select all gear positions “P, R, N, D, S” one after the other at idling speed, maintaining each position for at least 3 seconds.
- Shift selector lever into position “P”.
- Check gear oil level ➔ [page 72](#) .



Tightening torques

- ◆ ➔ [“7.1 Overview - gear oil circuit”, page 65](#) .



35 – Gears, shafts

1 Dismantling and assembling gears and shafts

At present there is no provision for dismantling and assembling
gears and shafts.



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39 – Final drive - differential

1 Gearbox control system

⇒ **"1.1 Overview of fitting locations - gearbox control system", page 81**

1.1 Overview of fitting locations - gearbox control system

1 - Brake light switch - F- / brake pedal switch - F63-

- ☐ On brake master cylinder
- ☐ Exploded view ⇒ Rep. gr. 47 ; Brake servo/ brake master cylinder; Exploded view - brake servo/brake master cylinder

2 - Mechatronic unit for dual clutch gearbox - J743-

- ☐ Bolted onto front of gearbox housing
- ☐ Removing and installing ⇒ [page 60](#)

3 - Selector lever - E313-

- ☐ With selector lever sensors control unit - J587-; selector lever lock solenoid - N110- and selector lever locked in position P switch - F319-
- ☐ The components are integrated in the printed circuit of the shift unit; they cannot be renewed separately
- ☐ Removing and installing selector mechanism ⇒ [page 31](#)

4 - Selector lever position display - Y26-

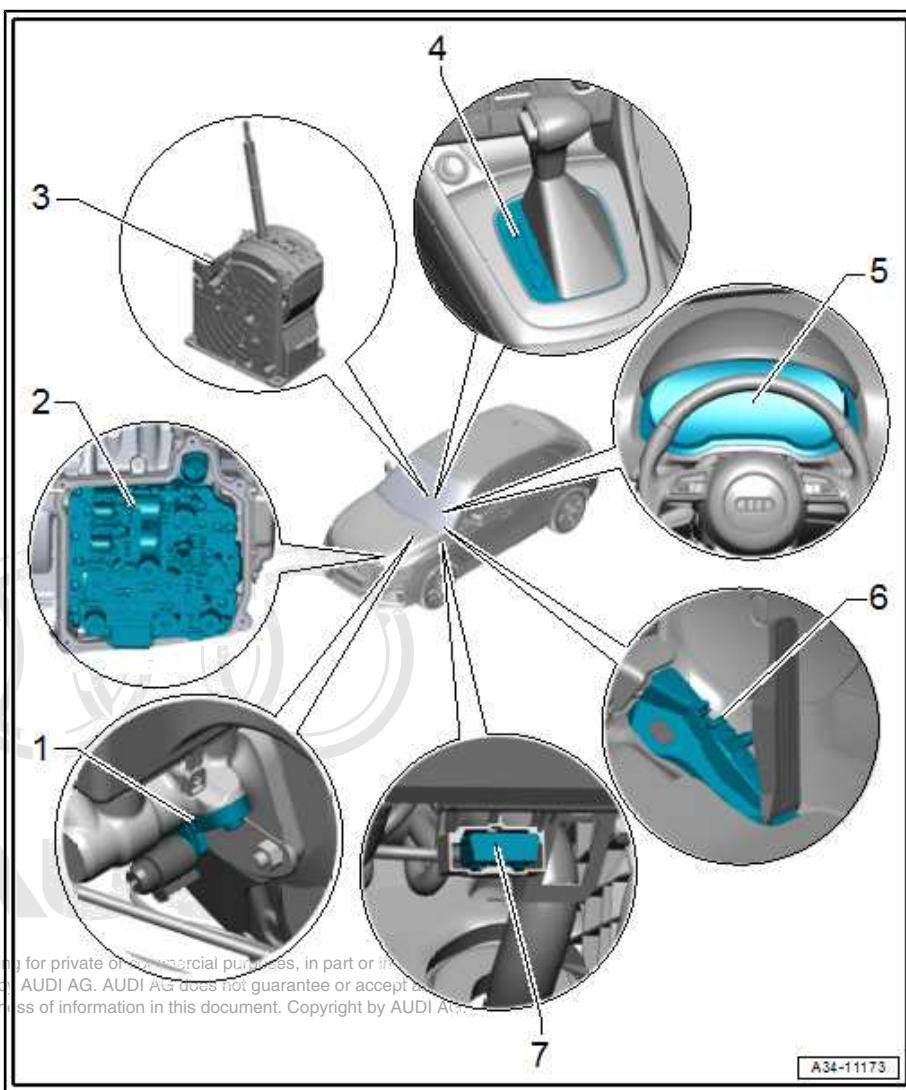
- ☐ Removing and installing: ⇒ Electrical system; Rep. gr. 96 ; Lights; Removing and installing selector lever position display - Y26-

5 - Selector lever position display

- ☐ Integrated into dash panel insert
- ☐ Cannot be renewed individually
- ☐ Exploded view ⇒ Electrical system; Rep. gr. 90 ; Dash panel insert; Exploded view - dash panel insert

6 - Kick-down switch

- ☐ An adapted value from accelerator position sender - G79- / accelerator position sender 2 - G185- (integrated in accelerator pedal module) is stored in the engine control unit as the kickdown signal
- ☐ Signal transmission from engine control unit to gearbox control unit via CAN bus
- ☐ Exploded view ⇒ Rep. gr. 20 ; Accelerator mechanism; Exploded view - accelerator pedal module



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7 - Diagnostic connection

- ☐ For vehicle diagnostic tester
- ☐ In driver's footwell
- ☐ Testing all components listed ⇒ Vehicle diagnostic tester, Guided Fault Finding

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2 Oil seals

⇒ [“2.1 Overview of fitting locations - oil seals”, page 83](#)

⇒ [“2.2 Renewing oil seal \(left-side\)”, page 83](#)

2.1 Overview of fitting locations - oil seals

1 - Final drive

2 - Oil seal (right-side)

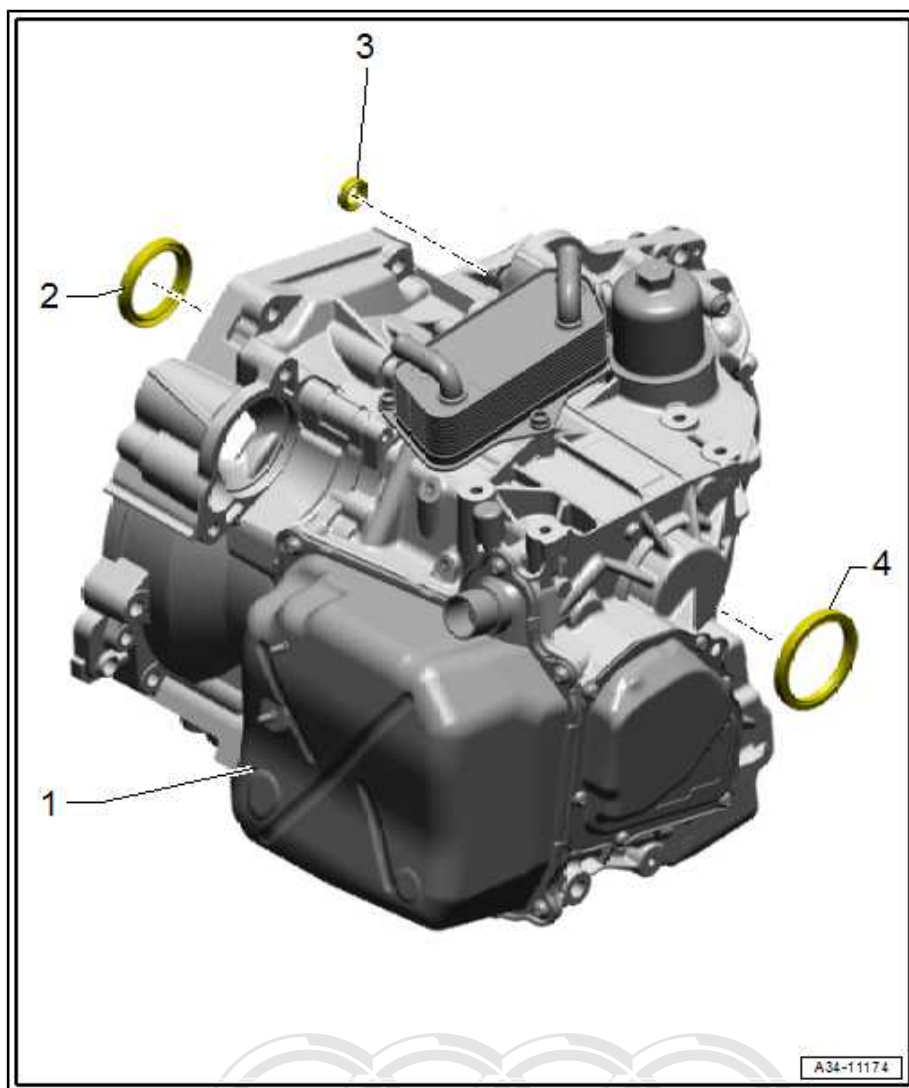
- ☐ For flange shaft (right-side)
- ☐ Renewing ⇒ [page 85](#)

3 - Oil seal

- ☐ For selector shaft
- ☐ Renewing ⇒ [page 39](#)

4 - Oil seal (left-side)

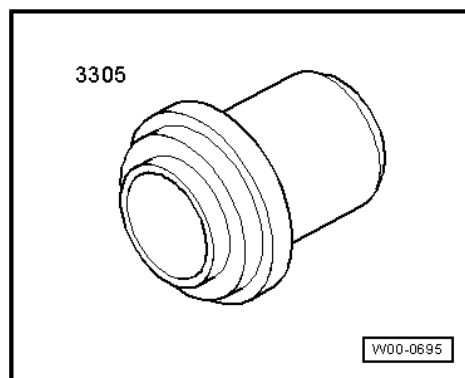
- ☐ For flange shaft (left-side)
- ☐ Renewing ⇒ [page 83](#)



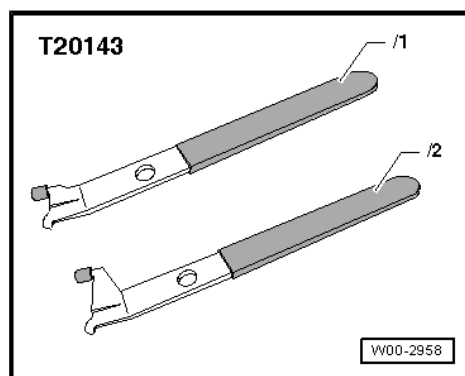
2.2 Renewing oil seal (left-side)

Special tools and workshop equipment required

◆ Thrust piece - 3305-



◆ Extractor tool - T20143-



◆ Sealing grease ⇒ Electronic parts catalogue

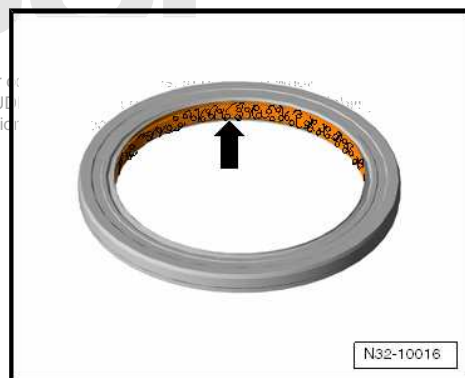
Procedure

- Gearbox in vehicle

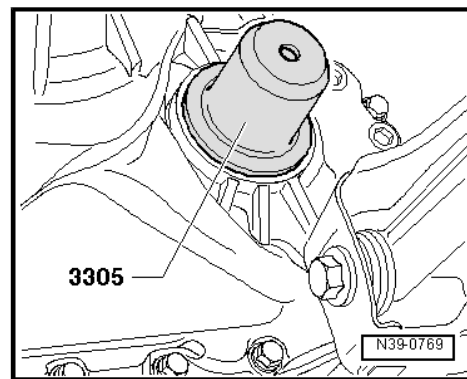


Note

- ◆ *Observe general notes ⇒ [page 7](#) .*
- ◆ *Observe rules for cleanliness ⇒ [page 9](#) .*
- ◆ *Refer to general repair instructions ⇒ [page 9](#) .*
- Remove flange shaft (left-side) ⇒ [page 87](#) .
- Pull out oil seal with extractor tool - T20143/1- or - T20143/2- .
- Lightly lubricate outer circumference and sealing lips of new oil seal with gear oil.
- Pack space between sealing lip and dust lip - arrow - half full with sealing grease ⇒ Electronic parts catalogue



- Drive in oil seal onto stop using thrust piece - 3305- . Take care to keep seal straight when installing.
- Install flange shaft (left-side) ⇒ [page 87](#) .

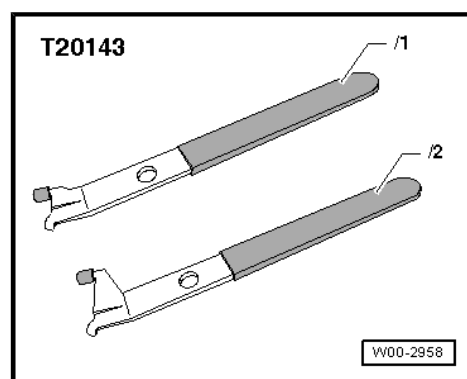


2.3 Renewing oil seal (right-side)

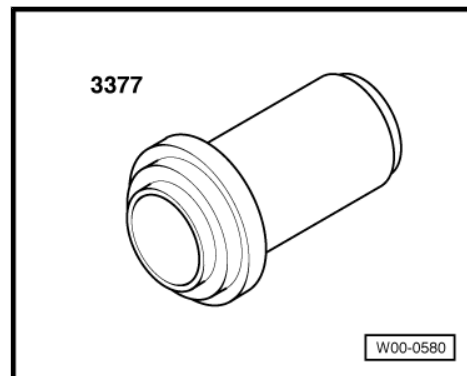
Special tools and workshop equipment required

- ◆ Extractor tool - T20143-

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- ◆ Thrust piece - 3377-



- ◆ Sealing grease ⇒ Electronic parts catalogue

Procedure

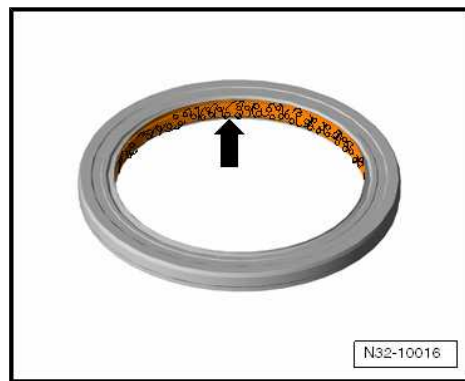
- Gearbox in vehicle



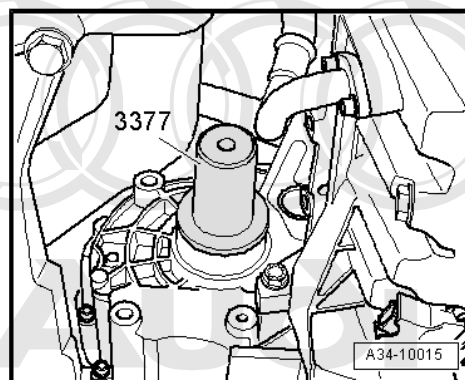
Note

- ◆ *Observe general notes* ⇒ [page 7](#) .
- ◆ *Observe rules for cleanliness* ⇒ [page 9](#) .
- ◆ *Refer to general repair instructions* ⇒ [page 9](#) .
- Remove flange shaft (right-side) ⇒ [page 90](#) .
- Pull out oil seal using extractor tool - T20143/2- .

- Lightly lubricate outer circumference and sealing lips of new oil seal with gear oil.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease ⇒ Electronic parts catalogue .



- Drive in new oil seal onto stop using thrust piece - 3377- . Take care to keep seal straight when installing.
- Install flange shaft (right-side) ⇒ [page 90](#) .



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3 Differential

⇒ [“3.1 Exploded view - differential”, page 87](#)

⇒ [“3.2 Removing and installing flange shaft \(left-side\)”, page 87](#)

⇒ [“3.3 Removing and installing flange shaft \(right-side\)”, page 90](#)

3.1 Exploded view - differential

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1 - Bolt

- ☐ 30 Nm

2 - Flange shaft (right-side)

- ☐ Removing and installing
⇒ [page 90](#)

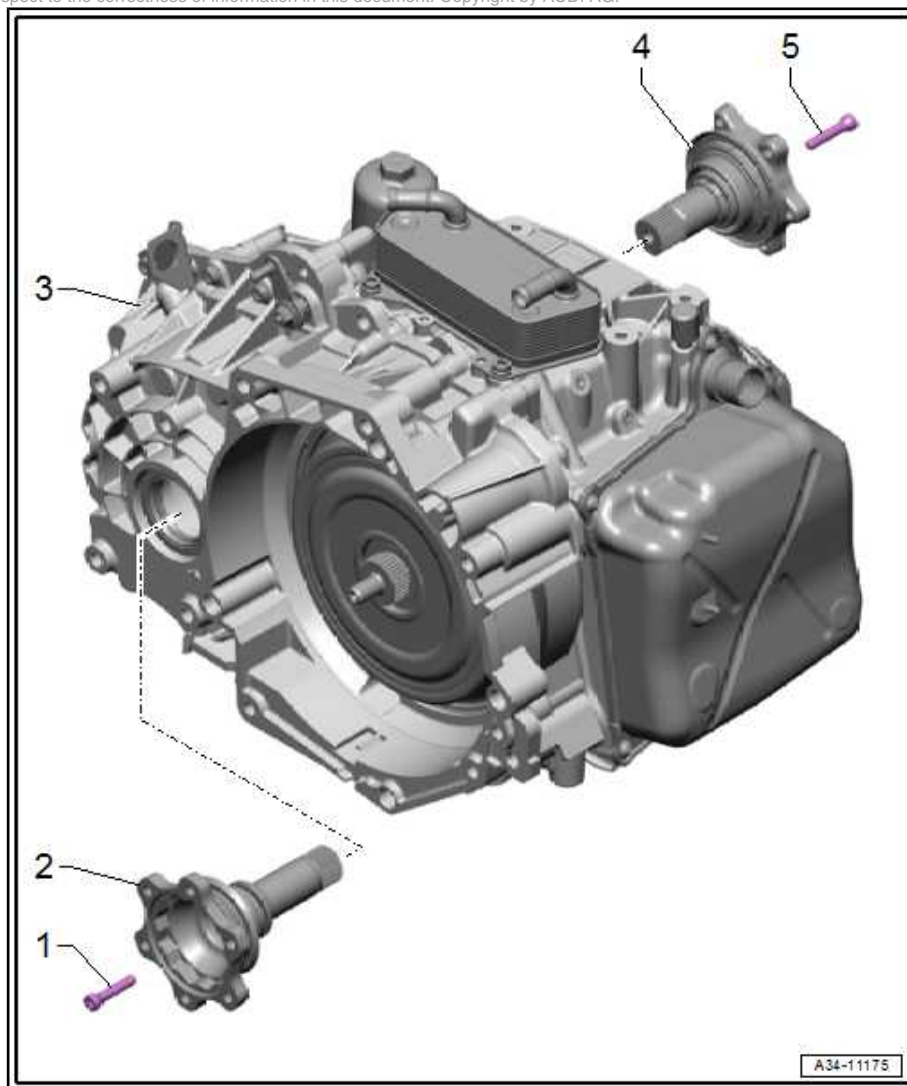
3 - Final drive

4 - Flange shaft (left-side)

- ☐ Removing and installing
⇒ [page 87](#)

5 - Bolt

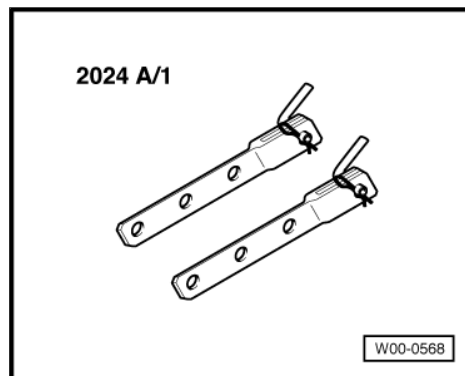
- ☐ 30 Nm



3.2 Removing and installing flange shaft (left-side)

Special tools and workshop equipment required

◆ Hook -2024 A /1-



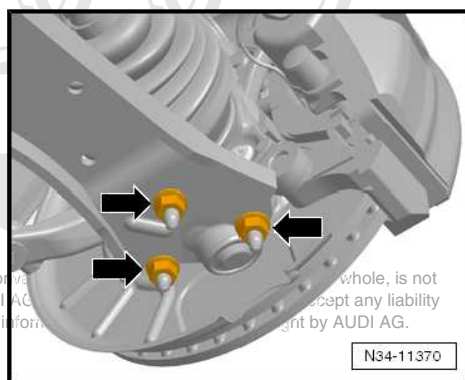
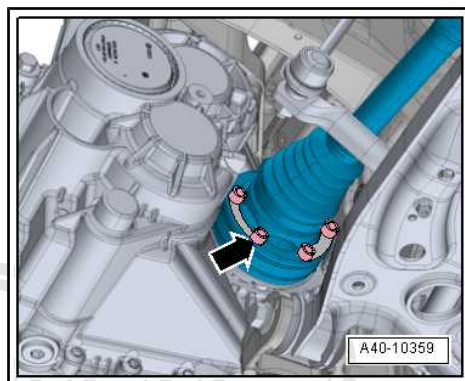
Removing

- Gearbox in vehicle



Note

- ◆ *Observe general notes ⇒ [page 7](#) .*
- ◆ *Observe rules for cleanliness ⇒ [page 9](#) .*
- ◆ *Refer to general repair instructions ⇒ [page 9](#) .*
- Unbolt drive shaft -arrow- (left-side) from flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Mark position of nuts -arrows- securing swivel joint (left-side) and remove nuts.



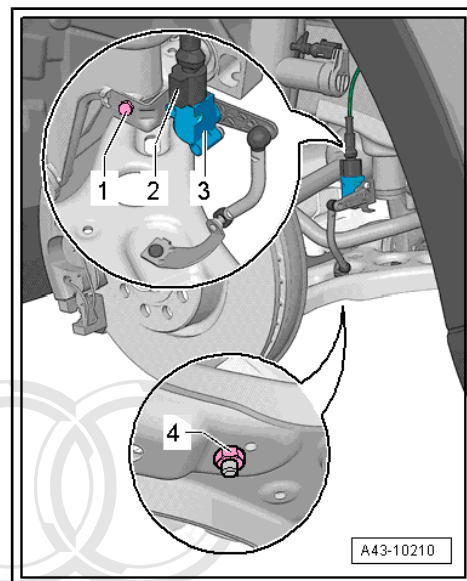
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- If fitted, remove nut -4- and bolt -1-, place front left vehicle level sender - G78- -3- to one side.
- Disengage swivel joint (left-side) from wishbone.



Note

-Item 2- can be disregarded.



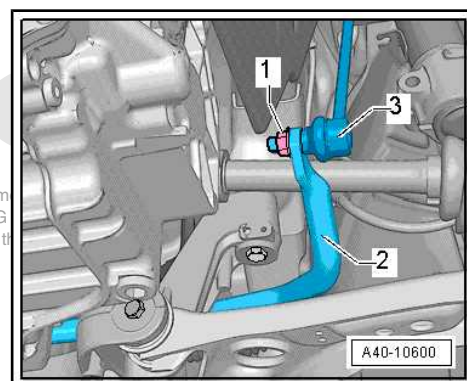
- Unscrew nut -1- for coupling rod -3- (left-side) on anti-roll bar -2-.
- Swivel drive shaft (left-side) towards front.



Note

Make sure you do not damage surface coating on drive shaft.

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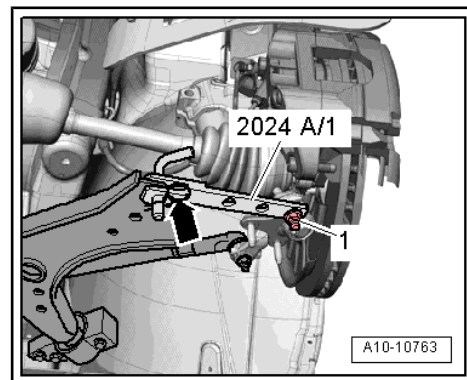
- Swivel suspension strut (left-side) outwards and support with hook -2024 A /1- as shown in illustration.



WARNING

Risk of accident if parts of support are not properly secured.

- ◆ Secure locking pin and swivel joint with retaining clip -arrow- and nut -1-.



- Remove bolt securing flange shaft (left-side). To do so, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft and spring.

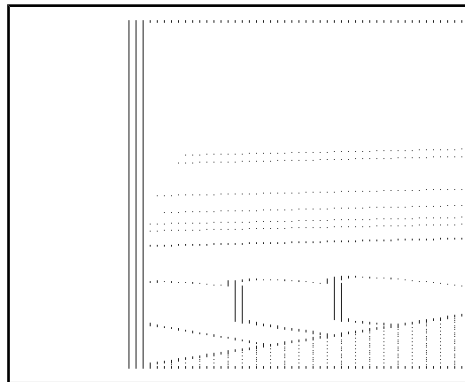
Installing

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

- Push flange shaft in against spring pressure and secure with bolt.

Tightening torques

- ◆ ⇒ [“3.1 Exploded view - differential”, page 87](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft



3.3 Removing and installing flange shaft (right-side)

Removing

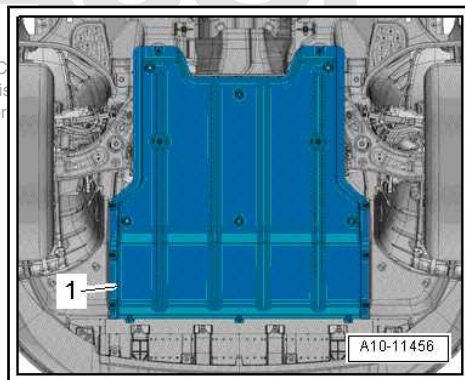
- Gearbox in vehicle



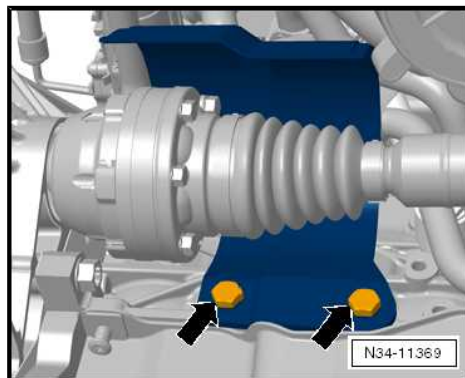
Note

- ◆ *Observe general notes* ⇒ [page 7](#) .
- ◆ *Observe rules for cleanliness* ⇒ [page 9](#) .
- ◆ *Refer to general repair instructions* ⇒ [page 9](#) .
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- If fitted, remove bolts -arrows- and detach heat shield for drive shaft (right-side).
- Turn steering to full right lock.

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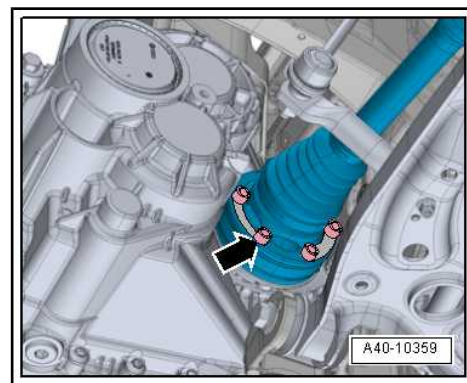
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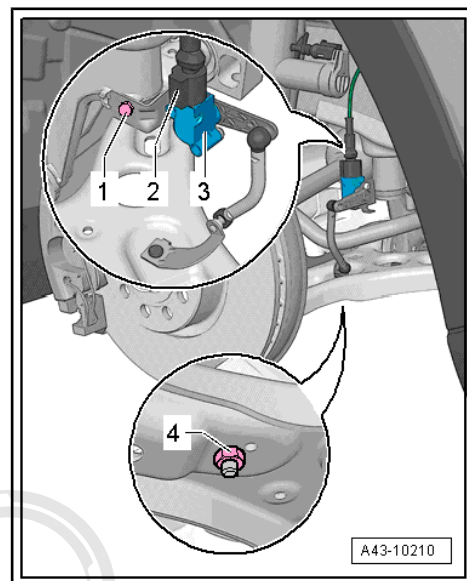
 Note

Some of the following work steps are shown on the left side of the vehicle.

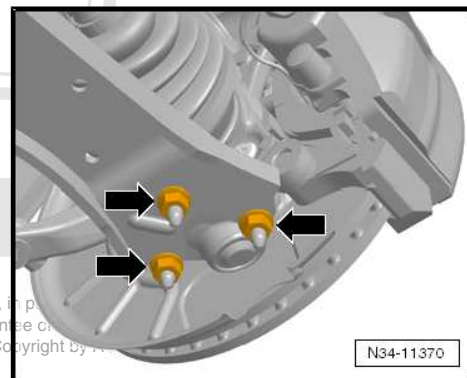
- Unbolt drive shaft -arrow- (right-side) from flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



- If fitted, remove nut -4- and bolt -1- and place front right vehicle level sender - G289- -3- to one side.



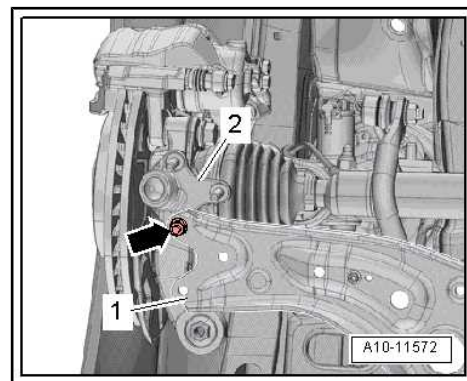
- Remove nuts -arrows- securing swivel joint (right-side).
- If fitted, unscrew nut on bracket for front right vehicle level sender - G289- .
- Disengage swivel joint (right-side) from wishbone.



- Secure swivel joint -2- (right-side) to wishbone -1- with nut -arrow- as shown in illustration.
- Tie up drive shaft (right-side) to rear.

 Note

Make sure you do not damage surface coating on drive shaft.



- Remove bolt -arrow- securing flange shaft (right-side). To do so, screw 2 bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft.

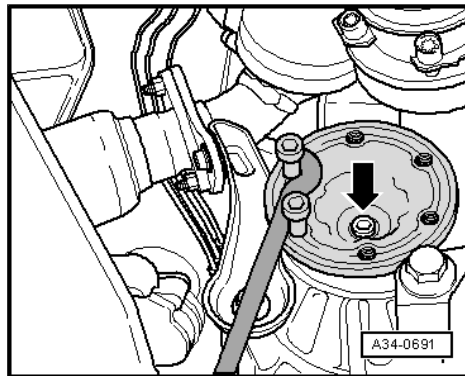
Installing

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

- Push flange shaft in against spring pressure and secure with bolt.

Tightening torques

- ◆ ⇒ ["3.1 Exploded view - differential", page 87](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



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