Workshop Manual

Sharan 2016 ➢
Tiguan 2008 ➢

7-speed dual clutch gearbox 0BH

Edition 05.2017

List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

39 - Final drive - differential

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 Safety information

(VRL010440; Edition 05.2017)

⇒ “1.1 General safety provisions”, page 1

⇒ “1.2 Safety measures when working on vehicles with a start/stop system”, page 2

⇒ “1.3 Notes on tow-starting/towing”, page 2

⇒ “1.4 Safety precautions when using testers and measuring instruments during a road test”, page 2

1.1 General safety provisions

To prevent personal injury and material damage to the vehicle, observe the following:

WARNING

Risk of injury and accident by accidental engagement of gear while engine is running.

- *Before working on vehicle with engine running, move selector lever into position “P” and apply handbrake.*

To prevent personal injury and damage to or destruction of electrical and electronic components, observe the following:

- Connect and disconnect measuring and testing devices only with the ignition switched off.

Caution

To prevent damage to the electronic components when disconnecting the battery:

- *Observe the necessary measures when disconnecting the battery.*
- *Disconnect battery only after the ignition has been switched off.*

– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .

1.2 Safety measures when working on vehicles with a start/stop system

Observe the following when working on vehicles with a start/stop system:

WARNING

Injury hazard as a result of automatic engine start in vehicles with start/stop system.

- *In vehicles with the start/stop system activated (identifiable by an indication in the dash panel insert) the engine can start automatically if required.*
- *When working on the vehicle, always make sure that the start-stop system is deactivated (switch off the ignition; switch the ignition on again if necessary).*

1.3 Notes on tow-starting/towing

Caution

Danger of irreparable damage to gearbox.

- *If the vehicle must be towed, the selector lever must be in the "N" position, and the vehicle must be towed at a speed no greater than 50 km/h and for a distance not exceeding 50 km.*

Note

It is not possible to tow-start the engine, e.g. if the battery is too flat or the starter is not functioning.

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

Observe the following if test and measuring equipment is required during a road test:

WARNING

Risk of accident due to distraction and inadequate securing of test and measuring equipment.

Danger as a result of activation of front passenger airbag in event of an accident.

- *Operation of test and measuring equipment while driving results in distraction.*
- *Greater injury hazard as a result of unsecured test and measuring equipment.*
- *Always strap in place test and measuring equipment on rear seat and have a 2nd person sitting on the rear seat to operate them.*

Please note the following to avoid personal injury and damage to, or destruction of, electrical and electronic components:

- Connect and disconnect measuring and testing devices only with the ignition switched off.

Caution

To prevent damage to the electronic components when disconnecting the battery:

- *Observe the necessary measures when disconnecting the battery.*
- *Disconnect battery only after the ignition has been switched off.*

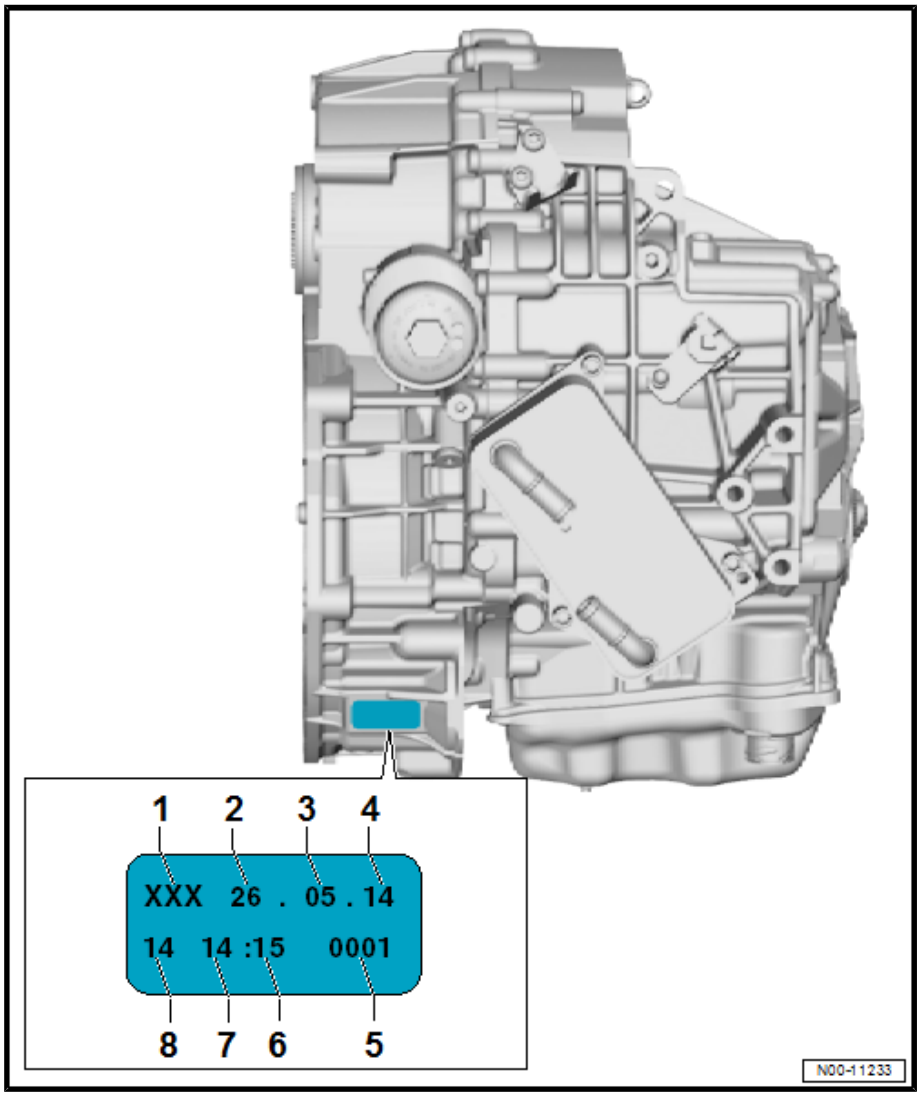
– Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .

2 Identification

2.1 Identification of gearbox

The gearbox code can be found on top of the gearbox, near the starter.

1 - Gearbox code
2 - Day of production
3 - Month of production
4 - Year of production
5 - Serial number
6 - Minute of production
7 - Hour of production
8 - Factory



Note

The gearbox code is also indicated on the vehicle data stickers.

3 Repair notes

⇒ “3.1 General information”, page 5

⇒ “3.2 Rules for cleanliness”, page 5

⇒ “3.3 General repair instructions”, page 6

⇒ “3.4 Gaskets and seals”, page 7

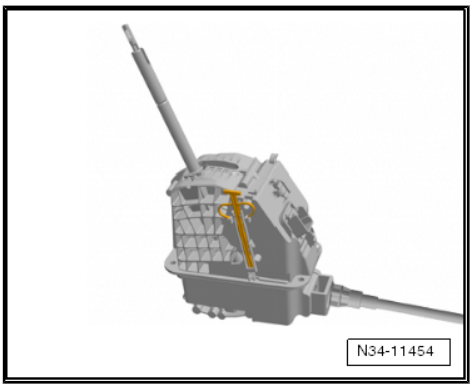
⇒ “3.5 Nuts and bolts”, page 7

3.1 General information

Gearbox

- The torque of the engine is transmitted via the flywheel to the dual clutch gearbox. The flywheel and the dual clutch are joined together by a toothed connection. Together they take on the function of the dual-mass flywheel.
- The gearbox is structured like a manual gearbox. Through opposed hydraulic actuation of the dual clutch, it is operated like an automatic gearbox. In other words, the gears are engaged automatically or manually via the Tiptronic system. There is no clutch pedal.

Selector mechanism



The feedback for the gearbox concerning the selector lever position is not transferred by mechanical means via the selector lever cable and the multifunction switch (gear sensor) any more, as is the case for the automatic gearbox. The information concerning selector lever positions or shifting operations are transferred to the gearbox control unit via a separate control unit in the selector mechanism and the CAN data bus. That is, gears are shifted without any mechanical cables being involved. Only for selector lever position “P” the parking lock is engaged mechanically via the selector lever cable.

Gear change point variations for gradients

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

- Gear change map for extreme uphill stretches is matched to engine output.
- Gear change map for extreme downhill stretches is matched to the braking effect of the engine.
- If a gear is selected directly via the Tiptronic system, it is also possible to use the braking effect of the engine in a specific gear, e.g. when driving down a slope with a trailer attached.

3.2 Rules for cleanliness

- First thoroughly clean connecting points and surrounding areas and then loosen bolts.
- Seal open lines and connections immediately using clean plugs or sealing caps from engine bung set - VAS 6122- .
- Place removed parts on a clean surface and cover them to prevent them from getting dirty. Use sheeting and paper for this purpose. Use lint-free cloths only.
- Make sure that no dirt can enter an »open« gearbox.
- Install only clean parts; do not remove Genuine parts from packaging until immediately before installing.

- If repair work cannot be performed immediately, cover opened parts carefully.
- Protect disconnected electrical connectors from dirt and water, and reconnect them only when dry.

3.3 General repair instructions

To ensure flawless and successful gearbox repairs, the greatest care and cleanliness as well as the use of good and proper tools are essential. Also note the basic rules on safety when performing repair procedures.

A number of general notes on the individual repair procedures, which can otherwise be found in the relevant sections of the manual, are summarised here. They apply for this particular workshop manual.

Guided fault-finding, vehicle self-diagnosis and test instruments

- Before performing repairs to the gearbox, determine the cause of the fault as accurately as possible ⇒ Vehicle diagnostic tester, Guided Fault Finding, Vehicle Self-Diagnosis or Test Instruments.

Special tool

For a complete list of special tools used in this workshop manual, see ⇒ "Workshop equipment and special tools" .

Gearbox

Always make sure that no dirt can enter an »open« gearbox. In particular, dirt entering an »exposed« mechatronic unit for dual clutch gearbox - J743- and/or oil pump can lead to gearbox failure.

- If gearbox covers have been unbolted or gearbox has no fluid, do not run engine or tow vehicle.
- First thoroughly clean connecting points and surrounding areas and then loosen bolts.
- When installing the gearbox, ensure that dowel sleeves between the engine and gearbox are correctly located.

Locking devices

- Do not overstretch retaining rings.
- Always renew retaining rings which have been damaged or overstretched.
- Retaining rings must locate properly in grooves.

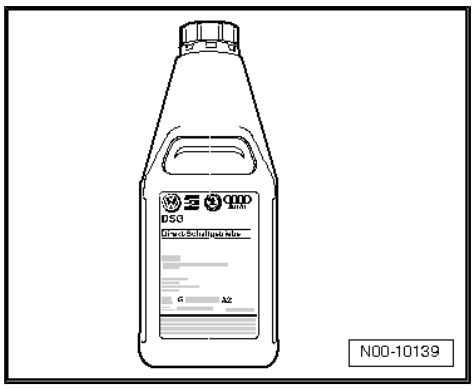
Dual clutch gearbox oil

The oil quality is of critical importance for the function of the gearbox.

Shake oil bottle before opening.

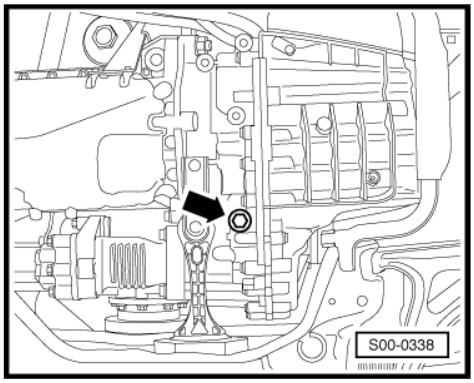
Do not mix additives in oil. Do not fill any other oil.

Oil which has been drained out cannot be filled again.

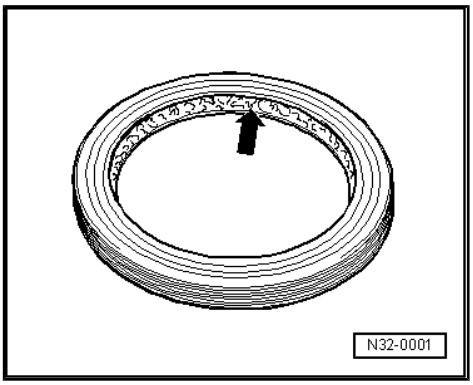


Oil drain and inspection plug

A plastic overflow pipe (with 8 mm hexagon socket head) is located behind this plug -arrow-. Its length determines the oil level in the gearbox.

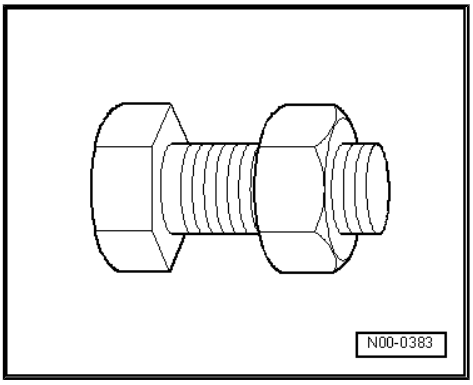


3.4 Gaskets and seals



- Renew O-rings, seals and gaskets.
- After removing gaskets and seals, always inspect contact surface of housing or shaft for burrs resulting from removal or for other signs of damage.
- Before installing seals, lightly oil outer diameter and half-fill space between sealing lips -arrow- with sealing grease - G 052 128 A1- .
- The open side of the oil seals faces toward the side with fluid filling.
- Only use dual clutch gearbox oil. Other lubricants will cause problems in function.
- Coat O-rings with dual clutch gearbox oil to prevent pinching of rings during assembly.
- After renewing gaskets, O-rings and seals, check oil level in gearbox and top up if necessary ⇒ page 103 .

3.5 Nuts and bolts



- Loosen and tighten securing bolts and securing nut for covers and housings diagonally.
- Specified torques given are for unoiled nuts, bolts and screws.
- Clean threads of bolts which are to be installed with locking fluid using a wire brush. Then insert bolts with locking fluid - AMV 185 101 A1- .
- Use a thread chaser to clear residual locking fluid from all threaded holes into which self-locking bolts are to be screwed. Otherwise there is a danger of bolts shearing when subsequently being removed.
- Check pitch of thread, to ensure correct thread chaser is used to clean threads and to ensure the threads are not damaged.
- Always renew self-locking bolts and nuts.

4 Technical data

4.1 Allocation gearbox - engine

⇒ “4.1.1 Tiguan 2008 ►”, page 8

⇒ “4.1.2 Sharan 2016 ►”, page 8

4.1.1 Tiguan 2008 ►

Take account of the gearbox code if spare parts are required for a repair.

Allocation: gearbox codes for petrol engines		
LWT, MYC, NEZ	NEZ, NYE, NZT, RBV	
2.0 l - 125/147 kW TSI	2.0 l - 132/155 kW TSI	

Allocation: gearbox codes for diesel engines		
LWS, MYB, MYG, NYD, NZS, RBU	NYD, NZS, RBU	QYQ
2.0 l - 100, 103 kW TDI	2.0 l - 130 kW TDI	2.0 l - 110, 135 kW TDI

4.1.2 Sharan 2016 ►

Take account of the gearbox code if spare parts are required for a repair.

Allocation: gearbox codes for diesel engines		
QYQ, SCY		
2.0 l - 110, 135 kW TDI		

4.2 Capacities

Capacity	Dual clutch gearbox 0BH
Initial filling	7.0 l ± 0.1 l
Changing ◆ Change interval: ⇒ Maintenance manual and/ or ⇒ service tables “ELSA”	approx. 5.5 litres
Lubricant	Dual clutch gearbox oil

The oil is available as a replacement part; part no. ⇒ Electronic parts catalogue (ETKA) .

Further information in the part number designates the container size.

Capacity	Front bevel box
Initial filling	0.9 l
Changing	Filled for life, no change
Lubricant	Gear oil

The oil is available as a replacement part; part no. ⇒ Electronic parts catalogue (ETKA) .

Further information in the part number designates the container size.

5 Electrical components

5.1 Overview of fitting locations - electrical components

1 - Mechatronic unit for dual clutch gearbox - J743-

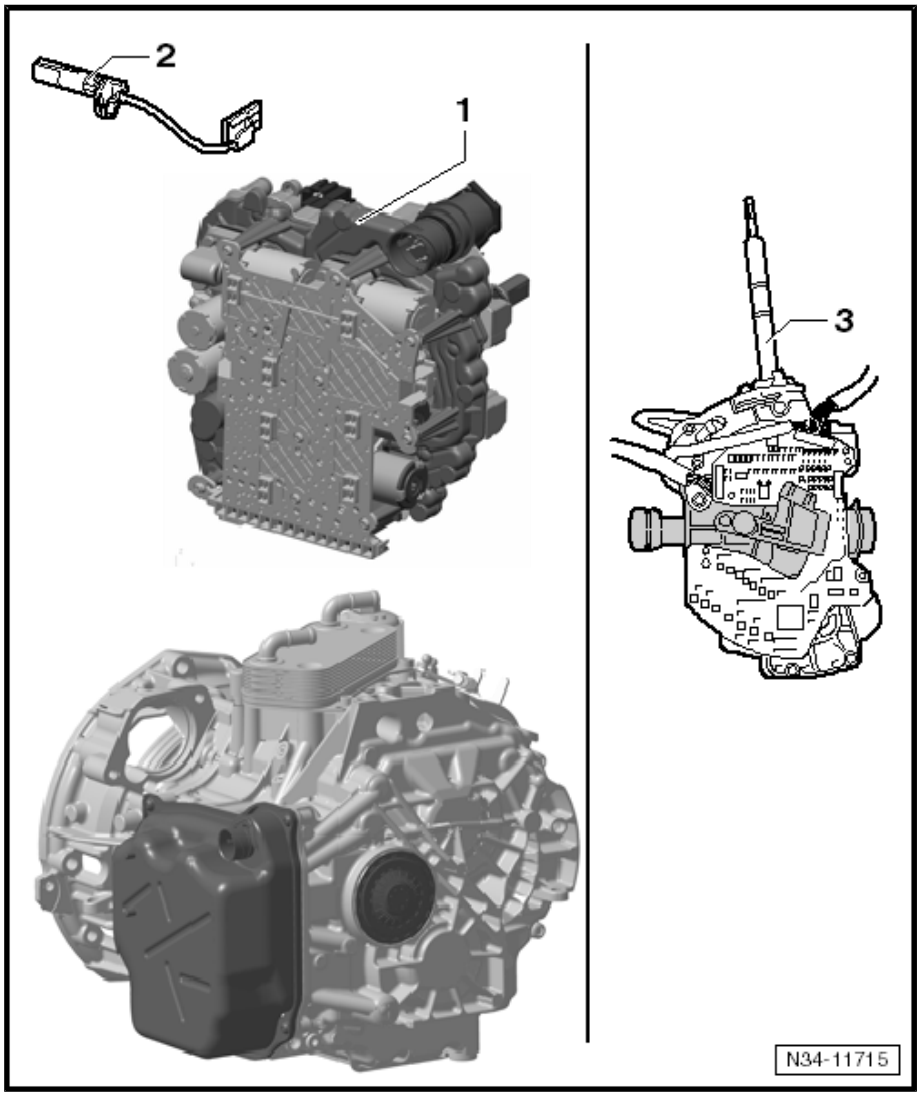
- ❑ Removing and installing ⇒ page 26

2 - Gearbox input speed sender - G182- and oil temperature sender in multi-plate clutch - G509-

- ❑ Both senders are combined in one component and can be renewed together only.
- ❑ Removing and installing ⇒ page 37
- ❑ Before removal of the sender, the mechatronic unit for dual clutch gearbox - J743- must be removed ⇒ page 26 .
- ❑ Discontinued as of gearbox date 06/15

3 - Selector lever - E313-

- ❑ For information about selector lever, see ⇒ page 47 Selector mechanism



30 – Clutch

1 Clutch

⇒ “1.1 Assembly overview - dual clutch”, page 11

⇒ “1.2 Removing and installing clutch end cover”, page 12

⇒ “1.3 Removing dual clutch”, page 15

⇒ “1.4 Installing dual clutch”, page 18

1.1 Assembly overview - dual clutch

Replacement parts

1 - Retaining ring for dual clutch end cover

- ❑ Renew after removal

2 - Retaining ring for dual clutch

- ❑ Renew after removal

3 - Retaining ring for drive plate

4 - Dual clutch

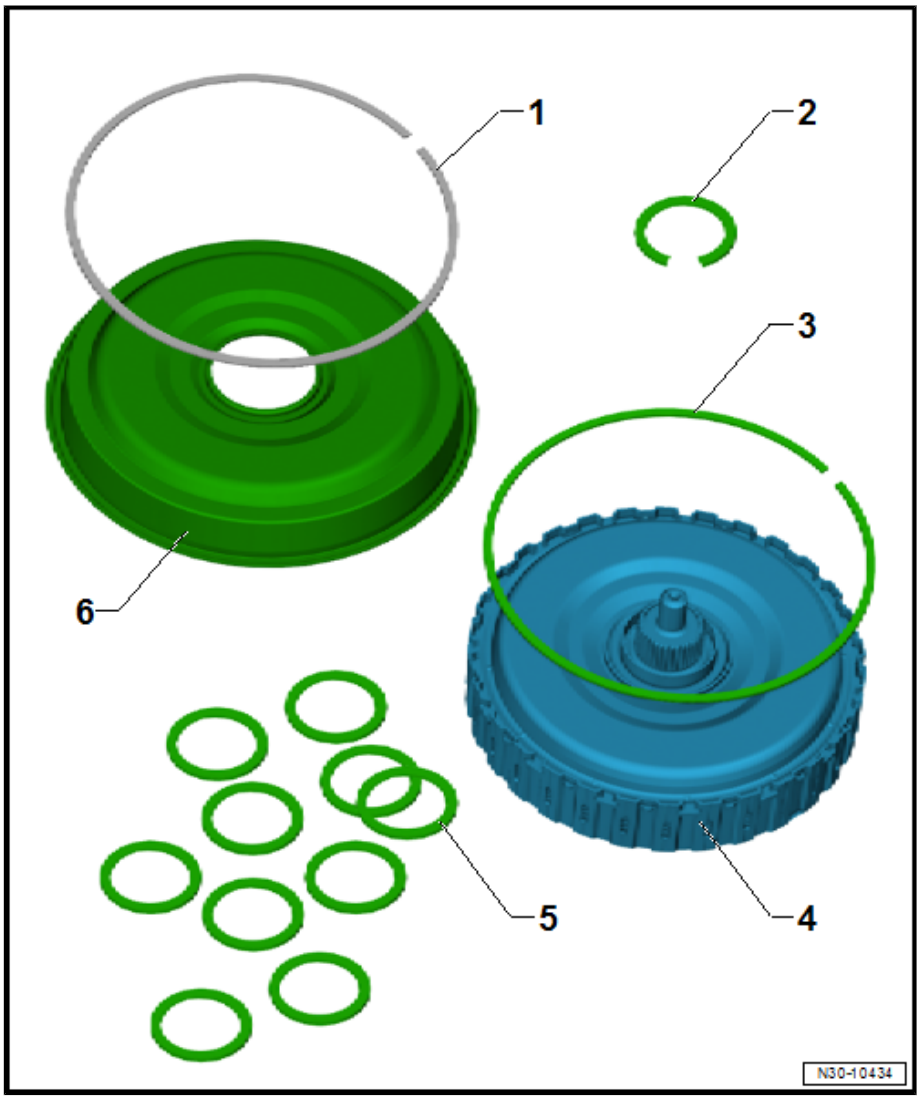
> **Caution**
>
> *The drive plate has to remain engaged between the teeth of the outer plate carrier.*
>
> *If the drive plate detaches, the plates in the dual clutch can shift. It may then not be possible to adjust the clutch correctly when it is installed.*

5 - Shims

- ❑ 10 shims having different »thicknesses«. They are sized in 0.05 mm increments.
- ❑ Thickness of spacer ring must be determined when installing dual clutch.

6 - Dual clutch end cover

- ❑ Renew after removal



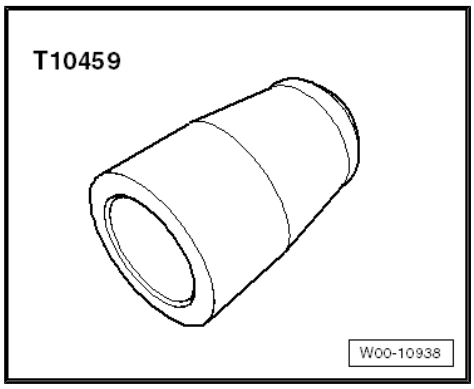
Caution

- *This figure is intended only to provide an overview of the components. The dual clutch must not be dismantled because all the plates have been balanced relative to each other.*
- *If the drive plate is detached, the plates in the dual clutch can shift, and consequently it may not be possible to adjust the clutch correctly when it is installed.*

1.2 Removing and installing clutch end cover

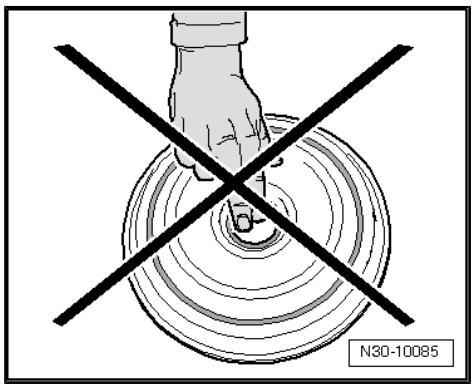
Special tools and workshop equipment required

- Clean assembly sleeve - T10459- before using. Do not use a scratched sleeve.



Brief description

The cover is held in its seat by a retaining ring. After the retaining ring has been removed, the cover can be levered out of its seat. Cover and retaining ring must always be renewed. Never install a new cover with a hammer and never oil the centre seal or touch it with a hand! However, if this should happen, the cover is certain to leak!



Removing

The gearbox must be removed for work on cover.

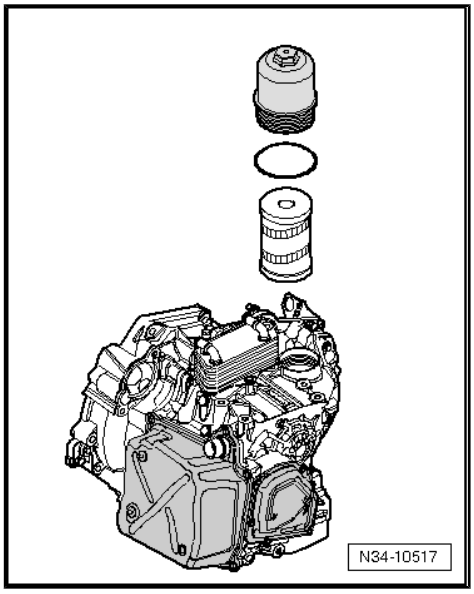
– Drain gear oil ⇒ page 105 .
– Remove gearbox ⇒ page 61 .
– Secure gearbox to assembly stand ⇒ page 86 .

Often, doubts arise as to whether the filter must be renewed or not.

Note

It is not always necessary to change the oil filter ⇒ page 101 .

– Remove filter if necessary ⇒ page 101 .



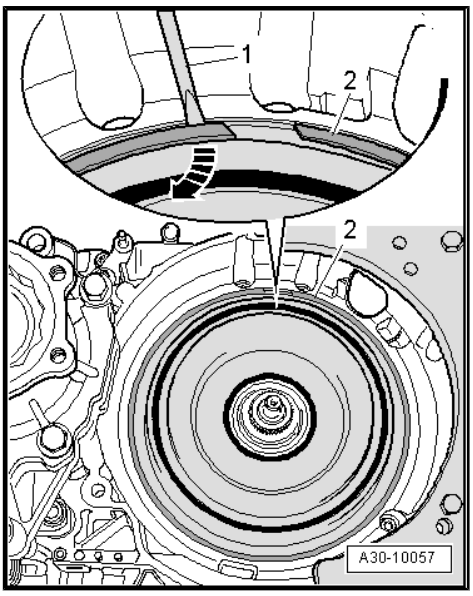
– Lever out retaining ring -2- of clutch end cover using screwdriver -1- -arrow- and remove.

Cover can be levered out with a screwdriver.

Note

The removed cover and retaining may not be installed again.

Install only a »new« cover.



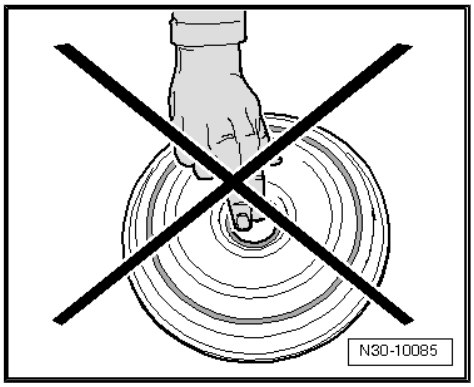
Installing

Caution

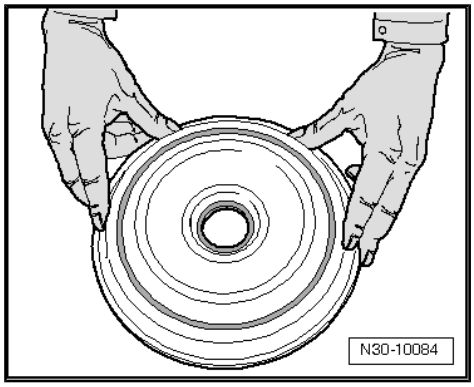
Cover and retaining ring must always be renewed.

Never grasp a new cover in centre seal. The centre hole of the cover must not be touched, oiled or brought into contact with other materials. Leaks will result.

Never install new covers with a hammer!



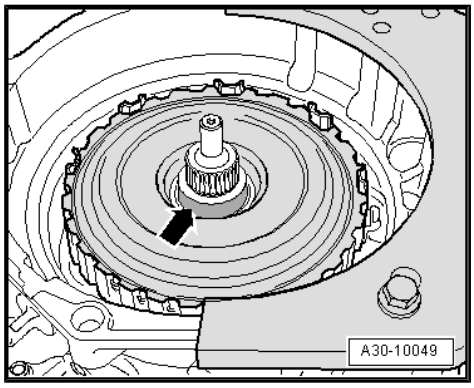
– Only handle cover as shown -in this picture-.



Note

There must be no stickers on the inside of the cover. If, however, stickers are present, remove them carefully.

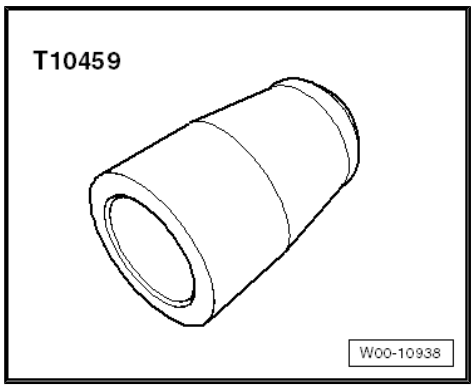
– The running surface on the end of the shaft of the clutch -arrow- must be free of oil and dry.
– If necessary, thoroughly clean running surface.



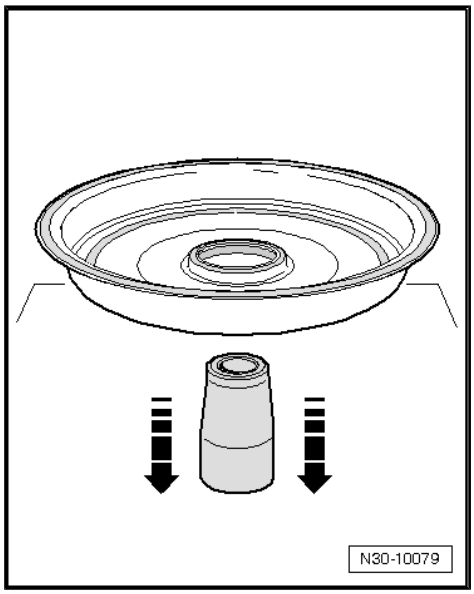
WARNING

The centre seal of the new cover must be »preformed« before installing:

– Clean assembly sleeve - T10459- “before using”. Do not use a scratched sleeve.
– Set sleeve on a flat surface.



– Guide cover horizontally and evenly over entire sleeve -as shown in this figure-. This will bring the sealing lip into installation position.
– Remove sleeve upwards out of cover and set sleeve on end of clutch shaft.
– Moisten outer seal of cover with oil.



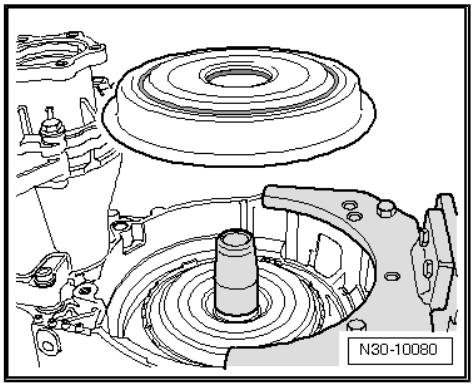
Caution

Moisten only the outer seal of the cover with oil. Oiling the inner seal will always cause leaks.

– Guide cover horizontally over sleeve and press evenly onto its seat.

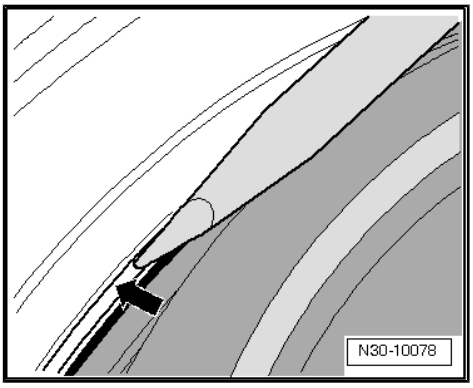
Caution

Work carefully. Any sort of blow to the cover is certain to cause leaks.



It is possible to lever cover carefully into its seat with a -screwdriver- until »new« retaining ring can be installed.

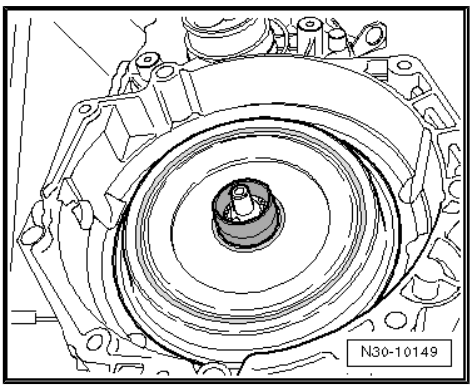
– Install new retaining ring.



– Do not remove bush until retaining ring is installed.
– Installing gearbox ⇒ page 82
– Top up gear oil ⇒ page 105 .

WARNING

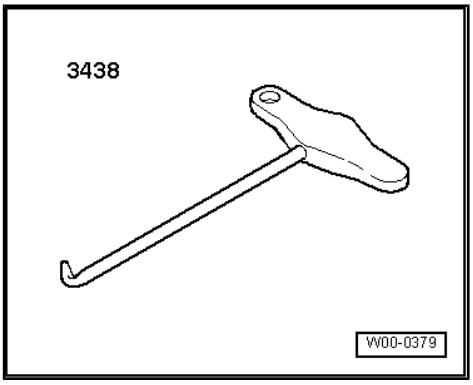
Do not start engine if there is no oil in gearbox.



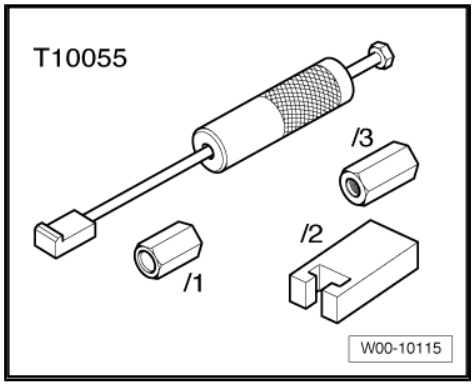
1.3 Removing dual clutch

Special tools and workshop equipment required

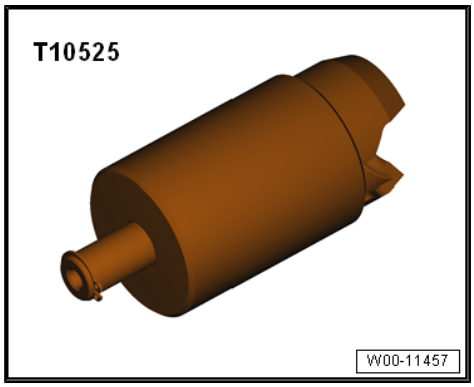
♦ 2 x hooks - 3438-



♦ Puller - T10055-



♦ Puller - T10525-



Brief description

- The axial play of the clutch is readjusted during installation procedure.
- To remove or install clutch, gearbox must be securely attached to an assembly stand in vertical position ⇒ page 86 . Only this way is it possible later to adjust axial play of the clutch without error.

Removing

– Remove clutch end cover ⇒ page 12 .

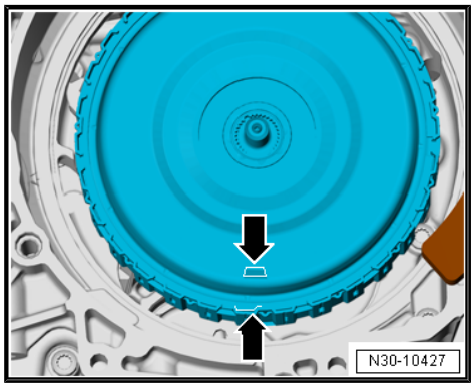
Important! Installation location of drive plate

– Check that marking on drive plate -arrow- aligns with the marking on the outer plate carrier.

If there is no marking:

– Mark installation position of drive plate relative to periphery of outer plate carrier with permanent marker, as shown in illustration.

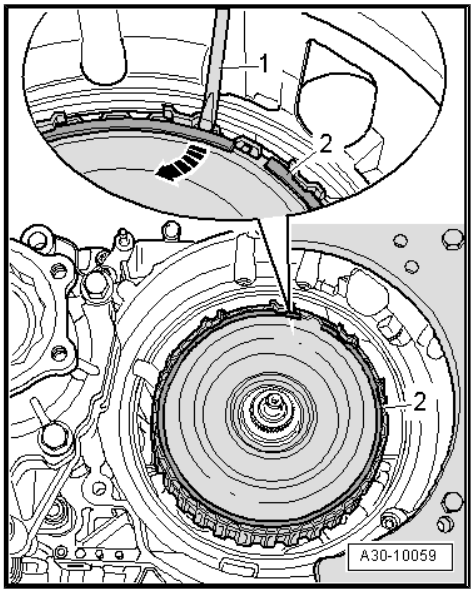
- During installation, drive plate must always be repositioned at marked position.



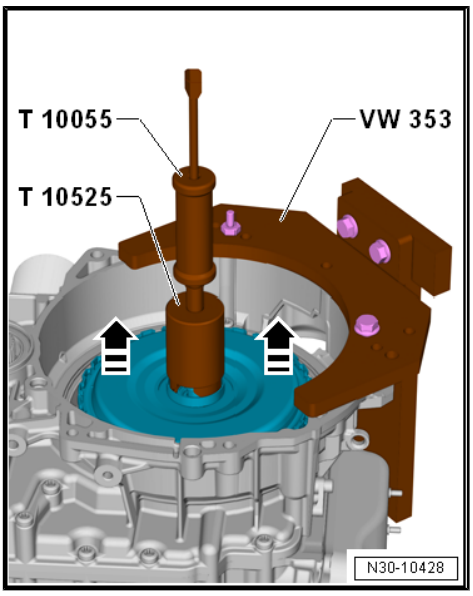
Note

The retaining ring is renewed together with the clutch. If the clutch which is removed is reinstalled, the securing ring is to be used again as well.

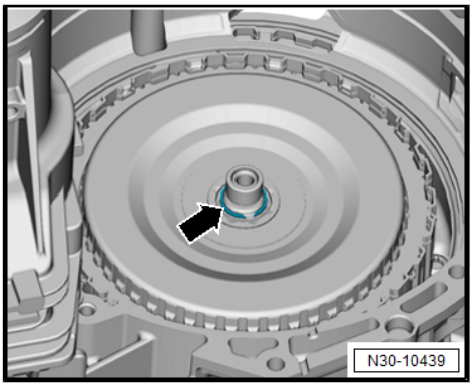
– Lever out retaining ring -2- of drive plate using screwdriver -1- -arrow-.



– Apply puller - T10525- together with puller - T10055- on splines and carefully pull drive plate off its seat -arrows-.



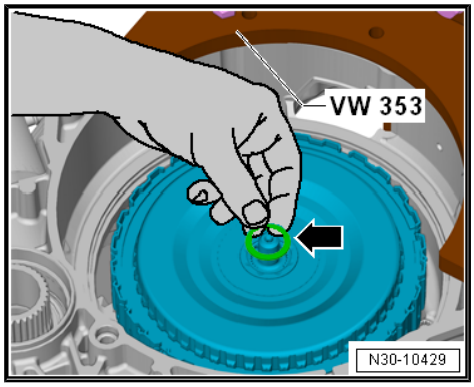
– Remove retaining ring -arrow- and save it for now.



Note

Do not dispose of the retaining ring yet because it will be needed to measure axial clearance.

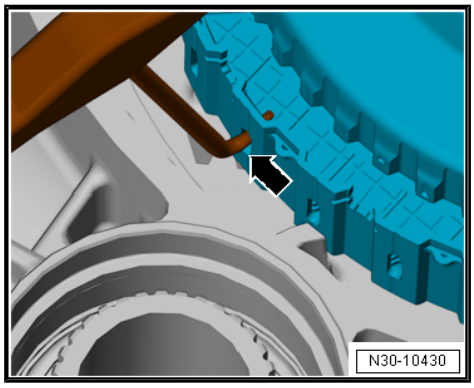
– Remove shim -arrow-.



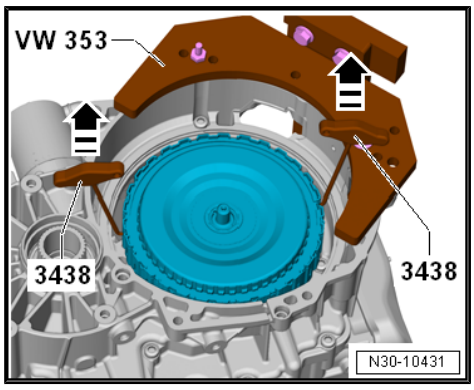
Caution

Carefully remove the dual clutch. Take care that no parts fall out. Therefore, do not turn the clutch over!

– Engage 2 hooks - 3438- on opposite sides of clutch -arrow-.



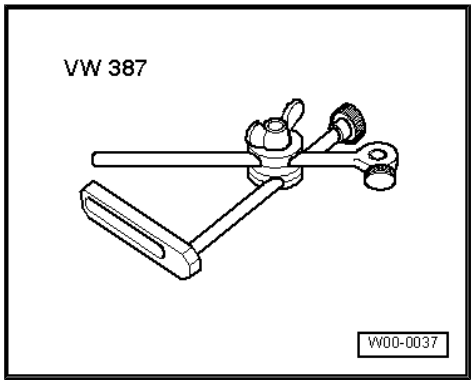
– Remove dual clutch using hooks - 3438- .



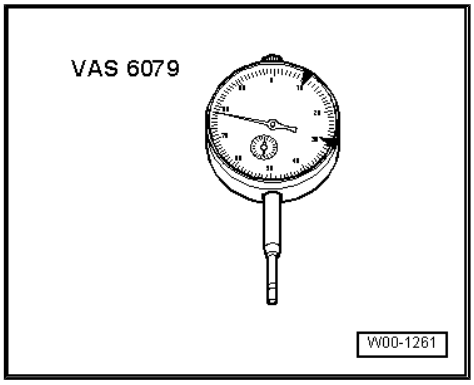
1.4 Installing dual clutch

Special tools and workshop equipment required

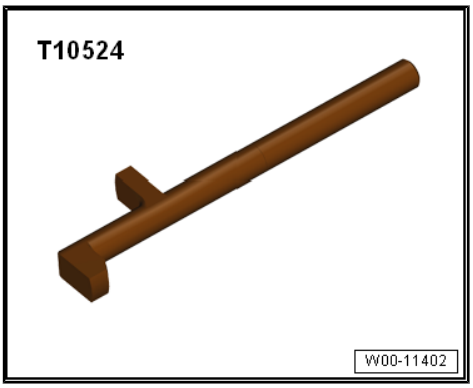
♦ Universal dial gauge holder - VW 387-



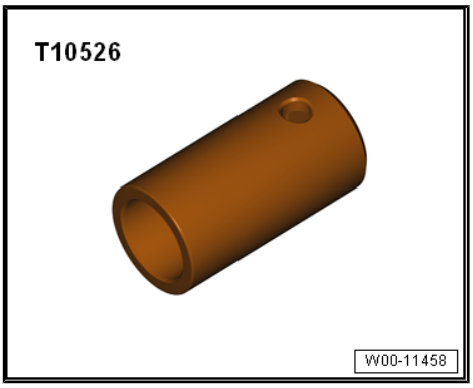
- Dial gauge - VAS 6079-



- Retaining pins - T10524-



- Thrust piece - T10526-



Caution

- *The drive plate has to remain engaged between the teeth of the outer plate carrier.*
- *If the drive plate detaches, the plates in the dual clutch can shift. It may then not be possible to adjust the clutch correctly when it is installed.*
- *Do not lift (not even slightly) or remove plate carrier! The plates could turn.*

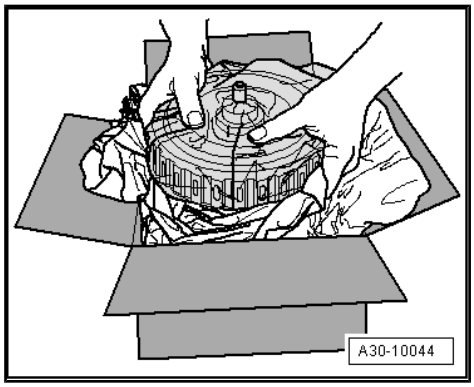
Brief description

- To remove or install the clutch, the gearbox must be securely attached to an assembly stand in vertical position.
- The large plate carrier goes through all plates inside the clutch. It must not slip out of the lowest plate.

Installing

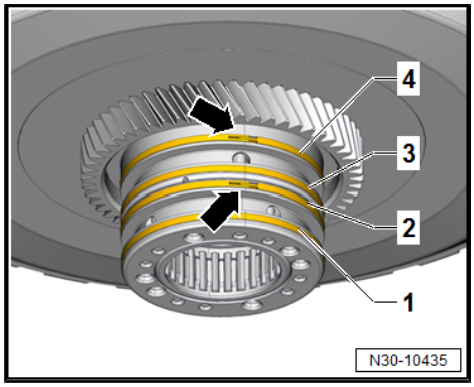
– Take great care when removing the dual clutch from its package.

– Turn piston rings by hand. They must move freely and must not bind.



– Ensure that piston rings -1-, -2-, -3- and -4- are seated correctly. The ring butts -arrows- of piston rings -1- and -3- should align.

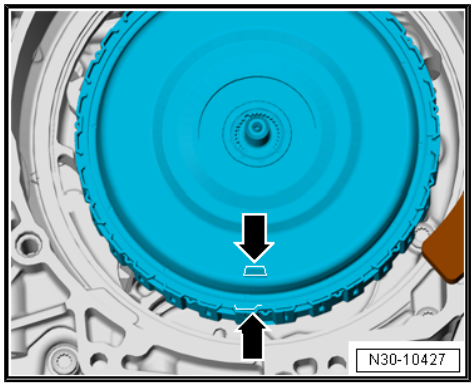
– The ring butts -arrows- of piston rings -2- and -4- should align and be offset 180° to the ring butts of piston rings -1- and -3-.



Important! Position of drive plate

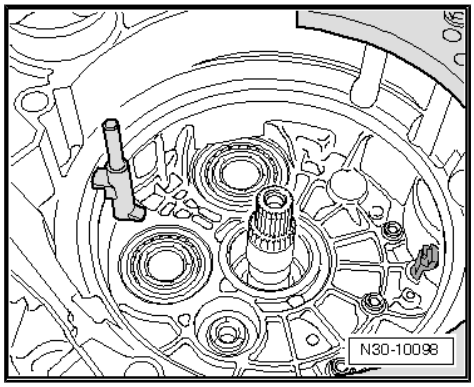
– Before installing, check if there is a marking -arrow- on dual clutch.

– If there is no marking, use a permanent marker to make a colour marking on the drive plate and one the outer plate carrier.

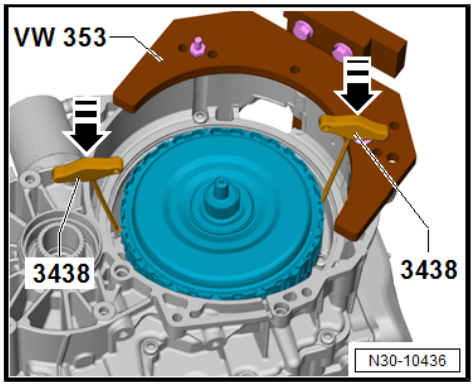


– Insert retaining pin - T10524- .

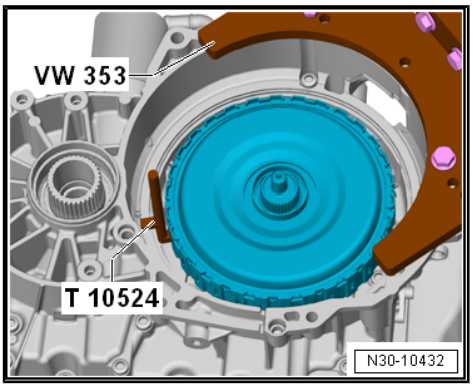
The retaining pin - T10524- should be held by a second mechanic while the dual clutch is being inserted.



– Carefully insert -dual clutch-, ensuring it does not fall.
– If necessary, insert clutch by turning slightly.



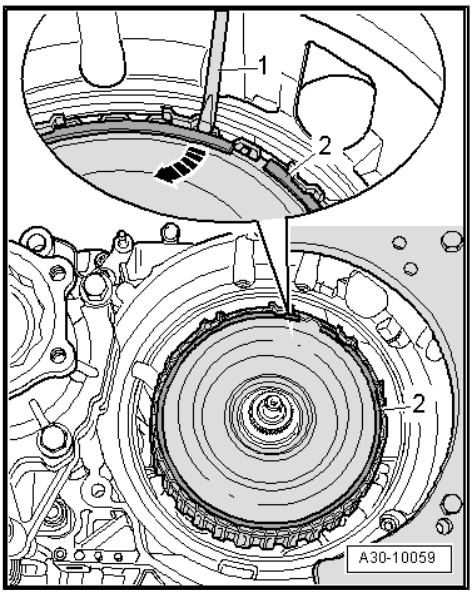
The dual clutch is properly fitted if there is almost no play in the retaining pin - T10524- .



Note

- *The retaining pin remains inserted until the clutch end cover is installed.*
- *The dual clutch must now not be rotated any more, as this can shift the position of the retaining pin - T10524- .*

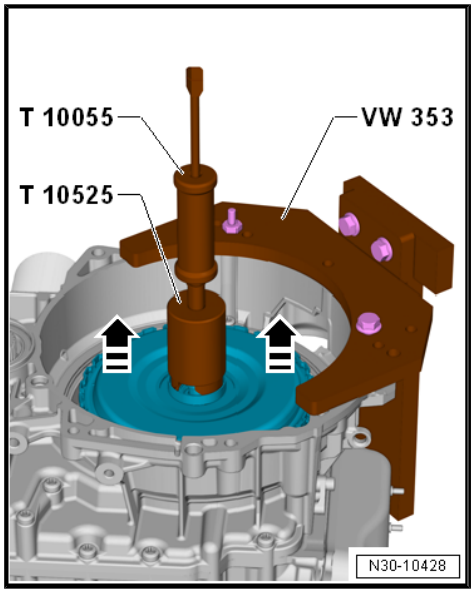
– Lever out retaining ring -2- of drive plate using screwdriver -1- -arrow-.



Note

This retaining ring will be used again. Do not dispose of it.

– Apply puller - T10525- together with puller - T10055- on splines and carefully pull drive plate off its seat -arrows-.



Note

The retaining pin - T10524- must be held by a second mechanic while pulling off.

– Carefully remove drive plate from dual clutch -arrows- and place it on one side.

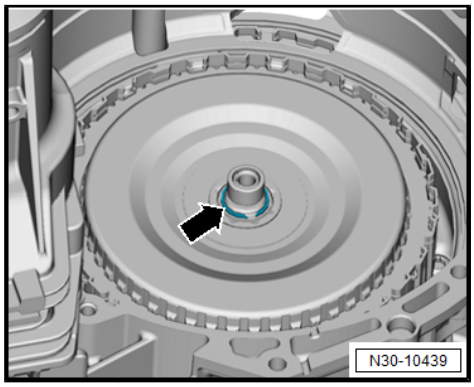
Caution

Do not lift (not even slightly) or remove plate carrier! The plates could turn.

Determining shim for dual clutch:

- The retaining pin - T10524- remains installed!

– Temporarily install “old” retaining ring -arrow-.



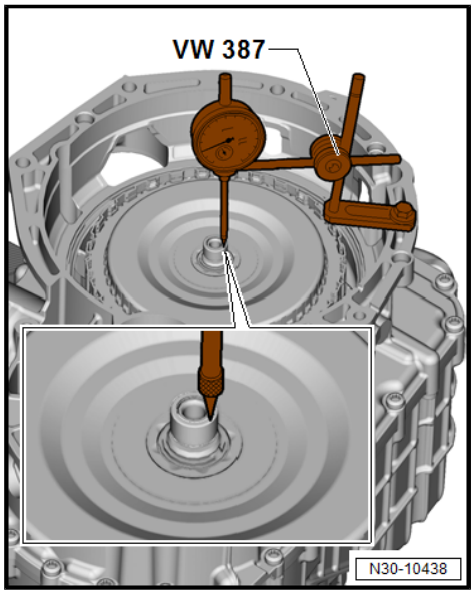
Before this ring is finally disposed of, 3 measurements must be made.

First measurement (axial play of shaft)

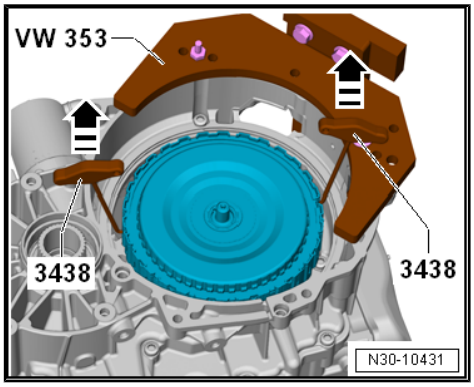
– Screw universal dial gauge - VW 387- to gearbox flange.

– Set -tip of dial gauge- on input shaft.

– Set -dial gauge- to 0 with preload.



– Lift dual clutch with force -in direction of arrow- to stop using hooks - 3438- and note measurement.
– Call this value “A”.



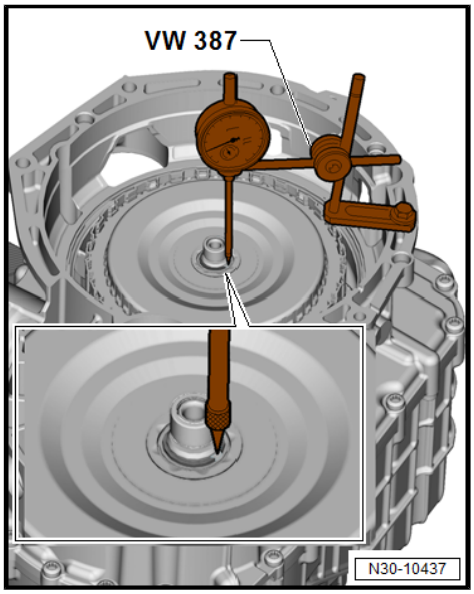
Note

This value will be needed later for the check measurement so save value “A” until the last measurement has been performed.

Second measurement

- The retaining pin - T10524- remains installed!

– Set tip of dial gauge -on hub of large plate carrier-.



Note

Tip must not sit on retaining ring.

– Set -dial gauge- to 0 with preload again.
– Lift dual clutch with force to stop and note measurement.
– Call this value “B”.

Now calculate which shim must be fitted:

– Use this formula:

  Value “B” minus value “A” minus 0.11 = thickness of shim to be fitted.

– Note result.

The shims are sized in 0.05 mm increments.

– Measure the shims and determine which one is closest to the result.

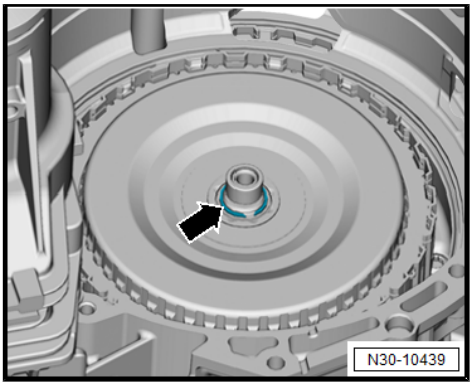
WARNING

Always use the next-largest shim, never the next-smallest.

Example:

Calculated dimension for shim	New shim
1.28 mm	1.3 mm
1.26 mm	1.3 mm

– Remove old retaining ring -arrow-.



Note

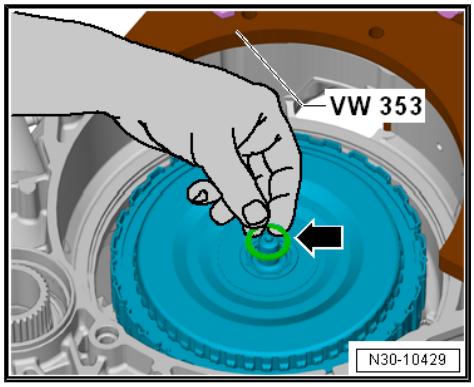
Do not dispose of ring yet; it will be needed once more.

– Fit calculated shim.

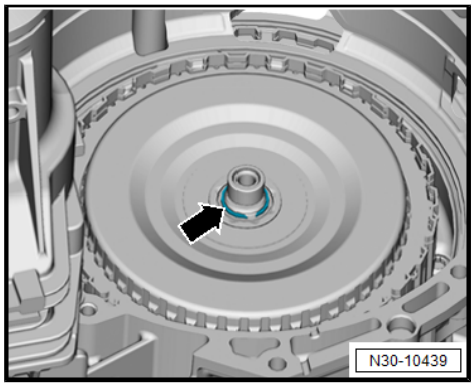
Third measurement (check measurement)

To make sure that the shim is correct, a test measurement must still be carried out. Proceed as follows:

- The retaining pin - T10524- remains installed!



– Install old retaining ring -arrow- once more.



– Set tip of dial gauge -on hub of large plate carrier-.

Note

Set the tip of the dial gauge on the shim -1-.

– Set -dial gauge- to 0 with preload again.
– Lift dual clutch with force to stop and note measurement.
– Call this value “C”.

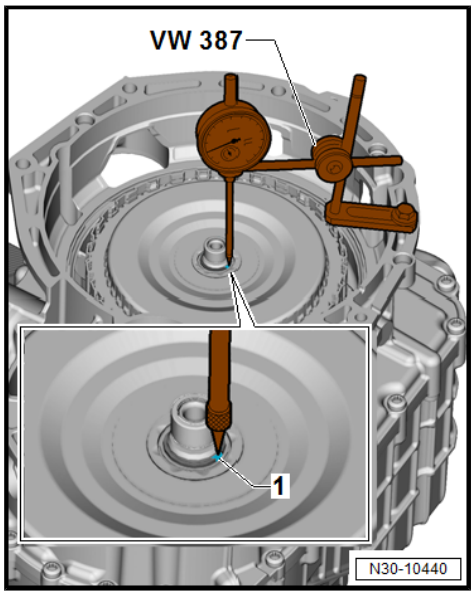
Now calculate which shim must finally be fitted:

– Use this formula:

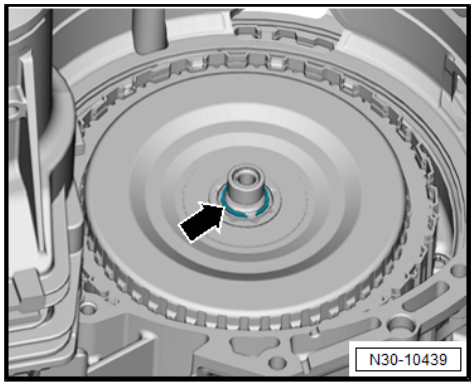
Value “C” minus value “A” = specification

This specification must lie between 0.05 and 0.12 mm.

If the specification is not attained, then achieve the specification by fitting a thicker or thinner shim.



– Install new retaining ring -arrow-.



– Fit drive plate into dual clutch.

• When installing, check if marking on drive plate is aligned with marking on outer plate carrier -arrows-. If the markings were subsequently make, align these.

– A second mechanic must hold retaining pin - T10524- in its place and press outwards slightly.

– Carefully drive the drive plate onto its seat using thrust piece - T10426- and a plastic mallet.

– Install drive plate retaining ring.

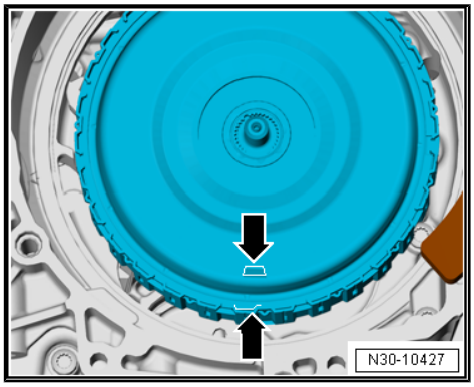
– Starting at the opening, press retaining ring in clockwise direction into its fitting position.

• The retaining ring must be fully engaged.

– Use screwdriver to check that retaining ring is correctly seated and engaged.

– Now remove retaining pin - T10524- from between dual clutch and housing.

– Install clutch end cover ⇒ page 12 .



34 – Controls, housing

1 Mechatronic unit

⇒ “1.1 Removing and installing mechatronic unit for dual clutch gearbox J743 (gearbox installed)”, page 26

⇒ “1.2 Removing and installing mechatronic unit for dual clutch gearbox J743 (gearbox removed)”, page 31

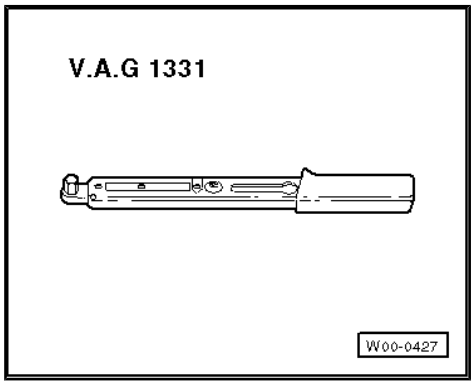
⇒ “1.3 Removing and installing gearbox input speed sender G182 and oil temperature sender in multi-plate clutch G509 up to gearbox date 05/15”, page 37

1.1 Removing and installing mechatronic unit for dual clutch gearbox - J743- (gearbox installed)

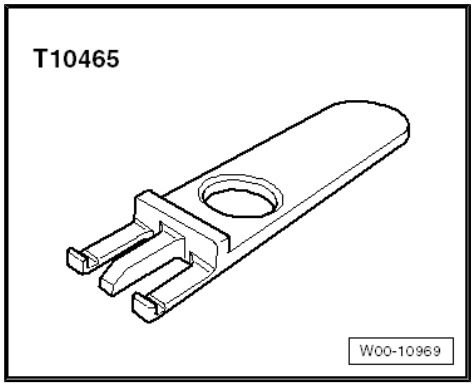
⇒ “1.2 Removing and installing mechatronic unit for dual clutch gearbox J743 (gearbox removed)”, page 31

Special tools and workshop equipment required

- Torque wrench - V.A.G 1331-



- Up to gearbox date 05/15 release tool - T10465-



Always make sure that no dirt can enter an »open« gearbox.

In particular, dirt entering an »exposed« mechatronic unit for dual clutch gearbox - J743- can lead to gearbox failure.

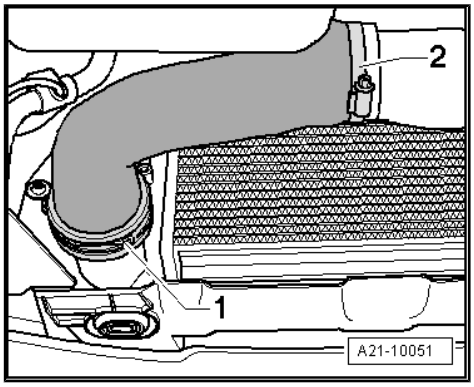
Please also refer to the notes on the oil filter change regarding »dirty oil« ⇒ page 101 .

Remove mechatronic unit.

– Move selector lever to position “P”.

– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation; Assembly overview - noise insulation

– Remove connecting hose between charge air cooler and charge air pipe ⇒ Rep. gr. 21 ; Removing and installing parts of charge air cooling .



Note

It is possible that parts having nothing to do with the mechatronic unit must be removed. This depends on the vehicle's equipment. This will create enough space to remove the mechatronic unit.

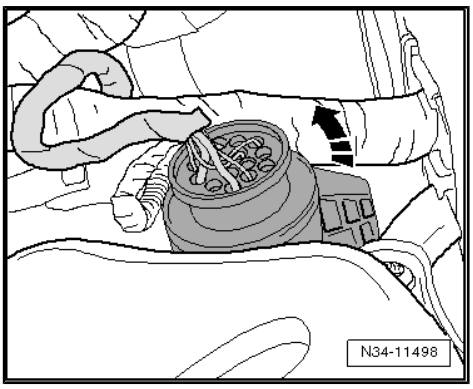
– Unbolt wiring retainer from front of »large« gearbox cover (2 nuts M6).

– Release mechatronic unit connector by turning in -direction of arrow- and pull off connector.

– Raise lines near cover and tie.

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

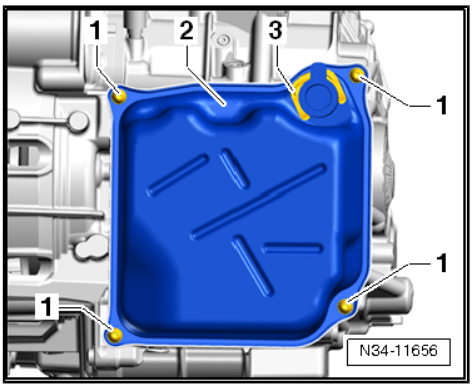
– Drain oil ⇒ page 105 .



– Remove securing clip -3-.

– Unscrew bolts -1- diagonally and remove.

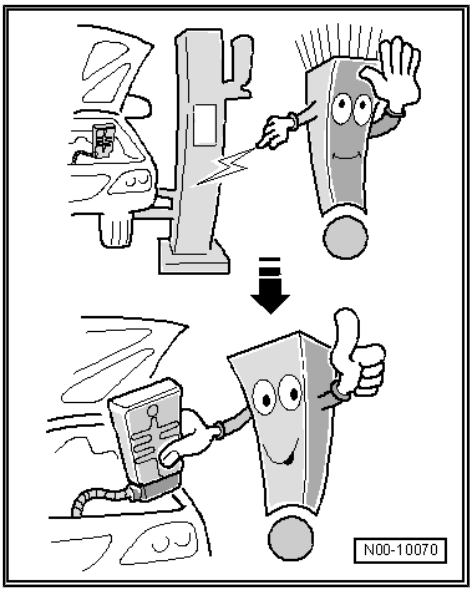
– Remove cover -2- with seal.



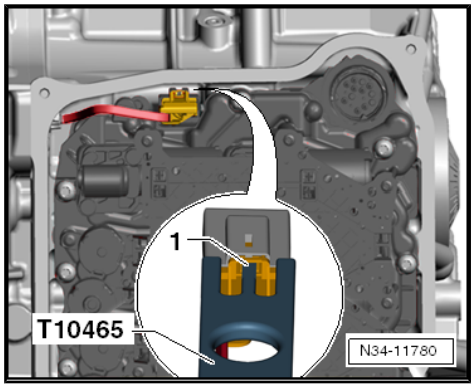
Note

Always renew bolts, securing clips and the cover with seal.

Before touching mechatronic unit, touch an earthed object again.

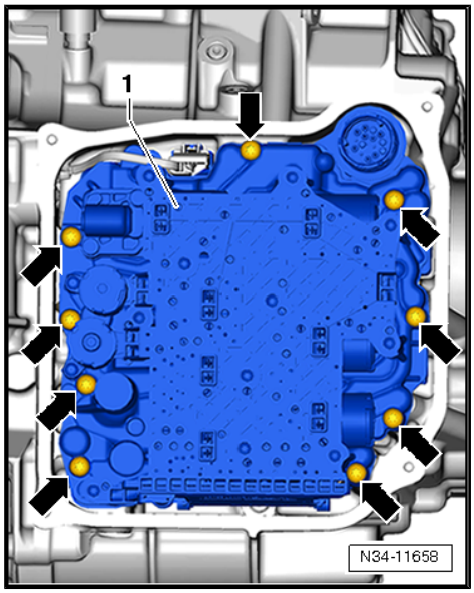


– If fitted, release connector -1- of gearbox input speed sender - G182- and oil temperature sender in multi-plate clutch - G509- using release tool - T10465- .



– Remove bolts -arrows- diagonally.

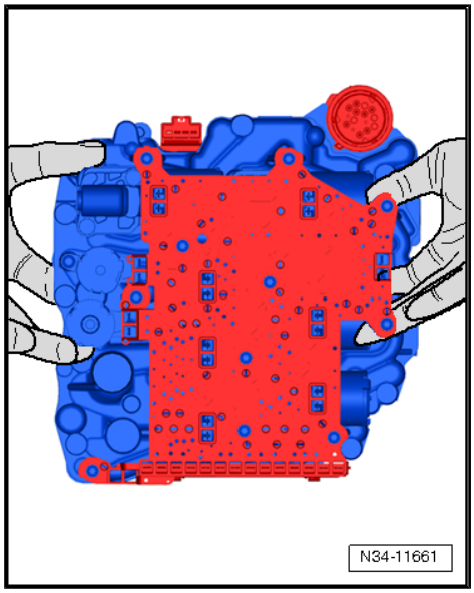
All 9 bolts have same length and are not allowed to be reused.



– Remove mechatronic unit -1- carefully.

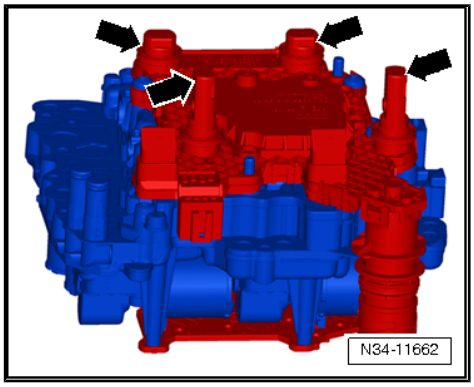
Caution

- *Lift or put down mechatronic unit only on housing and on solenoid valves.*



Lay mechatronic unit to side properly.

– Put down mechatronic unit so that sensors -arrows- are pointing upwards.



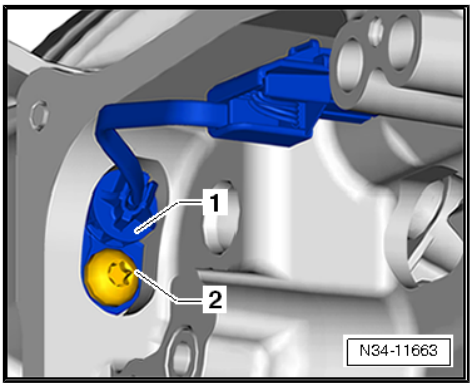
Install mechatronic unit.

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

WARNING

Before installing the mechatronic unit, clean the sealing surface on the gearbox housing thoroughly without using cleaning agents. Always make sure that no dirt can get into the inside.

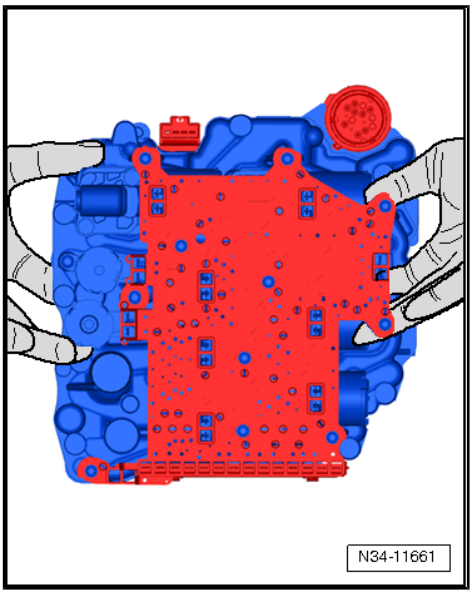
– Before installation, check that »sender« -1- is installed ⇒ page 37 .



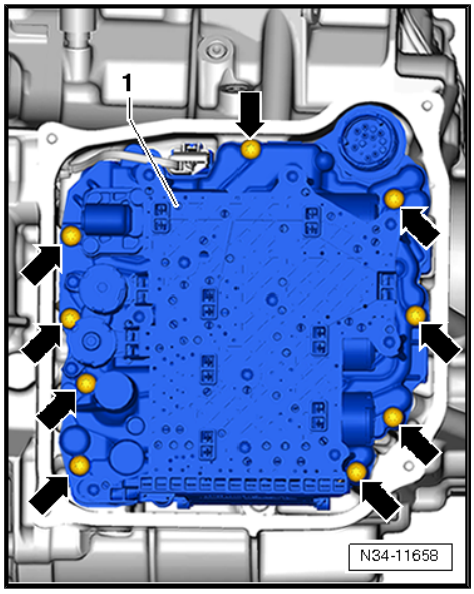
Before touching mechatronic unit, touch an earthed object again.

Caution

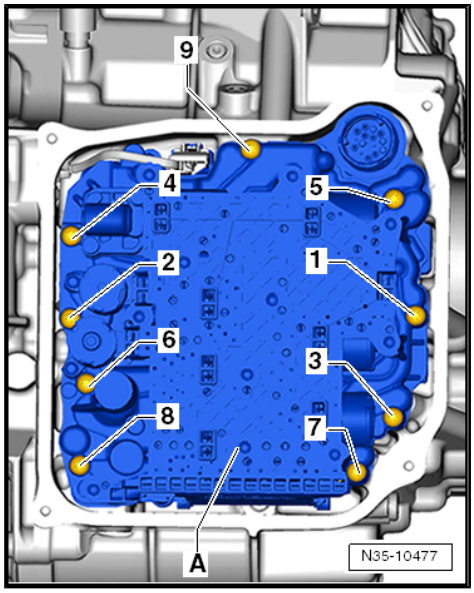
- ***Lift or put down mechatronic unit only on housing and on solenoid valves.***



– Carefully insert mechatronic unit -1- into gearbox.
– Screw in new bolts -arrows- diagonally until finger-tight.



– Tighten bolts in specified sequence to 8 Nm + 45°.

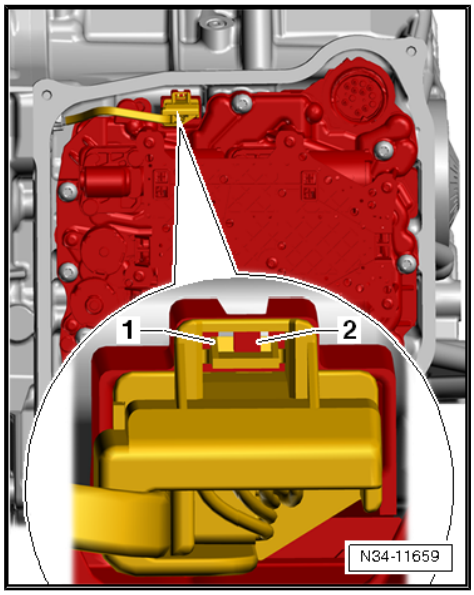


– Push on connector -1-, if fitted, and engage.
– After this, check that fastener -2- is not damaged.

Caution

- *Work with great care. The fastener of the connector -2- can break. If this has happened, the connector will no longer hold and the damaged part, e.g. mechatronic unit for dual clutch gearbox - J743- must be renewed.*

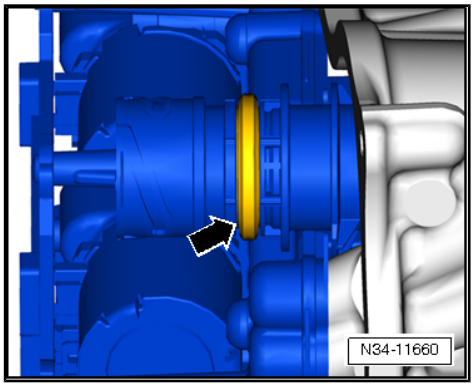
Continuation for all:



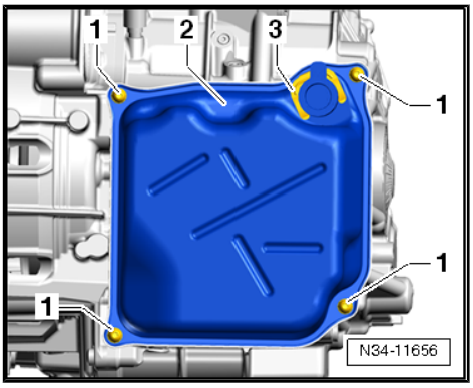
– Renew seal -arrow-.

A new mechatronic unit already has a new oil seal.

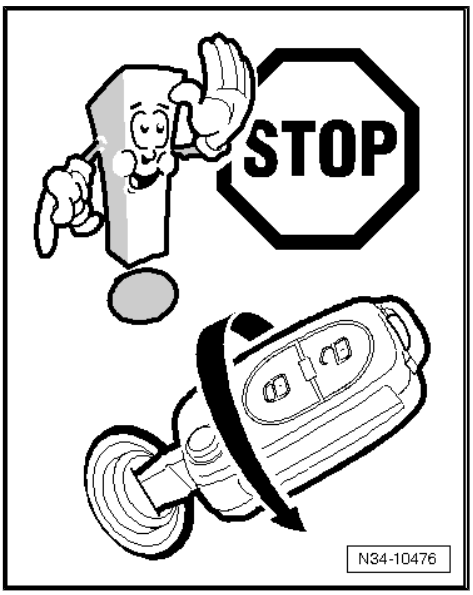
– Lubricate seal with ⇒ DSG oil.



– Set new cover with seal -2- in place and tighten with new bolts -1- diagonally in several stages to 10 Nm + 45°.
– Install new securing clip -3-.
– Attach wire retainer to cover and tighten nuts to 10 Nm.
– Push on connector for mechatronic unit for dual clutch gearbox - J743- and engage lock by turning.
– Install connecting hose between charge air cooler and charge air pipe ⇒ Rep. gr. 21 ; Removing and installing parts of charge air cooling .



– Do not start engine!
– Fill with oil ⇒ page 105 .
– Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation; Assembly overview - noise insulation
– Conduct basic adjustment of mechatronic unit for dual clutch gearbox - J743- .

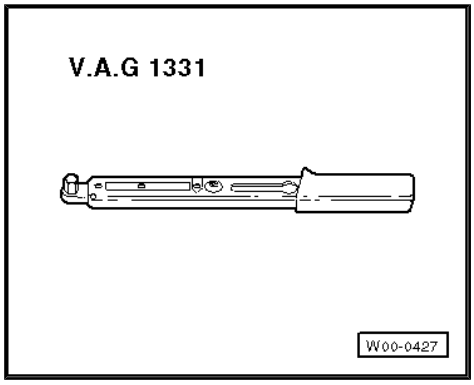


1.2 Removing and installing mechatronic unit for dual clutch gearbox - J743- (gearbox removed)

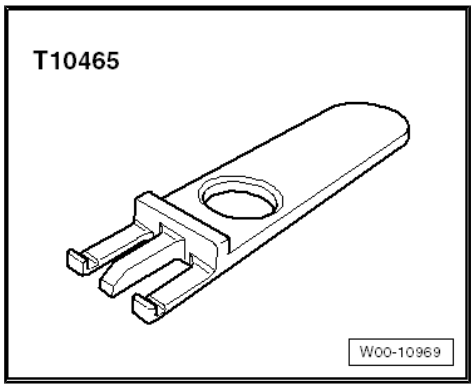
⇒ “1.1 Removing and installing mechatronic unit for dual clutch gearbox J743 (gearbox installed)”, page 26

Special tools and workshop equipment required

♦ Torque wrench - V.A.G 1331-



♦ Up to gearbox date 05/15 release tool - T10465-



Always make sure that no dirt can enter an »open« gearbox.

In particular, dirt entering an »exposed« mechatronic unit for dual clutch gearbox - J743- can lead to gearbox failure.

Please also refer to the notes on the oil filter change regarding »dirty oil« ⇒ page 101 .

Remove mechatronic unit.

– Drain oil ⇒ page 105 .

– Remove securing clip -3-.

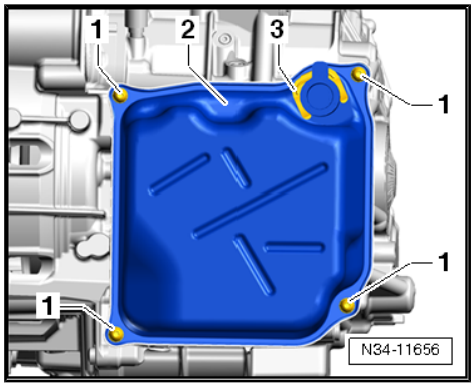
Always renew securing clip.

– Unscrew bolts -1- diagonally and remove.

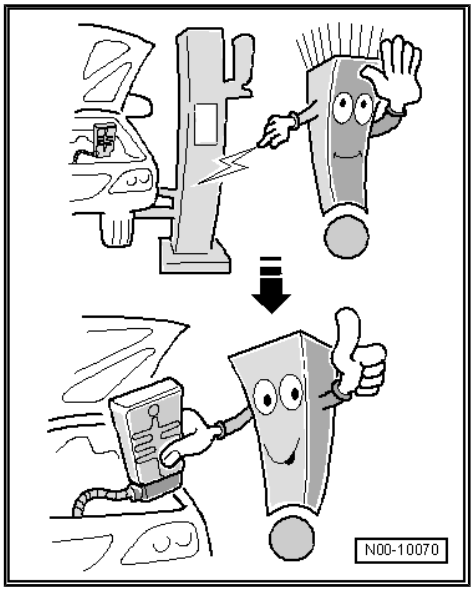
– Remove cover -2- with seal.

Note

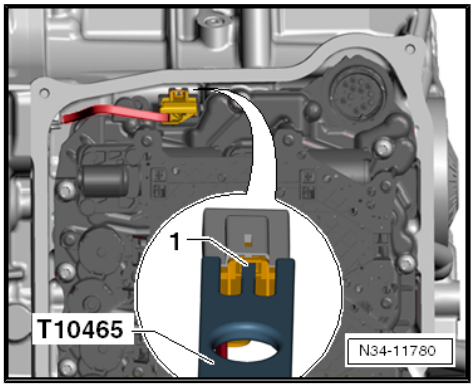
Always renew bolts, securing clips and the cover with seal.



Before touching mechatronic unit, touch an earthed object again.

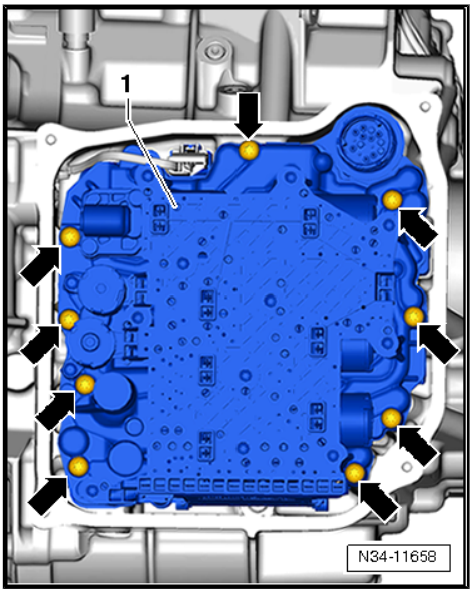


– If fitted, release connector -1- of gearbox input speed sender - G182- and oil temperature sender in multi-plate clutch - G509- using release tool - T10465- .

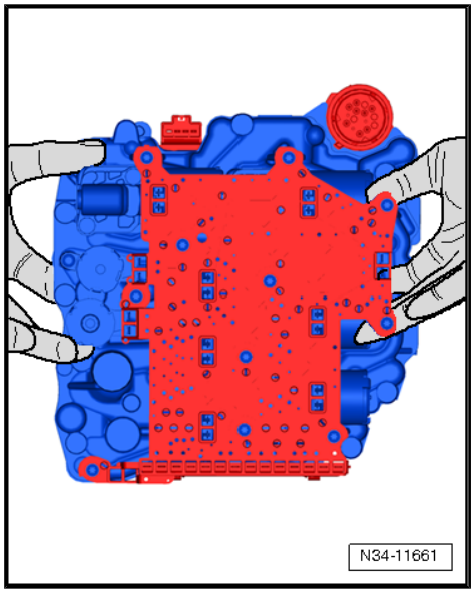


– Remove bolts -arrows- diagonally.

All 9 bolts have same length and are not allowed to be reused.



– Remove mechatronic unit -1- carefully.

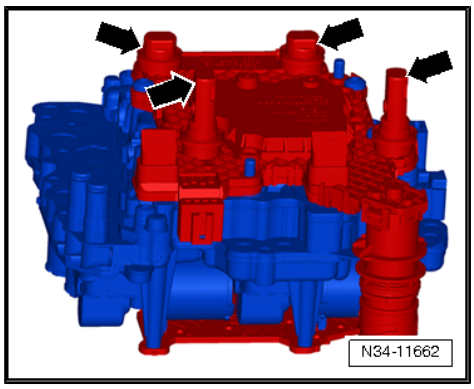


Caution

- *Lift or put down mechatronic unit only on housing and on solenoid valves.*

Lay mechatronic unit to side properly.

– Put down mechatronic unit so that sensors -arrows- are pointing upwards.



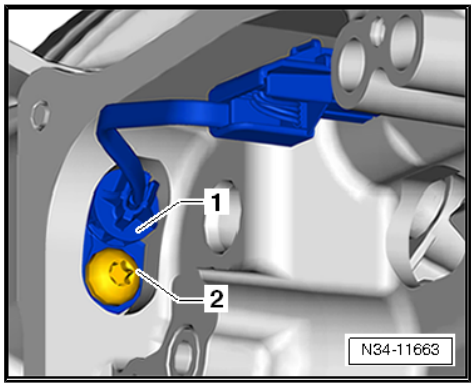
Install mechatronic unit.

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

WARNING

Before installing the mechatronic unit, clean the sealing surface on the gearbox housing thoroughly without using cleaning agents. Always make sure that no dirt can get into the inside.

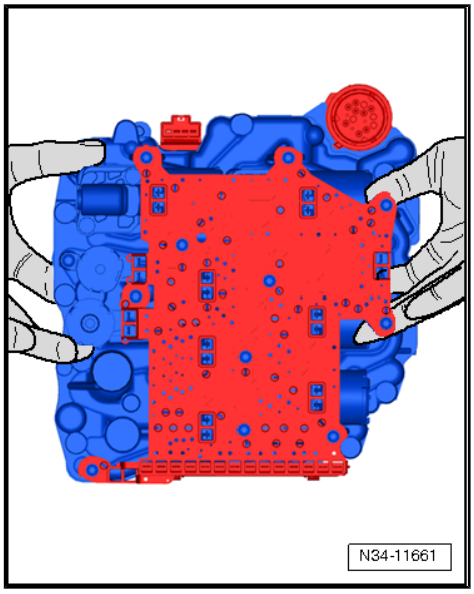
– Before installation, check that »sender« -1- is installed ⇒ page 37 .



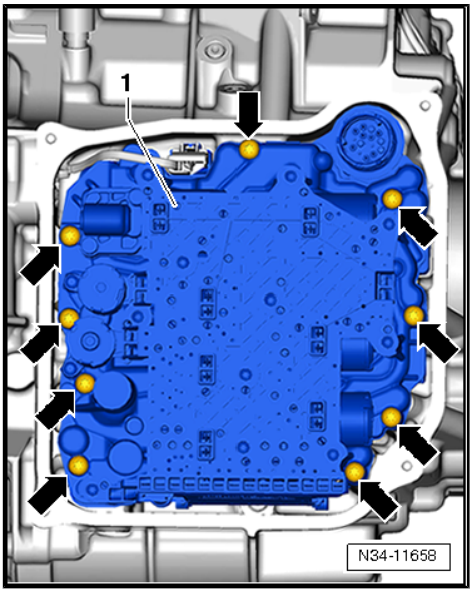
Before touching mechatronic unit, touch an earthed object again.

Caution

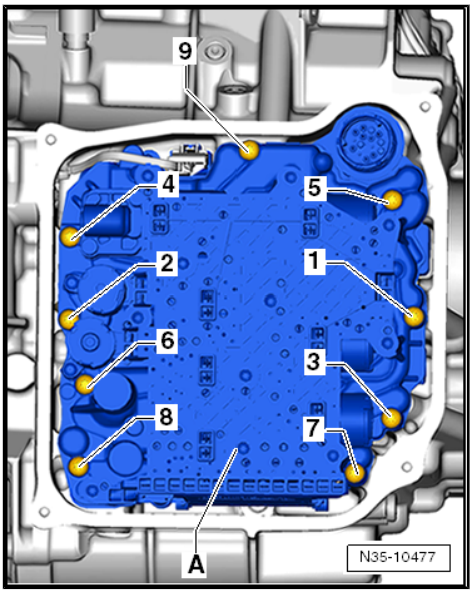
- *Lift or put down mechatronic unit only on housing and on solenoid valves.*



– Carefully insert mechatronic unit -1- into gearbox.
– Screw in new bolts -arrows- diagonally until finger-tight.



– Tighten bolts in specified sequence to 8 Nm + 45°.

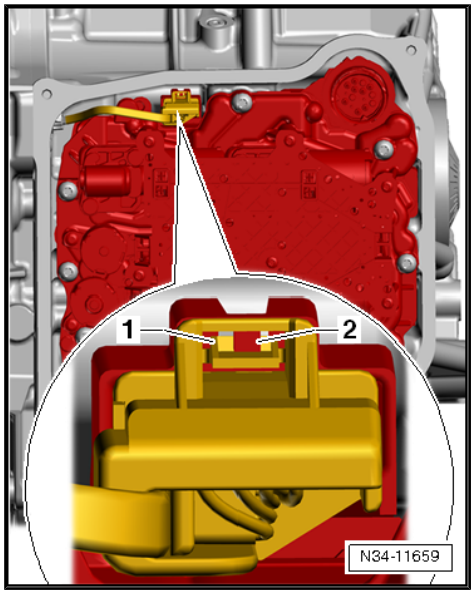


– Push on connector -1-, if fitted, and engage.

– After this, check that fastener -2- is not damaged.

Caution

- *Work with great care. The fastener of the connector -2- can break. If this has happened, the connector will no longer hold and the mechatronic unit for dual clutch gearbox - J743- must be renewed.*

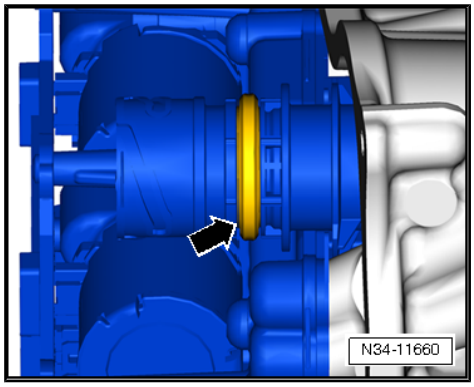


Continuation for all:

– Renew seal -arrow-.

A new mechatronic unit already has a new oil seal.

– Lubricate seal with ⇒ DSG oil.



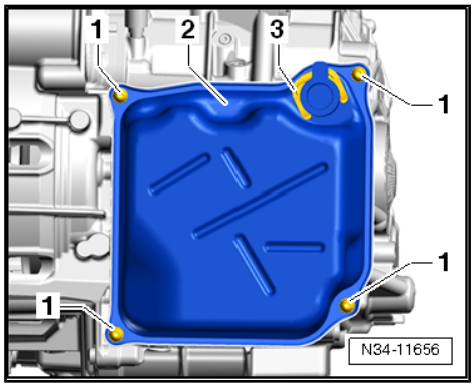
– Set new cover -2- in place and tighten with new bolts -1- diagonally in several stages to 10 Nm + 45°.

– Install new securing clip -3-.

After installation of gearbox

– Fill with oil ⇒ page 105 .

– Conduct basic adjustment of mechatronic unit for dual clutch gearbox - J743- .



1.3 Removing and installing gearbox input speed sender - G182- and oil temperature sender in multi-plate clutch - G509- up to gearbox date 05/15

Note

- *As of gearbox date 06/15, the gearbox input speed sender - G182- and the oil temperature sender in multi-plate clutch - G509- have been discontinued.*
- *If a sender is fitted, a sender must be reinstalled after it has been removed.*
- *The following procedure applies only to gearboxes in which a sender is fitted.*

Brief description

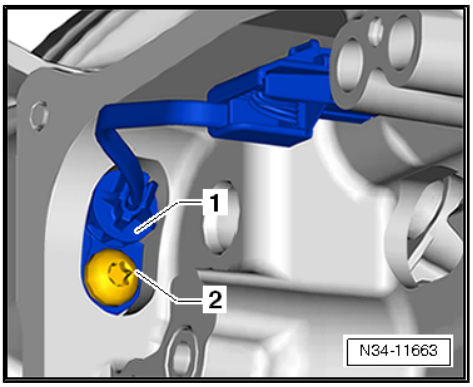
Both senders are combined in one component and can be renewed together only. They are in the gearbox near the multi-clutch. Before removal, the mechatronic unit for dual clutch gearbox - J743- must be removed.

Removing

– Remove mechatronic unit for dual clutch gearbox - J743- ⇒ page 26 .

Do not pull on line!

– Unscrew and remove bolt -2- and pull out sender -1-.



Installing

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

Reinstall »old« sender only if:

- The sender has no defect
- The cable was not pulled on when it was removed

– Moisten sender with dual clutch gearbox oil and install.

– Tighten bolt -2- to 10 Nm.

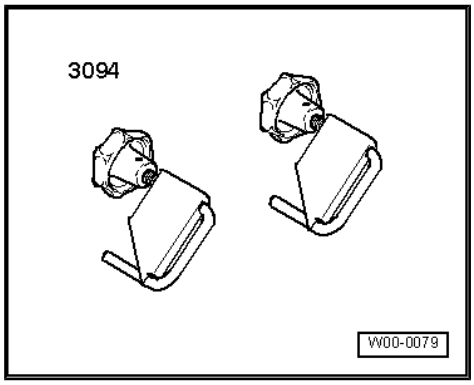
– Install mechatronic unit for dual clutch gearbox - J743- ⇒ page 26 .

2 Removing and installing gear oil cooler

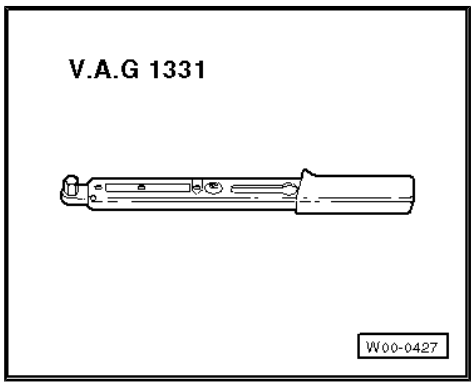
⇒ “2.1 Renewing bleeder”, page 40

Special tools and workshop equipment required

- Hose clamps to 25 mm - 3094-



- Torque wrench - V.A.G 1331-



Removing

– Move selector lever to position “P”.

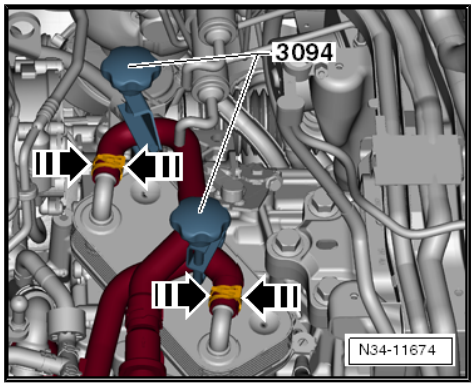
– Remove air filter housing.

- Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing
- Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

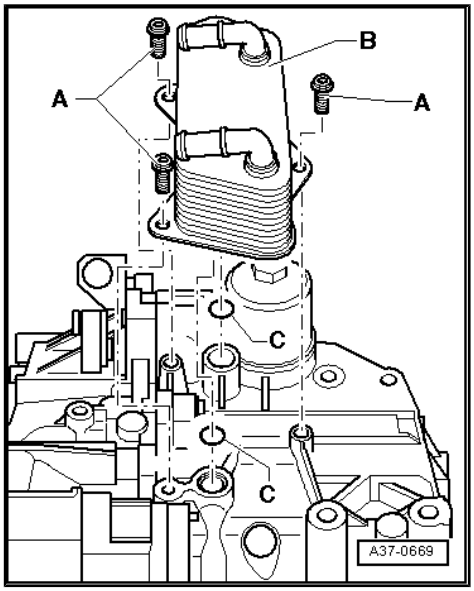
– Remove battery with battery tray ⇒ Rep. gr. 27 ; Battery; Removing and installing battery .

– Lay lint-free cloths on gear oil cooler and gearbox to catch escaping coolant.

– Clamp off coolant hoses using hose clamps -3094- and remove from cooler.



– Remove bolts -A- and remove gear oil cooler -B-.



> **Caution**
>
> *No coolant must be allowed to drip into gearbox!*

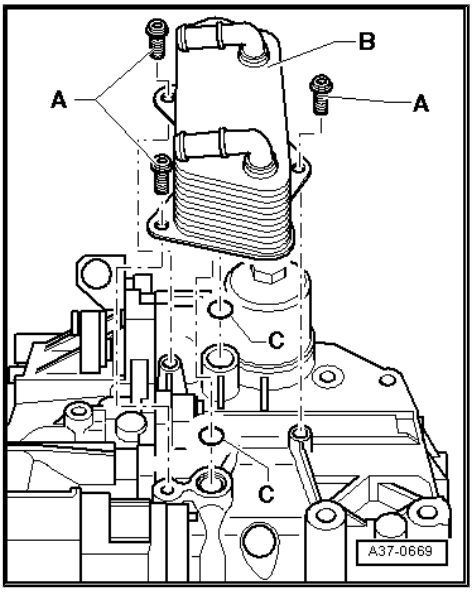
Installing

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

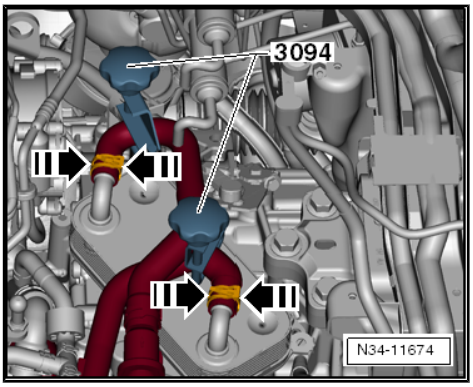
– Renew O-rings -C-.

– Set gear oil cooler -B- in place. When doing this, note O-rings -C-.

– Screw in new bolts -A- and tighten to 20 Nm + 45°.



– Attach coolant hoses to gear oil cooler and remove hose clamps -3094- .



Continue installation in reverse order of removal.

– Install battery with battery tray ⇒ Rep. gr. 27 ; Battery; Removing and installing battery .

– Install air filter housing.

♦ Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

♦ Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

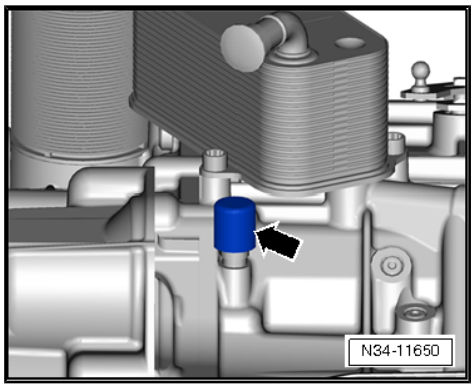
– Check coolant level and top up with coolant as needed ⇒ Rep. gr. 19 ; Removing and installing parts of cooling system .

– Checking and adjusting oil level ⇒ page 103 .

2.1 Renewing bleeder

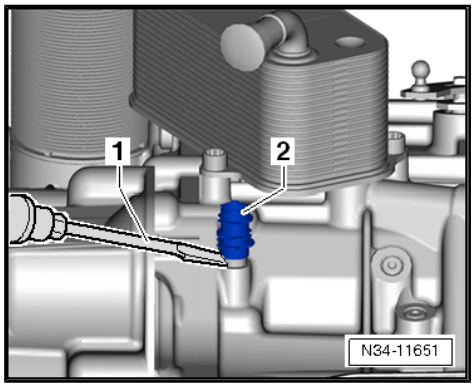
Removing

– Pull off cap -arrow- by hand.



– Insert screwdriver -1- between collar of gearbox and breather pipe -2-.

– Pry off breather pipe -2- with screwdriver -1-.



Installing

– Push on breather pipe -2- powerfully by hand.

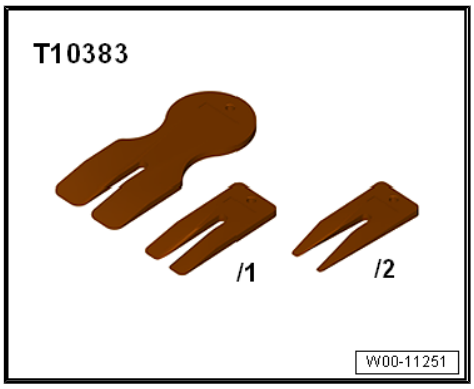
Breather pipe must be heard and felt to engage.

– Put on cap.

3 Emergency release of selector lever

Special tools and workshop equipment required

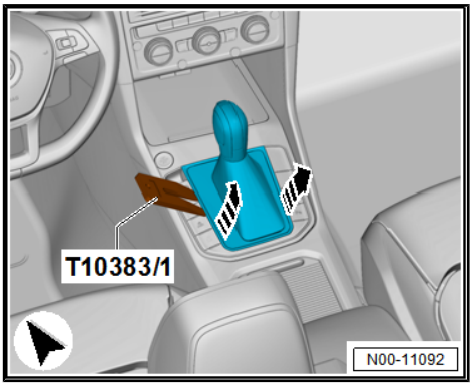
- Wedges - T10383/1-



Do not remove knob.

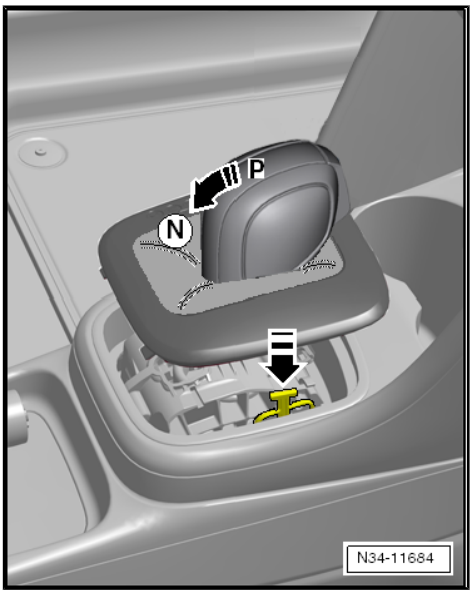
– Depress brake pedal or set handbrake.

– Using wedge - T10383- , carefully lever gear lever gaiter off centre console insert -arrows-.



– Press yellow plastic part -arrow- from above and hold in this position.

Lever can now be moved from position »P«.



4 Removing and installing selector lever handle

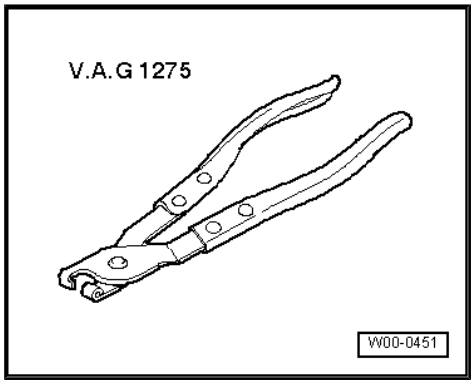
⇒ “4.1 Removing and installing handle”, page 42

⇒ “4.2 Moving push button in the handle to installation position”, page 45

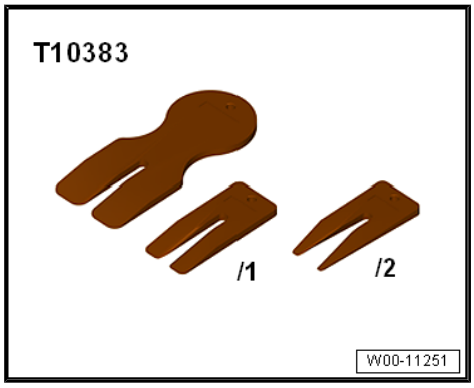
4.1 Removing and installing handle

Special tools and workshop equipment required

- Handle with clip: hose clip pliers - V.A.G 1275-



- Wedges - T10383/1-



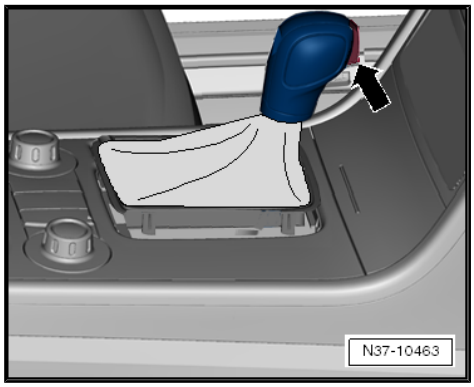
Brief description

Handle is removed together with selector cover.

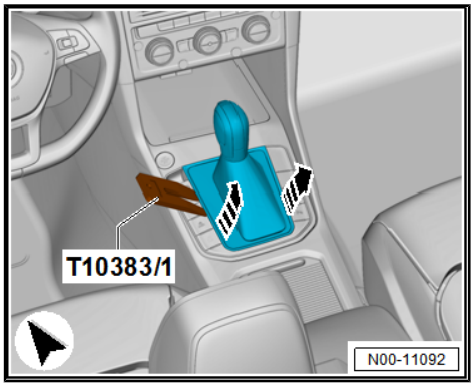
Removing

– Shift selector lever to position “D”.

The push button -arrow- does not need to be pulled out by hand. Push button engages automatically in installation position when handle is pulled off.

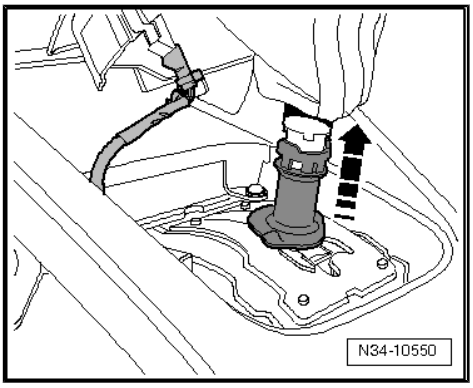


– Using wedge - T10383- , carefully lever gear lever gaiter off centre console insert -arrows-.
– Separate electrical connector.



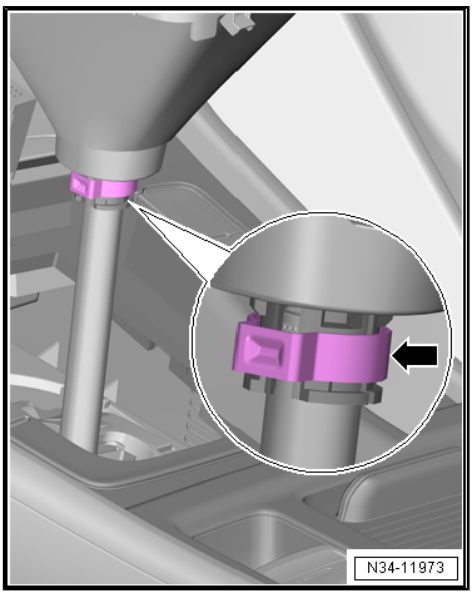
Handle with locking sleeve:

– To release handle, slide plastic part under handle in direction of -arrow-



Handle with clamp:

– Cut open clamp -arrow- under boot using side cutters.



Continuation for all handles:

– Pull handle upwards off selector lever without pressing push button.

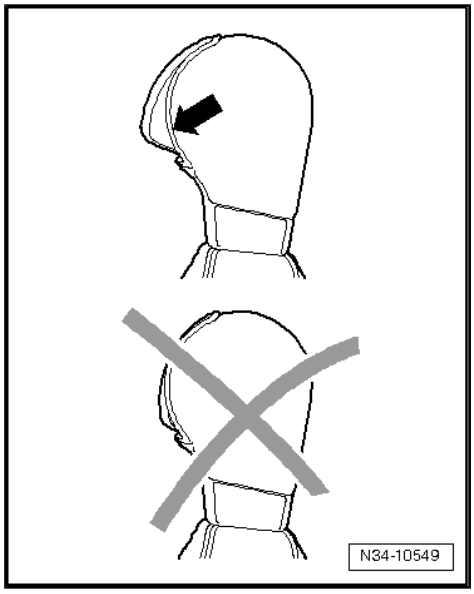
Note

Do not press button again after removal as it will no longer be possible to install the handle.

Installing

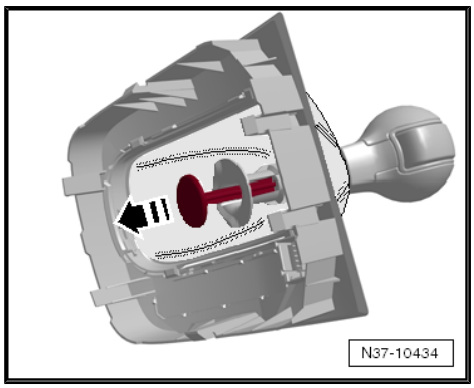
Install in reverse order of removal, observing the following:

- Selector lever is in position “D”.



Note

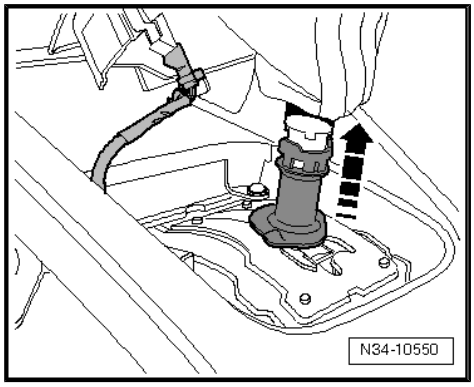
- *There is a chance that the button could be pressed into the handle. Never install a handle with the button pressed in.*
- *Move push button to installation position ⇒ page 45 .*
- *New handle is supplied with installation guard. Do not remove guard until just before installing. To remove, pull out -in direction of arrow-.*



Handle with locking sleeve:

– Push handle onto selector lever as far as stop and lock.

– To lock, push sleeve downwards opposite direction of arrow.



Handle with clamp:

– Push on handle with new clamp -arrow- to stop. Do not tighten clamp yet.

Continuation for all handles:

– Press push button after installation.

Note

If not installed correctly, the button remains inserted in the handle after being pressed. If this happens, pull handle off again and move push button to installation position again ⇒ page 45 . Then fit the handle again.

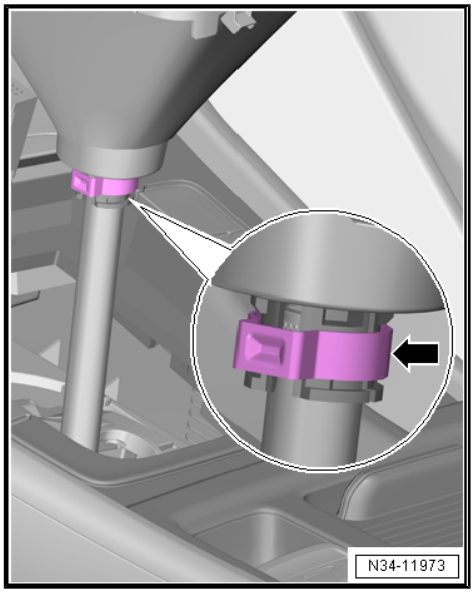
Handle with clamp:

– If the press button moves back to its start position, the clamp can be tightened using the hose clip pliers - V.A.G 1275- .

Continuation for all handles:

– Connect electrical connector.

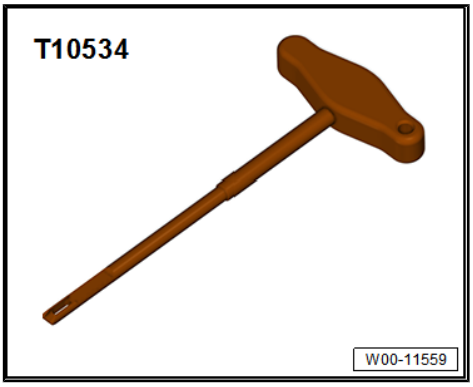
– Clip in selector cover.



4.2 Moving push button in the handle to installation position

Special tools and workshop equipment required

♦ Release tool - T10534-



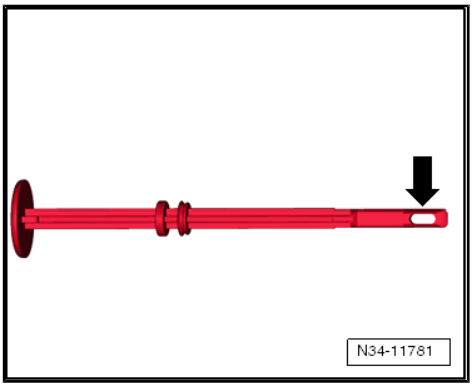
If the button was pressed by mistake, the installation position can be restored.

There are 2 ways of moving the push button into the installation position, »with« and »without« installation guard. Both of them are described here.

Placing handle »with« release tool - T10534- in installation position:

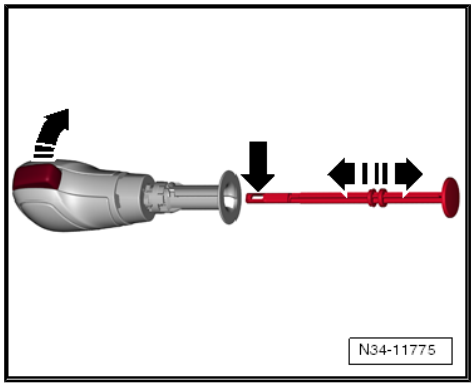
Instead of the release tool - T10534- , the installation guard which is delivered with new handles may also be used.

When using the installation guard, make sure that it has an eyelet -arrow- at the front. Other types of installation guard are not suitable.



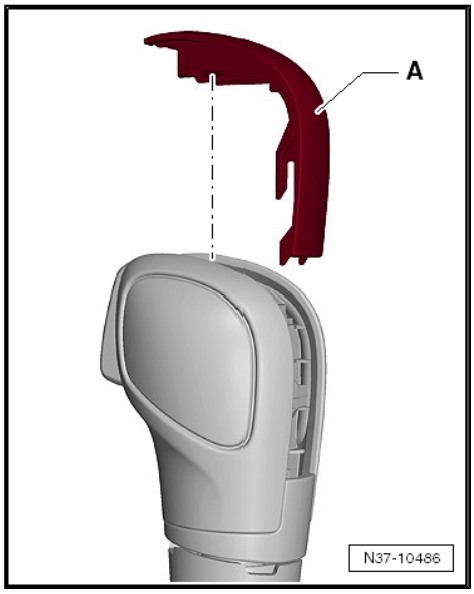
– Holding down push button, completely push in release tool - T10534- installation guard with eyelet -arrow-. The installation guard latches in place while doing so.

– Now, release push button. When the installation guard is pulled out, the push button engages in installation position.



Placing handle »without« release tool - T10534- or installation guard in installation position:

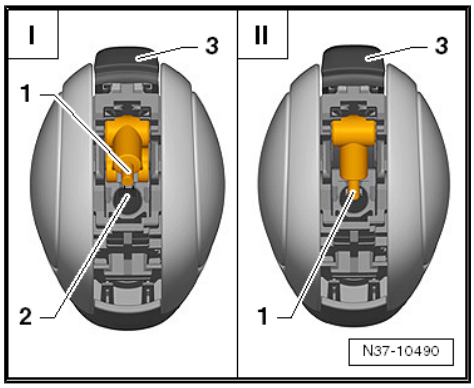
– Carefully unclip handle trim -A- upwards.



– Using a screwdriver, press the small lever -1- for the tie rod into the groove -2-. This action presses the push button -3- into installation position.

-I- = button pressed in

-II- = button in installation position



Note

- *Press the lever only into the groove and no further.*
- *Do not clip the handle trim onto selector mechanism until the handle has been fitted. This makes it possible to check whether the small lever engages in the pull rod when the button is pressed.*

5 Selector mechanism

⇒ “5.1 Overview - selector mechanism”, page 47

⇒ “5.2 Removing and installing selector mechanism”, page 48

⇒ “5.3 Checking selector lever cable”, page 51

⇒ “5.4 Adjusting selector lever cable”, page 52

WARNING

Before working on vehicle with engine running, move selector lever into position “P” and apply handbrake.

5.1 Overview - selector mechanism

1 - Handle with selector cover

- ❑ Do not remove handle without reason. For emergency release, only the cover needs to be unclipped ⇒ page 41 .
- ❑ Removing and installing ⇒ page 42

2 - Selector lever and selector mechanism with selector lever cable

- ❑ With selector lever lock solenoid - N110-
- ❑ Selector mechanism and selector lever cable are not allowed to be separated from one another. Both are removed together.
- ❑ Removing and installing ⇒ page 48
- ❑ Do not grease Bowden cable
- ❑ Checking ⇒ page 51
- ❑ Adjusting ⇒ page 52

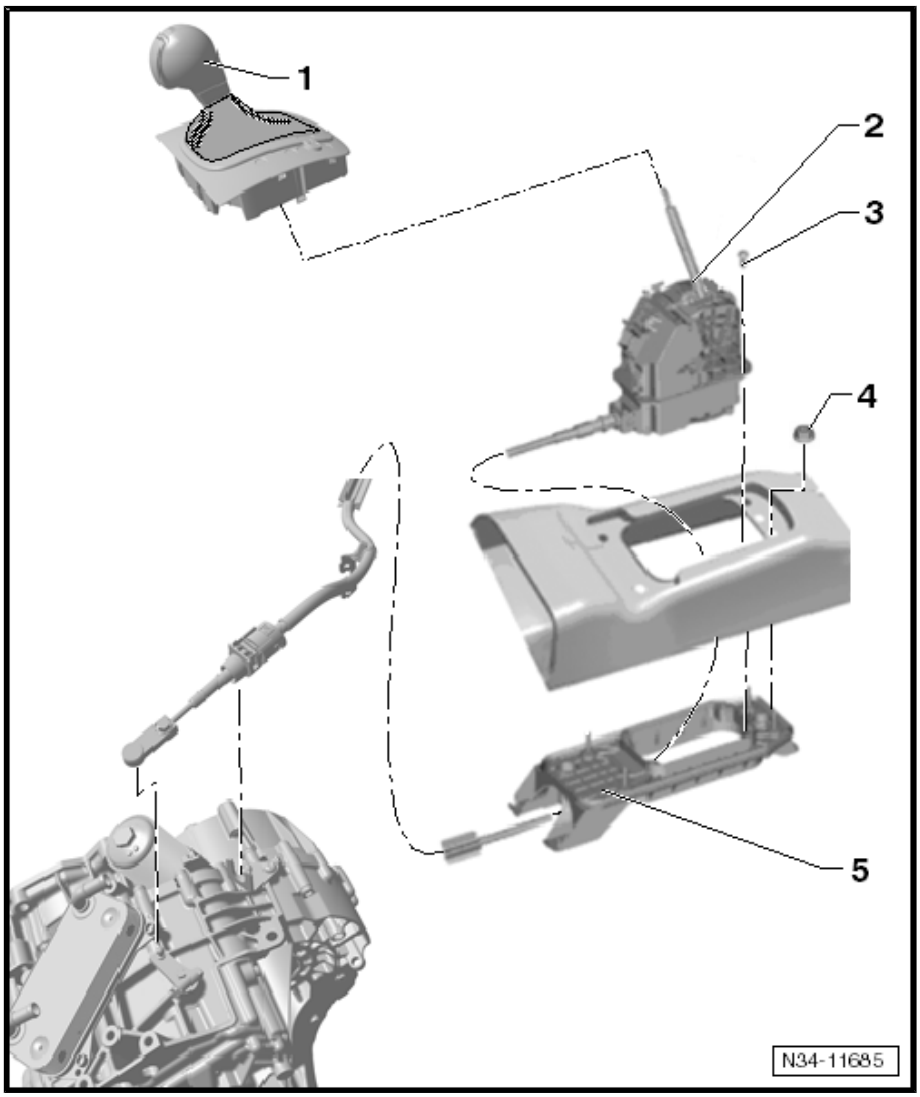
3 - Bolt

- ❑ 8 Nm

4 - Hexagon flange nut

- ❑ 8 Nm
- ❑ Qty. 4

5 - Selector housing



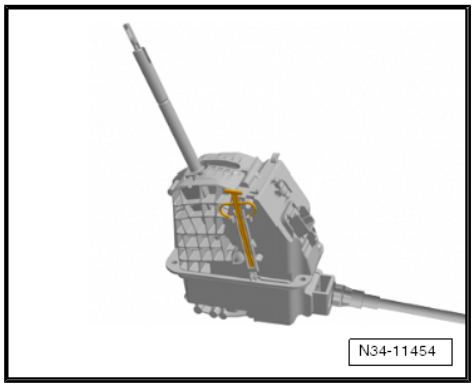
5.2 Removing and installing selector mechanism

⇒ “5.2.1 Removing and installing selector mechanism with selector housing”, page 48

⇒ “5.2.2 Removing and installing selector mechanism without selector housing”, page 50

5.2.1 Removing and installing selector mechanism with selector housing

Brief description



Selector mechanism and selector lever cable are not allowed to be separated from one another. Both are removed together with the selector housing.

In the interior, the centre console must be removed.

The heat shield beneath the vehicle must be removed.

The selector mechanism with selector lever cable can be removed and installed separately without removing and installing the selector housing ⇒ page 50 .

Note

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

Removing

– Remove selector lever handle ⇒ page 42 .

– Remove centre console ⇒ Rep. gr. 68 .

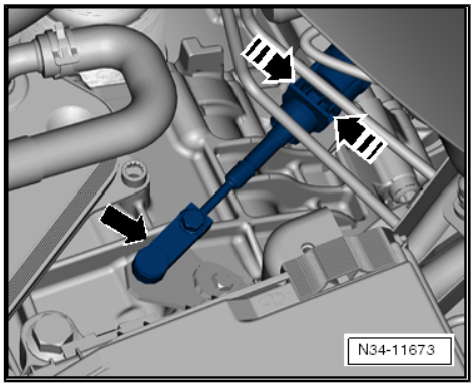
– Separate electrical connector from selector mechanism to vehicle wiring harness.

– Remove air filter housing.

♦ Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

♦ Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

– Pry selector lever cable -arrow- off lever using an open-ended spanner.



Caution

Locks on selector lever cable break off very easily. If a locking lug has broken off, complete selector mechanism with selector lever cable must be renewed.

– Carefully push locking mechanisms of selector lever cable together -arrows- and remove selector lever cable upwards out of cable support bracket.

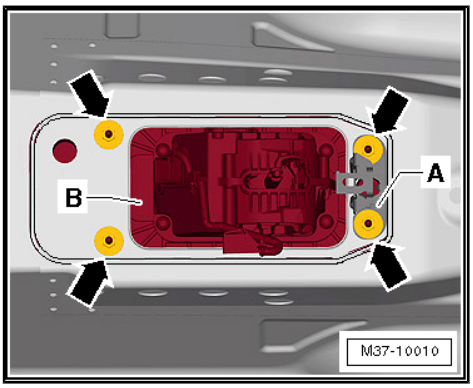
– Do not bend or kink cable.

– Install centre tunnel heat shield below selector mechanism ⇒ General body repairs, exterior; Rep. gr. 66 ; Mouldings/trims/ extensions; Removing and installing floor heat shield .

Note

To remove selector mechanism, a 2nd mechanic is required under the vehicle.

– Remove nuts -arrows- inside vehicle.



– If fitted, remove bracket -A-.

– Remove selector mechanism -B- together with selector lever cable and selector housing downwards.

Installing

Install in reverse order of removal.

– Before putting cable on selector shaft, position selector lever on selector mechanism forwards in direction to travel to position “P”.

– Also move selector shaft on gearbox to position “P”. To do this, push lever opposite to driving direction to rear stop.

– Before ball head of cable is placed on selector shaft: check selector lever cable ⇒ page 51 .

– Install centre tunnel heat shield below selector mechanism ⇒ General body repairs, exterior; Rep. gr. 66 ; Mouldings/trims/ extensions; Removing and installing floor heat shield .

– Install centre console ⇒ Rep. gr. 68 .

– Install selector lever handle ⇒ page 42 .

– Adjust selector lever cable after installing ⇒ page 52 .

5.2.2 Removing and installing selector mechanism without selector housing

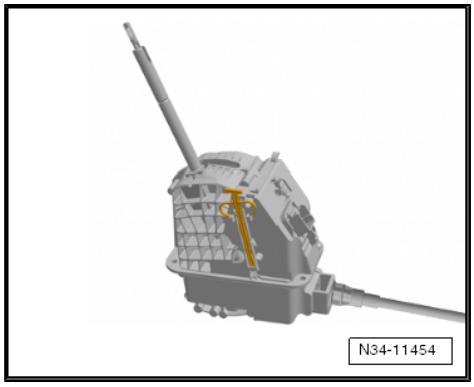
Brief description

Selector mechanism and selector lever cable are not allowed to be separated from one another. Both are removed together.

In the interior, the centre console must be removed.

A cord must be attached to the Bowden cable before it is removed. The cord is needed to guide the Bowden cable between the tunnel and the heat shield.

The selector mechanism with selector lever cable can also be removed and installed with the selector housing ⇒ page 48 .



Removing

– Remove selector lever handle ⇒ page 42 .

– Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

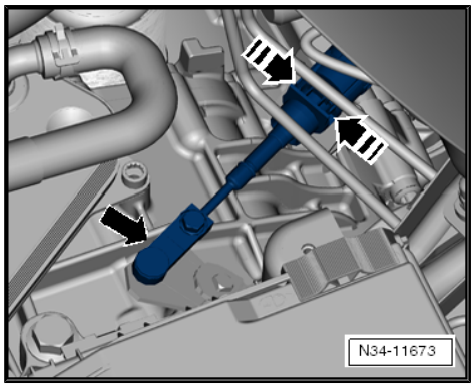
– Separate electrical connector from selector mechanism to vehicle wiring harness.

– Remove air filter housing.

♦ Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

♦ Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

– Pry selector lever cable -arrow- off lever using an open-ended spanner.



Caution

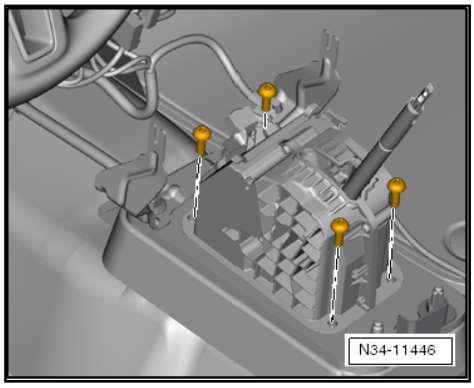
Locks on selector lever cable break off very easily. If a locking lug has broken off, complete selector mechanism with selector lever cable must be renewed.

– Carefully push locking mechanisms of selector lever cable together -arrows- and remove selector lever cable upwards out of cable support bracket.

– Do not bend or kink cable.

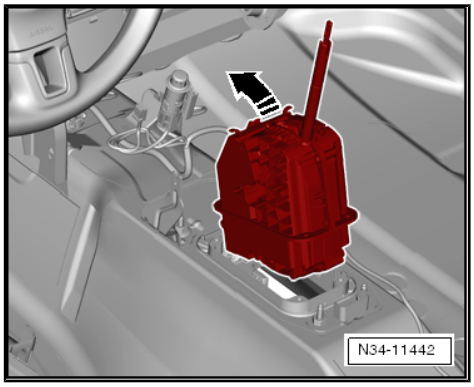
– Then a long cord must be attached to the end of the Bowden cable. The cord is needed to guide the Bowden cable between the tunnel and heat shield during installation.

– Remove 4 bolts.



– Carefully pull selector mechanism with Bowden cable out of the centre tunnel. Ensure that the cord remains accessible from the engine compartment after being pulled by the Bowden cable.

– Remove cord from Bowden cable.



Installing

Install in reverse order of removal, observing the following:

A second mechanic is needed to guide Bowden cable from passenger compartment into engine compartment.

Note

- *Do not bend or kink gear selector cable.*
- *Do not grease selector lever cable.*

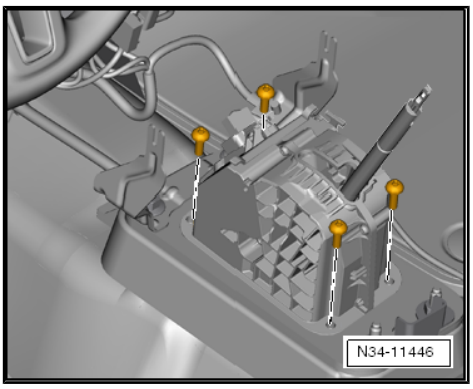
– Attach Bowden cable to cord which was drawn into the passenger compartment during removal.

– Carefully guide selector mechanism with Bowden cable through opening in centre tunnel.

– Have the second mechanic pull cord with Bowden cable through tunnel from engine compartment until Bowden cable can be attached to support bracket.

– Remove cord from Bowden cable.

– Secure selector mechanism to selector housing using 4 bolts.



Specified torque: 8 Nm

– Before fitting cable on selector shaft, position selector lever in vehicle forwards to position “P”.

– Also move gearbox selector lever to position “P”. To do this, push lever opposite to driving direction to rear stop.

– Before ball head of cable is placed on selector shaft: check selector lever cable ⇒ page 51 .

– Install centre console ⇒ Rep. gr. 68 .

– Install selector lever handle ⇒ page 42 .

– Check selector lever cable after installing ⇒ page 51 .

5.3 Checking selector lever cable

Brief description

To check ease of movement of selector lever cable, it must be removed from the gearbox and the free end must be placed so that it does not bump against anything.

Then move selector lever and reinstall the cable.

Then the selector lever cable must be adjusted ⇒ page 52 .

Do not grease cable

Check

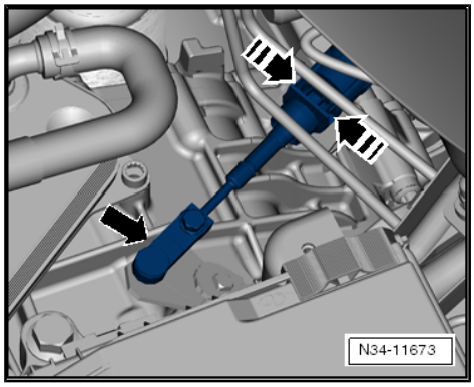
– Switch selector lever to »P« position.

– Remove air filter housing.

- Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

- ♦ Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

– Pry selector lever cable -arrow- off lever using an open-ended spanner.



Caution

Locks on selector lever cable break off very easily. If a locking lug has broken off, complete selector mechanism with selector lever cable must be renewed.

– Carefully push locking mechanisms of selector lever cable together -arrows- and remove selector lever cable upwards out of cable support bracket.

– Do not bend or kink cable.

– Shift selector lever several times from position »P« to »S« and back to »P«.

• Selector lever must move easily.

– Reinstall cable.

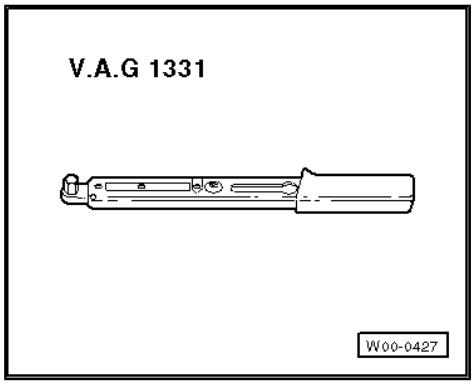
– Adjust selector lever cable. ⇒ page 52

Continue installation in reverse order of removal.

5.4 Adjusting selector lever cable

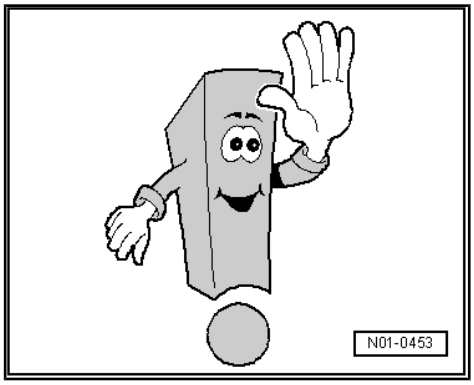
Special tools and workshop equipment required

- ♦ Torque wrench - V.A.G 1331-



The selector lever cable must be adjusted if

- The selector lever cable has been removed from the gearbox.
- The engine and/or gearbox has been removed and installed.
- The cable with the selector mechanism has been removed and installed.
- The position of the engine and gearbox is shifted, for example to install it free of tension.



Adjusting:

– Move selector lever in vehicle to “P” position.

– Selector shaft on gearbox is also in position “P”. To check, push lever opposite to driving direction to rear stop.

Note

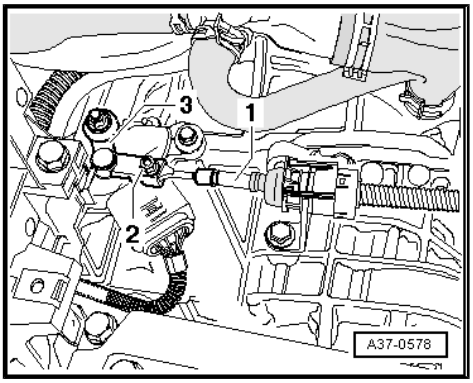
Raise vehicle, to be sure that the gearbox is in “P” (parking lock engaged). It should not be possible to turn both front wheels together in the same direction.

– Loosen bolt -2- of the Bowden cable -1-.

– Gently push knob of selector lever forwards and backwards but under no circumstances must you shift out of “P”.

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

– Tighten bolt -2- to 15 Nm.



6 Checking selector mechanism

⇒ “6.1 Selector lever in P position and ignition switched on”, page 54

⇒ “6.2 Selector lever in N position and ignition switched on”, page 54

⇒ “6.3 Selector lever in position Tiptronic ”, page 54

⇒ “6.4 Ignition and light switched on”, page 55

⇒ “6.5 Selector lever position indicator”, page 55

It must not be possible to start the engine in the selector lever positions “R”, “D” or “S”.

On right-hand drive vehicles, the starter must operate only in selector lever positions “P” and “N” when the locking button in the selector lever handle is not pressed.

Over 5 km/h

When the selector lever is shifted to “N”, the selector lever lock solenoid must not lock the selector lever. Selector lever can be shifted back into a driving range.

Under 5 km/h

When the selector lever is shifted to “N”, the selector lever lock solenoid must lock the selector lever only after approx. 1 second. Selector lever cannot be shifted out of “N” position until brake pedal is depressed.

6.1 Selector lever in “P” position and ignition switched on

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of “P” position with the lock button pressed. Solenoid for selector lever lock blocks selector lever.

- Brake pedal is depressed:

Solenoid for selector lever lock releases selector lever. It is possible to shift into a driving gear. Slowly shift selector lever from “P” through to “S”, checking whether selector lever position in dash panel insert corresponds to actual selector lever position.

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

- Brake pedal not depressed:

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

- Brake pedal is depressed:

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

6.3 Selector lever in position “Tiptronic”

– Shift selector lever into Tiptronic gate.

The illumination of the “D” symbol in the selector mechanism cover must go out. “+” and “-” symbols must light up.

Symbols in the dash panel insert must change from “P R N D S” to “7 6 5 4 3 2 1”.

6.4 Ignition and light switched on

The respective symbol in the shift mechanism cover lights up.

6.5 Selector lever position indicator

Simultaneous illumination of all selector lever position display segments indicates gearbox emergency running mode.

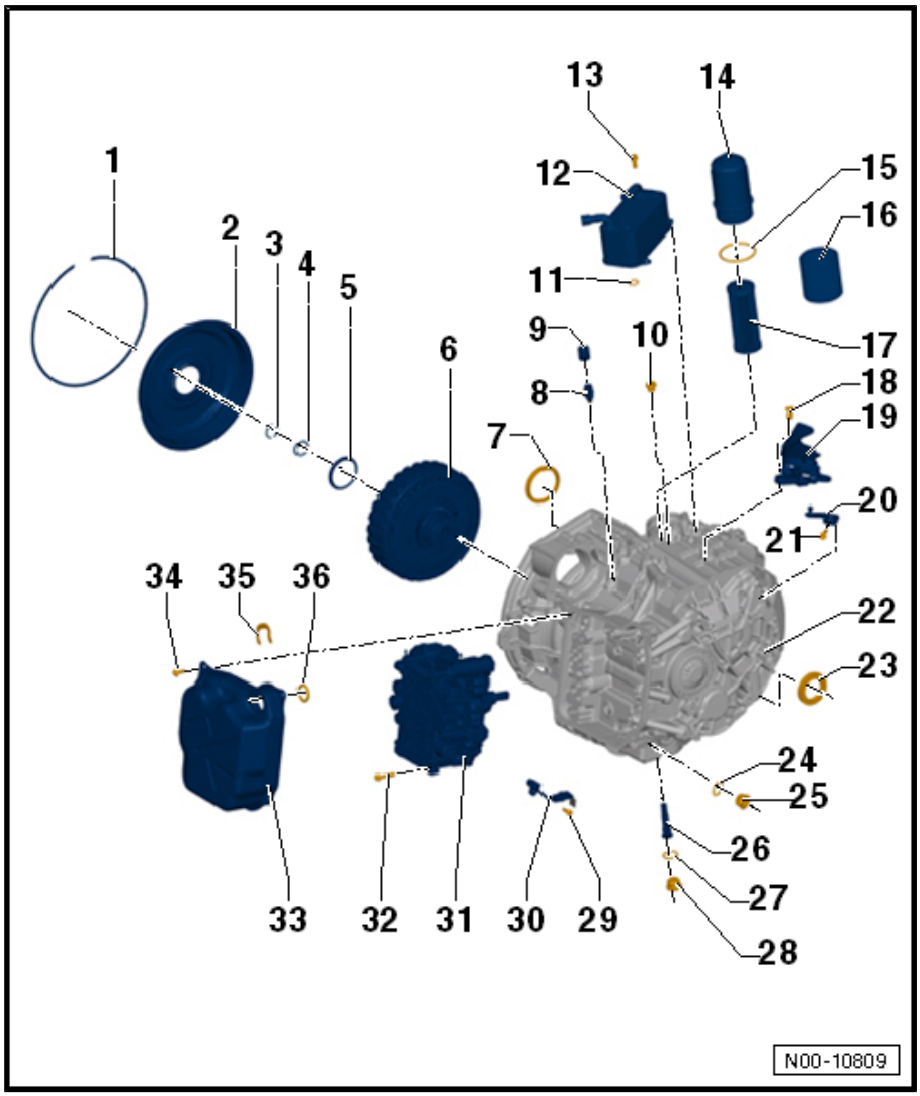
7 Dismantling and assembling gearbox

⇒ “7.1 Assembly overview - gearbox”, page 56

7.1 Assembly overview - gearbox

⇒ “7.1.1 Renewing bleeder”, page 58

⇒ “7.1.2 Renewing sealing cap”, page 58



1 - Retaining ring

- ❑ Renew

2 - Clutch end cover

- ❑ A cover which has been removed must not be installed again.
- ❑ Lubricate external seal with dual clutch gearbox oil - G 052 182 A2- before installing.
- ❑ Removing and installing ⇒ page 12

3 - Retaining ring

- ❑ Renew

4 - Shim

- ❑ Determine thickness again if a new clutch has been fitted ⇒ page 11

5 - Tapered ring

6 - Clutch

- ❑ Removing and installing ⇒ page 11

7 - Seal, right

- ❑ Removing and installing ⇒ page 116

8 - Breather pipe

- ❑ Removing and installing ⇒ page 40

9 - Breather cap

10 - Plug

11 - Seal

- ❑ Renew

12 - Gear oil cooler

- ❑ Removing and installing gear oil cooler ⇒ page 38

13 - Bolt, 20 Nm + 45°

- ❑ Renew

14 - Filter housing, 20 Nm

15 - Seal

- ❑ Renew

16 - Heat shield

17 - Oil filter

- ❑ Renewing ⇒ page 101

18 - Bolt, 5 Nm + 90°

- ❑ Renew

19 - Cable support bracket

- ❑ For selector lever cable to gearbox

20 - Gearbox selector lever

21 - Bolt, 10 Nm + 90°

- ❑ Renew

22 - Gearbox

23 - Seal, left

- ❑ Removing and installing ⇒ page 114

24 - Seal

- ❑ Renew

25 - Oil drain plug, 20 Nm

- ❑ For mechatronic unit

26 - Oil level pipe, 3 Nm

Caution

Comply with the torque setting precisely.

The oil level pipe can break between the thread and the collar.

Note

- *The oil level pipe comes in different lengths and colours.*
- *If the oil level pipe is renewed, it is essential that the oil level pipe appropriate for the gearbox is installed ⇒ Electronic Parts Catalogue "ETKA".*
- *Do not install the oil level pipe from another gearbox! The oil level pipe determines the oil level in the gearbox.*
- *Fitting a different oil level pipe can result in the oil level in the gearbox being too high or too low.*

- ❑ Drain and fill oil ⇒ page 105

27 - Seal

- ❑ Renew

28 - Oil drain plug, 45 Nm

29 - Bolt, 10 Nm

30 - Gearbox input speed sender - G182- and oil temperature sender in multi-plate clutch - G509-

- ❑ Removing and installing ⇒ page 37

31 - Mechatronic unit for dual clutch gearbox - J743-

- ❑ Removing and installing ⇒ page 26

32 - Bolt, 8 Nm + 45°

- ❑ Renew

33 - Cover

- ❑ With seal
- ❑ Renew

34 - Bolt, 10 Nm + 45°

- ❑ Renew

35 - Securing clip

- ❑ Renew

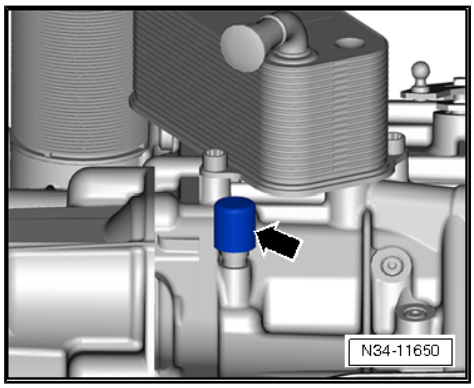
36 - Seal

- ❑ Renew

7.1.1 Renewing bleeder

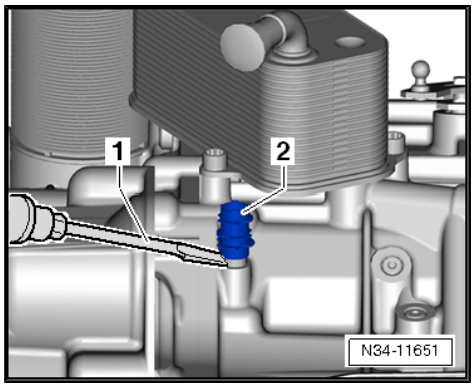
Removing

– Pull off cap -arrow- by hand.



– Insert screwdriver -1- between collar of gearbox and breather pipe -2-.

– Pry off breather pipe -2- with screwdriver -1-.



Installing

– Push on breather pipe -2- powerfully by hand.

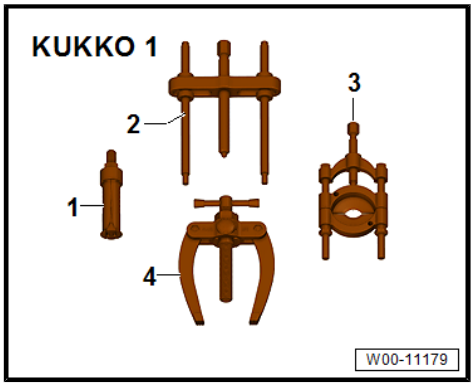
Breather pipe must be heard and felt to engage.

– Put on cap.

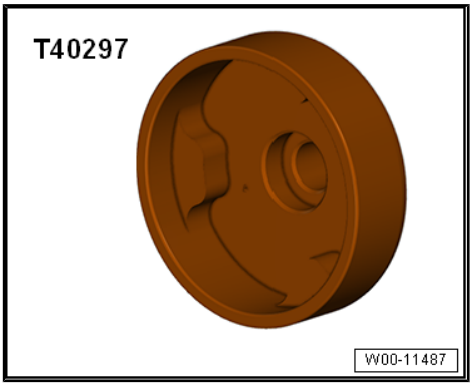
7.1.2 Renewing sealing cap

Special tools and workshop equipment required

- -1- Internal puller - Kukko 21/2-



- -4- Counter support - Kukko 22/1-
- Special wrench - T40297-



- Knife, commercially available

Removing

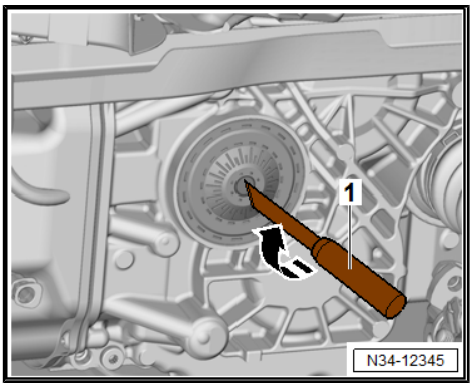
– Raise vehicle. All 4 supports of lifting platform must be at same height.

– Switch selector lever to »P« position.

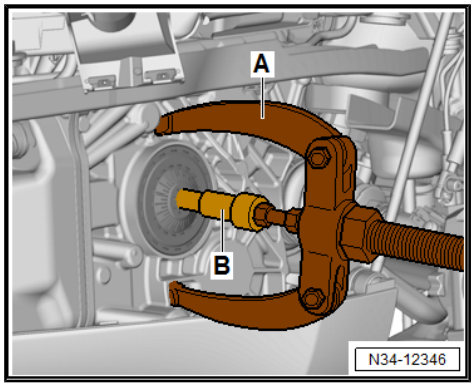
– Remove front left wheel.

– Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing front wheel housing liner .

– Pierce centre of cap with a knife -1- and remove rubber coating around it. Diameter of opening approx. 15 mm.

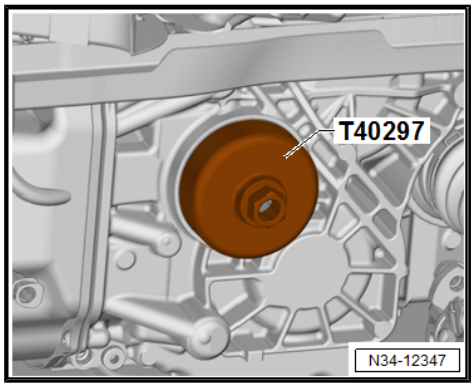


– Pull sealing cap out of gearbox housing using internal puller 14 … 19 mm -B-, e.g. -Kukko 21/2- , and counter support -A-, e.g. -Kukko 22/1- .
– Thoroughly clean sealing surface on gearbox housing with a lint-free cloth.



Installing

– Using key - T40297- , drive new sealing cap into gearbox housing to stop. Take care not to cant sealing cap.
– Check gear oil level ⇒ page 103 .
– Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
– Install front left wheel ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres; Changing wheels .



8 Removing and installing gearbox

⇒ “8.1 Removing gearbox”, page 61

⇒ “8.2 Installing gearbox”, page 82

⇒ “10.3 Detaching bevel box from gearbox - gearbox removed”, page 97

⇒ “8.3 Specified torques”, page 82

8.1 Removing gearbox

8.1.1 Removing gearbox, Tiguan 2008 ►

Brief description

The gearbox is removed downwards together with the bevel box.
»From above«

The battery, air filter and starter are removed. Wiring harness of steering rack is disconnected and »moved clear«. This allows it to be lowered together with subframe and steering rack. The engine and gearbox must be supported before the left and right assembly mounting is removed.

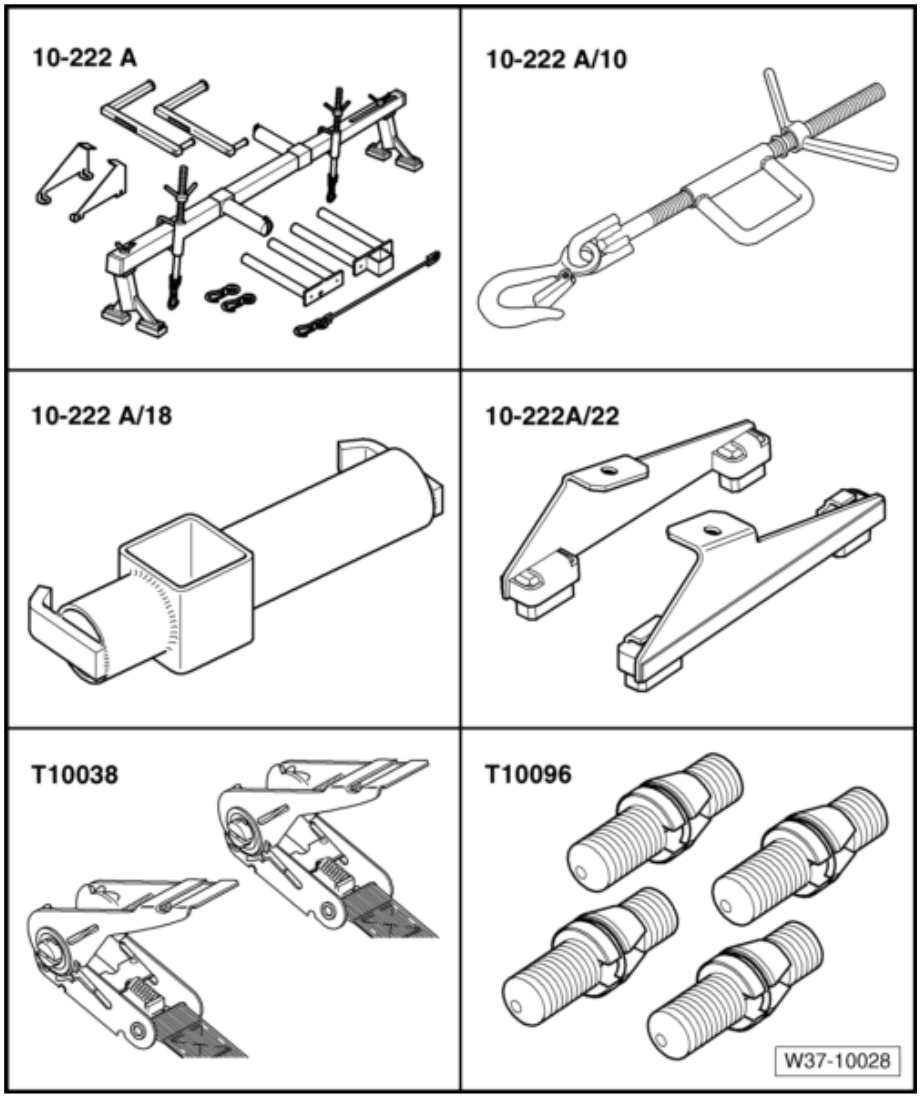
»From below«

Remove noise insulation beneath engine and cover in front left wheel housing.

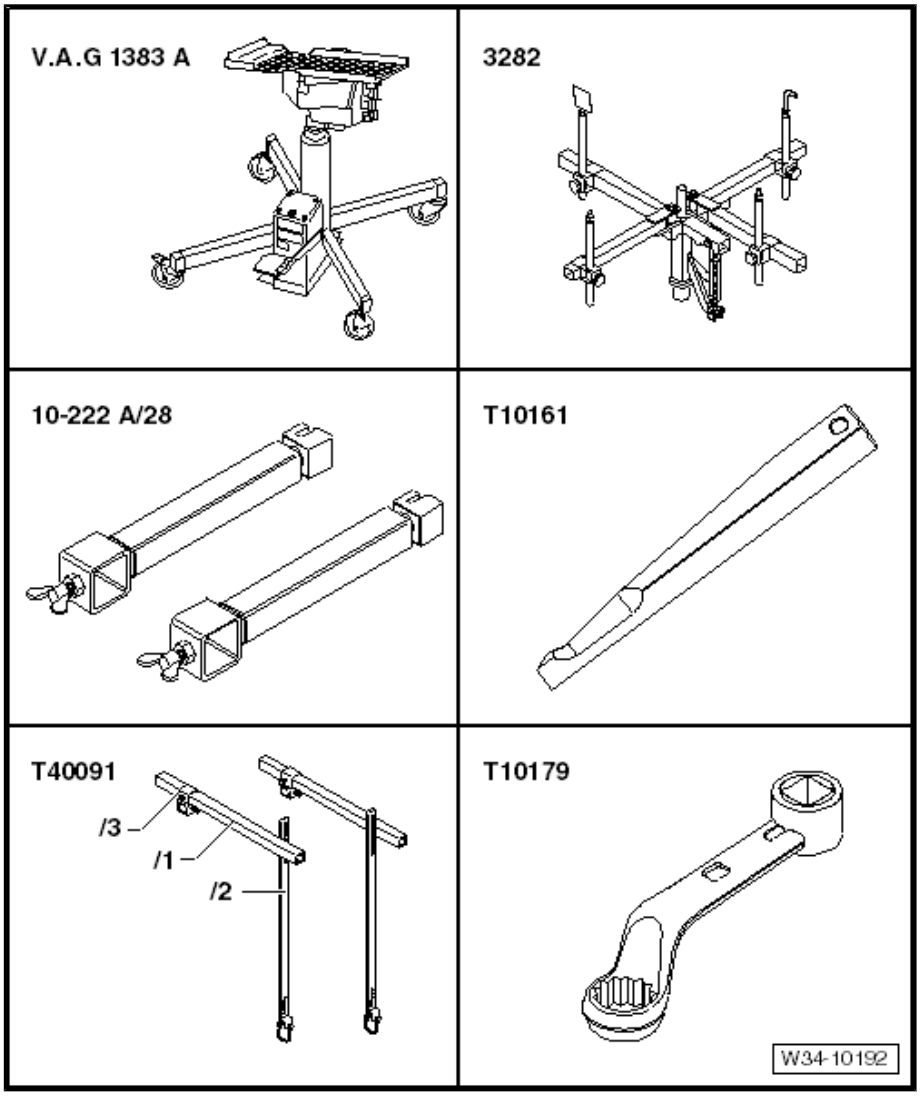
Remove -subframe- together with -pendulum support-, -steering rack- and -both suspension links-.

Both drive shafts are pushed out of gearbox and left installed in wheel bearing housings. They are only swivelled to one side, but are left on vehicle.

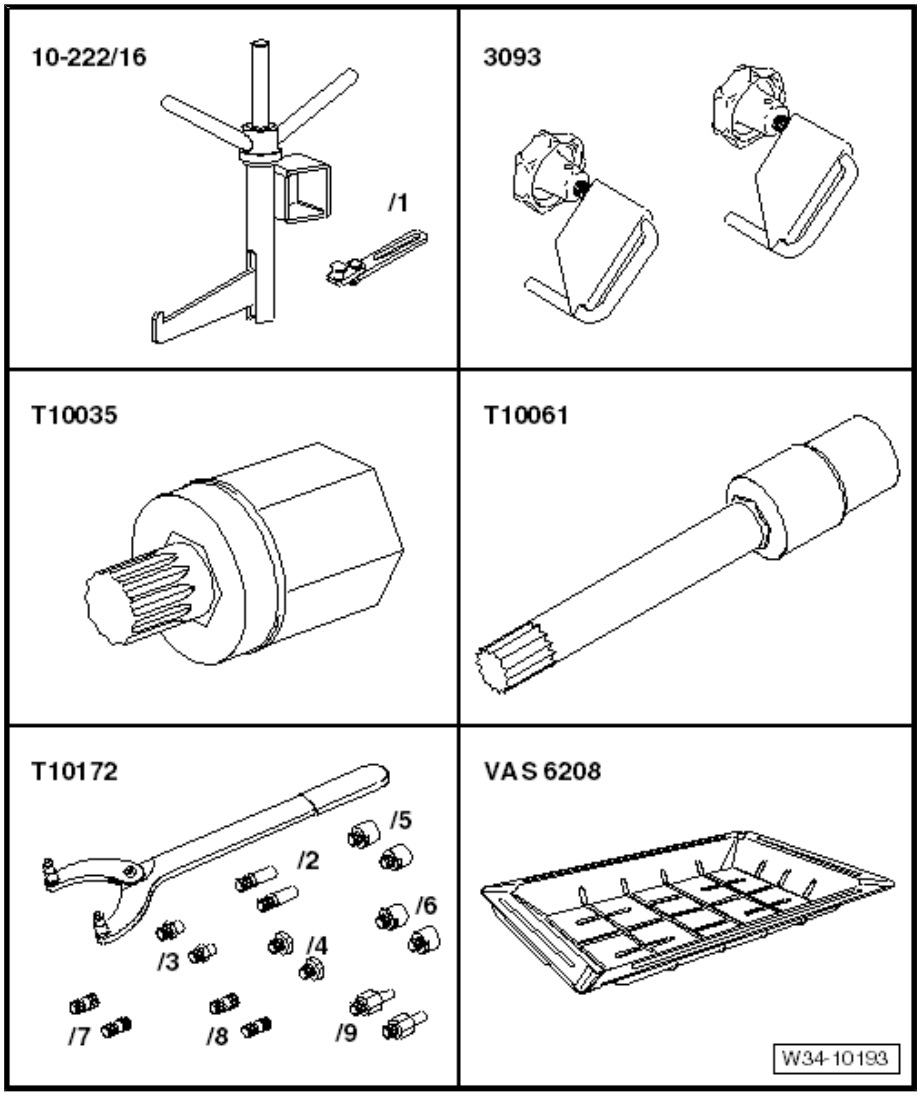
Special tools and workshop equipment required



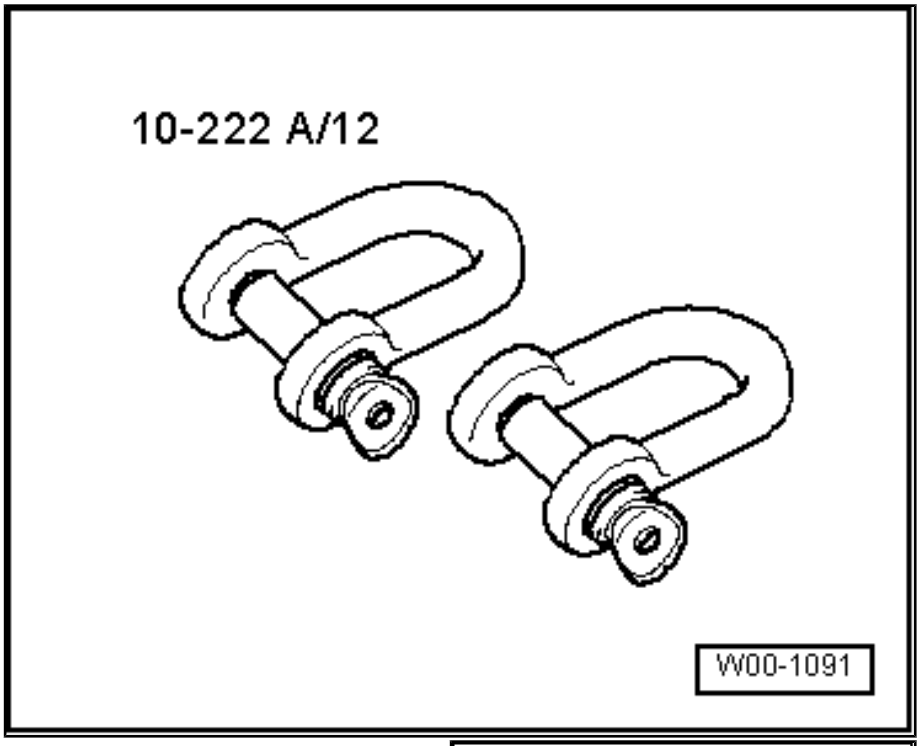
- Support - 10 - 222 A-
- Hook - 10 - 222 A /10-
- Adapter - 10 - 222 A /18-
- Adapter - 10 - 222 A /22-
- Tensioning strap - T10038-

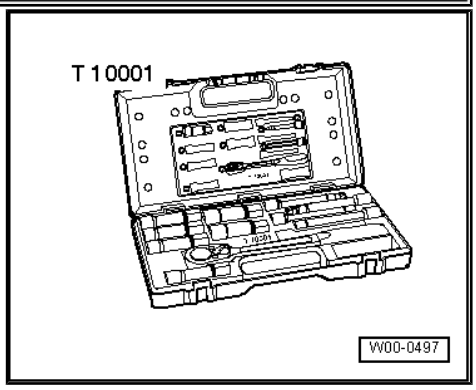


- Engine and gearbox jack - V.A.G 1383 A-
- Gearbox support - 3282-
- Adapter - 10 - 222 A /28- or adapter - 10 - 222 A /19-
- Wedge - T10161-
- Engine support, basic set - T40091-
- Insert tool, 18 mm - T10179-



- Adapter - 10 - 222 A /16-
- Hose clamps up to 40 mm - 3093- if available, or hose clamps up to 25 mm - 3094-
- Socket insert - T10035-
- Socket insert - T10061-
- Counter-hold tool - T10172-
- Drip tray for workshop hoist - VAS 6208-





- Shackle - 10 - 222 A /12-
- Shock absorber tool set - T10001-

Removing

– Raise vehicle. All 4 supports of lifting platform must be at same height.

– Turn steering to straight-ahead position.

– Switch selector lever to »P« position.

– Remove both front wheels.

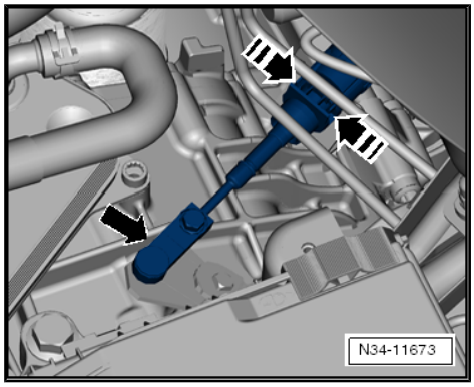
– Remove air filter housing.

- Petrol engine: ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing
- Diesel engine: ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

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

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

– Pry selector lever cable off selector shaft lever -arrow- using an open-ended spanner.



Caution

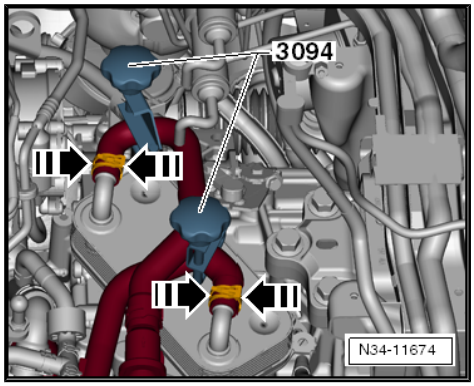
Locks on selector lever cable break off very easily. If a locking lug has broken off, complete selector mechanism with selector lever cable must be renewed.

– Carefully push locking mechanisms of selector lever cable together -arrows- and remove selector lever cable upwards out of cable support bracket.

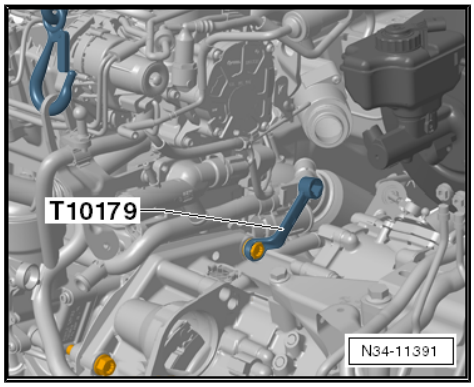
– Do not bend or kink cable.

– Clamp off coolant hoses using hose clamps to 40 mm - 3093- or hose clamps to 25 mm - 3094- and remove.

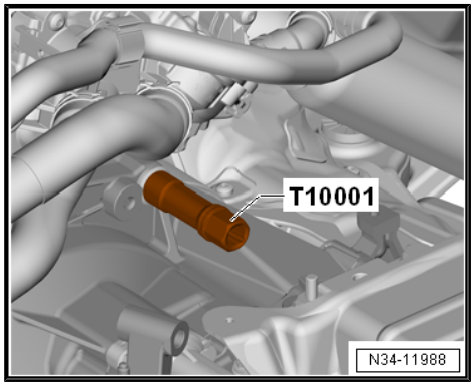
– Remove air intake pipe. ⇒ Rep. gr. 21 ; Turbocharging/supercharging



– Remove upper engine/gearbox connecting bolts.

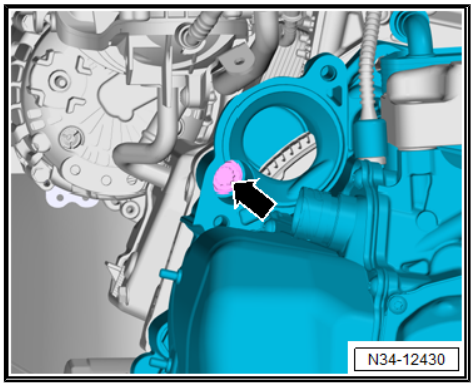


– Upper engine/gearbox connecting bolts can also be removed using a suitable socket from shock absorber set - T10001- .

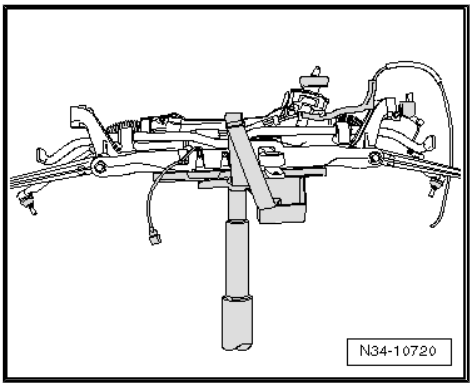


A bolt is located in the starter motor hole. Bit - T10061- can be used instead of an 18 mm socket.

– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

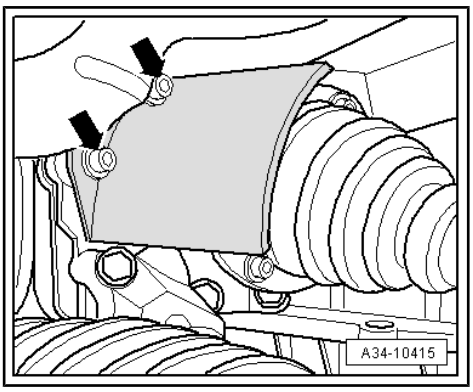


Remove subframe with steering rack. ⇒ Rep. gr. 40 ; Removing and installing subframe with steering rack

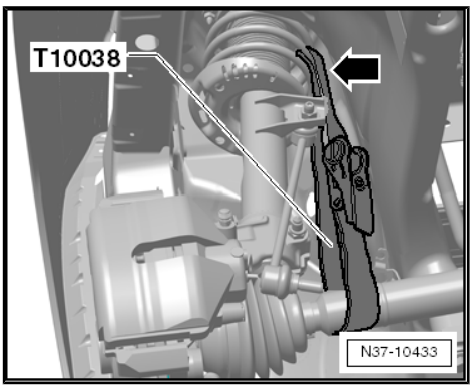


– Remove drive shaft heat shield, if present, from bevel box ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts .

– Press both drive shafts off gearbox and remove. ⇒ Rep. gr. 40 ; Removing and installing drive shaft

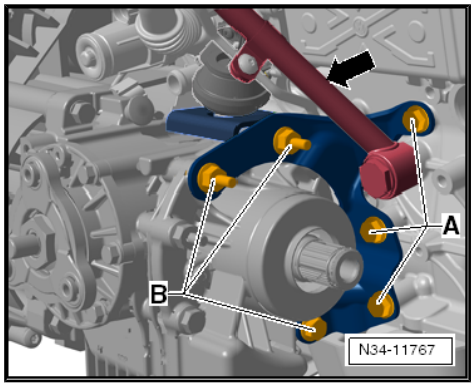


Secure both drive shafts to suspension struts using tensioning straps - T10038- .



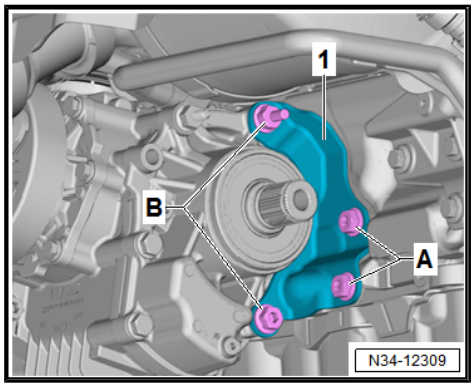
Gearbox carrier for 2.0 l - 100/103/130 kW diesel engine

– Unscrew bolts -B- from gearbox carrier on bevel box. Only loosen bolts -A-, do not remove them.



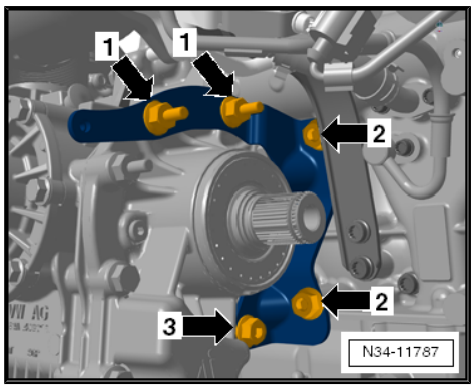
Gearbox carrier for 2.0 l - 135 kW diesel engine

– Unscrew bolts -A and B-, and remove gearbox carrier for bevel box.

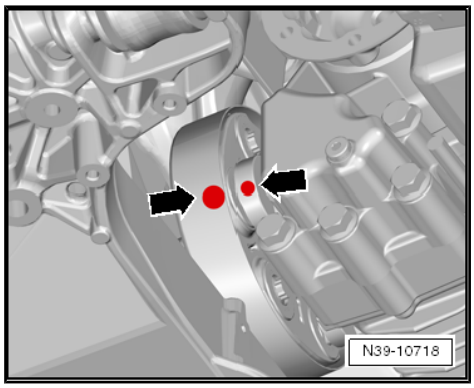


Gearbox carrier for petrol engine:

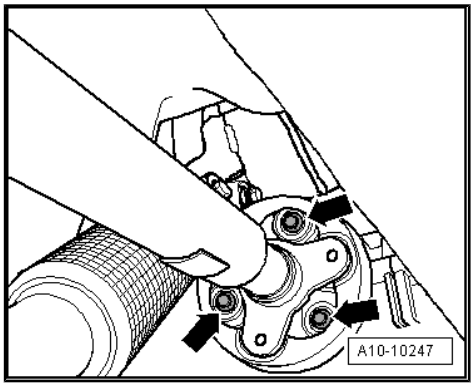
– Unscrew bolts -1- and -3- from gearbox carrier on bevel box. Only loosen bolts -2-, do not remove them.



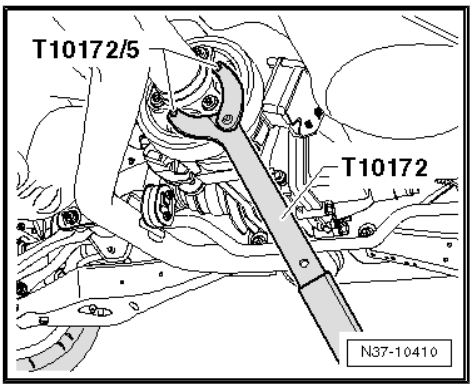
– Mark position of propshaft with flexible coupling relative to output shaft of bevel box -arrows-.



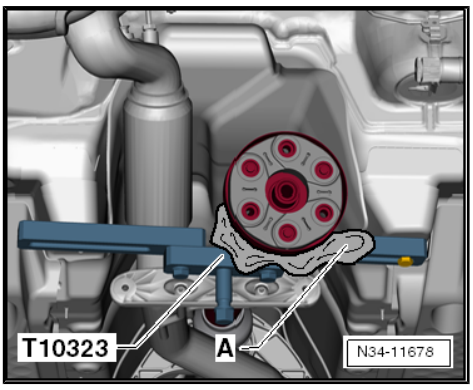
– Unbolt propshaft from bevel box -arrows-.



– If necessary, counterhold at rear final drive when loosening or tightening propshaft.



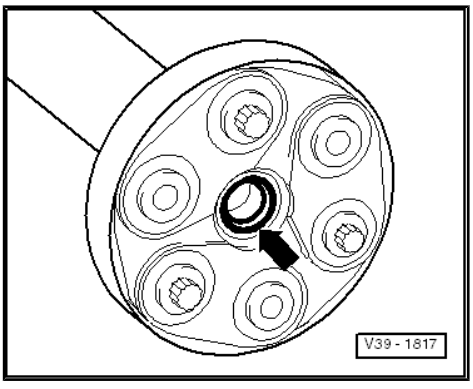
– Secure support - T10323- with a bolt on inside rear threaded hole for subframe.
– A securing bolt from the subframe is suitable for this.
– Place cloth -A- on support and lay propshaft on that.



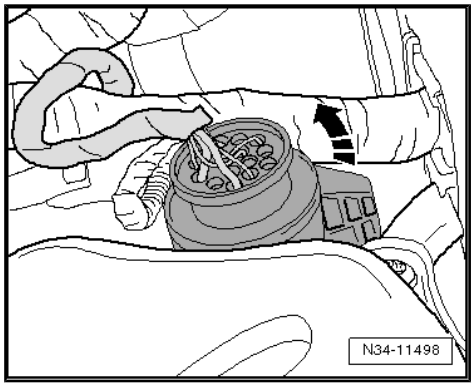
Note

- *When removing and installing, do not damage seal in the propshaft flange -arrow-.*
- *Renew propshaft if damaged. ⇒ Propshaft and rear final drives; Rep. gr. 39 ; Removing and installing propshaft*
- *All parts of propshaft which have been marked relative to each other must be reinstalled in the same positions.*

– Remove front cable holder from »black« gearbox cover.



– Release mechatronic unit connector by turning in -direction of arrow- and pull off connector.
– Remove all but one »easily accessible« connecting bolt between engine and gearbox.

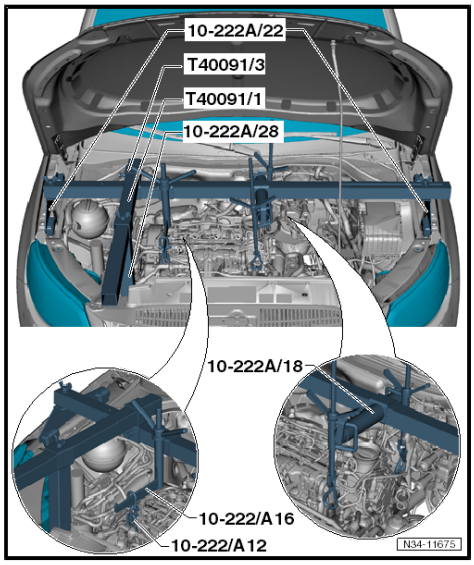


– Set up support device - 10 - 222 A- . Attach hooks to support eyes on engine and support engine and gearbox. Do not raise.

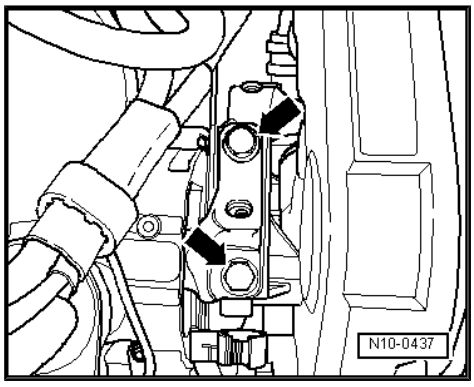
Adapter - 10-222A/28- may be used in place of adapter - 10-222A/19- .

Note

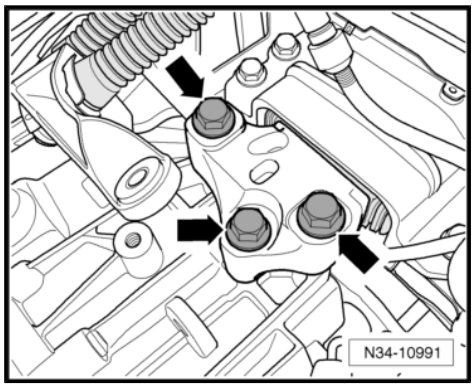
Support eyes may differ from those shown in illustration. Support engine and gearbox with the available support eyes.



– Remove securing bolts -arrows- of assembly mounting for engine⇒ Rep. gr. 10 ; Removing and installing engine .

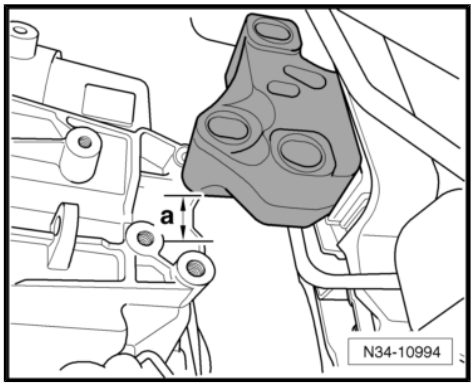


– Remove securing bolts -arrows- of assembly mounting for gearbox.



– Then use spindles of support bracket - 10 - 222 A- to lower engine/gearbox »only« on gearbox side as far as dimension -a-.

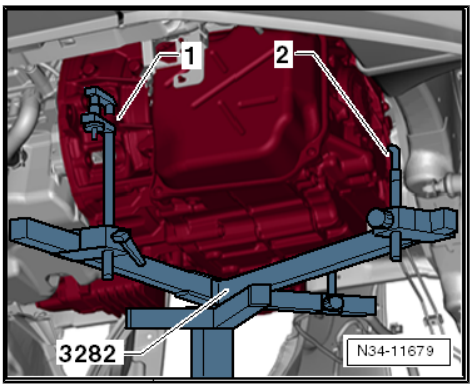
Dimension -a- = about 110mm



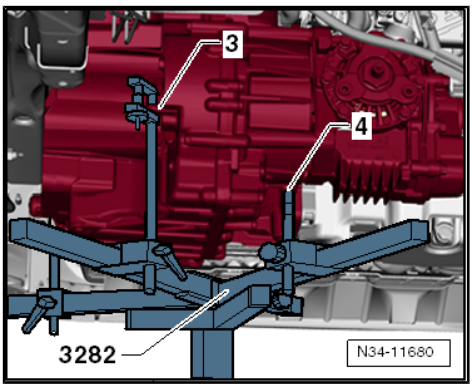
The gearbox is separated from the engine in this position.

– Position engine and gearbox jack - V.A.G 1383 A- with gearbox support - 3282- under gearbox.

– Mount safety support -1- and hook -2- on gearbox as shown.



– Mount safety support -3- and pin -4- on gearbox as shown.
– Remove »last« connecting bolt between engine and gearbox.
– Push gearbox off engine and lower it carefully, ensuring »clearance« to other components.
– Detach bevel box from gearbox ⇒ page 97



8.1.2 Removing gearbox, Sharan 2016 ►

Brief description

The gearbox is removed downwards separately. »From above«

The battery with battery tray, air filter and starter are removed. The coolant hoses must be clamped off. Support engine and gearbox before left subframe mounting is unbolted.

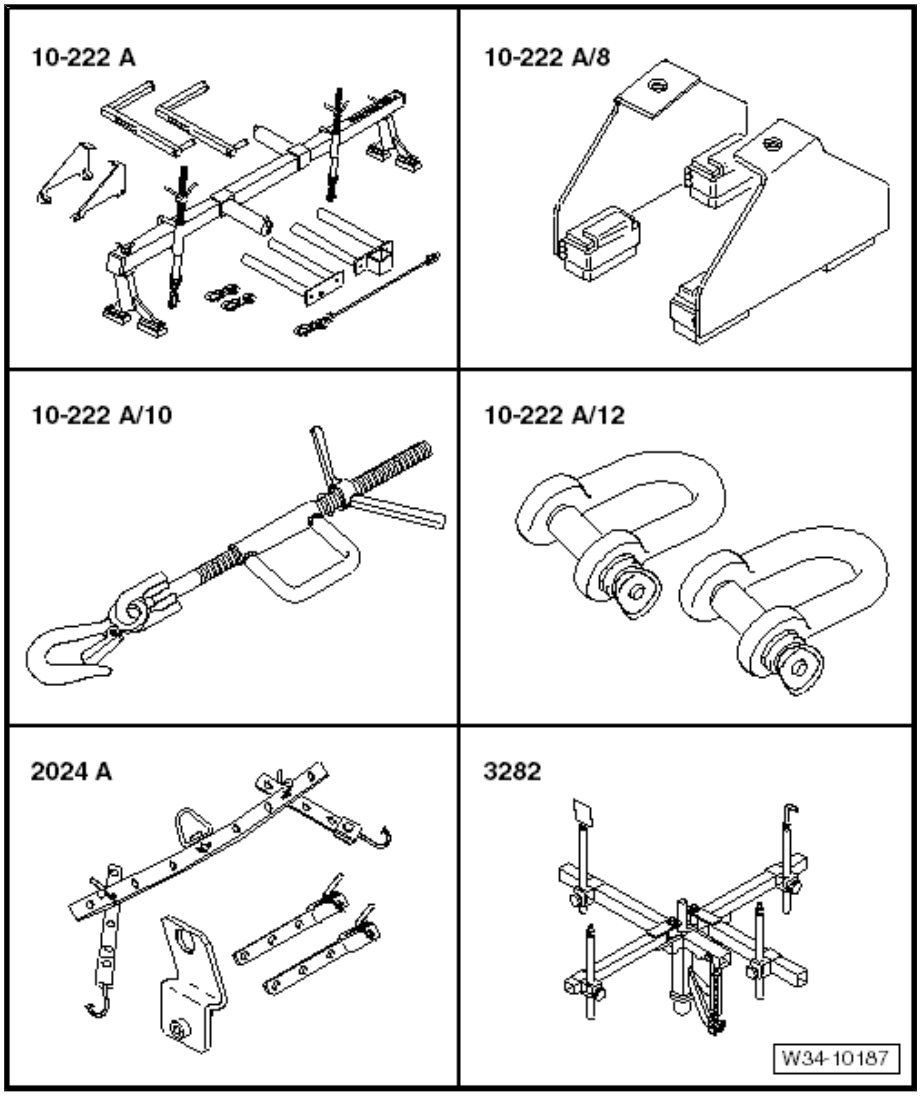
»From below«

Remove noise insulation beneath engine and cover in front left wheel housing.

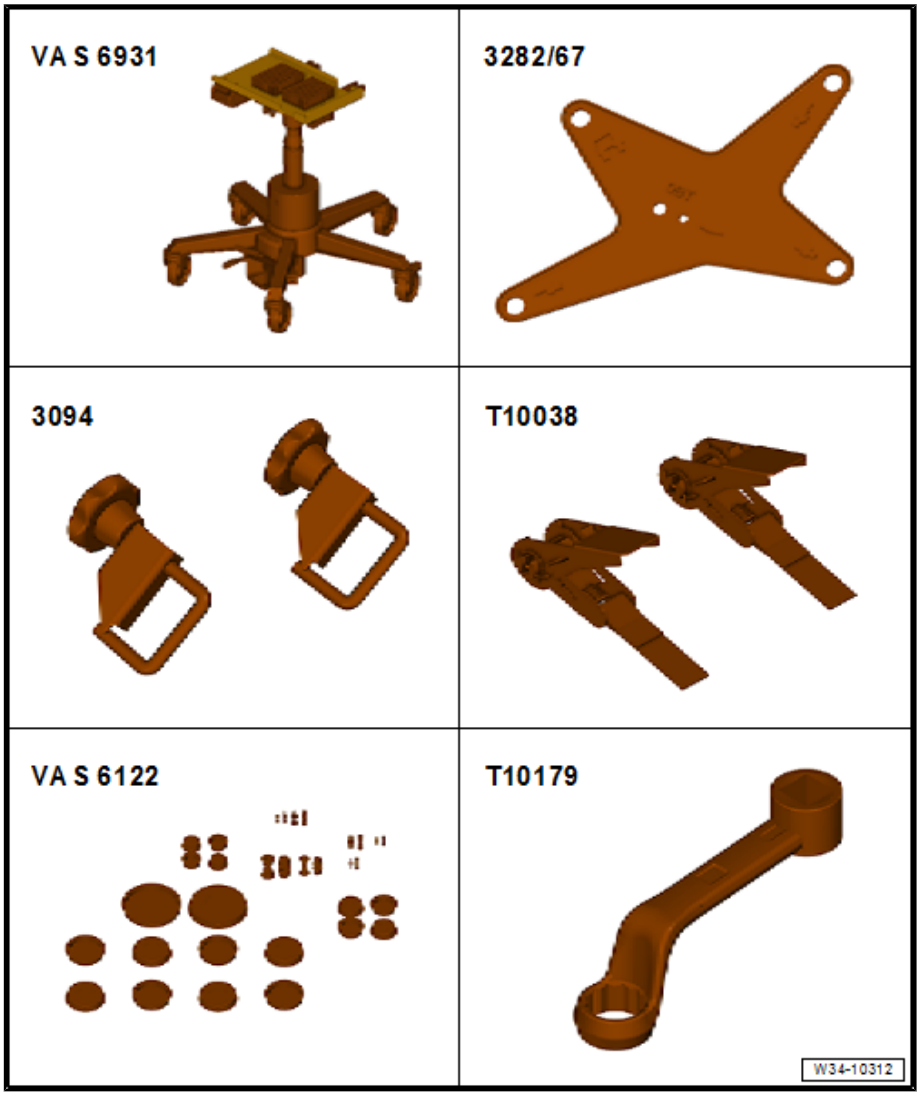
Remove -subframe- together with -pendulum support-.

Both drive shafts are pushed out of gearbox and left installed in wheel bearing housings. They are only swivelled to one side, but are left on vehicle.

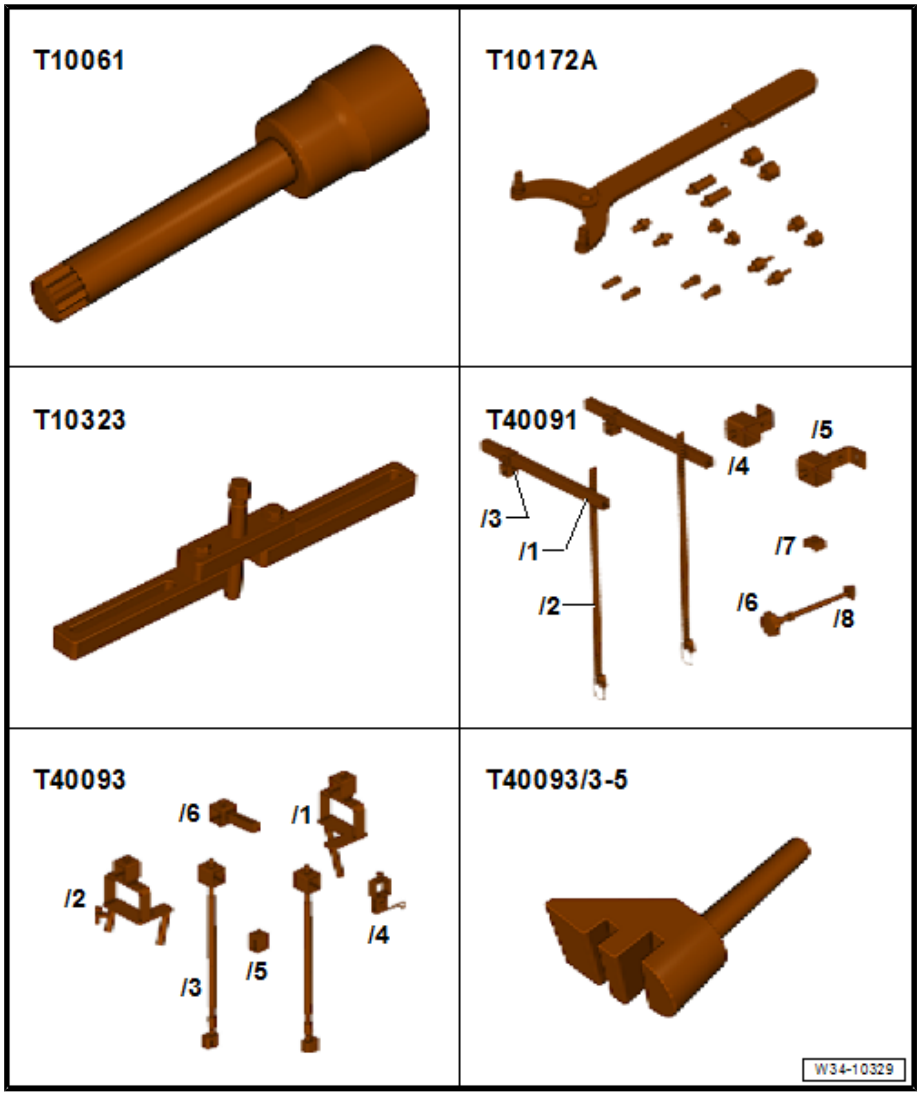
Special tools and workshop equipment required



- Support - 10 - 222 A-
- Sharan adapter - 10-222 A /8-
- Hook - 10 - 222 A /10-
- Shackle - 10 - 222 A /12-
- Bars - 2024 A / 1- of lifting tackle - 2024 A-
- Gearbox support - 3282-



- Engine and gearbox jack - VAS 6931-
- Adjustment plate - 3282/67-
- Hose clamps to 25 mm - 3094-
- Tensioning strap - T10038-
- Set of plugs for engine - VAS 6122-
- Insert tool, 18 mm - T10179-



- Socket insert - T10061-
- Counter-hold tool - T10172A-
- Support bridge - T10323-
- Rectangular tube - T40091 / 1- of basic engine support bracket set - T40091-
- Connector - T40091/3- of basic engine support bracket set - T40091-
- Adapter - T40093/3- of supplementary engine support bracket set - T40093-
- Adapter - T40093/3-5 - of supplementary engine support bracket set - T40093-

Removing:

– Raise vehicle. All 4 supports of lifting platform must be at same height.

– Move selector lever to position »P«.

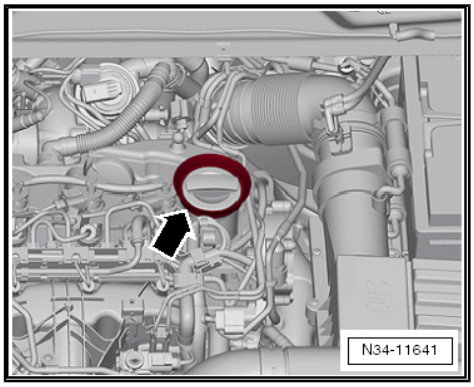
– Remove engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .

– Then pull off grommet -arrow- so that it is not damaged when supporting engine.

– Remove air filter housing ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing

– Remove battery with battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

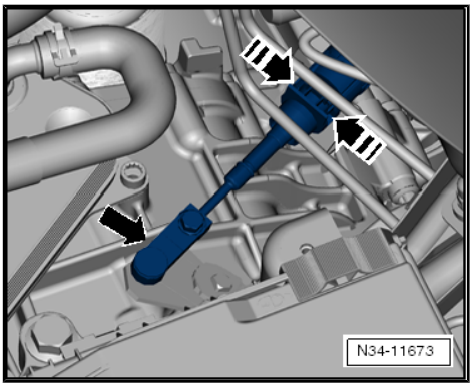
– Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .



– Pry selector lever cable off selector shaft lever -arrow- using an open-ended spanner.

Caution

Locks on selector lever cable break off very easily. If a locking lug has broken off, complete selector mechanism with selector lever cable must be renewed.

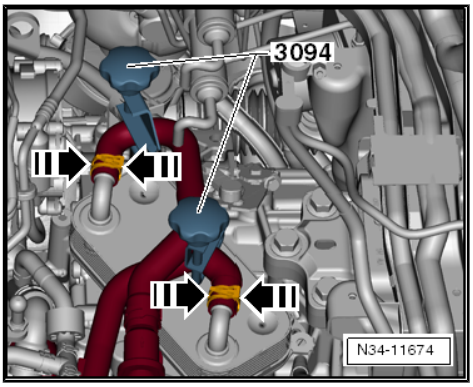


– Carefully push locking mechanisms of selector lever cable together -arrows- and remove selector lever cable upwards out of cable support bracket.

– Do not bend or kink cable.

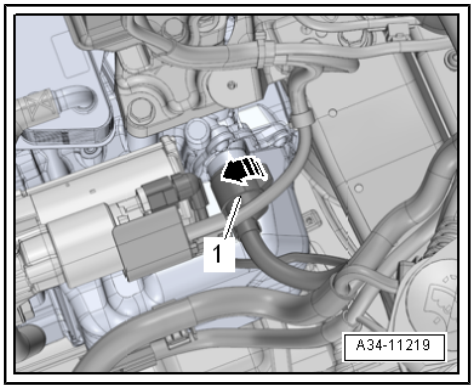
– Clamp off coolant hoses using hose clamps to 25 mm Ø - 3094- and remove.

– Seal connecting necks of gear oil cooler using suitable plugs from engine bung set - VAS 6122- .

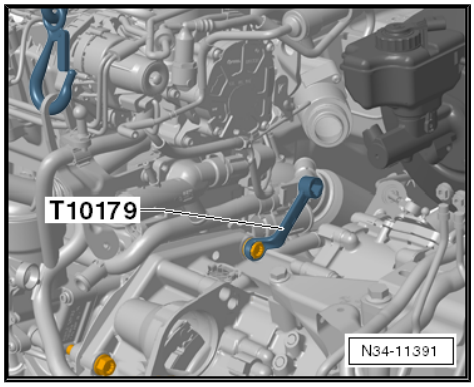


– Disconnect connector -1- for mechatronic unit for dual clutch gearbox - J743- . To do this, turn rotary locking mechanism anti-clockwise -arrow-.

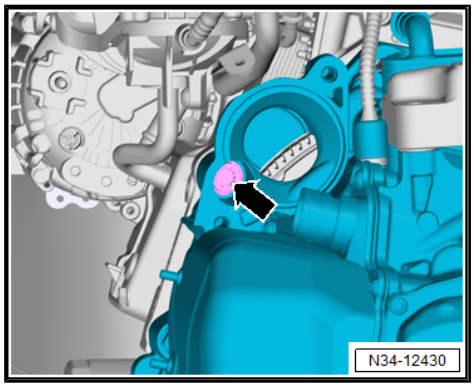
– Remove charge air line. ⇒ Rep. gr. 21 ; Charge air system; Assembly overview - charge air system



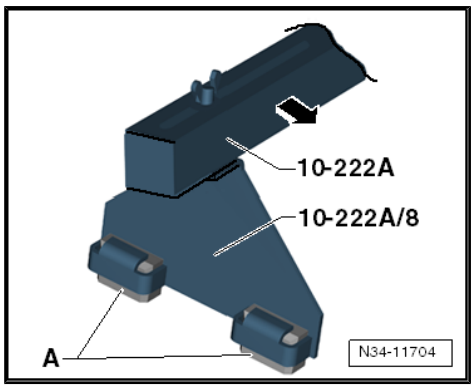
– Remove upper engine/gearbox connecting bolts.

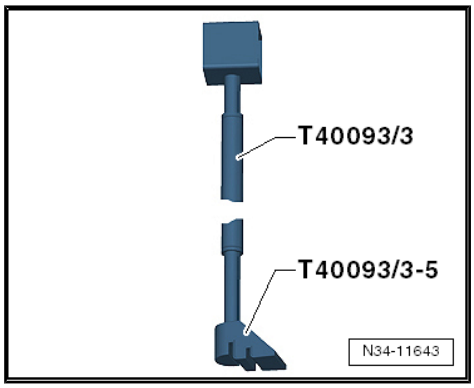


A bolt is located in the starter motor hole -arrow-. This bolt can be removed using socket - T10061- .

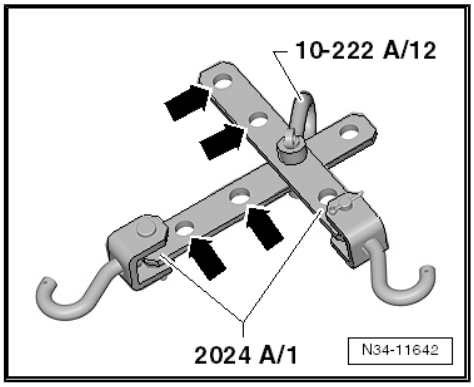


- Please note the assembly of the following special tools at this point:
- Adapters - 10-222 A /8- must be mounted with support bracket put on, as shown.
- Rubber blocks -A- must face outwards.
- -Arrow- = vehicle driving direction.





- Bolt adapter - T40093/3-5 - onto adapter - T40093/3- .
- Connect 2 bars - 2024 A / 1- of support bracket - 2024 A- together using shackle - 10 - 222 A /12- .
- 2 holes -arrows- each point in one direction.



Adapter - T40093/3-5 - or adapter - 10-222 A /8- for the support bracket - 10-222 A- are positioned near radiator grille and plenum chamber cover.

Therefore, remove following components:

♦ Radiator grille ⇒ Rep. gr. 66 ; Radiator grille

♦ Windscreen wiper arms ⇒ Electrical system; Rep. gr. 92 ; Windscreen wash/wipe system

♦ Plenum chamber cover ⇒ Rep. gr. 50 ; Plenum chamber cover

– Set up support bracket - 10-222 A- behind bonnet support:

– Use:

♦ Adapter - 10-222 A /8-

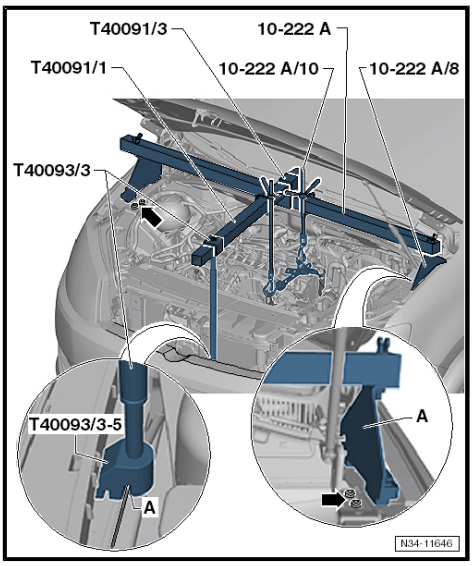
♦ Spindle - 10 - 222 A /10-

♦ Connector - T40091/3-

– First put on adapter -10-222A/8- -A- next to bolts -arrow- on left side.

– Then fit support bracket - 10-222A- behind bonnet support. Position the right adapter - 10-222A/8- next to the bolts as well -arrow-.

– Bolt support bracket - 10-222A- onto left adapter - 10-222A/8- .

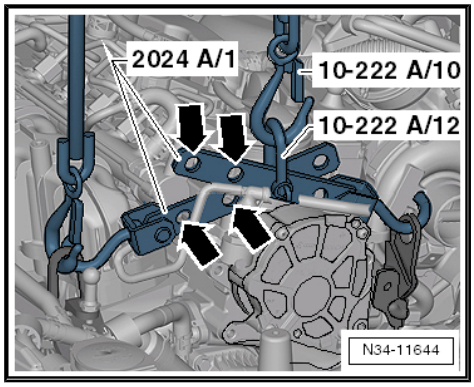


– Attach bars - 2024 A / 1- in engine support eyes.

• 2 holes -arrows- each point towards front end.

– Connect lugs - 2024 A / 1- to spindle - 10 - 222 A /12- using shackle - 10 - 222 A /10- .

(⇒ previous illustration)



– Set up adapter - T40093/3- with adapter - T40093/3-5 - (notch -A-) on sheet metal fold of bumper carrier.

– Push one spindle onto square tube - T40091/1- .

– Assemble square tube - T40091/1- with adapter - T40093/3- and support bracket - 10-222A- .

– Then attach spindle in front engine support eye.

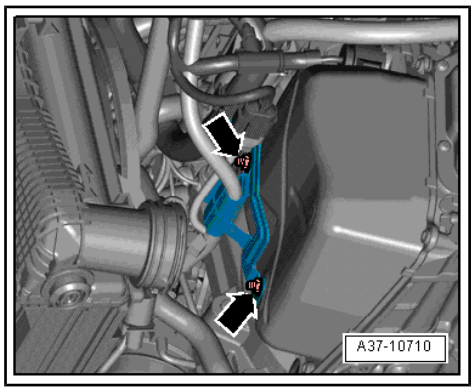
– Take up weight of engine/gearbox assembly on spindle .

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

– Remove lower part of front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview - front wheel housing liner .

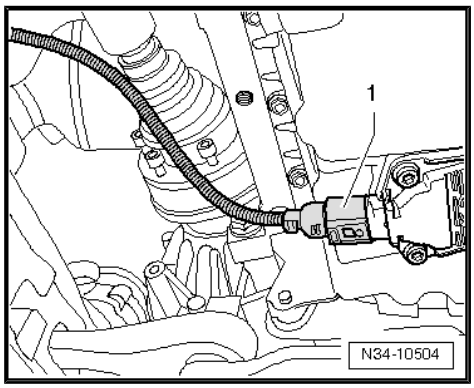
– Remove electrical wiring and retainers from sump at front -arrows-.

– Raise wiring in area of sump and secure it.

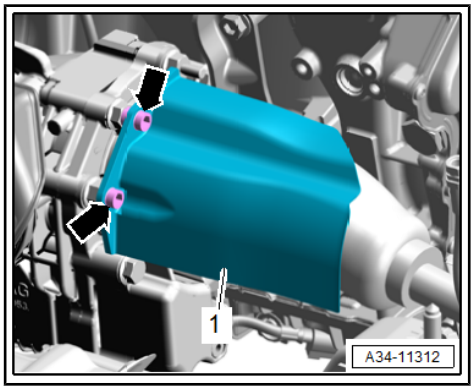


– Disconnect connector -1- from oil level and oil temperature sender - G266- .

Remove subframe. ⇒ Rep. gr. 40 ; Subframe; Assembly overview - subframe

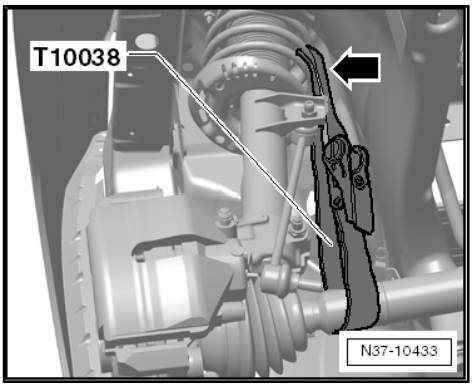


– Remove drive shaft heat shield -1-, if present, from bevel box (-arrows-) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft .
– Disconnect both drive shafts from gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft: Removing and installing drive shafts .

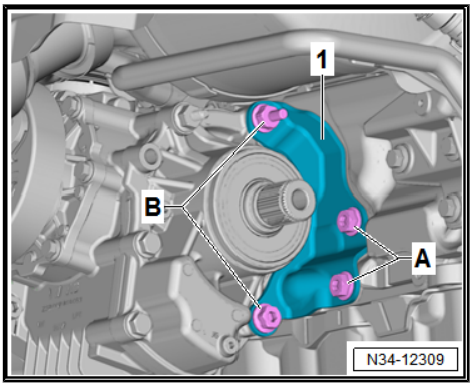


Secure both drive shafts to suspension struts using tensioning straps - T10038- .

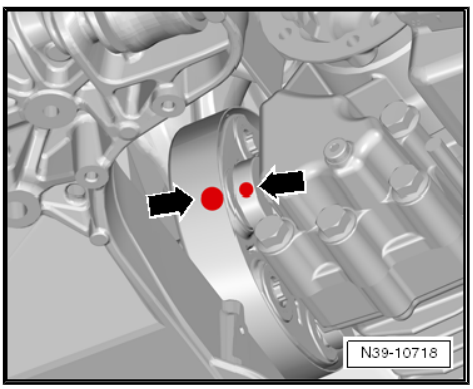
The surface protection of the shafts must not be damaged.



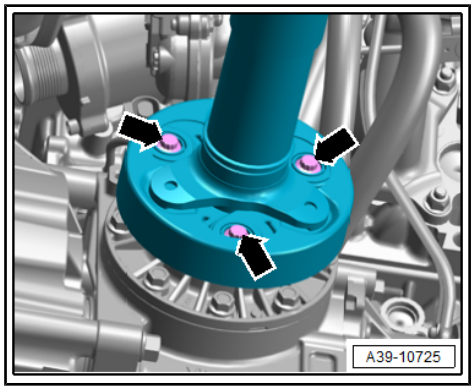
– Unscrew bolts -A and B-, and remove gearbox carrier for bevel box.



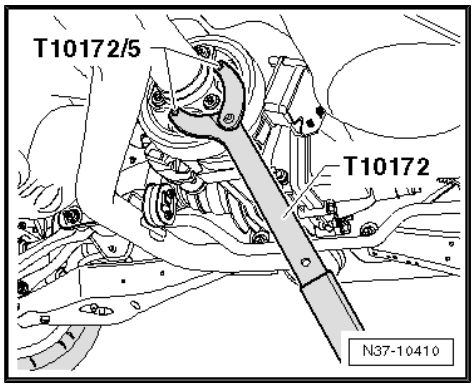
– Mark position of propshaft with flexible coupling relative to output shaft of bevel box -arrows-.



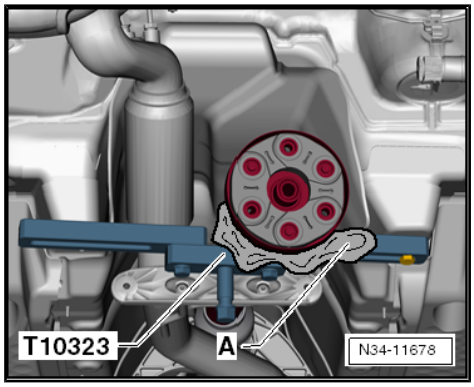
– Unbolt propshaft from bevel box -arrows- ⇒ Rep. gr. 39 ; Propshaft; Removing and installing propshaft .



– If necessary, counterhold at rear final drive when loosening or tightening propshaft.



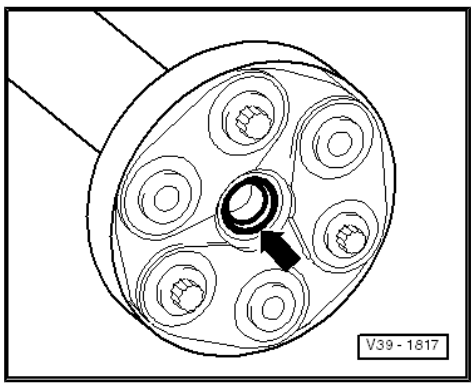
– Secure support - T10323- with a bolt on inside rear threaded hole for subframe.
– A securing bolt from the subframe is suitable for this.
– Place cloth -A- on support and lay propshaft on that.



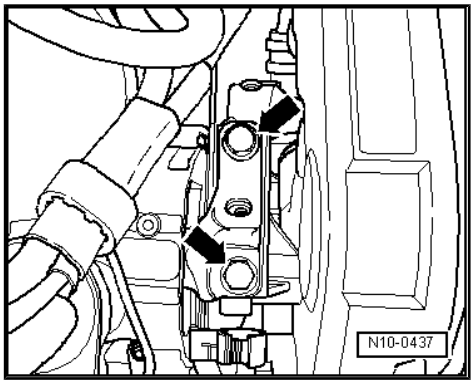
Note

- *When removing and installing, do not damage seal in the propshaft flange -arrow-.*
- *Renew propshaft if damaged. ⇒ Rep. gr. 39 ; Propshaft; Removing and installing propshaft*
- *All parts of propshaft which have been marked relative to each other must be reinstalled in the same positions.*

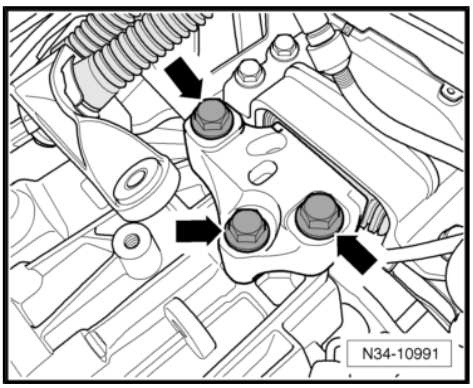
– Remove all but one »easily accessible« connecting bolt between engine and gearbox.



– Remove securing bolts -arrows- of assembly mounting for engine ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings .



– Remove securing bolts -arrows- of assembly mounting for gearbox.

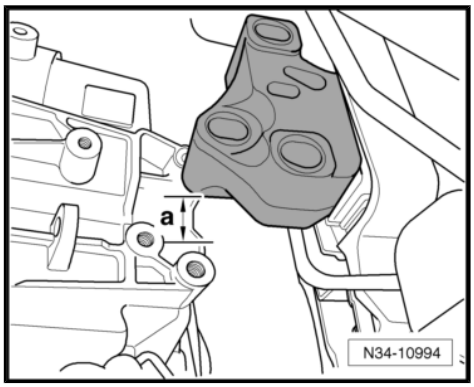


– Then use spindles of support bracket - 10 - 222 A- to lower engine/gearbox »only« on gearbox side as far as dimension -a-.

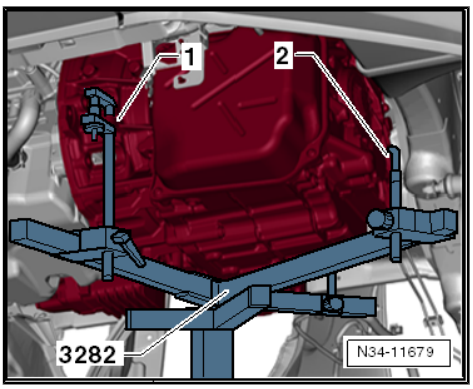
Dimension -a- = about 110mm

The gearbox is separated from the engine in this position.

– Position engine and gearbox jack - V.A.G 1383 A- with gearbox support - 3282- under gearbox.



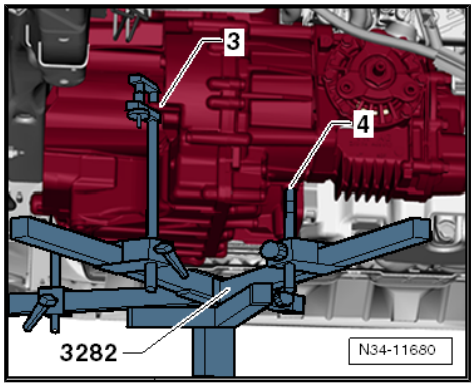
– Mount safety support -1- and hook -2- on gearbox as shown.



– Mount safety support -3- and pin -4- on gearbox as shown.
– Remove »last« connecting bolt between engine and gearbox.
– Push gearbox off engine and lower it carefully, ensuring »clearance« to other components.

Transporting gearbox and attaching to engine and gearbox support ⇒ page 86 .

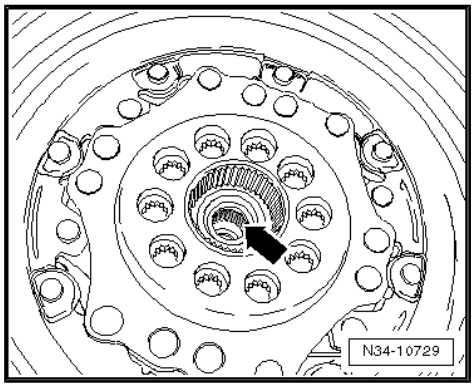
Install gearbox ⇒ page 82 .



8.2 Installing gearbox

Install in the reverse order of removal, observing the following.

– Renew needle bearing -arrow- in crankshaft ⇒ Rep. gr. 13 ; Crankshaft; Renewing needle bearing in crankshaft .
– Lightly grease journal and splines on gearbox using high-temperature grease - G052133A2- .
– Check for proper seating of both dowel sleeves between engine and gearbox.
– Remove retaining ring and O-ring of drive shafts.
– Set gearbox in place, possible adjusting gearbox support.



It must be possible to guide the engine and gear box together by hand until the flanges make contact all around.

If this is not so, then »something is wrong«!

– Readjust gearbox support until engine and gearbox are »aligned with each other«.
– Install engine/gearbox connecting bolts.

Continue installation in reverse order of removal.

– Adjust selector lever cable ⇒ page 52 .
– Check coolant level and top up if necessary ⇒ Rep. gr. 19 .

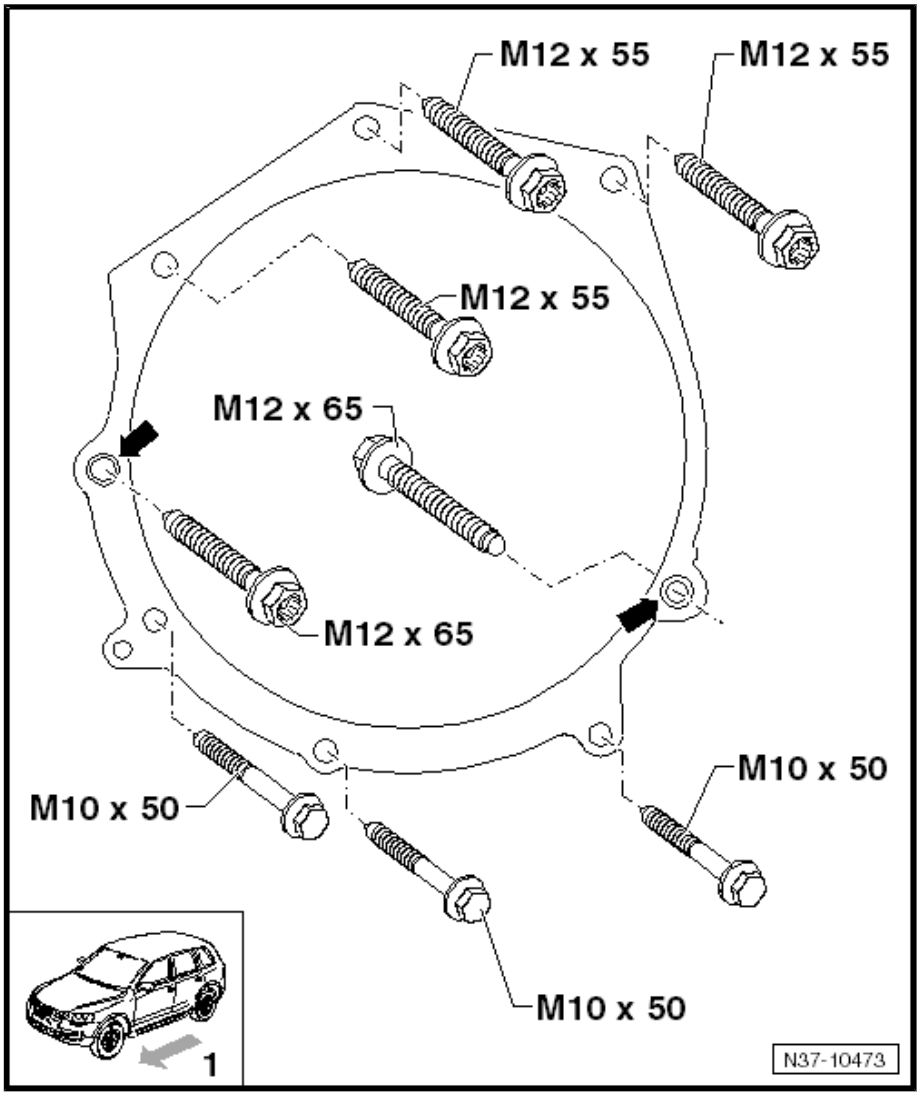
Specified torques: ⇒ page 82

8.3 Specified torques

⇒ “8.3.1 Gearbox carrier to engine and bevel box”, page 83

1 - Direction of travel

- M12 bolts
  - ❑ 80 Nm
  - ❑ 65 Nm, if 18 mm insert - T10179- is used.
- M10 bolts
  - ❑ 40 Nm
- 2 dowel sleeves in engine -arrows-



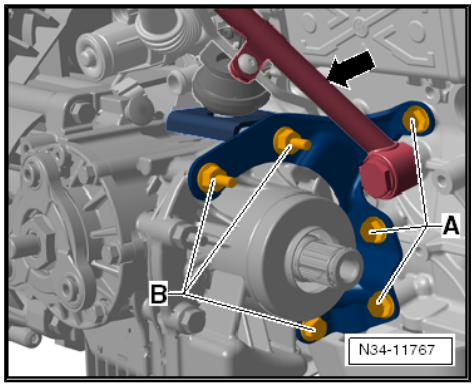
Component	Nm
Assembly mounting to gearbox (use new bolts)	60 Nm + turn 90° further
Assembly mounting to engine (use new bolts)	⇒ Rep. gr. 10 ; Removing and installing engine
Earth strap to assembly mounting	25
Heat shield for right drive shaft to bevel box	20
Propshaft to bevel box	⇒ Propshaft and rear final drive; Rep. gr. 39
Suspension link, coupling rod, pendulum support, drive shaft	⇒ Running gear, axles, steering; Rep. gr. 40 .
Wheel bolts	⇒ Running gear, axles, steering; Rep. gr. 44 ; Torque settings for wheel bolts

Bevel box to gearbox 40 Nm + 90° further
♦ Renew bolts.

8.3.1 Gearbox carrier to engine and bevel box

Installation location and tightening sequence:

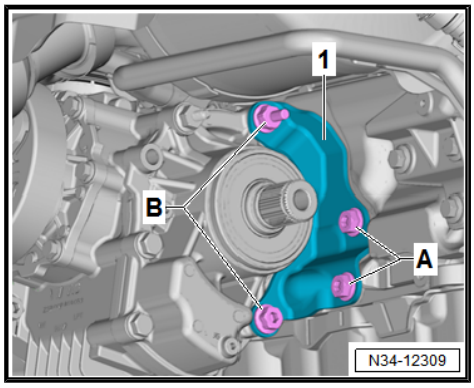
2.0 l - 100/103/130 kW diesel engine



2.0 l - 110/135 kW diesel engine

Item	Bolt
A	M10 x 21
B	M10 x 45

Sequence	Bolts	Specified torque
1.	-A- and -B-	Screw in to contact by hand
2.	Tighten -A-	40 Nm
3.	Tighten -B-	40 Nm

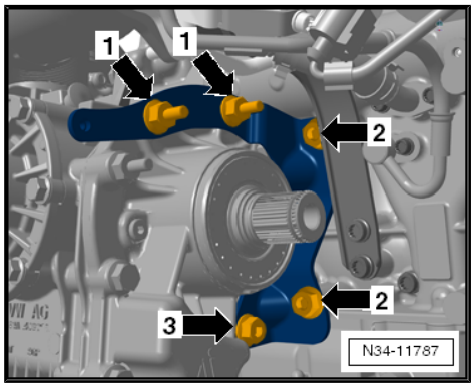


Petrol engine

Installation location and tightening sequence:

Item	Bolt
1	M10 x 45
2	M10 x 21
3	M10 x 45

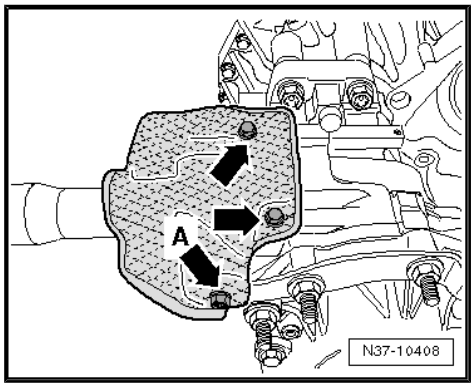
Sequence	Bolts	Specified torque
1.	-1- and -3-	Screw in to contact by hand
2.	Tighten -2-	40 Nm
3.	Tighten -1- and -3-	40 Nm
Heat shield for drive shaft		20 Nm



Heat shield for propshaft

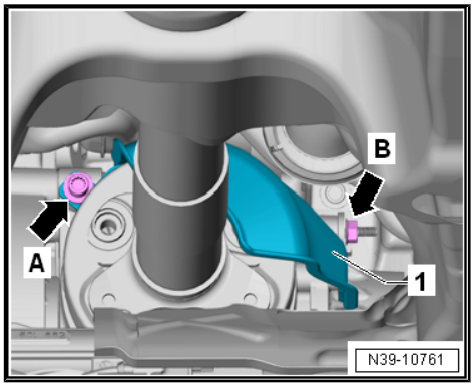
Version 1:

- Bolts -arrows- 9 Nm



Version 2:

- Bolt -A-: 20 Nm
- Bolt -B-: 40 Nm



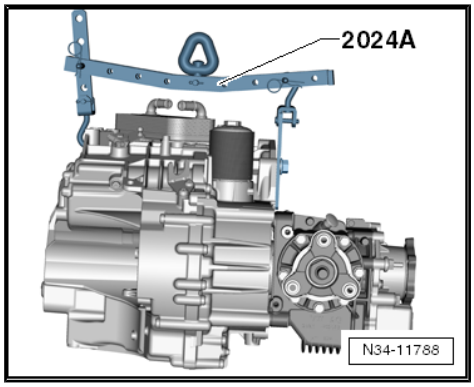
9 Transporting gearbox and securing to assembly stand

Always secure heavy parts when transporting them.

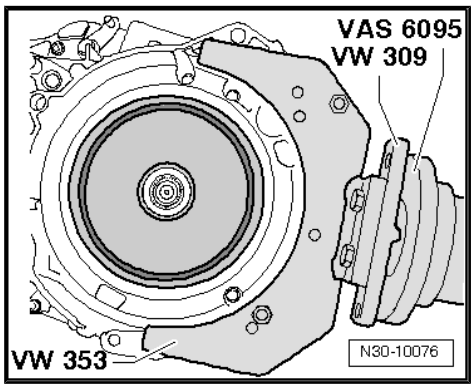
Also remember there is oil in the gearbox. Do not turn gearbox with breathers downwards during transport or while on repair stand. Oil will run out.

Transporting gearbox

Gearbox can be lifted with lifting tackle - 2024 A- .



Example: securing gearbox to assembly stand.



10 Bevel box

⇒ “10.1 Removing and installing bevel box, vehicles with 2.0 l - 100/103/130 kW diesel engine”, page 87

⇒ “10.2 Removing and installing bevel box, vehicles with petrol engine and vehicles with 2.0 l - 110/135 kW diesel engine”, page 87

⇒ “10.3 Detaching bevel box from gearbox - gearbox removed”, page 97

10.1 Removing and installing bevel box, vehicles with 2.0 l - 100/103/130 kW diesel engine

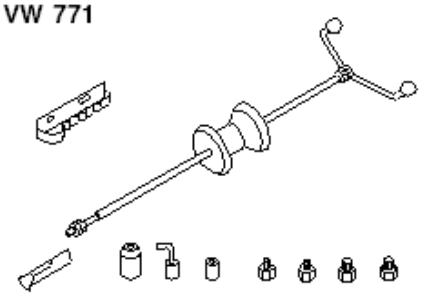
On vehicles with 2.0 l - 100/103/130 kW diesel engine, the bevel box cannot be renewed individually. It must be removed together with dual clutch gearbox and only then detached from gearbox.

⇒ “8 Removing and installing gearbox”, page 61

10.2 Removing and installing bevel box, vehicles with petrol engine and vehicles with 2.0 l - 110/135 kW diesel engine

Special tools and workshop equipment required

VW 771



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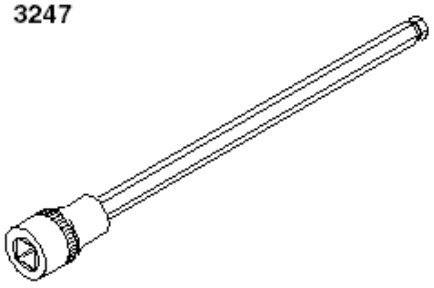
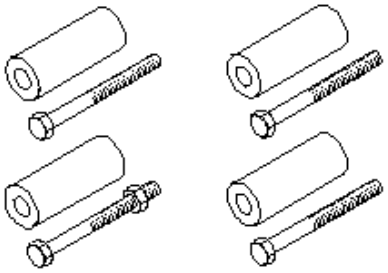
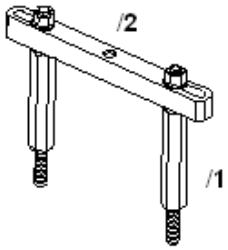


VW 540/1B



T10472

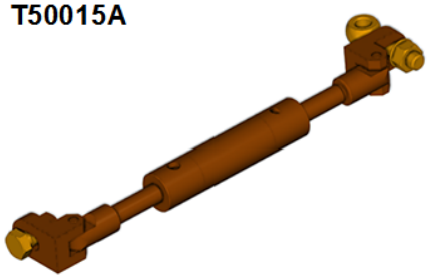


W39-10113

T10172A

W00-11665

T50015A



W00-11671

T10346/1

- Multipurpose tool - VW 771-
- Hexagon key extension, 8 mm - 3247-
- Supplementary set for engine and gearbox support - VW 540/1 B-
- Puller - T 10472-
- Counter-hold tool - T10172A-
- Engine support - T50015A-
- Bracket - T10346/1-

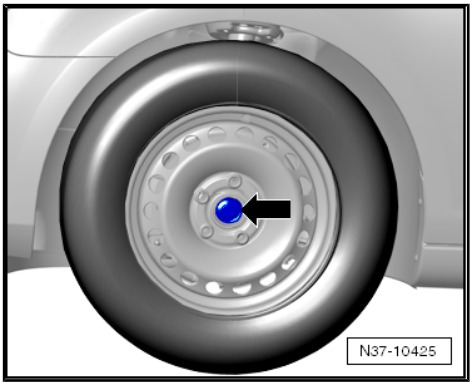
Removing

– Raise vehicle. All 4 supports of lifting platform must be at same height.

Note

After loosening centre bolt, do not lower vehicle to ground again.

– Depress brake pedal and loosen bolt of right drive shaft -arrow- (2nd mechanic needed)⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



Note

So that the propshaft can be turned later in order to loosen it:

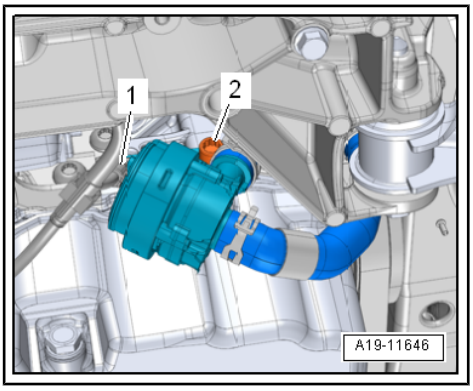
– Move selector lever to »N« position.

– Remove noise insulation below engine and gearbox. ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Vehicles with diesel engine:

– Disconnect connector -1-.

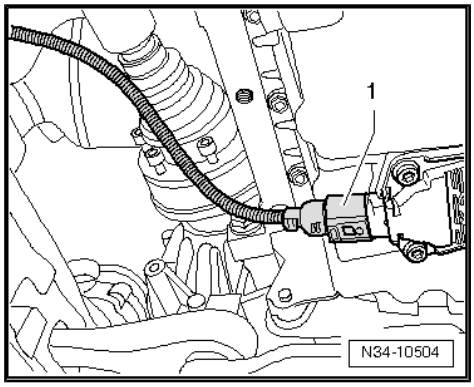
– Unscrew bolt -2- and push auxiliary pump for heating - V488- to right side. Do not disconnect any lines ⇒ Rep. gr. 19 ; Coolant pump, regulation of cooling system; Assembly overview - electric coolant pump .



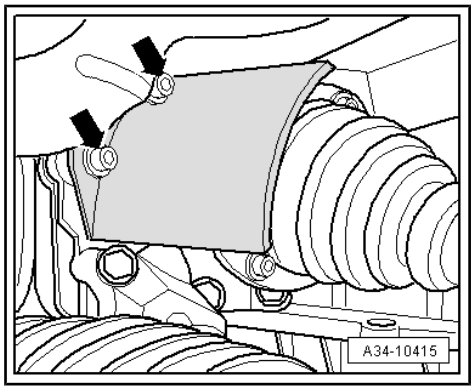
Continued for all vehicles:

– Disconnect connector -1- from oil level and oil temperature sender - G266- .

– Remove right drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



– Remove drive shaft heat shield, if present, from bevel box ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



Caution

Risk of damage to decoupling element.

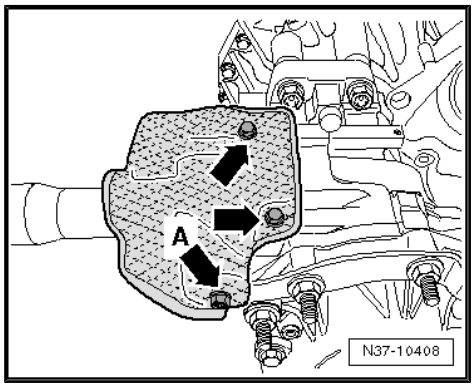
- ***Observe ⇒ Rep. gr. 26 ; Emission control; Assembly overview - emission control .***

– Remove front exhaust system from engine, raise it and tie it in place ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Assembly overview - silencer .

If fitted, remove heat shield for propshaft.

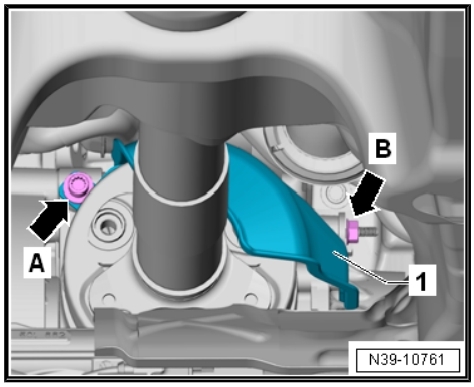
Version 1:

– Unscrew bolts -arrows- and remove heat shield -A-.

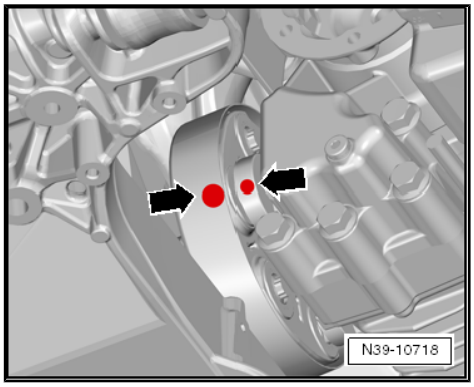


Version 2:

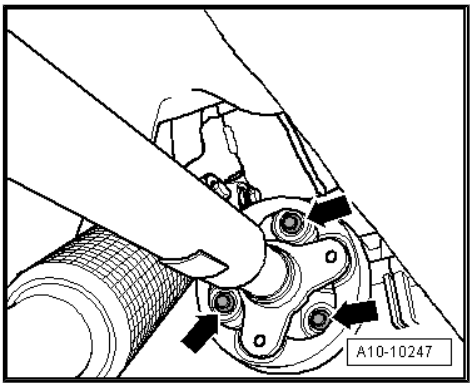
– Unscrew bolts -A- and -B- from bevel box, and remove heat shield -1-.



– Mark position of propshaft with flexible coupling relative to output shaft of bevel box -arrows-.



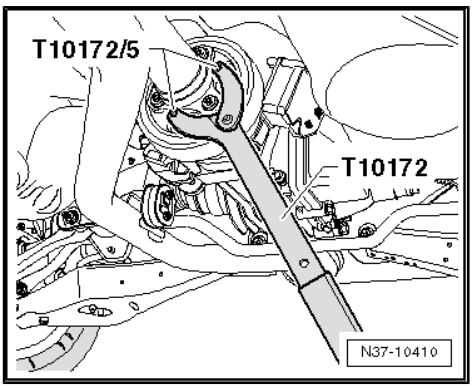
– Unbolt front propshaft from bevel box -arrows-.



– If necessary, counterhold at rear final drive when loosening or tightening propshaft.

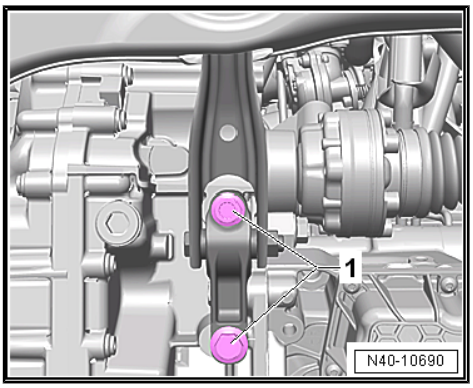
Note

To loosen »next« bolt, turn propshaft further by turning rear wheels at same time.

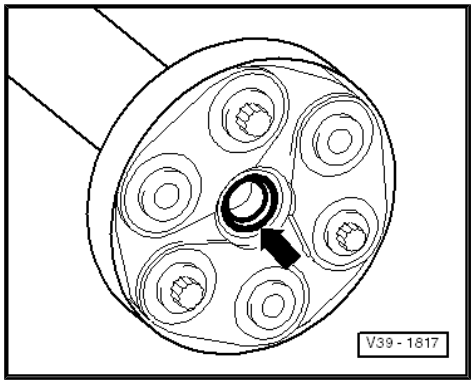


– Unscrew pendulum support bolts -1- from gearbox.

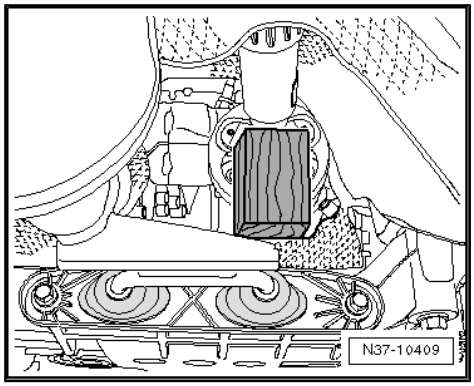
– Place a cloth on subframe to avoid damaging paint of propshaft when it is placed on subframe.



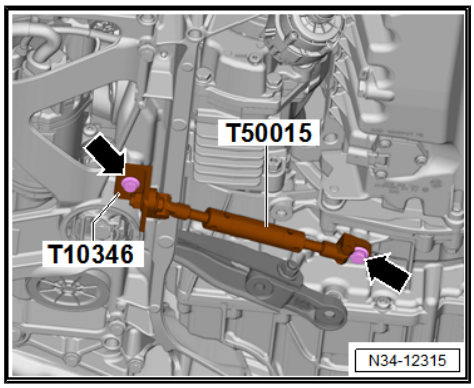
– Push font propshaft back to stop. Make sure not to damage seal -arrow- in centring bush.



– Guide propshaft upwards into tunnel, and use a suitable piece of wood to support it on subframe.

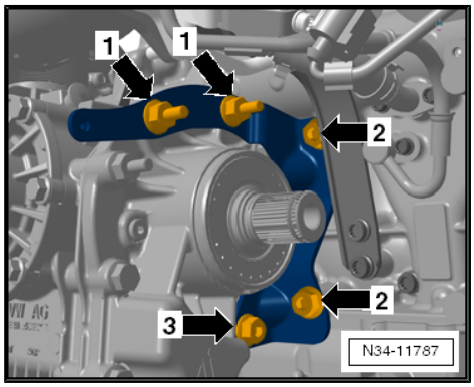


– Secure bracket - T10346/1- to subframe as shown in illustration using an M 8 x 25 bolt.
– Bolt engine support - T50015- to bracket - T10346/1- and to gearbox at front threaded connection for pendulum support.
– Force engine/gearbox as far forwards as possible by turning spindle of engine support - T50015- . Avoid collisions between components and radiator cowl.
– Unbolt gearbox carrier.



Petrol engine:

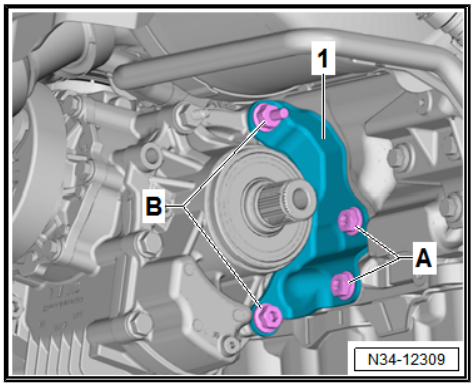
– Unscrew bolts -1-, -2- and -3-, and remove bevel box carrier.



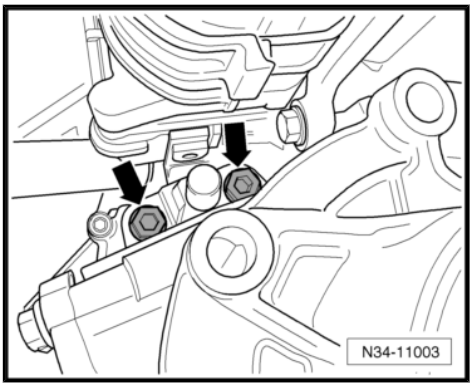
Diesel engine:

– Unscrew bolts -A and B-, and remove gearbox carrier -1- for bevel box.

Continuation for all:



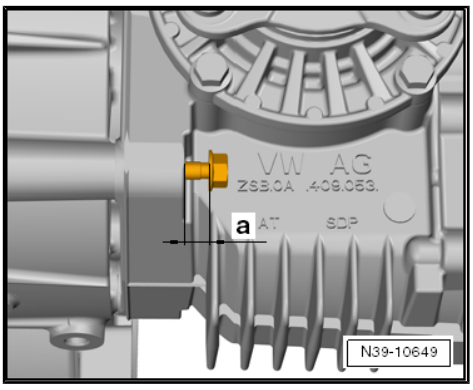
– Remove upper securing bolts -arrows- securing bevel box to gearbox.



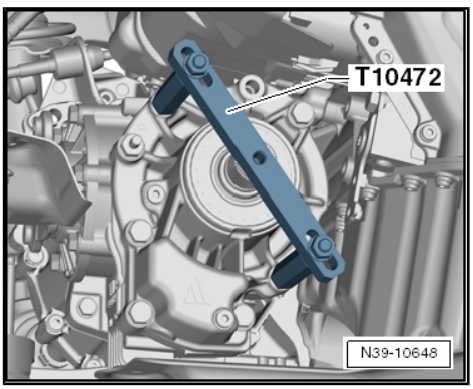
– Loosen lower securing bolts securing bevel box to gearbox and unscrew only as far as dimension -a-.

Dimension -a- = 15 mm

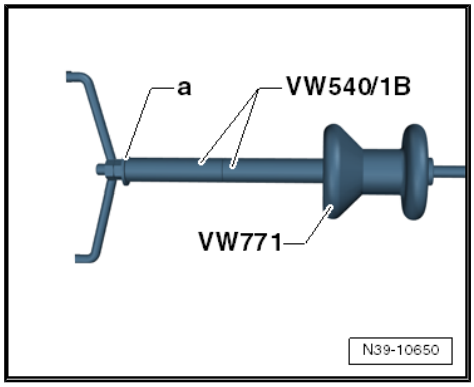
This prevents the bevel box from falling down immediately when loosened using multi-purpose tool - VW 771- .



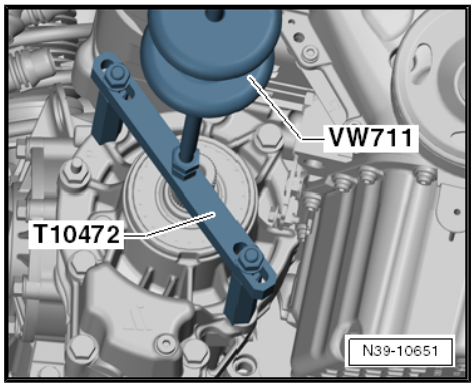
– Fit puller - T 10472- to bevel box.



– Prepare multi-purpose tool - VW 771- with a washer -a- and 2 sleeves from the supplementary set for engine and gearbox support - VW 540/1 B- as shown in the illustration.



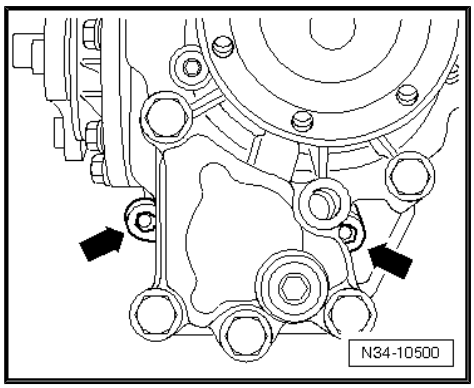
– Bolt multi-purpose tool - VW 771- onto puller - T10472- and loosen bevel box from gearbox.
– Remove multi-purpose tool - VW 771- and puller - T10472- from bevel box.



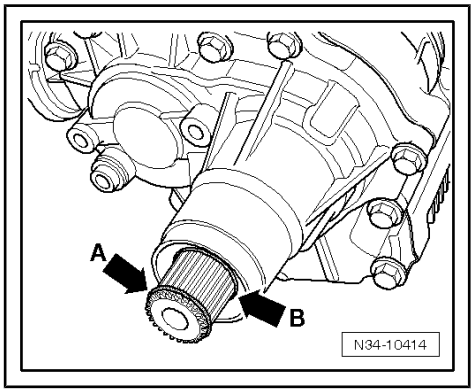
– Unscrew lower securing bolts -arrows- and remove bevel box.

Installing

When installing, note the following:



– Grease splines of differential with grease for clutch plate splines - G 000 100- .
– Install new retaining ring -arrow A- and new O-ring -arrow B- on right stub shaft.
– Insert bevel box and press against gearbox as far as it will go.



Note

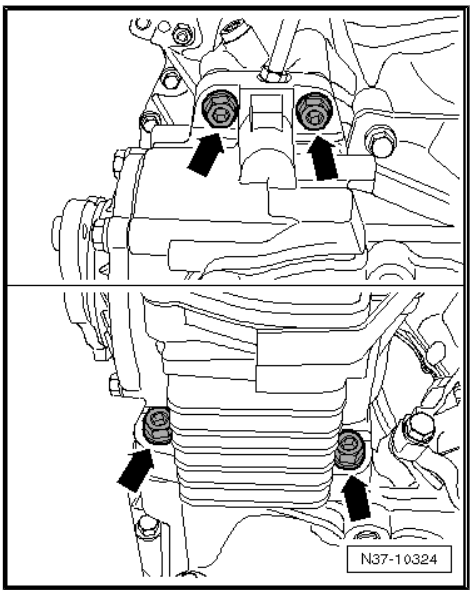
Turn stub shaft if spline position is unfavourable (bevel box cannot be pressed to stop against gearbox).

– If splines are correctly positioned and shafts are centred, then bevel box will slide to stop against gearbox.

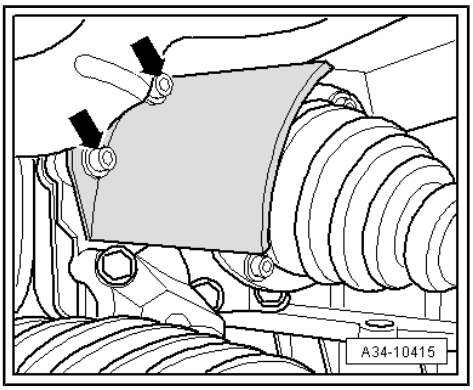
Caution

To ensure that the retaining ring of the stub shaft engages properly in the differential bevel gear, strike the face of the spline stub with a plastic hammer. Do not pull bevel box forcefully against gearbox by turning securing bolts. Damage to gearbox or bevel box could result.

– Screw on bevel box with new bolts -arrows- until finger-tight, then tighten. Specified torque: ⇒ page 82 .
– Install gearbox carrier. Observe installation location and tightening sequence of bolts ⇒ page 82 .

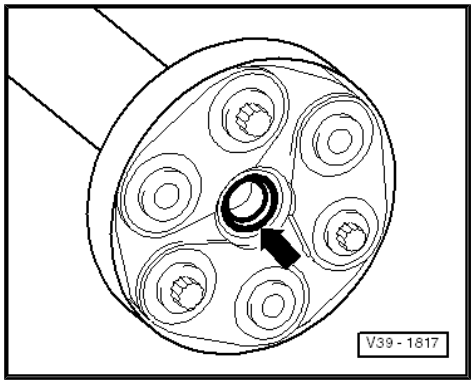


– If previously removed, attach drive shaft heat shield to bevel box ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .
– Fit propshaft on bevel box.

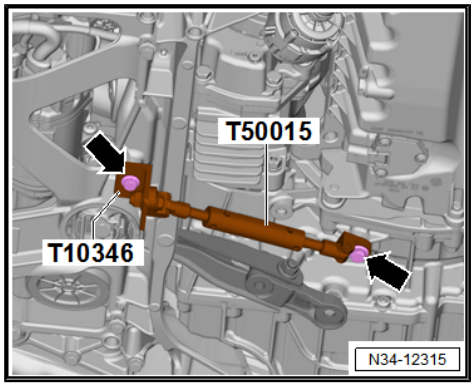


Note

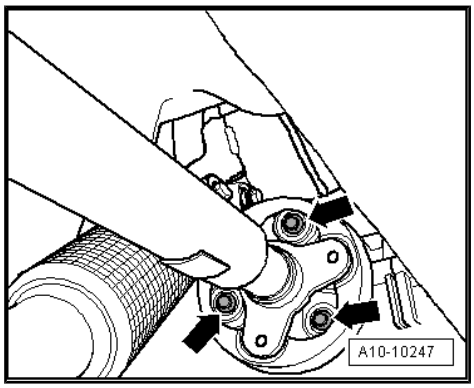
When removing and installing the bevel box, do not damage the seal in the propshaft flange -arrow-. Renew propshaft if damaged.



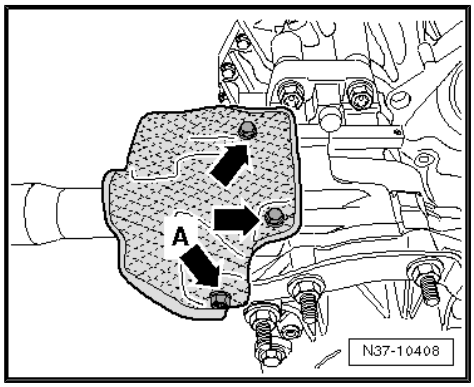
– Join bevel box and propshaft by turning spindle of engine support - T50015- .
– Remove engine support - T50015- together with bracket - T10346/1- .



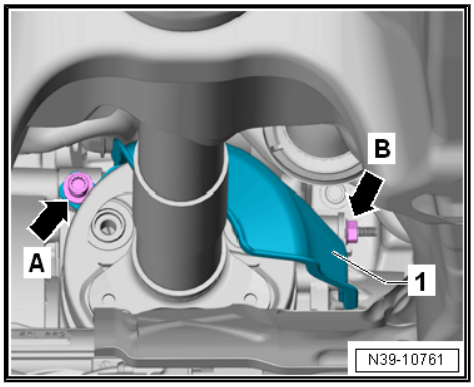
– Bolt propshaft onto bevel box -arrows- ⇒ Rep. gr. 39 ; Removing and installing propshaft .
– If present, install heat shield for propshaft.



Version 1:



Version 2:



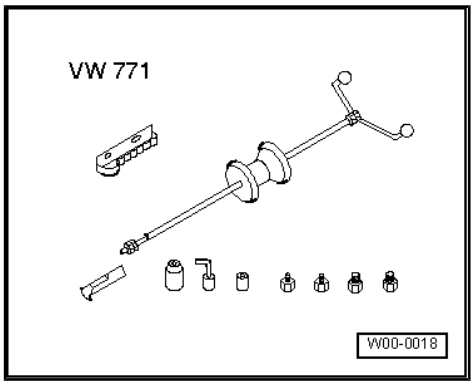
- Bolt on pendulum support using »new« bolts. Specified torques ⇒ Running gear, axles, steering; Rep. gr. 40 .
- Grease splines of stub shaft with grease - G 000 100- .
- Install right drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts; Removing and installing drive shaft .
- Install parts of exhaust system ⇒ Rep. gr. 26 ; Exhaust system .
- Check gear oil in bevel box ⇒ page 132 .
- Following installation, check oil level in gearbox ⇒ page 103 .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

Specified torques: ⇒ page 83

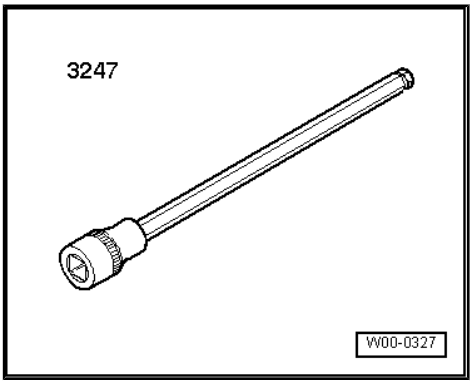
10.3 Detaching bevel box from gearbox - gearbox removed

Special tools and workshop equipment required

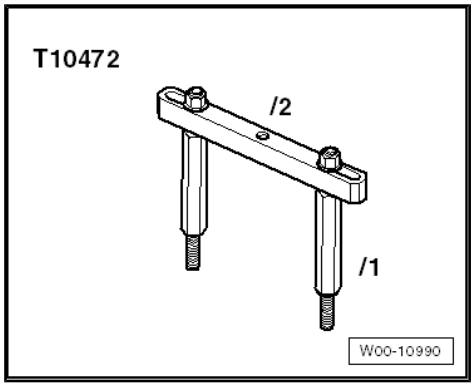
- Multipurpose tool - VW 771-



- Hexagon key extension, 8 mm - 3247-



♦ Puller - T 10472-



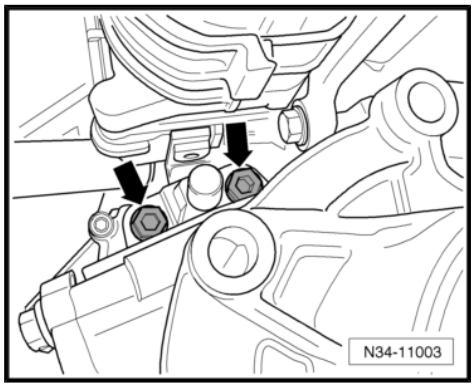
Removing

– Remove gearbox with bevel box ⇒ page 61 .

– Secure gearbox with bevel box to assembly stand ⇒ page 86 .

In the following illustrations the bevel box is shown in installed condition.

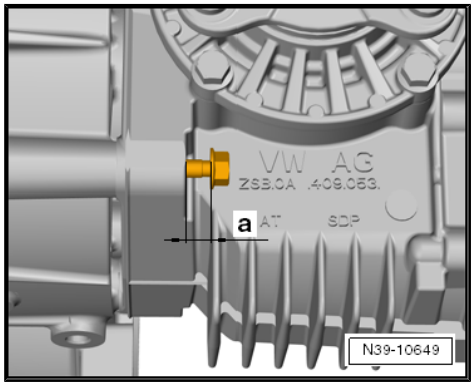
– Remove upper securing bolts -arrows- securing bevel box to gearbox.



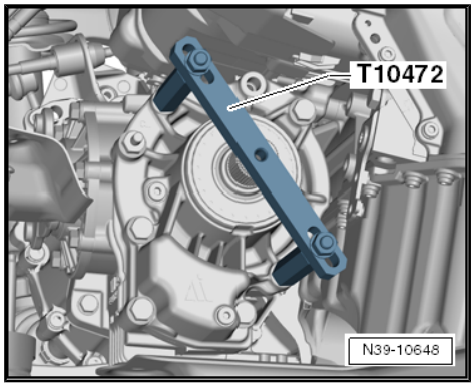
– Loosen lower securing bolts securing bevel box to gearbox and unscrew only as far as dimension -a-.

Dimension -a- = 15 mm

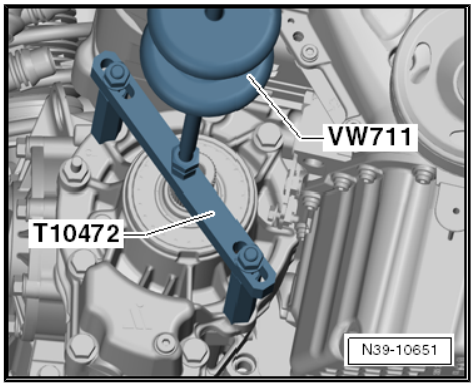
This prevents the bevel box from falling down immediately when loosened using multi-purpose tool - VW 771- .



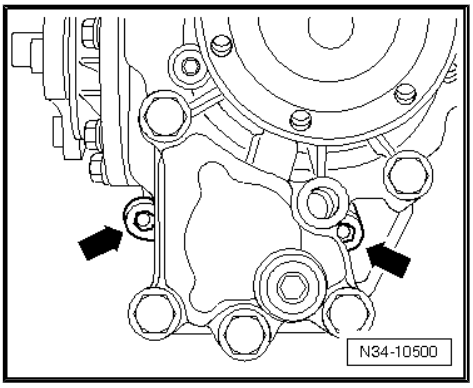
– Fit puller - T 10472- to bevel box.



– Bolt multi-purpose tool - VW 771- onto puller T10472 and loosen bevel box from gearbox.



– Unscrew lower securing bolts -arrows- and remove bevel box.



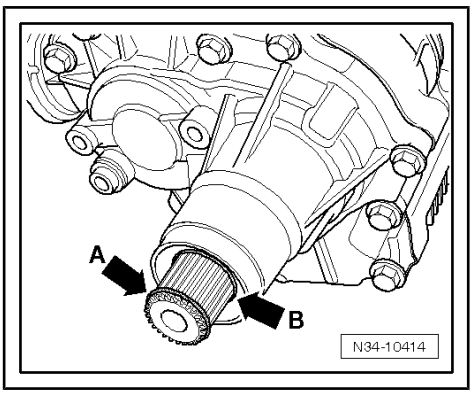
Installing

When installing, note the following:

– Grease splines of differential with grease for clutch plate splines - G 000 100- .

– Install new retaining ring -arrow A- and new O-ring -arrow B- on right stub shaft.

– Insert bevel box and press against gearbox.



Note

Turn stub shaft if spline position is unfavourable (bevel box cannot be pressed to stop against gearbox).

– If splines are correctly positioned and shafts are centred, then bevel box will slide against contact surface on gearbox.

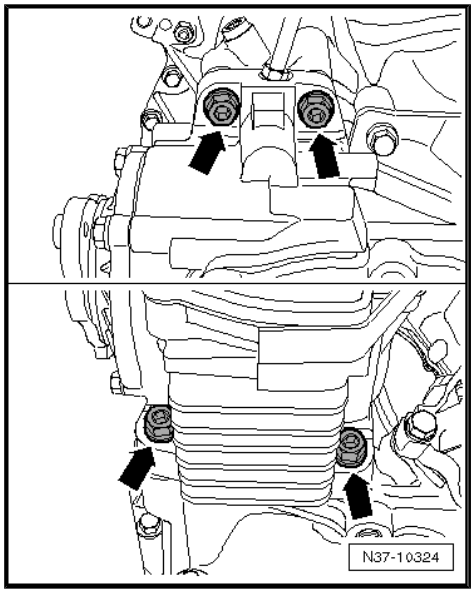
Caution

Retaining ring on stub shaft must engage correctly in differential bevel gear. If retaining ring is not engaged, there is a risk that stub shaft might move outwards.

Also, bevel box is not allowed to be bolted onto gearbox forcefully. Damage to gearbox or bevel box could result in both cases.

– To ensure that the retaining ring engages properly in the differential bevel gear, strike the face of the spline stub several times with a plastic hammer (weight 1000 - 2000 g).

– Screw on bevel box with new bolts -arrows- until finger-tight, then tighten. Specified torque: ⇒ page 82 .
– Installing gearbox ⇒ page 82
– After installing gearbox, check oil level and top up ⇒ page 103 .



11 Oil and oil filter

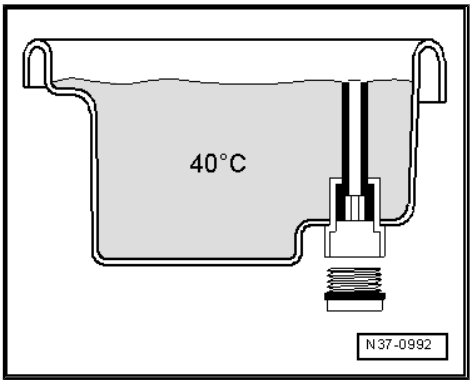
⇒ “11.1 Renewing oil filter”, page 101

⇒ “11.2 Checking oil level and topping up”, page 103

⇒ “11.3 Draining and filling oil”, page 105

Please also follow instructions:

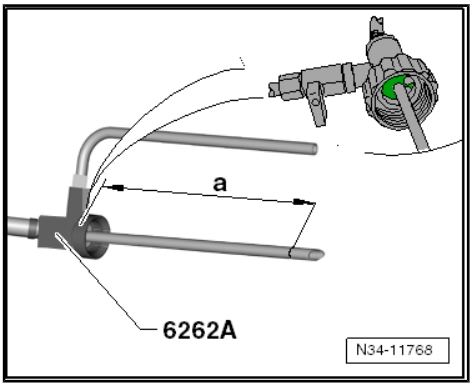
- About this workshop manual ⇒ page 5
- Breather pipe of adapter for oil filling - VAS 6262 A- may need to be shortened.



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

– In order to ensure that the breather pipe of the adapter for oil filling - VAS 6262 A- does not contact the bottom of some oil bottles, the pipe must be shortened to the length -a-.

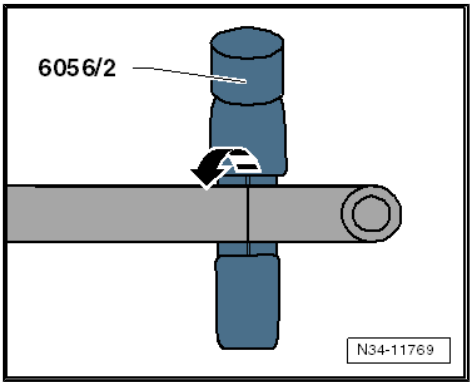
Dimension -a- = 210 mm



Note

The dimension -a- is measured from the shaft (green area in the magnifying glass) of the adapter for oil filling - VAS 6262 A- .

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



11.1 Renewing oil filter

Oil filter change – »yes or no?«

The oil filter does not have to be changed as a matter of course.

Do not change the filter if:

- The gear oil cooler or its O-rings have been renewed and no coolant has got into the oil.
- The oil seal for the selector shaft has been renewed.
- The oil seal for the flange shaft was renewed.
- Leaking covers in the mechatronic unit, dual clutch or oil pump have been renewed.

The filter must be changed if:

- Coolant has got into the oil.
- Metal particles have been found in the oil.
- The clutch is burnt out or has a mechanical defect.

Note

Refer to general repair instructions ⇒ page 6 .

Removing

– Move selector lever to position »P«.

– Remove air filter housing ⇒ Rep. gr. 24 ; Removing and installing air filter .

Only vehicles with diesel engine

– Remove left coolant pipe together with charge air pipe ⇒ Rep. gr. 19 ; Coolant pipes, coolant temperature sender .

Continued for all vehicles

Note

- *A residual amount of oil remains in oil filter. It runs out when filter housing is unscrewed.*
- *Before unscrewing the filter housing, cover the area around the oil filter with a sufficient number of cloths.*

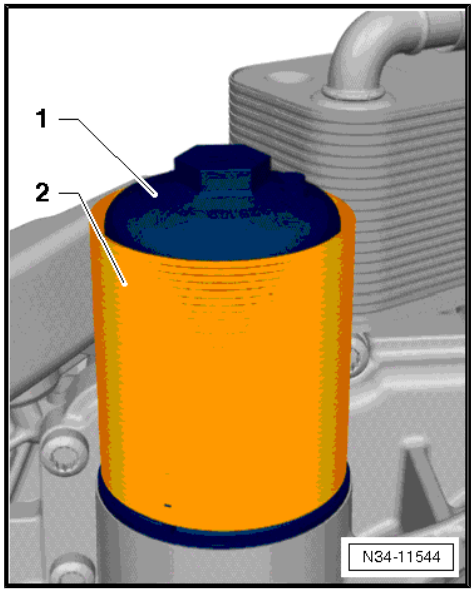
– First loosen filter housing -1- by about 7 turns.

– Wait about 10 seconds.

This allows the oil to flow from filter housing back into gearbox.

– Now remove filter housing with filter.

– Renew missing or damaged heat shield -2-.



Installing

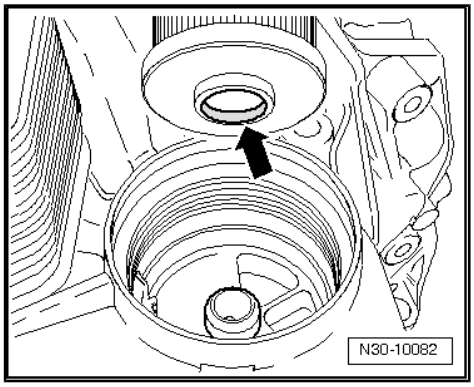
Install in reverse order of removal. During this procedure, observe the following:

– Thoroughly clean oily areas on gearbox.

– Insert new oil filter with collar -arrow- downwards.
– Screw in filter housing and tighten to 20 Nm.

Continue installation in reverse order of removal.

– Check oil level and top up ⇒ page 103 .

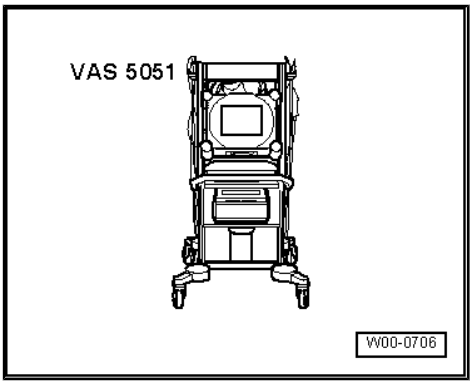


11.2 Checking oil level and topping up

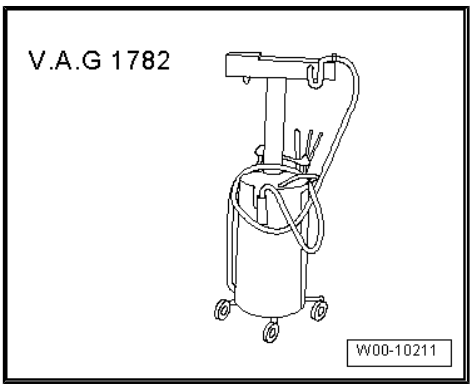
If DSG oil must be added, use only oil listed in ⇒ Electronic parts catalogue "ETKA" .

Special tools and workshop equipment required

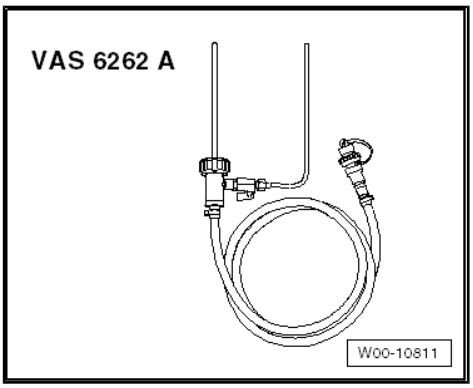
♦ Vehicle diagnosis, testing and information system - VAS 5051B-



♦ Used oil collector and extractor - V.A.G 1782-



♦ Adapter for oil filling - VAS 6262 A-



Conditions

- Vehicle level, all mountings of lifting platform evenly at same height
- Noise insulation removed
- Vehicle diagnosis, testing and information system - VAS 5051B- is connected.
- At start of work, oil temperature must not be above 45°C.
- Test temperature: 35 - 45°C

Check

– Connect vehicle diagnosis, testing and information system - VAS 5051B- and identify the vehicle in `Guided functions`.

– Select `Dual clutch gearbox`.

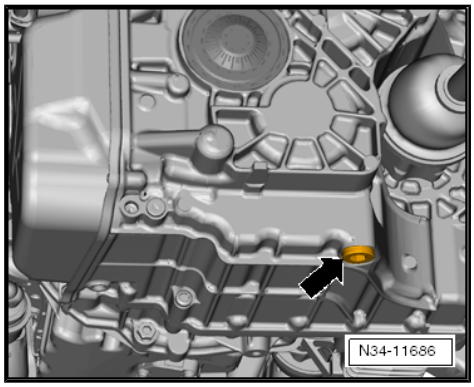
– Select `Check oil level`.

Note

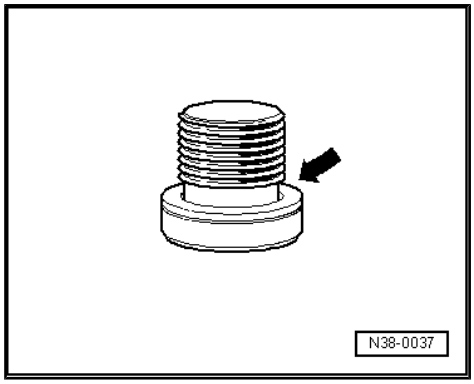
If the oil temperature is above 45°C, allow the gearbox to cool down.

Engine is running at idling speed with selector lever in “P”.

– Remove oil drain plug -arrow-.



– Renew oil seal -arrow- of bolt.



Note

Even if oil level is too low, a small amount of oil will initially run out of oil level pipe because pipe fills up during operation.

– Let surplus oil flow out.

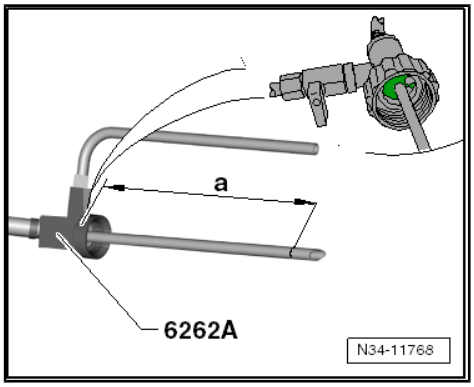
– When excess oil has run out (when it begins only to drip), install plug with new seal.

– Top up oil if no oil flows out.

Topping up

– Before screwing adapter for oil filling - VAS 6262 A- onto oil bottle, measure length of breather pipe, dimension -a- and shorten ⇒ page 101 .

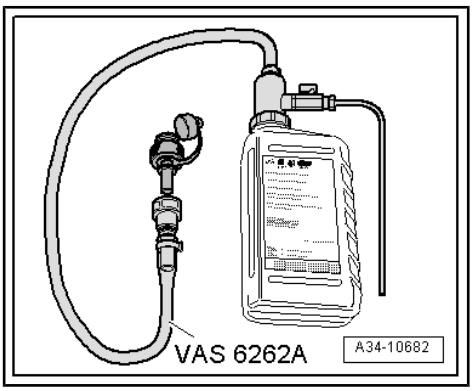
Dimension -a- = 210 mm



Note

The dimension -a- is measured from the shaft (green area in the magnifying glass) of the adapter for oil filling - VAS 6262 A- .

– Screw adapter of adapter for filling oil - VAS 6262 A- hand-tight into inspection hole.



WARNING

Shake bottles thoroughly before opening to ensure that sediment at the bottom of the bottle mixes well with the oil.

– Fill 1.0 litres of oil.

– Pull off adapter for oil filling - VAS 6262- at plug-in connector and check:

If oil now flows out of hole in adapter:

Oil does not need topping up.

– Allow surplus oil to drain out.

– When excess oil has run out (when it begins only to drip), remove adapter for filling oil - VAS 6262 A- and install plug with new seal.

If no oil drips out of inspection hole:

– If a further litre has to be added ⇒ page 103 .

WARNING

An oil level which is too low or too high will impair the function of the gearbox.

Torque setting for drain plug: 45 Nm

11.3 Draining and filling oil

If DSG oil must be added, use only oil listed in ⇒ Electronic parts catalogue “ETKA” .

Please also refer to the notes on the oil filter change regarding »dirty oil« ⇒ page 101 .

Brief description

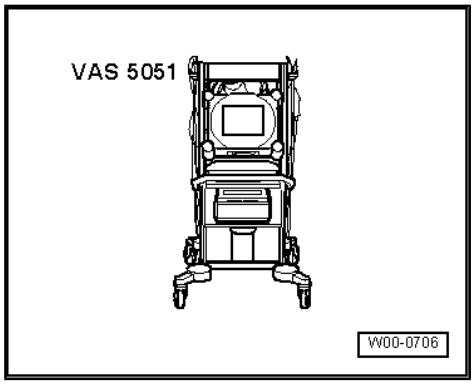
First read the oil temperature. If it is above 50°C, allow the gearbox to cool down.

With engine stopped, unscrew and remove overflow pipe and let the oil drain out. Then reinstall overflow pipe and »overfill« gearbox with oil.

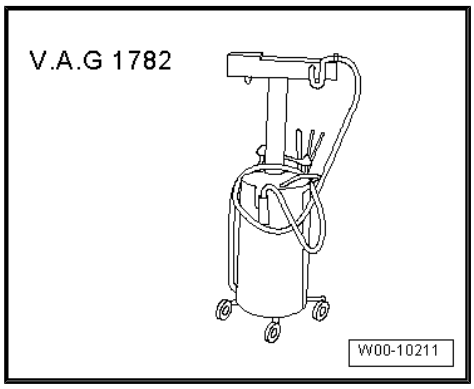
Then start engine and drain excess oil until oil level attains level of overflow pipe.

Special tools and workshop equipment required

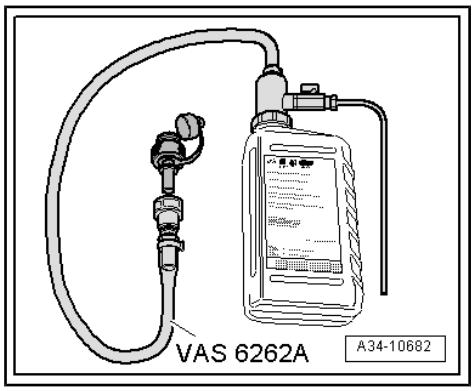
- Vehicle diagnosis, testing and information system - VAS 5051B-



- Used oil collector and extractor - V.A.G 1782-



- Adapter for oil filling - VAS 6262 A-



Conditions

- Engine switched off
- Vehicle level, all mountings of lifting platform evenly at same height
- Noise insulation removed if previously fitted
- Selector lever at “P”
- Vehicle diagnosis, testing and information system - VAS 5051B- is connected.
- At start of work, oil temperature must not be above 45 °C.

Procedure

– Comply with rules for cleanliness when working on gearbox ⇒ page 5 .

– Only gear oil available as spare part is allowed to be used for dual clutch gearbox. Other oils will lead to malfunctions or failure of the gearbox ⇒ Electronic Parts Catalogue (ETKA) .

WARNING

Danger of injury from hot gear oil!

– Connect vehicle diagnosis, testing and information system - VAS 5051B- and identify the vehicle in `Guided functions`.
– Select `Dual clutch gearbox`.
– Select `Check oil level`.

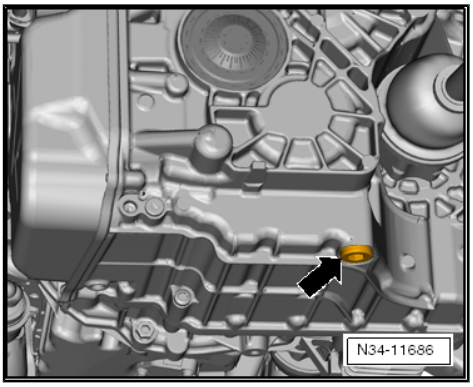
Note

If the oil temperature is higher than 45°C, allow gearbox to cool down.

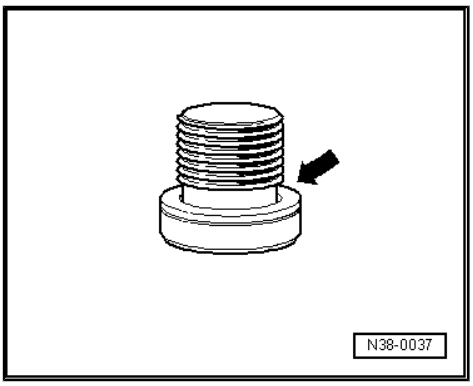
WARNING

Do not start engine if there is no oil in gearbox.

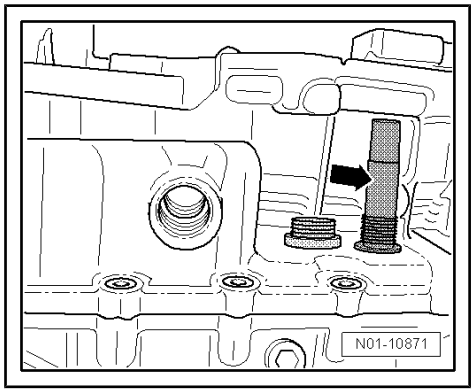
– Engine switched off - do not start engine!
– Remove oil drain plug -arrow-.



– Renew oil seal -arrow- of bolt.



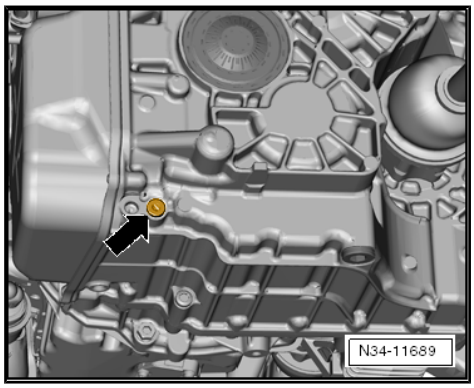
– Remove oil level pipe -arrow- and allow oil to run out.



– Remove oil drain plug -arrow- from mechatronic unit.

Note

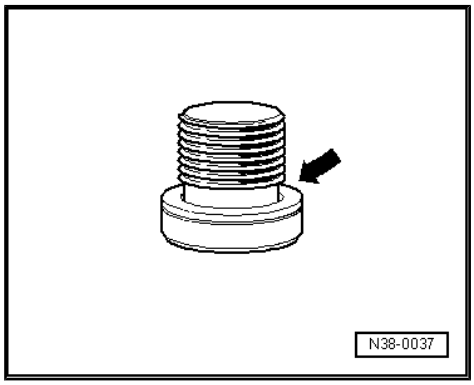
A further approx. 1.2 litres of oil will run out.



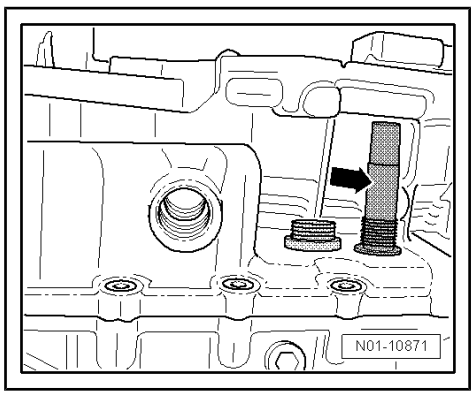
– Renew seal -arrow- and reinstall oil drain plug of mechatronic unit, tightening to 20 Nm.

Note

- *Normally, there is no need to remove oil filter.*
- *Oil filter change "Yes or no?"* ⇒ page 101

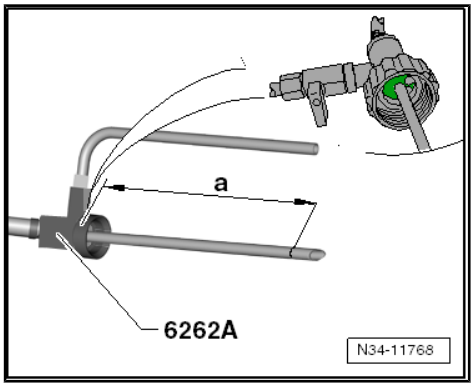


– Screw oil level pipe -arrow- in to stop and tighten to 3 Nm.



– Before screwing adapter for oil filling - VAS 6262 A- onto oil bottle, measure length of breather pipe, dimension -a- and shorten ⇒ page 101 .

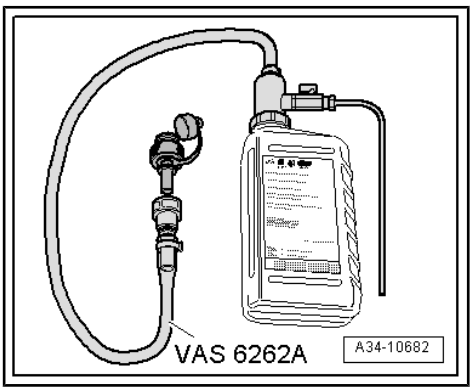
Dimension -a- = 210 mm



Note

The dimension -a- is measured from the shaft (green area in the magnifying glass) of the adapter for oil filling - VAS 6262 A- .

– Screw adapter of adapter for filling oil - VAS 6262 A- hand-tight into inspection hole.



WARNING

Shake bottles thoroughly before opening to ensure that sediment at the bottom of the bottle mixes well with the oil.

During filling, the adapter for oil filling - VAS 6262 A- and bottle must always be held higher than the gearbox.

– Fill 5.5 litres of oil.
– When changing bottles, close tap on adapter.
– Close tap on adapter when 5.5 litres of oil have been added to gearbox.
– Start engine. The adapter for filling oil - VAS 6262 A- may remain connected.
– Depress brake pedal and select each selector lever position for about 3 seconds, then move lever back to »P«
– Do NOT switch off engine.
– Then check oil level and top up. ⇒ page 103

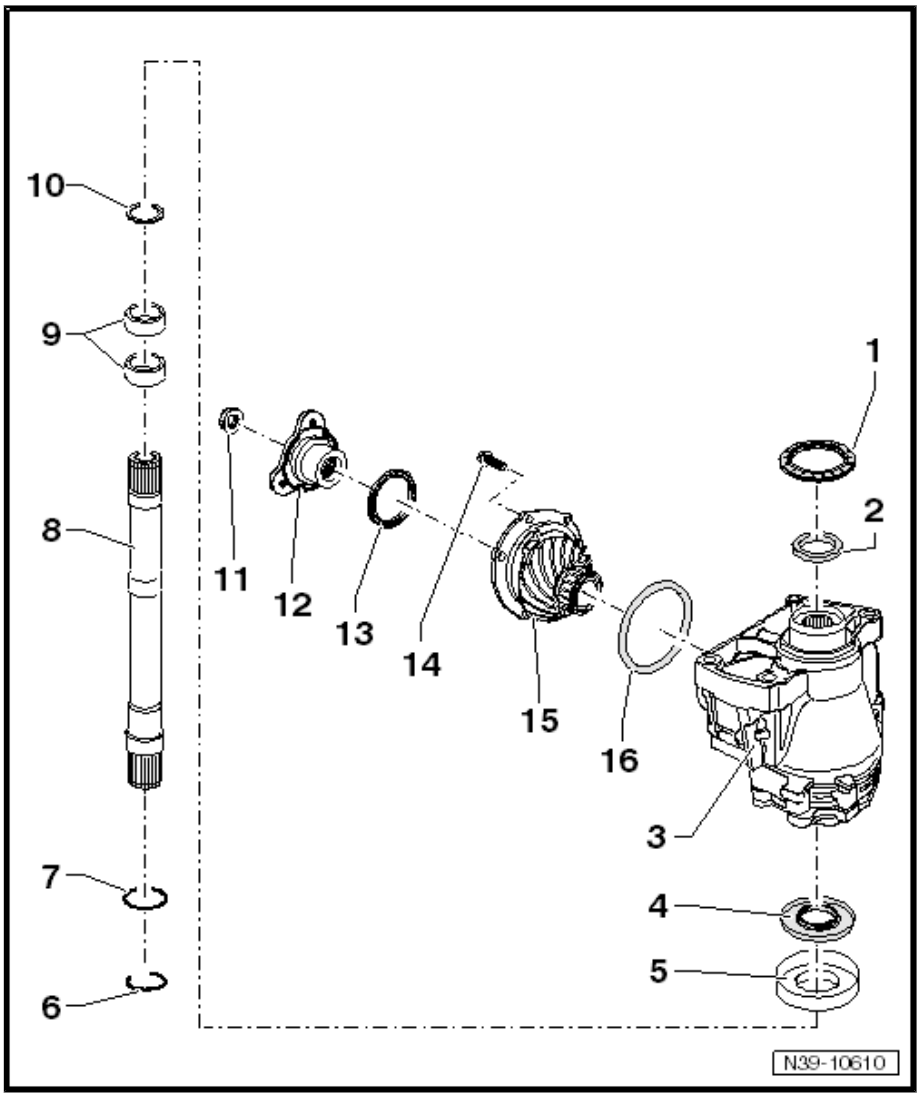
35 – Gears, shafts

1 Currently, no repairs can be made to gears and shafts

39 – Final drive - differential

1 Bevel box

1.1 Assembly overview - bevel box



1 - Outer left seal

- ❑ Between bevel box and gearbox
- ❑ To renew, remove bevel box ⇒ page 87
- ❑ In case of leakage, also renew »inner« seal ⇒ Item 2 (page 111)
- ❑ Renewing ⇒ page 118

2 - Inner left seal

- ❑ Between bevel box and gearbox
- ❑ To renew, remove bevel box ⇒ page 87
- ❑ In case of leakage, also renew »outer« seal ⇒ Item 1 (page 111)
- ❑ Renewing ⇒ page 118

3 - Bevel box

- ❑ Removing and installing ⇒ page 87

4 - Seal

- ❑ Right (drive shaft side)
- ❑ Seal can be renewed with bevel box installed
- ❑ Renewing ⇒ page 121

5 - Cap

- ❑ Right (drive shaft side), if there is one
- ❑ Seal can be renewed with bevel box installed
- ❑ Renewing ⇒ page 121

6 - Retaining ring

- ❑ Always renew
- ❑ Insert in circumferential groove in stub shaft

7 - O-ring

- ❑ Always renew
- ❑ Insert in circumferential groove in stub shaft

8 - Stub shaft

- ❑ To remove and install, remove bevel box ⇒ page 87
- ❑ Removing and installing ⇒ page 128

9 - Needle bearing (polygon bearing)

- ❑ Renewing ⇒ page 128

10 - Retaining ring

- ❑ Always renew

11 - Hexagon nut, 480 Nm

- ❑ Removing and installing ⇒ page 123
- ❑ Install using locking fluid - D 000 600-

12 - Output flange

- ❑ Removing and installing ⇒ page 123

13 - Seal

- ❑ To renew, remove bevel box ⇒ page 87
- ❑ Renewing ⇒ page 123

14 - Bolt, 25 Nm

- ❑ Tighten diagonally and alternately

15 - Pinion housing

- ❑ With shaft bevel gear
- ❑ Pinion housing fits only in one position.
- ❑ Installing: place pinion housing loosely on bevel box, screw in all bolts by hand, screw in alternately until heads contact casing and then tighten bolts alternately

16 - O-ring

- ❑ To renew, unscrew bolts ⇒ Item 14 (page 112) and carefully lever off pinion housing at projecting webs on outside edge
- ❑ Do not remove hexagon nut ⇒ Item 11 (page 112) and output flange ⇒ Item 12 (page 112)

2 Overview of fitting locations - seals

1 - Stub shaft O-ring
- ❑ Renew

2 - Seal right, bevel box
- ❑ Removing and installing ⇒ page 121

3 - Stub shaft

4 - Right oil seal, stub shaft
- ❑ Item can be disregarded

5 - Output shaft seal
- ❑ Removing and installing ⇒ page 123

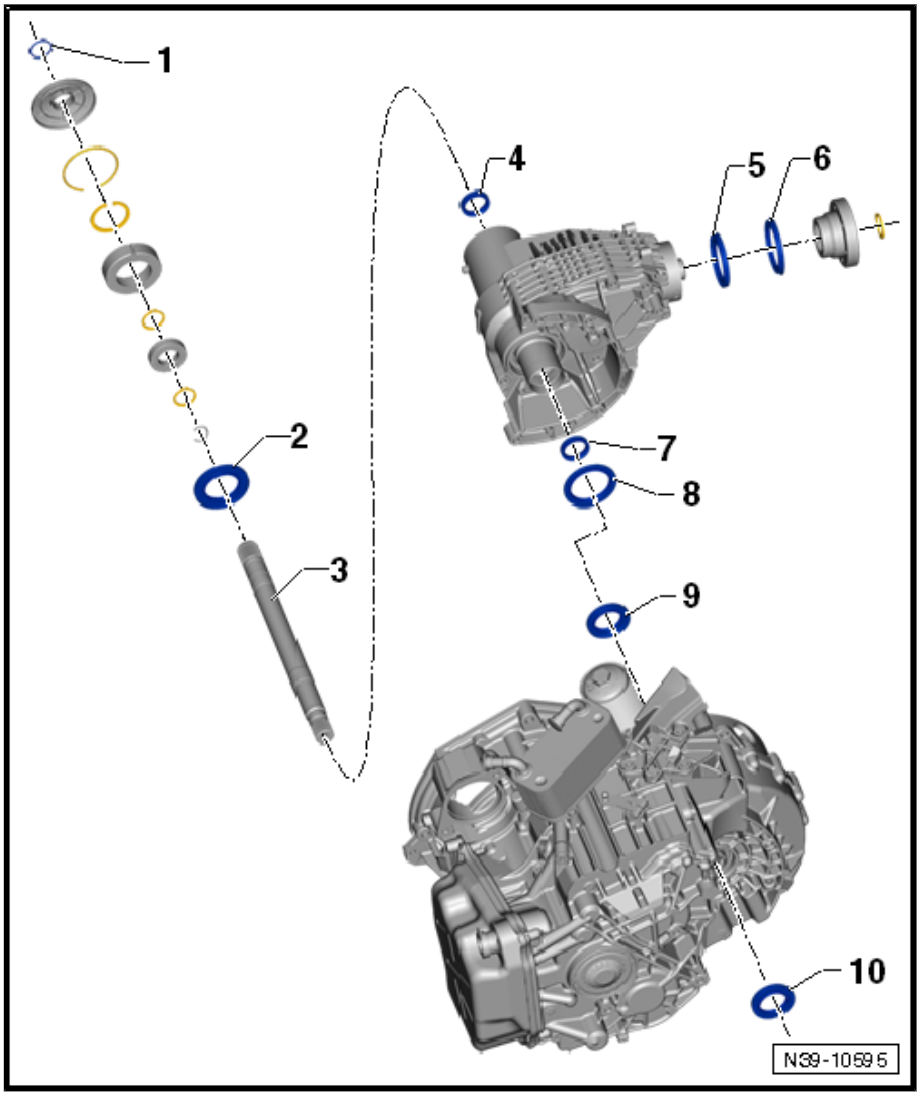
6 - Deflector ring
- ❑ Item can be disregarded

7 - Left oil seal, stub shaft
- ❑ Removing and installing ⇒ page 119

8 - Seal left, bevel box
- ❑ Removing and installing ⇒ page 119

9 - Seal, right
- ❑ Removing and installing ⇒ page 116

10 - Seal, left
- ❑ Removing and installing ⇒ page 114



3 Renewing seals on gearbox

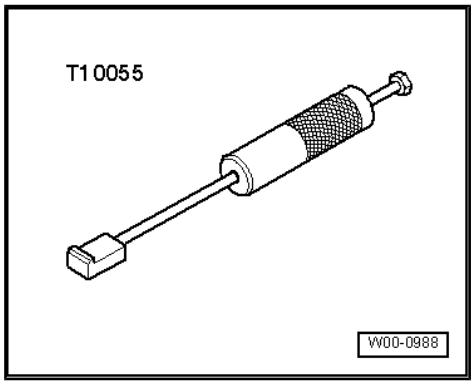
⇒ “3.1 Renewing oil seal for left flange shaft”, page 114

⇒ “3.2 Renewing right seal (between gearbox and bevel box) on gearbox”, page 116

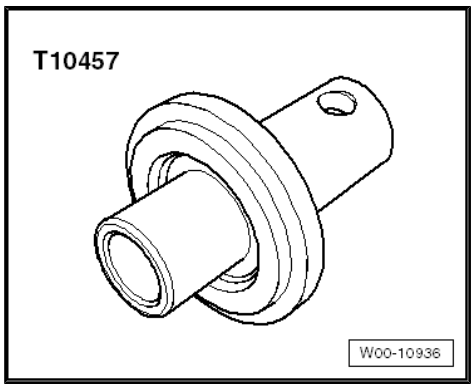
3.1 Renewing oil seal for left flange shaft

Special tools and workshop equipment required

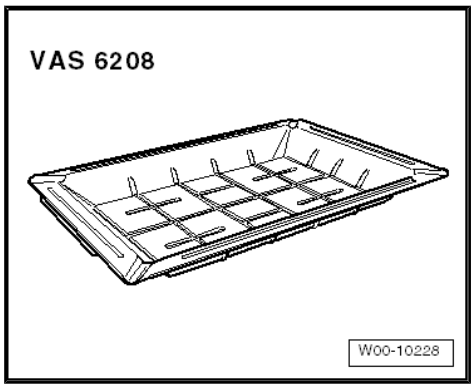
- Puller - T10055-



- Thrust piece - T10457-



- Drip tray for workshop hoist - VAS 6208-



- Electric drill, commercially available

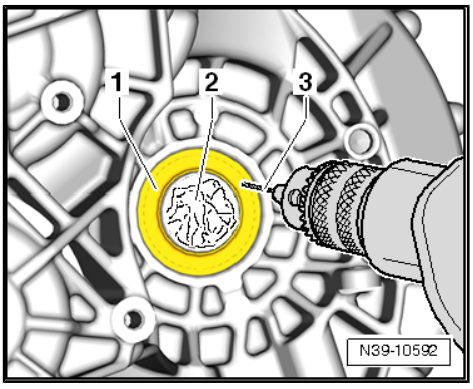
Removing

– Remove left drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Front suspension, drive shaft; Drive shafts .

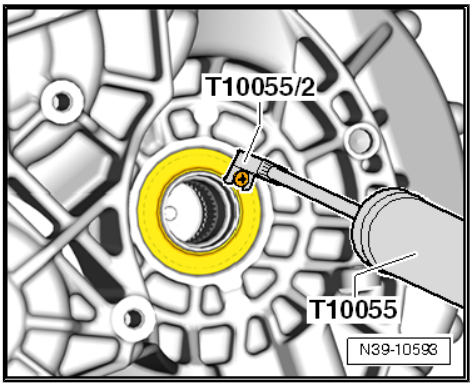
Note

Only drill through sheet metal ring (about 3 mm), otherwise bearing located behind it might be damaged.

– Grease drill bit -3- so that metal chips adhere to it.
– Seal drive shaft aperture on transmission with a clean cloth -2-.
– Carefully drill a hole with a drill bit -3- (diameter 2 to 4 mm) into outer sheet metal ring -1- of oil seal.



– Screw a self-tapping screw, approx. 4 mm in diameter, into hole drilled in oil seal. Do not screw in sheet metal screw too far to avoid damaging bearing behind it.
– Place drip tray for workshop hoist - VAS 6208- below gearbox.
– Pull out oil seal using puller - T10055- and adapter - T10055/2- .



Make sure no metal chips get into gearbox and into opening for drive shaft. Vacuum out metal chips first if necessary.

– Carefully remove cloths and make sure that no metal chips get into gearbox.
– Carefully clean gearbox and opening for drive shaft.

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

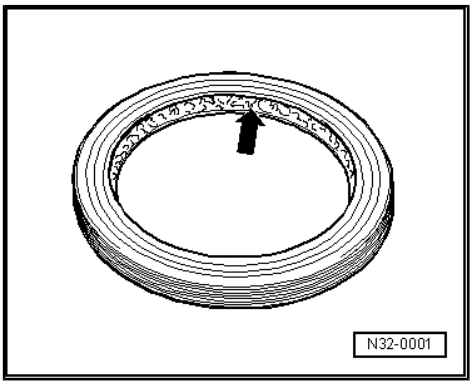
Installing

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

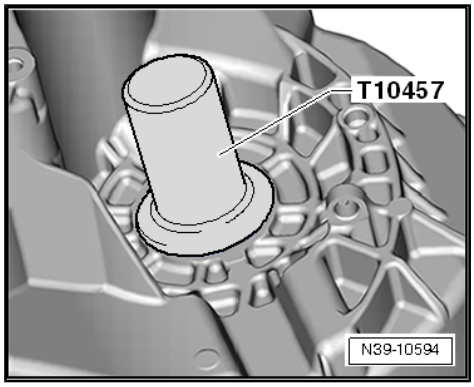
Before seal is installed, apply sealing grease for radial oil seal - G 052 128 A1- to sealing lips and cavity, and apply ⇒ DSG oil to outer circumference.

Installation position:

Open side of oil seal faces gearbox.



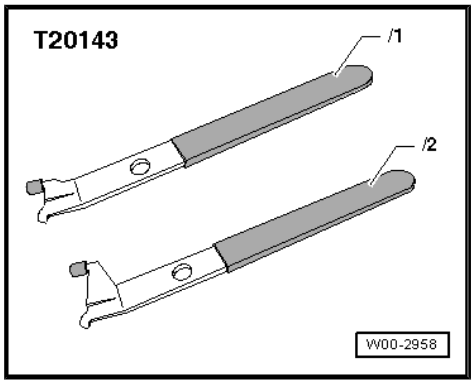
– Drive oil seal in to stop with thrust piece - T10457- . Do not cant oil seal in the process.
– Grease splines of stub shaft with universal grease - G 060 735 A2- .
– Install left drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Front suspension, drive shaft; Drive shafts .
– Check oil level and top up ⇒ page 103 .



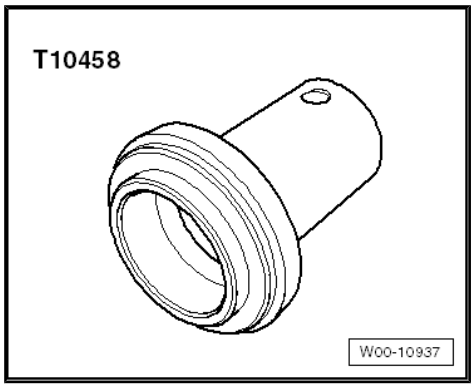
3.2 Renewing right seal (between gearbox and bevel box) on gearbox

Special tools and workshop equipment required

♦ Extractor hooks -T20143-



♦ Thrust piece - T10458-



Removing

– Remove bevel box ⇒ page 87 .
– Lever out seal on gearbox using puller hook - T20143/1- or - T20143/2- .

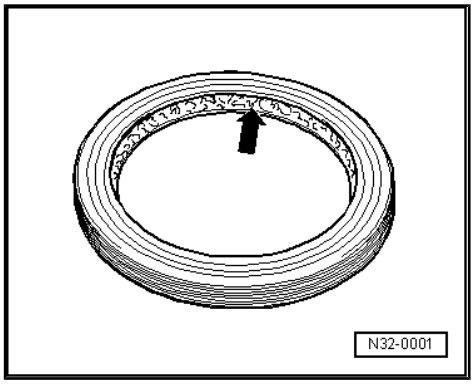
Installing

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

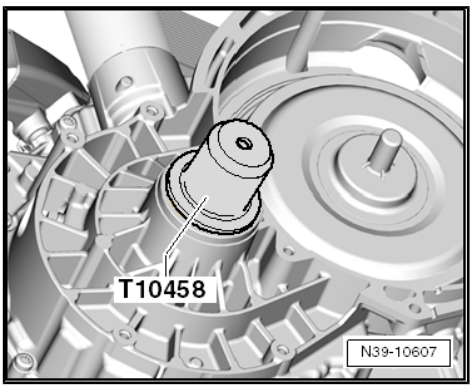
Before seal is installed, apply sealing grease for radial oil seal - G 052 128 A1- to sealing lips and cavity, and apply ⇒ DSG oil to outer circumference.

Installation position:

Open side of oil seal faces gearbox.



– Drive oil seal in to stop with thrust piece - T10458- . Do not cant oil seal in the process.
– Install bevel box ⇒ page 87 .
– Check oil level and top up ⇒ page 103 .



4 Renewing seals on bevel box

Note

Bevel box is usually removed to renew seals ⇒ page 111 . In this case examine all seals carefully and renew any that are defective.

⇒ “4.1 Renewing seals on left (between bevel box and gearbox)”, page 119

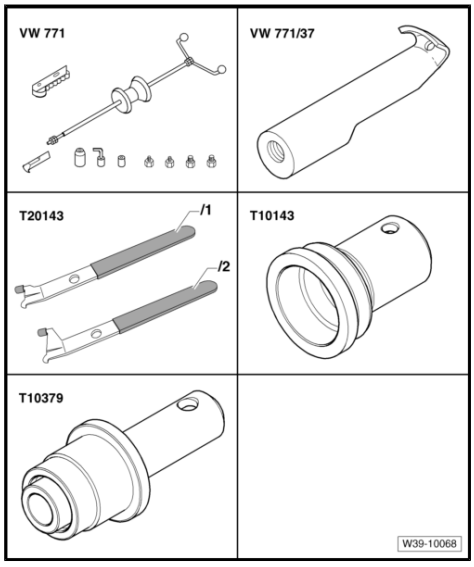
⇒ “4.2 Renewing right seal (drive shaft side)”, page 121

⇒ “4.3 Renewing output flange oil seal (bevel box removed)”, page 123

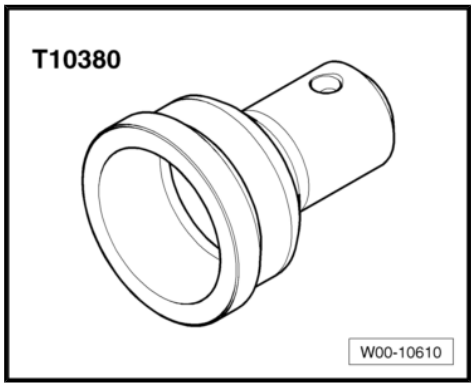
⇒ “4.4 Renewing needle bearing (polygon bearing) for stub shaft”, page 128

Special tools and workshop equipment required

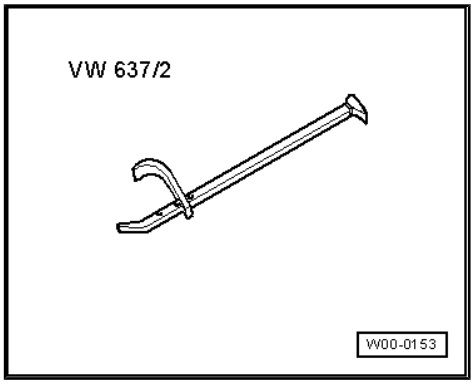
- Multi-purpose tool - VW 771- and multi-purpose tool - VW 771/37-
- Extractor hook - T20143-
- Thrust piece - T10143-
- Thrust piece - T10379-



- Thrust piece -T10380-



♦ Hub grease cap puller - VW 637/2-



4.1 Renewing seals on left (between bevel box and gearbox)

Note

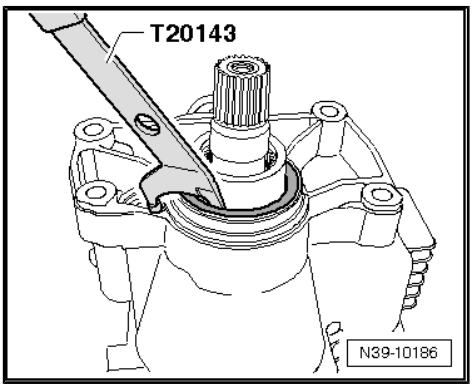
Seals (Qty. 2) can be renewed only with bevel box removed. Always renew both seals.

Removing

– Remove bevel box ⇒ page 87 .

Remove »outer« seal.

– Lever out seal using puller hook - T20143/2- .



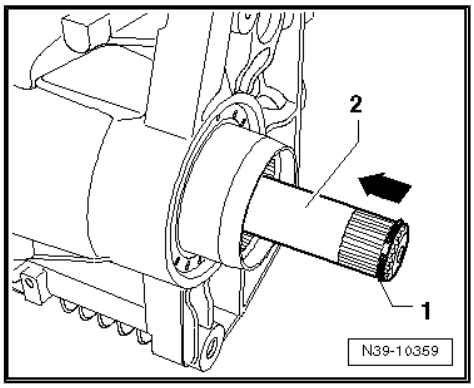
Remove »inner« seal.

Note

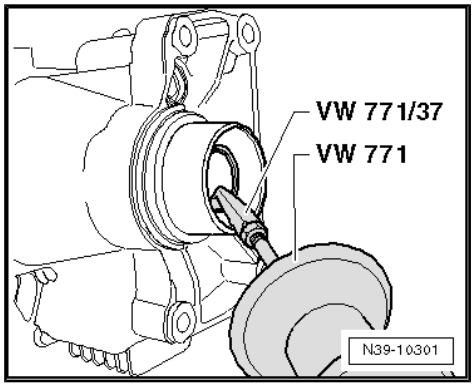
So that new seal will not be damaged later on:

– Remove retaining ring -1- from stub shaft.

– Carefully use plastic mallet -2- to drive stub shaft out in direction of arrow.



– Pull out seal for stub shaft on gearbox side.

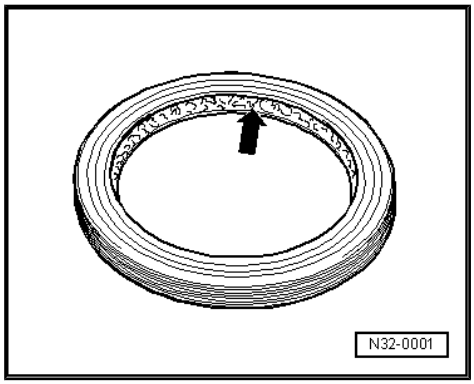


Installing

Drive in »outer« seal.

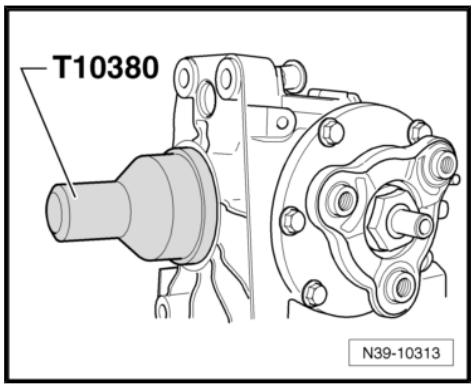
– Half-fill space between sealing lip and dust lip of new seal -arrow- with sealing grease - G 052 128 A1- .

– Lightly oil outer circumference of new oil seal.



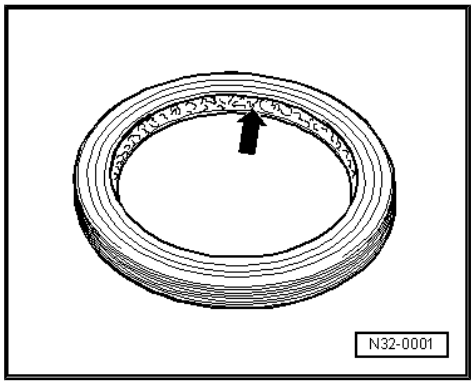
– Drive in seal to stop.

Drive in »inner« seal.

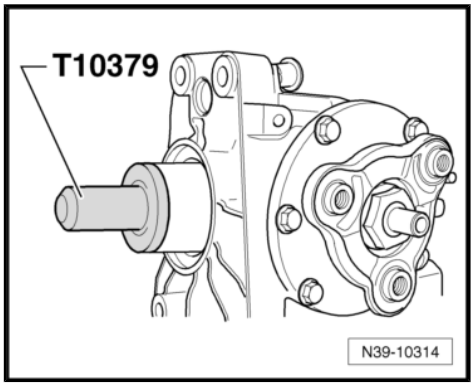


– Half-fill space between sealing lip and dust lip of new seal -arrow- with sealing grease - G 052 128 A1- .

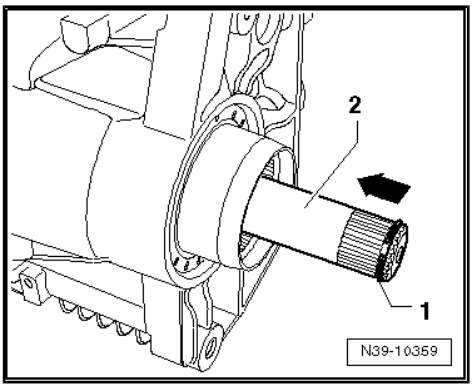
– Lightly oil outer circumference of new oil seal.



– Drive in seal to stop.
– Carefully use plastic mallet to drive in stub shaft to stop.



– Fit new retaining ring -1- on stub shaft.
– Install bevel box ⇒ page 87 .
– Check gear oil in bevel box ⇒ page 132 .



4.2 Renewing right seal (drive shaft side)

Note

Seal can be renewed with bevel box installed.

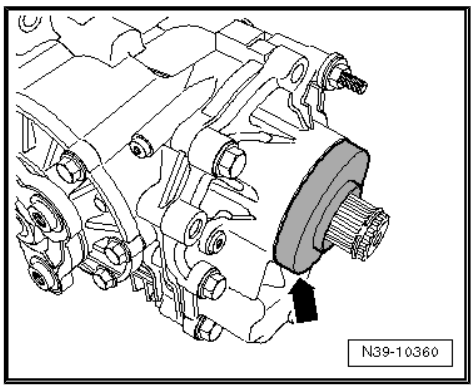
Removing

– Raise vehicle.
– Remove noise insulation located beneath engine/gearbox ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .
– Remove right drive shaft. ⇒ Running gear, axles, steering; Rep. gr. 40 ; Removing and installing drive shafts .

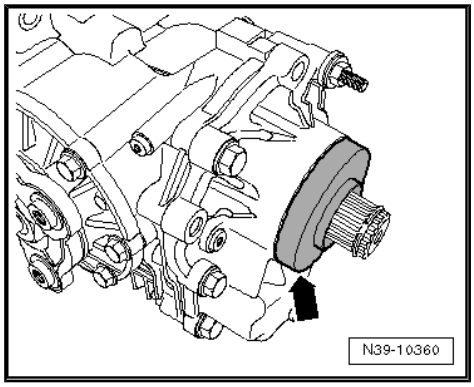
Note

Some bevel boxes have protective cap -arrow- installed on right. Renew protective cap each time after removing.

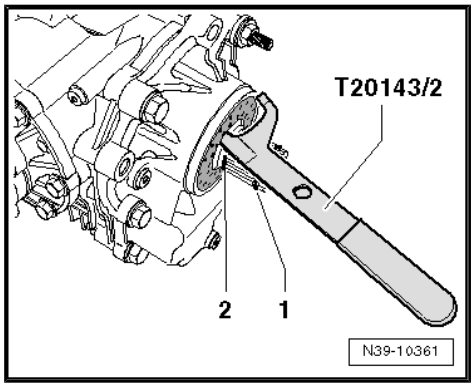
Pull off protective cap.



– Position hub grease cap puller - VW 637/2- in recess -arrow- and lever off protective cap.

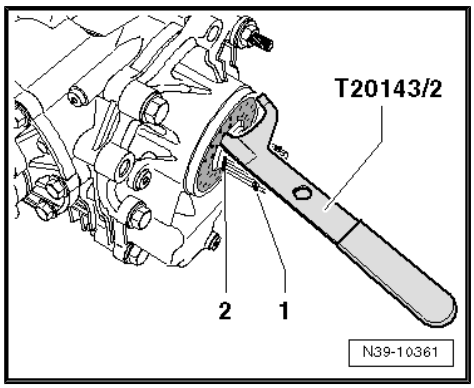


– Remove retaining ring -1- and seal -2- from stub shaft.
– Place drip tray under bevel box.

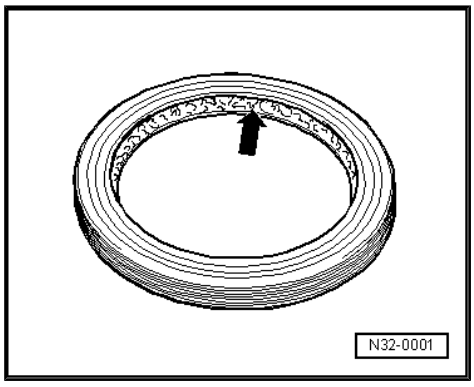


Lever out seal.

Installing

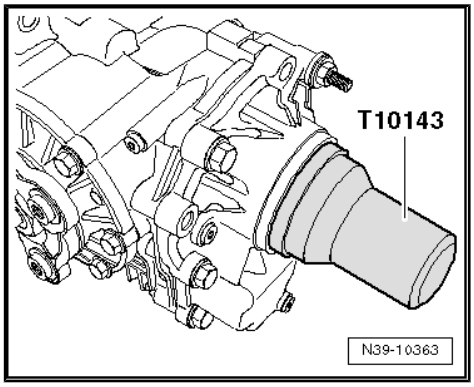


– Half-fill space between sealing lip and dust lip of new seal -arrow- with sealing grease - G 052 128 A1- .
– Lightly oil outer circumference of new oil seal.

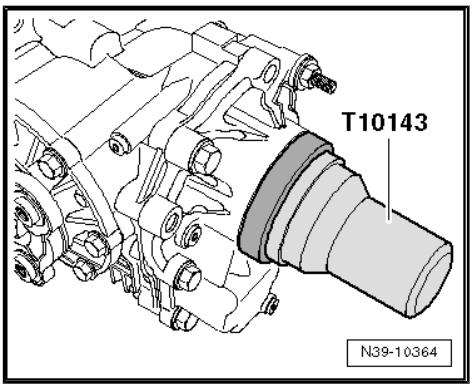


– Drive in seal to stop.
– Fit new retaining ring and new seal on stub shaft.

Bevel box with protective cap



– Drive on new protective cap to stop.
– Check gear oil in bevel box ⇒ page 132 .
– Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Removing and installing drive shafts .

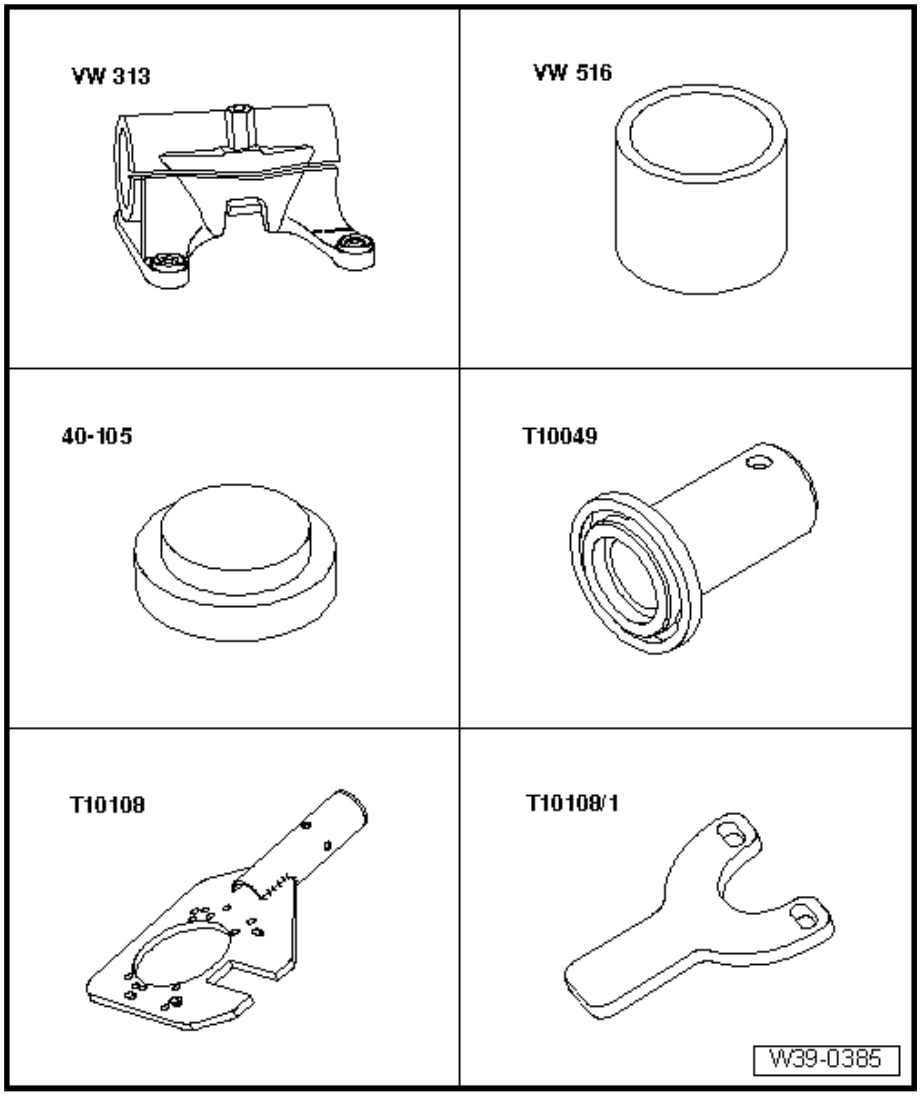


4.3 Renewing output flange oil seal (bevel box removed)

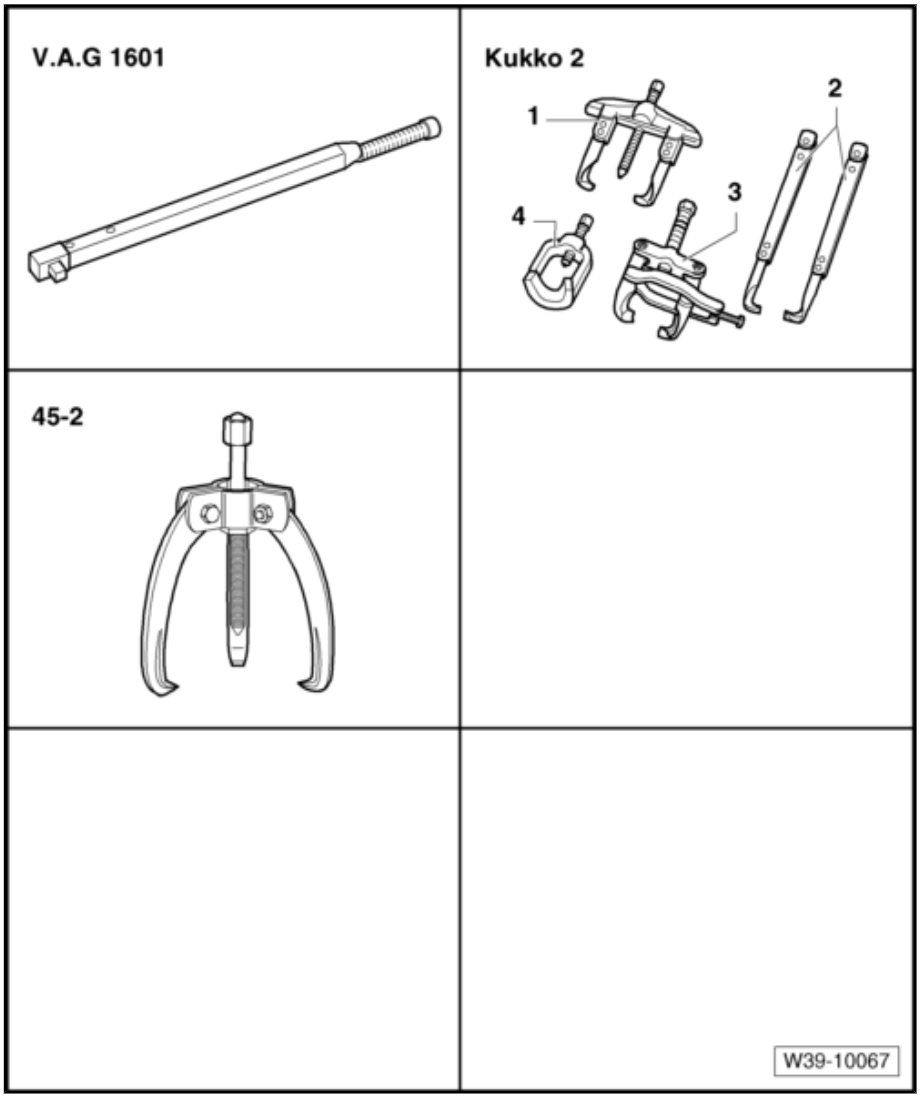
Note

Seal can be renewed only with bevel box removed.

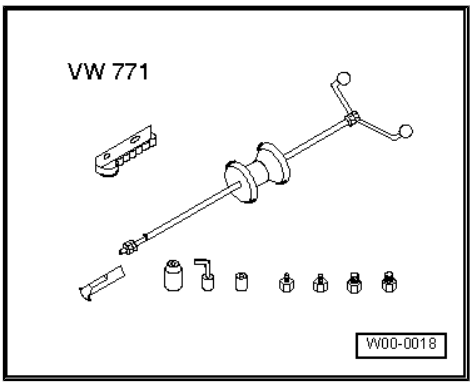
Special tools and workshop equipment required



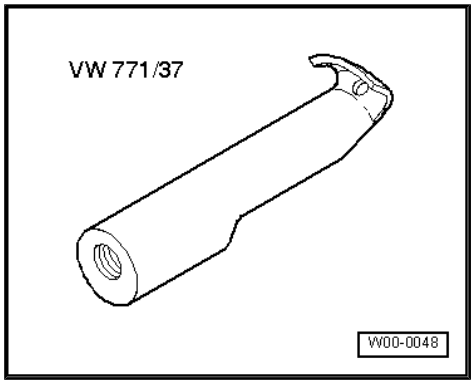
- Support clamp - VW 313-
- Tube - VW 516-
- Thrust plate - 40-105-
- Thrust piece - T10049-
- Gearbox support - T10108-
- Support plate - T10108/1-



- Torque wrench - V.A.G 1601-
- -1- Two-arm puller - Kukko 20/10-
- Three-arm puller - Kukko 45-2-
- Multipurpose tool - VW 771-



♦ Extractor hook - VW 771/37-



♦ Sealing grease - G 052 128 A1-

♦ 2 bolts M10 x 30

♦ 4 nuts M12 x 10

Removing

– Remove bevel box ⇒ page 87 .

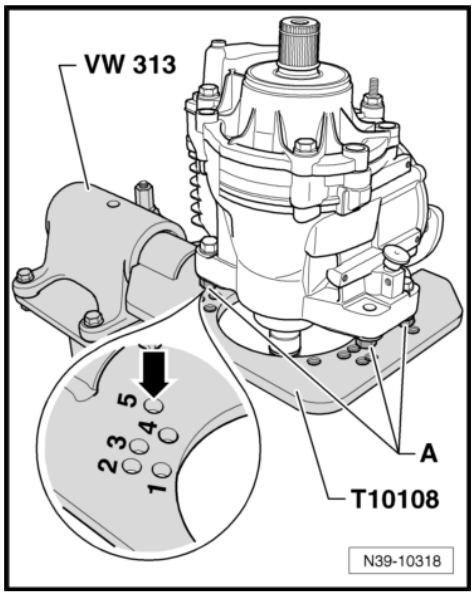
– Set bevel box in gearbox support - T10108- on hole -arrow- marked with the number -5-.

A - Lay nuts M12 x 10 (qty. 4) between bevel box and gearbox support . Nuts function as spacers.

– Then align bevel box with hole opposite and secure.

– Place drip tray for workshop hoist - VAS 6208- underneath.

– Drain oil from bevel box.

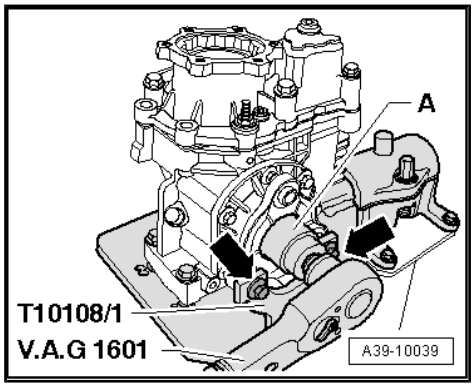


– Lock bevel box output flange with stop plate - T10108/1- , screwing in M 10 x 30 bolts -arrows-.

– Unscrew hexagon nut for output flange.

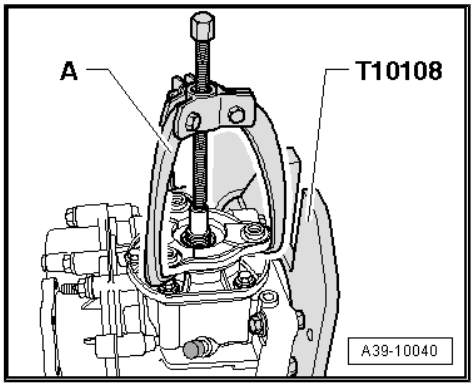
A - 36 mm socket for 3/4" drive

– Swing bevel box so that output flange points upwards.



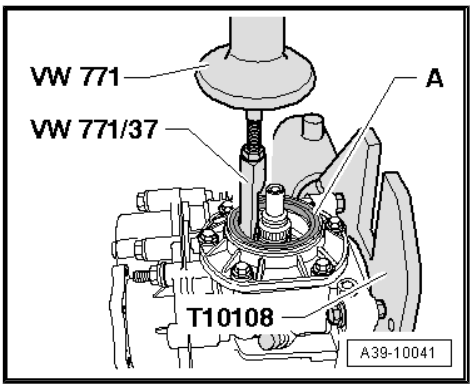
– Pull output flange off shaft bevel gear of bevel box.

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

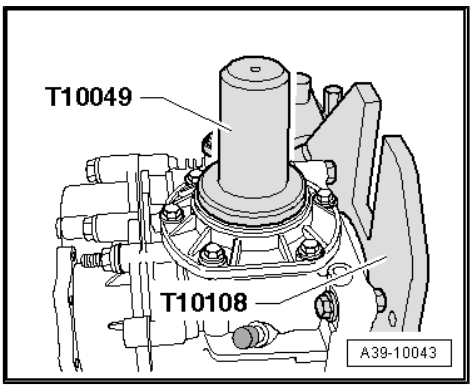


– Pull out seal -A- for output flange.
– Clean residual locking fluid from thread of shaft bevel gear.

Installing



– Drive in new oil seal to stop using thrust piece - T10049- .
– Half-fill space between sealing lip and dust lip with sealing grease - G 052 128 A1- .

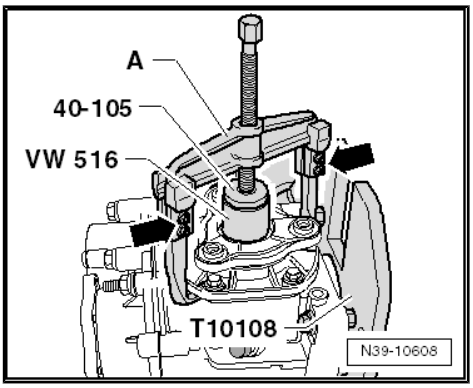


– Pull in output flange using two arm puller -A-.

A - Two-arm puller , e.g. -Kukko 20/10-

Please note the following:

- Use new or nearly new puller hooks!
- The output flange must not be canted.
- Fit puller hooks as far as they will go onto underside of pinion housing.
- Take up slack on puller hooks fully with two arm puller -arrows-.
- Puller hooks should not bend outwards.
- If necessary, halt pulling process, pull off output flange again and restart pulling process.

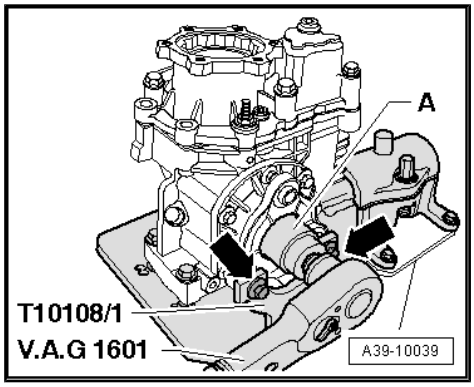


– Coat thread of new hexagon nut with locking fluid D 000 600.
– Tightening new hexagon nut for output flange to specified torque.

Specified torque: ⇒ Item 11 (page 112)

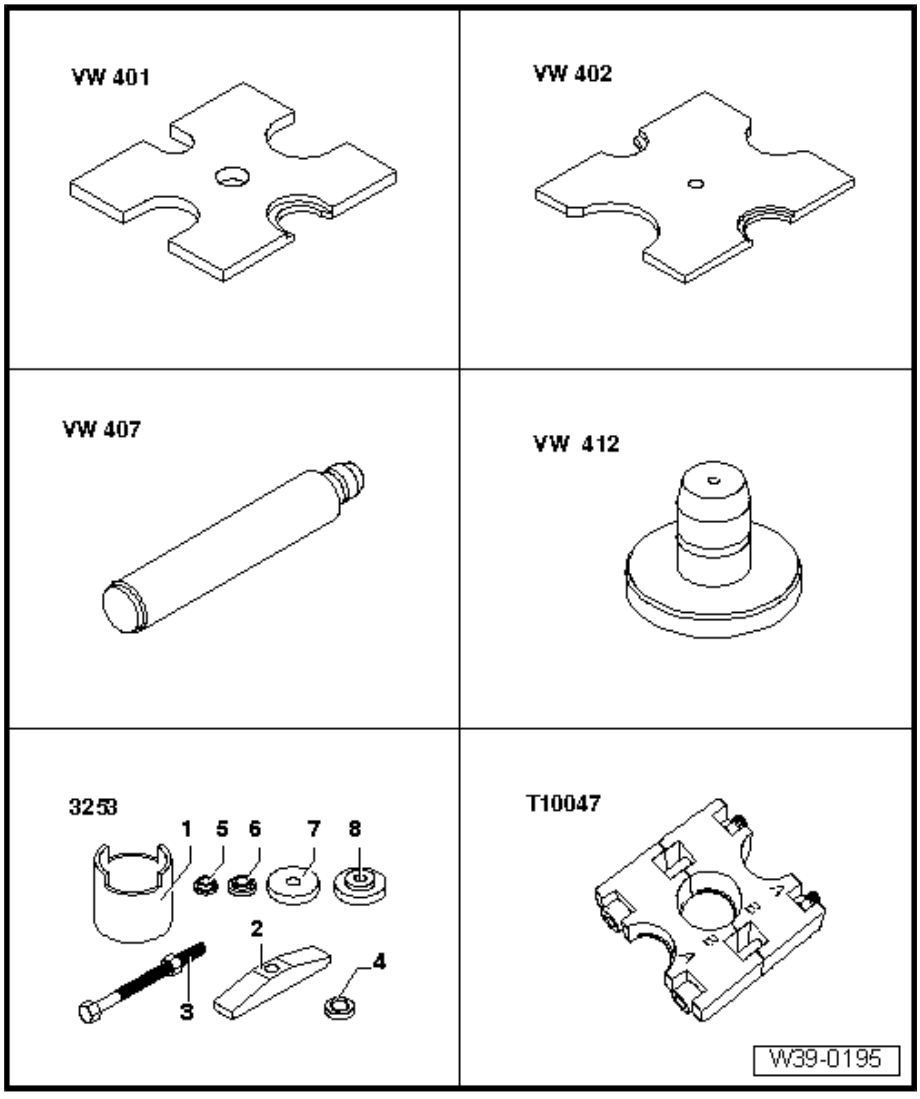
A - 36 mm socket for 3/4" drive

– Install bevel box ⇒ page 87 .
– Check gear oil in bevel box ⇒ page 132 .



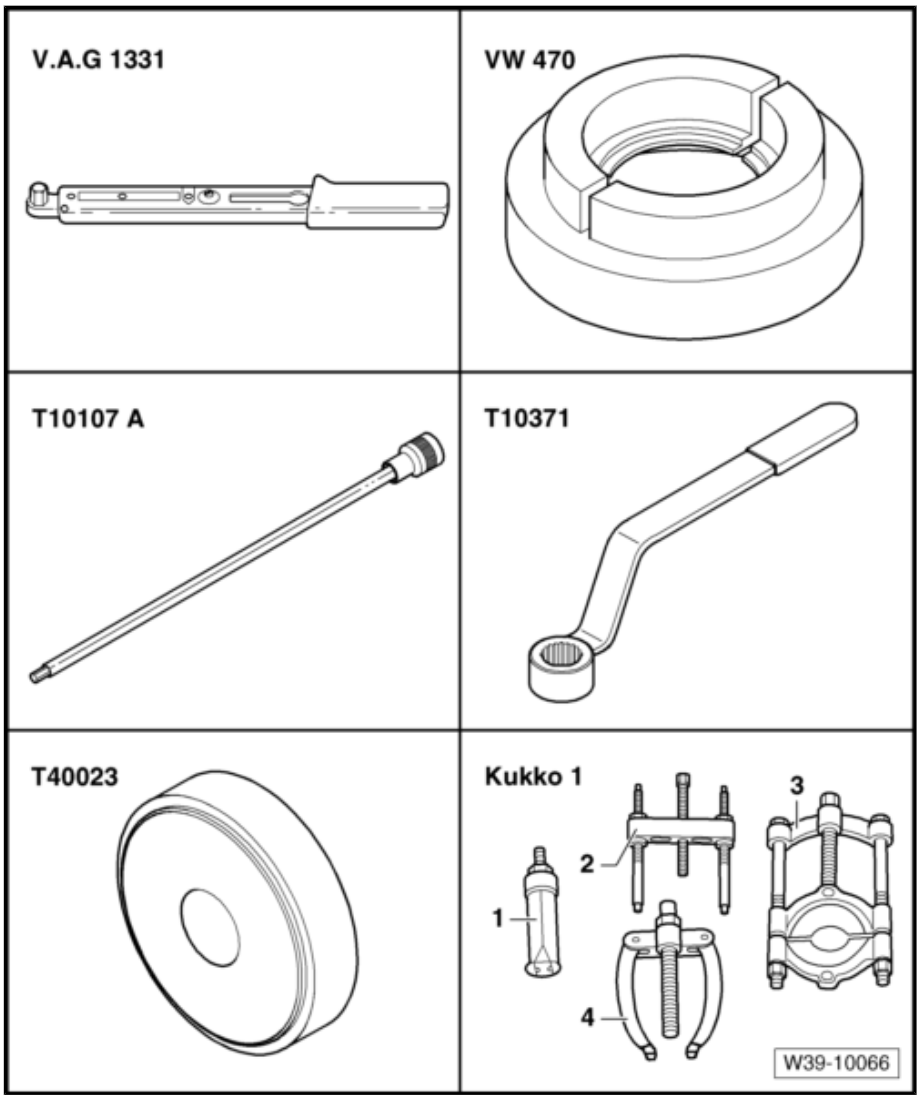
4.4 Renewing needle bearing (polygon bearing) for stub shaft

Special tools and workshop equipment required



- Pressure plate - VW 401-
- Pressure plate - VW 402-
- Press tool - VW 407-
- Press tool - VW 412-
- Assembly tool - 3253/5-

- Tensioning device - T10047-



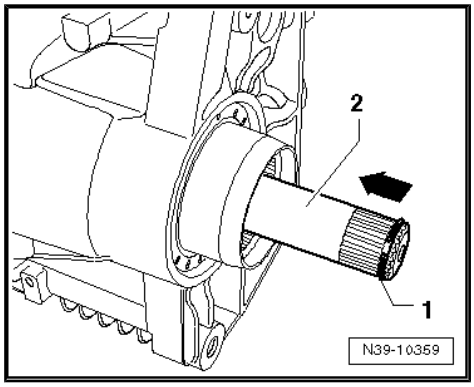
- Torque wrench - V.A.G 1331-
- Thrust pieces for drive pinion bearing - VW 470-
- Socket insert - T10107 A-
- Thrust piece - T40023-
- -3- splitter 2275 mm , e.g. -Kukko 17/1-

Removing

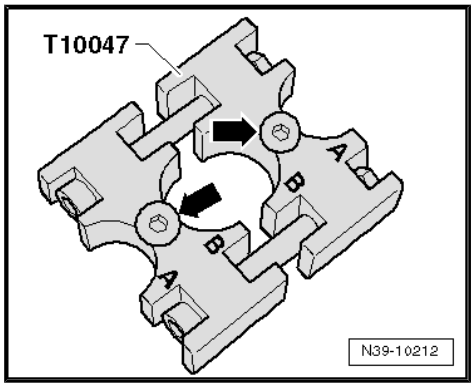
– Remove noise insulation below engine and gearbox. ⇒ General body repairs, exterior; Rep. gr. 66

– Remove bevel box ⇒ page 87 .

– Remove retaining ring -1- from stub shaft.
– Carefully use plastic mallet -2- to drive stub shaft out in direction of arrow.

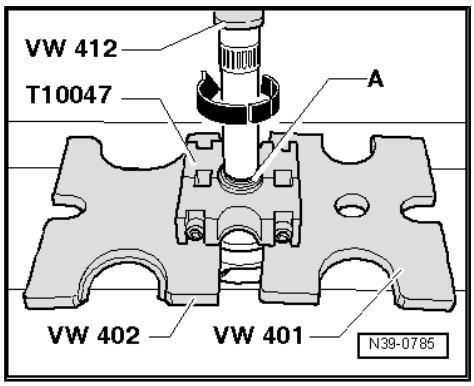


– Align both parts of tool so that marks “B” are opposite one another.
– The shoulders -arrows- must then be below the bearing.
– Now screw both halves together to stop.

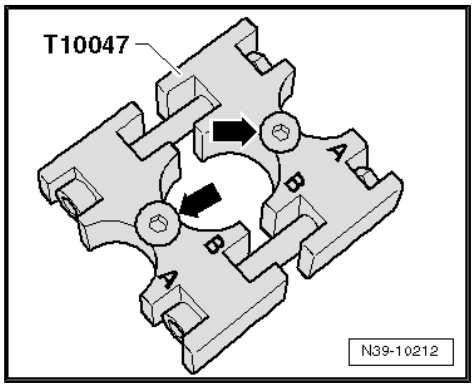


– Lever off retaining ring -A- for needle bearing.
– To avoid damage to running surface of bearing on shaft, turn shaft during pressing procedure -arrow-.

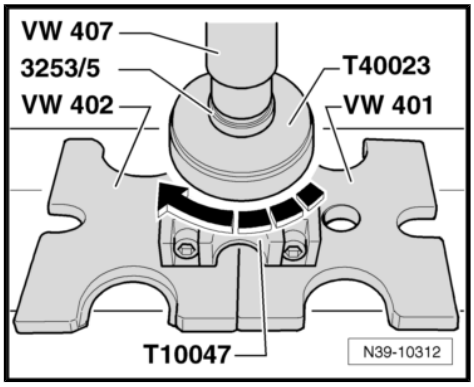
Installing



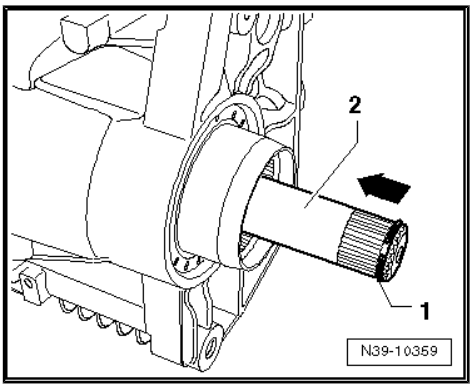
– Align both parts of tool so that marks “B” are opposite one another.



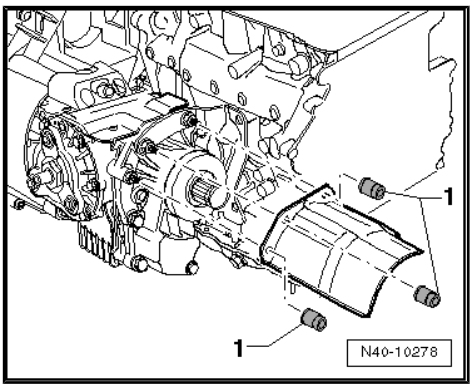
– To avoid damage to running surface of bearing on shaft, turn shaft during pressing procedure -arrow-.
– Secure needle bearing with a new retaining ring.
– Carefully use plastic mallet to drive in stub shaft to stop.



– Fit new retaining ring -1- on stub shaft.
– Install right drive shaft ⇒ Running gear - front and four wheel drive; Rep. gr. 40 ; Removing and installing drive shafts .



– Install heat shield. Torque setting ⇒ Running gear, axles, steering; Rep. gr. 40 ; Repairing drive shafts .
– Install bevel box ⇒ page 87 .
– Check oil level in bevel box ⇒ page 132 .
– Install noise insulation. ⇒ General body repairs, exterior; Rep. gr. 66



5 Checking and topping up gear oil in bevel box

Bevel box is bolted to side of gearbox and has its own oil supply.

Gear oil specification for bevel boxes ⇒ Electronic parts catalogue “ETKA” .

5.1 Checking gear oil in bevel box

Requirement

- Bevel box must be in installation position.

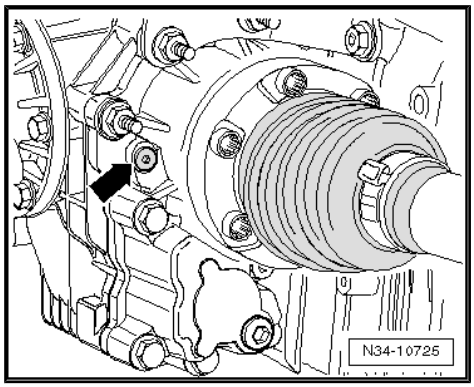
– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

– Place drip tray for workshop hoist - VAS 6208- underneath.

Note

Cover area beneath oil filler plug -arrow- with a cloth.

– Remove oil filler plug -arrow- from bevel box.



Oil filler plug -arrow- must be renewed.

Oil level is correct when bevel box is filled to lower edge of filler hole.

If oil should get on bevel box, carefully remove it.

– Top up gear oil if necessary ⇒ page 132 .

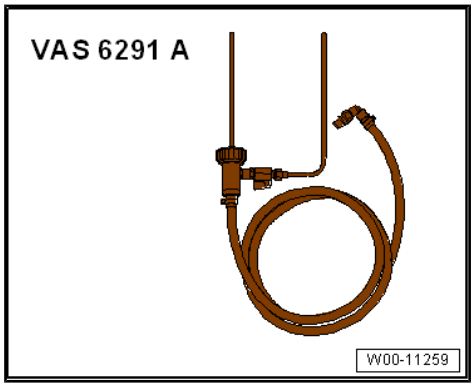
– Screw in new oil filler plug -arrow-.

– Tighten bolt to specified torque ⇒ page 134 .

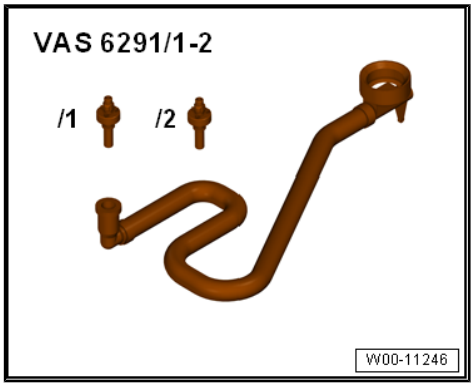
5.2 Filling gear oil in bevel box

Special tools and workshop equipment required

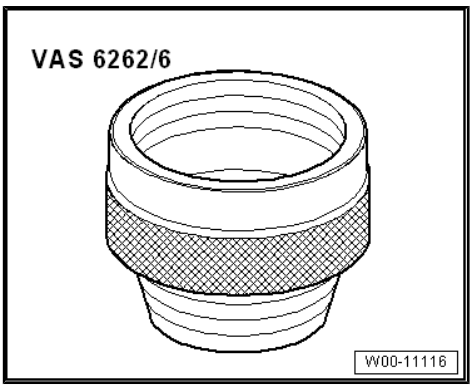
♦ Filling device - VAS 6291 A-



♦ Adapter - VAS 6291/2-



♦ For some oil bottles adapter - VAS 6262/6- must be used as well.



♦ Not illustrated: Torque wrench - V.A.G 1331-

Requirement

- Vehicle is level.

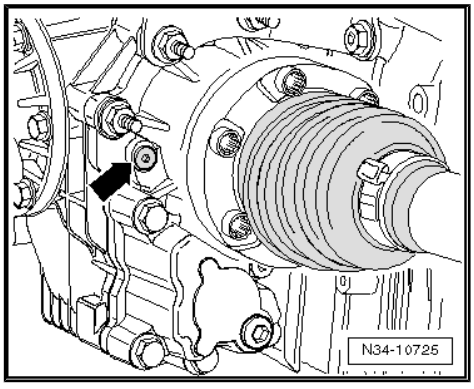
– Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .

– If fitted, remove right drive shaft heat shield from bevel box -arrows- ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

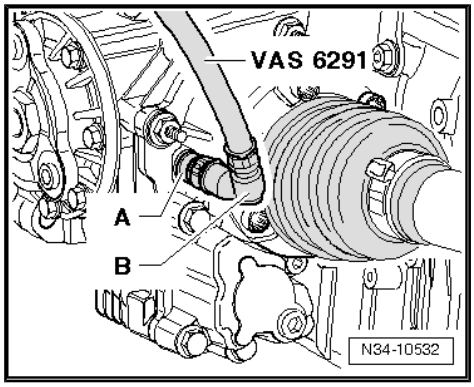
Note

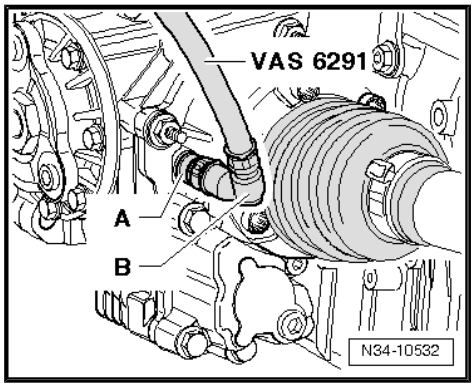
Cover area under oil filler plug -arrow- with a cloth.

– Remove oil filler plug -arrow- from bevel box.



– Screw adapter - VAS 6291/2- -A- in to stop.
– Engage elbow -B- in adapter -A-.
– Top up with oil.





Note

- *If bevel box has been properly filled, oil runs out at adapter -A-.*
- *Continue with filling procedure if no oil has run out yet.*

– After bevel box has been properly filled, unscrew adapter - VAS 6291/2- .
– Screw in »old« oil drain plug and tighten slightly.
– Start engine, engage gear and allow gearbox to turn for approx. 2 minutes.
– Turn off engine and unscrew plug from oil filler hole.
– Check oil level, if necessary top up gear oil again to lower edge of filler hole.
– Screw in new oil filler plug -arrow-.
– Tighten bolt to specified torque ⇒ page 134 .

If oil should get on bevel box, carefully remove it.

– If present, install heat shield above right drive shaft. Specified torque ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
– Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 ; Noise insulation .

5.3 Specified torque

Oil filler plug ♦ Renew bolt	15 Nm