



## Workshop Manual

Audi A1 2011 ➤ ,  
Audi A1 Sportback 2012 ➤ ,  
Audi A3 2004 ➤ ,  
Audi A3 Cabriolet 2008 ➤ ,  
Audi TT 2007 ➤

**Servicing 7-speed dual clutch gearbox 0AM/0CW**

Edition 08.2018



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## List of Workshop Manual Repair Groups

### Repair Group

- 00 - Technical data
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- 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 Identification

(ARL006003; Edition 08.2018)

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

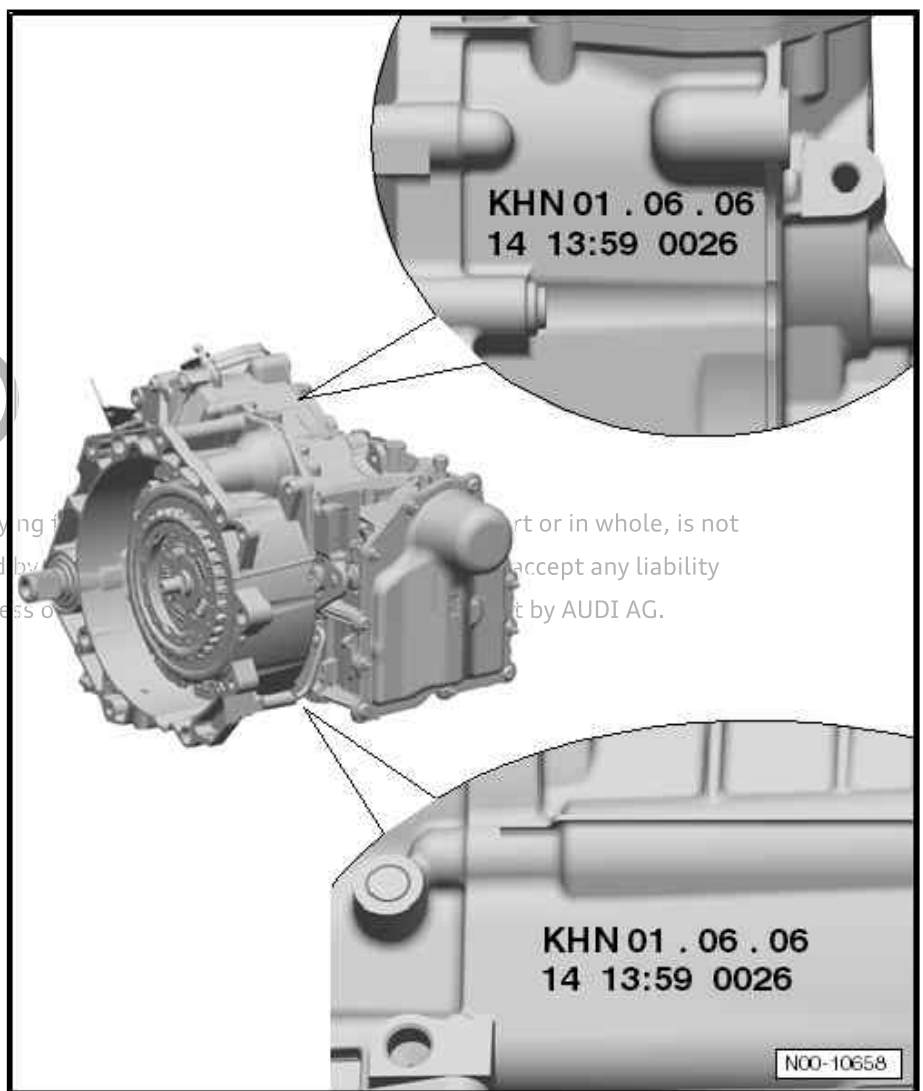
#### 1.1 Gearbox identification

For allocation of gearbox code letters refer to Workshop Manual  
"7-speed dual clutch gearbox 0AM/0CW (S tronic)":

⇒ 7-speed dual clutch gearbox; Rep. gr. 00 ; Technical data;  
Allocation of gearbox to engine



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

- ◆ KHN = gearbox code letters
- ◆ 01.06.06 = production date
- ◆ 14 = factory code



- ◆ 13:59 = time of production
- ◆ 0026 = serial number



**Note**

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



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## 2 Technical data

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

⇒ **"2.2 Capacities", page 3**

### 2.1 Allocation of gearbox to engine

For allocation of gearbox to engine and calculation of gear ratios, refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)":

⇒ 7-speed dual clutch gearbox; Rep. gr. 00 ; Technical data; Allocation of gearbox to engine

### 2.2 Capacities

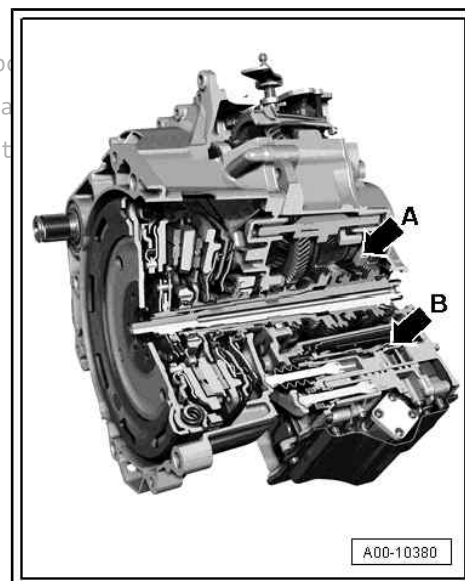
The 7-speed dual clutch gearbox has separate oil and fluid fillings. One section is filled with gear oil -arrow A-, the other with hydraulic fluid -arrow B-.

For fluid capacities and specifications for gear oil section and hydraulic fluid section with mechatronic unit for dual clutch gearbox - J743- , refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)":

⇒ 7-speed dual clutch gearbox; Rep. gr. 00 ; Technical data; Capacities

For instructions for "Renewing gear oil", refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)":

⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Gear oil; Draining and filling gear oil



#### Caution

##### ***Risk of damage to gearbox***

- ◆ ***Use only the gear oil available as a replacement part for the 7-speed dual clutch gearbox 0AM/0CW ⇒ Electronic parts catalogue .***
- ◆ ***Other types of oil cause malfunctions and/or failure of the gearbox.***
- ◆ ***It is not possible to check the fluid level in the hydraulic section of the mechatronic unit for dual clutch gearbox - J743- . When performing repairs, the breather opening on the mechatronic unit for dual clutch gearbox - J743- must be sealed off ⇒ page 66 . Fluid which escapes from the mechatronic unit for dual clutch gearbox - J743- cannot be replenished and the fluid level cannot be checked!***
- ◆ ***If oil escapes from the gear oil section, the gear oil must be replaced completely. It is not possible to check the level.***
- ◆ ***Underfilling or overfilling either of the oil/fluid sections will impair the function of the gearbox.***



### 3 Transmission layout

⇒ "3.1 Transmission layout - front-wheel drive", page 4

#### 3.1 Transmission layout - front-wheel drive

The 7-speed dual clutch gearbox 0AM/0CW is equipped with 5 shafts. It consists of two input shafts and three output shafts.

A1 - Input shaft 1

A2 - Input shaft 2

B1 - Output shaft 1

B2 - Output shaft 2

B3 - Output shaft 3

C - Front final drive

K1 - Dual clutch 1

K2 - Dual clutch 2

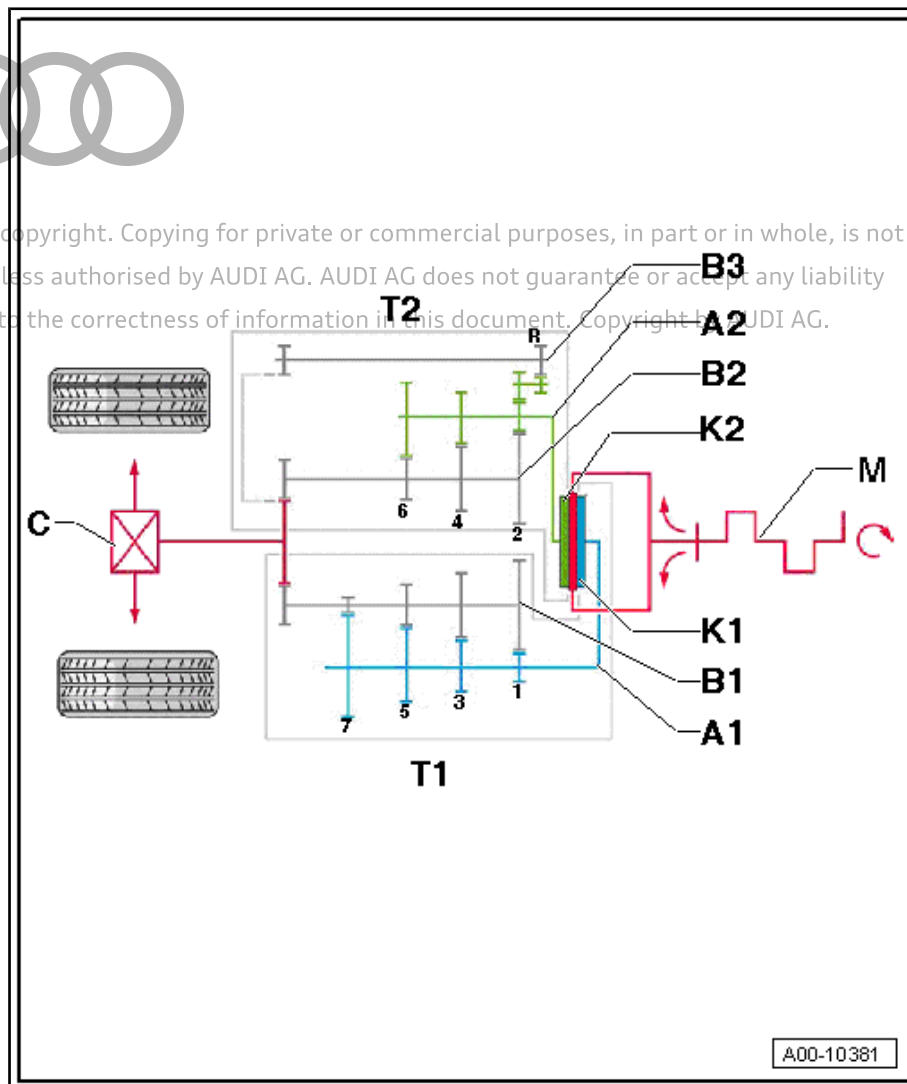
M - Engine

T1 - Gear train half 1

- With gears 1, 3, 5 and 7

T2 - Gear train half 2

- With gears 2, 4, 6 and reverse gear R





## 4 Safety precautions

⇒ [“4.1 General safety precautions”, page 5](#)

⇒ [“4.2 Safety precautions when working on vehicles with start/stop system”, page 6](#)

⇒ [“4.3 Safety precautions when using testers and measuring instruments during a road test”, page 6](#)

⇒ [“4.4 Safety precautions when working on mechatronic unit”, page 6](#)

⇒ [“4.5 Safety precautions when tow-starting and towing”, page 8](#)

### 4.1 General safety precautions

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



#### WARNING

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

- ◆ *Before working on the vehicle while the engine is running, shift the selector lever into position “P” and apply the parking brake.*

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

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



#### Caution

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

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



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## 4.2 Safety precautions when working on vehicles with start/stop system

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



### WARNING

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

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

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

Observe the following precautions if test and measuring instruments are required during a test drive:



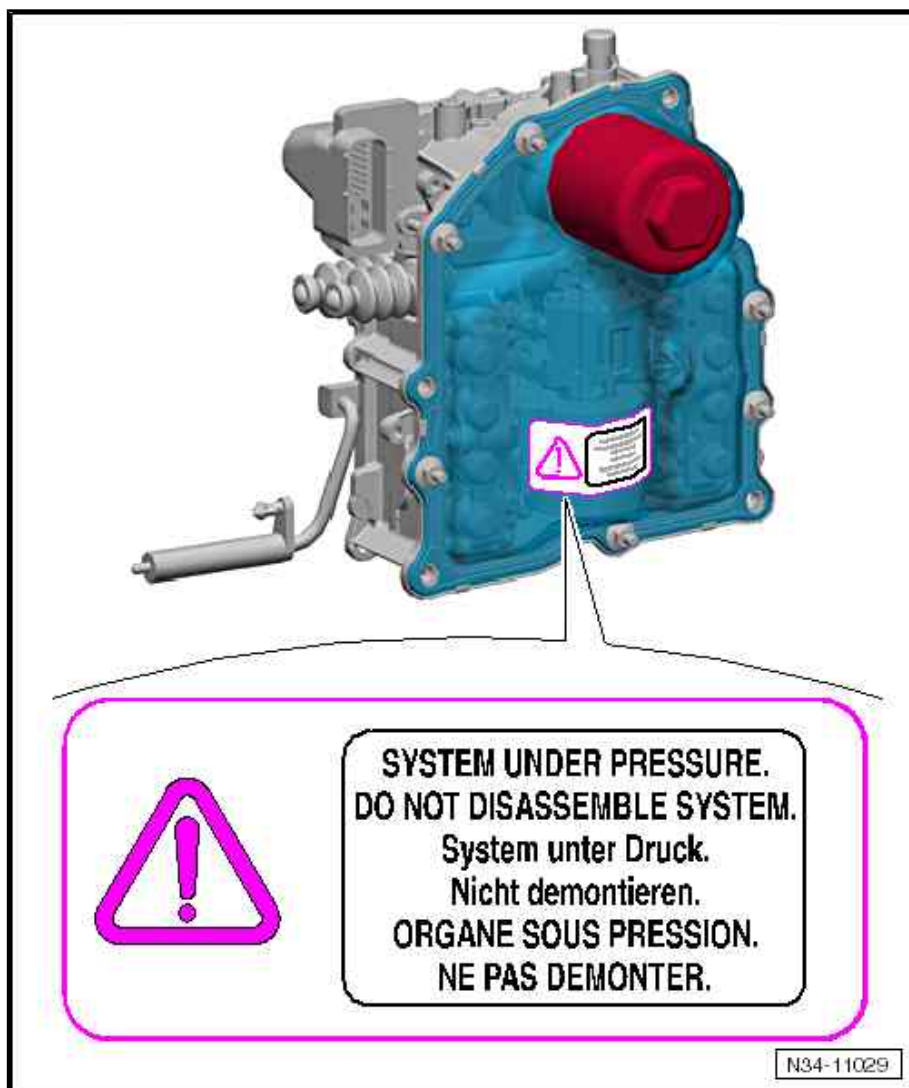
### WARNING

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

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

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

## 4.4 Safety precautions when working on mechatronic unit.



#### WARNING

*System is pressurised.*

*The mechatronic unit for dual clutch gearbox - J743- has an accumulator which maintains a system pressure of up to 60 bar.*

*The cover of the mechatronic unit for dual clutch gearbox - J743- and the accumulator must not be opened.*



#### Note

*The maximum specification for pressure in the accumulator, which is controlled by software and adjusted via the pump, is 60 bar. The pump is switched off if the pressure exceeds this value. When the pressure drops to 42 bar due to gearshifts, the pump is switched on again. In the event of a software fault, it is possible for the pressure to reach approx. 75 bar. The pressure relief valve then opens automatically.*

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## 4.5 Safety precautions when tow-starting and towing



### Caution

***Risk of irreparable damage to gearbox.***

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



### Note

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



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## 5 Repair instructions

⇒ [“5.1 General notes”, page 9](#)

⇒ [“5.2 Rules for cleanliness”, page 12](#)

⇒ [“5.3 General repair instructions”, page 12](#)

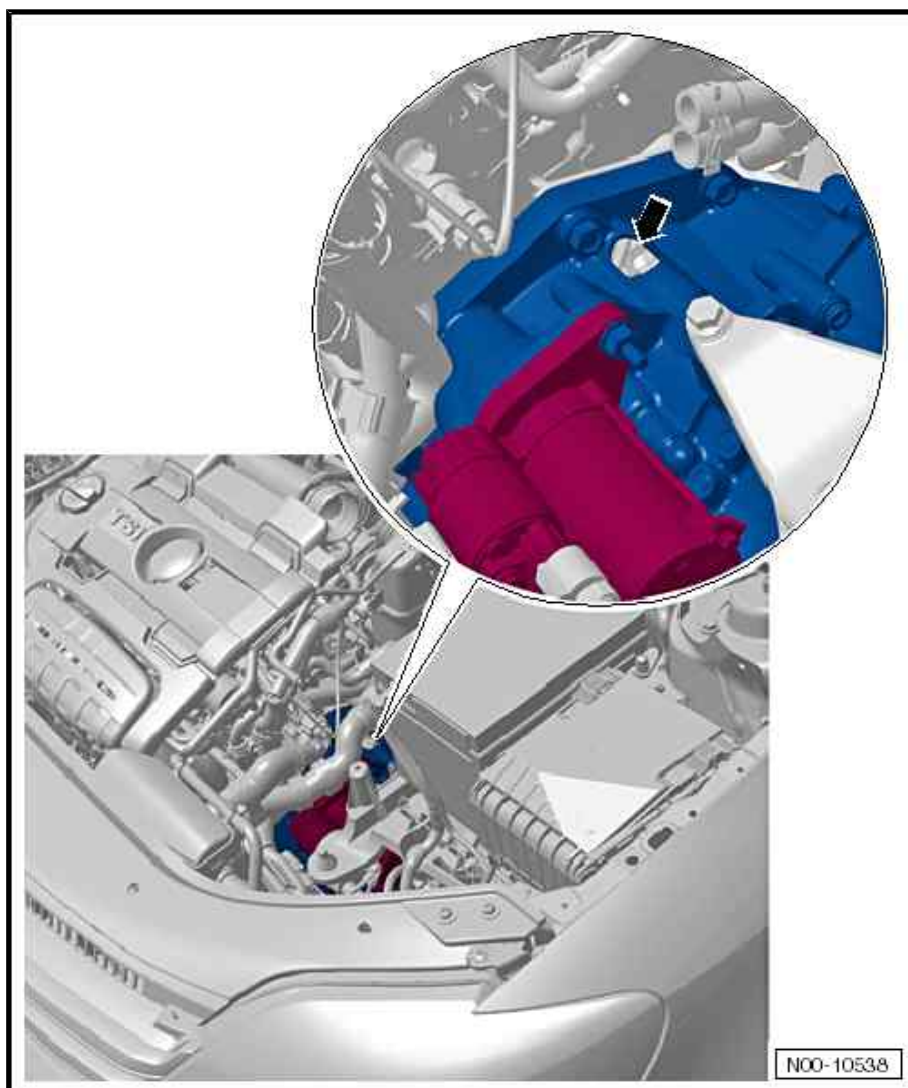
⇒ [“5.4 Contact corrosion”, page 13](#)

### 5.1 General notes

#### Gearbox

- ◆ The engine torque is transferred to the dual clutch via the flywheel. The flywheel and the dual clutch are connected by splines. The two combined components perform the function of a dual-mass flywheel.
- ◆ The layout of the gearbox is similar to that of a 7-speed manual gearbox. The two multi-plate dry clutches are regulated hydraulically and actuated alternately so that the gearbox is operated like an automatic gearbox. This means that the gears are engaged automatically, or can be selected manually using the tiptronic function. There is no clutch pedal.
- ◆ Both clutches are disengaged when the ignition is switched off. The 1st gear on gear train half 1 and the reverse gear on gear train half 2 are engaged.

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The gearbox has an opening on the housing.

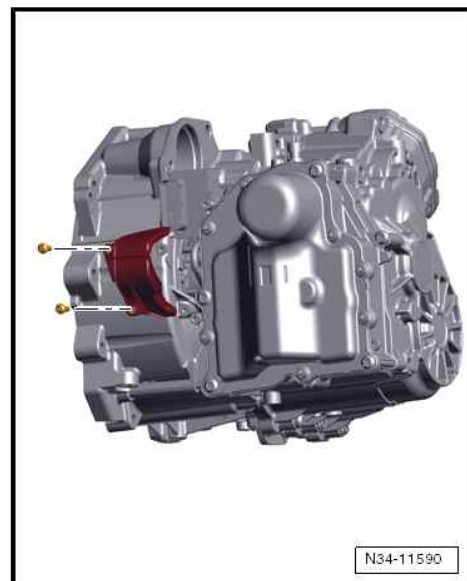
- Make sure no small parts drop into the gearbox through this opening -arrow- when carrying out repairs. Cover the opening if necessary.
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### Cover above engaging levers

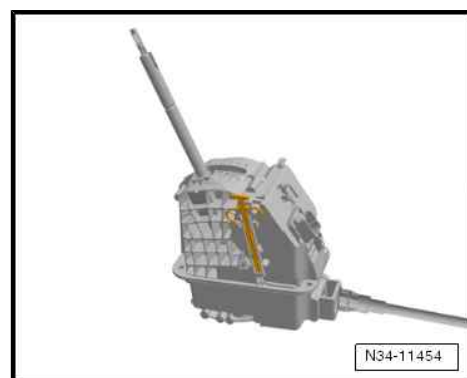
Some versions are fitted with a cover above the engaging levers to prevent dirt from entering.

- Tightening torque: 8 Nm



### Selector mechanism

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



### Gear oil

The 7-speed dual clutch gearbox has separate oil and fluid fillings. One section is filled with gear oil -arrow A-, the other with hydraulic fluid -arrow B-.

Only the types of gear oil available as a replacement part may be used for the dual clutch gearbox 0AM/0CW. Other types of oil will cause malfunctions and/or failure of the gearbox; for part number refer to ⇒ Electronic parts catalogue .

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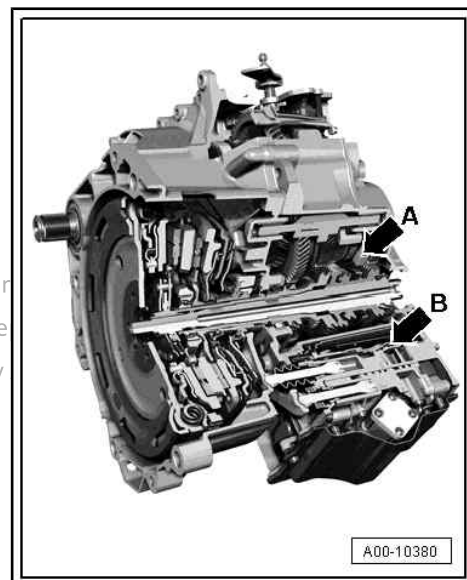
The gear oil level cannot be checked. The correct gear oil level can only be achieved by renewing the gear oil, e.g. if the gearbox is leaking. For instructions for "Renewing gear oil", refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)".

⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Gear oil; Draining and filling gear oil

### Variation of gear-change points for gradients

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

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





## 5.2 Rules for cleanliness

- ◆ Carefully clean connection points and the surrounding area with engine cleaner or brake cleaner and dry thoroughly before opening.
- ◆ Use cleaning fluid - D 009 401 04- to clean the gearbox and its components.
- ◆ Use lint-free cloths for cleaning, such as the "WYPALL X70 / WORKHORSE" cloth from Kimberly-Clark Professional.
- ◆ Seal off open lines and connections immediately with clean plugs or sealing caps from engine bung set - VAS 6122- immediately.
- ◆ After removal, place parts on a clean surface and cover them. Use sheeting and paper. Only use lint-free cloths.
- ◆ Carefully cover or seal open components if repairs cannot be carried out immediately.
- ◆ Only install clean components; replacement parts should only be unpacked immediately prior to installation.
- ◆ Protect unplugged electrical connectors against dirt and moisture and make sure connections are dry when attaching.

## 5.3 General repair instructions

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

### Guided Fault Finding, Vehicle self-diagnosis and Test Instruments

- ◆ Before servicing the gearbox, the exact cause of the failure should be identified using Guided Fault Finding, Vehicle Self-diagnosis and Test Instruments ⇒ Vehicle diagnostic tester.

### Special tools

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

### Environmental and waste disposal regulations for oil

- ◆ Be careful when working with oil.
- ◆ Dispose of drained oil properly.
- ◆ Always adhere to statutory environmental and waste disposal regulations.
- ◆ Please observe the information shown on the packaging of the oil.

### Gearbox

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



### O-rings, seals, oil seals and gaskets

- ◆ Always renew O-rings, seals, oil seals and gaskets.
- ◆ In certain cases, seals are also referred to as oil seals.
- ◆ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Thoroughly clean housing joint surfaces before assembling.
- ◆ Always replace paper gaskets. Completely remove old gasket and clean sealing surfaces thoroughly.
- ◆ Lightly lubricate the outer circumference and sealing lip of oil seals with gear oil before installing.
- ◆ Lightly lubricate O-rings with gear oil or vaseline before installation to prevent them from getting crushed during assembly.
- ◆ Do not use any other lubricants where gear oil is specified. Otherwise, there is a risk of problems occurring in the gearbox hydraulics.
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ When installing a new oil seal, position the seal in the housing so that the sealing lip does not contact the shaft in the same place as the old seal (make use of installation depth tolerances).
- ◆ Observe rules for cleanliness ⇒ [page 12](#) .

### Locking elements

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

### Nuts, bolts

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

## 5.4 Contact corrosion

Contact corrosion can occur if unsuitable fasteners are used (e.g. bolts, nuts, washers, etc.).

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

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

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



**Please note:**

- ◆ We recommend using only genuine replacement parts; these have been tested and are compatible with aluminium.
- ◆ We recommend the use of accessories approved by Audi.
- ◆ Damage caused by contact corrosion is not covered by warranty.



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## 30 – Clutch

### 1 Clutch

⇒ [“1.1 Exploded view - dual clutch”, page 15](#)

⇒ [“1.2 Removing dual clutch”, page 18](#)

⇒ [“1.3 Installing dual clutch”, page 22](#)

⇒ [“1.4 Renewing input shaft oil seal”, page 27](#)

⇒ [“1.5 Renewing oil seal for inner input shaft”, page 29](#)

#### 1.1 Exploded view - dual clutch

⇒ [“1.1.1 Exploded view - dual clutch \(gearbox manufacturing date up to 05.2011\)”, page 15](#)

⇒ [“1.1.2 Exploded view - dual clutch \(gearbox manufacturing date from 06.2011 onwards\)”, page 17](#)

##### 1.1.1 Exploded view - dual clutch (gearbox manufacturing date up to 05.2011)



#### Caution

*Risk of damage to adjusting mechanism of clutch.*

- ◆ *The clutch is self-adjusting. Shocks can have a negative effect on the adjusting mechanism. Do not allow the clutch to drop into the gearbox when installing it.*
- ◆ *A clutch that has dropped onto a hard surface or is damaged must not be re-installed.*

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**1 - Circlip**

- ☐ Renew after removing

**2 - Hub**

**3 - Circlip**

- ☐ Renew after removing

**4 - Large engaging lever for »K 1«**

- ☐ With large engagement bearing
- ☐ Removing and installing  
⇒ [page 34](#)

**5 - Small engaging lever for »K 2«**

**6 - Bolt**

- ☐ Renew after removing
- ☐ Tightening torque  
⇒ [Item 6 \(page 32\)](#)

**7 - Support**

- ☐ For engaging lever

**8 - Clip**

- ☐ For small engaging lever
- ☐ Not fitted on some earlier gearbox versions

**9 - Oil seal**

- ☐ For inner input shaft
- ☐ Renewing ⇒ [page 27](#)

**10 - Oil seal**

- ☐ For outer input shaft
- ☐ Renewing ⇒ [page 27](#)

**11 - Outer input shaft**

**12 - Shim »SK 1«**

- ☐ Determining thickness ⇒ [page 40](#)

**13 - Shim »SK 2«**

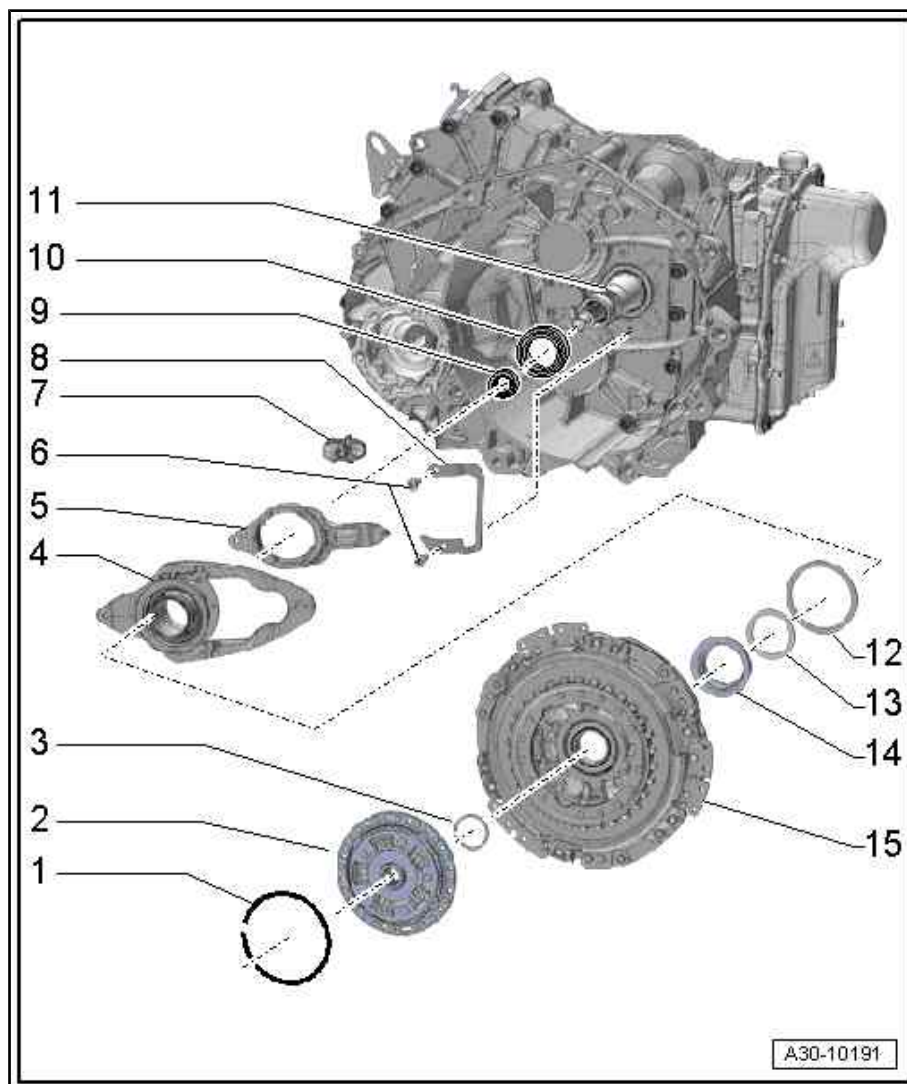
- ☐ Determining thickness ⇒ [page 40](#)

**14 - Small engagement bearing for »K 2«**

- ☐ Removing and installing ⇒ [page 34](#)

**15 - Dual clutch**

- ☐ Removing ⇒ [page 18](#)
- ☐ Installing ⇒ [page 22](#)



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## 1.1.2 Exploded view - dual clutch (gearbox manufacturing date from 06.2011 onwards)



### Caution

#### **Risk of damage to adjusting mechanism of clutch.**

- ◆ *The clutch is self-adjusting. Shocks can have a negative effect on the adjusting mechanism. Do not allow the clutch to drop into the gearbox when installing it.*
- ◆ *A clutch that has dropped onto a hard surface or is damaged must not be re-installed.*

### 1 - Hinge mounting

- ☐ For large engaging lever "K 1"
- ☐ Is not renewed

### 2 - Ball-head pin

- ☐ For small engaging lever "K 2"
- ☐ Removing and installing  
⇒ [page 54](#)

### 3 - Shim "SK 1"

- ☐ Determining thickness  
⇒ [page 52](#)

### 4 - Shim "SK 2"

- ☐ Determining thickness  
⇒ [page 52](#)

### 5 - Small engagement bearing for "K 2"

### 6 - Dual clutch

- ☐ Removing ⇒ [page 18](#)
- ☐ Installing ⇒ [page 22](#)

### 7 - Circlip

- ☐ Renew after removing

### 8 - Hub

### 9 - Circlip

- ☐ Renew after removing

### 10 - Large engaging lever for "K 1"

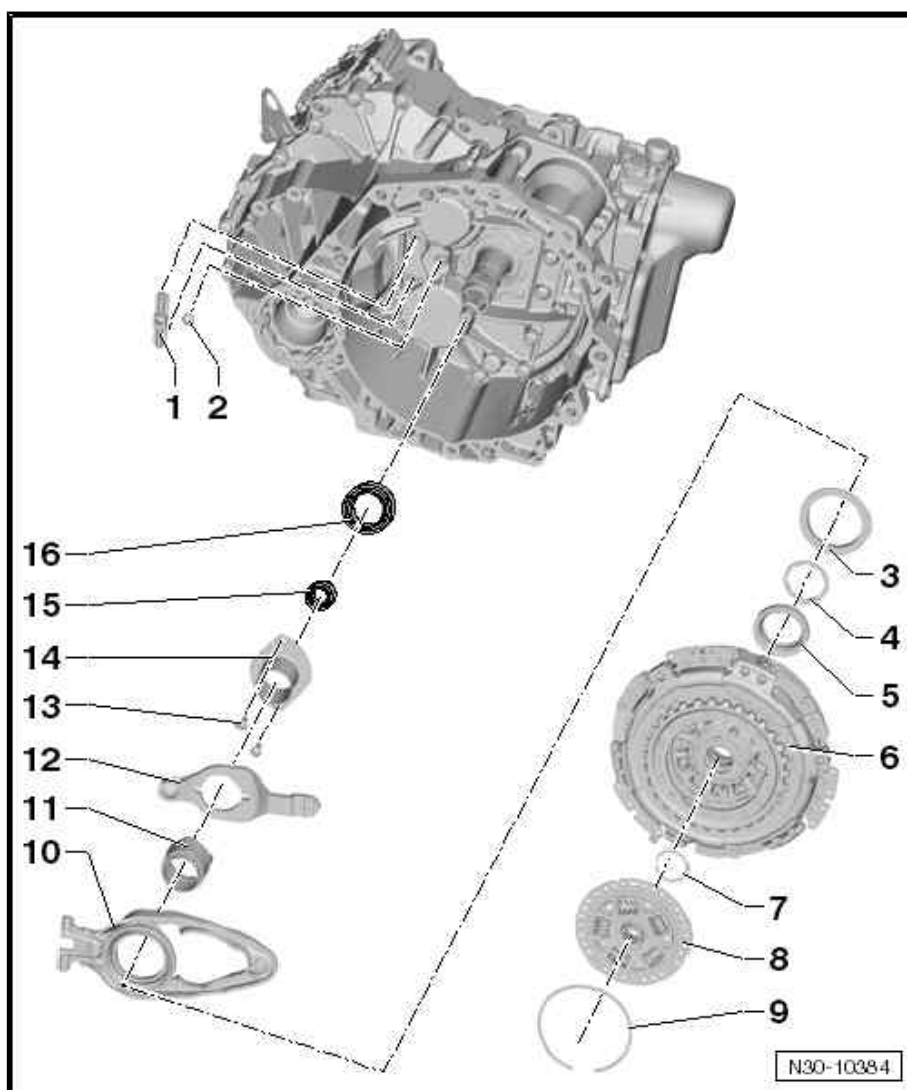
- ☐ With engagement bearing
- ☐ Removing and installing  
⇒ [page 37](#)

### 11 - Guide sleeve (top section)

- ☐ For small engaging lever "K 2"
- ☐ Removed and installed together with small engaging lever and guide sleeve (bottom section)

### 12 - Small engaging lever for "K 2"

- ☐ Removed and installed together with guide sleeve (top and bottom sections)





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

### 13 - Bolts

- ☐ Renew after removing
- ☐ 8 Nm +90°

### 14 - Guide sleeve (bottom section)

- ☐ For small engaging lever "K 2"
- ☐ Removed and installed together with small engaging lever and guide sleeve (top section)

### 15 - Oil seal

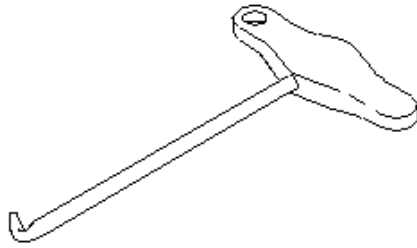
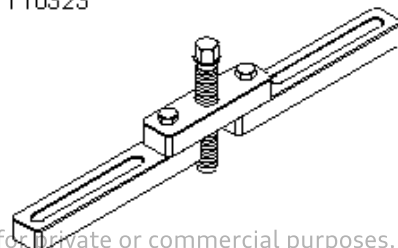
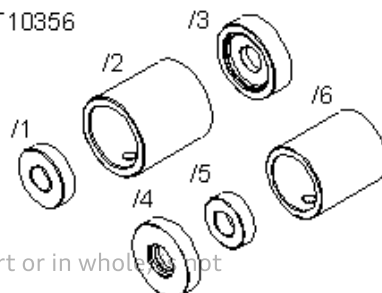
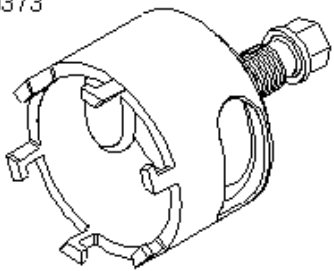
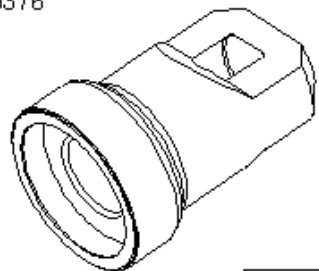
- ☐ For inner input shaft
- ☐ Renewing ⇒ [page 27](#)

### 16 - Oil seal

- ☐ For outer input shaft
- ☐ Renewing ⇒ [page 27](#)

## 1.2 Removing dual clutch

### Special tools and workshop equipment required

|                                                                                                   |                                                                                                                      |
|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <p>3438</p>     | <p>VAS 6122</p>                   |
| <p>T10323</p>  | <p>T10356</p>                    |
| <p>T10373</p>  | <p>T10376</p>  <p>G30-10003</p> |

- ◆ Hook - 3438-



- ◆ Engine bung set - VAS 6122-
- ◆ Support bridge - T10323-
- ◆ -T10356/5- from assembly tool - T10356-
- ◆ Puller - T10373-
- ◆ Thrust piece - T10376-
- ◆ 1x protective cap - 0AM 325 120 A- and 1x protective cap - 02M 409 120- (alternative to engine bung set - VAS 6122- )

## Removing

Requirements:

- Gearbox must be removed and secured to engine/gearbox support ⇒ [page 65](#) .
- Mechatronic unit for dual clutch gearbox - J743- fitted onto gearbox

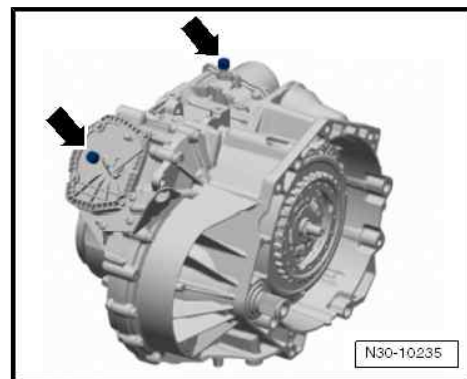


### Caution

#### *Risk of damage to gearbox*

*When performing repairs, the breather opening on the mechatronic unit for dual clutch gearbox - J743- (-rear arrow-) and the gearbox breather (-front left arrow-) must be sealed off to avoid loss of fluid.*

- ◆ *Fluid which escapes from the mechatronic unit for dual clutch gearbox - J743- cannot be replenished and the fluid level cannot be checked! It is not possible to check the fluid level in the hydraulic section of the mechatronic unit for dual clutch gearbox - J743- .*
- ◆ *If oil escapes from the gear oil section, the gear oil must be replaced completely. It is not possible to check the level.*
- ◆ *Underfilling or overfilling either of the oil/fluid sections will impair the function of the gearbox.*
- ◆ *Depending on the version, the breather cap on the mechatronic unit is damaged irreparably during removal and must be renewed.*



- Pull off both breather caps -arrows-.



### Note

*The protective cap - 02M 409 120- may be used in place of the engine bung set - VAS 6122- to seal off the gearbox. Alternatively, the mechatronic unit can be sealed off securely with the protective cap - 0AM 325 120 A- . Order via ⇒ Electronic parts catalogue .*

- Seal gearbox breather and breather opening for mechatronic unit for dual clutch gearbox - J743- with clean plugs from engine bung set - VAS 6122- .
- If necessary, order new breather cap for mechatronic unit for dual clutch gearbox - J743- ; breather cap must be renewed after installing gearbox ⇒ Electronic parts catalogue .
- After installing gearbox in vehicle, remove plugs and re-fit or renew breather caps.



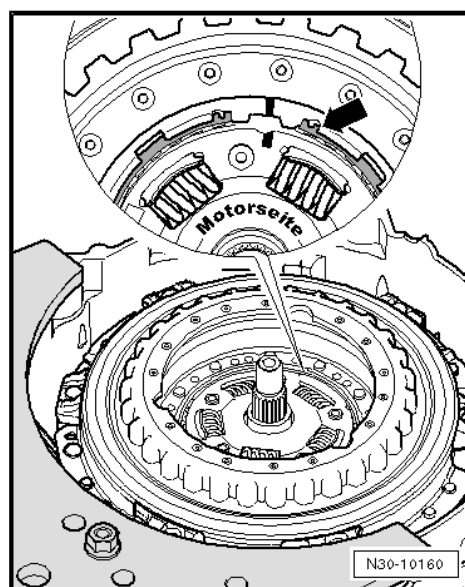
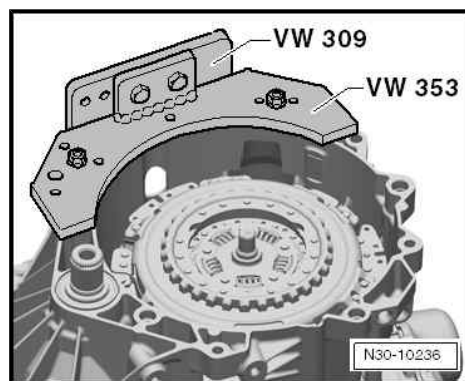
- Turn gearbox in engine and gearbox support so that clutch faces upwards.



#### Note

*The clutch is removed from above. The mechatronic unit remains in the gearbox.*

- Remove circlip -arrow- from hub.

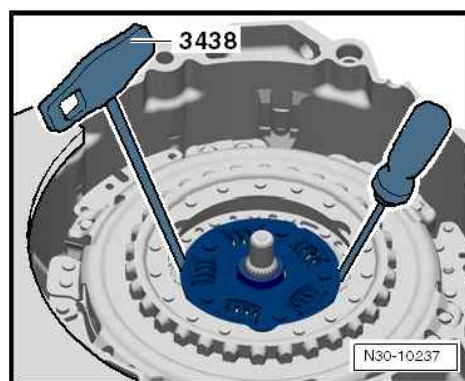


- Remove hub using hook - 3438- and a screwdriver.



#### Note

*If components of the clutch are being renewed, the positions of the engagement bearings "K 1" and "K 2" must later be adjusted. It is therefore advisable to determine dimension "B" for the measurements now ➔ [page 40](#) .*



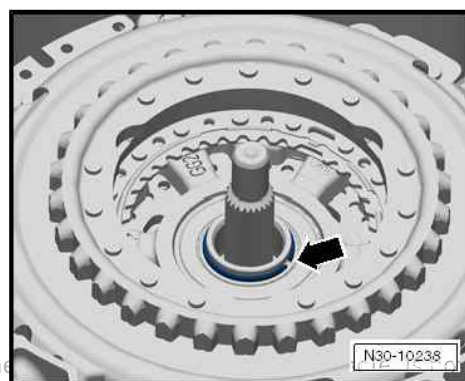
- Remove circlip -arrow- for clutch

**If circlip cannot be removed:**



#### Note

- ♦ *If the circlip cannot be removed, it is likely that the clutch is jamming the circlip from below.*
- ♦ *In this case, press the clutch slightly down as described in the following until the circlip is released. Do NOT knock on the clutch or shaft with a hammer.*



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- Set up support bridge - T10323- so it is parallel to gearbox flange, as shown in illustration.
- If necessary, use e.g. -T10356/5- as a spacer.
- Fit bolts -A- hand-tight.



#### Note

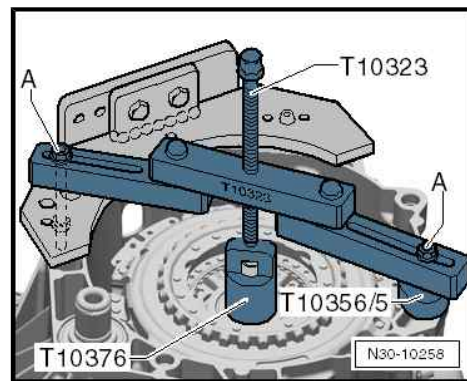
Secure bolts -A- with nuts as required.



#### Caution

**Risk of damage to the clutch and other components!**

- **Only press the clutch down lightly - do not exert too much pressure.**

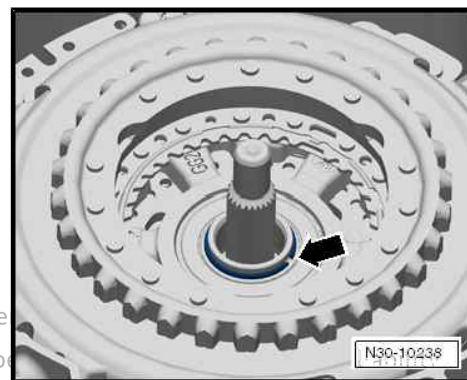


- Turn spindle against thrust piece - T10376- when pressing clutch down.
- Remove circlip -arrow- for clutch.



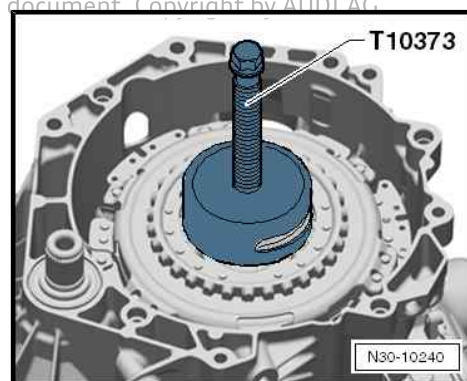
#### Caution

**Circlip must not be used again.**

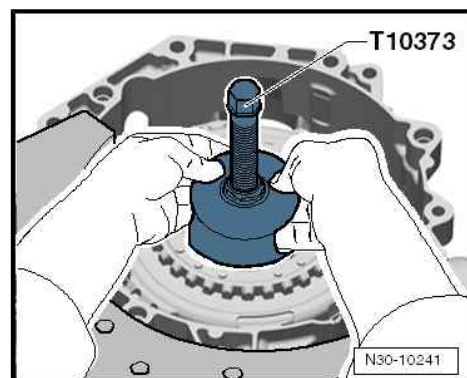


#### After removal of circlip (continued):

- Insert puller - T10373- in clutch and take up clutch with spindle.



- Take out clutch together with puller - T10373- .





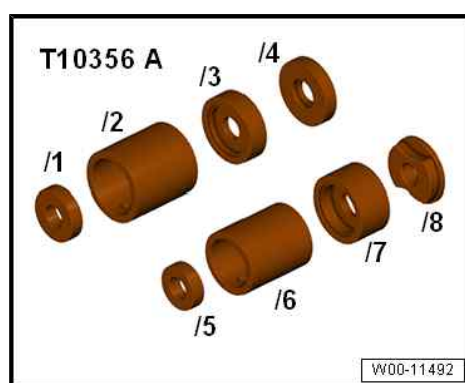
## 1.3 Installing dual clutch

### Special tools and workshop equipment required

- ◆ Support bridge - T10323-



- ◆ -T10356/5- from assembly tool - T10356-



- ◆ Puller - T10373-



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- ◆ Thrust piece - T10376-





## Installing



### Caution

***Risk of damage to the clutch and other components!***

- ***The positions of the engagement bearings must be adjusted correctly.***

***The adjustment procedure can only be performed before installing the clutch.***

***The position of the engagement bearings must be adjusted in the following cases:***

- ◆ ***Clutch has been renewed.***
- ◆ ***Engaging levers have been renewed.***
- ◆ ***Ball-head pin for engaging lever "K 2" has been renewed.***
- ◆ ***Engagement bearings have been renewed.***

***If one of the procedures listed above was performed, the positions of the engagement bearings "K 1 and K 2" must be adjusted before continuing ⇒ [page 40](#) .***

***Do not continue assembly unless the adjustment is correct!***

***If no new components have been installed, the shims that were removed can be re-inserted.***

***Fit only one shim on each engagement bearing.***

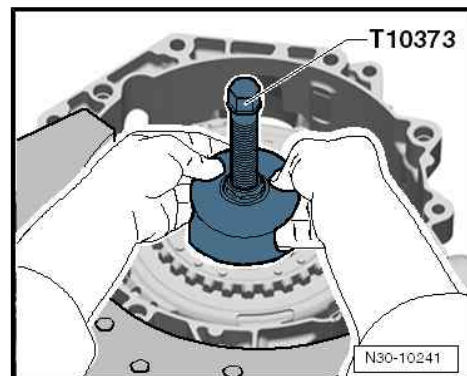
- ***Clutch components must be free of oil and grease when installing!***

***Risk of damage to adjusting mechanism of clutch.***

- ◆ ***The clutch is self-adjusting. Shocks can have a negative effect on the adjusting mechanism. Do not allow the clutch to drop into the gearbox when installing it.***

Requirement:

- Clutch engagement mechanism is installed ⇒ [page 34](#) .
- Turn back spindle of puller -T10373- .
- Before fitting dual clutch, apply a very thin coating of grease to input shaft splines;: for grease refer to ⇒ Electronic parts catalogue . Remove any excess grease.
- Insert clutch in gearbox using puller - T10373- , as shown in illustration.



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- Set up support bridge - T10323- so it is parallel to gearbox flange, as shown in illustration.
- If necessary, use e.g. -T10356/5- of assembly tool - T10356- as a spacer.
- Fit bolts -A- hand-tight.



#### Note

Secure bolts -A- with nuts as required.

- Press on clutch as far as stop.



#### Note

Place a hand on the clutch when pressing it on. You will be able to feel a slight grating or juddering movement. This indicates that the clutch is being pressed in to a press fit. You can also feel when the clutch reaches its stop and is fully seated.

- Take hold of new circlip using circlip pliers, as shown in illustration.
- Installation position of circlip: narrow part of gap is at the top



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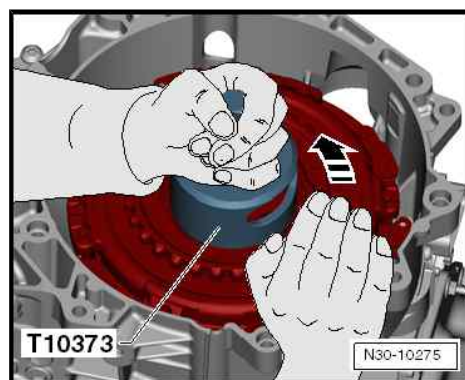
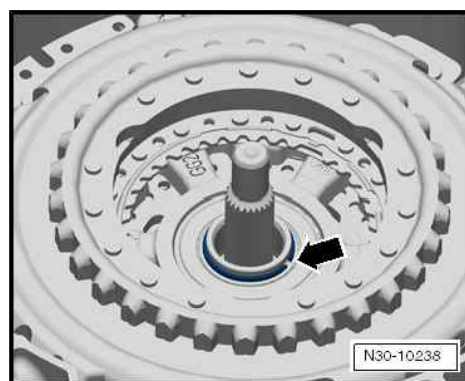
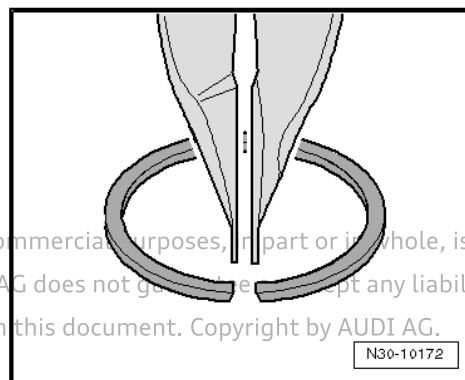
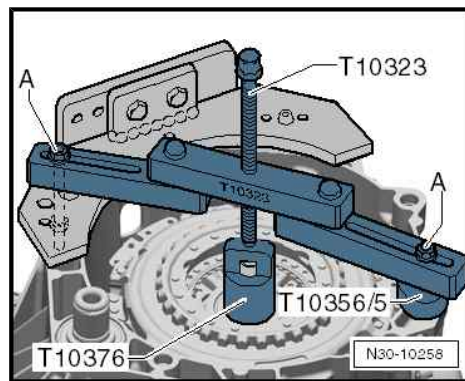
- Insert circlip -arrow-.



#### Note

If the circlip cannot be inserted, this means that the clutch has not been pressed onto the stop properly.

- Turn clutch against puller - T10373- -arrow- by hand (without a tool) so that clutch moves into operating position at this point already.





# **Note**

- ◆ *After it has been pressed on, the clutch is seated on the input shaft at the bottom stop; this is not the ideal position.*
- ◆ *The clutch should only be pulled up far enough so it touches the circlip.*

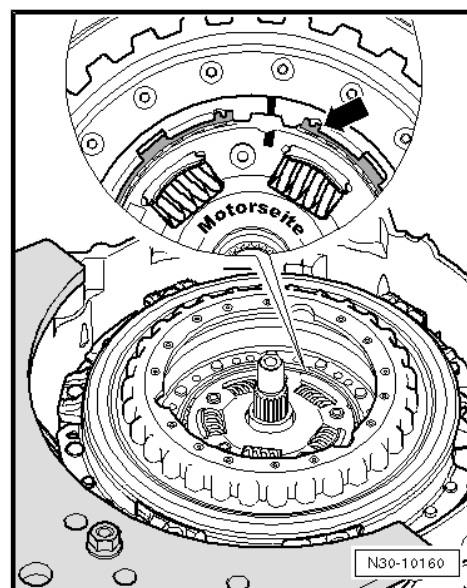
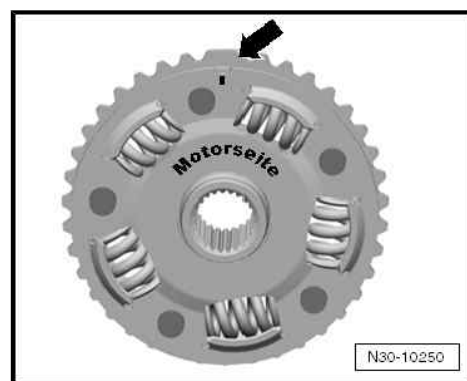
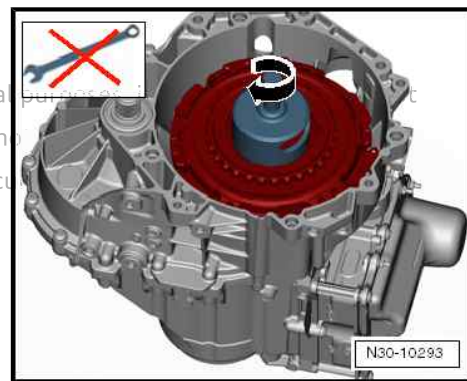


# **Note**

*Only turn the clutch by hand (without a tool); in this way the clutch will slide against the circlip.*

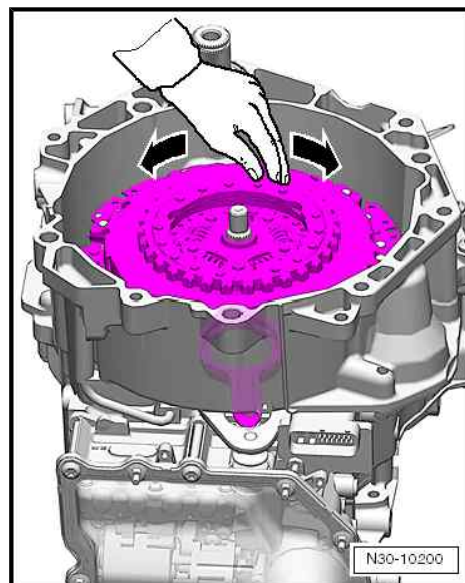
- Insert hub.
- The hub has one large tooth -arrow- and can only be fitted in one correct position.
- The large tooth has a marking on the engine side.

- Install circlip -arrow- on hub.
- Gap of circlip must face »lug« on clutch.



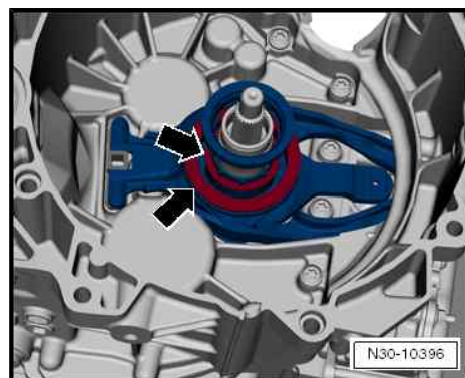


- Turn clutch by hand; it should turn easily.



#### Note

- ♦ If it does not turn easily or if the clutch linings scrape against one another, remove the clutch again ➔ [page 18](#) .
- ♦ Check installation position of shims -arrows-.
- ♦ The shims must be seated correctly and must not be damaged.
- ♦ An error in calculation may have occurred; re-check measurements ➔ [page 40](#) .
- ♦ If no other faults are detected, the clutch may have come out of adjustment during transport/assembly and a new clutch must be installed. The position of the engagement bearings must subsequently be adjusted again ➔ [page 40](#) .



- Remove both plugs and fit breather caps -arrows-.



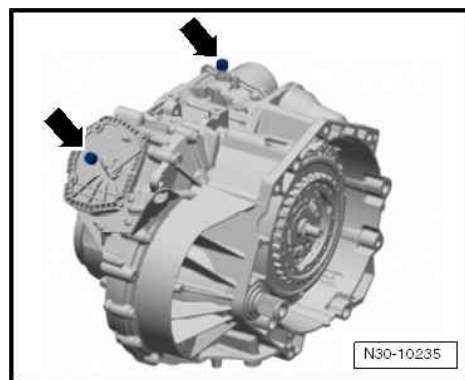
#### Caution

**The breather cap on the mechatronic unit may be damaged irreparably during removal, in which case it must be renewed.**

- For instructions for installing gearbox, refer to Workshop Manual “7-speed dual clutch gearbox 0AM/0CW (S tronic)”:

➔ 7-speed dual clutch gearbox; Rep. gr. 34 ; Removing and installing gearbox; Installing gearbox

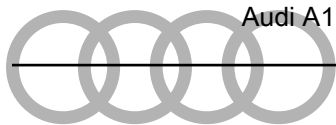
- After installing gearbox, run **Basic setting complete** function in **Guided Functions** ➔ Vehicle diagnostic tester.



#### Note

**A software update may have to be performed; refer to service information in ➔ [Technical Service Handbook \(HST\)](#)**

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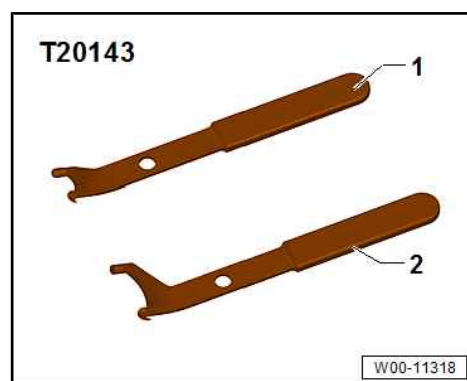
## 1.4 Renewing input shaft oil seal

### Special tools and workshop equipment required

- ◆ Tube - VW 415 A-



- ◆ Extractor hook -T20143/2-



### Procedure:

- Dual clutch is removed ➔ [page 18](#) .
- Clutch engagement mechanism is removed ➔ [page 34](#) .



#### Caution

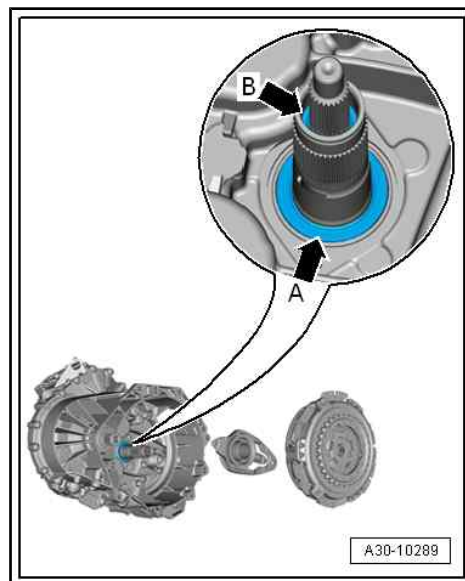
***Risk of damage to the clutch and other components!***

- ***The dual clutch must be renewed if it is contaminated with oil.***

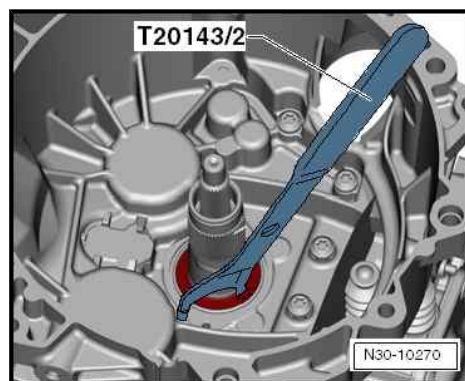


#### Note

- ◆ Two oil seals are fitted on the clutch side of the gearbox.
- ◆ Input shaft oil seal -arrow A-
- ◆ Oil seal for inner input shaft -arrow B-  
⇒ ["1.5 Renewing oil seal for inner input shaft", page 29](#)
- ◆ Both oil seals can be renewed without dismantling the gearbox. If only the oil seals are being renewed, it is not necessary to adjust the clutch engagement mechanism.



- Pry out outer oil seal.

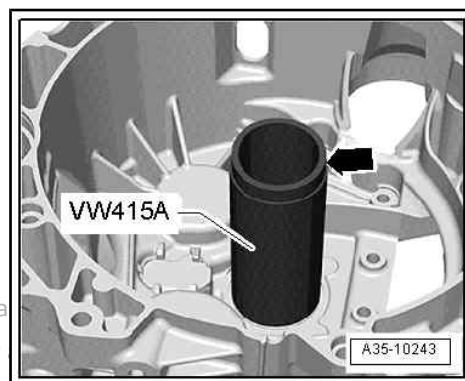


- Using plastic hammer, drive in new outer oil seal so it is flush with clutch housing.
- Shoulder on tube - VW 415 A- faces upwards -arrow-.



#### Caution

**Only drive in the oil seal until flush to avoid closing off the oil drilling underneath, otherwise the bearing can no longer be supplied with sufficient oil.**



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- Install clutch engagement mechanism ⇒ [page 34](#) .

- Install dual clutch ⇒ [page 22](#) .



#### Note

*If oil leaks have been found it is worthwhile having a look at the crankshaft.*

- For instructions for installing gearbox, refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)":

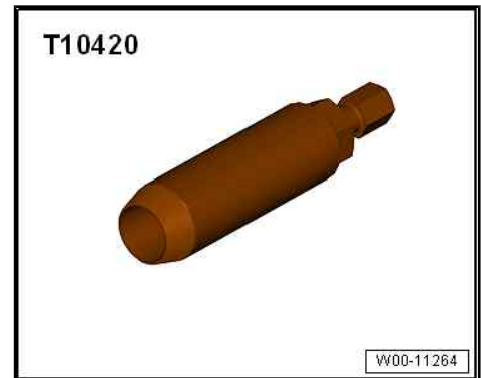
⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Removing and installing gearbox; Installing gearbox



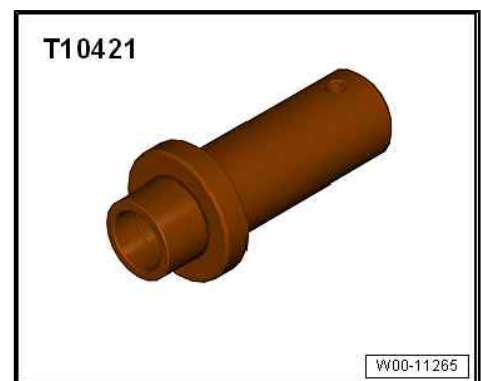
## 1.5 Renewing oil seal for inner input shaft

### Special tools and workshop equipment required

- ◆ Oil seal extractor - T10420-



- ◆ Thrust piece - T10421-



### Procedure:

- Dual clutch is removed ➔ [page 18](#) .
- Clutch engagement mechanism is removed ➔ [page 34](#) .

**Caution**

***Risk of damage to the clutch and other components!***

- ***The dual clutch must be renewed if it is contaminated with oil.***

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## Note

- ◆ Two oil seals are fitted on the clutch side of the gearbox.
- ◆ Input shaft oil seal -arrow A-  
⇒ ["1.4 Renewing input shaft oil seal", page 27](#)
- ◆ Oil seal for inner input shaft -arrow B-
- ◆ Both oil seals can be renewed without dismantling the gearbox. If only the oil seals are being renewed, it is not necessary to adjust the clutch engagement mechanism.

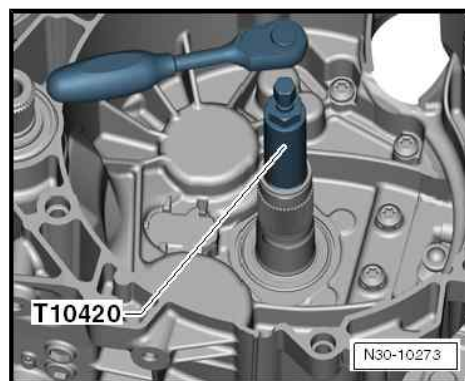
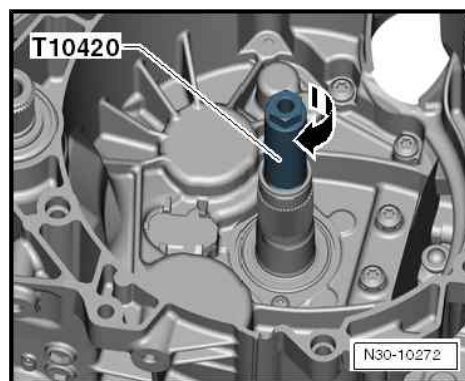
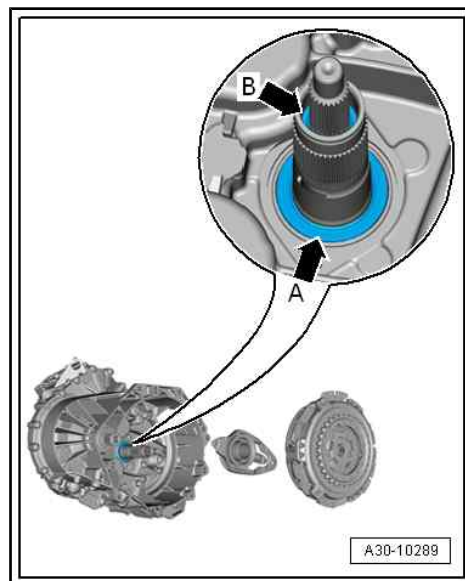
- Unscrew spindle of oil seal extractor - T10420- .

- Screw oil seal extractor - T10420- into small inner oil seal, at the same time pressing down on extractor.

The extractor clamps the oil seal firmly when it is screwed in.

- Screw in extractor until oil seal starts turning in its seat with extractor.

- Now screw in spindle.
- Pull out oil seal using spindle.



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- Drive in new oil seal using thrust piece - T10421- (drive in until thrust piece contacts stop).
- Install clutch engagement mechanism ➔ [page 34](#) .
- Install dual clutch ➔ [page 22](#) .

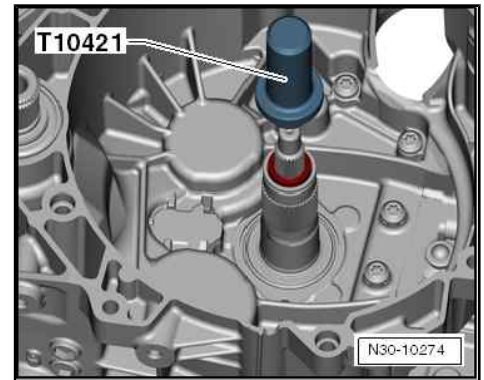


#### Note

*If oil leaks have been found it is worthwhile having a look at the crankshaft.*

- For instructions for installing gearbox, refer to Workshop Manual “7-speed dual clutch gearbox 0AM/0CW (S tronic)”:

⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Removing and installing gearbox; Installing gearbox



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## 2 Clutch mechanism

⇒ [“2.1 Exploded view - clutch engagement mechanism”, page 32](#)

⇒ [“2.2 Removing and installing clutch engagement mechanism”, page 34](#)

⇒ [“2.3 Adjusting clutch engagement mechanism”, page 40](#)

### 2.1 Exploded view - clutch engagement mechanism

⇒ [“2.1.1 Exploded view - clutch engagement mechanism \(gearbox manufacturing date up to 05.2011\)”, page 32](#)

⇒ [“2.1.2 Exploded view - clutch engagement mechanism \(gearbox manufacturing date from 06.2011 onwards\)”, page 33](#)

#### 2.1.1 Exploded view - clutch engagement mechanism (gearbox manufacturing date up to 05.2011)

1 - Small engaging lever for »K 2«

- ☐ Removing and installing  
⇒ [page 34](#)

2 - Shim for »K 2«

- ☐ Determining thickness  
⇒ [page 40](#)

3 - Engagement bearing for »K 2«

4 - Large engaging lever for “K 1”

- ☐ With large engagement bearing
- ☐ Removing and installing  
⇒ [page 34](#)

5 - Shim for “K 1”

- ☐ Determining thickness  
⇒ [page 40](#)

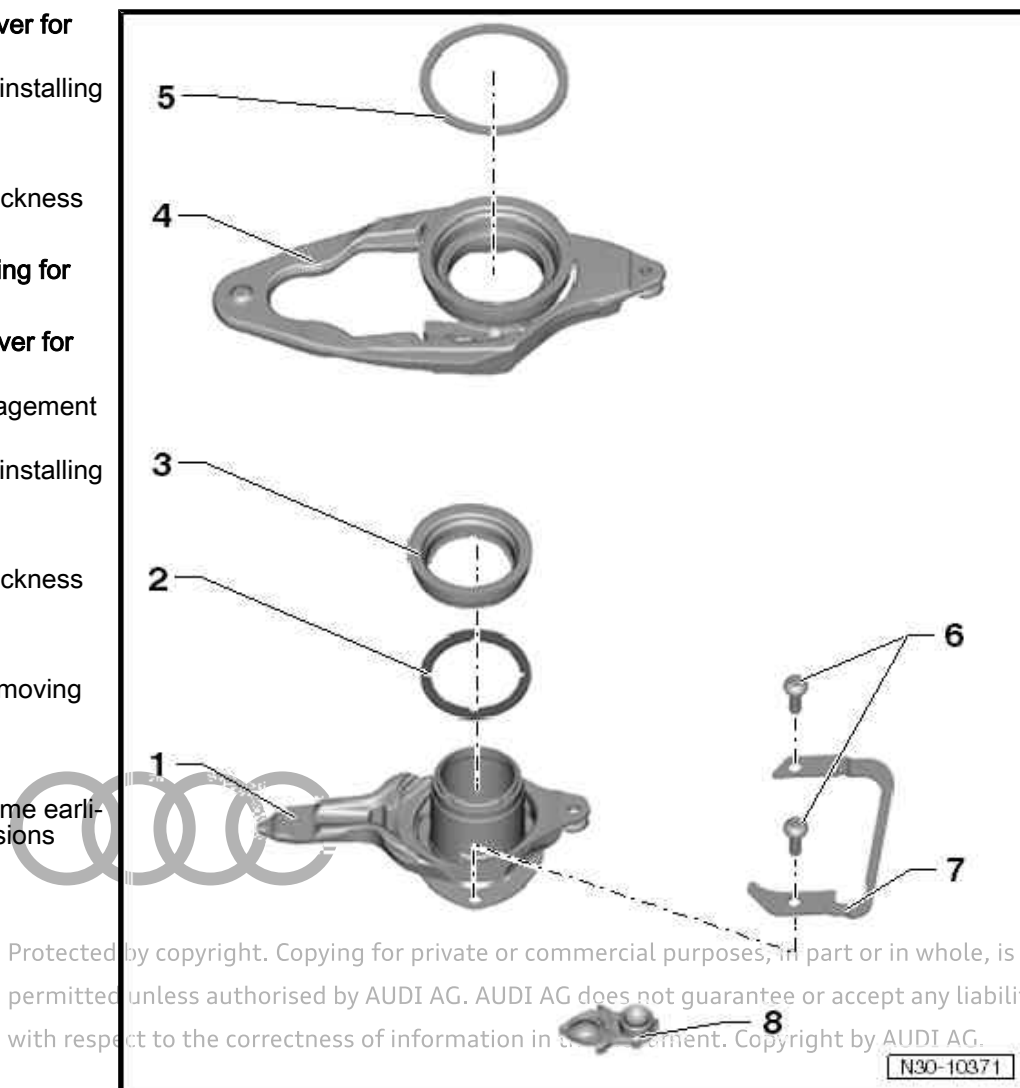
6 - Bolts

- ☐ Renew after removing
- ☐ 8 Nm +90°

7 - Clip

- ☐ Not fitted on some earlier gearbox versions

8 - Support





## 2.1.2 Exploded view - clutch engagement mechanism (gearbox manufacturing date from 06.2011 onwards)

### 1 - Shim for "K 1"

- ☐ Determining thickness  
⇒ [page 52](#)

### 2 - Large engaging lever for "K 1"

- ☐ With engagement bearing
- ☐ Removing and installing  
⇒ [page 37](#)

### 3 - Hinge mounting

- ☐ For large engaging lever "K 1"
- ☐ Is not renewed

### 4 - Small engagement bearing for "K 2"

### 5 - Shim for "K 2"

- ☐ Determining thickness  
⇒ [page 52](#)

### 6 - Guide sleeve (top section)

- ☐ For small engaging lever "K 2"
- ☐ Removed and installed together with small engaging lever and guide sleeve (bottom section)

### 7 - Small engaging lever for "K 2"

- ☐ Removed and installed together with guide sleeve (top and bottom sections)
- ☐ Removing and installing  
⇒ [page 37](#)

### 8 - Ball-head pin

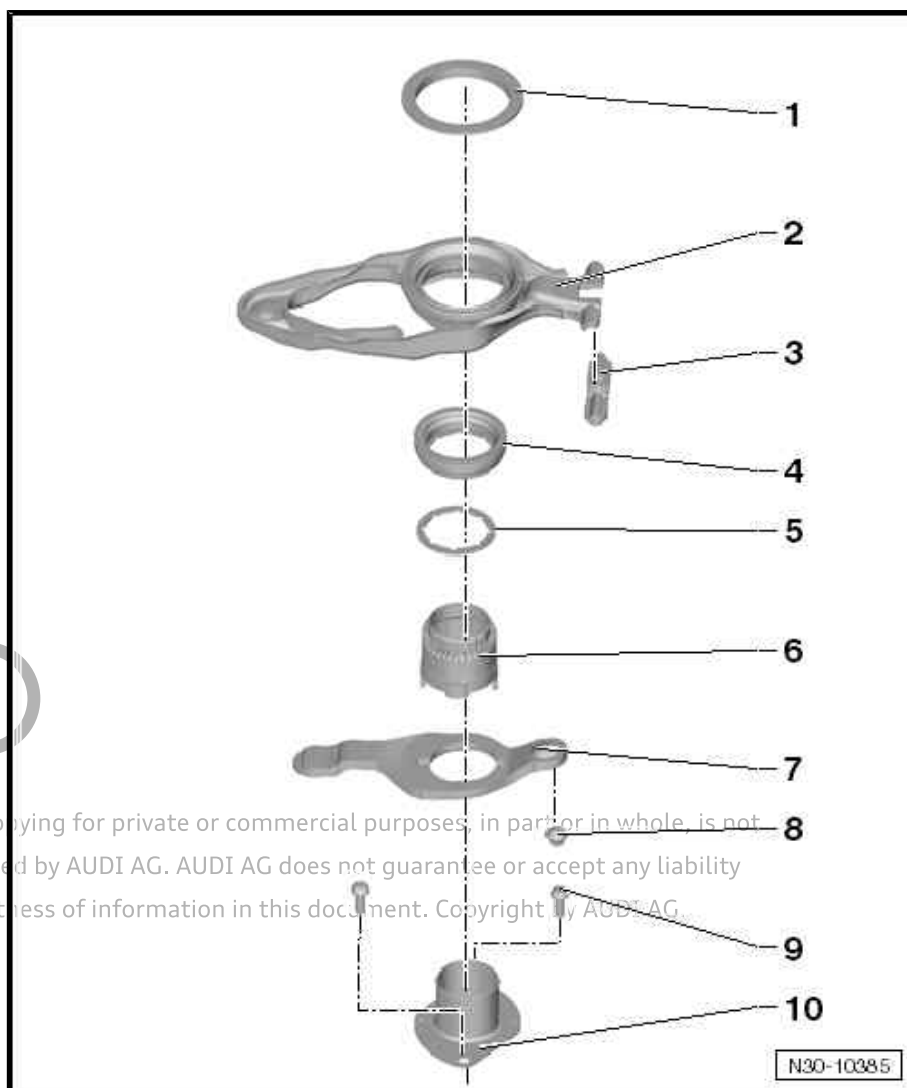
- ☐ For small engaging lever "K 2"
- ☐ Removing and installing ⇒ [page 54](#)

### 9 - Bolts

- ☐ Renew after removing
- ☐ 8 Nm +90°

### 10 - Guide sleeve (bottom section)

- ☐ For small engaging lever "K 2"
- ☐ Removed and installed together with small engaging lever and guide sleeve (top section)





## 2.2 Removing and installing clutch engagement mechanism

⇒ ["2.2.1 Removing and installing clutch engagement mechanism \(gearbox manufacturing date up to 05.2011\)", page 34](#)

⇒ ["2.2.2 Removing and installing clutch engagement mechanism \(gearbox manufacturing date from 06.2011 onwards\)", page 37](#)

### 2.2.1 Removing and installing clutch engagement mechanism (gearbox manufacturing date up to 05.2011)

#### Requirement:

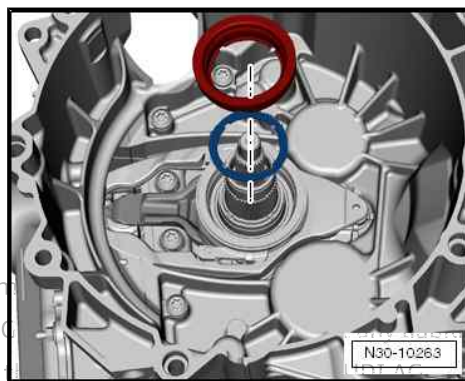
Dual clutch is removed ⇒ [page 18](#) .

#### Removing

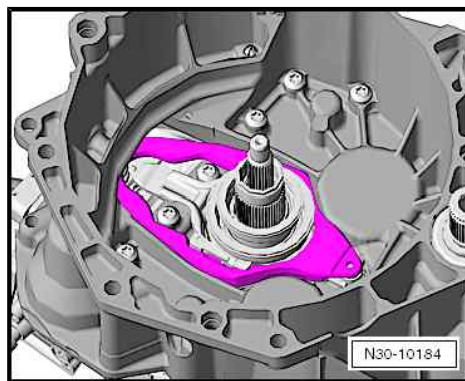
- Take out small engagement bearing with shim.



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- Remove large engaging lever.

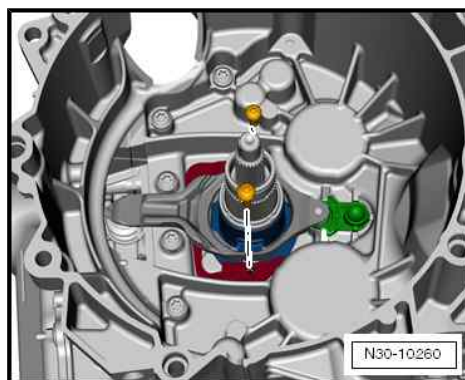


- Remove bolts and detach small engaging lever with clip.



#### Note

*A very small number of earlier gearboxes do not have this clip.*





- Remove support bearing for engaging levers.

### Installing

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

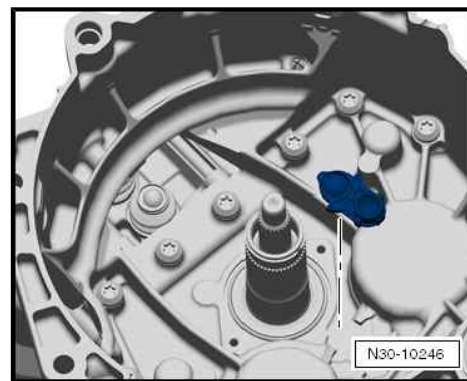


#### Caution

*The position of the engagement bearings "K 1" and "K 2" must be adjusted in the following cases:*

- ◆ *Dual clutch has been renewed.*
- ◆ *Engaging levers have been renewed.*
- ◆ *Support bearing for engaging levers has been renewed.*
- ◆ *Engagement bearings have been renewed.*

*If one of the procedures listed above was performed, the positions of the engagement bearings "K 1" and "K 2" must be adjusted before continuing ⇒ **page 40** .*



#### Note

*No adjustment is necessary if all aforementioned components have merely been removed and installed again.*

- Insert support bearing for engaging levers.

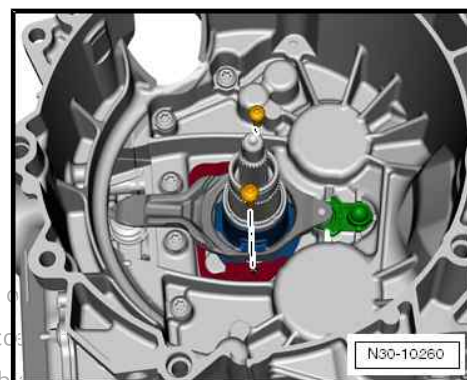


- Install small engaging lever with clip and secure with two new bolts.



#### Note

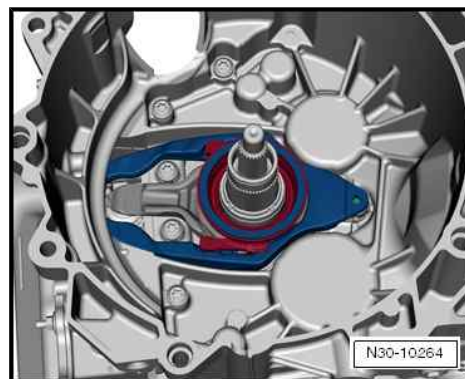
*A very small number of earlier gearboxes do not have this clip.*



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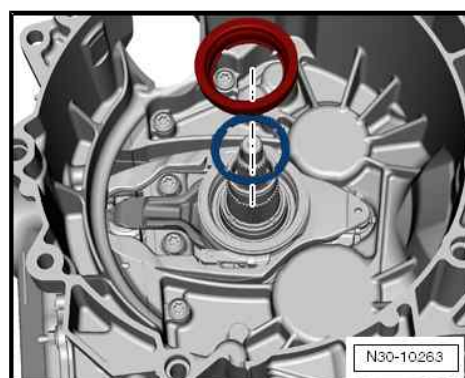


- Insert large engaging lever.
- Check that both engaging levers are seated correctly.



- Install small engagement bearing with appropriate measured shim for clutch "K 2".

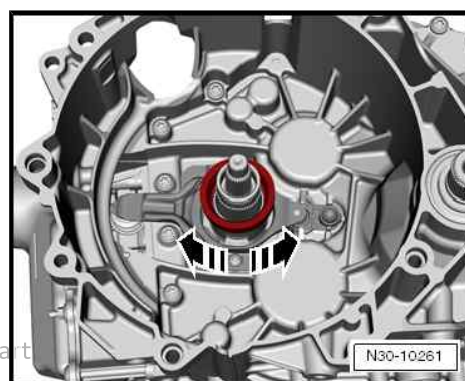
**The shim is fitted under the small engagement bearing (install the shim first).**



- The small engagement bearing only fits in one position due to the 4 grooves.



- Check that small engagement bearing is installed correctly and grooves are seated properly by turning it -arrows-.



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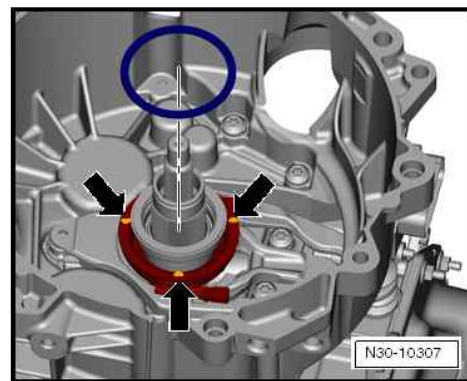


- Fix »large« shim for clutch "K 1" in position with three drops of adhesive - AMV 195 KD1 01- .

This prevents the shim from slipping out of its seat when the clutch is installed.

#### Tightening torques

- ◆ Small engaging lever to gearbox housing ⇒ [Item 6 \(page 32\)](#)



## 2.2.2 Removing and installing clutch engagement mechanism (gearbox manufacturing date from 06.2011 onwards)

#### Requirement:

Dual clutch is removed ⇒ [page 18](#) .

#### Removing

- Remove large engaging lever with small engagement bearing.

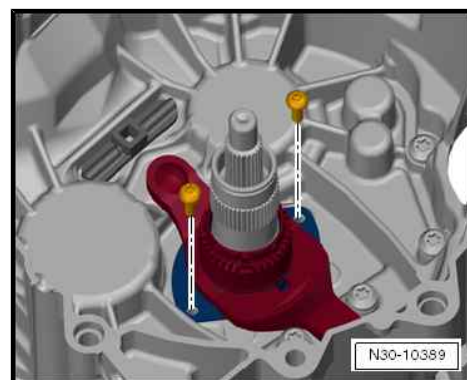


#### Note

*The top section of the guide sleeve cannot be removed and installed separately. It is always removed and installed together with the bottom section of the guide sleeve and the small engaging lever.*



- Remove bolts and detach small engaging lever together with guide sleeve (top and bottom sections).



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Do not remove hinge mounting -1-.

Only renew ball-head pin -2- if it is worn ⇒ [page 54](#) .

### Installing

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

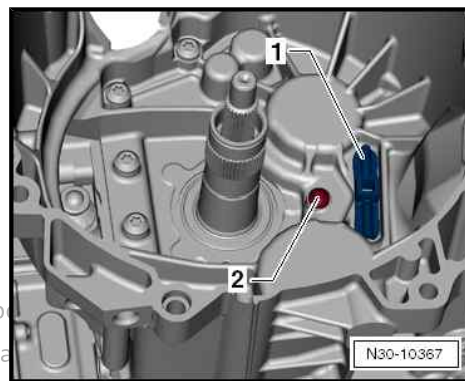


#### Caution

**The position of the engagement bearings "K 1" and "K 2" must be adjusted in the following cases:**

- ◆ **Dual clutch has been renewed.**
- ◆ **Engaging levers have been renewed.**
- ◆ **Ball-head pin for engaging lever "K 2" has been renewed.**
- ◆ **Engagement bearings have been renewed.**

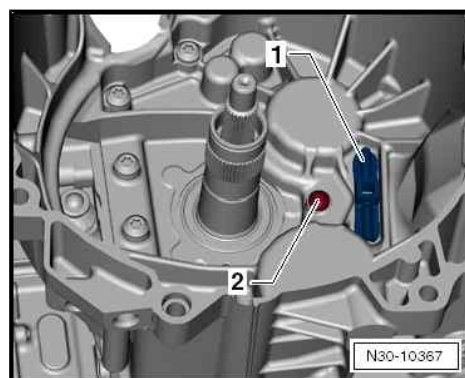
**If one of the procedures listed above was performed, the positions of the engagement bearings "K 1 and K 2" must be adjusted before continuing ⇒ [page 40](#) .**



#### Note

No adjustment is necessary if all aforementioned components have merely been removed and installed again.

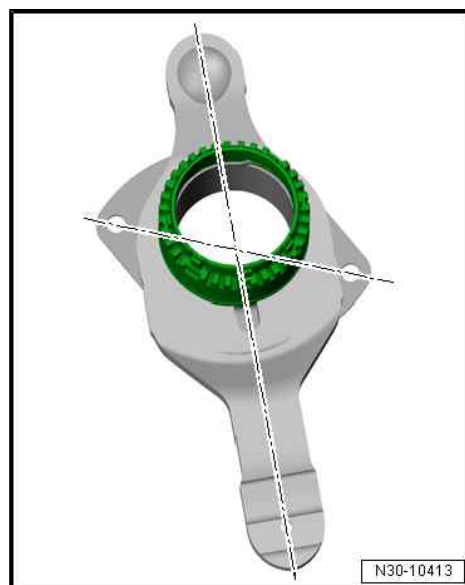
Hinge mounting -1- and ball-head pin -2- have been installed.



**When installing a new engaging lever »K 2«, note the following:**

New engaging lever »K 2« with guide sleeves (top and bottom sections) is supplied in transport position -illustration- and must be brought into installation position before fitting.

Bring engaging lever »K 2« into correct position:





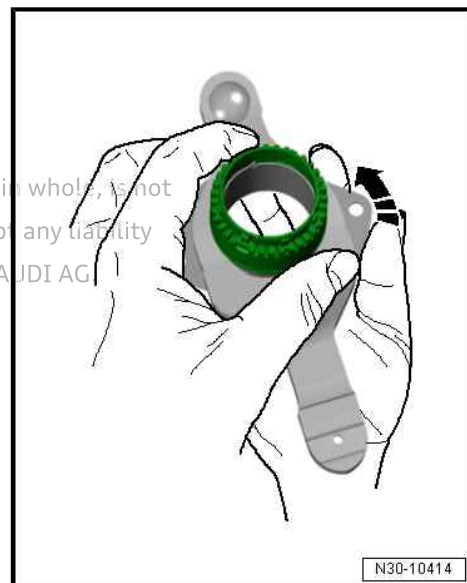
- Hold guide sleeve (top section) in place with one hand. With the other hand, turn guide sleeve (bottom section) in direction of -arrow- until sleeve can move freely.



#### Note

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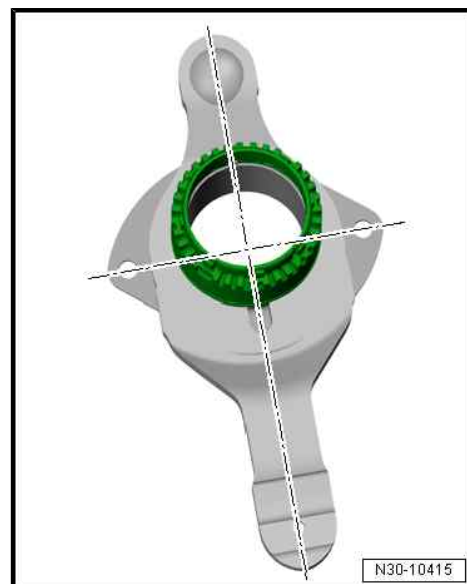
*Hold both sections firmly, as more force is required to turn the guide sleeve (bottom section).*



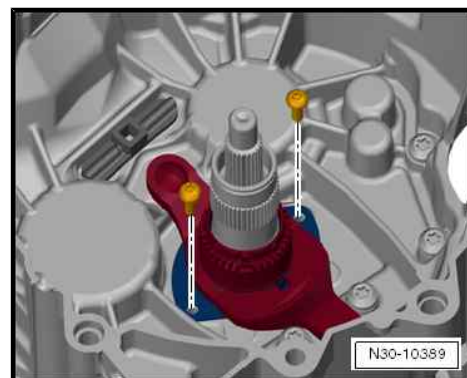
In installation position, both holes in guide sleeve (bottom section) are positioned perpendicular to engaging lever and sleeve can be moved freely.

- When installing new engaging lever, position of engagement bearings “K 1” and “K 2” must be adjusted ➔ [page 40](#) .

**All vehicles (continued):**

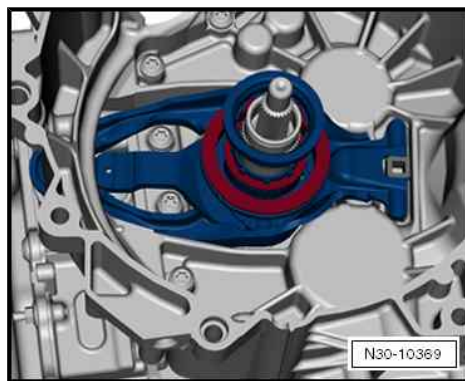


- Install small engaging lever together with guide sleeve (top and bottom sections). Fit new bolts and tighten.

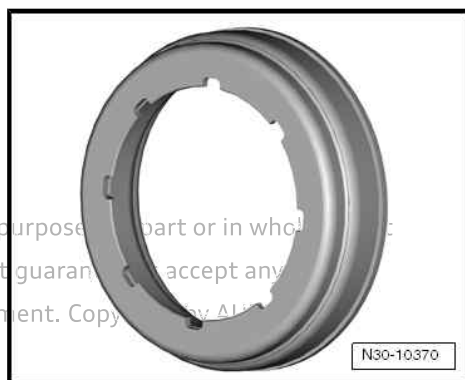




- Fit large engaging lever with appropriate measured shims for “K 1” and “K 2” and with small engaging lever.



- Fit large shim in large engagement bearing with hemispherical side facing downwards.
- The small shim is fitted under the small engagement bearing (install shim first).
- Shim and small engagement bearing only fit in one position due to the 8 grooves.
- Turn components to check that they are installed correctly and grooves are seated properly.
- Check that both engaging levers are seated correctly.
- Install dual clutch ⇒ [page 22](#) .



#### Tightening torques

- ♦ Guide sleeve (bottom section) with small engaging lever to gearbox housing ⇒ [Item 9 \(page 33\)](#)

## 2.3 Adjusting clutch engagement mechanism

⇒ [“2.3.1 Adjusting clutch engagement mechanism \(gearbox manufacturing date up to 05.2011\)”, page 40](#)

⇒ [“2.3.2 Adjusting clutch engagement mechanism \(gearbox manufacturing date from 06.2011 onwards\)”, page 52](#)

### 2.3.1 Adjusting clutch engagement mechanism (gearbox manufacturing date up to 05.2011)

The position of the engagement bearings “K 1” and “K 2” must be adjusted in the following cases:

- ♦ Clutch has been renewed.
- ♦ Engaging levers have been renewed.
- ♦ Ball-head pin for engaging lever “K 2” has been renewed.
- ♦ Engagement bearings have been renewed.



#### Note

- ♦ *No adjustment is necessary if all aforementioned components have merely been removed and installed again.*
- ♦ *Circlip must always be renewed.*

#### Brief description

- ♦ The position of the engagement bearings can be compared to the clutch play of a mechanical manual gearbox. On the 7-

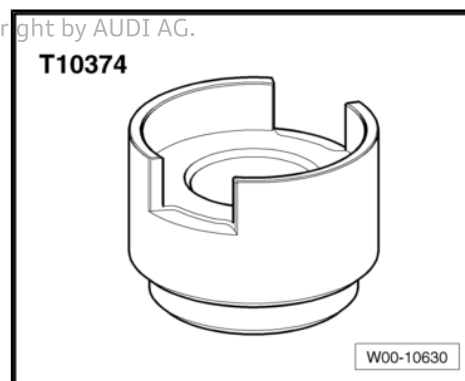


speed dual clutch gearbox 0AM, there are tolerances for the engagement system of the gearbox, for the gearbox itself and for the dual clutch. The tolerances must be considered separately during the adjustment procedure.

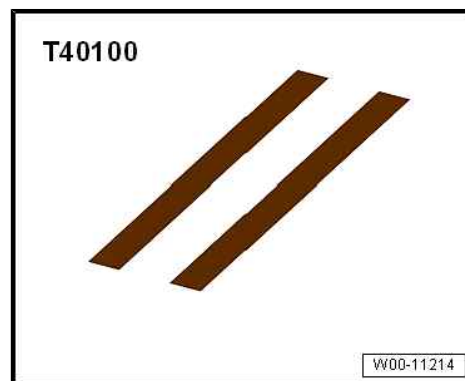
- ◆ In the following the procedure for determining all necessary dimensions (on the gearbox) is described in order to select the required shim. In addition, the tolerances in the clutch already determined by the manufacturer are also allowed for. The tolerances on the gearbox and in the clutch determine the thickness of the shim.
- ◆ It is important to keep to the sequence of steps as listed below.

#### Special tools and workshop equipment required

- ◆ Depth gauge, digital (300 mm) VAS 6594-
- ◆ Gauge block - T10374-



- ◆ Ruler - T40100-



#### Requirement:

- The surface of the gearbox flange must be absolutely even to make sure the ruler lies flat on the surface.
- Mechatronic unit for dual clutch gearbox - J743- must be installed.

Dual clutch is removed ⇒ [page 18](#) .



#### Caution

***Risk of damage to the clutch and other components!***

- ***The support bearing for the engaging levers and all the mechanical components of the engagement bearings must be dry and free from oil and grease.***



### 1st step: Preparing dual clutch for measurement

- Insert support bearing for engaging levers.



- Install small engaging lever with clip and secure with two new bolts.

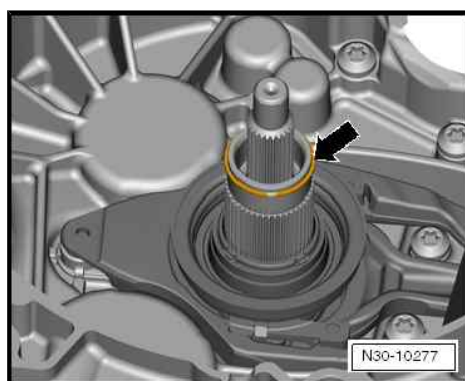
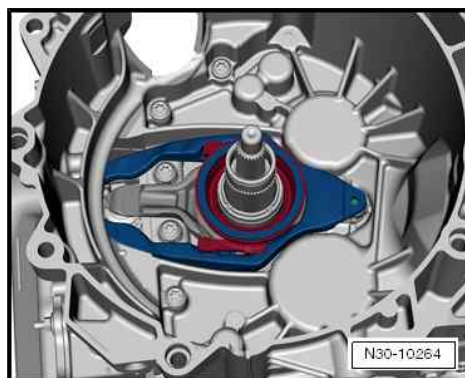
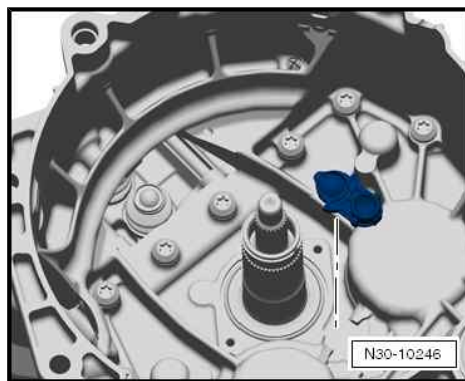


#### Note

*A very small number of earlier gearboxes do not have this clip.*

- Insert large engaging lever.
- Check that both engaging levers are seated correctly.

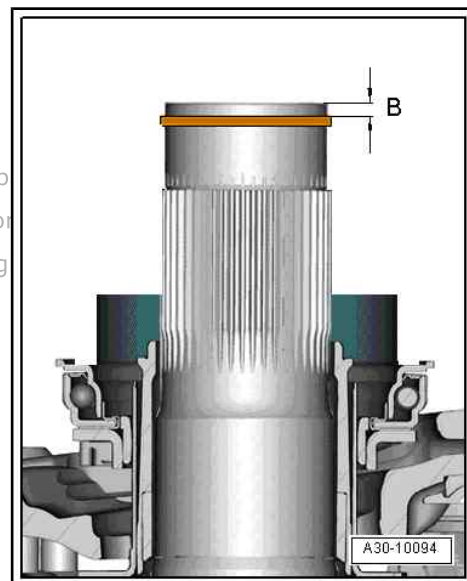
- Re-install old circlip on outer input shaft.





## 2nd step: Determining dimension "B" for clutch "K 1" and "K 2"

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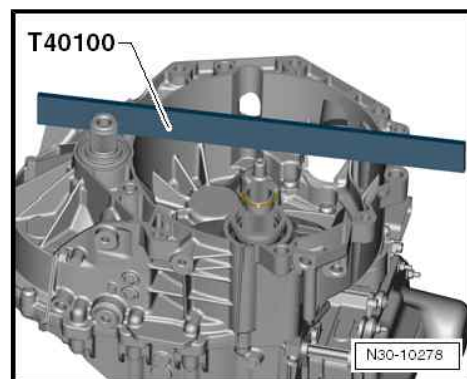
- Place ruler - T40100- on edge across gearbox flange above end of shaft.



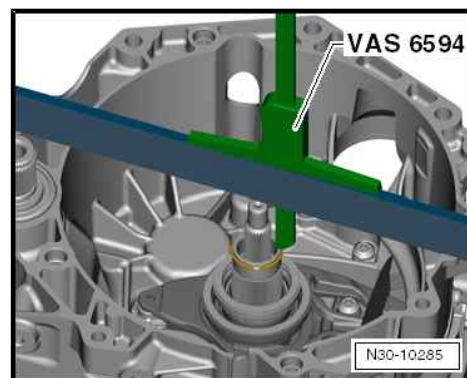
### Caution

*Risk of incorrect measurements.*

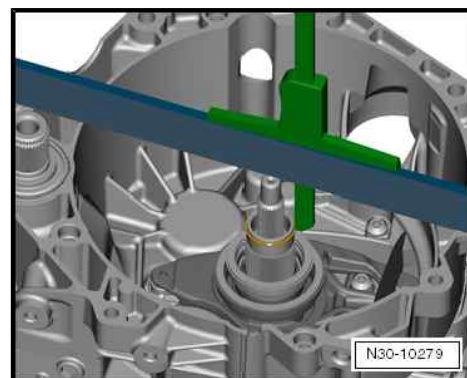
- ◆ *The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.*



- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler - T40100- and apply tip of depth gauge to outer input shaft.
- Set depth gauge to "0".



- Apply tip of depth gauge to circlip, as shown in illustration.
- Determine dimension "B<sub>1</sub>" to circlip at this point.
- Example: dimension "B<sub>1</sub>" = 2.92 mm





- Determine dimension “B<sub>2</sub>” to circlip on opposite side.



#### Note

*Do not perform measurement at gap in circlip; otherwise the circlip could be pressed out of position and the measurement would be incorrect.*

- Example: dimension “B<sub>2</sub>” = 3.00 mm
- Calculate mean value of dimensions “B<sub>1</sub>” and “B<sub>2</sub>”.

Formula:  $B_1 + B_2 \div 2$

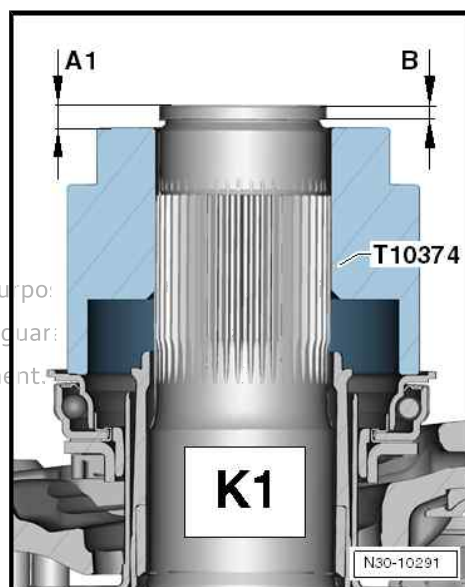
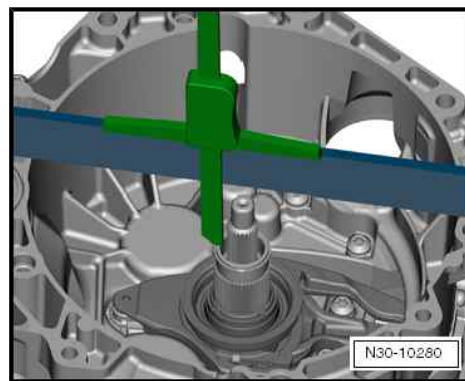
Example:

- $2.92 + 3.002 = 2.96 \text{ mm}$
- Result: dimension “B” = 2.96 mm
- Remove and dispose of circlip.

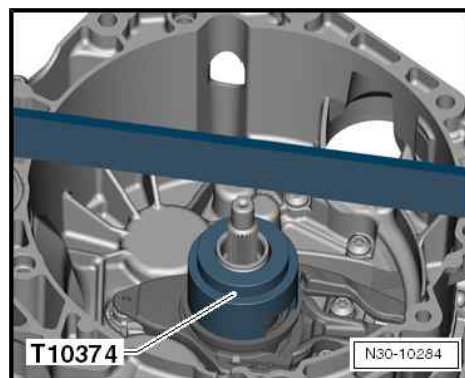
#### 3rd step: Determining dimension “A 1” for engagement bearing of clutch “K 1”



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- Place gauge block - T10374- on large engagement bearing; large opening must face downwards.
- To make sure that gauge block - T10374- is seated correctly on engagement bearing, press down on gauge block and turn it.
- The engagement bearing should turn together with the gauge block - T10374- .





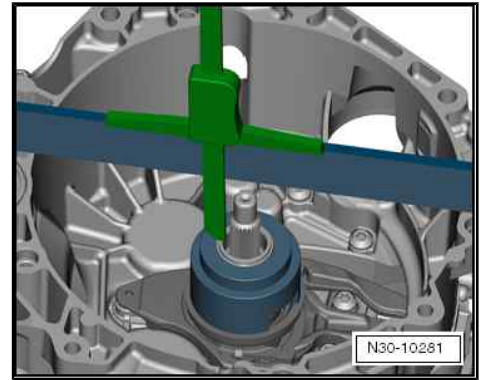
- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler and apply tip of depth gauge to outer input shaft.
- The ruler - T40100- is positioned on edge across the gearbox flange above the end of the shaft.



#### Caution

*Risk of incorrect measurements.*

- ◆ *The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.*

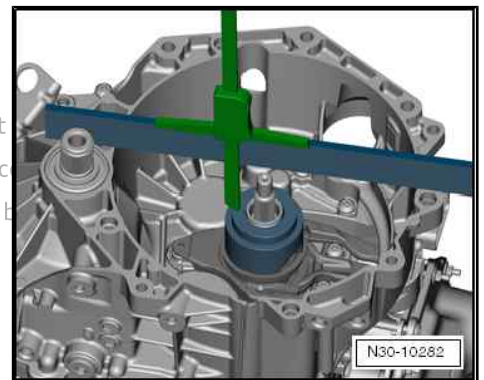


- Set depth gauge to "0".
- Apply tip of depth gauge to gauge block - T10374- , as shown in illustration.

- Determine dimension "A 1<sub>a</sub>" to gauge block - T10374- at this point.

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- Example: dimension "A 1<sub>a</sub>" = 2.61 mm





- Determine dimension “A 1<sub>b</sub>” to gauge block - T10374- on opposite side.
- Example: dimension “A 1<sub>b</sub>” = 2.81 mm
- Calculate mean value of dimensions “A 1<sub>a</sub>” and “A 1<sub>b</sub>”.

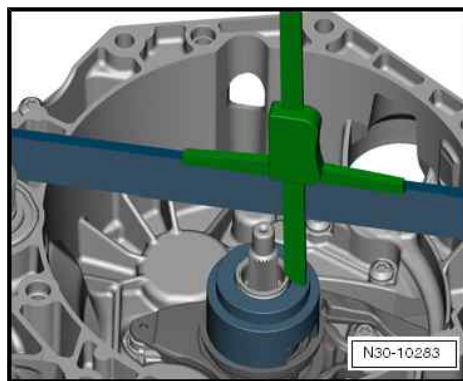
Formula:  $A 1_a + A 1_b : 2$

Example:

- $2.61 + 2.812 = 2.71$  mm
- Result: dimension “A 1” = 2.71 mm

#### 4th step: Determining installation depth of engagement bearing for clutch “K 1”

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#### Note

*The actual depth of the engagement bearing for clutch “K 1” must now be calculated from dimensions “A 1” and “B” as follows:*

|   |                                                                  |
|---|------------------------------------------------------------------|
|   | Dimension “A 1”                                                  |
| – | Dimension “B”                                                    |
| + | Exterior height of gauge block - T10374- (51.81 mm; fixed value) |
| = | Actual depth of engagement bearing for clutch “K 1”              |

Example:

- $2.71 \text{ mm} - 2.96 \text{ mm} + 51.81 \text{ mm} = 51.56 \text{ mm}$
- Result: Actual depth of engagement bearing for clutch “K 1” = 51.56 mm

#### 5th step: Calculating clearance of clutch “K 1”



#### Note

*The clearance of clutch “K 1” must now be calculated from the actual depth and the specified depth of the engagement bearing as follows:*

|   |                                                               |
|---|---------------------------------------------------------------|
|   | Actual depth of engagement bearing                            |
| – | Specified depth of engagement bearing (50.08 mm; fixed value) |
| = | Clearance of clutch “K 1”                                     |

Example:

- $51.56 \text{ mm} - 50.08 \text{ mm} = 1.48 \text{ mm}$
- Result: Clearance of clutch “K 1” = 1.48 mm



## 6th step: Determining tolerance for clutch "K 1"

- Read tolerance value for clutch off new clutch.
- Example: tolerance for clutch as marked on clutch "K 1 = +0.2" (as shown in illustration)

## 7th step: Determining thickness of shim "SK 1"



### Note

The thickness of shim "SK 1" must now be determined from the values for the clearance and the tolerance of clutch "K 1" as follows:

|     |                                     |
|-----|-------------------------------------|
|     | Clearance of clutch "K 1"           |
| -/+ | Tolerance value of clutch "K 1"     |
| =   | Calculated thickness of shim "SK 1" |

Example:

- $1.48 \text{ mm} + 0.20 \text{ mm} = 1.68 \text{ mm}$
- Result: calculated thickness of shim "SK 1" = 1.68 mm
- Measure and select required shim from shims supplied and have to hand for installation.

| Calculated thickness of shim<br>mm | Available shims<br>Thickness in mm |
|------------------------------------|------------------------------------|
| 0.31 ... 0.90                      | 0.80                               |
| 0.91 ... 1.10                      | 1.00                               |
| 1.11 ... 1.30                      | 1.20                               |
| 1.31 ... 1.50                      | 1.40                               |
| 1.51 ... 1.70                      | 1.60                               |
| 1.71 ... 1.90                      | 1.80                               |
| 1.91 ... 2.10                      | 2.00                               |
| 2.11 ... 2.30                      | 2.20                               |
| 2.31 ... 2.50                      | 2.40                               |
| 2.51 ... 2.70                      | 2.60                               |
| 2.71 ... 3.30                      | 2.80                               |

Example:

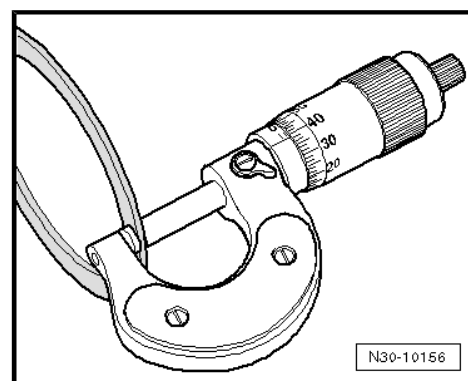
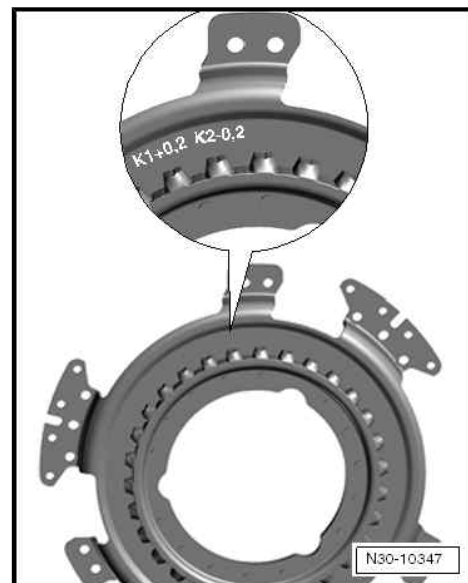
- Result: calculated thickness of shim "SK 1" = 1.68 mm
- Selected thickness of shim = 1.60 mm



### Caution

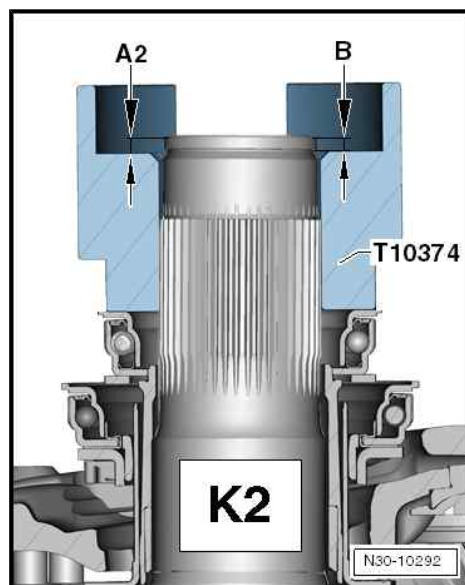
**Risk of damage to gearbox**

- ◆ Mark shim as "SK 1" and have this shim ready for assembly.
- ◆ This shim "SK 1" (and only this shim) must be fitted when adjusting.

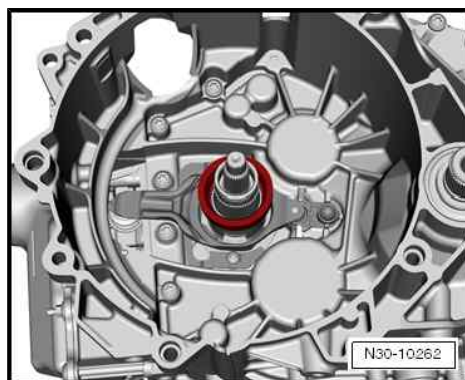




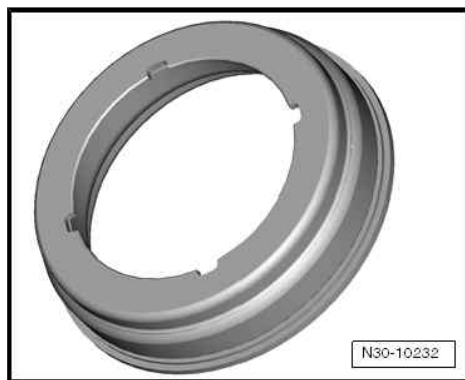
**8th step: Determining dimension "A 2" for engagement bearing of clutch "K 2"**



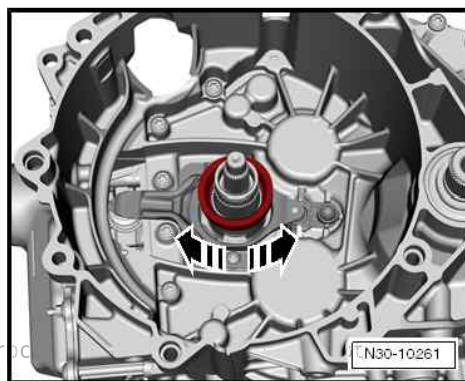
- Only insert small engagement bearing.



The small engagement bearing only fits in one position due to the 4 grooves.



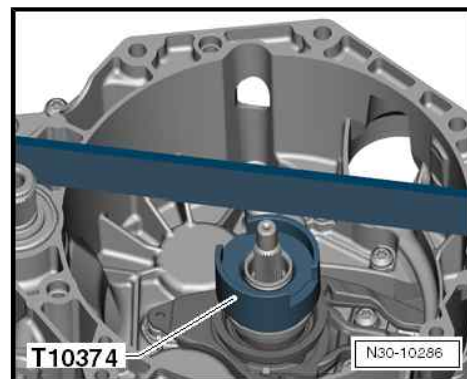
- Check that small engagement bearing is installed correctly and grooves are seated properly by turning it -arrows-.



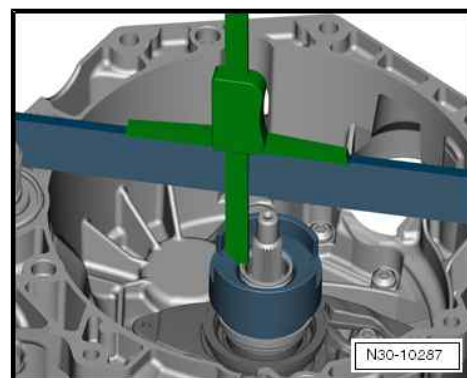
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- Place gauge block - T10374- on small engagement bearing; large opening must face upwards.



- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler and apply tip of depth gauge to outer input shaft.
- The ruler - T40100- is positioned on edge across the gearbox flange above the end of the shaft.

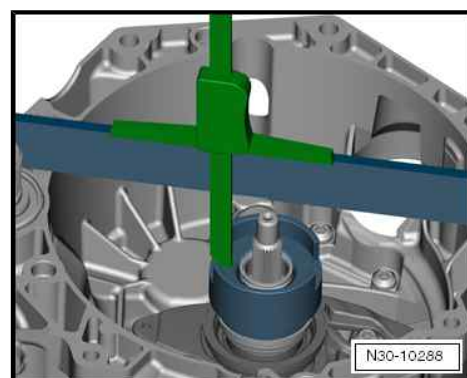


#### Caution

***Risk of incorrect measurements.***

- ◆ ***The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.***

- Set depth gauge to “0”.
- Apply tip of depth gauge to gauge block - T10374- , as shown in illustration.
- Determine dimension “A 2<sub>a</sub>” to gauge block - T10374- at this point.
- Example: dimension “A 2<sub>a</sub>” = 2.50 mm



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- Determine dimension “A 2<sub>b</sub>” to gauge block - T10374- on opposite side.
- Example: dimension “A 2<sub>b</sub>” = 2.54 mm
- Calculate mean value of dimensions “A 2<sub>a</sub>” and “A 2<sub>b</sub>”.

Formula:  $A 2_a + A 2_b : 2$

Example:

- $2.50 + 2.542 = 2.52$  mm
- Result: dimension “A 2” = 2.52 mm

**9th step: Determining installation depth of engagement bearing for clutch “K 2”**



**Note**

*The actual depth of the engagement bearing for clutch “K 2” must now be calculated from dimensions “A 2” and “B” as follows:*

|   |                                                                  |
|---|------------------------------------------------------------------|
|   | Dimension “A 2”                                                  |
| – | Dimension “B”                                                    |
| + | Interior height of gauge block - T10374- (36.20 mm; fixed value) |
| = | Actual depth of engagement bearing for clutch “K 2”              |

Example:

- $2.52$  mm –  $2.96$  mm +  $36.20$  mm =  $35.76$  mm
- Result: Actual depth of engagement bearing for clutch “K 2” =  $35.76$  mm

**10th step: Calculating clearance of clutch “K 2”**



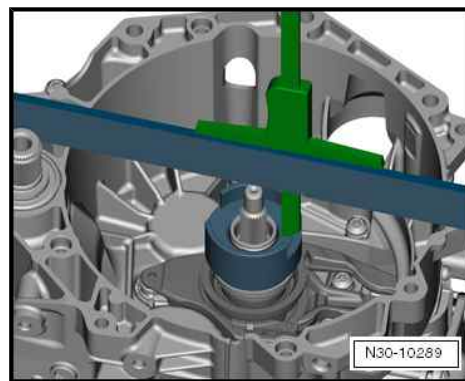
**Note**

*The clearance of clutch “K 2” must now be calculated from the actual depth and the specified depth of the engagement bearing as follows:*

|   |                                                               |
|---|---------------------------------------------------------------|
|   | Actual depth of engagement bearing                            |
| – | Specified depth of engagement bearing (34.35 mm; fixed value) |
| = | Clearance of clutch “K 2”                                     |

Example:

- $35.76$  mm –  $34.35$  mm =  $1.41$  mm
- Result: Clearance of clutch “K 2” =  $1.41$  mm



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### 11th step: Determining tolerance for clutch "K 2"

- Read tolerance value for clutch off new clutch.
- Example: tolerance for clutch as marked on clutch "K2 = – 0.2" (as shown in illustration)

### 12th step: Determining thickness of shim "SK 2":



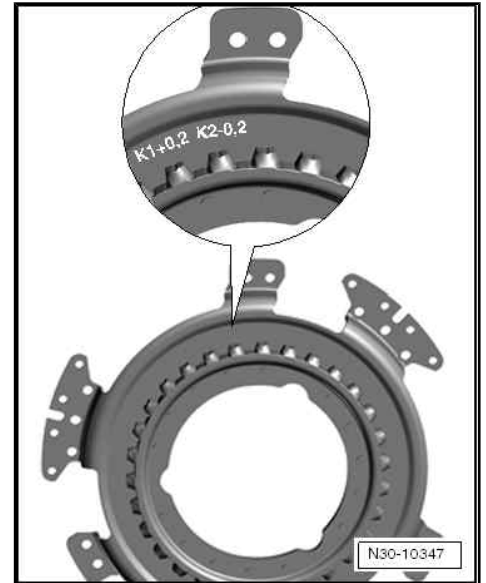
#### Note

*The thickness of shim "SK 2" must now be determined from the values for the clearance and the tolerance of clutch "K 2" as follows:*

|     |                                     |
|-----|-------------------------------------|
|     | Clearance of clutch "K 2"           |
| –/+ | Tolerance value of clutch "K 2"     |
| =   | Calculated thickness of shim "SK 2" |

Example:

- $1.41 \text{ mm} - 0.20 \text{ mm} = 1.21 \text{ mm}$
- Result: calculated thickness of shim "SK 2" = 1.21 mm

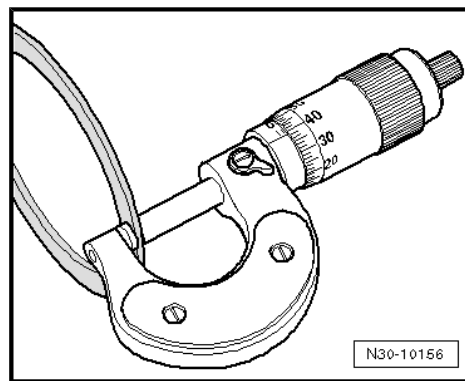


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- Measure and select required shim from shims supplied and have to hand for installation.

| Calculated thickness of shim<br>mm | Available shims<br>Thickness in mm |
|------------------------------------|------------------------------------|
| 0.31 ... 0.90                      | 0.80                               |
| 0.91 ... 1.10                      | 1.00                               |
| 1.11 ... 1.30                      | 1.20                               |
| 1.31 ... 1.50                      | 1.40                               |
| 1.51 ... 1.70                      | 1.60                               |
| 1.71 ... 1.90                      | 1.80                               |
| 1.91 ... 2.10                      | 2.00                               |
| 2.11 ... 2.30                      | 2.20                               |
| 2.31 ... 2.50                      | 2.40                               |
| 2.51 ... 2.70                      | 2.60                               |
| 2.71 ... 3.30                      | 2.80                               |



Example:

- Result: calculated thickness of shim "SK 2" = 1.21 mm
- Selected thickness of shim = 1.20 mm



#### Caution

##### *Risk of damage to gearbox*

- ◆ *Mark shim as "SK 2" and have this shim ready for assembly.*
- ◆ *This shim "SK 2" (and only this shim) must be fitted when adjusting.*

Adjustment is now completed and small engaging lever has been installed.

- Install dual clutch ⇒ [page 22](#) .

#### Tightening torques

- ◆ Small engaging lever to gearbox housing ⇒ [Item 6 \(page 32\)](#)

### 2.3.2 Adjusting clutch engagement mechanism (gearbox manufacturing date from 06.2011 onwards)

The position of the engagement bearings "K 1" and "K 2" must be adjusted in the following cases:

- ◆ Clutch has been renewed.
- ◆ Engaging levers have been renewed.
- ◆ Ball-head pin for engaging lever "K 2" has been renewed.
- ◆ Engagement bearings have been renewed.

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#### Note

- ◆ *No adjustment is necessary if all aforementioned components have merely been removed and installed again.*
- ◆ *Circlip must always be renewed.*

#### Brief description

- ◆ The position of the engagement bearings can be compared to the clutch play of a mechanical manual gearbox. On the 7-speed dual clutch gearbox 0AM/0CW, there are tolerances for the engagement system of the gearbox, for the gearbox itself and for the dual clutch. The tolerances must be considered separately during the adjustment procedure.
- ◆ In the following the procedure for determining all necessary dimensions (on the gearbox) is described in order to select the required shim. In addition, the tolerances in the clutch already determined by the manufacturer are also allowed for. The tolerances on the gearbox and in the clutch determine the thickness of the shim.
- ◆ It is important to keep to the sequence of steps as listed below.

#### Special tools and workshop equipment required

- ◆ Depth gauge, digital (300 mm) - VAS 6594-
- ◆ Gauge block - T10466-



- ◆ Ruler - T40100-



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#### Requirement:

- The surface of the gearbox flange must be absolutely even to make sure the ruler lies flat on the surface.
- Mechatronic unit for dual clutch gearbox - J743- must be installed.

Dual clutch is removed ➔ [page 18](#) .



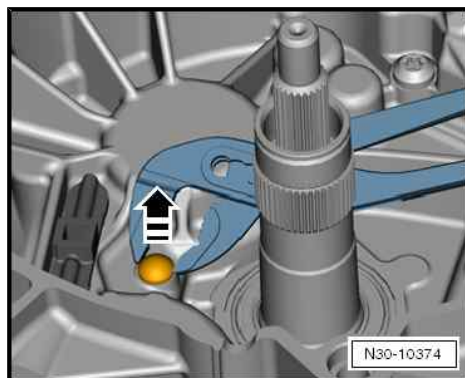
### Caution

***Risk of damage to the clutch and other components!***

- ***The support bearing for the engaging levers and all the mechanical components of the engagement bearings must be dry and free from oil and grease.***

Only if ball-head pin is worn:

- Use pliers to remove existing ball-head pin.

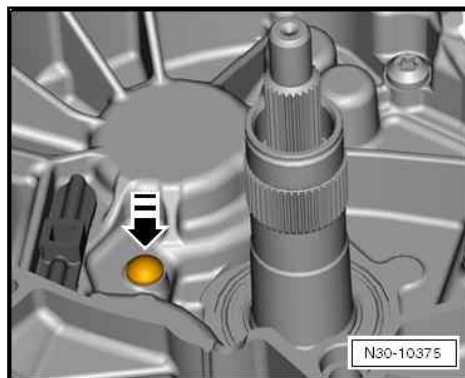


- Press in new ball-head pin by hand; if necessary, knock it in gently using a plastic hammer and drift.



### Note

*Take care to tap the drift gently with the plastic hammer to avoid damaging the ball-head pin.*



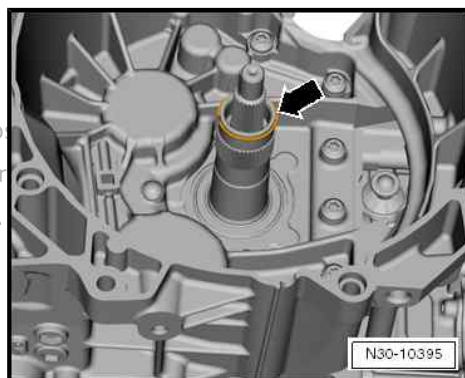
All vehicles (continued):



### Note

*If dimension "B" has already been determined, 2nd step of measuring procedure can now be performed ➔ [page 56](#).*

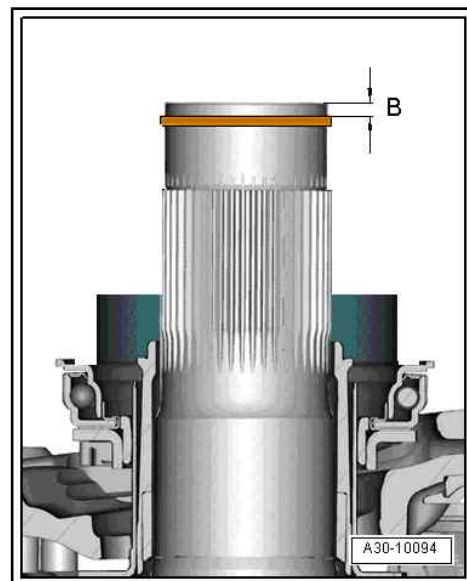
- Re-install old circlip -arrow- on outer input shaft.



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## 1st step: Determining dimension "B" for clutch "K 1" and "K 2"



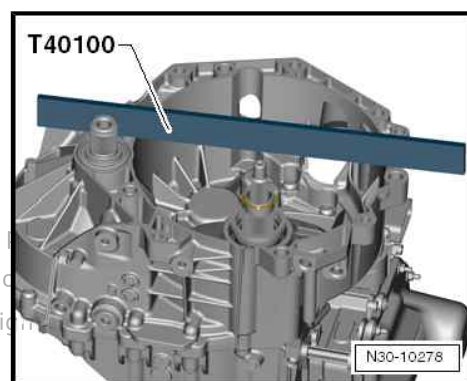
- Place ruler - T40100- on edge across gearbox flange above end of shaft.



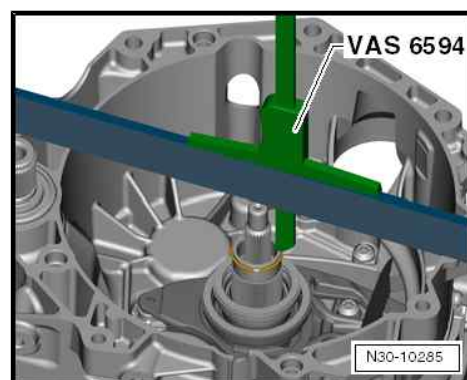
### Caution

*Risk of incorrect measurements.*

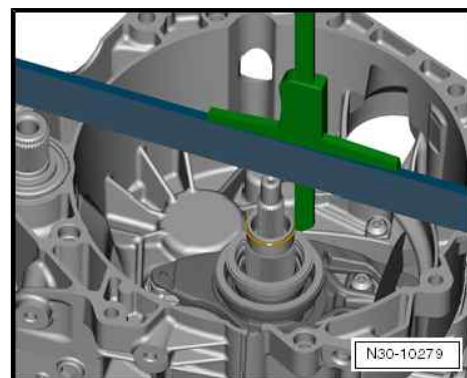
◆ *The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.*



- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler - T40100- and apply tip of depth gauge to outer input shaft.
- Set depth gauge to "0".



- Apply tip of depth gauge to circlip, as shown in illustration.
- Determine dimension "B<sub>1</sub>" to circlip at this point.
- Example: dimension "B<sub>1</sub>" = 2.62 mm





- Determine dimension “B<sub>2</sub>” to circlip on opposite side.



#### Note

*Do not perform measurement at gap in circlip; otherwise the circlip could be pressed out of position and the measurement would be incorrect.*

- Example: dimension “B<sub>2</sub>” = 2.58 mm

- Calculate mean value of dimensions “B<sub>1</sub>” and “B<sub>2</sub>”

Formula:  $B_1 + B_2 : 2$

Example:

- $2.62 + 2.582 = 2.60$  mm
- Result: dimension “B” = 2.60 mm



#### Note

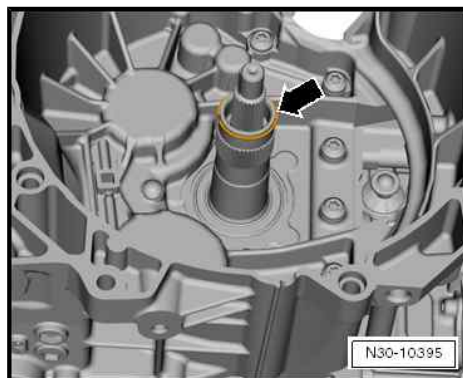
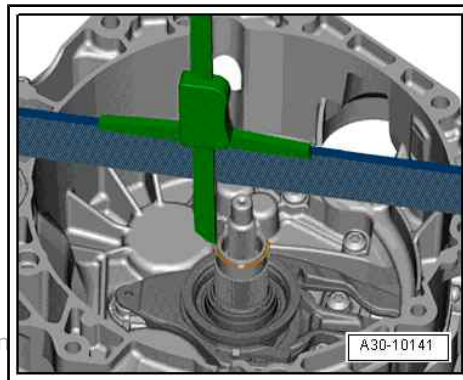
*If the dual clutch is still installed following this measurement, it must now be removed ⇒ [page 20](#) .*

- Remove and dispose of circlip -arrow- on outer input shaft.

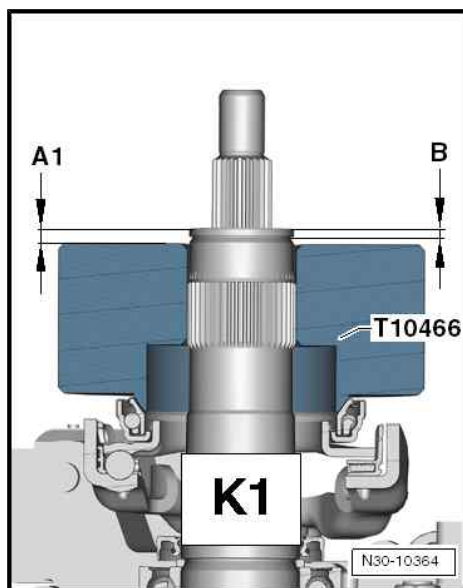


#### Caution

*Circlip must not be used again.*



**2nd step: Determining dimension “A 1” for engagement bearing of clutch “K 1”**





- Insert large engaging lever.

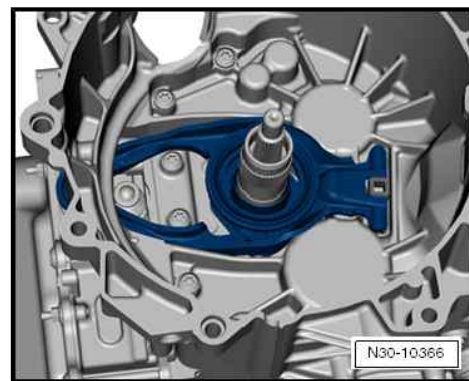


**Caution**

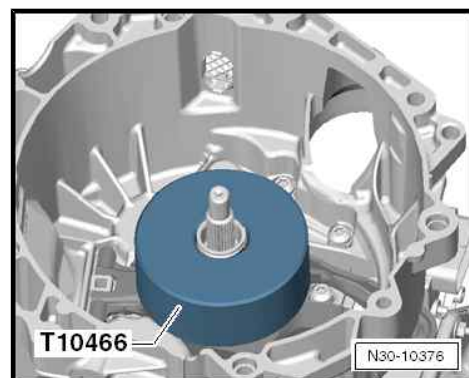
*Risk of incorrect measurements.*

- ◆ **Do not install a shim.**

- Check that engaging lever is seated correctly.



- Place gauge block - T10466- on large engagement bearing. The flat side faces upwards.
- To make sure that gauge block - T10466- is seated correctly on engagement bearing, press down on gauge block and turn it.
- The engagement bearing should turn together with the gauge block - T10466- .



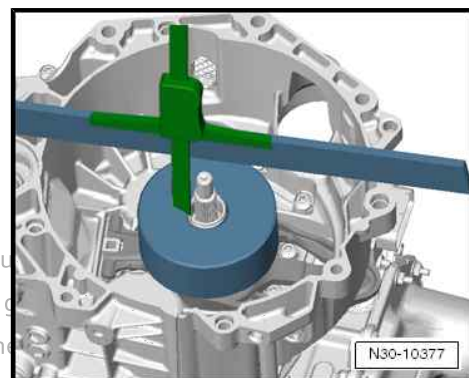
- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler and apply tip of depth gauge to outer input shaft.
- The ruler - T40100- is positioned on edge across the gearbox flange above the end of the shaft.



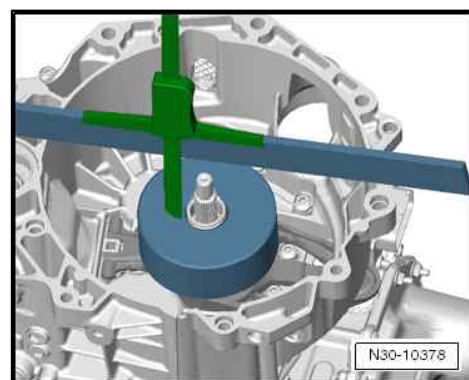
**Caution**

*Risk of incorrect measurements.*

- ◆ **The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.**



- Set depth gauge to “0”.
- Apply tip of depth gauge to gauge block - T10466- , as shown in illustration.
- Determine dimension “A 1<sub>a</sub>” to gauge block - T10466- at this point.
- Example: dimension “A 1<sub>a</sub>” = 5.03 mm





- Determine dimension “A<sub>1b</sub>” to gauge block - T10466- on opposite side.
- Example: dimension “A<sub>1b</sub>” = 5.01 mm
- Calculate mean value of dimensions “A<sub>1a</sub>” and “A<sub>1b</sub>”.

Formula:  $A_{1a} + A_{1b} \div 2$

Example:

- $5.03 + 5.012 \div 2 = 5.02 \text{ mm}$
- Result: dimension “A<sub>1</sub>” = 5.02 mm

### 3rd step: Determining height tolerance of engagement bearing for clutch “K 1”



#### Note

*The height tolerance of the engagement bearing for clutch “K 1” must now be calculated from dimensions “A<sub>1</sub>” and “B” as follows:*

|   |                                                         |
|---|---------------------------------------------------------|
|   | Dimension “A <sub>1</sub> ”                             |
| – | Dimension “B”                                           |
| = | Height tolerance of engagement bearing for clutch “K 1” |

Example:

- $5.02 \text{ mm} - 2.60 \text{ mm} = 2.42 \text{ mm}$
- Result: height tolerance of engagement bearing for clutch “K 1” = 2.42 mm

### 4th step: Determining tolerance for clutch “K 1”

- Read tolerance value for clutch off new clutch.
- Example: tolerance for clutch as marked on clutch “K 1” = +0.2” (as shown in illustration)
- Result: tolerance of clutch “K 1” = + 0.20 mm

### 5th step: Determining thickness of shim “SK 1”



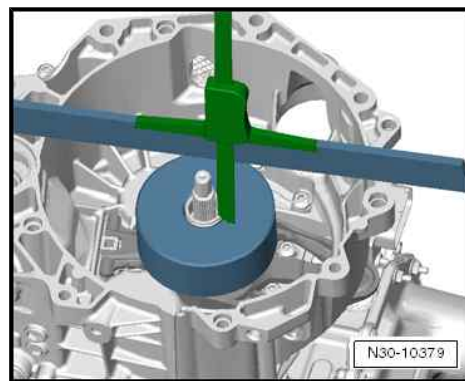
#### Note

*The thickness of shim “SK 1” must now be determined from the tolerance of clutch “K 1” as follows:*

|     |                                              |
|-----|----------------------------------------------|
|     | Height tolerance of engagement bearing “K 1” |
| –/+ | Tolerance value of clutch “K 1”              |
| =   | Calculated thickness of shim “SK 1”          |

Example:

- $2.42 \text{ mm} + 0.20 \text{ mm} = 2.62 \text{ mm}$
- Result: calculated thickness of shim “SK 1” = 2.62 mm





- Select required shim from table using part number  
-detail view- on shim and have to hand for installation.

| Calculated thick-<br>ness of shim<br>mm | Available shims<br>Thickness in mm | Shim part number |
|-----------------------------------------|------------------------------------|------------------|
| 1.21 ... 1.60                           | 1.50                               | 0AM 141 383      |
| 1.61 ... 1.80                           | 1.70                               | 0AM 141 383 A    |
| 1.81 ... 2.00                           | 1.90                               | 0AM 141 383 B    |
| 2.01 ... 2.20                           | 2.10                               | 0AM 141 383 C    |
| 2.21 ... 2.40                           | 2.30                               | 0AM 141 383 D    |
| 2.41 ... 2.60                           | 2.50                               | 0AM 141 383 E    |
| 2.61 ... 2.80                           | 2.70                               | 0AM 141 383 F    |
| 2.81 ... 3.00                           | 2.90                               | 0AM 141 383 G    |
| 3.01 ... 3.20                           | 3.10                               | 0AM 141 383 H    |
| 3.21 ... 3.40                           | 3.30                               | 0AM 141 383 J    |
| 3.41 ... 3.80                           | 3.50                               | 0AM 141 383 K    |



Example:

- Result: calculated thickness of shim "SK 1" = 2.62 mm
- Selected thickness of shim = 2.70 mm = part number 0AM 141 383 F



#### Caution

*The clutch can be damaged.*

◆ *Install only this shim later when required.*

- Remove gauge block - T10466- and large engaging lever again.



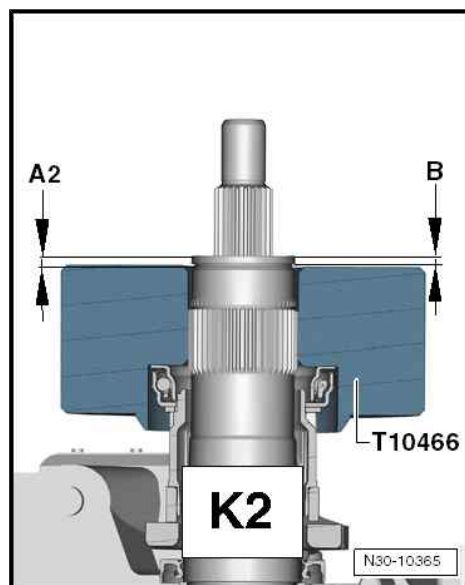


# **6th step: Determining dimension "A 2" for engagement bearing of clutch "K 2"**



## **Note**

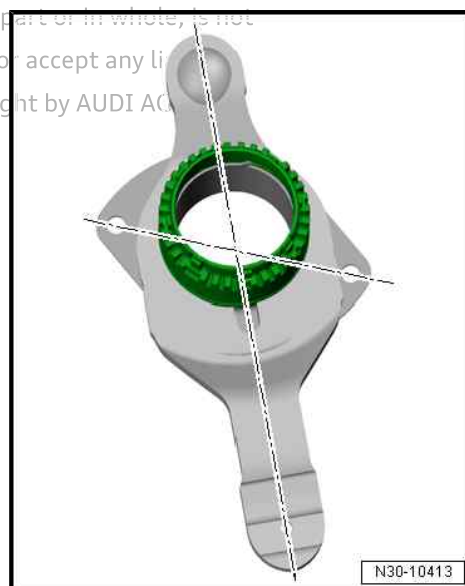
*The top section of the guide sleeve cannot be removed and installed separately. It is always removed and installed together with the bottom section of the guide sleeve and the small engaging lever.*



## **When installing a new engaging lever »K 2«, note the following:**

New engaging lever »K 2« with guide sleeves (top and bottom sections) is supplied in transport position -illustration- and must be brought into installation position before fitting.

Bring engaging lever »K 2« into correct position:

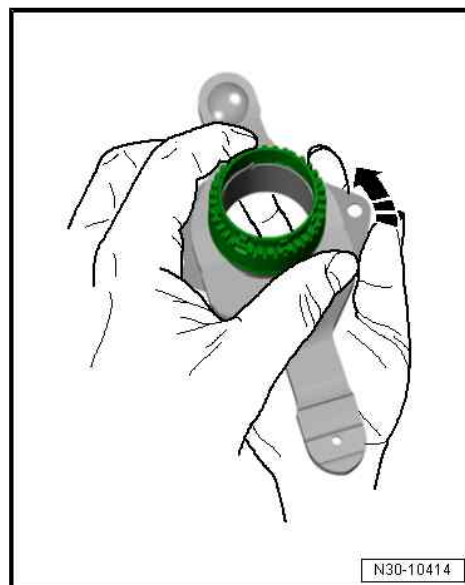


- Hold guide sleeve (top section) in place with one hand. With the other hand, turn guide sleeve (bottom section) in direction of -arrow- until sleeve can move freely.



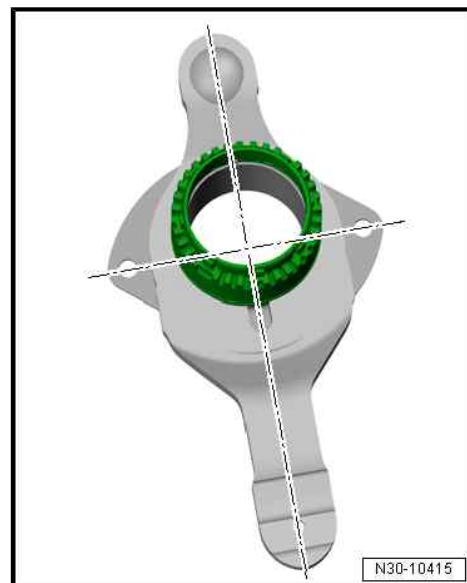
## **Note**

*Hold both sections firmly, as more force is required to turn the guide sleeve (bottom section).*





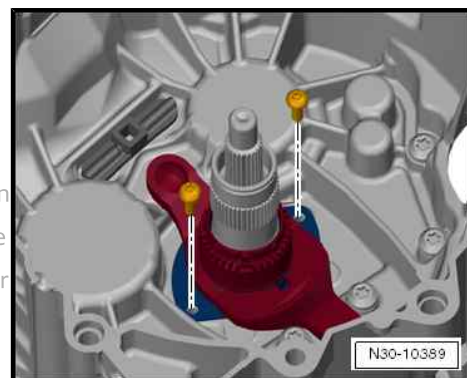
In installation position, both holes in guide sleeve (bottom section) are positioned perpendicular to engaging lever and sleeve can be moved freely.



#### All vehicles (continued):

- Install small engaging lever together with guide sleeve (top and bottom sections). Fit new bolts and tighten.

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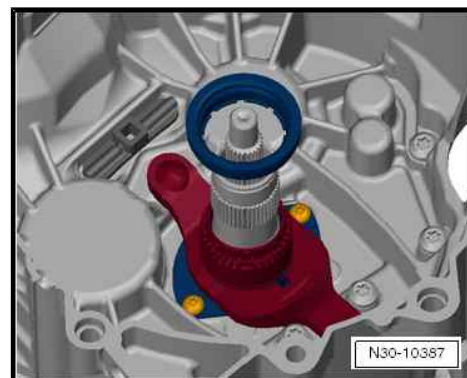
- Insert small engagement bearing without shim.



#### Caution

*Risk of incorrect measurements.*

- ◆ *Do not install a shim.*



- The small engagement bearing only fits in one position due to the 8 grooves.
- Check that small engagement bearing is installed correctly and grooves are seated properly by turning it.





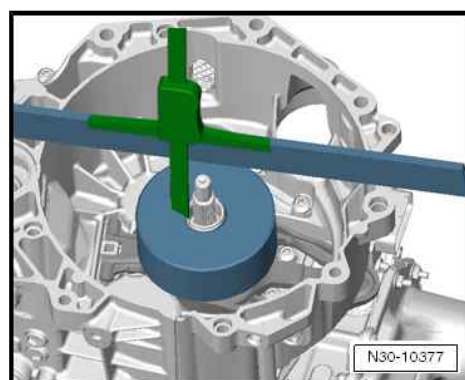
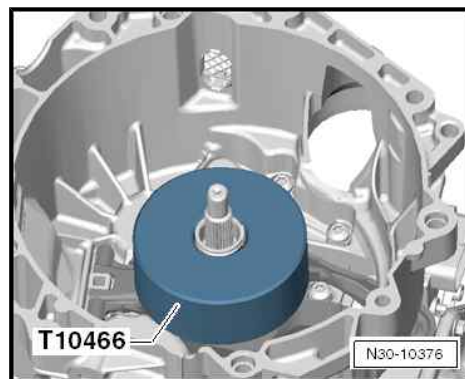
- Place gauge block - T10466- on small engagement bearing. The flat side faces upwards.
- To make sure that gauge block - T10466- is seated correctly on engagement bearing, press down on gauge block and turn it.
- The engagement bearing should turn together with the gauge block - T10466- .
- Set digital depth gauge (300 mm) - VAS 6594- on top of ruler and apply tip of depth gauge to outer input shaft.
- The ruler - T40100- is positioned on edge across the gearbox flange above the end of the shaft.



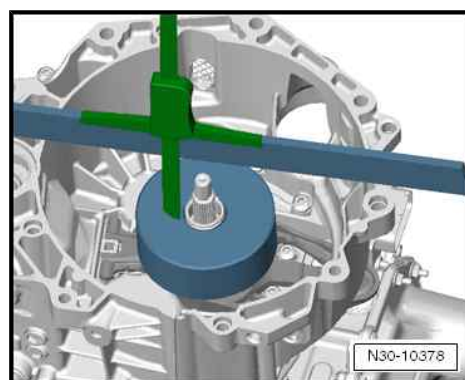
**Caution**

***Risk of incorrect measurements.***

- ◆ ***The ruler - T40100- should remain in this position during the following measurements - do not change its position or remove it.***



- Set depth gauge to "0".
- Apply tip of depth gauge to gauge block - T10466- , as shown in illustration.
- Determine dimension "A 2<sub>a</sub>" to gauge block - T10466- at this point.
- Example: dimension "A 2<sub>a</sub>" = 4.79 mm



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- Determine dimension “A 2<sub>b</sub>” to gauge block - T10466- on opposite side.
- Example: dimension “A 2<sub>b</sub>” = 4.75 mm
- Calculate mean value of dimensions “A 2<sub>a</sub>” and “A 2<sub>b</sub>”.

Formula:  $A 2_a + A 2_b \div 2$

Example:

- $4.79 + 4.752 = 4.77$  mm
- Result: dimension “A 2” = 4.77 mm

**7th step: Determining height tolerance of engagement bearing for clutch “K 2”**



**Note**

*The height tolerance of the engagement bearing for clutch “K 2” must now be calculated from dimensions “A 2” and “B” as follows:*

|   |                                                         |
|---|---------------------------------------------------------|
|   | Dimension “A 2”                                         |
| – | Dimension “B”                                           |
| = | Height tolerance of engagement bearing for clutch “K 2” |

Example:

- $4.77 \text{ mm} - 2.60 \text{ mm} = 2.17 \text{ mm}$
- Result: height tolerance of engagement bearing for clutch “K 2” = 2.17 mm

**8th step: Determining tolerance for clutch “K 2”**

- Read tolerance value for clutch off new clutch.
- Example: tolerance for clutch as marked on clutch “K2 = – 0.2” (as shown in illustration)
- Result: tolerance of clutch “K 2” = – 0.20 mm

**9th step: Determining thickness of shim “SK 2”**



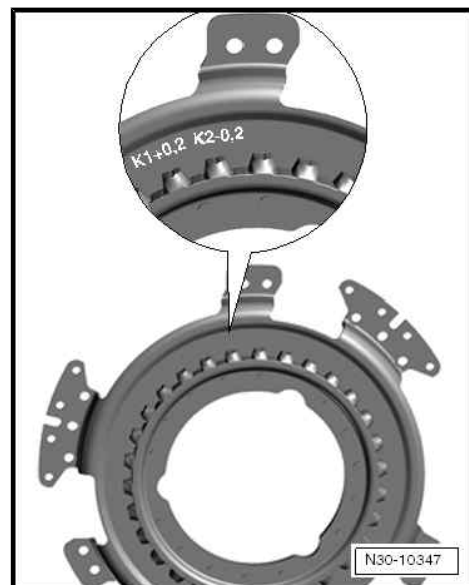
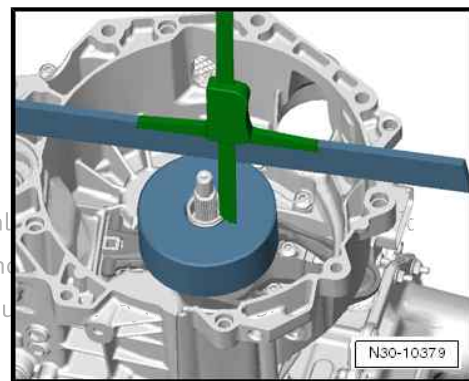
**Note**

*The thickness of shim “SK 2” must now be determined from the tolerance of clutch “K 2” as follows:*

|     |                                              |
|-----|----------------------------------------------|
|     | Height tolerance of engagement bearing “K 2” |
| –/+ | Tolerance value of clutch “K 2”              |
| =   | Calculated thickness of shim “SK 2”          |

Example:

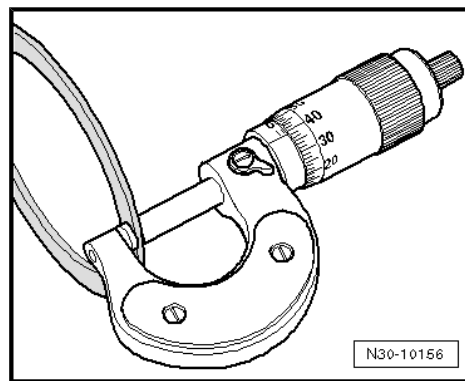
- $2.17 \text{ mm} - 0.20 \text{ mm} = 1.97 \text{ mm}$
- Result: calculated thickness of shim “SK 2” = 1.97 mm





- Measure and select required shim from shims supplied and have to hand for installation.

| Calculated thickness of shim<br>mm | Available shims<br>Thickness in mm |
|------------------------------------|------------------------------------|
| 0.31 ... 0.90                      | 0.80                               |
| 0.91 ... 1.10                      | 1.00                               |
| 1.11 ... 1.30                      | 1.20                               |
| 1.31 ... 1.50                      | 1.40                               |
| 1.51 ... 1.70                      | 1.60                               |
| 1.71 ... 1.90                      | 1.80                               |
| 1.91 ... 2.10                      | 2.00                               |
| 2.11 ... 2.30                      | 2.20                               |
| 2.31 ... 2.50                      | 2.40                               |
| 2.51 ... 2.70                      | 2.60                               |
| 2.71 ... 3.30                      | 2.80                               |



Example:

- Result: calculated thickness of shim “SK 2” = 1.97 mm
- Selected thickness of shim = 2.00 mm



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**The clutch can be damaged.**

◆ **Install only this shim later when required.**

Adjustment is now completed and small engaging lever has been installed.

- Install dual clutch ⇒ [page 22](#) .

**Tightening torques**

- ◆ Guide sleeve (bottom section) with small engaging lever to gearbox housing ⇒ [Item 9 \(page 33\)](#)



## 34 – Controls, housing

### 1 Transporting gearbox

#### Special tools and workshop equipment required

- ◆ Shackle - 10 - 222 A /12-



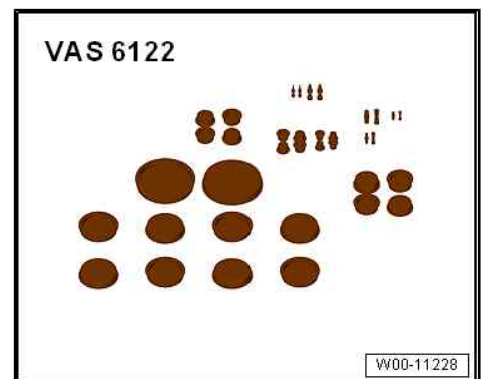
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- ◆ Workshop hoist - VAS 6100-



- ◆ Engine bung set - VAS 6122-



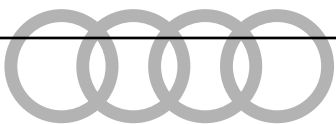
- ◆ 2x protective cap - 02M 409 120- (alternative to engine bung set - VAS 6122- )
- ◆ 1x protective cap - 0AM 325 120 A-



## Sealing gearbox



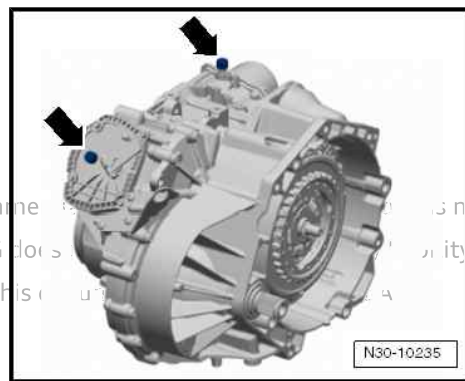
### Caution



#### **Risk of damage to gearbox**

**When performing repairs, the breather opening on the mechatronic unit for dual clutch gearbox - J743- (-rear arrow-) and the gearbox breather (-front left arrow-) must be sealed off to avoid loss of fluid.**

- ◆ **Fluid which escapes from the mechatronic unit for dual clutch gearbox - J743- cannot be replenished and the fluid level cannot be checked! It is not possible to check the fluid level in the hydraulic section of the mechatronic unit for dual clutch gearbox - J743- .**
- ◆ **If oil escapes from the gear oil section, the gear oil must be replaced completely. It is not possible to check the level.**
- ◆ **Underfilling or overfilling either of the oil/fluid sections will impair the function of the gearbox.**



- Pull off both breather caps -arrows- (different types according to version).

#### **If both breather caps are the same size:**

- Seal gearbox breather and breather opening for mechatronic unit for dual clutch gearbox - J743- with clean plugs from engine bung set - VAS 6122- . Two protective caps - 02M 409 120- can also be used to seal the breather openings ⇒ Electronic parts catalogue

#### **If the breather cap for the mechatronic unit for dual clutch gearbox - J743- (-rear arrow-) is larger than the gearbox breather cap (-front left arrow-):**

- Order new breather cap for mechatronic unit for dual clutch gearbox - J743- ; breather cap must be renewed ⇒ Electronic parts catalogue .
- Seal off breather opening of mechatronic unit for dual clutch gearbox - J743- with protective cap - 0AM 325 120 A- to prevent fluid from escaping.

#### **Both versions:**

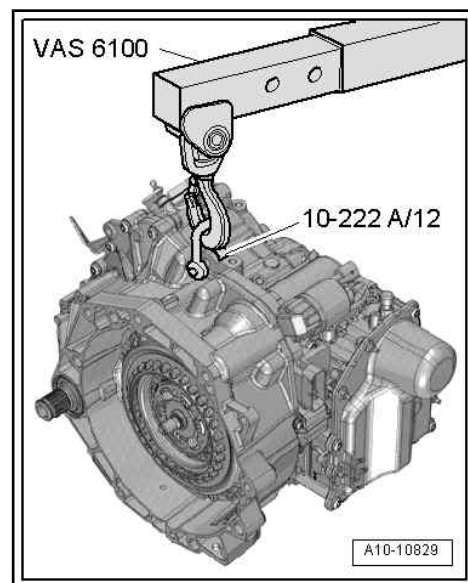
- After installing gearbox in vehicle, remove plugs and re-fit or renew breather caps.



## Transporting gearbox

Requirement:

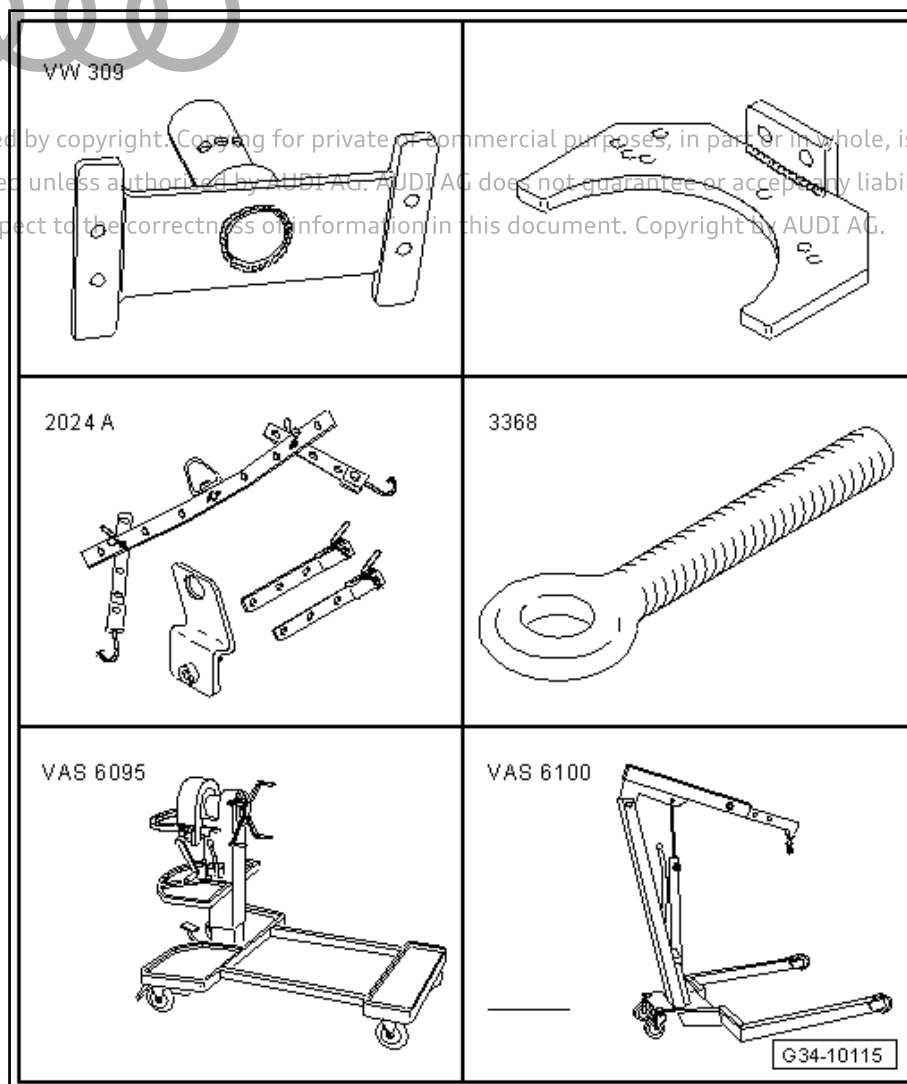
- Gearbox is sealed ⇒ [page 66](#) .





## 2 Securing to engine and gearbox support

### Special tools and workshop equipment required



- ◆ Support plate - VW 309-
- ◆ Gearbox support - VW 353-
- ◆ Lifting tackle - 2024 A-
- ◆ 2x eye-head bolt - 3368-
- ◆ Engine and gearbox support - VAS 6095-
- ◆ Workshop hoist - VAS 6100-

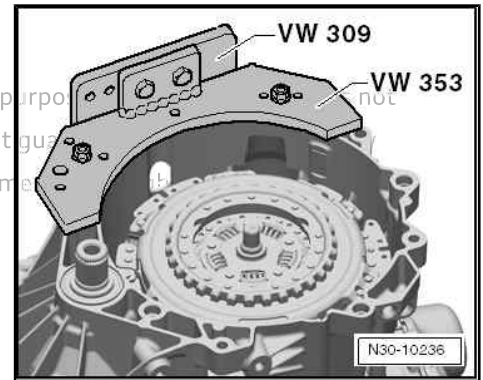


## Secure gearbox on gearbox support - VW 353- .

Requirement:

- Gearbox is sealed ⇒ [page 66](#) .

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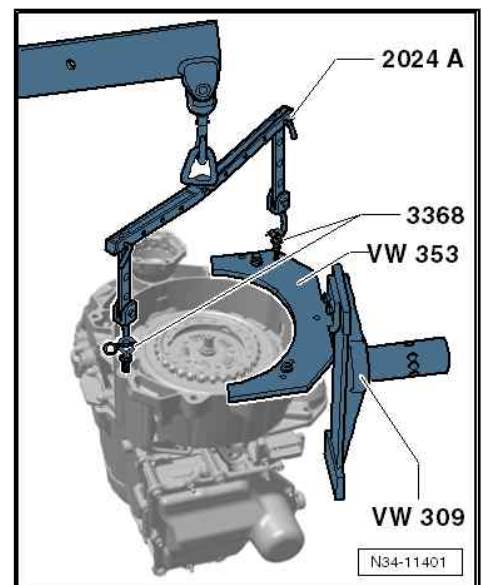


## Lifting gearbox into engine and gearbox support

Requirement:

- Gearbox is sealed ⇒ [page 66](#) .

The gearbox is lifted onto the engine and gearbox support - VAS 6100- together with the gearbox support - VW 353- using the workshop hoist - VAS 6095- .





### 3 Mechatronic unit

⇒ [“3.1 Exploded view - mechatronic unit”, page 70](#)

⇒ [“3.2 Removing and installing mechatronic unit”, page 71](#)

⇒ [“3.3 Moving mechatronic unit into removal position by hand”, page 81](#)

⇒ [“3.4 Basic settings”, page 83](#)

⇒ [“3.5 Renewing boot together with clutch actuator”, page 85](#)

⇒ [“3.6 Renewing mechatronic unit control unit”, page 89](#)

#### 3.1 Exploded view - mechatronic unit



##### Note

Some versions are fitted with a cover above the engaging levers ⇒ [page 71](#) .

##### 1 - Bolt

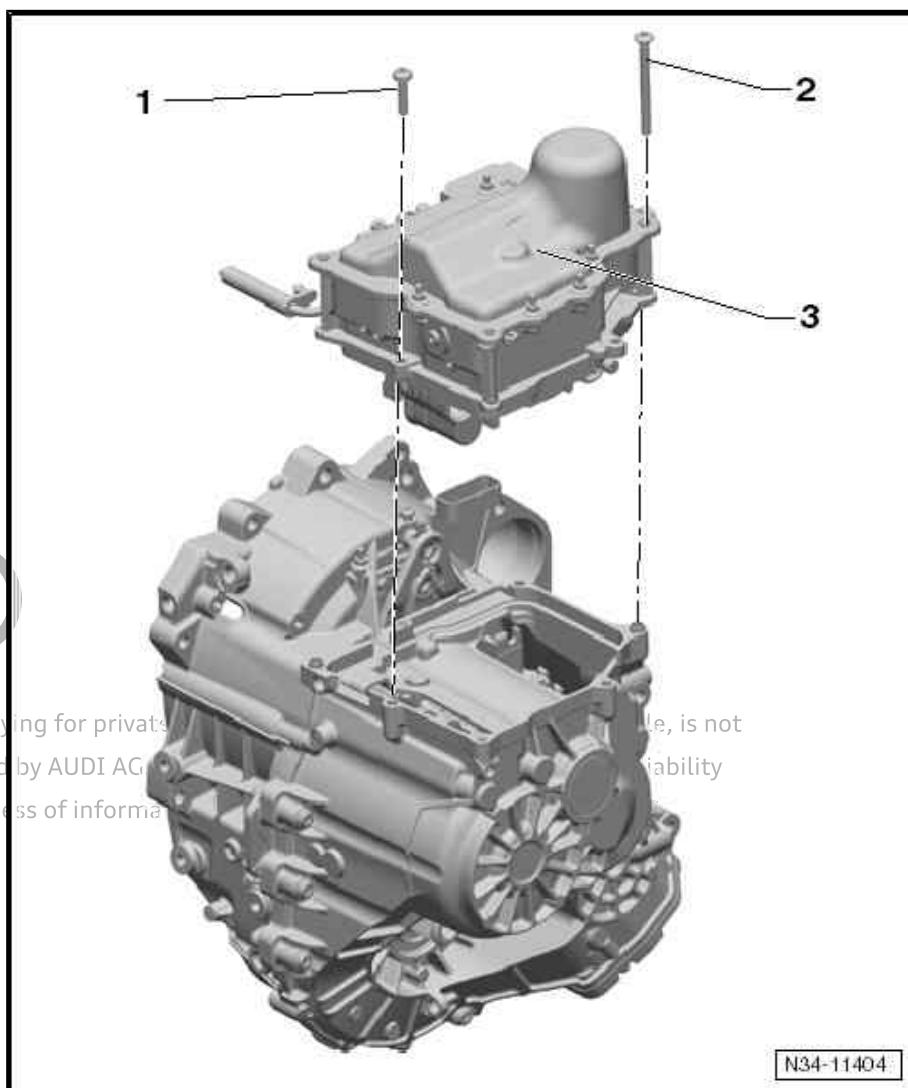
- ☐ Qty. 3, M8 x 35
- ☐ Renew after removing
- ☐ Tightening torque and sequence ⇒ [page 71](#)

##### 2 - Bolt

- ☐ Qty. 4, M8 x 90
- ☐ Renew after removing
- ☐ Tightening torque and sequence ⇒ [page 71](#)

##### 3 - Mechatronic unit for dual clutch gearbox - J743-

- ☐ ⇒ [“4.4 Safety precautions when working on mechatronic unit”, page 6](#)
- ☐ ⇒ [“3.2 Removing and installing mechatronic unit”, page 71](#)
- ☐ ⇒ [“3.3 Moving mechatronic unit into removal position by hand”, page 81](#)

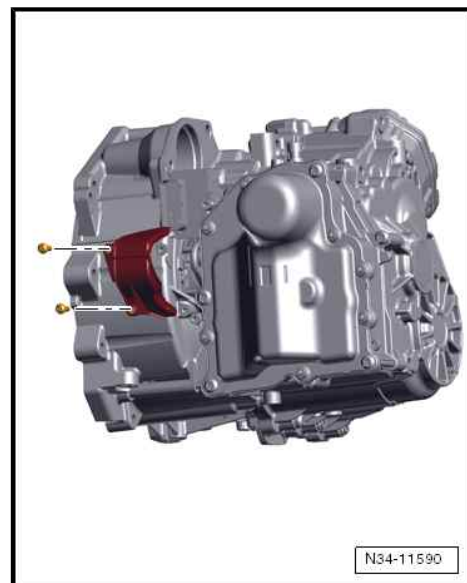




### Cover above engaging levers

Some versions are fitted with a cover above the engaging levers to prevent dirt from entering.

- Tightening torque: 8 Nm



### Mechatronic unit for dual clutch gearbox - J743- : tightening torque and sequence

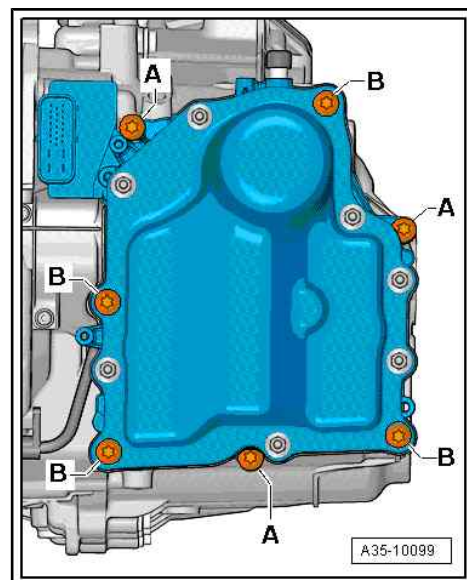


#### Note

*Renew bolts after removing.*

- Tighten bolts in 4 stages as follows:

| Stage | Bolts                      | Tightening torque                      |
|-------|----------------------------|----------------------------------------|
| 1.    | -A-                        | Screw in by hand until contact is made |
| 2.    | Remove guide pin - T10406- |                                        |
| 3.    | -B-                        | Screw in by hand until contact is made |
| 4.    | -A, B-                     | Tighten in diagonal sequence to 10 Nm  |



## 3.2 Removing and installing mechatronic unit

⇒ [“3.2.1 Removing and installing mechatronic unit for dual clutch gearbox J743 with gearbox installed”, page 71](#)

⇒ [“3.2.2 Removing and installing mechatronic unit for dual clutch gearbox J743 with gearbox removed”, page 72](#)

### 3.2.1 Removing and installing mechatronic unit for dual clutch gearbox - J743- with gearbox installed

For instructions for removing and installing mechatronic unit for dual clutch gearbox - J743- with gearbox installed, refer to Workshop Manual “7-speed dual clutch gearbox 0AM/0CW (S tronic)”:

⇒ 7-speed dual clutch gearbox; Rep. gr. 34 ; Mechatronic unit; Exploded view - mechatronic unit

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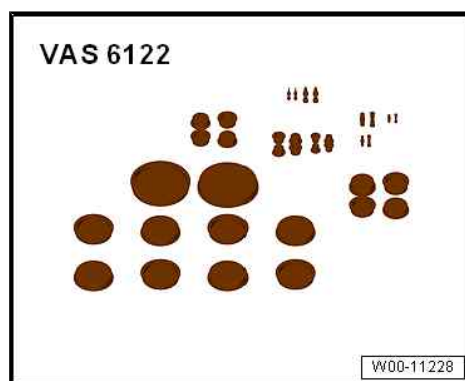
### 3.2.2 Removing and installing mechatronic unit for dual clutch gearbox - J743- with gearbox removed

#### Special tools and workshop equipment required

- ◆ Vehicle diagnostic tester
- ◆ Used oil collection and extraction unit - V.A.G 1782-



- ◆ Engine bung set - VAS 6122-



- ◆ 2x protective cap - 02M 409 120- (alternative to engine bung set - VAS 6122- )
- ◆ 1x protective cap - 0AM 325 120 A-
- ◆ Guide pin - T10406-



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◆ Assembly lever - T10407-



## Removing

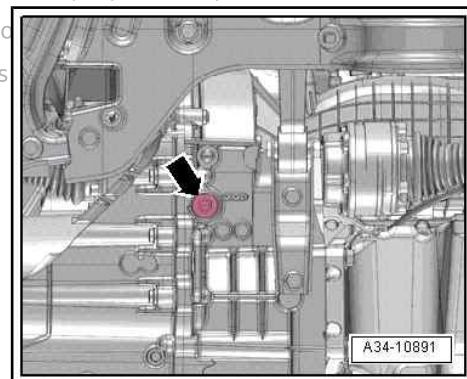


### Note

- ◆ ⇒ *"5 Repair instructions", page 9*
- ◆ ⇒ *"5.2 Rules for cleanliness", page 12*
- ◆ *Observe notes on gearbox, disposing of oil ⇒ page 9 .*
- ◆ *Observe notes on dual clutch gearbox 0AM/0CW ⇒ page 9 .*
- ◆ *The clutch is self-adjusting. Shocks can affect the adjusting mechanism. Even if the mechatronic unit has been removed, suddenly pulling out the assembly lever - T10407- from under the engaging levers can have a negative effect on the adjusting mechanism.*
- ◆ *A new mechatronic unit is supplied with the correct oil filling. Do not drain oil.*
- ◆ *After removal, the used mechatronic unit is sent back with its oil in. The mechatronic unit remains filled with oil.*

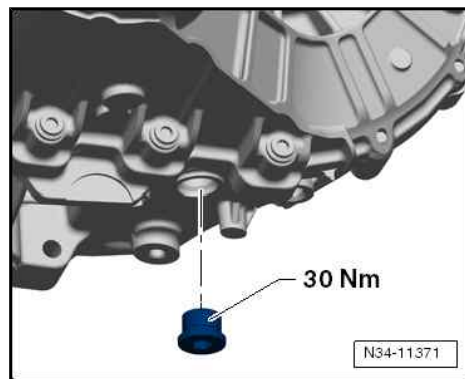
## Requirement:

- Gearbox must be removed and secured to engine/gearbox support ⇒ [page 68](#) .
- Gearbox is sealed ⇒ [page 66](#) .
- Place drip tray, e.g. used oil collection and extraction unit – V.A.G 1782- below gearbox.
- Remove oil drain plug -arrow- from gearbox.





- Allow oil to drain off, then retighten oil drain plug.

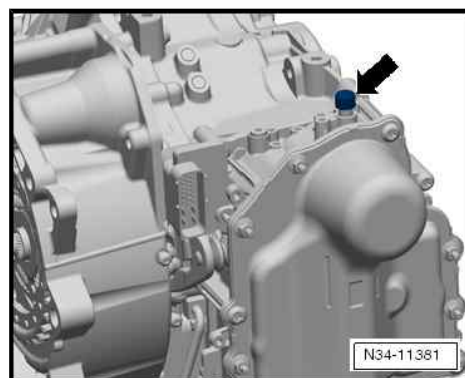


- Remove cap from breather opening -arrow- and seal opening to prevent oil from escaping ➔ [page 66](#) .

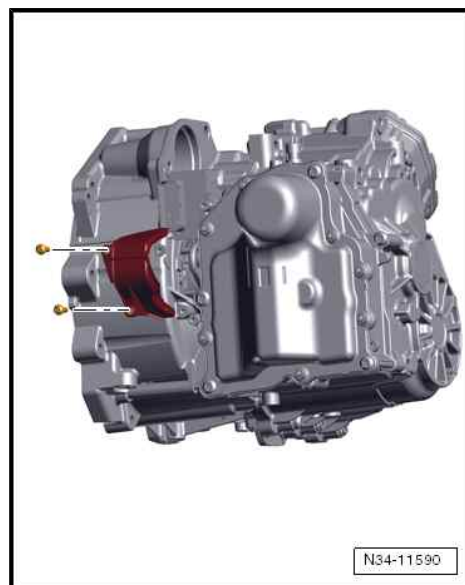


#### Note

*There are different types of breather cap on different versions; renew cap if necessary.*

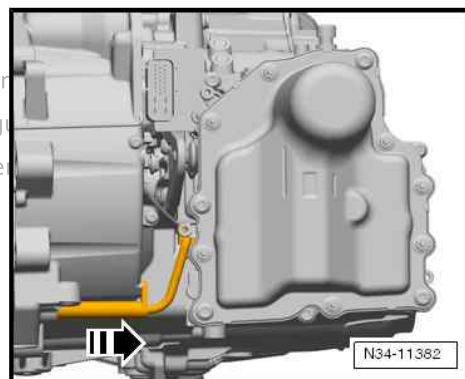


- If fitted, remove cover above engaging levers.



- Carefully pull gearbox input speed sender 3 - G641- out of gearbox -arrow-.

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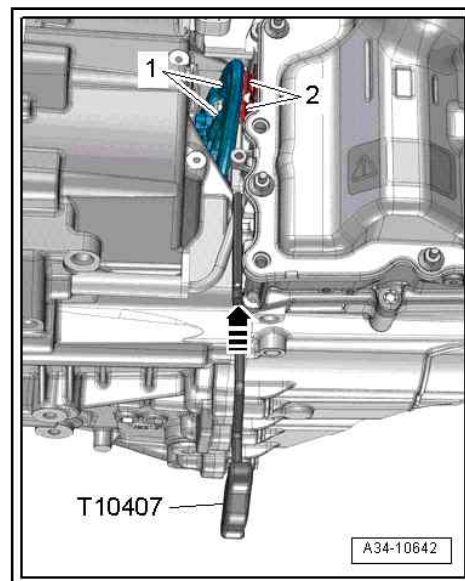




## Note

*The following step is necessary in order to lift the two engaging levers of the dual clutch away from the plungers of the mechatronic unit. Otherwise, the levers will jam the mechatronic unit at the plungers and prevent it from being removed.*

- Insert assembly lever - T10407- below plungers -2- between gearbox housing and the two engaging levers -1- -arrow-, as shown in illustration.



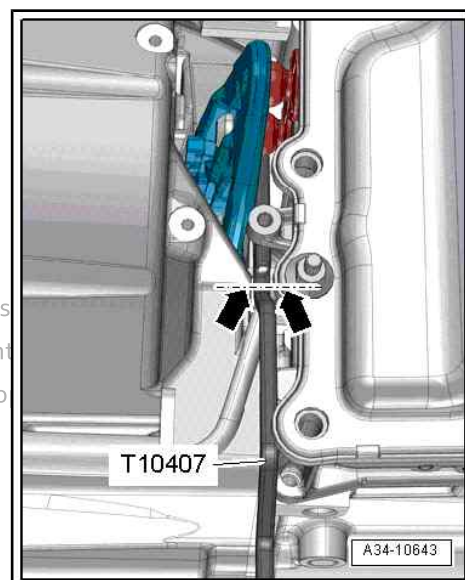
- Only slide in assembly lever - T10407- until groove on assembly lever is in line with rib on housing -arrows-, as shown in illustration. Do not slide it in all the way.



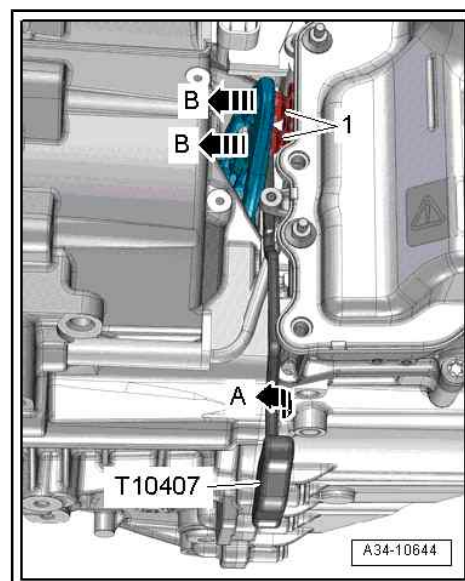
## Note

*The back of the assembly lever must make contact with the gearbox housing.*

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- Now rotate assembly lever - T10407- 90° anti-clockwise about its own axis -arrow A- so as to lift engaging levers away from plungers -1- -arrow B-.





- If necessary, press the assembly lever - T10407- against the gearbox housing with a screwdriver to prevent it from slipping out when it is turned.



#### Note

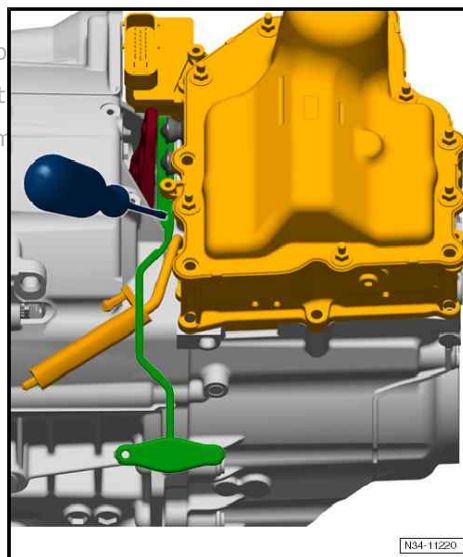
- ♦ The assembly lever - T10407- remains inserted between the engaging levers and the gearbox housing while removing and installing the mechatronic unit.
- ♦ If necessary, press the assembly lever - T10407- against the gearbox housing.



#### Caution

**Risk of irreparable damage to gearbox components.**

- ♦ Before touching or removing the mechatronic unit for dual clutch gearbox - J743- , always discharge any static electricity by touching an earthed object with your hand.
- ♦ Never touch the contacts in the gearbox connector with your hands. Electrostatic discharge could cause irreparable damage to the control unit and, consequently, the mechatronic unit.



- Touch a suitable earthed object with your hand (without gloves) to discharge any static electricity.



#### Note

Make sure that the screwdriver used to support the assembly lever -T10407- does not jam against the mechatronic unit.



#### Caution

**Risk of damage to mechatronic unit for dual clutch gearbox - J743- !**

- ♦ Do not loosen bolts securing cover on mechatronic unit for dual clutch gearbox - J743- .
- ♦ Make sure that no oil escapes through the breather hole when placing down mechatronic unit for dual clutch gearbox - J743- after removal.
- ♦ Oil that has escaped cannot be refilled!



#### Note

The mechatronic unit is returned for reconditioning complete with oil filling.



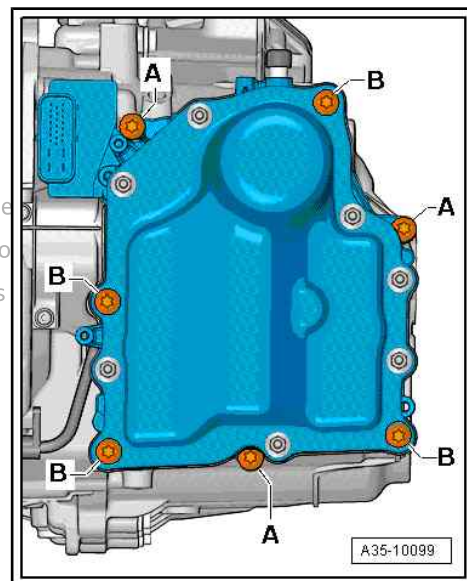
- Remove bolts -B- in diagonal sequence.
- Unscrew bolts -A-.
- Detach mechatronic unit from gearbox.



#### Caution

**Risk of damage to mechatronic unit for dual clutch gearbox J743-.**

- ◆ *In some cases it may not be possible to remove the mechatronic unit.*
- ◆ *This can happen if the gear actuator at the top left of the mechatronic unit is stuck.*
- ◆ *Do not attempt to remove the mechatronic unit by force.*
- ◆ *The mechatronic unit must be first brought into the correct position for removal by hand ➔ [page 81](#) .*



#### Installing



#### Note

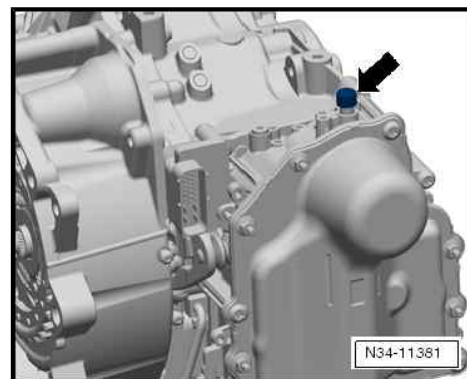
*A new mechatronic unit is supplied with the correct oil filling.*

- Seal off breather opening of mechatronic unit with a cap from engine bung set - VAS 6122- to prevent oil from escaping ➔ [page 66](#) .



#### Note

- ◆ *There are different types of breather cap on different versions; renew cap if necessary.*
- ◆ *The new mechatronic unit is supplied with the protective cap fitted to seal it off.*
- ◆ *Make sure that all selector forks are in centre position before installing mechatronic unit for dual clutch gearbox - J743- .*
- ◆ *Centre position is position -N- (neutral) in the illustration below.*
- ◆ *No gear is engaged in this position, the gearbox is in neutral.*



- First check each of the 4 selector forks by hand.

Each selector fork has 3 positions:

- ◆ Gear engaged
- ◆ Neutral -N-
- ◆ Gear engaged
- Move the 4 selector forks once into each position -arrows-, one after the other.
- Then shift all selector forks back into »centre position«, position -N-.



## Note

*Turn the relevant selector gears slightly to make it easier to move the selector forks.*

N - Neutral

R - Reverse gear

1 - First gear

2 - Second gear

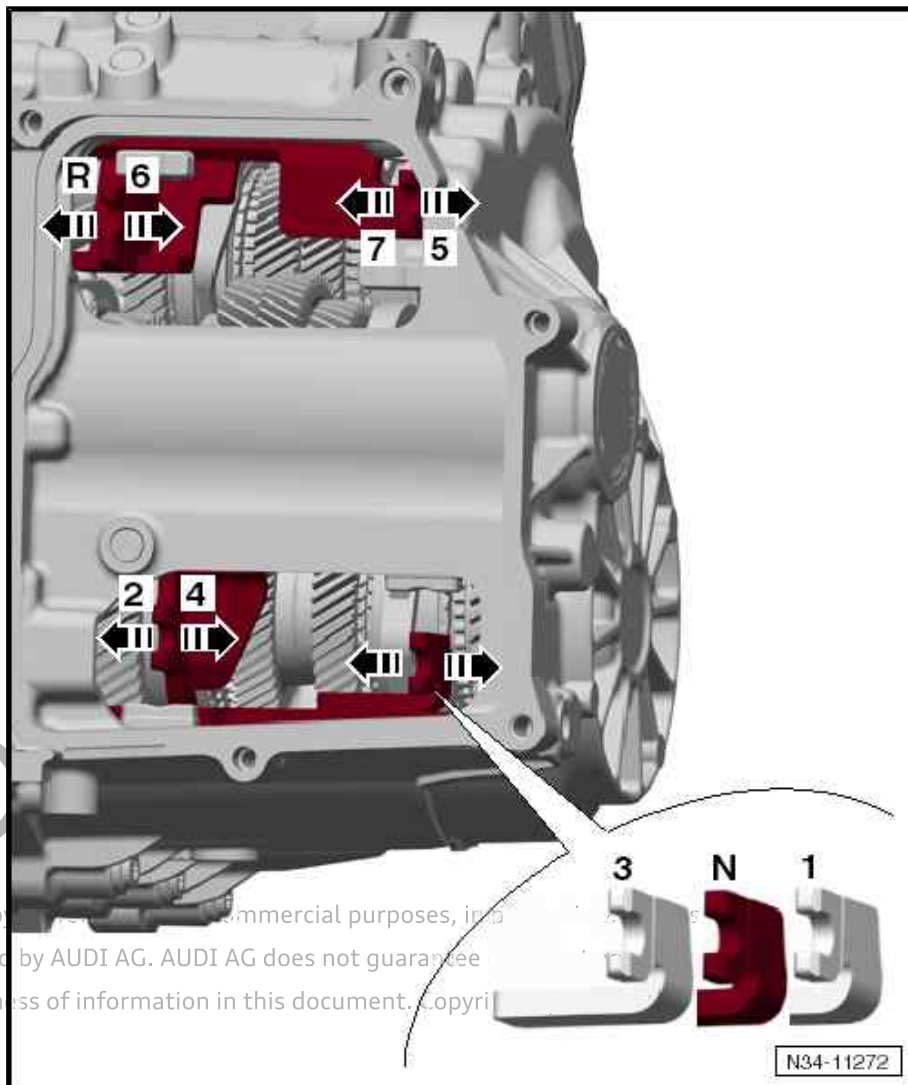
3 - Third gear

4 - Fourth gear

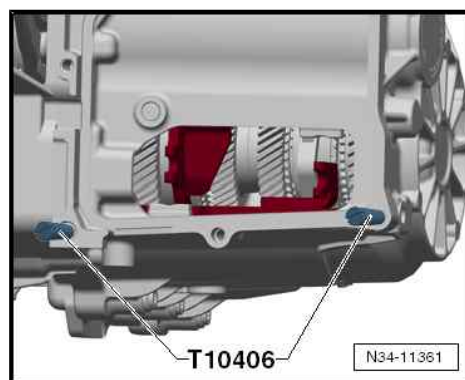
5 - Fifth gear

6 - Sixth gear

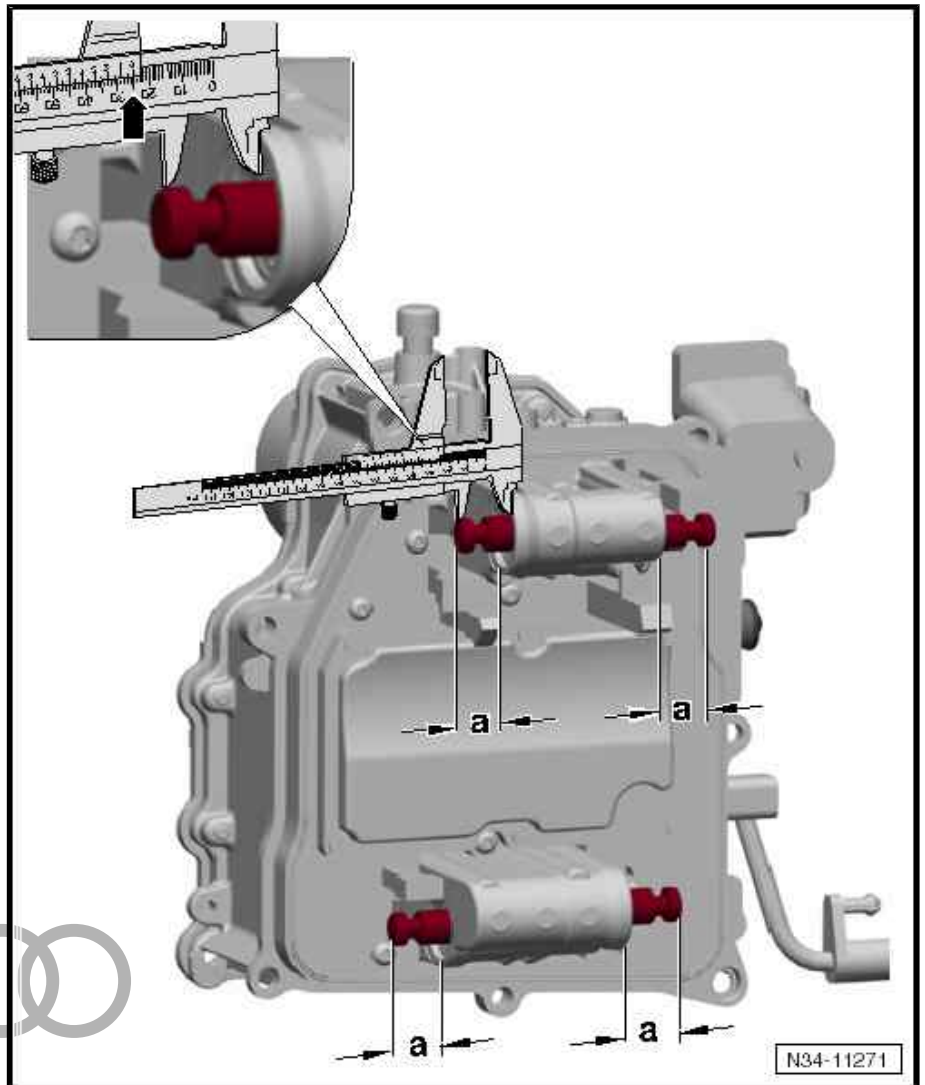
7 - Seventh gear



- Clean sealing surface on which mechatronic unit is to be installed.
- Screw in guide bolts - T10406- hand-tight.



Adjusting gear actuators:



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**Caution**

***Risk of damage to mechatronic unit for dual clutch gearbox - J743-.***

***Do not apply any pressure to the sensors when levering out the plungers.***

- Adjust the four gear actuators on the reverse side of mechatronic unit for dual clutch gearbox - J743- to the specified positions.
- Specified position: -a- = 25 mm
- Clean sealing surface on mechatronic unit.
- The gasket positioned round the mechatronic unit for dual clutch gearbox - J743- must be properly seated in the groove all round.

- Put on mechatronic unit.
- Tighten bolts for mechatronic unit ⇒ **page 71**.

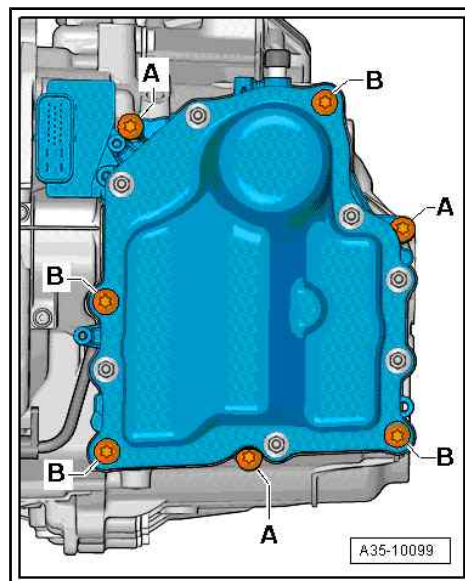


### Caution

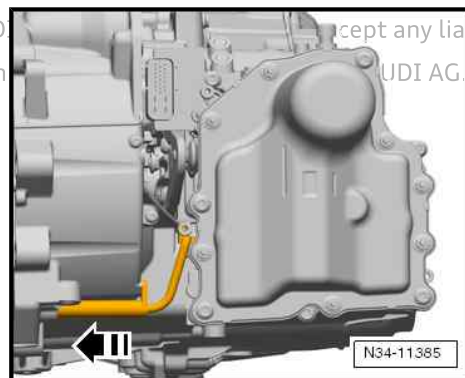
***The clutches can be damaged.***

- ◆ ***If the clutch engaging levers contact the clutch actuators of the mechatronic unit abruptly, this can move the actuators out of position and activate the clutch self-adjustment. The status prior to self-adjustment cannot be recovered.***

- Both clutch actuators must be properly engaged in the retainers on the clutch engaging levers.
- The rubber grommets of the clutch actuators must not be damaged.
- The rubber grommets must seal off at the mechatronic unit properly.
- Turn assembly lever - T10407- slowly and carefully in clockwise direction and remove.
- The plungers should slide slowly into the retainers.
- Pull out plungers by hand until they are seated correctly in retainers.

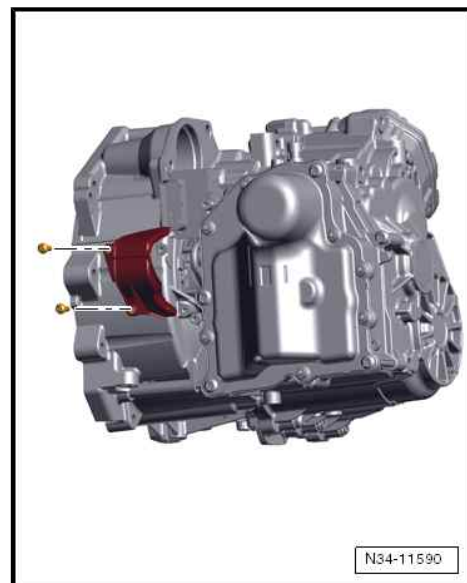


- Install gearbox input speed sender 3 - G641- (direction of arrow-).
- Take care not to damage clip of sender.
- Bracket of sender must make full, secure contact with gearbox housing. Replace mechatronic unit if sender is loose or if clip is broken.





- If previously removed, install cover above engaging levers.



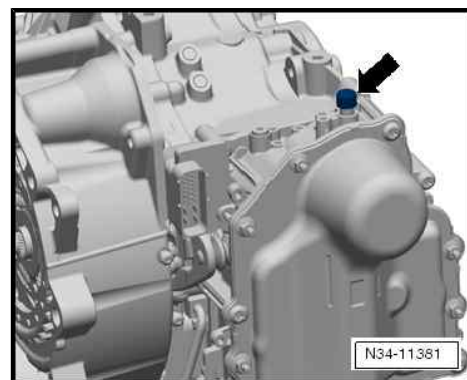
- Remove sealing plug from breather opening of mechatronic unit and fit breather cap -arrow-.



#### Note

- ◆ *If the mechatronic unit is being renewed, fit the sealing plug on the old mechatronic unit so it remains oil-tight when it is returned for reconditioning.*
- ◆ *Do not drain oil out of the old mechatronic unit.*
- After installing gearbox, fill up gear oil. For instructions for “Renewing gear oil”, refer to Workshop Manual “7-speed dual clutch gearbox 0AM/0CW (S tronic)”:

⇒ 7-speed dual clutch gearbox; Rep. gr. 34 : Gear oil; Draining and filling gear oil



#### Note

- ◆ *The gear oil level cannot be checked.*
- ◆ *The gear oil has to be completely drained and then refilled.*
- After installing gearbox, run Basic setting complete function in Guided Functions ⇒ Vehicle diagnostic tester.

#### Tightening torques

- ◆ ⇒ [“3.1 Exploded view - mechatronic unit”, page 70](#)

### 3.3 Moving mechatronic unit into removal position by hand



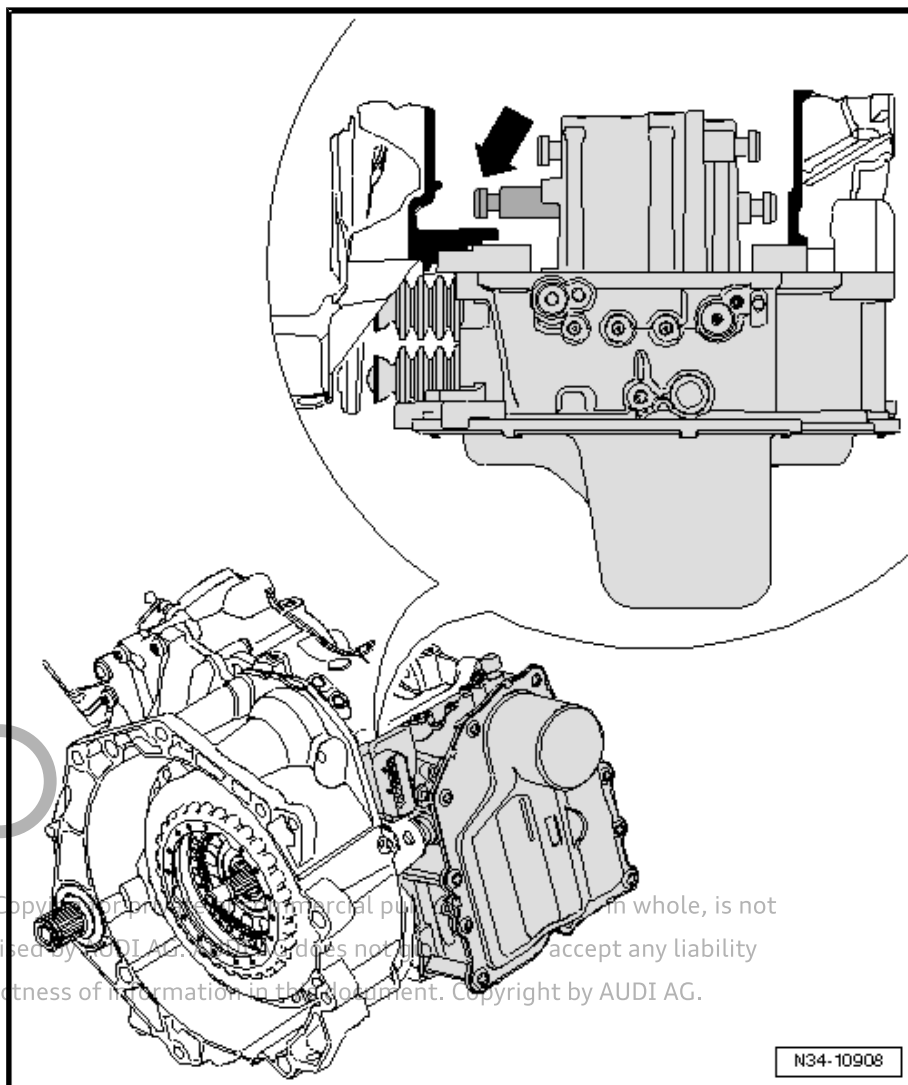
#### Note

*The mechatronic unit can be set to the removal position by hand; this should only be done if it is not possible to move it to this position with the vehicle diagnostic tester.*



## Procedure

In some cases it may not be possible to remove the mechatronic unit. In this case the gear actuator at the top left of the gearbox housing -arrow- is sticking.



The sticking gear actuator must now be pressed by hand into the removal position. To do this, the selector shaft cover has to be removed.

- Re-fit mechatronic unit completely in gearbox and secure with one bolt.
- Move selector lever to position “P”.



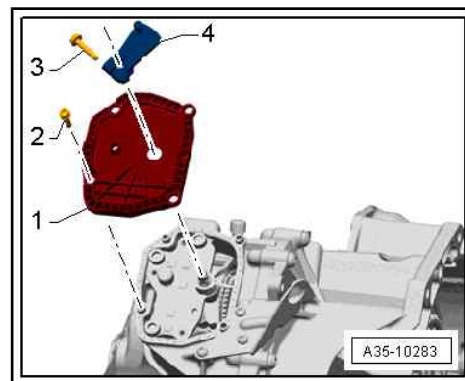
- Remove cover for parking lock -1- ➔ [page 97](#) .



#### Caution

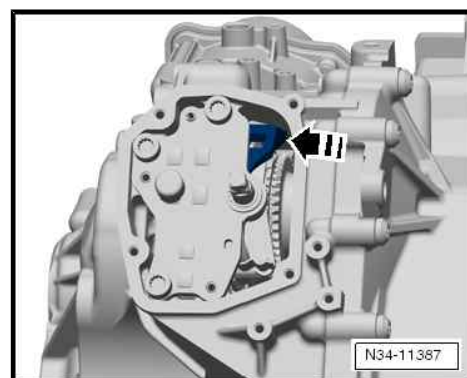
**Risk of irreparable damage if mechatronic unit is allowed to drop out.**

- ◆ **After the next step, the mechatronic unit is released and can drop out. If this has not already been done, secure mechatronic unit on gearbox with one bolt to prevent it from dropping out.**



- Reach through opening and press selector fork to side in direction of -arrow-.

This presses back the sticking gear actuator and the mechatronic unit can then be removed.



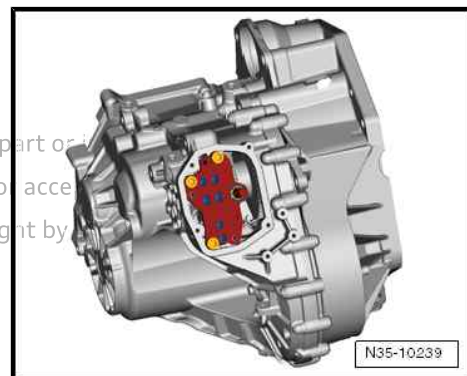
- After completing work on mechatronic unit and installing mechatronic unit, fill up with gear oil via parking lock. For a description of "Renewing gear oil", refer to Workshop Manual "7-speed dual clutch gearbox 0AM/0CW (S tronic)":

➔ 7-speed dual clutch gearbox, Rep gr. 34 ; Gear oil, Draining and filling gear oil

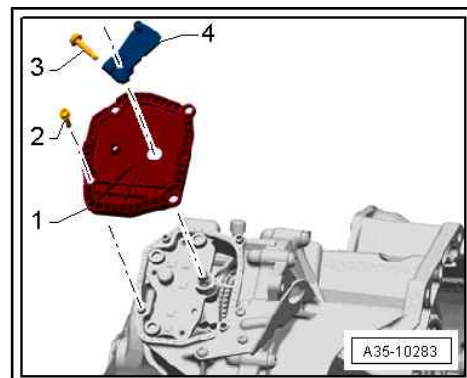


#### Note

- ◆ **It is not necessary to remove the breather cap on the cover for the parking lock in order to fill up the gearbox with gear oil via the parking lock. The gear oil can be filled up directly at the parking lock on the side of the gearbox.**
- ◆ **For procedure, capacities and types of gear oil refer to "Renewing gear oil" ➔ [page 83](#) .**



- Install cover for parking lock -1- ➔ [page 97](#) .



## 3.4 Basic settings

Special tools and workshop equipment required



- ◆ Vehicle diagnostic tester

#### Requirements for Basic setting:

- Vehicle diagnostic tester is connected.
- Selector lever is in position "P".
- Using vehicle diagnostic tester in **Guided Functions** mode, select **02 - Gearbox electronics** and then select the appropriate basic setting function.
- It is important to follow all the instructions given by the vehicle diagnostic tester exactly in order to complete the basic setting successfully.

The following "basic settings" are currently available:

- ◆ 1. **Basic setting complete**
- ◆ 2. **Basic setting neutral**
- ◆ 3. **Basic setting removal position**

#### Description of basic settings:

##### 1. Basic setting complete

**Basic setting complete** must be performed after the following operations:

- ◆ When the gearbox is operated for the first time
- ◆ When the dual clutch has been removed
- ◆ When the mechatronic unit for dual clutch gearbox - J743- with control unit has been renewed
- ◆ When gearbox repairs have been performed
- ◆ When the gearbox has been removed



#### Note

- ◆ The **basic setting complete** function on the vehicle diagnostic tester achieves a *fast and comprehensive self-adaption of the clutch system. The clutch and gear actuators are re-adapted. The current clutch engagement point, the current degree of wear, the synchronisation points and the end positions of the gear actuators with gears engaged are detected and stored.*
- ◆ *Clutch self-adaption is performed regularly during normal driving, according to the amount of clutch wear. However, this adaption is only possible under specific driving conditions. For this reason a "Basic setting" of the clutch must be performed after certain repairs, as listed above. This achieves optimum adjustment for gearshifts and clutch engagement when moving off.*

##### 2. Basic setting neutral

**Basic setting neutral** moves the gear actuators into the removal position. This ensures that the mechatronic unit does not "catch" during removal.

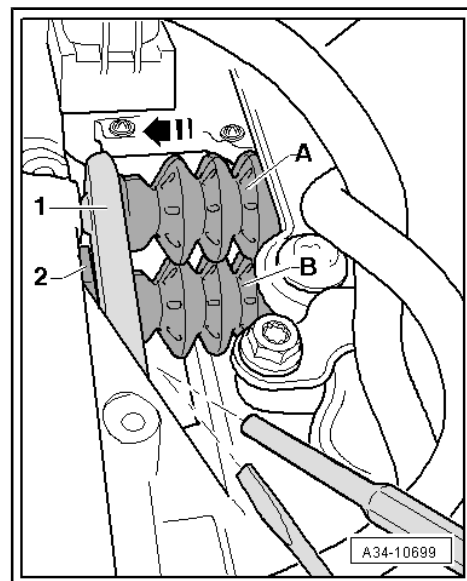
**Basic setting neutral** also attempts to shift out of all gears so that the vehicle can be pushed, e.g. if the clutch is defective.



### 3. Basic setting removal position

In the **Basic setting removal position** it is possible to check that the bellows of the clutch actuators -A- and -B- are correctly seated and not leaking or damaged.

- ◆ In the **Basic setting removal position** the two clutch actuators -A- and -B- are also moved all the way out in the direction of the -arrow-. The two clutch engaging levers -1- and -2- are thus pressed away from the mechatronic unit.
- ◆ The gear actuators are also moved to the removal position.
- ◆ When the ignition is switched off, the force is no longer applied to the two clutch actuators -A- and -B-. The clutch engaging levers -1- and -2- press the clutch actuators back into the mechatronic unit.



## 3.5 Renewing boot together with clutch actuator

### Special tools and workshop equipment required

- ◆ Cleaning solution, part no.: D 009 401 04 ⇒ Electronic parts catalogue (ETKA)



#### Caution

#### *Risk of damage to mechatronic unit.*

- ◆ ***Proper tools and the greatest possible care and cleanliness are essential for satisfactory repairs.***
- ◆ ***The piston of the clutch actuator is magnetic. To keep new clutch actuators as clean as possible, wait to remove them from the packaging until just prior to installation.***
- ◆ ***Install clutch actuators immediately after removing them from the packaging; do not put them down first.***

### Requirement:

Mechatronic unit is removed and breather opening in mechatronic unit is sealed so that no fluid can escape.

### Procedure:

- Remove mechatronic unit ⇒ [page 71](#) .

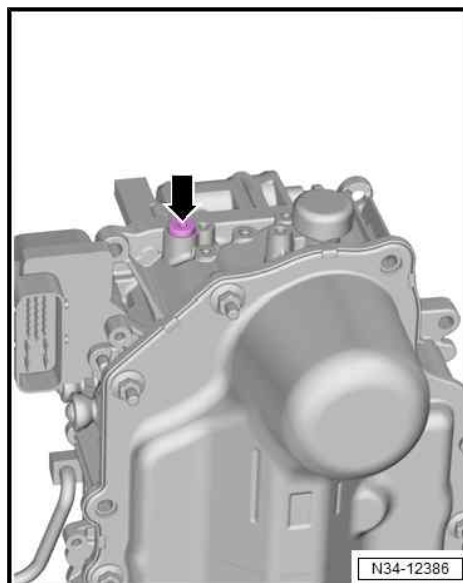


- Place mechatronic unit on a flat, clean surface (workbench or similar). Oil filler plug -arrow- faces upwards.

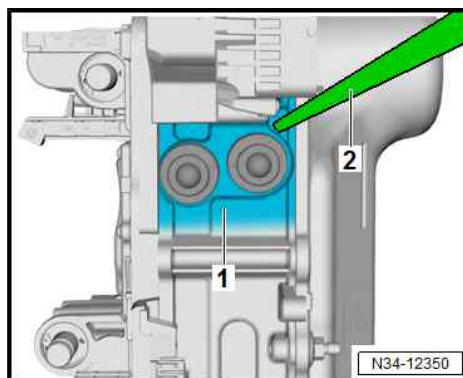


#### Note

*It is very important to ensure that the area around the clutch actuators is clean and dry, as otherwise leaks may later occur.*



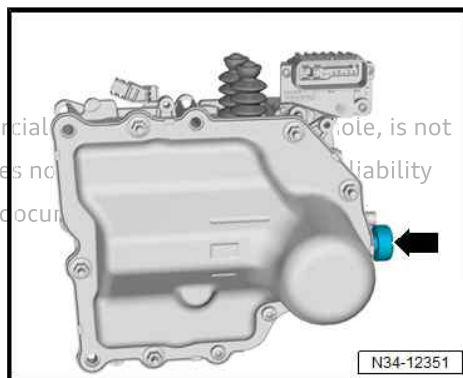
- Clean area -1- around clutch actuators with cleaning solution D 009 401 04 or a wash bottle -2- with detergent. Use a paintbrush to remove any stubborn dirt. Then use a lint-free cloth to clean area -1- again thoroughly.



#### Note

*Before turning the mechatronic unit, ensure that the breather opening -arrow- is sealed so that no fluid can escape.*

- Turn mechatronic unit and place it on its side so that clutch actuators face upwards.

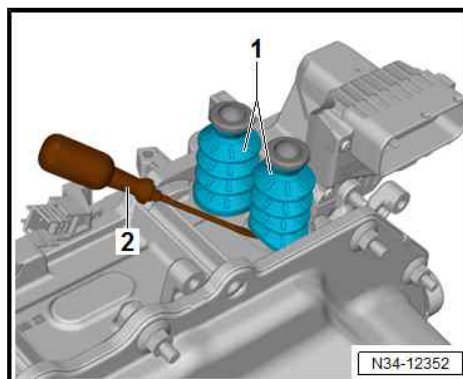


- Prise boots -1- off mechatronic unit using a screwdriver -2-.



#### Note

*Clean guide bush thoroughly before each step, as any dirt can later lead to leaks.*





- Fit guide bush -2- onto mechatronic unit with large opening facing upwards as shown, and hold in place with one hand. With other hand, pull out clutch actuator -1- as far as stop.
- Carefully remove guide bush without pulling out clutch actuator -1- any further.

The procedure is the same for the other clutch actuator.



#### Note

*The check in the following step determines how to proceed next.*

- Check area around clutch actuator -1- for leaks.

If area -1- around clutch actuators is dry, continue as follows  
 ⇒ [page 87](#) .

If there is fluid covering the area, drain mechatronic unit before continuing with procedure below ⇒ [page 94](#) .

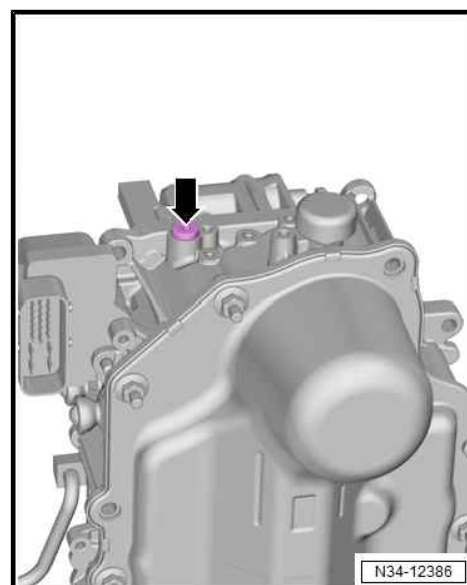
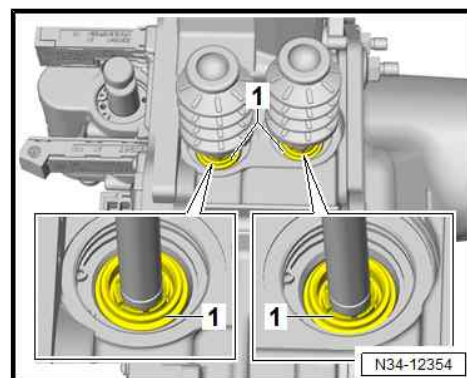
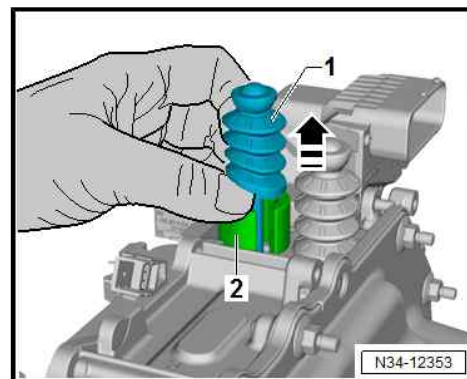


#### Note

*Wait until all of the following procedures are completed before filling up with new hydraulic fluid.*

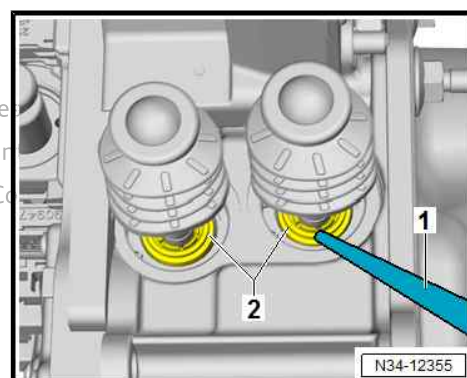
#### Continued for all vehicles:

- Reposition mechatronic unit so that oil filler plug -arrow- is positioned at top again.



- Clean area around seals -2- with cleaning solution D 009 401 04 or a wash bottle -1- with detergent. Then allow detergent to drain off; if necessary, wipe dry with a lint-free cloth.

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- Place mechatronic unit on its side so that clutch actuators face upwards. It is very important to ensure that breather opening -arrow- is sealed so that no fluid can escape.



#### Note

*The greatest possible care and cleanliness are essential for all work described here. It is therefore very important to make sure that no dirt enters the opening when the clutch actuators are pulled out.*

- Pull both clutch actuators out of mechatronic unit.

#### Installing



#### Caution

**Risk of damage to mechatronic unit.**

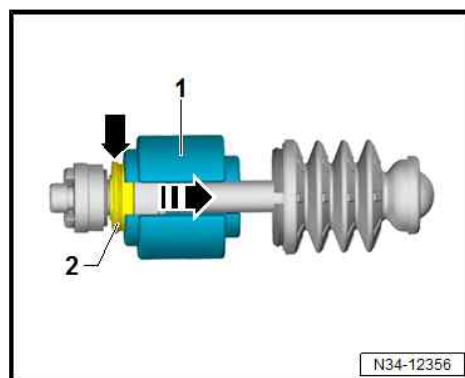
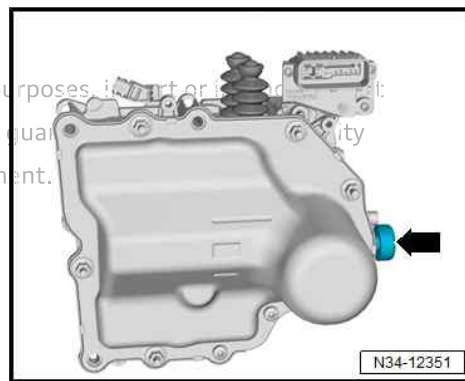
- ◆ **Proper tools and the greatest possible care and cleanliness are essential for satisfactory repairs.**
- ◆ **The piston of the clutch actuator is magnetic. To keep new clutch actuators as clean as possible, wait to remove them from the packaging until just prior to installation.**
- ◆ **Install clutch actuators immediately after removing them from the packaging; do not put them down first.**



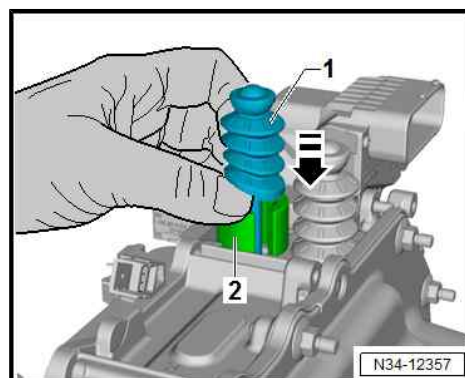
#### Note

*Clean guide bush thoroughly before each step, as any dirt can later lead to leaks.*

- Lightly lubricate sealing lip -arrow- of seal -2- with oil and press it into guide bush -1- as far as stop.

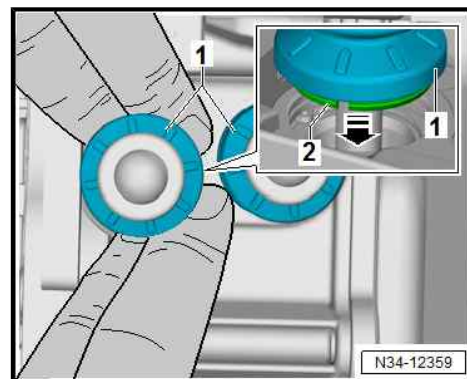


- Carefully place clutch actuator -1- together with guide bush -2- onto opening of mechatronic unit. Hold guide bush with one hand, and with other hand push clutch actuator approx. 30 mm into mechatronic unit.
- Carefully remove guide bush. Do not pull piston out again when doing so.
- Carefully push clutch actuator further into mechatronic unit until boot makes contact with opening.





- With four fingers, engage boot -1- securely in mechatronic unit using catch -2-.
- Install the other clutch actuator in the same way.



- Remove old gasket from mechatronic unit and clean groove (-shown in green-) for gasket before installing a new gasket.

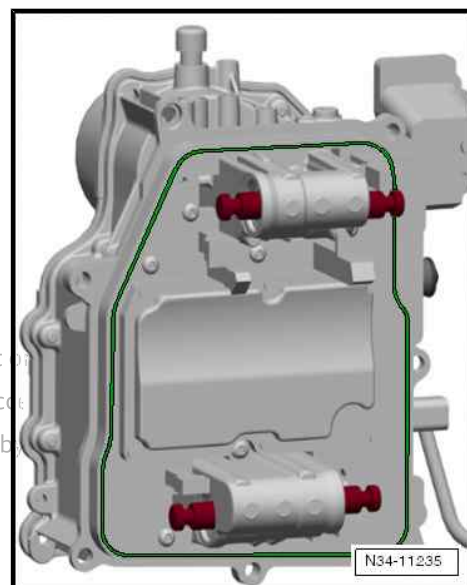


#### Note

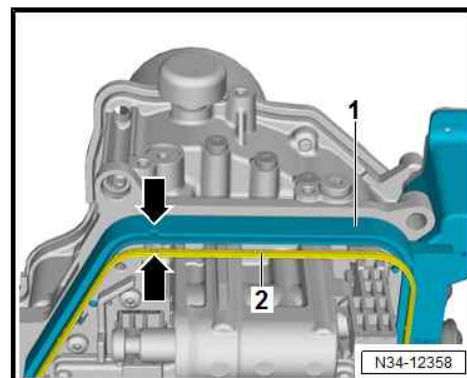
*The gasket can only be fitted in one position.*



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- Fit new gasket in groove on mechatronic unit (press into place all round). Protrusion on gasket -bottom arrow- must align with notch on mechatronic unit -top arrow-.
- Fill up fluid in mechatronic unit (if drained previously) ⇒ [page 94](#) .
- Install mechatronic unit ⇒ [page 71](#) .

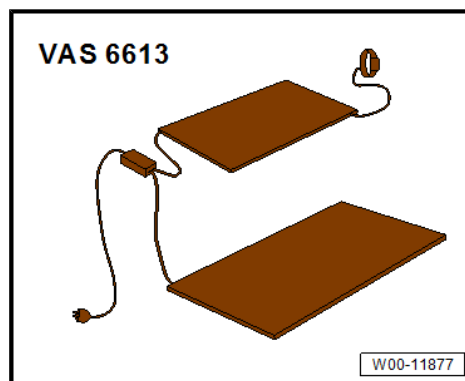


## 3.6 Renewing mechatronic unit control unit

Special tools and workshop equipment required

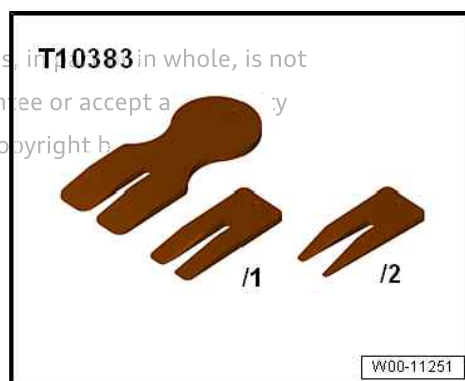


- ◆ ESD (electrostatic discharge) workplace - VAS 6613-



- ◆ Wedge - T10383/2-

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- ◆ Torque wrench - V.A.G 1783-



- ◆ Safety goggles

#### Requirements

- ◆ Proper tools and the greatest possible care and cleanliness are essential for satisfactory repairs.
- ◆ Risk of irreparable damage to control unit due to electrostatic discharge and insufficient attention to cleanliness
- ◆ Keep control unit clean and dry.
- ◆ Touch a suitable earthed object ( ESD workplace - VAS 6613-) before working on electrical components.
- ◆ Do not touch connector pins or electronic components directly.



**Note the following when working on the control unit:**



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- ◆ Do NOT touch marked surfaces or set control unit down on these surfaces.
- ◆ Control unit must only be touched in -marked areas- and in areas of -arrows-.

#### Procedure

- Remove mechatronic unit ➔ [page 71](#) .
- Drain hydraulic fluid for mechatronic unit ➔ [page 94](#) .

#### Note

- It is important that the mechatronic unit is in a stable, horizontal position during the following work steps.
- Set down mechatronic unit on a work bench with control unit facing upwards. To bring mechatronic unit into a stable and horizontal position, place appropriate supports, e.g. wooden blocks, underneath mechatronic unit on both sides.
- Surround mechatronic unit with sufficient amount of cloths.
- Slide gear actuators in as far as possible -arrows-.



#### WARNING

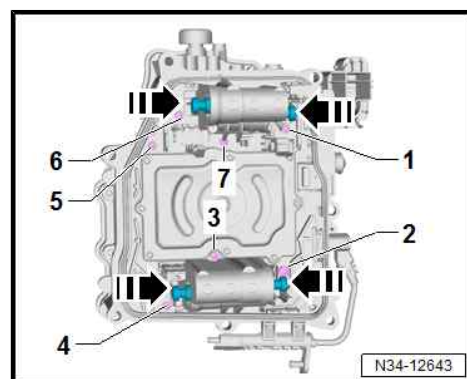
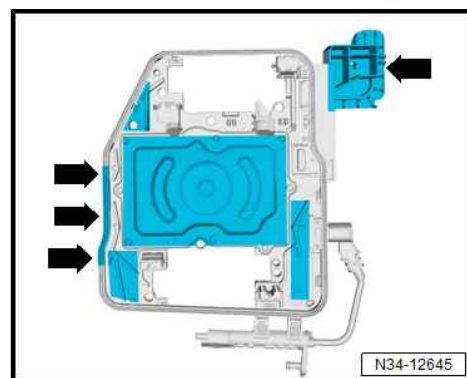
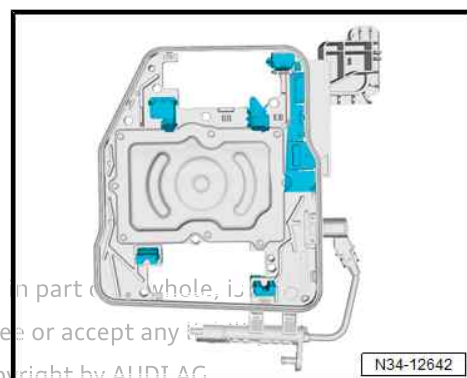
**Accumulator underneath control unit is pressurised. Due to reduction in pressure when bolts are loosened, fluid can escape suddenly.**

- ◆ **Risk of eye injury.**
- **Put on safety goggles.**
- **Loosening sequence MUST be observed.**

- Loosen bolts -1- to -6- approx. 3 turns. Finally, loosen bolt -7- carefully. Due to sudden reduction in pressure, fountain of fluid can escape from accumulator above bolt -7-. Bolts can only be removed completely after pressure has fully dissipated.

#### Note

- ◆ If there is no reduction in pressure in accumulator when bolt -7- is loosened, it is possible that control unit is bonded onto mechatronic unit. In this case, control unit must be raised slightly to safely dissipate any remaining pressure.

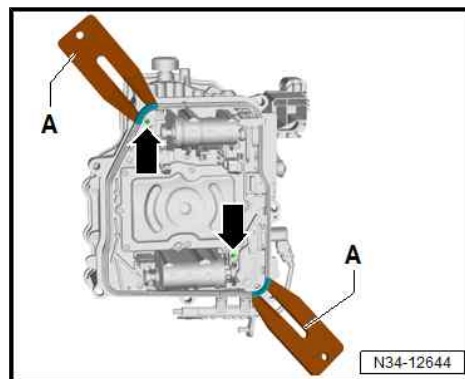




- Fit wedge - T10383/2- -A- between control unit and mechatronic unit in vicinity of guide pins -arrows-, as shown, and prise off control unit.

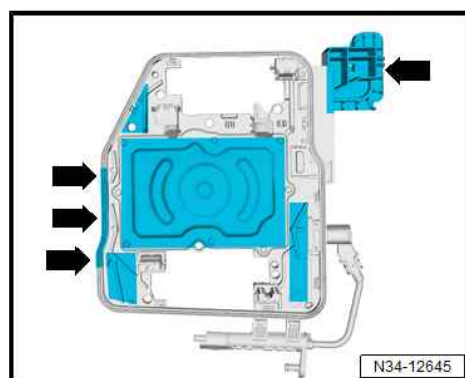
If control unit is bonded on, pressure will not dissipate until it is raised using wedges. Fluid may escape suddenly.

- Once pressure has dissipated, bolts can be removed.



- Take hold of control unit frame in area of -arrows- (left-side) and at connector housing -arrow- (right-side) and detach it from mechatronic unit.

You might not be able to detach the control unit at this point as it might still be stuck. Prise control unit off using wedge - T10383/2- so that it can be detached.



#### Putting mechatronic unit down correctly

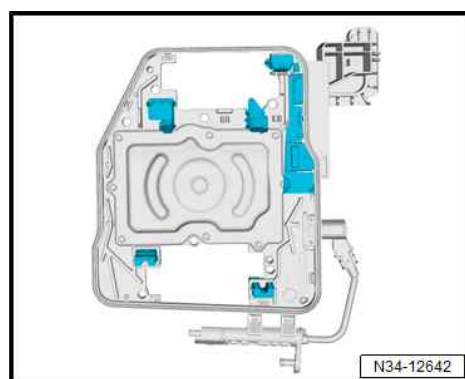


#### Caution

#### *Risk of damage to control unit*

- ◆ **Do NOT touch sensor domes or set control unit down on sensor domes.**

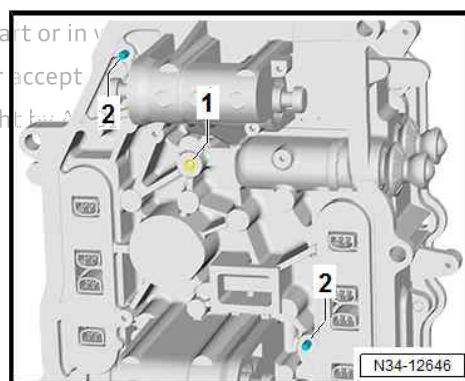
- Allow remaining hydraulic fluid in mechatronic unit to drain off.



- After fluid has drained off, set mechatronic unit down on work bench again so it is horizontal. Clean sealing surface with a lint-free cloth.

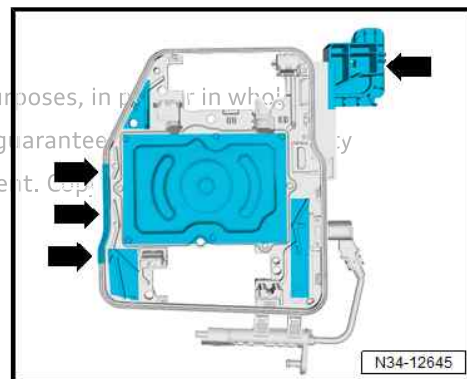
- Renew O-ring -1-.

- Make sure both guide pins -2- are fitted (they might still be stuck in control unit).
- Also make sure that all seals on new control unit are seated correctly (on 4-pin connector [left/right], main connector [centre] and surround seal). Make sure only to install fault-free parts.

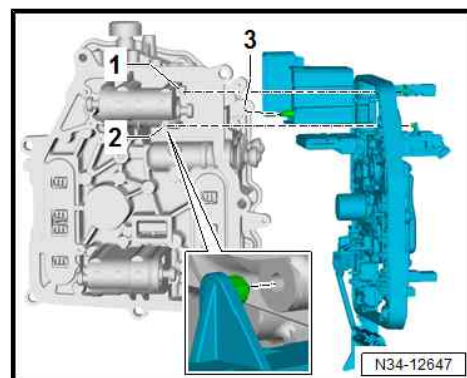




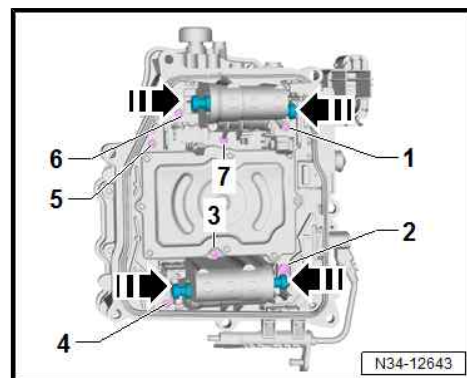
- Control unit must only be touched in -marked areas- and in areas of -arrows-.
- Take hold of new control unit in area of -arrows- (left-side) and at connector housing -arrow- (right-side) and position it on top of mechatronic unit. When positioning it, make sure that it is locked in place by guide pins.



- Important: When installing, pay attention to guide nipples -1 to 3- on control unit; they must align with guide holes (see -detail view-).
- Guides must be aligned before control unit can be pressed on at -marked surfaces- so that sealing surface makes contact.



- Screw in bolts -1- to -7- hand-tight and tighten to 5 Nm in diagonal sequence.
- Fill up hydraulic fluid in mechatronic unit ➔ [page 94](#) .
- Install mechatronic unit ➔ [page 71](#) .





## 4 Gear oil

⇒ **"4.1 Draining and filling hydraulic fluid for mechatronic unit",  
page 94**

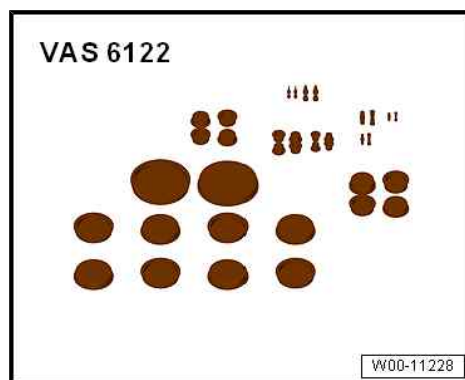
### 4.1 Draining and filling hydraulic fluid for mechatronic unit

Special tools and workshop equipment required

- ◆ Used oil collection and extraction unit - V.A.G 1782-



- ◆ Engine bung set - VAS 6122-



- ◆ Funnel (commercially available)



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The mechatronic unit has a lifetime filling of hydraulic fluid. It is not possible to check the fluid level.



#### Caution

***Risk of damage to mechatronic unit.***

- ◆ ***Only the hydraulic fluid available as a replacement part may be used for the mechatronic unit → Electronic parts catalogue .***
- ◆ ***Other lubricants will cause malfunctions and/or failure of the mechatronic unit.***
- ◆ ***It is not possible to check the fluid level in the hydraulic section of the mechatronic unit for dual clutch gearbox - J743- . When performing repairs, the breather opening on the mechatronic unit for dual clutch gearbox - J743- must be sealed off. If fluid escapes from the mechatronic unit for dual clutch gearbox - J743- , the fluid level cannot be checked!***
- ◆ ***If any hydraulic fluid escapes, the entire filling must be replaced completely. It is not possible to check the level.***
- ◆ ***Both underfilling and overfilling will impair the function of the mechatronic unit.***

#### Requirement

- ◆ Mechatronic unit is removed ⇒ [page 72](#)

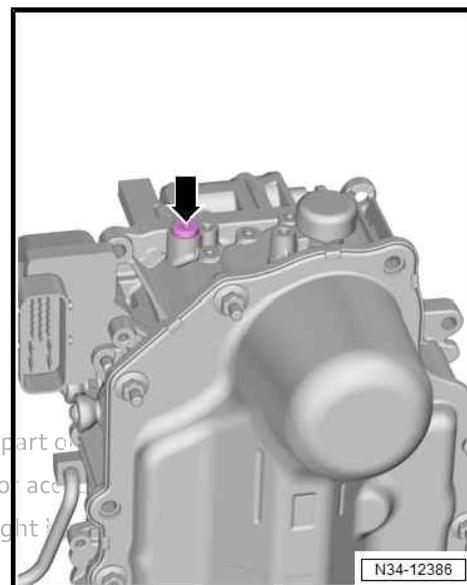
#### Draining hydraulic fluid

- Remove oil filler plug -arrow-.

Renew plug after removal.



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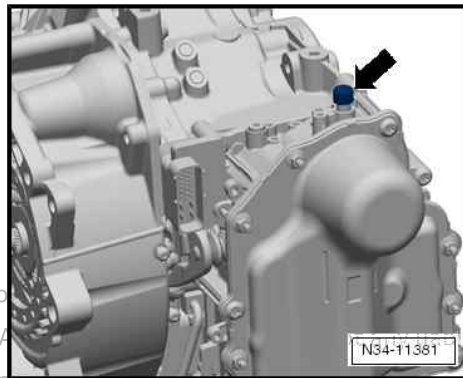


- Remove cap from breather opening -arrow- (if not already removed).



#### Caution

*On some gearboxes, the breather cap on the mechatronic unit may be damaged irreparably during removal, in which case it must be renewed.*



#### Note

*The hydraulic fluid will drain from the filler opening as well as the breather opening when the mechatronic unit is turned. Make sure to position both openings so that they are in the tray of the used oil collection and extraction unit - V.A.G 1782- .*

- Turn mechatronic unit and drain fluid completely.

#### Filling up hydraulic fluid



#### Note

*Wait until all of the repairs on the mechatronic unit are completed before filling up with new fluid.*

- After fluid has drained completely, turn mechatronic unit again so that oil filler hole is positioned at top.
- Insert a clean funnel (commercially available) into oil filler hole. Shake fluid bottle before opening.
- Fill with 1 litre of hydraulic fluid.
- Fit new oil filler plug.

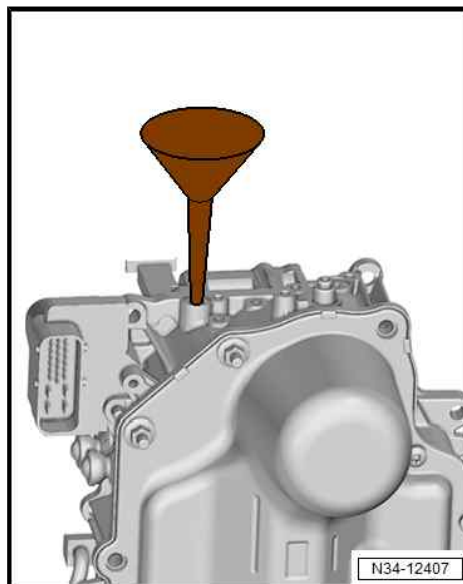
**Tightening torque: 5 Nm + 90°**



#### Caution

***Risk of damage to mechatronic unit.***

- ◆ ***If any hydraulic fluid escapes, the entire filling must be replaced completely. It is not possible to check the level.***
- ◆ ***Both underfilling and overfilling will impair the function of the mechatronic unit.***



- Seal breather opening of mechatronic unit with clean plug from engine bung set - VAS 6122- . This prevents fluid from escaping from hole during installation.
- Install mechatronic unit ⇒ [page 72](#) .



## 35 – Gears, shafts

### 1 Parking lock

⇒ [“1.1 Removing and installing cover for parking lock”, page 97](#)

⇒ [“1.2 Removing and installing parking lock”, page 97](#)

#### 1.1 Removing and installing cover for parking lock



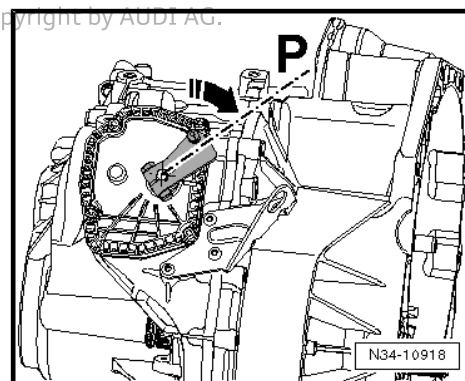
Note

*The mechatronic unit can be set to the removal position by hand; this should only be done if it is not possible to move it to this position with the vehicle diagnostic tester.*

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##### Removing

- Set gearbox selector lever to position “P”.
- To do this, press lever by hand as far as it will go in direction of cable support bracket -arrow-.

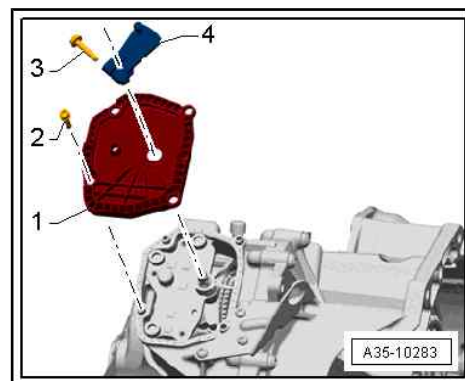


- Unscrew bolt -3- and detach gearbox selector lever -4-.
- Remove bolt -2- and detach cover -1- for parking lock.

##### Installing

Cover for parking lock must be renewed if seal for selector shaft or seal on cover for parking lock is leaking.

- Clean sealing surface and cover for parking lock -1-.
- Fit cover for parking lock -1- and screw in bolts -2-.
- Fit gearbox selector lever -4- and screw in bolt -3-.



| Component                                 | Tightening torque |
|-------------------------------------------|-------------------|
| Cover for parking lock to gearbox housing | 8 Nm              |
| Gearbox selector lever to selector shaft  | 15 Nm             |

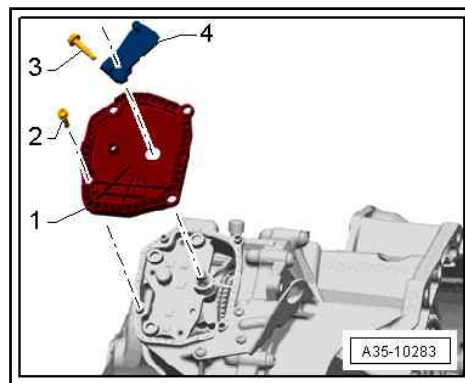
#### 1.2 Removing and installing parking lock

##### Removing

- Gearbox in vehicle



- Remove cover for parking lock -1- ➔ [page 97](#) .



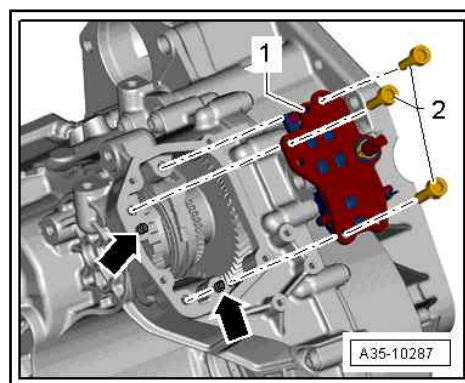
- Remove bolts -2- and pull parking lock -1- off dowel sleeves -arrows-.

If parking lock cannot be removed by hand:

- Apply multi-purpose tool - VW 771- with extractor tool - VW 771/37- behind parking lock and remove parking lock by pulling on alternate sides.
- Renew bolts -2-.

#### Installing

- Fit parking lock -1- onto dowel sleeves -arrows-.
- Fit new bolts -2-.
- Install cover for parking lock -1- ➔ [page 97](#) .



| Component                       | Tightening torque               |
|---------------------------------|---------------------------------|
| Parking lock to gearbox housing | 20 Nm and then turn 90° further |
| • Renew bolts after removal     |                                 |

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## 39 – Final drive - differential

### 1 Oil seals

⇒ [“1.1 Overview of fitting locations - oil seals”, page 99](#)

⇒ [“1.2 Renewing oil seal \(left-side\)”, page 99](#)

⇒ [“1.3 Renewing oil seal \(right-side\)”, page 101](#)

#### 1.1 Overview of fitting locations - oil seals

##### 1 - Oil seal for inner input shaft

- ❑ Renewing  
⇒ [“1.5 Renewing oil seal for inner input shaft”, page 29](#)

##### 2 - Input shaft oil seal

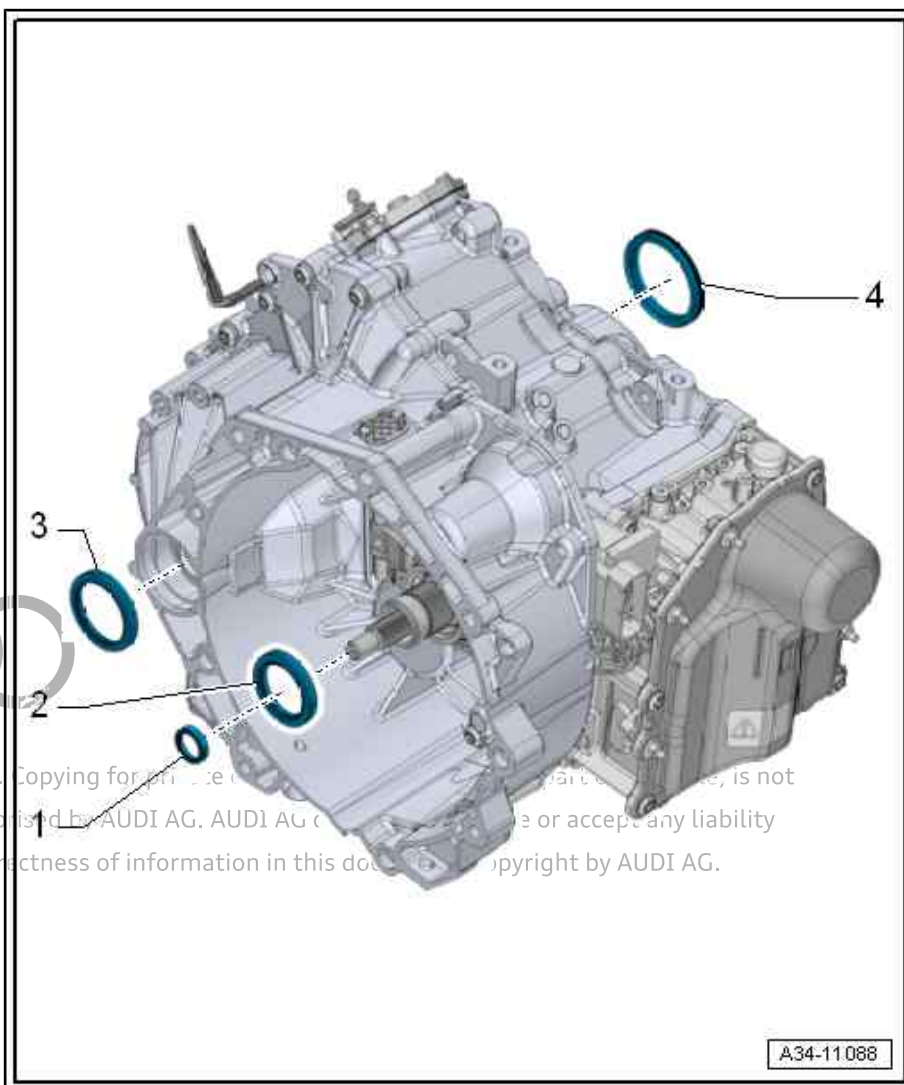
- ❑ Renewing  
⇒ [“1.4 Renewing input shaft oil seal”, page 27](#)

##### 3 - Oil seal (right-side)

- ❑ For stub shaft or flange shaft (right-side)
- ❑ Renewing  
⇒ [“1.3 Renewing oil seal \(right-side\)”, page 101](#)

##### 4 - Oil seal (left-side)

- ❑ For stub shaft or flange shaft (left-side)
- ❑ Renewing  
⇒ [“1.2 Renewing oil seal \(left-side\)”, page 99](#)

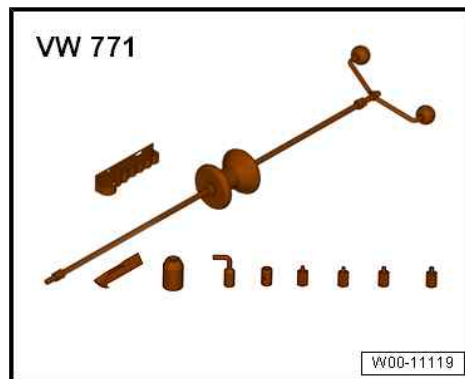


#### 1.2 Renewing oil seal (left-side)

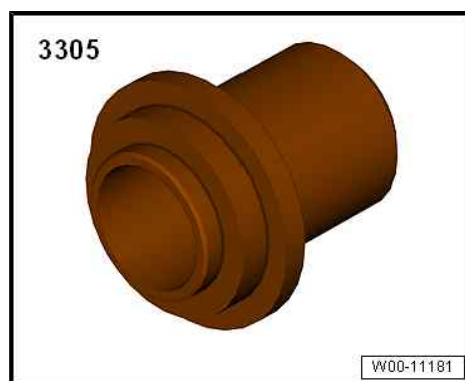
Special tools and workshop equipment required



- ◆ Multi-purpose tool - VW 771-



- ◆ Thrust piece - 3305-



- ◆ Sealing grease ⇒ Electronic parts catalogue

#### Procedure



#### Note

- ◆ Note ⇒ ["5.1 General notes", page 9](#) .
- ◆ Note ⇒ ["5.2 Rules for cleanliness", page 12](#) .
- ◆ Note ⇒ ["5.3 General repair instructions", page 12](#) .

Either stub shafts -A- or flange shafts -B- are installed on the gearbox.

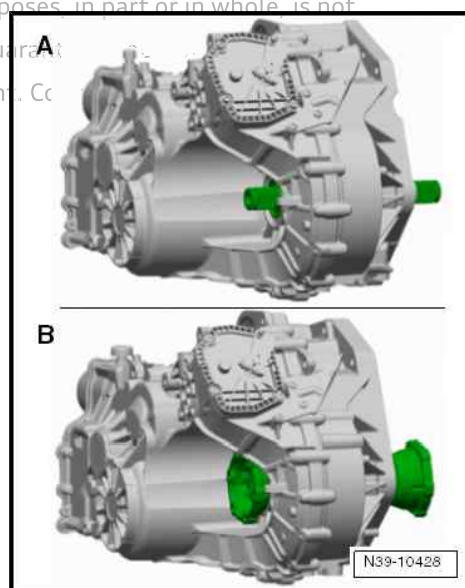
#### Gearbox with stub shafts:

- Remove stub shaft (left-side) ⇒ [page 106](#) .

#### Gearbox with flange shafts:

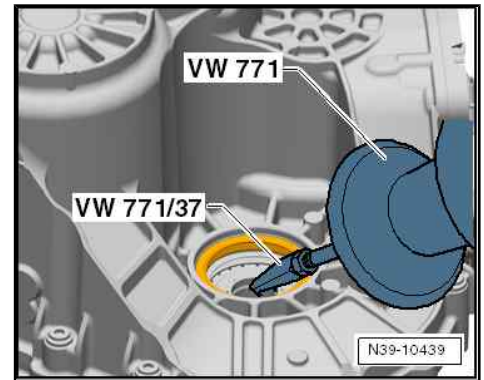
- Remove flange shaft (left-side) ⇒ [page 105](#) .

#### Both versions:

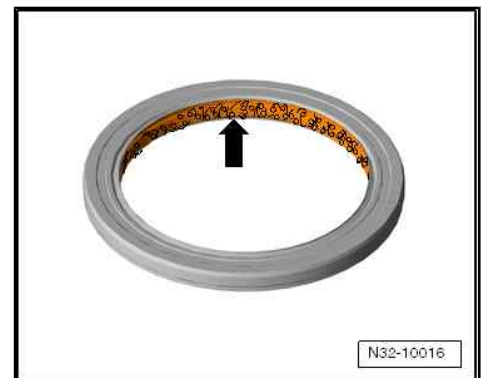




- Pull out oil seal using multi-purpose tool - VW 771- and extractor tool - VW 771/37- .



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



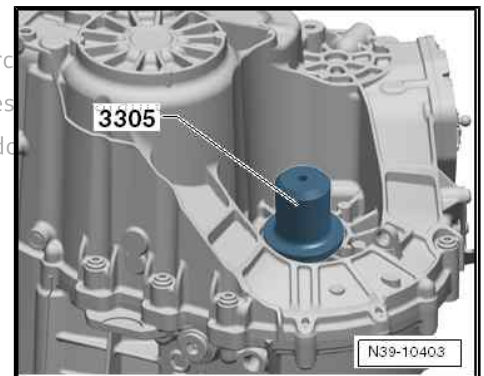
- Drive in oil seal onto stop (take care to keep seal straight).

#### Gearbox with stub shafts:

- Install stub shaft (left-side) ⇒ [page 106](#) .

#### Gearbox with flange shafts:

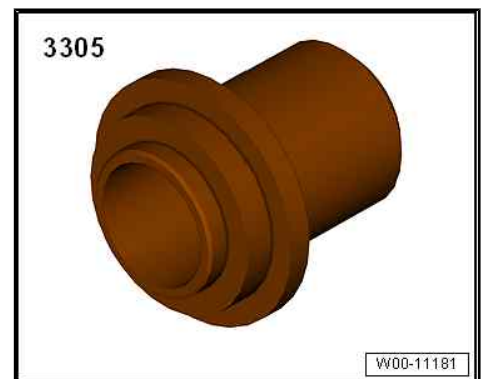
- Install flange shaft (left-side) ⇒ [page 105](#) .



### 1.3 Renewing oil seal (right-side)

#### Special tools and workshop equipment required

- ◆ Thrust piece - 3305-



- ◆ Sealing grease ⇒ Electronic parts catalogue



## Procedure



### Note

- ◆ Note ⇒ ["5.1 General notes", page 9](#) .
- ◆ Note ⇒ ["5.2 Rules for cleanliness", page 12](#) .
- ◆ Note ⇒ ["5.3 General repair instructions", page 12](#) .

Either stub shafts -A- or flange shafts -B- are installed on the gearbox.

#### Gearbox with stub shafts:

- Remove stub shaft (right-side) ⇒ [page 106](#) .

#### Gearbox with flange shafts:

- Remove flange shaft (right-side) ⇒ [page 106](#) .

#### Both versions:

- Pry out oil seal using assembly lever.
- Lubricate outer circumference of new oil seal with gear oil.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease ⇒ [Electronic parts catalogue](#) .

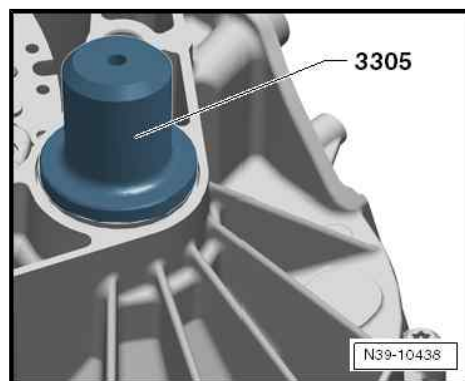
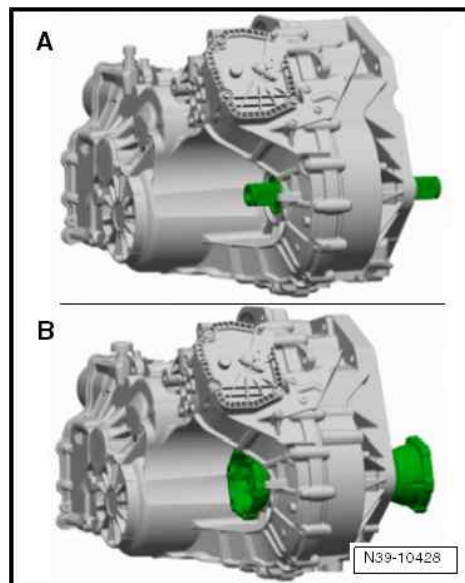
- Drive in oil seal onto stop (take care to keep seal straight).

#### Gearbox with stub shafts:

- Install stub shaft (right-side) ⇒ [page 106](#) .

#### Gearbox with flange shafts:

- Install flange shaft (right-side) ⇒ [page 106](#) .





## 2 Differential

⇒ [“2.1 Exploded view - differential”, page 103](#)

⇒ [“2.2 Removing and installing flange shaft \(left-side\)”, page 105](#)

⇒ [“2.3 Removing and installing flange shaft \(right-side\)”, page 106](#)

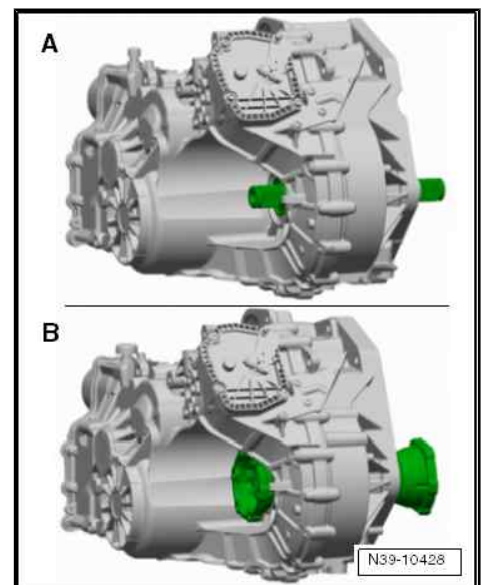
⇒ [“2.4 Removing and installing stub shaft”, page 106](#)

### 2.1 Exploded view - differential

⇒ [“2.1.1 Exploded view - stub shaft and oil seals”, page 103](#)

⇒ [“2.1.2 Exploded view - flange shaft and oil seals”, page 105](#)

Either stub shafts -A- or flange shafts -B- are installed on the gearbox.



#### 2.1.1 Exploded view - stub shaft and oil seals



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### 1 - Oil seal (right-side)

- ☐ For stub shaft (right-side)

☐ Renewing ⇒ [page 101](#)

### 2 - Stub shaft (right-side)

- ☐ Removing and installing ⇒ [page 106](#)

### 3 - O-ring

- ☐ Renew

### 4 - Circlip

- ☐ Renew

### 5 - Bolt

- ☐ 30 Nm

### 6 - Oil seal (left-side)

- ☐ For stub shaft (left-side)
- ☐ Renewing ⇒ [page 99](#)

### 7 - Stub shaft (left-side)

- ☐ Removing and installing ⇒ [page 106](#)

### 8 - O-ring

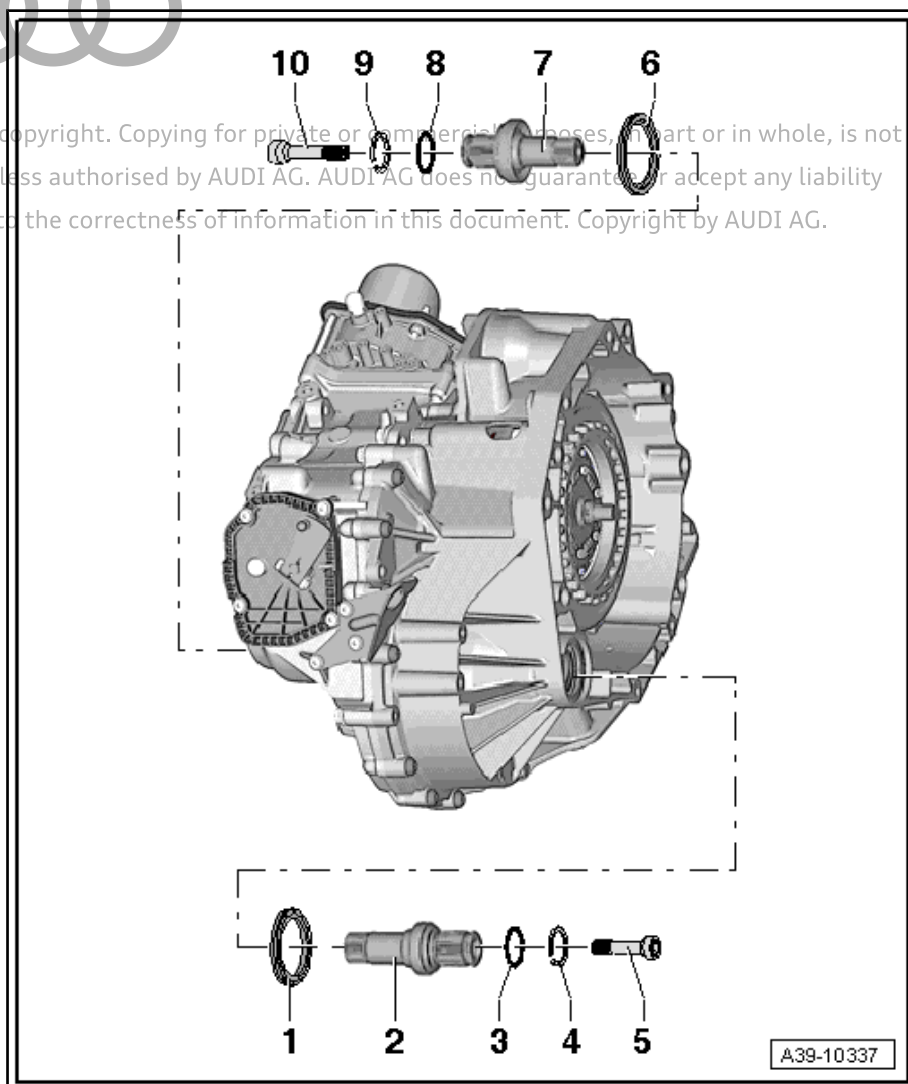
- ☐ Renew

### 9 - Circlip

- ☐ Renew

### 10 - Bolt

- ☐ 30 Nm





## 2.1.2 Exploded view - flange shaft and oil seals

### 1 - Bolt

- ☐ 30 Nm

### 2 - Flange shaft (left-side)

- ☐ Removing and installing  
⇒ [page 105](#)

### 3 - Oil seal (left-side)

- ☐ For flange shaft (left-side)
- ☐ Renewing ⇒ [page 99](#)

### 4 - Bolt

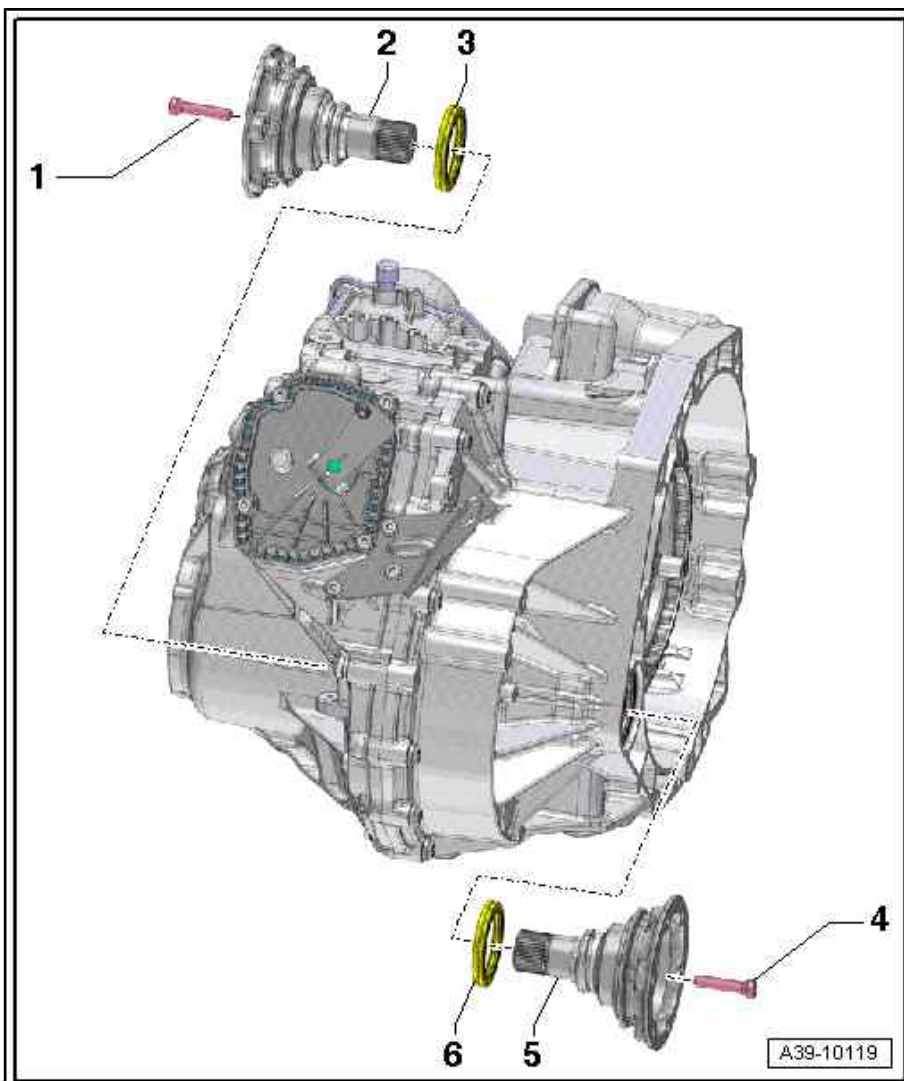
- ☐ 30 Nm

### 5 - Flange shaft (right-side)

- ☐ Removing and installing  
⇒ [page 106](#)

### 6 - Oil seal (right-side)

- ☐ For flange shaft (right-side)
- ☐ Renewing ⇒ [page 101](#)



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## 2.2 Removing and installing flange shaft (left-side)

### Removing

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

Bolt has a 6 mm hexagon socket head. Bolt can also be removed and installed with a 6 mm socket (commercially available).

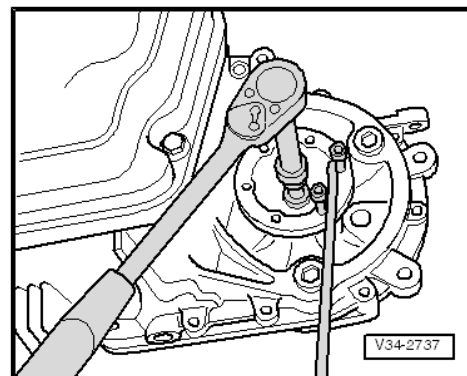
- Pull out flange shaft together with spring, thrust washer and tapered ring.

### Installing

- Tighten securing bolt for flange shaft to specified tightening torque. At the same time, press flange shaft against gearbox so that bolt engages in thread.

### Tightening torques

- ◆ Flange shaft to gearbox ⇒ [Item 1 \(page 105\)](#)



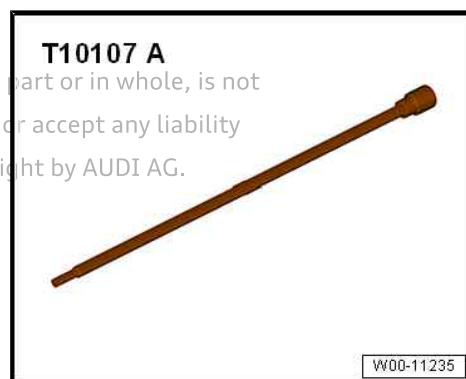


## 2.3 Removing and installing flange shaft (right-side)

### Special tools and workshop equipment required

- ◆ Socket - T10107 A-

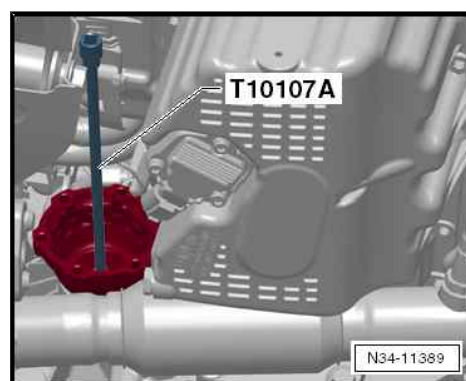
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### Removing

- Remove flange shaft (right-side) of gearbox using socket and extended bit - T10107 A- . Shown in illustration with gearbox installed.

Bolt has a 6 mm hexagon socket head. Bolt can also be removed and installed with a 6 mm socket (commercially available).



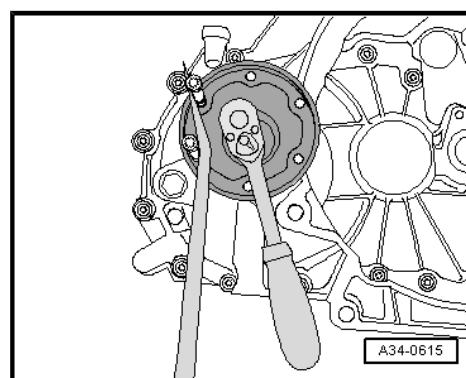
- To remove and install flange shaft, fit 2 bolts into flange and counterhold with tyre iron or other suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.

### Installing

- Tighten securing bolt for flange shaft to specified tightening torque. At the same time, press flange shaft against gearbox so that bolt engages in thread.

### Tightening torques

- ◆ Flange shaft to gearbox ➔ [Item 4 \(page 105\)](#)



## 2.4 Removing and installing stub shaft

### Special tools and workshop equipment required



◆ Socket - T10107 A-

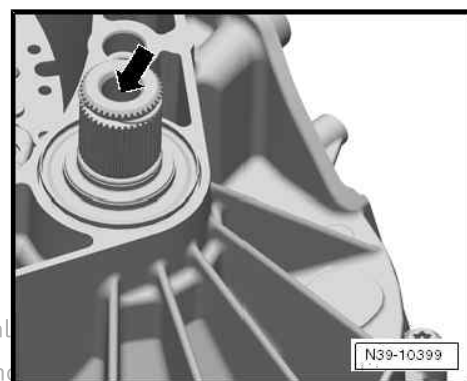


**Removing**

- Remove bolt in stub shaft (right-side) with socket - T10107 A- or 6 mm socket (commercially available).



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- Remove bolt in stub shaft (left-side) with socket - T10107 A- or 6 mm socket (commercially available).
- Pull out stub shaft.

**Installing**

If necessary, a new dust ring can be pressed onto stub shaft using drift sleeve - 40 - 20- . Do not use a hammer.

- Insert stub shaft.
- Tighten securing bolt for stub shaft to specified tightening torque. At the same time, press stub shaft against gearbox so that bolt engages in thread.
- Renew O-ring -1- and circlip -2- on stub shaft.

