



## Workshop Manual T-Cross 2019 >

**7-speed dual clutch gearbox 0CW**

Edition 10.2019





## List of Workshop Manual Repair Groups

### Repair Group

- 00 - Technical data
- 30 - Clutch
- 34 - Controls, housing
- 35 - Gears, shafts
- 39 - Final drive - differential

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

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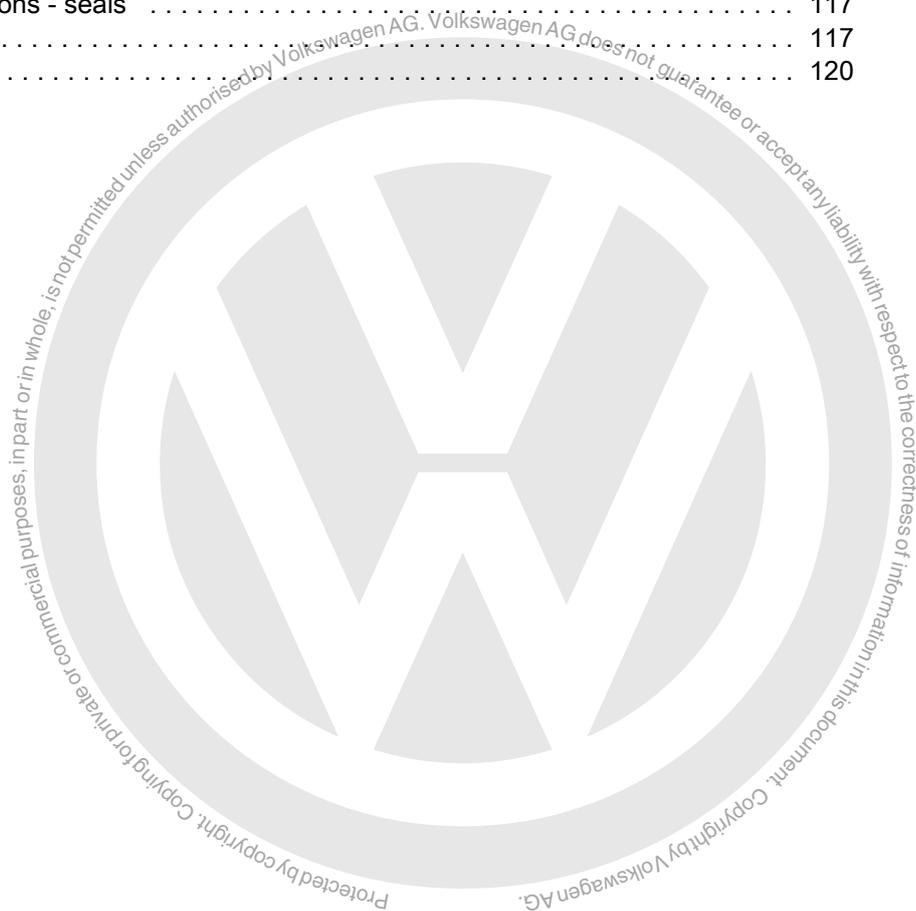


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## 00 – Technical data

### 1 Safety information

(VRL013579; Edition 10.2019)

⇒ [“1.1 General safety provisions”, page 1](#)

⇒ [“1.2 Safety measures when working on vehicles with a start/stop system”, page 2](#)

⇒ [“1.3 Safety precautions when using testers and measuring instruments during a road test”, page 2](#)

⇒ [“1.4 Safety precautions when tow-starting or towing”, page 2](#)

#### 1.1 General safety provisions

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



**WARNING**

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

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

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

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



**Caution**

*Risk of irreparable damage to electronic components when disconnecting battery.*

- ◆ *Observe measures for disconnecting battery ⇒ Electrical system; Rep. gr. 27; Battery; Disconnecting and connecting battery.*



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

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



### WARNING

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

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

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

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



### WARNING

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

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

- ◆ *Operation of test and measuring equipment while driving results in distraction.*
- ◆ *Increased risk of injury as a result of unsecured test and measuring instruments.*
- ◆ *Always secure test equipment to the rear seat with a strap and have it operated from there by a second person.*

## 1.4 Safety precautions when tow-starting or towing



### Caution

*Danger of irreparable damage to gearbox.*

- ◆ *Selector lever must be in "N" position for towing vehicle. Do not tow for more than 50 km or faster than 50 km/h.*



### Note

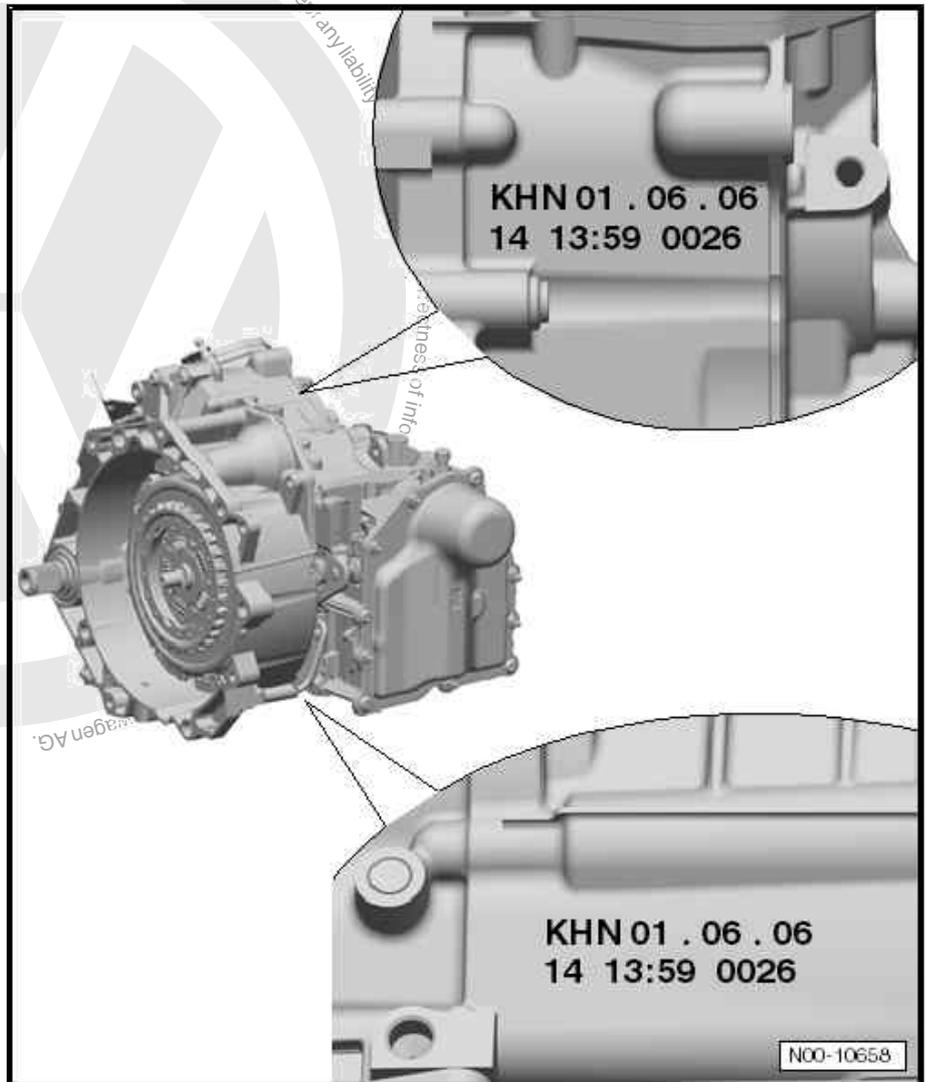
*It is not possible to tow-start the motor.*



## 2 Identification

⇒ "2.1 Gearbox identification", page 3

### 2.1 Gearbox identification



The following information is shown on the gearbox (example):

- ◆ KHN = Gearbox code
- ◆ 01.06.06 = Production date
- ◆ 14 = factory code
- ◆ 13:59 = Production time
- ◆ 0026 = Serial number

 Note

*The gearbox code also appears on the vehicle data stickers.*



### 3 Repair instructions

⇒ [“3.1 General information”, page 4](#)

⇒ [“3.2 General repair instructions”, page 5](#)

⇒ [“3.3 Gaskets and seals”, page 6](#)

⇒ [“3.4 Nuts and bolts”, page 6](#)

#### 3.1 General information

##### Gearbox

- ◆ The torque of the engine is transmitted via the flywheel to the dual clutch gearbox. The flywheel and the dual clutch are joined together by a toothed connection. Together they take on the function of the dual-mass flywheel.
- ◆ The gearbox is structured like a 7-speed manual gearbox. Through opposed hydraulic actuation of two multi-plate dry clutches, it is operated like an automatic gearbox. In other words, the gears are engaged automatically or manually via the Tiptronic system. There is no clutch pedal.
- ◆ When the ignition is switched off, both clutches are disengaged.



N00-10538



The gearbox has an opening in the housing.

- Ensure that no small parts fall into this opening during repairs -arrow-. Cover the opening if necessary.

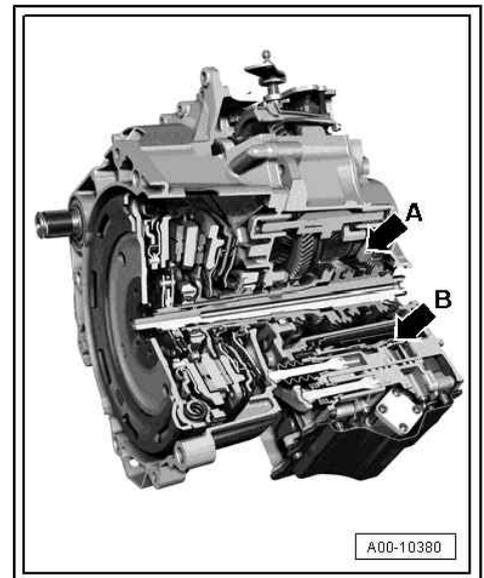
### Gear oil

The 7-speed dual clutch gearbox has two separate and different oil systems. One for the gear oil section -arrow A- and one for the hydraulic fluid section -arrow B-.

Only the gearbox oils available through the replacement parts system must be used for the dual clutch gearbox 0CW. Other oils will lead to malfunctions or failure of the gearbox, part number → Electronic parts catalogue (ETKA) .

The oil level in the gearbox cannot be checked. The correct gear oil level can only be achieved by renewing the gear oil, e.g. if the gearbox is leaking

⇒ [“7.1 Draining and filling gear oil”, page 108](#) .



## 3.2 General repair instructions

- ◆ To ensure flawless and successful gearbox repairs, the greatest care and cleanliness as well as the use of good and proper tools are essential. Also note the basic rules on safety when performing repair procedures.
- ◆ A number of generally applicable instructions for the various repair procedures which were previously repeated at numerous places in the workshop manual are summarised here. They apply for this particular workshop manual.

### Guided Fault Finding, vehicle self-diagnosis and test instruments

- ◆ Before performing repairs on the gearbox, determine the exact cause using vehicle diagnostic tester [Guided fault finding](#), [Vehicle self-diagnosis](#) and [Test instruments](#) modes.

### Gearbox

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

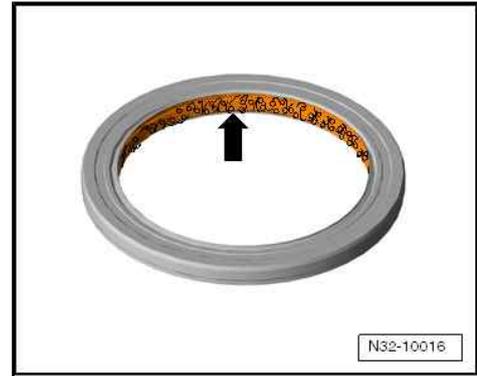
### Locking devices

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



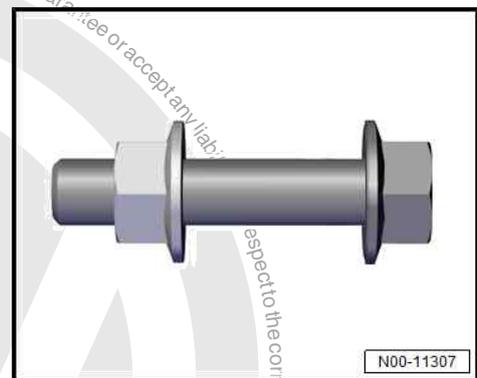
### 3.3 Gaskets and seals

- ◆ After removing gaskets and seals, always inspect contact surface of housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Before installing seals, lightly oil outer diameter and half-fill space between sealing lips -arrow- with sealing grease - G 052 128 A1- .
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ Only use DSG transmission oil. Other lubricants will cause problems in function.
- ◆ After renewing gaskets, O-rings and seals - drain gear oil completely and refill with new oil => [page 108](#) .



### 3.4 Nuts and bolts

- ◆ Loosen and tighten securing bolts and securing nut for covers and housings diagonally.
- ◆ Specified torques given are for unlubricated nuts and bolts.
- ◆ Clean threads of bolts which are to be installed with locking fluid using a wire brush. Then insert bolts with locking fluid - AMV 185 101 A1- .
- ◆ Threaded holes into which self-locking bolts or bolts with locking agent have been screwed must be cleaned (e.g. with a screw tap). Otherwise there is a danger that the bolts will shear off when refitted.
- ◆ Always renew self-locking bolts and nuts.





## 4 Technical data

⇒ ["4.1 Allocation gearbox - engine", page 7](#)

⇒ ["4.2 Capacities", page 8](#)

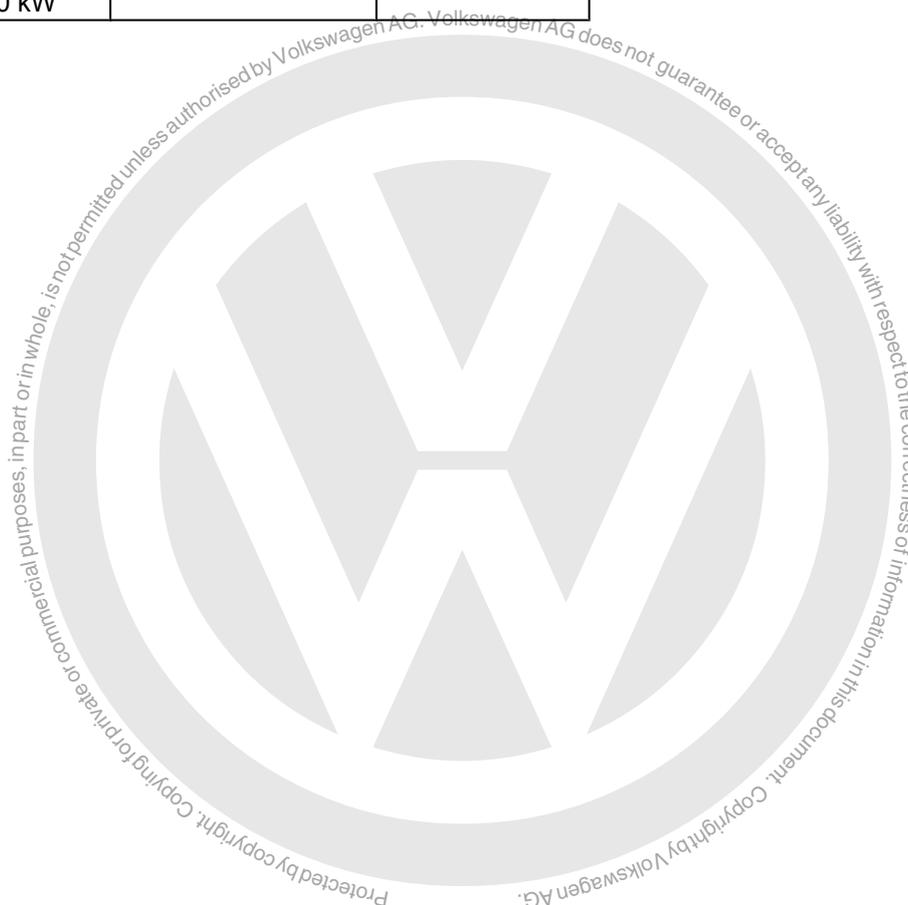
### 4.1 Allocation gearbox - engine

#### 4.1.1 T- Cross 2019 ►

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

Gearbox code for petrol engines		
SSU, TSH, TXT, UBU	UAG	
1.0 l - 85 kW	1.5 l - 110 kW	

Gearbox code for diesel engines		
RRH, SMS, SSV, SSR, TSP, UCA		
1.6 l - 70 kW		



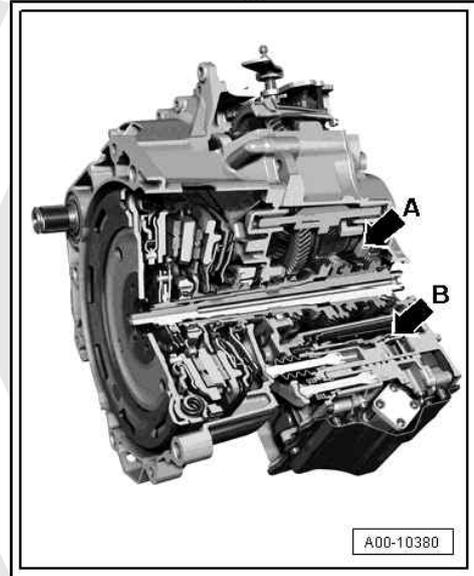


## 4.2 Capacities

The 7-speed dual clutch gearbox has two separate and different oil systems. One for the gear oil section -arrow A- and one for the hydraulic fluid section -arrow B-.

Capacities	Gear oil section
In case of repair	Capacity: 1.7 litres
Changing	<ul style="list-style-type: none"> <li>◆ No change necessary</li> <li>◆ Change only after repair if the oil has been drained.</li> </ul>
Lubricant	Gear oil for dual clutch gearbox 0CW Part number ⇒ Electronic parts catalogue (ETKA)

Capacities	Hydraulic oil section with mechatronic unit for dual clutch gearbox - J743-
In case of repair	Capacity 0.9 l
Changing	<ul style="list-style-type: none"> <li>◆ No change necessary</li> <li>◆ Change only after repair if the oil has been drained.</li> </ul>
Lubricant	Hydraulic oil Part number ⇒ Electronic parts catalogue (ETKA)



### Caution

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

- ◆ *Only the gear oil for the 7-speed dual clutch gearbox 0CW, which is available through the replacement parts system, may be used ⇒ Electronic parts catalogue (ETKA) .*
- ◆ *Other oils will lead to malfunctions or failure of the gearbox.*
- ◆ *It is not possible to check the fill level of the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743- . For installation work, the breather of the mechatronic unit for dual clutch gearbox - J743- must be sealed so that no oil can escape ⇒ [page 104](#) . The fill level can only be set correctly by changing the hydraulic fluid.*
- ◆ *If oil escapes from the gear oil part, it can only be rectified by changing the gear oil ⇒ [page 108](#) . It is not possible to check the fill level.*
- ◆ *If the level of oil/fluid is too high or too low in either of the parts, the function of the gearbox will be impaired.*



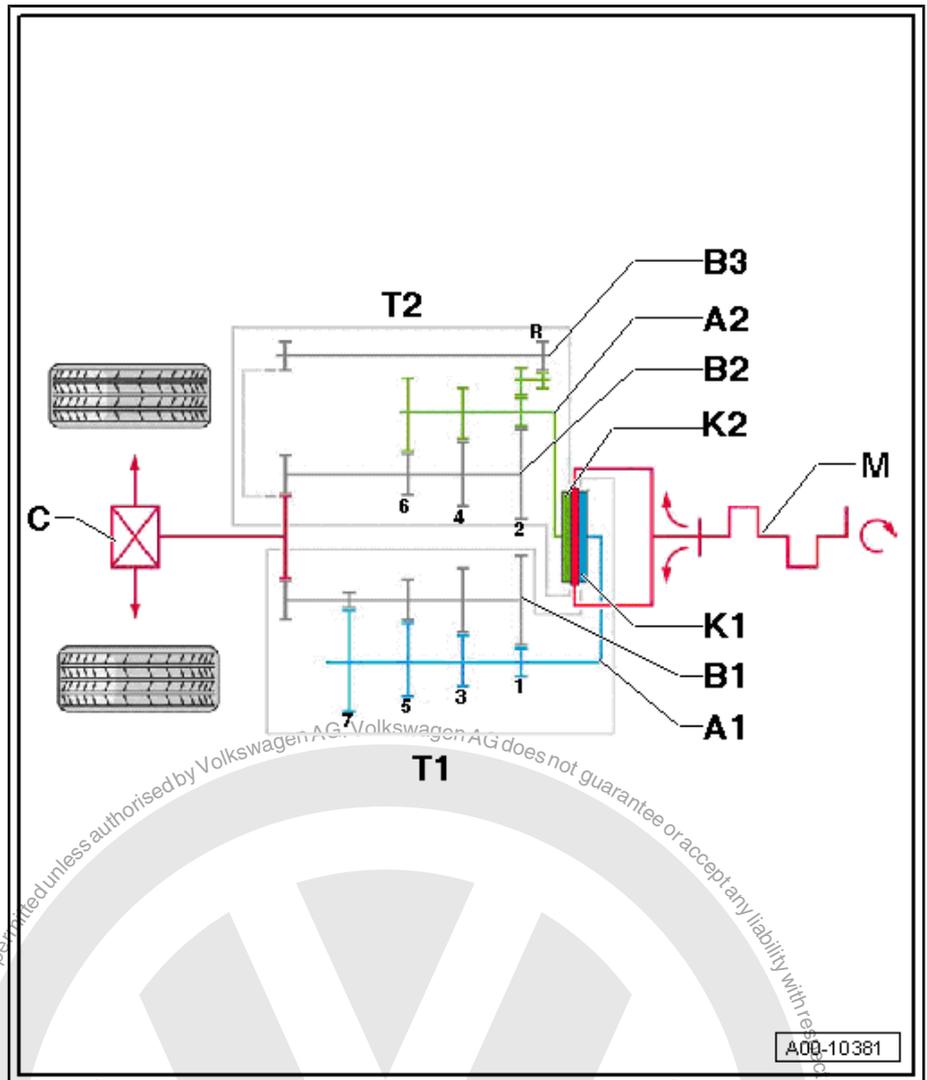
## 5 Overview - power transmission

⇒ ["5.1 Overview - power transmission - front-wheel drive", page 9](#)

### 5.1 Overview - power transmission - front-wheel drive

The 7-speed dual clutch gearbox 0CW is configured as a 5-shaft gearbox. 2 input shafts and 3 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 - Sub-gearbox 1
  - with gears 1, 3, 5 and 7
- T2 - Sub-gearbox 2
  - with gears 2, 4, 6 and reverse gear R



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## 30 – Clutch

### 1 Clutch mechanism

⇒ [“1.1 Assembly overview - clutch engagement”, page 10](#)

⇒ [“1.2 Removing and installing clutch engagement”, page 11](#)

⇒ [“1.3 Adjusting clutch engagement”, page 14](#)

#### 1.1 Assembly overview - clutch engagement

##### 1 - Shim for “K 1”

- Determining thickness  
⇒ [page 14](#) .

##### 2 - Large engaging lever for “K 1”

- With engagement bearing
- Removing and installing  
⇒ [page 11](#)

##### 3 - Hinge mounting

- For large engaging lever “K 1”
- Cannot be renewed.

##### 4 - Small engagement bearings for “K 2”

##### 5 - Shim for “K 2”

- Determining thickness  
⇒ [page 14](#) .

##### 6 - Upper section of bushing

- For small engaging lever “K 2”
- Is removed and installed together with small engaging lever and lower section of bushing

##### 7 - Small engaging lever for “K 2”

- Is removed and installed together with upper and lower section of bushing
- Removing and installing  
⇒ [page 11](#)

##### 8 - Ball-head pin

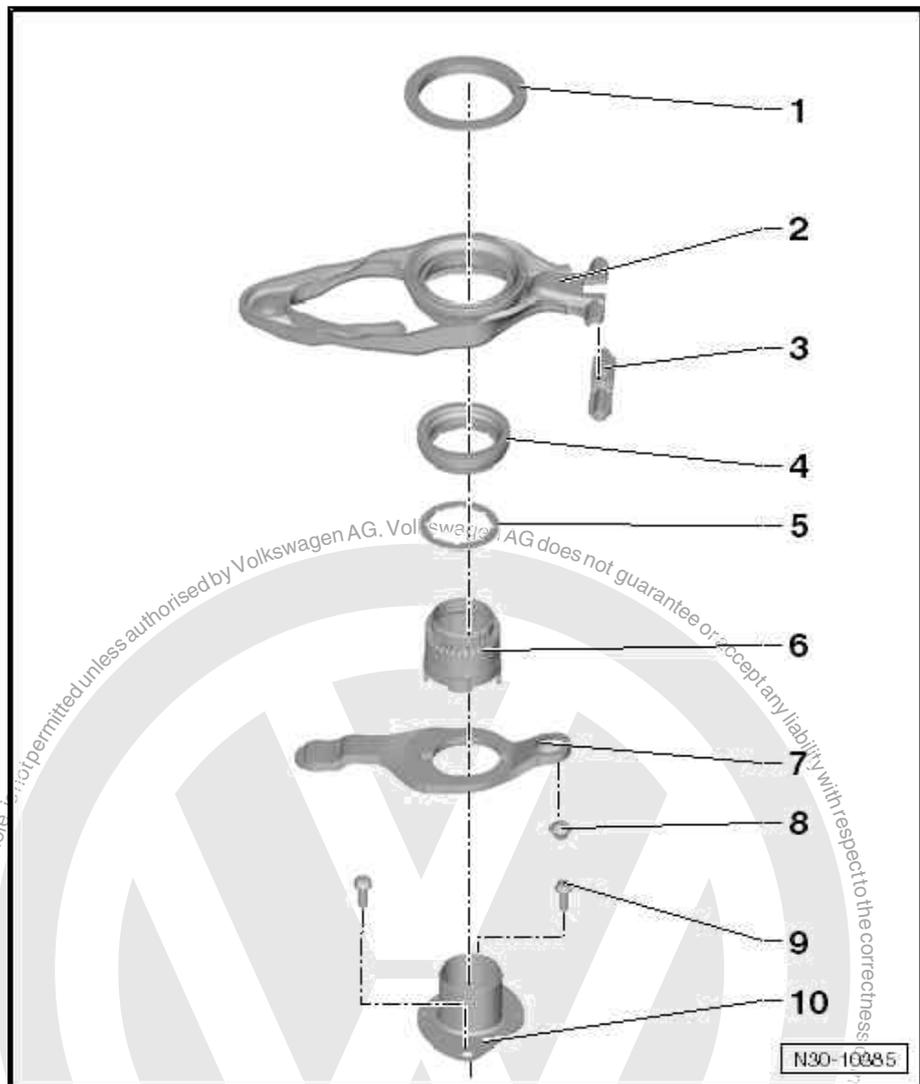
- For small engaging lever “K 2”
- Removing and installing ⇒ [page 15](#)

##### 9 - Bolt

- Always renew after removing
- 8 Nm +90°

##### 10 - Lower section of bushing

- For small engaging lever “K 2”
- Is removed and installed together with small engaging lever and upper section of bushing



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## 1.2 Removing and installing clutch engagement

### Removing

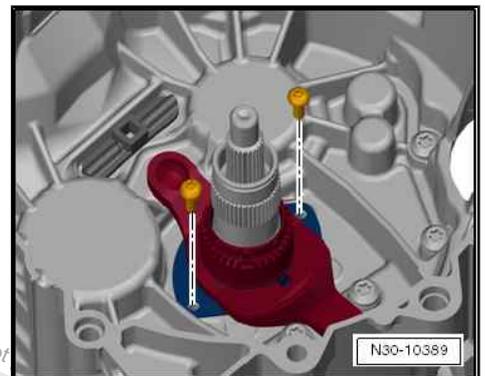
- Dual clutch removed ⇒ [page 27](#) .
- Remove »large« engaging lever with »small« engagement bearing.



### Note

*The upper section of bushing cannot be removed or installed alone. It is always removed or installed together with lower section of guide sleeve and »small« engaging lever.*

- Undo and remove bolts and remove »small« engagement lever together with upper and lower section of bushing.





Only replace the ball pin -2- when it is worn ⇒ [page 15](#) .



**WARNING**

*The hinge mounting -1- cannot be removed.*

**Installing**

Install in reverse order of removal, observing the following:



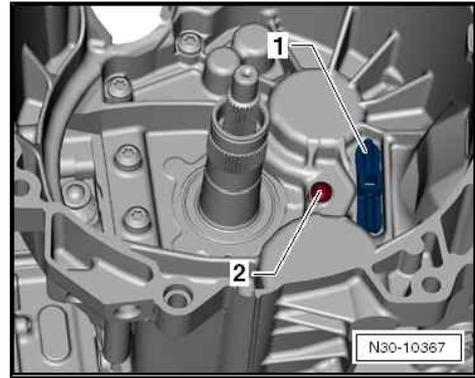
**WARNING**

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

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

*The hinge mounting cannot be removed.*

*If you have performed any of the above work, you must now adjust the position of engagement bearings "K 1 and K 2" ⇒ [page 14](#) .*

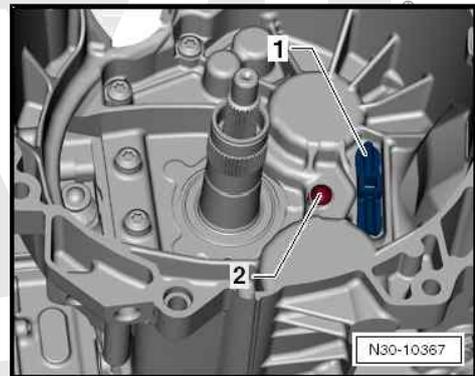


**Note**

*There is no need to adjust anything if all the named parts have only been removed and reinstalled.*

- Hinge mounting -1- and ball pin -2- have been installed.
- Only replace the ball pin -2- when it is worn ⇒ [page 15](#) .

**Observe the following when installing a new engaging lever »K 2«:**





The new engaging lever »K 2« with upper and lower section of guide sleeve will be delivered in transport position -illustration- and must be set to installation position prior to installation.

**Setting engaging lever »K 2« to installation position:**

- Hold upper section of guide sleeve with one hand. With the other hand turn the lower section of guide sleeve in direction of arrow until the sleeve moves freely.

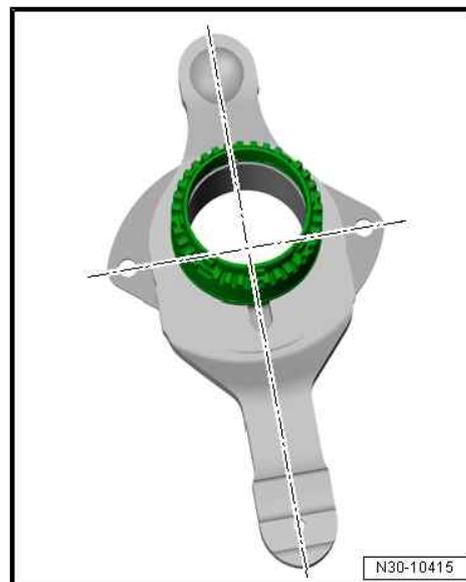
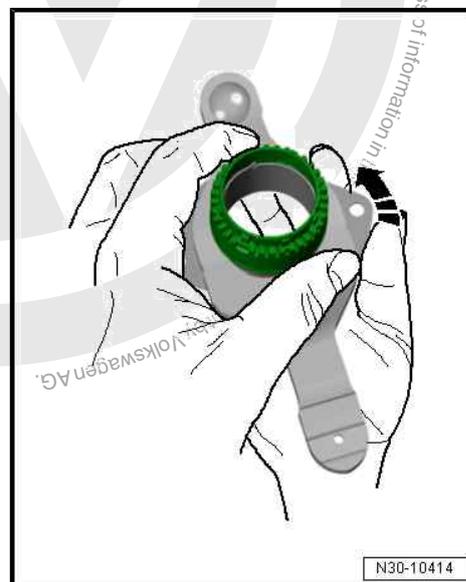
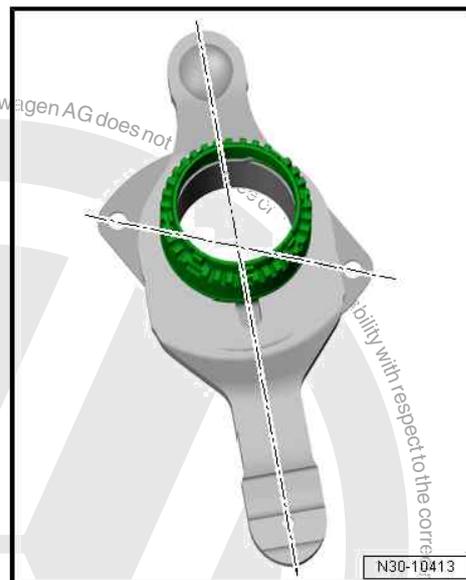
**Note**

*Apply high force to hold both sections, as this is necessary for turning the lower section of the guide sleeve.*

If the engaging lever is in installation position, the holes of the lower section of guide sleeve are at right angles to the engaging lever. The sleeve moves freely.

- When installing a new engaging lever, the position of the engaging bearings "K 1" and "K 2" must be adjusted  
=> [page 14](#) .

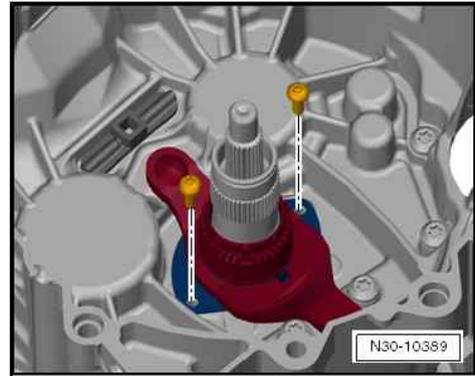
**Continued for all:**





- Install »small« engagement lever together with upper and lower section of bushing. Insert and tighten new bolts.

Specified torque: ⇒ [Item 9 \(page 10\)](#)



- Insert »large« engaging lever with measured shims for “K 1” and “K 2” and with small engagement bearing.



- The large shim is inserted into the large engagement bearing, with the hemispherical side of the shim facing downwards.
  - The small shim goes under the small engagement bearing. Therefore, insert shim first.
  - The shim and the small engagement bearing only fit in one position due to the 8 grooves.
  - By turning, check that parts have been installed correctly and that grooves are seated correctly.
  - Check both engaging levers are seated correctly.
- Install dual clutch ⇒ [page 32](#) .



### 1.3 Adjusting clutch engagement

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

- ◆ Clutch has been renewed.
- ◆ Engaging levers were renewed.
- ◆ Small ball pin for engaging lever “K 2” has been renewed.
- ◆ Engagement bearings were renewed.



#### Note

- ◆ *There is no need to adjust anything if all the named parts have only been removed and reinstalled.*
- ◆ *The retaining ring must be renewed in each case.*

**Special tools and workshop equipment required**



- ◆ Gauge block - T10466-



- ◆ Ruler - T40100-



- ◆ Not shown: Depth gauge, digital 300 mm - VAS 6594-

#### Requirement

- Dual clutch removed ⇒ [page 27](#) .
- The gearbox flange must be level to assure good contact with the ruler.
- Mechatronic unit for dual clutch gearbox - J743- built into gearbox.



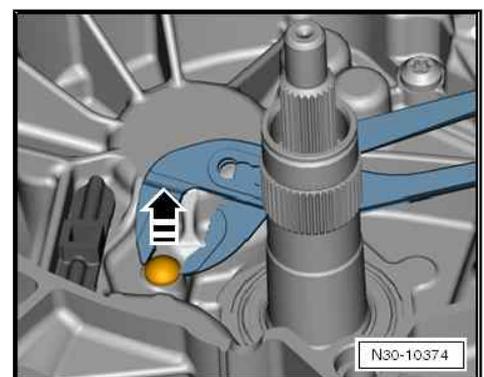
#### Caution

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

- ***Retainer for engaging lever and entire mechanism of engagement bearing must be dry and free of oil or grease.***

#### Removing and installing ball pin

- Use pliers to remove ball-head pin.



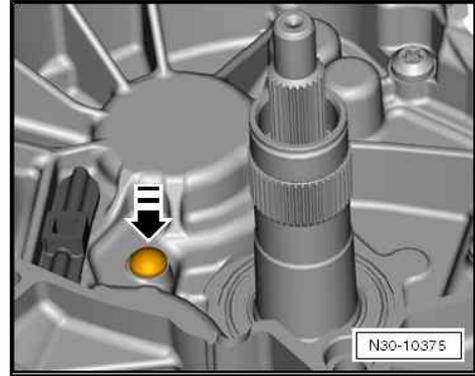


- Push in »new« ball pin by hand, if necessary using a plastic hammer and drift to tap it in.



**Note**

To avoid damage to ball pin, only tap the drift lightly with the plastic head hammer.



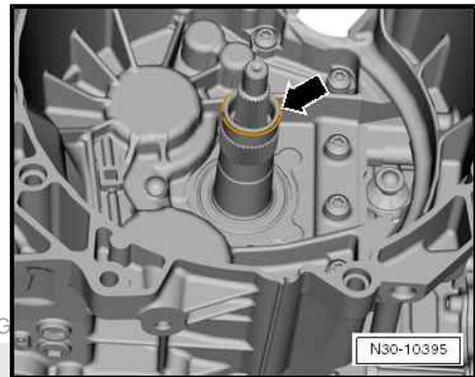
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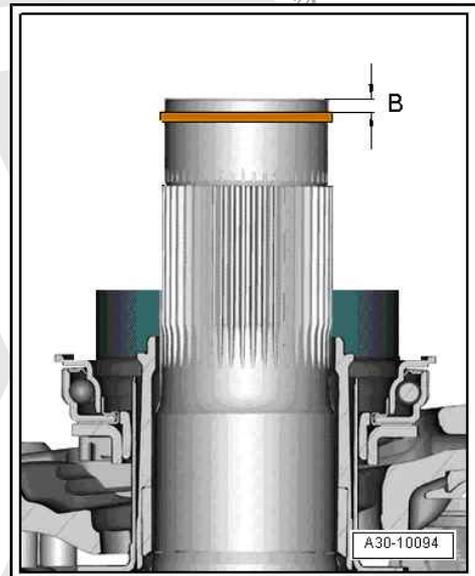
**Note**

If dimension "B" has already been determined, it is now possible to proceed with step "2" of the measurement ⇒ [page 18](#)

- Install previously used retaining ring -arrow- of outer input shaft.



**Step 1: Determine dimension "B" for clutch "K 1" and "K 2"**



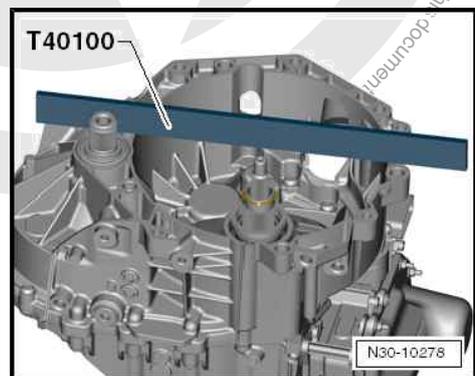
- Place ruler - T40100- upwards across end of shaft onto gear-box flange.



**Caution**

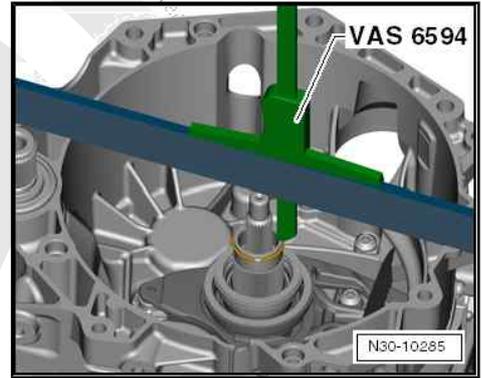
**Risk of false measurements.**

- ◆ The ruler - T40100- should remain in this position for the following measurements. Do not turn over, do not remove.

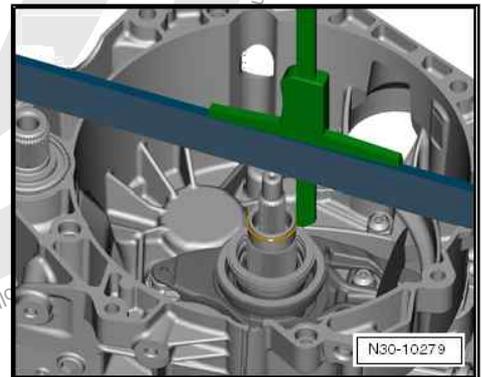




- Fit digital 300 mm depth gauge - VAS 6594- on top of ruler - T40100- . Position depth gauge rod on outer input shaft.
- Set depth gauge to "0".



- Position depth gauge rod on retaining ring, as show in diagram.
- In this position, determine dimension "B<sub>1</sub>" to retaining ring.
- Example: dimension "B<sub>1</sub>" = 2.62 mm



- In the opposite position, determine dimension "B<sub>2</sub>" to retaining ring.

**i** Note

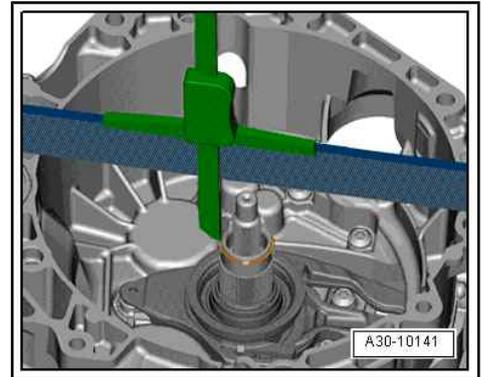
*Do not measure on retaining ring joint. The retaining ring could be pushed away and falsify the reading.*

- Example: dimension "B<sub>2</sub>" = 2.58 mm
- Calculate mean value from dimension "B<sub>1</sub>" and "B<sub>2</sub>".

Formula:  $B_1 + B_2$

Example:

- $2.62 + 2.582 = 2.60$  mm
- Result: Dimension "B" = 2.60 mm



**i** Note

*If the dual clutch is still installed following this measurement, it must now be removed => [page 30](#) .*

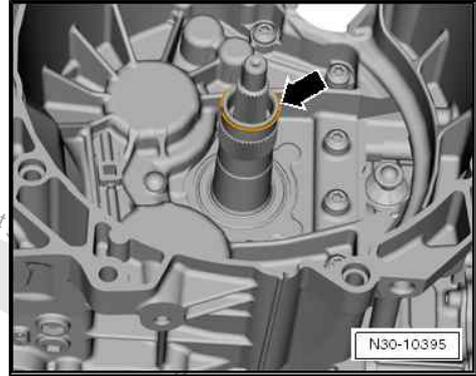


- Remove retaining ring -arrow- of outer input shaft and dispose.

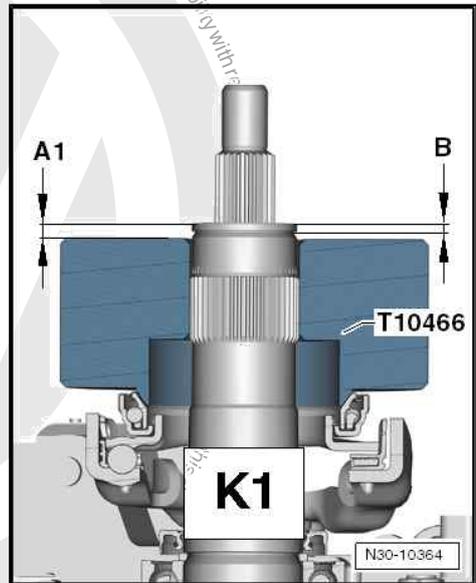


**Note**

*It is not permissible to reuse the retaining ring.*



**Step 2: Determine dimension "A 1" for clutch engagement bearing "K 1"**



- Insert large engaging lever.



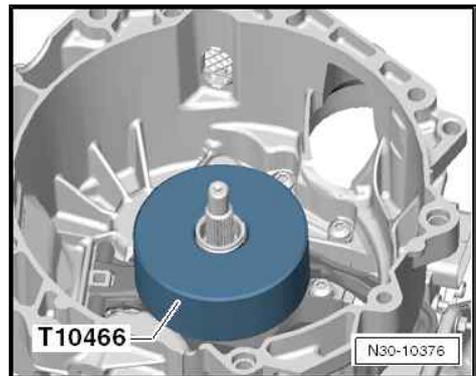
**Caution**

*Risk of false measurements.*

- ◆ **Do not insert any shim!**



- Check that engaging lever is seated correctly.
- Place gauge block - T10466- on large engagement bearing. Flat side faces upwards.
- To ensure that end gauge - T10466- sits properly on engagement bearing, press down and turn end gauge.
- Engagement bearing will turn with gauge block - T10466- .



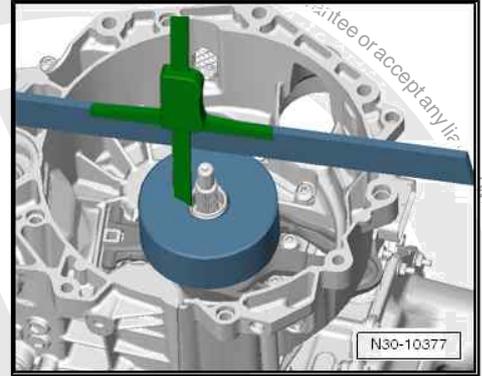


- Fit digital 300 mm depth gauge - VAS 6594- on top of ruler.
- Position depth gauge rod on outer input shaft.
- Ruler - T40100- is lying upwards across end of shaft on gear-box flange.

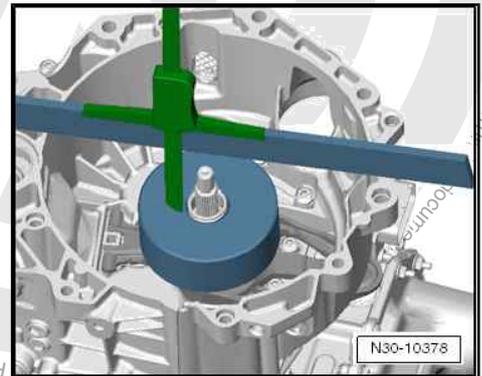
**Caution**

**Risk of false measurements.**

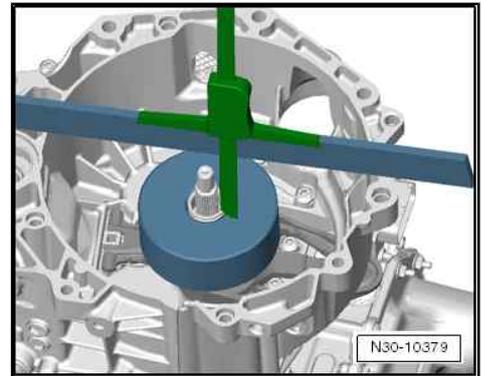
◆ **The ruler - T40100- should remain in this position for the following measurements. Do not turn over, do not remove.**



- Set depth gauge to "0".
- Position depth gauge rod on end gauge - T10466- , as shown in diagram.
- In this position, determine dimension "A 1<sub>a</sub>" to gauge block - T10466- .
- Example: Dimension "A 1<sub>a</sub>" = 5.03 mm



- In the opposite position, determine dimension "A 1<sub>b</sub>" to end gauge - T10466- .
  - Example: Dimension "A 1<sub>b</sub>" = 5.01 mm
  - Calculate mean value from dimension "A 1<sub>a</sub>" and "A 1<sub>b</sub>".
- Formula:  $A_{1a} + A_{1b} \cdot 2$



Example:

- $5.03 + 5.012 = 5.02$  mm
- Result: dimension "A 1" = 5.02 mm

**Step 3: Calculate height tolerance of clutch engagement bearing "K 1"**

**Note**

*On the basis of dimension "A 1" and dimension "B", the height tolerance of the clutch engagement bearing "K 1" is now calculated according to the following calculus.*

	Dimension "A 1"
-	Dimension "B"
=	Actual height tolerance of clutch engagement bearing "K 1"

Example:

- $5.02 \text{ mm} - 2.60 \text{ mm} = 2.42 \text{ mm}$
- Result: Height tolerance of clutch engagement bearing "K 1" = 2.42 mm



**Step 4: Determine clutch tolerance of clutch "K 1"**

- Read clutch tolerance value from new clutch.
- Example: Read off clutch tolerance value on clutch "K 1 = +0.2", as shown in illustration.
- Result: clutch tolerance of clutch "K 1" = + 0.20 mm.

**Step 5: Determine thickness of shim "SK 1"**



**Note**

On the basis of the clutch tolerance "K 1", the thickness of shim "SK1" is now calculated according to the following method.

	Height tolerance of engagement bearing "K 1"
-/+	Clutch tolerance of clutch "K 1"
=	Calculated thickness of shim "SK 1"

Example:

- 2.42 mm + 0.20 mm = 2.62 mm
- Result: calculated thickness of shim "SK 1" = 2.62 mm
- Select required shim from the table with the help of the part number -magnifying glass- and have it ready for installation.

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

Example:

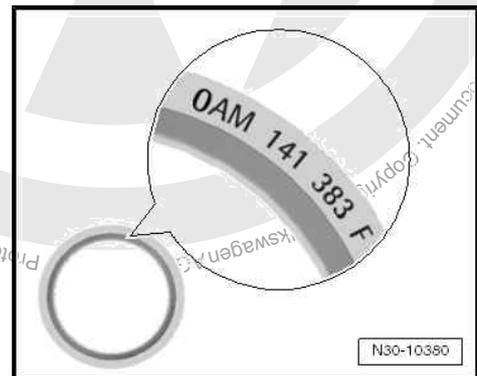
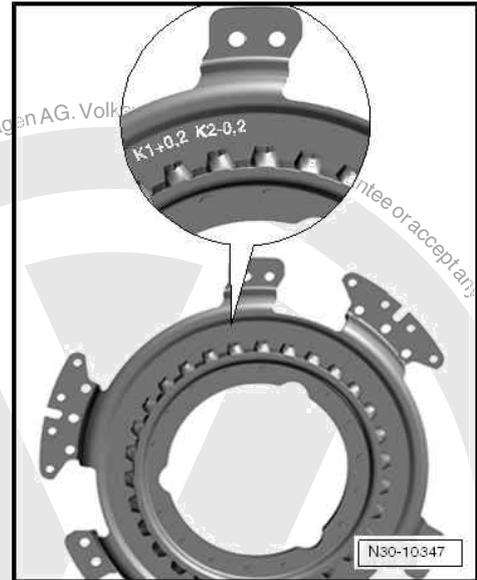
- Result: calculated thickness of shim "SK 1" = 2.62 mm
- Chosen shim thickness = 2.70 mm = part number 0AM 141 383 F



**Caution**

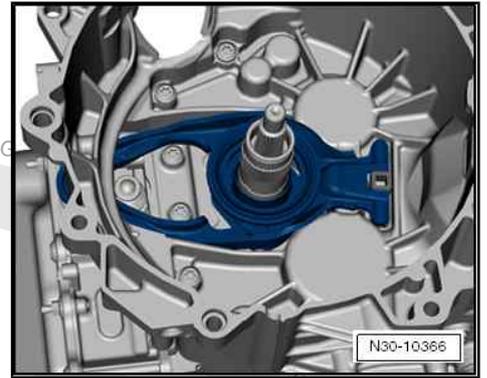
*Risk of damage to the clutch.*

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





- Remove end gauge - T10466- and large engagement lever again.

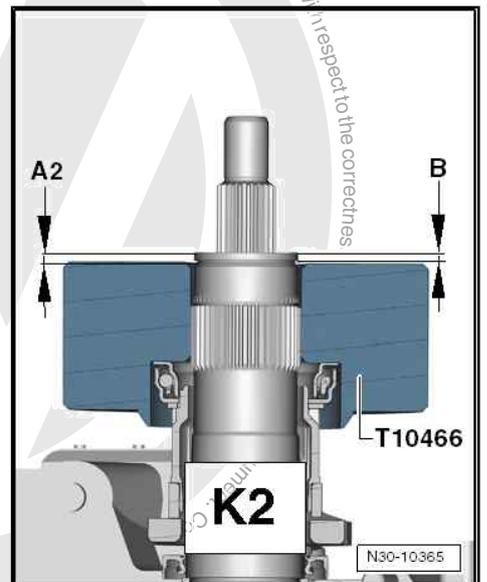


**Step 6: determine dimension "A 2" for engagement bearing of clutch "K 2"**

**Note**

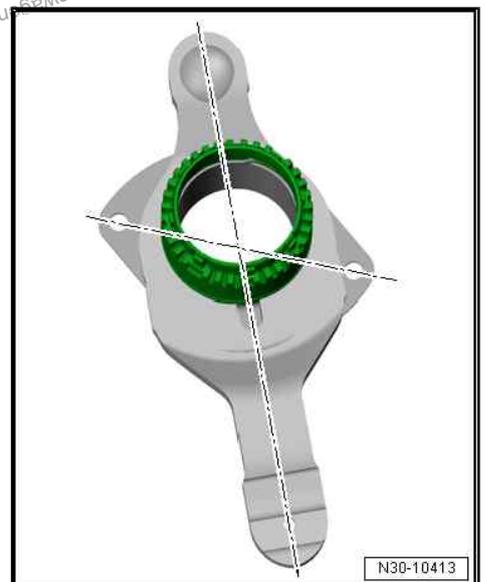
*The upper section of bushing cannot be removed or installed alone. It is always removed or installed together with lower section of bushing and »small« engagement lever.*

**Observe the following when installing a new engaging lever »K2«:**



The new engaging lever »K2« with upper and lower section of guide sleeve will be delivered in transport position -illustration- and must be set to installation position prior to installation.

**Setting engaging lever »K2« to installation position:**



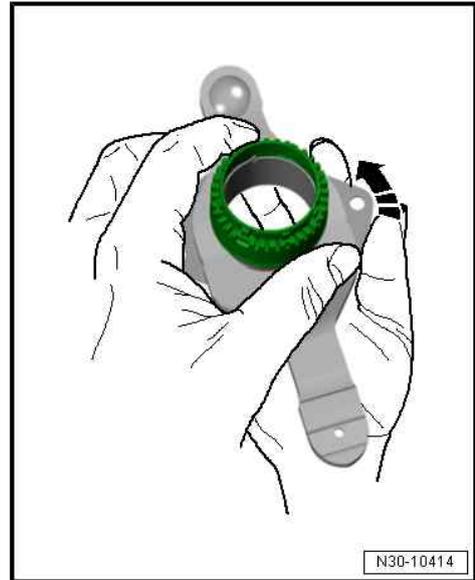


- Hold upper section of guide sleeve with one hand. With the other hand turn the lower section of guide sleeve in direction of arrow until the sleeve moves freely.



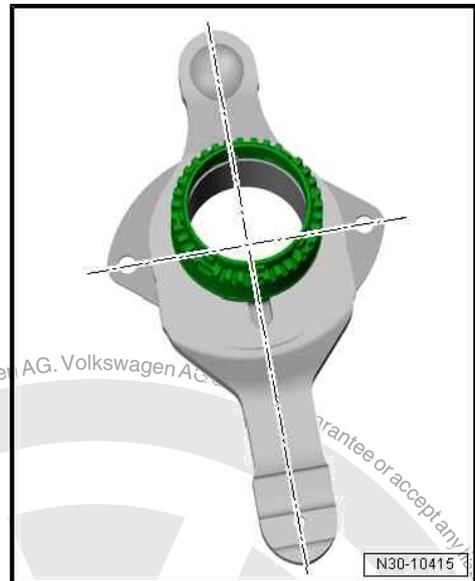
**Note**

*Apply high force to hold both sections, as this is necessary for turning the lower section of the guide sleeve.*



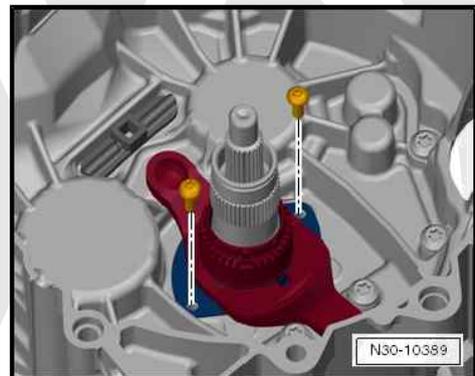
If the engaging lever is in installation position, the holes of the lower section of guide sleeve are at right angles to the engaging lever. The sleeve moves freely.

**Continued for all:**



- Install »small« engagement lever together with upper and lower section of bushing. Insert and tighten new bolts.

Specified torque: ⇒ [Item 9 \(page 10\)](#)



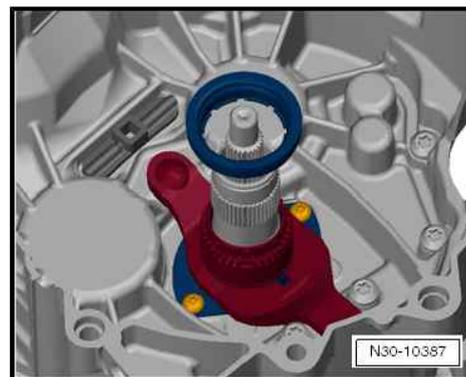


- Insert »small« engagement bearing without shim.

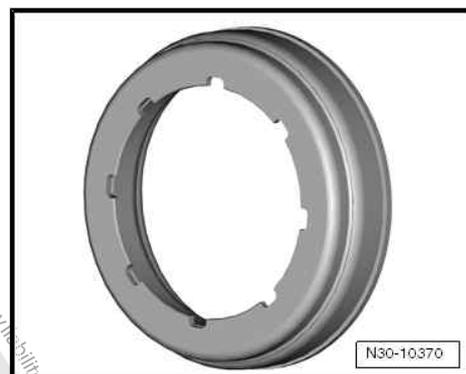
 **Caution**

*Risk of false measurements.*

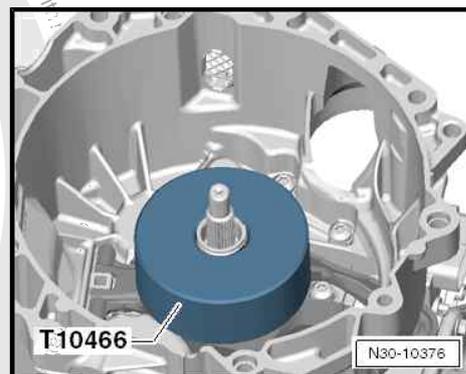
◆ **Do not insert any shim!**



- Small engagement bearing only fits in one position due to 8 grooves.
- By turning, check whether small engagement bearing has been installed correctly and that grooves are seated correctly.



- Place end gauge - T10466- on small engagement bearing. Flat side faces upwards.
- To ensure that end gauge - T10466- sits properly on engagement bearing, press down and turn end gauge.
- Engagement bearing will turn with gauge block - T10466- .

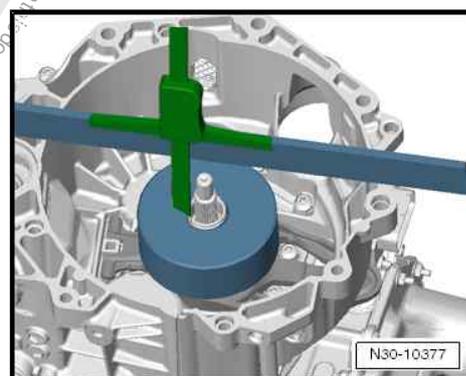


- Place digital 300 mm depth gauge - VAS 6594- on top of ruler and position depth gauge rod on outer input shaft.
- Ruler - T40100- is lying upwards across end of shaft on gearbox flange.

 **Caution**

*Risk of false measurements.*

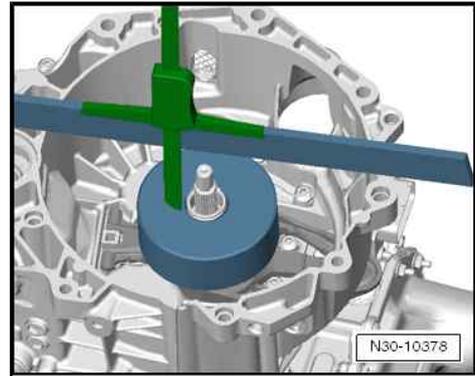
◆ **The ruler - T40100- should remain in this position for the following measurements. Do not turn over, do not remove.**



- Set depth gauge to "0".



- Position depth gauge rod on end gauge - T10466- , as shown in diagram.
- In this position, determine dimension "A 2<sub>a</sub>" to gauge block - T10466- .
- Example: Dimension "A 2<sub>a</sub>" = 4.79 mm

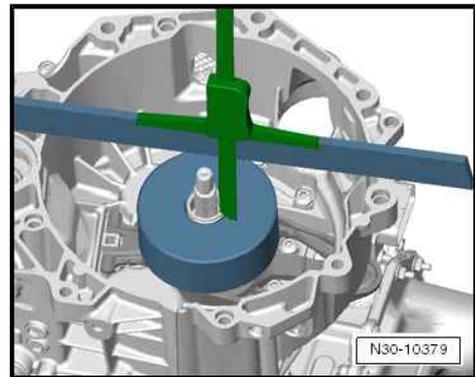


- In the opposite position, determine dimension "A 2<sub>b</sub>" to end gauge - T10466- .
- Example: Dimension "A 2<sub>b</sub>" = 4.75 mm
- Calculate mean value from dimension "A 2<sub>a</sub>" and "A 2<sub>b</sub>".

Formula:  $A_{2a} + A_{2b} / 2$

Example:

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



**Step 7: Calculate height tolerance of clutch engagement bearing "K 2"**



**Note**

*On the basis of dimension "A 2" and dimension "B", the height tolerance of the clutch engagement bearing "K 2" is now calculated according to the following calculus.*

	Dimension "A 2"
-	Dimension "B"
=	Actual height tolerance of clutch engagement bearing "K 2"

Example:

- $4.77$  mm -  $2.60$  mm =  $2.17$  mm
- Result: Height tolerance of clutch engagement bearing "K 2" =  $2.17$  mm



**Step 8: Determine clutch tolerance of clutch "K 2"**

- Read clutch tolerance value from new clutch.
- Example: Read off clutch tolerance value on clutch "K 2 = – 0.2", as shown in diagram.
- Result: clutch tolerance of clutch "K 2" = – 0.20 mm.

**Step 9: Determine thickness of shim "SK 2"**



*On the basis of the clutch tolerance "K 2", the thickness of shim "SK 2" is now calculated according to the following method.*

	Height tolerance of engagement bearing "K 2"
-/+	Clutch tolerance of clutch "K 2"
=	Calculated thickness of shim "SK 2"

Example:

- 2.17 mm – 0.20 mm = 1.97 mm
- Result: calculated thickness of shim "SK 2" = 1.97 mm
- Select required shim with help of table below and have it ready for installation.

Calculated thickness of shim mm	Available shims Thickness in mm	Part number of shim
0.31 to 0.90	0.80	WHT 005 518
0.91 to 1.10	1.00	WHT 005 518 A
1.11 to 1.30	1.20	WHT 005 518 B
1.31 to 1.50	1.40	WHT 005 518 C
1.51 to 1.70	1.60	WHT 005 518 D
1.71 to 1.90	1.80	WHT 005 518 E
1.91 to 2.10	2.00	WHT 005 518 F
2.11 to 2.30	2.20	WHT 005 518 G
2.31 to 2.50	2.40	WHT 005 518 H
2.51 to 2.70	2.60	WHT 005 518 J
2.71 to 3.30	2.80	WHT 005 518 K

Example:

- Result: calculated thickness of shim "SK 2" = 1.97 mm
- Chosen shim thickness = 2.00 mm

**Caution**

*Risk of damage to the clutch.*

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

Adjustment is now complete, and the »small« engagement lever has been installed.

- Install dual clutch ⇒ [page 32](#) .



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## 2 Clutch

⇒ ["2.1 Assembly overview - dual clutch", page 26](#)

⇒ ["2.2 Removing dual clutch", page 27](#)

⇒ ["2.3 Installing dual clutch", page 32](#)

⇒ ["2.4 Renewing input shaft seal", page 37](#)

⇒ ["2.5 Renewing oil seal for inner input shaft", page 38](#)

### 2.1 Assembly overview - dual clutch

#### 1 - Hinge mounting

- For large engaging lever "K 1"
- Cannot be renewed.

#### 2 - Ball-head pin

- For small engaging lever "K 2"
- Removing and installing  
⇒ [page 15](#)

#### 3 - Shim "SK 1"

- Determining thickness  
⇒ [page 14](#)

#### 4 - Shim "SK 2"

- Determining thickness  
⇒ [page 14](#)

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

#### 6 - Dual clutch

- Removing and installing  
⇒ [page 26](#)

#### 7 - Retaining ring

- Always renew after removing

#### 8 - Hub

#### 9 - Retaining ring

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

- With engagement bearing
- Removing and installing  
⇒ [page 11](#)

#### 11 - Upper section of bushing

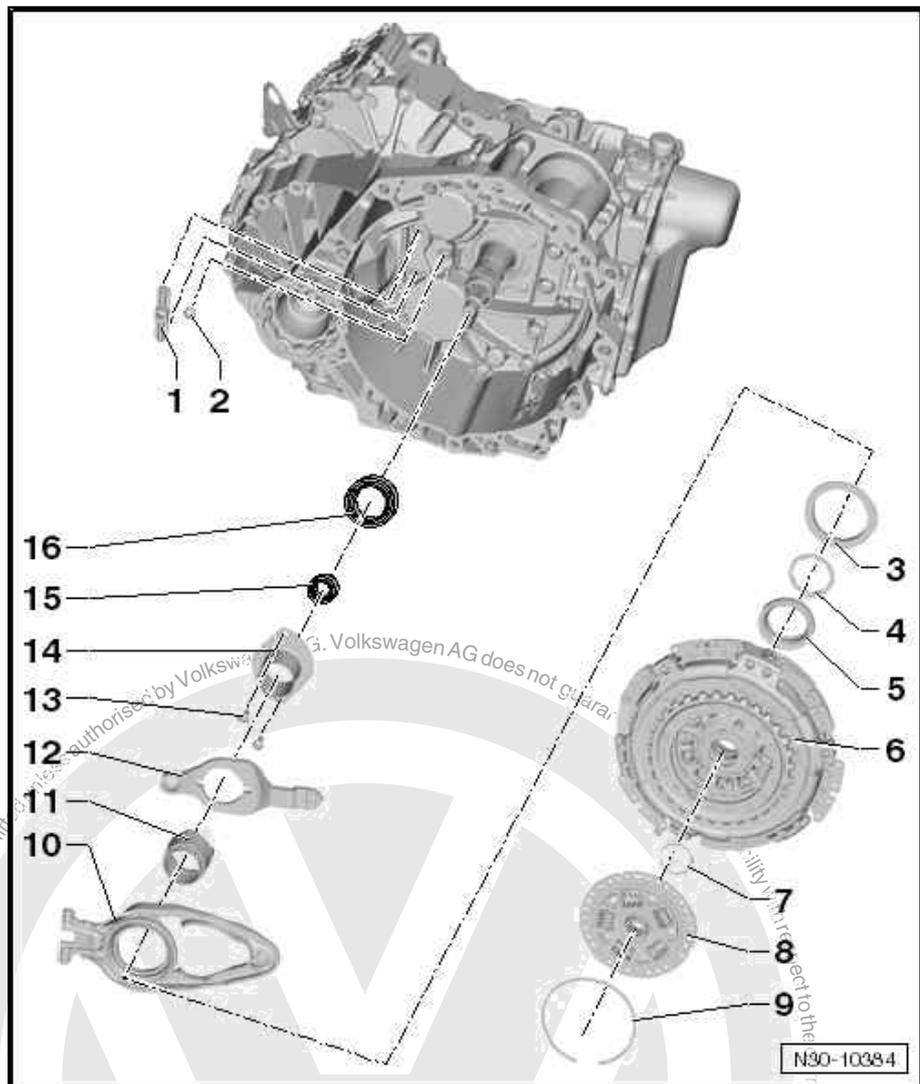
- For small engaging lever "K 2"
- Is removed and installed together with small engaging lever and lower section of bushing

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

- Is removed and installed together with upper and lower section of bushing
- Removing and installing ⇒ [page 11](#)

#### 13 - Bolts

- Always renew after removing
- 8 Nm +90°





#### 14 - Lower section of bushing

- ❑ For small engaging lever "K 2"
- ❑ Is removed and installed together with small engaging lever and upper section of bushing

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

- ❑ Renewing ⇒ [page 38](#)

#### 16 - Input shaft seal

- ❑ Renewing ⇒ [page 37](#)

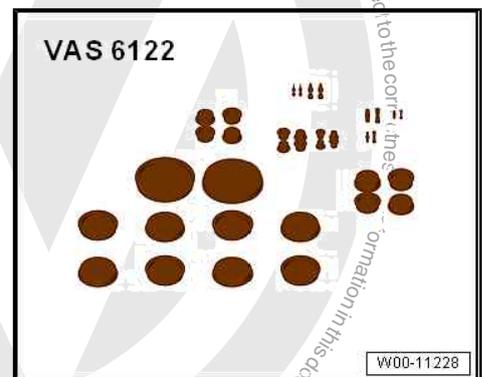
## 2.2 Removing dual clutch

### Special tools and workshop equipment required

- ◆ Hook - 3438-



- ◆ Engine bung set - VAS 6122-

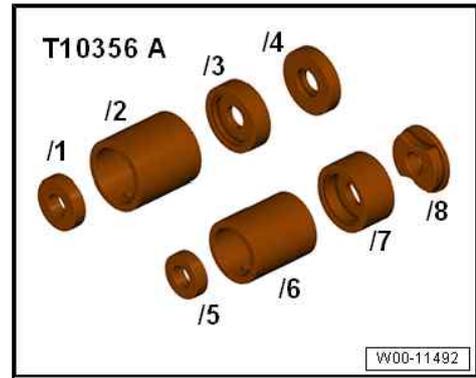


- ◆ Support bridge - T10323-

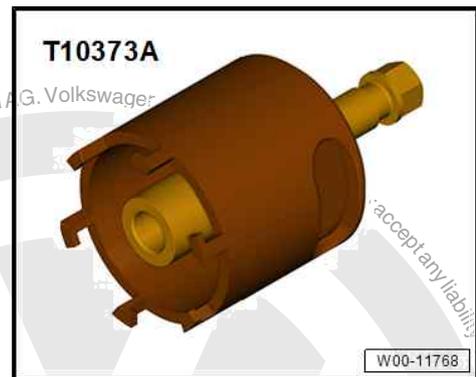




- ◆ -T10356/5- from assembly tool - T10356A-



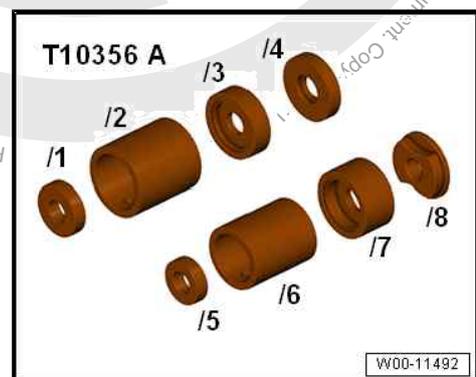
- ◆ Puller - T10373A-



- ◆ Press tool - T10583-



- ◆ -T10356/5- from assembly tool - T10356A-



- ◆ 1 x sealing cap - 0AM 325 120 A- and 1 x sealing cap - 02M 409 120- , as an alternative to engine bung set - VAS 6122-

Prerequisites:

- Gearbox removed and secured to engine and gearbox jack  
⇒ [page 103](#) .



- Mechatronic unit for dual clutch gearbox - J743- is built into 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.*

- ◆ *If any oil escapes from the hydraulic fluid part of the mechatronic unit for dual clutch gearbox - J743- , it is not possible to replenish it or check the level! It is not possible to check the fill level of the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743- .*
- ◆ *If oil escapes from the gear oil section, it can only be rectified by changing the gear oil. It is not possible to check the fill level.*
- ◆ *If the level of oil/fluid is too high or too low in either of the parts, the function of the gearbox will be impaired.*
- ◆ *The breather cap on the mechatronic unit is destroyed during removal and must be renewed.*

**Removing**

- Pull off both breather caps -arrows-.

Seal gearbox breather and breather of mechatronic unit for dual clutch gearbox - J743- with clean sealing plugs from engine bung set - VAS 6122- so that no oil can escape.



**Note**

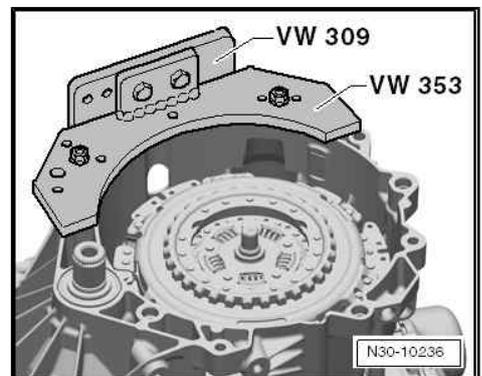
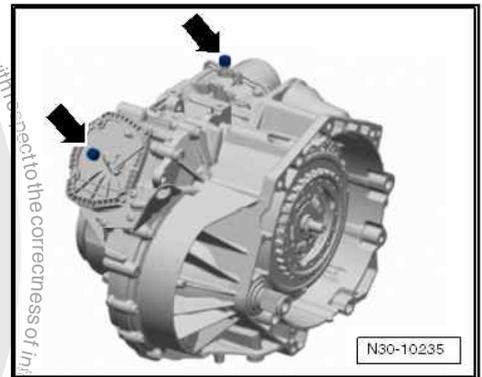
*As an alternative to the engine bung set - VAS 6122- the sealing cap - 02M 409 120- can be used to seal the gearbox. The mechatronic unit can be sealed using sealing cap - 0AM 325 120 A- as an alternative => Electronic parts catalogue (ETKA) .*

- Once the gearbox has been installed in the vehicle, the sealing plugs must be removed and the breather caps reinstalled, or new ones fitted if necessary.
- Turn gearbox on engine and gearbox jack upwards together with clutch.



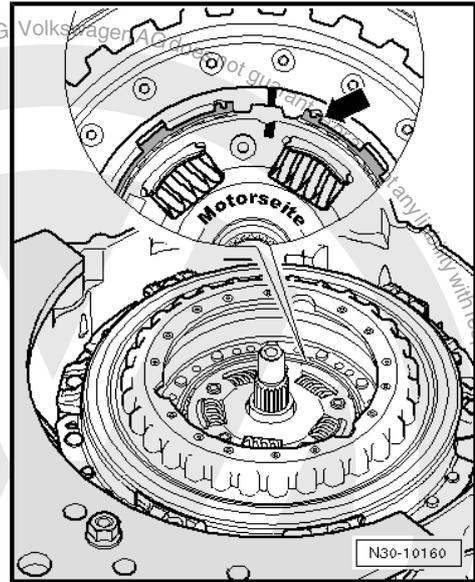
**Note**

*The clutch is pulled off upwards. Mechatronic unit remains fitted to the gearbox.*





- Remove retaining ring -arrow- for hub.

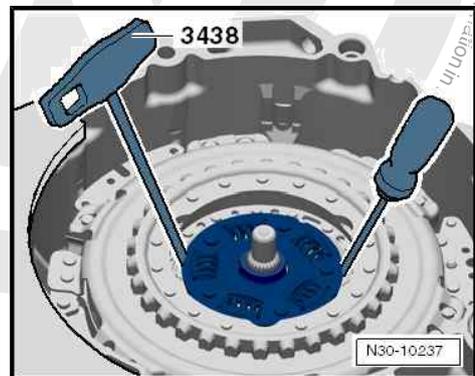


- Remove hub with hook - 3438- and a screwdriver.



**Note**

*If parts of clutch are renewed, the position of engagement bearings "K 1" and "K 2" must be set later. It is therefore advisable to determine dimension "B" for the measurements now ⇒ [page 14](#).*



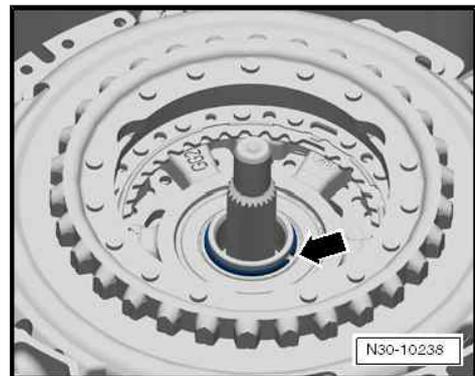
- Remove retaining ring -arrow- for clutch.

**If retaining ring cannot be removed:**



**Note**

- ◆ *If the retaining ring cannot be removed it is because the clutch has »clamped« the retaining ring at the bottom.*
- ◆ *In this case, push the clutch down slightly (see following description) and release the load on the retaining ring. Never strike the clutch or shaft with a hammer!*

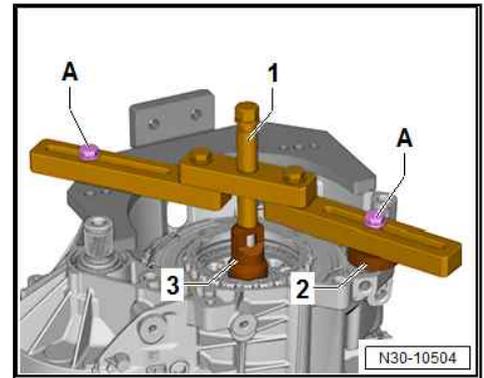




- Position thrust piece - T10583- -3-. Then position support bracket - T10323- parallel to gearbox flange as shown in illustration.
- To compensate for unequal heights, lay -T10356/5- -2- between gearbox and support bracket - T10323- .
- Screw in bolts -A- hand-tight.

**i** Note

Secure bolts -A- with nut as required.



**Caution**

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

- **Push down clutch using only very light force.**

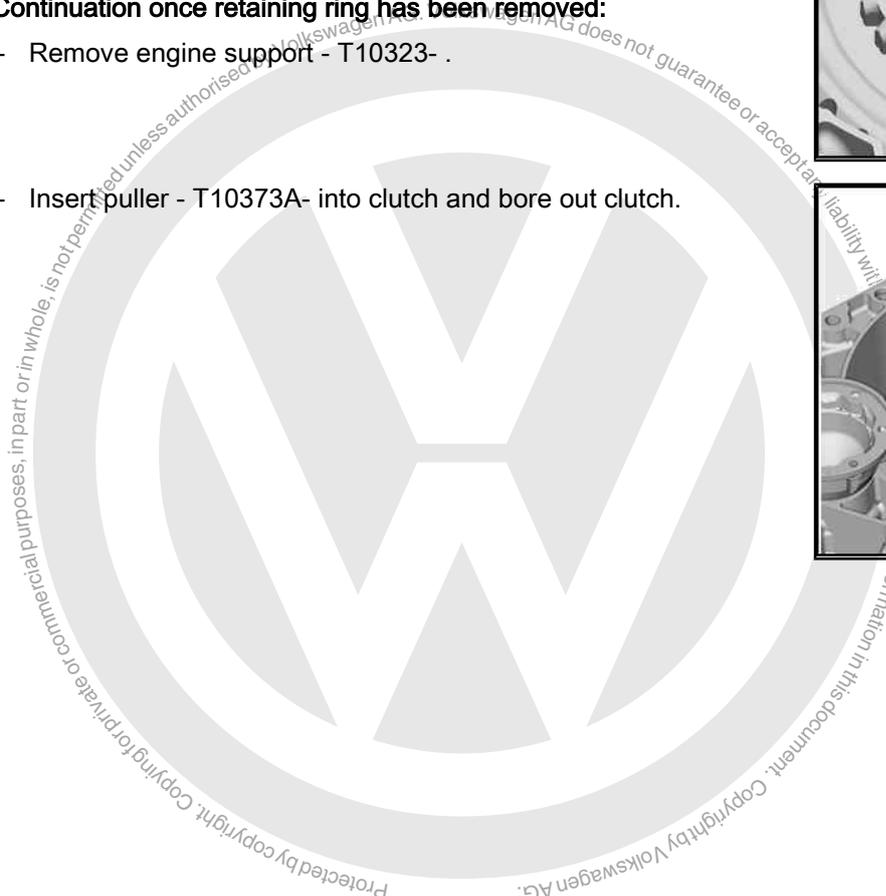
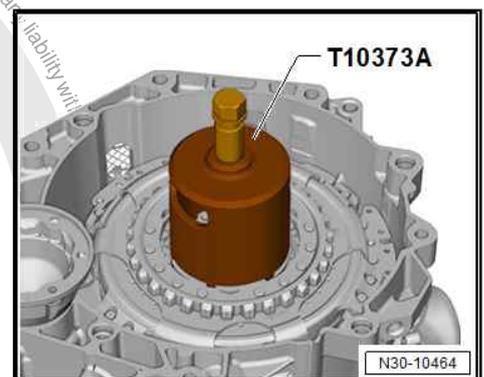
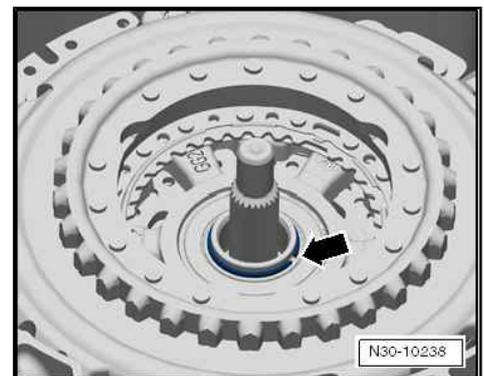
- To press down, carefully turn spindle against -1- thrust piece - T10583- -3-.
- Remove retaining ring -arrow- for clutch.

**i** Note

*It is not permissible to reuse the retaining ring.*

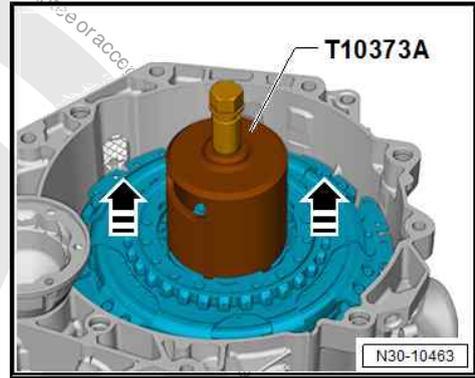
**Continuation once retaining ring has been removed:**

- Remove engine support - T10323- .
- Insert puller - T10373A- into clutch and bore out clutch.





- Remove clutch together with puller - T10373A- .



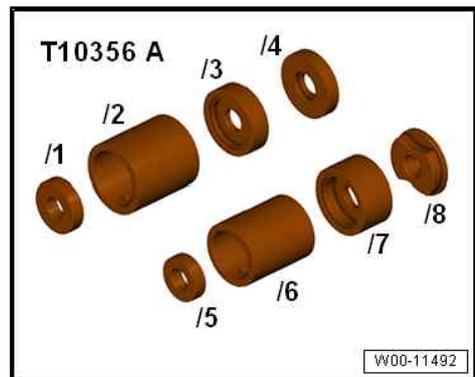
## 2.3 Installing dual clutch

### Special tools and workshop equipment required

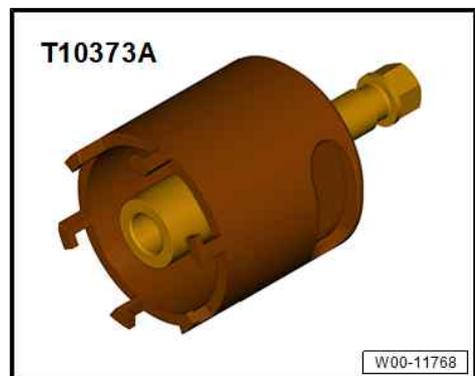
- ◆ Support bridge - T10323-



- ◆ -T10356/5- from assembly tool - T10356A-



- ◆ Puller - T10373A-





- ◆ Press tool - T10583-



- ◆ Clutch plate spline grease ⇒ Electronic parts catalogue (ETKA)

### Installing



#### Caution

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

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

***Adjustment can only be carried out before the clutch is installed.***

***The position of the engagement bearings must be adjusted after the following tasks:***

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

***If you have performed any of the above work, you must now adjust the position of engagement bearings "K 1 and K 2" ⇒ page 14 .***

***Only when the adjustment is correct may assembly work be continued.***

***If no new parts have been installed, insert removed shims.***

***Only one shim per engagement bearing may be installed.***

- *Clutch parts must be free of oil and grease.*

***Risk of damage from clutch adjustment device.***

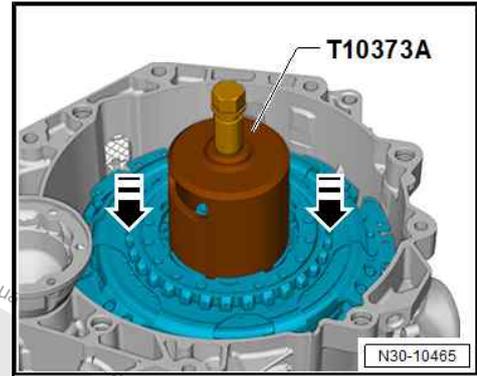
- ◆ ***The clutch is self-adjusting. Shocks can have a negative effect on this adjusting device. Do not allow clutch to fall into gearbox during installation.***

#### Requirement:

- Clutch engagement mechanism installed ⇒ [page 11](#)
- Turn back spindle of puller -T10373A-
- Before inserting dual clutch, apply a thin coat of grease to input shaft splines; grease ⇒ Electronic parts catalogue (ETKA) . Remove excess grease.



- Install clutch with puller - T10373A- in gearbox, as shown in diagram.



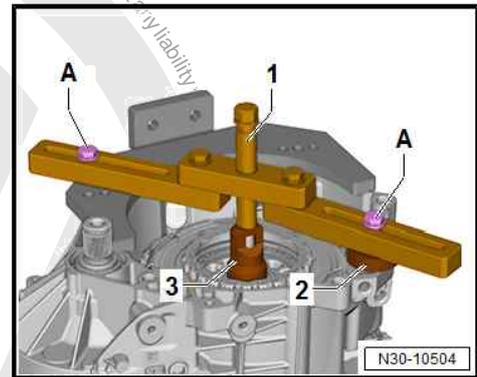
- Position thrust piece - T10583- -3-. Then position support bracket - T10323- parallel to gearbox flange as shown in illustration.
- To compensate for unequal heights, lay -T10356/5- -2- between gearbox and support bracket - T10323- .
- Screw in bolts -A- hand-tight.



**Note**

Secure bolts -A- with nut as required.

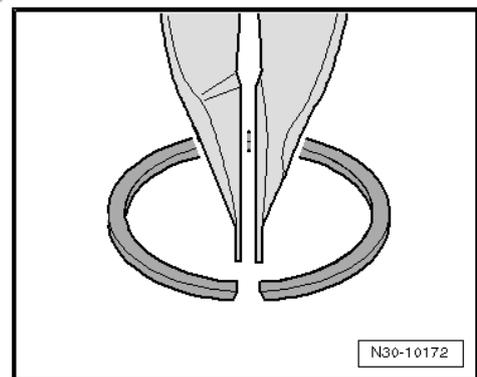
- Press clutch on to stop by turning spindles -1-.



**Note**

Place a hand on clutch whilst pressing on. A slight »rattling« will be felt. Rattling indicates that the clutch is being pressed onto its press seat. This also enables detection of the limit stop once the clutch has been seated correctly.

- Take hold of new retaining ring with retaining ring pliers, as shown in the illustration.
- Installation position: narrow surface of retaining ring on top.

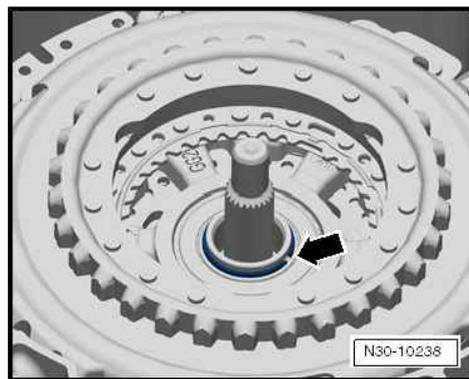




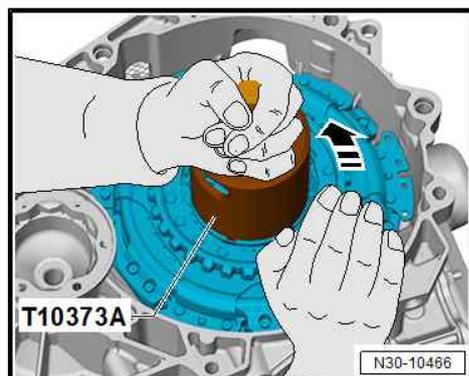
- Inserting retaining ring -arrow-

**i** Note

*If the retaining ring cannot be inserted, the clutch has not been pressed in onto its limit stop.*

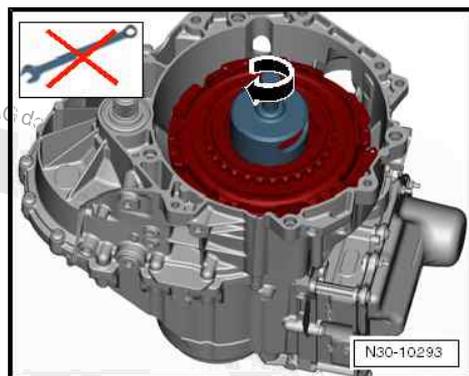


- To move clutch to operating position hold spindle of puller - T10373A- with one hand, and use the other hand to pull clutch in direction of rotation -arrow- against retaining ring.

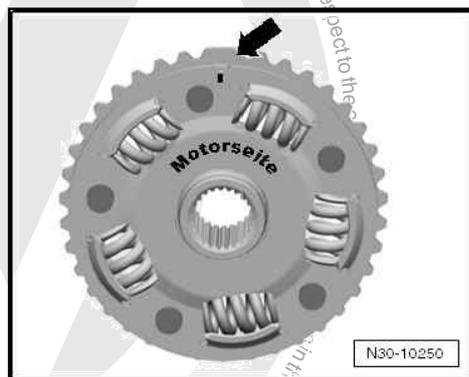


**i** Note

- ◆ *Pressing makes the clutch sit at the bottom against the limit stop on the input shaft. This is not the optimum position.*
- ◆ *Clutch should only be pulled up far enough for it to contact retaining ring.*
- ◆ *Only turn by hand. In this way, clutch slides against retaining ring. Do not use any other tool.*

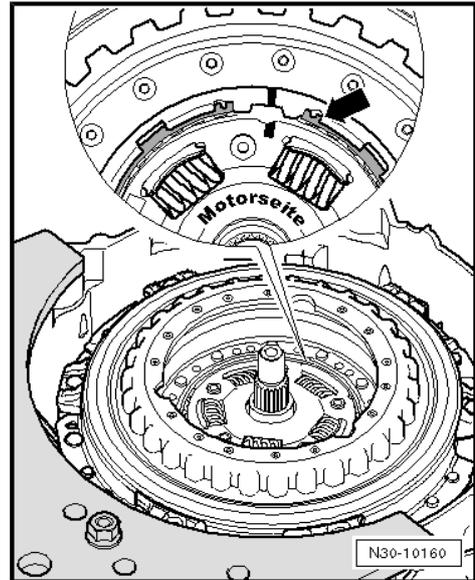


- Insert hub.
- Hub has »large tooth« -arrow- and only fits in one position.
- »Large tooth« has a mark at engine end.

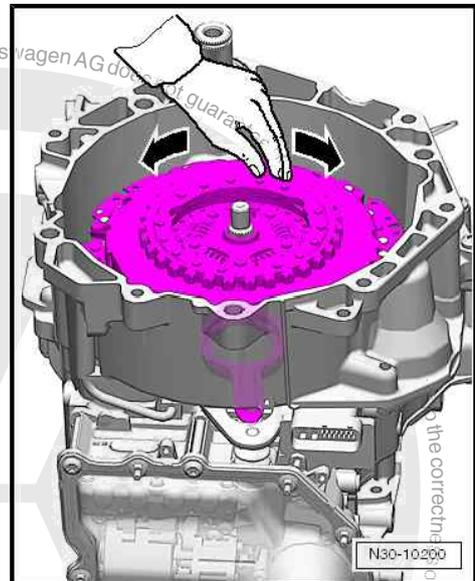




- Insert retaining ring -arrow- of hub.
- Joint of retaining ring must point towards »hub« of clutch.

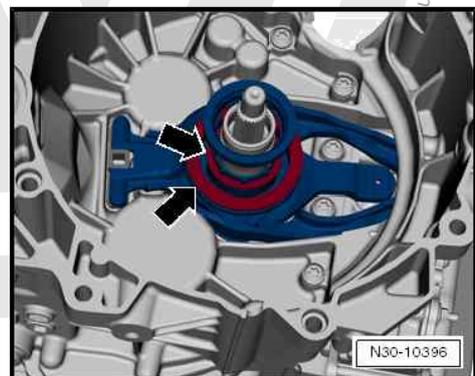


- Turn clutch by hand. It should be possible to turn it without difficulty.



**i** Note

- ◆ If the clutch is difficult to turn or if the clutch lining is being rubbed hard, remove clutch again ⇒ [page 27](#).
- ◆ Check installation position of shims -arrows-.
- ◆ The shims must be properly seated and must not be damaged.
- ◆ A mathematical error could have been made. Check measurements again ⇒ [page 14](#).
- ◆ If no fault can be found, the clutch may have been moved out of position due to transport/assembly and a new clutch now has to be installed. The position of the engagement bearings must then be readjusted ⇒ [page 14](#).



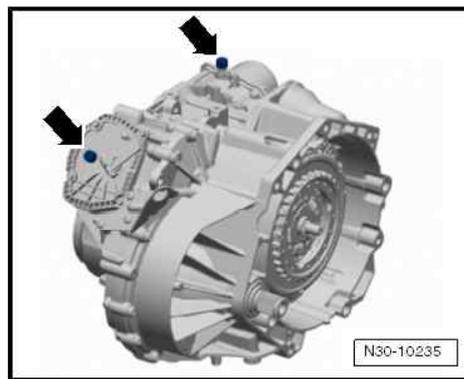


- Remove two plugs and put breather caps -arrows-on.

**i** Note

*The breather cap on the mechatronic unit is destroyed during removal and must be renewed.*

- Dispose of excess shims.
- After installing the gearbox, use the vehicle diagnostic tester to run the Basic setting complete function in Guided Functions.



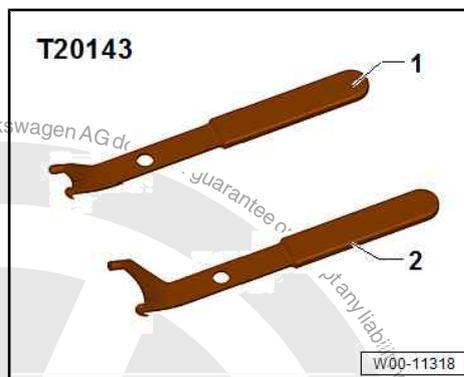
## 2.4 Renewing input shaft seal

### Special tools and workshop equipment required

- ◆ Tube - VW 415 A-



- ◆ Extractor hooks -T20143/2-



### Requirement:

- Dual clutch removed ⇒ [page 27](#) .
- Clutch engagement mechanism removed ⇒ [page 11](#) .



**Caution**

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

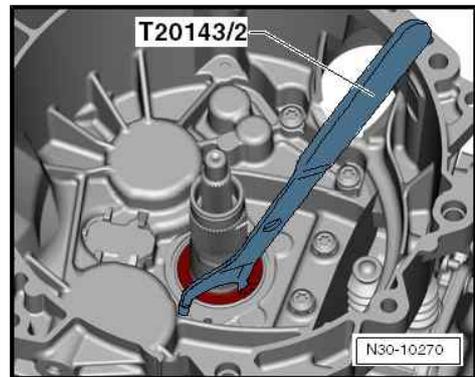
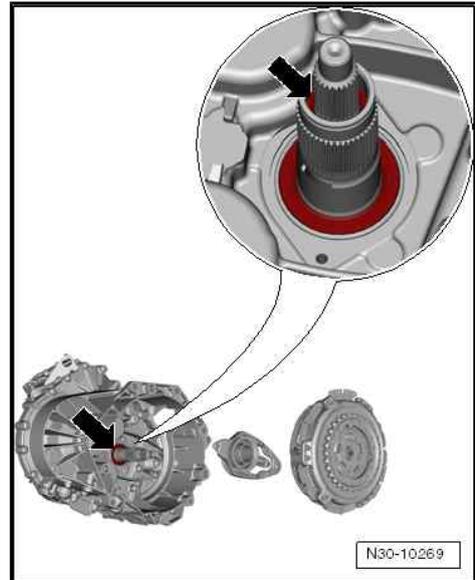
- ***Renew dual clutch if it is oily.***



**Note**

*There are 2 oil seals in gearbox at clutch end. 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.*

- Lever out outer oil seal.



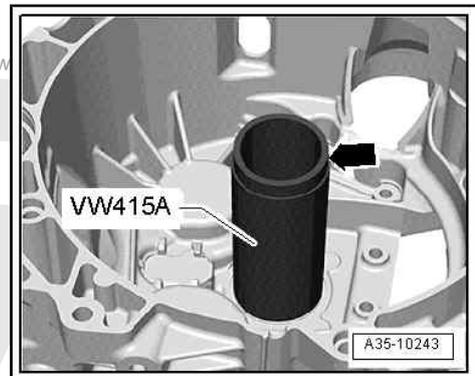
**Caution**

*The clutch can be damaged.*

- ◆ *Only drive in oil seal until it is flush, in order to avoid closing off oil drilling located behind it. Otherwise, bearing can no longer be supplied with enough oil.*

- Drive in new oil seal with a plastic hammer so it is flush with clutch housing, as shown in illustration.
- Shoulder of pipe section -VW 415 A- points upwards -arrow-.
- Install clutch engagement mechanism ⇒ [page 11](#) .
- Install dual clutch ⇒ [page 32](#) .

⇒ [“2.5 Renewing oil seal for inner input shaft”, page 38](#)



## 2.5 Renewing oil seal for inner input shaft

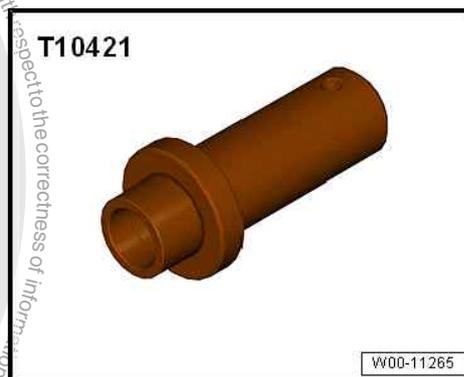
Special tools and workshop equipment required



◆ Seal puller - T10420A-



◆ Press tool - T10421-



**Requirement:**

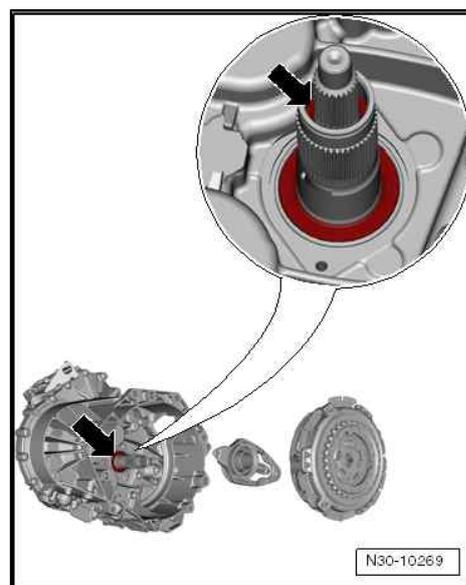
- Dual clutch removed ⇒ [page 27](#) .
- Clutch engagement mechanism removed ⇒ [page 11](#)

**⚠ Caution**  
**Risk of damage to clutch and other components!**

- **Renew dual clutch if it is oily.**

**i Note**

*There are 2 oil seals in gearbox at clutch end. 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 -T10420A- .
- Screw oil seal extractor - T10420A- into »small«, inner oil seal. Push on puller when screwing in.



**Note**

*Puller will become very tight as oil seal is turned.*

- Screw puller in until the seal begins to turn in its seat.

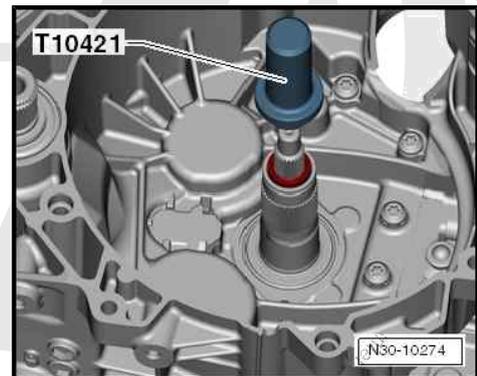
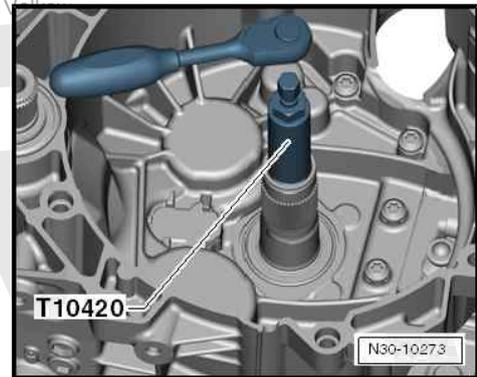
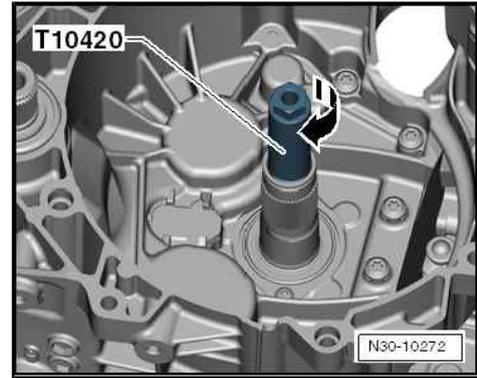
- Now screw in spindle.
- Pull out oil seal using spindle.

- Drive in new oil seal using thrust piece - T10421- (drive in until thrust piece contacts stop).

**Installation depth of seal =  $17.5 \pm 0.2$  mm**

- Install clutch engagement mechanism ⇒ [page 11](#) .
- Install dual clutch ⇒ [page 32](#) .

⇒ [“2.4 Renewing input shaft seal”, page 37](#)





## 34 – Controls, housing

### 1 Mechatronic unit

⇒ [“1.1 Assembly overview - mechatronic unit”, page 41](#)

⇒ [“1.2 Removing and installing mechatronic unit for dual clutch gearbox J743”, page 42](#)

⇒ [“1.3 Moving mechatronic unit for dual clutch gearbox J743 into removal position by hand”, page 56](#)

⇒ [“1.4 Renewing clutch actuator”, page 58](#)

⇒ [“1.5 Renewing control unit for mechatronic unit for dual clutch gearbox J743”, page 63](#)

#### 1.1 Assembly overview - mechatronic unit

##### 1 - Bolt

- For securing mechatronic unit for dual clutch gearbox - J743- on gearbox housing.
- Qty. 3, M8 × 35
- Always renew after removing
- Specified torque and tightening sequence  
⇒ [page 42](#)

##### 2 - Bolt

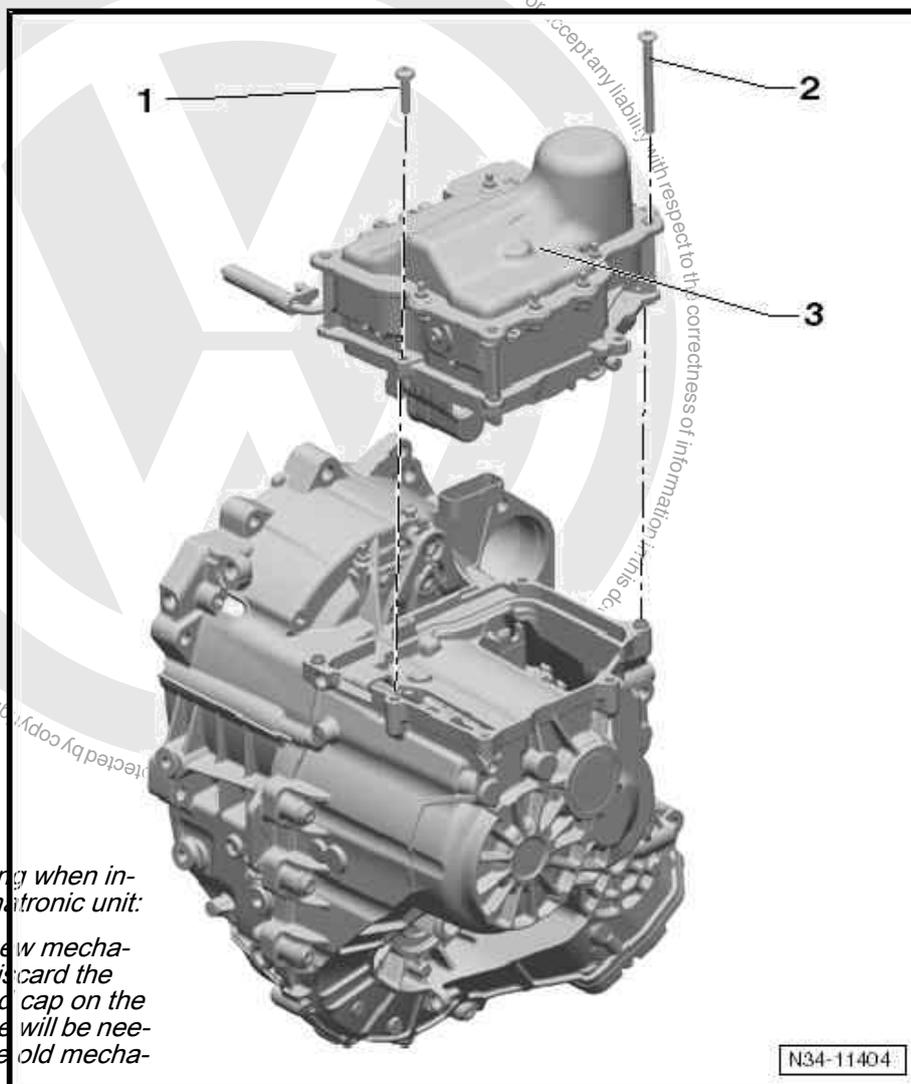
- For securing mechatronic unit for dual clutch gearbox - J743- on gearbox housing.
- Qty. 4, M8 × 90
- Always renew after removing
- Specified torque and tightening sequence  
⇒ [page 42](#)

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



##### Note

- ◆ *Observe the following when installing a new mechatronic unit:*
- ◆ *After unpacking a new mechatronic unit, do not discard the packaging or the red cap on the breather pipe. These will be needed for returning the old mechatronic unit.*
- ◆ *A »new« mechatronic unit is correctly filled with oil. Do not drain or top up oil.*
- ◆ *Renew dowel sleeves prior to installing a »new« mechatronic unit.*





◆ *Recalibrate the immobiliser after installing a »new« mechatronic unit.*

- ⇒ ["1.2 Removing and installing mechatronic unit for dual clutch gearbox J743", page 42](#)
- ⇒ ["1.3 Moving mechatronic unit for dual clutch gearbox J743 into removal position by hand", page 56](#)

**Mechatronic unit for dual clutch gearbox - J743- - specified torque and tightening sequence**



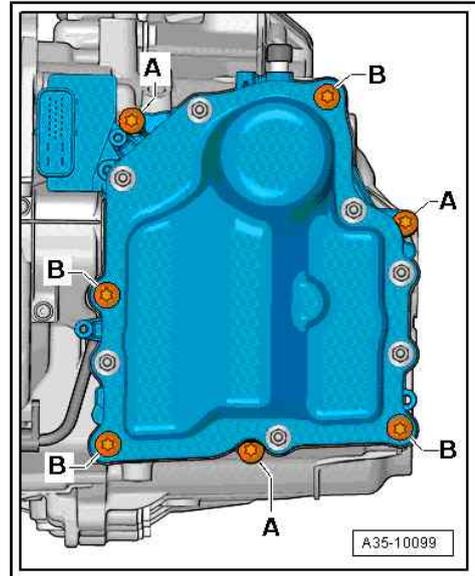
**Note**

*Always renew bolts after removing.*

– Tighten bolts in 4 stages as follows:

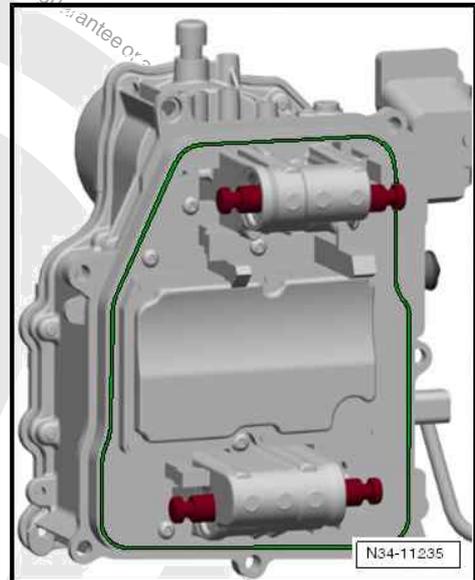
Stage	Bolts	Specified torque
1	-A-	Screw in by hand as far as stop
2	Remove guide bolts - T10406- .	
3	-B-	Screw in by hand as far as stop
4	-A, B-	Tighten to 10 Nm in diagonal sequence

Component	Specified torque
Engaging lever cover	8 Nm



**Note**

*If a mechatronic unit which was removed is to be re-installed, the seal -shown in green- must be renewed before the unit is installed.*



**1.2 Removing and installing mechatronic unit for dual clutch gearbox - J743-**

**Special tools and workshop equipment required**

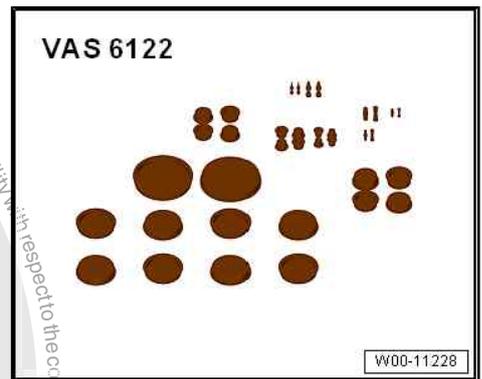
- ◆ Vehicle diagnostic tester



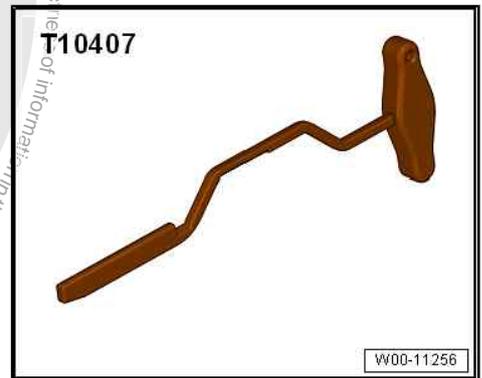
- ◆ Used oil collector and extractor - V.A.G 1782-



- ◆ Engine bung set - VAS 6122- ; alternatively sealing cap - 0AM 325 120 A-



- ◆ Assembly lever - T10407-



- ◆ Guide pin - T10406-



Requirement:

- Gearbox is installed.

#### Brief description

In order to remove the mechatronic unit, sufficient space must be available in front of the gearbox. Depending on the vehicle, parts must be removed which do not have anything to do directly with



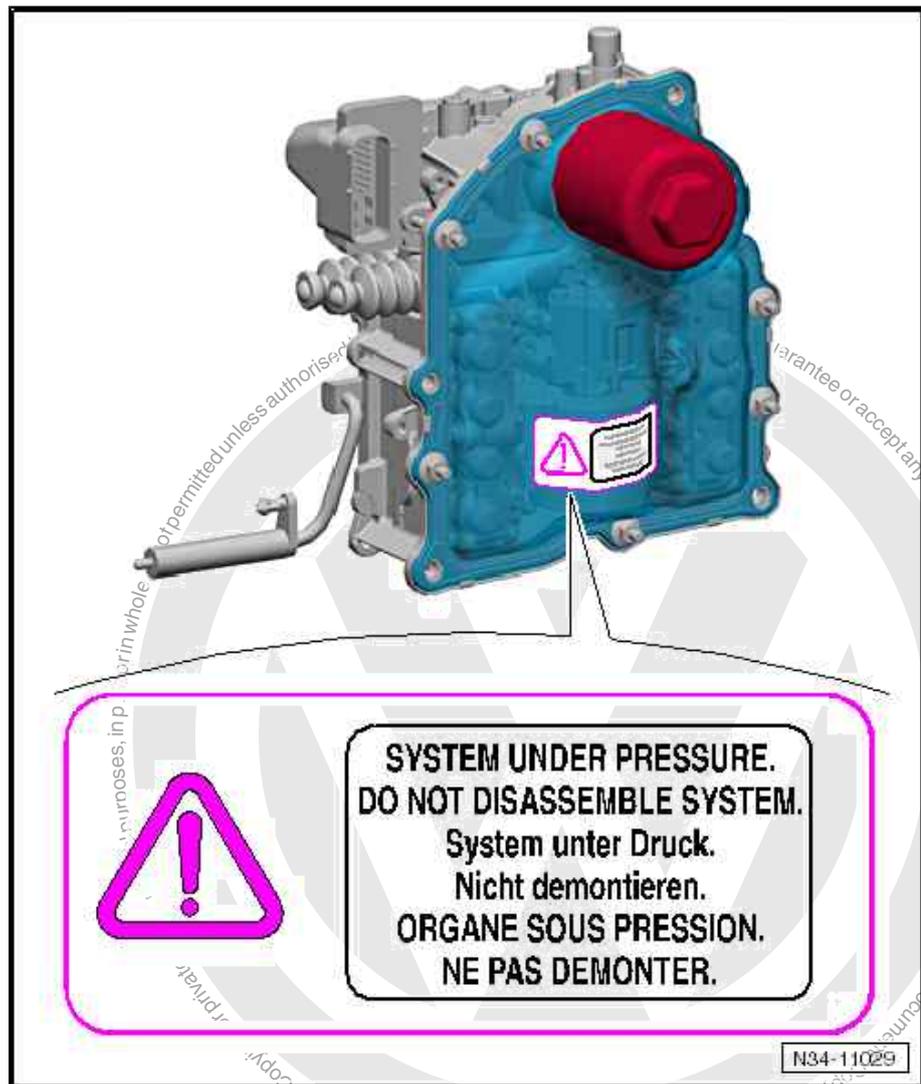
the gearbox. For example: air filter housing, if present, charge air lines or coolant lines.

Fitted retainers may also have to be removed.

Tester moves all gear actuators »into neutral position«.

In this position, insert assembly lever - T10407- between clutch lever and gearbox housing.

### Safety note on mechatronic unit for dual clutch gearbox - J743-



**DANGER!**

*Do not work on the accumulator. The accumulator is under pressure and is not allowed to be opened.*



**Caution**

***Danger of irreparable damage to gearbox.***

- ◆ ***Do not run engine or tow vehicle with mechatronic unit for dual clutch gearbox - J743- removed or when there is no gear oil in the gearbox.***



**Note**

- ◆ ⇒ ***“3 Repair instructions”, page 4*** Comply with notes.
- ◆ *The clutch is self-adjusting. Shocks can have an effect on this adjusting device. 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 correctly filled with oil. Do not drain or top up oil.*
- ◆ *Renew dowel sleeves prior to installing a »new« mechatronic unit.*
- ◆ *Recalibrate the immobiliser after installing a »new« mechatronic unit.*
- ◆ *If a mechatronic unit is sent back, always observe the corresponding requirements.*

**Removing**

- Raise vehicle. All 4 supports of lifting platform must be at same height.
- Move selector lever to position »P«.



**Note**

- ◆ *The vehicle diagnostic tester moves all gear actuators into “neutral” position.*
- ◆ *In this position, insert assembly lever - T10407- between engaging lever and gearbox housing. This enables the load to be taken off the mechatronic unit plungers so that they can be removed by hand from the engaging lever mountings.*
- Connect vehicle diagnostic tester and switch on ignition.
- Select the following menu options:
  - ◆
  - ◆
  - ◆
- Switch off ignition.

**Vehicles with diesel engine:**

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

**Continued for all vehicles:**

- Remove noise insulation ⇒ Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .

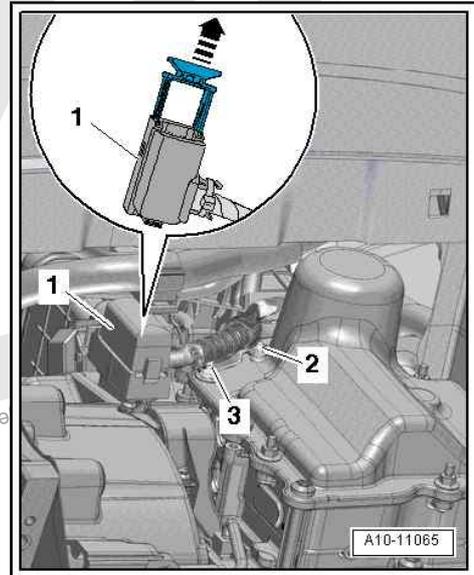


### Caution

**Risk of damaging gearbox components beyond repair.**

- ◆ **Do not under any circumstances touch the contacts in the gearbox connector by hand. Electrostatic discharge can destroy the control unit and mechatronic unit.**

- Touch earth connection (without gloves) to discharge static electricity.
- Disconnect electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- . To do this, pull locking element upwards -arrow-.
- Unscrew nuts -2- and -3- and remove wiring retainer from gearbox.
- Raise and tie wiring in area of gearbox cover.

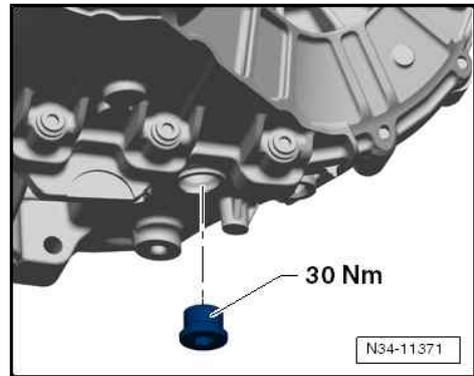


- Put used oil collection and extraction unit - V.A.G 1782- underneath.
- Unscrew gear oil drain plug.
- Allow oil to drain off, then screw oil drain plug firmly back in.



### Caution

**It is not possible to check the fill level of the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743- . For installation work, the breather of the mechatronic unit for dual clutch gearbox - J743- must be sealed so that no oil can escape => page 104 . The fill level can only be set correctly by changing the hydraulic fluid.**

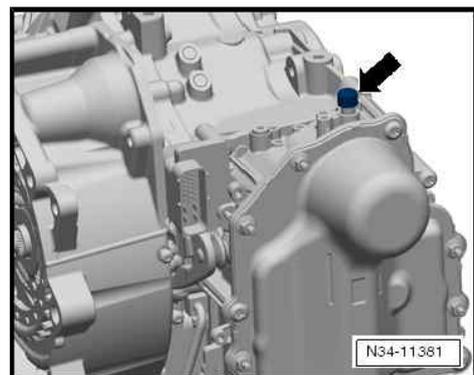


- Pull cap -arrow- off breather connection on mechatronic unit. Seal connection using a clean plug from engine bung set - VAS 6122- so that no oil can escape.



### Note

- ◆ **The breather cap on the mechatronic unit is destroyed during removal and must be renewed.**
- ◆ **The mechatronic unit can be sealed using sealing cap - 0AM 325 120 A- as an alternative => Electronic parts catalogue (ETKA) .**





- If fitted, remove cover on engaging levers.  
The cover prevents dirt getting in.

**i** Note

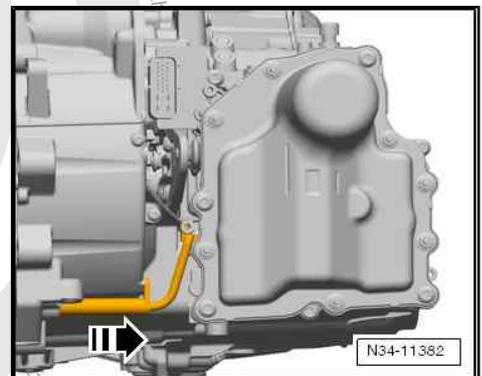
- ◆ Gearbox input speed sender 3 - G641- has been discontinued for gearboxes manufactured as of 11/14.
- ◆ However, if such a sender is fitted on a mechatronic unit to be renewed, then it also needs to be fitted on a new mechatronic unit.



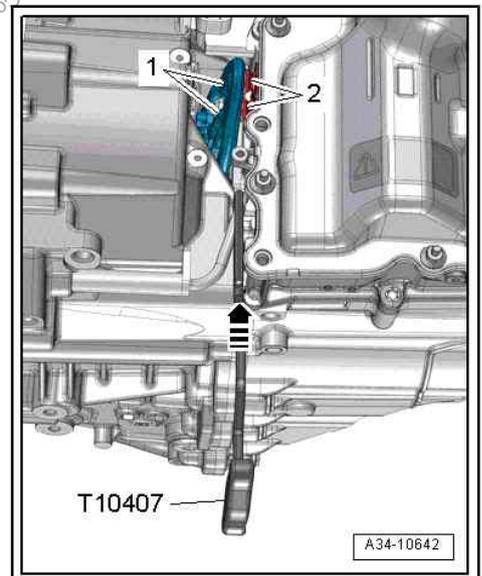
- If present, carefully pull gearbox input speed sender 3 - G641- out of gearbox -arrow-.

**i** Note

The following step is to lift both dual clutch engaging levers off the mechatronic unit plungers. If this is not done, the engaging levers will jam the mechatronic unit at the plungers and prevent the mechatronic unit from being removed.



- Insert assembly lever - T10407- under plunger -2- between gearbox housing and both engaging levers -1- -arrow-, as shown in illustration.



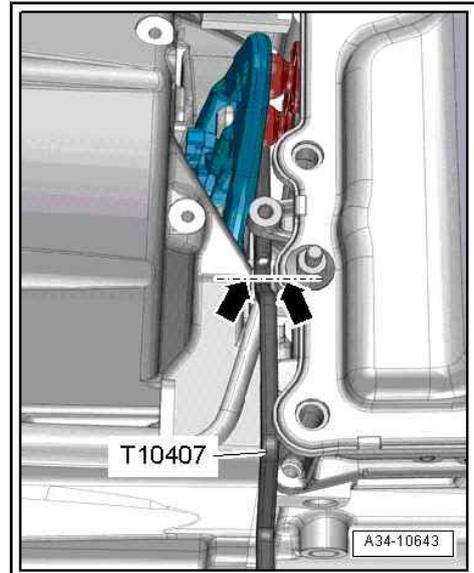


- Insert assembly lever - T10407- just enough until groove is flush with housing rib -arrows-, as shown in diagram. Do not insert it until stop.

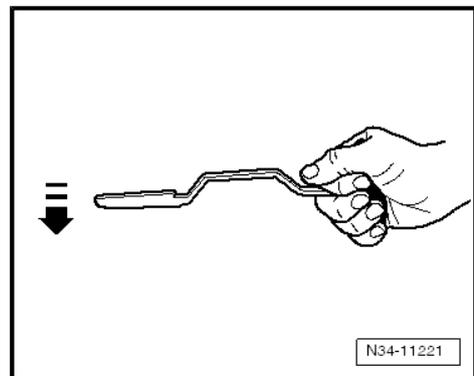


**Note**

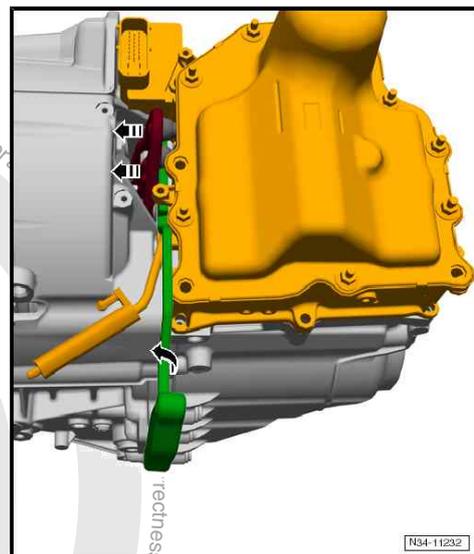
*The back of the assembly lever must rest against the gearbox housing when doing this.*



- Apply a bit of force to tip of lever when turning. This stops lever from slipping out when turning.

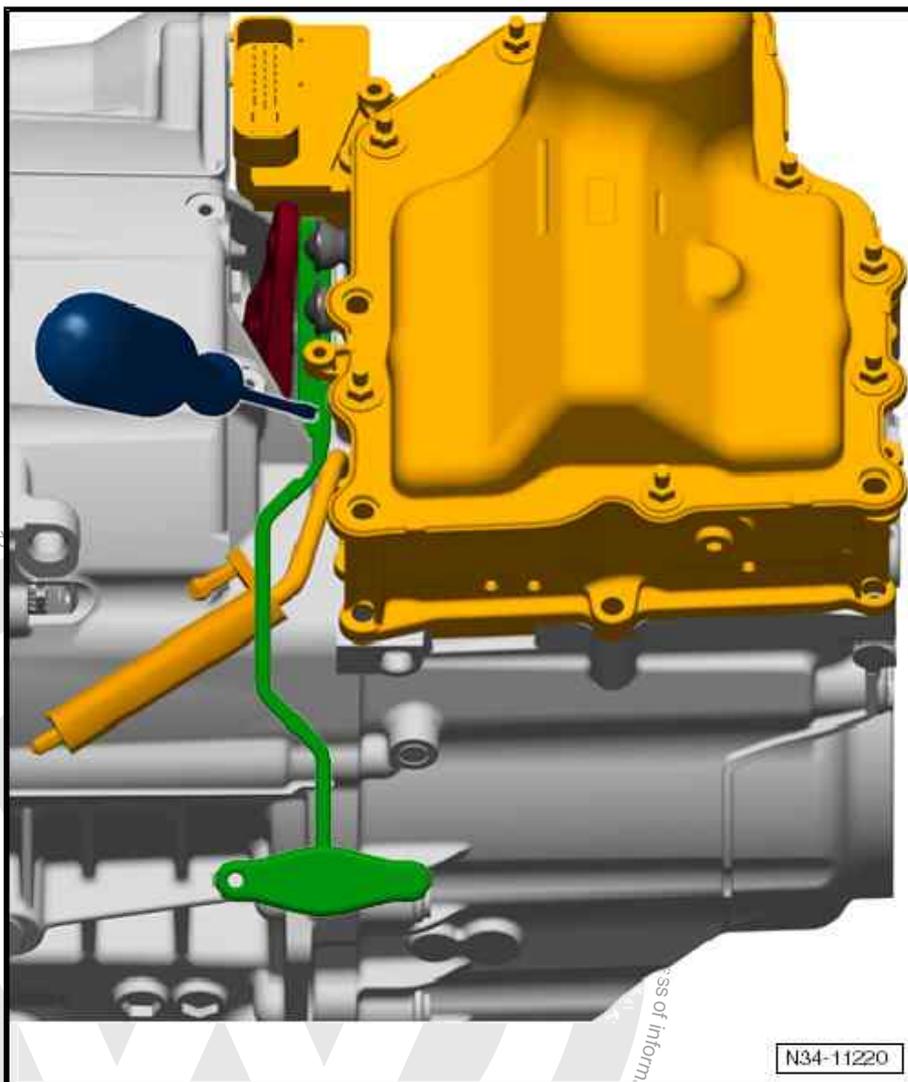


Turn assembly lever - T10407- anticlockwise. This presses the engaging levers away from the plungers.



Do not take out assembly lever - T10407- . The assembly lever remains inserted between clutch lever and gearbox housing for the entire process.

- If necessary, press assembly lever - T10407- against gearbox using a screwdriver.



**i** Note

*The assembly lever - T10407- must remain inserted between clutch lever and gearbox housing after removing the mechatronic unit. Removing the lever could have a negative effect on the clutch adjustment.*



**Caution**

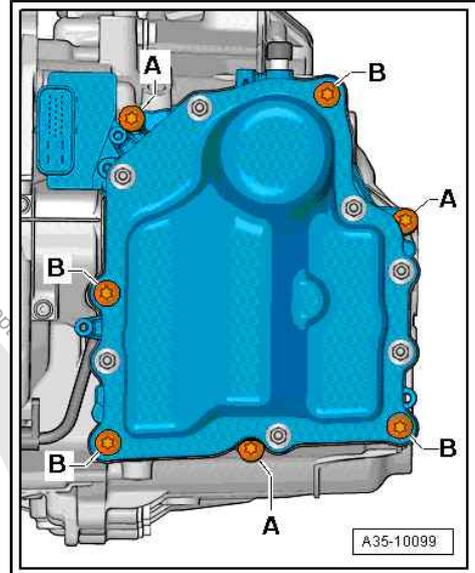
***Risk of damaging mechatronic unit for dual clutch gearbox - J743- .***

- ◆ ***Do not loosen the bolts for cover of the mechatronic unit for dual clutch gearbox - J743- .***
- ◆ ***Set the removed mechatronic unit for dual clutch gearbox - J743- down in such a way that no oil can escape through the breather.***
- ◆ ***The fill level can only be set correctly by changing the hydraulic fluid. It is not possible to check the fill level.***



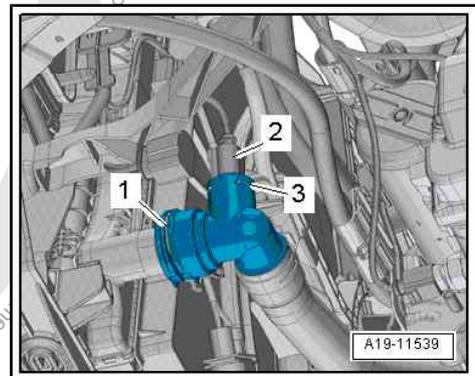
- Remove bolts -B- in diagonal sequence.
- Unscrew bolts -A-, and remove mechatronic unit from gearbox.
- Make sure no oil runs out of breather.

On some vehicles, a coolant hose prevents the mechatronic unit from being removed. In this case, reinsert mechatronic unit, and secure it against falling down with a bolt.

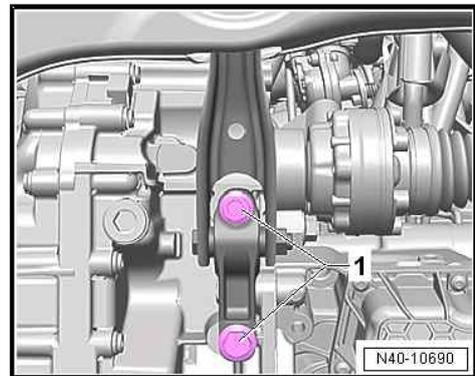


- Detach lower left coolant hose -1- from radiator ⇒ Rep. gr. 19 ; Radiator/radiator fan; Assembly overview – radiator/radiator fan .

Some additional space in front of the mechatronic unit can be obtained by removing the pendulum support from the gearbox. This allows the gearbox to be »pushed back« a little in order to remove the mechatronic unit.



- Remove bolts -1- securing pendulum support to gearbox.
- Remove mechatronic unit, and place it in such a way that no oil can escape from the breather hole.



**Caution**

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

- ◆ *Sometimes, the mechatronic unit cannot be removed.*
- ◆ *When this happens, the gear actuator is caught at the top left of the mechatronic unit.*
- ◆ *The mechatronic unit must not be pulled out using excess force.*
- ◆ *Rather, the mechatronic unit should first be brought into the installation position by hand ⇒ [page 56](#) .*

**Installing**

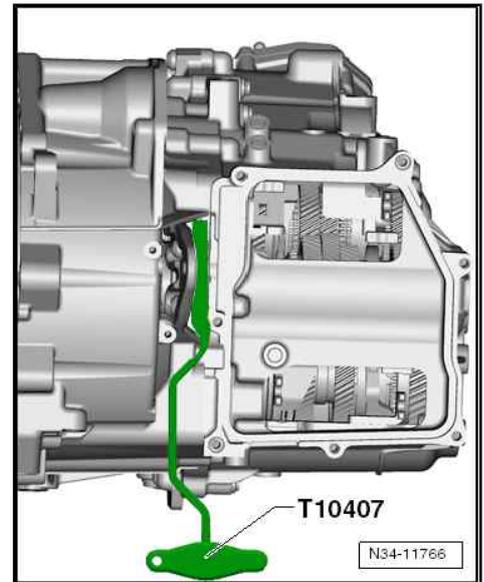
**Requirement:**



The assembly lever - T10407- is inserted between clutch lever and gearbox housing.

**i** Note

- ◆ *Observe the following when installing a new mechatronic unit:*
  - ◆ *After unpacking a new mechatronic unit, do not discard the packaging or the red cap on the breather pipe. These will be needed for returning the old mechatronic unit.*
  - ◆ *A »new« mechatronic unit is correctly filled with oil. Do not drain or top up oil.*
  - ◆ *Renew dowel sleeves prior to installing a »new« mechatronic unit.*
  - ◆ *Recalibrate the immobiliser after installing a »new« mechatronic unit.*
- Before inserting mechatronic unit, check each of the 4 selector forks in gearbox by hand.



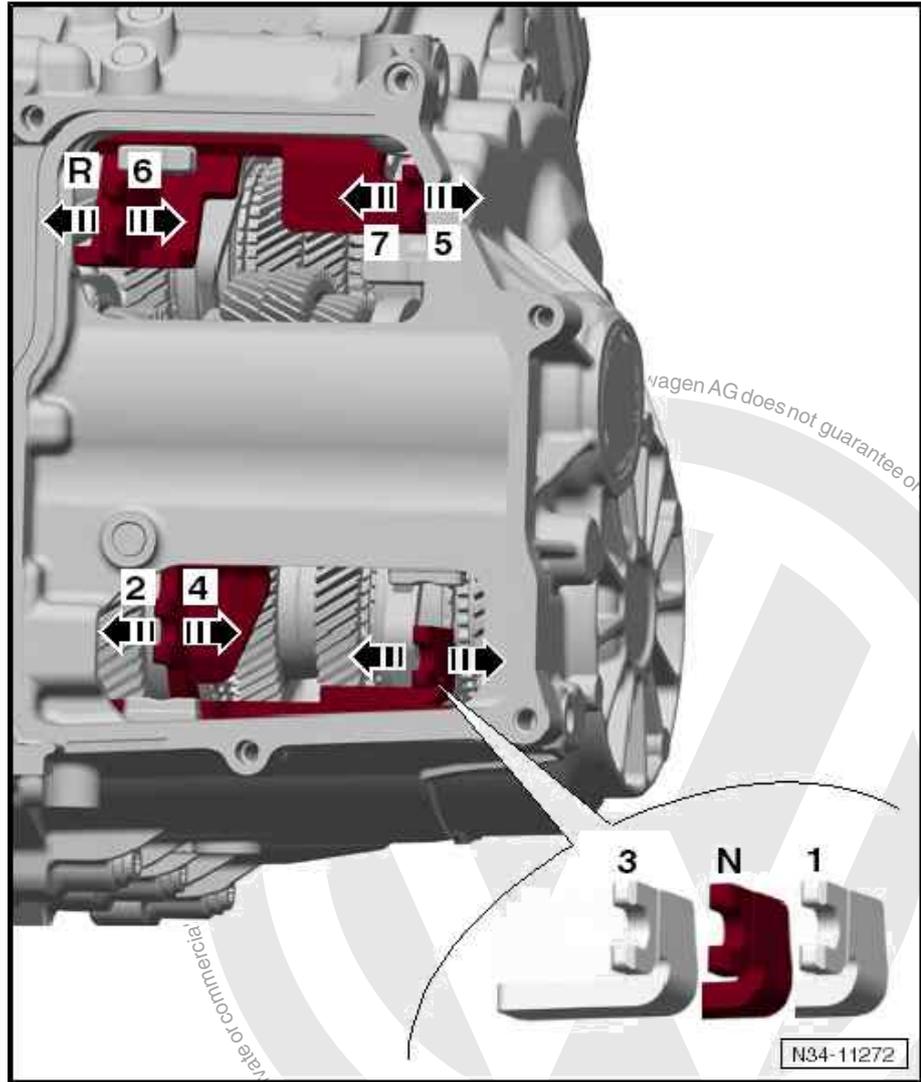
Each selector fork has 3 positions:

- ◆ Gear engaged
  - ◆ Neutral position -N-
  - ◆ Gear engaged
- Move each of the 4 selector forks one after the other into each position -arrows-. Slightly turn one wheel to ease the movement of the selector forks.



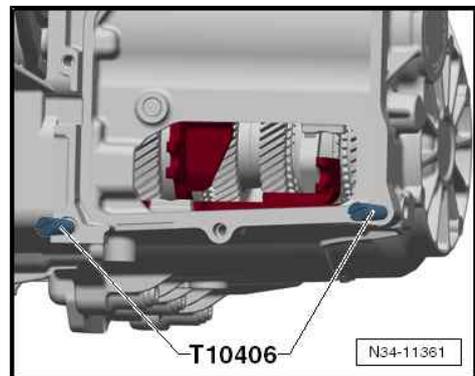


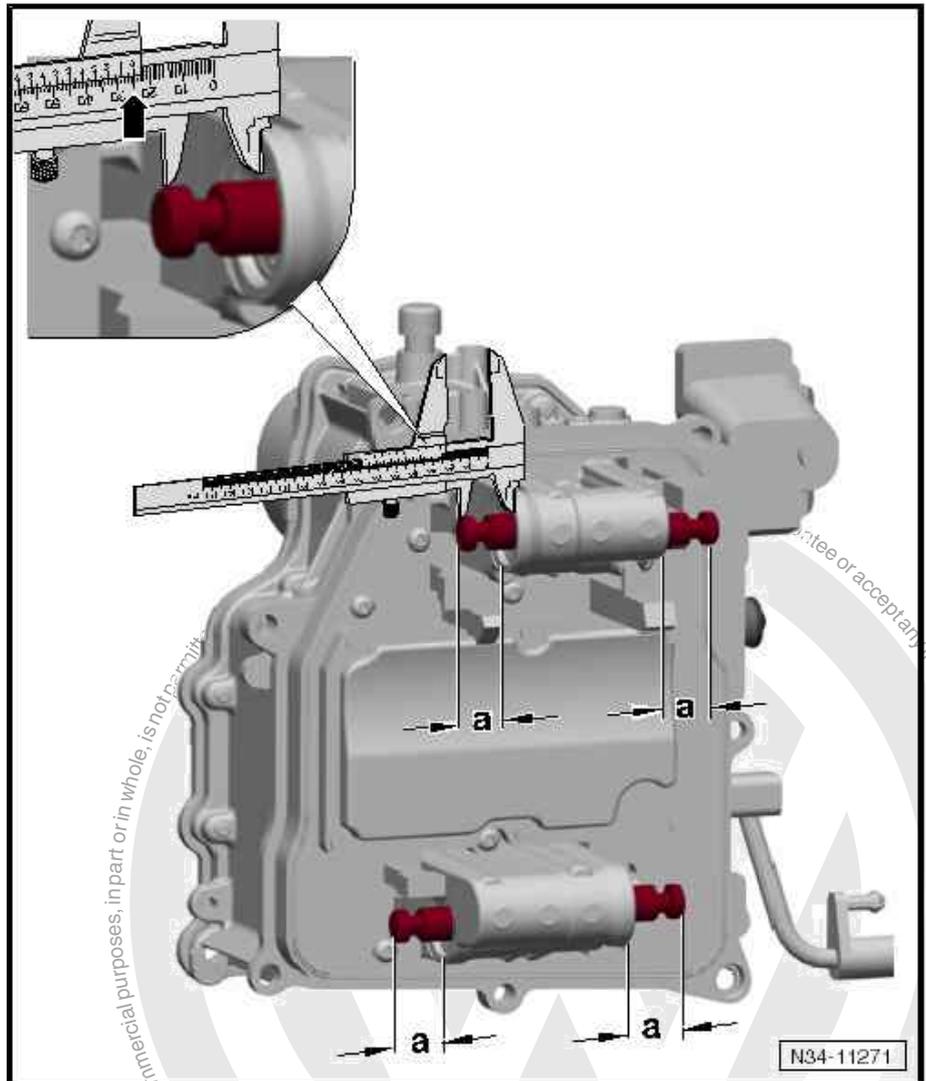
- N - Neutral position
- R - Reverse gear
- 1 - First gear
- 2 - Second gear
- 3 - Third gear
- 4 - Fourth gear
- 5 - Fifth gear
- 6 - Sixth gear
- 7 - Seventh gear



- Then move all selector forks back to «centre position» (position -N-).
- Clean sealing surface where mechatronic unit will later make contact.
- Screw in guide bolts - T10406- by hand.

Make sure that the gear actuators are adjusted correctly:





**Caution**

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

***When levering out the plungers, do not use the sensors as an anchor point.***

- Move the 4 gear actuators of the mechatronic unit for dual clutch gearbox - J743- to the specified position.
- Specified position: -a- = 25 mm.

**New mechatronic unit:**

- Renew dowel sleeves prior to installing a "new" mechatronic unit.



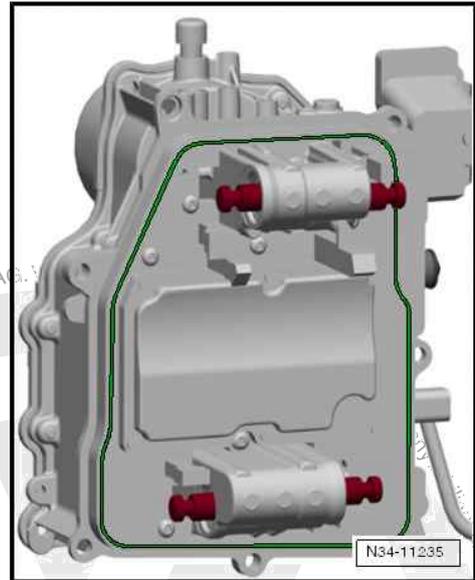
- Clean sealing surface of mechatronic unit.
- The seal around mechatronic unit for dual clutch gearbox - J743- must be fully and properly inserted in the groove.

**Removed mechatronic unit which is to be re-installed:**

- Remove old seal from mechatronic unit, and clean groove for seal (-highlighted in green-) before installing a new seal.

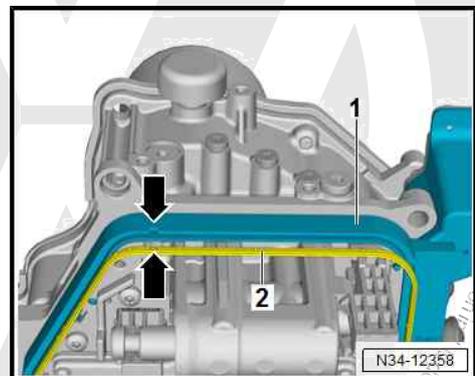
**Note**

*The seal fits only in one position.*



- Fit new seal all-round into groove in mechatronic unit. The nub on the seal -lower arrow- must be seated in the recess on the mechatronic unit -upper arrow-.

**Continued for all:**



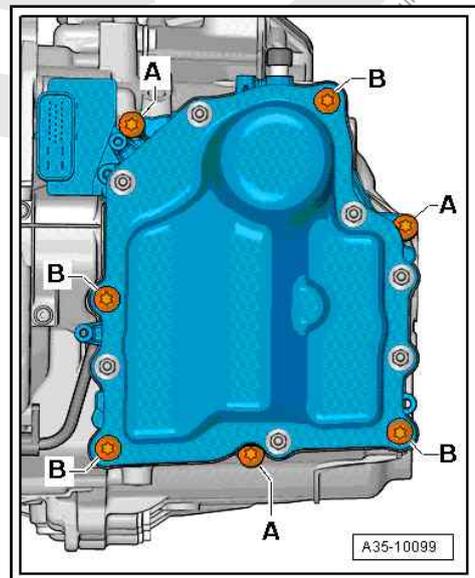
- Put on mechatronic unit.
- Insert and tighten new bolts for mechatronic unit. Specified torques: ⇒ [page 42](#)

**Caution**

**Risk of damaging clutches.**

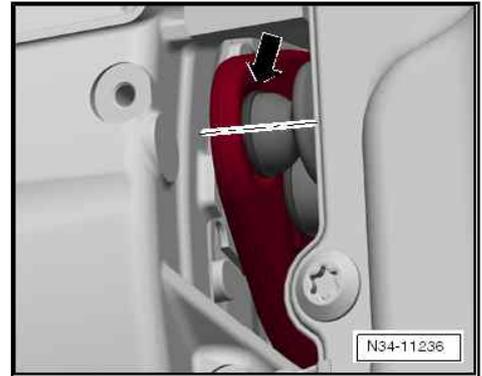
◆ *If the engaging levers strike the clutch actuators of the mechatronic unit hard, they will be put under excess pressure and the clutch self-adjustment will activate. Self-adjustment cannot be reversed.*

- Both clutch actuators must be engaged correctly in retainers of clutch engaging levers -arrow-.
- Do not damage rubber grommets of clutch actuators when doing this.
- Rubber grommets must seal properly against mechatronic unit.

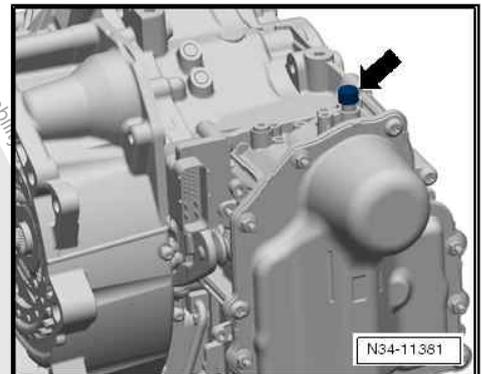




- Carefully and slowly turn assembly lever - T10407- in clockwise direction and remove it.
- The plungers must slide slowly into the mountings.
- Pull out plungers by hand until they are properly seated in mountings.



- Pull sealing plug off breather connection on mechatronic unit and fit new breather cap -arrow-.



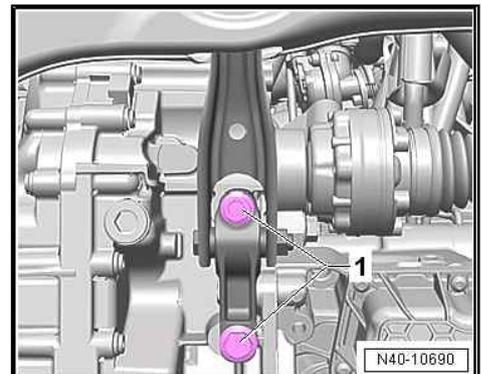
If present, install cover on engaging levers. Specified torque:  
=> [page 41](#)



- Install new bolts -1- securing pendulum support to gearbox, if they have been removed before => Rep. gr. 40 ; Subframe; Assembly overview - subframe .

Continue installation in reverse order of removal, observing the following:

- Fill with gear oil => [page 108](#) .
- Check selector lever cable adjustment and adjust it if necessary => [page 77](#) .
- Install noise insulation => Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- After installation, perform a **Complete reset** by means of **Guided functions** => Vehicle diagnostic tester.



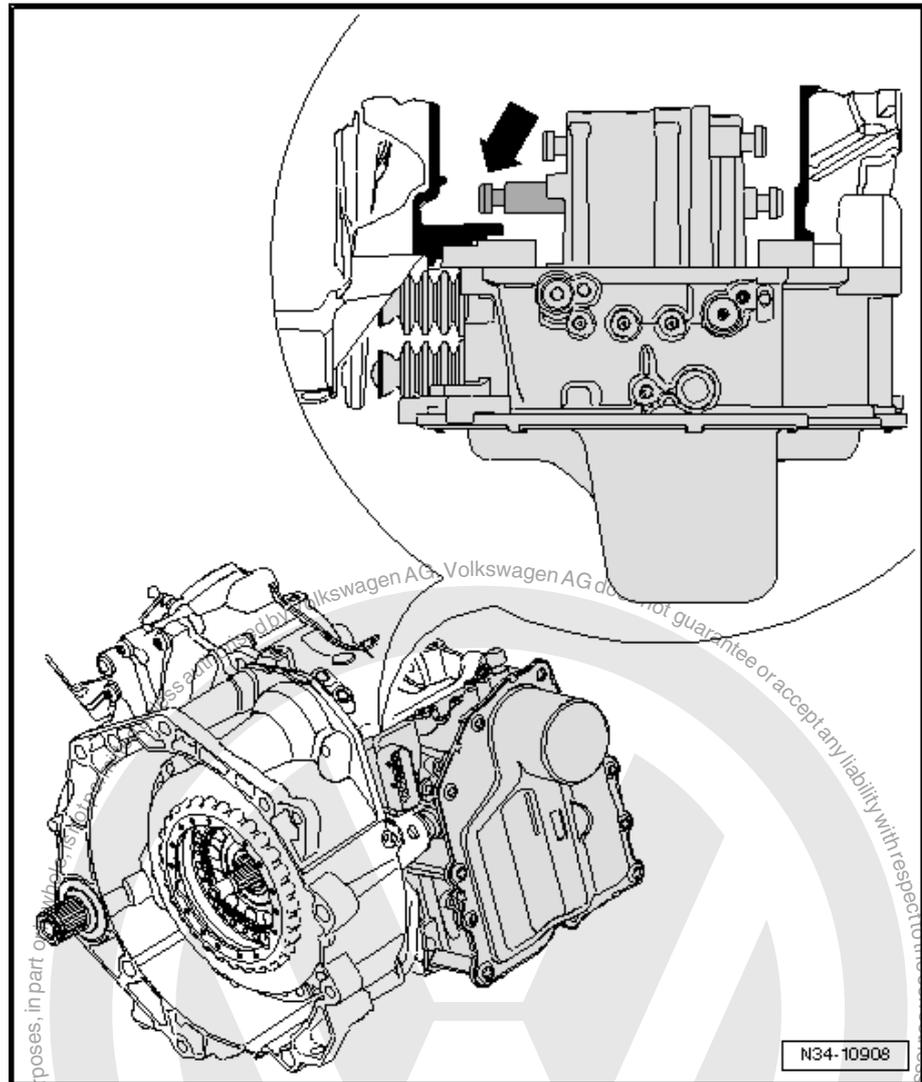


### 1.3 Moving mechatronic unit for dual clutch gearbox - J743- into removal position by hand



#### Note

Only if you cannot set the mechatronic unit to removal position with the vehicle diagnostic tester, you must set the unit by hand to removal position.



Sometimes, the mechatronic unit cannot be removed. In this case, »sticking« of the gear actuator for 6th/ reverse occurs at »top left« of gearbox housing -arrow-

The »sticking« gear actuator must now be pressed by hand into a »removal position«. To do this remove the cover on the selector shaft.

- Reinsert mechatronic unit completely into gearbox and secure it with a bolt.
- Switch selector lever to "P" position.

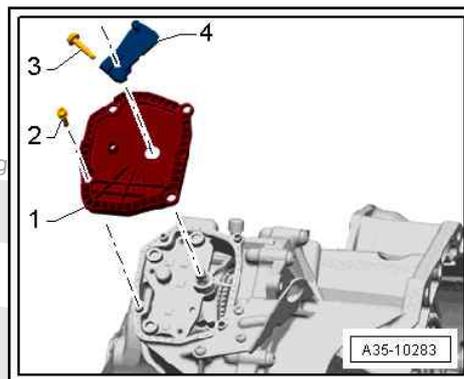


- Remove cover for parking lock -1- => [page 114](#) .

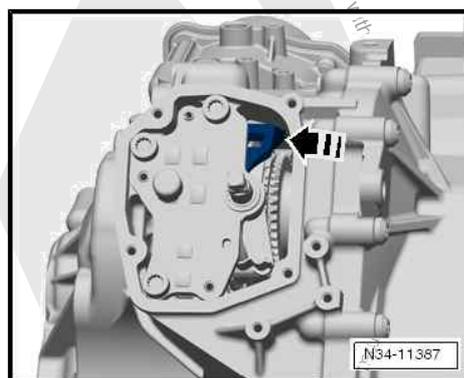
 **Caution**

*Risk of causing permanent damage by mechatronic unit falling out.*

◆ *After the next step, the mechatronic unit is free and could fall out. If it has not already been done, secure mechatronic unit on gearbox with a bolt to prevent it from falling down.*

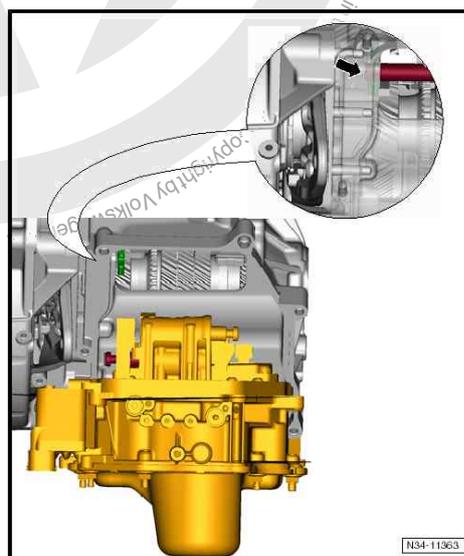


- Push selector fork for 6th/ reverse gear aside through opening -arrow-.



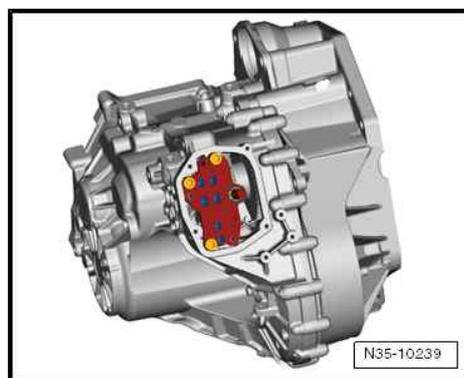
This presses back the »sticking« gear actuator -arrow- and the mechatronic unit can be removed.

- Remove mechatronic unit.



- After work on mechatronic unit has been completed and mechatronic unit has been installed, fill up with gear oil via parking lock => [page 108](#) .

- Install cover for parking lock -1- => [page 114](#) .





## 1.4 Renewing clutch actuator

### Special tools and workshop equipment required

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



- ◆ Cleaning solution, part number: D 009 401 04 ⇒ Electronic Parts Catalogue (ETKA)



### Caution

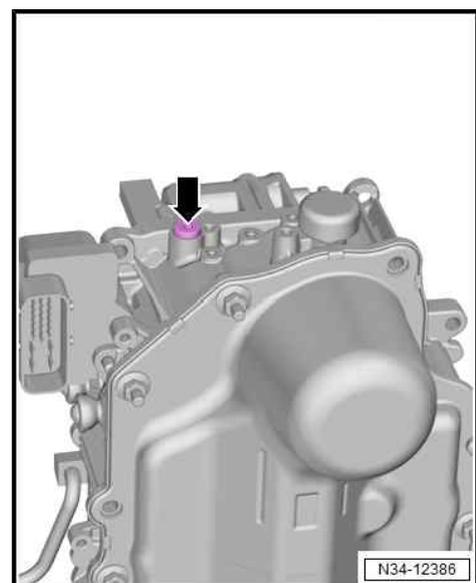
#### *Risk of damage to the mechatronic unit.*

- ◆ *To achieve the desired results when performing repairs, it is important to work with the greatest possible care and cleanliness, and to use proper tools which are in perfect condition.*
- ◆ *The clutch actuator is magnetic. To ensure the highest level of cleanliness, do not remove new clutch actuators from their packaging until immediately before installing them.*
- ◆ *Install the clutch actuators as soon as they have been removed from their packaging. Do not put them down anywhere beforehand.*

### Procedure

- Removing mechatronic unit ⇒ [page 42](#)
- Remove oil filler plug -arrow-.

Renew bolt after each removal.

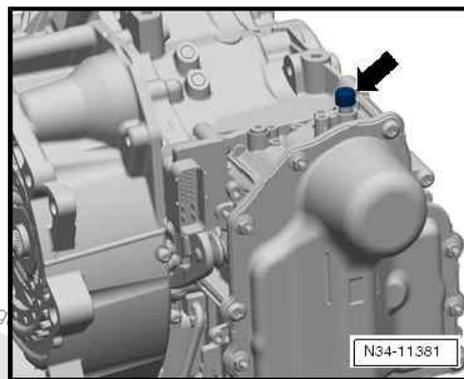




- If still fitted, remove cap from bleeder hole -arrow-.

**⚠ WARNING**

*For some gearboxes the breather cap on the mechatronic unit is destroyed during removal and must be renewed.*



**i Note**

*When turning the mechatronic unit, the oil will flow out of both the oil drilling and the bleeder hole. Make sure to hold both openings over the tray of the used oil collection and extraction unit - V.A.G 1782- .*

- Turn over mechatronic unit, and drain oil completely.

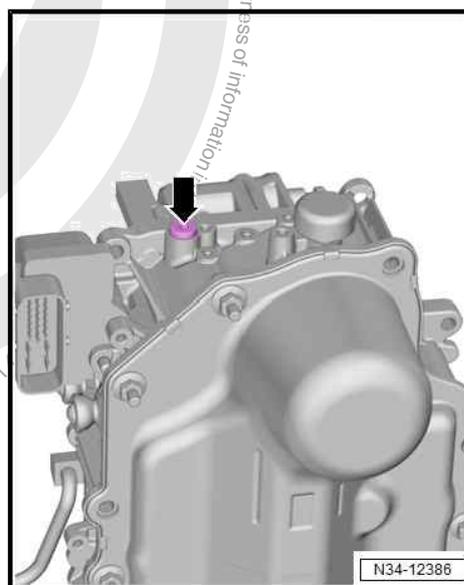
**i Note**

*Do not fill hydraulic fluid until the following steps have been completed.*

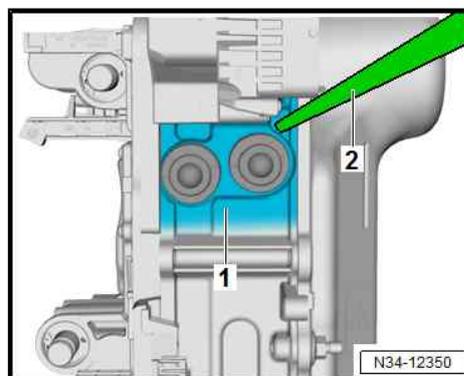
- Once the oil is drained, place the mechatronic unit on a clean, flat surface such as a worktop. Oil filler hole points upwards -arrow-.

**i Note**

*The area around the clutch actuator must always be clean and dry. Any contamination may cause leaks at a later point.*



- Clean area -1- around clutch actuators using cleaning solution D 009 401 04 or a bottle -2- with washing-up liquid. Remove any stubborn dirt with a brush. Then, use a lint-free cloth to thoroughly clean area -1- again.
- Turn mechatronic unit and place it down so that clutch actuators face upwards.





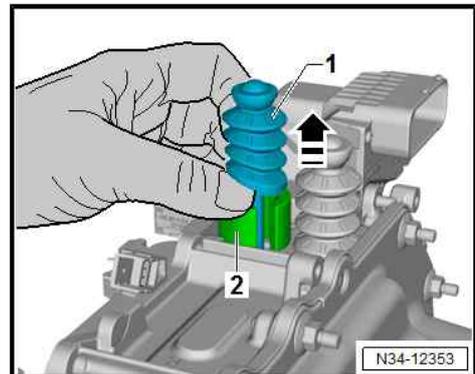
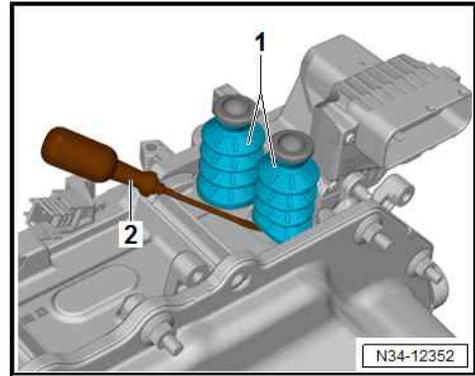
- Use a screwdriver -2- to lever bellows -1- off mechatronic unit.



**Note**

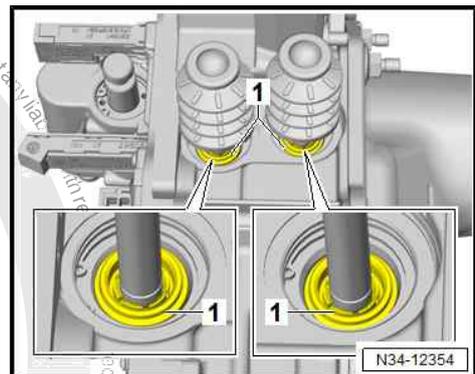
*Clean guide bush thoroughly before any work step, since any kind of contamination may cause leaks at a later point.*

- Fit guide bush -2- with the large opening facing upwards onto mechatronic unit, as shown in illustration, and hold it with one hand. Use other hand to pull out clutch actuator -1- as far as stop.

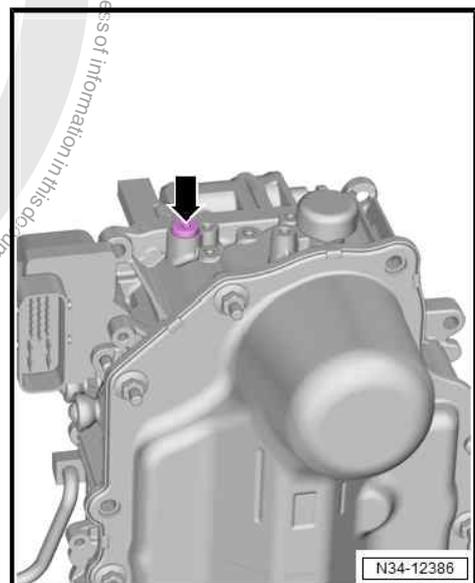


- Carefully remove guide bush. Do not pull out clutch actuator -1- any further when doing this.

Proceed in the same way with the other clutch actuator.

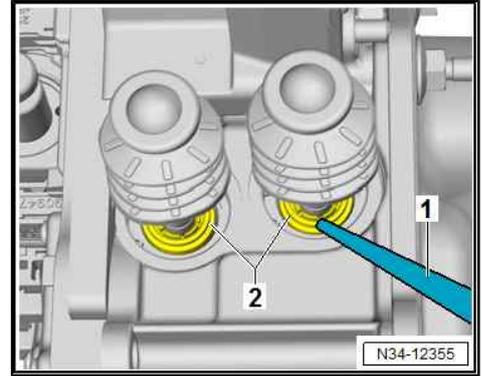


- Place mechatronic unit down in such a way again that oil filler hole -arrow- faces upwards.





- Clean area around seal -2- using cleaning solution D 009 401 04 or a bottle -1- with washing-up liquid. Then, let the washing-up liquid drip off, and dry it off with a lint-free cloth as necessary.



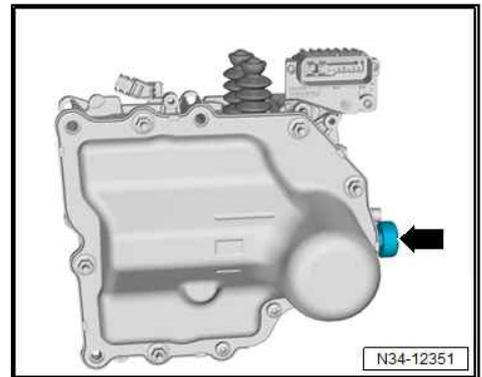
- Place mechatronic unit on side in such a way that clutch actuators face upwards.



#### Note

*Extreme care and a high level of cleanliness are required for any work. Therefore, always make sure that no dirt gets into the opening when pulling out the clutch actuator.*

- Pull both clutch actuators out of mechatronic unit.



#### Installing



#### Caution

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

- ◆ ***To achieve the desired results when performing repairs, it is important to work with the greatest possible care and cleanliness, and to use proper tools which are in perfect condition.***
- ◆ ***The clutch actuator is magnetic. To ensure the highest level of cleanliness, do not remove new clutch actuators from their packaging until immediately before installing them.***
- ◆ ***Install the clutch actuators as soon as they have been removed from their packaging. Do not put them down anywhere beforehand.***

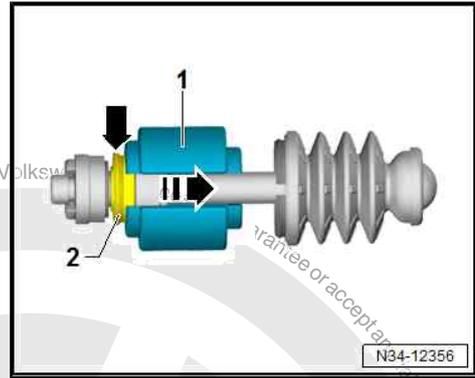


#### Note

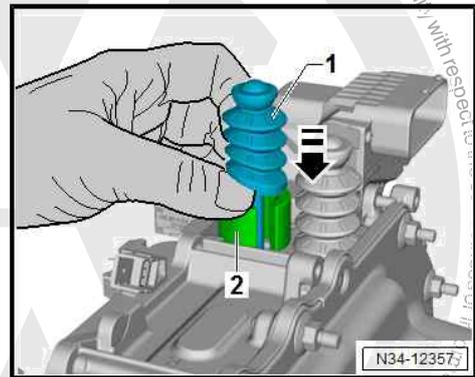
*Clean guide bush thoroughly before any work step, since any kind of contamination may cause leaks at a later point.*



- Lightly coat sealing lip -arrow- of seal -2- with oil, and slide it to stop into guide bush -1-.



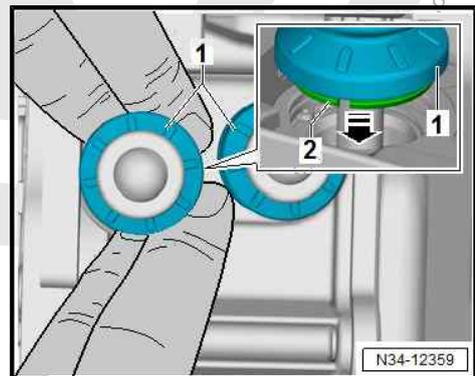
- Carefully fit clutch actuator -1- with guide bush -2- onto opening in mechatronic unit. Hold guide bush with one hand and use other hand to slide clutch actuator 30 mm into mechatronic unit.



- Carefully remove guide bush. Do not pull out clutch actuator again when doing this.

- Carefully push clutch actuator further into mechatronic unit until boot rests against opening.

- Use 4 fingers to engage catch -2- of bellows -1- firmly in mechatronic unit.

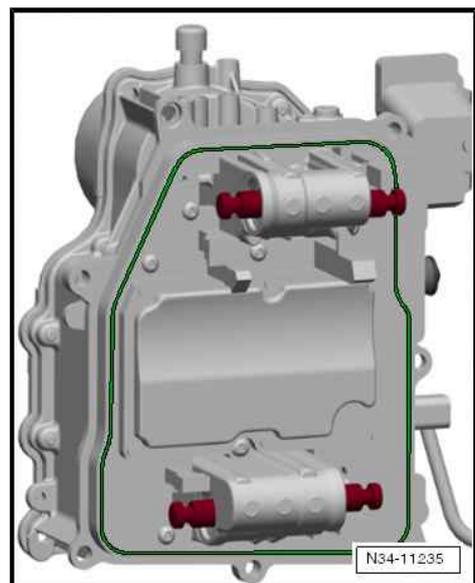


- Install the other clutch actuator in the same way.

- Remove old seal from mechatronic unit, and clean groove for seal (-highlighted in green-) before installing a new seal.

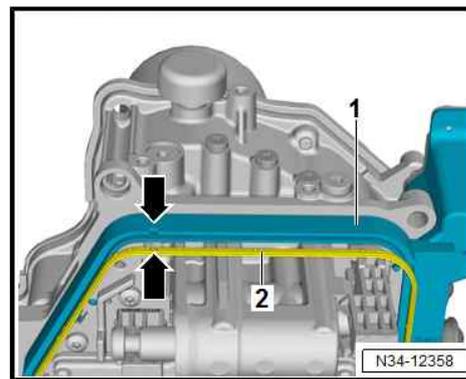
**i** Note

*The seal fits only in one position.*





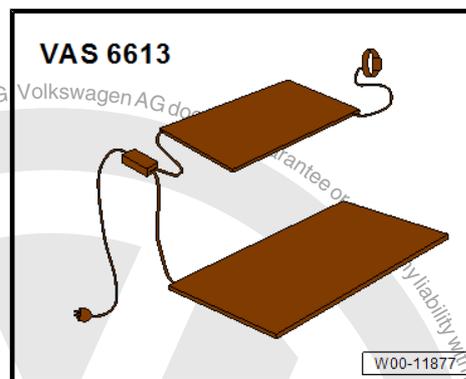
- Fit new seal all-round into groove in mechatronic unit. The nub on the seal -lower arrow- must be seated in the recess on the mechatronic unit -upper arrow-.
- Replenish oil level in mechatronic unit  
⇒ ["7.2 Draining and filling hydraulic fluid for mechatronic unit", page 110](#) .
- Installing mechatronic unit ⇒ [page 42](#) .



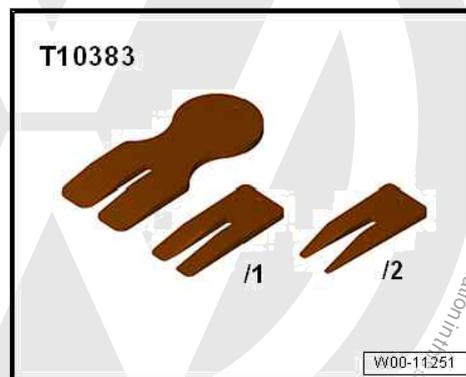
## 1.5 Renewing control unit for mechatronic unit for dual clutch gearbox - J743-

Special tools and workshop equipment required

- ◆ ESD workplace - VAS 6613-



- ◆ Wedge - T10383/2-



- ◆ Torque wrench - V.A.G 1783-



- ◆ Not illustrated: safety goggles



### Caution

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

- ◆ *To achieve the desired results when performing repairs, it is important to work with the greatest possible care and cleanliness, and to use proper tools which are in perfect condition.*
- ◆ *Risk of damage to control unit caused by static charge and dirt.*
- ◆ *Discharge any static charge: touch an ESD workplace.*
- ◆ *Protect control unit from moisture and dirt.*

- Before working on electric components, touch an earthed object, ESD workplace - VAS 6613- . Do not directly touch connector contacts or electronic components.

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

- ◆ Do not touch the control unit at the marked areas or place it down with these areas facing downwards.
- ◆ Only the -marked areas- of the control unit may be touched, as well as the area marked by the arrows -arrows-.

#### Procedure

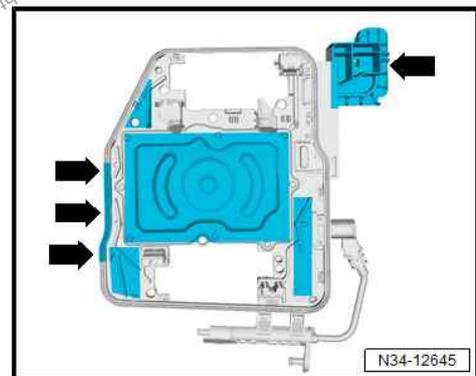
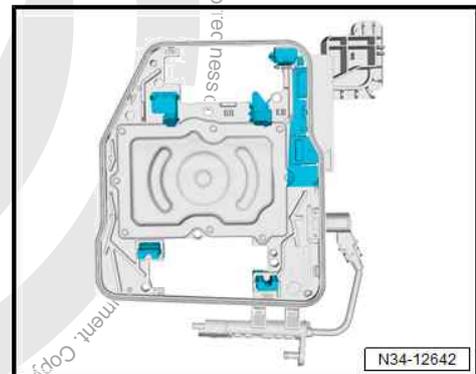
- Remove mechatronic unit ⇒ [page 42](#) .
- Drain hydraulic fluid for mechatronic unit ⇒ [page 110](#) .



### Note

*For the following work steps it is important to make sure that the mechatronic unit is kept in a stable horizontal position.*

- Place mechatronic unit on a workbench with the control unit facing upwards. Place suitable blocks of wood or similar under the mechatronic unit on both sides to ensure a stable horizontal position.
- Place a sufficient amount of cloths all around the mechatronic unit.



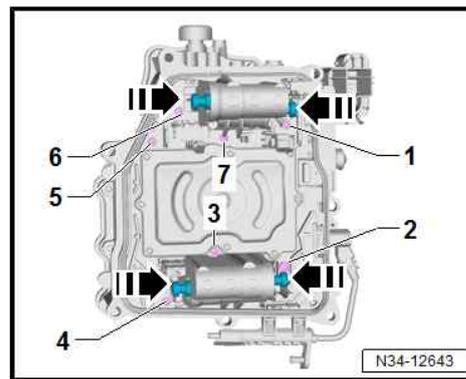


- Push in gear actuator -arrows- as far as possible.

**Caution**

*Prior to performing the following work steps, the following must be assured:*

- ◆ *The fluid tank under the control unit is pressurised. As the pressure will be released abruptly when the bolts are loosened, fluid may escape unexpectedly.*
- *Wear safety goggles.*
- *Always observe the prescribed sequence when loosening the bolts.*



- Unscrew bolts -1- to -6- by approx. 3 turns. Bolt -7- is the last one to be loosened. Proceed with care while doing so. As a consequence of the sudden pressure release, the fluid may escape from the tank in a fountain-like manner above the bolt -7-. Do not unscrew the bolts completely until the pressure has been released entirely.

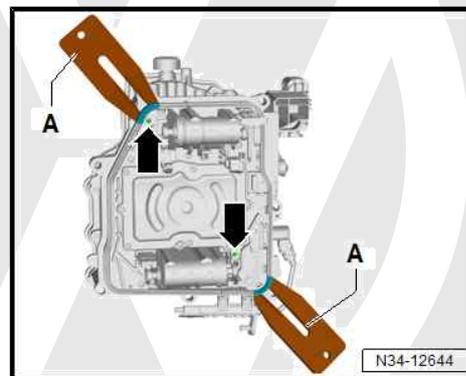
**Note**

*When no pressure is released from the oil tank when the bolt -7- is loosened, the control unit might be stuck to the mechatronic unit. If this is the case, the control unit should be raised slightly in order to make sure that the remaining pressure is released safely.*

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

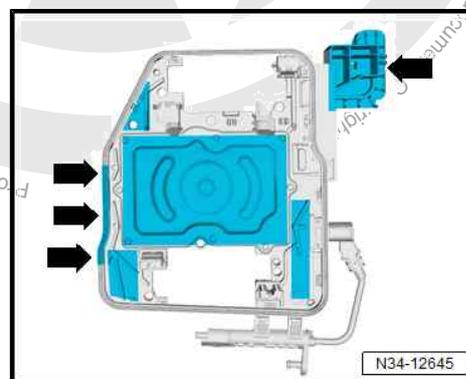
If the control unit is stuck in place, the pressure will not start escaping until the control unit is raised with the wedges. The fluid might then start escaping in an uncontrolled manner.

- After the pressure has been released entirely, the bolts may be unscrewed completely.



- Grasp control unit at frame in area indicated by -arrows- on left side and at connector housing -arrow- on right side, and detach it from mechatronic unit.

It might not yet be possible to detach the control unit if it is stuck to the mechatronic unit. Use wedge - T10383/2- to lever off the control unit so it can be removed.





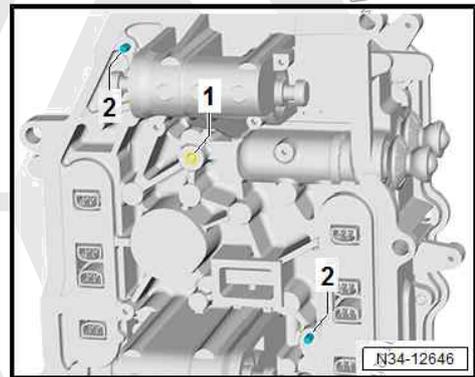
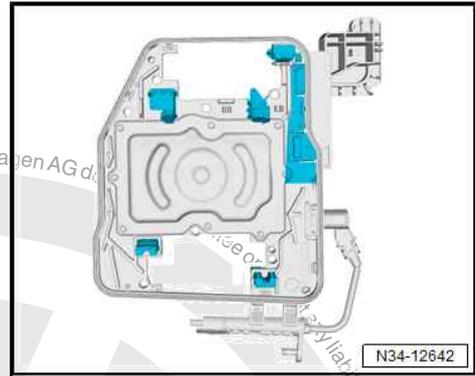
Lay control unit to side properly:



Caution

**Never touch the control unit at the sensor domes or place it down with the sensor domes facing downwards.**

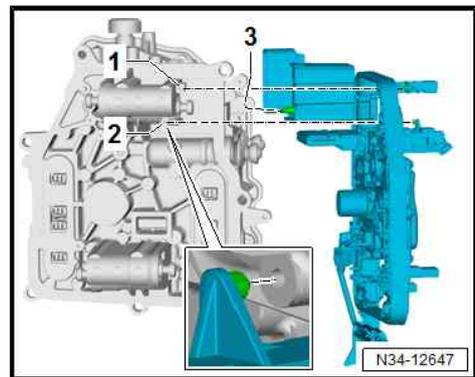
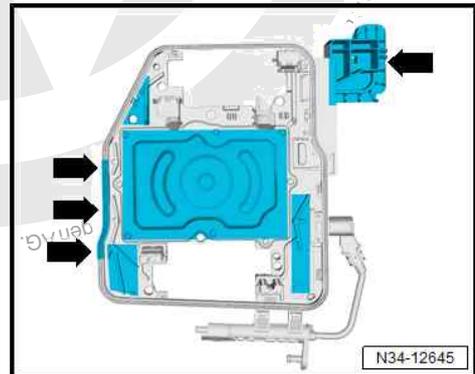
- Drain remaining hydraulic fluid from mechatronic unit.
- After draining oil, place mechatronic unit horizontally on a workbench. Clean sealing surface with a lint-free cloth. Renew O-ring -1-.
- Check if both guide pins -2- are fitted. These might still be in the removed control unit.
- On the new control unit, make sure that all seals (on 4-conductor strip left/right, centre connector and seal around circumference) are seated properly. Only install parts that are in perfect condition.



Note

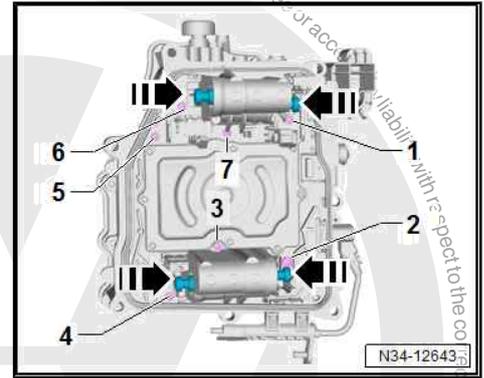
*Only the -marked areas- of the control unit may be touched, as well as the area marked by the arrows -arrows-.*

- Grasp control unit at seal in area indicated by -arrows- on left side and at connector housing -arrow- on right side, and place it on mechatronic unit. While doing so, make sure that the control unit is fixed properly in the guide pins.
- When installing, always observe the guide nipples -1 to 3- on the control unit. They must align with the guide holes -magnified area-.
- Only after having made sure that the guides properly align, press the control unit at the -marked areas- onto mechatronic unit until it makes contact on the sealing surface.





- Screw in bolts -1- to -7- hand-tight first, and tighten them in diagonal sequence to 5 Nm.
- Fill hydraulic fluid ⇒ [page 110](#) .
- Installing mechatronic unit ⇒ [page 42](#) .





## 2 Selector mechanism

- ⇒ [“2.1 Assembly overview - selector mechanism”, page 68](#)
- ⇒ [“2.2 Emergency release from position P”, page 69](#)
- ⇒ [“2.3 Removing and installing selector lever handle”, page 70](#)
- ⇒ [“2.4 Moving push-button in the handle to installation position”, page 72](#)
- ⇒ [“2.5 Removing and installing selector mechanism”, page 74](#)
- ⇒ [“2.6 Checking selector mechanism”, page 76](#)
- ⇒ [“2.7 Checking and adjusting selector lever cable”, page 77](#)
- ⇒ [“2.8 Renewing selector shaft seal”, page 79](#)

### 2.1 Assembly overview - selector mechanism

#### 1 - Handle with selector cover

- Do not remove handle without reason. For emergency release, only the cover needs to be unclipped ⇒ [page 69](#).
- Removing and installing ⇒ [page 70](#)

#### 2 - Bolt

- Qty. 4
- 8 Nm

#### 3 - Selector mechanism

- With integrated selector lever sensor control unit - J587- with selector lever - E313- , Tiptronic switch - F189- , switch for selector lever locked in P - F319- and selector lever lock solenoid - N110-
- Removing and installing ⇒ [page 74](#)

#### 4 - Selector lever cable

- Selector lever cable is not greased
- Checking ⇒ [page 77](#)
- Adjusting ⇒ [page 77](#)

#### 5 - Securing clip

- Always renew after removing.

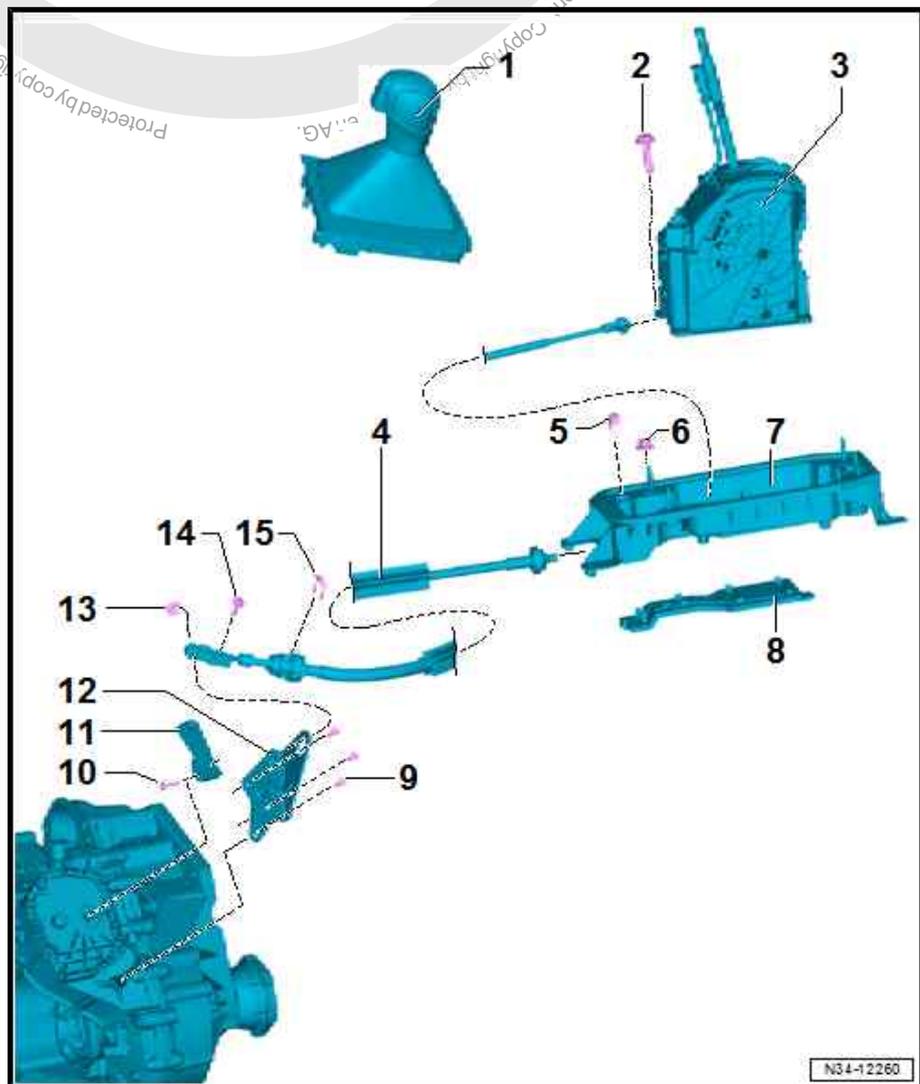
#### 6 - Hexagon flange nut

- Qty. 4
- 8 Nm

#### 7 - Selector housing

#### 8 - Cover

- Do not remove.





**9 - Bolt**

- Qty. 3
- 8 Nm

**10 - Bolt**

- 15 Nm

**11 - Gearbox selector lever**

**12 - Cable support bracket**

- For selector lever cable

**13 - Component not installed**

**14 - Bolt**

- Adjuster screw for selector lever cable
- 13 Nm

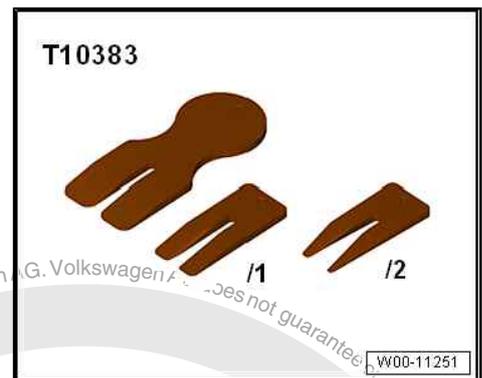
**15 - Retaining clip**

- Renew after removal

**2.2 Emergency release from position P**

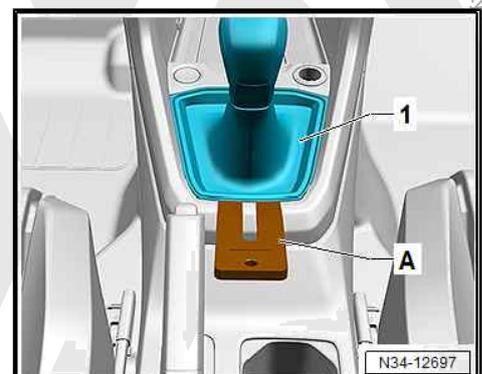
**Special tools and workshop equipment required**

- ◆ Wedges - T10383/1-



**Do not remove handle**

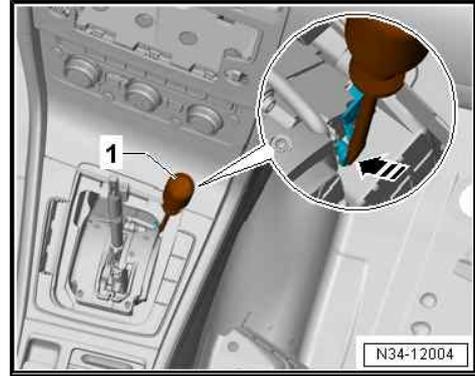
- Depress brake pedal or set handbrake.
- Carefully lever gear lever gaiter -1- off centre console insert using wedge - T10383/1- -A-.
- Lever off rear part of gear lever gaiter first.
- Push selector cover to one side.





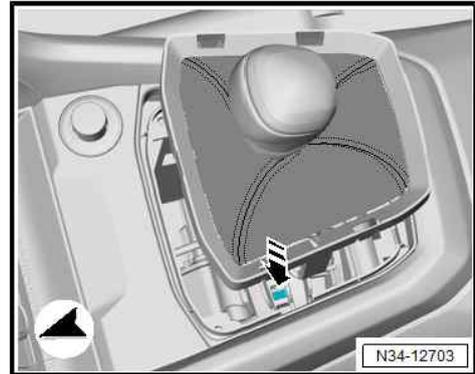
**Version 1:**

- Using a screw driver, from right side, press yellow plastic part and hold in this position.



**Version 2:**

- Using a screwdriver, press yellow plastic part -arrow- from above, and hold it in this position.



**Note**

Arrow points in direction of travel:

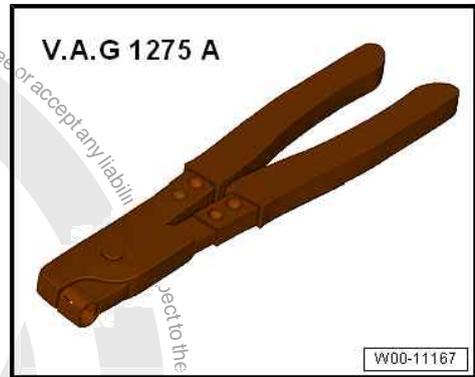
**Continued for all:**

Selector lever can now be moved from position »P«.

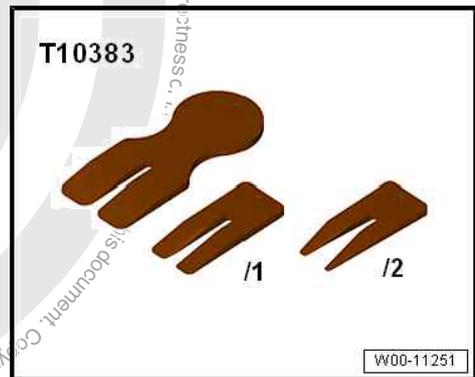
## 2.3 Removing and installing selector lever handle

**Special tools and workshop equipment required**

- ◆ Hose clip pliers - V.A.G 1275 A-



- ◆ Wedges - T10383-



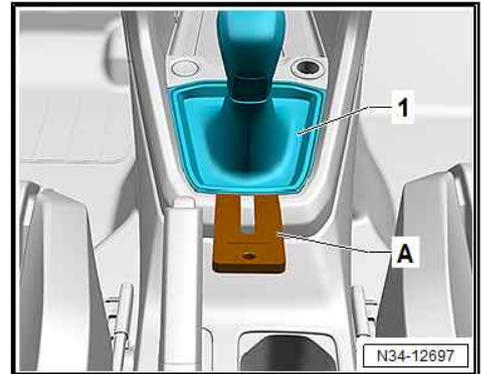
**Brief description**

Handle is removed together with selector cover.

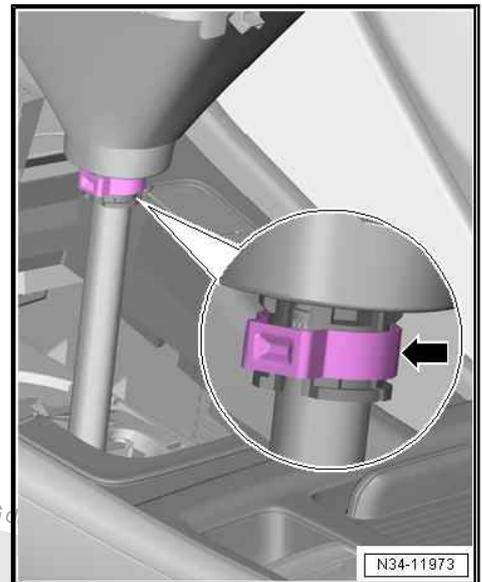


## Removing

- Carefully lever gear lever gaiter -1- off centre console insert using wedge - T10383/1- -A-.
- Lever off rear part of gear lever gaiter first.
- Disconnect electrical connector.
- Pull gear lever gaiter upwards off gear knob.



- Cut open clamp -arrow- under gaiter using side cutters.



Pull off handle upwards without pressing push button -arrow-. Push button engages automatically in installation position when handle is pulled off.

### Note

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

## Installing

Install in reverse order of removal, observing the following:

- Selector lever is in position "D".

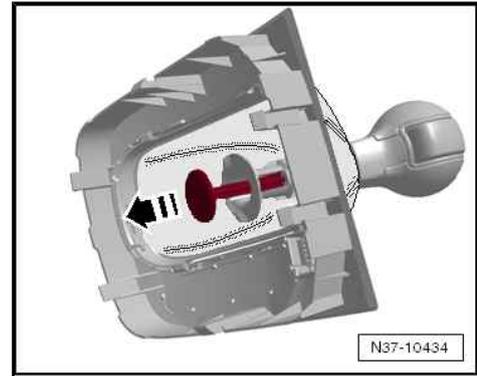




**Note**

- ◆ *There is a danger of the button being pressed into the handle. Never install a handle with the button pressed in.*
- ◆ *Move push-button to installation position ⇒ [page 72](#) .*
- ◆ *New handle is supplied with installation guard. Do not remove guard until just before installing. To remove, pull out -in direction of arrow-.*

- Push handle fully onto selector lever and lock.
- Push sleeve downwards to lock.



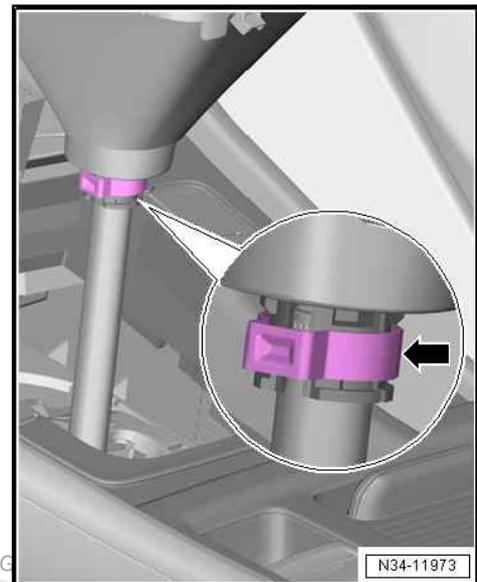
**Handle with clamp:**

- Push on handle with new clamp -arrow- to stop.
- Secure clip with hose clip pliers - V.A.G 1275 A- .
- Connect electrical connector.
- Press push button after installation.



**Note**

*If not installed correctly, the button remains inserted in the handle after being pressed. If this happens, remove handle again and move push-button to installation position again ⇒ [page 72](#) . Then fit the handle again.*



## 2.4 Moving push-button in the handle to installation position

**Special tools and workshop equipment required**

- ◆ Release tool - T10534-



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

There are 2 ways of moving the push button into the installation position, »with« and »without« release tool - T 10534- . Both of them are described here.



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

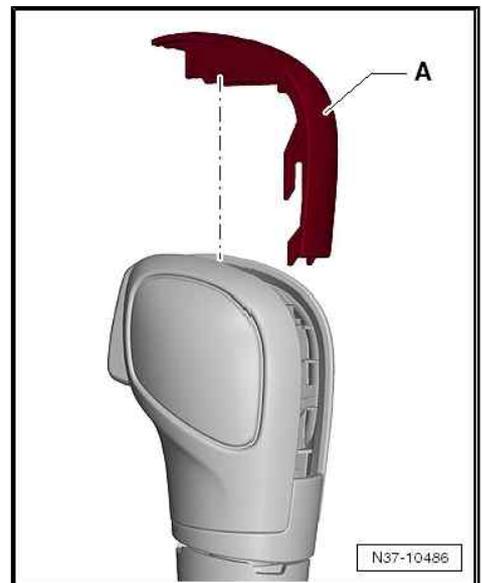
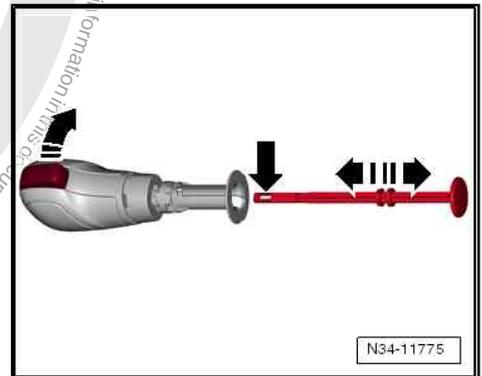
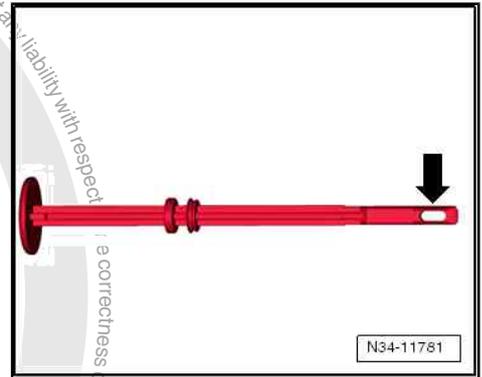
Instead of the release tool - T10534- , the installation guard which is delivered with new handles may also be used.

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

- Holding down push button, completely push in release tool - T10534- installation guard with eyelet -arrow-. The installation guard latches in place while doing so.
- Now, release push button. When the installation guard is pulled out, the push button engages in installation position.

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

- Carefully unclip handle trim -A- upwards.



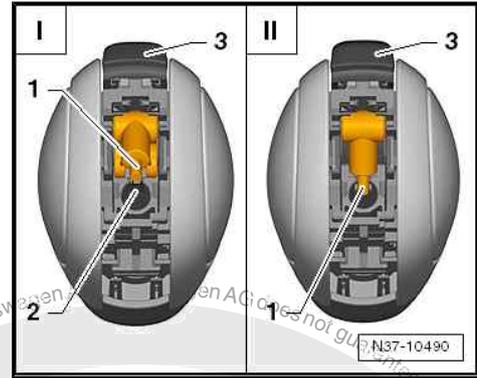


- Using e.g. a screwdriver press small lever -1- for pull rod into groove -2-. This action presses the push button -3- back into installation position.
- 1- Button pressed in
- 1- Button in installation position



**Note**

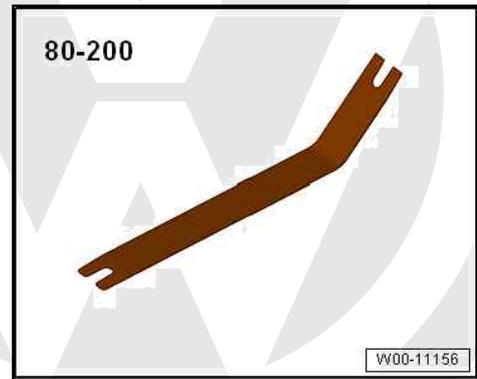
- ◆ Press the lever only into the groove and no further.
- ◆ Do not clip the handle trim onto selector mechanism until the handle has been fitted. This makes it possible to check whether the small lever engages in the pull rod when the button is pressed.



## 2.5 Removing and installing selector mechanism

### Special tools and workshop equipment required

- ◆ Release lever - 80 - 200-



### Brief description

The selector mechanism is removed together with the selector lever cable.

In the interior, the centre console must be removed.

The heat shield beneath the vehicle must be removed.

### Removing

- Remove selector lever handle ⇒ [page 70](#) .
- Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Separate electrical connector from selector mechanism to vehicle wiring harness.

### Vehicles with diesel engine:

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

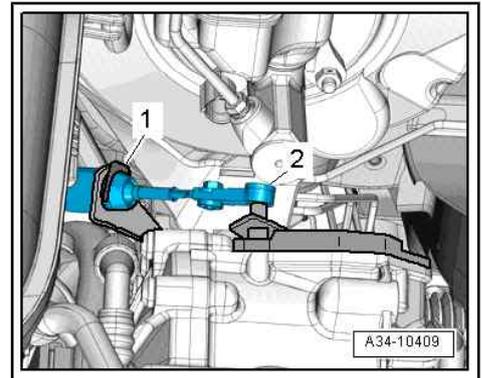


**Continued for all vehicles:**

- Using removal lever - 80 - 200- , lever selector lever cable -2- off gearbox selector lever.
- Remove securing clip -1-.

Use pliers to remove the securing clip on the cable support bracket. Do not use a sharp-edged lever. The selector lever cable could otherwise be damaged.

Securing clips for selector lever cable must always be renewed.



 **Caution**

**Risk of damage to selector lever cable.**

◆ **Do not push selector lever cable backwards out of cable support bracket. The selector lever cable is not detached from the cable support bracket until the selector mechanism is removed.**

Securing clips for selector lever cable must always be renewed

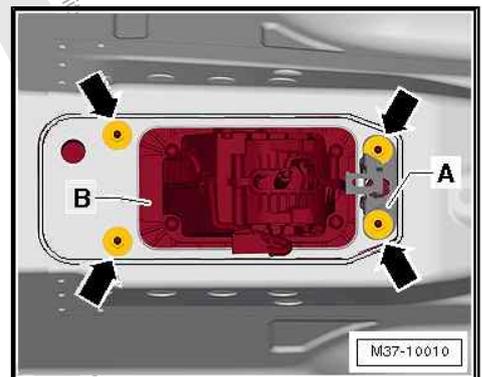
- Remove heat shield for centre tunnel beneath selector mechanism => General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .
- If fitted, remove bracket -A-.
- Remove nuts -arrows- inside vehicle.
- Remove selector mechanism -B- together with selector lever cable and selector housing downwards.

**Installing**

Install in reverse order of removal. When doing this, observe the following:

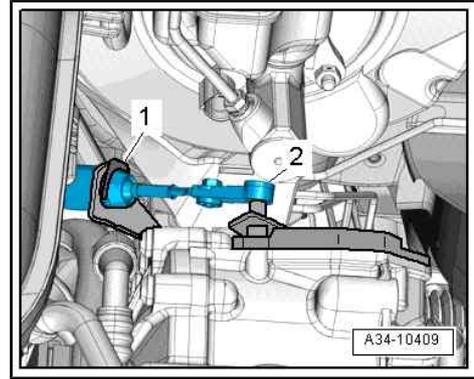
 **Note**

- ◆ **Do not bend or kink gear selector cable.**
- ◆ **Do not grease selector lever cable.**
- ◆ **Following installation of selector mechanism, selector lever cable must be checked for ease of movement and be adjusted.**





- Secure selector lever cable with new securing clip -1- to cable support bracket.
- Install heat shield beneath selector mechanism ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .
- Install centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Install selector lever handle ⇒ [page 70](#) .
- Adjust selector lever cable ⇒ [page 77](#) .
- Check selector mechanism ⇒ [page 76](#) .



#### Vehicles with diesel engine:

- Install air filter housing ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing .

#### Specified torques

- ◆ Selector housing to body ⇒ [page 68](#)

## 2.6 Checking selector mechanism

The starter must not operate in the selector lever positions “R”, “D” and “S” and in the Tiptronic position.

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

Above 5 km/h:

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

Below 5 km/h:

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

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

- Brake pedal not depressed:

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

- Brake pedal is depressed:

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

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

- Brake pedal not depressed:

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

- Brake pedal is depressed:

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



### Selector lever in position "Tiptronic"

- Shift selector lever into Tiptronic gate.

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

When the selector lever is shifted into the Tiptronic gate, the selector lever position display in the dash panel insert must change from "P R N D S" to "6 5 4 3 2 1".

### Ignition and light switched on

The respective symbol in the shift mechanism cover lights up.

### Selector lever position indicator

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

## 2.7 Checking and adjusting selector lever cable

### Brief description

Selector lever cable must be removed from gearbox so that its ease of movement can be checked. Put removed end down so it does not rub against anything.

The selector lever must be moved and then the cable must be reattached to the gearbox.

Then the selector lever cable must be adjusted.

Do not grease cable!

### Always adjust selector lever cable, when:

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

### Check

- Move selector lever to position »P«.
- Remove cable from lever on gearbox.
- Move selector lever repeatedly from »P« to »S« and back to »P«.
- Selector lever must move easily.
- Reinstall cable with »loosened« adjustment screw.



If securing clip was removed, always install a »new« securing clip

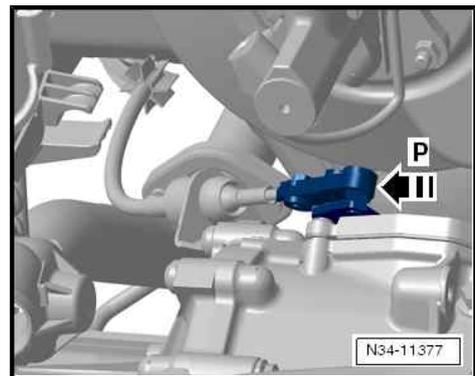
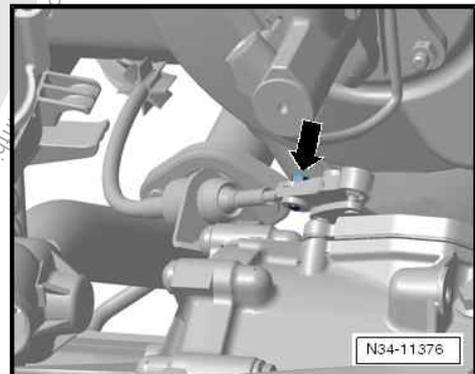
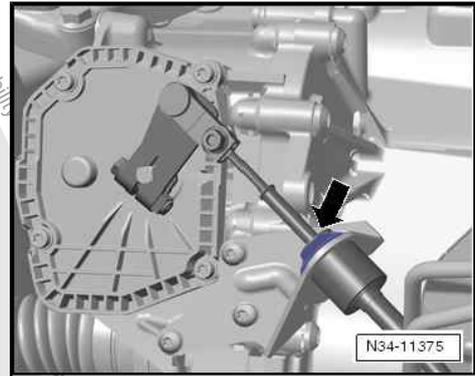
- Finally adjust selector lever cable.

#### Adjusting

- Move selector lever in vehicle to "P" position.

Adjuster screw -arrow- must be »loosened«.

Shift lever on gearbox to position "P".



The gearbox lever must be pressed »completely to right side of vehicle« in the direction of selector lever cable support bracket.



- Install Bowden cable with loosened adjusting screw -arrow- and new securing clip.



### WARNING

*The parking lock must be engaged.*

- To do this, turn both front wheels simultaneously »under the car« in the same direction until the parking lock can be heard to engage.
- The parking lock is engaged when both front wheels cannot be turned in the same direction at the same time.
- Gently push knob of selector lever forwards and backwards but under no circumstances must you shift out of "P".

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

- Tighten adjuster screw -arrow-. Specified torque: ⇒ [page 68](#)

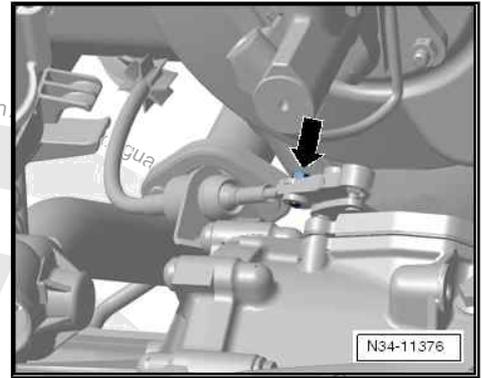
This completes the adjustment.

- Check selector mechanism ⇒ [page 76](#) .

## 2.8 Renewing selector shaft seal

The selector shaft oil seal can currently only be renewed in conjunction with cover for parking lock

⇒ ["1.1 Removing and installing cover for parking lock"](#), [page 114](#) .





### 3 Removing and installing gearbox

⇒ [“3.1 Removing gearbox”, page 80](#)

⇒ [“3.2 Installing gearbox”, page 96](#)

⇒ [“3.3 Specified torques for gearbox”, page 100](#)

#### 3.1 Removing gearbox

⇒ [“3.1.1 Removing gearbox, vehicles with 1.0 l petrol engine”, page 80](#)

⇒ [“3.1.2 Removing gearbox, vehicles with 1.6 l diesel engine”, page 86](#)

⇒ [“3.1.3 Removing gearbox, vehicles with 1.5 l petrol engine”, page 91](#)

##### 3.1.1 Removing gearbox, vehicles with 1.0 l petrol engine

###### Brief description

The gearbox is removed downwards separately, without engine.  
»From above«:

The battery, air filter and starter are removed. The engine and gearbox must be supported before the left subframe mounting is removed.

»From below«:

Pendulum support and left drive shaft removed. Right drive shaft remains installed in wheel bearing housing and only needs to be swivelled to one side.

The subframe remains in the vehicle.

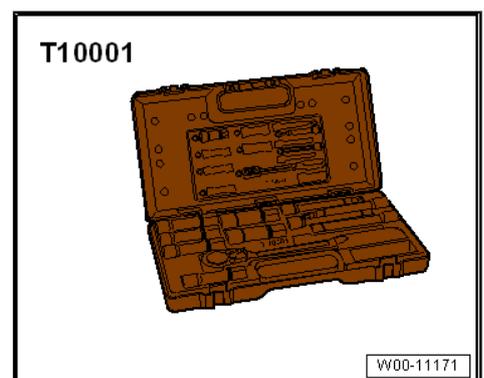




**Special tools and workshop equipment required**

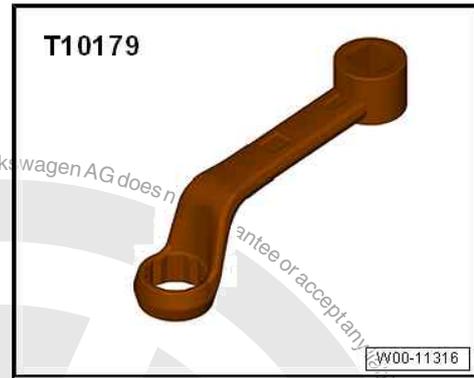


- ◆ Socket and extended bit 6 mm - T10107 A-
- ◆ Shackle - 10 - 222 A /12-
- ◆ Tensioning strap - T10038-
- ◆ Engine and gearbox jack - VAS 6931- or -V.A.G 1383 A-
- ◆ Gearbox support - 3282-
- ◆ Adjustment plate - 3282/59-
- ◆ Shock absorber set - T10001-

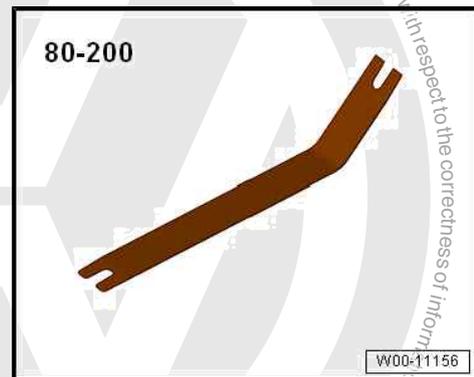




- ◆ Insert tool 18 mm - T10179- or insert tool AF 18 - T10509-



- ◆ Release lever - 80 - 200-



#### Removing:

- Raise vehicle. All 4 supports of lifting platform must be at same height.
- Move selector lever to position »P«.

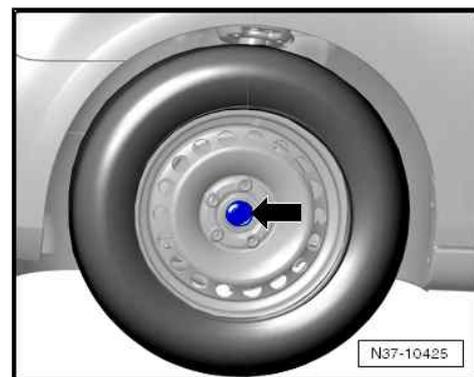


#### Note

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

- Depress brake pedal to remove bolt for left drive shaft -arrow- (second mechanic required).
- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

It is advisable to remove the »lower« bolt first.



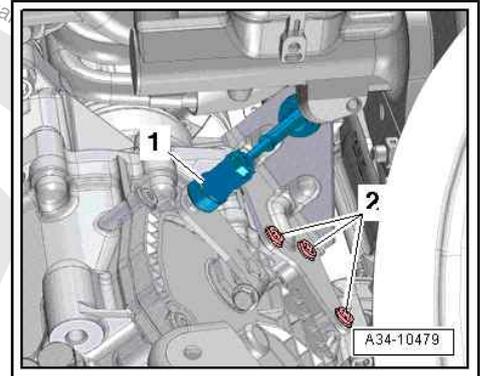


- Using removal lever - 80 - 200- , lever selector lever cable -1- off gearbox selector lever.
- Remove bolts -2-, raise and tie selector lever cable together with support bracket.

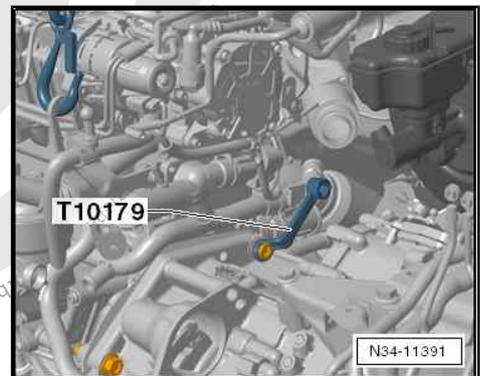
 **Caution**

**Risk of damage to selector lever cable.**

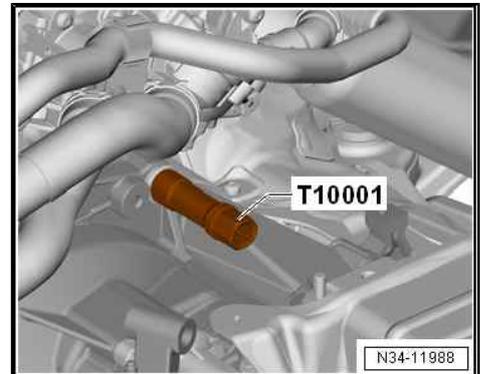
◆ **Do not bend or kink gear selector cable.**



- Pull vacuum line for brake servo off intake manifold.
- Using suitable tools, remove upper engine/gearbox connecting bolts. Suitable tools:



- ◆ Insert tool 18 mm - T10179- or -T10509-
- ◆ Or 18-mm socket from shock absorber set - T10001-
- Support engine in installation position ⇒ Rep. gr. 10 ; Assembly mountings; Supporting engine in installation position .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .



 **Caution**

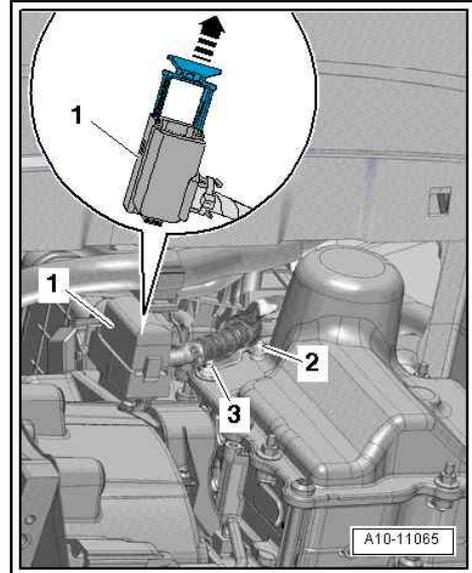
**Risk of damaging gearbox components beyond repair.**

◆ **Do not under any circumstances touch the contacts in the gearbox connector by hand. Electrostatic discharge can destroy the control unit and mechatronic unit.**

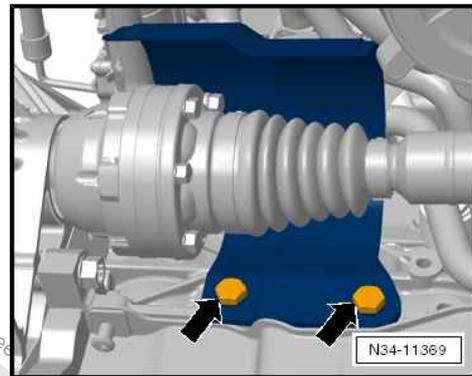
- Touch earth connection (without gloves) to discharge static electricity.



- Disconnect electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- . To do this, pull locking element upwards -arrow-.
- Unscrew nuts -2- and -3- and remove wiring retainer.
- Raise and tie wiring in area of gearbox cover.
- Remove left drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts .

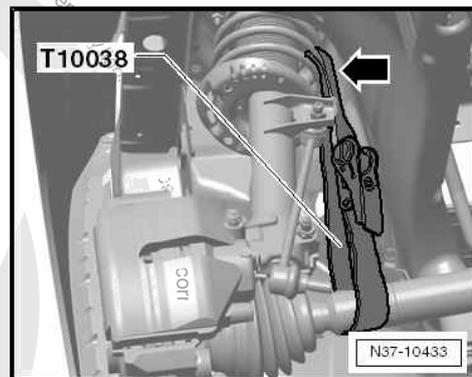


- If fitted, remove heat shield for right drive shaft -arrows- ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft heat shield .



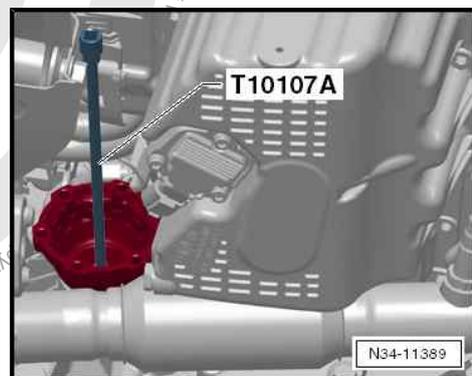
- Unbolt right drive shaft from gearbox, and secure it to suspension strut using tensioning strap - T10038- ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

The surface protection of the shaft must not be damaged.



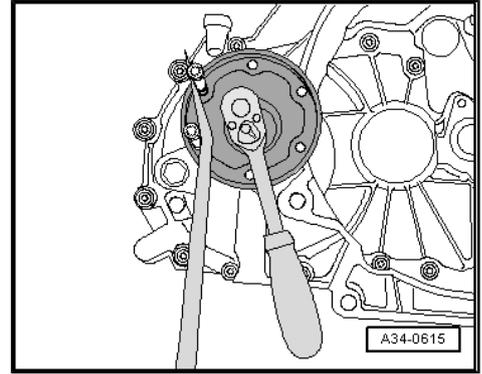
- Remove right flange shaft of gearbox using socket - T10107 A- .

Bolt has a 6 mm hexagon socket. Bolt can also be removed and installed with socket - V.A.G 1669- .

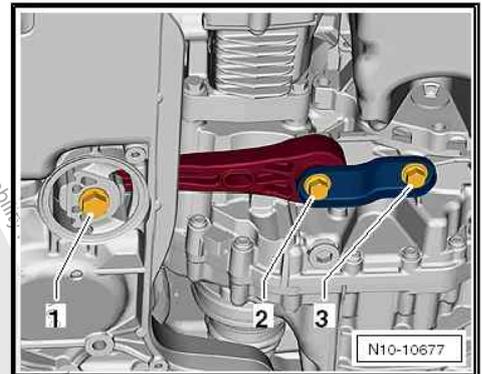




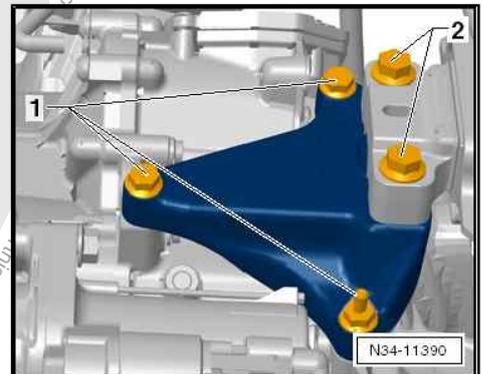
- To remove or install flange shaft, screw 2 bolts into flange and counterhold flange shaft with a lever.
- Remove flange shaft with compression spring.
- Close opening in drive shaft using a suitable plug.



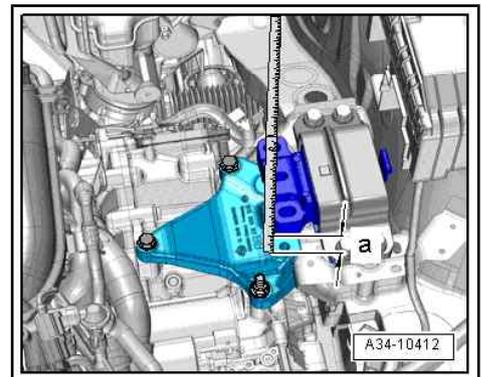
- Remove pendulum support. First remove bolt -1-, followed by bolts -2- and -3-.
- Remove all but one »easily accessible« connecting bolt between engine and gearbox from underneath.



Unscrew all bolts -1- and -2- for gearbox bracket.

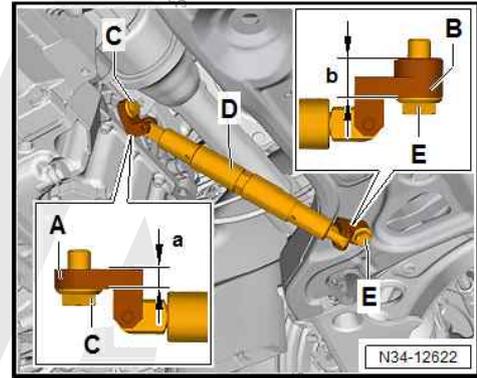


- Lower engine/gearbox assembly using spindle - 10-222 A / 11- until distance -a- is obtained between gearbox housing and gearbox mounting.
- Dimension -a- = 20 mm.
- Remove gearbox bracket.
- Remove all engine/gearbox connecting bolts except for one easily accessible bolt.



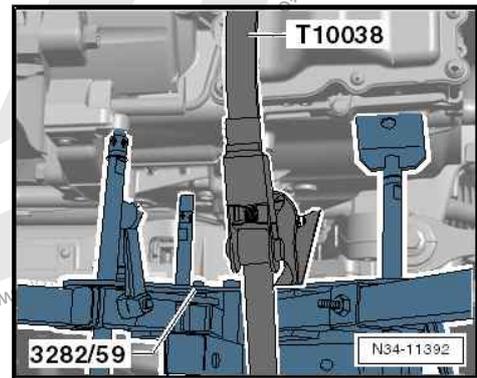


- Attach engine support - T10533/1- -D- as follows:
  - ◆ Secure engine support -D- (flattened end -A-) to engine block by screwing an M10 x 20 bolt -C- into left threaded hole for heat shield.
  - ◆ Secure engine support -D- (elevated end -B- to subframe by screwing an M8 x 30 bolt -E- into right threaded hole for noise insulation.
- Force engine/gearbox as far forwards as possible by turning spindle of engine support -D-. Avoid collisions between components and radiator cowl.
- Set up gearbox support - 3282- with adjustment plate - 3282/59- .
- Position engine and gearbox jack - VAS 6931- or -V.A.G 1383 A- under gearbox and support gearbox. Do not raise.
- Position plate of pin under gearbox housing, not under mechatronic unit.
- Screw a pin into »rear« hole for pendulum support.
- Secure gearbox with tensioning strap - T10038- to prevent it from falling down.



The gearbox is separated from the engine in this position.

- Remove last remaining engine/gearbox connecting bolt.
- Press gearbox off engine while »observing selector lever cable«, and lower gearbox.
- If the gearbox is renewed, reinstall right flange shaft which has been removed beforehand.



Install gearbox => [page 96](#) .

### 3.1.2 Removing gearbox, vehicles with 1.6 I diesel engine

#### Brief description

The gearbox is removed downwards separately, without engine.  
»From above«:

The battery, air filter and starter are removed. The engine and gearbox must be supported before the left subframe mounting is removed.

»From below«:

The -subframe- is removed together with -pendulum support- and -both suspension links-. The -steering rack- remains installed in the vehicle.

Both drive shafts are disconnected from gearbox and left installed in wheel bearing housings. They are only swivelled to one side and left on vehicle.

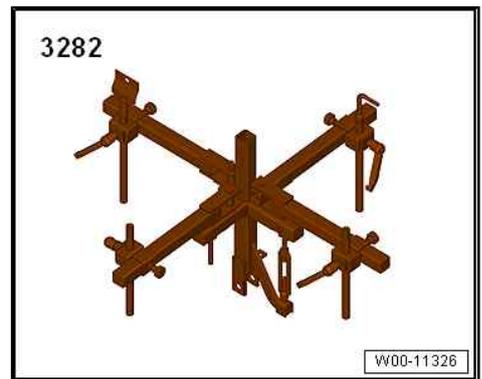
#### Special tools and workshop equipment required



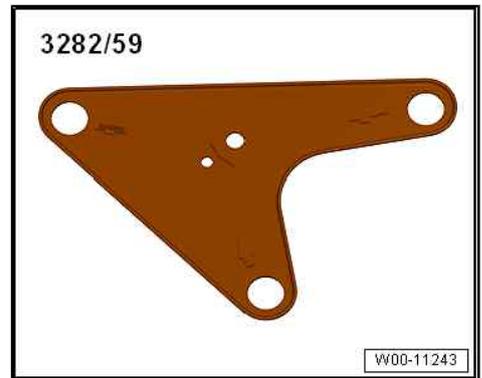
◆ Engine and gearbox jack - VAS 6931-



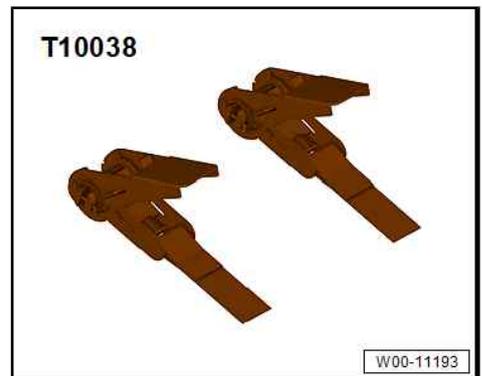
◆ Gearbox support - 3282-



◆ Adjustment plate - 3282/59-



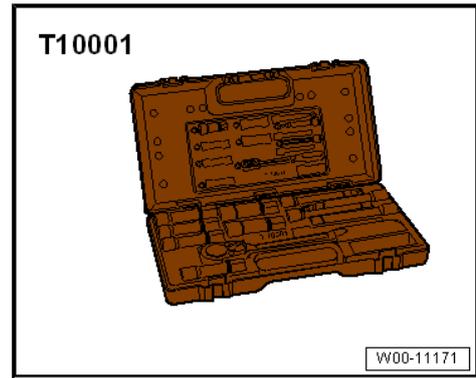
◆ Tensioning strap - T10038-



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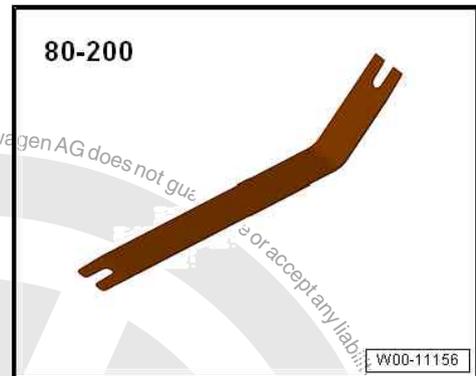
◆ Shock absorber set - T10001-



◆ Insert tool 18 mm - T10179- or insert tool AF 18 - T10509-



◆ Release lever - 80 - 200-



**Removing:**

- Raise vehicle. All 4 supports of lifting platform must be at same height.
- Move selector lever to position »P«.
- Remove engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .
- Remove air filter housing ⇒ Rep. gr. 23 ; Air filter; Removing and installing air filter housing
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .

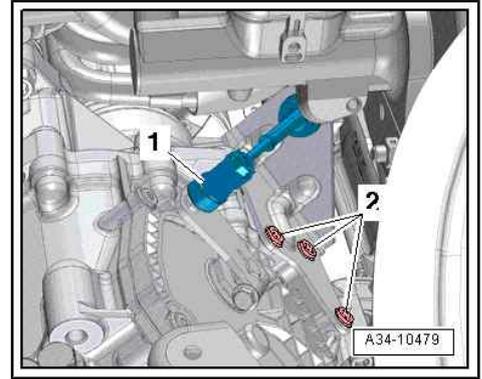


- Using removal lever - 80 - 200- , lever selector lever cable -1- off gearbox selector lever.
- Remove bolts -2-, raise and tie selector lever cable together with support bracket.

**Caution**

*Risk of damage to selector lever cable.*

◆ *Do not bend or kink gear selector cable.*



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

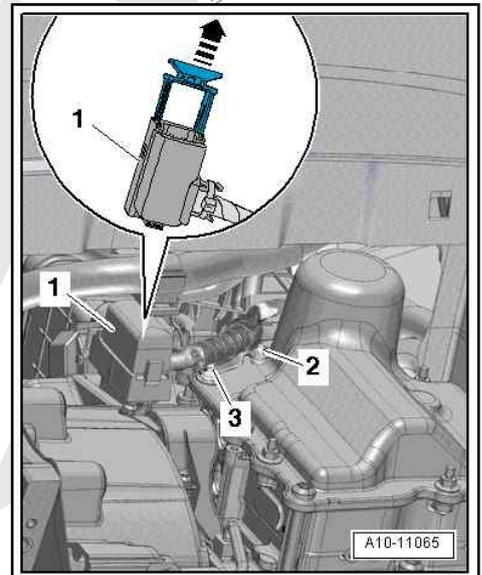
It is advisable to remove the »lower« bolt first.

**Caution**

*Risk of damaging gearbox components beyond repair.*

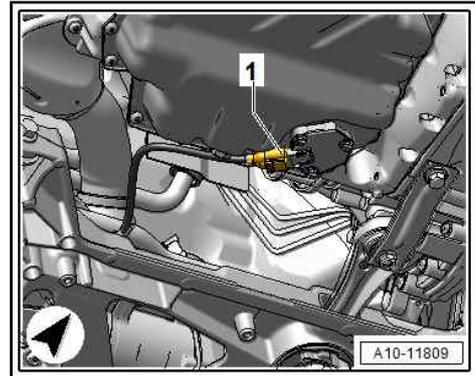
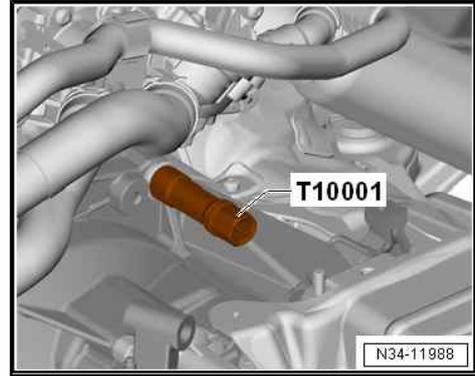
◆ *Do not under any circumstances touch the contacts in the gearbox connector by hand. Electrostatic discharge can destroy the control unit and mechatronic unit.*

- Touch earth connection (without gloves) to discharge static electricity.
- Disconnect electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- . To do this, pull locking element upwards -arrow-.
- Unscrew nuts -2- and -3- and remove wiring retainer.
- Raise and tie wiring in area of gearbox cover.
- Remove air pipe => Rep. gr. 21 ; Charge air system; Assembly overview - charge air system .
- Using suitable tools, remove upper engine/gearbox connecting bolts. Suitable tools:



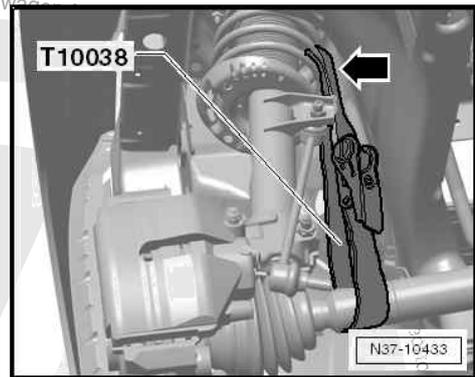


- ◆ Insert tool 18 mm - T10179- or -T10509-
- ◆ Or 18-mm socket from shock absorber set - T10001-
- Support engine in installation position ⇒ Rep. gr. 10 ; Assembly mountings; Supporting engine in installation position .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- If fitted, release and pull off electrical connector -1- on oil level and oil temperature sender - G266- .
- Remove subframe without steering rack ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe without steering rack .
- Disconnect both drive shafts from gearbox ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft: Removing and installing drive shafts .

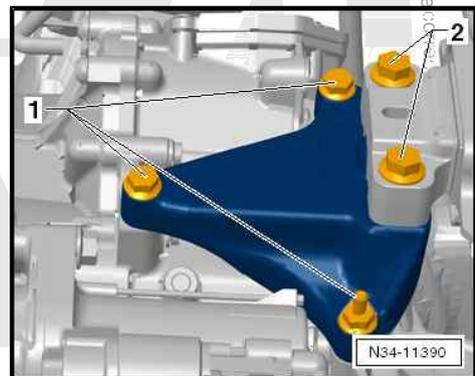


- Secure drive shaft to suspension strut with tensioning strap - T10038- .

The surface protection of the shafts must not be damaged.

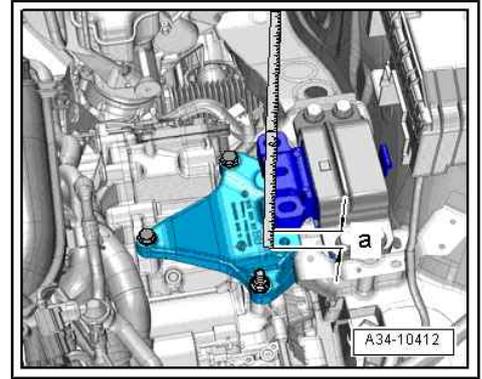


Unscrew all bolts -1- and -2- for gearbox bracket.

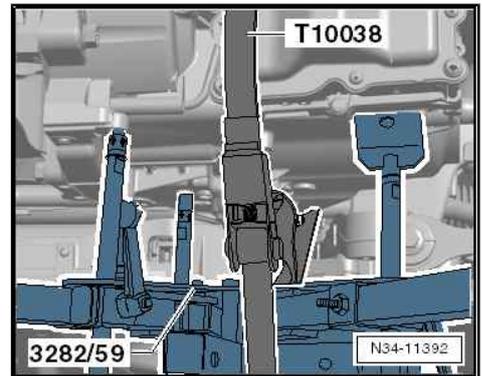




- Lower engine/gearbox assembly using spindle - 10 - 222 A / 11- until distance -a- is obtained between gearbox housing and gearbox mounting.
- Dimension -a- = 50 mm.
- Remove gearbox bracket.
- Remove all engine/gearbox connecting bolts except for one easily accessible bolt.
- Set up gearbox support - 3282- with adjustment plate - 3282/59- .

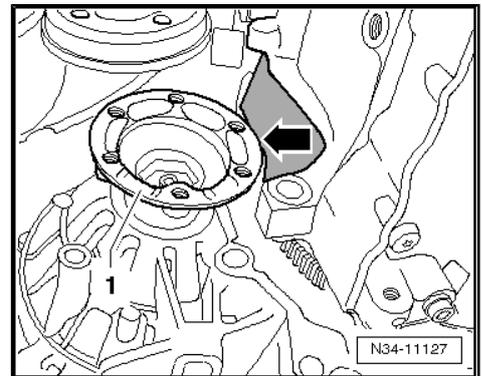


- Position engine and gearbox jack - VAS 6931- or -V.A.G 1383 A- under gearbox and support gearbox. Do not raise.
- Position plate of pin under gearbox housing, not under mechatronic unit.
- Screw a pin into »rear« hole for pendulum support.
- Secure gearbox with tensioning strap - T10038- to prevent it from falling down.



The gearbox is separated from the engine in this position.

- Remove last remaining engine/gearbox connecting bolt.
- Press gearbox off engine while »observing selector lever cable«. Slightly tilt gearbox on the outside using spindle of gearbox support - 3282- .
- Now slightly turn gearbox and lower it. Be sure to guide flange -1- past intermediate plate -arrow- when lowering gearbox.



**i Note**

*Be careful of all lines when lowering gearbox.*

Transporting gearbox => [page 103](#) .

Secure gearbox to assembly stand => [page 106](#) .

Install gearbox => [page 96](#) .

### 3.1.3 Removing gearbox, vehicles with 1.5 l petrol engine

#### Brief description

The gearbox is removed downwards separately.

»From above«:

The battery, air filter and starter are removed. The engine and gearbox must be supported before the left subframe mounting is removed.

»From below«:

The -subframe- is removed together with -pendulum support- and -both suspension links-. The -steering rack- remains installed in the vehicle.

Both drive shafts are disconnected from gearbox and left installed in wheel bearing housings. They are only swivelled to one side and left on vehicle.



### Special tools and workshop equipment required

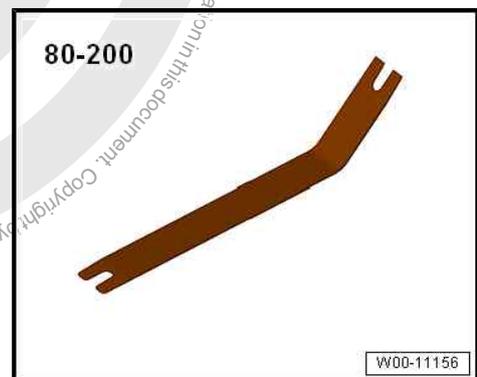
- ◆ Gearbox support - 3282-



- ◆ Engine and gearbox jack - VAS 6931-



- ◆ Release lever - 80 - 200-

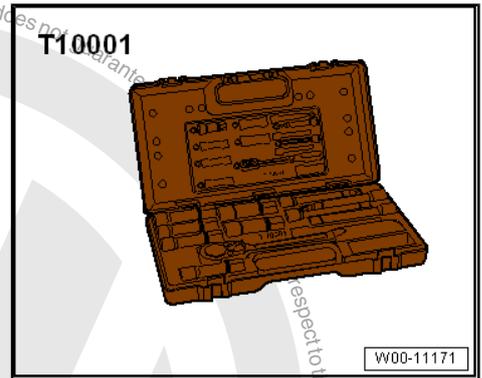


- ◆ Insert tool 18 mm - T10179- or insert tool AF 18 - T10509-

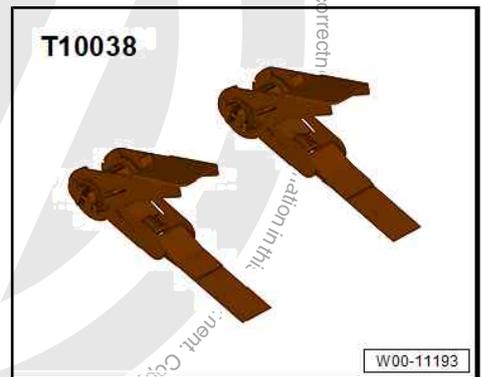




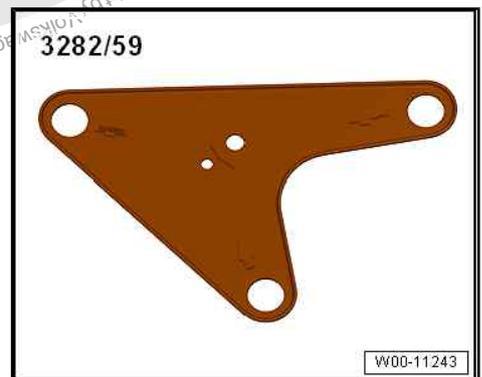
- ◆ Shock absorber tool set - T10001-



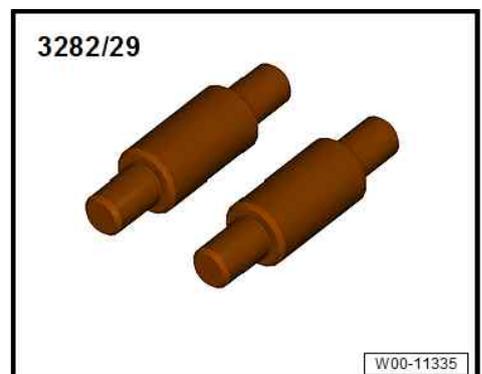
- ◆ Tensioning strap T10038-



- ◆ Adjustment plate - 3282/59-



- ◆ Pin - 3282/29-



### Removing

- Raise vehicle. All 4 supports of lifting platform must be at same height.
- Move selector lever to position »P«.



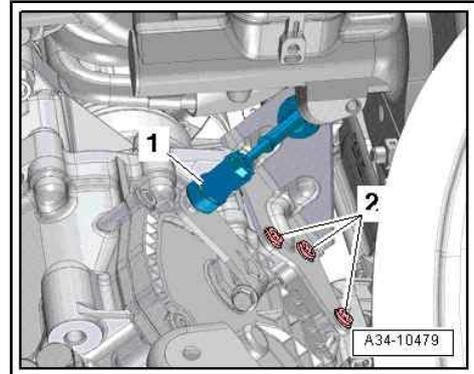
- Remove air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Using removal lever - 80 - 200- , lever selector lever cable -1- off gearbox selector lever.
- Remove bolts -2-, raise and tie selector lever cable together with support bracket.



**Caution**

**Risk of damage to selector lever cable.**

- ◆ **Do not bend or kink gear selector cable.**



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

It is advisable to remove the »lower« bolt first.

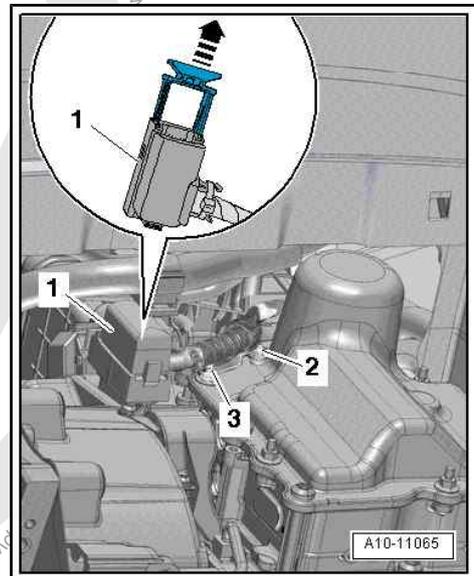


**Caution**

**Risk of damaging gearbox components beyond repair.**

- ◆ **Do not under any circumstances touch the contacts in the gearbox connector by hand. Electrostatic discharge can destroy the control unit and mechatronic unit.**

- Touch earth connection (without gloves) to discharge static electricity.
- Disconnect electrical connector -1- for mechatronic unit for dual clutch gearbox - J743- . To do this, pull locking element upwards -arrow-.
- Unscrew nuts -2- and -3- and remove wiring retainer from gearbox.
- Raise and tie wiring in area of gearbox cover.

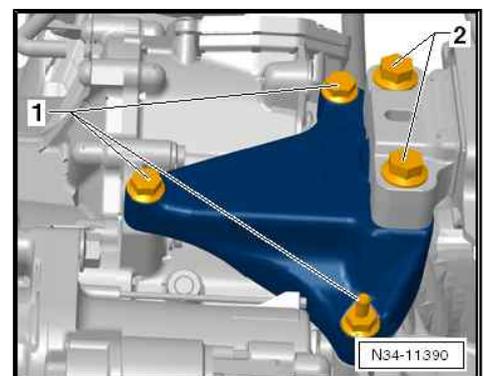
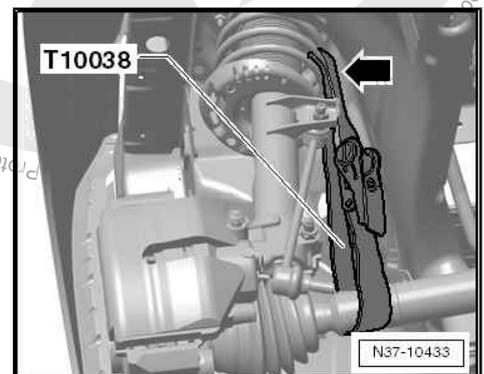
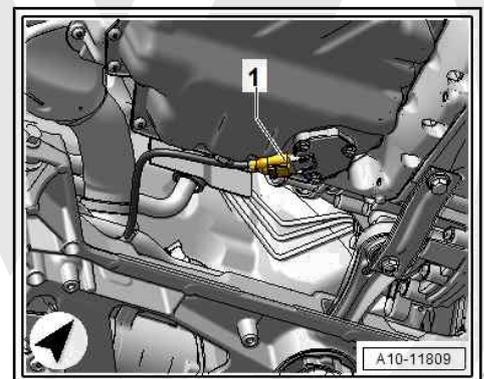
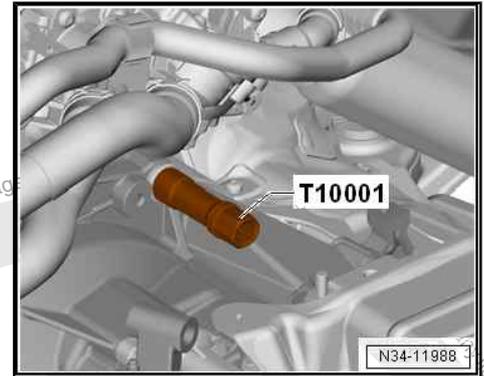




- Unscrew upper engine/gearbox connecting bolts with a suitable socket from shock absorber set - T10179- or insert tool 18 mm - T10001- .
- If there are hose and cable connections in area of engine support eyes for support bracket - 10-222A- , remove these now.
- Support engine and gearbox in installation position => Rep. gr. 10 ; Assembly mountings; Supporting engine in installation position .
- Remove noise insulation => General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Remove front left wheel housing liner => General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- Disconnect connector -1- from oil level and oil temperature sender - G266- .
- Remove subframe without steering rack => Running gear, axles, steering; Rep. gr. 40 ; Subframe; Removing and installing subframe without steering rack .
- Disconnect both drive shafts from gearbox => Running gear, axles, steering; Rep. gr. 40 ; Drive shaft: Removing and installing drive shafts .
- Secure drive shaft to suspension strut with tensioning strap - T10038- .

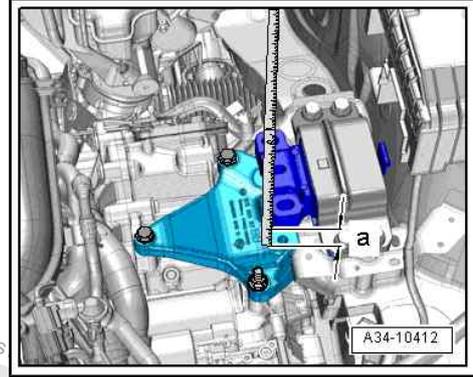
The surface protection of the shafts must not be damaged.

Unscrew all bolts -1- and -2- for gearbox bracket.

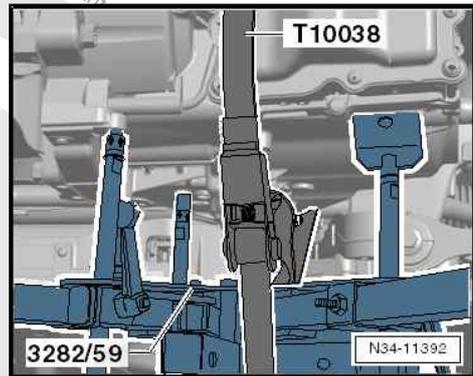




- Lower engine/gearbox assembly using spindle - 10 - 222 A / 11- until distance -a- is obtained between gearbox housing and gearbox mounting.
- Dimension -a- = 50 mm.
- Remove gearbox bracket.
- Remove all connecting bolts except one which is in an easily accessible place between engine and gearbox.
- Set up gearbox support - 3282- with adjustment plate - 3282/59- .



- Position engine and gearbox jack - VAS 6931- or -V.A.G 1383 A- under gearbox and support gearbox. Do not raise.
- Position plate of pin under gearbox housing, not under mechatronic unit.
- Screw a pin into »rear« hole for pendulum support.
- Secure gearbox with tensioning strap - T10038- to prevent it from falling down.



The gearbox is separated from the engine in this position.

- Remove last connecting bolt between engine and gearbox.
- Press gearbox off engine while »observing selector lever cable«. Slightly tilt gearbox on the outside using spindle of gearbox support - 3282- .
- Now slightly turn gearbox and lower it. Ensure that flange is guided past intermediate plate when lowering.



#### Note

*Be careful of all lines when lowering gearbox.*

Transporting gearbox ⇒ [page 103](#) .

Secure gearbox to assembly stand ⇒ [page 106](#) .

Install gearbox ⇒ [page 96](#) .

## 3.2 Installing gearbox

Install in reverse order of removal, observing the following:

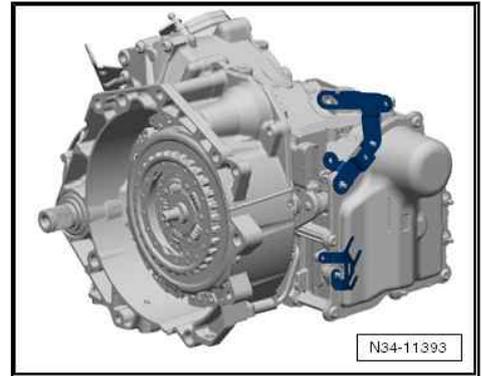


#### Note

- ◆ *Renew bolts that are tightened with turning further angle.*
- ◆ *Renew self-locking nuts and bolts as well as gaskets, seals and O-rings.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Fit all cable ties in the original position when installing.*
- ◆ *Recalibrate the immobiliser after installing a »new« gearbox.*



- In some cases, there are brackets on the front of the removed gearbox. Attach these brackets to the »new« gearbox.



In some vehicles, a cover is fitted over the engaging levers.

The cover prevents dirt getting in.

**Specified torque: 8 Nm**

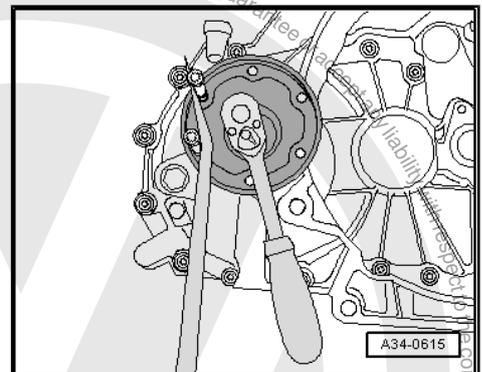
**Only 1.0 l petrol engine:**

- Remove right flange shaft.



- To remove or install flange shaft, screw 2 bolts into flange and counterhold flange shaft with a lever.
- Remove flange shaft with compression spring.
- Close opening in drive shaft using a suitable plug.

**All vehicles:**

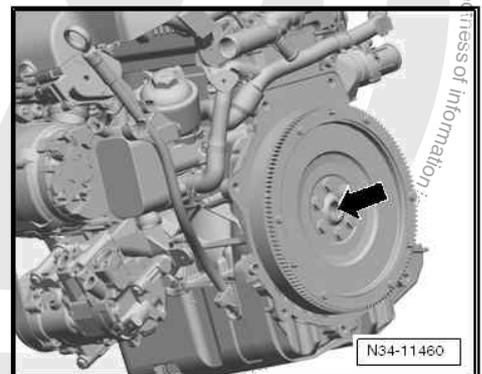


- Renew needle bearing -arrow- in crankshaft => Rep. gr. 13 ; Crankshaft; Renewing needle bearing in crankshaft .



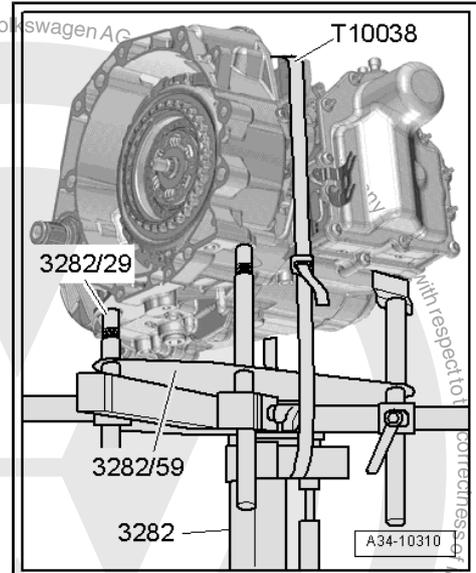
**Note**

*If the needle bearing in the crankshaft is damaged, the gears cannot be selected properly any more because the clutch is supported on this bearing.*

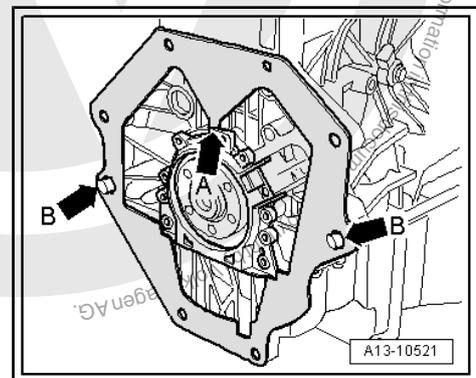




- Fit gearbox onto gearbox support - 3282- and secure it in place.
- Clean input shaft splines and splines of torsional damper, remove corrosion and lubricate splines with only a very thin coating of grease ⇒ Electronic Parts Catalogue (ETKA) . Remove excess grease.

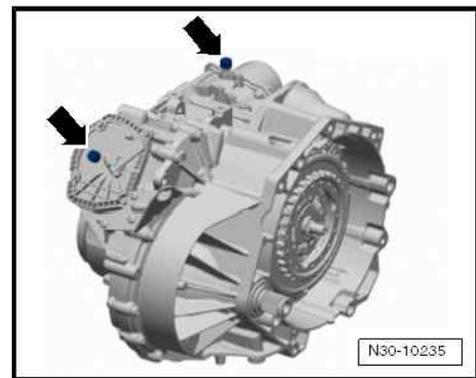


- Make sure that the dowel sleeves -arrows B- for centring engine and gearbox are fitted in cylinder block and that the intermediate plate is fitted on the dowel sleeves. Insert any missing dowel sleeves.
- For some engines, make sure that the intermediate plate is attached to the sealing flange -arrow A-
- Carefully raise gearbox using engine and gearbox jack - V.A.G 1383 A- and move it to installation position with gearbox support - 3282- .
- Bolt gearbox to engine.



If the gearbox has been sealed so that no oil can escape, e.g. after a gearbox repair or after gearbox has been renewed:

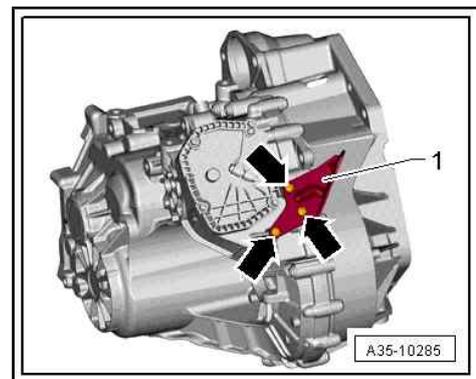
- Remove both plugs from breathers -arrows- and install breather caps (renew if necessary).



- Bolt cable support bracket -1- to gearbox.

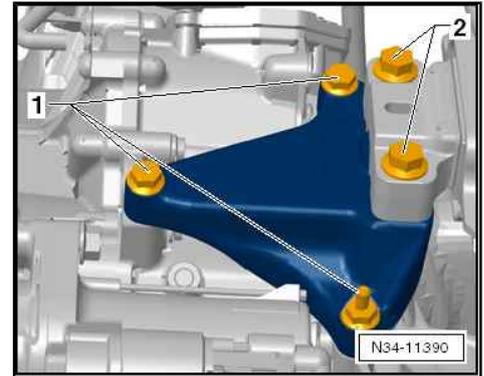
Install left assembly mounting as follows:

- Always renew all bolts on left assembly mountings.





- Bolt gearbox bracket -1- to gearbox.



- The bracket can be moved within its seat with a screwdriver when bolts -2- are tightened ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings .

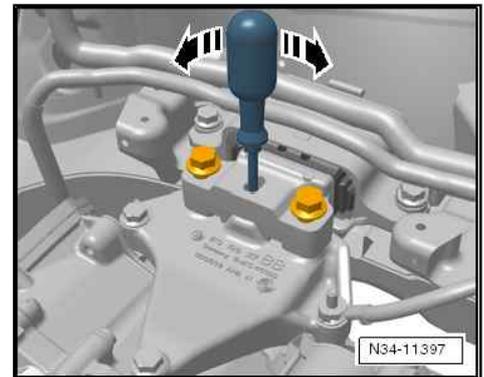
#### Vehicles with diesel engine:

- Install charge air cooler ⇒ Rep. gr. 21 ; Charge air system; Removing and installing charge air cooler .

#### All vehicles:

Continue installation in reverse order of removal.

- If subframe has been removed, install it ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview - subframe .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts .
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- If present, install heat shield above right drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .
- Check selector lever cable adjustment and adjust it if necessary ⇒ [page 77](#) .

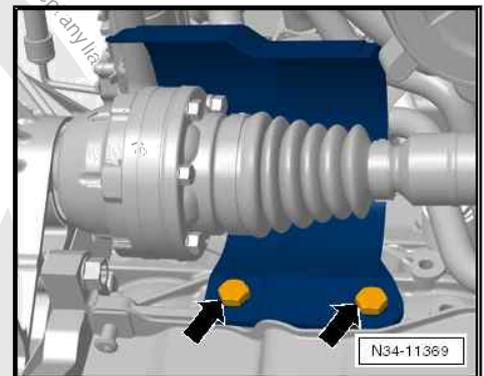


#### Note

Recalibrate the immobiliser after installing a »new« gearbox via vehicle diagnostic tester [\[Guided functions\]](#).

#### Specified torques

- ◆ Gearbox to engine ⇒ [page 100](#)
- ◆ Gearbox bracket to gearbox ⇒ [page 100](#)
- ◆ Wire retainer to gearbox cover ⇒ [page 100](#)
- ◆ Selector cable support bracket to gearbox ⇒ [page 68](#)
- ◆ Flange shaft to gearbox ⇒ [page 100](#)

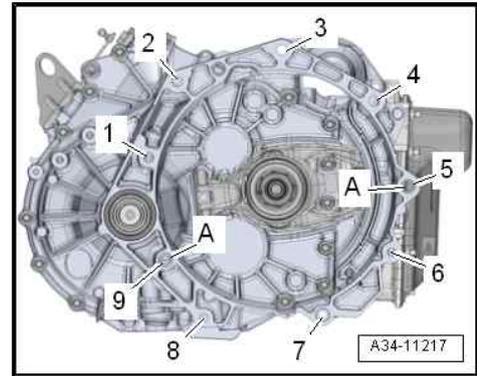




### 3.3 Specified torques for gearbox

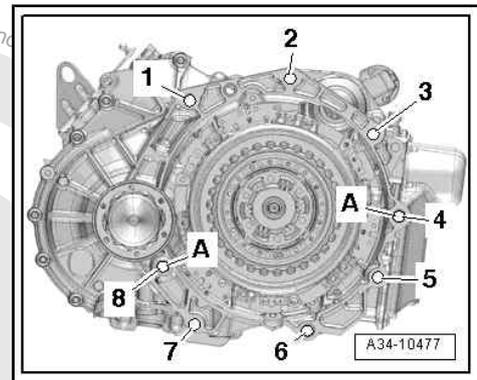
Gearbox to petrol engine:

Item	Bolt	Nm
1, 5, 9	M12×70	80
2, 4	M12x50	80
3 <sup>1)</sup> , 2)	M12x165	80
6, 7, 8	M10x55	40
A	Dowel sleeves for centring	
<ul style="list-style-type: none"> <li>• 1) Also secures starter</li> <li>• 2) Centre hex stud</li> </ul>		



Gearbox to diesel engine:

Item	Bolt	Nm
1, 3 <sup>3)</sup>	M12x55	80
2 <sup>1)</sup> , 2)	M12x150	80
4, 8	M12×65	80
5, 6, 7	M10x55	40
A	Dowel sleeves for centring	
<ul style="list-style-type: none"> <li>• 1) Also secures starter</li> <li>• 2) Centre hex stud</li> <li>• 3) With insert tool T10179 or T10509: »65 Nm«</li> </ul>		



Component	Specified torque
Cable retainer to gearbox cover.	10 Nm
Flange shaft to gearbox	30 Nm

Specified torques for assembly mounting ⇒ [page 101](#)



## 4 Assembly mountings

### 4.1 Assembly overview - assembly mountings

#### 1 - Bolt

- Renew
- Tightening sequence ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 2 - Engine support

- Specified torque and tightening sequence ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 3 - Engine mounting

- With support arm
- Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 4 - Bolt

- Renewing ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 5 - Bolt

- Renewing ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 6 - Bolt

- Specified torque ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 7 - Bracket

#### 8 - Bolt

- Renew
- Specified torque ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 9 - Pendulum support

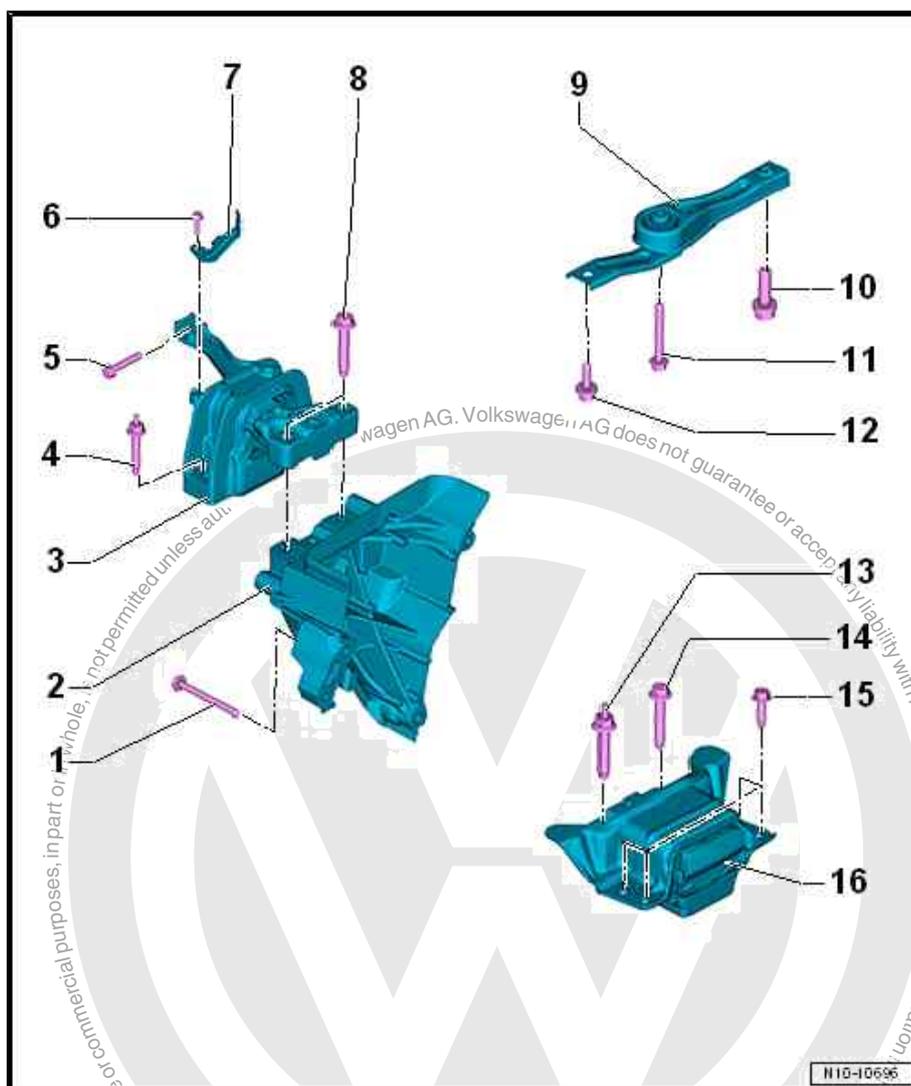
- Removing and installing ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview - subframe

#### 10 - Bolt

- Renew
- Specified torque and tightening sequence ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

#### 11 - Bolt

- Renew





- ❑ Specified torque and tightening sequence ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

## 12 - Bolts

- ❑ Renew
- ❑ Specified torque and tightening sequence ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

## 13 - Bolt

- ❑ Renew
- ❑ Specified torque ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

## 14 - Bolt

- ❑ Renew
- ❑ Specified torque ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

## 15 - Bolt

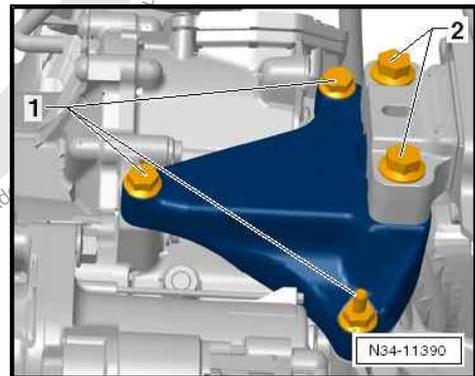
- ❑ Renew
- ❑ Specified torque ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

## 16 - Gearbox mounting

- ❑ With support arm
- ❑ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### Gearbox bracket to gearbox:

- Renew bolts after removing.
- Specified torque 40 Nm and then turn 90° further

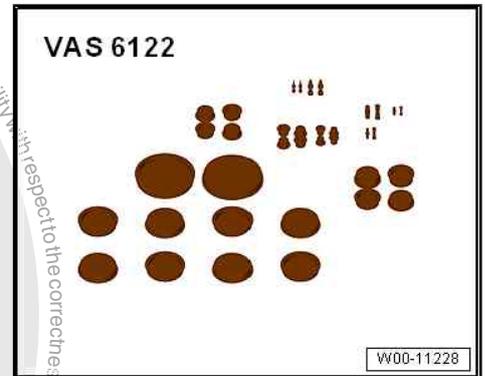




## 5 Transporting gearbox

### Special tools and workshop equipment required

- ◆ Workshop hoist - VAS 6100-
- ◆ Shackle - 10 - 222 A /12-
- ◆ Engine bung set - VAS 6122-





Seal gearbox so that no oil can escape.

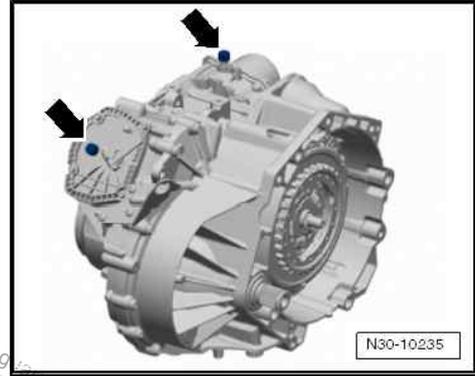


### Caution

**Risk of damage to gearbox.**

**Before repairs, the breather of the mechatronic unit for dual clutch gearbox - J743- (-rear arrow-) and the gearbox breather (-front left arrow-) must be sealed so that no oil can escape.**

- ◆ **If any oil escapes from the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743-, it is not possible to check the fill level! The fill level can only be set correctly by changing the hydraulic fluid.**
- ◆ **If oil escapes from the gear oil section, it can only be rectified by changing the gear oil. It is not possible to check the fill level.**
- ◆ **If the level of oil/fluid is too high or too low in either of the parts, the function of the gearbox will be impaired.**



- Pull off both breather caps -arrows-.



### Note

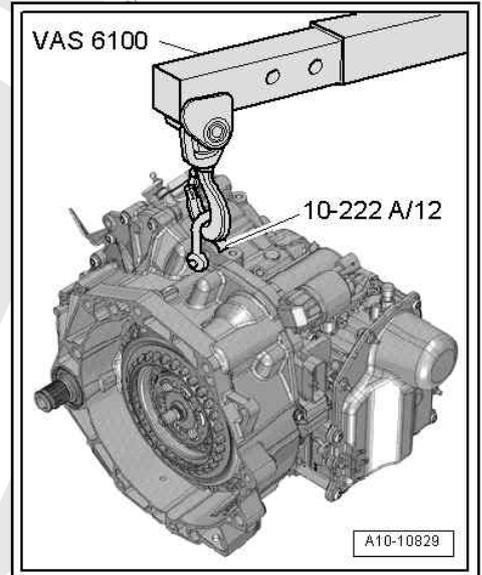
- ◆ **The breather cap on the mechatronic unit is destroyed during removal and must be renewed.**
- ◆ **As an alternative to the engine bung set - VAS 6122- the sealing cap - 02M 409 120- can be used to seal the gearbox. The mechatronic unit can be sealed using sealing cap - 0AM 325 120 A- as an alternative ⇒ Electronic parts catalogue (ETKA) .**
- Seal gearbox breather and breather of mechatronic unit for dual clutch gearbox - J743- with clean sealing plugs from engine bung set - VAS 6122- so that no oil can escape.
- Order new breather cap for mechatronic unit for dual clutch gearbox - J743- ; breather cap must be renewed after installing gearbox ⇒ Electronic parts catalogue (ETKA) .
- Once the gearbox has been installed in the vehicle, the sealing plugs must be removed and the breather caps reinstalled, or new ones fitted if necessary.



**Transporting gearbox:**

Requirement:

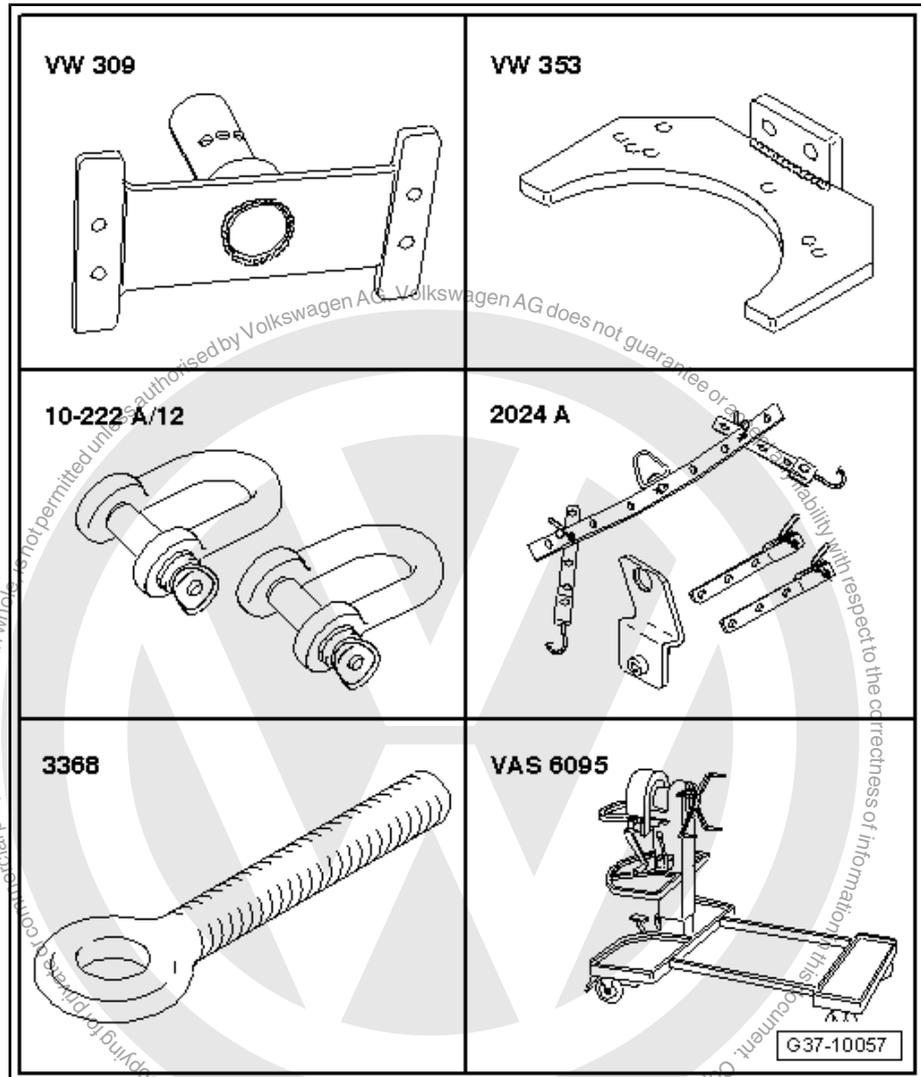
- Gearbox is sealed so that no oil can escape ⇒ [page 104](#) .





## 6 Securing to engine and gearbox support

Special tools and workshop equipment required



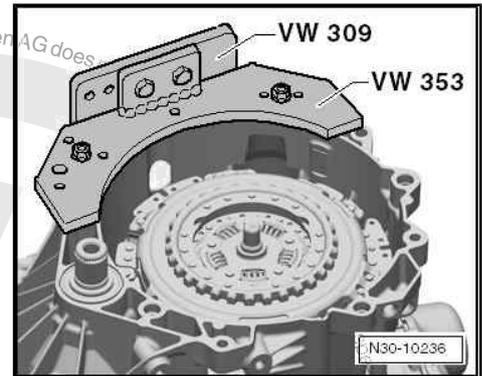
- ◆ Support plate - VW 309-
- ◆ Gearbox support - VW 353-
- ◆ Shackle - 10 - 222 A /12-
- ◆ Lifting tackle - 2024 A-
- ◆ Lifting eye bolt - 3368-
- ◆ Engine and gearbox support - VAS 6095-
- ◆ Workshop hoist - VAS 6100-



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

Requirement:

- Gearbox is sealed so that no oil can escape ⇒ [page 104](#) .

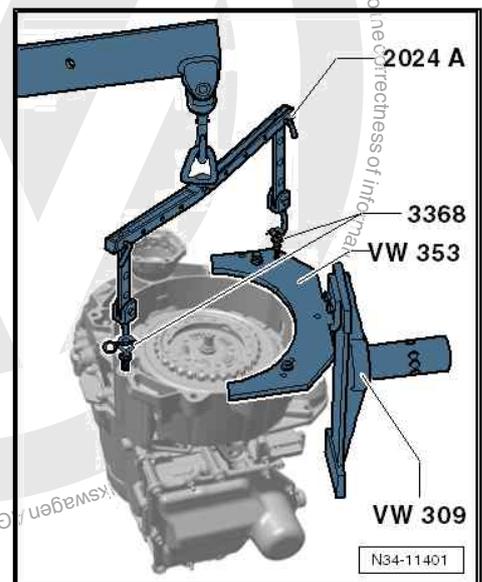


### Lifting gearbox into engine and gearbox support

Requirement:

- Gearbox is sealed so that no oil can escape ⇒ [page 104](#) .

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 .





## 7 Gear oil

⇒ [“7.1 Draining and filling gear oil”, page 108](#)

⇒ [“7.2 Draining and filling hydraulic fluid for mechatronic unit”, page 110](#)

### 7.1 Draining and filling gear oil

Special tools and workshop equipment required

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



- ◆ Adapter for filling oil - VAS 6262 A- with -VAS 6262/4-



- ◆ Extension - VAS 6262/7-



**The gearbox is filled for life. Therefore, there is no need to check the oil level of this gearbox.**

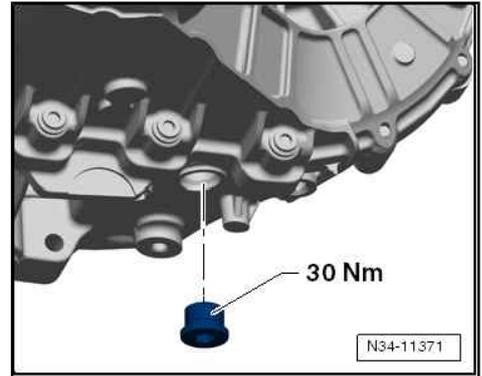
**This explains why there is no oil level check.**

If the gearbox has started leaking, check where the oil is coming from.

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



- Then drain remaining oil.
- Repair leak.
- Then install the drain plug again.

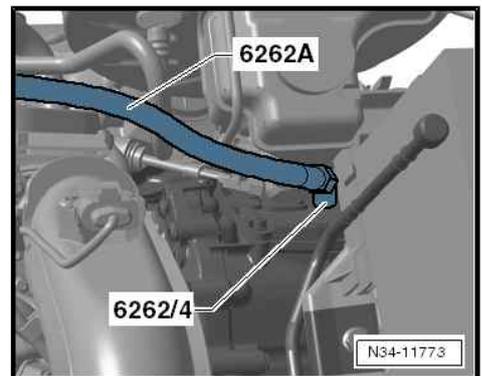


The new oil is poured in through the breather hole.

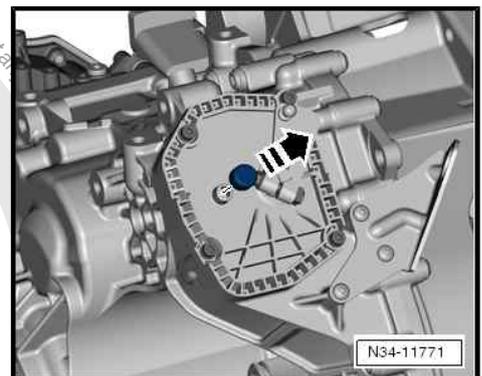
**Vehicles with diesel engine:**

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

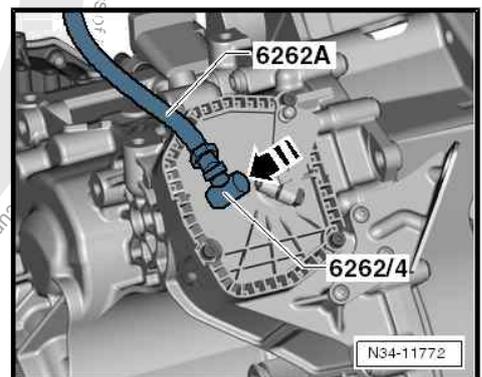
**Continued for all vehicles:**



- Pull cap off breather hole.



- Fit oil filling adapter - VAS 6262 A- with adapter - VAS 6262/4- on breather hole.





**WARNING**

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

**Note**

- ◆ Only the gear oil for the 7-speed dual clutch gearbox 0CW, which is available through the replacement parts system, may be used ⇒ Electronic parts catalogue (ETKA) .
- ◆ Breather pipe of adapter for oil filling - VAS 6262 A- may need to be shortened.



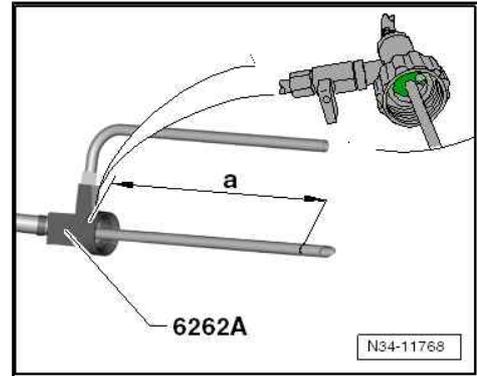
- In order to ensure that the breather pipe of the adapter for oil filling - VAS 6262 A- does not contact the bottom of some oil bottles, the pipe must be shortened to the length -a-.

Dimension -a- = 210 mm

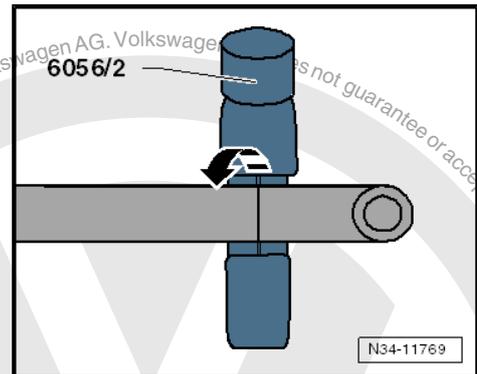


**Note**

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



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



- Bolt extension - VAS 6262/7- onto bottle. Then screw on, adapter for oil filling - VAS 6262 A- .

- Fill 1.7 l of oil.

The oil is available as a replacement part; Part no. ⇒ Electronic Parts Catalogue (ETKA) .

After filling, remove oil filling adapter - VAS 6262 A- . Clean area around breather hole with a cloth and fit the breather cap.

**Vehicles with diesel engine:**

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



## 7.2 Draining and filling hydraulic fluid for mechatronic unit

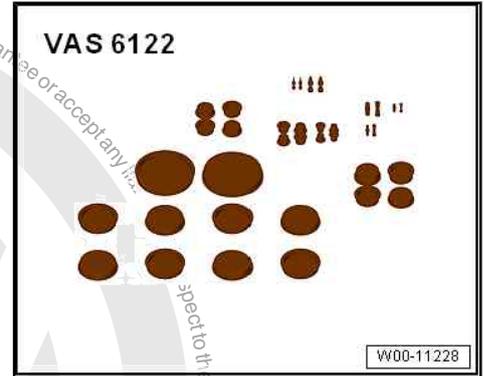
**Special tools and workshop equipment required**

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





- ◆ Engine bung set - VAS 6122



- ◆ Funnel, commercially available

The hydraulic fluid for the mechatronic unit is filled for the entire lifetime of the unit. It is not possible to check the oil level.

**Caution**

**Risk of damaging mechatronic unit.**

- ◆ Use only the hydraulic fluid which is available as a replacement part for the mechatronic unit ⇒ Electronic parts catalogue (ETKA).
- ◆ Other oils will lead to malfunctions or failure of the mechatronic unit.
- ◆ It is not possible to check the fill level of the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743-. During installation work the breather of the dual clutch gearbox mechatronic unit - J743- must be sealed so that no oil can escape. If any oil escapes from the hydraulic fluid section of the mechatronic unit for dual clutch gearbox - J743-, it is not possible to check the fill level!
- ◆ The fill level can only be set correctly by changing the hydraulic fluid. It is not possible to check the fill level.
- ◆ If the fill level is too low or too high, the operation of the mechatronic unit will be impaired.

**Requirement**

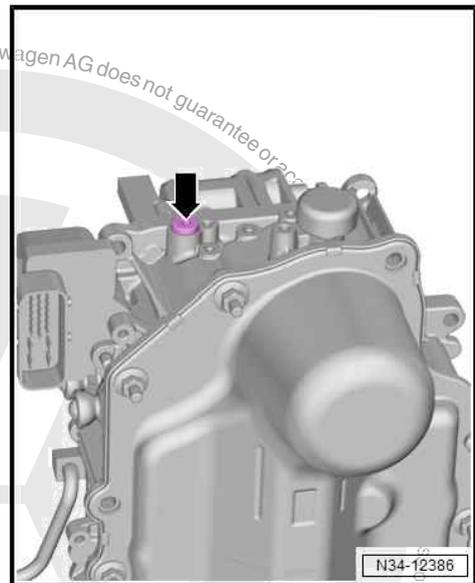
- ◆ Mechatronic unit is removed ⇒ [page 42](#)



### Draining hydraulic fluid

- Remove oil filler plug -arrow-.

Renew bolt after each removal.

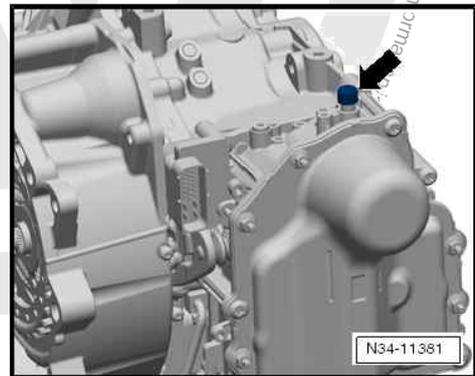


- If still fitted, remove cap from bleeder hole -arrow-.



#### WARNING

*For some gearboxes the breather cap on the mechatronic unit is destroyed during removal and must be renewed.*



#### Note

*When turning the mechatronic unit, the oil will flow out of both the oil drilling and the bleeder hole. Make sure to hold both openings over the tray of the used oil collection and extraction unit - V.A.G 1782- .*

- Turn over mechatronic unit, and drain oil completely.

### Filling with hydraulic fluid:



#### Note

*Do not fill new oil until all repair work on the mechatronic unit has been completed.*

- After the oil has been drained completely, turn mechatronic unit back. The oil filler hole faces upwards.



- Fit a clean commercially available funnel into oil filler hole.
- Shake the oil bottle before opening it.
- Pour in 0.9 l of hydraulic fluid.
  - Install new oil filler plug.

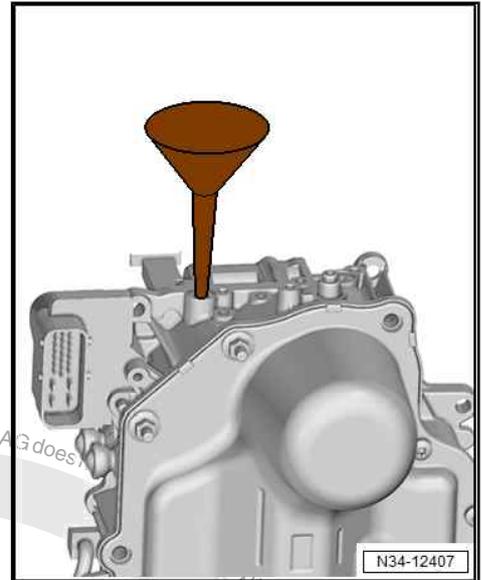
Specified torque 5 Nm and then turn 90° further



**Caution**

***Risk of damaging mechatronic unit.***

- ◆ ***The fill level can only be set correctly by changing the hydraulic fluid. It is not possible to check the fill level.***
- ◆ ***If the fill level is too low or too high, the operation of the mechatronic unit will be impaired.***



- Seal bleeder hole of mechatronic unit using a clean plug from engine bung set - VAS 6122. This will prevent any oil from flowing unintentionally out of the hole.
- Installing mechatronic unit => [page 42](#)





## 35 – Gears, shafts

### 1 Parking lock

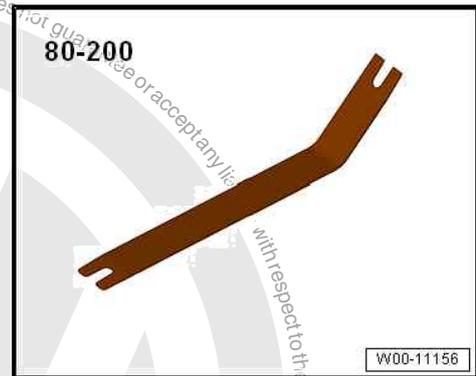
⇒ "1.1 Removing and installing cover for parking lock",  
page 114

⇒ "1.2 Removing and installing parking lock", page 115

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

Special tools and workshop equipment required

- ◆ Release lever - 80 - 200-



#### Removing

- Gearbox is installed.
- Selector lever positioned in »P«.

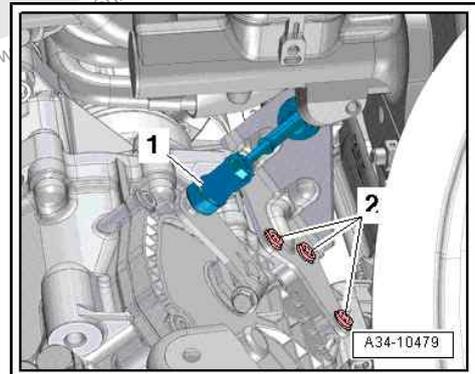
**Golf, Golf Estate, Golf SV, Polo: only diesel engine**

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

**Continued for all vehicles:**

- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Using removal lever - 80 - 200- , lever selector lever cable -1- off gearbox selector lever.

Disregard bolts -2-.





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

### Installing

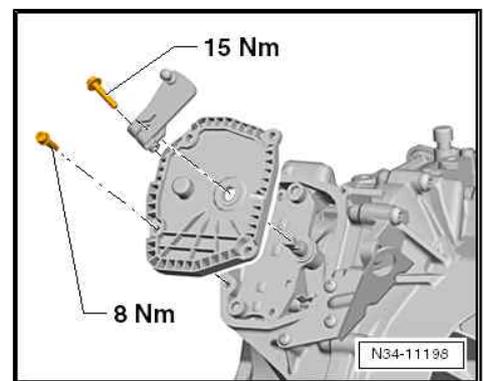
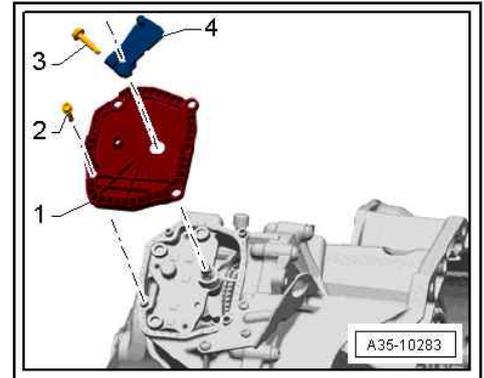
Cover for parking lock must be renewed if seal for selector shaft or seal on cover for parking lock is leaking.

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

Continue installation in reverse order of removal.

- Install battery and battery tray => Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Adjust selector lever cable => [page 77](#) .

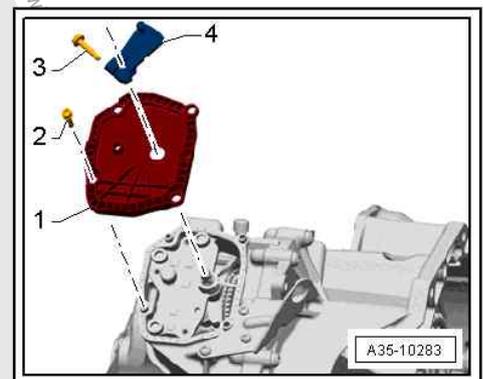
Specified torques:



## 1.2 Removing and installing parking lock

### Removing

- Gearbox is installed.
- Remove cover for parking lock -1- => [page 114](#) .





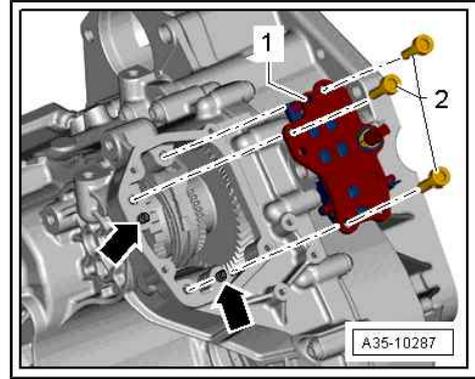
- Remove bolts -2- and pull parking lock -1- off dowel sleeves -arrows-.

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.
- Always renew bolts -2-.

#### Installing

- Fit parking lock -1- onto dowel sleeves -arrows-.
- Screw in new bolts -2-, specified torque 20 Nm + 90° further.
- Install cover for parking lock -1- ⇒ [page 114](#) .





## 39 – Final drive - differential

### 1 Seals

⇒ [“1.1 Overview of fitting locations - seals”, page 117](#)

⇒ [“1.2 Renewing left seal”, page 117](#)

⇒ [“1.3 Renewing right oil seal”, page 120](#)

#### 1.1 Overview of fitting locations - seals

##### 1 - Left flange shaft

##### 2 - Bolt

- Always renew after removing
- 30 Nm

##### 3 - Left seal

- For left flange shaft
- Renewing ⇒ [page 117](#)

##### 4 - Bolt

- Always renew after removing
- 30 Nm

##### 5 - Right flange shaft or stub shaft

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

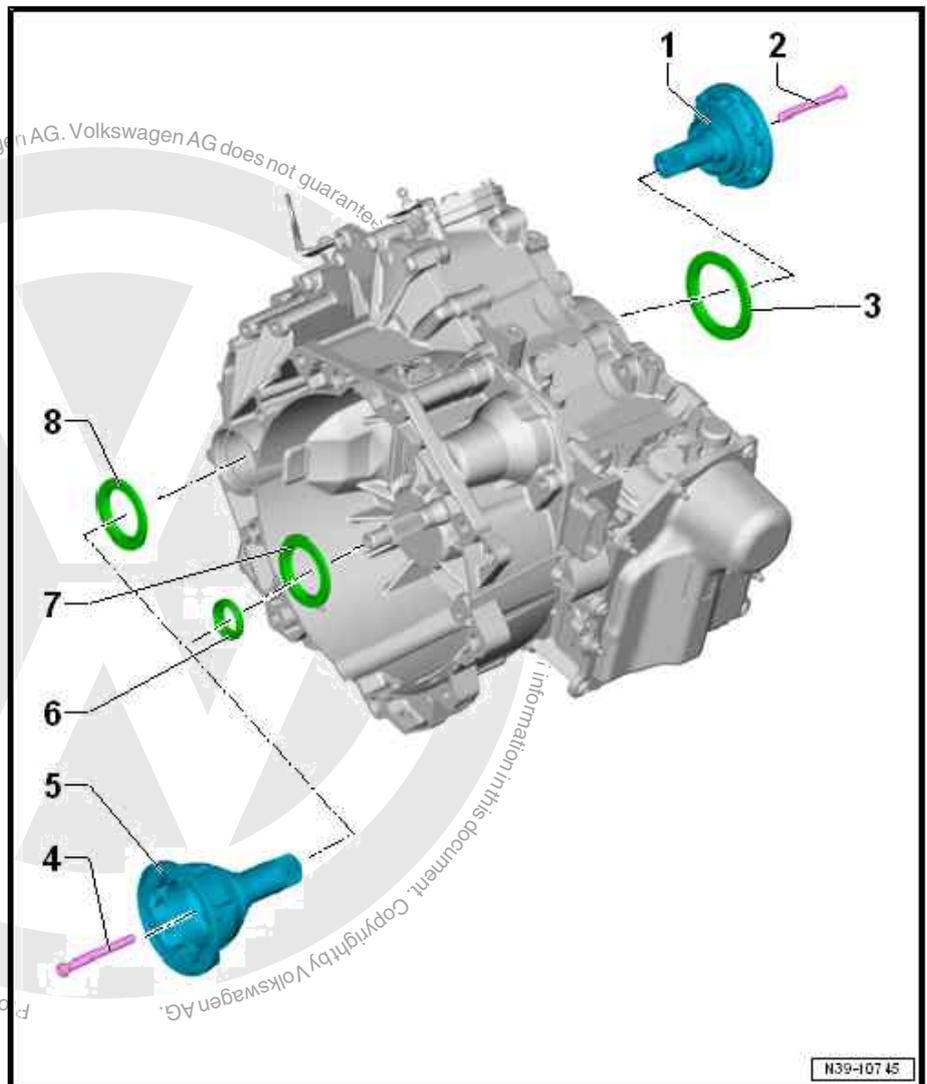
- Renewing ⇒ [page 38](#)

##### 7 - Input shaft seal

- Renewing ⇒ [page 37](#)

##### 8 - Sealing ring, right

- For right flange shaft
- Renewing ⇒ [page 120](#)

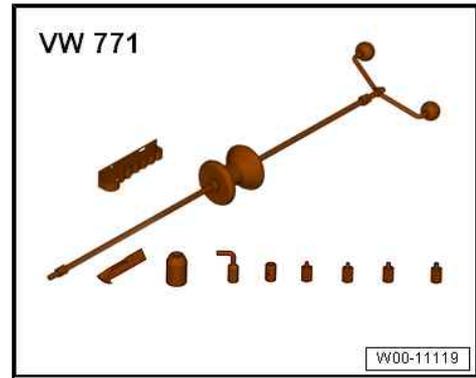


#### 1.2 Renewing left seal

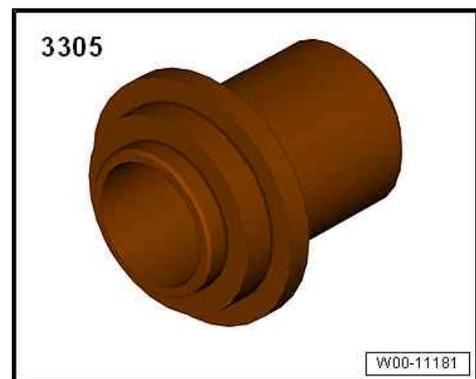
Special tools and workshop equipment required



- ◆ Multi-purpose tool - VW 771-



- ◆ Press tool - 3305-



- ◆ Socket and extended bit 6 mm - T10107 A-



- ◆ Sealing grease ⇒ Electronic parts catalogue (ETKA)

### Removing

- Gearbox is installed.



Note

⇒ *“3 Repair instructions”, page 4* Comply with notes.

- Raise vehicle. All 4 supports of lifting platform must be at same height.
- Move selector lever to position »P«.

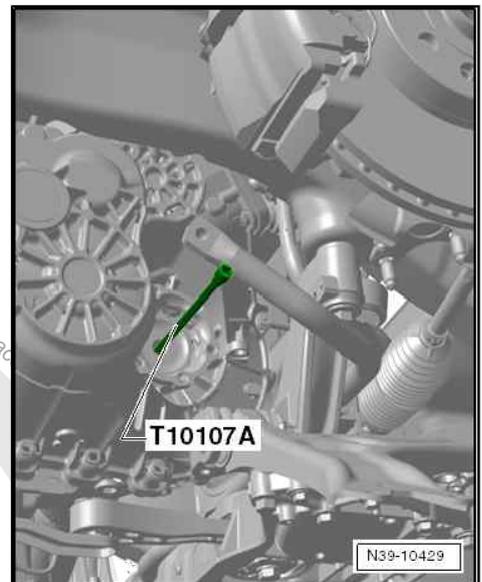
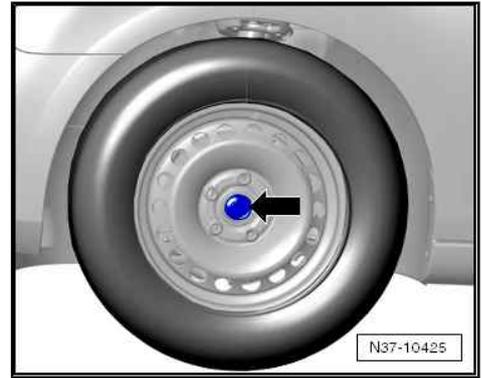


Note

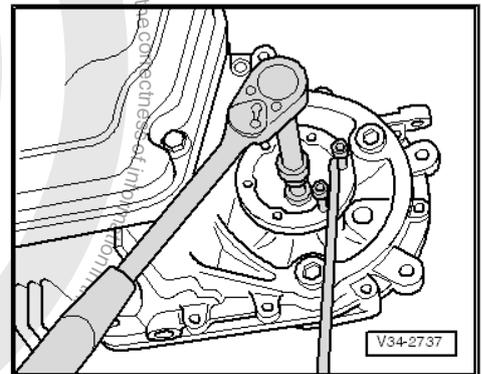
After loosening centre bolt, do not lower vehicle to ground again.



- Step on the brake pedal while a second mechanic loosens the left drive shaft bolt -arrow-.
- Remove noise insulation => General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Drain gear oil => [page 108](#) .
- Remove lower part of front left wheel housing liner => General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- Remove left drive shaft => Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts .
- Remove left flange shaft of gearbox using socket - T10107 A- . Bolt has a 6 mm hexagon socket. Bolt can also be removed and installed with socket - V.A.G 1669- .



- To remove or install flange shaft, screw 2 bolts into flange and counterhold flange shaft with a lever.
- Remove flange shaft along with spring, thrust washer and tapered ring.

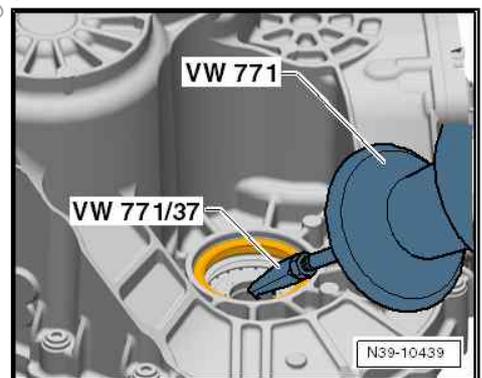


- Pull out oil seal using multi-purpose tool - VW 771- and hooks - VW 771/37- .

### Installing

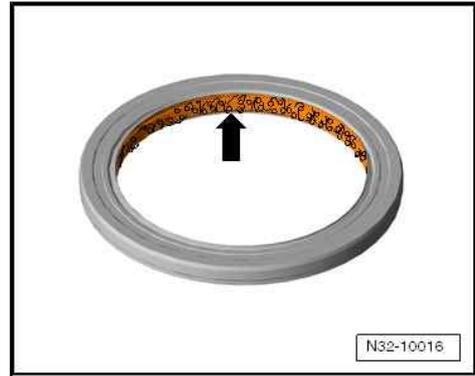
Install in reverse order of removal, observing the following:

- Lubricate outer circumference of new oil seal with gear oil.





- Fill space between sealing lip and dust lip -arrow- with sealing grease ⇒ Electronic Parts Catalogue (ETKA) .

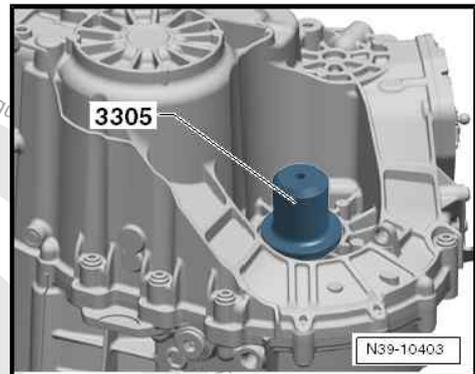


- Drive in new oil seal to stop, being careful not to cant oil seal.



#### Note

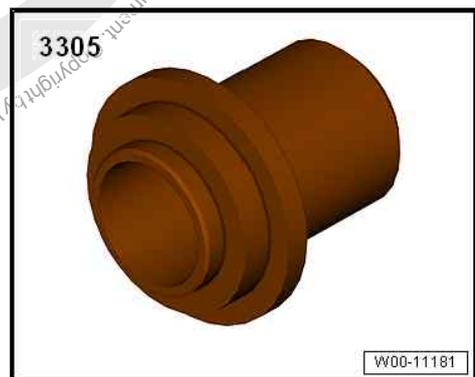
- ◆ *Renew flange shaft countersunk bolt.*
- ◆ *Press flange shaft against spring force into gearbox so that bolt engages in threaded piece of differential.*
- Fit flange shaft and secure with new countersunk bolt. Specified torque: ⇒ [page 117](#)
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts .
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Removing and installing front wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview – noise insulation .
- Top up gear oil ⇒ [page 108](#) .



### 1.3 Renewing right oil seal

#### Special tools and workshop equipment required

- ◆ Press tool - 3305-





- ◆ Socket and extended bit 6 mm - T10107 A-



- ◆ Tensioning strap - T10038-



- ◆ Sealing grease ⇒ Electronic parts catalogue (ETKA)

### Removing

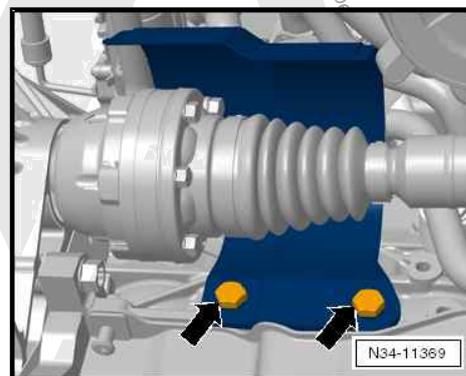
- Gearbox is installed.



### Note

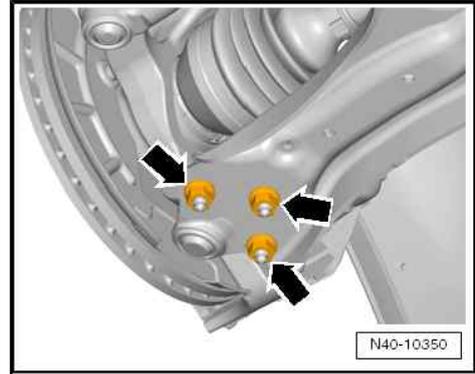
⇒ ***"3 Repair instructions", page 4*** *Comply with notes.*

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Drain gear oil ⇒ [page 108](#) .
- If present, remove heat shield above right drive shaft.
- Turn steering to right to full lock.
- Disconnect right drive shaft from gearbox ⇒ Running gear, axles, steering; Rep.gr. 40 ; Drive shaft: Removing and installing drive shafts

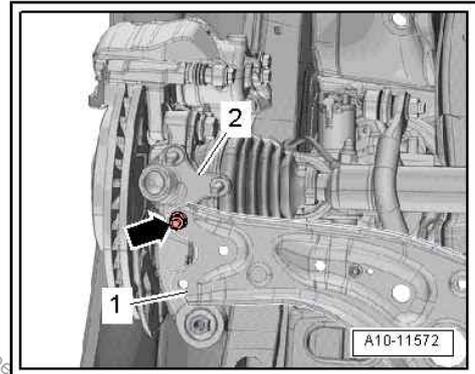




- Unscrew nuts -arrows- for right swivel joint.
- If fitted, unscrew nut on bracket for front right vehicle level sender - G289- .
- Detach right swivel joint from transverse link.

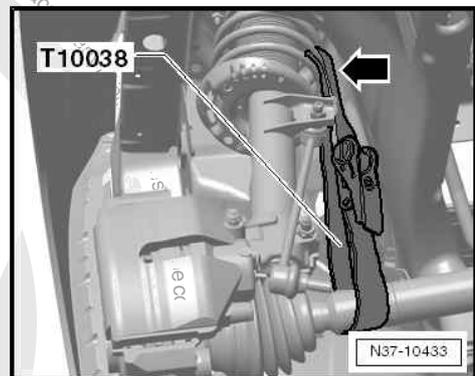


- Secure right swivel joint -2- to transverse link -1- with a nut -arrow- as shown in illustration.



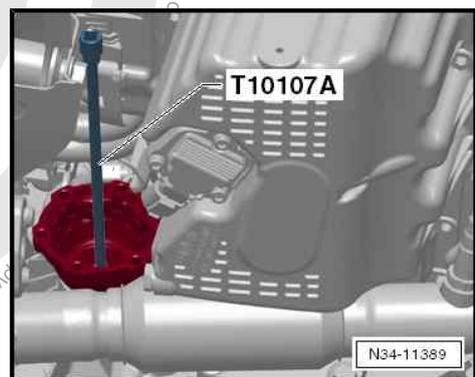
- Secure right drive shaft to suspension strut with tensioning strap - T10038- .

The surface protection of the shaft must not be damaged.



- Remove right flange shaft of gearbox using socket - T10107 A- .

Bolt has a 6 mm hexagon socket. It can also be removed and installed with hexagon key - V.A.G 1669- .





- To remove or install flange shaft, screw 2 bolts into flange and counterhold flange shaft with a lever.
- Remove flange shaft along with spring, thrust washer and tapered ring.
- Pry seal out using assembly lever.

### Installing

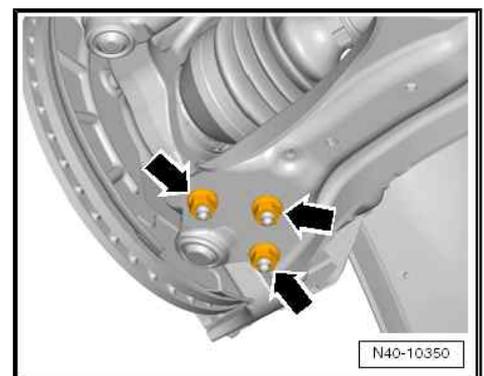
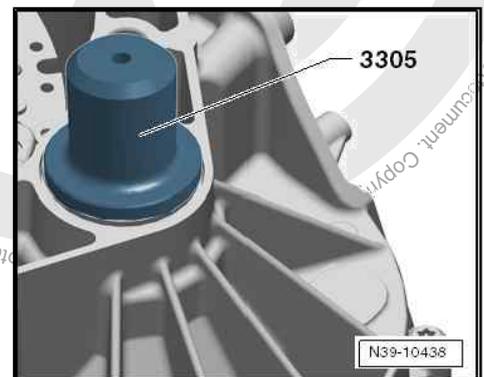
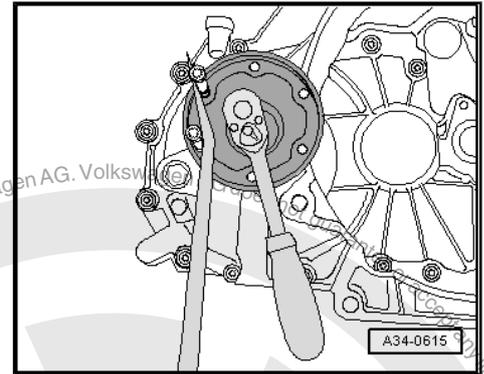
Install in reverse order of removal, observing the following:

- Lubricate outer circumference of new oil seal with gear oil.
- Fill space between sealing lip and dust lip - arrow - with sealing grease ⇒ Electronic Parts Catalogue (ETKA) .
- Drive in new oil seal to stop, being careful not to cant oil seal.



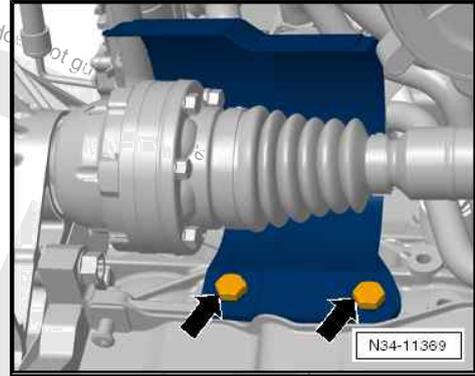
### Note

- ◆ *Renew flange shaft countersunk bolt.*
- ◆ *Press flange shaft against spring force into gearbox so that bolt engages in threaded piece of differential.*
- Fit flange shaft and secure with new countersunk bolt. Specified torque: ⇒ [page 117](#)
- Install swivel joint ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower suspension link, swivel joint; Assembly overview - lower suspension link, swivel joint .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts .





- If present, install heat shield above right drive shaft. Specified torque ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview – noise insulation .
- Top up gear oil ⇒ [page 108](#) .



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