

## Workshop Manual

### Audi A3 2004 ➤

### Audi A3 Cabriolet 2008 ➤

|                            |
|----------------------------|
| 6-speed manual gearbox 02S |
|----------------------------|

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## List of Workshop Manual Repair Groups

### Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

39 - Final drive - front differential



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

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## 00 – Technical data

### 1 Gearbox identification

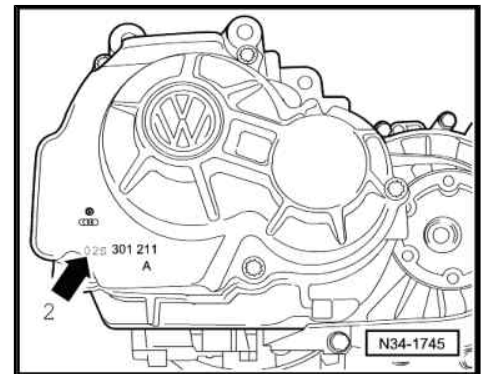
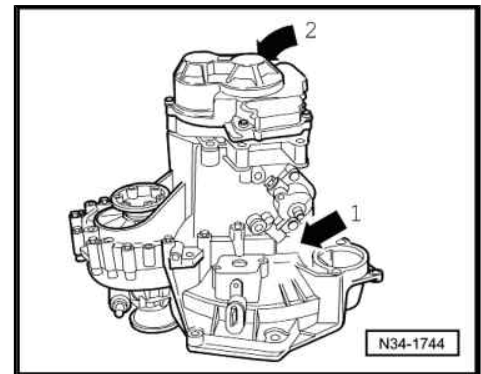
- ⇒ „1.1 Code letters, allocation, transmission ratios, capacities“, page 1

#### Location on gearbox

- ◆ Code letters and date of manufacture -arrow 1-
- ◆ -Arrow 2- manual gearbox 02S

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#### Manual gearbox 02S -arrow 2-



#### Code letters and date of manufacture of gearbox

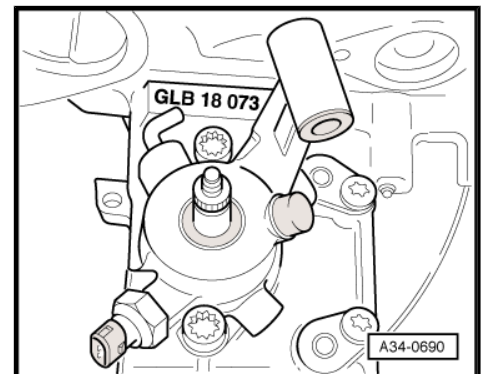
|          |              |     |       |                            |
|----------|--------------|-----|-------|----------------------------|
| Example: | GLB          | 18  | 07    | 3                          |
|          |              |     |       |                            |
|          | Code letters | Day | Month | Year (2003) of manufacture |

Additional data are manufacture-related.



#### Note

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



### 1.1 Code letters, allocation, transmission ratios, capacities

The following data can be found in the ⇒ Electronic parts catalogue .

- ◆ Individual gear ratios
- ◆ Gear oil specification
- ◆ Allocation of flange shafts
- ◆ Allocation of clutch type



| Manual gearbox                                                                             |             | 6-speed 02S           |                       |                       |
|--------------------------------------------------------------------------------------------|-------------|-----------------------|-----------------------|-----------------------|
| Code letters                                                                               |             | FNC                   | GLB                   | GQP                   |
| Manufactured                                                                               | from<br>to  | 02.03<br>03.03        | 02.03<br>08.03        | 08.03<br>05.04        |
| Allocation                                                                                 | Model       | Audi A3 2004 ►        | Audi A3 2004 ►        | Audi A3 2004 ►        |
|                                                                                            | Engine      | 2.0 ltr. - 110 kW FSI | 2.0 ltr. - 110 kW FSI | 2.0 ltr. - 110 kW FSI |
| Ratio<br>Z1 : Z2                                                                           | Final drive | 62 : 17 = 3.647       | 62 : 17 = 3.647       | 62 : 17 = 3.647       |
| Capacity of manual gearbox<br>(gearbox completely dismantled)                              |             | 2.1 ltr.              |                       |                       |
| Capacity of manual gearbox<br>⇒ <a href="#">page 137</a> (gearbox partially<br>dismantled) |             | 1.9 ltr.              |                       |                       |

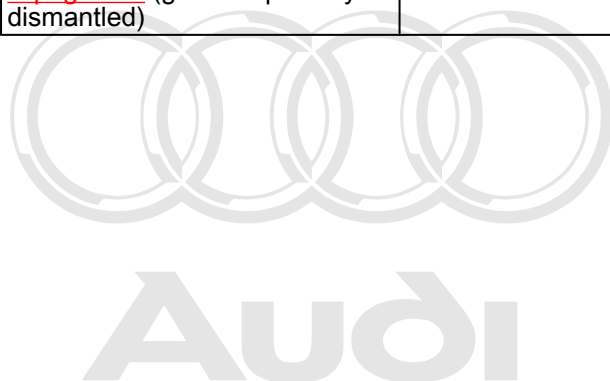
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| Manual gearbox                                                                             |             | 6-speed 02S                      |                       |                                               |
|--------------------------------------------------------------------------------------------|-------------|----------------------------------|-----------------------|-----------------------------------------------|
| Code letters                                                                               |             | HXP                              | JCN                   | JWX                                           |
| Manufactured                                                                               | from<br>to  | 10.06<br>11.06                   | 06.06<br>08.06        | 01.07<br>05.08                                |
| Allocation                                                                                 | Model       | Audi A3 2004 ►                   | Audi A3 2004 ►        | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► |
|                                                                                            | Engine      | 1.8 ltr. - 118 kW FSI tur-<br>bo | 2.0 ltr. - 110 kW FSI | 1.8 ltr. - 118 kW FSI tur-<br>bo              |
| Ratio<br>Z1 : Z2                                                                           | Final drive | 62 : 17 = 3.647                  | 62 : 17 = 3.647       | 62 : 17 = 3.647                               |
| Capacity of manual gearbox<br>(gearbox completely dismantled)                              |             | 2.1 ltr.                         |                       |                                               |
| Capacity of manual gearbox<br>⇒ <a href="#">page 137</a> (gearbox partially<br>dismantled) |             | 1.9 ltr.                         |                       |                                               |

| Manual gearbox                                                                             |             | 6-speed 02S           |                                               |                                               |
|--------------------------------------------------------------------------------------------|-------------|-----------------------|-----------------------------------------------|-----------------------------------------------|
| Code letters                                                                               |             | JXR                   | KVT                                           | MDP                                           |
| Manufactured                                                                               | from<br>to  | 08.06<br>06.08        | 05.08<br>11.09                                | 11.09<br>06.10                                |
| Allocation                                                                                 | Model       | Audi A3 2004 ►        | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► |
|                                                                                            | Engine      | 2.0 ltr. - 110 kW FSI | 1.8 ltr. - 118 kW FSI tur-<br>bo              | 1.8 ltr. - 118 kW FSI tur-<br>bo              |
| Ratio<br>Z1 : Z2                                                                           | Final drive | 62 : 17 = 3.647       | 62 : 17 = 3.647                               | 62 : 17 = 3.647                               |
| Capacity of manual gearbox<br>(gearbox completely dismantled)                              |             | 2.1 ltr.              |                                               |                                               |
| Capacity of manual gearbox<br>⇒ <a href="#">page 137</a> (gearbox partially<br>dismantled) |             | 1.9 ltr.              |                                               |                                               |

| Manual gearbox |  | 6-speed 02S |     |     |
|----------------|--|-------------|-----|-----|
| Code letters   |  | MUE         | MUF | NMY |

| Manual gearbox                                                                    |             | 6-speed 02S                                   |                                               |                                               |
|-----------------------------------------------------------------------------------|-------------|-----------------------------------------------|-----------------------------------------------|-----------------------------------------------|
| Manufactured                                                                      | from<br>to  | 11.10                                         | 06.10<br>11.10                                | 11.10                                         |
| Allocation                                                                        | Model       | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► | Audi A3 2004 ►<br>Audi A3 Cabriolet 2008<br>► |
|                                                                                   | Engine      | 1.8 ltr. - 118 kW FSI tur-<br>bo              | 1.8 ltr. - 118 kW FSI tur-<br>bo              | 1.8 ltr. - 118 kW FSI tur-<br>bo              |
| Ratio<br>Z1 : Z2                                                                  | Final drive | 62 : 17 = 3.647                               | 62 : 17 = 3.647                               | 62 : 17 = 3.647                               |
| Capacity of manual gearbox<br>(gearbox completely dismantled)                     |             | 2.1 ltr.                                      |                                               |                                               |
| Capacity of manual gearbox<br>⇒ <b>page 137</b> (gearbox partially<br>dismantled) |             | 1.9 ltr.                                      |                                               |                                               |



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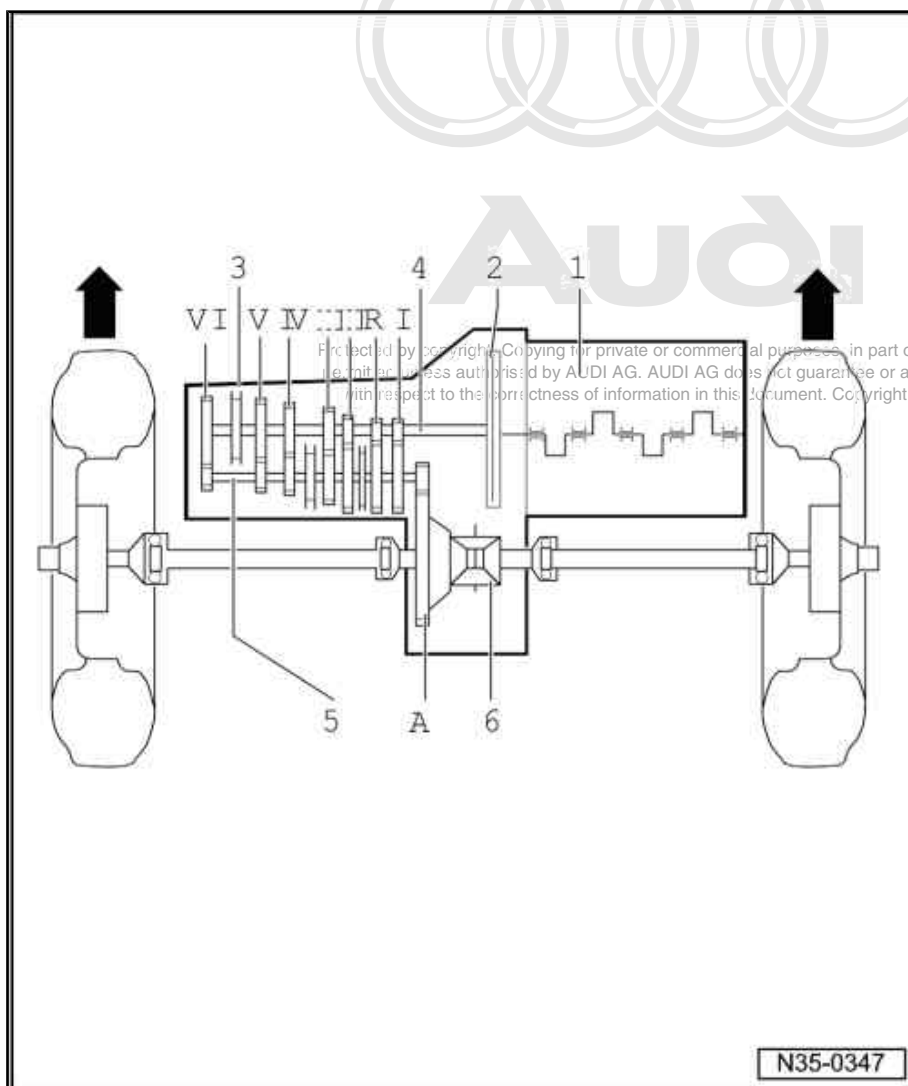
## 2 Transmission layout



### Note

Arrows point in direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual gearbox
- 4 - Input shaft (main shaft)
- 5 - Output shaft
- 6 - Differential
- I - 1st gear
- II - 2nd gear
- III - 3rd gear
- IV - 4th gear
- V - 5th gear
- VI - 6th gear
- R - Reverse gear
- A - Final drive



### 3 Calculating ratio „i“

Example:

|             | 6th gear    | Final drive |
|-------------|-------------|-------------|
| Drive gear  | $ZG_1 = 38$ | $ZA_1 = 17$ |
| Driven gear | $ZG_2 = 31$ | $ZA_2 = 62$ |

$$i = Z_2 : Z_1 \text{ } ^{1)}$$

$$i_G = \text{gear ratio} = ZG_2 : ZG_1 = 31 : 38 = 0.816$$

$$i_A = \text{axle ratio} = ZA_2 : ZA_1 = 62 : 17 = 3.647$$

$i_{ov}$  = overall ratio

$$i_{ov} = i_G \times i_A = 0.816 \times 3.647 = 2.975$$

1)  $Z_1$  = No. of teeth on drive gear,  $Z_2$  = No. of teeth on driven gear



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## 4 General repair instructions

Proper tools and the maximum possible care and cleanliness are essential for satisfactory repairs to the transmission units. The usual basic safety precautions also naturally apply when carrying out repair work.

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 to the work described in this Manual.

### Special tools

- ◆ For a complete list of special tools used in this Workshop Manual ➔ Workshop equipment and special tools

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### Gearbox

- ◆ Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- ◆ When installing the gearbox, ensure that the dowel sleeves between the engine and the gearbox are correctly located.
- ◆ For allocation of bolts and other components, refer to ➔ Electronic parts catalogue .
- ◆ Clean contact surfaces when assembling mounting brackets and waxed components. The contact surfaces must be free of wax and grease.
- ◆ For gear oil specification, refer to ➔ Electronic parts catalogue .
- ◆ Gear oil must be filled up as required after repairing the gearbox.

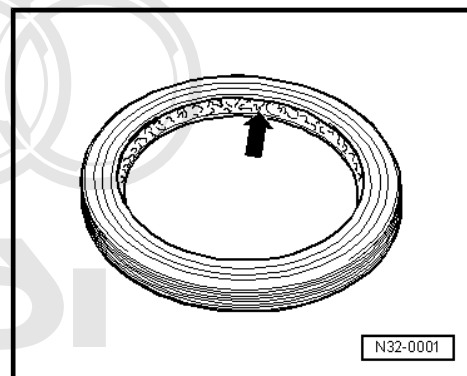
| Capacity (gearbox completely dismantled) | Capacity (gearbox partially dismantled) ➔ <a href="#">page 137</a> |
|------------------------------------------|--------------------------------------------------------------------|
| 2.1 ltr.                                 | 1.9 ltr.                                                           |

### Sealants

- ◆ Thoroughly clean housing contact surfaces before applying sealing paste .
- ◆ Apply sealing paste -AMV 188 200 03- evenly and not too thick.
- ◆ Breather holes must remain free of sealing paste .

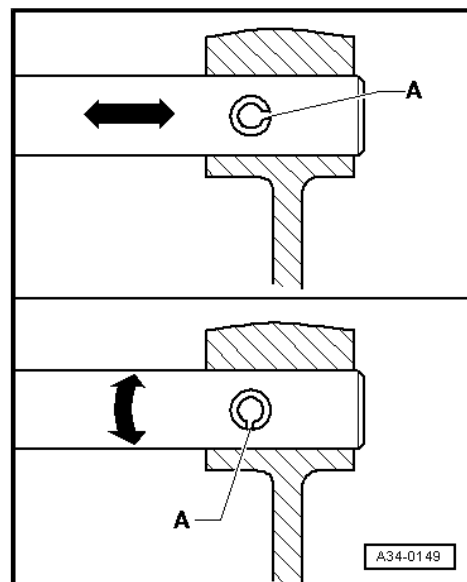
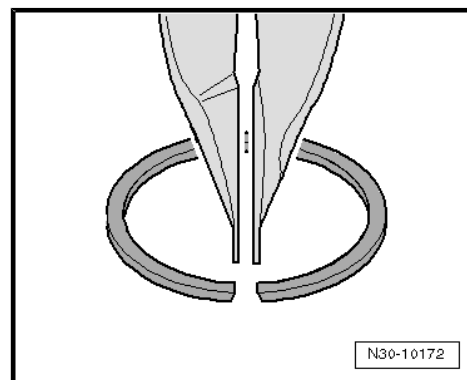
## Oil seals, seals, O-rings and gaskets

- ◆ Always renew oil seals, O-rings and gaskets.
- ◆ After removing gaskets and oil seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ Before installing oil seals, lightly oil the outer circumference of the seal and fill the space between the sealing lips -arrow- about half full with grease -G 052 128 A1- .
- ◆ The open side of the oil seal should face the side containing the fluid.
- ◆ When installing a new oil seal, position the seal such that the sealing lip does not contact the shaft in the same place as the old seal (make use of installation depth tolerances).
- ◆ Lightly lubricate O-rings with oil before installation to prevent them being trapped during assembly.
- ◆ Check oil level after installing new gaskets, O-rings and oil seals ➔ [page 137](#) .



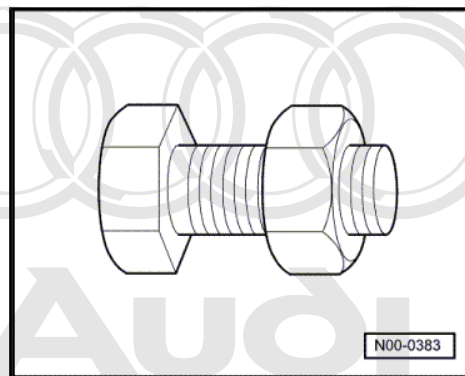
## Locking elements

- ◆ Do not over-stretch circlips.
- ◆ Installation position for some circlips: the circlip is fitted so that the narrow part of the gap is at the top. This also gives the pliers a better grip when removing and installing.
- ◆ Always renew circlips which have been damaged or over-stretched.
- ◆ Circlips must be properly seated in the base of the groove.
- ◆ Renew spring pins. Position: the slit -A- should be in line with the line of force -arrow-.



## Nuts, bolts

- ◆ Loosen the nuts and bolts in reverse sequence to the specified tightening sequence.
- ◆ Nuts and bolts which secure covers and housings should be loosened and tightened in diagonal sequence and in stages if no tightening sequence is specified.
- ◆ Loosen and tighten particularly sensitive parts in diagonal sequence and in stages, taking care to keep them straight.
- ◆ Always renew self-locking nuts and bolts.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.
- ◆ Use a wire brush to clean the threads of bolts which are secured with locking fluid. Then apply locking fluid - AMV 185 101 A1- to bolt threads before installing.
- ◆ Threaded holes which take self-locking bolts or bolts coated with locking fluid must be cleaned (using a thread tap or similar). Otherwise there is a danger of the bolts shearing off the next time they are removed.
- ◆ For all threaded connections, ensure that (where applicable) the contact surfaces and the nuts and bolts are not coated with wax until after assembly is completed.



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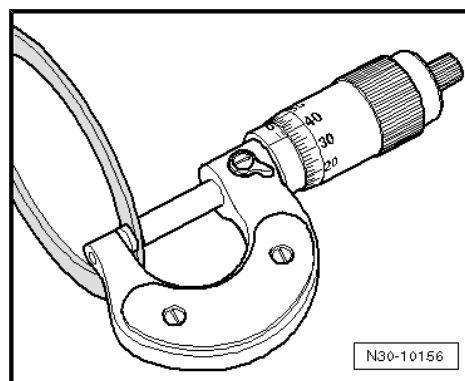
## Bearings

- ◆ Lubricate all bearings in gearbox housing with gear oil before installing.
- ◆ Use inductive heater -VAS 6414- to heat inner races of tapered roller bearings to approx. 100°C before installing. Press home onto stop when installing so there is no axial clearance.
- ◆ Do not interchange the outer or inner races of bearings of the same size (the bearings are paired).
- ◆ If required, renew the tapered roller bearings on one shaft together and use new bearings from a single manufacturer.
- ◆ Install needle bearings, ball sleeves and roller bearings so the lettering (side with thicker metal) faces towards the installing tool.

## Shims

- ◆ Use a micrometer to measure the shims at several points. Tolerance variations make it possible to obtain the exact shim thickness required.
- ◆ Check for burrs and damage.
- ◆ Install only shims which are in perfect condition.

## Synchro-rings



- ◆ Do not interchange synchro-rings. When reusing always fit to the same selector gear.
- ◆ Check for wear; renew if necessary.
- ◆ Check the grooves -arrow 1- on synchro-ring -A- and on inner ring for wear (flattened sections in grooves).
- ◆ Make sure that the coating of coated synchro-rings is not damaged.
- ◆ If an intermediate ring -B- is fitted, check the outer contact surface -arrow 2- and inner contact surface -arrow 3- of the intermediate ring for »scoring«, »visible traces of wear« and »blue discolouration (caused by overheating)«.
- ◆ Check chamfer on selector gear for scoring and visible traces of wear.
- ◆ Lubricate synchro rings with gear oil before installing.

### Gear wheels

- ◆ Clean before pressing on.
- ◆ Use inductive heater -VAS 6414- to heat to approx. 100°C before installing. Press home onto stop when installing so there is no axial clearance.
- ◆ Note correct installation position.

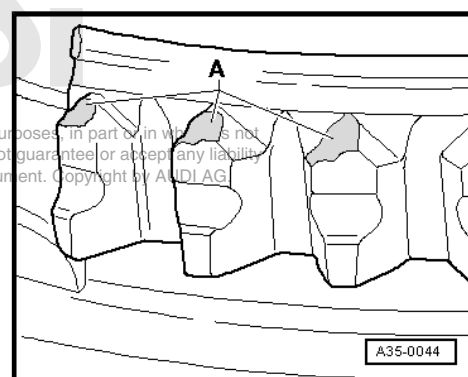
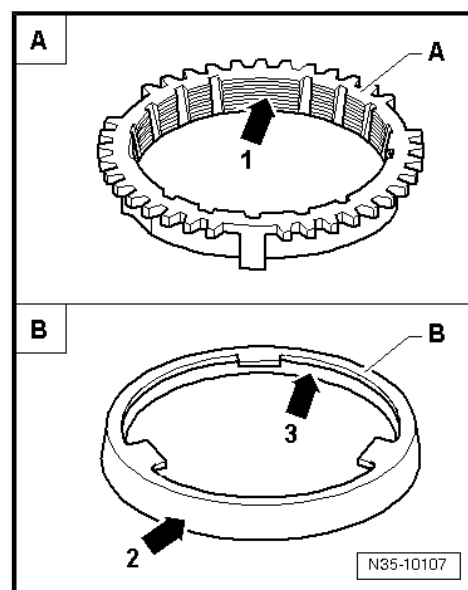
### Selector gears and locking collars

- ◆ After installing, check 1st to 6th speed selector gears for minimal axial play and freedom of movement.

- ◆ Abnormal wear on synchro-ring or selector gear:

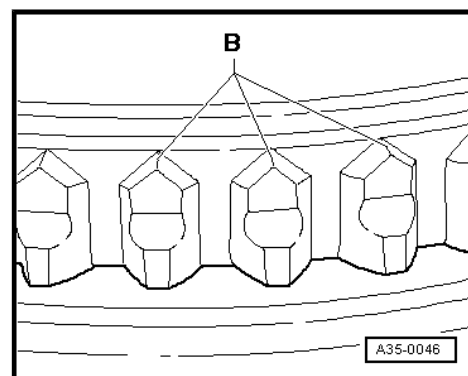
A - Worn chamfer on dog teeth of synchro-ring or selector gear.

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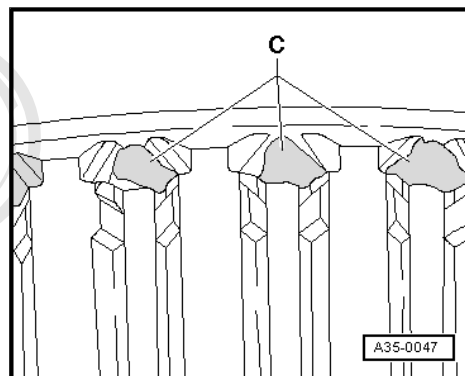
- ◆ In comparison: intact synchro-ring or selector gear:

B - Intact chamfer on dog teeth of synchro-ring or selector gear.



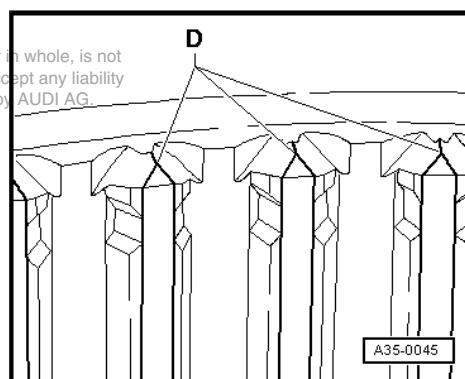
- ◆ Abnormal wear on locking collar:

C - Worn chamfer on internal splines of locking collar.



- ◆ In comparison: intact locking collar:

D - Intact chamfer on internal splines of locking collar.



### Clutch actuation

- ◆ When removing gearbox, remove clutch slave cylinder without disconnecting pipes.
- ◆ Do not depress the clutch pedal after removing the clutch slave cylinder if the hydraulic pipe is still connected. Otherwise the piston will be pressed out of the clutch slave cylinder.
- ◆ If the clutch pedal does not return to its initial position after releasing it (clutch pedal in rest position), you must bleed the clutch system (further measures ⇒ [„2 Notes on removing and installing clutch master cylinder and slave cylinder“, page 13](#) ).
- ◆ Keep clutch pressure plate straight when removing and installing
- ◆ If the clutch has burnt out, thoroughly clean the clutch housing, flywheel and parts of the engine facing the gearbox in order to prevent odour.
- ◆ Only blow out dual-mass flywheel with compressed air.

## 5 Safety precautions for vehicles with start/stop system



### WARNING

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

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

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## 30 – Clutch

### 1 Overview - clutch mechanism



#### Note

*If you suspect a defective clutch master cylinder or clutch slave cylinder, pay attention to  
⇒ „2 Notes on removing and installing clutch master cylinder and slave cylinder“, page 13 and perform  
⇒ „2.1 Function check for clutch master cylinder and slave cylinder“, page 13 prior to renewing.*

I -  
⇒ „3 Exploded view - pedal  
cluster, clutch master cylinder“, page 15

⇒ „3.1 Removing and installing  
over-centre spring“, page 16

⇒ „3.2 Removing and installing  
clutch pedal“, page 18

⇒ „3.3 Removing and installing  
mounting bracket“, page 21

⇒ „3.4 Removing and installing  
clutch position sender G476“,  
page 24

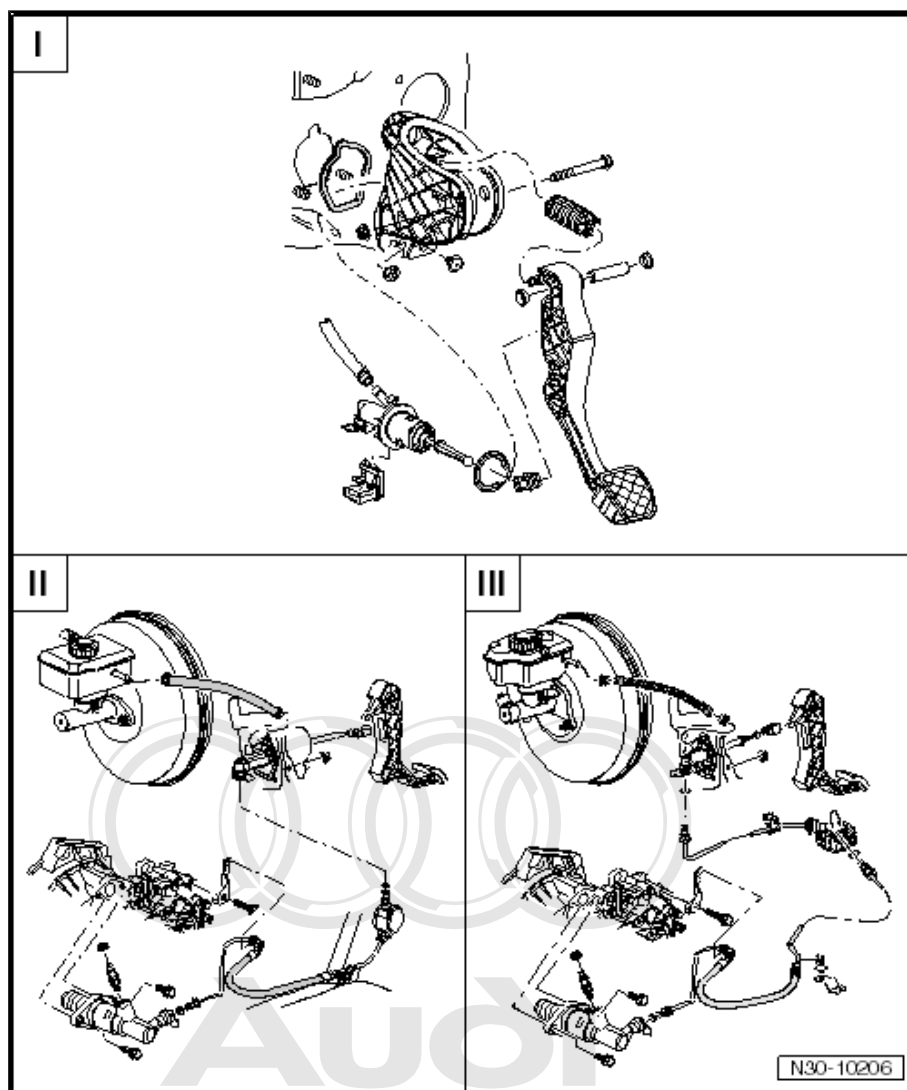
⇒ „3.5 Removing and installing  
clutch master cylinder“,  
page 26

II -  
⇒ „4 Exploded view - hydraul-  
ics (LHD)“, page 29

⇒ „4.1 Removing and installing  
clutch slave cylinder“,  
page 31

⇒ „6 Bleeding clutch system“,  
page 40

III -  
⇒ „5 Exploded view - hydraul-  
ics (RHD)“, page 38



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## 2 Notes on removing and installing clutch master cylinder and slave cylinder

- ◆ Before renewing the clutch master cylinder or slave cylinder on the assumption that it is defective, you must first carry out the appropriate function check  
⇒ [„2.1 Function check for clutch master cylinder and slave cylinder“, page 13](#) .
- ◆ If the slave cylinder is removed from gearbox with the pipe/hose assembly still attached, make sure you do not press the clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and be destroyed.
- ◆ After installing the slave cylinder, carefully press the clutch pedal. If you feel an unusually strong point of resistance when depressing the clutch pedal, you must not press it down further. The plunger of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.

### 2.1 Function check for clutch master cylinder and slave cylinder

Before you renew the clutch master cylinder or slave cylinder you must - in the case of the following faults - first carry out the appropriate checks.

#### Noises when operating the clutch:

- ◆ First check the over-centre spring / clutch pedal switch for noise.
- ◆ If you hear a noise, remove over-centre spring and repeat check.
- ◆ Renew relevant component.

#### After releasing clutch pedal it still remains depressed / does not return to its initial position.

- ◆ Check whether the clutch pedal returns all the way to its initial position, thereby uncovering the vent opening in the master cylinder.
- ◆ The vent opening is integrated in the clutch master cylinder. It is not visible from the outside.
- ◆ The vent opening must be uncovered, otherwise the permanent self-bleeding function for the hydraulic clutch system will no longer be effective.
- ◆ Make the customer aware that the driver must NOT rest his/her foot on the clutch pedal for long periods of time. This could impair the self-bleeding function of the clutch system as the vent opening in the master cylinder can no longer function.
- ◆ The self-bleeding function of the clutch system can be impaired if the footwell trim or floor mats get trapped, if the clutch pedal switch jams or if the driver rests his foot on the clutch pedal for long periods of time.

#### Check the complete hydraulic system for leaks.

- ◆ Check brake fluid level in brake fluid reservoir.
- ◆ Check clutch master cylinder and slave cylinder as well as the pipe/hose assembly including connections for external leaks (visual inspection).

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- ◆ If you identify any leaks you must renew the leaking component.
- ◆ Bleed clutch system ⇒ [page 40](#) .

**Pedal forces:**

- ◆ approx. 140 N for complete service life of the clutch

**High pedal force:**

- ◆ Mechanical fault on pressure plate/clutch plate ⇒ [page 44](#) .

**Clutch does not disengage or does not disengage fully:**

- ◆ Air in hydraulic system: bleed clutch system ⇒ [page 40](#) and check hydraulic system for external and internal leaks.
- ◆ Clutch plate does not move smoothly on input shaft splines (due to corrosion or dirt, etc.).
- ◆ Foreign body in clutch system.
- ◆ Mechanical fault on pressure plate/clutch plate ⇒ [page 44](#) .
- ◆ Wrong components used or components forgotten when carrying out repair work (e.g. intermediate plate or dowel sleeves).



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### 3 Exploded view - pedal cluster, clutch master cylinder

#### 1 - Pipe/hose assembly

- ☐ With frequency modulator
- ☐ Disconnecting from clutch master cylinder and slave cylinder  
⇒ [page 31](#)
- ☐ Removing and installing  
⇒ [page 36](#)

#### 2 - Seal or O-ring

- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing
- ☐ Whether a seal or an O-ring is used depends on the type of connection  
⇒ [page 30](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

#### 3 - Clip

#### 4 - Supply hose

- ☐ To brake fluid reservoir
- ☐ Made of rubber or plastic, depending on version
- ☐ Plastic supply hose with additional seals  
⇒ [page 30](#)

#### 5 - Nut

- ☐ 20 Nm
- ☐ 3x
- ☐ Self-locking
- ☐ Renew

#### 6 - Seal

- ☐ Renew

#### 7 - Mounting bracket

- ☐ For clutch pedal
- ☐ Removing and installing ⇒ [page 21](#)

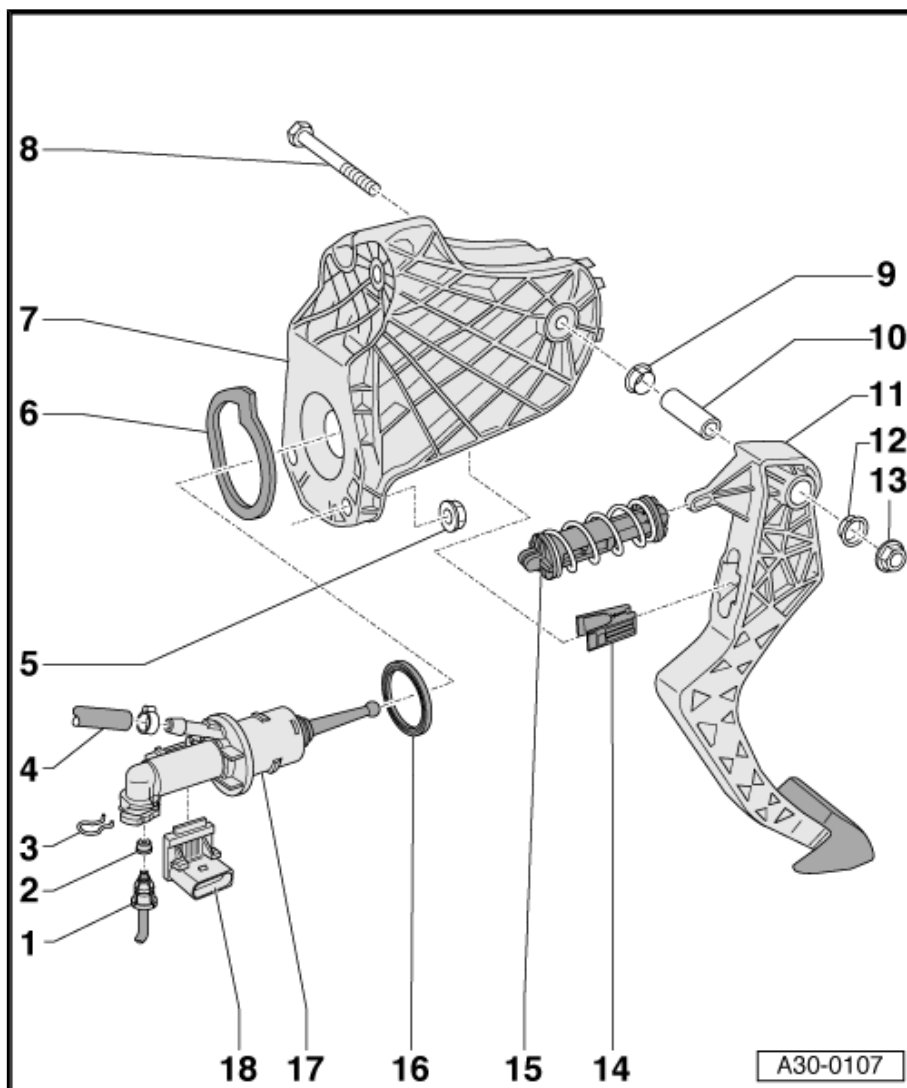
#### 8 - Bolt

#### 9 - Bearing bush

#### 10 - Pivot pin

#### 11 - Clutch pedal

- ☐ Removing and installing ⇒ [page 18](#)



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## 12 - Bearing bush

## 13 - Nut

- ☐ 25 Nm
- ☐ Self-locking
- ☐ Renew

## 14 - Retaining clip

- ☐ For operating rod on clutch master cylinder

## 15 - Over-centre spring

- ☐ Removing and installing ⇒ [page 16](#)

## 16 - Seal

- ☐ Renew

## 17 - Clutch master cylinder

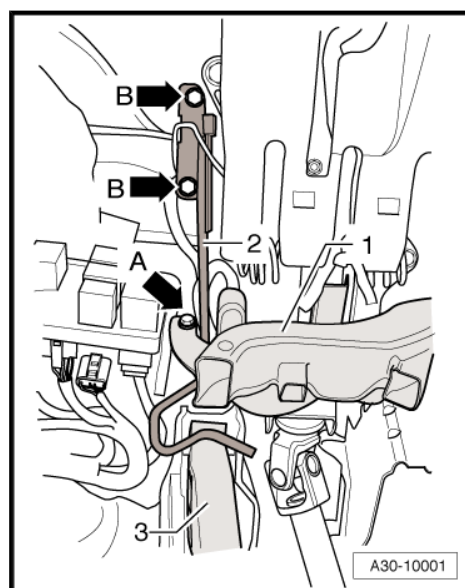
- ☐ Removing and installing ⇒ [page 26](#)

## 18 - Clutch position sender -G476-

- ☐ Removing and installing ⇒ [page 24](#)
- ☐ Can be checked in „Guided fault finding“ using ⇒ vehicle diagnostic tester

## Crash bar - tightening torque

- Install crash bar -2- and tighten 1 or 2 bolts (depending on version) -arrows B-.
- M6 - 10 Nm
- M8 - 20 Nm

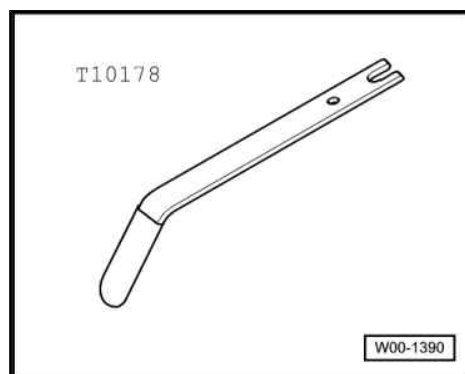


## 3.1 Removing and installing over-centre spring

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### Special tools and workshop equipment required

- ◆ Assembly tool -T10178-

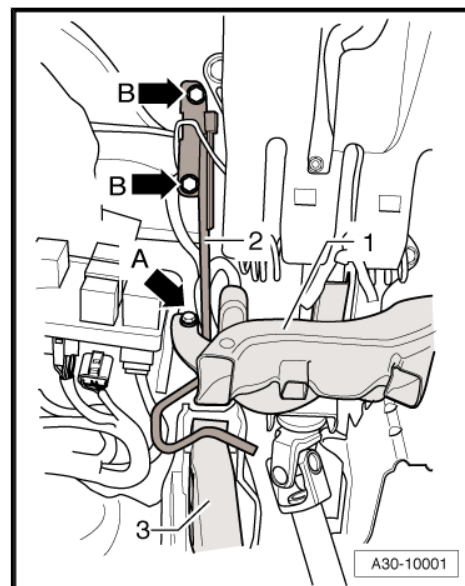


◆ Grease -G 000 450 02-

**Removing**

- Clutch pedal mounting bracket fitted in vehicle
- Move driver's seat away from pedals.
- Remove storage compartment on driver's side ⇒ General body repairs, interior; Rep. gr. 68 .
- Unscrew bolt -arrow A- and remove footwell vent (front left) -1-.
- Unclip wiring harness at rear of footwell vent -1- and move clear to one side.
- Unbolt crash bar -2- (secured by one or two bolts -arrows B-, depending on version).

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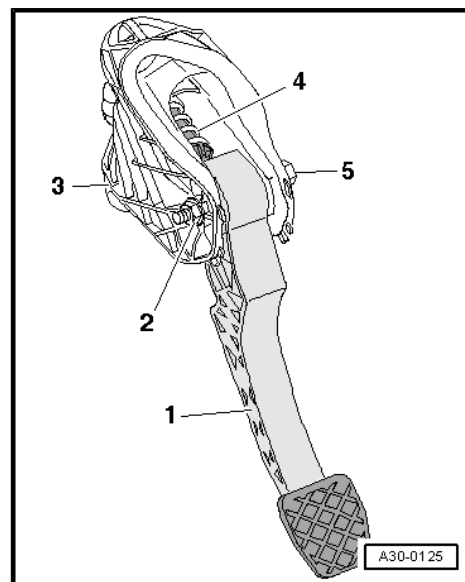
- Unbolt clutch pedal -1- from mounting bracket -3-. To do this, remove nut -2- and pull out bolt -5-.



**Note**

*The clutch pedal does not have to be detached from the operating rod on the clutch master cylinder.*

- Pivot clutch pedal down slightly and take over-centre spring -4- out of mounting bracket.



**Installing**

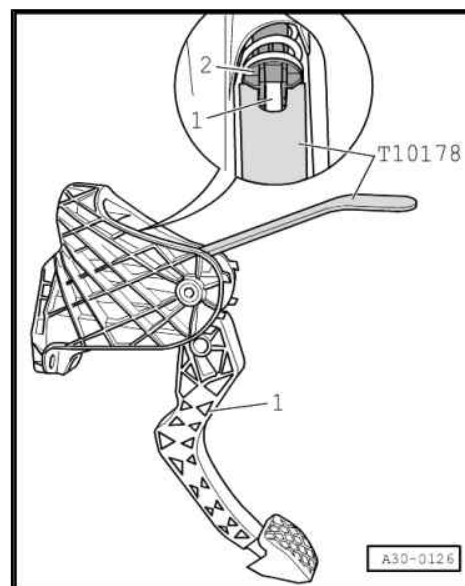
- Tightening torque ⇒ [page 15](#)

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

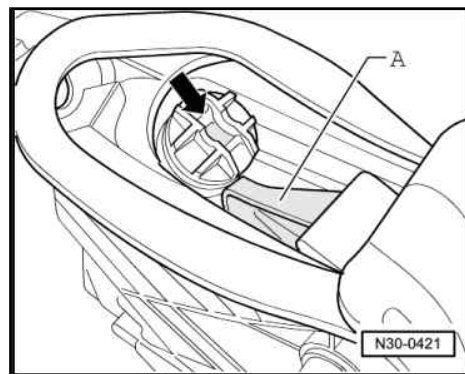


**Note**

- ◆ *Renew self-locking nut.*
- ◆ *Lubricate all bearings and contact surfaces with grease -G 000 450 02- .*
- Fit over-centre spring -2- into mounting bracket from above while holding end of spring in correct position with assembly tool -T10178- .



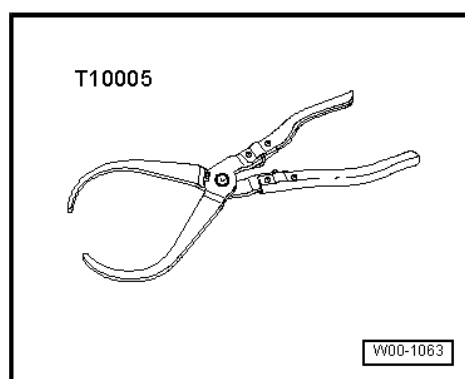
- Socket -arrow- of over-centre spring must be in vertical position.
- Fit actuator on clutch pedal -A- into corresponding socket in over-centre spring -arrow-.
- Press clutch pedal slightly, push bolt through and tighten self-locking nut.
- Install crash bar ➔ [page 16](#) .
- Install footwell vent (front left) ➔ Heating, air conditioning; Rep. gr. 80 .
- Install storage compartment on driver's side ➔ General body repairs, interior; Rep. gr. 68 .



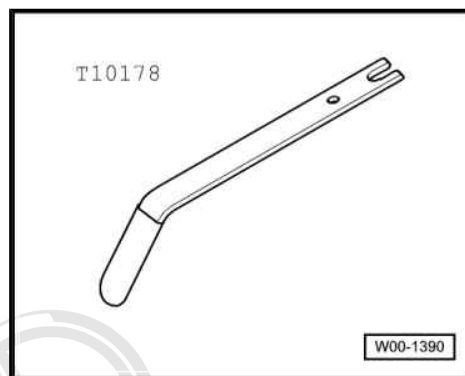
## 3.2 Removing and installing clutch pedal

### Special tools and workshop equipment required

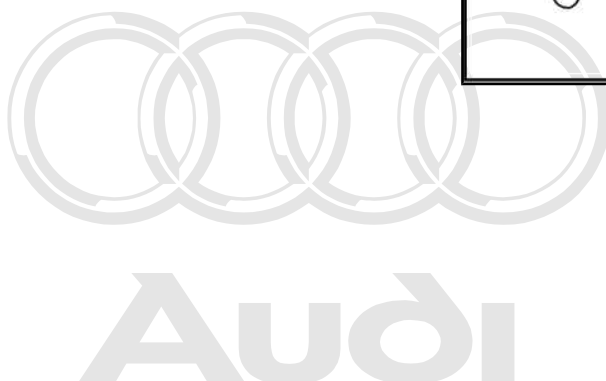
- ◆ Pliers -T10005-



- ◆ Assembly tool -T10178-



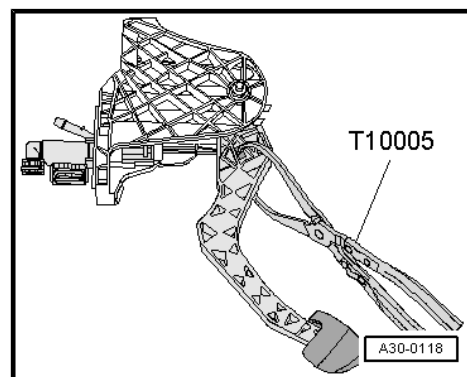
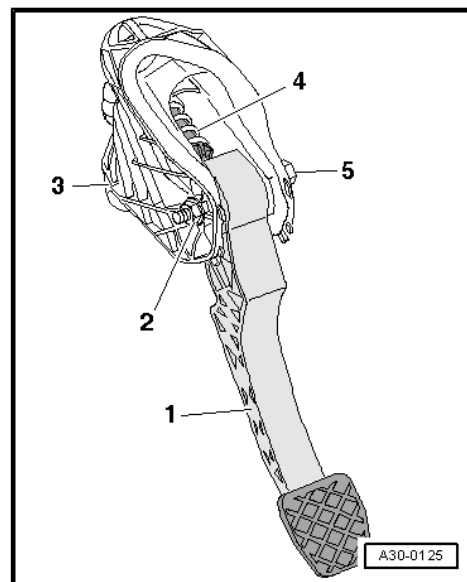
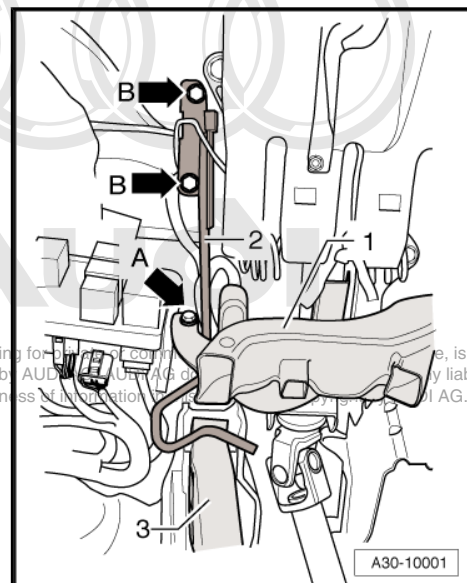
- ◆ Grease -G 000 450 02-



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## Removing

- Clutch pedal mounting bracket fitted in vehicle
- Move driver's seat away from pedals.
- Remove storage compartment on driver's side ⇒ General body repairs, interior; Rep. gr. 68 .
- Unscrew bolt -arrow A- and remove footwell vent (front left) -1-.
- Unclip wiring harness at rear of footwell vent -1- and move clear to one side.
- Unbolt crash bar -2- (secured by one or two bolts -arrows B-, depending on version).
- Unbolt clutch pedal -1- from mounting bracket -3-. To do this, remove nut -2- and pull out bolt -5-.
- Pivot clutch pedal forward slightly and take over-centre spring -4- out of mounting bracket.
- Release retaining clip for operating rod on clutch master cylinder using pliers -T10005- .
- Remove clutch pedal.



## Installing

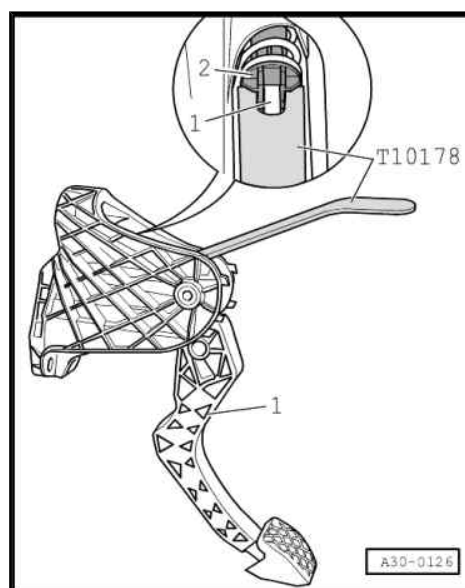
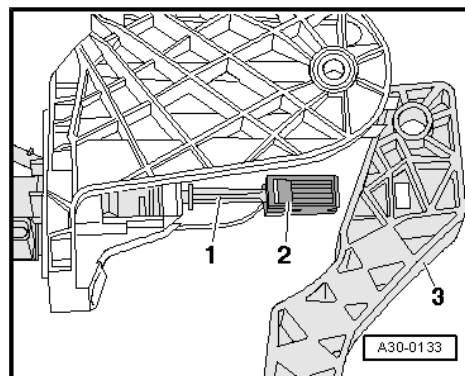
- Tightening torque ➔ [page 15](#)

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

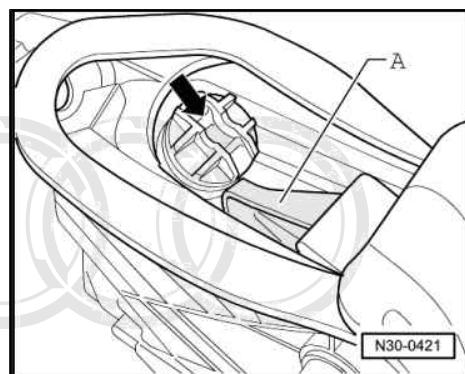


### Note

- ◆ *Renew self-locking nut.*
- ◆ *Lubricate all bearings and contact surfaces with grease -G 000 450 02- .*
- Install retaining clip -2- on operating rod -1- of master cylinder.
- Press retaining clip into mounting on clutch pedal so that it snaps into place.
- Fit over-centre spring -2- into mounting bracket from above while holding end of spring in correct position with assembly tool -T10178- .



- Socket -arrow- of over-centre spring must be in vertical position.
- Fit actuator on clutch pedal -A- into corresponding socket in over-centre spring -arrow-.
- Press top of clutch pedal forwards against spring pressure of over-centre spring, push through bolt and tighten self-locking nut.



### Note

*It is easier to press the clutch pedal against the spring if you pull back the bottom of the pedal carefully as you bring the top of the pedal into installation position.*

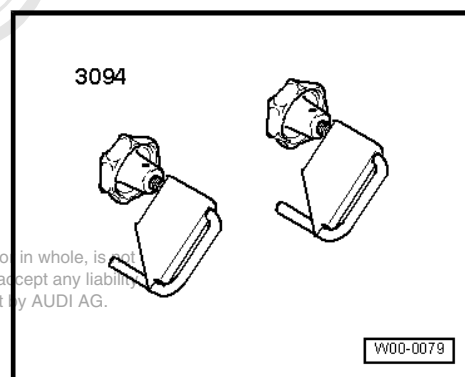
- Install crash bar ➔ [page 16](#) .
- Install footwell vent (front left) ➔ Heating, air conditioning; Rep. gr. 80 .
- Install storage compartment on driver's side ➔ General body repairs, interior; Rep. gr. 68 .

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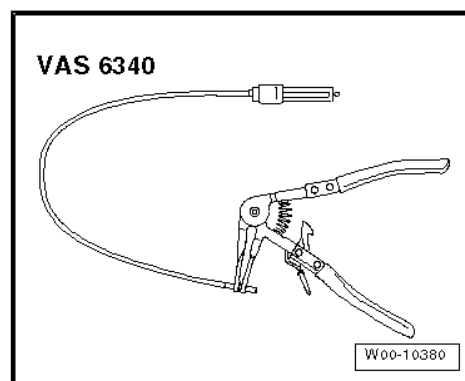
### 3.3 Removing and installing mounting bracket

#### Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm -3094-



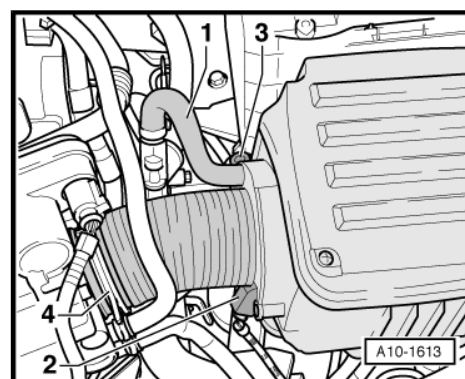
- ◆ Hose clip pliers -VAS 6340-



#### Removing

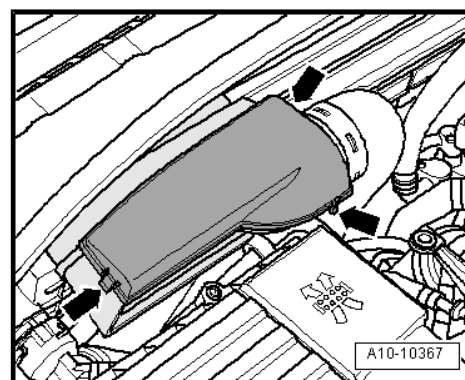
##### Vehicles with 2.0 ltr. FSI engine:

- Disconnect hose -1- and connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.

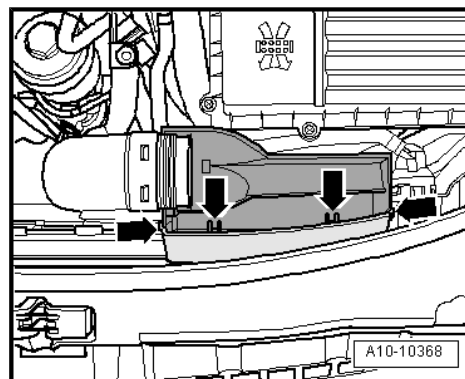


##### Vehicles with 1.8 ltr. TFSI engine:

- Pull off cover for air duct (release retaining clips -arrows- on the sides).



- Pull off bottom section of air duct (release retaining clips -arrows-).
- Detach bottom section of air duct with air hose.



- Unplug electrical connector -1- from air mass meter -G70- .
- Remove air hose -2-.
- Remove bolt -4- and remove air cleaner housing.

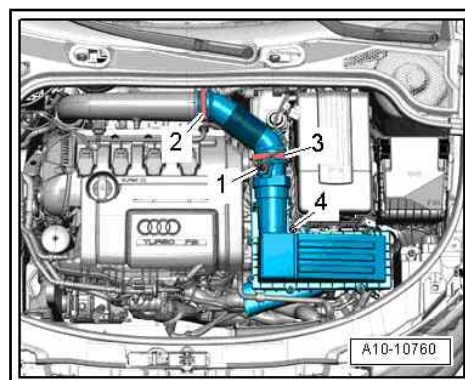


#### Note

-Item 3- can be disregarded.

#### All vehicles:

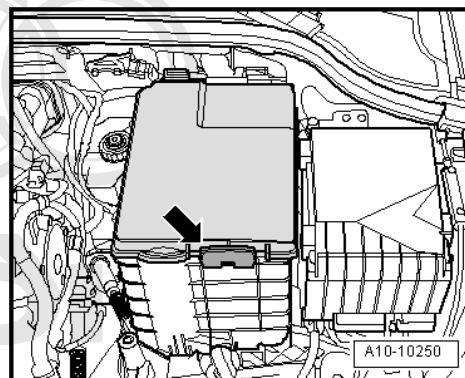
- Move driver's seat to rear as far as possible and move steering wheel into uppermost position.



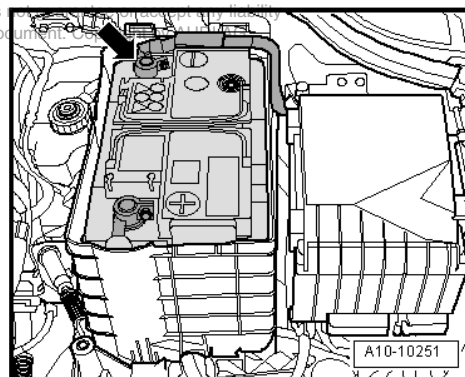
#### Caution

**Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27 .**

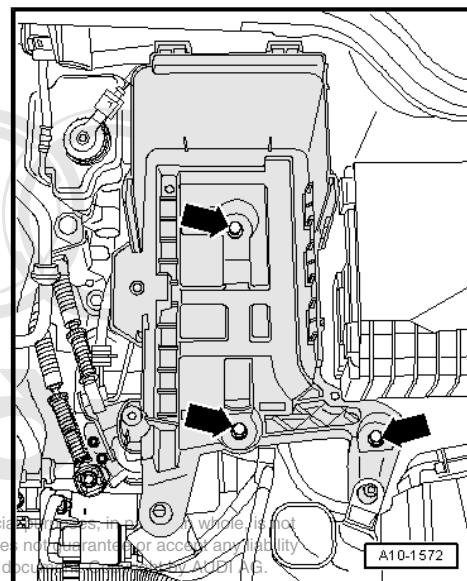
- Detach cover above battery (press release tab -arrow-).



- With ignition switched off, disconnect battery earth strap -arrow-.



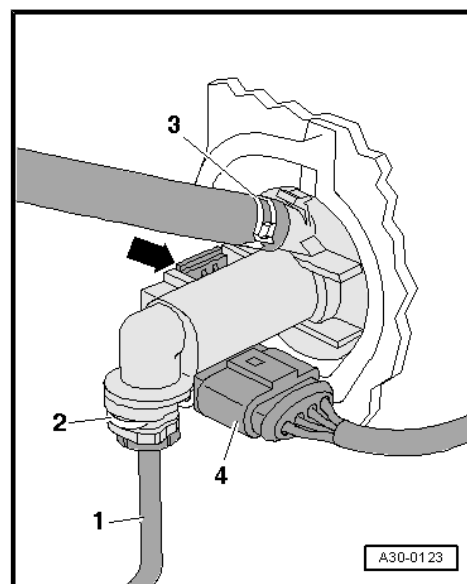
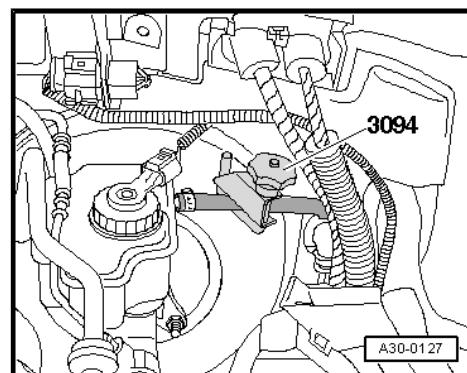
- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows- (detach front of battery tray from air duct if applicable).



#### Note

*In the following steps make sure that no brake fluid escapes onto the longitudinal member or onto the gearbox below. If this does happen, clean the affected area thoroughly.*

- Use hose clamp -3094- to clamp off supply hose to clutch master cylinder.
- Disconnect supply hose at clutch master cylinder (if necessary, release spring-type clip -3- using hose clip pliers -VAS 6340- ).
- Release clip -2- with a screwdriver and disconnect pipe/hose assembly -1- from clutch master cylinder.
- Unclip and detach clutch position sender -G476- from clutch master cylinder -arrow-. Electrical connector -4- can remain connected.

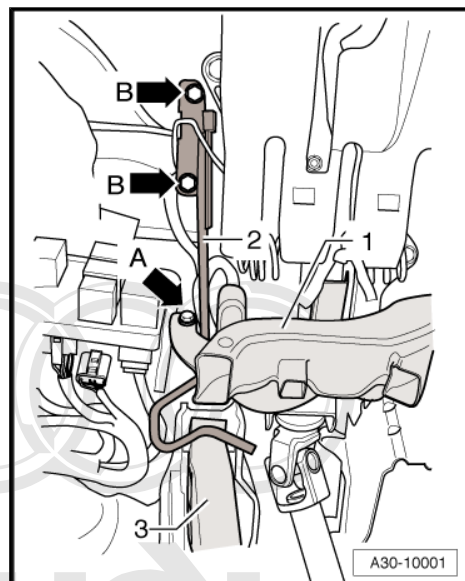


- Remove storage compartment on driver's side ⇒ General body repairs, interior; Rep. gr. 68 .
- Unscrew bolt -arrow A- and remove footwell vent (front left) -1- ⇒ Heating, air conditioning; Rep. gr. 80 .
- Unclip wiring harness at rear of footwell vent -1- and move clear to one side.
- Unbolt crash bar -2- (secured by one or two bolts -arrows B-, depending on version).



#### Note

*When working in the footwell, put cloths on the floor covering to protect it from possible brake fluid spills.*



- Remove nuts -2-.
- Take out mounting bracket -1-.

#### Installing

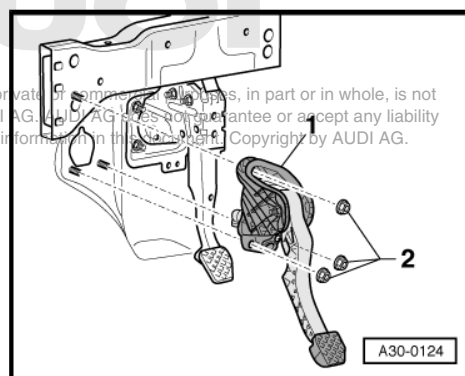
- Tightening torque ⇒ [page 15](#)

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

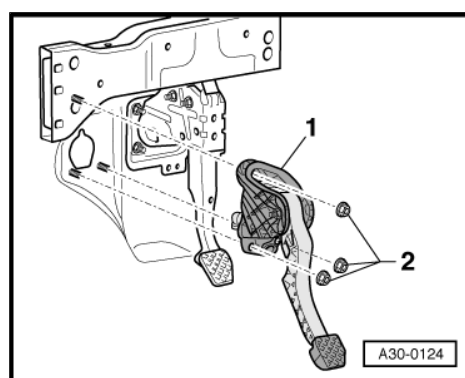


#### Note

- ◆ *Renew self-locking nuts.*
- ◆ *Secure all hose connections with the correct hose clips (as original equipment); refer to ⇒ [Electronic parts catalogue](#) .*



- Fit mounting bracket -1- and tighten nuts -2-.
- Connect pipe/hose assembly ⇒ [page 31](#) .
- Bleed clutch system ⇒ [page 40](#) .
- Install crash bar ⇒ [page 16](#) .
- Install footwell vent (front left) ⇒ Heating, air conditioning; Rep. gr. 80 .
- Install storage compartment on driver's side ⇒ General body repairs, interior; Rep. gr. 68 .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 .
- Install complete air cleaner housing ⇒ Rep. gr. 24 .



### 3.4 Removing and installing clutch position sender -G476-

#### Removing

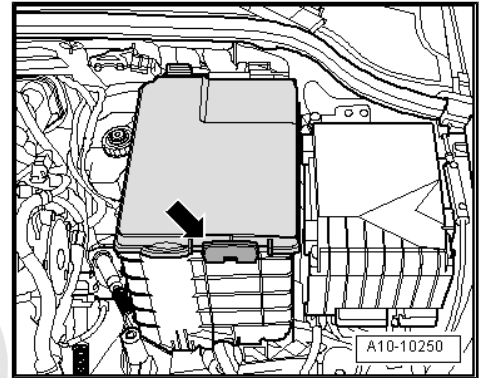
- Remove air cleaner housing completely ⇒ Rep. gr. 24 .



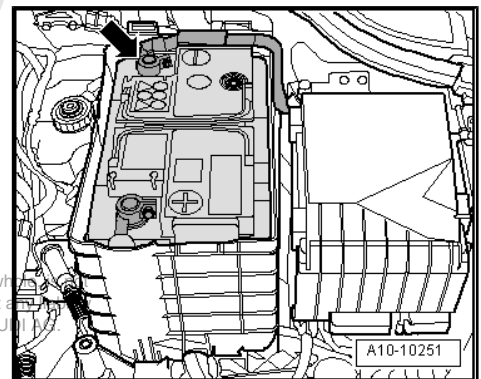
**Caution**

*Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27 .*

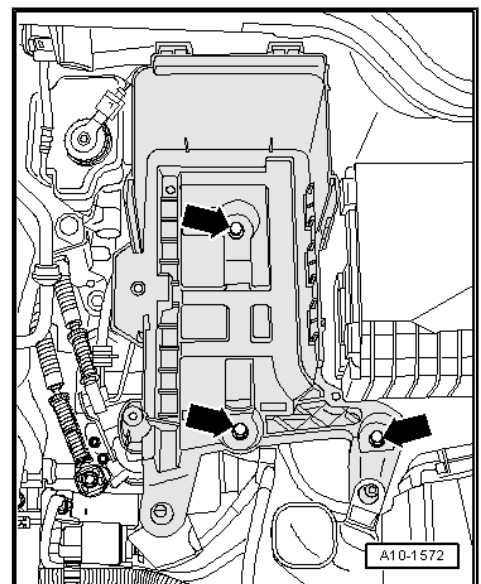
- Detach cover above battery (press release tab -arrow-).



- With ignition switched off, disconnect battery earth strap -arrow-.



- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows- (detach front of battery tray from air duct if applicable).



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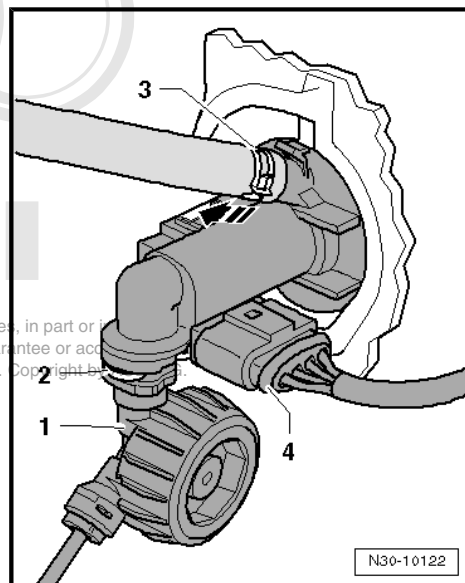
- Unplug electrical connector -4-.
- Unclip clutch position sender -G476- at clutch master cylinder in direction of -arrow- and remove.



#### Note

Items -1 ... 3- can be disregarded.

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### Installing

Perform installation in reverse sequence of removal.

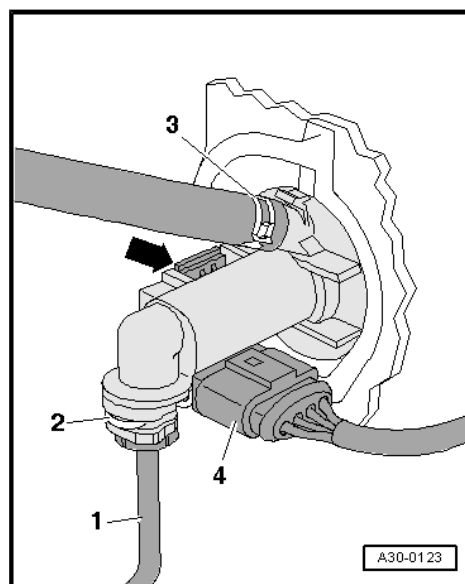
- Fit clutch position sender -G476- at clutch master cylinder and engage -arrow-.
- Attach electrical connector -4-.



#### Note

Items -1 ... 3- can be disregarded.

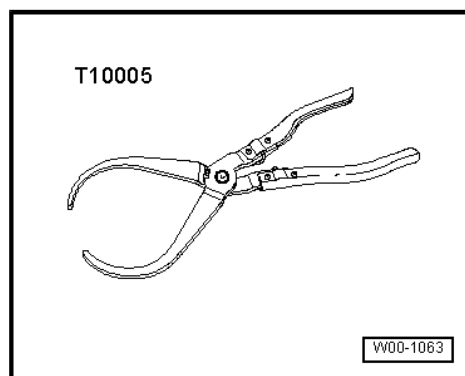
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 .
- Install air cleaner housing ⇒ Rep. gr. 24 .



## 3.5 Removing and installing clutch master cylinder

### Special tools and workshop equipment required

- ◆ Pliers -T10005-

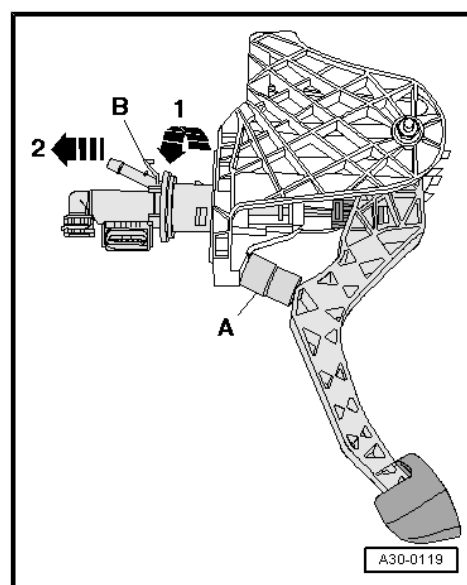
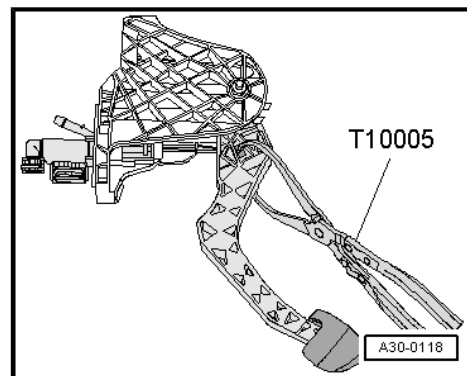


## Removing



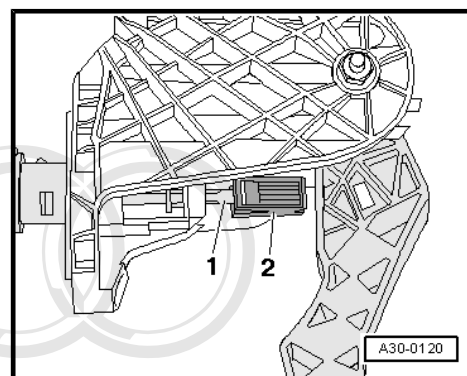
### Note

- ◆ *If you suspect a defective clutch master cylinder, perform function test prior to renewing*  
*⇒ „2 Notes on removing and installing clutch master cylinder and slave cylinder“, page 13.*
- ◆ *When working in the footwell, put cloths on the floor covering to protect it from possible brake fluid spills.*
- Remove mounting bracket ⇒ [page 21](#) .
- Release retaining clip for operating rod on clutch master cylinder using pliers -T10005- .
- Insert a spacer -A- between clutch pedal and stop, and press clutch pedal forward.
- ◆ Length of spacer = approx. 40 mm (e.g. 1/2" socket).
- Release retainer clip -B- and pull master cylinder out of mounting bracket -arrow 1- and -arrow 2-.

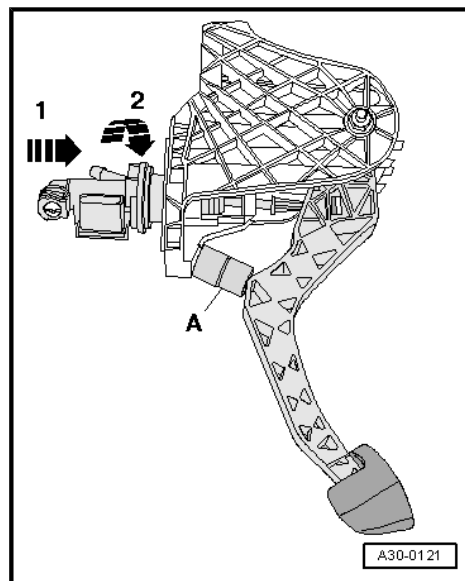


## Installing

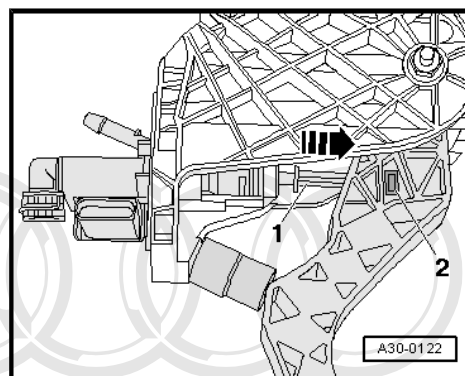
- Clutch pedal in „released“ position.
- Install retaining clip -2- on operating rod -1- for clutch master cylinder.



- Insert a spacer -A- between clutch pedal and stop, and press clutch pedal forward.
- ◆ Length of spacer = approx. 40 mm (e.g. 1/2" socket).
- Secure master cylinder on mounting bracket -arrow 1- and -arrow 2-.



- Press operating rod -1- for master cylinder in direction of -arrow- so that retaining clip -2- snaps into place in clutch pedal.
- Install mounting bracket ➔ [page 21](#) .



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## 4 Exploded view - hydraulics (LHD)

### 1 - Brake fluid reservoir

### 2 - Hose clip (spring-type clip)

- ☐ Not fitted in all vehicles

### 3 - Supply hose

- ☐ Made of rubber or plastic, depending on version
- ☐ Plastic supply hose with additional seals  
⇒ [page 30](#)

### 4 - Clutch master cylinder

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

### 5 - Clip

- ☐ To remove and install pipe/hose assembly, pull out clip as far as it will go

### 6 - Retaining clip

- ☐ For operating rod on clutch master cylinder
- ☐ To remove and install retaining clip first detach clutch master cylinder from clutch pedal  
⇒ [page 18](#)

### 7 - Clutch pedal

- ☐ Removing and installing  
⇒ [page 18](#)

### 8 - Nut

- ☐ For securing mounting bracket to plenum chamber partition panel
- ☐ Tightening torque ⇒ [Item 5 \(page 15\)](#)
- ☐ Always renew

### 9 - Seal or O-ring

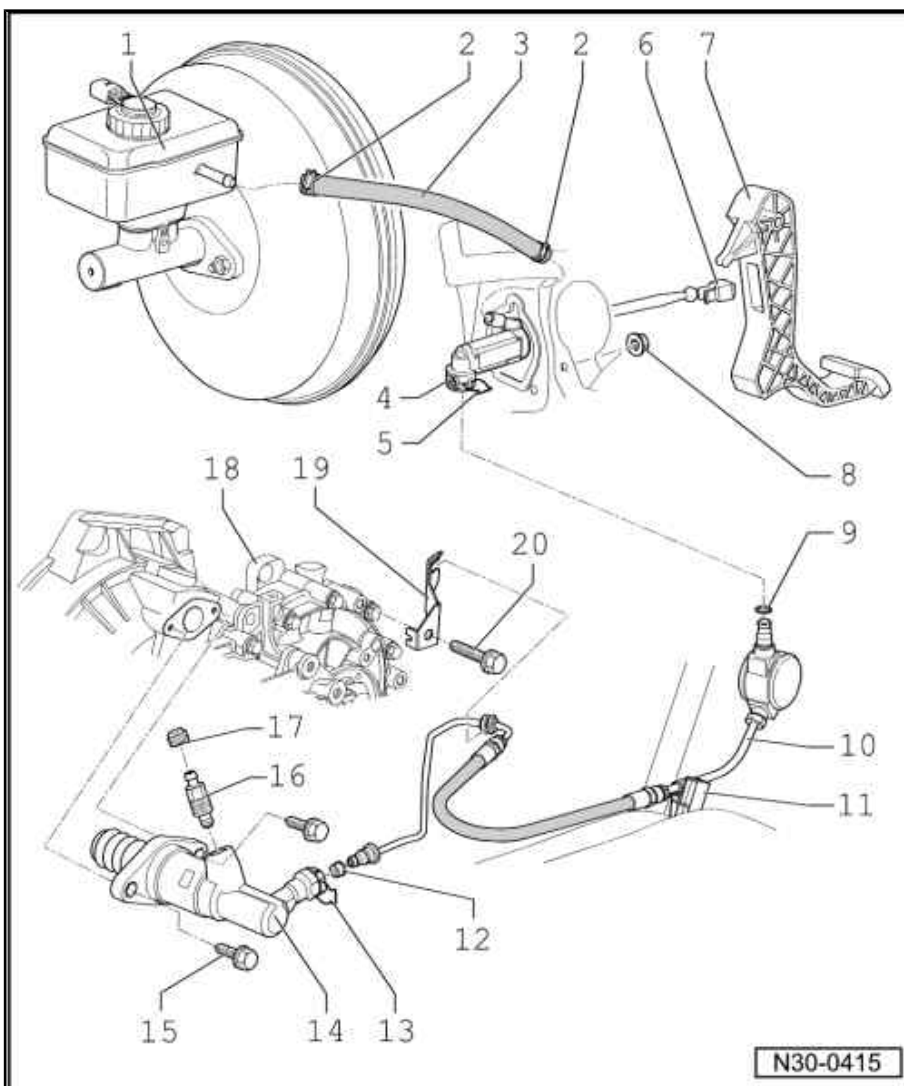
- ☐ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 30](#)
- ☐ For correct version, refer to ⇒ [Electronic parts catalogue](#)
- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing

### 10 - Pipe/hose assembly

- ☐ With frequency modulator (vibration damper) on some versions
- ☐ For correct version, refer to ⇒ [Electronic parts catalogue](#)
- ☐ Removing and installing ⇒ [page 36](#)
- ☐ Disconnecting from clutch master cylinder and clutch slave cylinder ⇒ [page 31](#)

### 11 - Bracket

- ☐ For pipe/hose assembly ⇒ [Item 10 \(page 29\)](#)
- ☐ Secured on body



## 12 - Seal or O-ring

- ☐ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 30](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing

## 13 - Clip

- ☐ To remove and install pipe/hose assembly, pull out clip as far as it will go

## 14 - Clutch slave cylinder

- ☐ Removing and installing ⇒ [page 31](#)

## 15 - Bolt

- ☐ 20 Nm
- ☐ 2x

## 16 - Bleeder screw

- ☐ 6 Nm
- ☐ Bleeding clutch system ⇒ [page 40](#)

## 17 - Dust cap

## 18 - Gearbox

## 19 - Bracket

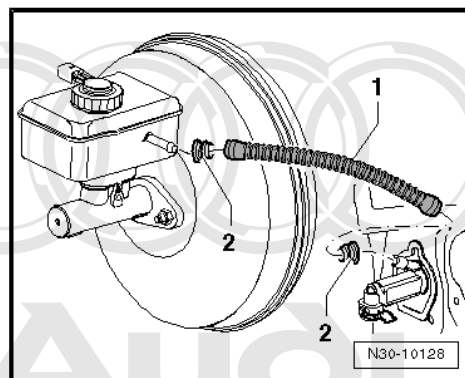
- ☐ For pipe/hose assembly

## 20 - Bolt

- ☐ 20 Nm

## Vehicles with plastic supply hose -1-

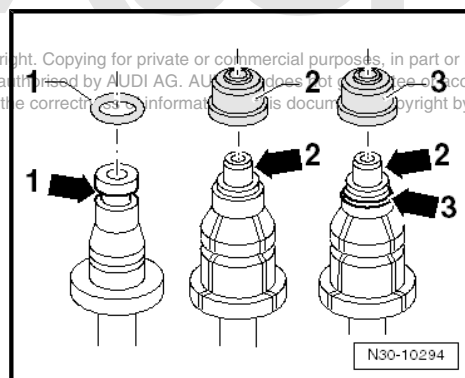
- Seals -2- must be fitted in supply hose.



## Seal/O-ring for pipe/hose assembly

| Item | Type of connection                                              |
|------|-----------------------------------------------------------------|
| 1    | Connection with annular groove -arrow 1-                        |
| 2    | Connection with shoulder -arrow 2-                              |
| 3    | Connection with shoulder -arrow 2- and annular groove -arrow 3- |

- Connection with annular groove -arrow 1- and -arrow 3-: seal or O-ring must be inserted in groove.



## Disconnecting and connecting hose/pipe assembly from/to clutch master cylinder/clutch slave cylinder

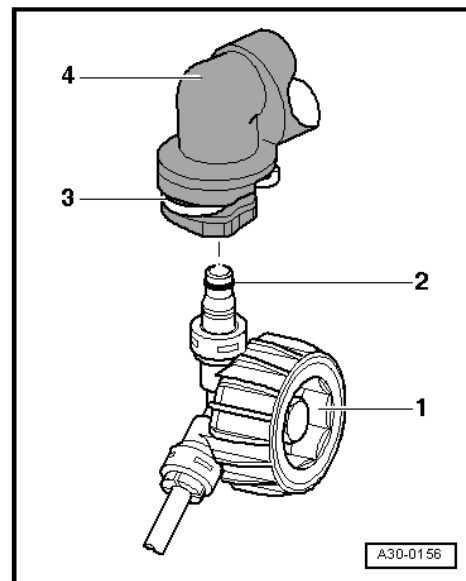
- To remove, release clip -3- with a screwdriver and disconnect pipe/hose assembly -1- from clutch master cylinder/slave cylinder -4-.

### Installing



#### Note

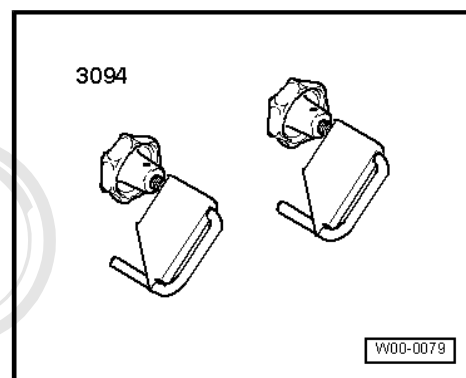
- ◆ *Observe distinction between seals -2- and O-rings  
⇒ [page 30](#) .*
- ◆ *Renew damaged seals or O-rings.*
- Press pipe/hose assembly -1- onto connection on clutch slave cylinder and clutch master cylinder -4- so that clip -3- snaps into place.
- Pull on pipe to check it is secure.



## 4.1 Removing and installing clutch slave cylinder

### Special tools and workshop equipment required

- ◆ Hose clamps, up to 25 mm -3094-



### Removing



#### Note

- ◆ *If you suspect a defective clutch slave cylinder, perform function test prior to renewing  
⇒ „2 Notes on removing and installing clutch master cylinder and slave cylinder“, [page 13](#) .*
- ◆ *If the slave cylinder is removed from gearbox with the pipe/hose assembly still attached, make sure you do not press the clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and be destroyed.*

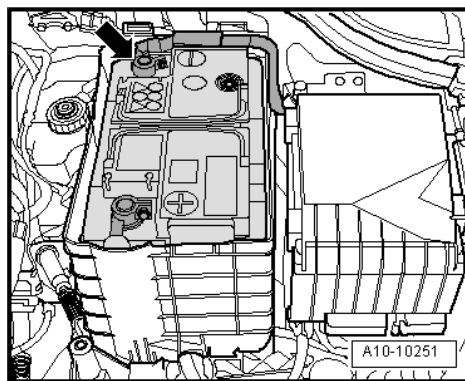
- Remove air cleaner housing completely ⇒ Rep. gr. 24 .



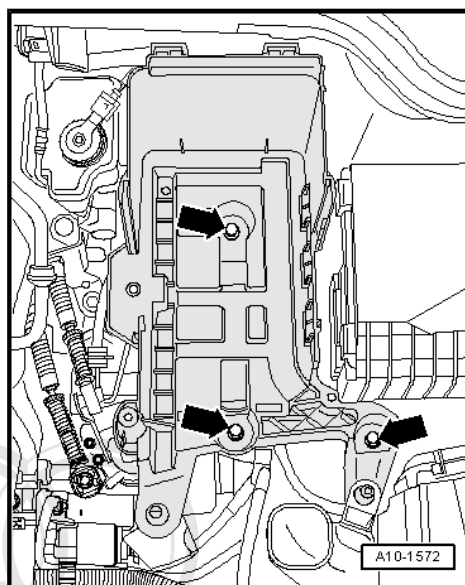
#### Caution

**Follow steps required when disconnecting battery ⇒ Electrical system; Rep. gr. 27 .**

- With ignition switched off, disconnect battery earth strap -arrow-.
- Remove battery ⇒ Electrical system; Rep. gr. 27 .

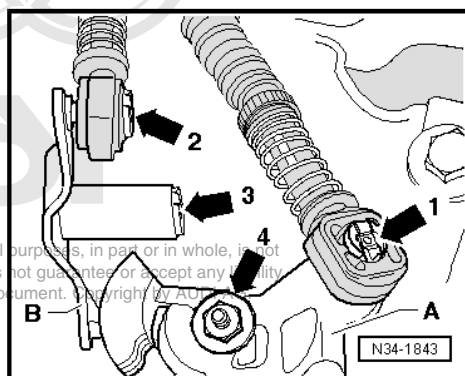


- Remove battery tray -arrows-.



#### Vehicles with metal gate relay lever -B-:

- Detach securing clip -arrow 1- for gear selector cable from gearbox selector lever -A-.
- Detach securing clip -arrow 2- for gate selector cable from gate relay lever -B-.
- Pull both cables off pins.



#### Note

Arrows -3 ... 4- can be disregarded.

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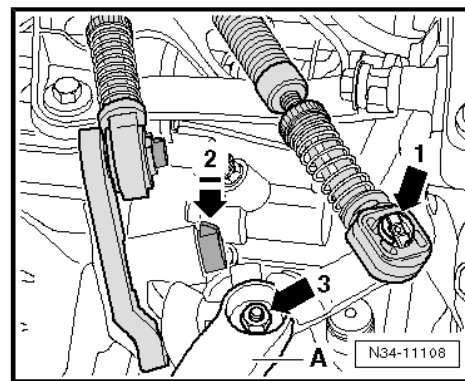
#### Vehicles with plastic gate relay lever with detent -arrow 2-

- Detach securing clip -arrow 1- and pull gear selector cable off gearbox selector lever -A-.
- Detach gate selector cable from cable end-piece  
⇒ [page 70](#) .
- Press detent -arrow 2- down onto stop and remove gate relay lever together with cable end-piece. Move gate relay lever in normal direction of operation.



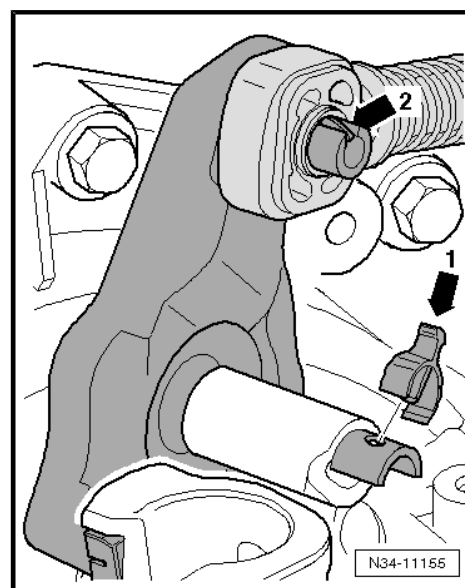
#### Note

-Arrow 3- can be disregarded.



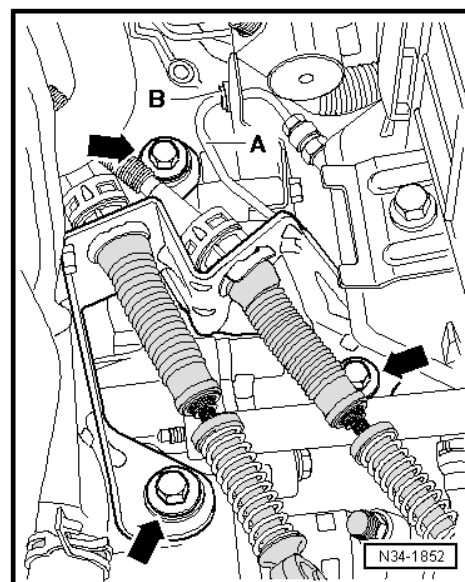
#### Vehicles with plastic gate relay lever with clip -arrow 1-

- Pull out clip -arrow 1- and remove gate relay lever together with cable end-piece -arrow 2-.

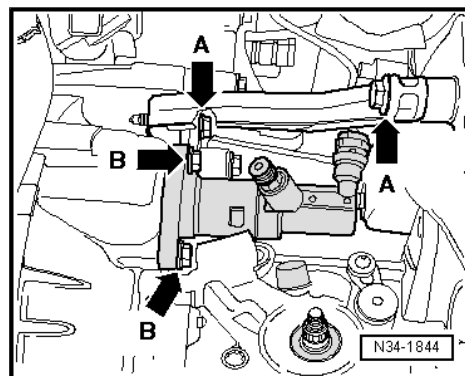


#### Continued for all vehicles:

- Detach cable support bracket from gearbox -arrows-.
- Tie back gear selector cable and gate selector cable.



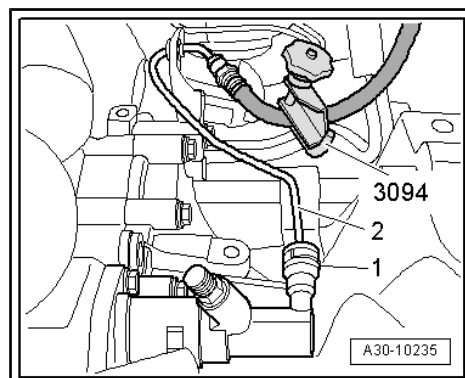
- Then detach gearbox support -arrows A-.
- Remove clutch slave cylinder -arrows B-.



#### Note

*Make sure that no brake fluid escapes onto the gearbox. If this does happen, clean the affected area thoroughly.*

- Place a lint-free cloth under the clutch slave cylinder.
- Using hose clamp -3094-, clamp off pipe/hose assembly going to clutch master cylinder.
- Pull out clip -1- as far as it will go, move pipe/hose assembly -2- clear at bracket and disconnect from clutch slave cylinder.



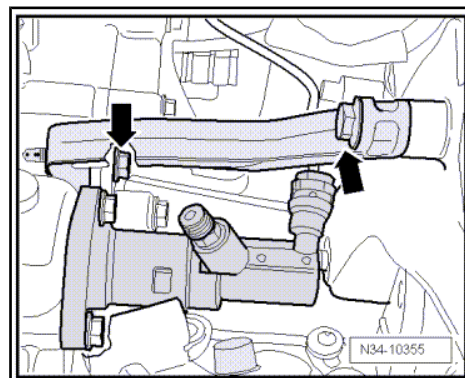
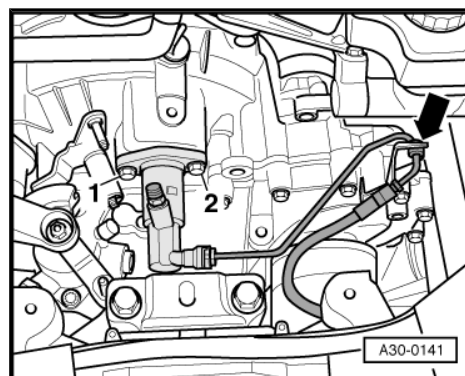
#### Caution

*Do not operate clutch pedal after disconnecting pipe/hose assembly.*

#### Installing

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

- Connect pipe/hose assembly to clutch slave cylinder  
⇒ [page 31](#)
- Lubricate end of plunger with grease for clutch plate splines - G 000 100- .
- Install clutch slave cylinder and tighten bolts -1- and -2-. Tightening torque ⇒ [Item 15 \(page 30\)](#)
- Clip pipe/hose assembly into bracket -arrow-.
- Remove hose clamp -3094- .
- Fit gearbox support and tighten bolts -arrows-. Tightening torques ⇒ [Item 1 \(page 127\)](#)
- Bleed clutch system ⇒ [page 40](#) .

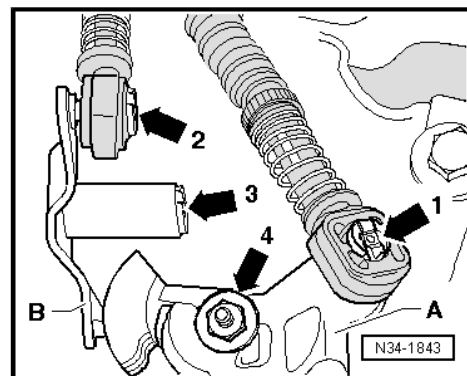


 **Note**

*To install, lubricate bearings and moving surfaces with grease - G 000 450 02- .*

**Metal gate relay lever -B-:**

- Attach gear selector cable to gearbox selector lever -A- and secure with securing clip -arrow 1-.
- Attach gate selector cable to gate relay lever -B- and secure with securing clip -arrow 2-.

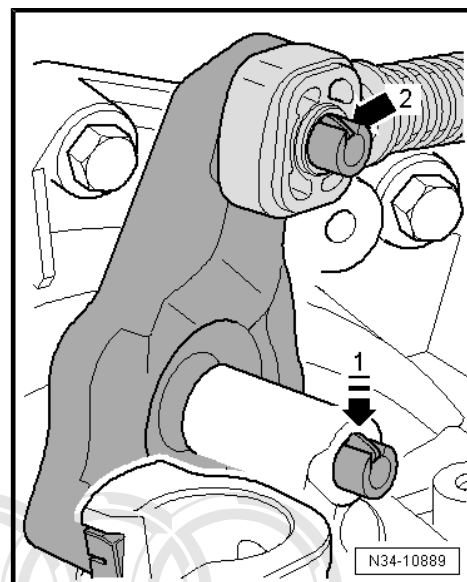


 **Note**

*Arrows -3 ... 4- can be disregarded.*

**Plastic gate relay lever with detent -arrow 1-:**

- Insert gate relay lever with cable end-piece as far as stop.
- Gate relay lever is secured by detent -arrow 1-.
- Cable end-piece is secured by detent -arrow 2-.
- Ensure that components engage securely.



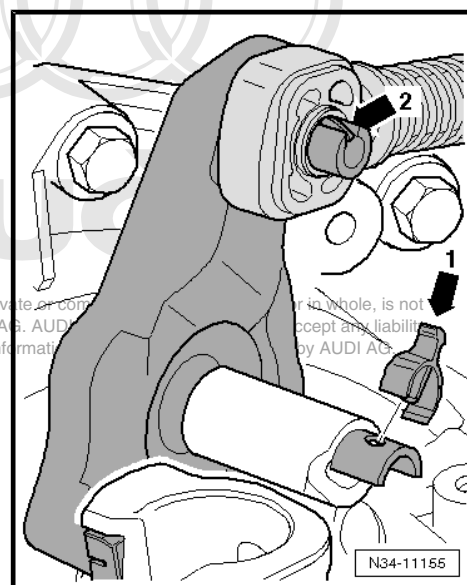
**Plastic gate relay lever with clip -arrow 1-:**

- Fit gate relay lever and secure with clip -arrow 1-.

**Continued for all vehicles:**

- Adjust selector mechanism ⇒ [page 86](#) .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 .
- Install complete air cleaner housing ⇒ Rep. gr. 24 .

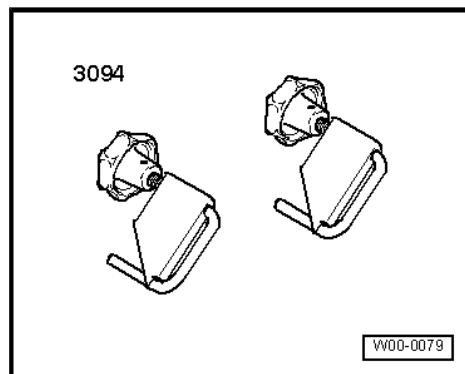
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## 4.2 Removing and installing pipe/hose assembly

### Special tools and workshop equipment required

- ◆ Hose clamps, up to Ø 25 mm -3094-



### Removing

- Remove air cleaner housing completely ⇒ Rep. gr. 24 .



#### Caution

*When disconnecting the battery there is a risk of serious damage to electronic components:*

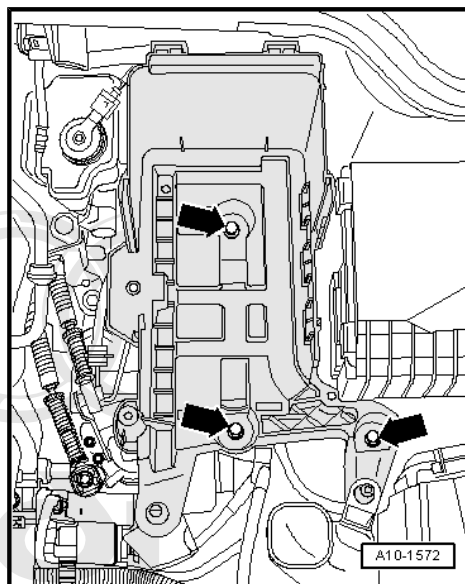
- ◆ *Observe the correct procedure for disconnecting the battery ⇒ Electrical system; Rep. gr. 27 .*

- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove battery tray -arrows-.



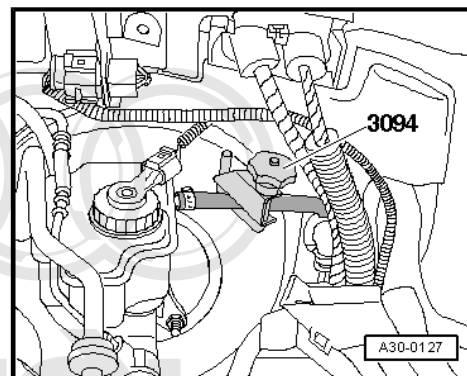
#### Note

- ◆ *In the following steps make sure that no brake fluid escapes onto the longitudinal member or onto the gearbox below. If this does happen, clean the affected area thoroughly.*
- ◆ *Place a cloth underneath to catch escaping brake fluid.*



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- Use hose clamp -3094- to clamp off supply hose to clutch master cylinder.



- Release clip -3- with a screwdriver and disconnect pipe/hose assembly -1- from clutch master cylinder and clutch slave cylinder.
- Detach pipe/hose assembly -1- from bracket and remove.

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#### Caution

***Do not operate clutch pedal after disconnecting pipe/hose assembly.***

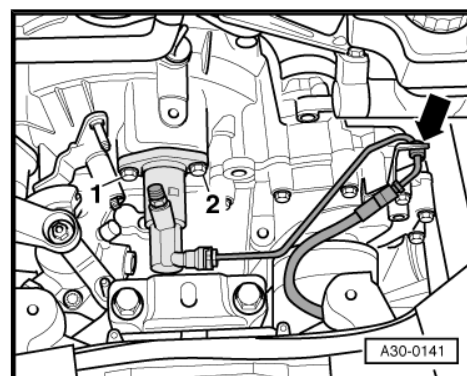
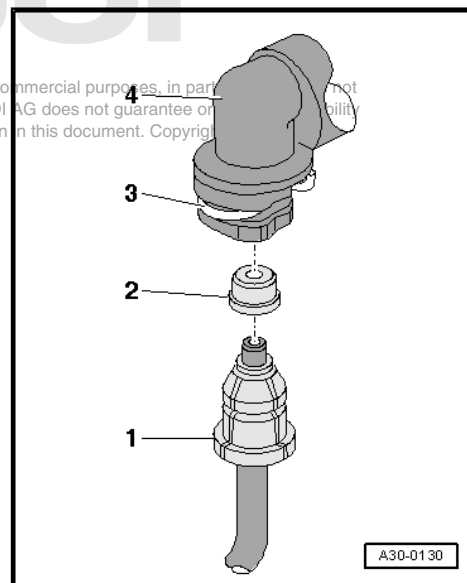
#### Installing

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



#### Note

- ◆ *Observe distinction between seals -2- and O-rings ⇒ [page 30](#).*
- ◆ *Renew damaged seals or O-rings.*
- Press pipe/hose assembly -1- onto connection on clutch slave cylinder and clutch master cylinder -4- so that clip -3- snaps into place.
- Pull on pipe to check it is secure.
- Clip pipe/hose assembly into bracket -arrow-.
- Remove hose clamp -3094-.
- Bleed clutch system ⇒ [page 40](#).
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27.
- Install complete air cleaner housing ⇒ Rep. gr. 24.



## 5 Exploded view - hydraulics (RHD)

### 1 - Brake fluid reservoir

### 2 - Seal

- ☐ For plastic supply hose
- ☐ Seals must be fitted in supply hose.

### 3 - Supply hose

- ☐ Made of rubber or plastic, depending on version
- ☐ Plastic supply hose with additional seals  
⇒ [Item 2 \(page 38\)](#)

### 4 - Clutch master cylinder

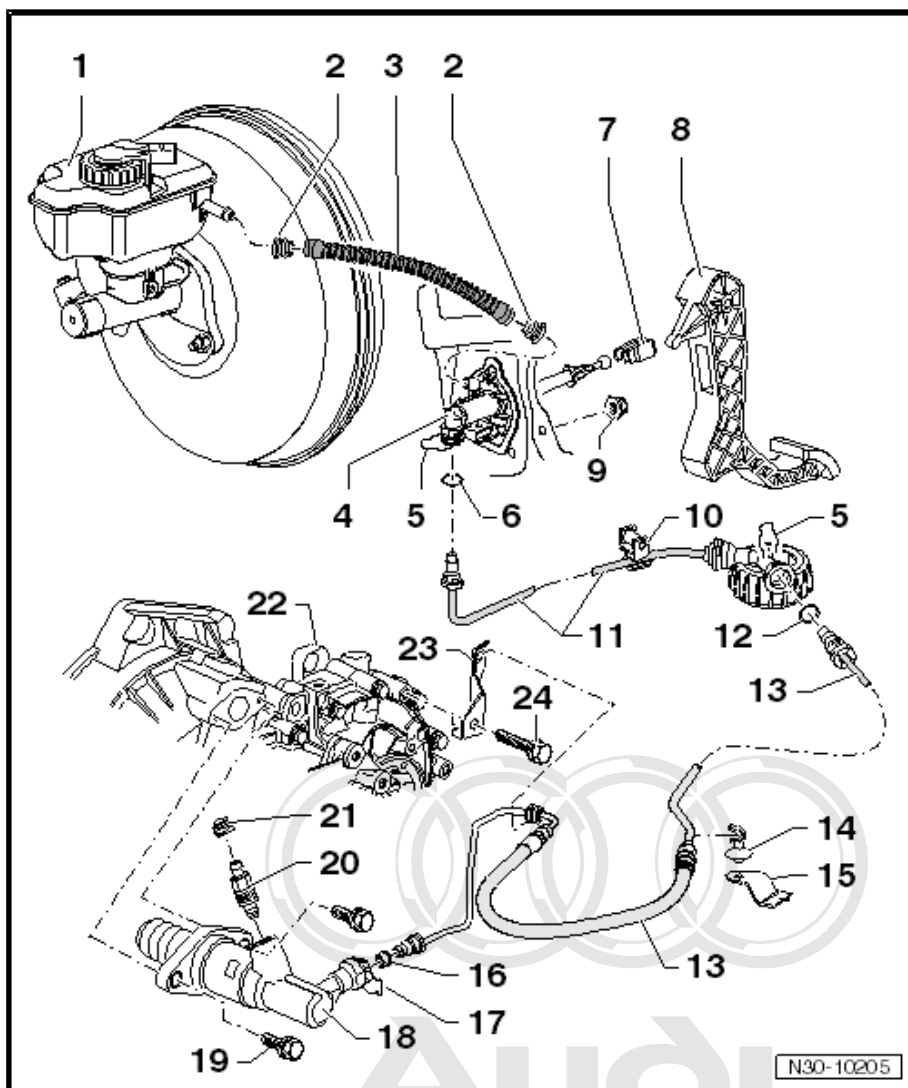
- ☐ Removing and installing  
⇒ [page 26](#)

### 5 - Clip

- ☐ To remove and install pipe, pull out clip as far as it will go

### 6 - Seal or O-ring

- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing
- ☐ Whether a seal or an O-ring is used depends on the type of connection  
⇒ [page 30](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue



### 7 - Retaining clip

- ☐ To remove and install retaining clip first detach clutch master cylinder from clutch pedal ⇒ [page 18](#)

### 8 - Clutch pedal

### 9 - Nut

- ☐ 20 Nm
- ☐ For securing mounting bracket to plenum chamber partition panel

### 10 - Bracket

- ☐ Secured on body

### 11 - Pipe

- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ To remove, first remove battery and battery tray ⇒ Electrical system; Rep. gr. 27

### 12 - Seal or O-ring

- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing
- ☐ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 30](#)

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

### 13 - Pipe/hose assembly

- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ To remove, first remove battery and battery tray ⇒ Electrical system; Rep. gr. 27

### 14 - Bracket

- ☐ Secured to bracket for ABS/EDL

### 15 - Bracket

- ☐ For ABS/EDL

### 16 - Seal or O-ring

- ☐ Renew damaged seals or O-rings
- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing
- ☐ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 30](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

### 17 - Clip

- ☐ To remove and install pipe/hose assembly, pull out clip as far as it will go

### 18 - Clutch slave cylinder

- ☐ Removing and installing ⇒ [page 31](#)

### 19 - Bolt

- ☐ Tightening torque ⇒ [Item 15 \(page 30\)](#)

### 20 - Bleeder screw

- ☐ Tightening torque ⇒ [Item 16 \(page 30\)](#)
- ☐ Bleeding clutch system ⇒ [page 40](#)

### 21 - Dust cap

### 22 - Gearbox

### 23 - Bracket

### 24 - Bolt

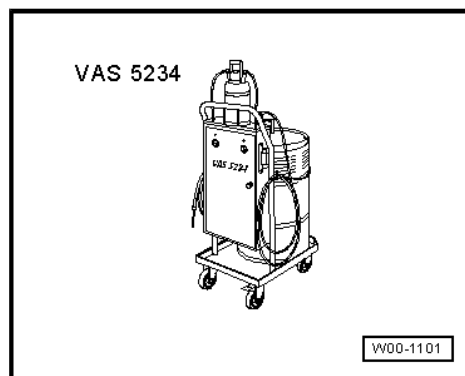
- ☐ ⇒ [Item 20 \(page 30\)](#)

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## 6 Bleeding clutch system

### Special tools and workshop equipment required

- ◆ Brake filling and bleeding equipment -VAS 5234-



### Note

- ◆ *The clutch system must be bled after performing work on the hydraulic clutch mechanism.*
- ◆ *In the following steps make sure that no brake fluid escapes onto the longitudinal member or onto the gearbox below.*
- ◆ *Prefilling the system is not necessary.*
- ◆ *Before bleeding clutch system, top up brake fluid reservoir to „Max“ marking with brake fluid.*
- ◆ *Brake fluid specification ⇒ Rep. gr. 47.*

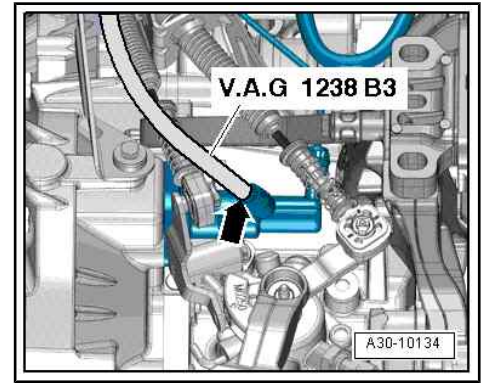
### Vehicles with 1.8 ltr. TFSI engine:

- Remove air cleaner housing completely ⇒ Rep. gr. 24 .

### Continued for all vehicles:

- Pull clutch pedal back to its normal rest position.
- Connect brake filling and bleeding equipment -VAS 5234- or -V.A.G 1869- .
- To bleed system, use bleed hose -V.A.G 1238 B/3- - 670 mm long, if necessary.
- Then connect bleeder hose to collector bottle of brake bleeding unit.

- Connect bleed hose to bleeder connection -arrow-.
- Now switch on bleeding equipment.
- ◆ Operating pressure 2.0 bar
- Open bleeder screw.
- Bleed off about 100 cm<sup>3</sup> of brake fluid.
- Close bleeder screw.
- Rapidly pump clutch pedal through full range of travel 10 to 15 times.
- Open bleeder screw once again.
- Bleed off an additional 50 cm<sup>3</sup> of brake fluid.
- Tighten bleeder screw to 6 Nm, detach bleeder hose and fit protective cap.
- Detach brake filling and bleeding equipment -VAS 5234- from brake fluid reservoir.
- Depress clutch pedal several times after bleeding process is completed.
- Repeat bleeding procedure if necessary.



**Vehicles with 1.8 ltr. TFSI engine:**

- Install complete air cleaner housing ⇒ Rep. gr. 24 .

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## 7 Exploded view - clutch release mechanism

### 1 - Gearbox

### 2 - Ball-head pin

- ☐ 25 Nm
- ☐ Remove existing grease from contact surface of release lever
- ☐ Lubricate with grease for clutch plate splines - G 000 100-

### 3 - Input shaft oil seal

- ☐ Pressed into guide sleeve
- ☐ Renewing  
⇒ [Item 12 \(page 175\)](#)

### 4 - Guide sleeve

- ☐ With vulcanised O-ring and oil seal for input shaft  
⇒ [Item 3 \(page 42\)](#)
- ☐ Renew guide sleeve if O-ring is damaged
- ☐ Lubricate guide sleeve in area of release bearing with grease for clutch plate splines - G 000 100-

### 5 - Retaining spring

- ☐ Secure to clutch release lever

### 6 - Socket head bolt

- ☐ 20 Nm

### 7 - Clutch release lever

- ☐ Removing and installing together with release bearing ⇒ [page 43](#)
- ☐ Lubricate surface which contacts ball-head pin with grease for clutch plate splines -G 000 100-

### 8 - Release bearing

- ☐ Do not wash out bearing; wipe clean only
- ☐ Renew bearing if noisy
- ☐ Detaching/attaching on release lever ⇒ [page 43](#)
- ☐ Lubricate surface which contacts release lever with grease for clutch plate splines -G 000 100-

### 9 - Bolt

- ☐ Tightening torque ⇒ [Item 15 \(page 30\)](#)
- ☐ 2x

### 10 - Clutch slave cylinder

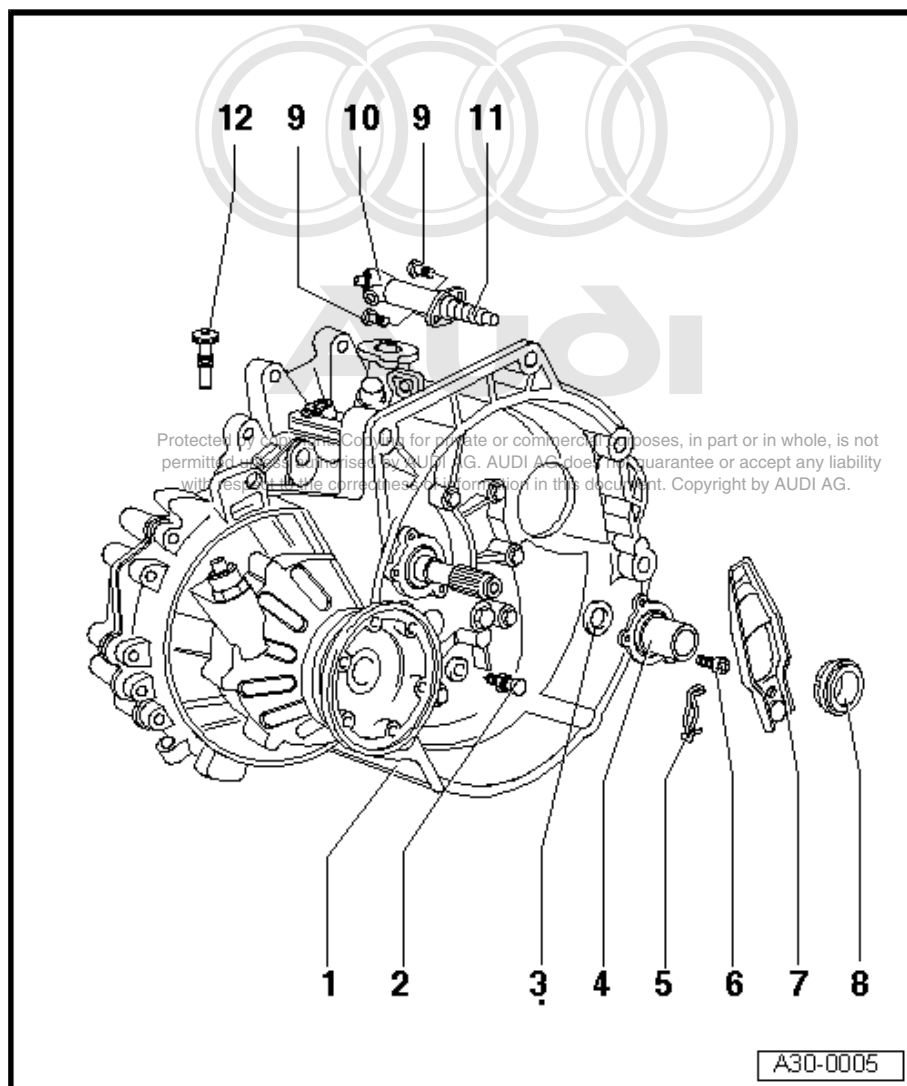
- ☐ Removing and installing ⇒ [page 31](#)

### 11 - Plunger

- ☐ Lubricate end of plunger with grease for clutch plate splines -G 000 100-

### 12 - Assembly bolt

- ☐ Secures the clutch release lever while installing gearbox



- ❑ Unscrew after gearbox has been installed



**Note**

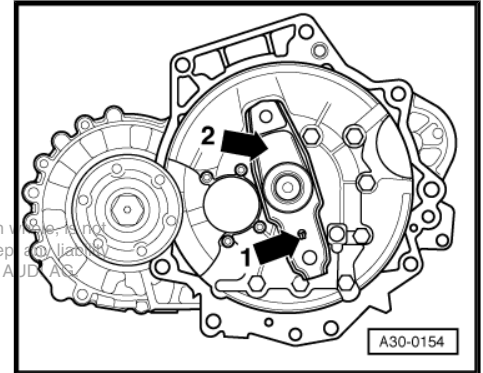
*If the assembly bolt  
(⇒ [Item 12 \(page 42\)](#)) is not avail-  
able, an M8 x 35 bolt can be used  
instead.*

**Removing and installing clutch release lever together with release bearing**

- Unhook spring -arrow 1-.
- Pull off clutch release lever -arrow 2- and clutch release bearing.

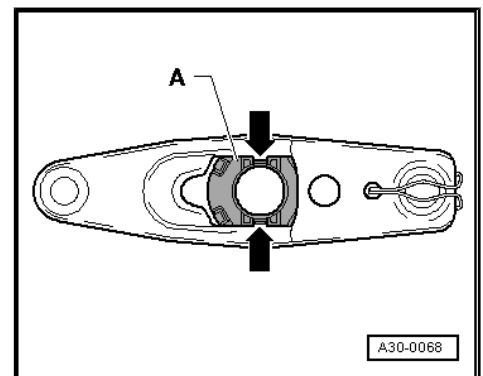
Perform installation in reverse sequence of removal.

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**Removing and installing clutch release bearing**

- Press locking lugs -arrows- together on reverse side of clutch release lever and remove release bearing -A- from clutch release lever.
- To install, press release bearing -A- into clutch release lever until locking lugs -arrows- engage.



## 8 Overview - servicing clutch

- ◆ ⇒ „8.1 Clutch identification“, page 44
- ◆ ⇒ „8.2 Exploded view - Sachs version clutch“, page 45
- ◆ ⇒ „8.3 Removing and installing clutch (Sachs version)“, page 47
- ◆ ⇒ „8.4 Exploded view - LuK version clutch“, page 51
- ◆ ⇒ „8.5 Removing and installing clutch (LuK version)“, page 53

### 8.1 Clutch identification

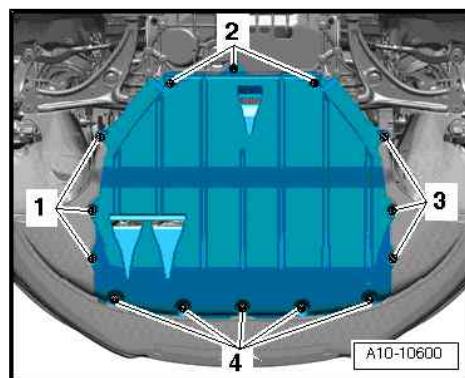


#### Note

*The clutch fitted in the vehicle is supplied by either „Sachs“ or „LuK“.*

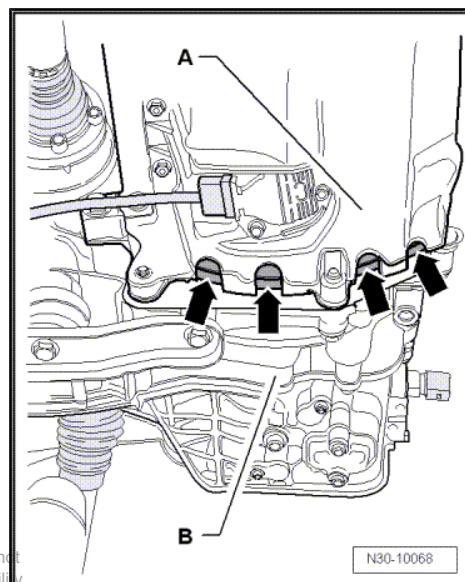
With gearbox installed, the clutch version fitted can be distinguished as follows:

- Loosen fasteners -1 ... 4- and remove noise insulation panel (centre).



A number of recesses -arrows- are located in lower area of sump between engine -A- and gearbox -B-.

- Check the contour of the flywheel visible through the recesses.



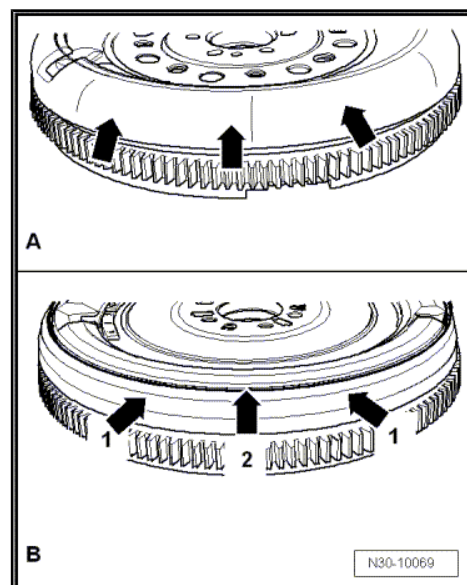
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**A - round contour -arrows- = Sachs version clutch**

Exploded view - Sachs version clutch ⇒ [page 45](#)

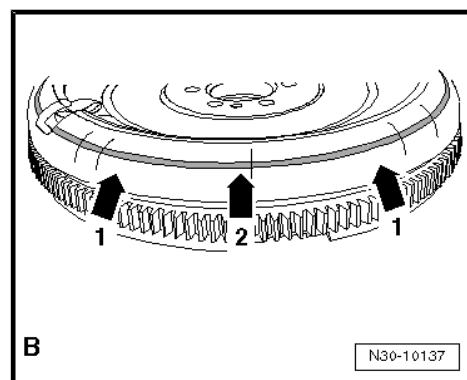
**B - square contour -arrows 1- and annular groove -arrow 2- = LuK version clutch**

or



**B - round contour -arrows 1- and annular groove -arrow 2- = LuK version clutch**

Exploded view - LuK version clutch ⇒ [page 51](#)



## 8.2 Exploded view - Sachs version clutch



### Note

*The dual-mass flywheel, pressure plate and clutch plate are matched together; components from another manufacturer must not be installed on the same vehicle.*



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### 1 - Dual-mass flywheel

- ☐ Removing and installing  
⇒ Engine, mechanics;  
Rep. gr. 13
- ☐ Ensure that dowel pins  
fit tightly
- ☐ Contact surface for  
clutch lining must be  
free of grooves, oil and  
grease
- ☐ Observe instructions for  
removal ⇒ [page 47](#)

### 2 - Clutch plate

- ☐ Removing and installing  
⇒ [page 47](#)
- ☐ Always renew pressure  
plate as well
- ☐ Installation position  
⇒ [page 50](#)
- ☐ For correct version, re-  
fer to ⇒ Electronic parts  
catalogue

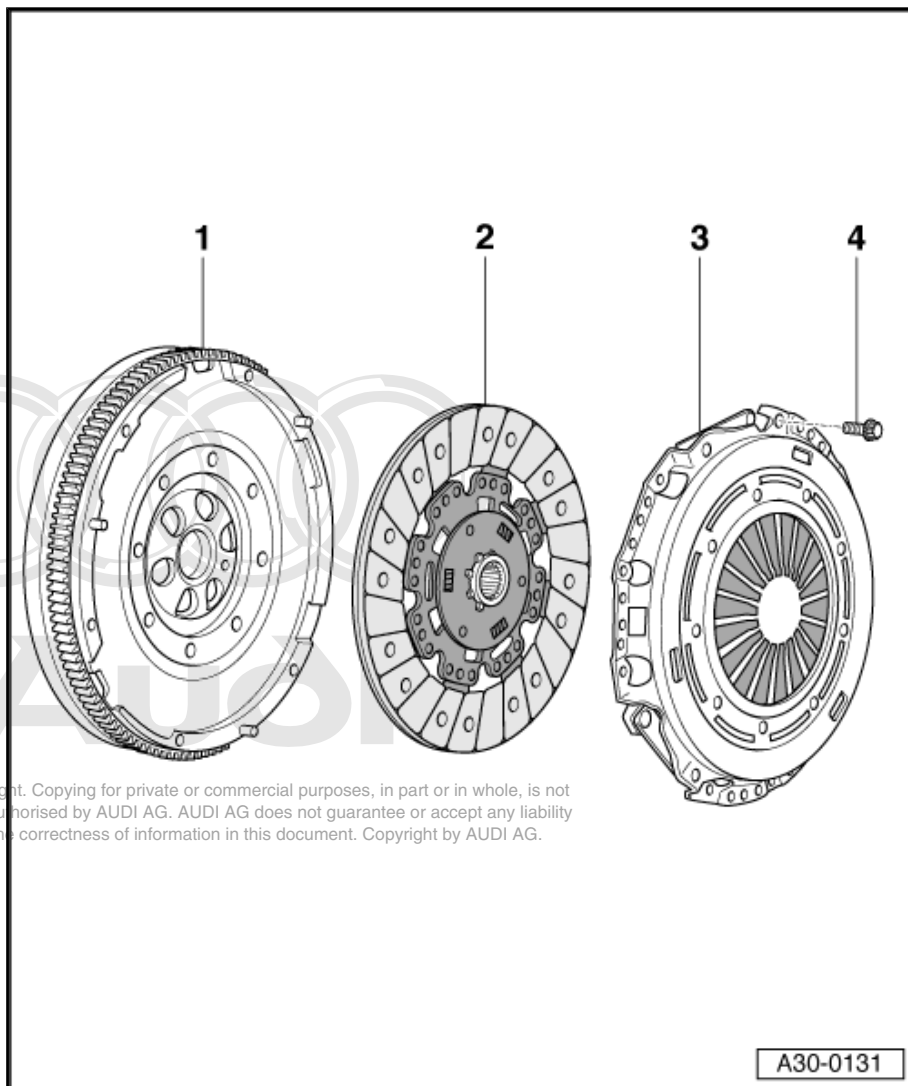
### 3 - Pressure plate

- ☐ With adjustment mech-  
anism
- ☐ Identification  
⇒ [page 47](#)
- ☐ Removing and installing  
⇒ [page 47](#)
- ☐ Checking ends of dia-  
phragm spring  
⇒ [page 50](#)
- ☐ Checking spring con-  
nections and rivets  
⇒ [page 50](#)

- ☐ Always renew clutch plate as well
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

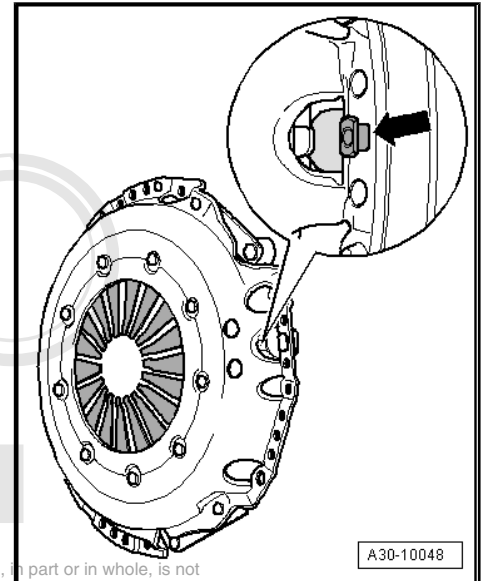
### 4 - Bolt

- ☐ M6 - 13 Nm
- ☐ M7 - 20 Nm
- ☐ 6x
- ☐ Loosen and tighten bolts consecutively in steps of 90°



### Identification of self-adjusting Sachs version clutch

- ◆ Pressure plate with stop mechanism (position sensor)  
-arrow-.



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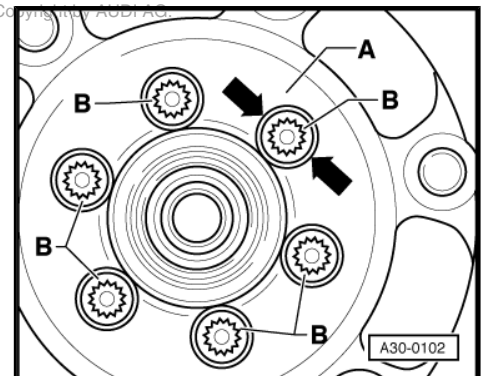
### Instructions for removing dual-mass flywheel



#### Note

*Do not use an impact wrench or pneumatic wrench to remove bolts -B-: this would severely damage the dual-mass flywheel. The bolts must always be removed by hand.*

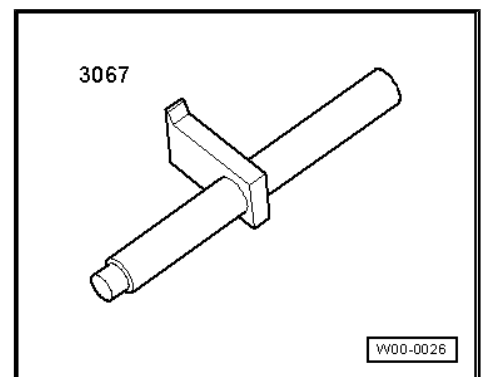
- Rotate dual-mass flywheel -A- so that the bolts are aligned centrally behind the holes -arrows-.
- When removing the bolts, make sure that none of the bolt heads contacts the dual-mass flywheel, as this would damage the flywheel when the bolts are unscrewed further.



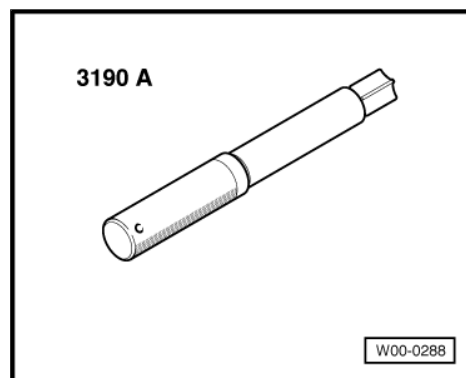
## 8.3 Removing and installing clutch (Sachs version)

### Special tools and workshop equipment required

- ◆ Counterhold tool -3067-



- ◆ Centring mandrel -3190 A-



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



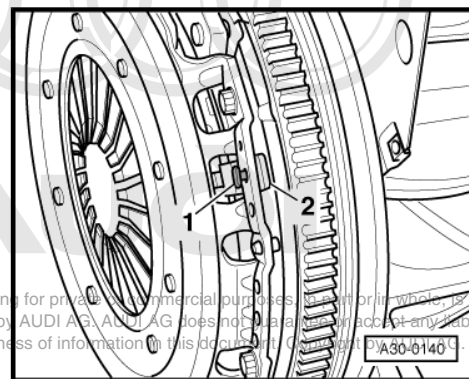
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## Removing

- Remove gearbox  
⇒ „2 Removing and installing gearbox on vehicles with 1.8 ltr. TFSI engine“, page 90 or  
⇒ „3 Removing and installing gearbox on vehicles with 2.0 ltr. FSI engine“, page 109 .

**To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always adhere to the following procedure when unbolting the pressure plate:**

- Apply counter-hold tool -3067- in order to loosen bolts.
- Working clockwise, loosen all six bolts consecutively in steps of 90° (1/4 turn) until the pressure plate is released.
- Stop -2- with pin -1- should come loose when the bolts are slackened.
- If the stop does not come loose, push the pin towards the dual-mass flywheel.
- Take off pressure plate and clutch plate.



## Installing

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

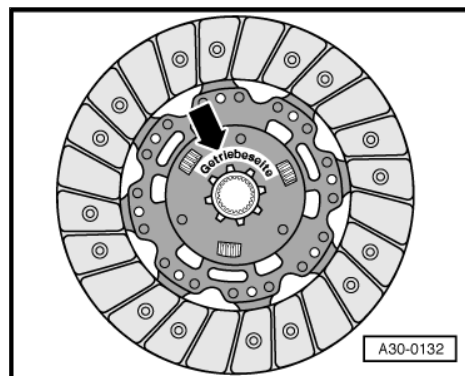


### Note

- ◆ *The dual-mass flywheel, pressure plate and clutch plate are matched together; components from another manufacturer must not be installed on the same vehicle.*
- ◆ *Always renew clutch plate and pressure plate together and select the correct parts according to engine code ⇒ Electronic parts catalogue .*
- ◆ *If the clutch has burnt out, thoroughly clean the clutch housing, flywheel and parts of the engine facing the gearbox in order to reduce the smell of burnt linings.*
- ◆ *Clean input shaft splines and (in the case of a used clutch plate) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines -G 000 100- to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.*
- ◆ *Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.*
- ◆ *Pressure plate contact surface and clutch plate lining must make full contact with flywheel. Only then insert bolts.*
- ◆ *Check that dowel sleeves for centralising engine/gearbox are in the cylinder block; install if necessary.*
- ◆ *If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).*

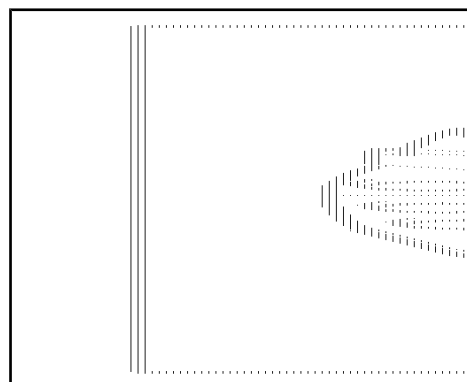
### Installation position of clutch plate

- Marking „Getriebeseite“ (gearbox side) and the protruding spring cage face towards gearbox.



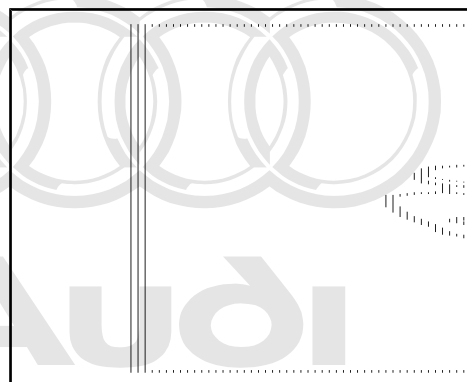
### Checking ends of diaphragm spring

- Wear up to half the thickness of the diaphragm spring -arrows- is permissible.



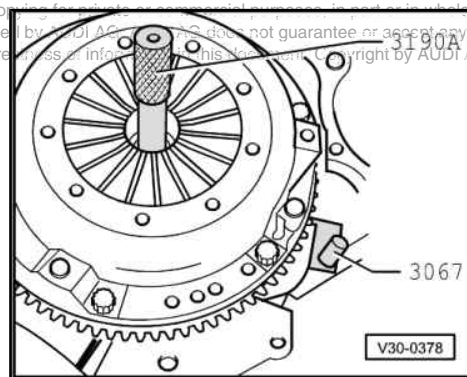
### Checking spring connections and rivets

- Check spring connections between pressure plate and cover for cracks and make sure rivets are seated tightly.
- Renew pressure plate if spring connections are broken or badly bent, or if riveted fastenings are loose -arrows-.



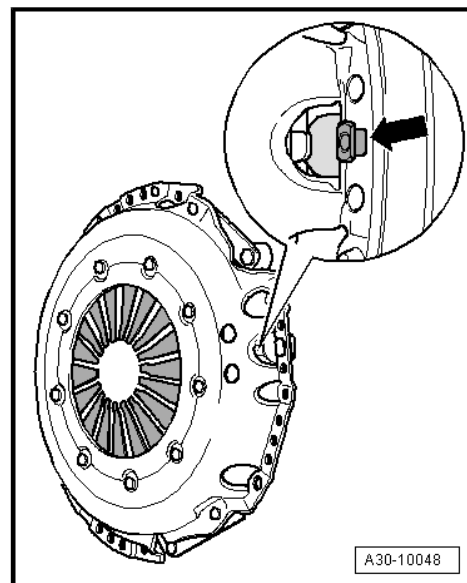
- Use counterhold tool -3067- .
- Fit pressure plate onto centring pins.
- Use centring mandrel -3190 A- to centralise clutch plate.

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To prevent the pressure plate from becoming distorted during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:

- Make sure that the stop pin (position sensor) -arrow- is free to move.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Working clockwise, tighten all six bolts consecutively in steps of 90° (1/4 turn) until the housing makes contact with the flywheel.
- The stop pin -arrow- should then lift away from the pressure plate.
- Working clockwise, tighten all 6 bolts to final torque consecutively. Tightening torque ➔ [Item 4 \(page 46\)](#)
- Install gearbox ➔ [page 100](#) or ➔ [page 118](#) .



## 8.4 Exploded view - LuK version clutch



### Note

*The dual-mass flywheel, pressure plate and clutch plate are matched together; components from another manufacturer must not be installed on the same vehicle.*



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### 1 - Dual-mass flywheel

- ☐ Removing and installing  
⇒ Engine, mechanics;  
Rep. gr. 13
- ☐ Ensure that dowel pins  
fit tightly
- ☐ Contact surface for  
clutch lining must be  
free of scoring, oil and  
grease
- ☐ Observe instructions for  
removal ⇒ [page 53](#)

### 2 - Clutch plate

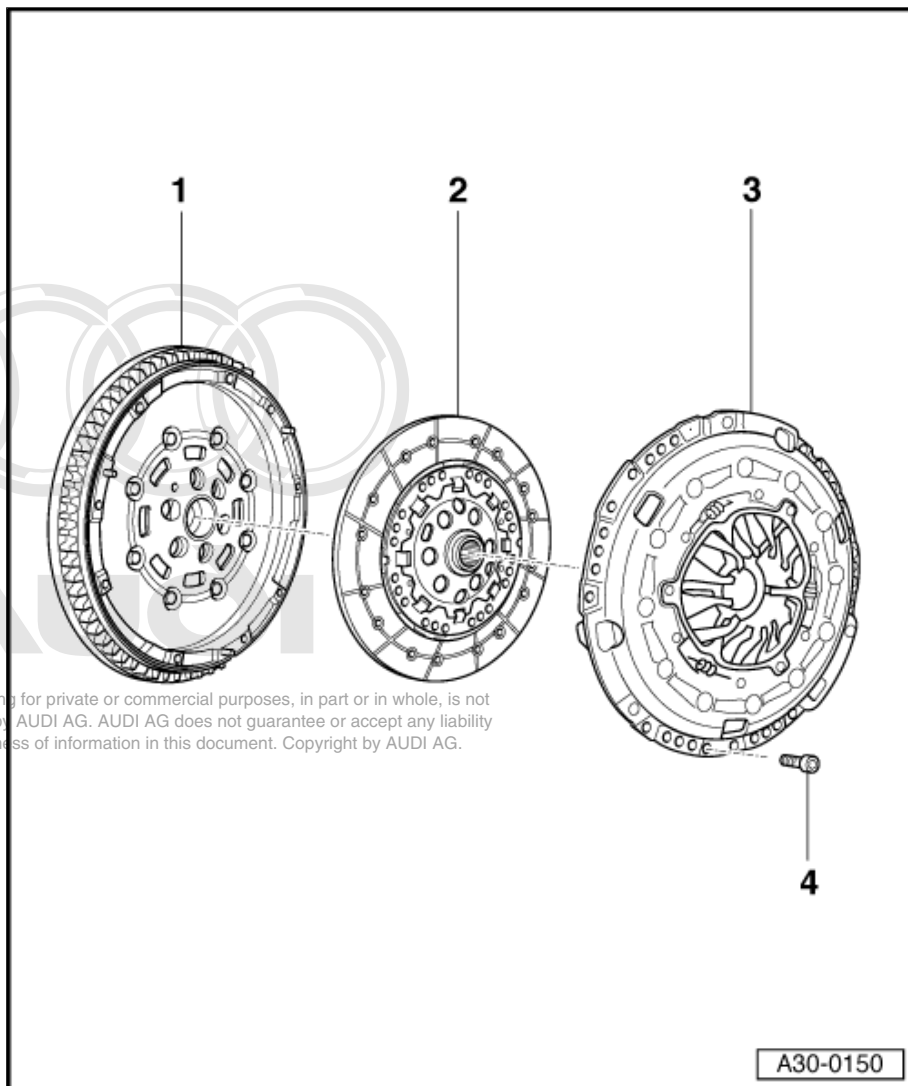
- ☐ Removing and installing  
⇒ [page 53](#)
- ☐ Always renew SAC  
pressure plate as well
- ☐ Installation position:  
marking  
„Getriebeseite“ (gear-  
box side) faces towards  
gearbox
- ☐ For correct version, re-  
fer to ⇒ [Electronic parts](#)  
catalogue

### 3 - SAC pressure plate

- ☐ „SAC“ = self-adjusting  
clutch
- ☐ Always renew clutch  
plate as well
- ☐ Removing and installing  
⇒ [page 53](#)
- ☐ Checking position of ad-  
juster ring on new SAC  
pressure plate  
⇒ [page 55](#)
- ☐ Only fits on flywheel in one position
- ☐ Checking ends of diaphragm spring ⇒ [page 55](#)
- ☐ Checking spring connection and rivets ⇒ [page 55](#)

### 4 - Bolt

- ☐ M6 - 13 Nm
- ☐ M7 - 20 Nm
- ☐ 6x
- ☐ Loosen and tighten bolts consecutively in steps of 90°



## Removing dual-mass flywheel

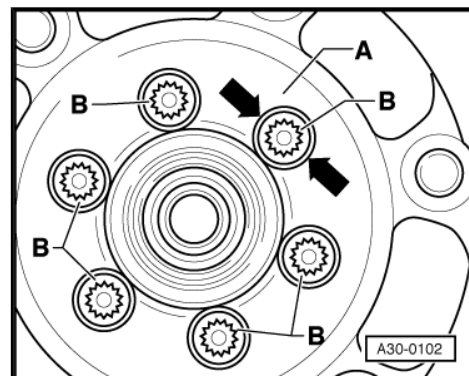


### Note

*Do not use an impact wrench or pneumatic wrench to remove bolts -B-: this would severely damage the dual-mass flywheel. Bolts -B- must always be removed by hand.*

- Rotate flywheel -A- so that bolts -B- are aligned centrally behind the holes -arrows-.
- When unscrewing bolts -B-, make sure the bolt heads do not contact the flywheel -arrows- because this would damage the flywheel when the bolts are turned further.

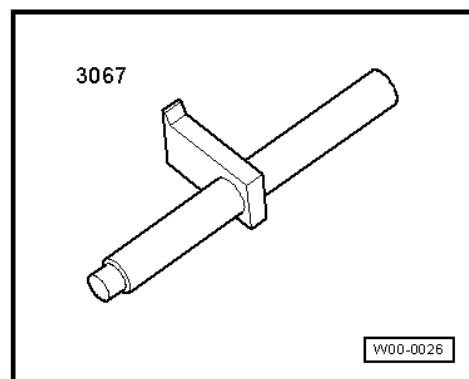
Removing and installing dual-mass flywheel ⇒ Engine, mechanics; Rep. gr. 13



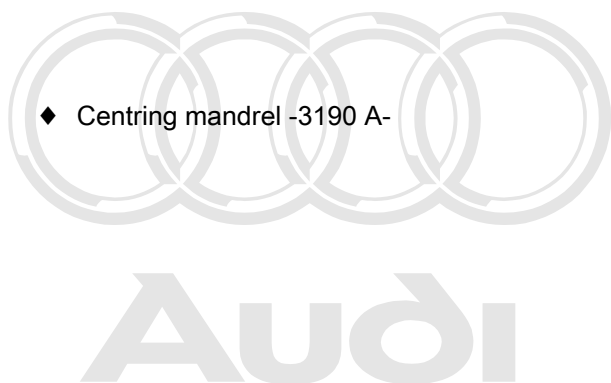
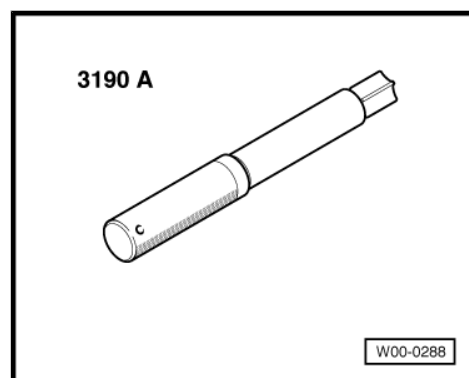
## 8.5 Removing and installing clutch (LuK version)

### Special tools and workshop equipment required

- ◆ Counterhold tool -3067-



- ◆ Centring mandrel -3190 A-



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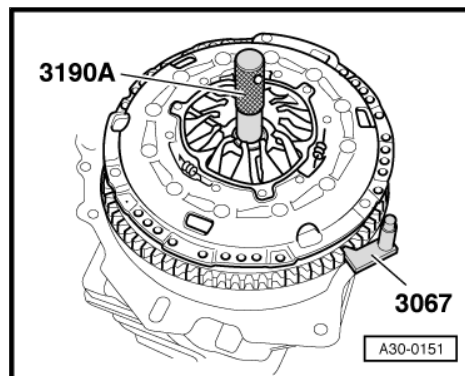
- ◆ Grease for clutch plate splines -G 000 100-

## Removing

- Remove gearbox  
⇒ „2 Removing and installing gearbox on vehicles with 1.8 ltr. TFSI engine“, page 90 or  
⇒ „3 Removing and installing gearbox on vehicles with 2.0 ltr. FSI engine“, page 109 .
- Attach counterhold tool -3067- before loosening bolts.

**To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always adhere to the following procedure when unbolting the pressure plate:**

- Working clockwise, loosen all six bolts consecutively in steps of 90° (1/4 turn) until the pressure plate is released.
- Take off pressure plate and clutch plate.



## Installing

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

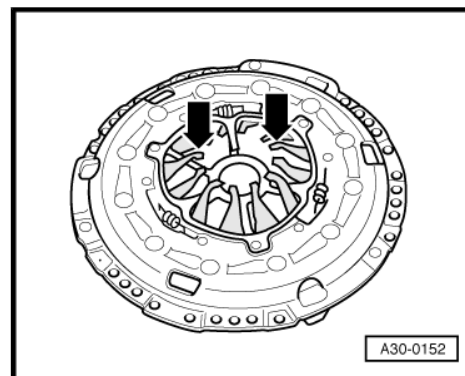


### Note

- ◆ *The dual-mass flywheel, pressure plate and clutch plate are matched together; components from another manufacturer must not be installed on the same vehicle.*
- ◆ *Always renew clutch plate and pressure plate together and select the correct parts according to engine code ⇒ Electronic parts catalogue .*
- ◆ *Checking position of adjuster ring on new pressure plate  
⇒ page 55*
- ◆ *If the clutch has burnt out, thoroughly clean the clutch housing, flywheel and parts of the engine facing the gearbox in order to reduce the smell of burnt linings.*
- ◆ *Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines -G 000 100- to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.*
- ◆ *Pressure plates have an anti-corrosion coating and are greased. Only the contact surface may be cleaned, otherwise the service life of the clutch will be considerably reduced.*
- ◆ *Pressure plate contact surface and clutch plate lining must make full contact with flywheel. Only then insert bolts.*
- ◆ *Check that dowel sleeves for centralising engine/gearbox are in the cylinder block; install if necessary.*
- ◆ *If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).*

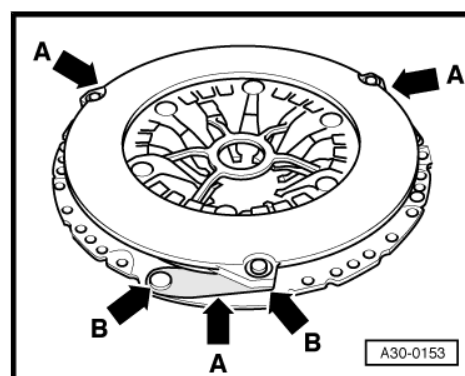
### Checking ends of diaphragm spring

- Wear up to half the thickness of the diaphragm spring -arrows- is permissible.



### Checking spring connections and rivets

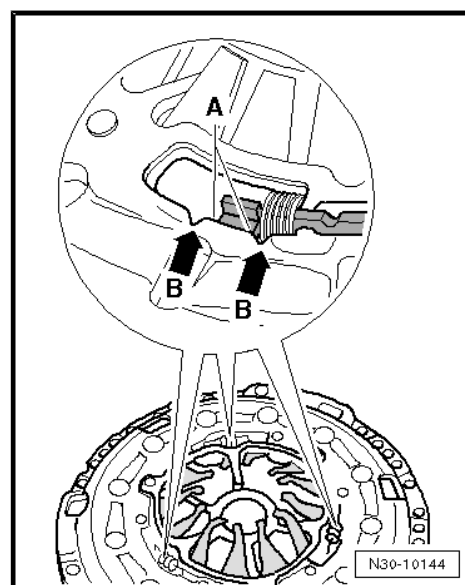
- Check spring connections -arrows A- for damage and make sure riveted joints -arrows B- are seated tightly.
- Renew pressure plate if spring connections are broken or badly bent, or if riveted joints are loose.



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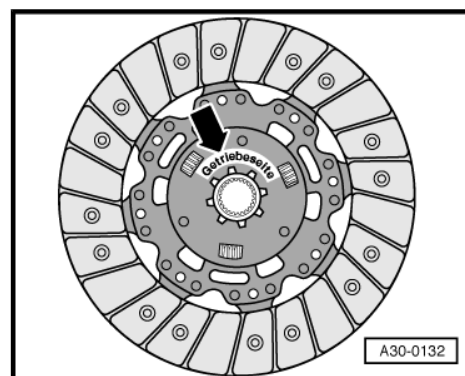
### Checking position of adjustment mechanism (new SAC pressure plates only)

- The two edges -A- of the adjuster ring should be located between the two notches -arrows B-.
- If the adjuster ring is in a different position on a new pressure plate, the pressure plate and clutch plate must not be installed.
- The position of the adjuster ring can be outside the notches on used clutches.



### Installation position of clutch plate:

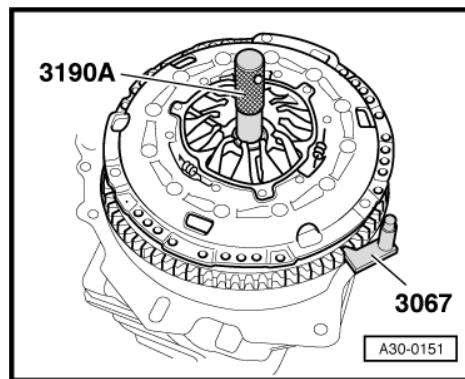
- The marking „Getriebeseite“ (gearbox side) faces towards the gearbox



- Use counterhold tool -3067- .
- Position pressure plate on centring pins.
- Use centring mandrel -3190 A- to centre clutch plate.

**To prevent the pressure plate from becoming distorted during installation (causes clutch grab when driving off), always adhere to the following procedure when installing the pressure plate:**

- Screw in all 6 bolts evenly by hand until bolt heads make contact with pressure plate.
- Working clockwise, tighten all six bolts consecutively in steps of 90° (1/4 turn) until the housing makes contact with the fly-wheel.
- Working clockwise, tighten all 6 bolts to final torque consecutively. Tightening torque ➔ [Item 4 \(page 52\)](#)
- Install gearbox ➔ [page 100](#) or ➔ [page 118](#) .



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## 34 – Controls, housing

### 1 Overview - selector mechanism

- ◆ ⇒ „1.1 Exploded view - gear knob and gear lever boot“, page 59
- ◆ ⇒ „1.2 Removing and installing gear knob with gear lever boot“, page 59
- ◆ ⇒ „1.3 Separating gear lever boot from gear knob“, page 60
- ◆ ⇒ „1.4 Exploded view - gear lever and selector housing on vehicles up to model year 2008“, page 61
- ◆ ⇒ „1.5 Exploded view - selector mechanism on vehicles from model year 2008 onwards“, page 64
- ◆ ⇒ „1.6 Dismantling and assembling selector mechanism on vehicles from model year 2008 onwards“, page 65
- ◆ ⇒ „1.7 Removing and installing selector mechanism“, page 69
- ◆ ⇒ „1.8 Exploded view - gear selector cable and gate selector cable up to model year 2007“, page 76
- ◆ ⇒ „1.9 Exploded view - gear selector cable and gate selector cable from model year 2008 onwards“, page 80
- ◆ ⇒ „1.10 Removing and installing gear selector cable and gate selector cable“, page 85
- ◆ ⇒ „1.11 Adjusting selector mechanism“, page 86

-Arrow A- gear selection movement

-Arrow B- gate selection movement

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**A - Gear selector cable (gear selection movement)**

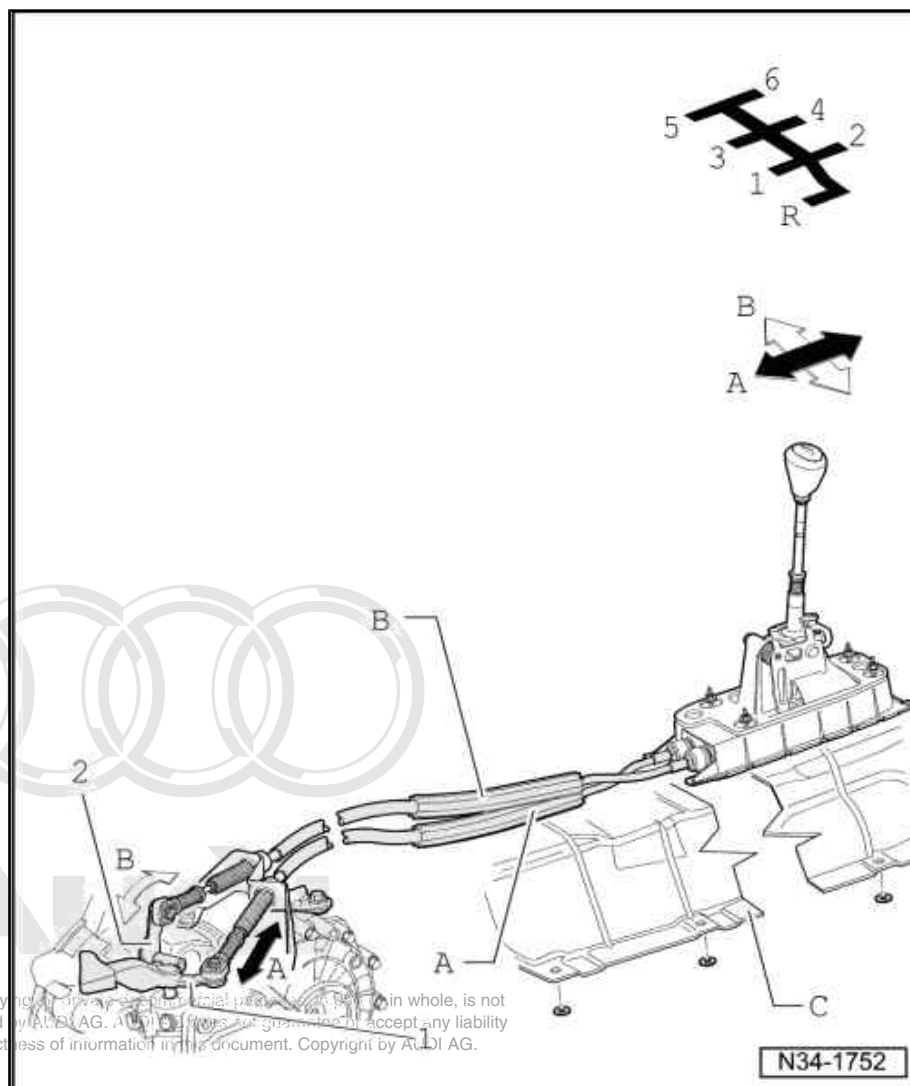
**B - Gate selector cable (gate selection movement)**

**C - Heat shield**

- ☐ Detach before removing selector mechanism

**1 - Gearbox selector lever**

**2 - Gate relay lever**



## 1.1 Exploded view - gear knob and gear lever boot

### 1 - Gear lever

### 2 - Noise insulation cover (lower)

### 3 - Noise insulation cover (upper)

### 4 - Gear knob

- ❑ Remove and install together with gear lever boot ⇒ [page 59](#)

### 5 - Gear lever boot

- ❑ Remove and install together with gear knob ⇒ [page 59](#)

### 6 - Cover for centre console

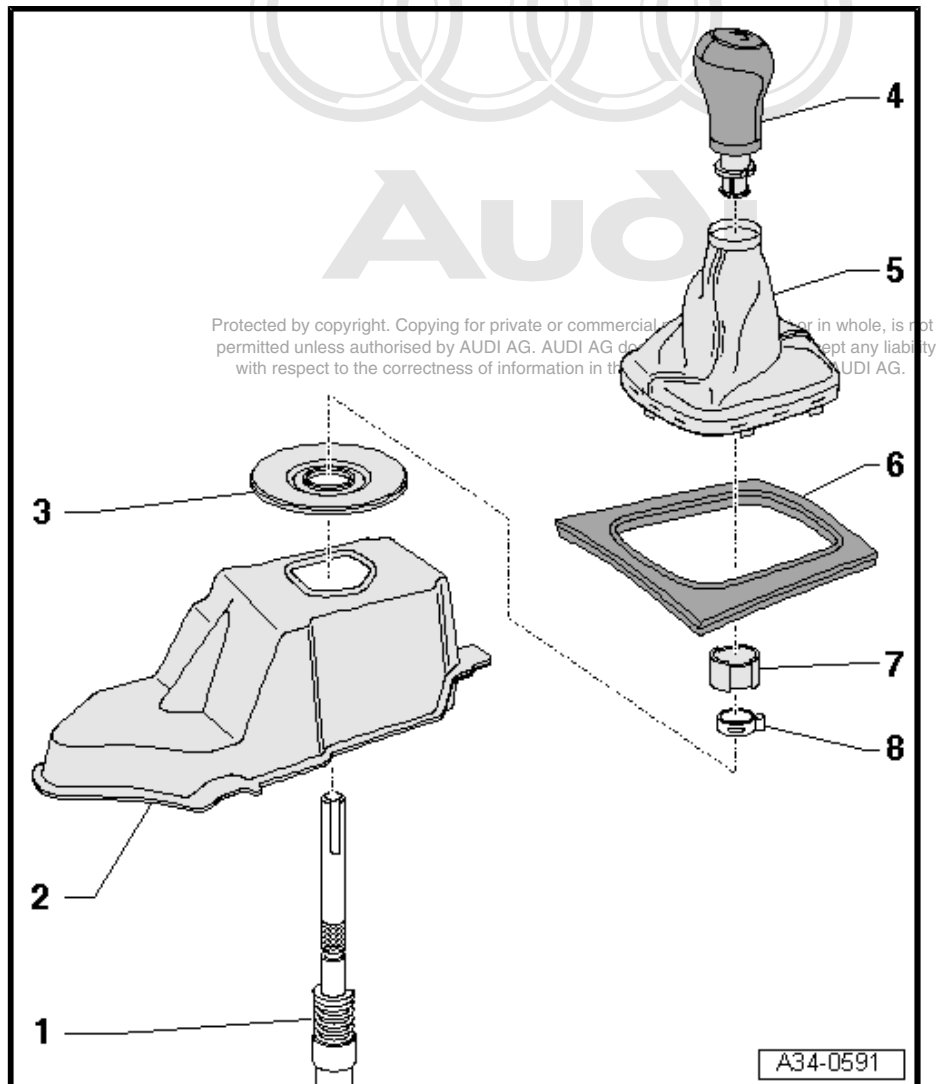
- ❑ Remove and install together with gear knob and gear lever boot ⇒ [page 59](#)

### 7 - Connecting piece

- ❑ Connects gear lever boot and gear knob
- ❑ Different versions ⇒ Electronic parts catalogue

### 8 - Clip

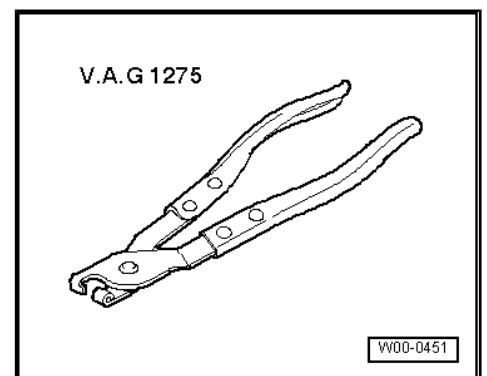
- ❑ Secures gear knob to gear lever
- ❑ Secure with hose clip pliers -V.A.G 1275-



## 1.2 Removing and installing gear knob with gear lever boot

### Special tools and workshop equipment required

- ◆ Hose clip pliers -V.A.G 1275-



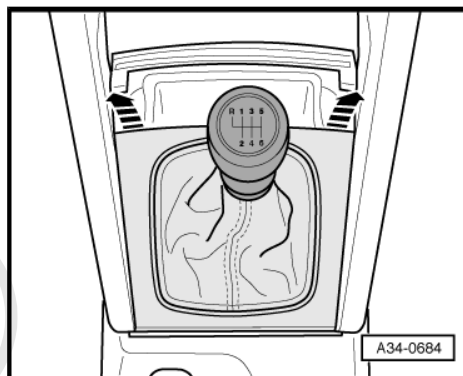
## Removing



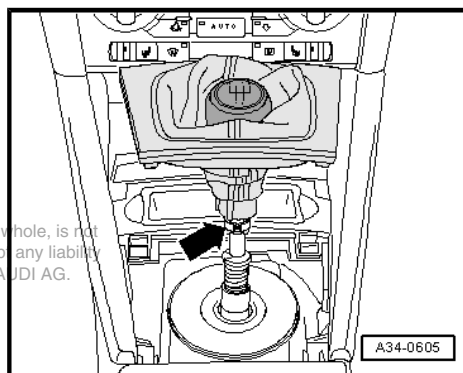
### Note

*The gear knob is removed together with the gear lever boot and the cover for the centre console.*

- Open ashtray (if fitted).
- Carefully pry gear lever boot off centre console -arrows-.
- Pull boot up and over gear knob.



- Open clip -arrow- and pull off gear knob together with boot.

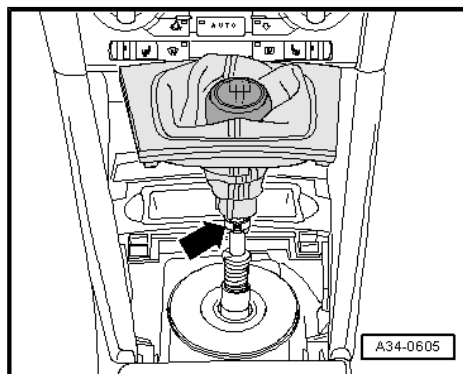


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## Installing

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

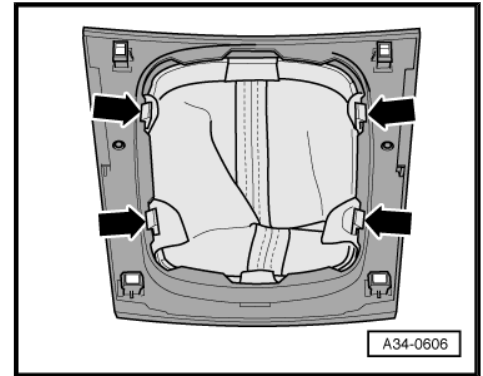
- Push gear knob together with boot onto gear lever as far as stop.
- Secure gear knob to gear lever with clip -arrow-, using hose clip pliers -V.A.G 1275- .



## 1.3 Separating gear lever boot from gear knob

- Remove gear knob together with gear lever boot ⇒ [page 59](#) .

- Unclip frame of gear lever boot from centre console cover -arrows-.

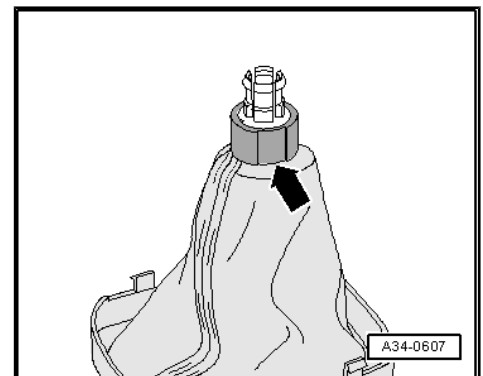


- Cut through the connecting piece with a sharp knife at the point marked -arrow-. Take care not to damage gear lever boot.

#### Installing

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

- Fit gear lever boot on gear knob, using a new connecting piece -arrow-.
- Install gear knob together with boot ➔ [page 59](#) .



## 1.4 Exploded view - gear lever and selector housing on vehicles up to model year 2008



#### Note

*Lubricate all bearings and moving surfaces with grease -G 000 450 02- .*



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**1 - Floor plate**

- ☐ Bend tabs open to remove
- ☐ Renew

**2 - Gasket**

- ☐ Renew if damaged

**3 - Gear lever**

**4 - O-ring**

- ☐ Renew if damaged

**5 - Retaining clip**

- ☐ Renew

**6 - Gate selector cable**

- ☐ Removing and installing ⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)

**7 - Gear selector cable**

- ☐ Removing and installing ⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)

**8 - Securing clip**

- ☐ Renew

**9 - Guide**

- ☐ For spring ⇒ [Item 26 \(page 63\)](#)

**10 - Ball socket with damper**

**11 - Cover**

**12 - Bush**

**13 - Securing clip**

- ☐ Removing and installing ⇒ [page 63](#)

**14 - Spring**

**15 - Bush**

**16 - Bolt**

- ☐ 6 Nm

**17 - Securing clip**

**18 - Bearing bush**

**19 - Gear lever guide**

**20 - Nut**

- ☐ 10 Nm

**21 - Gasket**

- ☐ Between selector housing and floor
- ☐ Self-adhesive

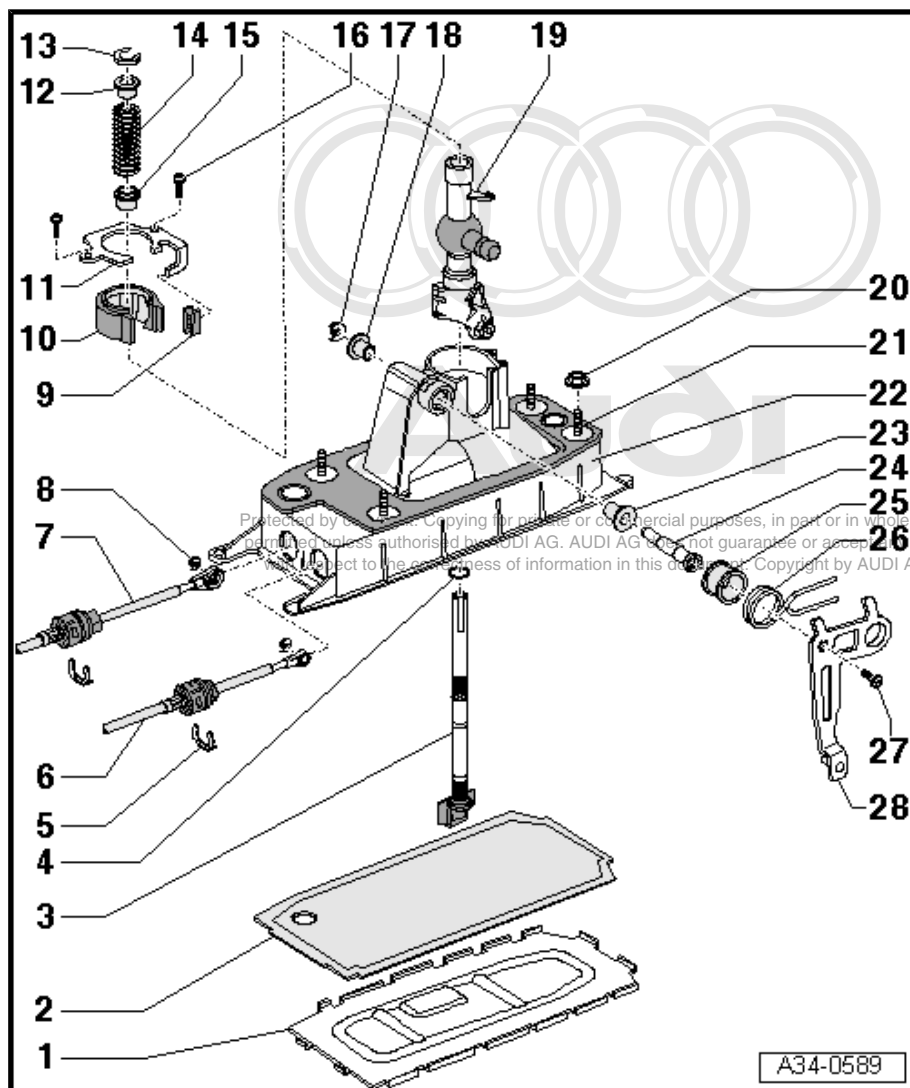
**22 - Selector housing**

**23 - Bearing bush**

**24 - Pivot pin**

**25 - Guide bush**

- ☐ Press onto selector housing



## 26 - Spring

- Installing ➔ [page 63](#)

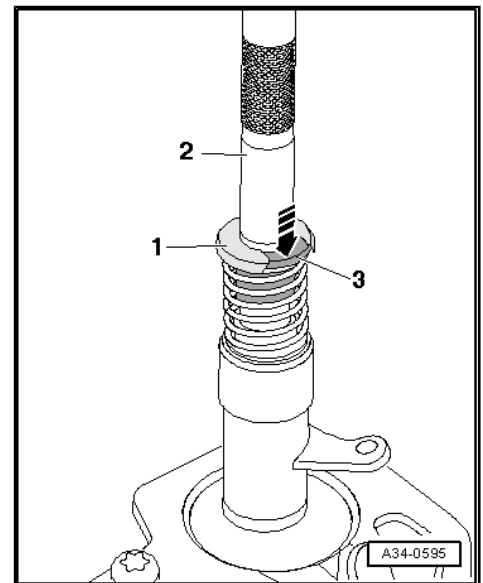
## 27 - Bolt

- 5 Nm

## 28 - Gate selector lever

### Removing and installing securing clip

- Hold gear lever -2- in position.
- Press spacer bush -3- in direction indicated -arrow-.
- Take off securing clip -1-.



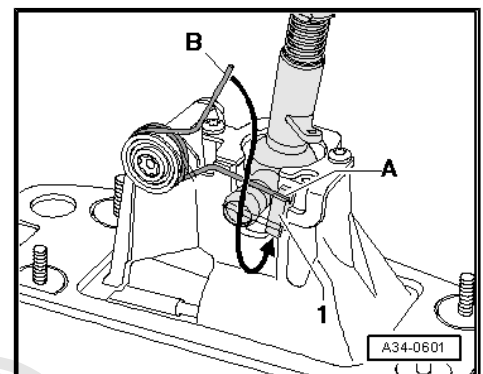
### Installing spring

- Insert arm -A- of spring in guide -1- from above.
- Pull down arm -B- of spring and insert it in the guide from below.



#### Note

*The gate selector lever is removed to give a better illustration.*



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## 1.5 Exploded view - selector mechanism on vehicles from model year 2008 onwards



### Note

Lubricate bearings and moving surfaces with grease -G 000 450 02-.

#### 1 - Floor plate

- ☐ Bend tabs open to remove
- ☐ Always renew

#### 2 - Gasket

- ☐ Always renew

#### 3 - Gear lever

- ☐ Can be removed and installed without removing gear lever guide  
⇒ [Item 15 \(page 65\)](#)

#### 4 - Damping washer

- ☐ Push onto gear lever as far as stop-arrow

#### 5 - Securing clip

- ☐ Take care not to damage selector cables when removing.
- ☐ Always renew

#### 6 - Gate selector cable

- ☐ Lever off gate selector lever
- ☐ Press onto gate selector lever inside selector mechanism
- ☐ Installation position  
⇒ [page 57](#)

#### 7 - Bush

#### 8 - Gear selector cable

- ☐ Lever off gear lever guide
- ☐ Press onto gear lever guide inside selector mechanism
- ☐ Installation position ⇒ [page 57](#)

#### 9 - Damper

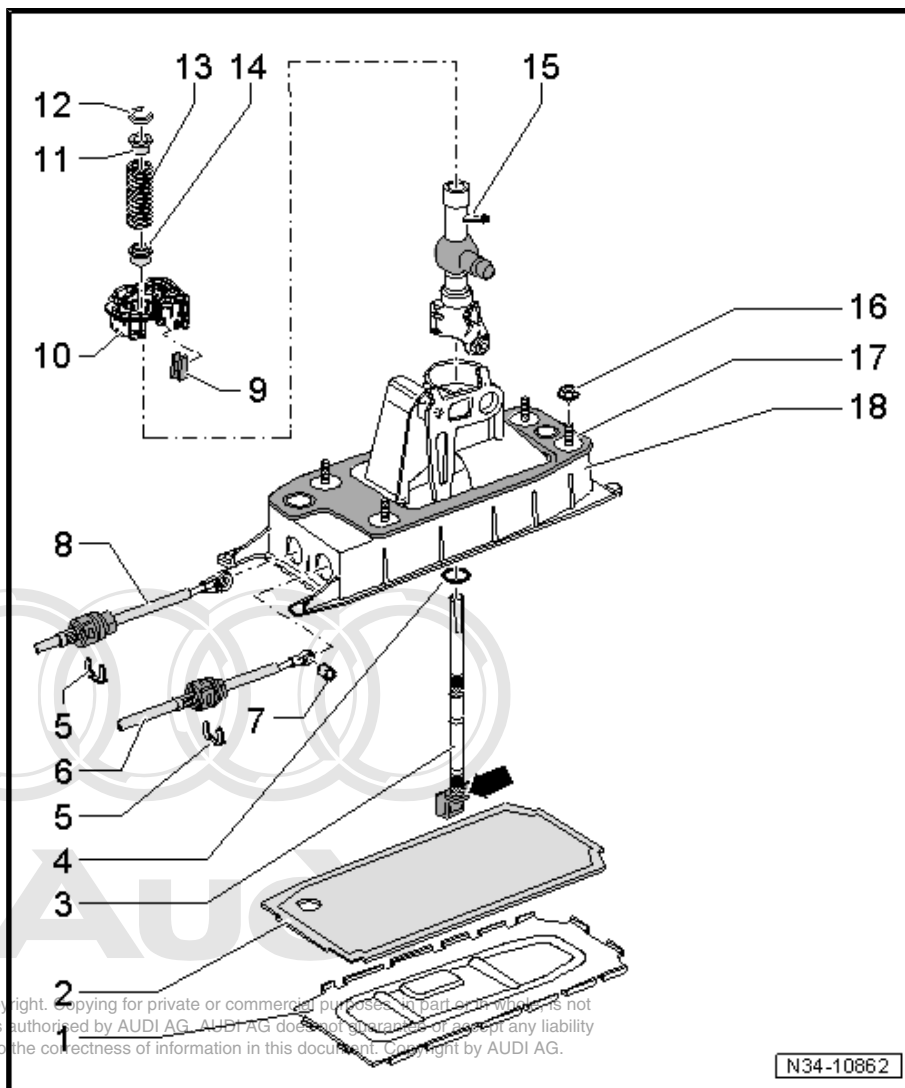
#### 10 - Ball socket

- ☐ Will be damaged during removal
- ☐ Always renew

#### 11 - Bush

#### 12 - Securing clip

- ☐ Removing and installing ⇒ [page 63](#)



**13 - Spring**

**14 - Bush**

**15 - Gear lever guide**

**16 - Nut**

- M6 - 8 Nm
- M8 - 25 Nm
- ☐ 4x

**17 - Gasket**

- ☐ Between selector housing and floor
- ☐ Self-adhesive
- ☐ Glue onto selector housing

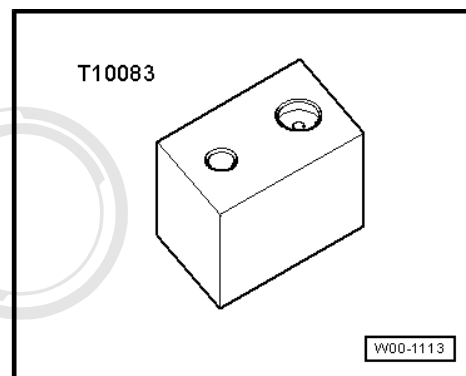
**18 - Selector housing**

- ☐ With spring and gate selector lever
- ☐ Spring and gate selector lever cannot be detached

## 1.6 Dismantling and assembling selector mechanism on vehicles from model year 2008 onwards

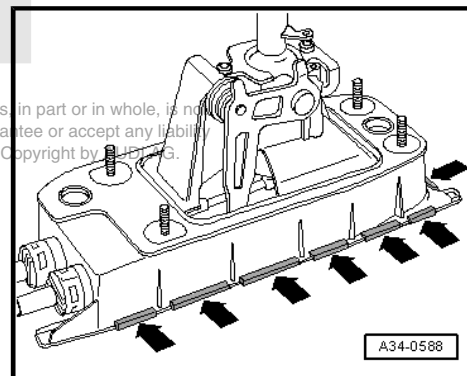
### Special tools and workshop equipment required

- ◆ Thrust block -T10083-

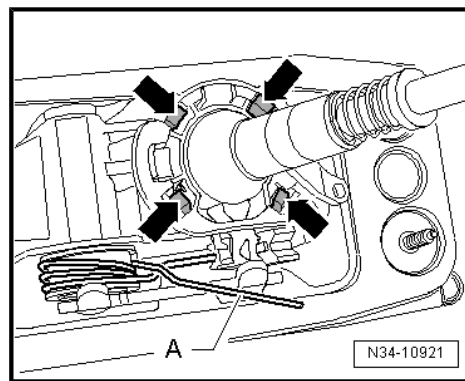


### Dismantling

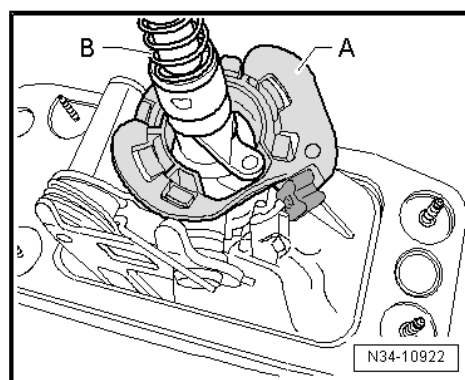
- Remove selector mechanism ⇒ [page 69](#)
- Using a screwdriver, bend open tabs ~~arrows~~ on all sides of floor plate and remove floor plate.
- Remove gasket from selector housing.
- Remove gear selector cable and gate selector cable from selector housing ⇒ [page 64](#) .



- Lift top spring arm -A- over tab on gate selector lever.
- Using a screwdriver, press lugs -arrows- on ball socket towards ball on gear lever guide; if necessary, break off lugs.



- Prise ball socket -A- out of selector housing together with gear lever guide and gear lever -B-.
- Then press ball socket -A- off ball on gear lever guide and remove.



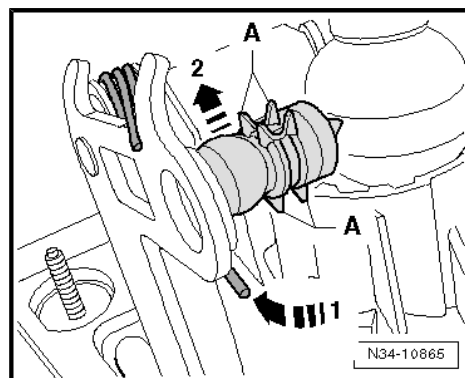
#### Note

- ♦ Note guides -A- when performing the following steps.
- ♦ They must not break off.
- Swivel bottom spring arm -arrow 1- onto stop on shoulder of gate selector lever.



#### Caution

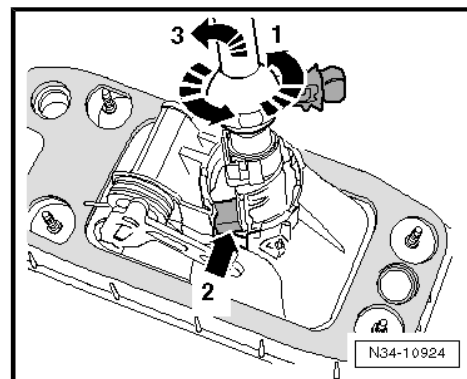
*During the following steps, the bottom spring arm (-arrow 1-) can become dislodged and snap downwards off the shoulder of the gate selector lever.*



- Pull gear lever guide upwards as far as stop and at the same time pull ball-head pin -arrow 2- out of gate selector lever.
  - Press spring -arrow 1- carefully off the shoulder of the gate selector lever.
- The spring arms will then compress „diagonally“.

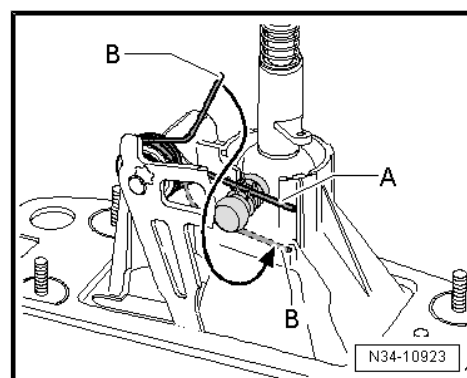
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- Then turn gear lever guide in direction of -arrow 1-.
- The pin -arrow 2- must be in the recess in the selector housing.
- Next, swivel gear lever guide out in direction of -arrow 3- together with gear lever.

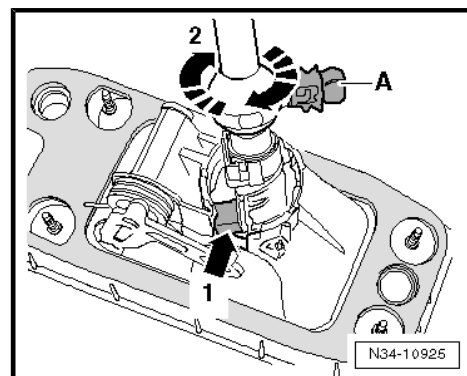


### Assembling selector mechanism

- Release spring arms -A- and -B-.
- Spring arms -A- and -B- must point in opposite directions. (Shown here with gear lever guide installed.)



- Insert gear lever guide into selector housing together with gear lever.
- Pin -arrow 1- should be positioned just inside recess on selector housing.
- Turn gear lever guide in direction of -arrow 2- until ball-head pin -A- is above recess on selector housing.

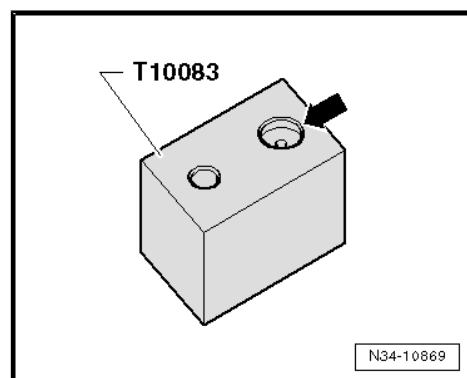


- Position selector housing with gear lever guide onto thrust block -T10083-.

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• The gear lever guide rests in the larger recess -arrow- in the thrust block -T10083-.

- The gear lever guide should protrude out of the selector housing as far as the stop.



- Insert arm -A- of spring in guide from above.
- Pull arm -B- of spring downwards and insert it next to the guide (towards ball head).

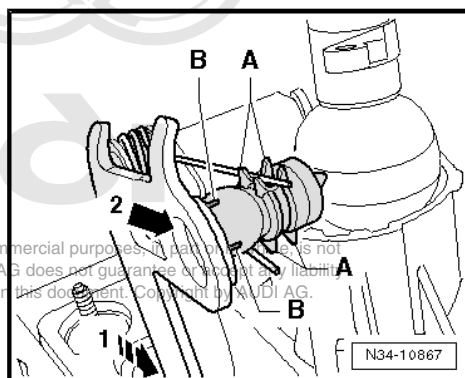
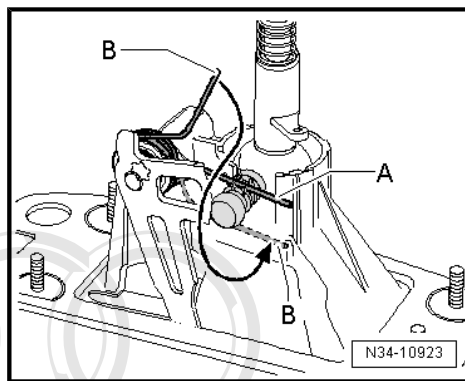


### Note

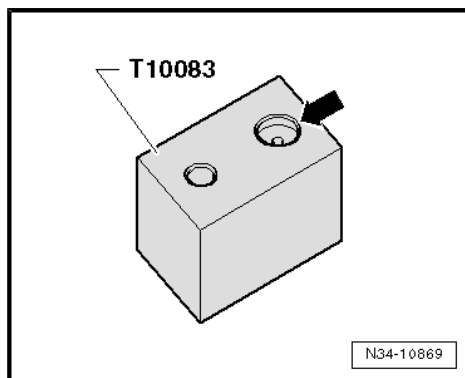
*For illustration purposes, only part of the gate selector lever is shown.*

- Carefully take selector housing off thrust block -T10083- together with gear lever guide.
- Move gate selector lever rearwards as far as stop in direction of -arrow 1-.
- Grease ball-head pin.
- Press ball-head pin into hole in gate selector lever -arrow 2-.
- Guides -A- and tabs -B- must not be damaged.

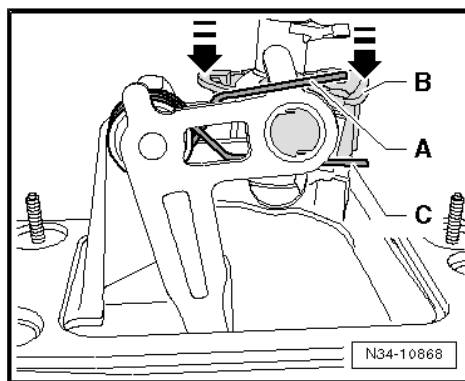
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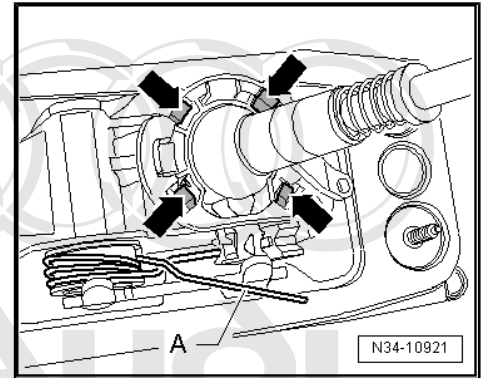
- Now insert gear lever guide (which is now fitted in selector housing) into larger recess -arrow- in thrust block -T10083- again.
- The gear lever guide should now protrude out of the selector housing as far as the stop.



- Lift top spring arm -A- over pin on gate selector lever.
- Use a new ball socket -B-.
- Grease ball socket and ball of gear lever guide.
- Press ball socket onto ball of gear lever guide as far as stop.
- Remove selector housing from thrust block -T10083- .
- Press ball socket into selector housing in direction of -arrows-.



- All four lugs -arrows- must engage.
- Lift top spring arm -A- over pin on gate selector lever into guide.
- Insert bottom spring arm into guide.
- Fit gear lever, gear selector cable, gate selector cable and floor plate ⇒ [page 64](#) .
- Install selector mechanism ⇒ [page 74](#) .



## 1.7 Removing and installing selector mechanism

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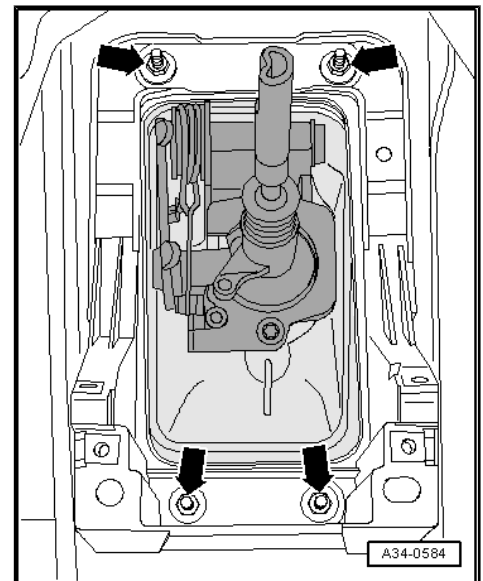
### Removing

- Remove gear knob together with gear lever boot ⇒ [page 59](#) .
- Remove ashtray or storage compartment in front section of centre console ⇒ General body repairs, interior; Rep. gr. 68 .
- Lift out noise insulation covers above selector mechanism.
- Remove nuts -arrows-.
- Remove air cleaner housing completely ⇒ Rep. gr. 24 .

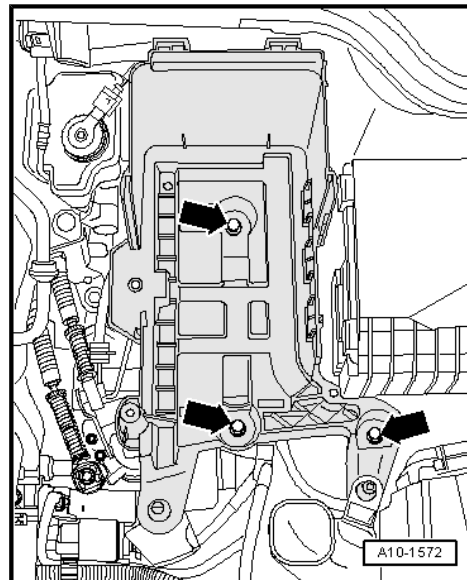


### WARNING

*Follow steps required when disconnecting battery ⇒ Rep. gr. 27 .*



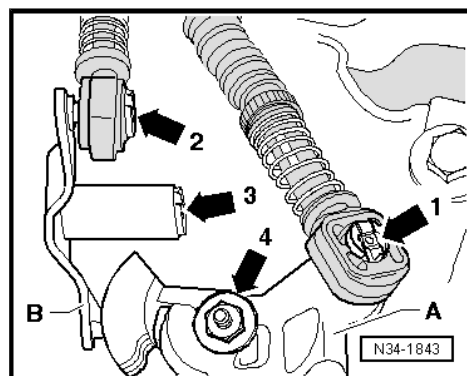
- Remove battery and battery tray -arrows- ⇒ Electrical system; Rep. gr. 27 .



- Detach securing clip -arrow 1- for gear selector cable from gearbox selector lever -A-.

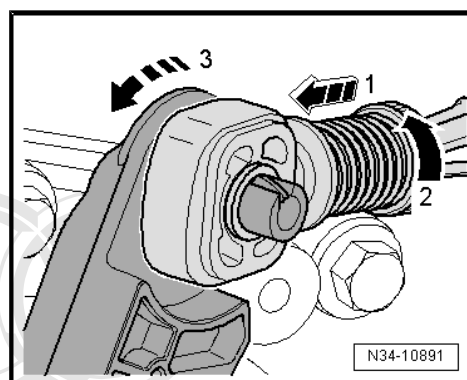
#### Vehicles with metal gate relay lever -B-:

- Detach securing clip -arrow 2- for gate selector cable from gate relay lever -B-.
- Pull gate selector cable and gear selector cable off joint pins.



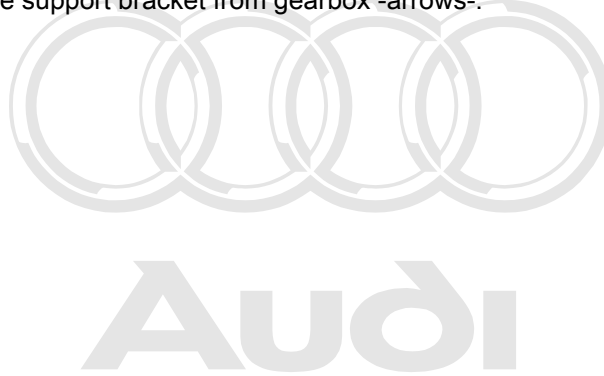
#### Vehicles with plastic gate relay lever:

- To avoid damage to the gate selector cable, the cable end-piece must be separated from the gate selector cable before removal.
- Pull locking mechanism forwards in direction of -arrow 1- onto stop and then turn in direction of -arrow 2- to lock.
- Then press gate relay lever forwards (in direction of -arrow 3-).
- Do not detach cable end-piece from gate relay lever until gate relay lever has been removed ⇒ [page 84](#) .

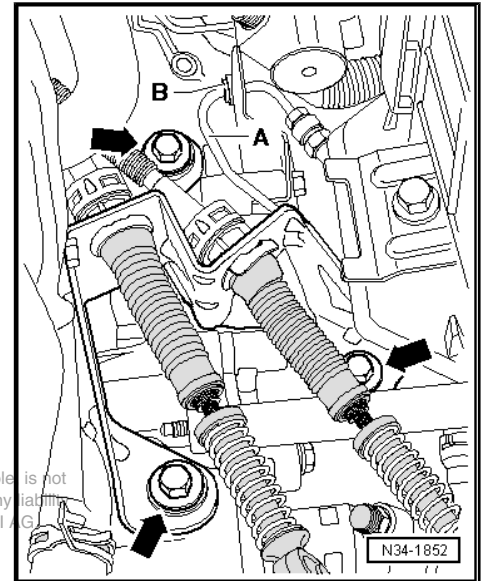


**Continued for all vehicles:**

- Detach cable support bracket from gearbox -arrows-.

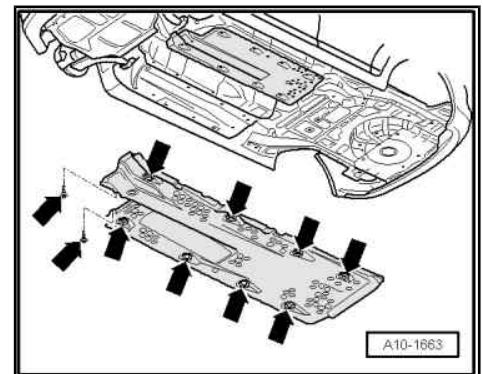


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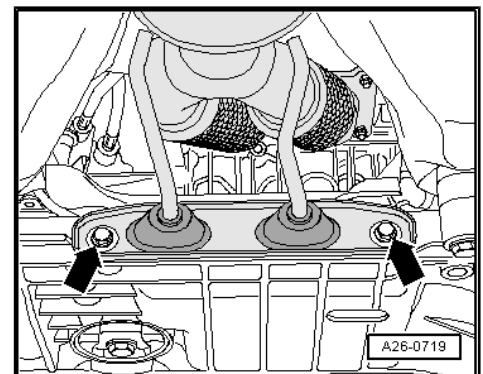


**Vehicles with 2.0 ltr. FSI engine:**

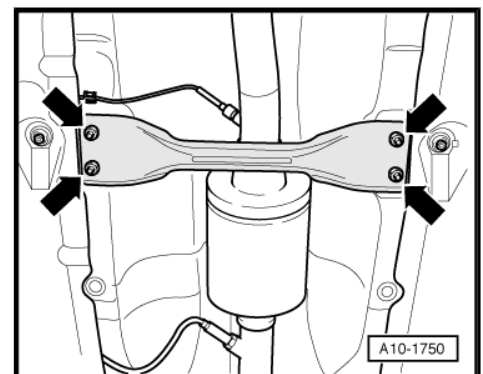
- Remove covers on vehicle underside -arrows- (left and right).



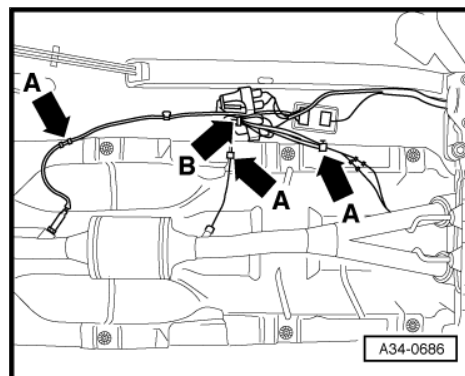
- Unbolt support bracket for exhaust system -arrows-.



- Remove front tunnel cross-piece on vehicle underside -arrows-.



- Unclip all wiring at heat shield -arrows A-.
- Cut open cable tie -arrow B-.



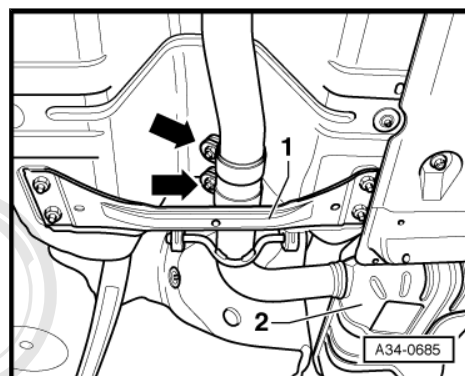
- Remove rear tunnel cross-piece -1-.
- Take up weight of front section of exhaust system at catalytic converter using engine/gearbox jack -V.A.G 1383 A- .



#### Note

*To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 10°.*

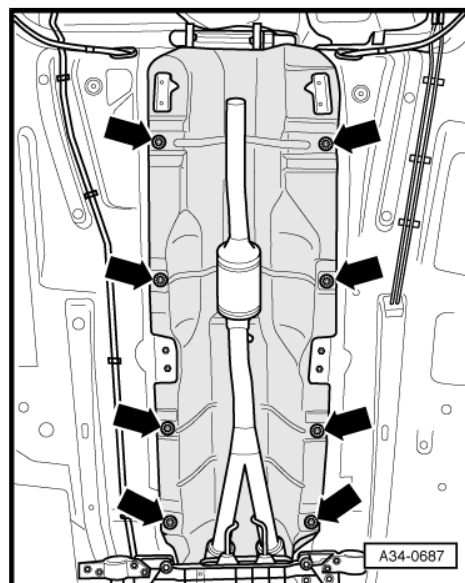
- Disconnect exhaust system at clamp -arrows-.



#### Note

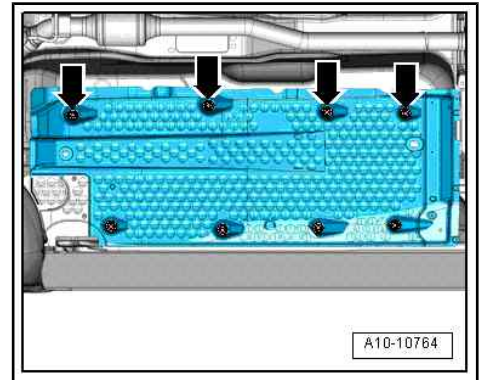
*A second mechanic is required for removing the rear section of the exhaust system.*

- Detach rear silencer -2- at rubber mountings and remove rear section of exhaust system.
- Lower front section of exhaust system slightly using engine and gearbox jack -V.A.G 1383 A- (not more than 10°). Make sure there is sufficient clearance for Lambda probe wiring.
- Release clips -arrows- and pull out heat shield from the rear.

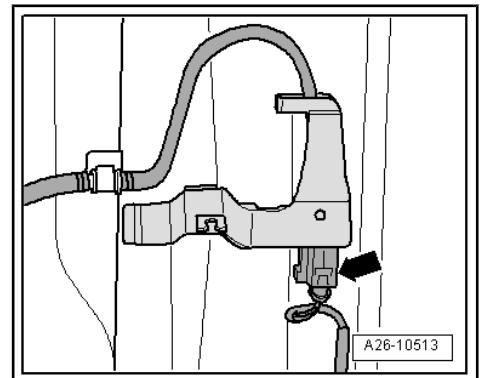


### Vehicles with 1.8 ltr. TFSI engine:

- Remove nuts -arrows- from covers on vehicle underside (left and right).



- Pull inner side of cover on vehicle underside (right-side) downwards slightly.
- Unplug electrical connector -arrow- on vehicle underside (right-side).
- Take electrical connector out of bracket and move clear wiring to Lambda probe -G39- .



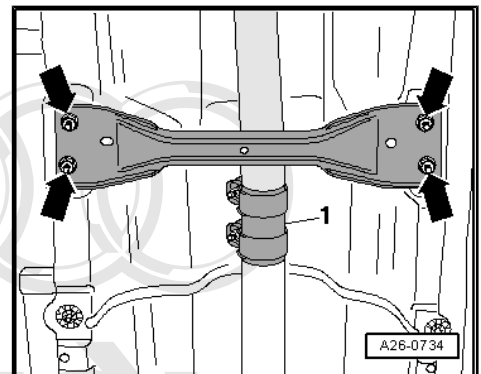
- Remove front cross member on vehicle underside -arrows-.



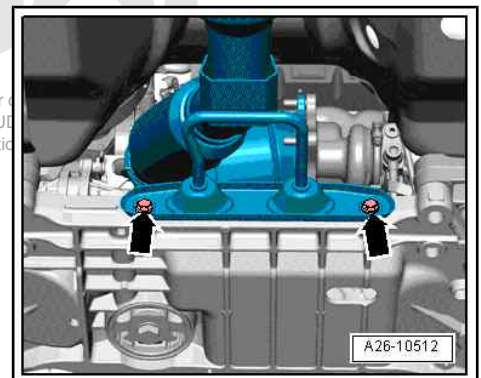
#### Note

*To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 10°.*

- Loosen clamp -1- and move towards the rear.



- Unbolt support bracket for exhaust system -arrows-.
- Tie up front exhaust pipe on underbody.



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- Remove rear cross member on underbody -nuts 1 and 2-.



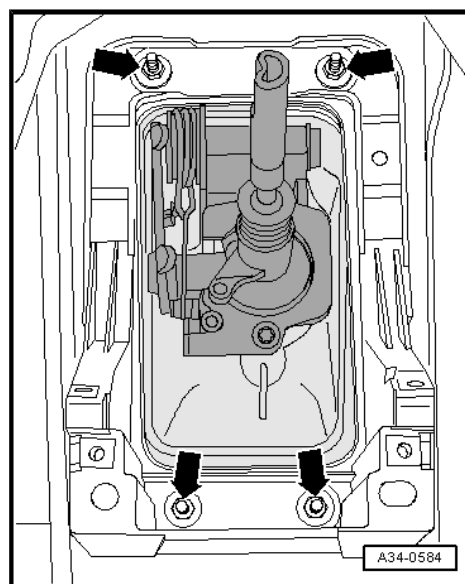
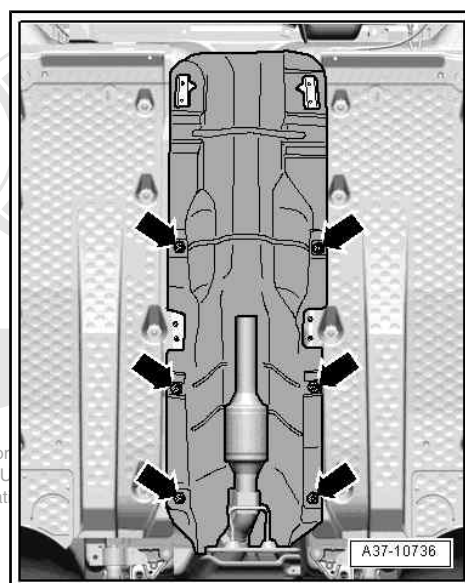
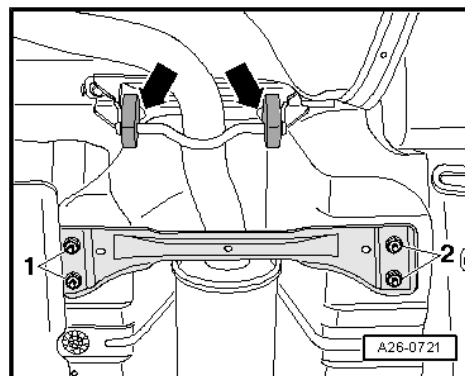
#### Note

*A second mechanic is required for removing the rear section of the exhaust system.*

- Detach exhaust system at rubber mountings -arrows-.
- Detach rear silencer at rubber mountings and remove rear section of exhaust system.
- Release clips -arrows- and detach heat shield to rear.

#### All vehicles:

- Swing selector housing down and remove with selector cables.



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#### Installing

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

- Tightening torques for vehicles up to model year 2008 - ➤ [page 61](#) or from model year 2008 onwards ➤ [page 64](#) .
- Install selector mechanism and tighten nuts -arrows-.

- Route cables -1- from selector mechanism -2- to gearbox as follows:
- ◆ After the point where they cross over -arrow-, the cables must run parallel as far as the cable support bracket on the gearbox.
- ◆ Check that cable tie -arrow- securing selector cables is properly fitted. Installation position ➔ [page 80](#) or ➔ [page 80](#)
- ◆ The cables must be routed in the slot provided in heat shield -3-.

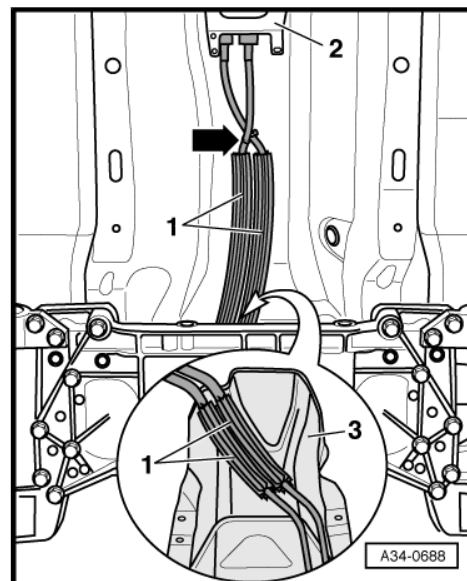


#### Note

*The enlargement shows the heat shield from above.*

The holes in the cable end-pieces have different diameters.

Identification of cable end-pieces ➔ [page 77](#) and ➔ [page 82](#)



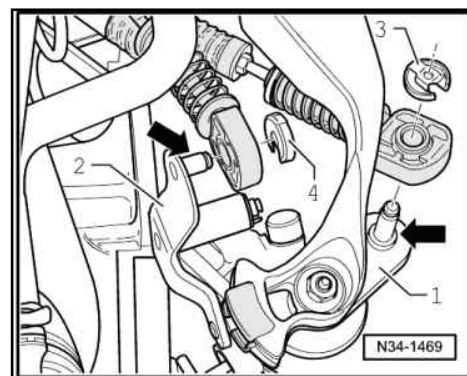
- Apply a small quantity of grease -G 000 450 02- to pin -arrow- of gearbox selector lever -1-.
- Push gear selector cable onto pin -arrow- and secure with securing clip -3-.

#### Metal gate relay lever -2-:

- Apply a small quantity of grease -G 000 450 02- to pin -arrow- of gate relay lever -2-.
- Push gate selector cable onto pin -arrow- and secure with securing clip -4-.

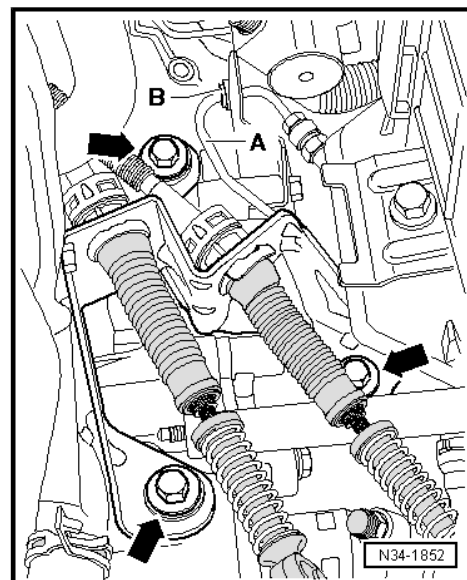
#### Plastic gate relay lever -2-:

- Insert gate selector cable in cable end-piece.



#### Continued for all vehicles:

- Attach cable support bracket to gearbox -arrows-.
- Adjust selector mechanism ➔ [page 86](#) .
- Install noise insulation covers above selector mechanism.
- Install ashtray in front section of centre console ➔ General body repairs, interior; Rep. gr. 68 .
- Install gear knob together with boot ➔ [page 59](#)
- Install exhaust system and ensure stress-free alignment ➔ Engine, mechanics; Rep. gr. 26 .
- Secure both tunnel cross-pieces on vehicle underside ➔ Engine, mechanics; Rep. gr. 26 .
- Install battery tray and battery ➔ Electrical system; Rep. gr. 27 .
- Install complete air cleaner housing ➔ Rep. gr. 24 .



## 1.8 Exploded view - gear selector cable and gate selector cable up to model year 2007



### Note

Lubricate all bearings and moving surfaces with grease -G 000 450 02-.

#### 1 - Gear selector cable

- ☐ Installation position  
⇒ [page 57](#)
- ☐ Removing and installing  
⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)
- ☐ Secure to gate selector cable with cable tie  
⇒ [page 80](#)

#### 2 - Gate selector cable

- ☐ Installation position  
⇒ [page 57](#)
- ☐ Removing and installing  
⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)
- ☐ Secure to gear selector cable with cable tie  
⇒ [page 80](#)

#### 3 - Securing clips

- ☐ Not fitted on vehicles from model year 2008 onwards ⇒ [page 64](#)

#### 4 - Selector housing

#### 5 - Retaining clips

- ☐ Take care not to damage selector cables when removing.
- ☐ Renew

#### 6 - Bolt

- ☐ 20 Nm
- ☐ 3x
- ☐ For cable support bracket

#### 7 - Cable support bracket

- ☐ Made of metal or plastic, depending on version
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

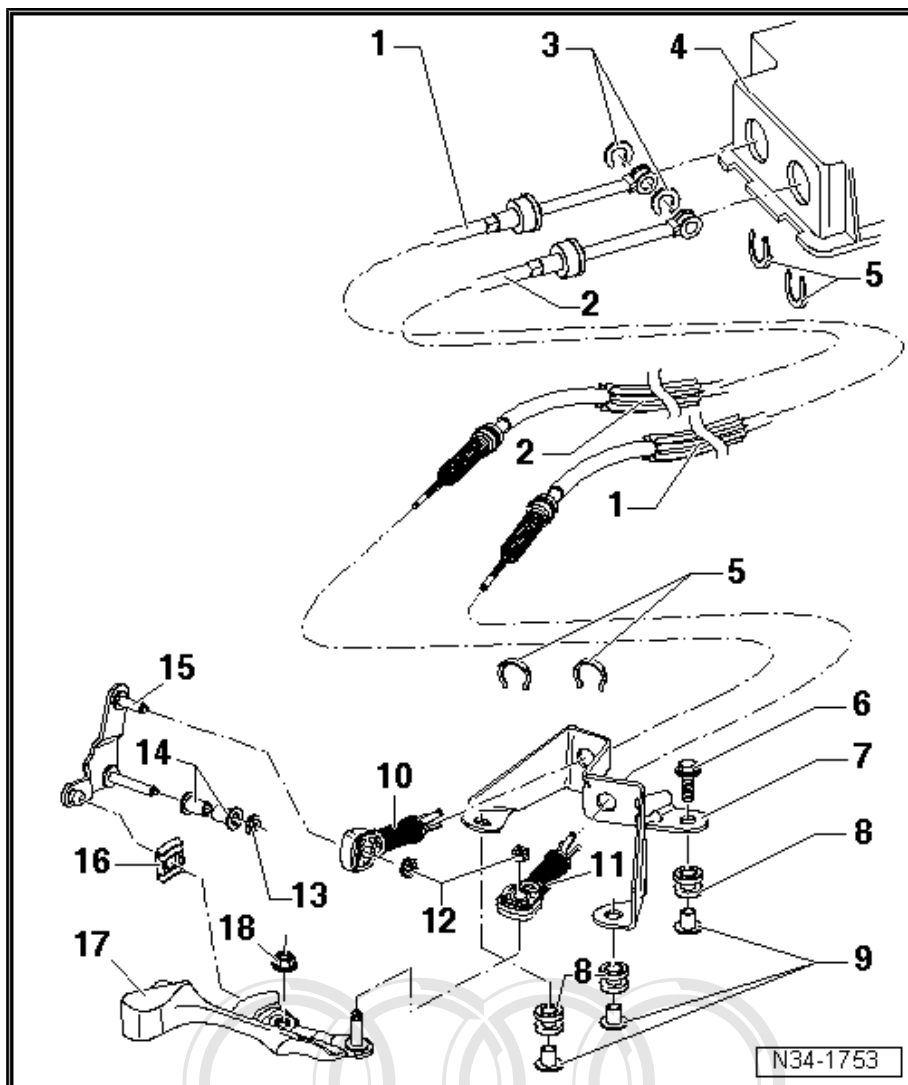
#### 8 - Grommet

- ☐ Mounting for cable support bracket on gearbox

#### 9 - Bush

#### 10 - Cable end-piece

- ☐ Secures gate selector cable to gate relay lever
- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different



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⇒ Fig. „A - Identification according to diameter of bore in cable end-piece“, page 77 or  
⇒ Fig. „B - Identification according to height of cable end-piece“, page 78

- ☐ Detaching from gate selector cable ⇒ page 79

#### 11 - Cable end-piece

- ☐ Secures gear selector cable to gearbox selector lever
- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different  
⇒ Fig. „A - Identification according to diameter of bore in cable end-piece“, page 77 or  
⇒ Fig. „B - Identification according to height of cable end-piece“, page 78
- ☐ Detaching from gear selector cable ⇒ page 79

#### 12 - Securing clips

- ☐ Removing ⇒ page 79
- ☐ Renew

#### 13 - Securing clip

- ☐ Removing ⇒ page 78
- ☐ Renew

#### 14 - Bearing bushes

#### 15 - Gate relay lever

- ☐ Installation position ⇒ page 79

#### 16 - Slide block

#### 17 - Gearbox selector lever

- ☐ With damper weight
- ☐ Install so that gap in splines aligns with selector shaft ⇒ page 78
- ☐ After installing, adjust selector mechanism ⇒ page 86
- ☐ Installation position ⇒ page 79

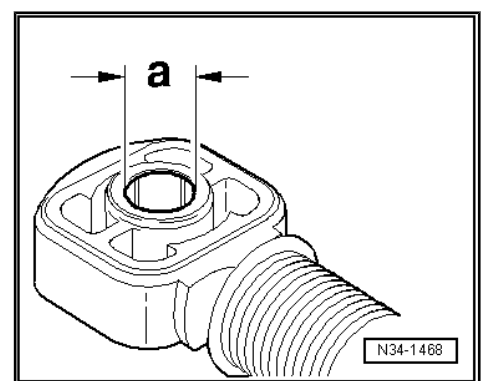
#### 18 - Nut

- ☐ 23 Nm
- ☐ Self-locking
- ☐ Always renew

### A - Identification according to diameter of bore in cable end-piece

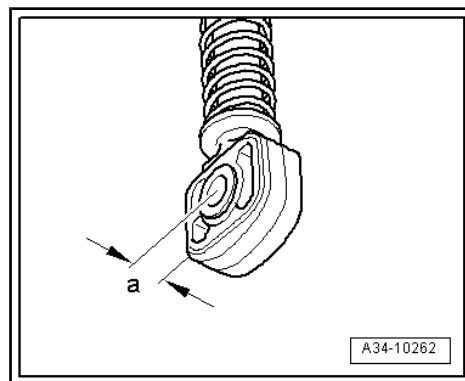
The holes in the cable end-pieces have different diameters.

| Cable end-piece for:                          | Dimension „a“ |
|-----------------------------------------------|---------------|
| Gear selector cable to gearbox selector lever | 10 mm         |
| Gate selector cable to gate relay lever       | 8 mm          |



## B - Identification according to height of cable end-piece

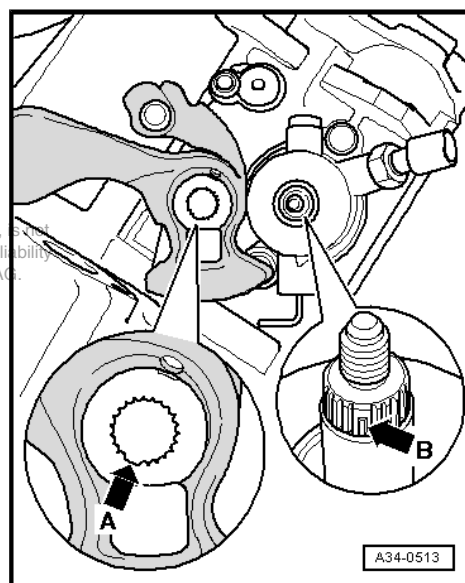
| Cable end-piece for:                          | Dimension „a“ |
|-----------------------------------------------|---------------|
| Gear selector cable to gearbox selector lever | 20 mm         |
| Gate selector cable to gate relay lever       | 18.5 mm       |



## Installing gearbox selector lever

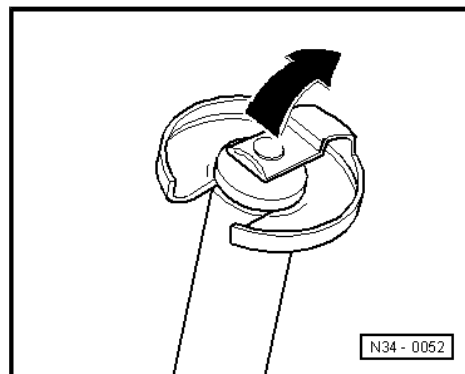
- When installing gearbox selector lever, make sure that the gap in the splines -arrow A- aligns with the wider spline -arrow B- on the selector shaft.

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## Removing securing clip from gate relay lever

- Pull up clip -arrow- and detach securing clip.



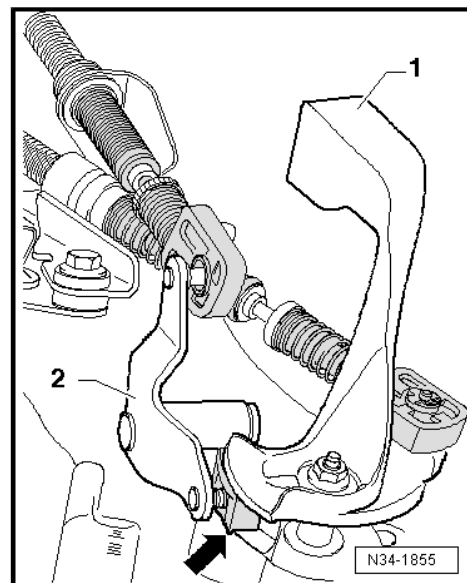
## Installation position: gearbox selector lever/gate relay lever

### 1 - Gearbox selector lever

- With damper weight

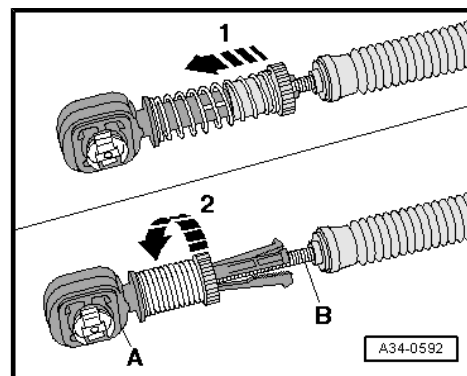
### 2 - Gate relay lever

- Locates in guide rail of gearbox selector lever via slide block -arrow-.



## Detaching cable end-pieces from gear selector cable and gate selector cable

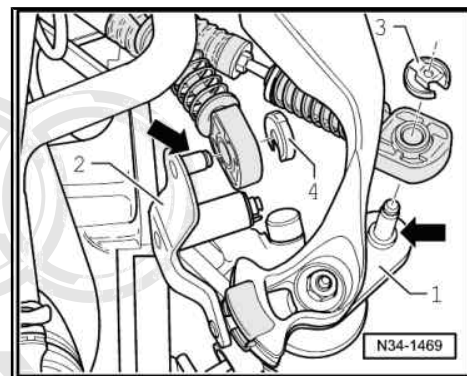
- Pull locking mechanism forwards -arrow 1- onto stop and then turn in direction of -arrow 2- to lock.
- Take cable -B- out of cable end-piece -A-.



## Detaching and securing gear selector cable and gate selector cable

### Detaching

- Lift up tab and detach securing clip -3- for gear selector cable from gearbox selector lever -1-. Then pull gear selector cable off pin -arrow-.
- Lift up tab and detach securing clip -4- for gate selector cable from gate relay lever -2-. Then pull gate selector cable off pin -arrow-.



### Securing



### Note

- ◆ Renew securing clips.

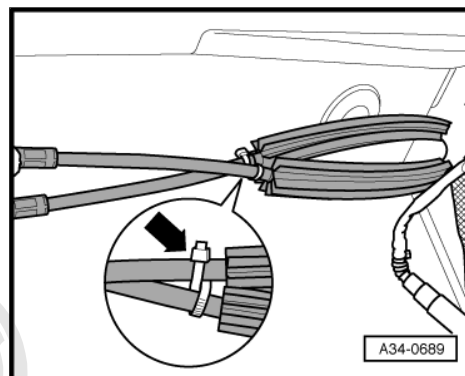
- ◆ Apply a small quantity of grease ~~G 000 450 02~~ to the pins -arrows-.

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- Push gear selector cable onto gearbox selector lever -1- and secure with securing clip -3-.
- Push gate selector cable onto gate relay lever -2- and secure with securing clip -4-.

## Position of cable tie securing selector cables

- Wrap cable tie round selector cables in a „figure-of-eight“-arrow- and secure cable tie as shown in illustration.



## 1.9 Exploded view - gear selector cable and gate selector cable from model year 2008 onwards



### Note

Lubricate all bearings and moving surfaces with grease -G 000 450 02- .

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### 1 - Selector mechanism cover

### 2 - Slide block

### 3 - Gate relay lever

- ☐ Made of plastic
- ☐ Different versions available; for correct version refer to ➔ Electronic parts catalogue
- ☐ Installation position ➔ [page 82](#)
- ☐ Detaching and securing gate relay lever (with detent) at selector mechanism cover ➔ [page 83](#)
- ☐ Detaching and securing gate relay lever (with clip) at selector mechanism cover ➔ [page 84](#)

### 4 - Cable end-piece

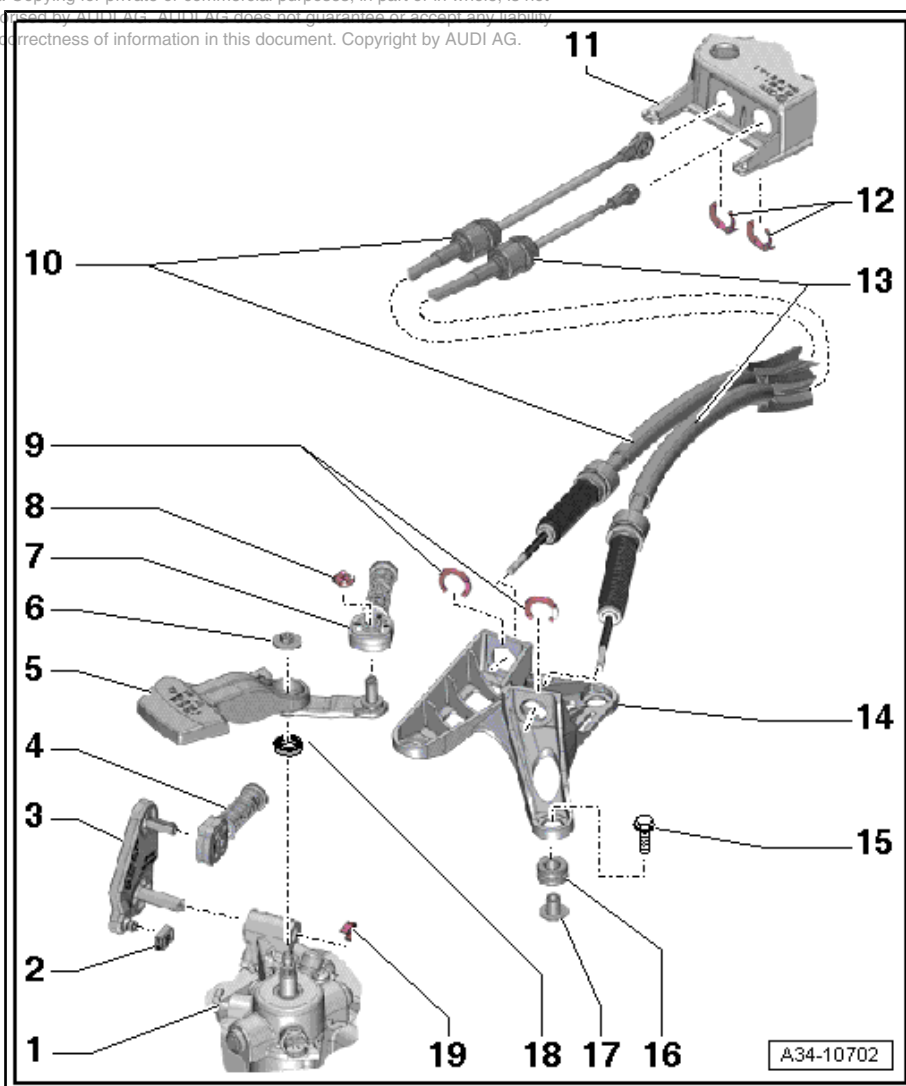
- ☐ Secures gate selector cable to gate relay lever
- ☐ Allocation ➔ [page 82](#)
- ☐ Detaching from gate selector cable ➔ [page 83](#)

### 5 - Gearbox selector lever

- ☐ With damper weight
- ☐ Fitting ➔ [page 82](#)
- ☐ Installation position ➔ [page 82](#)
- ☐ After installing, adjust selector mechanism ➔ [page 86](#)

### 6 - Nut

- ☐ Self-locking



- ☐ Renew
- ☐ 23 Nm

#### 7 - Cable end-piece

- ☐ Secures gear selector cable to gearbox selector lever
- ☐ Allocation ⇒ [page 82](#)
- ☐ Detaching from gear selector cable ⇒ [page 83](#)

#### 8 - Securing clip

- ☐ Removing ⇒ [page 83](#)
- ☐ Renew

#### 9 - Retaining clips

- ☐ Renew

#### 10 - Gate selector cable

- ☐ Removing and installing ⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)
- ☐ Secure to gear selector cable with cable tie ⇒ [page 85](#)

#### 11 - Selector housing

#### 12 - Retaining clips

- ☐ Renew

#### 13 - Gear selector cable

- ☐ Detaching and securing at gearbox selector lever ⇒ [page 83](#)
- ☐ Removing and installing ⇒ [page 85](#)
- ☐ Adjusting ⇒ [page 86](#)
- ☐ Secure to gate selector cable with cable tie ⇒ [page 85](#)

#### 14 - Cable support bracket

#### 15 - Bolt

- ☐ 20 Nm

#### 16 - Grommet

#### 17 - Bush

#### 18 - Oil seal

- ☐ For selector shaft
- ☐ Renewing ⇒ [page 186](#)

#### 19 - Clip

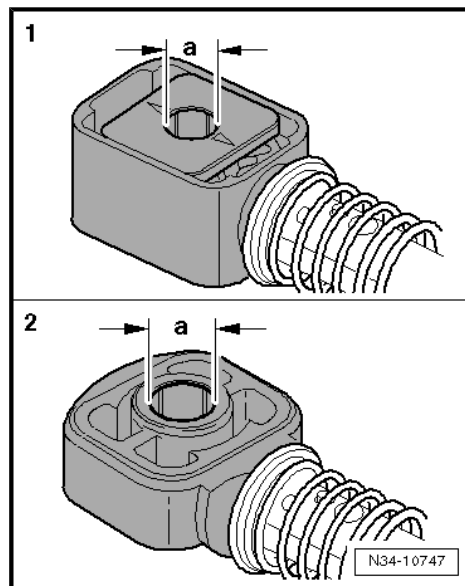
- ☐ For gate relay lever (only from 08.2008 onwards)

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## Identification of cable end-pieces

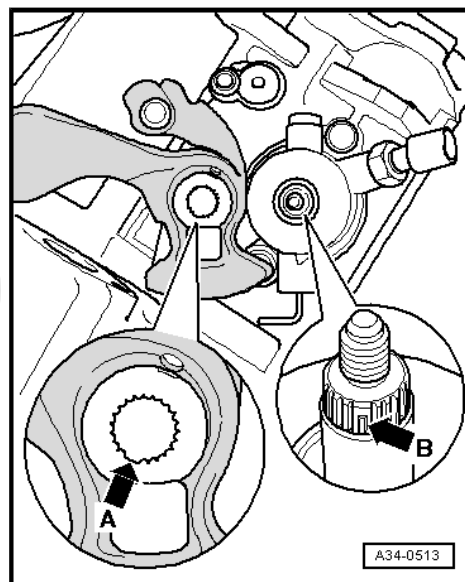
The holes in the cable end-pieces have different diameters.

| Cable end-piece for:                              | Dimension „a“ |
|---------------------------------------------------|---------------|
| -1- Gear selector cable to gearbox selector lever | 8.5 mm        |
| -2- Gate selector cable to gate relay lever       | 10 mm         |



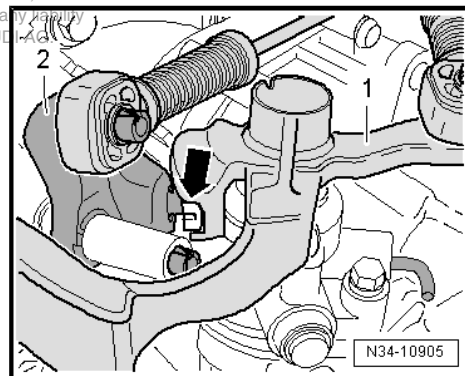
## Installing gearbox selector lever

- When installing gearbox selector lever, make sure that the gap in the splines -arrow A- aligns with the wider spline -arrow B- on the selector shaft.



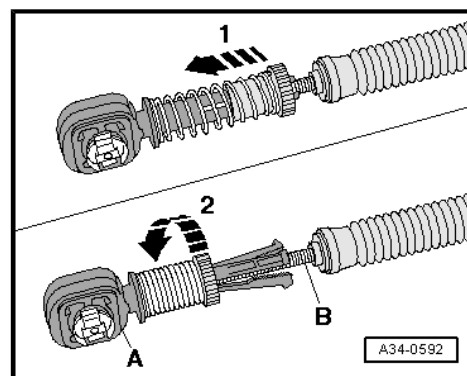
## Installation position: gearbox selector lever/gate relay lever

- Gearbox selector lever
  - With damper weight
- Gate relay lever
  - Locates in guide rail of gearbox selector lever via slide block -arrow-.



### Detaching cable end-pieces from gear selector cable and gate selector cable

- Pull locking mechanism forwards -arrow 1- onto stop and then turn in direction of -arrow 2- to lock.
- Take cable -B- out of cable end-piece -A-.



### Detaching and securing gear selector cable at gearbox selector lever

#### Detaching

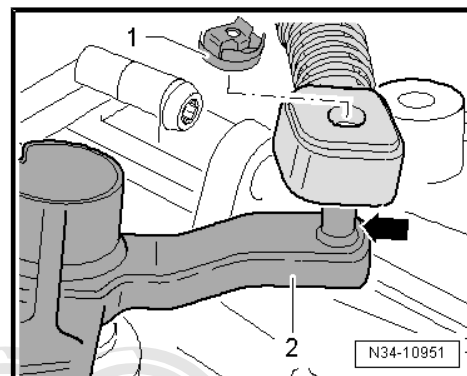
- Lift up tab and detach securing clip -1- for gear selector cable from gearbox selector lever -2-.
- Pull gear selector cable off pin -arrow-.

#### Securing



#### Note

- ◆ Renew securing clip for gear selector cable.
- ◆ Apply a small amount of grease -G 000 450 02- to pin -arrow-.
- Push gear selector cable onto gearbox selector lever -2- and secure with securing clip -1-.



### Detaching and securing gate relay lever (with detent) at gearbox selector lever (selector mechanism cover)

#### Detaching

- Press detent -arrow 1- down onto stop and remove gate relay lever together with cable end-piece. Move gate relay lever in normal direction of operation.



#### Note

-Arrow 2- can be disregarded.

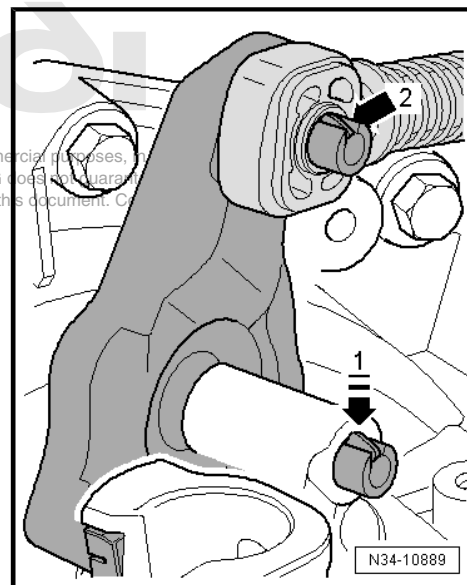
#### Securing



#### Note

To install, lubricate bearings and moving surfaces with grease -G 000 450 02-.

- Press cable end-piece onto gate relay lever ⇒ [page 84](#) .
- Insert gate relay lever with cable end-piece as far as stop.
- Gate relay lever is secured by detent -arrow 1-.
- Cable end-piece is secured by detent -arrow 2-.
- Ensure that components engage securely.



## Detaching and securing gate relay lever (with clip) at gearbox selector lever (selector mechanism cover)

### Detaching

- Remove clip -arrow 1- and take off gate relay lever together with cable end-piece.

### Securing



#### Note

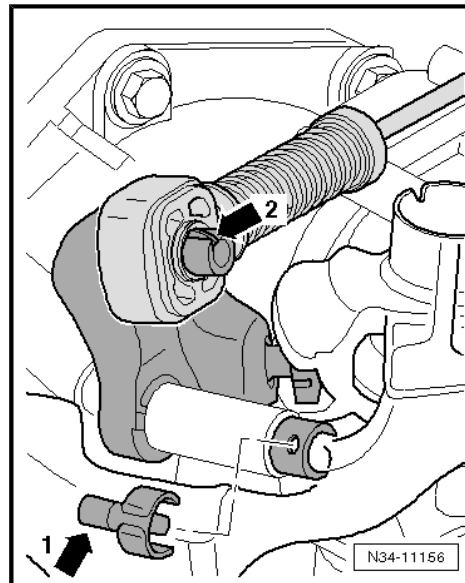
Lubricate all bearings and moving surfaces with grease -G 000 450 02-.

- Insert gate relay lever with cable end-piece as far as stop.
- Press on clip -arrow 1-, making sure it engages securely.



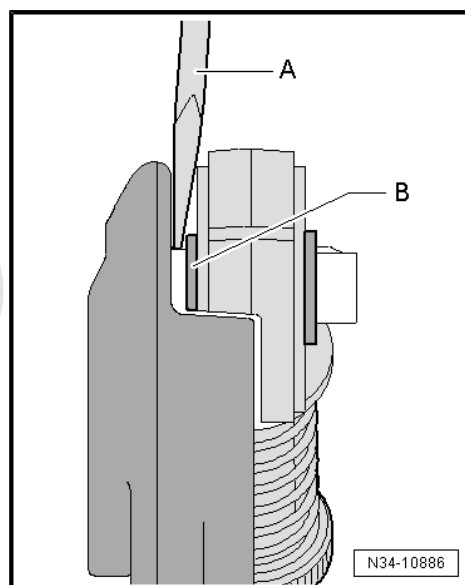
#### Note

-Arrow 2- can be disregarded.



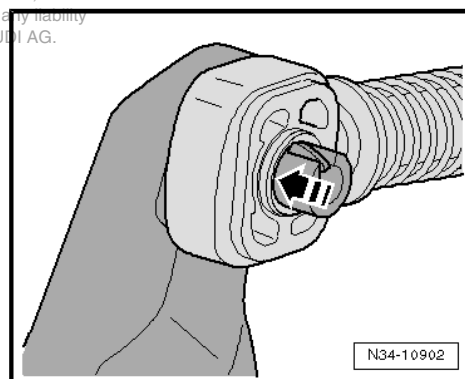
## Levering cable end-piece for gate selector cable off gate relay lever

- Gate relay lever removed
- Apply plain slot screwdriver -A- between bush -B- and gate relay lever.



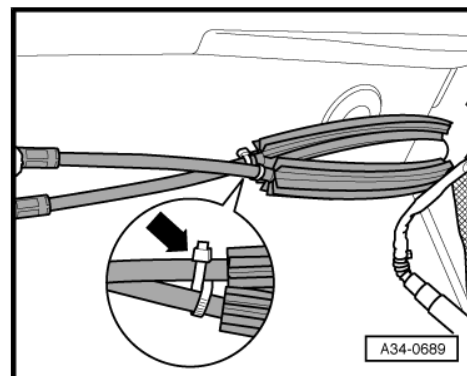
## Pressing cable end-piece for gate selector cable onto gate relay lever

- Gate relay lever removed
- Press on cable end-piece only at bush -arrow-.
- Cable end-piece must move freely on gate relay lever.
- Cable end-piece must be behind detent.
- Ensure that components engage securely.



### Position of cable tie securing selector cables

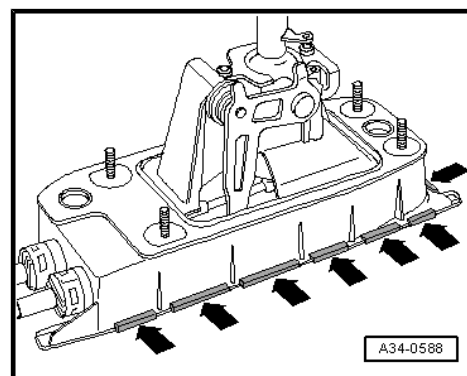
- Wrap cable tie round selector cables in a „figure-of-eight“-arrow- and secure cable tie as shown in illustration.



## 1.10 Removing and installing gear selector cable and gate selector cable

### Removing

- Remove selector mechanism ➔ [page 69](#)
- Using a screwdriver, bend open tabs -arrows- for selector mechanism on floor plate and remove floor plate.
- Remove gasket.

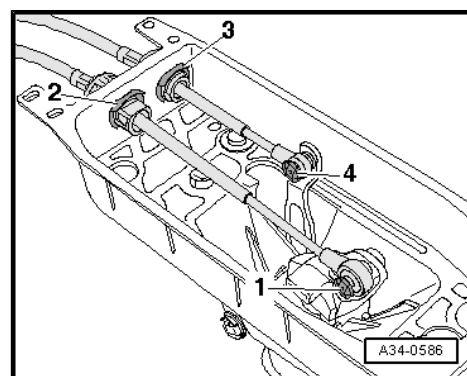


- Take off securing clips -1... 4- and detach gear selector cable and gate selector cable from selector housing.



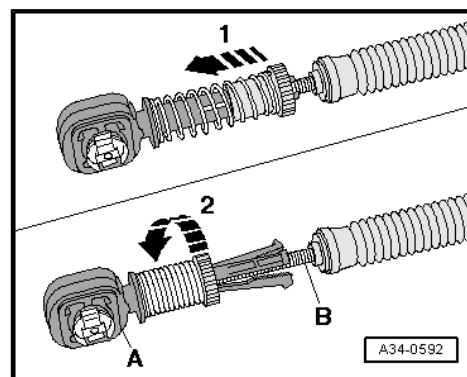
### Note

- ◆ Securing clips -1 and 4- on the selector mechanism are discontinued from model year 2008 onwards.
- ◆ Then press cables off gate selector lever and gear lever guide.

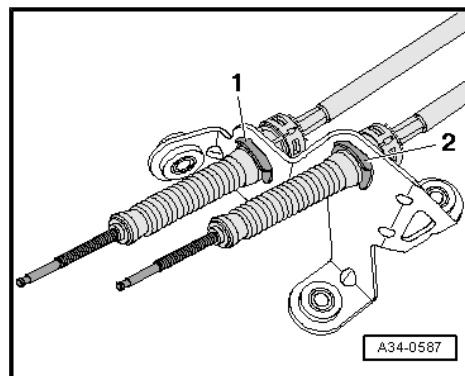


Release cable end-pieces -A- for gate selector cable and gear selector cable -B- as follows:

- Push locking sleeve forwards as far as stop -arrow 1-.
- Turn locking sleeve as far as it will go in direction of arrow -2- so that it engages.
- Detach cable end-pieces from cables.



- Pull off securing clips -1- and -2-.
- Detach cable support bracket from cables.



### Installing

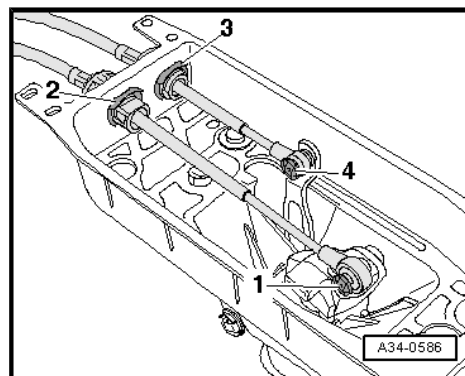
Installation is carried out in reverse sequence; note the following:

- Secure gear selector cable and gate selector cable to selector housing with securing clips -1 ... 4-.

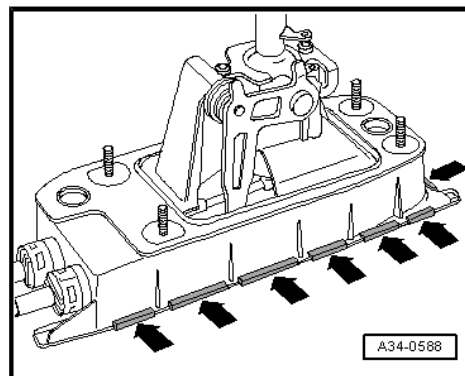


#### Note

- ◆ *Securing clips -1 and 4- on the selector mechanism are discontinued from model year 2008 onwards.*
- ◆ *Then press cables onto gate selector lever and gear lever guide.*



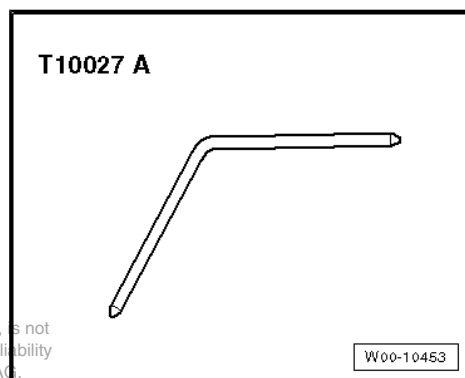
- Fit gasket and secure floor plate to selector mechanism by bending over tabs -arrows-.
- Install selector mechanism ⇒ [page 74](#) .
- Adjust selector mechanism ⇒ [page 86](#) .



## 1.11 Adjusting selector mechanism

### Special tools and workshop equipment required

- ◆ Locking pin -T10027A-



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### Requirements for adjustment

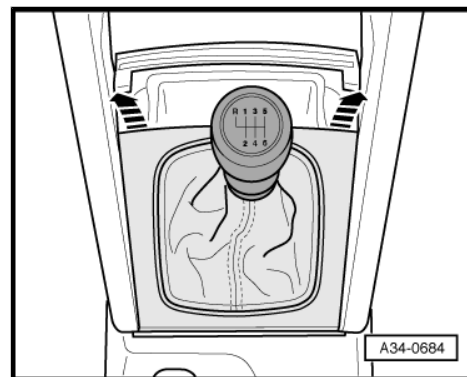
- Gear selector linkage must be in proper condition and undamaged.

- Selector mechanism must move freely.
- Gearbox, clutch and clutch mechanism must be in proper condition.
- Gearbox in neutral.

### Adjusting

- Open ashtray.
- Carefully pry gear lever boot off centre console -arrows-.
- Pull boot up and over gear knob.
- With gearbox in neutral, move gear lever to the left into 1st/2nd gear gate.

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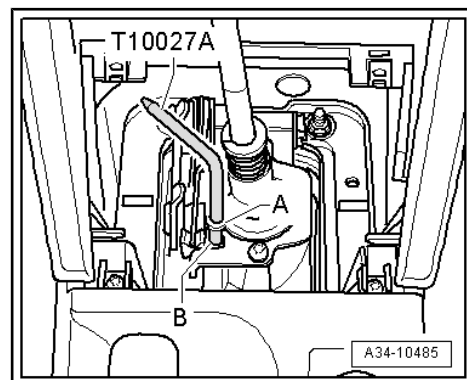


- Pull noise insulation covers slightly to one side.
- Lock gear lever in position with locking pin -T10027A-.



### Note

*The noise insulation covers are removed to give a better illustration.*



- Remove air cleaner housing completely ⇒ Rep. gr. 24 .

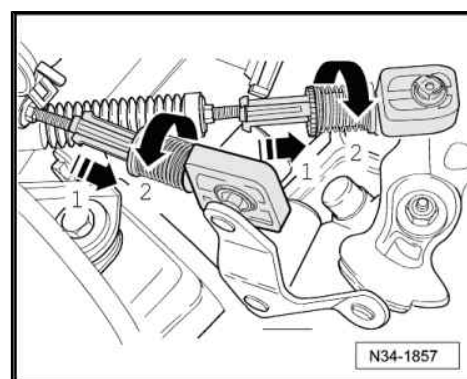
Release cable end-pieces for gate selector cable and gear selector cable as follows:

- Push locking sleeves on gear selector cable and gate selector cable forward as far as they will go -arrow 1-.
- Turn locking sleeve as far as it will go in direction of arrow -2- so that it engages.



### Note

*It should now be possible to move the cables in the cable end-pieces.*



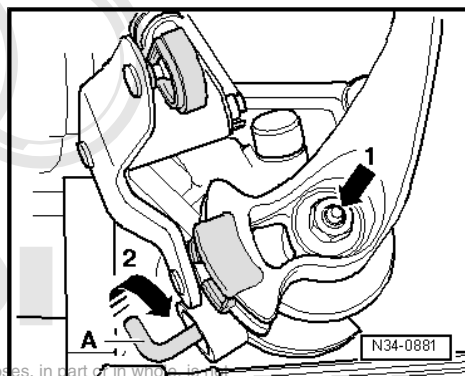
- Gearbox in neutral.

Lock the selector shaft as follows:

- Push selector shaft down into 1st/2nd gear gate in direction of -arrow 1-. At the same time, turn locking pin -A- in direction of -arrow 2- until it engages in selector shaft.

The selector shaft is then locked and can no longer be moved.

- Ensure that the gate selector cable and the gear selector cable are located free of tension in the cable end-pieces.



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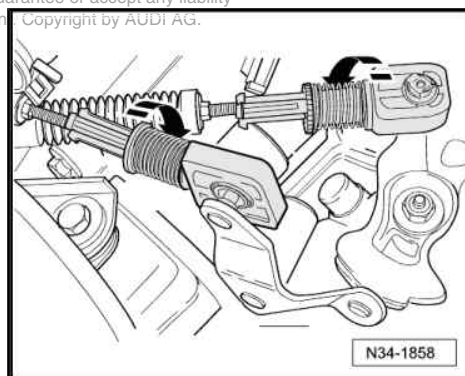
- Now turn locking sleeves on gear selector cable and gate selector cable as far as they will go in the direction indicated -arrow-.

The spring presses the locking sleeve back into the original position.

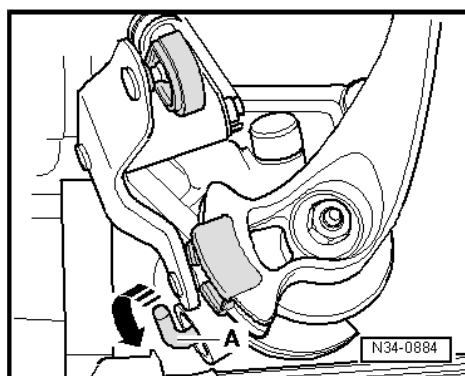


#### Note

*Cable adjustment is now complete.*



- Now turn locking pin -A- back to original position (direction of -arrow-).
- Pull locking pin -T10027A- out of selector mechanism.



**Check gear lever setting as follows:**

- With the gearbox in neutral, the gear lever should rest in the 3rd/4th gear gate.
- Depress clutch.
- Select all gears several times. Pay particular attention to the operation of the reverse gear locking mechanism.

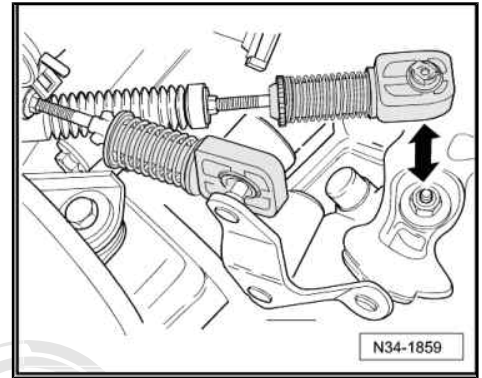
Should a gear fail to engage smoothly after repeated selection, check the play (lift movement) of the selector shaft as follows:

- Engage 1st gear.
- Push gear lever as far as it will go to the left and release.
- At the same time observe selector shaft on gearbox (2nd mechanic).
- The selector shaft should move up and down approx. 1 mm (in direction of -arrow-) when the gear lever is moved.

If this is not the case, adjust selector mechanism again

⇒ [page 86](#) .

- Fit gear lever boot.
- Install complete air cleaner housing ⇒ Rep. gr. 24 .



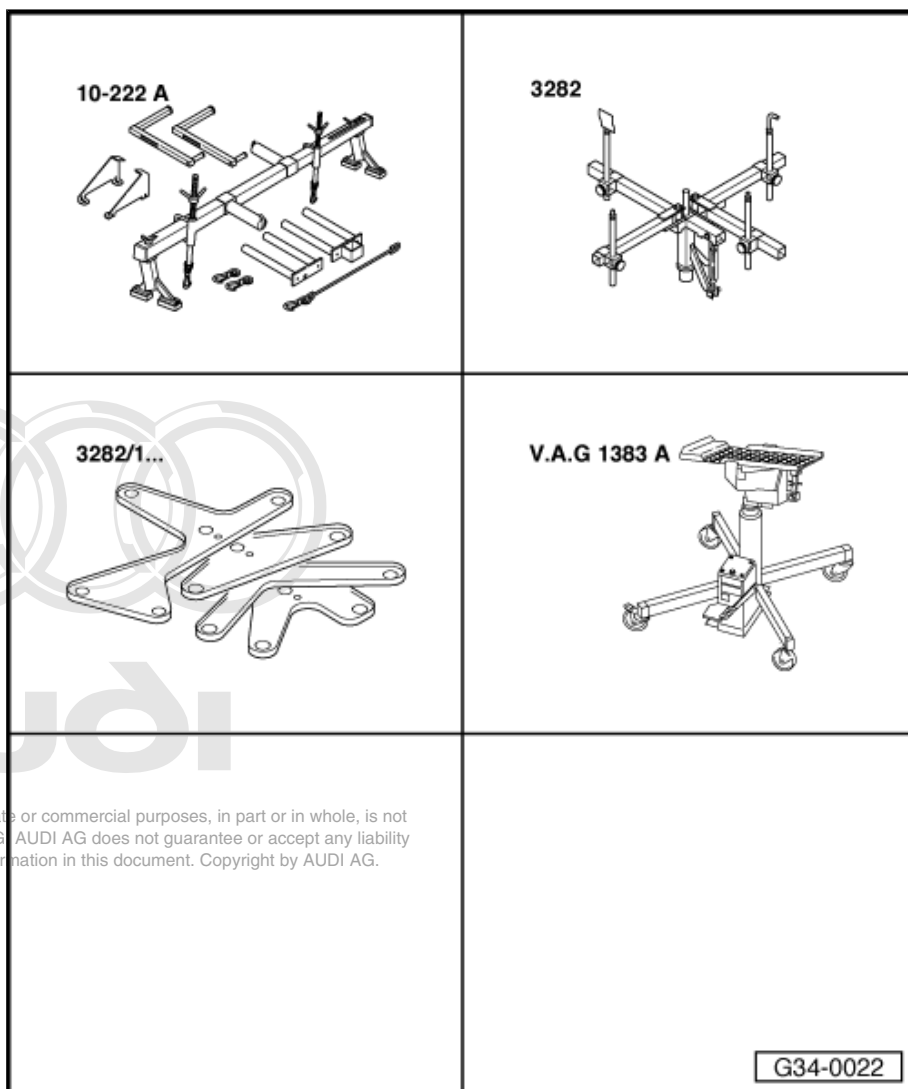
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## 2 Removing and installing gearbox on vehicles with 1.8 ltr. TFSI engine

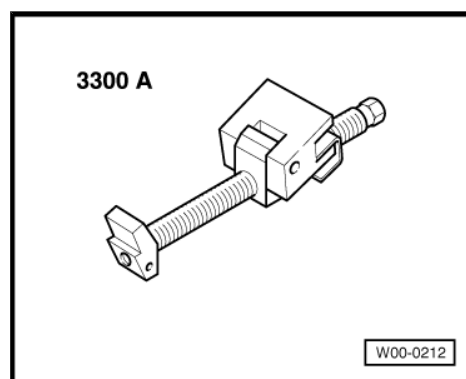
### 2.1 Removing gearbox

#### Special tools and workshop equipment required

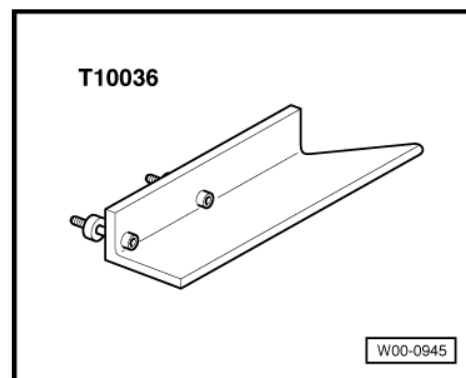
- ◆ Support bracket -10 - 222 A-
- ◆ Gearbox support -3282-
- ◆ Pin -3282/29-
- ◆ Adjustment plate -3282/39-
- ◆ Engine and gearbox jack - V.A.G 1383 A-



- ◆ Engine support -3300 A-



◆ Support -T10036-



- ◆ Grease for clutch plate splines -G 000 100-
- ◆ Bolt M6 x 20 (2x)
- ◆ Bolt M10 x 20

**Procedure**

- Remove engine cover panel -arrows-.
- Remove air cleaner housing completely ⇒ Rep. gr. 24 .

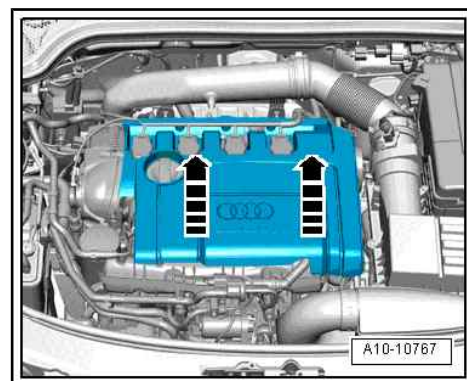
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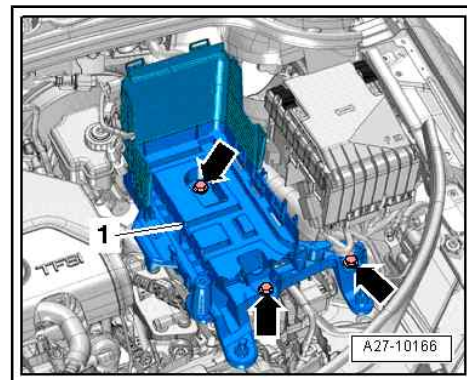
**Caution**

***When disconnecting the battery there is a risk of serious damage to electronic components:***

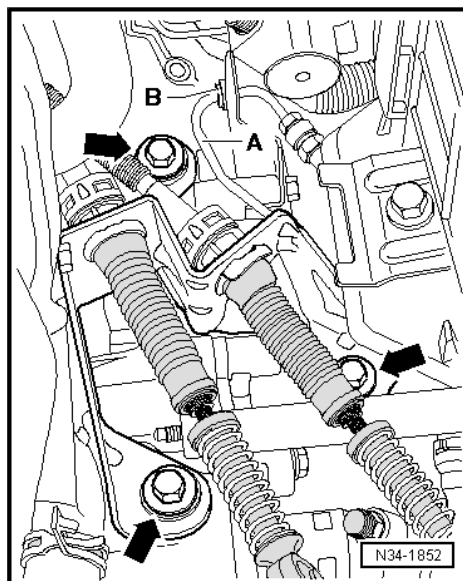
- ◆ ***Observe the correct procedure for disconnecting the battery ⇒ Electrical system; Rep. gr. 27 .***



- Remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove bolts -arrows- and detach battery tray -1-.

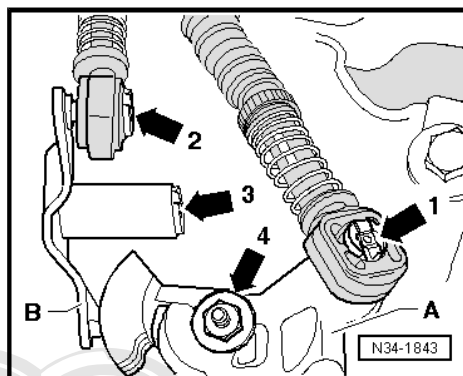


- Detach cable support bracket from gearbox -arrows-.
- Remove bracket -B- from gearbox and disconnect from pipe/hose assembly -A-.



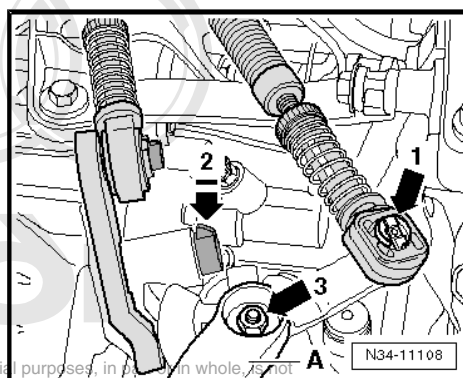
#### Metal gate relay lever -B-:

- Detach securing clip -arrow 1- from gearbox selector lever -A- and pull off gear selector cable.
- Detach securing clip -arrow 2- from gate relay lever -B- and pull off gate selector cable.
- Pull off securing clip -arrow 3- and remove gate relay lever -B-.



#### Plastic gate relay lever

- Detach securing clip -arrow 1- and pull gear selector cable off gearbox selector lever -A-.
- Detach gate selector cable from cable end-piece ➔ [page 70](#) .
- Press detent -arrow 2- down onto stop and remove gate relay lever together with cable end-piece. Move gate relay lever in normal direction of operation.



#### Note

From 08.2008 onwards the gate relay lever is secured with a clip ➔ [page 33](#) .

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#### Continued for all vehicles:

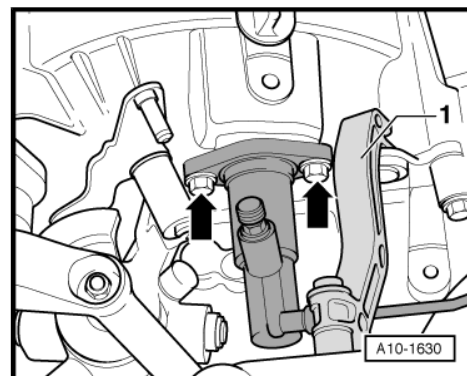
- Tie cables with cable support bracket to one side.
- Remove nut -arrow 3- and detach gearbox selector lever -A-.

- Detach gearbox support -1-.
- Move clear pipe/hose assembly leading to clutch slave cylinder.
- Remove clutch slave cylinder -arrows- and place to one side; do not disconnect pipe.

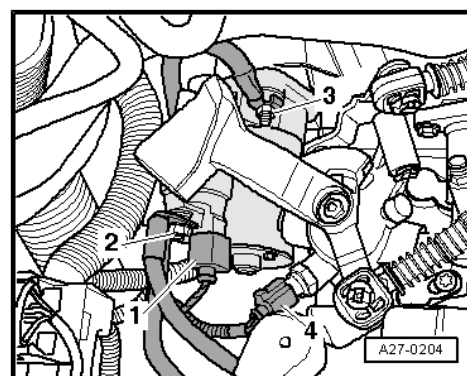


**Caution**

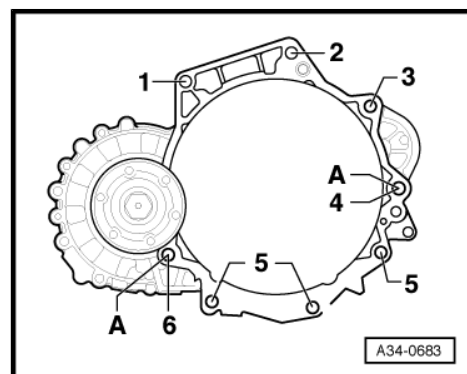
*Do not depress clutch pedal after removing clutch slave cylinder.*



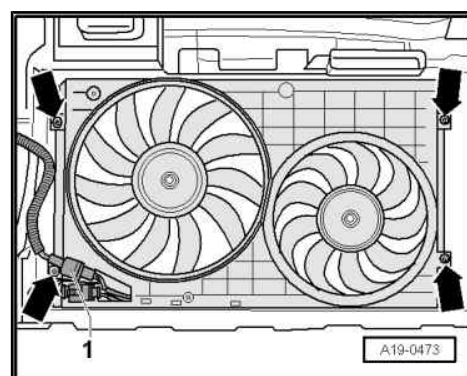
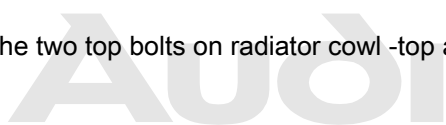
- Unplug electrical connector -1-.
- Disconnect B+ wire from starter solenoid -2-.
- Disconnect earth wire -3- and remove top bolt securing starter.
- Unplug electrical connector -4- at reversing light switch -F4-.



- Remove engine/gearbox securing bolts -1 and 2- (accessible from above).

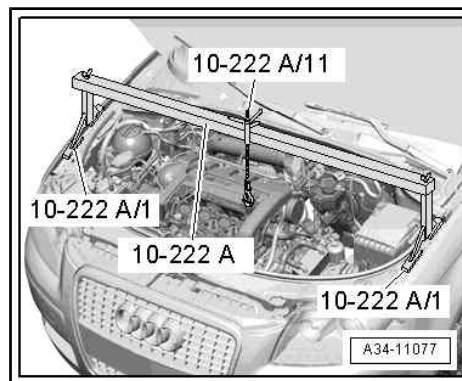


- Remove the two top bolts on radiator cowl -top arrows-.



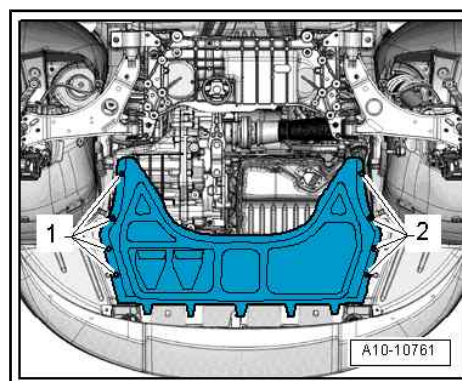
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- Assemble support bracket -10 - 222 A- and place onto wing panel flange, as shown in illustration.
- Engage hook of spindle in engine lifting eye (left-side).
- Take up weight of engine/gearbox assembly with spindle; do not lift.



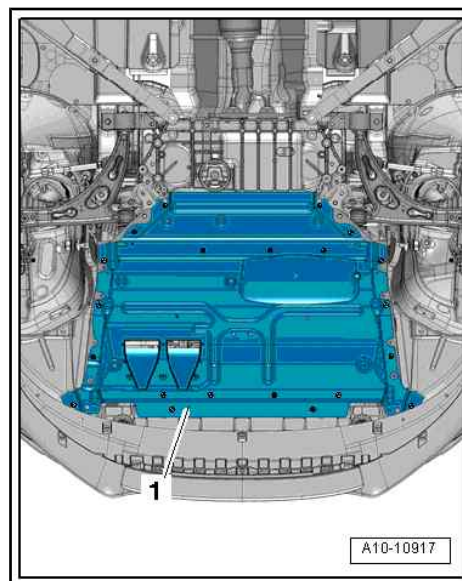
### Audi A3

- Loosen fasteners -1 and 2- and remove noise insulation panel (centre).



### Audi A3 Cabriolet

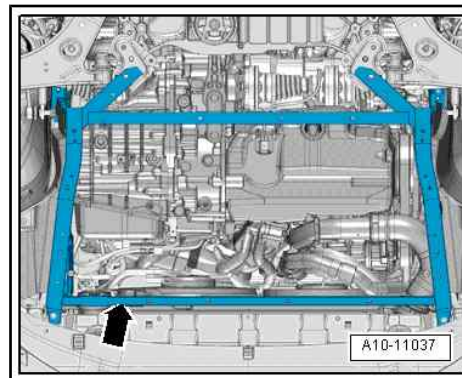
- Remove noise insulation -1- ⇒ General body repairs, exterior; Rep. gr. 50 .



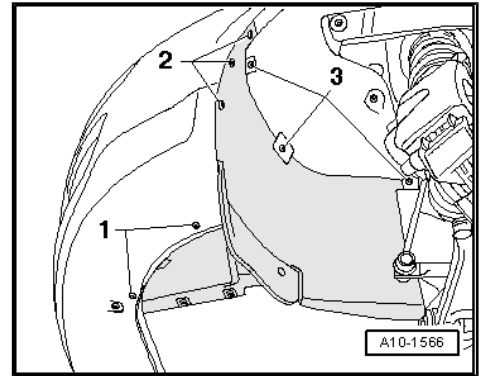
- Remove noise insulation frame -arrow- ⇒ General body repairs, exterior; Rep. gr. 50 .

### Continued for all vehicles

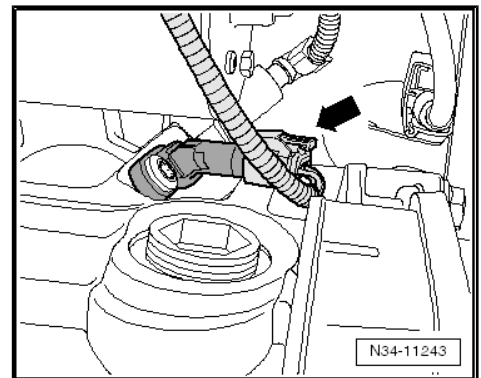
- Remove front left wheel.



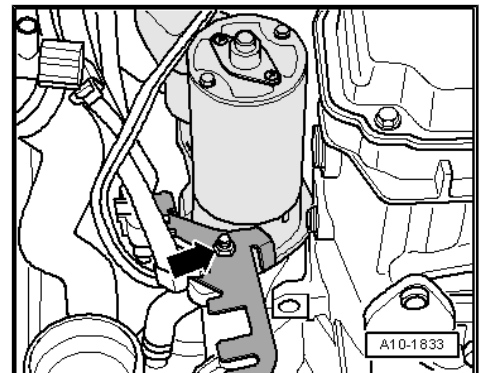
- Remove front section of wheel housing liner (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 .



- Gearbox for vehicles with start/stop system: unplug connector -arrow- from gearbox neutral position sender -G701- .

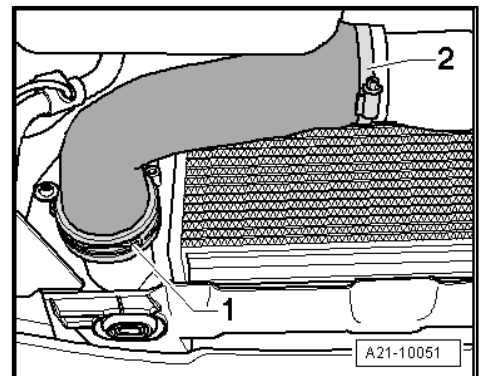


- Remove nut -arrow- and detach bracket for electrical wiring.
- Remove bottom starter mounting bolt and take out starter.

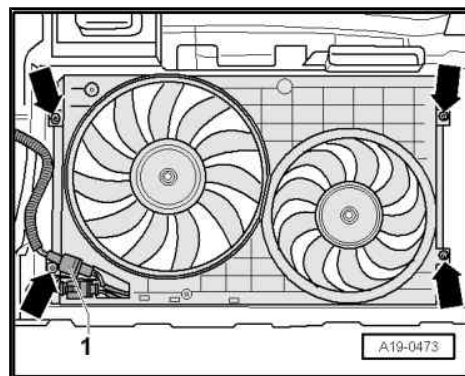


- Slightly lift retaining clip -1- and loosen hose clip -2- to remove air hose.

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- Detach electrical connector -1-.
- Remove remaining bolts -bottom arrows- and take out radiator cowl from below.

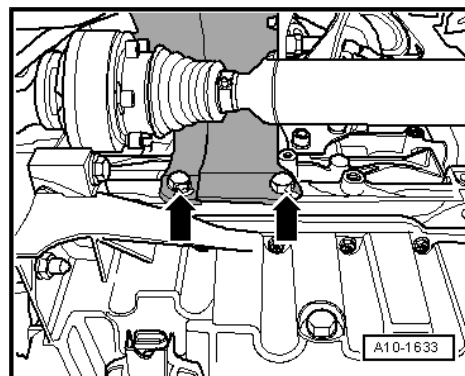


- Unbolt heat shield for drive shaft (right-side) -arrows-.
- Unbolt drive shafts (left and right) from flange shafts on gear-box.
- Lift drive shafts (left and right) up and secure with cable tie.

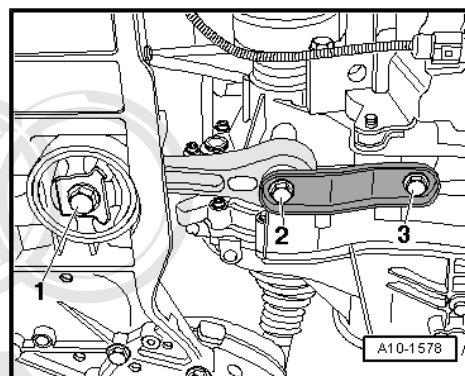


#### Note

*Make sure you do not damage surface coating on drive shafts.*



- Unscrew bolts -1 ... 3- and remove pendulum support.

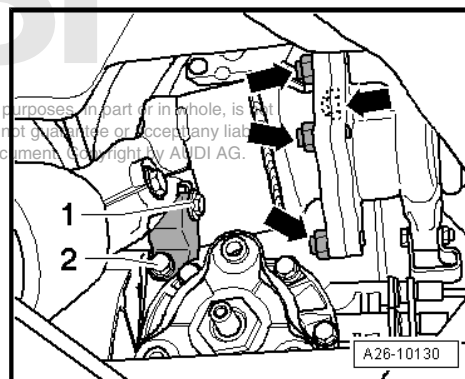


- Spray studs on turbocharger -arrows- with rust remover.
- Remove nuts -arrows- from threaded pins.
- Detach catalytic converter from turbocharger and secure catalytic converter to prevent it from falling to the ground.

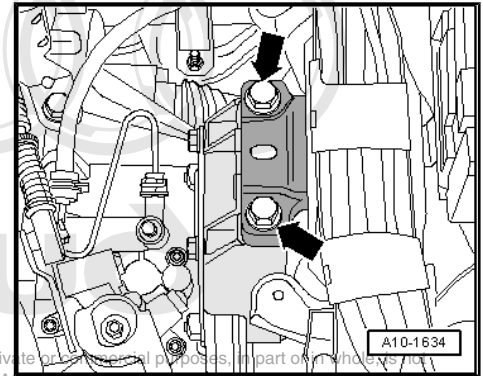


#### Note

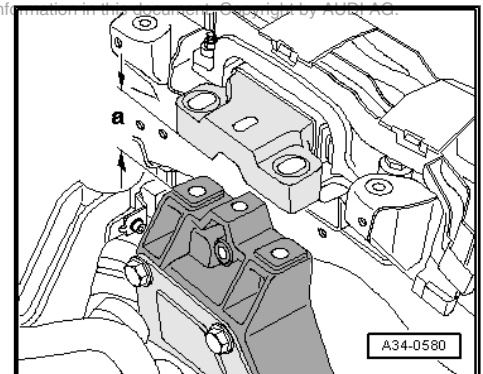
- ◆ *To prevent damage, the flexible couplings in the front exhaust pipe must not be bent further than 10°.*
- ◆ *-Item 1- and -item 2- can be disregarded.*



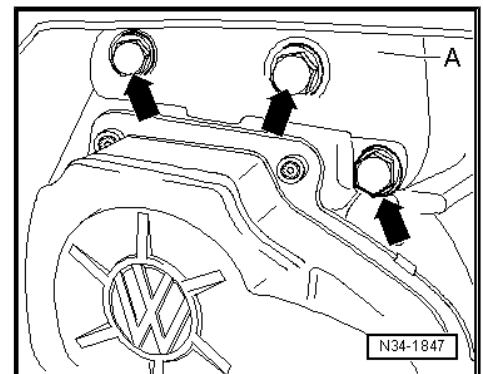
- Remove bolts -arrows- at left mounting from gearbox mounting.



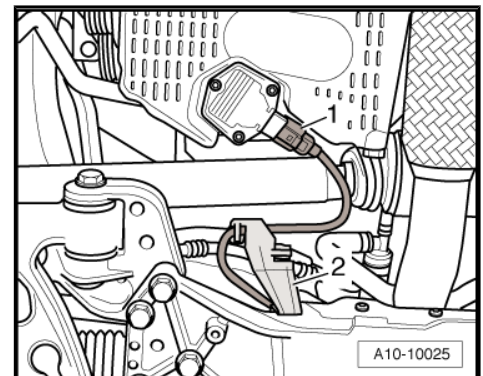
- Adjust spindle of support bracket -10 - 222 A- to lower gearbox by distance -a-.
- Dimension -a- = 50 mm



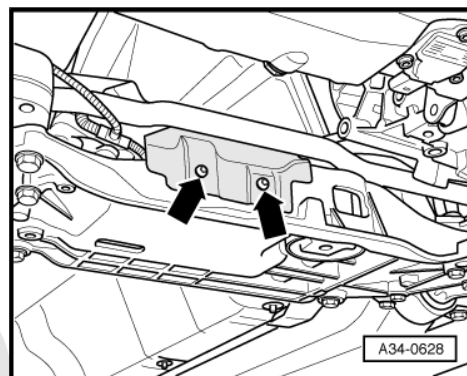
- Unbolt gearbox bracket -A- from gearbox -arrows-.



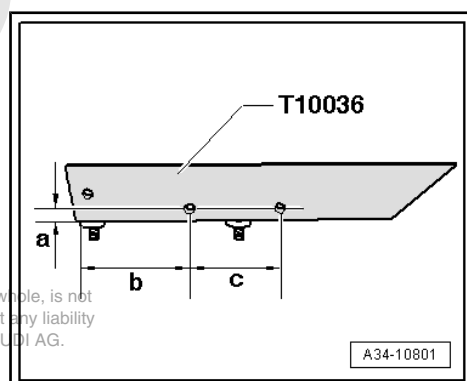
- Unplug electrical connector -1- at oil level and oil temperature sender -G266- .
- Unclip bracket -2- for electrical wiring leading to oil level and oil temperature sender -G266- at subframe.



- If fitted, unbolt heat shield for power steering control unit - J500- from subframe -arrows-.

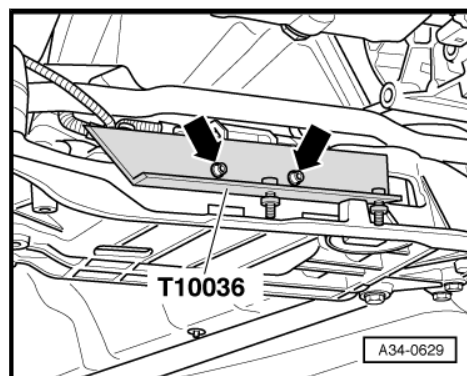


- Drill two 7 mm diameter holes in support -T10036-, as illustrated (if holes have not already been drilled).
- Dimension -a- = 11 mm
- Dimension -b- = 98 mm.
- Dimension -c- = 70 mm.

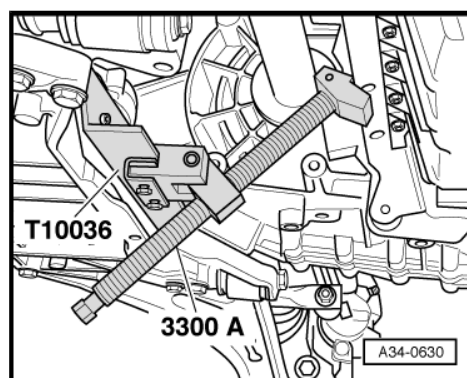


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- Bolt support -T10036- onto subframe -arrows- using two M6 × 20 bolts.



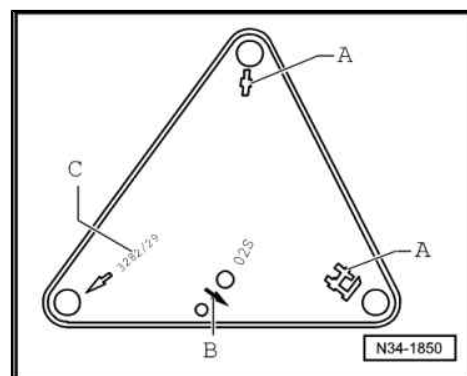
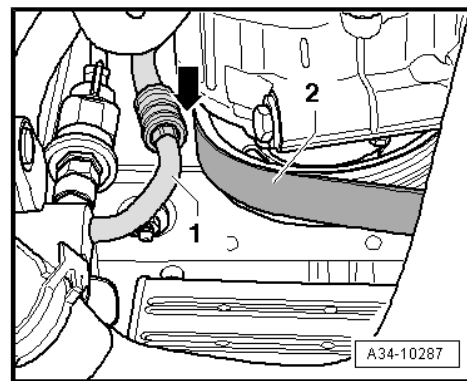
- Bolt engine support -3300 A- onto support -T10036-.



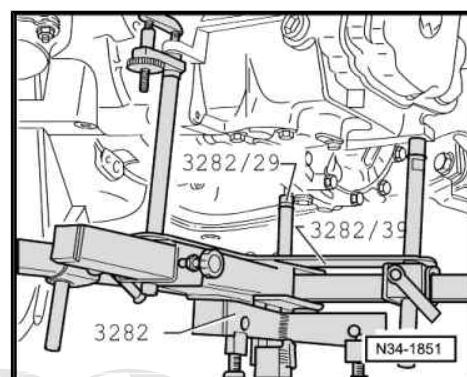
- Press engine towards front of vehicle using spindle of engine support -3300 A-. Pay special attention to the following points:
- The air conditioner compressor -2- must not contact refrigerant line -1- -arrow-.
- Alternator must not make contact with refrigerant line.
- Pressure pipe must not make contact with radiator.

To remove gearbox 02S, set up gearbox support -3282- with adjustment plate -3282/39-.

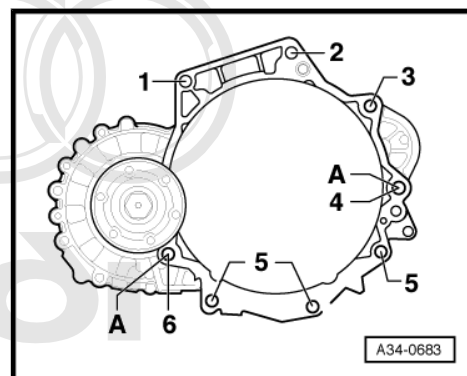
- Insert gearbox support -3282- in engine and gearbox jack -V.A.G 1383 A-.
- Align arms of gearbox support according to holes in adjustment plate -3282/39-.
- Bolt on support elements -A- and -C-, as illustrated on adjustment plate.
- The arrow symbol -B- on the adjustment plate points in the direction of travel.



- Place engine and gearbox jack -V.A.G 1383 A- underneath vehicle.
- Align gearbox support -3282- parallel with gearbox.
- Screw pin -3282/29- into gearbox.
- Insert remaining support elements in gearbox as illustrated.
- Support gearbox from underneath by raising engine and gearbox jack -V.A.G 1383 A-.

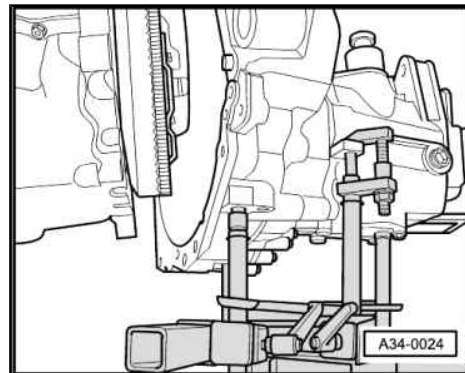


- Remove remaining engine/gearbox securing bolts -5 and 6-.



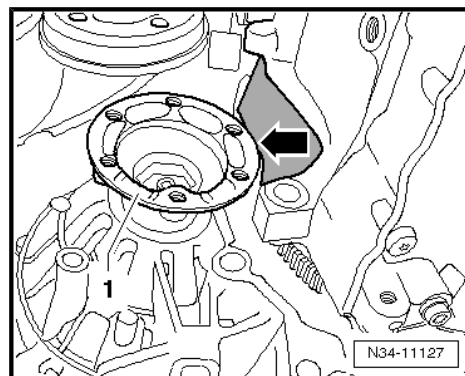
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- Push the gearbox off the dowel sleeves and swing carefully towards the subframe.

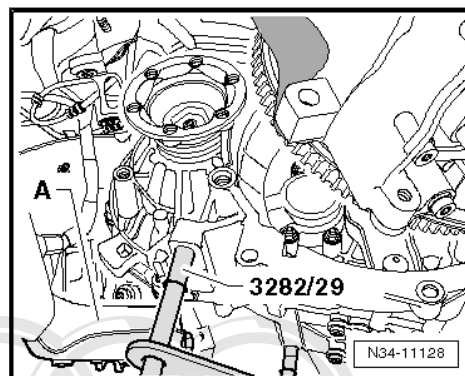


Then guide flange shaft (right-side) -1- past recess -arrow- in intermediate plate.

- Incline gearbox via spindles of gearbox support -3282- .
- The differential must face upwards.
- Pivot gearbox downwards in area of 6th gear.



- Guide gearbox with differential past subframe -A- and swivel out.
- When lowering the gearbox, change position of gearbox using the spindles on gearbox support -3282- .



## 2.2 Installing gearbox

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

**Please note the information in the table below - „Checking gear oil level and filling up with gear oil“.**

| „Checking gear oil level and filling up with gear oil“ |                                     |      |                                                                                                 |       |
|--------------------------------------------------------|-------------------------------------|------|-------------------------------------------------------------------------------------------------|-------|
| Gearbox                                                |                                     | »No« | »Yes«                                                                                           | »Yes« |
|                                                        | Replace-<br>ment unit               | X    |                                                                                                 |       |
|                                                        | No oil es-<br>caping                | X    |                                                                                                 |       |
|                                                        | Was com-<br>pletely dis-<br>mantled |      | X<br>Before in-<br>stalling<br>⇒ <b>Item 3</b><br>(page 174)<br>Oil capacity<br>⇒ <b>page 1</b> |       |

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| „Checking gear oil level and filling up with gear oil“ |                                                                                        |  |  |                                            |
|--------------------------------------------------------|----------------------------------------------------------------------------------------|--|--|--------------------------------------------|
|                                                        | Was partially dismantled<br>• (gear-box housing and clutch housing were not separated) |  |  | X<br>After installing<br>⇒ <u>page 137</u> |

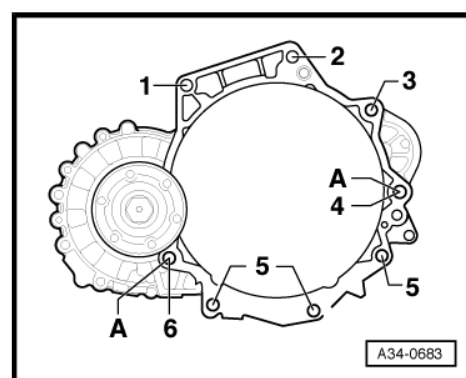
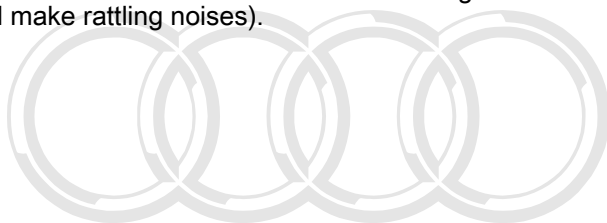


#### Note

- ◆ The special tools required are listed in the procedure for ⇒ „2.1 Removing gearbox“, page 90.
- ◆ Renew self-locking nuts and bolts when performing assembly work.
- ◆ Renew oil seals and gaskets, and bolts which are tightened by turning through a specified angle.
- ◆ Secure all hose connections with the correct hose clips (as original equipment); refer to ⇒ *Electronic parts catalogue*.
- ◆ Re-attach all cable ties at the same locations when re-installing.
- ◆ Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines -G 000 100- to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.

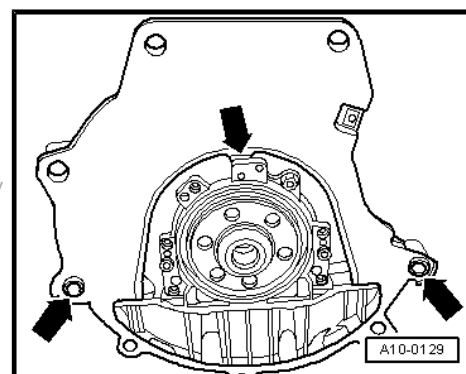
- Check that dowel sleeves -A- for centralising engine/gearbox are in the cylinder block; install any missing dowel sleeves.

If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).

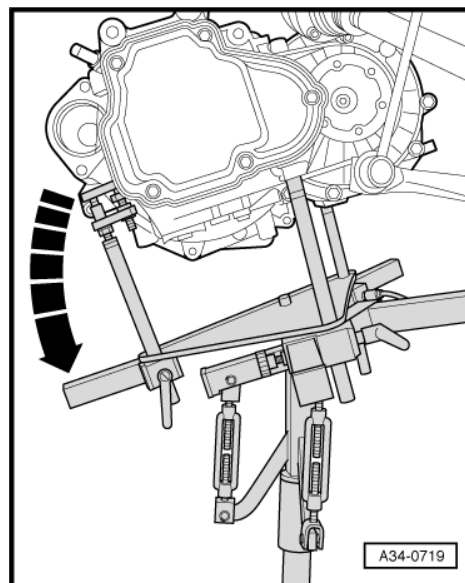


- Make sure that the intermediate plate is engaged on the sealing flange and fitted on the dowel sleeves -arrows-.
- Check clutch release bearing for wear and renew if necessary.
- Lubricate surface which contacts ball-head pin with grease for clutch plate splines -G 000 100-.

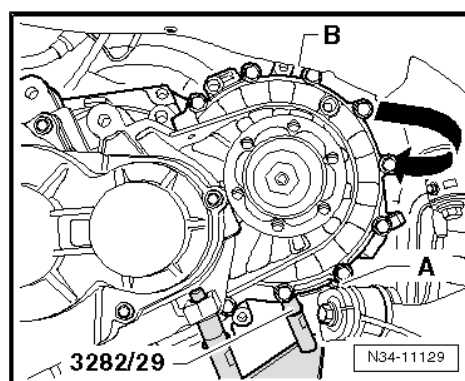
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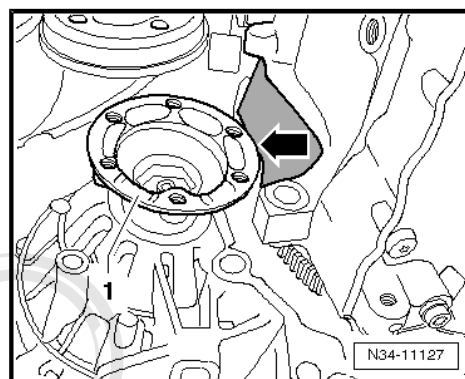
- Incline gearbox via spindles of gearbox support -3282- .
- The differential must face upwards.
- Pivot gearbox downwards in area of 6th gear.
- Then raise gearbox carefully.



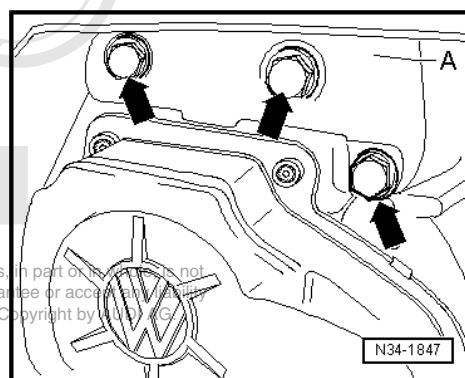
- Guide gearbox with differential past subframe -A- and swivel in direction of -arrow-.
- Make sure longitudinal member -B- is not in the way.



- Guide flange shaft (right-side) -1- past recess -arrow- in intermediate plate.
- Align gearbox with engine in installation position and install.
- Bolt gearbox onto engine. Tightening torques ➔ [page 108](#)
- Detach gearbox jack with gearbox support -3282- from gearbox after bolting gearbox to engine.
- Remove engine support -3300 A- and support -T10036- .
- Install starter ➔ Electrical system; Rep. gr. 27 .



- Secure gearbox bracket -A- to gearbox with new bolts -arrows-. Tightening torque ➔ [Item 8 \(page 127\)](#)
- Pull gearbox up to support arm of gearbox mounting with spindle on support bracket -10 - 222 A- .



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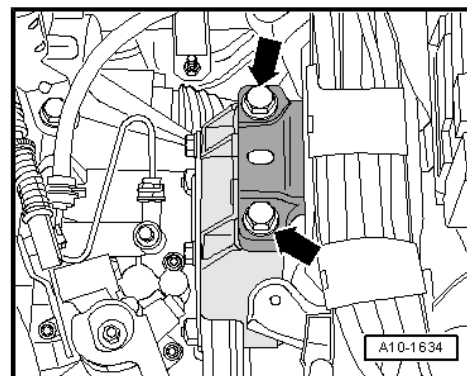
- Align engine/gearbox in installation position. To do so, raise engine/gearbox until gearbox bracket makes full contact with gearbox mounting.



#### Caution

*The threads in the gearbox bracket can be damaged if the bolts are not inserted straight.*

- ◆ *Before fitting the bolts -arrows-, the gearbox bracket and the support arm of the gearbox mounting must be aligned absolutely parallel. If necessary, press rear part of gearbox up with engine and gearbox jack .*



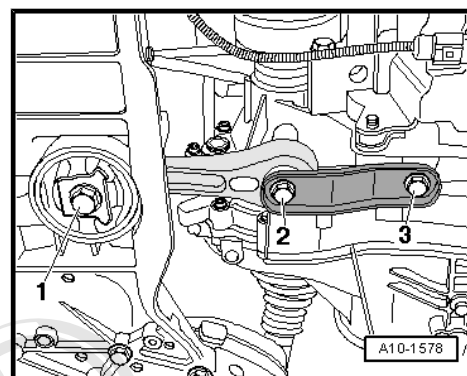
- Use new bolts -arrows- to secure gearbox mounting to gearbox bracket. Tightening torque ➔ [Item 12 \(page 128\)](#)



#### WARNING

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

- Check mountings of engine/gearbox assembly for correct adjustment ➔ Engine, mechanics; Rep. gr. 10 .
- Fit pendulum support with new bolts -1 ... 3- in accordance with installation instructions ➔ [page 132](#) . Tightening torques ➔ [page 127](#)

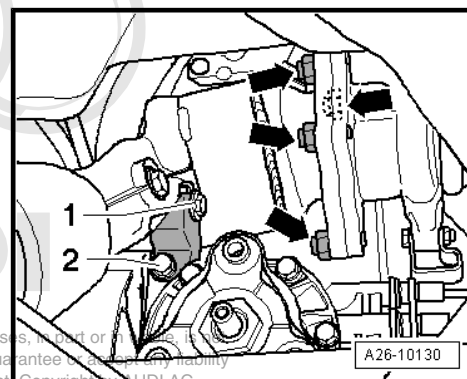


- Secure catalytic converter to turbocharger -arrows- ➔ Engine, mechanics; Rep. gr. 26 .



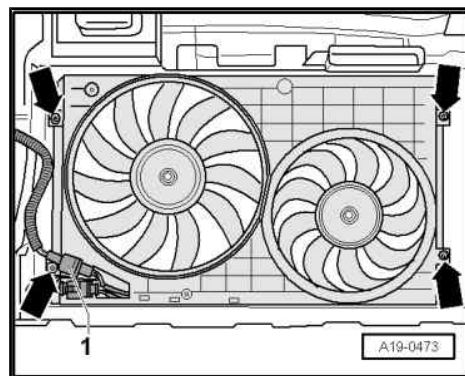
#### Note

*-Item 1- and -item 2- can be disregarded.*

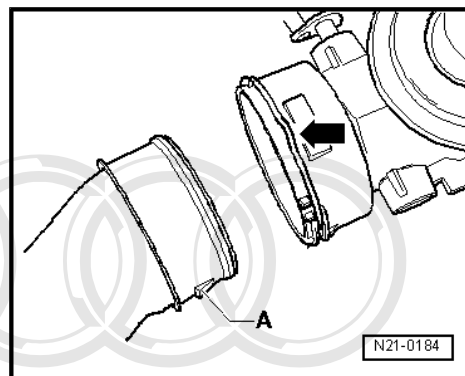


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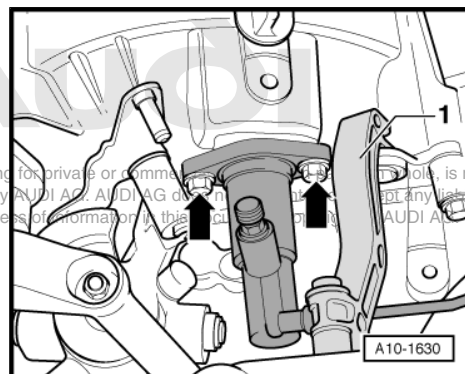
- Install radiator cowl -arrows- and attach electrical connector -1-.



- Install air intake hose. Make sure retaining clip -arrow- snaps onto retaining lug -A-.
- Secure drive shafts to flange shafts on gearbox ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Secure heat shield for drive shaft (right-side) to engine.

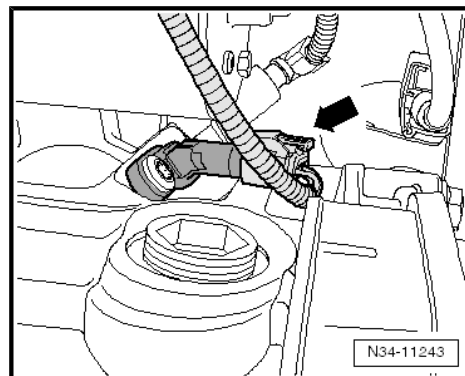


- Install clutch slave cylinder -arrows-. Tightening torque ⇒ [Item 15 \(page 30\)](#)
- Install gearbox support -1-. Tightening torque ⇒ [Item 1 \(page 127\)](#)



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- Gearbox for vehicles with start/stop system: plug connector -arrow- into gearbox neutral position sender -G701- .



- Plug in electrical connector -arrow- at reversing light switch - F4- .
- Connect earth strap at upper engine/gearbox securing bolt.



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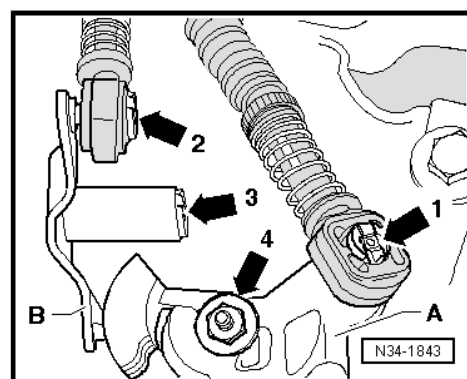
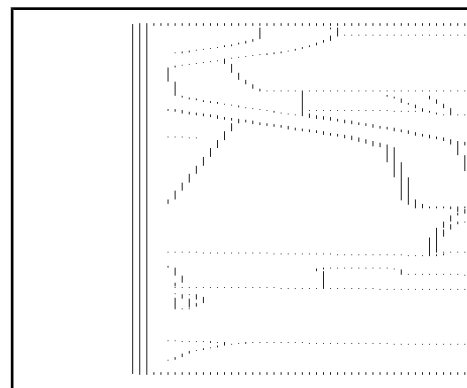
### Metal gate relay lever -B-:



#### Note

*To install, lubricate bearings and moving surfaces with grease - G 000 450 02- .*

- Install gearbox selector lever -A- ➔ [page 78](#) .
- Tighten hexagon nut -arrow 4- to specified torque  
➔ [Item 18 \(page 77\)](#) .
- Fit gate relay lever -B- and secure with securing clip -arrow 3-.
- Attach gear selector cable to gearbox selector lever and secure with securing clip -arrow 1-.
- Attach gate selector cable to gate relay lever and secure with securing clip -arrow 2-.



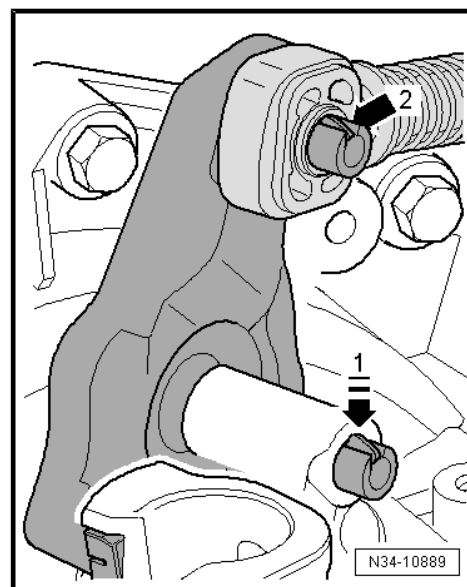
### Plastic gate relay lever:

- Insert gate relay lever with cable end-piece as far as stop.
- Gate relay lever is secured by detent -arrow 1-.
- Ensure that components engage securely.
- Cable end-piece must be behind detent -arrow 2-.



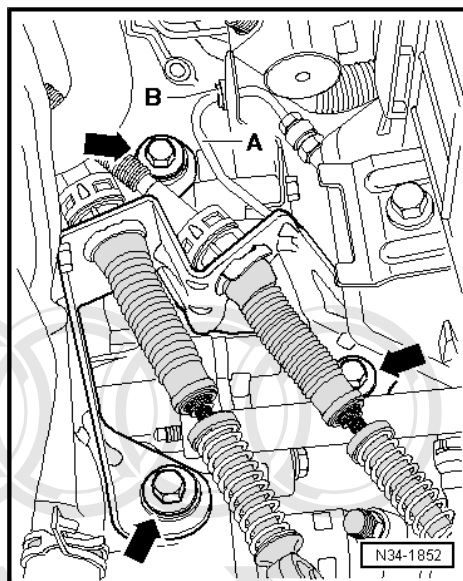
#### Note

*From 08.2008 onwards the gate relay lever is secured with a clip ➔ [page 33](#) .*



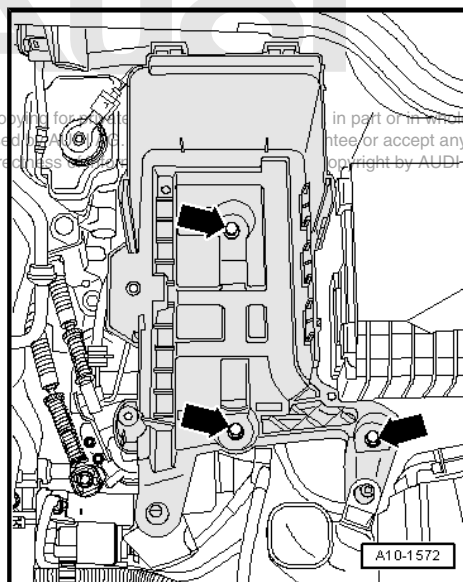
**Continued for all vehicles:**

- Secure cable support bracket -arrows-. Tightening torque  
⇒ [Item 6 \(page 76\)](#)
- Fit bracket -B- to gearbox.
- Push pipe/hose assembly -A- into bracket -B- on gearbox.
- Adjust selector mechanism ⇒ [page 86](#) .

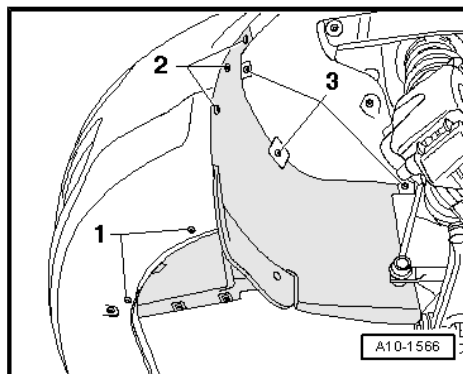


- Install battery tray -arrows- and battery ⇒ Electrical system;  
Rep. gr. 27 .
- Install air cleaner housing ⇒ Rep. gr. 24 .
- Install engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 .

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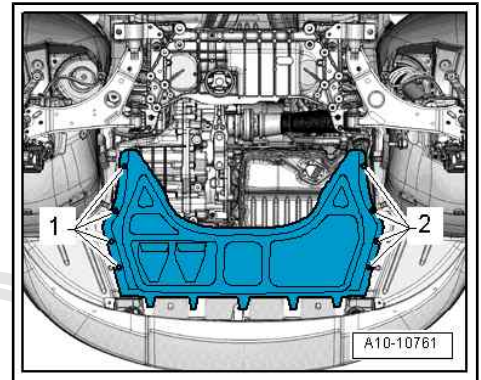


- Install front section of wheel housing liner (left-side) ⇒ General  
body repairs, exterior; Rep. gr. 66 .
- Fit front left wheel ⇒ Rep. gr. 44 .



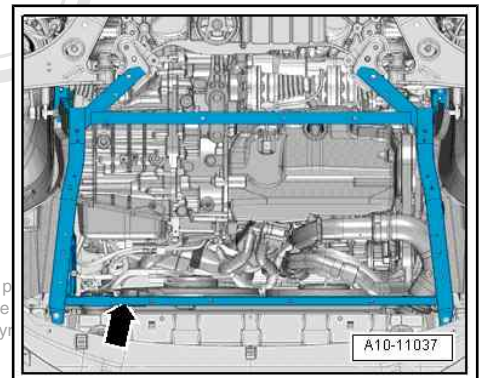
### Audi A3

- Install noise insulation (centre) -1 and 2- ➔ General body repairs, exterior; Rep. gr. 50 .

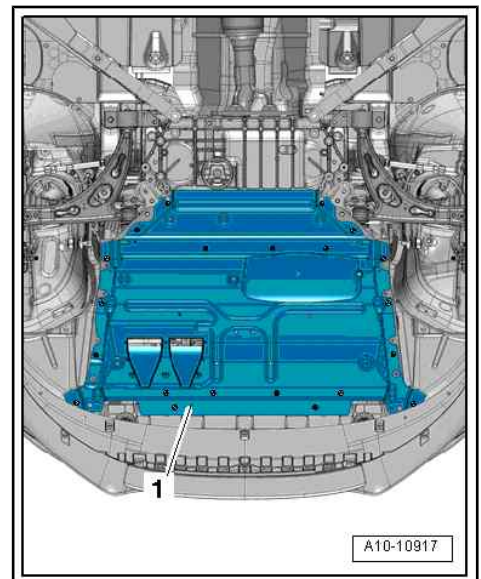


### Audi A3 Cabriolet

- Install noise insulation frame -arrow- ➔ General body repairs, exterior; Rep. gr. 50 .



- Install noise insulation (centre) -1- ➔ General body repairs, exterior; Rep. gr. 50 .



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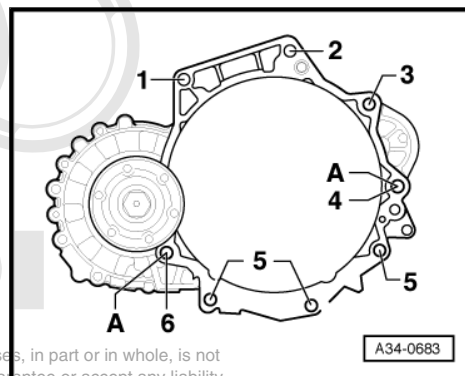
## Tightening torques

Engine/gearbox attachment (1.8 ltr. TFSI engine)

| Item   | Bolt                           | Nm |
|--------|--------------------------------|----|
| 1, 2   | M12 x 65                       | 80 |
| 3 1)2) | M12 x 150                      | 80 |
| 4 1)2) | M12 x 165                      | 80 |
| 5      | M10 x 50                       | 40 |
| 6      | M12 x 85                       | 80 |
| A      | Dowel sleeves for centralising |    |

- 1) Bolt with stud M8.
- 2) Also starter to gearbox

| Component                                            | Nm |
|------------------------------------------------------|----|
| Clutch pipe bracket to gearbox                       | 20 |
| Bracket for electrical wiring at bottom starter bolt | 23 |
| Heat shield for drive shaft to cylinder block        | 25 |

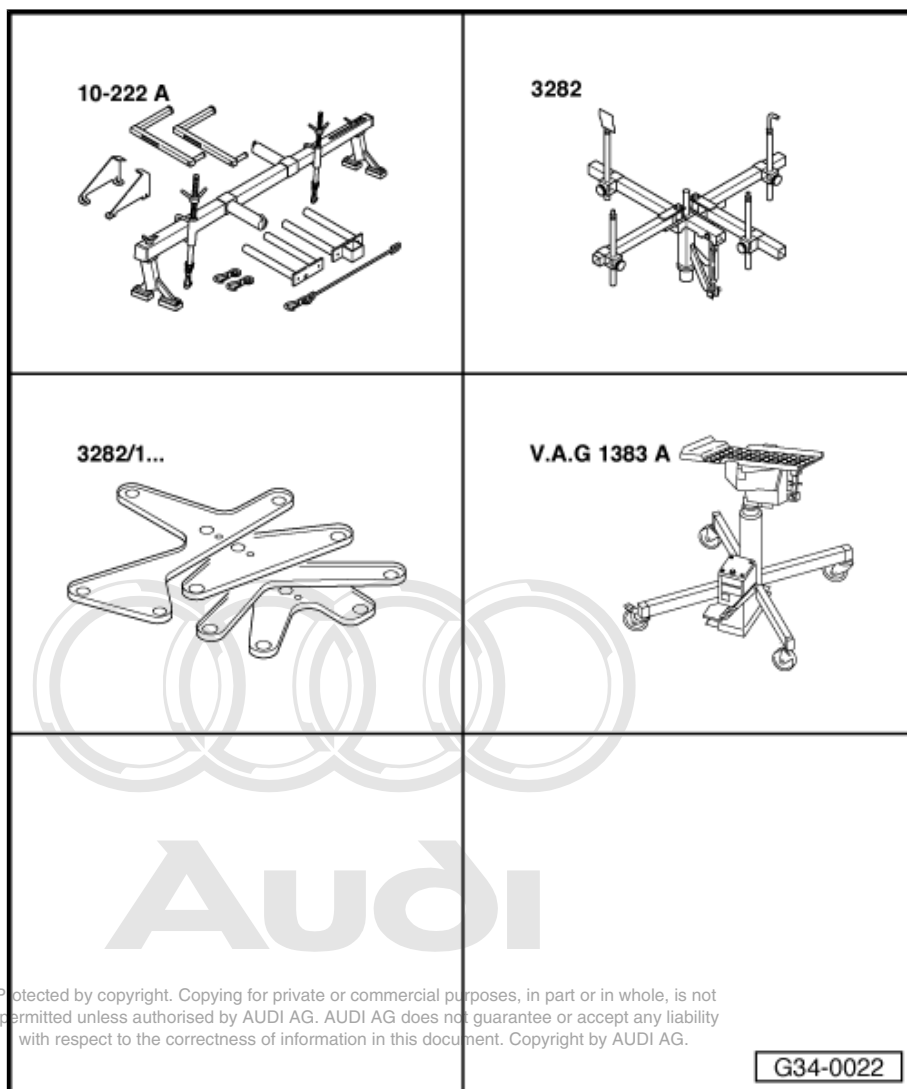


### 3 Removing and installing gearbox on vehicles with 2.0 ltr. FSI engine

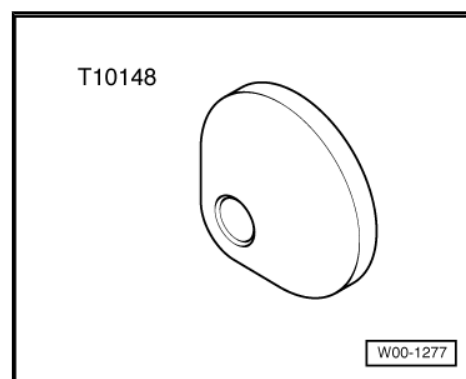
#### 3.1 Removing gearbox

##### Special tools and workshop equipment required

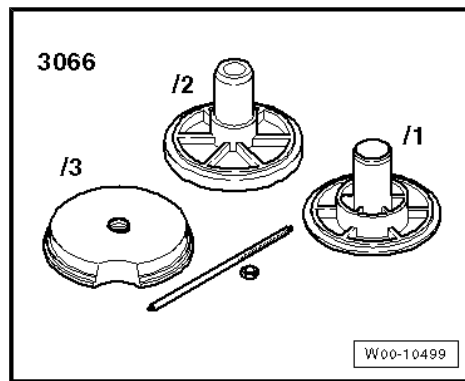
- ◆ Support bracket -10 - 222 A-
- ◆ Gearbox support -3282-
- ◆ Pin -3282/29-
- ◆ Adjustment plate -3282/39-
- ◆ Engine and gearbox jack - V.A.G 1383 A-



- ◆ Press tool -T10148-



- ◆ Spindle from assembly device -3066- or M8 x 105 bolt



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



#### Note

*All cable ties which are released or cut open during removal must be fitted in the same position when installing.*

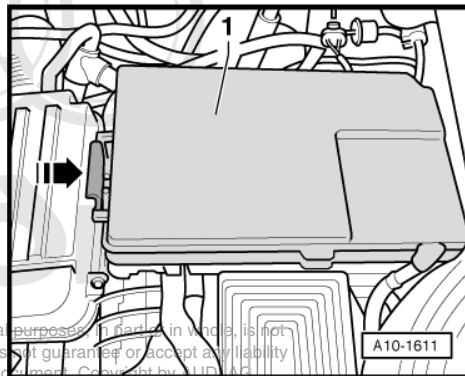


#### Caution

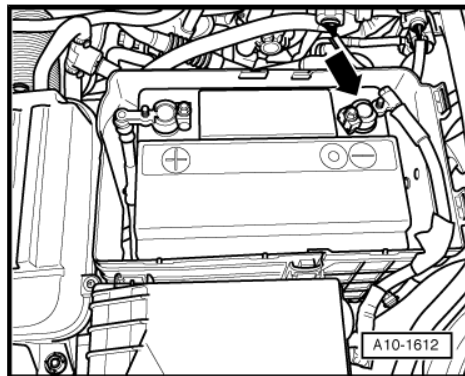
**When disconnecting the battery there is a risk of serious damage to electronic components:**

- ◆ **Observe the correct procedure for disconnecting the battery → Electrical system; Rep. gr. 27 .**

- Press release tab -arrow- and remove cover -1- over battery.

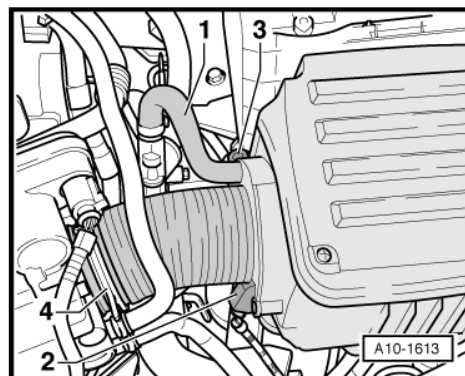


- With ignition switched off, disconnect earth wire -arrow- at battery.

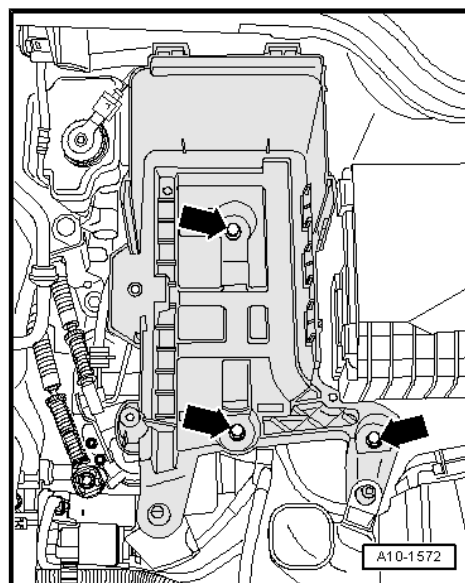


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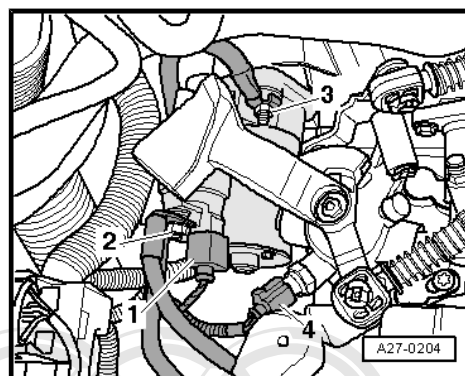
- Disconnect hose -1- and connector -2- at air cleaner housing.
- Remove bolt -3-.
- Release spring clips -4- and detach air intake hose.
- Take out air cleaner housing.
- Remove battery ⇒ Electrical system; Rep. gr. 27 .



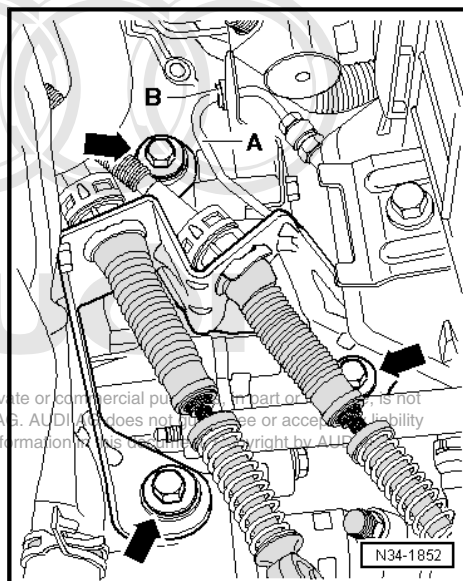
- Remove battery tray -arrows-.
- Detach front of battery tray from air duct.



- Unplug electrical connectors -1- at starter and -4- at reversing light switch -F4- .
- Unscrew wire -2- at starter and earth wire -3-.
- Move wiring clear.
- Remove top starter mounting bolt.

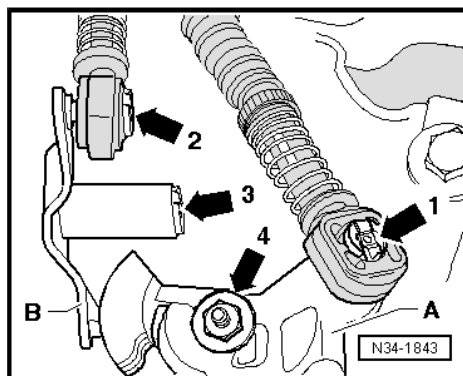


- Detach cable support bracket from gearbox -arrows-.
- Remove bracket -B- from gearbox and disconnect from pipe/hose assembly -A-.



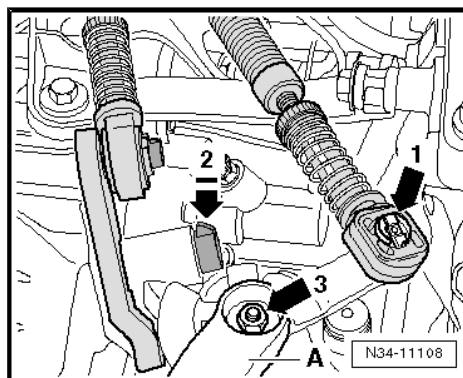
#### Metal gate relay lever -B-:

- Detach securing clip -arrow 1- from gearbox selector lever -A- and pull off gear selector cable.
- Detach securing clip -arrow 2- from gate relay lever -B- and pull off gate selector cable.
- Pull off securing clip -arrow 3- and remove gate relay lever -B-.



#### Plastic gate relay lever

- Detach securing clip -arrow 1- and pull off gear selector cable.
- Detach gate selector cable from cable end-piece ➔ [page 70](#) .
- Press detent -arrow 2- down onto stop and remove gate relay lever together with cable end-piece. Move gate relay lever in normal direction of operation.



#### Note

From 08.2008 onwards the gate relay lever is secured with a clip ➔ [page 33](#) .

#### Continued for all vehicles:

- Tie cables with cable support bracket to one side.
- Remove nut -arrow 3- and detach gearbox selector lever -A-.

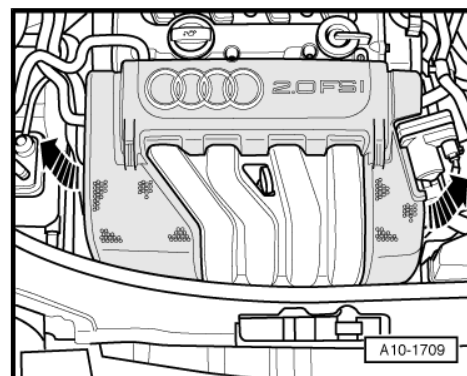
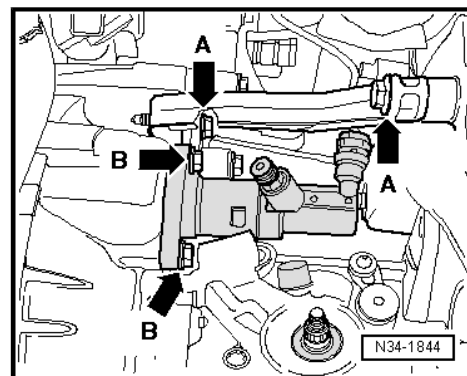
- Remove gearbox support -arrows A-.
- Remove clutch slave cylinder -arrows B-, move to one side and secure with wire. Do not disconnect pipes.



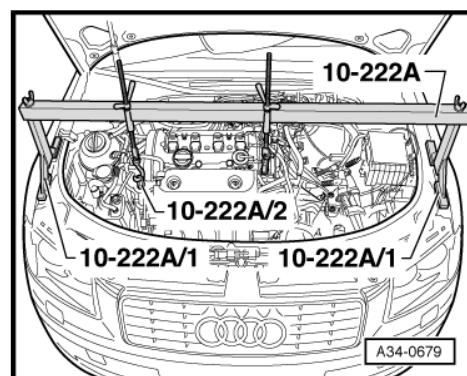
**WARNING**

*Do not depress clutch pedal after removing slave cylinder.*

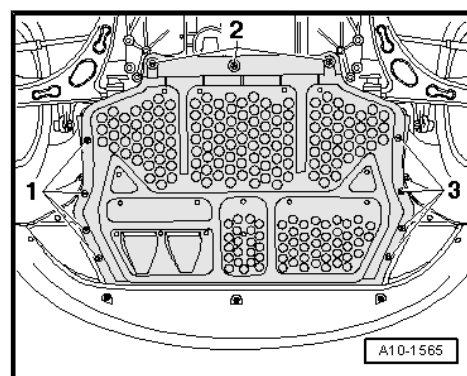
- Remove upper engine/gearbox securing bolts.
- Remove engine cover panel -arrows-.



- Position support bracket -10 - 222 A- on wing mounting flanges with adapters -10 - 222 A /3-. Spindles face to the front.
- Take up weight of engine evenly with both spindles; do not lift.
- Raise vehicle.
- Remove front left wheel.
- Turn steering to the left.

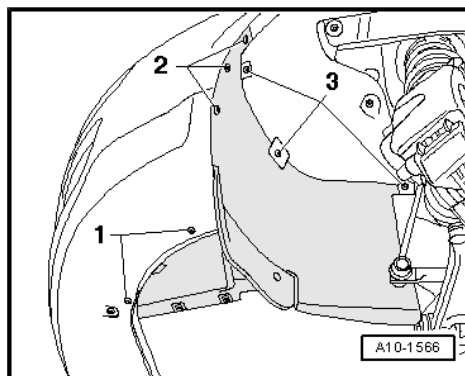


- Remove centre noise insulation (fasteners -1 ... 3-).

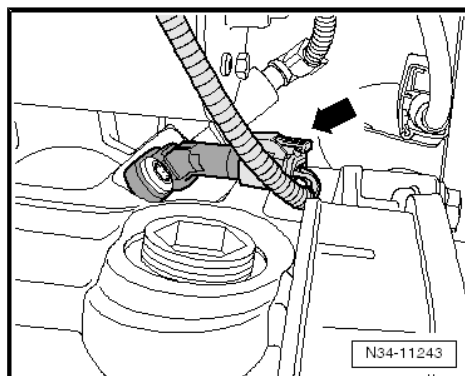


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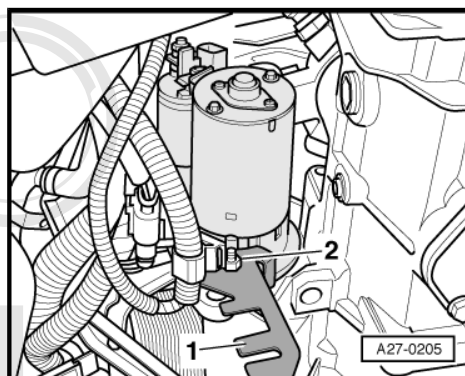
- Remove front section of wheel housing liner (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 .



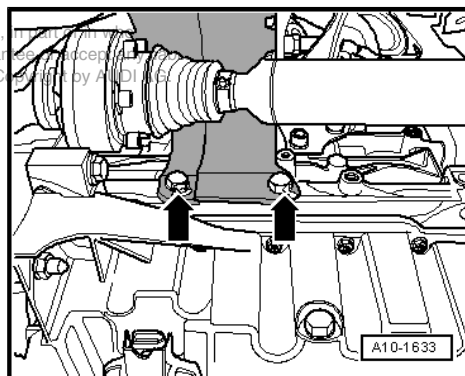
- Gearbox for vehicles with start/stop system: unplug connector -arrow- from gearbox neutral position sender -G701- .



- Remove nut -2- and detach bracket -1- from stud together with electrical wiring.
- Remove bottom starter mounting bolt and take out starter.



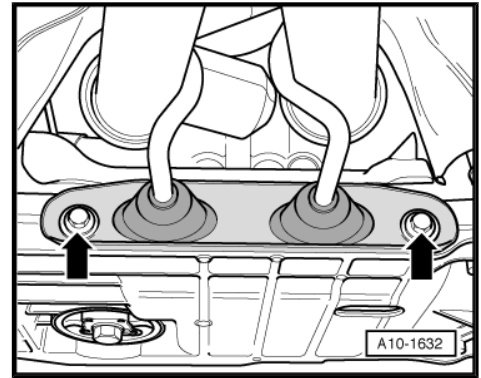
- Unbolt heat shield for right-side drive shaft -arrows-
- Unbolt drive shafts (left and right) from gearbox flange shafts
- Lift drive shafts as far as possible and tie in place. Do not damage surface coating.



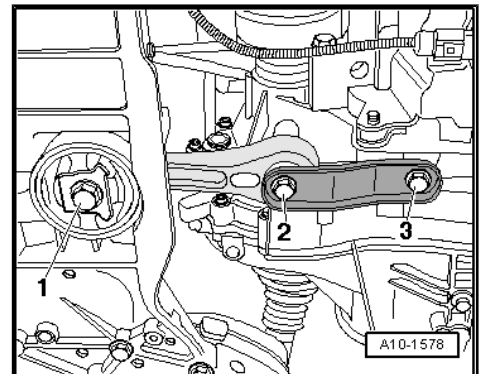
#### Note

*The left drive shaft should be tied up as far forward as possible.*

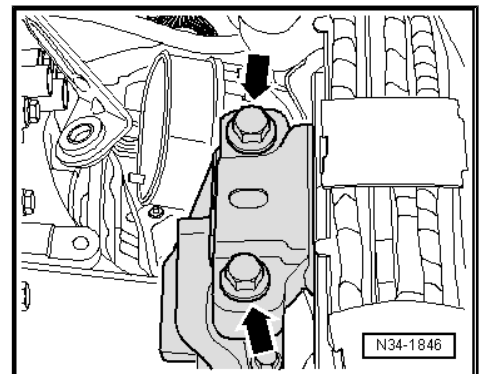
- Unbolt support bracket for exhaust system -arrows-.



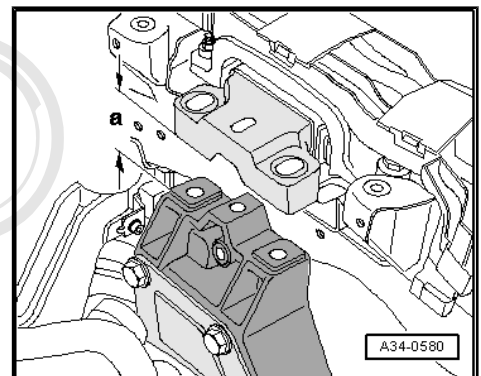
- Remove bolts -1 ... 3- and detach pendulum support.



- Remove hexagon bolts -arrows- at left mounting from gearbox mounting.

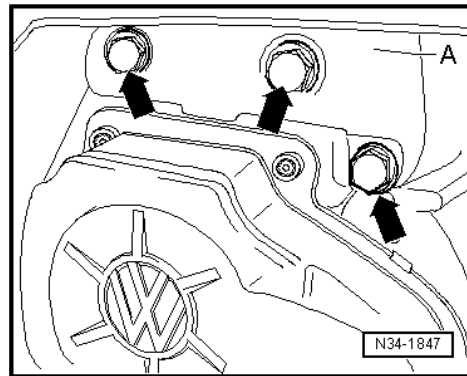


- Adjust spindles of support bracket -10 - 222 A- to lower gearbox by distance -a-.
- Dimension -a- = 50 mm

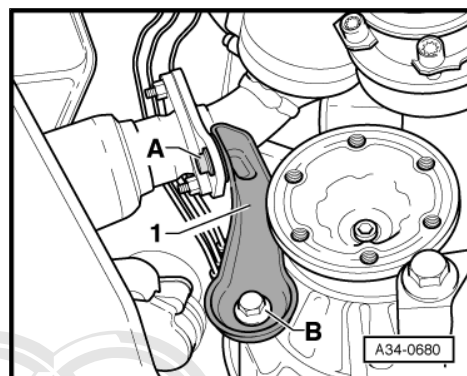


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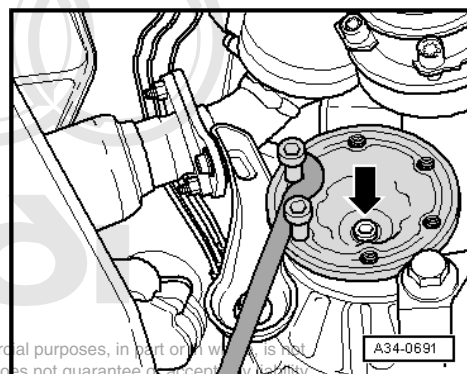
- Unbolt gearbox bracket -A- from gearbox -arrows-.



- Remove bolts -A- and -B- and take out strut -1-.



- Remove securing bolt -arrow- for flange shaft. To do this, screw two bolts into flange and counterhold flange shaft with suitable lever.



#### Note

*Before removing flange shaft, check oil seal for damage. A leaking oil seal must be renewed when fitting flange shaft.*

- Pull out flange shaft and spring.

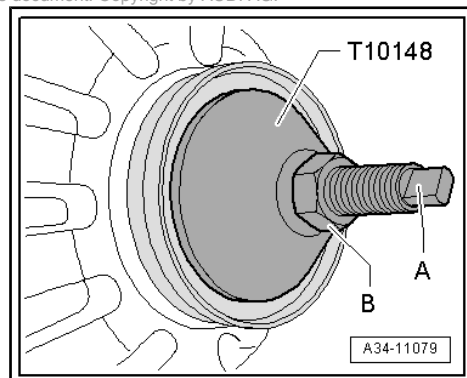
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- Screw spindle -A- of assembly device -3066- into threaded piece in differential.
- Insert thrust piece -T10148- and secure with nut -B-.



#### Note

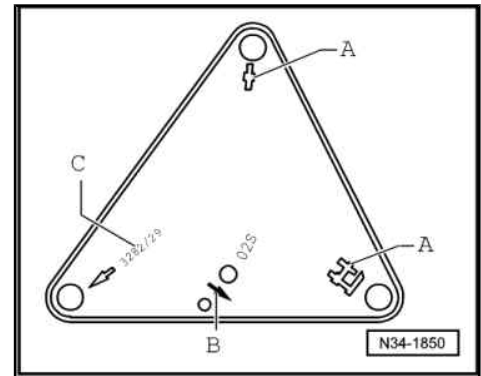
- ♦ *The thrust piece -T10148- serves to protect the oil seal (right-side) and the gearbox from dirt.*
- ♦ *Instead of using the spindle -A-, an M8 x 105 mm bolt can also be screwed hand-tight into the threaded piece in the differential.*



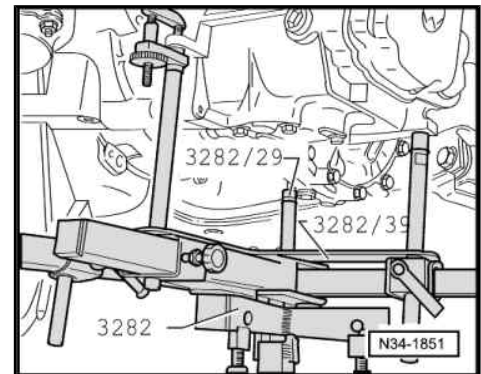
To remove gearbox „02S“, set up gearbox support -3282- with adjustment plate -3282/39- .

- Insert gearbox support -3282- in engine and gearbox jack - V.A.G 1383 A- .
- Align arms of gearbox support according to holes in adjustment plate .

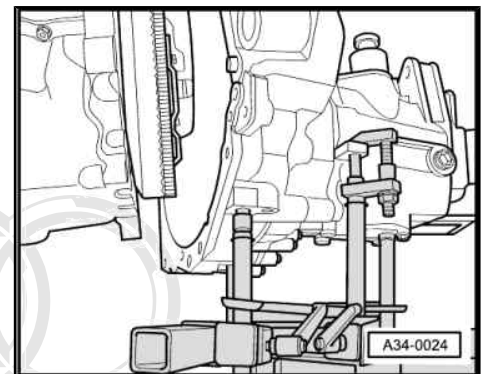
- Bolt on support elements -A- and -C-, as illustrated on adjustment plate .
- Place engine and gearbox jack -V.A.G 1383 A- under vehicle; arrow symbol -B- on adjustment plate points to front of vehicle.



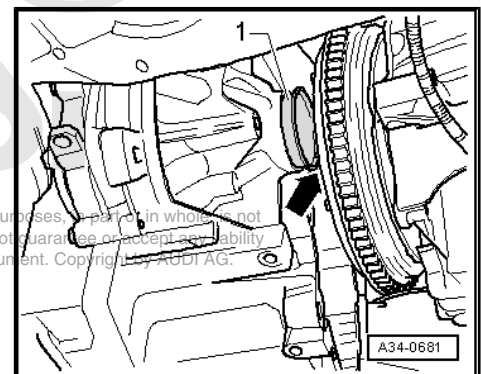
- Align adjustment plate parallel to gearbox and lock safety support on gearbox.
- Remove bottom engine/gearbox connecting bolts.



- Carefully pull gearbox off dowel sleeves.
- ♦ Distance between gearbox and engine is slightly greater at the front than at the back.



- Push gearbox forwards slightly and bring it into the position shown.
- Lower gearbox out of vehicle. When removing gearbox, ensure sufficient clearance between sleeve -1- and pressure plate -arrow- to prevent damage.

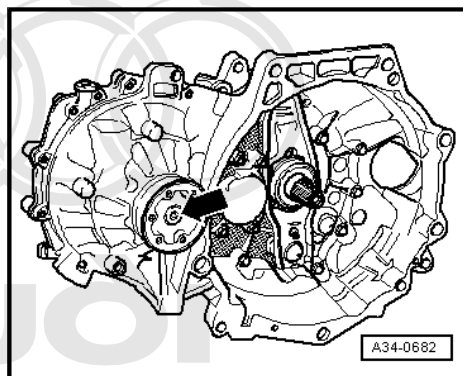


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## Note

If you will be installing a new gearbox instead of the one removed, re-install flange shaft and tighten countersunk bolt -arrow-. Tightening torque ⇒ [Item 1 \(page 145\)](#)



## 3.2 Installing gearbox

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

Please note the information in the table below - „Checking gear oil level and filling up with gear oil“.

| „Checking gear oil level and filling up with gear oil“ |                                                                                           |      |                                                                                                                |                                                      |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------|------------------------------------------------------|
|                                                        |                                                                                           | »No« | »Yes«                                                                                                          | »Yes«                                                |
| Gearbox                                                | Replace-ment unit                                                                         | X    |                                                                                                                |                                                      |
|                                                        | No oil es-caping                                                                          | X    |                                                                                                                |                                                      |
|                                                        | Was com-pletely dis-mantled                                                               |      | X<br>Before in-<br>stalling<br>⇒ <a href="#">Item 3 (page 174)</a><br>Oil capacity<br>⇒ <a href="#">page 1</a> |                                                      |
|                                                        | Was parti-ally dis-mantled<br>• (gear-box housing and clutch housing were not separa-ted) |      |                                                                                                                | X<br>After instal-ling<br>⇒ <a href="#">page 137</a> |

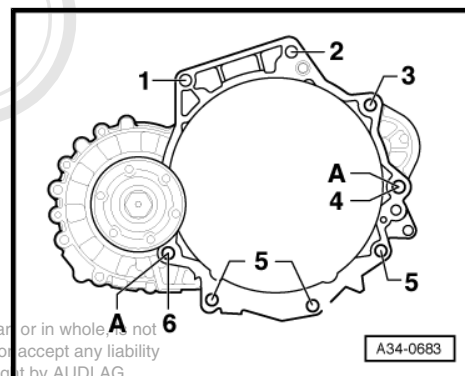


## Note

- ◆ The special tools required are listed in the procedure for  
⇒ „3.1 Removing gearbox“, page 109 .
- ◆ Renew self-locking nuts and bolts when performing assembly work.
- ◆ Renew oil seals and gaskets, and bolts which are tightened by turning through a specified angle.
- ◆ Secure all hose connections with the correct hose clips (as original equipment); refer to ⇒ Electronic parts catalogue .
- ◆ All cable ties which are released or cut open during removal must be fitted in the same position when installing.
- ◆ Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines -G 000 100- to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.

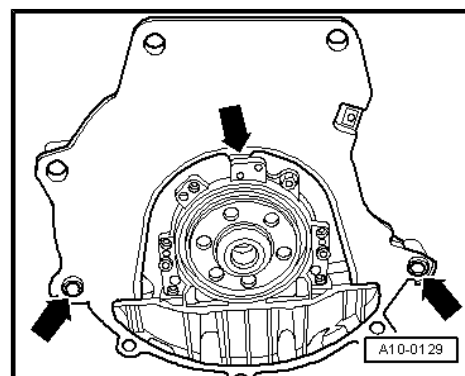
- Check that dowel sleeves -A- for centralising engine/gearbox are in the cylinder block; install any missing dowel sleeves.

If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).

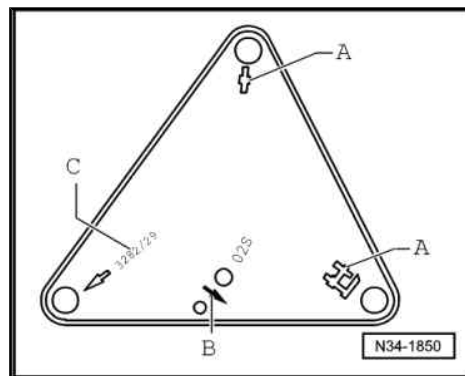


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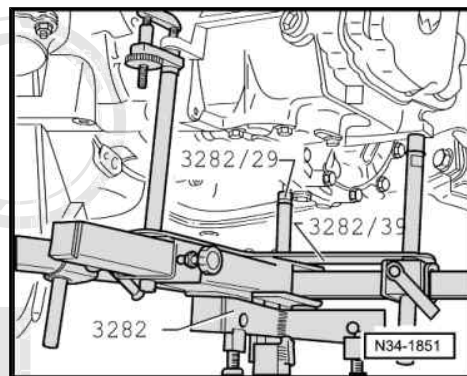
- Make sure that the intermediate plate is engaged on the sealing flange and fitted on the dowel sleeves -arrows-.
- Check clutch release bearing for wear and renew if necessary.
- Lubricate surface which contacts ball-head pin with grease for clutch plate splines -G 000 100- .
- Raise gearbox carefully and move to installation position using gearbox support 3282.
- Place adjustment plate 3282/39 on gearbox support 3282. (Adjustment plate can only be fitted in one position.)
- Align arms of gearbox support according to holes in adjustment plate.
- Insert gearbox support -3282- in engine and gearbox jack - V.A.G 1383 A- .



- Screw support elements -A- and pin -3282/29- (-C-) into adjustment plate , as illustrated.

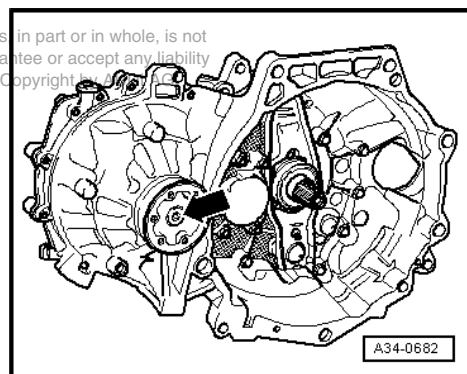


- Align adjustment plate -3282/39- parallel to gearbox and lock safety support on gearbox.
- Screw pin -3282/29- into hole for bolt securing pendulum support to gearbox.



- Remove bolt -arrow- and pull flange shaft out of gearbox together with spring.

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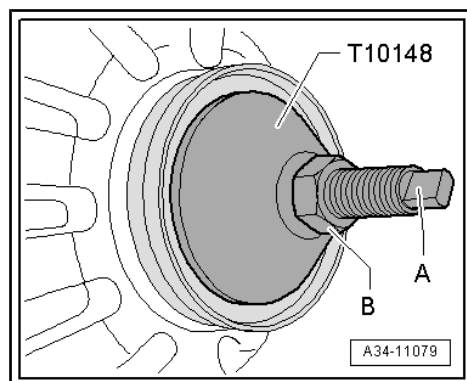


- Screw spindle -A- of assembly device -3066- into threaded piece in differential.
- Insert thrust piece -T10148- and secure with nut -B-.



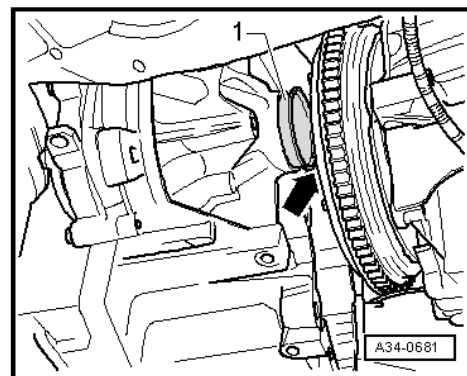
#### Note

- ♦ The thrust piece -T10148- serves to protect the oil seal (right-side) and the gearbox from dirt.
- ♦ Instead of using the spindle -A-, an M8 x 105 mm bolt can also be screwed hand-tight into the threaded piece in the differential.

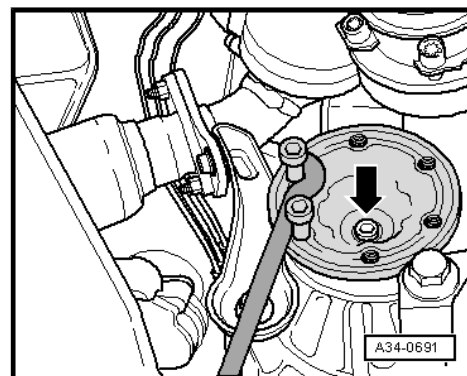


- Place engine and gearbox jack -V.A.G 1383 A- underneath vehicle.
- The arrow symbol on the adjustment plate points in the direction of travel.

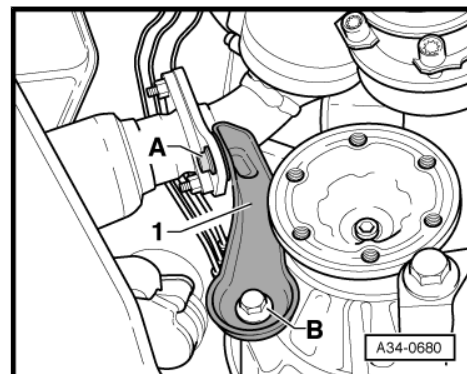
- Lift gearbox. When installing gearbox, ensure sufficient clearance between sleeve -1- and pressure plate -arrow- to prevent damage.
- Bring gearbox into position.
- Install bottom engine/gearbox securing bolts. Tightening torques ➔ [page 125](#)
- Detach gearbox jack with gearbox support -3282- from gearbox after bolting gearbox to engine.



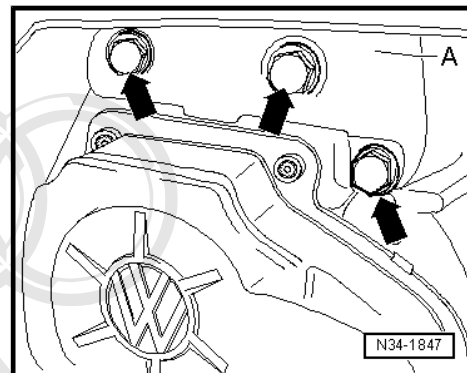
- Re-install flange shaft (right-side) and tighten countersunk bolt -arrow-. Tightening torque ➔ [Item 12 \(page 246\)](#)
- Install starter ➔ Electrical system; Rep. gr. 27 .



- Install strut -1- and tighten bolts -A- and -B- ➔ Engine, mechanics; Rep. gr. 26 .



- Secure gearbox bracket -A- to gearbox with new bolts -arrows-. Tightening torque ➔ [Item 8 \(page 127\)](#)
- Install top engine/gearbox securing bolts. Tightening torques ➔ [page 125](#)
- Lift engine/gearbox assembly slightly via the spindles of support bracket -10 - 222 A- .



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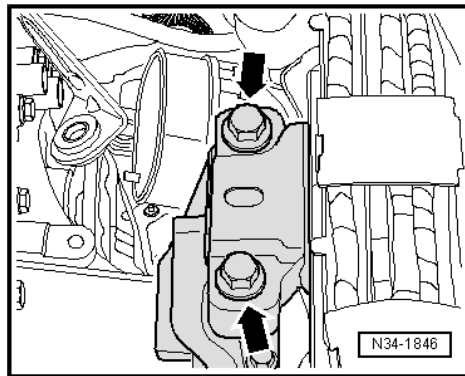
- Align engine/gearbox in installation position. To do so, raise engine/gearbox until gearbox bracket makes full contact with gearbox mounting.



### Caution

*The threads in the gearbox bracket can be damaged if the bolts are not inserted straight.*

- ◆ *Before fitting the bolts -arrows-, the gearbox bracket and the support arm of the gearbox mounting must be aligned absolutely parallel. If necessary, press rear part of gearbox up with engine and gearbox jack .*



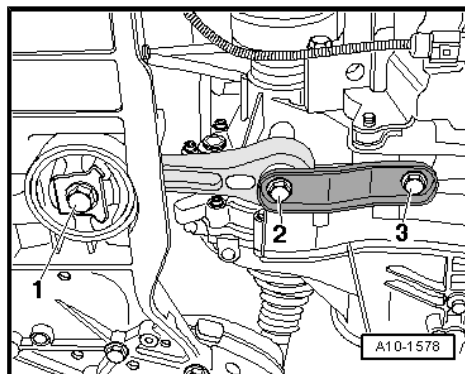
- Bolt gearbox bracket onto gearbox mounting using new bolts -arrows-. Tightening torque ➔ [Item 12 \(page 128\)](#)



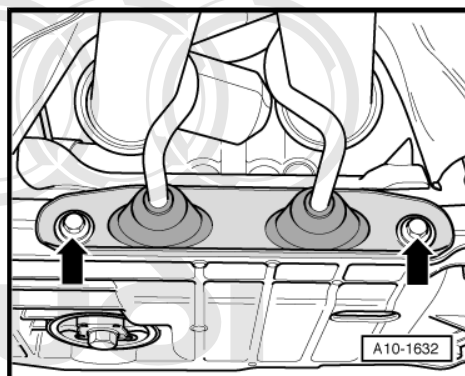
### WARNING

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

- Check mountings of engine/gearbox assembly for stress-free adjustment and re-adjust if necessary ➔ Engine, mechanics; Rep. gr. 10 .
- Fit pendulum support with new bolts -1 ... 3- in accordance with installation instructions ➔ [page 132](#) . Tightening torques ➔ [page 127](#)
- Bolt drive shafts to flange shafts ➔ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Install heat shield for right-side drive shaft.

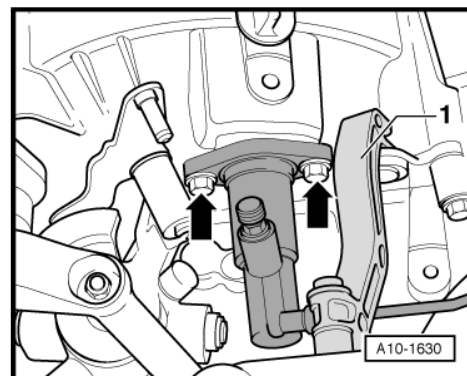


- Secure exhaust system -arrows- and align so it is free of stress ➔ Engine, mechanics; Rep. gr. 26 .

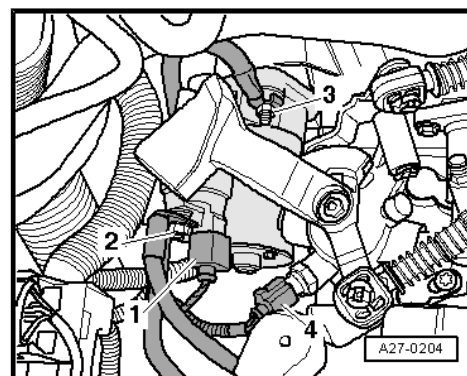


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- Install clutch slave cylinder -arrows-. Tightening torque  
⇒ [Item 15 \(page 30\)](#)
- Install gearbox support -1-. Tightening torque  
⇒ [Item 1 \(page 127\)](#)



- Connect earth strap -3- at upper engine/gearbox securing bolt.
- Plug in electrical connector -4- at reversing light switch -F4- .



#### Metal gate relay lever -B-:

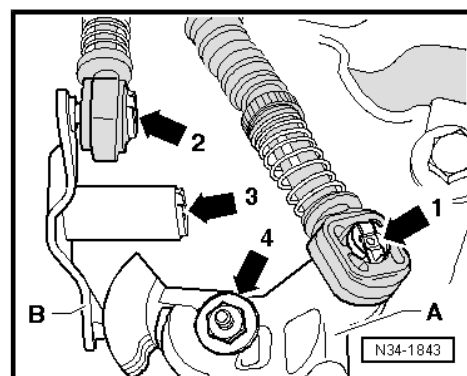
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#### Note

*To install, lubricate bearings and moving surfaces with grease - G 000 450 02- .*

- Install gearbox selector lever -A- ⇒ [page 78](#) .
- Tighten hexagon nut -arrow 4- to specified torque  
⇒ [Item 18 \(page 77\)](#) .
- Fit gate relay lever -B- and secure with securing clip -arrow 3-.
- Attach gear selector cable to gearbox selector lever and secure with securing clip -arrow 1-.
- Attach gate selector cable to gate relay lever and secure with securing clip -arrow 2-.



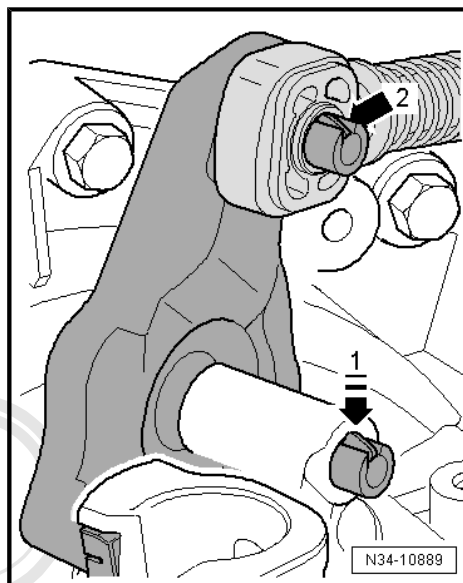
### Plastic gate relay lever:

- Insert gate relay lever with cable end-piece as far as stop.
- Gate relay lever is secured by detent -arrow 1-.
- Ensure that components engage securely.
- Cable end-piece must be behind detent -arrow 2-.



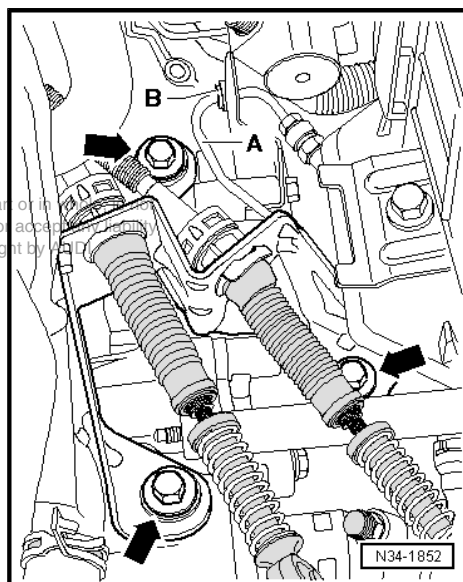
### Note

From 08.2008 onwards the gate relay lever is secured with a clip  
⇒ [page 33](#) .

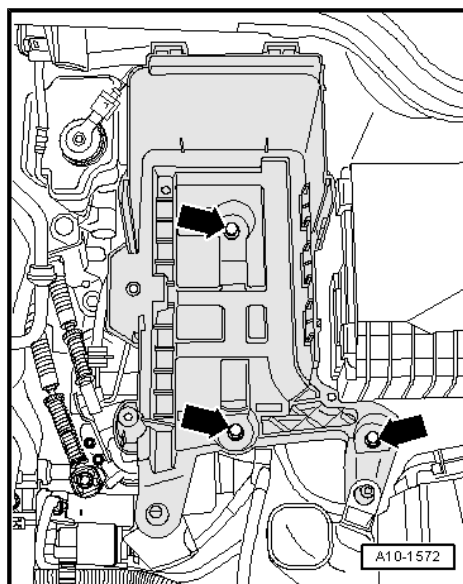


### Continued for all vehicles:

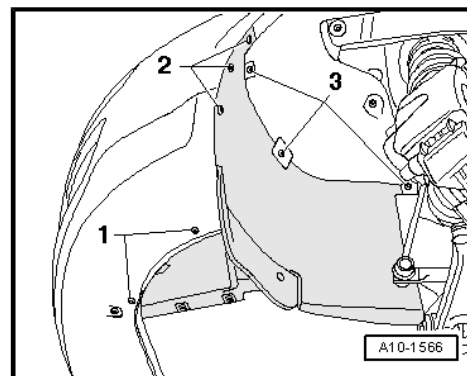
- Secure cable support bracket -arrows-. Tightening torque  
⇒ [Item 6 \(page 76\)](#)
- Fit bracket -B- to gearbox.
- Push pipe/hose assembly -A- into bracket -B- on gearbox.
- Adjust selector mechanism ⇒ [page 86](#)



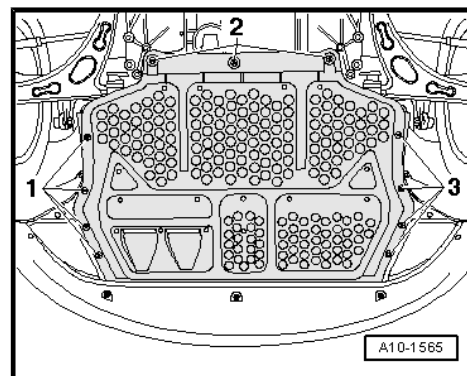
- Install battery tray -arrows- and battery ⇒ Electrical system;  
Rep. gr. 27 .
- Install air cleaner housing ⇒ Rep. gr. 24 .
- Install engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 .



- Install front section of wheel housing liner (left-side) ⇒ General body repairs, exterior; Rep. gr. 66 .
- Fit front left wheel ⇒ Rep. gr. 44 .



- Install noise insulation (centre) -1 ... 3- ⇒ General body repairs, exterior; Rep. gr. 50 .

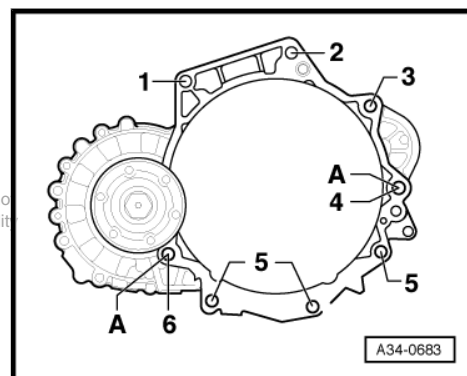


### Tightening torques

- Engine/gearbox attachment (2.0 ltr. FSI engine):

| Item   | Bolt                           | Qty. | Nm |
|--------|--------------------------------|------|----|
| 1      | M 12 x 65                      | 1    | 80 |
| 2 1)   | M 12 x 65                      | 1    | 80 |
| 3 1)2) | M 12 x 150                     | 1    | 80 |
| 4 1)2) | M 12 x 165                     | 1    | 80 |
| 5      | M 10 x 50                      | 3    | 40 |
| 6      | M 12 x 85                      | 1    | 80 |
| A      | Dowel sleeves for centralising | 2    |    |

- 1) Bolt with stud M8.
- 2) Also starter to gearbox.

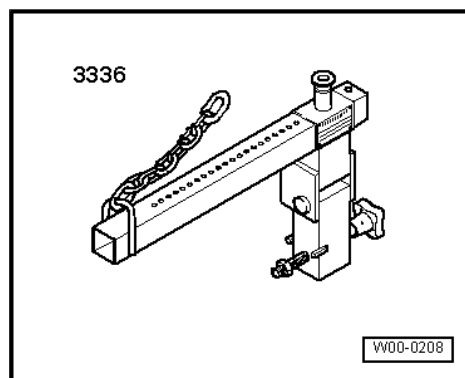


|                                                      |    |
|------------------------------------------------------|----|
| Clutch pipe bracket to gearbox                       | 20 |
| Bracket for electrical wiring at bottom starter bolt | 23 |
| Heat shield for drive shaft to gearbox               | 25 |

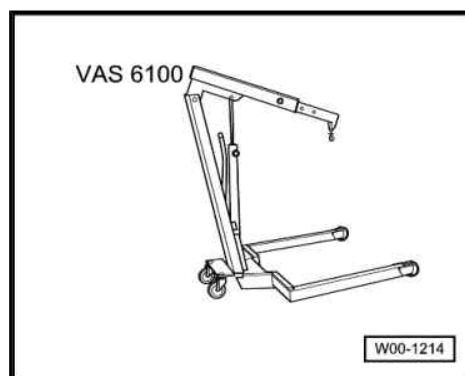
## 3.3 Transporting gearbox

Special tools and workshop equipment required

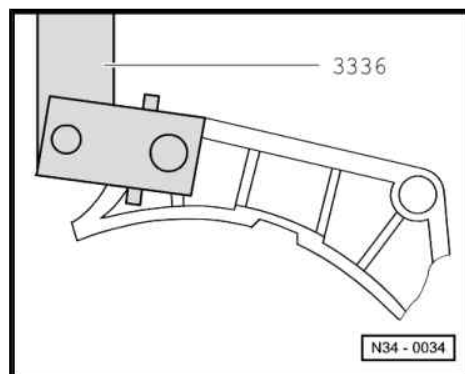
◆ Gearbox lifting tackle -3336-



◆ Workshop hoist -VAS 6100-



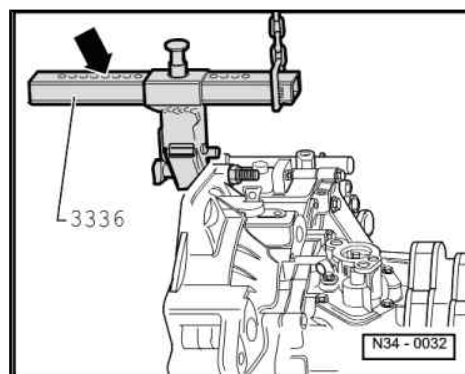
- Bolt gearbox lifting tackle -3336- to clutch housing



- Set support arm on sliding bracket by means of locking pin -arrow-.

Number of holes visible = 5

- Lift gearbox with workshop hoist -VAS 6100- and gearbox lifting tackle -3336- .
- Set down gearbox as required (for example in transport container).



## 4 Exploded view - assembly mountings

### 1 - Bolt

- ☐ 20 Nm + 90°
- ☐ Gearbox support to gearbox and gearbox bracket
- ☐ Tightening sequence ⇒ [page 128](#)
- ☐ Always renew

### 2 - Gearbox support

- ☐ To gearbox bracket and gearbox

### 3 - Engine mounting with engine support

- ☐ Removing and installing ⇒ Engine, mechanics; Rep. gr. 10
- ☐ Tightening torques ⇒ Engine, mechanics; Rep. gr. 10

### 4 - Bolt

- ☐ 100 Nm + 90°
- ☐ Pendulum support to subframe
- ☐ Always renew

### 5 - Pendulum support

- ☐ Removing and installing ⇒ [page 131](#)

### 6 - Bolt

- ☐ 50 Nm + 90°
- ☐ Pendulum support to gearbox
- ☐ Always renew

### 7 - Bolt

- ☐ 50 Nm + 90°
- ☐ Pendulum support to gearbox
- ☐ Always renew

### 8 - Bolt

- ☐ 40 Nm + 90°
  - ☐ Gearbox bracket to gearbox
  - ☐ Always renew
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### 9 - Gearbox bracket

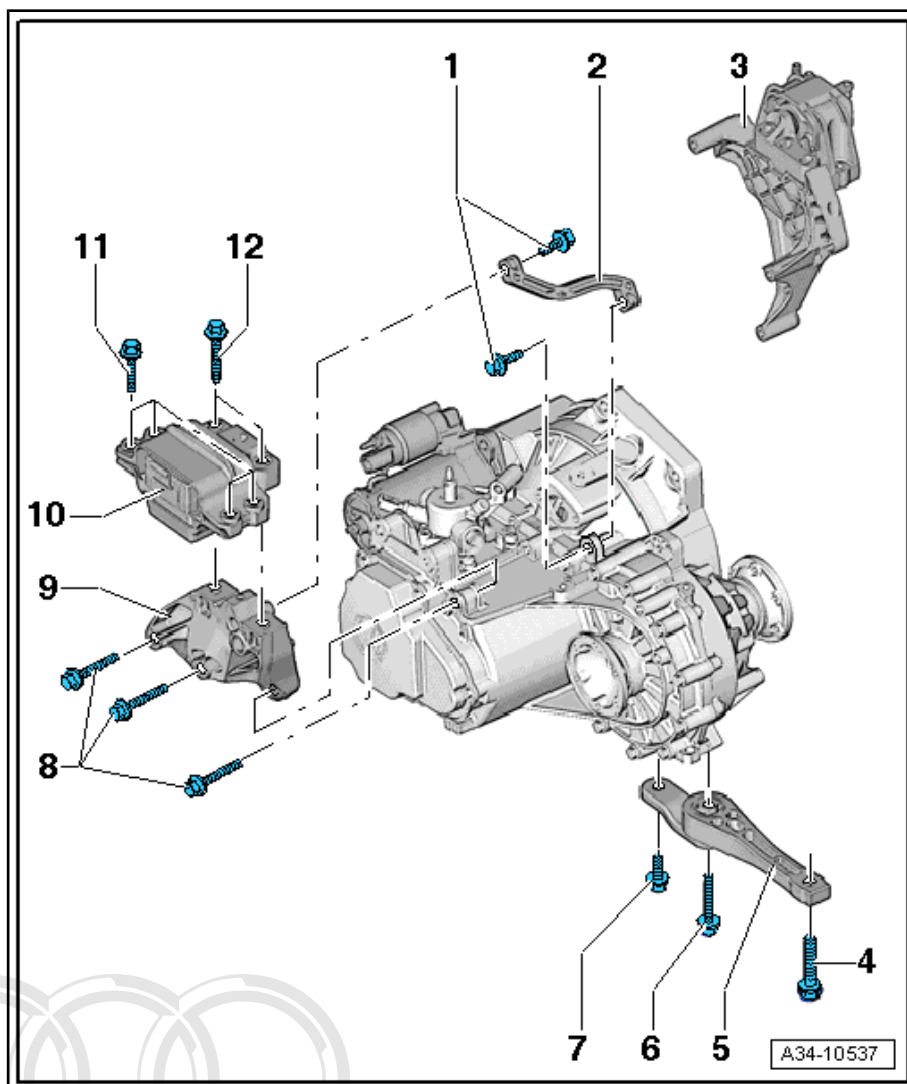
- ☐ Removing and installing ⇒ [page 132](#)

### 10 - Gearbox mounting

- ☐ Removing and installing ⇒ [page 128](#)
- ☐ Attach to gearbox bracket

### 11 - Bolt

- ☐ 40 Nm + 90°
- ☐ Gearbox mounting to body



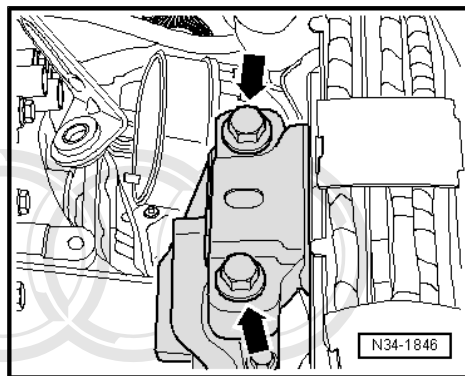
- ❑ Tightening sequence ⇒ [page 128](#)
- ❑ Always renew

## 12 - Bolt

- ❑ 60 Nm + 90°
- ❑ Gearbox mounting to gearbox bracket
- ❑ Always renew

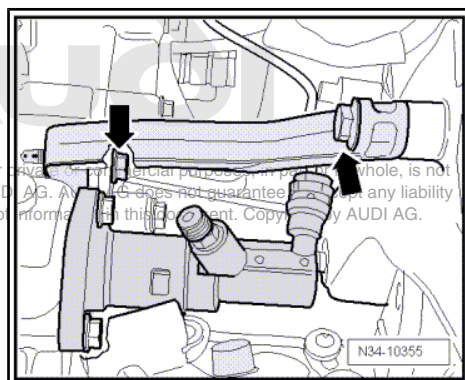
### Attaching gearbox mounting to gearbox bracket

- Renew bolts -arrows-
- Tighten all bolts hand-tight.
- Tighten bolts to specified torque.



### Gearbox support to gearbox bracket and gearbox

- Renew bolts.
- Initially tighten both bolts -arrows- hand-tight.
- Tighten bolts to specified torque.

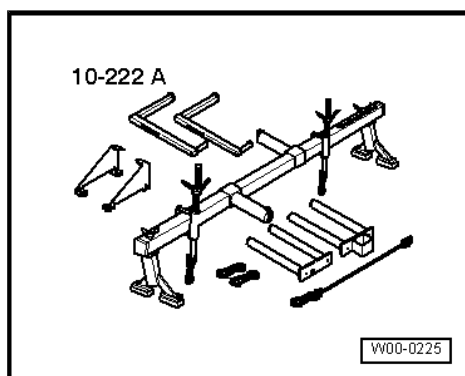


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## 4.1 Removing and installing gearbox mounting

### Special tools and workshop equipment required

- ◆ Support bracket -10 - 222 A-



## Removing

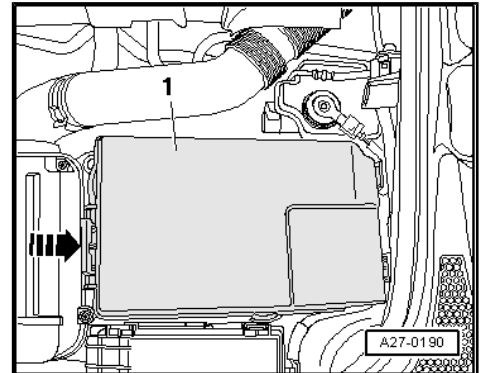


### Caution

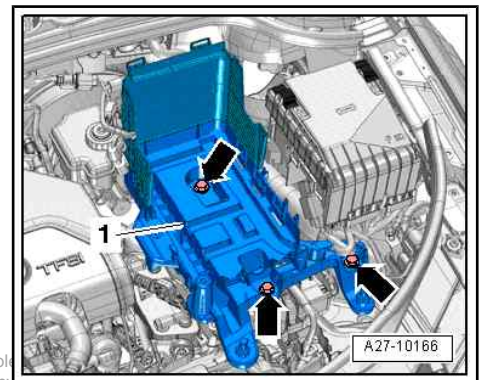
*When disconnecting the battery there is a risk of serious damage to electronic components:*

- ◆ *Observe the correct procedure for disconnecting the battery ⇒ Electrical system; Rep. gr. 27 .*

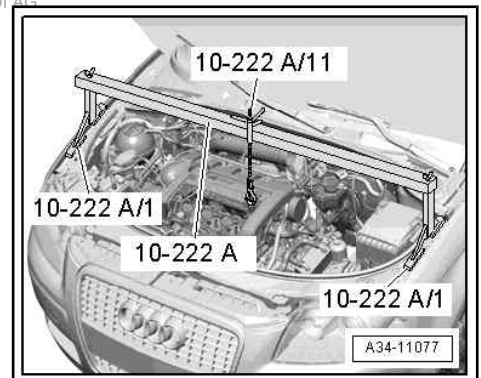
- Press release tab -arrow- and remove cover -1- over battery.
- With ignition switched off, disconnect and remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove air cleaner housing ⇒ Rep. gr. 24 .



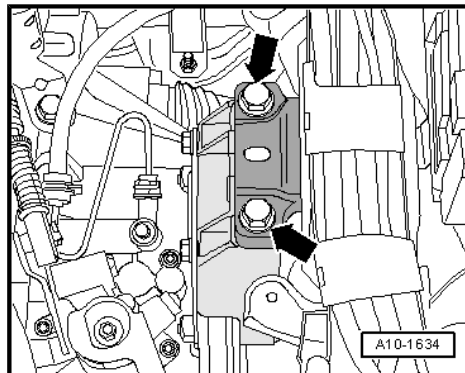
- Remove bolts -arrows- and take out battery mounting -1- .



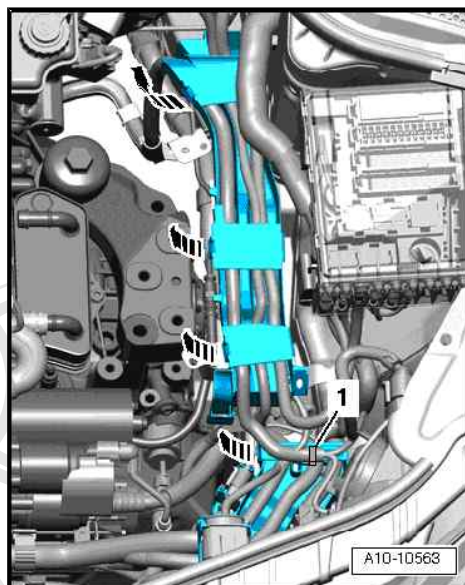
- Remove engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 .
- Set up support bracket -10 - 222 A- with adapters -10 - 222 A / 1- on wing mounting flanges.
- Engage hook of spindle -10 - 222 A /11- in lifting eye.
- Take up weight of engine evenly with spindle; do not lift.



- Remove bolts -arrows-.



- Open retainers for wiring duct -arrows-.
- Cut open cable tie -1- and push electrical wiring to one side.
- Unclip wiring duct.

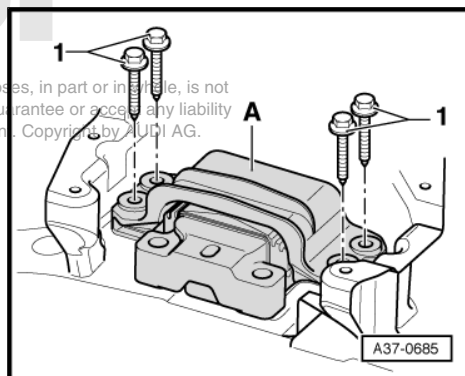


- Remove bolts -1- and detach gearbox mounting -A-.

### Installing

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

- Tightening torques ➔ [page 127](#)
- Fit gearbox mounting -A- with new bolts -1- to longitudinal member.

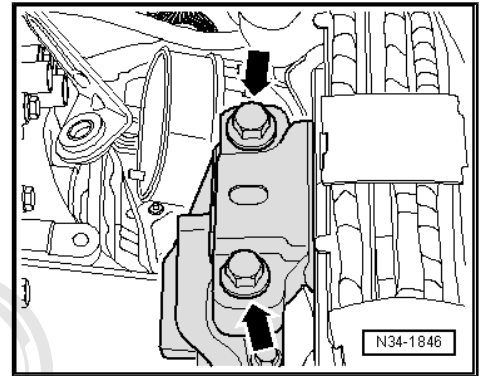




#### Caution

*The threads in the gearbox bracket can be damaged if the bolts are not inserted straight.*

- ◆ *Before fitting the bolts -arrows-, the gearbox bracket and the support arm of the gearbox mounting must be aligned absolutely parallel. If necessary, push the gearbox up at the rear with a trolley jack.*



- Pull gearbox up with spindle on support bracket -10 - 222 A- until gearbox bracket contacts support arm of gearbox mounting.
- Bolt support arm of gearbox mounting to gearbox bracket -arrows-.
- Adjust assembly mountings ⇒ Engine, mechanics; Rep. gr. 10 .
- Detach support bracket -10 - 222 A- from engine.
- Install engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 .
- Install air cleaner housing ⇒ Rep. gr. 24 .

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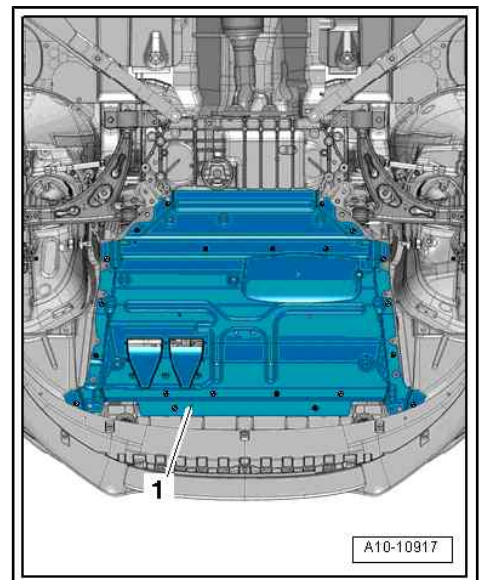
## 4.2 Removing and installing pendulum support

### Removing

#### Audi A3 Cabriolet

- Remove noise insulation (centre) -1- ⇒ General body repairs, exterior; Rep. gr. 50 .

Continued for all vehicles

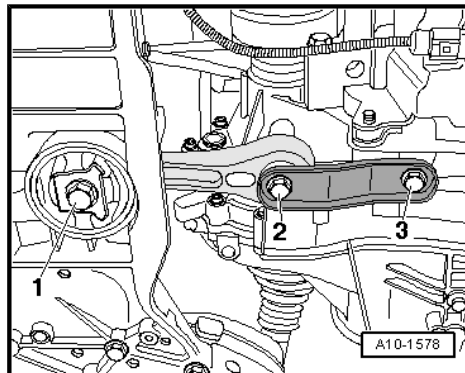


- Unscrew bolts -1 ... 3- and remove pendulum support.

#### Installing pendulum support

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

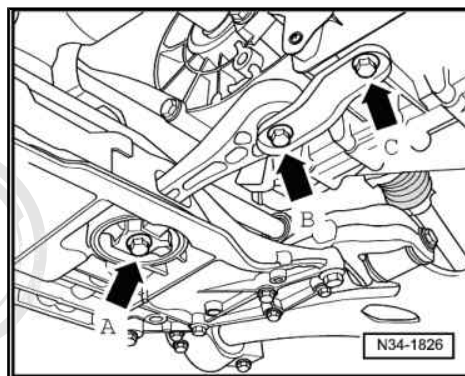
- Tightening torques ⇒ [page 127](#)



- First secure pendulum support to gearbox -arrow B- and -arrow C-, then on subframe -arrow A-.

#### Audi A3 Cabriolet

- Install noise insulation (centre) ⇒ General body repairs, exterior; Rep. gr. 50 .

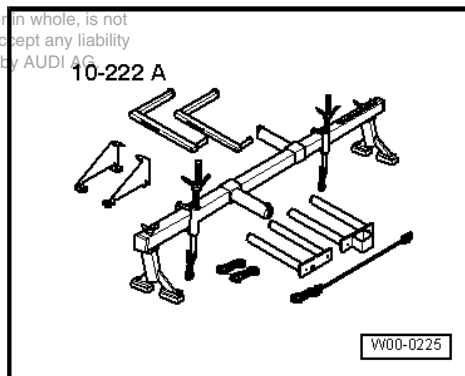


## 4.3 Removing and installing gearbox bracket

### Special tools and workshop equipment required

- ◆ Support bracket -10 222 A-

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### Removing

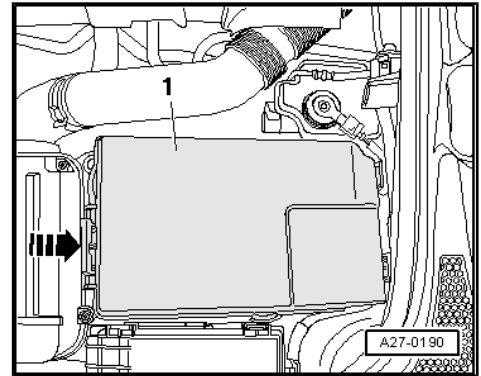


#### Caution

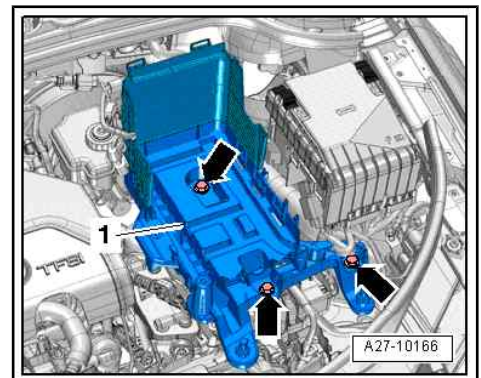
**When disconnecting the battery there is a risk of serious damage to electronic components:**

- ◆ **Observe the correct procedure for disconnecting the battery ⇒ Electrical system; Rep. gr. 27 .**

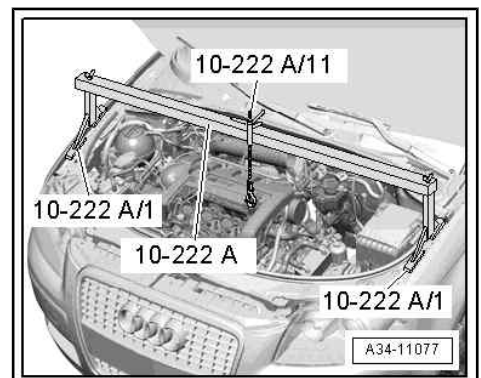
- Press release tab -arrow- and remove cover -1- over battery.
- With ignition switched off, disconnect and remove battery ⇒ Electrical system; Rep. gr. 27 .
- Remove engine cover panel ⇒ Engine, mechanics; Rep. gr. 10 .
- Remove air cleaner housing ⇒ Rep. gr. 24 .



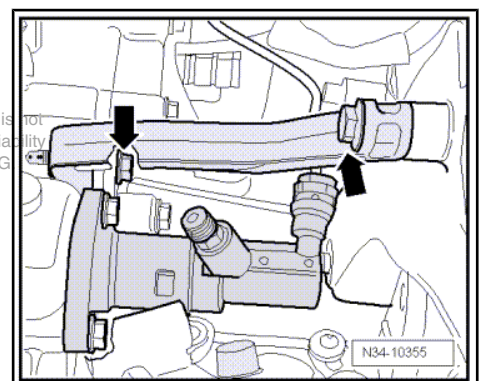
- Remove bolts -arrows- and take out battery tray -1- .



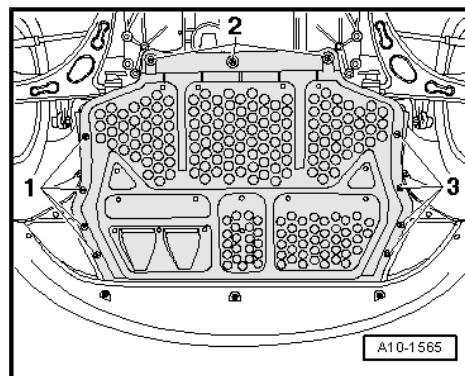
- Set up support bracket -10 - 222 A- with adapters -10 - 222 A / 1- on wing mounting flanges.
- Engage hook of spindle -10 - 222 A /11- in engine lifting eye.
- Take up weight of engine evenly with spindle; do not lift.



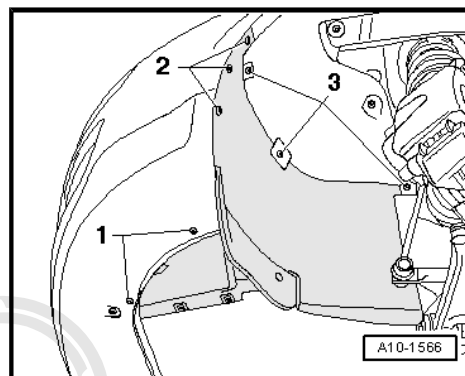
- Remove gearbox support -arrows-.
- Raise vehicle.
- Remove front left wheel.
- Turn steering to the left.



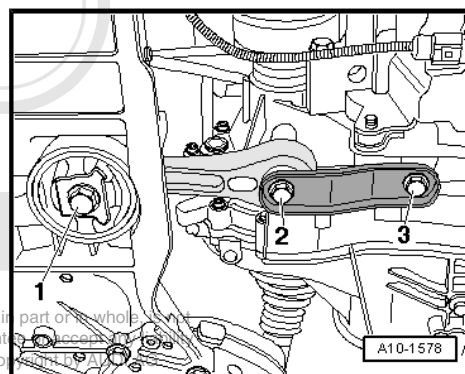
- Remove noise insulation (centre) by releasing fasteners  
 -1 ... 3-.



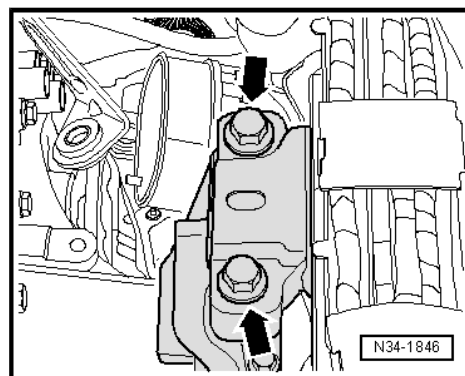
- Remove front section of wheel housing liner (left-side)  
 -fasteners 1 ... 3-.



- Remove bolts -1 ... 3- and detach pendulum support.

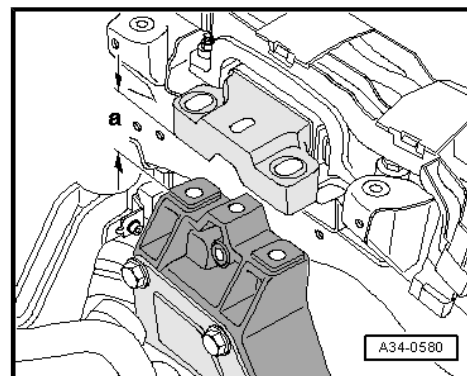


- Remove bolts -arrows- at left mounting from gearbox mounting.



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- Adjust spindles of support bracket -10 - 222 A- to lower gearbox by distance -a-.
- Dimension -a- = 50 mm

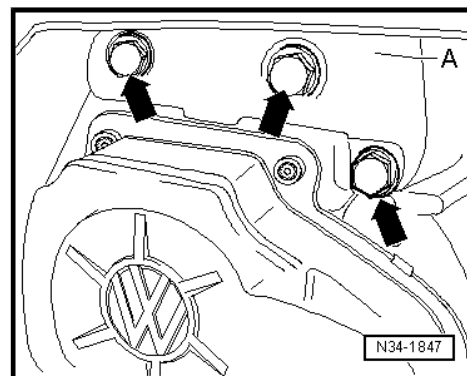


- Unbolt gearbox bracket -A- from gearbox -arrows- and detach.

### Installing

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

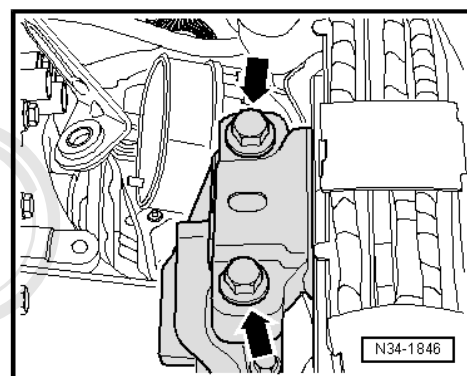
- Fit gearbox bracket -A- with new bolts -arrows-. Tightening torque ⇒ [Item 8 \(page 127\)](#)



### Caution

*The threads in the gearbox bracket can be damaged if the bolts are not inserted straight.*

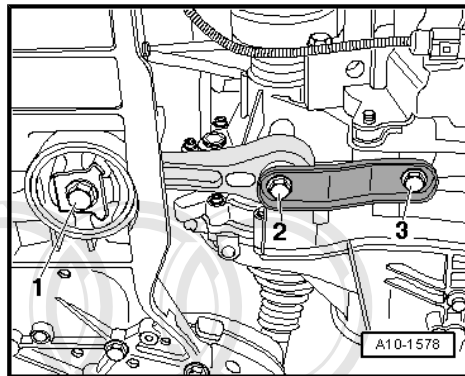
- ◆ *Before fitting the bolts -arrows-, the gearbox bracket and the support arm of the gearbox mounting must be aligned absolutely parallel. If necessary, push the gearbox up at the rear with a trolley jack.*
- ◆ *Do not remove support bracket 10-222A until the bolts securing the engine/gearbox mounting -arrows- have been tightened to the specified torque.*



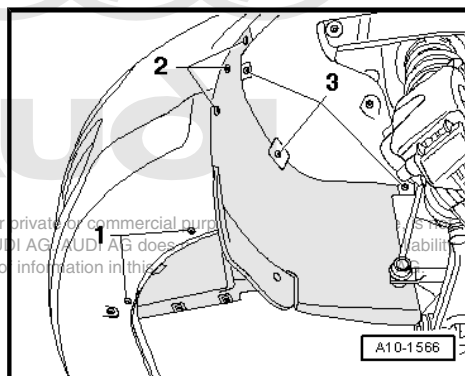
- Pull gearbox up with spindle on support bracket -10 - 222 A- until gearbox bracket contacts support arm of gearbox mounting.
- Bolt support arm of gearbox mounting onto gearbox bracket using new bolts -arrows-. Tightening torque ⇒ [Item 12 \(page 128\)](#)
- Adjust assembly mountings ⇒ Engine, mechanics; Rep. gr. 10.
- Detach support bracket -10 - 222 A- from engine.

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- First bolt pendulum support onto gearbox -bolts 2 ... 3- and then secure to subframe -bolt 1- (use new bolts). Tightening torques ➔ [page 127](#)



- Install front section of wheel housing liner (left-side) ➔ General body repairs, exterior; Rep. gr. 66 .
- Install noise insulation (centre) ➔ General body repairs, exterior; Rep. gr. 50 .
- Fit front left wheel ➔ Rep. gr. 44 .
- Install battery tray and battery ➔ Electrical system; Rep. gr. 27 .
- Install air cleaner housing ➔ Rep. gr. 24 .
- Install engine cover panel ➔ Engine, mechanics; Rep. gr. 10 .

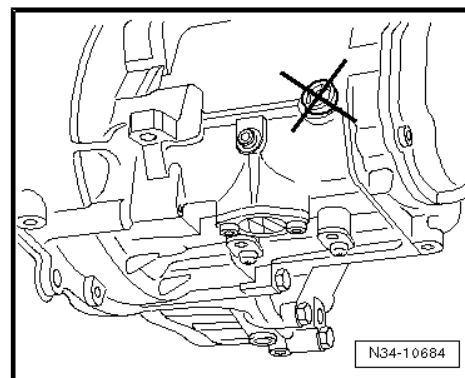


## 5 Checking gear oil level and filling up with gear oil



### Caution

*It is not possible to check the gear oil level by removing the oil filler plug.*

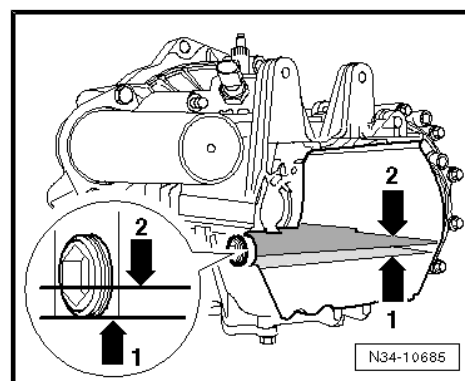


Due to the inclination of the engine/gearbox assembly, the oil level -arrow 2- will be above the lower edge of the filler hole -arrow 1-.

The gear oil level can only be checked by draining the gear oil completely and then filling up again:

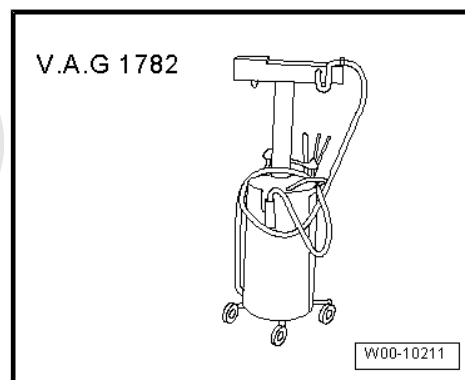
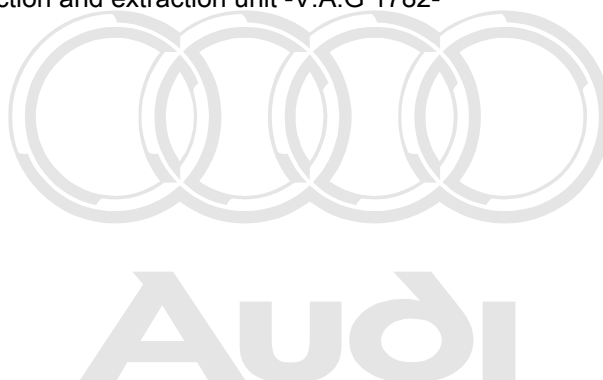
Carry out the steps described in the chapters specified below in the following order:

- ➤ „5.1 Preparations“, page 137
- ➤ „5.2 Draining off gear oil“, page 139
- ➤ „5.3 Filling up with gear oil“, page 139



### Special tools and workshop equipment required

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



- ◆ Hose (length approx. 600 mm, outside diameter 10 mm) with funnel (commercially available)
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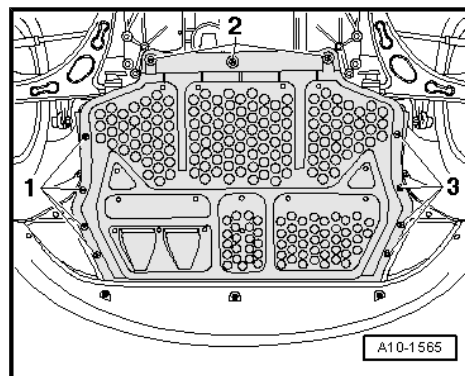
### 5.1 Preparations

Gear oil specification for manual gearboxes ➤ Electronic parts catalogue

- Remove air cleaner housing ➤ Rep. gr. 24 .

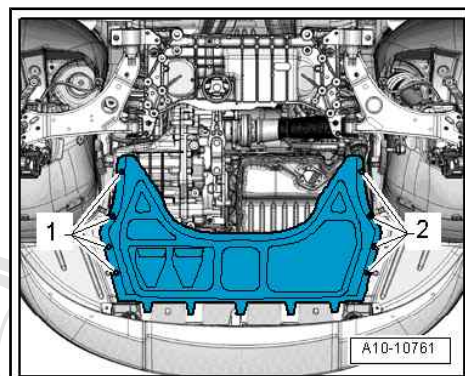
#### Vehicles with 2.0 ltr. FSI engine:

- Remove noise insulation (centre) by releasing fasteners  
-1 ... 3-.



#### Vehicles with 1.8 ltr. FSI engine:

- Remove noise insulation (centre) by releasing fasteners  
-1 and 2-.



#### Audi A3 Cabriolet

- Remove noise insulation (centre) -1- ➔ General body repairs,  
exterior; Rep. gr. 50 .

#### Continued for all vehicles

Clean gearbox.



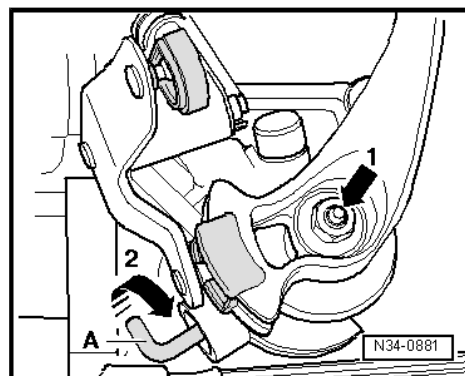
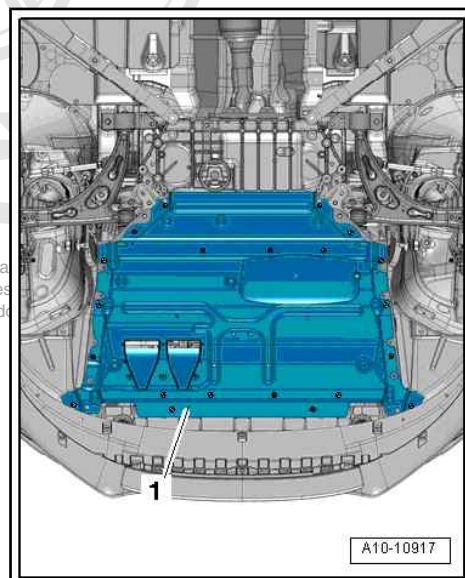
#### Caution

*A pivot pin for the selector forks in the gearbox must be removed in order to drain the gear oil.*

*The selector shaft must be locked to prevent the position of the selector forks from being changed, e.g. due to accidental operation of the selector mechanism.*

Lock the selector shaft as follows:

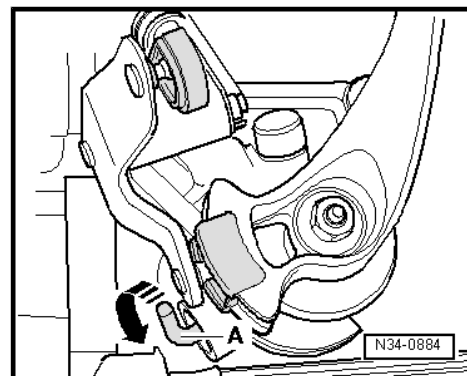
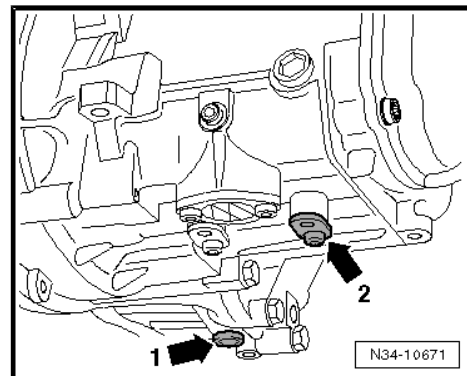
- Press selector shaft down (direction of -arrow 1-).
- While pressing selector shaft down, move angled rod -A- upwards in direction of -arrow 2-. At the same time press angled rod carefully into selector shaft until it engages.



## 5.2 Draining off gear oil

Use a clean container (capacity 3.0 ltr.) with a graduated scale to collect gear oil.

- Selector shaft must be locked ⇒ [page 138](#) .
- Remove oil drain plug -arrow 1-, then remove pivot pin -arrow 2- and drain off gear oil.
- Install pivot pin -arrow 2- with a new O-ring ⇒ [Item 7 \(page 145\)](#) .
- Fit oil drain plug -arrow 1- ⇒ [Item 17 \(page 175\)](#) .
- Now turn angled rod -A- back to original position (direction of -arrow-) so that selector shaft can move freely again.

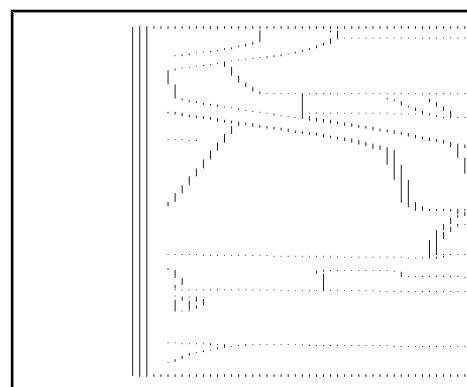


## 5.3 Filling up with gear oil

Add gear oil to container until amount of gear oil in container is 1.9 ltr.

For gear oil specification, refer to ⇒ Electronic parts catalogue .

- Remove reversing light switch -F4- -arrow-.
- Fit hose (length approx. 600 mm, outside diameter 10 mm) to funnel (commercially available)
- Insert hose in mounting hole of reversing light switch -F4- and fill gearbox with gear oil.
- Re-install reversing light switch -F4- -arrow- ⇒ [Item 2 \(page 184\)](#) .
- Install complete air cleaner housing ⇒ Rep. gr. 24 .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 50 .





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## 6 Dismantling and assembling gearbox

### 6.1 General layout of gearbox

1 - 1st gear

2 - 2nd gear

3 - 3rd gear

4 - 4th gear

5 - 5th gear

6 - 6th gear

7 - Gearbox housing cover

8 - Gearbox housing

❑ Servicing ➤ [page 174](#)

9 - Selector mechanism

❑ (Selector forks)

❑ Dismantling and assembling ➤ [page 187](#)

10 - Reverse gear wheel

11 - Clutch housing

❑ Servicing ➤ [page 174](#)

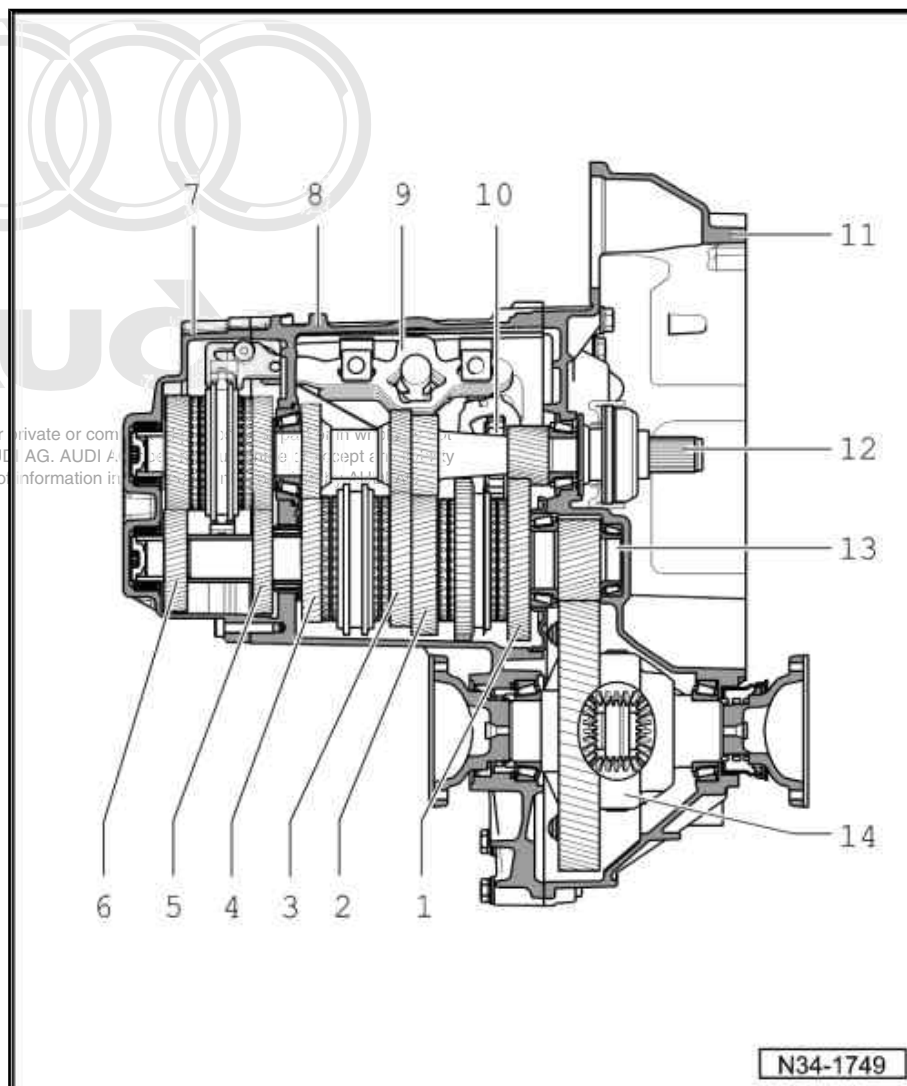
12 - Input shaft

❑ Dismantling and assembling ➤ [page 194](#)

13 - Output shaft

❑ Dismantling and assembling ➤ [page 209](#)

14 - Differential



## 6.2 Exploded view - dismantling and assembling gearbox

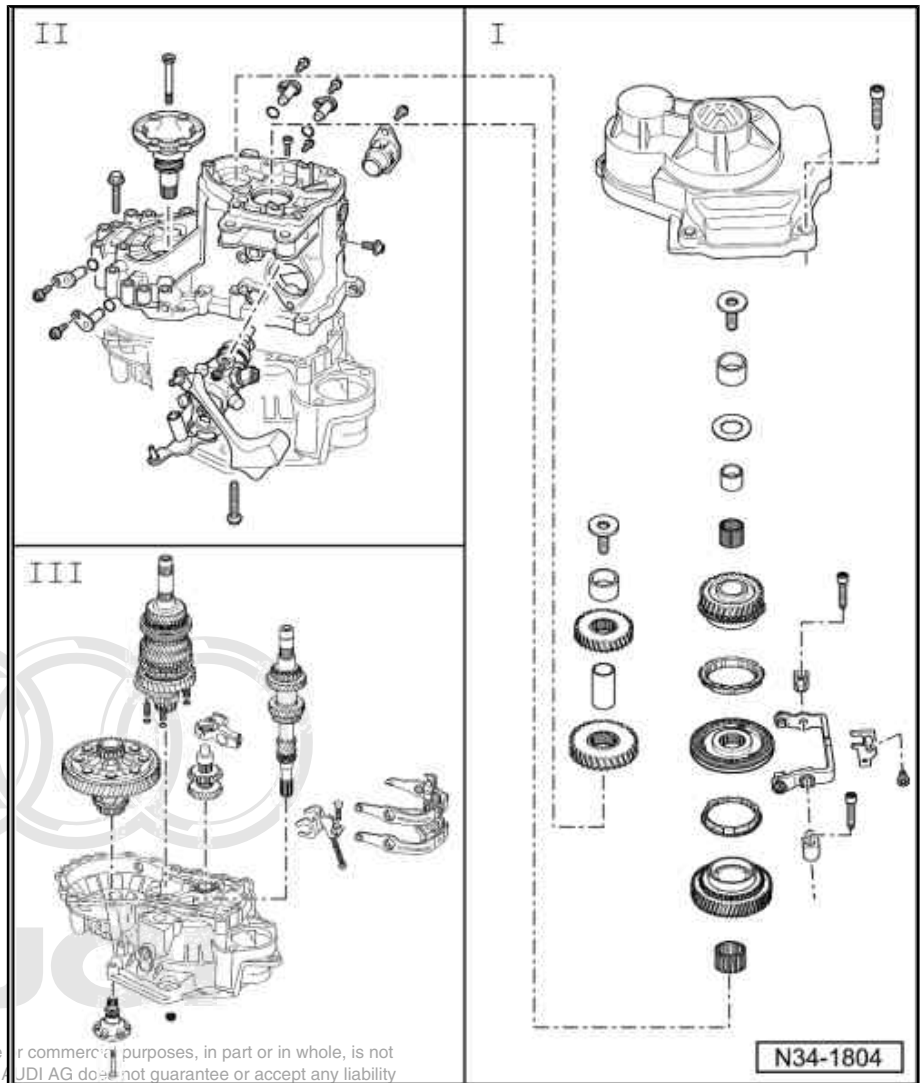
Assembly sequence - removing and installing gearbox housing cover and 5th/6th gear ➔ [page 148](#)

Assembly sequence - dismantling and assembling complete gearbox ➔ [page 154](#)

I - Removing and installing gearbox housing cover and 5th/6th gear ➔ [page 142](#)

II - Removing and installing gearbox housing and selector mechanism ➔ [page 145](#)

III - Removing and installing input shaft, output shaft, differential and selector forks ➔ [page 146](#)



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## 6.3 Exploded view - removing and installing gearbox housing cover and 5th/6th gear

### 1 - Gearbox housing

- ☐ Pulling off together with 5th/6th gear  
⇒ [page 154](#)
- ☐ Servicing ⇒ [page 174](#)

### 2 - 5th gear wheel

- ☐ Pulling off individually  
⇒ [page 148](#)
- ☐ Pulling off together with gearbox housing  
⇒ [page 154](#)

### 3 - Sleeve

### 4 - 6th gear wheel

- ☐ Pulling off individually  
⇒ [page 148](#)
- ☐ Pulling off together with gearbox housing  
⇒ [page 154](#)

### 5 - Roller bearing inner race

- ☐ For output shaft
- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for input shaft
- ☐ Larger outer diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Allocation ⇒ [page 144](#)

### 6 - Bolt

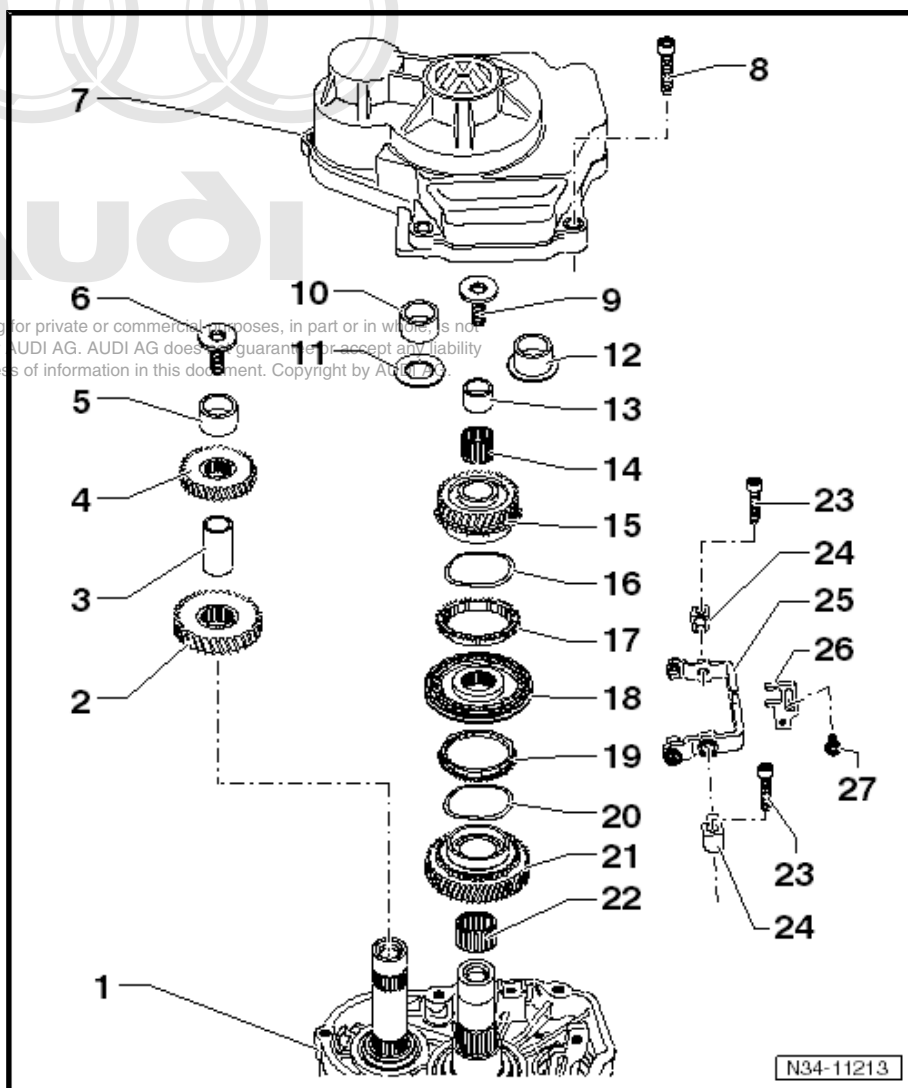
- ☐ For output shaft
- ☐ On gearboxes manufactured up to 20 08 6: tighten to 40 Nm and turn 180° further
- ☐ On gearboxes manufactured from 21 08 6 onwards: tighten to 80 Nm and turn 90° further
- ☐ Allocation of bolts ⇒ [page 144](#)
- ☐ Self-locking
- ☐ Always renew
- ☐ Use thread tap to remove any remaining locking fluid from threaded holes for bolts securing 5th/6th gear synchro-hub and 6th gear wheel. Otherwise there is a risk that the bolts will shear off

### 7 - Gearbox housing cover

- ☐ With roller bearings for input and output shafts
- ☐ Roller bearings for input and output shafts with larger outer diameter on gearboxes manufactured from 21 08 6 onwards ⇒ [page 182](#)
- ☐ Servicing ⇒ [page 180](#)

### 8 - Bolt

- ☐ 18 Nm
- ☐ 5x
- ☐ For gearbox housing cover



## 9 - Bolt

- ☐ For input shaft
- ☐ On gearboxes manufactured up to 20 08 6: tighten to 40 Nm and turn 180° further
- ☐ On gearboxes manufactured from 21 08 6 onwards: tighten to 80 Nm and turn 90° further
- ☐ Allocation of bolts ⇒ [page 144](#)
- ☐ Self-locking
- ☐ Always renew
- ☐ Use thread tap to remove any remaining locking fluid from threaded holes for bolts securing 5th/6th gear synchro-hub and 6th gear wheel. Otherwise there is a risk that the bolts will shear off.

## 10 - Roller bearing inner race

- ☐ For input shaft
- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for output shaft
- ☐ On gearboxes manufactured from 21 08 6 onwards, thrust washer and roller bearing inner race are one component ⇒ [Item 12 \(page 143\)](#)
- ☐ Allocation of roller bearing inner race ⇒ [page 144](#)

## 11 - Thrust washer

- ☐ On gearboxes manufactured up to 20 08 6

## 12 - Roller bearing inner race with thrust washer

- ☐ For input shaft
- ☐ On gearboxes manufactured from 21 08 6 onwards
- ☐ Allocation of roller bearing inner race ⇒ [page 144](#)

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## 13 - Sleeve

- ☐ For 6th gear needle bearing
- ☐ Renew together with needle bearing
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Select correct components from ⇒ Electronic parts catalogue

## 14 - Needle bearing

- ☐ For 6th gear
- ☐ Renew together with sleeve
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Select correct components from ⇒ Electronic parts catalogue

## 15 - 6th speed selector gear

- ☐ Modified according to sleeve and needle bearing on gearboxes manufactured from 21 08 6 onwards
- ☐ Select correct components from ⇒ Electronic parts catalogue

## 16 - Corrugated spring washer

- ☐ Gearboxes manufactured from 26 05 8 onwards
- ☐ On this version, install only springs for locking pieces which do not have angled ends (as shown in ⇒ [page 202](#) - item 1-)
- ☐ Select correct components from ⇒ Electronic parts catalogue

## 17 - 6th gear synchro-ring

## 18 - Locking collar with synchro-hub for 5th and 6th gear

- ☐ Pulling off individually ⇒ [page 148](#)
- ☐ Pulling off together with gearbox housing ⇒ [page 154](#)
- ☐ Dismantling and assembling ⇒ [page 202](#) and ⇒ [page 203](#)
- ☐ Locking collar modified on gearboxes manufactured from 12 06 6 onwards ⇒ [page 202](#)
- ☐ Adjusting on gearboxes manufactured up to 11 06 6 ⇒ [page 172](#)
- ☐ Adjusting on gearboxes manufactured from 12 06 6 onwards ⇒ [page 173](#)
- ☐ Installing offset springs for locking pieces ⇒ [page 203](#)

## 19 - 5th gear synchro-ring

## 20 - Corrugated spring washer

- ☐ Gearboxes manufactured from 26 05 8 onwards
- ☐ On this version, install only springs for locking pieces which do not have angled ends (as shown in [⇒ page 202](#) - item 1-)
- ☐ Select correct components from ⇒ Electronic parts catalogue

## 21 - 5th speed selector gear

## 22 - Needle bearing

- ☐ For 5th gear

## 23 - Socket head bolt

- ☐ 25 Nm
- ☐ For pivot pin to gearbox housing

## 24 - Pivot pin

## 25 - 5th/6th gear selector fork

## 26 - 5th/6th gear selector jaw

## 27 - Bolt

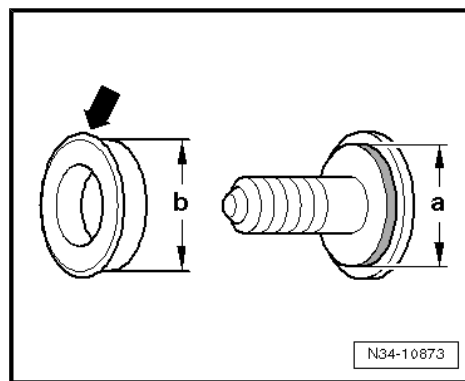
- ☐ 25 Nm



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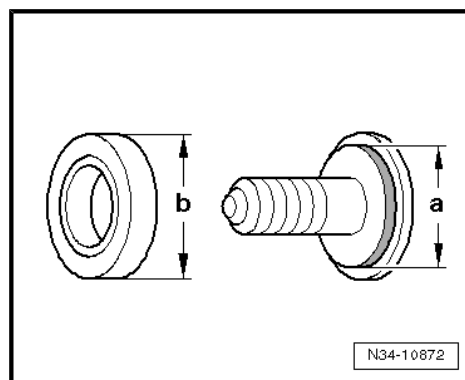
### Allocation of securing bolts and roller bearing inner races for input shaft

| Gearbox manufacturing date | Dimension „a“ (mm) | Dimension „b“ (mm)                                                                                                                  |
|----------------------------|--------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| Up to 20 08 6              | 21                 | 31                                                                                                                                  |
| From 21 08 6 onwards       | 23.4               | 37                                                                                                                                  |
|                            |                    | <ul style="list-style-type: none"> <li>• In addition: inner race and thrust washer are combined as one component -arrow-</li> </ul> |



### Allocation of securing bolts and roller bearing inner races for output shaft

| Gearbox manufacturing date | Dimension „a“ (mm) | Dimension „b“ (mm) |
|----------------------------|--------------------|--------------------|
| Up to 20 08 6              | 21                 | 31                 |
| From 21 08 6 onwards       | 23.4               | 37                 |



## 6.4 Exploded view - removing and installing gearbox housing and selector mechanism

### 1 - Countersunk bolt

- 25 Nm

### 2 - Flange shaft with spring

- Removing and installing  
⇒ [page 233](#)
- Assembling  
⇒ [page 245](#)

### 3 - Torx socket head bolt

- 25 Nm
- For reverse shaft support
- Self-locking
- Always renew

### 4 - Torx socket head bolt

- 30 Nm
- For reverse shaft support
- Self-locking
- Always renew

### 5 - O-ring

- Always renew

### 6 - Pivot pin

### 7 - Bolt

- 25 Nm

### 8 - Bolt

- 25 Nm

### 9 - Sealing cap

### 10 - Multi-point socket head bolt

- 25 Nm
- For reverse shaft support
- Always renew

### 11 - Bolt

- 5 Nm

### 12 - Gearbox neutral position sender -G701-

- For vehicles with start/stop system

### 13 - Gearbox housing

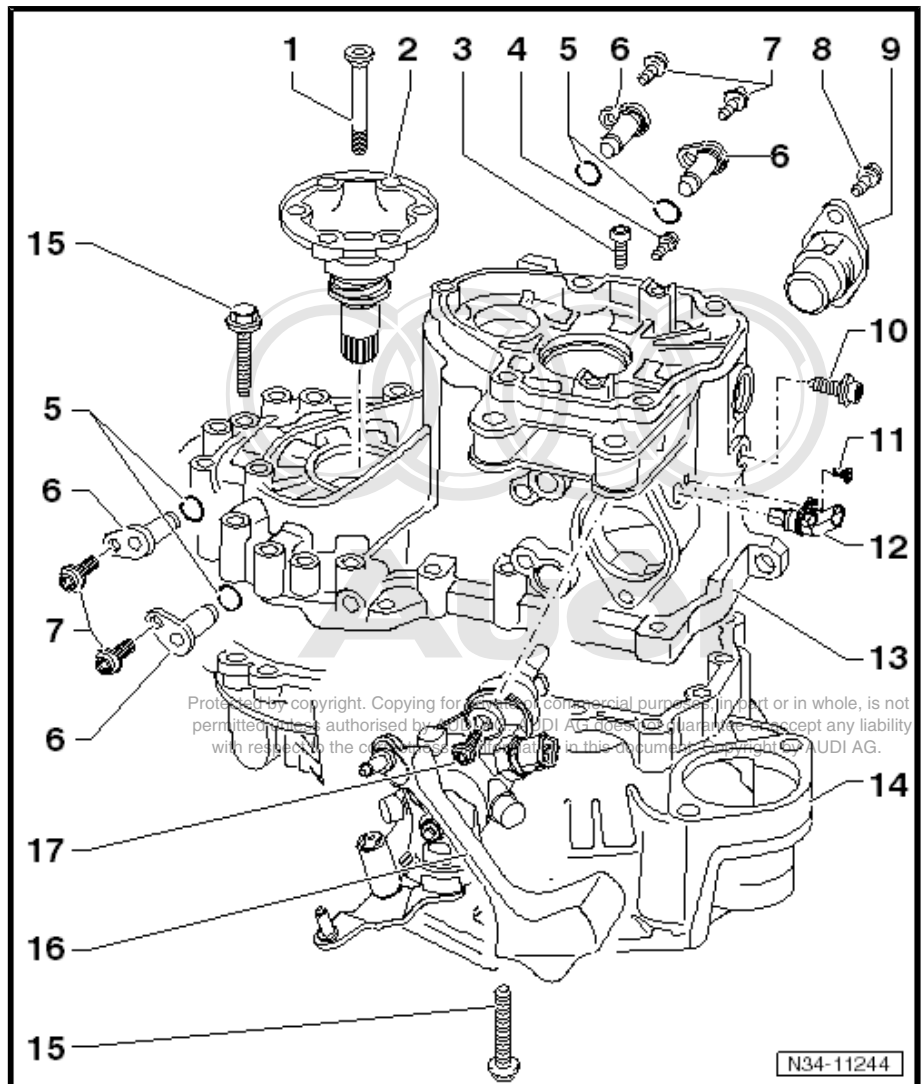
- Pulling off together with 5th/6th gear ⇒ [page 154](#)
- Servicing ⇒ [page 174](#)

### 14 - Clutch housing

- Servicing ⇒ [page 174](#)

### 15 - Bolt

- 25 Nm + 90°
- Always renew



## 16 - Selector shaft with selector mechanism cover

- ☐ (Selector unit)
- ☐ Servicing ➔ [page 187](#)

## 17 - Multi-point socket head bolt

- ☐ 25 Nm

## 6.5 Exploded view - removing and installing input shaft, output shaft, differential and selector forks

### 1 - Differential

- ☐ Dismantling and assembling ➔ [page 245](#)

### 2 - Seal

- ☐ 4x
- ☐ Always renew

### 3 - Output shaft

- ☐ Dismantling and assembling ➔ [page 209](#)

### 4 - Reverse shaft support

- ☐ Dismantling and assembling ➔ [page 227](#)

### 5 - Reverse shaft

- ☐ With reverse selector gear
- ◆ Dismantling and assembling ➔ [page 227](#)
- ☐ With locking collar for reverse gear (on some gearbox versions, from gearbox manufacturing date 09 08 10 onwards)
- Dismantling and assembling ➔ [page 228](#)

### 6 - Input shaft

- ☐ Dismantling and assembling ➔ [page 194](#)

### 7 - Reverse gear selector fork

- ☐ Only in conjunction with reverse selector gear

- ◆ Dismantling and assembling ➔ [page 187](#)

- ☐ Discontinued in conjunction with locking collar for reverse gear

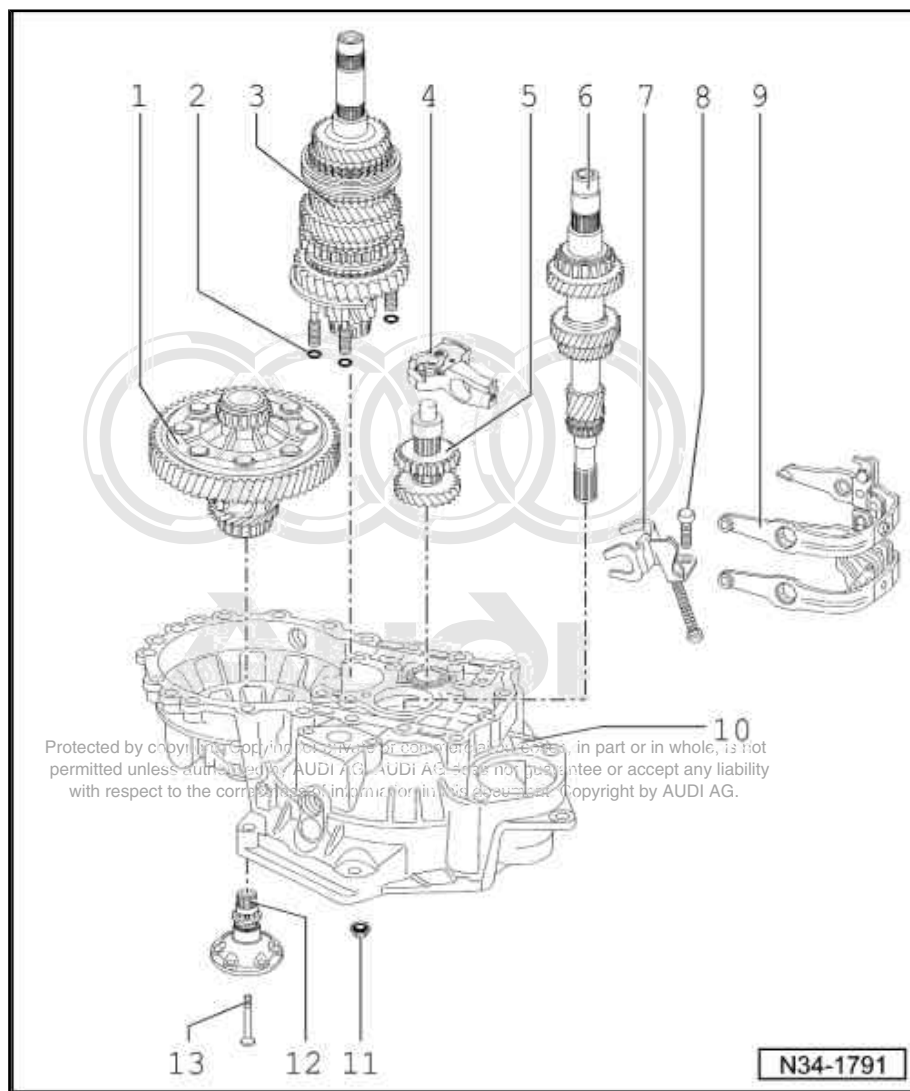
- ◆ On this version, reverse gear is engaged via selector plate ➔ [Item 7 \(page 189\)](#)

### 8 - Torx socket head bolt

- ☐ 25 Nm

### 9 - Selector mechanism

- ☐ (Selector forks)
- ☐ In conjunction with reverse selector gear
- ◆ Dismantling and assembling ➔ [page 187](#)



- ☐ In conjunction with locking collar for reverse gear (on some gearbox versions, from gearbox manufacturing date 09 08 10 onwards)

◆ Dismantling and assembling ⇒ [page 228](#)

**10 - Clutch housing**

- ☐ Servicing ⇒ [page 174](#)

**11 - Nut**

- ☐ 25 Nm + 90°
- ☐ 4 nuts for bearing mounting
- ☐ Always renew

**12 - Flange shaft with spring**

- ☐ Removing and installing ⇒ [page 233](#)
- ☐ Assembling ⇒ [page 245](#)

**13 - Countersunk bolt**

- ☐ 25 Nm



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## 6.6 Assembly sequence - removing and installing gearbox housing cover and 5th/6th gear

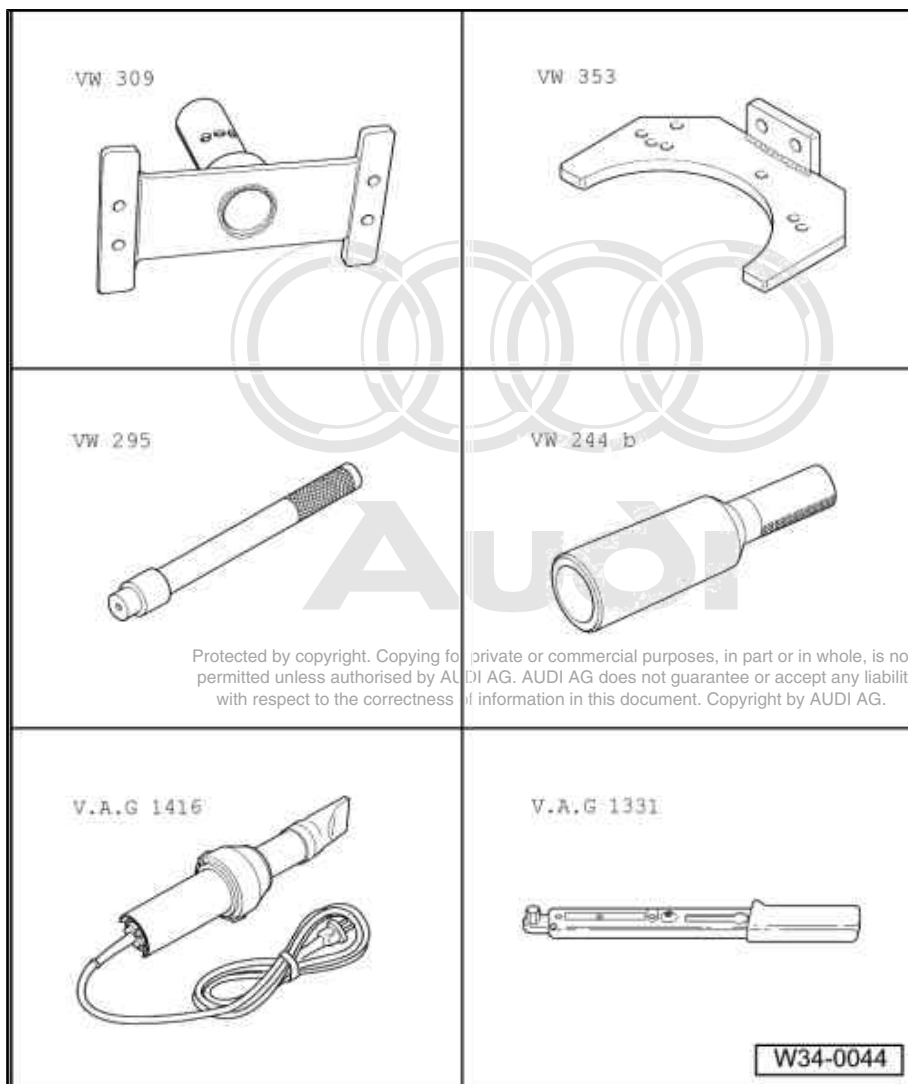


### Note

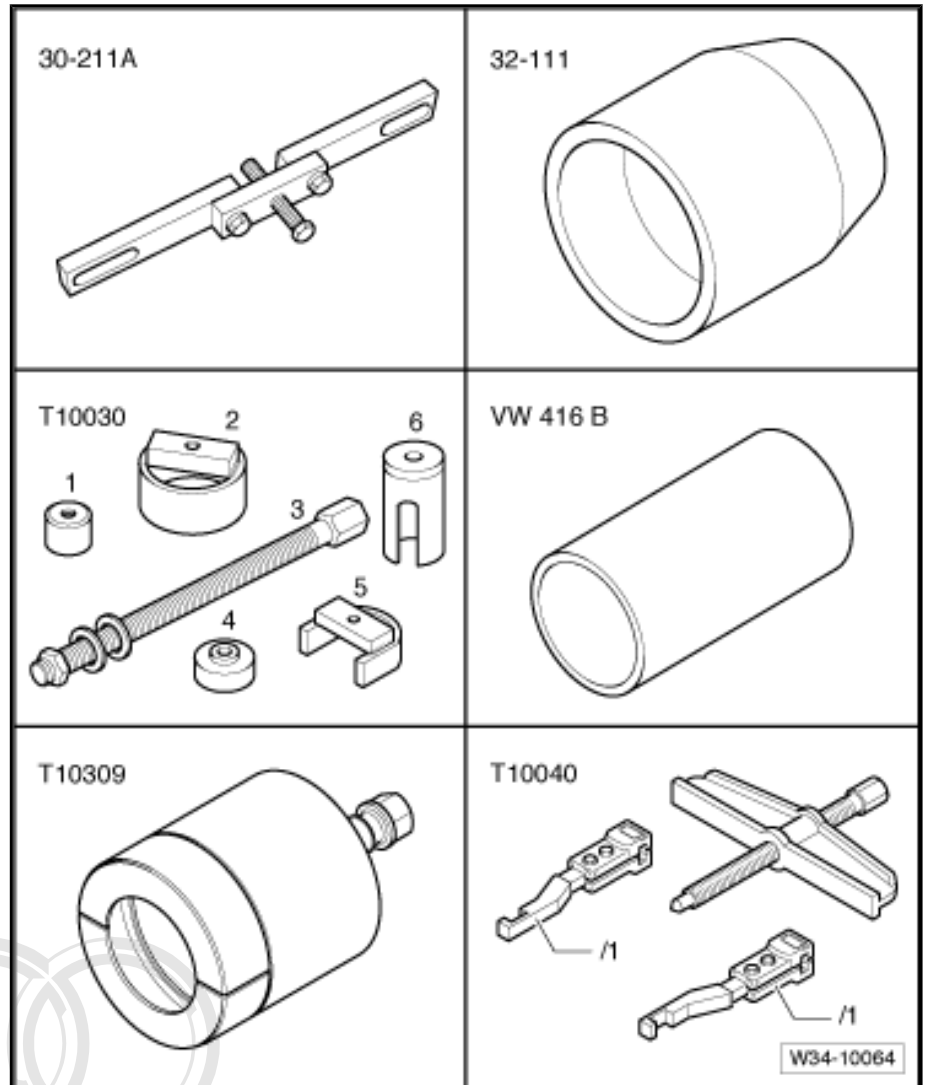
- ◆ If only the 5th/6th gear has to be removed, please refer to the procedure described below.
- ◆ If the gearbox housing has to be removed, please refer to the procedure: Dismantling and assembling complete gearbox ➔ [page 154](#) .

### Special tools and workshop equipment required

- ◆ Support plate -VW 309-
- ◆ Gearbox support -VW 353-
- ◆ Drift -VW 295-
- ◆ Drift sleeve -VW 244 B-
- ◆ Hot air blower -V.A.G 1416-
- ◆ Torque wrench -V.A.G 1331-



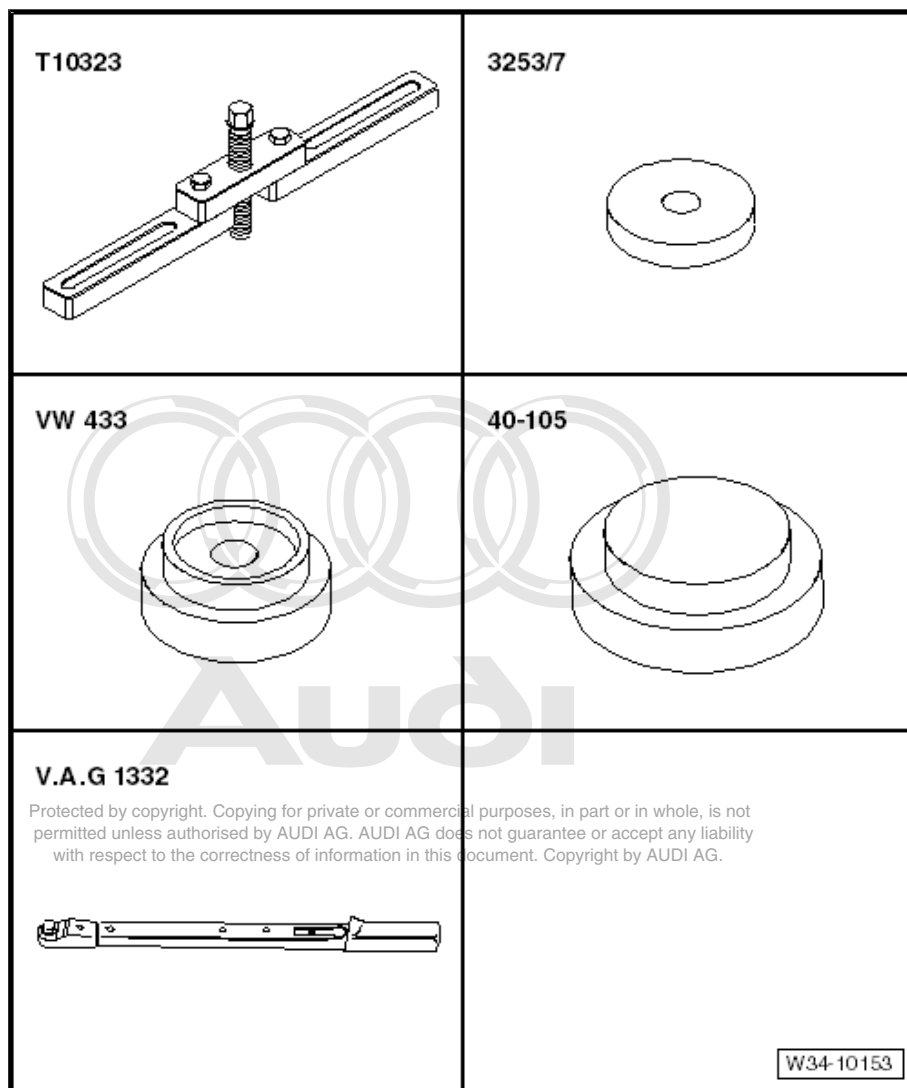
- ◆ Support bridge -30-211A-
- ◆ Thrust piece -32 - 111-
- ◆ Thrust piece -T10030/4- of assembly tool -T10030-
- ◆ Tube -VW 416 B-
- ◆ Puller -T10309-
- ◆ Two-arm puller -T10040- with claws -T10040/2A-
- ◆ or two-arm puller -Kukko 20/10- (for 6th gear wheel)



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- ◆ Support bridge -T10323-
- ◆ Assembly tool -3253/7-
- ◆ Press tool -VW 433-
- ◆ Thrust plate -40 - 105-
- ◆ Torque wrench -V.A.G 1332-



## Removing

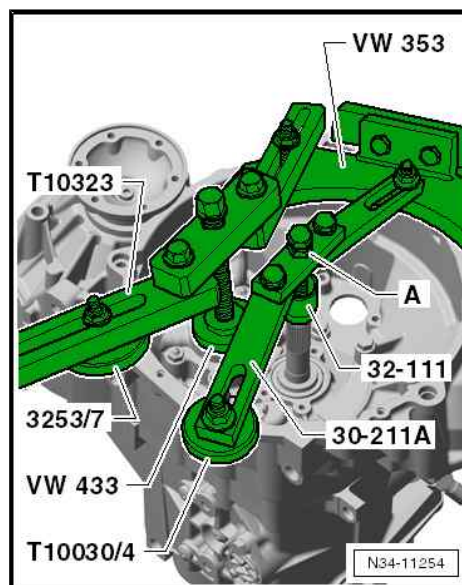
- Remove clutch release lever and release bearing ➔ [page 42](#) .
- The bearings of the input shaft and output shaft must not be damaged when removing and installing 5th/6th gear.
- For this reason, when attaching the gearbox to gearbox support -VW 353-, you must first attach the following tools to provide the necessary support:

### Below input shaft:

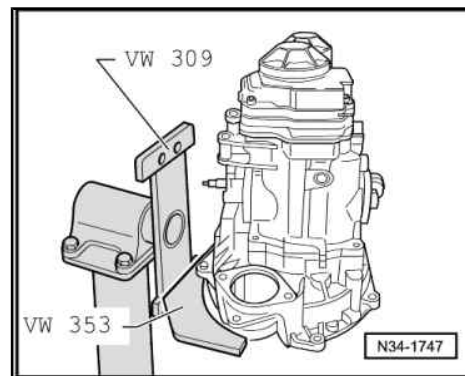
- ◆ Support bridge -30-211A-
- ◆ Thrust piece -32 - 111-
- ◆ Thrust piece -T10030/4-
- The input shaft should not be supported by the thrust piece -32 - 111- until it becomes necessary later on.

### Below bearing mounting for output shaft:

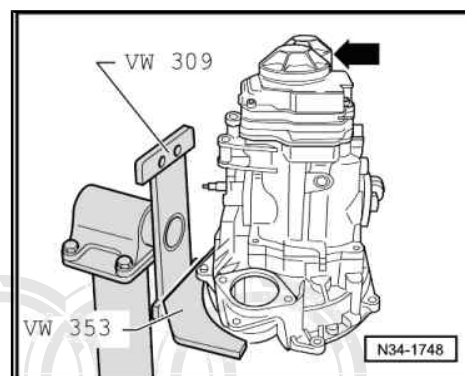
- ◆ Support bridge -T10323-
- ◆ Assembly tool -3253/7-
- ◆ Press tool -VW 433-



- Secure gearbox on gearbox support -VW 353- .



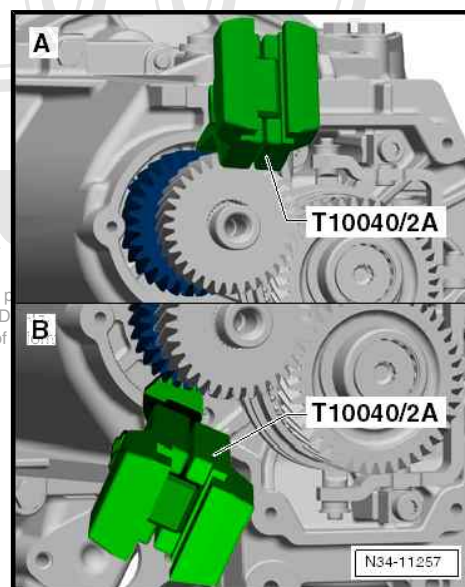
- Unbolt gearbox housing cover -arrow-.
- Take off cover. If necessary carefully lever up all round and alternating between sides on the protruding flanges, being careful not to damage sealing surfaces.



- Check whether claws -T10040/2A- can be applied correctly below 5th gear wheel.

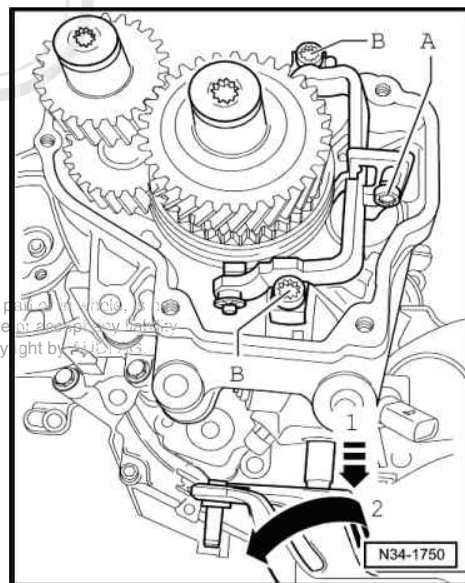
| If claws -T10040/2A- cannot be applied correctly:                                                                 |                                                                                                                                                           |
|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| -A-<br>Claws -T10040/2A- foul against:<br>♦ side of gearbox housing<br>♦ ribs in gearbox housing below gear wheel | In this case the 5th/6th gear synchro-hub, 6th gear wheel, 5th gear wheel and gearbox housing have to be removed together<br>⇒ <a href="#">page 154</a> . |
| -B-<br>Claws -T10040/2A- foul against ribs in gearbox housing below 5th gear wheel.                               |                                                                                                                                                           |

| If claws -T10040/2A- can be applied correctly:                        |
|-----------------------------------------------------------------------|
| 5th and 6th gear can be removed separately ⇒ <a href="#">page 152</a> |



### Removing 5th and 6th gear separately

- Remove 5th/6th gear selector fork as follows:
- Cover openings in gearbox housing with a cloth.
- Engage 5th gear (arrows -1- and -2-).
- Remove 5th/6th gear selector jaw (bolt -A-).
- Then remove both bolts -B- for pivot pins.
- Pull out pivot pins.
- Take out 5th/6th gear selector fork.

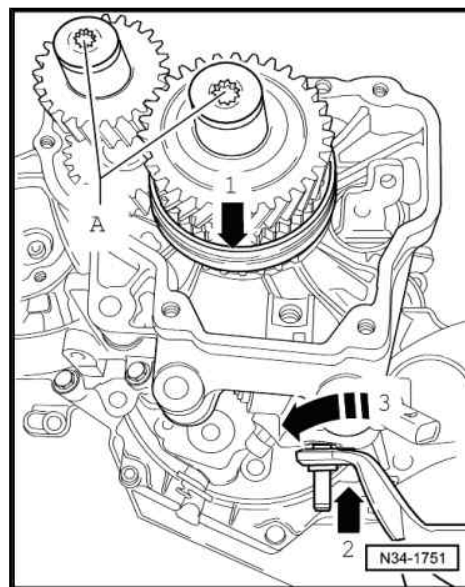


- Remove bolts -A- for inner bearing races on input and output shafts. To do this, engage 5th gear -arrow 1- and 1st gear -arrow 2 - and -arrow 3-.
- The input and output shafts are both locked when these two gears are engaged. The two bolts can now be loosened.



#### Note

*If the shafts are not being renewed, clean residual locking compound out of tapped holes using a thread tap.*



- Pull off 6th gear wheel and roller bearing inner race for output shaft.

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

B - Hexagon bolt, M10 x 20, 17 mm or thrust piece -T10040/3-



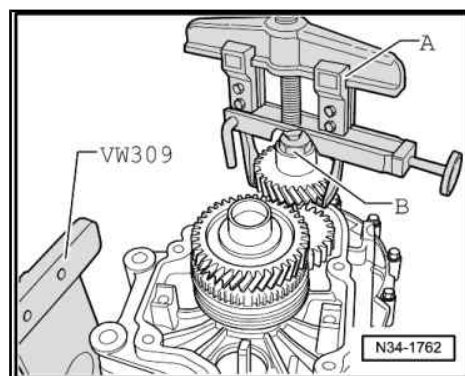
#### Note

*6th gear wheel and roller bearing inner race can also be pulled out using two-arm puller -T10040- and claws -T10040/2A- .*

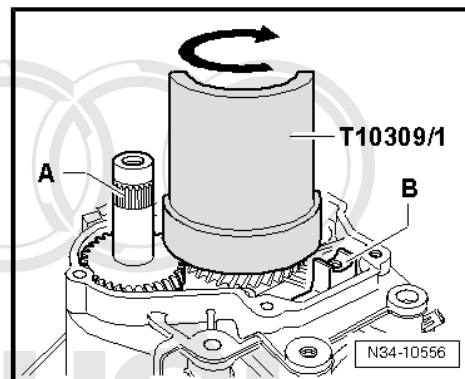
- If necessary, heat gear wheel using hot air blower - V.A.G 1416- before pulling off.

**Pull off 6th speed selector gear with roller bearing inner race for input shaft, thrust washer and 6th gear synchro-ring, or pull off together with 5th/6th gear synchro-hub with inner race for 6th gear needle bearing and 5th gear synchro-ring.**

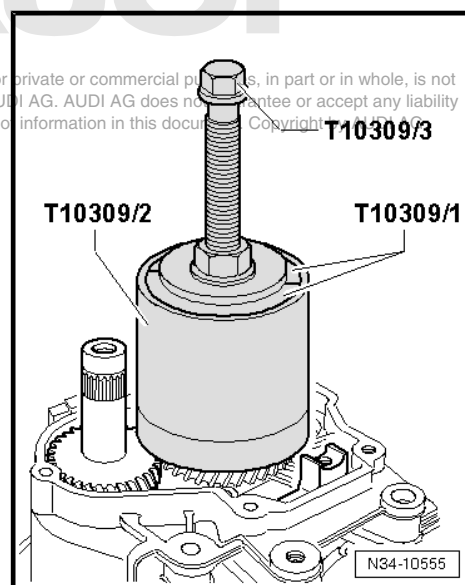
**Use puller -T10309- .**



- First insert shell half -T10309/1- between output shaft -A- and mounting for 5th/6th gear selector fork -B-.
- Shell half -T10309/1- must be positioned underneath synchro-ring.
- Turn shell half -T10309/1- to opposite side in direction of -arrow-.



- Introduce thread insert -T10309/3- into shell half .
- Now fit second shell half -T10309/1- and slide tube T10309/2- onto tool.
- Please check synchro-hub for damage after removal.
- Renew synchro-ring.

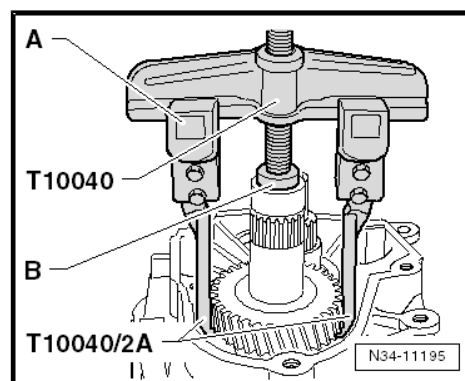


#### Note

*On gearboxes manufactured from 26 05 8 onwards one corrugated spring washer is fitted below 5th gear synchro-ring and one above 6th gear synchro-ring ⇒ [Item 20 \(page 144\)](#) and ⇒ [Item 16 \(page 143\)](#) . Check corrugated spring washers for damage.*

- Now take off sleeve from 5th gear wheel.

- Pull off 5th gear wheel.
- First fit claws -A-.
- B- = thrust piece -T10040/3-
- or
- Thrust plate -40 - 105-



#### Note

- ◆ *Ensure that the claws do not bend outwards when pulling off the gear wheel. Check 5th gear wheel for damage after removal.*
- ◆ *If necessary, heat 5th gear wheel using hot air blower -V.A.G 1416- before pulling off.*

### Installing

Installing 5th gear ⇒ [page 168](#) .

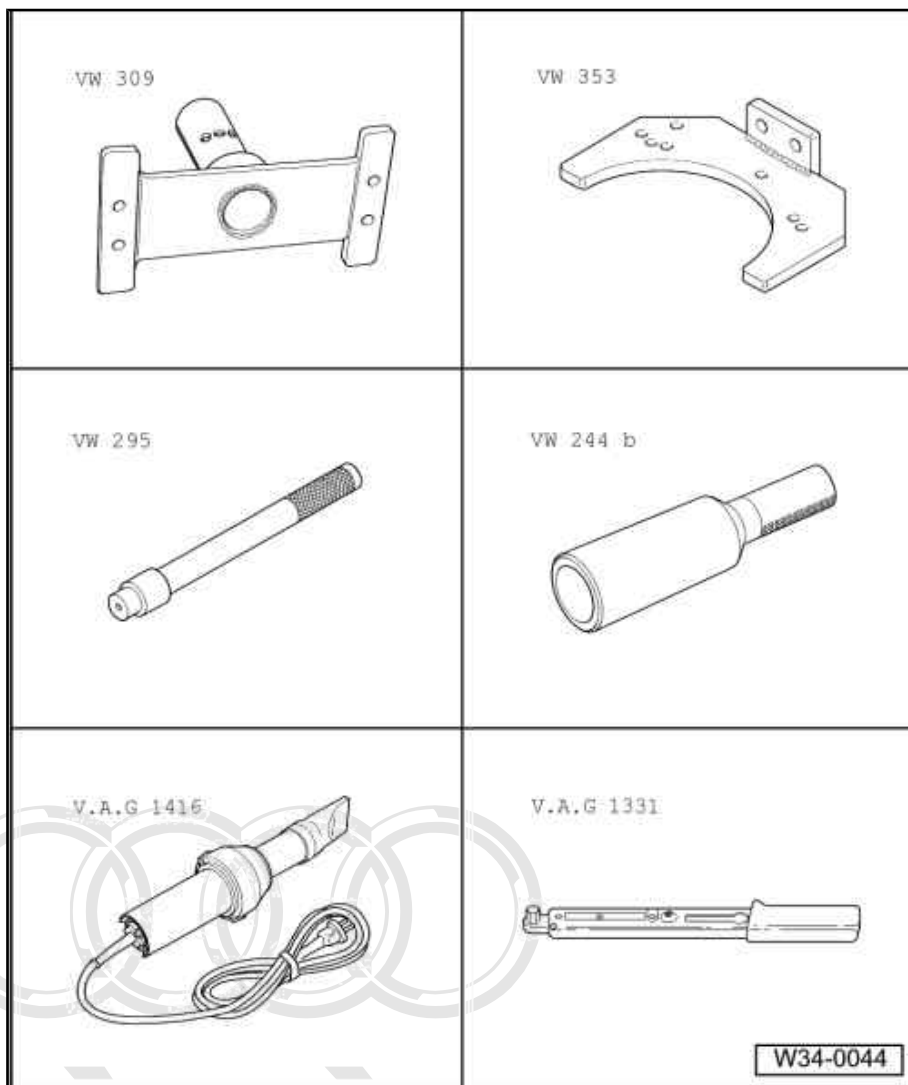
- Apply sealant -AMV 188 200 03- evenly to sealing surface of cover for gearbox housing.
- Install gearbox housing cover ⇒ [page 142](#) .
- Install clutch release lever and release bearing ⇒ [page 42](#) .
- Fill up gear oil ⇒ [page 100](#) .

## 6.7 Assembly sequence - dismantling and assembling complete gearbox

Removing and installing cover for gearbox housing, gearbox housing, selector shaft with selector mechanism cover, input shaft, output shaft, differential and selector mechanism

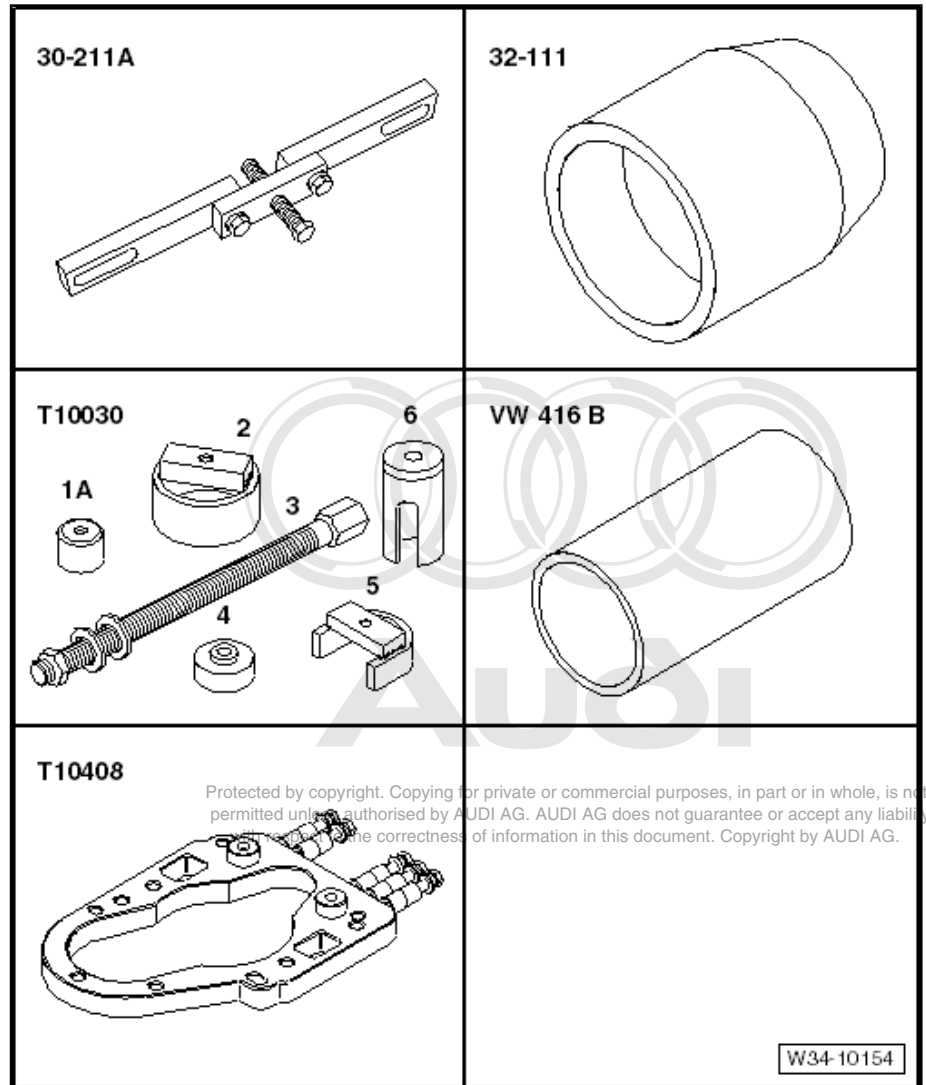
### Special tools and workshop equipment required

- ◆ Support plate -VW 309-
- ◆ Gearbox support -VW 353-
- ◆ Drift -VW 295-
- ◆ Drift sleeve -VW 244 B-
- ◆ Hot air blower -V.A.G 1416-
- ◆ Torque wrench - V.A.G 1331-

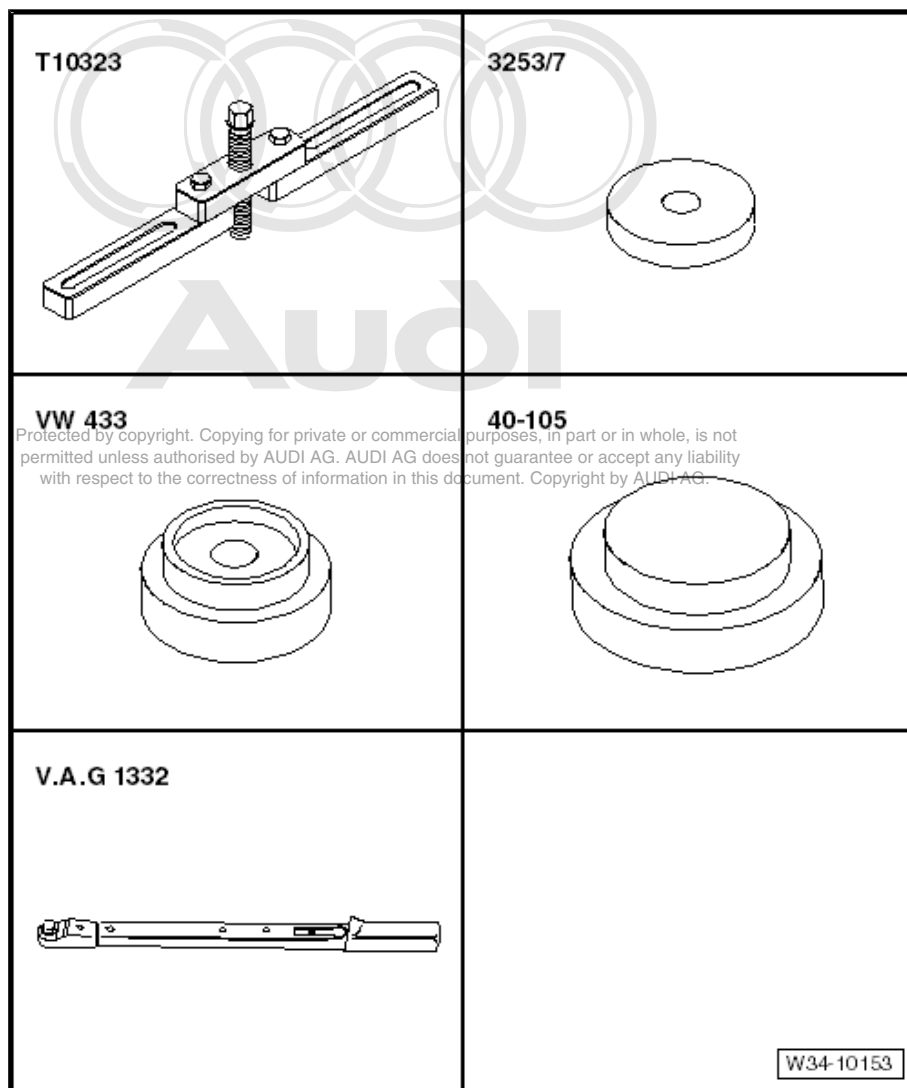


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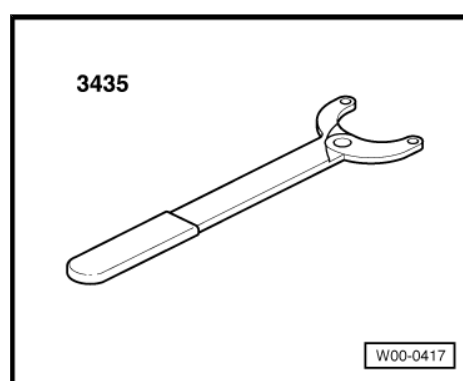
- ◆ Support bridge -30-211A-
- ◆ Thrust piece -32 - 111-
- ◆ Thrust piece -T10030/4- of assembly tool -T10030-
- ◆ Tube -VW 416 B-
- ◆ Puller plate -T10408-
- ◆ Thrust blocks -T10408/2-
- ◆ Hexagon bolts M7 x 35 with washers (component parts of puller plate -T10408- )



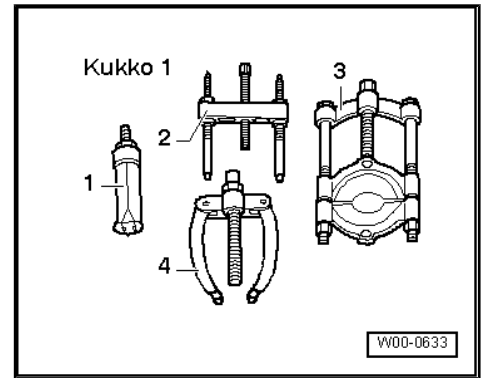
- ◆ Support bridge -T10323-
- ◆ Assembly tool -3253/7-
- ◆ Press tool -VW 433-
- ◆ Torque wrench -V.A.G 1332-



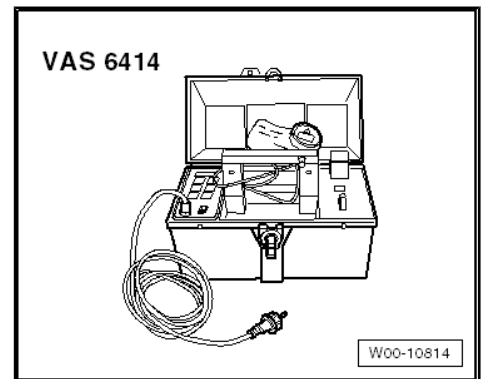
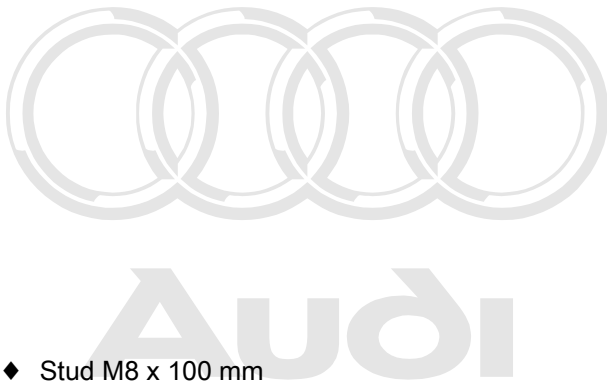
- ◆ Counterhold tool -3435-



◆ -2- Puller -Kukko 18/1- (2x)



◆ Inductive heater -VAS 6414-



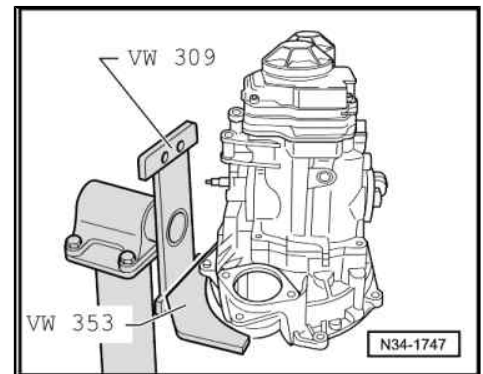
◆ Stud M8 x 100 mm

**Dismantling complete gearbox**

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— Mount gearbox on assembly stand

- Place drip tray underneath.
- Unscrew oil filler plug and oil drain plug.
- Drain off gear oil.
- Remove clutch release lever and release bearing ⇒ [page 42](#) .
- Remove guide sleeve ⇒ [page 42](#) .



- The bearings of the input shaft and output shaft must not be damaged when removing and installing 5th/6th gear.
- For this reason, when attaching the gearbox to gearbox support -VW 353-, you must first attach the following tools to provide the necessary support:

**Below input shaft:**

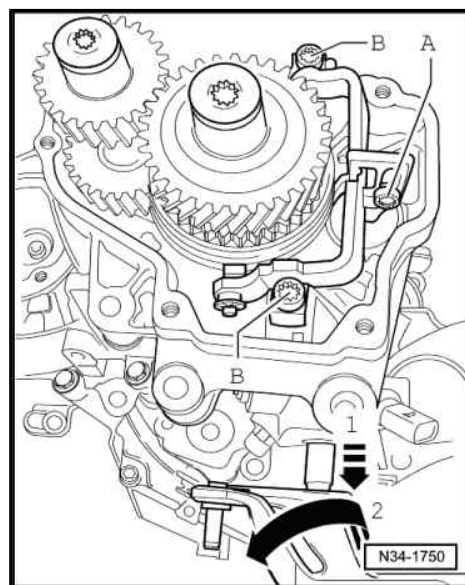
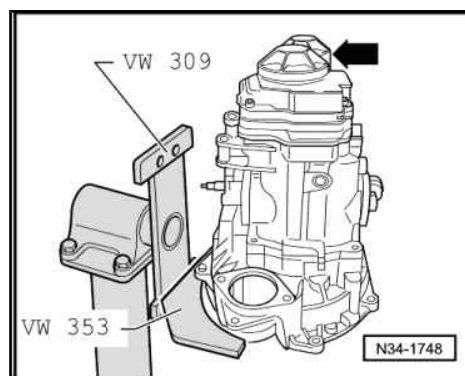
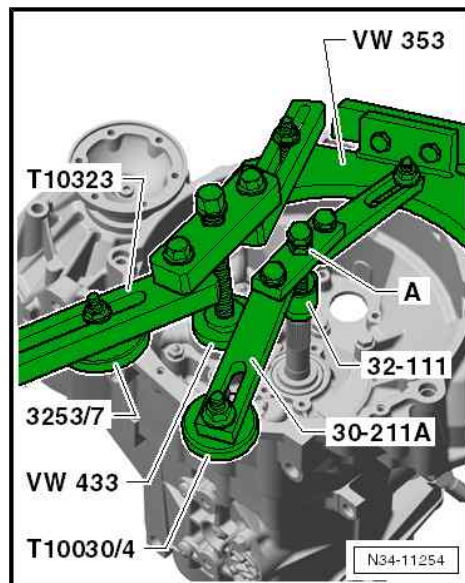
- ◆ Support bridge -30-211A-
- ◆ Thrust piece -32 - 111-
- ◆ Thrust piece -T10030/4-
- Secure bolt of support bridge -30-211A- with lock nut -A-.

**Below bearing mounting for output shaft:**

- ◆ Support bridge -T10323-
- ◆ Assembly tool -3253/7-
- ◆ Press tool -VW 433-
- Unbolt gearbox housing cover -arrow-.
- Take off cover. If necessary carefully lever up all round and alternating between sides on the protruding flanges, being careful not to damage sealing surfaces.

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- Remove 5th/6th gear selector fork as follows:
- Engage 5th gear (arrows -1- and -2-).
- Remove 5th/6th gear selector jaw (bolt -A-).
- Then remove both bolts -B- for pivot pins.
- Pull out pivot pins.
- Take out 5th/6th gear selector fork.

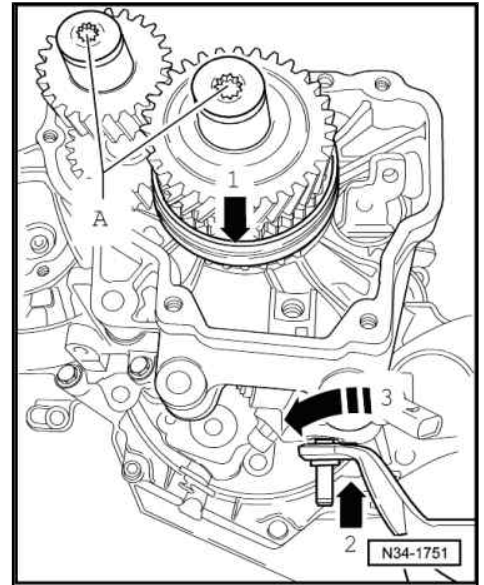


- Remove bolts -A- for inner bearing races on input and output shafts. To do this, engage 5th gear -arrow 1- and 1st gear -arrows 2 and 3-.
- The input and output shafts are both locked when these two gears are engaged. The two bolts can now be loosened.

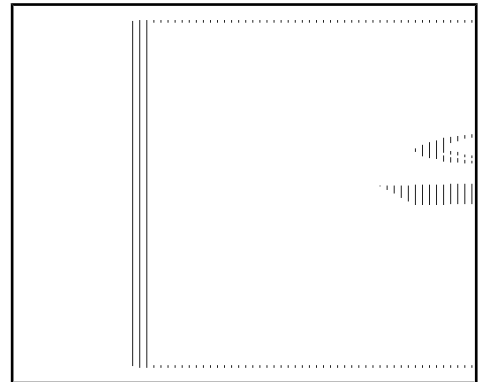


#### Note

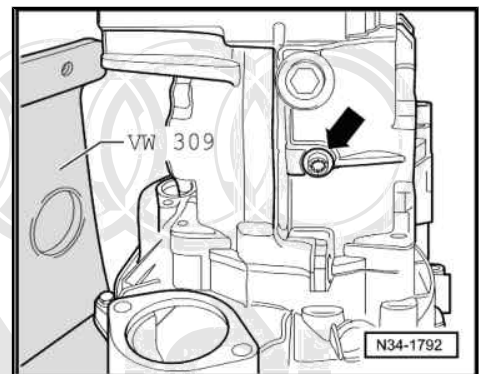
*If the shafts are not being renewed, clean residual locking compound out of tapped holes using a thread tap.*



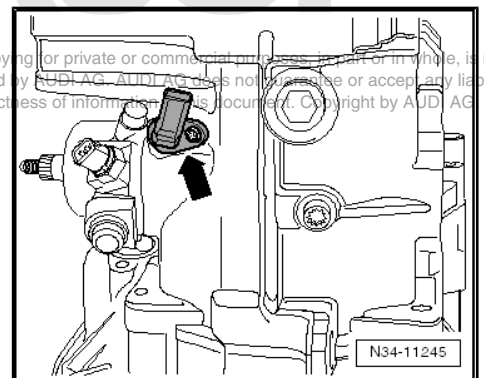
- Remove both bolts -arrows- for reverse shaft support.



- Now remove 3rd bolt -arrow- for reverse shaft support.

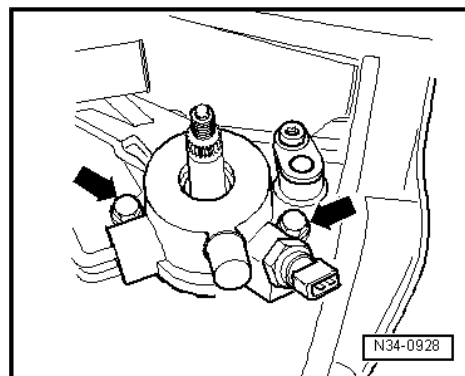


- Gearbox for vehicles with start/stop system: remove gearbox neutral position sender -G701- -arrow-.

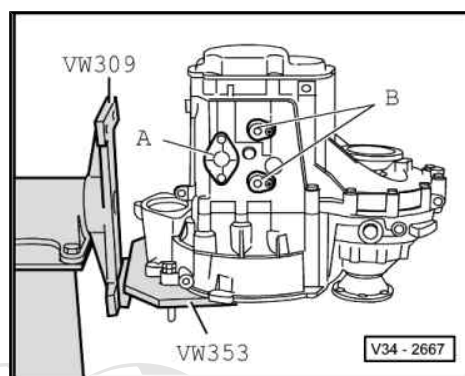


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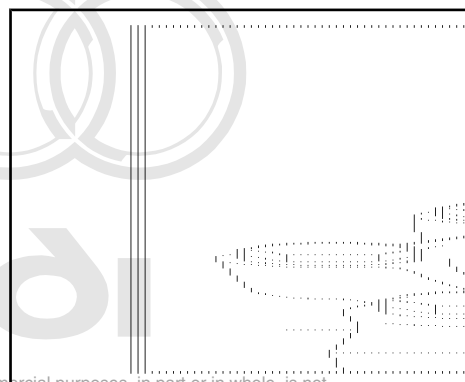
- Remove selector shaft with selector mechanism cover. To do this, set selector shaft in neutral position. Then remove bolts -arrows- and pull selector shaft out of gearbox housing.



- Remove cover plate -A- and pivot pins -B- from underside of gearbox.



- Remove pivot pins -A- on top side of gearbox and bolts -B- securing gearbox housing to clutch housing (near differential).

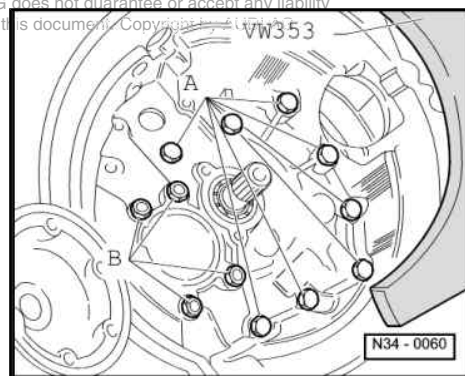


- Remove bolts -A- securing gearbox housing from inside clutch housing.



#### Note

*Do not remove nuts -B- for output shaft bearing mounting.*



- Remove both flange shafts.
- Take out flange shafts together with springs, thrust washers and tapered rings.

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**Pull off the following components, together with the gearbox housing:**

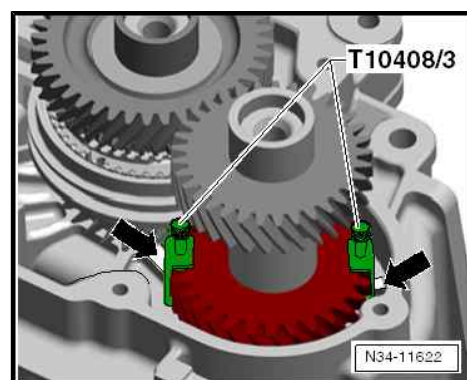
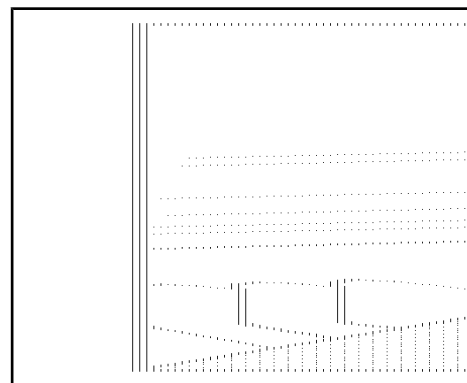
- ◆ Synchro-hub for 5th/6th gear
- ◆ 6th gear wheel
- ◆ 5th gear wheel
- You must secure the two brackets -T10408/3- to the 5th gear wheel.
- Always position the brackets above 2 opposite ribs on the housing -arrows-.



**Caution**

***Risk of damage to needle bearing for output shaft in gearbox housing***

- *A needle bearing is located underneath the 5th gear wheel in the gearbox housing.*
- *Please secure the two brackets . This will prevent the needle bearing from coming into contact with the 5th gear wheel when the gearbox housing is pulled off.*



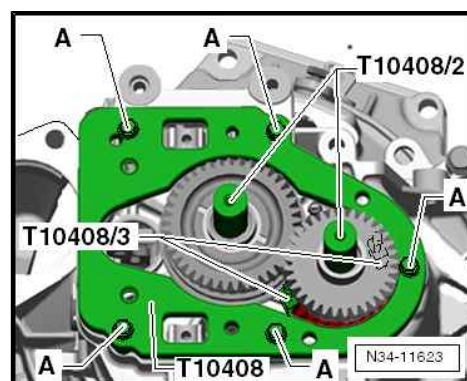
**Use puller plate -T10408- together with the following special tools:**

- ◆ Thrust blocks -T10408/2-
- ◆ Brackets -T10408/3-
- ◆ Puller Kukko 18/1 (2x)
- Bolt on puller plate -T10408- using threaded holes for gearbox housing cover.

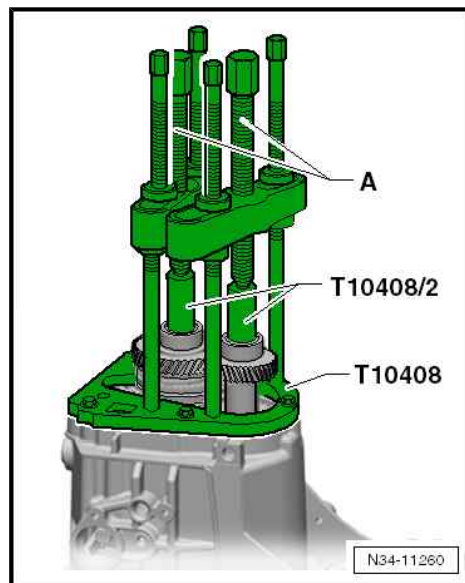
A - Hexagon bolts M7 x 35 with washers

Tightening torque: 18 Nm

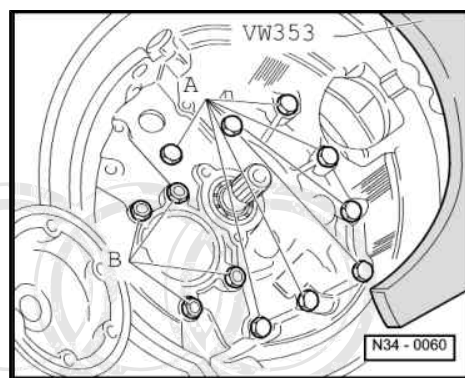
- Fit thrust blocks -T10408/2- on shafts.



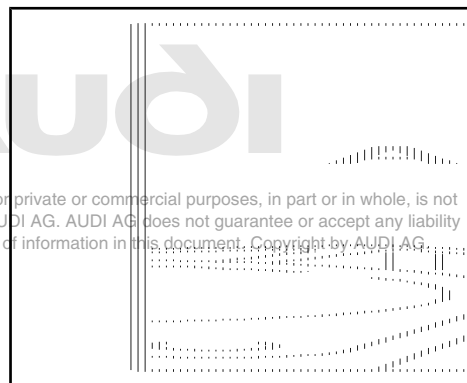
- Attach pullers Kukko 18/1 -A-.
- Pull off 5th/6th gear synchro-hub, 6th gear wheel, 5th gear wheel and gearbox housing by alternately tightening spindles -A- of pullers Kukko 18/1 ,  $\frac{1}{2}$  turn at a time.
- If necessary, heat 5th gear wheel and 6th gear wheel using hot air blower -V.A.G 1416- slightly before pulling off.



- Remove nuts -B- for output shaft bearing mounting.

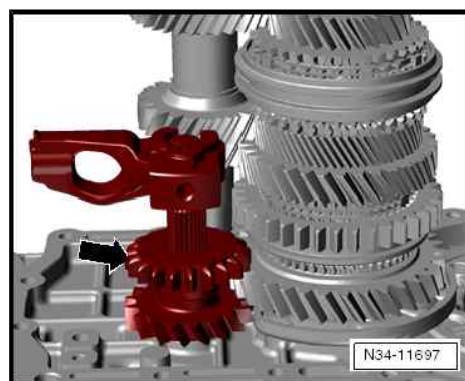


- Remove selector forks -A- together with selector plates.



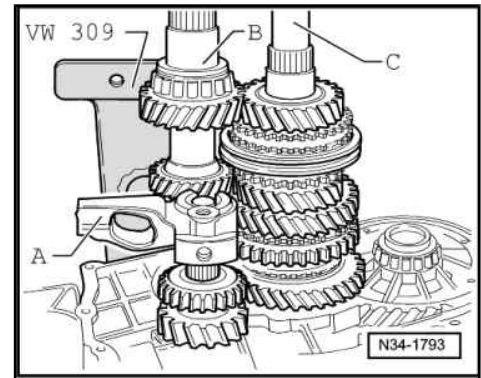
#### Gearbox with reverse selector gear -arrow-

- Unscrew bolt -B- for reverse gear selector mechanism (see previous illustration).

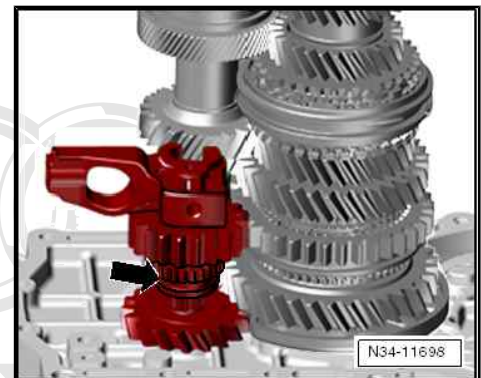


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- Remove reverse gear -A-, input shaft-B- and output shaft -C- one after the other from clutch housing.



Gearbox with locking collar for reverse gear -arrow-



- Detach input shaft -1-, output shaft -2- and reverse shaft -3- together from clutch housing.

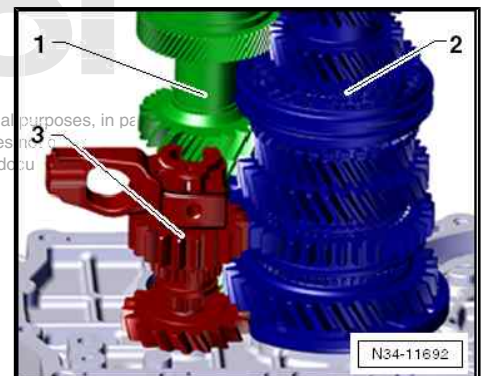
**Continued for all vehicles:**

- Take out differential.

**Assembling gearbox**

- Fit differential.

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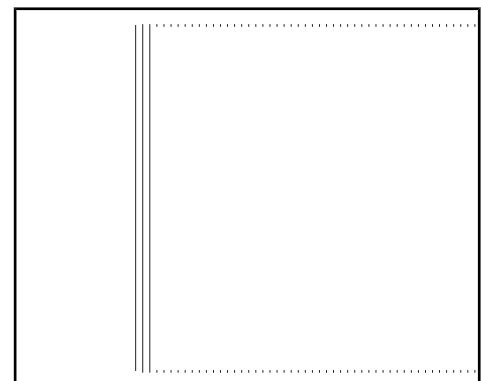
- Always renew seals -arrows- for output shaft bearing mounting.



**Note**

*The illustration only shows 3 of the 4 seals.*

- Install reverse gear selector mechanism.

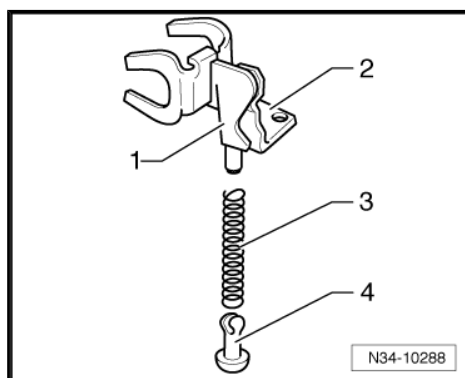
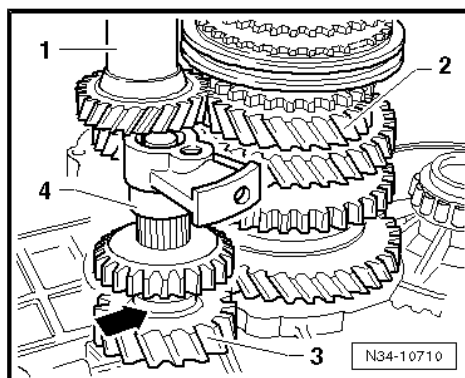
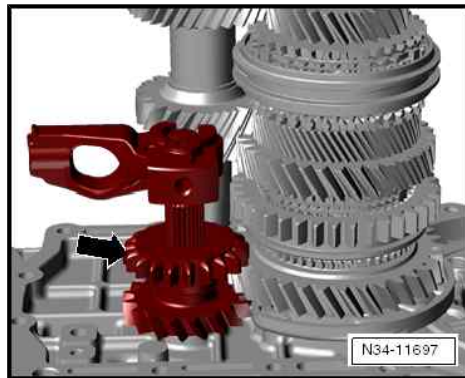


## Gearbox with reverse selector gear -arrow-

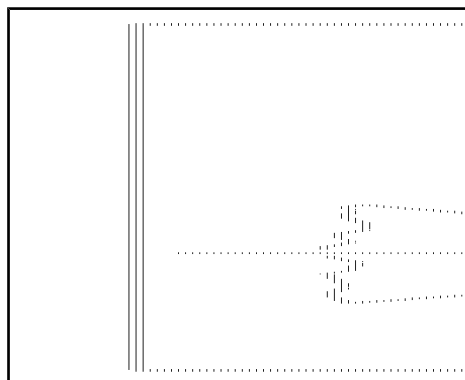
- Insert input shaft -1- and output shaft -2- together.
- Tighten nuts for output shaft bearing mounting to torque ➔ [Item 11 \(page 147\)](#) .
- Place reverse gear wheel -3- on needle bearing in clutch housing.

Shoulder -arrow- faces away from clutch housing.

- Check that reverse shaft -4- is complete ➔ [page 227](#) ; do not fit reverse shaft support onto reverse shaft yet.
- Insert reverse shaft in clutch housing.
- Clean locking fluid residue from all tapped holes in reverse shaft support (residue can be removed using a tap).
- Fit reverse shaft support on reverse shaft.
- Fit reverse gear selector fork -1- with support for reverse gear selector fork -2-, spring -3- and slide -4-.



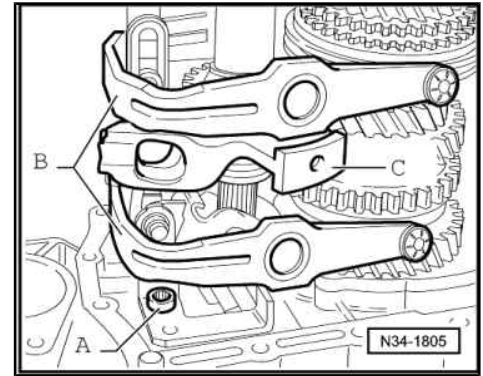
Installation position: reverse gear



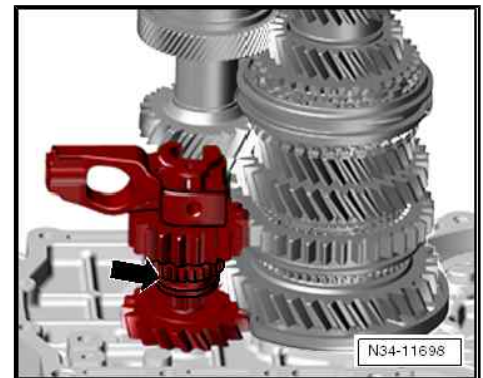
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- Tighten bolt -A- for reverse gear selector mechanism to specified torque ⇒ [Item 8 \(page 146\)](#) .
- Install selector forks -B- together with selector plates.

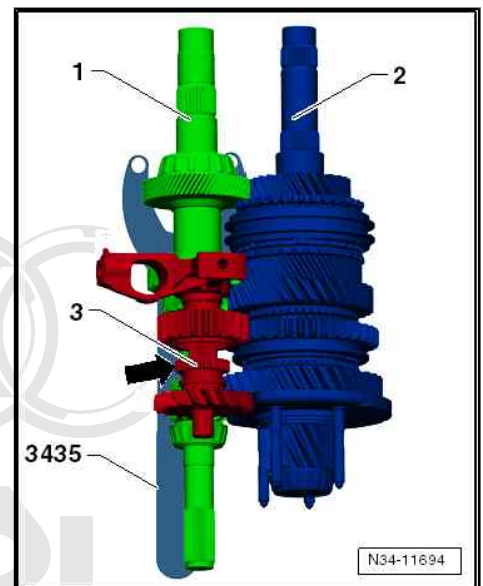
Pin on reverse shaft support -C- is located in front of selector plates.



#### Gearbox with locking collar for reverse gear -arrow-



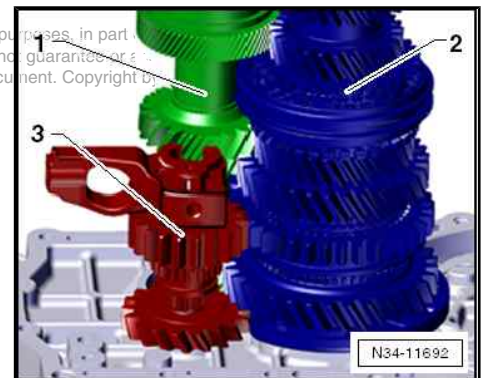
- Clean locking fluid residue from all tapped holes in reverse shaft support (residue can be removed using a tap).
- Position input shaft -1-, output shaft -2- and reverse shaft -3- together on a workbench or similar as shown in illustration.
- The input shaft -1- is held in position by counterhold tool -3435- .
- The dog teeth -arrow- of the locking collar for reverse gear face the reverse selector gear.



- Install input shaft -1-, output shaft -2- and reverse shaft -3- together.

The output shaft -2- will contact the differential.

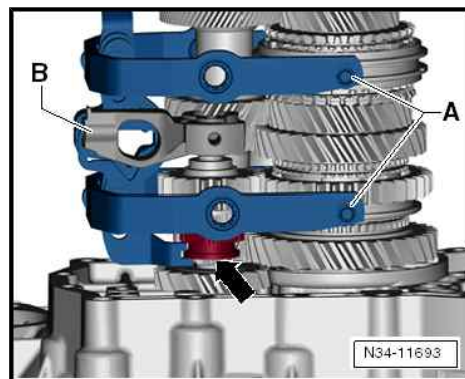
- If necessary, turn differential (2nd mechanic required) so that output shaft -2- can be inserted into clutch housing.
- Tighten nuts for output shaft bearing mounting to specified torque ⇒ [Item 11 \(page 147\)](#) .



- Install selector forks -A- together with selector plates.

Reverse shaft support -B- is located in front of selector plates.

- The selector plate for reverse gear engages in the locking collar for reverse gear -arrow-.



#### Continued for all vehicles:

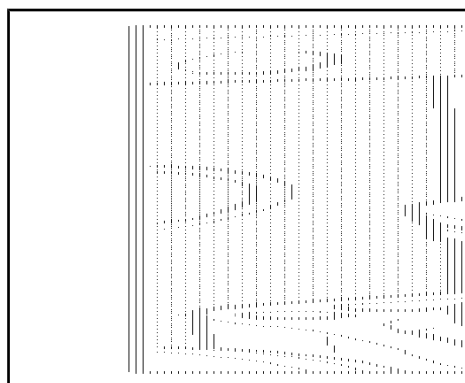
- Screw M8 x 100 mm stud -A- into reverse shaft support so that support is aligned after fitting gearbox housing.
- Align selector plates.



#### Note

*The detent segments must be positioned in the grooves on the locking collars.*

- Apply sealant -AMV 188 200 03- evenly to sealing surface of clutch housing.
- Fit and secure gearbox housing.

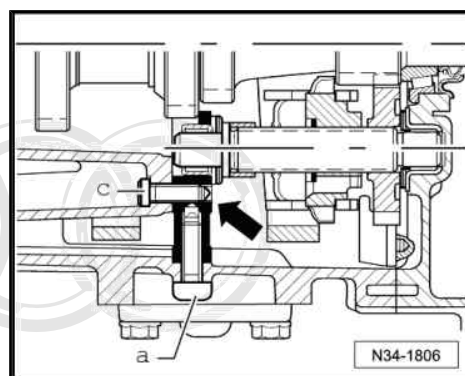


Install bolts for reverse shaft support -arrow- as follows:

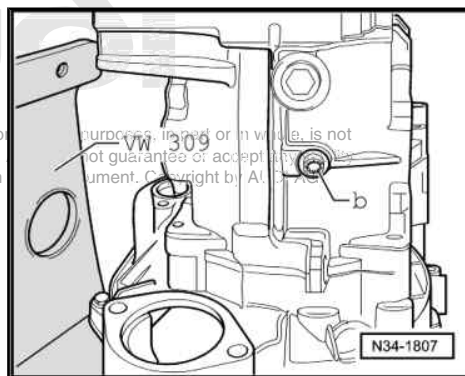
- Fit bolt -a-.
- Remove stud -A- (⇒ top illustration).
- Fit bolt -c-.

Tightening sequence:

- Tighten bolt -a- to 30 Nm.
- Tighten bolt -b- (⇒ bottom illustration) to 25 Nm.



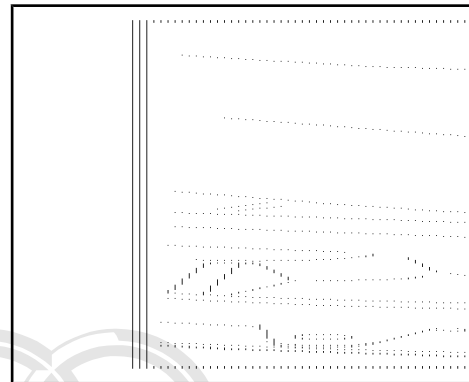
- Tighten bolt -c- to 25 Nm.



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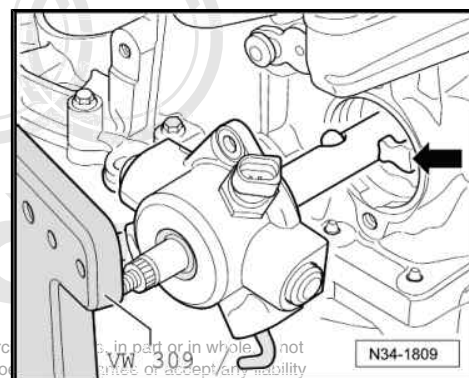
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- Install pivot pins -arrow- for selector forks. To do this align selector mechanism using a screwdriver so that the relevant pivot pin can be inserted.
- Apply sealant -AMV 188 200 03- evenly to sealing surface of cover plate.
- Fit cover plate for selector shaft.



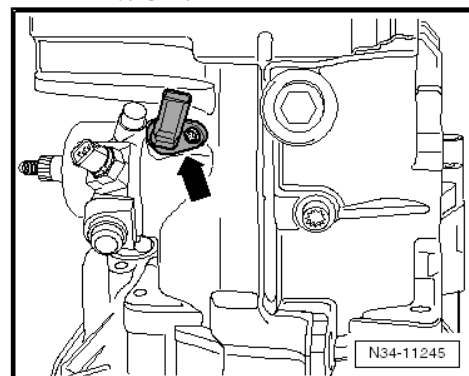
Install selector shaft and selector mechanism cover as follows:

- Set selector plates in neutral position.
- Apply sealant -AMV 188 200 03- evenly to sealing surface of selector mechanism cover.
- Put selector shaft in neutral position.
- Position selector shaft so that selector finger -arrow- is engaged in selector plates.
- Tighten selector shaft cover ⇒ [Item 17 \(page 146\)](#).

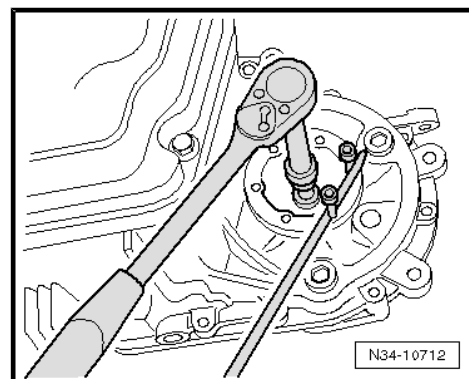


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- Gearbox for vehicles with start/stop system: fit gearbox neutral position sender -G701- -arrow- and tighten securing bolt to specified torque ⇒ [Item 11 \(page 145\)](#).

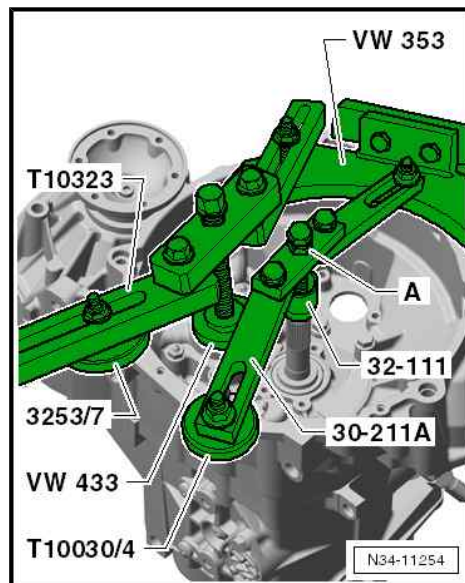


- Install both flange shafts with springs, thrust washers and tapered rings ⇒ [page 245](#).



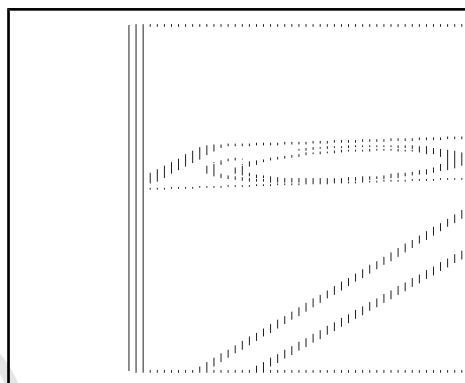
### Install 5th and 6th gears as follows:

- Please ensure that the support bridge -30-211A- and support bridge -T10323- are fitted.
- Secure bolt of support bridge -30- 211A- with lock nut -A-.



### Installation position of 5th gear wheel

The groove running round the gear wheel -arrow- faces to the gearbox housing.

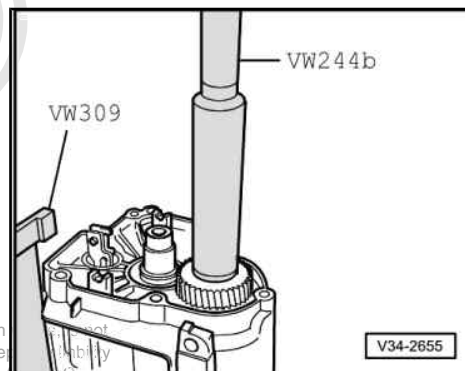


- Heat 5th gear wheel and drive on.



### WARNING

*Wear protective gloves.*



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## Checking 5th and 6th gear synchro-rings

- Before re-installing selector gears and synchro-rings for 5th and 6th gears, press synchro-rings onto tapered seats of selector gears and measure gap -a- with a feeler gauge.

| Gap -a-      | Installation depth | Wear limit |
|--------------|--------------------|------------|
| 5th/6th gear | 1.1 ... 1.7 mm     | 0.5 mm     |

- Install 5th speed selector gear with needle bearing.

**On gearboxes manufactured from 26 05 8 onwards: fit corrugated spring washer on 5th speed selector gear ➔ Item 20 (page 144) .**

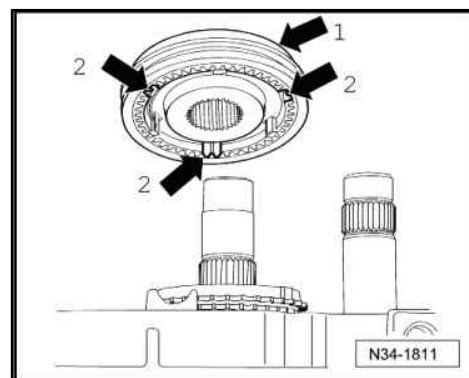
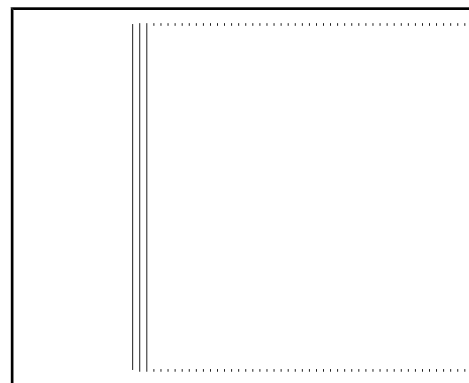
- Fit 5th gear synchro-ring on selector gear.
- If previously dismantled, assemble 5th/6th gear synchro-hub/locking collar before installing ➔ page 202 , ➔ page 203 and ➔ page 203 .
- Also note modifications to 5th/6th gear locking collar on gearboxes manufactured from 12 06 6 onwards ➔ page 202 .

These modifications are particularly important when adjusting 5th/6th gear at a later stage.

## Installation position of 5th/6th gear synchro-hub/locking collar

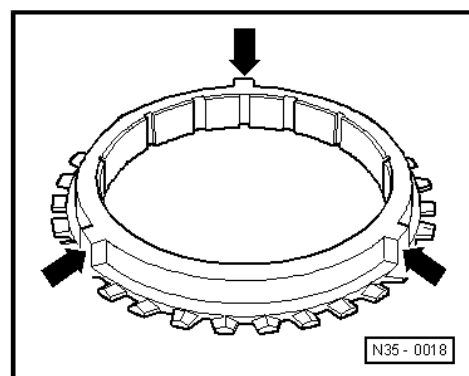
Collar -arrow 1- faces towards 6th gear.

The retainers -arrow 2- on the synchro-hub align with the cast locking pieces on the synchro-ring (arrows in the illustration below).



## 5th and 6th gear synchro-rings with cast locking pieces -arrows-

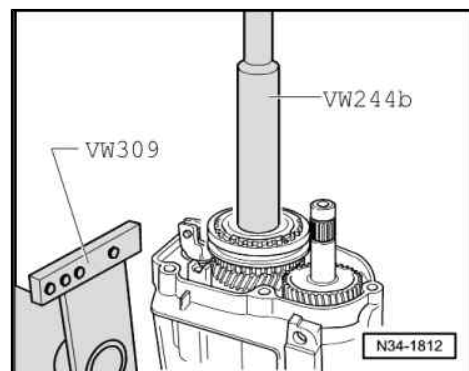
- Cover all openings with a cloth to prevent dirt etc. from entering the gearbox.



- Heat 5th/6th gear synchro-hub and drive on.

 **WARNING**  
*Wear protective gloves.*

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*When driving on, ensure clearance for synchro-ring.*



- Heat needle bearing inner race for 6th speed selector gear to 100°C (maximum) and drive onto input shaft.



### WARNING

*Wear protective gloves.*

- Fit 6th gear synchro-ring.

**On gearboxes manufactured from 26 05 8 onwards: fit corrugated spring washer on 6th speed synchro-ring ➔ Item 16 (page 143) .**

- Install 6th speed selector gear with needle bearing.

**On gearboxes manufactured up to 20 08 6**

- Fit thrust washer -A-.



### Note

*Do not interchange roller bearing inner races of input and output shafts.*

- Heat roller bearing inner race -B- to 100°C (maximum) and drive onto input shaft.



### WARNING

*Wear protective gloves.*

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**On gearboxes manufactured from 21 08 6 onwards**

Roller bearing inner race -B- and thrust washer -A- are one component.

- Heat roller bearing inner race to 100°C (maximum) and drive onto input shaft.



### WARNING

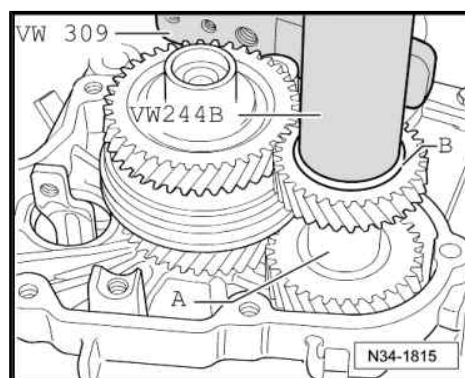
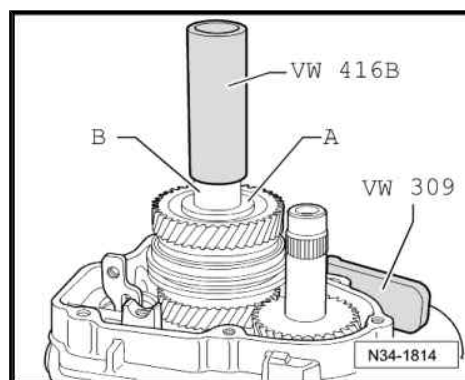
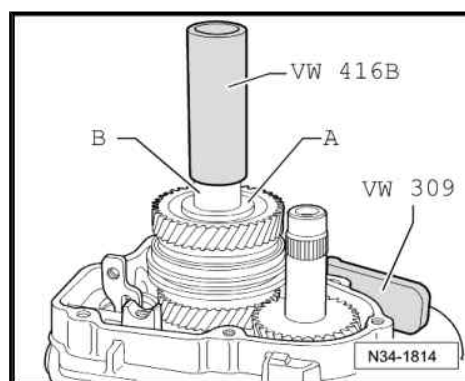
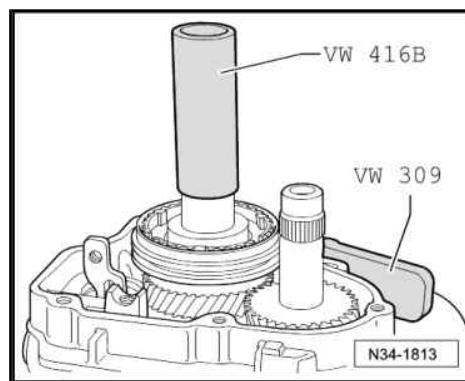
*Wear protective gloves.*

**Continued for all vehicles:**

- Fit sleeve -A- on 5th gear wheel.

**Installation position of 6th gear wheel:**

- Groove -B- points towards drift sleeve -VW 244 B- .



»Or«

- Groove -arrow 1- in area of shoulder -arrow 2- points towards drift sleeve -VW 244 B- (see previous illustration).
- Heat 6th gear wheel to 100°C (maximum) and press on.



**WARNING**

*Wear protective gloves.*

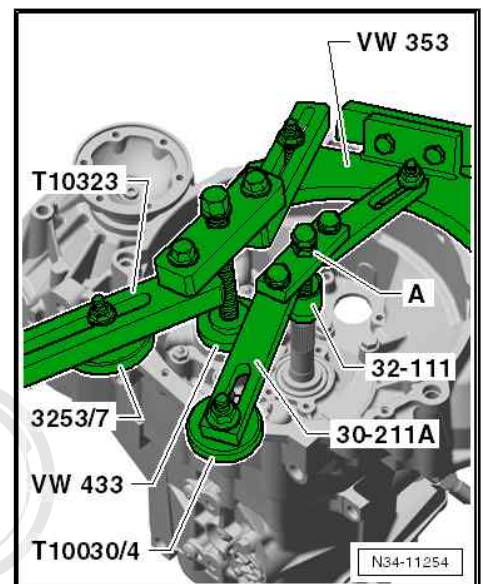
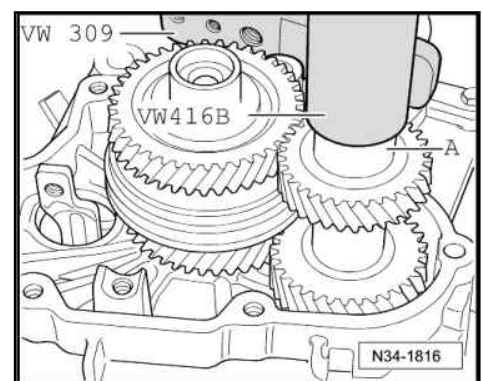
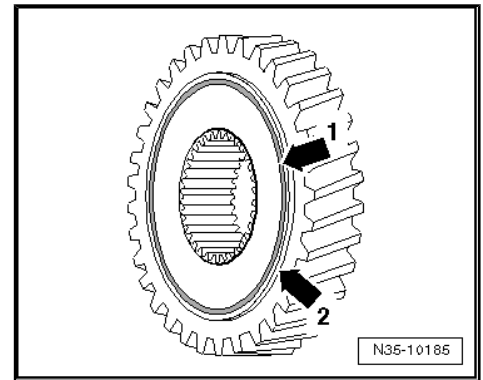
- Set locking collar for 5th/6th gear to neutral position to allow 6th speed selector gear to turn while pressing on 6th gear wheel.
- Drive on 6th gear wheel, making sure that it meshes properly with 6th speed selector gear.
- Heat roller bearing inner race -A- to 100°C (maximum) and drive onto output shaft.



**WARNING**

*Wear protective gloves.*

- Loosen support for input shaft.



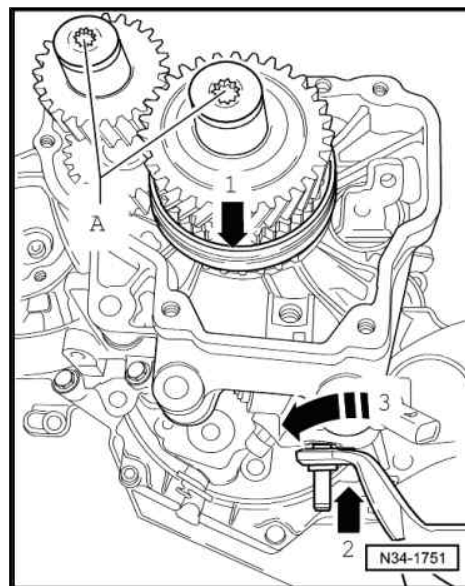
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- If not already done, remove residual locking fluid from threaded holes for securing bolts -A- using a thread tap. Otherwise there is a risk that the bolts will shear off.

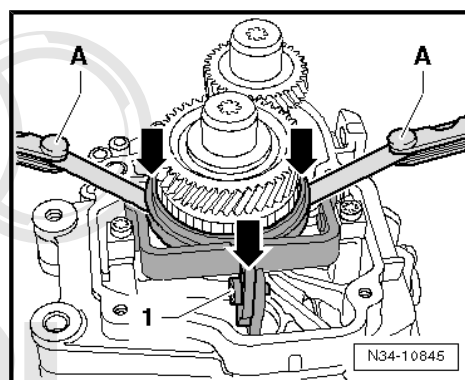
Note allocation of securing bolts ➤ [page 144](#) and ➤ [page 144](#) .

- Tighten securing bolts for synchro-hub and 5th/6th gear wheels to torque ➤ [page 142](#) .
- Engage 2 gears -arrows 1- to -3- in order to tighten securing bolts -A-.
- Install 5th/6th gear selector fork.

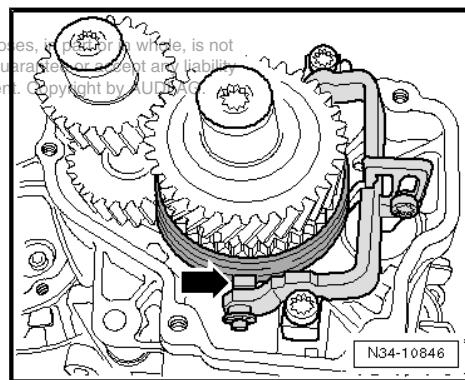


#### Adjusting 5th/6th gear up to gearbox manufacturing date 11 06 6

- Engage 5th gear.
- Loosen bolt -1-.
- Insert two feeler gauges -A- of 0.5 mm above the two detent segments -arrows- (for 6th gear) into locking collar.
- Press down selector jaw and locking collar -arrows- and tighten bolt -1- to 25 Nm.

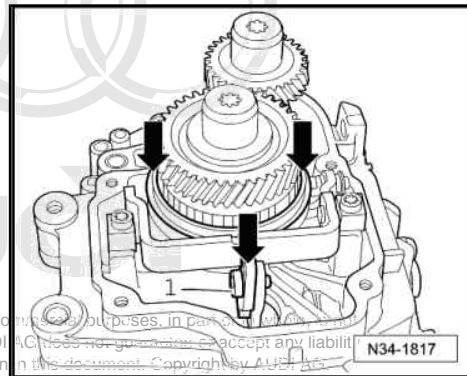


- The 5th gear is engaged.
- Checking adjustment: it should just be possible to insert an 0.5 mm feeler gauge between the locking collar and each of the two detent segments -arrow- on the 6th gear side.
- Repeat adjustment if necessary.
- First engage 5th and then 6th gear.
- There should be slight play between 5th/6th gear selector fork and selector jaw with 5th or 6th gear engaged.
- Disengage gear.
- Locking collar should now be in the neutral position. Synchro-ring should move freely.
- Select all gears.

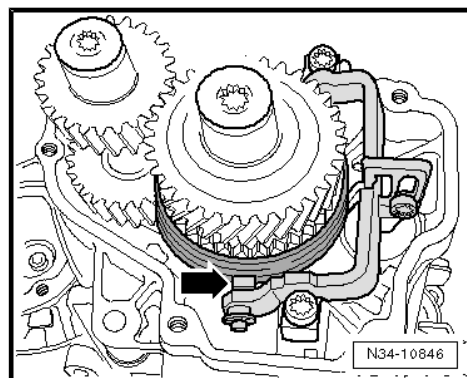


### Adjusting 5th/6th gear from gearbox manufacturing date 12 06 6 onwards

- Engage 5th gear.
- Loosen bolt -1-.
- Press down selector jaw and locking collar -arrows- and tighten bolt -1- to 25 Nm.



- The 5th gear is engaged.
- Checking adjustment: it must not be possible to insert an 0.2 mm feeler gauge between the locking collar and the two detent segments -arrow- on the 6th gear side.
- Repeat adjustment if necessary.
- First engage 5th and then 6th gear.
- There should be slight play between 5th/6th gear selector fork and selector jaw with 5th or 6th gear engaged.
- Disengage gear.
- Locking collar should now be in the neutral position. Synchronising should move freely.
- Select all gears.



### Continued for all vehicles:

- Apply sealant -AMV 188 200 03- evenly to sealing surface of cover for gearbox housing.
- Install gearbox housing cover ➔ [page 142](#) .
- Install release bearing guide sleeve ➔ [page 42](#) .
- Install clutch release lever and release bearing ➔ [page 42](#) .
- Fill up gear oil ➔ [page 100](#) .

## 7 Exploded view - gearbox housing and clutch housing

### 1 - Gearbox housing

- ☐ If renewed: Adjust input shaft and differential  
⇒ [page 244](#)

### 2 - Needle bearing

- ☐ For output shaft
- ☐ Removing ⇒ [page 177](#)
- ☐ Installing and securing ⇒ [page 178](#)

### 3 - Oil filler plug

- ☐ 35 Nm
- ☐ Gear oil level cannot be checked by removing oil filler plug
- ☐ If gearbox was dismantled, fill with gear oil before installing
- ☐ Capacity of manual gearbox (gearbox completely dismantled)

#### ◆ 2.1 ltr.

- ☐ Capacity of manual gearbox (gearbox partially dismantled)  
⇒ [page 137](#)

#### ◆ 1.9 ltr.

### 4 - Tapered roller bearing outer race

- ☐ For output shaft
- ☐ Removing and installing ⇒ [page 215](#)
- ☐ If renewed: Adjust output shaft ⇒ [page 222](#)

### 5 - Shim

- ☐ For output shaft
- ☐ Table of adjustments ⇒ [page 244](#)

### 6 - Shim

- ☐ For input shaft
- ☐ Table of adjustments ⇒ [page 244](#)

### 7 - Tapered roller bearing outer race

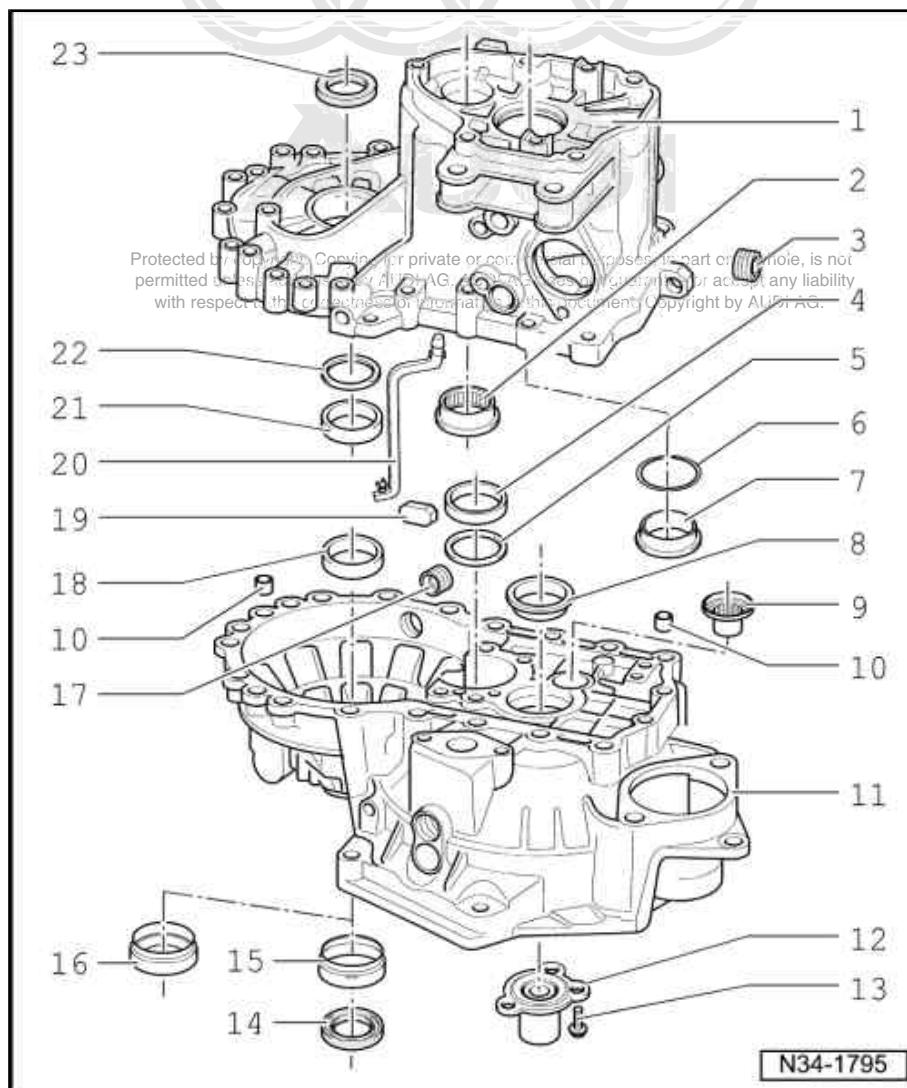
- ☐ For input shaft
- ☐ Removing and installing ⇒ [page 199](#)
- ☐ If renewed: Adjust input shaft ⇒ [page 203](#)

### 8 - Tapered roller bearing outer race

- ☐ For input shaft
- ☐ Removing and installing ⇒ [page 201](#)
- ☐ If renewed: Adjust input shaft ⇒ [page 203](#)

### 9 - Needle bearing

- ☐ Removing and installing ⇒ [page 231](#)



#### 10 - Dowel sleeve

- ☐ 2x

#### 11 - Clutch housing

- ☐ If renewed: table of adjustments ⇒ [page 244](#)

#### 12 - Guide sleeve

- ☐ With input shaft oil seal and vulcanised O-ring
- ☐ Driving out oil seal ⇒ [page 178](#)
- ☐ Driving in oil seal ⇒ [page 178](#)
- ☐ Remove guide sleeve in order to renew oil seal
- ☐ If O-ring is damaged, renew both guide sleeve and O-ring

#### 13 - Socket head bolt

- ☐ 20 Nm

#### 14 - Oil seal

- ☐ Renewing ⇒ [page 233](#)

#### 15 - Sleeve

- ☐ For oil seal (item ⇒ [Item 14 \(page 175\)](#) )
- ☐ Removing ⇒ [page 178](#)
- ☐ Installing ⇒ [page 179](#)

#### 16 - One-piece oil seal and sleeve

- ☐ If oil seal is damaged, renew both sleeve and oil seal
- ☐ Removing ⇒ [page 179](#)
- ☐ Installing ⇒ [page 179](#)

#### 17 - Oil drain plug

- ☐ 35 Nm

#### 18 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing out and pressing in ⇒ [page 245](#)
- ☐ If renewed: adjust differential ⇒ [page 253](#)

#### 19 - Magnet

- ☐ Held in place by joint surface of housing

#### 20 - Oil collector

- ☐ Installing oil collector in gearbox housing ⇒ [page 179](#)

#### 21 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing out and pressing in ⇒ [page 245](#)
- ☐ If renewed: adjust differential ⇒ [page 253](#)

#### 22 - Shim

- ☐ For differential
- ☐ Table of adjustments ⇒ [page 244](#)

#### 23 - Oil seal

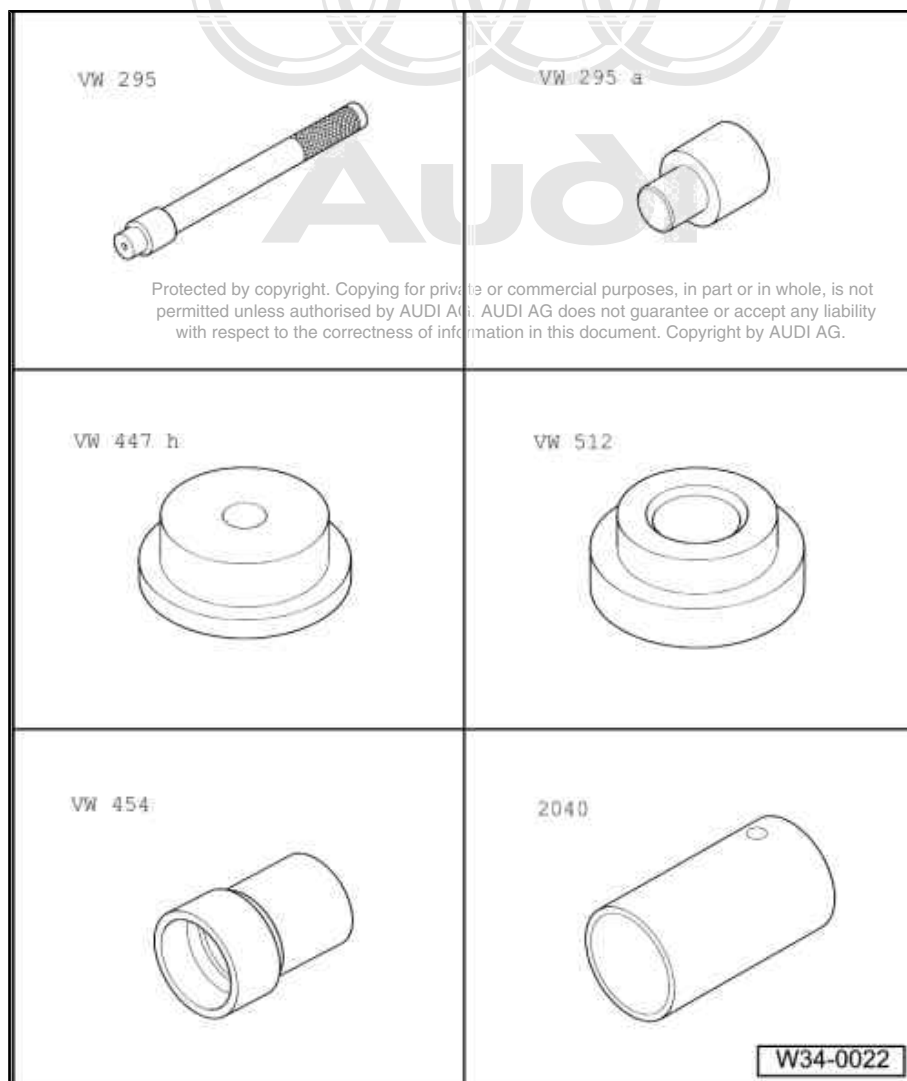
- ☐ Renewing ⇒ [page 233](#)

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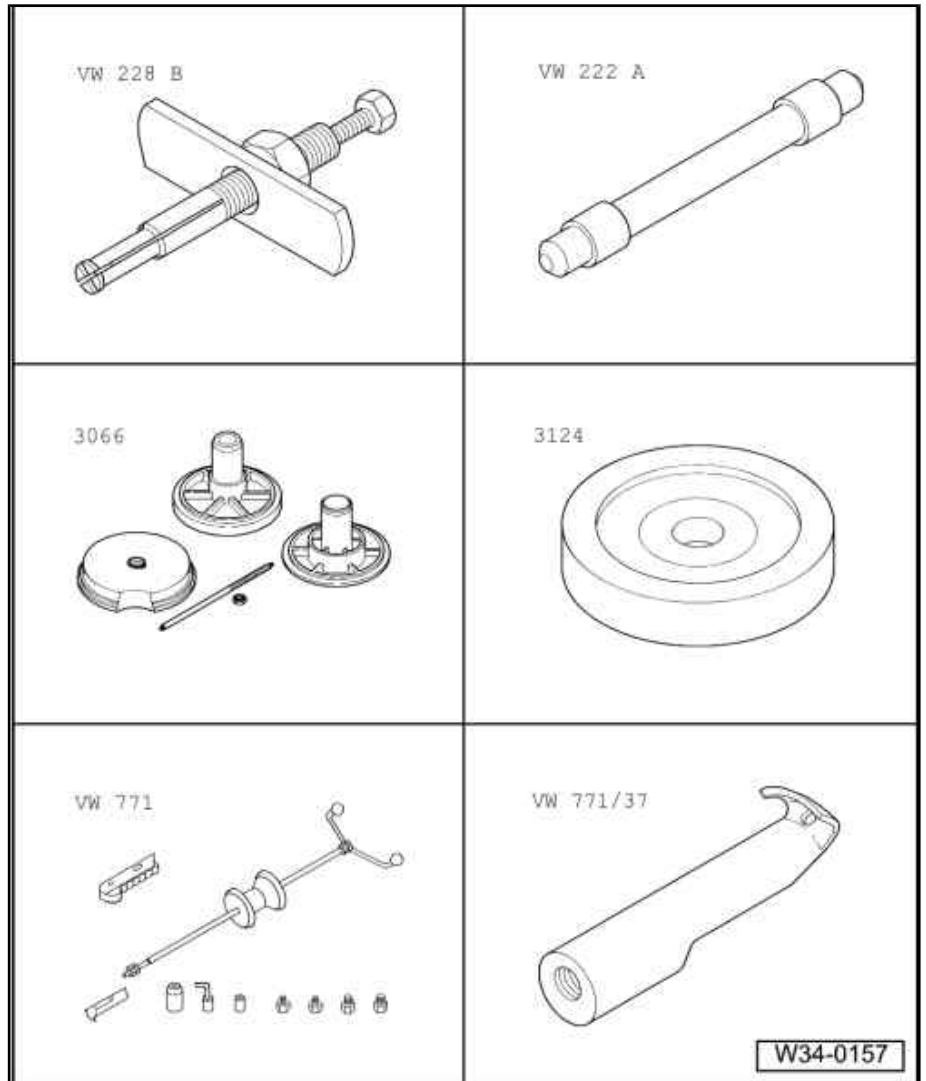
## 7.1 Servicing gearbox housing and clutch housing

### Special tools and workshop equipment required

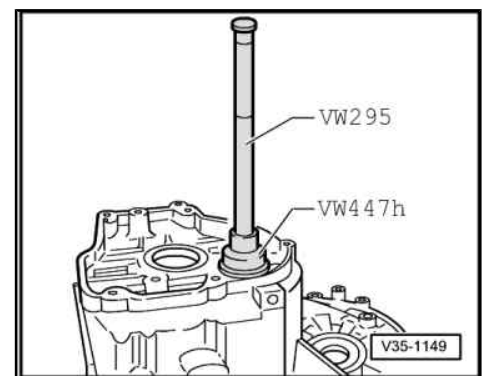
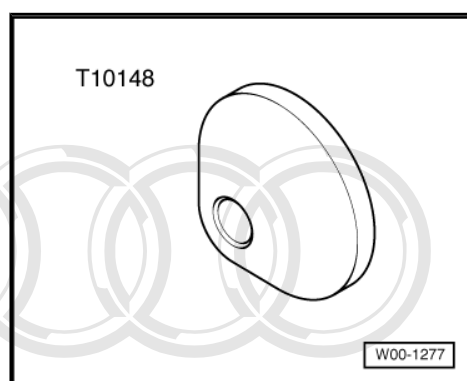
- ◆ Drift -VW 295-
- ◆ Adapter -VW 295 A-
- ◆ Thrust plate -VW 447 H-
- ◆ Thrust pad -VW 512-
- ◆ Tube -VW 415 A-
- ◆ Press tool -VW 454-



- ◆ Puller -VW 228 B- (not used on this gearbox)
- ◆ Drift -VW 222 A- (not used on this gearbox)
- ◆ Assembly device -3066- (assembly device spindle)
- ◆ Thrust piece -3124- (for two-piece oil seal and sleeve; identification ⇒ [page 235](#) )
- ◆ Multi-purpose tool - VW 771- (for one-piece oil seal and sleeve; identification ⇒ [page 235](#) )
- ◆ Puller hook -VW 771/37- (for one-piece oil seal and sleeve; identification ⇒ [page 235](#) )



- ◆ Thrust piece - T10148- (for one-piece oil seal and sleeve; identification ⇒ [page 235](#) )

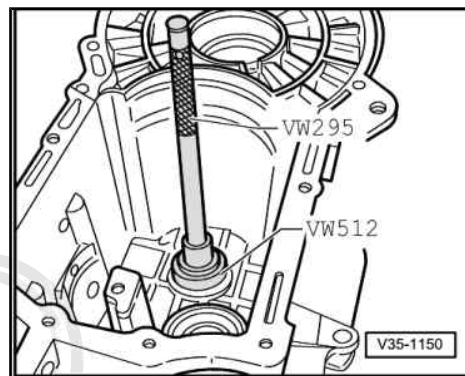


## Driving out needle bearing

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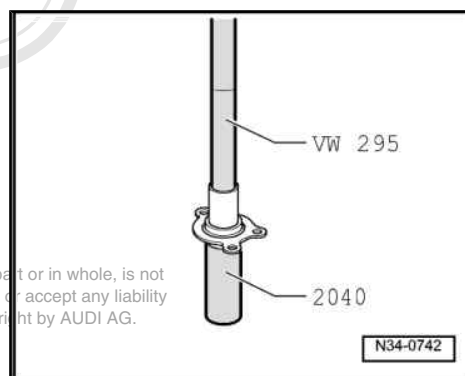
### Driving in needle bearing onto stop

- Secure needle bearing in gearbox housing at three points (120° offset) with a punch.

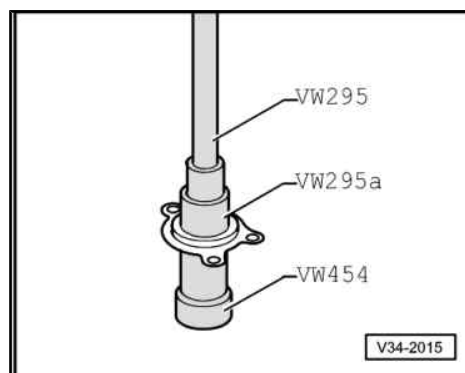


### Driving oil seal out of guide sleeve

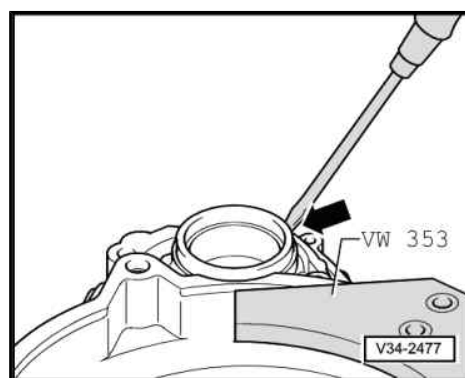
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### Driving oil seal into guide sleeve (drive in onto stop)



### Lever out sleeve -arrow- with screwdriver



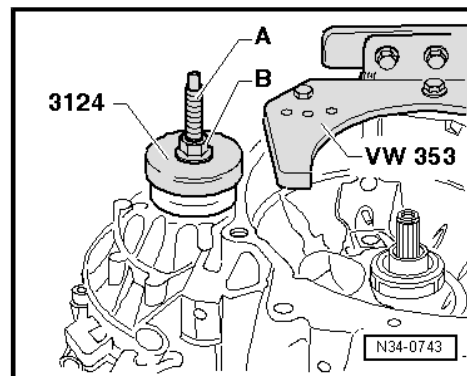
### Installing sleeve

- Clean seat of sleeve in gearbox.
- Screw spindle -A- of assembly device -3066- into threaded piece in differential.
- Turn nut -B- and pull sleeve in onto stop with thrust piece -3124- .



#### Note

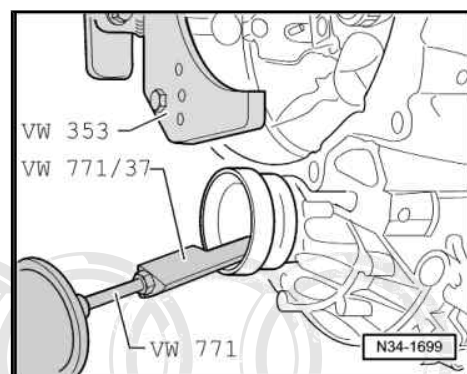
*If gearbox has been dismantled, press in sleeve onto stop using thrust piece -3124- .*



### Pulling out sleeve and oil seal

A shoulder is located on inside diameter of sleeve.

- To pull out oil seal and sleeve, apply puller hook -VW 771/37- behind shoulder inside sleeve.
- During this operation, press puller hook -VW 771/37- firmly in against sleeve.



### Installing sleeve and oil seal

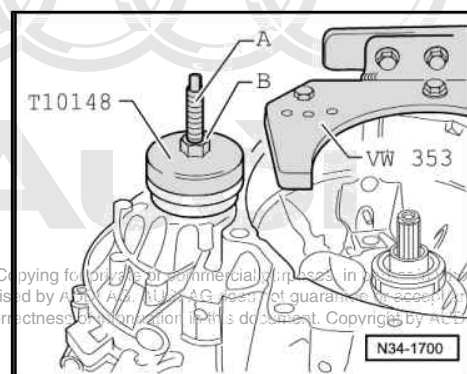
- Clean seat for oil seal in gearbox.
- Screw spindle -A- of assembly device -3066- into threaded piece in differential.
- Turn nut -B- and pull sleeve in onto stop with thrust piece -T10148- .



#### Note

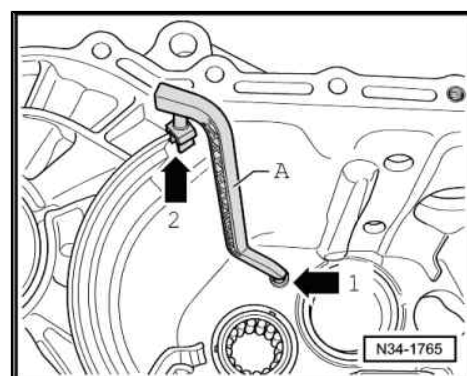
*If gearbox has been dismantled, press in sleeve onto stop using thrust piece -T10148- .*

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### Installing oil collector -A- in gearbox housing

- Insert oil collector simultaneously into bore -arrow 1- and groove -arrow 2-.



## 8 Exploded view - gearbox housing cover

### 1 - Roller bearing

- ☐ For input shaft
- ☐ Do not interchange with roller bearing for output shaft
- ☐ Pulling out ➔ [page 181](#)
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards ➔ [page 182](#)
- ☐ Pressing in on gearboxes manufactured up to 20 08 6: ➔ [page 182](#)
- ☐ Pressing in on gearboxes manufactured from 21 08 6 onwards: ➔ [page 182](#)
- ☐ Securing ➔ [page 183](#)

### 2 - Roller bearing

- ☐ For output shaft
- ☐ Do not interchange with roller bearing for input shaft
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards ➔ [page 182](#)
- ☐ Pulling out ➔ [page 182](#)
- ☐ Pressing in on gearboxes manufactured up to 20 08 6: ➔ [page 182](#)
- ☐ Pressing in on gearboxes manufactured from 21 08 6 onwards: ➔ [page 182](#)
- ☐ Securing ➔ [page 183](#)

### 3 - Gearbox housing cover

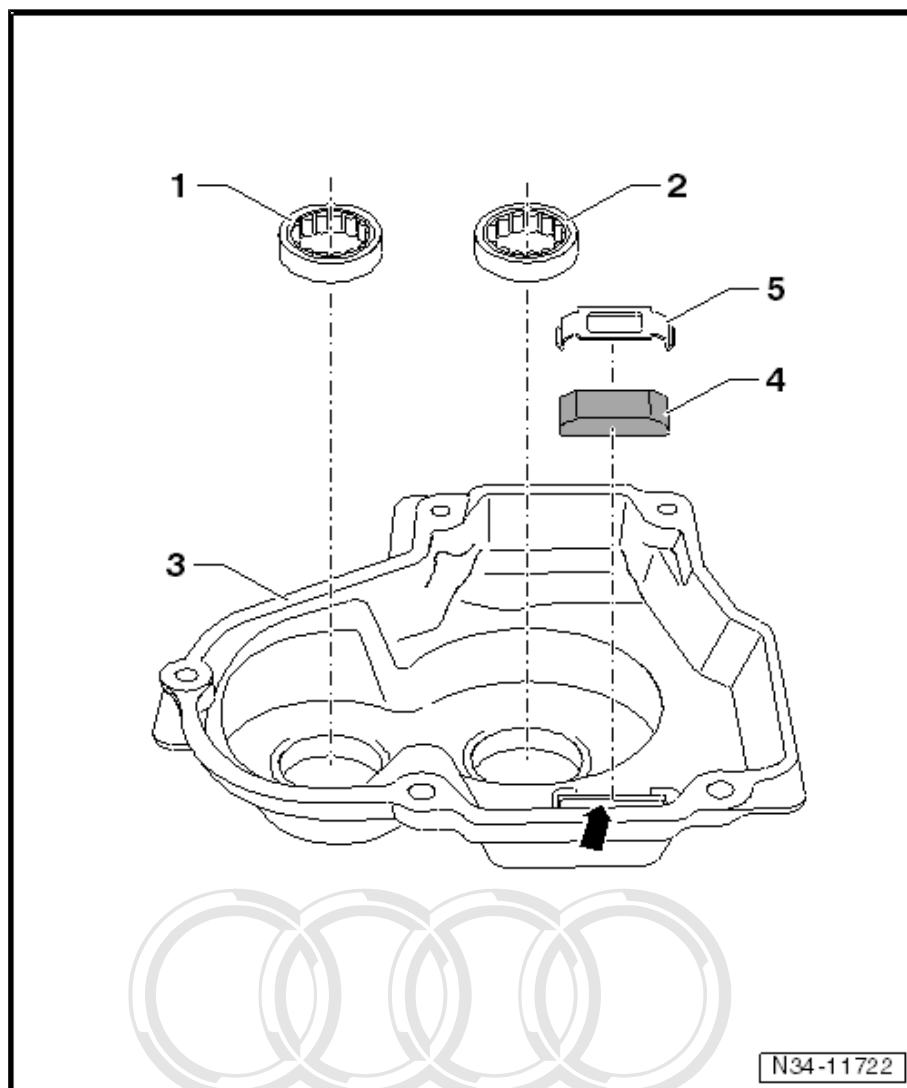
- ☐ Modified according to roller bearings on gearboxes manufactured from 21 08 6 onwards ➔ [page 182](#)

### 4 - Magnet

- ☐ From 11.2010 onwards
- ☐ Can only be fitted in a cover with a recess - arrow

### 5 - Clip

- ☐ Holds magnet in position

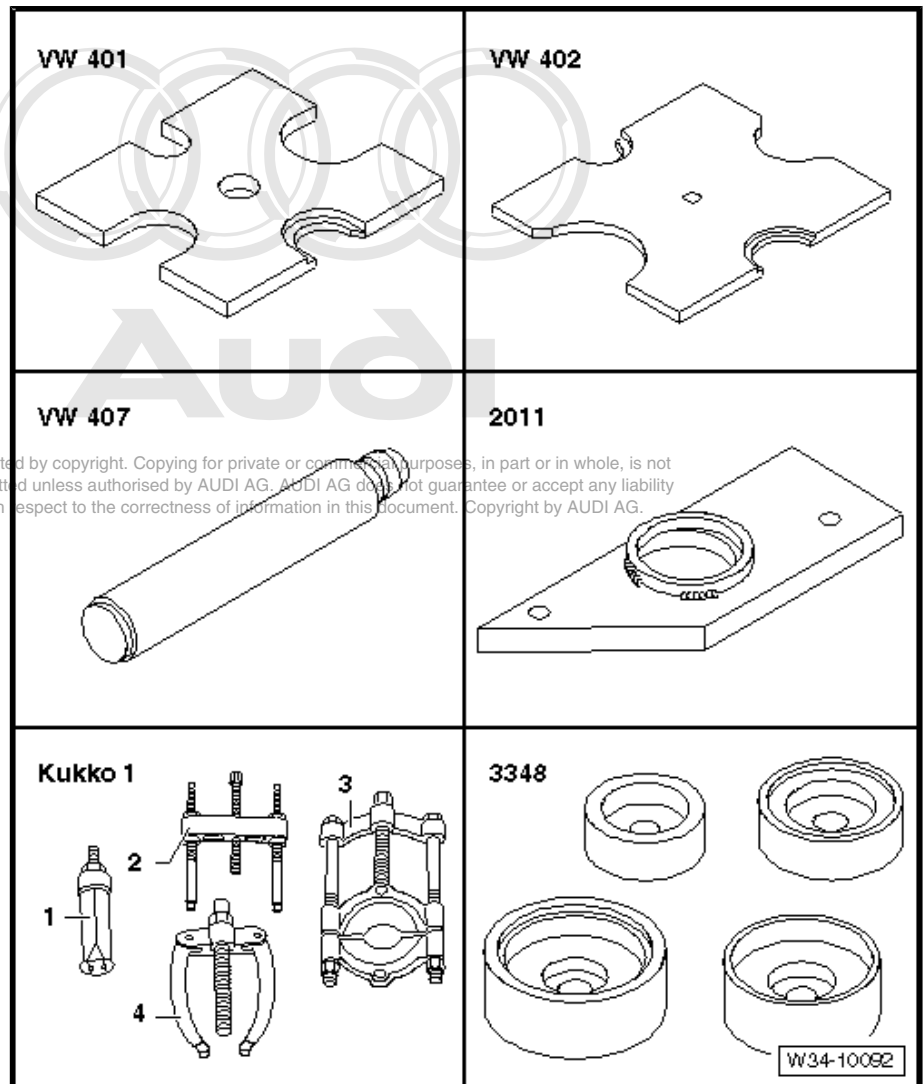


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## 8.1 Servicing gearbox housing cover

### Special tools and workshop equipment required

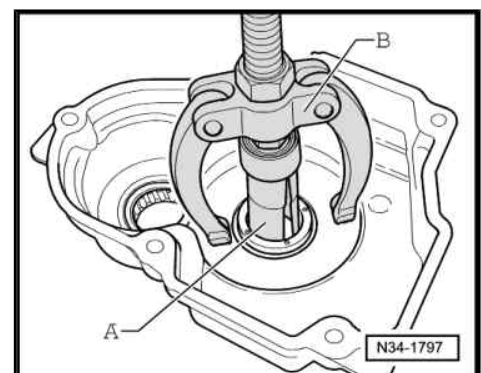
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 407-
- ◆ Support bridge -2011-
- ◆ -1- internal puller -Kukko 21/5-
- ◆ -4- Counter-support -Kukko 22/1-
- ◆ In addition for gearboxes manufactured from 21 08 6 onwards: assembly tool -3348/2-



### Pulling roller bearing out of gearbox housing cover

A - Internal puller 30 ... 37 mm , e.g. -Kukko 21/5-

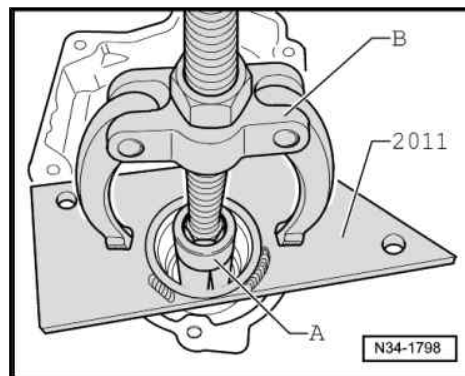
B - Counter-support , e.g. -Kukko 22/1-



### Pulling roller bearing out of gearbox housing cover

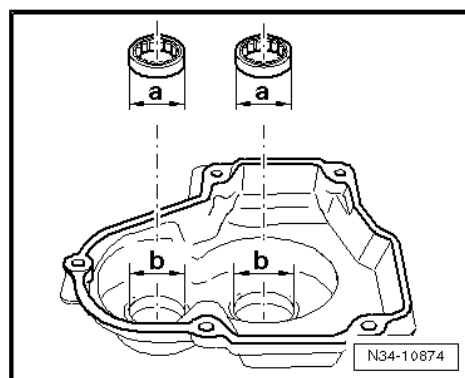
A - Internal puller 30 ... 37 mm , e.g. -Kukko 21/5-

B - Counter-support , e.g. -Kukko 22/1-



### Allocation of roller bearings

| Gearbox manufacturing date | Dimension „a“ (mm) | Dimension „b“ (mm) |
|----------------------------|--------------------|--------------------|
| Up to 20 08 6              | 43                 | 43                 |
| From 21 08 6 onwards       | 47                 | 47                 |



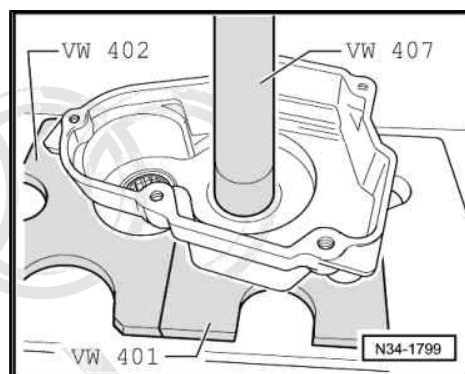
### Pressing roller bearings into gearbox housing cover on gearboxes manufactured up to 20 08 6

- Heat area round bearing seats in gearbox housing cover to approx. 100°C using hot air blower -V.A.G 1416- .
- Insert roller bearing after heating housing and push into position under workshop press until heat exchange has taken place.



#### Note

*Roller bearings must be pressed fully home into cover.*



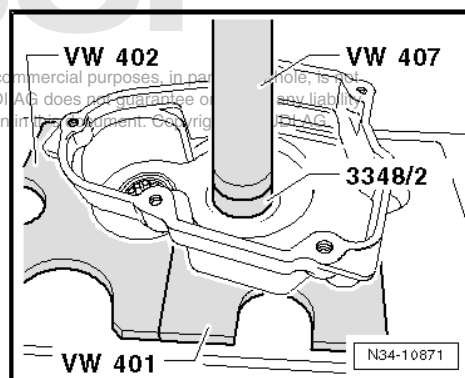
### Pressing roller bearings into gearbox housing cover on gearboxes manufactured from 21 08 6 onwards

- Heat area round bearing seats in gearbox housing cover to approx. 100°C using hot air blower -V.A.G 1416- .
- Insert roller bearing after heating housing and push into position under workshop press until heat exchange has taken place.

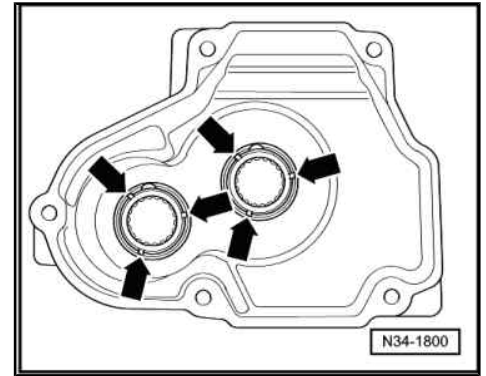


#### Note

*Roller bearings must be pressed fully home into cover.*



**Secure roller bearings in gearbox housing cover by peening  
-arrows-.**



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## 9 Exploded view - servicing selector unit

### 1 - Selector unit

- ☐ Consists of selector shaft and selector mechanism cover
- ☐ Components cannot be separated from each other
- ☐ Dismantling and assembling ⇒ [page 185](#)

### 2 - Reversing light switch -F4-

- ☐ 20 Nm
- ☐ Lightly coat lug with MoS<sub>2</sub> grease

### 3 - Locking pin

- ☐ For adjusting selector mechanism
- ☐ Removing ⇒ [page 185](#)
- ☐ Pressing in ⇒ [page 186](#)

### 4 - Gate relay lever

- ☐ Installation position ⇒ [page 79](#)
- ☐ Plastic version from model year 2008 onwards

### 5 - Bearing bush

- ☐ Not required for plastic gate relay lever

### 6 - Oil seal

- ☐ Lever out with screw-driver
- ☐ Installing ⇒ [page 186](#)

### 7 - Nut

- ☐ Tightening torque ⇒ [Item 18 \(page 77\)](#)
- ☐ Self-locking
- ☐ Always renew

### 8 - Gearbox selector lever

- ☐ Install so that gap in splines aligns with selector shaft ⇒ [page 186](#)
- ☐ Can be renewed with selector mechanism installed
- ☐ Installation position ⇒ [page 79](#)

### 9 - Cap

- ☐ For gearbox breather

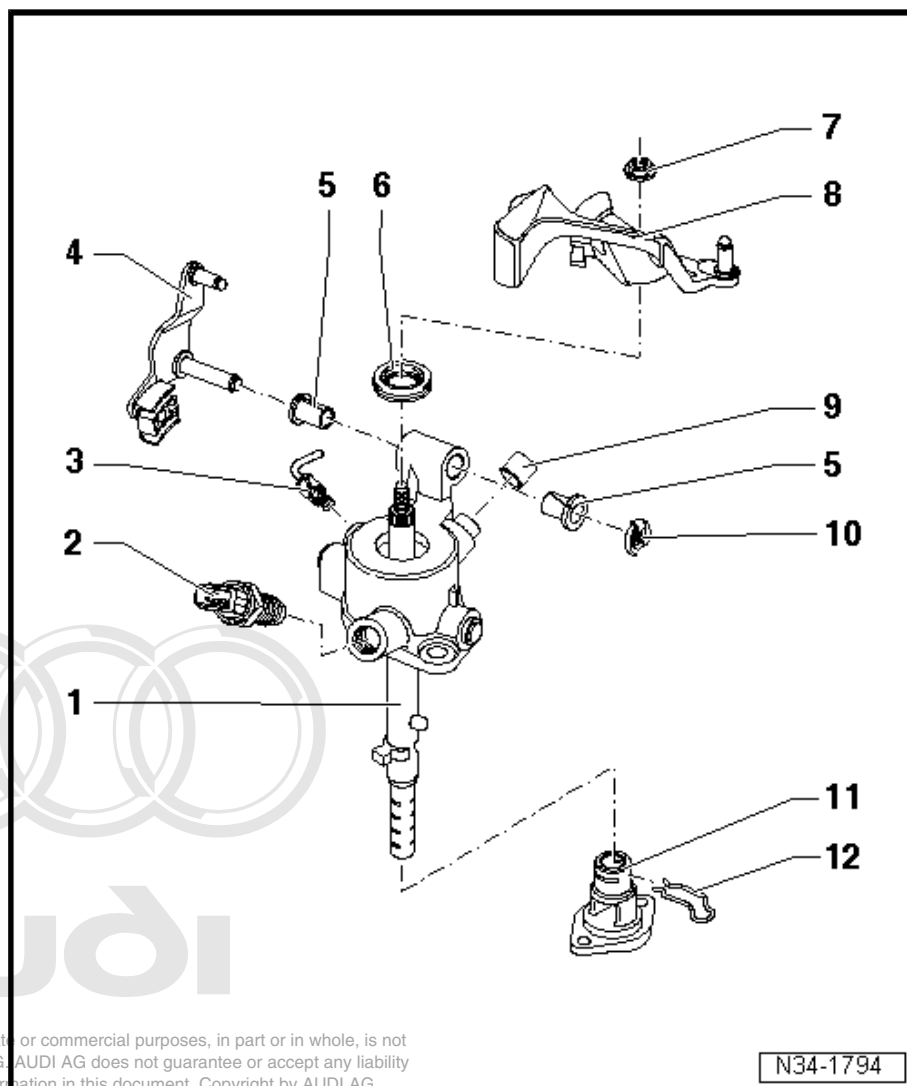
### 10 - Securing clip

- ☐ Not required for plastic gate relay lever

### 11 - Cover plate

### 12 - Spring

- ☐ Not fitted on all gearboxes

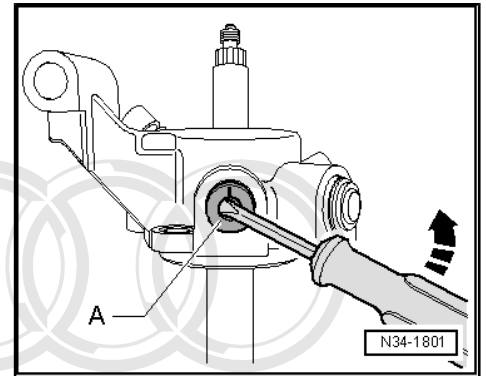
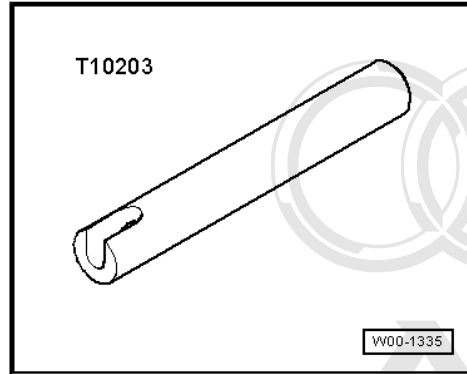


N34-1794

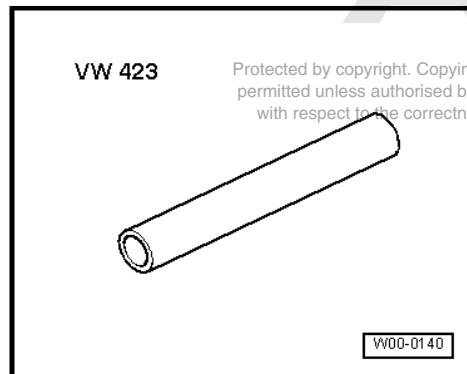
## 9.1 Dismantling and assembling selector unit

Special tools and work-shop equipment required

- ◆ Tube -T10203-



- ◆ Tube -VW 423-



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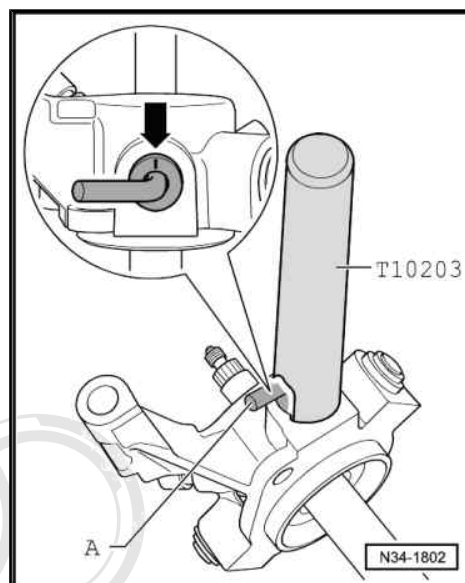
Removing locking pin  
-A- from selector mechanism cover

- Remove outer part of retaining pin.
- Then lever out locking pin carefully using a screwdriver.

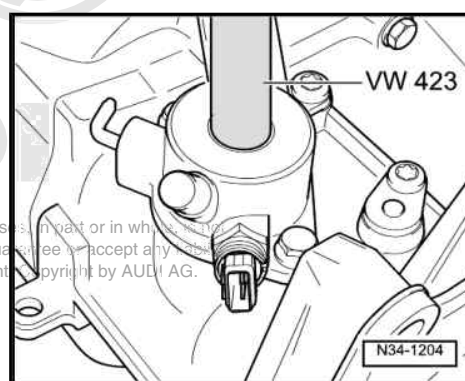
### Pressing locking pin -A- into selector mechanism cover

Installation position:

Marking -arrow- points to upper section of selector shaft.

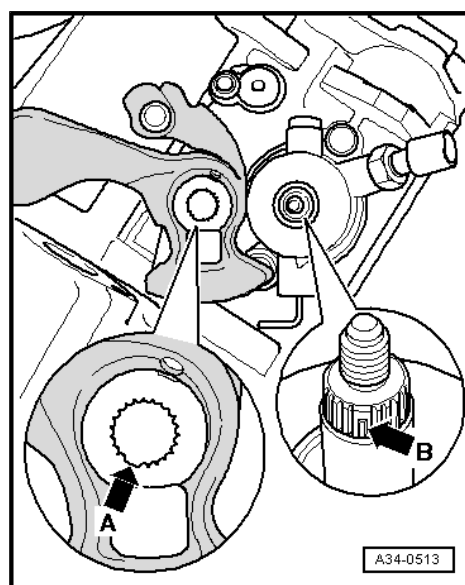


### Installing oil seal (insert onto stop)



### Installing gearbox selector lever

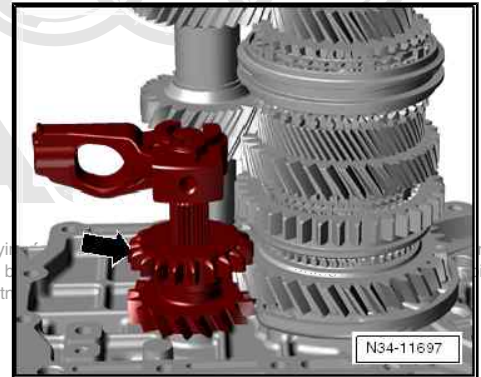
- When installing gearbox selector lever, make sure that the gap in the splines -arrow A- aligns with the wider spline -arrow B- on the selector shaft.



## 10 Exploded view - selector forks

- ◆ ⇒ „10.1 Exploded view - selector forks in conjunction with reverse selector gear arrow“, page 187
- ◆ ⇒ „10.2 Exploded view - selector forks in conjunction with locking collar for reverse gear arrow“, page 189
- ◆ ⇒ „10.3 Dismantling and assembling selector forks“, page 190

### 10.1 Exploded view - selector forks in conjunction with reverse selector gear -arrow-



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#### Note

*The selector fork cluster ( ⇒ Item 7 (page 188) ) does not have to be dismantled in order to remove and install detent segments, lock washers and angular contact ball bearings.*

# 1 - 5th/6th gear detent segment

- ☐ Identification ➤ [page 191](#)
- ☐ Detent segment should turn freely after lock washer is installed

# 2 - Lock washer

- ☐ Always renew
- ☐ Removing ➤ [page 192](#)
- ☐ Installing ➤ [page 192](#)

# 3 - 5th/6th gear selector fork

# 4 - Bolt

- ☐ 25 Nm

# 5 - 5th/6th gear selector jaw

# 6 - Angular contact ball bearing

- ☐ 4x
- ☐ Removing ➤ [page 192](#)
- ☐ Pressing inner race into outer race ➤ [page 192](#)
- ☐ Installing ➤ [page 193](#)

# 7 - Selector fork cluster with selector plates

# 8 - 1st/2nd gear detent segment

- ☐ Identification ➤ [page 191](#)
- ☐ The segment must rotate freely after installing the lock washer

# 9 - 3rd/4th gear detent segment

- ☐ Identification ➤ [page 191](#)
- ☐ The segment must rotate freely after installing the lock washer

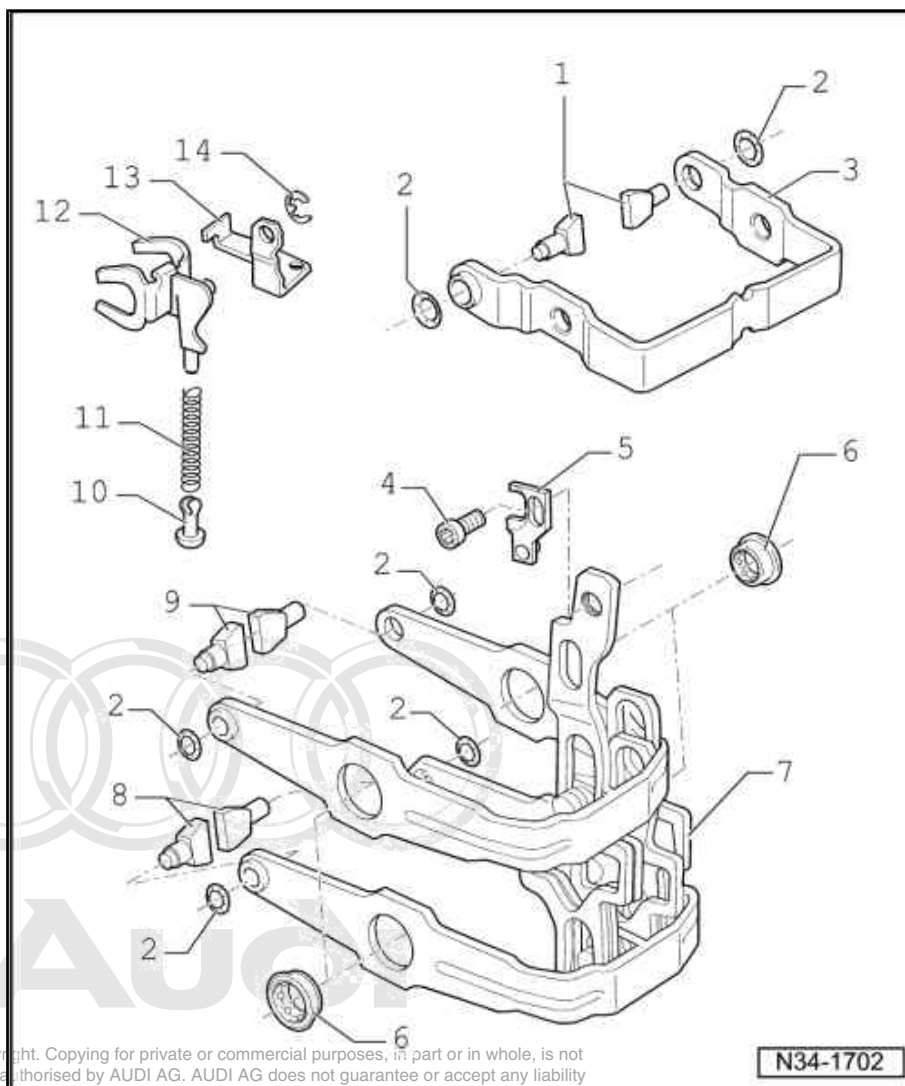
# 10 - Sliding piece

# 11 - Spring

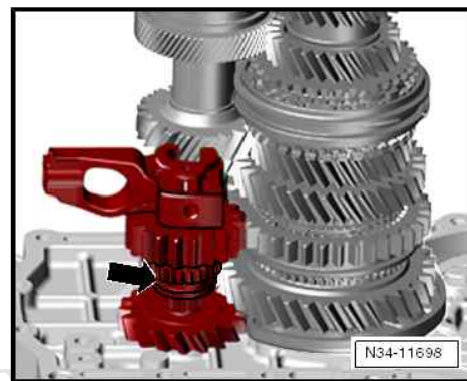
# 12 - Reverse gear selector fork

# 13 - Support for reverse gear selector fork

# 14 - Circlip



## 10.2 Exploded view - selector forks in conjunction with locking collar for reverse gear -arrow-



### Note

The selector fork cluster ( ⇒ [Item 7 \(page 189\)](#) ) does not have to be dismantled in order to remove and install detent segments, lock washers and angular contact ball bearings.

#### 1 - 5th/6th gear detent segment

- ☐ Identification ⇒ [page 191](#)
- ☐ Detent segment should turn freely after lock washer is installed

#### 2 - Lock washer

- ☐ Always renew
- ☐ Removing ⇒ [page 192](#)
- ☐ Installing ⇒ [page 192](#)

#### 3 - 5th/6th gear selector fork

#### 4 - Bolt

- ☐ 25 Nm

#### 5 - 5th/6th gear selector jaw

#### 6 - Angular contact ball bearing

- ☐ 4x
- ☐ Removing ⇒ [page 192](#)
- ☐ Pressing inner race into outer race ⇒ [page 192](#)
- ☐ Installing ⇒ [page 193](#)

#### 7 - Selector fork cluster with selector plates

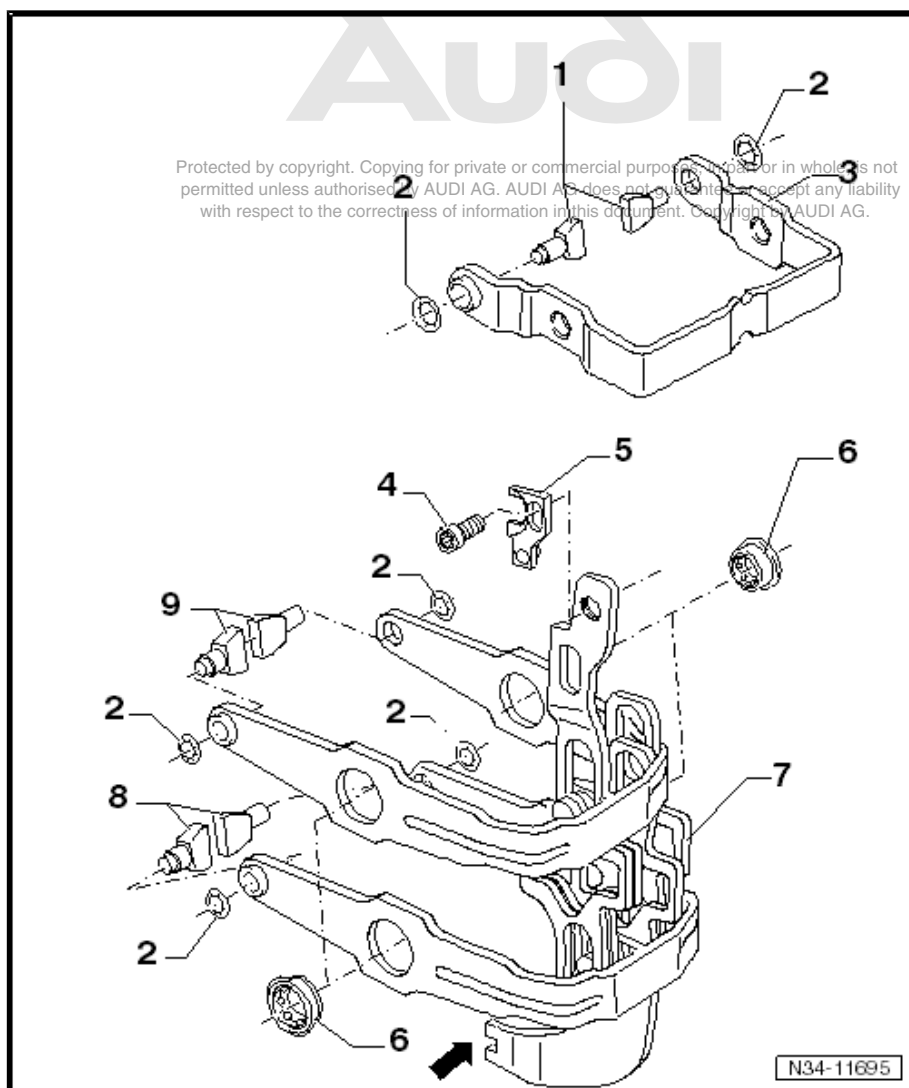
- ☐ With selector plate for reverse gear selector mechanism -arrow-

#### 8 - 1st/2nd gear detent segment

- ☐ Identification ⇒ [page 191](#)
- ☐ The segment must rotate freely after installing the lock washer

#### 9 - 3rd/4th gear detent segment

- ☐ Identification ⇒ [page 191](#)

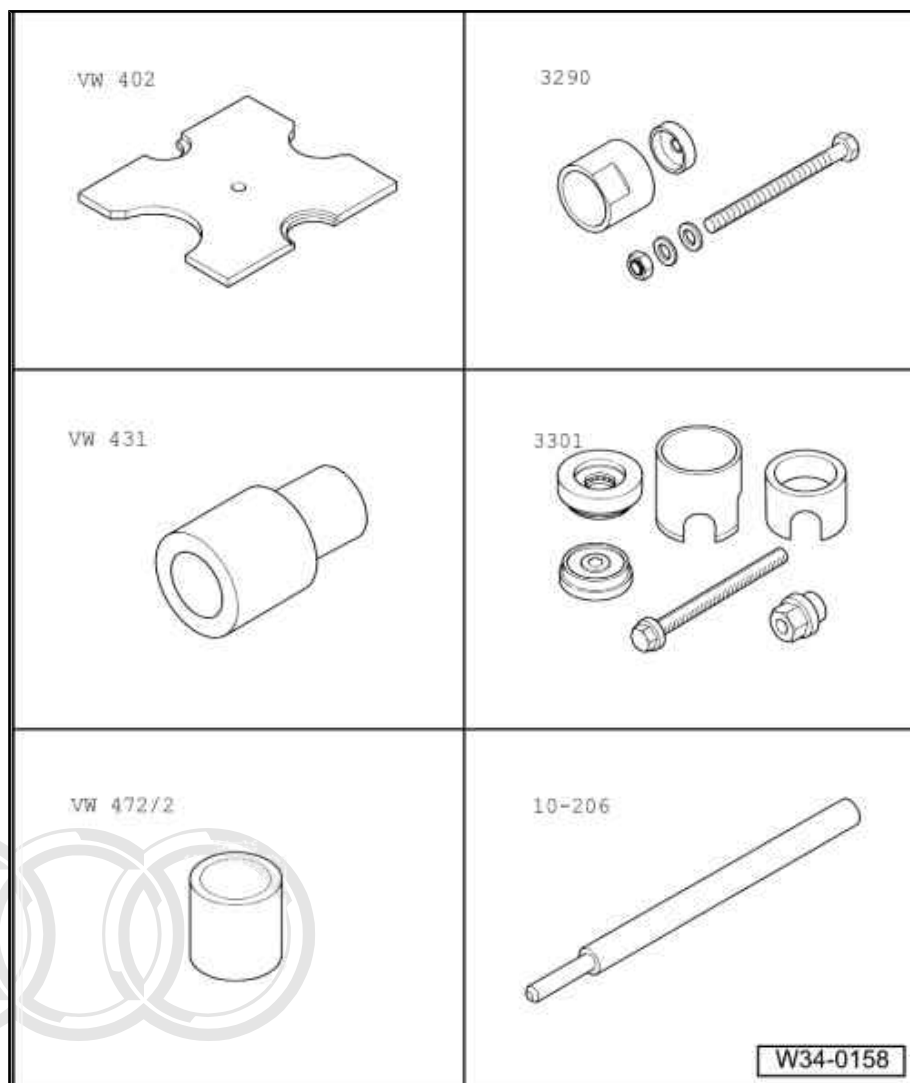


- ❑ The segment must rotate freely after installing the lock washer

## 10.3 Dismantling and assembling selector forks

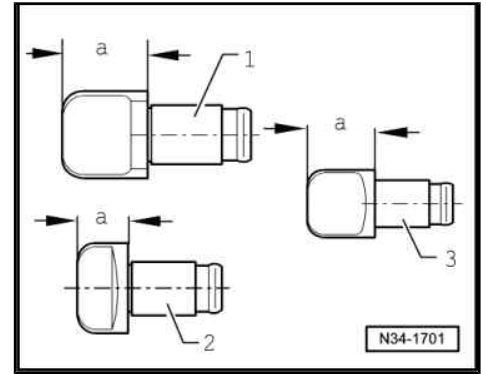
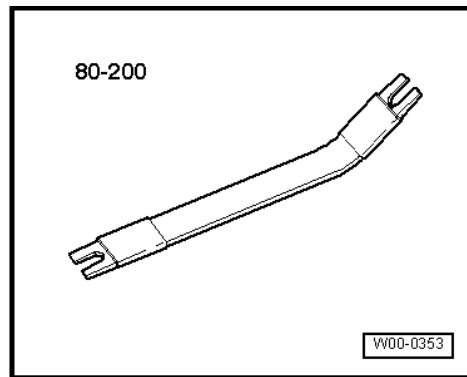
### Special tools and workshop equipment required

- ◆ Thrust plate -VW 402-
- ◆ Thrust piece -3290/1-
- ◆ Thrust piece -VW 431-
- ◆ Assembly tool -3301-
- ◆ Spacer sleeve -VW 472/2-
- ◆ Drift -10 - 206-

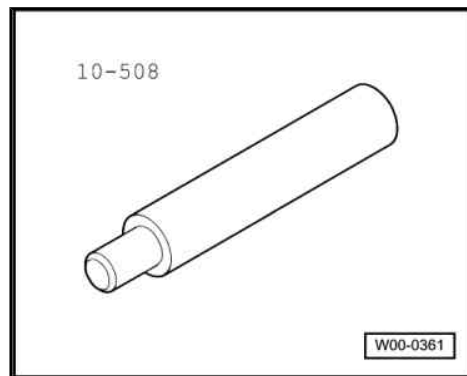


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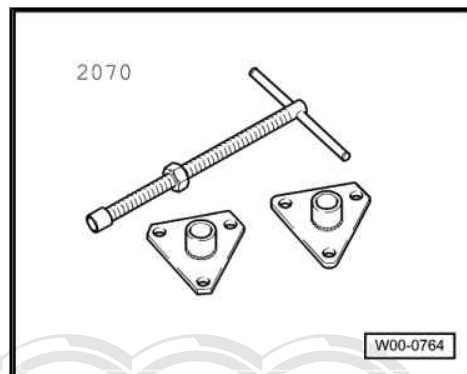
- ◆ Removal lever -80-200-



- ◆ Assembly mandrel -10 - 508-



- ◆ Tensioning device -2070-



### Identification of detent segments

#### Dimension -a-

1 - Detent segments, 1st/  
2nd gear = 11.4 mm

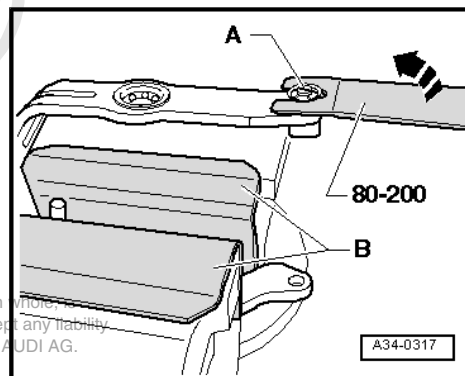
2 - Detent segments,  
3rd/4th gear = 7.7 mm

3 - 5th/6th gear detent  
segments = 12.1 mm

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## Removing lock washer

- Secure selector fork in vice with protective jaw covers -B-.
- Lever off lock washer -A- in direction of -arrow-.



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## Installing lock washer

- Push lock washer into groove in detent segment using socket driver.

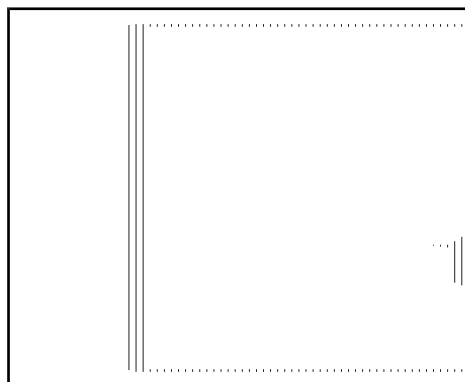


### Note

*Detent segment should turn freely after lock washer is installed.*

-A-- Socket driver, 10 mm

-B-- Protective jaw covers

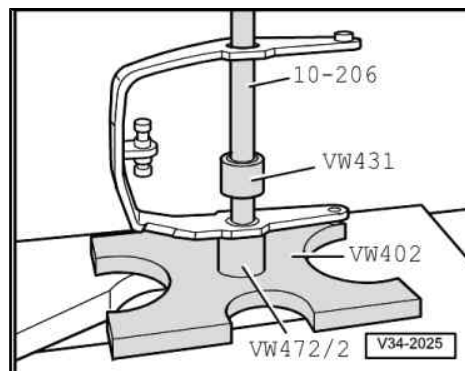


## Removing angular contact ball bearing



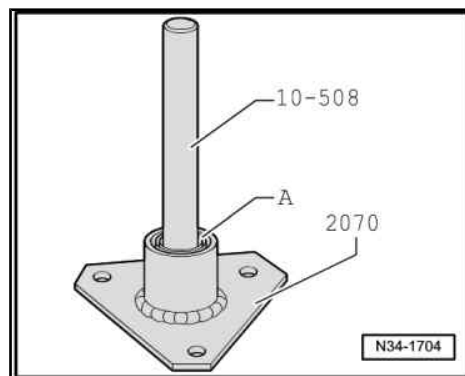
### Note

*Do not bend selector forks when removing and installing the ball bearing.*



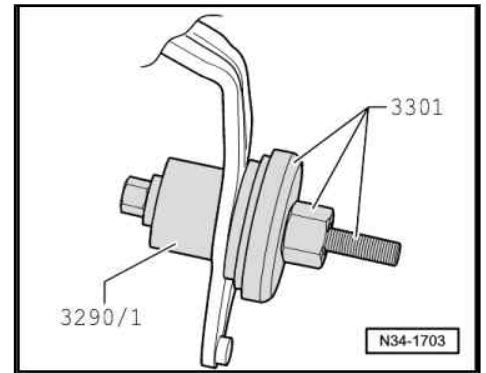
## Pressing inner race -A- of angular contact ball bearing into outer race

Inner race must engage positively in outer race.



**Pulling angular contact ball bearing into selector fork (insert onto stop)**

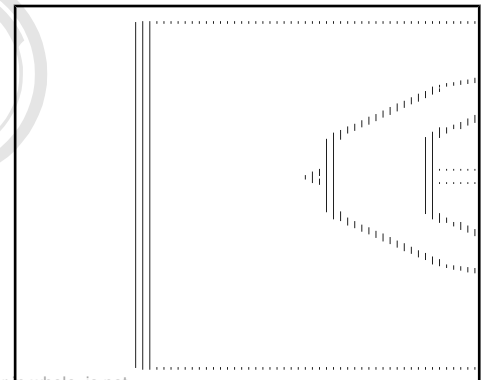
Recess in thrust piece -3290/1- points towards ball bearing.



**Selector forks with detent segments installed**

|                            | Dimension -a- (mm) |
|----------------------------|--------------------|
| 1st/2nd gear selector fork | 87.2 ... 87.4      |
| 3rd/4th gear selector fork | 93.6 ... 93.8      |

For identification of detent segments ⇒ [page 191](#)



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## 35 – Gears, shafts

### 1 Input shaft

- ◆ ⇒ „1.1 Exploded view - input shaft“, page 194
- ◆ ⇒ „1.2 Dismantling and assembling input shaft“, page 197
- ◆ ⇒ „1.3 Adjusting input shaft“, page 203

#### 1.1 Exploded view - input shaft



#### Note

- ◆ Refer to general repair instructions ⇒ [page 6](#) .
- ◆ Refer to technical data ⇒ [page 1](#) and ⇒ Electronic parts catalogue when installing new gear wheels or a new input shaft.
- ◆ The input shaft must be re-adjusted if the position of tapered roller bearings is affected when renewing parts. Refer to table of adjustments ⇒ [page 244](#) .

#### 1 - Clutch housing

#### 2 - Tapered roller bearing outer race

- ☐ Pressing out  
⇒ [page 199](#)
- ☐ Pressing in  
⇒ [page 199](#)

#### 3 - Tapered roller bearing inner race

- ☐ Pressing off  
⇒ [page 199](#)
- ☐ Pressing on  
⇒ [page 200](#)

#### 4 - Input shaft

- ☐ Adjusting ⇒ [page 203](#)

#### 5 - 3rd gear wheel

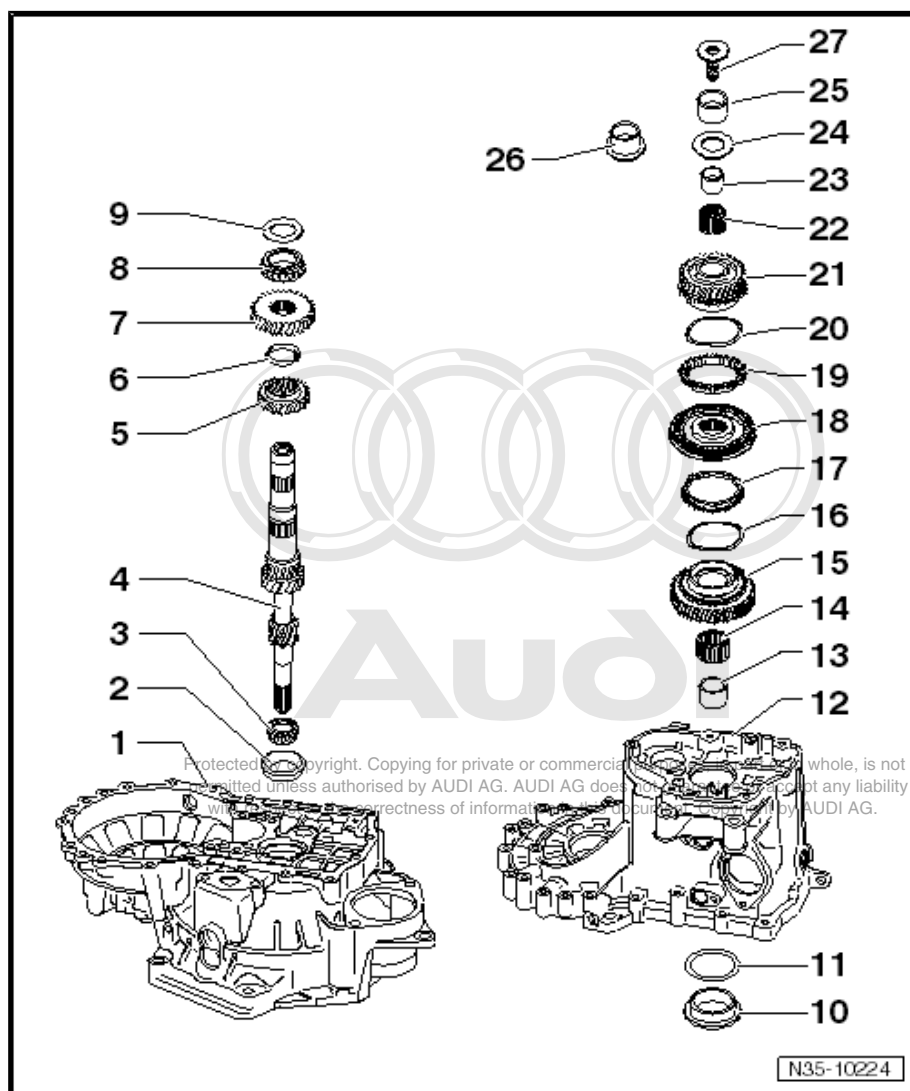
- ☐ Installation position:  
Collar faces 4th gear
- ☐ Pressing off  
⇒ [page 200](#)
- ☐ Pressing on  
⇒ [page 200](#)

#### 6 - Circlip

- ☐ Always renew

#### 7 - 4th gear wheel

- ☐ Pressing off with tapered roller bearing outer race and sleeve  
⇒ [page 200](#)
- ☐ Pressing on  
⇒ [page 201](#)
- ☐ Installation position:  
Collar faces 3rd gear



## 8 - Tapered roller bearing inner race

- ☐ Pressing off with 4th gear wheel and sleeve ➔ [page 200](#)
- ☐ Pressing on ➔ [page 201](#)

## 9 - Thrust washer

## 10 - Tapered roller bearing outer race

- ☐ Pressing out ➔ [page 201](#)
- ☐ Pressing in ➔ [page 202](#)

## 11 - Shim

- ☐ Determining thickness ➔ [page 203](#)

## 12 - Gearbox housing

## 13 - Sleeve

- ☐ For 5th gear needle bearing
- ☐ Press off with 4th gear wheel and tapered roller bearing inner race ➔ [page 200](#)
- ☐ Pressing on ➔ [page 201](#)
- ☐ Fit thrust washer ➔ [Item 9 \(page 195\)](#) before installing

## 14 - Needle bearing

- ☐ For 5th gear

## 15 - 5th speed selector gear

## 16 - Corrugated spring washer

- ☐ Gearboxes manufactured from 26.05.8 onwards
- ☐ On this version, install only springs for locking pieces which do not have angled ends (as shown in ➔ [page 202](#) - item 1-)
- ☐ Select correct version from ➔ Electronic parts catalogue

## 17 - 5th gear synchro-ring

- ☐ With cast locking pieces ➔ [page 169](#)
- ☐ Checking for wear ➔ [page 169](#)

## 18 - Locking collar with synchro-hub for 5th and 6th gear

- ☐ Pulling off individually ➔ [page 148](#)
- ☐ Pulling off together with gearbox housing ➔ [page 154](#)
- ☐ Dismantling and assembling ➔ [page 202](#) and ➔ [page 203](#)
- ☐ Locking collar modified on gearboxes manufactured from 12.06.6 onwards ➔ [page 202](#)
- ☐ Adjusting on gearboxes manufactured up to 11.06.6 ➔ [page 172](#)
- ☐ Adjusting on gearboxes manufactured from 12.06.6 onwards ➔ [page 173](#)
- ☐ Installing offset springs for locking pieces ➔ [page 203](#)

## 19 - 6th gear synchro-ring

- ☐ With cast locking pieces ➔ [page 169](#)
- ☐ Checking for wear ➔ [page 169](#)

## 20 - Corrugated spring washer

- ☐ Gearboxes manufactured from 26.05.8 onwards
- ☐ On this version, install only springs for locking pieces which do not have angled ends (as shown in ➔ [page 202](#) - item 1-)
- ☐ Select correct version from ➔ Electronic parts catalogue

## 21 - 6th speed selector gear

- ☐ Modified according to sleeve and needle bearing on gearboxes manufactured from 21.08.6 onwards
- ☐ Select correct components from ➔ Electronic parts catalogue

## 22 - Needle bearing

- ☐ For 6th gear



- ☐ Renew together with sleeve
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Select correct components from ⇒ Electronic parts catalogue

#### 23 - Sleeve

- ☐ For 6th gear needle bearing
- ☐ Renew together with needle bearing
- ☐ Larger diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Select correct components from ⇒ Electronic parts catalogue

#### 24 - Thrust washer

- ☐ On gearboxes manufactured up to 20 08 6

#### 25 - Roller bearing inner race

- ☐ Allocation ⇒ [page 144](#)
- ☐ On gearboxes manufactured up to 20 08 6
- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for output shaft

#### 26 - Roller bearing inner race with thrust washer

- ☐ Allocation ⇒ [page 144](#)
- ☐ For input shaft
- ☐ On gearboxes manufactured from 21 08 6 onwards

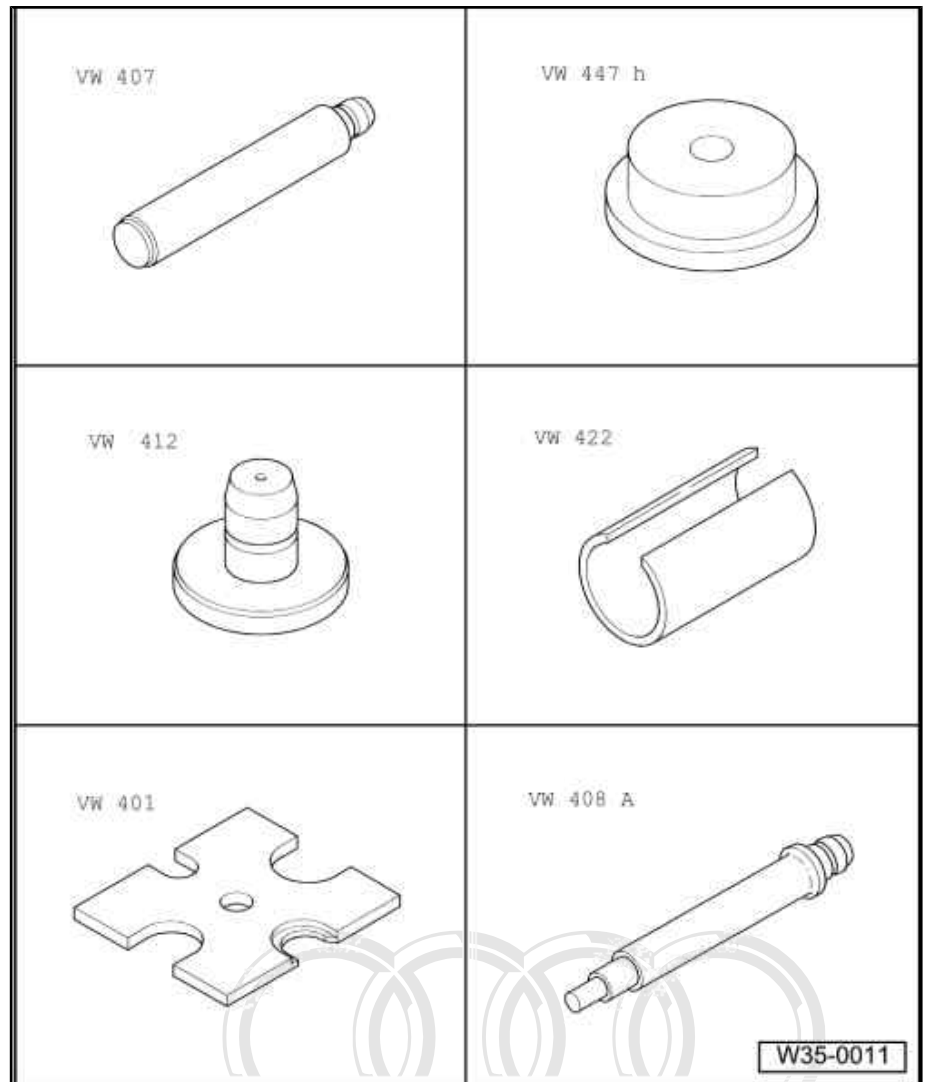
#### 27 - Bolt

- ☐ Tightening torque ⇒ [Item 9 \(page 143\)](#)
- ☐ For input shaft
- ☐ Allocation of bolts ⇒ [page 144](#)
- ☐ Self-locking
- ☐ Always renew
- ☐ Use thread tap to remove any remaining locking fluid from threaded holes for bolts securing 5th/6th gear synchro-hub and 6th gear wheel. Otherwise there is a risk that the bolts will shear off

## 1.2 Dismantling and assembling input shaft

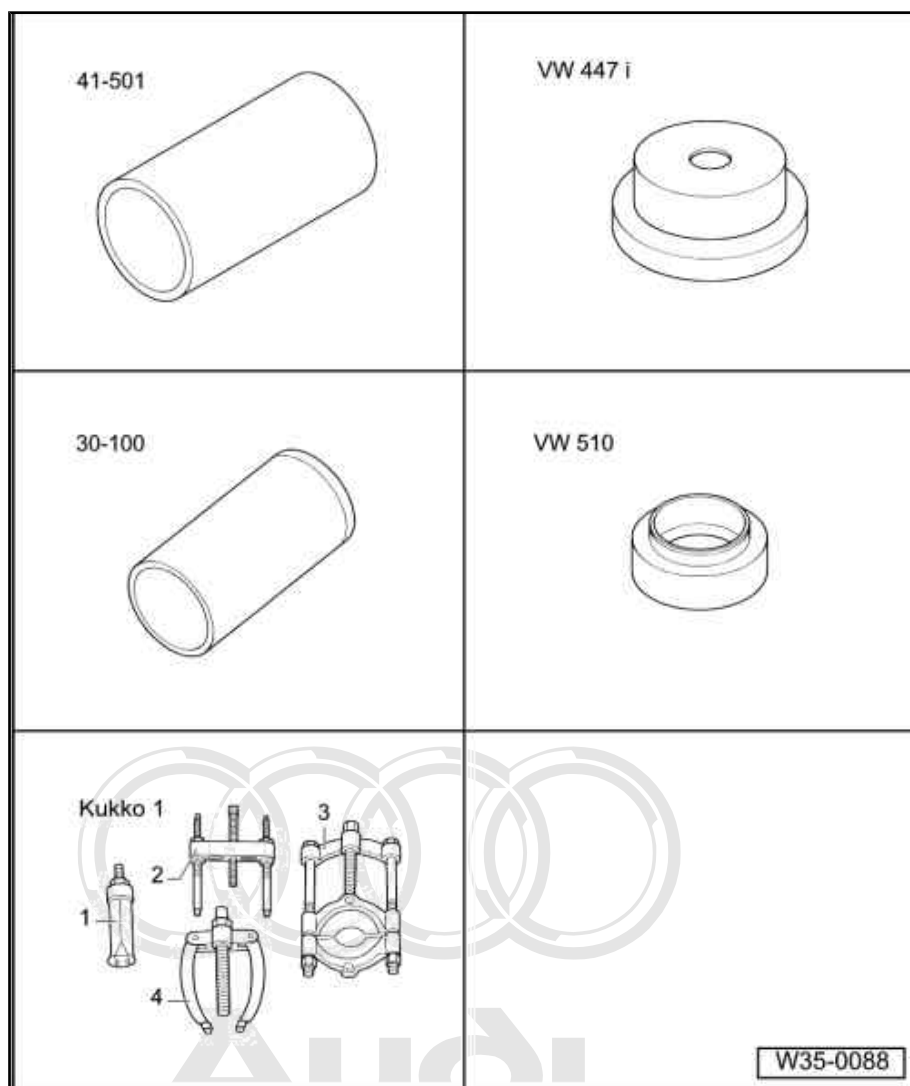
### Special tools and workshop equipment required

- ◆ Press tool -VW 407-
- ◆ Thrust plate -VW 447 H-
- ◆ Press tool -VW 412-
- ◆ Tube -VW 422-
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 408 A-



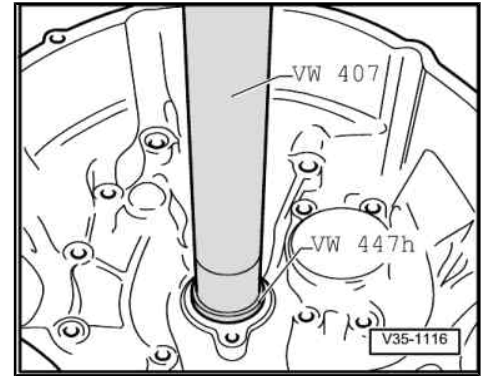
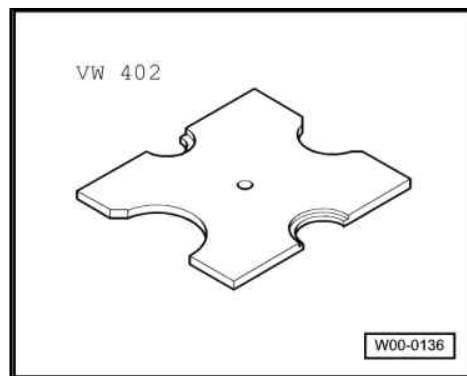
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- ◆ Drift sleeve -41 - 501-
- ◆ Thrust plate -VW 447 i-
- ◆ Drift sleeve -30 - 100-
- ◆ Thrust pad -VW 510-
- ◆ -3- Splitter -Kukko 17/1-

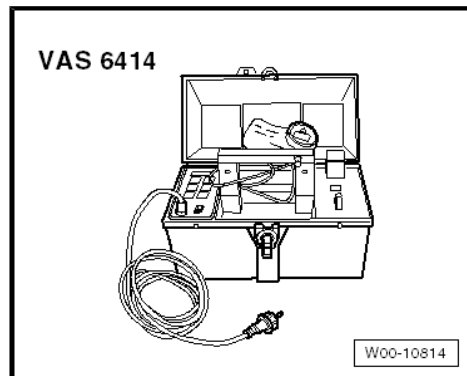


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- ◆ Thrust plate -  
VW 402-

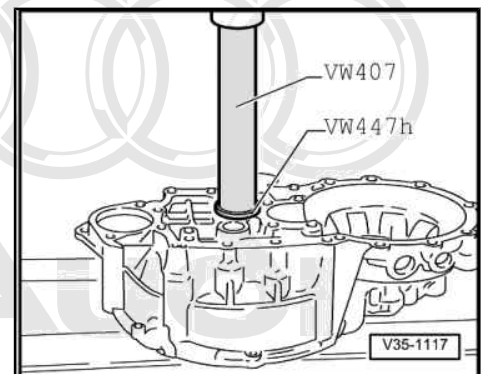


- ◆ Inductive heater -  
VAS 6414-



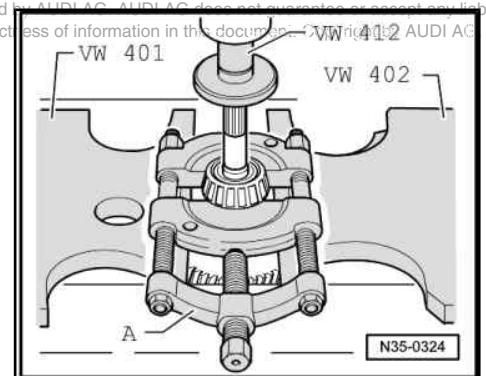
**Pressing out tapered  
roller bearing outer race**

**Pressing in tapered roller bearing outer race**



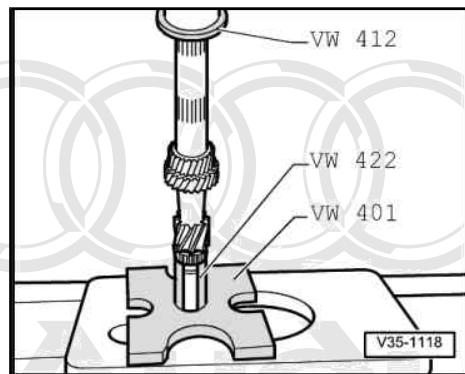
**Pressing off tapered roller bearing inner race**

**A - Splitter 12 ... 75 mm -Kukko 17/1-**



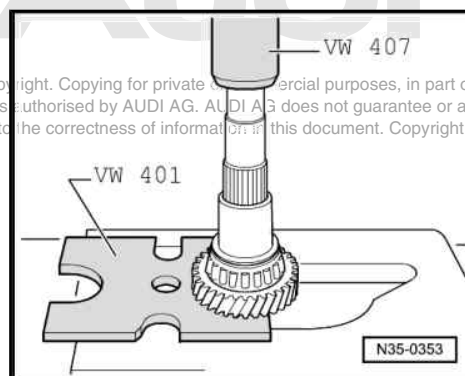
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### Pressing on tapered roller bearing inner race



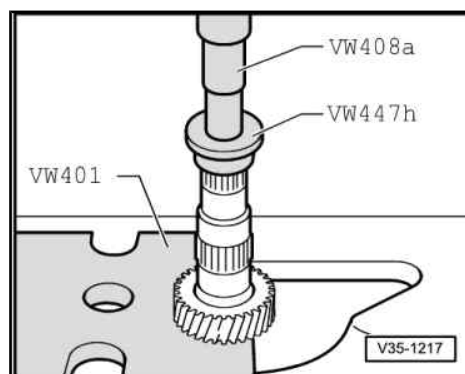
### Pressing off 4th gear wheel with tapered roller bearing and sleeve

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### Pressing off 3rd gear wheel

- First remove circlip.



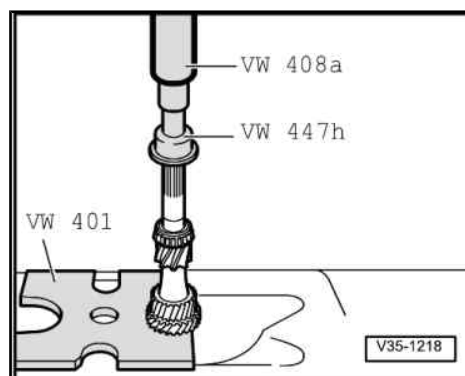
### Heat 3rd gear wheel and press on.



#### WARNING

*Wear protective gloves.*

Shoulder faces towards 4th gear.



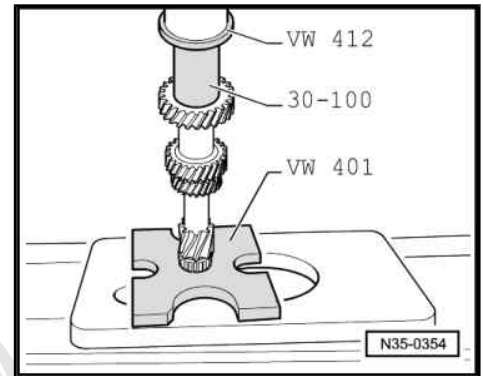
Heat 4th gear wheel and press on.



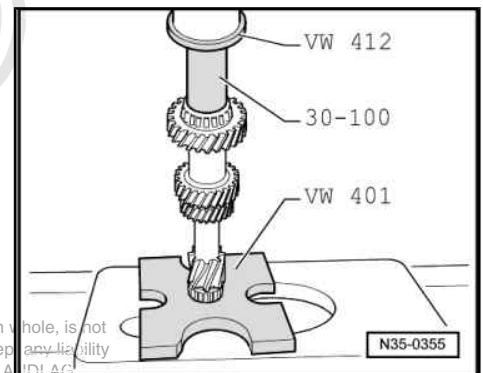
**WARNING**

*Wear protective gloves.*

Shoulder faces towards 3rd gear.

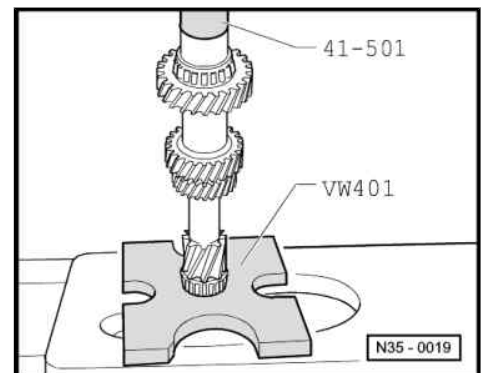


Pressing on tapered roller bearing inner race

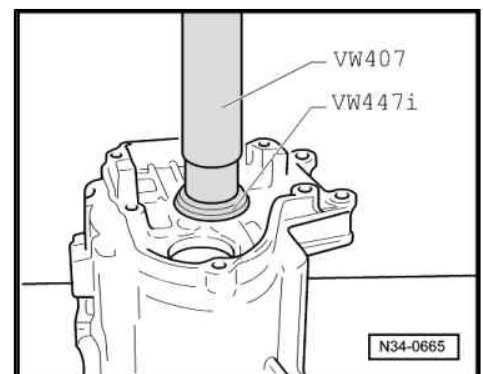


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Pressing on sleeve for 5th gear needle bearing

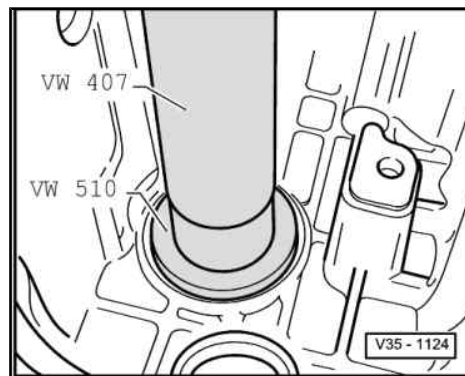


Pressing out tapered roller bearing outer race



### Pressing in tapered roller bearing outer race

- Install with shim after adjusting input shaft.



On gearboxes manufactured from 12 06 6 onwards, deeper recesses in 5th/6th gear locking collar on both sides -arrows-

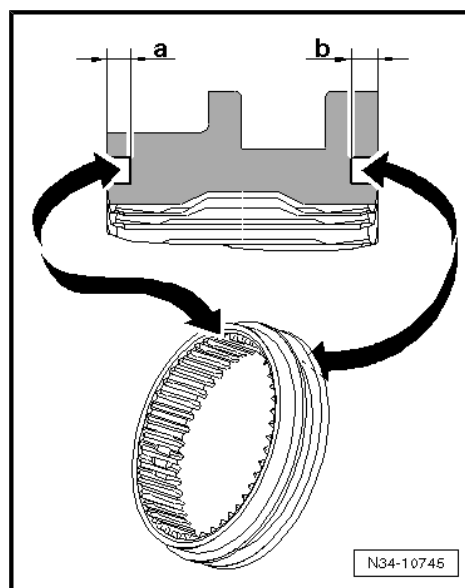
| Dimension -a-<br>(6th gear side) | On gearboxes manufactured up to<br>11 06 6 | On gearboxes manufactured from 12 06 6<br>onwards |
|----------------------------------|--------------------------------------------|---------------------------------------------------|
|                                  | 1.5 mm                                     | 1.8 mm                                            |

| Dimension -b-<br>(5th gear side) | On gearboxes manufactured up to<br>11 06 6 | On gearboxes manufactured from 12 06 6<br>onwards |
|----------------------------------|--------------------------------------------|---------------------------------------------------|
|                                  | 1.5 mm                                     | 2.0 mm                                            |

- Refer to ➔ Electronic parts catalogue to allocate locking collar and 5th/6th gear synchro-hub.

**Modified adjustment procedure on 5th/6th gears due to the deeper recesses:**

- Adjusting 5th/6th gear on gearboxes manufactured up to 11 06 6 ➔ [page 172](#)
- Adjusting 5th/6th gear on gearboxes manufactured from 12 06 6 onwards ➔ [page 173](#)

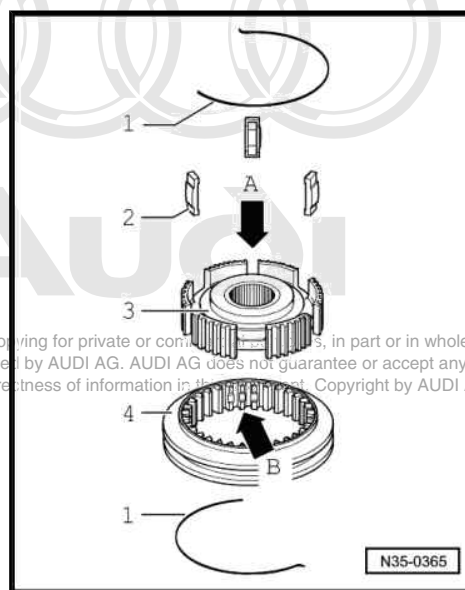


### Dismantling and assembling 5th/6th gear locking collar and synchro-hub

- 1 - Spring
- 2 - Locking piece
- 3 - Synchro-hub
- 4 - Locking collar

- Slide locking collar over synchro-hub.

The deeper recesses -arrow A- for the locking pieces in the synchro-hub must align with the recesses -arrow B- in the locking collar.



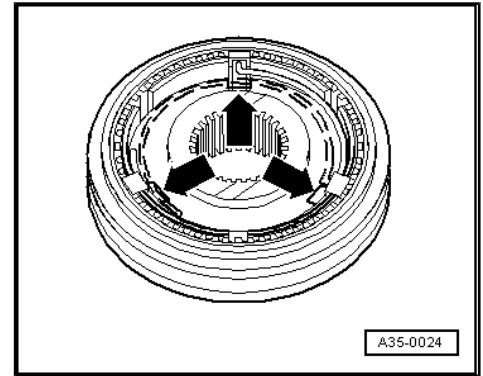
### Assembling 5th/6th gear locking collar/synchro-hub

- Locking collar is pushed over synchro-hub.
- Insert locking pieces in the deeper recesses -arrows- and install springs 120° off-set. Angled end of spring must locate in hollow locking piece.



#### Note

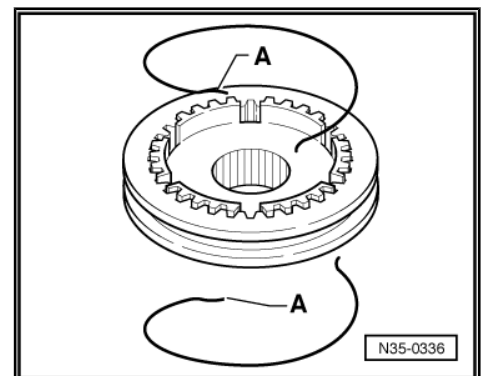
- ◆ On gearboxes manufactured from 26 05 8 onwards one corrugated spring washer is fitted below 5th gear synchro-ring and one above 6th gear synchro-ring ⇒ [Item 16 \(page 195\)](#) and ⇒ [Item 20 \(page 195\)](#) .
- ◆ On this version, install only springs for locking pieces which do not have angled ends (as shown in ⇒ [page 202](#) - item 1-)



### Installing offset springs -A-

This type of spring is fitted on both sides.

- The springs are only used together with hollow locking pieces (with internal recess).
- Fit locking pieces.

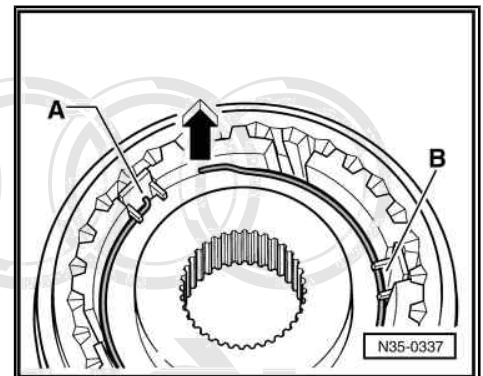


Installation position of springs:

- Insert springs offset by 120°.
- Angled end -A- of spring must locate in hollow locking piece.

Spring must be fitted under lug -B- of locking pieces.

The offset end must always point away from synchro-hub (in direction of -arrow-).



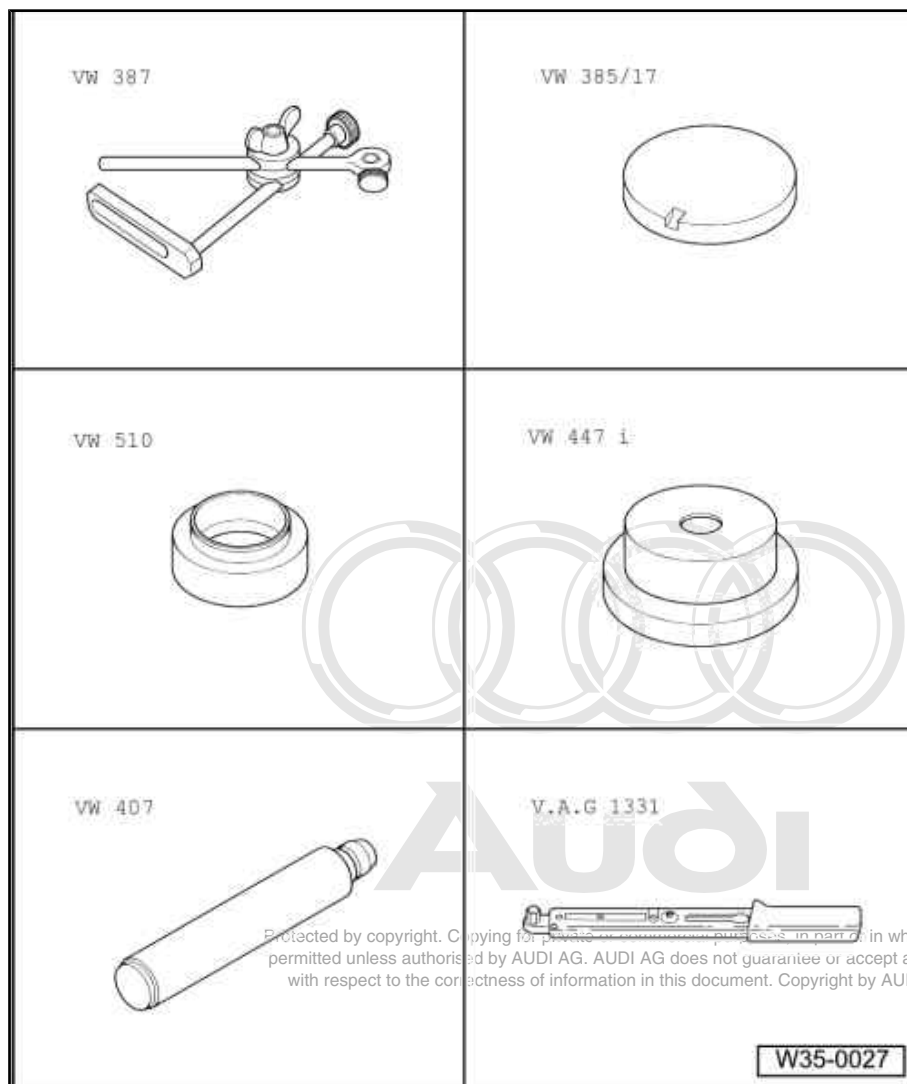
## 1.3 Adjusting input shaft

(Determining thickness of shim for input shaft)

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### Special tools and workshop equipment required

- ◆ Universal dial gauge bracket -VW 387-
- ◆ End measuring plate - VW 385/17-
- ◆ Thrust pad -VW 510-
- ◆ Thrust plate -VW 447 i-
- ◆ Press tool -VW 407-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Dial gauge



### Procedure

The input shaft must be re-adjusted when the following components are renewed:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Input shaft
- ◆ 4th gear wheel

or the

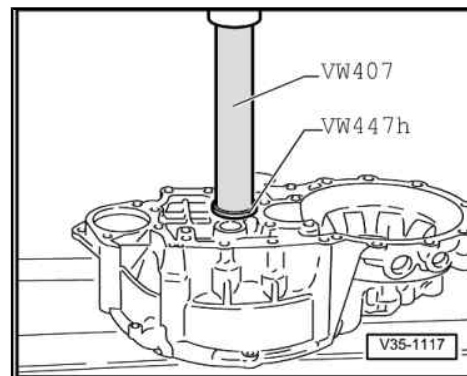
- ◆ Tapered roller bearings for input shaft

Table of adjustments ➔ [page 244](#)

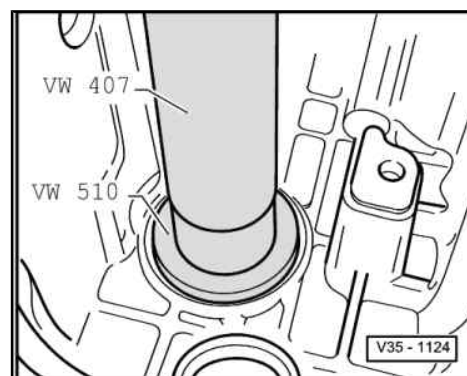
### Requirement:

- Sealing surfaces of clutch and gearbox housings must be free of sealant.

- Press tapered roller bearing outer race without shim onto stop in clutch housing.



- Press tapered roller bearing outer race without shim onto stop in gearbox housing.
- Install input shaft in clutch housing and put on gearbox housing. Tighten hexagon bolts to 25 Nm.

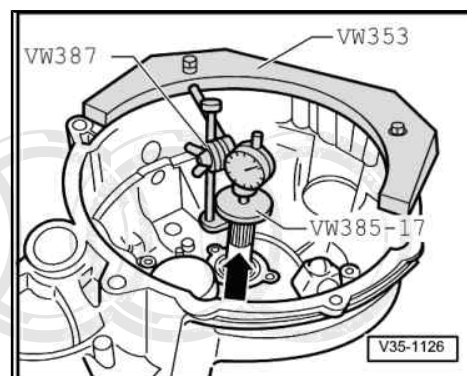


- Fit measuring appliance and dial gauge in clutch housing.
- Before measurement, rotate input shaft to allow tapered roller bearings to settle. Preload dial gauge to 1 mm and set to „0“.



#### Note

*This procedure must be repeated for each subsequent measurement, as otherwise the dial gauge will not return to its original setting.*



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- Push input shaft towards dial gauge in direction of -arrow-.
- Read off and note play indicated on dial gauge (in this example: 1.21 mm).



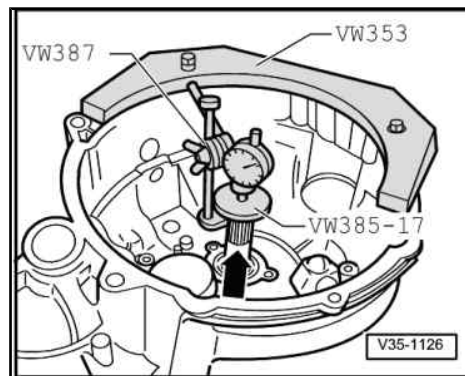
#### Note

*Dial gauge does not return to original setting by itself.*

**Determine thickness of shim.**

**Example:**

| Bearing clearance (measured value) | Thickness of shim according to table |
|------------------------------------|--------------------------------------|
| 1.21 mm                            | 1.175 mm                             |



# Audi

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**Table of shims**

| Bearing clearance   | Shim           |
|---------------------|----------------|
| Measured value (mm) | Thickness (mm) |
| 0.671 ... 0.699     | 0.650          |
| 0.700 ... 0.724     | 0.675          |
| 0.725 ... 0.749     | 0.700          |
| 0.750 ... 0.774     | 0.725          |
| 0.775 ... 0.799     | 0.750          |
| 0.800 ... 0.824     | 0.775          |
| 0.825 ... 0.849     | 0.800          |
| 0.850 ... 0.874     | 0.825          |
| 0.875 ... 0.899     | 0.850          |
| 0.900 ... 0.924     | 0.875          |
| 0.925 ... 0.949     | 0.900          |
| 0.950 ... 0.974     | 0.925          |
| 0.975 ... 0.999     | 0.950          |
| 1.000 ... 1.024     | 0.975          |
| 1.025 ... 1.049     | 1.000          |
| 1.050 ... 1.074     | 1.025          |
| 1.075 ... 1.099     | 1.050          |
| 1.100 ... 1.124     | 1.075          |
| 1.125 ... 1.149     | 1.100          |
| 1.150 ... 1.174     | 1.125          |
| 1.175 ... 1.199     | 1.150          |
| 1.200 ... 1.224     | 1.175          |
| 1.225 ... 1.249     | 1.200          |
| 1.250 ... 1.274     | 1.225          |
| 1.275 ... 1.299     | 1.250          |
| 1.300 ... 1.324     | 1.275          |
| 1.325 ... 1.349     | 1.300          |
| 1.350 ... 1.374     | 1.325          |
| 1.375 ... 1.399     | 1.350          |
| 1.400 ... 1.424     | 1.375          |
| 1.425 ... 1.449     | 1.400          |
| 1.450 ... 1.474     | 1.425          |
| 1.475 ... 1.499     | 1.450          |
| 1.500 ... 1.524     | 1.475          |
| 1.525 ... 1.549     | 1.500          |
| 1.550 ... 1.574     | 1.525          |
| 1.575 ... 1.599     | 1.550          |
| 1.600 ... 1.624     | 1.575          |
| 1.625 ... 1.649     | 1.600          |
| 1.650 ... 1.674     | 1.625          |
| 1.675 ... 1.699     | 1.650          |
| 1.700 ... 1.724     | 1.675          |



**Note**

Select correct shims from ⇒ *Electronic parts catalogue* .

- Remove input shaft and press tapered roller bearing outer race out of gearbox housing using thrust plate -VW 447 i- .
- Insert shim of correct thickness.

If the size of the shim required is larger than those listed in the table, install two shims amounting to the correct value. Install the thicker of the two shims first.

- Press tapered roller bearing outer race together with the correct shim (1.175 mm in example) into gearbox housing using thrust pad -VW 510- .
- Put on gearbox housing and tighten hexagon bolts to 25 Nm and then turn 90° further.

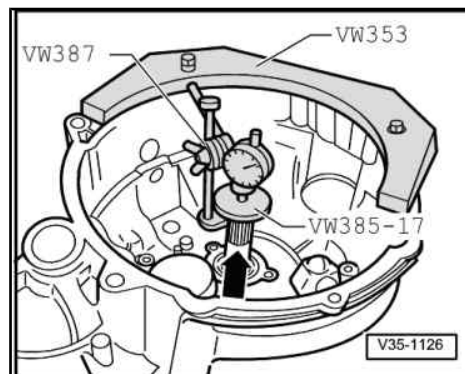
### Checking adjustment

- Install measuring appliance and dial gauge.
- Rotate input shaft to allow tapered roller bearings to settle.
- Press input shaft in direction of -arrow-.
- Bearing clearance should be min. 0.01 ... max. 0.09 mm.



### Note

*If no bearing clearance is measurable, but the input shaft has perceptible play and turns freely, the adjustment is acceptable.*



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## 2 Output shaft

- ◆ ⇒ „2.1 Exploded view - output shaft“, page 209
- ◆ ⇒ „2.2 Dismantling and assembling output shaft“, page 212
- ◆ ⇒ „2.3 Adjusting output shaft“, page 222

### 2.1 Exploded view - output shaft



#### Note

- ◆ The output shaft is dismantled as follows:- Position splitter under 2nd speed selector gear (⇒ [Item 21 \(page 210\)](#)) and press off as described in ⇒ [page 216](#). Remove circlip ⇒ [Item 17 \(page 210\)](#). Then press off locking collar and synchro-hub for 1st and 2nd gear as shown in ⇒ [page 216](#).
- ◆ Refer to general repair instructions ⇒ [page 6](#).
- ◆ Refer to ⇒ [Electronic parts catalogue and technical data](#) ⇒ [page 1](#) when installing new gears or a new output shaft.
- ◆ Always renew both tapered roller bearings together.

#### 1 - Nut

- ☐ 25 Nm + 90°
- ☐ 4 nuts for bearing mounting
- ☐ Always renew

#### 2 - Clutch housing

#### 3 - Shim

- ☐ For output shaft
- ☐ Table of adjustments  
⇒ [page 244](#)

#### 4 - Small tapered roller bearing outer race

- ☐ Removing ⇒ [page 215](#)
- ☐ Pressing in  
⇒ [page 215](#)

#### 5 - Small tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 216](#)
- ☐ Pressing on  
⇒ [page 216](#)

#### 6 - Output shaft

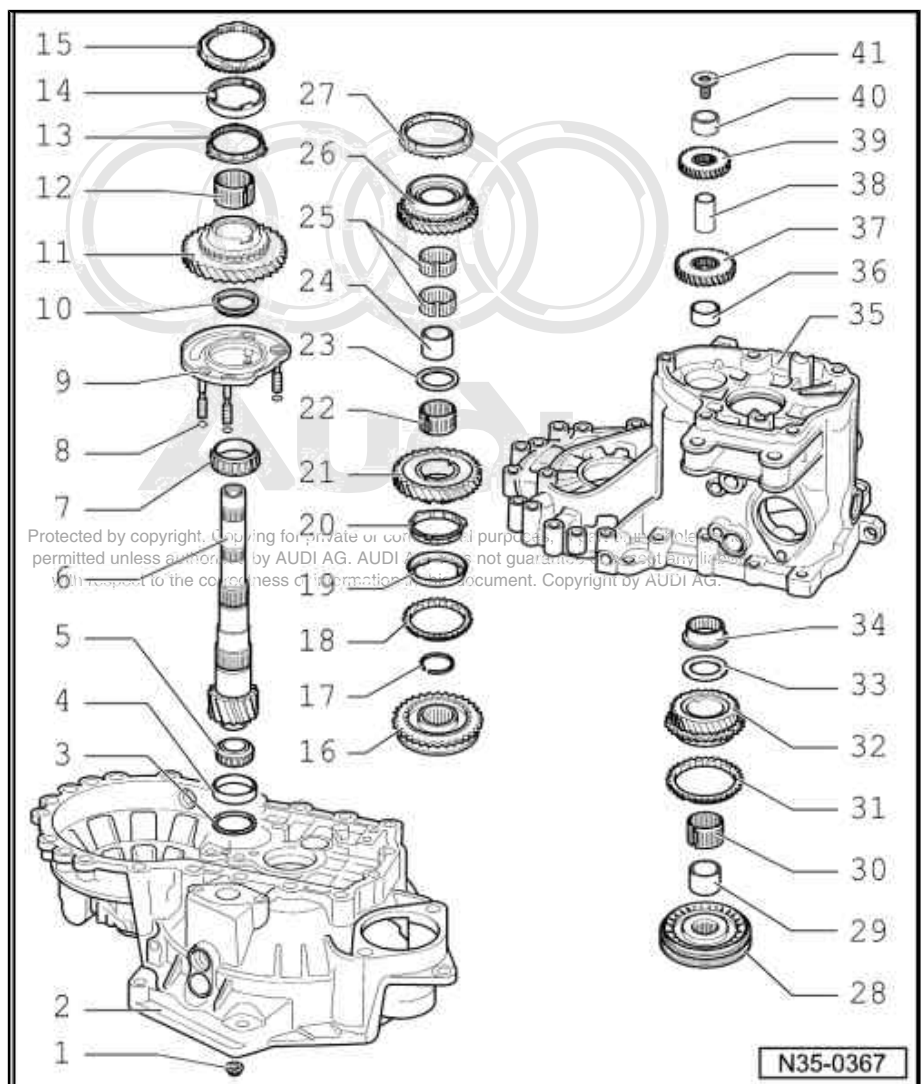
- ☐ Adjusting ⇒ [page 222](#)

#### 7 - Large tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 217](#)
- ☐ Pressing on  
⇒ [page 217](#)

#### 8 - Seal

- ☐ Place seals (4x) on bolts for bearing mounting



## 9 - Bearing mounting

- ☐ With large tapered roller bearing outer race and bolts
- ☐ Only renew outer race together with large tapered roller bearing and bearing mounting

## 10 - Thrust washer

- ☐ Shoulder on thrust washer faces towards tapered roller bearing

## 11 - 1st speed selector gear

## 12 - Needle bearing

- ☐ For 1st gear

## 13 - Synchro-ring

- ☐ (Inner ring for 1st gear)
- ☐ Installation position ⇒ [page 217](#)
- ☐ Checking for wear ⇒ [page 217](#)
- ☐ Check lugs for scoring

## 14 - Outer ring for 1st gear

- ☐ Installation position ⇒ [page 217](#)
- ☐ Checking for wear ⇒ [page 218](#)
- ☐ Renew if scored or if there are visible traces of wear

## 15 - 1st gear synchro-ring

- ☐ Installation position ⇒ [page 217](#)
- ☐ Checking for wear ⇒ [page 218](#)

## 16 - Locking collar with synchro-hub for 1st and 2nd gear

- ☐ Press off together with bearing mounting ⇒ [Item 17 \(page 210\)](#) after removing circlip ⇒ [page 216](#)
- ☐ Dismantling ⇒ [page 218](#)
- ☐ Assembling locking collar/synchro-hub ⇒ [page 218](#) , ⇒ [page 218](#) and ⇒ [page 219](#)
- ☐ Installation position ⇒ [page 219](#)
- ☐ Pressing on ⇒ [page 219](#)

## 17 - Circlip

## 18 - 2nd gear synchro-ring

- ☐ Checking for wear ⇒ [page 218](#)
- ☐ Assemble so that the recesses engage on the locking pieces on the locking collar  
⇒ [Item 16 \(page 210\)](#)

## 19 - Outer ring for 2nd gear

- ☐ Insert in synchro-ring ⇒ [Item 18 \(page 210\)](#)
- ☐ Installation position ⇒ [page 219](#)
- ☐ Renew if scored or if there are visible traces of wear

## 20 - Synchro-ring

- ☐ (Inner ring for 2nd gear)
- ☐ Checking for wear ⇒ [page 217](#)
- ☐ Check lugs for scoring
- ☐ Installation position ⇒ [page 220](#)

## 21 - 2nd speed selector gear

- ☐ Installation position ⇒ [page 220](#)

## 22 - Needle bearing

- ☐ For 2nd gear

## 23 - Thrust washer

## 24 - Sleeve for 3rd gear needle bearing

- ☐ Pressing off with 2nd speed selector gear ⇒ [page 216](#)

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- ☐ Pressing on ⇒ [page 220](#)

## 25 - Needle bearing

- ☐ For 3rd gear

## 26 - 3rd speed selector gear

## 27 - 3rd gear synchro-ring

- ☐ Checking for wear ⇒ [page 220](#)

## 28 - Locking collar with synchro-hub for 3rd and 4th gear

- ☐ Pressing off with 2nd speed selector gear ⇒ [Item 21 \(page 210\)](#) and 3rd speed selector gear ⇒ [Item 26 \(page 211\)](#) ⇒ [page 216](#)
- ☐ Dismantling ⇒ [page 221](#)
- ☐ Assembling locking collar/synchro-hub ⇒ [page 221](#) , ⇒ [page 221](#) and ⇒ [page 221](#)
- ☐ Installation position: Locking collar/synchro-hub ⇒ [page 221](#)
- ☐ Pressing on ⇒ [page 222](#)

## 29 - Sleeve

- ☐ For 4th gear needle bearing
- ☐ Pressing off with locking collar and synchro-hub for 3rd and 4th gear ⇒ [Item 28 \(page 211\)](#) ⇒ [page 216](#)
- ☐ Pressing on ⇒ [page 222](#)

## 30 - Needle bearing

- ☐ For 4th gear
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## 31 - 4th gear synchro-ring

- ☐ Checking for wear ⇒ [page 220](#)

## 32 - 4th speed selector gear

## 33 - Thrust washer

## 34 - Needle bearing

- ☐ For output shaft
- ☐ Removing and installing ⇒ [page 177](#)

## 35 - Gearbox housing

## 36 - Sleeve

- ☐ For needle bearing/output shaft
- ☐ Pressing off ⇒ [page 216](#)
- ☐ Pressing on ⇒ [page 222](#)

## 37 - 5th gear wheel

- ☐ Pulling off individually ⇒ [page 148](#)
- ☐ Pulling off together with gearbox housing ⇒ [page 154](#)

## 38 - Sleeve

## 39 - 6th gear wheel

- ☐ Pulling off individually ⇒ [page 148](#)
- ☐ Pulling off together with gearbox housing ⇒ [page 154](#)

## 40 - Roller bearing inner race

- ☐ For output shaft
- ☐ Larger outer diameter on gearboxes manufactured from 21 08 6 onwards
- ☐ Allocation ⇒ [page 144](#)
- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for input shaft

## 41 - Bolt

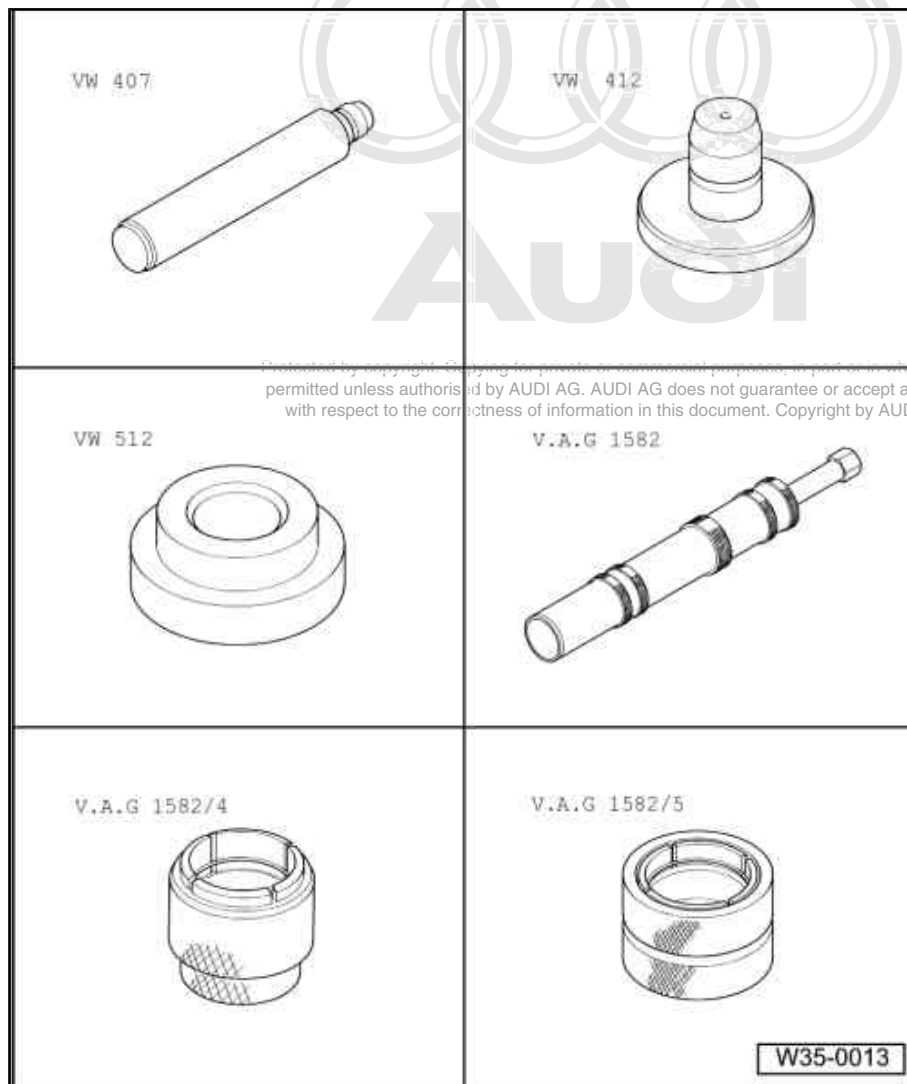
- ☐ Tightening torque ⇒ [Item 6 \(page 142\)](#)

- ☐ Allocation of bolts ➔ [page 144](#)
- ☐ For output shaft
- ☐ Self-locking
- ☐ Always renew

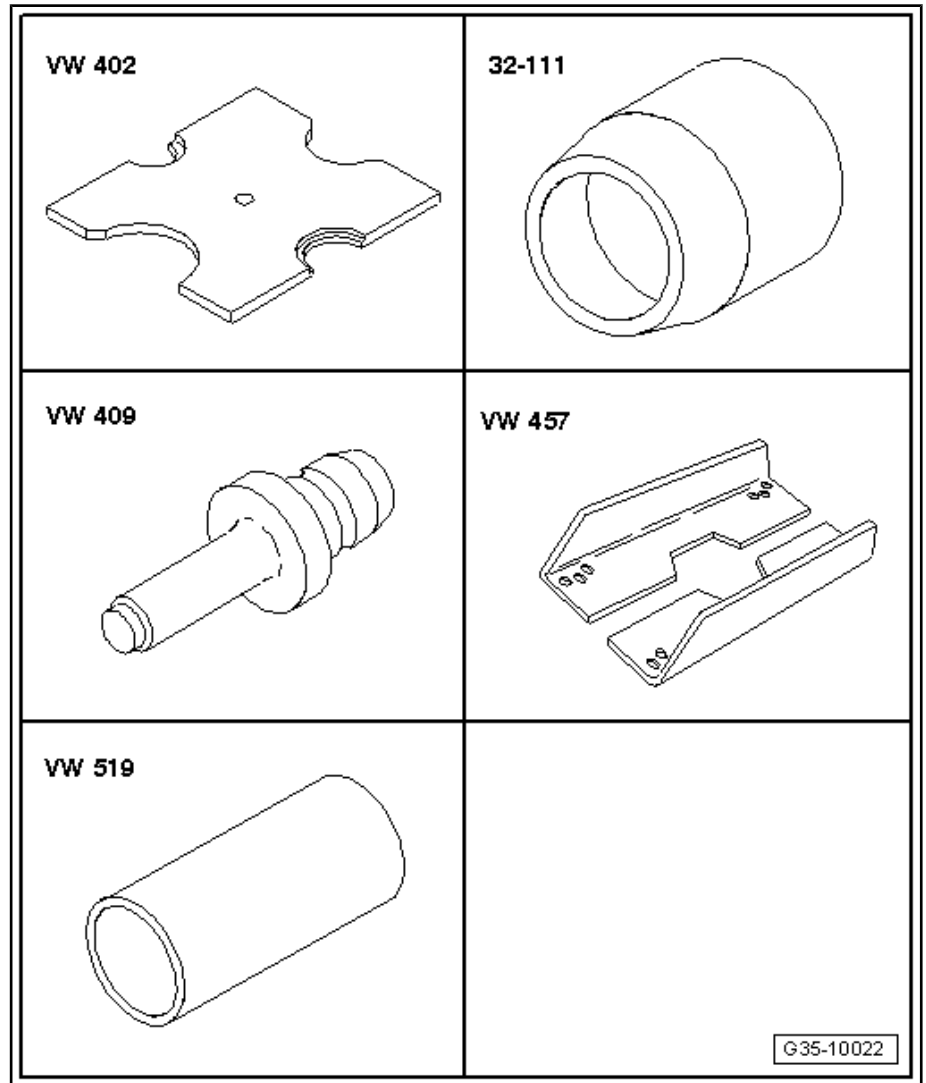
## 2.2 Dismantling and assembling output shaft

### Special tools and workshop equipment required

- ◆ Press tool -VW 407-
- ◆ Press tool -VW 412-
- ◆ Thrust pad -VW 512-
- ◆ Puller -V.A.G 1582-
- ◆ Adapter -V.A.G 1582/4-
- ◆ Adapter -V.A.G 1582/5-

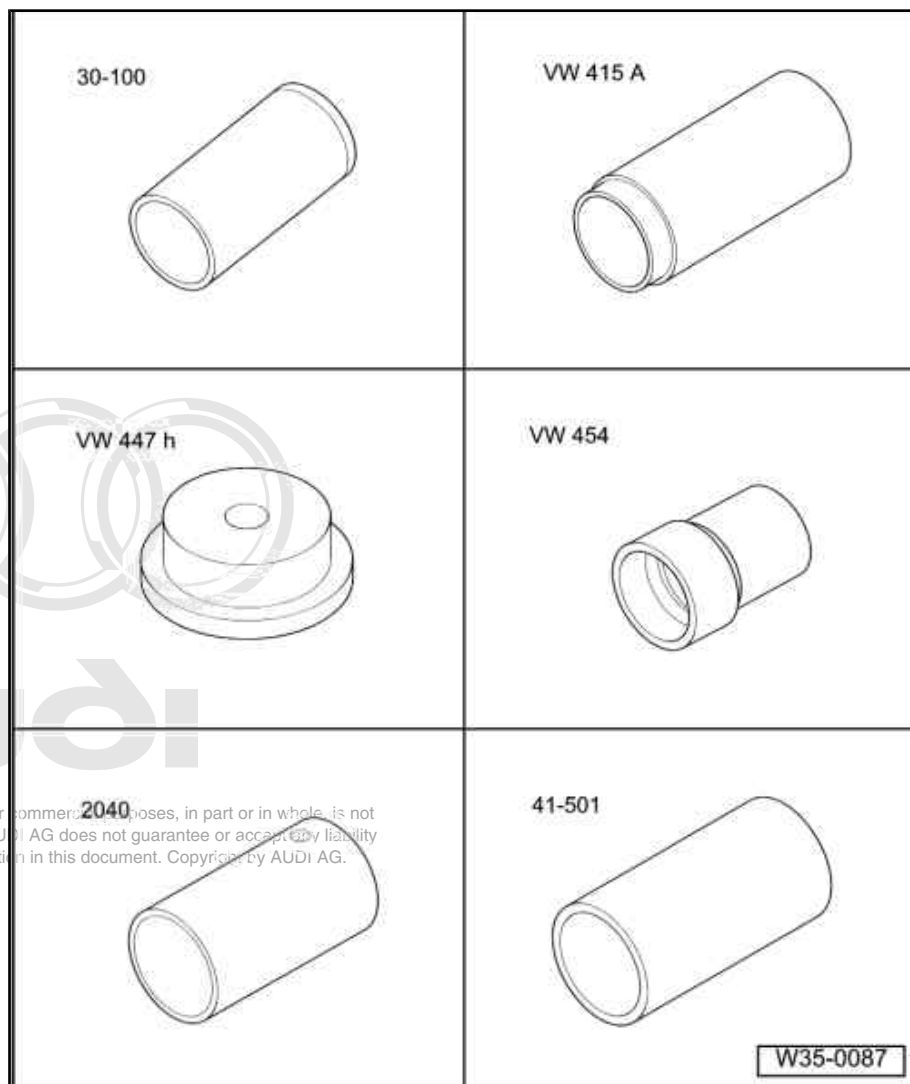


- ◆ Thrust plate -VW 402-
- ◆ Thrust piece -32 - 111-
- ◆ Press tool -VW 409-
- ◆ Support rails -VW 457-
- ◆ Tube -VW 519-



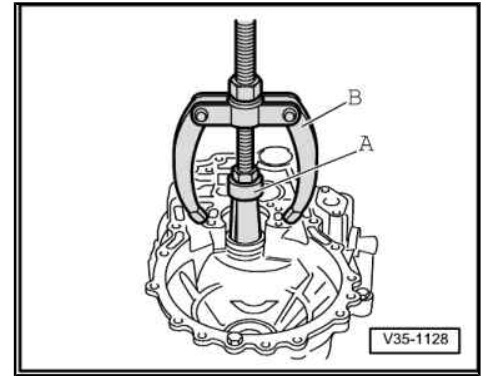
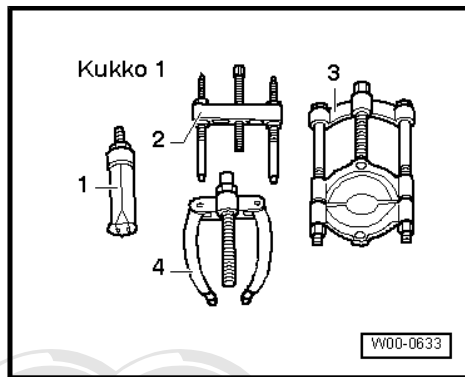
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- ◆ Drift sleeve -30 - 100-
- ◆ Tube -VW 415 A-
- ◆ Thrust plate -VW 447 H-
- ◆ Press tool -VW 454-
- ◆ Tube -2040-
- ◆ Drift sleeve -41 - 501-

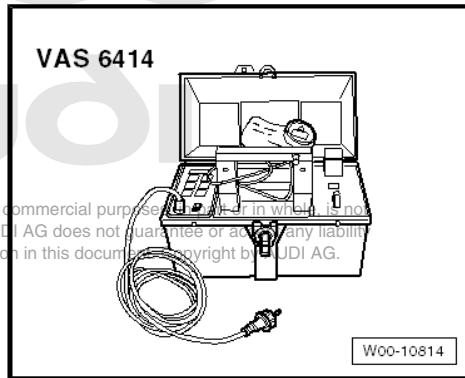


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- ◆ -1- Internal puller -  
Kukko 21/6-



- ◆ -3- Splitter -Kukko  
17/2-
- ◆ -4- Counter-support -  
Kukko 22/2-
- ◆ Inductive heater -  
VAS 6414-



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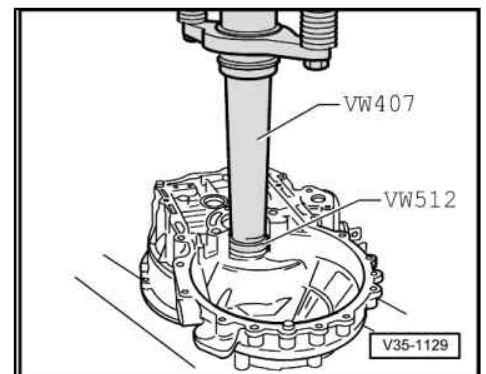
- ◆ Feeler gauge

#### Pulling out small tapered roller bearing outer race

A - Internal puller 37 ...  
46 mm , e.g. -Kukko  
21/6-

B - Counter-support ,  
e.g. -Kukko 22/2-

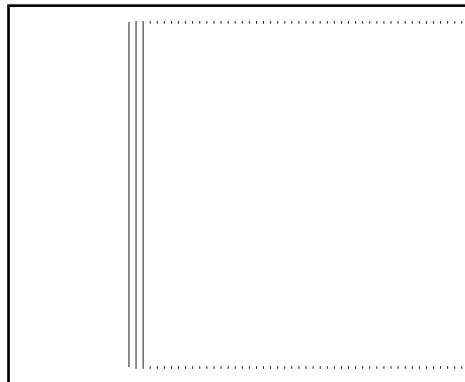
#### Pressing in small tapered roller bearing outer race



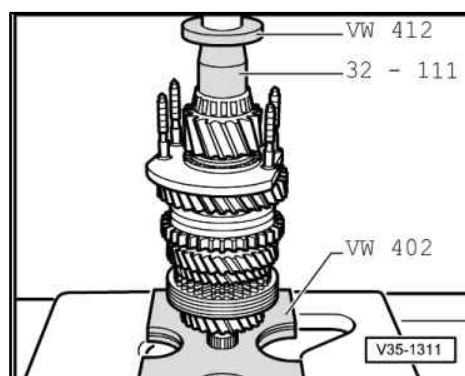
### Pulling off small tapered roller bearing inner race

A - Soft jaws/vice

- Fit adapter and apply tension to it behind the bearing rollers, then turn bearing and re-tension adapter.



### Pressing on small tapered roller bearing inner race



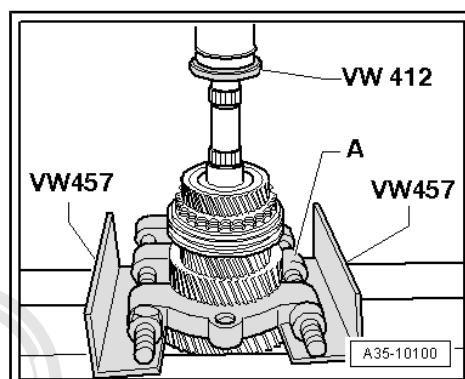
### Pressing off 3rd and 4th gear synchro-hub/locking collar; 2nd, 3rd and 4th speed selector gears with needle bearing sleeve for output shaft

A - Splitter 22...115 mm , e.g. -Kukko 17/2-



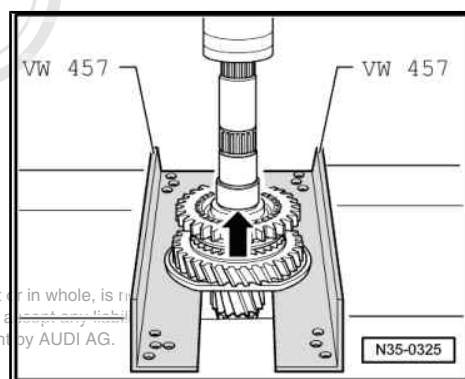
#### Note

*Support splitter so that the 1st and 2nd gear locking collar is not pulled off at the same time.*



### Pressing off locking collar with synchro-hub and bearing mounting

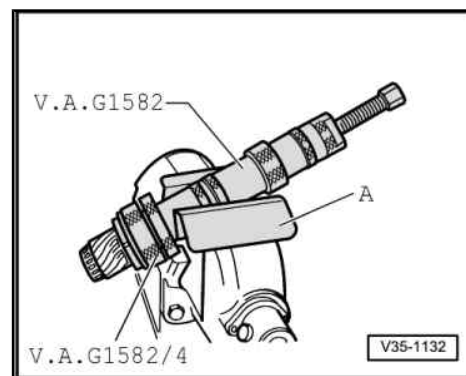
- First remove circlip -arrow-.



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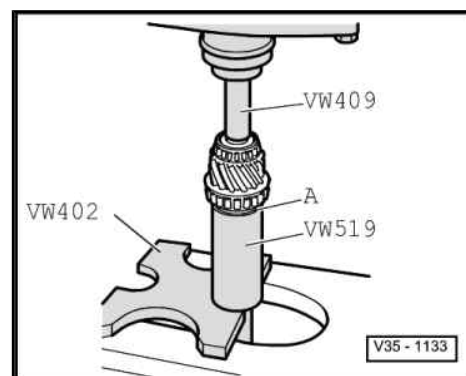
### Pulling off large tapered roller bearing inner race

- A- - Jaw covers
- Before fitting puller, insert M10 x 20 hexagon bolt in hole in output shaft.



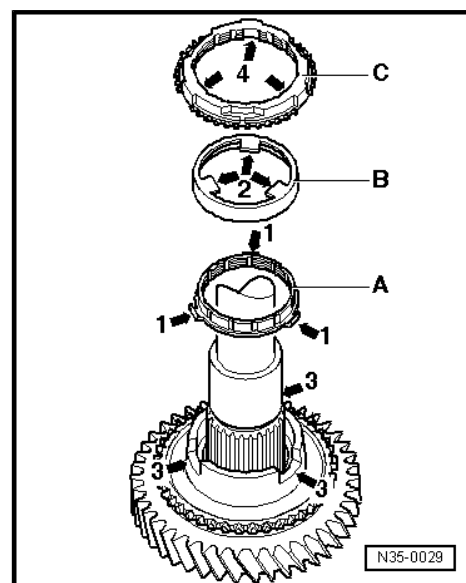
### Pressing on large tapered roller bearing inner race

- A- Thrust washer
- Fit thrust washer before pressing on inner race. Shoulder faces towards inner race.



### Installation position of inner ring, outer ring and synchro-ring for 1st gear

- Place inner ring -A- on 1st speed selector gear.
- The angled tabs -arrow 1- point towards the outer ring -B-.
- Fit outer ring -B-.
- The tabs -arrow 2- lock in the recesses -arrow 3- of the selector gear.
- Fit synchro-ring -C-.
- The recesses -arrow 4- locate on the tabs -arrow 1- of the inner ring -A-.



#### Note

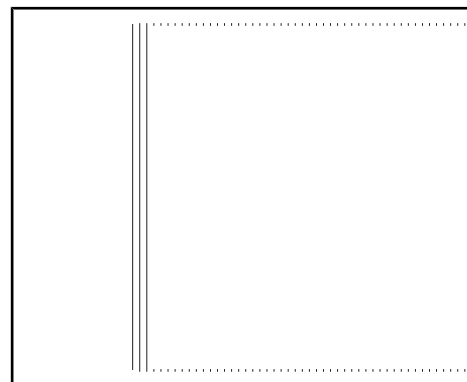
*If components are not being renewed, make sure they are re-installed on the same gear.*

### Checking inner ring for 1st and 2nd gear for wear

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Press inner ring onto tapered seat on selector gear and measure gap -a- using a feeler gauge.

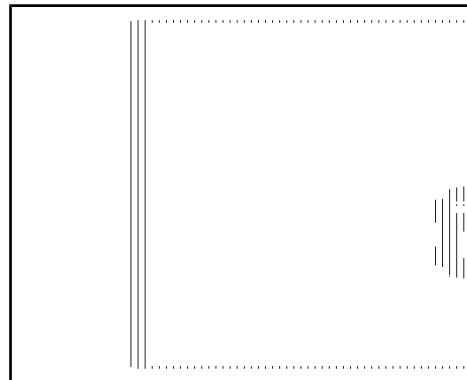
| Gap -a-          | Installation depth | Wear limit |
|------------------|--------------------|------------|
| 1st and 2nd gear | 0.75 ... 1.25 mm   | 0.3 mm     |



### Checking 1st and 2nd gear synchro-ring for wear

- Press synchro-ring, outer ring and inner ring onto tapered seat on selector gear and measure gap -a- using a feeler gauge.

| Gap -a-          | Installation depth | Wear limit |
|------------------|--------------------|------------|
| 1st and 2nd gear | 1.2 ... 1.8 mm     | 0.5 mm     |



### Dismantling and assembling 1st and 2nd gear locking collar and synchro-hub

#### 1 - Spring

Select correct spring from ⇒ Electronic parts catalogue .

Assembling version used together with hollow locking pieces  
⇒ [page 218](#)

Assembling version used together with solid locking pieces (no internal recess) ⇒ [page 219](#)

#### 2 - Locking collar

#### 3 - Synchro-hub

#### 4 - Locking piece

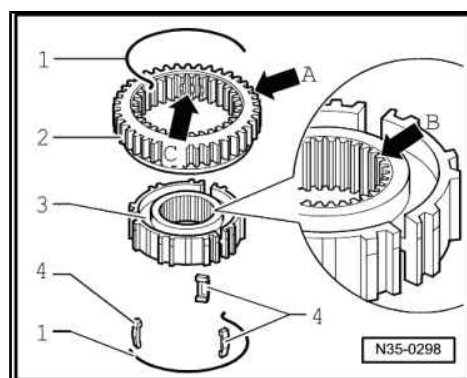
Select locking pieces from ⇒ Electronic parts catalogue .

Shoulders on synchro-hub are of equal width on both sides.

**The shoulder on one side is chamfered -arrow B-.**

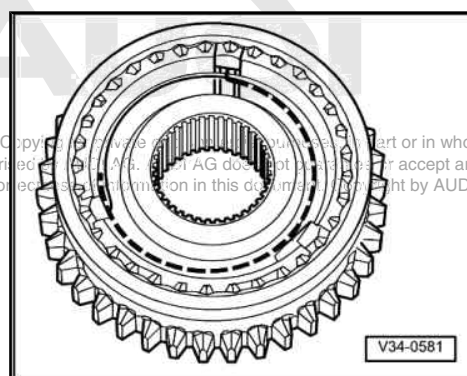
When assembled, the chamfer on the shoulder of the synchro-hub and the external teeth on the locking collar -arrow A- face in the same direction.

The recesses for the locking pieces on synchro-hub and locking collar -arrow C- must align.



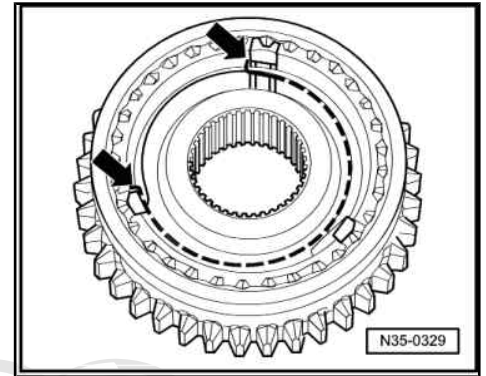
### Assembling locking collar/synchro-hub for 1st and 2nd gear (version with hollow locking pieces)

- Locking collar is pushed over synchro-hub.
- Insert locking pieces and install springs offset at 120°. Angled end of spring must locate in hollow locking piece.



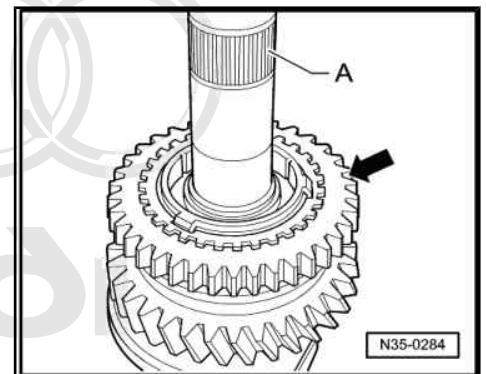
### Assembling locking collar/synchro-hub for 1st and 2nd gear (version with solid locking pieces: no internal recess)

- Locking collar is pushed over synchro-hub.
- Insert locking pieces and install springs offset at 120°. Angled ends of spring must be in front of locking pieces -arrows-.



### Installation position of 1st and 2nd gear locking collar/synchro-hub

Splines on locking collar -arrow- point to splines for 3rd/4th gear synchro-hub -A-.



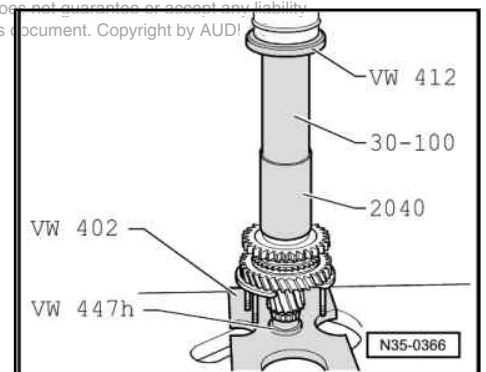
### Heat 1st and 2nd gear locking collar/synchro-hub and press on



#### WARNING

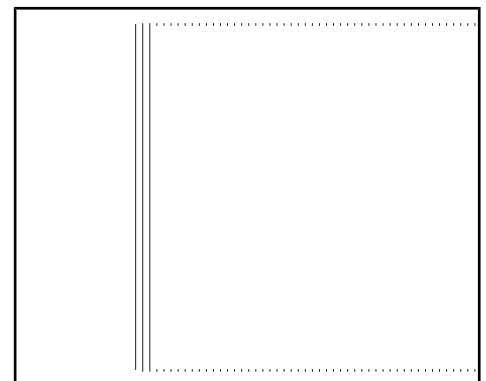
*Wear protective gloves.*

Turn synchro-ring so that grooves align with locking pieces.



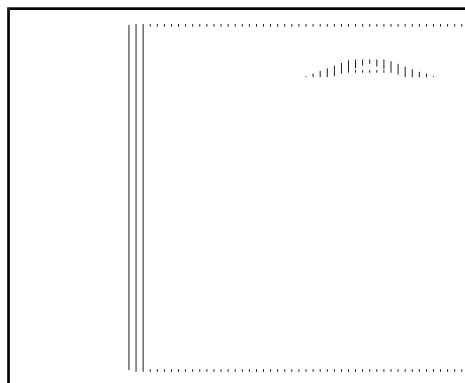
### Installation position of outer ring for 2nd gear

The lugs -arrows- face towards 1st gear -A-.



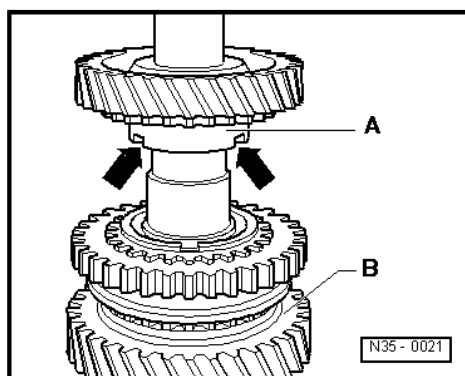
### Installation position of synchro-ring (inner ring for 2nd gear) -A-

The lugs -arrow 1- locate in the recesses -arrow 2- in the synchro-ring -B-.

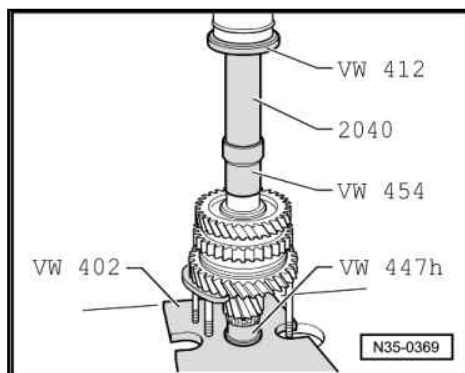


### Installation position of 2nd speed selector gear

The higher shoulder -A- faces towards 1st gear -B-. The recesses in the shoulder -arrows- engage on the lugs on the outer ring  
⇒ [page 219](#) .



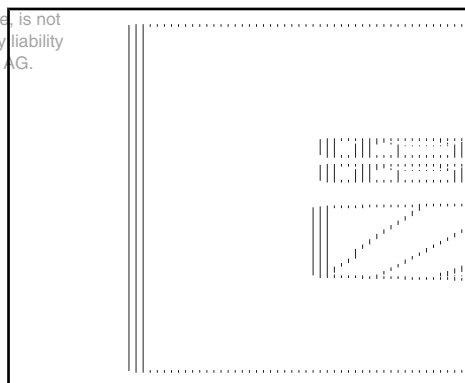
### Pressing on sleeve for 3rd gear needle bearing



### Checking 3rd and 4th gear synchro-ring for wear

- Press synchro-ring onto tapered seat on selector gear and measure gap -a- with a feeler gauge.

| Gap -a-  | Installation depth | Wear limit |
|----------|--------------------|------------|
| 3rd gear | 1.0 ... 1.7 mm     | 0.5 mm     |
| 4th gear | 1.0 ... 1.7 mm     |            |



## Dismantling and assembling 3rd and 4th gear locking collar and synchro-hub

### 1 - Spring

Select correct spring from ⇒ Electronic parts catalogue .

Assembling version used together with hollow locking pieces  
⇒ [page 221](#)

Assembling version used together with solid locking pieces (no internal recess) ⇒ [page 221](#)

### 2 - Locking piece

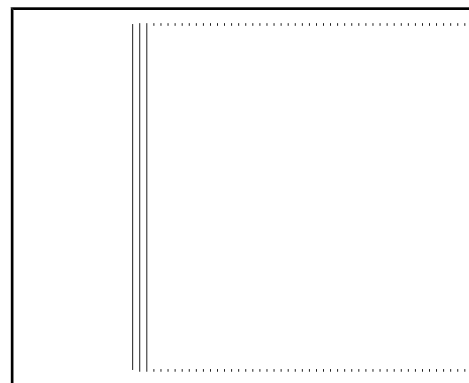
Select locking pieces from ⇒ Electronic parts catalogue .

### 3 - Locking collar

### 4 - Synchro-hub

- Slide locking collar over synchro-hub.

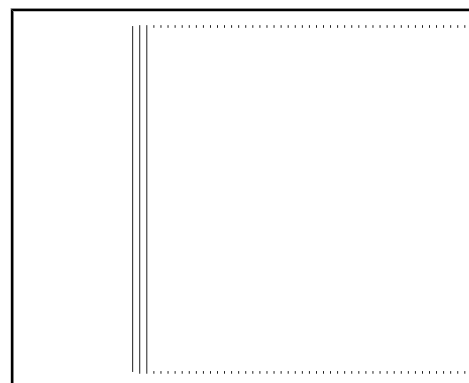
Recesses for locking pieces in synchro-hub and locking collar must align.



## Assembling locking collar/synchro-hub for 3rd and 4th gear (version with hollow locking pieces)

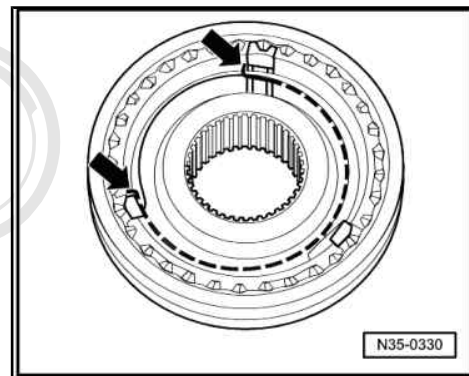
Locking collar is pushed over synchro-hub.

- Insert locking pieces and install springs offset at 120°. Angled end of spring must locate in hollow locking piece.



## Assembling locking collar/synchro-hub for 3rd and 4th gear (version with solid locking pieces: no internal recess)

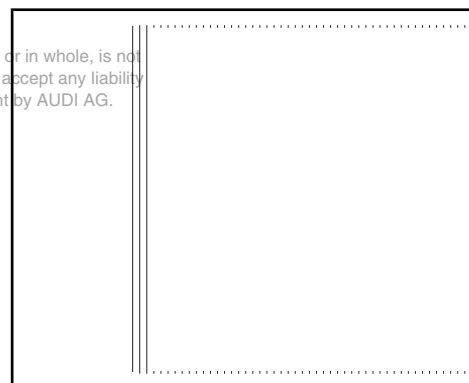
- Locking collar is pushed over synchro-hub.
- Insert locking pieces and install springs offset at 120°. Angled ends of spring must be in front of locking pieces -arrows-.



## Installation position of 3rd and 4th gear locking collar/synchro-hub

Chamfer -arrow- faces towards 4th gear

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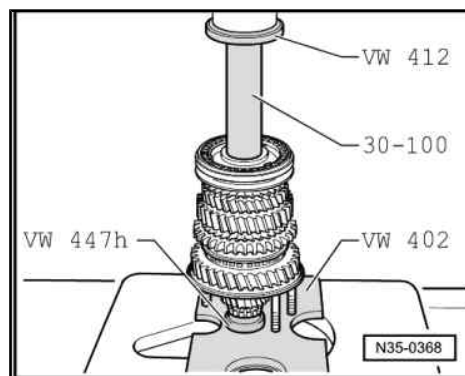


Heat and press on 3rd and 4th gear synchro-hub with locking collar

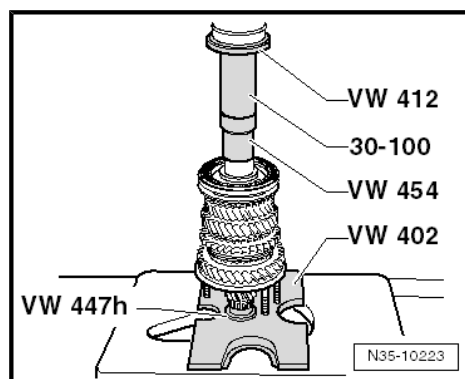


# **WARNING**

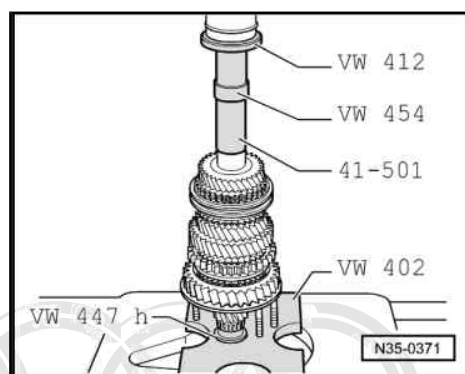
*Wear protective gloves.*



Pressing on sleeve for 4th gear needle bearing



Pressing on sleeve for needle bearing/output shaft



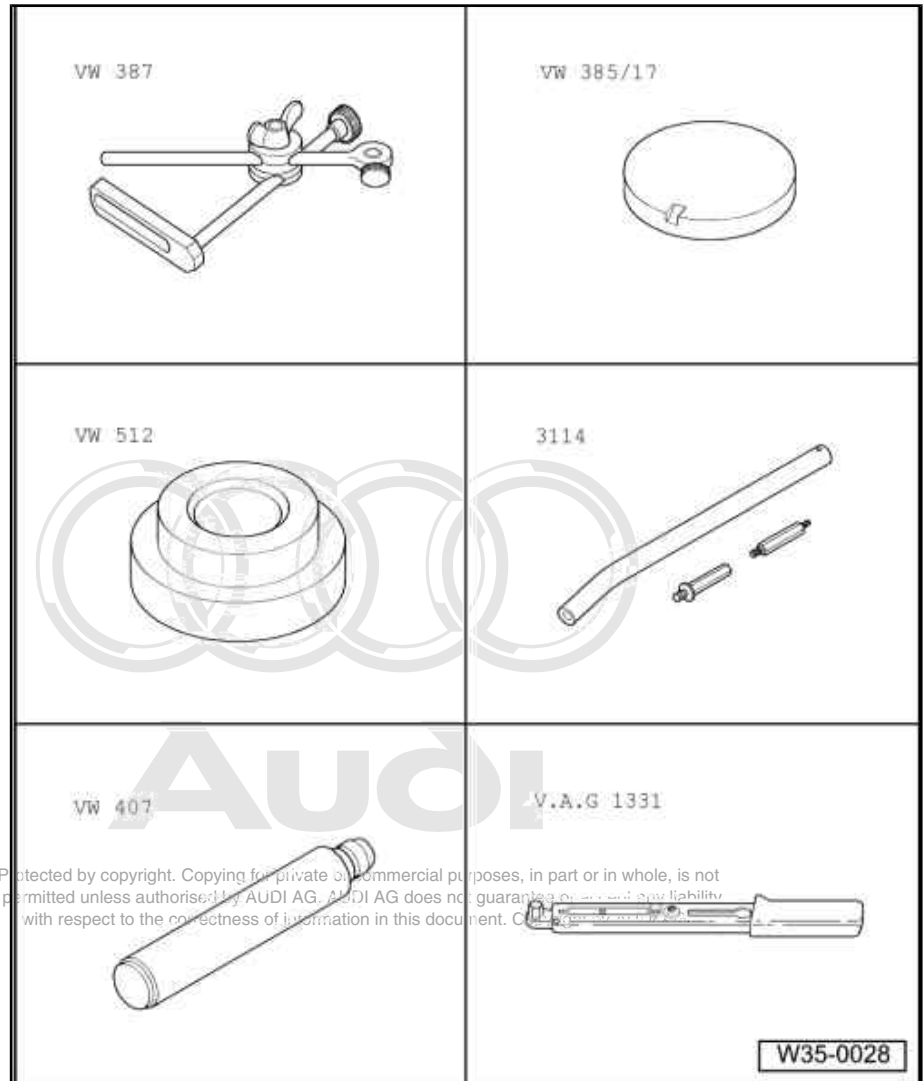
## **2.3 Adjusting output shaft**

(Determining thickness of output shaft shim)

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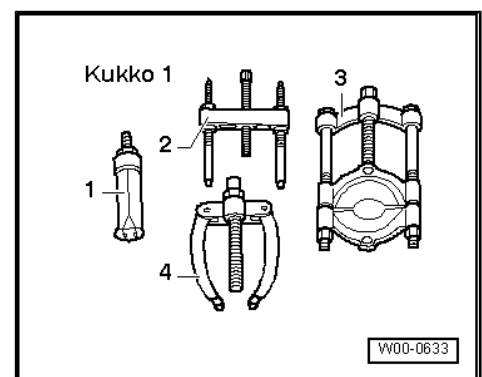
### Special tools and workshop equipment required

- ◆ Universal dial gauge bracket -VW 387-
- ◆ End measuring plate - VW 385/17-
- ◆ Thrust pad -VW 512-
- ◆ Straightening tool -3114/2-
- ◆ Press tool -VW 407-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Dial gauge



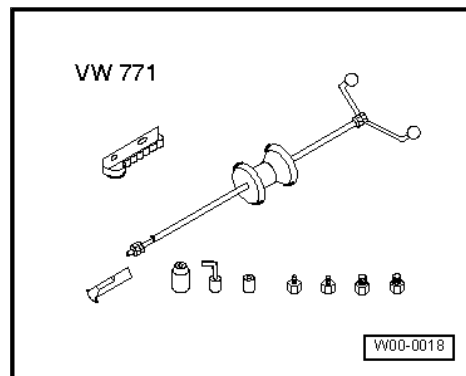
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- ◆ -1- Internal puller -Kukko 21/6-



- ◆ -4- Counter-support -Kukko 22/2-
- ◆ -2- Puller -Kukko 18/0- (threaded spindle)

◆ Adapter -VW 771/15-



### Procedure

The output shaft must be re-adjusted when the following components are renewed:

- ◆ Output shaft
- ◆ Clutch housing

or

- ◆ Tapered roller bearings for output shaft

Table of adjustments ➔ [page 244](#)

### Requirement:

- Sealing surfaces of clutch and gearbox housings must be free of sealant.
- Press small tapered roller bearing outer race together with 0.65 mm shim onto stop in clutch housing ➔ [page 215](#) .
- Insert output shaft and tighten bearing mounting nuts to 25 Nm and then turn 90° further.
- Turn output shaft approx. 20 to 30 turns in one direction.



### Note

- ◆ *The output shaft has to be turned in one direction to seat the rollers in the tapered roller bearing.*
- ◆ *This requires 20 to 30 turns.*
- ◆ *If this is neglected, the measurement will not be correct.*



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- Mount dial gauge (3 mm measuring range) and set to „0“ with 1 mm preload.
- A- = (threaded spindle) from puller -Kukko 18/0- .
- Move output shaft up and down; read off and note play indicated on dial gauge (in this example 0.20 mm).

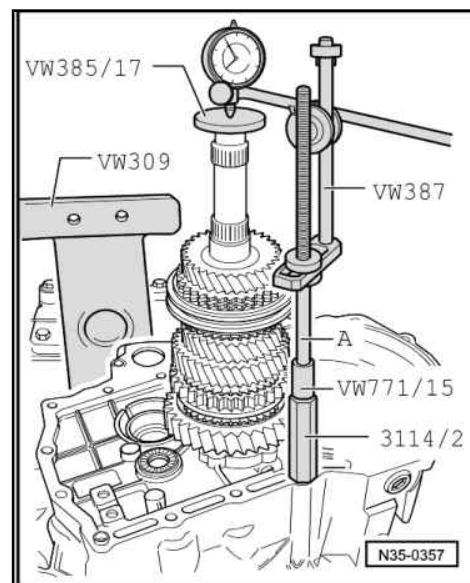
#### Determining thickness of shim

The specified bearing preload is obtained by adding a constant preload figure (0.10 ... 0.15 mm) to the thickness of the shim installed (0.65 mm) and the measured value obtained (0.20 mm).

Example:

| Bearing clearance = shim (0.65 mm) + measured value | Thickness of shim according to table |
|-----------------------------------------------------|--------------------------------------|
| 0.850 mm                                            | 1.000 mm                             |

- Remove output shaft and pull out small tapered roller bearing outer race ➔ [page 215](#) .



#### Table of shims

| Bearing clearance = shim (0.65 mm) + measured value | Thickness of shim (mm) |
|-----------------------------------------------------|------------------------|
| 0.650                                               | 0.750                  |
| 0.660 ... 0.689                                     | 0.800                  |
| 0.690 ... 0.739                                     | 0.850                  |
| 0.740 ... 0.789                                     | 0.900                  |
| 0.790 ... 0.839                                     | 0.950                  |
| 0.840 ... 0.889                                     | 1.000                  |
| 0.890 ... 0.939                                     | 1.050                  |
| 0.940 ... 0.989                                     | 1.100                  |
| 0.990 ... 1.039                                     | 1.150                  |
| 1.040 ... 1.089                                     | 1.200                  |
| 1.090 ... 1.139                                     | 1.250                  |
| 1.140 ... 1.189                                     | 1.300                  |
| 1.190 ... 1.239                                     | 1.350                  |
| 1.240 ... 1.289                                     | 1.400                  |
| 1.290 ... 1.339                                     | 1.450                  |
| 1.340 ... 1.389                                     | 1.500                  |
| 1.390 ... 1.429                                     | 1.550                  |



#### Note

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- ♦ Select correct shims from ➔ *Electronic parts catalogue* .
- ♦ Tolerance variations make it possible to obtain the exact shim thickness required.

- Insert shim of correct thickness.

If the size of the shim required is larger than those listed in the table, install two shims amounting to the correct value. Install the thicker of the two shims first.

- If the original shim (0.65 mm) is to be refitted, check the shim for damage.
- Press in small tapered roller bearing outer race together with the correct shim (in example 1.00 mm) ➔ [page 215](#) and install output shaft.



- Tighten bearing mounting nuts in clutch housing to 25 Nm and then turn 90° further.

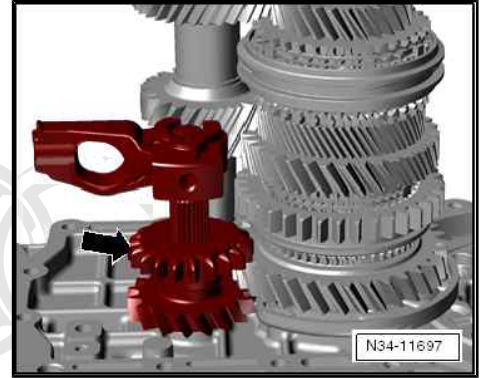


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### 3 Reverse shaft

- ◆ ⇒ „3.1 Exploded view - reverse shaft with reverse selector gear arrow“, page 227
- ◆ ⇒ „3.2 Exploded view - reverse shaft with locking collar for reverse gear arrow“, page 228
- ◆ ⇒ „3.3 Dismantling and assembling reverse shaft“, page 230

#### 3.1 Exploded view - reverse shaft with reverse selector gear -arrow-



#### Note

*After removal, always renew needle bearings in clutch housing and in reverse shaft support.*

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**1 - Clutch housing**

**2 - Needle bearing**

- ☐ Pulling out ➤ [page 231](#)
- ☐ Pressing in  
➤ [page 231](#)

**3 - Reverse gear wheel**

**4 - Circlip**

- ☐ Always renew after removing
- ☐ Fit new circlip carefully
- ☐ Do not overstretch

**5 - Reverse selector gear**

- ☐ Remove circlip before renewing
- ☐ Shoulder faces towards reverse gear wheel

**6 - Reverse shaft**

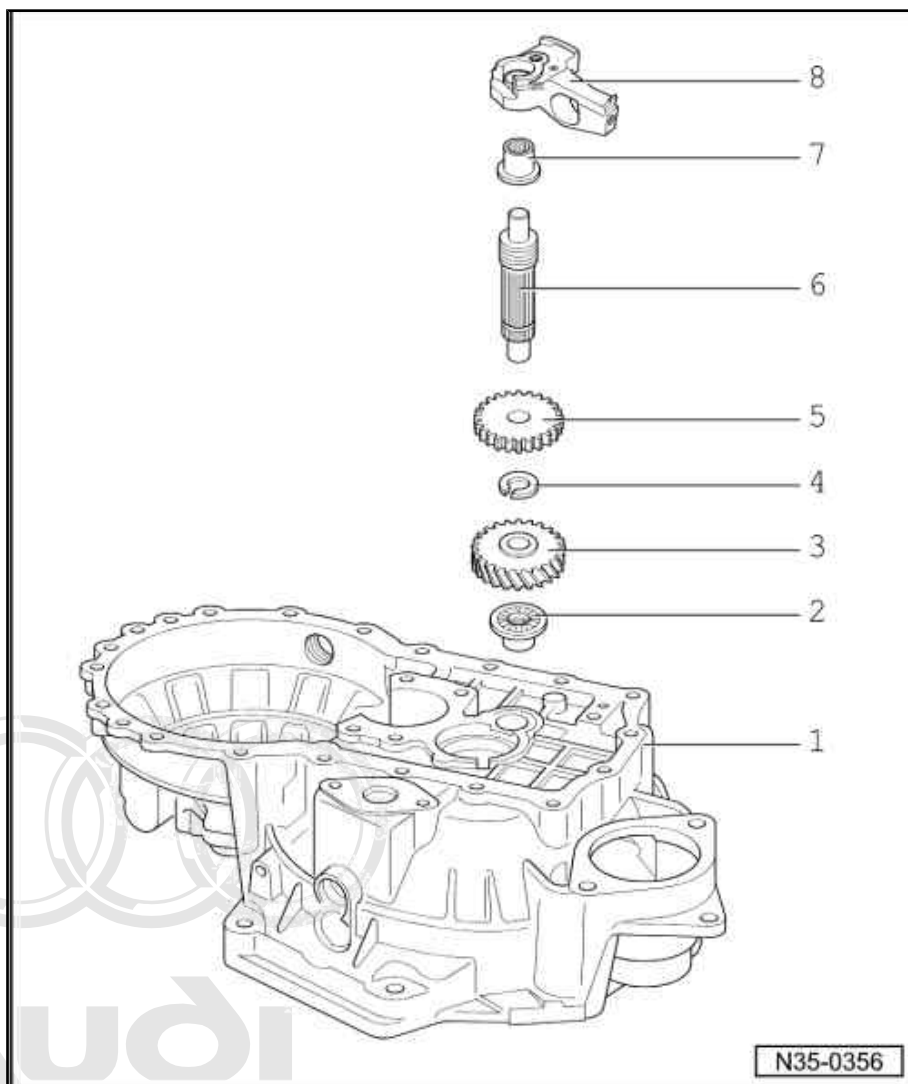
- ☐ Removing and installing  
➤ [page 154](#)

**7 - Needle bearing**

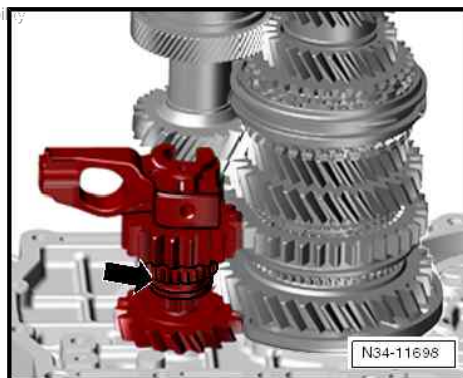
- ☐ Pressing out  
➤ [page 231](#)
- ☐ Pressing in  
➤ [page 232](#)

**8 - Reverse shaft support**

- ☐ Removing and installing  
➤ [page 154](#)



### 3.2 Exploded view - reverse shaft with locking collar for reverse gear -arrow-



**Note**

*After removal, always renew needle bearings in clutch housing and in reverse shaft support.*

**1 - Clutch housing**

**2 - Needle bearing**

- ☐ Pulling out ⇒ [page 231](#)
- ☐ Pressing in  
⇒ [page 231](#)

**3 - Reverse shaft**

- ☐ With reverse gear wheel
- ☐ Removing and installing  
⇒ [page 154](#)

**4 - Reverse gear locking collar**

- ☐ Installation position: dog  
teeth face towards re-  
verse selector gear

**5 - Thrust washer**

**6 - Needle bearing**

- ☐ For reverse selector  
gear
- ☐ Lubricate with gear oil  
before installing

**7 - Reverse selector gear**

- ☐ Installation position: dog  
teeth face towards lock-  
ing collar for reverse  
gear

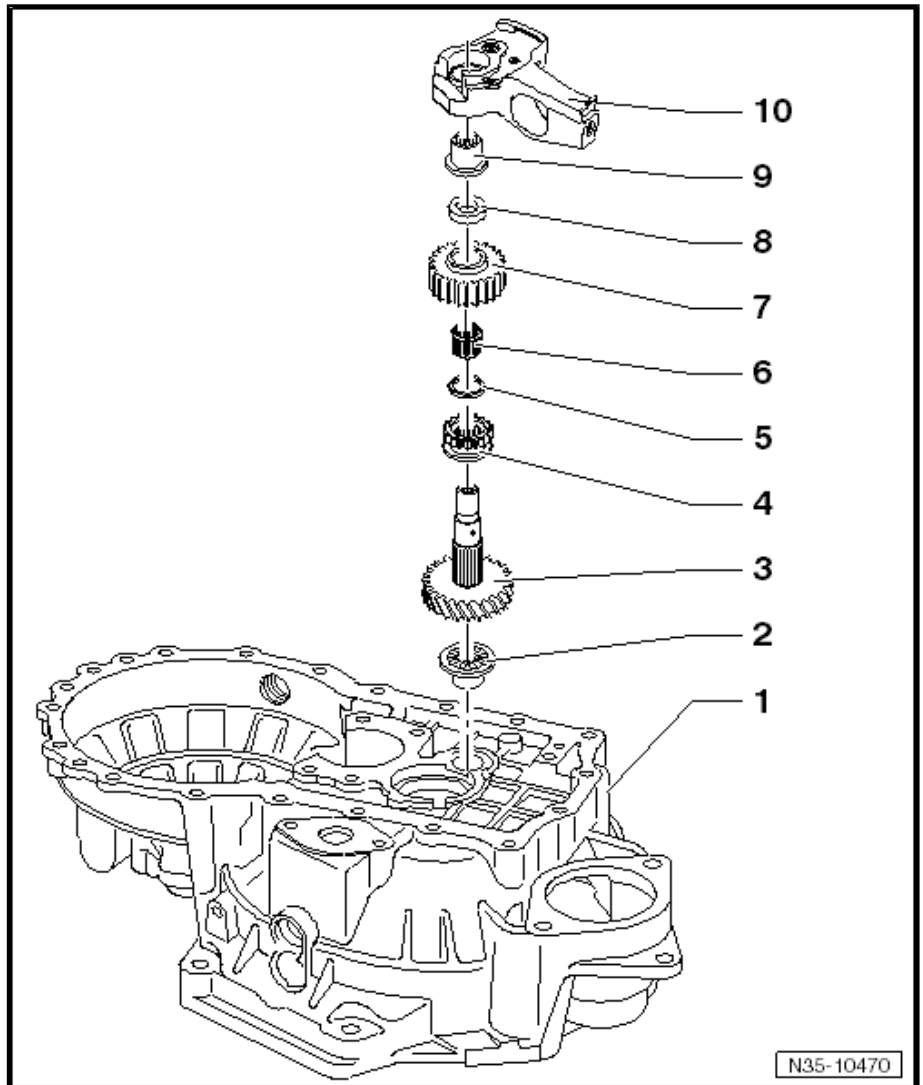
**8 - Thrust washer**

**9 - Needle bearing**

- ☐ Pressing out  
⇒ [page 231](#)
- ☐ Pressing in  
⇒ [page 232](#)

**10 - Reverse shaft support**

- ☐ Removing and installing ⇒ [page 154](#)

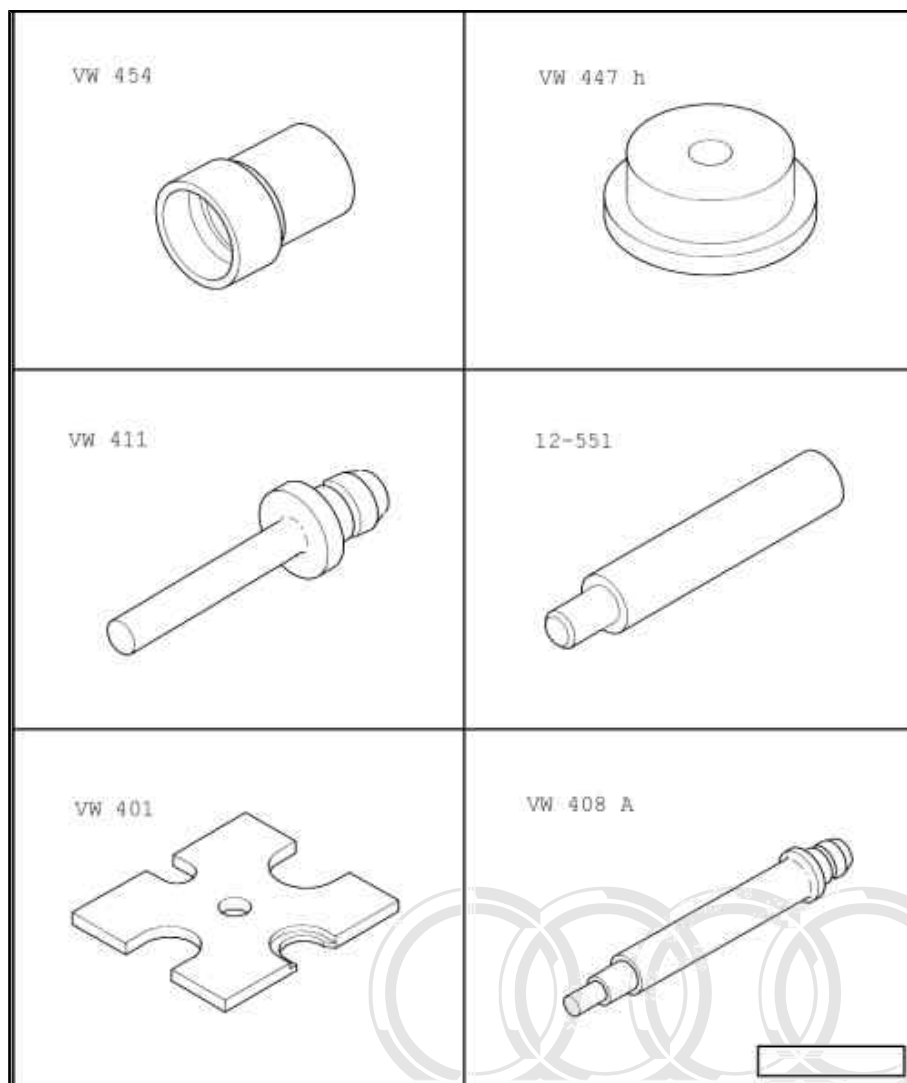


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### 3.3 Dismantling and assembling reverse shaft

#### Special tools and workshop equipment required

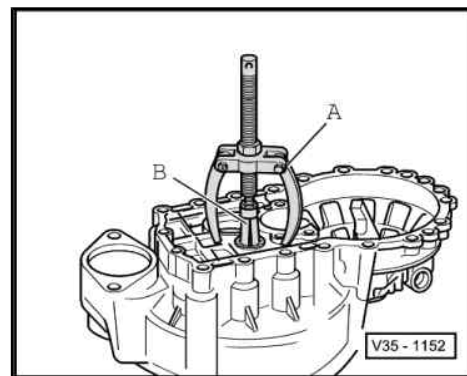
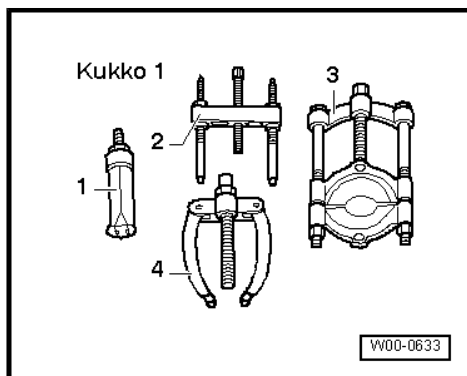
- ◆ Press tool -VW 454-
- ◆ Thrust plate -VW 447 H-
- ◆ Press tool -VW 411-
- ◆ Centring mandrel -12 - 551-
- ◆ Thrust plate -VW 401-
- ◆ Press tool -VW 408 A-



Audi

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



- ◆ -4- Counter-support -  
Kukko 22/1-

### Pulling needle bearing out of clutch housing

A - Counter-support ,  
e.g. -Kukko 22/1-

B - Internal puller 14.5 ...  
18.5 mm , e.g. -Kukko  
21/2-

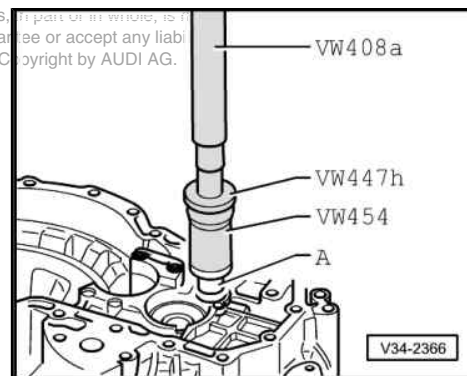


### Note

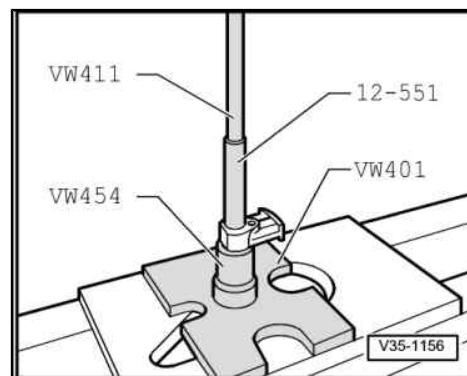
*The needle bearing is  
destroyed during remov-  
al and must be renewed.*

### Pressing needle bearing -A- into clutch housing

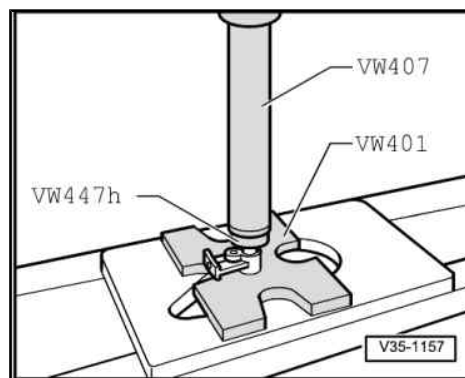
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### Pressing needle bearing out of reverse shaft support



## Pressing needle bearing into reverse shaft support



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## 39 – Final drive - front differential

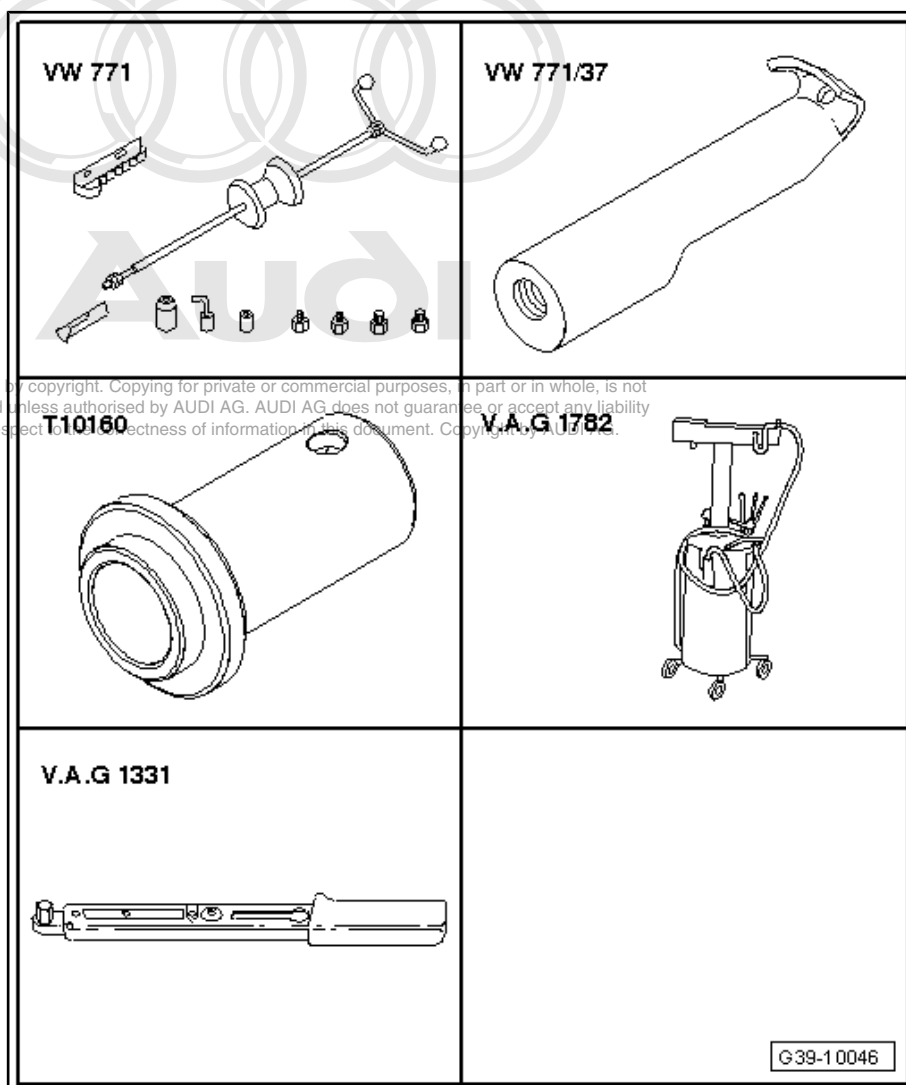
### 1 Renewing oil seals for flange shafts with gearbox installed in vehicle

- ◆ ⇒ „1.1 Renewing flange shaft oil seal (left-side)“, page 233
- ◆ ⇒ „1.2 Identification of flange shaft oil seals (right-side)“, page 235
- ◆ ⇒ „1.3 Renewing flange shaft oil seal (right-side) - two-piece oil seal and sleeve“, page 236
- ◆ ⇒ „1.4 Renewing oil seal together with sleeve (one-piece sleeve and flange shaft oil seal (right-side))“, page 239

#### 1.1 Renewing flange shaft oil seal (left-side)

##### Special tools and workshop equipment required

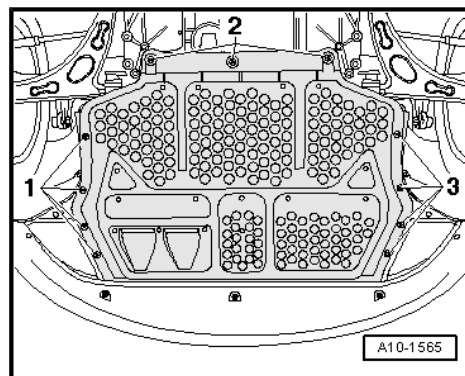
- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor hook - VW 771/37-
- ◆ Thrust piece -T10160-
- ◆ Used oil collection and extraction unit -V.A.G 1782-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Sealing grease -G 052 128 A1-



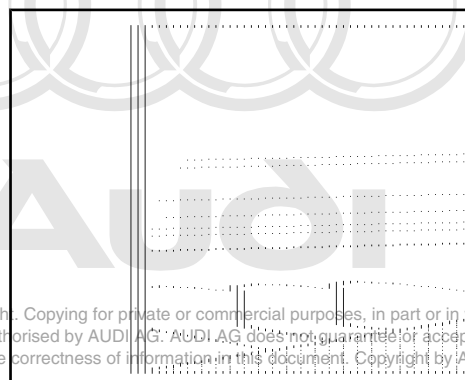
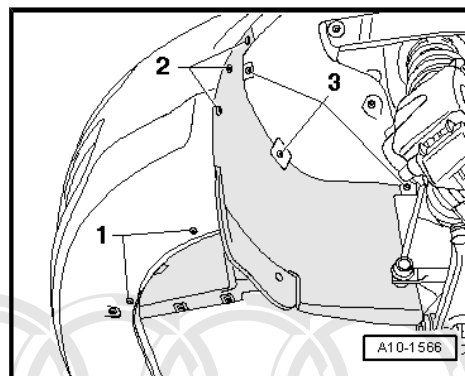
##### Removing

- Gearbox in vehicle
- Remove left wheel.

- Remove noise insulation (centre) by releasing fasteners  
-1 ... 3-.

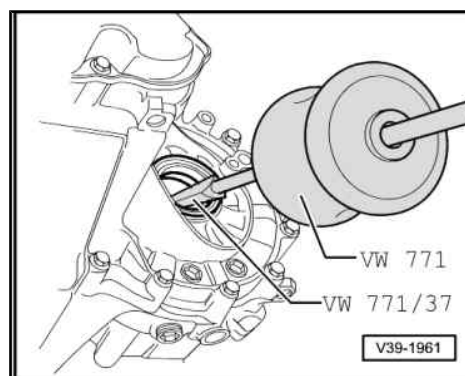


- Remove front section of wheel housing liner (left-side)  
-fasteners 1 ... 3-.
- Turn steering to the left.
- Unbolt drive shaft from flange shaft ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Lift drive shaft clear and tie in place. Do not damage surface coating.
- Place used oil collection and extraction unit -V.A.G 1782- below gearbox.
- Remove securing bolt for flange shaft (left-side); to do so, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



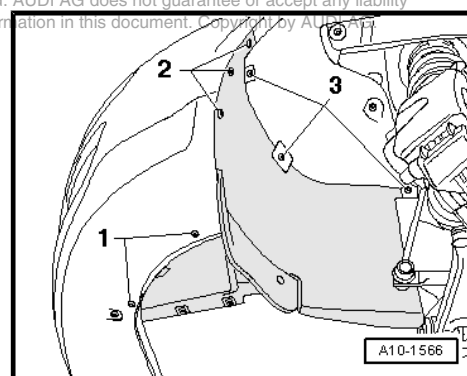
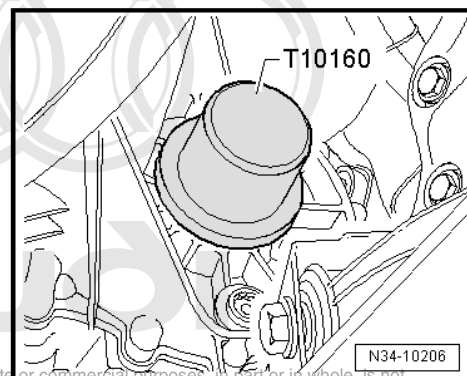
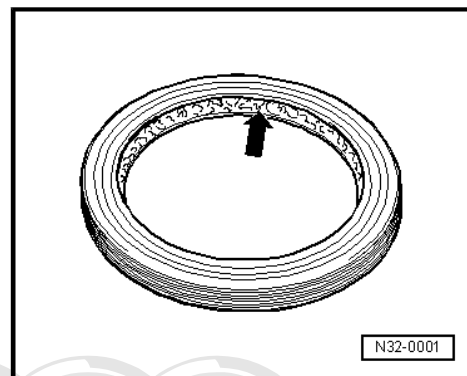
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- Pull out flange shaft oil seal using multi-purpose tool -VW 771- and puller hook -VW 771/37- .



## Installing

- Lightly oil outer circumference of new oil seal.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease -G 052 128 A1- .
- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install flange shaft.
- Press flange shaft in against spring on gearbox housing and secure with countersunk bolt. Tightening torque  
⇒ [Item 12 \(page 246\)](#)
- Bolt drive shaft to flange shaft ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Check oil level in gearbox and top up with gear oil if necessary  
⇒ [page 137](#) .
- Install front section of wheel housing liner (left-side)  
-fasteners 1 ... 3-.
- Install noise insulation under engine/gearbox ⇒ General body repairs, exterior; Rep. gr. 50 .
- Fit front left wheel ⇒ Rep. gr. 44 .



## 1.2 Identification of flange shaft oil seals (right-side)

The flange shaft oil seal -1- (right-side) is always fitted inside a sleeve -2-.

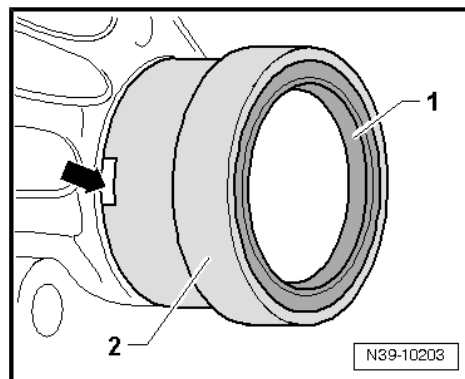
There are two different versions:

- ◆ Two-piece oil seal and sleeve
- ◆ One-piece oil seal and sleeve

### Two-piece oil seal -1- and sleeve -2-.

- Identification: recesses on sleeve -arrow- all around.

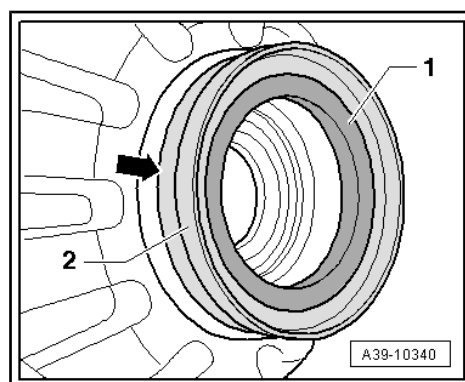
Renewing oil seal ➔ [page 236](#)



### One-piece oil seal -1- and sleeve -2-.

- Identification: without recesses or annular groove -arrow- on sleeve.

Oil seal and sleeve can only be renewed together ➔ [page 239](#) .

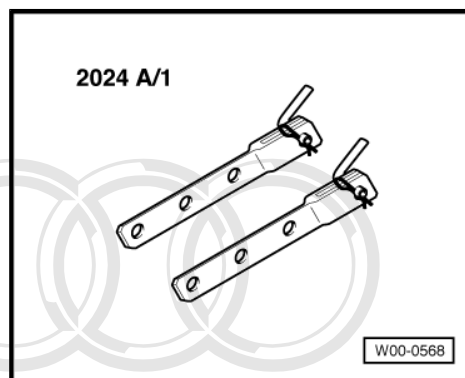


## 1.3 Renewing flange shaft oil seal (right-side) - two-piece oil seal and sleeve

- ➔ „1.2 Identification of flange shaft oil seals (right-side)“, [page 235](#)

### Special tools and workshop equipment required

- ◆ Lifting tackle -2024 A/1-

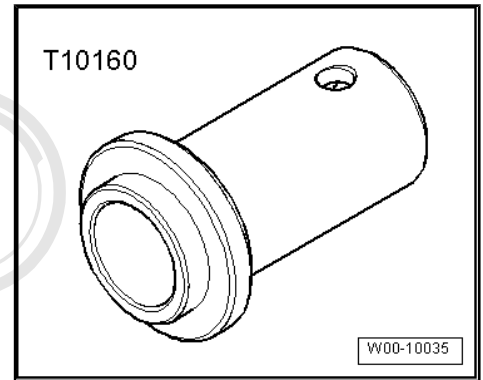


- ◆ Assembly tool -3253/2-



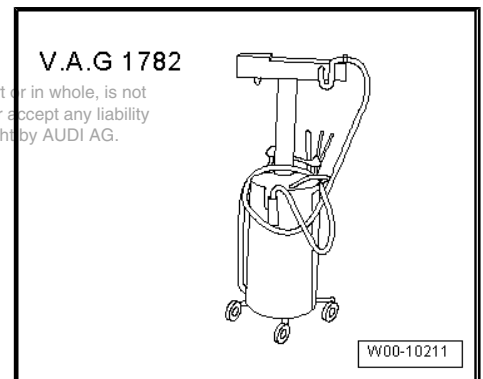
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◆ Thrust piece -T10160-



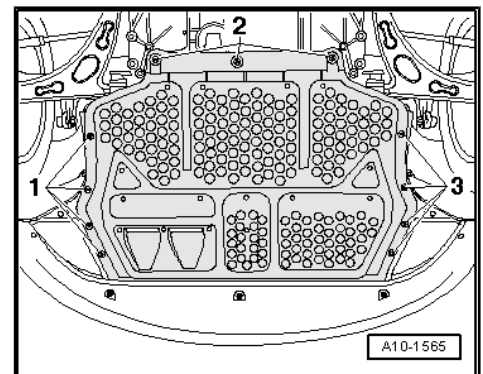
◆ Used oil collection and extraction unit -V.A.G 1782-

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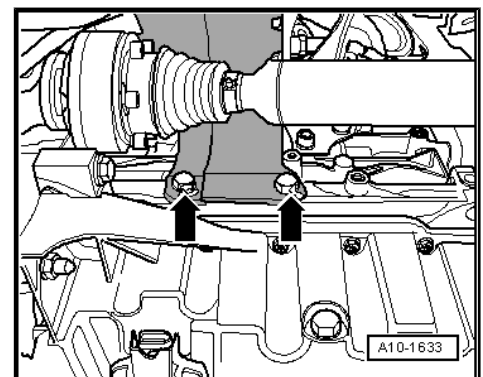


**Removing**

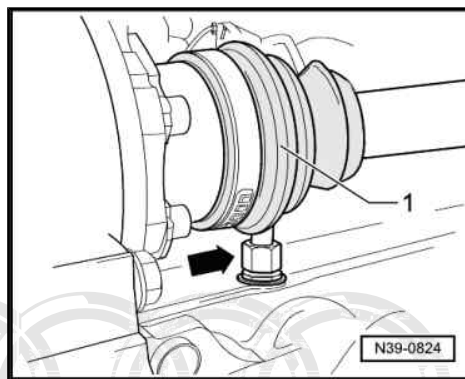
- Gearbox in vehicle
- Remove noise insulation (centre) by releasing fasteners -1 ... 3-.



- Unbolt heat shield for right-side drive shaft -arrows-.
- Turn steering to full right lock.

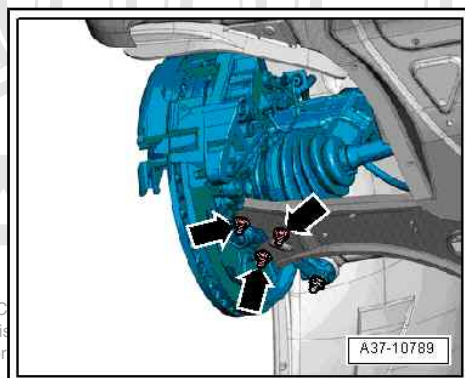


- Unbolt drive shaft -1- from flange shaft ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Lift drive shaft as far as possible and tie in place. Do not damage surface coating.



#### Vehicles with 1.8 ltr. TFSI engine:

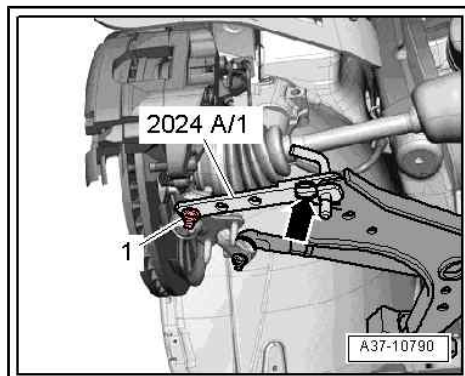
- Remove right wheel.
- Remove nuts -arrows- on swivel joint (right-side).



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AG.

- Disengage wishbone (right-side) at swivel joint.
- Swivel suspension strut (right-side) outwards and support with -2024 A /1- as shown in illustration.

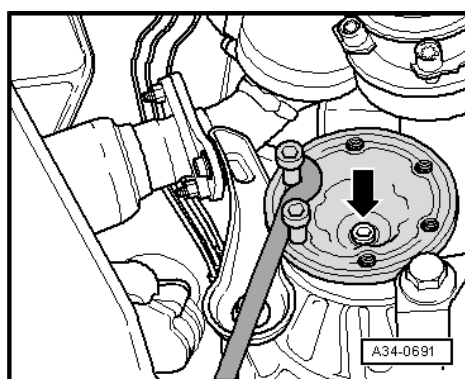


#### WARNING

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

#### Continued for all vehicles:

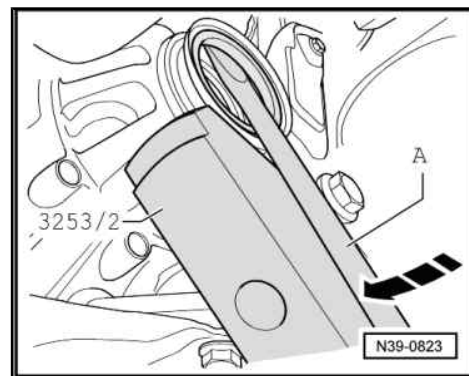
- Remove securing bolt -arrow- for flange shaft. To do this, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



- Lever out oil seal using a screwdriver -A- (support screwdriver on assembly tool -3253/2-).

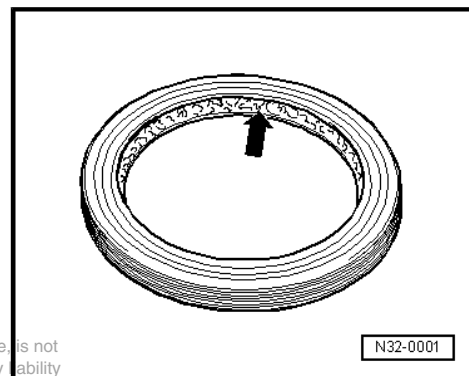
 **Note**

- ◆ Do not damage sleeve, otherwise leaks will occur.
- ◆ Renew sleeve if damaged ⇒ [page 178](#)



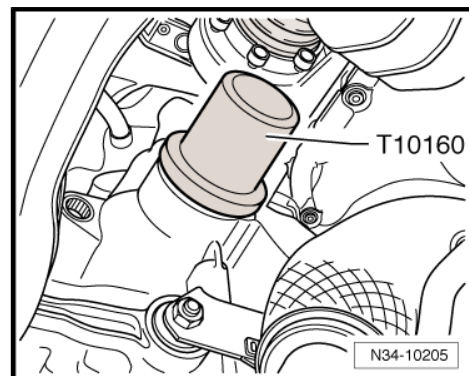
**Installing**

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



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- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install flange shaft.
- Press flange shaft in against spring on gearbox housing and secure with countersunk bolt. Tightening torque ⇒ [Item 12 \(page 246\)](#)
- Attach swivel joint to wishbone and secure ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Bolt drive shaft to flange shaft ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Install heat shield for right-side drive shaft.
- Check oil level in gearbox and top up with gear oil if necessary ⇒ [page 137](#) .
- Fit right wheel ⇒ Rep. gr. 44 .
- Install noise insulation under engine/gearbox ⇒ General body repairs, exterior; Rep. gr. 50 .

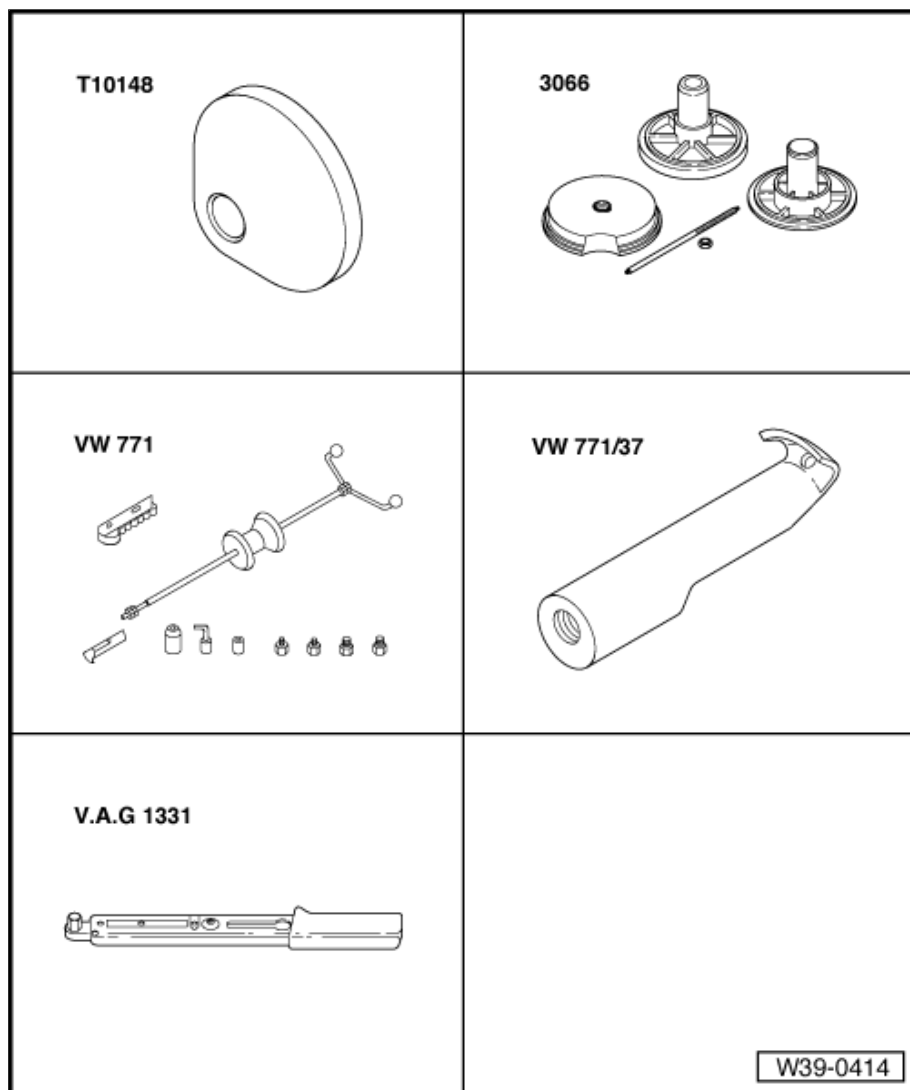


**Tightening torque**

| Component                                     | Nm |
|-----------------------------------------------|----|
| Heat shield for drive shaft to cylinder block | 25 |

## 1.4 Renewing oil seal together with sleeve (one-piece sleeve and flange shaft oil seal (right-side))

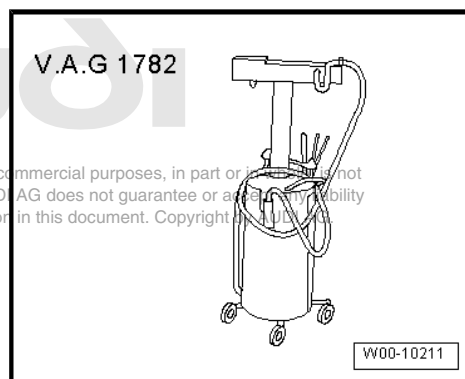
- ⇒ [„1.2 Identification of flange shaft oil seals \(right-side\)“, page 235](#)



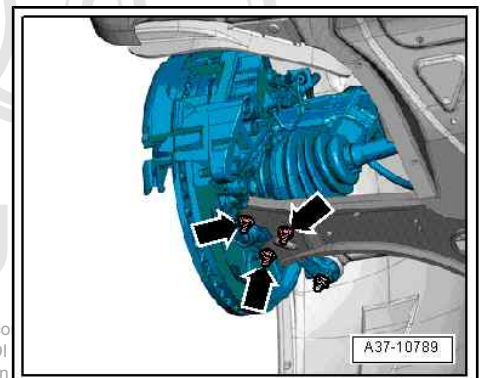
#### Special tools and workshop equipment required

- ◆ Thrust piece -T10148-
- ◆ Spindle from assembly device -3066-
- ◆ Multi-purpose tool -VW 771-
- ◆ Extractor hook -VW 771/37-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Used oil collection and extraction unit -V.A.G 1782-

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- Remove nuts -arrows- on swivel joint (right-side).



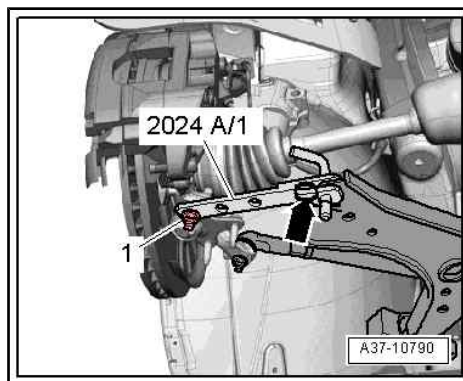
241

- Disengage wishbone (right-side) at swivel joint.
- Swivel suspension strut (right-side) outwards and support with -2024 A /1- as shown in illustration.



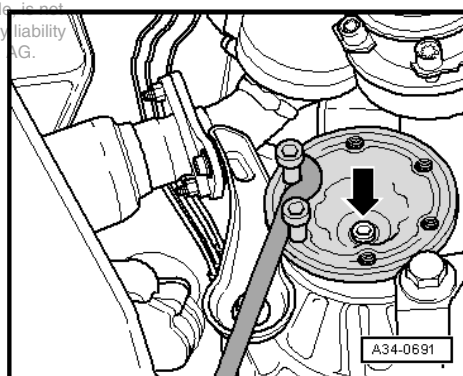
#### WARNING

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



#### Continued for all vehicles:

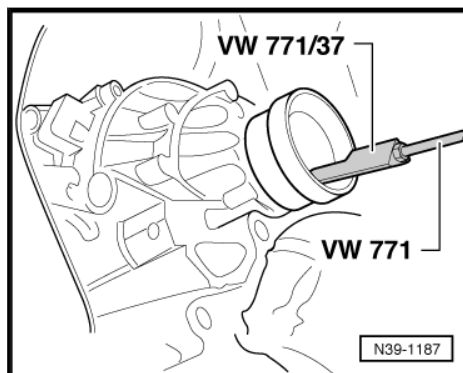
- Place used oil collection and extraction unit -V.A.G 1782- below gearbox.
- Remove securing bolt -arrow- for flange shaft. To do this, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



- Pull out oil seal with sleeve.

A projection is located on inside diameter of sleeve.

- Position puller hook -VW 771/37- directly behind projection in sleeve.
- During this operation, press puller hook -VW 771/37- firmly in against sleeve.



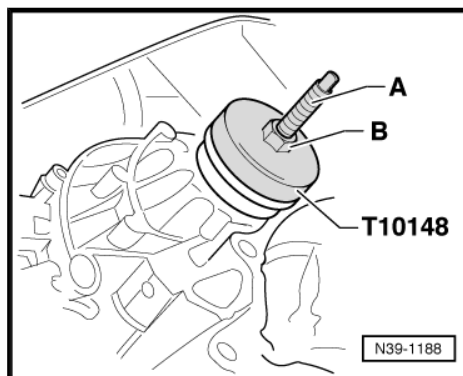
#### Installing

- Clean seat for oil seal in gearbox.
- Pull in oil seal together with sleeve.

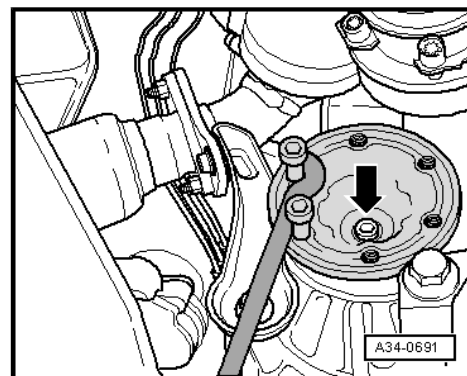
A - Spindle from assembly device -3066- screwed into threaded piece in differential.

B - M12 nut

- Turn nut -B- and pull oil seal with sleeve in onto stop with thrust piece -T10148- .
- Pack space between sealing lip and dust lip half-full with sealing grease -G 052 128 A1- .
- Install flange shaft.



- Press flange shaft in against spring on gearbox housing and secure with countersunk bolt -arrow-. Tightening torque  
⇒ [Item 12 \(page 246\)](#)
- Attach swivel joint to wishbone and secure ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Bolt drive shaft to flange shaft ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 .
- Install heat shield for right-side drive shaft.
- Check oil level in gearbox and top up with gear oil if necessary  
⇒ [page 137](#) .
- Fit right wheel ⇒ Rep. gr. 44 .
- Install noise insulation under engine/gearbox ⇒ General body repairs, exterior; Rep. gr. 50 .



#### Tightening torque

| Component                                     | Nm |
|-----------------------------------------------|----|
| Heat shield for drive shaft to cylinder block | 25 |



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## 2 Table of adjustments



### Note

*When performing repairs on the gearbox it is only necessary to re-adjust the input shaft, output shaft or differential if components have been renewed which have a direct effect on the adjustment of the gearbox. Refer to the following table to avoid unnecessary adjustment work:*

|                     |                                          | Components requiring adjustment:          |                                            |                                            |
|---------------------|------------------------------------------|-------------------------------------------|--------------------------------------------|--------------------------------------------|
|                     |                                          | Input shaft<br>⇒ <a href="#">page 203</a> | Output shaft<br>⇒ <a href="#">page 222</a> | Differential<br>⇒ <a href="#">page 253</a> |
| Components renewed: | Gearbox housing                          | x                                         |                                            | x                                          |
|                     | Clutch housing                           | x                                         | x                                          | x                                          |
|                     | Input shaft                              | x                                         |                                            |                                            |
|                     | Output shaft (final drive gear set)      |                                           | x                                          |                                            |
|                     | Differential cage                        |                                           |                                            | x                                          |
|                     | Tapered roller bearings for input shaft  | x                                         |                                            |                                            |
|                     | Tapered roller bearings for output shaft |                                           | x                                          |                                            |
|                     | Tapered roller bearings for differential |                                           |                                            | x                                          |
|                     | 4th gear wheel                           | x                                         |                                            |                                            |

## 3 Differential

- ◆ ⇒ „3.1 Exploded view - differential“, page 245
- ◆ ⇒ „3.2 Dismantling and assembling differential“, page 247
- ◆ ⇒ „3.3 Adjusting differential“, page 253

### 3.1 Exploded view - differential



#### Note

- ◆ Heat tapered roller bearing inner race to 100° C before installing.
- ◆ Always renew both tapered roller bearings together.
- ◆ Adjust differential if tapered roller bearings, differential cage, gearbox housing or clutch housing are renewed ⇒ [page 253](#).

#### 1 - Gearbox housing

#### 2 - Shim

- ☐ For differential
- ☐ Determining thickness  
⇒ [page 253](#)

#### 3 - Tapered roller bearing outer race

- ☐ Pulling out ⇒ [page 250](#)
- ☐ Pressing in  
⇒ [page 251](#)

#### 4 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 250](#)
- ☐ Pressing on  
⇒ [page 250](#)

#### 5 - Differential cage

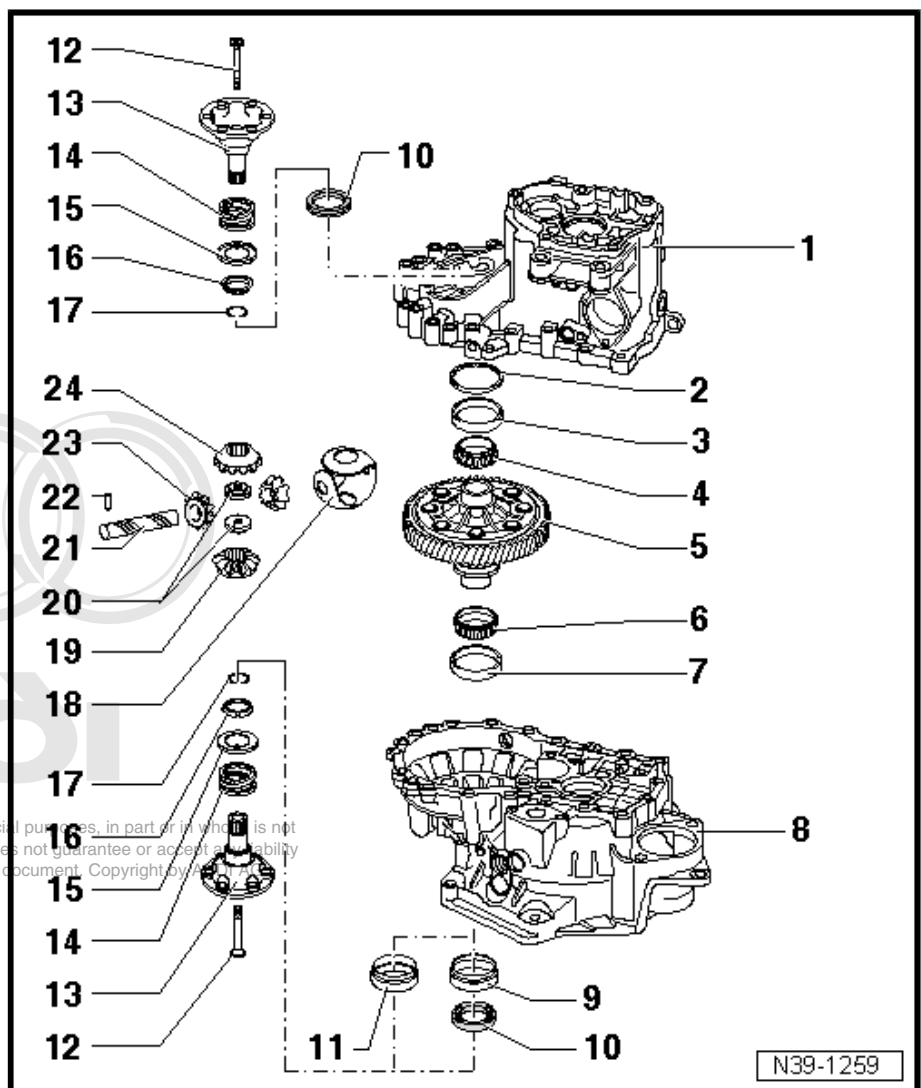
- ☐ With final drive gear
- ☐ Differential cage is matched to one-piece thrust washer  
⇒ [page 252](#)
- ☐ Hole for spring pin is matched to length of spring pin ⇒ [page 251](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

#### 6 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 250](#)
- ☐ Pressing on  
⇒ [page 250](#)

#### 7 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 249](#)
- ☐ Pressing in ⇒ [page 250](#)



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## 8 - Clutch housing

## 9 - Sleeve

- ☐ Forms housing for oil seal ⇒ [Item 10 \(page 246\)](#)
- ☐ Removing and installing ⇒ [page 178](#)

## 10 - Oil seal

- ☐ Renewing flange shaft oil seal (left-side) ⇒ [page 233](#)
- ☐ Renewing flange shaft oil seal (right-side) - two-piece oil seal and sleeve ⇒ [page 236](#)

## 11 - One-piece oil seal and sleeve

- ☐ If oil seal is damaged, renew both sleeve and oil seal ⇒ [page 239](#)

## 12 - Countersunk bolt

- ☐ 25 Nm
- ☐ Screws into threaded piece ⇒ [Item 20 \(page 246\)](#)

## 13 - Flange shaft

- ☐ Removing and installing ⇒ [page 233](#)

## 14 - Spring for flange shaft

- ☐ Installed behind flange shafts

## 15 - Thrust washer

- ☐ Installation position ⇒ [page 253](#)

## 16 - Tapered ring

- ☐ With grooves to engage on thrust washer
- ☐ Installation position: Taper towards differential cage

## 17 - Circlip

- ☐ Holds tapered ring, thrust washer and spring in position when flange shaft is removed

## 18 - One-piece thrust washer

- ☐ Lubricate with gear oil before installing
- ☐ One-piece thrust washer has a projection on some versions ⇒ [page 252](#)

## 19 - Sun wheel

- ☐ Installing ⇒ [page 252](#)

## 20 - Threaded piece

- ☐ Installing ⇒ [page 252](#)

## 21 - Differential pinion pin

- ☐ Drive out with drift
- ☐ Installing ⇒ [page 252](#)

## 22 - Spring pin

- ☐ Secures differential pinion pin
- ☐ Spring pins of two different lengths are fitted
- ☐ Identification of different types of spring pin ⇒ [page 251](#)
- ☐ Short spring pin: removing and installing ⇒ [page 251](#)
- ☐ Long spring pin: is sheared off on removal ⇒ [page 252](#)
- ☐ Long spring pin: installing ⇒ [page 252](#)

## 23 - Planet pinion

- ☐ Installing ⇒ [page 252](#)

## 24 - Sun wheel

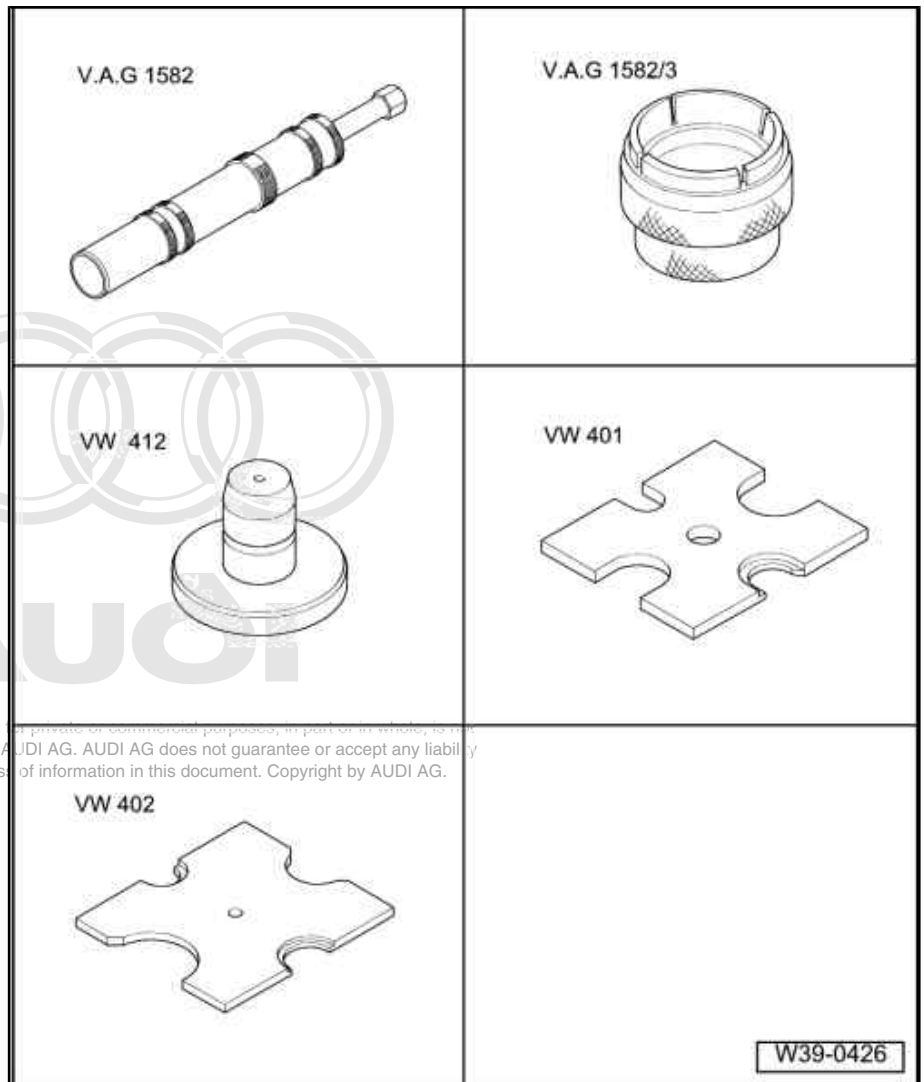
- ☐ Installing ⇒ [page 252](#)

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## 3.2 Dismantling and assembling differential

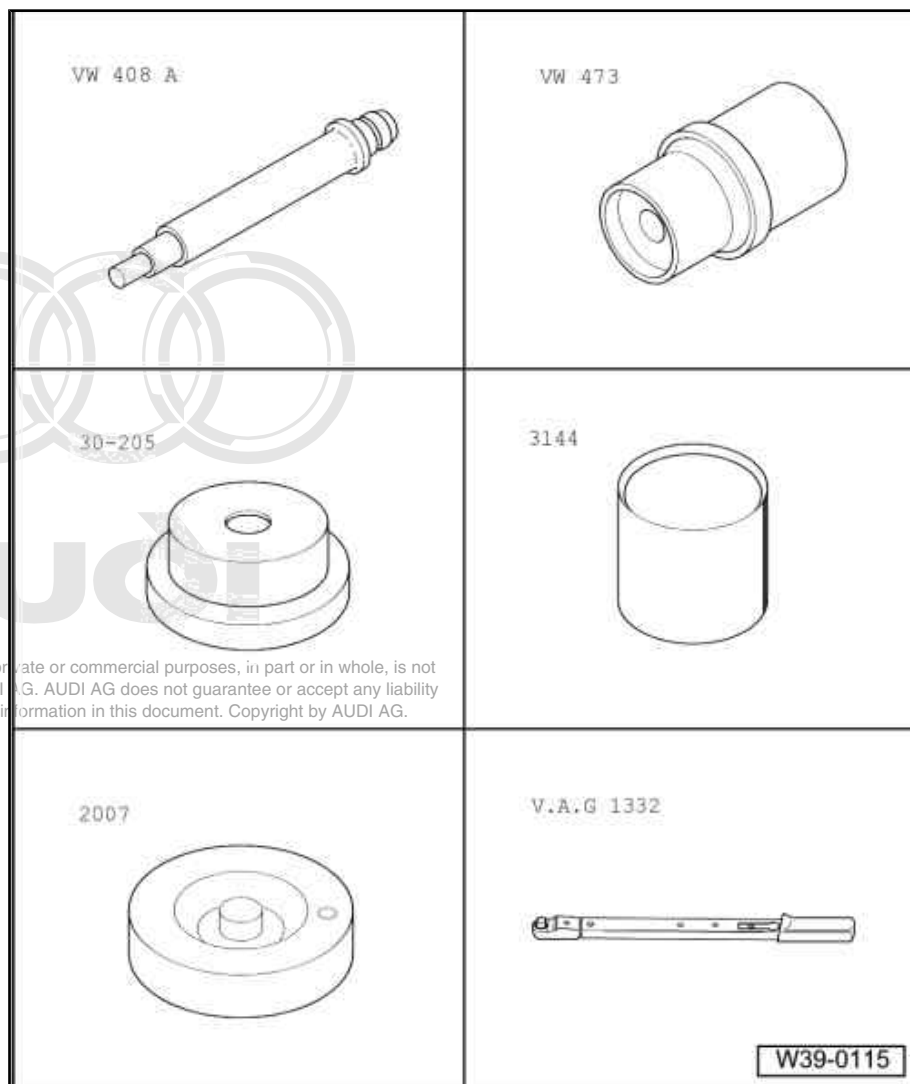
### Special tools and workshop equipment required

- ◆ Tapered roller bearing puller -V.A.G 1582-
- ◆ Adapter -V.A.G 1582/3-
- ◆ Press tool -VW 412-
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-



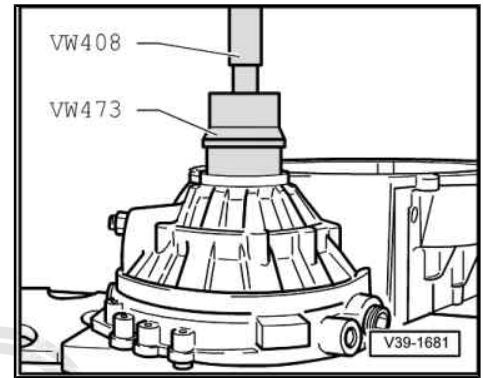
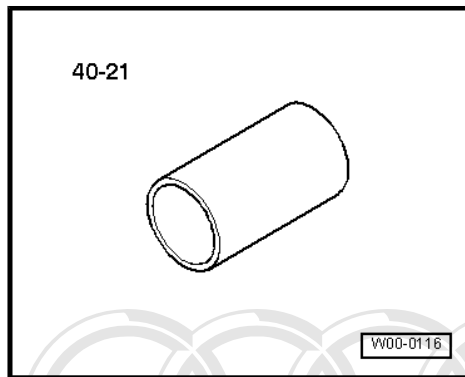
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- ◆ Press tool -VW 408 A-
- ◆ Press tool -VW 473-
- ◆ Thrust plate -30 - 205-
- ◆ Sleeve -3144-
- ◆ Press tool -2007-
- ◆ Torque wrench -V.A.G 1332-

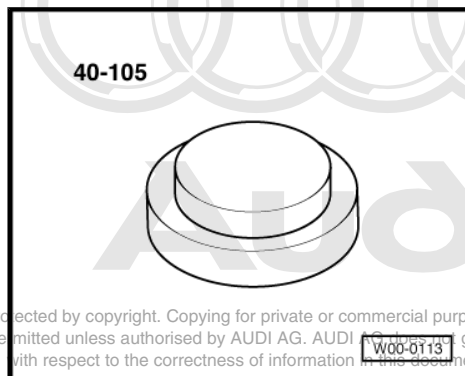


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- ◆ Press tool -40 - 21-

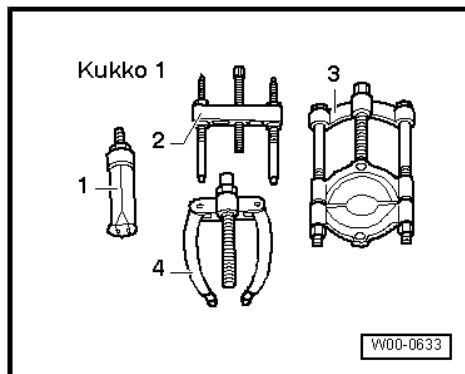


- ◆ Thrust plate -40 - 105-



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- ◆ -1- Internal puller - Kukko 21/7-



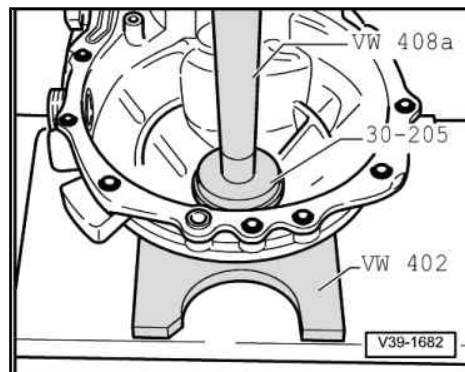
- ◆ -4- Counter-support - Kukko 22/2-

#### Pressing tapered roller bearing outer race out of clutch housing

- First remove mounting sleeve for flange shaft oil seal.

## Pressing tapered roller bearing outer race into clutch housing

No shim is installed on the clutch housing side.



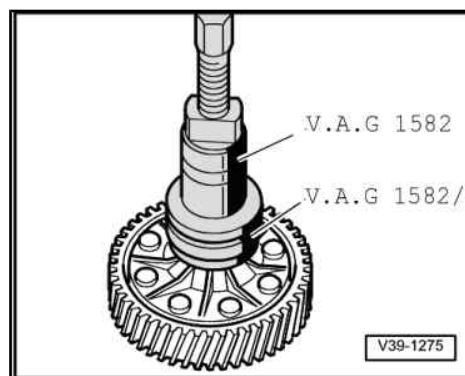
## Pulling off tapered roller bearing inner races

- Before setting up the puller, place thrust plate -40 - 105- on differential cage.



### Note

The procedure for pulling the tapered roller bearing inner races off the differential cage is the same for both bearings.



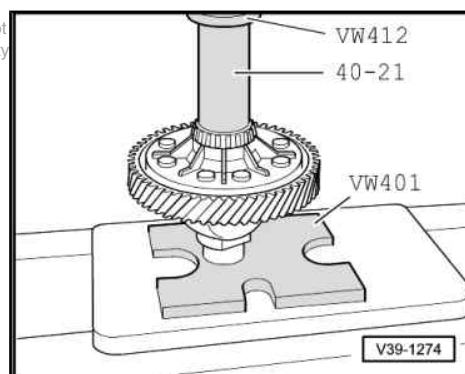
## Pressing on tapered roller bearing inner races

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### Note

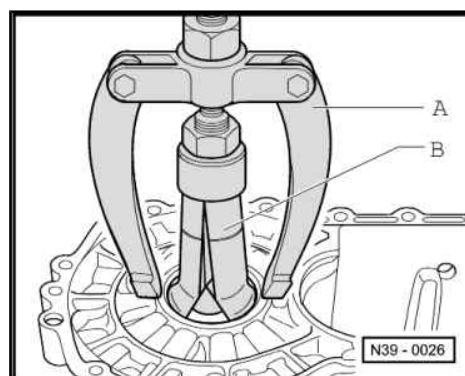
The same special tools are used for pressing on the tapered roller bearing inner races for the gearbox housing and the clutch housing.



## Pulling tapered roller bearing outer race out of gearbox housing

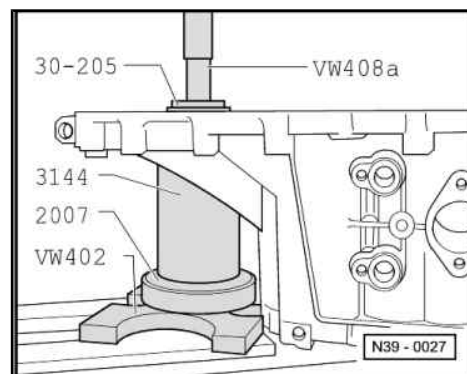
A - Counter-support , e.g. -Kukko 22/2-

B - Internal puller 46 ... 58 mm , e.g. -Kukko 21/7-



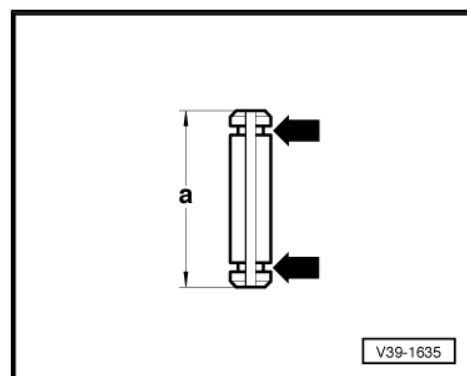
### Pressing tapered roller bearing outer race into gearbox housing

- Fit shim below outer race.
- Support gearbox housing with sleeve -3144- directly below bearing mounting.



### Identification of different types of spring pin

| Dimension „a“ (mm)                                                                                        | Identification          |
|-----------------------------------------------------------------------------------------------------------|-------------------------|
| 28.5 (short spring pin),<br>removing and installing ⇒ <a href="#">page 251</a>                            | Annular groove -arrows- |
| 36.0 (long spring pin),<br>removing ⇒ <a href="#">page 252</a> ,<br>installing ⇒ <a href="#">page 252</a> | No annular groove       |

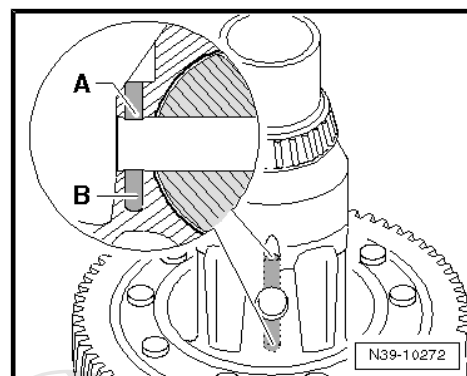


### Identification of differential cage

- Check drilling for spring pin in differential cage.

The drilling in the differential cage has been modified to accommodate the longer spring pin.

| Hole        | Length of spring pin (mm) |
|-------------|---------------------------|
| -A-         | 28.5 (short spring pin)   |
| -A- and -B- | 36.0 (long spring pin)    |



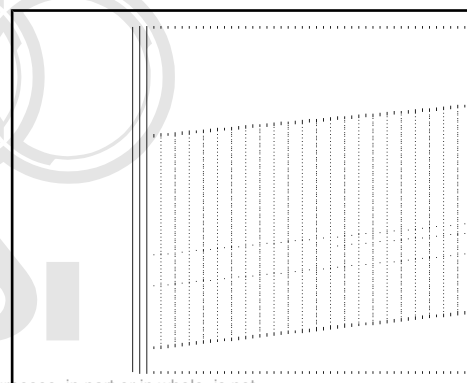
### Spring pin with annular groove (short spring pin): removing and installing

#### Removing

- Cover up tapered roller bearing inner race and speedometer drive wheel to keep out metal particles and to prevent damage.
- Drive out spring pin with chisel, inserting chisel into annular groove.

#### Installing

- Drive fully into differential cage.

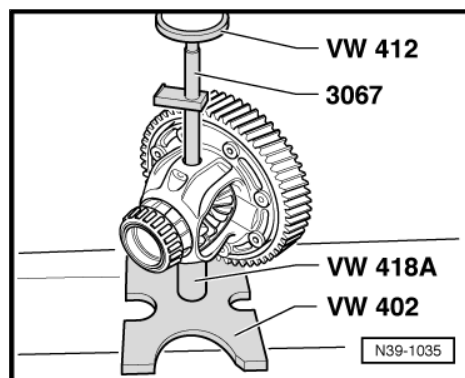


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### Removing spring pin without annular groove (long spring pin): press out differential pinion pin

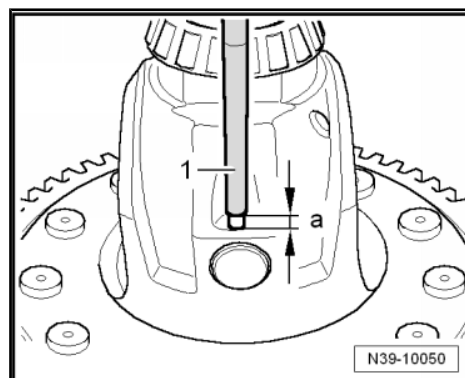
The spring pin is sheared off when pressing out.

- Drive the remaining part of the spring pin out of the differential cage.



### Installing spring pin without annular groove (long spring pin)

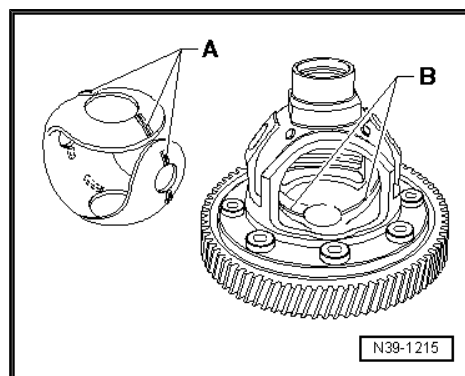
- Align drilling in differential pinion pin with drilling in differential cage.
- Use a punch -1- to drive in new spring pin to dimension -a- = 3.0 mm.
- The spring pin must not come into contact with the gearbox when the differential cage is installed.



On some versions the one-piece thrust washer has a projection next to the holes -A-.

In this case the differential cage has a corresponding annular slot -B-.

- Lubricate one-piece thrust washer with gear oil and install.
- Position one-piece thrust washer so it engages in slot -B- in differential cage.

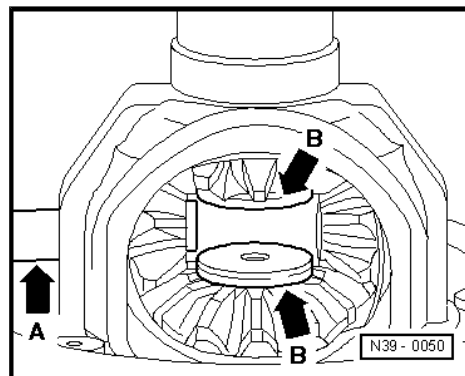


### Installing differential bevel gears and differential pinion pin

- Lubricate one-piece thrust washer with gear oil and install.
- Install both sun wheels and secure (e.g. with flange shaft).
- Fit planet pinions (180° apart) and pivot into position.
- Push differential pinion pin -arrow A- in as far as first planet pinion.
- Fit threaded pieces -arrows B- in sun wheels.

Installation position: Stepped shoulder towards sun wheel

- Drive differential pinion pin into final position and secure with spring pin.

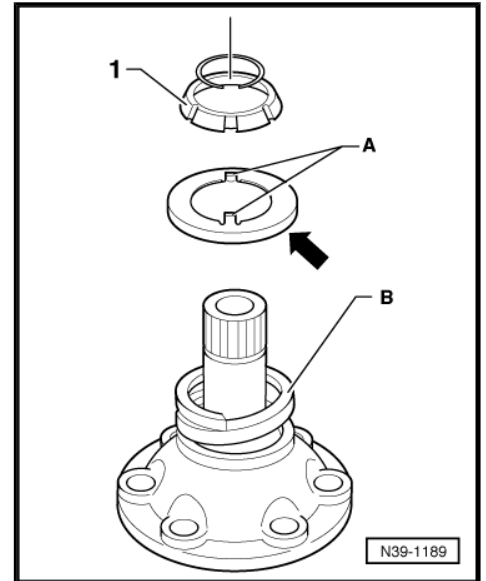


### Installation position of thrust washer for tapered ring -1-

Collar -arrow- faces spring -B-.

Some gearbox versions have projections -A-.

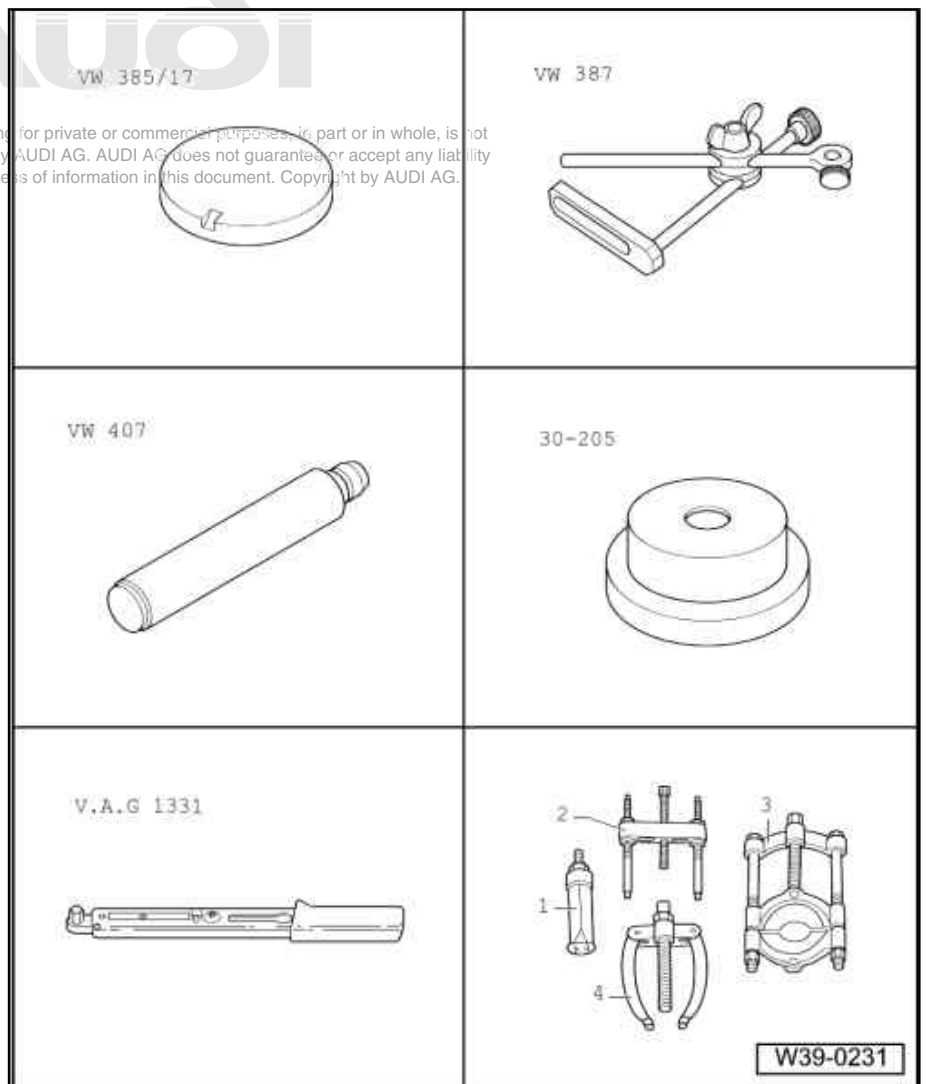
The projections -A- face towards tapered ring -1-.



## 3.3 Adjusting differential

### Special tools and workshop equipment required

- ◆ End measuring plate - VW 385/17-
- ◆ Universal dial gauge bracket - VW 387-
- ◆ Press tool -VW 407-
- ◆ Thrust plate -30 - 205-
- ◆ Torque wrench - V.A.G 1331-
- ◆ -1- Internal puller -Kukko 21/7-
- ◆ -4- Counter-support -Kukko 22/2-
- ◆ Dial gauge





## Procedure

The differential has to be readjusted when the following components are renewed:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Differential cage

or the

- ◆ Tapered roller bearings for differential

Table of adjustments ⇒ [page 244](#)

- Press tapered roller bearing outer race without shim into gearbox housing using thrust plate -30 - 205- ⇒ [page 250](#) .



## Note

*The tapered roller bearing inner and outer races are paired. Do not interchange.*

- Press tapered roller bearing outer race into clutch housing ⇒ [page 251](#) using thrust plate -30 - 205- .
- Install differential in clutch housing.
- Place gearbox housing in position and tighten 5 bolts to 25 Nm.



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- Attach dial gauge and set to „0“ with a preload of 1 mm.
- Move differential up and down and read off and note play indicated on dial gauge. (0.70 mm in this example.)

### Determining thickness of shim

The specified bearing preload is obtained by adding a constant preload figure (0.25 mm) to the reading indicated (0.70 mm).

### Example:

| Bearing clearance (measured value) | Thickness of shim according to table |
|------------------------------------|--------------------------------------|
| 0.70 mm                            | 0.95 mm                              |

### Table of shims

| Bearing clearance   | Shim           |
|---------------------|----------------|
| Measured value (mm) | Thickness (mm) |
| 0.303 ... 0.449     | 0.650          |
| 0.450 ... 0.499     | 0.700          |
| 0.500 ... 0.549     | 0.750          |
| 0.550 ... 0.599     | 0.800          |
| 0.600 ... 0.649     | 0.850          |
| 0.650 ... 0.699     | 0.900          |
| 0.700 ... 0.749     | 0.950          |
| 0.750 ... 0.799     | 1.000          |
| 0.800 ... 0.849     | 1.050          |
| 0.850 ... 0.899     | 1.100          |
| 0.900 ... 0.949     | 1.150          |
| 0.950 ... 0.999     | 1.200          |
| 1.000 ... 1.049     | 1.250          |
| 1.050 ... 1.099     | 1.300          |
| 1.100 ... 1.149     | 1.350          |
| 1.150 ... 1.199     | 1.400          |



### Note

- ◆ Select correct shims from ➔ *Electronic parts catalogue*.
- ◆ Tolerance variations make it possible to obtain the exact shim thickness required.

- Detach gearbox housing and pull tapered roller bearing outer race out of gearbox housing.

A - Counter-support , e.g. -Kukko 22/2-

B - Internal puller 46 ... 58 mm , e.g. -Kukko 21/7-

- Insert shim of correct thickness.

If the size of the shim required is larger than those listed in the table, install two shims amounting to the correct value. Install the thicker of the two shims first.

- Press in outer race of differential tapered roller bearing again and secure gearbox housing ➔ [page 250](#)

