Workshop Manual

Audi A4 2008 ➤
Audi A5 Coupé 2008 ➤

Servicing 6-speed manual gearbox 0B4, four-wheel drive

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Edition 01.2014

List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

39 - Final drive - differential

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

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00 – Technical data

1 Identification

(ARL003547; Edition 01.2014)

⇒ "1.1 Gearbox identification", page 1

1.1 Gearbox identification

- -Arrow- gearbox code letters, serial number and gearbox Part No. ⇒ page 1

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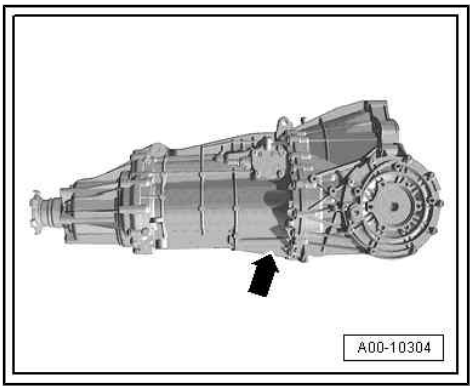
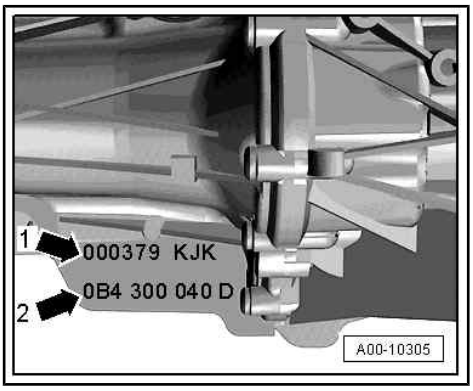


-Arrow 1- gearbox code letters and consecutive serial number

Example:	001379	KTV
	Serial number	Code letters

-Arrow 2- manual gearbox "0B4" with gearbox Part No. (e.g. 0B4 300 040 H)



Note

- *For detailed information on code letters, gearbox allocation, transmission ratios and capacities please refer to the Workshop Manual ⇒ 6-speed manual gearbox 0B4; Rep. gr. 00 ; Technical data .*
- *Additional data are manufacture-related.*
- *The code letters for the gearbox are also given on the vehicle data stickers.*

2 Repair instructions

⇒ “2.1 General repair instructions”, page 2

2.1 General repair instructions

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

To avoid repetition, a number of generally applicable instructions for the various repair procedures are summarised here. They apply to the work described in this Manual.

Special tools

For a complete list of special tools used in this Workshop Manual ⇒ Workshop equipment and special tools catalogue .

Gearbox

- Allocate bolts and other components according to gearbox code letters, refer to ⇒ Electronic parts catalogue .
- Thoroughly clean all joints and connections and the surrounding areas before dismantling.
- When exchanging or repairing the manual gearbox, check the oil level and fill up with oil if necessary ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .
- Determine capacities and specifications according to the gearbox code letters ⇒ 6-speed manual gearbox 0B4; Rep. gr. 00 ; Technical data; Capacities .

Sealants

- Thoroughly clean joint surfaces on gearbox housing etc. before applying sealing paste.
- Apply sealing paste - AMV 188 001 02- evenly and not too thickly.
- Breather holes must remain free of sealing paste.

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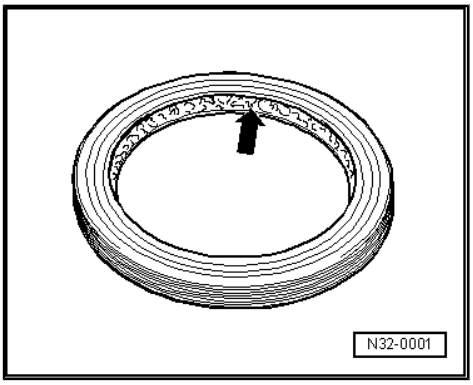
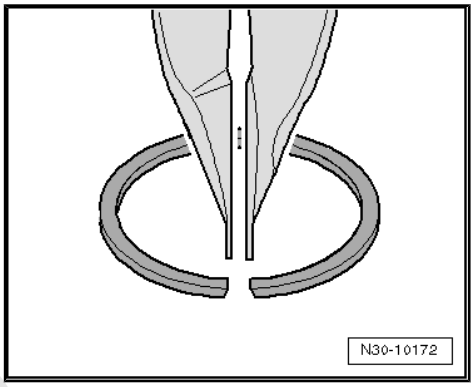
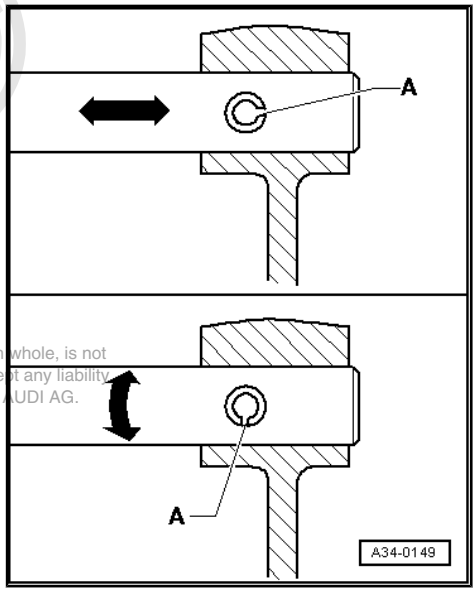
O-rings, oil seals and gaskets



- Always renew O-rings, oil seals and gaskets after removal.
- 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.
- Thoroughly clean housing joint surfaces before assembling.
- 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 before installation to prevent them from being trapped and damaged during assembly.
- After renewing oil seals and gaskets, check and, if necessary, top up oil level in gearbox ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .

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-.

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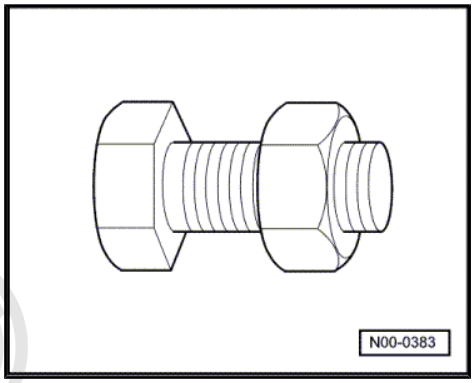
Bolts and nuts



- 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.
- The tightening torques stated apply to non-oiled nuts and bolts.
- Always renew self-locking bolts and nuts.
- Use a wire brush to clean the threads of bolts which are secured with locking fluid. Then apply locking fluid - AMV 185 101 A1- to bolt threads before installing.
- 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.

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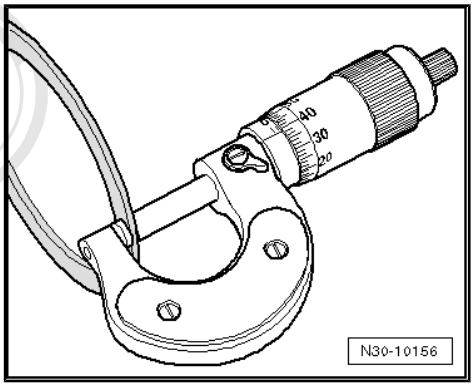
Shims



- 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.
- Do not install shims which are damaged or not in perfect condition.

Bearings

- Install needle bearings, ball sleeves and roller bearings so the lettering (side with thicker metal) faces towards the installing tool.
- Lubricate all bearings in gearbox with gear oil when 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.
- Heat inner races of needle bearings and roller bearings to max. 130 °C.
- 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.

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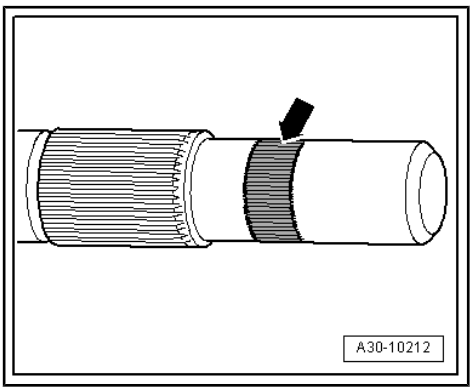
Gear wheels, synchro-hubs, inner races for selector gears

- Before installing, heat inner races for selector gears to approx. 100° C using inductive heater - VAS 6414- .
- Use inductive heater - VAS 6414- to heat synchro-hubs to approx. 100 °C before installing. Press home onto stop when installing so there is no axial clearance.
- Use inductive heater - VAS 6414- to heat gear wheels to approx. 150 °C before installing. Press home onto stop when installing so there is no axial clearance.
- Note correct installation position.

Selector gears

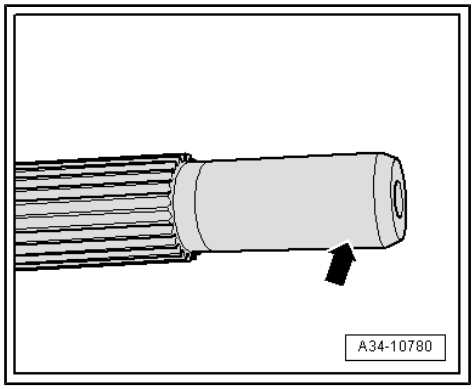
- After installing, check that 1st to 6th speed selector gears have an axial clearance of 0.15 ... 0.50 mm and check that they rotate freely.

Input shaft



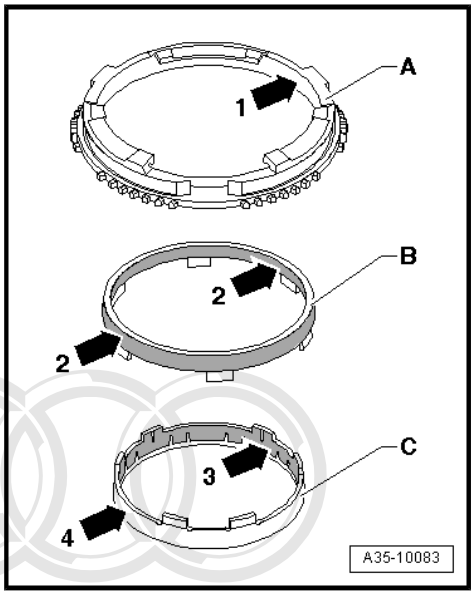
- If there is visible damage on the surface of the input shaft in the vicinity of the needle bearing for the dual-mass flywheel -arrow-, both the input shaft and the needle bearing in the dual-mass flywheel must be renewed
  ⇒ “2.6 Renewing needle bearing for dual-mass flywheel”, page 34 .
- Renewing input shaft
  ⇒ “3.7 Dismantling and assembling gearbox”, page 49

- Check input shaft for scoring around bearing in drive plate -arrow-. Renew needle bearing in drive plate if necessary ⇒ Rep. gr. 13 ; Cylinder block (gearbox end); Renewing needle bearing in drive plate .



Synchro-rings

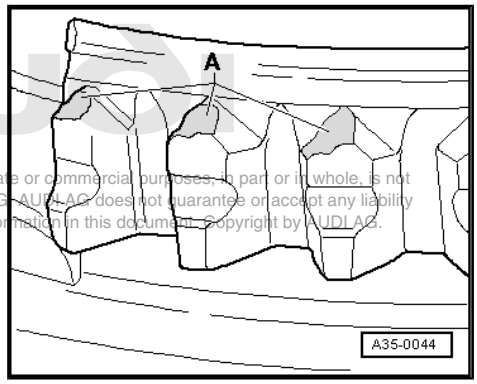
- Do not interchange. When reusing synchro-rings, always fit to the same selector gear.
- Check for wear; renew if necessary.
- Lubricate with gear oil before installing.
- Check the coated contact surfaces -arrows 2- on intermediate ring -B- for damage (flattened sections or particles of carbon coating broken away).
- Check inner contact surface -arrow 1- on synchro-ring -A- and outer contact surface -arrow 4- on inner ring -C- for grooves or scoring.
- Check for damage to coating on inner rings -C- with coated contact surface -arrow 3- (particles of carbon coating broken away).



Abnormal wear on selector gears and locking collars

- Abnormal wear on synchro-ring or selector gear:

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



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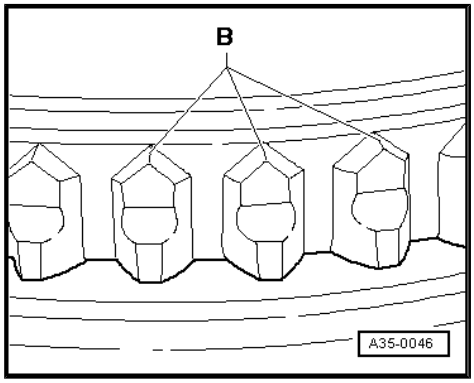
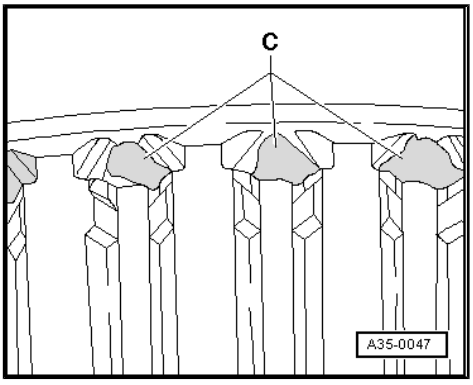
- In comparison: intact synchro-ring or selector gear:

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



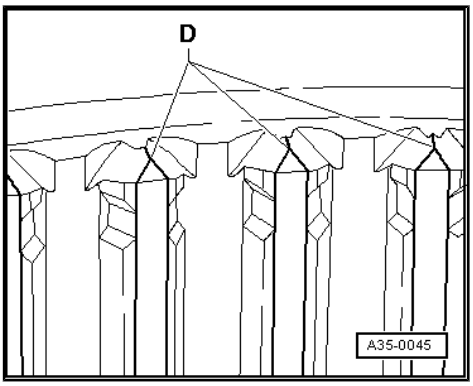
♦ Abnormal wear on locking collar:

C - Worn chamfer on internal splines of locking collar



♦ In comparison: intact locking collar:

D - Intact chamfer on internal splines of locking collar



♦ Always renew synchro-rings with carbon coating together with locking collar. Renew selector gears also if there are traces of wear.

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30 – Clutch

1 Clutch mechanism

⇒ "1.1 Exploded view - clutch release mechanism", page 8

⇒ "1.2 Servicing clutch release mechanism", page 11

1.1 Exploded view - clutch release mechanism

1 - Ball-head pin

- ❑ 25 Nm
- ❑ Coat bearing surface for clutch release lever -arrow A- with grease for clutch plate splines - G 000 100-

2 - Intermediate piece

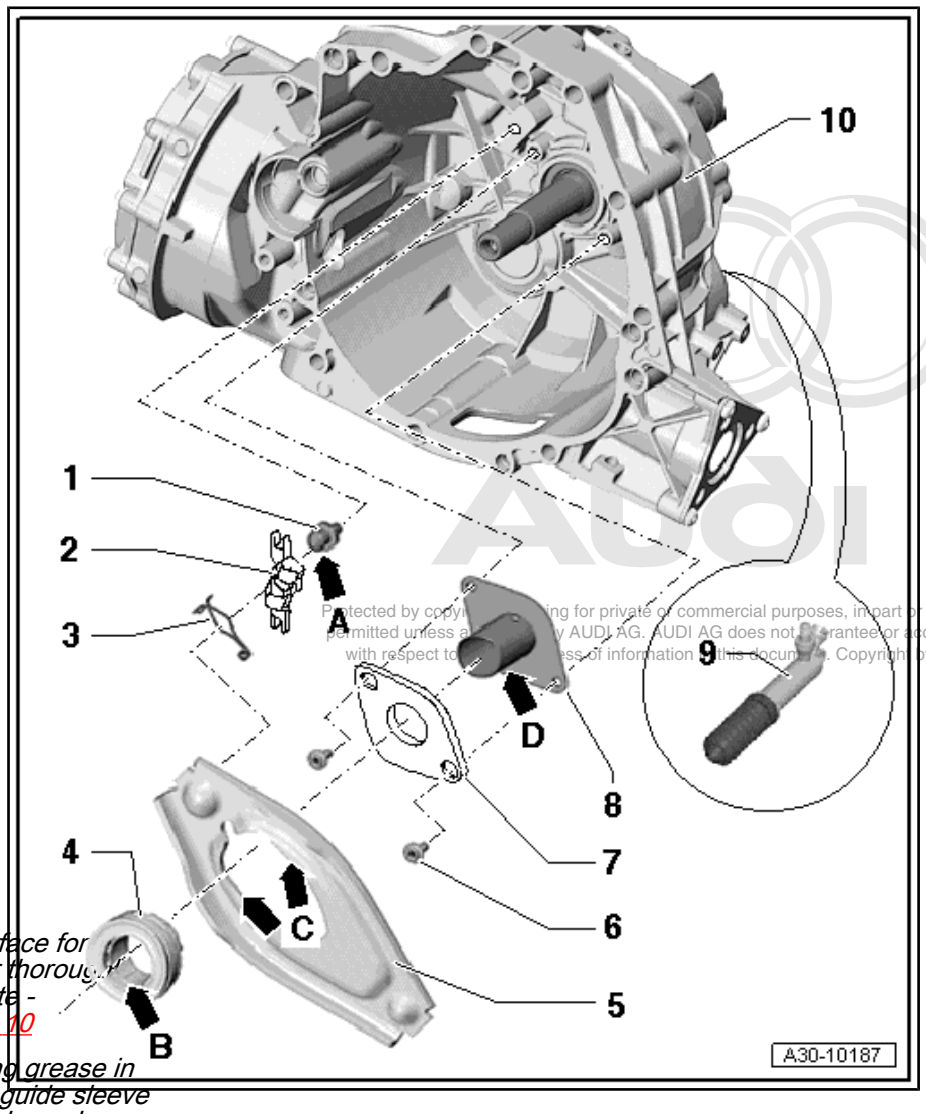
- ❑ Renew if damaged

3 - Retaining spring

- ❑ Engage on clutch release lever

4 - Release bearing

- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Do not wash out; wipe clean only
- ❑ Renew bearing if noisy
- ❑ Retainer lugs on release bearing must engage in release lever
- ❑ Removing and installing ⇒ page 11



Note

- *Grease bearing surface for clutch release lever thoroughly with lubricating paste - G 000 150- ⇒ page 10*
- *Remove any existing grease in bearing surface for guide sleeve -arrow B- - clutch release bearing must be ritted free of grease on guide sleeve*

Release bearing up to 02.2008

- Inner diameter -arrow B-: 34 mm
- Checking release bearing ⇒ page 10

Clutch release bearing with tumbler ring - from 02.2008 onwards

- Inner diameter -arrow B-: 36 mm
- Checking release bearing with tumbler ring ⇒ page 10

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5 - Clutch release lever

- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Remove existing grease from release lever
- ❑ Re-grease bearing surface for release bearing -arrows C- with lubricating paste - G 000 150-
- ❑ Removing and installing ⇒ page 11

6 - Bolt

- ❑ 8 Nm
- ❑ Different bolt length
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ 2x
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

7 - Retaining piece

- ❑ For guide sleeve

Note

- ♦ *Discontinued as of 02.2008*
- ♦ *Is also omitted when new guide sleeve is installed ⇒ Item 8 (page 9)*
- ♦ *For correct version, refer to ⇒ Electronic parts catalogue*

8 - Guide sleeve

- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Remove grease from guide sleeve -arrow D- – clutch release bearing must be fitted free of grease on guide sleeve

Guide sleeve up to 02.2008

- Diameter -arrow D-: 34 mm
- If renewed, install without retaining piece ⇒ Item 7 (page 9)

Guide sleeve from 02.2008 onwards

- Fitted on clutch release bearing with tumbler ring ⇒ page 10
- Diameter -arrow D-: 36 mm
- Is installed without retaining piece ⇒ Item 7 (page 9)

9 - Clutch slave cylinder

- ❑ Removing and installing ⇒ 6-speed manual gearbox 0B4; Rep. gr. 30 ; Clutch mechanism; Removing and installing clutch slave cylinder
- ❑ Do not operate clutch pedal after slave cylinder has been removed
- ❑ Observe correct sequence when bleeding ⇒ 6-speed manual gearbox 0B4; Rep. gr. 30 ; Clutch mechanism; Bleeding clutch mechanism
- ❑ When installing, push in until the securing bolt can be fitted.

10 - Gearbox

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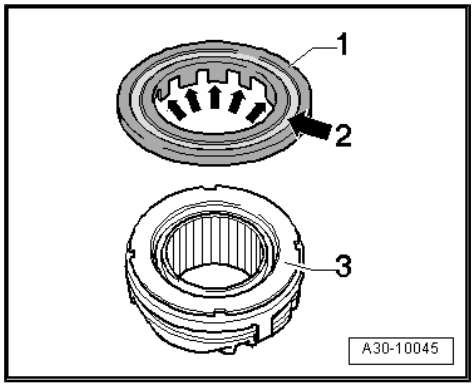
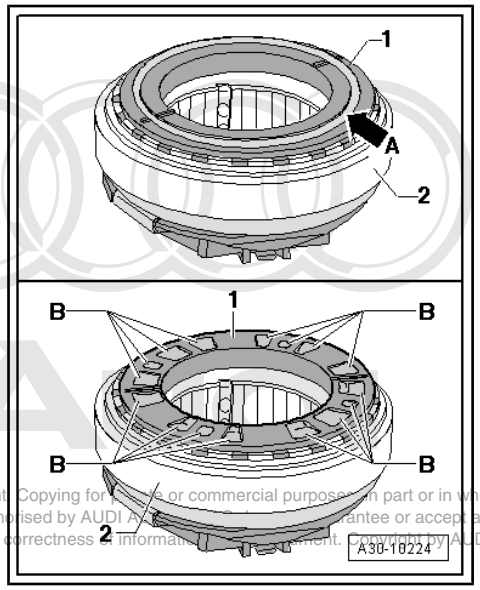
Checking release bearing (up to 02.2008)



- The release bearing must be renewed if the plastic ring -1- has come loose.
- The release bearing -3- must be renewed if the groove -arrow 2- worn on the plastic ring -1- is deeper than 0.8 mm.

Checking clutch release bearing with tumbler ring (swash plate) - from 02.2008 onwards



Different versions:

- ♦ Tumbler ring -1- with annular groove -arrow A-
- ♦ Tumbler ring -1- without groove (when new)
- ♦ Tumbler ring -1- with indentations -B- (used release bearing)

Check:

- Axial and radial clearance is permissible on the tumbler ring -1- of the release bearing.
- The tumbler ring (swash plate) -1- should be able to tilt to all sides in the release bearing -2-.
- The release bearing must be renewed if the groove -arrow A- or the indentations -B- in the tumbler ring -1- are deeper than 0.8 mm.
- The tumbler ring is a relatively loose fit when the release bearing is not in contact with the clutch.

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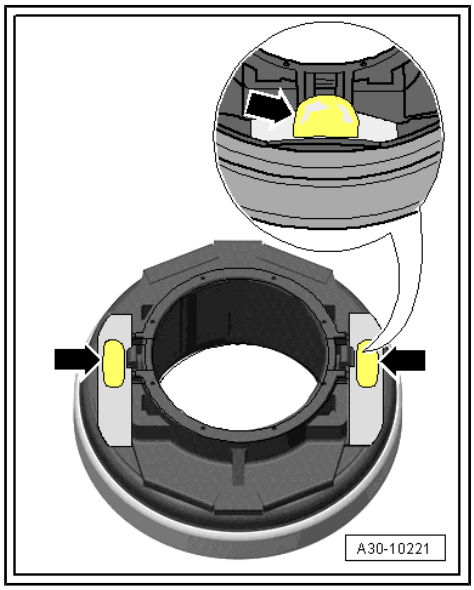
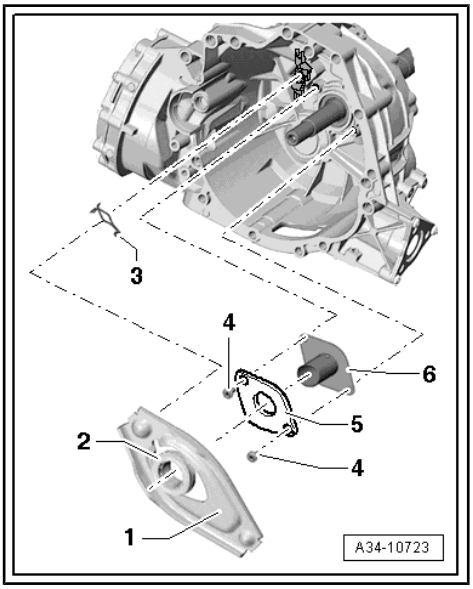
Greasing release bearing



Caution

- *Grating/creaking noises can occur when clutch is operated.*
- *Lack of grease at the bearings -arrows- on the release bearing assembly can cause creaking/grating noises when the clutch is operated.*
- *Grease bearings -arrows- on release bearing assembly thoroughly with lubricating paste - G 000 150- .*
- *Remove grease in bearing surface for guide sleeve: bearing on guide sleeve must be free of grease.*

1.2 Servicing clutch release mechanism



Removing

– Remove clutch release lever -1- together with release bearing -2- and retaining spring -3-.

– Remove bolts -4- and detach retaining piece -5- (if fitted) with guide sleeve -6-.

– Remove any existing grease on clutch release lever -1-, release bearing -2- and guide sleeve -6-.

Installing

– Clean guide sleeve -6- and install together with retaining piece -5- (if previously fitted).

– Clean threads of bolts -4- with wire brush. Then apply locking fluid - AMV 185 101 A1- to bolts and tighten. Tightening torque ⇒ Item 6 (page 9)

Caution

Grating/creaking noises can occur when clutch is operated.

- *Grease bearing surfaces for clutch release lever with lubricating paste - G 000 150- ⇒ Item 5 (page 9) .*

– Engage release bearing -2- and retaining spring -3- in release lever -1- and install complete assembly.

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2 Clutch

⇒ “2.1 General notes on clutch”, page 12

⇒ “2.2 Exploded view - clutch unit”, page 15

⇒ “2.3 Removing and installing clutch module”, page 20

⇒ “2.4 Removing and installing clutch”, page 24

⇒ “2.5 Resetting adjuster ring in pressure plate”, page 32

⇒ “2.6 Renewing needle bearing for dual-mass flywheel”, page 34

2.1 General notes on clutch

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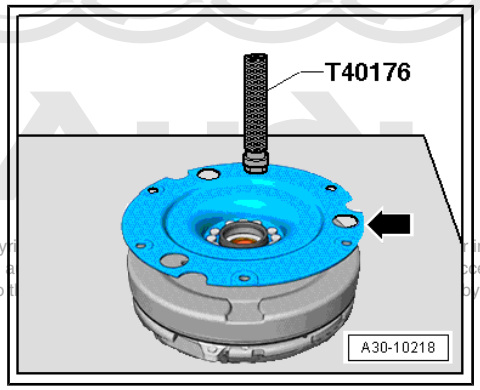

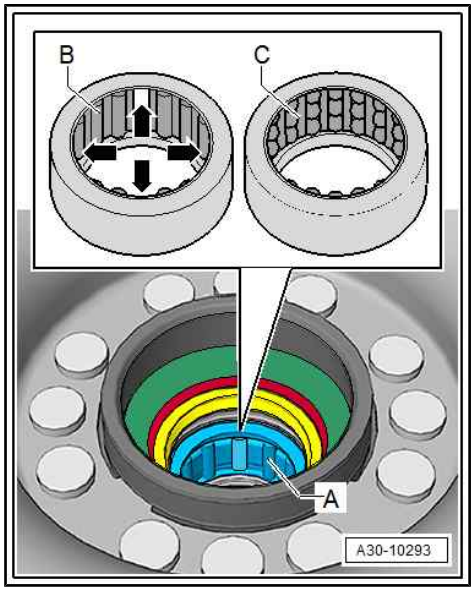

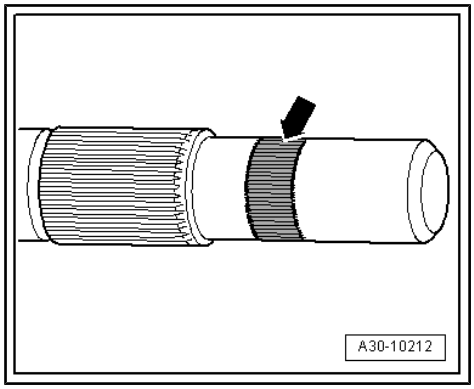

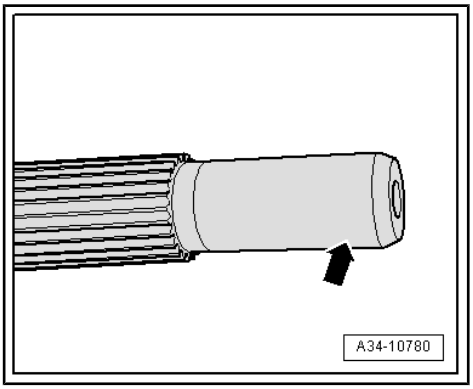

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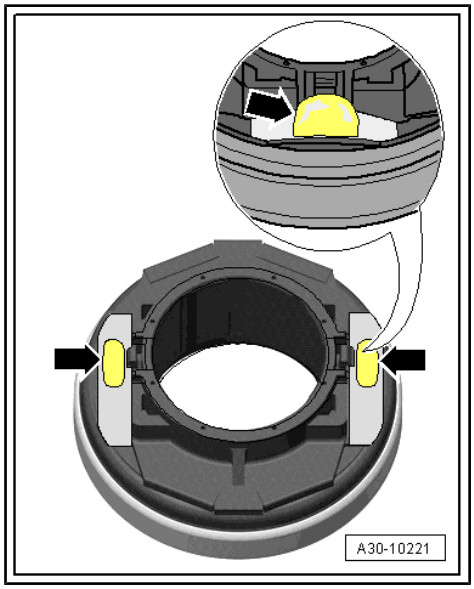

Note

- *Servicing clutch mechanism and clutch hydraulics ⇒ 6-speed manual gearbox 0B4; Rep. gr. 30 ; Clutch mechanism*
- *The gearbox must be removed before working on the clutch ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .*
- *To avoid damaging SAC pressure plate (self-adjusting clutch) when removing and installing, observe assembly instructions for pressure plate ⇒ "2.4.1 Removing and installing clutch - single-plate clutch, LuK version", page 24 or ⇒ "2.4.2 Removing and installing clutch - twin-plate clutch", page 28 .*
- *On vehicles with single-plate clutch with SAC pressure plate, an adjuster ring has to be reset when only the clutch plate is renewed ⇒ page 32 .*
- *Checking clutch pressure plate for distortion ⇒ page 17*
- *Renew clutch plate and pressure plate if riveted fastening is damaged or loose.*
- *Select the correct clutch plate and pressure plate according to engine code ⇒ Electronic parts catalogue .*
- *Clutch pressure plates have an anti-corrosion coating and are greased. With the exception of the friction surface for the clutch plate, the clutch pressure plate must not be cleaned. Otherwise, the service life of the clutch will be considerably reduced.*
- *The friction surface of the clutch pressure plate and the dual-mass flywheel must be cleaned (degreased) thoroughly.*
- *If the clutch has burnt out, thoroughly clean the gearbox housing in area of clutch and parts of the engine facing the gearbox in order to prevent odours.*
- *Blow out clutch module with compressed air only.*
- *Do not put down clutch module with flange -arrow- for drive plate facing downwards.*
- *This could bend the flange -arrow- for the drive plate, which would cause problems with clutch operation.*
- *Depending on the version, the following types bearings may be fitted in the flywheel:*
- *Needle bearing -A- with the full number of rollers.*
- *Needle bearing -B- with every 4th needle roller missing -arrows-.*
- *The fact that every 4th needle roller is missing does not mean that the needle bearing -B- is defective. Do not renew the needle bearing.*
- *New needle bearings have the full number of rollers.*
- *Ball bearing -C-.*
- *If there is visible damage on the surface of the input shaft in the vicinity of the needle bearing for the dual-mass flywheel -arrow-, both the input shaft and the needle bearing in the dual-mass flywheel must be renewed ⇒ page 34 .*
- *Renewing input shaft ⇒ "3.7 Dismantling and assembling gearbox", page 49*

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- *Check input shaft for scoring around bearing in drive plate -arrow-. Renew needle bearing in drive plate if necessary ⇒ Rep. gr. 13 ; Cylinder block (gearbox end); Renewing needle bearing in drive plate .*
- *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.*
- *Remove grease from input shaft bearing journal as far as splines.*
- *Lack of grease at the bearings -arrows- on the release bearing assembly can cause creaking/grating noises when the clutch is operated.*
- *Grease bearings -arrows- on release bearing assembly thoroughly with lubricating paste - G 000 150- .*

2.2 Exploded view - clutch unit

⇒ "2.2.1 Exploded view - single-plate clutch (LuK version)", page 15

⇒ "2.2.2 Exploded view - twin-plate clutch", page 18

2.2.1 Exploded view - single-plate clutch (LuK version)

Note

- *The LuK version clutch has an SAC pressure plate.*
- *"SAC" stands for "Self-Adjusting Clutch".*
- *Observe notes on clutch ⇒ page 12 .*

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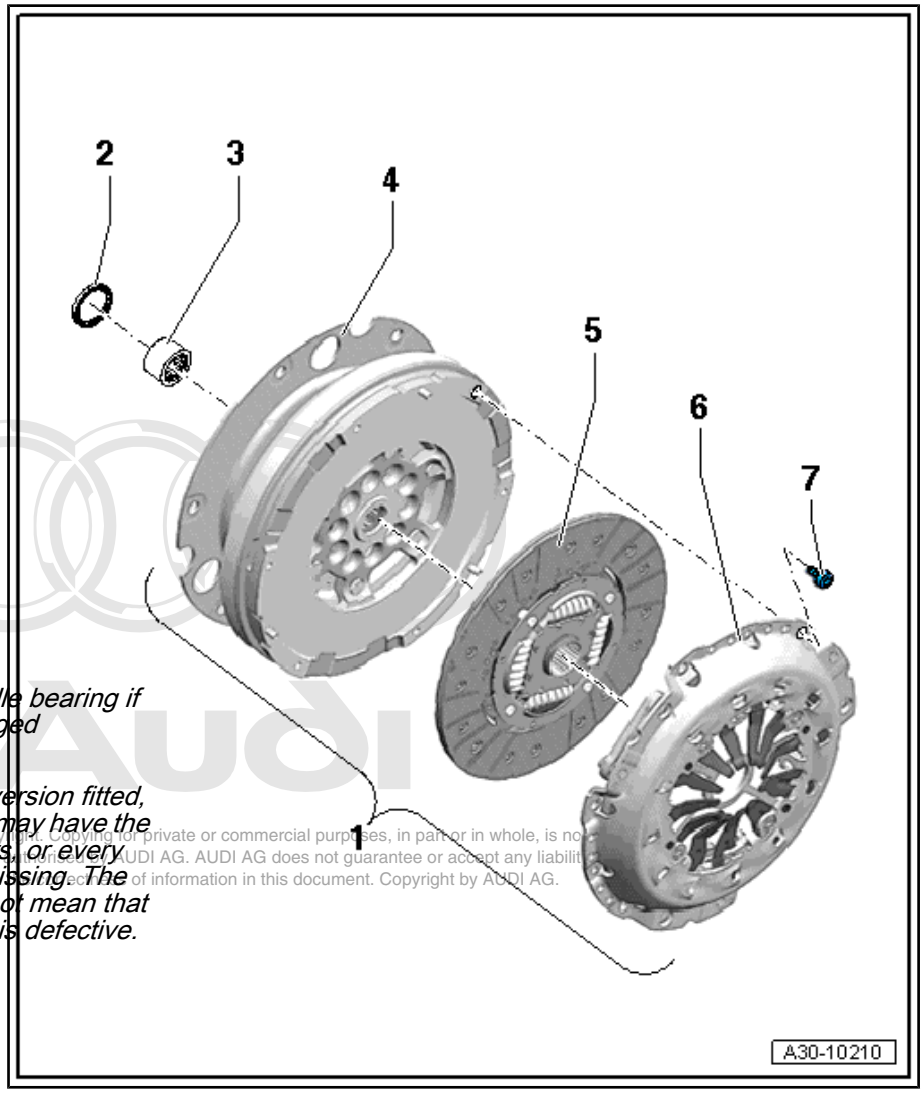

1 - Clutch module

- ❑ Removing and installing ⇒ page 20

2 - Oil seal

- ❑ For dual-mass flywheel
- ❑ Pulling out ⇒ page 35
- ❑ Driving in ⇒ page 37

3 - Needle bearing

- ❑ For dual-mass flywheel
- ❑ Different versions ⇒ page 17
- ❑ Check and renew if necessary ⇒ page 17
- ❑ Pressing out ⇒ page 36
- ❑ Pressing in ⇒ page 36

Note

- *Always renew needle bearing if input shaft is damaged ⇒ page 35*
- *Depending on the version fitted, the needle bearing may have the full number of rollers, or every 4th roller may be missing. The missing rollers do not mean that the needle bearing is defective.*

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4 - Dual-mass flywheel

- ❑ With flange for drive plate
- ❑ Ensure that dowel pins fit tightly
- ❑ Contact surface for clutch lining must be free of grooves, oil and grease
- ❑ Removing and installing ⇒ “2.4.1 Removing and installing clutch - single-plate clutch, LuK version”, page 24

5 - Clutch plate

- ❑ Removing and installing ⇒ page 24
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Installation position: marking “Getriebeseite” (gearbox side) faces towards pressure plate
- ❑ If fitted, coil springs (damper assembly) face towards pressure plate

6 - SAC pressure plate

- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 24
- ❑ Resetting adjuster ring ⇒ page 32
- ❑ Checking ends of diaphragm spring ⇒ page 17
- ❑ Checking pressure plate for distortion ⇒ page 17
- ❑ Checking springs and riveting ⇒ page 18
- ❑ Contact surface for clutch lining must be free of grooves, oil and grease

7 - Bolt

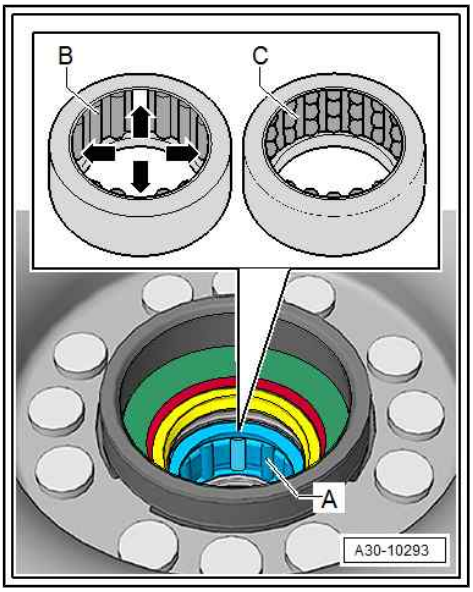
- ❑ 22 Nm and then turn 90° further
- ❑ Always renew

- ❑ Secures pressure plate to dual-mass flywheel
- ❑ Observe assembly instructions ⇒ page 24 for loosening or tightening

Checking needle bearing in dual-mass flywheel

Depending on the version, the following types of bearings may be fitted in the dual-mass flywheel:

- ♦ Needle bearing -A- with the full number of rollers.
- ♦ Needle bearing -B- with every 4th needle roller missing -arrows- (this not mean the needle bearing is defective).
- ♦ New needle bearings have the full number of rollers.
- ♦ Ball bearing -C-.

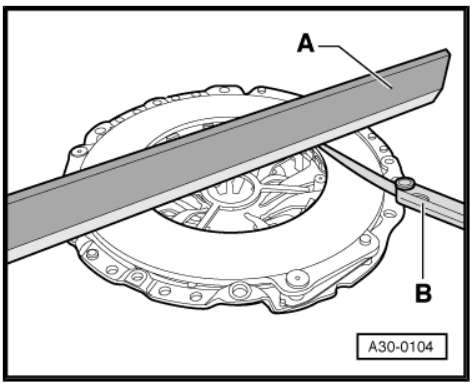


Checking SAC pressure plate for distortion, cracks and burning

A - Straightedge

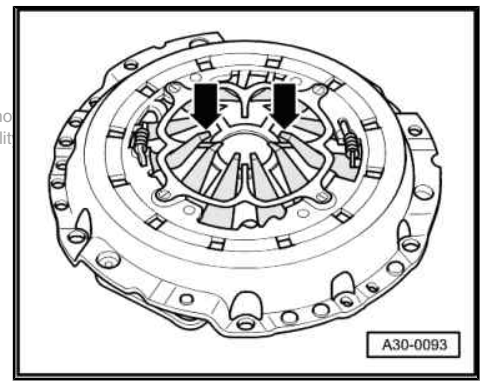
B - Feeler gauge

- Pressure plate distortion up to 0.8 mm is permissible.



Checking ends of diaphragm spring

- Wear up to 0.3 mm (maximum) is permissible.



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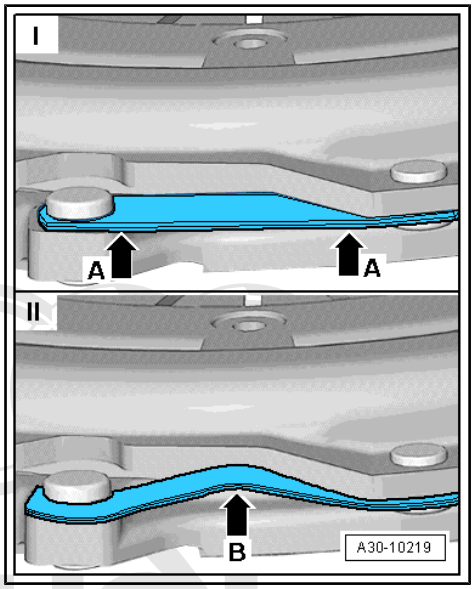
Checking springs and riveting

I - Springs OK

- Slight kinking on the outside -arrows A- is normal on production parts.

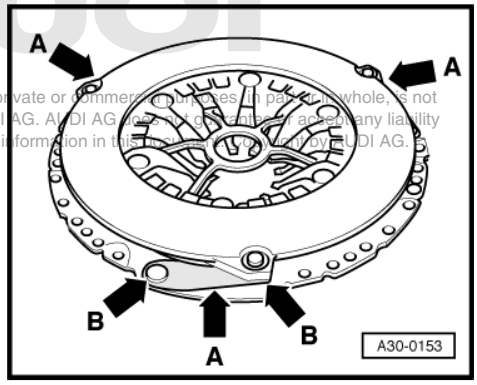
II - Springs damaged

- Renew pressure plate if springs are broken or badly bent -arrow B-.



– Check that rivets -arrows B- are secure at all springs -arrows A-.

- Renew pressure plate if rivets -arrows B- are loose.



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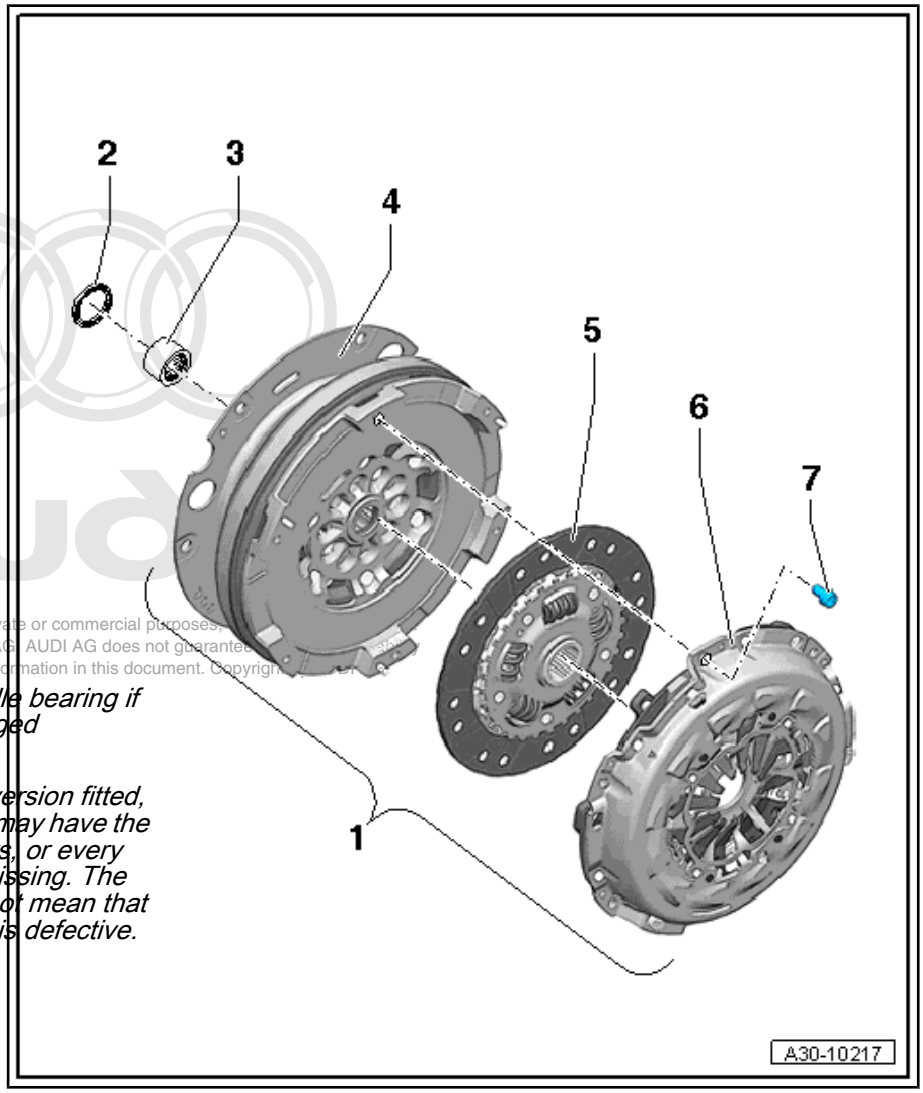
2.2.2 Exploded view - twin-plate clutch

Note

- *The two clutch plates and the SAC pressure plate are one unit and can only be renewed together.*
- *One of the two clutch plates is integrated in the pressure plate. It is not possible to remove it for inspection.*
- *Observe notes on clutch* ⇒ page 12 .



1 - Clutch module

- ❑ Removing and installing ⇒ page 20

2 - Oil seal

- ❑ For dual-mass flywheel
- ❑ Pulling out ⇒ page 35
- ❑ Driving in ⇒ page 37

3 - Needle bearing

- ❑ For dual-mass flywheel
- ❑ Different versions ⇒ page 17
- ❑ Check and renew if necessary ⇒ page 17
- ❑ Pressing out ⇒ page 36
- ❑ Pressing in ⇒ page 36

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Note

- ♦ *Always renew needle bearing if input shaft is damaged ⇒ page 35*
- ♦ *Depending on the version fitted, the needle bearing may have the full number of rollers, or every 4th roller may be missing. The missing rollers do not mean that the needle bearing is defective.*

4 - Dual-mass flywheel

- ❑ With flange for drive plate
- ❑ Ensure that dowel pins fit tightly
- ❑ Contact surface for clutch lining must be free of grooves, oil and grease
- ❑ Removing and installing ⇒ “2.4.2 Removing and installing clutch - twin-plate clutch”, page 28

5 - Clutch plate

- ❑ Can only be replaced in conjunction with pressure plate ⇒ Item 6 (page 19)
- ❑ Removing and installing ⇒ page 28
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Installation position: Clutch lining must make full contact with flywheel
- ❑ The marking “Getriebeseite” (gearbox side), if provided, faces towards pressure plate/gearbox

6 - SAC pressure plate

- ❑ Second clutch plate is integrated in pressure plate
- ❑ Can only be replaced in conjunction with clutch plate ⇒ Item 5 (page 19)
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 28
- ❑ Checking ends of diaphragm spring ⇒ page 17
- ❑ Checking pressure plate for distortion ⇒ page 17
- ❑ Checking springs and riveting ⇒ page 18
- ❑ Contact surface for clutch lining must be free of grooves, oil and grease

7 - Bolt

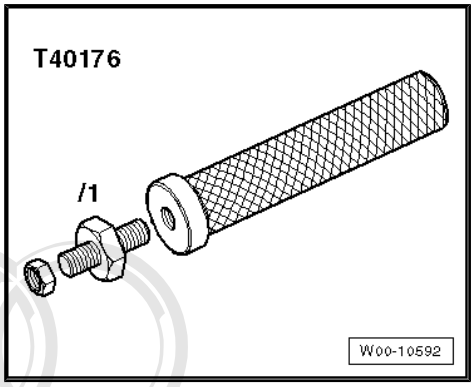
- ❑ 22 Nm and then turn 90° further

- ❑ Always renew
- ❑ Secures pressure plate to dual-mass flywheel
- ❑ Observe assembly instructions ⇒ page 28 for loosening or tightening

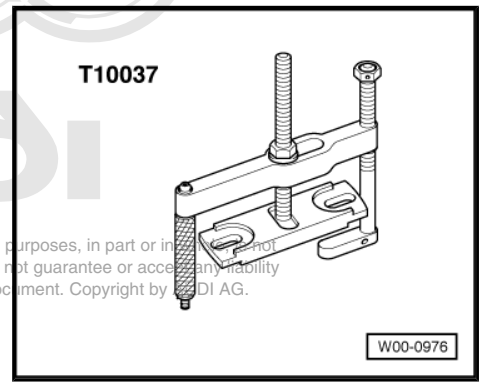
2.3 Removing and installing clutch module

Special tools and workshop equipment required

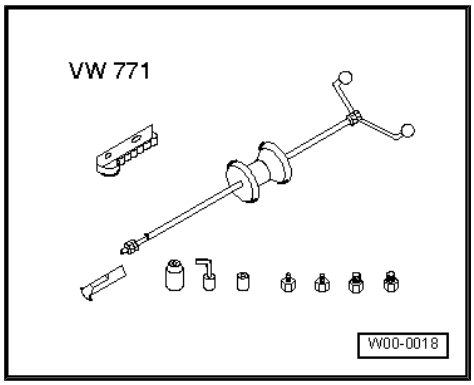
- ♦ Extractor - T40176-



- ♦ Puller - T10037-



- ♦ Multi-purpose tool - VW 771/1-



- ♦ Grease for clutch plate splines - G 000 100-
- ♦ Sealing grease - G 052 128 A1-

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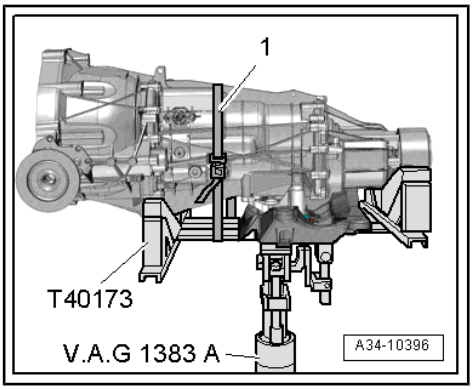
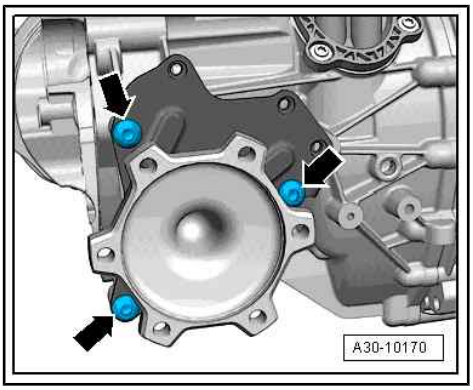
Removing clutch module

– Remove gearbox and secure to gearbox support - T40173- using tensioning strap -1- ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .

• Gearbox must be inclined slightly to the rear so that gear oil does not escape after flange shaft (left-side) is removed.



– Unscrew bolts -arrows- on mounting bracket for flange shaft (left-side).



– Remove flange shaft from gearbox in direction of -arrow A-. Keep shaft end -2- centred in opening on front final drive -arrow 3-.

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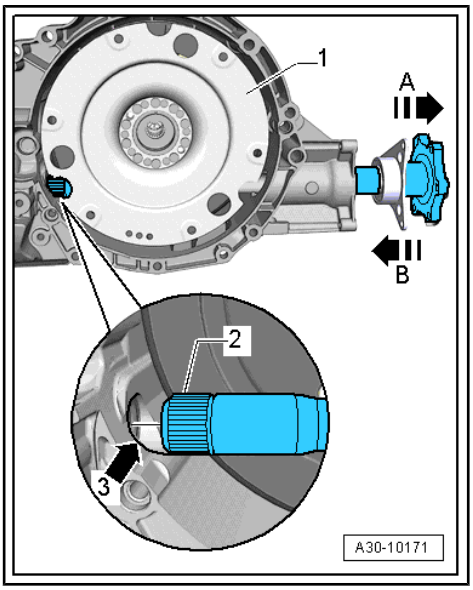
Caution

Risk of damage to oil seal.

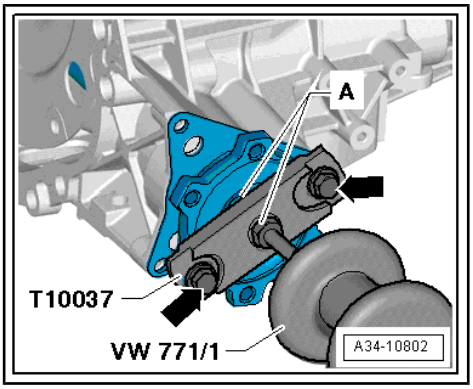
- *If you do not keep the shaft centred when pulling it out further, the splines of the shaft -2- will fall against the inner oil seal -arrow 3- between the differential and the gearbox housing.*
- *If oil seal is damaged, it must be renewed ⇒ page 132 .*



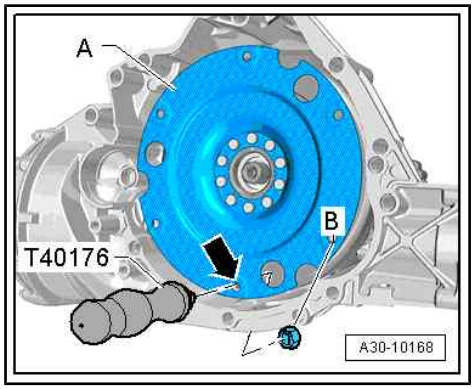
Note

If the flange shaft (left-side) cannot be removed by hand, pull it out carefully using multi-purpose tool - VW 771- .

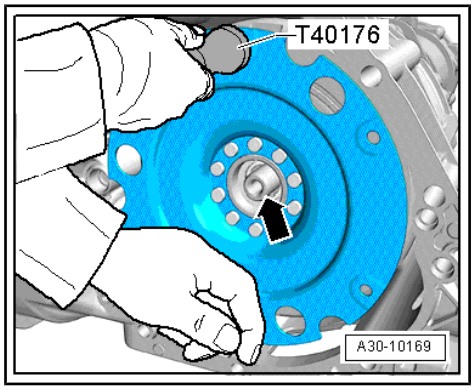
– To do this, secure plate of puller - T10037- to flange shaft -arrows- and attach plate to spindle of multi-purpose tool - VW 771- (nuts -A-).



– Attach extractor - T40176- to clutch module -A- using nut -B- -arrow-.



– Turn extractor - T40176- upwards.



Caution

Risk of damage to oil seals and needle bearing in dual-mass flywheel.

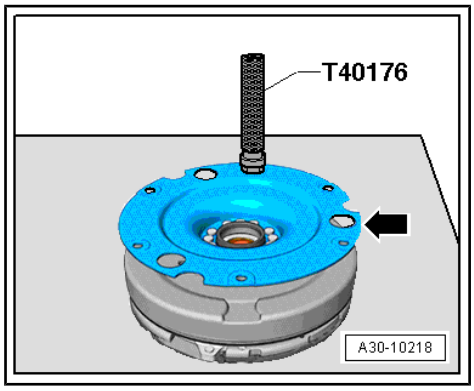
- *The clutch module weighs approx. 20 kg.*
- *Keep firm hold of the bottom of the clutch module, as shown in the illustration, to prevent the clutch module from tilting over.*
- *When removing and installing the clutch module, take care not to damage the oil seals and needle bearing in the dual-mass flywheel -arrow-.*
- *Renew oil seals or needle bearing if damaged* *⇒ page 34* *.*

– Pull clutch module off input shaft -arrow- keeping clutch module straight.

Caution

Take care not to damage flange for drive plate on dual-mass flywheel.

- *Do not put down clutch module with flange -arrow- for drive plate facing downwards.*
- *This could bend the flange -arrow- for the drive plate, which would cause problems with clutch operation.*



– Put clutch module down carefully, e.g. on work bench, with pressure plate facing downwards.

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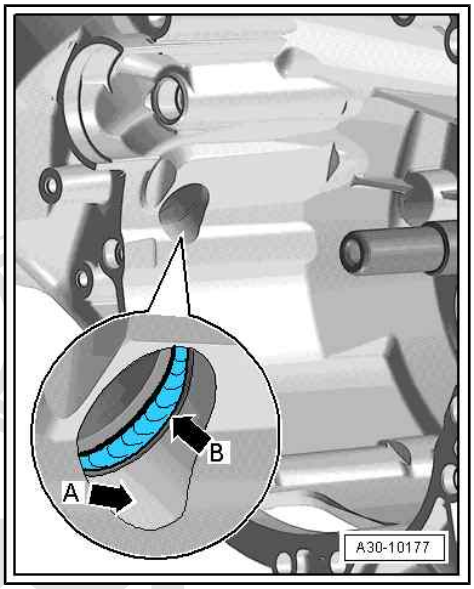
Installing clutch module

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

– Grease clutch release bearing according to specifications ⇒ page 10 .

– Thoroughly clean flange shaft (left-side), area of gearbox housing leading to differential -arrow A- and oil seal -arrow B-.



Note

If oil seal between differential and gearbox housing -arrow B- is damaged, it must be renewed ⇒ page 132 .

– Pack space between sealing lip and dust lip -arrow B- half full with sealing grease - G 052 128 A1- .

– Clean input shaft -arrow-.

– Apply a thin coating of grease for clutch plate splines - G 000 100- to splines on input shaft.

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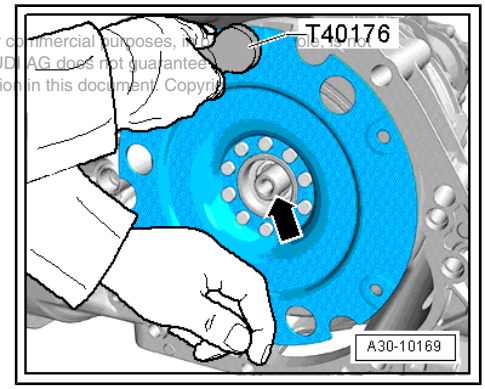


Caution

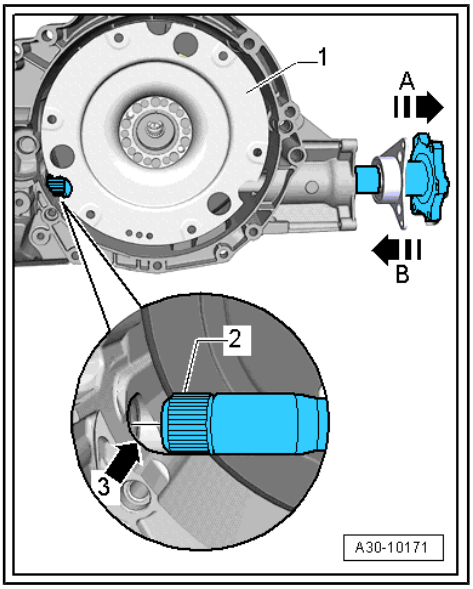
Before installing clutch module, remove grease from input shaft bearing journal -arrow- as far as splines.

– Carefully slide clutch module onto input shaft taking care to keep clutch module straight.

– Detach extractor - T40176- from clutch module.

– Turn clutch module -1- so that you can see opening to differential -arrow 3-.

– Slide flange shaft (left-side) into gearbox in direction of -arrow B- (keep end of shaft -2- centred while guiding it into oil seal on final drive -arrow 3-).

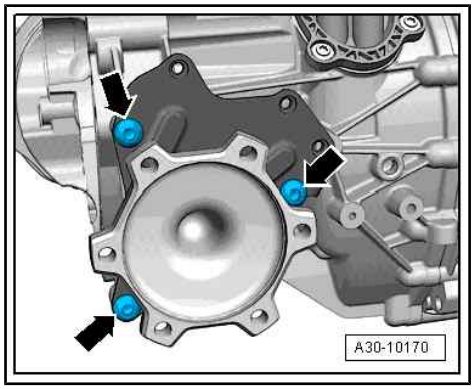


Caution

Risk of damage to oil seal.

- *If you do not keep the shaft centred, the splines of the shaft -2- will damage the oil seal -arrow 3- between the differential and the gearbox housing.*
- *If oil seal is damaged, it must be renewed ⇒ page 132 .*

– Tighten flange shaft mounting bracket -arrows-. Tightening torque ⇒ Item 29 (page 47)



2.4 Removing and installing clutch

⇒ “2.4.1 Removing and installing clutch - single-plate clutch, LuK version”, page 24

⇒ “2.4.2 Removing and installing clutch - twin-plate clutch”, page 28

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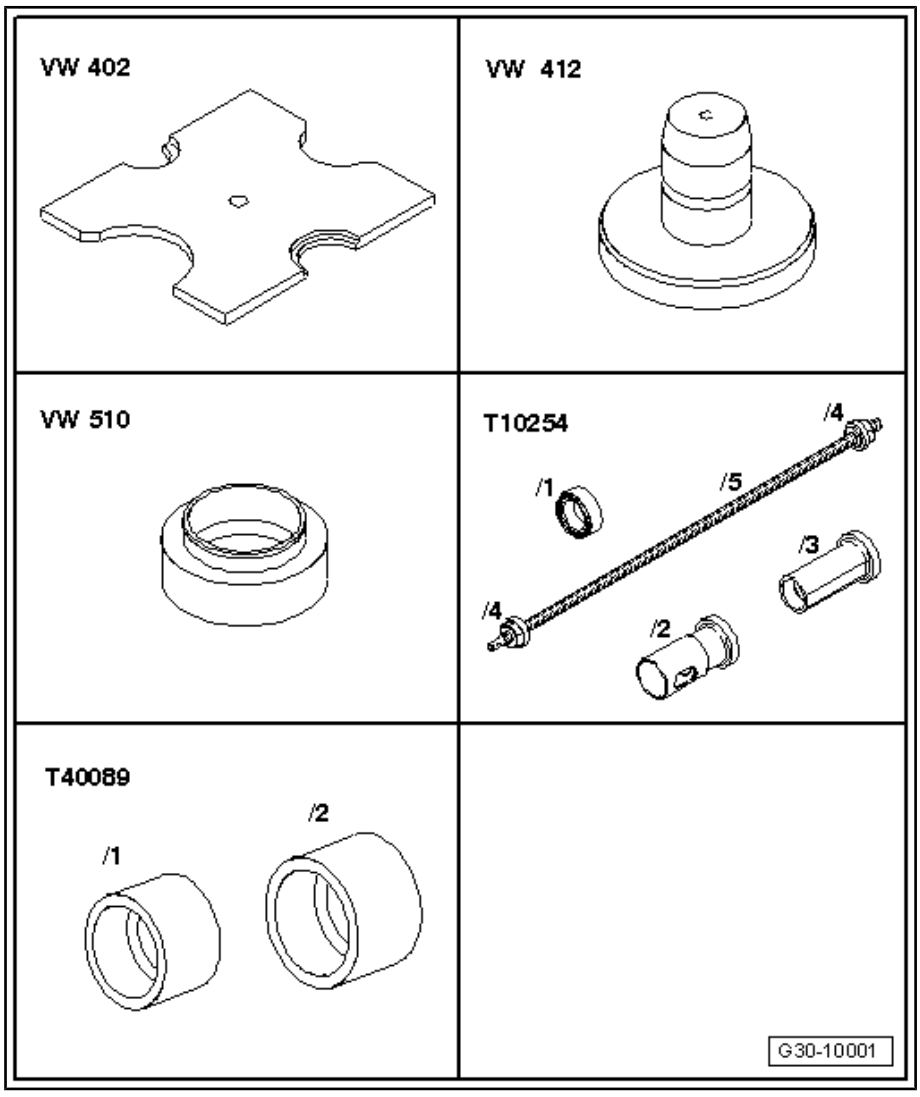
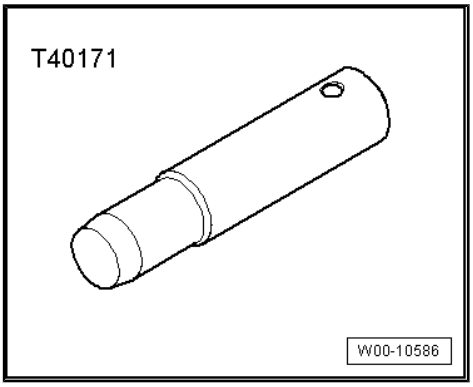
2.4.1 Removing and installing clutch - single-plate clutch, LuK version

Special tools and workshop equipment required

- Thrust plate - VW 402-
- Press tool - VW 412-
- Thrust pad - VW 510-
- Assembly tool - T10254-
- Thrust piece - T40089-



♦ Centring mandrel - T40171-

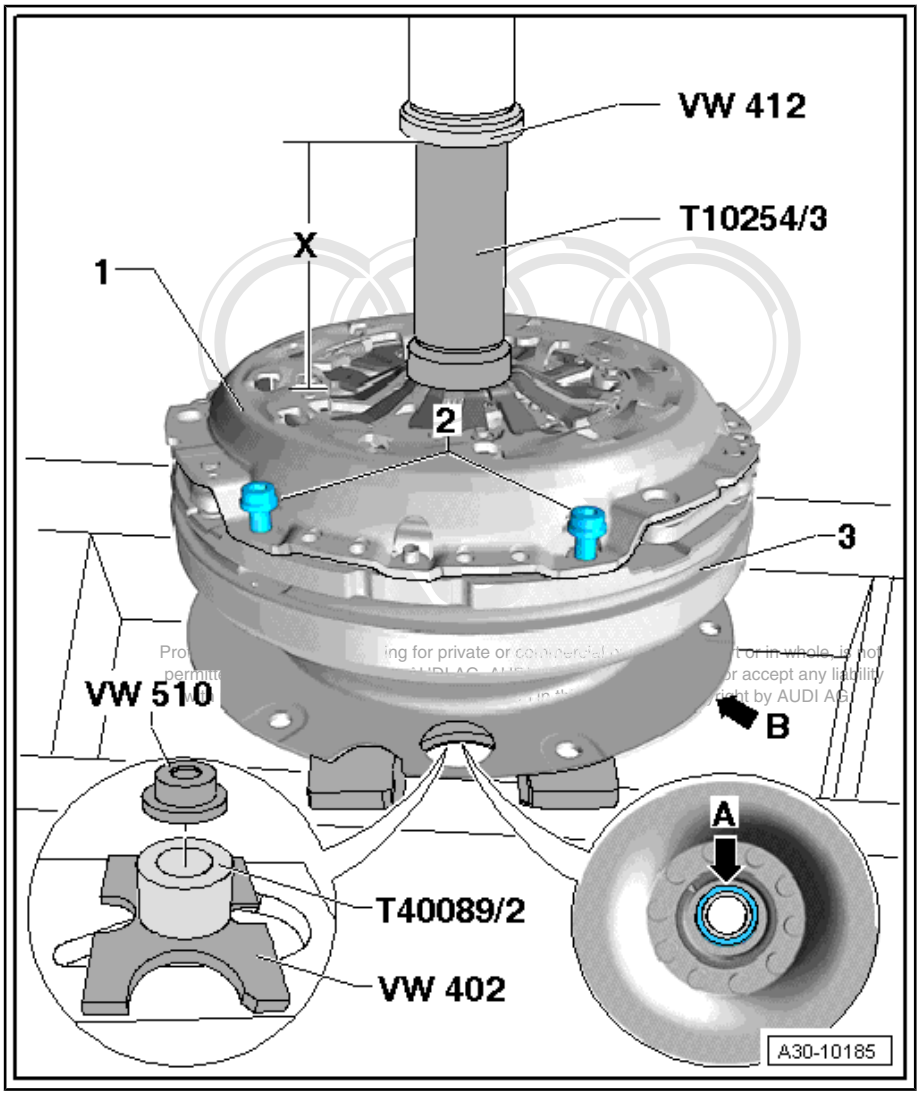


Removing

– Remove clutch module ⇒ page 20 .

1 - Clutch pressure plate

> **Caution**
> *Take care not to damage pressure plate and dual-mass flywheel.*
> *Pressure plate -1- must be compressed before removing or installing.*
>
> *If the pressure plate is not compressed, it will become distorted when the bolts -2- are slackened or tightened (causes clutch grab when driving off).*
>
> *The dual-mass flywheel -3- must rest only on the bearing washer -arrow A- when compressing the pressure plate -1- in the hydraulic press.*
>
> *If the dual-mass flywheel is supported on the flange for drive plate -arrow B- the flange will become distorted and the flywheel will thus be damaged. In this case, the dual-mass flywheel will have to be renewed.*



– Position the clutch module so that the thrust pad - VW 510- makes contact with the bearing washer -arrow A- in the dual-mass flywheel.

– Place the assembly tool - T10254/3- on the spring tongues in the diaphragm of the pressure plate -1- and apply the press.

• Distance of travel: dimension -x- = 8 to 9 mm

Note

A second mechanic is required for the next step.

– Remove all 6 bolts -2- and release press.

– Remove pressure plate -1- and clutch plate.

Installing

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

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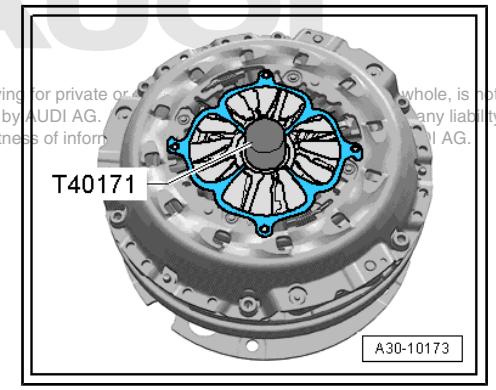


Note

- *Check that pressure plate is not distorted* *⇒ page 17* *.*
- *When only the clutch plate is being renewed, the adjuster ring in the pressure plate has to be reset before assembly* *⇒ page 32* *.*

– Use centring mandrel - T40171- to centralise clutch plate.

- Installation position of clutch plate: damper assembly (coil springs) or marking “Getriebeseite” (gearbox side) point towards pressure plate.

– Position pressure plate on centring pins.

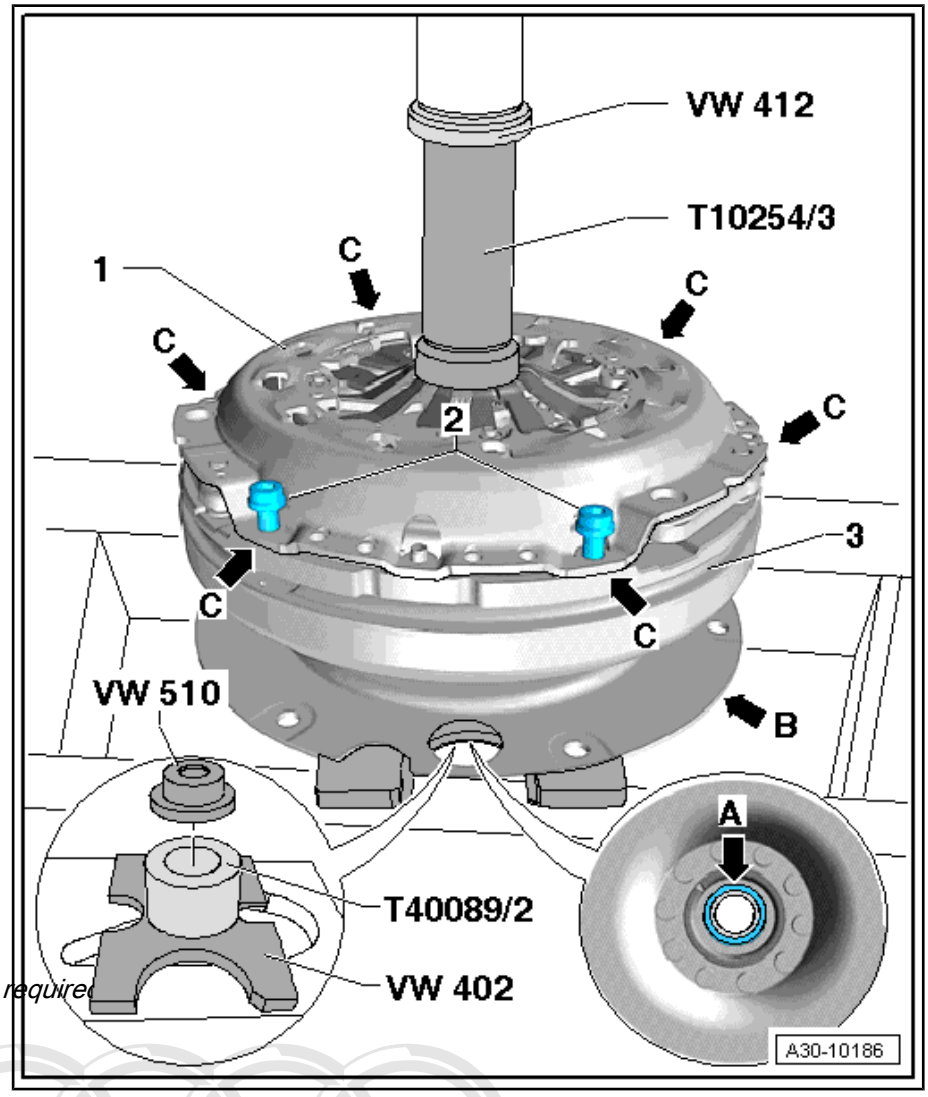
– Position the clutch module so that the thrust pad - VW 510- makes contact with the bearing washer -arrow A- in the dual-mass flywheel.

1 - Clutch pressure plate

Caution

Take care not to damage dual-mass flywheel.
The dual-mass flywheel -3- must rest only on the bearing washer -arrow A- when compressing the pressure plate -1- in the hydraulic press.

If the dual-mass flywheel is supported on the flange for drive plate -arrow B- the flange will become distorted and the flywheel will thus be damaged. In this case, the dual-mass flywheel will have to be renewed.



– Place assembly tool - T10254/3- over centring mandrel - T40171- .

– Apply press until pressure plate -1- just makes contact with dual-mass flywheel -3- -arrows C-.

Note

A second mechanic is required for the next step.

– Screw in each of the 6 bolts -2- in succession and tighten to final torque ⇒ Item 7 (page 16) .

– Release press.

– Install clutch module ⇒ page 20 .

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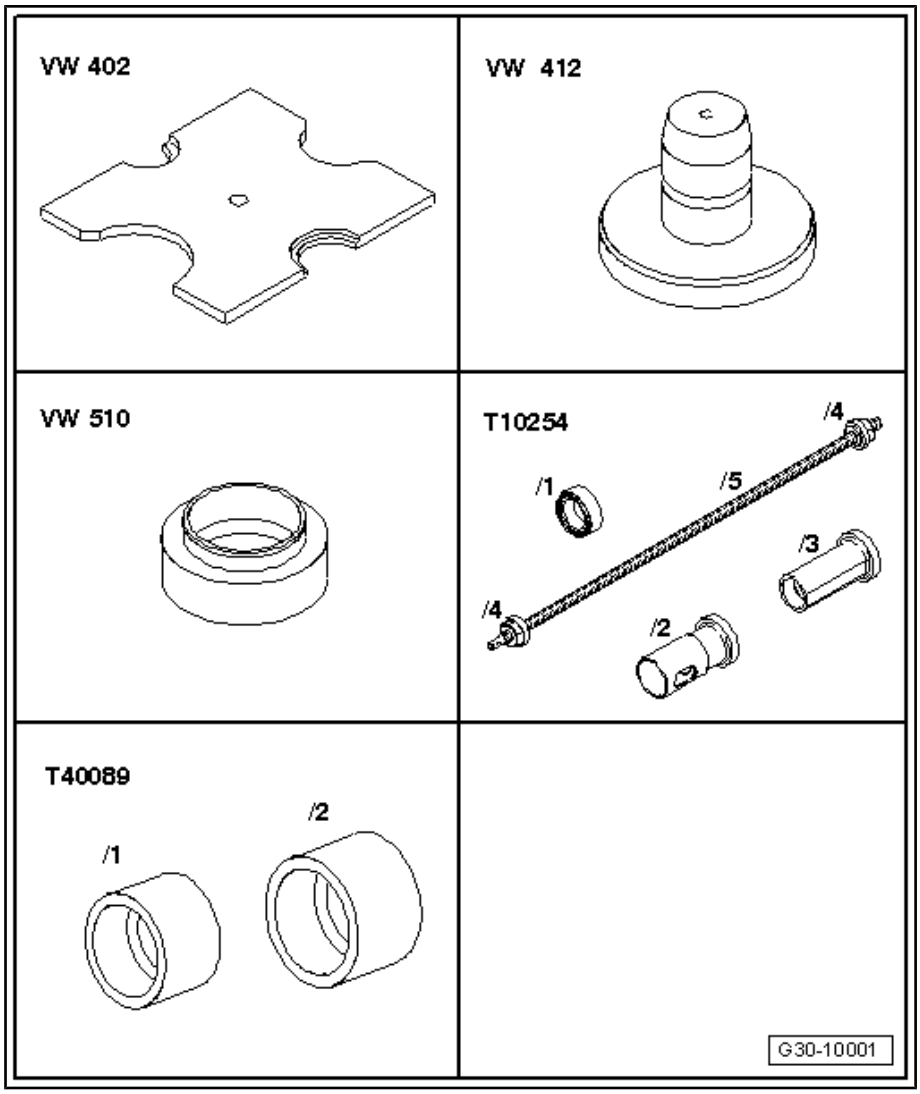
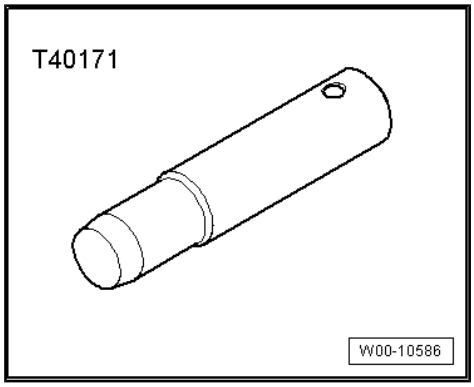
2.4.2 Removing and installing clutch - twin-plate clutch

Special tools and workshop equipment required

- Thrust plate - VW 402-
- Press tool - VW 412-
- Thrust pad - VW 510-
- Assembly tool - T10254-
- Thrust piece - T40089-



- Centring mandrel - T40171-



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Removing

– Remove clutch module ⇒ page 20 .

1 - Clutch pressure plate

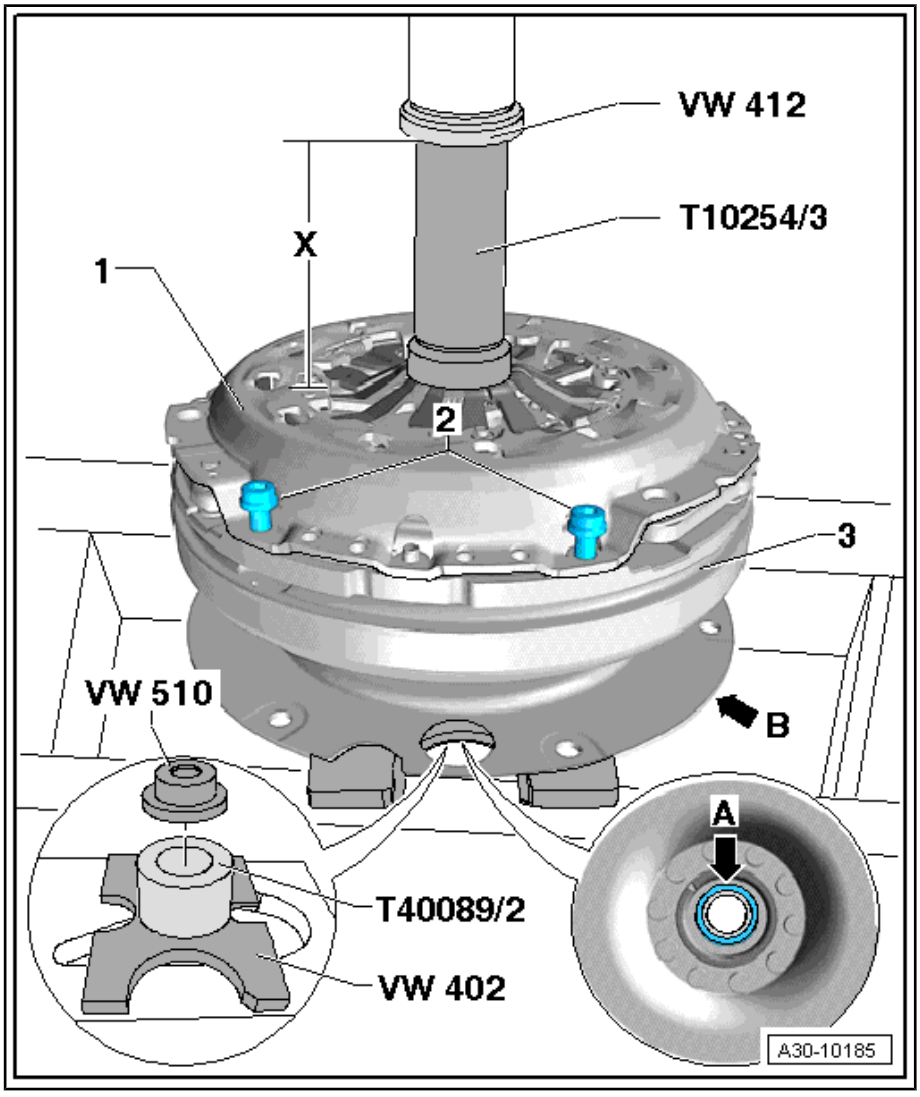
Caution

Take care not to damage pressure plate and dual-mass flywheel.
Pressure plate -1- must be compressed before removing or installing.

If the pressure plate is not compressed, it will become distorted when the bolts -2- are slackened or tightened (causes clutch grab when driving off).

The dual-mass flywheel -3- must rest only on the bearing washer -arrow A- when compressing the pressure plate -1- in the hydraulic press.

If the dual-mass flywheel is supported on the flange for drive plate -arrow B- the flange will become distorted and the flywheel will thus be damaged. In this case, the dual-mass flywheel will have to be renewed.



– Position the clutch module so that the thrust pad - VW 510- makes contact with the bearing washer -arrow A- in the dual-mass flywheel.

– Place the assembly tool - T10254/3- on the spring tongues in the diaphragm of the pressure plate -1- and apply the press.

- Distance of travel: dimension -x- = 8 to 9 mm

Note

A second mechanic is required for the next step.

– Remove all 6 bolts -2- and release press.

– Remove pressure plate -1- and clutch plate.

Installing

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

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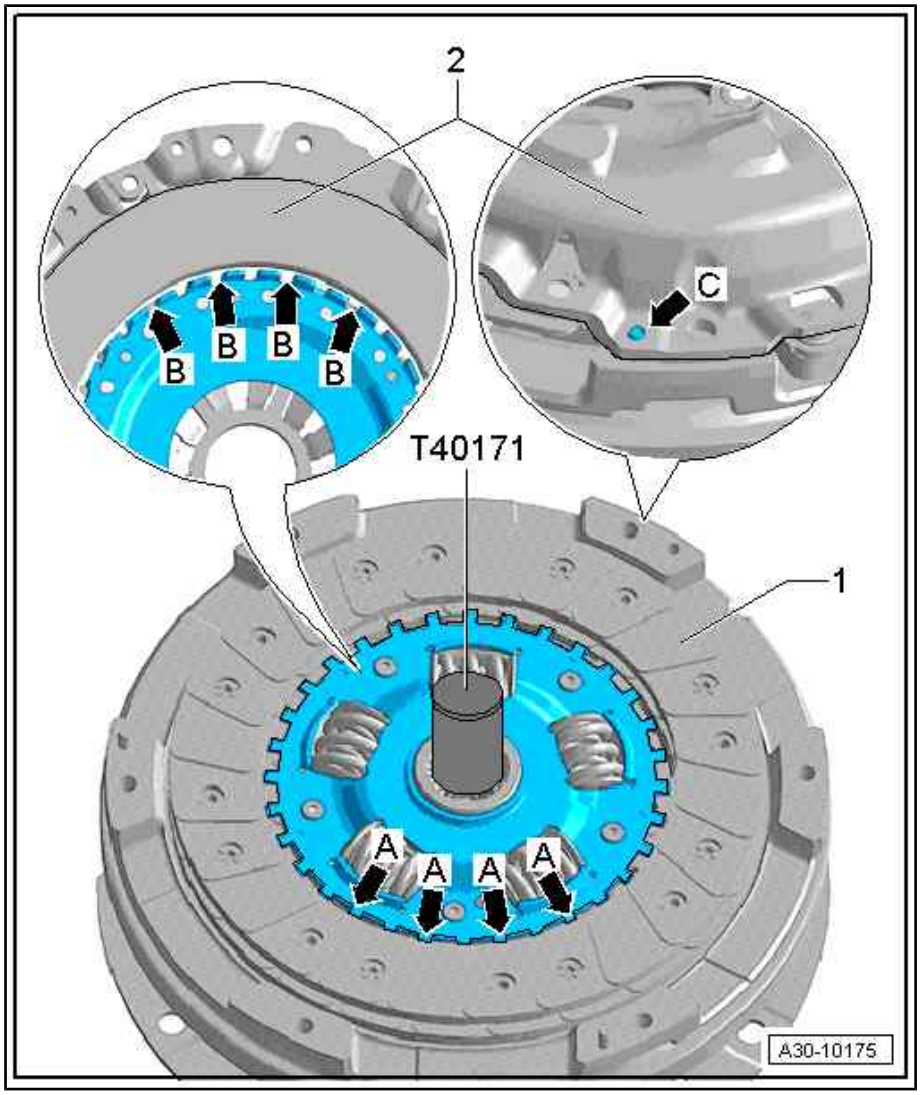
Caution

Risk of damage to clutch plate -1- and pressure plate -2-.



– Use centring mandrel - T40171- to centralise clutch plate -1-.

• Installation position of clutch plate: toothed plate -arrows A- should face towards pressure plate -2-.

– Position pressure plate -2- on centring pins -arrow C-. The tips of the centring pins -arrow C- must be flush with the pressure plate.

Caution

Take care not to damage dual-mass flywheel.

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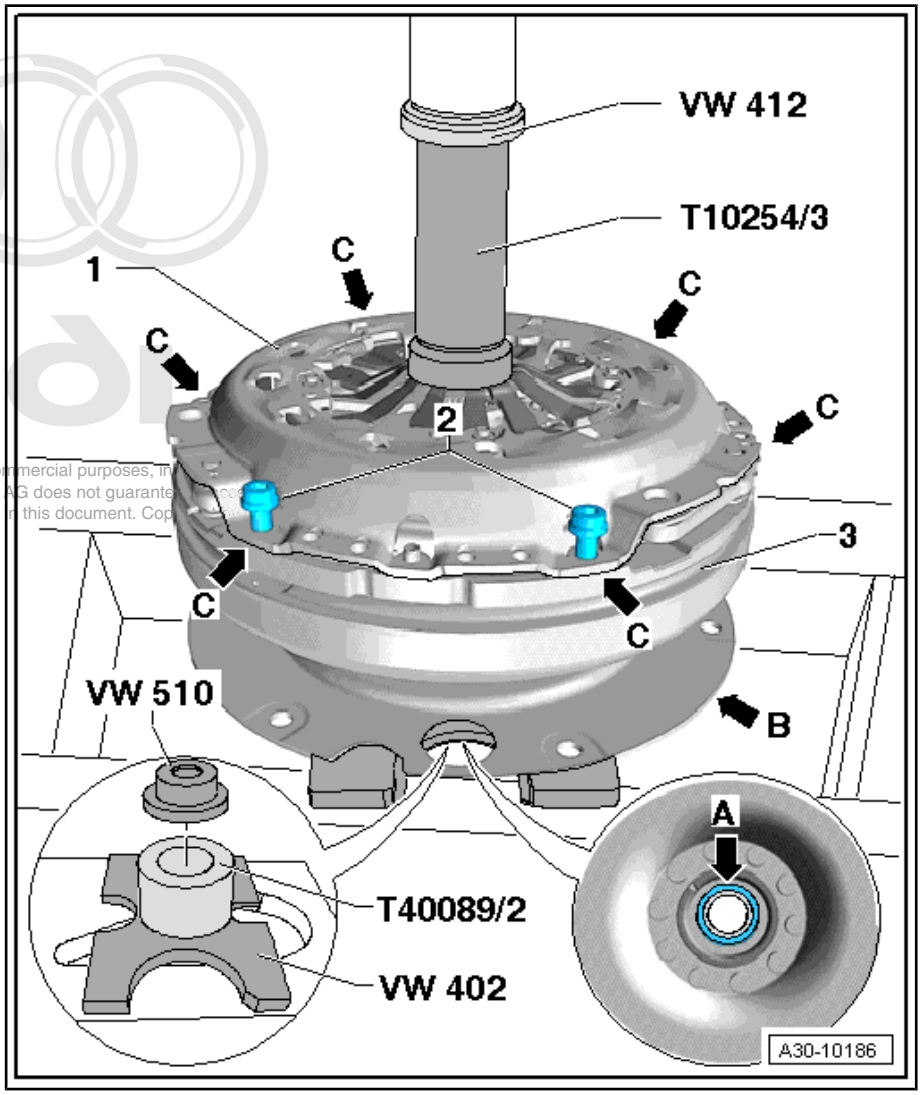


– Position the clutch module so that the thrust pad - VW 510- makes contact with the bearing washer -arrow A- in the dual-mass flywheel.
– Place assembly tool - T10254/3- over centring mandrel - T40171- .
– Apply press until pressure plate -1- just makes contact with dual-mass flywheel -3- -arrows C-.

Note

A second mechanic is required for the next step.

– Screw in each of the 6 bolts -2- in succession and tighten to final torque. Tightening torque ⇒ Item 7 (page 19)
– Release press.
– Install clutch module ⇒ page 23 .

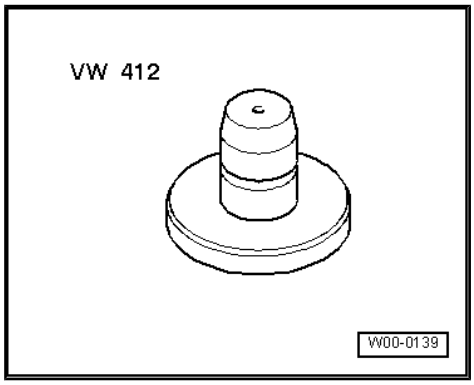
2.5 Resetting adjuster ring in pressure plate

Note

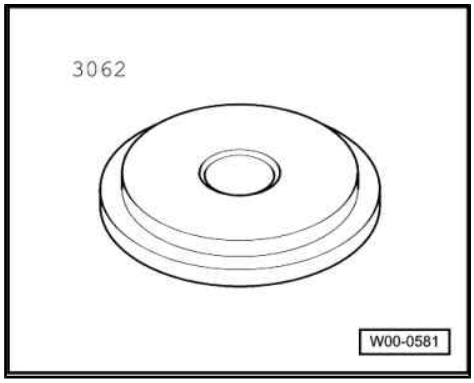
- *When fitting a new clutch plate in conjunction with a used pressure plate, the adjuster ring in the pressure plate has to be reset by turning it back as far as it will go. If you do not reset the adjuster ring in the pressure plate, the pressure plate will operate with reduced clamping force, which will cause excessive wear, especially of the clutch plate (clutch will then slip).*
- *If the clutch plate is not renewed, it is not necessary to reset the adjuster ring.*
- *New pressure plates are pre-set accordingly, and do not have to be reset.*

Special tools and workshop equipment required

- Press tool - VW 412-



- Thrust pad - 3062-



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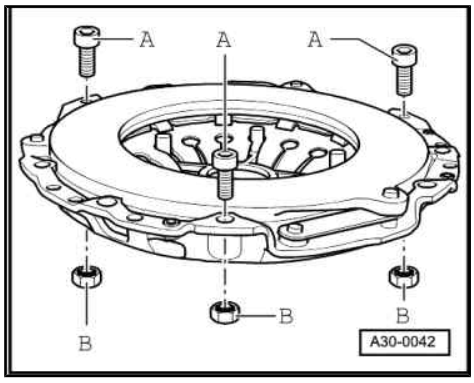
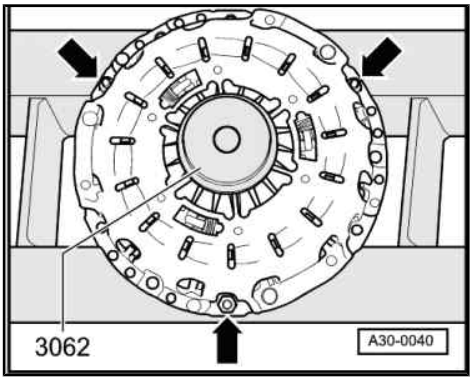
Procedure

– Insert 3 bolts for securing pressure plate -A- into the mounting holes on the pressure plate located at 120° ($^1/_3$ turn) intervals, as shown in the illustration.

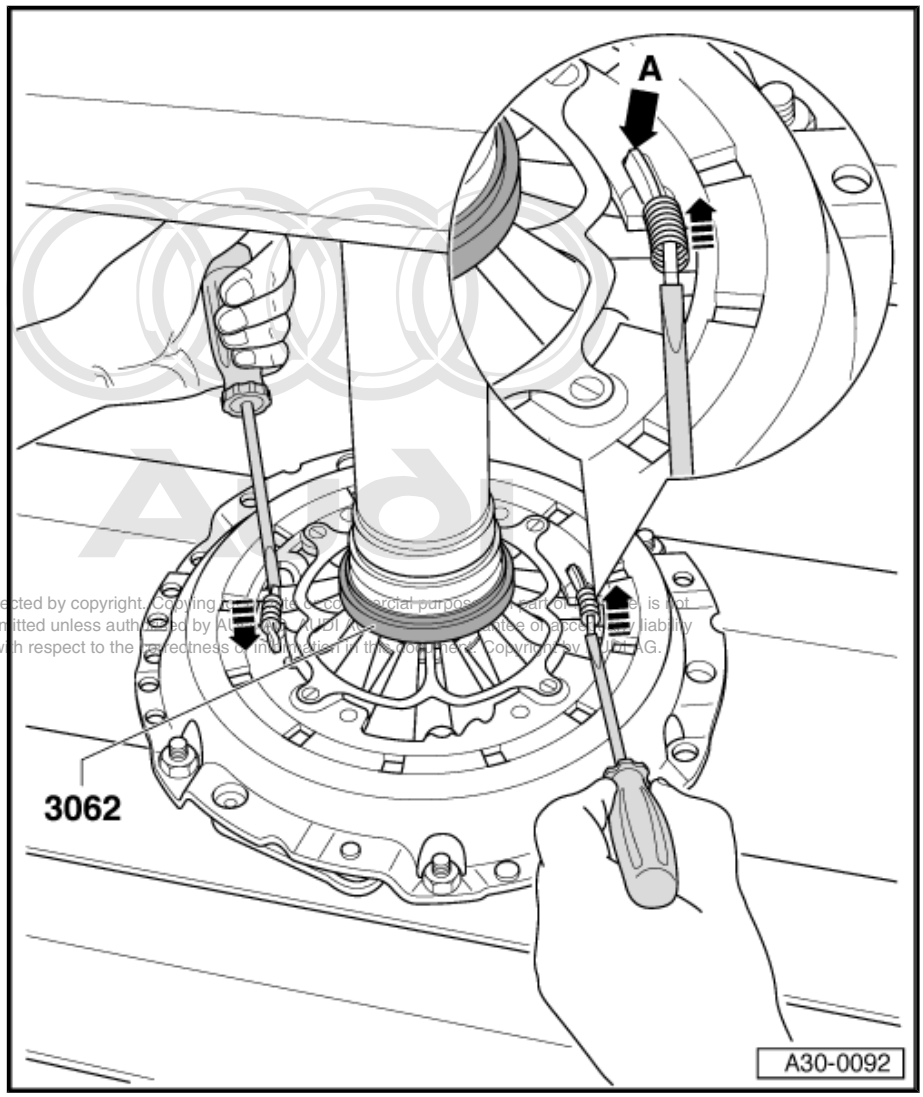
– Screw 3 nuts -B- (M8) onto bolts -A- and tighten nuts lightly.



– Place the pressure plate onto the press so that only the 3 bolt heads -arrows- make contact.
– Position thrust pad - 3062- in the centre of the pressure plate.



Do not use force when performing the following steps, as this could cause the forks on the adjuster ring to break off.



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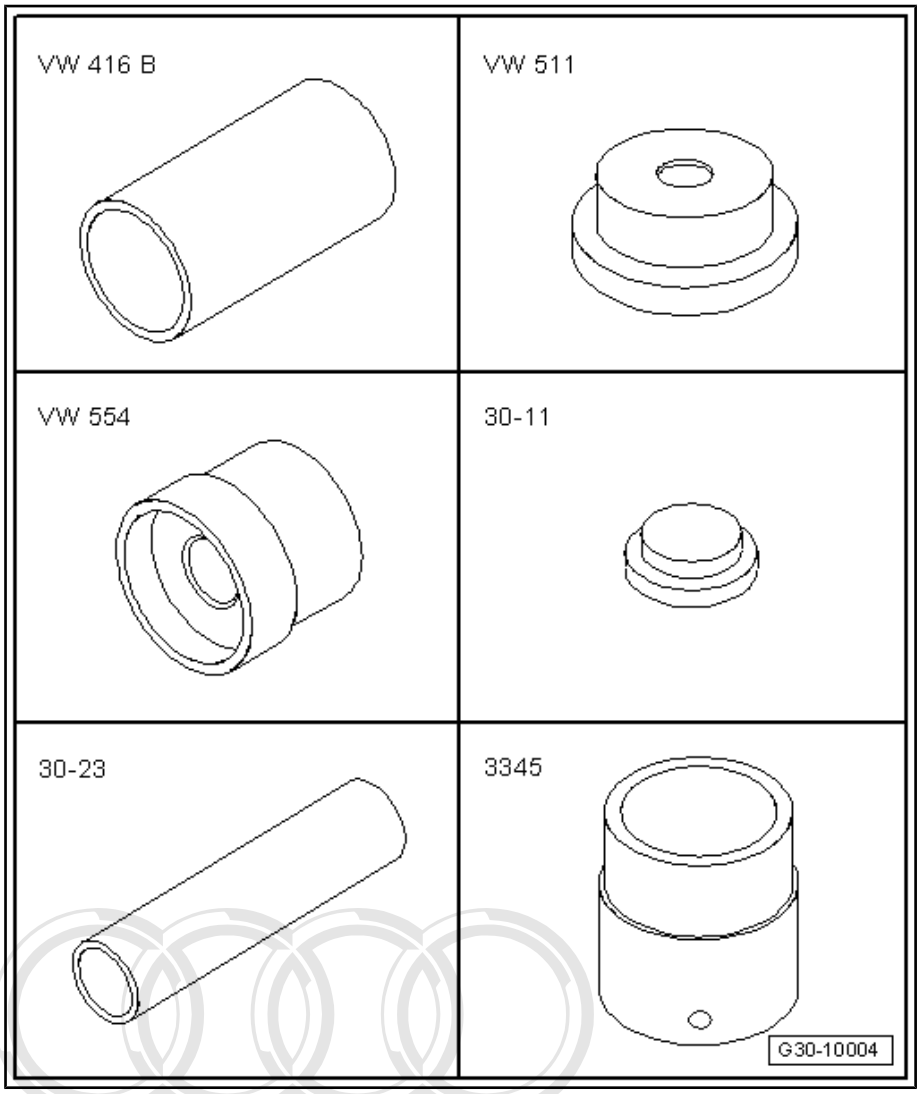
– Apply two screwdrivers to the forks on the adjuster ring. Use the press to apply pressure to the pressure plate until it is just possible to move the adjuster ring.
– Using the two screwdrivers, turn back the adjuster ring evenly in the direction of the -arrows- until it reaches the stop -arrow A-.

– Hold the adjuster ring against the stop and relieve the pressure applied by the press so that the adjuster ring is held in this position.

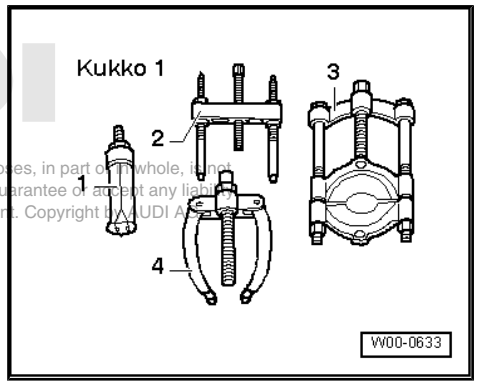
2.6 Renewing needle bearing for dual-mass flywheel

Special tools and workshop equipment required

- Tube - VW 416B-
- Thrust pad - VW 511-
- Press tool - VW 554-
- Thrust plate - 30-11-
- Extension - 30-23-
- Wheel bearing tube - 3345-



- -1- Internal puller - Kukko 21/4-



- -1- Internal puller - Kukko 21/5-

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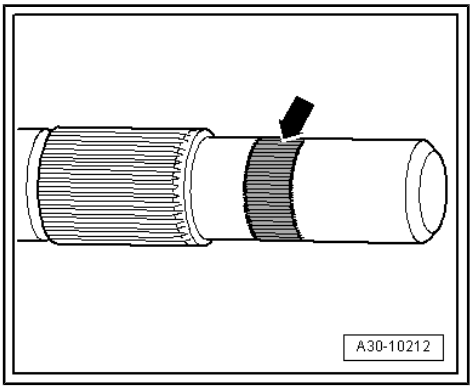
Note

- *If there is visible damage on the surface of the input shaft in the vicinity of the needle bearing for the dual-mass flywheel -arrow-, both the input shaft and the needle bearing in the dual-mass flywheel must be renewed.*
- *Renewing input shaft*
  ⇒ "3.7 Dismantling and assembling gearbox", page 49



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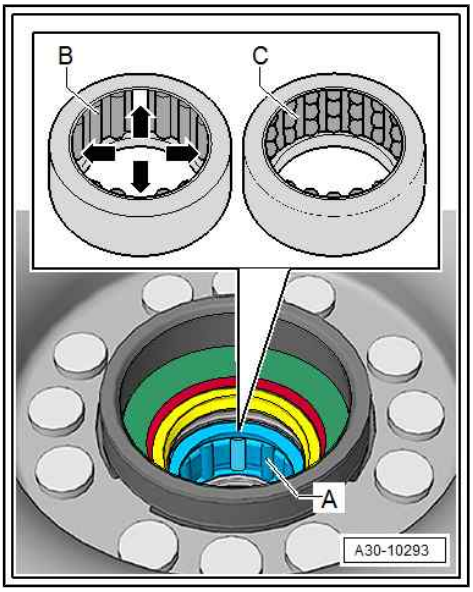
Depending on the version, the following types of bearings may be fitted in the dual-mass flywheel:

- Needle bearing -A- with the full number of rollers.
- Needle bearing -B- with every 4th needle roller missing -arrows- (this not mean the needle bearing is defective).
- New needle bearings have the full number of rollers.
- Ball bearing -C-.
- For correct version, refer to ⇒ Electronic parts catalogue



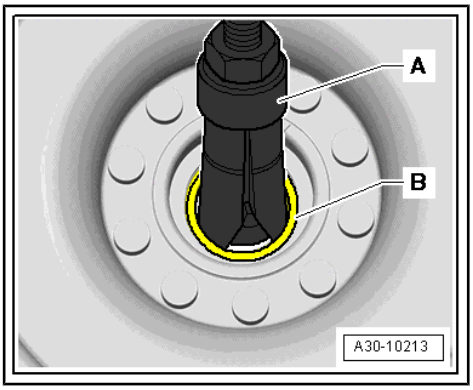
Removing

- Pressure plate with clutch plate has been removed from dual-mass flywheel ⇒ page 24 or ⇒ page 28 .

Removing oil seal from dual-mass flywheel

– Clamp internal puller -A- behind sealing lip of oil seal -B- and pry out oil seal.

A - Internal puller 30 ... 37 mm , e.g. -Kukko 21/5-

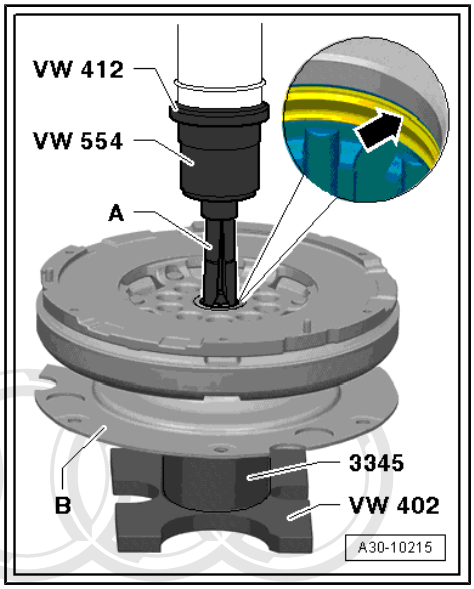


Pressing needle bearing out of dual-mass flywheel

Caution

Take care not to damage dual-mass flywheel.

- *If the dual-mass flywheel is supported on the flange for drive plate -B-, the flange will become distorted and the flywheel will thus be damaged. In this case, the dual-mass flywheel will have to be renewed.*



- Always renew the needle bearing when it has been removed from the dual-mass flywheel.

– Remove oil seal from dual-mass flywheel ⇒ page 35 .

– Apply internal puller -A- in area of seal -arrow- in needle bearing and tighten puller.

A - Internal puller 23.5 ... 30 mm , e.g. -Kukko 21/4-

– Then apply press tool - VW 554- to internal puller and press out needle bearing.

Pressing in needle bearing for dual-mass flywheel (press onto stop)

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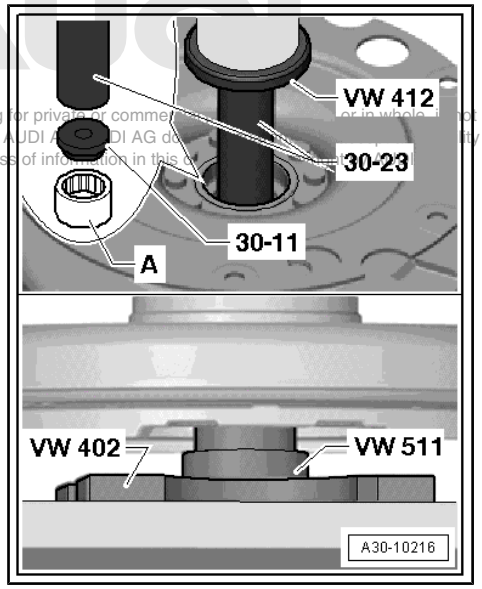
Take care not to damage dual-mass flywheel.

- *The centring pins on the dual-mass flywheel can be damaged when pressing in the needle bearing.*
- *The dual-mass flywheel must always be supported centrally under the bearing mounting for the needle bearing.*



– Remove remaining grease in bore for needle bearing in dual-mass flywheel using a dry cleaning cloth.

Note

Do not use solvent for cleaning bore.

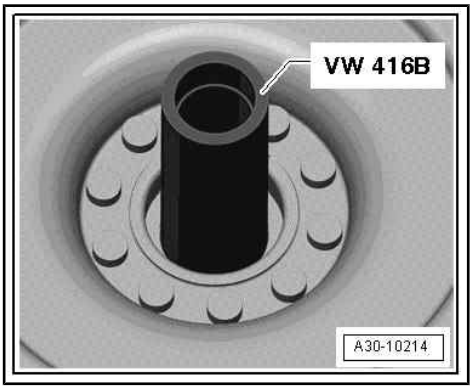
– Support dual-mass flywheel with thrust pad - VW 511- directly below bearing mounting.

– Insert smaller diameter of thrust plate - 30-11- in needle bearing -A-. Lettering on needle bearing (thicker metal) must face towards thrust plate .

– Carefully press in needle bearing as far as stop.

Driving oil seal into dual-mass flywheel (drive in onto stop)

- Needle bearing is installed in dual-mass flywheel.
- Open side of oil seal faces towards needle bearing.
- Installing pressure plate with clutch plate on dual-mass flywheel ⇒ page 24 or ⇒ page 28



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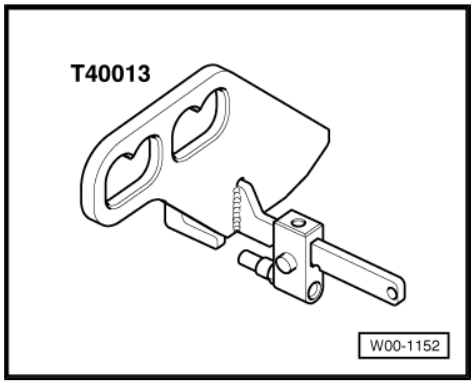
34 – Controls, housing

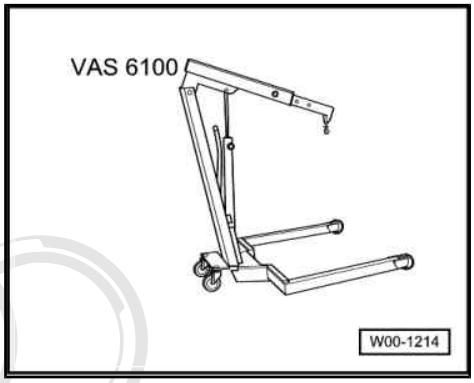
1 Transporting gearbox

Special tools and workshop equipment required

- Lifting aid - T40013-



- Workshop hoist - VAS 6100-

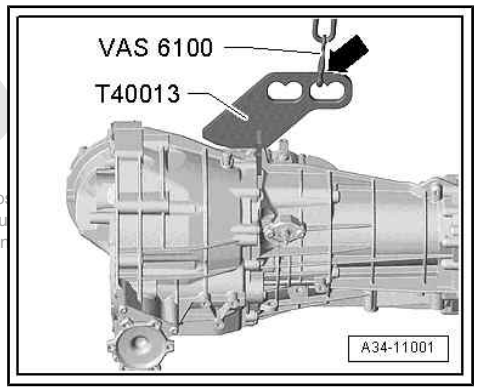


Procedure

– Insert lifting aid - T40013- in lifting eye on gearbox and secure.

– Engage hook of workshop hoist - VAS 6100- in 3rd notch -arrow- on lifting aid .

– Lift gearbox with workshop hoist - VAS 6100- and lifting aid - T40013- .



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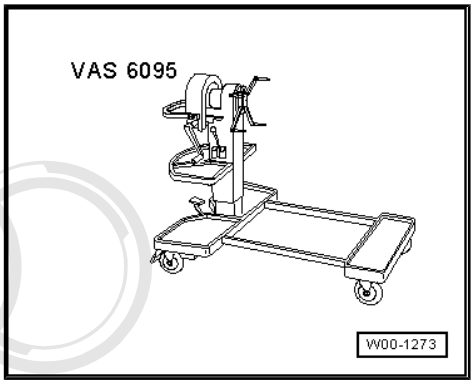
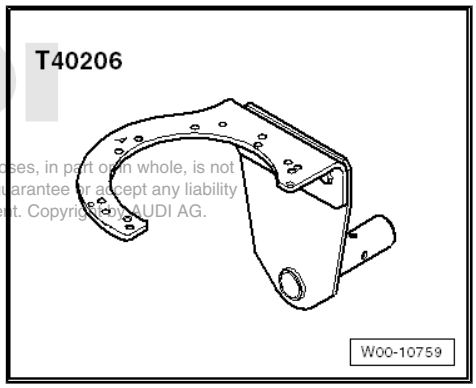
2 Securing to engine and gearbox support

Special tools and workshop equipment required

- Engine and gearbox support - VAS 6095-



- Gearbox support - T40206- with -T40206/1-



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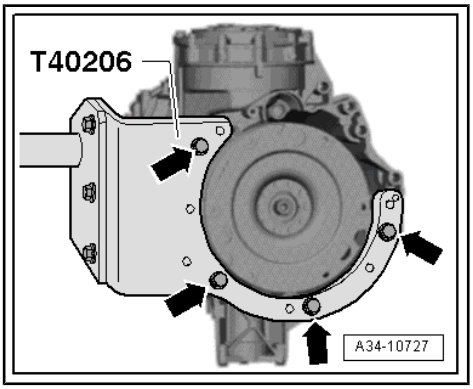
Procedure

Caution

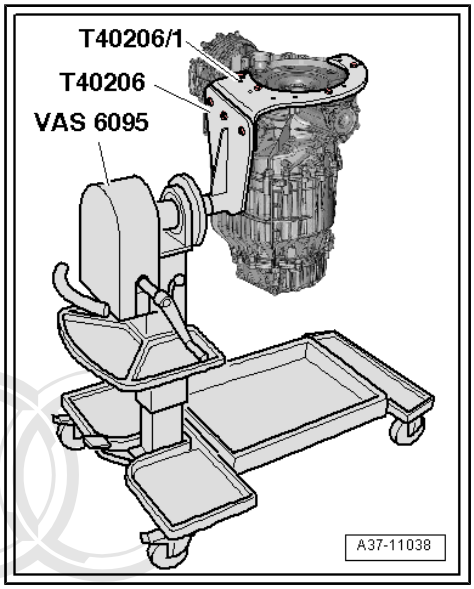
Risk of breaking gearbox housing

- *The gearbox must be secured to the gearbox support with four bolts -arrows- as the gearbox housing could break when pressing out the gear cluster.*



– Secure gearbox support - T40206- with -T40206/1- to gearbox -arrows-.

– Lift gearbox with workshop hoist - VAS 6100- ⇒ page 38 .
– Attach gearbox with gearbox support - T40206- to engine and gearbox support - VAS 6095- .



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3 Dismantling and assembling gearbox

⇒ “3.1 Schematic overview - gearbox”, page 41

⇒ “3.2 Exploded view - gearbox”, page 43

⇒ “3.3 Exploded view - centre differential housing and centre differential”, page 44

⇒ “3.4 Exploded view - gearbox cover, selector shaft”, page 45

⇒ “3.5 Exploded view - gear cluster, reverse gear wheel, selector mechanism”, page 48

⇒ “3.6 Exploded view - selector forks”, page 49

⇒ “3.7 Dismantling and assembling gearbox”, page 49

⇒ “3.8 Removing and installing selector shaft”, page 63

3.1 Schematic overview - gearbox

1 - Clutch module

- ❑ Consists of pressure plate, clutch plate and dual-mass flywheel with flange for drive plate

2 - Gearbox housing

3 - Cover for final drive

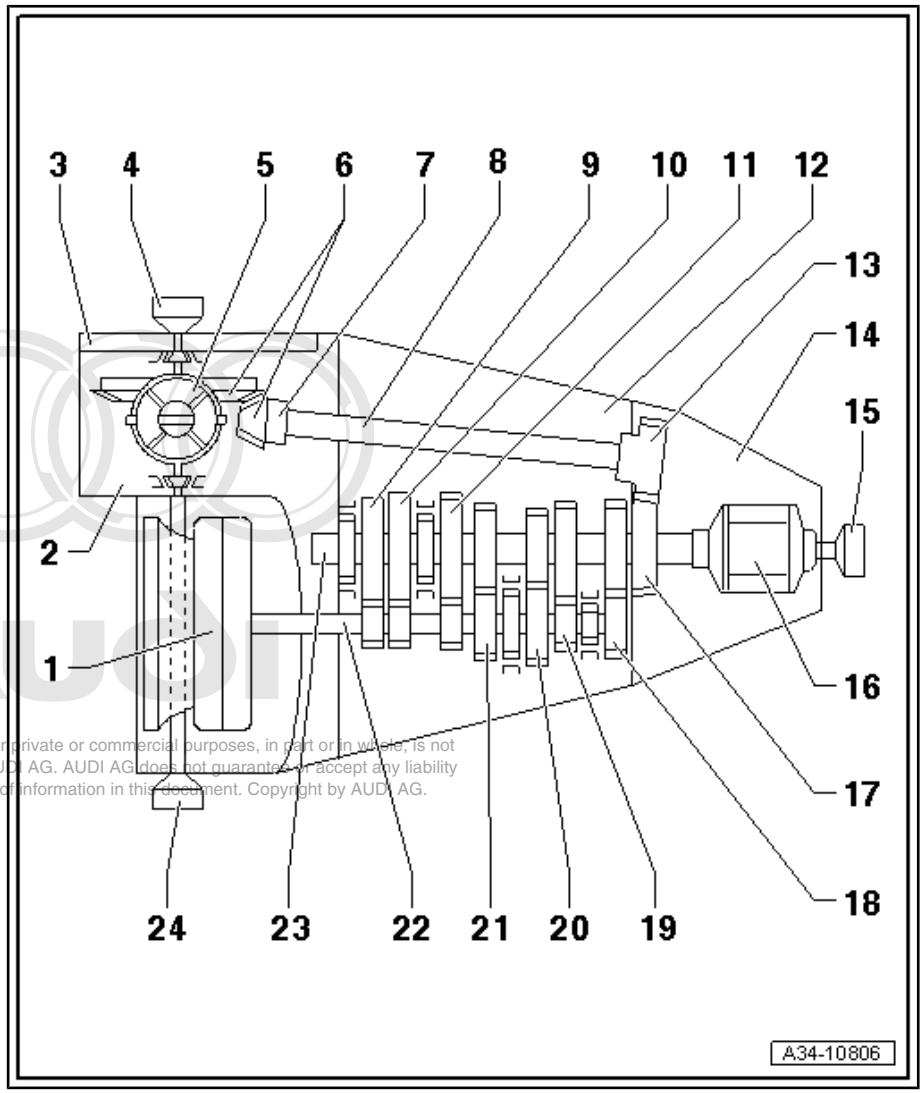
4 - Flange shaft (right-side)

5 - Differential

- ❑ With crown wheel

6 - Final drive gear set

- ❑ Pinion shaft with crown wheel/ differential



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7 - Double angular contact ball bearing
8 - Pinion shaft
9 - Reverse gear
10 - 1st gear
11 - 2nd gear
12 - Gearbox cover
13 - Spur gear drive output gear
14 - Centre differential housing
15 - Flange shaft (rear)
16 - Centre differential
17 - Spur gear drive input gear
18 - 4th gear
19 - 3rd gear
20 - 6th gear
21 - 5th gear
22 - Input shaft
23 - Output shaft
24 - Flange shaft (left-side)

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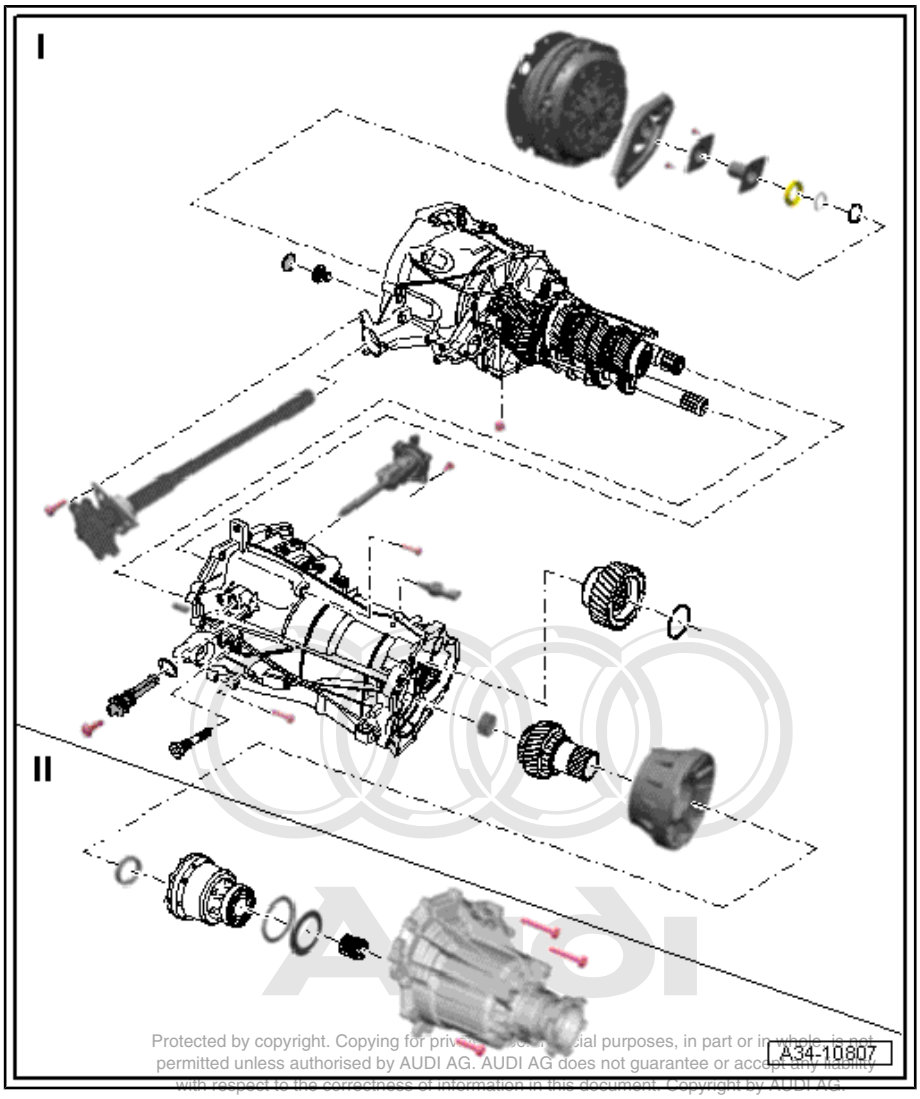
3.2 Exploded view - gearbox

I - Exploded view - gearbox cover, selector shaft
⇒ page 45

II - Exploded view - centre differential housing and centre differential ⇒ page 44



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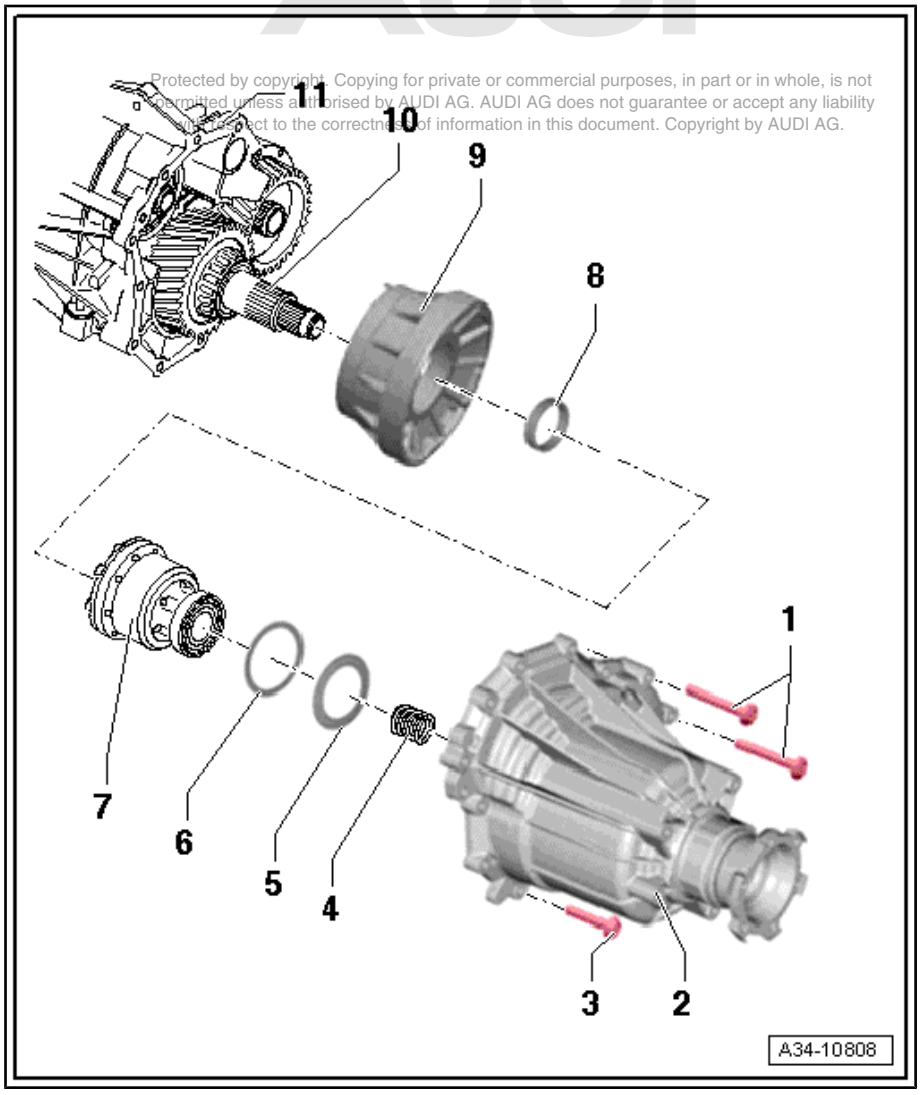
3.3 Exploded view - centre differential housing and centre differential

Note

Removal is also possible with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B4; Rep. gr. 39 ; Centre differential .



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1 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 63 mm long)
- ❑ 2x

2 - Centre differential housing

- ❑ With or without vibration damper, depending on design
- ❑ Removing and installing ⇒ page 49
- ❑ Servicing ⇒ page 145

3 - Bolt

- ❑ 10 Nm and then turn 90° further
- ❑ Aluminium bolts (M8; 42 mm long)
- ❑ 11x
- ❑ Always renew

4 - Spring

5 - Dished spring

- ❑ Installation position: Inner diameter (convex side) faces centre differential housing

6 - Shim

- ❑ Adjusts preload of ball bearings for centre differential
- ❑ Determining thickness ⇒ page 98

7 - Centre differential

- ❑ Can only be serviced by manufacturer
- ❑ Servicing bearings for centre differential ⇒ page 89

8 - Spacer sleeve

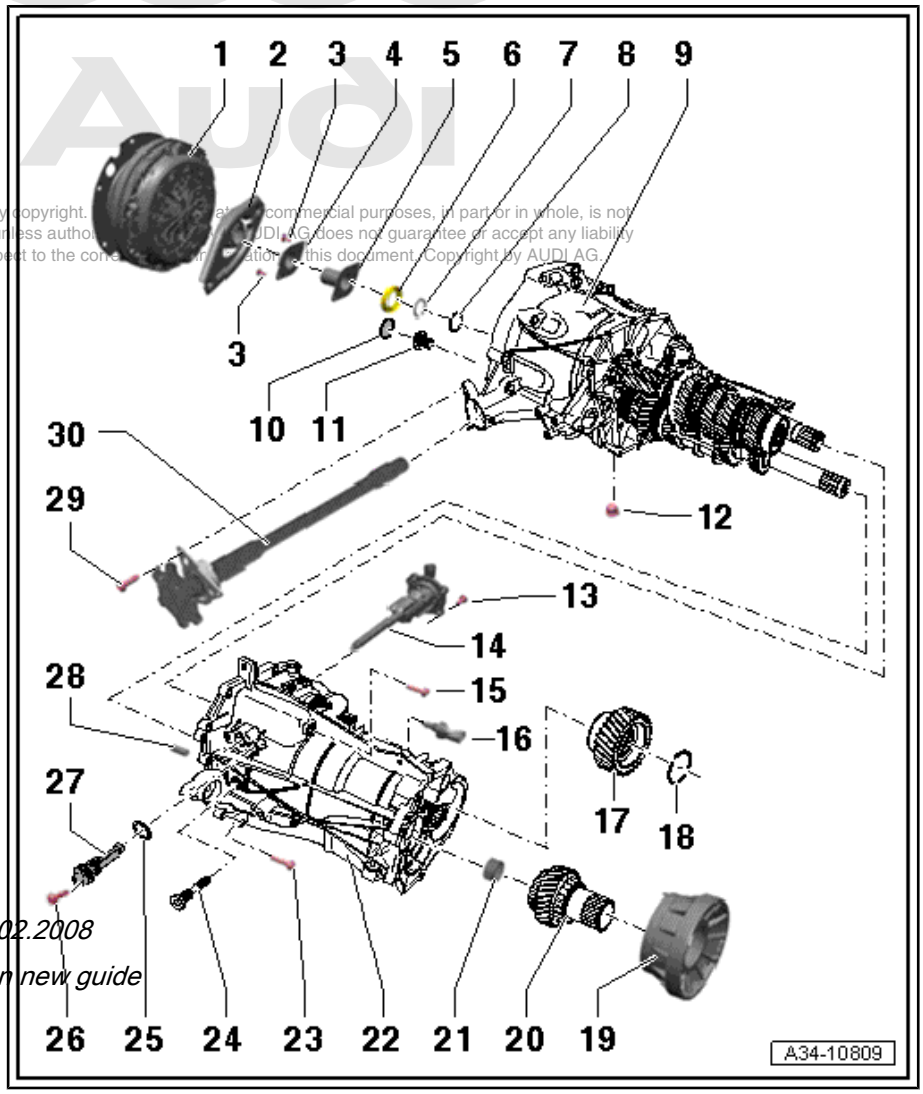
9 - Bearing plate

- ❑ Note correct installation position in relation to gearbox cover ⇒ page 60

10 - Spur gear drive input gear

11 - Gearbox cover / gearbox

3.4 Exploded view - gearbox cover, selector shaft



1 - Clutch module

- ❑ Removing and installing ⇒ page 20
- ❑ Servicing ⇒ “2.2 Exploded view - clutch unit”, page 15

2 - Clutch release lever with release bearing and retaining spring

- ❑ Removing and installing ⇒ page 11
- ❑ Dismantling and assembling ⇒ page 8

3 - Bolt

- ❑ 8 Nm
- ❑ 2x
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

4 - Retaining piece

- ❑ Not fitted on all versions
- ❑ Installation position: recess for bolts ⇒ Item 3 (page 45) faces towards clutch module

Note

- *Discontinued as of 02.2008*
- *Is also omitted when new guide sleeve is installed ⇒ Item 8 (page 9)*

5 - Guide sleeve

- ❑ Remove any existing grease from guide sleeve

6 - Input shaft oil seal

- ❑ Removing and installing ⇒ page 139

7 - Circlip

- ❑ Determining thickness ⇒ page 59
- ❑ Insert in circumferential groove in input shaft

8 - Shim

9 - Gearbox housing

- ❑ Removing and installing input shaft and output shaft with selector plates / selector forks ⇒ page 48
- ❑ Servicing ⇒ page 68
- ❑ Removing and installing differential ⇒ page 125

10 - Sealing cap

- ❑ For output shaft
- ❑ Always renew

11 - Bolt

- ❑ 110 Nm

- For output shaft
- Always renew

12 - Oil drain plug

- 40 Nm

13 - Bolt

- 24 Nm
- Steel bolts (M8; 25 mm long)
- 4x
- Apply locking fluid - AMV 185 101 A1- when fitting

14 - Selector shaft with selector mechanism cover

- Different versions are installed (with and without gearbox neutral position sender - G701-
- Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- Removing and installing ⇒ page 63
- Coat sealing surface between selector mechanism cover and gearbox cover lightly with sealing paste - AMV 188 001 02- before installing

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15 - Bolt

- 27 Nm
- Steel bolts (M8; 30 mm long)
- 3x
- Secures bearing mounting to gearbox cover
- Apply locking fluid - AMV 185 101 A1- when fitting

16 - Gear detector switch - F208-

- 20 Nm
- Does not have to be removed when dismantling and assembling gearbox

17 - Spur gear drive output gear

18 - Circlip

19 - Bearing plate

- Note correct installation position in relation to gearbox cover ⇒ page 49

20 - Spur gear drive input gear

21 - Needle bearing

- For spur gear drive input gear ⇒ Item 20 (page 46)
- Fit onto output shaft

22 - Gearbox cover

- Servicing ⇒ page 66

23 - Bolt

- 24 Nm
- Steel bolts (M8; 42 mm long)
- 16x

24 - Bolt

- 24 Nm
- Secures reverse shaft to gearbox cover

25 - O-ring

- Always renew
- Installed in gearboxes with gearbox neutral position sender - G701- or sealing plug

26 - Bolt

- 24 Nm
- Steel bolt (M8; 25 mm long)

- ❑ Secures gearbox neutral position sender - G701- or sealing plug and sealing cap/selector shaft to gearbox cover
- ❑ Not fitted on all versions
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

27 - Gearbox neutral position sender - G701- or sealing plug

- ❑ Gearbox neutral position sender for vehicles with start/stop system
- ❑ Sealing plug ⇒ Item 9 (page 67) can be fitted in place of gearbox neutral position sender - G701-
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue

Note

If a sealing plug is fitted in place of the gearbox neutral position sender - G701- , it does not have to be removed when dismantling and assembling the gearbox.

28 - Dowel pin

- ❑ 2x

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29 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 25 mm long)
- ❑ 3x
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

30 - Flange shaft (left-side)

- ❑ With mounting bracket

3.5 Exploded view - gear cluster, reverse gear wheel, selector mechanism

1 - Gearbox housing

- ❑ With differential and pinion shaft

2 - Input and output shafts with selector fork cluster

- ❑ Dismantling and assembling ⇒ page 81

3 - Oil collector

- ❑ Clipped into bearing mounting

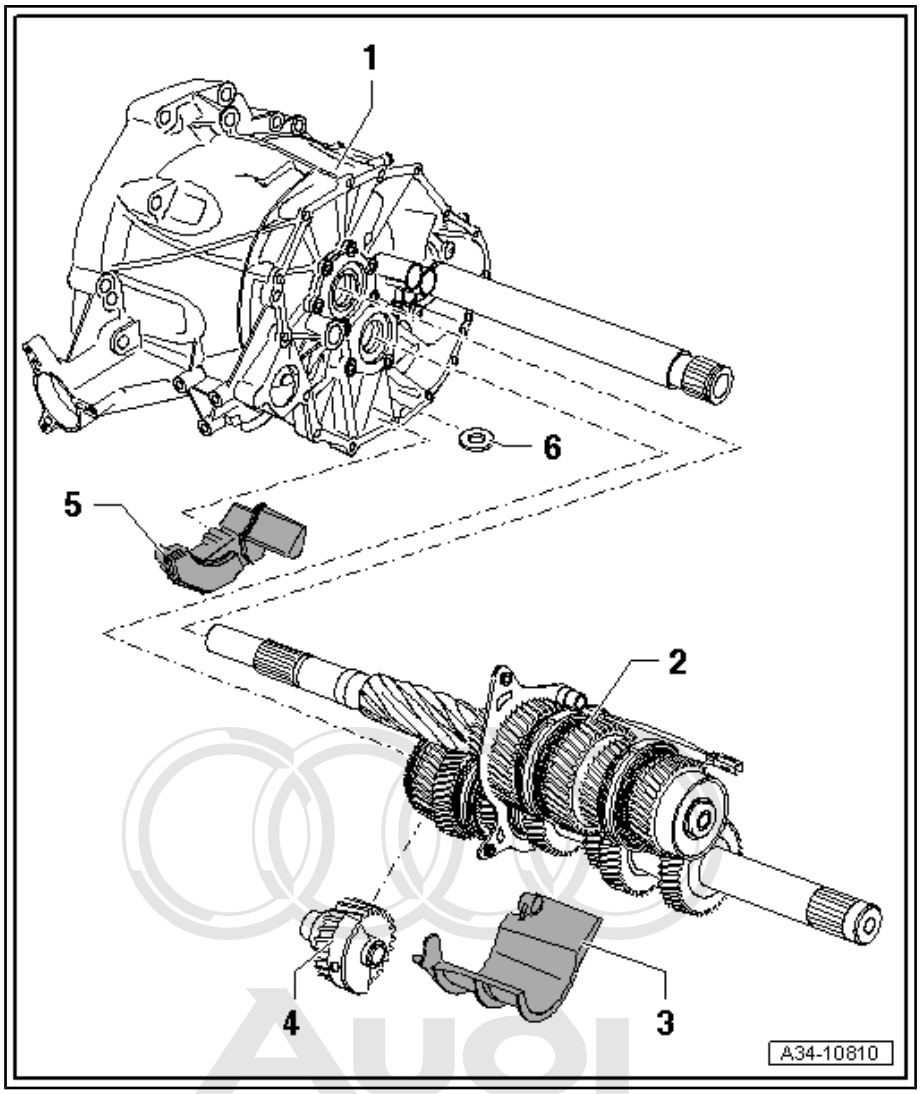
4 - Reverse gear wheel

- ❑ With reverse shaft
- ❑ Exploded view - reverse gear wheel ⇒ page 48

5 - Oil guide

6 - Magnet

- ❑ Clean



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Exploded view - reverse gear wheel

1 - Reverse gear wheel

Installation position: collar points towards gearbox housing.

2 - Needle bearing

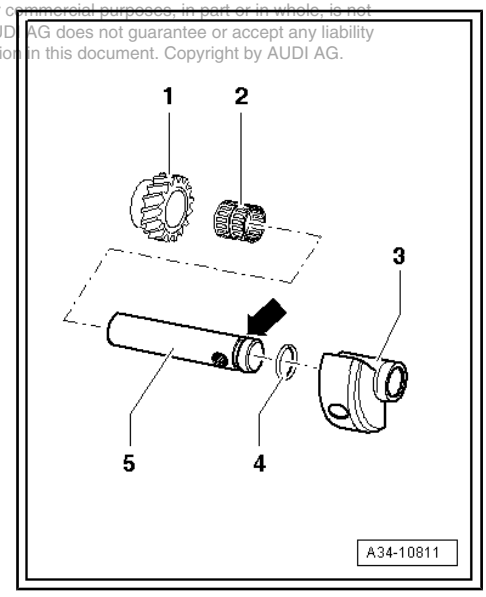
3 - Reverse shaft support

4 - O-ring

5 - Reverse shaft

Insert O-ring -item 4- in annular groove -arrow-.

Threaded hole in reverse shaft must align with hole in reverse shaft support.



3.6 Exploded view - selector forks

Note

Detaching selector fork cluster from bearing mounting for input shaft and output shaft ⇒ page 81

1 - Selector plate / selector fork for reverse gear

2 - Selector plate / selector fork for 1st and 2nd gear

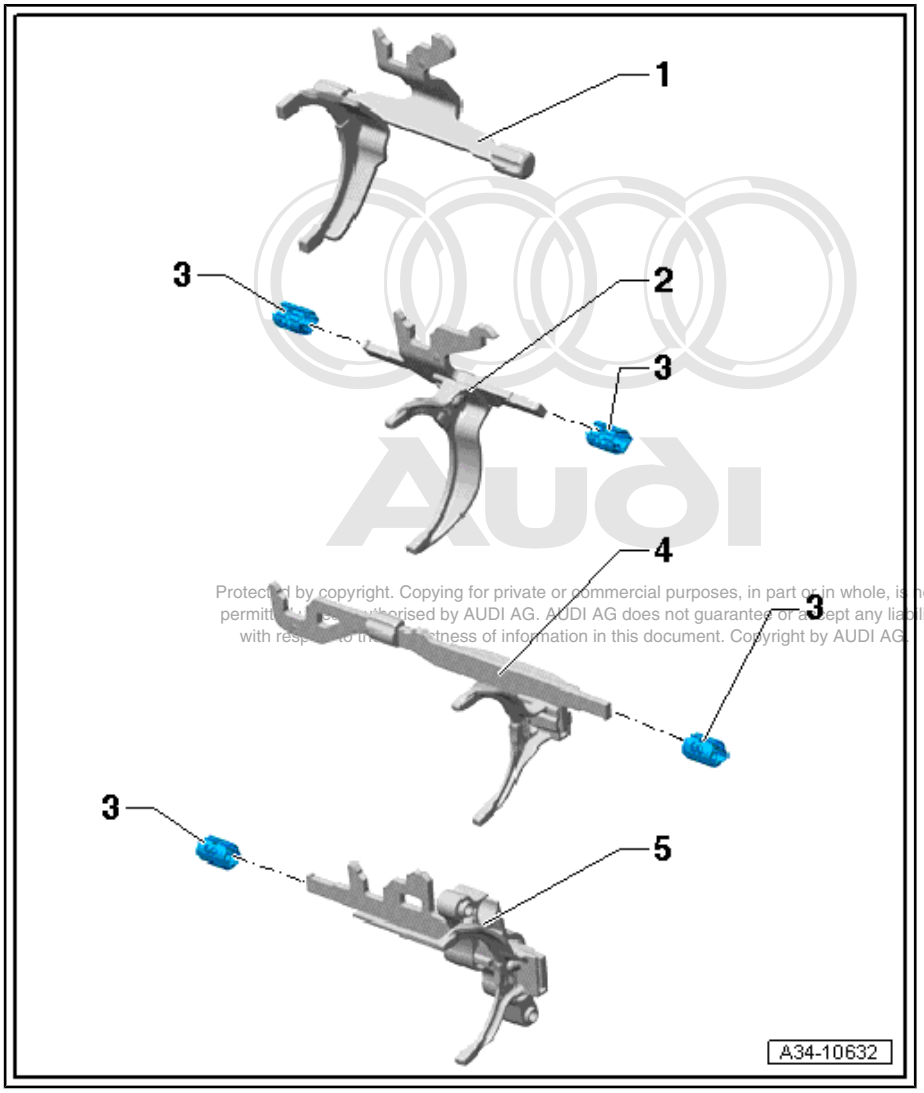
3 - Ball sleeve

- ❑ To attach/detach from selector plate / selector fork, use external circlip pliers or similar

4 - Selector plate / selector fork for 3rd and 4th gear

5 - Selector plate / selector fork for 5th and 6th gear

- ❑ With support for bearings of selector plates / selector forks
- ❑ Selector fork cannot be separated from support



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3.7 Dismantling and assembling gearbox

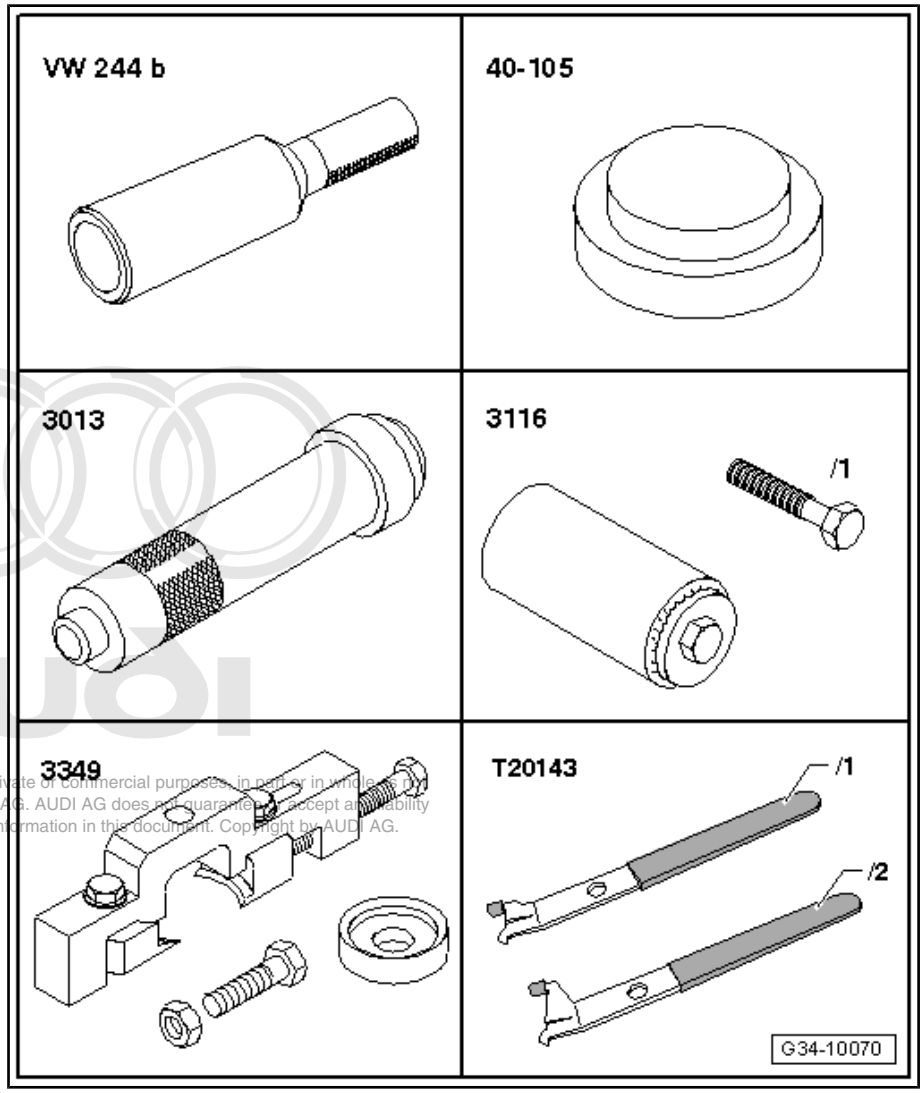
Centre differential housing, centre differential, spur gears, gearbox cover, input shaft and output shaft are removed and installed together with internal gearbox selector mechanism.

Note

- *The differential does not have to be removed in order to remove the above-mentioned components.*
- *Refer to general repair instructions* ⇒ page 2 .

Special tools and workshop equipment required

- Drift sleeve - VW 244 B-
- Thrust plate - 40 -105-
- Punch - 3013-
- Clamping sleeve - 3116-
- Puller - 3349-
- Extractor tool - T20143-



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- Assembly tool - T40041-
- Thrust piece - T40174-
- Gearbox support - T40206-
- Separating tool - T40213-
- Support - T40214-
- Guide pin - T40216-

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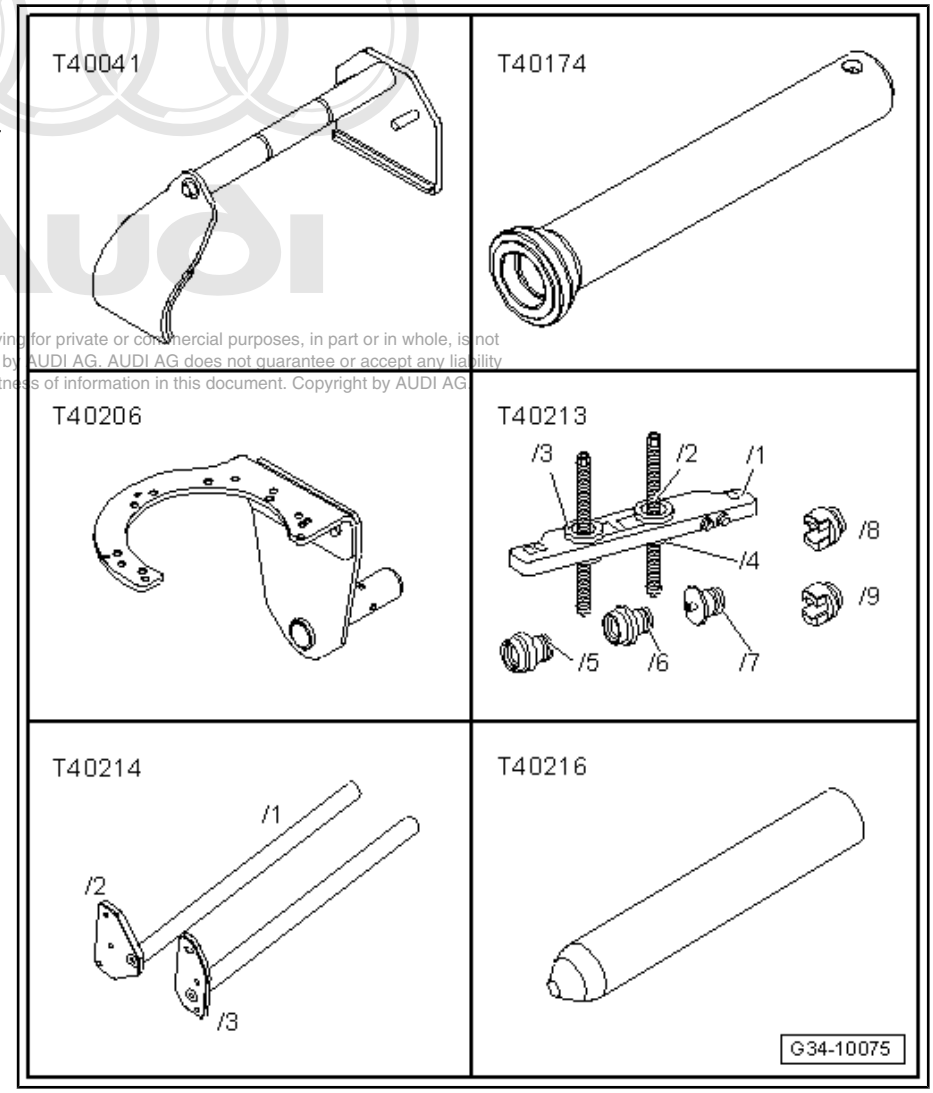
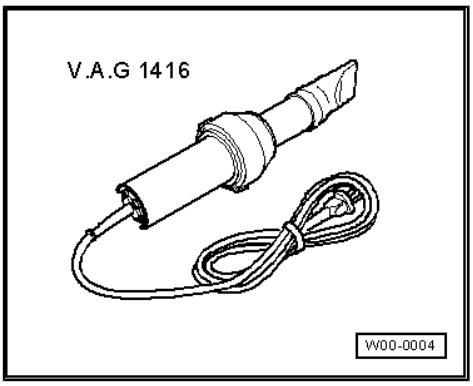


- Hot air blower - V.A.G 1416-

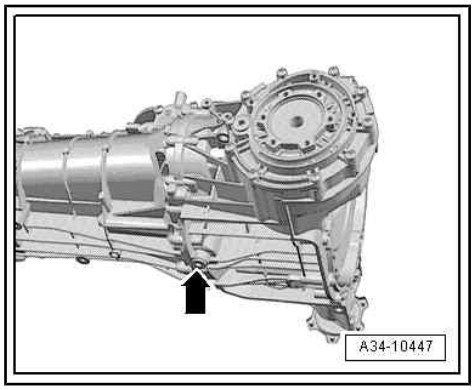


- Locking fluid - AMV 185 101 A1-
- Sealing paste - AMV 188 001 02-
- Grease for clutch plate splines - G 000 100-
- Lubricating paste - G 000 150-
- Sealing grease - G 052 128 A1-

Dismantling gearbox

– Place drip tray underneath.

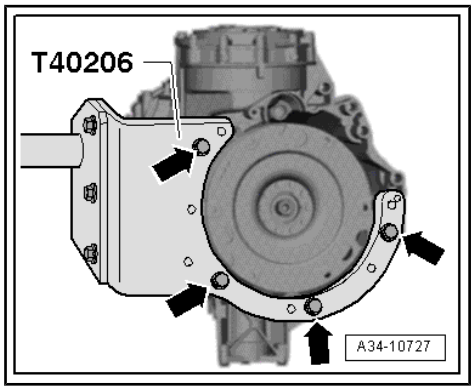
– Unscrew plug -arrow- and drain off gear oil.



– Attach gearbox support - T40206- to gearbox using bolts -arrows- and secure in assembly stand.

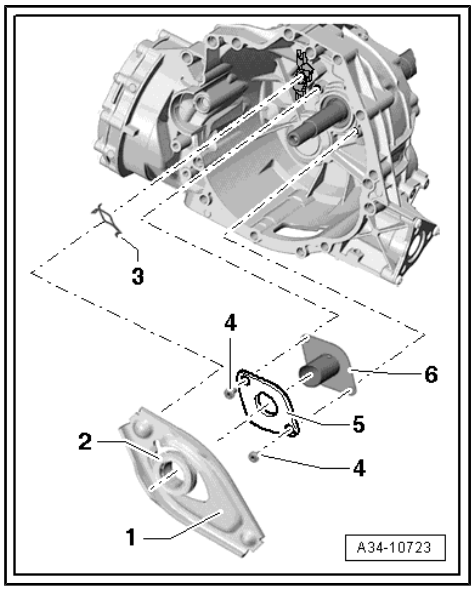
– Remove clutch module ⇒ page 20 .

– Put clutch module down carefully, e.g. on work bench.



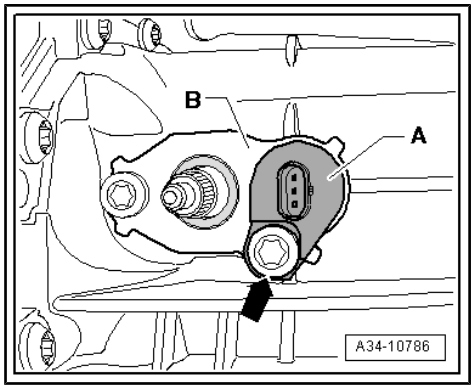
– Remove clutch release lever -1- together with release bearing -2- and retaining spring -3-.

– Remove bolts -4- and detach retaining piece -5- (if fitted) with guide sleeve -6-.



– If fitted, remove gearbox neutral position sender - G701- -A-.

– To do this, remove bolt -arrow- and pull sender out of sealing cap -B- for selector shaft.



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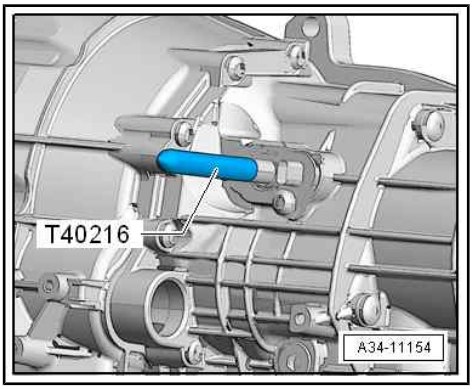
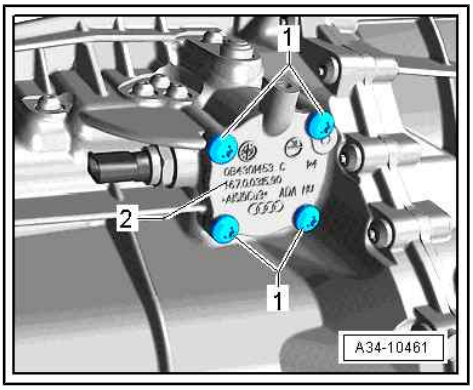
Note

- *Sealing cap -B- remains fitted.*
- *If a sealing plug is fitted in place of the gearbox neutral position sender - G701- , it does not have to be removed when dismantling and assembling the gearbox.*

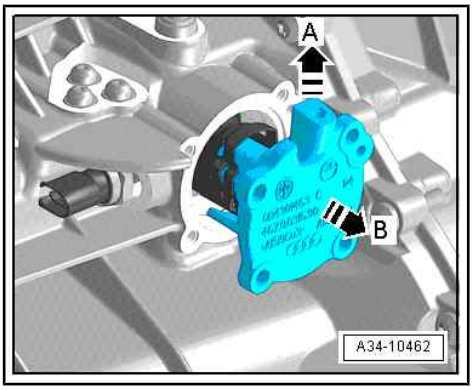
– Screw guide pin - T40216- onto selector shaft.



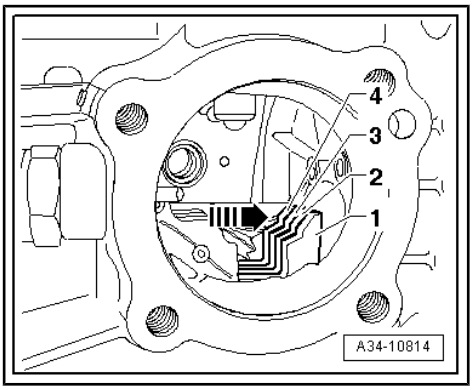
– Remove bolts -1- and carefully lever off selector shaft cover -2-.



– Lift selector shaft slightly -arrow A- and pull it out -arrow B-.



– Lock input shaft and output shaft in position by moving selector plates -1- to -4- in direction of -arrow-.



Note

To avoid damaging the gearbox cover, put a cloth in the aperture for the selector shaft between the tool and the housing.

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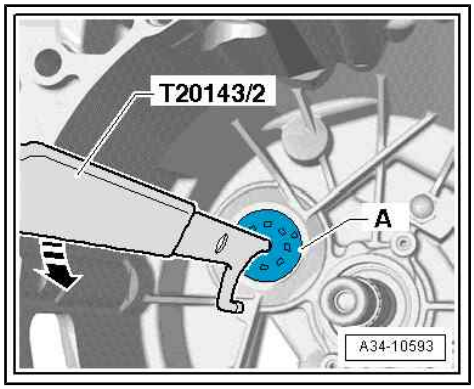
– Pierce through centre of sealing cap -A- for output shaft and prise out in direction of -arrow-.

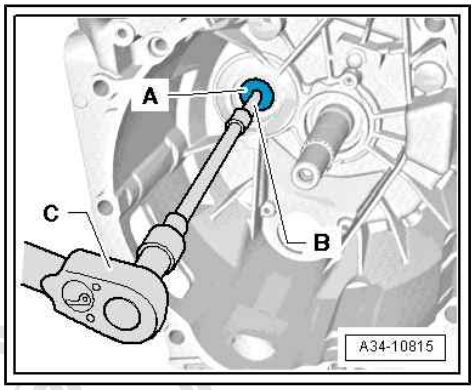


– Now unscrew bolt -A- from output shaft.

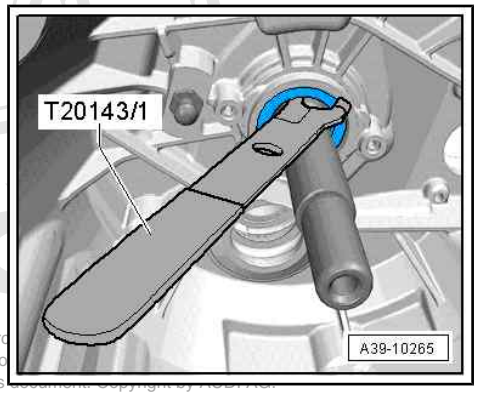
B - Hexagon key (12 mm)

C - Torque wrench

– Then move selector plates to neutral position.



– Prise out input shaft oil seal.



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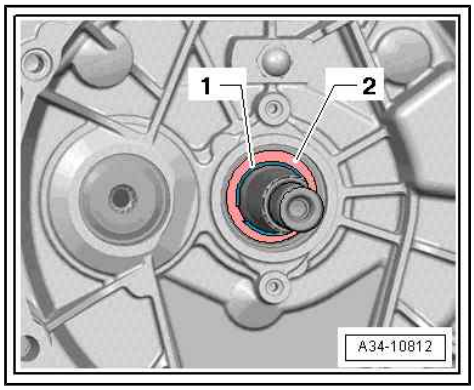
– Then remove circlip -1- in front of ball bearing for input shaft.

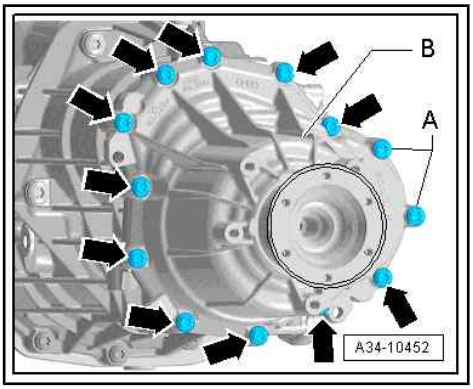
– Remove shim -2-.



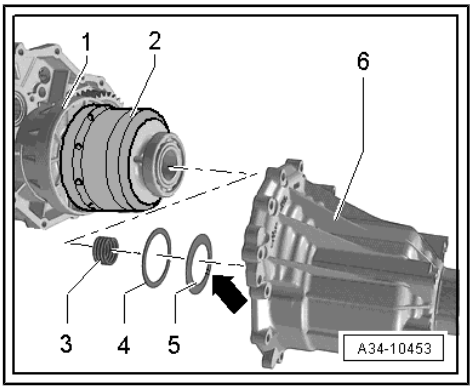
Note

- *If this circlip -1- cannot be removed, detach the centre differential housing first and knock the input shaft forwards using a rubber-headed hammer.*
- *It is important that the shim -2- be removed before pressing out the gear cluster so that the shim does not slip into the groove for the circlip.*

– Unscrew bolts -A- and -arrows- for centre differential housing -B- from gearbox cover.

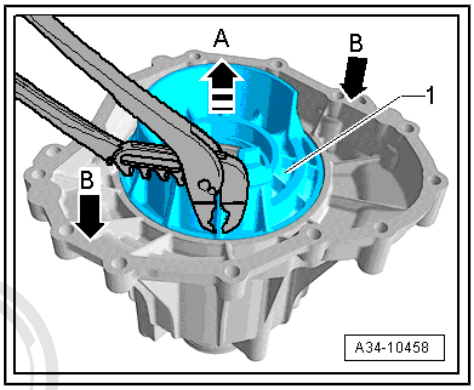


– Carefully pull off centre differential housing -6-, together with spring -3-, shim -4- and dished spring -5-.
– Detach centre differential -2- and bearing plate -1-.



If bearing plate -1- remains behind in centre differential housing, proceed as follows:

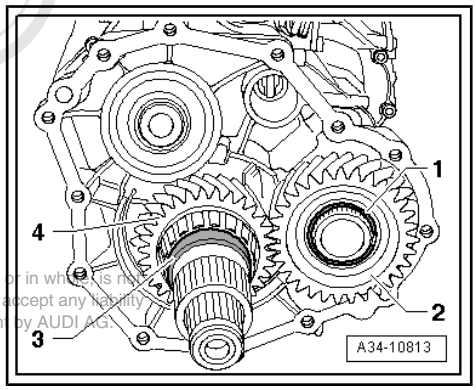
– Grip one of side ribs on bearing plate -1- with pliers and pull off in direction of -arrow A-.
– While doing so, carefully tap alternate sides of housing -arrows B- with a rubber-headed hammer .



Caution

Take care not to damage sealing surface!

– Remove circlip -1- and pull spur gear drive output gear -2- off pinion shaft.
– Detach spacer sleeve -3- and spur gear drive input gear -4- from output shaft. At the same time also detach needle bearing for spur gear drive input gear.



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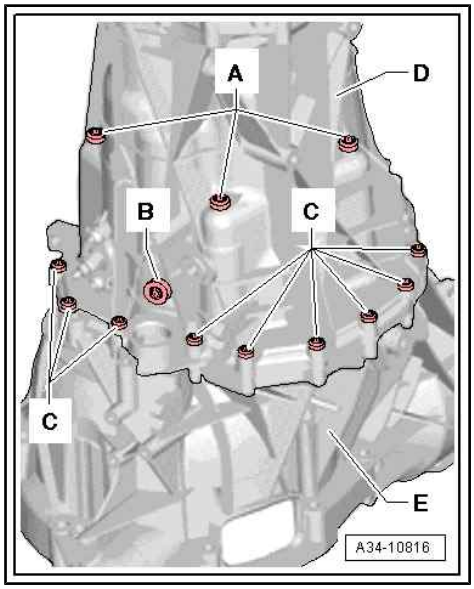
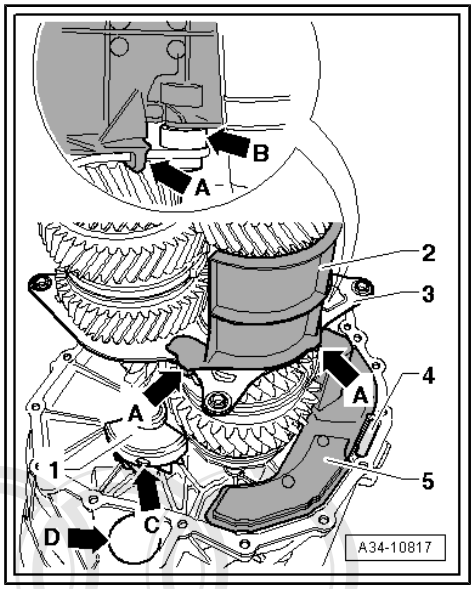
– Then turn gearbox in assembly stand so that gearbox cover -D- faces upwards.
– Remove bolts -A- securing bearing mounting, bolts -B- securing reverse shaft and bolts -C- securing gearbox cover -D- to gearbox housing -E-.
– Detach gearbox cover -D-; note input shaft ball bearing (do not tilt gearbox cover when pulling it off).



Note

Ball bearing on input shaft (rear) is a push fit in gearbox cover.

– Remove reverse gear wheel with reverse shaft -1-.
– Detach oil collector -2- from bearing mounting -3- -arrows A- and -arrow B-.
– Detach magnet -4- and oil guide -5- from gearbox housing.



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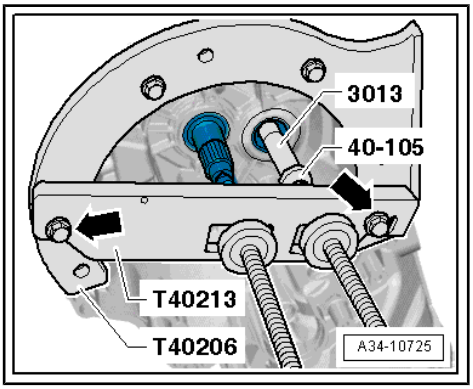
– Attach separating tool - T40213- to gearbox support - T40206- with bolts -arrows-.



Caution

Risk of damage to gears, shafts and bearings.

- ***The input shaft and output shaft must be pressed out together.***
- ***It is permissible to turn the spindles alternately not more than one turn at a time when pressing out the shafts.***
- ***Make sure the synchromesh for the reverse gear does not slip off the output shaft when taking out the gear cluster.***

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– By turning spindles of separating tool - T40213- alternately one turn at a time, press input shaft and output shaft out of ball bearings in gearbox housing. While doing so, make sure gear cluster does not drop (get help from a second person if necessary).

– Detach input shaft and output shaft together with selector fork cluster from gearbox housing.

Assembling gearbox

Note

If you are renewing the gearbox cover, spur gear drive input gear, tapered roller bearings for spur gear drive input gear, bearing plate or centre differential housing, you must first determine the thickness of the required shim for the preload of the tapered roller bearings for the spur gear drive input gear *⇒ page 96* *.*

To prevent the synchromesh for the reverse gear from slipping apart when the gear cluster is inserted, these components must be secured as follows with an assembly tool:

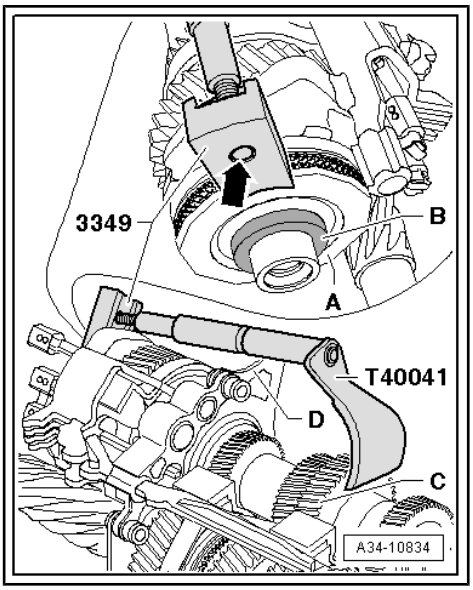
– Screw a hook of the puller - T40041- onto assembly tool - 3349- , as shown in illustration.

– Then position assembly tool with hook on reverse gear synchro-hub -A- and 3rd gear wheel -C- and tighten assembly tool.

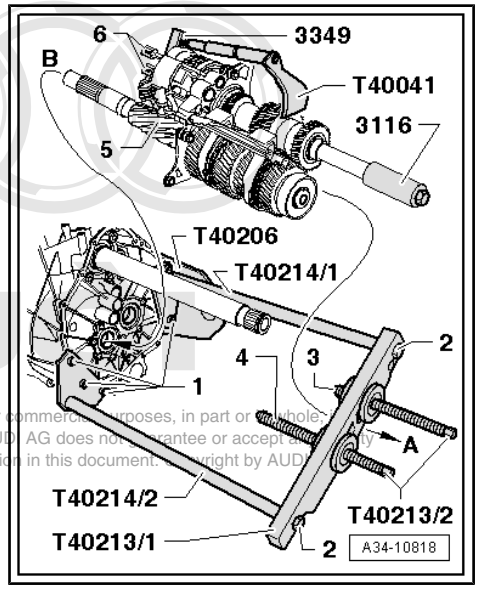
• Threaded spindle of assembly tool - T40041- must not protrude at hook -arrow-.

• Assembly tool must be positioned within radius of bearing mounting -D-.

– Fit thrust washer -B- with small amount of grease at reverse gear synchro-hub -A-.



– Fit clamping sleeve - 3116- onto output shaft.
– Secure supports - T40214/1- and -T40214/2- to gearbox housing, as shown in illustration, with bolts -1- (6x in total).
– Attach plate - T40213/1- to supports - T40214/1- and - T40214/2- with bolts -2-.
– Turn spindle -3- back as far as stop and set spindle -4- to central position.
– Turn gearbox housing with mounted special tools so it is horizontal in assembly stand, as shown in illustration.
– Heat ball bearings in gearbox housing with hot air blower - V.A.G 1416- .
– First guide gear cluster -5- underneath plate - T40213/1- in direction of -arrow A-.
– Then insert gear cluster with input shaft in gearbox housing (-arrow B-).
– Hold gear cluster in this position and apply the two spindles - T40213/2- at shafts. Selector plates -6- must be aligned with bearing points in gearbox housing.



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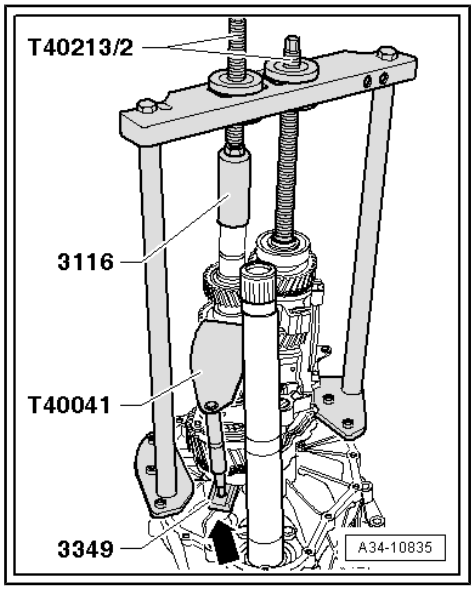
Note

Depending on the fit between the ball bearings and the shafts, the gear cluster can be pressed all the way into the gearbox housing by hand on some gearbox versions.

– Then turn the gearbox in the assembly stand so that the gear cluster faces upwards.
– If necessary, align spindles - T40213/2- with shafts again so that spindles press on shafts centrally.



Caution

Risk of damage to gears, shafts and bearings.

- ***The input shaft and output shaft must be pressed in together.***
- ***It is permissible to turn the spindles alternately not more than one turn at a time when pressing in the shafts.***

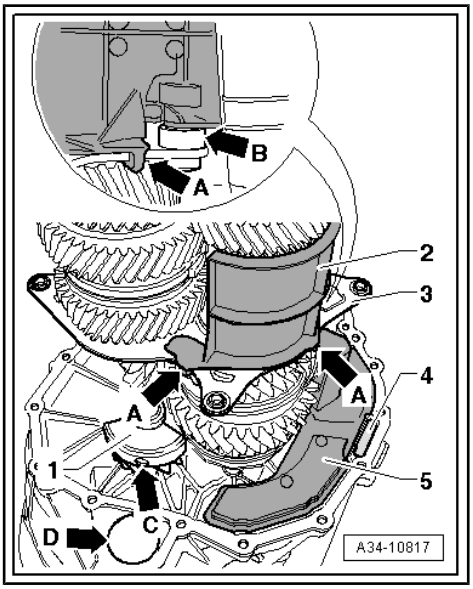
– Then, by turning spindles - T40213/2- alternately one turn at a time, press in input shaft and output shaft until they are seated in ball bearings.

Note

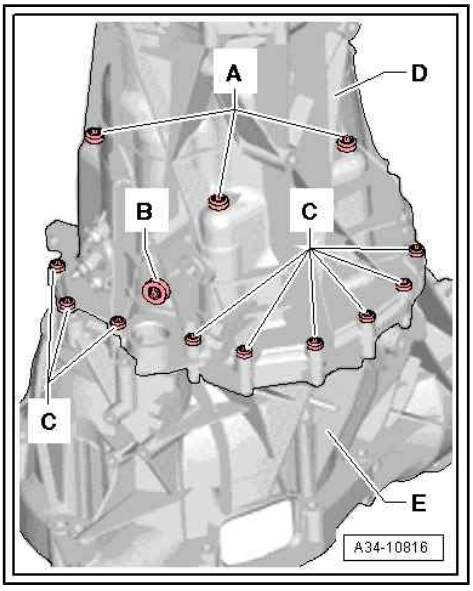
- *Keep shafts straight while pressing them in. Guide selector plates into corresponding bearing points in gearbox housing.*
- *Detach assembly tool - T40041- before hook comes into contact with housing rib -arrow-.*
- *Note synchromesh for reverse gear. Tabs on intermediate ring must lock in reverse gear synchro-hub.*

– Detach separating tool - T40213- and supports - T40214- .

– Insert magnet -4- and oil guide -5- into gearbox housing.
– Position oil collector -2- on pin -arrow B- of bearing mounting -3- and clip in at bearing mounting -arrows A-.
– Install reverse gear wheel with reverse shaft -1- (align threaded hole -arrow C- with aperture -arrow D- for slave cylinder).
– Check whether the two dowel sleeves for centring gearbox cover to gearbox housing are fitted in gearbox housing/gearbox cover.
– Apply sealing paste - AMV 188 001 02- evenly and not too thickly onto contact surfaces between gearbox housing and gearbox cover.



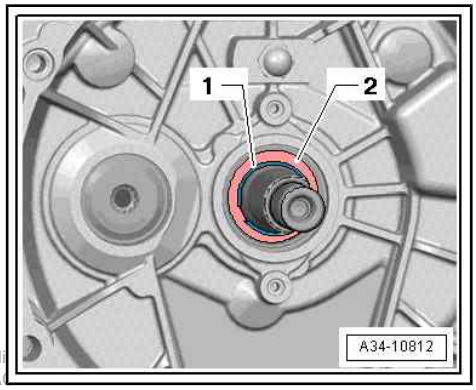
– Position gearbox cover -D- on gearbox housing -E-; do not screw in bolts -C- yet.
– Screw bolt -B- into reverse shaft (hand-tight).
– Clean threads of bolts -A- with a wire brush. Then apply locking fluid - AMV 185 101 A1- and screw bolts hand-tight into bearing mounting.
– Tighten bolts -C- to specified torque.
– Then tighten bolts -A- and -B- to specified torque.



– Position shim -2- on input shaft.

Determining thickness of circlip -1- for input shaft

– Determine the thickest circlip that will just fit and install it. For part number refer to ⇒ Electronic parts catalogue .



Note

Start with the thickest circlip.

The following circlips are available:

Circlip thickness (mm)		
1.95	2.10	2.25
2.00	2.15	
2.05	2.20	

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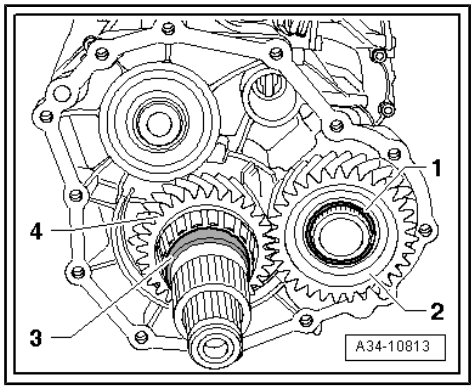
– Fit spur gear drive input gear -4- with needle bearing ⇒ Item 21 (page 46) and spacer sleeve -3- on output shaft.



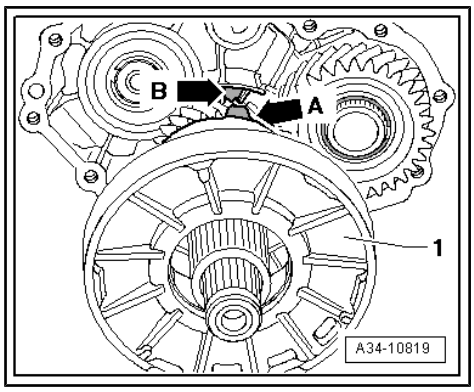
Note

If you are renewing the gearbox cover, spur gear drive input gear or the centre differential, you must first determine the thickness of the shim required for adjusting the preload of the ball bearings of the centre differential ⇒ page 98 .

– Position spur gear drive output gear -2- on pinion shaft and install circlip -1-.

Install bearing plate -1- on gearbox cover as follows:

- Installation position: lug -arrow A- on bearing plate -1- must engage in recess -arrow B- in gearbox cover.



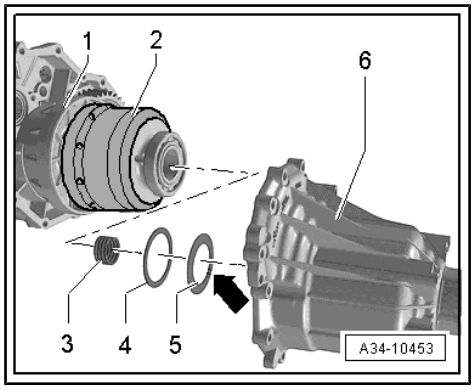
– Slide on centre differential -2- towards bearing plate -1- as far as stop.

– Fit dished spring -5-, shim -4- and spring -3- in centre differential housing -6-.

- Installation position of dished spring -5-: inner diameter (convex side) -arrow- faces centre differential housing -6-.

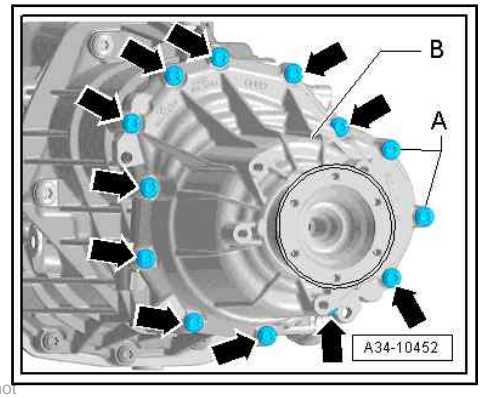
– Apply sealing paste - AMV 188 001 02- evenly and not too thickly.

– Then fit centre differential housing -6- onto gearbox.



– Press centre differential housing -B- fully onto gearbox cover and hold in place.

– Fit bolts -A- and new bolts -arrows- and tighten to specified torque.



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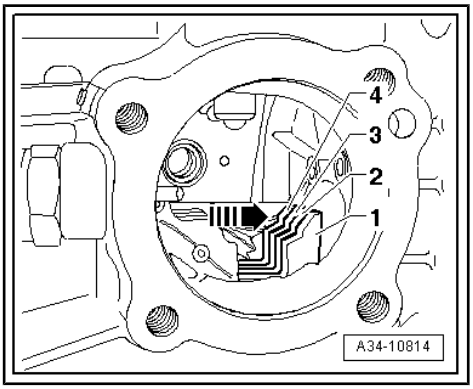
– Lock input shaft and output shaft in position by moving selector plates -1- to -4- in direction of -arrow-.



Note

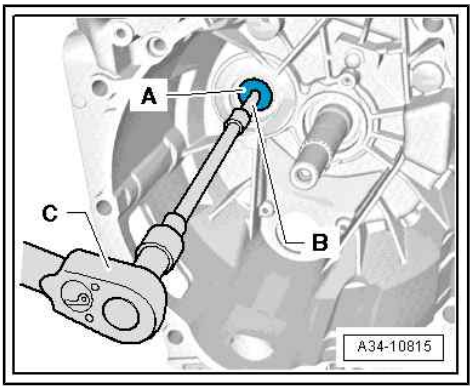
To avoid damaging the gearbox cover, put a cloth in the aperture for the selector shaft between the tool and the housing.

– Tighten new bolt -A- securing output shaft to specified torque.

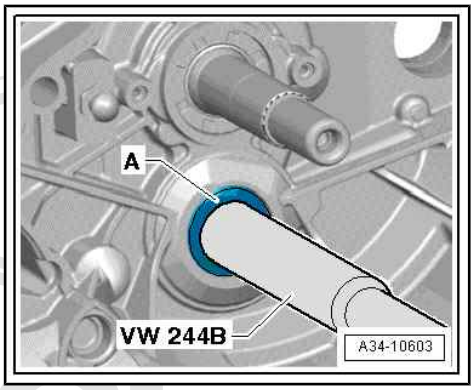
B - Hexagon key (12 mm)

C - Torque wrench

– Then move selector plates to neutral position.



– Before installation, lightly oil outside circumference of new sealing cap -A- for output shaft, and drive in until flush.



For gearboxes: Audi A5 Coupé 2008 ► up to gearbox serial number 000760

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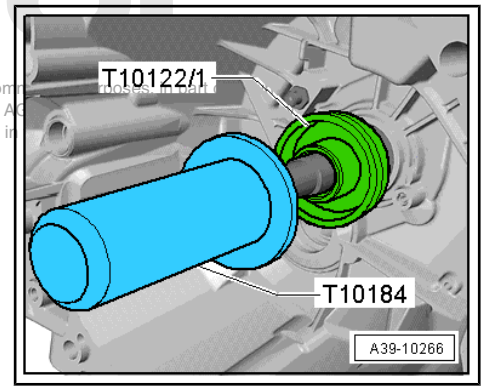
Note

Gearboxes with these serial numbers were installed only in the Audi A5 Coupé 2008 ►.

– Lightly oil outer circumference of new oil seal for input shaft.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Drive in new oil seal until flush (take care to keep seal straight).

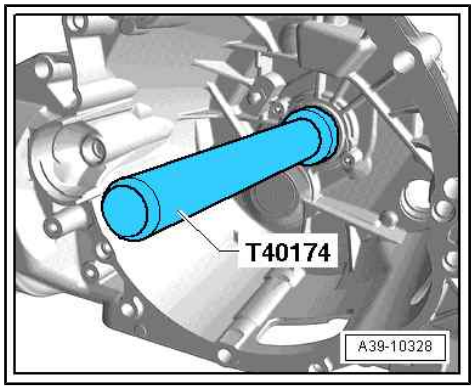


For gearboxes: Audi A4 2008 ►; Audi A5 Coupé 2008 ► from gearbox serial number 000761 onwards

– Lightly oil outer circumference of new oil seal.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

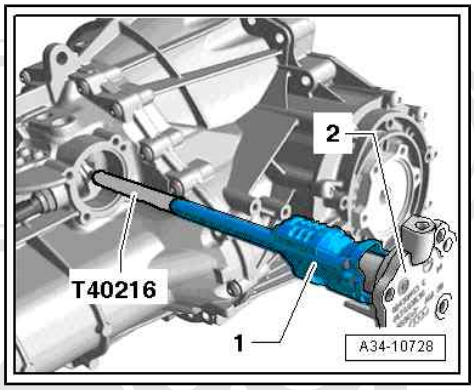
– Drive in new oil seal onto stop using thrust piece - T40174- . Take care to keep seal straight when installing.



Continued for all gearboxes

– Apply sealing paste - AMV 188 001 02- evenly and not too thickly onto sealing surface between selector mechanism cover and gearbox cover.

– Screw guide pin - T40216- onto selector shaft -1-.



– Lift selector shaft slightly -arrow B- and install it in gearbox -arrow A-.

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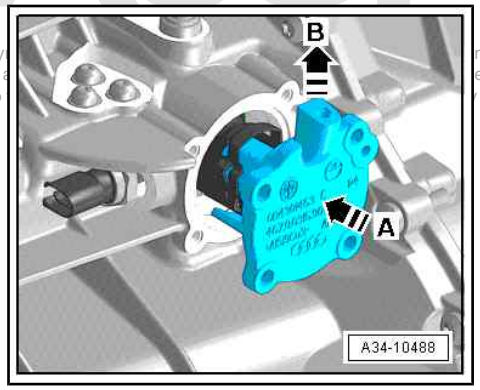
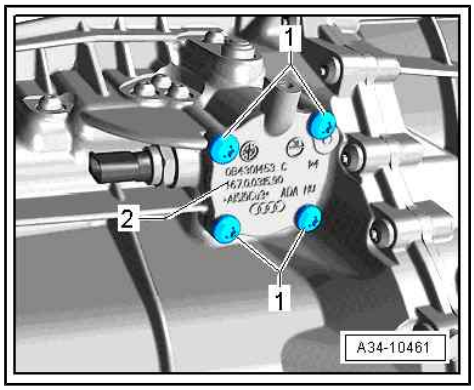


– Selector shaft cover -2- must make contact with gearbox cover.

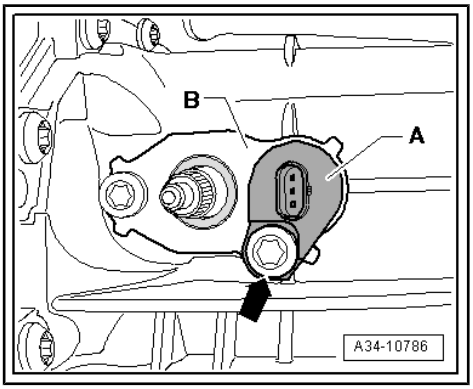
– Clean threads of bolts -1- with wire brush. Then insert bolts with locking fluid - AMV 185 101 A1- and tighten to specified torque.

– Unscrew guide pin - T40216- .



– If previously fitted, insert gearbox neutral position sender - G701- -A- with new O-ring in sealing cap -B- for selector shaft.

– Clean thread of bolt -arrow- with a wire brush. Then insert bolt with locking fluid - AMV 185 101 A1- and tighten to specified torque.



– Fit guide sleeve -6- and retaining piece -5-, if applicable.

– Clean threads of bolts -4- with wire brush. Then install bolts with locking fluid - AMV 185 101 A1- and tighten to specified torque ⇒ Item 6 (page 9) .

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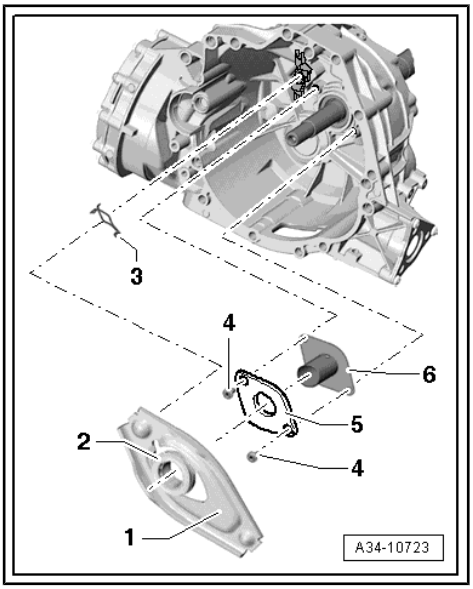


Caution

Grating/creaking noises can occur when clutch is operated.

- *Lack of grease at the bearings -2- on the release bearing assembly can cause creaking/grating noises when the clutch is operated.*
- *Grease bearings on release bearing assembly thoroughly with lubricating paste - G 000 150- ⇒ page 10 .*
- *Remove grease in bearing surface for guide sleeve: bearing of release bearing on guide sleeve must be free of grease.*

– Install release lever -1- together with release bearing -2- and retaining spring -3- ⇒ page 8 .

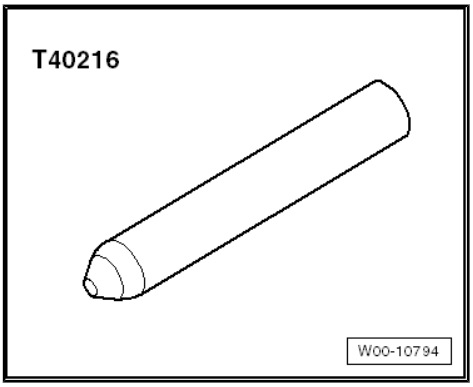
– Install clutch module and flange shaft (left-side) ⇒ page 23 .

– Fill up with gear oil and check oil level in manual gearbox ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .

3.8 Removing and installing selector shaft

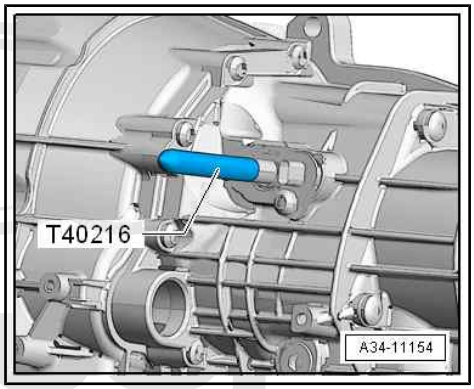
Special tools and workshop equipment required

♦ Guide pin - T40216-



Removing

– Screw guide pin - T40216- onto selector shaft.



– Remove bolts -1- and carefully lever off selector shaft cover -2-.

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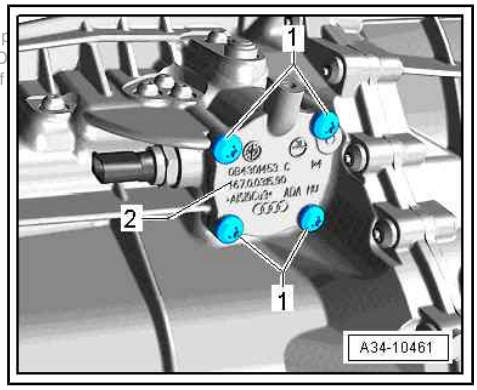
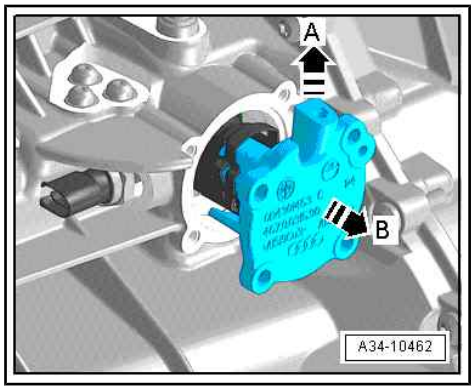


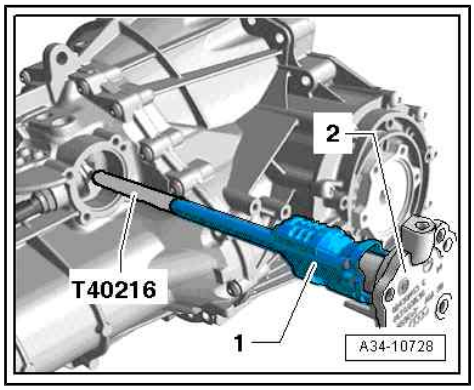
– Lift selector shaft slightly -arrow A- and pull it out -arrow B-.



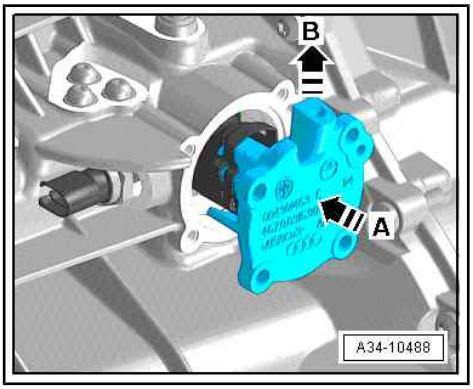
Installing

– Apply sealing paste - AMV 188 001 02- evenly and not too thickly onto sealing surface between selector mechanism cover and gearbox cover.

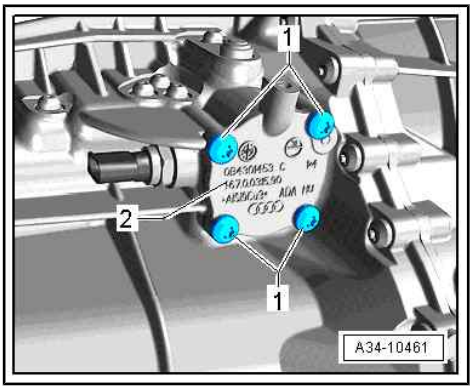
– Screw guide pin - T40216- onto selector shaft -1-.



– Lift selector shaft slightly -arrow B- and install it in gearbox -arrow A-.



– Selector shaft cover -2- must make contact with gearbox housing.
– Fit new bolts -1- and tighten to specified torque ⇒ Item 13 (page 46) .
– Unscrew guide pin - T40216- .



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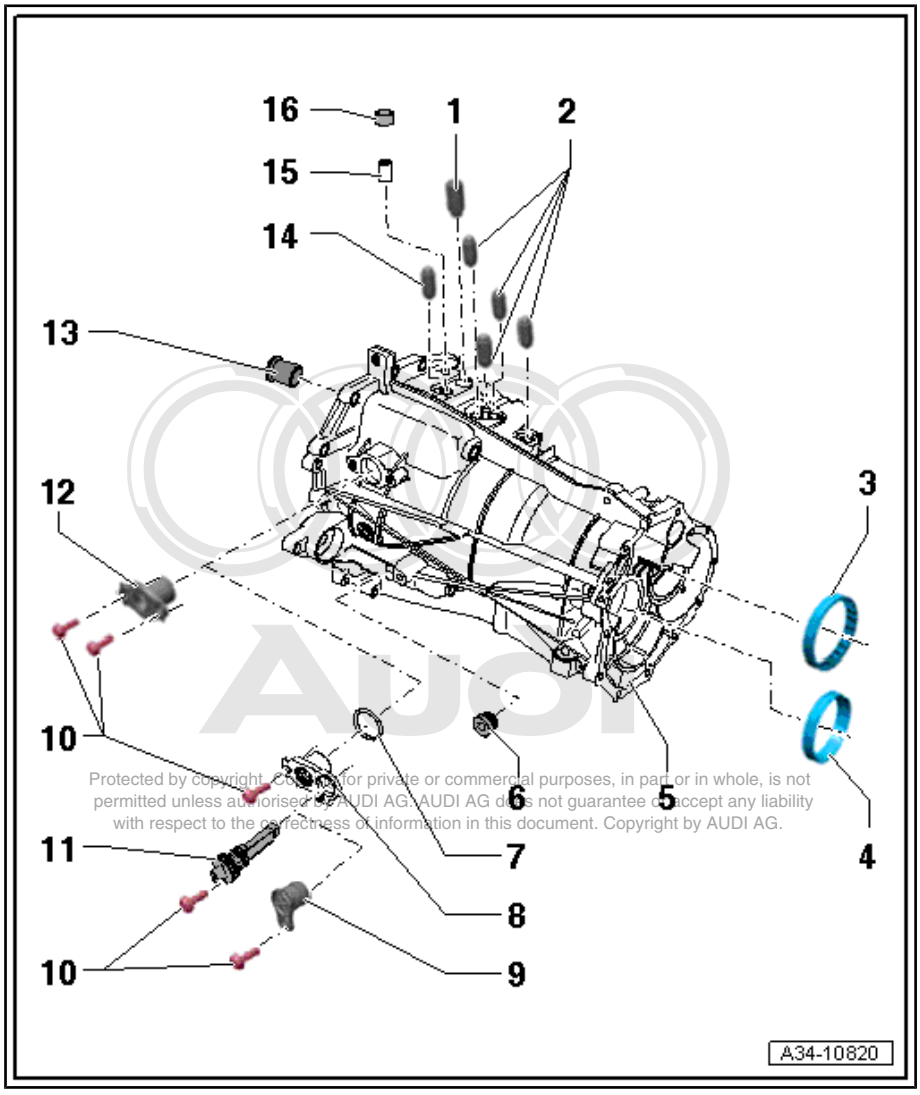
4 Gearbox housing, clutch housing

⇒ “4.1 Exploded view - gearbox cover”, page 66
⇒ “4.2 Exploded view - gearbox housing”, page 68
⇒ “4.3 Servicing gearbox cover”, page 70
⇒ “4.4 Servicing gearbox housing”, page 77

4.1 Exploded view - gearbox cover



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1 - Large locking bush

- For selector shaft
- Removing and installing ⇒ page 73
- Installation depth ⇒ page 74

2 - Locking bush

- For selector plate / selector fork
- At present there is no provision for removing and installing

3 - Needle bearing

- Bearing for spur gear drive output gear
- Pulling out ⇒ page 74
- Always renew
- Driving in ⇒ page 74
- Peen to secure after installing ⇒ page 74

4 - Tapered roller bearing outer race

- Bearing for spur gear drive input gear in gearbox cover
- Pressing out ⇒ page 75
- Pressing in ⇒ page 75

5 - Gearbox cover

- Select correct version according to gearbox code letters ⇒ Electronic parts catalogue

6 - Oil filler plug

- 40 Nm

7 - O-ring

- Only installed in gearboxes with sealing cap/selector shaft in conjunction with gearbox neutral position sender - G701- or sealing plug
- Always renew

8 - Sealing cap

- For selector shaft in conjunction with gearbox neutral position sender - G701- or sealing plug
- Not fitted on all versions

- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- ❑ Exploded view ⇒ page 76
- ❑ Removing and installing oil seal for selector shaft ⇒ page 76
- ❑ Removing ball sleeve for selector shaft ⇒ page 76
- ❑ Installing ball sleeve for selector shaft ⇒ page 77

9 - Sealing plug

- ❑ Not fitted on all versions
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- ❑ Renew O-ring on sealing plug; select correct version according to gearbox code letters ⇒ Electronic parts catalogue

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10 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 25 mm long)
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

11 - Gearbox neutral position sender - G701-

- ❑ Not fitted on all versions
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- ❑ Renew O-ring on gearbox neutral position sender - G701- ; select correct version according to gearbox code letters ⇒ Electronic parts catalogue

12 - Sealing cap

- ❑ For selector shaft without gearbox neutral position sender - G701- or sealing plug
- ❑ Not fitted on all versions
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 75
- ❑ Exploded view ⇒ page 75
- ❑ Removing and installing oil seal for selector shaft ⇒ page 76
- ❑ Removing ball sleeve for selector shaft ⇒ page 76
- ❑ Installing ball sleeve for selector shaft ⇒ page 76

13 - Bearing bush

- ❑ For 3rd/4th gear selector plate / selector fork
- ❑ Pressing out ⇒ page 77
- ❑ Pressing in ⇒ page 77

14 - Small locking bush

- ❑ For selector shaft
- ❑ At present there is no provision for removing and installing

15 - Breather pipe

- ❑ Installation depth: 17.5 mm ± 0.5 mm below top of pipe to housing
- ❑ Clip in cap for gearbox breather

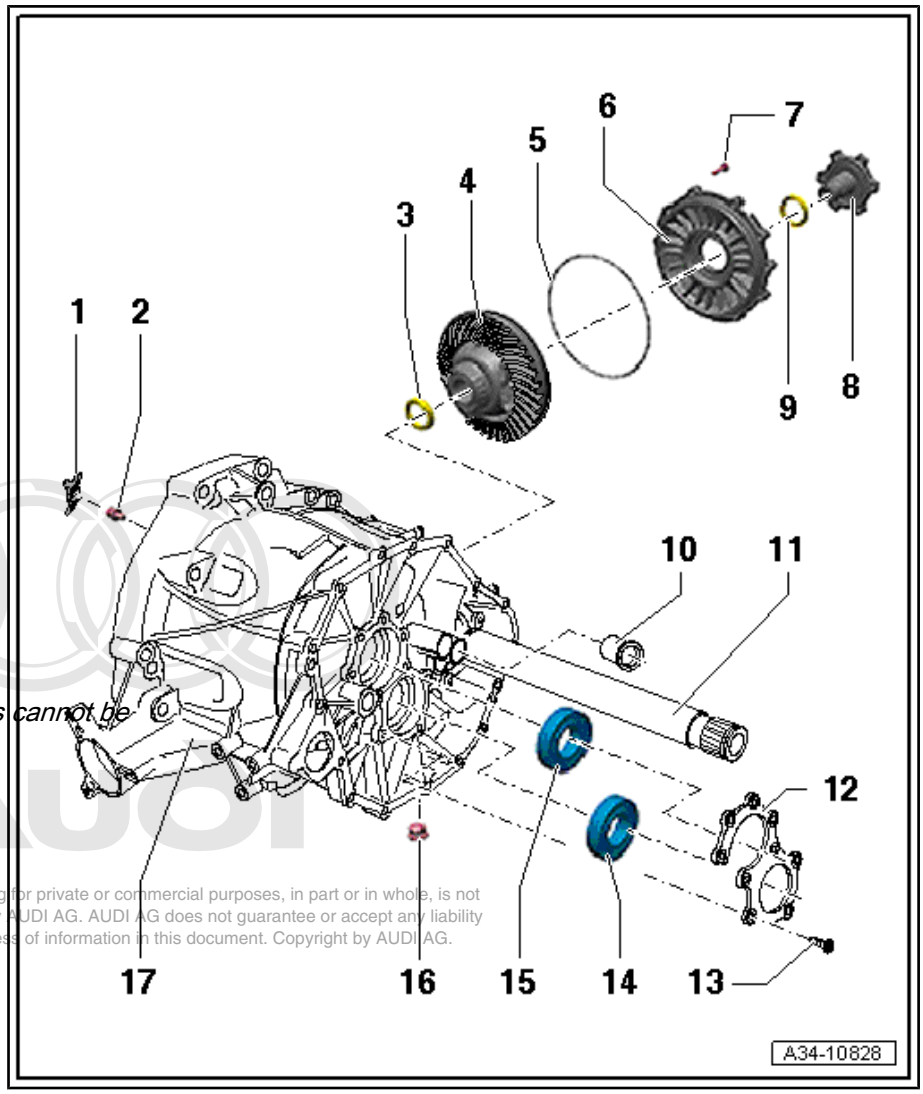
16 - Cap

- ❑ For gearbox breather

4.2 Exploded view - gearbox housing

Note

- *At present there is no provision for dismantling and assembling the differential.*
- *At present there is no provision for removing and installing the pinion shaft.*
- *At present there is no provision for adjusting the pinion shaft and crown wheel.*
- *Replacement: renew gearbox housing together with installed pinion shaft and differential.*



1 - Intermediate piece
- ❑ Renew if damaged

2 - Ball-head pin
- ❑ 25 Nm
- ❑ Coat bearing surface for clutch release lever with grease for clutch plate splines - G 000 100- .

3 - Oil seal
- ❑ For flange shaft (left-side)
- ❑ Removing and installing ⇒ page 132

4 - Differential
- ❑ Can currently only be renewed together with gearbox housing and pinion shaft

Note

Differential bevel gears cannot be removed and installed

5 - O-ring
- ❑ Always renew
- ❑ Lubricate with gear oil

6 - Cover for final drive
- ❑ Renewing ⇒ page 126

7 - Bolt
- ❑ 24 Nm
- ❑ Steel bolts (M8; 42 mm long)
- ❑ 10x

8 - Flange shaft (right-side)
- ❑ With circlip
- ❑ Removing and installing ⇒ page 137

9 - Oil seal
- ❑ For flange shaft (right-side)
- ❑ Removing and installing ⇒ page 137

10 - Bearing bush
- ❑ For selector plate / selector fork

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- ❑ 2x
- ❑ Removing ⇒ page 78
- ❑ Installing ⇒ page 79

11 - Pinion shaft

- ❑ Can currently only be renewed together with gearbox housing and differential

12 - Plate

- ❑ For securing ball bearings in gearbox housing
- ❑ Installation position: recesses for bolts face towards gearbox cover

13 - Bolt

- ❑ 24 Nm
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

14 - Ball bearing

- ❑ For output shaft
- ❑ Size of bearing: 19 mm
- ❑ Do not interchange with ball bearing ⇒ Item 15 (page 69)
- ❑ Driving out ⇒ page 79
- ❑ Driving in ⇒ page 79

15 - Ball bearing

- ❑ For input shaft
- ❑ Size of bearing: 17 mm
- ❑ Do not interchange with ball bearing ⇒ Item 14 (page 69)
- ❑ Driving out ⇒ page 80
- ❑ Driving in ⇒ page 80

16 - Oil drain plug

- ❑ 40 Nm

17 - Gearbox housing

- ❑ Can currently only be renewed together with differential and pinion shaft

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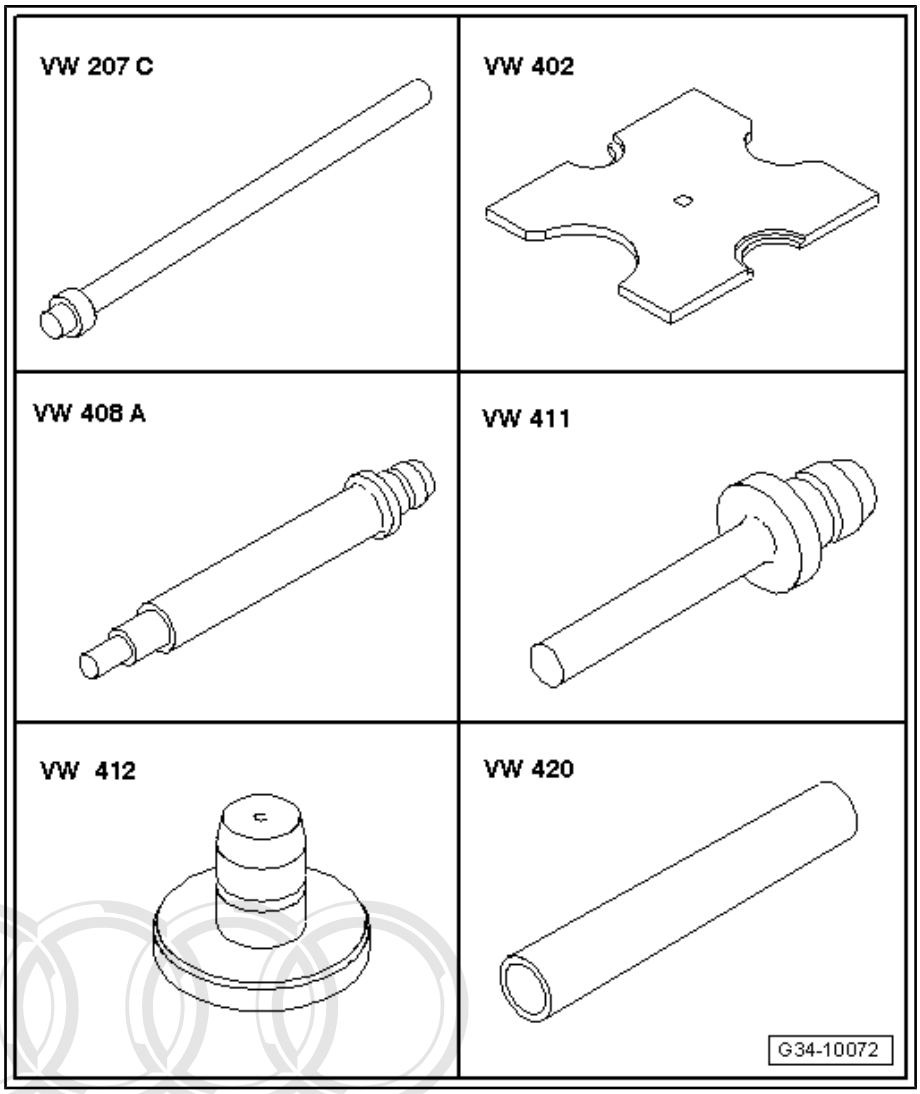
4.3 Servicing gearbox cover

Special tools and workshop equipment required

- Drift - VW 207 C-
- Thrust plate - VW 402-
- Press tool - VW 408 A-
- Press tool - VW 411-
- Press tool - VW 412-
- Tube - VW 420-



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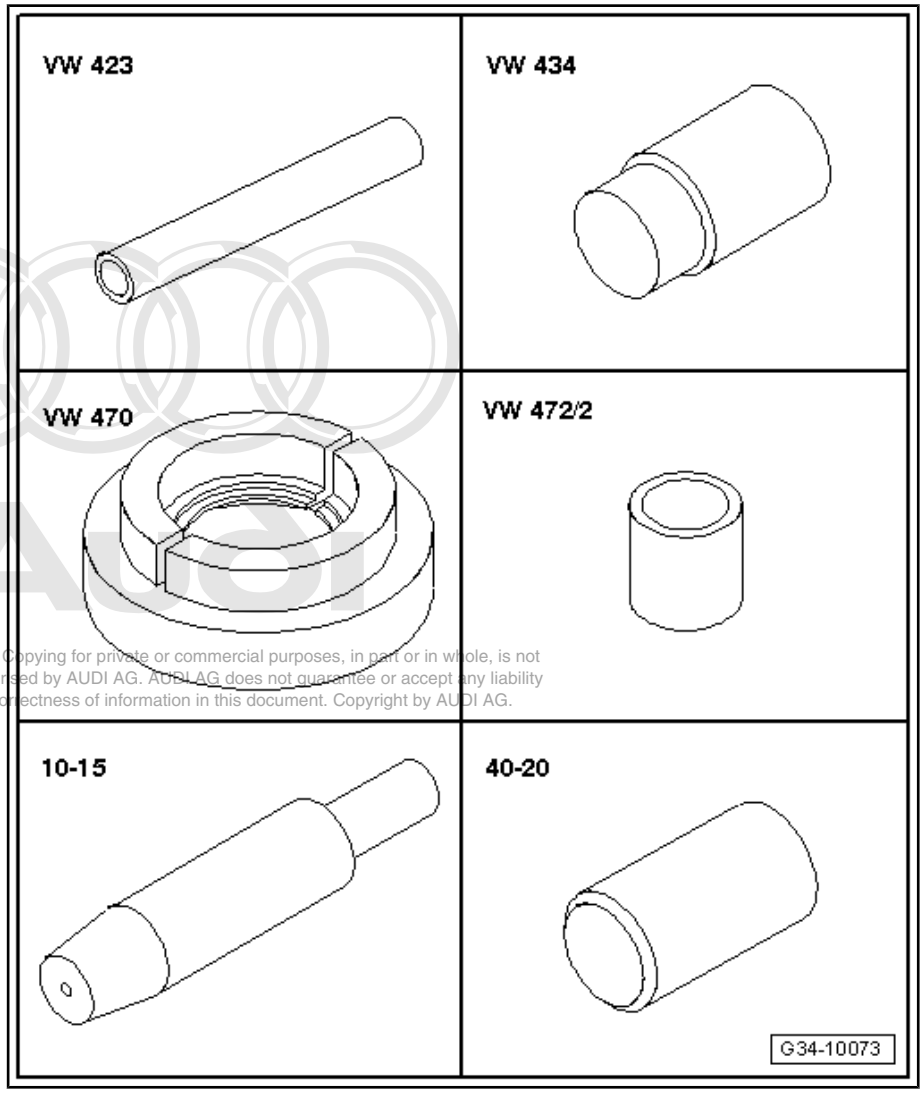
- Tube - VW 423-
- Press tool - VW 434-
- Thrust pieces for pinion shaft bearing - VW 470-
- Distance sleeve - VW 472/2-
- Guide pin - 10 - 15-
- Drift sleeve - 40 - 20-



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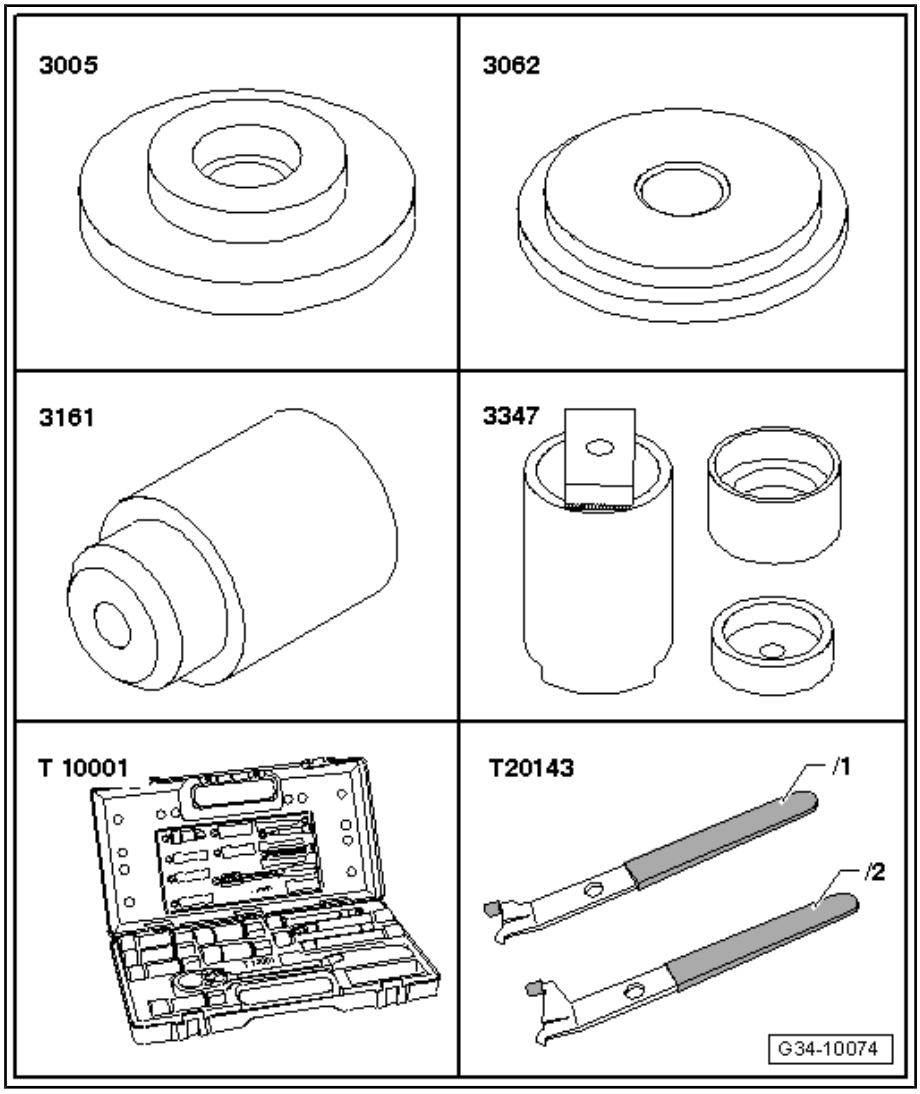
- Thrust plate - 3005-
- Thrust pad - 3062-
- Extension - 3161-
- Assembly tool - 3347-
- Shock absorber set - T10001-
- Extractor tool - T20143-



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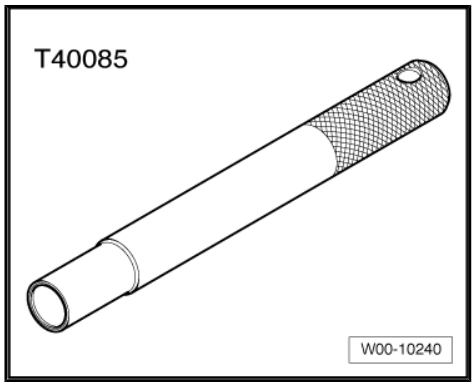
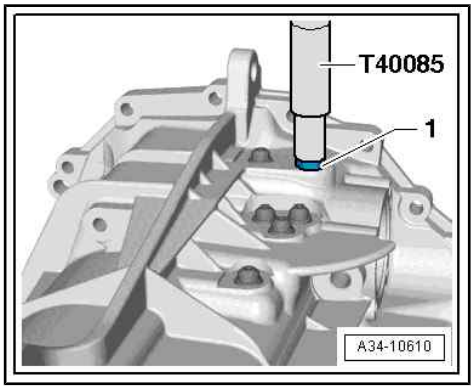
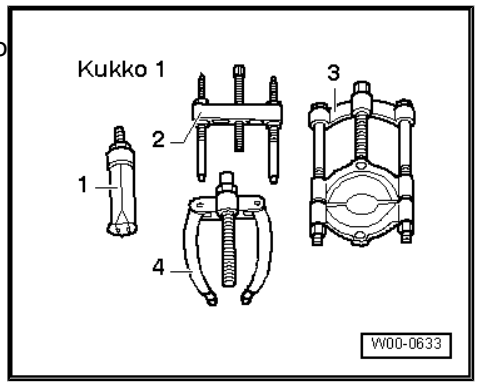
- Drift - T40085-





- Internal puller 56 ... 110 mm , e.g. -Kukko 21/89-



- Counter-support , e.g. -Kukko 22/4-
- Sealing paste - AMV 188 001 02-
- Sealing grease - G 052 128 A1-
- Locking fluid - AMV 185 101 A1-

Removing and installing large locking bush -1- for selector shaft

- The selector shaft must be removed.
- If the gearbox has not been dismantled, put a cloth in the aperture for the selector shaft to stop the locking bush from dropping into the gearbox.

– Drive out large locking bush inwards (i.e. into gearbox cover) using drift - T40085- .

– Drive in locking bush to correct installation depth ⇒ page 74 using drift - T40085- .

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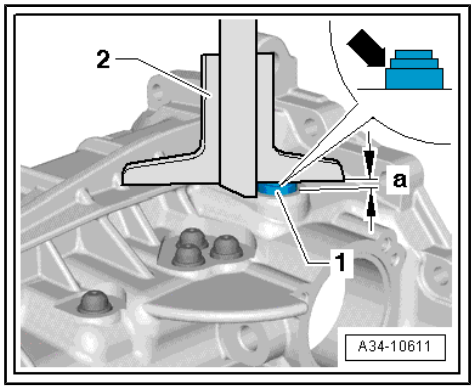
Installation depth of large locking bush -1- in gearbox cover

– Check installation depth -a- = 5 ± 0.2 mm using depth gauge -2-.

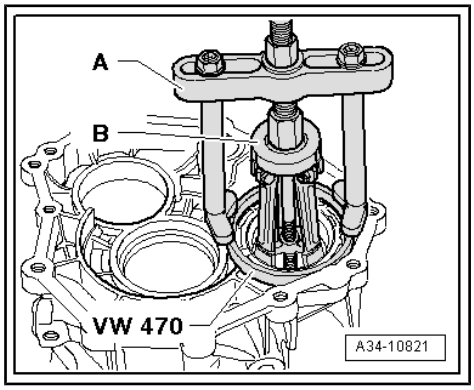
• Apply depth gauge to first shoulder -arrow- of locking bush.



Pulling needle bearing out of gearbox cover

A - Counter-support , e.g. -Kukko 22/4-

B - Internal puller 56 ... 110 mm , e.g. -Kukko 21/89-



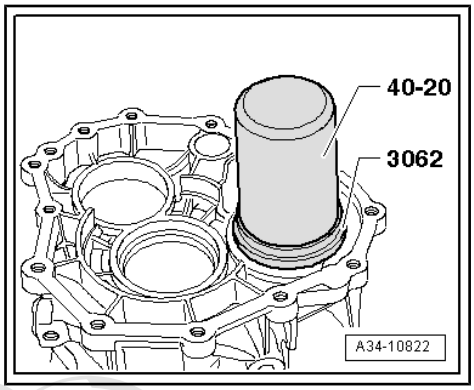
Driving in needle bearing onto stop in gearbox cover

Note

Eliminate peening depressions if necessary.

Install needle bearing so the lettering (side with thicker metal) faces towards the thrust pad - 3062- .

– Secure needle bearing after pressing in by peening into gearbox cover ⇒ page 74 .



Securing needle bearing in gearbox cover by peening

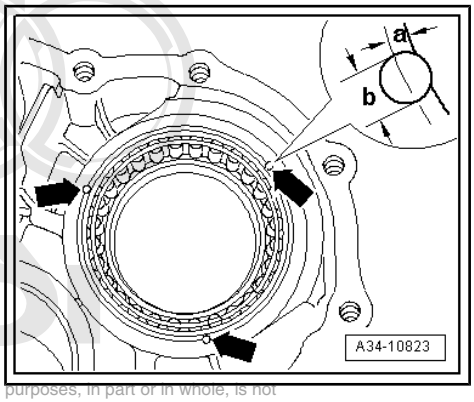
– Use blunt punch with ball-shaped end (ball ∅ approx. 5 mm) to peen in position.

– The needle bearing is secured with 3 peening marks spaced 120° apart around the circumference -arrows-.

Observe position and diameter of peening marks:

♦ Dimension -a- = 2 mm

♦ Dimension -b- = 3 mm



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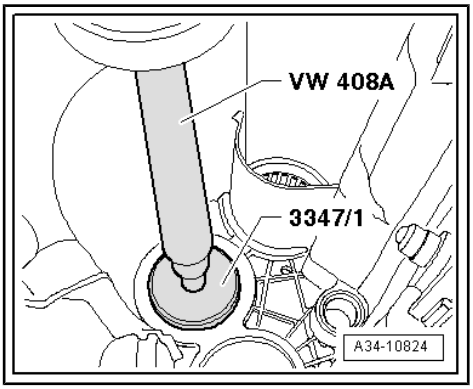
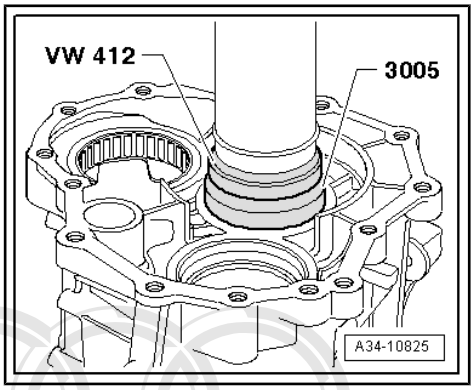
Pressing tapered roller bearing outer race out of gearbox cover



Pressing tapered roller bearing outer race into gearbox cover (press onto stop)



Removing and installing sealing cap -A- for selector shaft

- Selector shaft is removed.

– Remove bolts securing sealing cap -A- to gearbox cover.

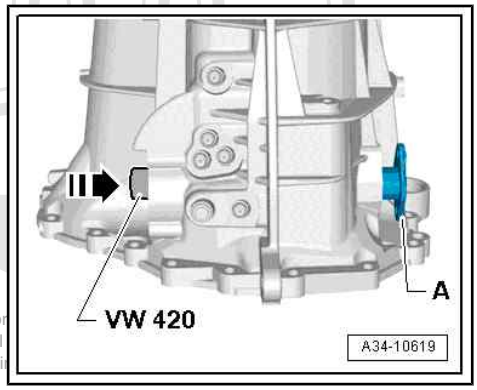
– Carefully knock out sealing cap in direction of -arrow- using tube - VW 420- .

– Clean sealing surfaces of sealing cap and gearbox cover.

– Clean threads of bolts with a wire brush.

– Apply sealing paste - AMV 188 001 02- evenly to sealing surface between sealing cap and gearbox cover.

– Install sealing cap; to do so, fit bolts with locking fluid - AMV 185 101 A1- and tighten to specified torque ⇒ Item 10 (page 67) .



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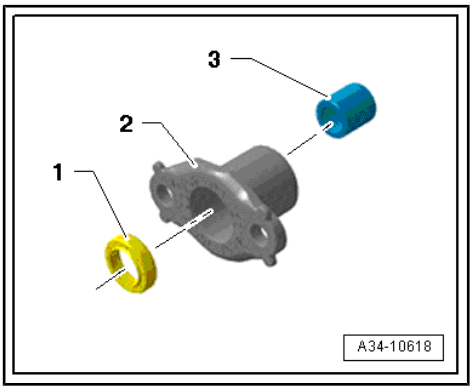
Exploded view - sealing cap for selector shaft

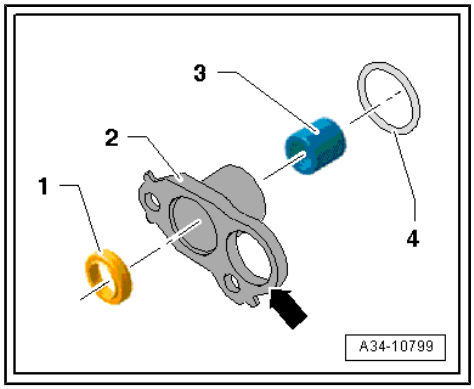
1 - Oil seal for selector shaft; removing and installing ⇒ page 76

2 - Sealing cap

3 - Ball sleeve for selector shaft; removing ⇒ page 76 , installing ⇒ page 76



Exploded view - sealing cap for selector shaft with aperture -arrow- for gearbox neutral position sender - G701- or sealing plug



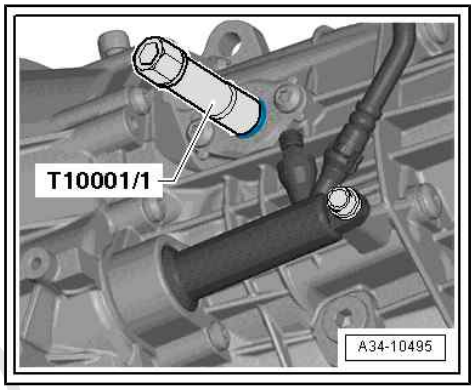
1 - Oil seal for selector shaft; removing and installing ⇒ page 76

2 - Sealing cap

3 - Ball sleeve for selector shaft; removing ⇒ page 76 , installing ⇒ page 77

4 - O-ring

Removing and installing oil seal for selector shaft



– Prise out oil seal with extractor tool - T20143/1- .

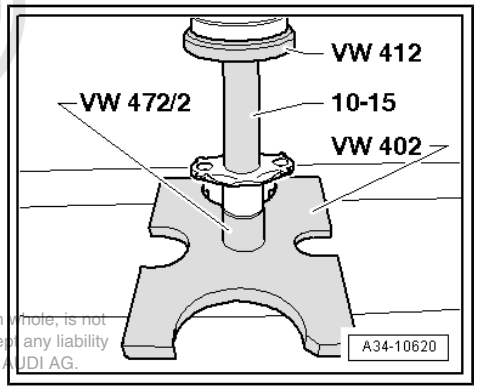
– Lightly oil outer circumference of oil seal.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Drive in oil seal using -T10001/1- or tube - VW 423- .

• Installation depth: 2 mm below top edge of sealing cap

Pressing ball sleeve for selector shaft out of sealing cap



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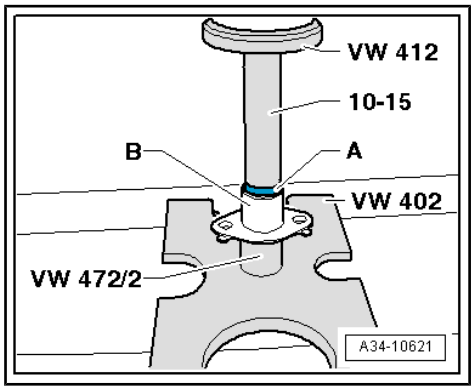
Pressing ball sleeve -A- for selector shaft into sealing cap -B- (press in until flush)

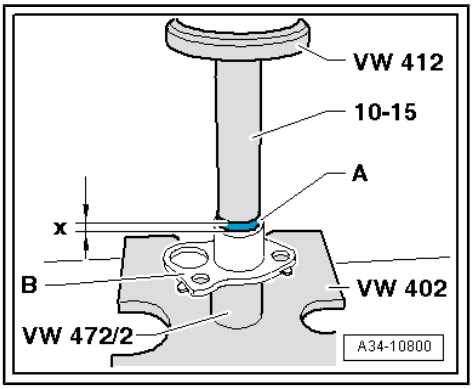
Fit ball sleeve so that side with lettering (thicker metal) faces guide pin - 10 - 15- .



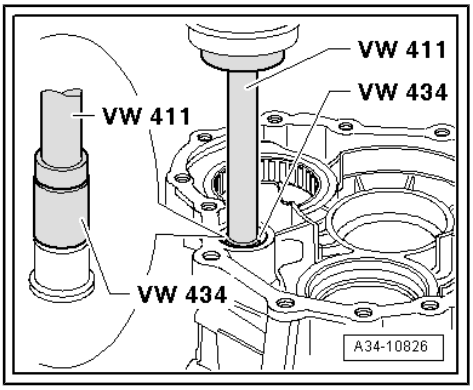
Pressing ball sleeve -A- for selector shaft into sealing cap -B- (press in to dimension -x-)

Fit ball sleeve so that side with lettering (thicker metal) faces guide pin - 10 - 15- .

- Installation depth -x- = 2.5 ± 0.5 mm



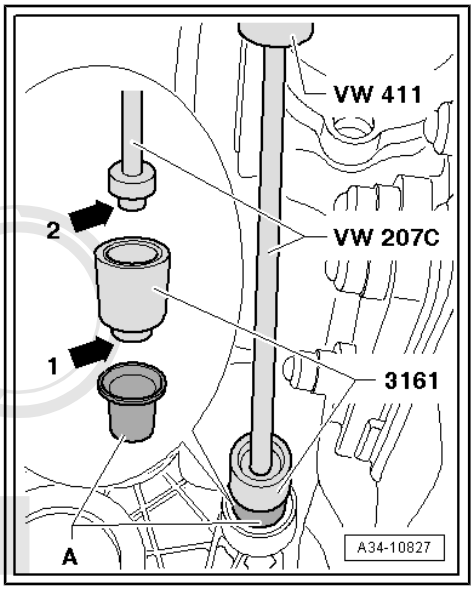
Pressing bearing bush for 3rd/4th gear selector plate / selector fork out of gearbox cover



Pressing bearing bush -A- for 3rd/4th gear selector plate / selector fork into gearbox cover (press onto stop)

– Insert shoulder -arrow 1- of extension - 3161- into bearing bush -A-.

– Insert shoulder -arrow 2- of drift - VW 207 C- in extension - 3161- and press in bearing bush onto stop.



4.4 Servicing gearbox housing

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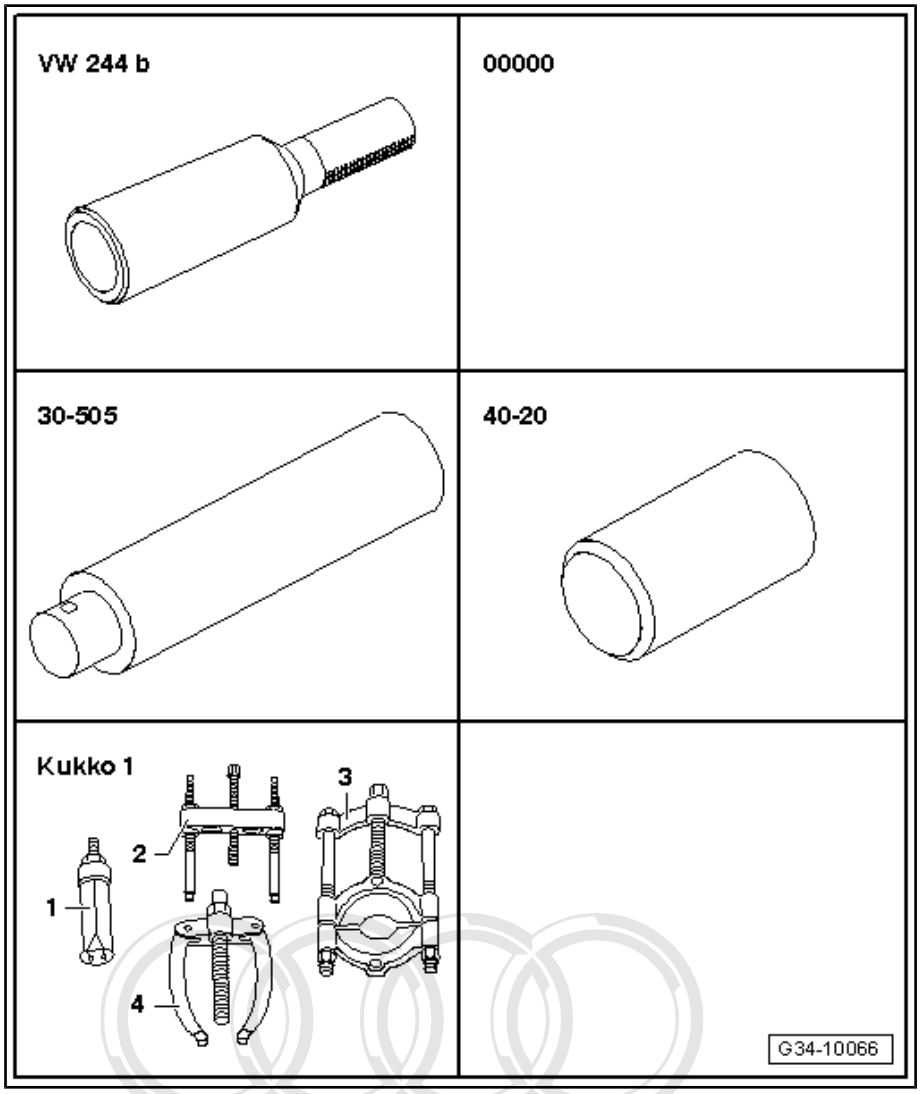
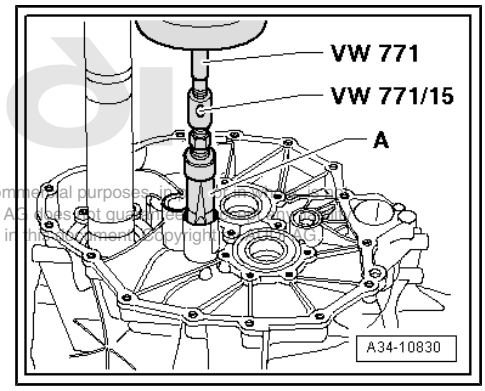
Special tools and workshop equipment required

- Drift sleeve - VW 244 B-
- Multi-purpose tool - VW 771-
- Mandrel - 30 - 505-
- Drift sleeve - 40 - 20-
- -1- Internal puller - Kukko 21/3-
- Locking fluid - AMV 185 101 A1-



Pulling out bearing bush for selector plate / selector fork

A - Internal puller 18.5 ... 23.5 mm , e.g. -Kukko 21/3-



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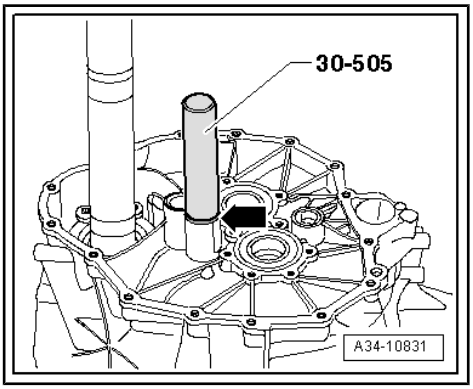
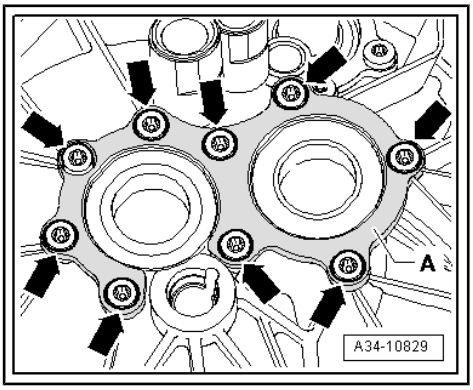
Driving in bearing bush -arrow- for selector plate / selector fork (drive in onto stop)



Removing and installing plate -A- for securing ball bearings

– Unscrew bolts -arrows- to remove plate -A-.



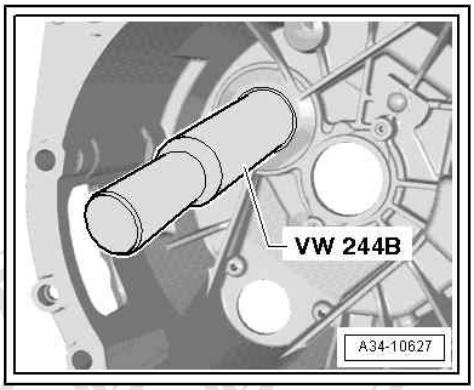
Note

Before installing, remove residual locking fluid from threads of bolts -arrows- e.g. with a wire brush. Then apply locking fluid - AMV 185 101 A1- to bolt threads before installing.

– Tighten bolts -arrows- to specified torque in diagonal sequence, working from inside to outside ⇒ Item 13 (page 69) .

Driving output shaft ball bearing out of gearbox housing

• First remove plate for securing ball bearings ⇒ page 79 .

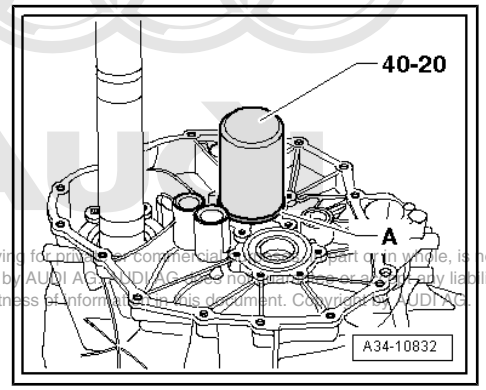


Driving output shaft ball bearing -A- into gearbox housing (drive in onto stop)

Note

Do not interchange ball bearings for input and output shafts (different sizes).

– Then install plate for securing ball bearings ⇒ page 79 .



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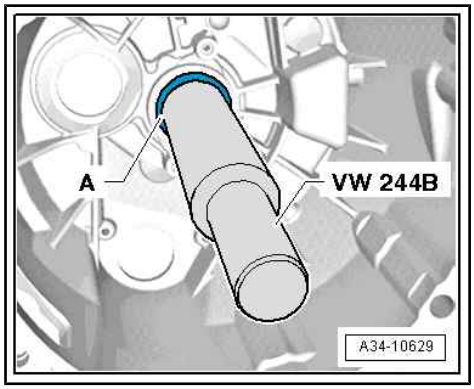
Driving input shaft ball bearing -A- out of gearbox housing

- First remove plate for securing ball bearings ⇒ page 79 .

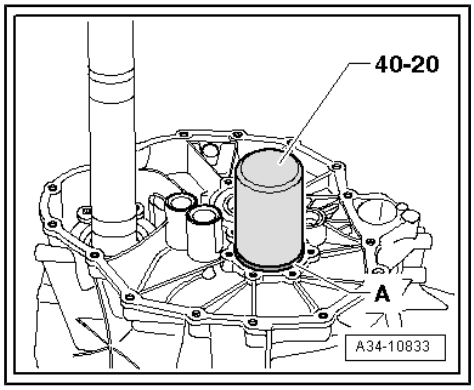


Driving input shaft ball bearing -A- into gearbox housing (drive in onto stop)

Note

Do not interchange ball bearings for input and output shafts (different sizes).

– Then install plate for securing ball bearings ⇒ page 79 .



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35 – Gears, shafts

1 Dismantling and assembling gears and shafts

⇒ “1.1 Exploded view - gear cluster”, page 81

⇒ “1.2 Dismantling and assembling gear cluster”, page 83

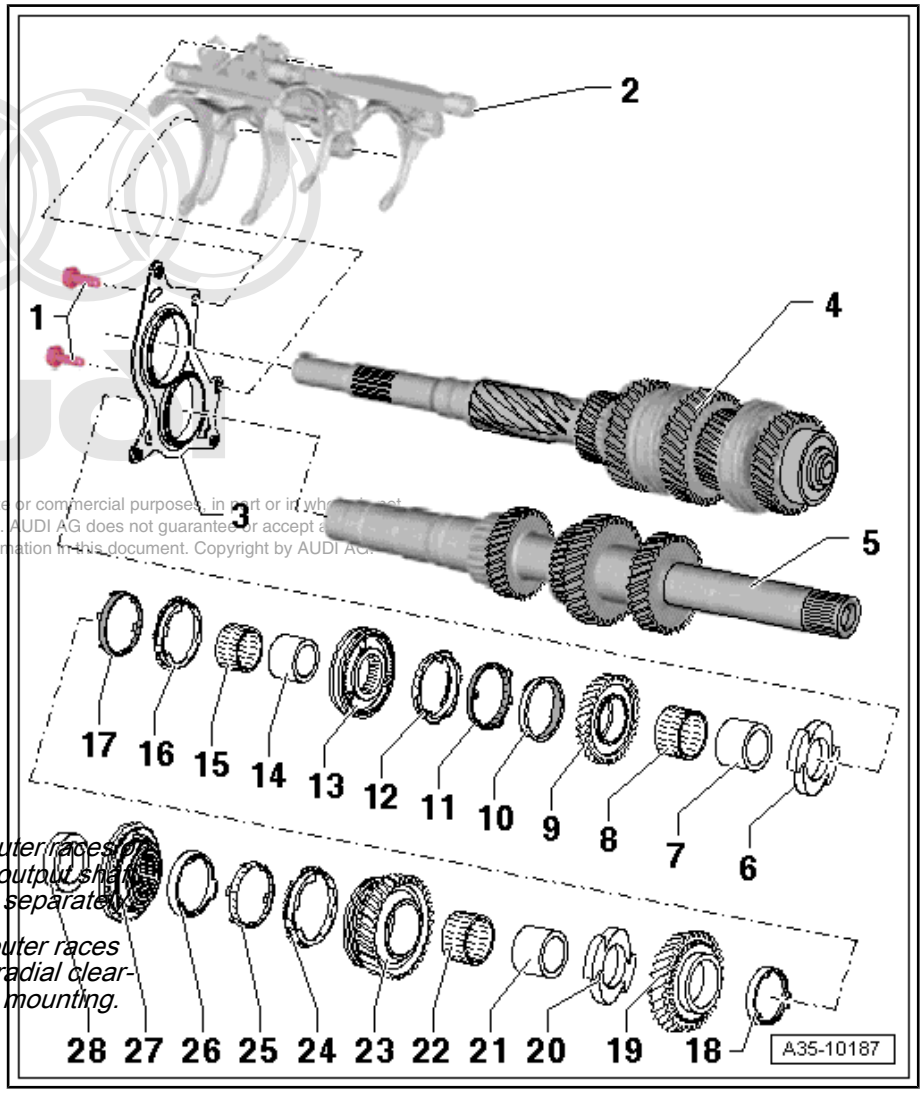
⇒ “1.3 Exploded view - bearings for spur gear and centre differential”, page 89

⇒ “1.4 Servicing bearings for spur gear and centre differential ”, page 90

⇒ “1.5 Determining preload of tapered roller bearings for spur gear”, page 96

⇒ “1.6 Re-determining preload of ball bearings for centre differential”, page 98

1.1 Exploded view - gear cluster



1 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 30 mm long)
- ❑ 2x
- ❑ Secures selector fork cluster ⇒ Item 2 (page 81) to bearing mounting ⇒ Item 3 (page 81)
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

2 - Selector fork cluster

- ❑ Dismantling and assembling ⇒ page 49

3 - Bearing mounting

- ❑ Carries bearings for input shaft and output shaft in gearbox cover
- ❑ Clean locking fluid out of tapped holes (using thread tap or similar)

Note

- ♦ *The roller bearing outer races of the input shaft and output shaft cannot be renewed separately.*
- ♦ *The roller bearing outer races must not have any radial clearance in the bearing mounting.*

4 - Input shaft

- ❑ Dismantling and assembling ⇒ page 101

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5 - Output shaft

- ❑ With 3rd and 4th gear wheels
- ❑ Removing and installing 1st, 2nd and reverse gear ⇒ page 83
- ❑ Dismantling and assembling ⇒ page 119

6 - Thrust washer

- ❑ For 2nd speed selector gear

7 - Needle bearing inner race

- ❑ For 2nd speed selector gear
- ❑ Removing and installing ⇒ Item 26 (page 116)

8 - Needle bearing

- ❑ For 2nd gear

9 - 2nd speed selector gear

10 - Inner ring for 2nd gear

- ❑ ⇒ Item 23 (page 116)

11 - Intermediate ring for 2nd gear

- ❑ ⇒ Item 22 (page 116)

12 - Synchro-ring for 2nd gear

- ❑ ⇒ Item 21 (page 116)

13 - Locking collar/synchro-hub for 1st and 2nd gear

- ❑ ⇒ Item 20 (page 116)

14 - Needle bearing inner race

- ❑ For 1st speed selector gear
- ❑ Removing and installing ⇒ Item 19 (page 116)

15 - Needle bearing

- ❑ For 1st gear

16 - Synchro-ring for 1st gear

- ❑ ⇒ Item 17 (page 116)

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17 - Intermediate ring for 1st gear

- ❑ ⇒ Item 16 (page 116)

18 - Inner ring for 1st gear

- ❑ ⇒ Item 15 (page 116)

19 - 1st speed selector gear

20 - Thrust washer

- ❑ For 1st speed and reverse selector gears

21 - Needle bearing inner race

- ❑ For reverse gear
- ❑ Removing and installing ⇒ Item 12 (page 115)

22 - Needle bearing

- ❑ For reverse gear

23 - Reverse selector gear

- ❑ With locking collar for reverse gear
- ❑ ⇒ Item 9 (page 115)

24 - Synchro-ring for reverse gear

- ❑ ⇒ Item 8 (page 115)

25 - Intermediate ring for reverse gear

- ❑ ⇒ Item 7 (page 115)

26 - Inner ring for reverse gear

- ❑ ⇒ Item 6 (page 115)

27 - Reverse gear synchro-hub

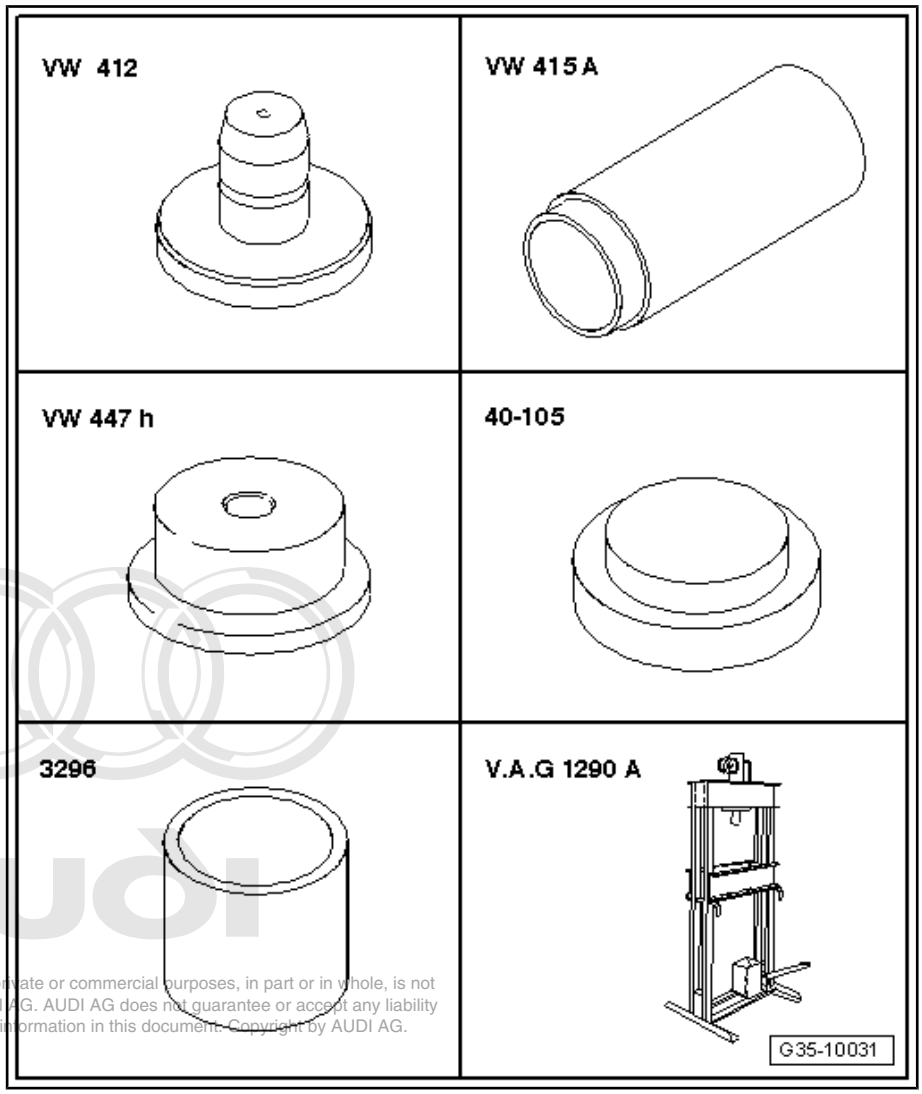
- ❑ Can be detached from output shaft by hand

28 - Thrust washer

1.2 Dismantling and assembling gear cluster

Special tools and workshop equipment required

- ♦ Press tool - VW 412-
- ♦ Tube - VW 415 A-
- ♦ Thrust plate - VW 447 H-
- ♦ Thrust plate - 40 - 105-
- ♦ Tube - 3296-
- ♦ Workshop press - V.A.G 1290A-



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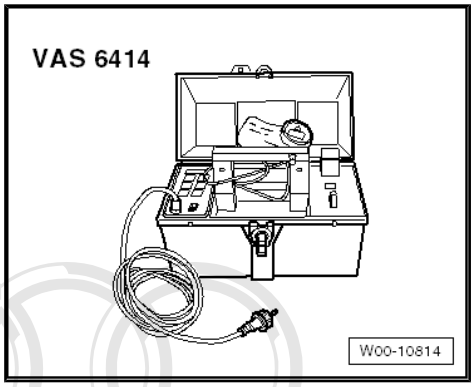
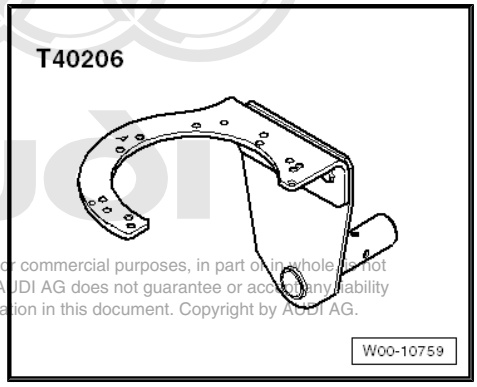
- Inductive heater - VAS 6414-



- Gearbox support - T40206-



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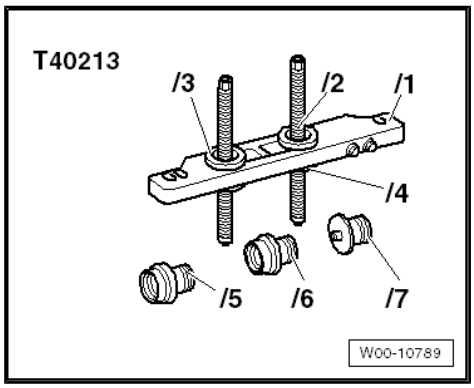
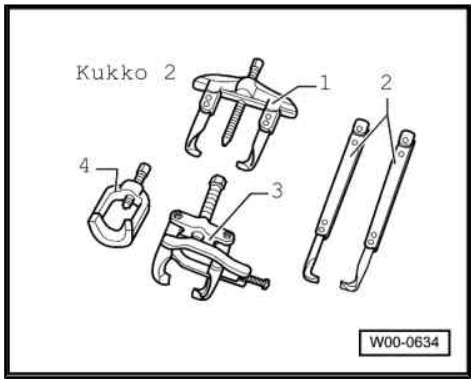
- Separating tool - T40213-



- -1- Two-arm puller - Kukko 20/10-

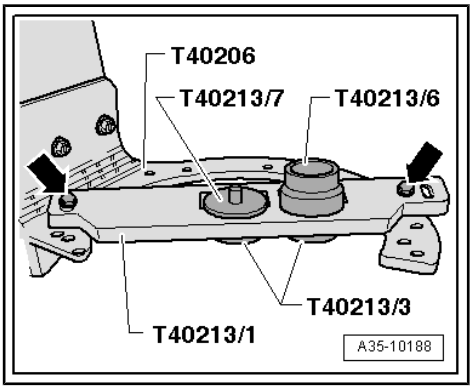


- -2- Puller hooks 200 mm

Removing selector fork cluster, input shaft, 1st, 2nd and reverse gears from output shaft

– Attach plate - T40213/1- to gearbox support - T40206- with bolts -arrows-.

– Fit adapters - T40213/6- and -T40213/7- in plate - T40213/1- .

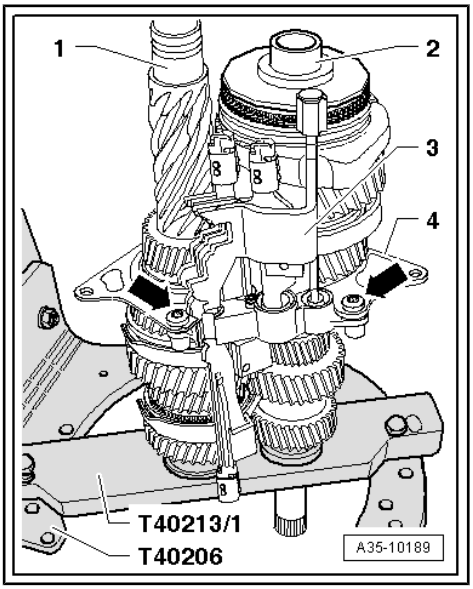


Note

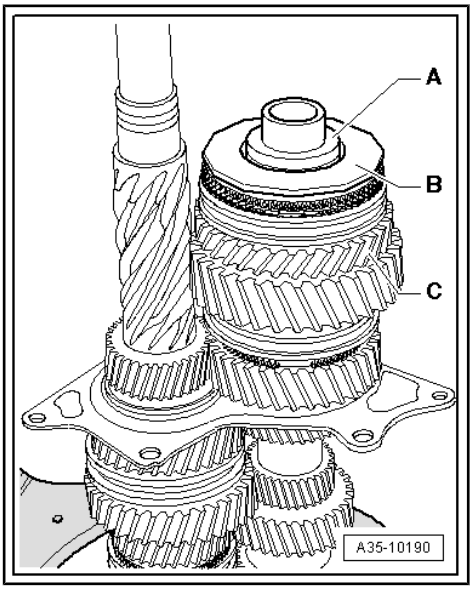
Secure adapters with knurled screws - T40213/3- after inserting input and output shafts.

– Insert input shaft -1- together with output shaft -2- and selector fork cluster -3- in adapters - T40213/6- and -T40213/7- .

– Remove bolts -arrows- and detach selector fork cluster from bearing mounting -4-.



– Detach thrust washer -A-, reverse gear synchro-hub -B- and reverse selector gear -C-.



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– Pull off 1st speed selector gear -E- with needle bearing inner race for reverse gear -C- and thrust washer -D-.

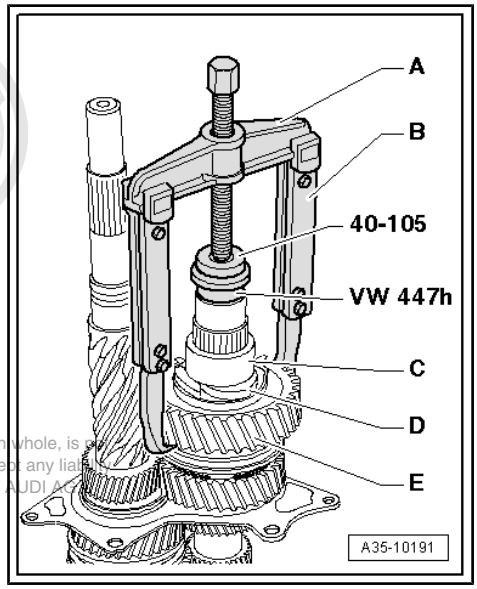
A - Two-arm puller , e.g. -Kukko 20/10-

B - Hook, 200 mm

Caution

Risk of damage to dog teeth on 1st speed selector gear -E-

- ***Hooks of the two-arm puller must not come into contact with dog teeth of 1st speed selector gear during removal.***



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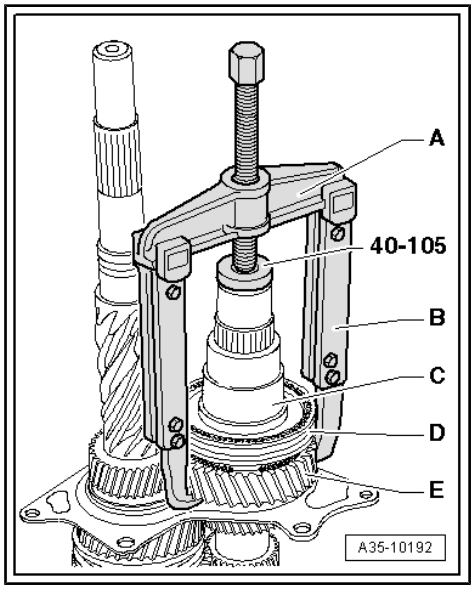
– Pull off 2nd speed selector gear -E- with needle bearing inner race for 1st gear -C- and synchro-hub/locking collar for 1st/2nd gear -D-.

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

B - Hook, 200 mm



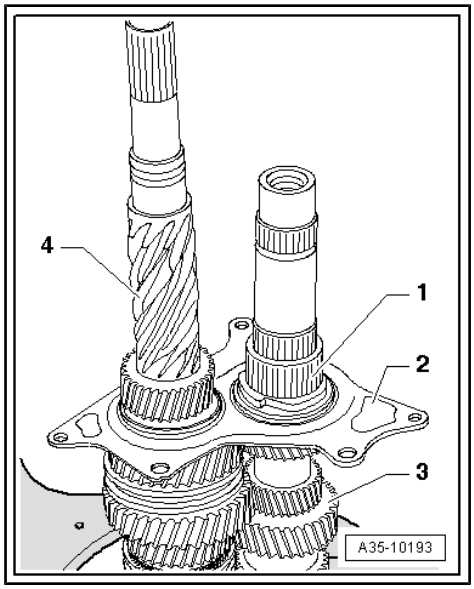
– Detach needle bearing -1-.

– Detach bearing mounting -2- from input shaft -4- and output shaft -3-.

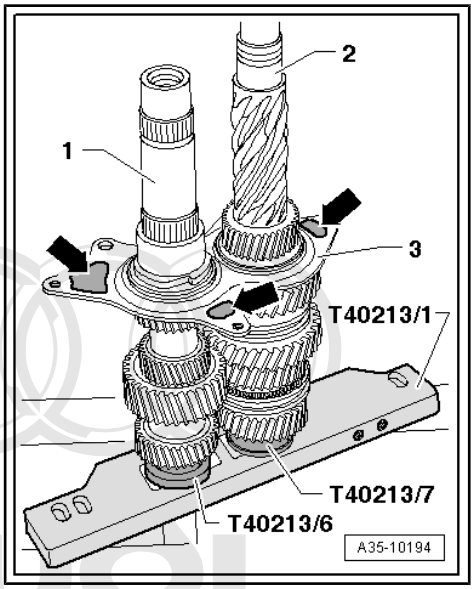
Note

- *Dismantling and assembling output shaft ⇒ page 119*
- *Dismantling and assembling input shaft ⇒ page 104*

Installing selector fork cluster, input shaft, 1st, 2nd and reverse gears on output shaft



– Place plate - T40213/1- with adapters - T40213/6- and - T40213/7- on work table of workshop press - V.A.G 1290A- .
– Insert output shaft -1- and input shaft -2- in adapters - T40213/6- and -T40213/7- .
– Fit bearing mounting -3- in correct position over the two shafts, with projections -arrows- facing upwards.



Installation position of synchro-rings for 1st, 2nd and reverse gear

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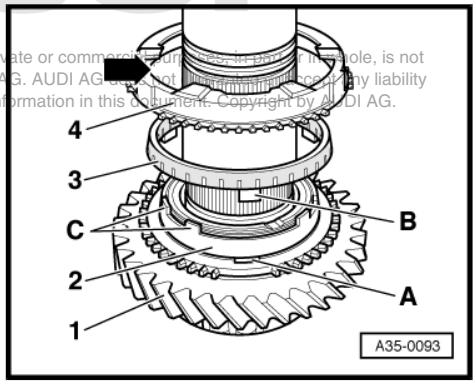
Note

If components are not being renewed, make sure they are re-installed on the same gear.

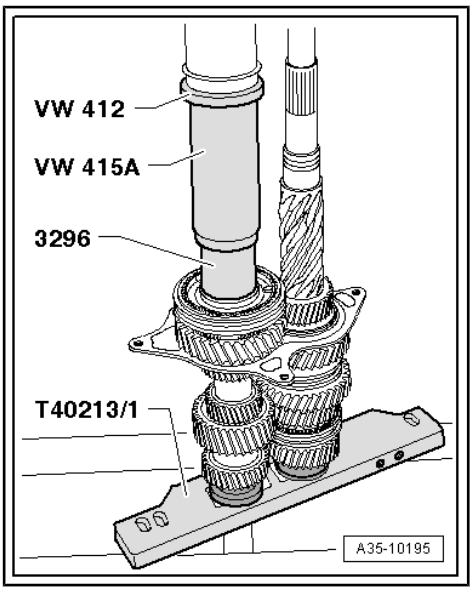
– Fit inner ring -2- onto selector gear -1-.
– Fit intermediate ring -3-. Lug -B- must be inserted into recess -A-.
– Fit synchro-ring -4-. Guide lugs -C- through recess -arrow-.
– Install 2nd speed selector gear with needle bearing and synchro-rings.



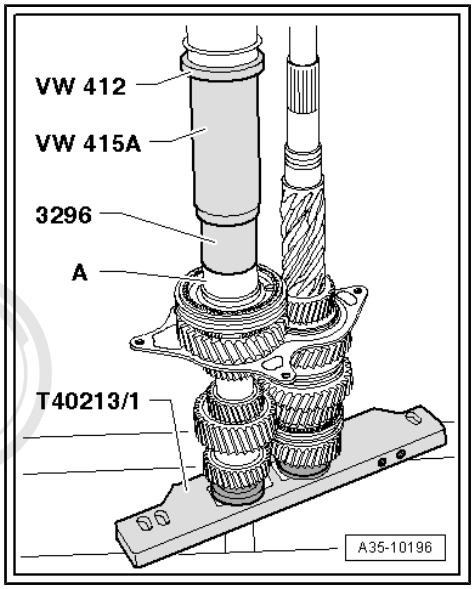
Pressing on locking collar with synchro-hub for 1st/2nd gear

Note

- *Heat synchro-hub to approx. 100°C.*
- *Note installation position of locking collar/synchro-hub* *⇒ page 119* .
- *When pressing on the synchro-hub, lift the 2nd speed selector gear slightly so that the lugs on the synchro-ring engage in the slots in the hub.*



Heat needle bearing inner race -A- for 1st speed selector gear to max. 100° C and press on.



– Install 1st speed selector gear -A- with synchro-rings and needle bearing on output shaft.
– Fit thrust washer -B- and pre-heated inner race -C- for needle bearing for reverse selector gear.

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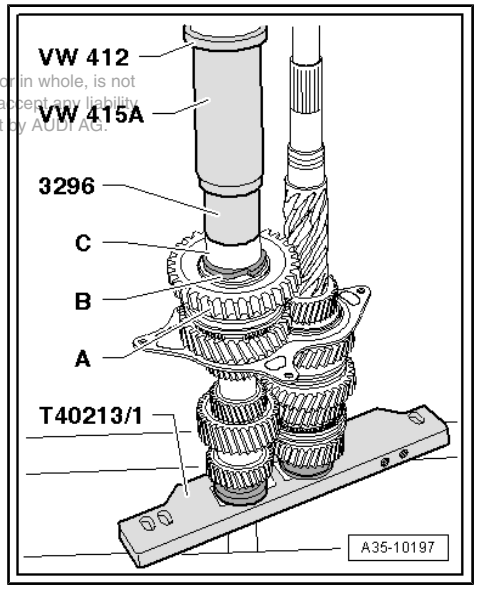
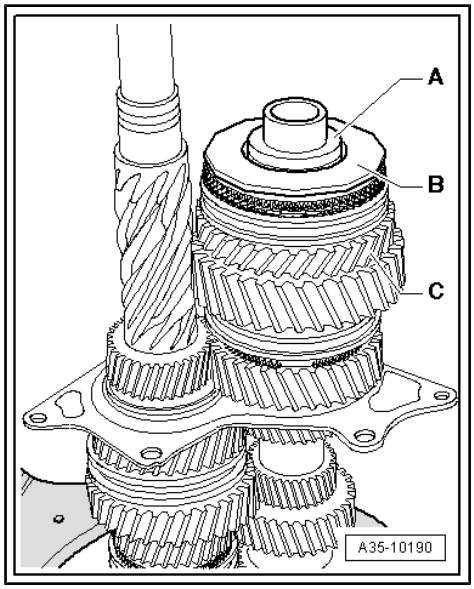
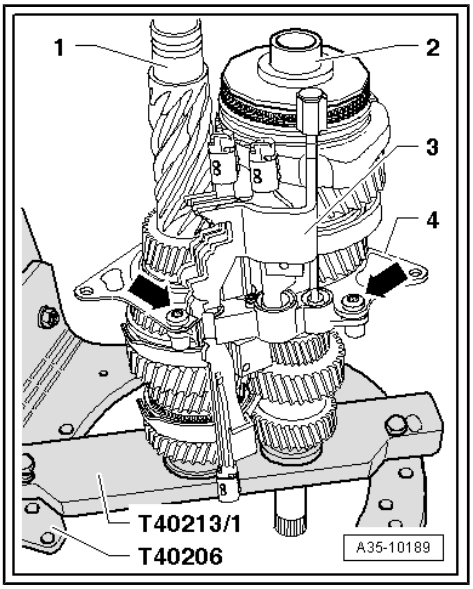


– Fit reverse selector gear -C- with needle bearing and locking collar for reverse gear.
– Fit reverse gear synchro-hub -B- with synchro-rings and thrust washer -A-.



– Secure plate - T40213/1- to gearbox support - T40206- .
– Clean threads of bolts -arrows- with a wire brush. Then coat bolts with locking fluid - AMV 185 101 A1- .
– Secure selector fork cluster -3- to bearing mounting -4- with bolts -arrows-.
– Take input shaft -1- with output shaft -2- and selector fork cluster out of plate - T40213/1- .



1.3 Exploded view - bearings for spur gear and centre differential

1 - Output shaft

2 - Gearbox cover

3 - Tapered roller bearing outer race

- ❑ Removing and installing ⇒ Item 4 (page 66)

4 - Tapered roller bearing inner race

- ❑ Goes towards gearbox cover
- ❑ Pressing off ⇒ page 93
- ❑ Pressing on ⇒ page 93

5 - Needle bearing

- ❑ Bearing for spur gear drive input gear on output shaft

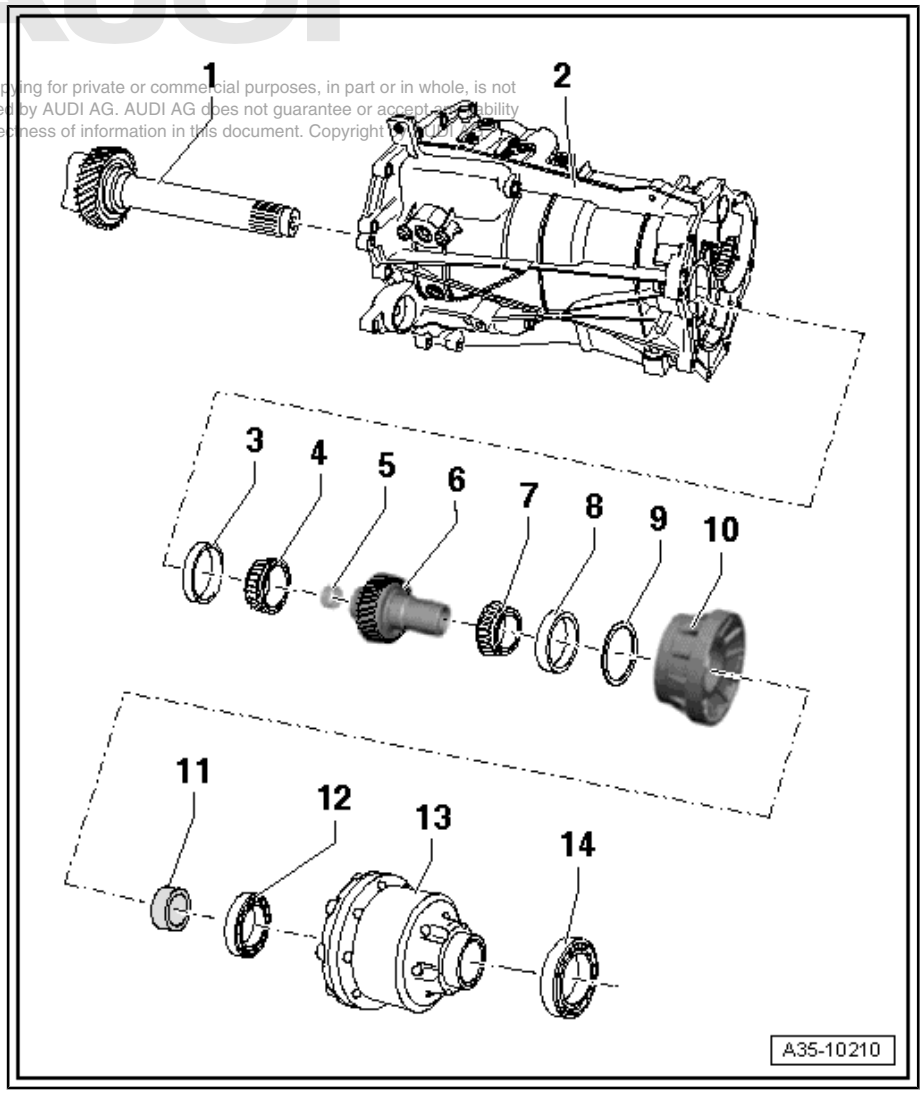
6 - Spur gear drive input gear

7 - Tapered roller bearing inner race

- ❑ Goes towards bearing plate
- ❑ Pressing off ⇒ page 93
- ❑ Pressing on ⇒ page 94

8 - Tapered roller bearing outer race

- ❑ Pressing out ⇒ page 94
- ❑ Pressing in ⇒ page 94



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9 - Shim

- ❑ Adjusts preload of tapered roller bearings for spur gear drive input gear ⇒ Item 6 (page 89)
- ❑ Determining thickness ⇒ page 96

10 - Bearing plate

11 - Spacer sleeve

12 - Ball bearing, small

- ❑ For centre differential
- ❑ Pulling out ⇒ page 95
- ❑ Pressing in ⇒ page 95

13 - Centre differential

- ❑ Can only be serviced by manufacturer

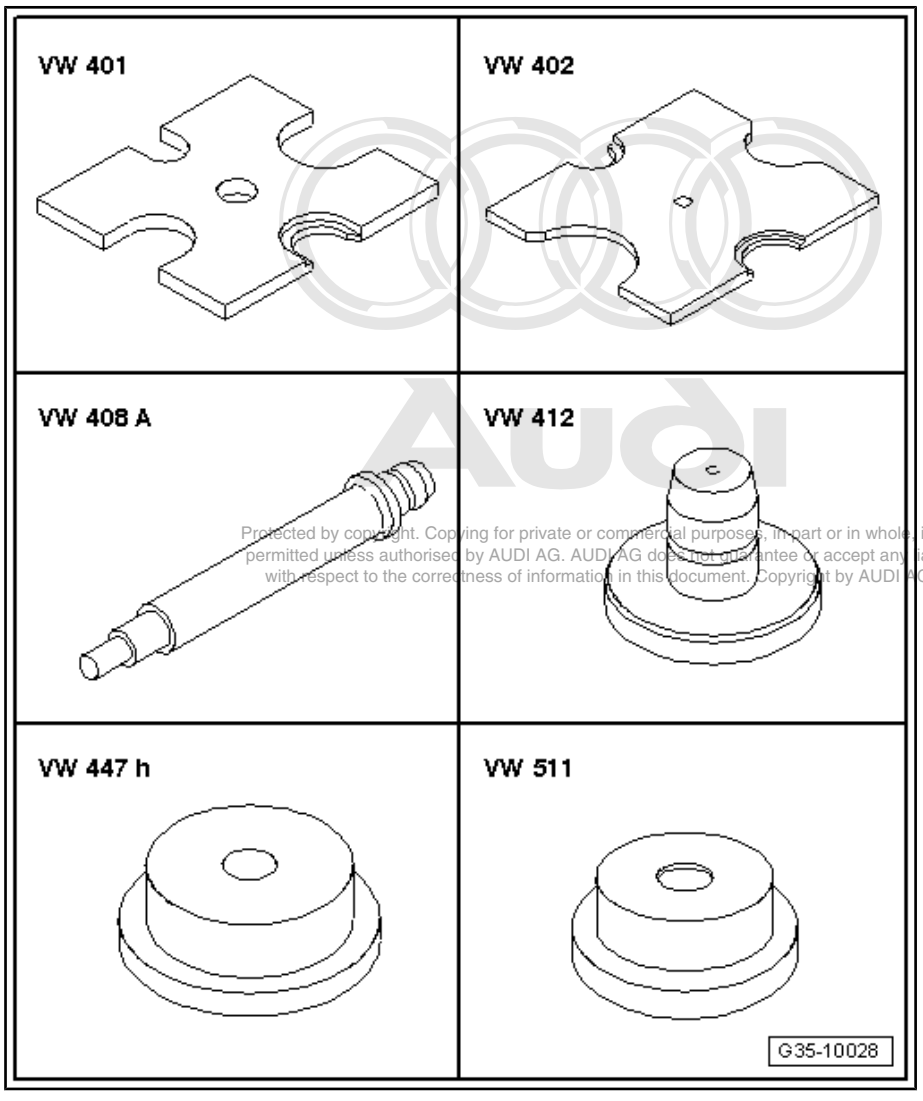
14 - Ball bearing, large

- ❑ For centre differential
- ❑ Pulling off ⇒ page 95
- ❑ Pressing on ⇒ page 96

1.4 Servicing bearings for spur gear and centre differential

Special tools and workshop equipment required

- ♦ Thrust plate - VW 401-
- ♦ Thrust plate - VW 402-
- ♦ Press tool - VW 408 A-
- ♦ Press tool - VW 412-
- ♦ Thrust plate - VW 447 H-
- ♦ Thrust pad - VW 511-



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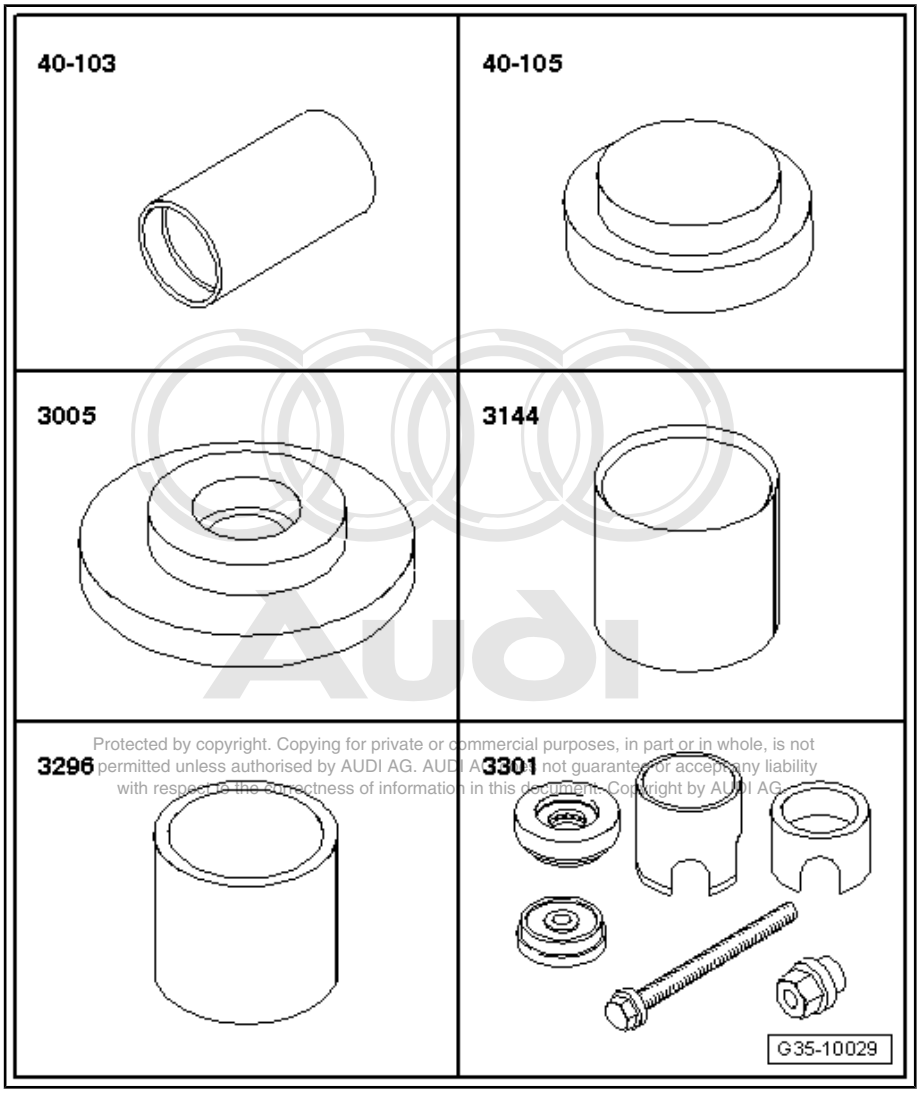
- Support - 40 - 103-
- Thrust plate - 40 - 105-
- Thrust plate - 3005-
- Sleeve - 3144-
- Tube - 3296-
- Assembly tool - 3301-



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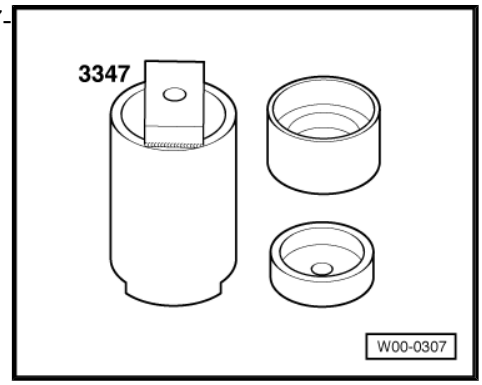
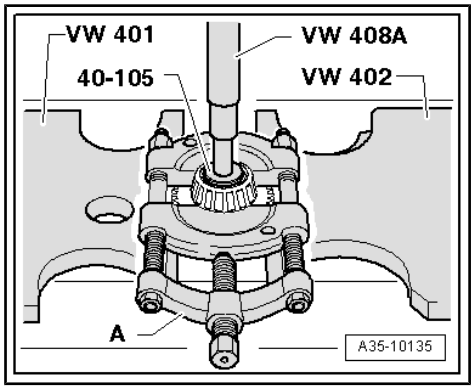
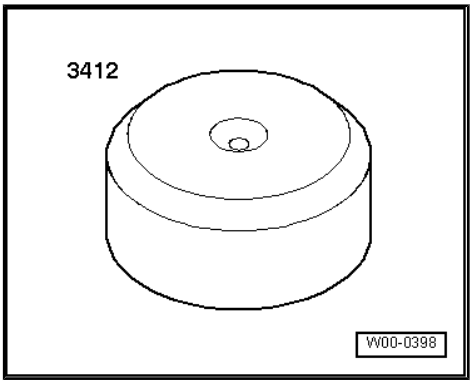
- Assembly tool - 3347-

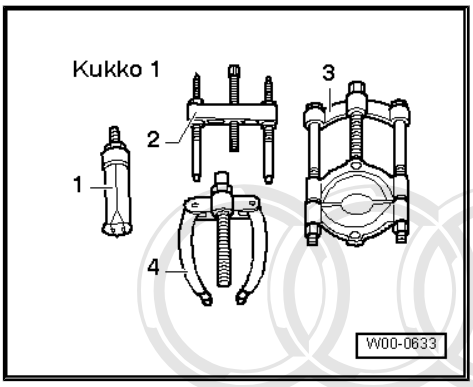




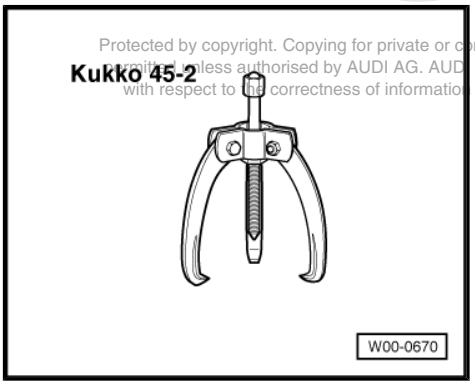
- Thrust piece - 3412-



- -1- Internal puller - Kukko 21/7-



- -3- Splitter - Kukko 17/2-
- -4- Counter-support - Kukko 22/2-
- Three-arm puller - Kukko 45-2-



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Pressing tapered roller bearing inner race off spur gear drive input gear

A - Splitter 22...115 mm , e.g. -Kukko 17/2-

Note

- *The method of pressing off the tapered roller bearing inner races for the spur gear drive input gear is the same for both bearings.*
- *The tapered roller bearing inner and outer races are paired. Do not interchange.*
- *The tapered roller bearing inner races can also be pulled off using tapered roller bearing puller - V.A.G 1582- and adapter - V.A.G 1582/8- ; to do so, insert thrust plate - 40 - 105- .*

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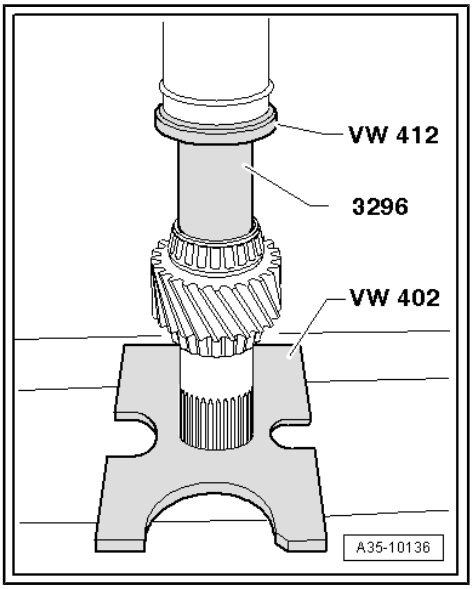
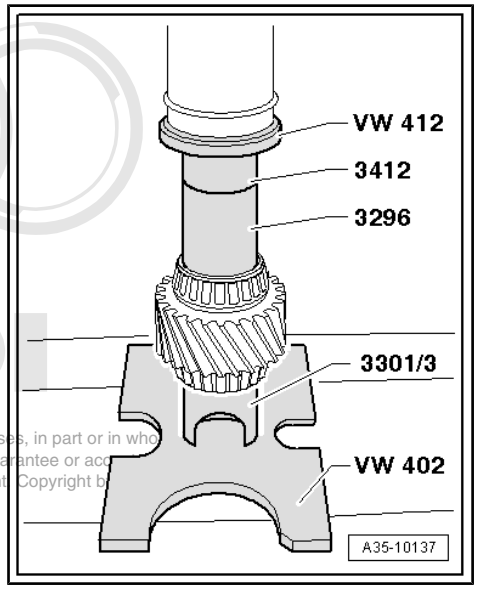
Pressing tapered roller bearing inner race onto spur gear drive input gear (gearbox cover side)



Pressing tapered roller bearing inner race onto spur gear drive input gear (bearing plate side)



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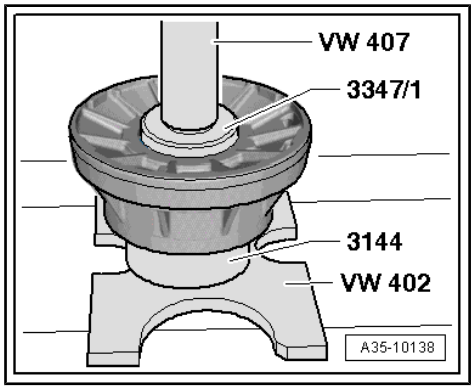
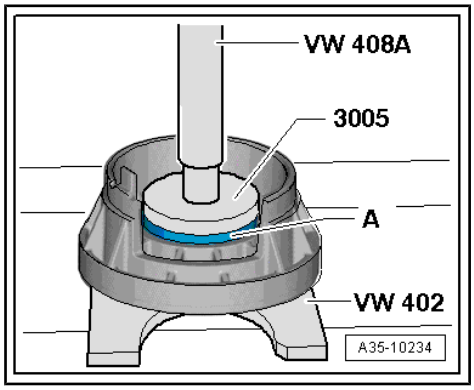
Pressing tapered roller bearing outer race out of bearing plate



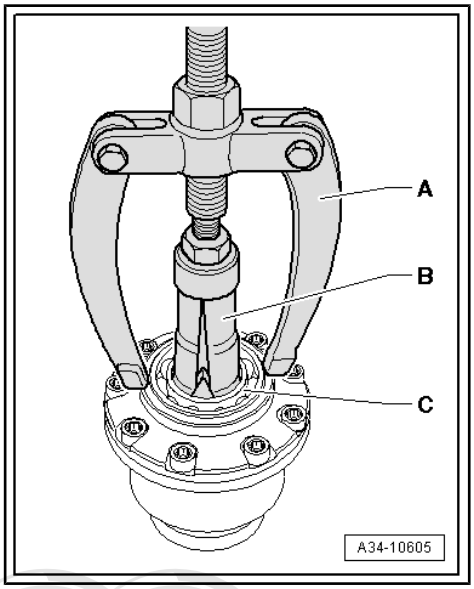
Pressing tapered roller bearing outer race -A- into bearing plate



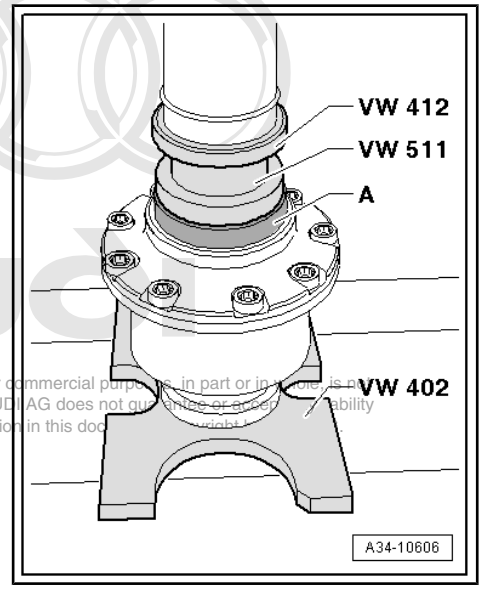
Pulling small ball bearing -C- out of centre differential

A - Counter-support , e.g. -Kukko 22/2-

B - Internal puller 37 ... 46 mm , e.g. -Kukko 21/6-



Pressing small ball bearing -A- into centre differential



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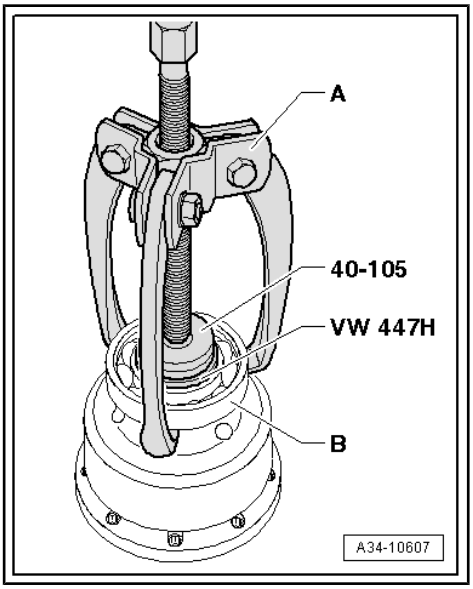
Pulling large ball bearing -B- off centre differential

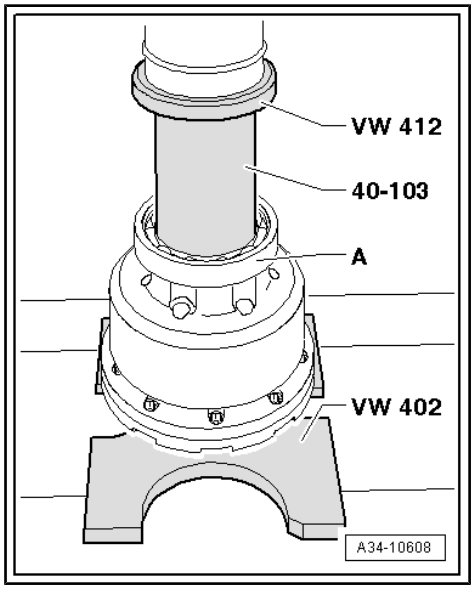
– Insert smaller diameter of thrust plate - VW 447 H- in centre differential

– Then apply thrust plate - 40 - 105- .

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



Pressing large ball bearing -A- onto centre differential



1.5 Determining preload of tapered roller bearings for spur gear

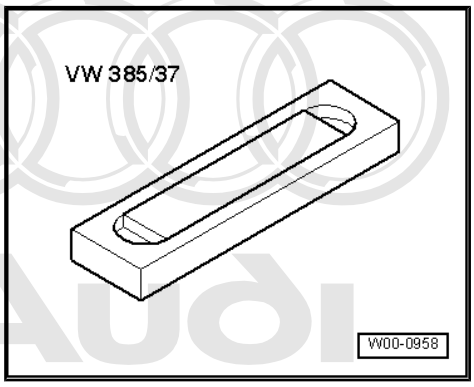
Determining thickness of shim "S_5"

This adjustment is necessary when the following components are renewed:

- Gearbox cover
- Centre differential housing
- Bearing plate
- Spur gear drive input gear
- Tapered roller bearing on spur gear drive input gear

Special tools and workshop equipment required

- Measuring plate - VW 385/17- from universal measuring tool - VW 385-



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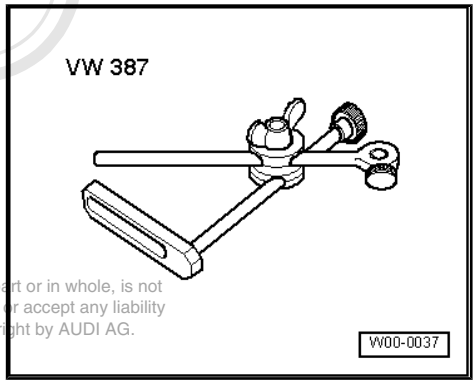
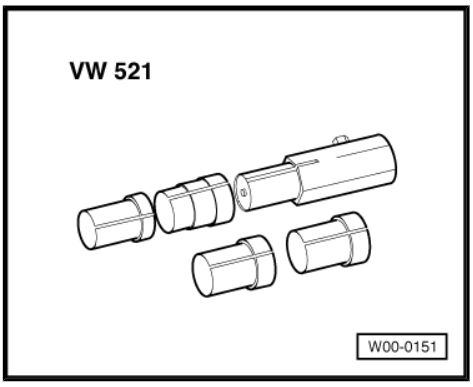
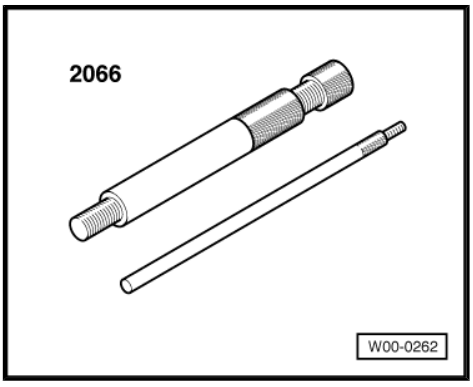
♦ Universal dial gauge bracket - VW 387-



♦ Crown wheel adjusting tool - VW 521-



♦ Dial gauge extension from dial gauge adapter - 2066-

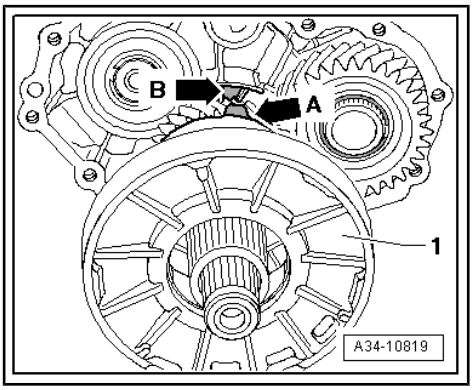


- Tapered roller bearing outer race for spur gear drive input gear is installed in gearbox cover.
- Tapered roller bearing outer race for spur gear drive input gear (without shim) is installed in bearing plate.

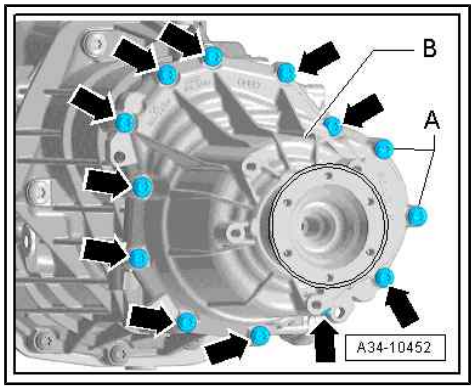
– Insert spur gear drive input gear in gearbox cover.

Install bearing plate on gearbox cover as follows:

- Installation position: lug -arrow A- on bearing plate -1- must engage in recess -arrow B- in gearbox cover.



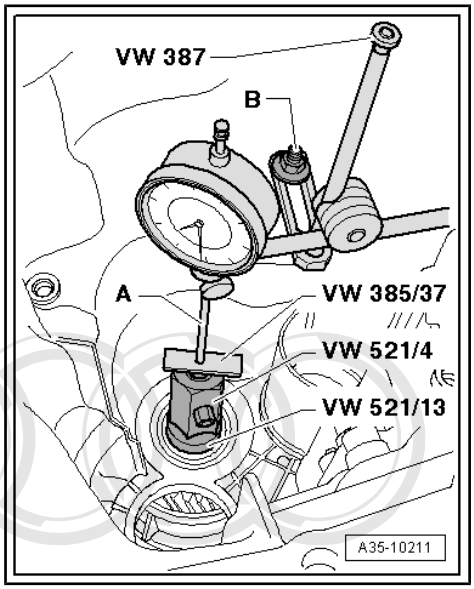
– Then secure centre differential housing -B- to gearbox cover with bolts -A- and -arrows- (5x).
– Then rotate gearbox cover with housing for centre differential attached so it is vertical, with housing for centre differential facing downwards.



– Attach measuring equipment.
– Secure universal dial gauge bracket - VW 387- to threaded hole in gearbox cover with bolt -B- and nut.
– Apply dial gauge extension to centre of measuring plate - VW 385/37- .
– Set dial gauge (3 mm measuring range) to »0« with 2 mm preload.

-A- Dial gauge extension from dial gauge adapter - 2066-

– Move spur gear drive input gear up and down using crown wheel adjusting tool - VW 521- .
– Read off play from dial gauge (in this example: 0.76 mm).



Example:

Measurement result (example)	0.76 mm
Preload (constant value)	+ 0.10 mm
Thickness of shim S_5	= 0.86 mm

Note

Select correct shims from ⇒ Electronic parts catalogue .

– The shim thickness “S_5” in this example is 0.86 mm.

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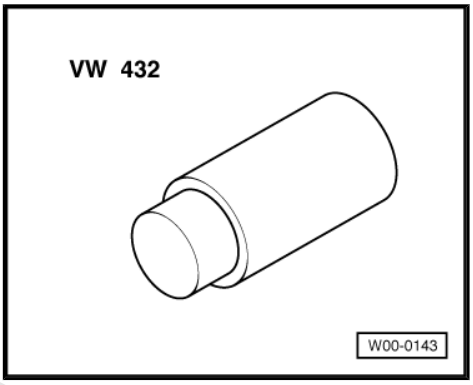
1.6 Re-determining preload of ball bearings for centre differential

This adjustment is necessary when the following components are renewed:

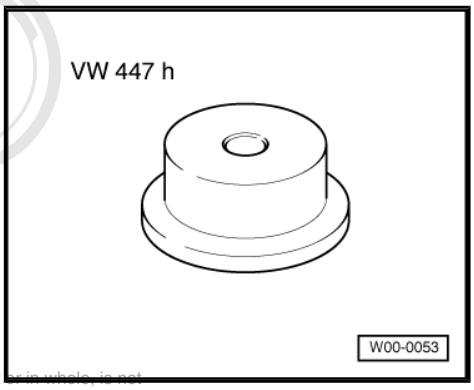
- Gearbox cover
- Spur gear drive input gear
- Spacer sleeve
- Centre differential

Special tools and workshop equipment required

♦ Press tool - VW 432-



♦ Thrust plate - VW 447 H-



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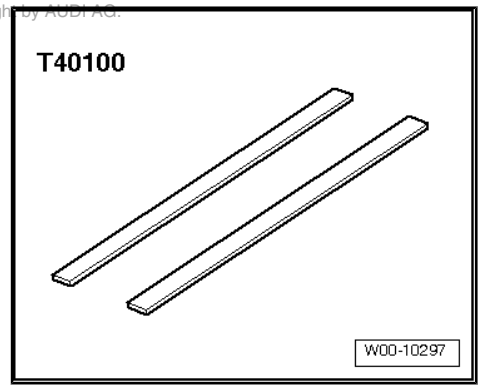
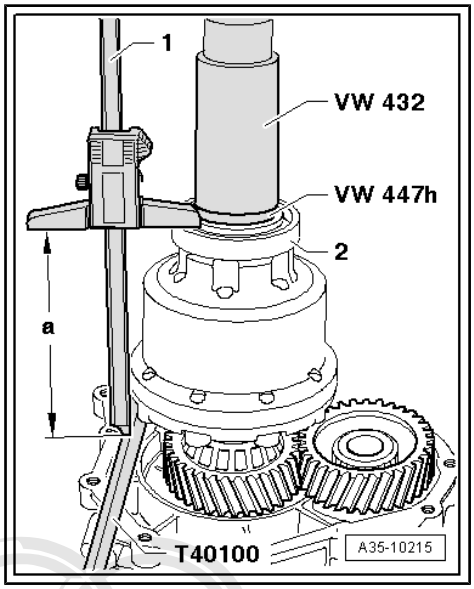
♦ Straightedge - T 40100-



♦ Digital depth gauge (e.g. -VAS 6087-)

- Tapered roller bearing outer race for spur gear drive input gear is installed in gearbox cover.
- Spur gear drive input gear, spacer sleeve and centre differential installed.

– Position straightedge - T40100- onto cleaned joint surface of gearbox cover.
– Using digital depth gauge -1- (e.g. digital depth gauge - VAS 6087-), measure depth between ball bearing -2- and straightedge .



Note

To prevent the centre differential from tilting during the measurement, fit the tools VW 447 H and VW 432 .

In example: measurement -a- = 142.45 mm.

– Add the height of straightedge - T 40100- to this measurement.

Example:

	Depth as measured with digital depth gauge (measurement -a-)	142.45 mm
+	Height of straightedge - T 40100-	39.70 mm
=	Measuring range (overall dimension)	182.15 mm

Select required shim from table ⇒ page 100 .

Measuring range (overall dimension)	Shim
Measured value (mm)	Thickness (mm)
181.50 … 181.66	1.65
181.67 … 181.86	1.45
181.87 … 182.06	1.25
182.07 … 182.25	1.05
182.26 … 182.45	0.85
182.46 … 182.65	0.65
182.66 … 182.88	0.45

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Note

Select correct shims from ⇒ Electronic parts catalogue .

– The thickness of the spacer sleeve in this example is 1.05 mm.

2 Input shaft

⇒ "2.1 Exploded view - input shaft", page 101

⇒ "2.2 Dismantling and assembling input shaft", page 104

2.1 Exploded view - input shaft

Detaching input shaft from output shaft and bearing mounting
⇒ "1.1 Exploded view - gear cluster", page 81

Dismantling and assembling input shaft ⇒ page 104

Note

- *Refer to technical data when installing new gears or a new input shaft ⇒ 6-speed manual gearbox 0B4; Rep. gr. 00 ; Technical data; Allocation of gearbox to engine .*
- *When renewing synchro-rings, renew inner ring, intermediate ring and synchro-ring for the corresponding gear together.*
- *Lubricate all bearings and synchro-rings on input shaft with gear oil before installing.*
- *3rd to 6th speed selector gears should have an axial play of 0.15 ... 0.50 mm after installation.*

1 - Gearbox housing

2 - Ball bearing
- ❑ For input shaft
- ❑ Removing and installing ⇒ Item 15 (page 69)

3 - Plate
- ❑ For securing ball bearings in gearbox housing

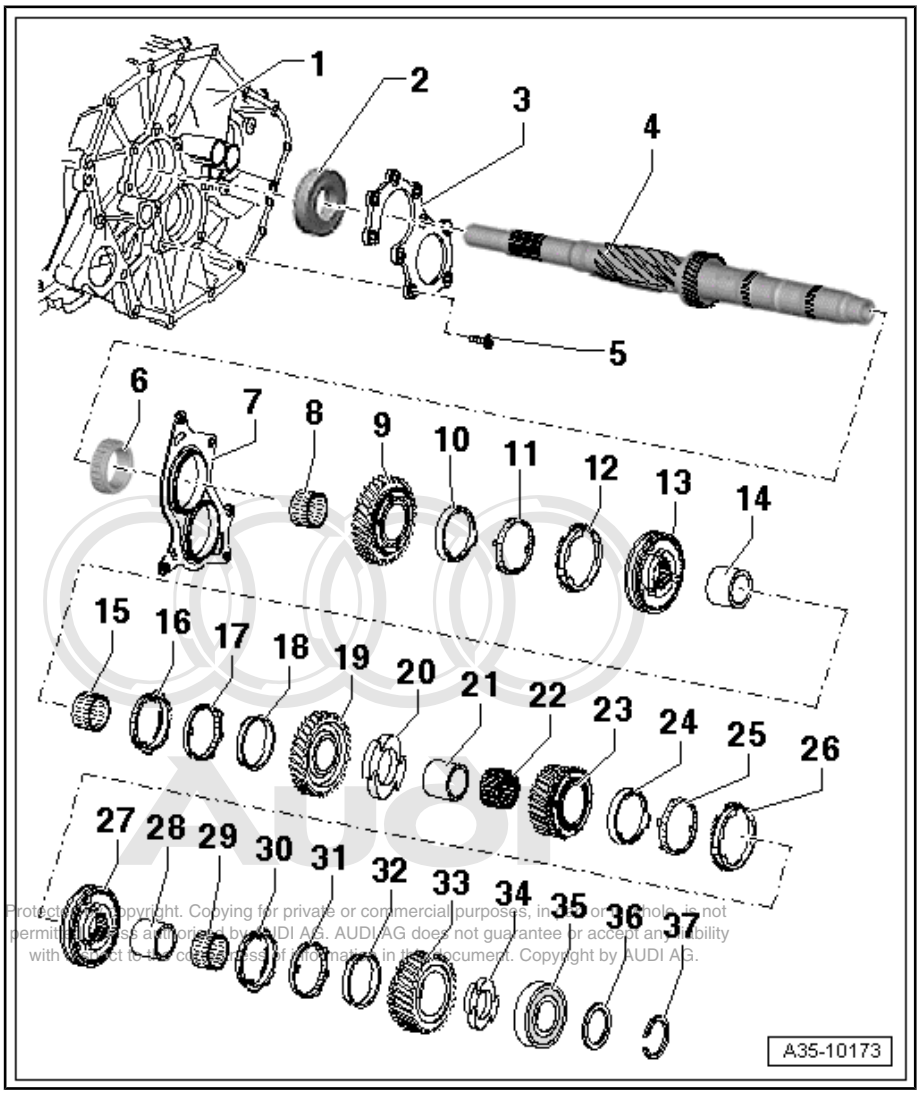
4 - Input shaft
- ❑ With splines for 1st, 2nd and reverse gear
- ❑ Checking input shaft for wear ⇒ page 104

5 - Bolt
- ❑ Tightening torque ⇒ Item 13 (page 69)

6 - Roller bearing
- ❑ For input shaft
- ❑ Pressing off ⇒ page 108
- ❑ Pressing on ⇒ page 110

7 - Bearing mounting
- ❑ Carries bearings for input shaft and output shaft in gearbox cover
- ❑ ⇒ Item 3 (page 81)

8 - Needle bearing
- ❑ For 5th gear



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9 - 5th speed selector gear

10 - Inner ring for 5th gear

- ❑ Installation position ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

11 - Intermediate ring for 5th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109

12 - Synchro-ring for 5th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

13 - Locking collar/synchro-hub for 5th and 6th gear

- ❑ Installation position: high inside collar of synchro-hub faces 5th speed selector gear
- ❑ Pressing off ⇒ page 108
- ❑ Pressing on ⇒ page 110
- ❑ Assembling locking collar/synchro-hub ⇒ page 110

14 - Needle bearing inner race

- ❑ For 6th speed selector gear
- ❑ Pressing off ⇒ page 108
- ❑ Pressing on ⇒ page 111

15 - Needle bearing

- ❑ For 6th gear

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16 - Synchro-ring for 6th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

17 - Intermediate ring for 6th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109

18 - Inner ring for 6th gear

- ❑ Installation position ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

19 - 6th speed selector gear

20 - Thrust washer

- ❑ For 3rd speed and 6th speed selector gears

21 - Needle bearing inner race

- ❑ For 3rd gear
- ❑ Pressing off ⇒ page 107
- ❑ Pressing on ⇒ page 111

22 - Needle bearing

- ❑ For 3rd gear

23 - 3rd speed selector gear

24 - Inner ring for 3rd gear

- ❑ Installation position ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

25 - Intermediate ring for 3rd gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109

26 - Synchro-ring for 3rd gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

27 - Locking collar/synchro-hub for 3rd and 4th gears

- ❑ Pressing off ⇒ page 107
- ❑ Pressing on ⇒ page 112
- ❑ Assembling locking collar/synchro-hub ⇒ page 112

28 - Needle bearing inner race

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- ❑ For 4th gear
- ❑ Pressing off ⇒ page 107
- ❑ Pressing on ⇒ page 112

29 - Needle bearing

- ❑ For 4th gear

30 - Synchro-ring for 4th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

31 - Intermediate ring for 4th gear

- ❑ Installation position ⇒ page 109
- ❑ Checking for wear ⇒ page 109

32 - Inner ring for 4th gear

- ❑ Installation position ⇒ page 109
- ❑ Renew if scored or if there are visible traces of wear

33 - 4th speed selector gear

34 - Thrust washer

- ❑ For 4th speed selector gear

35 - Ball bearing

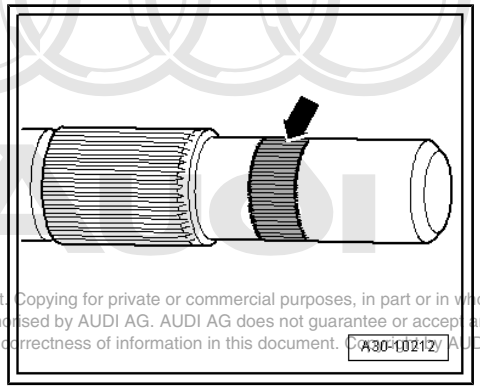
- ❑ Pressing off ⇒ page 107
- ❑ Pressing on ⇒ page 113

36 - Shim

- ❑ Determining thickness ⇒ page 113

37 - Circlip

Checking input shaft for wear



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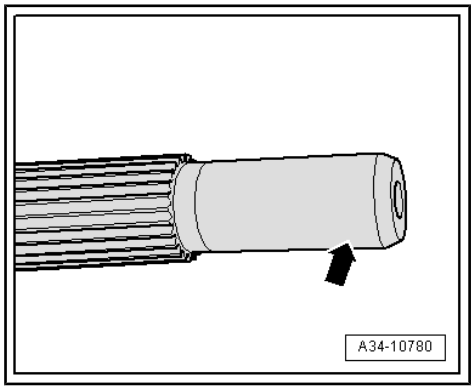
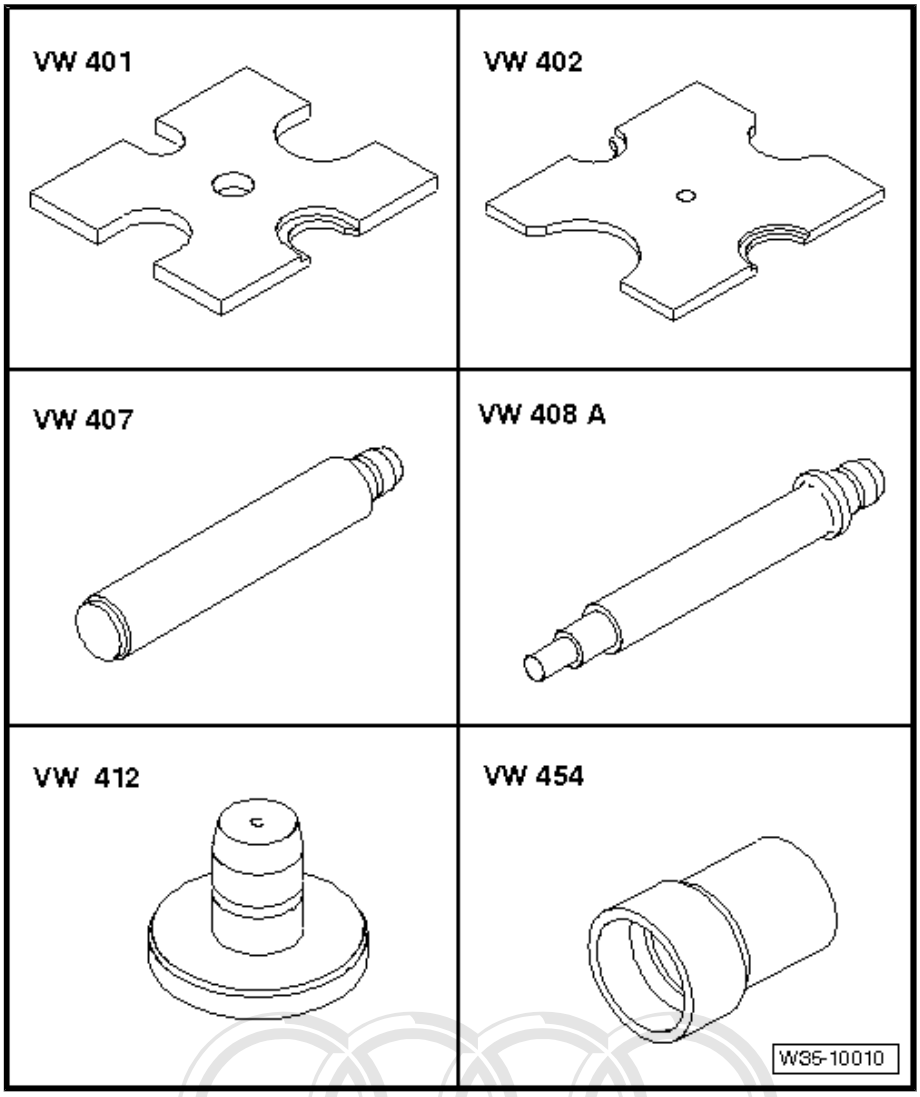
- If damage can be felt on the surface of the input shaft in the vicinity of the needle bearing for the dual-mass flywheel -arrow-, both the input shaft and the needle bearing in the dual-mass flywheel must be renewed ⇒ page 34 .
- Check input shaft for scoring around bearing in drive plate -arrow-. Renew needle bearing in drive plate if necessary ⇒ Rep. gr. 13 ; Cylinder block (gearbox end); Renewing needle bearing in drive plate .



2.2 Dismantling and assembling input shaft

Special tools and workshop equipment required

- Thrust plate - VW 401-
- Thrust plate - VW 402-
- Press tool - VW 407-
- Press tool - VW 408 A-
- Press tool - VW 412-
- Press tool - VW 454-



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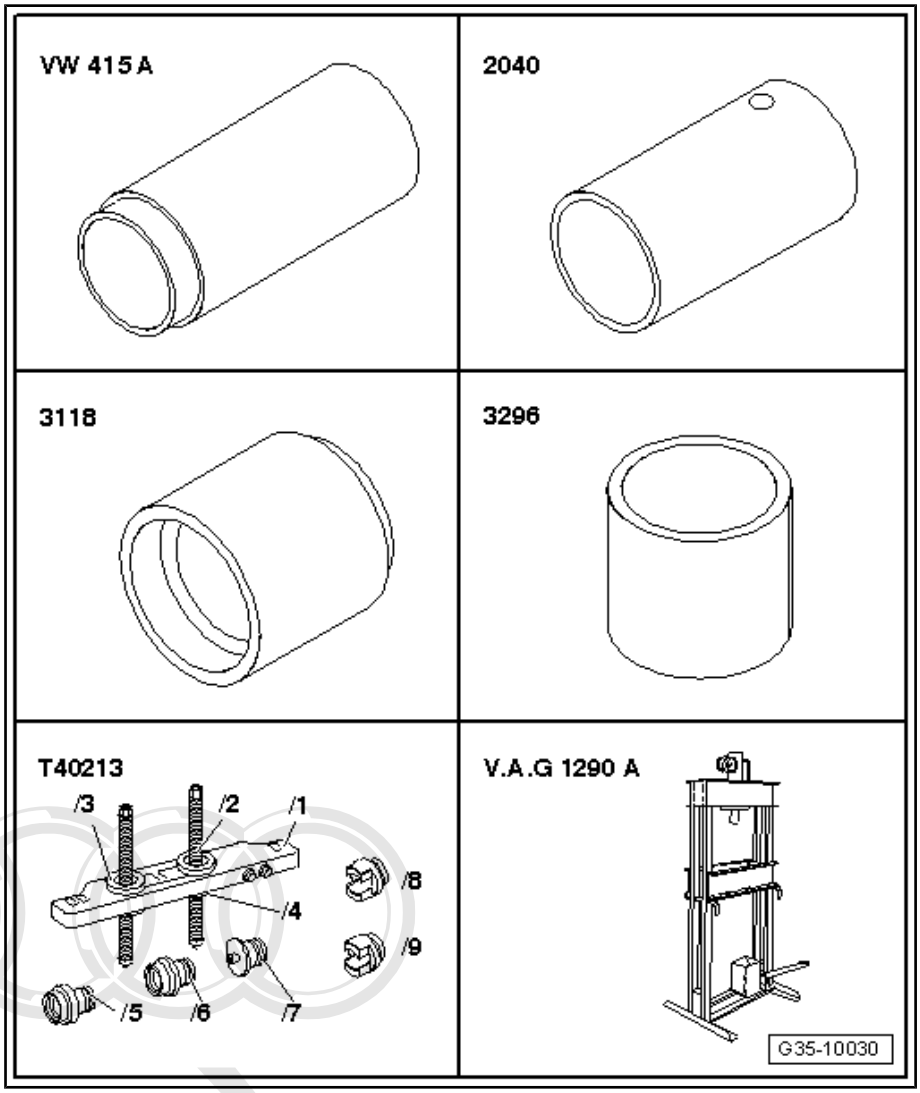
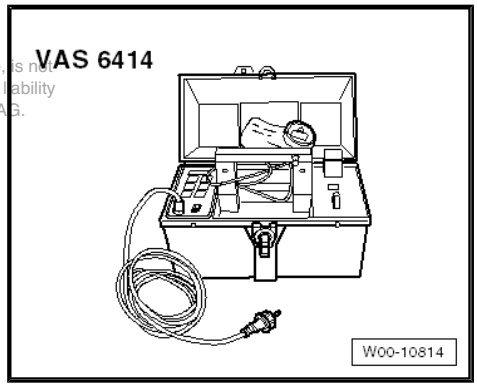
- Tube - VW 415 A-
- Tube - 2040-
- Press tool - 3118-
- Tube - 3296-
- Separating tool - T40213-
- Workshop press - V.A.G 1290A-



- Inductive heater - VAS 6414-



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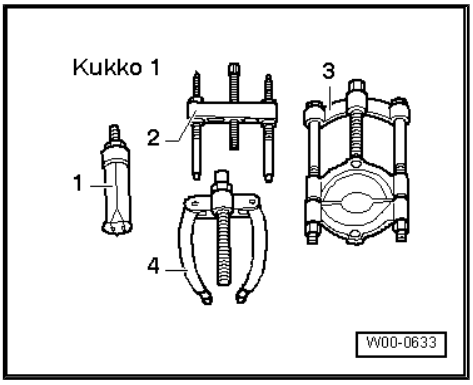
♦ -3- Splitter 22...115 mm , e.g. -Kukko 17/2-

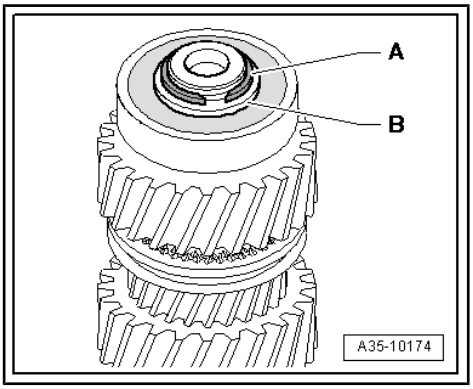


♦ Feeler gauge

Dismantling input shaft

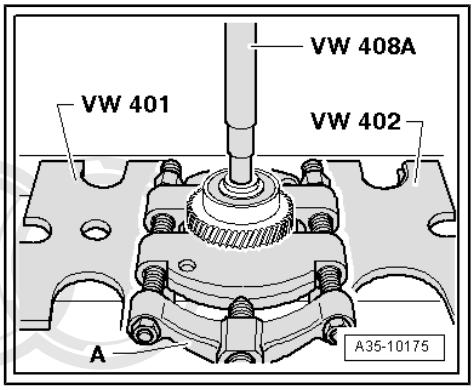
- Input shaft has been detached from output shaft and bearing mounting ⇒ page 81 .

– First remove circlip -A- and shim -B- behind ball bearing on removed input shaft.



– Clamp splitter -A- underneath driving teeth on 4th speed selector gear and press off ball bearing.

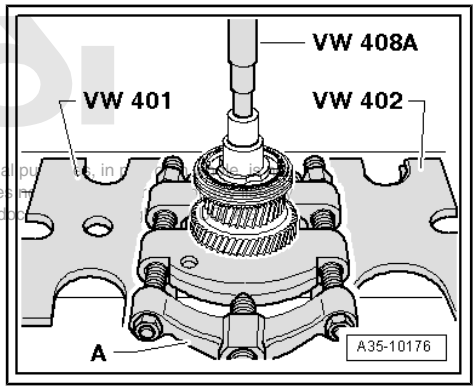
A - Splitter 22...115 mm , e.g. -Kukko 17/2-



– Remove synchro-rings and needle bearing for 4th speed selector gear.

– Clamp splitter -A- underneath driving teeth on 6th speed selector gear and press off synchro-hub for 3rd/4th gear together with needle bearing inner races for 3rd and 4th speed selector gears.

A - Splitter 22...115 mm , e.g. -Kukko 17/2-



– Remove synchro-rings and needle bearing for 6th speed selector gear.

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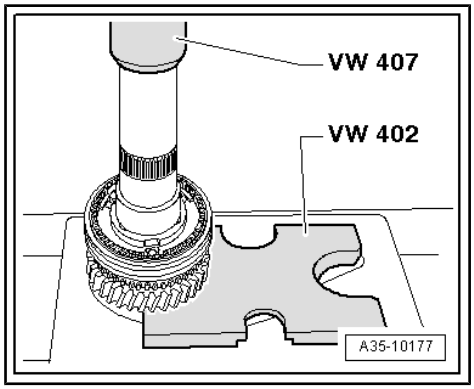
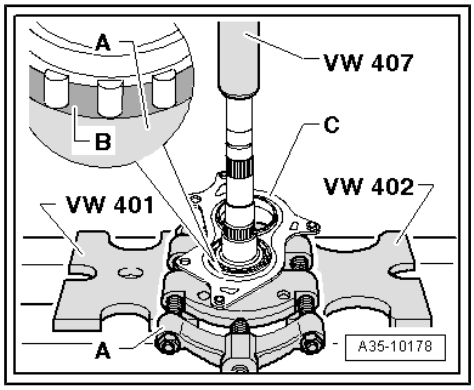
– Press off 5th speed selector gear together with synchro-hub for 5th/6th gear and needle bearing inner race for 6th speed selector gear.



– Press roller bearing off input shaft.

A - Splitter 22...115 mm , e.g. -Kukko 17/2-



Note

- *Apply splitter -A- beneath bearing cage -B-.*
- *Position bearing mounting -C- over input shaft roller bearing to prevent the rollers from being pressed out of the bearing cage -B-.*
- *To press off the roller bearing, you can also break open the cage of the bearing using a screwdriver or similar and then apply the splitter -A- to the inner race.*

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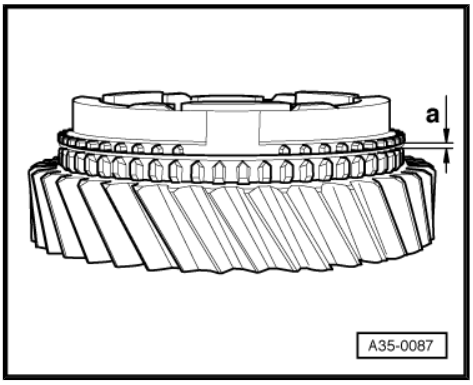
Assembling input shaft

Note

- *Lubricate all needle bearings and synchro-rings with gear oil before fitting.*
- *Heat needle bearing inner races to 100 °C (max.) before pressing on (wear protective gloves).*
- *Heat synchro-hubs to 100 °C (max.) before pressing on (wear protective gloves).*
- *Always press on roller bearing, needle bearing inner races and synchro-hubs as far as stop to make sure the axial clearance of the selector gears meets the specification.*

Checking 3rd to 6th gear synchro-rings for wear



- Check outer friction surface of inner ring for grooves or scoring and renew if necessary.
- Check inner friction surface of synchro-ring for grooves or scoring and renew if necessary.
- Fit inner ring, intermediate ring and synchro-ring onto cone of selector gear and rotate to achieve proper seating.

Note

To achieve proper seating, rotate synchro-rings approx. one turn while pressing down rings simultaneously.

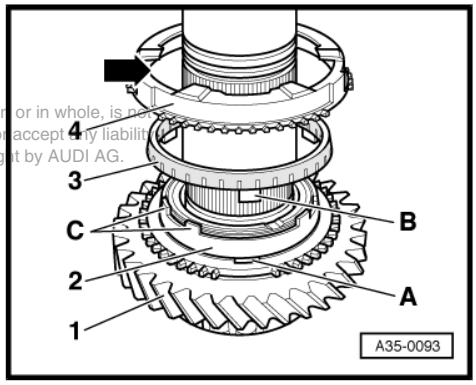
- Then measure gap -a- using a feeler gauge .

Gap -a-	Wear limit
3rd to 6th gear	0.7 mm

Note

Renew inner ring, intermediate ring and synchro-ring for the corresponding gear together.

Installation position of synchro-rings for 3rd to 6th gear



Note

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If components are not being renewed, make sure they are re-installed on the same gear.

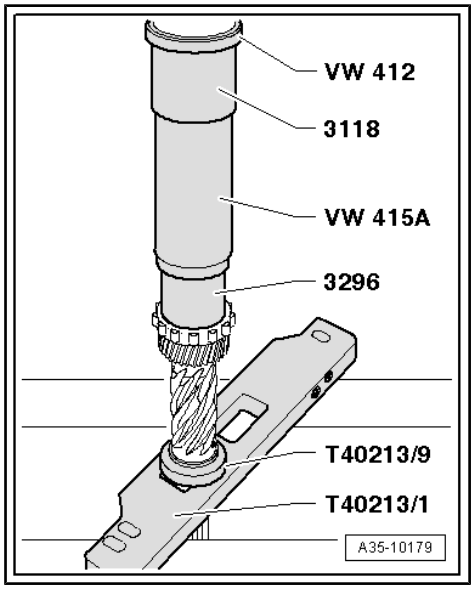
- Fit inner ring -2- onto selector gear -1-.
- Fit intermediate ring -3-. Lug -B- must be inserted into recess -A-.
- Fit synchro-ring -4-. Guide lugs -C- through recess -arrow-.

Note the following when performing the following steps:

- Position drift sleeves on centre of heated components (synchro-hub and needle bearing inner races).
- First press on components just briefly, then stop exerting pressure and check whether drift sleeves are still positioned properly and press on as far as stop.

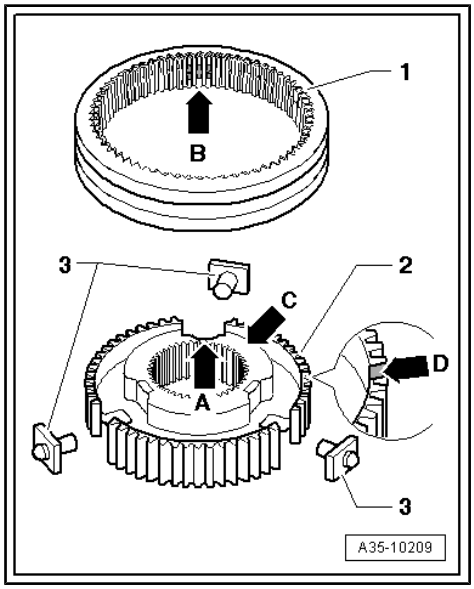
When pressing on, lugs on synchro-rings must line up with recesses in synchro-hub. To do so, lift corresponding selector gear with synchro-rings slightly so that it engages in the slots in the synchro-hub.

– Place plate - T40213/1- with adapter - T40213/9- on work table of workshop press - V.A.G 1290A- .
– Insert input shaft in adapter - T40213/9- .
– Press roller bearing onto input shaft as far as stop.
– Install 5th speed selector gear with needle bearing and synchro-rings.

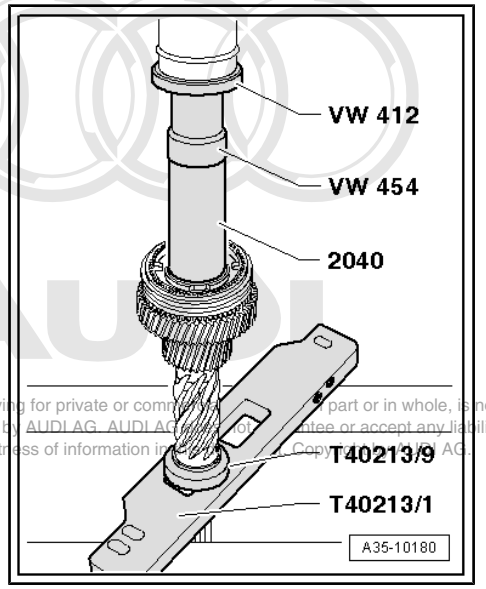


Assembling 5th and 6th gear locking collar/synchro-hub

– Slide locking collar -1- over synchro-hub -2-.
• The recesses -arrow A- for the thrust blocks -3- in the synchro-hub must align with the recesses -arrow B- in the locking collar.
• Installation position: high inside collar -arrow C- / notch -arrow D- of synchro-hub should face 5th speed selector gear.
– Then fit thrust blocks -3- in synchro-hub and press them into recesses -arrow B- in locking collar.



Pressing on 5th and 6th gear synchro-hub with locking collar



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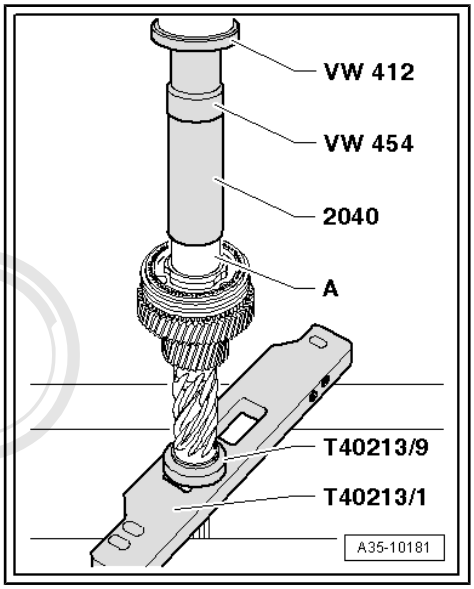
Pressing on needle bearing inner race -A- for 6th speed selector gear



- Fit 6th speed selector gear -A- with needle bearing and synchro-rings.
- Place thrust washer -B- on 6th speed selector gear.
- Press on needle bearing inner race -C- for 3rd speed selector gear.
- Install 3rd speed selector gear with needle bearing and synchro-rings.

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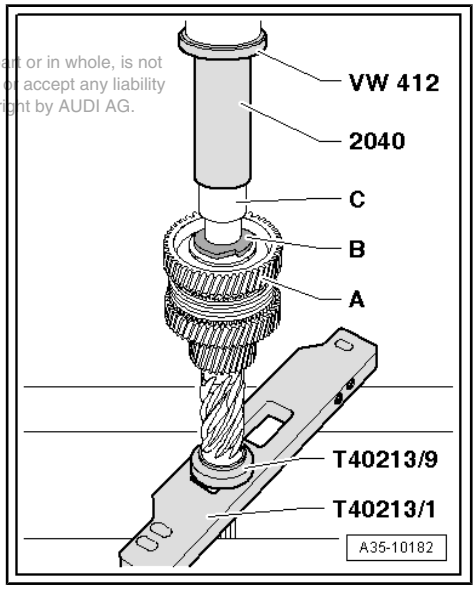
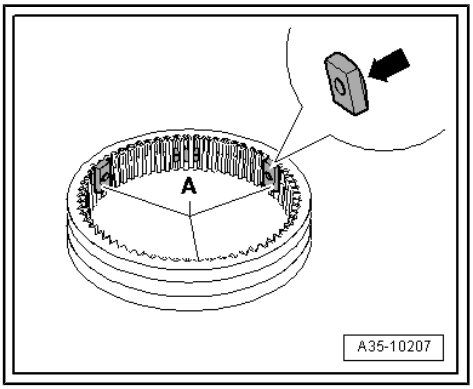


Fitting locking pieces -A- in locking collar.

- Apply a small amount of grease to convex side -arrow- of each of the three locking pieces -A-.
- Fit the three locking pieces with convex side first into recesses in locking collar.

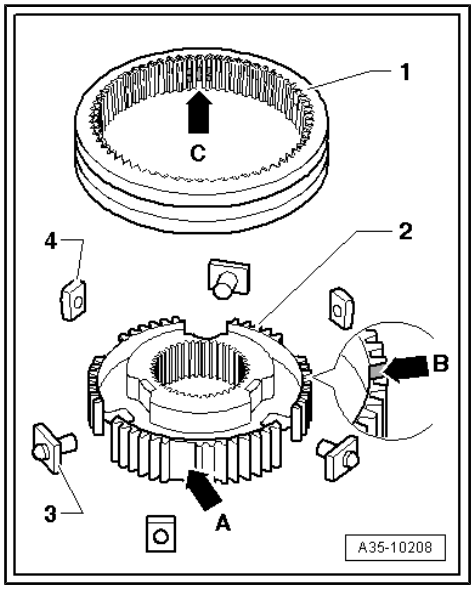


Assembling 3rd and 4th gear locking collar/synchro-hub

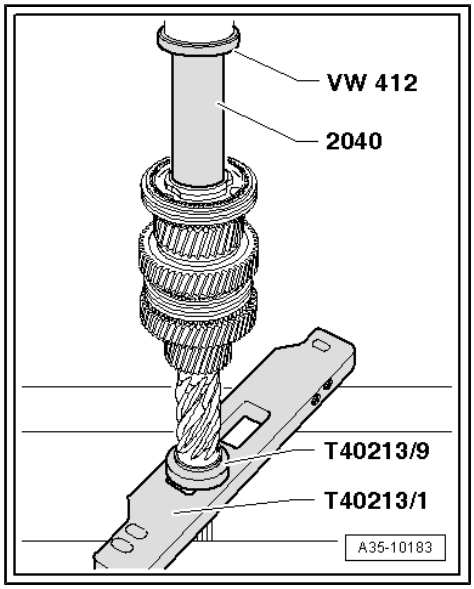
- Fit the three locking pieces -4- in their installation position (in recesses in locking collar -1-) ⇒ page 111 .
- Installation position of synchro-hub: Notch -arrow B- / lettering should face towards 4th speed selector gear.

– Position locking collar -1- over synchro-hub -2- so that recesses in synchro-hub -arrow A- align with locking pieces inserted in locking collar.

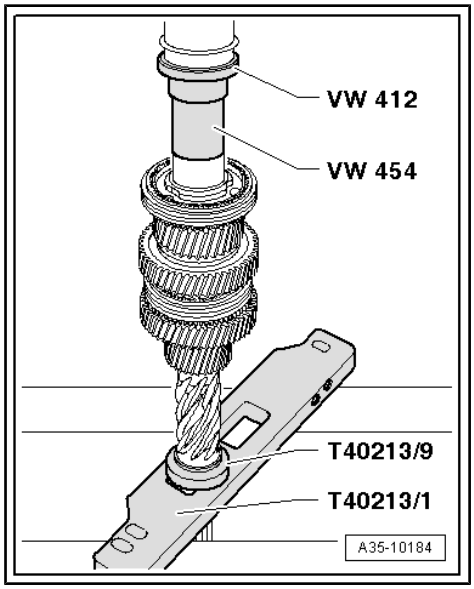
– Then fit thrust blocks -3- in synchro-hub and press them into recesses -arrow C- in locking collar.



Pressing on 3rd and 4th gear synchro-hub with locking collar



Pressing on needle bearing inner race for 4th speed selector gear



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– Fit 4th speed selector gear -A- with needle bearing and synchro-rings.

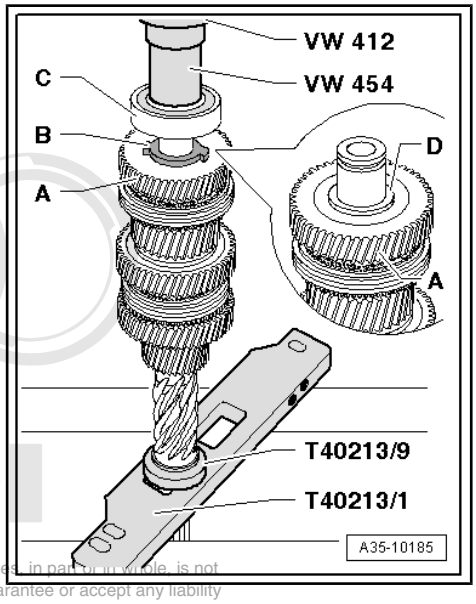
– Fit thrust washer -B-.

• Check that needle bearing inner race -D- for 4th speed selector gear is higher than 4th gear selector gear -A-.

– Press ball bearing -C- on as far as stop.

– Then check all selector gears for freedom of movement and axial play.

• The axial play of the selector gears must be at least 0.15 mm.



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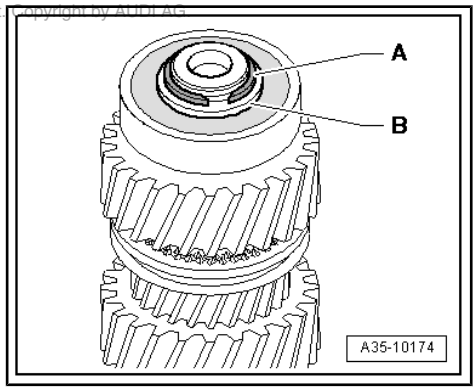
Determine required thickness of shim -B- as follows:

– Select the thickest shim -B- that can still just be fitted from those available as replacement parts ⇒ Electronic parts catalogue .

• The circlip -A- must be properly seated in the base of the groove when determining the shim.



3 Output shaft

⇒ "3.1 Exploded view - output shaft", page 114

⇒ "3.2 Dismantling and assembling output shaft", page 119

3.1 Exploded view - output shaft

Exploded view - removing and installing selector fork cluster, input shaft, 1st, 2nd and reverse gears on output shaft ⇒ page 81

Assembly sequence - removing and installing selector fork cluster, input shaft, 1st, 2nd and reverse gears on output shaft ⇒ page 83

Dismantling and assembling output shaft ⇒ page 119

Note

- *Refer to technical data when installing new gears or a new output shaft ⇒ 6-speed manual gearbox 0B4; Rep. gr. 00 ; Technical data; Allocation of gearbox to engine .*
- *Lubricate all needle bearings and synchro-rings with gear oil before installing.*
- *When renewing synchro-rings, renew inner ring, intermediate ring and synchro-ring for the corresponding gear together.*
- *If synchro-rings are not being renewed, make sure they are re-installed on the same gear.*

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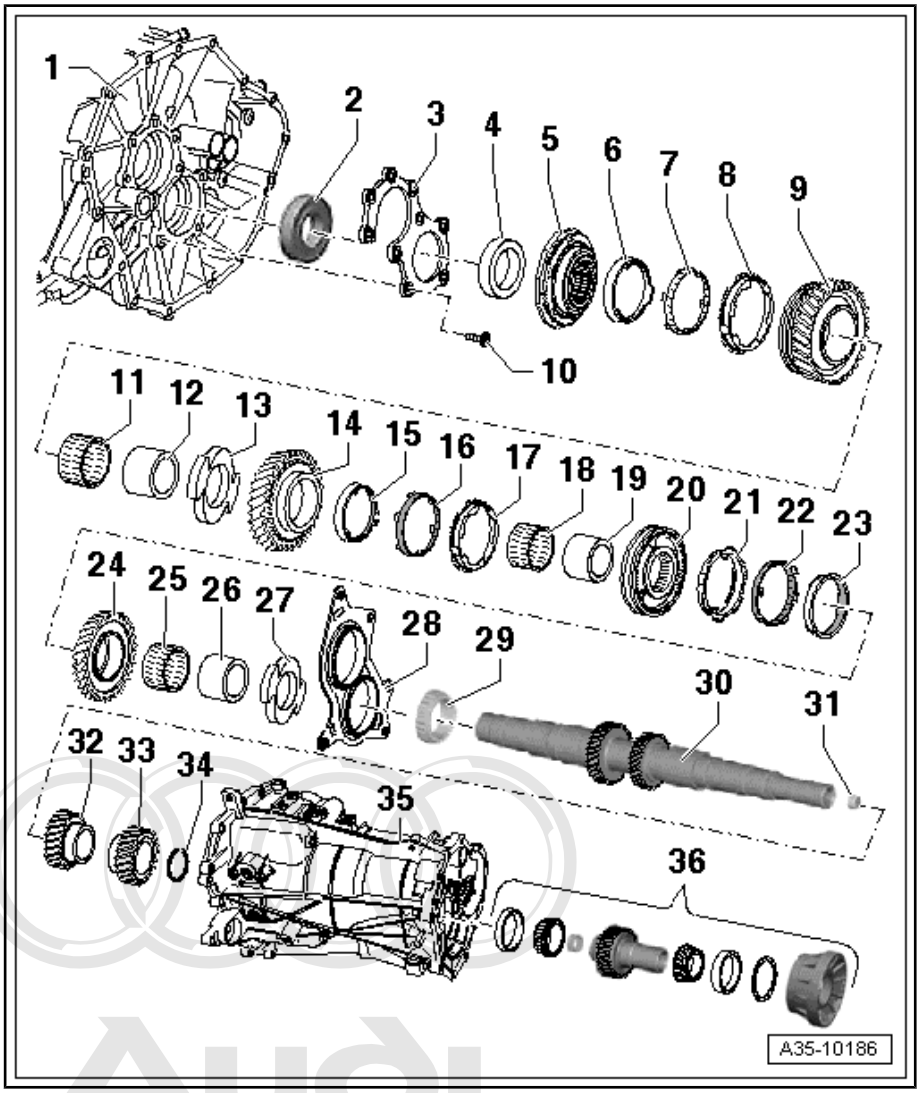

1 - Gearbox housing

2 - Ball bearing

- ❑ For output shaft
- ❑ Removing and installing ⇒ Item 14 (page 69)

3 - Plate

- ❑ For securing ball bearings in gearbox housing

4 - Thrust washer

5 - Reverse gear synchro-hub

- ❑ Can be detached from output shaft by hand

6 - Inner ring for reverse gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Renew if scored or if there are visible traces of wear

7 - Intermediate ring for reverse gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 119

8 - Synchro-ring for reverse gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 119
- ❑ Renew if scored or if there are visible traces of wear

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9 - Reverse selector gear

- ❑ With locking collar for reverse gear
- ❑ Dismantling and assembling locking collar and reverse selector gear ⇒ page 117

10 - Bolt

- ❑ Tightening torque ⇒ Item 13 (page 69)

11 - Needle bearing

- ❑ For reverse gear

12 - Needle bearing inner race

- ❑ For reverse gear
- ❑ Pulling off ⇒ page 86
- ❑ Pressing on ⇒ page 88

13 - Thrust washer

- ❑ For 1st speed and reverse selector gears

14 - 1st speed selector gear

15 - Inner ring for 1st gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 118
- ❑ Renew if scored or if there are visible traces of wear

16 - Intermediate ring for 1st gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 119

17 - Synchro-ring for 1st gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Identification ⇒ page 118
- ❑ Checking for wear ⇒ page 119
- ❑ Renew if scored or if there are visible traces of wear

18 - Needle bearing

- ❑ For 1st gear

19 - Needle bearing inner race

- ❑ For 1st speed selector gear
- ❑ Pulling off ⇒ page 86
- ❑ Pressing on ⇒ page 88

20 - Locking collar/synchro-hub for 1st and 2nd gear

- ❑ Assembling locking collar/synchro-hub ⇒ page 119
- ❑ Pulling off ⇒ page 86
- ❑ Pressing on ⇒ page 87

21 - Synchro-ring for 2nd gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Identification ⇒ page 118
- ❑ Checking for wear ⇒ page 119
- ❑ Renew if scored or if there are visible traces of wear

22 - Intermediate ring for 2nd gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 119

23 - Inner ring for 2nd gear

- ❑ Installation position ⇒ page 87
- ❑ Identification of synchro-rings ⇒ page 118
- ❑ Checking for wear ⇒ page 118
- ❑ Renew if scored or if there are visible traces of wear

24 - 2nd speed selector gear

25 - Needle bearing

- ❑ For 2nd gear

26 - Needle bearing inner race

- ❑ For 2nd speed selector gear
- ❑ Pressing off ⇒ page 122

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- ❑ Pressing on ⇒ page 122

27 - Thrust washer

- ❑ For 2nd speed selector gear

28 - Bearing mounting

- ❑ Carries bearings for input shaft and output shaft in gearbox cover
- ❑ ⇒ Item 3 (page 81)

29 - Roller bearing

- ❑ For output shaft
- ❑ Pressing off ⇒ page 122
- ❑ Pressing on ⇒ page 122

30 - Output shaft

- ❑ With splines for 5th and 6th gear

31 - Needle bearing or bearing bush

- ❑ Bearing for rear flange shaft in output shaft
- ❑ Pulling out ⇒ page 123
- ❑ Driving in ⇒ page 124

32 - 3rd gear wheel

- ❑ Pressing off ⇒ page 122
- ❑ Installation position: high inside collar faces 4th gear
- ❑ Pressing on ⇒ page 123

33 - 4th gear wheel

- ❑ Pressing off ⇒ page 121
- ❑ Installation position: high inside collar faces 3rd gear
- ❑ Pressing on ⇒ page 123

34 - Circlip

35 - Gearbox cover

36 - Spur gear drive input gear

- ❑ With tapered roller bearing and bearing plate
- ❑ Servicing bearings for spur gear ⇒ page 89

Assembling locking collar and reverse selector gear

1 - Reverse selector gear

2 - Locking collar

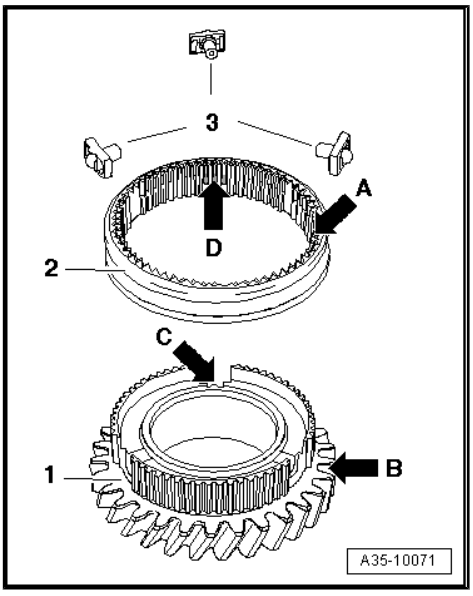
3 - Thrust blocks

– Push locking collar over reverse selector gear.

Installation position:

- After assembling, the pointed splines -arrow A- on the locking collar point away from the driving teeth -arrow B- of the reverse selector gear.
- Recesses for thrust blocks -3- in reverse selector gear -arrow C- and locking collar -arrow D- must align.

– Then position thrust blocks -3- in recesses on reverse selector gear and press thrust blocks into recesses -arrow D- in locking collar.



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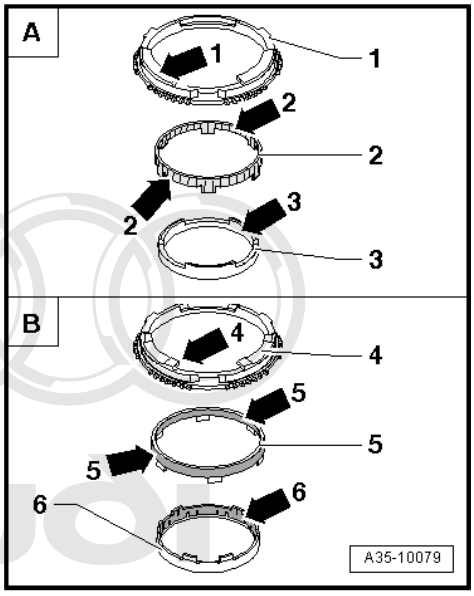
Identification of reverse gear synchro-rings -A- and 1st/2nd gear synchro-rings -B-



1 - Reverse gear synchro ring: the lugs -arrow 1- have a smooth surface.

2 - Reverse gear intermediate ring: the friction surfaces -arrows 2- are coated with sintered particles (brass colour).

3 - Reverse gear inner ring: has no inner friction surface -arrow 3-.

4 - Synchro-ring for 1st and 2nd gear: the lugs are fitted with 2 projections each -arrow 4-. Identification of synchro-ring for 1st and 2nd gear ⇒ page 118

5 - Intermediate ring for 1st and 2nd gear: the friction surfaces -arrows 5- are carbon-coated (black coating).

6 - Inner ring for 1st and 2nd gear: the inner friction surface -arrow 6- is carbon-coated (black coating).

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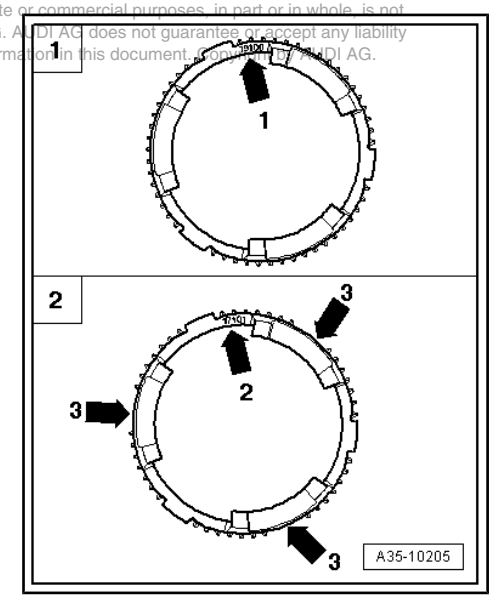
Identification of synchro-ring for 1st and 2nd gear



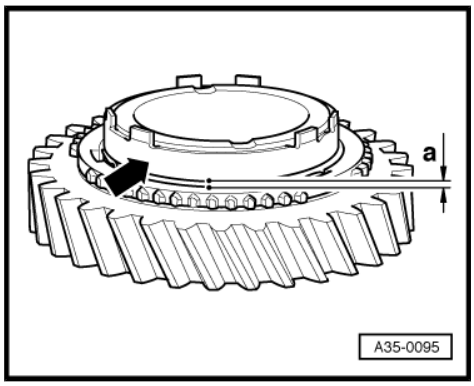
1 - Synchro-ring for 1st gear: lettering “19100” -arrow 1- means that the dog teeth are at an angle of 19°.

2 - Synchro-ring for 2nd gear: lettering “17101” -arrow 2- means that the dog teeth are at an angle of 17°. Additionally, 3x3 teeth -arrows 3- are missing on this synchro-ring.

Note

The synchro-ring for reverse gear has a smaller inner diameter and is marked with “15100”.

Checking 1st and 2nd gear inner ring for wear

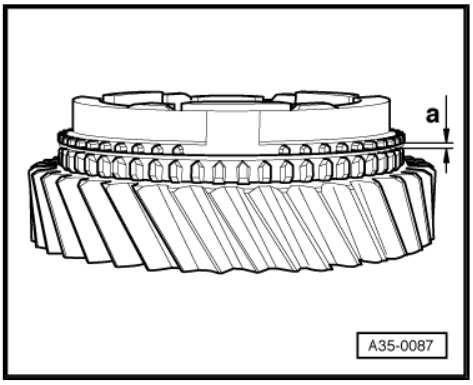


– Check outer contact surface -arrow- for scoring or visible traces of wear and renew if necessary.

– Press inner ring onto chamfer on selector gear and measure gap -a- using a feeler gauge .

Gap -a-	Wear limit
Inner ring for 1st and 2nd gear	0.6 mm

Checking intermediate rings for 1st, 2nd and reverse gears for wear



– Check inner friction surface of synchro-ring for grooves or scoring and renew if necessary.

– Fit inner ring, intermediate ring and synchro-ring on selector gear and rotate rings until they are »seated«.

Note

To achieve proper seating, rotate synchro-rings approx. one turn while pressing down rings simultaneously.

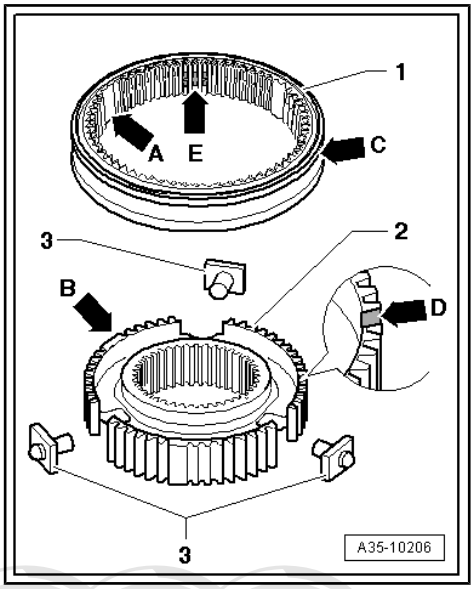
– Then measure gap -a- using a feeler gauge .

Gap -a-	Wear limit
1st, 2nd and reverse gear	0.7 mm

Note

Renew inner ring, intermediate ring and synchro-ring for the corresponding gear together.

Assembling 1st and 2nd gear locking collar/synchro-hub



– Fit locking collar -1- onto synchro-hub -2- so that wide teeth of locking collar -arrow A- and synchro-hub -arrow B- coincide.

- Installation position of locking collar: chamfer -arrow C- / side with larger outer diameter faces 2nd speed selector gear.
- Installation position of synchro-hub: Notch -arrow D- / lettering faces towards 2nd speed selector gear.

– Then fit thrust blocks -3- in synchro-hub and press them into recesses -arrows E- in locking collar.

3.2 Dismantling and assembling output shaft

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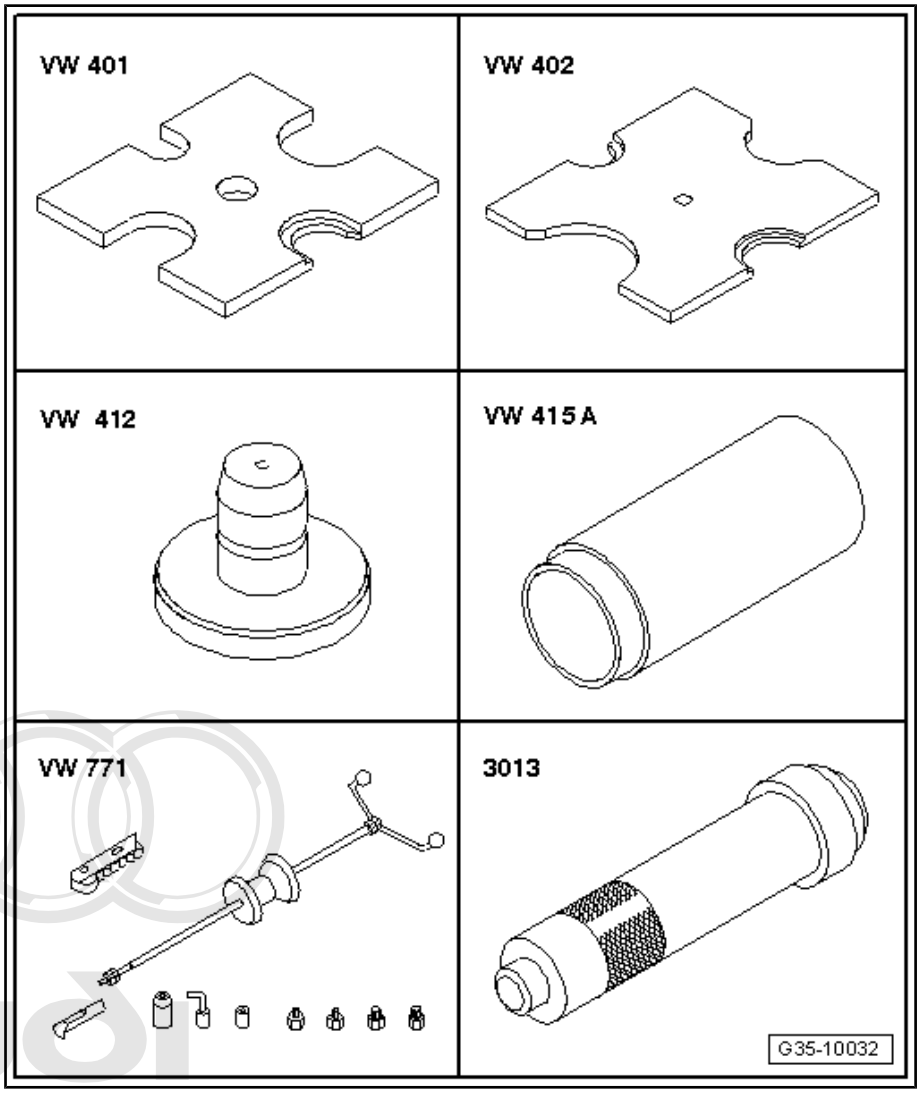
Special tools and workshop equipment required

- Thrust plate - VW 401-
- Thrust plate - VW 402-
- Press tool - VW 412-
- Tube - VW 415 A-
- Multi-purpose tool - VW 771-
- Punch - 3013-



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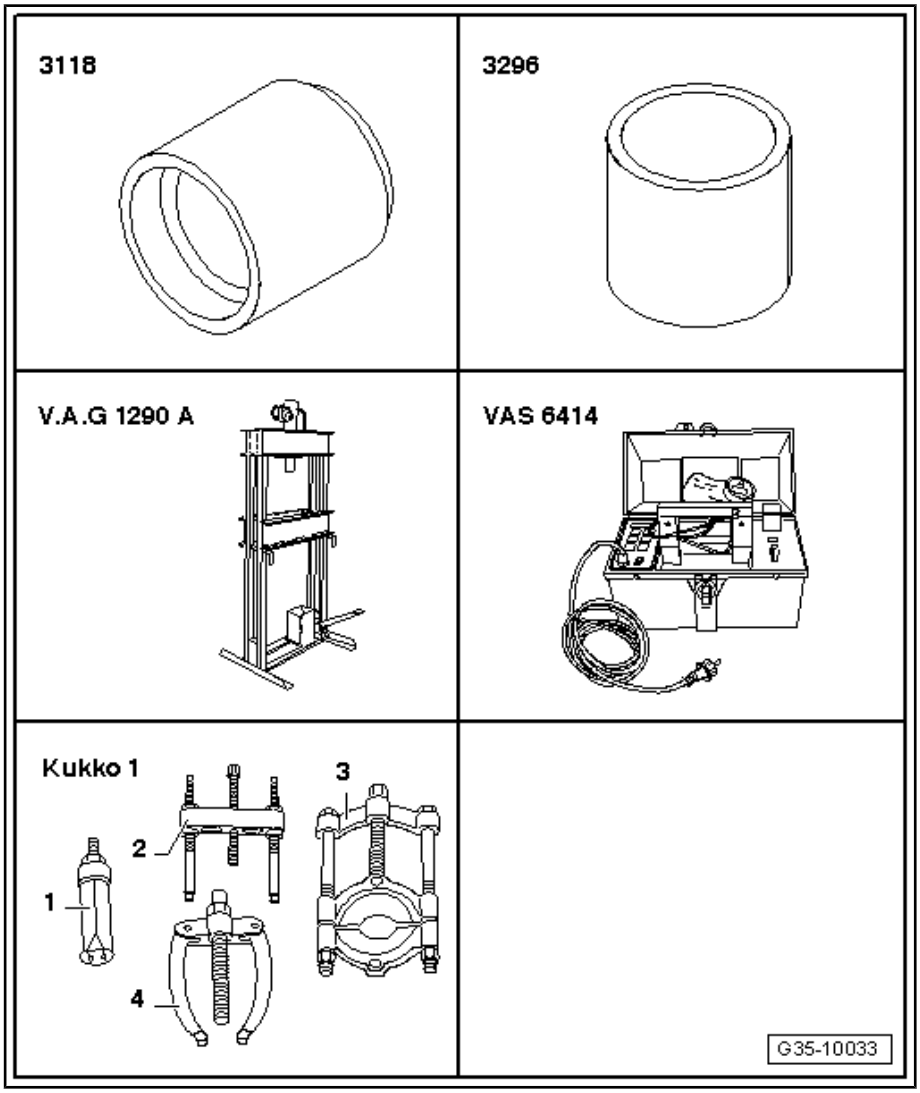
- Press tool - 3118-
- Tube - 3296-
- Workshop press - V.A.G 1290A-
- Inductive heater - VAS 6414-
- -1- Internal puller - Kukko 21/1-
- -3- Splitter 22...115 mm , e.g. -Kukko 17/2-



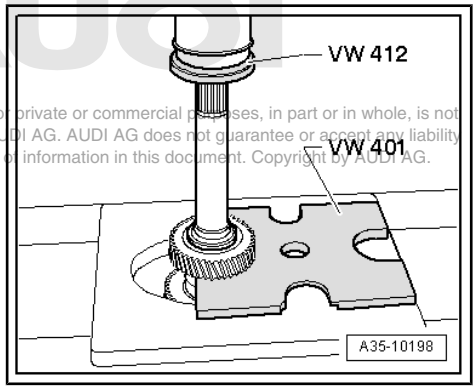
Note

Removing and installing 1st, 2nd and reverse gears is described under
⇒ "1.2 Dismantling and assembling gear cluster", page 83 .

Pressing 3rd gear wheel, 4th gear wheel, roller bearing and needle bearing inner race for 2nd speed selector gear off output shaft

– Remove circlip for 4th gear wheel

Pressing off 4th gear wheel



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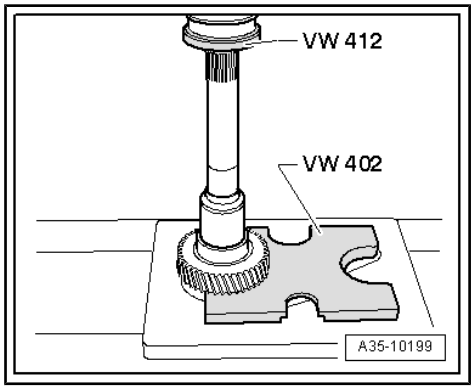
Note

- *It may be necessary to exert a pressure of up to 200 kN (20 t).*
- *After pressing off, check gear teeth on 4th gear wheel for damage.*

Pressing off 3rd gear wheel

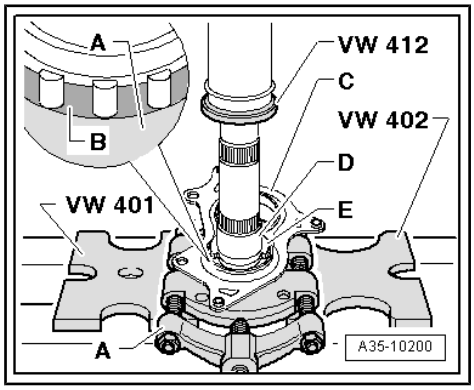


Note

- *It may be necessary to exert a pressure of up to 200 kN (20 t).*
- *After pressing off, check gear teeth on 3rd gear wheel for damage.*

Pressing roller bearing with needle bearing inner race for 2nd gear -D- and thrust washer -E- off output shaft

A - Splitter 22...115 mm , e.g. -Kukko 17/2-

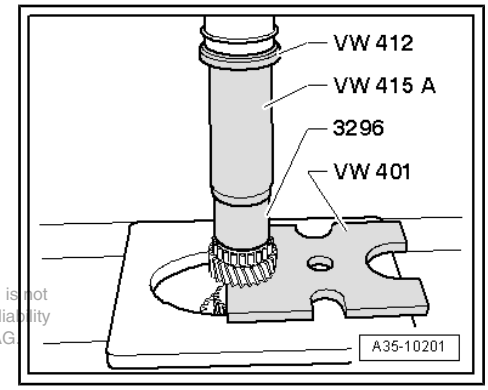


Note

- *Apply splitter -A- beneath bearing cage -B-.*
- *Position bearing mounting -C- over output shaft roller bearing to prevent the rollers from being pressed out of the bearing cage -B-.*
- *To press off the roller bearing, you can also break open the cage of the bearing using a screwdriver or similar and then apply the splitter -A- to the inner race.*

Pressing 3rd gear wheel, 4th gear wheel, roller bearing and needle bearing inner race for 2nd speed selector gear onto output shaft

Pressing roller bearing onto output shaft



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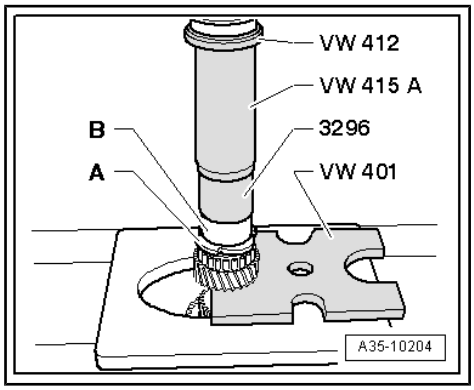
Pressing on needle bearing inner race for 2nd speed selector gear



– First fit thrust washer -A- on roller bearing.
– Then heat needle bearing inner race for 2nd speed selector gear to approx. 100 °C and press it onto stop.

WARNING

Wear protective gloves.

Heating 3rd gear wheel to max. 150° C and pressing onto stop

- Installation position: high inside collar -arrow- faces 4th gear.

WARNING

Wear protective gloves.

Note

Press on gear wheel quickly so that heat is not immediately transferred to output shaft.

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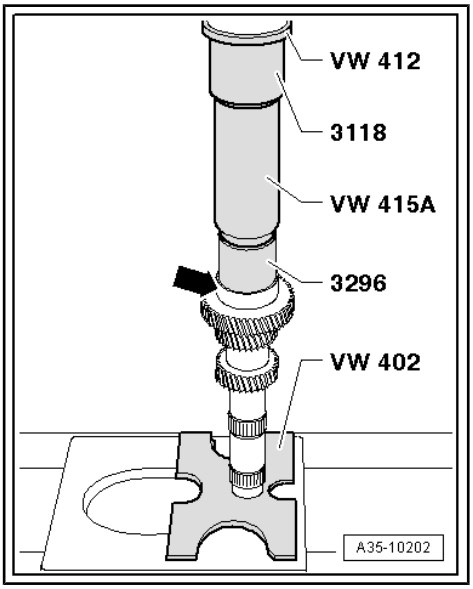


Pressing on 4th gear wheel

- Installation position: high inside collar -arrow- faces 3rd gear -A-.

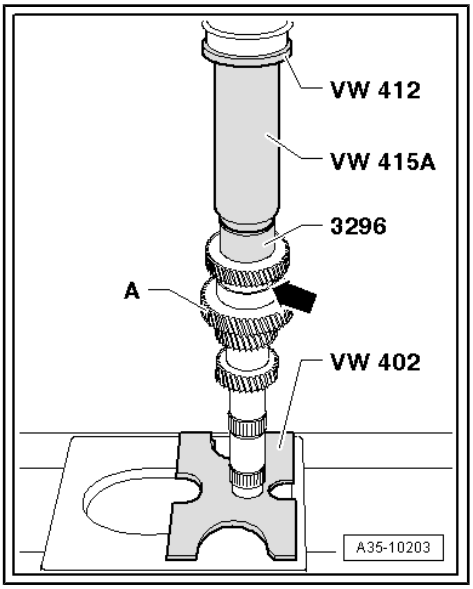
WARNING

Wear protective gloves.

Note

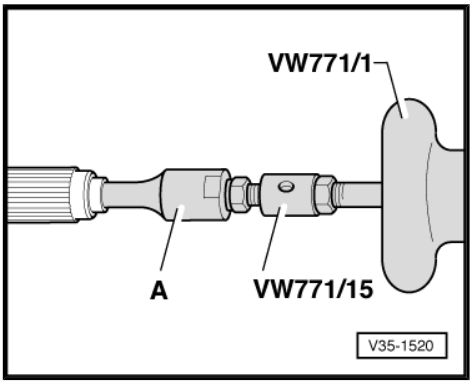
Press on gear wheel quickly so that heat is not immediately transferred to output shaft.

– Fit circlip for 4th gear wheel.



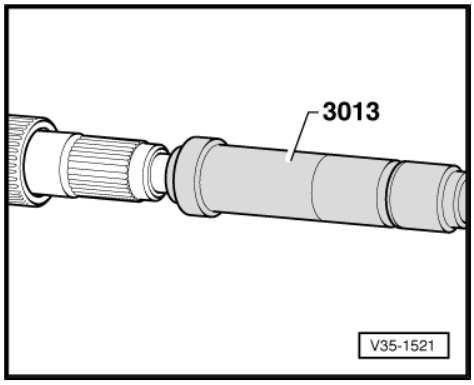
Pulling out needle bearing for rear flange shaft in output shaft

A - Internal puller 12 ... 14.5 mm , e.g. -Kukko 21/1-



Driving in needle bearing for rear flange shaft in output shaft until flush

Install needle bearing so the lettering (side with thicker metal) faces towards the punch - 3013- .



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39 – Final drive - differential

1 Final drive

⇒ “1.1 Exploded view - final drive”, page 125

⇒ “1.2 Renewing cover for final drive”, page 126

1.1 Exploded view - final drive

Note

- *The differential can be removed and installed without removing the selector mechanism, input shaft, output shaft, pinion shaft and gearbox cover.*
- *If you are renewing the cover for the final drive, you must adjust the preload of the tapered roller bearings for the differential ⇒ page 126 .*

1 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 25 mm long)
- ❑ 3x
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

2 - Flange shaft (left-side)

- ❑ With mounting bracket and ball bearing
- ❑ Removing and installing ⇒ page 132
- ❑ Renewing ball bearing or mounting bracket ⇒ page 142

3 - Gearbox housing

- ❑ Can currently only be renewed together with differential and pinion shaft

4 - Oil seal

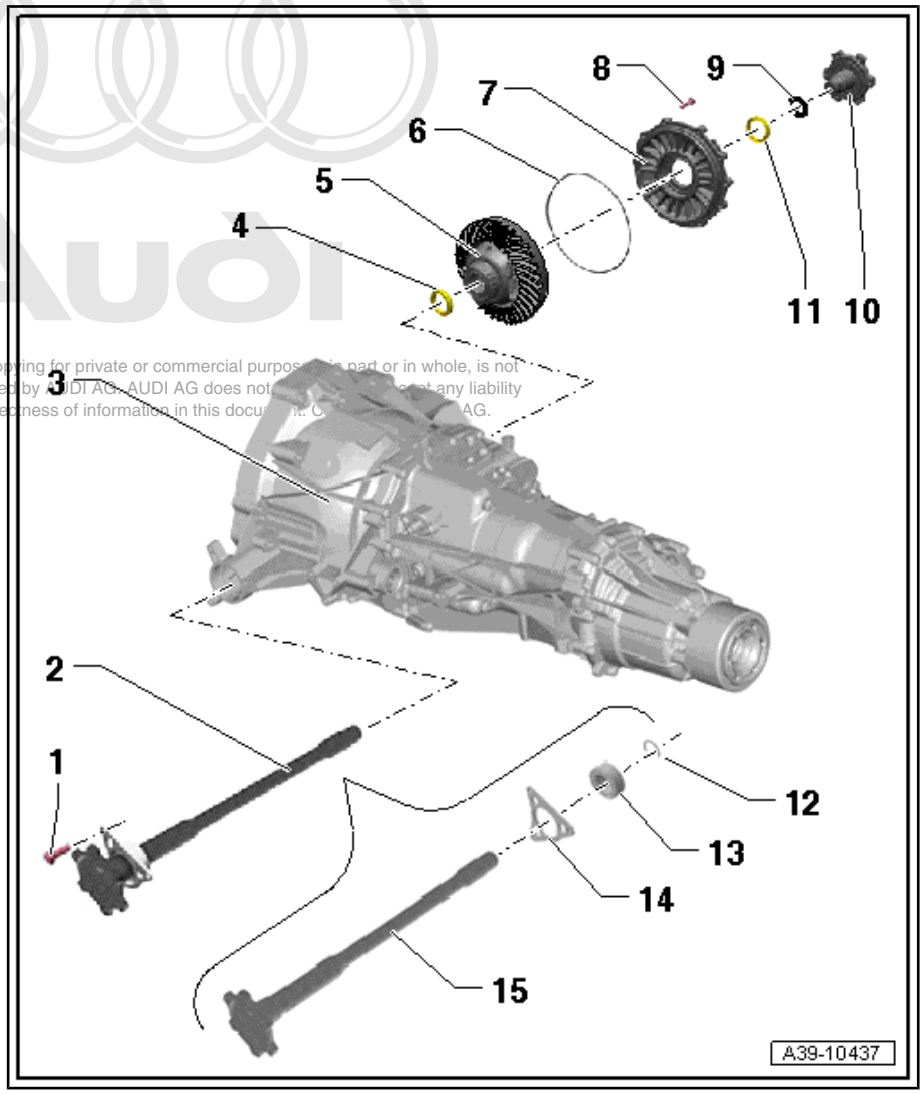
- ❑ For flange shaft (left-side)
- ❑ Renewing ⇒ page 132

5 - Differential with crown wheel

- ❑ Crown wheel cannot be removed from differential
- ❑ Differential bevel gears cannot be renewed

6 - O-ring

- ❑ Always renew
- ❑ Lubricate with gear oil



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7 - Cover for final drive

- ❑ Renewing ⇒ page 126

8 - Bolt

- ❑ 24 Nm
- ❑ Steel bolts (M8; 42 mm long)
- ❑ 10x

9 - Circlip

- ❑ Always renew
- ❑ Removing and installing ⇒ page 138

10 - Flange shaft (right-side)

- ❑ Removing and installing ⇒ page 137
- ❑ Drive in with drift - VW 295-

11 - Oil seal

- ❑ For flange shaft (right-side)
- ❑ Removing and installing ⇒ page 137

12 - Circlip

13 - Ball bearing

- ❑ For flange shaft (left-side)
- ❑ Renewing ⇒ page 142

14 - Mounting bracket

- ❑ For flange shaft (left-side)
- ❑ Renewing ⇒ page 142

15 - Flange shaft (left-side)

1.2 Renewing cover for final drive

- When renewing cover for final drive, determine thickness of new shim to adjust preload of tapered roller bearings for differential.

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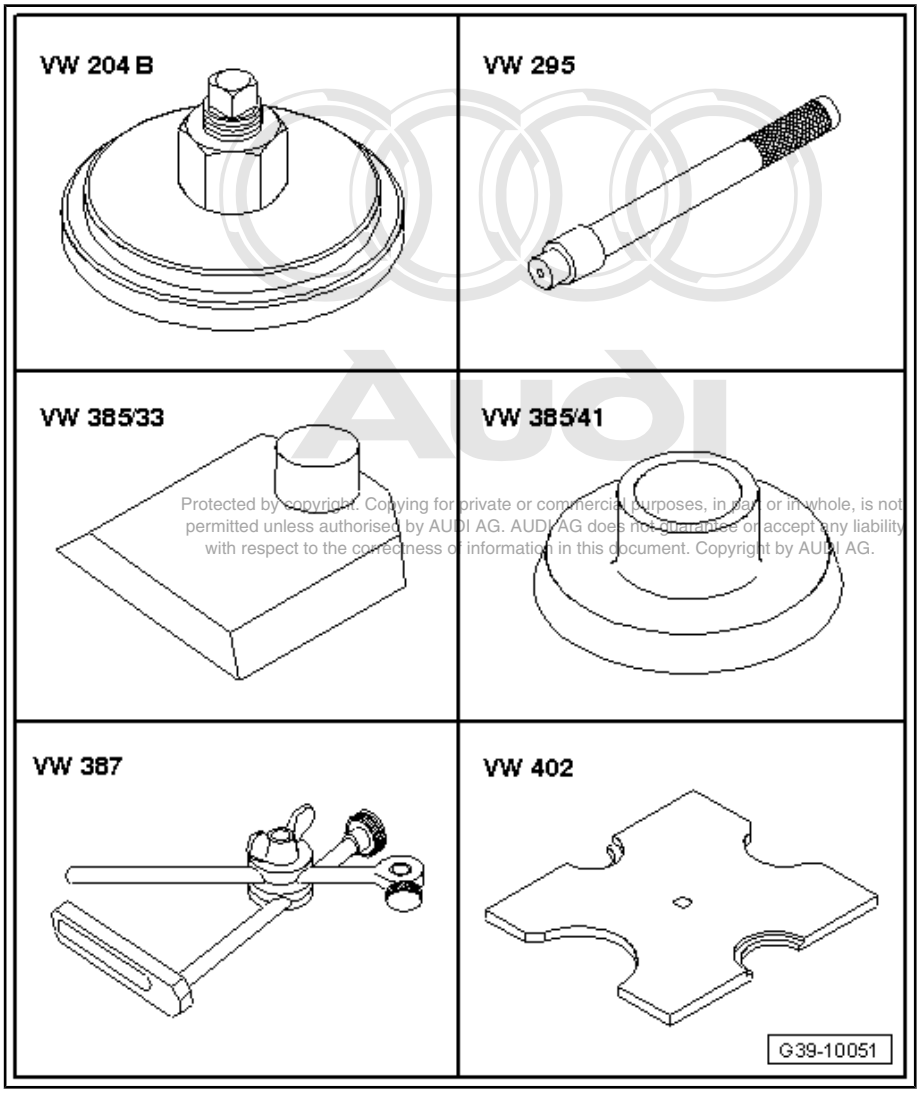
Note

This shim is located behind the tapered roller bearing outer race in the cover for the final drive.

Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 295-
- Measuring plate - VW 385/33-
- Centring disc - VW 385/41-
- Universal dial gauge bracket - VW 387-
- Thrust plate - VW 402-



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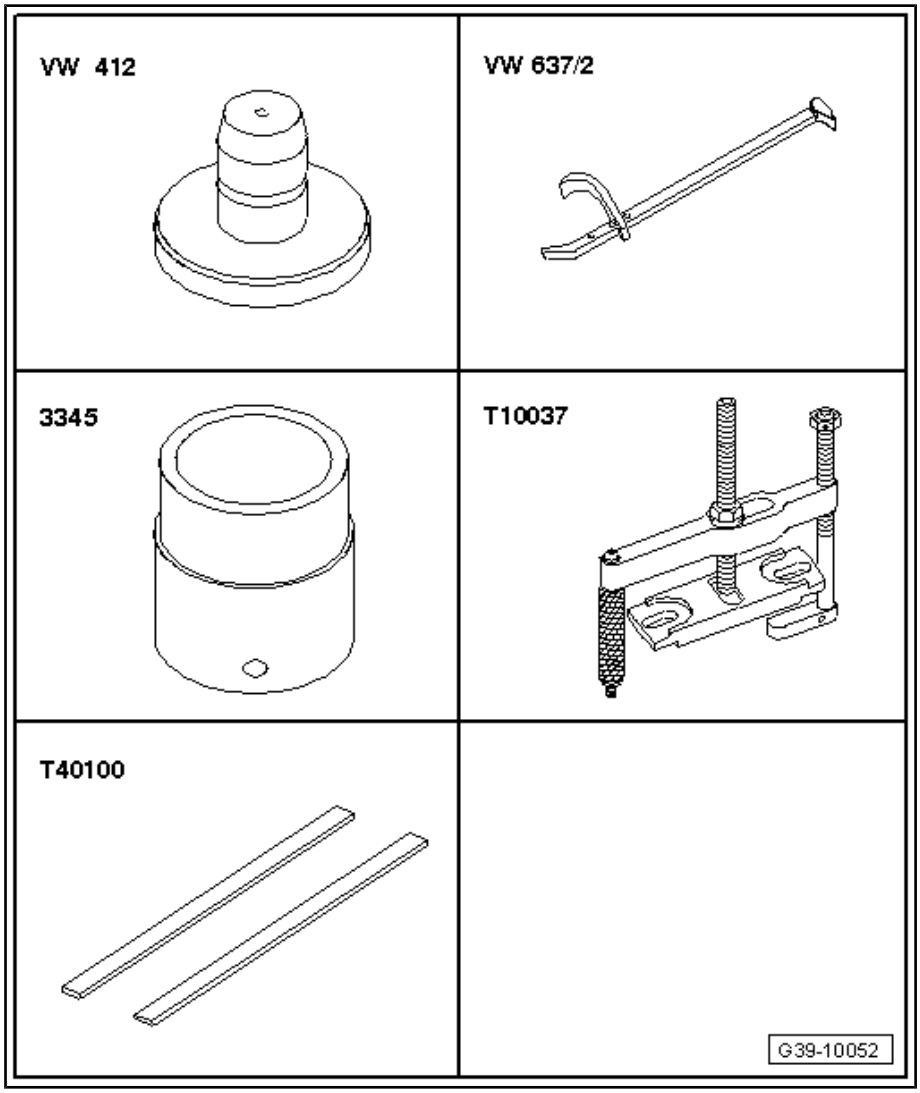
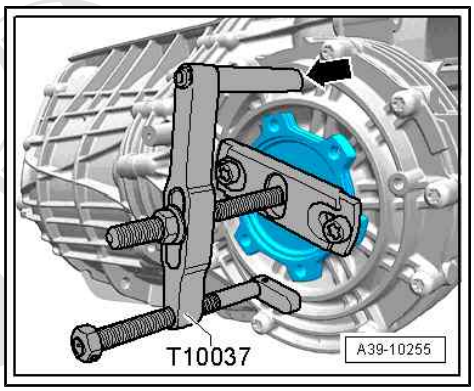
- Press tool - VW 412-
- Hub grease cap puller - VW 637/2-
- Wheel bearing tube - 3345-
- Puller - T10037-
- Ruler - T40100-



– Turn gearbox so that cover for final drive faces upwards (drain off gear oil if necessary).

– Remove flange shaft (right-side); to do so, secure puller - T10037- to cover for final drive -arrow-.



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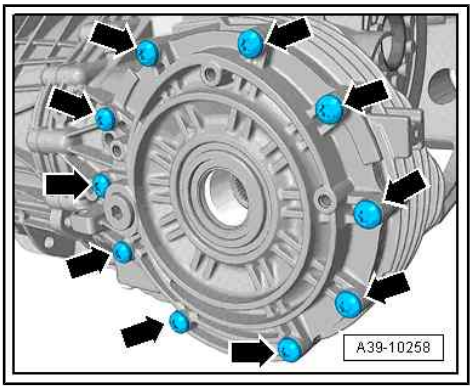
– Remove bolts -arrows-.



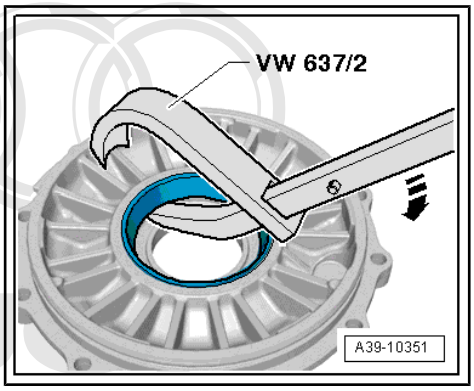
Caution

Risk of damage to the differential.

- *Detach cover for front final drive slowly and carefully from gearbox housing. The differential may otherwise fall out of the gearbox.*
- *The differential must not be re-installed if it is damaged. Renew the gearbox if the differential is damaged.*

– Detach cover for final drive.

– Carefully prise tapered roller bearing outer race out of old cover for final drive; to do so apply hub grease cap puller - VW 637/2- on alternate sides and press in direction of -arrow-.



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Note

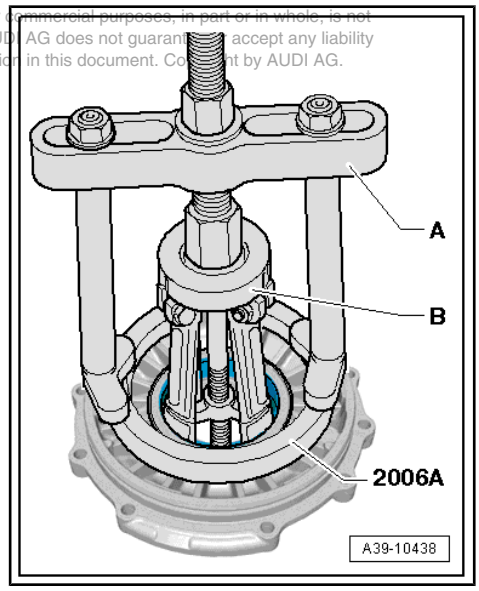
If the tapered roller bearing outer race cannot be removed with the hub grease cap puller - VW 637/2- , use internal puller - Kukko 21/89- -B- and counter support - Kukko 22/4- -A-.

A - Counter-support , e.g. -Kukko 22/4-

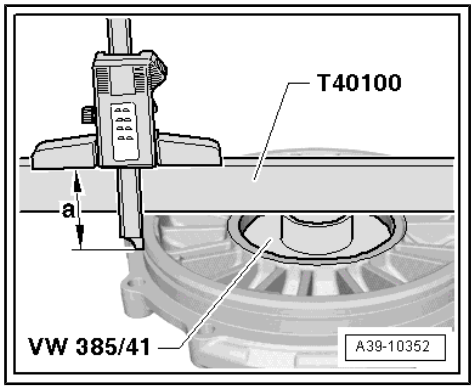
B - Internal puller 56 ... 110 mm , e.g. -Kukko 21/89-

– Remove existing shim.

Determining thickness of shim



– Measure dimension -a- on old cover and new cover as follows:
– Insert centring disc - VW 385/41- in bearing seat for tapered roller bearing outer race.
– Using digital depth gauge (e.g. digital depth gauge - VAS 6087-), measure down to joint flange.



Example:

Dimension -a- on old cover for final drive	58.40 mm
Dimension -a- on new cover for final drive	58.65 mm
Difference	= 0.25 mm

– Install thicker shim if dimension -a- is smaller on new cover.
– Install thinner shim if dimension -a- is greater on new cover.

Example:

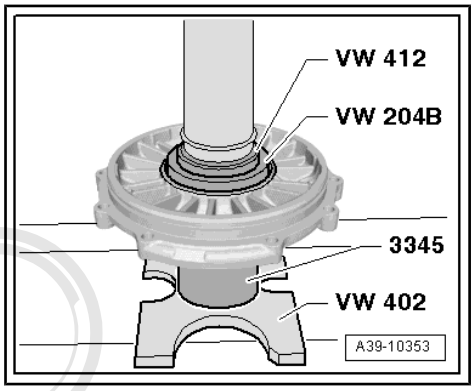
Existing shim	1.50 mm
Difference	– 0.25 mm
New shim	= 1.25 mm

Note

Select correct shim from ⇒ Electronic parts catalogue .

– The shim thickness in this example is 1.25 mm.
– Install new shim of required thickness in new cover for final drive.

– Press in tapered roller bearing outer race as far as stop; smaller ∅ of -VW 204 B- goes towards tapered roller bearing outer race.

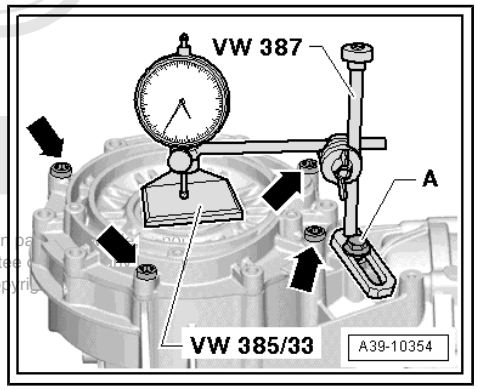


Note

Support cover for final drive with -3345- directly below bearing seat.

Check adjustment of preload of tapered roller bearings for differential as follows:

– Fit cover for final drive without O-ring and tighten 4 bolts -arrows-.
– Attach measuring equipment.
– Secure universal dial gauge bracket - VW 387- to threaded hole in gearbox housing with bolt -A-.
– Apply dial gauge extension to centre of measuring plate - VW 385/33- .
– Set dial gauge (3 mm measuring range) to »0« with 1 mm preload.
– Slacken 4 bolts -arrows- by one turn in diagonal sequence.
– Check reading on dial gauge.



• It should be 0.10 … 0.15 mm.

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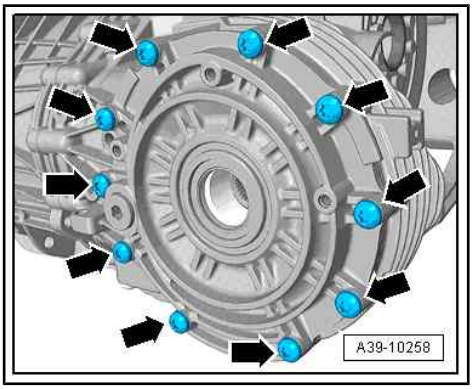
– Then install cover for final drive with new O-ring and tighten bolts -arrows-. Tightening torque ⇒ Item 8 (page 126)



– Lightly oil outer circumference of new oil seal.
– Drive in new flange shaft oil seal (right-side) as far as stop; keep seal straight when installing.
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1-

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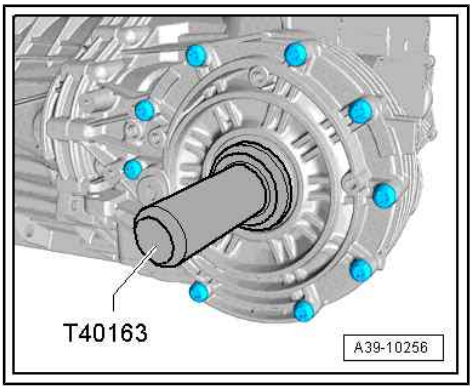
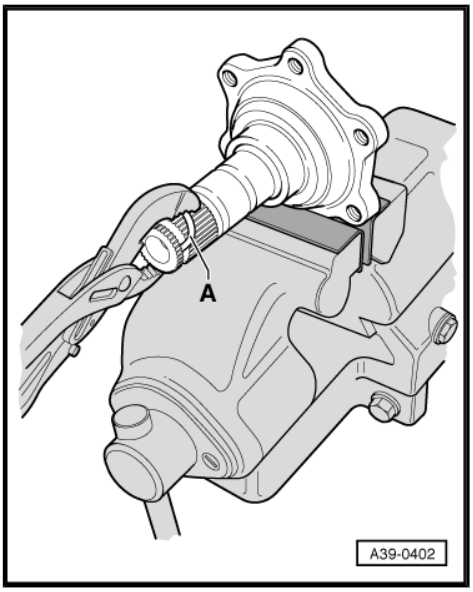


– Always renew circlip -A- for flange shaft (right-side).
– Clamp flange shaft in vice, using jaw protectors. Use new circlip -A- to press old circlip out of groove in flange shaft.
– Drive in flange shaft (right-side) with drift - VW 295- .
– If gear oil has been drained off, fill up gearbox with gear oil and check oil level ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .



2 Oil seals

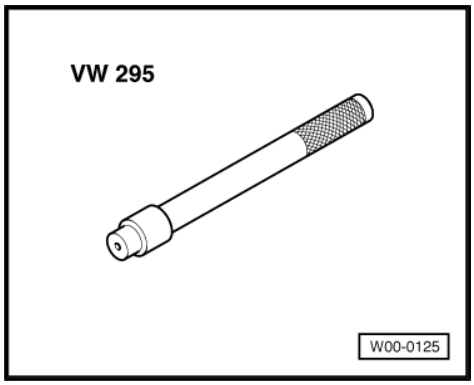
⇒ “2.1 Renewing oil seal (left-side)”, page 132

⇒ “2.2 Renewing oil seal (right-side)”, page 137

2.1 Renewing oil seal (left-side)

Special tools and workshop equipment required

- Drift - VW 295-



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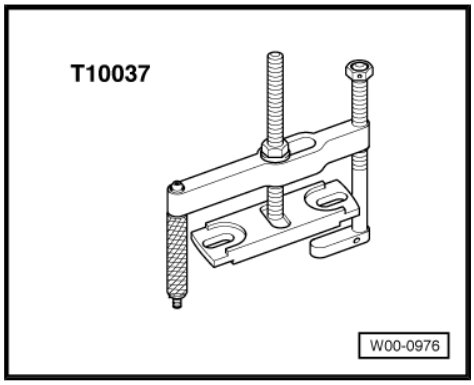
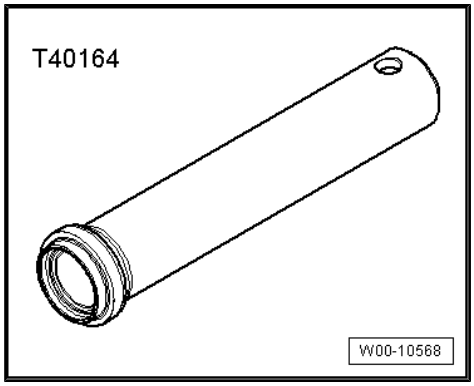
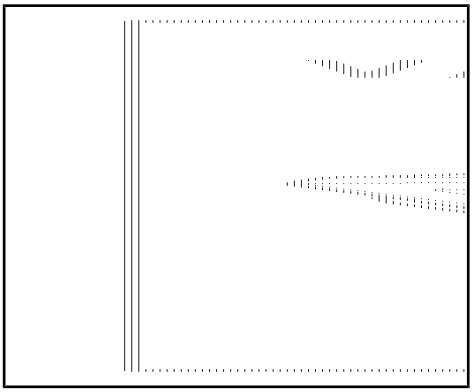
- Puller - T10037-



- Thrust piece - T40164-



♦ Drip tray for workshop hoist - VAS 6208-



♦ Sealing grease - G 052 128 A1-

Removing

- Gearbox removed ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .

Place drip tray - VAS 6208- under the gearbox.

– Open plug -arrow- and drain off gear oil.

– Re-fit and tighten plug -arrow-. Tightening torque ⇒ Item 16 (page 69)

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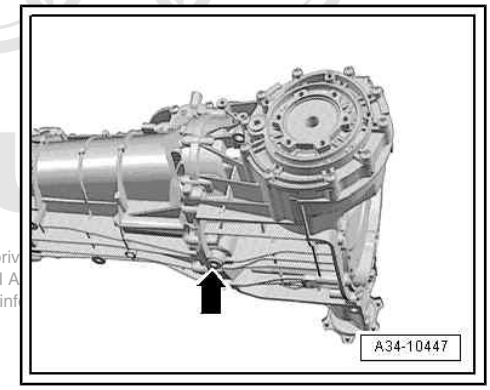
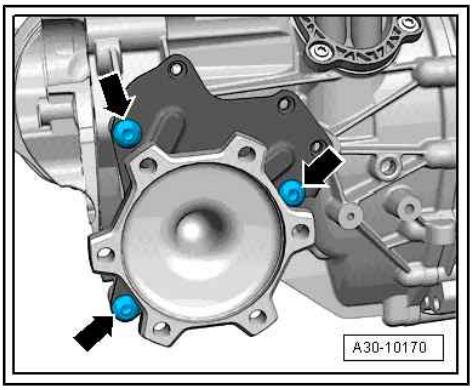
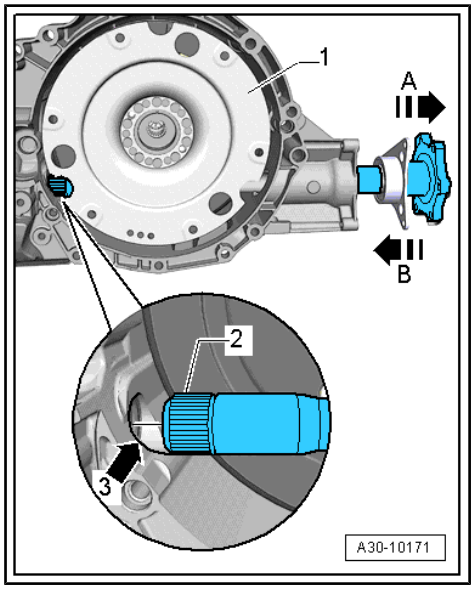


– Unscrew bolts -arrows- on mounting bracket for flange shaft (left-side).

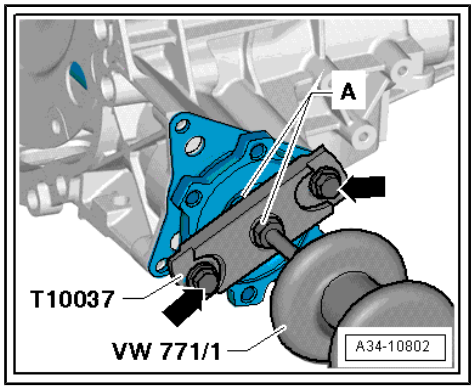


– Remove flange shaft from gearbox in direction of -arrow A-.

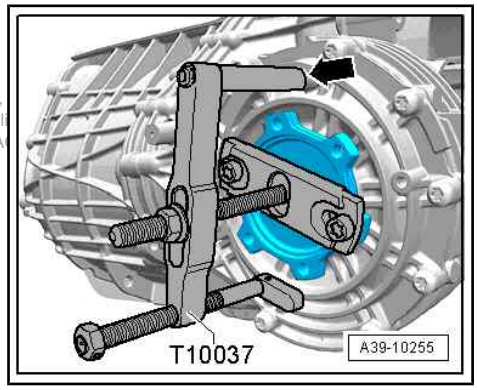


Note

- *If the flange shaft (left-side) cannot be removed by hand, pull it out carefully using multi-purpose tool - VW 771- .*
- *To do this, secure plate of puller - T10037- to flange shaft -arrows- and attach plate to spindle of multi-purpose tool - VW 771- (nuts -A-).*



– Remove flange shaft (right-side); to do so, secure puller - T10037- to cover for final drive -arrow-.



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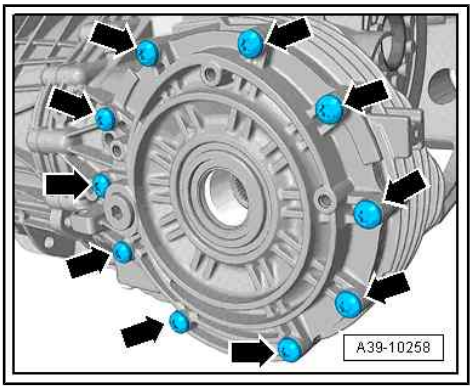
– Remove bolts -arrows-.



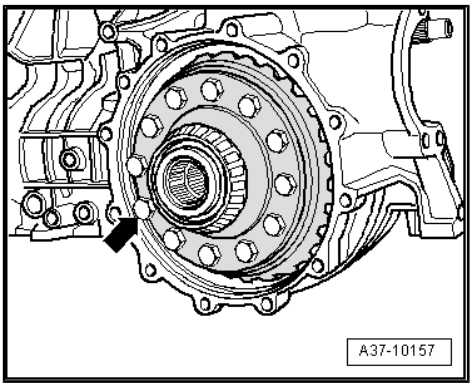
Caution

Risk of damage to the differential.

- *Detach cover for front final drive slowly and carefully from gearbox housing. The differential may otherwise fall out of the gearbox.*
- *The differential must not be re-installed if it is damaged. Renew the gearbox if the differential is damaged.*

– Carefully detach cover for front final drive (some remaining gear oil will drain off).

– Carefully remove differential -arrow- and set it down on a soft surface.



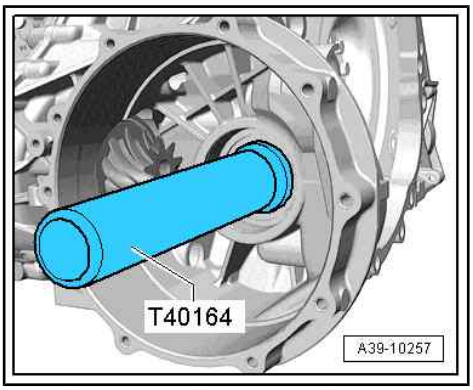
– Lever out oil seal for flange shaft (left-side).

– Thoroughly clean opening leading to gearbox housing.

Installing

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

– Lightly oil outer circumference of new oil seal and slide onto thrust piece - T40164- .

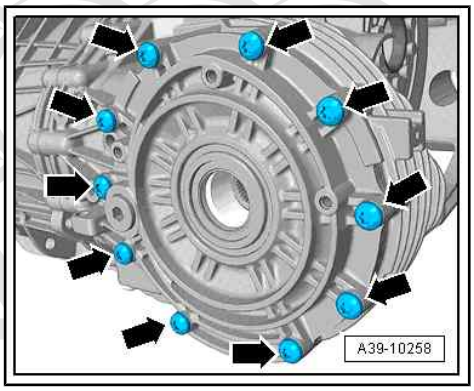


• Open side of oil seal faces towards thrust piece - T40164- .

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

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Fit differential.



– Install cover for final drive with new O-ring and tighten bolts -arrows-. Tightening torque ⇒ Item 8 (page 126)

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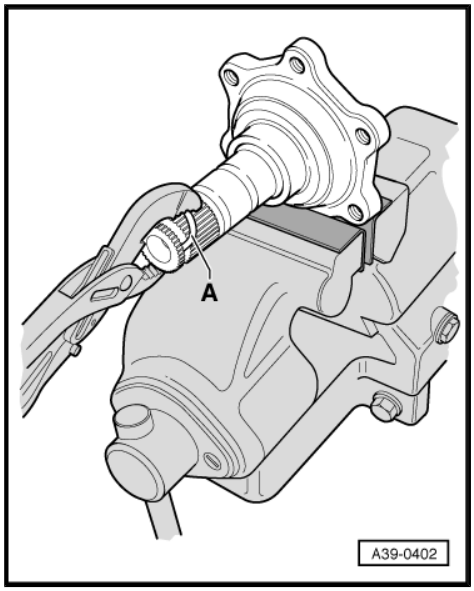
– Always renew circlip -A- for flange shaft (right-side).
– Clamp flange shaft in vice, using jaw protectors. Use new circlip -A- to press old circlip out of groove in flange shaft.
– Drive in flange shaft (right-side) with drift - VW 295- .

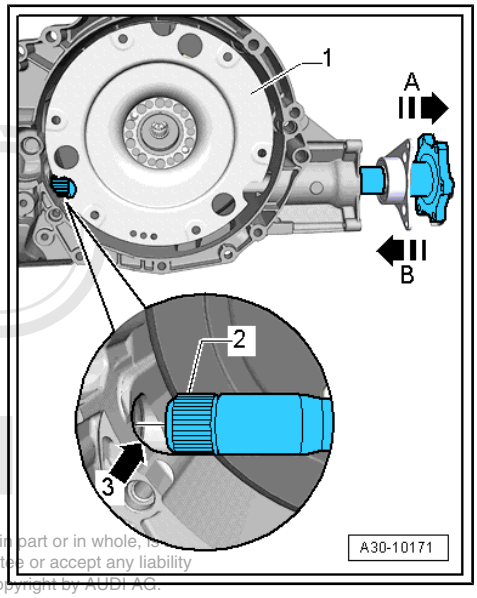


– Turn clutch module -1- so that you can see opening to differential -arrow 3-.
– Thoroughly clean flange shaft (left-side) -2-.
– Slide flange-shaft (left-side) -2- into gearbox in direction of -arrow B- (keep end of shaft centred while guiding it into oil seal on front final drive -arrow 3-).

Caution

Risk of damage to oil seal.

- *If you do not keep the shaft centred, the splines of the shaft -2- will damage the oil seal -arrow 3- between the differential and the gearbox housing.*
- *If oil seal is damaged, it must be renewed ⇒ page 132 .*



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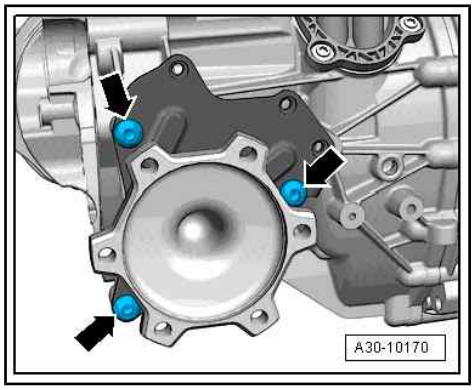
– Clean threads of bolts -arrows- with a wire brush. Then install bolts with locking fluid - AMV 185 101 A1- and secure mounting bracket for flange shaft (left-side) (specified torque ⇒ Item 1 (page 125)).
– Fill up with gear oil and check oil level in manual gearbox ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .



2.2 Renewing oil seal (right-side)

Note

The flange shaft oil seal (right-side) can also be renewed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B4; Rep. gr. 39 ; Oil seals; Renewing oil seal (right-side) .

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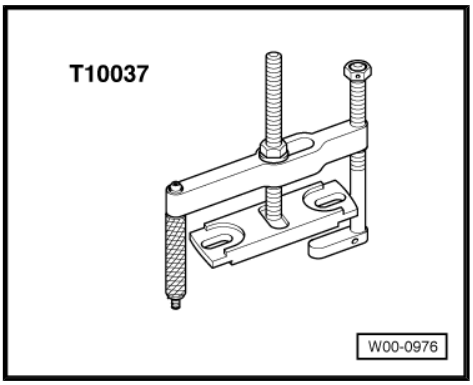
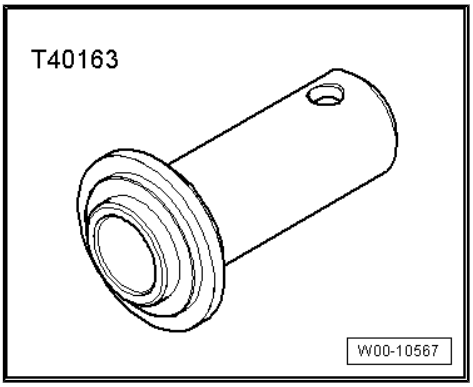
Special tools and workshop equipment required

- Drift - VW 295-

- Puller - T10037-



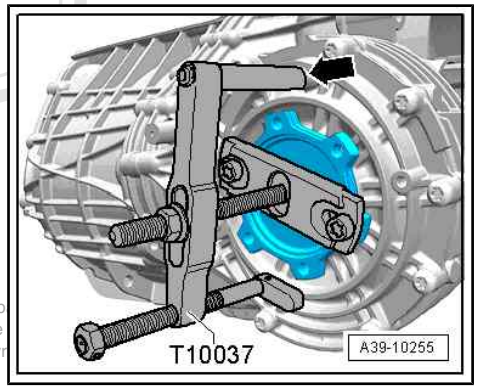
- Thrust piece - T40163-



- Sealing grease - G 052 128 A1-

Removing

– Remove flange shaft (right-side); to do so, secure puller - T10037- to gearbox housing -arrow-.



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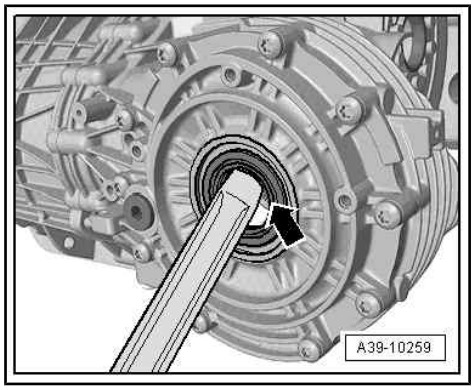
– Lever out flange shaft oil seal using an assembly lever.

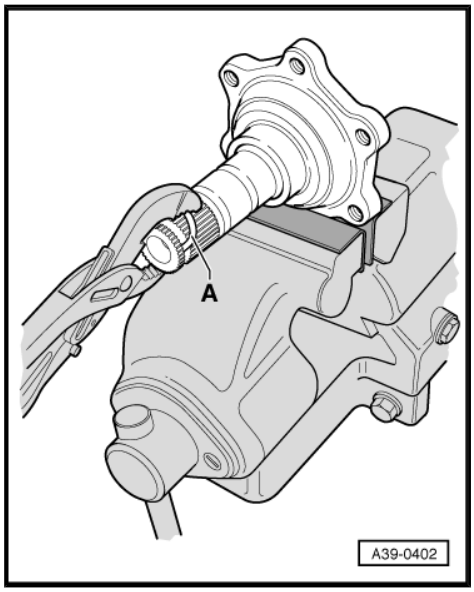


Installing

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

– Always renew circlip for flange shaft -A-.

– Clamp flange shaft in vice, using jaw protectors. Use new circlip -A- to press old circlip out of groove in flange shaft.



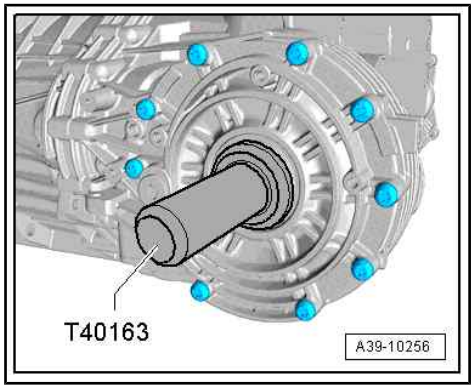
– Lightly oil outer circumference of new oil seal.

– Drive in new flange shaft oil seal (right-side) as far as stop; keep seal straight when installing.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

– Knock flange shaft in with drift - VW 295- .

– Fill up with gear oil and check oil level in manual gearbox ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Gear oil; Checking gear oil level .



2.3 Renewing input shaft oil seal

⇒ "2.3.1 Renewing input shaft oil seal - Audi A5 Coupé 2008 ► up to gearbox serial number 000760", page 139

⇒ "2.3.2 Renewing input shaft oil seal - Audi A4 2008 ►; Audi A5 Coupé 2008 ► from gearbox serial number 000761 onwards", page 140

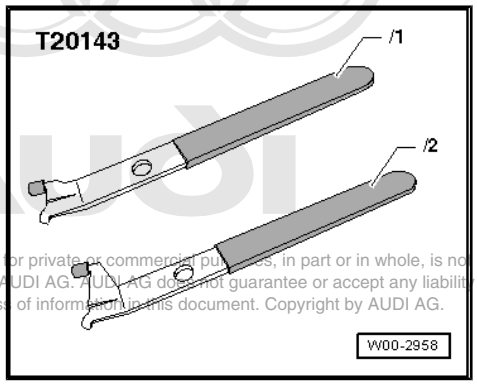
2.3.1 Renewing input shaft oil seal - Audi A5 Coupé 2008 ► up to gearbox serial number 000760

Note

Gearboxes with these serial numbers were installed only in the Audi A5 Coupé 2008 ►.

Special tools and workshop equipment required

- Extractor tool - T20143/1-



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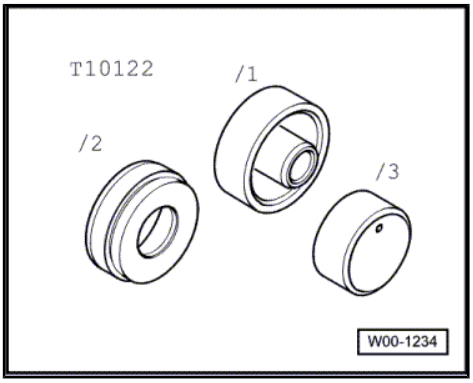
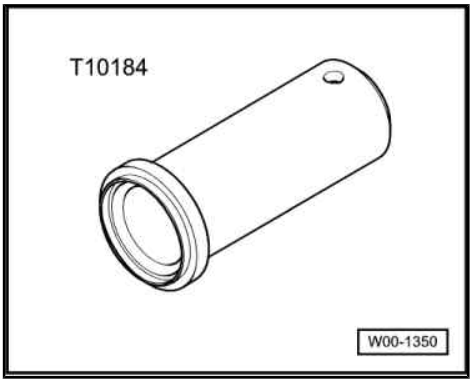
- Fitting tool - T10122-



- Thrust piece - T10184-

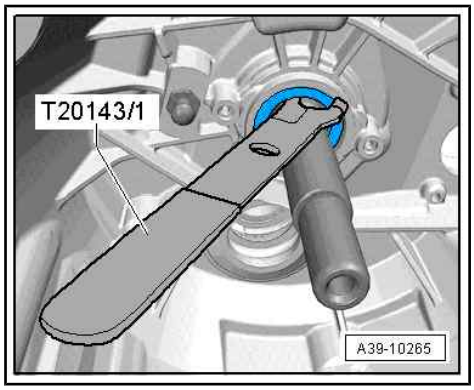


- Sealing grease - G 052 128 A1-

- Gearbox removed ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .

– Remove clutch module ⇒ page 20 .

– Prise out input shaft oil seal.



– Lightly oil outer circumference of new oil seal.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1-.

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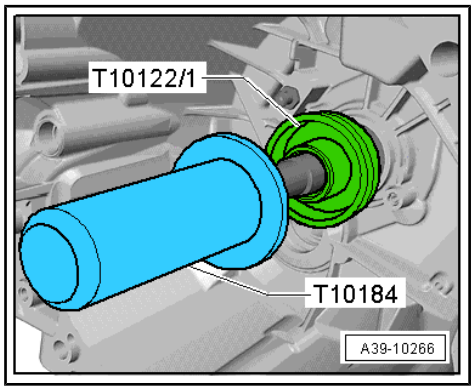
– Drive in new oil seal until flush (take care to keep seal straight).

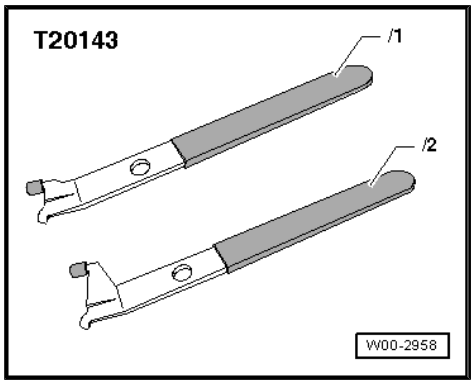
– Install clutch module ⇒ page 23 .



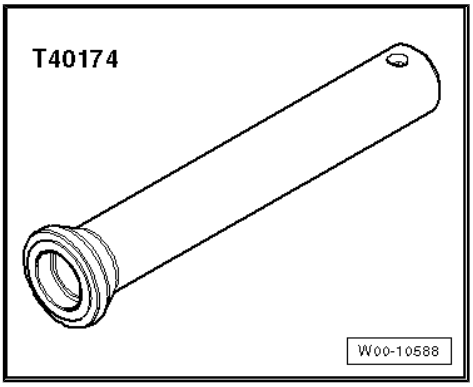
2.3.2 Renewing input shaft oil seal - Audi A4 2008 ►; Audi A5 Coupé 2008 ► from gearbox serial number 000761 onwards

Special tools and workshop equipment required

♦ Extractor tool - T20143/1-



♦ Thrust piece - T40174-

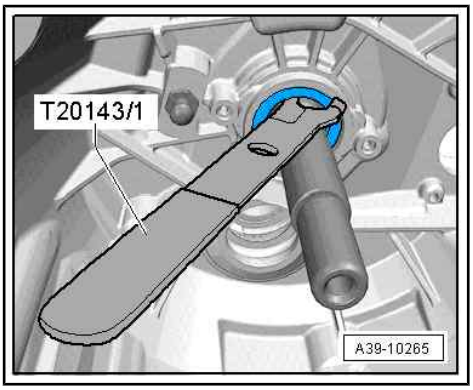


♦ Sealing grease - G 052 128 A1-

• Gearbox removed ⇒ 6-speed manual gearbox 0B4; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .

– Remove clutch module ⇒ page 20 .

– Prise out input shaft oil seal.

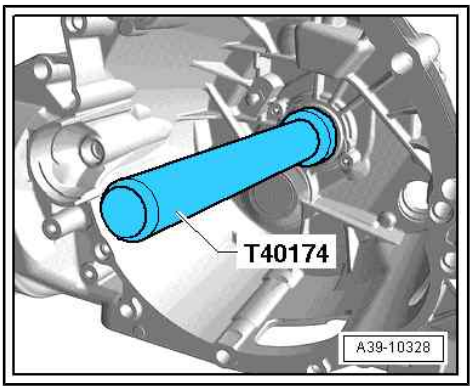


– Lightly oil outer circumference of new oil seal.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .

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

– Install clutch module ⇒ page 23 .



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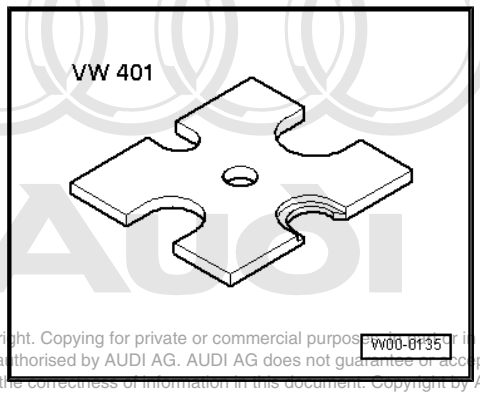
3 Differential

⇒ “3.1 Renewing mounting bracket and ball bearing for flange shaft (left-side)”, page 142

3.1 Renewing mounting bracket and ball bearing for flange shaft (left-side)

Special tools and workshop equipment required

- Thrust plate - VW 401-



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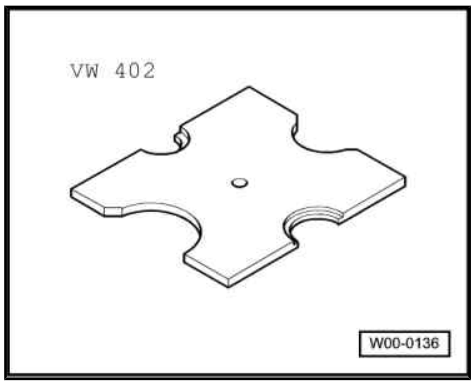
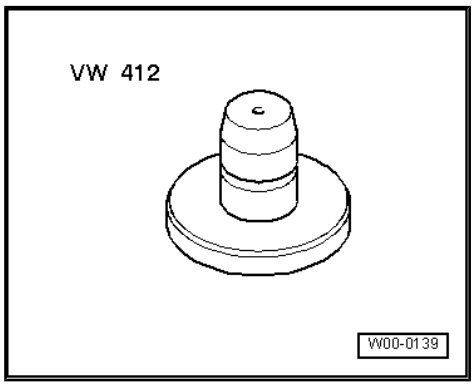
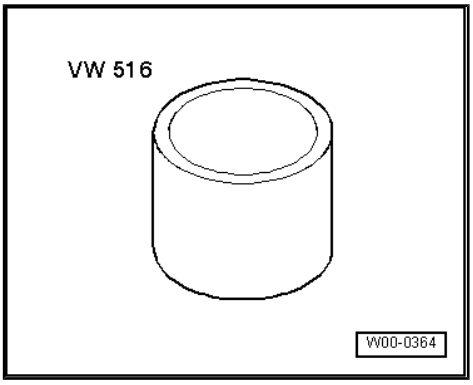
- Thrust plate - VW 402-



- Press tool - VW 412-

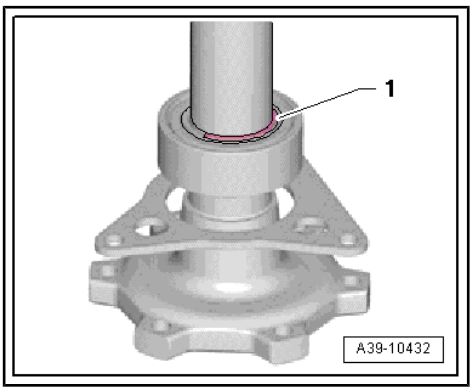


♦ Tube - VW 516-

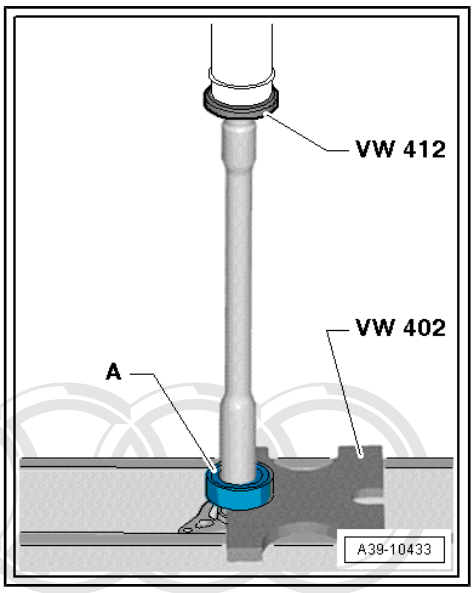


– Remove flange shaft (left-side) ⇒ page 132 .

– Remove circlip -1- from flange shaft.

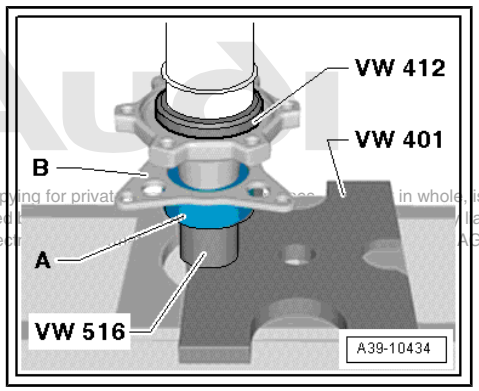


– Press ball bearing -A- off flange shaft.



– Press ball bearing -A- onto flange shaft as far as stop.

- Place mounting bracket -B- on ball bearing before pressing on bearing.
- Installation position of mounting bracket: lettering on mounting bracket faces towards flange.



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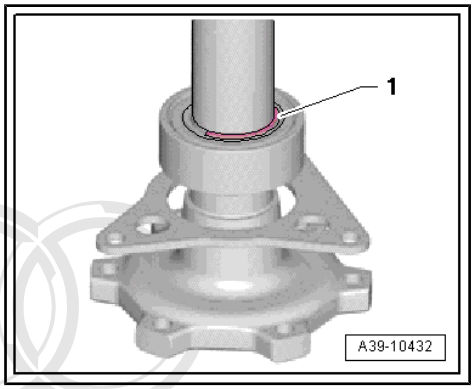
– Fit circlip -1- in annular groove on flange shaft.



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4 Centre differential

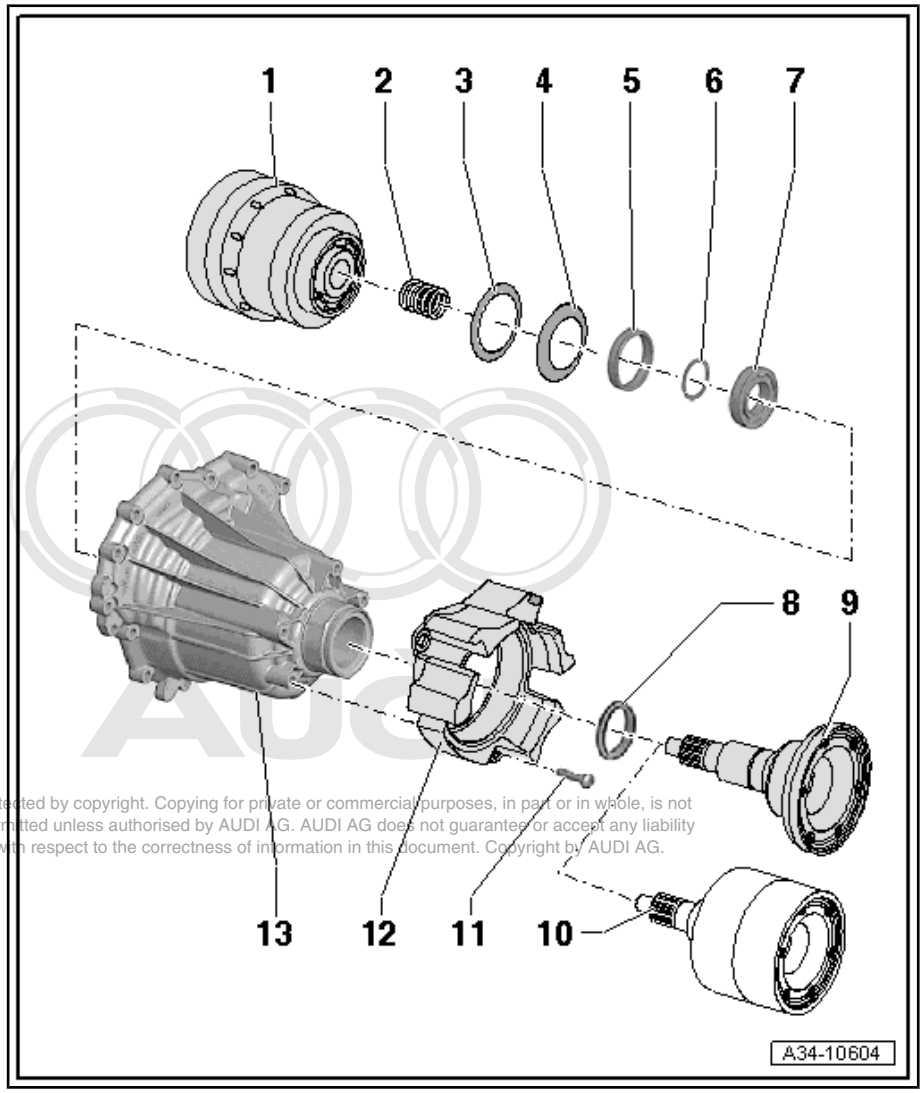
⇒ "4.1 Exploded view - centre differential housing", page 145

⇒ "4.2 Servicing centre differential housing", page 146

4.1 Exploded view - centre differential housing

Note

The centre differential housing can also be removed and installed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B4; Rep. gr. 39 ; Centre differential .



1 - Centre differential

- ❑ Can only be serviced by manufacturer

2 - Spring

3 - Shim

- ❑ Adjusts preload of ball bearings for centre differential
- ❑ Determining thickness ⇒ page 98

4 - Dished spring

- ❑ Installation position: Inner diameter (convex side) faces rear flange shaft

5 - Spacer sleeve

- ❑ Pressing out ⇒ page 147
- ❑ Pressing in ⇒ page 148

6 - Circlip

- ❑ For flange shaft
- ❑ Removing and installing ⇒ page 147

7 - Ball bearing

- ❑ For flange shaft
- ❑ Pressing out ⇒ page 147
- ❑ Pressing in ⇒ page 148

8 - Oil seal

- ❑ Levering out ⇒ page 147
- ❑ Pressing in ⇒ page 148

9 - Flange shaft (rear)

- ❑ Without vibration damper
- ❑ Select correct components from ⇒ Electronic parts catalogue
- ❑ Pressing out ⇒ page 147
- ❑ Pressing in ⇒ page 148

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10 - Flange shaft (rear)

- ❑ With vibration damper
- ❑ Select correct components from ⇒ Electronic parts catalogue
- ❑ Pressing out ⇒ page 147
- ❑ Pressing in ⇒ page 148

11 - Bolt

- ❑ 24 Nm
- ❑ For vibration damper
- ❑ 3x
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

12 - Vibration damper

- ❑ Not fitted on all versions
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue

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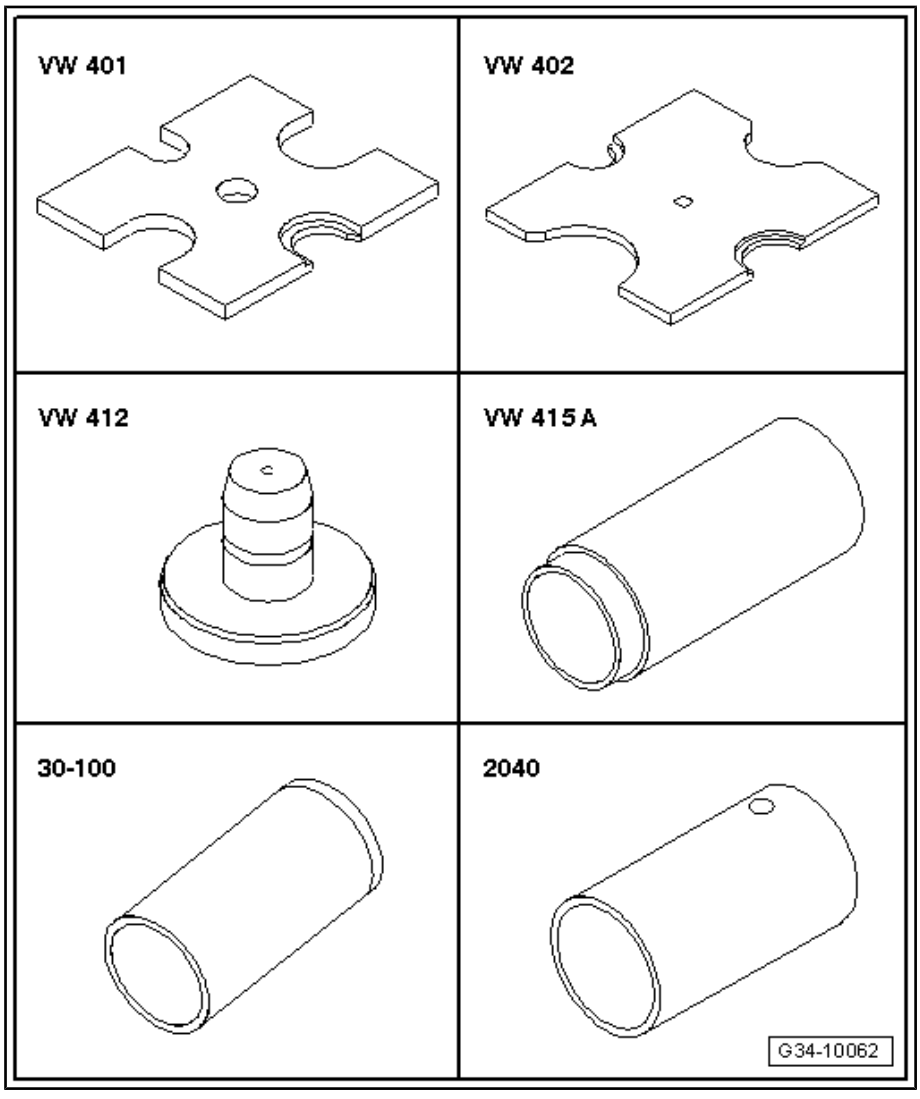
13 - Centre differential housing

- ❑ Removing and installing with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B4; Rep. gr. 39 ; Centre differential

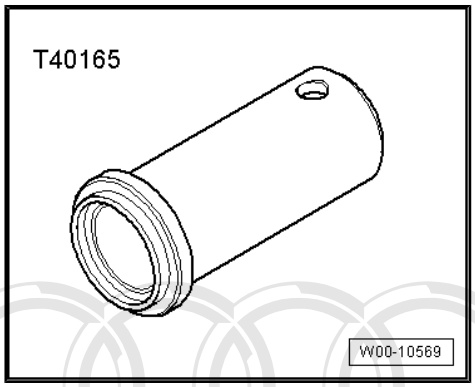
4.2 Servicing centre differential housing

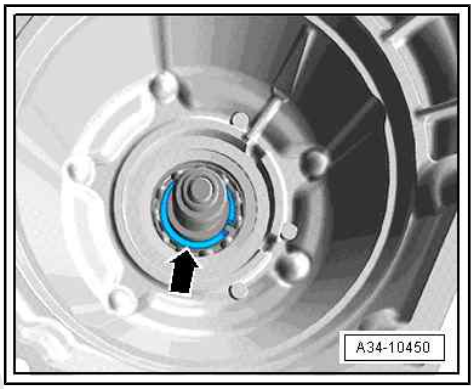
Special tools and workshop equipment required

- ♦ Thrust plate - VW 401-
- ♦ Thrust plate - VW 402-
- ♦ Press tool - VW 412-
- ♦ Tube - VW 415 A-
- ♦ Drift sleeve - 30 - 100-
- ♦ Tube - 2040-



- Thrust piece - T40165-





- Locking fluid - AMV 185 101 A1-
- Sealing grease - G 052 128 A1-

Removing circlip -arrow-

Pressing out flange shaft

– Before pressing out flange shaft remove circlip from flange shaft ⇒ page 147
– Position centre differential housing in such a way that the flange shaft does not make contact with thrust plates - VW 401- and -VW 402- when it is pressed out.

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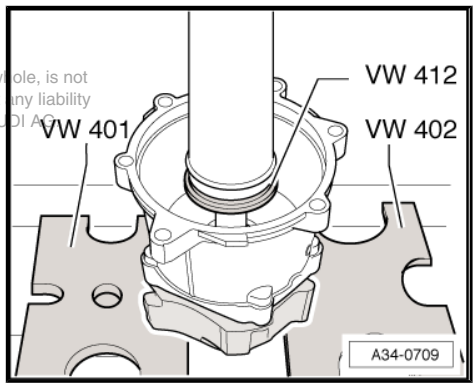
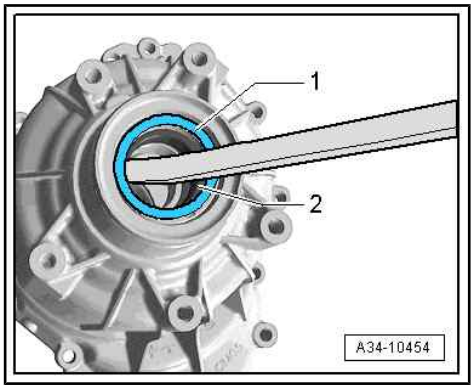


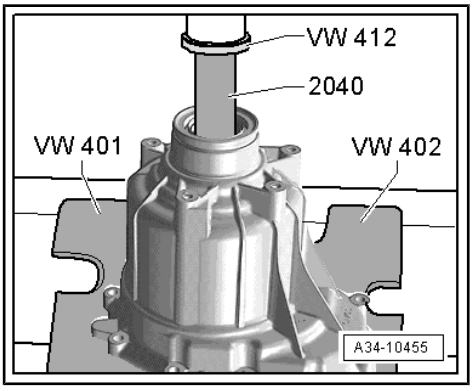
Levering out oil seal -1-

Note

-Item 2- can be disregarded.

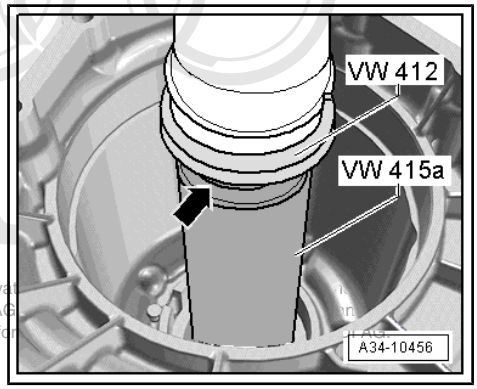


Pressing out ball bearing for flange shaft and spacer sleeve



Pressing in ball bearing for flange shaft and spacer sleeve

- Collar of tube - VW 415 A- -arrow- faces press tool - VW 412- .



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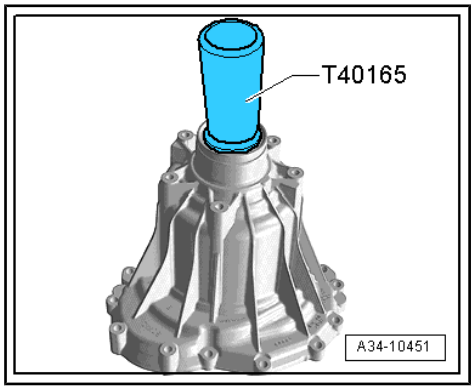
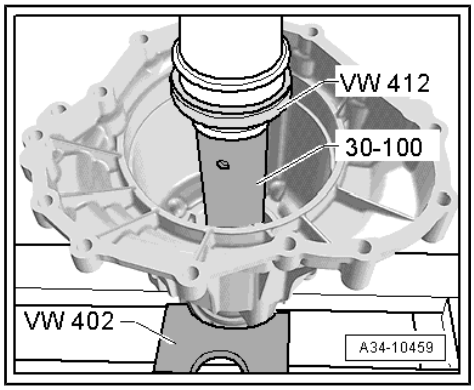
Installing oil seal for flange shaft (rear)

– Lightly lubricate outer circumference of oil seal and drive in onto stop.

– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .



Pressing in flange shaft

– Before pressing in the flange shaft, secure the vibration damper (if fitted). Tightening torque ⇒ Item 11 (page 146)

- Ball bearing for flange shaft must be installed.
- When pressing in flange shaft, drift sleeve - 30 - 100- must press against inner race of ball bearing.