Workshop Manual

Audi A4 2008 ➤,
Audi A5 Cabriolet 2009 ➤,
Audi A5 Coupé 2008 ➤, Audi A6 2011 ➤,
Audi A6 China 2012 ➤, Audi Q5 2008 ➤

Servicing 6-speed manual gearbox 0B1, front-wheel drive

Edition 02.2014

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

List of Workshop Manual Repair Groups

Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

39 - Final drive - differential

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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.

All rights reserved.
No reproduction without prior agreement from publisher.

Copyright © 2015 Audi AG, Ingolstadt

Contents

00 - Technical data . . . 1
1 Identification . . . 1
1.1 Gearbox identification . . . 1
2 Repair instructions . . . 2
2.1 General repair instructions . . . 2

30 - Clutch . . . 8
1 Clutch mechanism . . . 8
1.1 Exploded view - clutch release mechanism . . . 8
1.2 Servicing clutch release mechanism . . . 11
2 Clutch . . . 12
2.1 General notes on clutch . . . 12
2.2 Exploded view - clutch unit . . . 16
2.3 Removing and installing clutch module . . . 25
2.4 Removing and installing clutch . . . 29
2.5 Resetting adjuster ring in pressure plate, LuK version . . . 36
2.6 Renewing needle bearing/ball bearing for dual-mass flywheel . . . 38

34 - Controls, housing . . . 42
1 Transporting gearbox . . . 42
2 Dismantling and assembling gearbox . . . 43
2.1 Schematic overview - gearbox . . . 43
2.2 Exploded view - gearbox . . . 44
2.3 Exploded view - gear cluster, reverse gear wheel, selector mechanism . . . 48
2.4 Exploded view - selector forks . . . 50
2.5 Dismantling and assembling gearbox . . . 52
2.6 Removing and installing selector shaft . . . 68
3 Gearbox housing, clutch housing . . . 71
3.1 Exploded view - end cover . . . 71
3.2 Exploded view - gearbox cover . . . 72
3.3 Exploded view - gearbox housing . . . 74
3.4 Servicing end cover . . . 76
3.5 Servicing gearbox cover . . . 77
3.6 Servicing gearbox housing . . . 87
4 Securing to engine and gearbox support . . . 91

35 - Gears, shafts . . . 93
1 Dismantling and assembling gears and shafts . . . 93
1.1 Exploded view - gear cluster . . . 93
1.2 Dismantling and assembling gear cluster . . . 95
2 Input shaft . . . 103
2.1 Exploded view - input shaft . . . 103
2.2 Dismantling and assembling input shaft . . . 107
2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars . . . 116
2.4 Checking 3rd - 6th gear synchro-rings for wear . . . 117
3 Output shaft . . . 118
3.1 Exploded view - output shaft . . . 118
3.2 Dismantling and assembling output shaft . . . 122

39 - Final drive - differential . . . 127
1 Final drive . . . 127
1.1 Exploded view - final drive . . . 127

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Oil seals . . . 129
2.1 Overview of fitting locations - oil seals . . . 129
2.2 Renewing oil seal (right-side) . . . 130
2.3 Renewing oil seal (left-side) . . . 131
2.4 Renewing input shaft oil seal . . . 135
3 Differential . . . 138
3.1 Exploded view - differential . . . 138
3.2 Removing and installing flange shaft (right-side) . . . 140
3.3 Removing and installing flange shaft (left-side) . . . 142
3.4 Checking and adjusting preload of ball bearing for flange shaft (left-side) . . . 146
3.5 Renewing mounting bracket and ball bearing for flange shaft (left-side) . . . 151
3.6 Removing and installing differential . . . 153
3.7 Renewing cover for final drive . . . 155
3.8 Dismantling and assembling differential . . . 167
3.9 Adjusting differential . . . 175

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

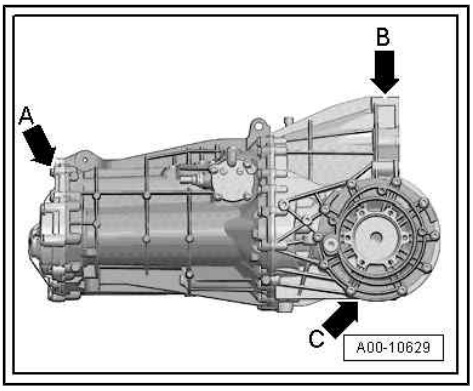
00 – Technical data

1 Identification

(ARL003660; Edition 02.2014)

⇒ "1.1 Gearbox identification", page 1

1.1 Gearbox identification

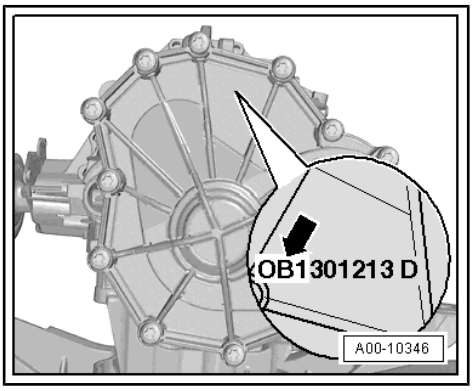


- -Arrow A- Manual gearbox 0B1 ⇒ page 1
- -Arrow B- Code letters and production date ⇒ page 1
- -Arrow C- Code letters and production date on underside of gearbox housing (not on all versions)

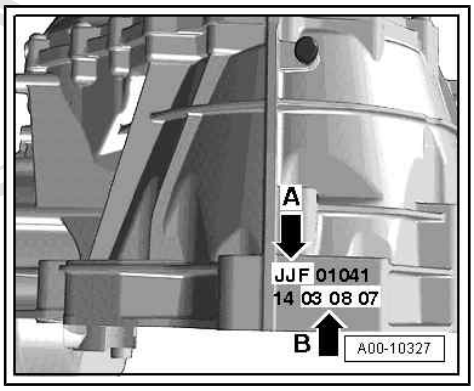
For detailed information on code letters, gearbox allocation, transmission ratios and capacities please refer to the Workshop Manual ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Technical data .

-

Manual gearbox 0B1 -arrow-



Code letters -arrow A- and production date of gearbox -arrow B-



Example:	JJF	03 08 07
	Code letters	Production date: 03.08.2007

Note

- *Additional data are manufacture-related.*
- *The code letters for the gearbox are also given on the vehicle data stickers.*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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 .

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 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .
- Determine capacities and specifications according to the gearbox code letters ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Technical data; Capacities .

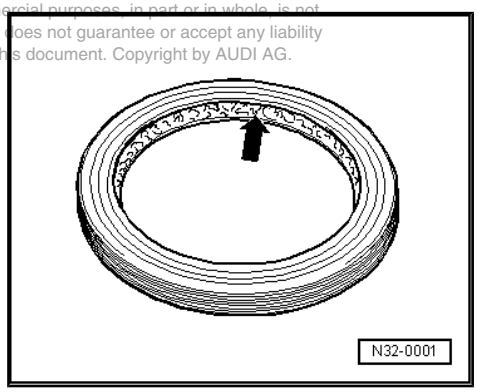
Sealants

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

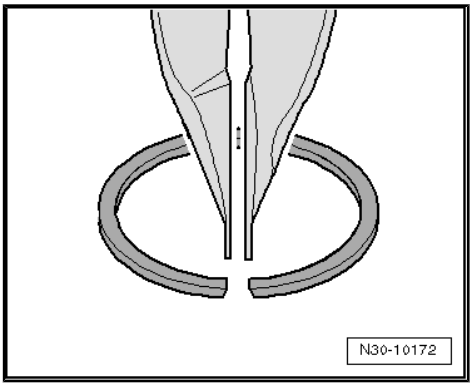
O-rings, oil seals and gaskets

- 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 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .

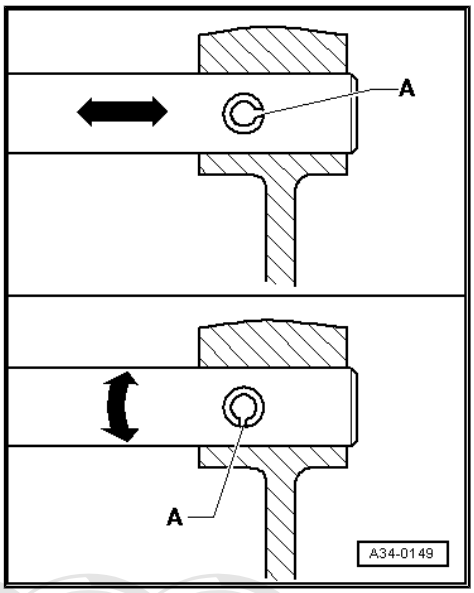
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Locking elements

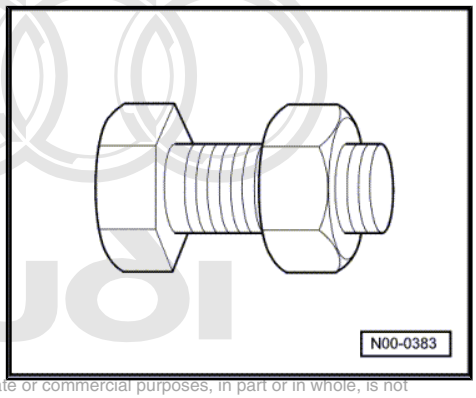


- Do not over-stretch circlips.
- Always renew circlips which have been damaged or over-stretched.
- Installation position for some circlips: the circlip is fitted so that the narrow part of the gap is at the top. This also gives the pliers a better grip when removing and installing.
- Circlips must 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-.



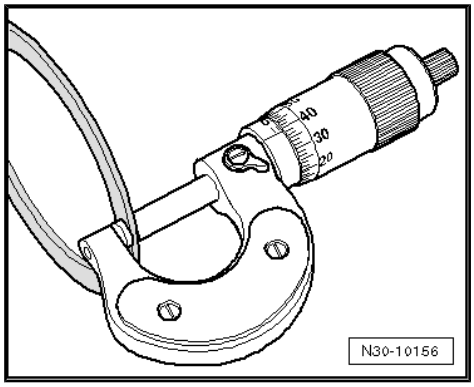
Bolts and nuts

- 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.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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 and angular contact ball 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.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

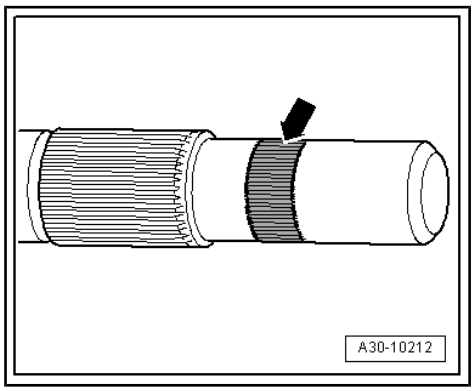
Gear wheels, synchro-hubs, inner races for selector gears

- Before installing, heat inner races for selector gears to approx. 100° C using inductive heater - VAS 6414- .
- Use inductive heater - VAS 6414- to heat gear wheels and synchro-hubs to approx. 100°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.

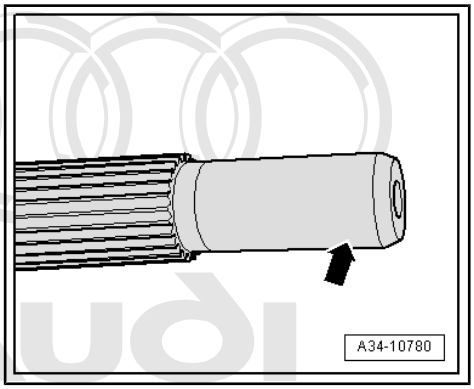
Input shaft



- 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.

- Renewing input shaft
  ⇒ “2.5 Dismantling and assembling gearbox”, page 52
- Renewing needle bearing in dual-mass flywheel
  ⇒ “2.6 Renewing needle bearing/ball bearing for dual-mass flywheel”, page 38

- 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.

Checking molybdenum-coated synchro-rings -I- and carbon-coated synchro-rings -II-

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

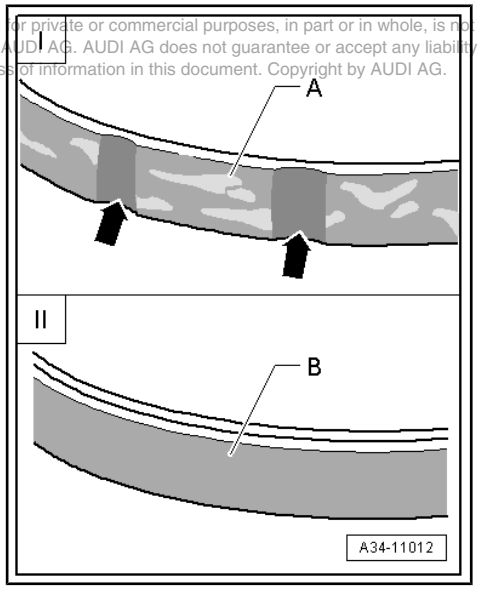
- Clean synchro-ring; the friction surface must be free of oil.

I - Molybdenum-coated synchro-ring

- The friction surface of an intact molybdenum coated synchro-ring has a graphite-grey, slightly porous appearance.
- The synchro-ring must be renewed if very shiny areas -A- have formed on the friction surface or if the brass-coloured metal underneath is already visible.

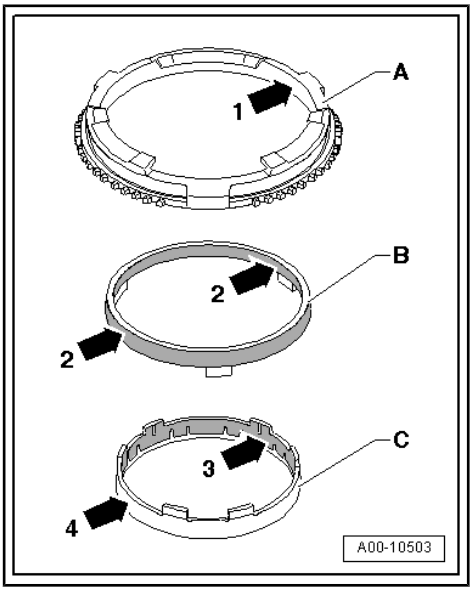
II - Carbon-coated synchro-ring

- Check the friction surfaces -B- of carbon-coated synchro-rings for damage (flattened sections or particles of carbon coating broken away). Renew if necessary.



Checking synchro-rings for 1st and 2nd gear

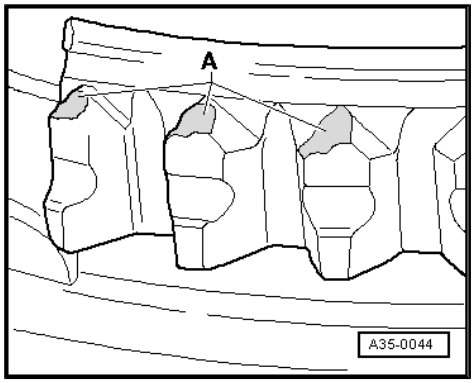
- Check the coated contact surfaces -arrows 2- on intermediate ring -B- for damage (flattened sections or particles of carbon coating broken away).
- Check inner contact surface -arrow 1- on synchro-ring -A- and outer contact surface -arrow 4- on inner ring -C- for grooves or scoring.
- Check for damage 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

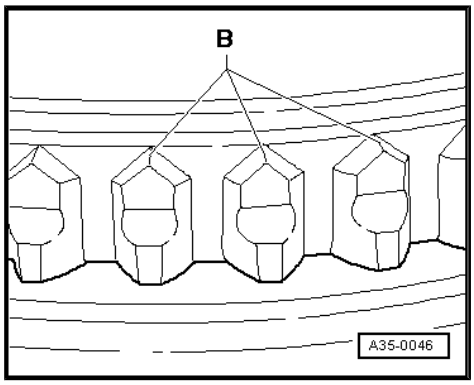
- Abnormal wear on synchro-ring or selector gear:

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



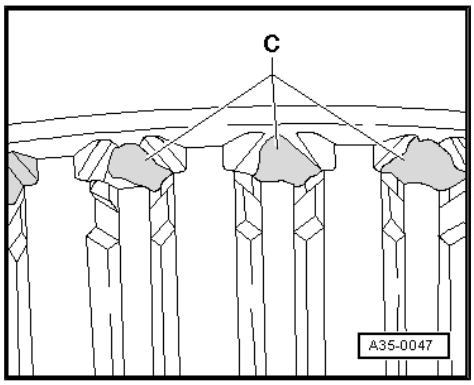
- In comparison: intact synchro-ring or selector gear:

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



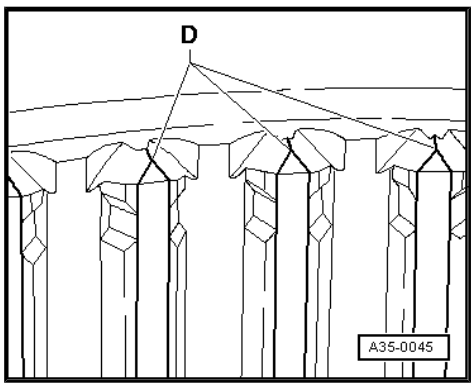
- Abnormal wear on locking collar:

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.

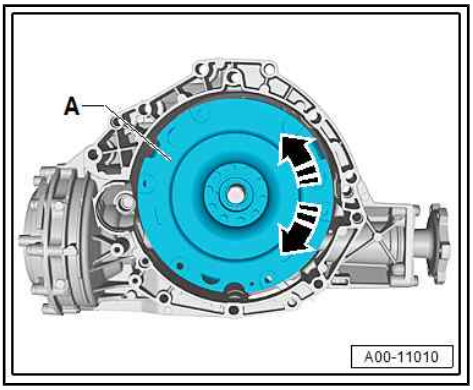
Clutch mechanism; clutch

- 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.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Rattling sound in LuK version dual-mass flywheel with centrifugal pendulum absorber

- Depending on version, clutch modules -A- with or without centrifugal pendulum absorbers may be fitted.
- When clutch module with centrifugal pendulum absorbers is turned by hand, a rattling sound can be heard at intervals of approx. 90°.
- This is caused by a centrifugal pendulum absorber in the dual-mass flywheel and is not a fault.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

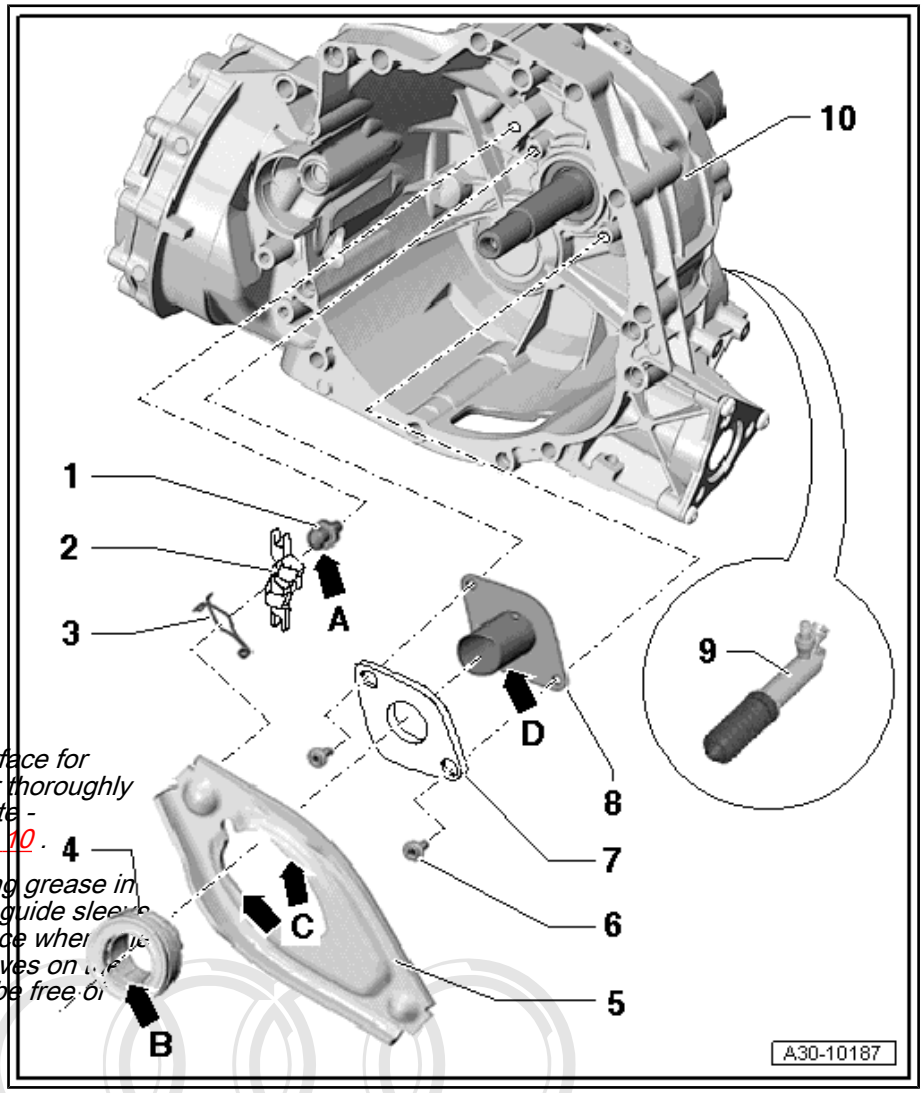
30 – Clutch

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 - 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

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-: the surface where the release bearing moves on the guide sleeve must be free of grease*

- ❑ Retainer lugs on release bearing must engage in release lever
- ❑ Removing and installing ⇒ page 11

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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)

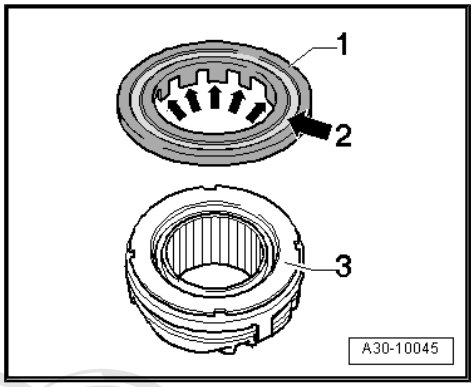
9 - Clutch slave cylinder

- ❑ Removing and installing ⇒ 6-speed manual gearbox 0B1; 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 0B1; Rep. gr. 30 ; Clutch mechanism; Bleeding clutch mechanism
- ❑ When installing, push in until the securing bolt can be fitted.

10 - Gearbox

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.



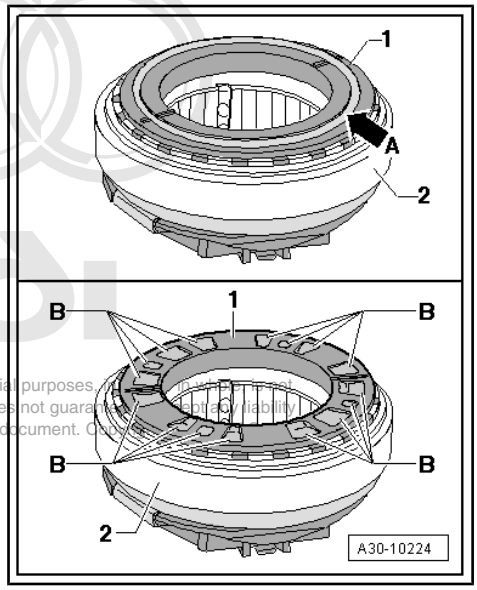
Checking clutch release bearing with tumbler ring -1- - from 02.2008 onwards

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 tumbler ring is a relatively loose fit when the release bearing is not in contact with the clutch.
- The release bearing must be renewed if the groove -arrow A- or the indentations -B- are deeper than 0.8 mm.



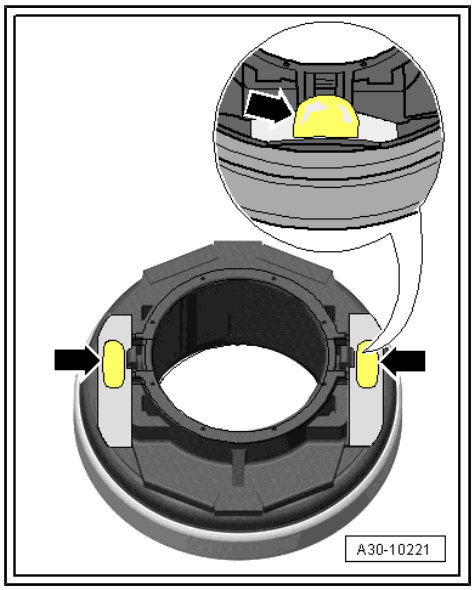
Copyright AUDI AG. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document.

Greasing release bearing

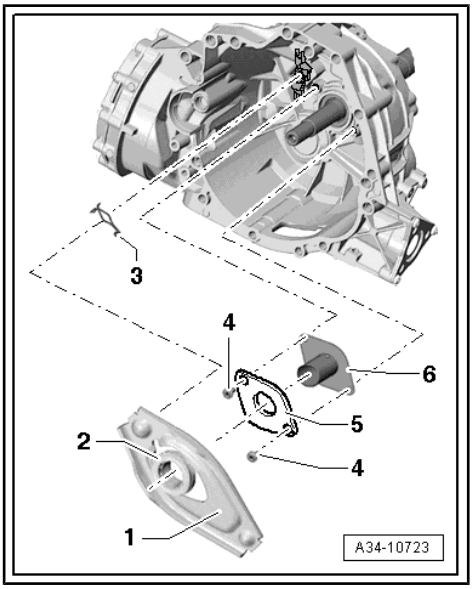
Caution

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- . A thin coating of grease is not sufficient.*
- *Remove grease in bearing surface for guide sleeve: bearing of release 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).

Note

The retaining piece -5- is omitted if a new guide sleeve -6- is installed.

– 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.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2 Clutch

⇒ “2.1 General notes on clutch”, page 12

⇒ “2.2 Exploded view - clutch unit”, page 16

⇒ “2.3 Removing and installing clutch module”, page 25

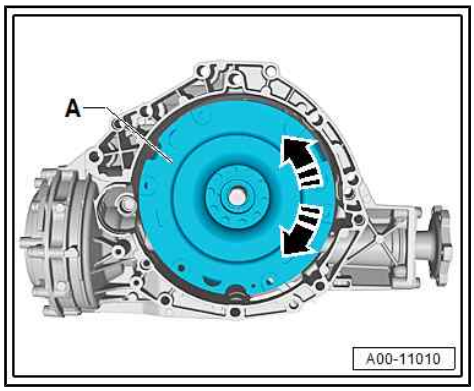
⇒ “2.4 Removing and installing clutch”, page 29

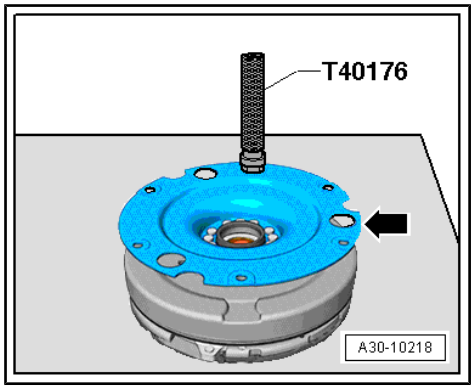
⇒ “2.5 Resetting adjuster ring in pressure plate, LuK version”, page 36

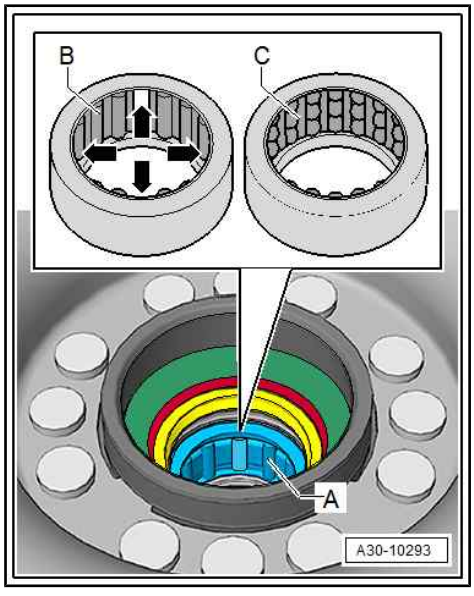
⇒ “2.6 Renewing needle bearing/ball bearing for dual-mass flywheel”, page 38

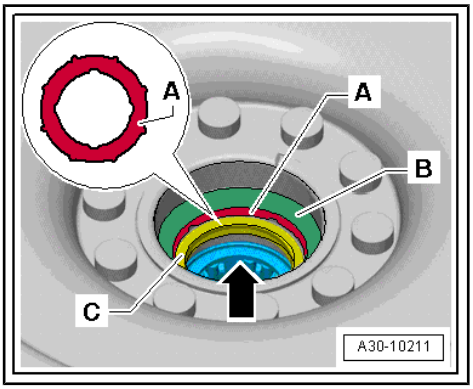
2.1 General notes on clutch

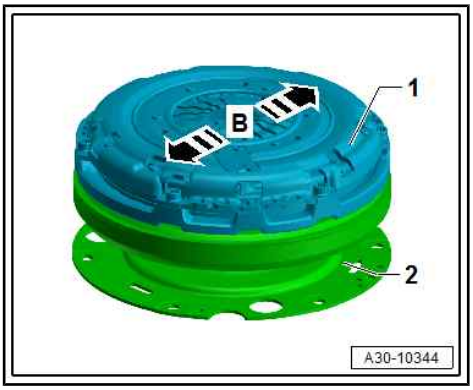
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

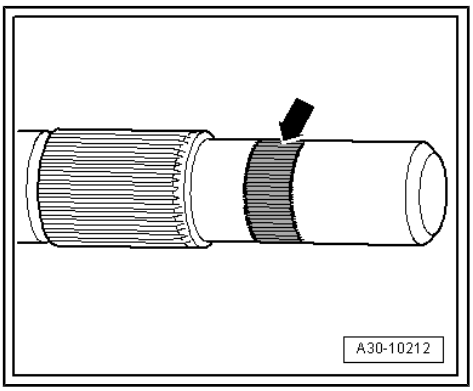




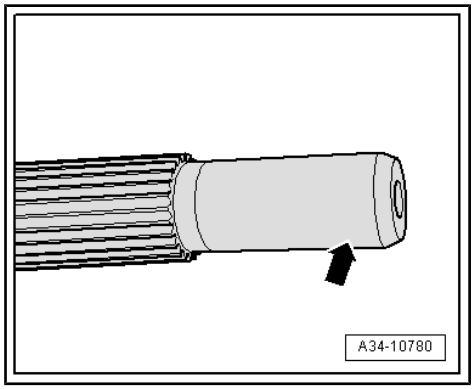




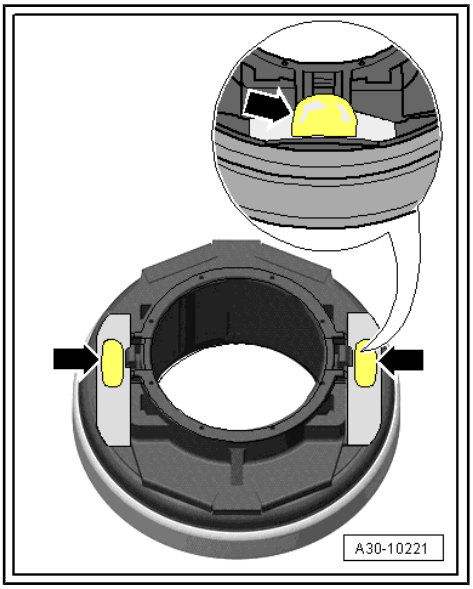




Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Note

- *Refer to general repair instructions ⇒ page 2 .*
- *Servicing clutch mechanism and clutch hydraulics ⇒ 6-speed manual gearbox 0B1; Rep. gr. 30 ; Clutch mechanism*
- *The gearbox must be removed before working on the clutch ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .*
- *To avoid damaging clutch pressure plate when removing and installing, observe assembly instructions ⇒ "2.4.1 Removing and installing Sachs version clutch", page 29 or ⇒ "2.4.2 Removing and installing LuK version clutch", page 33 .*
- *On clutch pressure plate (LuK version) an adjuster ring has to be reset when only the clutch plate is renewed ⇒ page 36 .*
- *Checking pressure plate for distortion ⇒ page 24 and ⇒ page 20*
- *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.*
- *Blow out clutch module with compressed air only.*
- *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.*
- *You may hear a rattling sound from the LuK version dual-mass flywheel -A- with centrifugal pendulum absorber.*
- *Depending on version, clutch modules -A- with or without centrifugal pendulum absorbers may be fitted.*
- *When clutch module with centrifugal pendulum absorbers is turned by hand, a rattling sound can be heard at intervals of approx. 90°.*
- *This is caused by a centrifugal pendulum absorber in the dual-mass flywheel and is not a fault.*
- *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.*
- *Check version of needle bearing in dual-mass flywheel -A, B, C- and renew needle bearing if necessary ⇒ page 20 .*
- *Check for wear on plastic washer -A- in "Sachs" version dual-mass flywheel ⇒ page 18 .*
- *When the dual-mass flywheel is removed, the weights may turn, shift and tilt towards one another slightly; this is not a defect, but rather part of the technological design.*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- *Secondary inertia weight -1- can be moved horizontally in direction of -arrows B- opposite primary inertia weight -2-.*
- *Secondary weight -1- has a tilting clearance to primary weight -2- (direction of -arrows C-).*
- *The dual-mass flywheel does not settle until it is fitted in the gearbox and secured to the engine.*
- *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/ball bearing for dual-mass flywheel", page 38 .
- *Renewing input shaft*
  ⇒ "2.5 Dismantling and assembling gearbox", page 52
- *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- .*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.2 Exploded view - clutch unit

⇒ "2.2.1 Exploded view - Sachs version clutch", page 16

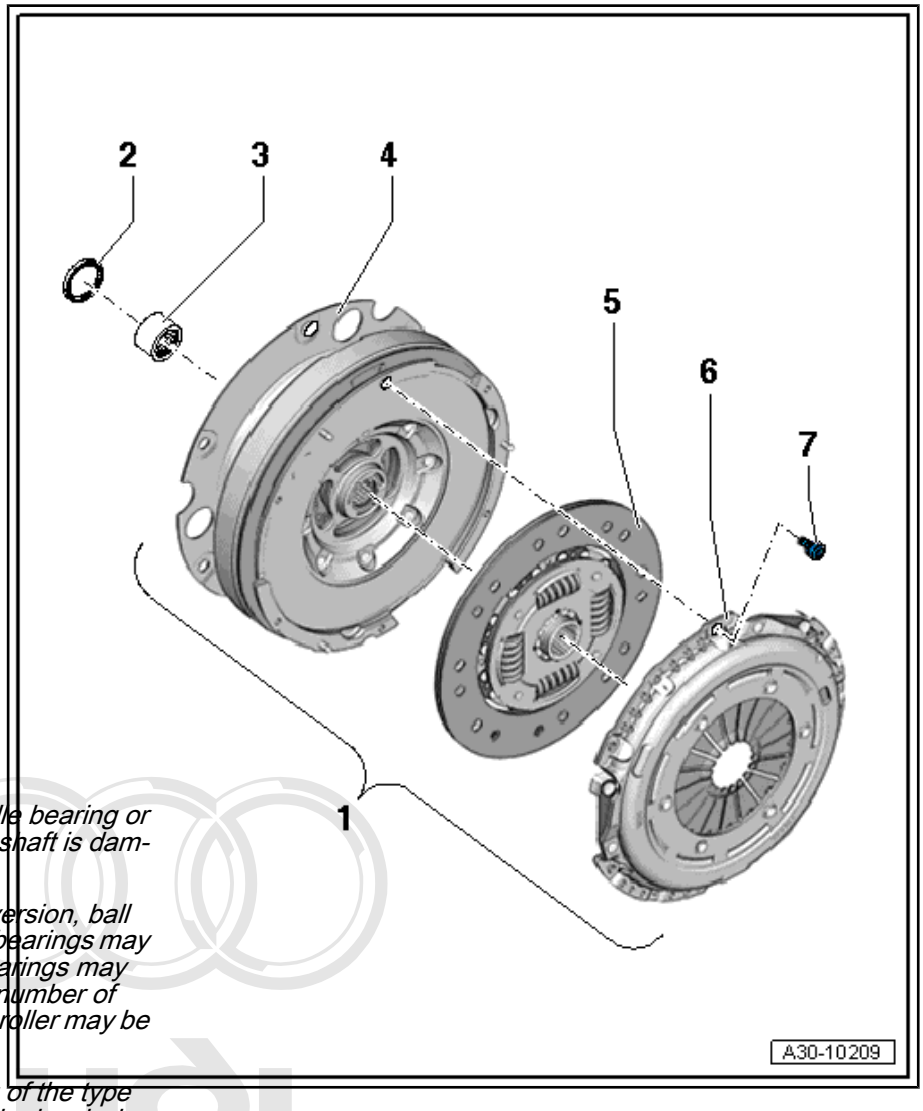
⇒ "2.2.2 Exploded view - SAC clutch, LuK version", page 21

2.2.1 Exploded view - Sachs version clutch

Caution

On this type of clutch the clutch pressure plate and clutch plate can only be renewed together.

- Observe notes on clutch ⇒ page 12 .
- Identification ⇒ page 18



1 - Clutch module

- ❑ Removing and installing ⇒ page 25

2 - Oil seal

- ❑ For dual-mass flywheel
- ❑ Pulling out ⇒ page 40
- ❑ Driving in ⇒ page 41

3 - Needle bearing or ball bearing

- ❑ For dual-mass flywheel
- ❑ Different versions ⇒ page 20
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Check and renew if necessary ⇒ page 20
- ❑ Pressing out ⇒ page 40
- ❑ Pressing in ⇒ page 40

Note

- *Always renew needle bearing or ball bearing if input shaft is damaged ⇒ page 39 .*
- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have either the full number of rollers, or every 4th roller may be missing.*
- *The needle bearing of the type where every 4th roller is missing must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI) ⇒ page 38 .*
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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 Sachs version clutch”, page 29
- ❑ Checking plastic washer in dual-mass flywheel ⇒ page 18
- ❑ Measuring degree of wear on plastic washer ⇒ page 19
- ❑ Checking for damage ⇒ page 19

5 - Clutch plate

- ❑ Removing and installing ⇒ page 29
- ❑ 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 - Pressure plate

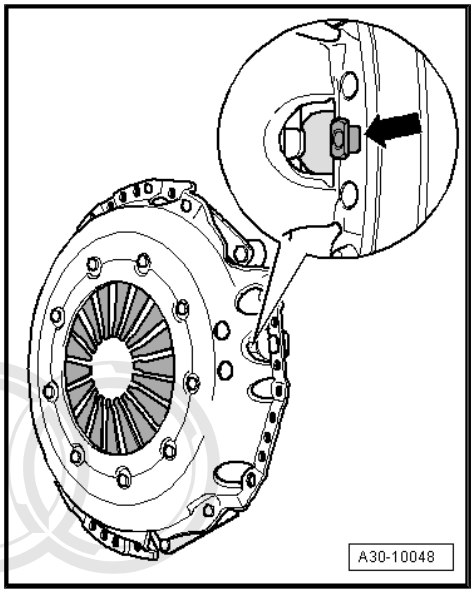
- ❑ Self-adjusting
- ❑ Identification ⇒ page 18
- ❑ Pressure plate and clutch plate can only be renewed together
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ page 29
- ❑ Checking pressure plate for distortion ⇒ page 20
- ❑ Checking ends of diaphragm spring ⇒ page 20
- ❑ Checking springs and riveting ⇒ page 21
- ❑ Checking metal ring ⇒ page 21
- ❑ 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 29 for loosening or tightening

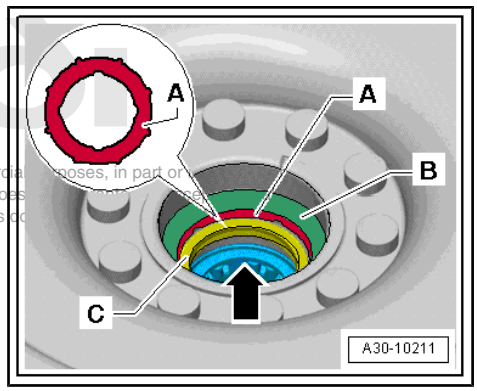
Identification of “Sachs” version

Pressure plate with position sender -arrow- or “Sachs” lettering



Checking plastic washer -A- in “Sachs” version dual-mass flywheel

- There must be a white plastic washer -A- in the dual-mass flywheel. It should be located under the copper-coloured bearing washer -B- and above the oil seal -C-.
- If the white plastic washer -A- is missing, the dual-mass flywheel must be renewed.
- Measuring degree of wear on plastic washer -A- ⇒ page 19



Protected by copyright. Copying for private or commercial purposes, in part or
with respect to the correctness of information in this

Measuring degree of wear on plastic washer in “Sachs” version dual-mass flywheel

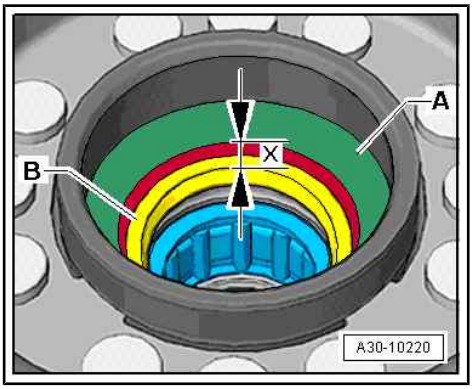
– Clean copper-coloured bearing washer -A- and oil seal -B- at points to be measured.

– Press bearing washer -A- towards oil seal -B-.

– Maintain pressure and measure distance -x- from top surface of copper-coloured bearing washer -A- to top surface of oil seal -B- at outer edge using a depth gauge .

• Distance -x- = 2.5 mm (minimum)

• The dual-mass flywheel must be renewed if distance -x- is less than 2.5 mm.



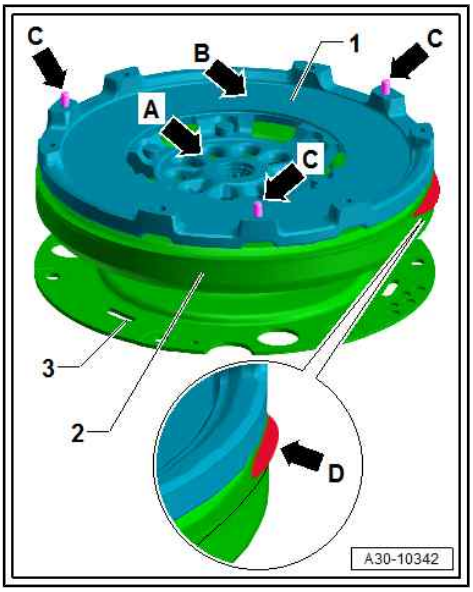
Checking dual-mass flywheel for damage

– Check projections -arrow A- and friction surface -arrow B- for cracks.

• Ensure that dowel pins -arrows C- are seated securely in dual-mass flywheel.

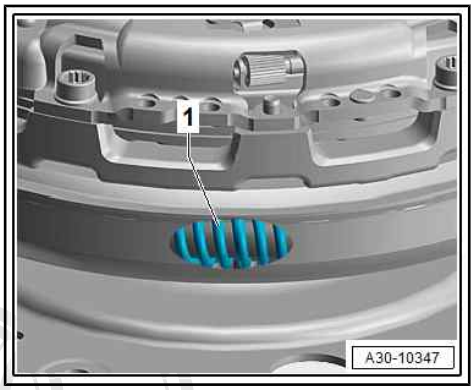
• Surface -2- must not be warped -arrow D-.

• Drive plate -3- must not be bent.



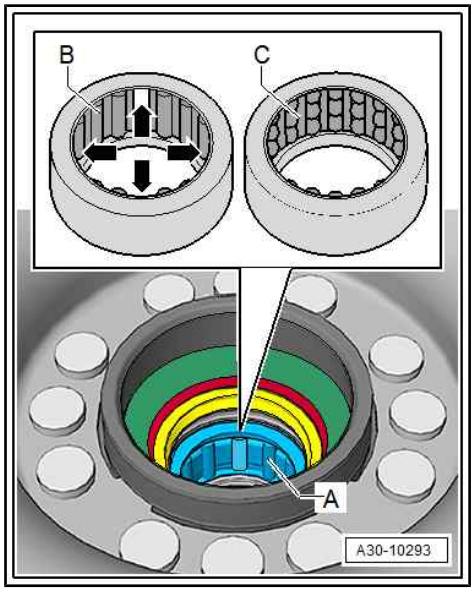
Damage to wall of dual-mass flywheel housing

♦ Damage to housing wall is caused by a defective bow spring -1- or bow spring mounting.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Checking needle bearing in dual-mass flywheel on vehicles with 4-cylinder TDI engine (except 125 kW TDI)



Caution

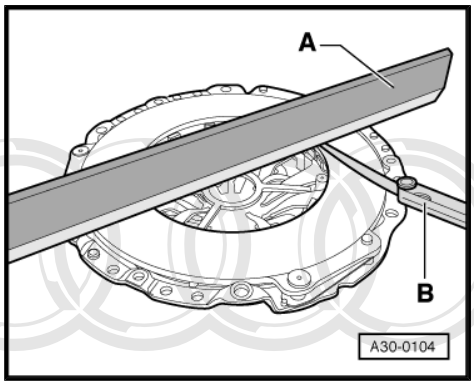
Check version of needle bearing in dual-mass flywheel.

- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have the full number of rollers, or every 4th roller may be missing.*
- *The needle bearings -B- of the type where every 4th roller is missing -arrows- must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI)* *⇒ page 38* .
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*
- *Depending on the manufacturer, the new needle bearings are fitted with the full number of either rollers -A- or balls -C-.*

Depending on the make, the following bearings are fitted on vehicles with 4-cylinder TDI engines (except 125 kW TDI):

- *»LuK« dual-mass flywheel: Needle bearing -A- fitted with the full number of rollers*
- *»Sachs« dual-mass flywheel: Ball bearing -C-*
- *For correct version, refer to ⇒ Electronic parts catalogue*

Checking pressure plate for distortion, cracks and burning

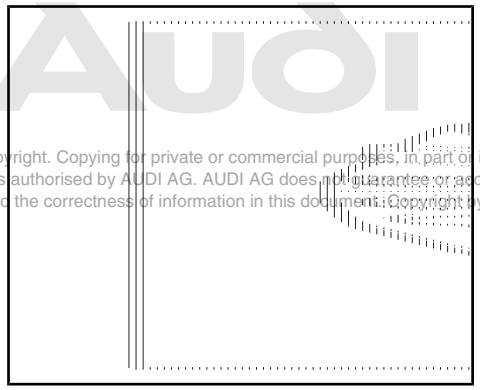


A - Straightedge

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.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

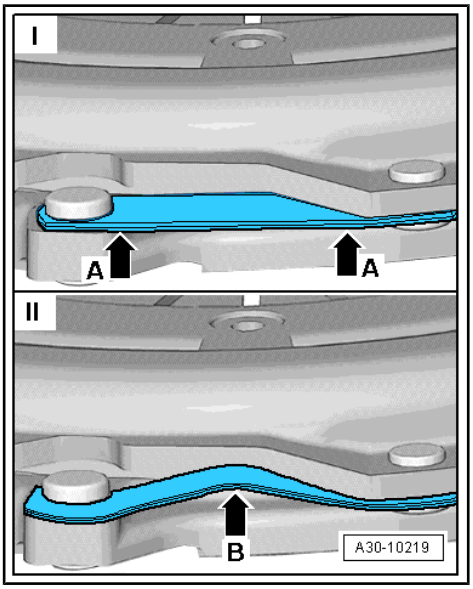
Checking springs and riveting

I - Springs OK

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

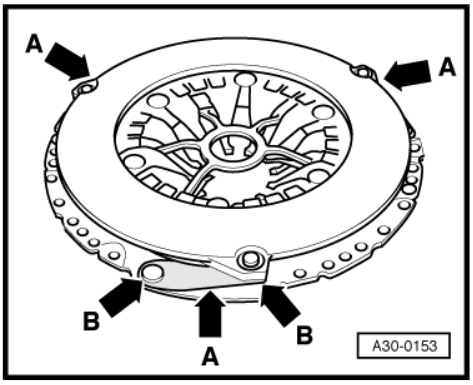
II - Springs damaged

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



– Check that riveting -arrows B- is secure at all springs -arrows A-.

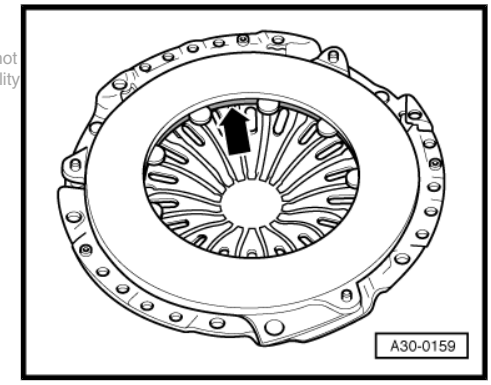
- Renew pressure plate if rivets -arrows B- are loose.



Checking metal ring

– Check metal ring -arrow- in pressure plate for damage.

- Renew pressure plate if metal ring is broken.

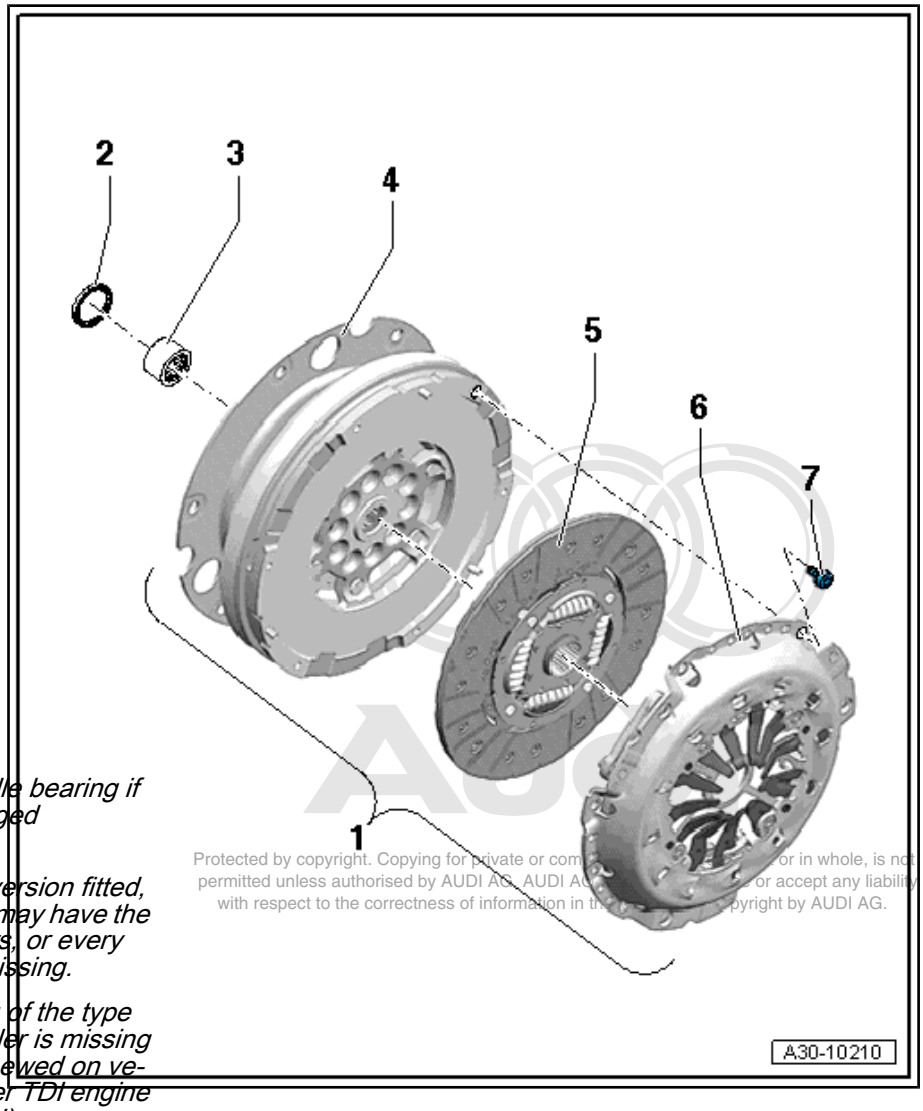


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.2.2 Exploded view - SAC clutch, LuK version

Note

- *"SAC" stands for "Self-Adjusting Clutch".*
- *Observe notes on clutch* ⇒ page 12 .



Protected by copyright. Copying for private or com... or in whole, is not permitted unless authorised by AUDI AG. AUDI A... or accept any liability with respect to the correctness of information in th... pyright by AUDI AG.

1 - Clutch module

- ❑ Removing and installing ⇒ page 25

2 - Oil seal

- ❑ For dual-mass flywheel
- ❑ Pulling out ⇒ page 40
- ❑ Driving in ⇒ page 41

3 - Needle bearing

- ❑ For dual-mass flywheel
- ❑ Different versions ⇒ page 23
- ❑ For correct version, refer to ⇒ Electronic parts catalogue
- ❑ Check and renew if necessary ⇒ page 23
- ❑ Pressing out ⇒ page 40
- ❑ Pressing in ⇒ page 40

Note

- ♦ *Always renew needle bearing if input shaft is damaged ⇒ page 39*
- ♦ *Depending on the version fitted, the needle bearing may have the full number of rollers, or every 4th roller may be missing.*
- ♦ *The needle bearing of the type where every 4th roller is missing must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI) ⇒ page 38 .*
- ♦ *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*

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
- ❑ Different versions with or without centrifugal pendulum absorber ⇒ page 23
- ❑ Checking for damage ⇒ page 24
- ❑ Removing and installing ⇒ “2.4.2 Removing and installing LuK version clutch”, page 33

5 - Clutch plate

- ❑ Removing and installing ⇒ page 33
- ❑ 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 33
- ❑ Resetting adjuster ring ⇒ page 36
- ❑ Checking ends of diaphragm spring ⇒ page 24
- ❑ Checking pressure plate for distortion ⇒ page 24
- ❑ Checking springs and riveting ⇒ page 25
- ❑ Contact surface for clutch lining must be free of grooves, oil and grease

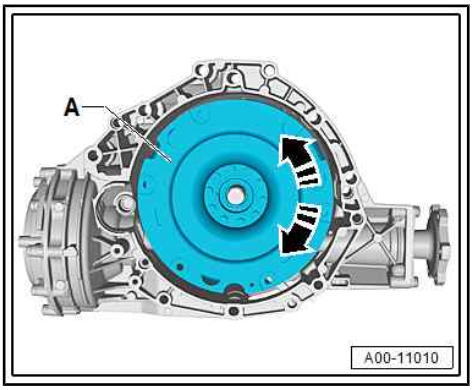
7 - Bolt

- ❑ 22 Nm and then turn 90° further
- ❑ Always renew
- ❑ Secures pressure plate to dual-mass flywheel
- ❑ Observe assembly instructions ⇒ page 33 for loosening or tightening

Rattling sound in LuK version dual-mass flywheel with centrifugal pendulum absorber

When the clutch module -A- is turned, a rattling sound can be heard at intervals of approx. 90°.

This is caused by moving pendulum masses in the dual-mass flywheel and is not a fault.



Checking needle bearing in dual-mass flywheel on vehicles with 4-cylinder TDI engine (except 125 kW TDI)

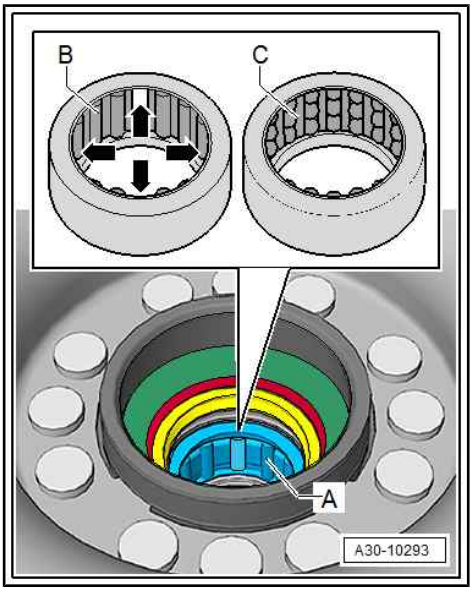
Caution

Check version of needle bearing in dual-mass flywheel.

- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have the full number of rollers, or every 4th roller may be missing.*
- *The needle bearings -B- of the type where every 4th roller is missing -arrows- must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI) ⇒ page 38 .*
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*
- *Depending on the manufacturer, the new needle bearings are fitted with the full number of either rollers -A- or balls -C-.*

Depending on the make, the following bearings are fitted on vehicles with 4-cylinder TDI engines (except 125 kW TDI):

- *»LuK« dual-mass flywheel: Needle bearing -A- fitted with the full number of rollers*
- *»Sachs« dual-mass flywheel: Ball bearing -C-*
- *For correct version, refer to ⇒ Electronic parts catalogue*

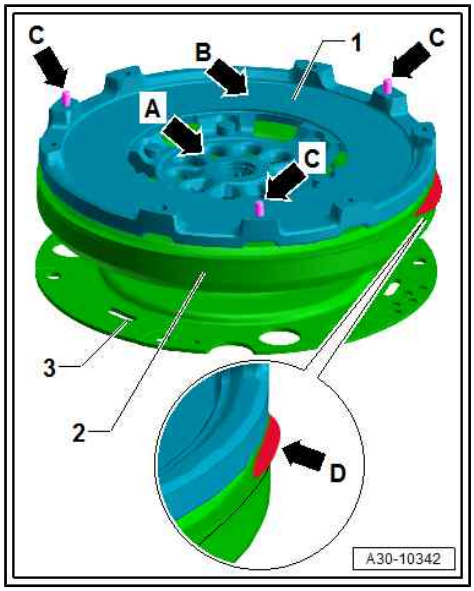


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Checking dual-mass flywheel for damage

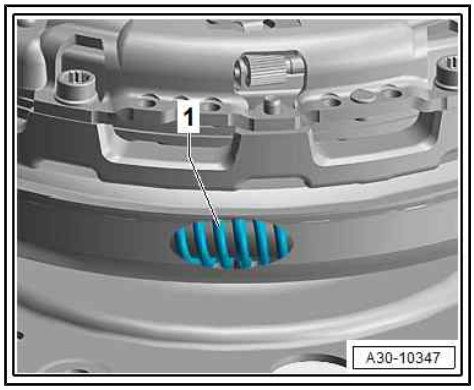
– Check projections -arrow A- and friction surface -arrow B- for cracks.

- Ensure that dowel pins -arrows C- are seated securely in dual-mass flywheel.
- Surface -2- must not be warped -arrow D-.
- Drive plate -3- must not be bent.



Damage to wall of dual-mass flywheel housing

♦ Damage to housing wall is caused by a defective bow spring -1- or bow spring mounting.

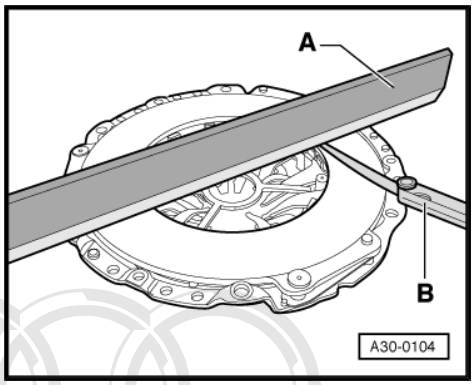


Checking pressure plate for distortion, cracks and burning

A - Straightedge

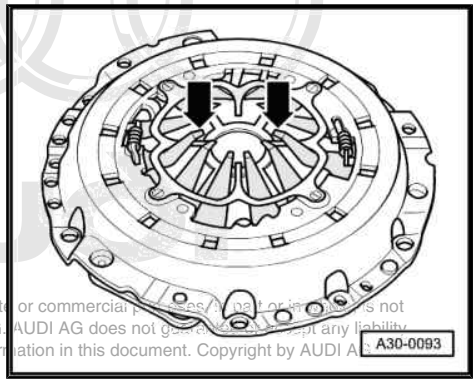
B - Feeler gauge

- Pressure plate distortion up to 0.8 mm is permissible.



Checking ends of diaphragm spring

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

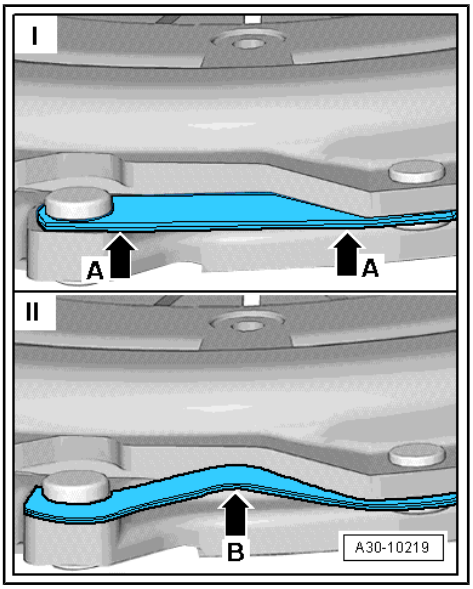
Checking springs and riveting

I - Springs OK

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

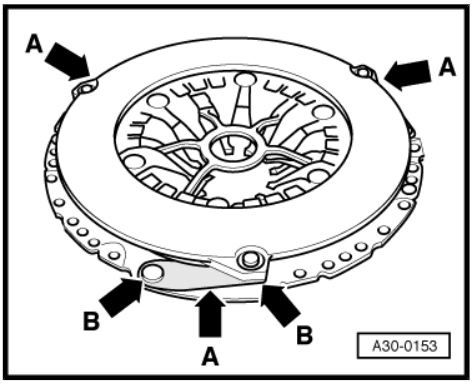
II - Springs damaged

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



– Check that riveting -arrows B- is secure at all springs -arrows A-.

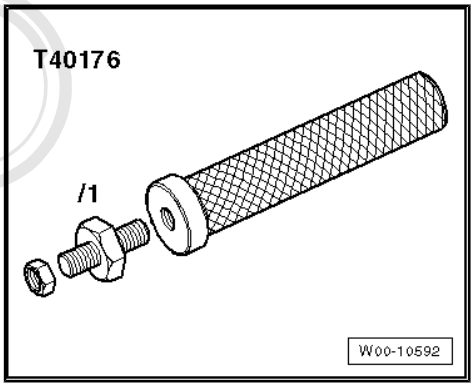
- Renew pressure plate if rivets -arrows B- are loose.



2.3 Removing and installing clutch module

Special tools and workshop equipment required

♦ Extractor - T40176-



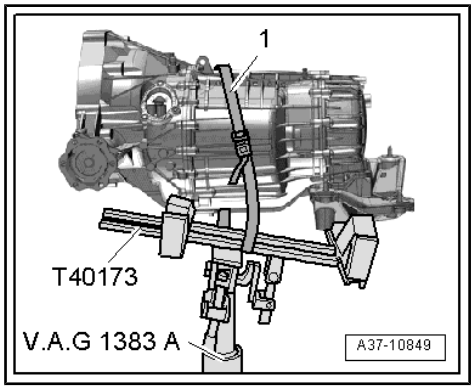
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

♦ Grease for clutch plate splines - G 000 100-

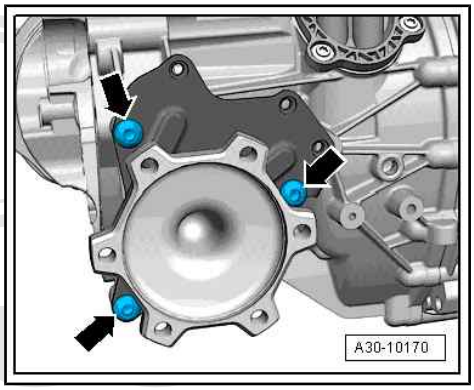
Removing

- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .
- Gearbox is secured to gearbox support - T40173- with tensioning strap -1-.

– Tilt gearbox to rear with gearbox support - T40173- to prevent gear oil from escaping.



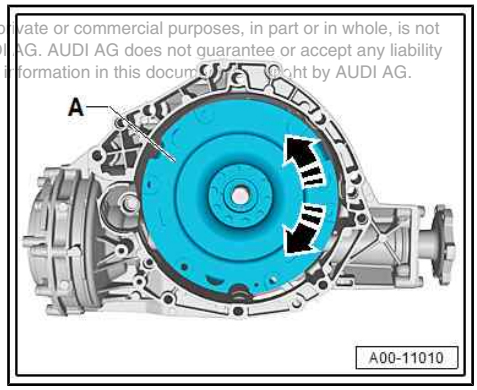
– Remove flange shaft (left-side) ⇒ page 142 .



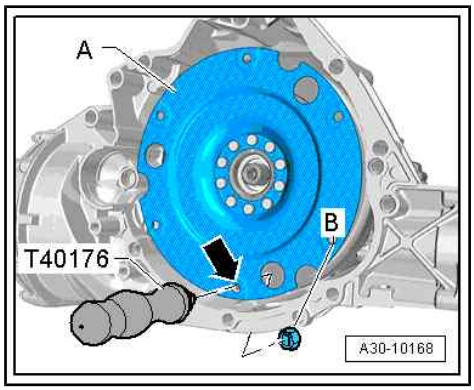
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

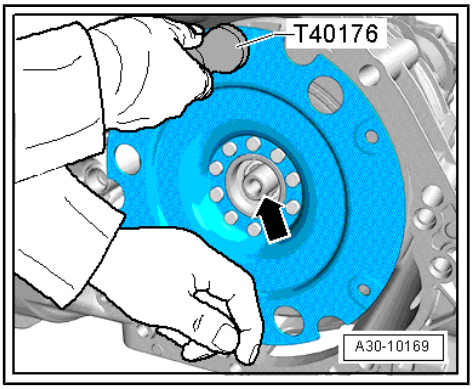
- *Depending on version, clutch modules -A- with or without centrifugal pendulum absorbers may be fitted.*
- *When clutch module with centrifugal pendulum absorbers is turned by hand, a rattling sound can be heard at intervals of approx. 90°.*
- *This is caused by a centrifugal pendulum absorber in the dual-mass flywheel and is not a fault.*



– 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.

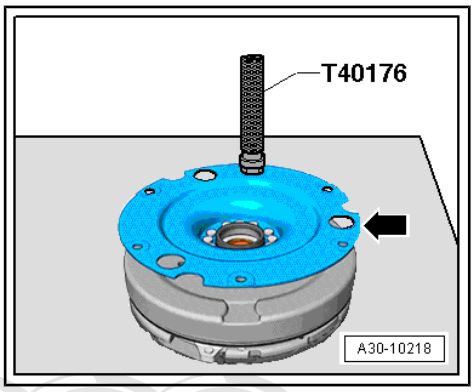
- *The clutch module weighs approx. 20 kg.*
- *Keep firm hold of the bottom of the clutch module, as shown in the illustration, to prevent the clutch module from tilting over.*
- *When removing and installing the clutch module, take care not to damage the oil seals and needle bearing in the dual-mass flywheel -arrow-.*
- *Renew oil seals or needle bearing if damaged* *⇒ page 38 .*

– 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.

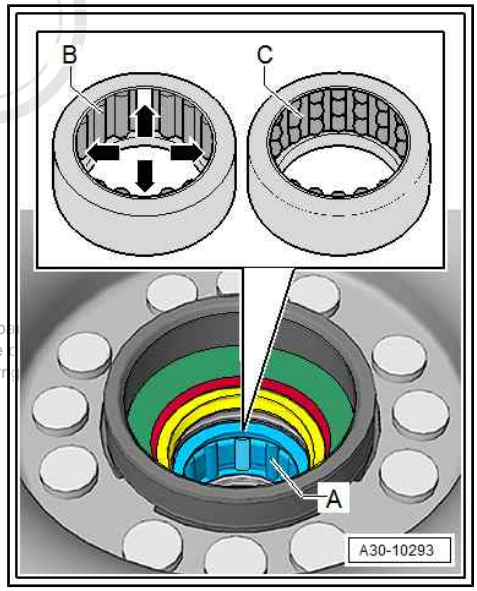
- *Do not put down clutch module with flange -arrow- for drive plate facing downwards.*
- *This could bend the flange -arrow- for the drive plate, which would cause problems with clutch operation.*



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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Vehicles with 4-cylinder TDI engine (except 125 kW TDI)



Caution

Check version of needle bearing in dual-mass flywheel.

- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have the full number of rollers, or every 4th roller may be missing.*
- *The needle bearings -B- of the type where every 4th roller is missing -arrows- must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI)* *⇒ page 38* .
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*
- *Depending on the manufacturer, the new needle bearings are fitted with the full number of either rollers -A- or balls -C-.*

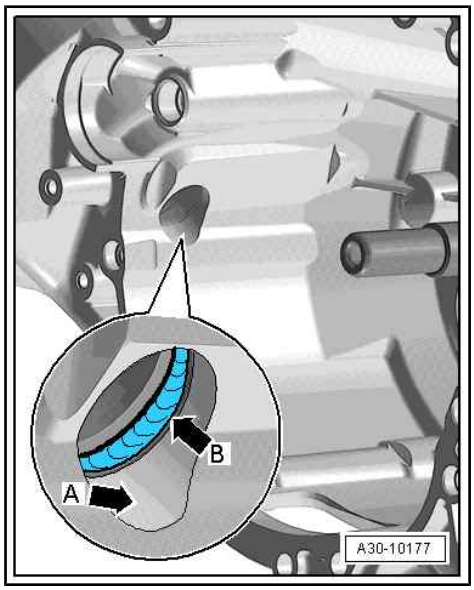
Depending on the make, the following bearings are fitted on vehicles with 4-cylinder TDI engines (except 125 kW TDI):

- *»LuK« dual-mass flywheel: Needle bearing -A- fitted with the full number of rollers*
- *»Sachs« dual-mass flywheel: Ball bearing -C-*
- *For correct version, refer to ⇒ Electronic parts catalogue*

Installing clutch module

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

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

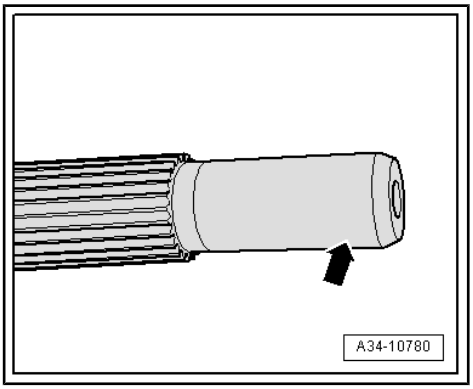


Note

If oil seal between differential and gearbox housing -arrow B- is damaged, it must be renewed *⇒ page 131* .

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

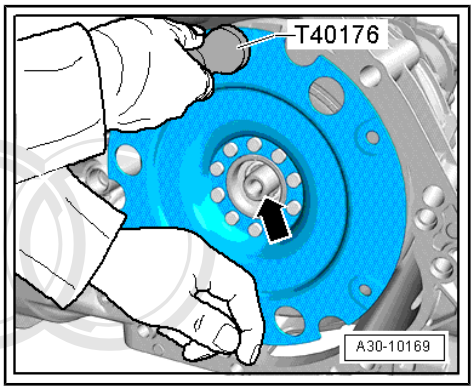
– Grease clutch release bearing according to specifications ⇒ page 10 .
– Clean splines and bearing journal of input shaft -arrow-.
– Apply a thin coating of grease for clutch plate splines - G 000 100- to splines on input shaft.



Caution

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

– Carefully slide clutch module onto input shaft -arrow-, taking care to keep clutch module straight.
– Detach extractor - T40176- from clutch module.
– Install flange shaft (left-side) ⇒ page 144 .



2.4 Removing and installing clutch

⇒ "2.4.1 Removing and installing Sachs version clutch", page 29

⇒ "2.4.2 Removing and installing LuK version clutch", page 33

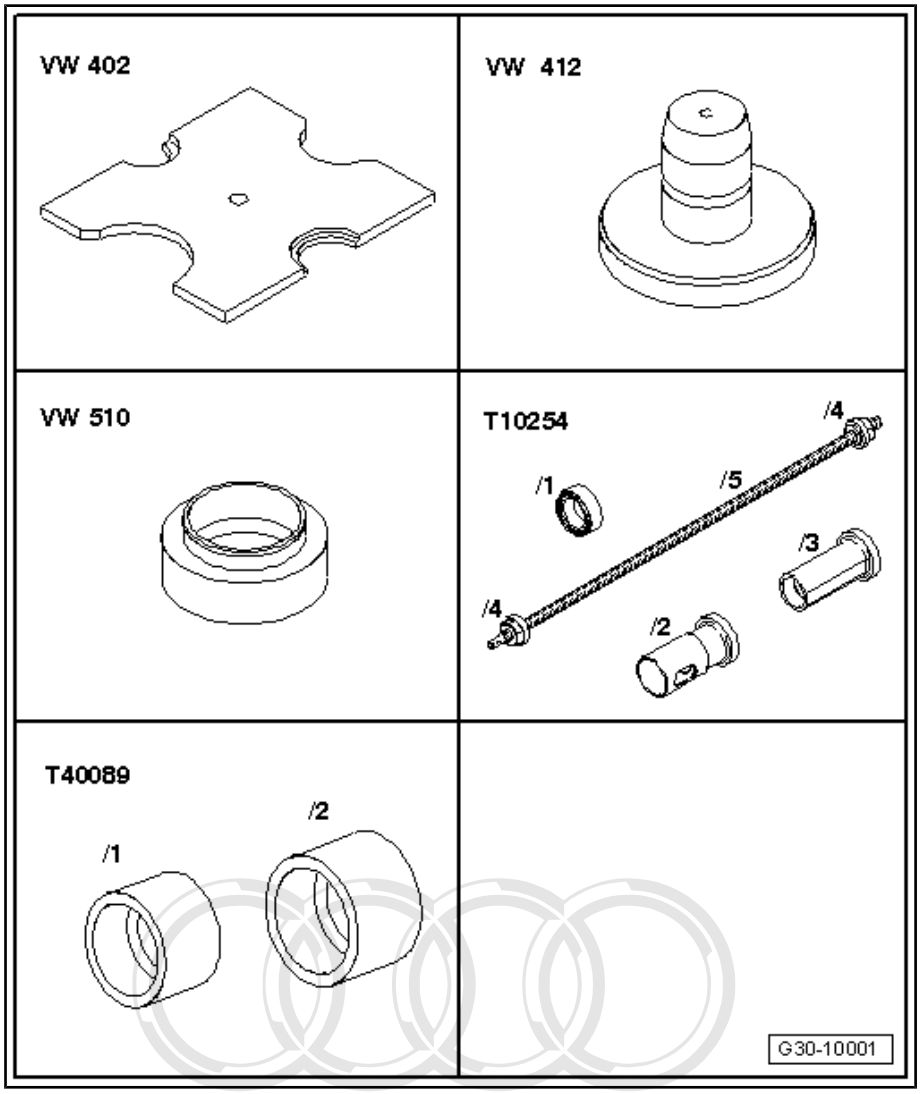
Audi

Any unauthorised use, storage, reproduction or transmission for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

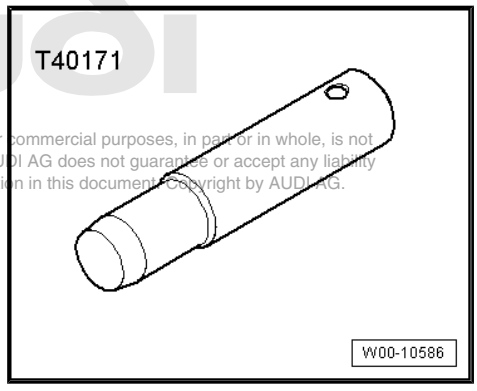
2.4.1 Removing and installing Sachs version clutch

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-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Removing

– Remove clutch module ⇒ page 25 .

3 - Clutch pressure plate

Caution

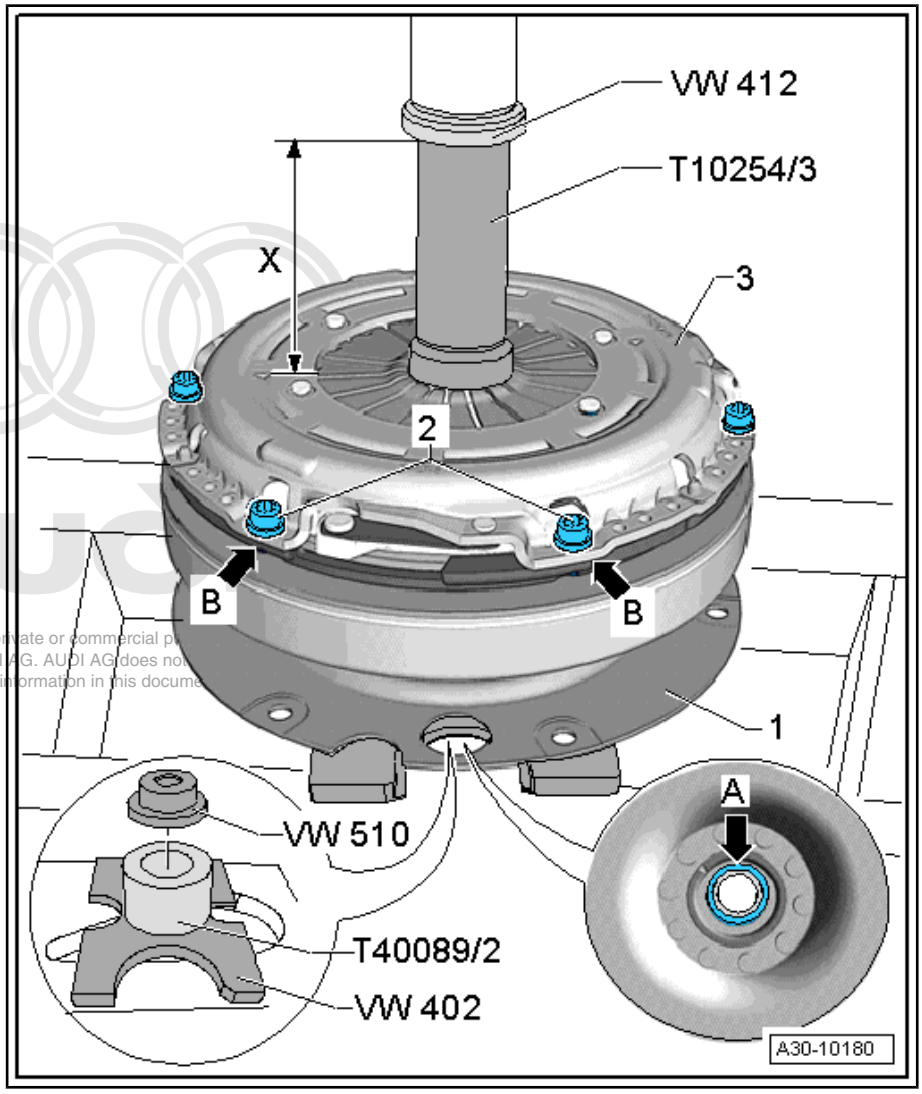
Take care not to damage pressure plate and dual-mass flywheel.

Pressure plate -3- 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 must rest only on the bearing washer -arrow A- when compressing the pressure plate -3- in the hydraulic press.

If the dual-mass flywheel is supported on the flange for drive plate -1- the flange will become distorted and the flywheel will thus be damaged. In this case, the dual-mass flywheel will have to be renewed.



Protected by copyright. Copying for private or commercial p
permitted unless authorised by AUDI AG. AUDI AG does no
with respect to the correctness of information in this docume

– 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 -3- 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 -3- and clutch plate.

Installing

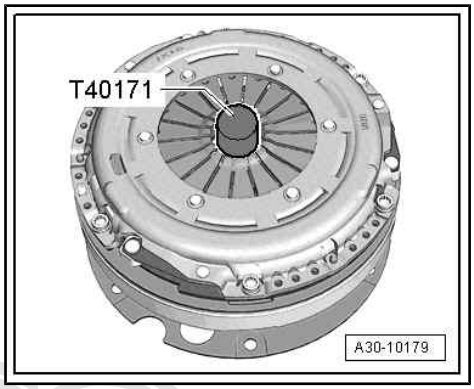
Installation is carried out in reverse sequence; note the following:

- Tightening torque ⇒ Item 7 (page 18)
- Check that pressure plate is not distorted ⇒ page 20 .

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

– Position pressure plate on centring pins.

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



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

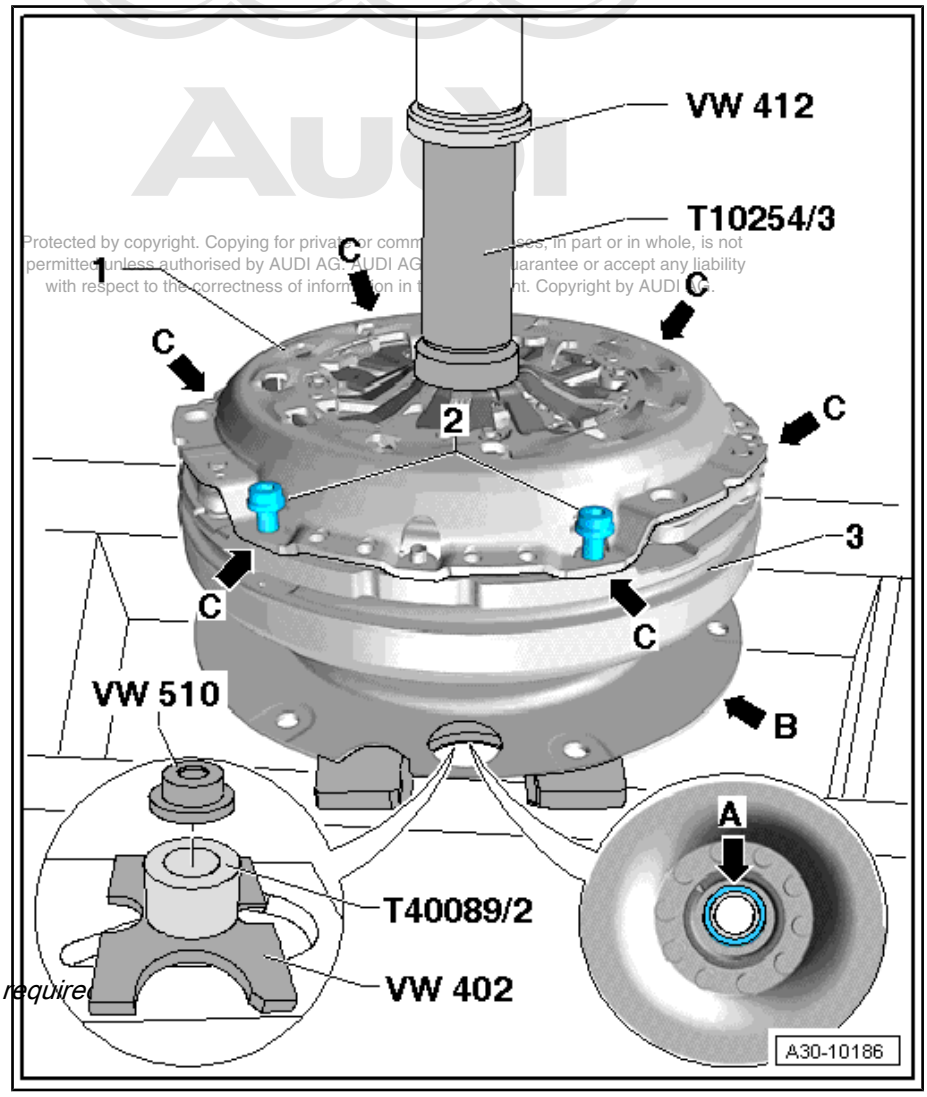
1 - Clutch pressure plate

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.

– Release press.

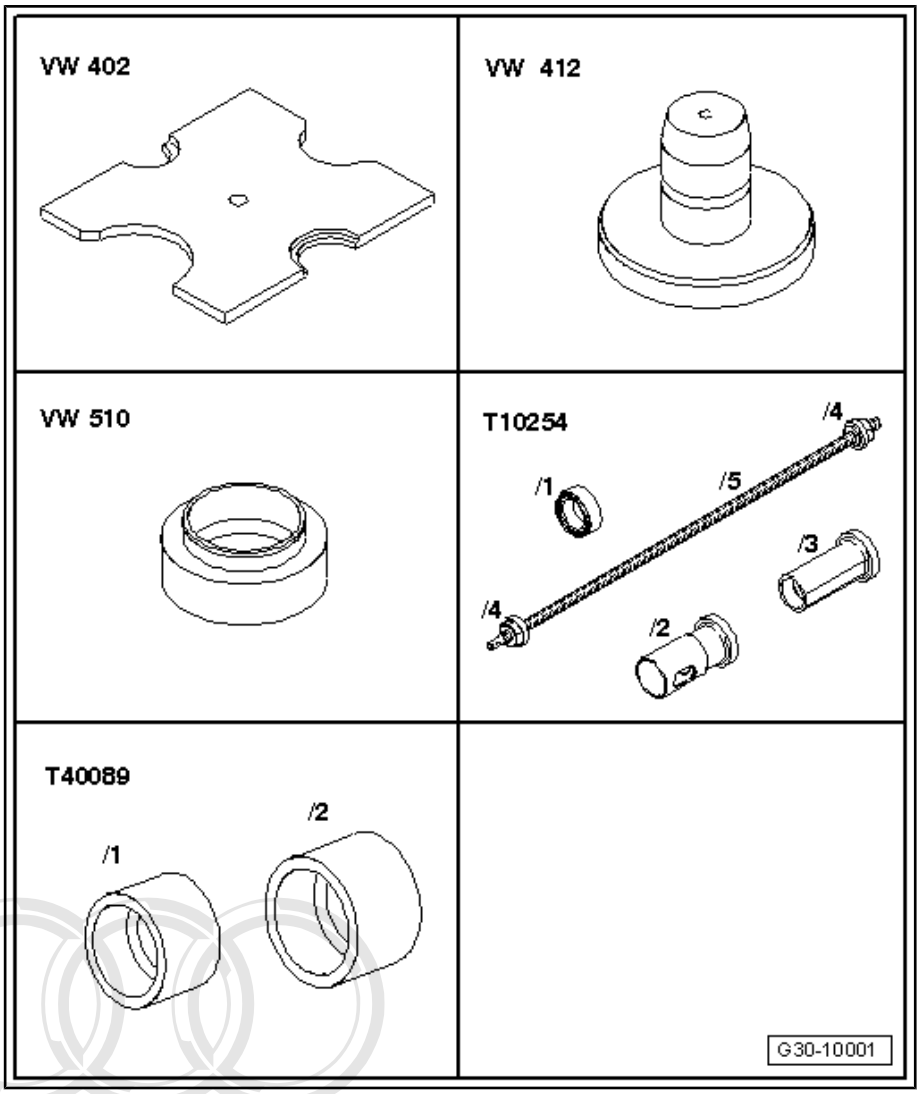
– Install clutch module ⇒ page 25 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

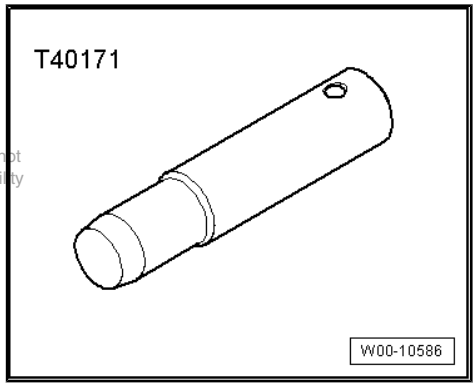
2.4.2 Removing and installing LuK version clutch

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-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Removing

– Remove clutch module ⇒ page 25 .

1 - Clutch pressure plate

Caution

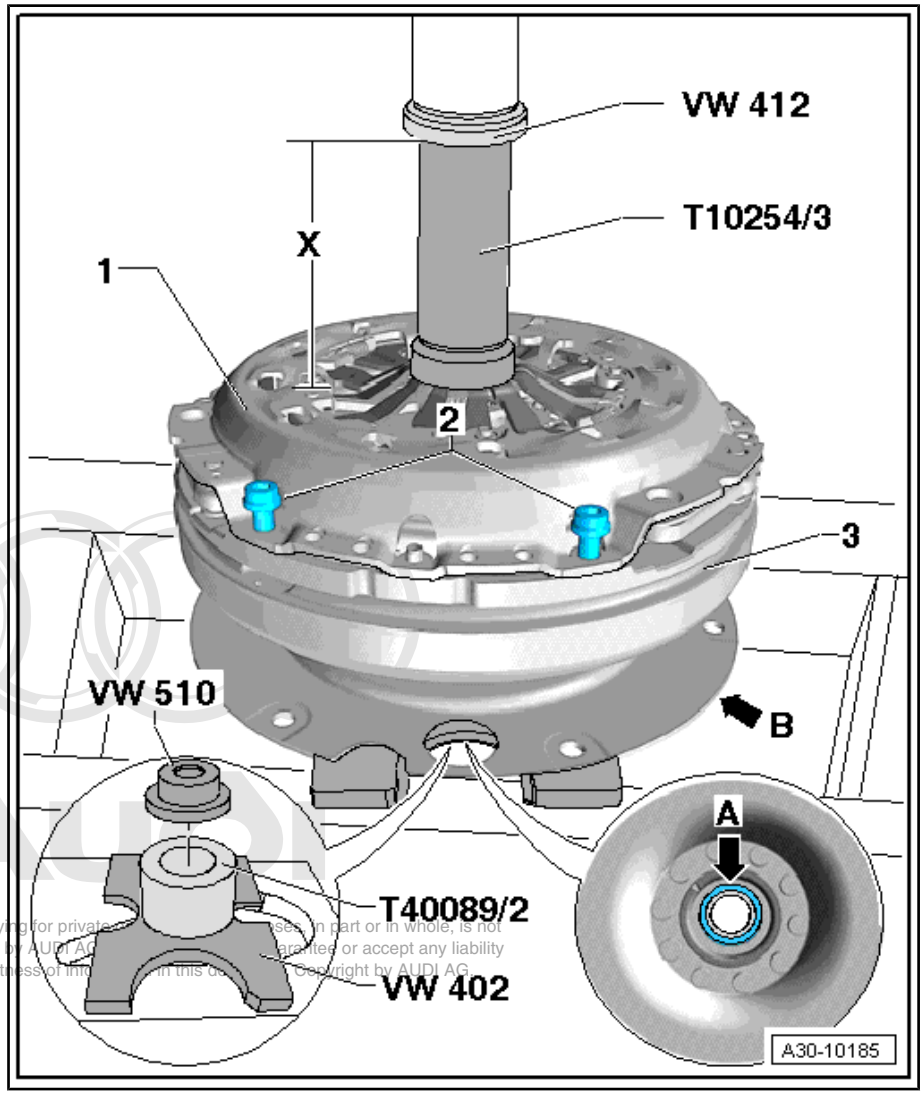
Take care not to damage pressure plate and dual-mass flywheel.

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.



Protected by copyright. Copying for private ... use, in part or in whole, is not permitted unless authorised by AUDI AG ... guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

– 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

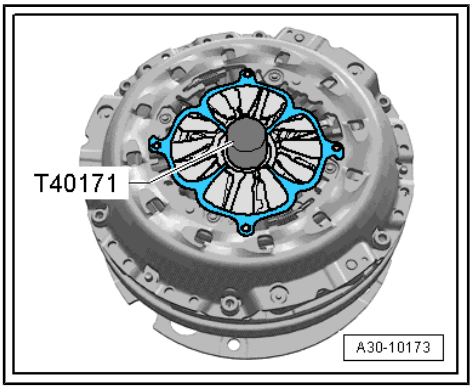
A second mechanic is required for the next step.

– 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:



Note

- *Check that pressure plate is not distorted ⇒ page 24 .*
- *When only the clutch plate is being renewed, the adjuster ring in the pressure plate has to be reset before assembly ⇒ page 36 .*

– 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.

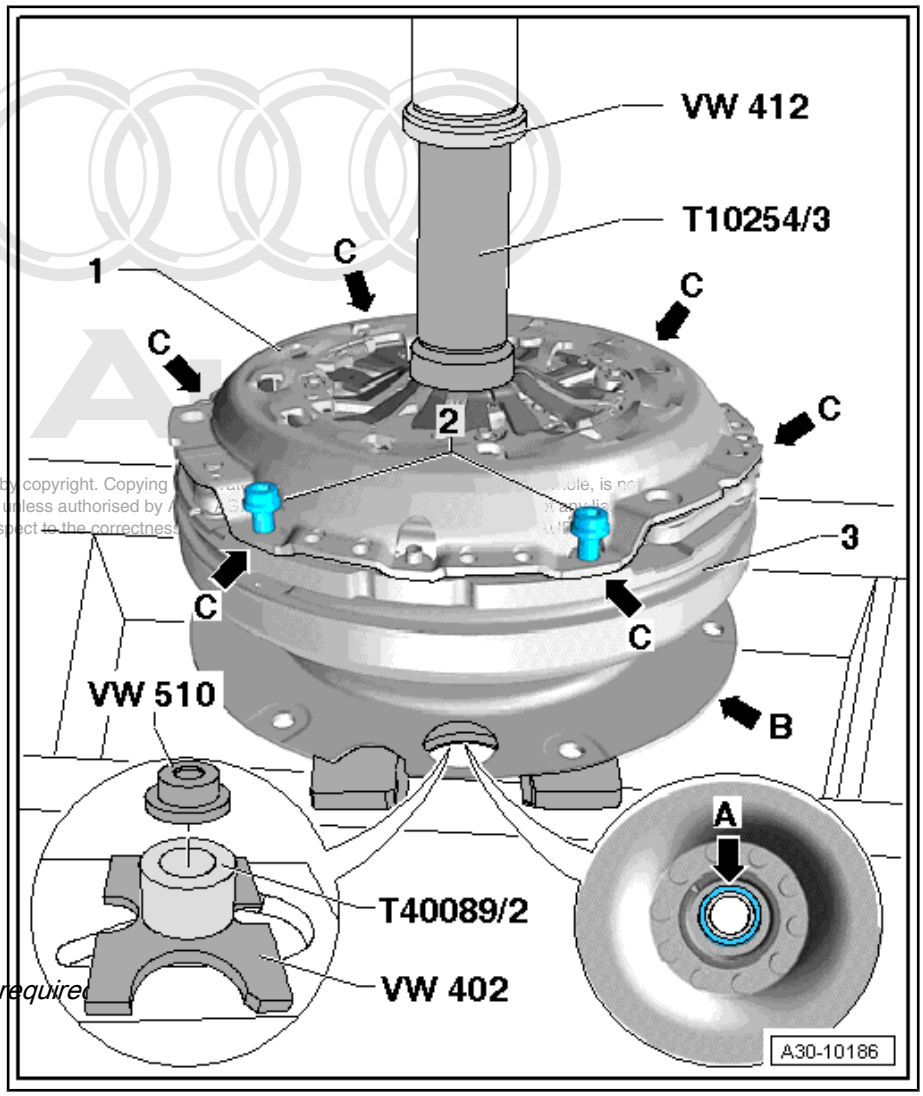
– Position the clutch module so that the thrust pad - VW 510- makes contact with the bearing washer -arrow A- in the dual-mass flywheel.

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.

– Release press.

– Install clutch module ⇒ page 25 .

2.5 Resetting adjuster ring in pressure plate, LuK version

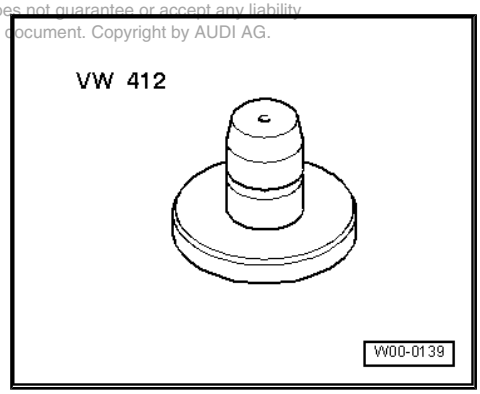
Note

- *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.*

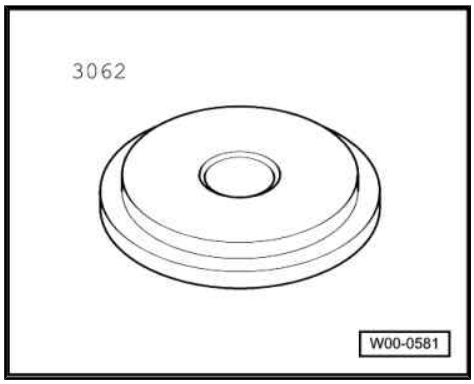
Copyright by AUDI AG. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Special tools and workshop equipment required

- Press tool - VW 412-



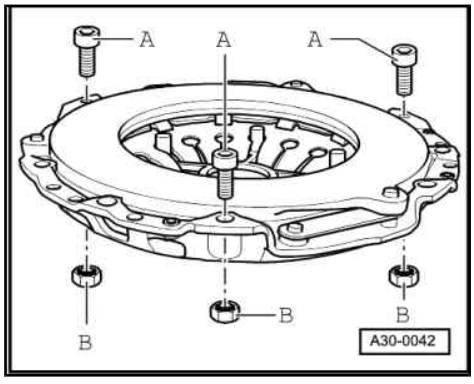
- Thrust pad - 3062-



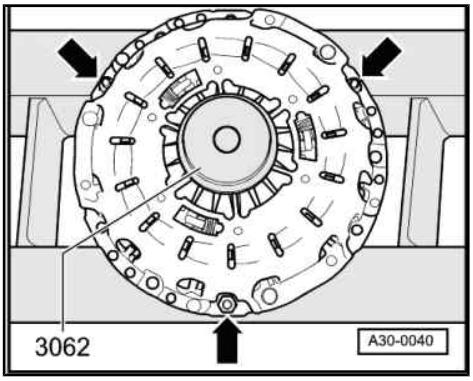
Procedure

– 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.

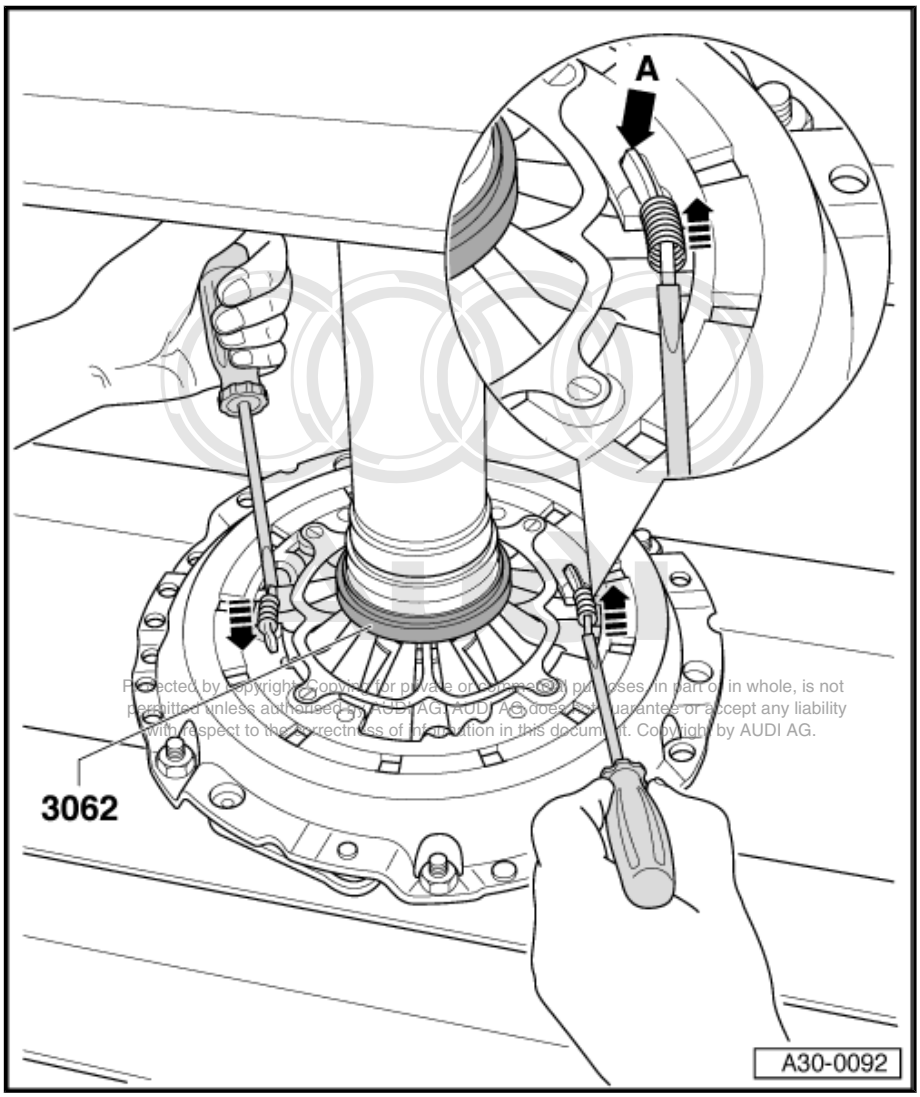
– Screw 3 nuts -B- (M8) onto bolts -A- and tighten nuts lightly.



– 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.



Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

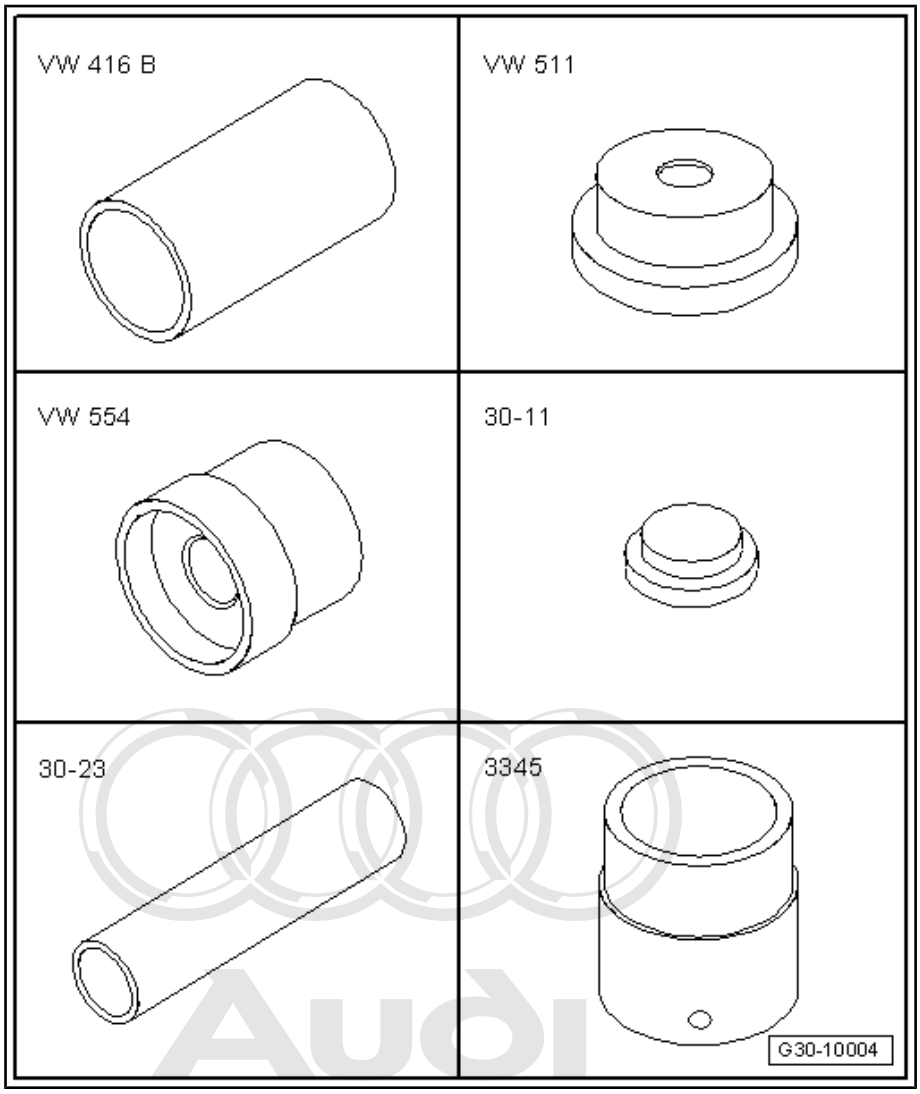
– Apply two screwdrivers to the forks on the adjuster ring. Use the press to apply pressure to the pressure plate until it is just possible to move the adjuster ring.
– Using the two screwdrivers, turn back the adjuster ring evenly in the direction of the -arrows- until it reaches the stop -arrow A-.

– 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/ball bearing for dual-mass flywheel

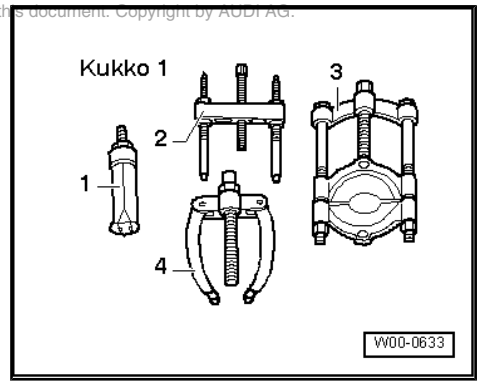
Special tools and workshop equipment required

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

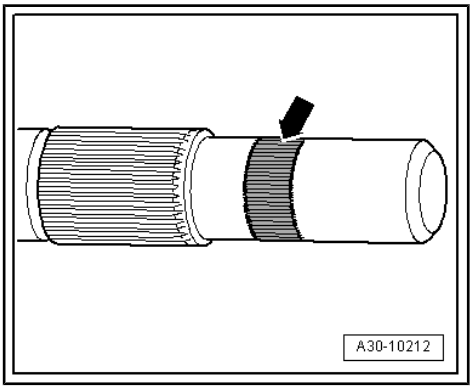


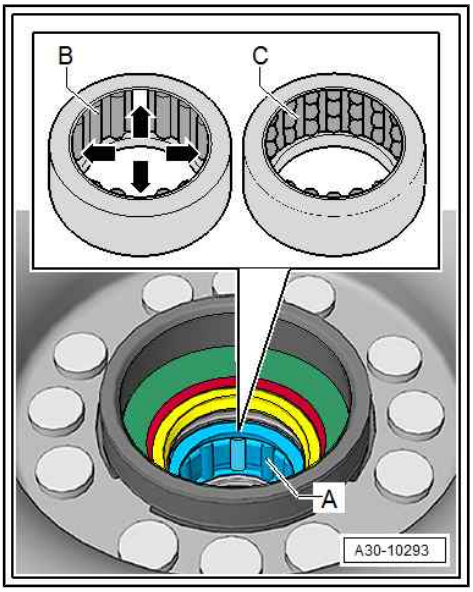
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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



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





Note

- *The procedure for renewing the needle bearing or ball bearing and the oil seal on the "Sachs" and "LuK" version clutches is identical.*
- *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 or ball bearing in the dual-mass flywheel must be renewed.*
- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have either the full number of rollers, or every 4th roller may be missing.*
- *The needle bearings -B- of the type where every 4th roller is missing -arrows- must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI)* *⇒ page 38* *.*
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*
- *The new needle bearings are fitted with the full number of rollers -A- or balls -C-.*

Depending on the make, the following bearings are fitted on vehicles with 4-cylinder TDI engines (except 125 kW TDI):

- »LuK« dual-mass flywheel: Needle bearing -A- fitted with the full number of rollers
- »Sachs« dual-mass flywheel: Ball bearing -C-
- For correct version, refer to ⇒ Electronic parts catalogue

Removing

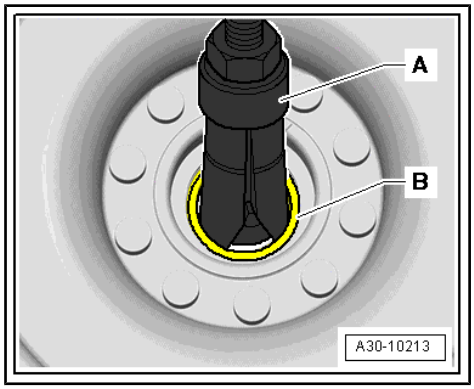
- Pressure plate with clutch plate has been removed from dual-mass flywheel ⇒ page 29 or ⇒ page 33 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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-

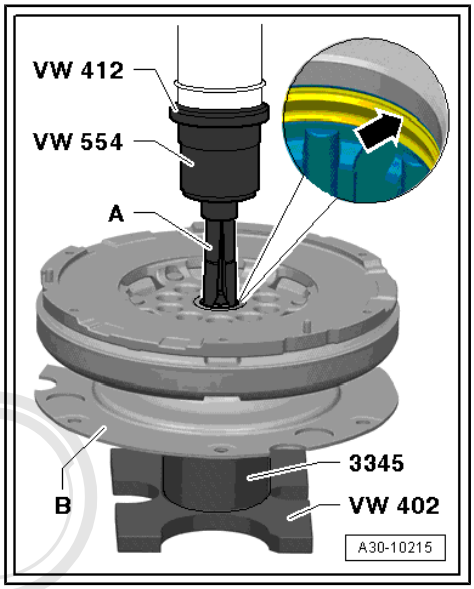


Pressing needle bearing out of dual-mass flywheel

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 40 .

– 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.

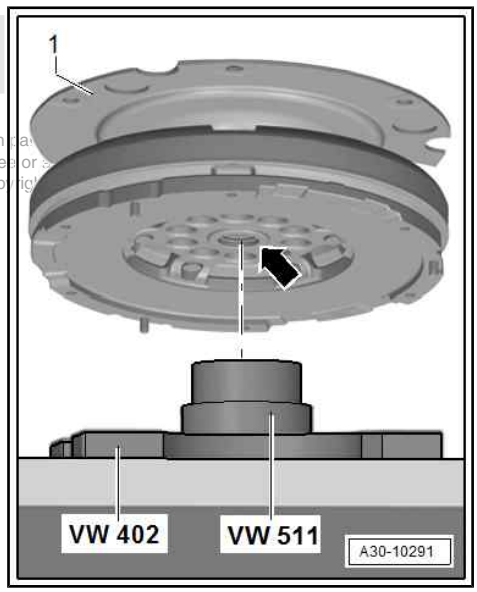
Pressing in needle bearing for dual-mass flywheel

Caution

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 -arrow-.*

Protected by copyright. Copying for private or commercial purposes, in part
without prior written consent of AUDI AG. AUDI AG does not guarantee or a
with respect to the correctness of information in this document. Copyrig



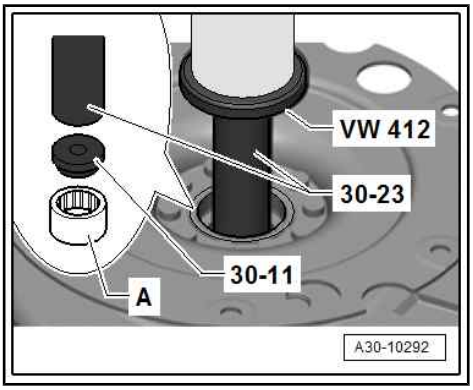
– Remove remaining grease in bore for needle bearing in dual-mass flywheel using a dry cleaning cloth.

Note

Do not use solvent for cleaning bore.

– Support dual-mass flywheel -1- with thrust pad - VW 511- directly below bearing mounting -arrow-.

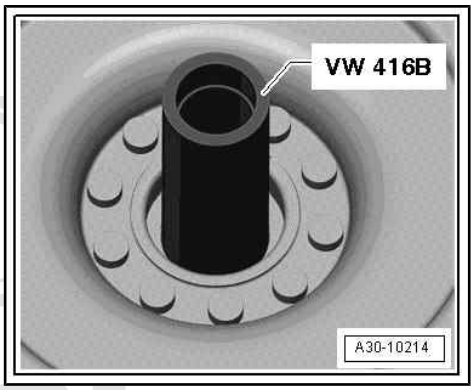
– Insert smaller diameter of thrust plate - 30-11- in needle bearing -A-. Lettering on needle bearing (thicker metal) must face towards thrust plate .
– Carefully press in needle bearing as far as stop.



Driving oil seal into dual-mass flywheel

- Needle bearing is installed in dual-mass flywheel.
- Open side of oil seal faces towards needle bearing.

– Carefully drive in oil seal onto stop.
– Installing pressure plate with clutch plate on dual-mass flywheel ⇒ page 29 or ⇒ page 33



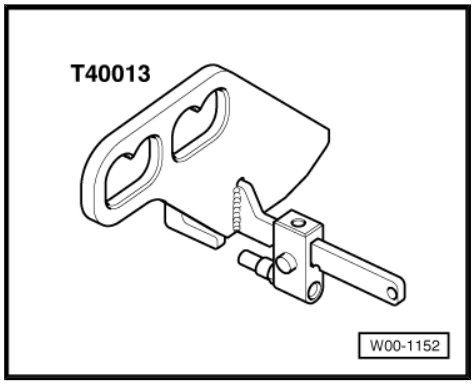
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

34 – Controls, housing

1 Transporting gearbox

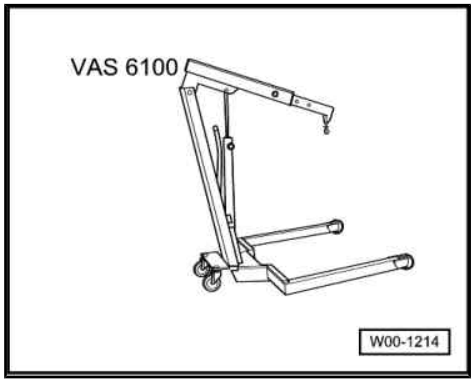
Special tools and workshop equipment required

- Lifting aid - T40013-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Workshop hoist - VAS 6100-

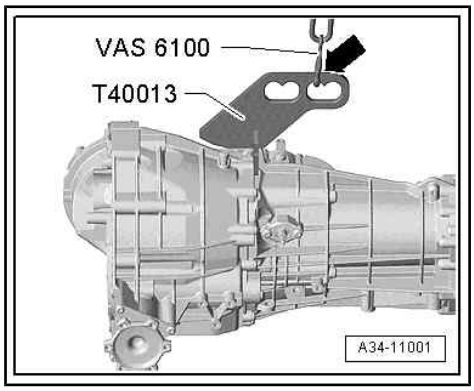


Procedure

– 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- .



2 Dismantling and assembling gearbox

⇒ “2.1 Schematic overview - gearbox”, page 43

⇒ “2.2 Exploded view - gearbox”, page 44

⇒ “2.3 Exploded view - gear cluster, reverse gear wheel, selector mechanism”, page 48

⇒ “2.4 Exploded view - selector forks”, page 50

⇒ “2.5 Dismantling and assembling gearbox”, page 52

⇒ “2.6 Removing and installing selector shaft”, page 68

2.1 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

7 - Pinion shaft

8 - Reverse gear

9 - 1st gear

10 - 2nd gear

11 - Gearbox cover

12 - Side shaft
- ❑ With spur gear

13 - End cover

14 - Spur gear
- ❑ Drive gear for side shaft (spur gearing)

15 - 4th gear

16 - 3rd gear

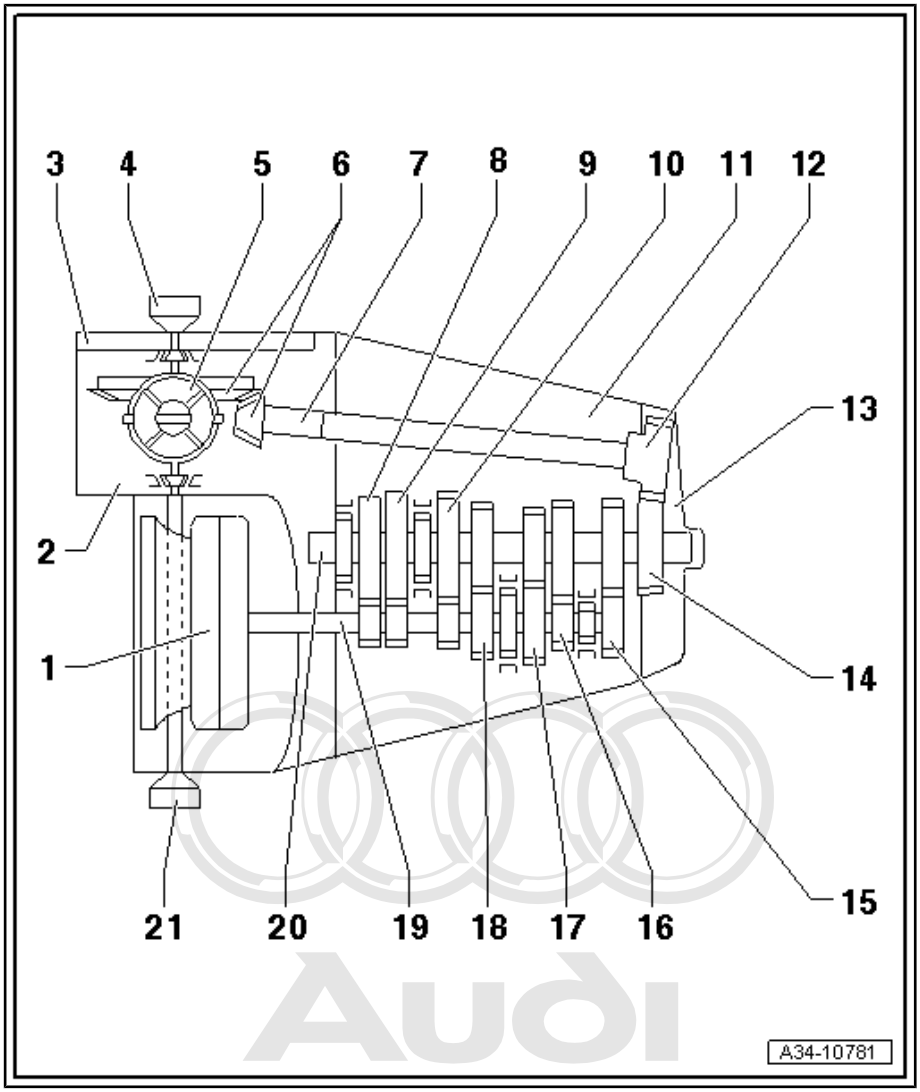
17 - 6th gear

18 - 5th gear

19 - Input shaft

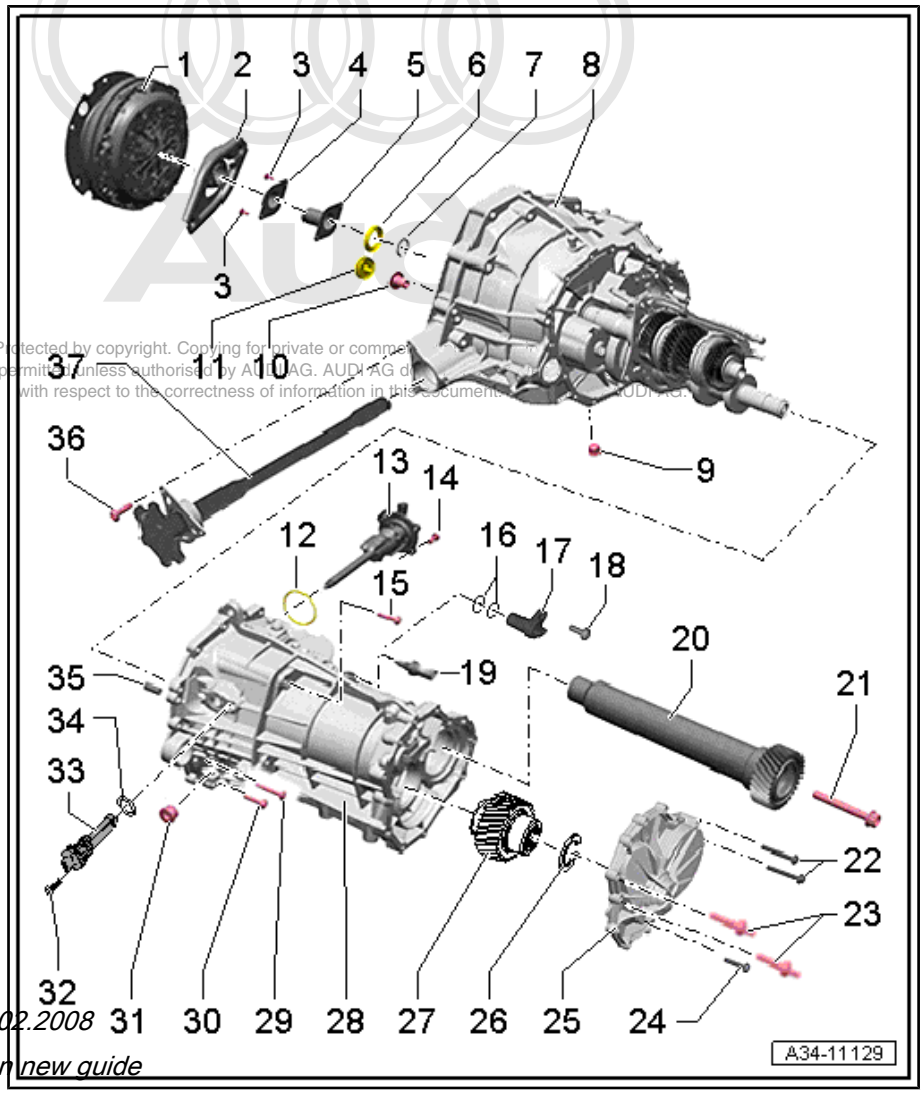
20 - Output shaft

21 - Flange shaft (left-side)



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.2 Exploded view - gearbox



Protected by copyright. Copying for private or commercial purposes, in part, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. © AUDI AG.

1 - Clutch module

- ❑ Removing and installing ⇒ page 25
- ❑ Servicing with “Sachs” version clutch ⇒ page 16
- ❑ Servicing with “LuK” version clutch ⇒ page 21

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 44) 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 135

7 - Circlip

- ❑ Determining thickness ⇒ page 63
- ❑ Insert in circumferential groove in input shaft

8 - Gearbox housing

- ❑ With gear cluster (input and output shafts) and selector fork cluster
- ❑ Removing and installing gear cluster (input and output shafts), reverse gear wheel and selector fork cluster ⇒ page 48
- ❑ Servicing gearbox housing ⇒ page 74
- ❑ Removing and installing differential ⇒ page 127

9 - Oil drain plug

- ❑ 45 Nm

10 - Bolt

- ❑ 200 Nm
- ❑ For output shaft
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

11 - Sealing cap

- ❑ With oil guide
- ❑ For output shaft
- ❑ Always renew

12 - O-ring

- ❑ Always renew

13 - Selector shaft with selector mechanism cover

- ❑ Different versions may be fitted
- ❑ Removing and installing ⇒ page 68
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue

14 - Bolt

- ❑ 10 Nm and then turn 45° further
- ❑ Aluminium bolts (M8; 22 mm long)
- ❑ 4x
- ❑ Always renew

15 - Bolt

- ❑ 20 Nm and then turn 30° further
- ❑ Steel bolts (M8; 30 mm long)
- ❑ 3x
- ❑ Secures bearing mounting to gearbox cover
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

16 - O-ring

- ❑ 2x
- ❑ Always renew

17 - Gear detection sensor - G604-

- ❑ Fitted from model year 2012 onwards
- ❑ Installation position ⇒ page 48
- ❑ Please refer to installation instructions ⇒ page 48
- ❑ Removing and installing with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Electrical components
- ❑ Replaces gear detector switch - F208- and gearbox neutral position sender - G701-

18 - Bolt

- ❑ 10 Nm and then turn 45° further
- ❑ Always renew

19 - Gear detector switch - F208-

- ❑ 20 Nm
- ❑ Fitted up to model year 2011
- ❑ Removing and installing with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Electrical components

20 - Side shaft

- ❑ With spur gear
- ❑ Only renew together with spur gear ⇒ Item 27 (page 46)

21 - Bolt

- ❑ 150 Nm and then turn 90° further

- ❑ Secures side shaft to pinion shaft
- ❑ Always renew
- ❑ Bolt head: twelve-point, 21 mm across flats

22 - Bolt

- ❑ 15 Nm and then turn 90° further
- ❑ Steel bolts (M8; 55 mm long)
- ❑ 2x
- ❑ Always renew

23 - Centre hex stud

- ❑ 15 Nm and then turn 90° further
- ❑ Steel studs (M8/M8; 38 mm long)
- ❑ 2x
- ❑ Not fitted on all gearboxes, in which case bolts are installed ⇒ Item 24 (page 46)
- ❑ Always renew

24 - Bolt

- ❑ 10 Nm and then turn 90° further
- ❑ Aluminium bolts (M8; 35 mm long)
- ❑ 9 or 11x
- ❑ Always renew

25 - End cover

- ❑ Servicing ⇒ page 71

26 - Circlip

- ❑ Determining thickness ⇒ page 64
- ❑ Fit in annular groove on output shaft

27 - Spur gear

- ❑ Drive gear for side shaft / pinion shaft (spur gearing)
- ❑ Only renew together with side shaft ⇒ Item 20 (page 45)

28 - Gearbox cover

- ❑ Servicing ⇒ page 72

29 - Bolt

- ❑ 15 Nm and then turn 90° further
- ❑ Steel bolt (M8; 50 mm long)
- ❑ 1x

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

30 - Bolt

- ❑ 10 Nm and then turn 90° further
- ❑ Aluminium bolts (M8; 35 mm long)
- ❑ 16x
- ❑ Always renew

31 - Oil filler plug

- ❑ 45 Nm

32 - Bolt

- ❑ 10 Nm and then turn 45° further
- ❑ Aluminium bolts (M8; 22 mm long)
- ❑ Secures gearbox neutral position sender - G701- or sealing plug and sealing cap/selector shaft to gearbox cover
- ❑ Not fitted on all versions
- ❑ Always renew

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

- ❑ Gearbox neutral position sender for vehicles with start/stop system
- ❑ Installation position ⇒ page 47
- ❑ Sealing plug is fitted in place of gearbox neutral position sender - G701-

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.

- ❑ Gearbox neutral position sender - G701- was discontinued from model year 2012 onwards. It has been replaced by gear detection sensor - G604- ⇒ Item 17 (page 45)
- ❑ Select correct version according to gearbox code letters ⇒ Electronic parts catalogue
- ❑ Removing and installing with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Electrical components

34 - O-ring

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

35 - Dowel sleeve

- ❑ 2x

36 - Bolt

- ❑ 15 Nm and then turn 45° further
- ❑ Steel bolts (M8; 25 mm long)
- ❑ 3x

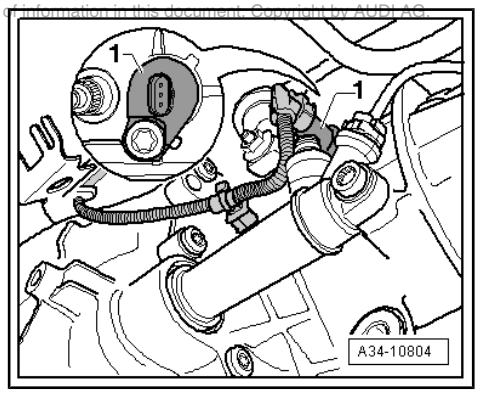
37 - Flange shaft (left-side)

- ❑ With mounting bracket
- ❑ Removing and installing ⇒ page 142
- ❑ Renewing mounting bracket and ball bearing ⇒ page 151

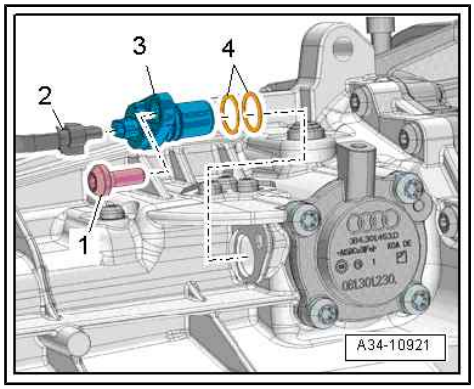
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Installation position of gearbox neutral position sender - G701- -1-.

- ♦ Only in vehicles with start/stop system
- ♦ Not fitted on gearbox with gear detection sensor - G604- ⇒ page 48



Installation position of gear detection sensor - G604-



1 - Bolt

2 - Connector

3 - Gear detection sensor

4 - O-rings

Note

The gear detection sensor - G604- can also be removed and installed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Electrical components .

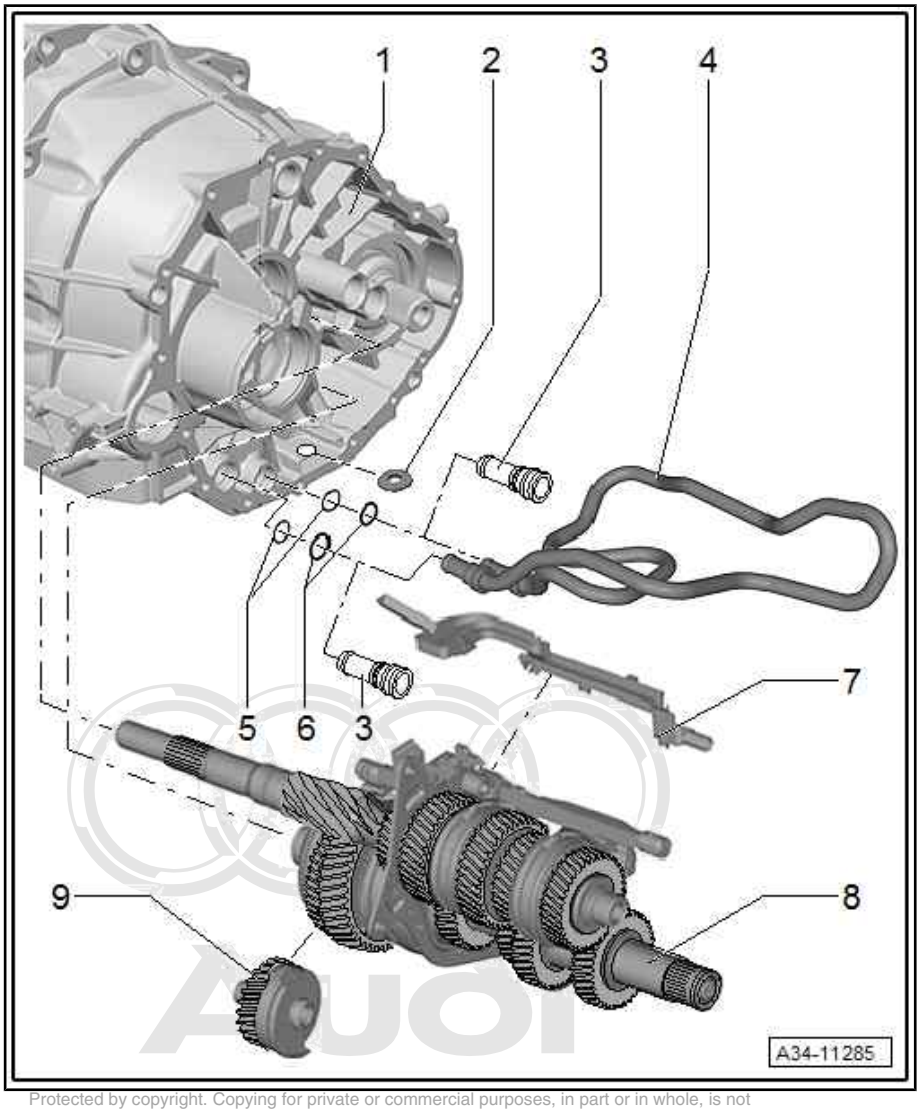
Caution

Take care when installing gear detection sensor - G604- : risk of breakage or sensor malfunction

- ***Gear detection sensor - G604- -3- must not be knocked into the gearbox or pulled in by tightening bolt -1-.***
- ***O-rings -4- and bore in gearbox cover must be lubricated with gear oil.***
- ***Gear detection sensor - G604- -3- can be pushed in carefully using a suitable tool, such as a hammer handle.***

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 - Gearbox housing

- ❑ With differential and pinion shaft
- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

2 - Magnet

- ❑ Clean

3 - Sealing plug

- ❑ 2x
- ❑ Fitted from model year 2012 onwards, depending on version
- ❑ Installation position ⇒ page 50
- ❑ Not fitted on gearbox with heat exchanger ⇒ Item 4 (page 49)

4 - Heat exchanger

- ❑ For gear oil heating
- ❑ Fitted from model year 2012 onwards, depending on version
- ❑ Removing and installing ⇒ page 52

5 - O-ring

- ❑ 2x
- ❑ For heat exchanger or sealing plug
- ❑ Always renew
- ❑ Fit in front groove of sealing plug or heat exchanger

6 - O-ring

- ❑ 2x
- ❑ For gear oil heating or sealing plug
- ❑ Always renew
- ❑ Fit in rear groove of sealing plug or heat exchanger

7 - Oil collector

- ❑ Is clipped into bearing mounting and selector plate / selector fork for 3rd/4th gear

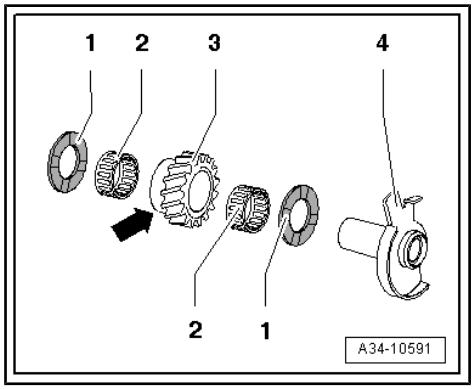
8 - Gear cluster

- ❑ Consists of input and output shafts with selector fork cluster
- ❑ Dismantling and assembling ⇒ page 93

9 - Reverse gear wheel

- ❑ With support for reverse shaft
- ❑ Exploded view - reverse gear wheel ⇒ page 50

Exploded view - reverse gear wheel



1 - Thrust washer

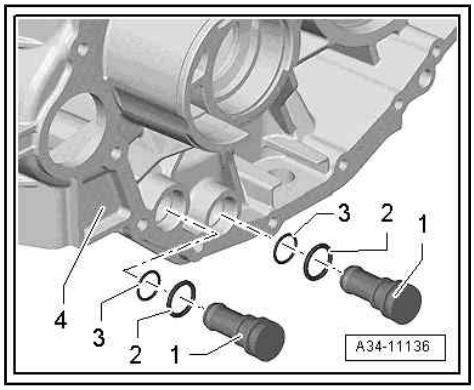
2 - Needle bearing

3 - Reverse gear wheel

Installation position: collar points -arrow- towards gearbox housing

4 - Reverse shaft support

Gearbox housing with sealing plug in place of heat exchanger



Note

- *On gearbox housings fitted for gear oil heating, sealing plugs -1- may be installed in gearbox housing -4- instead of heat exchanger.*
- *O-rings -2 ... 3- must always be renewed.*

2.4 Exploded view - selector forks

Note

- *Installation position of selector plates / selector forks in gearbox ⇒ page 51*
- *Detaching selector fork cluster from bearing mounting for input shaft and output shaft ⇒ page 93*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 - Selector plate / selector fork for reverse gear

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

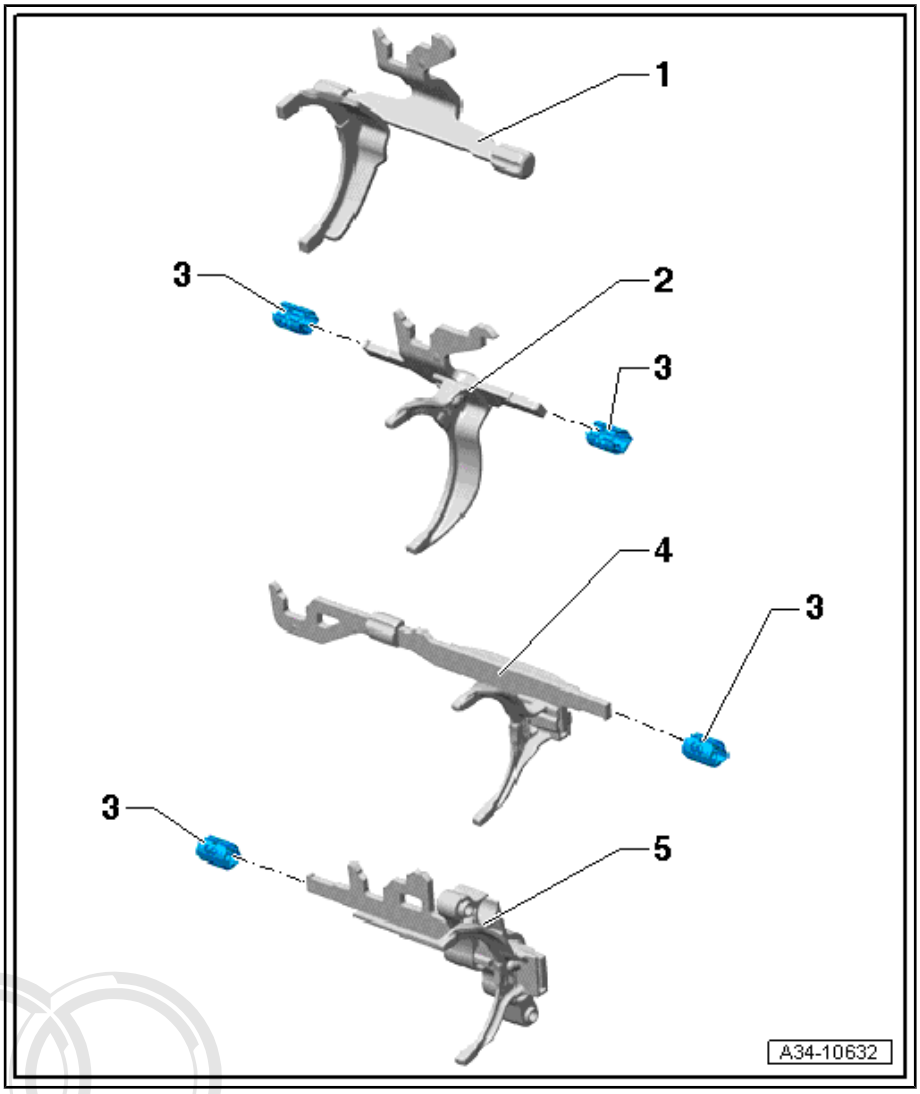
3 - Ball sleeve

- ❑ 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



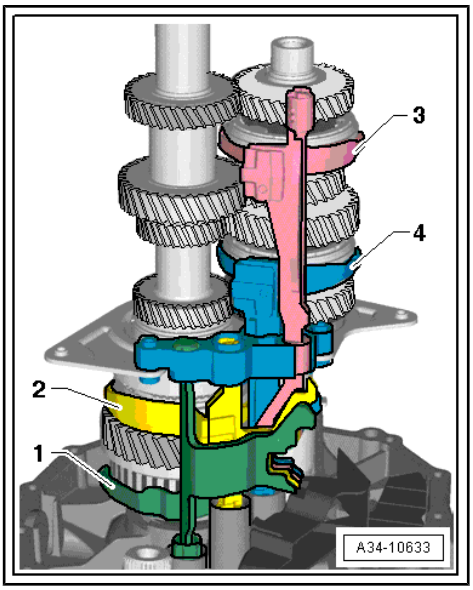
Installation position of selector plates / selector forks in gearbox

1 - Selector plate / selector fork for reverse gear

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

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

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

2.5 Dismantling and assembling gearbox

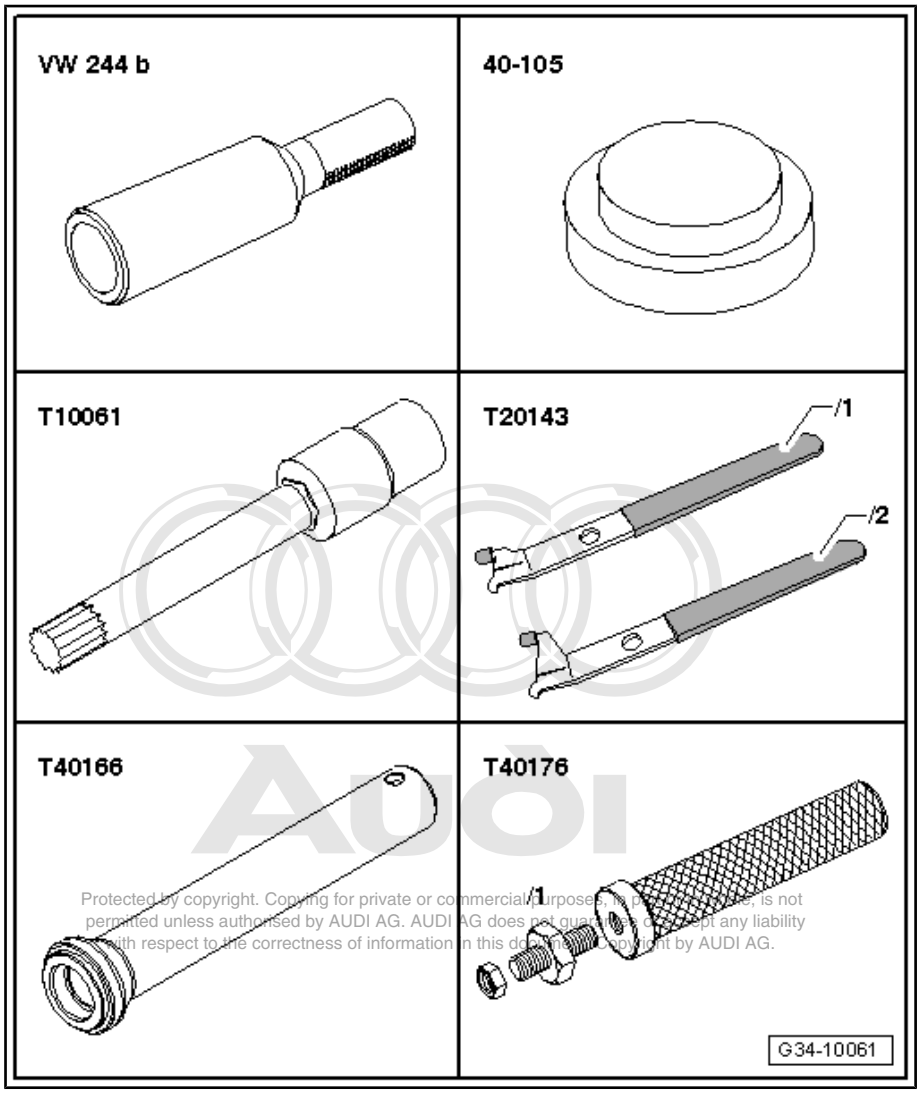
The end cover, side shaft, gearbox cover, input shaft and output shaft are removed and installed together with the internal gearbox selector mechanism.

Note

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

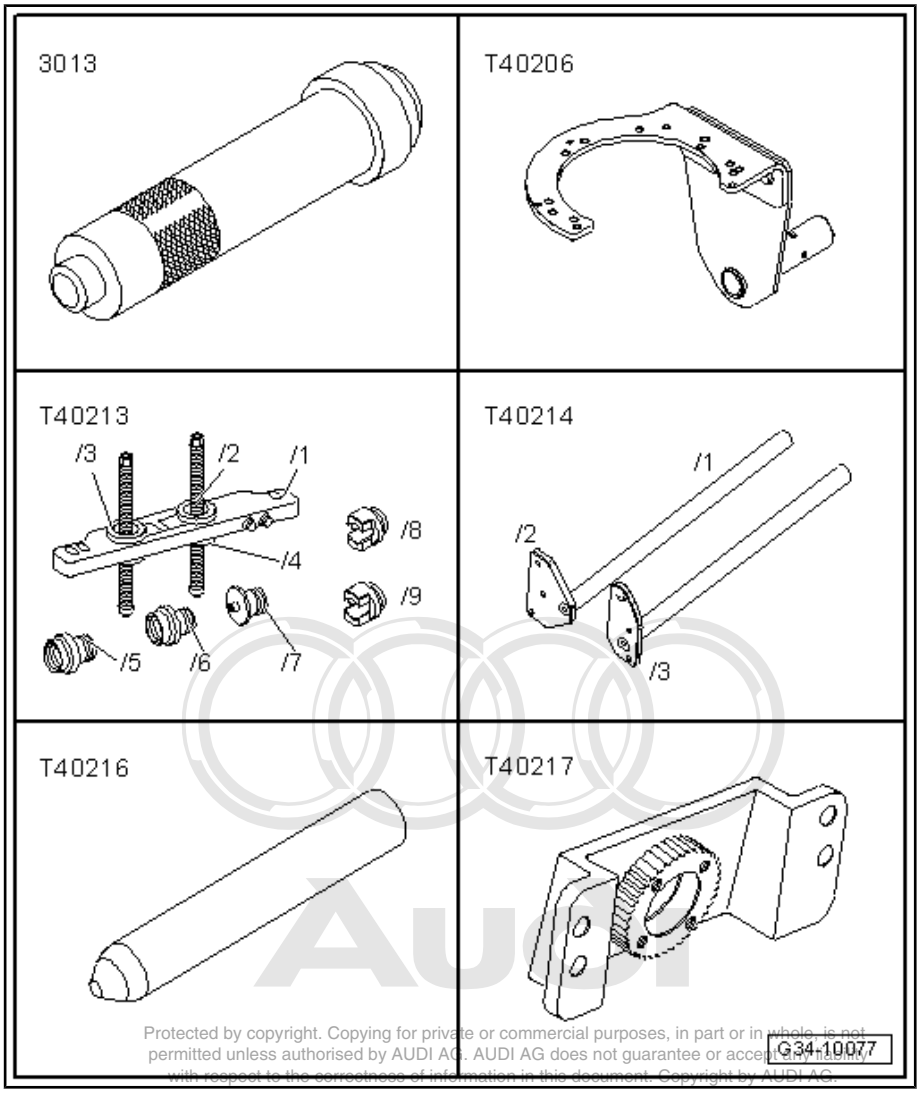
Special tools and workshop equipment required

- Drift sleeve - VW 244 B-
- Thrust plate - 40 -105-
- Socket, multi-point bit - T10061-
- Extractor tool - T20143-
- Thrust piece - T40166-
- Extractor - T40176-



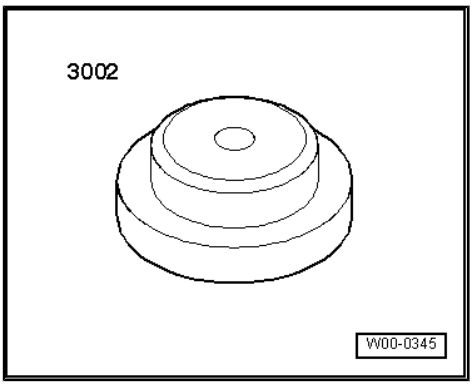
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Punch - 3013-
- Gearbox support - T40206-
- Separating tool - T40213-
- Support tool - T40214-
- Guide pin - T40216-
- Counterhold tool - T40217-

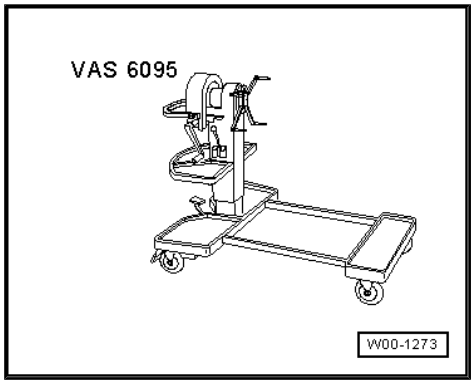


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Thrust piece - 3002-



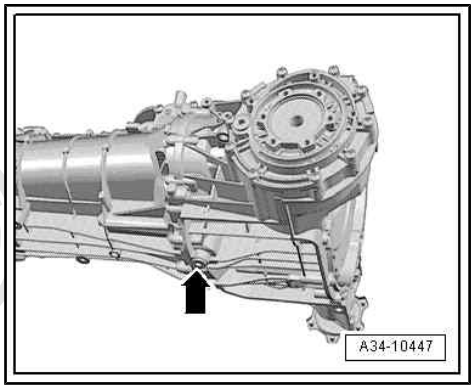
- Engine and gearbox support - VAS 6095-



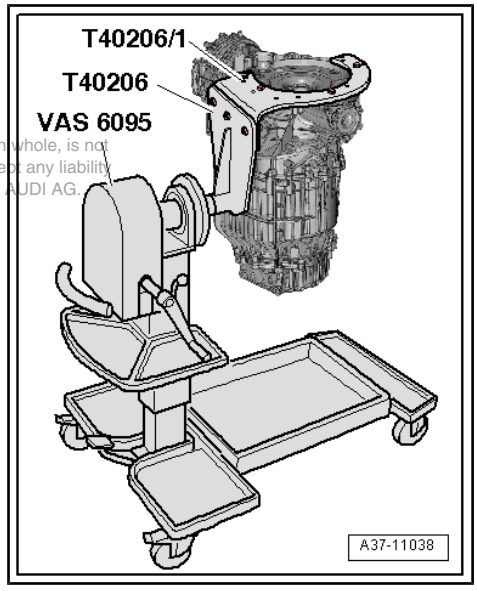
- Locking fluid - AMV 185 101 A1-
- Sealing paste - AMV 188 001 02-
- Grease for clutch plate splines - G 000 100-
- Lubricating paste - G 000 150-
- Sealing grease - G 052 128 A1-

Dismantling gearbox

– Lift gearbox with workshop hoist - VAS 6100- ⇒ page 42 .
– Place drip tray underneath.
– Unscrew plug -arrow- and drain off gear oil.

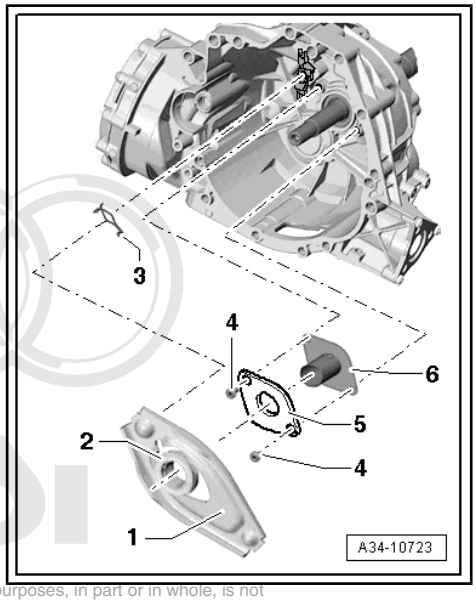


– Secure gearbox to engine and gearbox support ⇒ page 91 .
– Remove clutch module ⇒ page 25 .
– Put clutch module down carefully, e.g. on work bench.



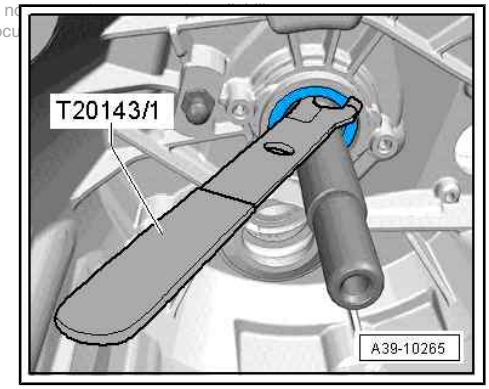
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– 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-.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does no with respect to the correctness of information in this docu

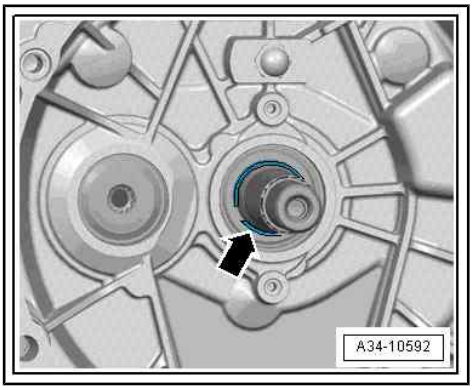
– Prise out input shaft oil seal.



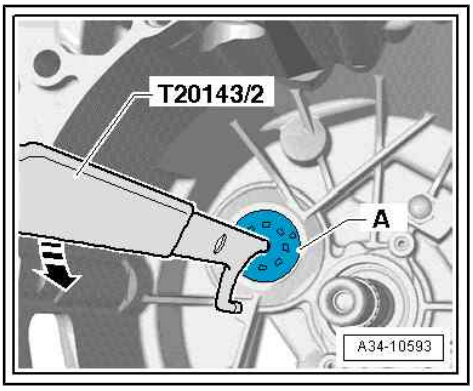
– Then remove circlip -arrow- in front of ball bearing for input shaft.

Note

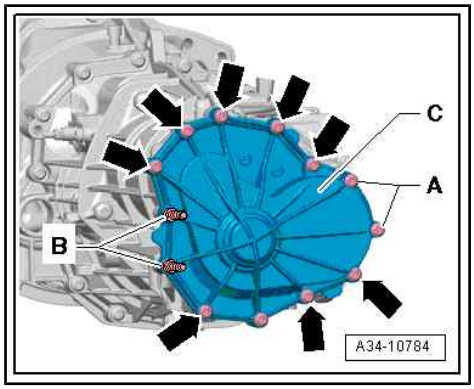
If this circlip cannot be removed, detach the gearbox cover first and knock the input shaft forwards using a rubber-headed hammer.



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



– Remove bolts -A-, -B- and -arrows- securing end cover -C- to gearbox cover.



Note

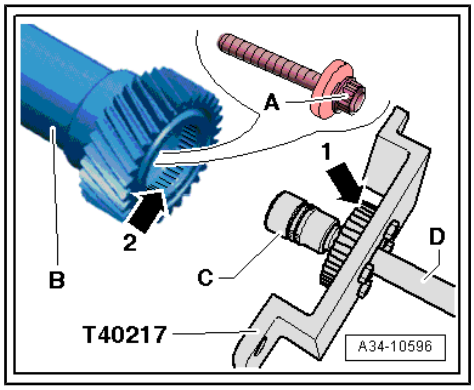
The centre hex studs -B- are not fitted on all versions, for allocation refer to ⇒ Electronic parts catalogue .

– Detach end cover -C- from gearbox cover.

Loosen twelve-point bolt -A- securing side shaft -B- to pinion shaft as follows:

– Apply twelve-point socket -C- (21 mm) with extension -D- to twelve-point bolt -A-.

– Engage external teeth -arrow 1- of counterhold tool - T40217- in internal splines -arrow 2- of side shaft -B-.

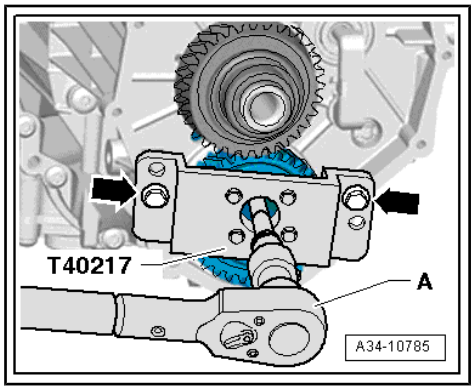


– Secure counterhold tool - T40217- to gearbox cover with M8 bolts -arrows-.

– Loosen and unscrew twelve-point bolt securing side shaft to pinion.

-A- Torque wrench

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



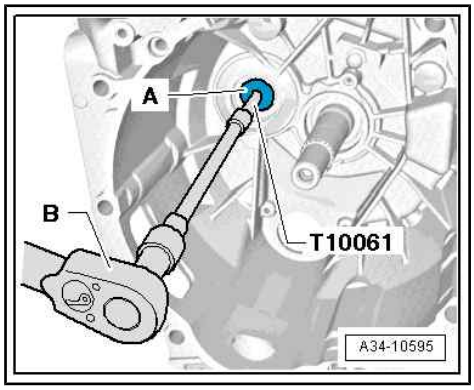
Note

- *Counterhold tool - T40217- remains in position on the gearbox cover.*
- *When the counterhold tool - T40217- is attached, the output shaft is locked and will not turn.*

– Now loosen bolt -A- on output shaft using socket - T10061- .

Note

- *Bolt -A- has a very high release torque (approx. 300 - 350 Nm).*
- *If necessary, heat bolt to approx. 80 °C using hot air blower - V.A.G 1416- . This will reduce the torque required to release the bolt. After dismantling the gearbox, check the seal of the ball bearing in the gearbox housing for damage. Renew ball bearing if necessary.*

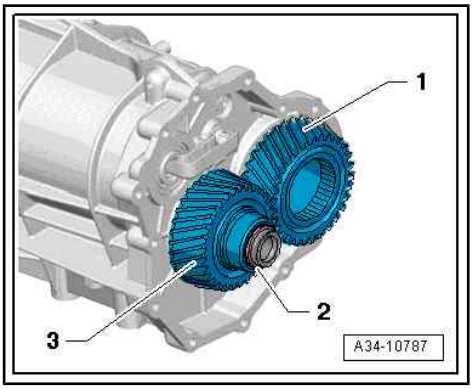


B - Torque wrench

– Remove counterhold tool - T40217- .

– Pull side shaft -1- out of gearbox cover.

– Detach circlip -2- and spur gear -3- (drive for side shaft) from output shaft -3-.

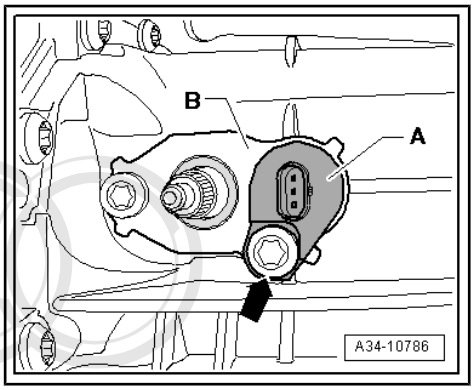


Note

- *If the spur gear cannot be detached by hand, use two-arm puller e.g. -Kukko 20/10- . To do this, insert thrust piece - 3002- in output shaft.*
- *If necessary, detach oil collector ⇒ Item 5 (page 72) from gearbox cover.*

– 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.

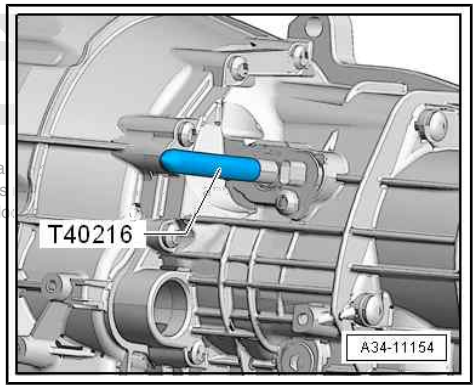


Note

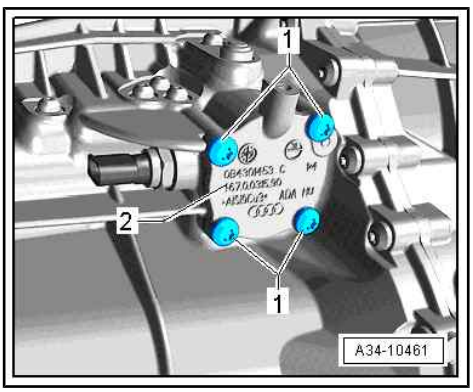
- *Sealing cap -B- remains fitted.*
- *If a sealing plug is fitted in place of the gearbox neutral position sender - G701- , it does not have to be removed when dismantling and assembling the gearbox.*

– Screw guide pin - T40216- onto selector shaft.

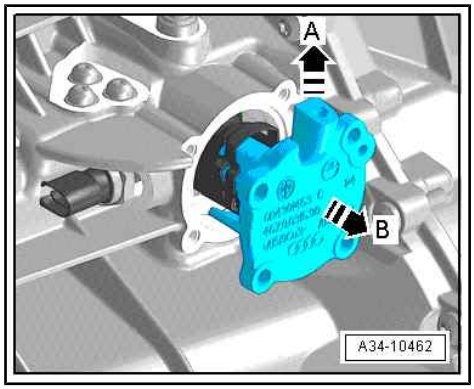
Protected by copyright. Copying for private or commercial
permitted unless authorised by AUDI AG. AUDI AG does
with respect to the correctness of information in this do



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



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

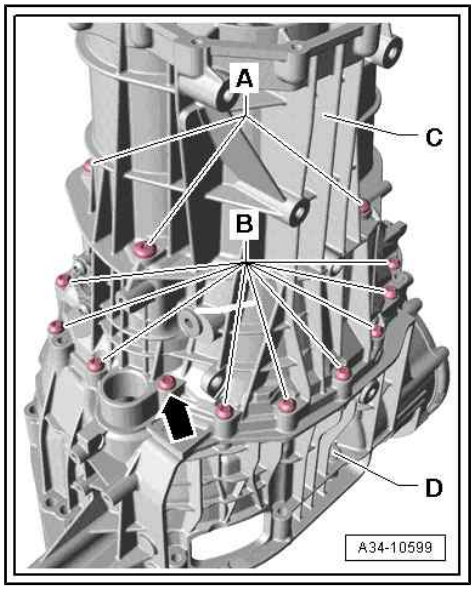


– Then turn gearbox in assembly stand or engine and gearbox support - VAS 6095- so that gearbox cover -C- faces upwards.
– Remove bolts -A- securing bearing mounting and bolts -B- securing gearbox cover -C- to gearbox housing -D-.

Note

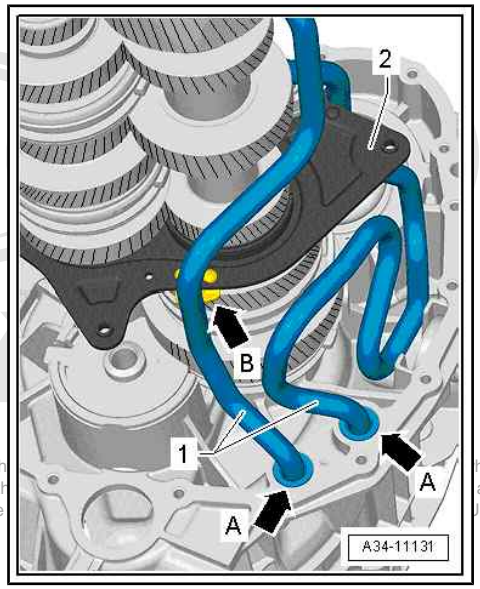
For subsequent installation of the gearbox cover, note that the bolt marked with the -arrow- is a steel bolt, 50 mm long.

– Take off gearbox cover -C-.



Gearbox with gear oil heating

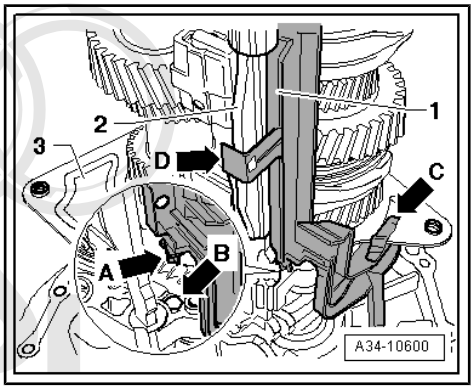
– Carefully pull heat exchanger -1- out of holes in gearbox housing -arrows A-. When doing so, pay attention to guides -arrow B- of bearing mounting -2-.



Protected by copyrigh
permitted unless auth
with respect to the
hole, is not
any liability
UDI AG.

Continued for all vehicles:

– Detach oil collector -1- from selector plate / selector fork for 3rd/4th gear -2- and from bearing mounting -3- -arrows A…D-.

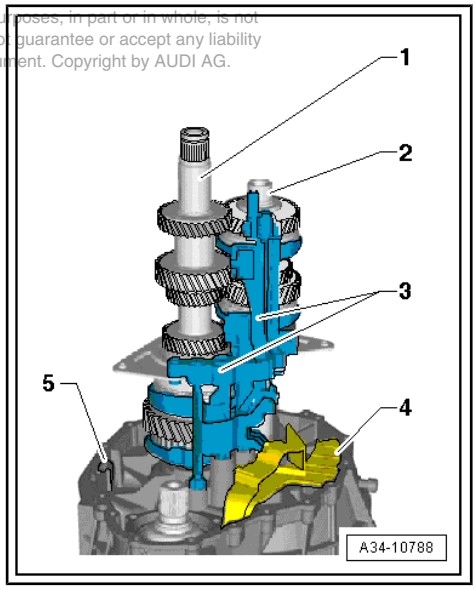


– Remove magnet -5- from gearbox housing and clean magnet.

Public Version of the Audi Group Digital Standard. Transfer to third parties or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

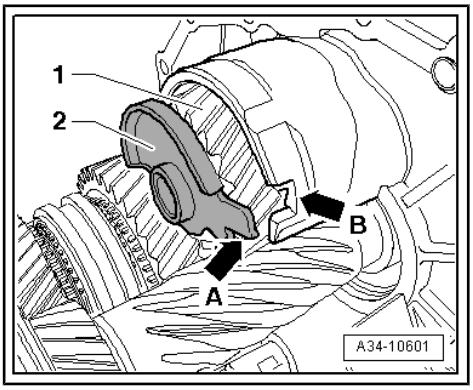
-Items 1 ... 4- can be disregarded.



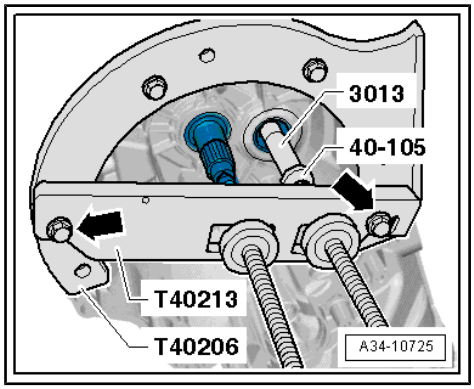
– Turn gearbox into a horizontal position on assembly stand or engine and gearbox support - VAS 6095- . Reverse gear wheel -1- with support for reverse shaft -2- then faces upwards.

Note

-Arrow A- and -arrow B- can be disregarded.



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



Caution

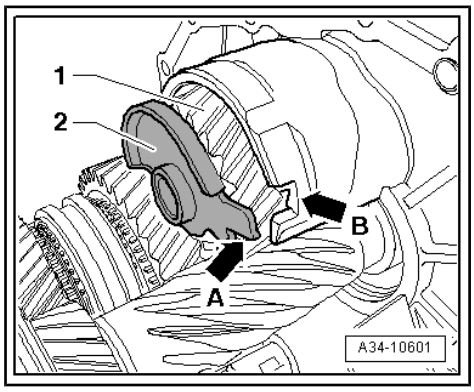
Risk of damage to gears, shafts and bearings.

- *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.*

– 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.

– At the same time, guide support for reverse shaft -2- out of retainer in gearbox housing -arrow B-.

– Then detach reverse gear wheel -1- with support for reverse shaft -2- from input shaft.

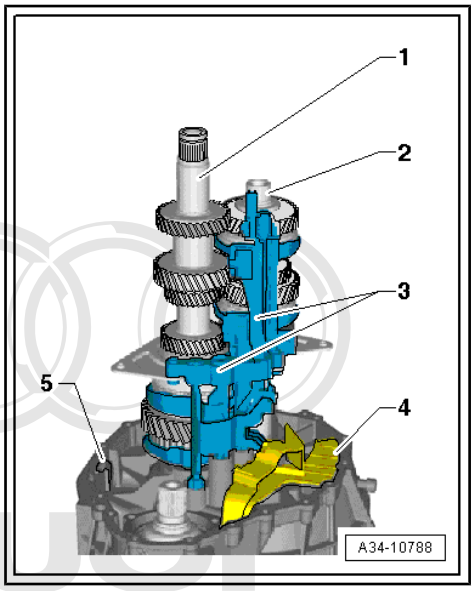


– Detach input shaft -1- and output shaft -2- together with selector fork cluster -3- from gearbox housing.

– If necessary, remove oil collector -4-.

Detach separating tool - T40213- from gearbox support - T40206- .

Assembling gearbox

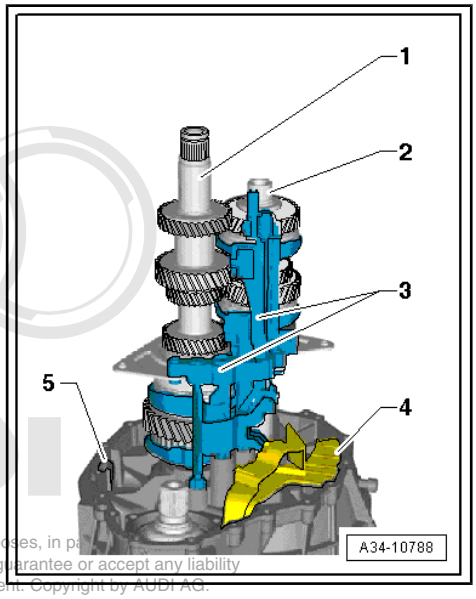


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- The reverse gear wheel with support for reverse shaft must be installed ⇒ page 61 before the input shaft -1- and output shaft -2- are seated in the ball bearings.

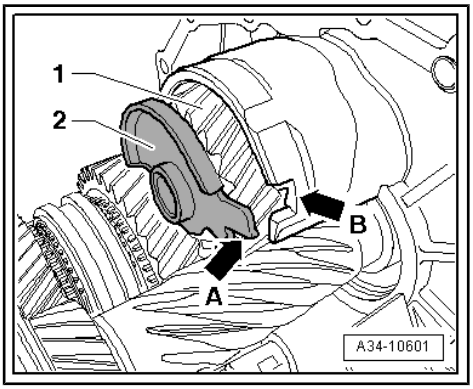
– Install oil collector -4- and magnet -5- in gearbox housing.

– Install input shaft -1- and output shaft -2- together with selector fork cluster -3- in gearbox housing.



Protected by copyright. Copying for private or commercial purposes, in p... permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Install reverse gear wheel -1- with support for reverse shaft -2-. When doing this, fit lug -arrow A- into slot -arrow B- in gearbox housing.



– Secure supports - T40214/1- and -T40214/2- to gearbox housing, as shown in illustration, with bolts -1- and -2-.

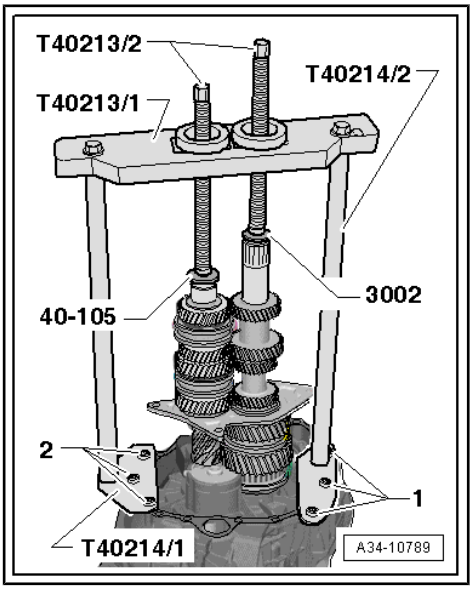
– Attach plate - T40213/1- to supports - T40214/1- and - T40214/2- .

– Fit thrust plate - 40-105- on input shaft and thrust piece - 3002- in aperture of output shaft.

Caution

Risk of damage to gears, shafts and bearings.

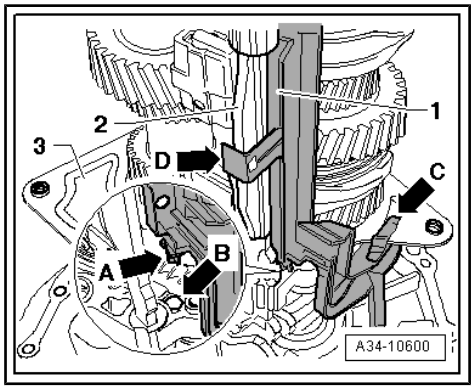
- ***The input shaft and output shaft must be pressed in together.***
- ***It is permissible to turn the spindles alternately not more than one turn at a time when pressing in the shafts.***



– 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.

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

– Fit lug -arrow A- on oil collector -1- into hole -arrow B- in bearing mounting -3- and then clip oil collector onto bearing mounting -arrow C- and selector plate / selector fork for 3rd/4th gear -2- -arrow D-.

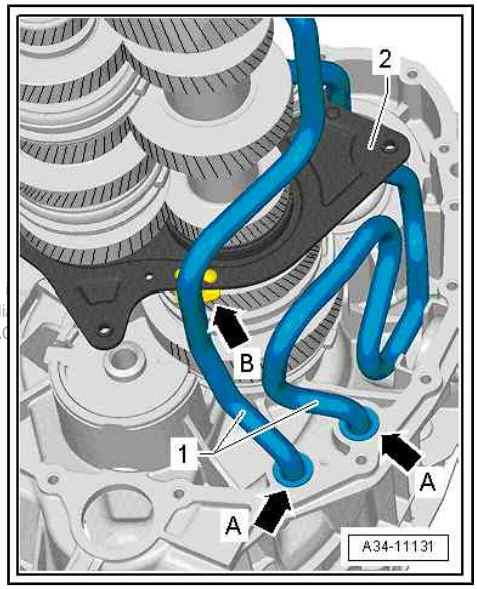


Gearbox with gear oil heating

- Renew O-rings on heat exchanger.

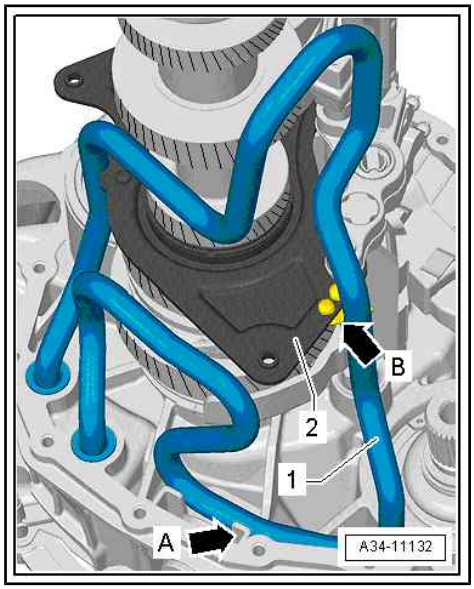
– Carefully press heat exchanger -1- into holes in gearbox housing -arrows A-. When doing so, lock it into guide -arrow B- of bearing mounting -2-.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Note

When installing, guide the heat exchanger -1- past the housing rib for the magnet -arrow A- and lock into the bearing mounting guide -arrow B-.

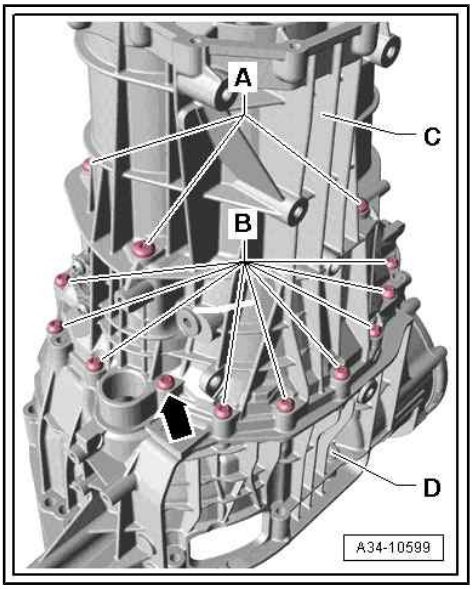


Continued for all vehicles:

– Check that 2 dowel sleeves for centring gearbox cover and gearbox housing are fitted in gearbox housing.

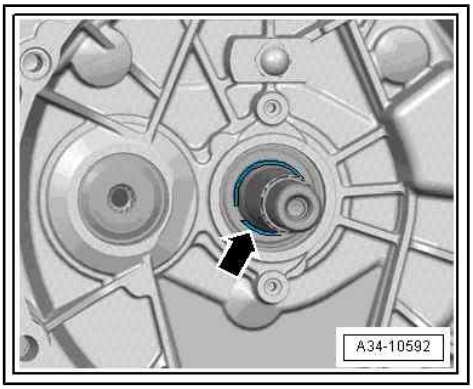
– Apply sealing paste - AMV 188 001 02- evenly and not too thickly onto contact surfaces between gearbox housing and gearbox cover.

– Fit gearbox cover -C- onto gearbox housing -D-.
– 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 new aluminium bolts -B- (16x; 35 mm long) to specified torque.
– Tighten steel bolt -arrow- (50 mm long) below aperture for slave cylinder to specified torque.
– Then tighten bolts -A- to specified torque.



Determine thickness of circlip -arrow- for input shaft as follows:

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



Note

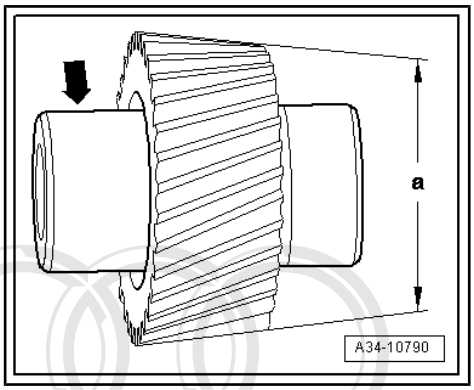
Start with the thickest circlip.

The following circlips are available:

Circlip thickness (mm)		
3.44	3.47	3.50

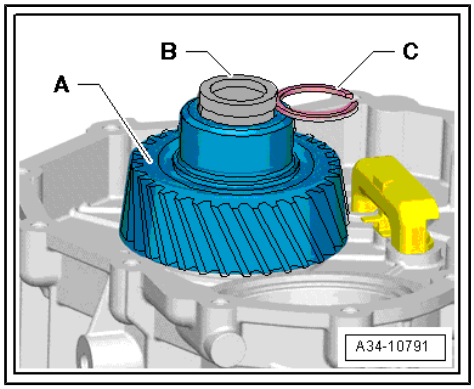
Installation position of spur gear

- Longer extension -arrow- for spur gear bearing faces towards gearbox cover.
- Smaller diameter -a- of gear teeth faces end cover.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Fit spur gear -A- on output shaft -B-.



Note

If necessary, use press tool - 40-21- to drive spur gear onto stop.

Determine thickness of circlip -C- for spur gear as follows:

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

The following circlips are available:

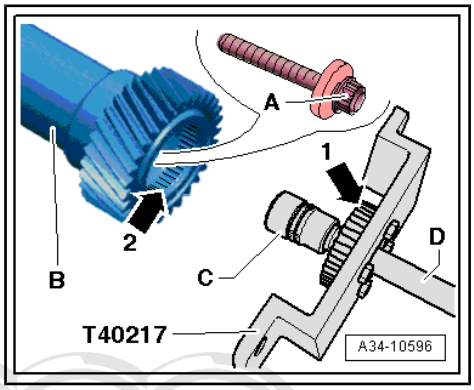
Circlip thickness (mm)		
2.23	2.35	2.47
2.26	2.38	2.50
2.29	2.41	
2.32	2.44	

– Insert side shaft -B- all the way onto pinion shaft and into gearbox cover.

Tighten twelve-point bolt -A- securing side shaft -B- to pinion shaft as follows:

– Apply twelve-point socket -C- (21 mm) with extension -D- to twelve-point bolt -A-.

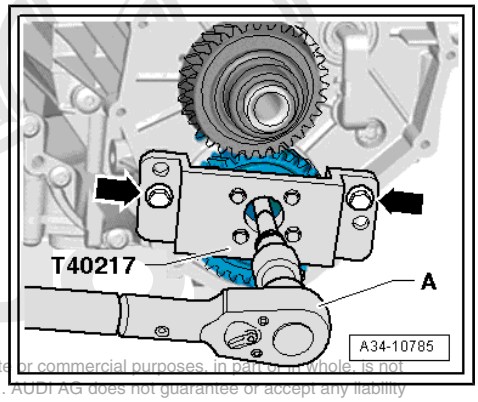
– Engage external teeth -arrow 1- of counterhold tool - T40217- in internal splines -arrow 2- of side shaft.



– Secure counterhold tool - T40217- to gearbox cover with M8 bolts -arrows-.

– Tighten twelve-point bolt securing side shaft / pinion to specified torque.

-A- Torque wrench



Note

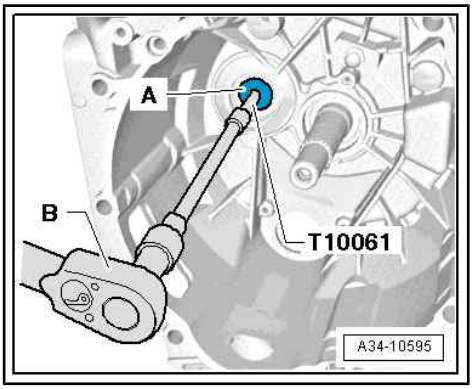
- *Counterhold tool - T40217- remains in position on the gearbox cover.*
- *When the counterhold tool - T40217- is attached, the output shaft is locked and will not turn.*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

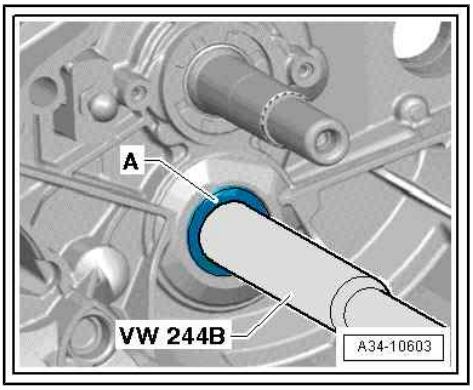
– Clean thread of bolt -A- for output shaft with a wire brush. Then install bolt with locking fluid - AMV 185 101 A1- and tighten to specified torque.

B - Torque wrench

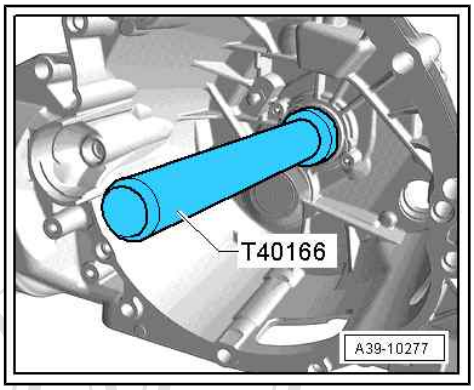
– Remove counterhold tool - T40217- .



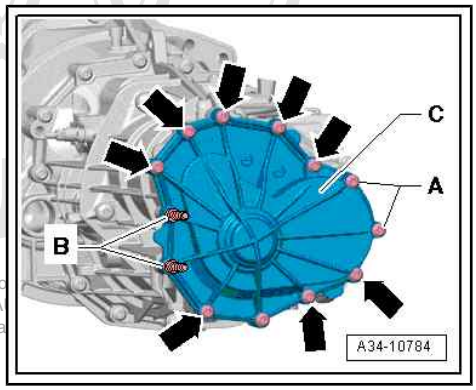
– Before installation, lightly oil outside circumference of new sealing cap -A- for output shaft, and drive in until flush.



– 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).
– Apply sealing paste - AMV 188 001 02- evenly and not too thickly onto joint between gearbox cover and end cover.



– Then fit end cover -C- on gearbox.
– Fit new bolts -A-, -B- and -arrows- and tighten to specified torque.

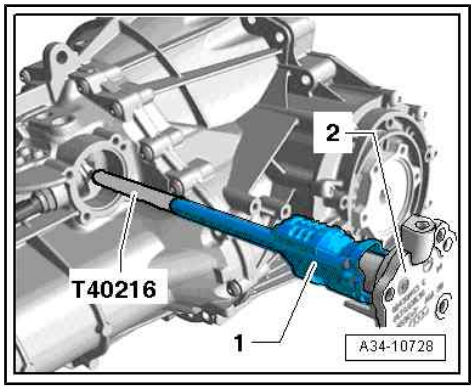


Note

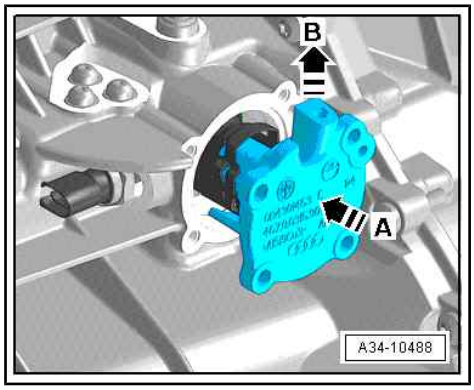
The centre hex studs -B- are not fitted on all versions, for allocation refer to ⇒ Electronic parts catalogue . In this case, bolts ⇒ Item 24 (page 46) are fitted in place of the centre hex studs.

Protected by copyright. Copying for private o
permitted unless authorised by AUDI AG. A
with respect to the correctness of informa

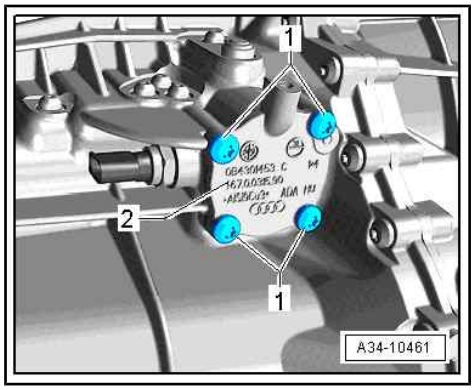
– Fit new O-ring on selector shaft cover -2-.
– Screw guide pin - T40216- onto selector shaft -1-
.



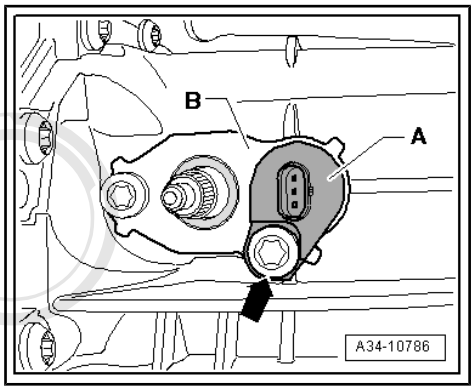
– Lift selector shaft slightly -arrow B- and install it in gearbox -arrow A-.



– Selector shaft cover -2- must make contact with gearbox housing.
– Tighten new bolts -1- to specified torque.
– Unscrew guide pin - T40216- .

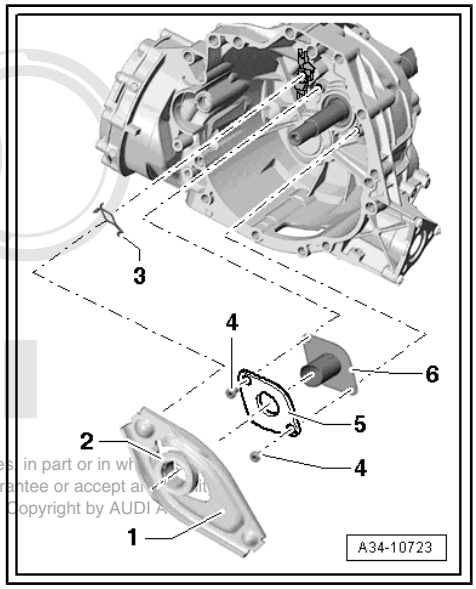


– If previously fitted, insert gearbox neutral position sender - G701- -A- with new O-ring in sealing cap -B- for selector shaft.
– Tighten new bolt -arrow- to specified torque.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

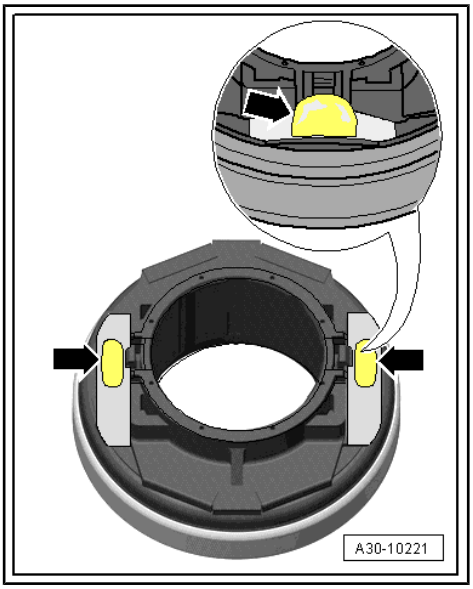


Protected by copyright. Copying for private or commercial purposes, in part or in wh
permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept a
with respect to the correctness of information in this document. Copyright by AUDI A

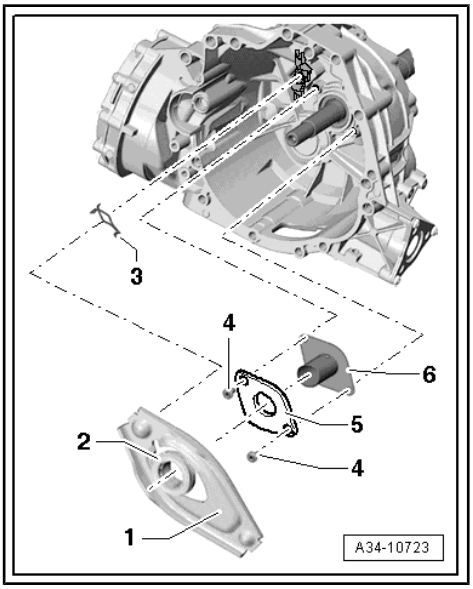
Caution

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- ⇒ page 8 .*
- *Grease bearing surfaces for clutch release bearing on release lever with lubricating paste - G 000 150-*
- *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 .



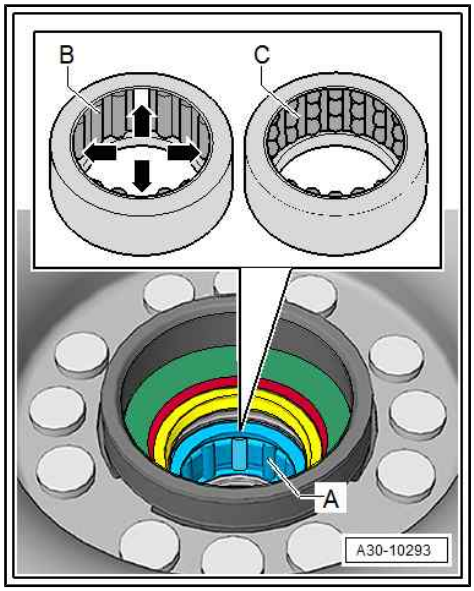
Caution

Check version of needle bearing in dual-mass flywheel.

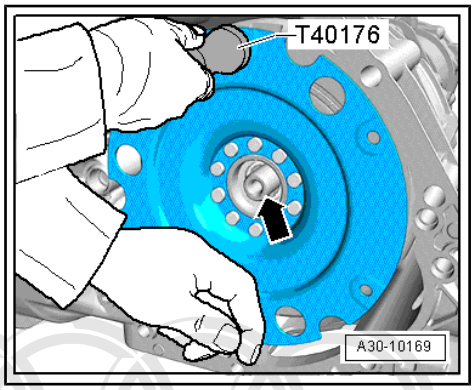
- *Depending on the version, ball bearings or needle bearings may be fitted; needle bearings may have the full number of rollers, or every 4th roller may be missing.*
- *The needle bearings -B- of the type where every 4th roller is missing -arrows- must always be renewed on vehicles with 4-cylinder TDI engine (except 125 kW TDI)* *⇒ page 38* .
- *On all other vehicles the missing needle rollers do not mean that the needle bearing is defective. Do not renew the needle bearing.*
- *Depending on the manufacturer, the new needle bearings are fitted with the full number of either rollers -A- or balls -C-.*

Depending on the make, the following bearings are fitted on vehicles with 4-cylinder TDI engines (except 125 kW TDI):

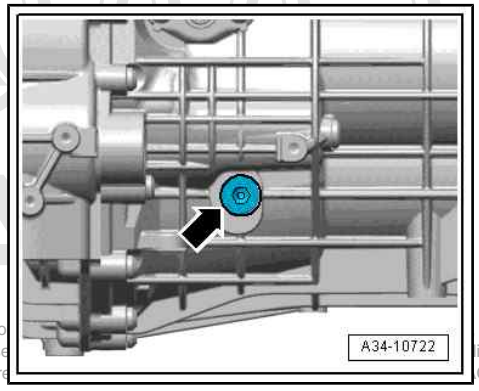
- *»LuK« dual-mass flywheel: Needle bearing -A- fitted with the full number of rollers*
- *»Sachs« dual-mass flywheel: Ball bearing -C-*
- *For correct version, refer to ⇒ Electronic parts catalogue*



– Install clutch module and flange shaft (left-side) ⇒ page 28 .



– Unscrew oil filler plug -arrow-, fill up gear oil in gearbox and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .

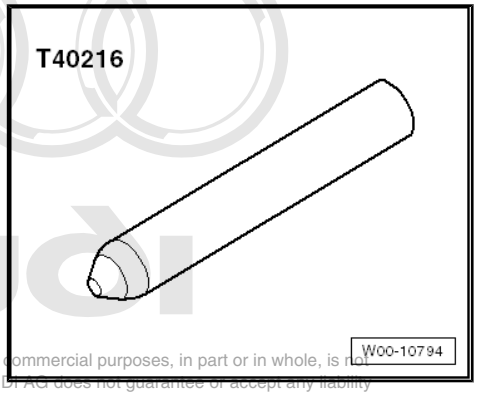


Protected by copyright. Co
permitted unless authorise
with respect to the corre
is not
liability
G.

2.6 Removing and installing selector shaft

Special tools and workshop equipment required

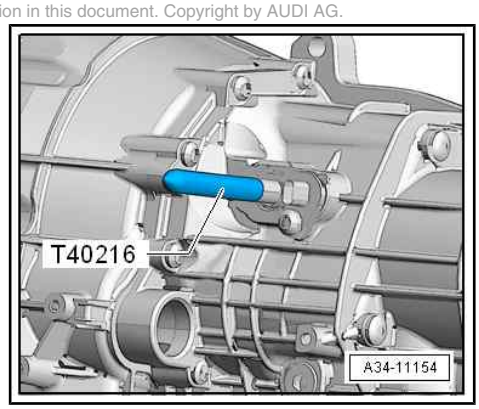
♦ Guide pin - T40216-



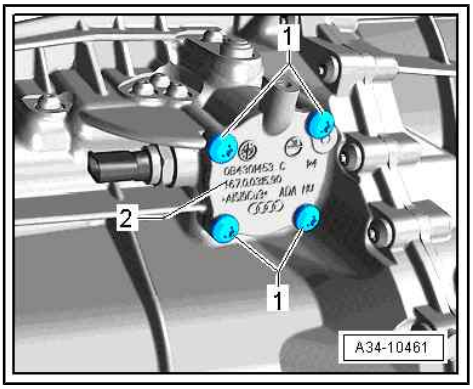
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Removing

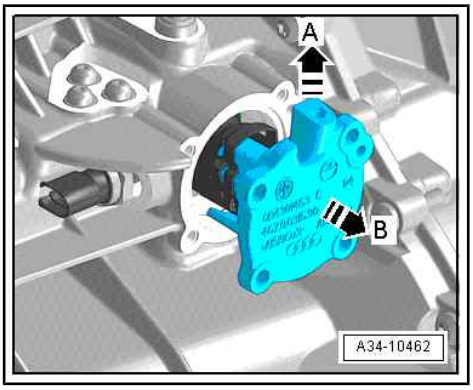
– Screw guide pin - T40216- onto selector shaft.



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



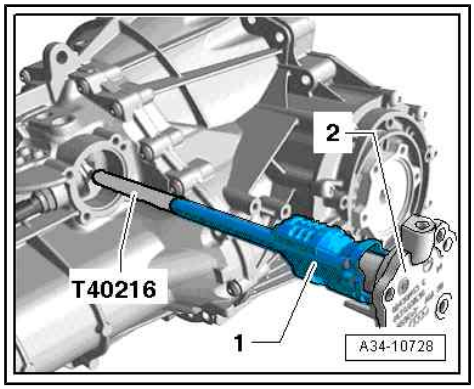
– Lift selector shaft slightly -arrow A- and pull it out -arrow B-.



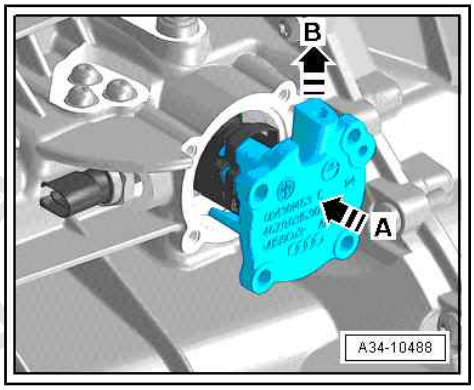
Installing

– Fit new O-ring on selector shaft cover -2-.

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



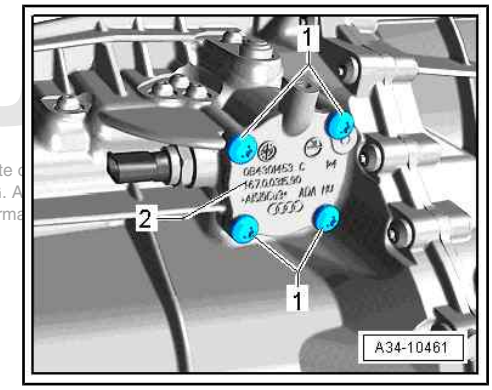
– Lift selector shaft slightly -arrow B- and install it in gearbox -arrow A-.



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

– Fit new bolts -1- and tighten to specified torque ⇒ Item 14 (page 45) .

– Unscrew guide pin - T40216- .



Protected by copyright. Copying for private
permitted unless authorised by AUDI AG. A
with respect to the correctness of informa

3 Gearbox housing, clutch housing

⇒ “3.1 Exploded view - end cover”, page 71
⇒ “3.2 Exploded view - gearbox cover”, page 72
⇒ “3.3 Exploded view - gearbox housing”, page 74
⇒ “3.4 Servicing end cover”, page 76
⇒ “3.5 Servicing gearbox cover”, page 77
⇒ “3.6 Servicing gearbox housing”, page 87

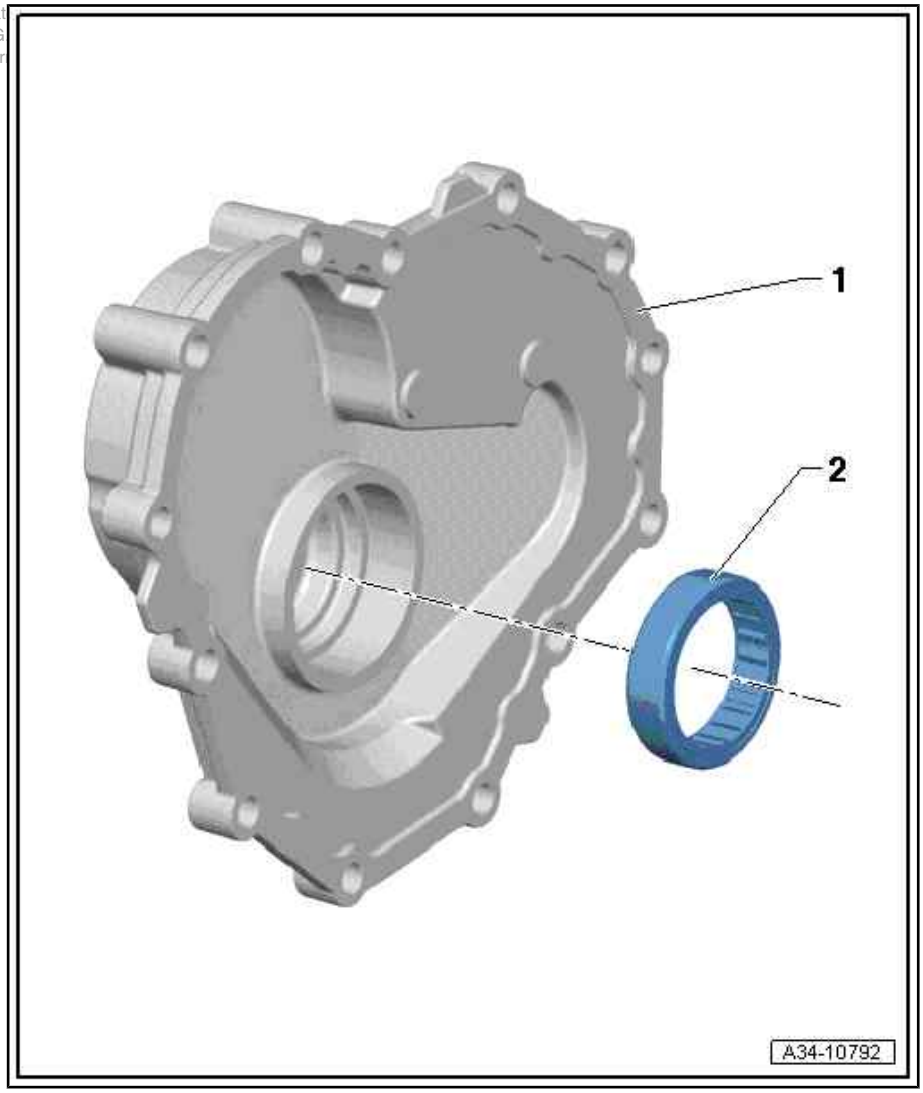
3.1 Exploded view - end cover

Protected by copyright. Copying for private
permitted unless authorised by AUDI AG
with respect to the correctness of infor

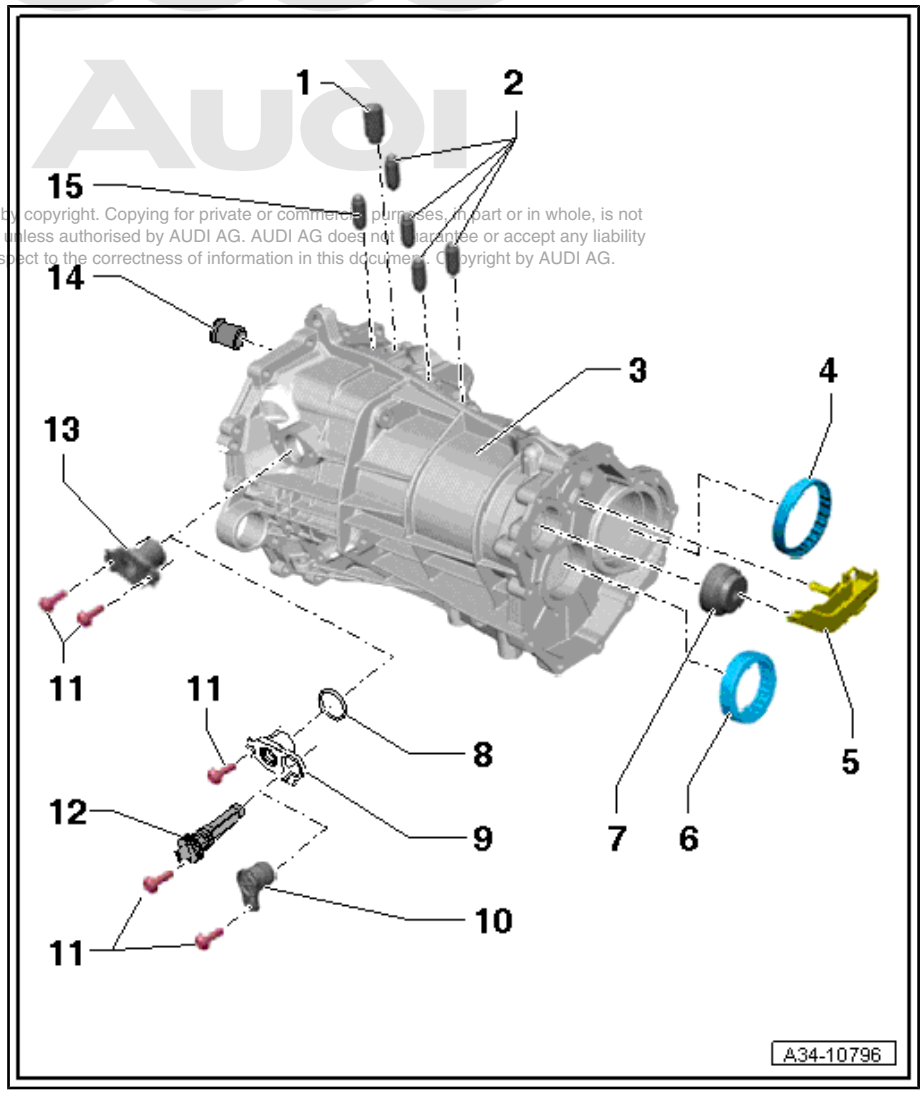
1 - End cover

2 - Needle bearing

- ❑ Bearing for spur gear
- ❑ Pulling out ⇒ page 77
- ❑ Pressing in ⇒ page 77
- ❑ Peen to secure after installing ⇒ page 77



3.2 Exploded view - gearbox cover



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

1 - Large locking bush

- For selector shaft
- Removing and installing ⇒ page 82
- Installation depth ⇒ page 82

2 - Locking bush

- For selector plate / selector fork
- Removing ⇒ page 83
- Pressing in ⇒ page 83

3 - Gearbox cover

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

4 - Needle bearing

- Bearing for side shaft
- Drive out of gearbox cover using drift - 3138-
- Always renew
- Driving in ⇒ page 83
- Peen to secure after installing ⇒ page 83

5 - Oil collector

- Fit in holes in gearbox cover and roller bearing ⇒ Item 7 (page 72)

6 - Roller bearing

- Bearing for spur gear in gearbox cover
- Pressing out ⇒ page 84
- Pressing in ⇒ page 84
- Peen to secure after installing ⇒ page 84

7 - Roller bearing

- Bearing for input shaft
- Pressing out ⇒ page 84
- Pressing in ⇒ page 85

8 - O-ring

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

9 - 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 85
- Removing and installing oil seal for selector shaft ⇒ page 86

- ❑ Removing ball sleeve for selector shaft ⇒ page 86
- ❑ Installing ball sleeve for selector shaft ⇒ page 86

10 - 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

11 - Bolt

- ❑ 10 Nm and then turn 45° further
- ❑ Aluminium bolts (M8; 22 mm long)
- ❑ Always renew

12 - Gearbox neutral position sender - G701-

- ❑ For vehicles with start/stop system
- ❑ Installation position ⇒ page 47
- ❑ Gearbox neutral position sender - G701- was discontinued from model year 2012 onwards. It has been replaced by gear detection sensor - G604- ⇒ page 48
- ❑ Sealing plug is fitted in place of gearbox neutral position sender - G701-
- ❑ 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
- ❑ Removing and installing with gearbox installed in vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Electrical components

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13 - 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 85
- ❑ Exploded view ⇒ page 85
- ❑ Removing and installing oil seal for selector shaft ⇒ page 86
- ❑ Removing ball sleeve for selector shaft ⇒ page 86
- ❑ Installing ball sleeve for selector shaft ⇒ page 86

14 - Bearing bush

- ❑ For 3rd/4th gear selector plate / selector fork
- ❑ Pressing out ⇒ page 87
- ❑ Pressing in ⇒ page 87

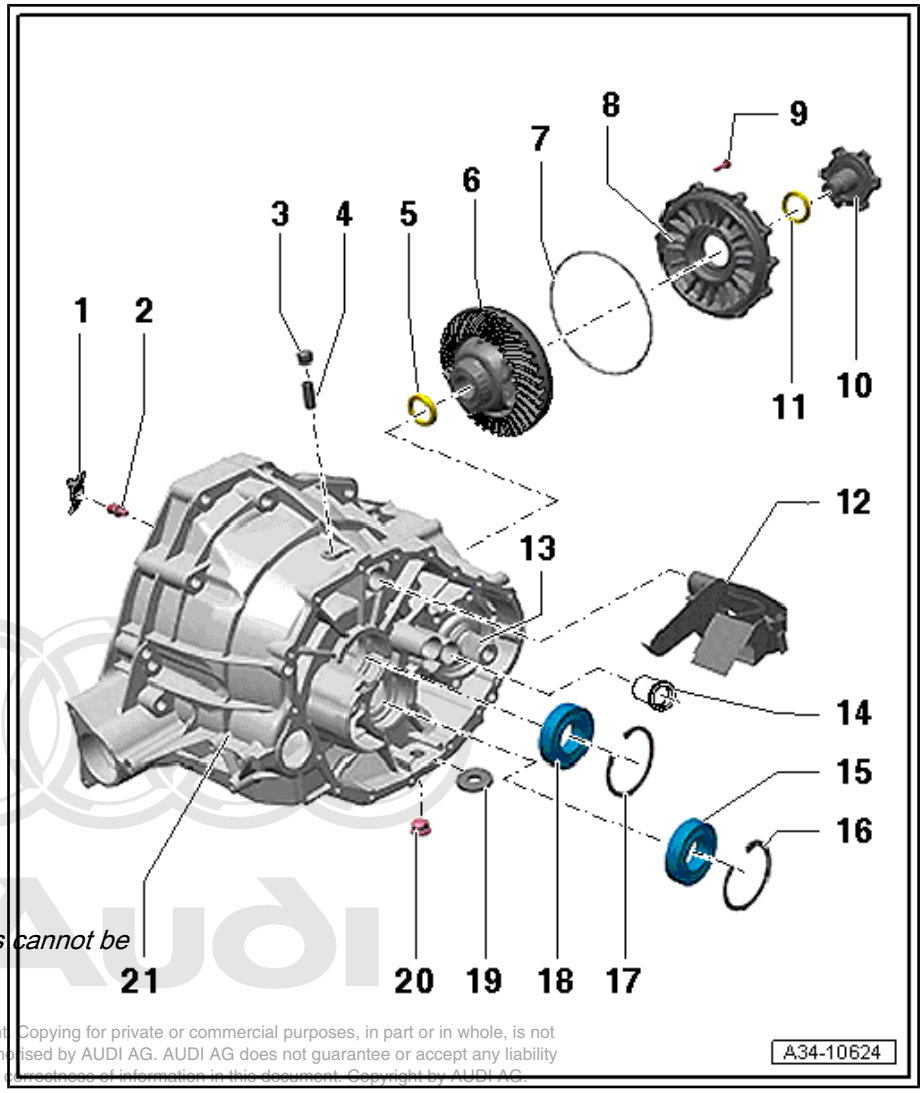
15 - Small locking bush

- ❑ For selector shaft
- ❑ Not fitted on all versions
- ❑ At present there is no provision for removing and installing

3.3 Exploded view - gearbox housing

Note

At present there is no provision for removing and installing the pinion shaft.



1 - Intermediate piece
- ❑ Renew if damaged

2 - Ball-head pin
- ❑ 25 Nm
- ❑ Grease bearing surface for clutch release lever with lubricating paste - G 000 150-

3 - Cap
- ❑ For gearbox breather

4 - Breather pipe
- ❑ Installation depth ⇒ page 88
- ❑ Clip in cap for gearbox breather

5 - Oil seal
- ❑ For flange shaft (left-side)
- ❑ Removing and installing ⇒ page 131

6 - Differential
- ❑ Renewing tapered roller bearings for differential ⇒ page 138

Note

Differential bevel gears cannot be removed and installed

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

8 - Cover for final drive
- ❑ Renewing ⇒ page 155

9 - Bolt
- ❑ 20 Nm and then turn 90° further
- ❑ Steel bolts (M8; 38 mm long)
- ❑ 10x

10 - Flange shaft (right-side)
- ❑ With circlip
- ❑ Removing and installing ⇒ page 140

11 - Oil seal
- ❑ For flange shaft (right-side)
- ❑ Removing and installing ⇒ page 130

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

12 - Oil collector

13 - Pinion shaft

- ❑ Cannot be renewed at present

14 - Bearing bush

- ❑ For selector plate / selector fork
- ❑ 3x
- ❑ Removing ⇒ page 89
- ❑ Installing ⇒ page 89

15 - Ball bearing

- ❑ For output shaft
- ❑ Driving out ⇒ page 89
- ❑ Driving in ⇒ page 89

16 - Circlip

- ❑ Installation position ⇒ page 90

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

17 - Circlip

- ❑ Installation position ⇒ page 90

18 - Ball bearing

- ❑ For input shaft
- ❑ Driving out ⇒ page 90
- ❑ Driving in ⇒ page 90

19 - Magnet

- ❑ Clean

20 - Oil drain plug

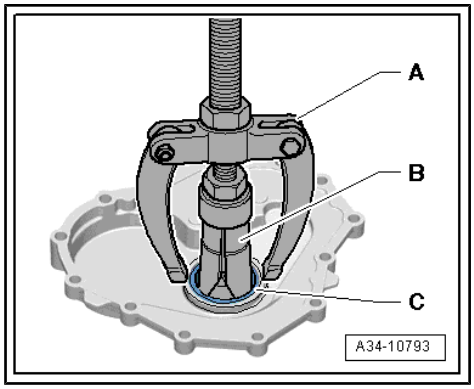
- ❑ 45 Nm

21 - Gearbox housing

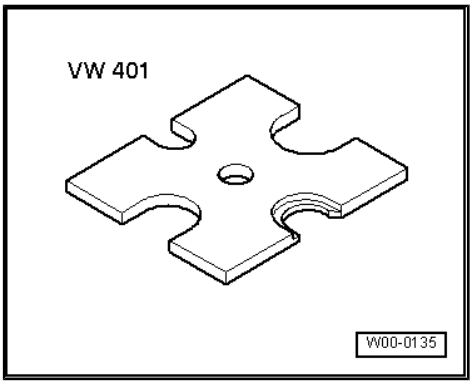
- ❑ Cannot be renewed at present
- ❑ Different versions
- ❑ Sealing plugs are fitted in some gearboxes instead of gear oil heater ⇒ page 90
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

3.4 Servicing end cover

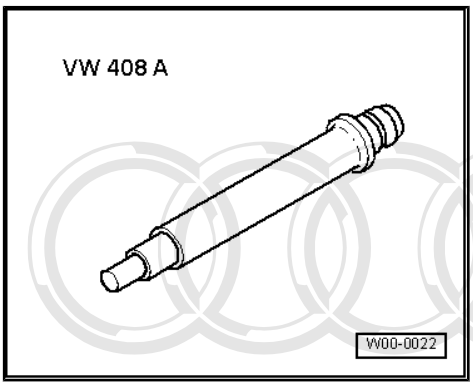
Special tools and workshop equipment required



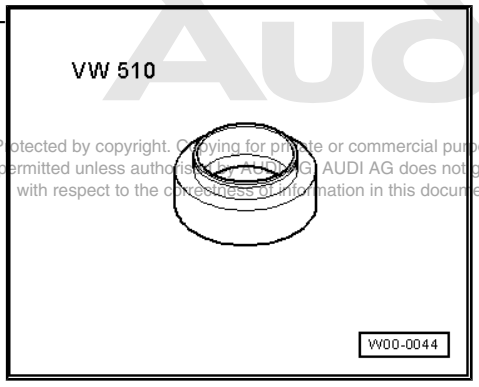
- Thrust plate - VW 401-



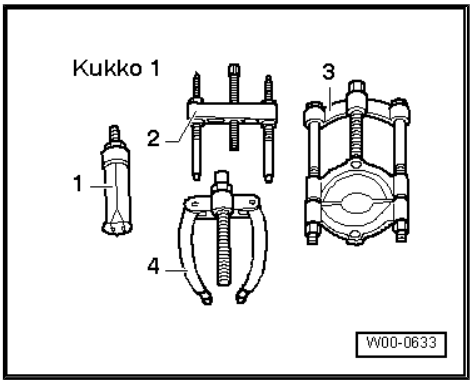
- Press tool - VW 408A-



- Thrust pad - VW 510-



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



- -4- Counter-support - Kukko 22/2-

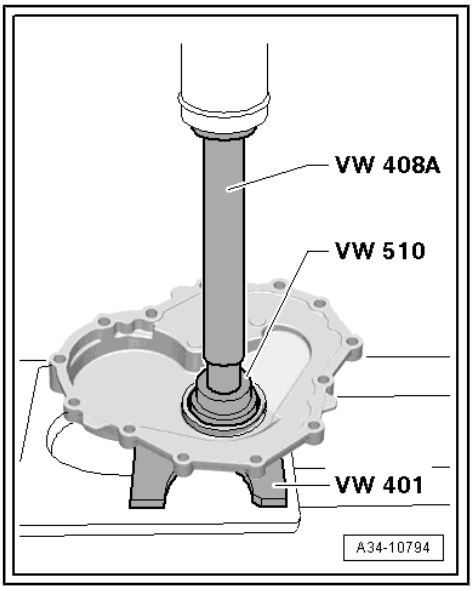
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pulling needle bearing -C- out of end cover

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

B - Internal puller 46 ... 58 mm , e.g. -Kukko 21/7-

Pressing needle bearing into end cover (press onto stop)



Note

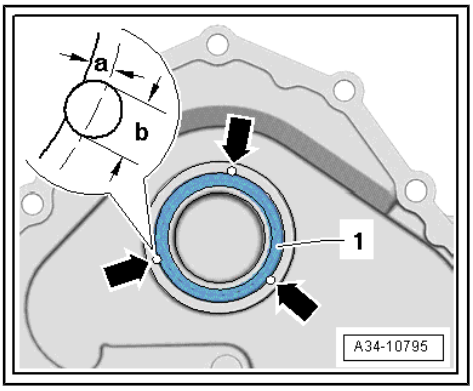
Before installation, remove peening marks if necessary.

Install needle bearing so the lettering (side with thicker metal) faces towards the thrust pad - VW 510- .

– Secure needle bearing after pressing in by peening into end cover ⇒ page 77 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Securing needle bearing in end 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-.

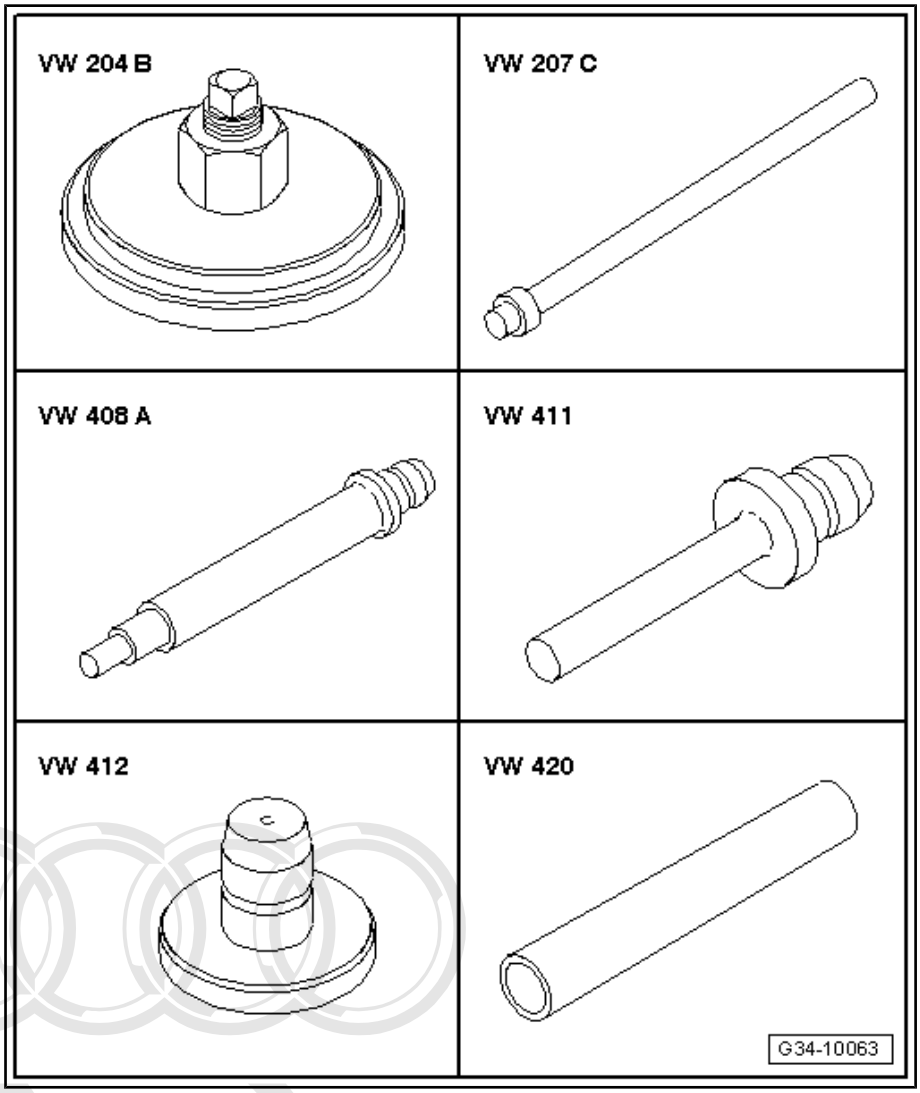
Observe position and diameter of peening marks:

- Dimension -a- = 2 mm
- Dimension -b- = 3 mm

3.5 Servicing gearbox cover

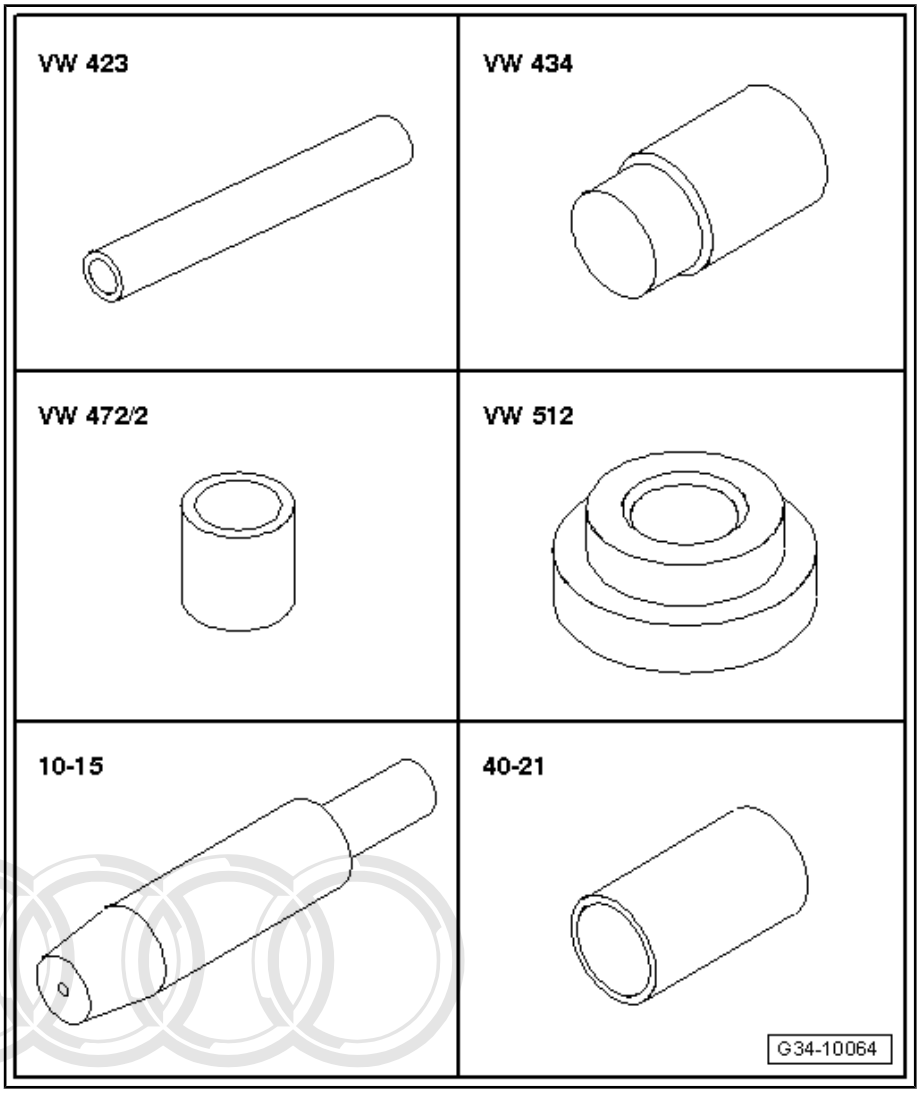
Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 207 C-
- Press tool - VW 408 A-
- Press tool - VW 411-
- Press tool - VW 412-
- Tube - VW 420-



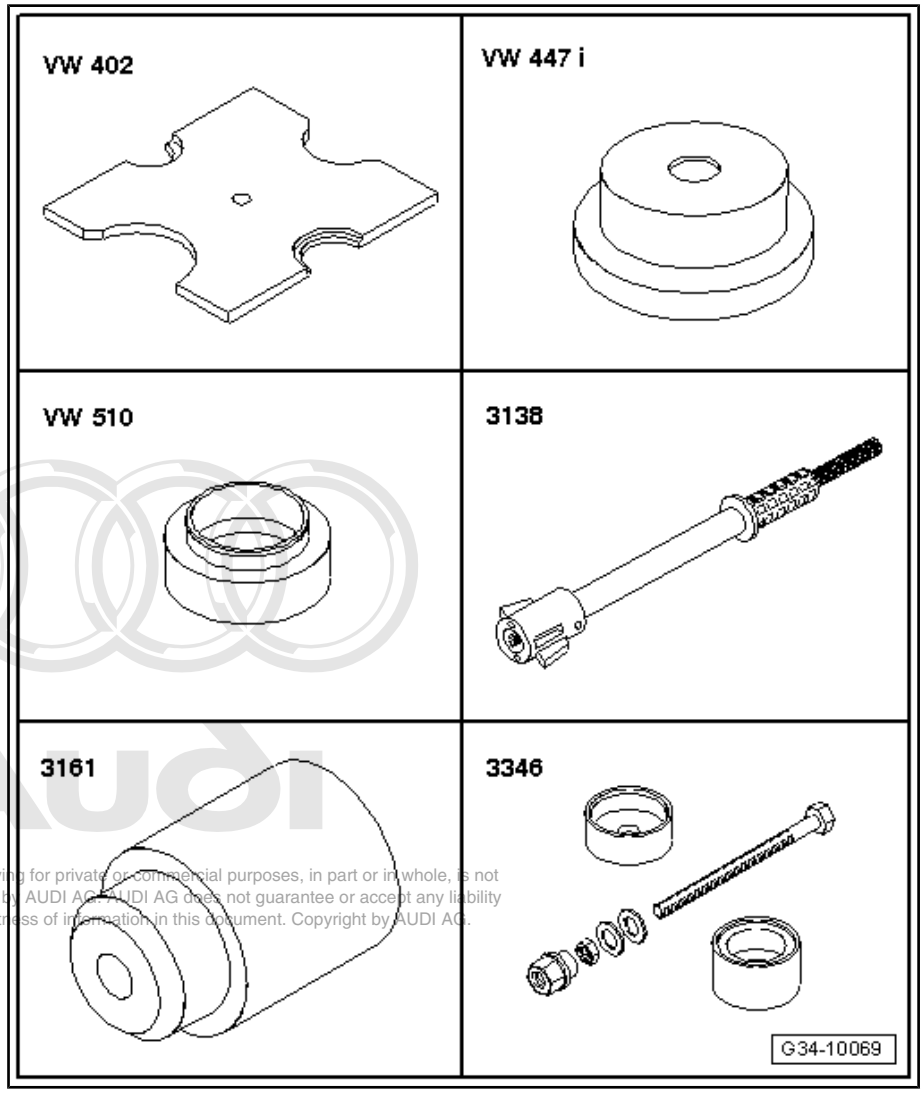
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Tube - VW 423-
- Press tool - VW 434-
- Sleeve - VW 472/2-
- Thrust pad - VW 512-
- Guide pin - 10 - 15-
- Press tool - 40 - 21-



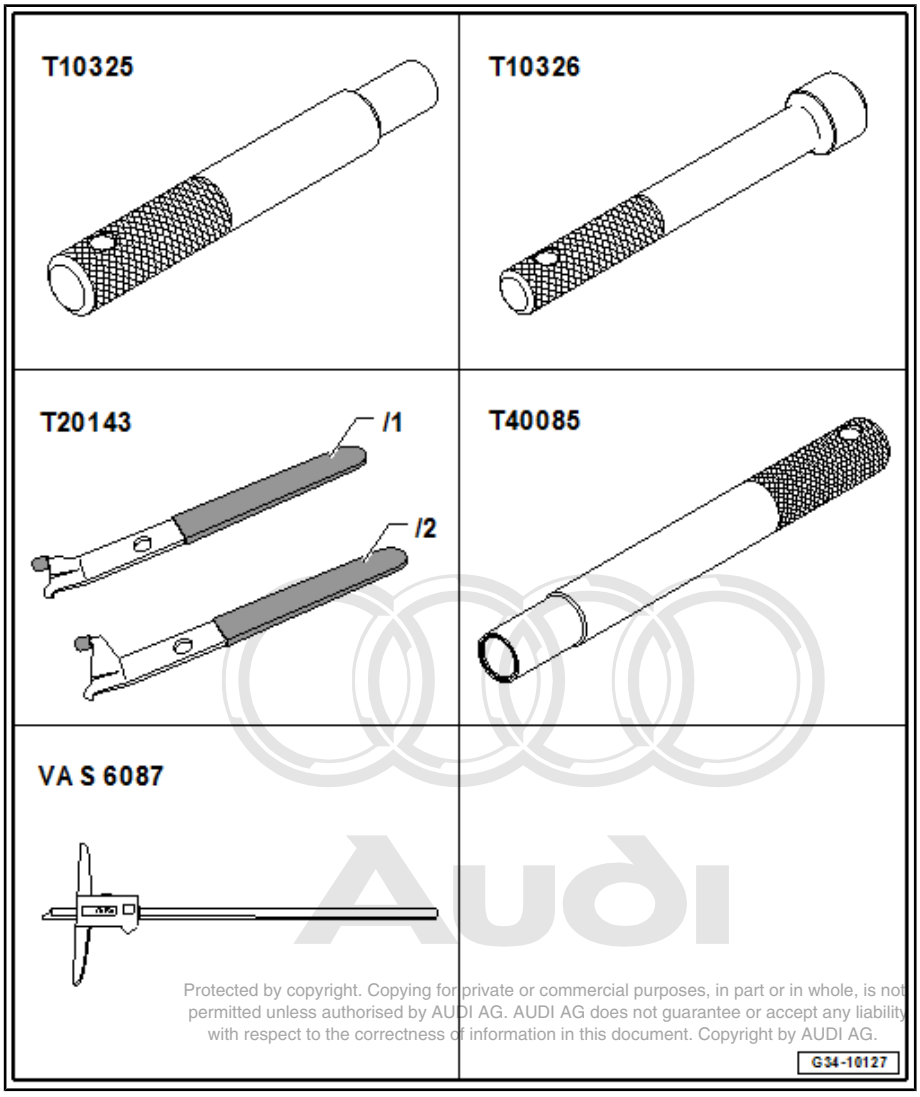
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Thrust plate - VW 402-
- Thrust plate - VW 447i-
- Thrust pad - VW 510-
- Drift - 3138-
- Extension - 3161-
- Assembly tool - 3346-



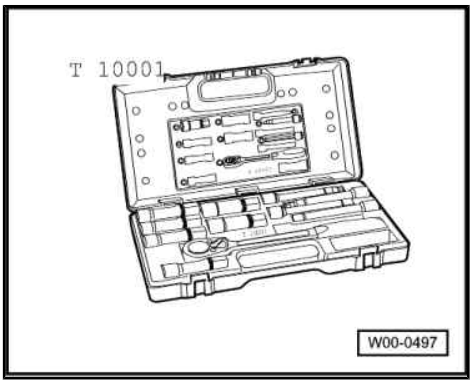
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

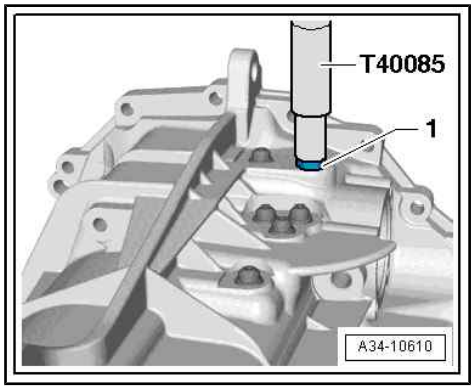
- Drift - T10325-
- Drift - T10326-
- Extractor tool - T20143-
- Drift - T40085-
- Digital depth gauge - VAS 6087-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Shock absorber set - T10001-





- Sealing paste - AMV 188 001 02-
- Sealing grease - G 052 128 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- .

– Use drift - T40085- to press in locking bush to correct installation depth ⇒ page 82 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

– Apply digital depth gauge - VAS 6087- to first shoulder -arrow- of locking bush and check installation depth -a-.

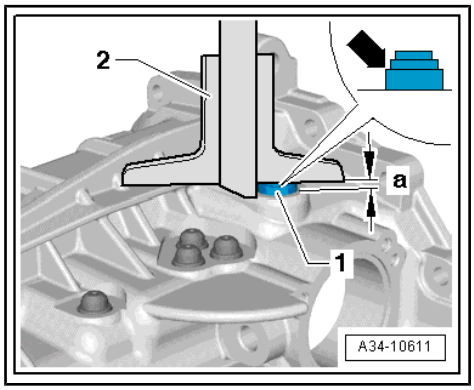
Installation depth -a-:

Gearbox with gear detector switch - F208- up to model year 2012

- 5.0 ± 0.2 mm

Gearbox with gear detection sensor - G604- from model year 2013 onwards

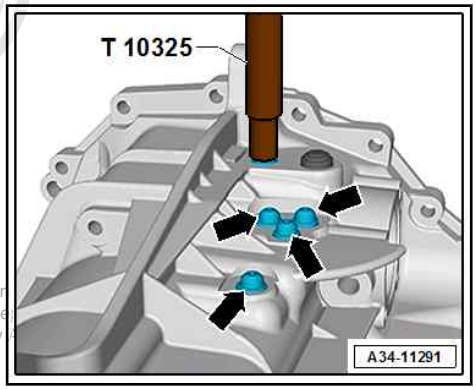
- 6.5 ± 0.2 mm



Removing locking bushes for selector plates/selector forks

- The gearbox cover must be removed.

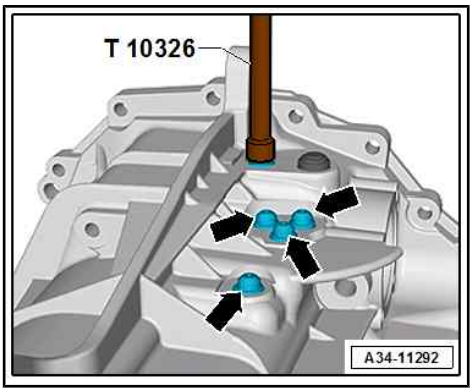
– Drive out locking bushes for selector plates/selector forks -arrows- with drift - T10325- .



Protected by copyright. Copying for private or commercial purposes, in part or in
permitted unless authorised by AUDI AG. AUDI AG does not guarantee or acce
with respect to the correctness of information in this document. Copyright by

Pressing in locking bushes for selector plates/selector forks

– Press in locking bushes for selector plates/selector forks -arrows- with drift - T10326- (press in until drift contacts stop).



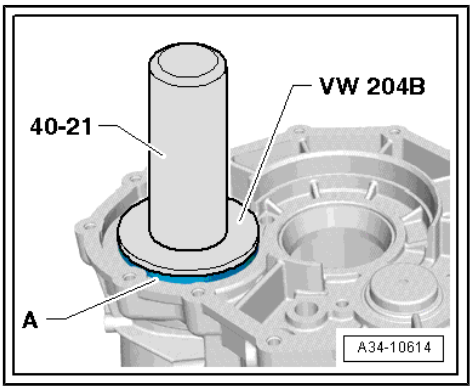
Driving in needle bearing onto stop in gearbox cover

Note

Before installation, remove peening marks if necessary.

Install the needle bearing so the lettering (side with thicker metal) faces towards the installing tool - VW 204 B- .

– Secure needle bearing after driving in by peening into gearbox cover ⇒ page 83 .



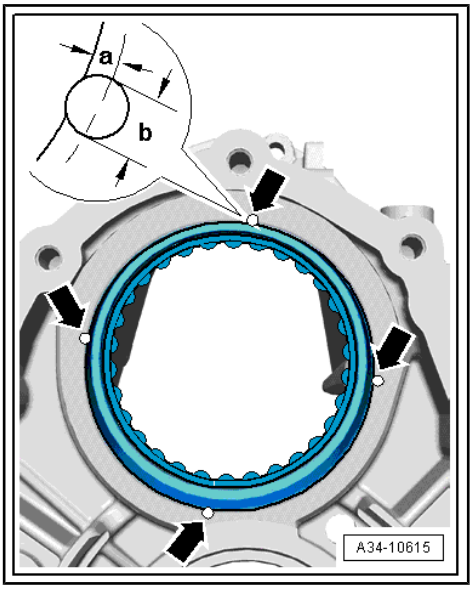
Securing needle bearing in gearbox cover by peening

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

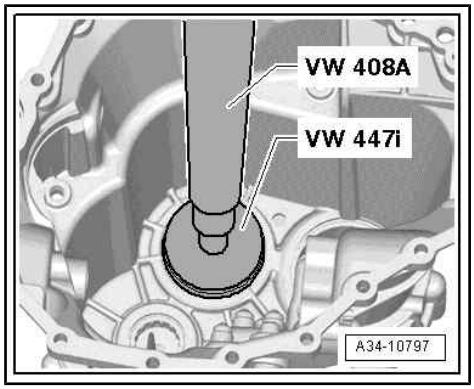
– The needle bearing is secured with 4 peening marks spaced 90° apart around the circumference -arrows-.

Observe position and diameter of peening marks:

- Dimension -a- = 2 mm
- Dimension -b- = 3 mm



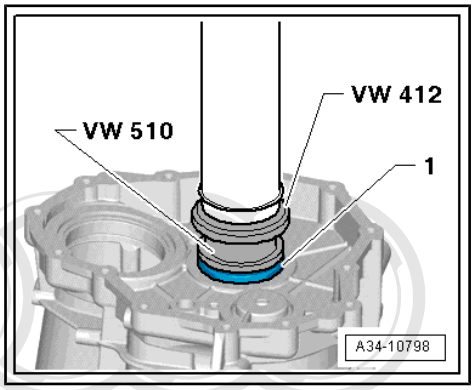
Pressing roller bearing for output shaft out of gearbox cover



Note

Eliminate peening depressions if necessary.

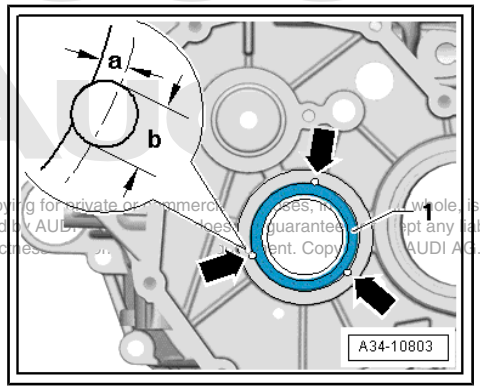
Pressing roller bearing -1- for output shaft into gearbox cover (press onto stop)



Install roller bearing so the lettering (side with thicker metal) faces towards the thrust pad - VW 510- .

– Secure roller bearing after pressing in by peening into gearbox cover ⇒ page 84 .

Securing roller bearing for output shaft in gearbox cover by peening



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

– The roller bearing is secured with 3 peening marks spaced at 120° intervals -arrows-.

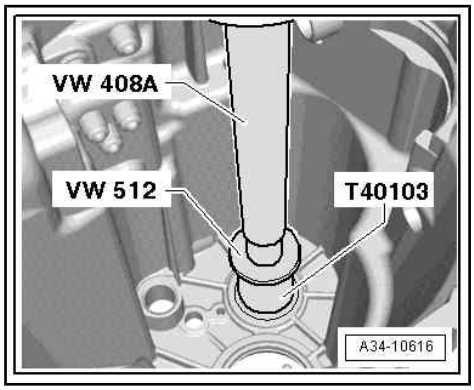
Observe position and diameter of peening marks:

♦ Dimension -a- = 2 mm

♦ Dimension -b- = 3 mm

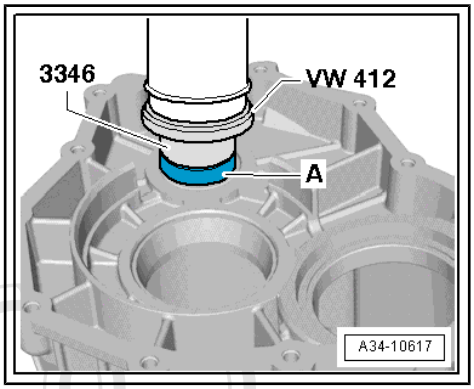
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pressing roller bearing for input shaft out of gearbox cover



Pressing roller bearing -A- for input shaft into gearbox cover (press onto stop)

- Install with the shoulder of the roller bearing facing towards the open side of thrust piece - 3346- .



Removing and installing sealing cap -A- for selector shaft

- Selector shaft is removed.

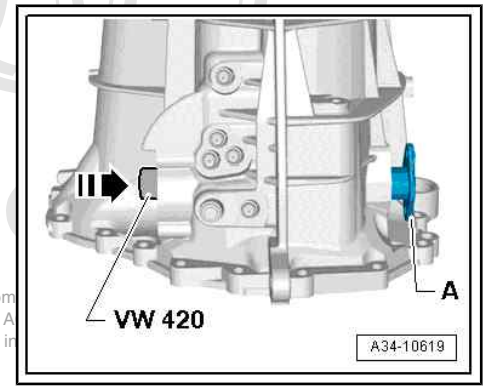
– Remove bolts securing sealing cap -A- to gearbox cover.

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

– Clean sealing surfaces of sealing cap and gearbox cover.

– Apply sealing paste - AMV 188 001 02- evenly and secure sealing cap with new bolts ⇒ Item 11 (page 73).

Protected by copyright. Copying for private or com
permitted unless authorised by AUDI AG. AUDI A
with respect to the correctness of information in

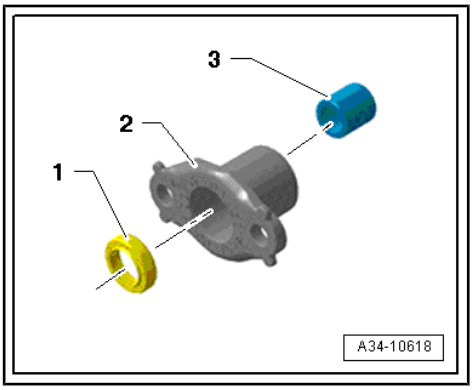


Exploded view - sealing cap for selector shaft

1 - Oil seal for selector shaft; removing and installing ⇒ page 86

2 - Sealing cap

3 - Ball sleeve for selector shaft; removing ⇒ page 86 , installing ⇒ page 86



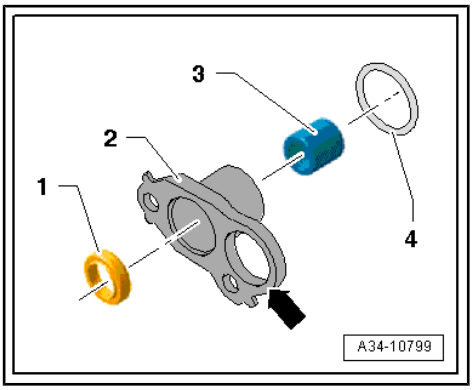
Exploded view - sealing cap for selector shaft with aperture -arrow- for gearbox neutral position sender - G701- or sealing plug

1 - Oil seal for selector shaft; removing and installing ⇒ page 86

2 - Sealing cap

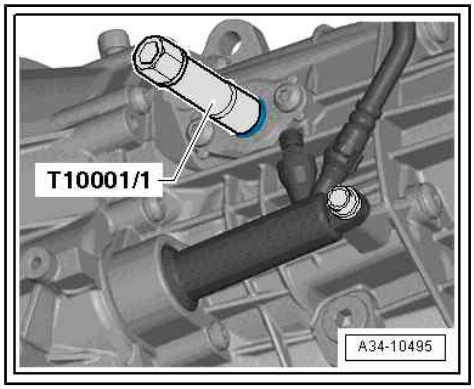
3 - Ball sleeve for selector shaft; removing ⇒ page 86 , installing ⇒ page 86

4 - O-ring

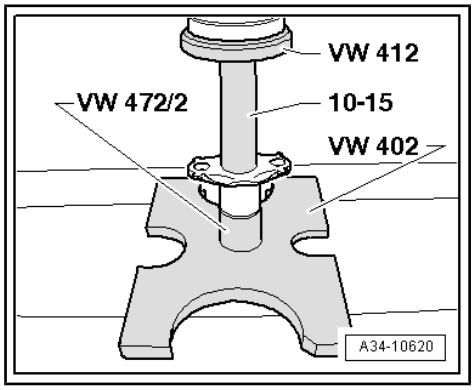


Removing and installing oil seal for selector shaft

– 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

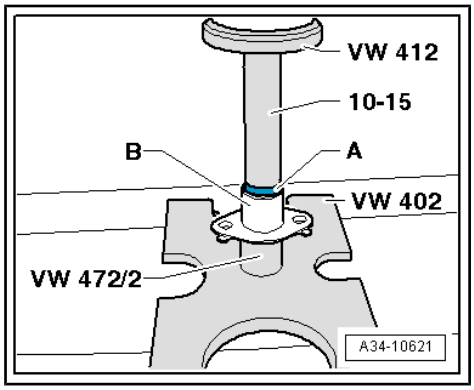


Pressing ball sleeve for selector shaft out of sealing cap



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

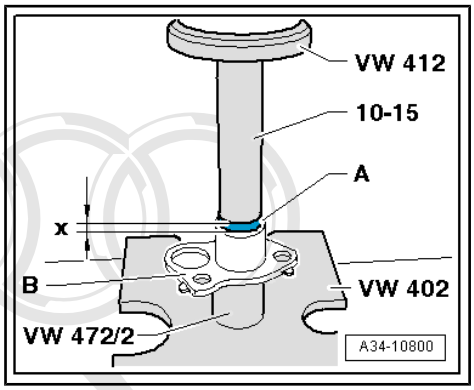
Fit ball sleeve so that side with lettering (thicker metal) faces guide pin - 10 - 15- .



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

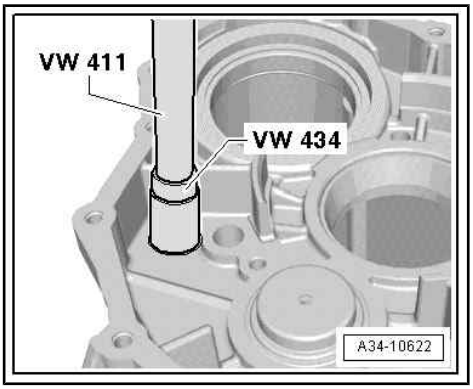
Fit ball sleeve so that side with lettering (thicker metal) faces guide pin - 10 - 15- .

• Installation depth -x- = 2.5 ± 0.5 mm



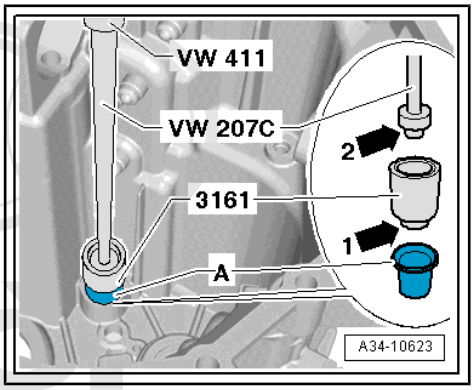
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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.

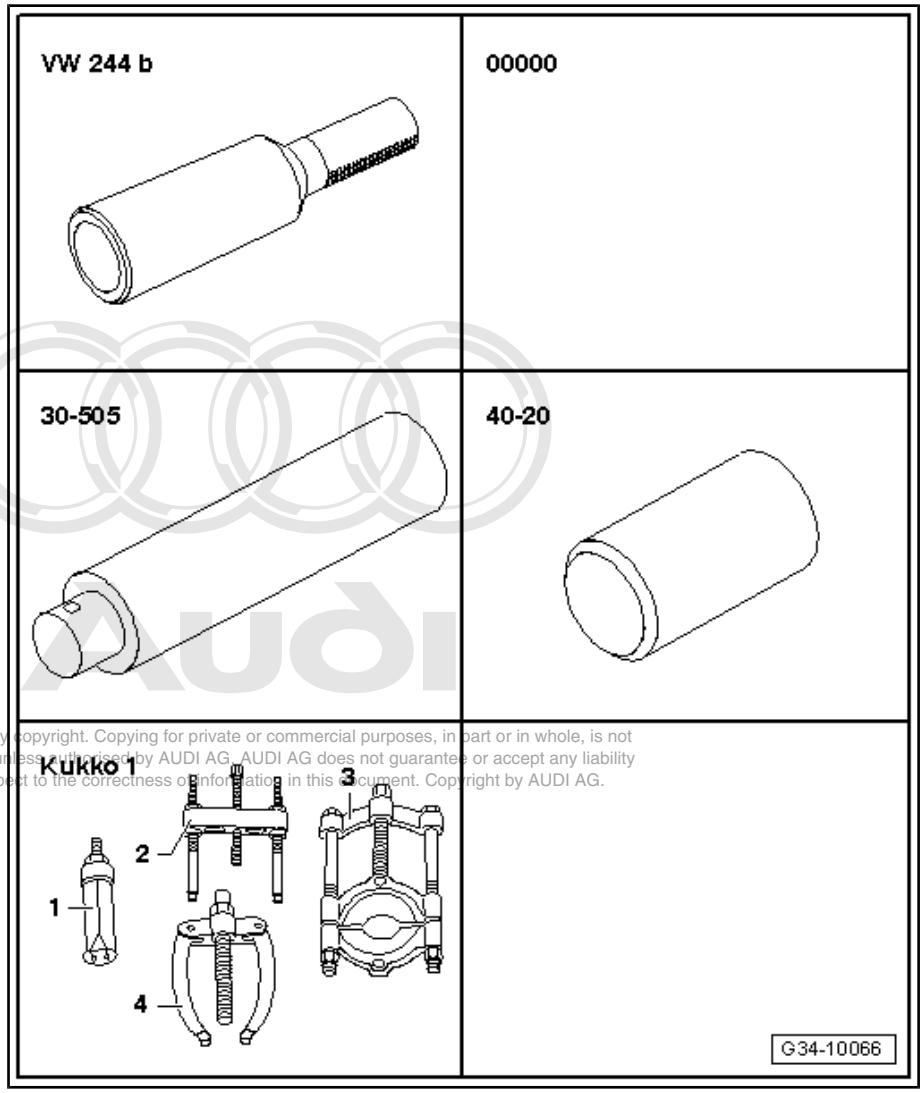


3.6 Servicing gearbox housing

Audi A4 2008 ➤ , Audi A5 Cabriolet 2009 ➤ , Audi A5 Coupé 2008 ➤ , Audi ...
Servicing 6-speed manual gearbox 0B1, front-wheel drive - Edition 02.2014
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Special tools and workshop equipment required

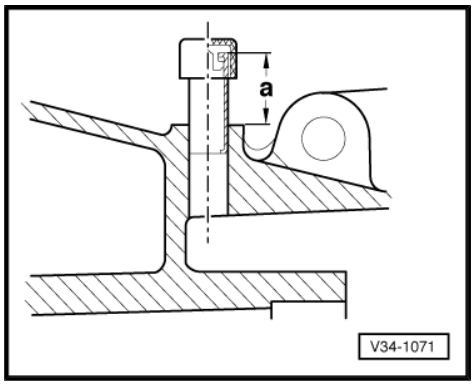
- Drift sleeve - VW 244 B-
- Multi-purpose tool - VW 771-
- Mandrel - 30 - 505-
- Drift sleeve - 40 - 20-
- -1- Internal puller - Kukko 21/3-
- Lubricating paste - G 000 150-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

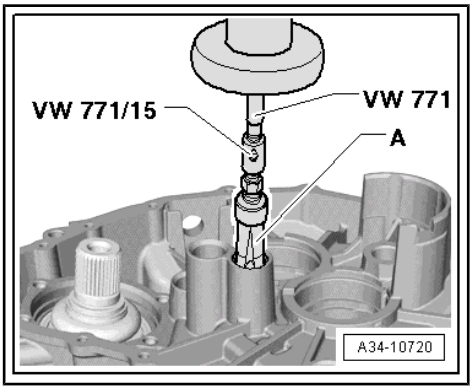
Installation dimension of breather pipe

Dimension -a- = 21.5 mm

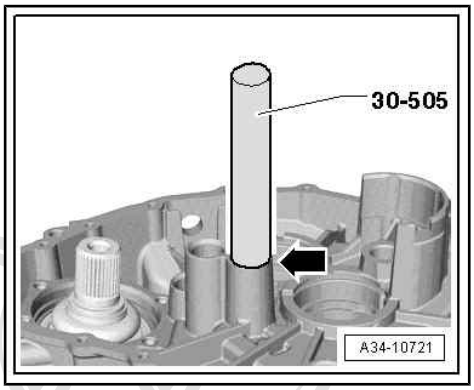


Pulling out bearing bush for selector plate / selector fork

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

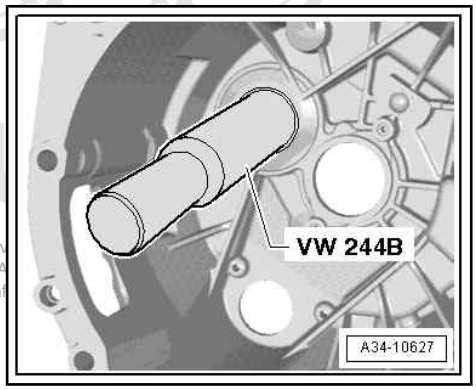


Driving in bearing bush -arrow- for selector plate / selector fork (drive in onto stop)



Driving output shaft ball bearing out of gearbox housing

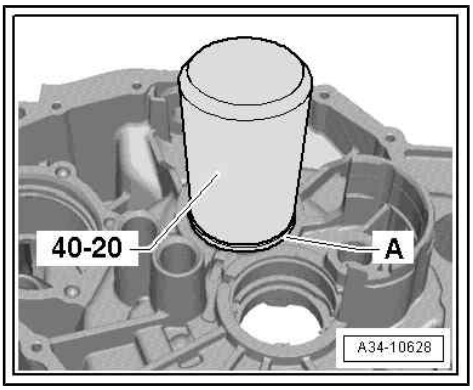
- First remove circlip for ball bearing.



Protected by copyright. Copying for priv
permitted unless authorised by AUDI A
with respect to the correctness of inf

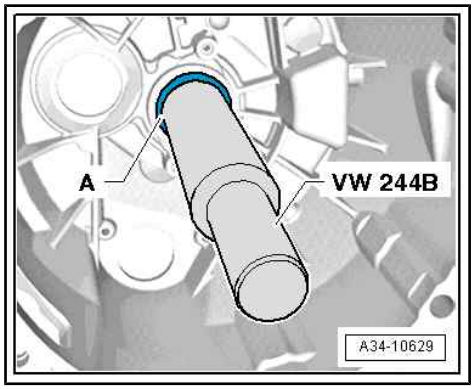
Driving output shaft ball bearing -A- into gearbox housing (drive in onto stop)

– Then fit circlip for ball bearing; note correct installation position of circlip ⇒ page 90 .



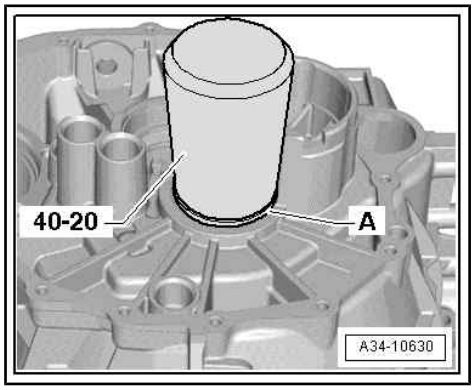
Driving input shaft ball bearing -A- out of gearbox housing

- First remove circlip for ball bearing.



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

– Then fit circlip for ball bearing; note correct installation position of circlip ⇒ page 90 .

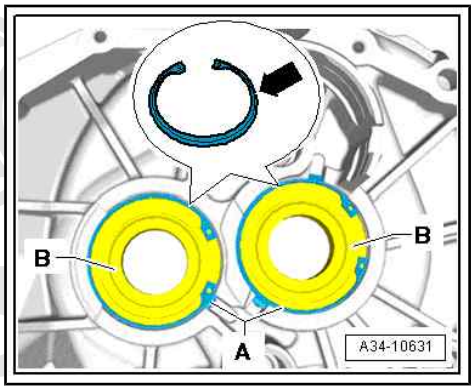


Installation position of circlips -A- for ball bearings -B-

- The chamfer -arrow- on circlip -A- faces away from ball bearings -B-.

Note

The circlips and ball bearings for the input shaft and output shaft are identical.

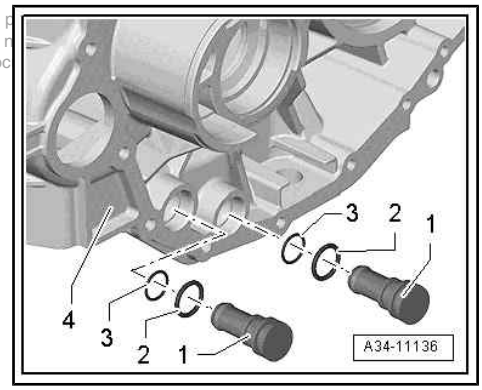


Gearbox housing with sealing plugs in place of gear oil heater

Copyright by AUDI AG. Any commercial p
permitted unless authorised by AUDI AG. AUDI AG does n
with respect to the correctness of information in this doc

Note

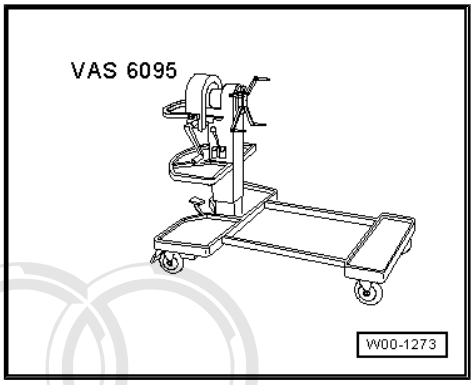
- *On gearbox housings fitted for gear oil heating ⇒ Item 4 (page 49) , sealing plugs -1- may be installed in gearbox housing -4- instead of gear oil heater.*
- *O-rings -2 ... 3- must always be renewed.*



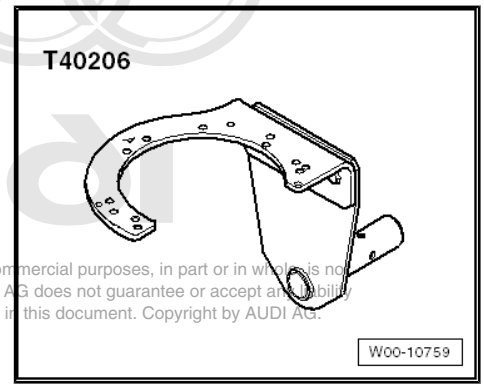
4 Securing to engine and gearbox support

Special tools and workshop equipment required

- Engine and gearbox support - VAS 6095-



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



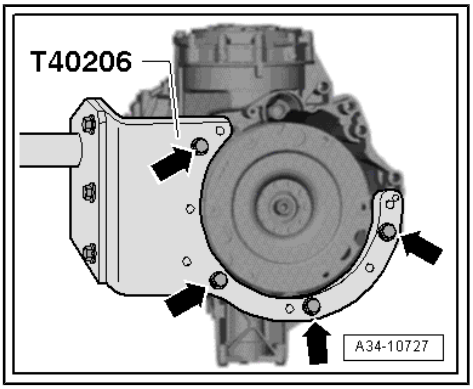
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Procedure

Caution

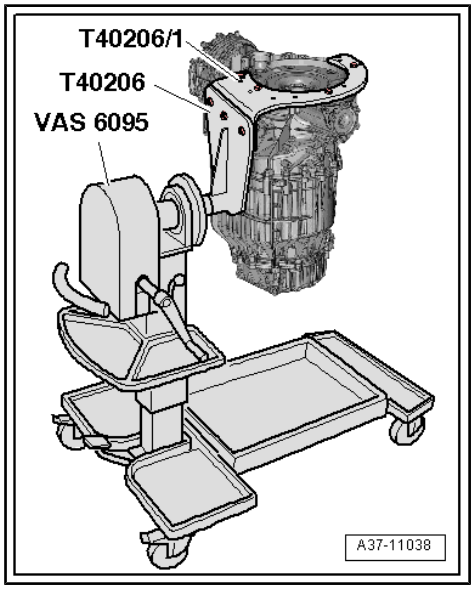
Risk of breaking gearbox housing

- *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 91 .
– Attach gearbox with gearbox support - T40206- to engine and gearbox support - VAS 6095- .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

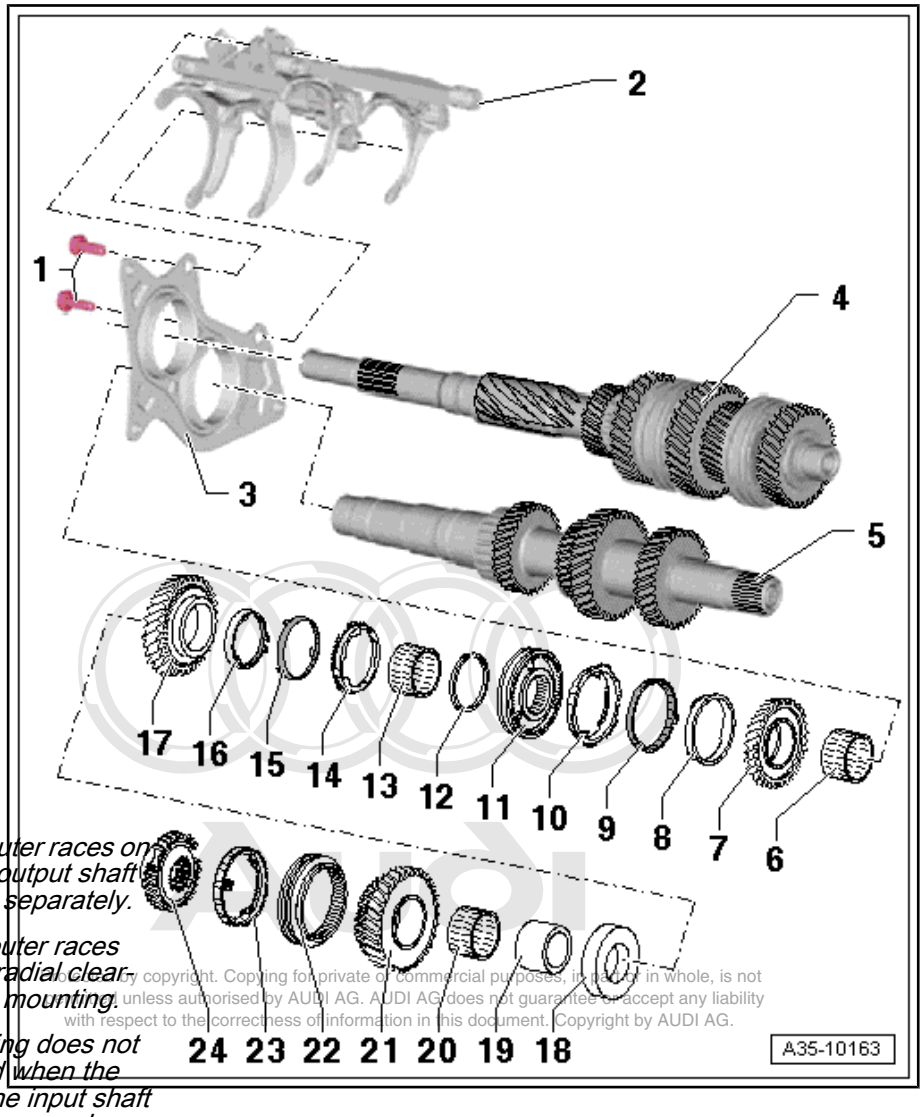
35 – Gears, shafts

1 Dismantling and assembling gears and shafts

⇒ "1.1 Exploded view - gear cluster", page 93

⇒ "1.2 Dismantling and assembling gear cluster", page 95

1.1 Exploded view - gear cluster



1 - Bolt

- ❑ 20 Nm and then turn 45° further
- ❑ Secures selector fork cluster ⇒ Item 2 (page 93) to bearing mounting ⇒ Item 3 (page 93)
- ❑ 2x

2 - Selector fork cluster

- ❑ Dismantling and assembling ⇒ page 50

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)
- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

Note

- ♦ *The roller bearing outer races on 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.*
- ♦ *The bearing mounting does not have to be renewed when the roller bearings on the input shaft or output shaft are renewed, e.g. when installing a new input shaft.*

Audi
This is copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

4 - Input shaft

- ❑ Dismantling and assembling ⇒ page 103

5 - Output shaft

- ❑ With 3rd and 4th gear wheels
- ❑ Removing and installing 1st, 2nd and reverse gear ⇒ page 95
- ❑ Dismantling and assembling ⇒ page 122

6 - Needle bearing

- ❑ For 2nd gear

7 - 2nd speed selector gear

8 - Inner ring for 2nd gear

- ❑ Installation position ⇒ page 99
- ❑ Distinguishing inner rings for 1st and 2nd gear ⇒ page 121

9 - Intermediate ring for 2nd gear

- ❑ Installation position ⇒ page 99

10 - Synchro-ring for 2nd gear

- ❑ Installation position ⇒ page 99

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

- ❑ Pulling off ⇒ page 98
- ❑ Installation position: high inside collar faces 2nd speed selector gear ⇒ page 122
- ❑ Pressing on ⇒ page 100

12 - Circlip

- ❑ Determining thickness ⇒ page 100

13 - Needle bearing

- ❑ For 1st gear

14 - Synchro-ring for 1st gear

- ❑ Installation position ⇒ page 99

15 - Intermediate ring for 1st gear

- ❑ Installation position ⇒ page 99

16 - Inner ring for 1st gear

- ❑ Installation position ⇒ page 99
- ❑ Distinguishing inner rings for 1st and 2nd gear ⇒ page 121

17 - 1st speed selector gear

18 - Thrust washer

- ❑ For 1st speed and reverse selector gears

19 - Needle bearing inner race

- ❑ For reverse gear
- ❑ Pulling off ⇒ page 98
- ❑ Pressing on ⇒ page 101

20 - Needle bearing

- ❑ For reverse gear

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

21 - Reverse selector gear

22 - Reverse gear locking collar

- ❑ Installation position ⇒ page 121

23 - Synchro-ring for reverse gear

- ❑ Checking for wear ⇒ page 121

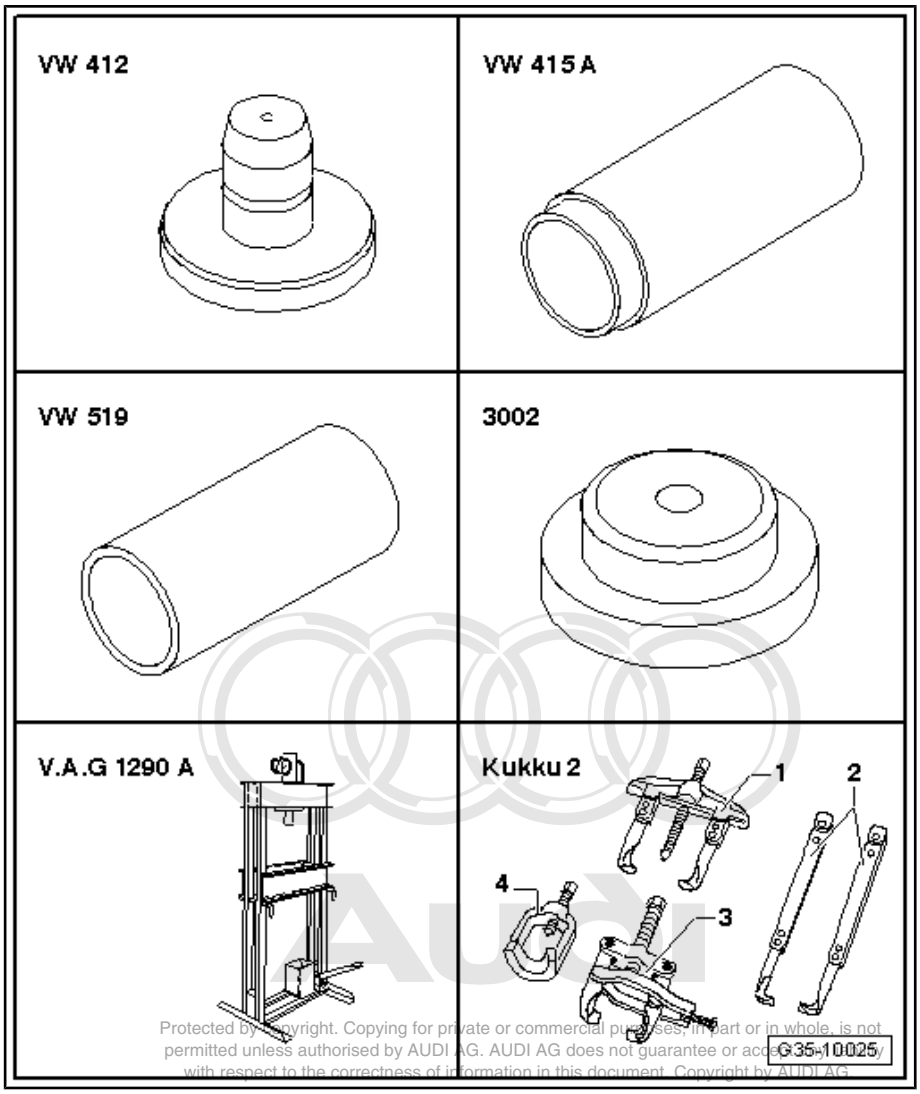
24 - Reverse gear synchro-hub

- ❑ With synchro-spring
- ❑ Pulling off ⇒ page 98
- ❑ Pressing on ⇒ page 101

1.2 Dismantling and assembling gear cluster

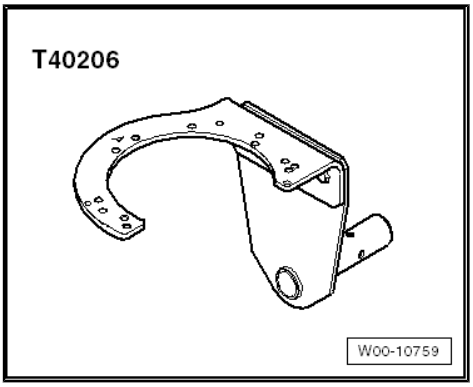
Special tools and workshop equipment required

- Press tool - VW 412-
- Tube - VW 415 A-
- Tube - VW 519-
- Thrust piece - 3002-
- Workshop press - V.A.G 1290A-
- -1- Two-arm puller - Kukko 20/10-
- -1- Two-arm puller - Kukko 20-20- with 300 mm hooks

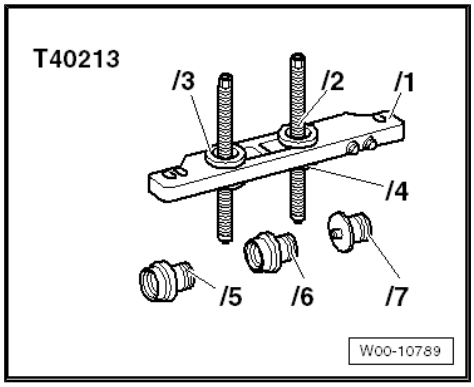


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG

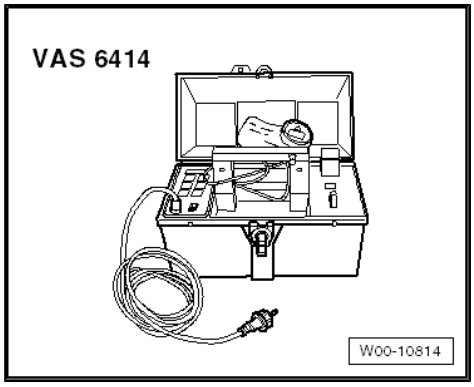
- Gearbox support - T40206-



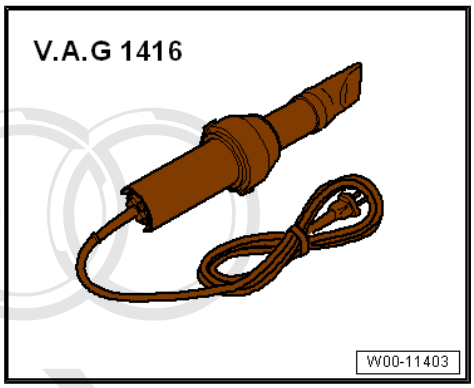
- Separating tool - T40213-



- Inductive heater - VAS 6414-



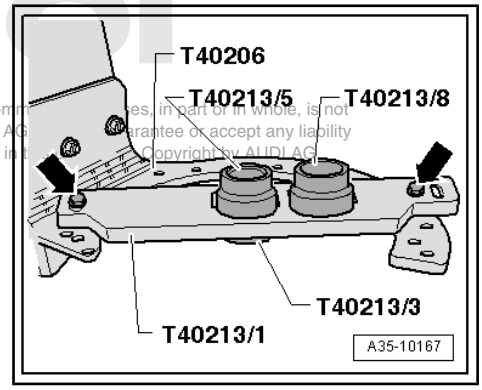
- Hot air blower - V.A.G 1416-



Dismantling gear cluster

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

– Fit adapters - T40213/5- and -T40213/8- in plate - T40213/1-.

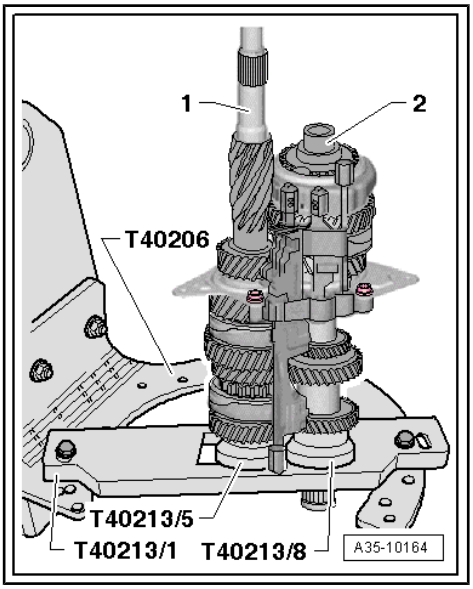


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not allowed unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

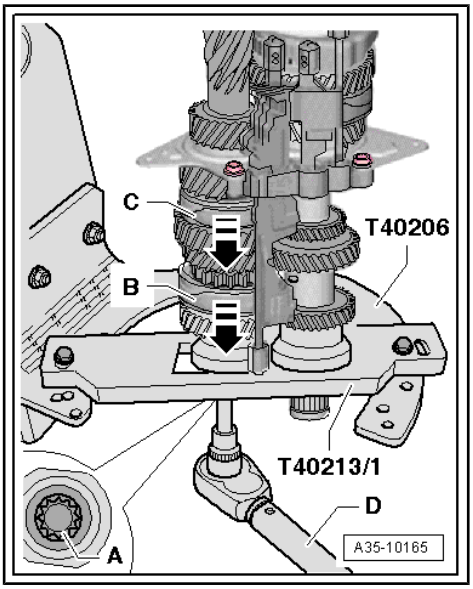
Secure adapter - T40213/5- with knurled screw - T40213/3- after inserting shafts.

– Insert input shaft -1- together with output shaft -2- and selector fork cluster in adapters - T40213/5- and -T40213/8- .



- If you have to dismantle the input shaft, now loosen and unscrew the multi-point socket head bolt -A- in the input shaft using torque wrench -D- or similar.
- To do this, engage 2 gears by moving locking collars -B- and -C- in direction of -arrow-.
- The shafts must be vertical, as shown in illustration.

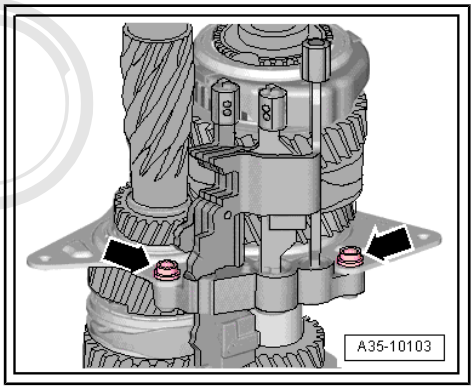
– Then move locking collars back to neutral position.



Note

In order to move the locking collars -B- and -C- back into the centre position, turn the output shaft slightly in a clockwise direction. To turn the output shaft, screw the bolt ⇒ Item 2 (page 118) into the output shaft.

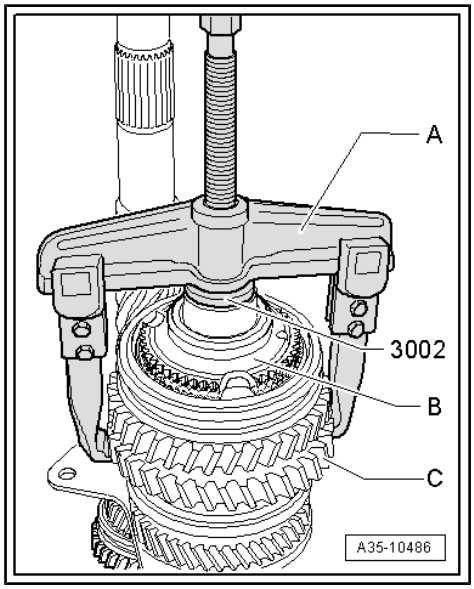
– Remove bolts -arrows- and detach selector fork cluster from bearing mounting.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Pull off 1st speed selector gear -C- together with reverse gear synchro-hub -B- and inner race for reverse selector gear.
– Heat synchro-hub -B- to approx. 80 °C using hot air blower -V.A.G 1416- (or similar) and detach it using two-arm puller .

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



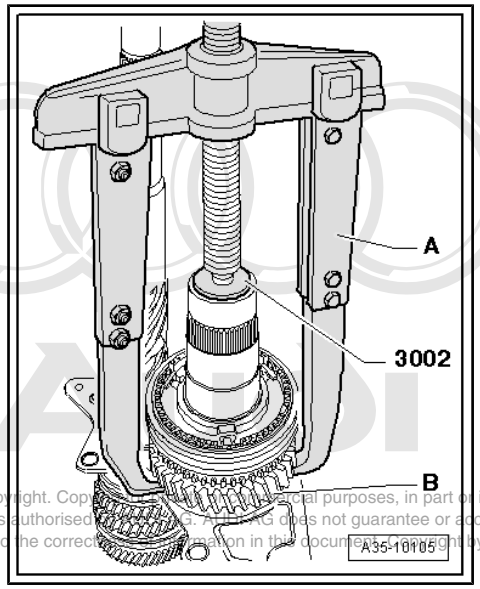
Caution

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

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

– Detach circlip for 1st/2nd gear synchro-hub.
– Pull off 2nd speed selector gear -B- together with synchro-hub and locking collar for 1st/2nd gear.

A - Two-arm puller , e.g. -Kukko 20-20- with 300 mm hooks

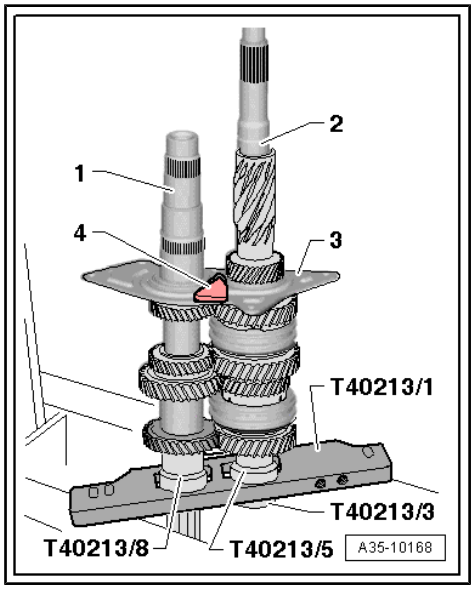


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

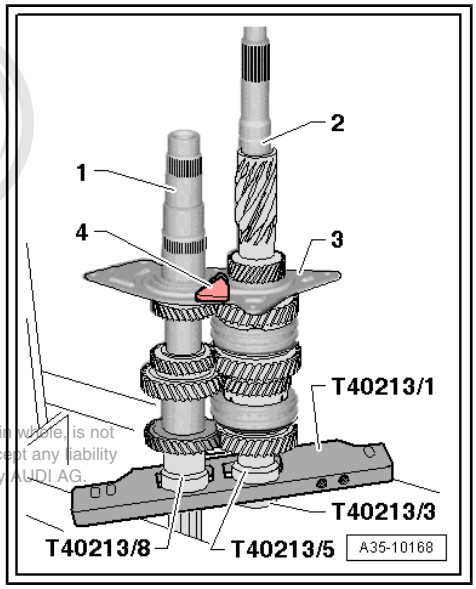
Note

- *Dismantling and assembling output shaft -1-* *⇒ page 122*
- *Dismantling and assembling input shaft -2-* *⇒ page 107*



Assembling gear cluster

– Place plate - T40213/1- with adapters - T40213/5- and - T40213/8- on work table of workshop press - V.A.G 1290A- .
– Insert output shaft -1- and input shaft -2- in adapters - T40213/5- and -T40213/8- .
– Fit bearing mounting -3- in correct position over the two shafts, with plastic piece -4- facing upwards.



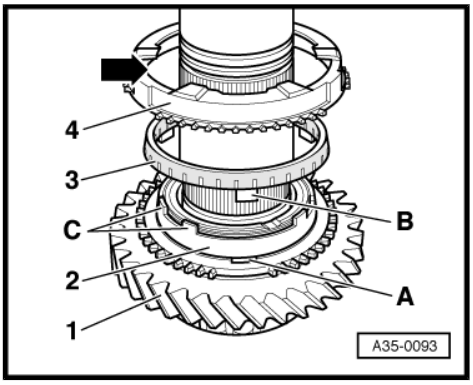
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

Note

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

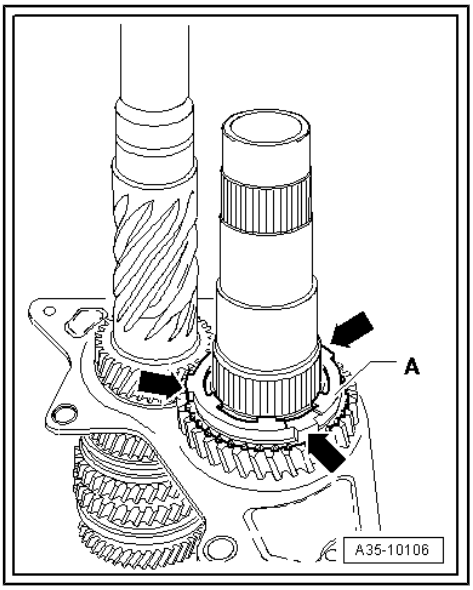
– Fit inner ring -2- onto selector gear -1-.
– Fit intermediate ring -3-. Lug -B- must be inserted into recess -A-.
– Fit synchro-ring -4-. Guide lugs -C- through recess -arrow-.



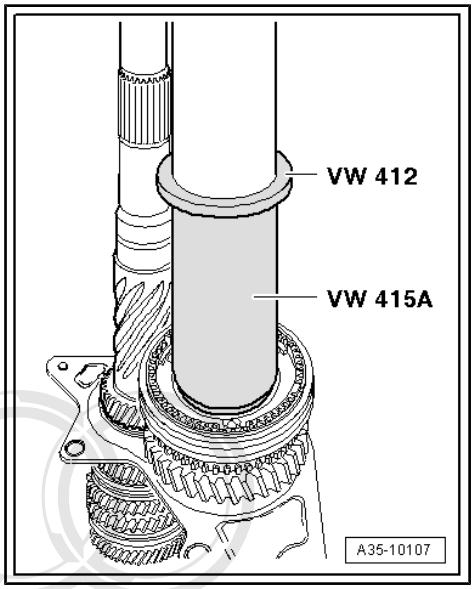
– Fit 2nd speed selector gear together with needle bearing and synchro-rings -A-; note position of synchro-rings ⇒ page 99 .

Note

The stop lugs -arrows- on the synchro-ring must engage in the slots in the 1st/2nd gear synchro-hub when the synchro-hub is pressed on (next step).



Pressing on 1st/2nd gear synchro-hub



- Heat synchro-hub to approx. 100°C.
- Installation position of synchro-hub: high inside collar faces 2nd speed selector gear

Note

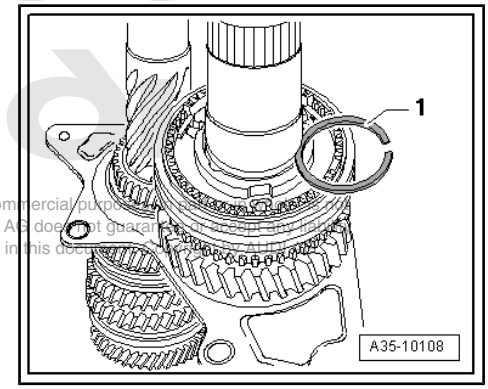
When pressing on the synchro-hub, lift the 2nd speed selector gear slightly so that the stop lugs on the synchro-ring engage in the slots in the hub.

– Install circlip for 1st/2nd gear synchro-hub.

- When renewing synchro-hub or output shaft:

Determine thickness of new circlip -1- for 1st/2nd gear synchro-hub.

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



The following circlips are available:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

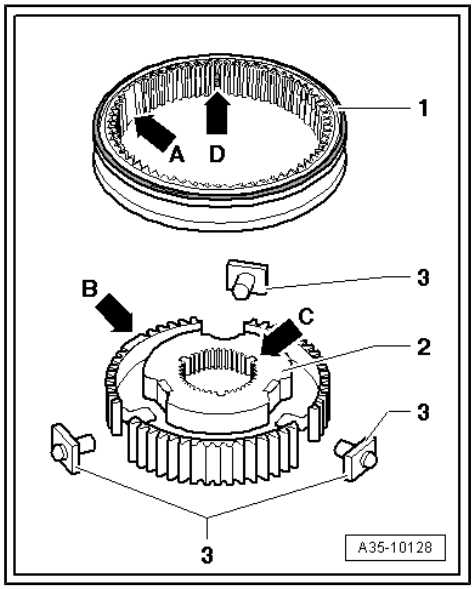
Circlip thickness (mm)		
2.44	2.47	2.50

– Install circlip for 1st/2nd gear synchro-hub.

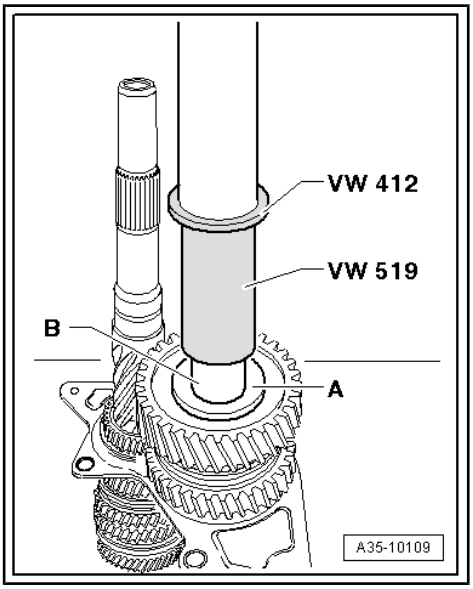
– Fit locking collar -1- onto pressed-on synchro-hub -2- so that wide teeth of locking collar -arrow A- and synchro-hub -arrow B- coincide.

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

– Install 1st speed selector gear with synchro-rings and needle bearing on output shaft.



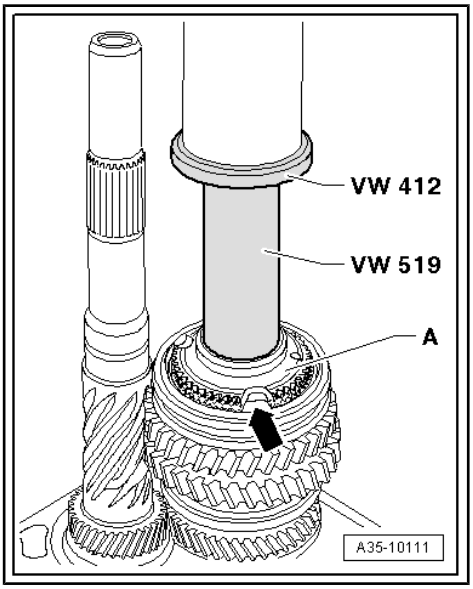
– Fit thrust washer -A- and pre-heated inner race -B- for reverse gear needle bearing.
– Fit reverse gear needle bearing together with selector gear and locking collar for reverse gear; note correct position ⇒ page 121 .
– Fit synchro-ring for reverse gear in locking collar.
– Heat synchro-hub for reverse gear to approx. 100°C.



– Press on synchro-hub for reverse gear -A- with installed synchro-spring ⇒ Item 7 (page 118) .

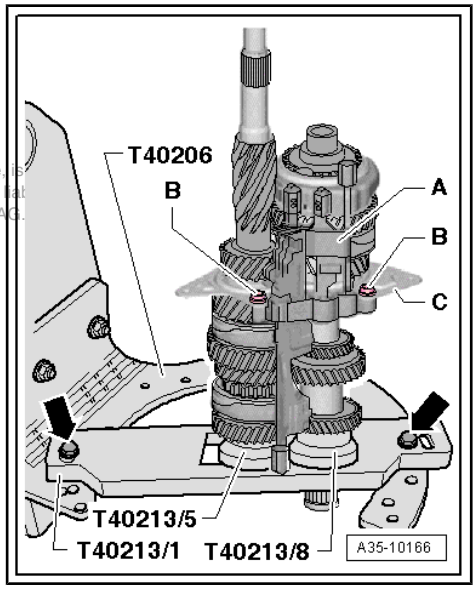
Note

When the synchro-hub for reverse gear is pressed on, the lugs -arrow- on the synchro-ring must engage in the slots in the hub.



– Attach plate - T40213/1- to gearbox support - T40206- with bolts -arrows-.
– Secure selector fork cluster -A- to bearing mounting -C- with bolts -C-. Tightening torque ⇒ Item 1 (page 93)

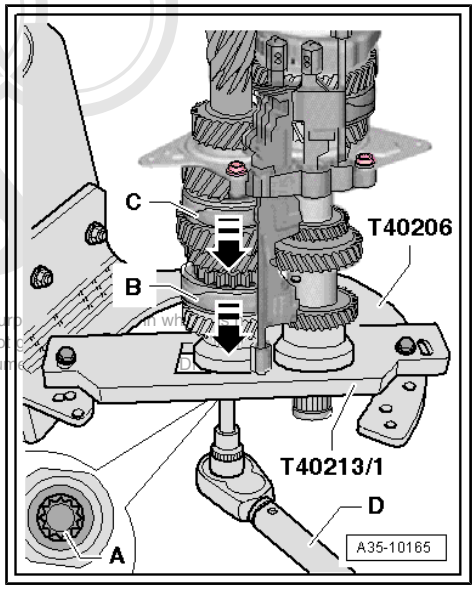
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- If you have dismantled and assembled the input shaft, now tighten the multi-point socket head bolt -A- in the input shaft to the specified torque ⇒ Item 36 (page 106) using torque wrench -D-. Before installing the bolt, clean the thread with a wire brush and then apply locking fluid - AMV 185 101 A1- .
- To do this, engage 2 gears by moving locking collars -B- and -C- in direction of -arrow-.
- The shafts must be vertical, as shown in illustration.

– Then move locking collars back to neutral position.

Protected by copyright. Copying for private or commercial pu
permitted unless authorised by AUDI AG. AUDI AG does no
with respect to the correctness of information in this docum



Note

In order to move the locking collars -B- and -C- back into the centre position, turn the input shaft slightly anti-clockwise via bolt -A-.

– Remove input shaft together with output shaft and selector fork cluster from plate - T40213/1- .

2 Input shaft

⇒ "2.1 Exploded view - input shaft", page 103

⇒ "2.2 Dismantling and assembling input shaft", page 107

⇒ "2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ", page 116

⇒ "2.4 Checking 3rd - 6th gear synchro-rings for wear", page 117

2.1 Exploded view - input shaft

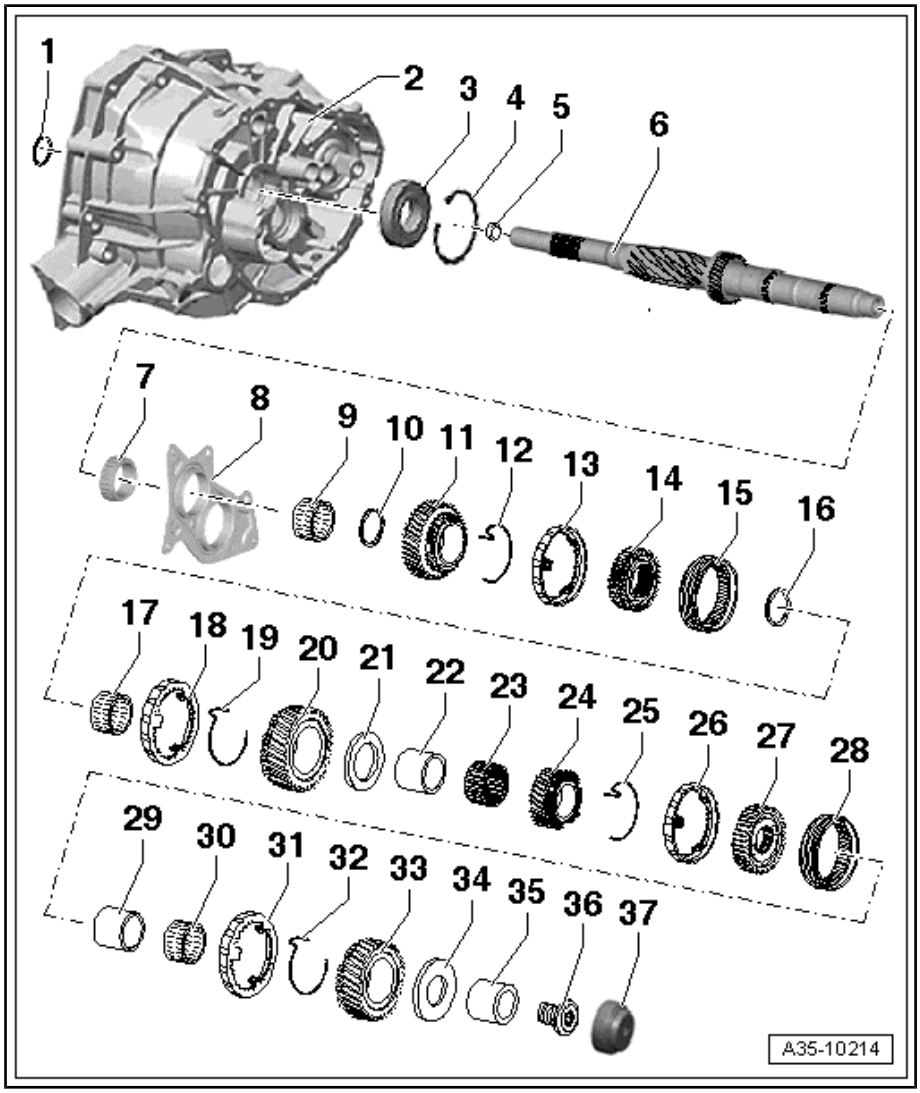
Detaching input shaft from output shaft and bearing mounting ⇒ page 93

Dismantling and assembling input shaft ⇒ page 107

Note

- *Lubricate all bearings and synchro-rings on input shaft with gear oil before installing.*
- *The circlip ⇒ Item 10 (page 105) should only be detached when renewing the roller bearing ⇒ Item 7 (page 104) .*
- *3rd to 6th speed selector gears should have an axial play of 0.15 ... 0.50 mm after installation.*
- *Note allocation of synchro-rings to locking collars ⇒ page 116 .*
- *Refer to technical data when installing new gears or a new input shaft ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Technical data; Allocation of gearbox to engine .*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



1 - Circlip

- ❑ Determining thickness ⇒ page 63

2 - Gearbox housing

3 - Ball bearing

- ❑ For input shaft
- ❑ Removing and installing ⇒ Item 18 (page 75)

4 - Circlip

- ❑ Note installation position ⇒ page 90

5 - Sealing plug

- ❑ For input shaft
- ❑ Installing ⇒ page 106

6 - Input shaft

- ❑ With splines for 1st, 2nd and reverse gear
- ❑ Sealing plug ⇒ Item 5 (page 104) is fitted in bore in vicinity of splines for clutch plate
- ❑ Fit sealing plug when renewing input shaft ⇒ page 106
- ❑ Checking input shaft for wear ⇒ page 107

7 - Roller bearing

- ❑ For input shaft
- ❑ Pressing off ⇒ page 111
- ❑ Pressing on ⇒ page 112
- ❑ Always renew

8 - 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)
- ❑ Different versions
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

Note

- ♦ *The roller bearing outer races on 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.*
- ♦ *The bearing mounting does not have to be renewed when the roller bearings on the input shaft or output shaft are renewed, e.g. when installing a new input shaft.*

9 - Needle bearing

- ❑ For 5th gear

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

❑ Installation position ⇒ page 112

10 - Circlip

❑ Mark
❑ Do not interchange with other circlip ⇒ Item 16 (page 105)
❑ Installation position ⇒ page 112
❑ Always renew after detaching

- It should not be possible to turn circlip in annular groove on input shaft by hand
- In installation position, circlip must not come into contact with 5th speed selector gear when gear is rotated ⇒ page 112

11 - 5th speed selector gear

- When rotated, gear must not come into contact with circlip ⇒ Item 10 (page 105) ⇒ page 112

12 - Synchro-spring

❑ Fit in 5th speed selector gear ⇒ page 111

13 - 5th gear synchro-ring

❑ Checking for wear ⇒ page 117
❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

14 - Synchro-hub for 5th and 6th gear

❑ Installation position ⇒ page 113

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

15 - Locking collar for 5th and 6th gear

❑ Installation position ⇒ page 113
❑ Do not interchange with locking collar for 3rd/4th gear. Mark locking collars accordingly.
❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

16 - Circlip

❑ Mark
❑ Do not interchange with other circlip ⇒ Item 10 (page 105)
❑ Determining thickness ⇒ page 114

17 - Needle bearing

❑ For 6th gear

18 - 6th gear synchro-ring

❑ Checking for wear ⇒ page 117
❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

19 - Synchro-spring

❑ Fit in 6th speed selector gear ⇒ page 111

20 - 6th speed selector gear

21 - Thrust washer

❑ For 3rd speed and 6th speed selector gears

22 - Needle bearing inner race

❑ For 3rd gear

23 - Needle bearing

❑ For 3rd gear

24 - 3rd speed selector gear

25 - Synchro-spring

❑ Insert in 3rd speed selector gear ⇒ page 111

26 - 3rd gear synchro-ring

❑ Checking for wear ⇒ page 117
❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

27 - Synchro-hub for 3rd and 4th gear

- ❑ Installation position: lower inside collar faces 4th gear ⇒ page 114

28 - Locking collar for 3rd and 4th gear

- ❑ Installation position ⇒ page 114
- ❑ Do not interchange with locking collar for 5th/6th gear. Mark locking collars accordingly.
- ❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

29 - Needle bearing inner race

- ❑ For 4th gear

30 - Needle bearing

- ❑ For 4th gear

31 - 4th gear synchro-ring

- ❑ Checking for wear ⇒ page 117
- ❑ ⇒ “2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars ”, page 116

32 - Synchro-spring

- ❑ Fit in 4th speed selector gear ⇒ page 111

33 - 4th speed selector gear

34 - Thrust washer

- ❑ For 4th speed selector gear

35 - Inner race

- ❑ For roller bearing ⇒ Item 37 (page 106) in gearbox cover

36 - Multi-point socket head bolt

- ❑ 200 Nm
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting
- ❑ Loosen and tighten with socket for multi-point socket head bolt XZN 12

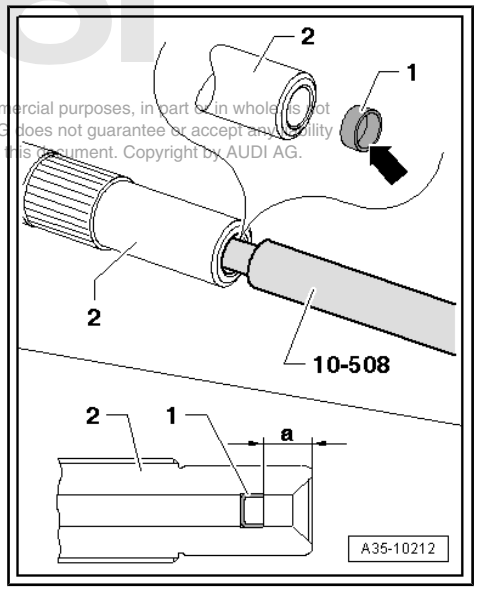
37 - Roller bearing

- ❑ Is fitted in gearbox cover
- ❑ Removing and installing ⇒ Item 7 (page 72)

Installing sealing plug -1- in input shaft

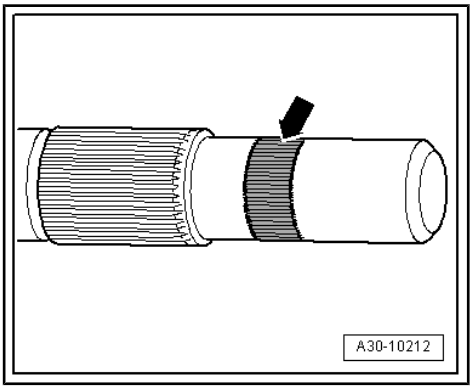
– Drive sealing plug -1- into input shaft -2- to dimension -a-.

- Dimension -a- = 12.5 mm
- Open end of sealing plug -arrow- faces towards assembly mandrel - 10-508- .



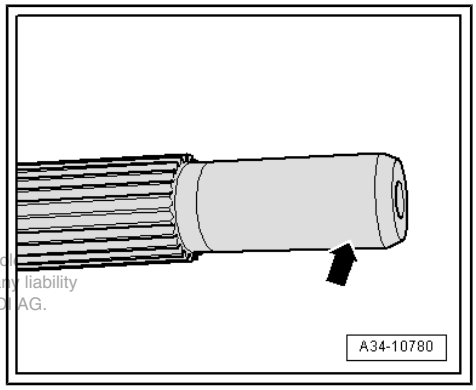
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Checking input shaft for wear



- 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 38 .
- 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 .

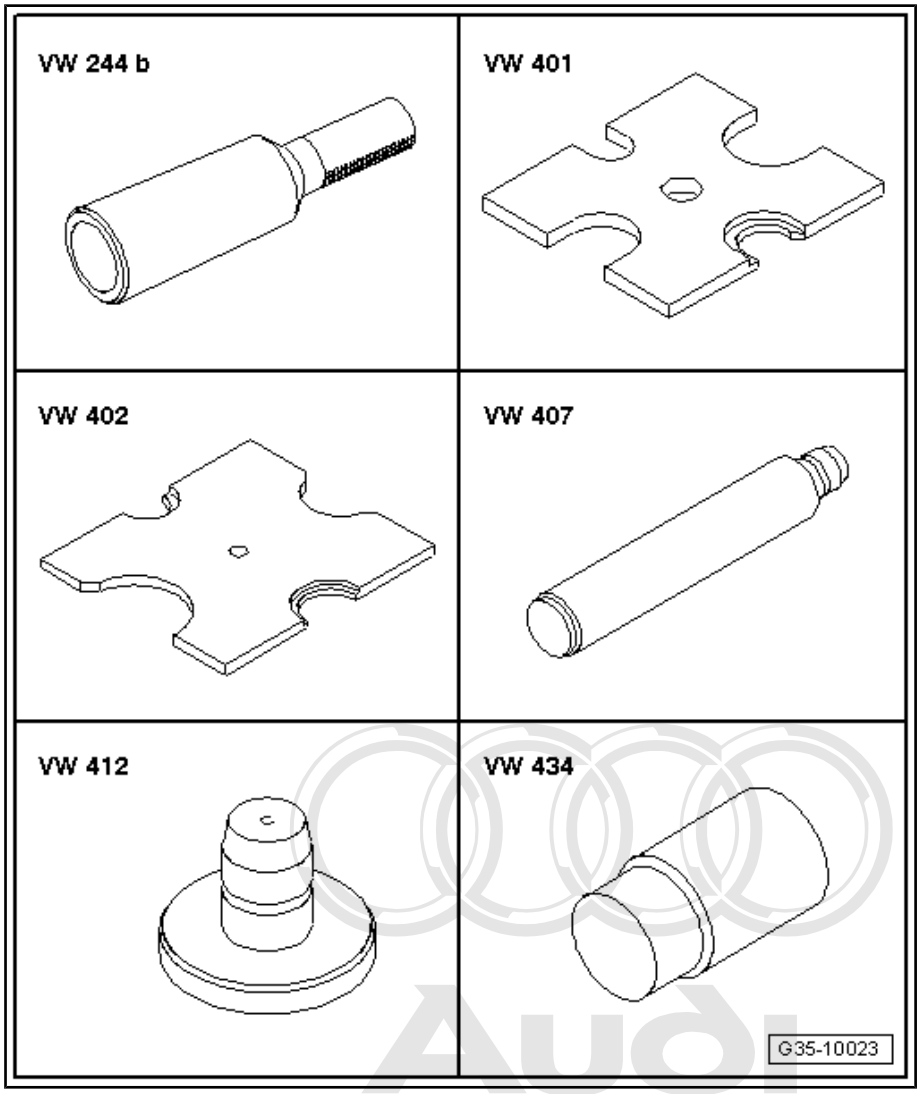
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



2.2 Dismantling and assembling input shaft

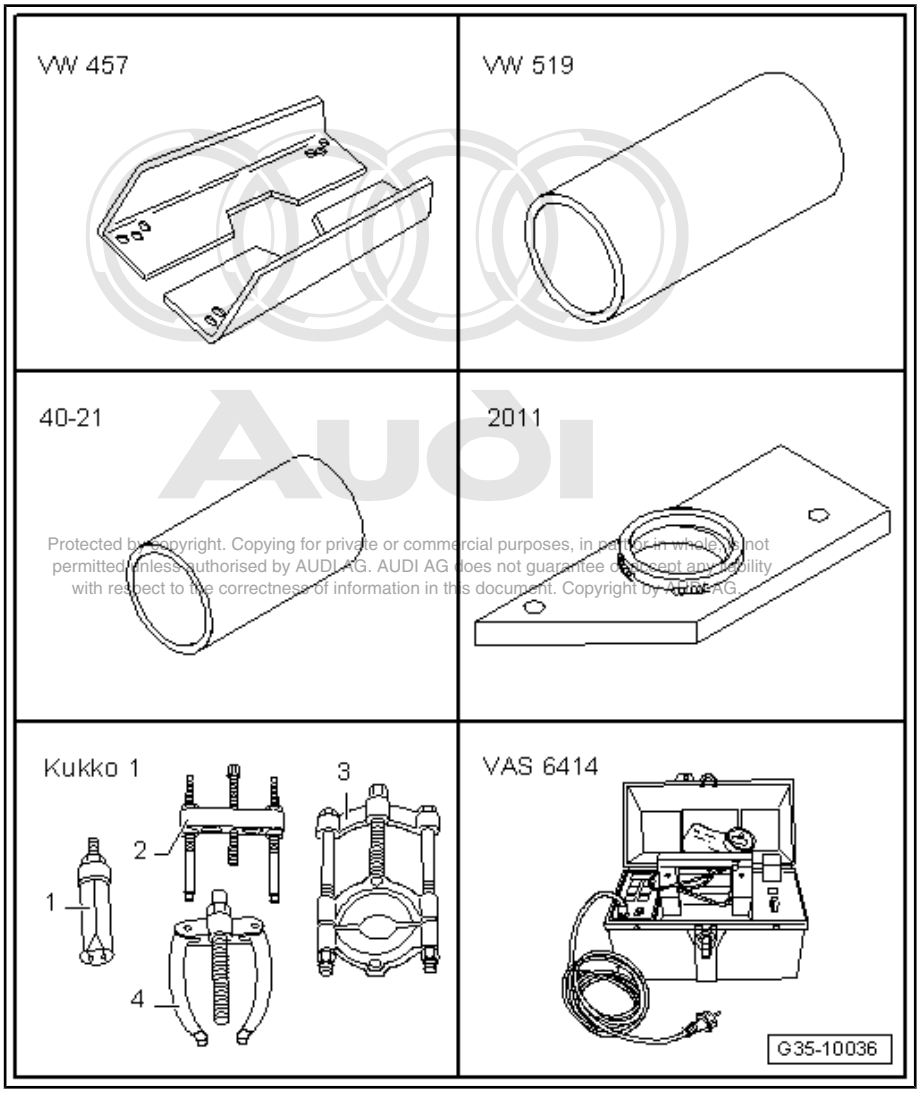
Special tools and workshop equipment required

- Drift sleeve - VW 244 B-
- Thrust plate - VW 401-
- Thrust plate - VW 402-
- Press tool - VW 407-
- Press tool - VW 412-
- Press tool - VW 434-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Support rails - VW 457-
- Tube - VW 519-
- Press tool - 40 - 21-
- Support bridge - 2011-
- -3- Splitter - Kukko 17/2-
- Inductive heater - VAS 6414-
- Depth gauge



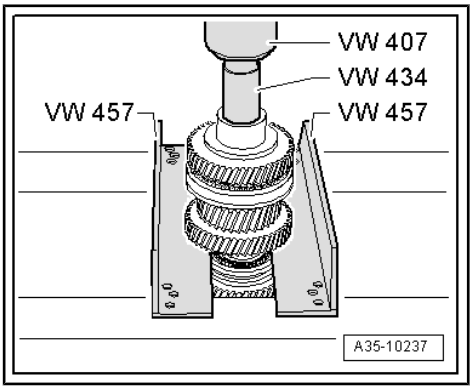
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Dismantling input shaft

- Input shaft has been detached from output shaft and bearing mounting ⇒ page 93 .
- Bolt in input shaft has been loosened and removed ⇒ page 97 .
- If synchro-rings are not being renewed, make sure they are re-installed on the same gear.
- Do not confuse locking collar for 3rd/4th gear with locking collar for 5th/6th gear. Mark locking collars accordingly.

– Press off 3rd speed, 4th speed and 6th speed selector gears together with synchro-hub for 3rd/4th gear and needle bearing inner races.

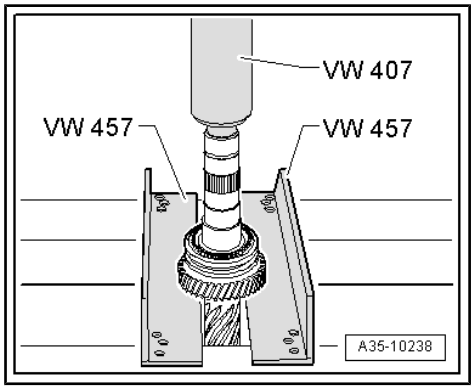
– Detach circlip for 5th /6th gear synchro-hub from input shaft.



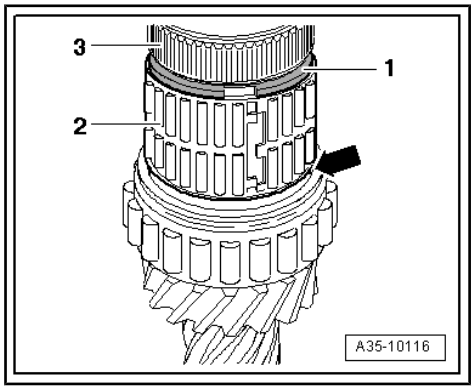
Note

Mark this circlip so that it is not interchanged with the circlip below the 5th /6th gear synchro-hub.

– Press off locking collar with 5th/6th gear synchro-hub and 5th speed selector gear.



– Open out needle bearing -2- for 5th gear and guide it carefully over circlip -1- and teeth -3- for 5th/6th gear synchro-hub.



Note

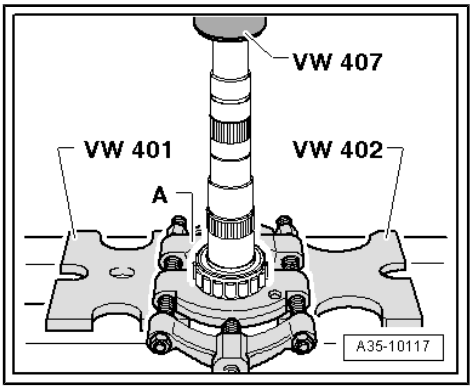
- *The circlip -1- below teeth -3- for the 5th/6th gear synchro-hub should only be removed from the input shaft if the roller bearing is being renewed (next step).*
- *Always renew the circlip if it has been removed.*

– Remove circlip -1-.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Press roller bearing off input shaft.

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



Note

- *The roller bearing will be damaged when it is pressed off and must therefore always be renewed.*
- *If the input shaft is being renewed, the roller bearing does not have to be pressed off the shaft.*
- *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 to the inner race.*

– Clean thread for multi-point socket head bolt in input shaft to remove any remaining locking fluid.

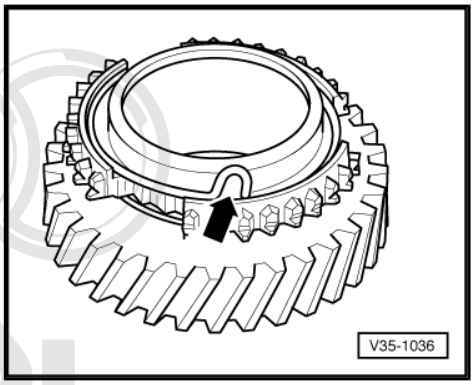
Assembling input shaft

Note

- *Lubricate all needle bearings and synchro-rings with gear oil before fitting.*
- *Checking synchro-rings for wear* ⇒ page 117 .
- *Note allocation of synchro-rings to locking collars* ⇒ page 116 .
- *Using inductive heater - VAS 6414- or similar, heat needle bearing inner races to 130 °C (max.) before pressing on (wear protective gloves).*
- *Using inductive heater - VAS 6414- or similar, heat synchro-hub 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.*

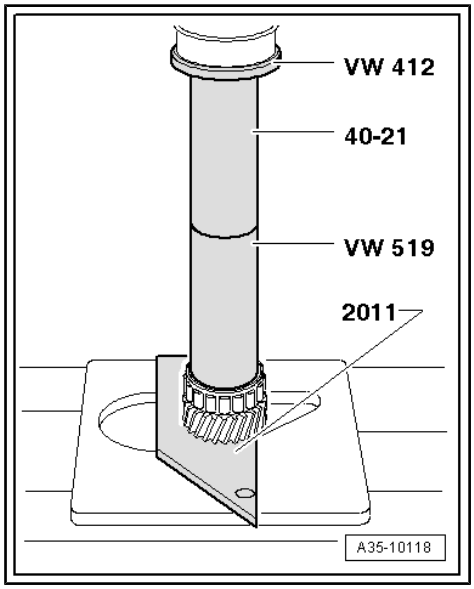
Inserting synchro-spring in selector gear

The bent end of the synchro-spring -arrow- must be hooked into the hole in the selector gear.

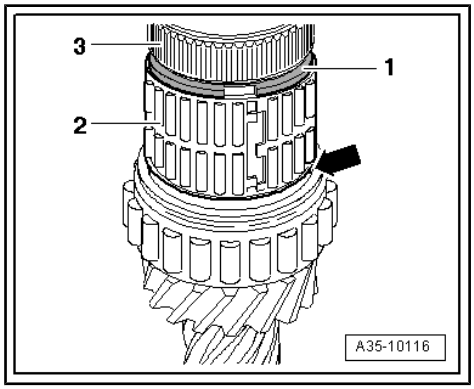


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Press roller bearing onto input shaft as far as stop.



– Open out needle bearing -2- for 5th speed selector gear and guide it carefully over splines for 5th/6th gear synchro-hub -3-; do not seat needle bearing on shoulder -arrow- of input shaft.



Note

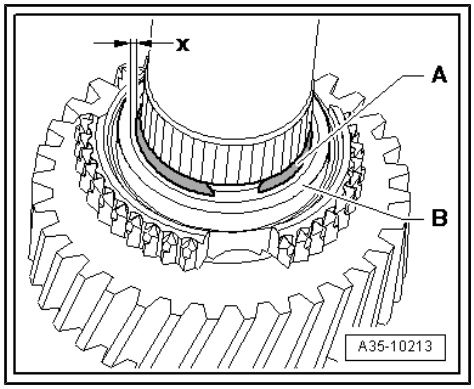
If the circlip -1- has not been removed, the needle bearing -2- must also be guided carefully over this circlip.

– If previously removed, carefully open out new circlip -1- and guide it over splines for 5th/6th gear synchro-hub -3-.

- It should not be possible to turn the circlip in the annular groove on the input shaft by hand

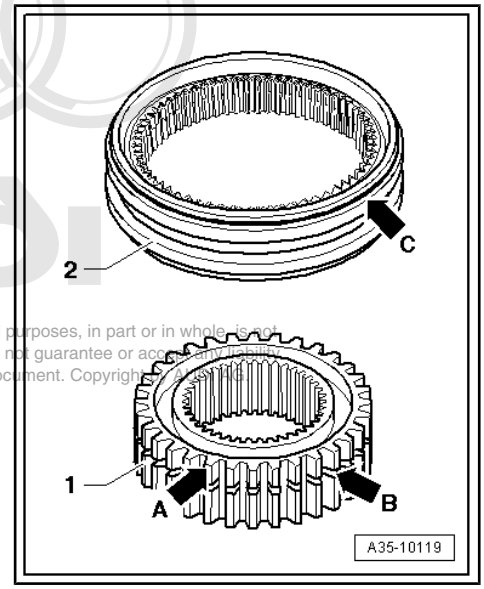
– Install 5th speed selector gear -B-.

- When rotated, selector gear -B- must not come into contact with circlip -A-.
- There must be a uniform clearance -x- between selector gear and circlip all round.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Installation position of 5th/6th gear synchro-hub and locking collar



Note

Depending on version, synchro-hubs -1- with or without groove -arrow B- may be fitted.

Installation position of synchro-hub with groove -arrow B-:

- The shorter teeth -arrow A- above the annular groove -arrow B- of synchro-hub -1- must face towards 6th speed selector gear.

No installation position is specified for synchro-hub without groove -arrow B-.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

- *Depending on version, locking collars -2- with or without groove -arrow C- may be fitted.*
- *If there is a groove -arrow C- on the locking collar, this may face towards 5th or 6th gear.*

Note the following when performing the following steps:

– Fit input shaft in drilling of support bridge - 2011- .

– Position drift sleeves on centre of heated components (synchro-hub and needle bearing inner races).

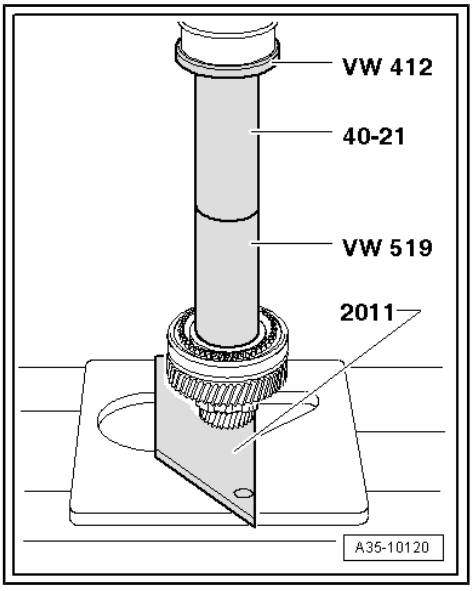
– First press on components just briefly, then stop exerting pressure and check whether drift sleeves are still positioned properly and press on as far as stop.

Press on synchro-hub for 5th and 6th gear as follows:

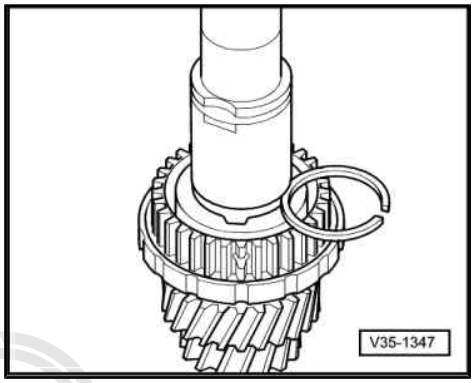
– Fit 5th gear synchro-ring.

– Press on pre-heated synchro-hub as far as stop.

– Slide locking collar over synchro-hub.



Determining thickness of circlip for synchro-hub for 5th and 6th gear



- Synchro-hub is pressed on as far as stop.

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

The following circlips are available:

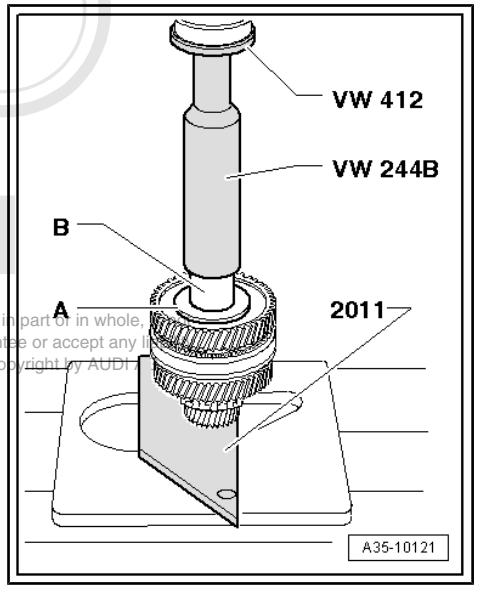
Circlip thickness (mm)		
2.44	2.47	2.50

– Install 6th speed selector gear with needle bearing and synchro-ring.

– Fit thrust washer -A-.

– Press on pre-heated needle bearing inner race -B- for 3rd speed selector gear.

– Install 3rd speed selector gear with needle bearing and synchro-ring.



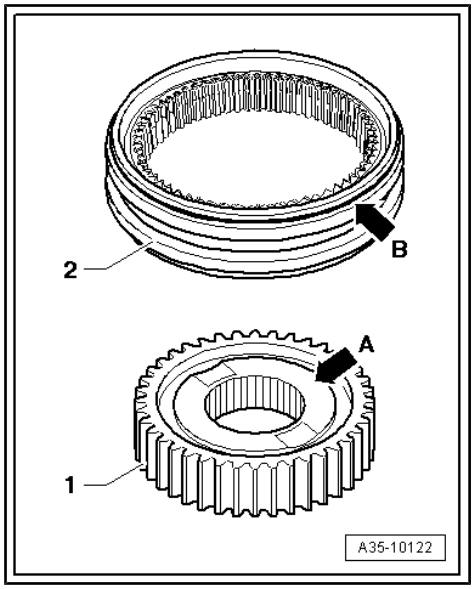
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Installation position of 3rd/4th gear synchro-hub and locking collar

- The lower inside collar -arrow A- of the synchro-hub -1- faces 4th gear.

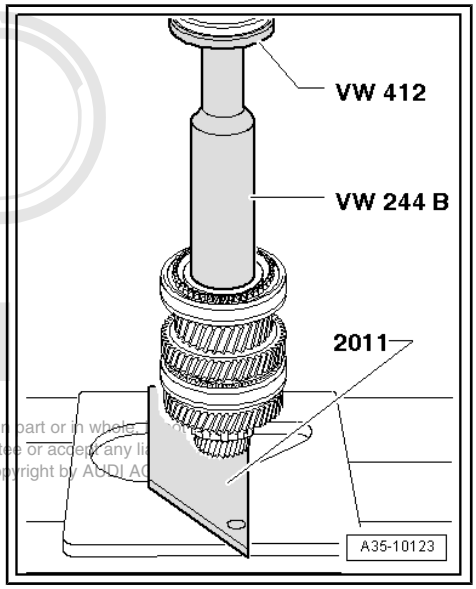
Note

- *Depending on version, locking collars -2- with or without groove -arrow B- may be fitted.*
- *If there is a groove -arrow B- on the locking collar -2-, this may face towards 3rd or 4th gear.*



Pressing on pre-heated 3rd/4th gear synchro-hub

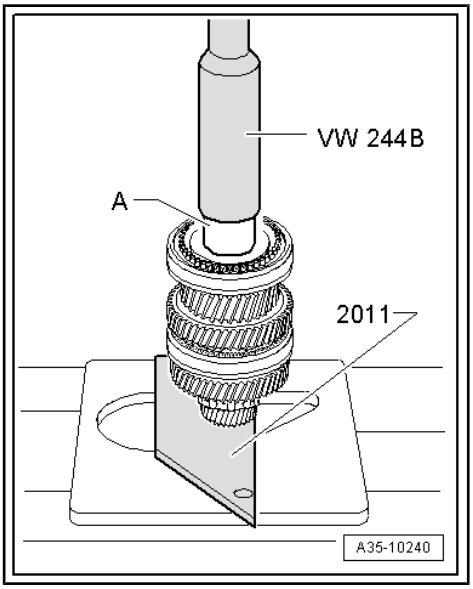
– Fit locking collar for 3rd/4th gear on synchro-hub.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not
permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
with respect to the correctness of information in this document. Copyright by AUDI AG

Pressing on pre-heated needle bearing inner race -A- for 4th speed selector gear

– Install 4th speed selector gear together with needle bearing and synchro-ring.

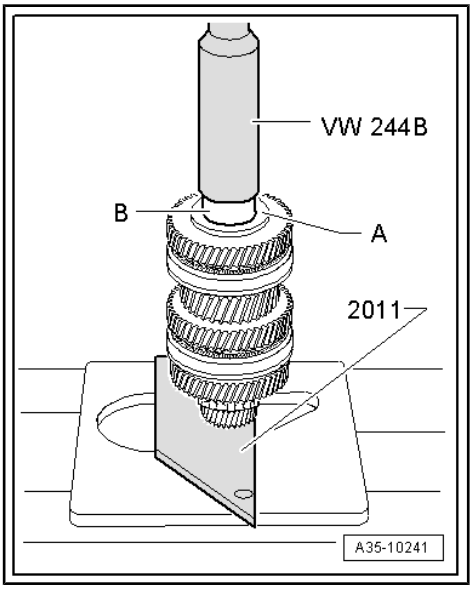


– Fit thrust washer -A-.

– Press on pre-heated inner race -B- for roller bearing.

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

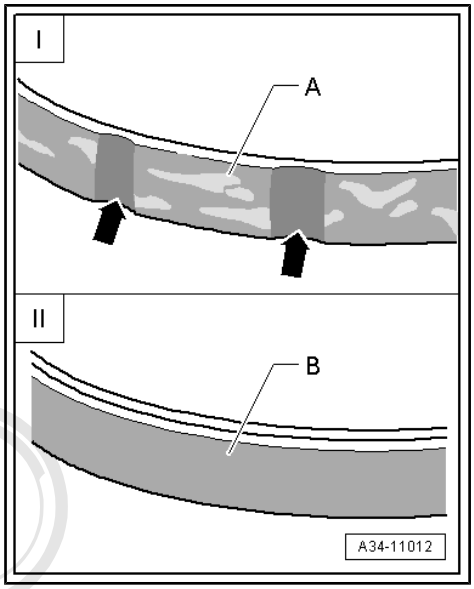
• The axial play of the selector gears must be at least 0.15 mm.



Note

Tighten bolt securing input shaft to specified torque ⇒ page 102 .

2.3 Allocation of 3rd - 6th gear synchro-rings to locking collars



Note

- *Depending on the version, the synchro-rings for 3rd/4th gear can have a molybdenum or carbon coating.*
- *The synchro-rings for 5th/6th gear always have a molybdenum coating.*
- *Please note correct allocation of synchro-rings to locking collars.*

Different types of synchro-rings

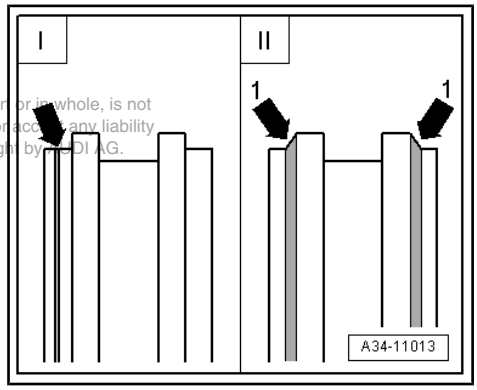
I -
Molybdenum-coated synchro-ring

- Distinguishing features: synchro-ring has oil recesses -arrows-, and friction surface -A- is graphite-grey with a slightly porous appearance.

II -
Carbon-coated synchro-ring

- Distinguishing features: friction surface -B- is black with a porous appearance; upper part is not coated.

Locking collars for molybdenum-coated synchro-rings
⇒ page 116



I - Locking collar with one groove -arrow- and no chamfers

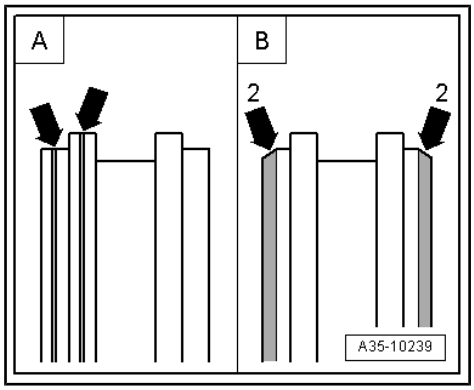
- Locking collar -I- – old version, no longer installed

II - Locking collar with chamfers -arrows 1- on both sides of selector fork slot

- Locking collar -II- – new version, currently installed

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Locking collars for carbon-coated synchro-rings
⇒ page 116



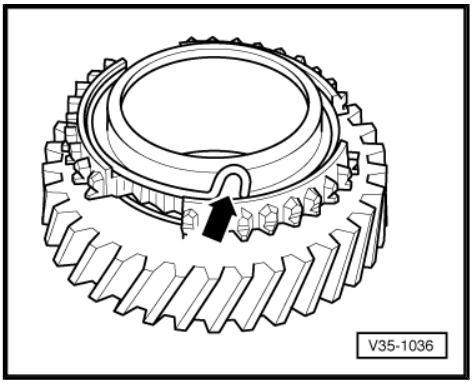
A - Locking collar with two grooves -arrows- and no chamfers

- Locking collar -A- – old version, no longer installed

B - Locking collar with chamfers on outer sides -arrows 2-

- Locking collar -B- – new version, currently installed

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

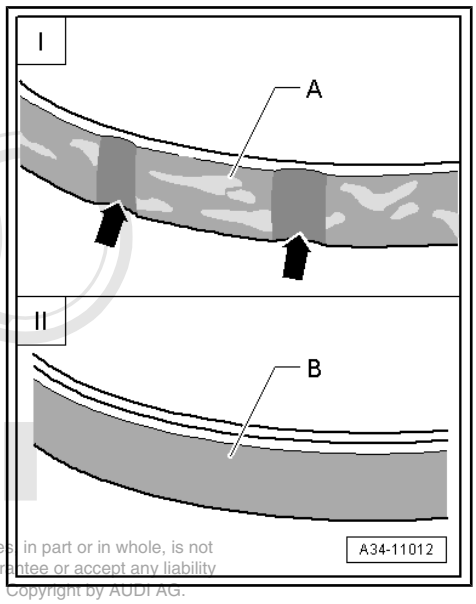


Note

- *If the synchromesh of one of the gears makes a grinding noise when engaging the gear, check the synchro-ring, the dog teeth of the locking collar/synchro-ring and the selector gear ⇒ page 6 and the synchro-spring -arrow- in the selector gear for damage. Renew damaged parts.*
- *The clutch and clutch actuator mechanism must be OK and the selector mechanism must be correctly adjusted.*

Checking synchro-rings with molybdenum coating and carbon coating

Clean synchro-ring; the friction surface must be free of oil.



I - Molybdenum-coated synchro-ring

- The friction surface of an intact molybdenum coated synchro-ring has a graphite-grey, slightly porous appearance.
- The synchro-ring must be renewed if very shiny areas -A- have formed on the friction surface or if the brass-coloured metal underneath is already visible.

II - Carbon-coated synchro-ring

- Check the friction surfaces -B- of carbon-coated synchro-rings for damage (flattened sections or particles of carbon coating broken away). Renew if necessary.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Output shaft

⇒ “3.1 Exploded view - output shaft”, page 118

⇒ “3.2 Dismantling and assembling output shaft”, page 122

3.1 Exploded view - output shaft

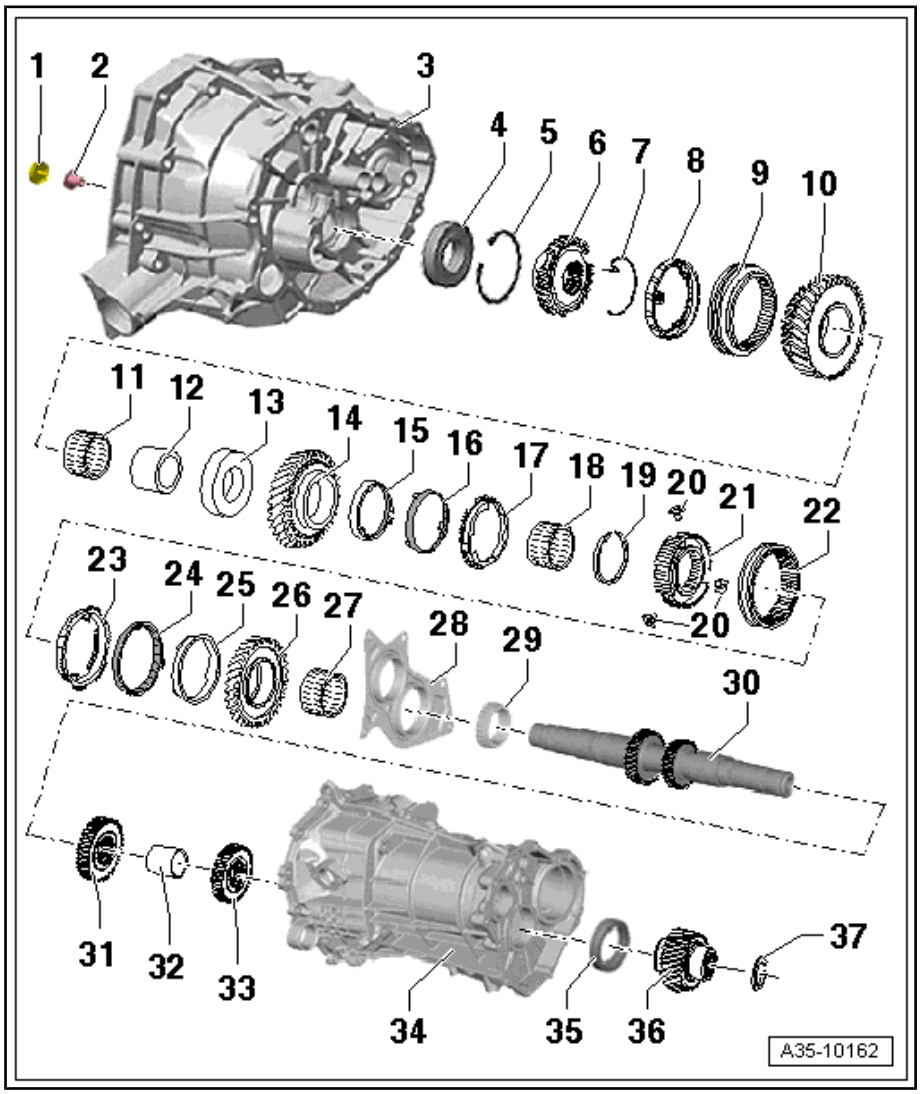
Detaching output shaft from input shaft and bearing mounting
⇒ page 93

Dismantling and assembling output shaft ⇒ page 122

Note

- *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.*
- *Refer to technical data when installing new gears or a new output shaft ⇒ 6-speed manual gearbox 0B1; Rep. gr. 00 ; Technical data; Allocation of gearbox to engine .*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



1 - Sealing cap
- ❑ With oil guide
- ❑ For output shaft
- ❑ Removing and installing ⇒ page 52

2 - Bolt
- ❑ 200 Nm
- ❑ For output shaft
- ❑ Apply locking fluid - AMV 185 101 A1- when fitting
- ❑ To loosen, heat bolt to approx. 80 °C if necessary using hot air blower - V.A.G 1416-

3 - Gearbox housing

4 - Ball bearing
- ❑ For output shaft
- ❑ Removing and installing ⇒ Item 15 (page 75)

5 - Circlip
- ❑ Note installation position ⇒ page 90

6 - Reverse gear synchro-hub
- ❑ Removing and installing ⇒ page 95

7 - Synchro-spring
- ❑ Insert in drilling in reverse gear synchro-hub

8 - Synchro-ring for reverse gear
- ❑ Checking for wear ⇒ page 121

9 - Reverse gear locking collar

- ❑ Installation position ⇒ page 121

10 - Reverse selector gear

- ❑ Installation position ⇒ page 121

11 - Needle bearing

- ❑ For reverse gear

12 - Needle bearing inner race

- ❑ For reverse gear
- ❑ Removing and installing ⇒ page 95

13 - Thrust washer

- ❑ For 1st speed and reverse selector gears

14 - 1st speed selector gear

15 - Inner ring for 1st gear

- ❑ Installation position ⇒ page 99
- ❑ Distinguishing inner rings for 1st and 2nd gear ⇒ page 121
- ❑ Checking for wear ⇒ page 122
- ❑ Renew if scored or if there are visible traces of wear

16 - Intermediate ring for 1st gear

- ❑ Installation position ⇒ page 99
- ❑ Checking for wear ⇒ page 122

17 - Synchro-ring for 1st gear

- ❑ Installation position ⇒ page 99
- ❑ Checking for wear ⇒ page 122
- ❑ Renew if scored or if there are visible traces of wear

18 - Needle bearing

- ❑ For 1st gear

19 - Circlip

- ❑ Determining thickness ⇒ page 100

20 - Thrust block

- ❑ 3x
- ❑ Installing ⇒ page 122

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

21 - Synchro-hub for 1st and 2nd gear

- ❑ Installation position ⇒ page 122

22 - Locking collar for 1st and 2nd gear

- ❑ Installation position ⇒ page 122

23 - Synchro-ring for 2nd gear

- ❑ Installation position ⇒ page 99
- ❑ Checking for wear ⇒ page 122
- ❑ Renew if scored or if there are visible traces of wear

24 - Intermediate ring for 2nd gear

- ❑ Installation position ⇒ page 99
- ❑ Checking for wear ⇒ page 122

25 - Inner ring for 2nd gear

- ❑ Installation position ⇒ page 99
- ❑ Distinguishing inner rings for 1st and 2nd gear ⇒ page 121
- ❑ Renew if scored or if there are visible traces of wear

26 - 2nd speed selector gear

27 - Needle bearing

- ❑ For 2nd gear

28 - Bearing mounting

- ❑ Carries bearings for input shaft and output shaft in gearbox cover
- ❑ ⇒ Item 3 (page 93)

29 - Roller bearing

- ❑ For output shaft
- ❑ Pressing off ⇒ page 125
- ❑ Pressing on ⇒ page 125
- ❑ Always renew

30 - Output shaft

- ❑ With splines for 5th and 6th gear

31 - 3rd gear wheel

- ❑ Pressing off ⇒ page 125
- ❑ Installation position: high inside collar faces 4th gear
- ❑ Pressing on ⇒ page 125

32 - Spacer sleeve

33 - 4th gear wheel

- ❑ Pressing off ⇒ page 124
- ❑ Installation position: high inside collar faces spur gear ⇒ Item 36 (page 120)
- ❑ Pressing on ⇒ page 126

34 - Gearbox cover

35 - Roller bearing

- ❑ Bearing for spur gear in gearbox cover
- ❑ Removing and installing ⇒ Item 6 (page 72)

36 - Spur gear

- ❑ Drive gear for side shaft / pinion shaft (spur gearing)
- ❑ Removing and installing ⇒ page 52

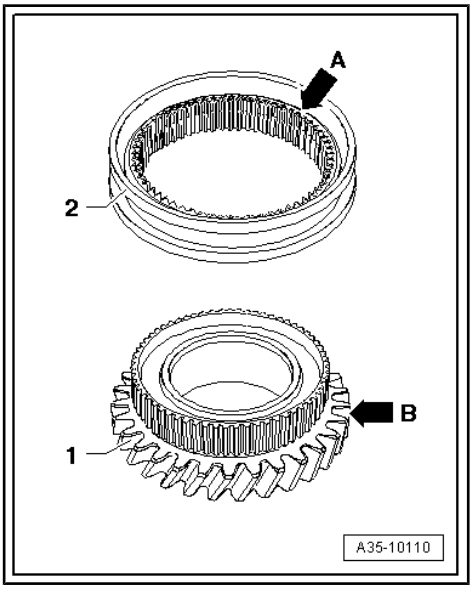
37 - Circlip

- ❑ Determining thickness ⇒ page 64
- ❑ Fit in annular groove on output shaft

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Installation position of locking collar -2- and selector gear -1- for reverse gear

- The pointed teeth -arrow A- of the locking collar -2- point away from the driving teeth -arrow B- of the reverse selector gear -1-.



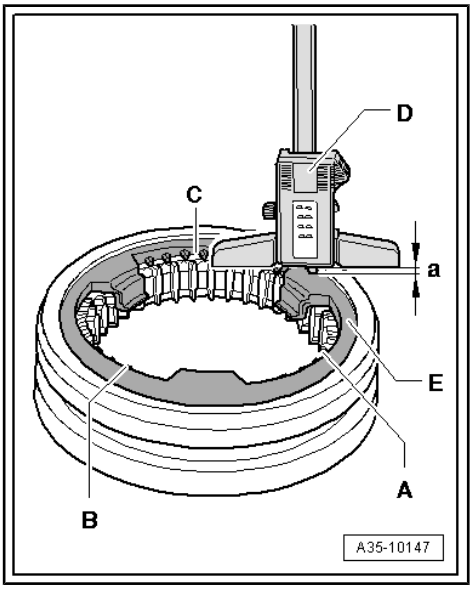
Audi
Copyright AUDI AG. All rights reserved. Copying or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Checking synchro-ring for wear

– Press synchro-ring -E- into locking collar and measure gap -a- at positions -A-, -B- and -C- using depth gauge -D-.

– Add the measured values and divide by 3.

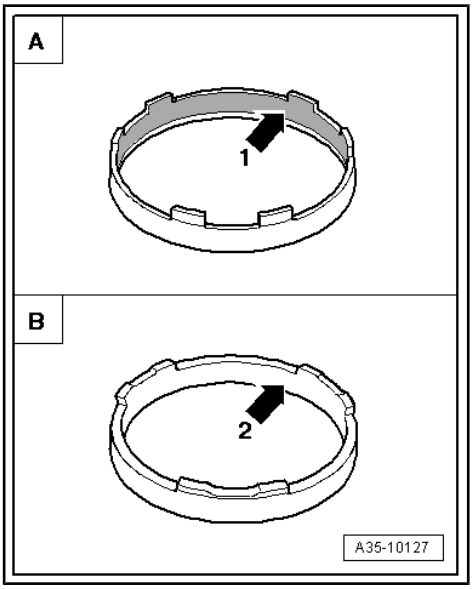
The determined value should not exceed 0.5 mm.



Distinguishing inner rings for 1st gear -A- and 2nd gear -B-

-A- The inner ring for 1st gear has a coated friction surface on the inside -arrow 1- and is conical.

-A- The inner ring for 2nd gear has no friction surface on the inside -arrow 2- and is cylindrical.

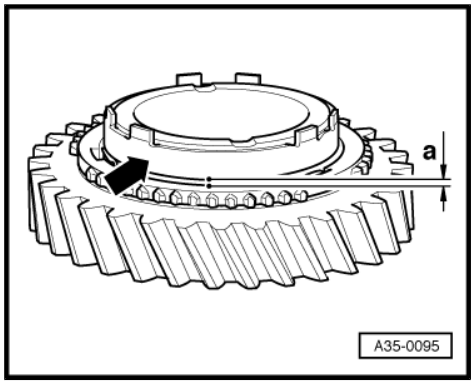


Checking 1st gear inner ring for wear

– 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 .

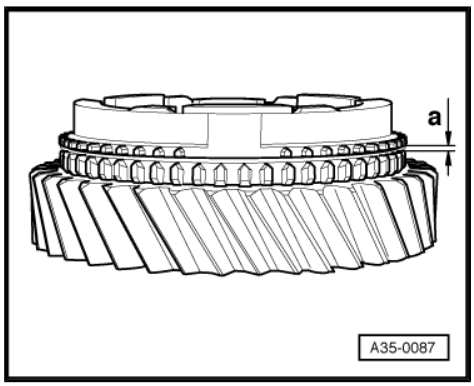
Gap -a-	Wear limit
Inner ring for 1st gear	0.6 mm



Checking 1st and 2nd gear intermediate ring 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 and 2nd gear	0.7 mm

Note

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

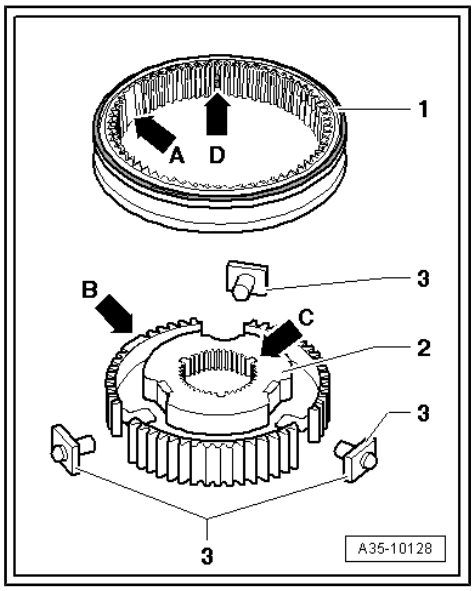
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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 synchro-hub: high inside collar -arrow C- faces 2nd speed selector gear.

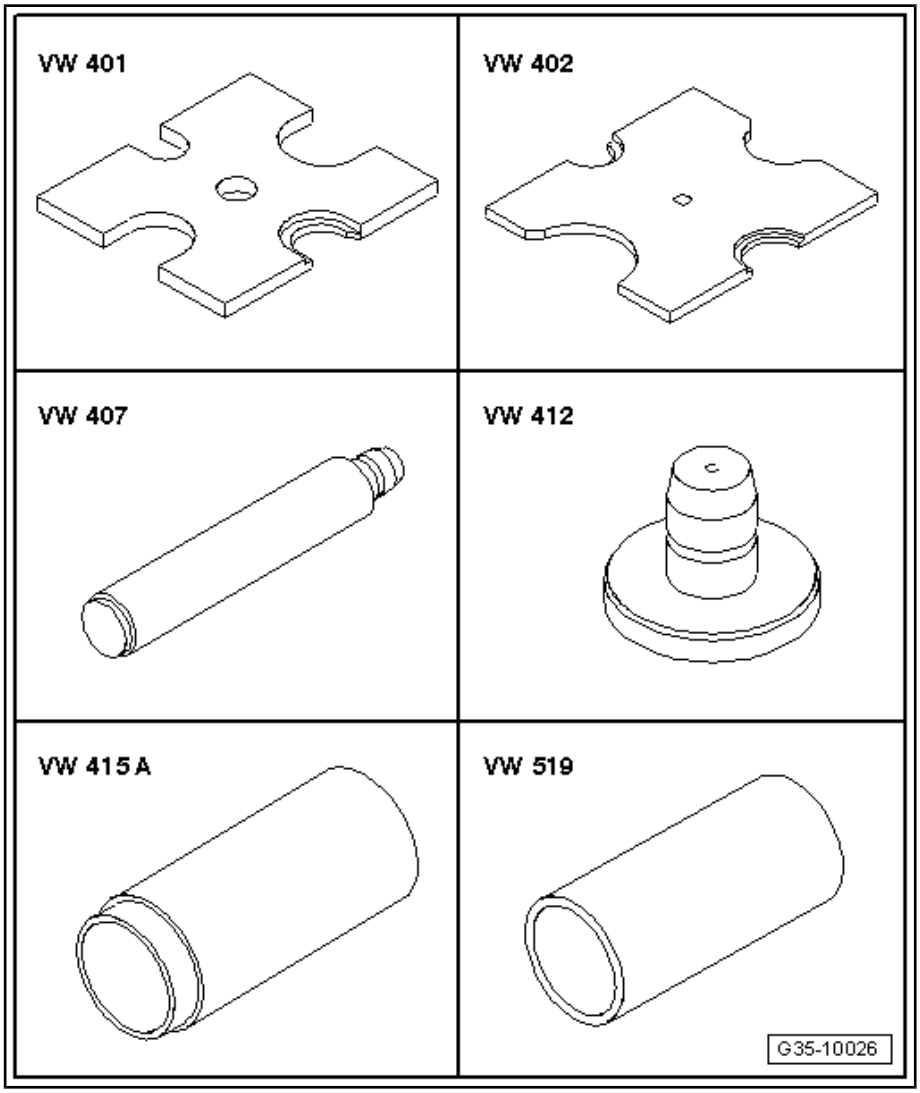
– Then fit thrust blocks -3- in synchro-hub and press them into recesses -arrows D- in locking collar.



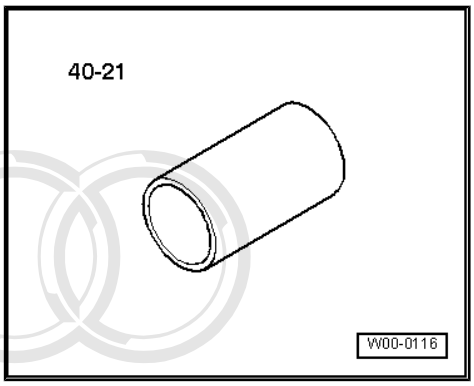
3.2 Dismantling and assembling output shaft

Special tools and workshop equipment required

- Thrust plate - VW 401-
- Thrust plate - VW 402-
- Press tool - VW 407-
- Press tool - VW 412-
- Tube - VW 415 A-
- Tube - VW 519-

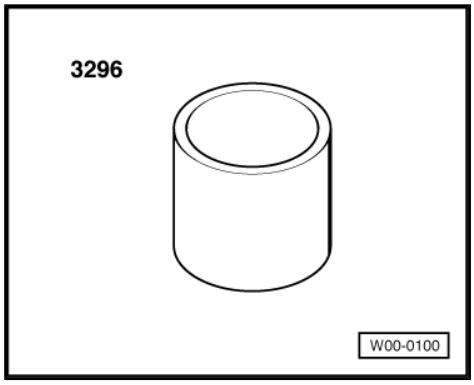


- Press tool - 40 - 21-

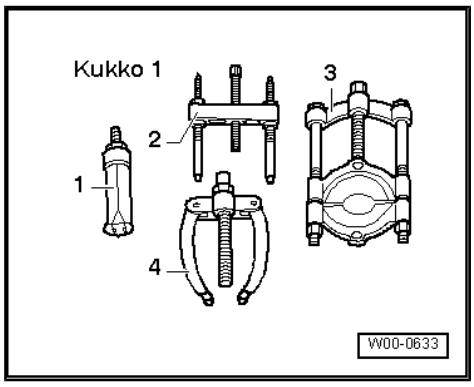


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

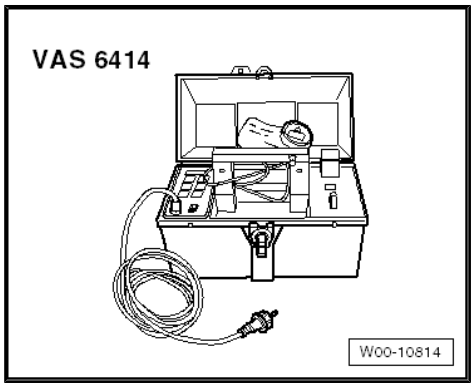
- Tube - 3296-



- -3- Splitter - Kukko 17/2-

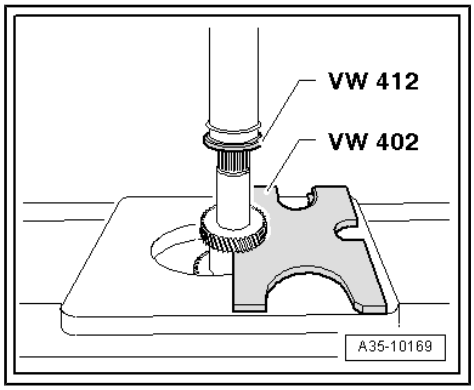


- Inductive heater - VAS 6414-



Note

Removing and installing 1st, 2nd and reverse gears is described under
⇒ "1.2 Dismantling and assembling gear cluster", page 95 .



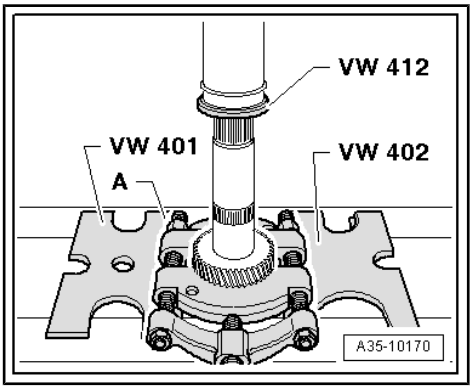
Pressing off 4th gear wheel

– Detach spacer sleeve ⇒ Item 32 (page 120) from output shaft by hand.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pressing off 3rd gear wheel

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

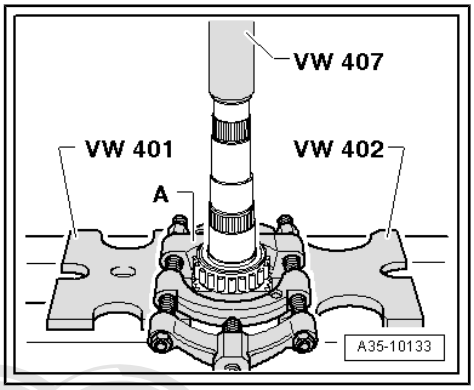


Pressing roller bearing off output shaft

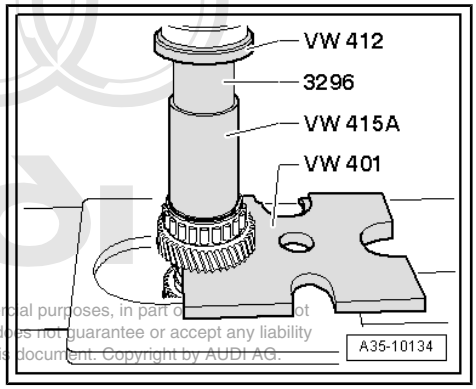
A - Splitter 22...115 mm , e.g. -Kukko 17/2-

Note

- *The roller bearing will be damaged when it is pressed off and must therefore always be renewed.*
- *If the output shaft is being renewed, the roller bearing does not have to be pressed off the shaft.*
- *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 to the inner race.*



Pressing roller bearing onto output shaft



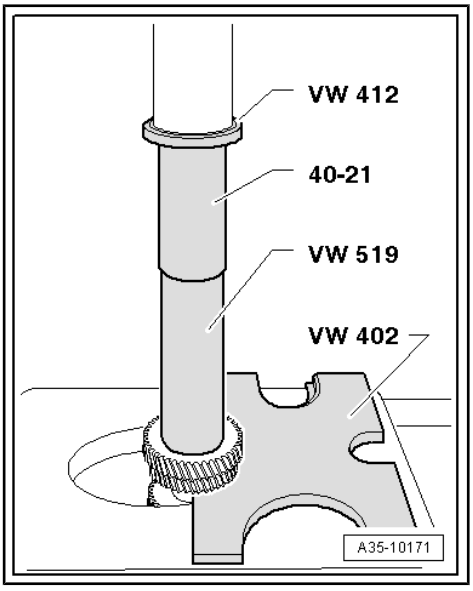
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pressing on 3rd gear wheel

- Installation position:

Higher inside collar faces 4th gear.

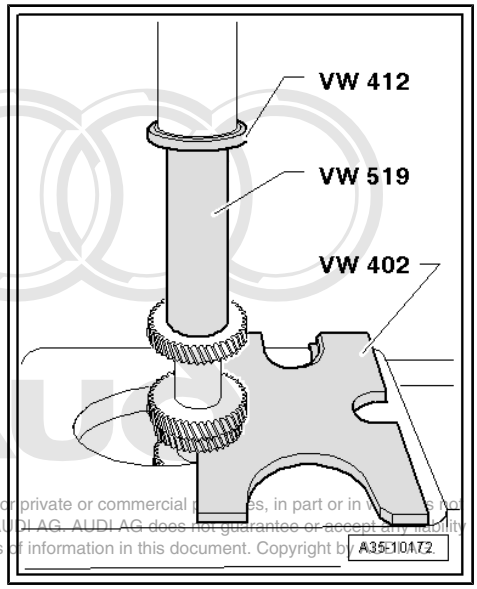
– Fit spacer sleeve ⇒ Item 32 (page 120) onto output shaft by hand.



Pressing on 4th gear wheel

- Installation position:

Higher inside collar faces upwards towards splines for spur gear.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

39 – Final drive - differential

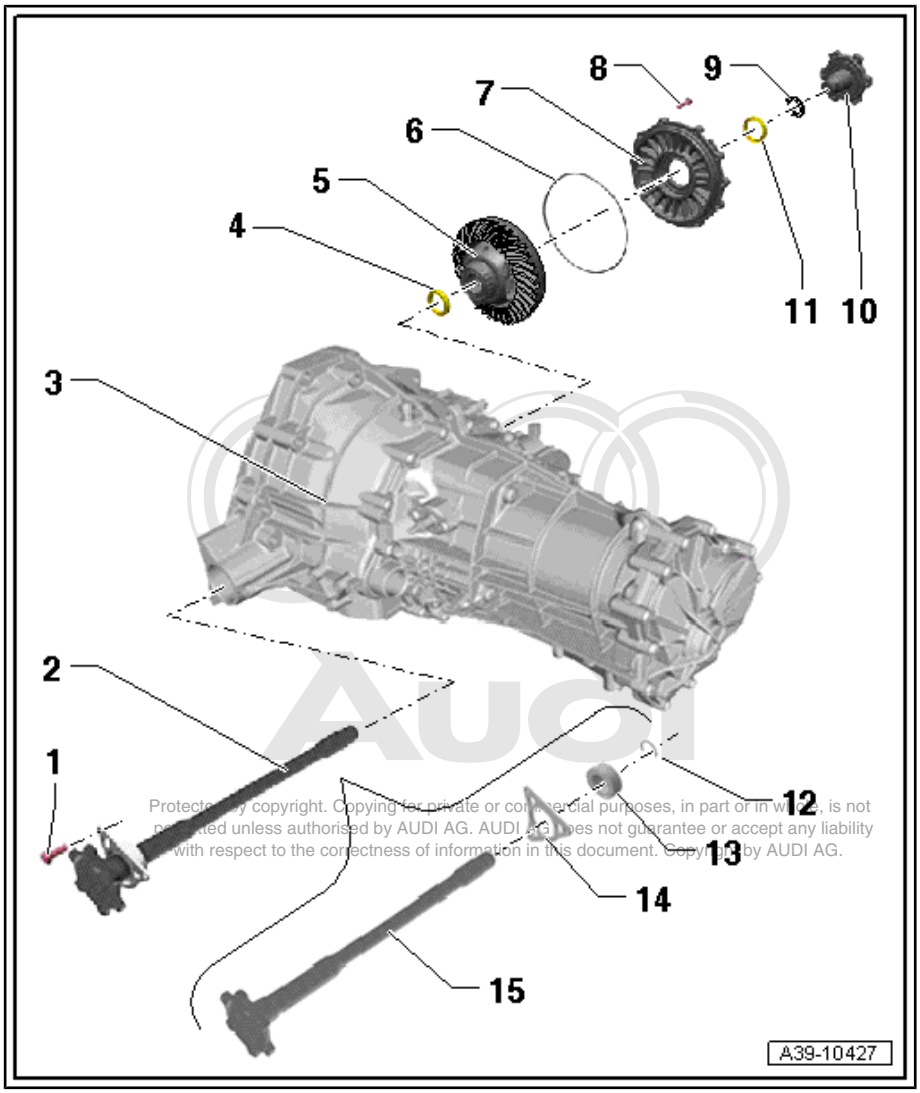
1 Final drive

⇒ “1.1 Exploded view - final drive”, page 127

1.1 Exploded view - final drive

Note

- *The differential can be removed and installed without removing the selector mechanism, input shaft, output shaft, side shaft / pinion shaft or gearbox cover.*
- *If you are renewing the cover for the final drive -7-, you must adjust the preload of the tapered roller bearings for the differential ⇒ page 155 .*
- *If you are renewing the tapered roller bearings of the differential, you must adjust the differential ⇒ page 175 .*



1 - Bolt

- ❑ 15 Nm and then turn 45° further
- ❑ Steel bolts (M8; 25 mm long)
- ❑ 3x
- ❑ Renew

2 - Flange shaft (left-side)

- ❑ With mounting bracket and ball bearing
- ❑ Removing and installing ⇒ “3.3 Removing and installing flange shaft (left-side)”, page 142
- ❑ Checking and adjusting preload of ball bearing for flange shaft (left-side) ⇒ page 146
- ❑ Renewing ball bearing or mounting bracket ⇒ page 151

3 - Gearbox housing

4 - Oil seal

- ❑ For flange shaft (left-side)
- ❑ ⇒ “2.3 Renewing oil seal (left-side)”, page 131

5 - Differential with crown wheel

- ❑ ⇒ “3.6 Removing and installing differential”, page 153
- ❑ ⇒ “3.1 Exploded view - differential”, page 138

6 - O-ring

- ❑ Always renew

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- ❑ Lubricate with gear oil

7 - Cover for final drive

- ❑ Renewing ⇒ page 155

8 - Bolt

- ❑ 20 Nm and then turn 90° further
- ❑ Steel bolts (M8; 38 mm long)
- ❑ 10x

9 - Circlip

- ❑ Always renew
- ❑ Removing and installing ⇒ page 141

10 - Flange shaft (right-side)

- ❑ ⇒ “3.2 Removing and installing flange shaft (right-side)”, page 140
- ❑ Drive in with drift - VW 295-

11 - Oil seal

- ❑ For flange shaft (right-side)
- ❑ ⇒ “2.2 Renewing oil seal (right-side)”, page 130

12 - Circlip

- ❑ Renew

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13 - Ball bearing

- ❑ For flange shaft (left-side)
- ❑ Checking and adjusting preload of ball bearing for flange shaft (left-side) ⇒ page 146
- ❑ ⇒ “3.5 Renewing mounting bracket and ball bearing for flange shaft (left-side)”, page 151

14 - Mounting bracket

- ❑ For flange shaft (left-side)
- ❑ ⇒ “3.5 Renewing mounting bracket and ball bearing for flange shaft (left-side)”, page 151

15 - Flange shaft (left-side)

- ❑ ⇒ “3.3 Removing and installing flange shaft (left-side)”, page 142

2 Oil seals

⇒ “2.1 Overview of fitting locations - oil seals”, page 129

⇒ “2.2 Renewing oil seal (right-side)”, page 130

⇒ “2.3 Renewing oil seal (left-side)”, page 131

⇒ “2.4 Renewing input shaft oil seal”, page 135

2.1 Overview of fitting locations - oil seals

The oil seals -C- and -D- can also be renewed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 39 ; Oil seals; Overview of fitting locations - oil seals .

A - Oil seal

- For input shaft
- ⇒ “2.4 Renewing input shaft oil seal”, page 135

B - Oil seal

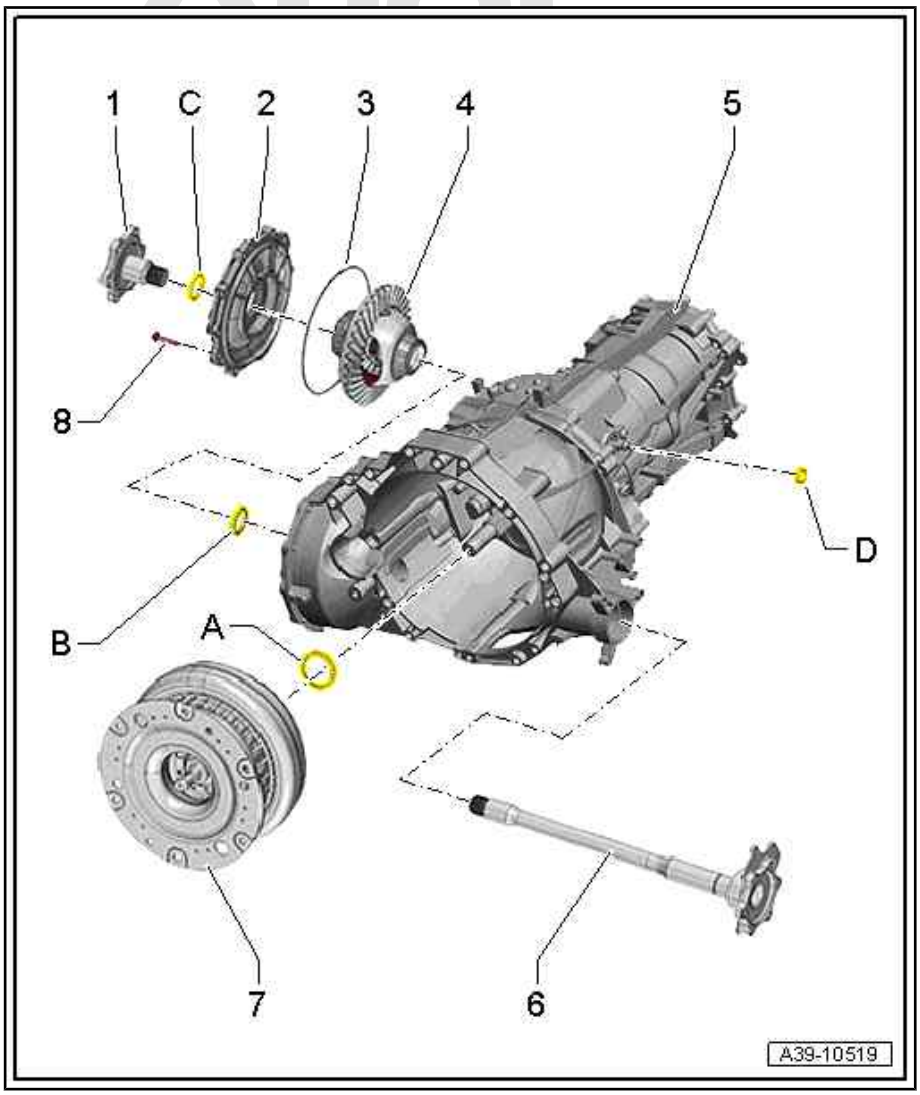
- For flange shaft (left-side)
- ⇒ “2.3 Renewing oil seal (left-side)”, page 131

C - Oil seal

- For flange shaft (right-side)
- ⇒ “2.2 Renewing oil seal (right-side)”, page 130
- Renewing with gearbox installed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 39 ; Oil seals; Renewing oil seal (right-side)

D - Oil seal

- For selector shaft
- ⇒ Fig. ““Removing and installing oil seal for selector shaft”“ , page 86
- Renewing with gearbox installed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Selector mechanism; Renewing



selector shaft oil seal

1 - Flange shaft (right-side)

- ⇒ “3.2 Removing and installing flange shaft (right-side)”, page 140
- Renewing with gearbox installed ⇒ 6-speed manual gearbox; Rep. gr. 39 ; Oil seals; Renewing oil seal (right-side)

2 - Cover for final drive

- Renewing ⇒ page 155

3 - O-ring

- On cover for final drive
- Renewing ⇒ page 155

4 - Differential

- ⇒ “3.1 Exploded view - differential”, page 138
- ⇒ “3.6 Removing and installing differential”, page 153

5 - Gearbox

- Removing and installing ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox

6 - Flange shaft (left-side)

- ⇒ “3.3 Removing and installing flange shaft (left-side)”, page 142

7 - Clutch module

- Removing and installing ⇒ “2.3 Removing and installing clutch module”, page 25

8 - Bolt

- For cover for final drive
- Tightening torque ⇒ Item 8 (page 128)
- 10x

2.2 Renewing oil seal (right-side)

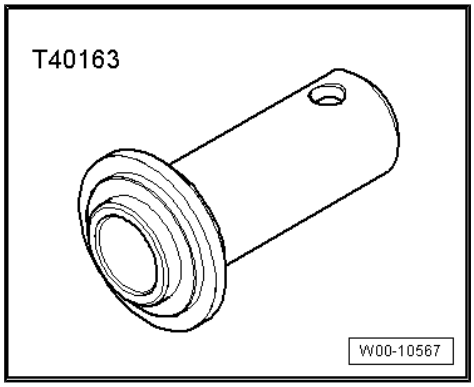
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

The flange shaft oil seal (right-side) can also be renewed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 39 ; Oil seals; Renewing oil seal (right-side) .

Special tools and workshop equipment required

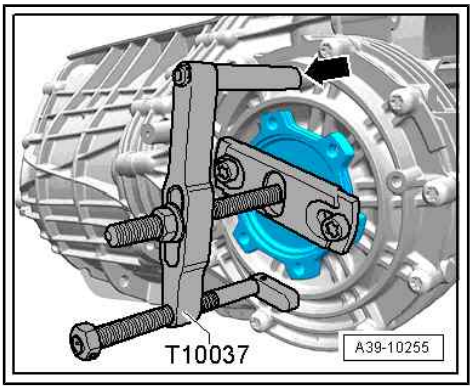
- Thrust piece - T40163-



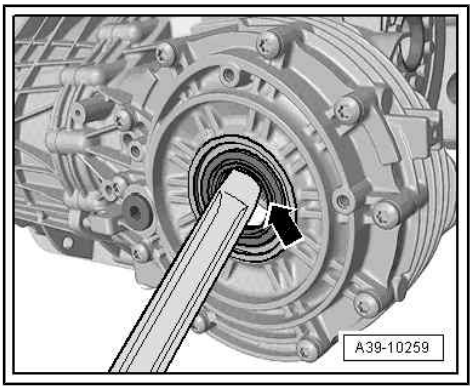
- Sealing grease - G 052 128 A1-

Removing

– Remove flange shaft (right-side) ⇒ page 140 .



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



Installing

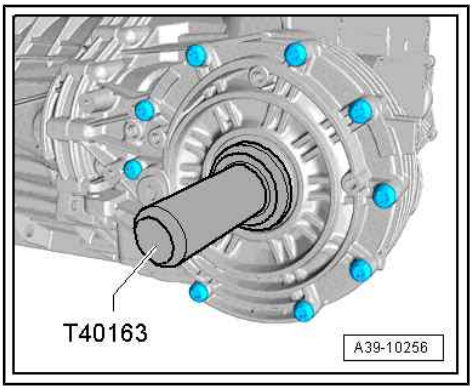
Installation is carried out in reverse sequence; note the following:

– Lightly oil outer circumference of new oil seal.

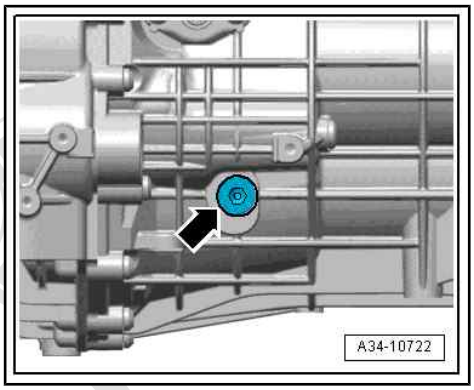
– Drive in new flange shaft oil seal (right-side) as far as stop; keep seal straight when installing.

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

– Install flange shaft (right-side) ⇒ page 141 .



– Unscrew oil filler plug -arrow-, fill up gear oil in gearbox and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .

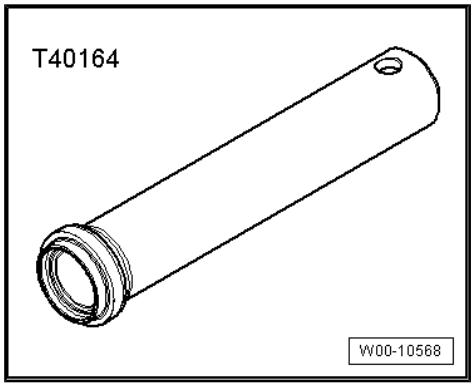


2.3 Renewing oil seal (left-side)

Special tools and workshop equipment required

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

♦ Thrust piece - T40164-

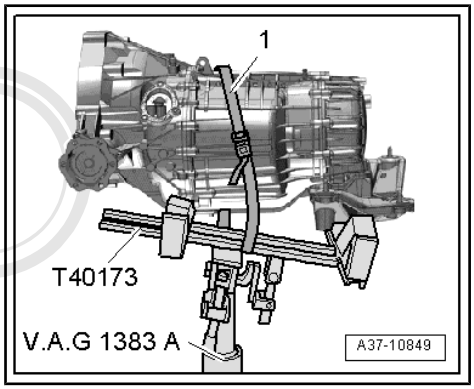


♦ Sealing grease - G 052 128 A1-

Removing

- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .
- Gearbox is secured to gearbox support - T40173- with tensioning strap -1-.

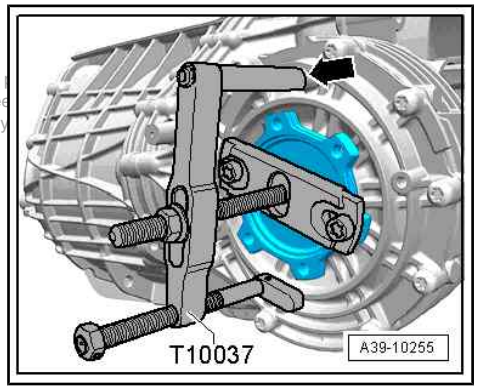
– Tilt gearbox towards rear and slightly to left with gearbox support - T40173- to prevent gear oil from escaping.



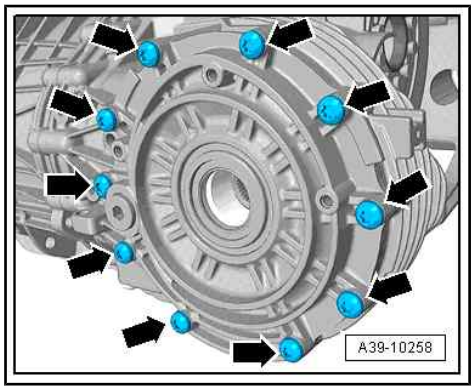
– Remove flange shaft (right-side) ⇒ page 140 .

– Place drip tray - VAS 6208- under the gearbox.

Protected by copyright. Copying for private or commercial purposes, in
permitted unless authorised by AUDI AG. AUDI AG does not guarantee
with respect to the correctness of information in this document. Copy



Unscrew bolts -arrows- and detach cover for final drive.



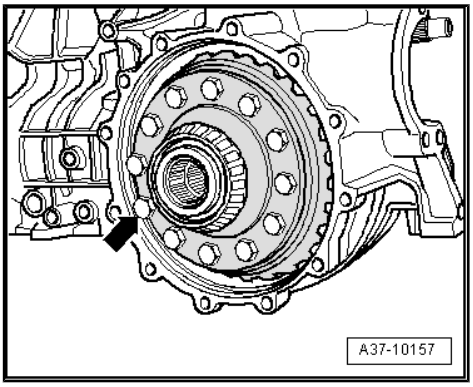
Caution

Risk of damage to the differential.

- ***Detach cover for final drive from gearbox housing slowly and carefully. The differential may otherwise fall out of the gearbox.***
- ***A differential which has fallen to the ground can no longer be installed. Renew gearbox if differential has fallen to the ground.***

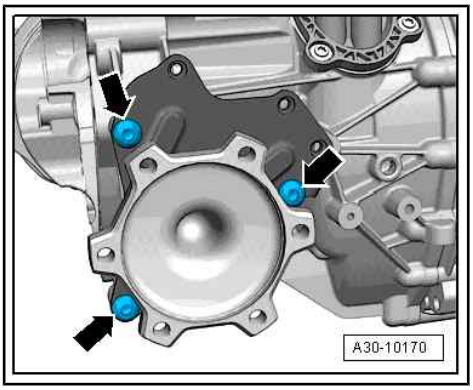
– Carefully detach cover for front final drive (some remaining gear oil may drain off).

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



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Remove flange shaft (left-side) ⇒ page 142 .

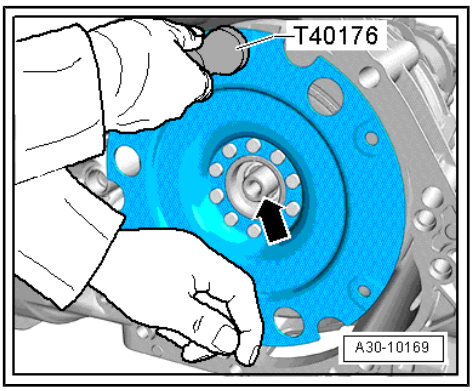


– Remove clutch module ⇒ page 25 .

Caution

Risk of damaging clutch module when removing and installing

- *Refer to Workshop Manual ⇒ "2.3 Removing and installing clutch module", page 25*

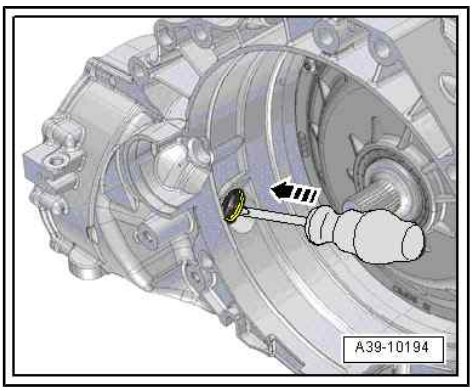


– Press out oil seal with a screwdriver.

Caution

Risk of damage to fitting surface in gearbox housing.

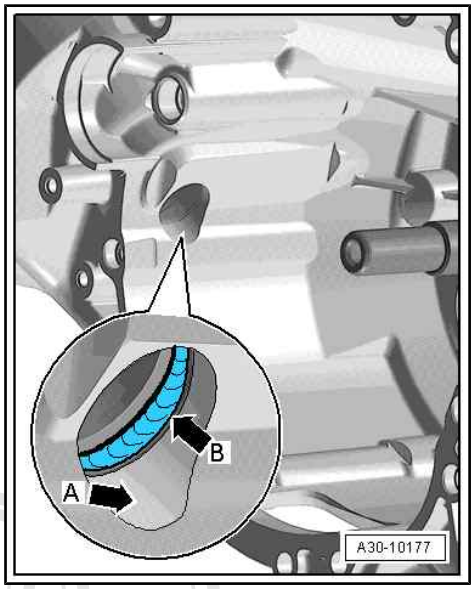
- *Apply screwdriver with care.*



Installing

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

– Thoroughly clean area of gearbox housing leading to differential -arrow A-, and seat for oil seal -arrow B-.

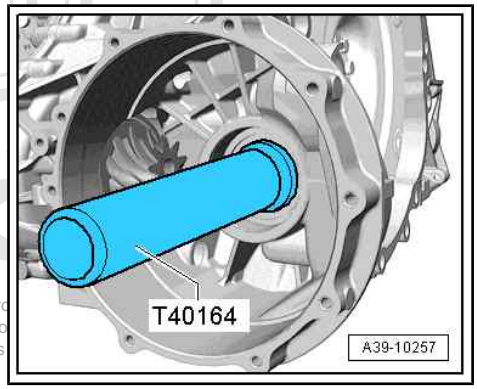


– Lightly oil outer circumference of new oil seal and slide onto thrust piece - T40164- .

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

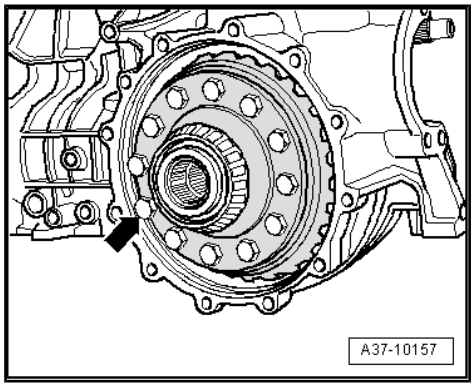
– Drive in oil seal onto stop (take care to keep seal straight).

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

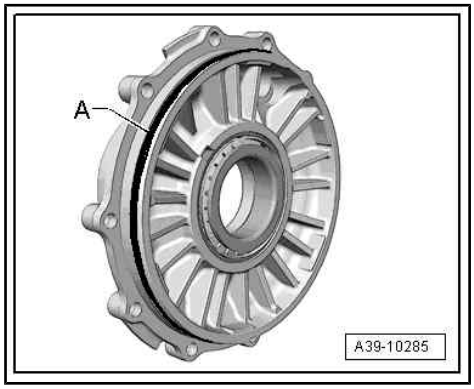


Protected by copyright. Copying for private or commerc
permitted unless authorised by AUDI AG. AUDI AG do
with respect to the correctness of information in this

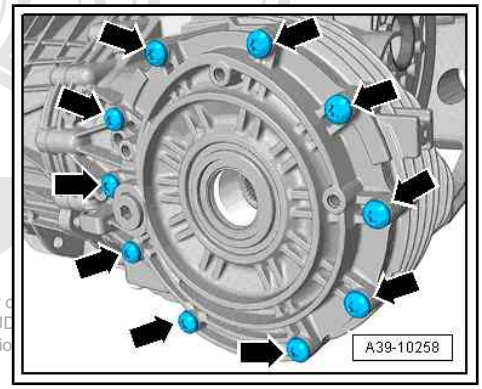
– Fit differential -arrow-.



– Renew O-ring -A- on cover for front final drive and lubricate lightly with gear oil.



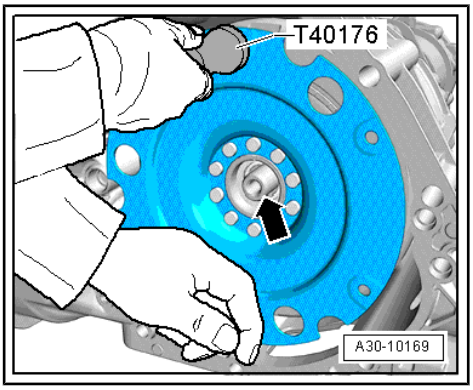
– Install cover for final drive and tighten bolts -arrows-. Tightening torque ⇒ Item 8 (page 128)



– Install flange shaft (right-side) ⇒ page 141 .

Protected by copyright. Copying for private or c
permitted unless authorised by AUDI AG. AUD
with respect to the correctness of informatio

– Install clutch module ⇒ page 25 .



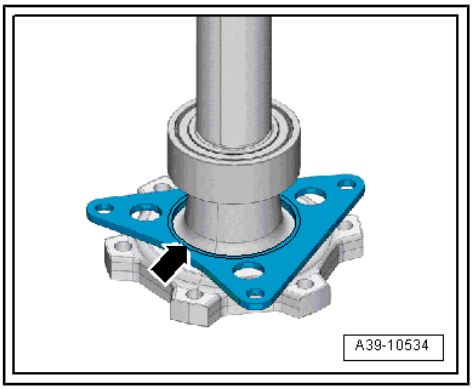
– Thoroughly clean flange shaft (left-side).

Vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589:

– Check preload of ball bearing for flange shaft (left-side) according to wear pattern on mounting bracket -arrow- ⇒ page 146 .

♦ Depending on wear pattern, optimise preload of ball bearing for flange shaft (left-side) as required ⇒ page 147 .

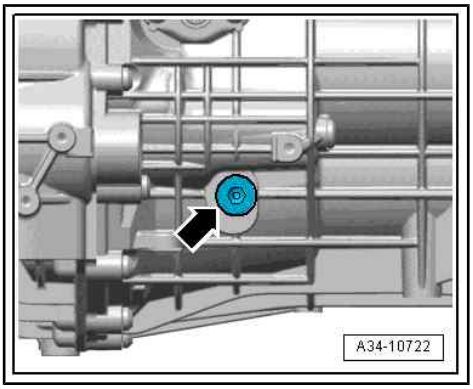
♦ Depending on wear pattern, adjust preload of ball bearing for flange shaft (left-side) as required ⇒ page 148 .



Continued for all vehicles:

– Install flange shaft (left-side) ⇒ page 144 .

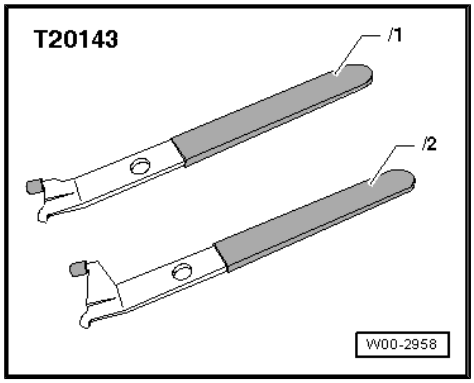
– After installing gearbox, unscrew oil filler plug -arrow- and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .



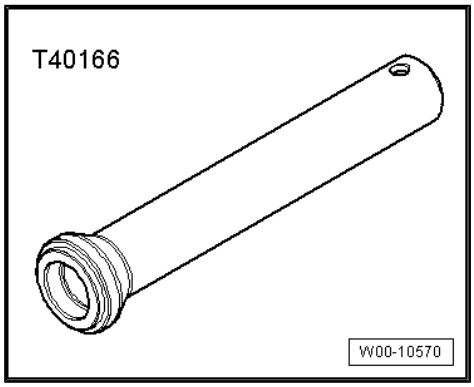
2.4 Renewing input shaft oil seal

Special tools and workshop equipment required

♦ Extractor tool - T20143/1-



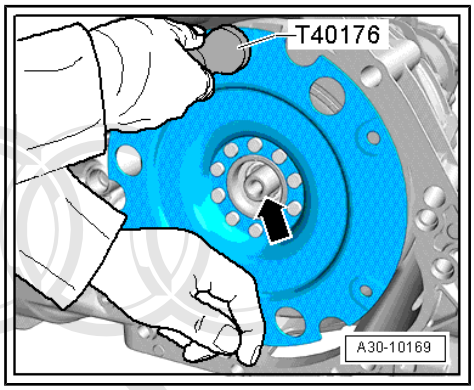
♦ Thrust piece - T40166-



♦ Sealing grease - G 052 128 A1-

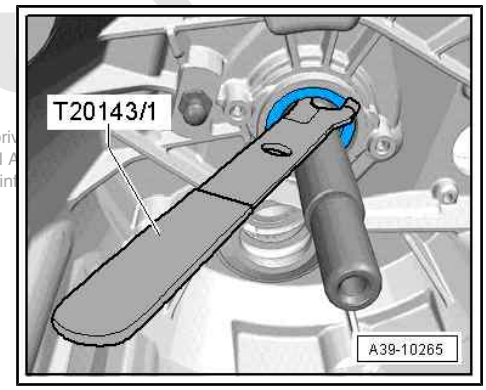
• Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .

– Remove clutch module ⇒ page 25 .



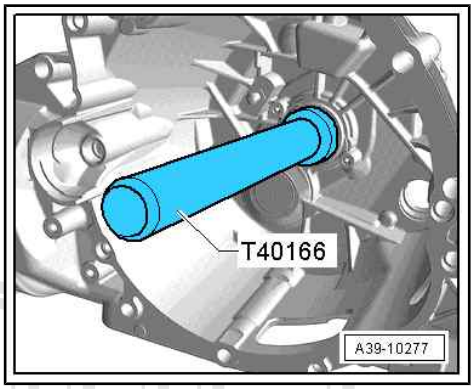
– Remove clutch release lever, release bearing and guide sleeve ⇒ page 11 .

– Prise out input shaft oil seal.



Protected by copyright. Copying for priv
permitted unless authorised by AUDI A
with respect to the correctness of in

– 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 onto stop (take care to keep seal straight).
– Install guide sleeve, clutch release lever and release bearing ⇒ page 11 .
– Install clutch module ⇒ page 28 .



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3 Differential

⇒ “3.1 Exploded view - differential”, page 138

⇒ “3.3 Removing and installing flange shaft (left-side)”, page 142

⇒ “3.2 Removing and installing flange shaft (right-side)”, page 140

⇒ “3.4 Checking and adjusting preload of ball bearing for flange shaft (left-side)”, page 146

⇒ “3.5 Renewing mounting bracket and ball bearing for flange shaft (left-side)”, page 151

⇒ “3.6 Removing and installing differential”, page 153

⇒ “3.7 Renewing cover for final drive”, page 155

⇒ “3.8 Dismantling and assembling differential”, page 167

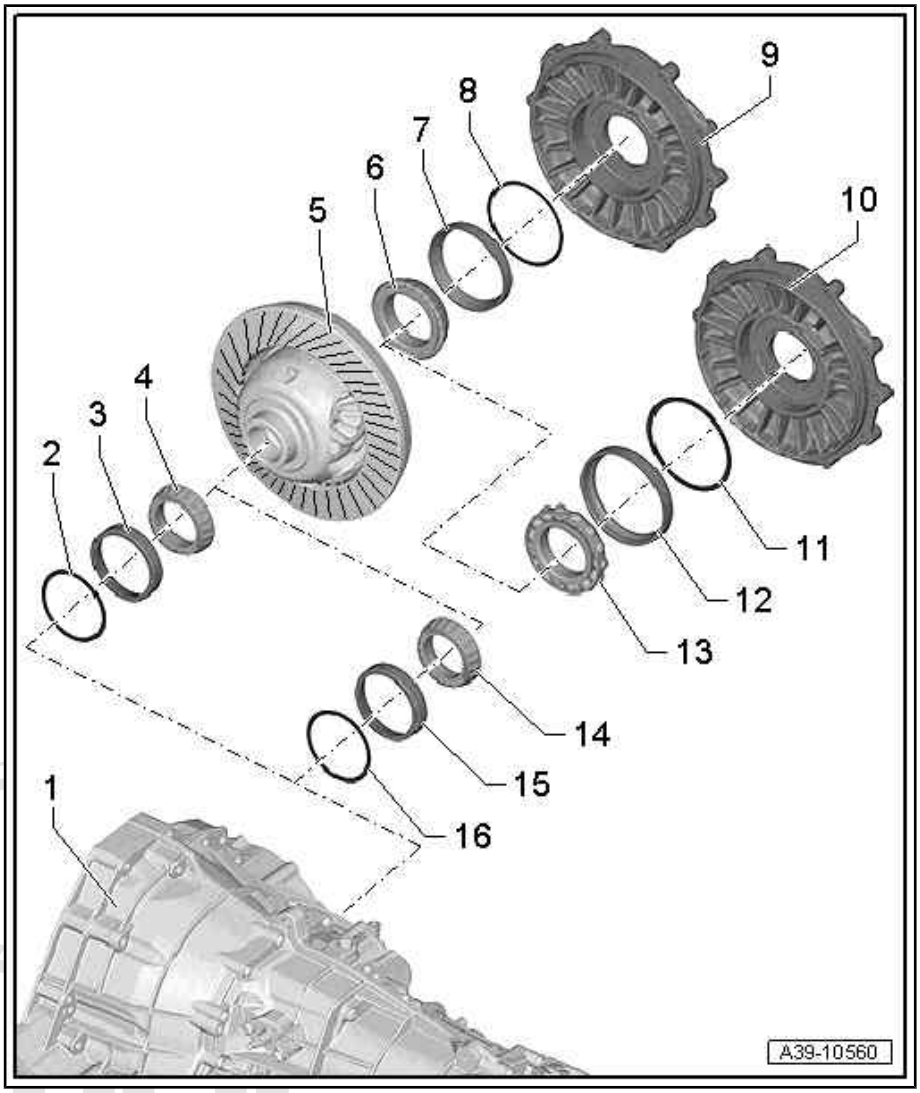
⇒ “3.9 Adjusting differential”, page 175

3.1 Exploded view - differential

Note

- *Always renew both bearings for differential together.*
- *Adjustment work is required when renewing the parts marked with 1). The bearing system for the differential consists of 2 tapered roller bearings (standard bearings); this version is fitted up to gearbox manufacturing date 14 08 11.*
- *Adjustment work is required when renewing the parts marked with 2). The bearing system of the differential consists of 1 tapered roller bearing and 1 angular contact ball bearing (high-efficiency bearings); this version is fitted from gearbox manufacturing date 15 08 11 onwards.*
- *With the exception of the tapered roller bearings/angular contact ball bearings, no components of the differential can be renewed at present. Select correct bearings and shims from ⇒ Electronic parts catalogue .*

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



1 - Gearbox housing

2 - Shim "S_2"

- ❑ Note thickness
- ❑ If tapered roller bearings of differential are renewed, thickness of required shim must be determined ⇒ page 175

3 - Tapered roller bearing outer race (left-side) 1)

- ❑ Pulling out ⇒ page 171
- ❑ Driving in ⇒ page 171

4 - Tapered roller bearing inner race (left-side) 1)

- ♦ Standard bearing; roller cage is made of metal
- ❑ Pulling off ⇒ page 171
- ❑ Pressing on ⇒ page 172

5 - Differential with crown wheel

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

6 - Tapered roller bearing inner race (right-side) 1)

- ❑ Pulling off ⇒ page 172
- ❑ Pressing on ⇒ page 173

7 - Tapered roller bearing outer race (right-side) 1)

- ❑ Pulling out ⇒ page 173
- ❑ Pressing in ⇒ page 174

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

8 - Shim "S_1"

- ❑ Note thickness
- ❑ If tapered roller bearings of differential or cover for final drive are renewed ⇒ Item 9 (page 139) , thickness of required shim must be determined ⇒ page 175

9 - Cover for final drive 1)

- ❑ If renewed, re-determine thickness of shim "S_1" ⇒ Item 8 (page 139) , ⇒ page 155

10 - Cover for final drive 2)

- ❑ Houses bearing for differential with high-efficiency bearings
- ❑ If renewed, re-determine thickness of shim "S_1" ⇒ Item 11 (page 139) , ⇒ page 155

11 - Shim "S_1"

- ❑ Note thickness
- ❑ If bearings for differential or cover for final drive are renewed ⇒ Item 10 (page 139) , thickness of required shim must be determined ⇒ page 175

12 - Outer race for angular contact ball bearing 2)

- ❑ Removing ⇒ page 174
- ❑ Pressing in ⇒ page 174

13 - Inner race for angular contact ball bearing [2)]

High-efficiency bearings:

- From gearbox manufacturing date 15 08 11 onwards
  - ❑ Pulling off ⇒ page 173
  - ❑ Pressing on ⇒ page 173

14 - Tapered roller bearing inner race [2)]

High-efficiency bearings:

- Roller cage is made of plastic
- From gearbox manufacturing date 15 08 11 onwards
  - ❑ Pulling off ⇒ page 172
  - ❑ Pressing on ⇒ page 172

15 - Tapered roller bearing outer race [2)]

- ❑ Pulling out ⇒ page 171
- ❑ Driving in ⇒ page 171

16 - Shim "S_2"

- ❑ Note thickness
- ❑ If bearings for differential are renewed, thickness of required shim must be determined ⇒ page 175

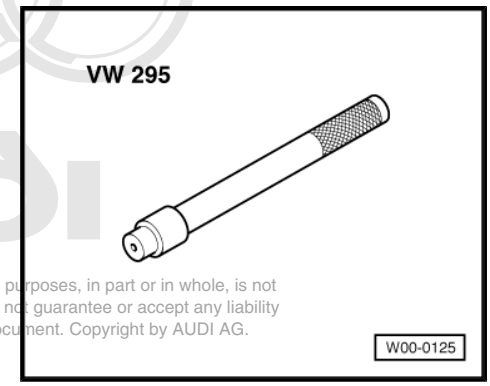
3.2 Removing and installing flange shaft (right-side)

Note

The flange shaft (right-side) can also be removed and installed with the gearbox installed in the vehicle ⇒ 6-speed manual gearbox 0B1; Rep. gr. 39 ; Oil seals; Renewing oil seal (right-side) .

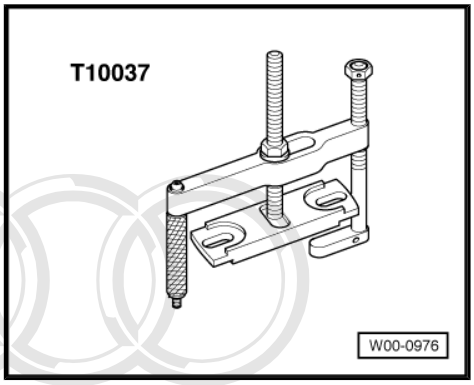
Special tools and workshop equipment required

- ♦ Drift - VW 295-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

♦ Puller - T10037-

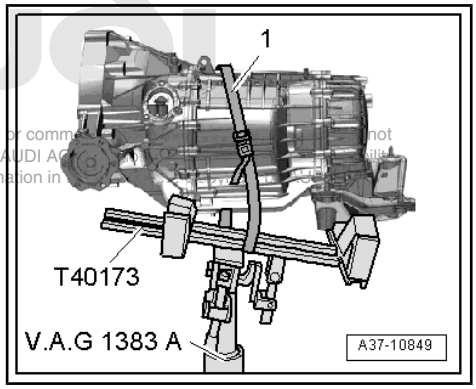


♦ Sealing grease - G 052 128 A1-

Removing

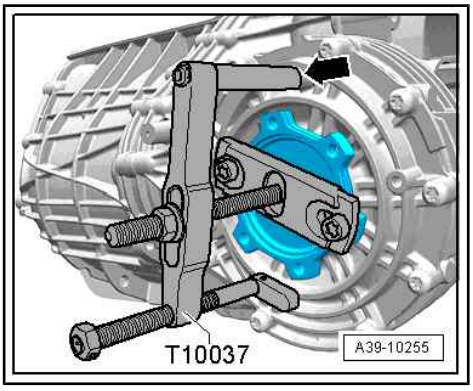
- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .
- Gearbox is secured to gearbox support - T40173- with tensioning strap -1-.

– Tilt gearbox to rear with gearbox support - T40173- to prevent gear oil from escaping.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document.

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

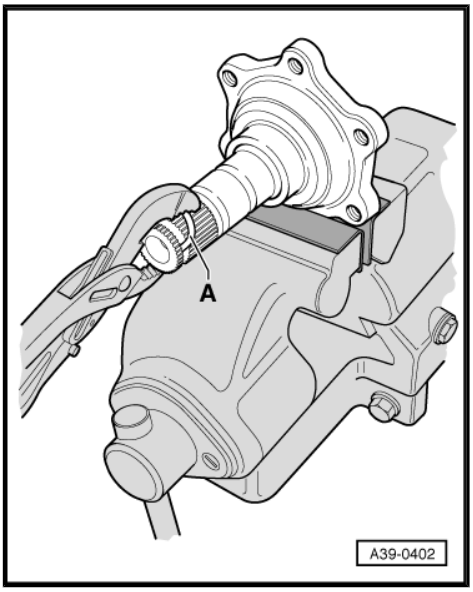


Installing flange shaft (right-side).

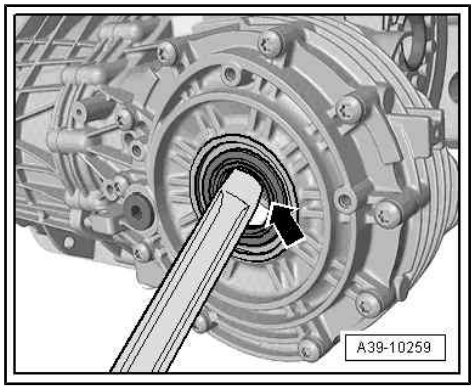
Installation is carried out in reverse sequence; note the following:

– 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.



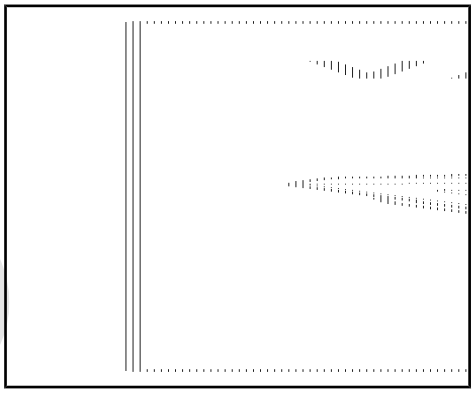
– Check flange shaft oil seal (right-side) -arrow- for damage and renew if necessary ⇒ page 130 .
– Pack space between sealing lip and dust lip half-full with sealing grease - G 052 128 A1- .
– Knock flange shaft in with drift - VW 295- .



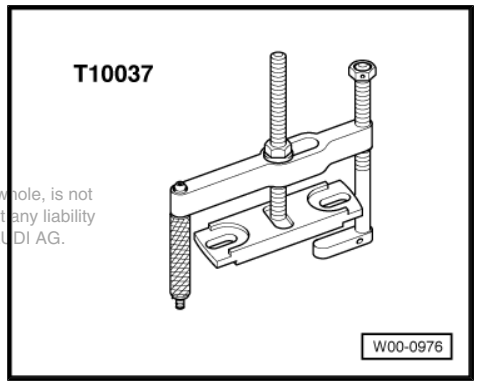
3.3 Removing and installing flange shaft (left-side)

Special tools and workshop equipment required

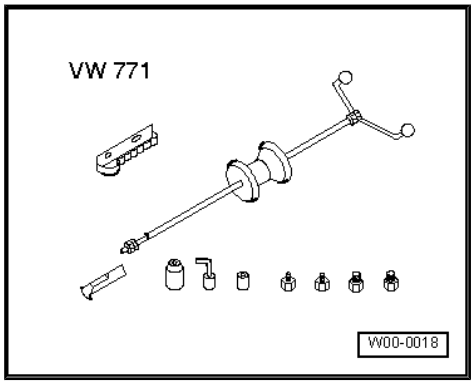
♦ Drip tray for workshop hoist - VAS 6208-



♦ Puller - T10037-



♦ Multi-purpose tool - VW 771/1-



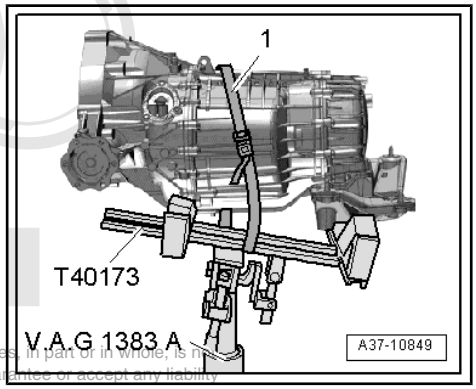
♦ Sealing grease - G 052 128 A1-

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Removing

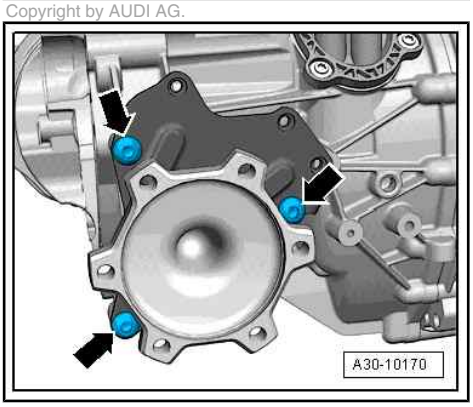
- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .
- Gearbox is secured to gearbox support - T40173- with tensioning strap -1-.

– Tilt gearbox to rear with gearbox support - T40173- to prevent gear oil from escaping.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

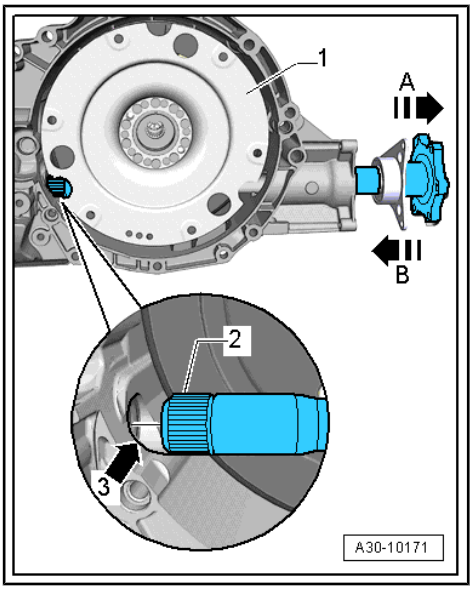


Caution

Risk of damage to oil seal.

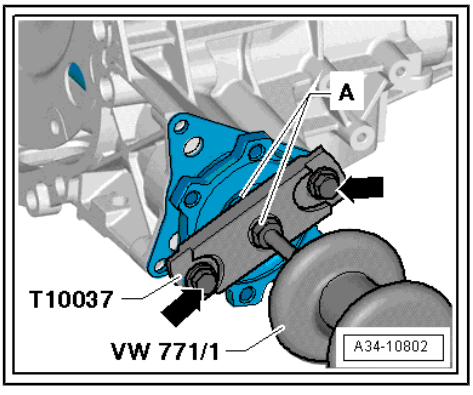
- *If you do not keep the shaft centred when pulling it out further, the splines of the shaft -2- will fall against the inner oil seal -arrow 3- between the differential and the gearbox housing.*
- *If oil seal is damaged, it must be renewed ⇒ page 131 .*

– Remove flange shaft (left-side) 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-).*

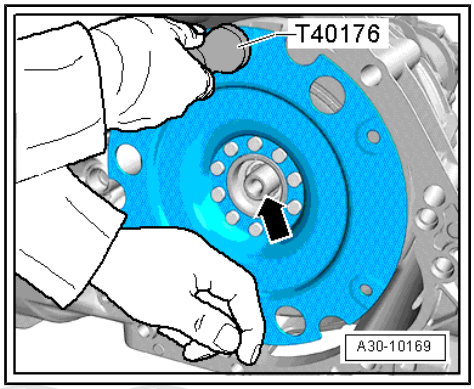


– Remove clutch module ⇒ page 25 .

Caution

Risk of damaging clutch module when removing and installing

- *Refer to Workshop Manual*
  ⇒ "2.3 Removing and installing clutch module", page 25



Installing flange shaft (left-side)

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

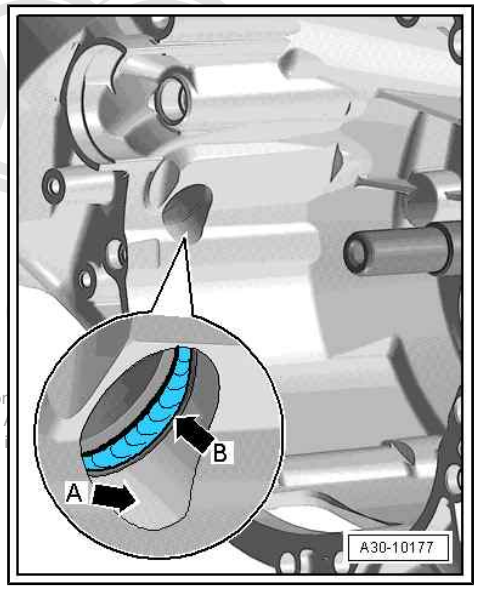
– Thoroughly clean area of gearbox housing leading to differential -arrow A-, and oil seal -arrow B-.

Note

If oil seal for flange shaft (left-side) between differential and gearbox housing -arrow B- is damaged, it must be renewed ⇒ page 131 .

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

permitted unless authorised by AUDI AG. AUDI
with respect to the correctness of information



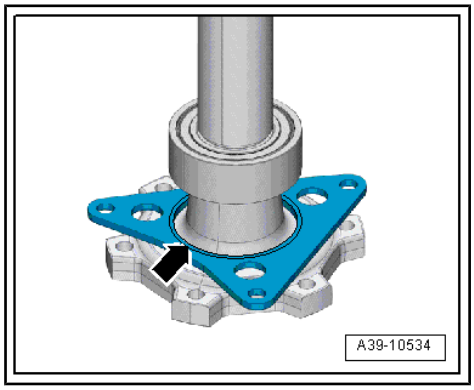
– Thoroughly clean flange shaft (left-side).

Vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589:

– Check preload of ball bearing for flange shaft (left-side) according to wear pattern on mounting bracket -arrow- ⇒ page 146 .

♦ Depending on wear pattern, optimise preload of ball bearing for flange shaft (left-side) as required ⇒ page 147 .

♦ Depending on wear pattern, adjust preload of ball bearing for flange shaft (left-side) as required ⇒ page 148 .



Continued for all vehicles:

– Install clutch module -1- ⇒ page 25 .

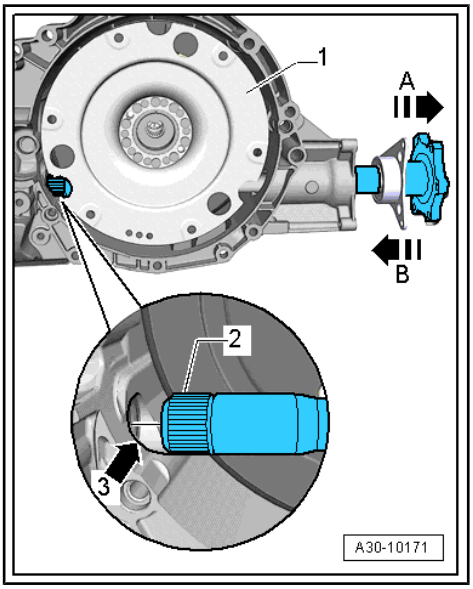
– Turn clutch module -1- so that you can see opening to differential -arrow 3-.

– 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-).

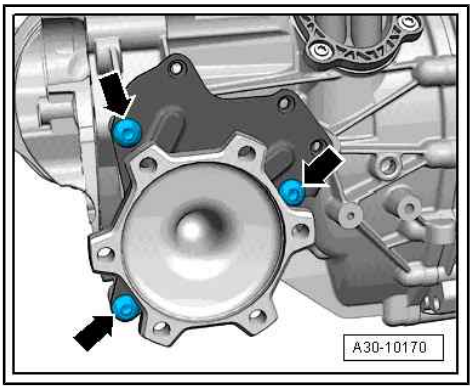
Caution

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 131 .*



– Tighten flange shaft mounting bracket -arrows-. Tightening torque ⇒ Item 1 (page 127)



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

3.4 Checking and adjusting preload of ball bearing for flange shaft (left-side)

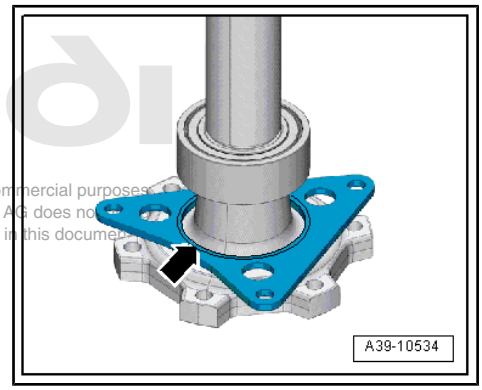
⇒ “3.4.1 Checking preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589”, page 146

⇒ “3.4.2 Optimising preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589”, page 147

⇒ “3.4.3 Adjusting preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589”, page 148

3.4.1 Checking preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589

Check preload of ball bearing according to wear pattern on mounting bracket -arrow-.



Note

- *It is only necessary to check preload of ball bearing for flange shaft (left-side) on vehicles up to the following ID Nos.:*
- *Audi A4 up to vehicle ID No. WAUZZZ8K0BA088680*
- *Audi A5 up to vehicle ID No. WAUZZZ8FXBN009589*
- *This measure is not required on later vehicles because of a design change.*

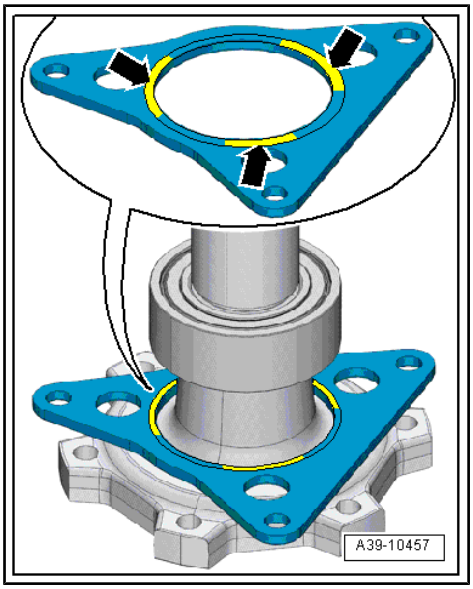
Copyright by AUDI AG. Reproduction for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document.

- Flange shaft (left-side) must be removed ⇒ page 142 .

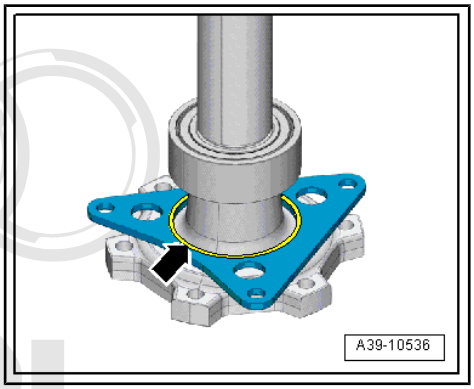
Wear pattern “A”

- Slight impressions in vicinity of hole in mounting bracket -arrows-.
- No trace of scoring or material worn down around circumference.

– Optimise preload of ball bearing for flange shaft (left-side) ⇒ page 147 .



Wear pattern “B”



- Scoring and possibly material worn down around circumference of hole in mounting bracket -arrow-.

– Adjust preload of bearing for flange shaft (left-side) ⇒ page 148 .

– Renew mounting bracket, ball bearing and circlip ⇒ page 151 .

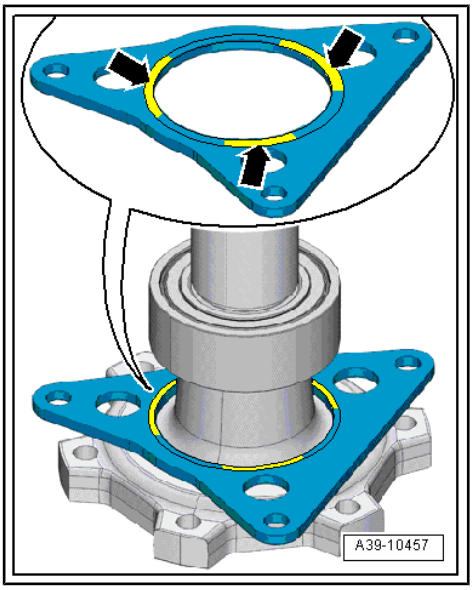
3.4.2 Optimising preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589

Copyright AUDI AG. All rights reserved. Copying or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

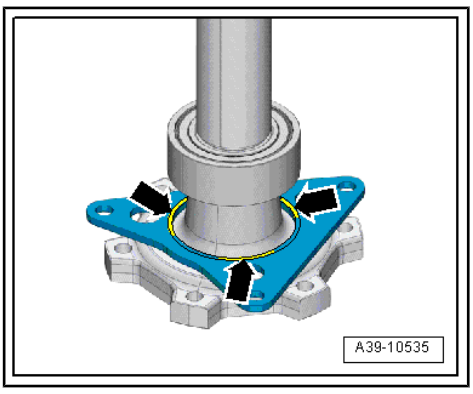
- Flange shaft (left-side) must be removed ⇒ page 142 .

Requirements for optimising:

- Mounting bracket shows no trace of scoring or material worn down around circumference.
- Slight impressions in vicinity of hole in mounting bracket -arrows- are permissible.

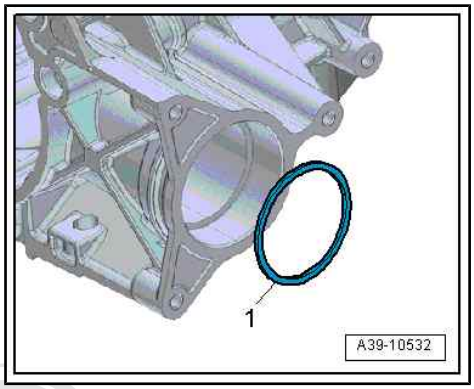


- Mounting bracket with wear pattern “A” ⇒ page 146 (mounting bracket has no traces of scoring or material worn down around circumference).
- A shim is inserted in the bearing seat in the gearbox to optimise the preload of the ball bearing.



– Before installing flange shaft , insert shim - 0B4 409 227- -item 1- in bearing seat in gearbox to optimise preload of ball bearing.

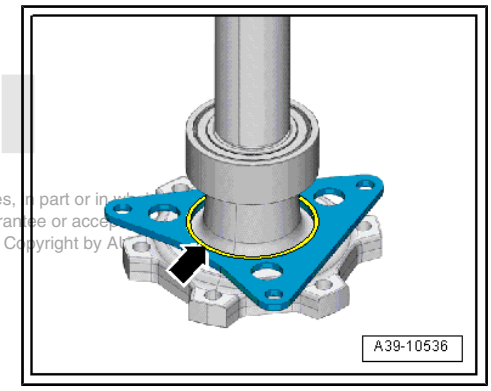
– Install flange shaft (left-side) ⇒ page 144 .



3.4.3 Adjusting preload of ball bearing for flange shaft (left-side) - vehicles with vehicle ID No. up to 8K0BA088680 or 8FXBN009589

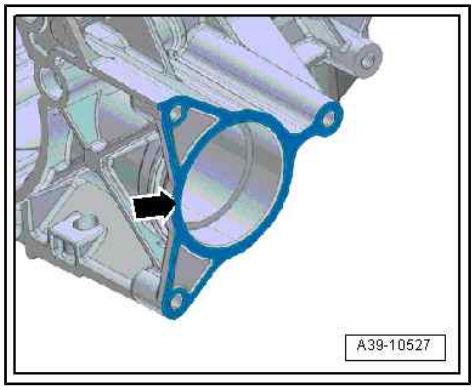
- Flange shaft (left-side) must be removed ⇒ page 142 .
- Mounting bracket with wear pattern “B” ⇒ page 147 (scoring and possibly material worn down around circumference of hole).
- Mounting bracket and ball bearing must be renewed ⇒ page 151 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Procedure

– Attach emery cloth (grain size 150) to sanding block and clean coarse dirt and corrosion off contact surface -arrow-.

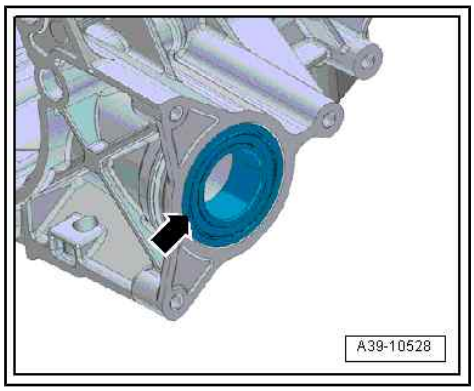


Note

The contact surface does not have to be sanded down to bare metal; it is sufficient to remove coarse dirt and corrosion.

– Clean contact surface and bearing seat.

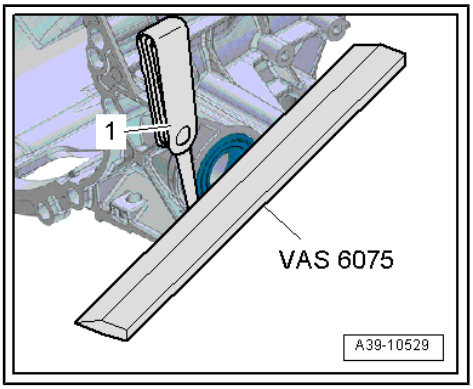
– Fit new ball bearing -arrow- for flange shaft (left-side) in bearing seat.



Continued procedure:

- If bearing protrudes slightly outside contact surface ⇒ page 149
- If bearing is below contact surface ⇒ page 150

Procedure if bearing protrudes outside contact surface



– Apply straight edge (500 mm) - VAS 6075- across bearing and measure distance to contact surface on gearbox housing on both sides using feeler gauge.
– Note down measured value.
– Re-apply straight edge at an angle of 90° across bearing and measure distance to contact surface on gearbox housing on both sides using feeler gauge.
– Note down measured value.

Determining shim(s):

Note

The smallest of the 4 measured values is used to determine the shim(s).

- Specification: bearing should protrude by 0.5 ... 0.8 mm

	Smallest amount of bearing protrusion (0.1 mm in this example)
+	Thickness of shim(s), (thickness 0.3 mm)
=	Bearing preload (specification 0.5 ... 0.8 mm)

Example:

1 shim:

0.1 mm + 0.3 mm = 0.4 mm, “bearing preload insufficient”

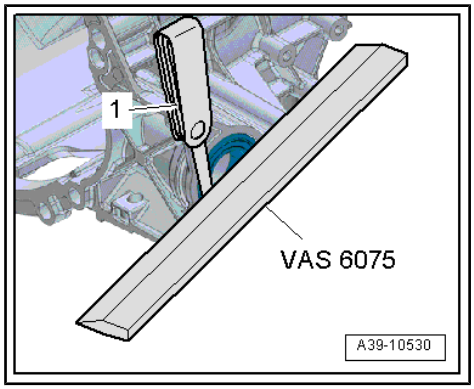
2 shims:

0.1 mm + 0.3 mm + 0.3 mm = 0.7 mm “bearing preload in specified range”

- Result: Inserting 2 shims of 0.3 mm thickness gives a bearing preload of 0.7 mm (inside tolerance range of 0.5 … 0.8 mm)

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Procedure if bearing is below contact surface



Note

Use only the method described here to measure the distance below the contact surface.

– Apply straight edge (500 mm) - VAS 6075- across contact surface on gearbox housing and measure distance to bearing on both sides using feeler gauge.
– Note down measured value.
– Re-apply straight edge at an angle of 90° across contact surface on gearbox housing and measure distance to bearing on both sides using feeler gauge.
– Note down measured value.

Determining shim(s):

Note

- *The largest of the 4 measured values is used to determine the shim(s).*
- *The measured distance below the contact surface is taken as a minus value ("–") for the calculation.*

• Specification: bearing should protrude by 0.5 ... 0.8 mm

–	Largest distance below surface (–0.15 mm in this example)
+	Thickness of shim(s), (thickness 0.3 mm)
=	Bearing preload (specification 0.5 ... 0.8 mm)

Example:

1 shim:

-0.15 mm + 0.3 mm = 0.15 mm, "bearing preload insufficient"

3 shims:

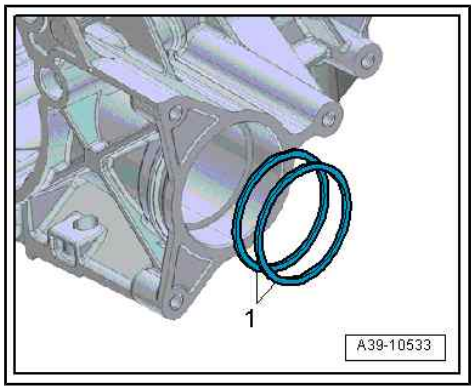
-0.15 mm + 0.3 mm + 0.3 mm + 0.3 mm = 0.75 mm, "bearing preload in specified range"

• Result: Inserting 3 shims of 0.3 mm thickness gives a bearing preload of 0.75 mm (inside tolerance range of 0.5 ... 0.8 mm)

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Continued for all vehicles:

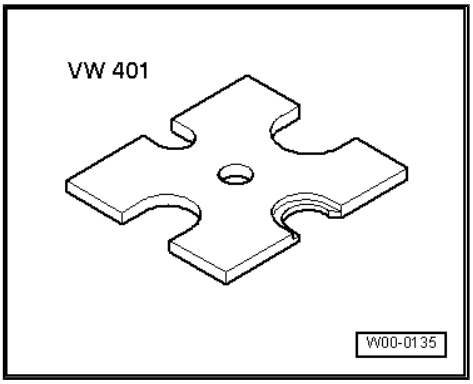
– Renew mounting bracket, ball bearing and circlip ⇒ page 151 .
– Before installing flange shaft fit calculated number of shims -0B4 409 227- -item 1- in bearing seat in gearbox.
– Install flange shaft (left-side) ⇒ page 144 .



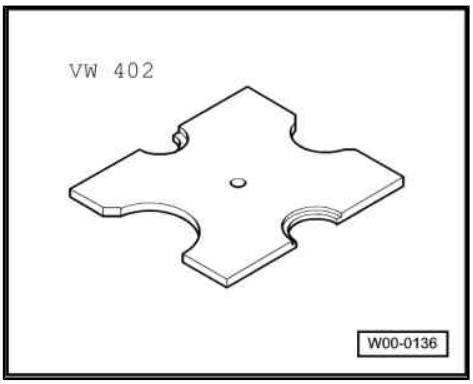
3.5 Renewing mounting bracket and ball bearing for flange shaft (left-side)

Special tools and workshop equipment required

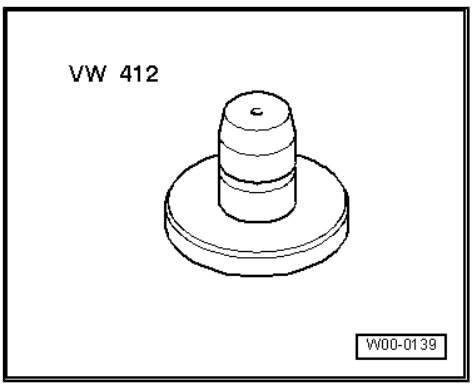
- Thrust plate - VW 401-



- Thrust plate - VW 402-

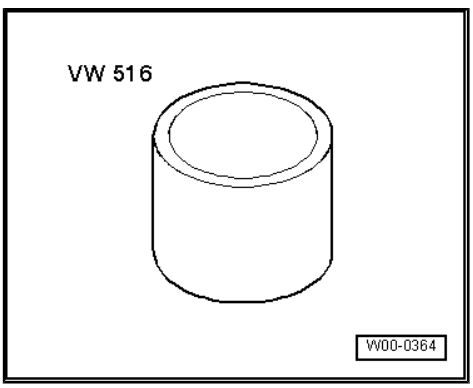


- Press tool - VW 412-

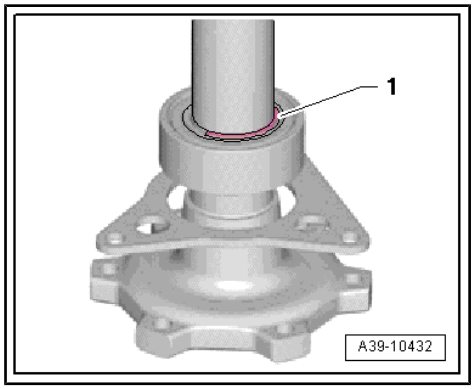


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

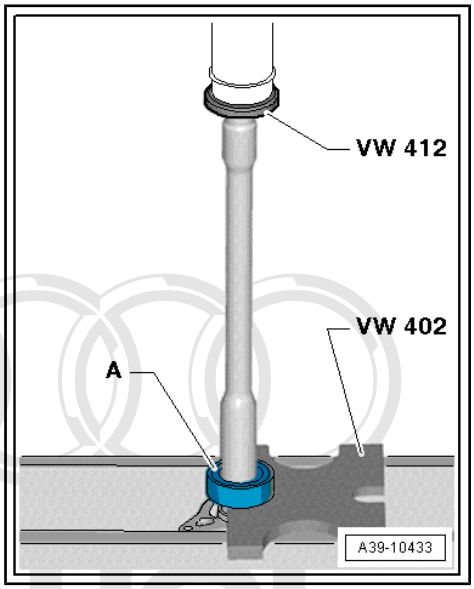
- Tube - VW 516-



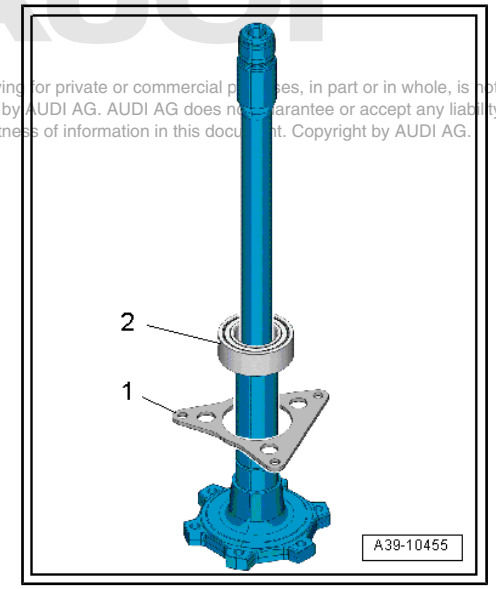
– Remove flange shaft (left-side) ⇒ page 142 .
– Remove circlip -1- from flange shaft.



– Press ball bearing -A- off flange shaft.

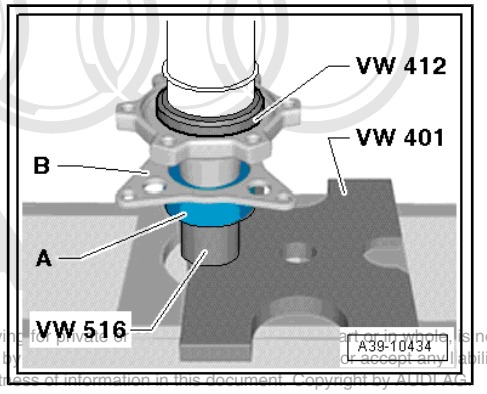


– Fit new mounting bracket -1-.
• Installation position: side with lettering faces towards flange for drive shaft.
– Fit new ball bearing -2-.



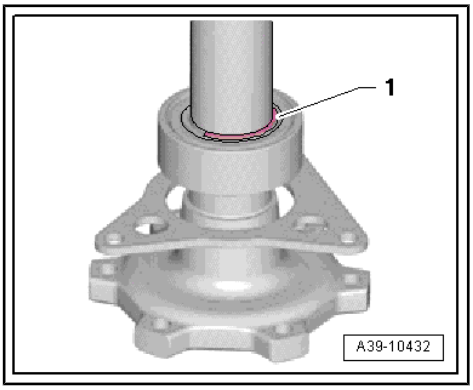
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– With mounting bracket -B- installed, press on ball bearing -A- as far as stop.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

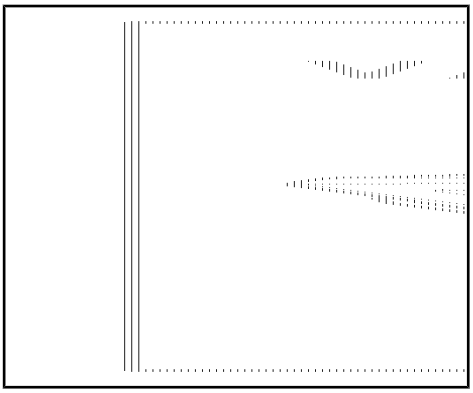
– Fit circlip -1- in annular groove on flange shaft.



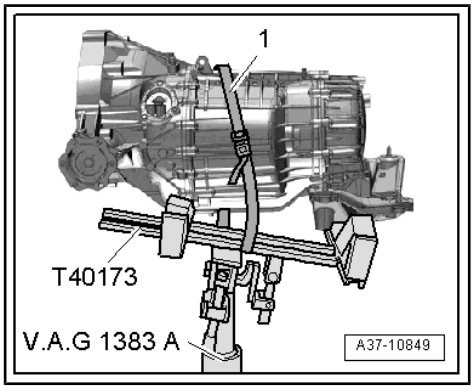
3.6 Removing and installing differential

Special tools and workshop equipment required

♦ Drip tray for workshop hoist - VAS 6208-



Removing

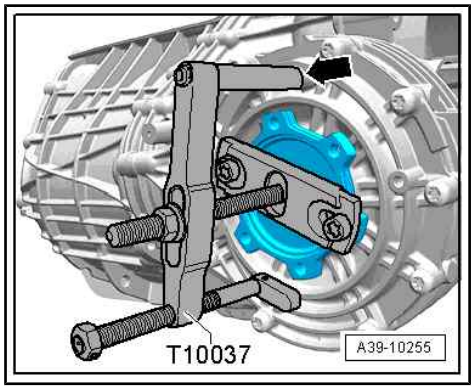


- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox; Removing gearbox .
- Gearbox is secured to gearbox support - T40173- with tensioning strap -1-.

– Tilt gearbox towards rear and slightly to left with gearbox support - T40173- to prevent gear oil from escaping.

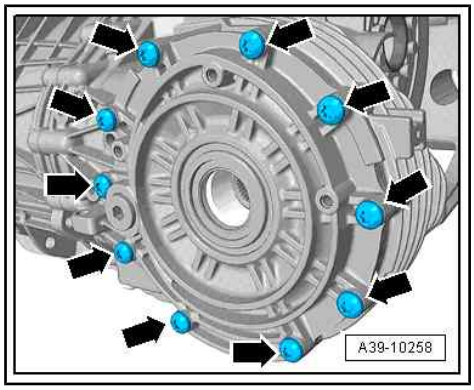
– Place drip tray - VAS 6208- under the gearbox.

– Remove flange shaft (right-side) ⇒ page 140 .



Unscrew bolts -arrows- and detach cover for final drive.

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

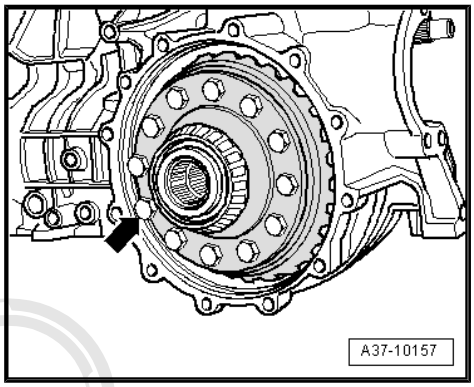


Caution

Risk of damage to the differential.

- *Detach cover for final drive from gearbox housing slowly and carefully. The differential may otherwise fall out of the gearbox.*
- *A differential which has fallen to the ground can no longer be installed. Renew gearbox if differential has fallen to the ground.*

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



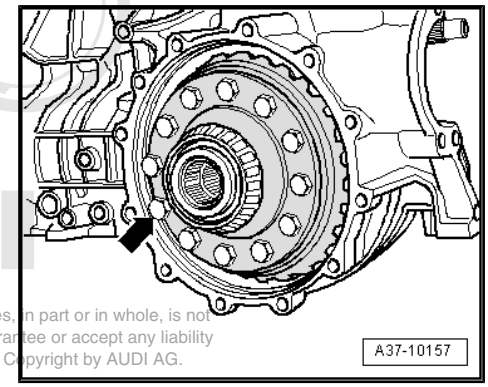
Note

If tapered roller bearing outer race (left-side) of differential requires renewal, first remove flange shaft (left-side) ⇒ page 142 .

Installing

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

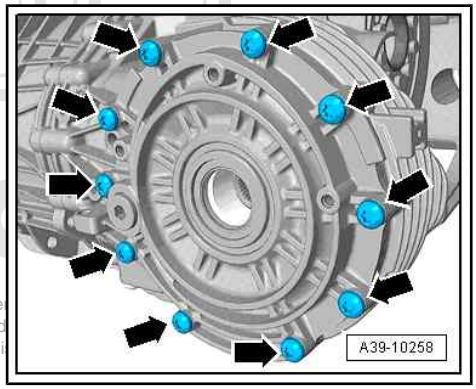
– Fit differential -arrow-.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Install cover for final drive with new O-ring and tighten bolts -arrows-. Tightening torque ⇒ Item 8 (page 128)

– Install flange shaft (right-side) ⇒ page 141 .

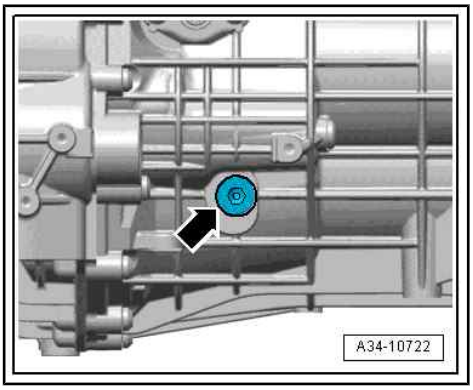


Note

If previously removed, install flange shaft (left-side) ⇒ page 144 .

Protected by copyright. Copying for private or commer
permitted unless authorised by AUDI AG. AUDI AG d
with respect to the correctness of information in thi

– After installing gearbox, unscrew oil filler plug -arrow- and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .



3.7 Renewing cover for final drive

⇒ "3.7.1 Renewing cover for final drive, version with tapered roller bearings up to gearbox manufacturing date 14 08 11", page 155

⇒ "3.7.2 Renewing cover for final drive, version with angular contact ball bearing (high-efficiency bearing) from gearbox manufacturing date 15 08 11 onwards", page 162

3.7.1 Renewing cover for final drive, version with tapered roller bearings up to gearbox manufacturing date 14 08 11

Note

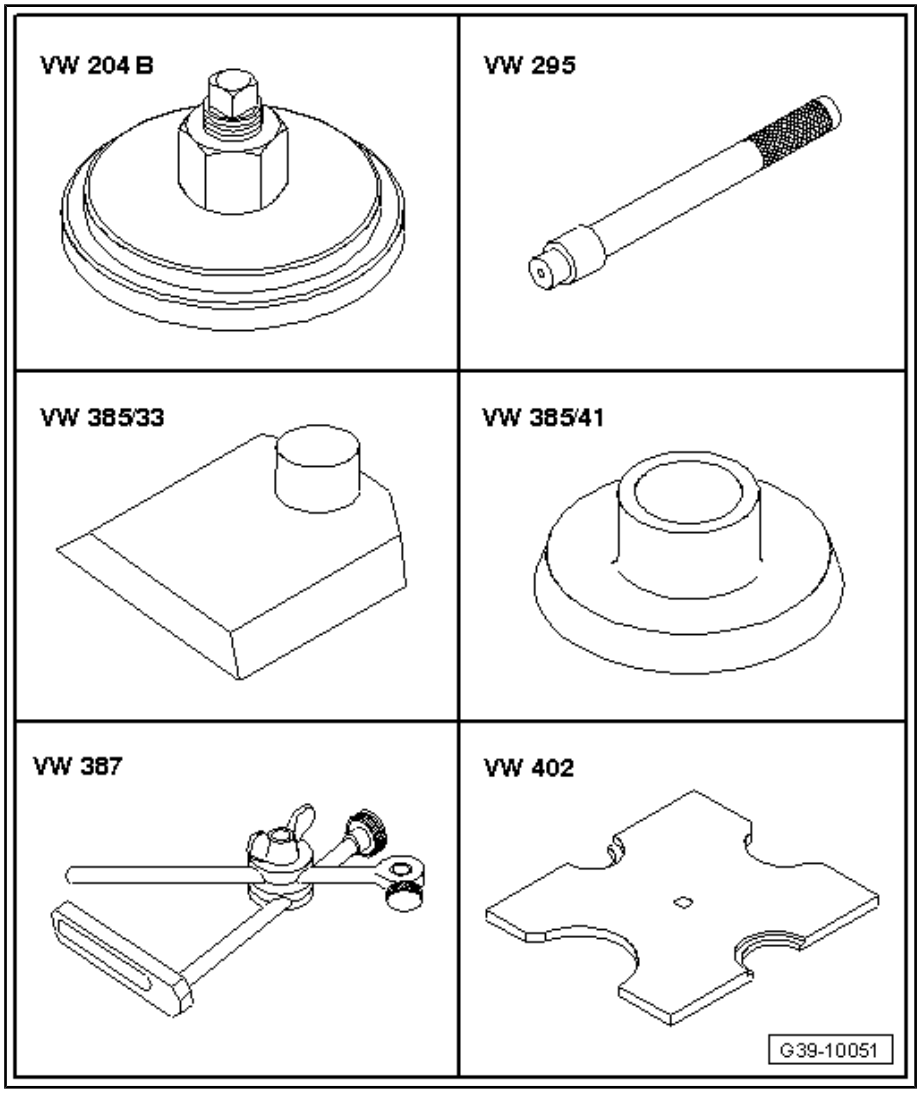
- *Different versions of the cover for final drive are installed depending on the version.*
- *When renewing cover for final drive, determine thickness of new shim to adjust preload of bearings for differential.*
- *This shim is located behind the outer race in the cover for the final drive.*

Old version (standard bearings) up to gearbox manufacturing date 14 08 11:

- Differential with 2 tapered roller bearings

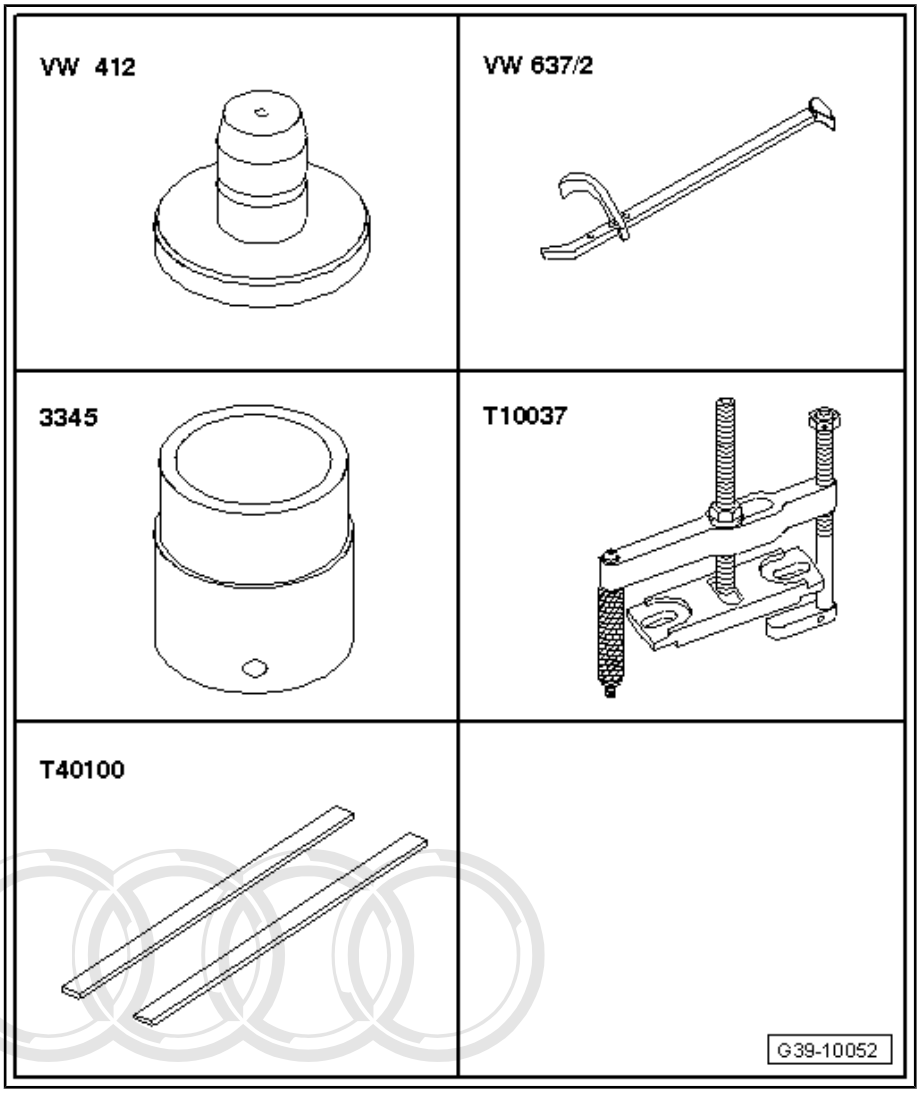
Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 295-
- Measuring plate - VW 385/33-
- Centring disc - VW 385/41- for cover with tapered roller bearing outer race
- Universal dial gauge bracket - VW 387-
- Thrust plate - VW 402-

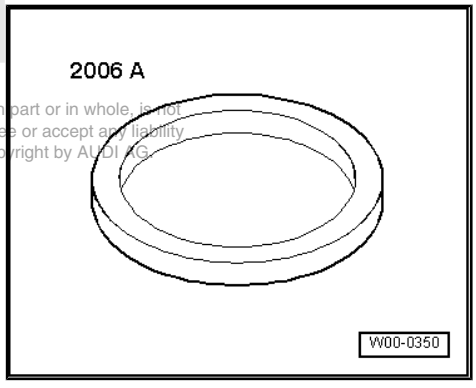


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

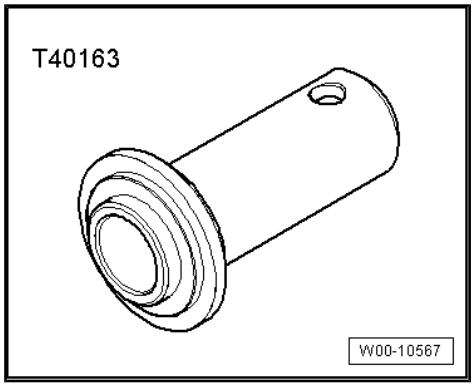


- Thrust ring - 2006 A-

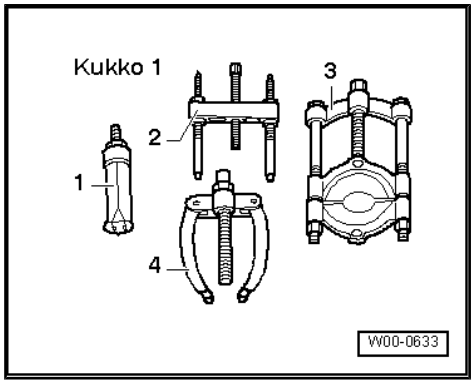


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

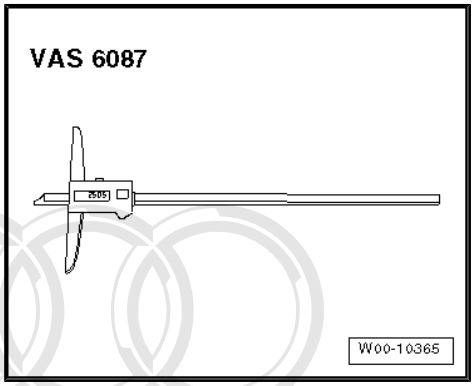
- Thrust piece - T40163-



- -1- Internal puller - Kukko 21/89-



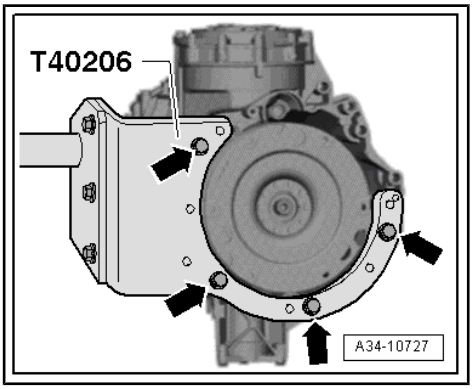
- -4- Counter-support - Kukko 22/4-
- Digital depth gauge (e.g. digital depth gauge - VAS 6087-)
- Digital depth gauge - VAS 6087-



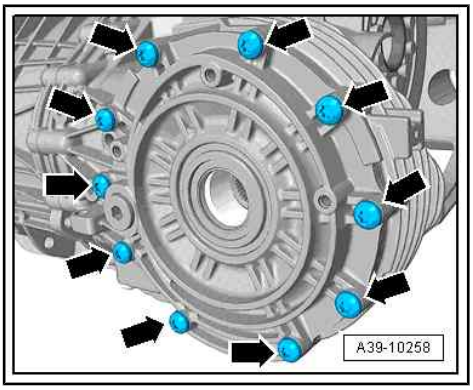
- Dial gauge , e.g. -VAS 6080-
- Sealing grease - G 052 128 A1-
- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Secure gearbox to gearbox support ⇒ page 91 .
– Turn gearbox so that cover for final drive points upwards.
– Remove flange shaft (right-side) ⇒ page 140 .



– Unscrew bolts -arrows- and detach cover for final drive.



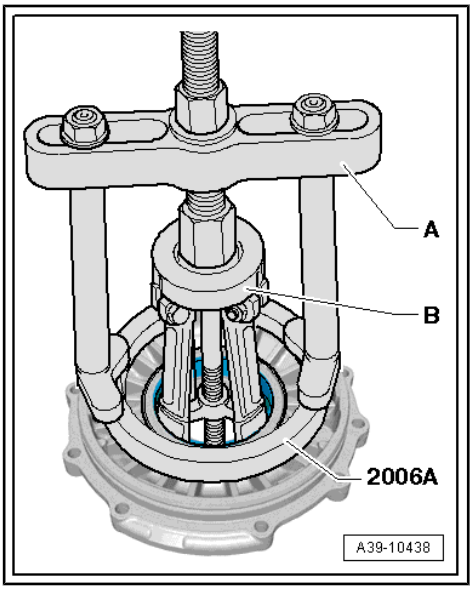
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Pull out outer race using internal puller - Kukko 21/89- -B- and counter support - Kukko 22/4- -A-.

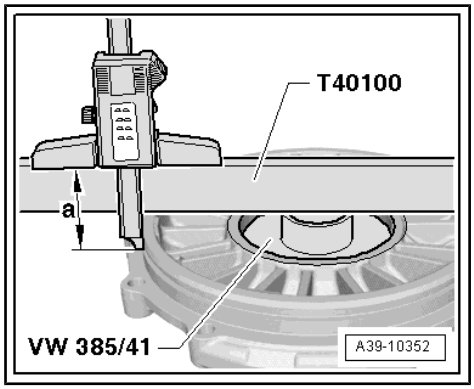
A - Counter-support , e.g. -Kukko 22/4-

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:

• Inert old shim in cover so that centring disc - VW 385/41- is positioned exactly during following procedure.

– 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	68.40 mm
Dimension -a- on new cover for final drive	68.65 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

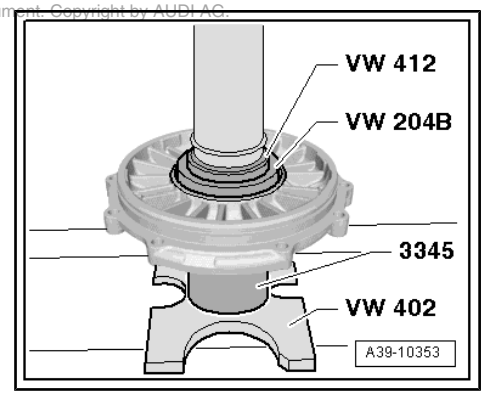
Select correct shim from ⇒ Electronic parts catalogue .

– The shim thickness in this example is 1.25 mm.

– Install new shim of required thickness in new cover for final drive.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

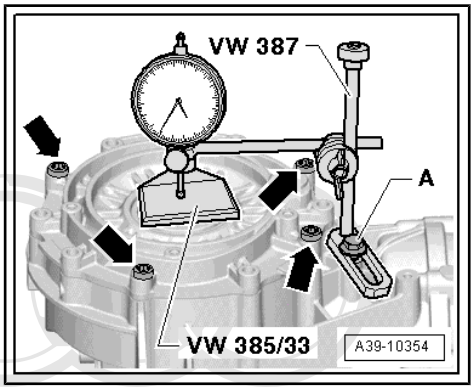
– Press in tapered roller bearing outer race as far as stop; smaller ∅ of -VW 204 B- goes towards outer race.



Note

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

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



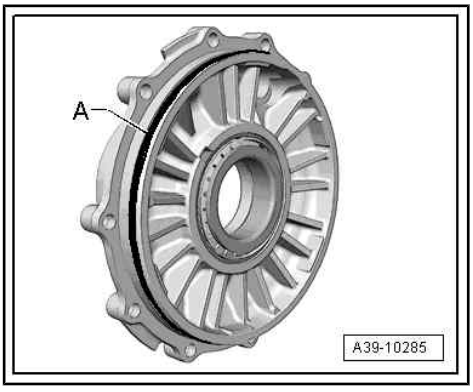
- Fit cover for final drive without O-ring and tighten 4 bolts -arrows-.
- Attach measuring equipment to gearbox housing.
- Secure universal dial gauge bracket - VW 387- to threaded hole in gearbox housing with bolt -A-.
- Apply dial gauge extension to centre of measuring plate - VW 385/33- .
- Set dial gauge , e.g. -VAS 6080- 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 for bearings with low mileage.

Note

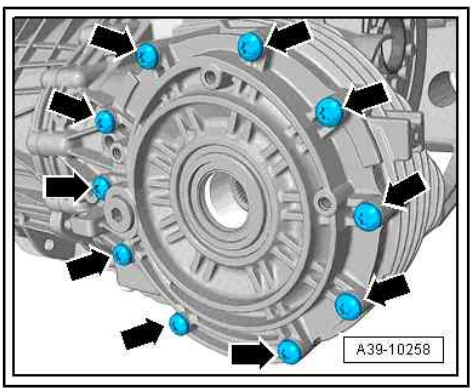
For bearings with high mileage, measured value must be at least 0.05 ... 0.10 mm.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Renew O-ring -A-.



- Install cover for final drive and tighten bolts -arrows-; tightening torque ⇒ Item 8 (page 130) .
- Install new flange shaft oil seal (right-side) ⇒ page 131 .
- Install flange shaft (right-side) ⇒ page 141 .
- If gear oil has been drained off, fill up gearbox with gear oil and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .



3.7.2 Renewing cover for final drive, version with angular contact ball bearing (high-efficiency bearing) from gearbox manufacturing date 15 08 11 onwards

Note

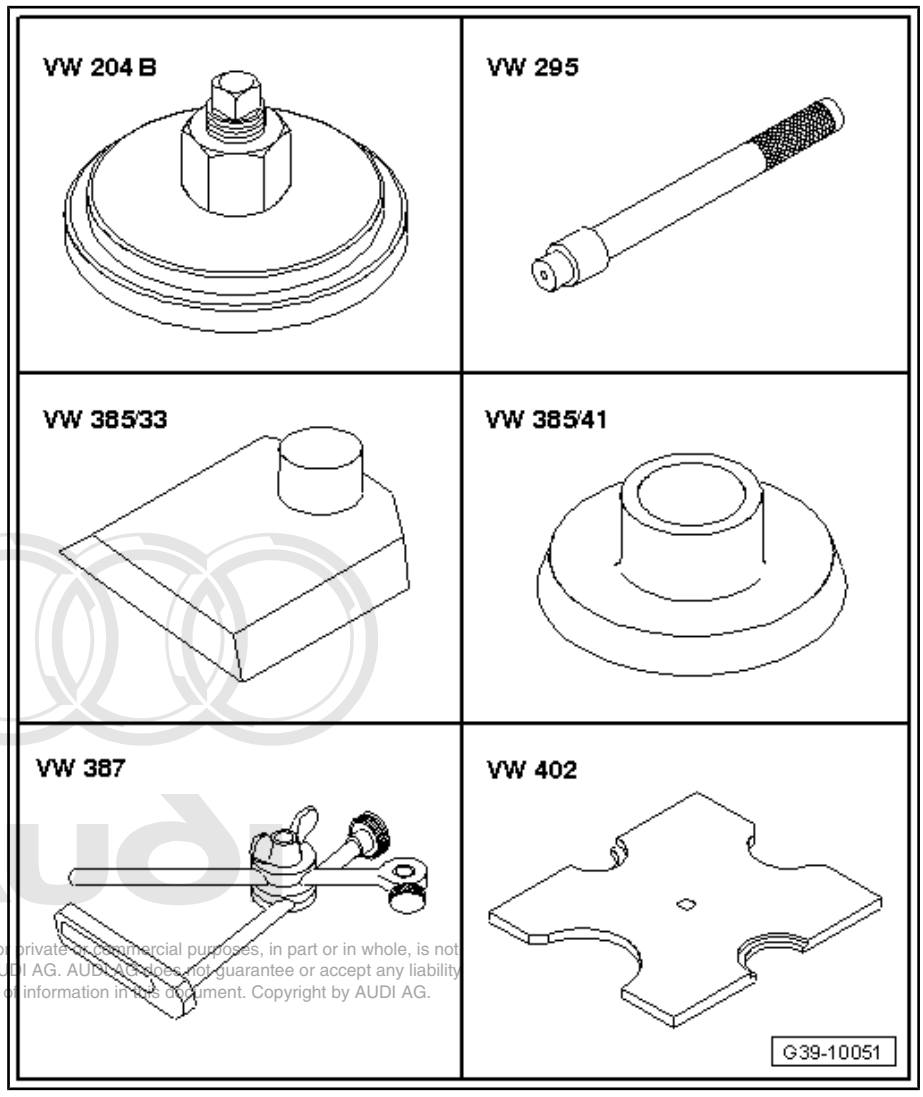
- *Different versions of the cover for final drive are installed depending on the version.*
- *When renewing cover for final drive, determine thickness of new shim to adjust preload of bearings for differential.*
- *This shim is located behind the outer race in the cover for the final drive.*

New version (high-efficiency bearings) from gearbox manufacturing date 15 08 11 onwards:

- Differential with tapered roller bearing on left and angular contact ball bearing on right

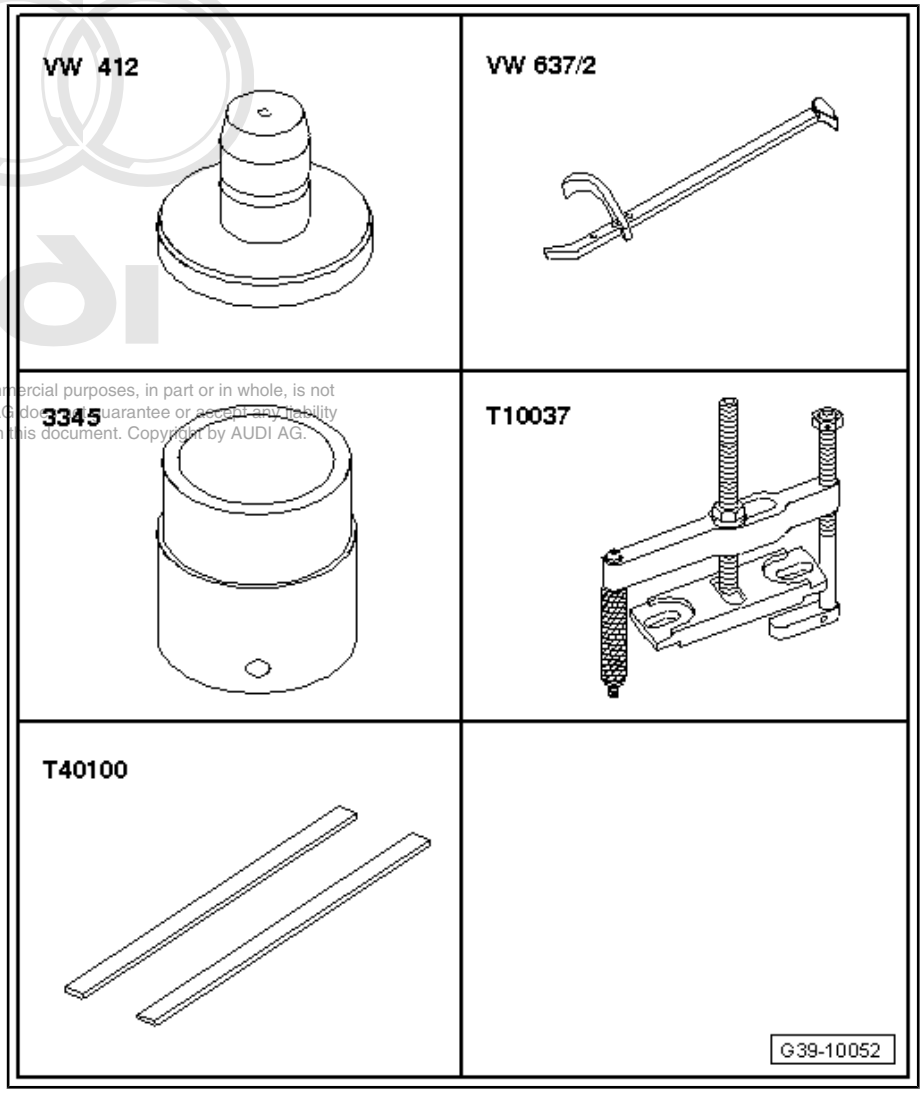
Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 295-
- Measuring plate - VW 385/33-
- Centring disc - VW 385/41- for cover with tapered roller bearing outer race
- Universal dial gauge bracket - VW 387-
- Thrust plate - VW 402-



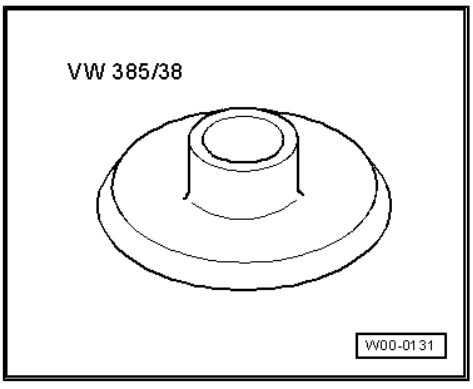
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

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

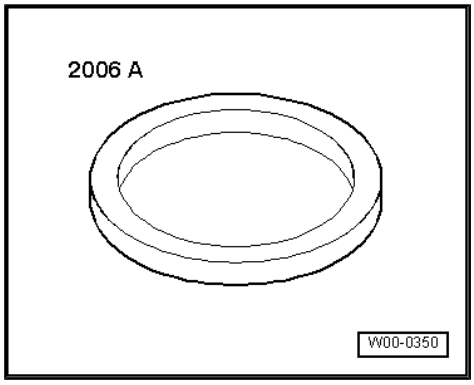


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

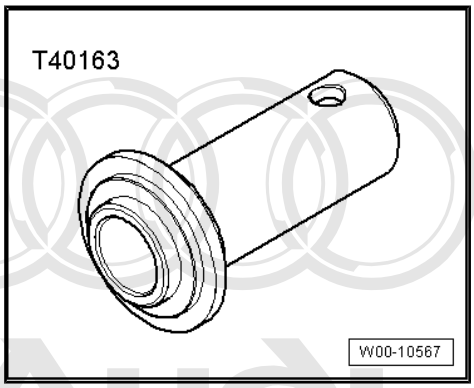
- Centring disc - VW 385/38- for cover with outer race for angular contact ball bearing



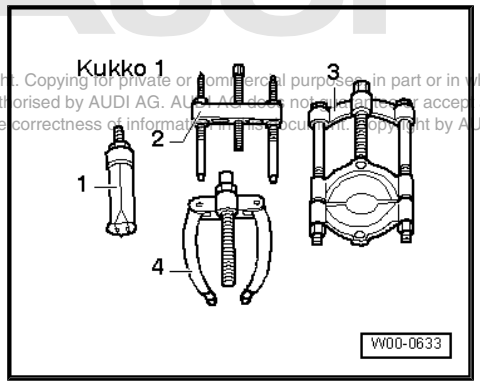
- Thrust ring - 2006 A-



- Thrust piece - T40163-

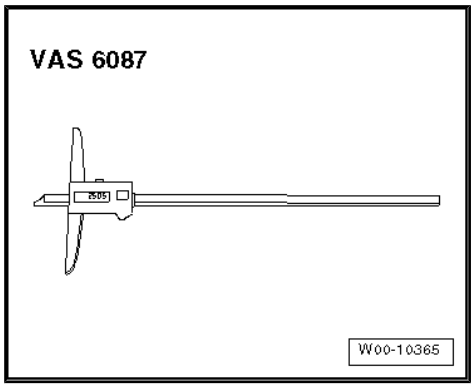


- -1- Internal puller - Kukko 21/89-



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- -4- Counter-support - Kukko 22/4-
- Digital depth gauge (e.g. digital depth gauge - VAS 6087-)
- Digital depth gauge - VAS 6087-



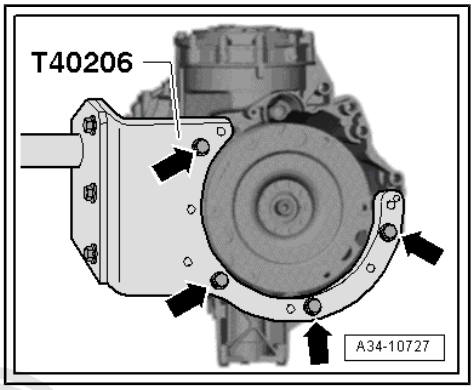
- Dial gauge , e.g. -VAS 6080-
- Sealing grease - G 052 128 A1-

- Gearbox removed ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Removing and installing gearbox .

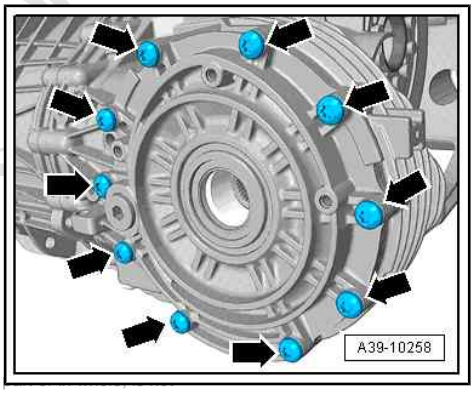
– Secure gearbox to gearbox support ⇒ page 91 .

– Turn gearbox so that cover for final drive points upwards.

– Remove flange shaft (right-side) ⇒ page 140 .

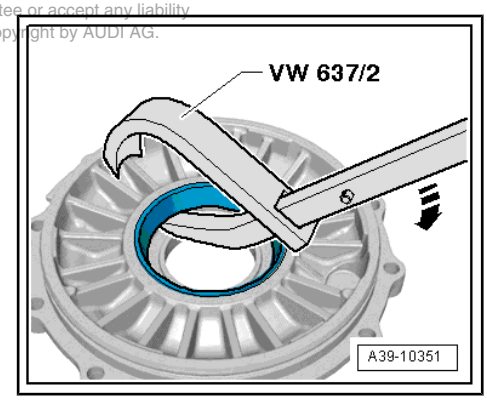


– Unscrew bolts -arrows- and detach cover for final drive.



Protected by copyright. Copying for private or commercial purposes, in
permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability
with respect to the correctness of information in this document. Copyright by AUDI AG.

– First press outer race for angular contact ball bearing slightly off bearing seat by applying hub grease cap puller - VW 637/2- continuously in small stages and pressing in direction of -arrow-.

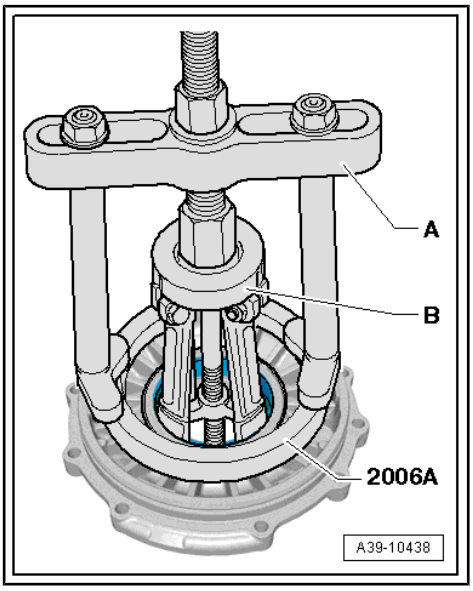


– Then pull out outer race using internal puller - Kukko 21/89- -B- and counter support - Kukko 22/4- -A-.

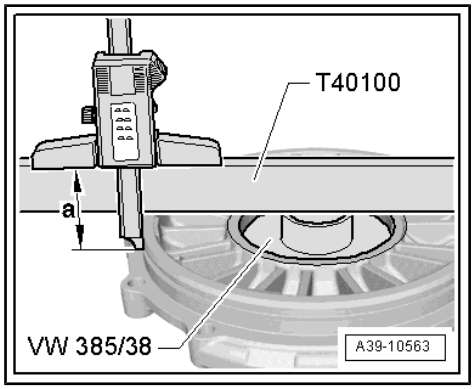
A - Counter-support , e.g. -Kukko 22/4-

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:

• Inert old shim in cover so that centring disc - VW 385/38- is positioned exactly during following procedure.

– Insert centring disc - VW 385/38- in bearing seat for outer race for angular contact ball bearing.

– 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	67.45 mm
Dimension -a- on new cover for final drive	67.60 mm
Difference	= 0.15 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	1.30 mm
Difference	– 0.15 mm
New shim	= 1.15 mm

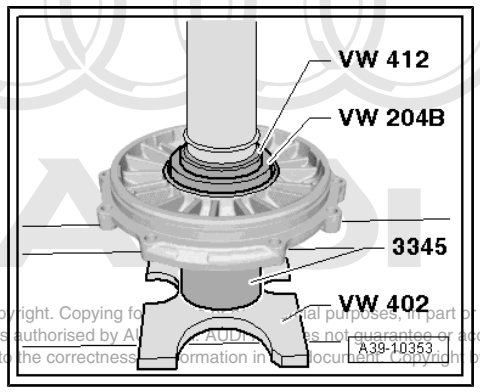
Note

Select correct shim from ⇒ Electronic parts catalogue .

– The shim thickness in this example is 1.15 mm.

– Install new shim of required thickness in new cover for final drive.

– Press in outer race for angular contact ball bearing onto stop; larger ∅ of -VW 204 B- faces towards outer race.

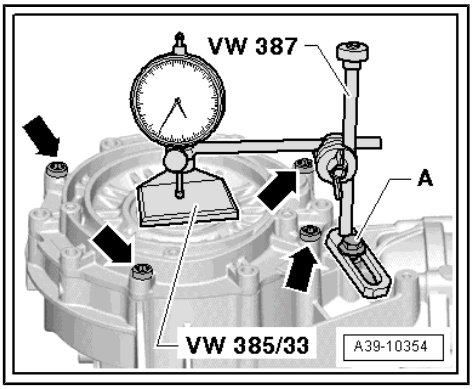


Note

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

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

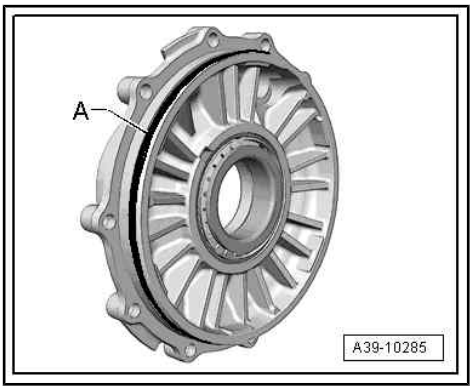
Check adjustment of preload of bearings for differential as follows:



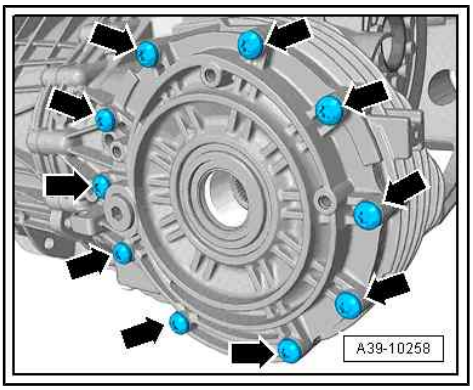
- Fit cover for final drive without O-ring and tighten 4 bolts -arrows-.
- Attach measuring equipment to gearbox housing.
- Secure universal dial gauge bracket - VW 387- to threaded hole in gearbox housing with bolt -A-.
- Apply dial gauge extension to centre of measuring plate - VW 385/33- .
- Set dial gauge , e.g. -VAS 6080- to »0« with 1 mm preload.
- Slacken 4 bolts -arrows- by one turn in diagonal sequence.
- Check reading on dial gauge.
- It should be 0.25 ... 0.30 mm for bearings with low mileage.

Note

For bearings with high mileage, measured value must be at least 0.05 mm.



- Renew O-ring -A-.



- Install cover for final drive and tighten bolts -arrows-; tightening torque ⇒ Item 8 (page 130) .
- Install new flange shaft oil seal (right-side) ⇒ page 131 .
- Install flange shaft (right-side) ⇒ page 141 .
- If gear oil has been drained off, fill up gearbox with gear oil and check oil level ⇒ 6-speed manual gearbox 0B1; Rep. gr. 34 ; Gear oil; Checking gear oil level .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

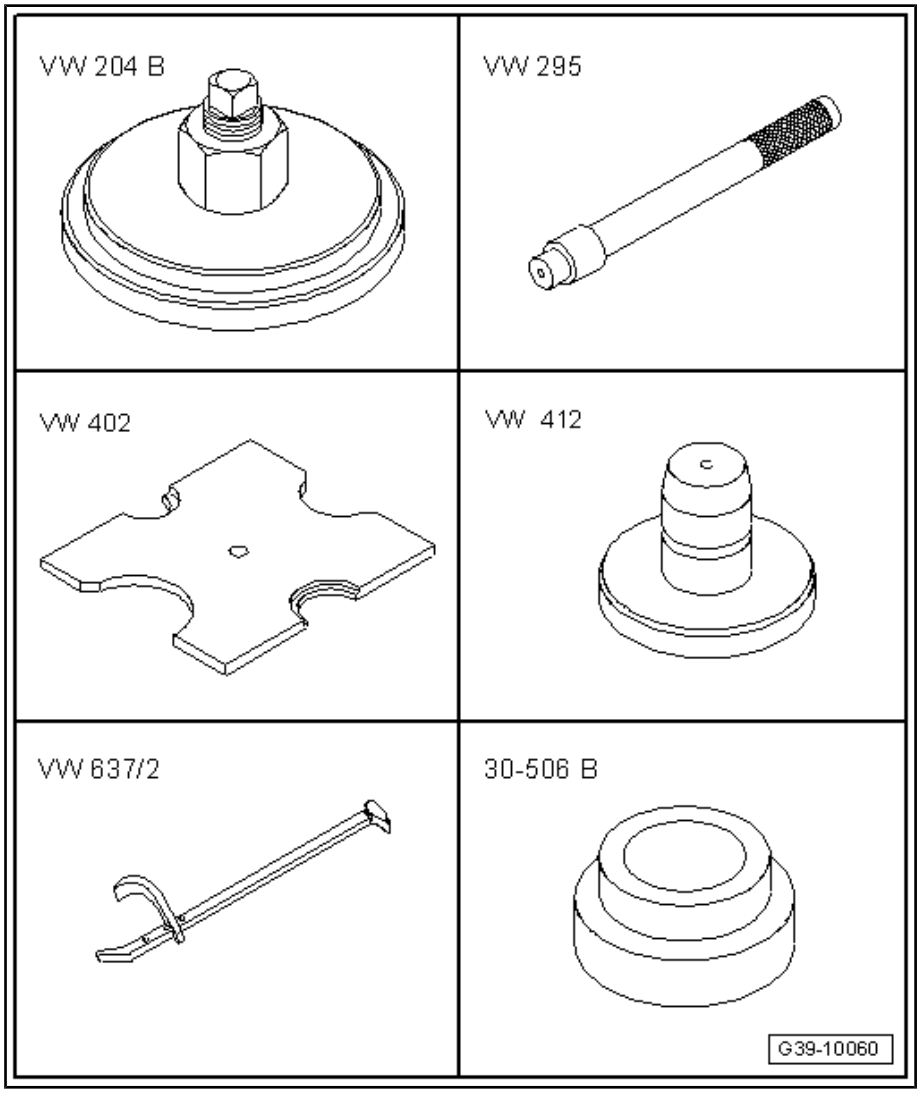
3.8 Dismantling and assembling differential

Note

- *Observe the general repair instructions for tapered roller bearings and shims ⇒ page 2 .*
- *Before carrying out assembly work on differential, drain off gearbox oil and secure gearbox to assembly stand ⇒ page 91 .*

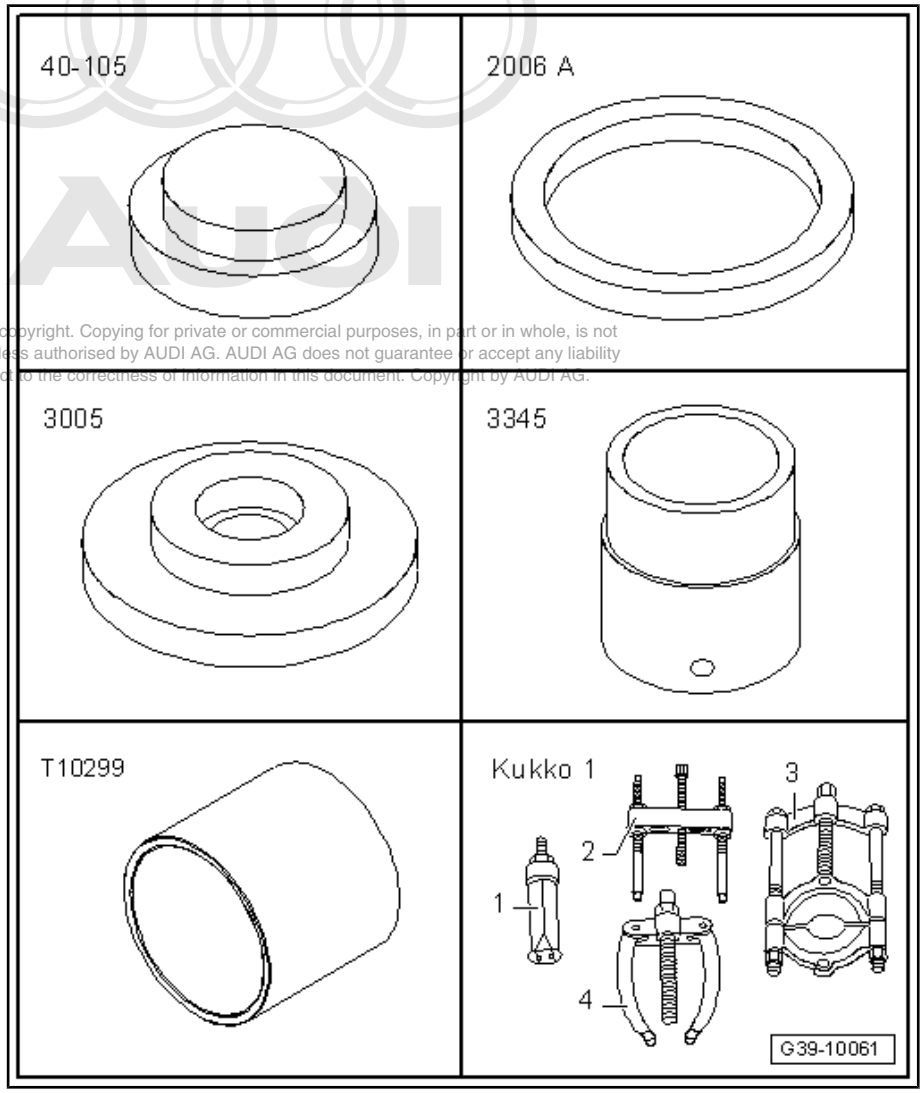
Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 295-
- Thrust plate - VW 402-
- Press tool - VW 412-
- Press tool - VW 408 A-
- Hub grease cap puller - VW 637/2-
- Press tool - 30 - 506 B-



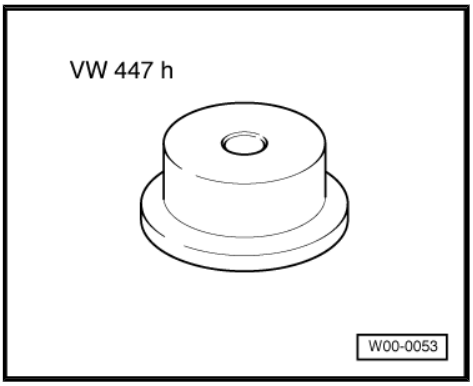
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Thrust plate - 40 - 105-
- Thrust ring - 2006 A-
- Thrust plate - 3005-
- Wheel bearing tube - 3345-
- Pressure sleeve - T10299-
- -1- Internal puller - Kukko 21/89-
- -1- Internal puller 56 ... 70 mm - VAS 6775-
- -4- Counter-support -Kukko 22/2-
- -4- Counter-support -Kukko 22/4-

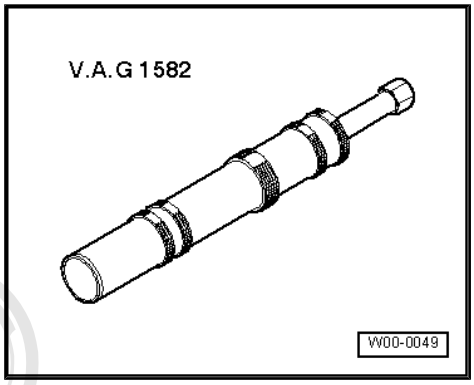


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

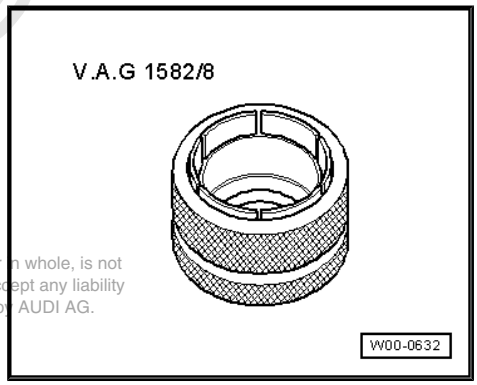
- Thrust pad - VW 447 H-



- Tapered roller bearing puller - V.A.G 1582-

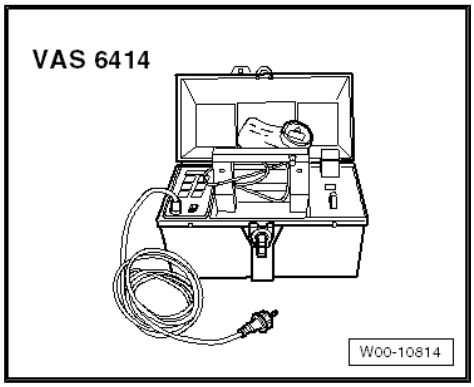


- Adapter - V.A.G 1582/8-

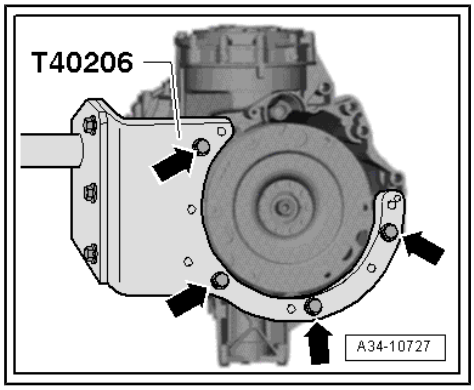


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

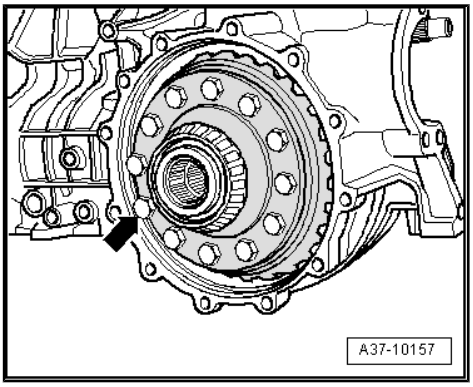
- Adapter - VAS 1582/15-
- Adapter - VAS 1582/16-
- Adapter - VAS 1582/17-
- Inductive heater - VAS 6414-



– Secure gearbox to gearbox support ⇒ page 91 and drain off gearbox oil.



– Remove differential -arrow- ⇒ page 153 .

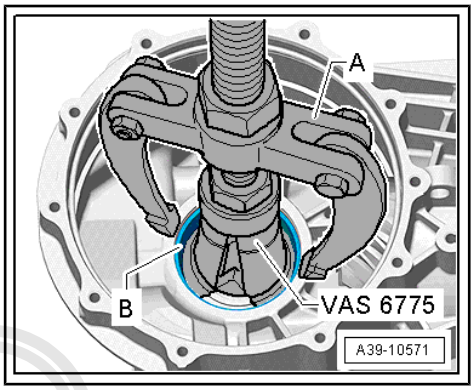


Pulling -B- tapered roller bearing outer race (left-side) out of gearbox housing

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

To pull outer race out, apply internal puller - VAS 6775- beneath outer race -B-.

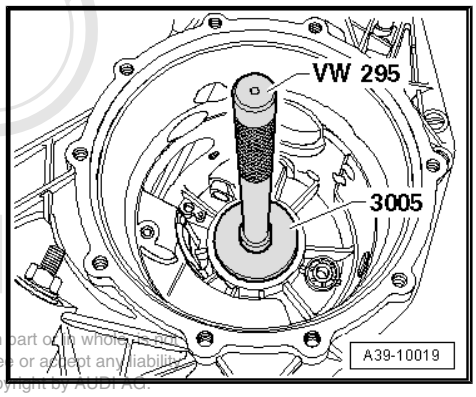
– After removing, check shim for damage.



Driving tapered roller bearing outer race (left-side) into gearbox housing

Note

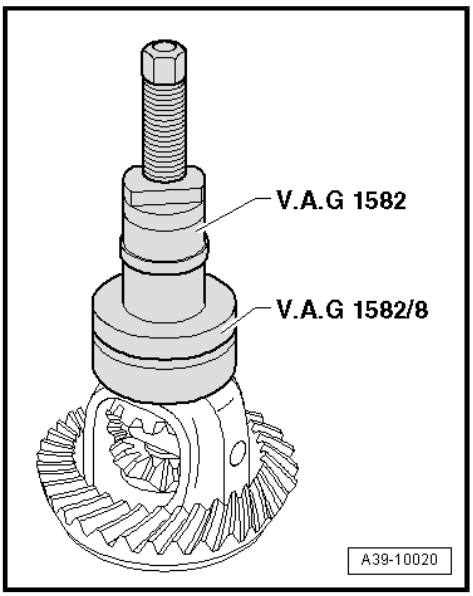
First insert shim in gearbox housing.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

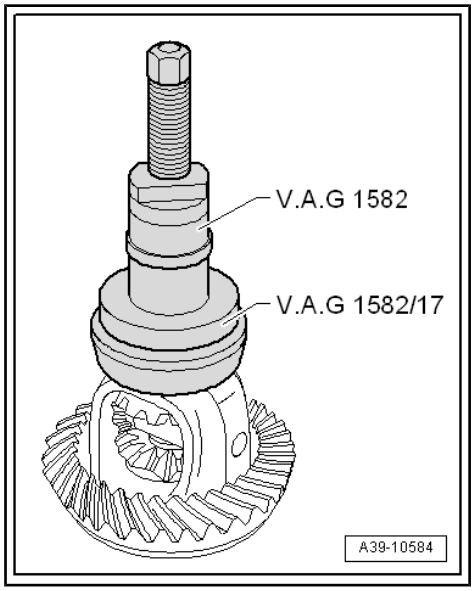
Pulling off tapered roller bearing inner race (left-side) - standard bearings

– Before setting up the puller, place thrust plate - 40 - 105- on differential cage.



Pulling off tapered roller bearing inner race (left-side) - high-efficiency bearings

– Before setting up the puller, place thrust plate - 40 - 105- on differential cage.

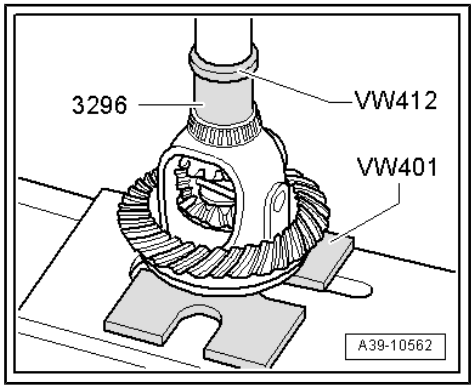


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pressing on tapered roller bearing inner race (left-side) - standard and high-efficiency bearings

WARNING

Wear protective gloves.



Note

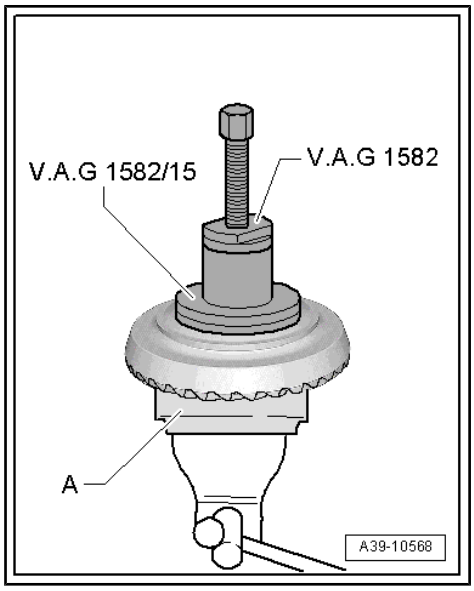
Support bottom of differential with press tool - 30 - 506 B- (do not apply to inner race).

– Heat inner race to approx. 100 °C, fit in position and press home.

Pulling off tapered roller bearing inner race (right-side) - standard bearings

– Carefully secure differential in a vice with soft jaws -A-.

– Before setting up puller, place thrust pad - VW 447 H- on differential cage.

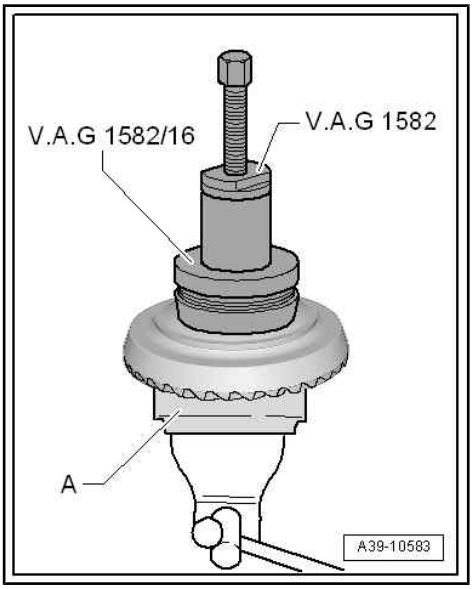


Pulling off inner race for angular contact ball bearing (right-side) - high-efficiency bearings

– Carefully secure differential in a vice with soft jaws -A-.

– Detach bearing cage and balls from from inner race.

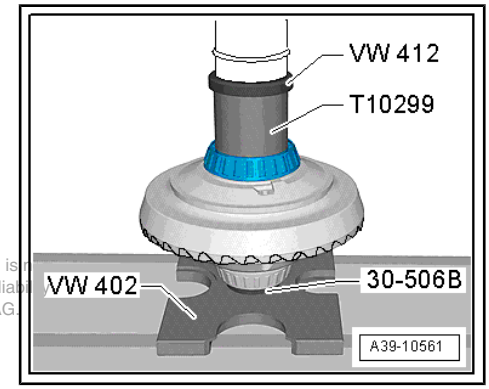
– Before setting up puller, place thrust pad - VW 447 H- on differential cage.



Pressing on tapered roller bearing inner race (right-side) or inner race for angular contact ball bearing

WARNING

Wear protective gloves.



Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Note

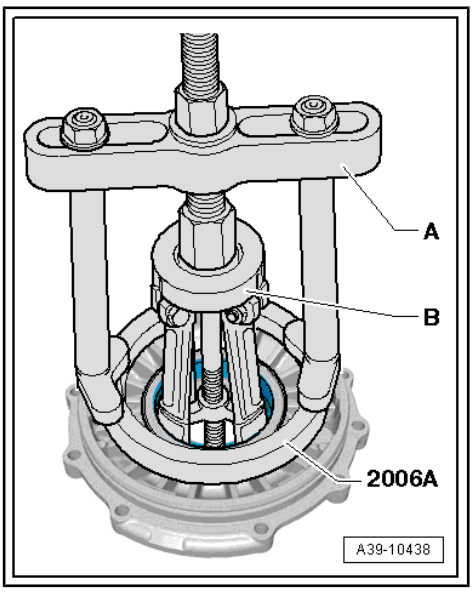
Support bottom of differential with press tool - 30 - 506 B- (do not apply to inner race).

– Heat inner race to approx. 100 °C, fit in position and press home.

Pulling tapered roller bearing outer race out of cover for final drive

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

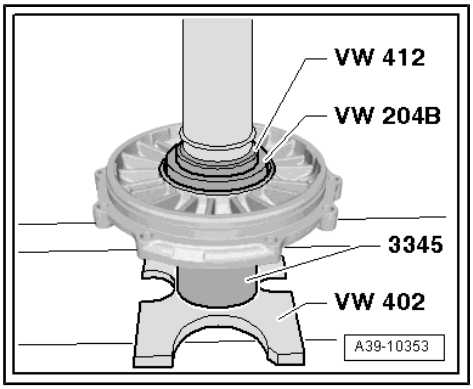
B - Internal puller 56 ... 110 mm , e.g. -Kukko 21/89-



Pressing tapered roller bearing outer race (right-side) into final drive cover

– First install shim in cover for final drive.

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

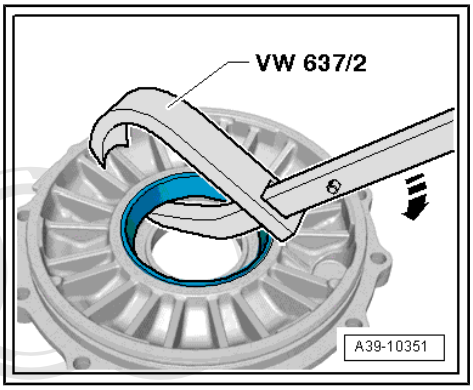


Note

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

Removing outer race for angular contact ball bearing from final drive cover

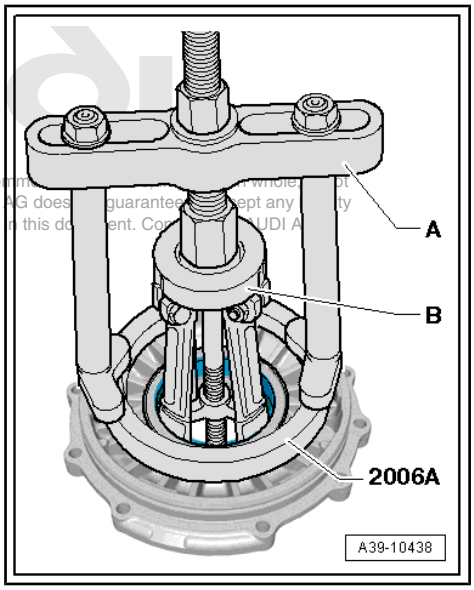
– First press outer race for angular contact ball bearing slightly off bearing seat by applying hub grease cap puller - VW 637/2- continuously in small stages and pressing in direction of -arrow-.



– Then pull out outer race using 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-

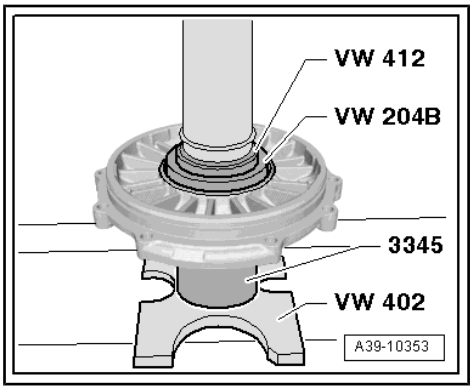


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Pressing outer race for angular contact ball bearing into final drive cover

– First install shim in cover for final drive.

– Press in outer race for angular contact ball bearing; larger ∅ of -VW 204 B- faces towards outer race.



Note

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

3.9 Adjusting differential

Note

Careful adjustment of the differential is essential to ensure that the finial drive gives long service and runs silently.

- The crown wheel must be adjusted when the tapered roller bearings of the differential have been renewed.
- The pinion shaft remains installed; for which reason backlash must always be present the during adjustment process. Otherwise the gear set will be damaged.
- The gearbox must be secured to the assembly stand, and the clutch module with the flange shaft (right-side) must be removed.

Different versions of the bearings for the differential may be fitted.

- New bearings (high-efficiency bearings) were introduced from gearbox manufacturing date 15 08 11 onwards.

Old version (standard bearings) up to gearbox manufacturing date 14 08 11:

- Differential with 2 tapered roller bearings
- The process for adjusting the differential is described in this section.

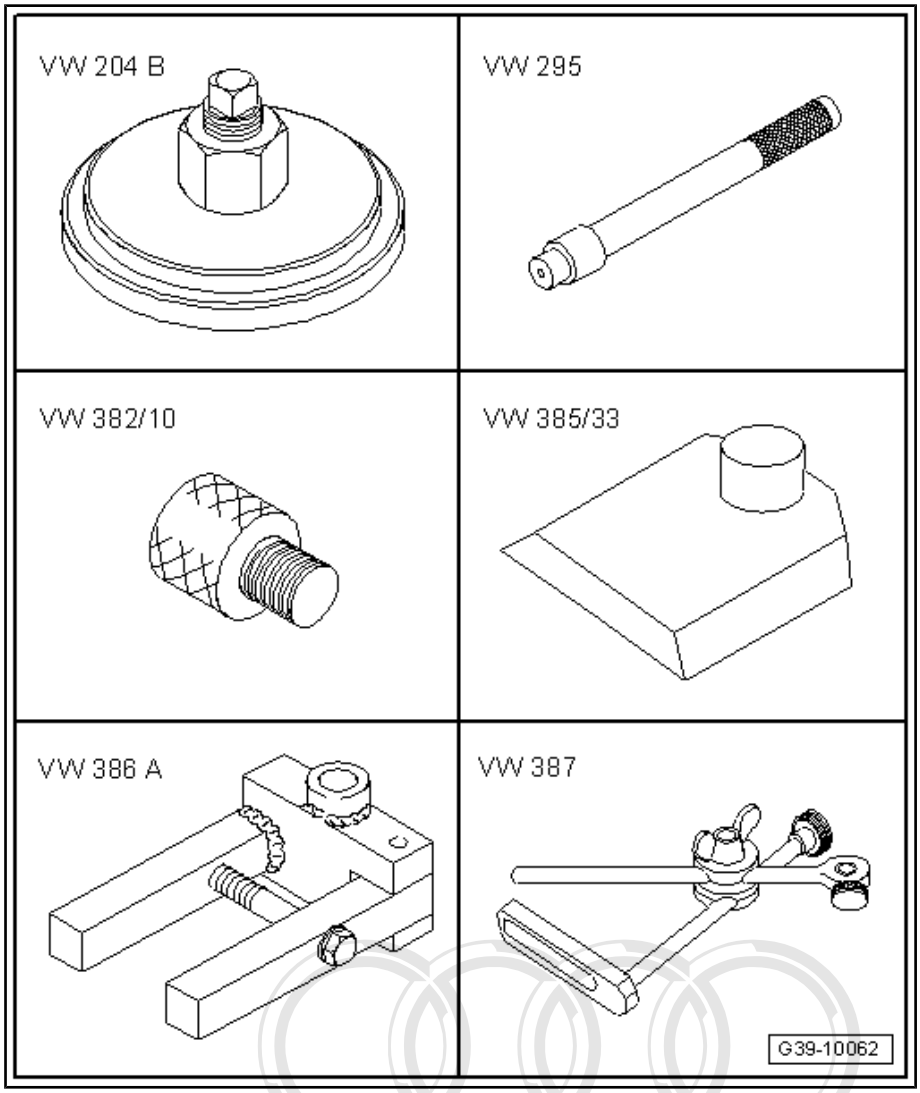
New version (high-efficiency bearings) from gearbox manufacturing date 15 08 11 onwards:

- Differential with tapered roller bearing on left and angular contact ball bearing on right

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

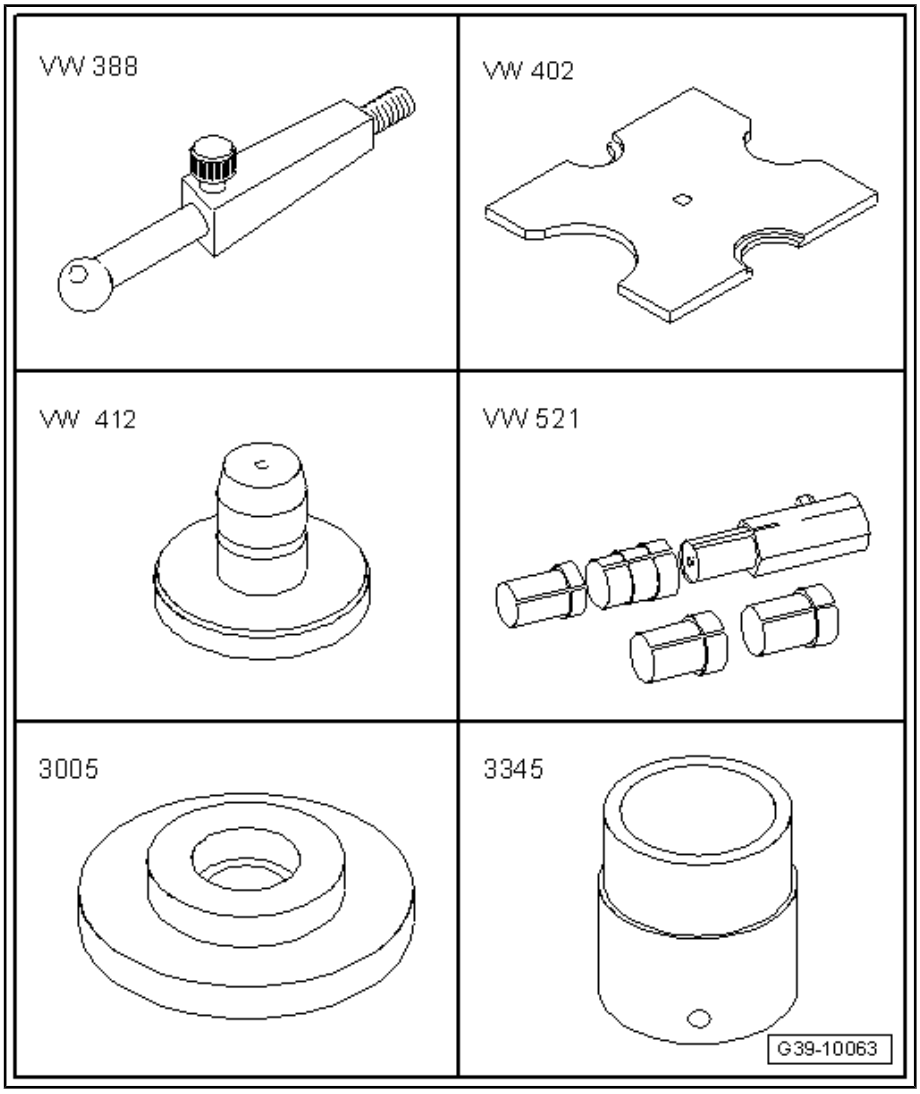
Special tools and workshop equipment required

- Crankshaft seal installing tool - VW 204 B-
- Drift - VW 295-
- Dial gauge extension - VW 382/10-
- Measuring plate - VW 385/33-
- Drive pinion clamp - VW 386 A-
- Universal dial gauge bracket - VW 387-

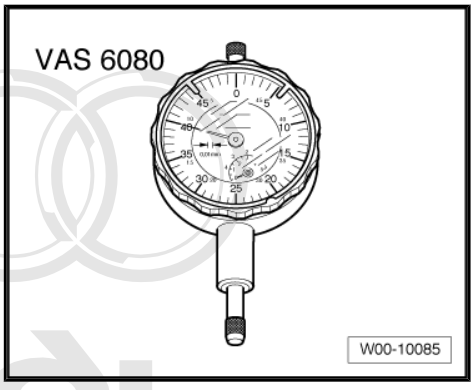


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Adjustable measuring lever - VW 388-
- Thrust plate - VW 402-
- Press tool - VW 412-
- Crown wheel adjusting tool - VW 521-
- Thrust plate - 3005-
- Wheel bearing tube - 3345-



- Dial gauge , e.g. -VAS 6080-



Note

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Careful adjustment of the differential is essential to ensure that the finial drive gives long service and runs silently.

- The crown wheel must be adjusted when the tapered roller bearings of the differential have been renewed.

- The pinion shaft remains installed; for which reason backlash must always be present the during adjustment process. Otherwise the gear set will be damaged.
- The gearbox must be secured to the assembly stand, and the clutch module with the flange shaft (right-side) must be removed.

Different versions of the bearings for the differential may be fitted.

- New bearings (high-efficiency bearings) were introduced from gearbox manufacturing date 15 08 11 onwards.

Old version (standard bearings) up to gearbox manufacturing date 14 08 11:

- Differential with 2 tapered roller bearings
- The process for adjusting the differential is described in this section.

New version (high-efficiency bearings) from gearbox manufacturing date 15 08 11 onwards:

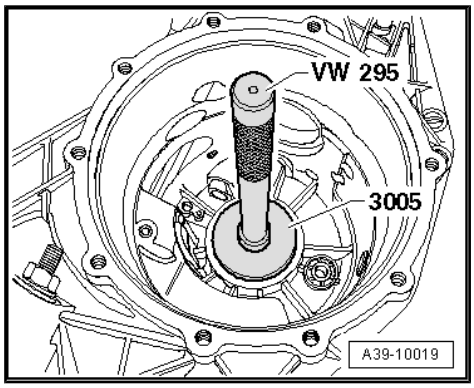
- Differential with tapered roller bearing on left and angular contact ball bearing on right

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Determining total shim thickness "S_{total}" for shims "S_1" + "S_2"

– Pull tapered roller bearing outer race (left-side) out of gearbox housing ⇒ page 171 .

– Drive new tapered roller bearing outer race (left-side) with old shim "S_1" (1.30 mm in example given) into gearbox housing.



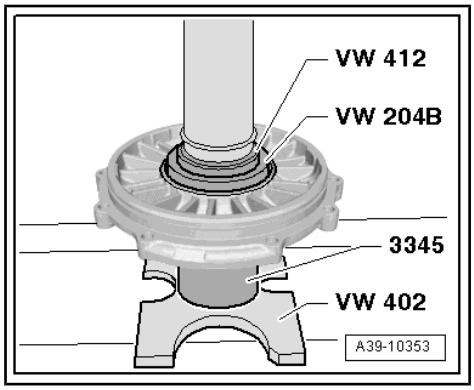
Note

The old shim "S_1" (1.30 mm thick in the example given) is inserted for measurement purposes This is referred to in the following as "S_1". "S_1*" is exchanged with the final shim "S_1" after determining backlash.*

Gearbox with tapered roller bearing (right-side) on differential

– Pull tapered roller bearing outer race out of cover for final drive ⇒ page 173 .

– Press new tapered roller bearing outer race (right-side) with old shim "S_2" (0.87 mm thick in example given) into cover for final drive. When doing so, smaller ∅ of -VW 204 B- faces outer race.

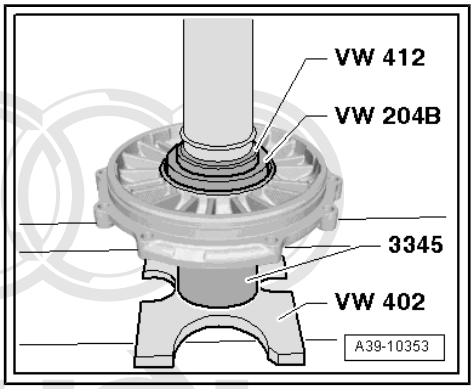


Note

- *The old shim "S_2" (0.87 mm thick in the example given) is inserted for measurement purposes This is referred to in the following as "S_2*". "S_2*" is exchanged with the final shim "S_2" after determining backlash.*
- *The total thickness of the shims "S_1*" and "S_2*" is 2.17 mm in this example.*
- *A shim must always be inserted before installing outer races.*

Gearbox with angular contact ball bearing (right-side) on differential

– Press new outer race for angular contact ball bearing (right-side) with old shim "S_2" into cover for final drive. When doing so, larger ∅ of -VW 204 B- faces outer race.



Continued for all vehicles:

– Install differential in gearbox housing.

Caution

Risk of damage to the gear set

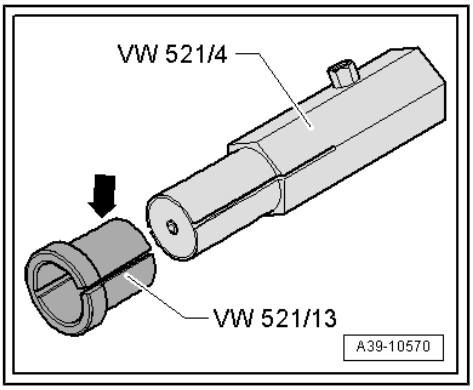
- ***Check backlash when tightening cover for final drive. There must always be a certain amount of play.***
- ***If gearbox is dismantled, check play at pinion shaft by turning it back and forth.***
- ***If gearbox is not dismantled, insert crown wheel adjusting tool - VW 521- and check play.***

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

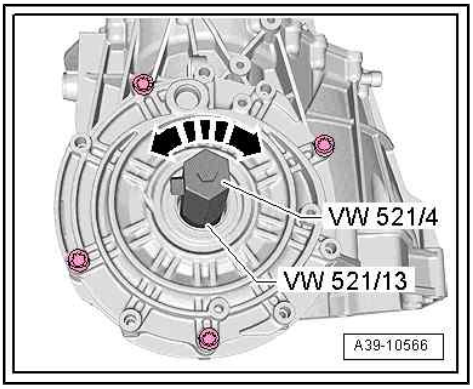
– Carefully secure cover for final drive with 4 bolts (tighten to 20 Nm in diagonal sequence).

Assemble crown wheel adjusting tool - VW 521- as follows:

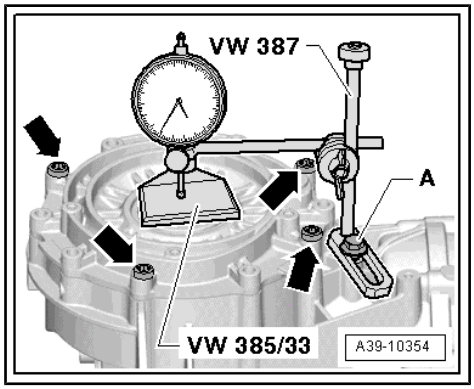
- Fit sleeve - VW 521/13- with smaller outer diameter -arrow- onto mandrel - VW 521/4- .



– Insert crown wheel adjusting tool - VW 521- and turn differential 5 turns in both directions to settle tapered roller bearings.



– Remove crown wheel adjusting tool - VW 521- and attach measuring tools to gearbox housing as follows:
– 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 , e.g. -VAS 6080- to »0« with 1 mm preload.
– Slacken 4 bolts -arrows- by one turn in diagonal sequence.
– Check reading on dial gauge.
• Specification: 0.10 ... 0.15 mm for differential with tapered roller bearings on both sides.
• Specification: 0.25 ... 0.30 mm for differential with tapered roller bearing on left side and angular contact ball bearing (high-efficiency bearing) on right side.



Note

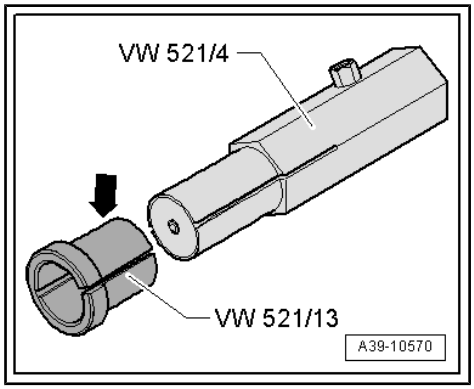
♦ *If specified measured value is not achieved, or if no backlash is discernible, correct thickness of shims "S_1" and "S_2".*

♦ *Select correct shims from ⇒ Electronic parts catalogue .*

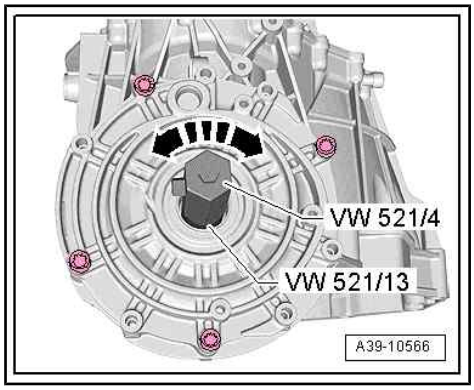
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Measuring backlash

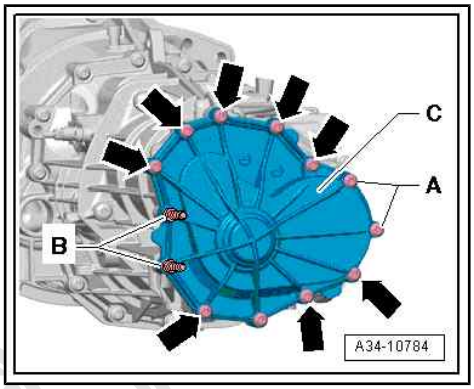
• Differential fitted with shims "S_1" and "S_2".
– Install differential with crown wheel: S_1 is fitted on cover side, S_2 in gearbox housing.
– Fit cover for final drive and tighten bolts to 20 Nm.
– Assemble crown wheel adjusting tool - VW 521- as described below and insert in differential.
• Fit sleeve - VW 521/13- with smaller outer diameter -arrow- onto mandrel - VW 521/4- .



– Turn differential 5 turns in both directions to settle tapered roller bearings.



– Remove bolts -A-, -B- and -arrows- securing end cover -C- to gearbox cover.

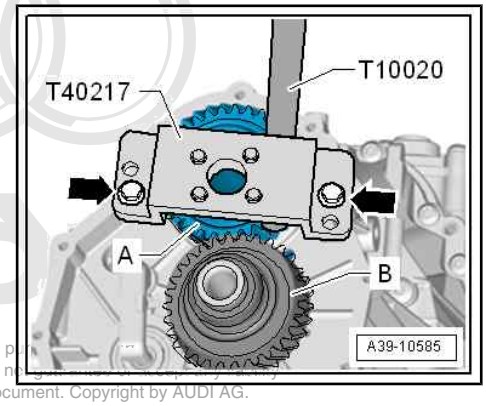


Locking side shaft in place

Block side shaft during measuring procedure to keep it from turning.

– To do so, engage counterhold tool - T40217- in side shaft and bolt loosely to gearbox cover with M8 bolts -arrows-.

– Insert pin wrench - T10020- between side shaft -A- and counterhold tool - T40217- .



Note

Do not slide on pin wrench - T10020- as far as spur gear -B-.

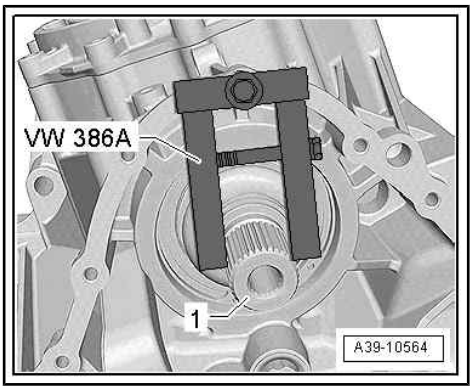
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

– Tighten bolts -arrows- to 5 Nm.

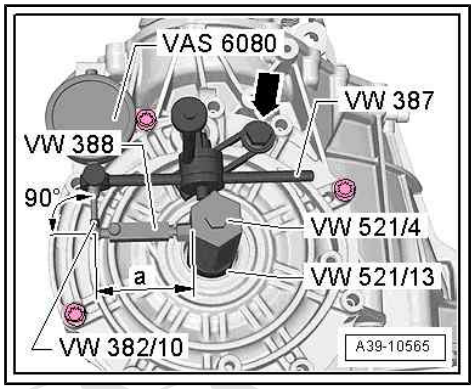
Locking pinion shaft in place with gearbox cover detached:

– To prevent pinion shaft -1- from turning during measurement, lock it in place using drive pinion clamp - VW 386 A- .

Continued for all vehicles:



– Secure universal dial gauge bracket - VW 387- to cover for final drive -arrow-.
– Insert dial gauge , e.g. -VAS 6080- with dial gauge extension - VW 382/10- (6 mm, flat).
– Set measuring lever - VW 388- to dimension “a” = 54.5 mm.



Measure play between teeth faces (backlash) as follows:

– Turn crown wheel until it makes contact with the face of one tooth (end of backlash travel).
– Preload dial gauge to 2 mm and set to “0”.
– Turn back crown wheel until it makes contact with opposite tooth face (backlash).
– Take backlash reading and note down measured value.
– Turn crown wheel through 90° and repeat measurement another 3 times. Unlock to turn further ⇒ page 181 .

Determining average backlash

– Add the four measured values together and divide by four.

Example:	
1st measured value	0.28 mm
+ 2nd measured value	0.30 mm
+ 3rd measured value	0.30 mm
+ 4th measured value	0.28 mm
= Sum of measured values	1.16 mm

• Result: the average backlash is 1.16 mm : 4 = 0.29 mm

Determining thickness of shim “S_2”

Formula: “S_2” = “S_2*” - measured backlash + specified backlash

Example:	
Previous shim “S_2*”	1.30 mm
- Measured average backlash	0.29 mm
+ Specified backlash (desired average value for backlash)	0.20 mm
= Thickness of shim “S_2”	1.21 mm

Select correct shims from ⇒ Electronic parts catalogue .

Determining thickness of shim “S_1”

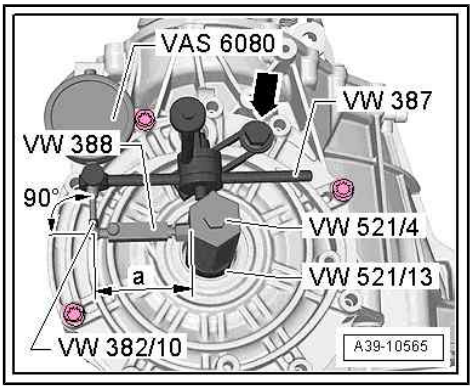
Formula: “S_1” = “S_{total}” – “S_2”

Example:	
Total shim thickness“S_{total}” for “S_1” + “S_2”	2.17 mm
- Thickness of shim “S_2”	1.21 mm
= Thickness of shim “S_1”	0.96 mm

– Remove old shims “S_1*” and “S_2*” and fit new determined shims ⇒ page 138 .

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Checking adjustment



– After installing shims “S_1” and “S_2”, turn differential 5 turns in both directions so that the tapered roller bearings settle.

– Measure backlash four times on circumference.

♦ Specification: 0.12 ... 0.28 mm for differential with tapered roller bearings on both sides.

♦ Specification: 0.12 ... 0.18 mm for differential with tapered roller bearing on left side and angular contact ball bearing (high-efficiency bearing) on right side.

Note

Adjustment must be repeated if backlash is outside tolerance. The total shim thickness “S_{total}” must remain unchanged.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.