



Workshop Manual Audi A1 2011 ➤

5-speed manual gearbox 02T, 0DF

Edition 12.2018



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List of Workshop Manual Repair Groups

Repair Group

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

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

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00 – Technical data

1 Identification

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

1.1 Gearbox identification

⇒ ["1.1.1 Gearbox identification - manual gearbox 02T", page 1](#)

⇒ ["1.1.2 Gearbox identification - manual gearbox 0DF", page 2](#)

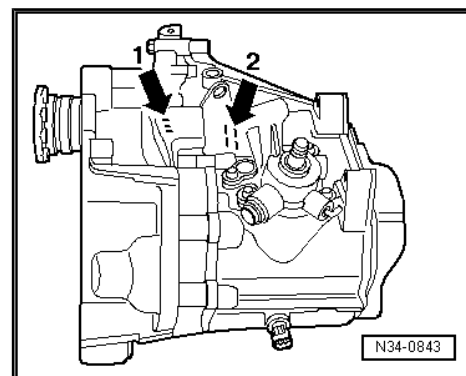
1.1.1 Gearbox identification - manual gearbox 02T

The 5-speed manual gearbox 02T is installed in the Audi A1 2011

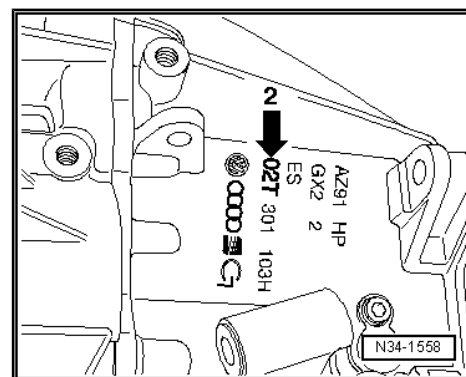
► ⇒ ["2.1 Allocation of gearbox to engine", page 4](#) .

Location on gearbox

- ◆ Code letters and date of manufacture -arrow 1-
- ◆ Manual gearbox 02T -arrow 2-



Manual gearbox 02T -arrow 2-





Code letters and production date of gearbox -arrow-

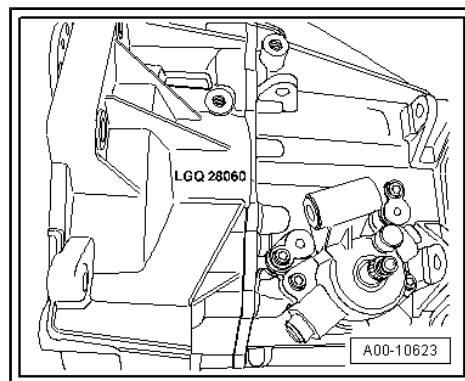
Example:	LGQ	28	06	0
	Code letters	Day	Month	Year of manufacture (2010)

Additional data depend on manufacture.



Note

The gearbox code letters can also be found on the vehicle data sticker.

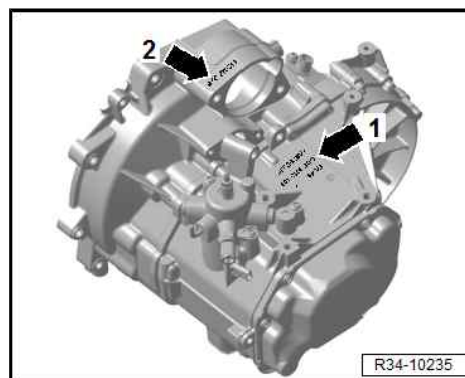


1.1.2 Gearbox identification - manual gearbox 0DF

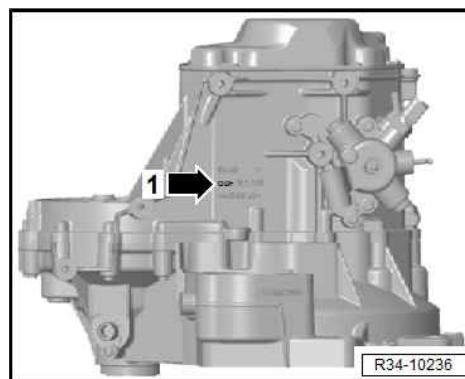
The 5-speed manual gearbox 0DF is installed in the Audi A1 2011
► ⇒ ["2.1 Allocation of gearbox to engine", page 4](#) .

Location on gearbox

- ◆ Manual gearbox 0DF -arrow 1-
- ◆ Code letters and date of manufacture -arrow 2-



Manual gearbox 0DF -arrow 1-



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Code letters and date of manufacture of gearbox -arrow 2-

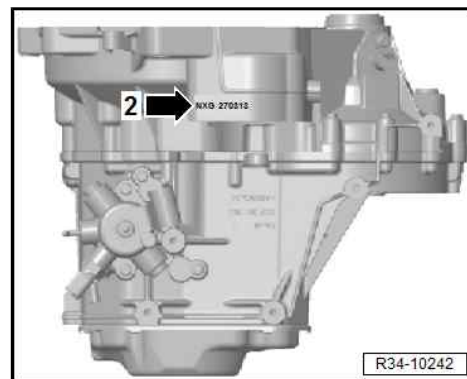
Example:	NXG	27	03	15
	Code letters	Day	Month	Year of manufacture (2015)

Additional data depend on manufacture.



Note

The gearbox code letters can also be found on the vehicle data sticker.



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2 Technical data

⇒ "2.1 Allocation of gearbox to engine", page 4

⇒ "2.2 Capacities", page 4

2.1 Allocation of gearbox to engine

Manual gearbox		5-speed 02T	
Code letters		LGQ	
Manufactured	from to	06.10	
Allocation	Model Engine	Audi A1 2011 ► 1.2 ltr. - 63 kW TFSI	
Ratio Z1 : Z2	Final drive	58 : 16 = 3.625	
The following data can be found in the ⇒ Electronic parts catalogue ♦ Individual gear ratios ♦ Allocation of drive shaft flanges ♦ Allocation of clutch type			

Manual gearbox		5-speed 0DF	
Code letters		QTS	
Manufactured	from to	01.15	
Allocation	Model Engine	Audi A1 2011 ► 1.0 ltr. - 70 kW TFSI	
Ratio Z1 : Z2	Final drive	58 : 16 = 3.625	
The following data can be found in the ⇒ Electronic parts catalogue ♦ Individual gear ratios ♦ Allocation of drive shaft flanges ♦ Allocation of clutch type			

2.2 Capacities

Manual gearbox	5-speed 02T	5-speed 0DF	
Code letters	LGQ	QTS	
Capacity	2.0 ltr.	2.1 ltr.	
♦ Gear oil specifications ⇒ Electronic parts catalogue			



3 Transmission layout

⇒ ["3.1 Transmission layout - front-wheel drive", page 5](#)

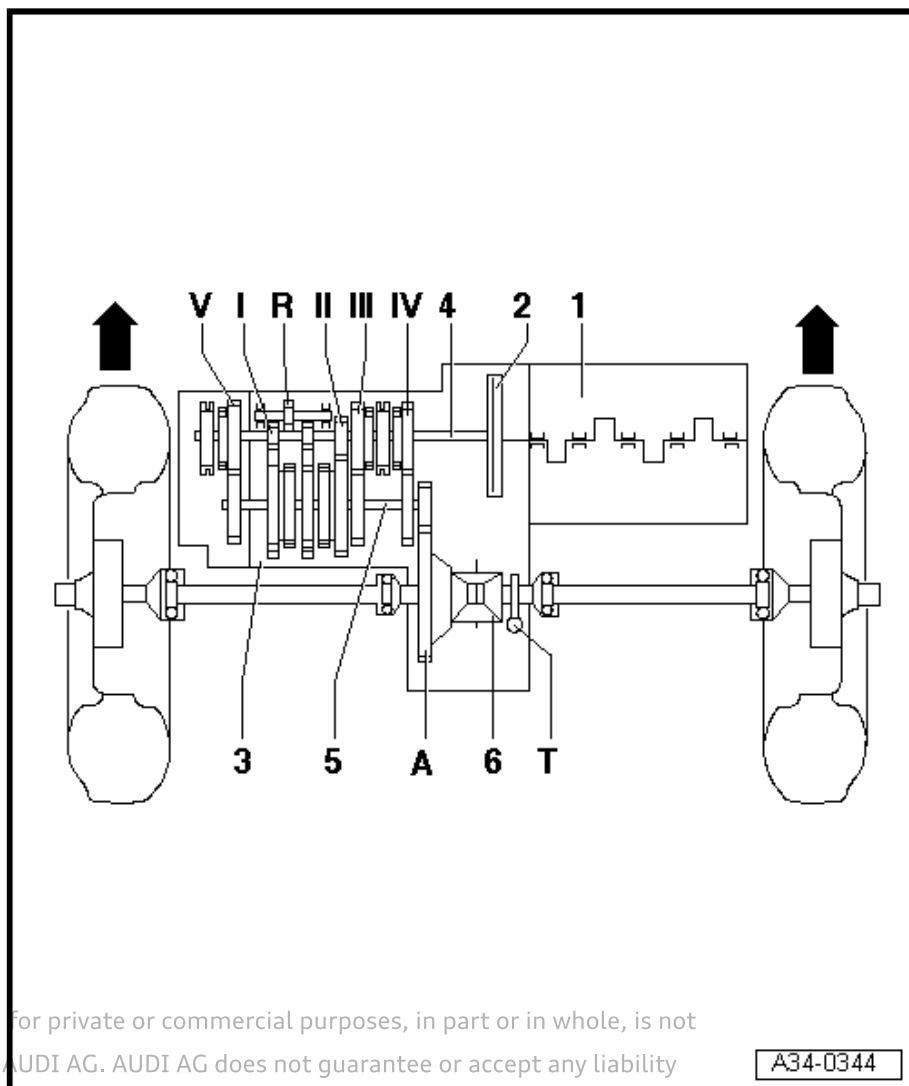
3.1 Transmission layout - front-wheel drive



Note

-Arrows- point in direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual gearbox
- 4 - Input shaft
- 5 - Output shaft
- 6 - Differential
- I - 1st gear
- II - 2nd gear
- III - 3rd gear
- IV - 4th gear
- V - 5th gear
- R - Reverse gear
- A - Final drive
- T - Speedometer drive
- Not used



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4 Safety precautions

⇒ "4.1 Safety precautions when working on vehicles with start/stop system", page 6

4.1 Safety precautions when working on vehicles with start/stop system



WARNING

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

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



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5 Repair instructions

⇒ ["5.1 General repair instructions", page 7](#)

⇒ ["5.2 Contact corrosion", page 12](#)

5.1 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.

A number of generally applicable instructions for the various repair procedures - which were previously repeated at numerous places in the Workshop Manual - are summarised here. They apply to the work described in this Manual.

Special tools

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

Gearbox

- ◆ When installing the gearbox, ensure that the dowel sleeves between the engine and the gearbox are correctly located.
- ◆ Allocate bolts and other components according to ⇒ Electronic parts catalogue .
- ◆ Clean contact surfaces when assembling mounting brackets and waxed components. The contact surfaces must be free of wax and grease.
- ◆ Thoroughly clean all joints and connections and the surrounding areas before disconnecting.
- ◆ When installing a new gearbox, check the oil level and fill up with oil if necessary ⇒ [page 48](#) .
- ◆ Capacities ⇒ [page 4](#) , specifications ⇒ Electronic parts catalogue .

Sealant

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

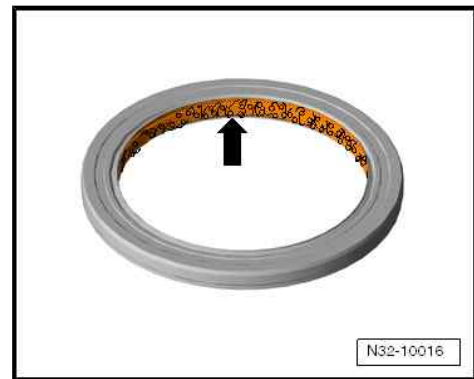


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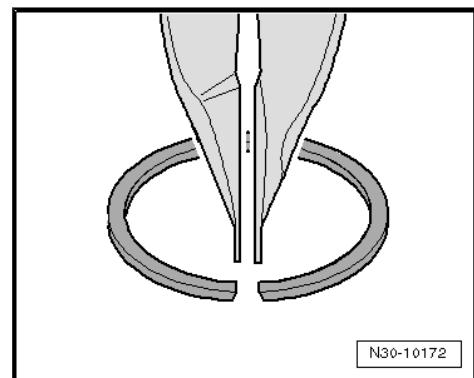
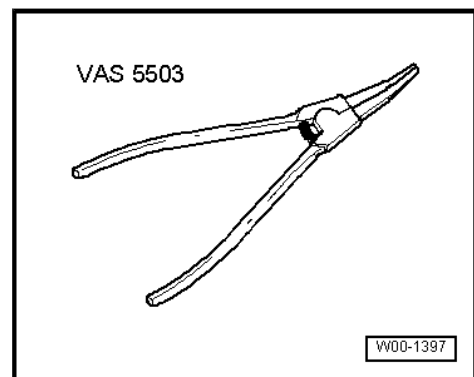
Oil seals, seals, O-rings and gaskets

- ◆ Always renew O-rings, oil seals and gaskets after removal.
- ◆ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ◆ 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 in the housing so that the sealing lip does not contact the shaft in the same place as the old seal (make use of installation depth tolerances).
- ◆ Lightly lubricate O-rings with oil before installation to prevent them being trapped during assembly.
- ◆ Check oil level after installing new gaskets, O-rings and oil seals ⇒ [page 96](#) .



Locking elements

- ◆ To facilitate assembly, use circlip pliers - VAS 5503A- .
- ◆ Do not over-stretch circlips.
- ◆ Installation position for some circlips: the circlip is fitted so that the narrow part of the gap is at the top. This also gives the pliers a better grip when removing and installing.
- ◆ Always renew circlips which have been damaged or over-stretched.
- ◆ Circlips must be properly seated in the base of the groove.



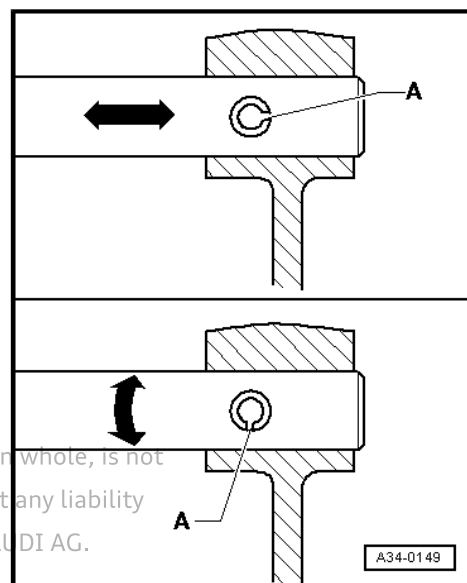
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- ◆ Renew spring pins. Position: the slit -A- should be in line with the line of force -arrow-.



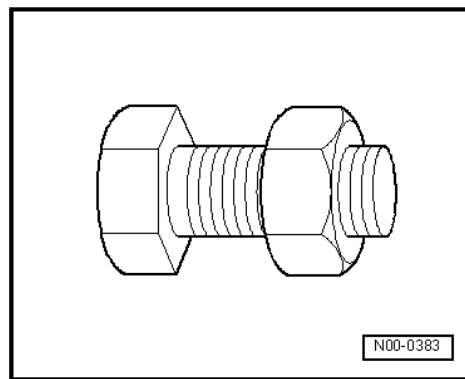
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Nuts, bolts

- ◆ Loosen the nuts and bolts in reverse sequence to the specified tightening sequence.
- ◆ Nuts and bolts which secure covers and housings should be loosened and tightened in diagonal sequence and in stages if no tightening sequence is specified.
- ◆ Parts which are particularly sensitive (e.g. clutch pressure plate) must be kept straight. Loosen and tighten bolts and nuts in stages and in diagonal sequence.
- ◆ Always renew self-locking nuts and bolts.
- ◆ The tightening torques stated apply to non-oiled nuts and bolts.
- ◆ Threaded holes which take self-locking bolts or bolts coated with locking fluid must be cleaned (using a tap or similar). Otherwise there is a danger of the bolts shearing off the next time they are removed.
- ◆ For all threaded connections, ensure that (where applicable) the contact surfaces and the nuts and bolts are not coated with wax until after assembly is completed.



Bearings

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

Shims

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

Synchro-rings

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

Gear wheels

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

Selector gears and locking collars

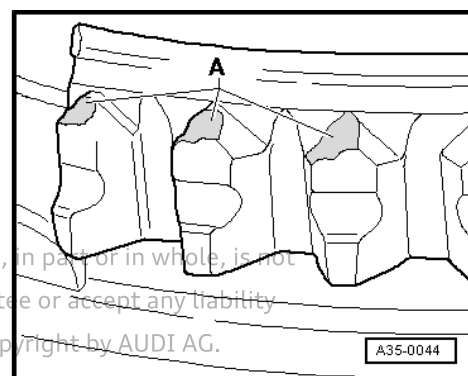
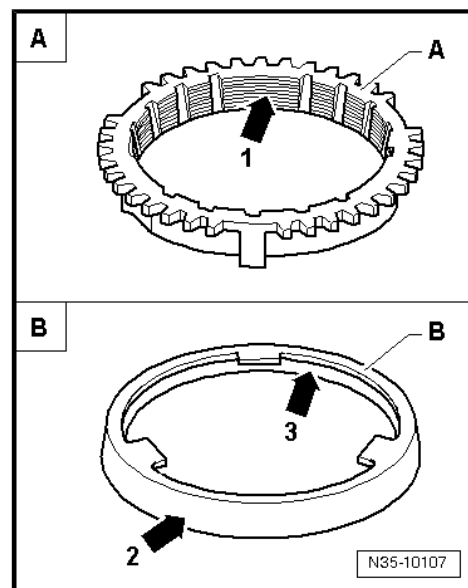
- ◆ After installing, check 1st to 5th selector gears for minimal axial play and freedom of movement.

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

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

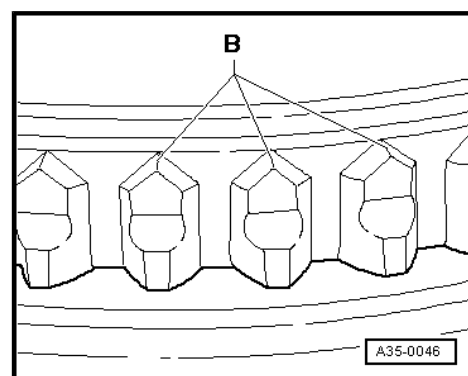


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- ◆ In comparison: intact synchro-ring or selector gear:

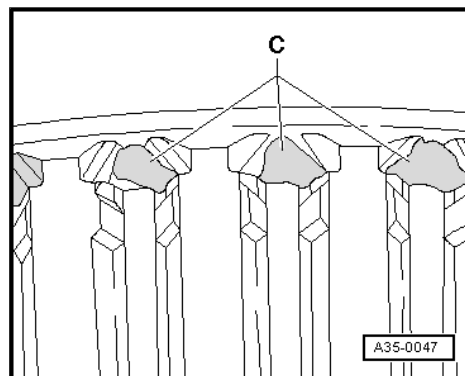
B - Intact chamfer on dog teeth of synchro-ring or selector gear.





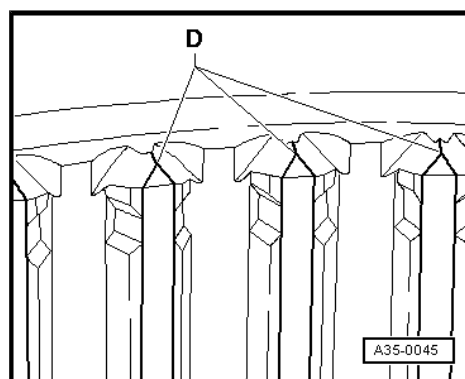
- ◆ Abnormal wear on locking collar:

C - Worn chamfer on internal splines of locking collar.



- ◆ In comparison: intact locking collar:

D - Intact chamfer on internal splines of locking collar.



Clutch mechanism, clutch

- ◆ Before renewing the clutch master cylinder or slave cylinder on the assumption that it is defective, you must first carry out the appropriate function check ⇒ [page 44](#) .
- ◆ When removing gearbox, remove clutch slave cylinder without disconnecting pipes.
- ◆ Do not depress the clutch pedal after removing the clutch slave cylinder if the hydraulic pipe is still connected. Otherwise the piston will be pressed out of the clutch slave cylinder.
- ◆ If the clutch pedal does not return to its initial position after releasing it (clutch pedal in rest position), you must bleed the clutch system (further measures ⇒ [page 44](#)).
- ◆ After installing the slave cylinder, carefully press the clutch pedal. If you feel an unusually strong point of resistance when pressing the clutch pedal, you must not press it down further. The plunger of the slave cylinder is likely to have been guided past the clutch release lever. The slave cylinder would then be destroyed once pedal force exceeds approx. 300 N.
- ◆ Ensure that the pressure plate is kept straight: loosen and tighten bolts in a diagonal sequence and in several gradual stages.
- ◆ If the clutch has burnt out, thoroughly clean the clutch housing, flywheel and parts of the engine facing the gearbox in order to prevent odour.
- ◆ Only blow out dual-mass flywheel with compressed air.

5.2 Contact corrosion

The gearbox housing and clutch housing are made of an aluminium or magnesium alloy.

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

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

In addition, rubber components, plastic components and adhesives are made of non-conductive material.

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

Please note:

- ◆ We recommend using only genuine replacement parts; these have been tested and are compatible with aluminium.



- ◆ We recommend the use of accessories approved by Audi.
- ◆ Damage caused by contact corrosion is not covered by warranty.



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6 Electrical components

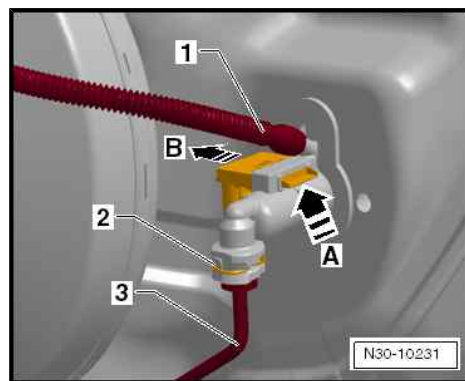
⇒ ["6.1 Overview of fitting locations - electrical components", page 14](#)

6.1 Overview of fitting locations - electrical components

Clutch position sender - G476-

Fitting location: the clutch position sender is attached to the clutch master cylinder.

⇒ ["1.13 Removing and installing clutch position sender G476 ", page 45](#)



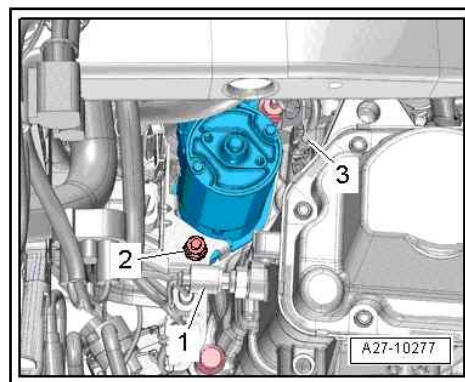
Reversing light switch - F4- / gearbox neutral position sender - G701-

Fitting location: behind starter on gearbox

1 - Reversing light switch - F4-

3 - Gearbox neutral position sender - G701-

⇒ ["7.4 Exploded view - input shaft, output shafts, differential and selector rods", page 103](#)



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30 – Clutch

1 Clutch mechanism

⇒ [“1.1 Exploded view - pedal cluster”, page 15](#)

⇒ [“1.2 Exploded view - clutch hydraulics”, page 19](#)

⇒ [“1.3 Exploded view - clutch release mechanism”, page 21](#)

⇒ [“1.4 Removing and installing clutch pedal”, page 22](#)

⇒ [“1.5 Removing and installing over-centre spring”, page 28](#)

⇒ [“1.6 Removing and installing mounting bracket”, page 30](#)

⇒ [“1.7 Removing and installing bearing bush”, page 33](#)

⇒ [“1.8 Removing and installing clutch master cylinder”,
page 34](#)

⇒ [“1.9 Removing and installing clutch slave cylinder”, page 39](#)

⇒ [“1.10 Removing and installing lines for clutch hydraulics”, page
41](#)

⇒ [“1.11 Bleeding clutch hydraulics”, page 42](#)

⇒ [“1.12 Checking clutch master cylinder and clutch slave cylin-
der”, page 44](#)

⇒ [“1.13 Removing and installing clutch position sender G476 ”,
page 45](#)

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⇒ [“1.14 Servicing clutch release mechanism”, page 46](#)

1.1 Exploded view - pedal cluster

⇒ [“1.1.1 Exploded view - pedal cluster, vehicles up to model year
2014”, page 15](#)

⇒ [“1.1.2 Exploded view - pedal cluster, vehicles from model year
2015 onwards”, page 18](#)

1.1.1 Exploded view - pedal cluster, vehicles up to model year 2014



1 - Clutch pedal

- ☐ Removing and installing with over-centre spring
⇒ [page 22](#)
- ☐ Removing and installing with extension spring
⇒ [page 24](#)

2 - Support

- ☐ Renew only when clutch master cylinder has been removed
- ☐ Removing ⇒ [page 17](#)
- ☐ Pressing on
⇒ [page 17](#)

3 - Clutch master cylinder

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

4 - Gasket

- ☐ Renew
- ☐ Glue onto clutch master cylinder

5 - Clutch position sender - G476-

- ☐ Removing and installing
⇒ [page 45](#)
- ☐ Checking in [Guided Fault Finding](#) ⇒ vehicle diagnostic tester

6 - Pivot pin

- ☐ Cannot be removed without being damaged
- ☐ Always renew

7 - Plenum chamber partition panel

- ☐ With mounting for mounting bracket and master cylinder

8 - Bush

- ☐ For top drilling in mounting bracket
- ☐ Bushes for bottom drilling in mounting bracket are installed in master cylinder

9 - Nut

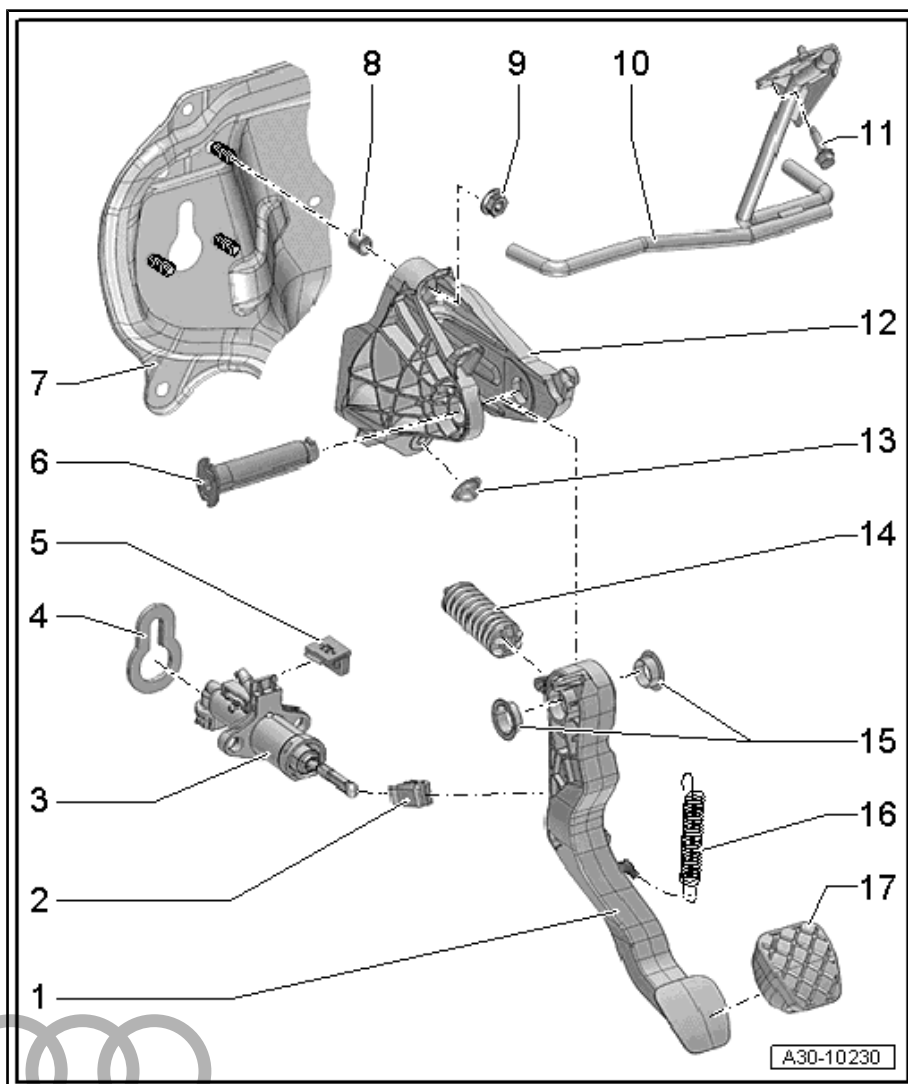
- ☐ 25 Nm
- ☐ 3x
- ☐ Self-locking
- ☐ Renew

10 - Crash bar

- ☐ Secured to steering column
- ☐ Different versions available; for correct version refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel

11 - Bolt

- ☐ A nut is fitted on some versions ⇒ Electronic parts catalogue
- ☐ Tightening torque ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel





12 - Mounting bracket

- ☐ Removing and installing with clutch master cylinder ⇒ [page 34](#)
- ☐ Removing and installing without clutch master cylinder ⇒ [page 30](#)

13 - Stop

- ☐ For clutch pedal

14 - Over-centre spring

- ☐ An extension spring or an over-centre spring is installed depending on the equipment version
- ☐ Select correct components from ⇒ Electronic parts catalogue
- ☐ Removing and installing ⇒ [page 22](#)

15 - Bearing bushes

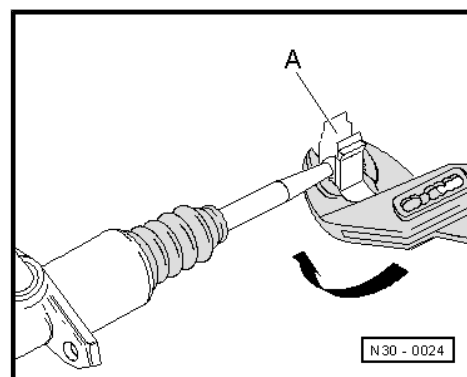
16 - Extension spring with vibration damper

- ☐ An extension spring or an over-centre spring is installed depending on the equipment version
- ☐ Select correct components from ⇒ Electronic parts catalogue
- ☐ Engaged on mounting bracket ⇒ [Item 12 \(page 17\)](#) and at clutch pedal ⇒ [Item 1 \(page 16\)](#)
- ☐ Removing and installing ⇒ [page 18](#)

17 - Cap

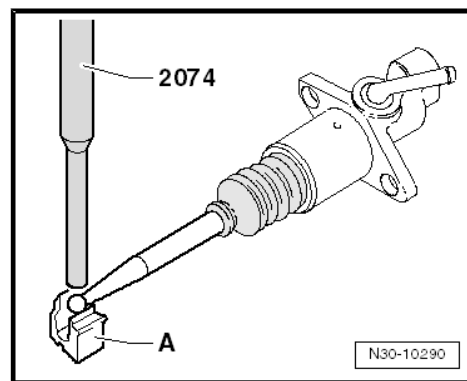
Removing retaining clip

- Lever off retaining clip -A- -arrow-.



Pressing on retaining clip

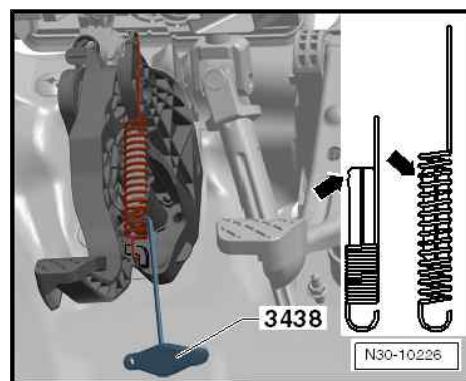
- Carefully press retaining clip -A- onto operating rod for clutch master cylinder using punch - 2074- .





Removing and installing extension spring

- Insert vibration damper so that 2nd spring coil -right arrow- is at recess -left arrow- (in illustration) of vibration damper.



1.1.2 Exploded view - pedal cluster, vehicles from model year 2015 onwards

1 - Bearing bush

2 - Over-centre spring

- ☐ Removing and installing
⇒ [page 28](#)

3 - Pivot pin

- ☐ For clutch pedal
- ☐ Cannot be removed without being damaged

4 - Clutch master cylinder

- ☐ Removing and installing
⇒ [page 36](#)
- ☐ Removing and installing bearing bush
⇒ [page 33](#)

5 - Gasket

- ☐ Renew
- ☐ Glue onto clutch master cylinder

6 - Plenum chamber partition panel

- ☐ With mounting for mounting bracket and master cylinder

7 - Clutch position sender - G476-

- ☐ Removing and installing
⇒ [page 45](#)

8 - Bush

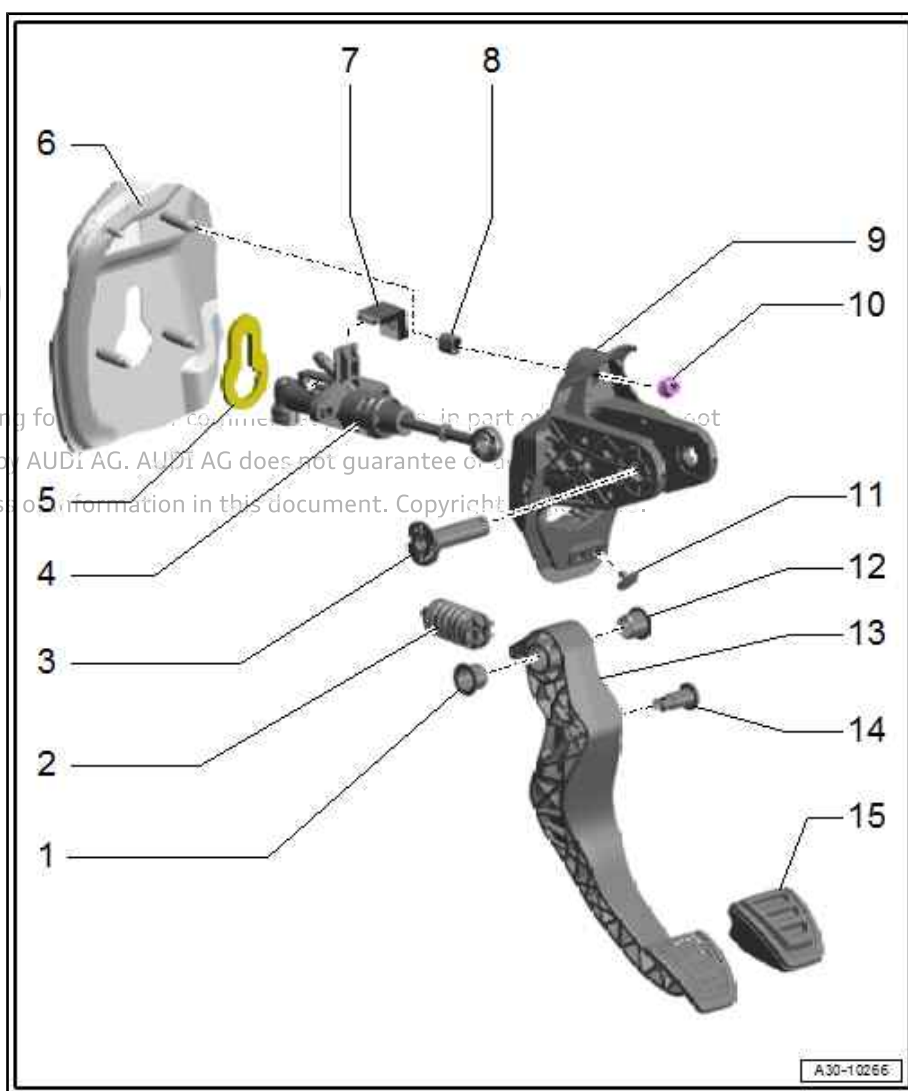
- ☐ For top drilling in mounting bracket
- ☐ Bushes for bottom drilling in mounting bracket are installed in clutch master cylinder

9 - Mounting bracket

- ☐ Removing and installing ⇒ [page 32](#)

10 - Nut

- ☐ Self-locking
- ☐ Renew after removing
- ☐ 3x





- ☐ 25 Nm

11 - Stop

- ☐ For clutch pedal

12 - Bearing bush

13 - Clutch pedal

- ☐ Removing and installing ⇒ [page 27](#)

14 - Locking pin

- ☐ Renew after removing

15 - Cap

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1.2 Exploded view - clutch hydraulics



Note

The installation position on a left-hand drive vehicle is shown as an example.

1 - Bolt

- ☐ 2x
- ☐ 20 Nm

2 - Clutch slave cylinder

- ☐ Removing and installing
⇒ [page 39](#)

3 - Gearbox

4 - Bleeder screw

- ☐ Bleeding clutch system
⇒ [page 42](#)
- ☐ 6 Nm

5 - Dust cap

6 - Retaining clip

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

7 - Brake fluid reservoir

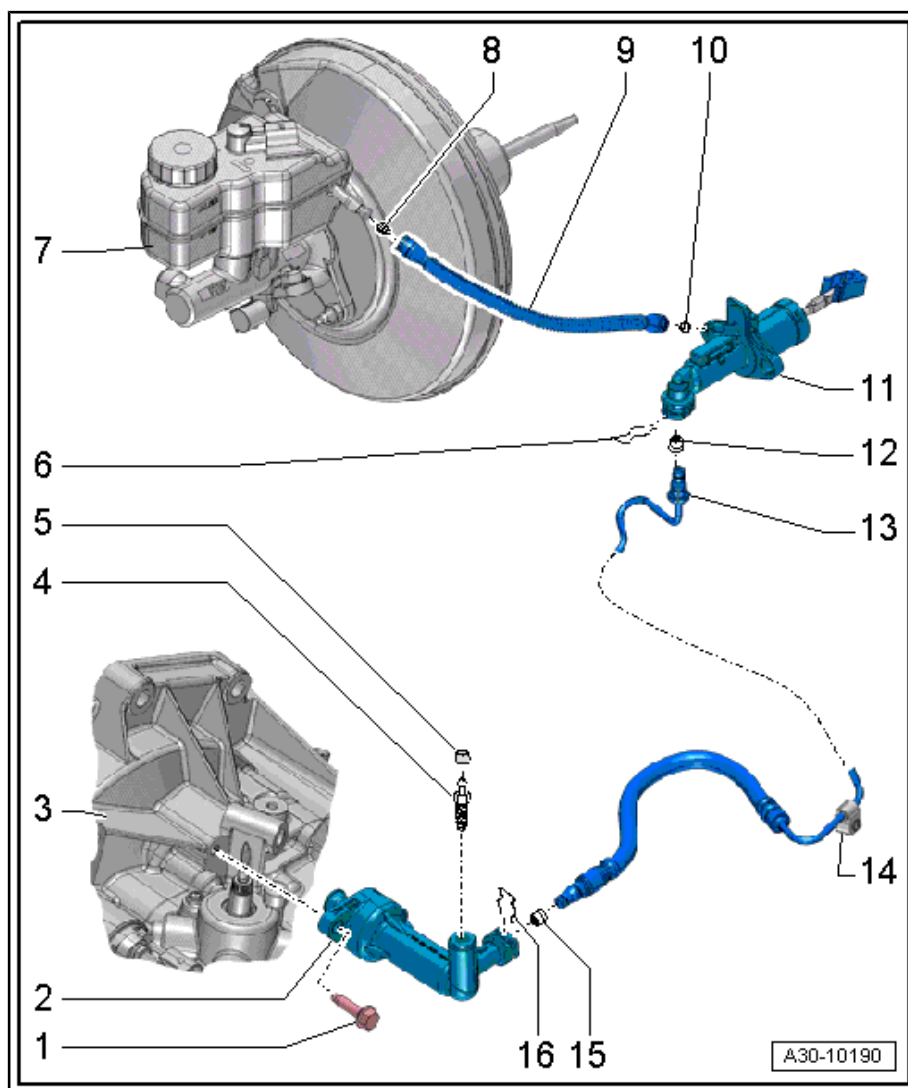
8 - Seal

- ☐ Seals must be fitted in supply hose
- ☐ Not available separately
- ☐ Renew supply hose -item 9- if damaged

9 - Supply hose

10 - Seal

- ☐ Seals must be fitted in supply hose
- ☐ Not available separately
- ☐ Renew supply hose -item 9- if damaged





11 - Clutch master cylinder

- ❑ Different versions available; for correct version refer to ⇒ Electronic parts catalogue
- ❑ Removing and installing ⇒ [page 34](#)

12 - Seal or O-ring

- ❑ Push onto pipe connection
- ❑ Lubricate with brake fluid before installing
- ❑ Renew seal or O-ring if damaged
- ❑ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 20](#)
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

13 - Pipe/hose assembly

- ❑ Removing and installing ⇒ [page 41](#)
- ❑ Disconnecting from clutch master cylinder and clutch slave cylinder ⇒ [page 21](#)

14 - Bracket

- ❑ For pipe/hose assembly

15 - Seal or O-ring

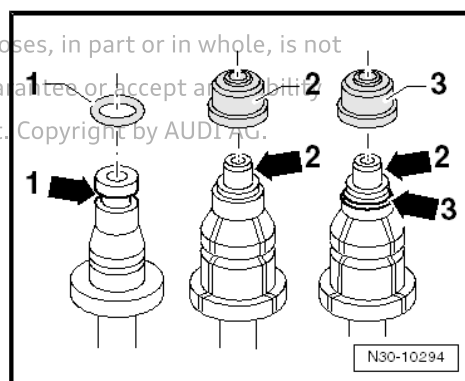
- ❑ Push onto pipe connection
- ❑ Lubricate with brake fluid before installing
- ❑ Renew seal or O-ring if damaged
- ❑ Whether a seal or an O-ring is used depends on the type of connection ⇒ [page 20](#)
- ❑ For correct version, refer to ⇒ Electronic parts catalogue

16 - Retaining clip

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

O-rings or seals for pipe/hose assemblies

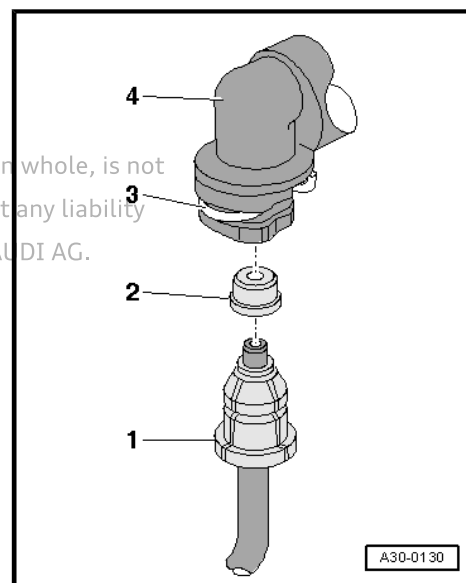
Item	Type of connection
-1-	Connection with annular groove -arrow 1-
-2-	Connection with shoulder -arrow 2-
-3-	Connection with shoulder -arrow 2- and annular groove -arrow 3-
• Connection with annular groove -arrow 1- and -arrow 3-: seal / O-ring must be inserted in groove.	





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

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



Note

Renew damaged seals or O-rings -2-.

- Press pipe/hose assembly -1- into connection on clutch slave cylinder or master cylinder -4- so that retaining clip -3- snaps into place.
- Pull on pipe to check that it is secure.

1.3 Exploded view - clutch release mechanism

1 - Release bearing

- ☐ Remove and install together with release lever [⇒ Item 3 \(page 21\)](#) and guide sleeve [⇒ Item 5 \(page 21\)](#) [⇒ page 46](#)
- ☐ Do not wash out bearing; wipe clean only
- ☐ Renew bearing if noisy
- ☐ Lubricate surfaces which contact release lever with grease, e.g. - G 000 100-

2 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

3 - Clutch release lever

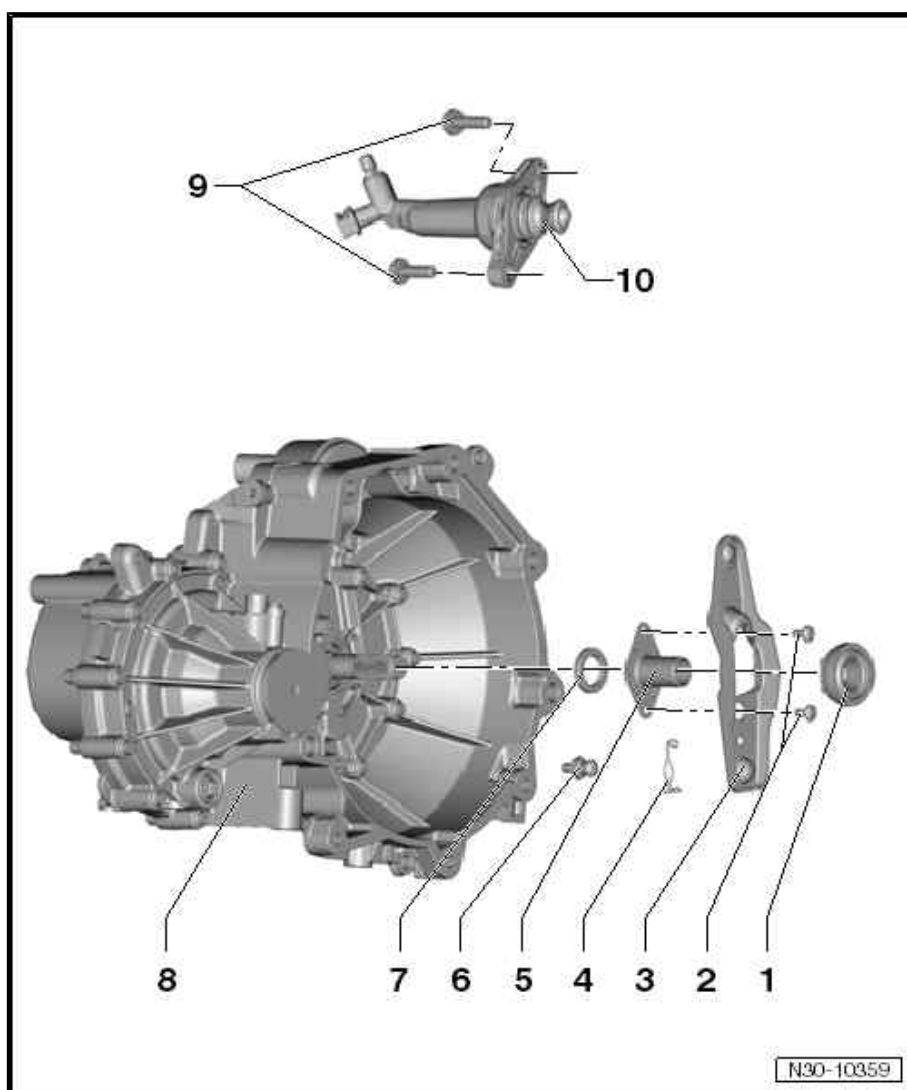
- ☐ Remove and install together with release bearing -item 1- and guide sleeve -item 5- [⇒ page 46](#)
- ☐ Remove existing grease
- ☐ Lubricate surface which contacts ball-head pin with MoS₂ grease

4 - Retaining spring

- ☐ Secure to clutch release lever

5 - Guide sleeve

- ☐ Remove and install together with release bearing -item 1- and release lever [⇒ Item 3 \(page 21\)](#) [⇒ page 46](#)





6 - Ball-head pin

- ☐ 20 Nm
- ☐ Remove existing grease from contact surface of release lever
- ☐ Lubricate with grease -G 000 100-

7 - Oil seal

- ☐ For input shaft
- ☐ Renewing ⇒ [page 51](#)

8 - Gearbox housing

9 - Bolts

- ☐ Tightening torque ⇒ [Item 1 \(page 19\)](#)

10 - Clutch slave cylinder

- ☐ Removing and installing ⇒ [page 39](#)
- ☐ Lubricate end of plunger with MoS₂ grease

1.4 Removing and installing clutch pedal

⇒ [“1.4.1 Removing and installing clutch pedal with over-centre spring - vehicles up to model year 2014”, page 22](#)

⇒ [“1.4.2 Removing and installing clutch pedal with extension spring - vehicles up to model year 2014”, page 24](#)

⇒ [“1.4.3 Removing and installing clutch pedal - vehicles from model year 2015 onwards”, page 27](#)

1.4.1 Removing and installing clutch pedal with over-centre spring - vehicles up to model year 2014

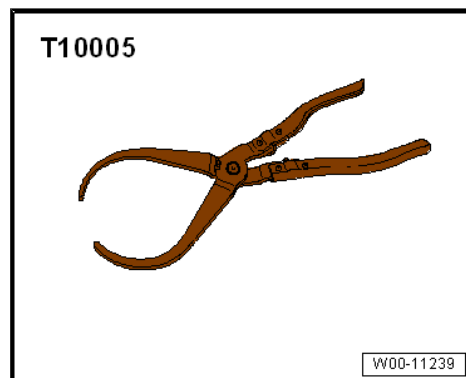


Note

Pivot pin for clutch pedal cannot be removed without being damaged.

Special tools and workshop equipment required

- ◆ Pliers - T10005-



Removing



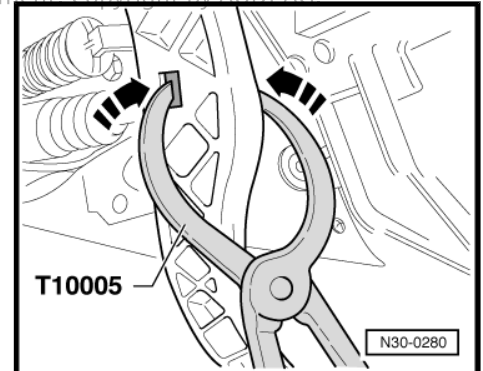
Note

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Pivot pin for clutch pedal cannot be removed without being damaged.



- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- To release operating rod for clutch master cylinder, pull clutch pedal slightly towards passenger compartment.
- Press both sides of retaining clip inwards using pliers - T10005- -arrows-.

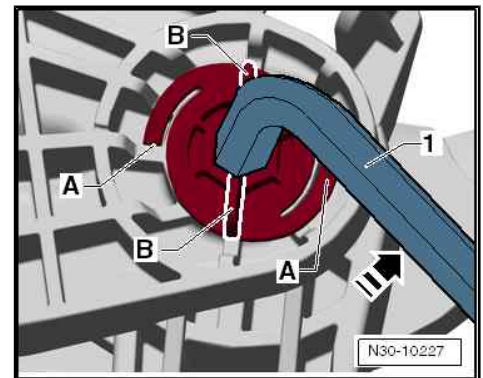


- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal anti-clockwise -arrow- until ears -B- are horizontal.



Note

- ◆ Retainers -A- will be destroyed when you do this.
- ◆ Renew pivot pin.
- Move clutch pedal back and forth to pull out pivot pin.
- Remove over-centre spring and (if necessary) clutch pedal.



Installing

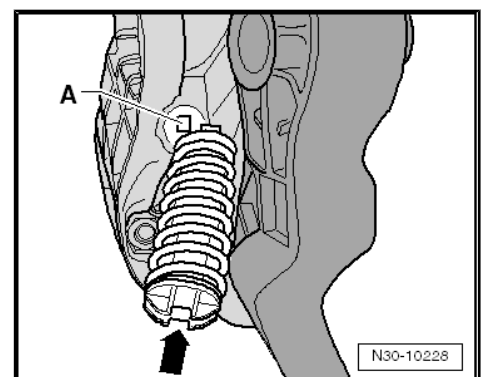
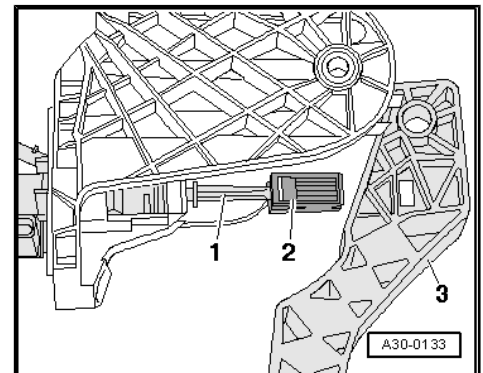
Installation is carried out in reverse sequence; note the following:



Note

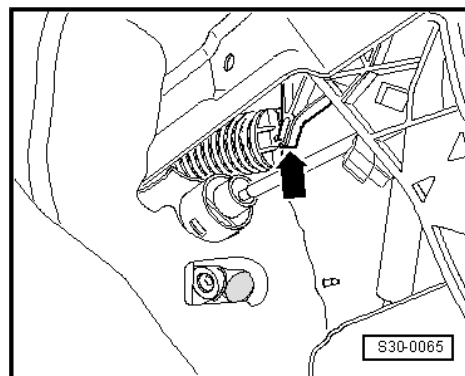
Renew pivot pin.

- Bring clutch pedal into position at clutch master cylinder.
- The retaining clip -2- must be fitted on the master cylinder operating rod -1-.
- Press on clutch pedal so that retaining clip snaps into place in mounting on clutch pedal -3-.
- Working sideways from below, insert over-centre spring into mounting bracket at point -A- beside operating rod of clutch master cylinder and beside clutch pedal.
- The bearing recess -arrow- for the actuator on the clutch pedal must be vertical.

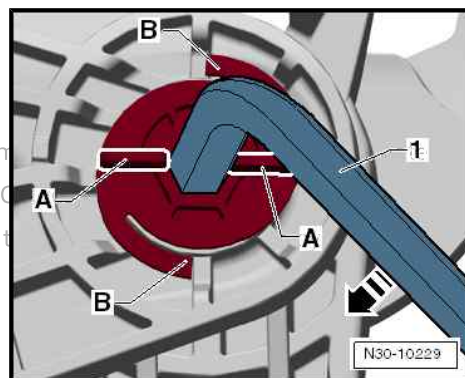




- Attach over-centre spring to actuator on clutch pedal -arrow-.



- Press clutch pedal slightly and slide in new pivot pin.
- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal clockwise -arrow- until ears -A- are vertical.
- Retainers -B- should engage audibly.
- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



Tightening torques

- ♦ ⇒ [“1.1 Exploded view - pedal cluster”, page 15](#)

1.4.2 Removing and installing clutch pedal with extension spring - vehicles up to model year 2014



Note

Pivot pin for clutch pedal cannot be removed without being damaged.

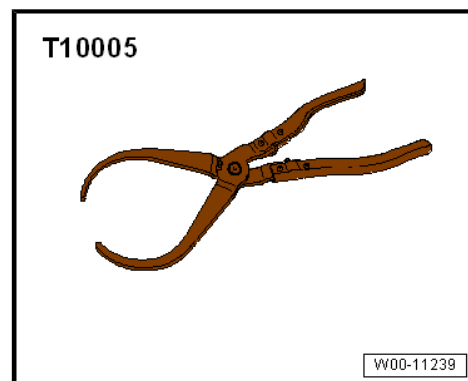
Special tools and workshop equipment required

- ♦ Hook - 3438-





◆ Pliers - T10005-



Removing



Note

Pivot pin for clutch pedal cannot be removed without being damaged.

- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side)

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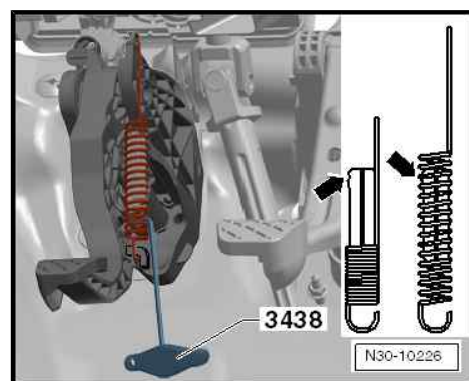
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .

- Disengage extension spring using hook - 3438- .

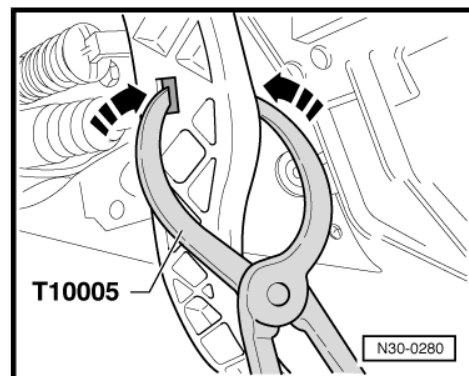


Note

Right side of illustration -arrows- is only relevant for installation.



- To release operating rod for clutch master cylinder, pull clutch pedal slightly towards passenger compartment.
- Press both sides of retaining clip inwards using pliers - T10005- -arrows-.





- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal anti-clockwise -arrow- until ears -B- are horizontal.



Note

- ◆ *Retainers -A- will be destroyed when you do this.*
- ◆ *Renew pivot pin.*
- Move clutch pedal back and forth to pull out pivot pin.
- Remove clutch pedal.



Installing

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

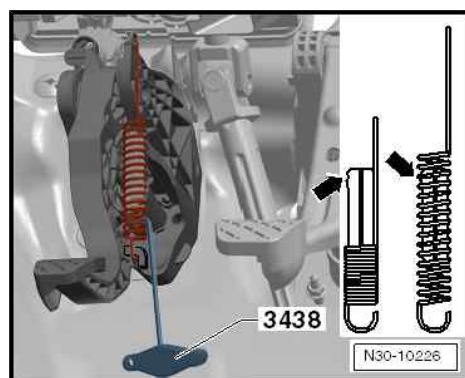
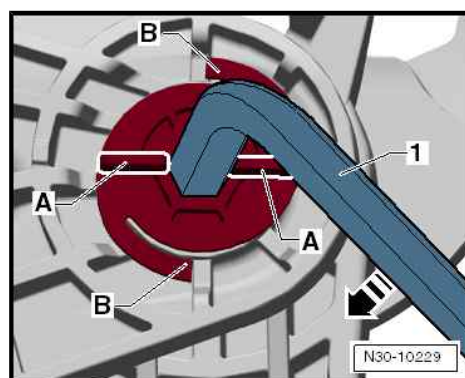
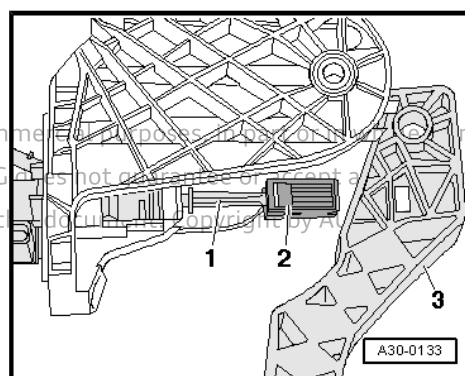
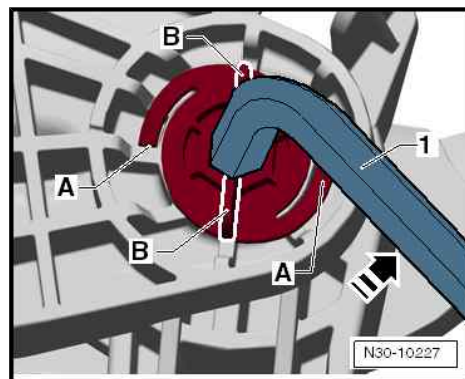


Note

- ◆ *Renew pivot pin.*
- ◆ *Grease mountings for extension spring.*
- Bring clutch pedal into position at clutch master cylinder.
- The retaining clip -2- must be fitted on the master cylinder operating rod -1-.
- Insert new pivot pin in mounting bracket and clutch pedal.
- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal clockwise -arrow- until ears -A- are vertical.
- Retainers -B- should engage audibly.
- Engage clutch pedal at mounting on master cylinder operating rod.
- Hook in extension spring.
- Insert vibration damper so that 2nd spring coil -right arrow- is at recess -left arrow- (in illustration) of vibration damper.
- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

Tightening torques

- ◆ ⇒ ["1.1 Exploded view - pedal cluster", page 15](#)





1.4.3 Removing and installing clutch pedal - vehicles from model year 2015 onwards

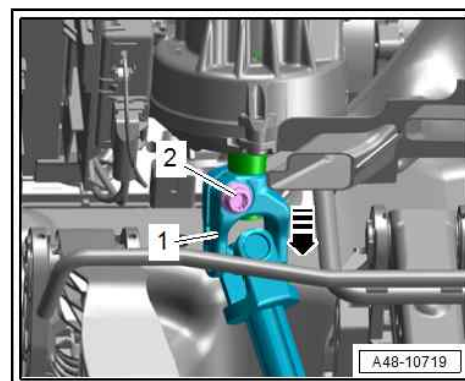


Note

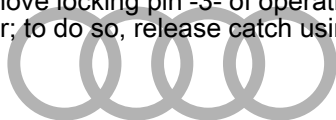
Pivot pin for clutch pedal cannot be removed without being damaged.

Removing

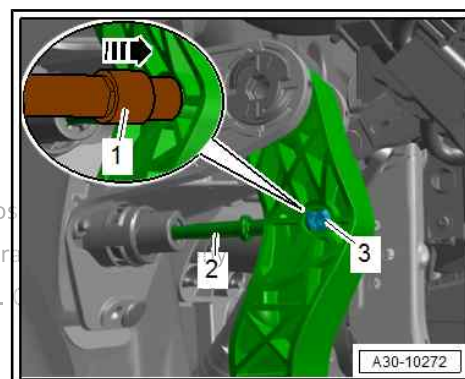
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .



- Remove locking pin -3- of operating rod for clutch master cylinder; to do so, release catch using an 8 mm socket -item 1-.



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- Using 8 mm Allen key, turn pivot pin -3- for clutch pedal anti-clockwise until arrows on mounting bracket -2- and pivot pin are in line with each other, as shown in illustration.



Note

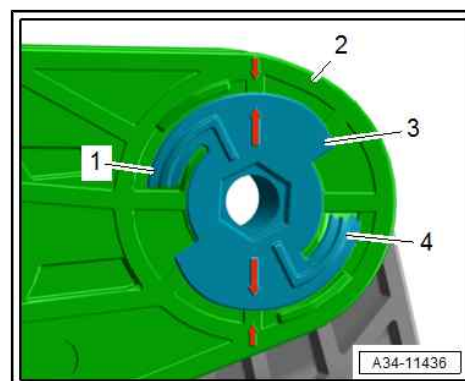
This will damage the retainers -1, 4- irreparably.

- Move clutch pedal back and forth to pull out pivot pin.
- Remove clutch pedal.

Installing

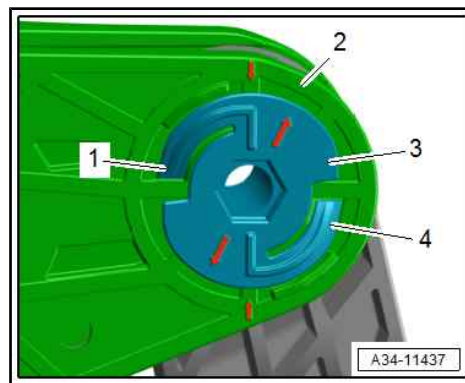
Installation is carried out in reverse order; note the following:

- Renew pivot pin and locking pin.





- Move clutch pedal into installation position and slide in new pivot pin -3-.
- Using 8 mm Allen key, turn pivot pin for clutch pedal clockwise until retainers -1, 4- engage audibly.
- Arrows on mounting bracket -1- must be offset, as shown in illustration.

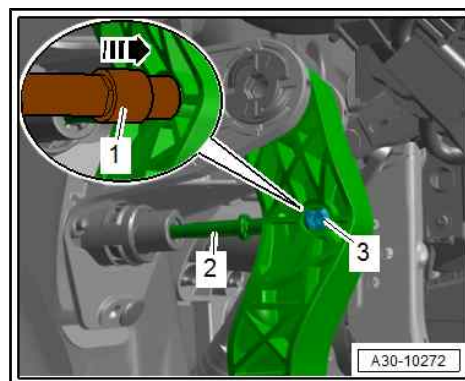


- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



Note

Disregard -item 1- and -arrow-.



- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

1.5 Removing and installing over-centre spring

⇒ [“1.5.1 Removing and installing over-centre spring - vehicles up to model year 2014”, page 28](#)

⇒ [“1.5.2 Removing and installing over-centre spring - vehicles from model year 2015 onwards”, page 28](#)

1.5.1 Removing and installing over-centre spring - vehicles up to model year 2014



Note



If the over-centre spring is being removed on its own, the clutch pedal does not have to be separated from the clutch master cylinder

⇒ [“1.4.1 Removing and installing clutch pedal with over-centre spring - vehicles up to model year 2014”, page 22](#).

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1.5.2 Removing and installing over-centre spring - vehicles from model year 2015 onwards

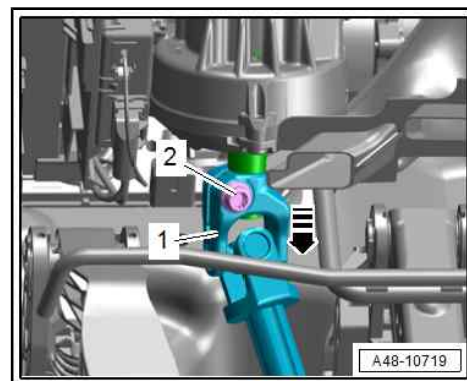
Removing

- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim

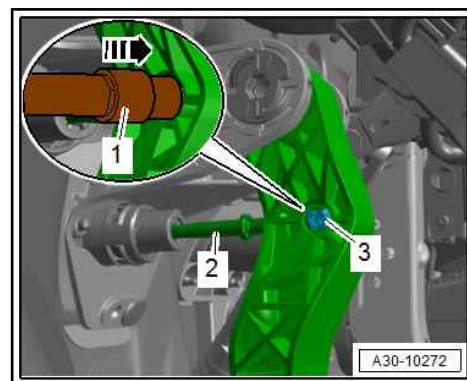


panels; Removing and installing dash panel cover (driver side) .

- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .



- Remove locking pin -3- of operating rod for clutch master cylinder; to do so, release catch using an 8 mm socket -item 1-.
- Swivel clutch pedal towards rear and remove over-centre spring.



Installing

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

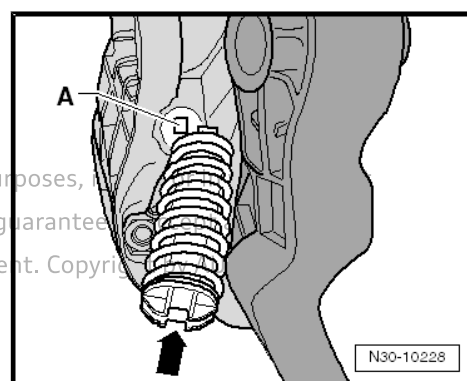


Note

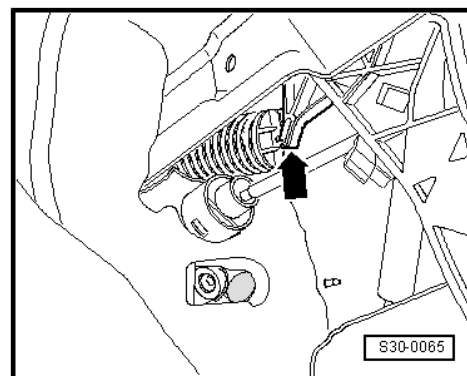
Renew locking pin.

- Working sideways from below, insert over-centre spring into mounting bracket at point -A- beside operating rod of clutch master cylinder and beside clutch pedal.
- Bearing recess -arrow- for actuator lug of clutch pedal must be vertical.

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- Attach over-centre spring to mounting lug on clutch pedal -arrow-.





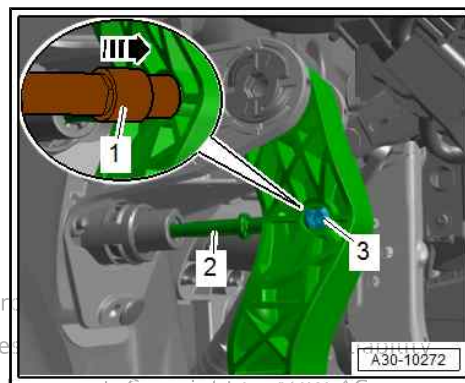
- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



Note



Disregard -item 1- and -arrow-.



- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .

1.6 Removing and installing mounting bracket

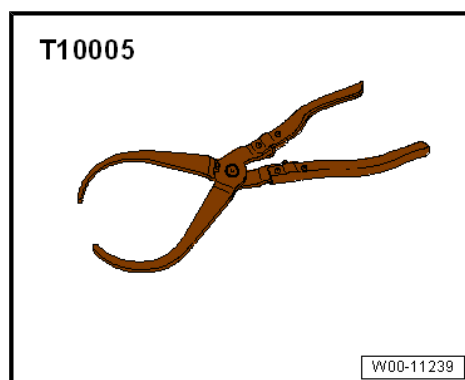
⇒ ["1.6.1 Removing and installing mounting bracket - vehicles up to model year 2014", page 30](#)

⇒ ["1.6.2 Removing and installing mounting bracket - vehicles from model year 2015 onwards", page 32](#)

1.6.1 Removing and installing mounting bracket - vehicles up to model year 2014

Special tools and workshop equipment required

- ◆ Pliers - T10005-

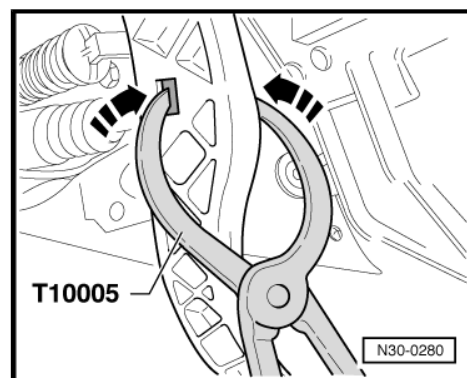


Removing

- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .



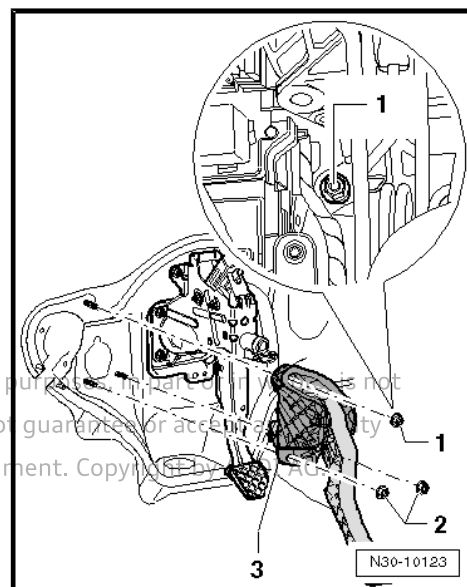
- To release operating rod for clutch master cylinder, pull clutch pedal slightly towards passenger compartment.
- Press both sides of retaining clip inwards using pliers - T10005- -arrows-.



- Unscrew nuts -1 and 2-.
- Carefully remove mounting bracket -3- (to do this, get a second mechanic to counterhold clutch master cylinder until it is disengaged from mounting bracket).



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Installing

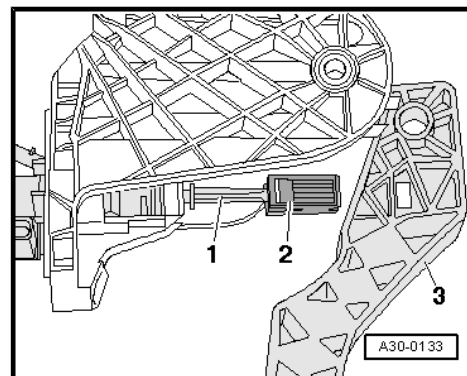
Installation is carried out in reverse sequence; note the following:



Note

Renew self-locking nuts.

- Bring clutch pedal into position at clutch master cylinder.
- The retaining clip -2- must be fitted on the master cylinder operating rod -1-.
- Press on clutch pedal so that retaining clip snaps into place in mounting on clutch pedal -3-.
- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



Tightening torques

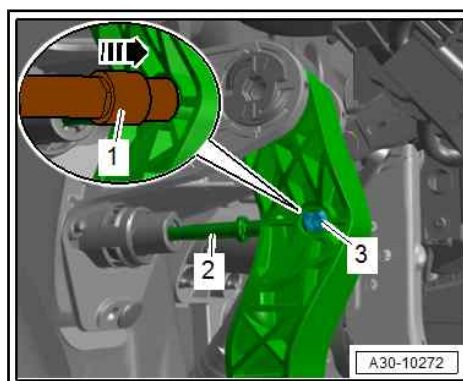
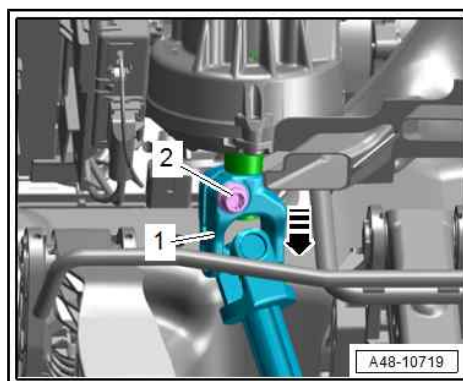
- ◆ ⇒ ["1.1 Exploded view - pedal cluster", page 15](#)



1.6.2 Removing and installing mounting bracket - vehicles from model year 2015 onwards

Removing

- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Remove locking pin -3- of operating rod for clutch master cylinder; to do so, release catch using an 8 mm socket -item 1-.



- Unscrew nuts -1 and 2-.
- Carefully remove mounting bracket -3- (to do this, get a second mechanic to counterhold clutch master cylinder until it is disengaged from mounting bracket).

Installing

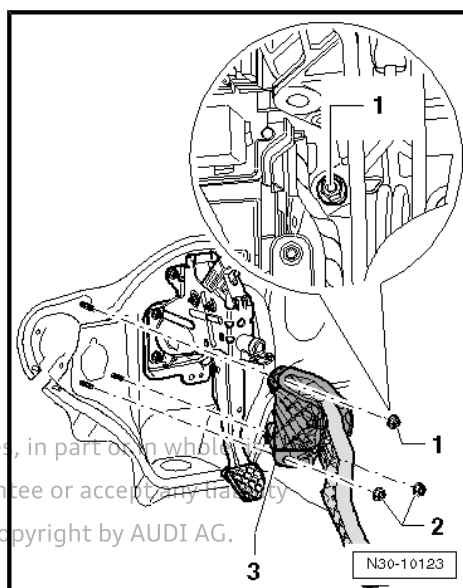
Installation is carried out in reverse order; note the following:



Note

Renew self-locking nuts and locking pin.

- Bring mounting bracket into position at clutch master cylinder and secure it.





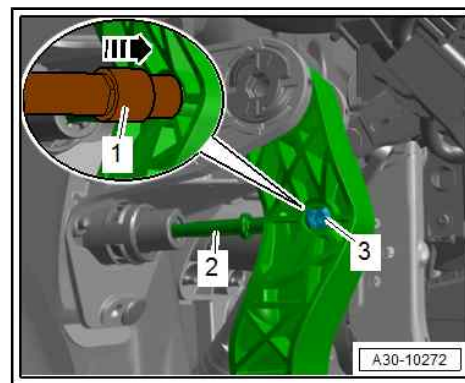
- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



Note

Disregard -item 1- and -arrow-.

- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



Tightening torques

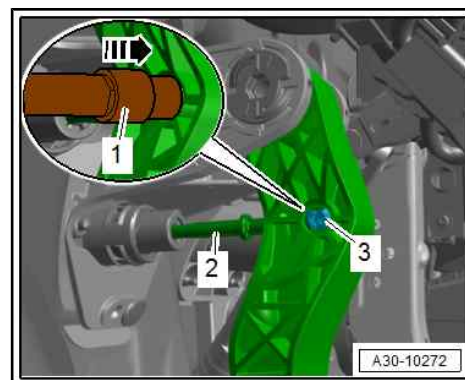
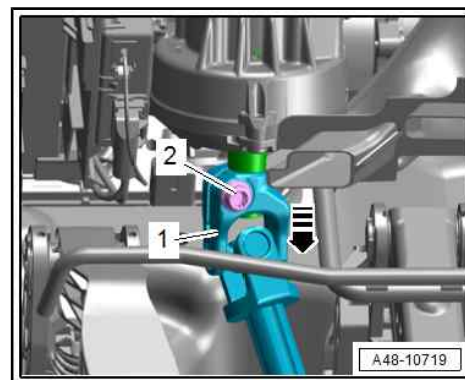
- ♦ ⇒ **“1.1.2 Exploded view - pedal cluster, vehicles from model year 2015 onwards”, page 18**

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1.7 Removing and installing bearing bush

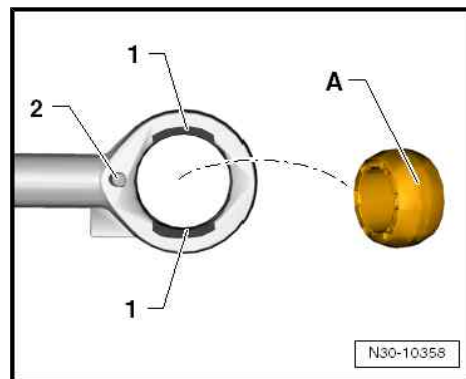
Removing

- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Remove locking pin -3- of operating rod for clutch master cylinder; to do so, release catch using an 8 mm socket -item 1-.
- Swivel clutch pedal towards rear.



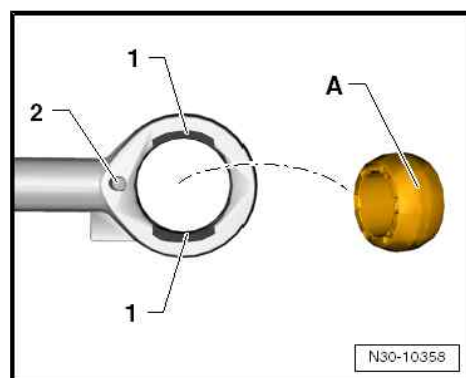


- Turn plunger of clutch master cylinder so that recesses -1- and pin -2- are visible.
- Recesses -1- and pin -2- point in the same direction.
- Remove bearing bush -A- from recesses -1-.



Installing

- Turn plunger of clutch master cylinder so that recesses -1- and pin -2- are visible.
- Recesses -1- and pin -2- point in the same direction.
- Insert bearing bush -A- into recesses -1- and pivot into position.
- Install over-centre spring ⇒ [page 28](#) .



1.8 Removing and installing clutch master cylinder

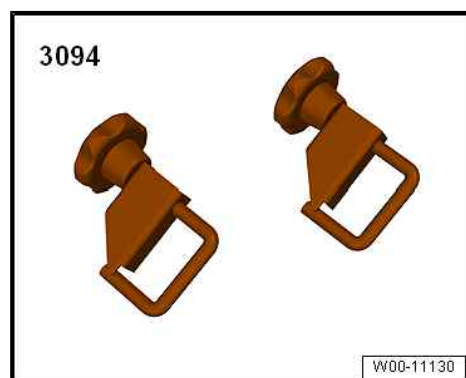
⇒ ["1.8.1 Removing and installing clutch master cylinder - vehicles up to model year 2014"](#), page 34

⇒ ["1.8.2 Removing and installing clutch master cylinder - vehicles from model year 2015 onwards"](#), page 36

1.8.1 Removing and installing clutch master cylinder - vehicles up to model year 2014

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-



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◆ Sealing tool - T10249-



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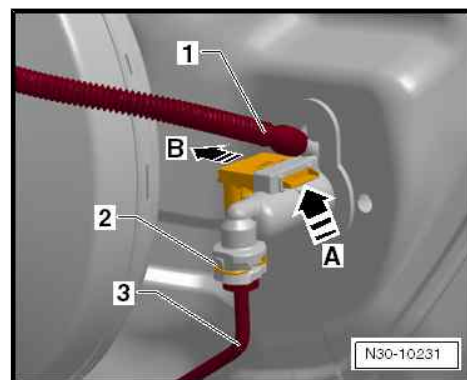
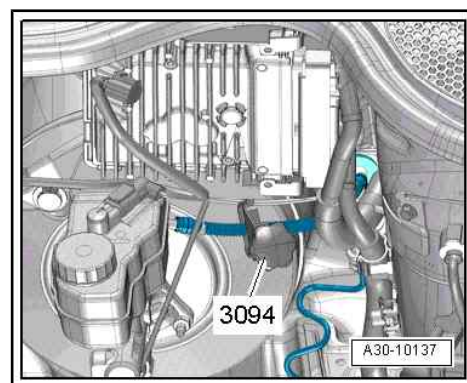
Removing

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



Note

- ◆ *Make sure brake fluid does not come into contact with longitudinal member or gearbox when performing the following operations. If it does, clean affected area thoroughly.*
- ◆ *Place a cloth underneath to catch escaping brake fluid.*
- Using hose clamp - 3094- , clamp off supply hose to clutch master cylinder.
- Disconnect supply hose -1- from clutch master cylinder and plug hose using sealing tool - T10249/1- .
- Release retaining clip -2- with a screwdriver and disconnect pipe/hose assembly -3- from clutch master cylinder.
- Unclip clutch position sender - G476- -arrows A, B- and place it to one side with electrical connector attached.
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .





Note

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

- Unscrew nuts -1 and 2-.
- Remove mounting bracket -3- with clutch master cylinder.
- Detach clutch master cylinder from mounting bracket.

Installing

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



Note

Renew self-locking nuts.

- Push pipe/hose assembly onto connection on clutch master cylinder so that retaining clip snaps into place.
- Pull on pipe to check that it is secure.
- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Bleed clutch system ⇒ [page 42](#) .
- Install clutch position sender - G476- ⇒ [page 45](#) .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

Tightening torques

- ♦ ⇒ [“1.1 Exploded view - pedal cluster”, page 15](#)

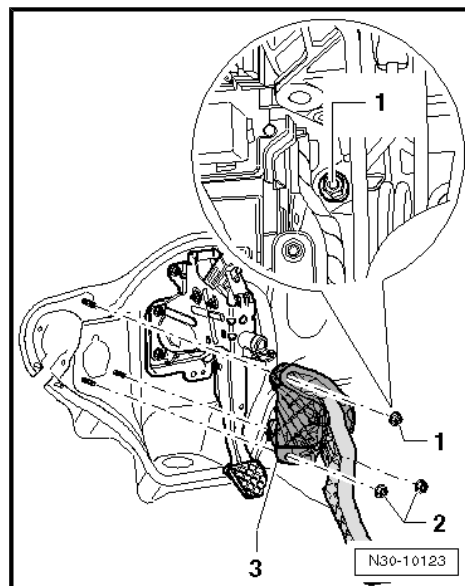
1.8.2 Removing and installing clutch master cylinder - vehicles from model year 2015 onwards

Special tools and workshop equipment required

- ♦ Hose clamps up to 25 mm - 3094-

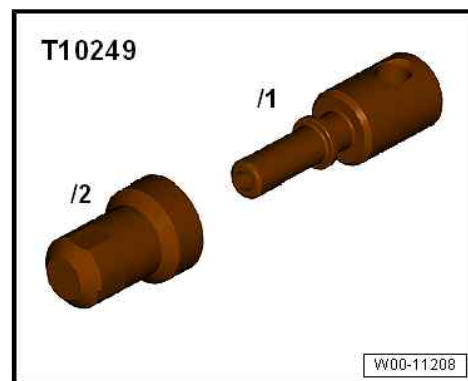


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- ◆ Sealing tool - T10249-



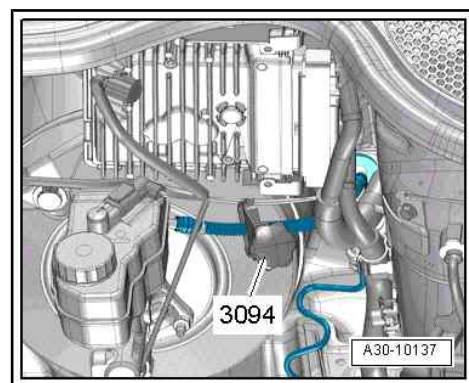
Removing

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Remove engine control unit - J623- from bracket and tie to one side ⇒ Rep. gr. 23 ; Engine control unit; Removing and installing engine control unit - J623- .



Note

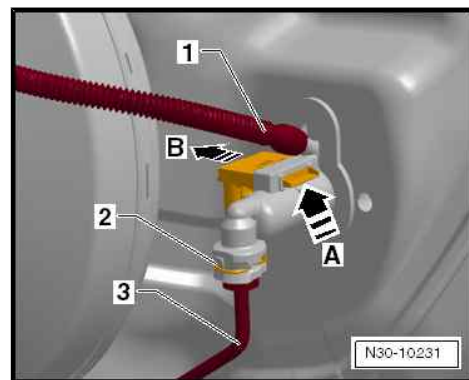
- ◆ *Make sure brake fluid does not come into contact with longitudinal member or gearbox when performing the following operations. If it does, clean affected area thoroughly.*
- ◆ *Place a cloth underneath to catch escaping brake fluid.*
- Using hose clamp -3094- , clamp off supply hose to clutch master cylinder.



Note

- ◆ *Clamping off the supply hose with the hose clamp - 3094- will cause a permanent deformation.*
- ◆ *However, this does not damage the supply hose.*
- ◆ *After removing the hose clamp -3094- , the supply hose must be returned to its original shape.*

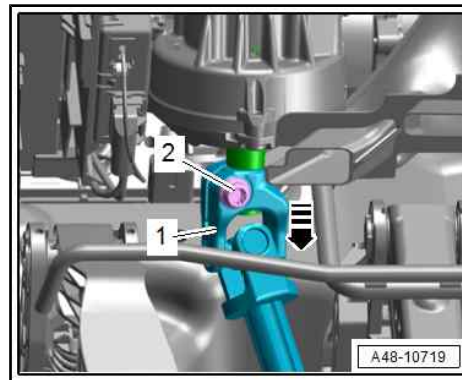
- Disconnect supply hose -1- from clutch master cylinder and plug hose using sealing tool - T10249/1- .
- Release retaining clip -2- with a screwdriver and disconnect pipe/hose assembly -3- from clutch master cylinder.
- Unclip clutch position sender - G476- -arrows A, B- and place it to one side with electrical connector attached.
- Remove dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .



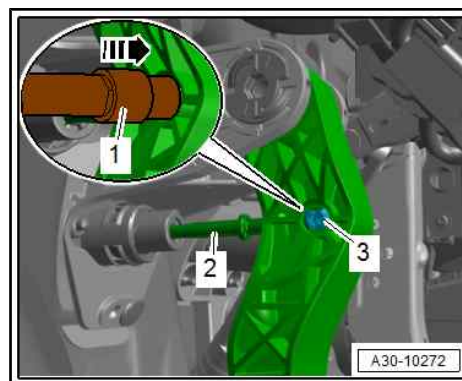
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- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .



- Remove locking pin -3- of operating rod for clutch master cylinder; to do so, release catch using an 8 mm socket -item 1-.



Note

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

- Unscrew nuts -1 and 2-.
- Remove mounting bracket -3- with clutch master cylinder.
- Detach clutch master cylinder from mounting bracket.

Installing

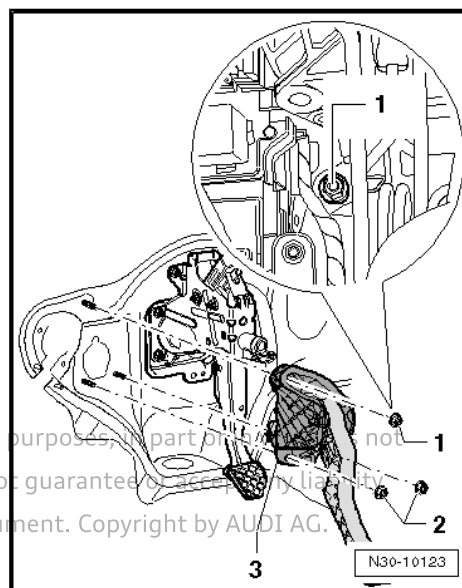
Installation is carried out in reverse order; note the following:



Note

Renew self-locking nuts.

- Clip clutch master cylinder into mounting bracket.
- Bring mounting bracket -3- and clutch master cylinder into installation position and tighten nuts -1, 2-.





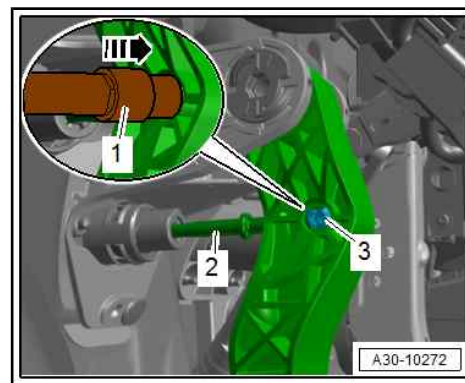
- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



Note

Disregard -item 1- and -arrow-.

- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- Install dash panel cover (driver side) ⇒ General body repairs, interior; Rep. gr. 68 ; Storage compartments/covers/trim panels; Removing and installing dash panel cover (driver side) .
- Connect pipe/hose assembly ⇒ [page 21](#) .
- Bleed clutch system ⇒ [page 42](#) .
- Install engine control unit - J623- ⇒ Rep. gr. 23 ; Engine control unit; Removing and installing engine control unit - J623- .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



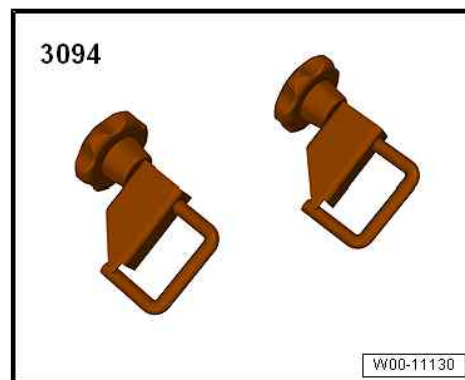
Tightening torques

- ◆ ⇒ [“1.1.2 Exploded view - pedal cluster, vehicles from model year 2015 onwards”, page 18](#)

1.9 Removing and installing clutch slave cylinder

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-



Removing



Note

- ◆ *If you suspect a defective clutch slave cylinder, perform function test prior to renewing ⇒ [page 44](#) .*
- ◆ *If the slave cylinder is removed from gearbox with the pipe/hose assembly still attached, make sure you do not press the clutch pedal. Otherwise, the piston will be pressed out of the slave cylinder and will be damaged irreparably.*

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Vehicles with 1.0 ltr. engine:

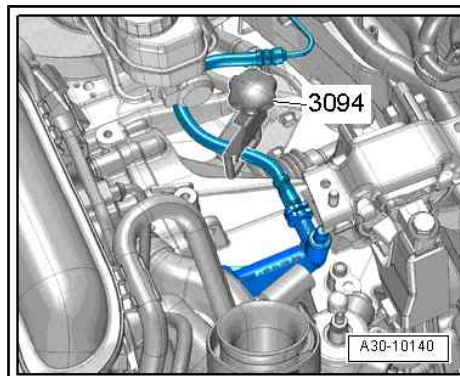
- Remove battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

Vehicles with 1.2 ltr. engine:

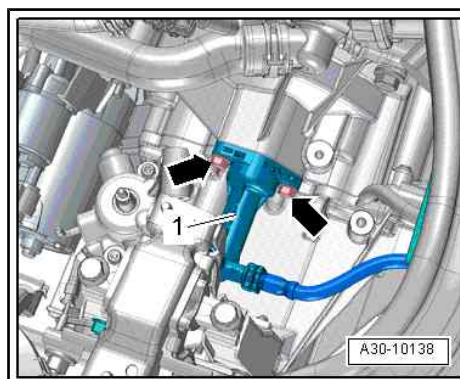
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

All vehicles (continued):

- Clamp off hose on pipe/hose assembly between clutch master cylinder and slave cylinder using hose clamp - 3094- .



- Remove bolts -arrows- and detach clutch slave cylinder -1-.



Note

- ♦ *Make sure that no brake fluid escapes onto the gearbox. If it does, clean affected area thoroughly.*
- ♦ *Place a cloth underneath to catch escaping brake fluid.*
- Release retaining clip -3- with a screwdriver and disconnect pipe/hose assembly -1- from connection -4-.



Note

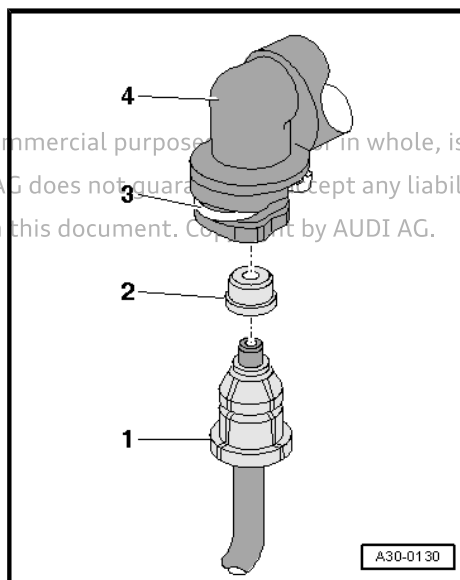
Disregard -item 2-.



Caution

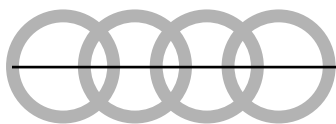
Risk of brake fluid escaping.

- ♦ *Do not operate clutch pedal with slave cylinder removed.*



Installing

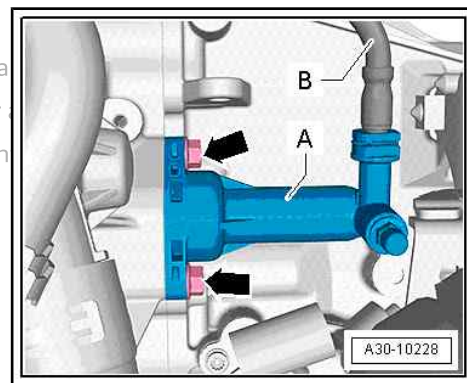
Installation is carried out in reverse sequence; note the following:



- Connect pipe/hose assembly -B- to clutch slave cylinder -A-.
- Lubricate end of plunger of clutch slave cylinder -A- with MoS₂ grease.
- Install clutch slave cylinder and tighten bolts -arrows- to specified torque.
- Bleed clutch system ⇒ [page 42](#) .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

Tightening torques

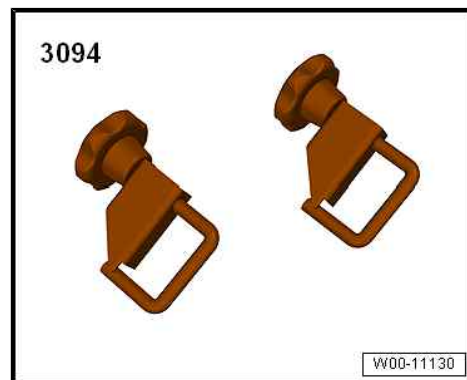
- ◆ ⇒ ["1.2 Exploded view - clutch hydraulics", page 19](#)



1.10 Removing and installing lines for clutch hydraulics

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-



Removing

Vehicles with 1.2 ltr. engine:

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

Vehicles from model year 2015 onwards:

- Remove engine control unit - J623- from bracket and tie to one side ⇒ Rep. gr. 24 ; Engine control unit; Removing and installing engine control unit - J623- .

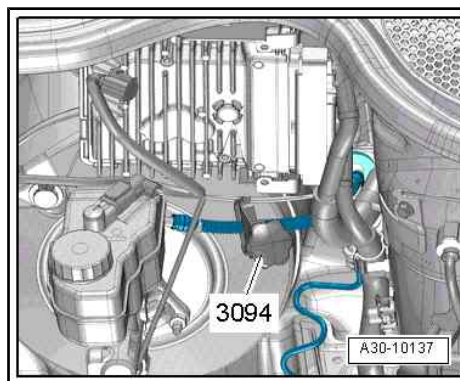


All vehicles (continued):



Note

- ◆ *Make sure brake fluid does not come into contact with longitudinal member or gearbox when performing the following operations. If it does, clean affected area thoroughly.*
- ◆ *Place a cloth underneath to catch escaping brake fluid.*
- Using hose clamp -3094-, clamp off supply hose to clutch master cylinder.



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Note

- ◆ *Clamping off the supply hose with the hose clamp - 3094- will cause a permanent deformation.*
- ◆ *However, this does not damage the supply hose.*
- ◆ *After removing the hose clamp -3094-, the supply hose must be returned to its original shape.*
- Release retaining clip -3- with a screwdriver and disconnect pipe/hose assembly -1- from connection -4-.
- Detach pipe/hose assembly from bracket and remove.



Caution

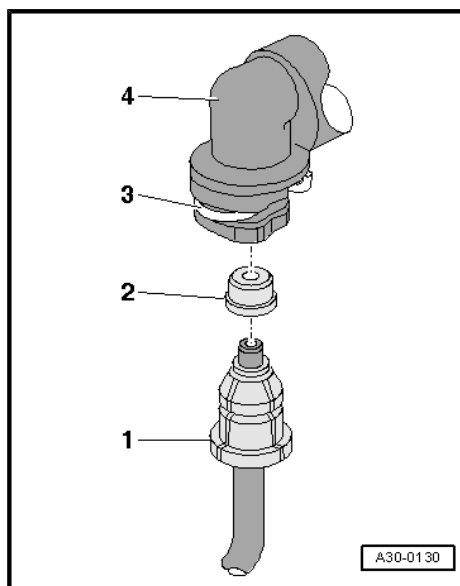
Risk of brake fluid escaping.

- ◆ *Do not operate clutch pedal with slave cylinder removed.*

Installing

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

- Connect pipe/hose assembly to clutch master cylinder and clutch slave cylinder ⇒ [page 21](#) .
- Bleed clutch system ⇒ [page 42](#) .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



1.11 Bleeding clutch hydraulics



Note

- ◆ *The clutch system must be bled after performing work on the hydraulic clutch mechanism.*
- ◆ *In the following steps make sure that no brake fluid escapes onto the longitudinal member or onto the gearbox below.*
- ◆ *Before bleeding clutch system, top up brake fluid reservoir to "max." marking with brake fluid.*
- ◆ *The brake fluid in the clutch system should be changed at the same intervals as the brake fluid in the brake system ⇒ Maintenance ; Booklet 819 ; Description of work; Brake fluid: changing (every 2 years) .*



Special tools and workshop equipment required

- ◆ Brake filling and bleeding equipment - VAS 5234-



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- ◆ Brake fluid specification ⇒ Electronic parts catalogue .

Procedure

- Pull clutch pedal back to rest position.

Vehicles with 1.2 ltr. engine:

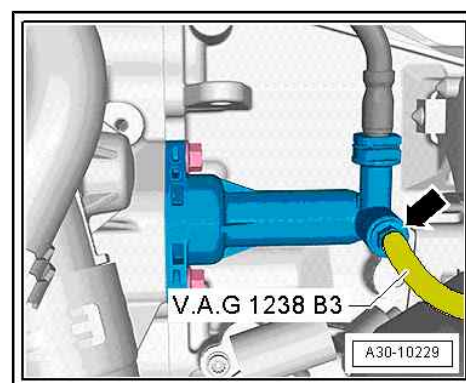
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

All vehicles (continued):

- Connect up brake filling and bleeding equipment - VAS 5234- .
- Remove protective cap and connect 670 mm bleeder hose - V.A.G 1238 B3- to bleeder connection -arrow-.
- Connect bleeder hose to collector bottle of brake bleeding unit.
- Switch on brake bleeding unit.

- ◆ Operating pressure 2.0 bar

- Open bleeder screw.
- Bleed off about 100 cm³ of brake fluid.
- Close bleeder screw.
- Rapidly pump clutch pedal through full range of travel 10 to 15 times.
- Open bleeder screw once again.
- Bleed off a further 50 cm³ of brake fluid.
- Tighten bleeder screw, disconnect bleeder hose and fit protective cap.
- Detach brake filling and bleeding equipment - VAS 5234- from brake fluid reservoir.
- Depress clutch pedal several times after bleeding process is completed.
- Repeat bleeding procedure if necessary.
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



Tightening torques

- ◆ ⇒ ["1.2 Exploded view - clutch hydraulics", page 19](#)



1.12 Checking clutch master cylinder and clutch slave cylinder

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

Noises when operating the clutch:

- ◆ First check whether any noise is coming from the over-centre spring.
- ◆ If you hear a noise, remove over-centre spring and repeat check.
- ◆ Renew relevant component.

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

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

Check the complete hydraulic system for leaks.

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

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- ◆ If you identify any leaks you must renew the leaking component.

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- ◆ Bleed clutch system ⇒ [page 42](#).

Pedal forces:

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

High pedal force:

- ◆ Mechanical fault on pressure plate/clutch plate ⇒ [page 48](#).

Clutch does not disengage or does not disengage fully:

- ◆ Air in hydraulic system: bleed clutch system ⇒ [page 42](#) and check hydraulic system for external and internal leaks.
- ◆ Clutch plate does not move smoothly on input shaft splines (due to corrosion or dirt, etc.)
- ◆ Foreign body in clutch system
- ◆ Mechanical fault on pressure plate/clutch plate ⇒ [page 48](#).
- ◆ Wrong components were installed when carrying out repair work (e.g. clutch plate, clutch pressure plate and dual-mass



flywheel are not from the same manufacturer); allocation ⇒
Electronic parts catalogue .

- ◆ Components were forgotten when carrying out repair work
(e.g. intermediate plate or dowel sleeves).
- ◆ Clutch plate was installed incorrectly when carrying out repair
work.

1.13 Removing and installing clutch position sender - G476-

Removing

Vehicles with 1.2 ltr. engine:

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Re-
moving and installing air cleaner housing .

Vehicles from model year 2015 onwards:

- Remove engine control unit - J623- from bracket and tie to one
side ⇒ Rep. gr. 23 ; Engine control unit; Removing and in-
stalling engine control unit - J623- .

All vehicles (continued):

- Unclip clutch position sender - G476- -arrows A, B-.
- Unplug electrical connector and remove clutch position sender
- G476- .



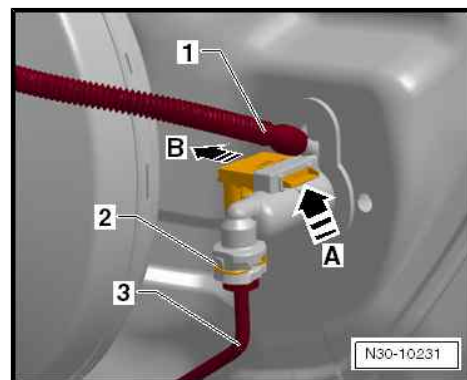
Note

Disregard -items 1, 2, 3-.

Installing

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

- Fit clutch position sender - G476- all the way onto clutch mas-
ter cylinder (electrical connector should be plugged in before-
hand).
- Clutch position sender should click into place -arrow A-.
- Check by pulling clutch position sender -arrow B-.
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Re-
moving and installing air cleaner housing .

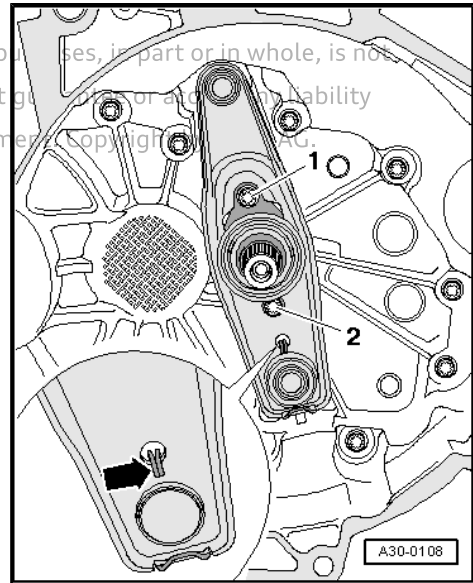




1.14 Servicing clutch release mechanism

Removing

- Gearbox removed
- Unhook spring -arrow- from clutch release lever.
- Remove bolts -1- and -2-.
- Remove release lever with release bearing and guide sleeve.



- Rotate guide sleeve -1- approx. 90° -arrow-.
- Press down the two retainer tabs -4- and pull release bearing -3- off release lever -2-.

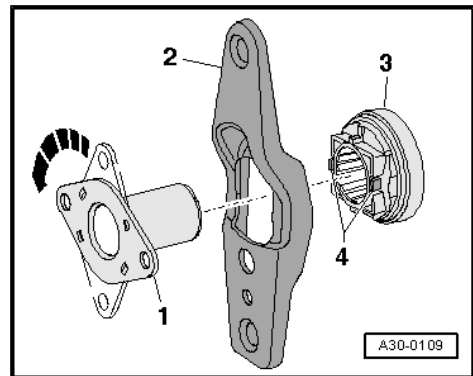
Installing

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



Note

Lubricate surface on release lever which contacts ball-head pin with MoS₂ grease.



Tightening torques

- ♦ ⇒ [“1.3 Exploded view - clutch release mechanism”, page 21](#)



2 Clutch

⇒ ["2.1 Exploded view - clutch unit", page 47](#)

⇒ ["2.2 Removing and installing clutch", page 48](#)

⇒ ["2.3 Renewing input shaft oil seal", page 51](#)

2.1 Exploded view - clutch unit

1 - Flywheel

- ☐ Removing and installing
⇒ Rep. gr. 13 ; Cylinder
block (gearbox end);
Removing and installing
flywheel
- ☐ Ensure that dowel pins
fit tightly
- ☐ Contact surface for
clutch plate must be free
of grooves, oil and
grease

2 - Clutch plate

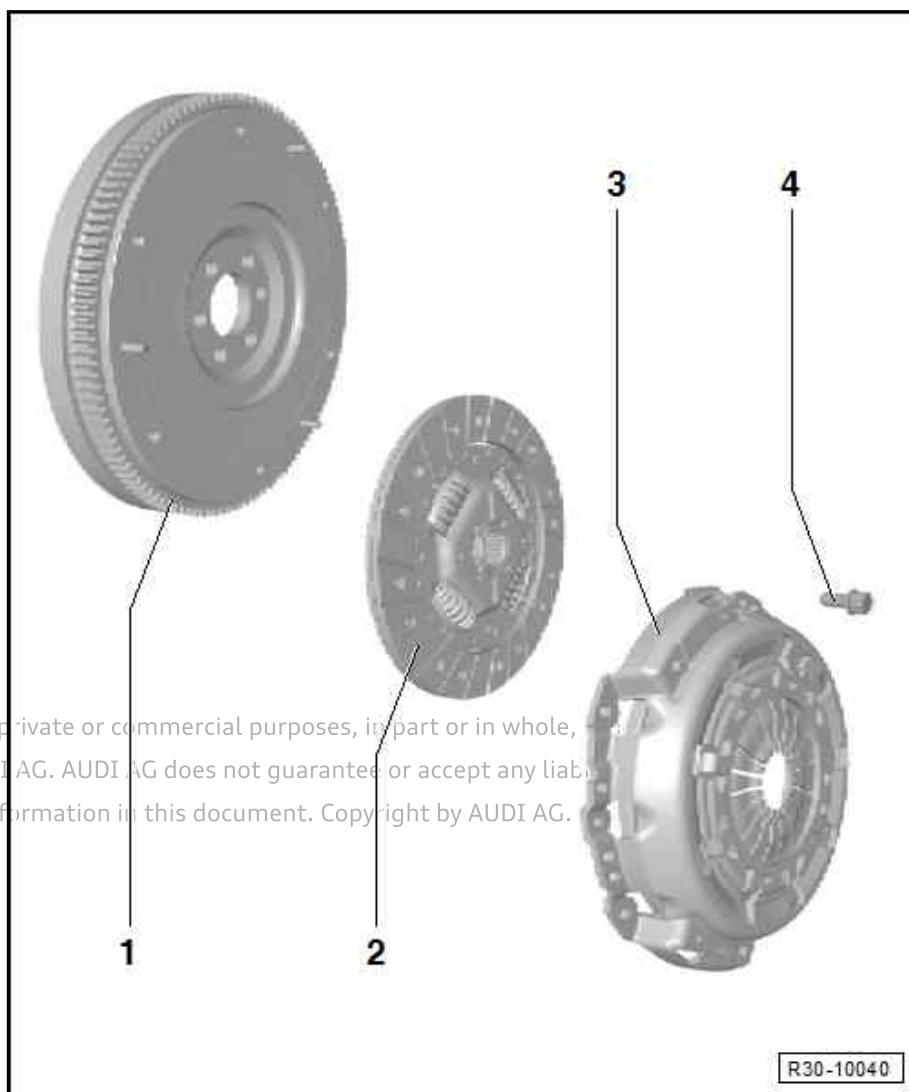
- ☐ Removing and installing
⇒ [page 48](#)
- ☐ For correct version, re-
fer to ⇒ Electronic parts
catalogue
- ☐ Installation position:
spring cage faces pres-
sure plate

3 - Clutch pressure plate

- ☐ Removing and installing
⇒ [page 48](#)
- ☐ Checking ends of dia-
phragm spring
⇒ [page 48](#)
- ☐ Checking spring con-
nections and rivets
⇒ [page 48](#)
- ☐ For correct version, re-
fer to ⇒ Electronic parts
catalogue

4 - Bolt

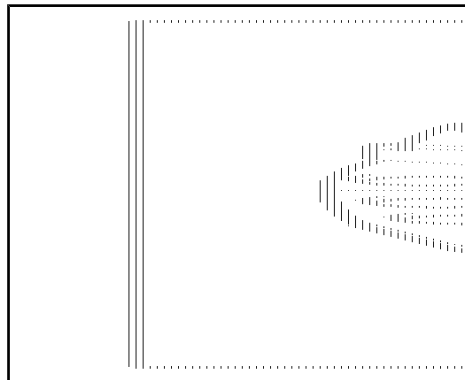
- ☐ M6 - 13 Nm
- ☐ M7 - 20 Nm
- ☐ Loosen and tighten gradually in diagonal sequence and in small steps





Checking ends of diaphragm spring

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



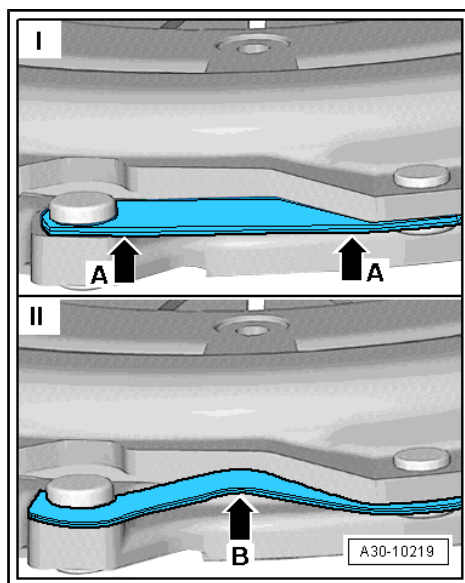
Checking springs and riveting

I - Springs OK

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

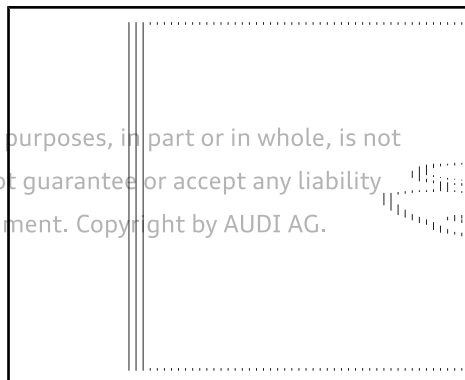
II - Springs damaged

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



- Check spring connections between clutch pressure plate and cover for cracks and make sure rivet fastenings are seated tightly.
- Renew clutch pressure plate if spring connections are damaged or rivets are loose -arrows-.

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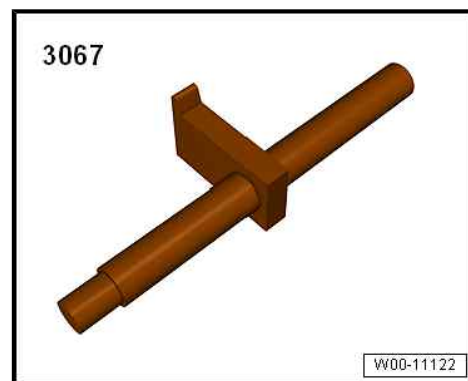


2.2 Removing and installing clutch

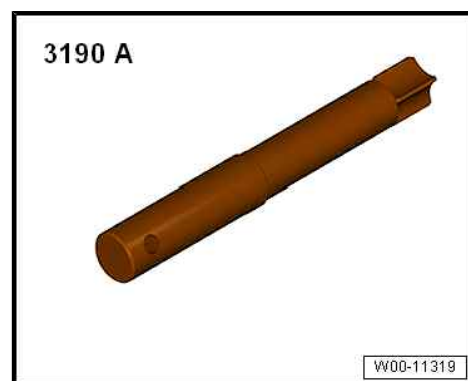
Special tools and workshop equipment required



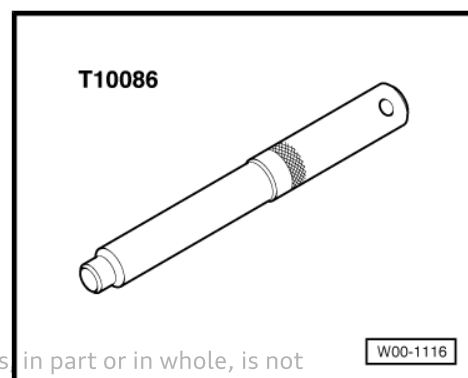
◆ Counterhold tool - 3067-



◆ Centring mandrel - 3190 A-



◆ Centring mandrel - T10086-



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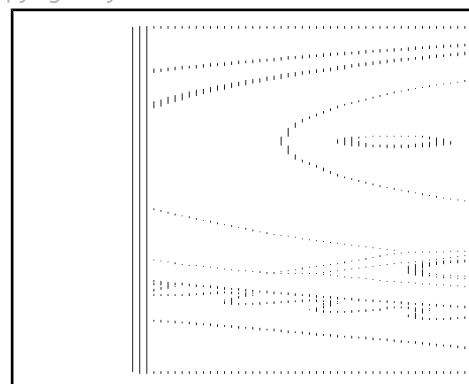
◆ Grease for clutch plate splines - G 000 100-

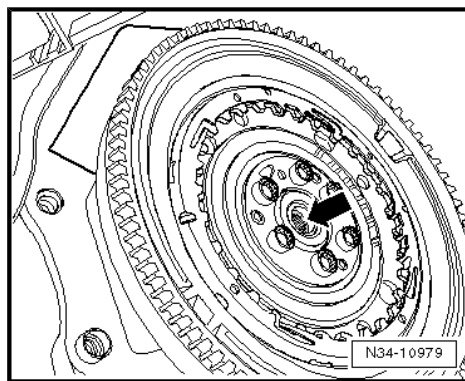
Removing

- Gearbox removed
- Insert counterhold tool - 3067- to unscrew bolts.
- Loosen bolts in small steps and in diagonal sequence.
- Take off clutch pressure plate and clutch plate.

Installing

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

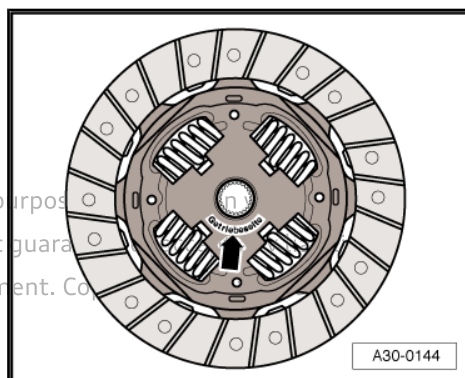




Note



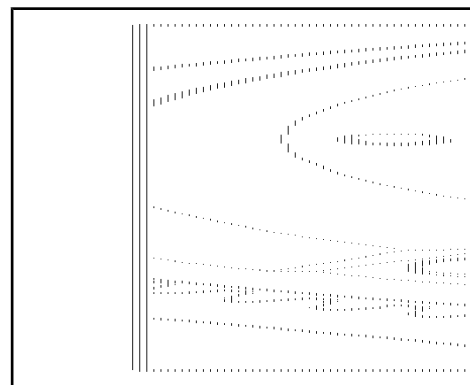
- ◆ Refer to general repair instructions ⇒ [page 7](#).
- ◆ The clutch plate, clutch pressure plate and dual-mass flywheel must be from the same manufacturer.
- ◆ Select the correct clutch plate and pressure plate according to engine code ⇒ [Electronic parts catalogue](#).
- ◆ Renew clutch plate and pressure plate if riveted fastening is damaged or loose.
- ◆ 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. Remove any excess grease.
- ◆ Clutch pressure plates have an anti-corrosion coating and are greased. With the exception of the friction surface for the clutch plate, the pressure plate must not be cleaned. Otherwise, the service life of the clutch will be considerably reduced.
- ◆ The friction surface of the pressure plate and the dual-mass flywheel must be cleaned (degreased) thoroughly.
- ◆ If the clutch has burnt out, thoroughly clean the gearbox housing in area of clutch and parts of the engine facing the gearbox in order to prevent odours.
- ◆ Important: different diameters -arrow- in crankshaft!
- ◆ For engines with smaller centring diameter in crankshaft -arrow- or engines with needle bearing -arrow- in crankshaft: use centring mandrel - T10086- ⇒ [page 51](#).
- ◆ For engines with larger centring diameter in crankshaft -arrow-: use centring mandrel - 3190 A- ⇒ [page 51](#).
- ◆ Installation position of clutch plate: protruding spring cage / marking "Getriebeseite" (gearbox side), if provided, faces towards pressure plate.
- ◆ Clutch plate linings must make full contact with flywheel and friction surface of clutch pressure plate. Only then insert bolts.
- ◆ Check that dowel sleeves for centralising engine/gearbox are in the cylinder block; install if necessary.
- ◆ If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).





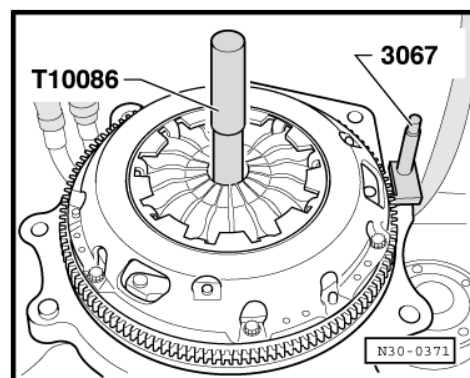
Crankshaft with large centring diameter

- Reverse position of counter-hold tool - 3067- when installing.
- Position clutch pressure plate on dowel pins.
- Use centring mandrel - 3190 A- to centralise clutch plate.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with clutch pressure plate.
- Tighten bolts in small steps and in diagonal sequence to avoid damaging centring holes in pressure plate and dowel pins on flywheel.



Crankshaft with small centring diameter

- Reverse position of counter-hold tool - 3067- when installing.
- Position clutch pressure plate on dowel pins.
- Use centring mandrel - T10086- to centralise clutch plate.
- Screw in all 6 bolts evenly by hand until bolt heads make contact with clutch pressure plate.
- Tighten bolts in small steps and in diagonal sequence to avoid damaging centring holes in clutch pressure plate and dowel pins on flywheel.



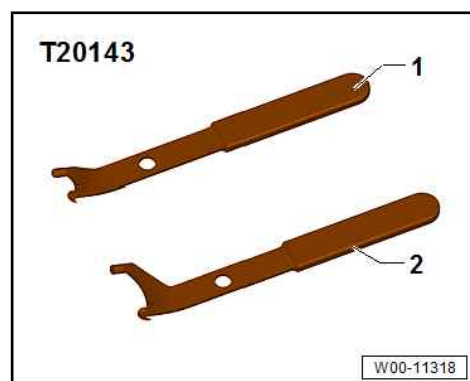
Tightening torques

- ◆ ⇒ ["2.1 Exploded view - clutch unit", page 47](#)

2.3 Renewing input shaft oil seal

Special tools and workshop equipment required

- ◆ Extractor tool - T20143/2-



- ◆ Thrust piece - T40008-



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- ◆ Sealing grease - G 052 128 A1-



Procedure

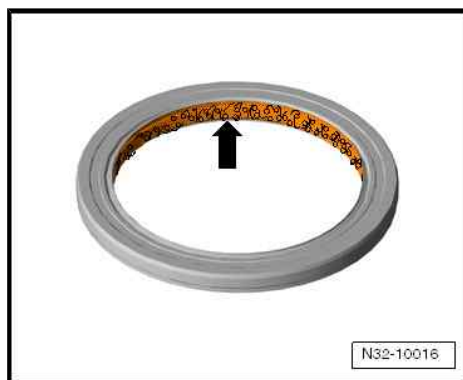
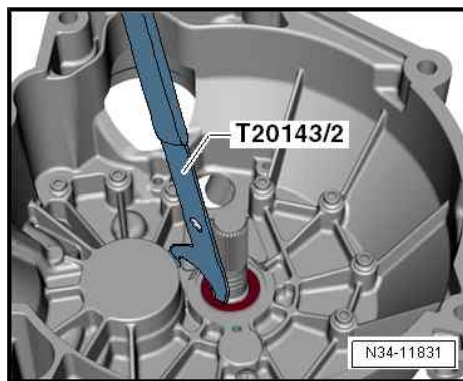
- Gearbox removed
- Remove release bearing ⇒ [page 46](#) .
- Pry out oil seal using extractor tool - T20143/2- .



Note

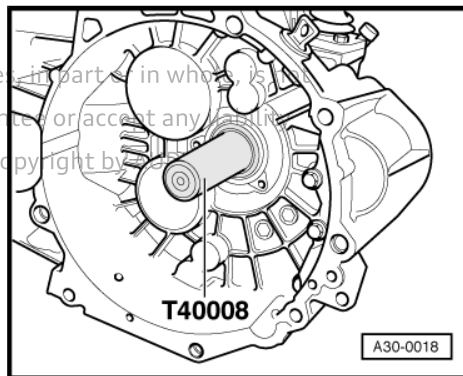
Take care not to damage contact surface for oil seal on input shaft.

- Clean contact surface and sealing surface.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install release bearing ⇒ [page 46](#) .

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34 – Controls, housing

1 Selector mechanism

- ⇒ [“1.1 Overview - selector mechanism”, page 53](#)
- ⇒ [“1.2 Exploded view - gear knob and cover”, page 55](#)
- ⇒ [“1.3 Exploded view - selector cables”, page 56](#)
- ⇒ [“1.4 Exploded view - selector mechanism”, page 60](#)
- ⇒ [“1.5 Removing and installing gear knob”, page 61](#)
- ⇒ [“1.6 Removing and installing selector mechanism”, page 62](#)
- ⇒ [“1.7 Adjusting selector mechanism”, page 65](#)
- ⇒ [“1.8 Dismantling and assembling selector mechanism”, page 67](#)
- ⇒ [“1.9 Renewing selector shaft oil seal”, page 71](#)
- ⇒ [“1.10 Removing and installing selector cable”, page 72](#)

1.1 Overview - selector mechanism

Gear selection movement -black arrow-

Gate selection movement -white arrow-



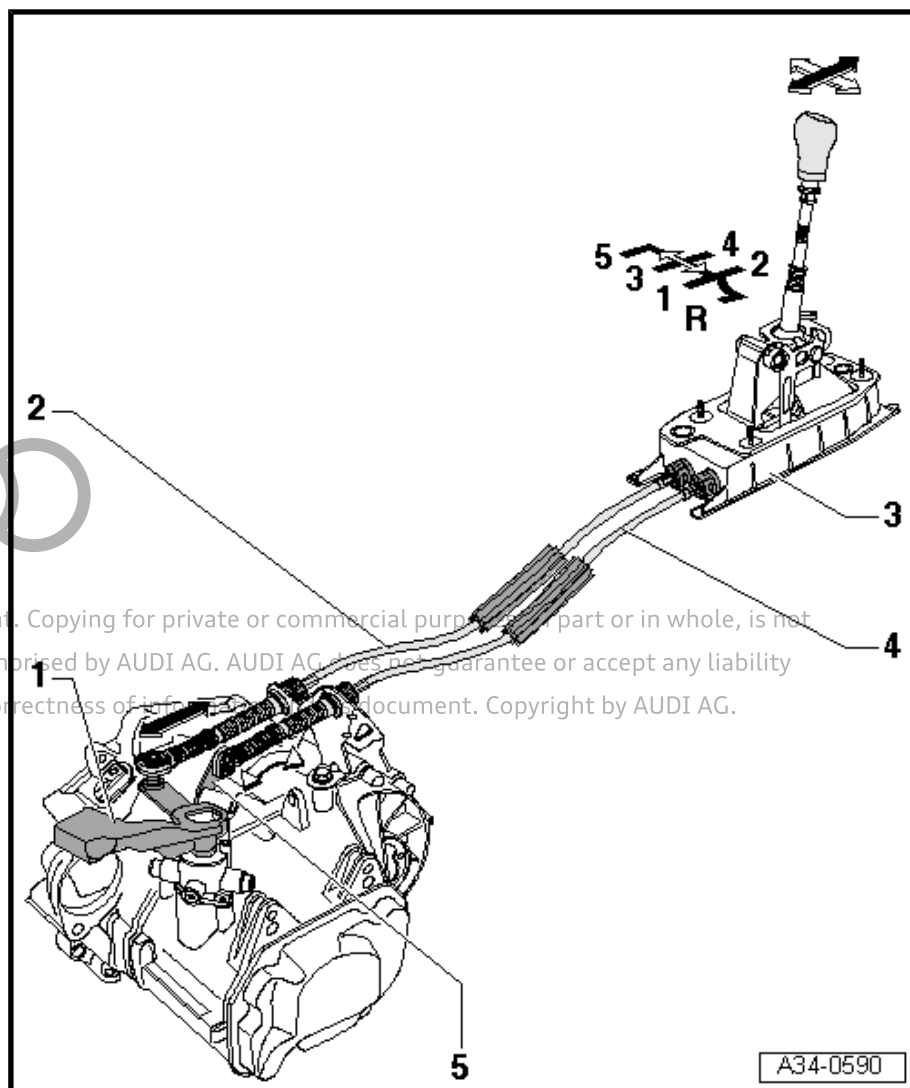
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- 1 - Gearbox selector lever**
 - ☐ With damper weight
- 2 - Gear selector cable**
 - ☐ For gear selection movement
- 3 - Selector mechanism**
- 4 - Gate selector cable**
 - ☐ For gate selection movement
- 5 - Gate relay lever**



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1.2 Exploded view - gear knob and cover

1 - Gear lever

2 - Clip

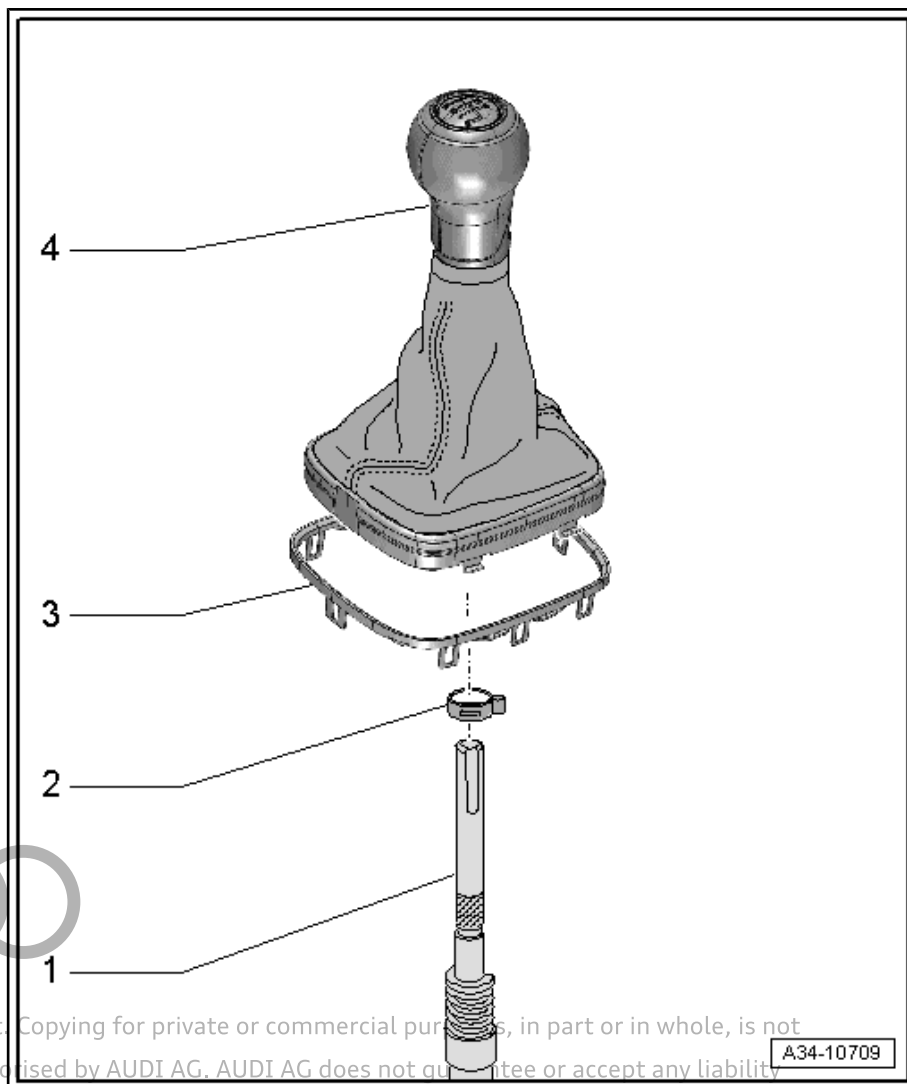
- ❑ Must be the same as original equipment ⇒ Electronic parts catalogue

3 - Trim frame

- ❑ Removing and installing ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing trim panel for centre console

4 - Gear knob

- ❑ With gear lever boot
- ❑ Removing and installing ⇒ [page 61](#)



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A34-10709



1.3 Exploded view - selector cables



Note

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

1 - Gear selector cable

- ☐ Detaching and securing at gearbox selector lever ⇒ [page 58](#)
- ☐ Removing and installing ⇒ [page 72](#)
- ☐ Adjusting ⇒ [page 65](#)

2 - Gate selector cable

- ☐ Removing and installing ⇒ [page 72](#)
- ☐ Adjusting ⇒ [page 65](#)

3 - Bush

- ☐ If damaged, renew gate selector cable

4 - Retaining clips

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

5 - Selector housing

6 - Cable support bracket

7 - Grommet

8 - Bush

9 - Bolt

- ☐ 20 Nm

10 - Cable end-piece

- ☐ Secures gate selector cable to gate relay lever
- ☐ Allocation ⇒ [page 57](#)
- ☐ Detaching from gate selector cable ⇒ [page 58](#)
- ☐ Levering off gate relay lever ⇒ [page 59](#)
- ☐ Pressing onto gate relay lever ⇒ [page 59](#)

11 - Securing clip

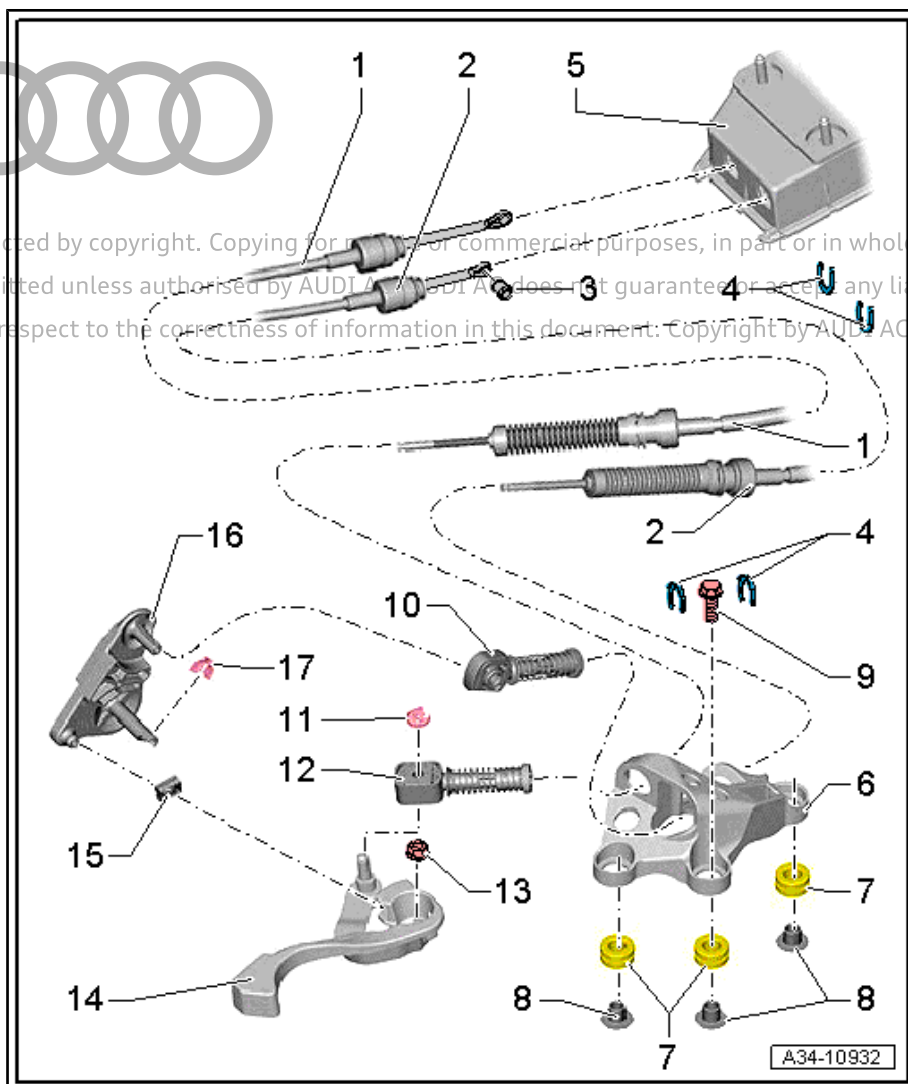
- ☐ Removing ⇒ [page 58](#)
- ☐ Renew

12 - Cable end-piece

- ☐ Secures gear selector cable to gearbox selector lever
- ☐ Allocation ⇒ [page 57](#)
- ☐ Detaching from gear selector cable ⇒ [page 58](#)

13 - Nut

- ☐ 20 Nm
- ☐ Self-locking





- ☐ Renew

14 - Gearbox selector lever

- ☐ With damper weight
- ☐ Fitting [⇒ page 57](#)
- ☐ Installation position [⇒ page 58](#)
- ☐ After installing, adjust selector mechanism [⇒ page 65](#)

15 - Slide block

16 - Gate relay lever

- ☐ Installation position [⇒ page 58](#)
- ☐ Detaching and securing gate relay lever at gearbox selector lever [⇒ page 59](#)
- ☐ Lubricate all bearings and moving surfaces with grease - G 000 450 02- .

17 - Clip

- ☐ For gate relay lever

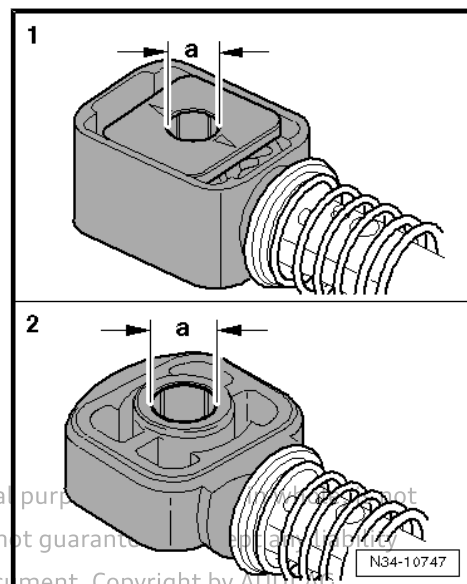
Identification of cable end-pieces

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

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

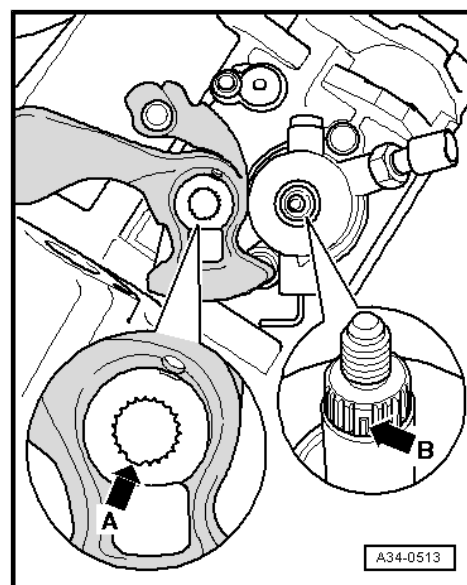


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Installing gearbox selector lever

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





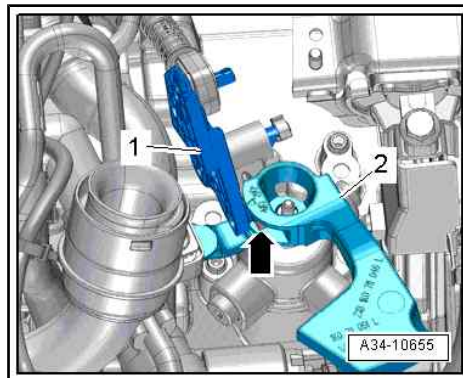
Installation position: gearbox selector lever/gate relay lever

1 - Gate relay lever

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

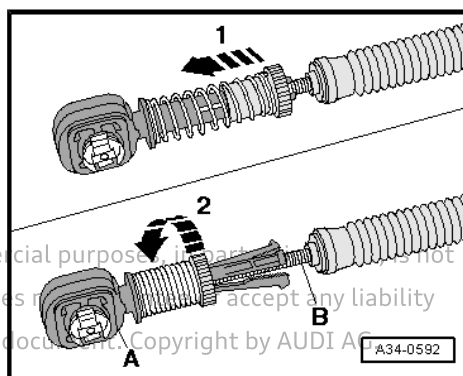
2 - Gearbox selector lever

- With damper weight



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

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



Detaching and securing gear selector cable at gearbox selector lever

Detaching

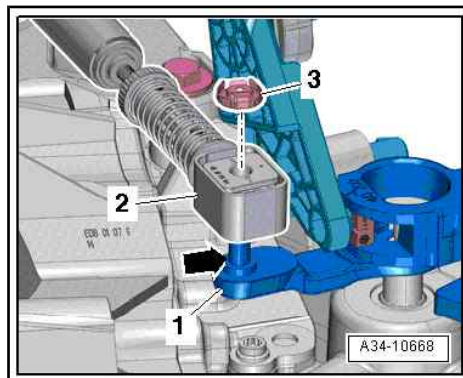
- Lift tab on securing clip -3- for gear selector cable and detach securing clip from gearbox selector lever -1-.
- Detach gear selector cable -2- from pin -arrow-.

Securing



Note

- ◆ Renew securing clip for gear selector cable.
- ◆ Apply a small amount of grease - G 000 450 02- to pin -arrow-.
- Push gear selector cable -2- onto gearbox selector lever -1- and secure with securing clip -3-.





Detaching and securing gate relay lever at gearbox selector lever

Detaching

- Remove clip -arrow 1- and take off gate relay lever together with cable end-piece.
- The gate relay lever must be removed before detaching the cable end-piece ⇒ [page 59](#).

Securing



Note



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

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



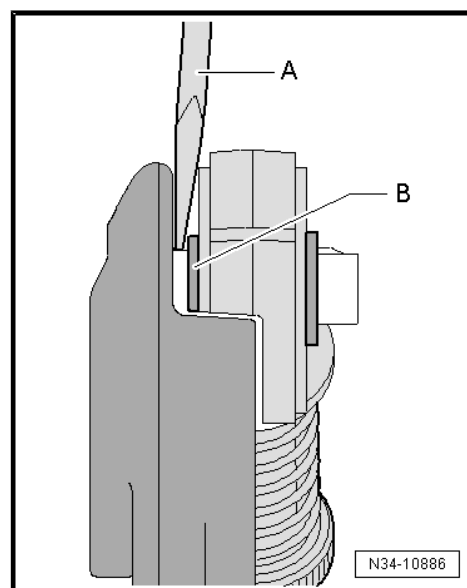
Note

-Arrow 2- can be disregarded.



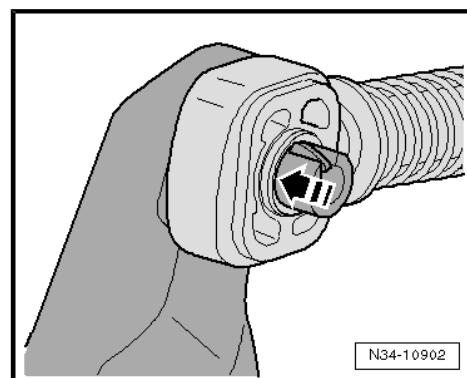
Levering cable end-piece for gate selector cable off gate relay lever

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



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

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





1.4 Exploded view - selector mechanism



Note

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

1 - Floor plate

- ☐ Bend tabs open to remove
- ☐ Renew

2 - Gasket

- ☐ Renew

3 - Bush

- ☐ Fitted in gate selector cable
- ☐ Renew gate selector cable if bush is damaged

4 - Retaining clips

- ☐ Renew

5 - Gate selector cable

- ☐ Lever off gate selector lever
- ☐ Press onto gate selector lever inside selector mechanism
- ☐ Installation position
⇒ [page 53](#)

6 - Gear selector cable

- ☐ Lever off gear lever guide
- ☐ Press onto gear lever guide inside selector mechanism
- ☐ Installation position
⇒ [page 53](#)

7 - Gear lever guide

8 - Bearing shell

- ☐ Will be damaged during removal
- ☐ Renew

9 - Spring

10 - Securing clip

- ☐ Removing and installing ⇒ [page 61](#)

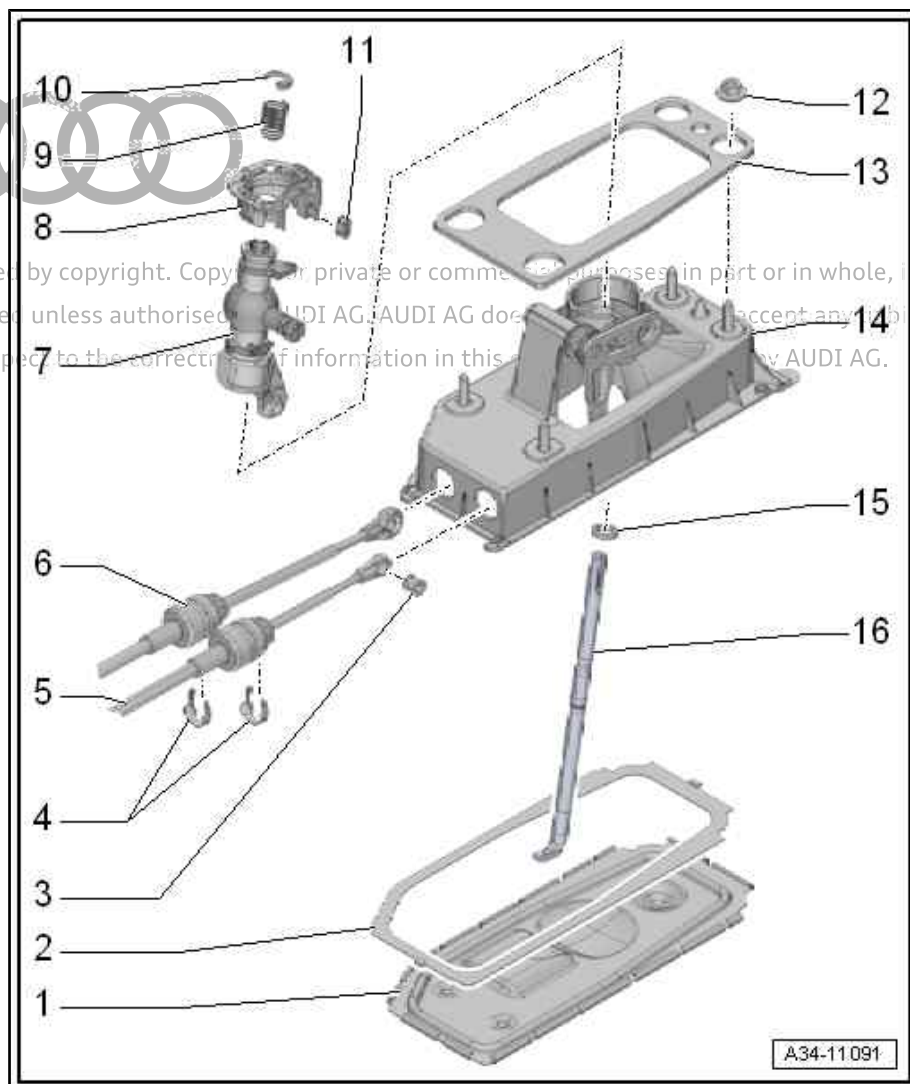
11 - Damper

12 - Nut

- ☐ 4x
- ☐ M6 - 8 Nm
- ☐ M8 - 20 Nm

13 - Gasket

- ☐ Between selector housing and floor





- ☐ Renew
- ☐ Self-adhesive
- ☐ Glue onto selector housing

14 - Selector housing

- ☐ With spring and gate selector lever
- ☐ Spring and gate selector lever cannot be removed
- ☐ Removing and installing ⇒ [page 62](#)

15 - Damping washer

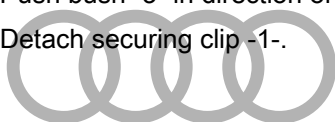
- ☐ Push onto gear lever as far as stop

16 - Gear lever

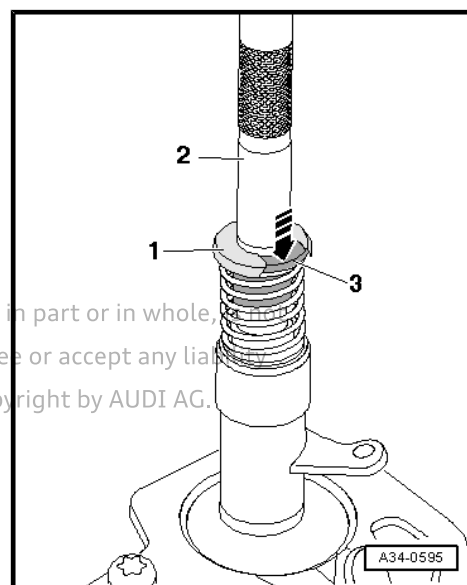
- ☐ Can be removed and installed without removing gear lever guide ⇒ [Item 7 \(page 60\)](#)

Removing and installing securing clip

- Hold gear lever -2- firmly.
- Push bush -3- in direction of -arrow-.
- Detach securing clip -1-.



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1.5 Removing and installing gear knob

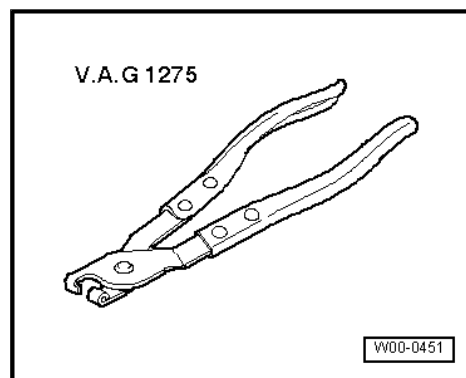
Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



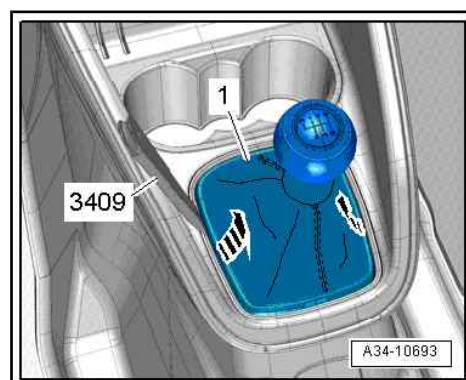


◆ Hose clip pliers - V.A.G 1275-

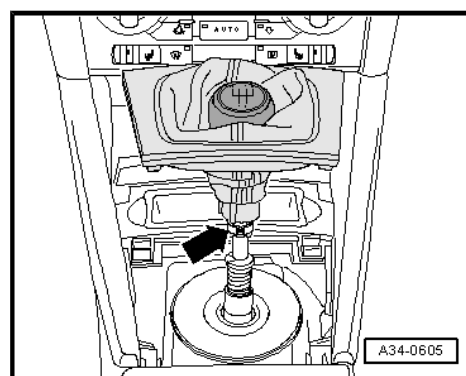


Removing

- Using removal wedge - 3409- , lift up gear lever boot -1- (as indicated by -arrows-) and turn inside out over gear knob.



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



Installing

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

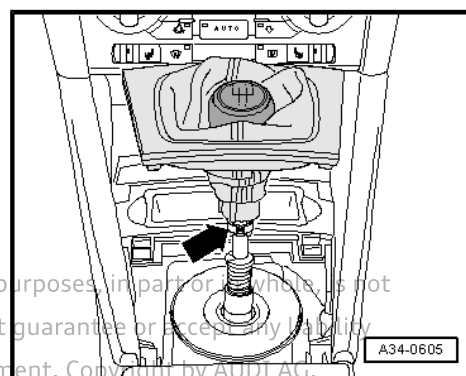


Note



Secure gear knob with the correct clip (as original equipment); refer to ⇒ *Electronic parts catalogue* .

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



1.6 Removing and installing selector mechanism

Removing

- Remove gear knob with gear lever boot ⇒ [page 61](#) .

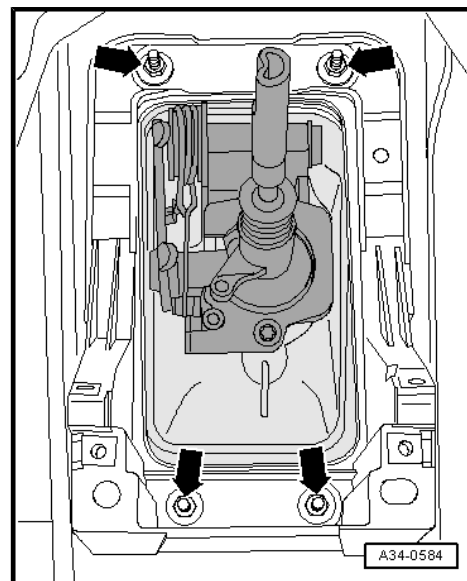


- Remove centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Remove nuts -arrows- securing selector housing to body.

Vehicles up to model year 2014:

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

All vehicles (continued):

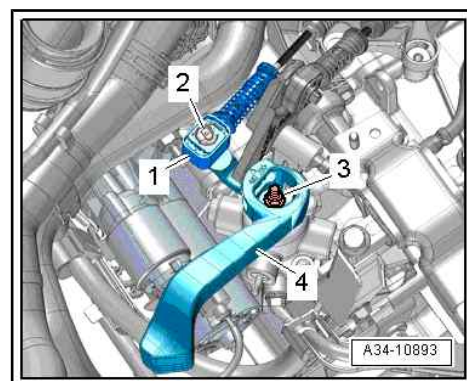


- Remove securing clip -2-.
- Pull gear selector cable -1- off gearbox selector lever -4-.

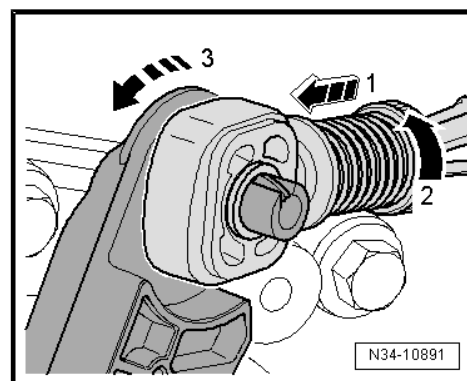


Note

Disregard -item 3-.



- To avoid damage to the gate selector cable, the cable end-piece must be separated from the gate selector cable before removal.
- Pull locking mechanism forwards -arrow 1- onto stop and then turn to left -arrow 2- to lock.
- Press gate relay lever towards front -arrow 3-.



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- Remove bolts -arrows- for cable support bracket -1-.
- Remove heat shield in centre tunnel ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield .
- Swing down selector housing and remove together with cables.

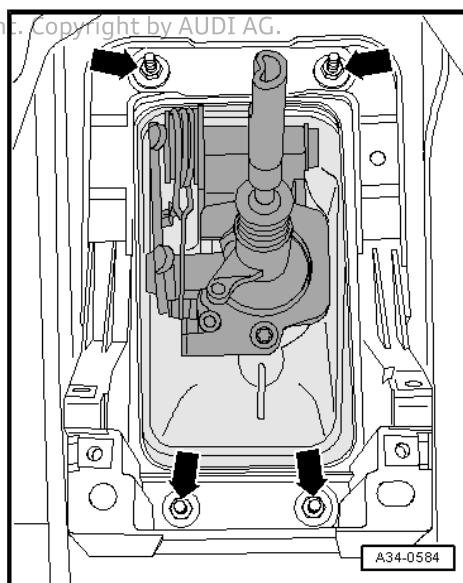
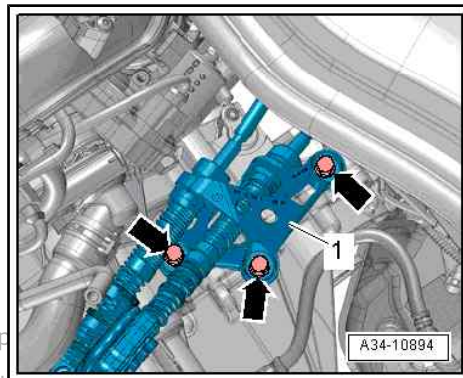


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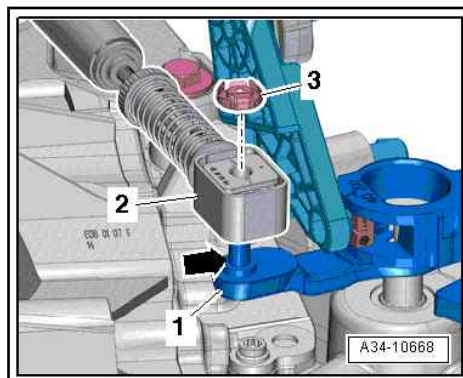
Installing selector mechanism

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

- Cables from selector mechanism to gearbox must run parallel.
- Insert selector mechanism and tighten nuts -arrows-.

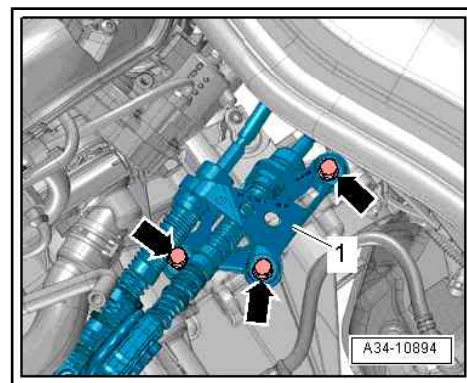


- Apply a small amount of grease - G 000 450 02- to pin -arrow- of gearbox selector lever -1-.
- Push gear selector cable -2- onto pin -arrow- and secure with new securing clip -3-.
- Insert gate selector cable in cable end-piece on gate relay lever.





- Secure cable support bracket to gearbox -arrows-.
- Adjust selector mechanism ⇒ [page 65](#) .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Install heat shield in centre tunnel ⇒ General body repairs, exterior; Rep. gr. 66 ; Strips / trim panels / extensions; Exploded view - heat shield .
- Install centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Install gear knob with gear lever boot ⇒ [page 61](#) .



Tightening torques

- ◆ ⇒ ["1.4 Exploded view - selector mechanism", page 60](#)

1.7 Adjusting selector mechanism

Special tools and workshop equipment required

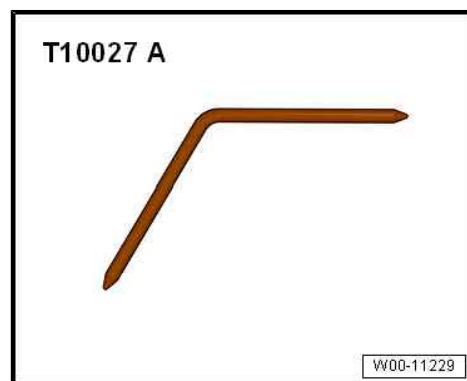
- ◆ Removal wedge - 3409-



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- ◆ Locking pin - T10027A-



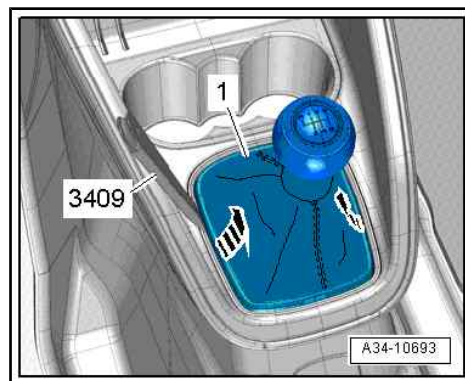
Adjustment conditions

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



Adjusting

- Using removal wedge - 3409- , lift up gear lever boot -1- (as indicated by -arrows-) and turn inside out over gear knob.
- Open ashtray (if fitted).
- With gearbox in neutral, move gear lever to the left into 1st/2nd gear gate.



- If fitted, pull noise insulation slightly to one side.
- Fix gear lever in position with locking pin - T10027A- .



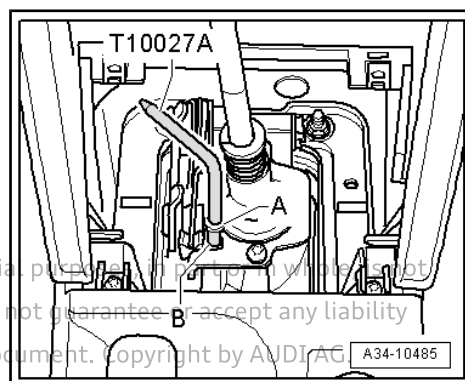
Note



The noise insulation panels are removed to give a better illustration.

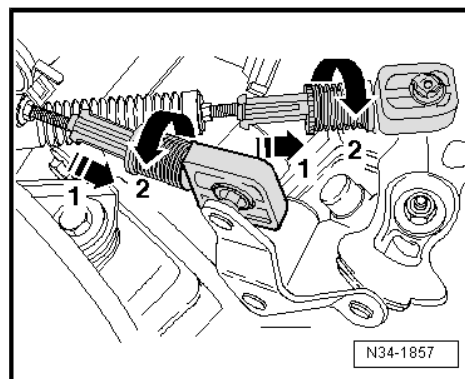
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- Remove air cleaner housing → Rep. gr. 24 : Air cleaner; Removing and installing air cleaner housing .



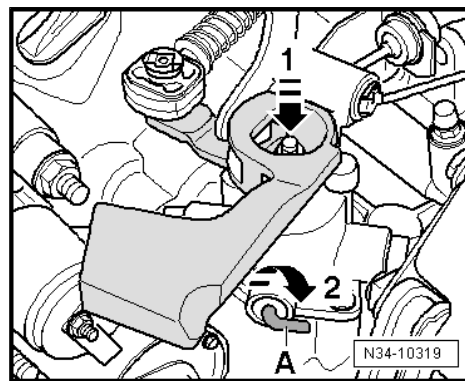
Release cable end-pieces for gear selector cable and gate selector cable as follows:

- Push locking sleeves on gear selector cable and gate selector cable forward as far as they will go -arrow 1-.
- Turn locking sleeve as far as stop in direction of -arrow 2- so that it engages.
- It should now be possible to move the cables in the cable end-pieces.
- Gearbox in neutral.



Lock selector shaft as follows:

- Push gearbox selector lever down into 1st/2nd gear gate -arrow 1-. At the same time, turn angled rod -A- in direction of -arrow 2- until it engages in selector shaft.
- The selector shaft is then locked and can no longer be moved.
- Ensure that the gear selector cable and the gate selector cable are located free of tension in the cable end-pieces.





- Turn locking sleeves on gear selector cable and gate selector cable as far as they will go -arrows-.
- The spring presses the locking sleeve back into the original position.



Note

Cable adjustment is now complete.

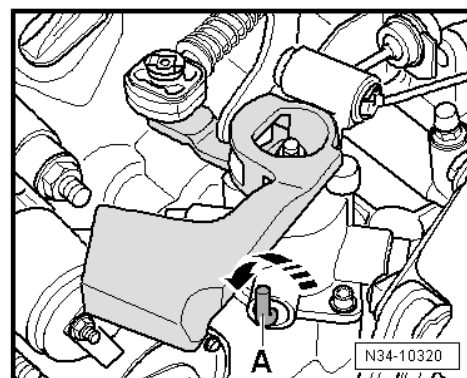
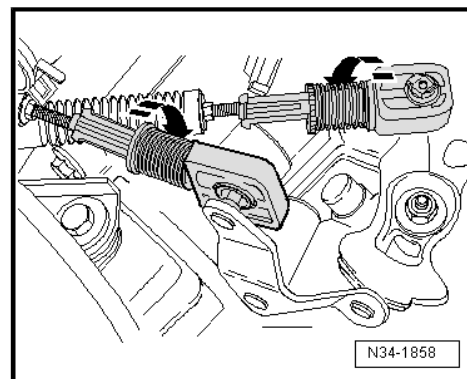
- Turn angled rod -A- back to original position in direction of -arrow-.
- Pull locking pin - T10027A- out of selector mechanism.

Checking adjustment

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

If the gear lever sticks or baulks repeatedly when engaging a gear, perform the adjustment procedure again [⇒ page 65](#).

- Install gear lever boot.
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



1.8 Dismantling and assembling selector mechanism

Special tools and workshop equipment required

- ◆ Press tool - VW 412-



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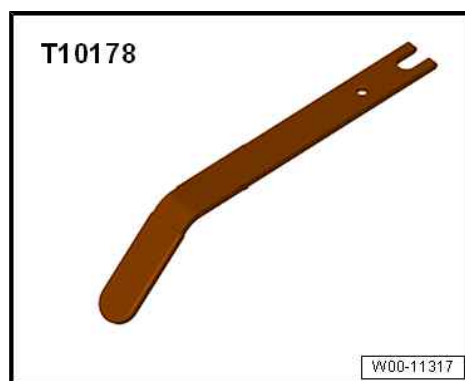


◆ Adapters - 10 - 222 A /25-

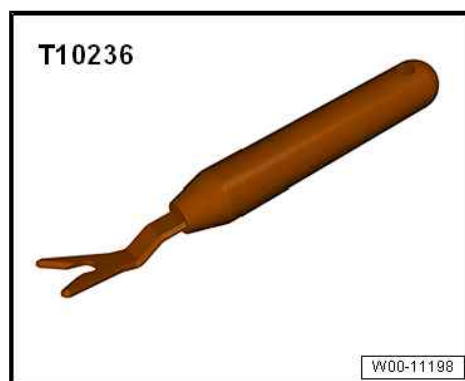
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◆ Assembly tool - T10178-



◆ Release tool - T10236-



◆ Wedge - T10357-

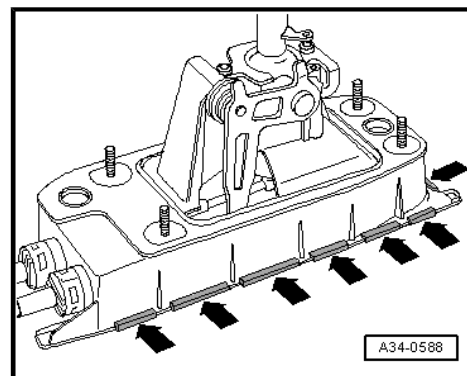


◆ Counter-support Kukko series 16



Dismantling

- Selector mechanism removed ⇒ [page 62](#) .
- Open out tabs -arrows- all round with screwdriver and remove floor plate.
- Remove gasket.

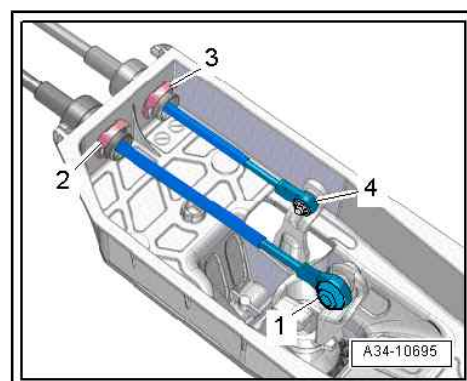


- Detach retaining clip -2-.
- Press off gear selector cable -1- using release tool - T10236- .

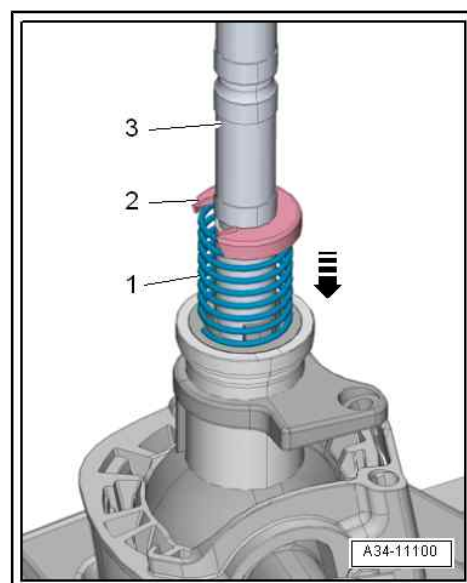


Note

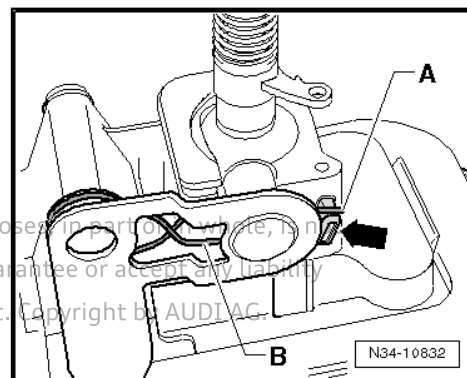
Disregard items -3 and 4-.



- Hold gear lever -3- firmly.
- Push spring -1- in direction of -arrow-.
- Detach securing clip -2-.
- Remove spring.



- Press arm -A- of spring to side until it is located next to damper -arrow-.
- Move gear lever to side and remove damper.



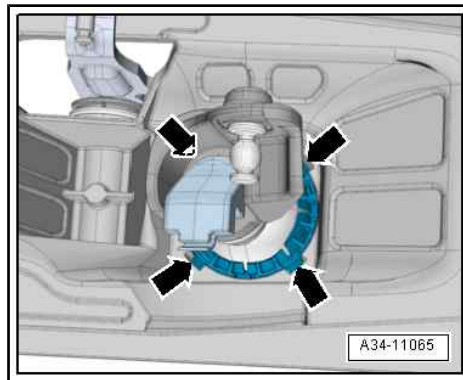
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Note

A second mechanic is required for the following step.

- Working from below, release all four retaining lugs -arrows- on ball socket by applying a small screwdriver at each lug.
- At the same time press gear lever out of selector housing together with ball socket and gear lever guide.



- Press ball socket -2- off ball -1- in gear lever guide.
- To do so, pull ball socket upwards -arrow A- and turn ball socket in direction of -arrow B- to release it from gear lever guide.

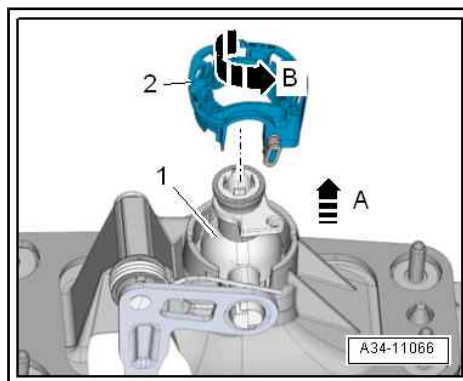
Assembling

Assembly is performed in reverse sequence; note the following:



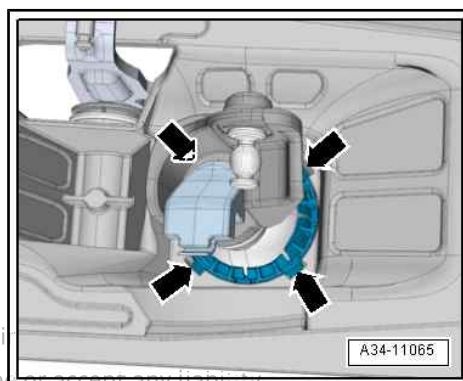
Note

- ◆ Renew seals.
- ◆ Lubricate bearings and moving surfaces with grease - G 000 450 02- .
- First fit ball socket over ball in gear lever guide and then press ball socket into selector housing until retaining lugs -arrows- snap into place.



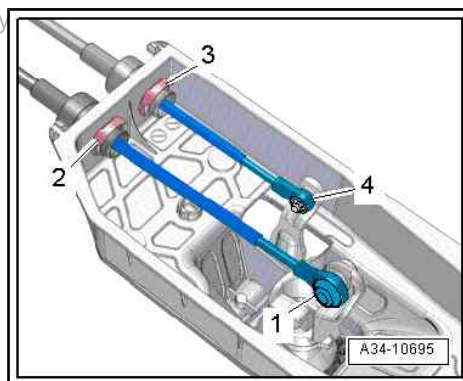
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- Press gear selector cable -1- onto gearbox selector lever.
- Secure gear selector cable with retaining clip -2-.



Note

Disregard items -3 and 4-.





Fitting floor plate

- Fit gasket onto floor plate.



Caution

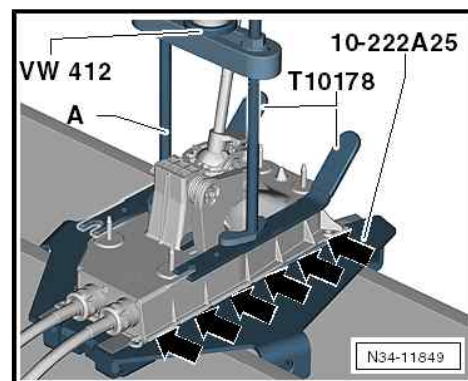
Risk of damage to selector housing and floor plate.

- ◆ *Apply only light pressure when pre-tensioning selector housing.*

- Secure selector mechanism and floor plate using tools, as shown in illustration.

A - Counter-support, e.g. Kukko series 16

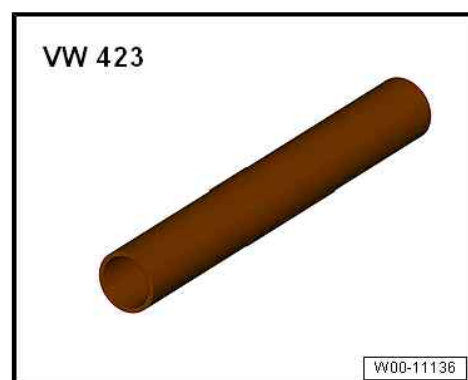
- Lever tabs -arrows- of floor plate over rim of selector housing on both sides using wedge - T10357- .
- Install selector mechanism ⇒ [page 64](#) .



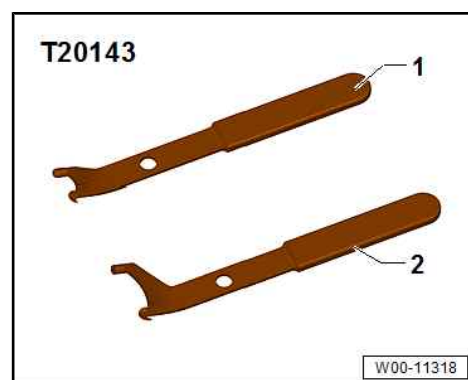
1.9 Renewing selector shaft oil seal

Special tools and workshop equipment required

- ◆ Tube - VW 423-



- ◆ Extractor tool - T20143/1-



Procedure

Vehicles with 1.2 ltr. engine:

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

All vehicles (continued):

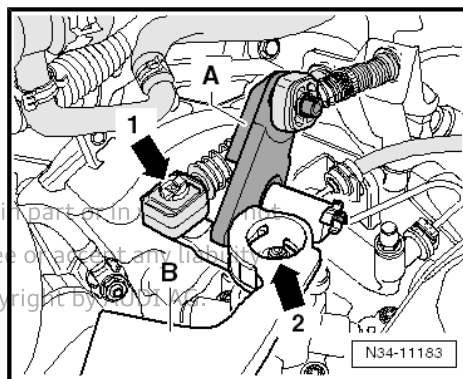
- Remove battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .



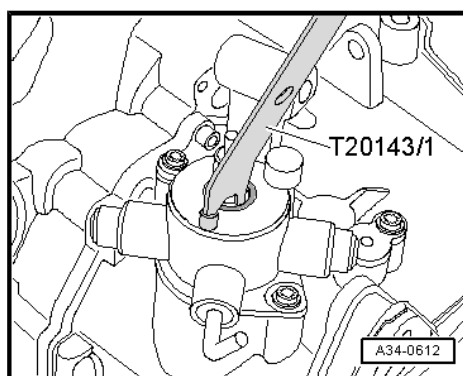
- Remove securing clip -1-.
- Detach gear selector cable from gearbox selector lever -B-.
- Remove gate relay lever -A- from gearbox together with cable end-piece ⇒ [page 59](#).

- Remove gearbox selector lever -B- by removing nut

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- Pry out oil seal using extractor lever - T20143/1- .



- Drive in oil seal using tube - VW 423- .

The remaining installation steps are carried out in reverse sequence; note the following:

- Install gearbox selector lever and gate relay lever ⇒ [page 56](#).



Note

The gearbox selector lever can only be installed in one position.

- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

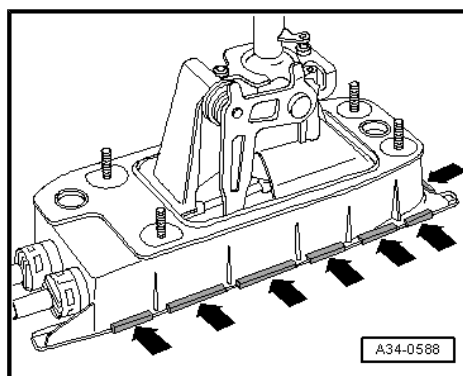
Tightening torques

- ♦ ⇒ [“1.3 Exploded view - selector cables”, page 56](#)

1.10 Removing and installing selector cable

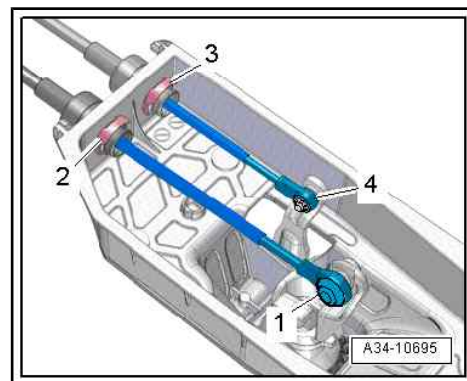
Removing

- Remove selector mechanism ⇒ [page 62](#).
- Open out tabs -arrows- all round with screwdriver and remove floor plate.
- Remove gasket.



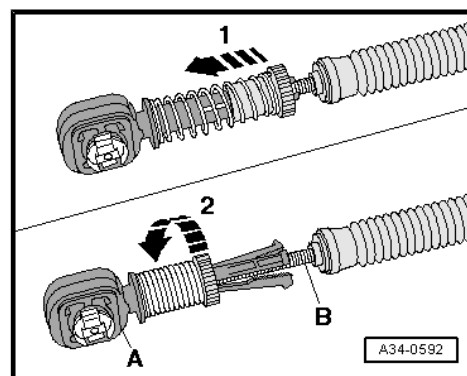


- Detach retaining clips -2, 3-.
- Press off gear selector cable -1- and gate selector cable -4- using a screwdriver.



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

- Push locking sleeve forwards as far as stop -arrow 1-.
- Turn locking sleeve clockwise as far as stop -arrow 2- so that it engages.
- Detach cable end-pieces from selector cables.



- Remove retaining clips -1- and -2-.
- Detach cable support bracket from selector cables.

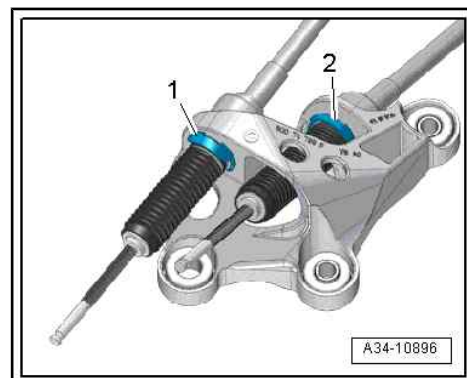
Installing

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

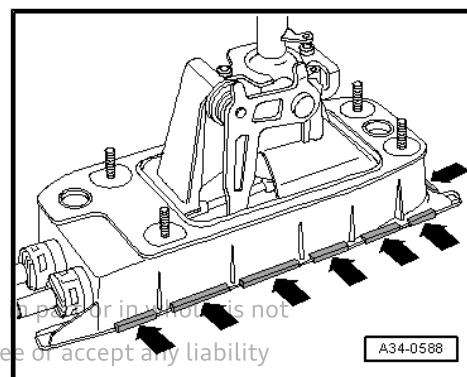


Note

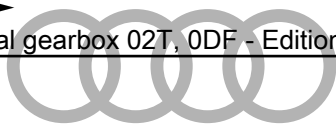
Renew gate selector cable if bush [⇒ Item 3 \(page 56\)](#) is damaged.



- Fit gasket and install floor plate -arrows- [⇒ page 71](#) .
- Install selector mechanism [⇒ page 62](#) .



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2 Removing and installing gearbox

⇒ ["2.1 Removing gearbox", page 74](#)

⇒ ["2.2 Installing gearbox", page 87](#)

⇒ ["2.3 Tightening torques for gearbox", page 89](#)

2.1 Removing gearbox

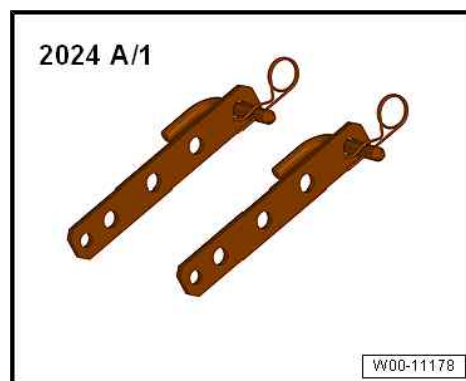
⇒ ["2.1.1 Removing gearbox - vehicles with 1.0 ltr. engine", page 74](#)

⇒ ["2.1.2 Removing gearbox - vehicles with 1.2 ltr. engine", page 79](#)

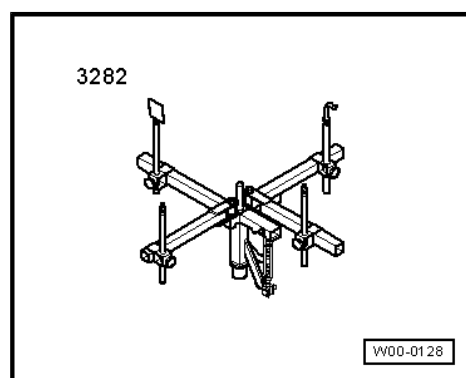
2.1.1 Removing gearbox - vehicles with 1.0 ltr. engine

Special tools and workshop equipment required

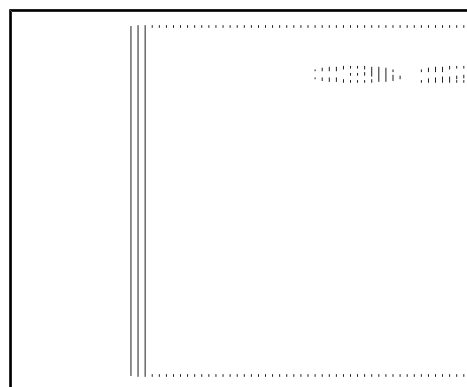
◆ Extension -2024A/1- of lifting tackle - 2024A-



◆ Gearbox support - 3282-



◆ Adjustment plate - 3282/53-



◆ Engine and gearbox jack - VAS 6931-



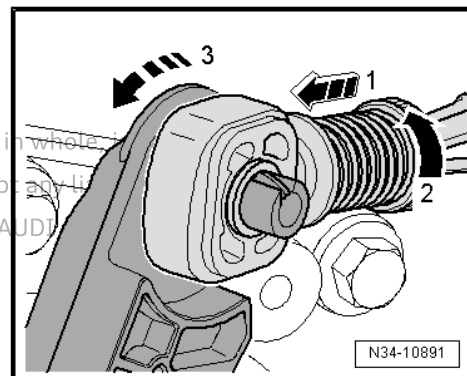
Procedure



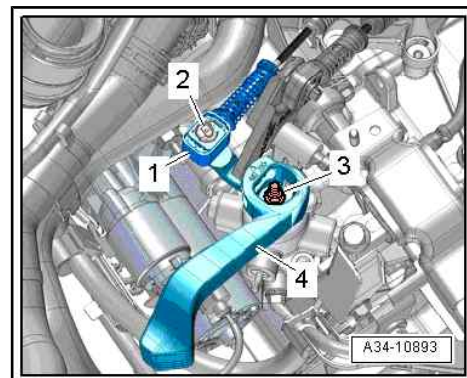
Note

Fit all cable ties in the original positions when installing.

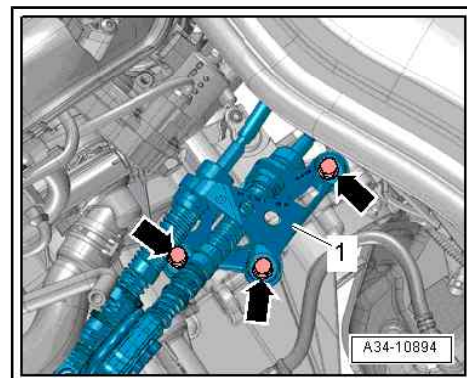
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Remove battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- To prevent damage to gate selector cable, cable end-piece must be detached from gate selector cable before removing.
- Pull locking mechanism forwards -arrow 1- onto stop and then turn to left -arrow 2- to lock.
- Press gate relay lever towards front -arrow 3-.



- Remove securing clip -2-.
- Pull gear selector cable -1- off gearbox selector lever -4-.
- Remove nut -3- and detach gearbox selector lever.



- Unscrew bolts -arrows-, remove cable support bracket -1- and place to one side together with cables.





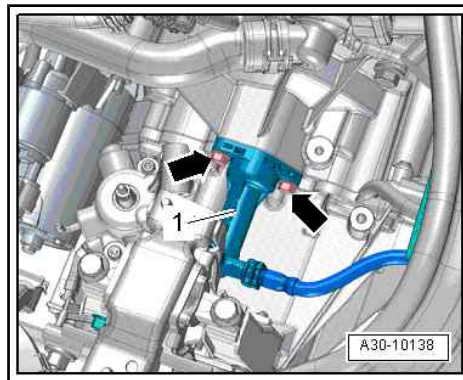
- Remove bolts -arrows-, detach clutch slave cylinder -1- and place to one side. Do not disconnect pipes.



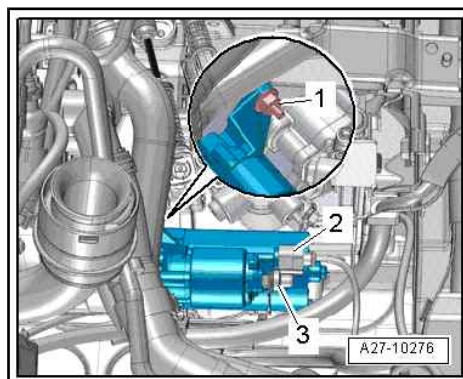
Caution

Risk of irreparable damage to clutch slave cylinder.

- ◆ *Do not operate clutch pedal with slave cylinder removed.*



- Unplug electrical connector -2-.
- Detach cover for B+ wire -3-.
- Remove nut and move B+ wire clear.
- Remove bolt -1-.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .

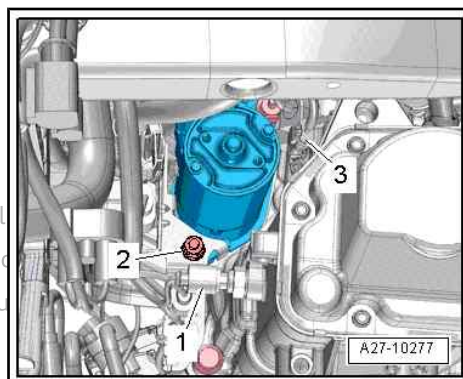


Vehicles with start/stop system:

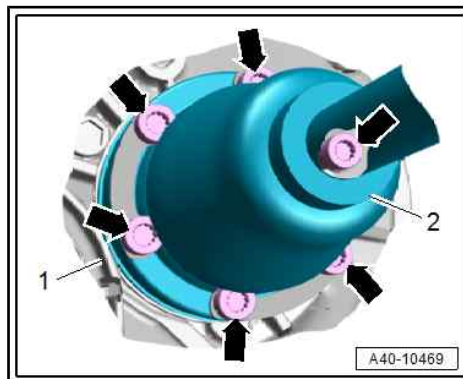
- Unplug electrical connector -3- at gearbox neutral position sender - G701- .

All vehicles (continued):

- Unplug electrical connector -1- at reversing light switch - F4- .
- Remove nut -2- and detach bracket for electrical wiring.
- Remove bolt (bottom) and detach starter.



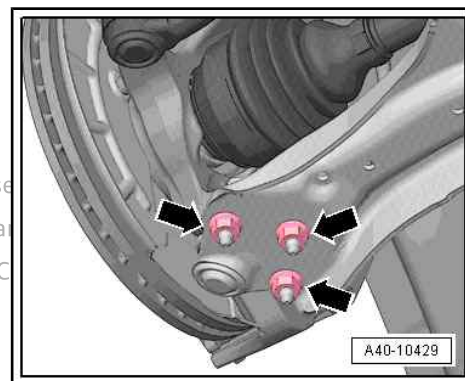
- If bolted on: Detach drive shafts (left and right) from gearbox. To do so, remove bolts -arrows-.





- Remove nuts -arrows- securing swivel joint on both sides.
- If fitted, unscrew nut on bracket for front left vehicle level sender - G78- .
- Disengage swivel joint (both sides) from wishbone.

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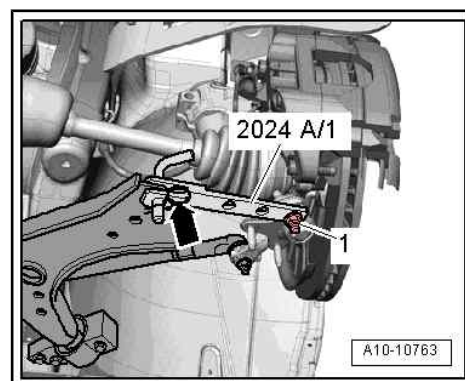
- Swivel suspension strut (both sides) outwards and support with extension -2024A/1- , as shown in illustration.



WARNING

Risk of accidents if components of support are loose

- ◆ *Secure retaining pin and swivel joint with locking pin -arrow- and nut -1-.*



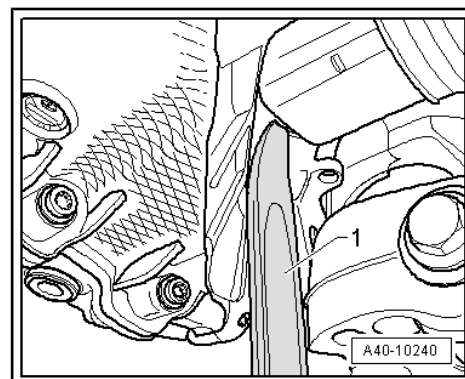
- If inserted in gearbox: Carefully pry drive shaft off joint pin (have a second mechanic hold the drive shaft to prevent it from dropping).
- Tie up drive shafts (left and right).



Note

Take care not to damage the surface coating of the drive shaft.

- Remove flange shaft (right-side) ⇒ [page 192](#) .

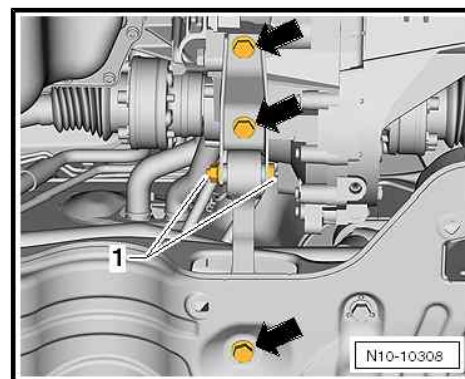


WARNING

Risk of accident.

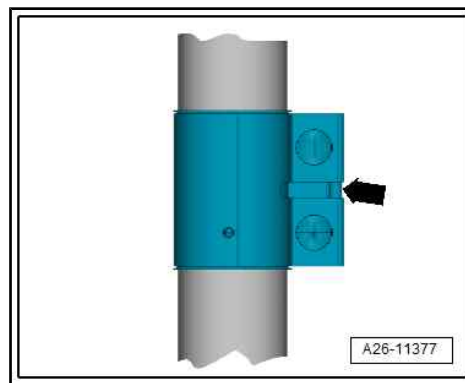
- ◆ *Do NOT loosen bolted connection -1-.*

- Remove bolts -arrows- and detach pendulum support.

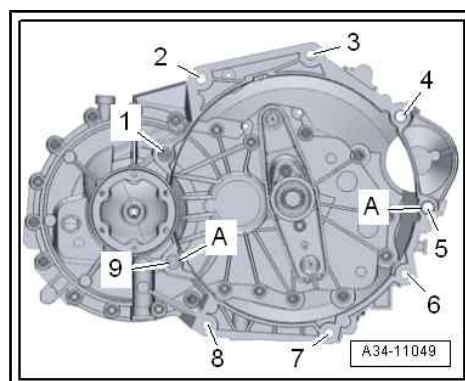




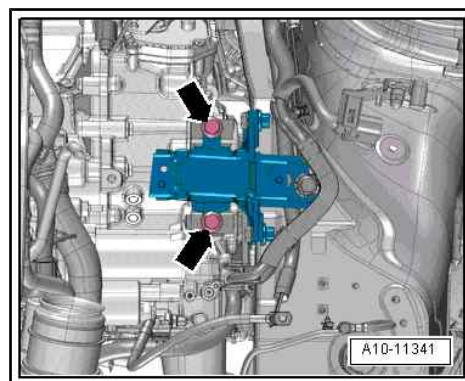
- Loosen nuts -arrows- and move clamp towards rear.



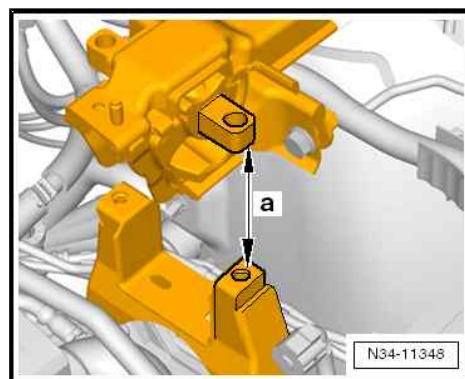
- Remove bolts -2 and 3- (accessible from above).
- Support engine in installation position ⇒ Rep. gr. 10 ; Assembly mountings; Supporting engine in installation position .



- Remove bolts -arrows- securing gearbox mounting.



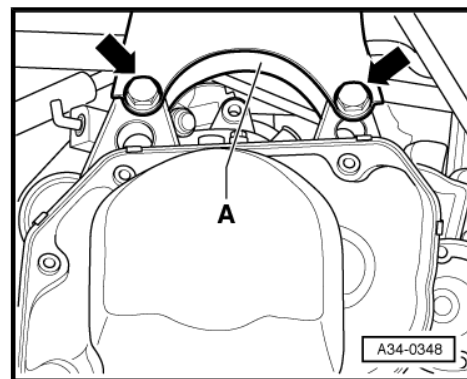
- Lower engine/gearbox assembly using spindle of support bracket - 10 - 222 A- until distance -a- is obtained between gearbox support and gearbox mounting.
- Dimension -a- = 50 mm



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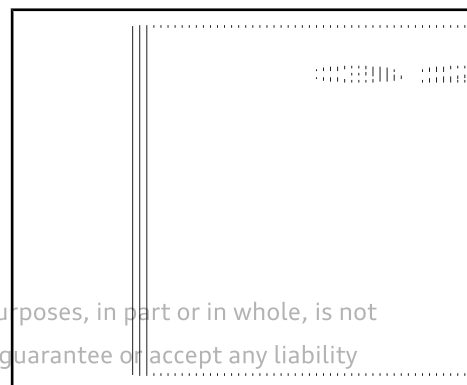


- Remove bolts -arrows- and detach gearbox support -A-.

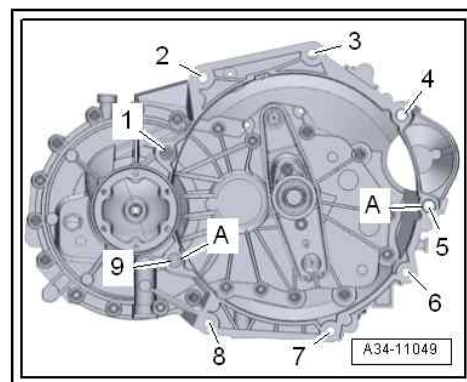


To remove gearbox 02T, set up gearbox support - 3282- with adjustment plate - 3282/53- .

- Insert gearbox support - 3282- in engine and gearbox jack - VAS 6931- .
- Align arms of gearbox support according to holes in adjustment plate.
- Secure support elements as illustrated on adjustment plate.
- Place engine and gearbox jack - VAS 6931- underneath vehicle.
- The arrow symbol on the adjustment plate points in the direction of travel.
- Align adjustment plate - 3282/53- parallel to gearbox and attach support elements to gearbox.



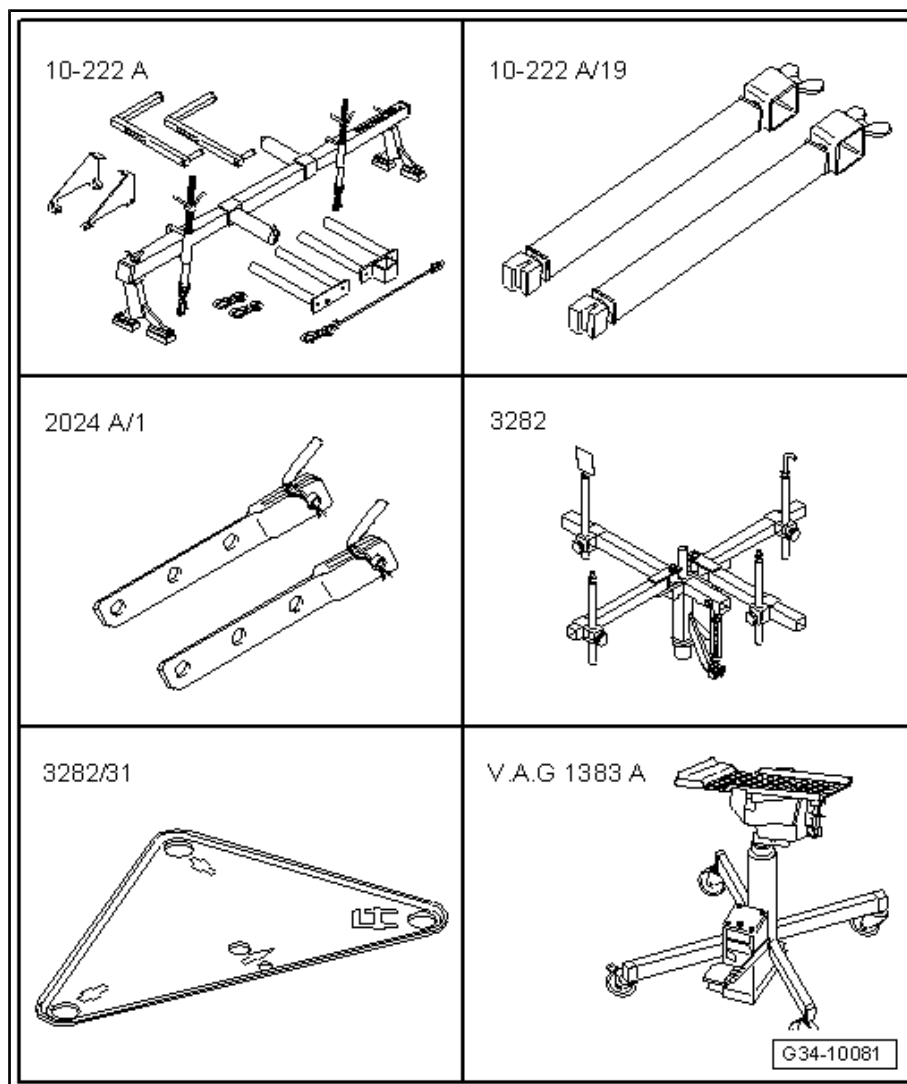
- Remove bolts -1, 6, 7, 8, 9- securing gearbox to engine.
- Press gearbox off dowel sleeves.
- Detach gearbox from engine.
- While lowering gearbox, adjust position of gearbox using spindles on gearbox support - 3282- .



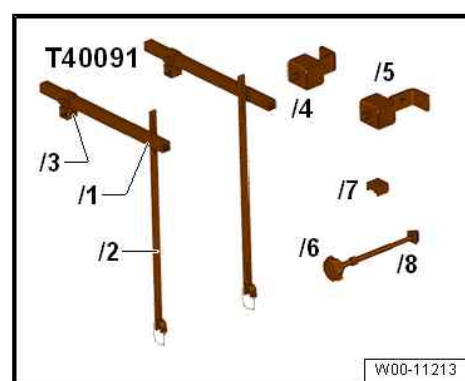
2.1.2 Removing gearbox - vehicles with 1.2 ltr. engine



Special tools and workshop equipment required



- ◆ Support bracket - 10 - 222 A-
- ◆ Adapters - 10 - 222 A /19-
- ◆ Extension -2024 A/1- of lifting tackle - 2024 A-
- ◆ Gearbox support - 3282-
- ◆ Adjustment plate - 3282/31-
- ◆ Engine and gearbox jack - VAS 6931- or -V.A.G 1383 A-
- ◆ Engine support (basic set) - T40091-





Procedure



Note

Fit all cable ties in the original positions when installing.

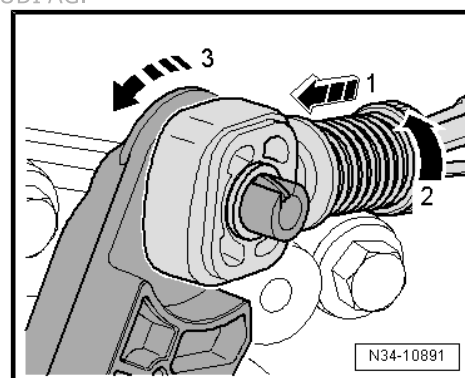
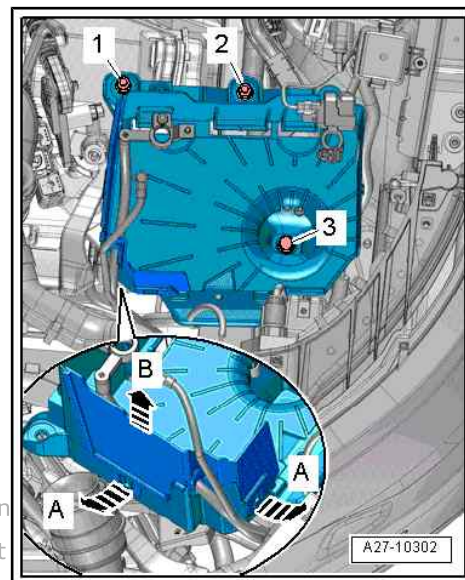


Caution

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

◆ ***Observe notes on procedure for disconnecting the battery.***

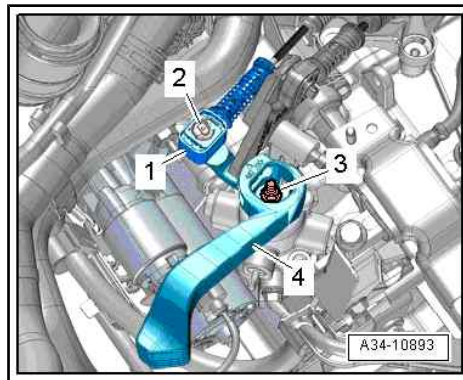
- With ignition switched off, disconnect battery earth wire and remove battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Release retainers -arrows A- and lift out side panel for battery tray -arrow B-.
- Remove bolt -3- and nuts -1 and 2- and detach battery tray.



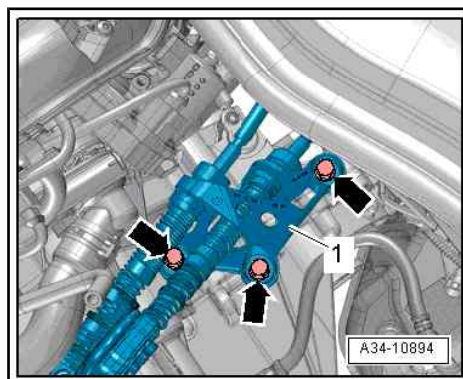
- To prevent damage to gate selector cable, cable end-piece must be detached from gate selector cable before removing.
- Pull locking mechanism forwards -arrow 1- onto stop and then turn to left -arrow 2- to lock.
- Press gate relay lever towards front -arrow 3-.



- Remove securing clip -2-.
- Pull gear selector cable -1- off gearbox selector lever -4-.
- Remove nut -3- and detach gearbox selector lever.



- Unscrew bolts -arrows-, remove cable support bracket -1- and place to one side together with cables.

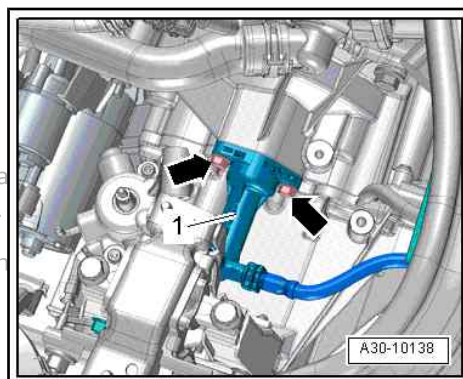


- Remove bolts -arrows-, detach clutch slave cylinder -1- and place to one side. Do not disconnect pipes.

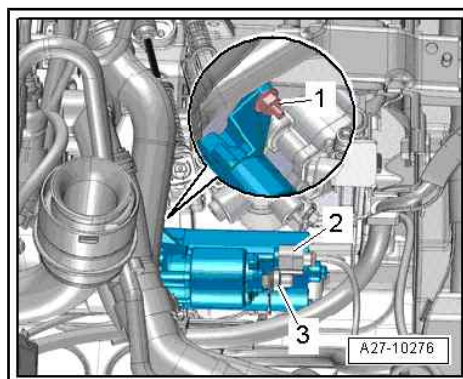
 **Caution**

Risk of irreparable damage to clutch slave cylinder.

◆ **Do not operate clutch pedal with slave cylinder removed.**



- Unplug electrical connector -2-.
- Detach cover for B+ wire -3-.
- Remove nut and move B+ wire clear.
- Remove bolt -1-.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .



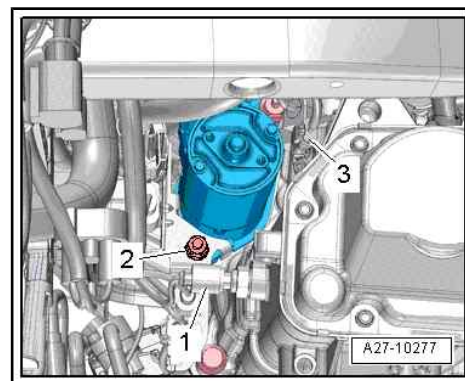


Vehicles with start/stop system:

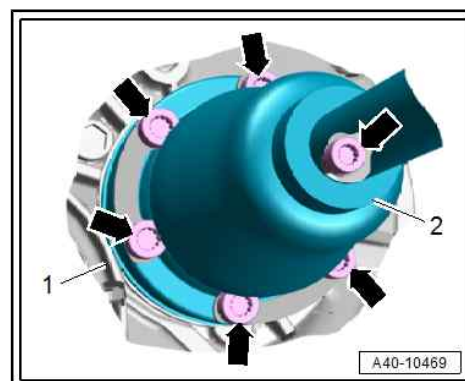
- Unplug electrical connector -3- at gearbox neutral position sender - G701- .

All vehicles (continued):

- Unplug electrical connector -1- at reversing light switch - F4- .
- Remove nut -2- and detach bracket for electrical wiring.
- Remove bolt (bottom) and detach starter.



- If bolted on: Detach drive shafts (left and right) from gearbox. To do so, remove bolts -arrows-.



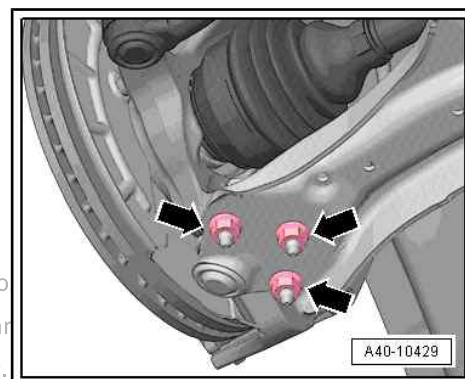
- Remove nuts -arrows- securing swivel joint on both sides.
- If fitted, unscrew nut on bracket for front left vehicle level sender - G78- .
- Pull swivel joint (left-side) off wishbone.



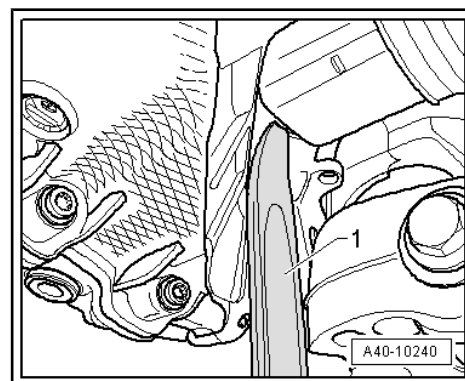
Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

with respect to the correctness of information in this document.



- If inserted in gearbox: Press drive shafts (left and right) off gearbox using assembly lever -1-.
- Pivot suspension strut outwards and at the same time guide drive shaft out of gearbox.





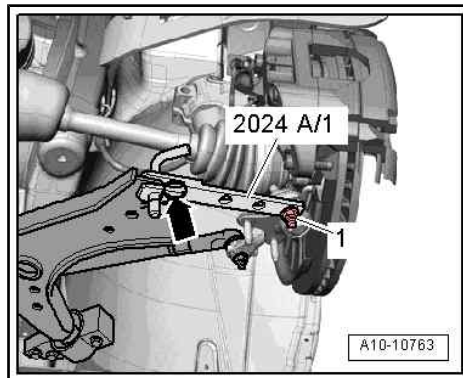
- Support suspension strut (left and right) with extension -2024 A/1-, as shown in illustration.



WARNING

Risk of accidents if components of support are loose

- ◆ *Secure retaining pin and swivel joint with locking pin -arrow- and nut -1-.*



- Tie up drive shaft.



Note

Take care not to damage the surface coating of the drive shaft.

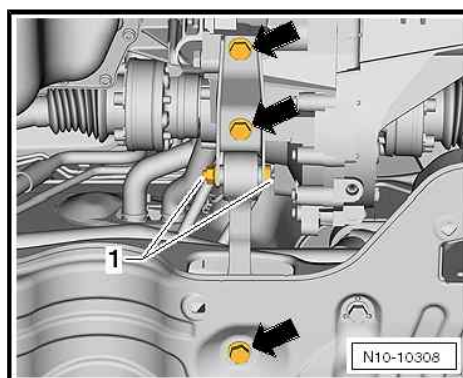
- Remove flange shaft (right-side) ⇒ [page 192](#) .



WARNING

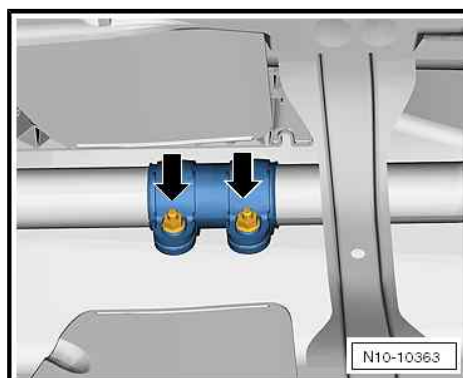
Risk of accident.

- ◆ *Do NOT loosen bolted connection -1-.*



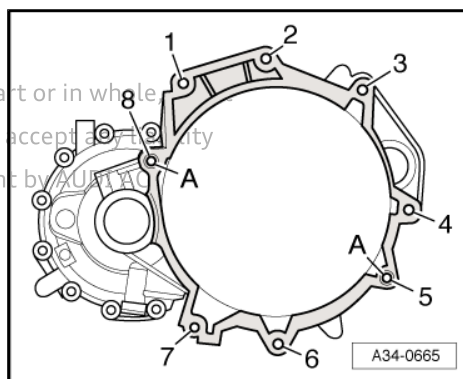
- Remove bolts -arrows- and detach pendulum support.

- Loosen nuts -arrows- and move clamp towards rear.



- Remove bolts -1- and -2- (accessible from above).

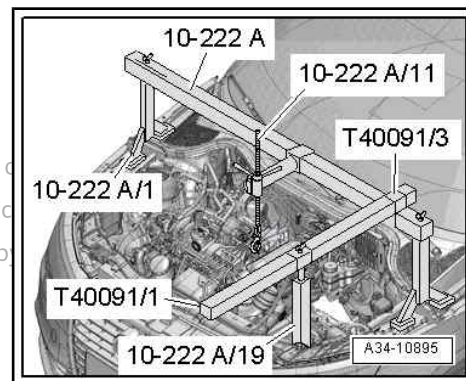
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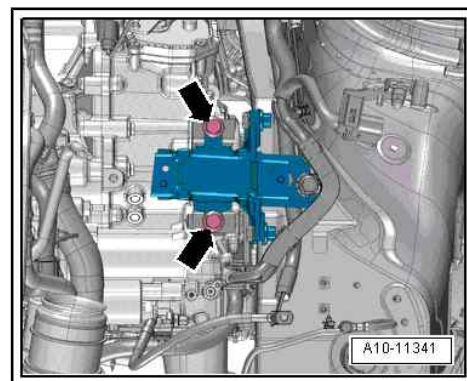


- Set up support bracket - 10 - 222 A- on wing mounting flanges, as shown in illustration.
- Engage hook of spindle - 10 - 222 A /11- in engine lifting eye (left-side).

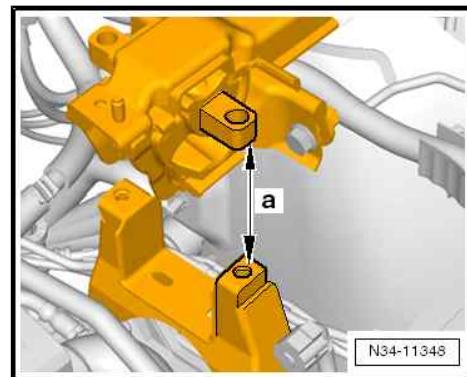
Protect the engine and gearbox from damage. For lifting purposes, in part of the engine and gearbox, lifting is only permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for damage or injury with respect to the correctness of information in this document. Copyright by Audi AG.



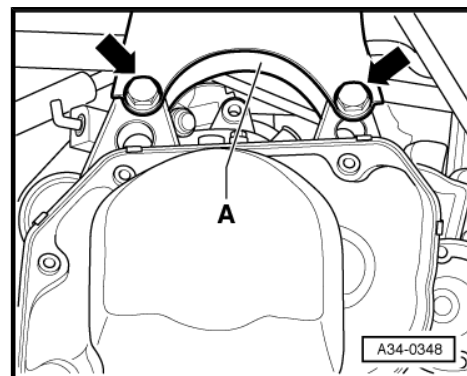
- Remove bolts -arrows- securing gearbox mounting.



- Lower engine/gearbox assembly using spindle of support bracket - 10 - 222 A- until distance -a- is obtained between gearbox support and gearbox mounting.
- Dimension -a- = 50 mm



- Remove bolts -arrows- and detach gearbox support -A-.





To remove gearbox 02T, set up gearbox support - 3282- with adjustment plate - 3282/31- .

- Insert gearbox support - 3282- in engine and gearbox jack - V.A.G 1383 A- .
- Align arms of gearbox support according to holes in adjustment plate.
- Bolt on support elements -A-, as illustrated on adjustment plate.
- Place engine and gearbox jack - V.A.G 1383 A- underneath vehicle.
- The arrow symbol -B- on the adjustment plate points in the direction of travel.
- Align adjustment plate - 3282/31- parallel to gearbox and lock safety support on gearbox.

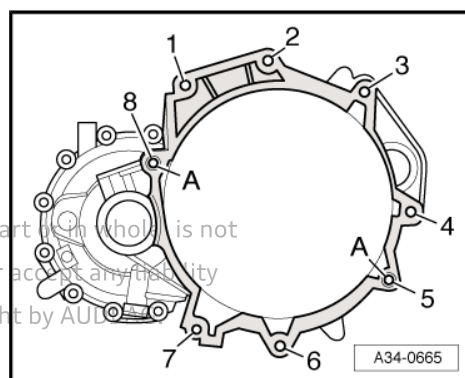
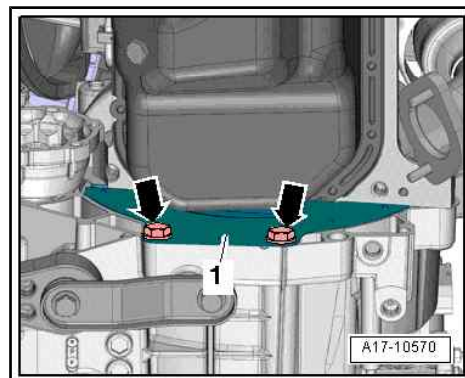
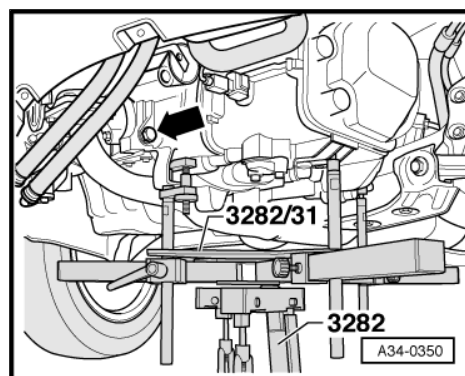
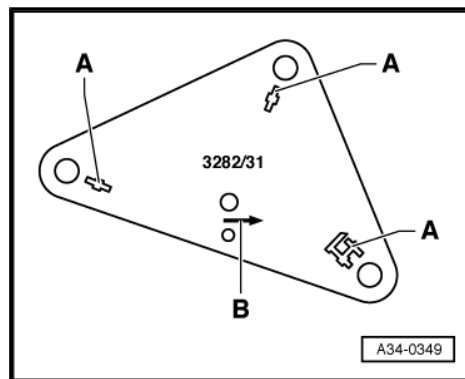


Note

Disregard -arrow-.

- Remove bolts -arrows- and detach cover plate -1-.

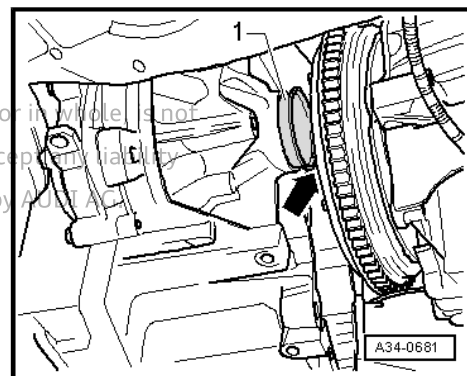
- Remove remaining engine/gearbox securing bolts -5- and -8-.
- Press gearbox off dowel sleeves.
- Detach gearbox from engine.



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- Press engine forward slightly.
- Carefully lower gearbox using engine and gearbox jack - V.A.G 1383 A- and ensure sufficient clearance between sleeve -1- and clutch pressure plate -arrow- to prevent damage.
- While lowering gearbox, adjust position of gearbox using spindles on gearbox support - 3282- .



2.2 Installing gearbox

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



Note

- ◆ *Renew bolts which are tightened by turning through a specified angle.*
- ◆ *Renew self-locking nuts and bolts as well as seals, gaskets and O-rings.*
- ◆ *Secure all hose connections with the correct type of hose clips (same as original equipment) ⇒ Electronic parts catalogue .*
- ◆ *Fit all cable ties in the original positions when installing.*
- ◆ *Clean input shaft splines and (in the case of used clutch plates) the hub splines. Remove corrosion and apply only a very thin coating of grease for clutch plate splines - G 000 100- to the splines. Then move clutch plate backwards and forwards on input shaft until hub moves freely on shaft. It is important to remove excess grease.*



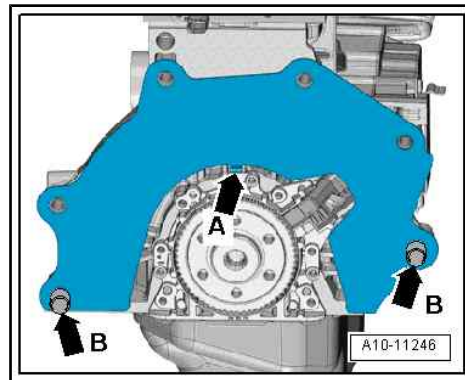
- Check that dowel sleeves -B- for centralising engine/gearbox are in the cylinder block; install any missing dowel sleeves.



Caution

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

- Make sure that the intermediate plate is engaged on the sealing flange -arrow A- and fitted on the dowel sleeves -arrows B-.
- Check clutch release bearing for wear and renew if necessary.
- Lubricate surface which contacts ball-head pin with grease, e.g. -G 000 100-
- Place engine and gearbox jack - V.A.G 1383 A- underneath vehicle.
- The arrow symbol on the adjustment plate points in the direction of travel.
- Remove flange shaft (right-side) when installing a new gearbox or exchange gearbox.
- Check oil seal for flange shaft (right-side) for leakage and renew if necessary → [page 161](#) .
- Carefully raise gearbox using engine and gearbox jack - V.A.G 1383 A- .

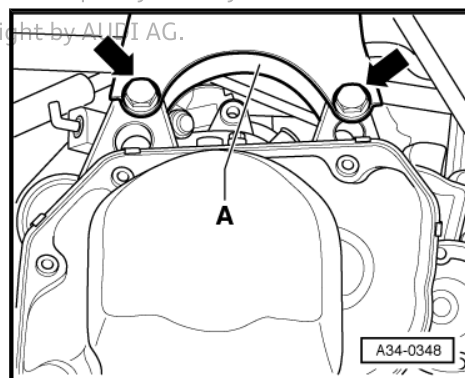
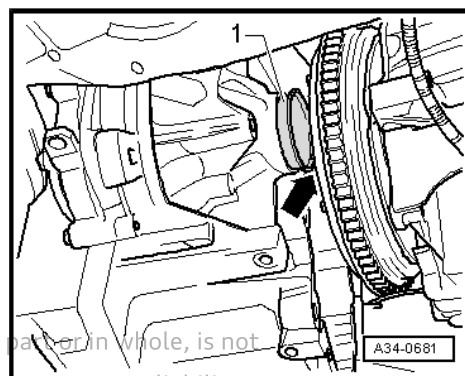


Vehicles up to model year 2014:

- When doing so, ensure sufficient clearance between sleeve -1- and pressure plate -arrow- to prevent damage.

All vehicles (continued):

- Bring gearbox into position.
- Install bottom engine/gearbox securing bolts.
- Detach gearbox support - 3282- with adjustment plate - 328253- from gearbox after bolting gearbox and engine together.
- Install gearbox support -A- → [page 91](#) .
- Install top engine/gearbox securing bolts.
- Raise engine/gearbox assembly via spindle of support bracket - 10 - 222 A- .





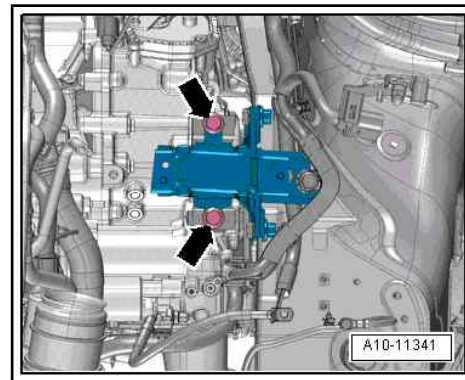
- Align engine/gearbox assembly in installation position. To do so, raise engine/gearbox until gearbox support makes full contact with gearbox mounting.



Caution

Bolts must be fitted straight to avoid damage to threads in gearbox support.

- ◆ **Gearbox support and support arm of gearbox mounting must be perfectly parallel to each other before screwing in bolts -arrows-.**



- Bolt gearbox support to gearbox mounting ⇒ [page 91](#) .



WARNING

Risk of accident.

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

- Install pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support
- Install flange shaft (right-side) ⇒ [page 192](#)
- Install drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft .
- Install clutch slave cylinder ⇒ [page 39](#) .
- Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Exploded view - starter .
- Adjust selector mechanism ⇒ [page 65](#) .
- Check oil level in gearbox and top up with gear oil if necessary ⇒ [page 96](#) .
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

2.3 Tightening torques for gearbox



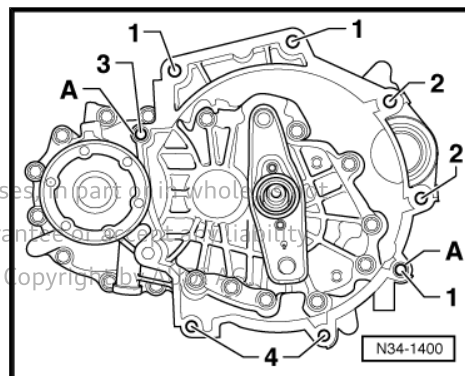
Note

- ◆ *Tightening torques apply only to lightly greased, oiled, phosphated or black-finished nuts and bolts.*
- ◆ *Additional lubricants such as engine or gear oil may be used, but do not use lubricants containing graphite.*
- ◆ *Do not use degreased parts.*
- ◆ *Tolerance for tightening torques: ± 15 %*



Securing manual gearbox 02T to 1.2 ltr. engine

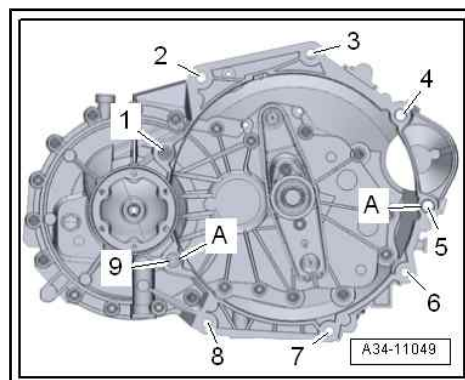
Item	Bolt	Nm
1	M12x65	80
2 ¹⁾	M12x140	80
3	M12x80	80
4	M10x50	40
A	Dowel sleeves for centralising	
• 1) Also secures starter.		



Securing manual gearbox 0DF to 1.0 ltr. engine

Item	Bolt	Nm
1, 9	M12x70	80
2, 3	M12x60	80
4, 5 ¹⁾	M12x150	80
6, 7, 8	M10x55	40
A	Dowel sleeves for centralising	

- ¹⁾ Also secures starter.





3 Assembly mountings

⇒ [“3.1 Exploded view - assembly mountings”, page 91](#)

3.1 Exploded view - assembly mountings

⇒ [“3.1.1 Exploded view - assembly mountings, vehicles with 1.0 ltr. engine”, page 91](#)

⇒ [“3.1.2 Exploded view - assembly mountings, vehicles with 1.2 ltr. engine”, page 93](#)

3.1.1 Exploded view - assembly mountings, vehicles with 1.0 ltr. engine

1 - Engine support

2 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

3 - Engine mounting

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing engine mounting

4 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

5 - Centre hex stud

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

6 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

7 - Pendulum support

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support

8 - Bolt

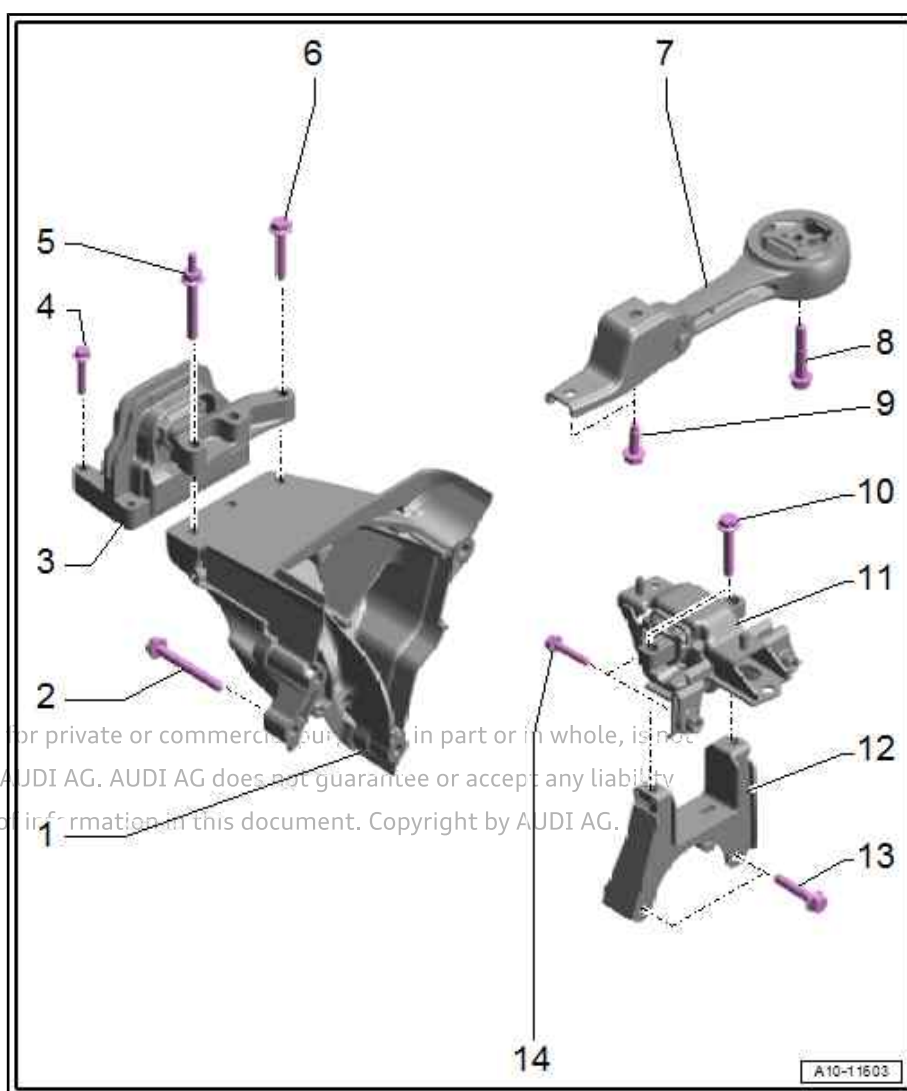
- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

9 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

10 - Bolt

- ☐ 40 Nm +90°
- ☐ Renew





11 - Gearbox mounting

- ☐ With support arm
- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing gearbox mounting

12 - Gearbox support

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

13 - Bolt

- ☐ 40 Nm +90°
- ☐ Renew

14 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 92](#)

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Gearbox mounting - tightening torque and sequence

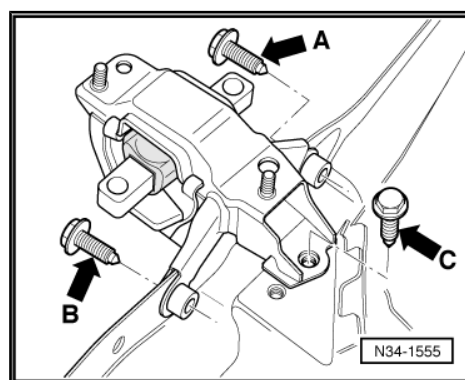


Note

Renew bolts which are tightened by turning through a specified angle.

– Tighten bolts in 3 stages in the sequence shown:

Stage	Bolts	Tightening torque/angle specification
1.	-A, B, C-	Screw in by hand until contact is made
2.	-A, B, C-	50 Nm
3.	-A, B, C-	Turn 90° further





3.1.2 Exploded view - assembly mountings, vehicles with 1.2 ltr. engine

1 - Engine support

2 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

3 - Engine mounting

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing engine mounting

4 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

5 - Support arm

6 - Nut

- ☐ Only loosen this part if engine mounting -item 3- is to be renewed
- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

7 - Threaded pin

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

8 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

9 - Pendulum support

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support

10 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

11 - Bolt

- ☐ Tightening torque ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

12 - Bolt

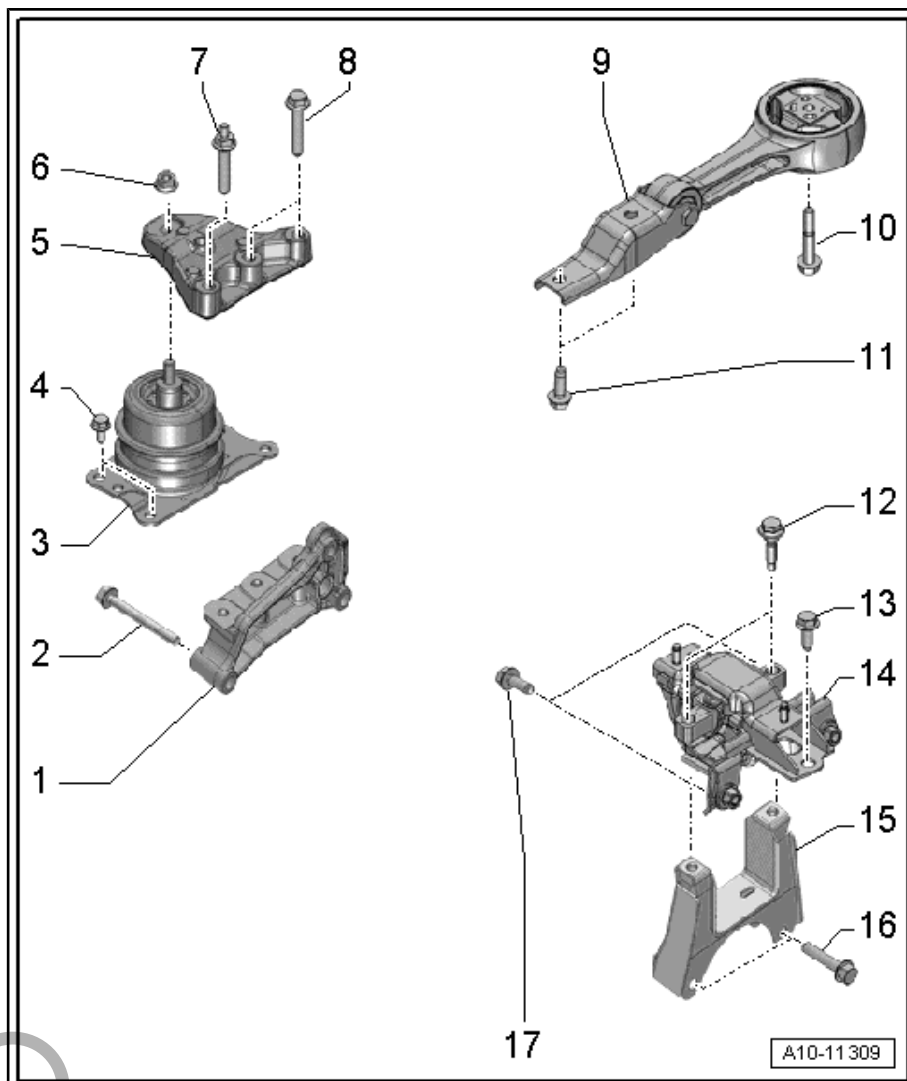
- ☐ 40 Nm +90°
- ☐ Renew

13 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 92](#)

14 - Gearbox mounting

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing gearbox mounting





15 - Gearbox support

- ☐ Removing and installing ⇒ Rep. gr. 10 ; Assembly mountings; Exploded view - assembly mountings

16 - Bolt

- ☐ 40 Nm +90°
- ☐ Renew

17 - Bolt

- ☐ Renew
- ☐ Tightening torque and sequence ⇒ [page 92](#)



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4 Transporting gearbox

Special tools and workshop equipment required

◆ Gearbox lifting tackle - 3336-

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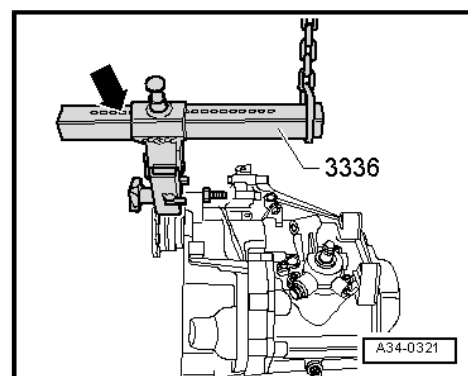
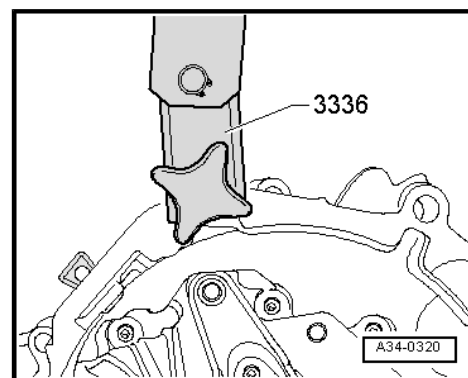


◆ Workshop hoist - VAS 6100-



Procedure

- Bolt gearbox lifting tackle - 3336- to clutch housing.
- Set support arm on sliding bracket by means of locking pin -arrow-.
- Number of holes visible = 6
- Lift gearbox with workshop hoist - VAS 6100- and gearbox lifting tackle - 3336- .





5 Gear oil

⇒ ["5.1 Checking gear oil level", page 96](#)

⇒ ["5.2 Draining and filling gear oil", page 96](#)

5.1 Checking gear oil level

Special tools and workshop equipment required

- ◆ Socket - 3357-



or

- ◆ 17 mm socket (hexagon key)

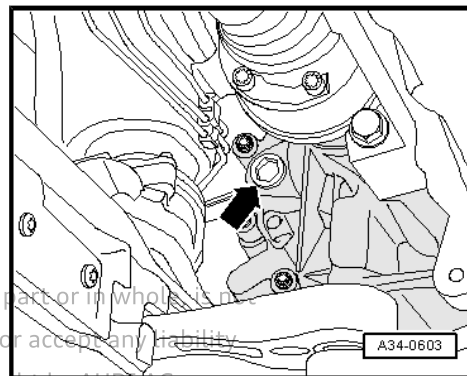
Procedure

- Drive vehicle onto a four-column lifting platform or over an inspection pit (vehicle must be horizontal).
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove oil filler plug -arrow-.
- Specification: oil level up to bottom lip of filler hole
- Top up gear oil if necessary. Specifications ⇒ Electronic parts catalogue
- Tighten oil filler plug -arrow- to specified torque.

Tightening torques

- ◆ ⇒ [Fig. "Different versions of oil filler/oil drain plug"](#), [page 126](#)

- ◆ ⇒ General body repairs, exterior, Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

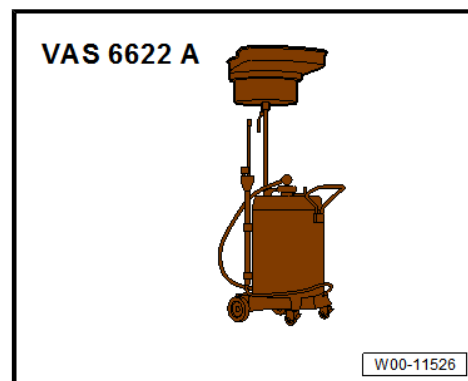


5.2 Draining and filling gear oil

Special tools and workshop equipment required



- ◆ Used oil collection and extraction unit - VAS 6622A-



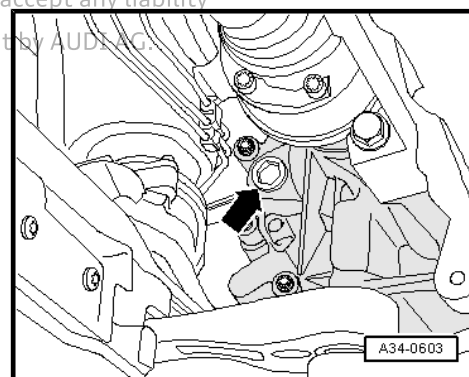
- ◆ Gear oil specifications ⇒ Electronic parts catalogue

Draining

- Drive vehicle onto a four-column lifting platform or over an inspection pit (vehicle must be horizontal).
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Place used oil collection and extraction unit - VAS 6622A- below gearbox.
- Unscrew oil drain plug ⇒ [Item 3 \(page 103\)](#) and allow gear oil to drain.
- Tighten oil drain plug to specified torque.

Filling

- Unscrew oil filler plug -arrow-.
- Fill up gear oil to bottom lip of filler hole.
- Screw in oil filler plug -arrow-.
- Start engine and let gearbox turn in neutral for approx. 2 minutes.
- Switch off engine and remove oil filler plug.
- Top up gear oil again to bottom lip of filler hole.
- Tighten plug -arrow- to specified torque.



Tightening torques

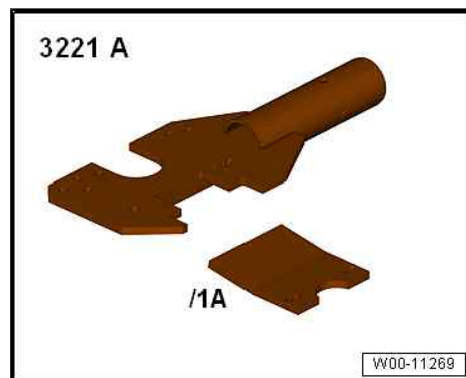
- ◆ ⇒ [Fig. ""Different versions of oil filler/oil drain plug""](#), [page 126](#)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



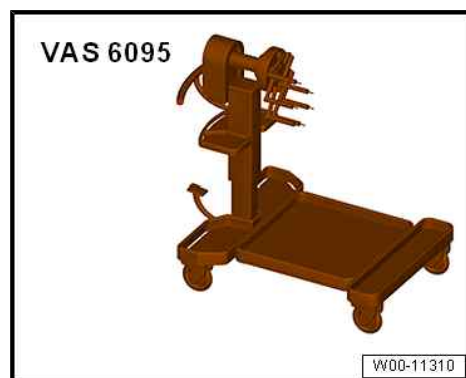
6 Securing to engine and gearbox support

Special tools and workshop equipment required

- ◆ Gearbox support - 3221A-



- ◆ Engine and gearbox support - VAS 6095- or support clamp - VW 313-



Preparing gearbox support - 3221- for manual gearbox 02T:

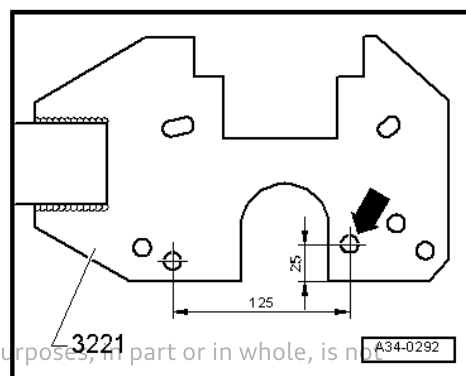
The old gearbox support - 3221- can be converted into gearbox support - 3221A- as follows:

- Make an additional $\varnothing 11$ mm drilling -arrow- in gearbox support - 3221- according to dimensions shown (dimensions in mm).



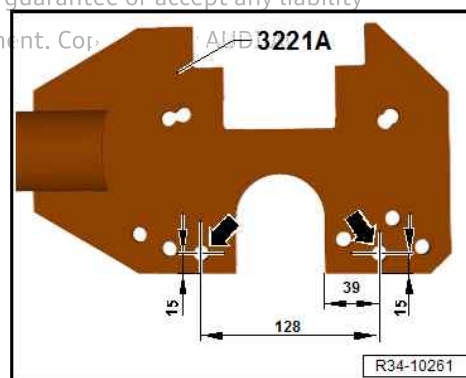
Note

This drilling is already present on gearbox support - 3221A-



Preparing gearbox support - 3221A- for manual gearbox 0DF:

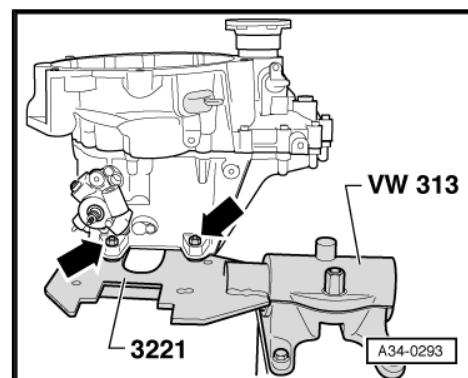
- Make two additional $\varnothing 11$ mm drillings -arrows- in gearbox support - 3221A- according to dimensions shown (dimensions in mm).





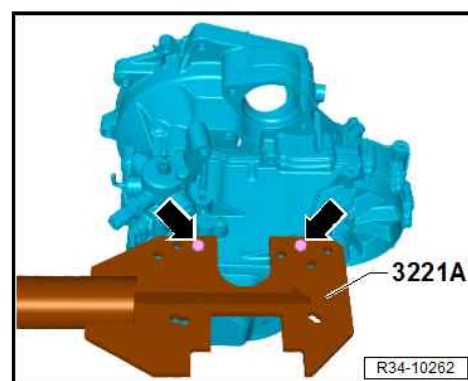
Manual gearbox 02T

- Bolt gearbox support - 3221- / -3221A- to gearbox housing -arrows-, as shown in illustration.



Manual gearbox 0DF

- Bolt gearbox support - 3221A- to gearbox housing -arrows- as shown in illustration.



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7 Dismantling and assembling gearbox

⇒ ["7.1 Schematic overview - gearbox", page 100](#)

⇒ ["7.2 Exploded view - gearbox", page 101](#)

⇒ ["7.3 Exploded view - gearbox housing cover", page 102](#)

⇒ ["7.4 Exploded view - input shaft, output shafts, differential and selector rods", page 103](#)

⇒ ["7.5 Exploded view - selector forks", page 105](#)

⇒ ["7.6 Exploded view - selector unit", page 106](#)

⇒ ["7.7 Servicing selector forks", page 107](#)

⇒ ["7.8 Removing and installing angled rod", page 110](#)

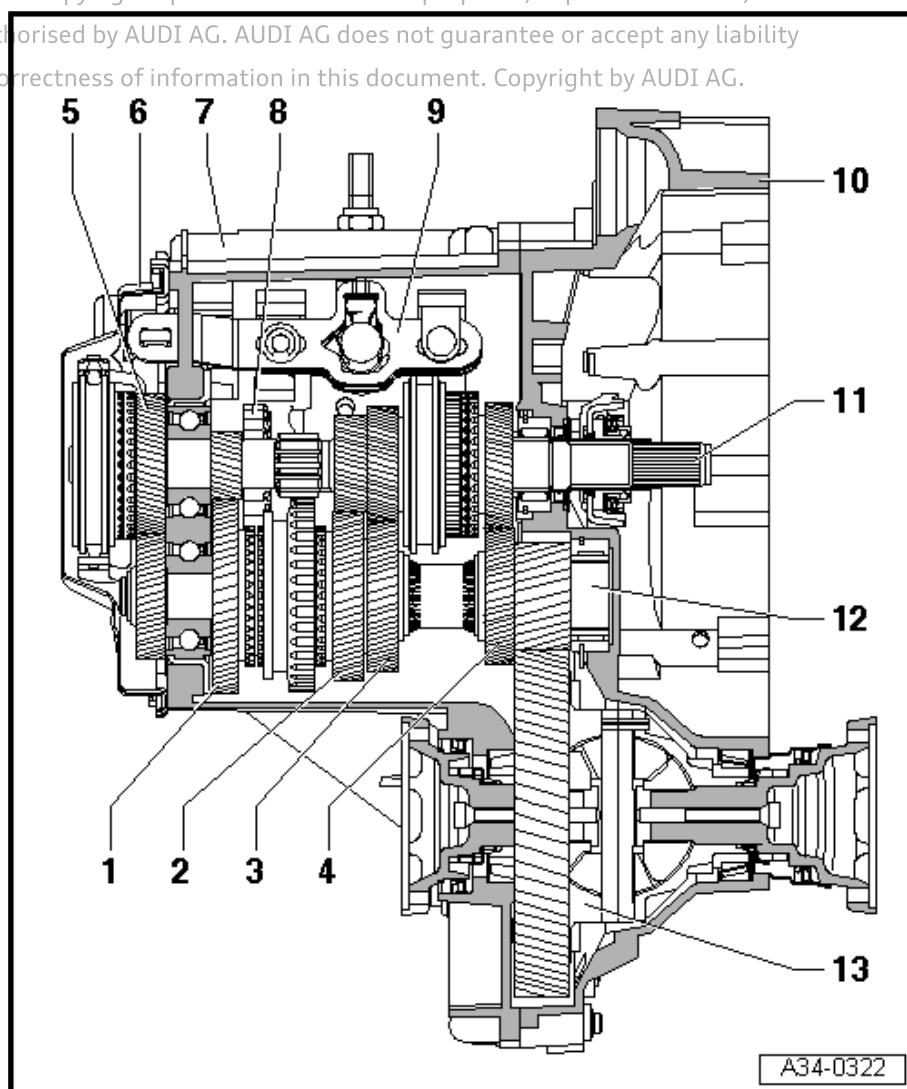
⇒ ["7.9 Removing and installing 5th gear", page 111](#)

⇒ ["7.10 Dismantling and assembling gearbox", page 113](#)

7.1 Schematic overview - gearbox

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- 1 - 1st gear
- 2 - 2nd gear
- 3 - 3rd gear
- 4 - 4th gear
- 5 - 5th gear
- 6 - Gearbox housing cover
- 7 - Gearbox housing
- 8 - Reverse gear wheel
- 9 - Selector mechanism
 - Selector forks
- 10 - Clutch housing
- 11 - Input shaft
- 12 - Output shaft
- 13 - Differential





7.2 Exploded view - gearbox

Sequence for dismantling and assembling ⇒ [page 113](#)

I - Gearbox housing cover and 5th gear

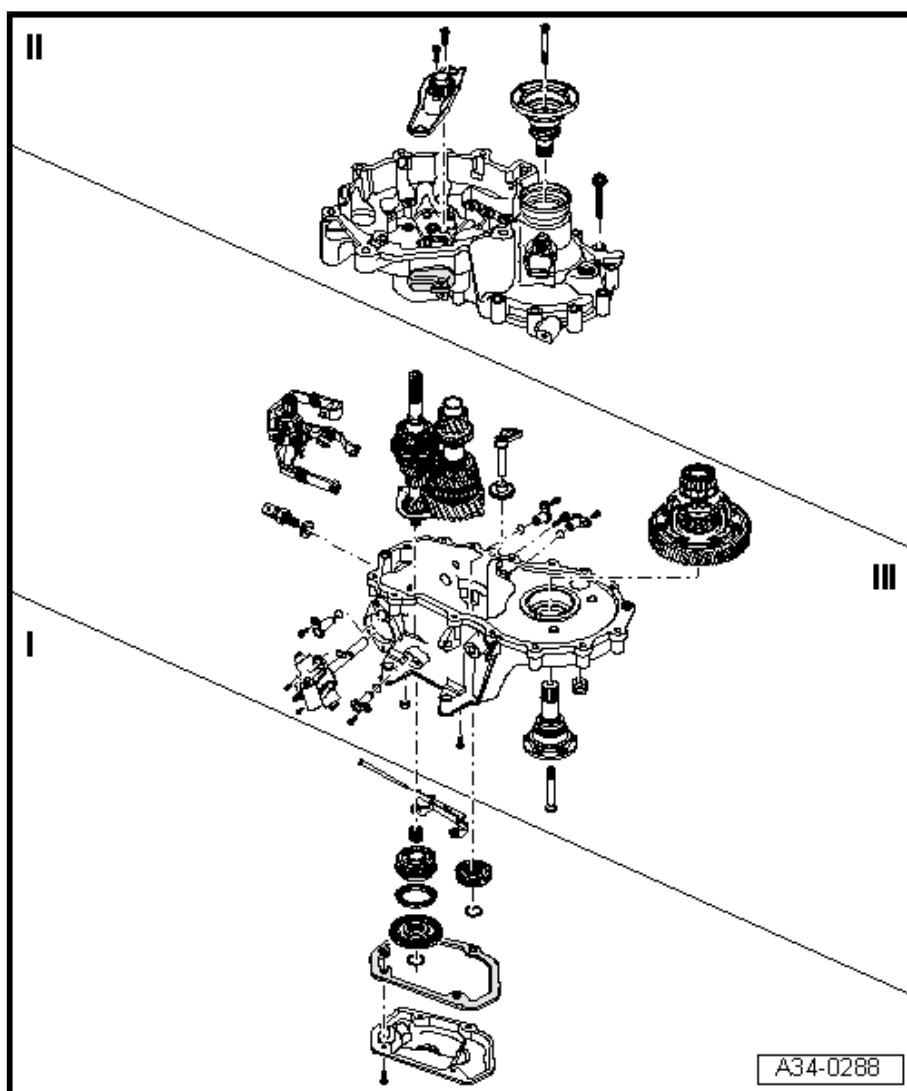
- ❑ Exploded view
⇒ [page 102](#)

II - Clutch housing

- ❑ Exploded view
⇒ [page 124](#)
- ❑ Removing and installing
⇒ [page 128](#)

III - Input shaft, output shaft, differential, selector mechanism and selector forks

- ❑ Exploded view
⇒ [page 103](#)
- ❑ Removing and installing
⇒ [page 113](#)



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7.3 Exploded view - gearbox housing cover

1 - Gearbox housing

- ☐ Servicing ⇒ [page 125](#)

2 - 5th gear wheel

- ☐ Installation position:
large collar faces gear-
box housing cover
⇒ [Item 5 \(page 102\)](#)
- ☐ Removing and installing
⇒ [page 111](#)

3 - Circlip

- ☐ Renew
- ☐ Determining thickness
⇒ [page 113](#)

4 - Gasket

5 - Gearbox housing cover



Note

*If the gearbox housing cover is in-
stalled with the gearbox in the vehi-
cle, check and top up oil
⇒ [page 96](#).*

6 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°

7 - Circlip

- ☐ Renew
- ☐ Determining thickness
⇒ [page 113](#)

8 - Synchro-hub with locking collar and check ring for 5th gear

- ☐ Dismantling and assembling

9 - 5th gear synchro-ring

10 - 5th speed selector gear

11 - Needle bearing

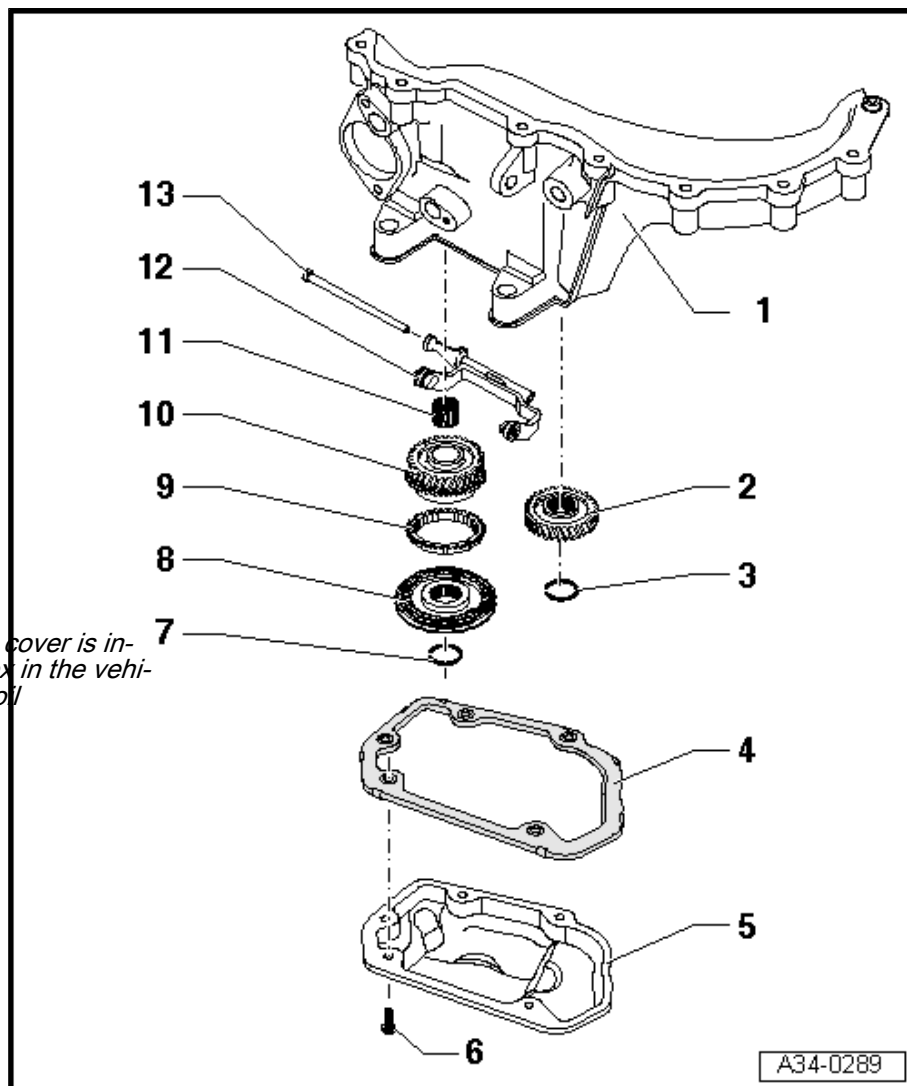
- ☐ For 5th gear

12 - 5th gear selector fork

- ☐ Dismantling and assembling ⇒ [page 105](#)

13 - Pivot pin

- ☐ For 5th gear selector fork





7.4 Exploded view - input shaft, output shafts, differential and selector rods



Note

Securing gearbox to assembly stand ⇒ [page 98](#)

1 - Differential

- ☐ Removing and installing
⇒ [page 113](#)
- ☐ Dismantling and assembling
⇒ [page 166](#)

2 - Gearbox housing

- ☐ Servicing ⇒ [page 130](#)

3 - Oil drain plug

- ☐ Tightening torque
⇒ [page 126](#)

4 - Flange shaft with spring

- ☐ Only for manual gearbox 02T
- ☐ Removing and installing
⇒ [page 190](#)
- ☐ Assembling
⇒ [page 166](#)

5 - Countersunk bolt

- ☐ Only for manual gearbox 02T
- ☐ Tightening torque
⇒ [Item 1 \(page 167\)](#)

6 - Bolt

- ☐ Secures bearing mounting with grooved ball bearings for input and output shafts
⇒ [Item 18 \(page 104\)](#)
- ☐ Self-locking
- ☐ Renew
- ☐ 5 Nm +90°

7 - Hexagon flange nut

- ☐ 23 Nm
- ☐ For selector mechanism ⇒ [Item 17 \(page 104\)](#)
- ☐ Self-locking
- ☐ Renew

8 - O-ring

- ☐ Renew

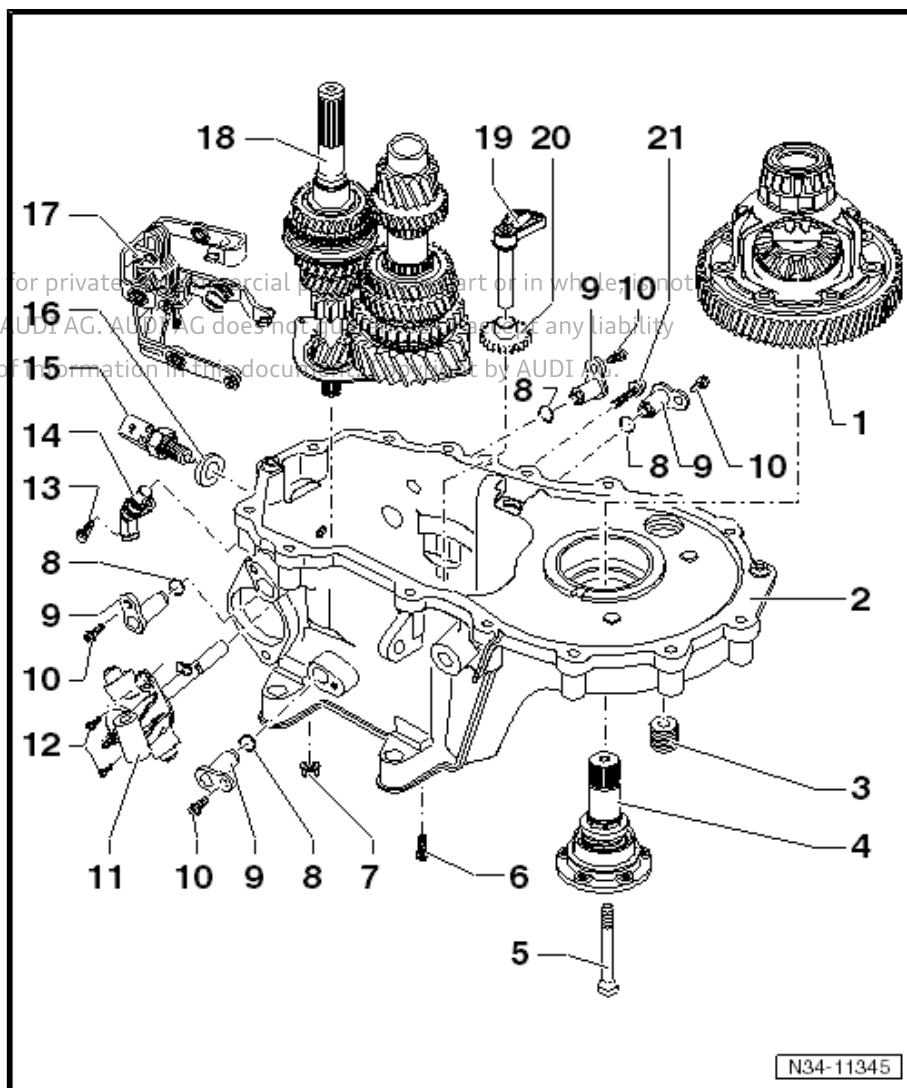
9 - Pivot pin

10 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°

11 - Selector shaft with selector mechanism cover

- ☐ Selector unit





- ☐ Dismantling and assembling ⇒ [page 106](#)

12 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°

13 - Bolt

- ☐ 6 Nm

14 - Gearbox neutral position sender - G701-

- ☐ For vehicles with start/stop system

15 - Reversing light switch - F4-

- ☐ 20 Nm
- ☐ With captive seal; seal does not have to be renewed

16 - Seal

- ☐ Captive seal; does not have to be renewed

17 - Selector mechanism

- ☐ Selector forks
- ☐ Dismantling and assembling ⇒ [page 105](#)

18 - Input and output shafts with bearing mounting for grooved ball bearings

- ☐ If bearing mounting is separated from gearbox housing, it must always be renewed
- ☐ Removing and installing ⇒ [page 113](#)
- ☐ Pressing bearing mounting on and off ⇒ [page 137](#)
- ☐ Dismantling and assembling input shaft ⇒ [page 135](#)
- ☐ Dismantling and assembling output shaft ⇒ [page 148](#)

19 - Reverse gear shaft

20 - Reverse gear wheel

21 - Bolt

- ☐ For reverse gear shaft
- ☐ Renew
- ☐ M6 - 5 Nm + 90°
- ☐ M8 - 25 Nm + 45°



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7.5 Exploded view - selector forks



Note

The selector fork cluster (⇒ [Item 1 \(page 105\)](#)) does not have to be dismantled in order to remove and install the detent segments, clamping washers and angular contact ball bearings.

1 - Selector fork cluster with selector plates

2 - 3rd/4th gear detent segment

- ☐ Identification ⇒ [page 108](#)
- ☐ Detent segment should turn freely after installation.
- ☐ Separate detent segments are fitted in some gearboxes ⇒ [page 109](#)
- ☐ Identification ⇒ [page 109](#)

3 - Angular contact ball bearing

- ☐ 4x
- ☐ Removing ⇒ [page 110](#)
- ☐ Pressing inner race into outer race ⇒ [page 110](#)
- ☐ Installing ⇒ [page 110](#)

4 - Clamping washer

- ☐ Renew
- ☐ Removing ⇒ [page 109](#)
- ☐ Installing ⇒ [page 110](#)

5 - 1st/2nd gear detent segment

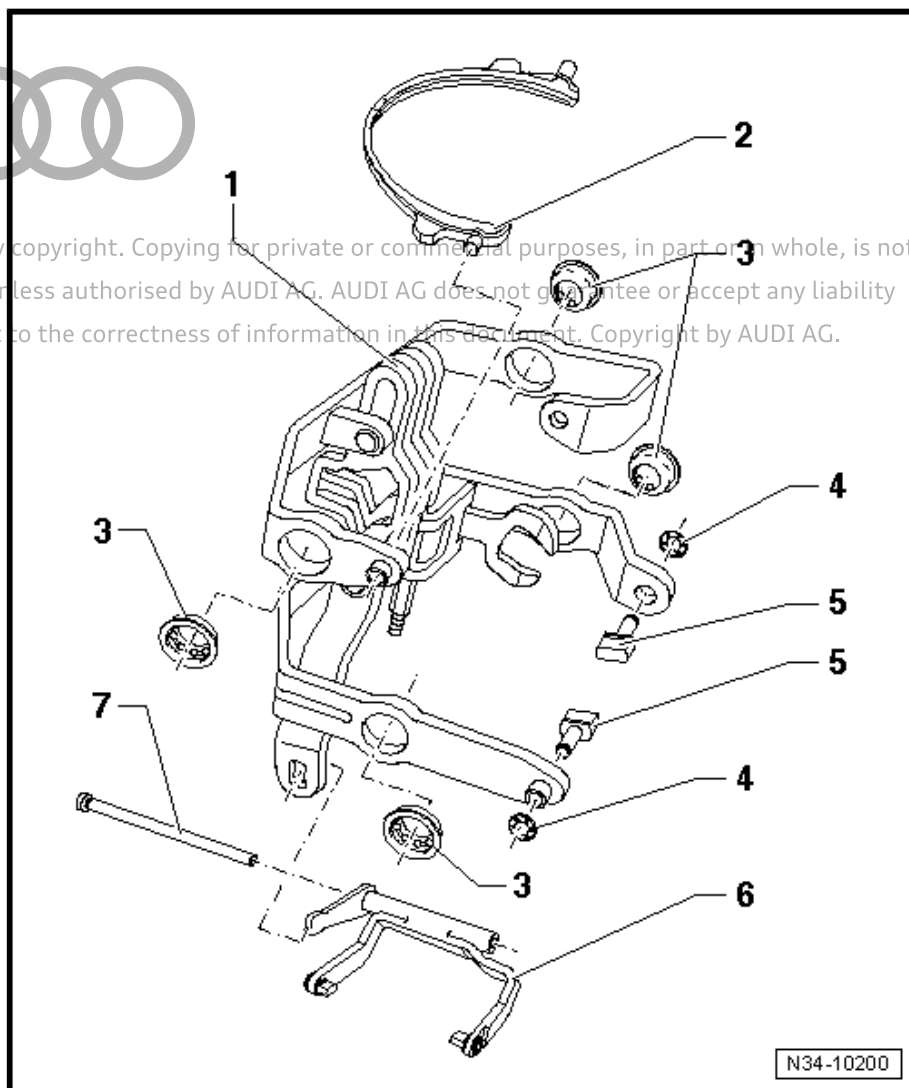
- ☐ Identification ⇒ [page 108](#)
- ☐ The segment must rotate freely after installing the lock washer
- ☐ Selector fork with detent segment ⇒ [page 109](#)

6 - 5th gear selector fork with detent segments

- ☐ Detent segments are inseparably joined with selector fork
- ☐ Identification ⇒ [page 108](#)

7 - Pivot pin

- ☐ For 5th gear selector fork





7.6 Exploded view - selector unit

1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ [page 134](#)
- ☐ Driving in ⇒ [page 134](#)

2 - Angled rod

- ☐ For adjusting selector mechanism ⇒ [page 65](#)
- ☐ Removing and installing ⇒ [page 110](#)

3 - Selector shaft with selector mechanism cover

- ☐ Selector unit
- ☐ Renew together

4 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°

5 - Oil seal

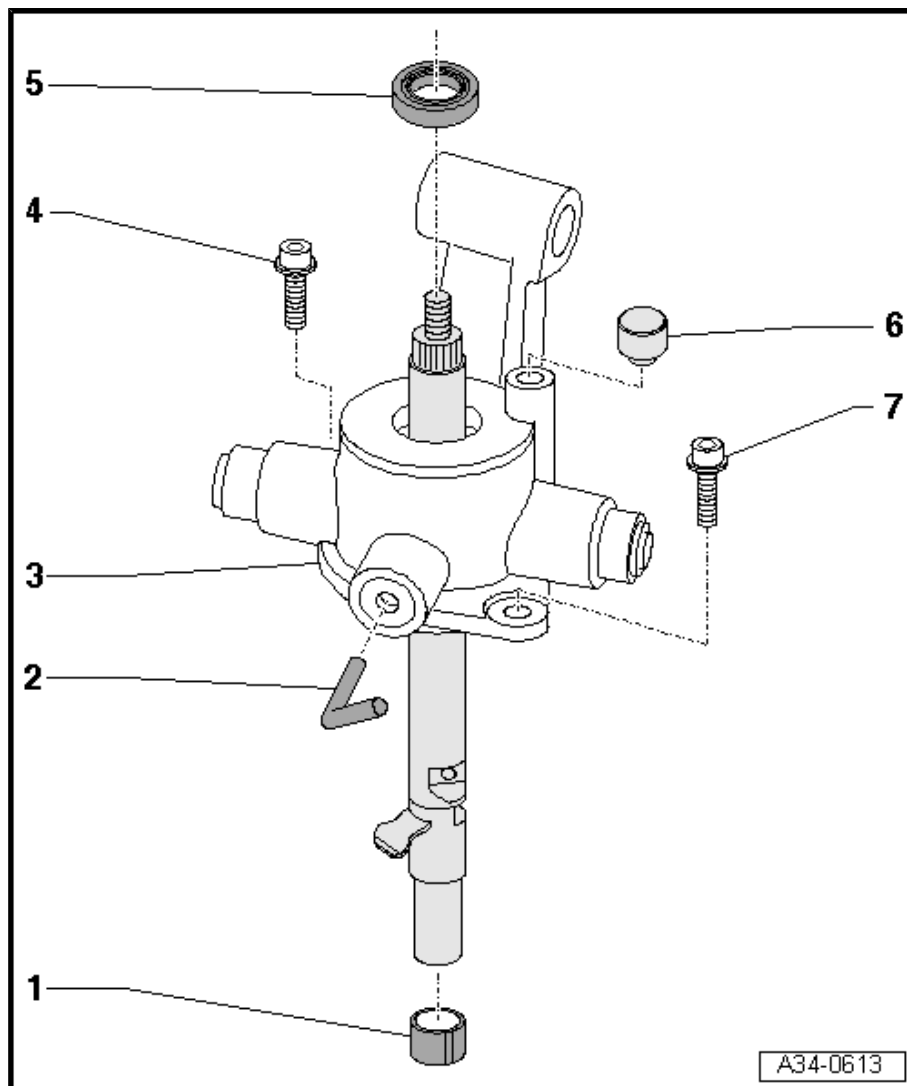
- ☐ Renewing ⇒ [page 71](#)

6 - Cap

- ☐ For gearbox breather

7 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°



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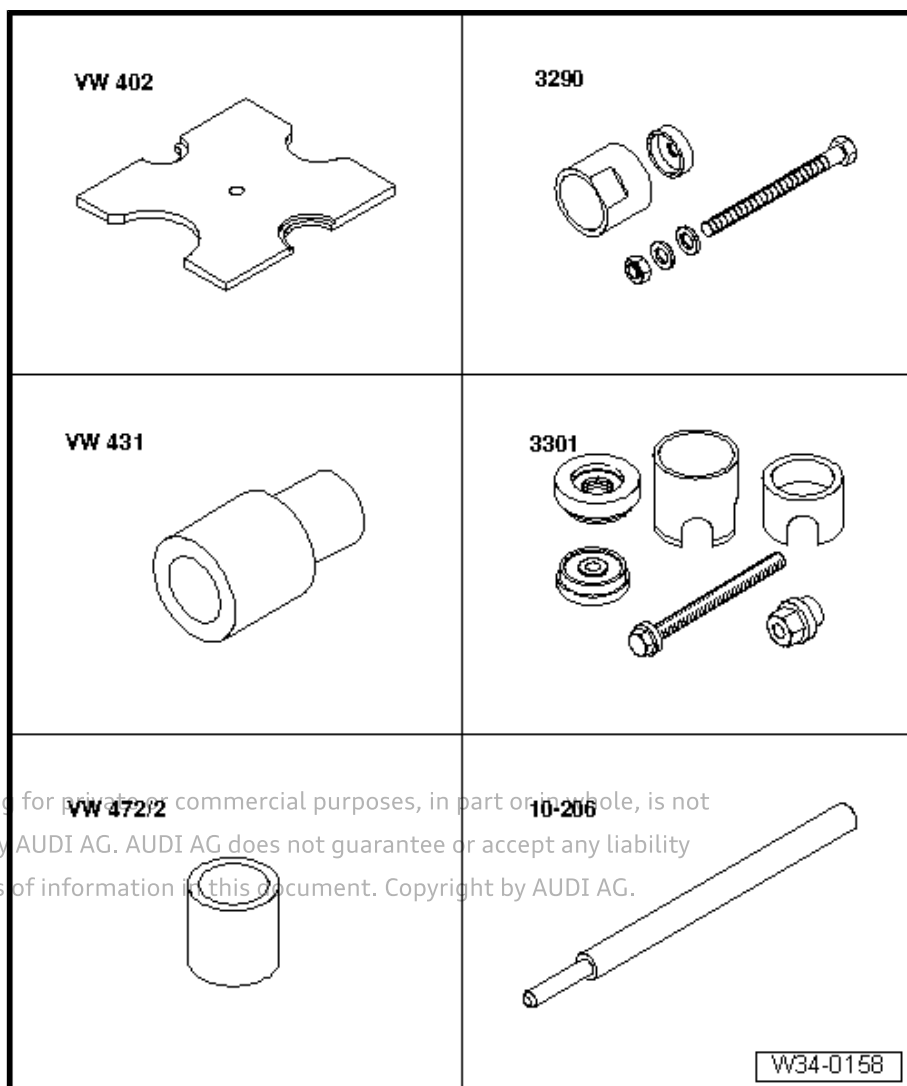


7.7 Servicing selector forks

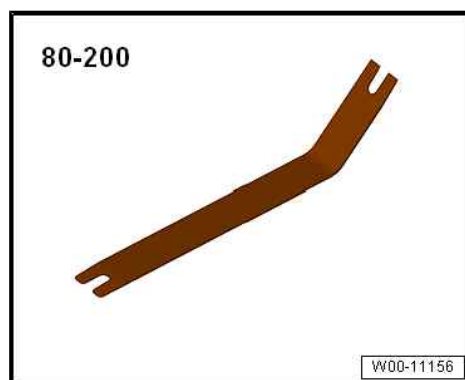
Special tools and workshop equipment required



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- ◆ Thrust plate - VW 402-
- ◆ Thrust piece -3290/1- from assembly tool - 3290-
- ◆ Assembly tool - 3301-
- ◆ Thrust piece - VW 431-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Drift - 10 - 206-



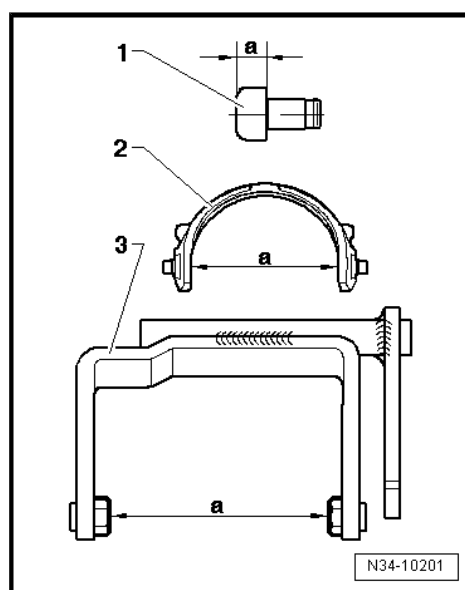
- ◆ Assembly mandrel - 10-508
- ◆ Removal lever - 80-200
- ◆ Tensioning device - 2070



Identification of detent segments and 5th gear selector fork with detent segments

Dimension -a-

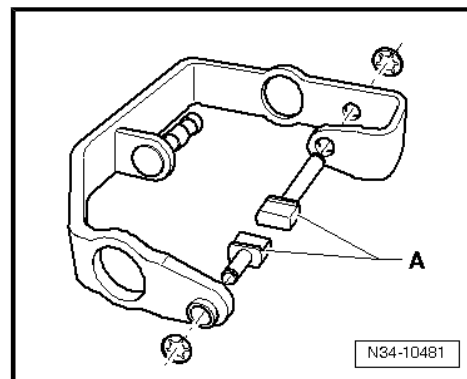
- 1 - Detent segments 1st/2nd gear = 10.2 mm
- 2 - Detent segment 3rd/4th gear = 78.6 mm
- 3 - 5th/6th gear selector fork with detent segments = 79.5 mm





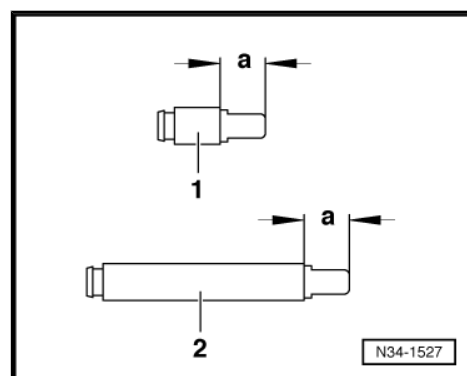
Separate detent segments for 3rd/4th gear -A-

Detent segments should turn freely after installation.



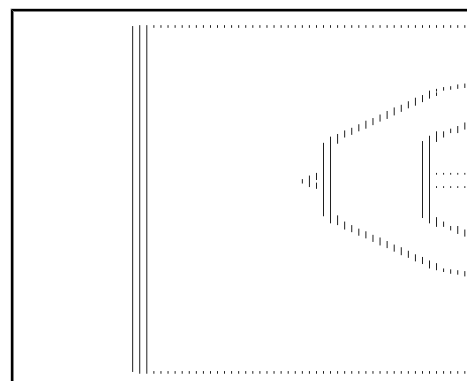
Identification of separate detent segments for 3rd/4th gear

- 1 - Short detent segment for 3rd/4th gear -a- = 10.2 mm
- 2 - Long detent segment for 3rd/4th gear -a- = 10.2 mm



1st/2nd gear selector fork with detent segments

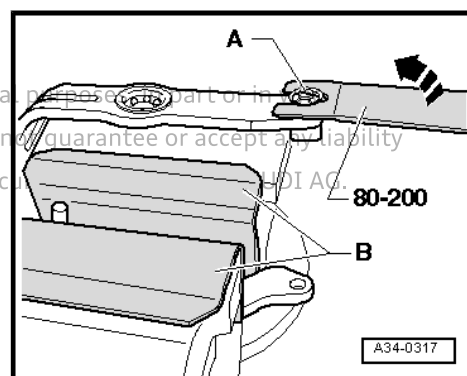
Distance -a- = 75 mm



Removing lock washer

- Secure selector fork in vice with protective jaw covers -B-.
- Lever off lock washer -A- in direction of -arrow-.

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Installing lock washer

- Press lock washer into groove on detent segment using socket attachment.

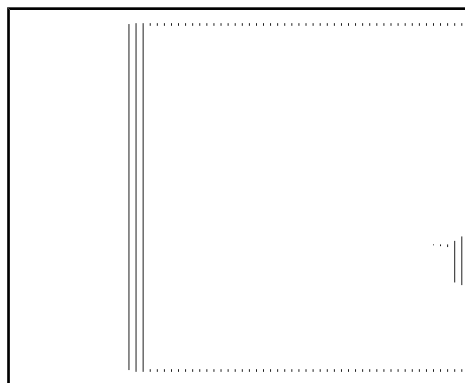
A - Socket (10 mm)

B - Protective jaw covers



Note

Detent segment should turn freely after lock washer is installed.

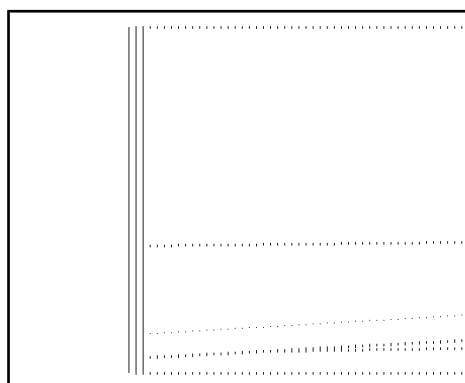


Removing angular contact ball bearing



Note

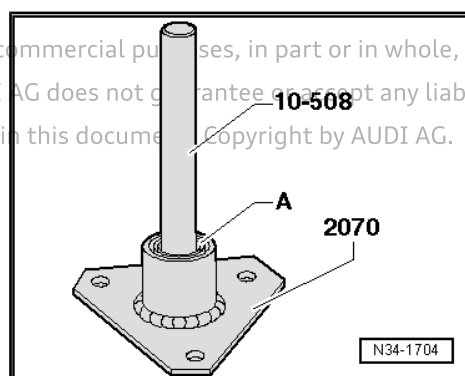
Do not bend selector forks when removing and installing the ball bearing.



Pressing inner race -A- of angular contact ball bearing into outer race

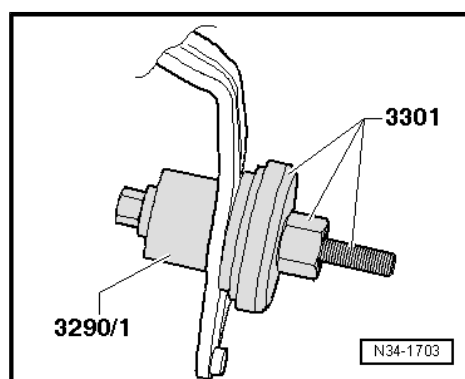
Inner race must engage positively in outer race.

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Pulling angular contact ball bearing into selector fork (insert onto stop)

Recess in thrust piece - 3290/1- points towards ball bearing.



7.8 Removing and installing angled rod

Special tools and workshop equipment required

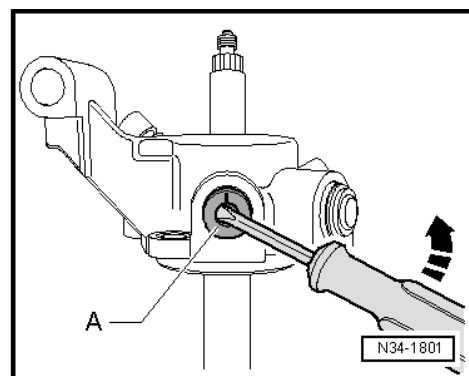


◆ Tube - T10203-



Removing

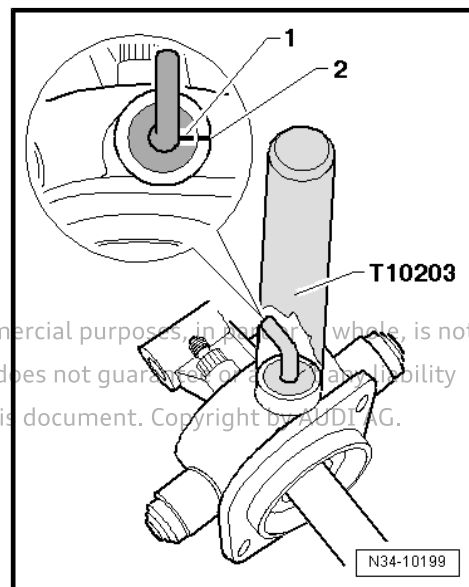
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Remove outer part of angled rod -A-.
- Carefully lever out angled rod with a screwdriver -arrow-.



Installing

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

- Drive angled rod into selector mechanism cover with tube - T10203- .
- Installation position: Marking -1- should coincide with marking -2- on selector mechanism cover.
- Install battery tray and battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Exploded view - battery .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



7.9 Removing and installing 5th gear



Note

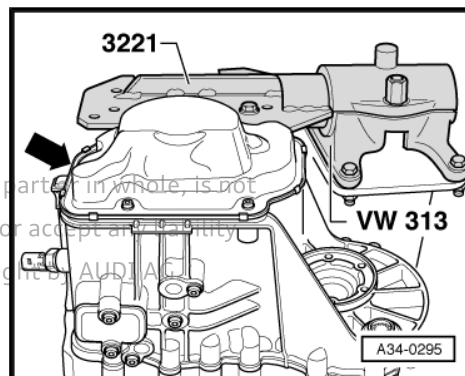
The gearbox housing cover and 5th gear can also be removed without removing the gearbox from the vehicle. The gearbox oil must be drained off for this operation. The following instructions describe removal and installation with the gearbox removed from the vehicle.



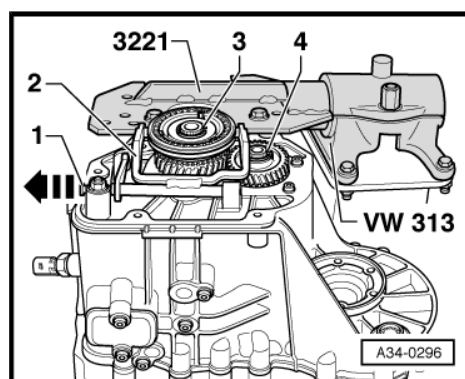
Removing

- Gearbox removed
- Secure gearbox to assembly stand ⇒ [page 98](#) .
- Unbolt gearbox housing cover -arrow-.

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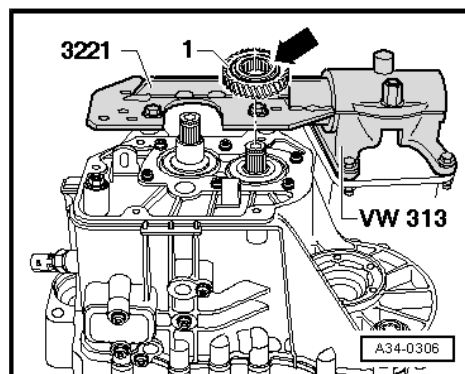


- Pull out pivot pin -1- for 5th gear selector fork -2- and remove selector fork.
- Remove circlip -3- for 5th gear synchro-hub.
- Remove circlip -4- for 5th gear wheel.
- Take off selector gear, locking collar with synchro-hub, and gear wheel.



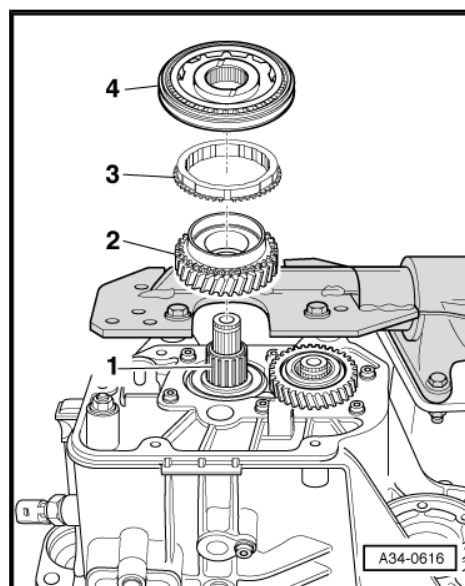
Installing

- Check synchro-ring for wear ⇒ [page 144](#) .
- Fit 5th gear wheel -1-.
- Installation position of 5th gear wheel: the large collar -arrow- points to the gearbox housing cover.



- Install the following components in the sequence indicated:

- 1 - Needle bearing for 5th speed selector gear
- 2 - 5th speed selector gear
- 3 - 5th gear synchro-ring
- 4 - 5th gear synchro-hub with locking collar and check ring





- Fit 5th gear selector fork -2- and slide pivot pin -1- in onto stop in direction of -arrow-.
- Determine thickness of new circlips -arrow- for input shaft -3- and output shaft -4-.
- 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)		
2.00	2.10	2.20

- Install gearbox housing cover.

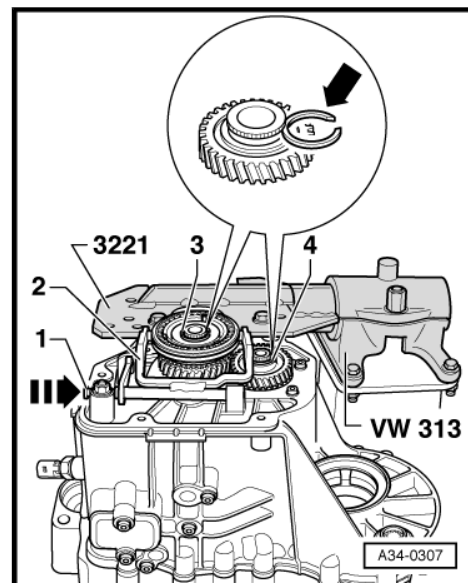


Note

If the gearbox cover is installed with the gearbox in the vehicle, fill up with gear oil and check oil level ⇒ [page 96](#) .

Tightening torques

- ◆ ⇒ [“7.3 Exploded view - gearbox housing cover”, page 102](#)



7.10 Dismantling and assembling gearbox

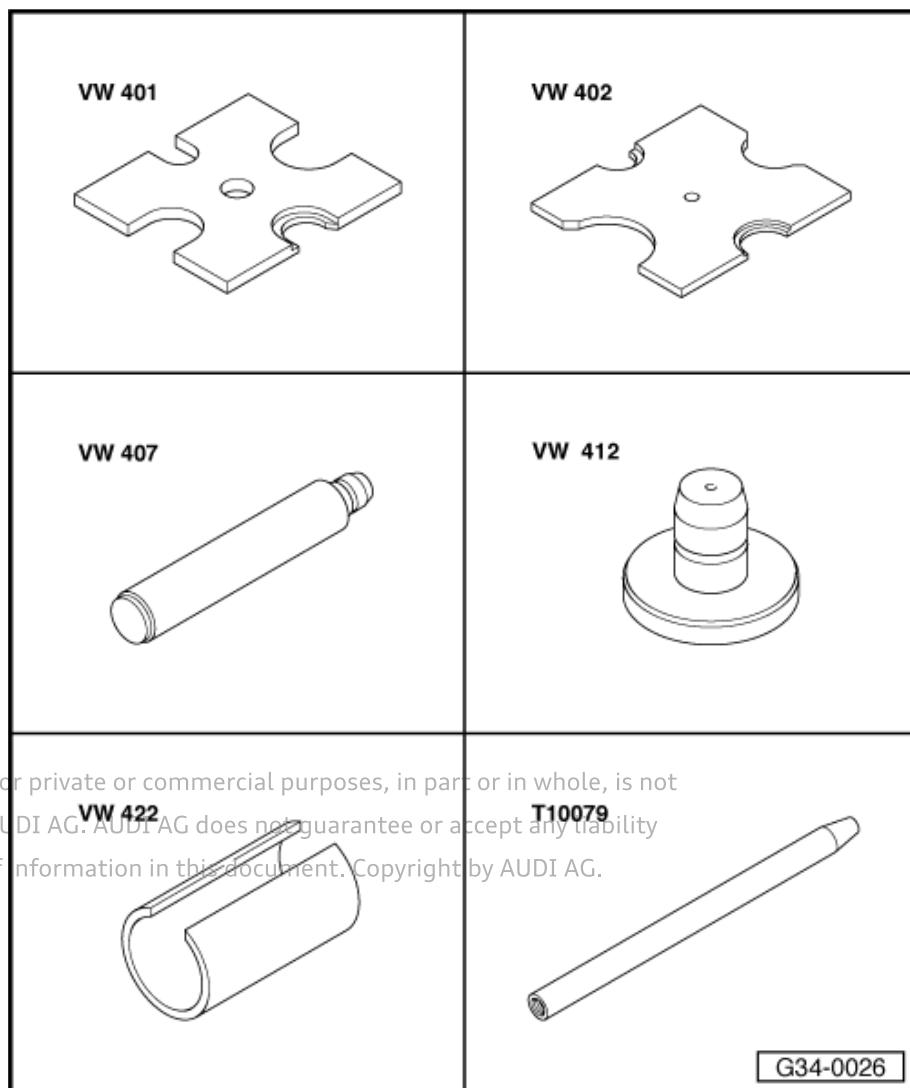
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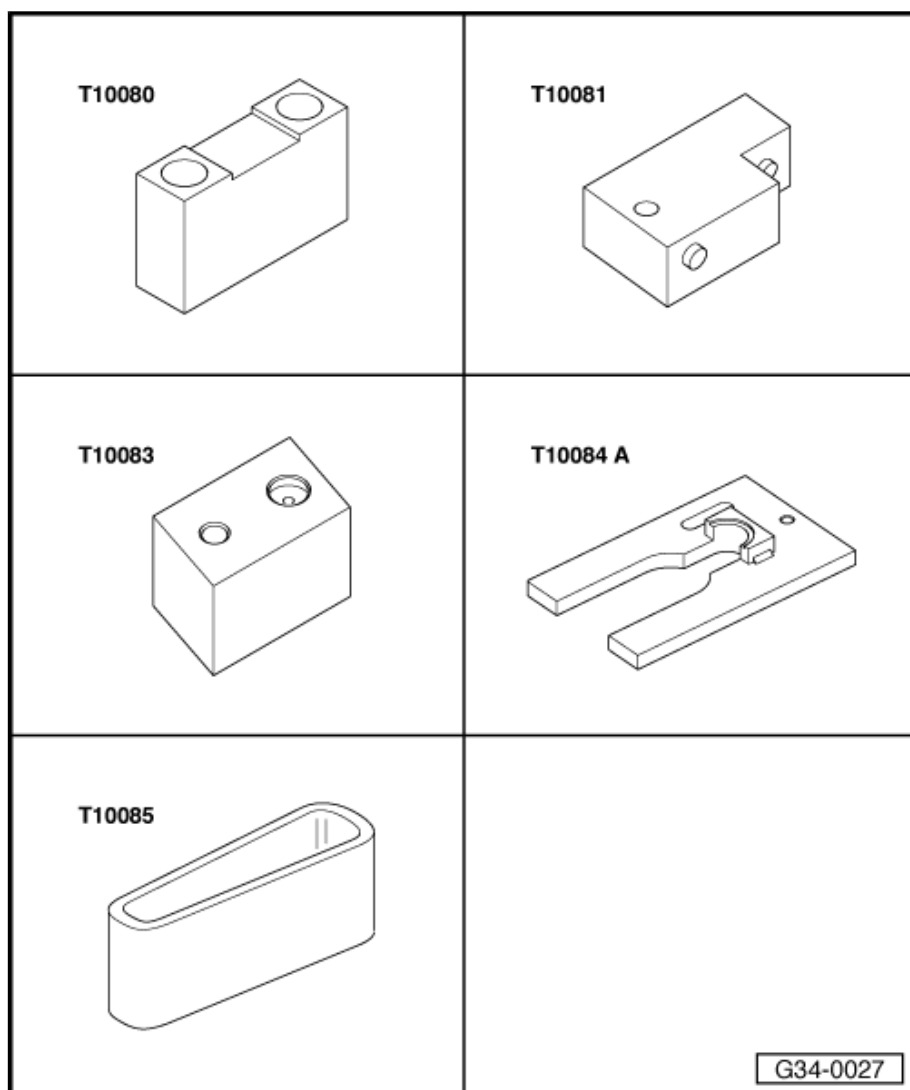
**Special tools and workshop
equipment required**



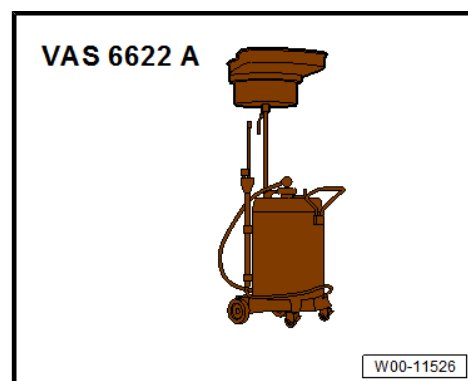
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- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 422-
- ◆ Guide pin - T10079-



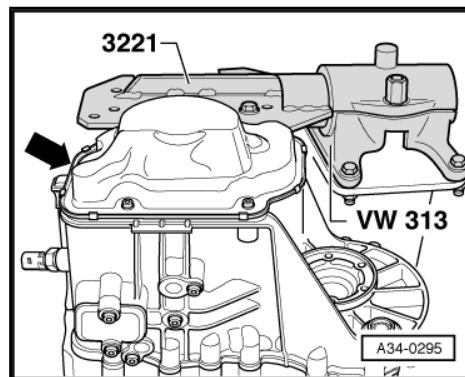
- ◆ Thrust piece - T10080-
- ◆ Thrust piece - T10081-
- ◆ Thrust block - T10083-
- ◆ Thrust plate - T10084 A-
- ◆ Thrust piece - T10085-
- ◆ Used oil collection and extraction unit - VAS 6622A-



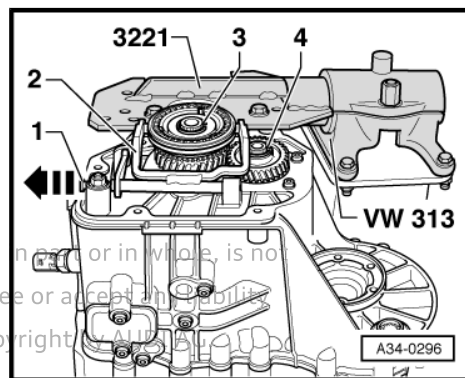


Dismantling gearbox

- Gearbox removed
- Secure gearbox to assembly stand ⇒ [page 98](#) .
- Place used oil collection and extraction unit - VAS 6622A- below gearbox.
- Drain off gear oil.
- Unbolt gearbox housing cover -arrow-.



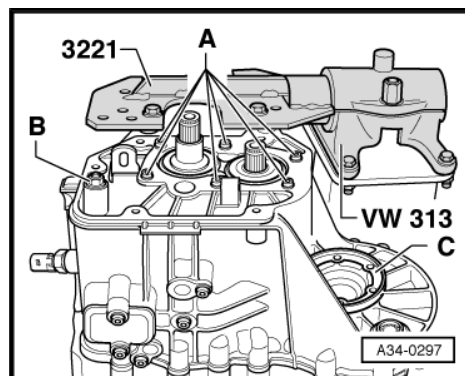
- Pull out pivot pin -1- for 5th gear selector fork -2- and remove selector fork.
- Remove circlip -3- for 5th gear synchro-hub.
- Remove circlip -4- for 5th gear wheel.
- Take off synchro-hub for 5th gear, selector gear and 5th gear wheel.



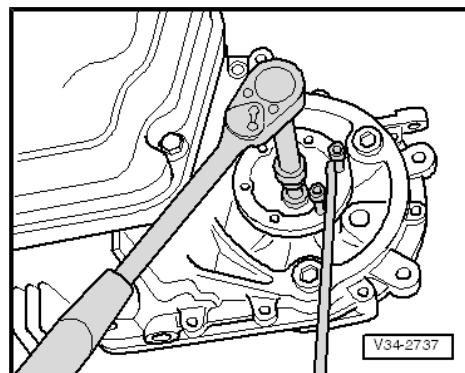
- Unscrew securing bolts -A- for bearing mounting for input and output shafts.
- Unscrew hexagon flange nut -B- for selector mechanism (reverse gear wheel mounting).

Manual gearbox 02T:

- Remove flange shaft -C- (see next illustration).



- Remove securing bolt for flange shaft (left-side); to do so, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



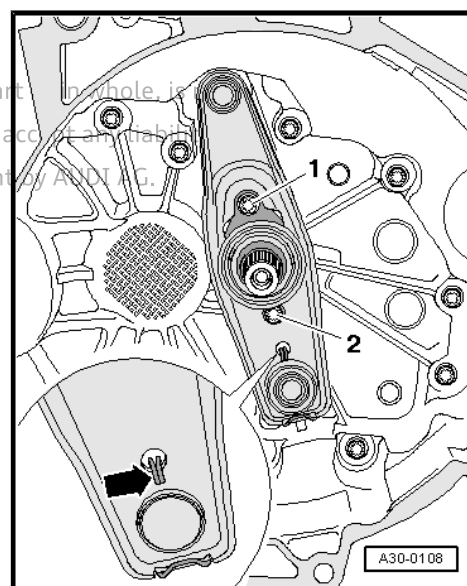
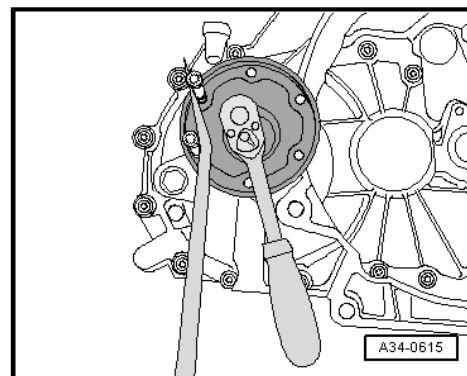


- Turn gearbox on assembly stand so that clutch housing faces upwards.
- Remove securing bolt for flange shaft (right-side); to do so, screw two bolts into flange and counterhold flange shaft with tyre iron or other suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



Continued for all gearboxes:

- Unhook spring -arrow- from clutch release lever.
- Remove bolts -1- and -2-.
- Remove release lever with release bearing and guide sleeve.

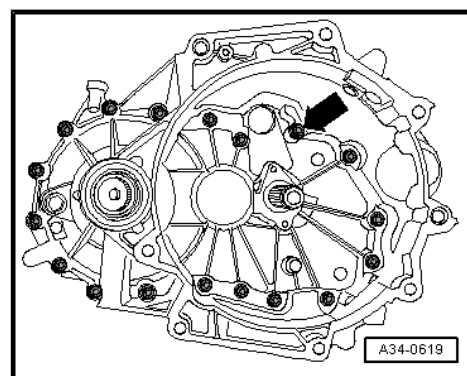


- Remove all 18 bolts -arrow- securing clutch housing.
- Carefully remove clutch housing by levering alternately at the protruding webs on the housing, taking care not to damage the sealing surfaces.



Caution

Make sure you keep clutch housing straight to avoid damaging roller bearings and bearing seat on input and output shafts.

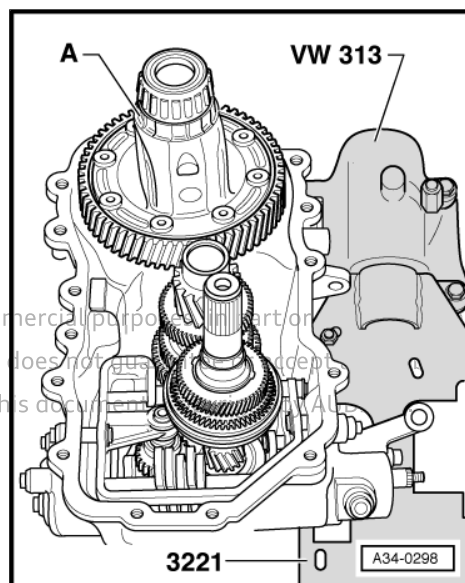




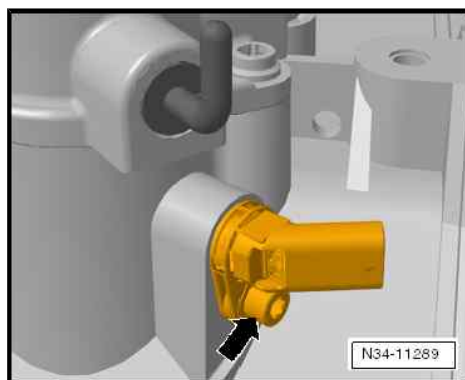
- Remove differential -A- from gearbox housing.



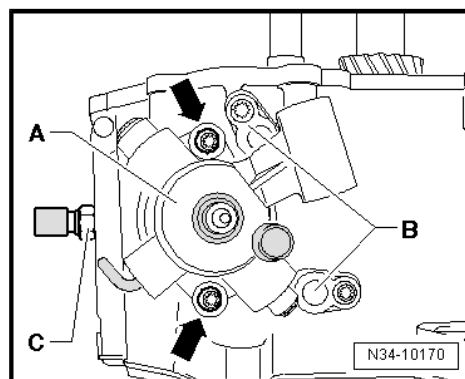
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- Gearbox for vehicles with start/stop system: remove gearbox neutral position sender - G701- -arrow-.



- Remove selector shaft with selector mechanism cover -A-. To do so, move selector shaft into neutral position. Then remove bolts -arrows- and pull selector mechanism cover and selector shaft out of gearbox housing.
- Remove pivot pins -B- from top of gearbox.
- Unscrew reversing light switch - F4- -item C-.

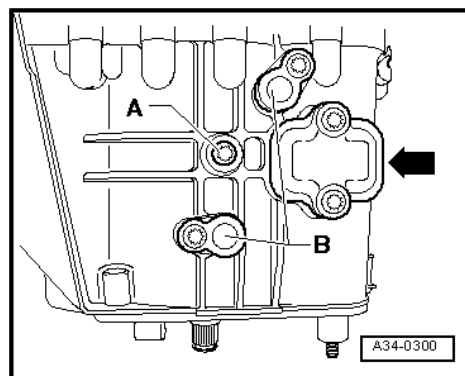


- Remove bolt -A- securing reverse gear shaft.
- Remove pivot pins -B- from gearbox underside.



Note

Do not remove cover plate -arrow- when dismantling gearbox.





- Press out input and output shafts together with bearing mounting, selector mechanism (selector forks) and reverse gear wheel.

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Note

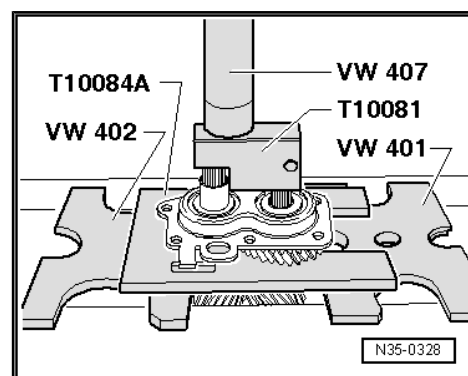
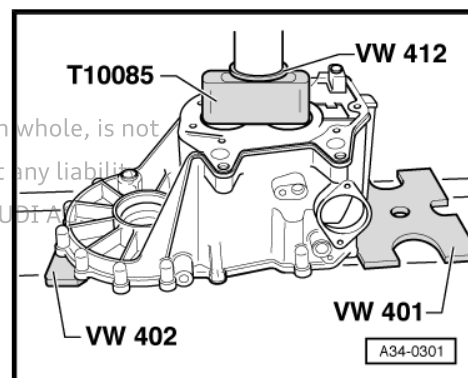
- ◆ Place gearbox housing on thrust plates - VW 401- and - VW 402- so that dowel sleeves in gearbox housing are not damaged.
- ◆ Make sure components do not drop out when being removed (get help from a second person if necessary).

- Press input and output shaft out of bearing mounting with grooved ball bearings ⇒ [page 137](#) .



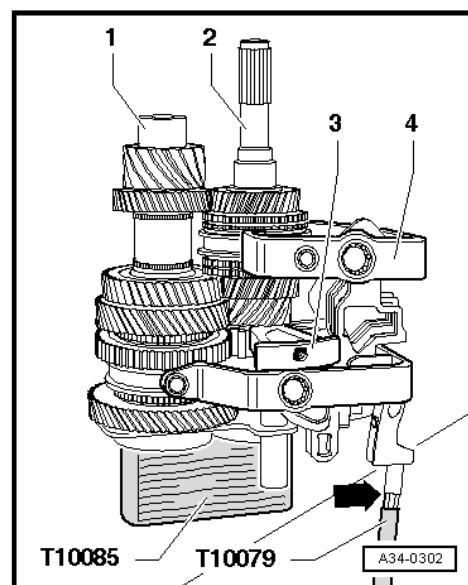
Note

The bearing mounting must always be renewed if it is separated from the gearbox housing.



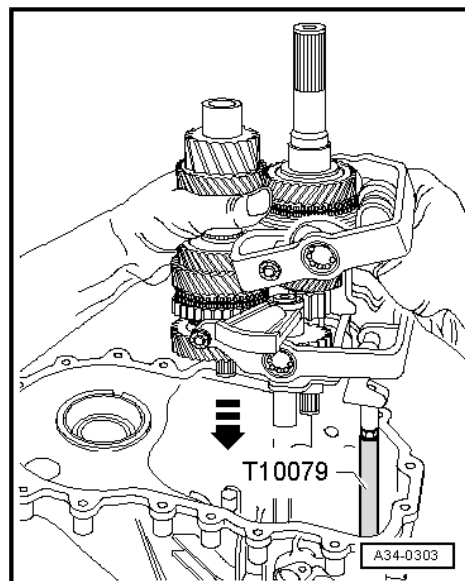
Assembling gearbox

- Bearing mounting with grooved ball bearings has been renewed ⇒ [page 137](#)
- Place the pre-assembled input shaft -2- and output shaft -1- with bearing mounting for grooved ball bearings in thrust piece - T10085- .
- Insert selector mechanism (selector forks) -4- in locking collars on shafts.
- Fit reverse gear shaft -3- with reverse gear wheel.
- Screw guide pin - T10079- onto threaded pin (reverse gear mounting) -arrow-.

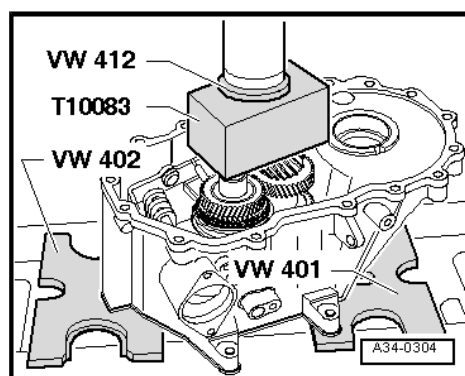




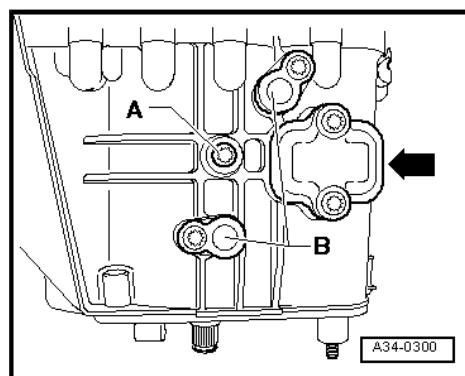
- Insert assembled components into gearbox housing, running guide pin - T10079- into gearbox housing through hole for selector mechanism mounting.
- Unscrew guide pin - T10079- .
- Check that selector forks engage correctly in locking collars before pressing in bearing mounting.



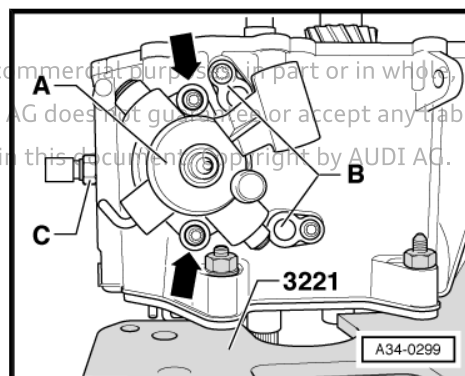
- Carefully press in bearing mounting together with input and output shafts as far as the stop.
- Secure bearing mounting lightly with bolt tightened finger-tight.



- Screw in bolt -A- for reverse gear shaft.
- Install pivot pins -B- on underside of gearbox.

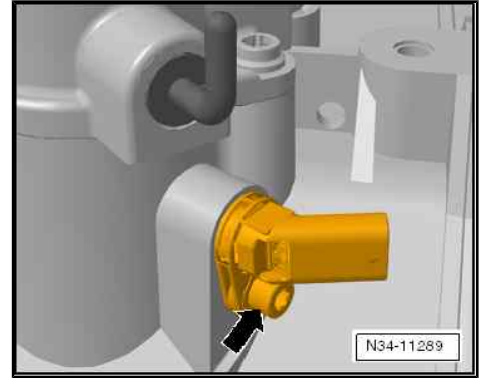


- Screw in reversing light switch - F4- -item C-.
- Align selector mechanism and install pivot pins -B- on top of gearbox.
- Set selector plates in neutral position.
- Clean sealing surfaces; they must be free from oil and grease.
- Apply sealing paste - AMV 188 200 03- evenly to sealing surface.
- Install selector shaft with selector mechanism cover -A-. Then tighten bolts -arrows-.





- Gearbox for vehicles with start/stop system: fit gearbox neutral position sender - G701- -arrow- and tighten securing bolt to specified torque ⇒ [Item 13 \(page 104\)](#) .



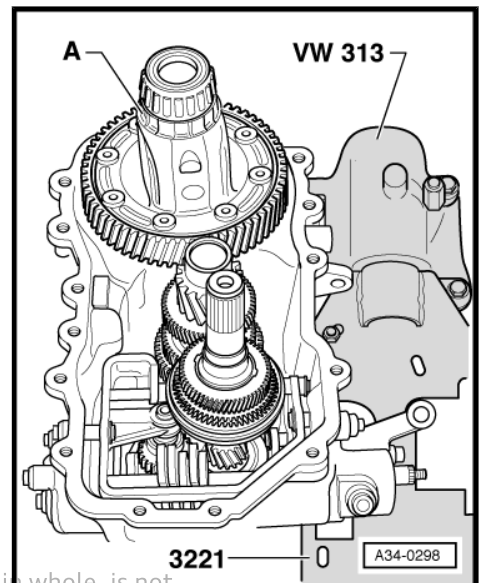
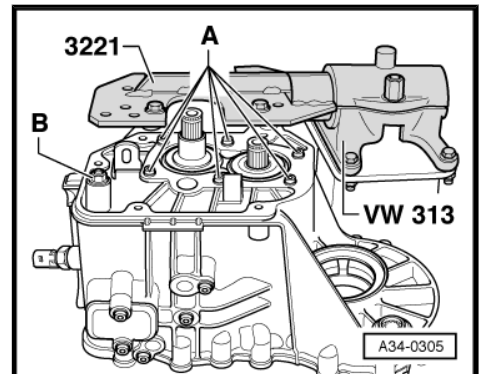
- Using new bolts -A-, secure bearing mounting for input and output shafts.



Note

Tighten the bolts in stages to the specified torque in diagonal sequence, starting in the centre.

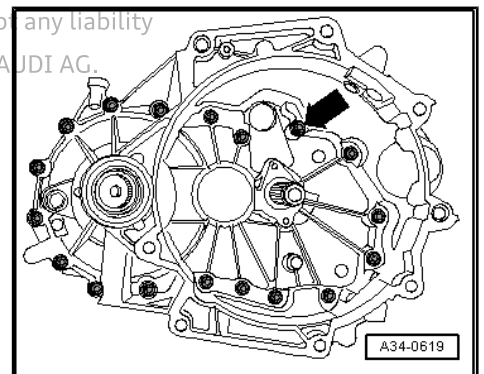
- Tighten hexagon flange nut -B- for selector mechanism (selector forks).
- Engage all gears to check function.
- Install differential -A-.
- Clean sealing surfaces; they must be free from oil and grease.
- Apply sealing paste - AMV 188 200 03- evenly to sealing surface.
- When installing housing, rotate input shaft by hand to enable bearing to slide easily onto its seat.



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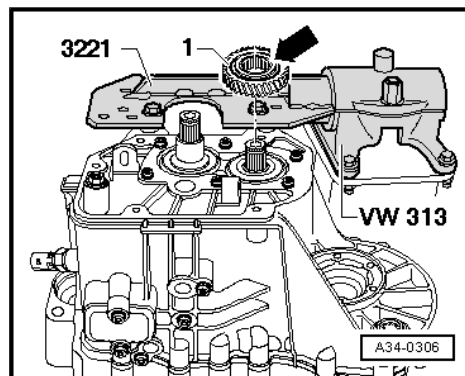
Tighten gearbox housing bolts -arrow- diagonally in stages.

Turn gearbox on assembly stand so that gearbox housing faces upwards.



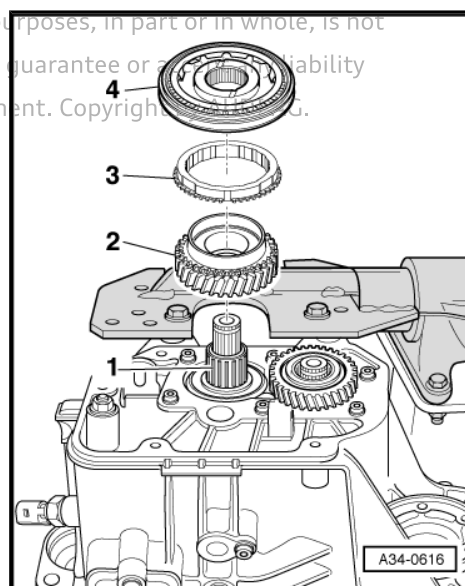


- Fit 5th gear wheel -1-.
- Installation position of 5th gear wheel: the large collar -arrow- points to the gearbox housing cover.



- Install the following components in the sequence indicated:

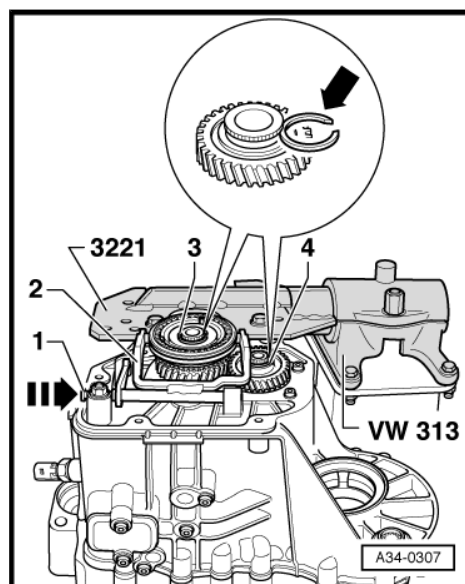
- 1 - Needle bearing for 5th speed selector gear
- 2 - 5th speed selector gear
- 3 - 5th gear synchro-ring
- 4 - 5th gear synchro-hub with locking collar and check ring



- Fit 5th gear selector fork -2- and slide pivot pin -1- in onto stop in direction of -arrow-.
- Determine thickness of new circlips -arrow- for input shaft -3- and output shaft -4-.
- Determine the thickest circlip that will just fit and install it. For part number, refer to ⇒ Electronic parts catalogue .

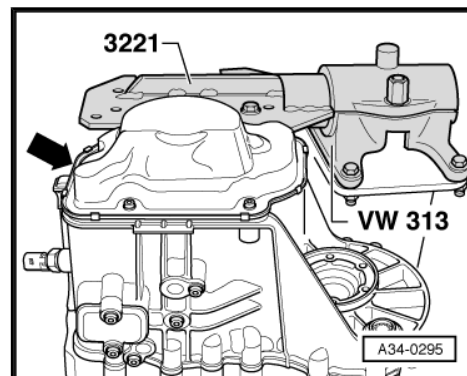
The following circlips are available:

Circlip thickness (mm)		
2.00	2.10	2.20





- Install gearbox housing cover -arrow-.



Manual gearbox 02T:

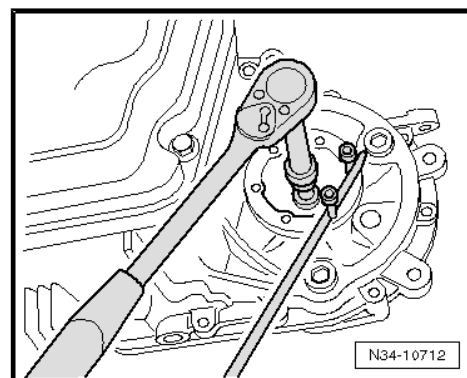
- Install both flange shafts with springs, thrust washers and tapered rings (press in towards gearbox housing and tighten bolts).

Continued for all gearboxes:

- Install clutch release lever together with release bearing and guide sleeve ⇒ [page 46](#) .
- Fill up oil in gearbox and check oil level ⇒ [page 96](#) .

Tightening torques

- ◆ ⇒ [“7.3 Exploded view - gearbox housing cover”, page 102](#)
- ◆ ⇒ [“8.1 Exploded view - clutch housing”, page 124](#)
- ◆ ⇒ [“7.4 Exploded view - input shaft, output shafts, differential and selector rods”, page 103](#)



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8 Gearbox housing, clutch housing

⇒ ["8.1 Exploded view - clutch housing", page 124](#)

⇒ ["8.2 Exploded view - gearbox housing and clutch housing", page 125](#)

⇒ ["8.3 Removing and installing clutch housing", page 128](#)

⇒ ["8.4 Servicing gearbox housing and clutch housing", page 130](#)

8.1 Exploded view - clutch housing

1 - Countersunk bolt

- ☐ Only for manual gearbox 02T
- ☐ When installing, push flange shaft in towards gearbox
- ☐ Tightening torque
⇒ [Item 1 \(page 167\)](#)

2 - Flange shaft with spring

- ☐ Only for manual gearbox 02T
- ☐ Removing and installing
⇒ [page 157](#)
- ☐ Assembling
⇒ [page 166](#)

3 - Bolt

- ☐ Renew
- ☐ 5 Nm +90°

4 - Clutch housing

- ☐ Servicing ⇒ [page 125](#)

5 - Gearbox housing

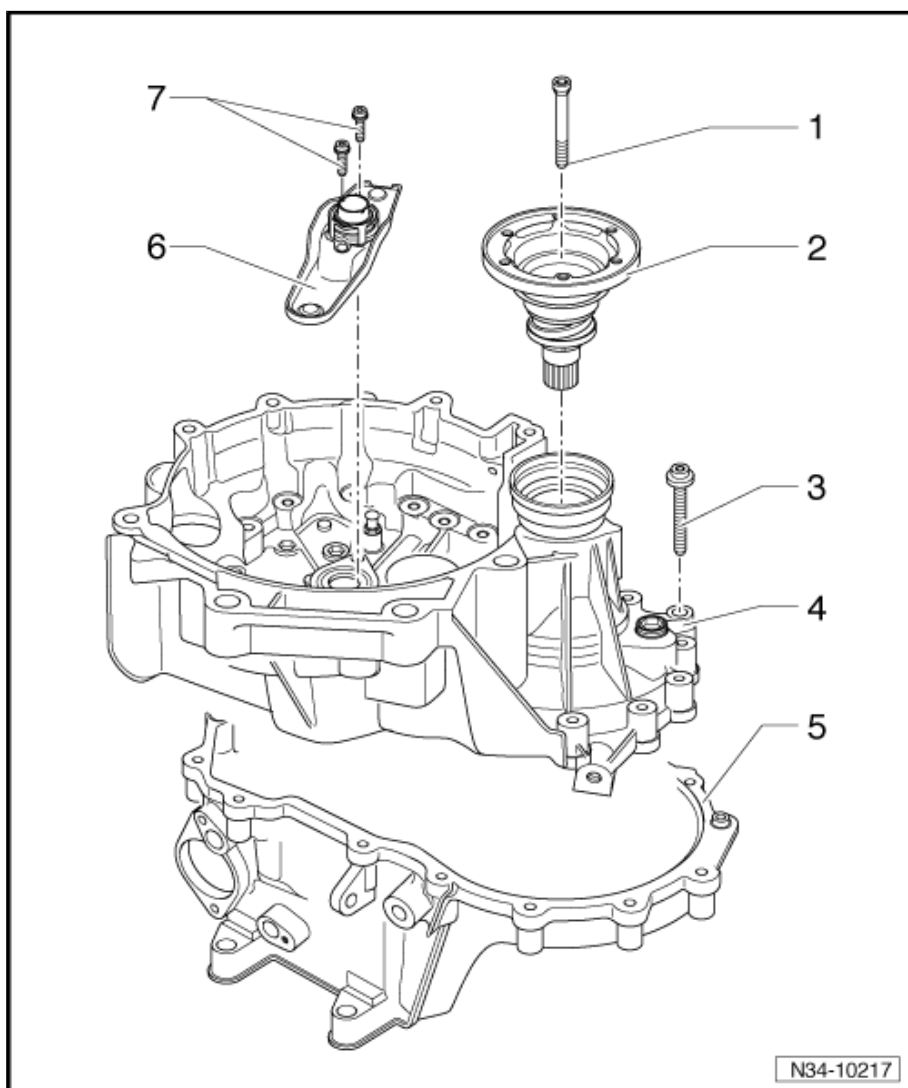
- ☐ Servicing ⇒ [page 125](#)

6 - Clutch release lever

- ☐ With guide sleeve and release bearing
- ☐ Removing and installing
⇒ [page 46](#)

7 - Bolt

- ☐ Tightening torque
⇒ [Item 2 \(page 21\)](#)





8.2 Exploded view - gearbox housing and clutch housing

⇒ "8.2.1 Exploded view - gearbox housing and clutch housing, manual gearbox 02T", page 125

⇒ "8.2.2 Exploded view - gearbox housing and clutch housing, manual gearbox 0DF", page 127

8.2.1 Exploded view - gearbox housing and clutch housing, manual gearbox 02T

1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ [page 134](#)
- ☐ Driving in ⇒ [page 134](#)

2 - Dowel sleeve

3 - Magnet

- ☐ Held in place by joint surface of housing

4 - Sealing cap

- ☐ Apply sealing paste - AMV 188 200 03- before installing.

5 - Circlip

- ☐ Fit in groove on roller bearing
⇒ [Item 8 \(page 125\)](#)

6 - Circlip

- ☐ Fit in groove on roller bearing
⇒ [Item 7 \(page 125\)](#)

7 - Roller bearing

- ☐ For input shaft
- ☐ Pulling out ⇒ [page 134](#)
- ☐ Pressing in ⇒ [page 134](#)

8 - Roller bearing

- ☐ For output shaft
- ☐ Pulling out ⇒ [page 134](#)
- ☐ Pressing in ⇒ [page 134](#)

9 - Clutch housing

- ☐ If renewed: adjust differential ⇒ [page 182](#)

10 - Input shaft oil seal

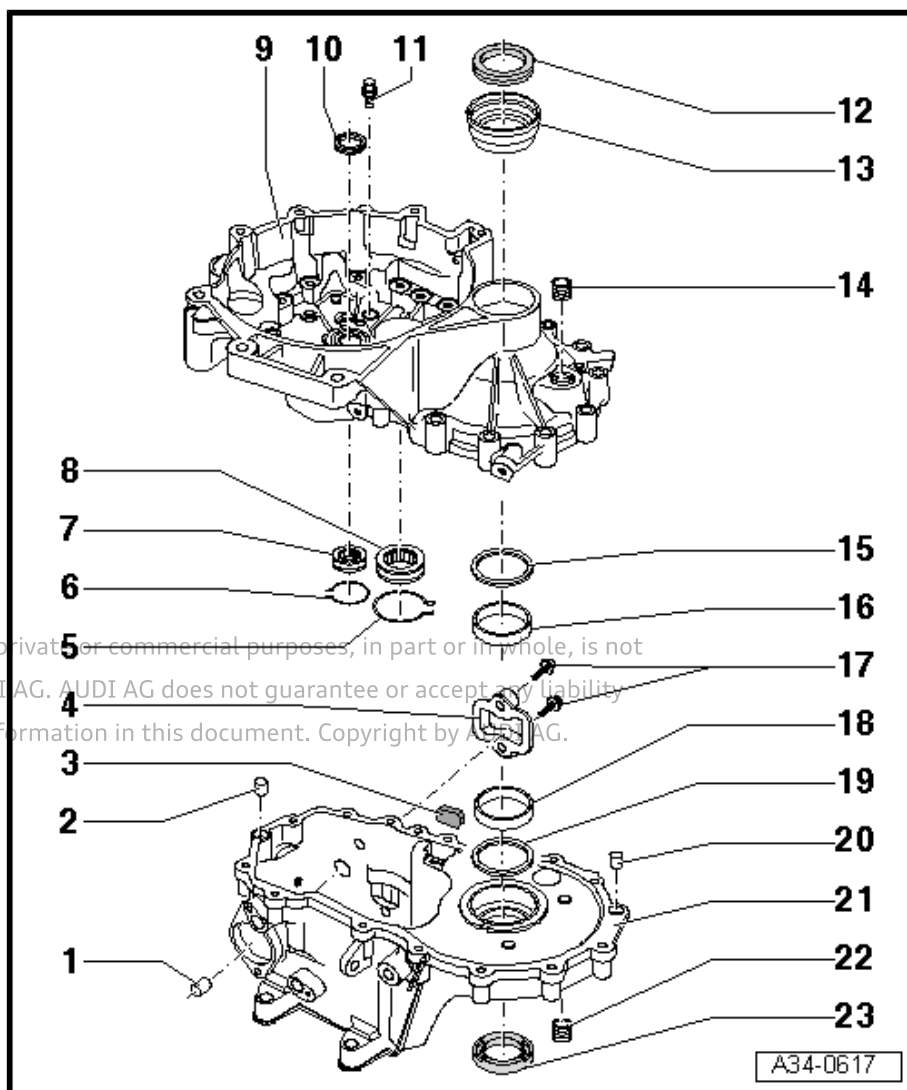
- ☐ Lever out with screwdriver
- ☐ Driving in ⇒ [page 133](#)

11 - Ball-head pin

- ☐ 20 Nm
- ☐ Lubricate with MoS₂ grease

12 - Oil seal for flange shaft (right-side)

- ☐ Renewing ⇒ [page 161](#)





13 - Sleeve

- ☐ For oil seal
- ☐ Pulling out ⇒ [page 133](#)
- ☐ Drawing in ⇒ [page 133](#)

14 - Oil filler plug

- ☐ Tightening torque ⇒ [page 126](#)

15 - Shim S₂

- ☐ For differential
- ☐ Determining thickness ⇒ [page 182](#)

16 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out and pressing in ⇒ [page 166](#)
- ☐ If renewed: adjust differential ⇒ [page 182](#)

17 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

18 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out and pressing in ⇒ [page 166](#)
- ☐ If renewed: adjust differential ⇒ [page 182](#)

19 - Shim S₁

- ☐ For differential
- ☐ Not fitted on this gearbox version

20 - Dowel sleeve

21 - Gearbox housing

- ☐ If renewed: adjust differential ⇒ [page 182](#)

22 - Oil drain plug

- ☐ Tightening torque ⇒ [page 126](#)

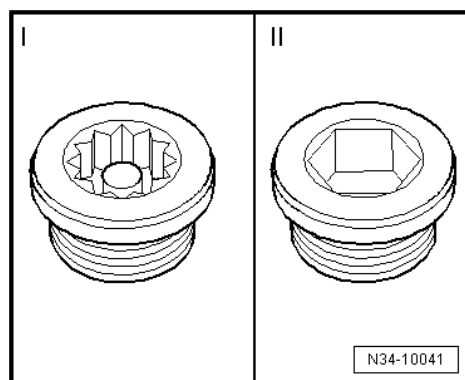
23 - Oil seal for flange shaft (left-side)

- ☐ Renewing ⇒ [page 157](#)

Different versions of oil filler/oil drain plug

I - Oil filler/oil drain plug with multi-point socket - 25 Nm

II - Oil filler/oil drain plug with hexagon socket - 30 Nm





8.2.2 Exploded view - gearbox housing and clutch housing, manual gearbox 0DF

1 - Clutch housing

- ☐ If renewed: adjust differential [⇒ page 182](#)

2 - Input shaft oil seal

- ☐ Lever out with screw-driver
- ☐ Driving in [⇒ page 133](#)

3 - Ball-head pin

- ☐ 20 Nm
- ☐ Lubricate with MoS₂ grease

4 - Oil seal for stub shaft (right-side)

- ☐ Renewing [⇒ page 159](#)

5 - Oil filler plug

- ☐ Tightening torque [⇒ page 126](#)

6 - O-ring

- ☐ Renew

7 - Plug

8 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

9 - Shim

- ☐ For differential
- ☐ Determining thickness [⇒ page 182](#)

10 - Oil deflector ring

11 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out and pressing in [⇒ page 166](#)
- ☐ If renewed: adjust differential [⇒ page 182](#)

12 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

13 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out and pressing in [⇒ page 166](#)
- ☐ If renewed: adjust differential [⇒ page 182](#)

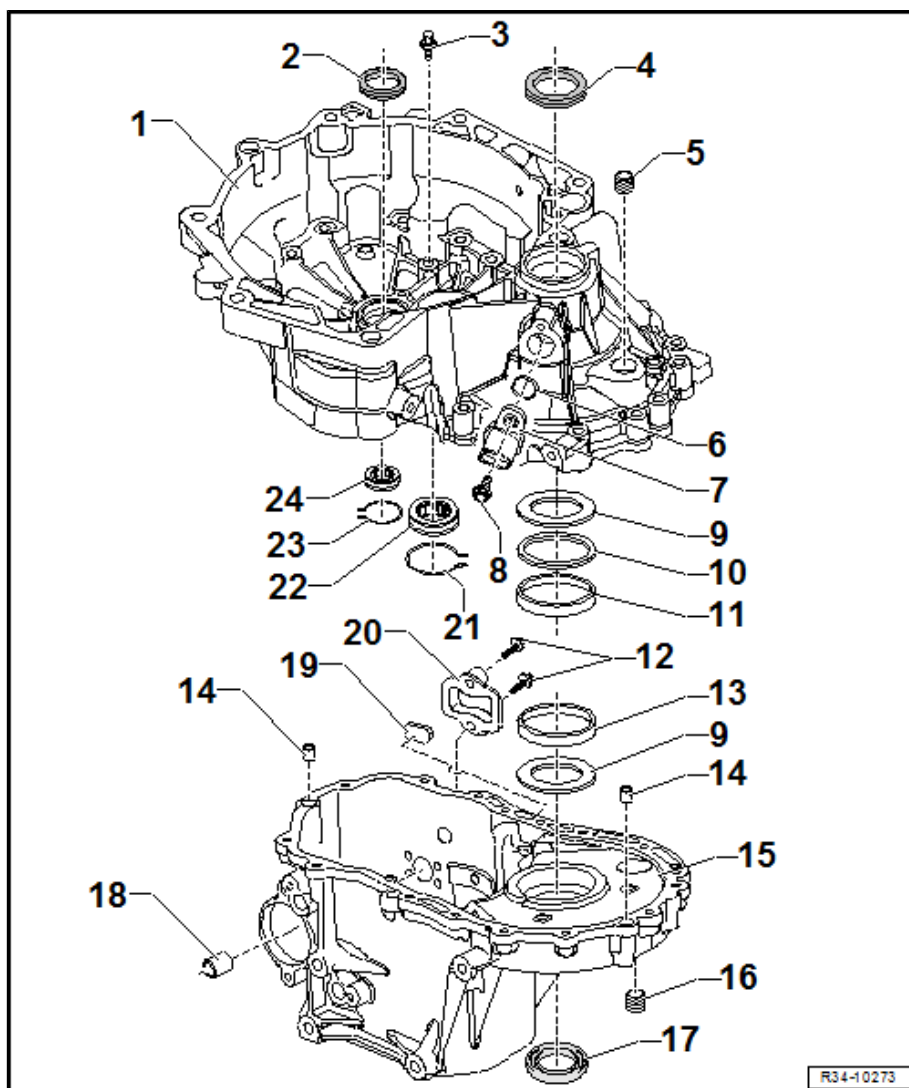
14 - Dowel sleeve

15 - Gearbox housing

- ☐ If renewed: adjust differential [⇒ page 182](#)

16 - Oil drain plug

- ☐ Tightening torque [⇒ page 126](#)



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17 - Oil seal for stub shaft (left-side)

- ☐ Renewing ⇒ [page 163](#)

18 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ [page 134](#)
- ☐ Driving in ⇒ [page 134](#)

19 - Magnet

- ☐ Held in place by joint surface of housing

20 - Sealing cap

- ☐ Apply sealing paste - AMV 188 200 03- before installing.

21 - Circlip

- ☐ Fit in groove on roller bearing ⇒ [Item 22 \(page 128\)](#)

22 - Roller bearing

- ☐ For output shaft
- ☐ Pulling out ⇒ [page 134](#)
- ☐ Pressing in ⇒ [page 134](#)

23 - Circlip

- ☐ Fit in groove on roller bearing ⇒ [Item 24 \(page 128\)](#)

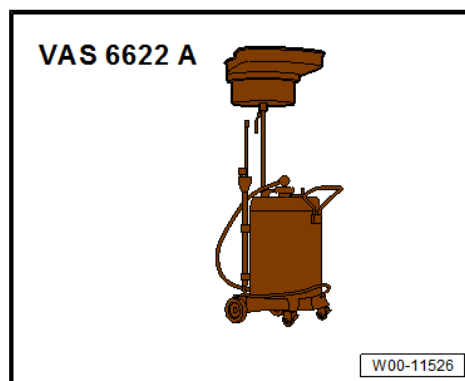
24 - Roller bearing

- ☐ For input shaft
- ☐ Pulling out ⇒ [page 134](#)
- ☐ Pressing in ⇒ [page 134](#)

8.3 Removing and installing clutch housing

Special tools and workshop equipment required

- ◆ Used oil collection and extraction unit - VAS 6622A-

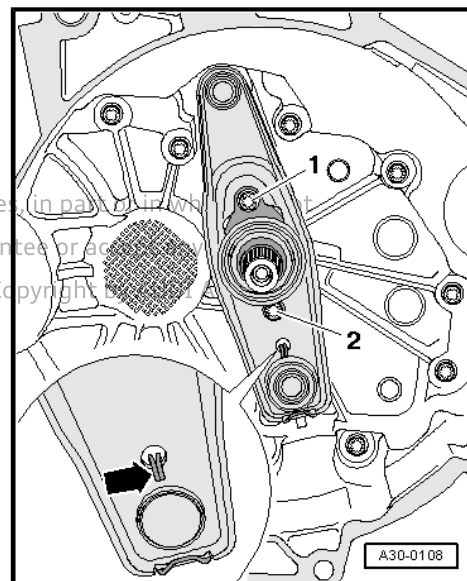


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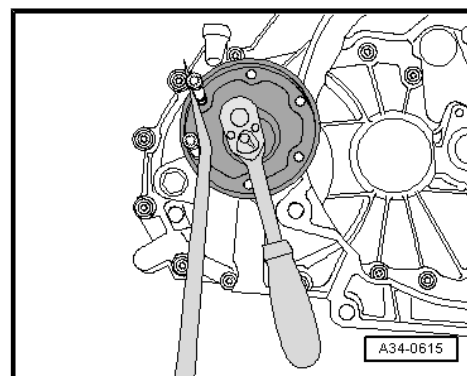
Removing

- Gearbox removed
- Secure gearbox to assembly stand ⇒ [page 98](#) .
- Place used oil collection and extraction unit - VAS 6622A- below gearbox.
- Drain off gear oil.
- Unhook spring -arrow- from clutch release lever.
- Remove bolts -1- and -2-.
- Remove release lever with release bearing and guide sleeve.



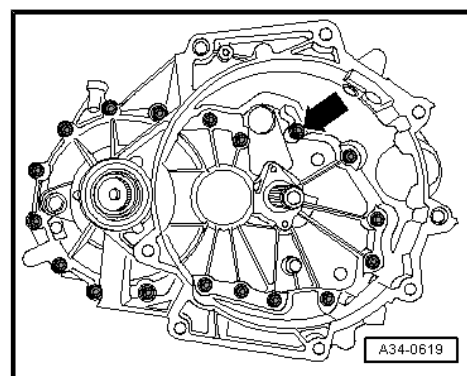
Manual gearbox 02T:

- Remove right flange shaft securing bolt; to do so, screw two bolts into flange and counterhold flange shaft with tyre iron or other suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.



Continued for all gearboxes:

- Turn gearbox on assembly stand so that clutch housing faces upwards.
- Remove all 18 bolts -arrow- securing clutch housing.
- Carefully remove clutch housing by levering alternately at the protruding webs on the housing, taking care not to damage the sealing surfaces.

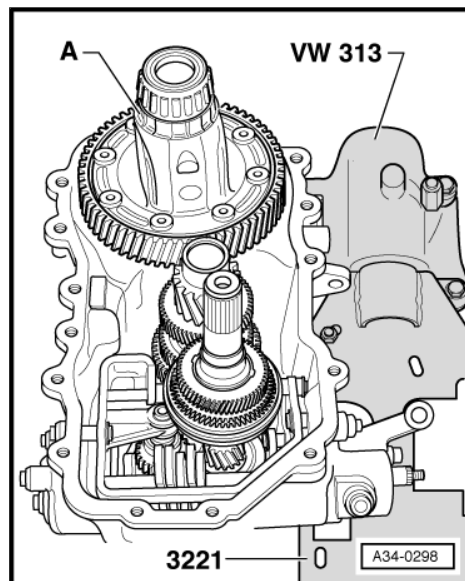




Installing

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

- Differential -A- installed
- Clean sealing surfaces; they must be free from oil and grease.
- Apply sealing paste - AMV 188 200 03- evenly to sealing surface.
- When installing housing, rotate input shaft by hand to enable bearing to slide easily onto its seat.



- Tighten gearbox housing bolts -arrow- diagonally in stages.

Manual gearbox 02T:

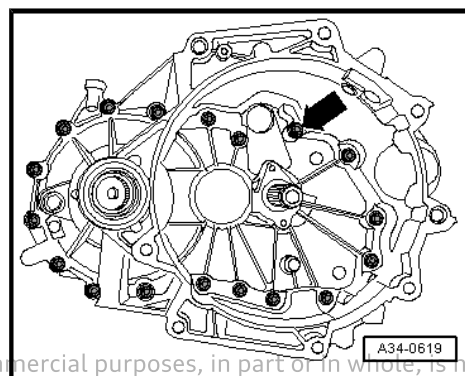
- Push flange shaft in towards gearbox together with spring, thrust washer and tapered ring, and tighten bolt.

Continued for all gearboxes:

- Install release lever with release bearing and guide sleeve ⇒ [page 46](#) .
- Fill up oil in gearbox and check oil level ⇒ [page 96](#) .

Tightening torques

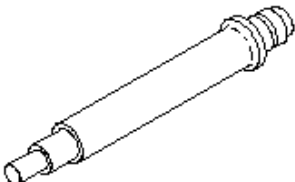
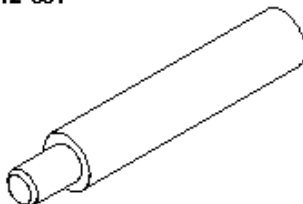
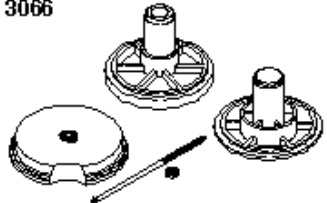
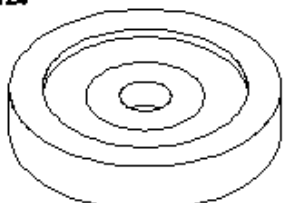
- ♦ ⇒ [“8.1 Exploded view - clutch housing”, page 124](#)



8.4 Servicing gearbox housing and clutch housing

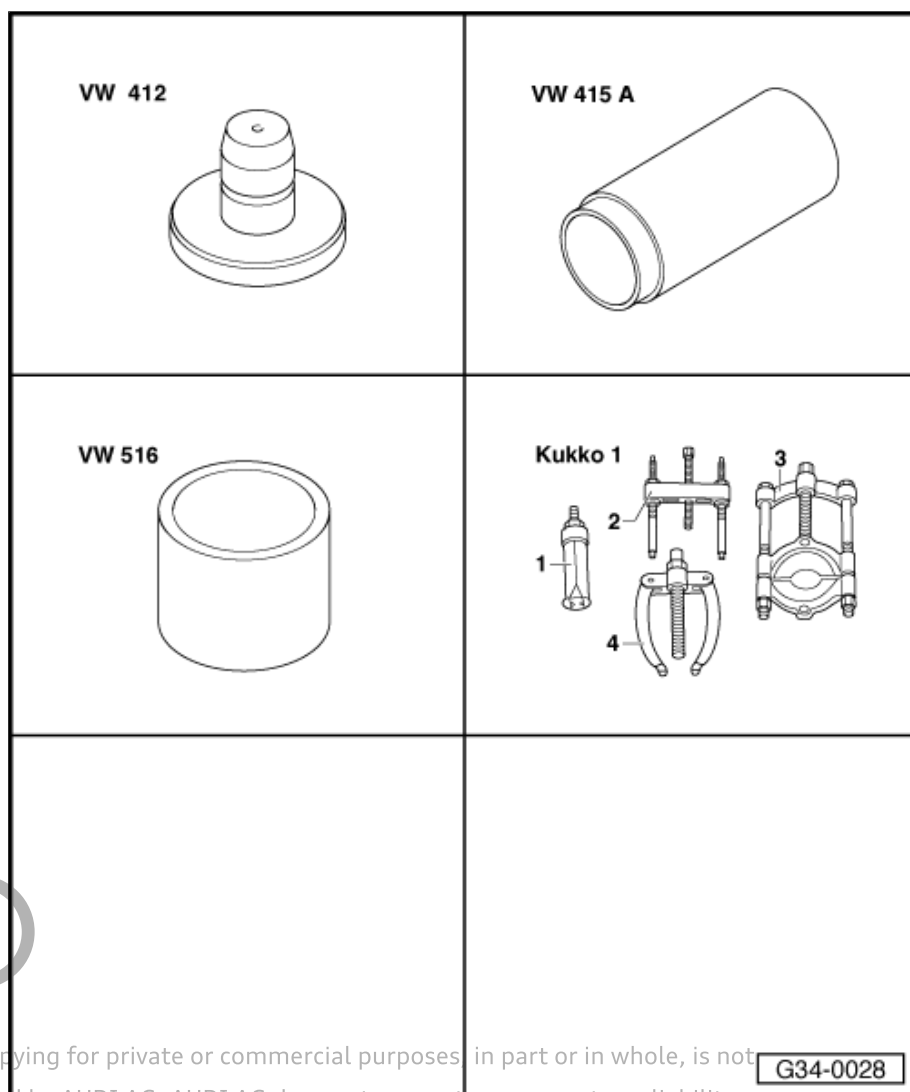


Special tools and workshop equipment required

VW 408 A 	VW 472/2 
12-551 	30-555 
3066 	3124  G34-0009



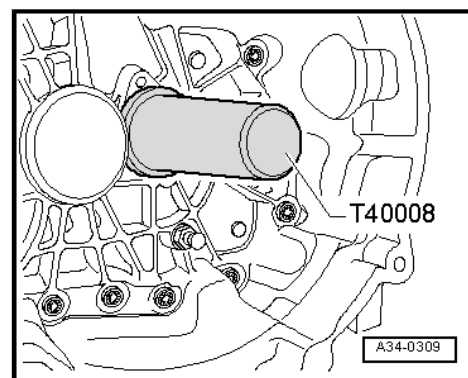
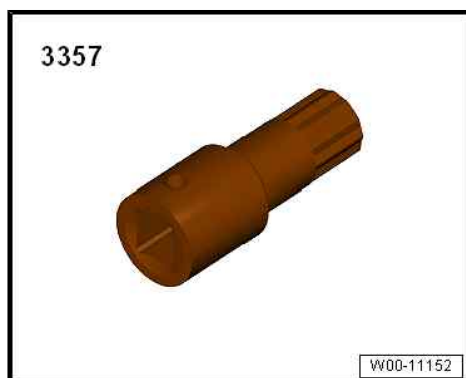
- ◆ Press tool - VW 408 A-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Centring mandrel - 12 - 551-
- ◆ Thrust piece - 30 - 555-
- ◆ Threaded rod from assembly device - 3066-
- ◆ Thrust piece - 3124-



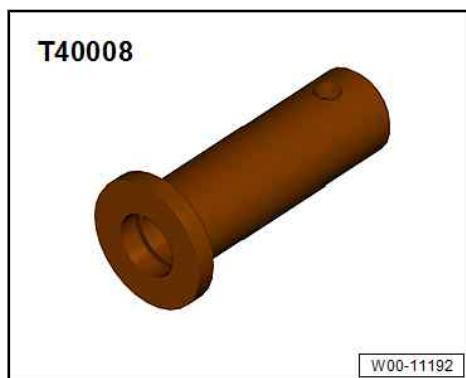
- ◆ Press tool - VW 412-
- ◆ Tube - VW 415 A-
- ◆ Tube - VW 516-
- ◆ -1- Kukko 21/3 internal puller
- ◆ -2- Kukko 18/1 puller
- ◆ -3- Kukko 17/1 splitter
- ◆ -4- Kukko 22/1 counter-support



◆ Socket - 3357-



◆ Thrust piece - T40008-



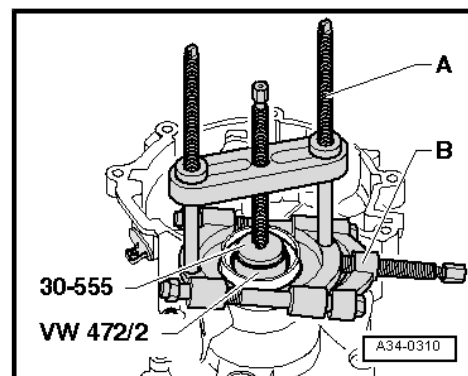
Driving in input shaft oil seal so it is flush

Pulling out oil seal sleeve

- Apply spacer sleeve - VW 472/2- and press tool - 30 - 555- to differential.

A - Puller , e.g. -Kukko 18/1-

B - Splitter 12...75 mm , e.g. -Kukko 17/1-



Drawing in oil seal sleeve

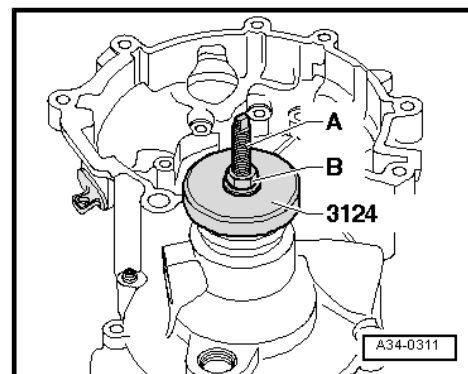
A - Screw threaded rod from assembly device - 3066- into threaded piece in differential.

B - M12 nut with washer

- Turn nut -B- and pull sleeve in onto stop with thrust piece - 3124-.



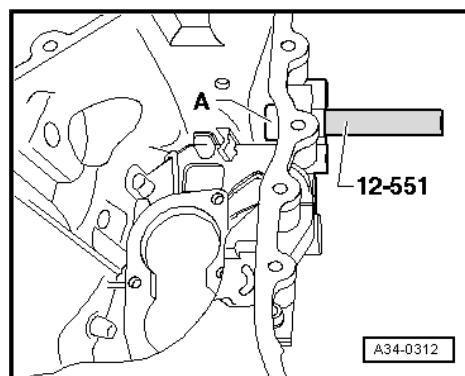
If gearbox has been dismantled, press in sleeve onto stop using thrust piece - 3124-.



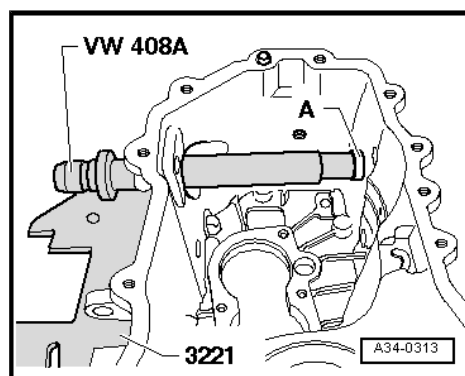
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Driving out selector shaft sleeve -A-



Driving in selector shaft sleeve -A-

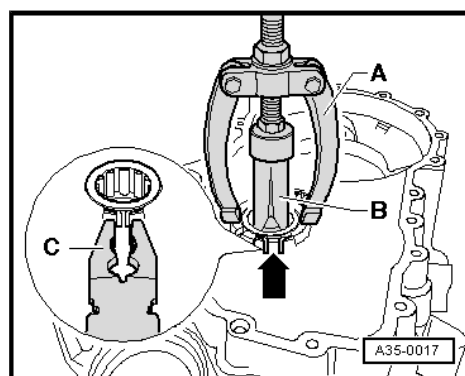


Pulling roller bearing out of clutch housing

- When pulling out, compress circlip -arrow- for roller bearing using pliers -C-.

A - Counter-support , e.g. -Kukko 22/1-

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



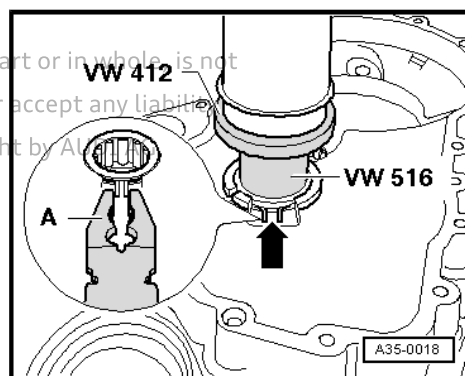
Pressing roller bearing into clutch housing

- Support clutch housing using tube - VW 415 A- (not visible in illustration) directly under bearing mounting.

- When pressing in, compress circlip -arrow- for roller bearing using pliers -A-.

- Remove the pliers before the roller bearing is in its final position.

- ♦ The circlip must engage in the groove in the clutch housing.





35 – Gears, shafts

1 Input shaft

⇒ "1.1 Exploded view - input shaft", page 135

⇒ "1.2 Renewing bearing mounting with grooved ball bearings for input and output shafts", page 137

⇒ "1.3 Dismantling and assembling input shaft", page 138

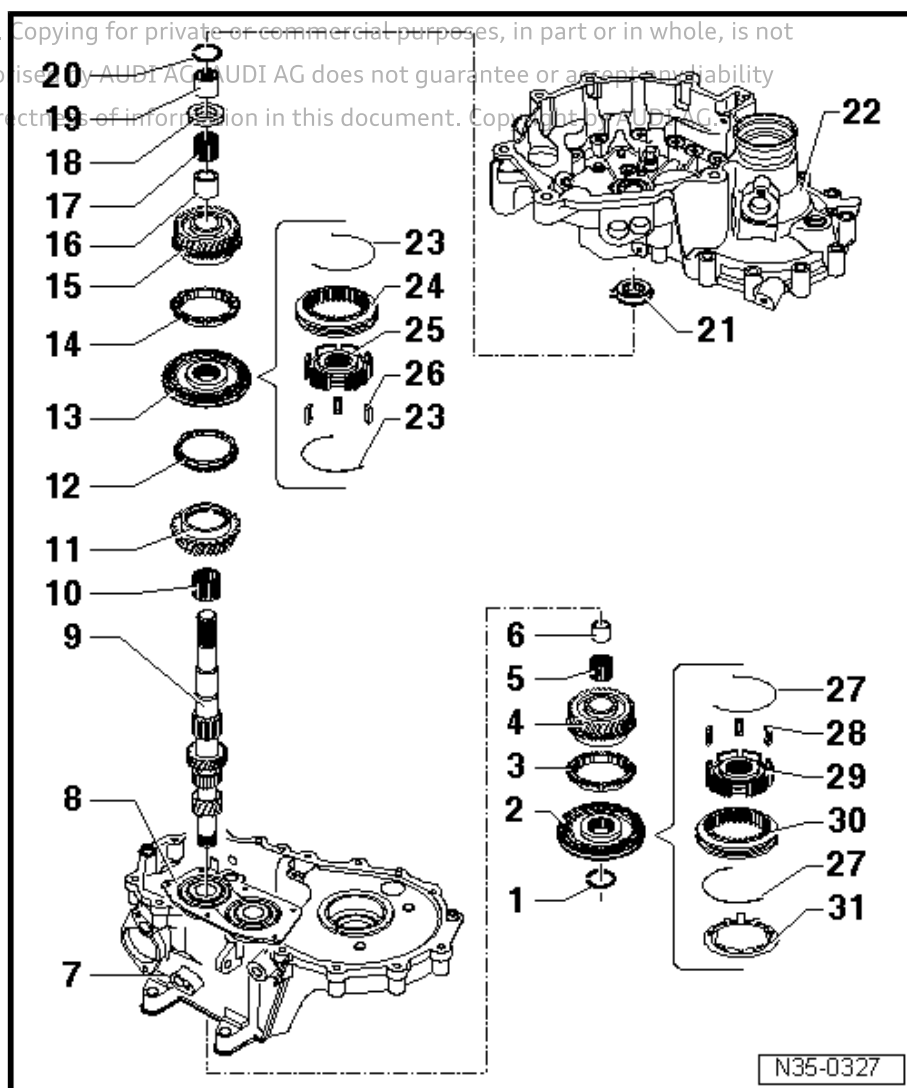
1.1 Exploded view - input shaft



Note

- ◆ Refer to ⇒ *Electronic parts catalogue and technical data* when installing new gear wheels or a new input shaft.
- ◆ Pressing input and output shaft out of bearing mounting and grooved ball bearings ⇒ [page 137](#)
- ◆ Lubricate all bearings, selector gears and synchro-rings on input shaft with gear oil before installing.
- ◆ Do not interchange synchro-rings. When re-using synchro-rings, always fit on the same selector gear.

- 1 - Circlip
 - ❑ Renew
 - ❑ Determining thickness
⇒ [page 113](#)
- 2 - Locking collar with synchro-hub for 5th gear
 - ❑ Removing and installing
⇒ [page 111](#)
 - ❑ Dismantling and assembling
⇒ [page 146](#)
- 3 - 5th gear synchro-ring
 - ❑ Removing and installing
⇒ [page 111](#)
 - ❑ Checking for wear
⇒ [page 144](#)
- 4 - 5th speed selector gear
 - ❑ Removing and installing
⇒ [page 111](#)
- 5 - Needle bearing
 - ❑ For 5th gear
 - ❑ Removing and installing
⇒ [page 111](#)
 - ❑ Renew together with sleeve
⇒ [Item 6 \(page 135\)](#)
- 6 - Sleeve
 - ❑ For 5th gear needle bearing
 - ❑ Renew together with
⇒ [Item 5 \(page 135\)](#)
 - ❑ Press off with bearing mounting/grooved ball bearing ⇒ [page 137](#)





- ☐ Pressing on ⇒ [page 138](#)

7 - Gearbox housing

8 - Bearing mounting with grooved ball bearings

- ☐ Only renew grooved ball bearings together with bearing mounting.
- ☐ If bearing mounting is separated from gearbox housing, it must always be renewed
- ☐ Pressing off and on ⇒ [page 137](#)

9 - Input shaft

10 - Needle bearing

- ☐ For 3rd gear

11 - 3rd speed selector gear

12 - 3rd gear synchro-ring

- ☐ Checking for wear ⇒ [page 144](#)

13 - Locking collar with synchro-hub for 3rd and 4th gear

- ☐ Press off with 3rd speed selector gear ⇒ [page 142](#)
- ☐ Dismantling ⇒ [page 143](#)
- ☐ Installation position: Locking collar/synchro-hub ⇒ [page 144](#)
- ☐ Assembling ⇒ [page 144](#)
- ☐ Pressing on ⇒ [page 144](#)

14 - 4th gear synchro-ring

- ☐ Checking for wear ⇒ [page 144](#)

15 - 4th speed selector gear

16 - Sleeve

- ☐ For 4th gear needle bearing
- ☐ Renew together with needle bearing ⇒ [Item 17 \(page 136\)](#)
- ☐ Pressing off ⇒ [page 142](#)
- ☐ Pressing on ⇒ [page 145](#)

17 - Needle bearing

- ☐ For 4th gear
- ☐ Renew together with ⇒ [Item 16 \(page 136\)](#)

18 - Thrust washer

19 - Inner race for roller bearing

- ☐ Pressing off ⇒ [page 142](#)
- ☐ Can also be pulled off ⇒ [page 143](#)
- ☐ Pressing on ⇒ [page 145](#)

20 - Circlip

- ☐ Renew
- ☐ Determining thickness ⇒ [page 145](#)

21 - Roller bearing

- ☐ With circlip
- ☐ Pulling out ⇒ [page 134](#)
- ☐ Pressing in ⇒ [page 134](#)
- ☐ Installation position: Circlip in bearing faces towards input shaft

22 - Clutch housing

23 - Spring

- ☐ Installation position: angled end of spring must locate in one of the locking pieces.



24 - Locking collar for 3rd and 4th gear

- ☐ Dismantling and assembling ⇒ [page 143](#)
- ☐ Installation position: Locking collar/synchro-hub ⇒ [page 144](#)

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

26 - Locking pieces

- ☐ 3x

27 - Spring

- ☐ Installation position: angled end of spring must locate in one of the locking pieces.

28 - Locking pieces (3x)

29 - 5th gear synchro-hub

30 - 5th gear locking collar

31 - Check ring

- ☐ Prevents locking pieces from moving out
- ☐ Removing ⇒ [page 146](#)
- ☐ Installing ⇒ [page 147](#)

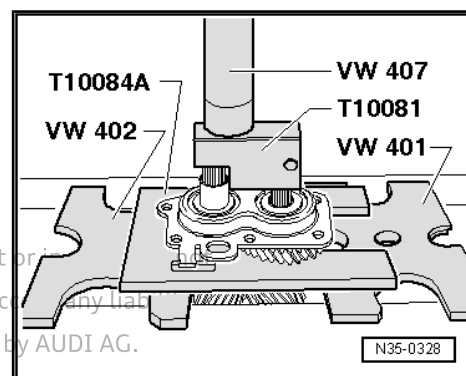
1.2 Renewing bearing mounting with grooved ball bearings for input and output shafts

Pressing off bearing mounting and grooved ball bearings

- Slide locking collar for 1st and 2nd gear onto 2nd gear.

Slide in thrust plate - T10084-A from the side until it contacts input shaft.

- Insert centring pins in thrust piece - T10081- into bores in input and output shafts.



Note

Make sure components do not drop out when being removed (get help from a second person if necessary).

- Press input and output shafts out of bearing mounting.
- Take out bearing mounting.
- Dismantle input shaft if necessary ⇒ [page 135](#).
- Dismantle output shaft if necessary ⇒ [page 148](#).

Pressing bearing mounting with grooved ball bearings onto input and output shafts

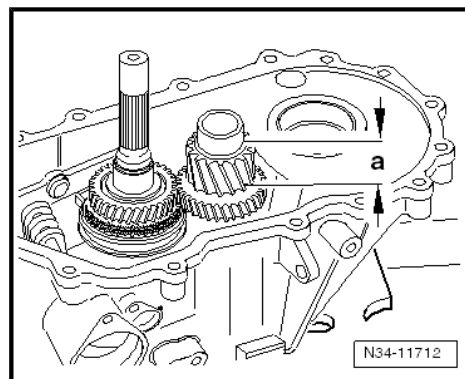


Note

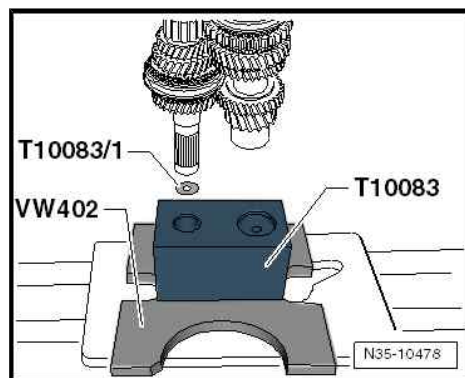
- ◆ Due to differences in the height of the teeth (dimension -a-), the output shafts of different gearboxes differ in length (shown here with shafts installed).
- ◆ To ensure that the bearing mounting is pressed evenly onto the shafts, the shafts must always be fitted evenly in the thrust block - T10083-.
- ◆ It may be necessary to fit a washer - T10083/1- (3 mm thick) in the hole provided for the input shaft ⇒ [page 138](#).
- ◆ Dimension -a- on teeth of output shaft must therefore be measured.

Dimension -a- = 30.6 mm

Insert washer - T10083/1- ⇒ next illustration.



Inserting washer - T10083/1-



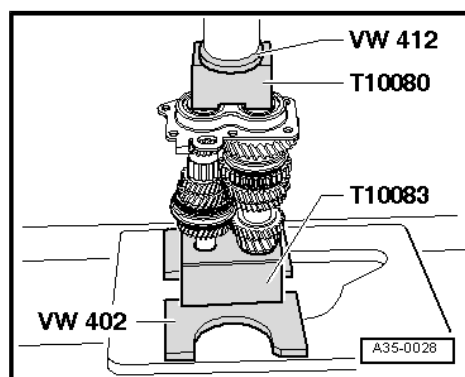
- Heat bearing mounting to about 100°C



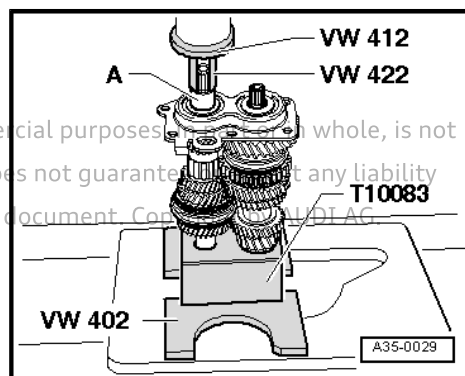
WARNING

Wear protective gloves.

- Press on bearing mounting with grooved ball bearings.



Pressing on sleeve -A- for 5th gear needle bearing

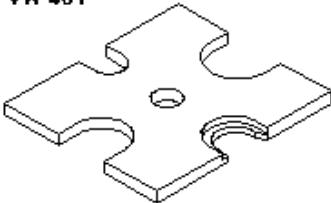
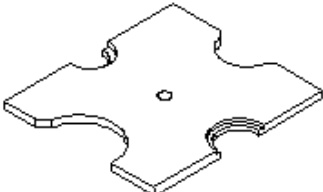
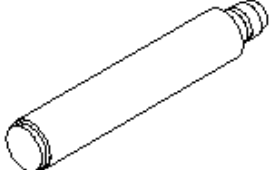
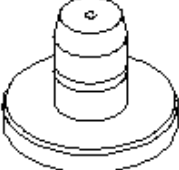
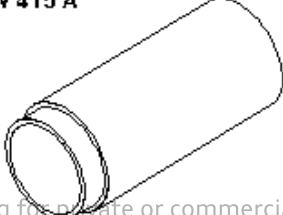
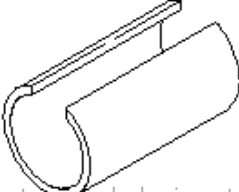


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1.3 Dismantling and assembling input shaft



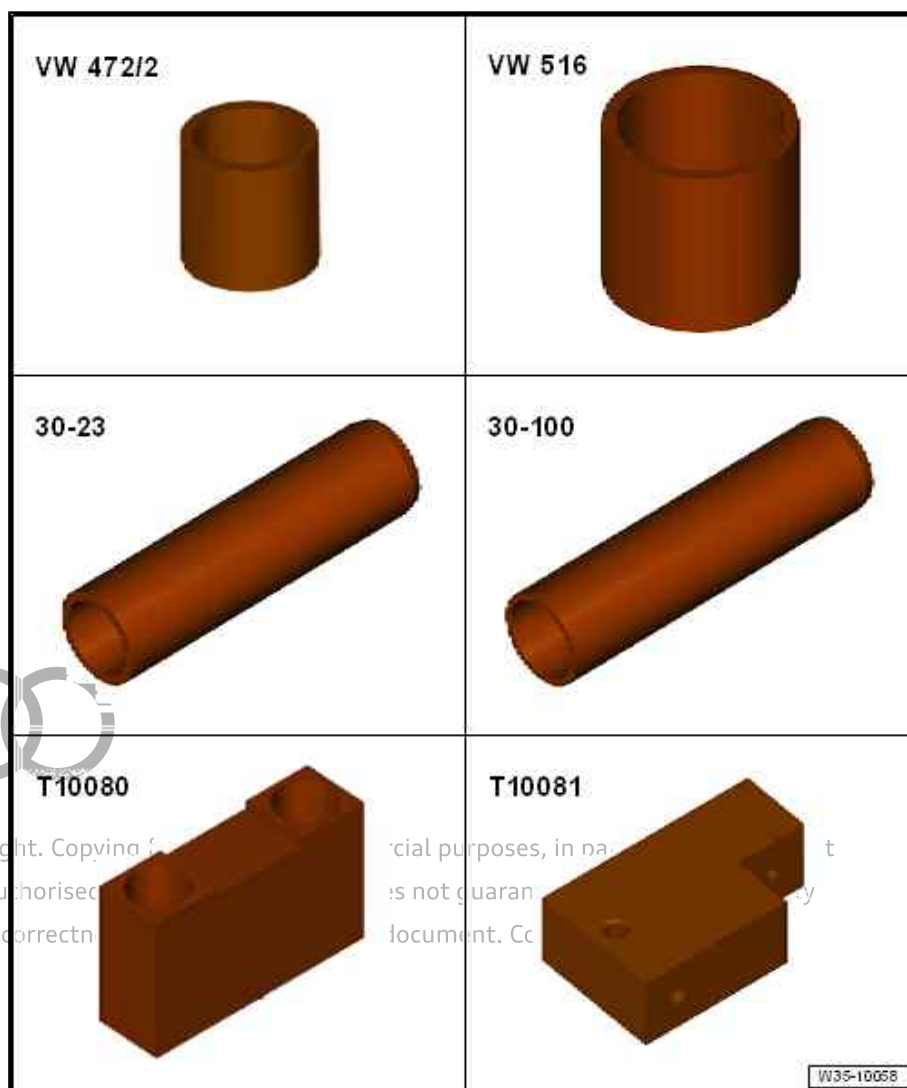
Special tools and workshop equipment required

VW 401 	VW 402 
VW 407 	VW 412 
VW 415 A 	VW 422 

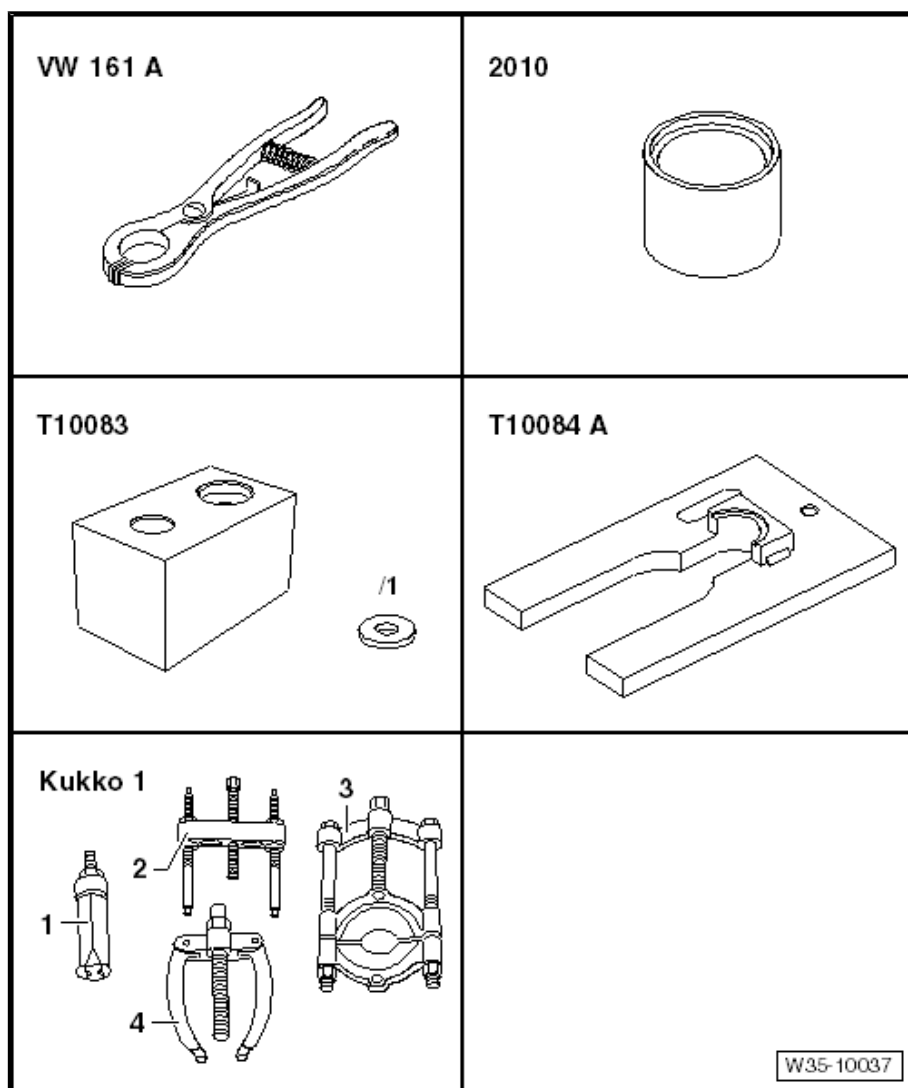
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G35-0001

- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 415 A-
- ◆ Tube - VW 422-



- ◆ Spacer sleeve - VW 472/2-
- ◆ Tube - VW 516-
- ◆ Extension - 30 - 23-
- ◆ Drift sleeve - 30 - 100-
- ◆ Thrust piece - T10080-
- ◆ Thrust piece - T10081-

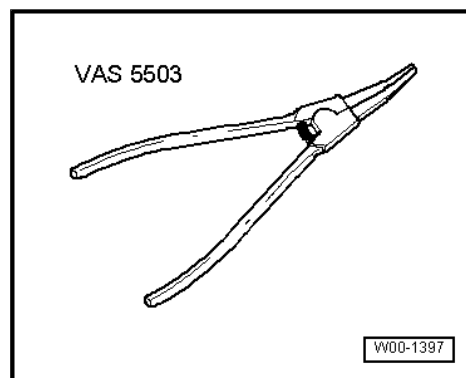


- ◆ Tube - 2010-
- ◆ Thrust block - T10083-
- ◆ Washer - T10083/1-
- ◆ Thrust plate - T10084A-
- ◆ -1- Internal puller , e.g. -Kukko 21/5-
- ◆ -4- Counter support , e.g. -Kukko 22/2-
- ◆ -2- Puller , e.g. -Kukko 18/1-
- ◆ -3- Splitter 12...75 mm , e.g. -Kukko 17/1-
- ◆ -Feeler gauge-

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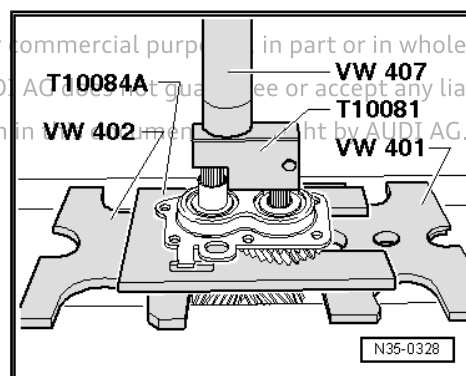
- ◆ Circlip pliers - VAS 5503-



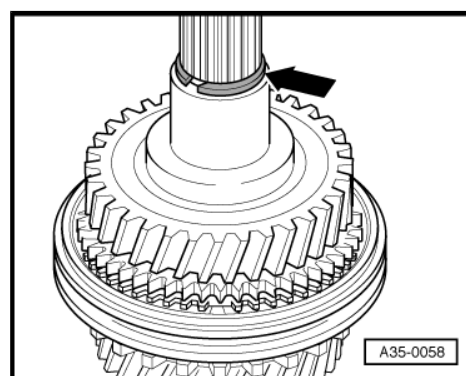
Dismantling

- Press off bearing mounting and grooved ball bearings
⇒ [page 137](#) .

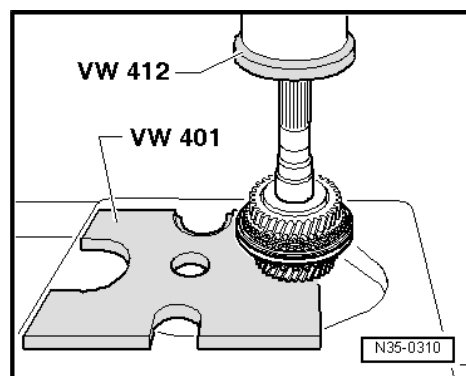
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- Remove circlip -arrow- with circlip pliers - VAS 5503- .

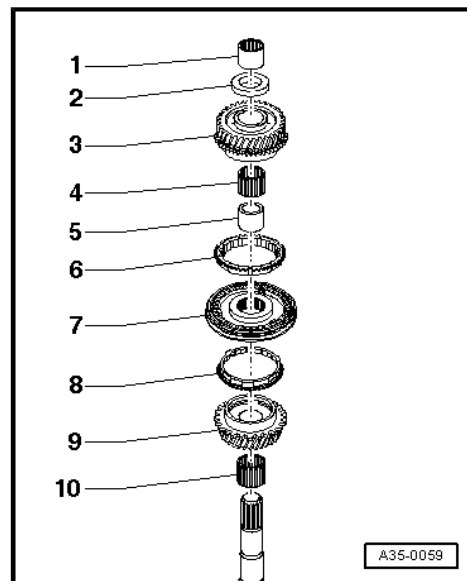


Press off roller bearing inner race together with: thrust washer, 4th speed selector gear with needle bearing, locking collar and synchro-hub for 3rd and 4th gear and 3rd speed selector gear.





- Remove components from input shaft in the sequence indicated -1 ... 10-.



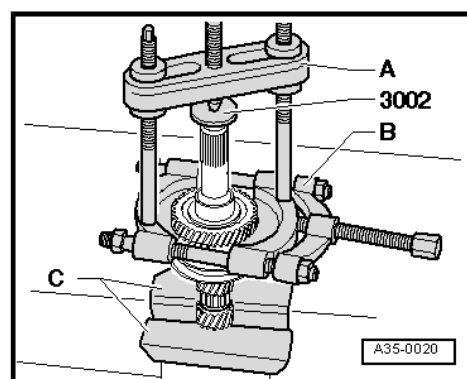
Roller bearing inner race can also be pulled off with 4th speed selector gear only.

- First remove circlip using circlip pliers - VAS 5503- .
- Clamp splitter -B- behind driving teeth (not dog teeth) on 4th gear.

A - Puller , e.g. -Kukko 18/1-

B - Splitter 12...75 mm , e.g. -Kukko 17/1-

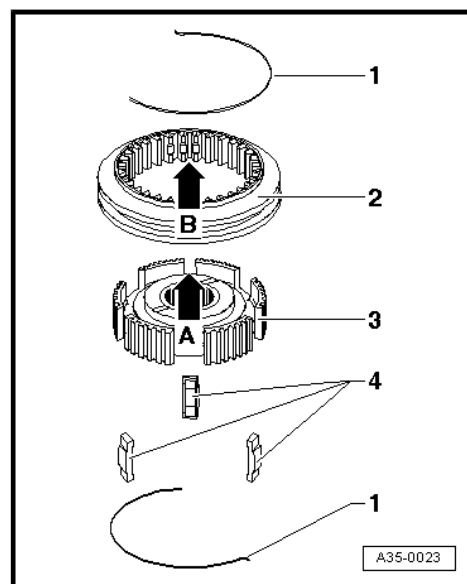
C - Protective jaw covers



Dismantling and assembling locking collar and synchro-hub for 3rd and 4th gears

- 1 - Spring
 - 2 - Locking collar
 - 3 - Synchro-hub
 - 4 - Locking piece
- Slide locking collar over synchro-hub.

The deeper recesses -arrow A- for the locking pieces in the synchro-hub must align with the recesses -arrow B- in the locking collar.



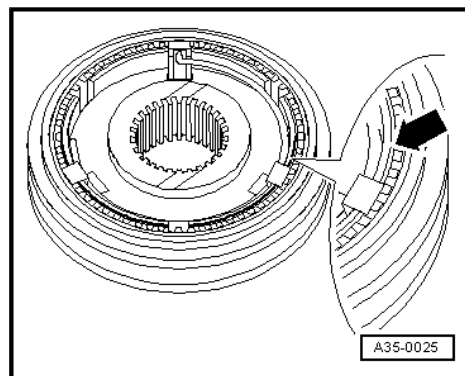
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Installation position of 3rd and 4th gear locking collar and synchro-hub

If there is a groove on the top -arrow-, this points towards 4th gear.

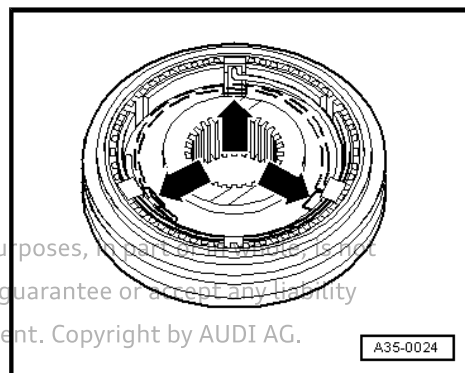
The high collar faces towards 3rd gear.



Assembling locking collar with synchro-hub for 3rd and 4th gears

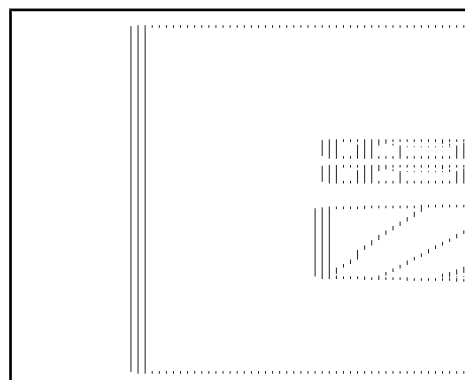
- Fit locking pieces in the smaller slots -arrows- and install springs so they are offset 120°.
- Angled end of spring must locate in one of the locking pieces.

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Checking 3rd, 4th and 5th gear synchro-rings for wear

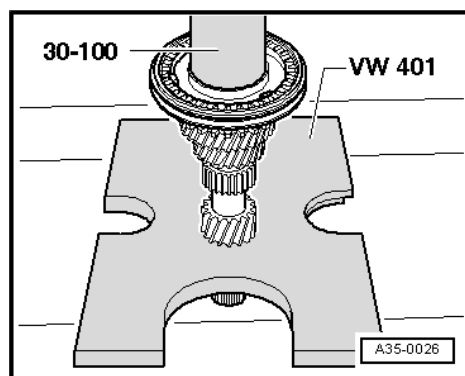
Gap -a-	Installation depth	Wear limit
3rd, 4th and 5th gear	1.1 ... 1.7 mm	0.5 mm



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

If there is a groove on the top of the synchro-hub, this points towards 4th gear.

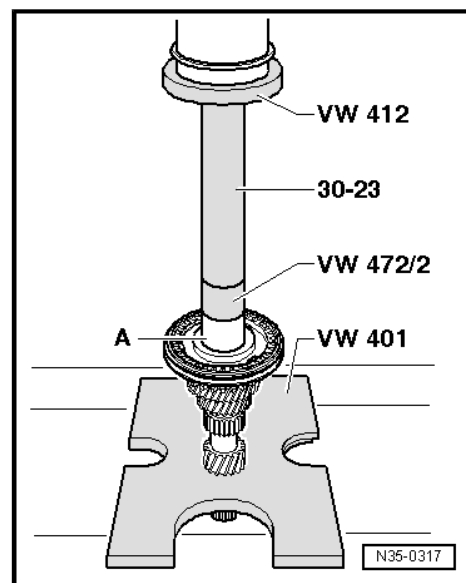
High collar of synchro-hub faces towards 3rd gear.



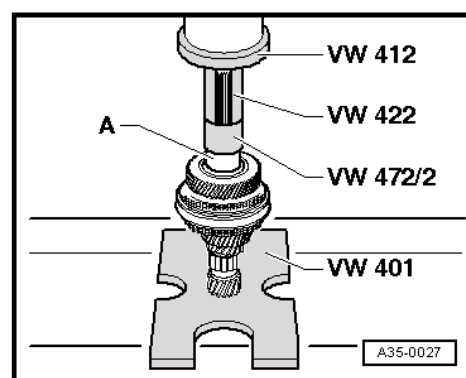


Pressing on sleeve -A- for 4th gear needle bearing

- After pressing on sleeve -A-, install 4th gear needle bearing, synchro-ring with selector gear for 4th gear and thrust washer.

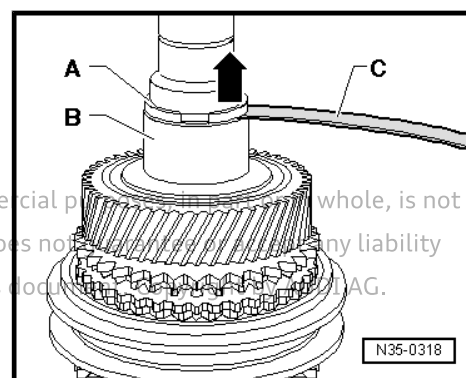


Pressing on roller bearing inner race -A-



Determining thickness of circlip

- Insert a 2.0 mm thick circlip -A- in groove on input shaft and press upwards -arrow-.
- Measure gap between inner race -B- and fitted circlip -A- using feeler gauge -C-.
- Remove circlip fitted for measurement.
- Select circlip from table.



Note

Select correct circlips from ⇒ *Electronic parts catalogue (ETKA)*.

The following circlips are available:

Measured value (mm)	Circlip thickness (mm)	Axial clearance (mm)
0.05 ... 0.14	2.0	0.05 ... 0.15
0.15 ... 0.24	2.1	0.05 ... 0.15
0.25 ... 0.34	2.2	0.05 ... 0.15
0.35 ... 0.44	2.3	0.05 ... 0.15
0.45 ... 0.51	2.4	0.05 ... 0.10

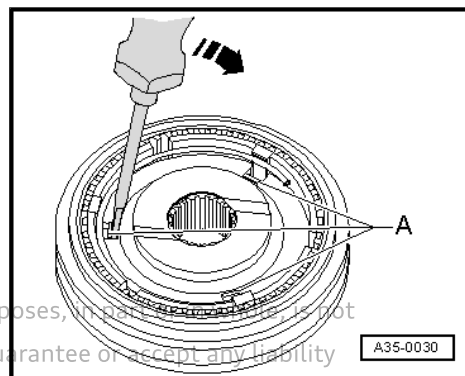


Detaching check ring

- Unclip hooks -A- of check ring from synchro-hub using a screwdriver.



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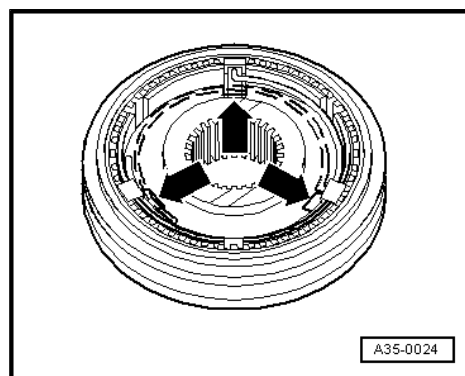
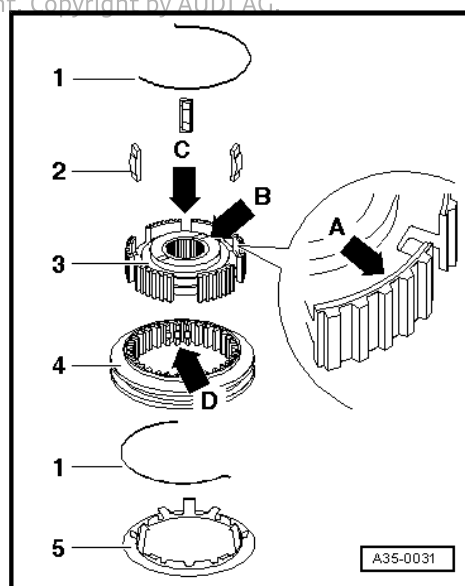


Dismantling and assembling 5th gear locking collar and synchro-hub

- 1 - Spring
- 2 - Locking piece
- 3 - Synchro-hub
- Installation position: the groove on the top -arrow A- and the higher collar -arrow B- on the synchro-hub face towards 5th gear.
- 4 - Locking collar
- 5 - Check ring

Assembling 5th gear locking collar/synchro-hub

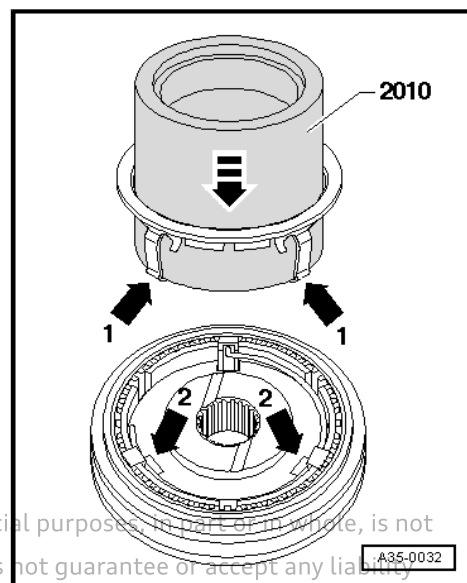
- Slide locking collar over synchro-hub.
- Installation position: the smaller slots -arrow C- for the locking pieces in the synchro-hub should be in line with the slots -arrow D- in the locking collar.
- Insert locking pieces in the deeper slots -arrows- and install springs off-set by 120°. Angled end of spring must locate in hollow locking piece.





Installing check ring

- Push check ring onto tube - 2010- .
- Insert check ring together with tube - 2010- into 5th gear synchro-hub/locking collar (observe installation position [⇒ page 146](#)).
- Hooks -arrow 1- engage in slots -arrow 2- for locking pieces in synchro-hub.
- Push check ring downwards until hooks engage.
- Pull off tube - 2010- .



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2 Output shaft

⇒ "2.1 Exploded view - output shaft", page 148

⇒ "2.2 Dismantling and assembling output shaft", page 151

2.1 Exploded view - output shaft



Note

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- ◆ Refer to ⇒ *Electronic parts catalogue and technical data* when installing new gear wheels or a new output shaft.
- ◆ Pressing input and output shaft out of bearing mounting and grooved ball bearings ⇒ [page 137](#)
- ◆ Lubricate all bearings, selector gears and synchro-rings on output shaft with gear oil before installing.
- ◆ Do not interchange synchro-rings. When re-using synchro-rings, always fit on the same selector gear.

1 - Roller bearing

- ☐ With circlip
- ☐ Removing and installing ⇒ [page 130](#)
- ☐ Installation position: circlip in bearing faces output shaft

2 - Output shaft

- ☐ With inner race for roller bearing (depending on version)
- ☐ Inner race cannot be removed from output shaft
- ☐ Check bearing seat / bearing inner race for scoring or other damage
- ☐ If you detect scoring or other damage to the bearing seat / inner race, renew both output shaft and roller bearing

3 - 4th gear wheel

- ☐ Installation position: Collar faces 3rd gear ⇒ [page 150](#)
- ☐ Removing and installing ⇒ [page 151](#)

4 - Circlip

5 - Circlip

6 - 3rd gear wheel

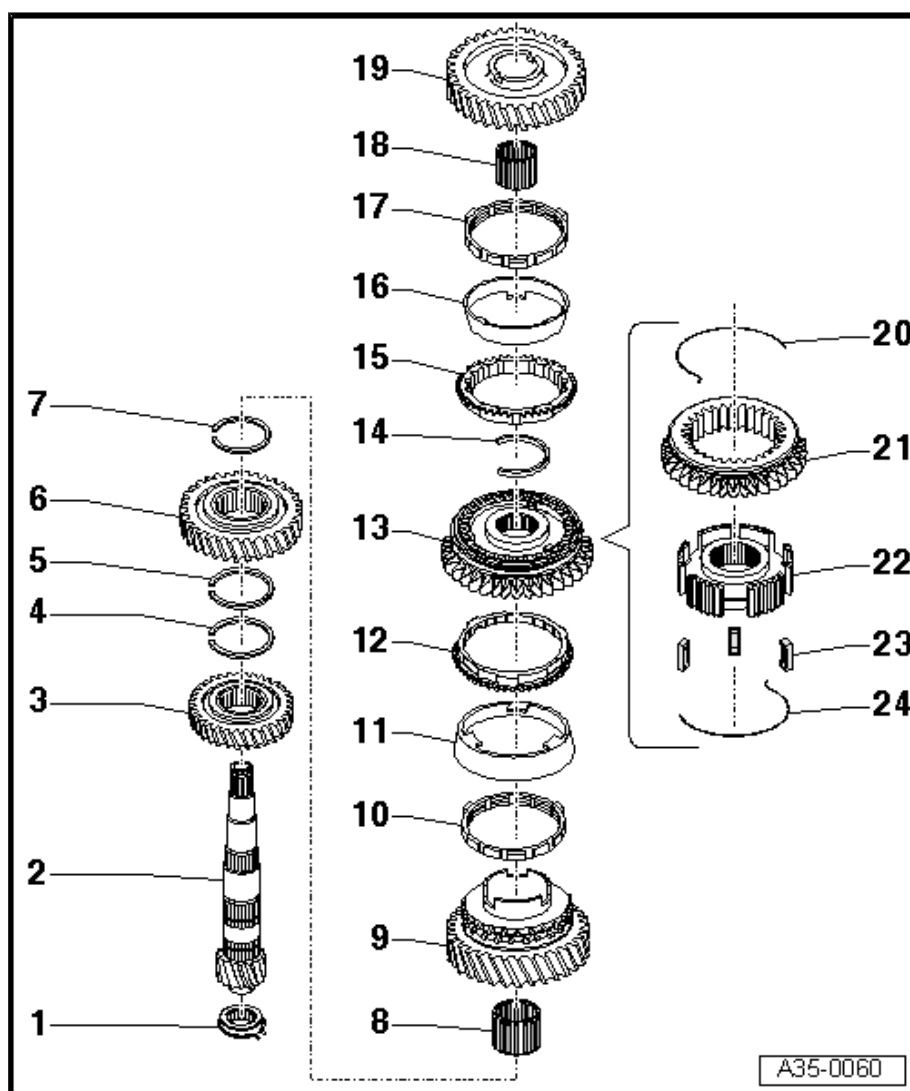
- ☐ Installation position: Collar faces 4th gear ⇒ [page 150](#)

- ☐ Removing and installing ⇒ [page 151](#)

7 - Circlip

8 - Needle bearing

- ☐ For 2nd gear





9 - 2nd speed selector gear

10 - Inner ring for 2nd gear

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Checking for wear ⇒ [page 150](#)

11 - Outer ring for 2nd gear

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Renew if scored or if there are visible traces of wear

12 - 2nd gear synchro-ring

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Checking for wear ⇒ [page 150](#)

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

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Dismantling and assembling ⇒ [page 150](#)

14 - Circlip

15 - 1st gear synchro-ring

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Checking for wear ⇒ [page 150](#)

16 - Outer ring for 1st gear

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Renew if scored or if there are visible traces of wear

17 - Inner ring for 1st gear

- ☐ Removing and installing ⇒ [page 151](#)
- ☐ Checking for wear ⇒ [page 150](#)
- ☐ Check lugs for scoring

18 - Needle bearing

- ☐ For 1st gear

19 - 1st speed selector gear

- ☐ Removing and installing ⇒ [page 151](#)

20 - Spring

- ☐ Installation position ⇒ [page 150](#)

21 - Locking collar for 1st and 2nd gear

- ☐ Dismantling and assembling ⇒ [page 150](#)

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

- ☐ Dismantling and assembling ⇒ [page 150](#)

23 - Locking pieces

- ☐ 3x

24 - Spring

- ☐ Installation position ⇒ [page 150](#)

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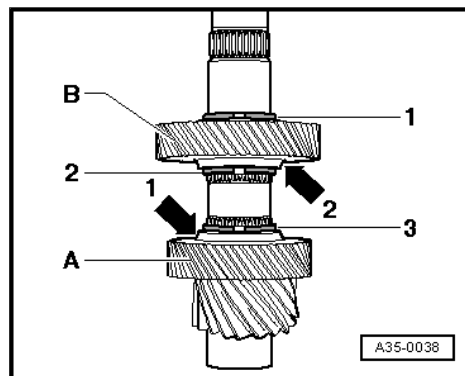
Installation position of 3rd and 4th gear wheel

Installation position of 4th gear wheel -A-:

- Collar -arrow 1- faces 3rd gear wheel -B-.

Installation position of 3rd gear wheel -B-:

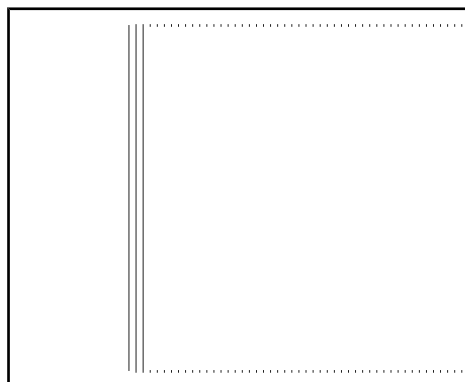
- Collar -arrow 2- faces 4th gear wheel -A-.



Checking 1st and 2nd gear inner ring for wear

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

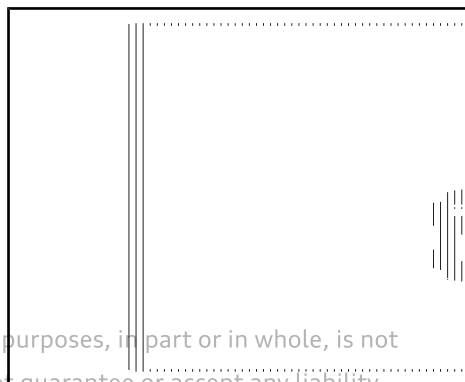
Gap -a-	Installation depth	Wear limit
1st and 2nd gear	0.75 ... 1.25 mm	0.3 mm



Checking 1st and 2nd gear synchro-ring for wear

- Press synchro-ring, outer ring and inner ring against cone on selector gear and measure gap -a- using a feeler gauge.

Gap -a-	Installation depth	Wear limit
1st and 2nd gear	1.2 ... 1.8 mm	0.5 mm



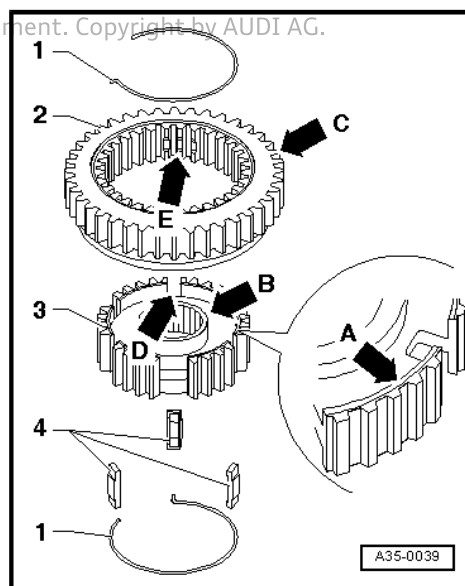
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Dismantling and assembling 1st and 2nd gear locking collar and synchro-hub

- Take off springs -1- before dismantling.
- 1 - Spring
- 2 - Locking collar
- 3 - Synchro-hub
- 4 - Locking piece
- To assemble, slide locking collar over synchro-hub.

Installation position:

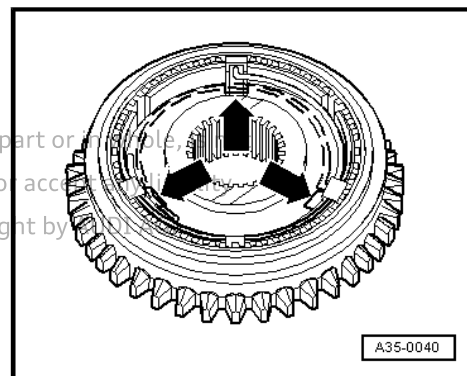
- After assembly, the groove on the top -arrow A- and the higher shoulder -arrow B- on the synchro-hub will face towards the external splines on the locking collar -arrow C-.
- The deeper recesses -arrow D- for the locking pieces in the synchro-hub must align with the recesses -arrow E- in the locking collar.





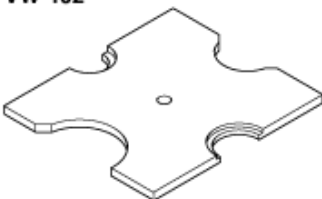
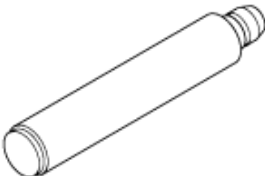
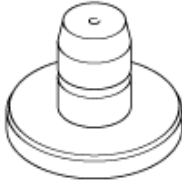
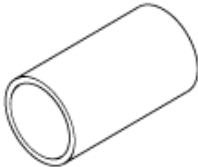
- Insert locking pieces in deeper recesses -arrows- and install springs so they are offset 120°.
- Angled end of spring must locate in one of the locking pieces.

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2.2 Dismantling and assembling output shaft

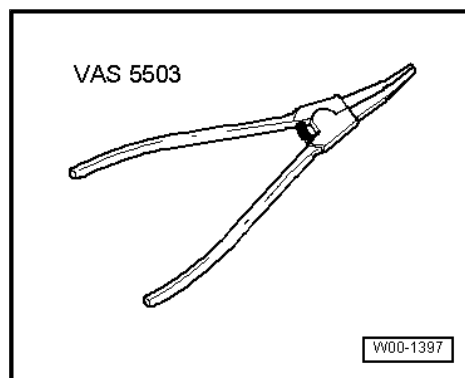
Special tools and workshop equipment required

VW 402 	VW 407 
VW 412 	40-21 
	G35-0011

- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Drift sleeve - 40 - 21-
- ◆ Circlip pliers - VAS 5503-

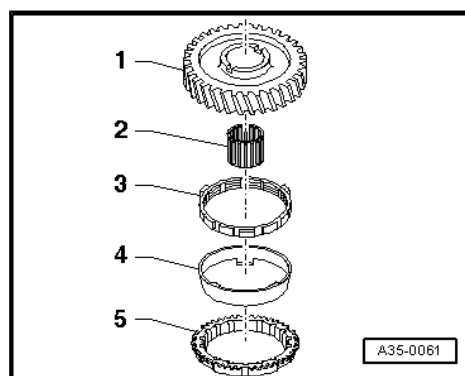


◆ Circlip pliers - VAS 5503-



Dismantling

- Output shaft removed ⇒ [page 137](#)
- Remove following components from output shaft:
 - 1 - 1st speed selector gear
 - 2 - Needle bearing for 1st gear
 - 3 - Inner ring for 1st gear
 - 4 - Outer ring for 1st gear
 - 5 - 1st gear synchro-ring

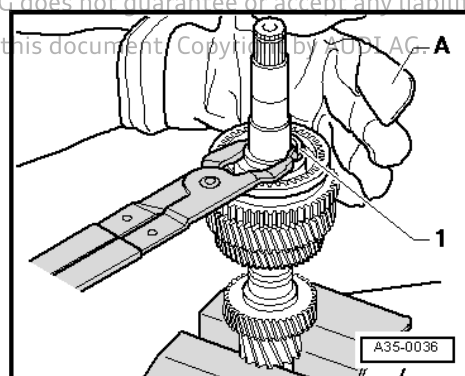


WARNING

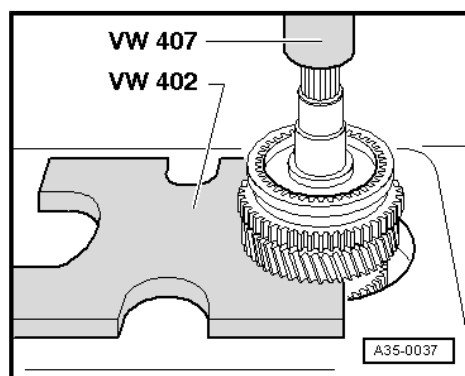
Prevent circlip from springing off suddenly.

- Push circlip -1- out of groove.

A - Protective glove



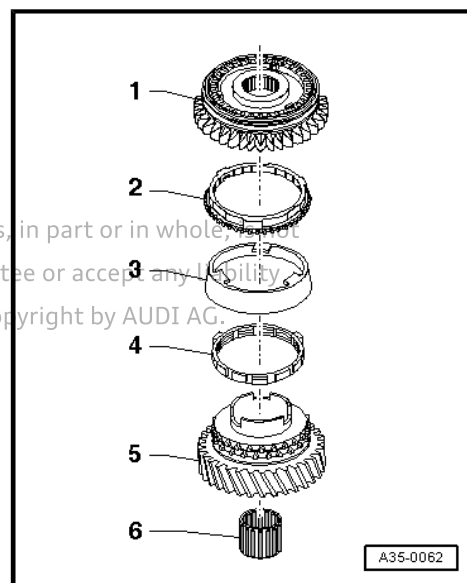
- Press off 2nd speed selector gear and locking collar/synchro-hub together.



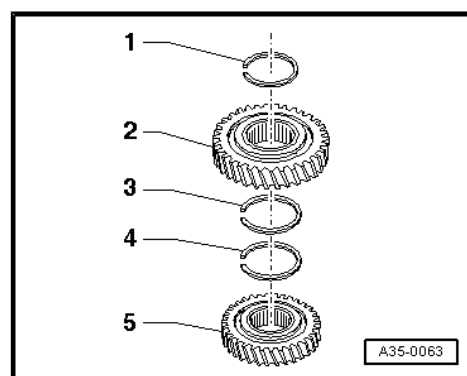


- Remove following components from output shaft:
- 1 - Locking collar with synchro-hub for 1st and 2nd gear
- 2 - 2nd gear synchro-ring
- 3 - Outer ring for 2nd gear
- 4 - Inner ring for 2nd gear
- 5 - 2nd speed selector gear
- 6 - Needle bearing for 2nd gear

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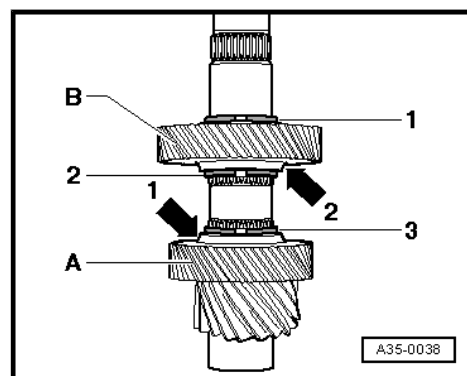


- Remove circlip -1- using circlip pliers - VAS 5503- .
- Take off 3rd gear wheel -item 2-.
- Remove circlips -3- and -4- with circlip pliers - VAS 5503- .
- Remove 4th gear wheel -Item 5- from output shaft.



Assembling

- Checking synchro-rings for wear ⇒ [page 150](#) .
- Fit 4th gear wheel -A- onto output shaft.
 - Collar -arrow 1- faces 3rd gear wheel -B-.
- Fit circlips -2- and -3-.
- Fit 3rd gear wheel -B- onto output shaft.
 - Collar -arrow 2- faces 4th gear wheel -A-.
- Fit circlip -1-.





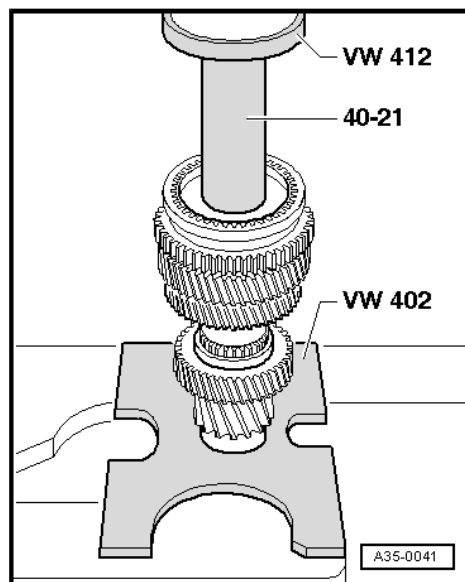
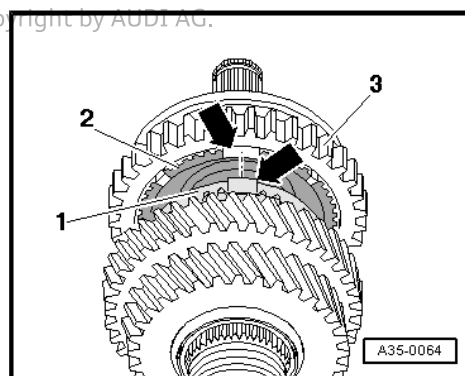
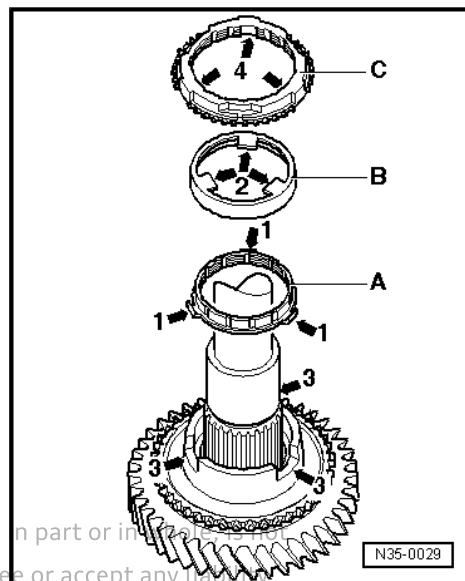
- Install needle bearing and 2nd speed selector gear on output shaft.
- Place inner ring -A- on 2nd speed selector gear.
- Angled coupling lugs -arrows 1- point towards outer ring -B-.
- Fit outer ring -B-.
- Coupling lugs -arrows 2- engage in slots -arrows 3- on selector gear.
- Fit synchro-ring -C-.
- Slots -arrows 4- engage on coupling lugs -arrows 1- on inner ring -A-.



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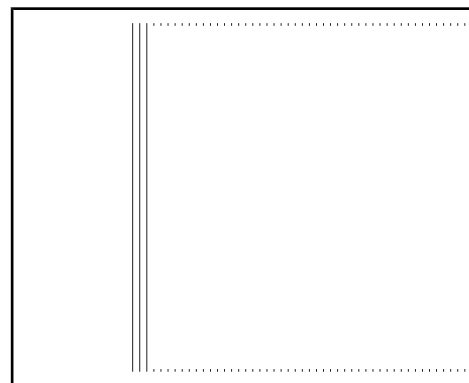
- Fit locking collar/synchro-hub -3- on output shaft.
- Splines on locking collar face towards 2nd gear.
- Rotate synchro-ring -1- so that coupling lugs on synchro-ring are in line with free slots in synchro-hub -2- -arrows-.

- Press 1st and 2nd gear locking collar/synchro-hub onto output shaft.
- After installing, check clearance of synchro-hub by turning 2nd speed selector gear backwards and forwards.
- 2nd speed selector gear should turn freely in both directions.



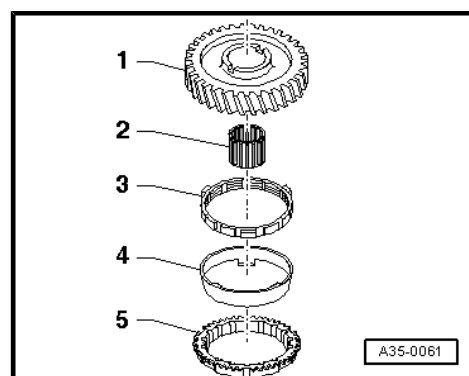


- Fit circlip.



- Fit following components on output shaft:

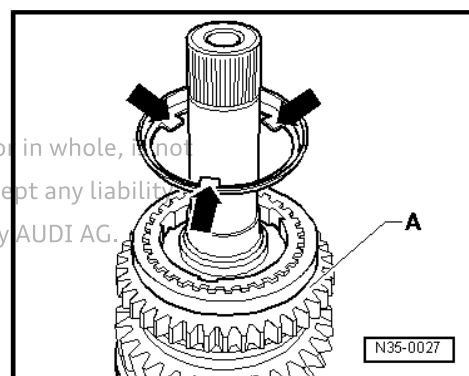
- 5 - 1st gear synchro-ring
- 4 - Outer ring for 1st gear
- 3 - Inner ring for 1st gear
- 2 - Needle bearing for 1st gear
- 1 - 1st speed selector gear



- Fit 1st gear synchro-ring in locking collar/synchro-hub.
- Fit outer ring for 1st gear.

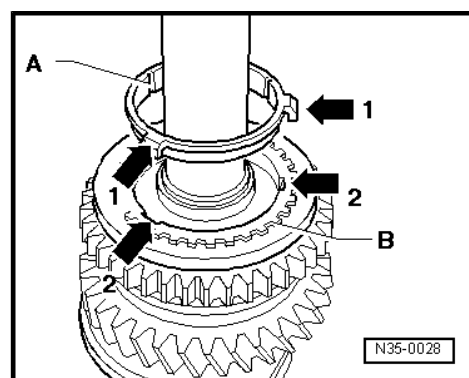
- Coupling lugs -arrows- face towards locking collar/synchro-hub.

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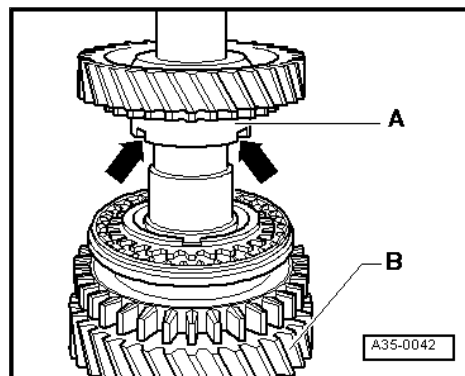
Fit inner ring for 1st gear -A-.

- Coupling lugs -arrows 1- must locate in slots -arrows 2- in synchro-ring -B-.





- Fit 1st speed selector gear.
- Rotate selector gear so that coupling lugs on outer ring engage in slots in selector gear -arrows- (selector gear will then slide down visibly).



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39 – Final drive - differential

1 Oil seals

⇒ [“1.1 Overview of fitting locations - oil seals”, page 157](#)

⇒ [“1.2 Renewing oil seal \(left-side\)”, page 157](#)

⇒ [“1.3 Renewing oil seal \(right-side\)”, page 161](#)

1.1 Overview of fitting locations - oil seals

1 - Oil seal

- ☐ For input shaft
- ☐ Renewing ⇒ [page 51](#)

2 - Oil seal (right-side)

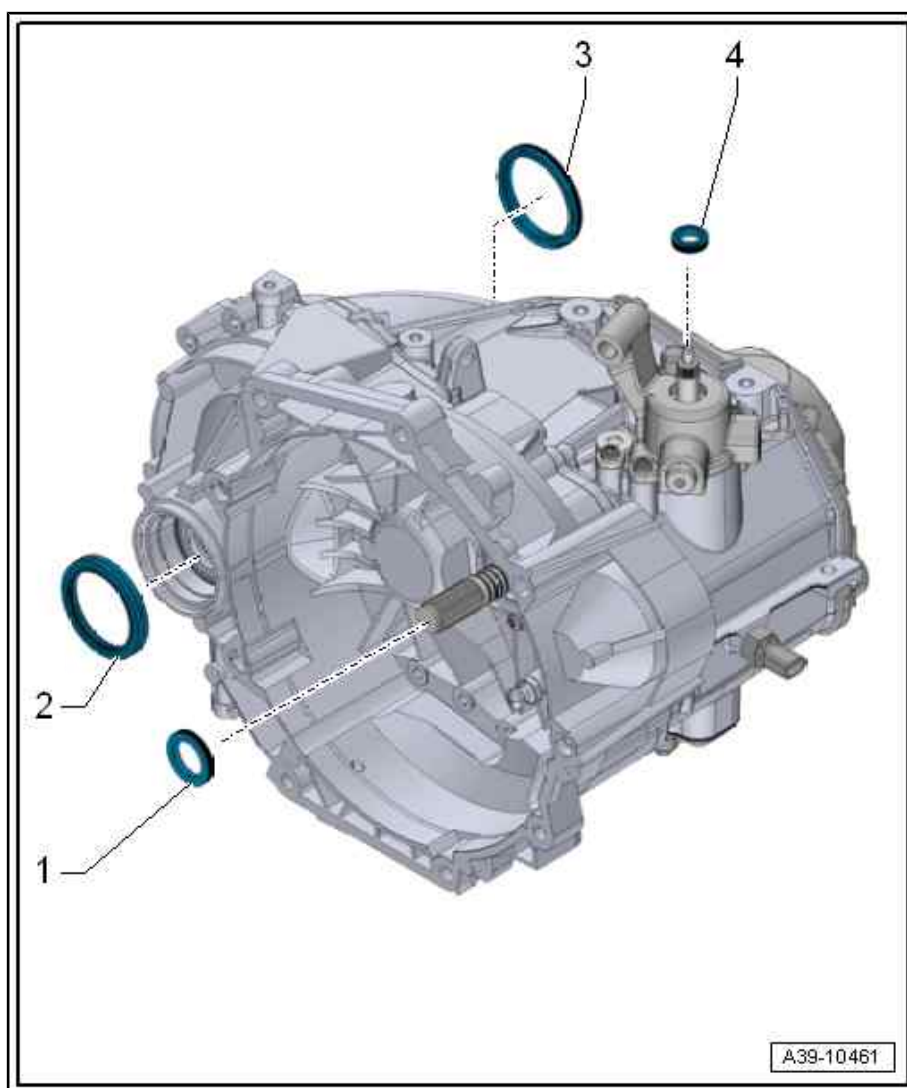
- ☐ Renewing on manual gearbox 02T
⇒ [page 161](#)
- ☐ Renewing on manual gearbox 0DF
⇒ [page 163](#)

3 - Oil seal (left-side)

- ☐ Renewing on manual gearbox 02T
⇒ [page 157](#)
- ☐ Renewing on manual gearbox 0DF
⇒ [page 159](#)

4 - Oil seal

- ☐ For selector shaft
- ☐ Renewing ⇒ [page 71](#)



1.2 Renewing oil seal (left-side)

⇒ [“1.2.1 Renewing oil seal \(left-side\) - manual gearbox 02T”, page 157](#)

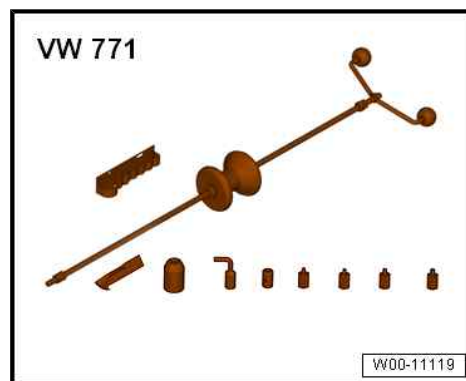
⇒ [“1.2.2 Renewing oil seal \(left-side\) - manual gearbox 0DF”, page 159](#)

1.2.1 Renewing oil seal (left-side) - manual gearbox 02T

Special tools and workshop equipment required



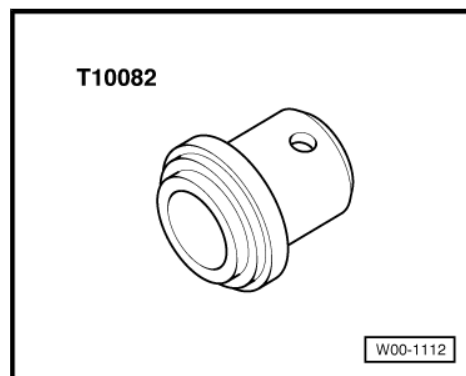
◆ Multi-purpose tool - VW 771-



◆ Extractor hook -VW 771/37-



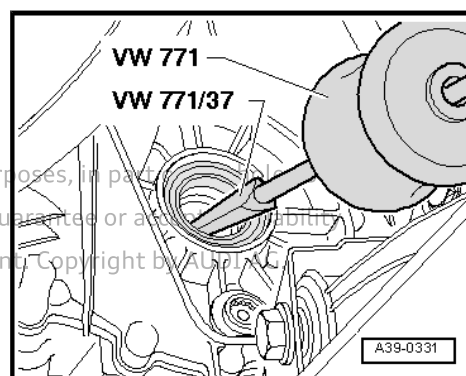
◆ Thrust piece - T10082-



◆ Sealing grease - G 052 128 A1-

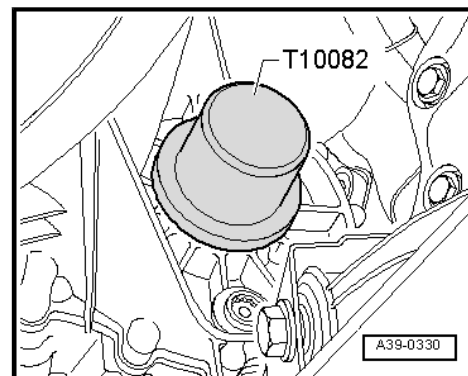
Procedure

- Remove flange shaft (left-side) ⇒ [page 190](#) .
- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and extractor hook -VW 771/37- .
- Clean installation area for oil seal.





- Lightly oil outer circumference of oil seal and drive in onto stop using thrust piece - T10082- , ensuring oil seal is kept straight.



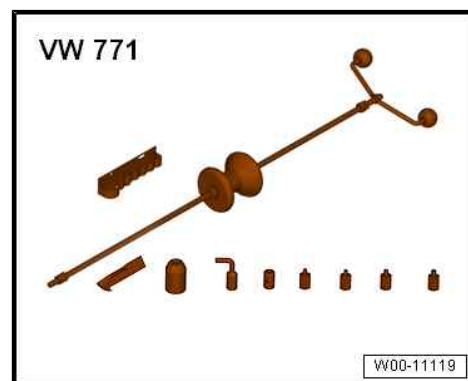
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .
- Install flange shaft (left-side) ⇒ [page 190](#) .



1.2.2 Renewing oil seal (left-side) - manual gearbox 0DF

Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-



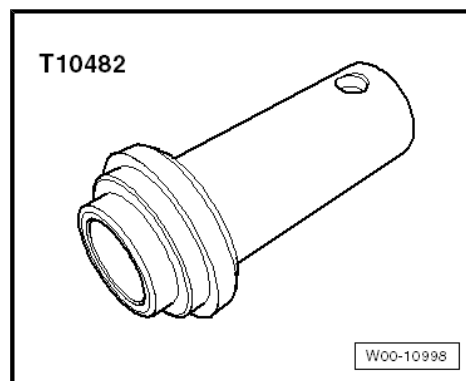
- ◆ Extractor hook -VW 771/37-



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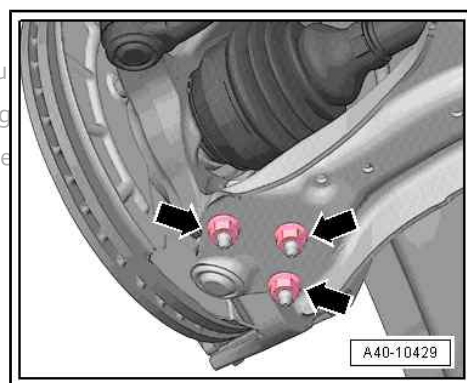
◆ Thrust piece - T10482-



◆ Sealing grease - G 052 128 A1-

Procedure

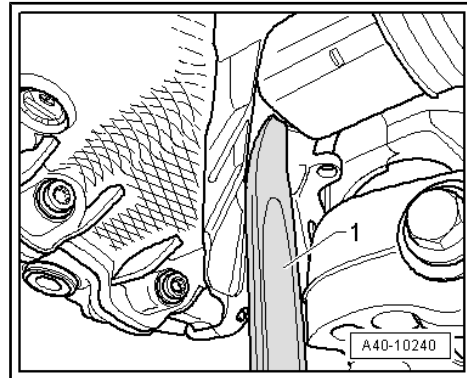
- Remove nuts -arrows- securing swivel joint (left-side).
- If fitted, unscrew nut on bracket for front left vehicle level sender - G78-.
- Pull swivel joint (left-side) off wishbone.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

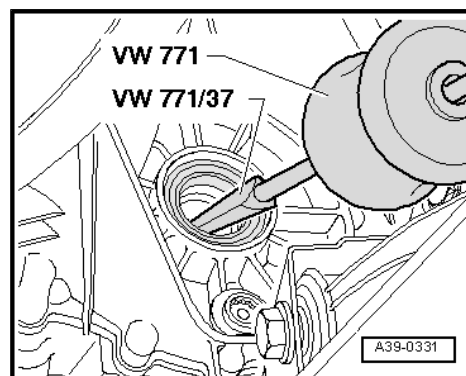
- Press drive shaft (left-side) off gearbox using assembly lever -1-.
- Pivot suspension strut (left-side) outwards and at the same time guide drive shaft out of gearbox.
- Tie up drive shaft.



Note

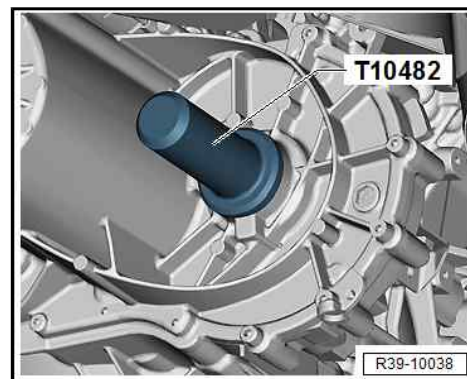
Take care not to damage the surface coating of the drive shaft.

- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and extractor hook -VW 771/37-.
- Clean installation area for oil seal.





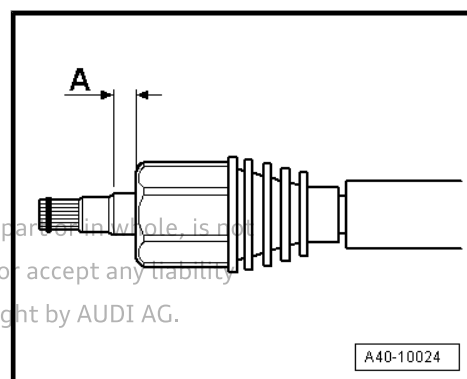
- Lightly oil outer circumference of oil seal and drive in onto stop using thrust piece - T10482- , ensuring oil seal is kept straight.



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



- Install drive shaft (left-side; inserted in gearbox) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



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1.3 Renewing oil seal (right-side)

⇒ ["1.3.1 Renewing oil seal \(right-side\) - manual gearbox 02T", page 161](#)

⇒ ["1.3.2 Renewing oil seal \(right-side\) - manual gearbox 0DF", page 163](#)

1.3.1 Renewing oil seal (right-side) - manual gearbox 02T

Special tools and workshop equipment required



◆ Multi-purpose tool - VW 771-

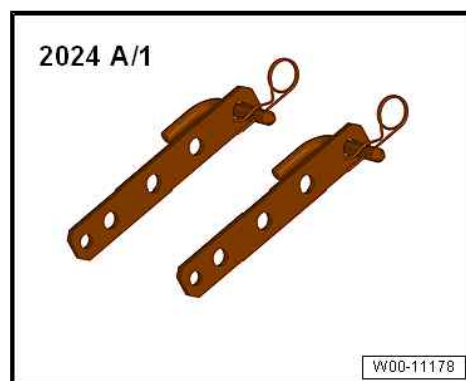
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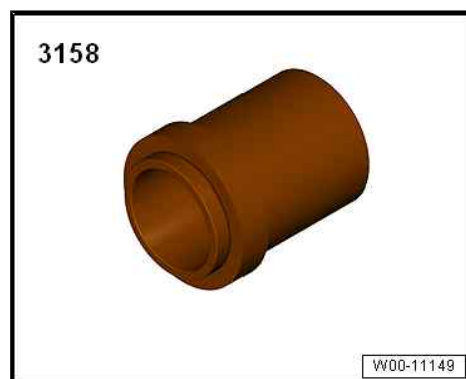
◆ Extractor hook -VW 771/37-



◆ Extension -2024A/1- of lifting tackle - 2024A-



◆ Drift sleeve - 3158-

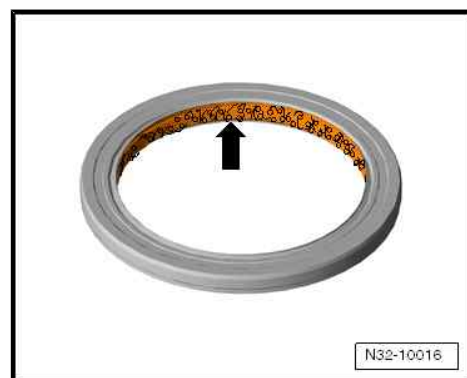
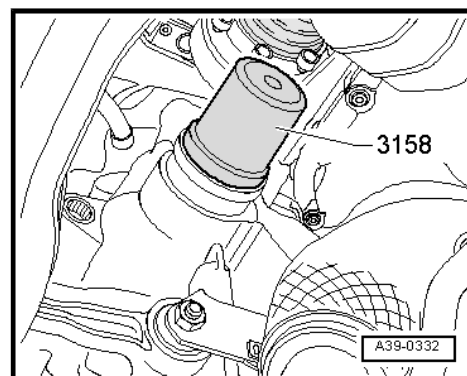
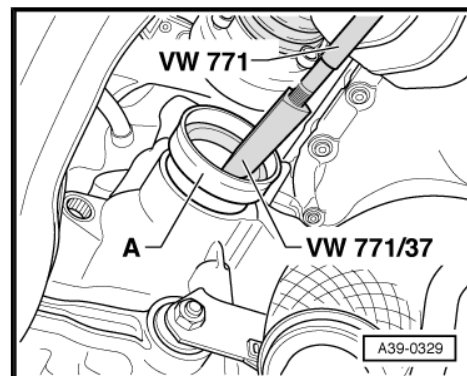


◆ Sealing grease - G 052 128 A1-



Procedure

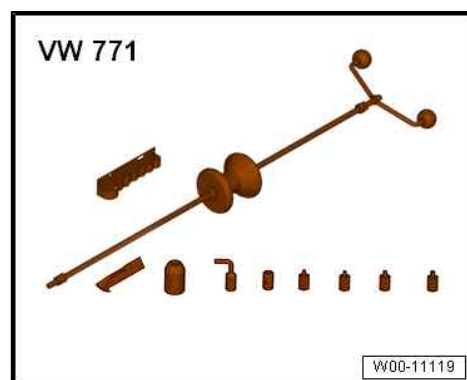
- Remove flange shaft (right-side) ⇒ [page 192](#) .
- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and extractor hook -VW 771/37- .
- Clean installation area for oil seal.
- Lightly oil outer circumference of oil seal and drive in onto stop using thrust piece - T10082- , ensuring oil seal is kept straight.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .
- Install flange shaft (right-side) ⇒ [page 192](#) .



1.3.2 Renewing oil seal (right-side) - manual gearbox 0DF

Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-



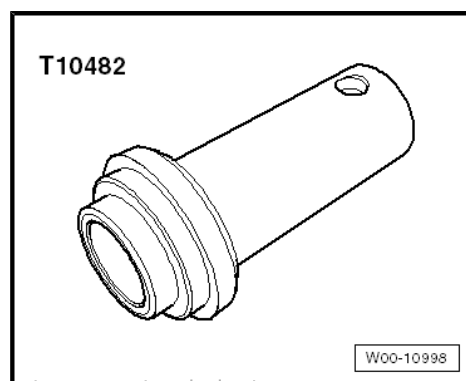
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◆ Extractor hook -VW 771/37-



◆ Thrust piece - T10482-



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◆ Sealing grease - G 052 128 A1-

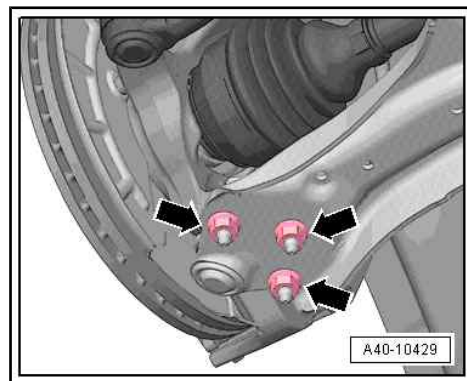
Procedure

- Unscrew nuts -arrows- for swivel joint (right-side).
- Pull swivel joint (left-side) off wishbone.



Note

When removing and installing, take care not to damage the rubber boot of the swivel joint. The boot should be protected against damage if necessary.

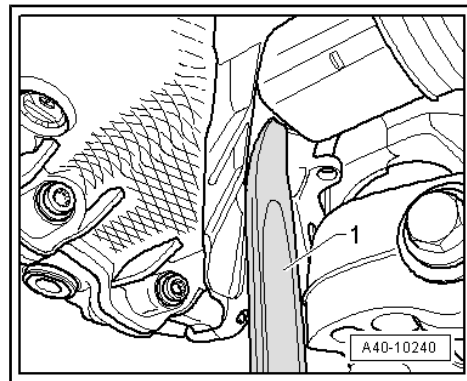


- Press drive shaft (right-side) off gearbox using assembly lever -1-.
- Pivot suspension strut (right-side) outwards and at the same time guide drive shaft out of gearbox.
- Tie up drive shaft.



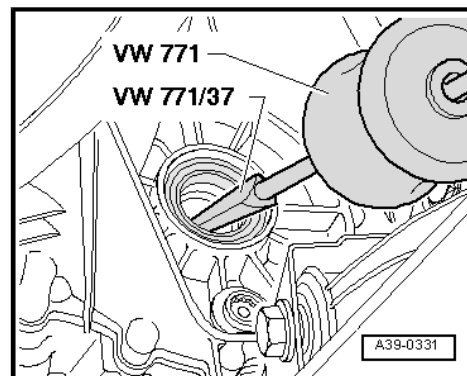
Note

Take care not to damage the surface coating of the drive shaft.

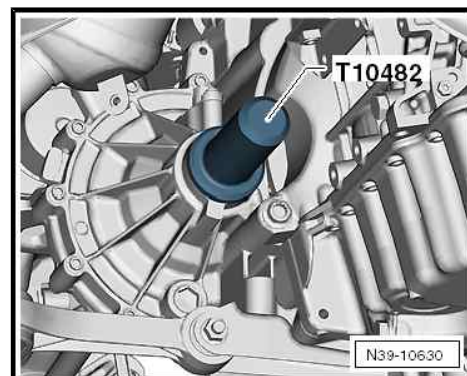




- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and extractor hook -VW 771/37- .
- Clean installation area for oil seal.



- Lightly oil outer circumference of oil seal and drive in onto stop using thrust piece - T10482- , ensuring oil seal is kept straight.

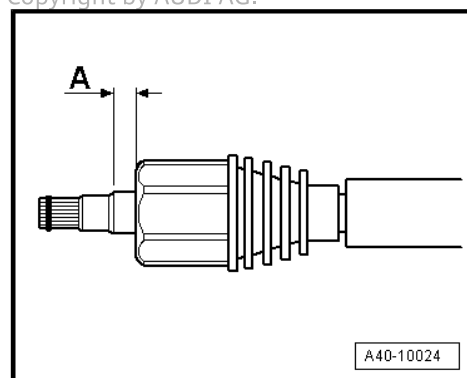


- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



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- Install drive shaft (right-side; inserted in gearbox) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .





2 Differential

⇒ [“2.1 Exploded view - differential”, page 166](#)

⇒ [“2.2 Dismantling and assembling differential”, page 170](#)

⇒ [“2.3 Adjusting differential”, page 182](#)

⇒ [“2.4 Removing and installing flange shaft \(left-side\) - manual gearbox 02T”, page 190](#)

⇒ [“2.5 Removing and installing flange shaft \(right-side\) - manual gearbox 02T”, page 192](#)

2.1 Exploded view - differential

⇒ [“2.1.1 Exploded view - differential, manual gearbox 02T”, page 166](#)

⇒ [“2.1.2 Exploded view - differential, manual gearbox 0DF”, page 169](#)

2.1.1 Exploded view - differential, manual gearbox 02T



Note

- ◆ *Heat tapered roller bearing inner race to 100° C before installing.*
- ◆ *Always renew both tapered roller bearings together.*
- ◆ *Adjust differential if tapered roller bearings, differential cage, gearbox housing or clutch housing are renewed
⇒ [page 182](#).*



1 - Countersunk bolt

- ☐ 25 Nm
- ☐ Screws into threaded piece
⇒ [Item 8 \(page 167\)](#)

2 - Flange shaft (right-side)

- ☐ Do not interchange; left and right flange shafts are different
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

3 - Spring for flange shaft

- ☐ Installed behind flange shafts

4 - Thrust washer

- ☐ Installation position: lip faces spring

5 - Tapered ring

- ☐ Installation position: Taper towards differential cage

6 - Circlip

- ☐ Holds tapered ring, thrust washer and spring in position when flange shaft is removed

7 - Sun wheel

- ☐ Installing ⇒ [page 176](#)

8 - Threaded piece

- ☐ Installing ⇒ [page 176](#)

9 - Differential pinion pin

- ☐ To remove, shear off spring pin ⇒ [Item 18 \(page 168\)](#) ⇒ [page 175](#)
- ☐ Installing ⇒ [page 176](#)

10 - Planet pinion

- ☐ Installing ⇒ [page 176](#)

11 - One-piece thrust washer

- ☐ Lubricate with gear oil before installing

12 - Flange shaft (left-side)

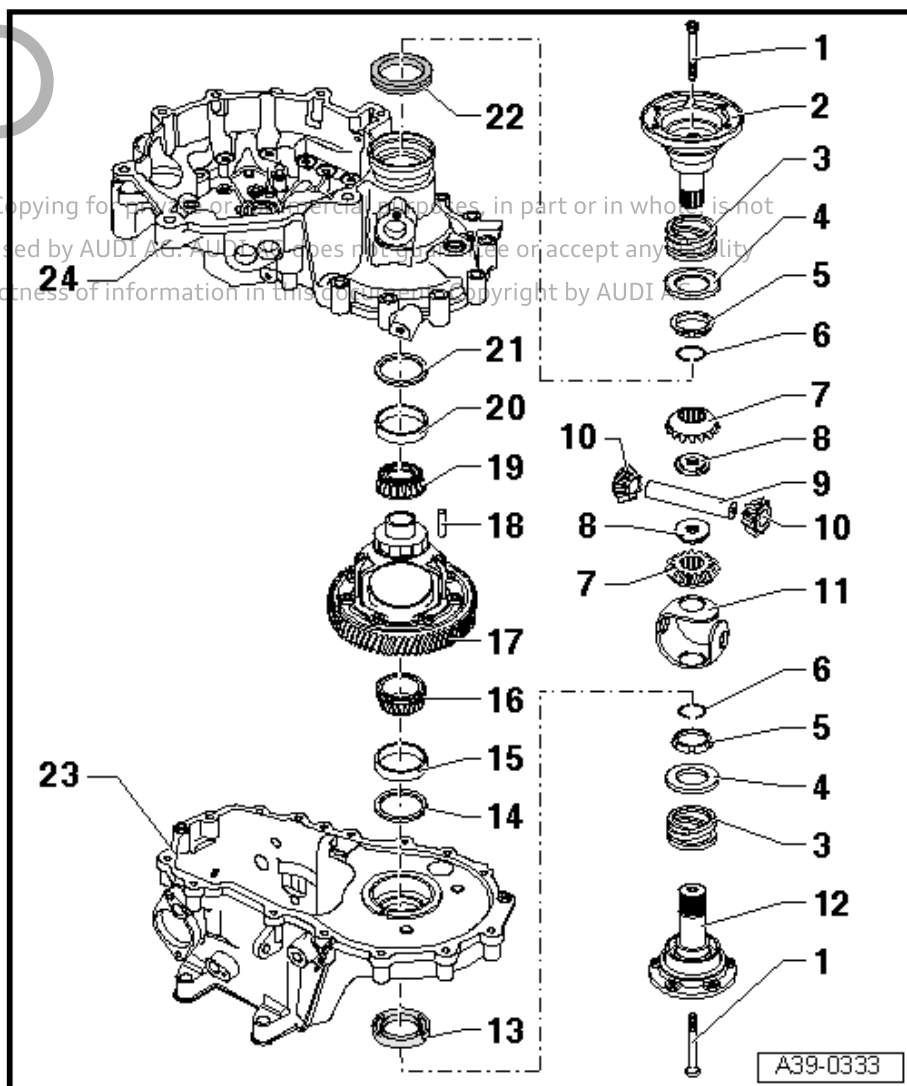
- ☐ With dust plate
- ☐ Do not interchange; left and right flange shafts are different
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

13 - Oil seal for flange shaft (left-side)

- ☐ Different diameters for left and right
- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Can be renewed with gearbox in vehicle ⇒ [page 157](#)

14 - Shim S₁

- ☐ For differential
- ☐ Not fitted on this gearbox version





15 - Tapered roller bearing outer race

- ☐ Pulling out ⇒ [page 173](#)
- ☐ Pressing in ⇒ [page 174](#)

16 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 174](#)
- ☐ Pressing on ⇒ [page 174](#)

17 - Differential cage

- ☐ With final drive gear

18 - Clamping sleeve

- ☐ Secures differential pinion pin
- ☐ Is sheared off on removal ⇒ [page 175](#)
- ☐ Installing ⇒ [page 176](#)

19 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 175](#)
- ☐ Pressing on ⇒ [page 175](#)

20 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 174](#)
- ☐ Pressing in ⇒ [page 175](#)

21 - Shim S₂

- ☐ For differential
 - ☐ Determining thickness ⇒ [page 182](#)
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22 - Oil seal for flange shaft (right-side)

- ☐ Different diameters for left and right
- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Can be renewed with gearbox in vehicle ⇒ [page 161](#)

23 - Gearbox housing

- ☐ Servicing ⇒ [page 130](#)

24 - Clutch housing



2.1.2 Exploded view - differential, manual gearbox 0DF

1 - Sun wheel

- ☐ Installing ⇒ [page 182](#)

2 - Differential pinion pin

- ☐ To remove, shear off spring pin
⇒ [Item 10 \(page 169\)](#)
⇒ [page 181](#)
- ☐ Installing ⇒ [page 182](#)

3 - Planet pinion

- ☐ Installing ⇒ [page 182](#)

4 - One-piece thrust washer

- ☐ Lubricate with gear oil before installing

5 - Oil seal

- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Renewing ⇒ [page 157](#)

6 - Retaining plate

- ☐ Renew after removing
- ☐ Installation position
⇒ [page 180](#)

7 - Tapered roller bearing outer race

- ☐ Pulling out ⇒ [page 179](#)
- ☐ Pressing in
⇒ [page 180](#)

8 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 181](#)
- ☐ Pressing on
⇒ [page 182](#)

9 - Differential cage

- ☐ With final drive gear

10 - Clamping sleeve

- ☐ Secures differential pinion pin
- ☐ Is sheared off on removal ⇒ [page 175](#)
- ☐ Installing ⇒ [page 182](#)

11 - Tapered roller bearing inner race

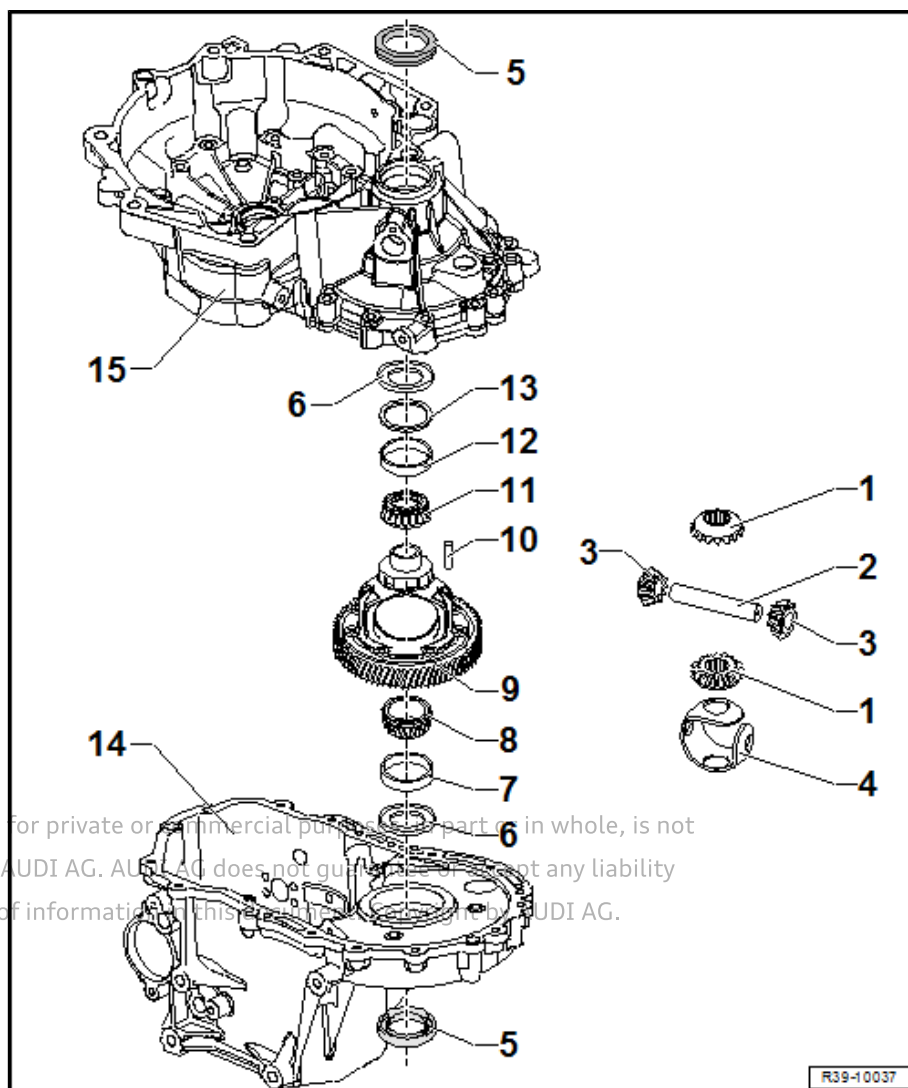
- ☐ Pulling off ⇒ [page 175](#)
- ☐ Pressing on ⇒ [page 175](#)

12 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 174](#)
- ☐ Pressing in ⇒ [page 175](#)

13 - Shim S₂

- ☐ For differential
- ☐ Determining thickness ⇒ [page 182](#)





14 - Gearbox housing

□ Servicing ⇒ [page 130](#)

15 - Clutch housing

2.2 Dismantling and assembling differential

⇒ [“2.2.1 Dismantling and assembling differential - manual gearbox 02T”, page 170](#)

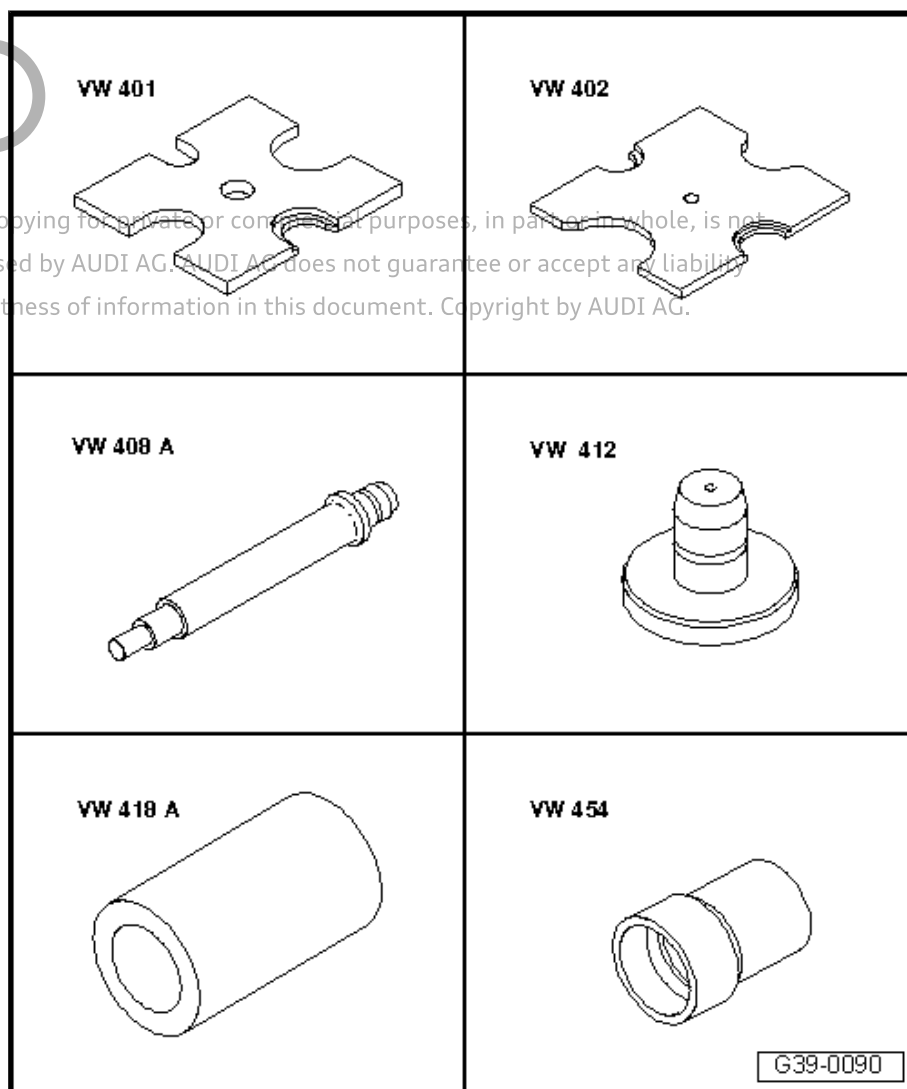
⇒ [“2.2.2 Dismantling and assembling differential - manual gearbox 0DF”, page 176](#)

2.2.1 Dismantling and assembling differential - manual gearbox 02T

Special tools and workshop
equipment required



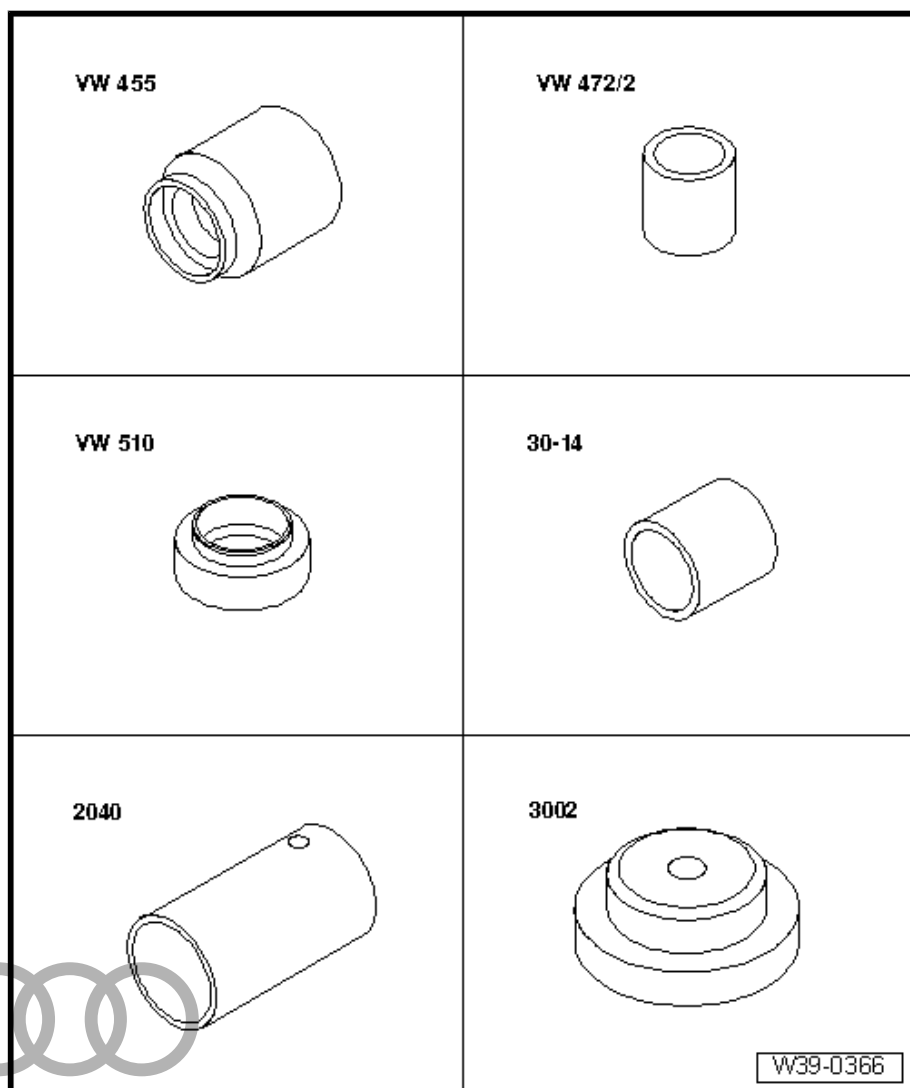
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- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408 A-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 418 A-



◆ Thrust piece - VW 454-



◆ Installing sleeve - VW 455-

◆ Spacer sleeve - VW 472/2-

◆ Thrust pad - VW 510-

◆ Tube - 30 - 14-

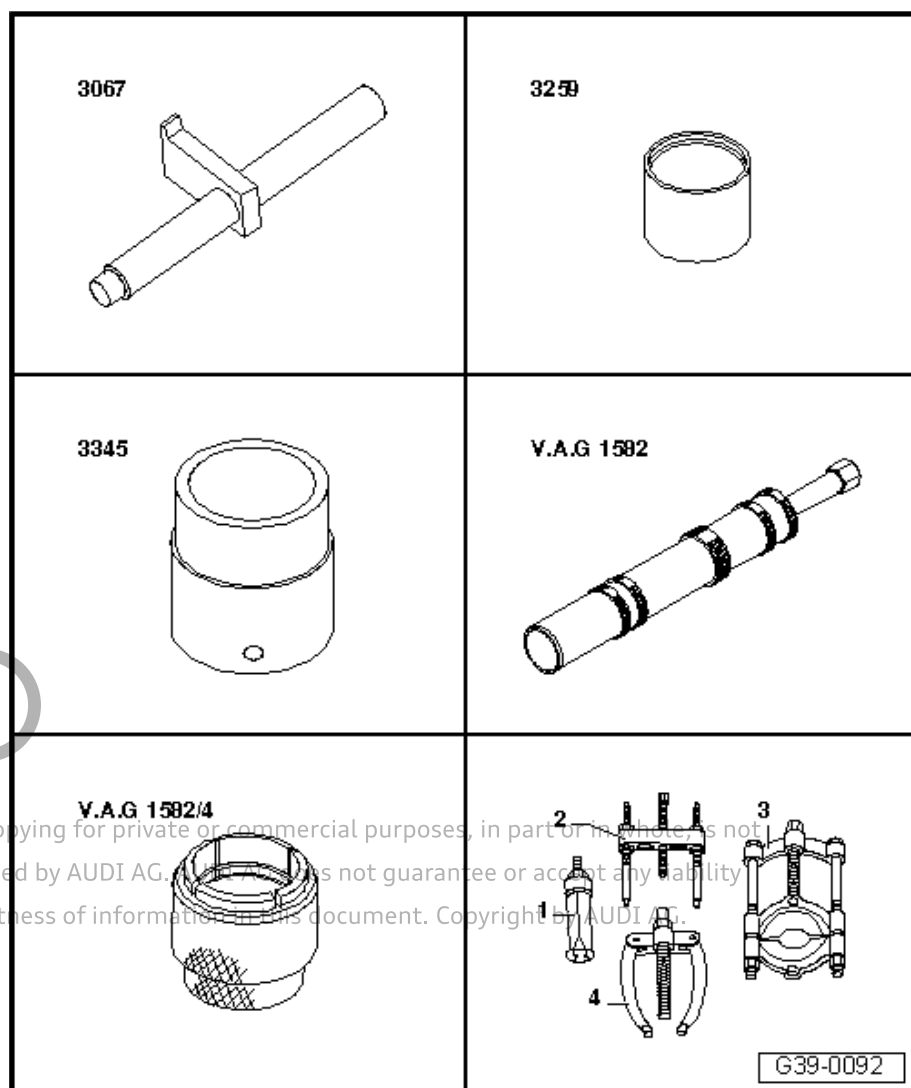
◆ Tube - 2040-

◆ Thrust piece - 3002-

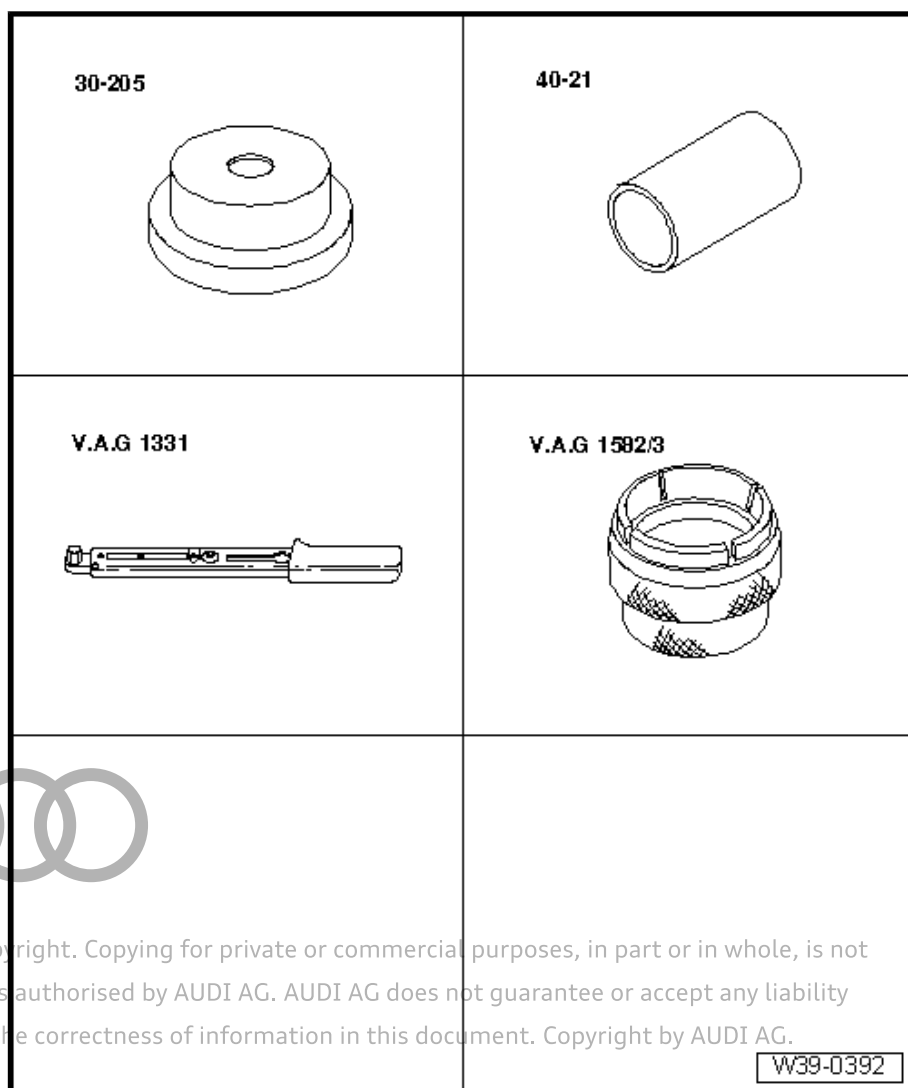
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- ◆ Counterhold tool - 3067-
- ◆ Tube - 3259-
- ◆ Wheel bearing tube - 3345-
- ◆ Tapered roller bearing puller - V.A.G 1582-
- ◆ Adapter - V.A.G 1582/4-
- ◆ -1- Kukko 21/7 internal puller
- ◆ -4- Kukko 22/2 counter-support



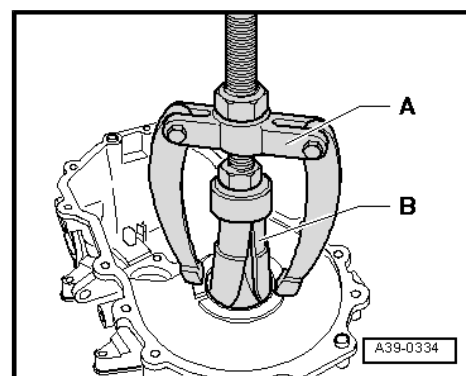
- ◆ Thrust plate - 30 - 205-
- ◆ Drift sleeve - 40 - 21-
- ◆ Torque wrench - V.A.G 1331- (5 ... 50 Nm)
- ◆ Adapter - V.A.G 1582/3-

Pulling tapered roller bearing outer race out of gearbox housing

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

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

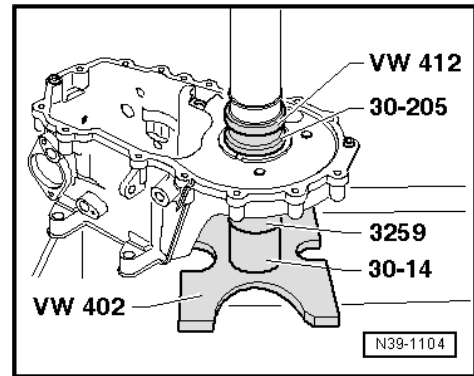
- Clamp internal puller firmly under tapered roller bearing outer race.





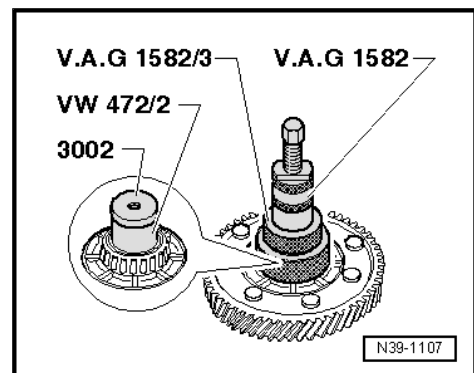
Pressing tapered roller bearing outer race into gearbox housing

- Support gearbox housing with tube - 3259- directly below bearing mounting.



Pulling off tapered roller bearing inner race

- Before fitting puller, position spacer sleeve - VW 472/2- and thrust piece - 3002- on differential cage.



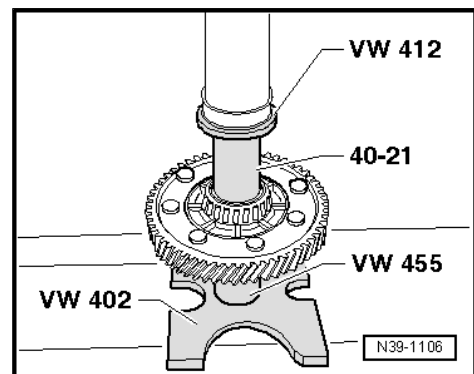
Pressing on tapered roller bearing inner race



WARNING

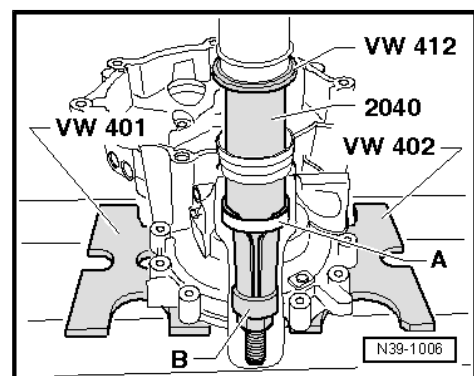
Wear protective gloves.

- Heat tapered roller bearing inner race to approx. 100°C before pressing on.
- Support opposite side of inner race using installing sleeve - VW 455- .



Pressing tapered roller bearing outer race -A- out of clutch housing

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



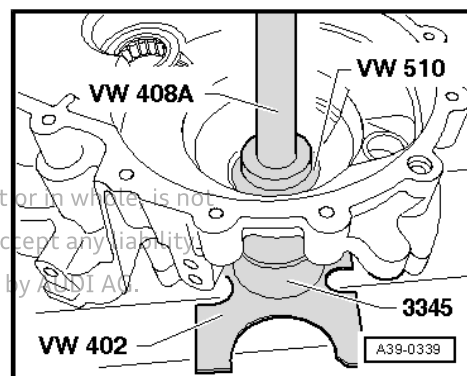
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Pressing tapered roller bearing outer race into clutch housing

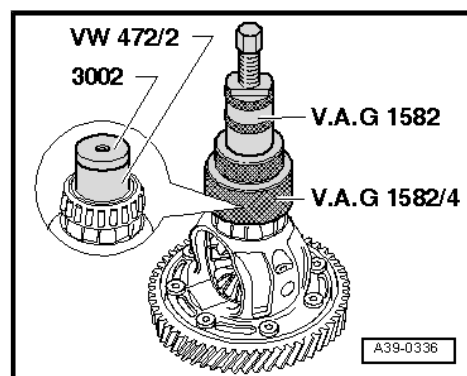
- Support clutch housing with tube for wheel bearing - 3345- directly below bearing mounting.

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Pulling off tapered roller bearing inner race

- Before fitting puller, position spacer sleeve - VW 472/2- and thrust piece - 3002- on differential cage.



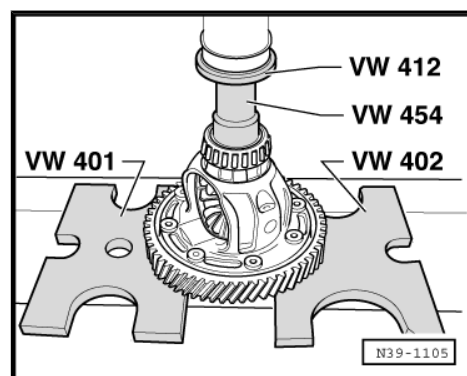
Pressing on tapered roller bearing inner race



WARNING

Wear protective gloves.

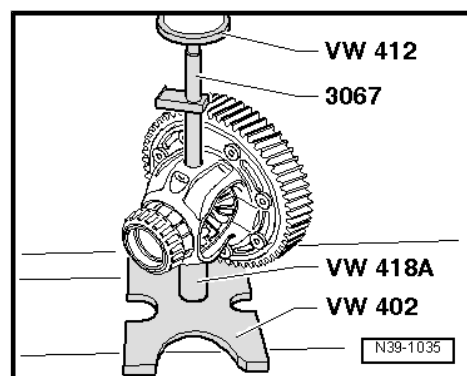
- Heat tapered roller bearing inner race to approx. 100°C before pressing on.



Pressing out differential pinion pin

The spring pin is sheared off when it is pressed out.

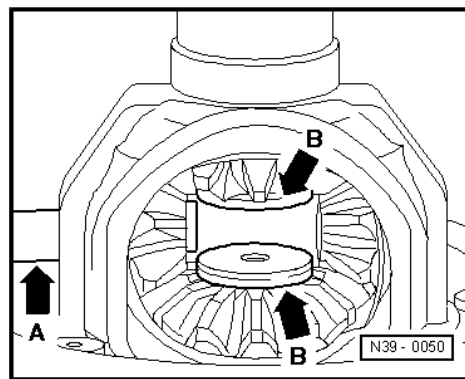
- Drive the remaining part of the spring pin out of the differential cage.





Installing differential bevel gears

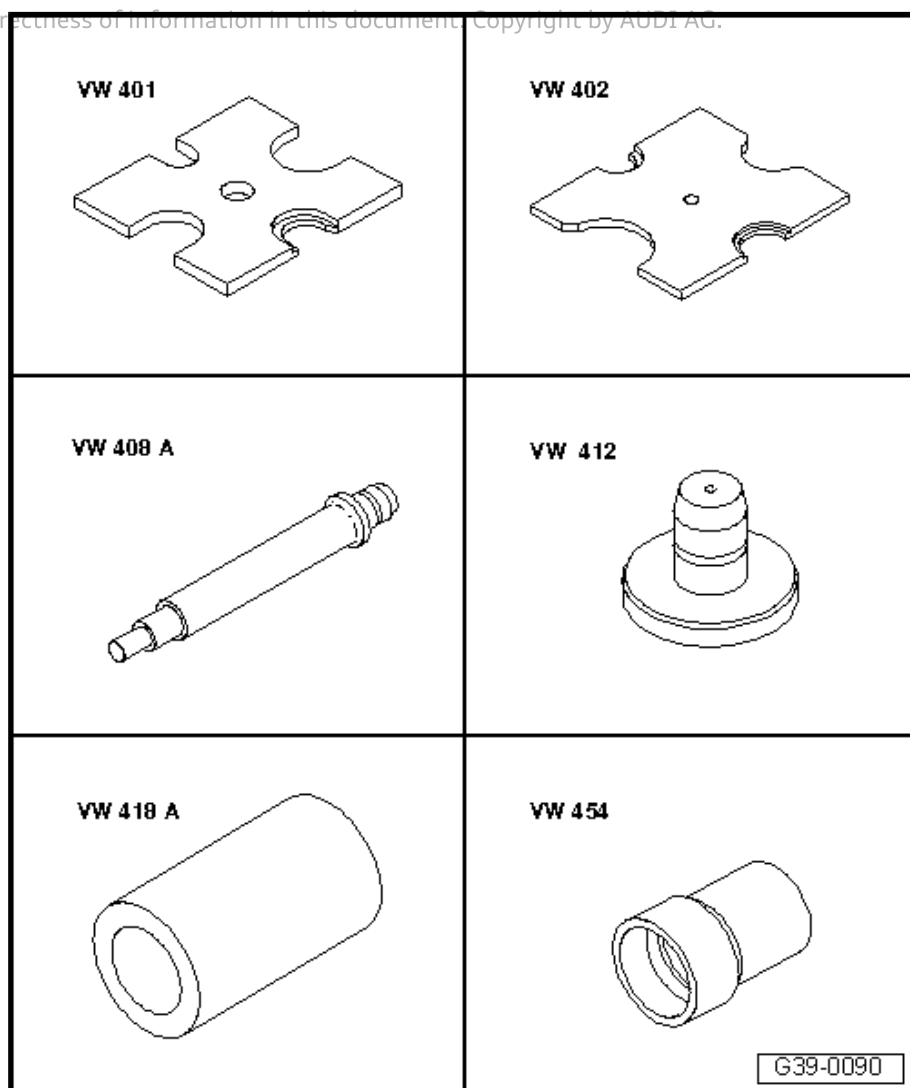
- Lubricate one-piece thrust washer with gear oil and install.
- Install both sun wheels and secure (e.g. with flange shaft).
- Insert planet pinions (180° apart) and pivot into position.
- Push differential pinion pin -arrow A- in as far as first planet pinion.
- Fit threaded pieces -arrows B- in sun wheels.
- Installation position: Stepped shoulder towards sun wheel
- Drive differential pinion pin into final position and secure with spring pin.



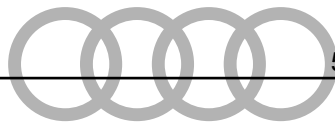
2.2.2 Dismantling and assembling differential - manual gearbox 0DF

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Special tools and workshop equipment required

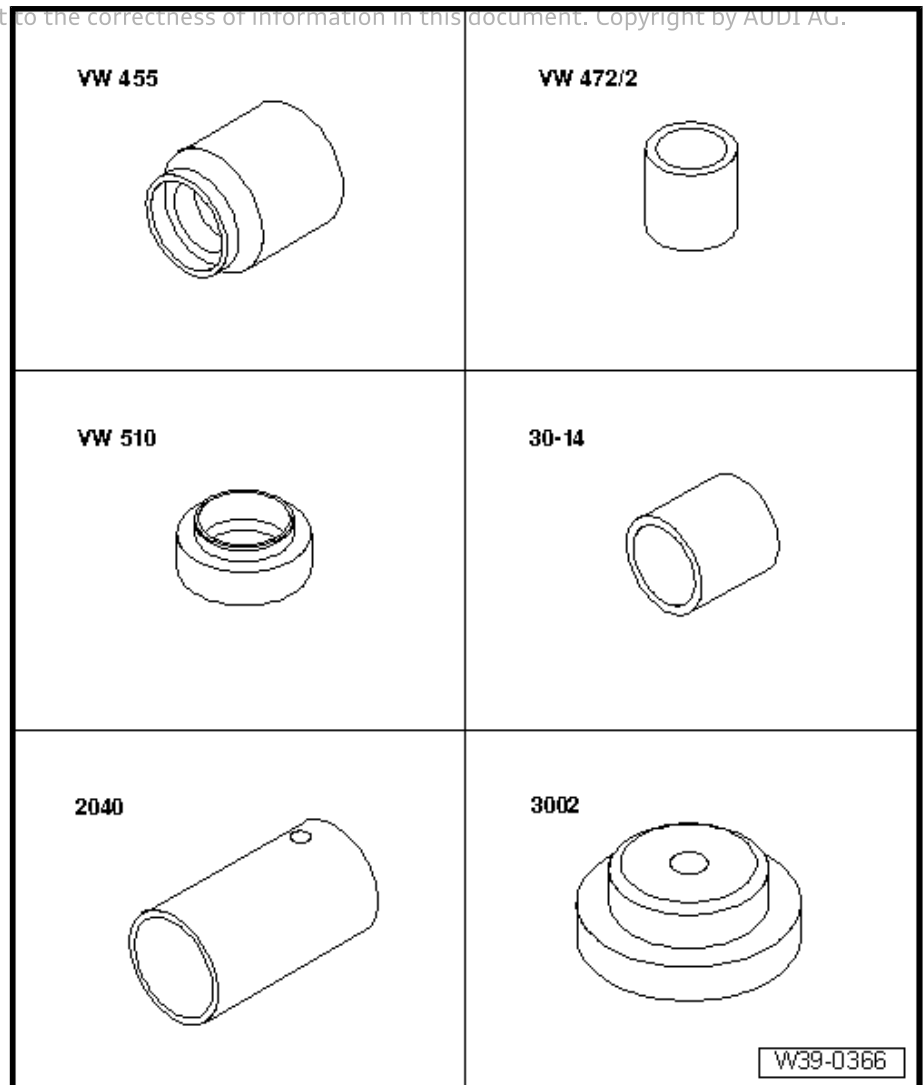


- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408A-
- ◆ Press tool - VW 412-

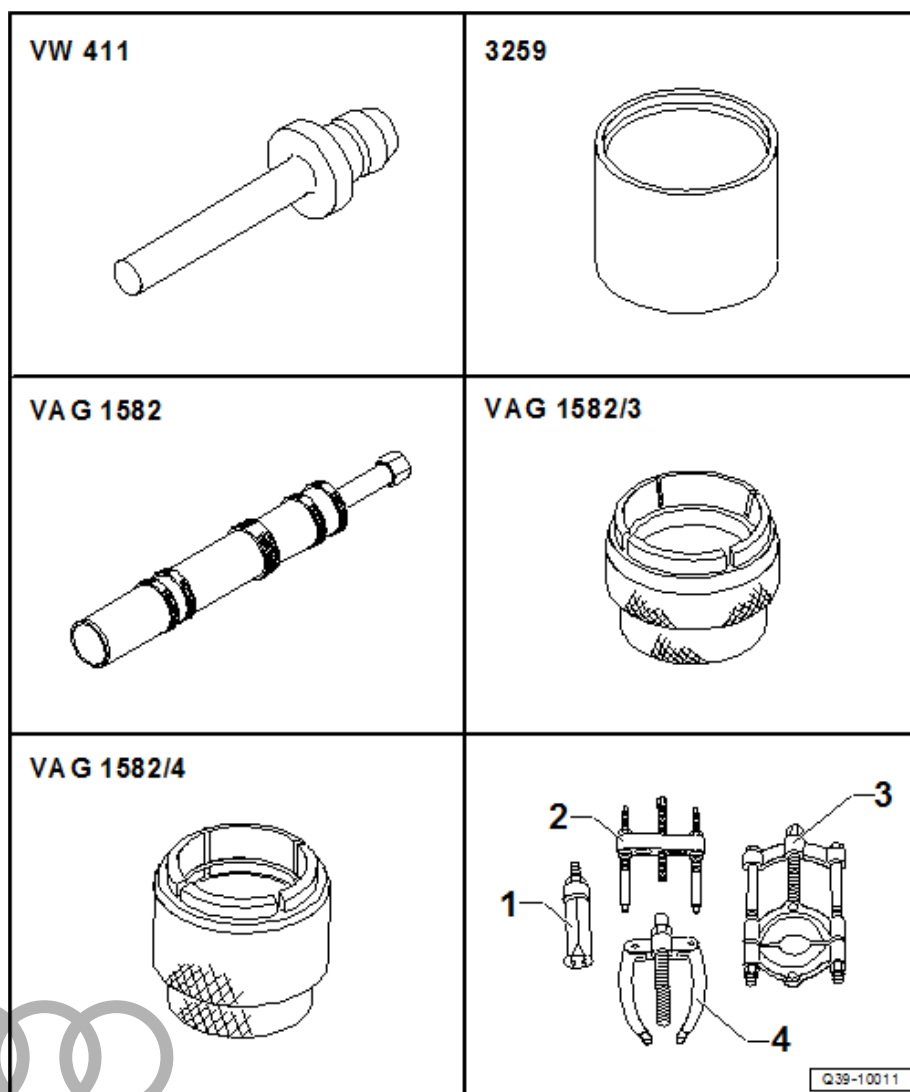


- ◆ Tube - VW 418A-
- ◆ Thrust piece - VW 454-

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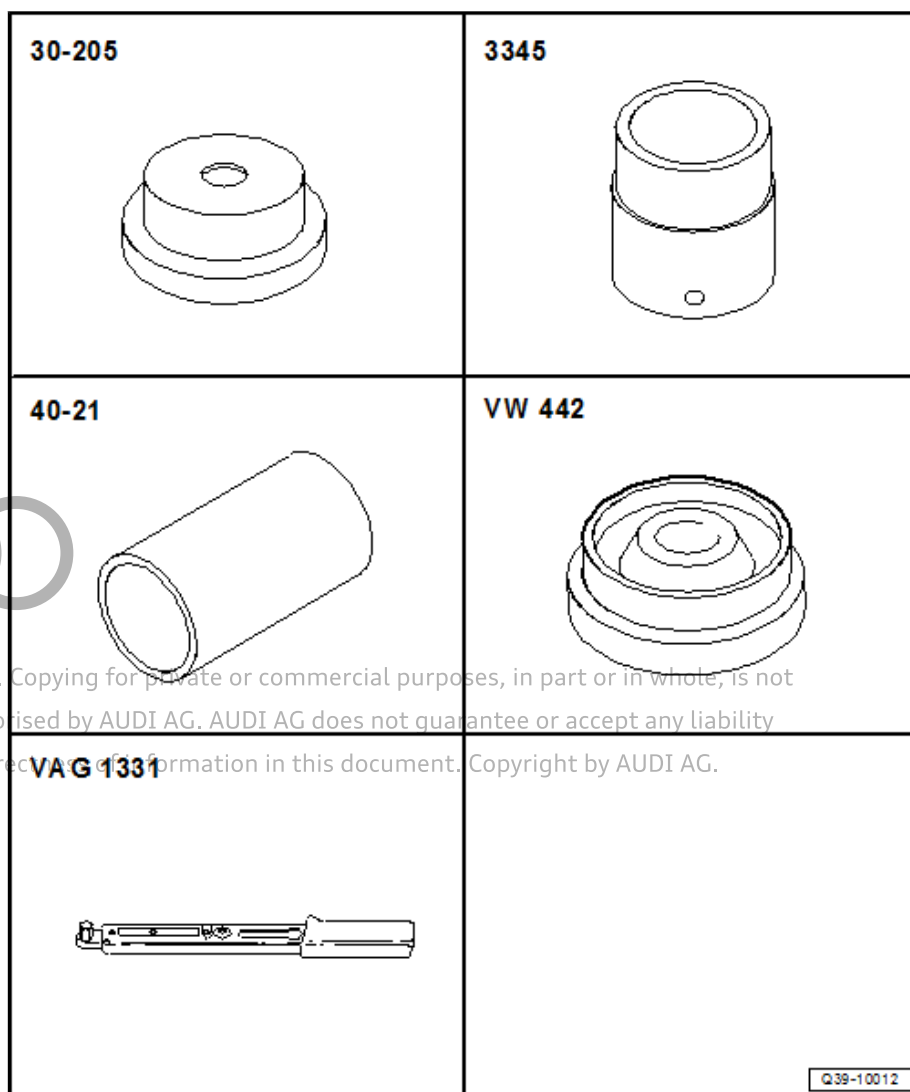
- ◆ Installing sleeve - VW 455-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Thrust pad - VW 510-
- ◆ Tube - 30-14-
- ◆ Tube - 2040-
- ◆ Thrust piece - 3002-



- ◆ Press tool - VW 411-
- ◆ Tube - 3259-
- ◆ Tapered roller bearing puller - V.A.G 1582-
- ◆ Adapter - VAG 1582/3-
- ◆ Adapter - VAG 1582/4-
- ◆ -1- Kukko 21/7 internal puller
- ◆ -4- Kukko 22/2 counter-support



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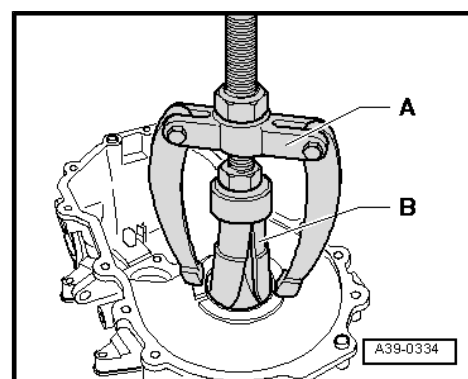
- ◆ Thrust plate - 30-205-
- ◆ Wheel bearing tube - 3345-
- ◆ Drift sleeve - 40-21-
- ◆ Thrust piece - VW 442-
- ◆ Torque wrench - V.A.G 1331- (5 ... 50 Nm)

Pulling tapered roller bearing outer race out of gearbox housing

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

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

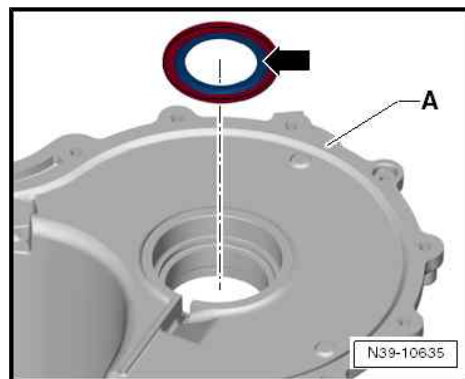
- Clamp internal puller firmly under tapered roller bearing outer race.





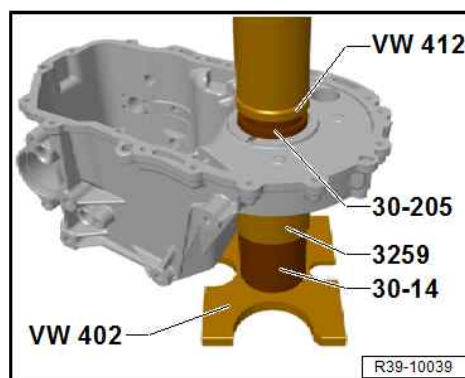
Installing a new retaining plate

- Installation position: Collar -arrow- points away from housing -A-.



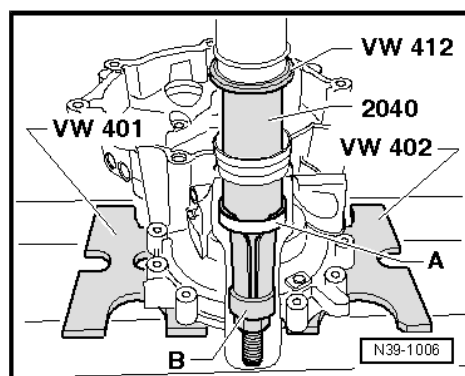
Pressing tapered roller bearing outer race into gearbox housing

- Support gearbox housing with press tool - VW 442- , tube - 3259- and tube - 30-14- directly below bearing mounting.



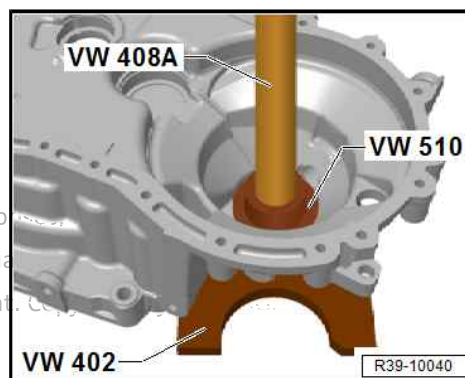
Pressing tapered roller bearing outer race -A- out of clutch housing

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



Pressing tapered roller bearing outer race into clutch housing

- Support clutch housing with tube for wheel bearing - 3345- directly below bearing mounting.



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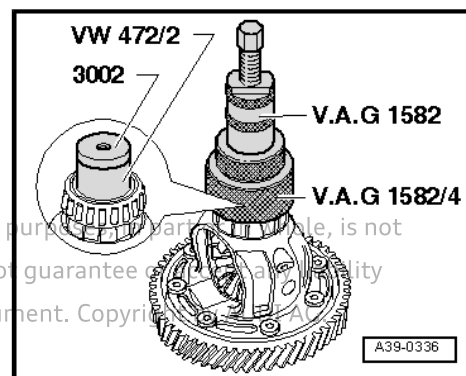
Pulling off tapered roller bearing inner race

- Before fitting puller, position spacer sleeve - VW 472/2- and thrust piece - 3002- on differential cage.



Note

The procedure for pulling tapered roller bearing inner races off the differential cage is the same for both bearings.



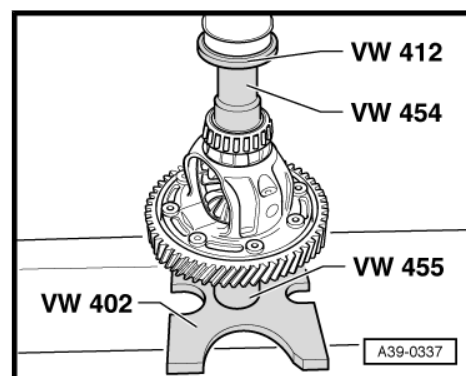
Pressing on tapered roller bearing inner race



WARNING

Wear protective gloves.

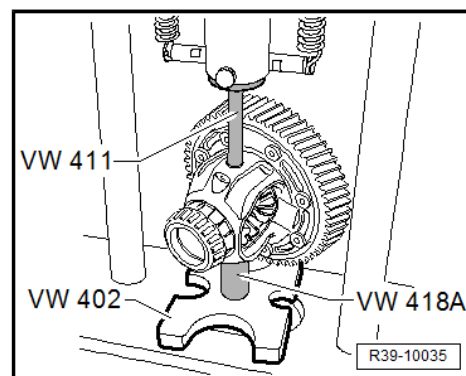
- Heat tapered roller bearing inner race to approx. 100°C before pressing on.
- Support opposite side of inner race using installing sleeve - VW 455- .



Pressing out differential pinion pin

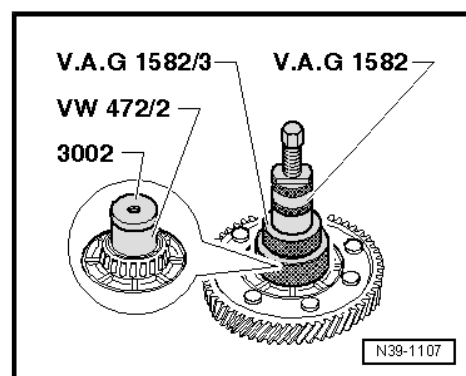
The spring pin is sheared off when it is pressed out.

- Drive remaining part of spring pin out of differential cage.



Pulling off tapered roller bearing inner race

- Before fitting puller, position spacer sleeve - VW 472/2- and thrust piece - 3002- on differential cage.





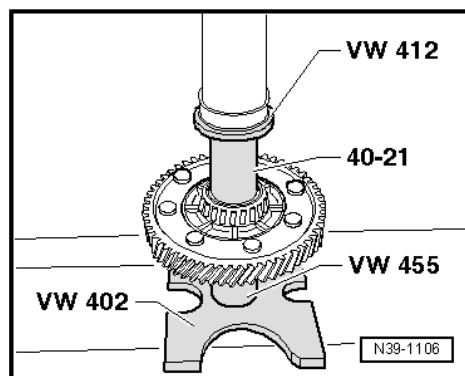
Pressing on tapered roller bearing inner race



WARNING

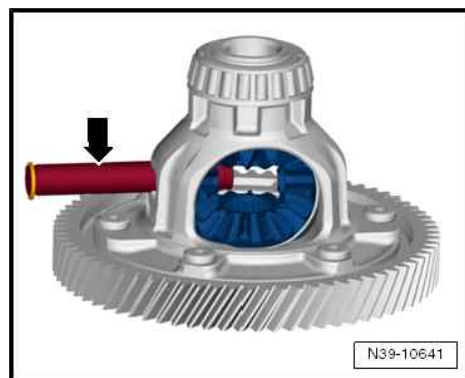
Wear protective gloves.

- Heat tapered roller bearing inner race to approx. 100°C before pressing on.
- Support opposite side of inner race using installing sleeve - VW 455- .



Installing differential bevel gears

- Lubricate one-piece thrust washer with gear oil and install.
- Fit both sun wheels.
- Hold upper sun wheel in position.
- Insert planet pinions (180° apart) and pivot into position.
- Drive differential pinion pin -arrow- into final position and secure with spring pin.



2.3 Adjusting differential

⇒ [“2.3.1 Adjusting differential - manual gearbox 02T”, page 182](#)

⇒ [“2.3.2 Adjusting differential - manual gearbox 0DF”, page 186](#)

2.3.1 Adjusting differential - manual gearbox 02T

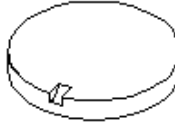
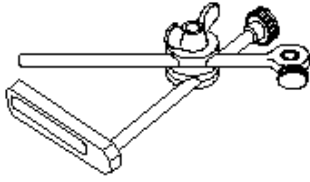
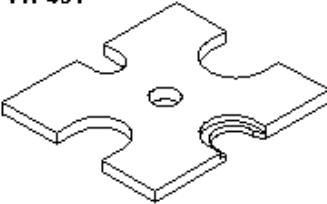
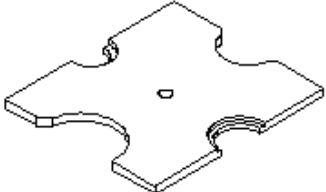
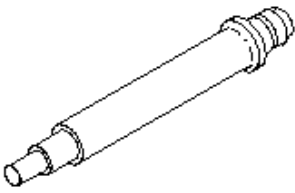
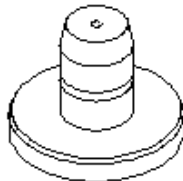
The differential must be readjusted when the following components have been renewed:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Differential cage
- ◆ Tapered roller bearings for differential

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Special tools and workshop equipment required

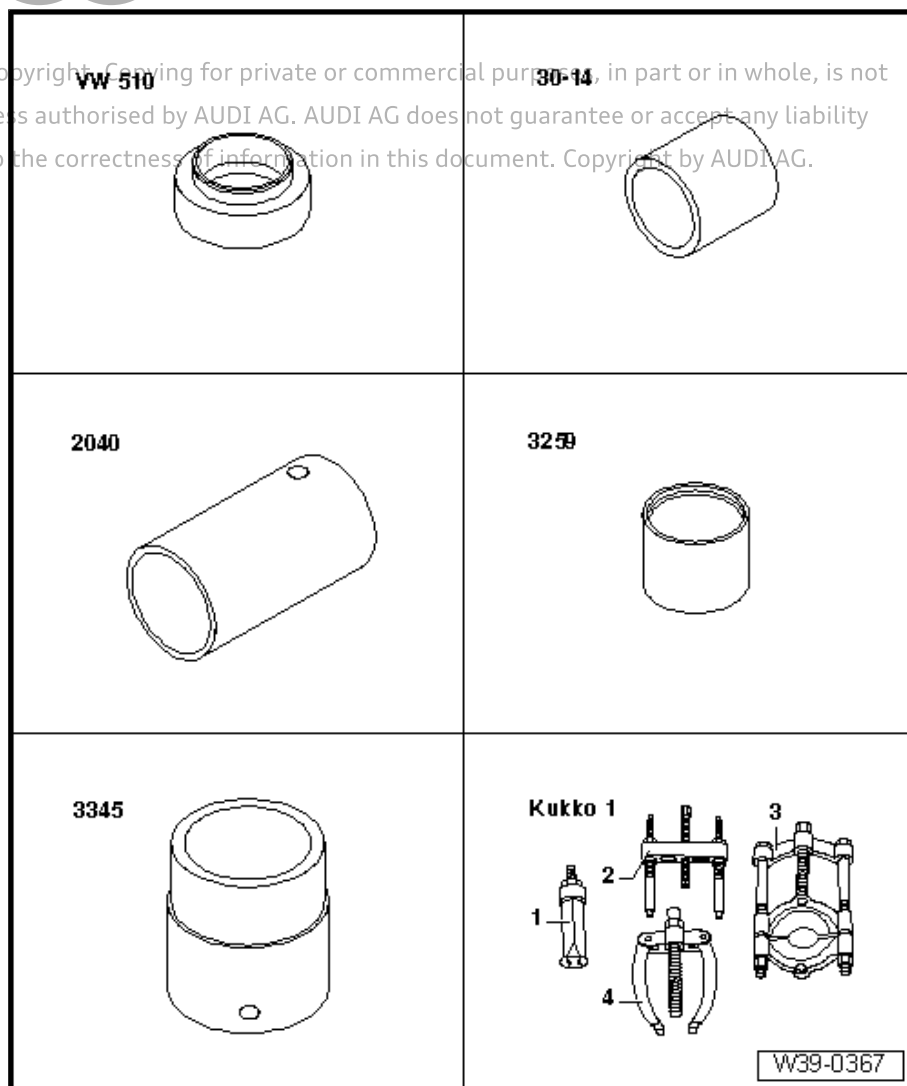
VW 385/17 	VW 387 
VW 401 	VW 402 
VW 408 A 	VW 412  G39-0093

- ◆ End plate - VW 385/17-
- ◆ Universal dial gauge bracket - VW 387-
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408 A-
- ◆ Press tool - VW 412-

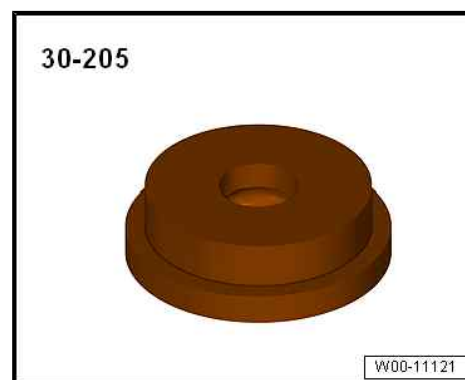
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- ◆ Thrust pad - VW 510-
- ◆ Tube - 30 - 14-
- ◆ Tube - 2040-
- ◆ Tube - 3259-
- ◆ Wheel bearing tube - 3345-
- ◆ -1- Kukko 21/7 internal puller





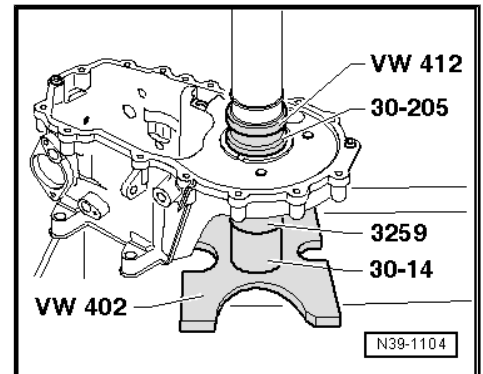
- ◆ Thrust plate - 30-205-
- ◆ Dial gauge - VAS 6080-
- ◆ Dial gauge extension, 30 mm

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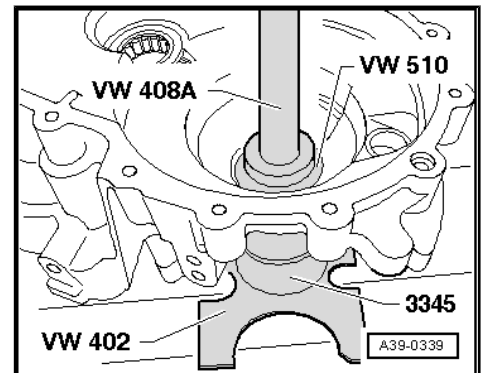


Procedure

- Drive tapered roller bearing outer race into gearbox housing.



- Press tapered roller bearing outer race without shim into clutch housing.
- Install differential in gearbox housing.
- Install clutch housing and tighten 5 bolts to 5 Nm.



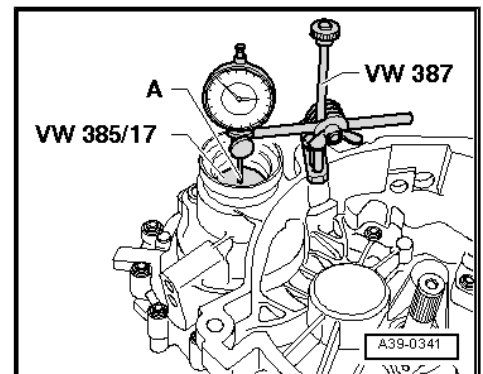
- Set up measuring tool and dial gauge (3 mm measuring range, dial gauge extension -A- approx. 30 mm).
- Preload dial gauge to 1 mm and set to "0".
- Move differential up and down and note play indicated on dial gauge (in this example: 0.50 mm).

Determining thickness of shim S₂

The specified bearing preload is achieved by adding a constant value (0.35 mm) to the measured value to obtain the required thickness for S₂.

Example:

Measured value	0.50 mm
+ Preload (constant value)	0.35 mm
Thickness of shim =	0.85 mm





- Take off clutch housing and press out tapered roller bearing outer race -A-.
- B - Internal puller 46 ... 58 mm, e.g. Kukko 21/7
- Fit shim S₂ of determined thickness (in example, 0.85 mm).
For part number, refer to ⇒ Electronic parts catalogue .
- Press tapered roller bearing outer race into clutch housing again.

The following shims are available:

Thickness of shims in mm ¹⁾			
0.65	0.85	1.05	1.25
0.70	0.90	1.10	1.30
0.75	0.95	1.15	1.35
0.80	1.00	1.20	1.40

1) Different shim thicknesses make it possible to obtain the exact shim thickness required; if necessary, fit 2 shims.

- Install clutch housing and tighten bolts to final torque.

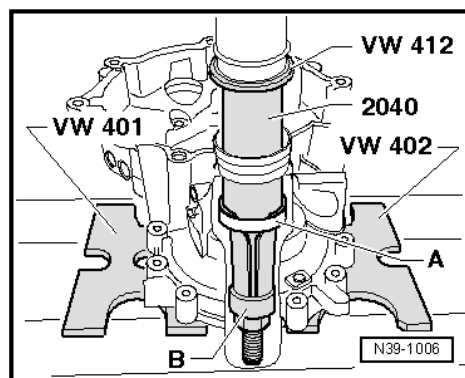
Tightening torques

- ◆ ⇒ [“8.1 Exploded view - clutch housing”, page 124](#)

2.3.2 Adjusting differential - manual gearbox 0DF

The differential must be readjusted when the following components have been renewed:

- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Differential cage
- ◆ Tapered roller bearings for differential

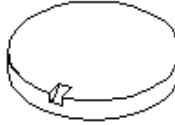
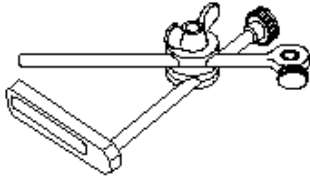
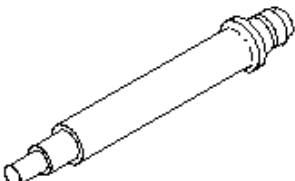
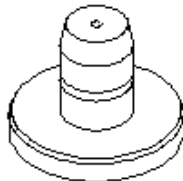




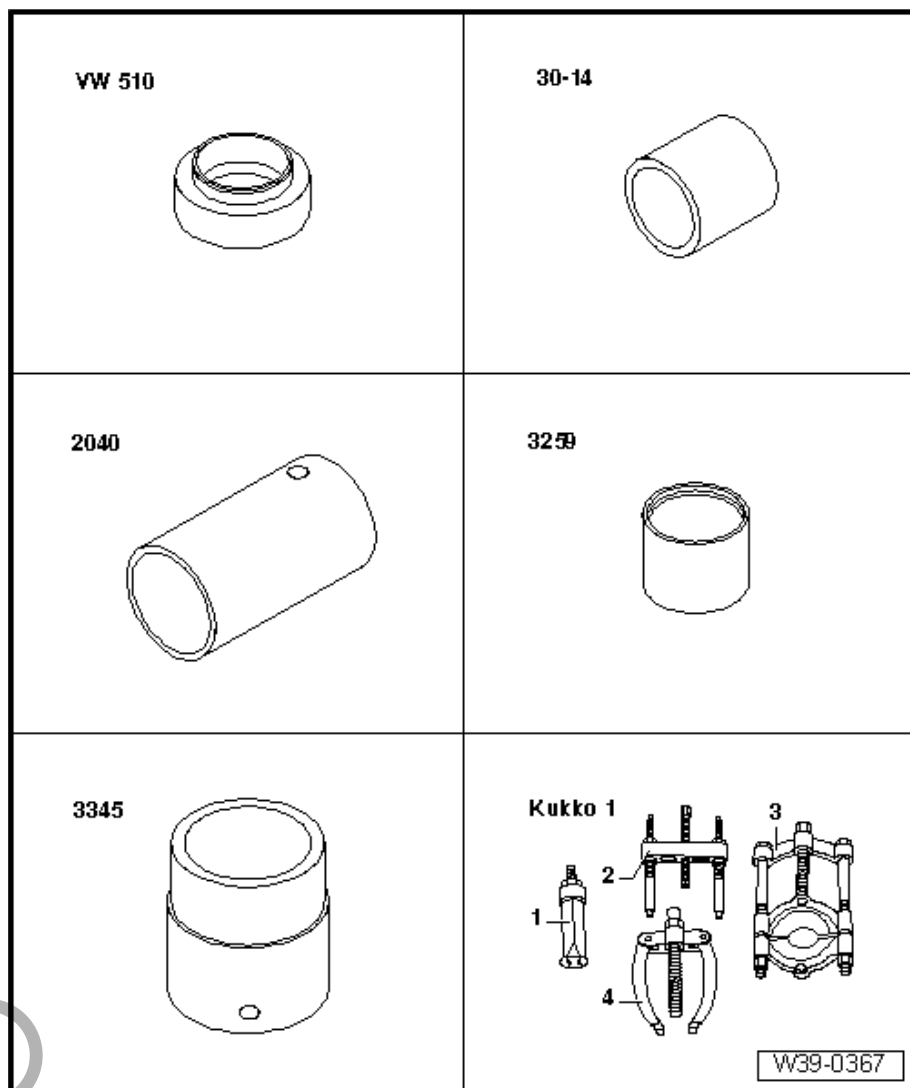
Special tools and workshop equipment required



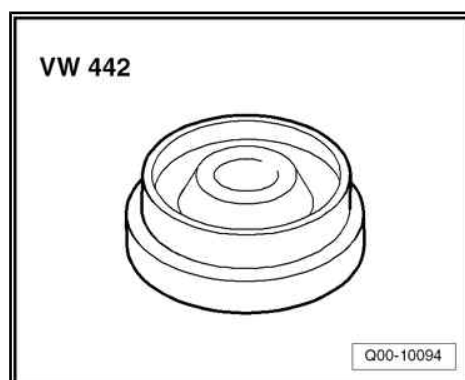
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VW 385/17 	VW 387 
VW 401 	VW 402 
VW 408 A 	VW 412  G39-0093

- ◆ End plate - VW 385/17-
- ◆ Universal dial gauge bracket - VW 387-
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408A-
- ◆ Press tool - VW 412-



- ◆ Thrust pad - VW 510-
- ◆ Tube - 30-14-
- ◆ Tube - 2040-
- ◆ Tube - 3259-
- ◆ Wheel bearing tube - 3345-
- ◆ -1- Kukko 21/7 internal puller
- ◆ Thrust piece - VW442-

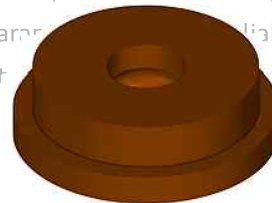




◆ Thrust plate - 30-205-

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30-205



W00-11121

◆ Dial gauge - VAS 6080-

VAS 6080

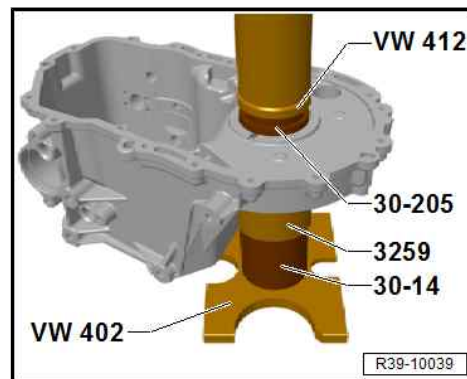


W00-11196

◆ Dial gauge extension, 30 mm

Procedure

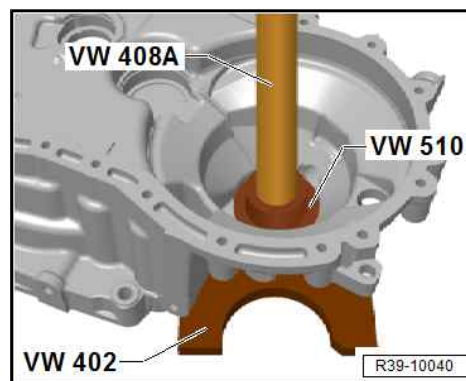
- Sealing surfaces of clutch and gearbox housings must be free of sealant.
- Both tapered roller bearing inner races have been pressed onto differential cage ⇒ [page 181](#) .
- New retaining plate has been inserted in gearbox housing ⇒ [page 180](#) .
- Drive tapered roller bearing outer race into gearbox housing ⇒ [page 180](#) .



R39-10039



- Press tapered roller bearing outer race without shim and without retaining plate into clutch housing ⇒ [page 180](#) .
- Install differential in gearbox housing.
- Install clutch housing and tighten 5 bolts to 5 Nm.



- Set up measuring tool and dial gauge (3 mm measuring range, dial gauge extension -A- approx. 30 mm).
- Preload dial gauge to 1 mm and set to "0".
- Move differential up and down and note play indicated on dial gauge (in this example: 1.30 mm).

Determining thickness of shim S₂

The specified bearing preload is obtained by adding a constant figure (0.35 mm) to the reading indicated.

Example:

Measured value	1.30 mm
+ Preload (constant value)	0.35 mm
Thickness of shim S ₂ =	1.65 mm

The following shims are available:

Thickness of shim S ₂ ²⁾ in mm			
0.65	0.85	1.05	1.25
0.70	0.90	1.10	1.30
0.75	0.95	1.15	1.35
0.80	1.00	1.20	1.40

2) Different shim thicknesses make it possible to obtain the exact shim thickness required; if necessary, fit 2 shims.

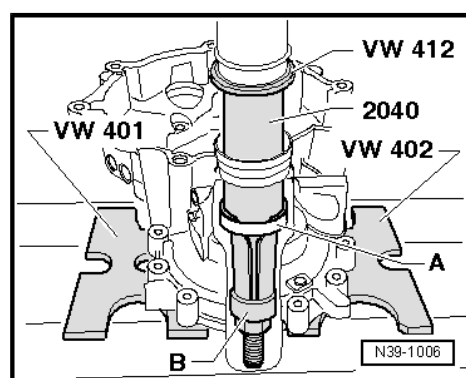
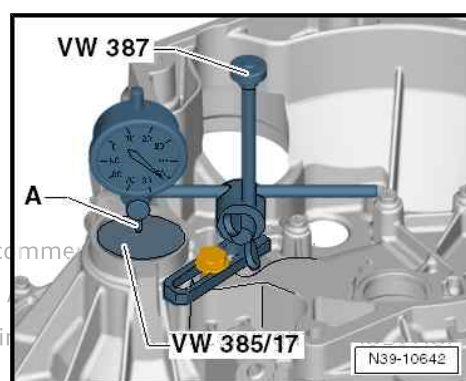
- Take off clutch housing and press out tapered roller bearing outer race -A-.
- B - Internal puller 46 ... 58 mm, e.g. Kukko 21/7
- Insert new retaining plate in clutch housing ⇒ [page 180](#) .
- Fit shim S₂ of determined thickness (in example, 1.65 mm). For part number, refer to ⇒ Electronic parts catalogue .
- Press tapered roller bearing outer race into clutch housing again ⇒ [page 180](#) .
- Install clutch housing and tighten bolts to final torque.

Tightening torques

- ♦ ⇒ ["8.1 Exploded view - clutch housing", page 124](#)

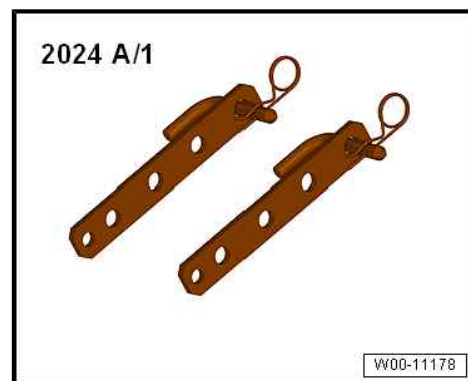
2.4 Removing and installing flange shaft (left-side) - manual gearbox 02T

Special tools and workshop equipment required



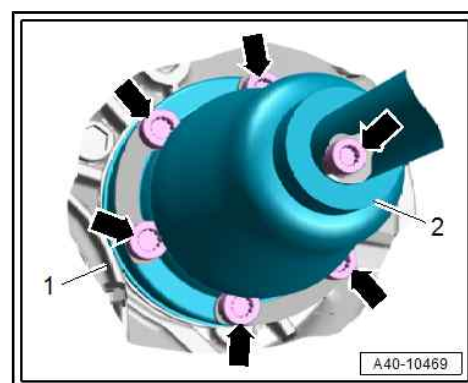


◆ Extension -2024 A /1-

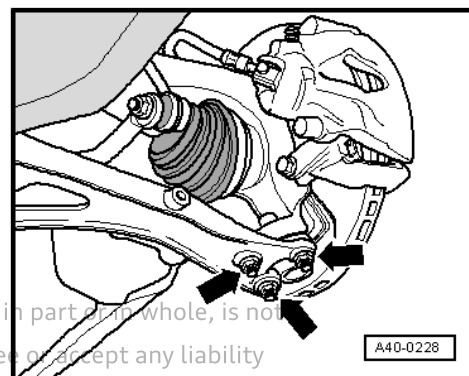


Removing

- Gearbox in vehicle
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Unbolt drive shaft (left-side) from flange shaft on gearbox.



- Remove nuts -arrows- securing swivel joint (left-side).
- If fitted, unscrew nut on bracket for front left vehicle level sender - G78- .
- Disengage swivel joint (left-side) from wishbone.



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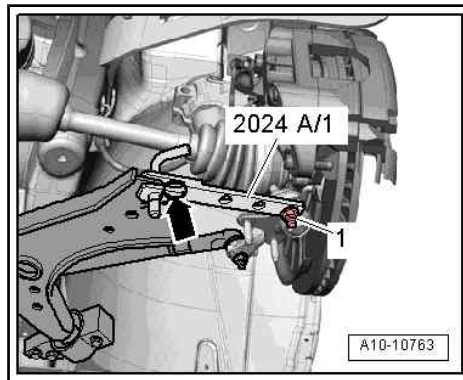
- Swing suspension strut (left-side) outwards and support with extension -2024 A /1- as shown in illustration.



WARNING

Risk of accidents if components of support are loose

- ◆ **Secure retaining pin and swivel joint with locking pin -arrow- and nut -1-.**



- Tie up drive shaft (left-side).



Note

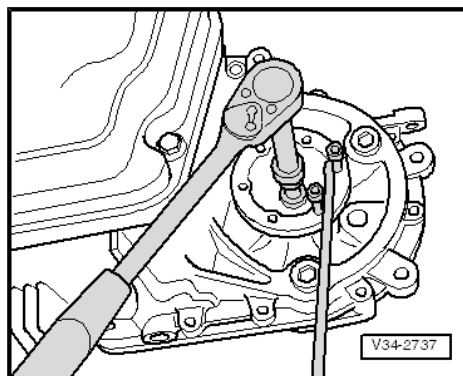
Take care not to damage the surface coating of the drive shaft.

- Remove bolt -arrow- securing flange shaft (left-side). To do so, screw two bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.

Installing

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

- Push flange shaft in against spring pressure and secure with bolt.



Tightening torques

- ◆ ⇒ **"2.1 Exploded view - differential", page 166**
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front)
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation

2.5 Removing and installing flange shaft (right-side) - manual gearbox 02T

Removing

- Gearbox in vehicle
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .

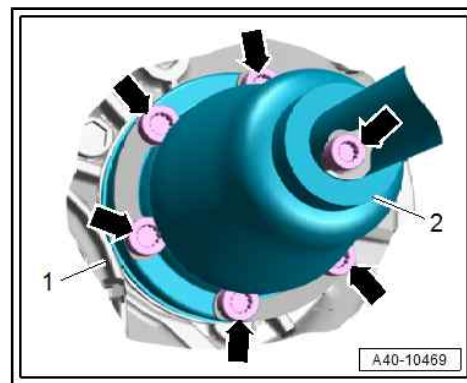


- Unbolt drive shaft (right-side) from flange shaft of gearbox.
- Tie up drive shaft (right-side).



Note

Take care not to damage the surface coating of the drive shaft.



- Remove bolt -arrow- securing flange shaft (right-side). To do so, screw 2 bolts into flange and counterhold flange shaft with suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.

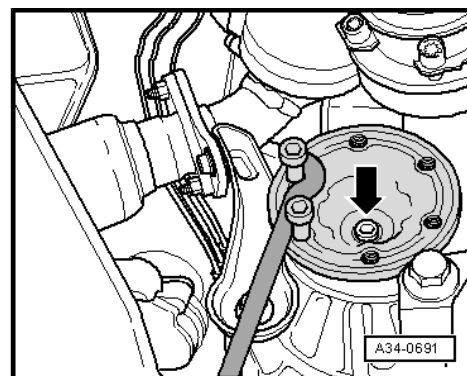
Installing

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

- Push flange shaft in against spring pressure and secure with bolt.

Tightening torques

- ◆ ⇒ ["2.1 Exploded view - differential", page 166](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft
- ◆ ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation



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