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Workshop Manual

Audi A1 2011 ➤

6-speed manual gearbox 02U

Edition 11.2019



List of Workshop Manual Repair Groups

Repair Group

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



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Contents

00 - Technical data	1
1 Identification	1
1.1 Gearbox identification	1
2 Technical data	2
2.1 Allocation of gearbox to engine	2
2.2 Capacities	2
3 Transmission layout	3
3.1 Transmission layout - front-wheel drive	3
4 Safety precautions	4
4.1 Safety precautions when working on vehicles with start/stop system	4
5 Repair instructions	5
5.1 General repair instructions	5
5.2 Contact corrosion	9
6 Electrical components	11
6.1 Overview of fitting locations - electrical components	11
30 - Clutch	12
1 Clutch mechanism	12
1.1 Exploded view - pedal cluster	12
1.2 Exploded view - clutch hydraulics	16
1.3 Exploded view - clutch release mechanism	18
1.4 Removing and installing clutch pedal	19
1.5 Removing and installing over-centre spring	25
1.6 Removing and installing mounting bracket	27
1.7 Removing and installing bearing bush	33
1.8 Removing and installing clutch master cylinder	35
1.9 Removing and installing clutch slave cylinder	38
1.10 Removing and installing lines for clutch hydraulics	40
1.11 Bleeding clutch hydraulics	42
1.12 Checking clutch master cylinder and clutch slave cylinder	43
1.13 Removing and installing clutch position sender G476	44
1.14 Servicing clutch release mechanism	45
2 Clutch	47
2.1 Exploded view - clutch unit	47
2.2 Removing and installing clutch	48
2.3 Renewing input shaft oil seal	51
34 - Controls, housing	53
1 Selector mechanism	53
1.1 Overview - selector mechanism	53
1.2 Exploded view - gear knob and cover	54
1.3 Exploded view - selector cables	55
1.4 Exploded view - selector mechanism	59
1.5 Removing and installing gear knob	61
1.6 Removing and installing selector mechanism	62
1.7 Adjusting selector mechanism	65
1.8 Dismantling and assembling selector mechanism	67
1.9 Renewing selector shaft oil seal	71
1.10 Removing and installing selector cable	72
2 Removing and installing gearbox	74
2.1 Removing gearbox	74
2.2 Installing gearbox	92



2.3	Tightening torques for gearbox	95
3	Assembly mountings	96
3.1	Exploded view - assembly mountings	96
4	Gear oil	98
4.1	Checking gear oil level	98
4.2	Draining and filling gear oil	99
5	Transporting gearbox	101
6	Securing to engine and gearbox support	103
7	Dismantling and assembling gearbox	104
7.1	Schematic overview - gearbox	104
7.2	Exploded view - gearbox	105
7.3	Exploded view - 5th and 6th gear	106
7.4	Exploded view - gearbox housing	108
7.5	Exploded view - gear cluster, differential and selector mechanism	109
7.6	Exploded view - selector forks	111
7.7	Exploded view - selector unit	112
7.8	Servicing selector forks	113
7.9	Removing and installing angled rod	116
7.10	Dismantling and assembling gearbox	117
8	Gearbox housing, clutch housing	135
8.1	Exploded view - gearbox housing cover	135
8.2	Servicing gearbox housing cover	136
8.3	Exploded view - gearbox housing and clutch housing	138
8.4	Servicing gearbox housing and clutch housing	140
35 - Gears, shafts		144
1	Input shaft	144
1.1	Exploded view - input shaft	144
1.2	Dismantling and assembling input shaft	147
2	Output shaft	156
2.1	Exploded view - output shaft	156
2.2	Dismantling and assembling output shaft	159
39 - Final drive - differential		165
1	Oil seals	165
1.1	Overview of fitting locations - oil seals	165
1.2	Renewing oil seal (left-side)	165
1.3	Renewing oil seal (right-side)	167
2	Differential	169
2.1	Exploded view - differential	169
2.2	Dismantling and assembling differential	171
2.3	Adjusting differential	177
2.4	Removing and installing flange shaft (left-side)	181
2.5	Removing and installing flange shaft (right-side)	182



00 – Technical data

1 Identification

(ARL006719; Edition 11.2019)

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

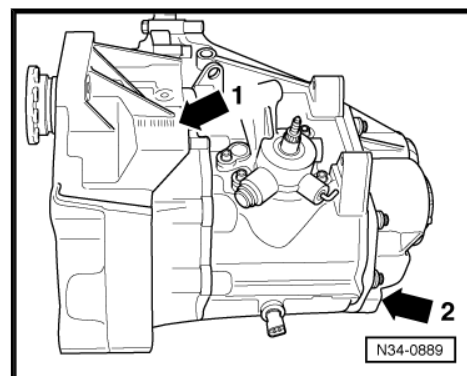
1.1 Gearbox identification

The 6-speed manual gearbox 02U is installed in the Audi A1 2011

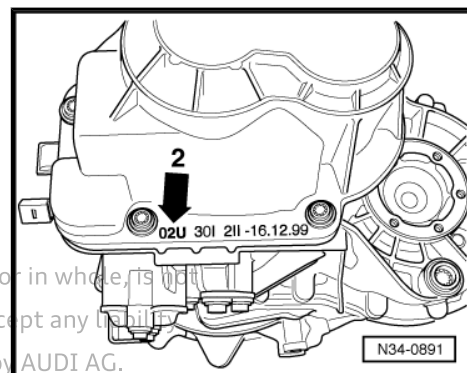
► ⇒ [“2.1 Allocation of gearbox to engine”, page 2](#).

Location on gearbox

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



Manual gearbox 02U -arrow 2-



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Code letters and production date of gearbox -arrow-

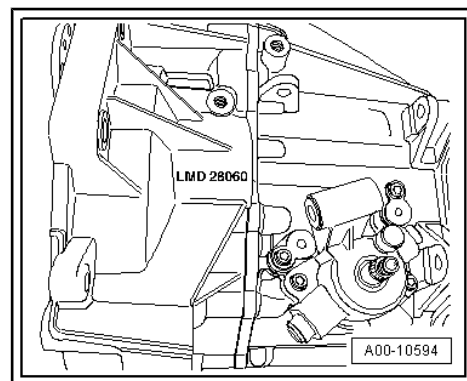
Example:	LMD	28	06	0
	Code letters	Day	Month	Year (2010) of manufacture

Additional data identify the factory where the unit was built.



Note

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





2 Technical data

⇒ "2.1 Allocation of gearbox to engine", page 2

⇒ "2.2 Capacities", page 2

2.1 Allocation of gearbox to engine

Manual gearbox		6-speed 02U		
Code letters		LMD	NBV	PNW
Manufactured	from	08.10	06.11	11.14
	to	06.11	05.14	
Allocation	Model	Audi A1 2011 ►	Audi A1 2011 ►	Audi A1 2011 ►
	Engine	1.4 ltr. TFSI - 90 kW	1.4 ltr. TFSI - 90 kW	1.4 ltr. TFSI - 92 kW
Ratio Z1 : Z2	Final drive	58 : 16 = 3.625	58 : 16 = 3.625	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		6-speed 02U		
Code letters		PRM	QEP	
Manufactured	from	11.13	11.14	
	to	04.15		
Allocation	Model	Audi A1 2011 ►	Audi A1 2011 ►	
	Engine	1.4 ltr. TFSI - 90 kW	1.4 ltr. TFSI - 92 kW	
Ratio Z1 : Z2	Final drive	58 : 16 = 3.625	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		6-speed 02U		
Code letters		LMD, NBV, PRM	PNW, QEP	
Capacity		2.1 ltr.	2.2 ltr.	
♦ Gear oil specifications ⇒ Electronic parts catalogue				



3 Transmission layout

⇒ "3.1 Transmission layout - front-wheel drive", page 3

3.1 Transmission layout - front-wheel drive



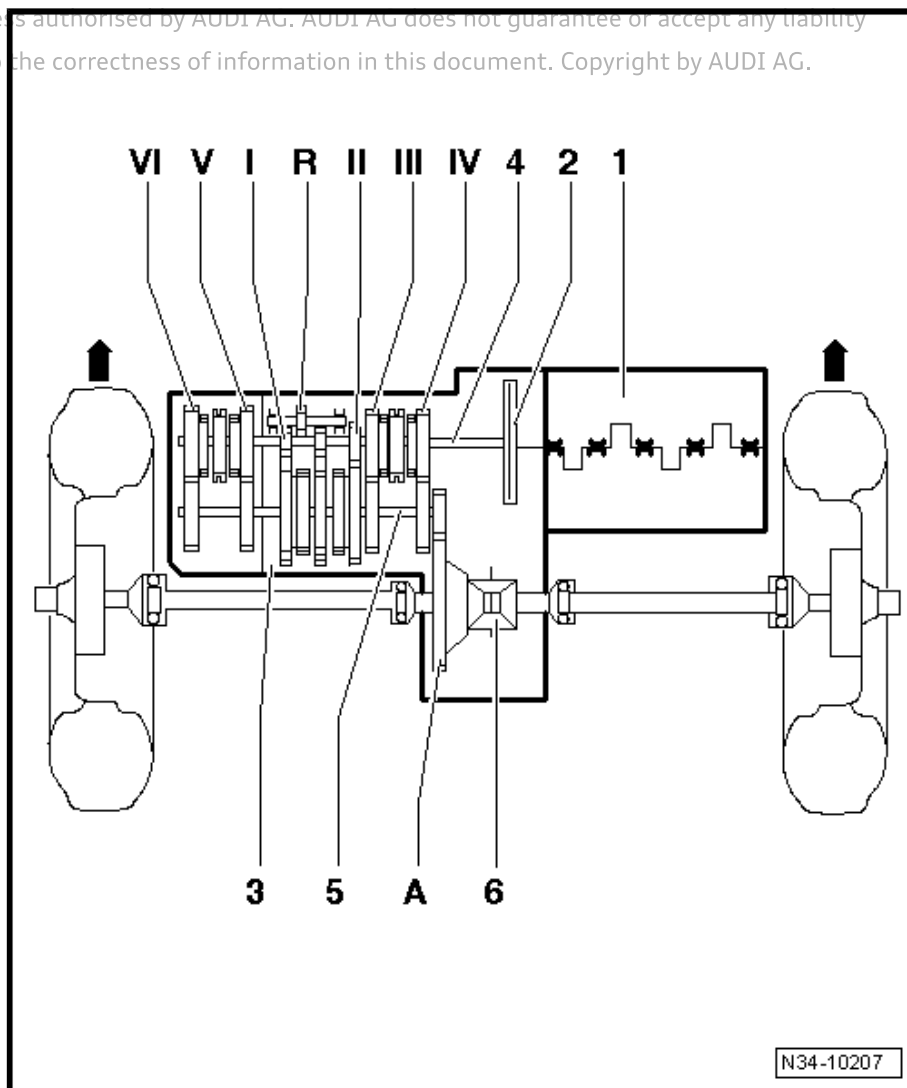
Note



-Arrows- point in direction of travel.

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- 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
- VI - 6th gear
- R - Reverse gear
- A - Final drive





4 Safety precautions

⇒ "4.1 Safety precautions when working on vehicles with start/stop system", page 4

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 5](#)

⇒ ["5.2 Contact corrosion", page 9](#)

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 98](#) .
- ◆ Capacities ⇒ [page 2](#) , specifications ⇒ Electronic parts catalogue .

Sealant

- ◆ Thoroughly clean joint surfaces on gearbox housing etc. before applying sealing paste.
- ◆ Apply sealing paste evenly and not too thick.
- ◆ For correct sealing paste, refer to ⇒ Electronic parts catalogue .
- ◆ Breather holes must remain free of sealing paste.



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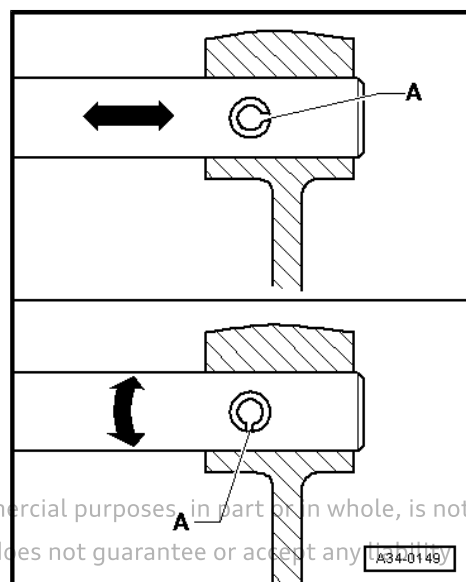
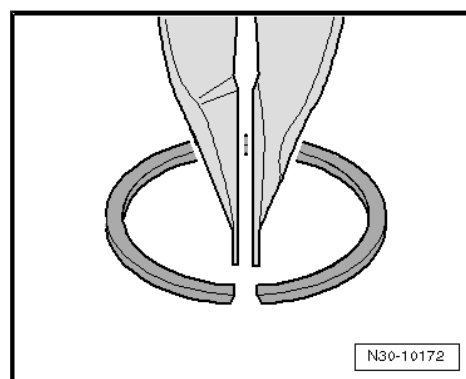
Oil seals, seals, O-rings and gaskets

- ◆ 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 98](#) .



Locking elements

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

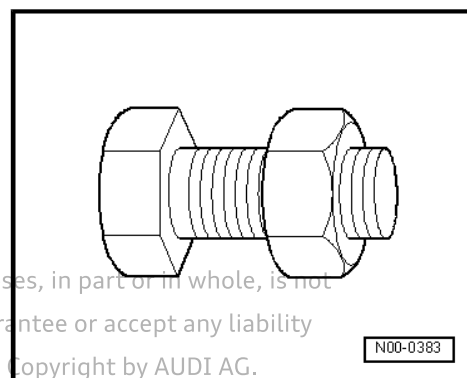


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Nuts, bolts

- ◆ 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.



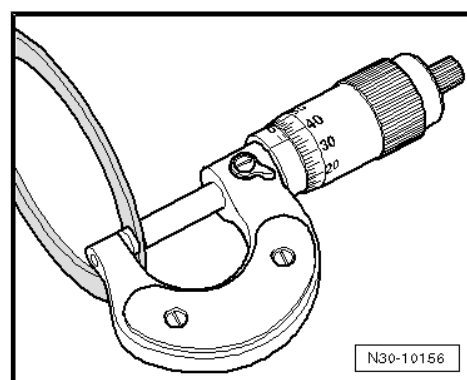
Bearings

- ◆ 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





- ◆ 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

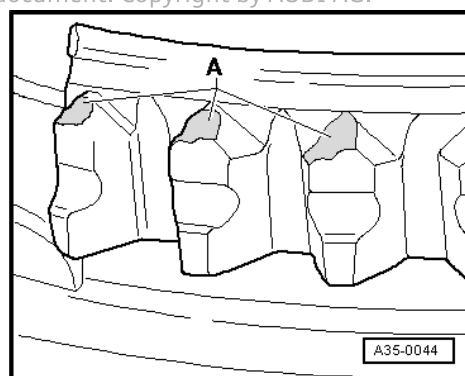
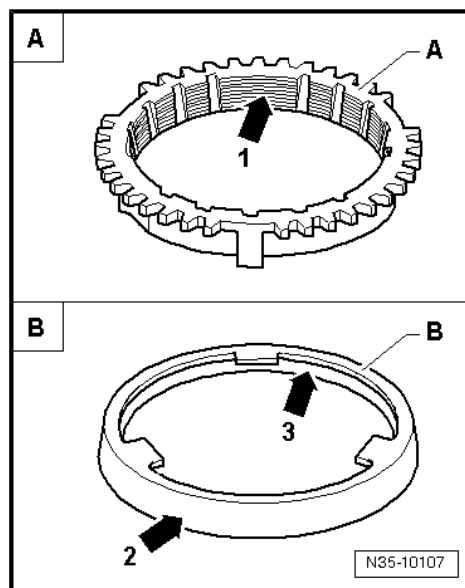
- ◆ Clean before pressing on.
- ◆ Use inductive heater - VAS 6414- to heat to approx. 100°C before installing. Press home onto stop when installing so there is no axial clearance.

Selector gears and locking collars

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

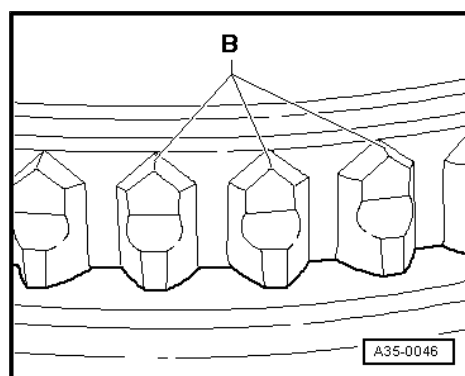
- ◆ Abnormal wear on synchro-ring or selector gear:

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



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

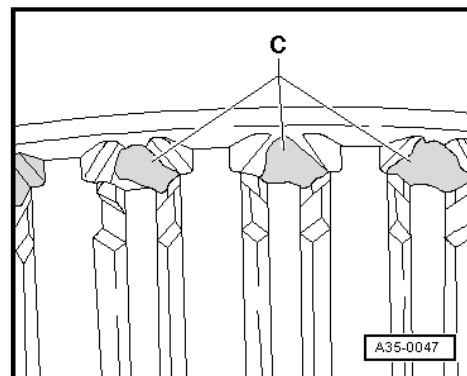
B - Intact chamfer on dog teeth of synchro-ring or selector gear.





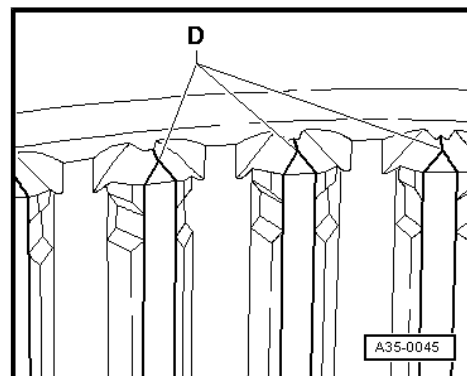
- ◆ Abnormal wear on locking collar:

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 43](#) .
- ◆ 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 43](#)).
- ◆ 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.

Additionally, all rubber and plastic parts and all adhesives are made of non-conductive materials.

Always install new parts if you are not sure whether used parts can be re-fitted ⇒ [Electronic parts catalogue](#) .

Please note:

- ◆ Use only genuine spare parts: these have been fully tested and are compatible with aluminium and magnesium.

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- ◆ We recommend using Audi Genuine Accessories.
- ◆ 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 11](#)

6.1 Overview of fitting locations - electrical components

⇒ ["6.1.1 Overview of fitting locations - electrical components, manual gearbox", page 11](#)

⇒ ["6.1.2 Overview of fitting locations - electrical components, clutch mechanism", page 11](#)

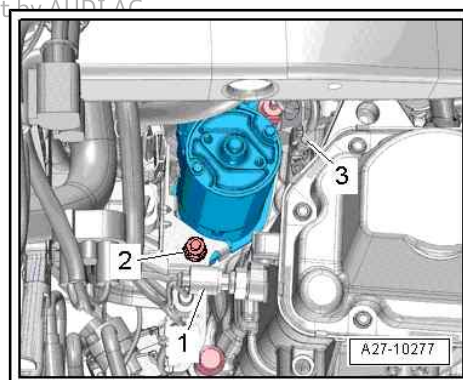
6.1.1 Overview of fitting locations - electrical components, manual gearbox

Reversing light switch - F4-

Fitting location:

The reversing light switch - F4- -1- is located under the starter on the gearbox.

- Removing and installing
⇒ ["7.5 Exploded view - gear cluster, differential and selector mechanism", page 109](#)

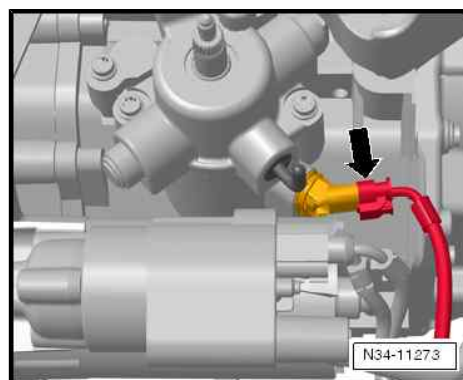


Gearbox neutral position sender - G701-

Fitting location:

The gearbox neutral position sender - G701- -arrow- is located behind the starter on the gearbox.

- Removing and installing
⇒ ["7.5 Exploded view - gear cluster, differential and selector mechanism", page 109](#)



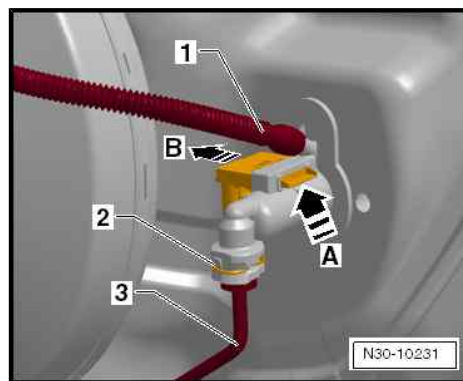
6.1.2 Overview of fitting locations - electrical components, clutch mechanism

Clutch position sender - G476- (-arrow A- and -arrow B-)

Fitting location:

In the engine compartment underneath the supply hose -1- on the clutch master cylinder -2-.

- Removing and installing
⇒ ["1.13 Removing and installing clutch position sender G476", page 44](#)





30 – Clutch

1 Clutch mechanism

⇒ [“1.1 Exploded view - pedal cluster”, page 12](#)

⇒ [“1.2 Exploded view - clutch hydraulics”, page 16](#)

⇒ [“1.3 Exploded view - clutch release mechanism”, page 18](#)

⇒ [“1.4 Removing and installing clutch pedal”, page 19](#)

⇒ [“1.5 Removing and installing over-centre spring”, page 25](#)

⇒ [“1.6 Removing and installing mounting bracket”, page 27](#)

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

⇒ [“1.8 Removing and installing clutch master cylinder”,
page 35](#)

⇒ [“1.9 Removing and installing clutch slave cylinder”, page 38](#)

⇒ [“1.10 Removing and installing lines for clutch hydraulics”, page
40](#)

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

⇒ [“1.12 Checking clutch master cylinder and clutch slave cylinder”, page 43](#)

⇒ [“1.13 Removing and installing clutch position sender G476 ”,
page 44](#)

⇒ [“1.14 Servicing clutch release mechanism”, page 45](#)

1.1 Exploded view - pedal cluster

⇒ [“1.1.1 Exploded view - pedal cluster, vehicles up to model year
2014”, page 12](#)

⇒ [“1.1.2 Exploded view - pedal cluster, vehicles from model year
2015 onwards”, page 15](#)

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



1 - Clutch pedal

- ☐ Removing and installing with over-centre spring
⇒ [page 19](#)
- ☐ Removing and installing with extension spring
⇒ [page 21](#)

2 - Mounting

- ☐ Renew only when clutch master cylinder has been removed
- ☐ Removing ⇒ [page 14](#)
- ☐ Pressing on
⇒ [page 14](#)

3 - Clutch master cylinder

- ☐ Removing and installing
⇒ [page 35](#)

4 - Gasket

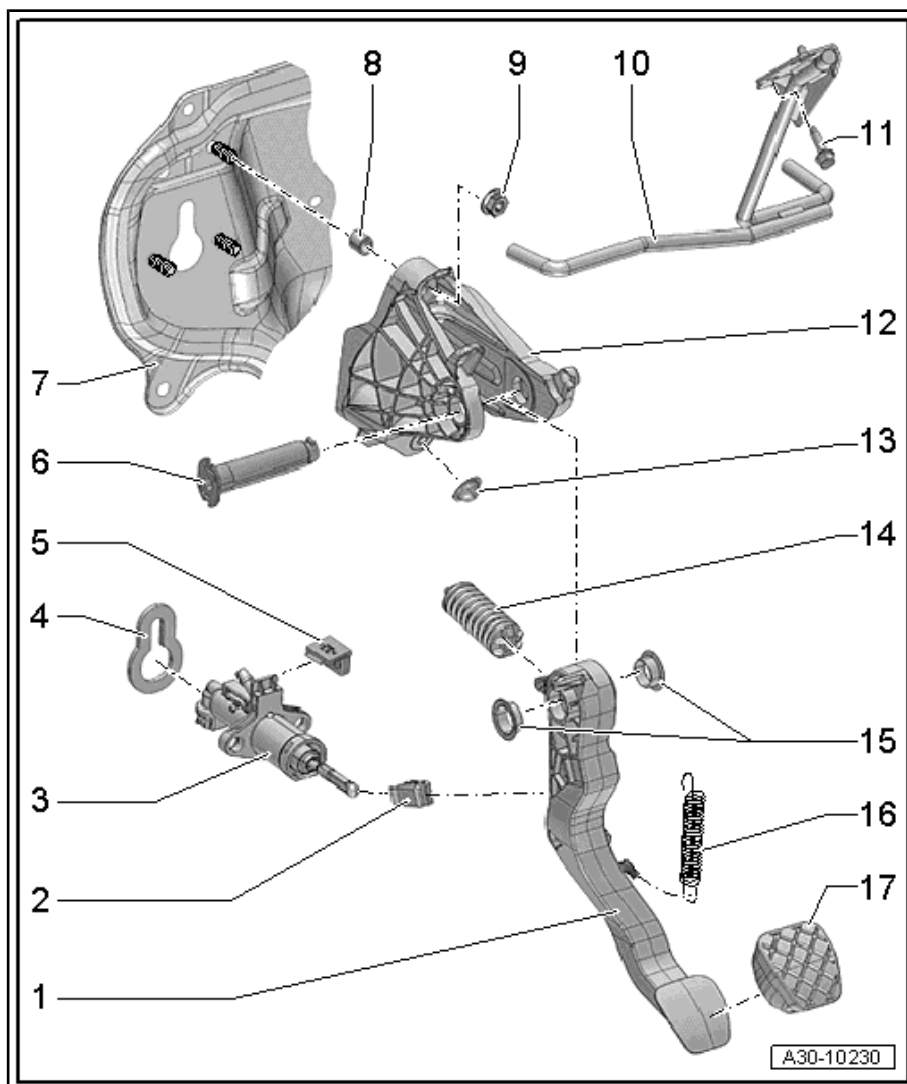
- ☐ Renew
- ☐ Glue onto clutch master cylinder

5 - Clutch position sender - G476-

- ☐ Removing and installing
⇒ [page 44](#)
- ☐ 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

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12 - Mounting bracket

- ❑ Removing and installing with clutch master cylinder ⇒ [page 27](#)
- ❑ 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 25](#)

15 - Bearing bushes

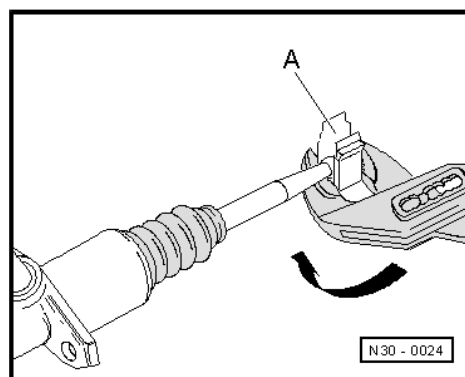
16 - Extension spring with vibration damper

- ❑ 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 \(page 14\)](#) and at clutch pedal ⇒ [Item 1 \(page 13\)](#)
- ❑ Removing and installing ⇒ [page 15](#)

17 - Cap

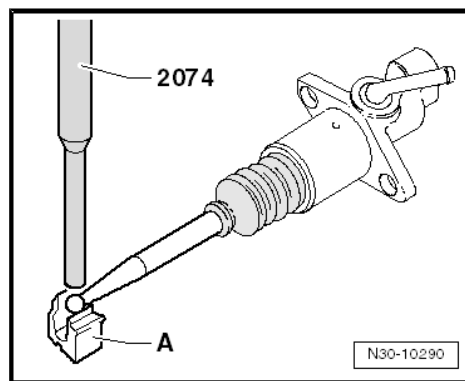
Removing retaining clip

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



Pressing on retaining clip

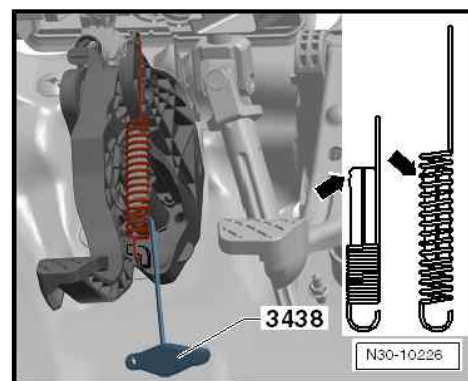
- Carefully press retaining clip -A- onto operating rod for clutch master cylinder using punch - 2074- .





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 25](#)

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 44](#)

8 - Bush

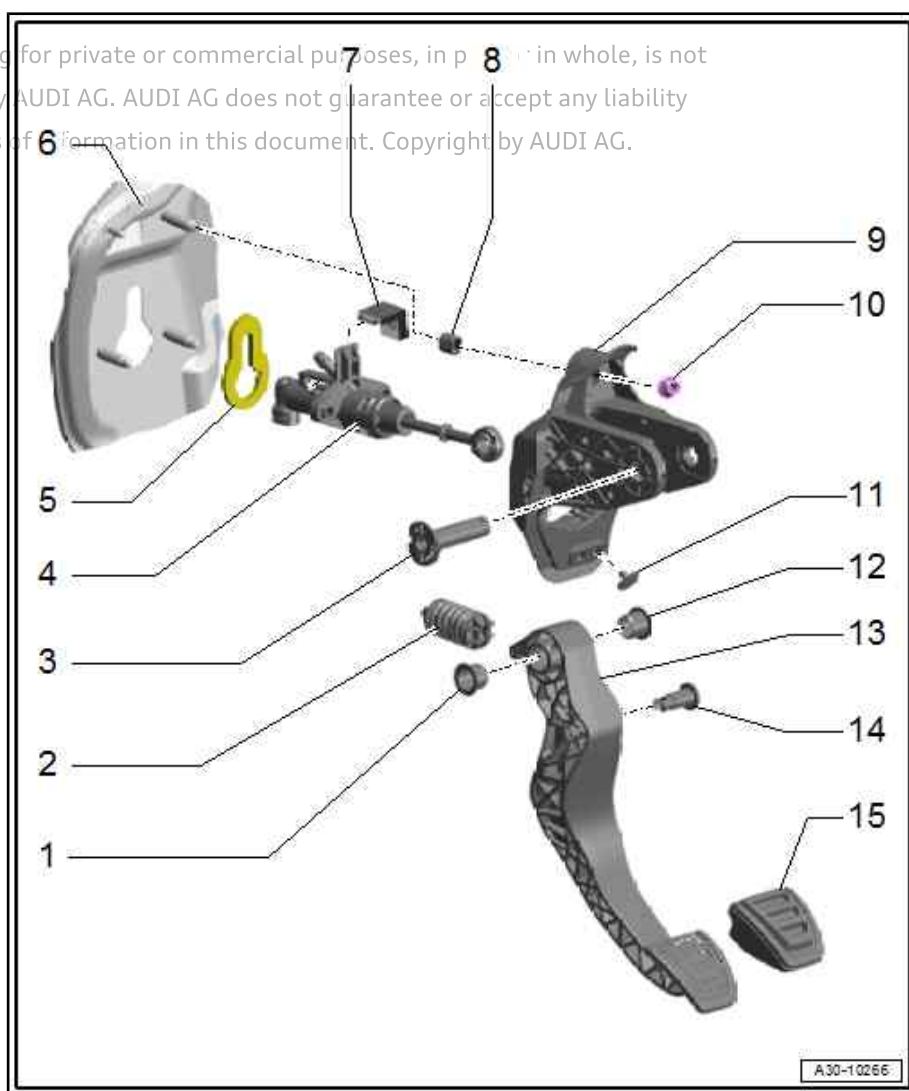
- ☐ For top drilling in mounting bracket
- ☐ Bushes for bottom drilling in mounting bracket are installed in clutch master cylinder

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 24](#)

14 - Locking pin

- ☐ Renew after removing

15 - Cap

1.2 Exploded view - clutch hydraulics



Note

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

1 - Brake fluid reservoir

2 - Supply hose

3 - Seal

- ☐ Seals must be fitted in supply hose
- ☐ Not available as separate part
- ☐ Renew supply hose -item 8- if damaged

4 - Clutch master cylinder

- ☐ Removing and installing ⇒ [page 35](#)

5 - Retaining clip

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

6 - Mounting

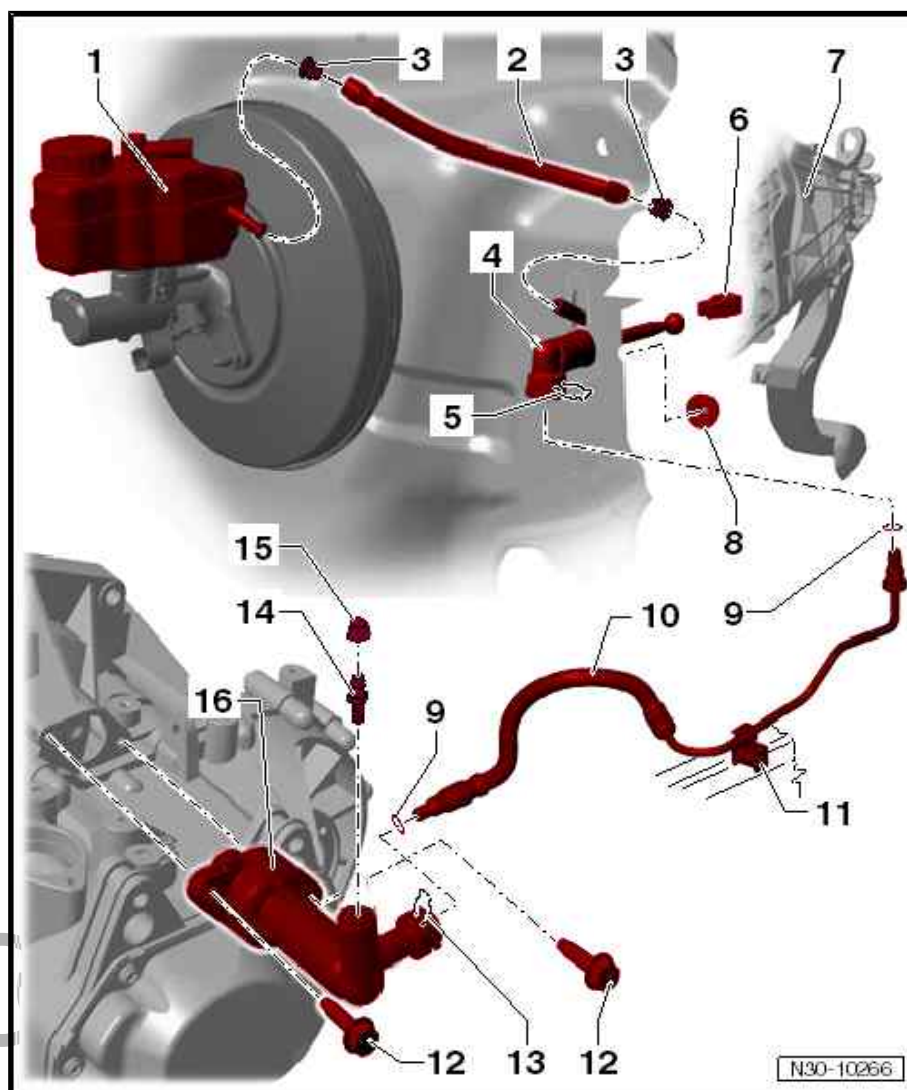
- ☐ Renew only when clutch master cylinder has been removed
- ☐ Removing and installing ⇒ [Item 2 \(page 13\)](#)

7 - Mounting bracket

- ☐ With clutch pedal
- ☐ Removing and installing with clutch master cylinder ⇒ [page 27](#)
- ☐ Removing and installing without clutch master cylinder ⇒ [page 30](#)

8 - Nut

- ☐ ⇒ [Item 9 \(page 13\)](#)



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9 - Seal / O-ring

- ☐ Push onto pipe connection
- ☐ Lubricate with brake fluid before installing
- ☐ Renew seal / O-ring if damaged
- ☐ Whether a seal or an O-ring is used depends on the type of connection [⇒ page 17](#)
- ☐ For correct version, refer to [⇒ Electronic parts catalogue](#)

10 - Pipe/hose assembly

- ☐ Removing and installing [⇒ page 40](#)
- ☐ Disconnecting from clutch master cylinder and clutch slave cylinder [⇒ page 18](#)

11 - Retainer

- ☐ For pipe/hose assembly
- ☐ Secured on body

12 - Bolt

- ☐ Tightening torque [⇒ Item 9 \(page 19\)](#)
- ☐ 2x

13 - Retaining clip

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

14 - Bleeder screw

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

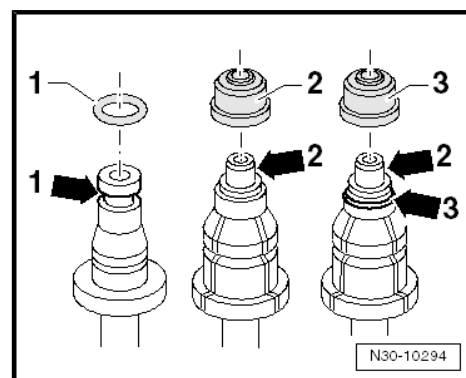
15 - Dust cap

16 - Clutch slave cylinder

- ☐ Removing and installing [⇒ page 38](#)

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.	



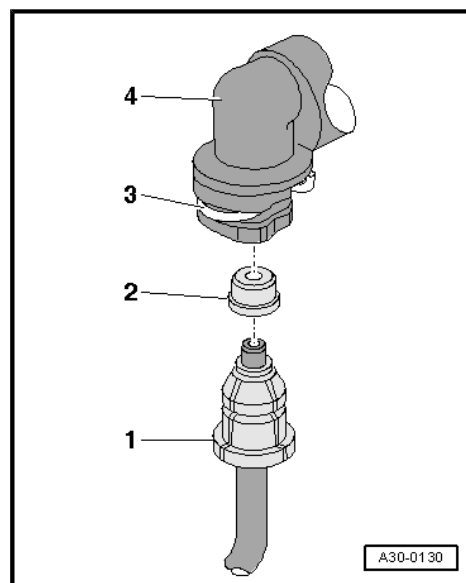
**Disconnecting and connecting pipe/hose assembly from/to clutch master cylinder/clutch slave cylinder**

- 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 \(page 18\)](#) and guide sleeve ⇒ [Item 5 \(page 18\)](#) ⇒ [page 45](#)
- ☐ Do not wash out bearing; wipe clean only
- ☐ Renew bearing if noisy
- ☐ Lubricate surfaces which contact release lever with grease - G 000 100-

2 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

3 - Clutch release lever

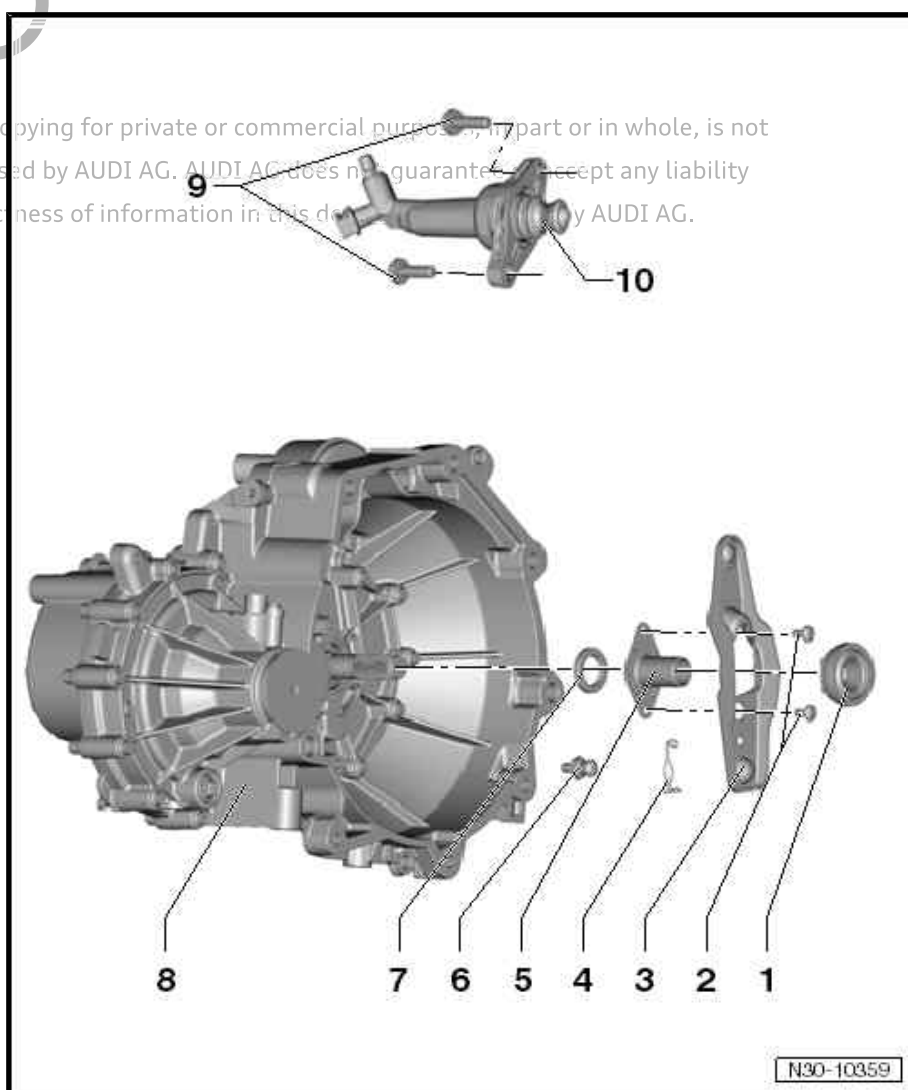
- ☐ Remove and install together with release bearing ⇒ [Item 1 \(page 18\)](#) and guide sleeve ⇒ [Item 5 \(page 18\)](#) ⇒ [page 45](#)
- ☐ Remove existing grease
- ☐ Lubricate surface which contacts ball-head pin with grease - G 000 100-

4 - Retaining spring

- ☐ Secure to clutch release lever

5 - Guide sleeve

- ☐ Remove and install together with release bearing ⇒ [Item 1 \(page 18\)](#) and release lever ⇒ [Item 3 \(page 18\)](#) ⇒ [page 45](#)





6 - Ball-head pin

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

7 - Input shaft oil seal

- ☐ Renewing ⇒ [page 51](#)

8 - Gearbox

9 - Bolt

- ☐ 20 Nm
- ☐ 2x

10 - Clutch slave cylinder

- ☐ Removing and installing ⇒ [page 38](#)

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 19](#)

⇒ [“1.4.2 Removing and installing clutch pedal with extension spring - vehicles up to model year 2014”, page 21](#)

⇒ [“1.4.3 Removing and installing clutch pedal - vehicles from model year 2015 onwards”, page 24](#)

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-



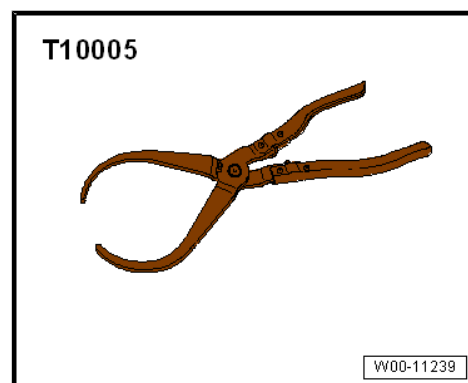
Removing



Note

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

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- 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-.

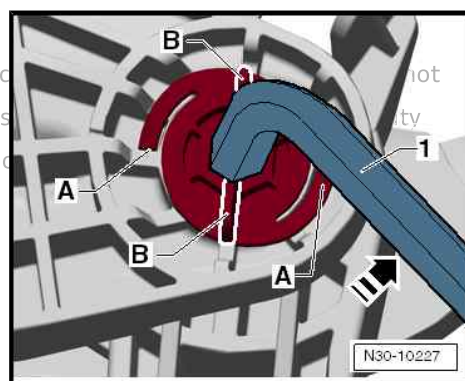
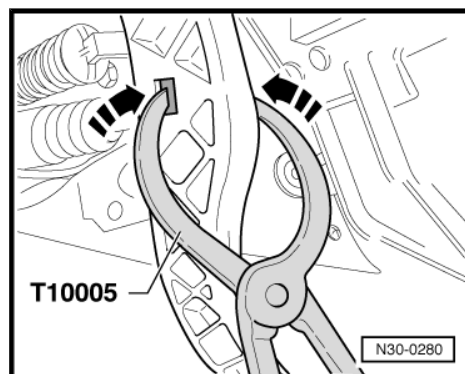


- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal anti-clockwise -arrow- until ears -B- are horizontal.

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**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.

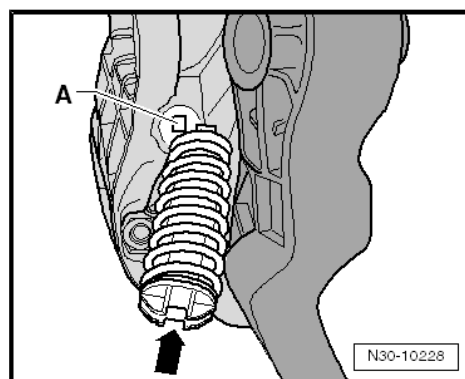
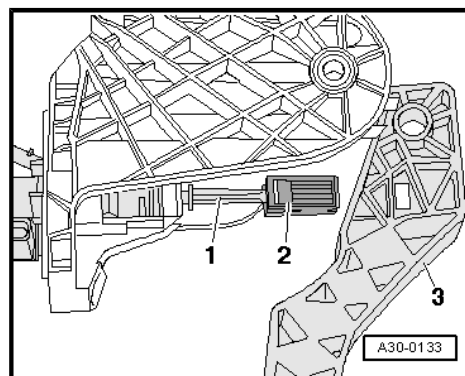
**Installing**

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

**Note**

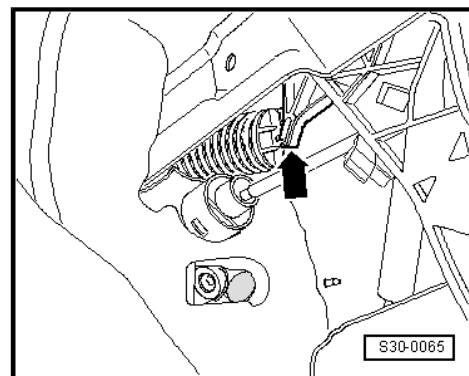
Renew pivot pin.

- 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.

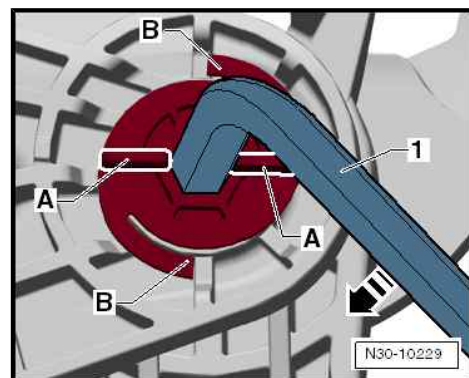




- Attach over-centre spring to actuator on clutch pedal -arrow-.



- 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 12](#)

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.*
- ◆ *If only the extension spring is to be removed, see ⇒ [page 15](#).*

Special tools and workshop equipment required

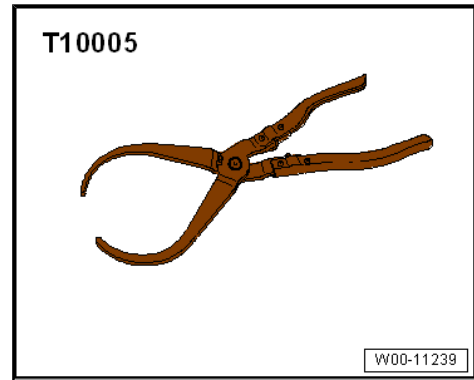
- ◆ Hook - 3438-



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◆ Pliers - T10005-



Removing



Note

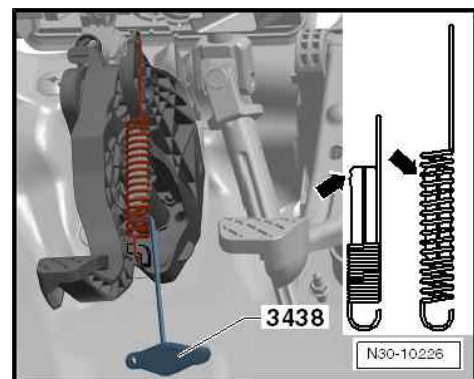
Pivot pin for clutch pedal cannot be removed without being damaged.

- 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) .
- 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- .

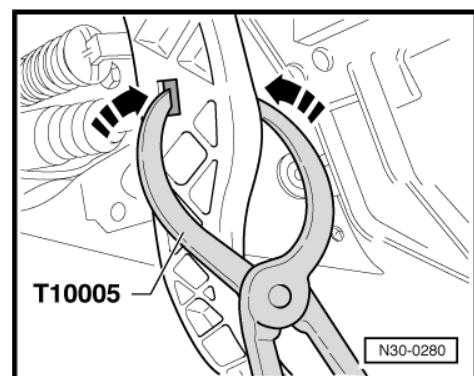


Note

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-.



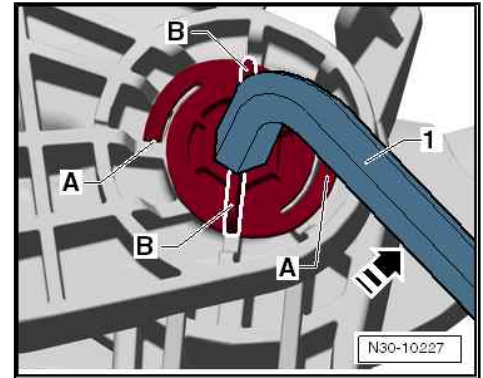


- Using 8 mm Allen key -item 1-, turn pivot pin for clutch pedal anti-clockwise -arrow- until ears -B- are horizontal.

i 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

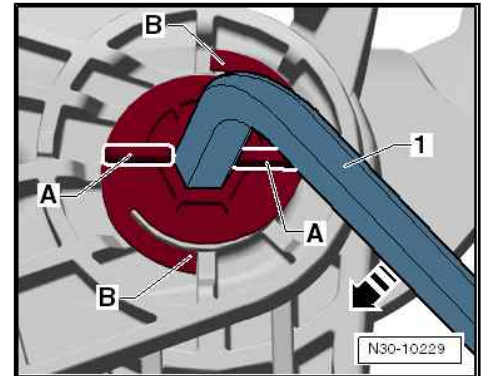
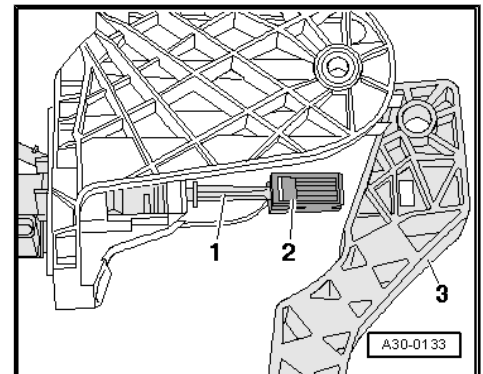
Installation is carried out in reverse order; note the following:

- Tightening torque
⇒ ["1.1 Exploded view - pedal cluster", page 12](#)

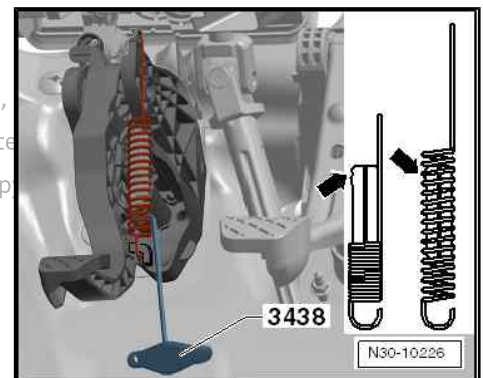
i Note

- ◆ *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 12](#)



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

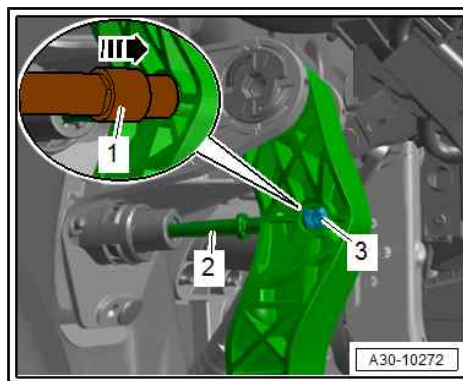
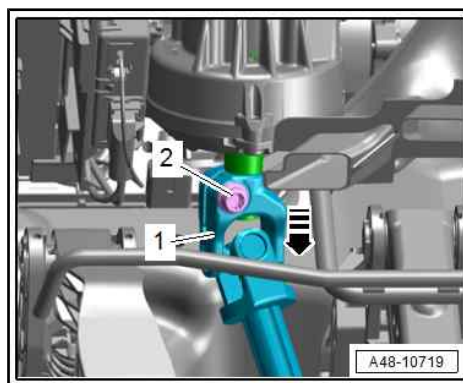


Note

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-.
- 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

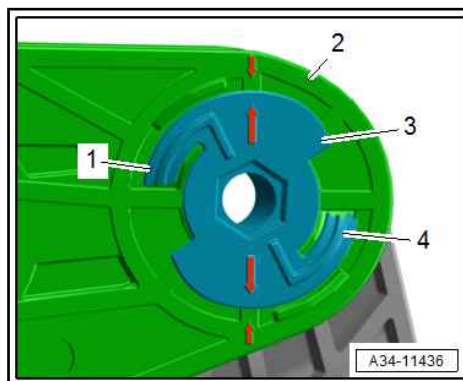
This will damage the retainers -1, 4- irreparably.

- 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:

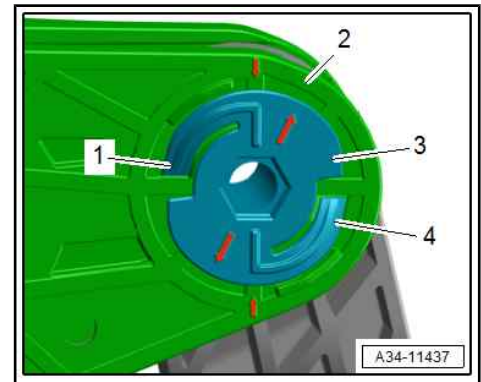
- Renew pivot pin and locking pin.



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- 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.



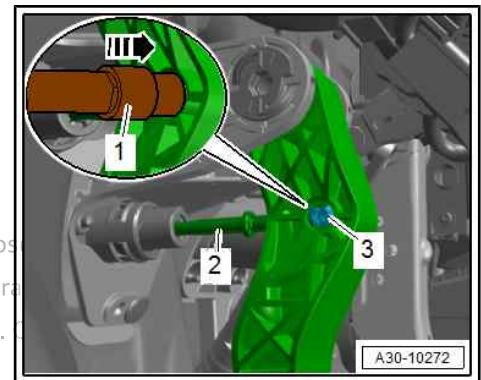
- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



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 25](#)

⇒ [“1.5.2 Removing and installing over-centre spring - vehicles from model year 2015 onwards”, page 25](#)

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 19](#) .

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

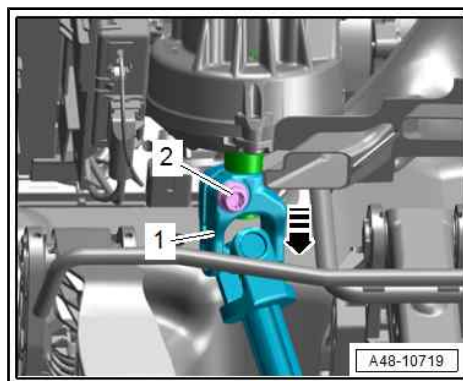
Removing

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

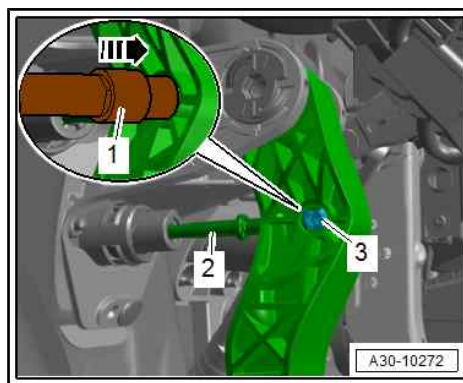


panels; Removing and installing dash panel cover (driver side) .

- 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

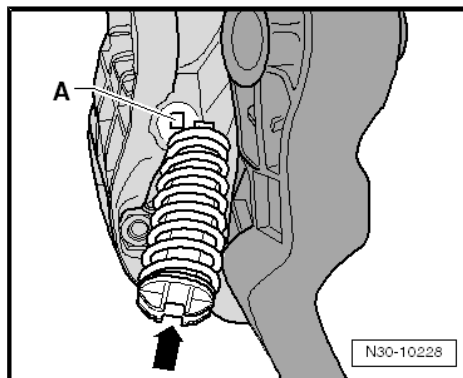
Installation is carried out in reverse order; note the following:



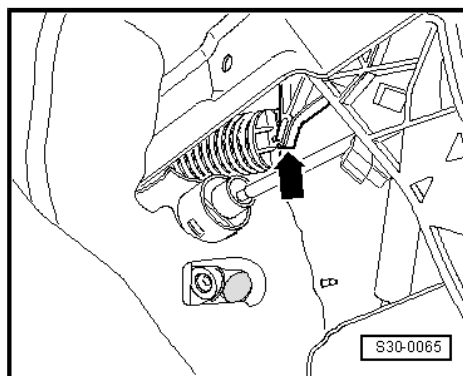
Note

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.



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



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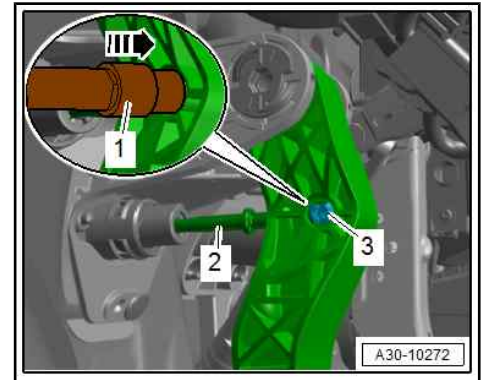
- Press clutch pedal until operating rod -2- for clutch master cylinder has reached installation position.
- Press in new locking pin -3- so that it engages audibly.



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 with clutch master cylinder - vehicles up to model year 2014”, page 27](#)

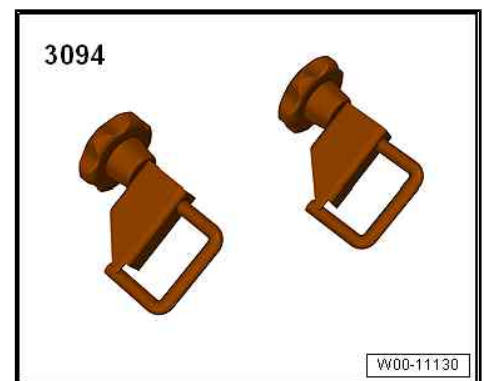
⇒ [“1.6.2 Removing and installing mounting bracket without clutch master cylinder - vehicles up to model year 2014”, page 30](#)

⇒ [“1.6.3 Removing and installing mounting bracket - vehicles from model year 2015 onwards”, page 32](#)

1.6.1 Removing and installing mounting bracket with clutch master cylinder - vehicles up to model year 2014

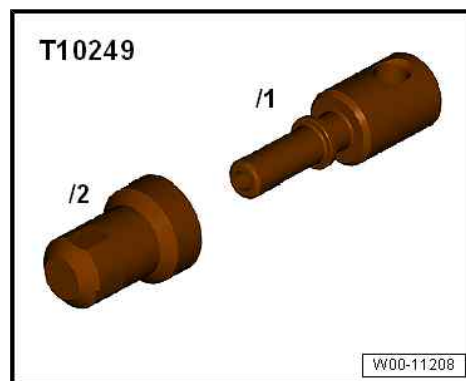
Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-



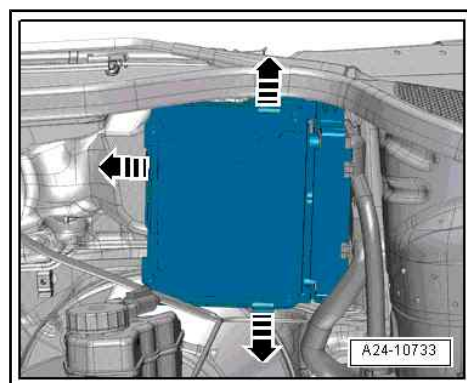


◆ Sealing tool - T10249-



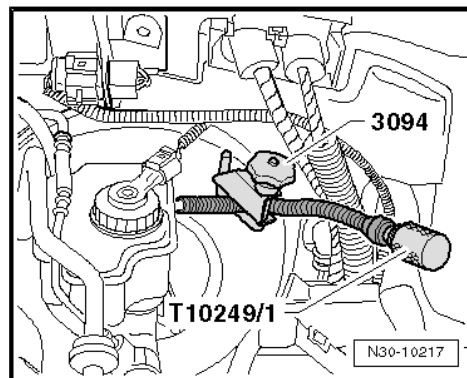
Removing

- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- If necessary, remove engine control unit - J623- from bracket at plenum chamber partition panel; release catches -arrows- to do so.



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

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- ◆ *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 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.

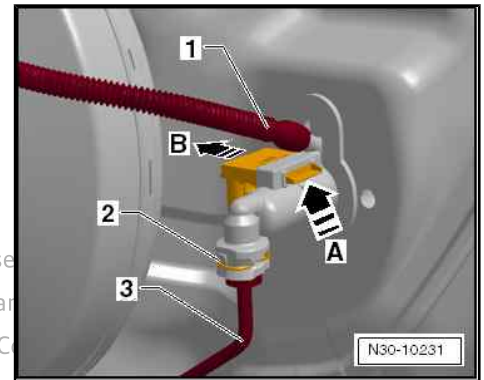


Note

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- 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.

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

Installing

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



Note

- ◆ *Glue new gasket onto clutch master cylinder and mounting bracket.*
- ◆ *Renew self-locking nuts.*
- ◆ *After detaching hose clip, move supply hose to original position if necessary.*

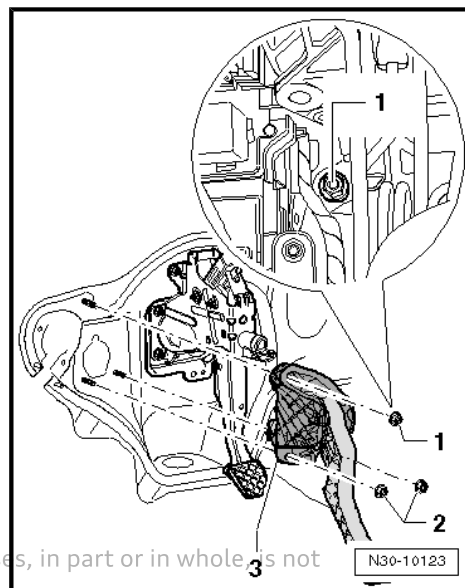
- Push pipe/hose assembly onto connection on clutch master cylinder so that retaining clip snaps into place.
- Pull on pipe to check that it is secure.
- Bleed clutch system ⇒ [page 42](#) .
- Install clutch position sender - G476- ⇒ [page 44](#) .
- If removed previously, attach engine control unit - J623- to plenum chamber partition panel.
- 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) .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

Tightening torques

- ◆ ⇒ [“1.1 Exploded view - pedal cluster”, page 12](#)

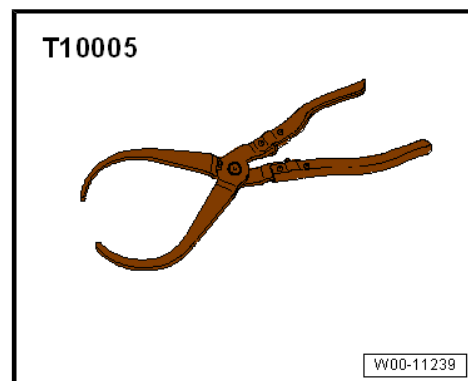
1.6.2 Removing and installing mounting bracket without clutch master cylinder - vehicles up to model year 2014

Special tools and workshop equipment required



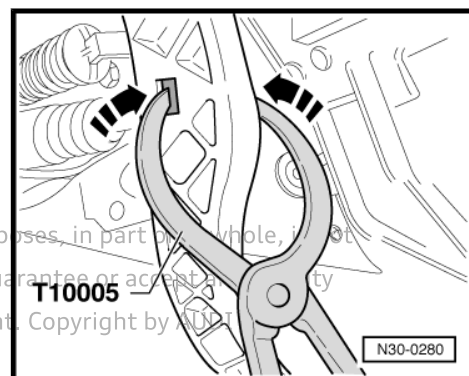


◆ Pliers - T10005-

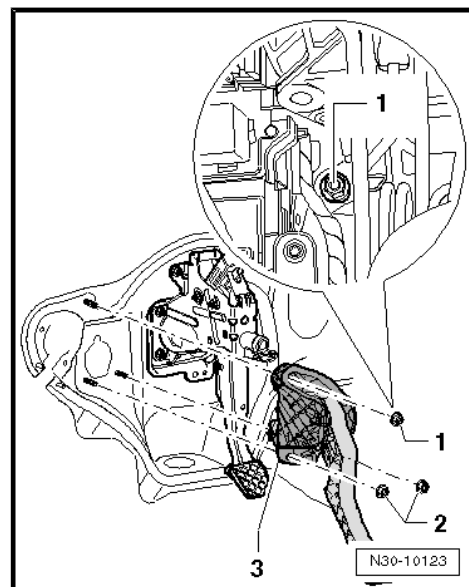


Removing

- 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-.



- Remove 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

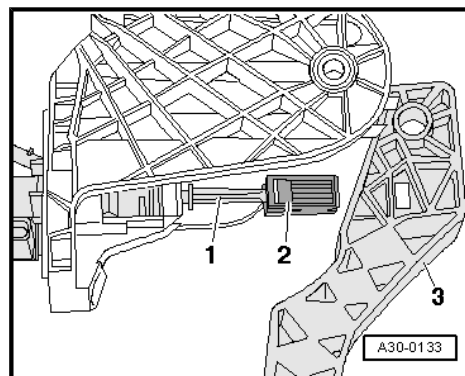
Installation is carried out in reverse order; note the following:



Note

Renew self-locking nuts.

- 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) .



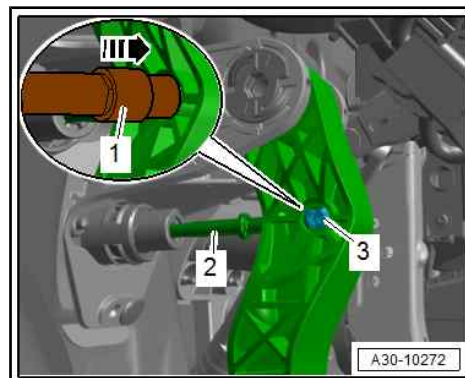
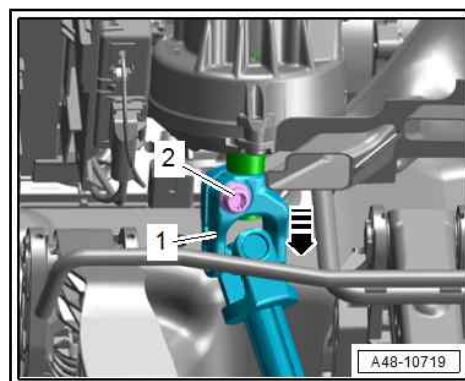
Tightening torques

- ♦ ⇒ ["1.1 Exploded view - pedal cluster", page 12](#)

1.6.3 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) .

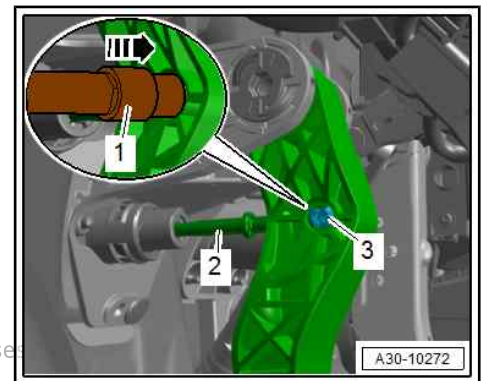
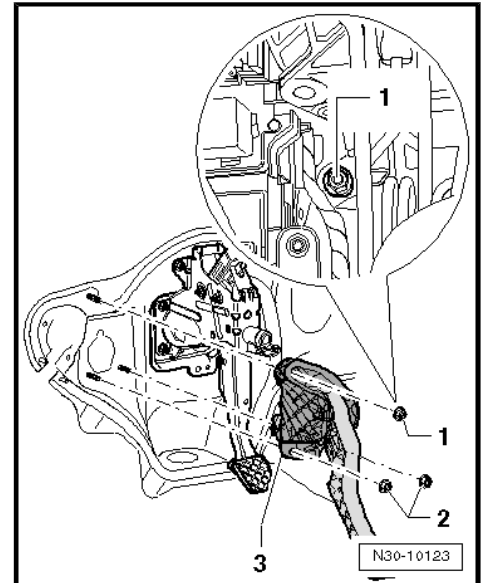
Tightening torques

- ◆ ⇒ "1.1.2 Exploded view - pedal cluster, vehicles from model year 2015 onwards", page 15

1.7 Removing and installing bearing bush

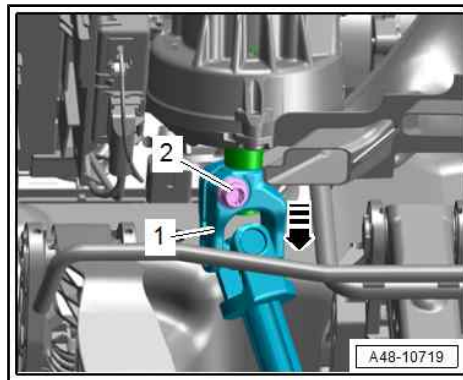
Removing

- 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) .

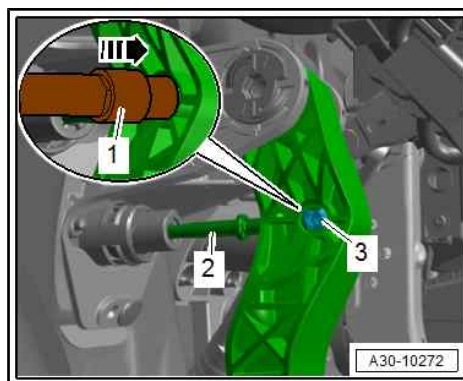




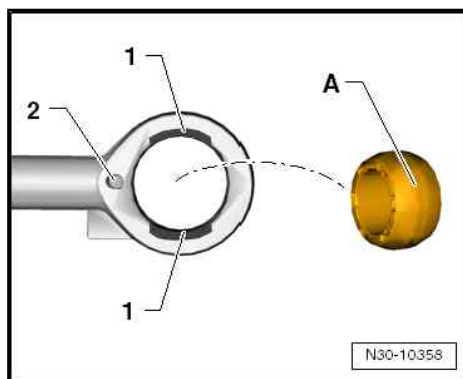
- Remove bolt -2-.
- Detach intermediate steering shaft -1- from steering column -arrow- and place to one side.
- Remove crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .



- 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.

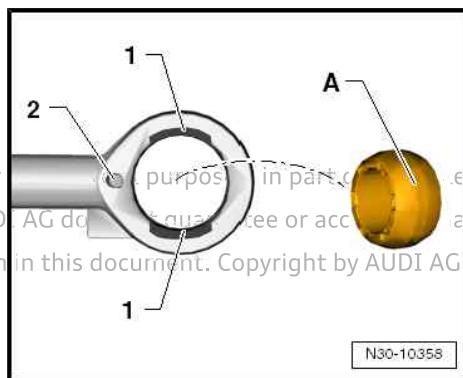


- Turn plunger of clutch master cylinder so that recesses -1- and pin -2- are visible.
- Recesses -1- and pin -2- point in the same direction.
- Remove bearing bush -A- from recesses -1-.



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 25](#).





1.8 Removing and installing clutch master cylinder

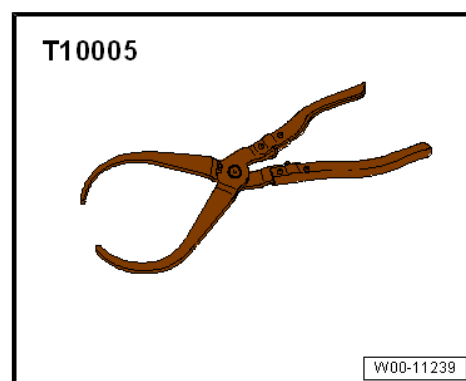
⇒ ["1.6.1 Removing and installing mounting bracket with clutch master cylinder - vehicles up to model year 2014", page 27](#)

⇒ ["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

◆ Pliers - T10005-



Removing



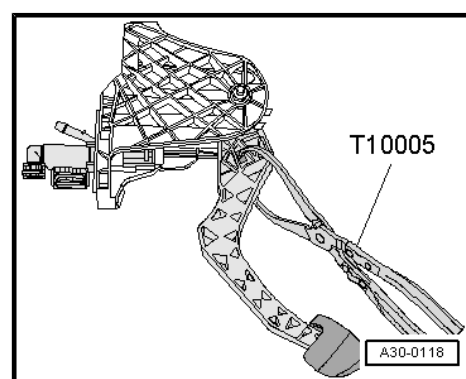
Note

If you suspect a defective clutch master cylinder, perform function test prior to renewing ⇒ [page 43](#).

- Remove mounting bracket with clutch master cylinder
⇒ [page 27](#).
- Release clutch pedal from clutch master cylinder using pliers - T10005-.
- Take clutch master cylinder out of mounting bracket.

Installing

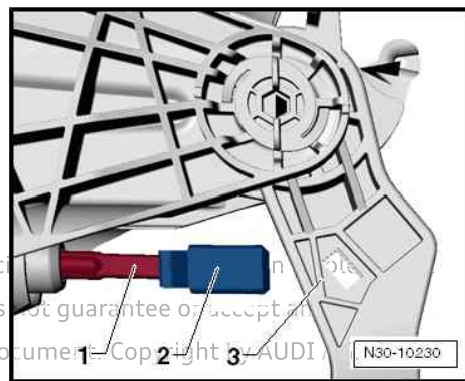
- Insert clutch master cylinder in mounting bracket.





- The retaining clip -2- must be fitted on the master cylinder operating rod -1-.
- Press retaining clip into recess in clutch pedal -3- so that it snaps into place.
- Install mounting bracket with clutch master cylinder
⇒ [page 27](#) .

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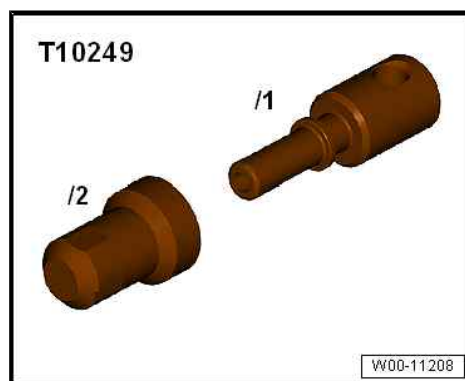
1.8.2 Removing and installing clutch master cylinder - vehicles from model year 2015 onwards

Special tools and workshop equipment required

- ◆ Hose clamps up to 25 mm - 3094-



- ◆ Sealing tool - T10249-



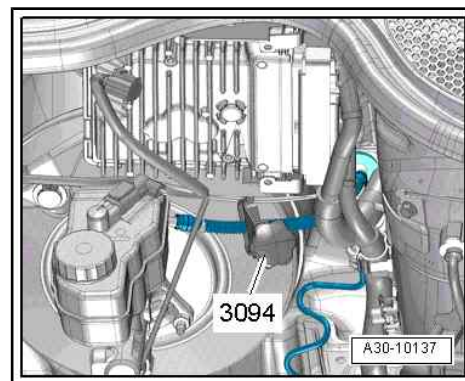
Removing

- 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- .



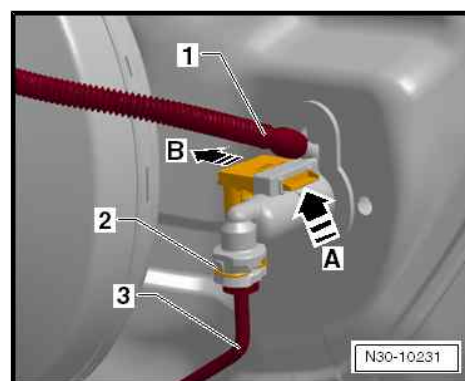
Note

- ◆ *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.

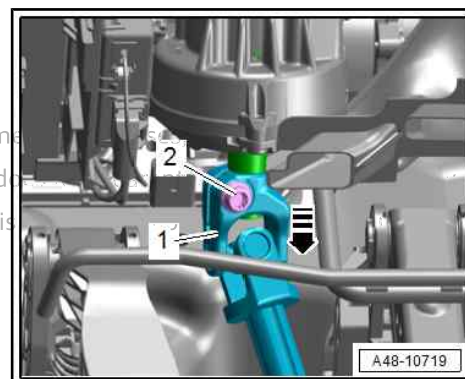


Note

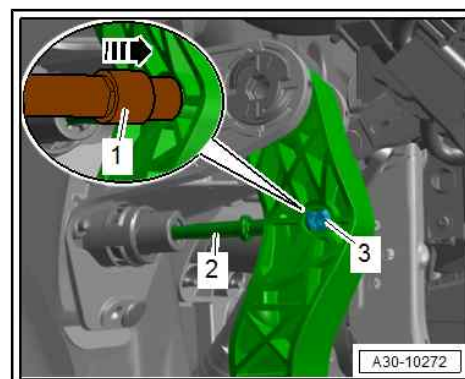
- ◆ *Clamping off the supply hose with the hose clamp - 3094- will cause a permanent deformation.*
- ◆ *However, this does not damage the supply hose.*
- ◆ *After removing the hose clamp -3094- , the supply hose must be returned to its original shape.*
- Disconnect supply hose -1- from clutch master 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) .



- 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-.

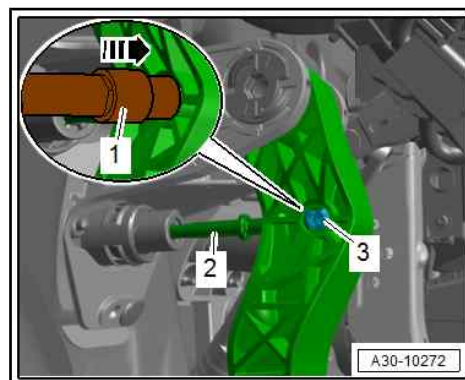
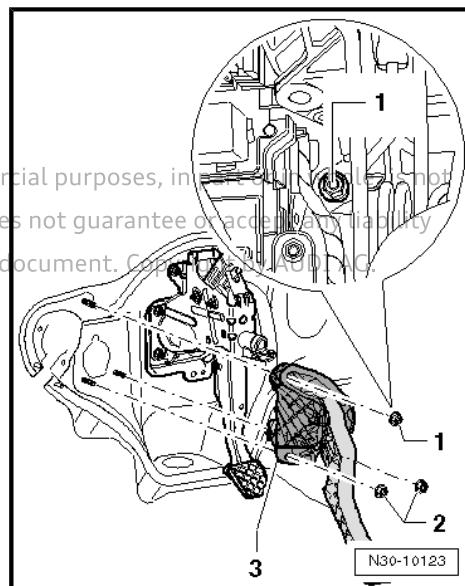
- Install crash bar ⇒ General body repairs, interior; Rep. gr. 70 ; Central tube for dash panel; Exploded view - central tube for dash panel .
- Install intermediate steering shaft ⇒ Running gear, axles, steering; Rep. gr. 48 ; Steering column; Removing and installing intermediate steering shaft .
- 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 18](#) .
- 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 15](#)

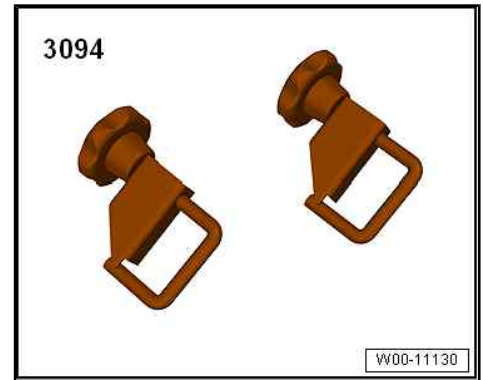
1.9 Removing and installing clutch slave cylinder

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 43](#) .*
- ◆ *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.*

Vehicles up to model year 2014:

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

Vehicles from model year 2015 onwards:

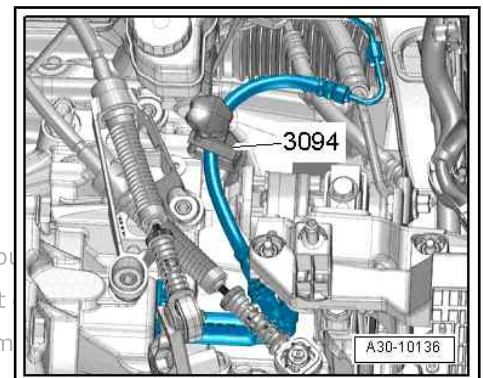
- Remove battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

All vehicles (continued):

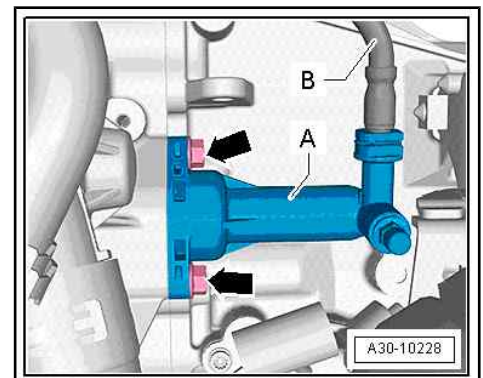
- Clamp off hose on pipe/hose assembly between clutch master cylinder and slave cylinder using hose clamp -3094- .



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- Remove bolts -arrows- and detach clutch slave cylinder -A- with pipe/hose assembly -B- still attached.





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

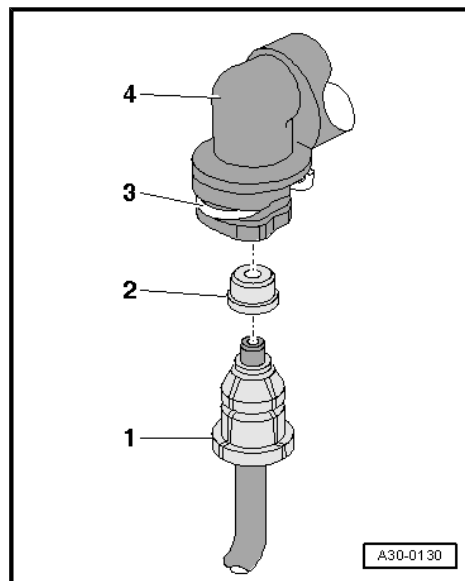
Disregard -item 2-.



Caution

Risk of brake fluid escaping.

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



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- 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](#) .

Vehicles up to model year 2014:

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

Vehicles from model year 2015 onwards:

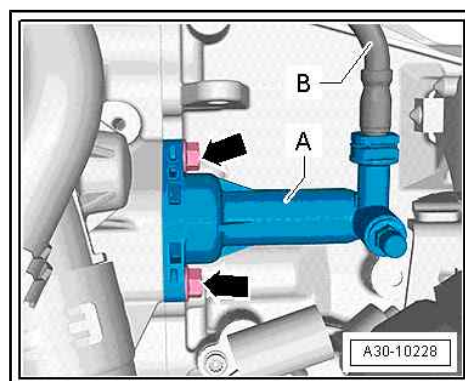
- Install battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

Tightening torques

- ◆ ⇒ [“1.2 Exploded view - clutch hydraulics”, page 16](#)

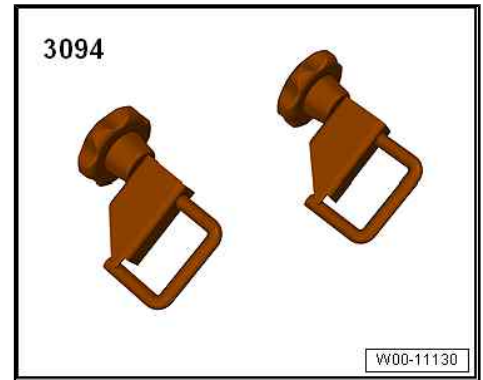
1.10 Removing and installing lines for clutch hydraulics

Special tools and workshop equipment required





- ◆ Hose clamps up to 25 mm - 3094-



Removing

Vehicles up to model year 2014:

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

Vehicles from model year 2015 onwards:

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

All vehicles (continued):

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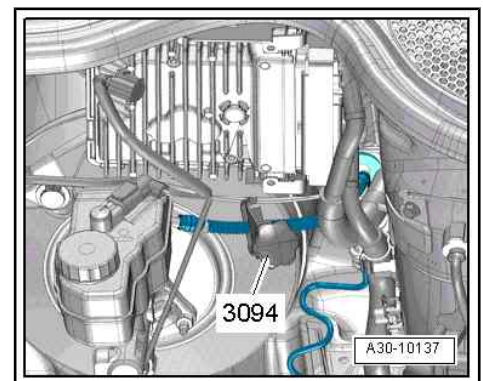
Note

- ◆ *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.*
- 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.*





- 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 after removing pipe/hose assembly from clutch master cylinder.**

Installing

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

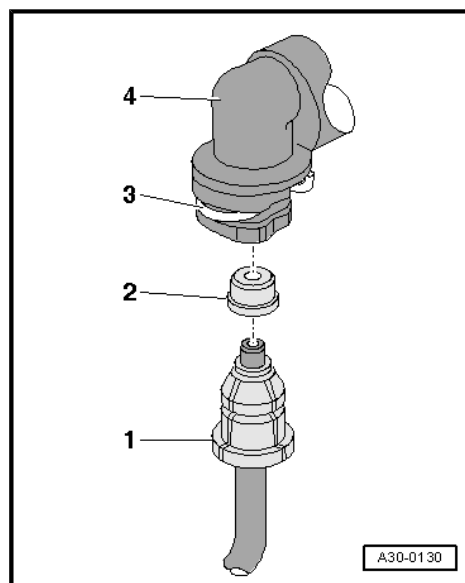
- Connect pipe/hose assembly to clutch master cylinder and clutch slave cylinder ⇒ [page 18](#) .
- Bleed clutch system ⇒ [page 42](#) .

Vehicles up to model year 2014:

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

Vehicles from model year 2015 onwards:

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



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) .*

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Special tools and workshop equipment required

- ◆ Brake filling and bleeding equipment - VAS 5234-



- ◆ Brake fluid specification ⇒ Electronic parts catalogue .



Procedure

- Pull clutch pedal back to rest position.

Vehicles up to model year 2014:

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

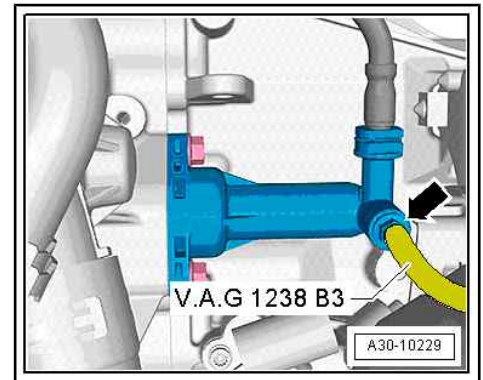
All vehicles (continued):

- 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 16](#)

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 the over-centre spring / extension spring for noise.
- ◆ If you hear a noise, remove over-centre spring / extension 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.
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- ◆ 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 or if the driver rests his/her foot on the clutch pedal for long periods of time.

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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).
- ◆ If you identify any leaks you must renew the leaking component.
- ◆ 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 47](#) .

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 47](#) .
- ◆ 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

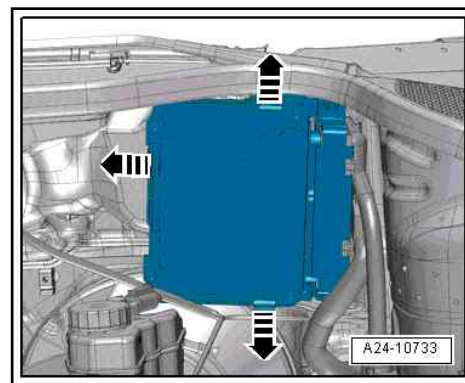
Vehicles up to model year 2014:

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



All vehicles (continued):

- If fitted, 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- .



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



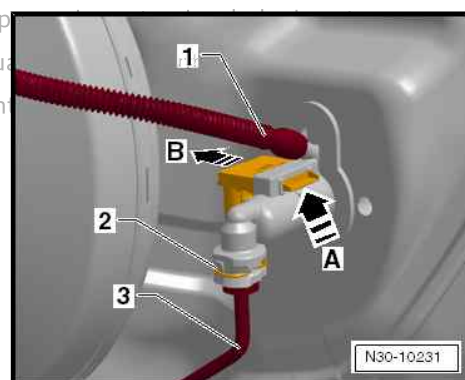
Note

Disregard -items 1, 2, 3-.

Installing

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

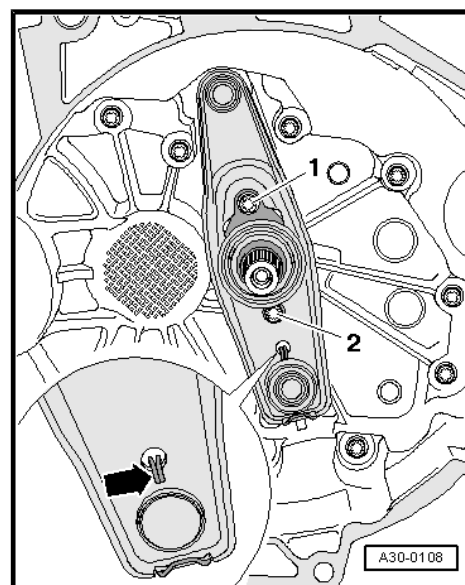
- Fit clutch position sender - G476- all the way onto clutch master cylinder (electrical connector should be plugged in beforehand).
- Clutch position sender should click into place -arrow A-.
- Check by pulling clutch position sender -arrow B-.
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner;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



1.14 Servicing clutch release mechanism

Removing

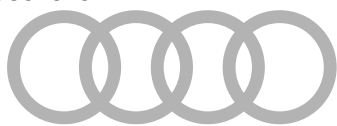
- Gearbox removed
- Unhook spring -arrow- from clutch release lever.
- Remove bolts -1- and -2-.
- Remove release lever with release bearing and guide sleeve.





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

Installing



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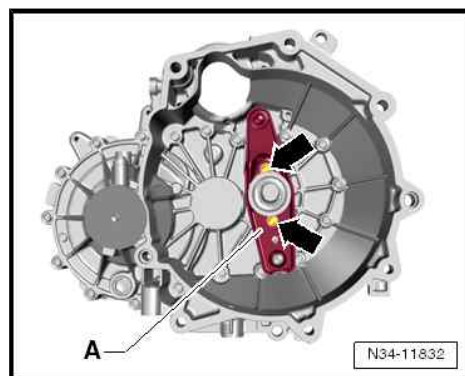
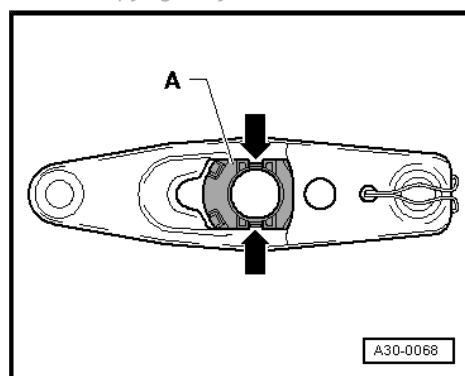
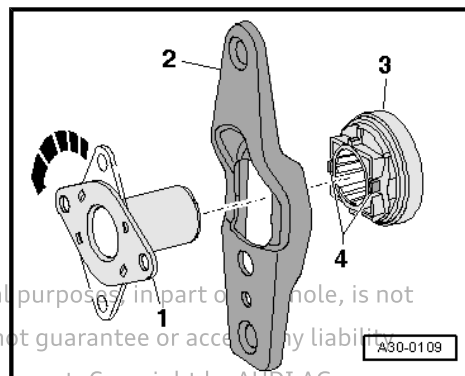
Installation is carried out in reverse order; note the following:

- To install, press release bearing -A- into clutch release lever until locking lugs -arrows- engage.
- Lubricate surface on clutch release lever which contacts ball-head pin with grease - G 000 100- .

- Install clutch release lever -A- with release bearing and guide sleeve, and tighten bolts -arrows-.

Tightening torques

- ♦ ⇒ [“1.3 Exploded view - clutch release mechanism”, page 18](#)





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 lining must be free of grooves, oil and grease

2 - Clutch plate

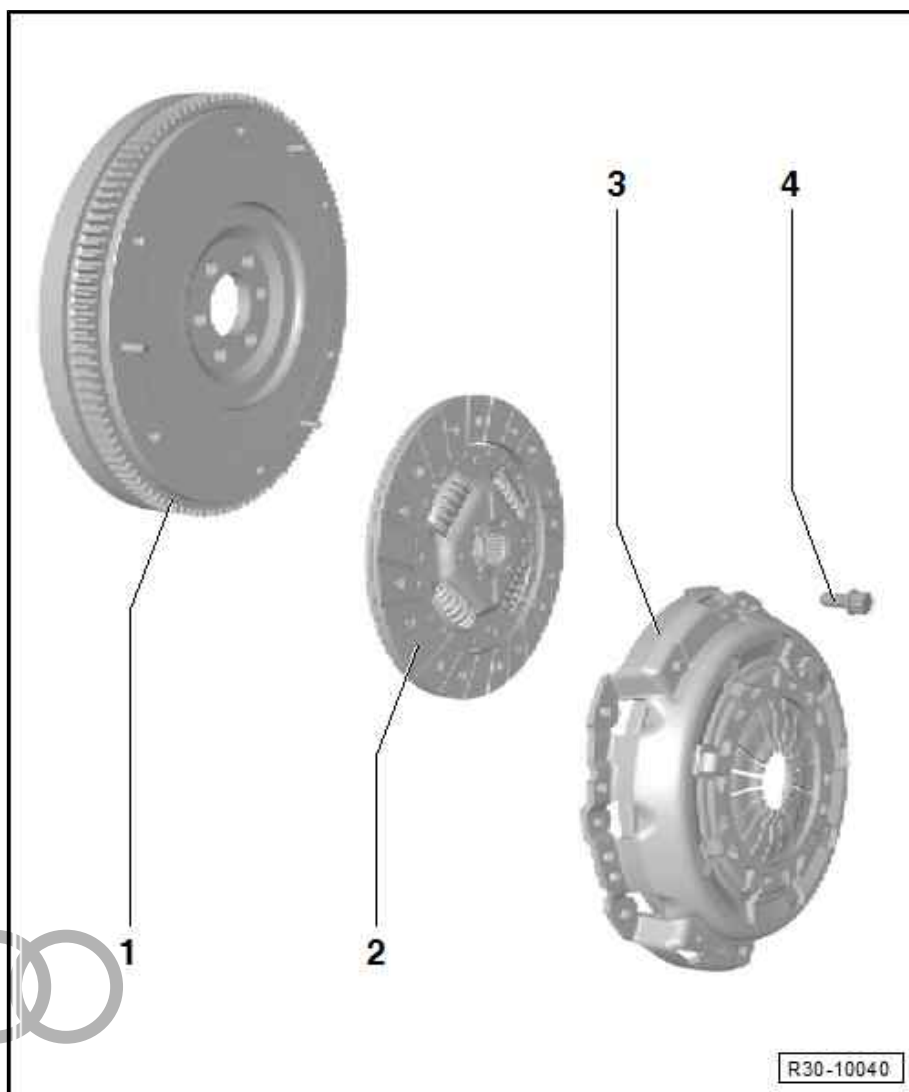
- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Removing and installing
⇒ [page 48](#)
- ☐ Installation position:
spring cage faces pressure plate

3 - Clutch pressure plate

- ☐ Removing and installing
⇒ [page 48](#)
- ☐ Checking ends of diaphragm spring
⇒ [page 48](#)
- ☐ Checking spring connection and rivets
⇒ [page 48](#)
- ☐ For correct version, refer to ⇒ Electronic parts catalogue

4 - Bolt

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





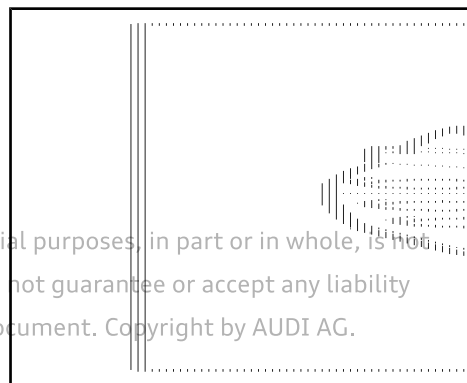
Checking ends of diaphragm spring

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



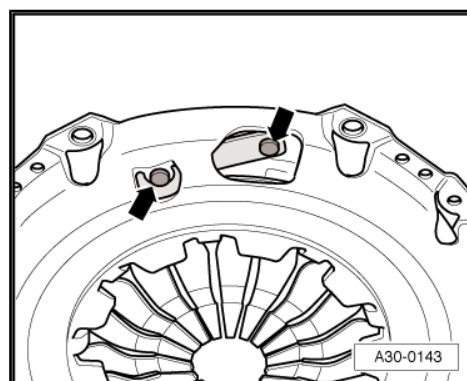
Note

- ◆ *When performing repairs always match up clutch pressure plate and clutch plate by checking engine code ⇒ Electronic parts catalogue.*
- ◆ *The clutch plate, clutch pressure plate and dual-mass flywheel must be from the same manufacturer.*



Checking spring connection and rivets

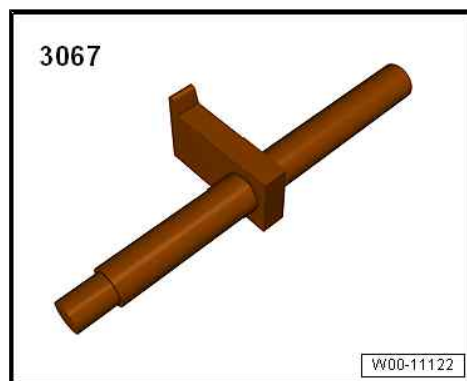
- Check spring connection between pressure plate and cover for cracks and make sure riveted fastenings are seated tightly.
- Renew pressure plate if springs are damaged or rivets are loose -arrows-.



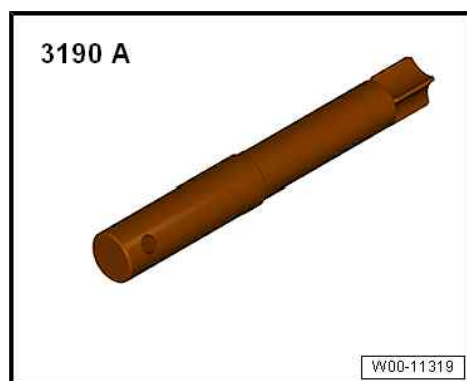
2.2 Removing and installing clutch

Special tools and workshop equipment required

- ◆ Counterhold tool - 3067-

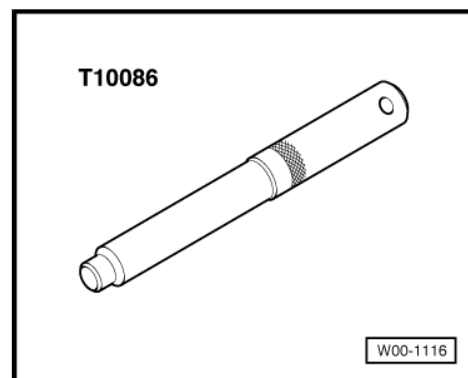


- ◆ Centring mandrel - 3190 A-





- ◆ Centring mandrel - T10086- ⇒ [page 51](#)



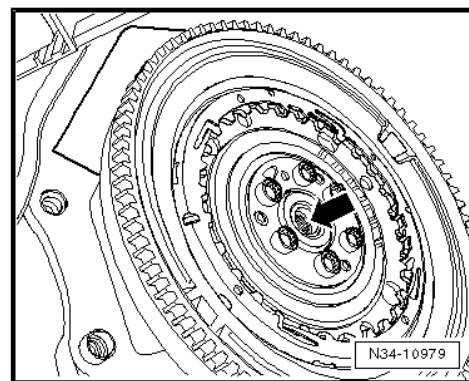
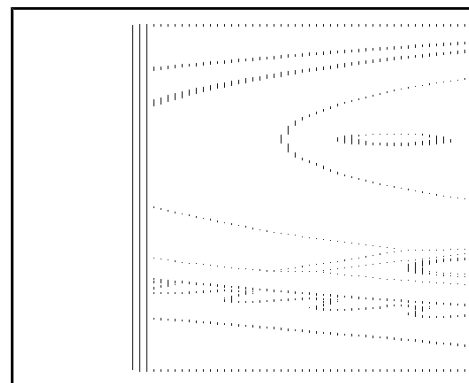
- ◆ Grease for clutch plate splines - G 000 100-

Removing

- Gearbox removed
- Apply counter-hold tool - 3067- in order to loosen 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 order; note the following:

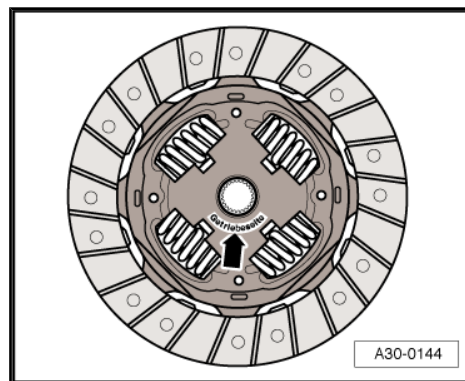


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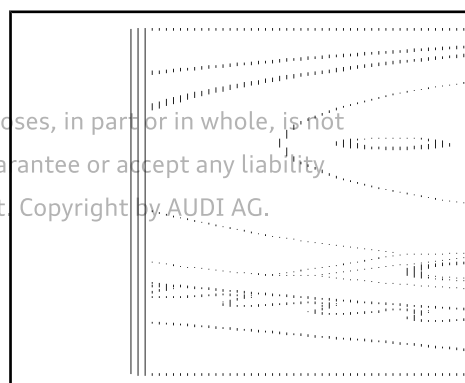
Note

- ◆ Refer to general repair instructions ⇒ [page 5](#).
- ◆ 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 50](#).
- ◆ 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.



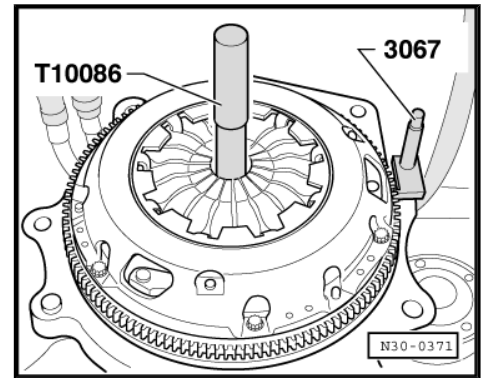


Crankshaft with small centring diameter

- 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

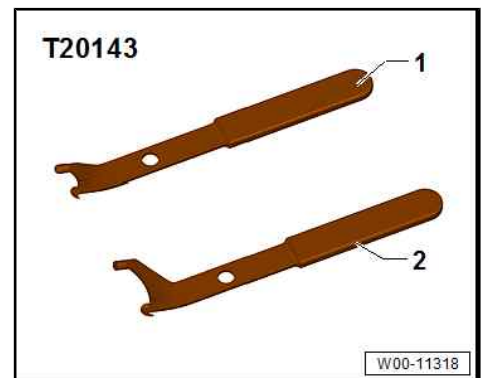
- ◆ ⇒ [Item 4 \(page 47\)](#)



2.3 Renewing input shaft oil seal

Special tools and workshop equipment required

- ◆ Extractor tool - T20143/1-



- ◆ Thrust piece - T40008-



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- ◆ Sealing grease - G 052 128 A1-

Procedure

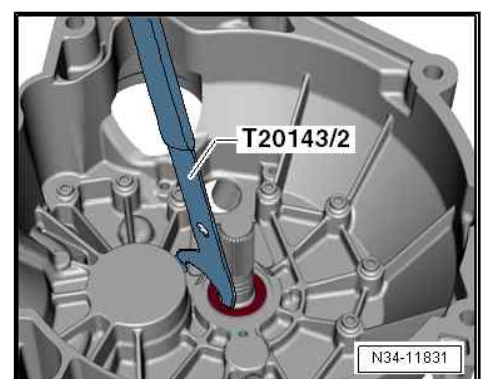
- Gearbox removed
- Remove release bearing ⇒ [page 45](#) .
- Pry out oil seal using extractor tool - T20143/1- .



Note

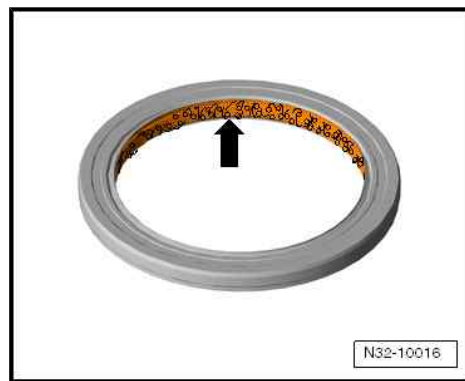
Take care not to damage contact surface for oil seal on input shaft.

- Clean contact surface and sealing surface.

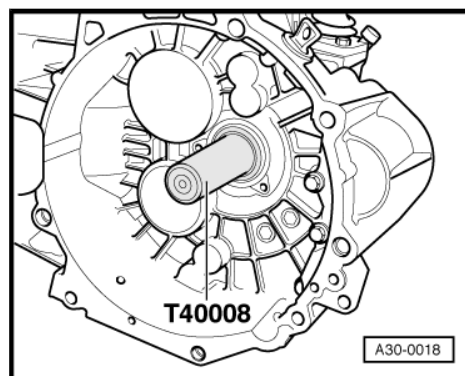




- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install release bearing ➔ [page 45](#) .



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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 54](#)

⇒ [“1.3 Exploded view - selector cables”, page 55](#)

⇒ [“1.4 Exploded view - selector mechanism”, page 59](#)

⇒ [“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

1 - Selector unit

- ☐ Exploded view
⇒ [page 112](#)

2 - Selector cables

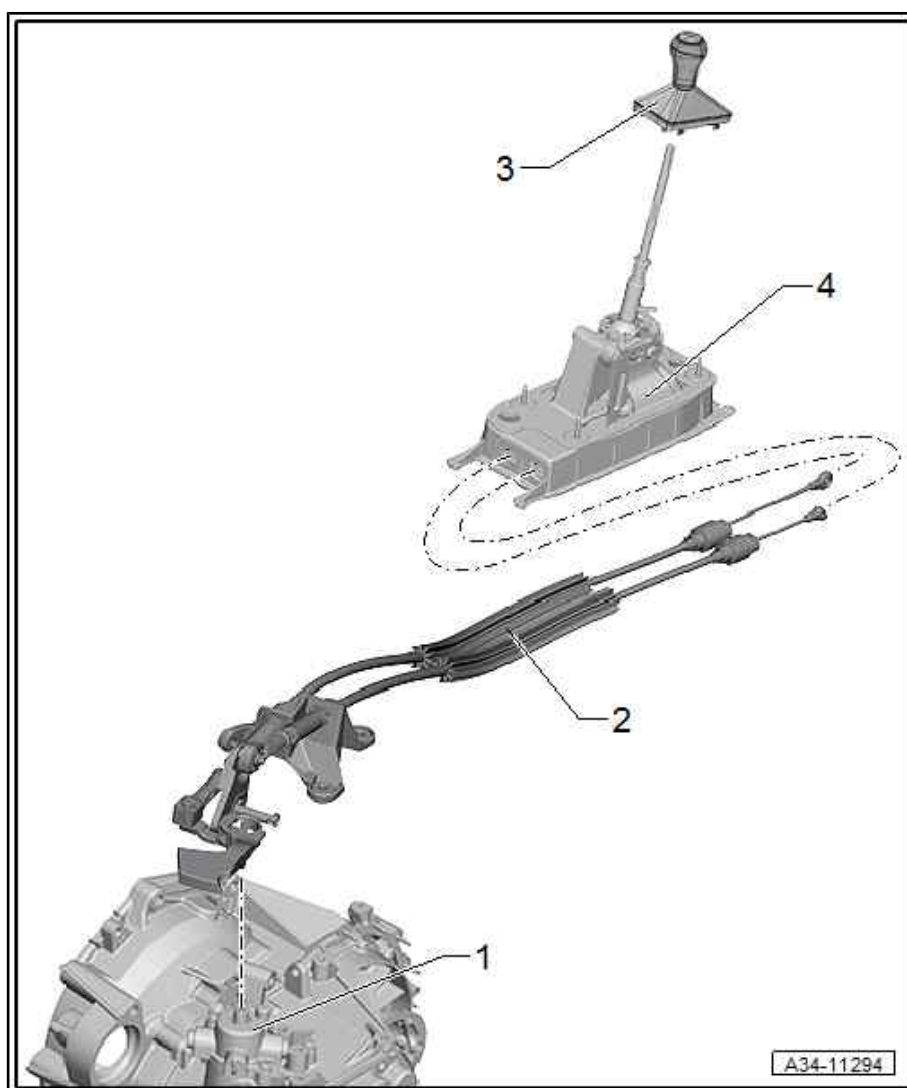
- ☐ With support bracket, gate relay lever and gearbox selector lever
- ☐ Exploded view
⇒ [page 55](#)

3 - Gear knob and boot

- ☐ Exploded view
⇒ [page 54](#)

4 - Selector mechanism

- ☐ Exploded view
⇒ [page 59](#)





1.2 Exploded view - gear knob and cover

1 - Gear lever

2 - Clip

- ☐ Secures gear knob to gear lever

- ☐ Secure with hose clip pliers - V.A.G 1275

- ☐ Renew

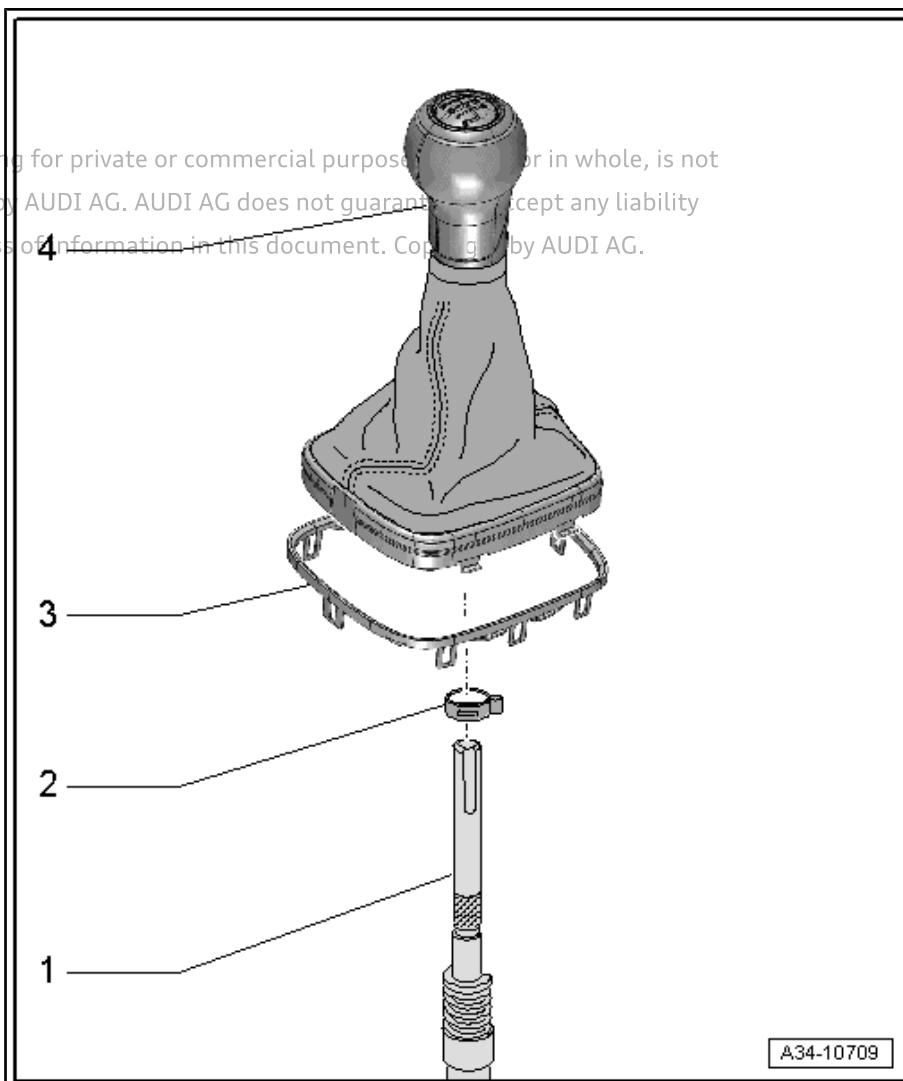
- ☐ Must be the same as original equipment ⇒ Electronic parts catalogue

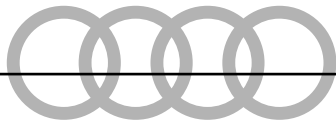
3 - Trim frame

- ☐ 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
- ☐ Remove and install together with gear lever boot ⇒ [page 61](#)





1.3 Exploded view - selector cables



Note

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

1 - Gear selector cable

- ☐ Connect to cable end-piece
⇒ [Item 12 \(page 55\)](#)
- ☐ Detaching and securing at gearbox selector lever
⇒ [page 58](#)
- ☐ Removing and installing
⇒ [page 72](#)
- ☐ Adjusting ⇒ [page 65](#)

2 - Gate selector cable

- ☐ Connect to cable end-piece
⇒ [Item 10 \(page 55\)](#)
- ☐ Removing and installing
⇒ [page 72](#)
- ☐ Adjusting ⇒ [page 65](#)

3 - Bush

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
- ☐ 3x
- ☐ Secures cable support bracket to gearbox

10 - Cable end-piece

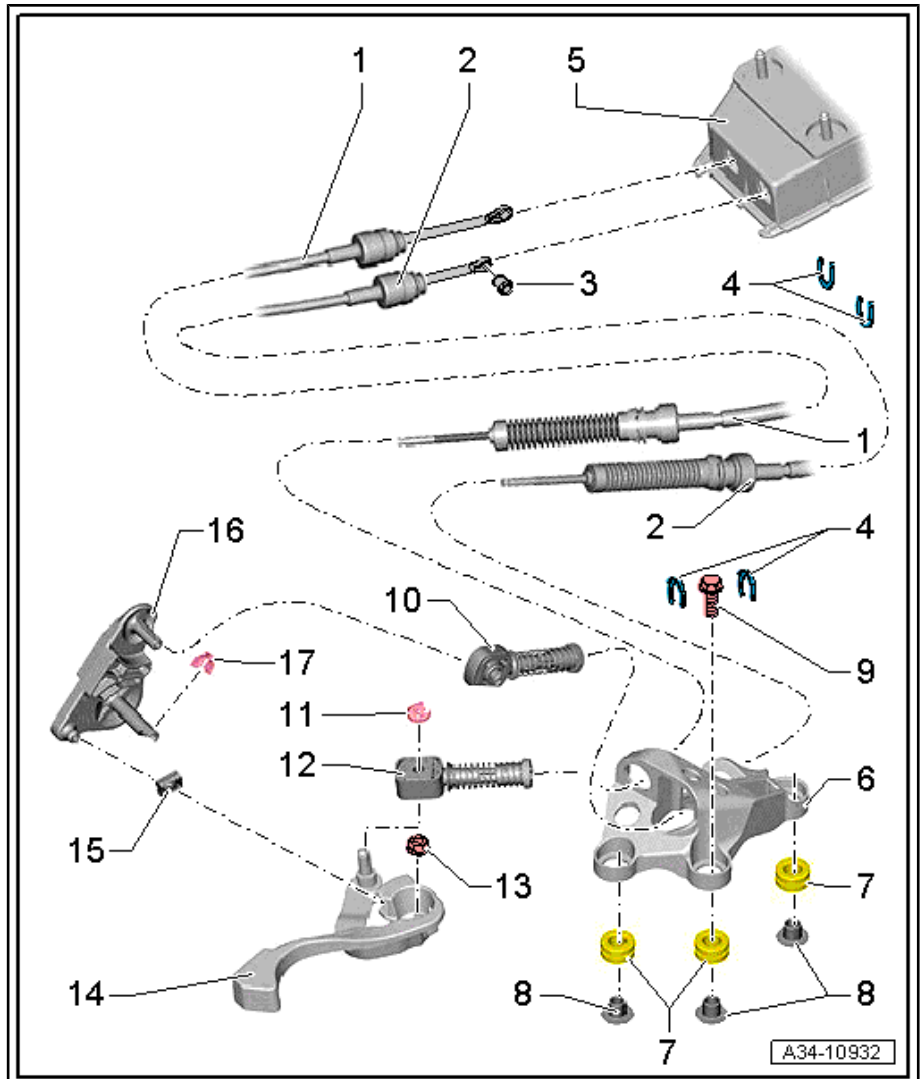
- ☐ Secures gate selector cable to gate relay lever
- ☐ Allocation ⇒ [page 56](#)
- ☐ Detaching from gate selector cable ⇒ [page 57](#)
- ☐ Levering off gate relay lever ⇒ [page 59](#)
- ☐ Pressing onto gate relay lever ⇒ [page 59](#)

11 - Securing clip

- ☐ Removing ⇒ [page 58](#)
- ☐ Renew

12 - Cable end-piece

- ☐ Secures gear selector cable to gearbox selector lever
- ☐ Allocation ⇒ [page 56](#)





- ☐ Detaching from gear selector cable ⇒ [page 57](#)

13 - Nut

- ☐ 20 Nm
- ☐ Self-locking
- ☐ Renew

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14 - Gearbox selector lever

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

15 - Slide block

16 - Gate relay lever

- ☐ Installation position ⇒ [page 57](#)
- ☐ Detaching and securing gate relay lever at gearbox selector lever ⇒ [page 58](#)
- ☐ Lubricate all bearings and moving surfaces with grease - G 000 450 02- .

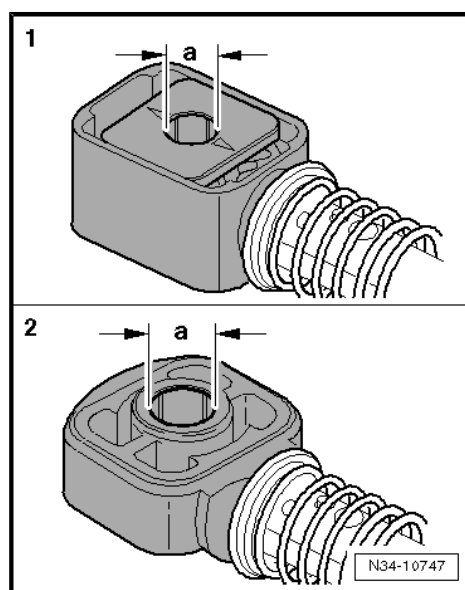
17 - Clip

- ☐ For gate relay lever

Identification of cable end-pieces

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

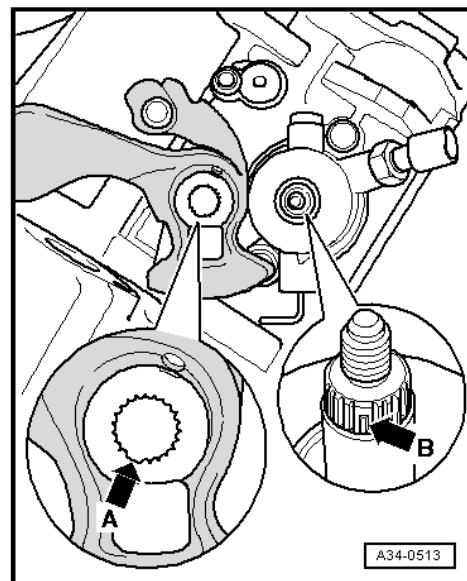
Cable end-piece for:	Dimension "a"
-1- Gear selector cable to gearbox selector lever	8.5 mm
-2- Gate selector cable to gate relay lever	10 mm





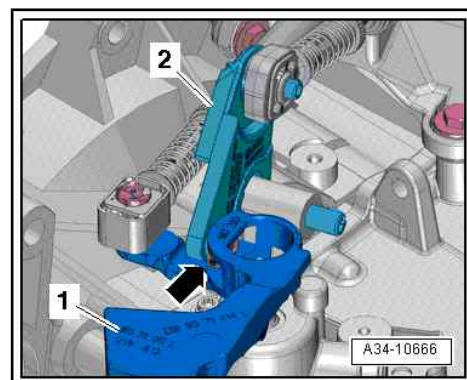
Installing gearbox selector lever

- 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.



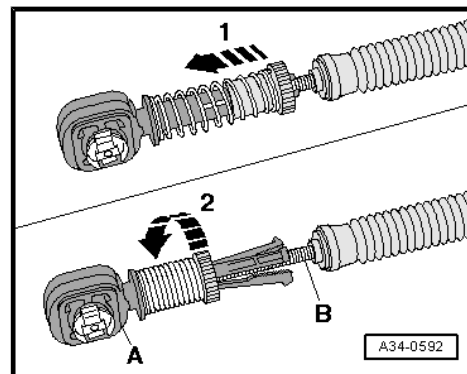
Installation position: gearbox selector lever/gate relay lever

- 1 - Gearbox selector lever with damper weight
- 2 - Gate relay lever locates in guide rail of gearbox selector lever via slide block -arrow-.



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

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



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Detaching and securing gear selector cable at gearbox selector lever

Detaching

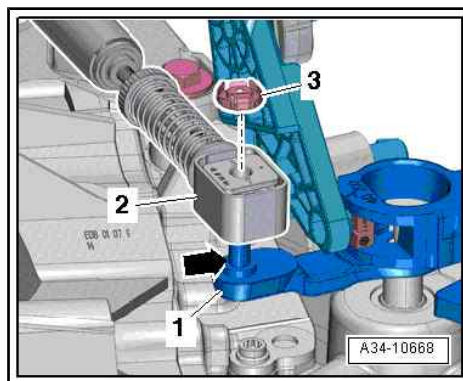
- Lift tab on securing clip -3- for gear selector cable and detach securing clip from gearbox selector lever -1-.
- Detach gear selector cable -2- from pin -arrow-.

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](#) .

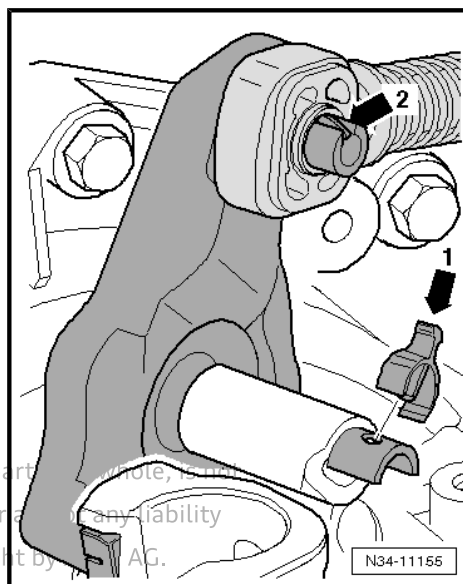
Securing



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.
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Note

-Arrow 2- can be disregarded.

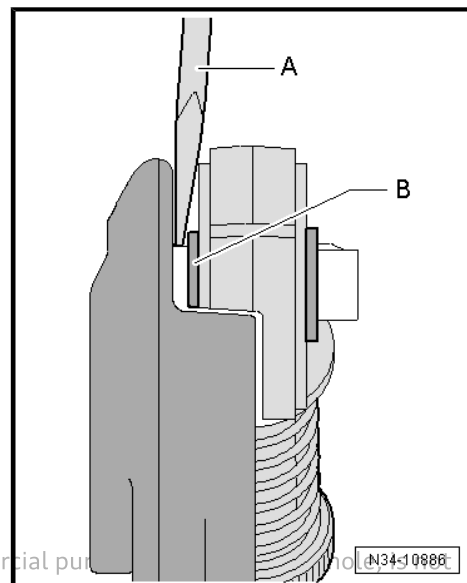


Levering cable end-piece for gate selector cable off gate relay lever

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

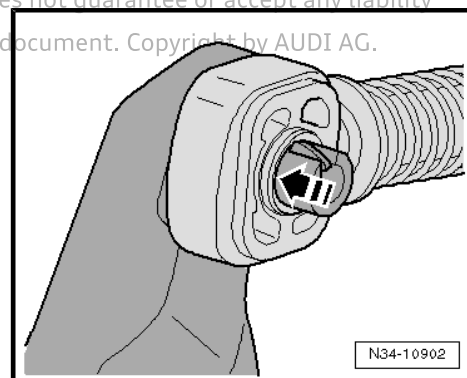


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Pressing cable end-piece for gate selector cable onto gate relay lever

- 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
- ☐ Always renew
- ☐ Installing ⇒ [page 71](#)

2 - Gasket

- ☐ Renew

3 - Bush

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

4 - Retaining clip

- ☐ 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 - Compression spring**10 - Securing clip**

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

11 - Damper**12 - Nut**

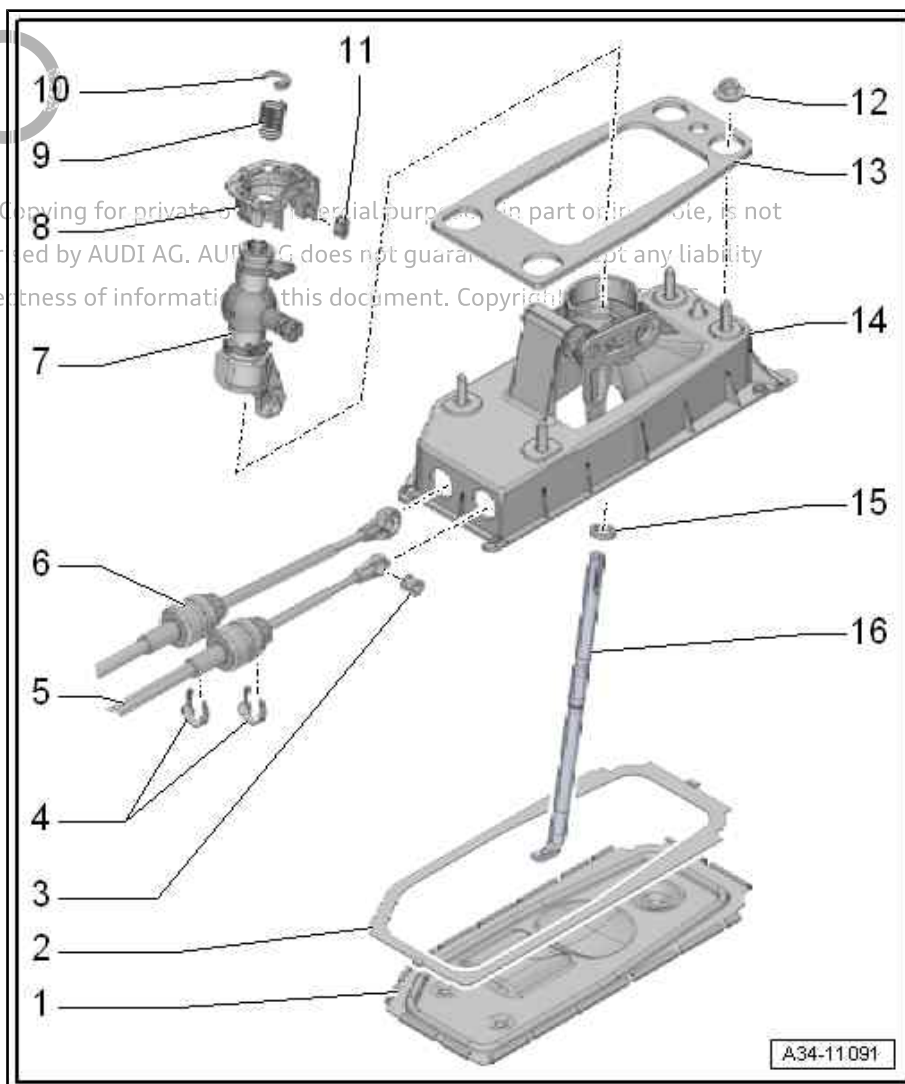
- M6 - 8 Nm
- M8 - 20 Nm
- ☐ 4x

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

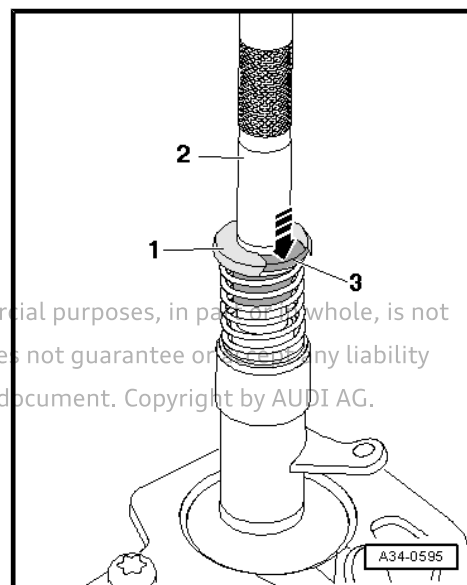
- ❑ Can be removed and installed without removing gear lever guide ⇒ [Item 7 \(page 60\)](#)

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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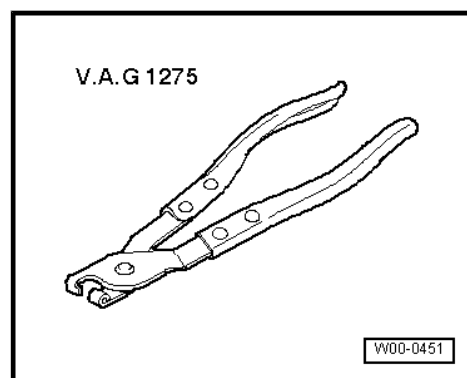
1.5 Removing and installing gear knob

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



- ◆ Hose clip pliers - V.A.G 1275-

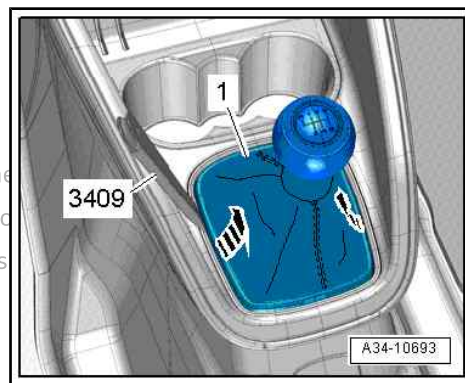




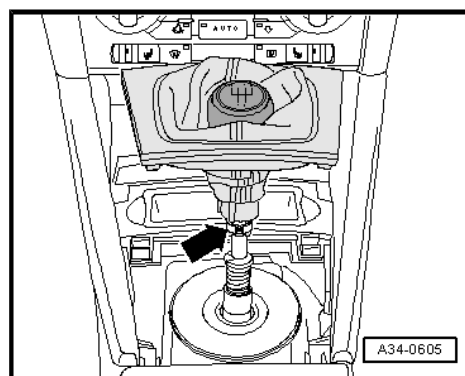
Removing

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

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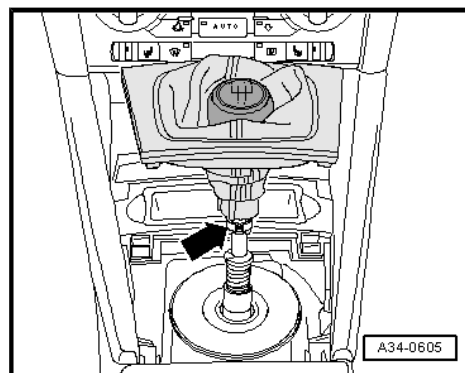
- Open clip -arrow- and pull off gear knob together with boot.



Installing

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

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



1.6 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 .

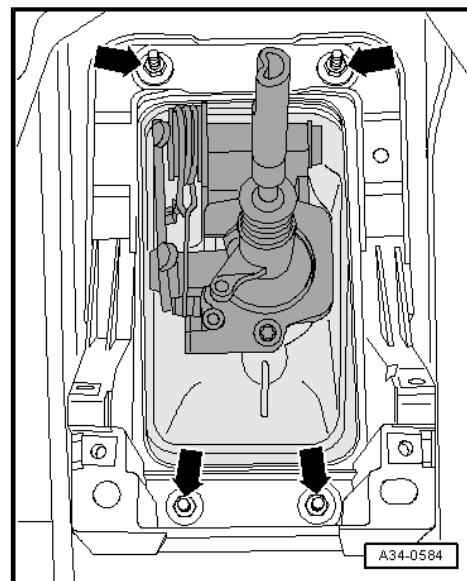


- Remove nuts -arrows- securing selector housing to body.

Vehicles up to model year 2014:

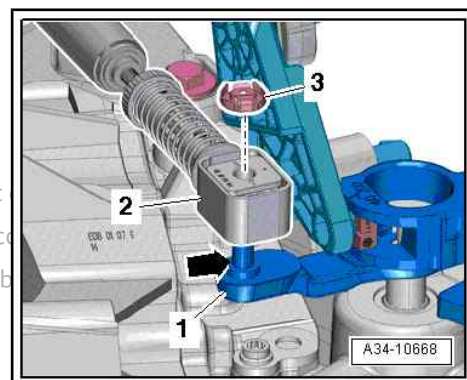
- Remove air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .

All vehicles (continued):

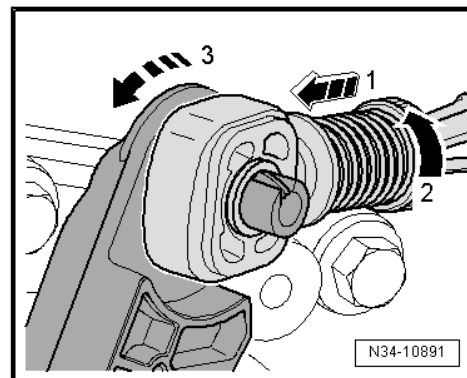


- Remove securing clip -arrow 3-.
- Pull gear selector cable -2- off pin -arrow- on gearbox selector lever -1-.
- Release cable end-piece from gate selector cable as follows:

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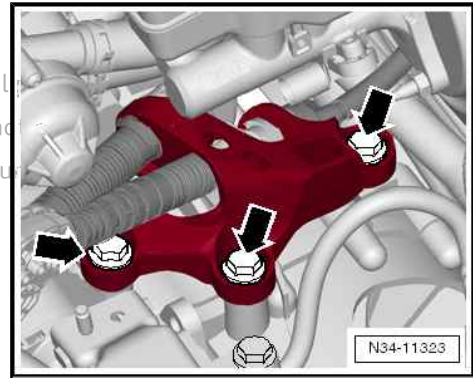


- Pull locking device forwards onto stop -arrow 1- and lock by turning anti-clockwise -arrow 2-.
- Press gate relay lever towards front -arrow 3-.





- Detach cable support bracket from gearbox -arrows-.
- Remove tunnel cross-pieces ⇒ General body repairs, exterior; Rep. gr. 66; Underbody trim; Exploded view - underbody trim.
- Disconnect exhaust system at clamp ⇒ Rep. gr. 26; Exhaust pipes/silencers; Exploded view - silencers.
- Release underbody trim from body in area of heat shield in centre tunnel ⇒ General body repairs, exterior; Rep. gr. 66; Underbody trim; Exploded view - underbody trim.
- Remove heat shield in centre tunnel ⇒ General body repairs, exterior; Rep. gr. 66; Strips / trim panels / extensions; Exploded view - heat shield.



Note

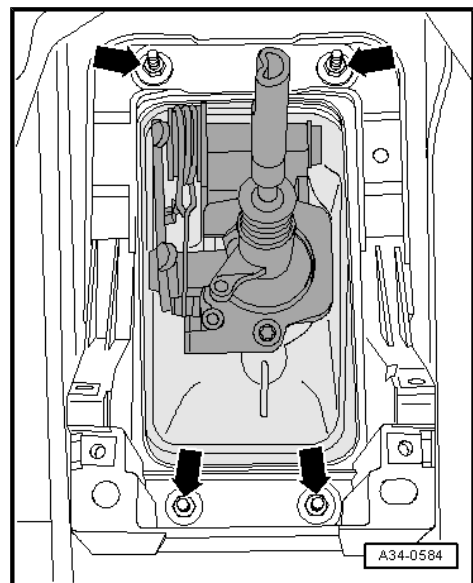
It may be necessary to remove the front exhaust pipe before the heat shield can be removed ⇒ Rep. gr. 26; Exhaust pipes/silencers; Exploded view - silencers.

- Swing down selector housing and remove together with cables.

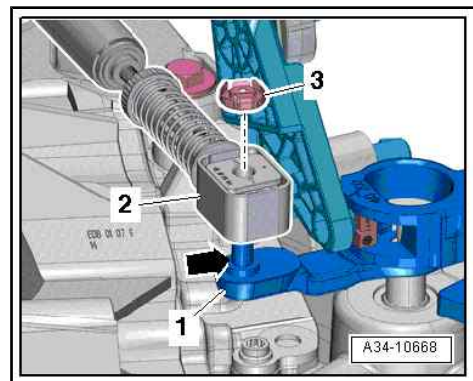
Installing selector mechanism

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

- Cables from selector mechanism to gearbox must run parallel.
- Insert selector mechanism and tighten nuts -arrows- to specified torque ⇒ [Item 12 \(page 60\)](#).



- 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.

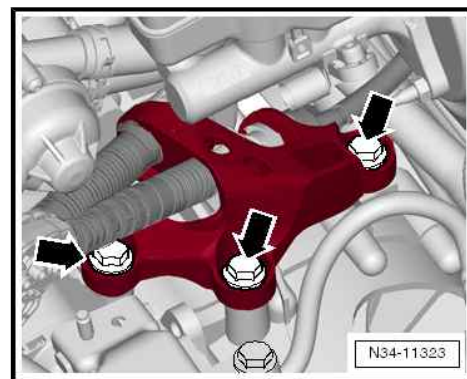




- Tighten bolts -arrows- for cable support bracket on gearbox to specified torque ⇒ [Item 9 \(page 55\)](#) .
- Adjust selector mechanism ⇒ [page 65](#) .
- Install centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Install gear knob with gear lever boot ⇒ [page 61](#) .

Vehicles up to model year 2014:

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



Tightening torques

- ◆ Heat shield, tunnel cross-pieces, underbody trim ⇒ General body repairs, exterior; Rep. gr. 66 ; Underbody trim; Exploded view - underbody trim
- ◆ ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers

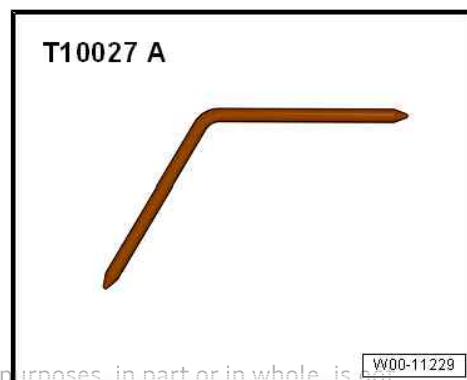
1.7 Adjusting selector mechanism

Special tools and workshop equipment required

- ◆ Removal wedge - 3409-



- ◆ Locking pin - T10027A-



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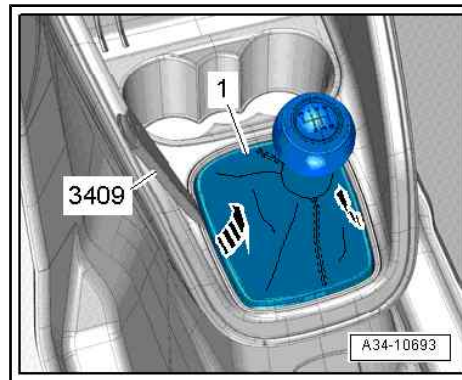
Adjustment conditions

- 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.

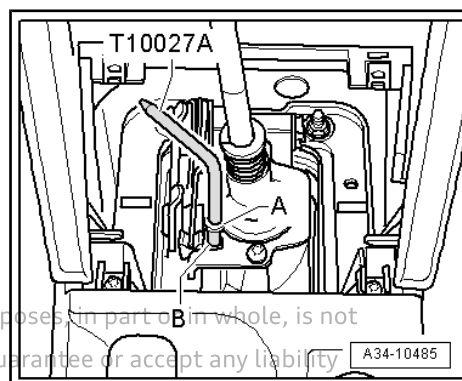


- If fitted, pull noise insulation slightly to one side.
- Fix gear lever in position with locking pin - T10027A- .

Vehicles up to model year 2014:

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

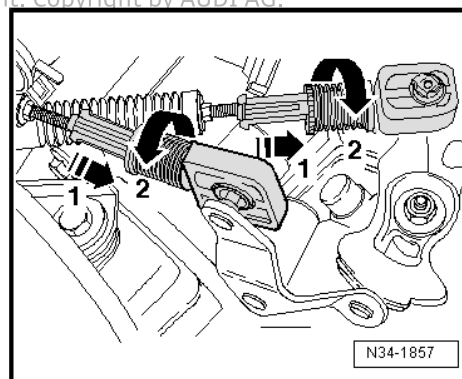
All vehicles (continued):



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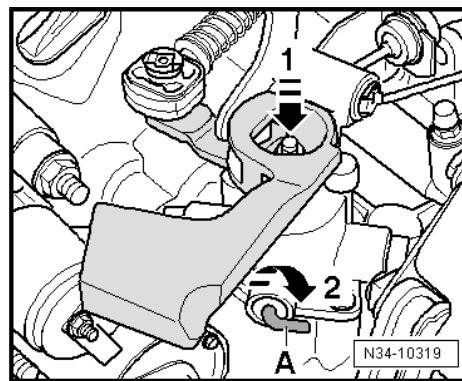
Release cable end-pieces for gear selector cable and gate selector cable as follows:

- 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.



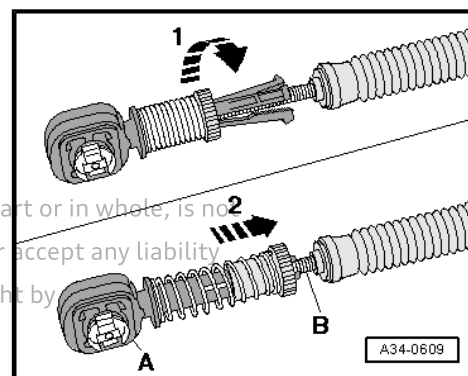


- Turn locking sleeves on gear selector cable and gate selector cable as far as they will go in direction of -arrow 1-.
- The spring presses the locking sleeve into normal position in direction of -arrow 2-.



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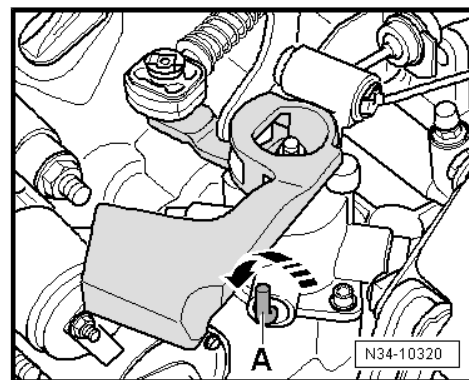
Cable adjustment is now complete.



- 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.

- Install gear lever boot.

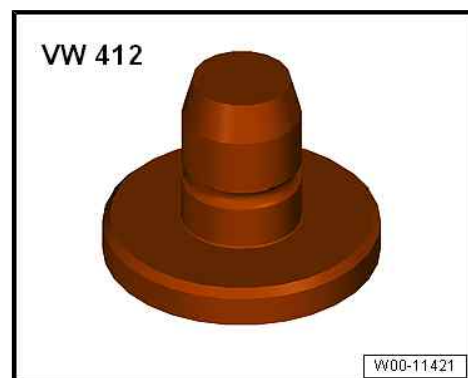
Vehicles up to model year 2014:

- 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-

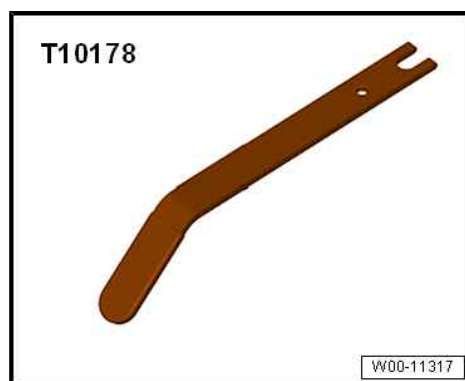


◆ Adapters - 10 - 222 A /25-

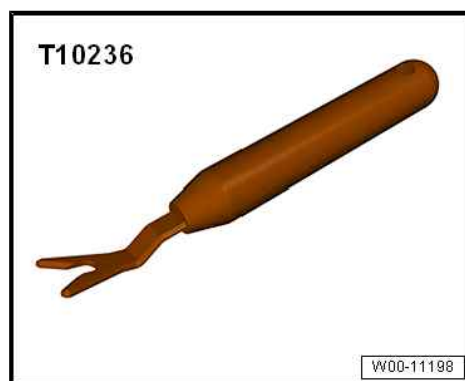
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◆ Assembly tool - T10178-



◆ Release tool - T10236-



◆ Wedge - T10357-

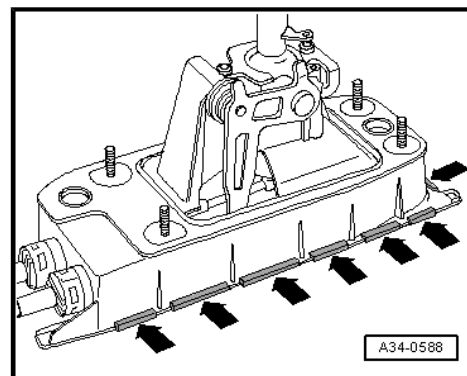


◆ Counter-support Kukko series 16



Dismantling

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

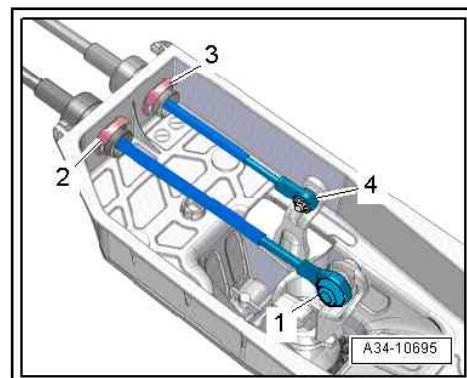


- Detach retaining clip -2-.
- Press off gear selector cable -1- using release tool - T10236- .

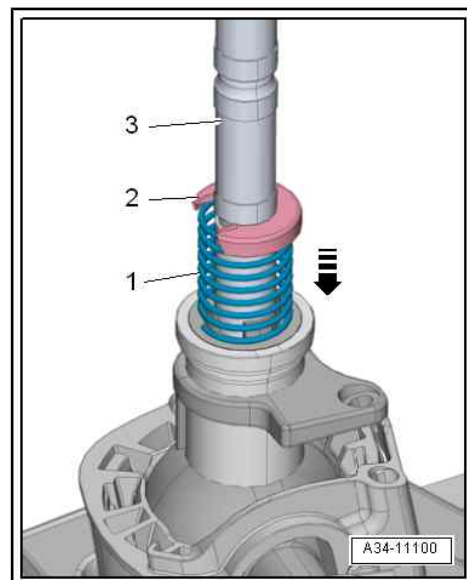


Note

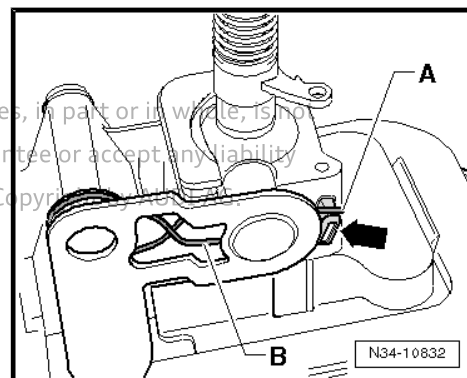
Disregard items -3 and 4-.



- 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.



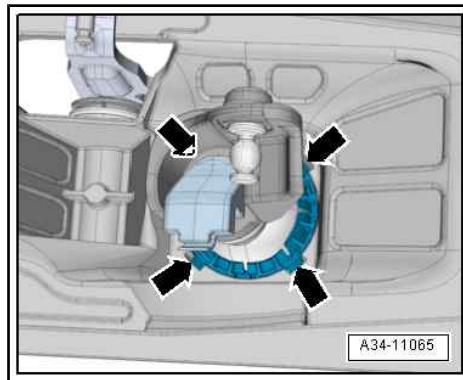
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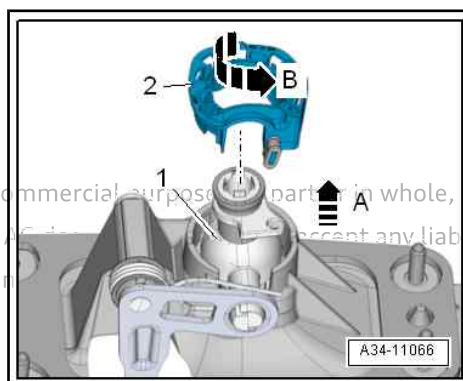
Note

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.



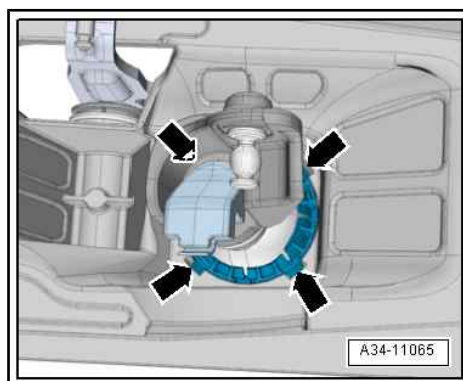
Assembling

Assembly is performed in reverse sequence; note the following:

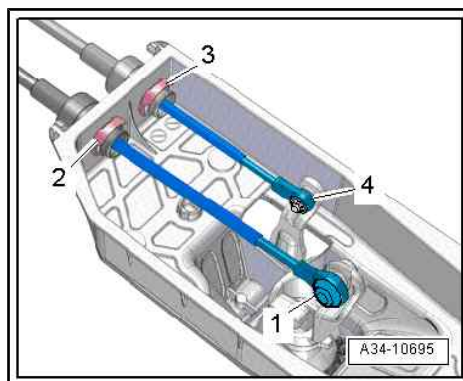


Note

- ◆ *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.



- 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

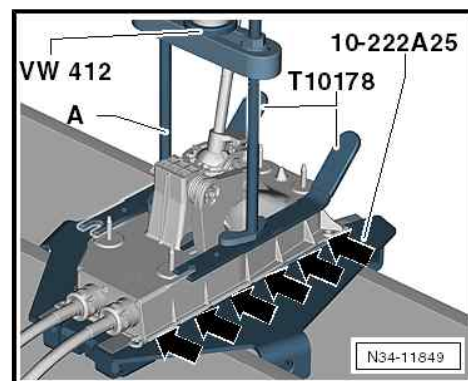
Risk of damage to selector housing and floor plate.

- ◆ *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

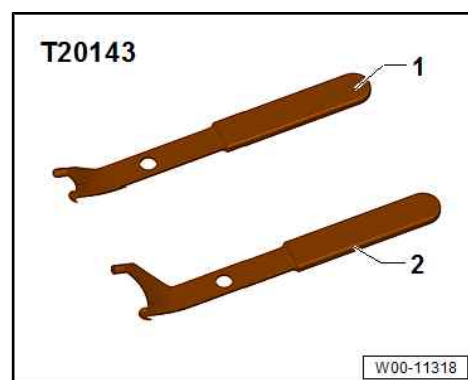
- ◆ Tube - VW 423-



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- ◆ Extractor tool - T20143/1-



Procedure

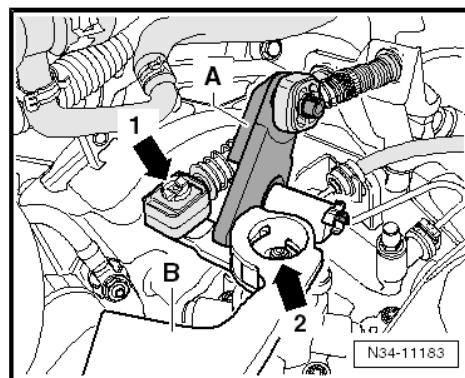
Vehicles up to model year 2014:

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

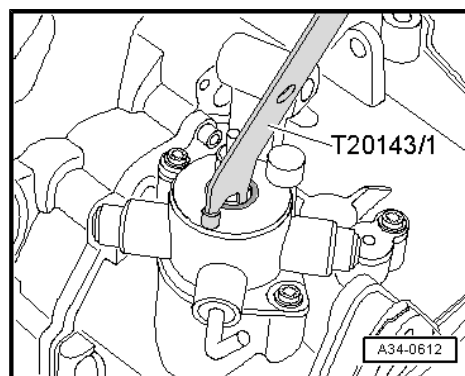


All vehicles (continued):

- Remove securing clip -1-.
- Detach gear selector cable from gearbox selector lever -B-.
- Remove gate relay lever -A- from gearbox together with cable end-piece ⇒ [page 58](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.



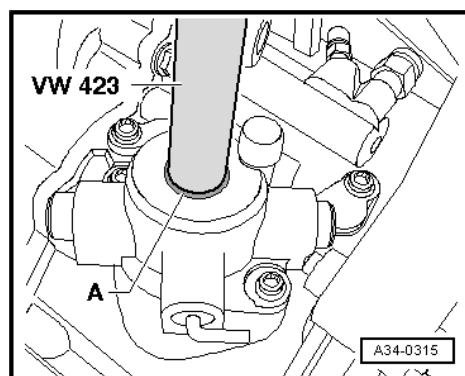
- Pry out oil seal using extractor tool - T20143/1- .



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

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

- Install gearbox selector lever and gate relay lever
⇒ [page 55](#) .



Note

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

Vehicles up to model year 2014:

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

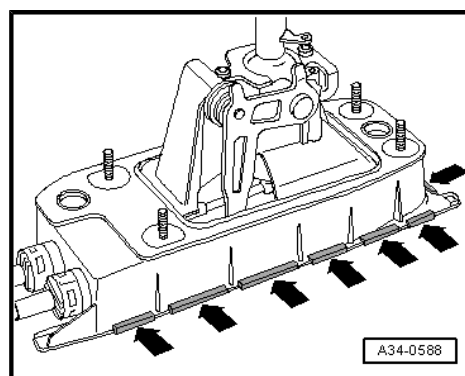
Tightening torques

- ♦ ⇒ [“1.3 Exploded view - selector cables” page 55](#)

1.10 Removing and installing selector cable

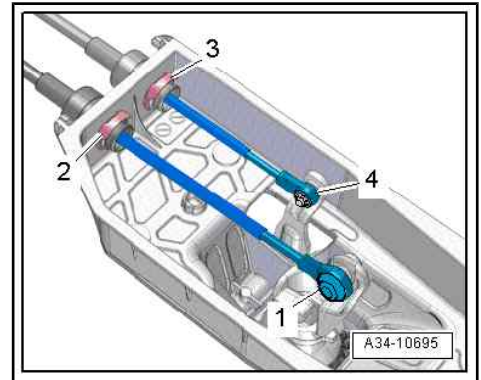
Removing

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



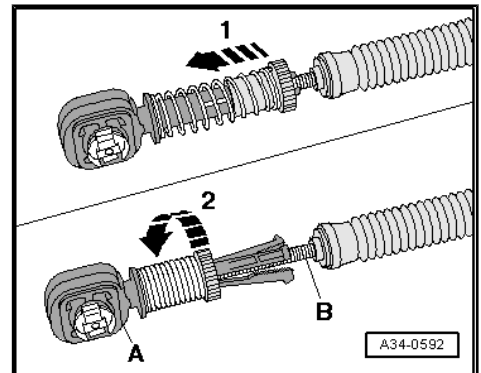


- Detach retaining clips -2, 3-.
- Press off gear selector cable -1- and gate selector cable -4- using a screwdriver.



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.



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

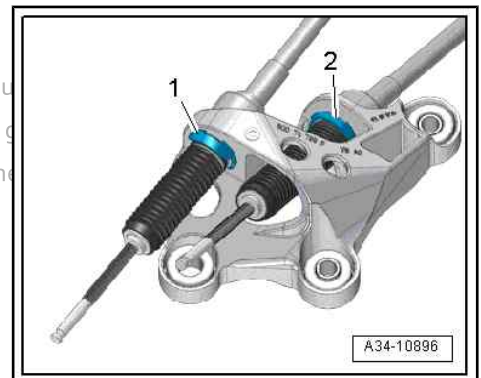
Installing

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

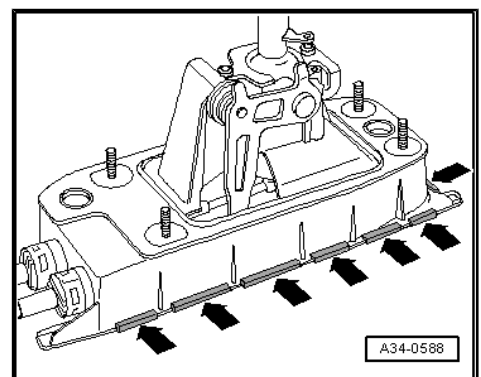


Note

Renew gate selector cable if bush ⇒ [Item 3 \(page 55\)](#) is damaged.



- Fit gasket and install floor plate -arrows- ⇒ [page 71](#) .
- Install selector mechanism ⇒ [page 64](#) .
- Adjust selector mechanism ⇒ [page 65](#) .





2 Removing and installing gearbox

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

⇒ [“2.2 Installing gearbox”, page 92](#)

⇒ [“2.3 Tightening torques for gearbox”, page 95](#)

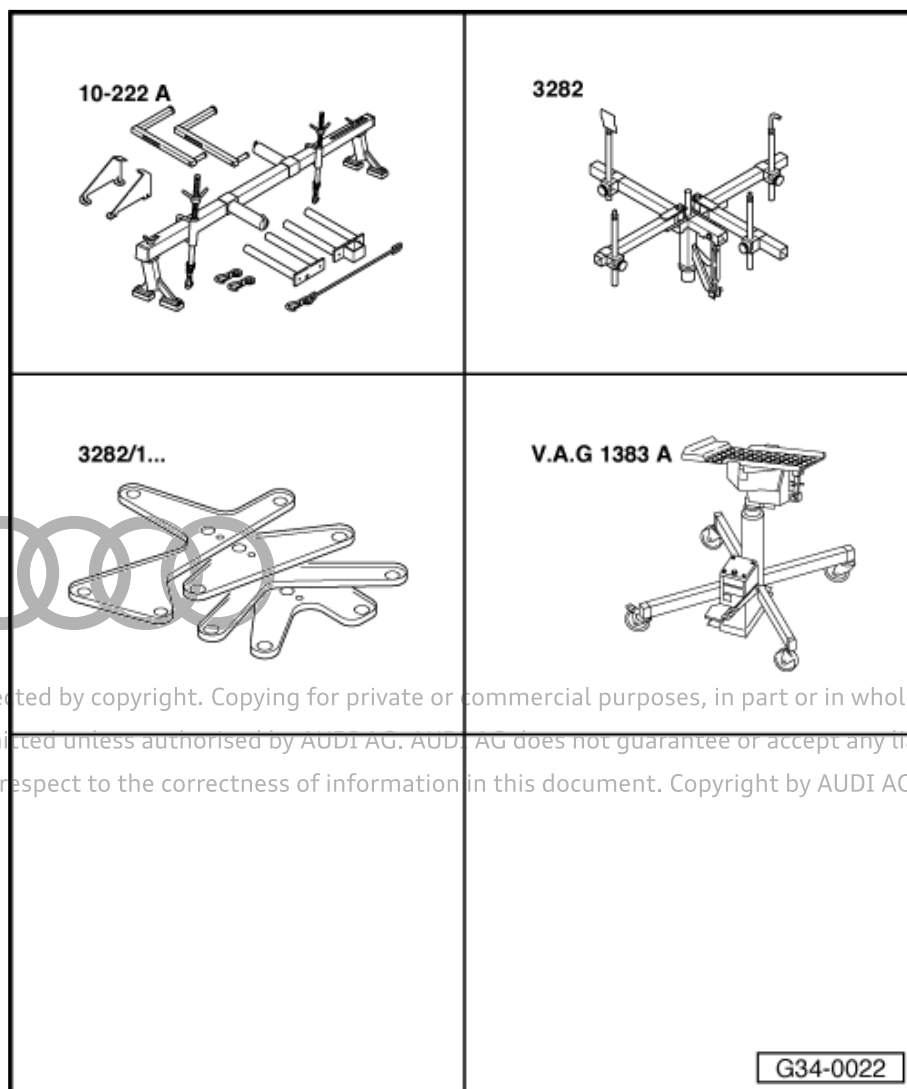
2.1 Removing gearbox

⇒ [“2.1.1 Removing gearbox - vehicles with 1.4 ltr. TFSI engine \(EA111\), up to model year 2014”, page 74](#)

⇒ [“2.1.2 Removing gearbox - vehicles with 1.4 ltr. TFSI engine \(EA211\), from model year 2015 onwards”, page 82](#)

2.1.1 Removing gearbox - vehicles with 1.4 ltr. TFSI engine (EA111), up to model year 2014

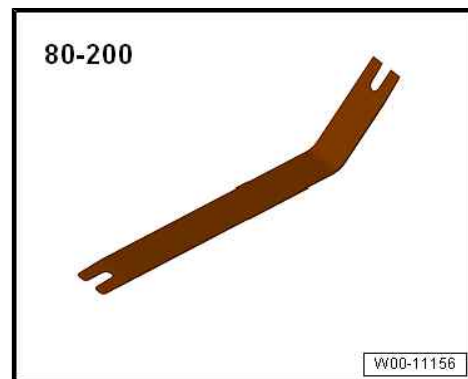
Special tools and workshop equipment required



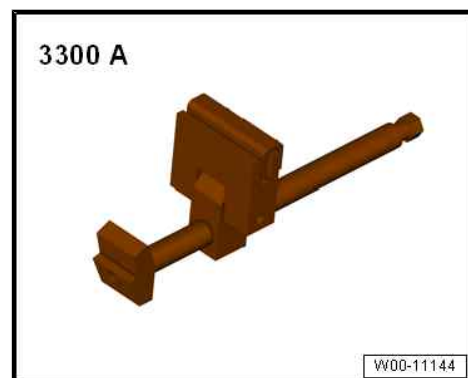
- ◆ Support bracket - 10 - 222 A-
- ◆ Gearbox support - 3282-
- ◆ Adjustment plate - 3282/31-
- ◆ Engine and gearbox jack - V.A.G 1383 A-



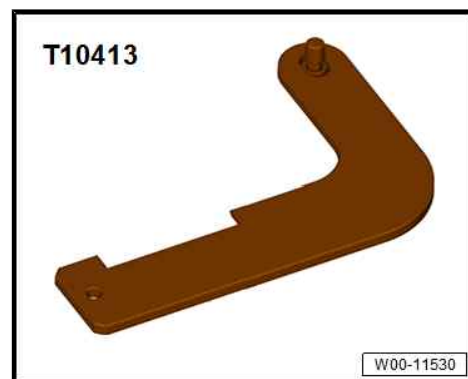
- ◆ Removal lever - 80 - 200-



- ◆ Engine support - 3300 A-



- ◆ Support plate - T10413-



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 engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



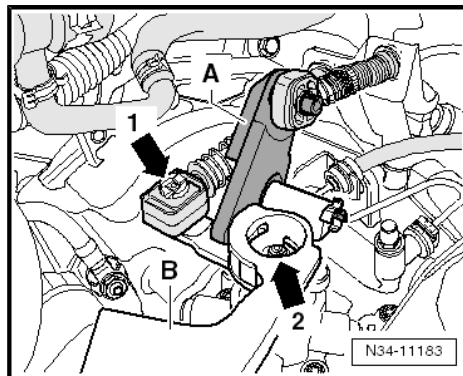
Caution

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

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

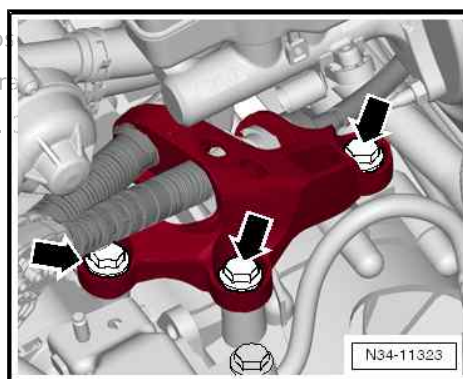


- With ignition switched off, disconnect earth wire ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Remove securing clip -1-.
- Detach gear selector cable from gearbox selector lever -B-.
- Remove gate relay lever -A- from gearbox together with cable end-piece ⇒ [page 58](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.



- Detach cable support bracket from gearbox -arrows- and tie up.

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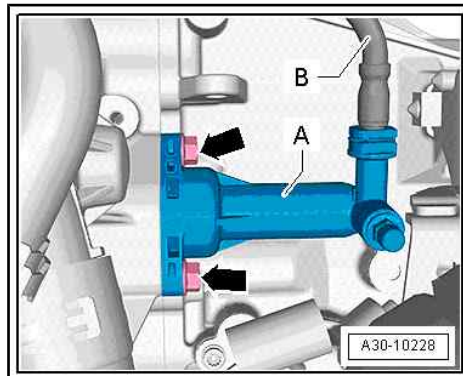
- Remove bolts -arrows- and detach clutch slave cylinder -A- with pipe/hose assembly -B- and tie up to one side; do not disconnect pipes.



Caution

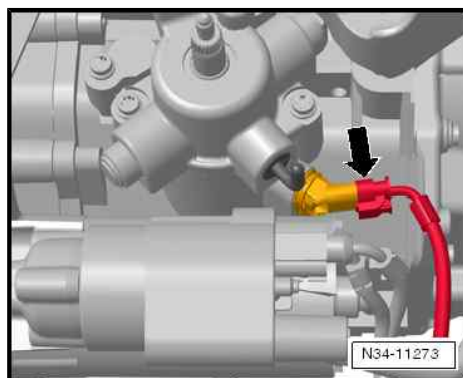
Risk of irreparable damage to clutch slave cylinder.

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



Vehicles with start/stop system:

- Unplug electrical connector -arrow- from gearbox neutral position sender - G701- .





All vehicles (continued):

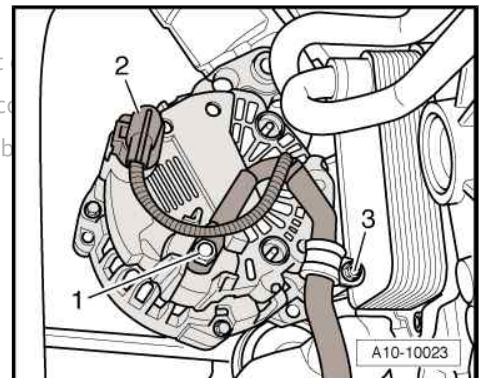
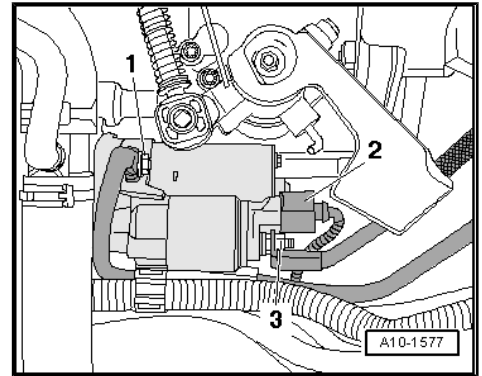
- Disconnect electrical wires -2- and -3- at starter and move them clear.
- Remove upper securing bolt -1- for starter.
- Remove upper engine/gearbox securing bolts.



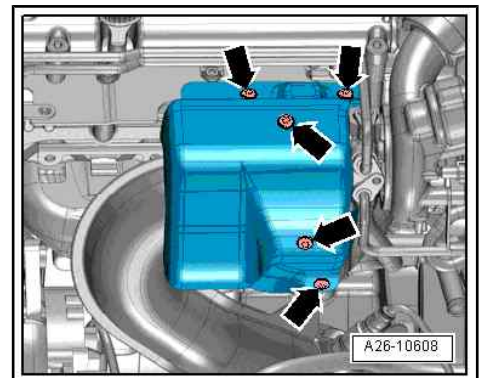
- Detach electrical connector -2- from alternator.

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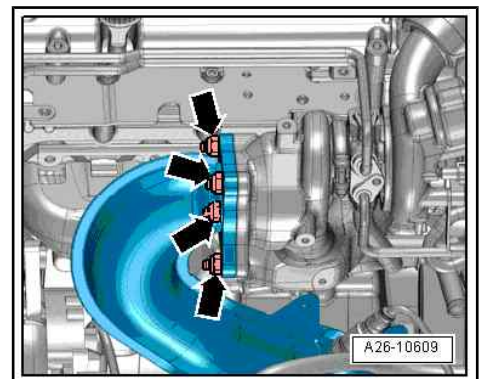
Note
Disregard items marked -1- and -3-.



- Remove bolts -arrows- and detach heat shield for turbocharger.



- Unscrew nuts -arrows- for catalytic converter.
- Move electrical wiring harness going to alternator clear at catalytic converter.



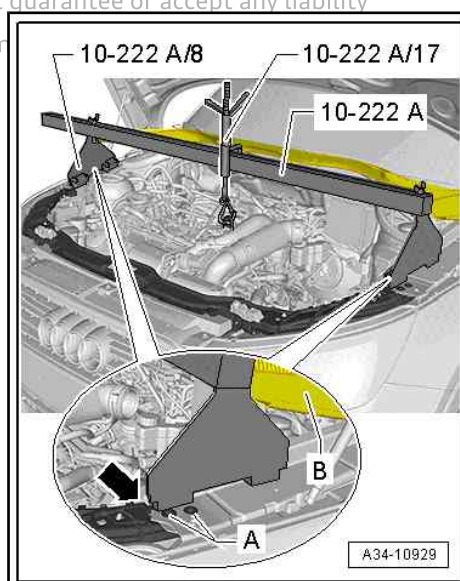
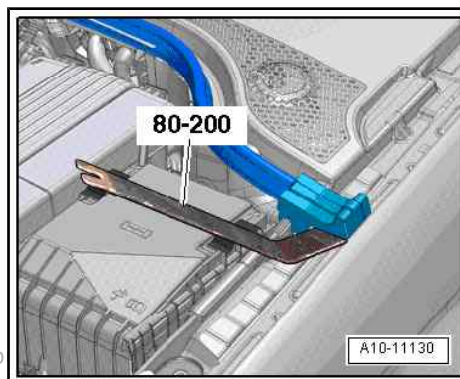


- Lever clips off sealing elements using removal lever - 80 - 200- and detach sealing elements on both sides.

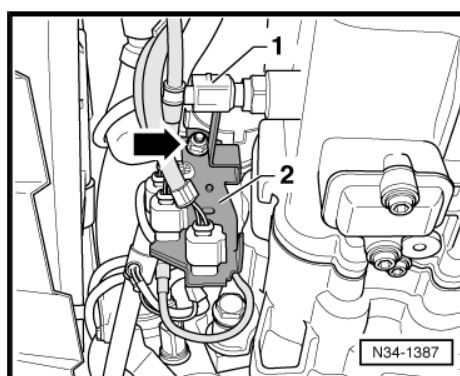
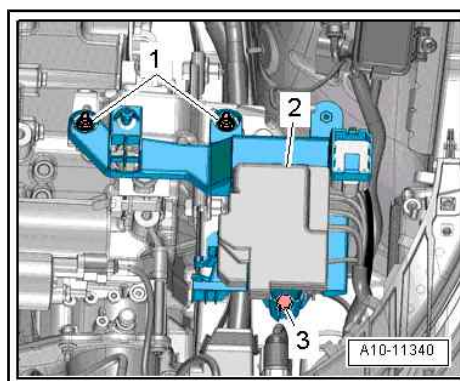


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- Set up support bracket - 10 - 222 A- on wing mounting flanges, as shown in illustration.
- Position both adapters - 10 - 222 A /8- behind lock carrier connection -arrow- and next to bolts -A-.
- Plenum chamber cover -B- will now rest on adapters - 10 - 222 A /8- .
- Engage hook of spindle -10 - 222 A /11- in engine lifting eye (left-side).
- Take up weight of engine with spindle; do not lift.

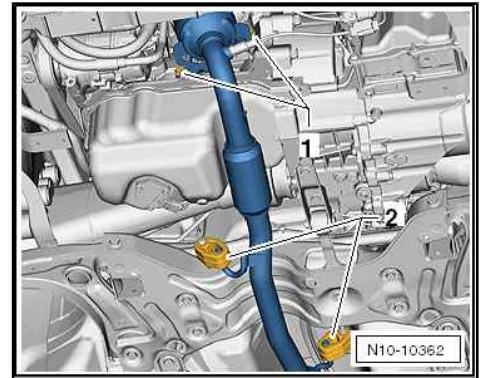


- Remove nuts -1- and bolt -3- and press electronics box -2- clear to one side.
- Raise vehicle.
- Remove front left wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Remove radiator cowl ⇒ Rep. gr. 19 ; Radiators/radiator fans; Removing and installing radiator cowl .
- Unplug electrical connector -1- at reversing light switch - F4- .
- Unplug electrical connectors and disengage from bracket -2-.
- Unscrew nut -arrow- and detach bracket -2-.
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter .

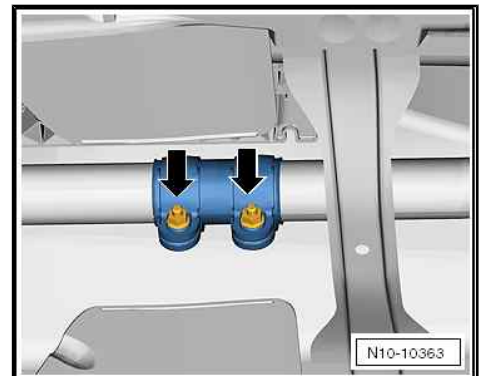




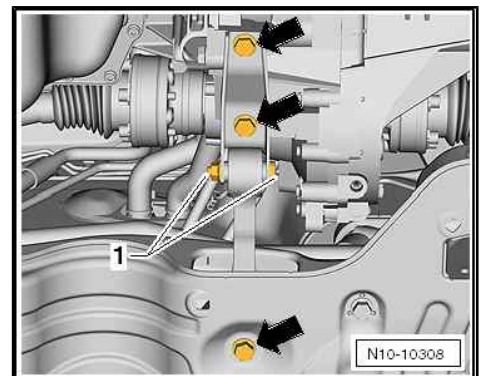
- Remove bolts -1-.
- Press rubber mountings -2- for exhaust system off pins.



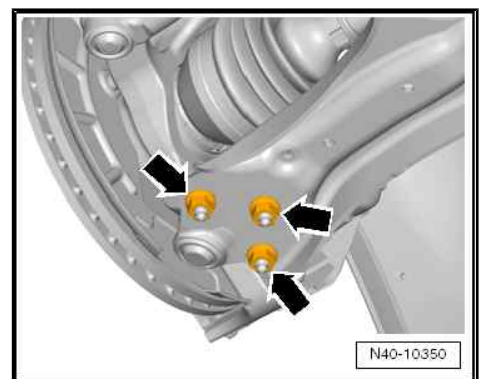
- Loosen nuts -arrows- and move clamp towards rear.
- Detach catalytic converter and centre silencer downwards.



- Remove bolts -arrows- and detach pendulum support.
- Do NOT loosen bolted connection -1-.
- Unbolt drive shafts (left and right) from flange shafts on gearbox.



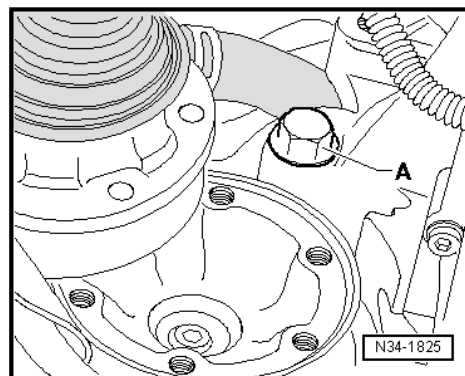
- Remove nuts -arrows- securing swivel joint (left-side).
- Swivel wheel bearing housing (left-side) outwards. At the same time, pull out drive shaft (left-side) between subframe and gearbox.
- Swivel drive shaft (left-side) into wheel housing and secure to suspension strut with cord or similar. Do not damage paint on drive shaft.
- Tie-up drive shaft (right-side) as high as possible with cord or similar. Do not damage paint on drive shaft.



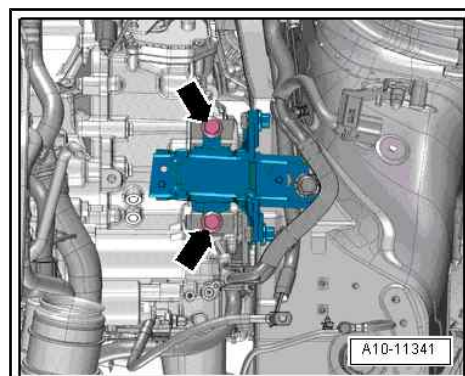
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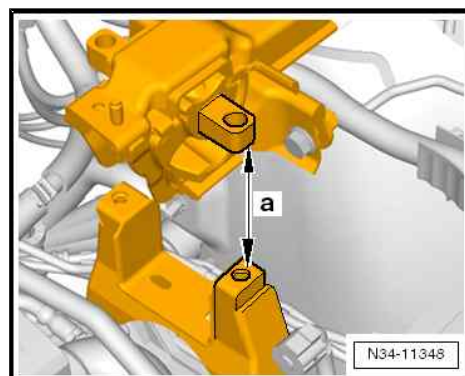
- Remove bolt -A- securing engine to gearbox above flange shaft (right-side).
- Remove bolts (bottom) securing engine to gearbox.



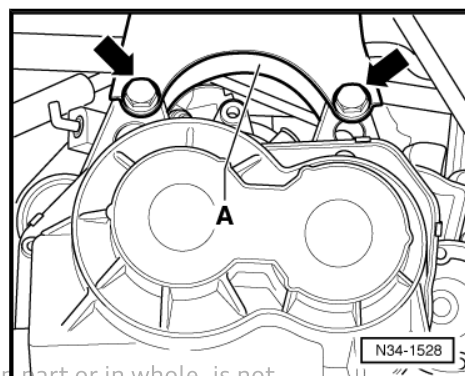
- Remove bolts -arrows- securing gearbox mounting.



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



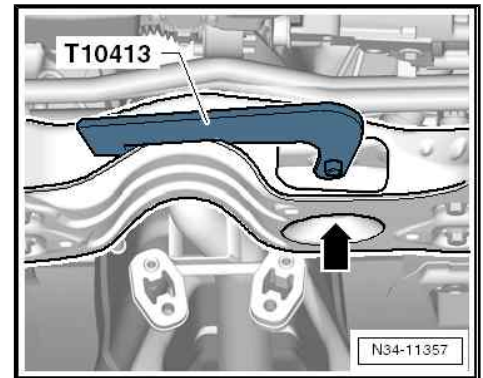
- Dimension -a- = 50 mm
- Gearbox must not make contact with subframe in area of differential.
- Bolts -arrows- securing gearbox bracket -A- must be accessible.
- Pay attention to coolant hoses between engine and heat exchanger for heater.
- Detach gearbox bracket -A- from gearbox -arrows-.



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- Secure support plate - T10413- to subframe -arrow-.



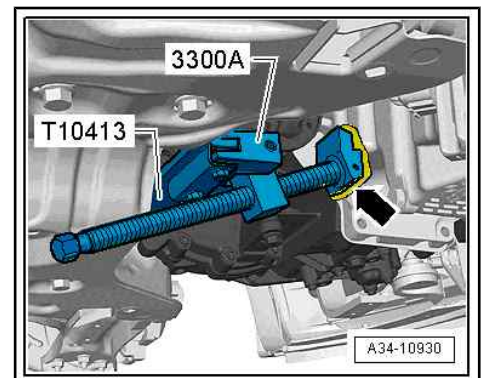
- Then secure engine support - 3300 A- to support plate .



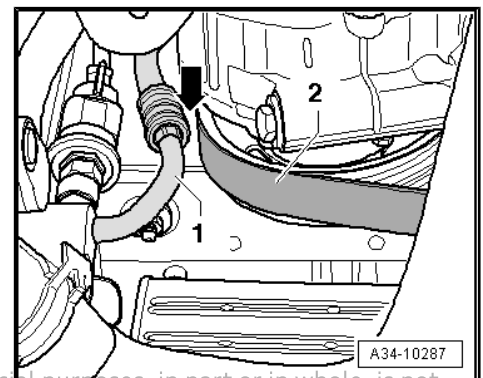
Note

Place flat rubber block -arrow- between the two to protect sump.

- Press engine towards front of vehicle by approx. 65 mm using spindle of engine support ; note the following:



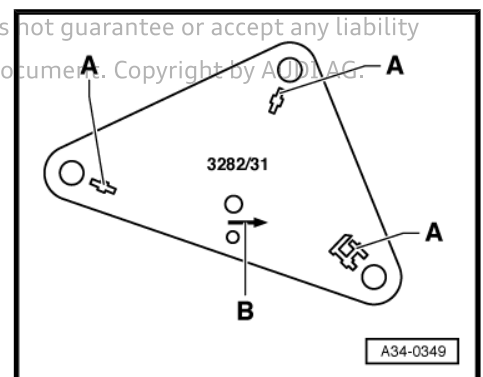
- Alternator and air conditioner compressor -2- must not make contact with refrigerant line -1- -arrow-.



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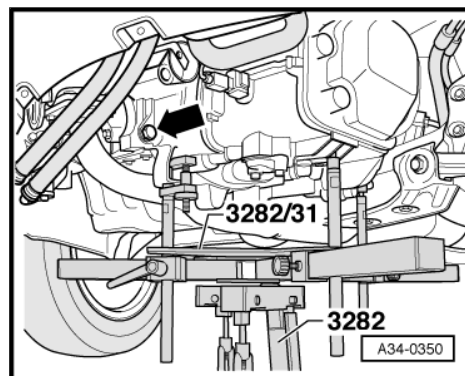
To remove gearbox 02U, set up gearbox support - 3282- with adjustment plate - 3282/31- .

- 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 shown 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.

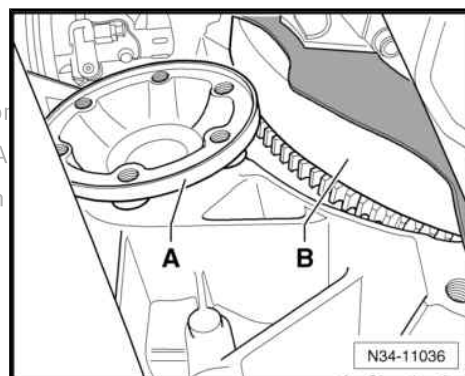




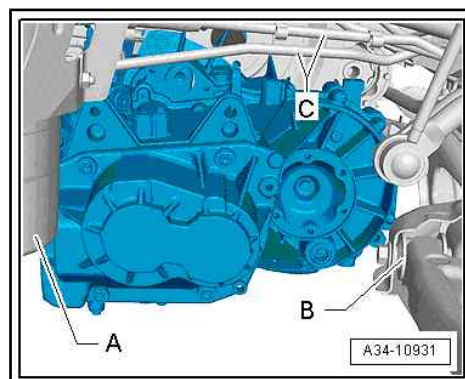
- Align adjustment plate - 3282/31- parallel to gearbox and lock safety support on gearbox.
- Support gearbox from underneath by raising engine and gearbox jack - V.A.G 1383 A- .
- Remove the last engine/gearbox securing bolt -arrow-.
- Pull gearbox off dowel sleeves and slightly away from engine.



- Then carefully guide gearbox with flange shaft (right-side) -A- past flywheel/intermediate plate -B- as illustrated.
- Then lower gearbox in area of cover for gearbox housing via spindles of gearbox support - 3282- .



- Swivel gearbox out further and lower it carefully, guiding it past motor/pump unit -A- for power steering and subframe -B-. Pay attention to power steering pipes -C-.



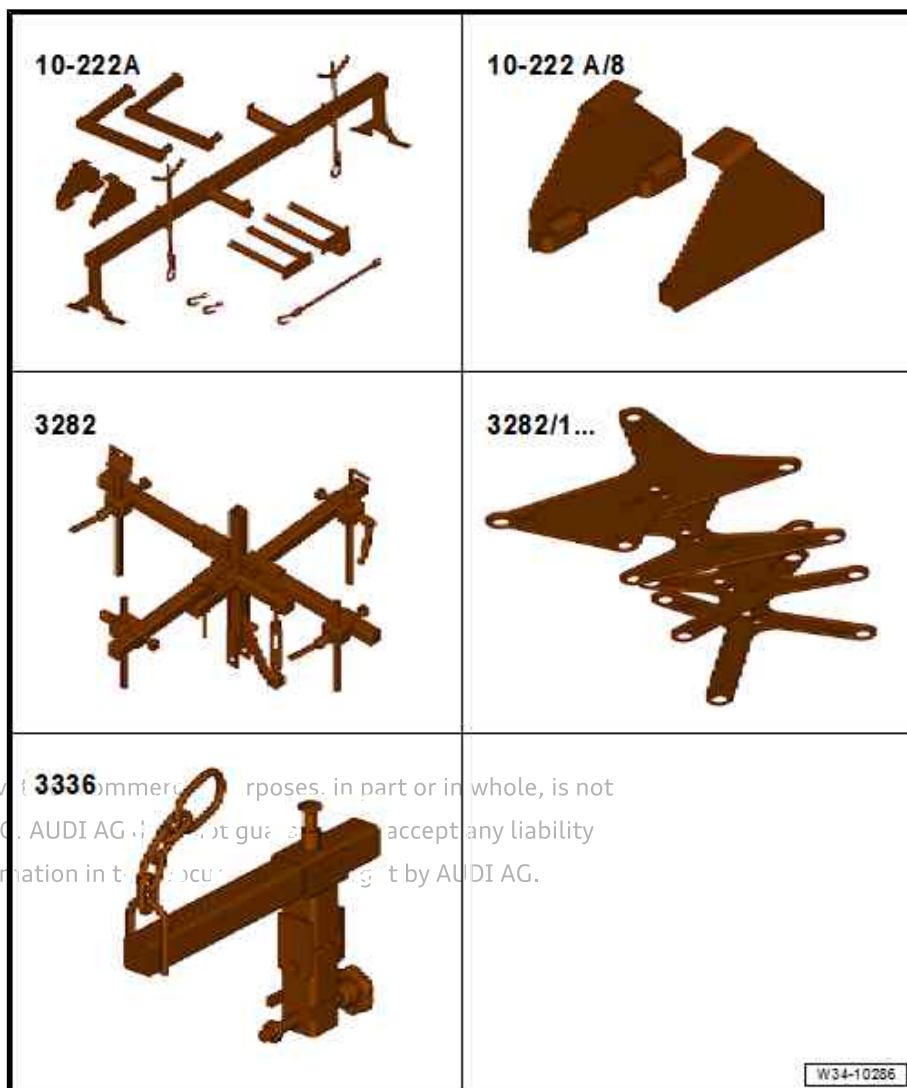
2.1.2 Removing gearbox - vehicles with 1.4 ltr. TFSI engine (EA211), from model year 2015 onwards



Special tools and workshop equipment required



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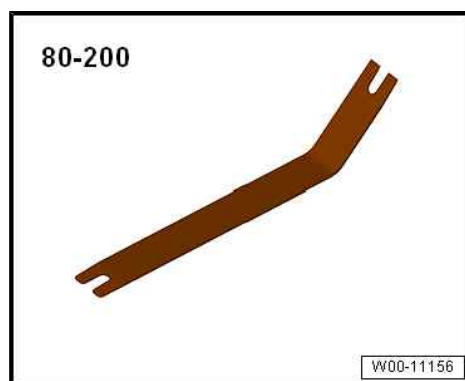
- ◆ Support bracket - 10 - 222 A-
- ◆ Spindle - 10-222A/11-
- ◆ Spacer tube - 10-222A/17-
- ◆ Adapters - 10 - 222 A /8-
- ◆ Gearbox support - 3282-
- ◆ Adjustment plate - 3282/69-
- ◆ Support elements for gearbox (select appropriate element when fitting adjustment plate onto gearbox support)
- ◆ Gearbox lifting tackle - 3336- for transporting gearbox



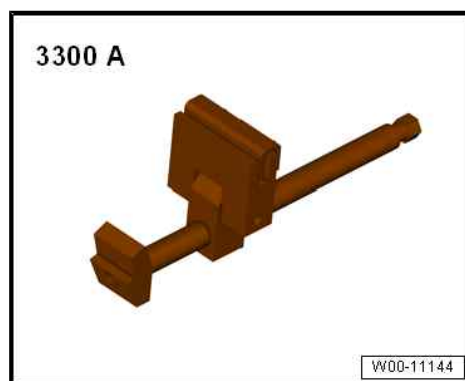
- ◆ Engine and gearbox jack - V.A.G 1383 A-



- ◆ Removal lever - 80 - 200-



- ◆ Engine support - 3300 A-



- ◆ Support plate - T10413-



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Procedure



Note

Fit all cable ties in the original positions when installing.

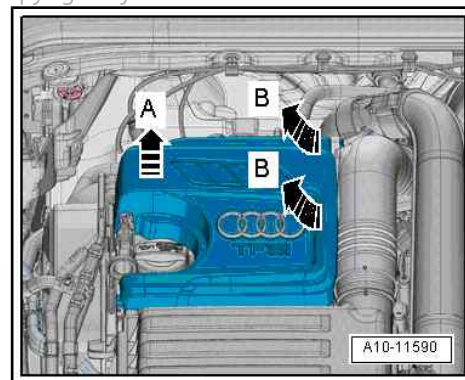
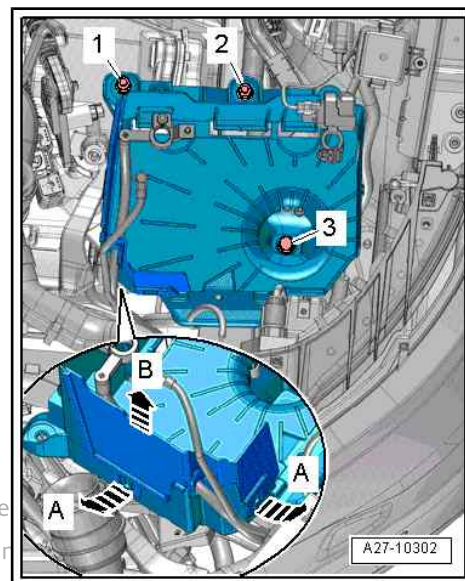


- With ignition switched off, disconnect earth wire ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .

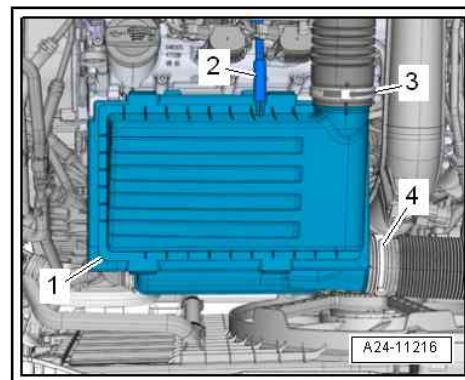


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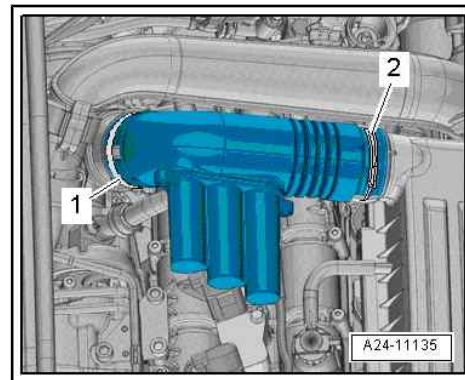
- Remove engine cover panel ⇒ Rep. gr. 10 ; Engine cover panel; Removing and installing engine cover panel .



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

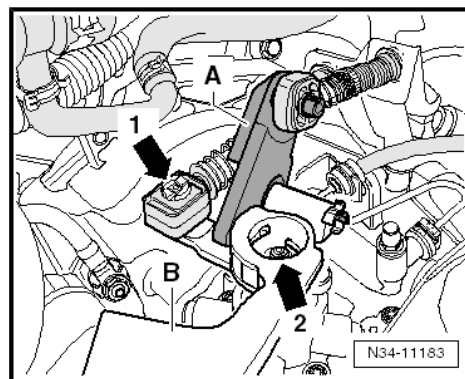


- Release hose clip -1- and remove air pipe.

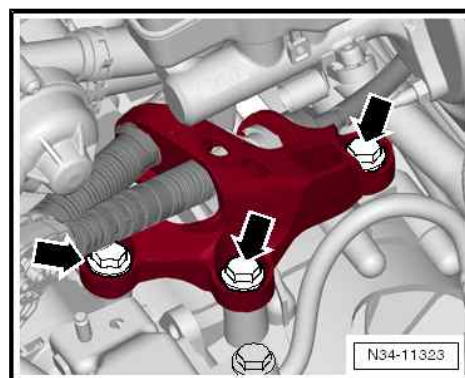




- Detach securing clip -1- and pull off gear selector cable.
- Remove gate relay lever -A- from gearbox together with cable end-piece ⇒ [page 58](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.



- Detach cable support bracket from gearbox -arrows- and tie up.



- Remove bolts -arrows- and detach clutch slave cylinder -A- with pipe/hose assembly -B- and tie up to one side; do not disconnect pipes.

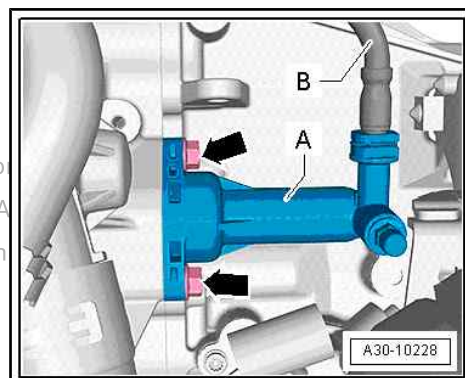


Caution

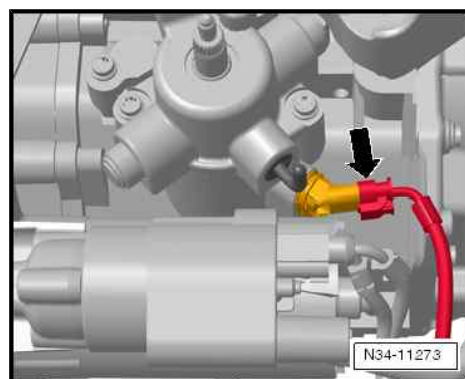
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Risk of irreparable damage to clutch slave cylinder. AUDI AG. AUDI A1 2011. 6-speed manual gearbox 02U. Edition 11.2019.

◆ **Do not operate clutch pedal with slave cylinder removed.** Information in this manual is for reference only. It is not a substitute for the actual vehicle. Always use the latest version of this manual.

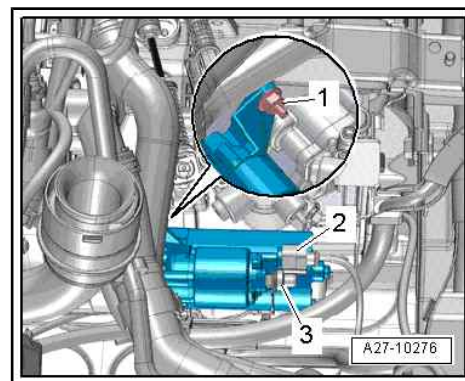


- Unplug electrical connector -arrow- from gearbox neutral position sender - G701- .

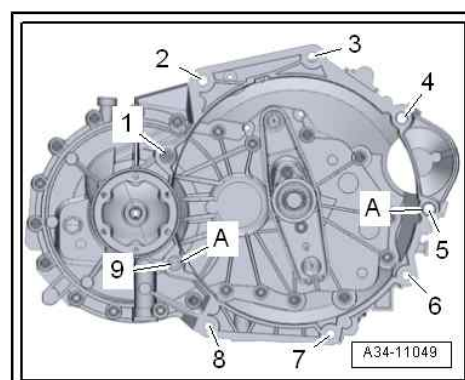




- Unplug electrical connector -2-.
- Detach cover for B+ wire -3-.
- Remove nut and move B+ wire clear.
- Remove upper securing bolt -1- for starter.

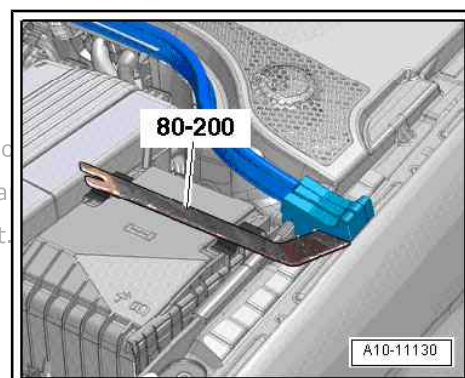


- Remove engine/gearbox connecting bolts (top) -2- and -3-.

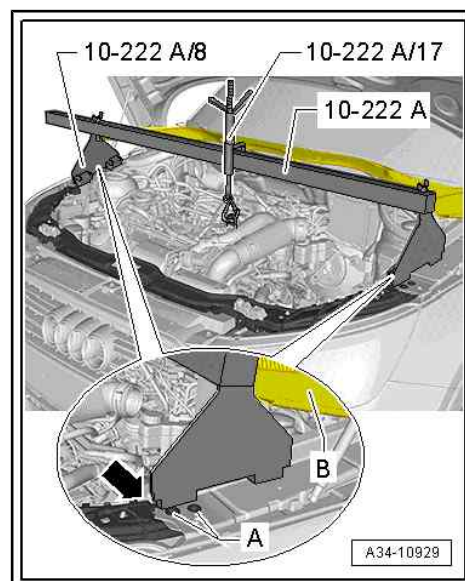


- Lever clips off sealing elements using removal lever - 80 - 200- and detach sealing elements on both sides.

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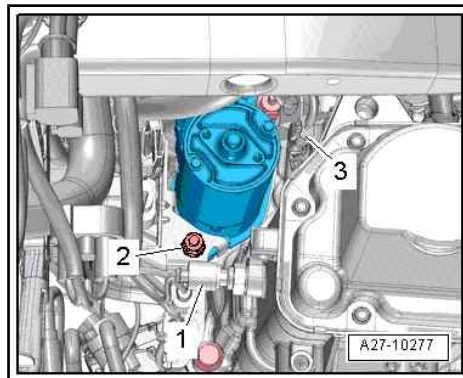


- Set up support bracket - 10 - 222 A- on top edges of body flanges (left and right) and on longitudinal member (left-side), as shown in illustration.
- Position both adapters - 10 - 222 A /8- behind lock carrier connection -arrow- and next to bolts -A-.
- Plenum chamber cover -B- will now rest on adapters - 10 - 222 A /8- .
- Engage hook of spindle -10 - 222 A /11- in engine lifting eye (left-side).
- Take up weight of engine with spindle; do not lift.
- Raise vehicle.
- Remove front left wheel.
- 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) .

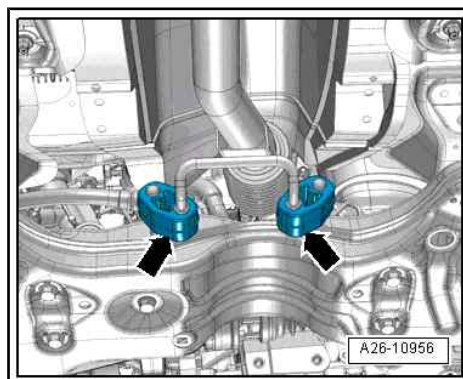




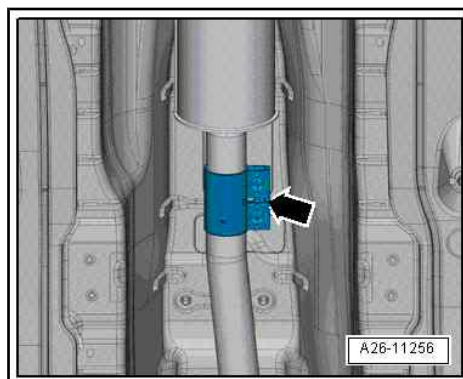
- Unplug electrical connector -1- at reversing light switch - F4- .
- Remove nut -2- and detach bracket for electrical wiring.
- Remove bolt (bottom) and detach starter.



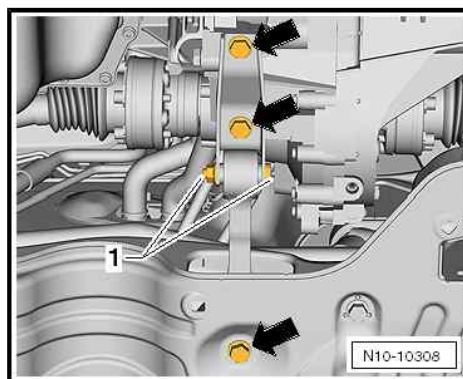
- Pull off rubber mountings -arrows- for front exhaust pipe.



- Loosen clamp -arrow- and push towards rear.
- Tie up front exhaust pipe on underbody.



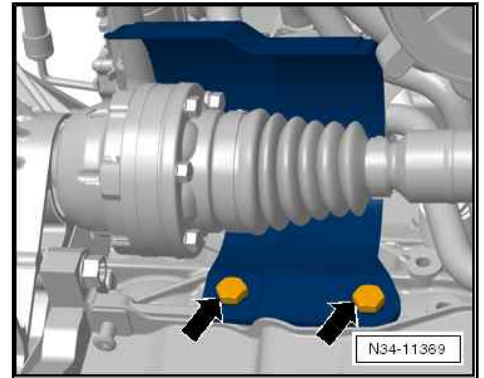
- Remove bolts -arrows- and detach pendulum support.
- Do NOT loosen bolted connection -1-.



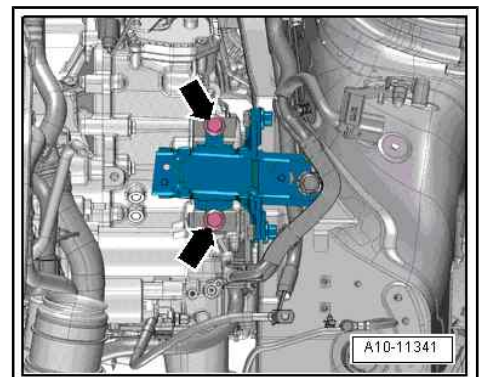
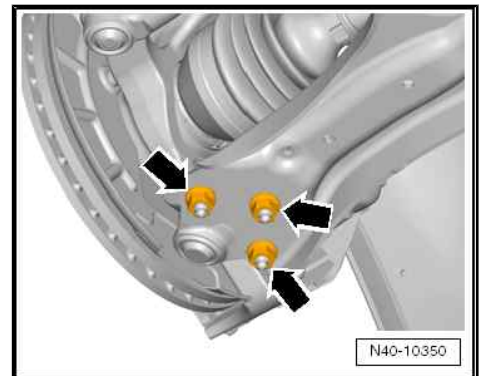
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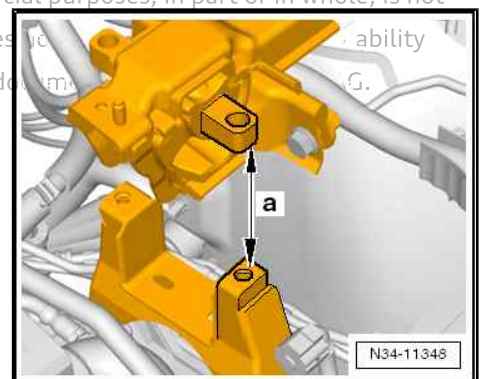
- Remove bolts -arrows- and detach heat shield for drive shaft (right-side).
- Unbolt drive shafts (left and right) from flange shafts on gearbox.



- If fitted, unscrew nut on bracket for front left vehicle level sender - G78- .
- Remove nuts -arrows- securing swivel joint (left-side).
- Swivel wheel bearing housing (left-side) outwards. At the same time, pull out drive shaft (left-side) between subframe and gearbox.
- Swivel drive shaft (left-side) into wheel housing and secure to suspension strut with cord or similar. Do not damage paint on drive shaft.
- Tie-up drive shaft (right-side) as high as possible with cord or similar. Do not damage paint on drive shaft.
- Remove bolts -arrows- securing gearbox mounting.



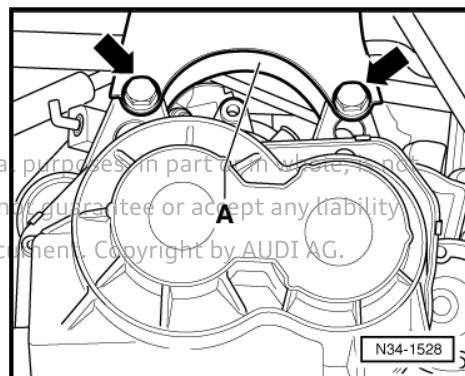
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- Lower engine/gearbox assembly using spindle of support bracket - 10 - 222 A- until distance -a- is obtained between gearbox bracket and gearbox mounting.
 - Dimension -a- = 50 mm
 - Pay attention to wires and coolant hoses between engine and heat exchanger for heater.



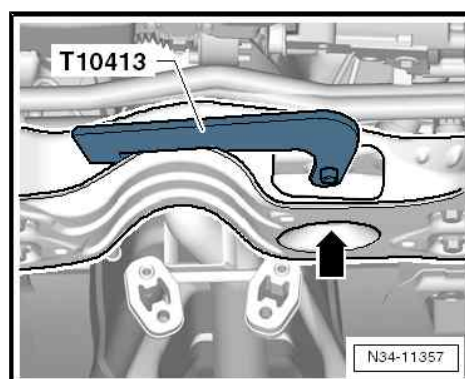


- Remove bolts -arrows- and detach gearbox support -A-.

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- Secure support plate - T10413- to subframe -arrow-.



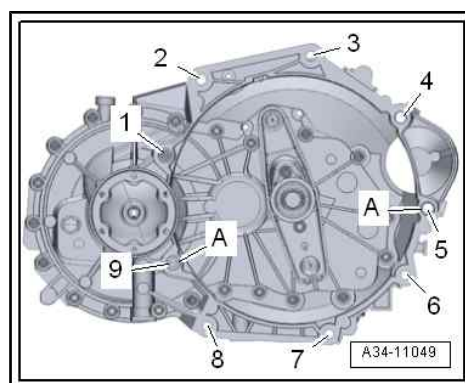
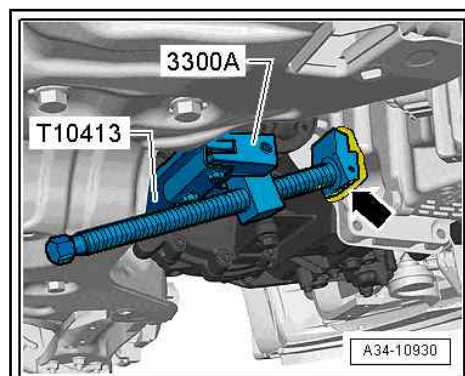
- Secure engine support - 3300 A- to support plate - T10413- .
- Apply engine support on engine directly next to gearbox.



Note

Place flat rubber block -arrow- between the two for protection.

- Press engine towards front of vehicle by approx. 60 mm using spindle of engine support ; ensure adequate clearance to radiator cowl.
- Remove bolts -6 ... 9- securing gearbox to engine.

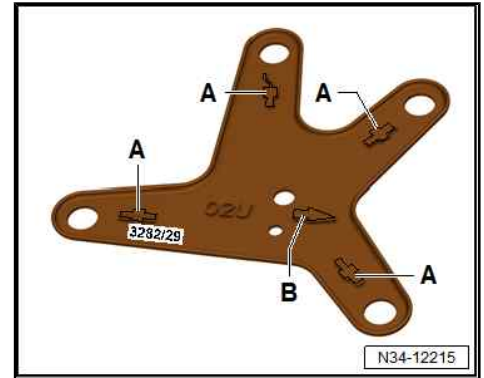




- Insert gearbox support - 3282- in engine and gearbox jack .

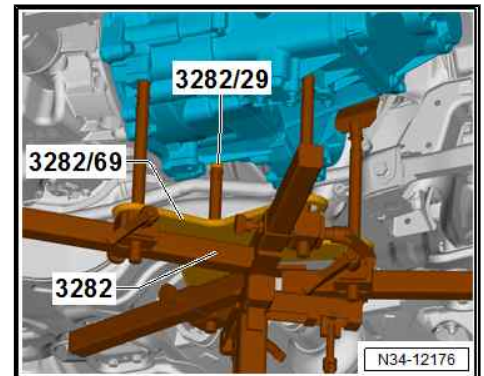
Set up gearbox support - 3282- with adjustment plate - 3282/69- to remove gearbox.

- Place adjustment plate - 3282/69- on gearbox support - 3282- (adjustment plate only fits in one position).
- Screw in 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.



The rods which the support elements are screwed into should be flush with the gearbox support - 3282- at the bottom.

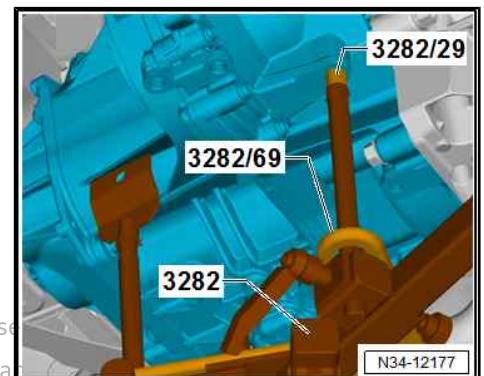
- Align adjustment plate parallel with gearbox.



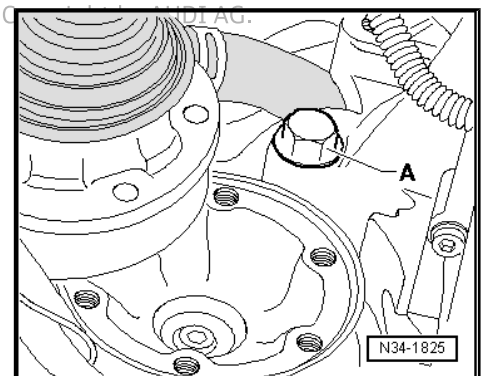
- Screw pin - 3282/29- into rear hole for bolt securing pendulum support to gearbox.
- Support gearbox from underneath by raising engine and gearbox jack - V.A.G 1383 A- .



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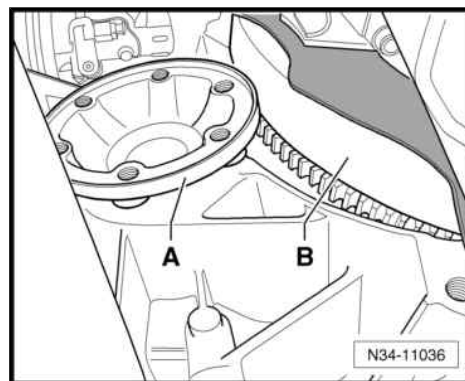


- Remove final bolt -A- securing engine to gearbox above flange shaft (right-side).
- Press gearbox off dowel sleeves.
- Detach gearbox from engine.





- Then carefully guide gearbox with flange shaft (right-side)
-A- past flywheel/intermediate plate -B- as illustrated.
- Then lower gearbox in area of cover for gearbox housing via spindles of gearbox support - 3282- .
- Swivel gearbox out further and lower carefully.



2.2 Installing gearbox

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



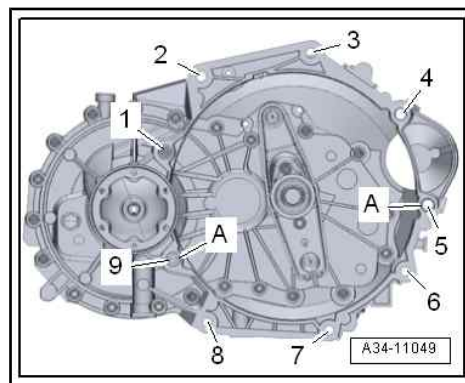
Note

- ◆ *Renew bolts tightened with specified tightening 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 whether dowel sleeves -A- for centring engine and gearbox are fitted in cylinder block; install missing dowel sleeves.



Note

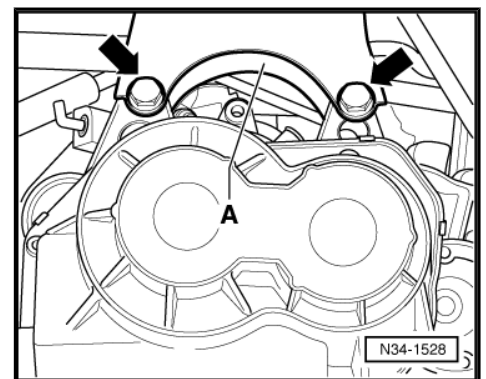
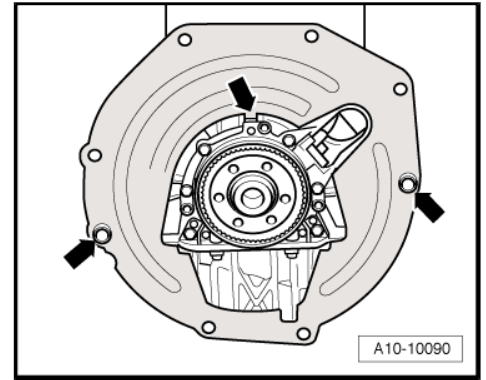
If the dowel sleeves are not fitted, this will lead to gear-change problems, clutch malfunction and in some cases gearbox noise (gears will make rattling noises).



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- Make sure that the intermediate plate is engaged on the sealing flange and fitted on the dowel sleeves -arrows-.
- Check clutch release bearing for wear and renew if necessary.
- Lubricate surface which contacts ball-head pin with grease - G 000 100- .
- Carefully raise gearbox using engine and gearbox jack - V.A.G 1383 A- and gearbox support - 3282- and move it into installation position.
- Bring gearbox into position.
- Install bottom engine/gearbox securing bolts.
- Detach gearbox support - 3282- with adjustment plate - 3282/31- from gearbox after bolting gearbox and engine together.
- Fit gearbox bracket -A- with new bolts -arrows- ⇒ [page 96](#) .
- Install top engine/gearbox securing bolts.



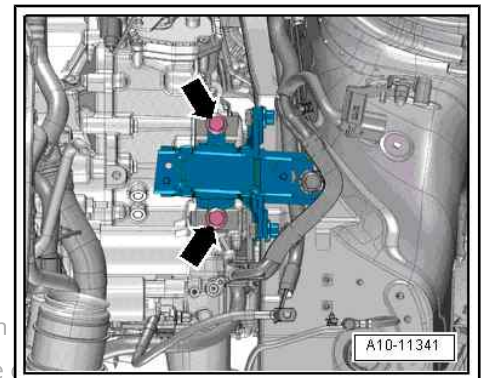
- Raise engine/gearbox assembly via spindle of support bracket - 10 - 222 A- .
- Align engine/gearbox assembly in installation position. To do so, raise engine/gearbox until gearbox bracket makes full contact with gearbox mounting.



Caution

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

◆ **Before fitting the bolts -arrows-, the gearbox bracket and the gearbox mounting must be aligned so they are parallel. If necessary, press gearbox up with engine and gearbox jack .**



- Bolt gearbox bracket to gearbox mounting ⇒ [page 96](#) .



WARNING

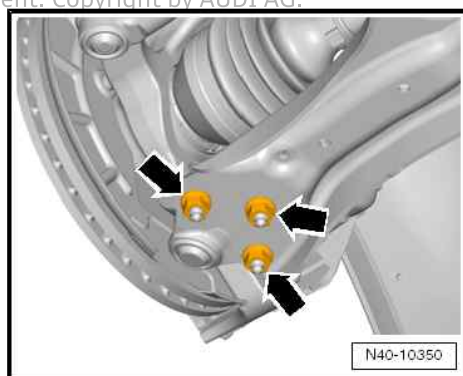
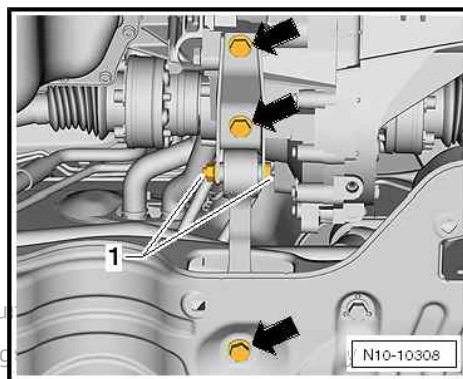
Do not remove support bracket - 10 - 222 A- until all bolts securing the left-hand engine/gearbox mounting have been tightened to the specified torque.



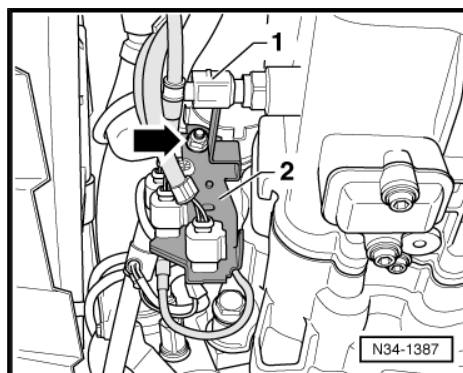
- Install pendulum support ⇒ Rep. gr. 10 ; Assembly mountings; Removing and installing pendulum support .
- Secure drive shafts to gearbox flange shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft .
- If previously fitted, bolt on heat shield for drive shaft (right-side) ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft .

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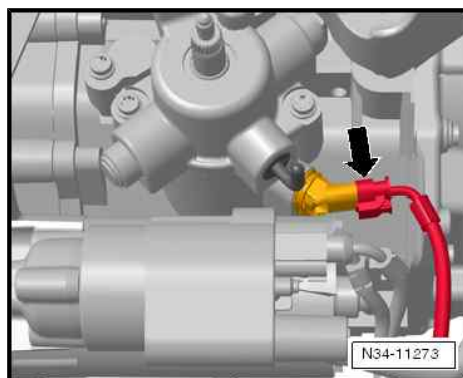
- Secure swivel joint (left-side) ⇒ Running gear, front-wheel drive and four-wheel drive; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint .
- Install exhaust system and perform stress-free alignment ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Exploded view - silencers .
- Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Exploded view - starter .



- Install retainer -2- on starter -arrow-.
- Plug connector -1- onto reversing light switch - F4- .



- Gearbox for vehicles with start/stop system: plug connector -arrow- into gearbox neutral position sender - G701- .
- Install clutch slave cylinder ⇒ [page 38](#) .
- Fit selector cables to gearbox ⇒ [page 55](#) .
- Adjust selector mechanism ⇒ [page 65](#) .
- Install radiator cowl (if applicable) ⇒ Rep. gr. 19 ; Radiator/ radiator fan; Removing and installing radiator cowl .
- Check oil level in gearbox and top up with gear oil if necessary ⇒ [page 98](#) .
- Install wheel housing liner (front left) and noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Exploded view - wheel housing liner (front) .
- Fit front wheel (left-side) ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Install air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .
- Install battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .





2.3 Tightening torques for gearbox



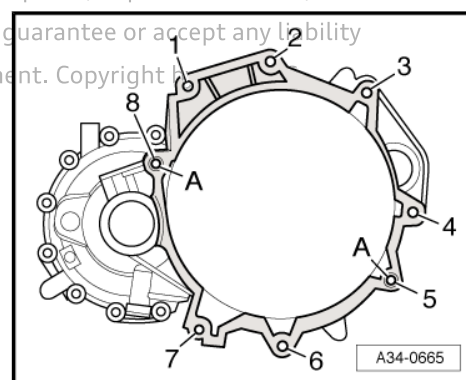
Note

- ◆ 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: $\pm 15\%$

Securing manual gearbox 02U to 1.4 ltr. TFSI engine (EA111), up to model year 2014

Item	Bolt	Nm
1, 2	M12 x 50	80
3 ¹⁾	M12 x 125	80
4 ¹⁾	M12 x 135	80
5	M12 x 60	80
6, 7	M10 x 50	40
8 ²⁾	M12 x 60	80
A	Dowel sleeves for centralising	

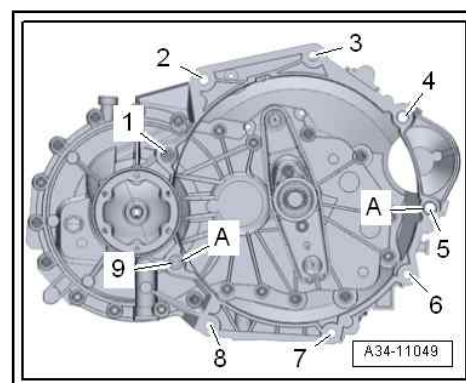
- ¹⁾ Also secures starter.
- ²⁾ Installed from engine side.



Securing manual gearbox 02U to 1.4 ltr. TFSI engine (EA211), from model year 2015 onwards

Item	Bolt	Nm
1, 9 ²⁾	M12 x 70	80
2, 3	M12 x 60	80
4, 5 ¹⁾	M12 x 150	80
6, 7, 8	M10 x 55	40
A	Dowel sleeves for centralising	

- ¹⁾ Also secures starter.
- ²⁾ Installed from engine side.





3 Assembly mountings

⇒ ["3.1 Exploded view - assembly mountings", page 96](#)

3.1 Exploded view - assembly mountings

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

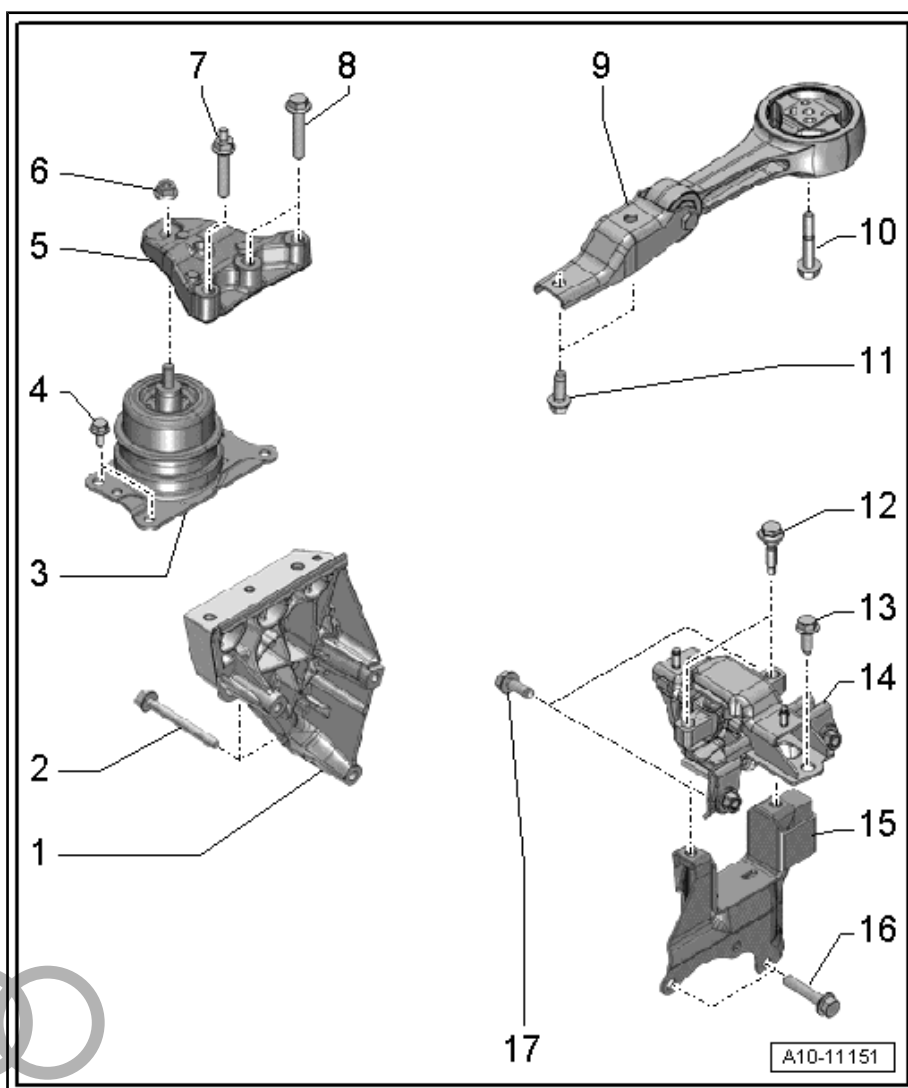
5 - Support arm

6 - Nut

- ☐ Do not loosen unless renewing engine mounting -item 3-
- ☐ 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

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

9 - Pendulum support

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- ☐ 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

- ☐ Tightening torque and sequence ⇒ [page 97](#)



- ☐ Renew

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

M10 x 52 - 8.8

- ☐ 40 Nm +90°
- ☐ Renew

M10 x 75 - 10.9

- ☐ 50 Nm +90°
- ☐ Renew

17 - Bolt

- ☐ Tightening torque and sequence ⇒ [page 97](#)
- ☐ Renew

Gearbox mounting - tightening torque and sequence

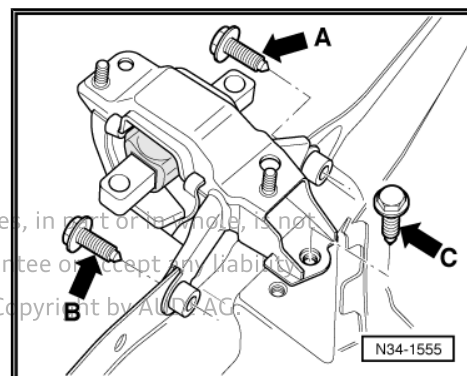


Note

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





4 Gear oil

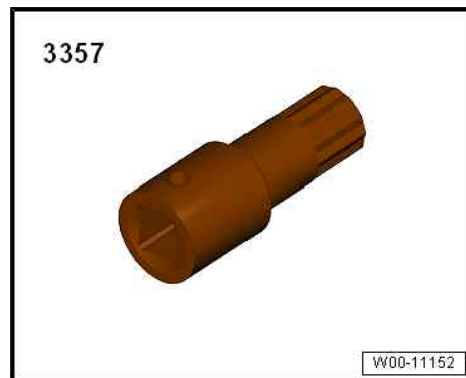
⇒ ["4.1 Checking gear oil level", page 98](#)

⇒ ["4.2 Draining and filling gear oil", page 99](#)

4.1 Checking gear oil level

Special tools and workshop equipment required

◆ Socket - 3357-



◆ or 17 mm socket (hexagon key)

◆ Torque wrench - V.A.G 1331-



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

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

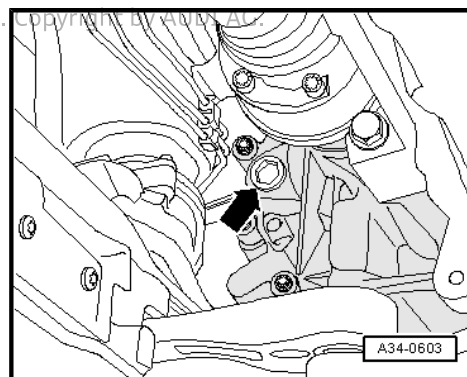
- If necessary, fill up gear oil to bottom lip of filler hole.

- Tighten oil filler plug -arrow- to specified torque.

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

Tightening torques

- ◆ Oil filler/oil drain plug - different versions and tightening torques ⇒ [page 140](#)

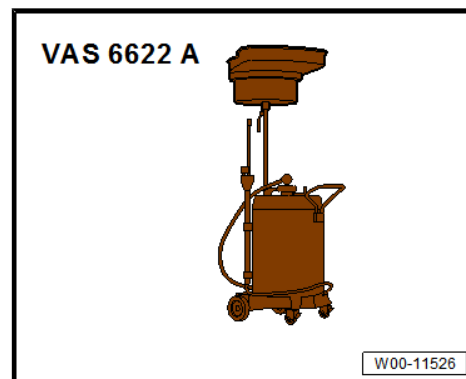




4.2 Draining and filling gear oil

Special tools and workshop equipment required

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



- ◆ Multi-point bit - 3357- for oil filler plug with multi-point socket



- ◆ or 17 mm socket (hexagon key)
- ◆ Torque wrench - V.A.G 1331-



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

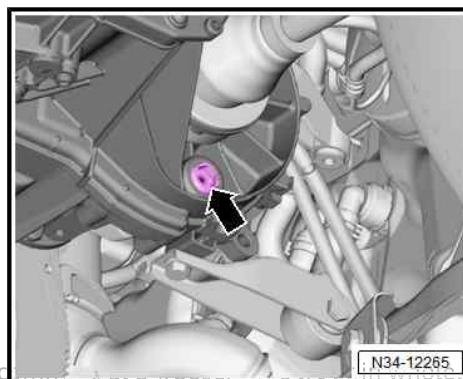
Draining off gear oil

- 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.

If necessary, use a clean container (capacity approx. 3.0 ltr.) to collect gear oil.

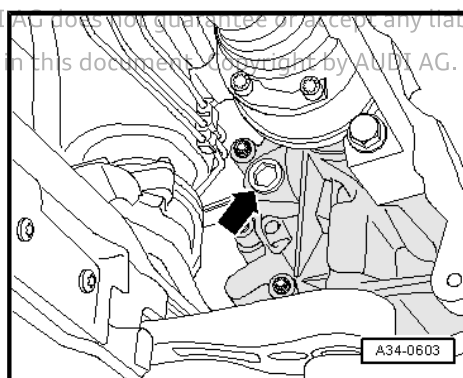


- Unscrew oil drain plug -arrow- and allow gear oil to drain.
- Tighten oil drain plug to specified torque.



Filling up with gear oil

- 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 for approx. 2 minutes.
 - During this time, do not operate clutch pedal.
 - Do not engage a gear.
- Switch off engine and remove oil filler plug.
- Top up gear oil again to bottom lip of filler hole.
- Tighten oil filler plug -arrow- to specified torque.
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Exploded view - noise insulation .



Tightening torques

- ◆ Oil filler/oil drain plug - different versions and tightening torques ⇒ [page 140](#)



5 Transporting gearbox

Special tools and workshop equipment required

- ◆ Gearbox lifting tackle - 3336-



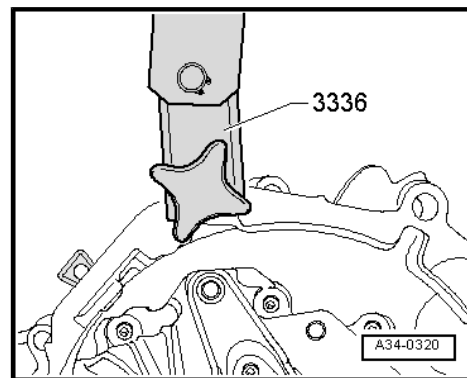
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- ◆ Workshop hoist - VAS 6100-



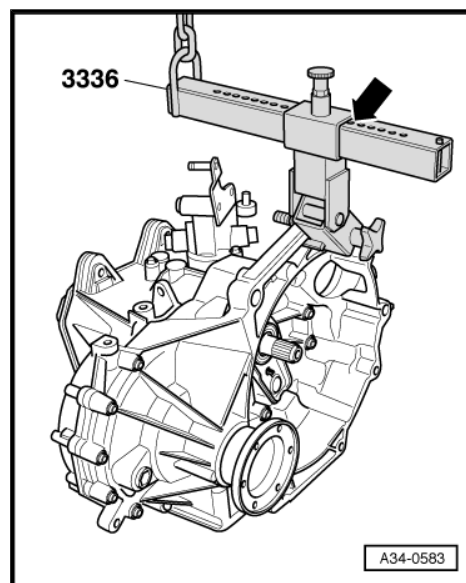
Procedure

- 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- .



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6 Securing to engine and gearbox support

Special tools and workshop equipment required

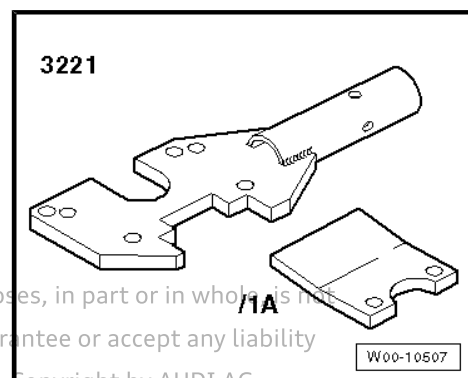
- ◆ Support clamp - VW 313-



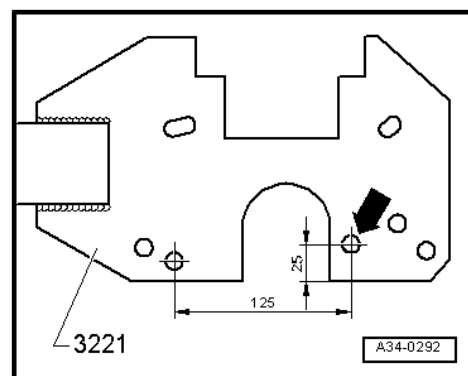
- ◆ Gearbox support - 3221-



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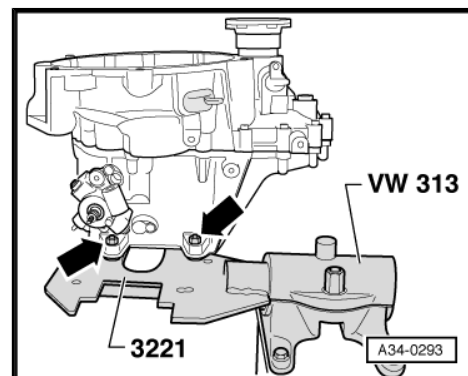


- Make an additional $\varnothing 11$ mm drilling -arrow- in gearbox support - 3221- according to dimensions shown (dimensions in mm).



Procedure

- Bolt gearbox housing to gearbox support - 3221- as illustrated -arrows-.





7 Dismantling and assembling gearbox

⇒ ["7.1 Schematic overview - gearbox", page 104](#)

⇒ ["7.2 Exploded view - gearbox", page 105](#)

⇒ ["7.3 Exploded view - 5th and 6th gear", page 106](#)

⇒ ["7.5 Exploded view - gear cluster, differential and selector mechanism", page 109](#)

⇒ ["7.6 Exploded view - selector forks", page 111](#)

⇒ ["7.7 Exploded view - selector unit", page 112](#)

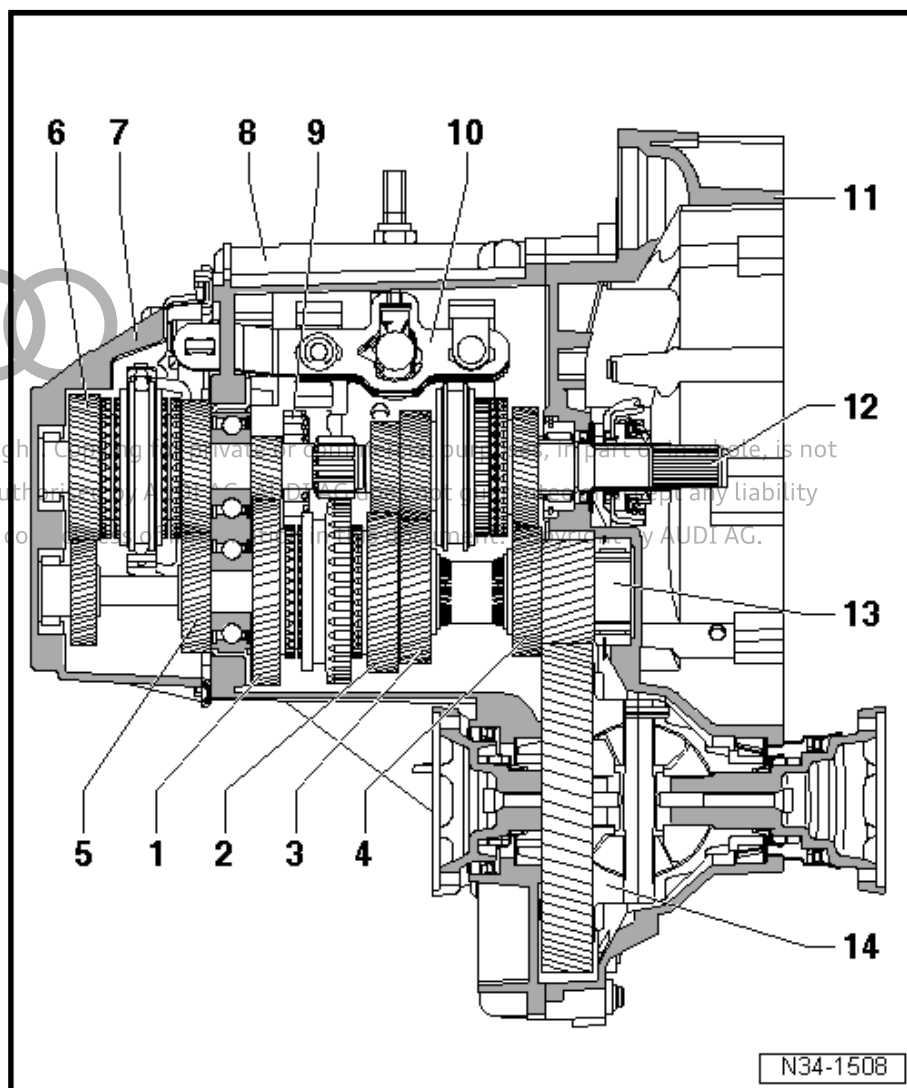
⇒ ["7.8 Servicing selector forks", page 113](#)

⇒ ["7.9 Removing and installing angled rod", page 116](#)

⇒ ["7.10 Dismantling and assembling gearbox", page 117](#)

7.1 Schematic overview - gearbox

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





7.2 Exploded view - gearbox

I - Removing and installing gearbox housing cover and 5th/6th gear

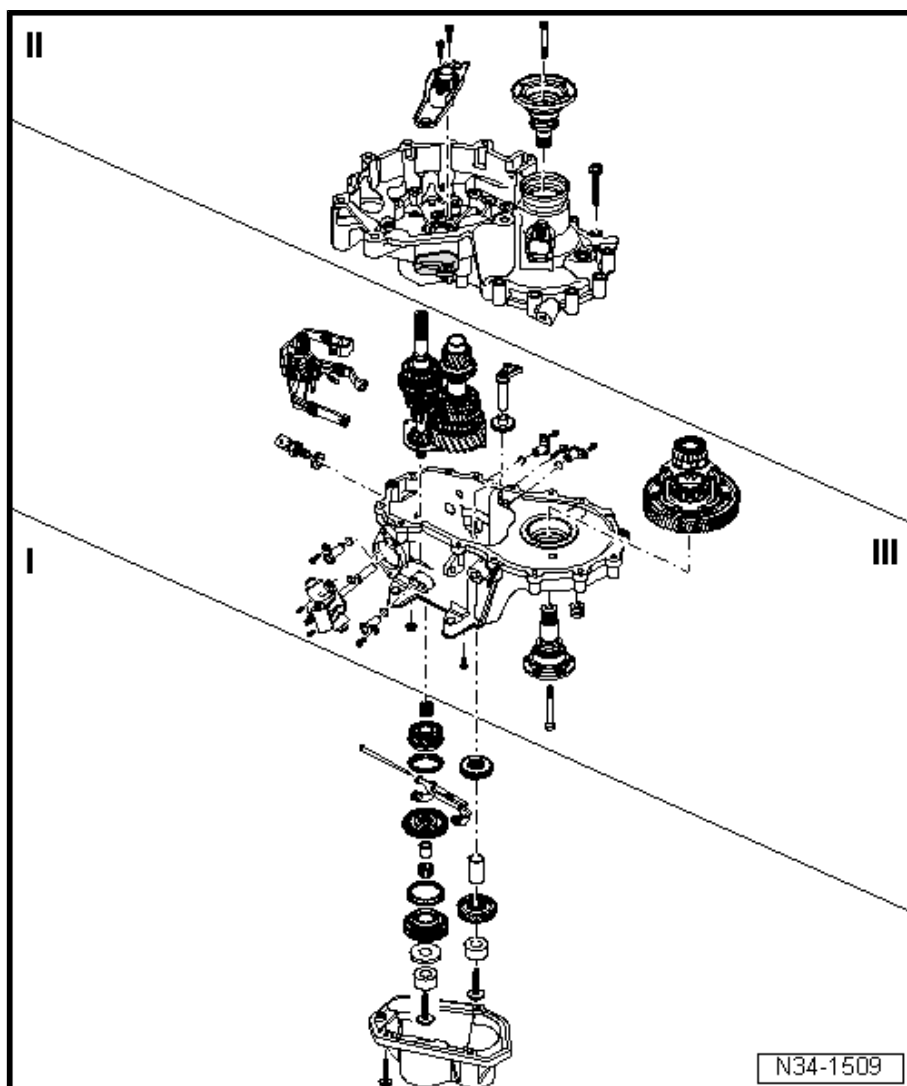
- ☐ ⇒ [“7.3 Exploded view - 5th and 6th gear”, page 106](#)
- ☐ Detaching and attaching ⇒ [page 117](#)
- ☐ ⇒ [“8.1 Exploded view - gearbox housing cover”, page 135](#)

II - Removing and installing clutch housing ⇒ [page 108](#)

- ☐ ⇒ [“7.4 Exploded view - gearbox housing”, page 108](#)
- ☐ Detaching and attaching ⇒ [page 117](#)

III - Removing and installing input shaft, output shaft, differential, selector mechanism and selector forks

- ☐ ⇒ [“7.5 Exploded view - gear cluster, differential and selector mechanism”, page 109](#)
- ☐ ⇒ [“7.6 Exploded view - selector forks”, page 111](#)
- ☐ ⇒ [“7.7 Exploded view - selector unit”, page 112](#)
- ☐ ⇒ [“7.8 Servicing selector forks”, page 113](#)
- ☐ ⇒ [“7.9 Removing and installing angled rod”, page 116](#)
- ☐ ⇒ [“7.10 Dismantling and assembling gearbox”, page 117](#)





7.3 Exploded view - 5th and 6th gear

1 - Gearbox housing

- ☐ Servicing ⇒ [page 140](#)

2 - 5th gear wheel

- ☐ Installation position
⇒ [page 131](#)
- ☐ Must be pressed off
⇒ [page 150](#) and on
⇒ [page 131](#) on some
gearbox versions

3 - Sleeve

4 - 6th gear wheel

- ☐ Installation position
⇒ [page 133](#)

5 - Roller bearing inner race

- ☐ For output shaft
- ☐ Mark before removing
- ☐ Do not interchange with
roller bearing inner race for
input shaft

6 - Bolt

- M8 - 30 Nm + 90°
- M10 - 75 Nm + +45°
- ☐ For output shaft
- ☐ Self-locking
- ☐ Renew

7 - Gearbox housing cover

- ☐ With roller bearings for
input and output shafts
- ☐ Exploded view
⇒ [page 135](#)

8 - Bolt

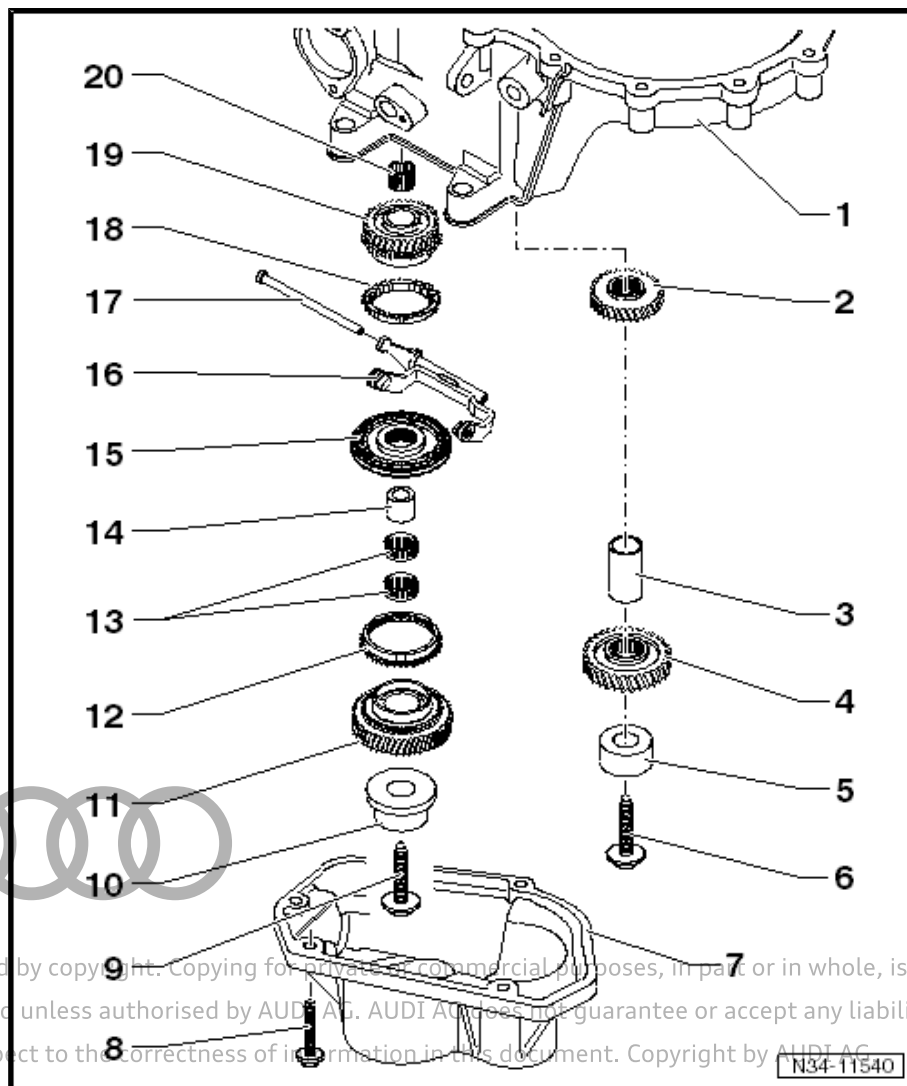
- ☐ 5 Nm +90°
- ☐ Renew

9 - Bolt

- M8 - 30 Nm + 90°
- M10 - 75 Nm + +45°
- ☐ For input shaft
- ☐ Self-locking
- ☐ Renew

10 - Roller bearing inner race with thrust washer

- ☐ For input shaft
- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for output shaft





11 - 6th speed selector gear

12 - 6th gear synchro-ring

13 - Needle bearing

- ☐ For 6th gear
- ☐ Two-piece
- ☐ One-piece component on some gearbox versions
- ☐ For correct version, refer to ⇒ Electronic parts catalogue
- ☐ Renew together with sleeve ⇒ [Item 14 \(page 107\)](#)

14 - Sleeve

- ☐ For 6th gear needle bearing
- ☐ Renew together with needle bearing

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

- ☐ Dismantling and assembling ⇒ [page 144](#)
- ☐ Installation position ⇒ [page 132](#)

16 - 5th/6th gear selector fork

17 - Pivot pin

- ☐ For 5th/6th gear selector fork

18 - 5th gear synchro-ring

- ☐ Will be damaged when removed from input shaft
- ☐ Renew

19 - 5th speed selector gear

20 - Needle bearing

- ☐ For 5th gear



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7.4 Exploded view - gearbox housing

1 - Countersunk bolt

- Tightening torque
⇒ [Item 1 \(page 169\)](#)

2 - Flange shaft with spring

- Removing and installing
⇒ [page 167](#)
- Assembling
⇒ [page 169](#)

3 - Bolt

- 5 Nm +90°
- Renew

4 - Clutch housing

- Servicing ⇒ [page 140](#)

5 - Gearbox housing

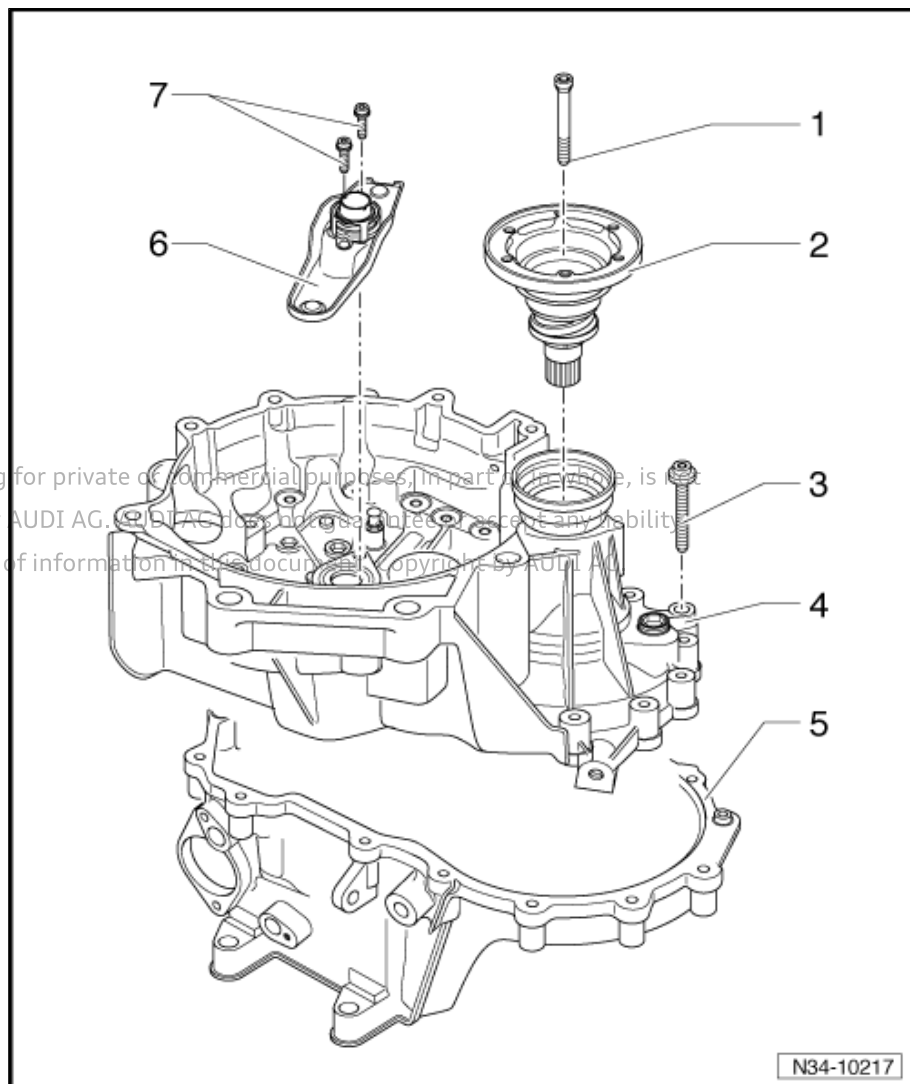
- Servicing ⇒ [page 140](#)

6 - Clutch release lever

- With guide sleeve and release bearing
- Removing and installing
⇒ [page 45](#)

7 - Bolt

- Tightening torque
⇒ [Item 2 \(page 18\)](#)





7.5 Exploded view - gear cluster, differential and selector mechanism

1 - Differential

- ☐ Removing and installing
⇒ [page 117](#)
- ☐ Dismantling and assembling
⇒ [page 171](#)

2 - Gearbox housing

- ☐ Servicing ⇒ [page 140](#)

3 - Bolt

- ☐ For oil drain hole
- ☐ Tightening torque
⇒ [page 140](#)

4 - Flange shaft with spring

- ☐ Removing and installing
⇒ [page 165](#)
- ☐ Assembling
⇒ [page 169](#)

5 - Countersunk bolt

- ☐ Tightening torque
⇒ [Item 1 \(page 169\)](#)

6 - Bolt

- ☐ 5 Nm +90°
- ☐ Secures bearing mounting with grooved ball bearings for input and output shafts
⇒ [Item 18 \(page 110\)](#)
- ☐ Self-locking
- ☐ Renew

7 - Hexagon flange nut

- ☐ 23 Nm
- ☐ For selector mechanism
⇒ [Item 17 \(page 110\)](#)
- ☐ Self-locking
- ☐ Renew

8 - O-ring

- ☐ Renew

9 - Pivot pin

10 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

11 - Selector shaft with selector mechanism cover

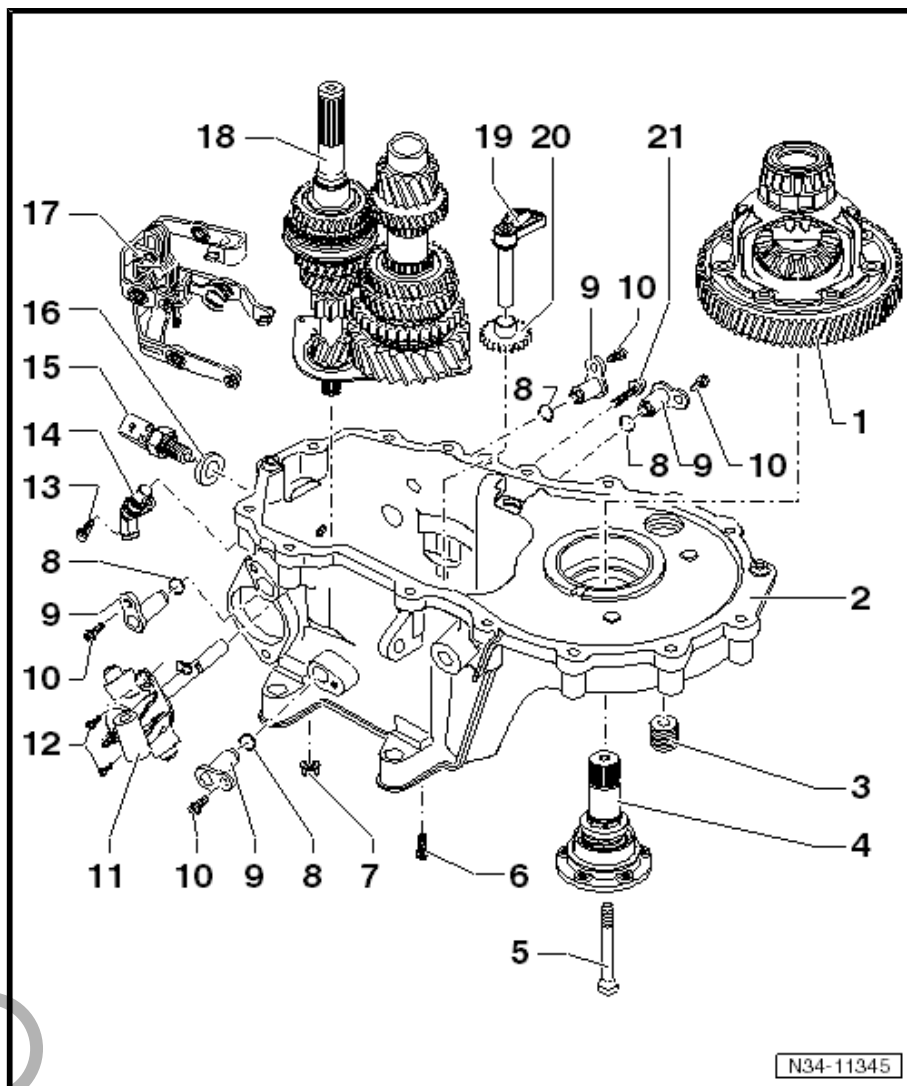
- ☐ Selector unit
- ☐ Dismantling and assembling ⇒ [page 112](#)

12 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

13 - Bolt

- ☐ 6 Nm



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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

- ☐ Renew
- ☐ Not fitted on all versions

17 - Selector mechanism

- ☐ Selector forks
- ☐ Dismantling and assembling ⇒ [page 113](#)

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
- ☐ Pressing bearing mounting on and off: Dismantling and assembling input shaft ⇒ [Item 13 \(page 145\)](#)
- ☐ Dismantling and assembling input shaft ⇒ [page 147](#)
- ☐ Dismantling and assembling output shaft ⇒ [page 159](#)

19 - Reverse gear shaft

20 - Reverse gear wheel

21 - Bolt

- ☐ 25 Nm +45°
- ☐ For reverse gear shaft
- ☐ Renew



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7.6 Exploded view - selector forks



Note

The selector fork cluster ([⇒ Item 1 \(page 111\)](#)) 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 114](#)
- ☐ Detent segment should turn freely after installation.

3 - Angular contact ball bearing

- ☐ 4x
- ☐ Removing [⇒ page 115](#)
- ☐ Pressing inner race into outer race [⇒ page 116](#)
- ☐ Installing [⇒ page 116](#)

4 - Clamping washer

- ☐ Renew
- ☐ Removing [⇒ page 115](#)
- ☐ Installing [⇒ page 115](#)

5 - 1st/2nd gear detent segment

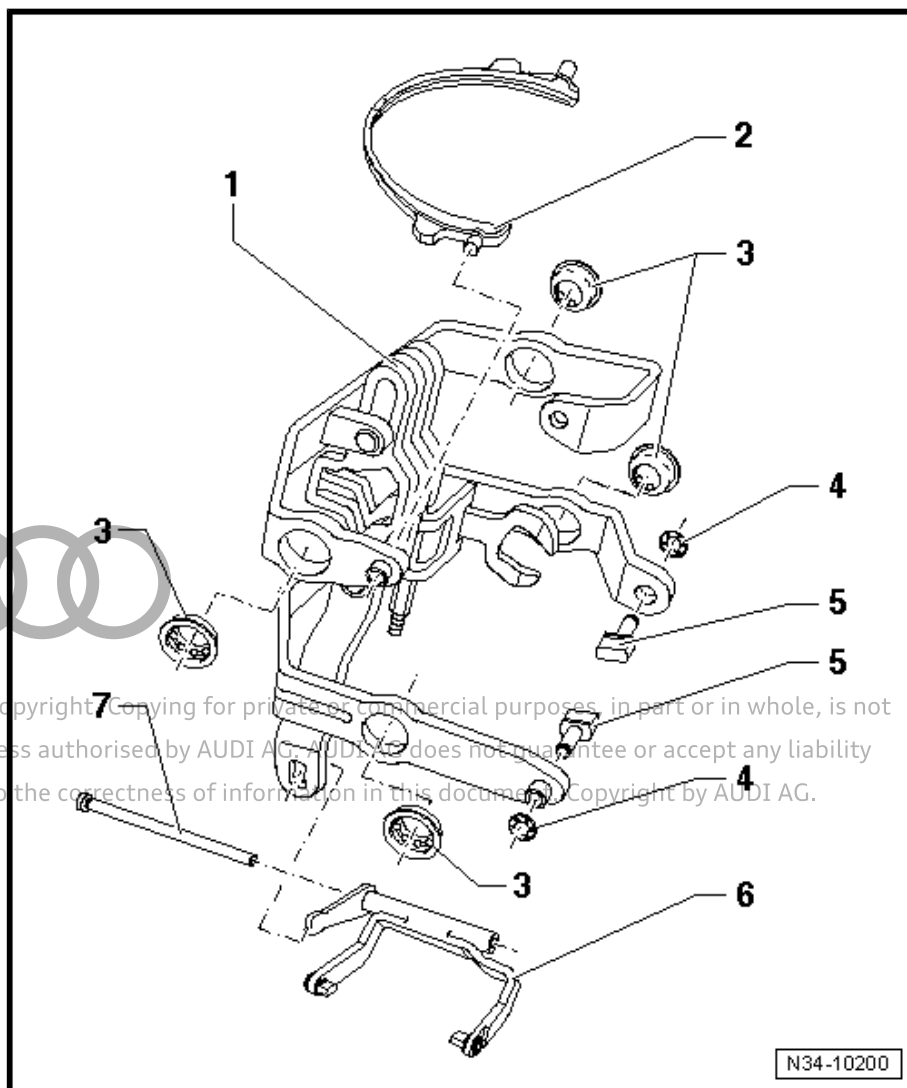
- ☐ Identification [⇒ page 114](#)
- ☐ The segment must rotate freely after installing the lock washer
- ☐ Selector fork with detent segment [⇒ page 115](#)

6 - 5th/6th gear selector fork with detent segments

- ☐ Detent segments are inseparably joined with selector fork
- ☐ Identification [⇒ page 114](#)

7 - Pivot pin

- ☐ For 5th/6th gear selector fork





7.7 Exploded view - selector unit

1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ [page 143](#)
- ☐ Driving in ⇒ [page 143](#)

2 - Angled rod

- ☐ For adjusting selector mechanism ⇒ [page 65](#)
- ☐ Removing and installing ⇒ [page 116](#)

3 - Selector shaft with selector mechanism cover (selector unit)

- ☐ Renew together

4 - Bolt

- ☐ 5 Nm +90°
- ☐ Renew

5 - Oil seal

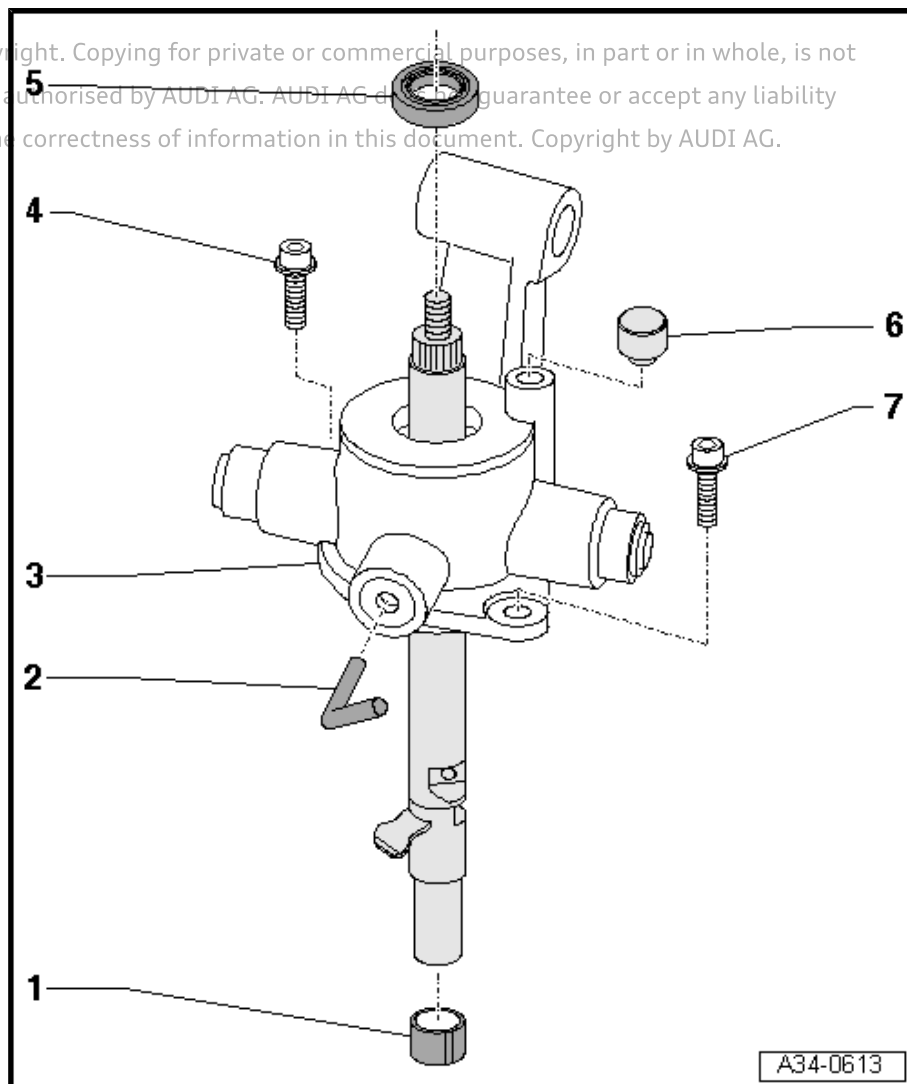
- ☐ Renewing ⇒ [page 71](#)

6 - Cap

- ☐ For gearbox breather

7 - Bolt

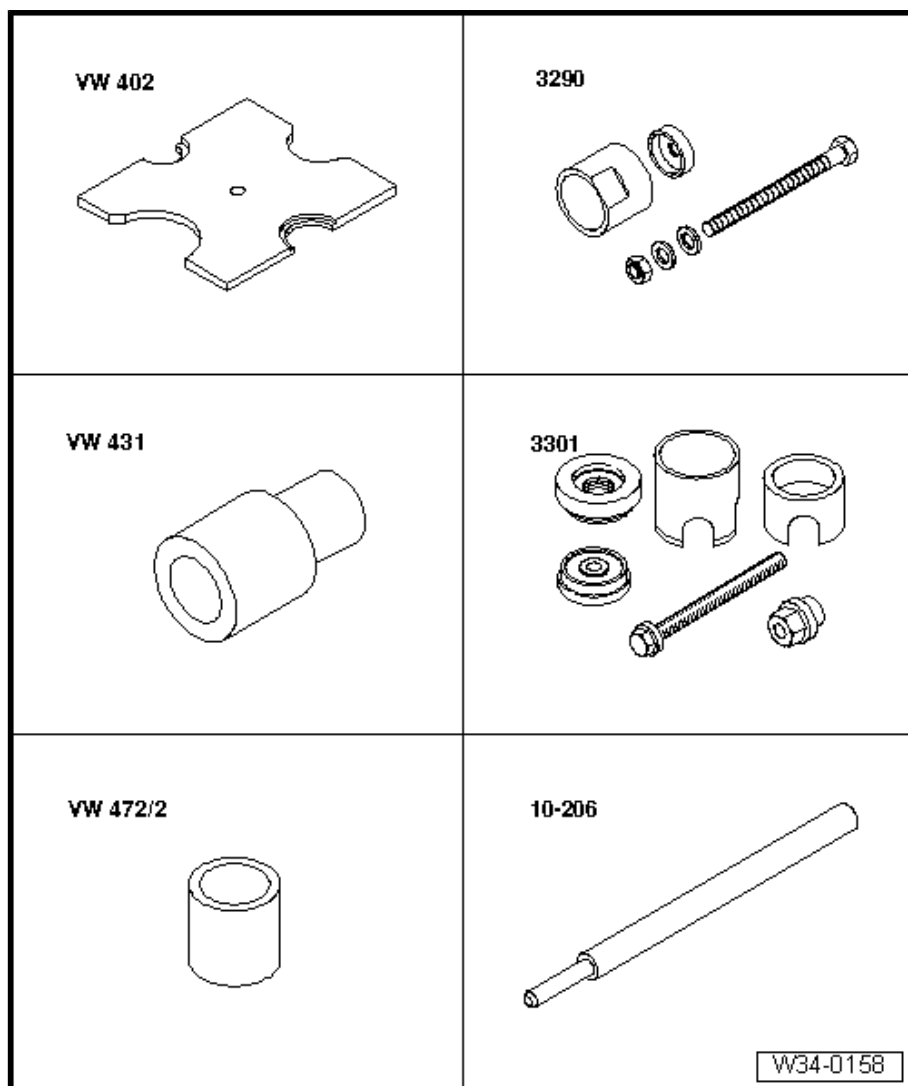
- ☐ 5 Nm +90°
- ☐ Renew





7.8 Servicing selector forks

Special tools and workshop equipment required



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



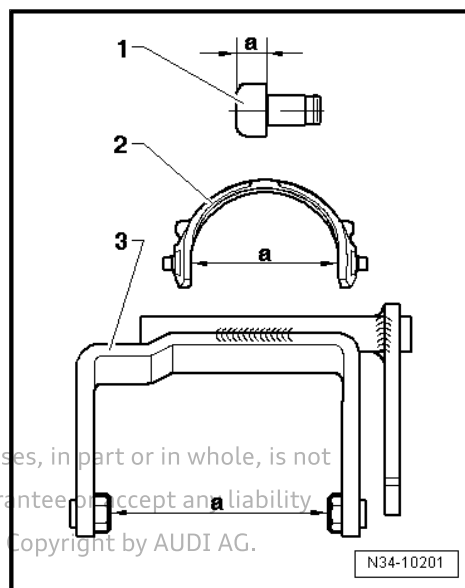
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- ◆ Assembly mandrel - 10 - 508-



- ◆ Removal lever 80-200-



- ◆ Tensioner - 2070-



Identification of detent segments and 5th/6th gear selector fork with detent segments

Dimension -a-

1 - Detent segments 1st/
2nd gear = 10.0 mm

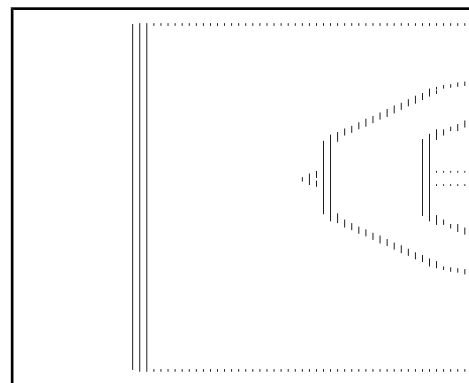
2 - Detent segment 3rd/
4th gear = 78.6 mm

3 - 5th/6th gear selector
fork with detent seg-
ments = 79.5 mm



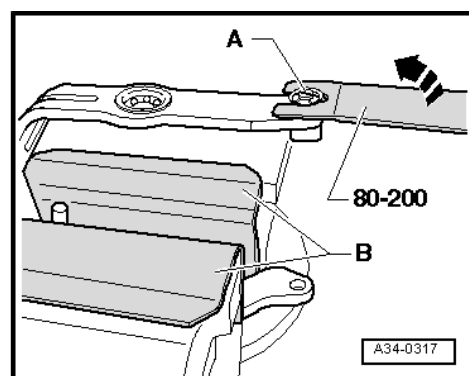
1st/2nd gear selector fork with detent segments

Dimension -a- = 78 mm



Removing lock washer

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



Installing lock washer

- Push lock washer into groove in detent segment using socket driver.

A - Socket (10 mm)

B - Protective jaw covers



Note

Detent segment should turn freely after lock washer is installed.

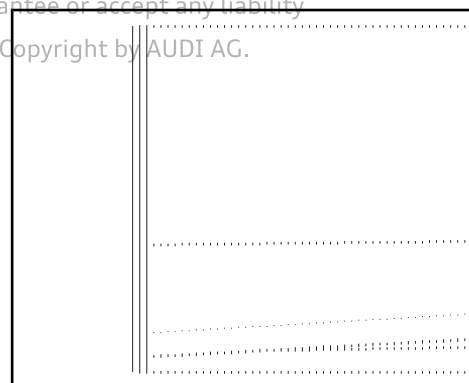
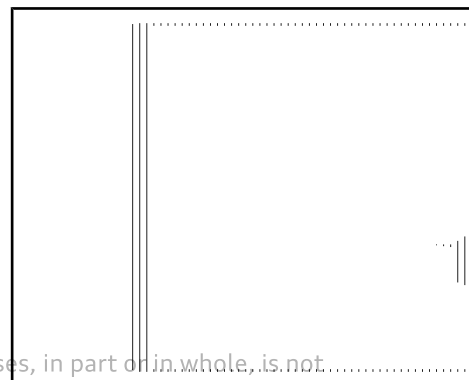
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Removing angular contact ball bearing



Note

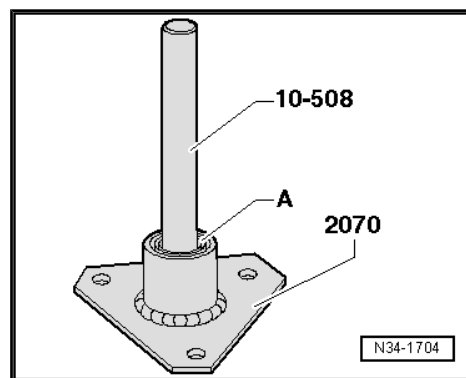
Do not bend selector forks when removing and installing the ball bearing.





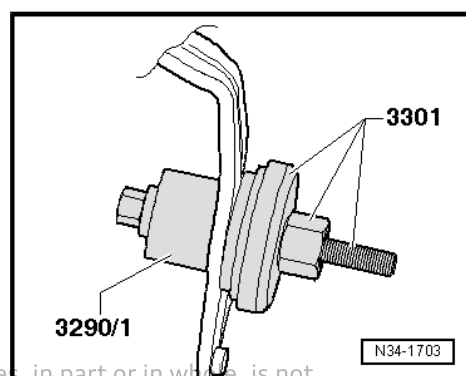
Pressing inner race -A- of angular contact ball bearing into outer race

Inner race must engage positively in outer race.



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

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

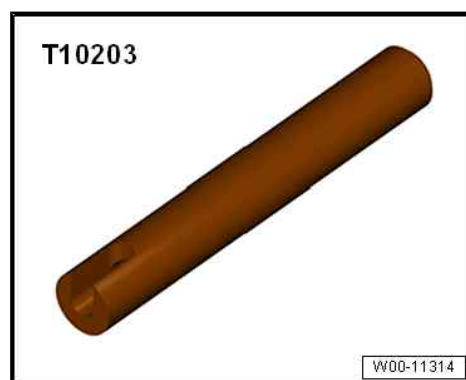


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7.9 Removing and installing angled rod

Special tools and workshop equipment required

- ◆ Tube - T10203-



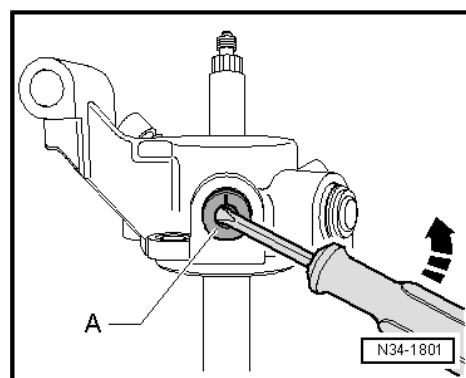
Removing

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 outer part of angled rod -A-.
- Carefully lever out angled rod with a screwdriver -arrow-.

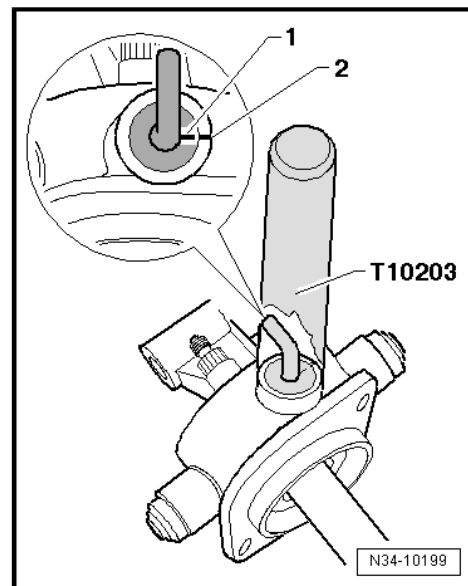




Installing

Installation is carried out in reverse order; 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 air cleaner housing ⇒ Rep. gr. 24 ; Air cleaner; Removing and installing air cleaner housing .



7.10 Dismantling and assembling gearbox

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



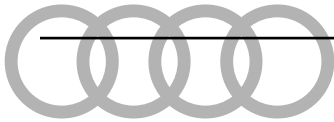
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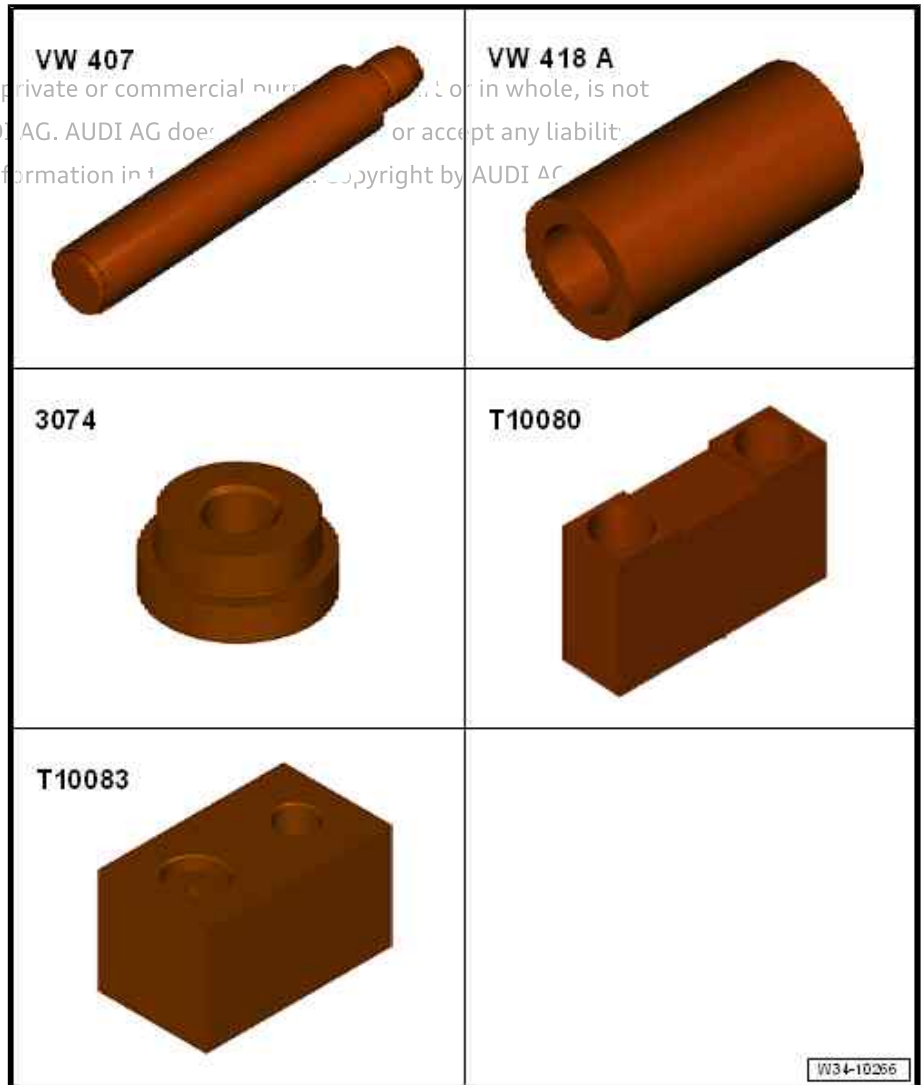
**Special tools and workshop
equipment required**



- ◆ Support clamp - VW 313-
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 412-
- ◆ Gearbox support - 3221A-
- ◆ Or gearbox support - 3221-
- ◆ Guide pin - T10079-



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- ◆ Press tool - VW 407-
- ◆ Tube - VW 418 A-
- ◆ Thrust piece - T10080-
- ◆ Thrust block - T10083-
- ◆ Washer - T10083/1-
- ◆ If 5th gear wheel was pressed off earlier
- ◆ Pressure washer - 3074-



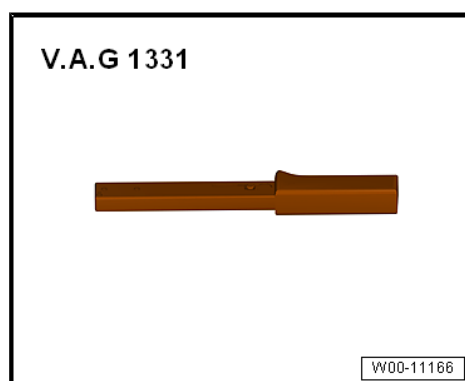
- ◆ If 5th gear wheel was not pressed off earlier



- ◆ Pressure washer - T10375-
- ◆ Puller - T10309-



- ◆ Shell half - T10309/4-
- ◆ If pulling off is not possible using shell half listed above:
- ◆ Shell half - T10309/4A-
- ◆ Adapter - T10309/5-
- ◆ Torque wrench - V.A.G 1331-



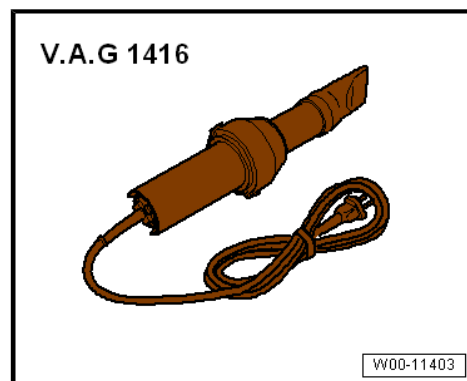
- ◆ Torque wrench - V.A.G 1332-



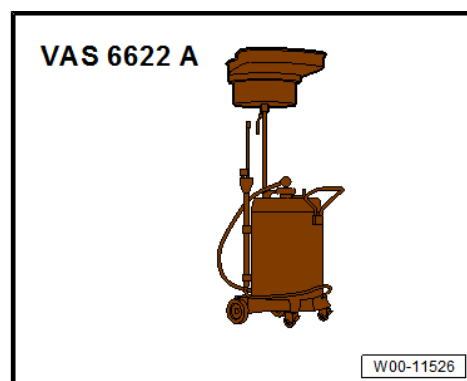
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- ◆ Hot air blower - V.A.G 1416-



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



- ◆ Inductive heater - VAS 6414-

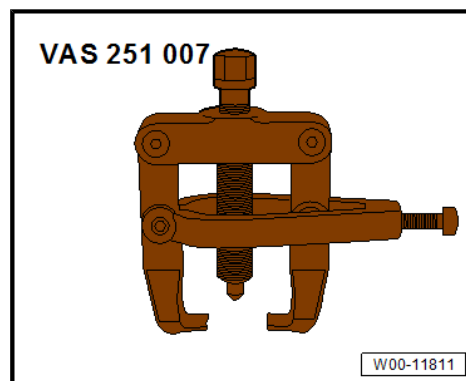


- ◆ Three-arm puller - VAS 251 203, or e.g. three-arm puller
Kukko 30/1-





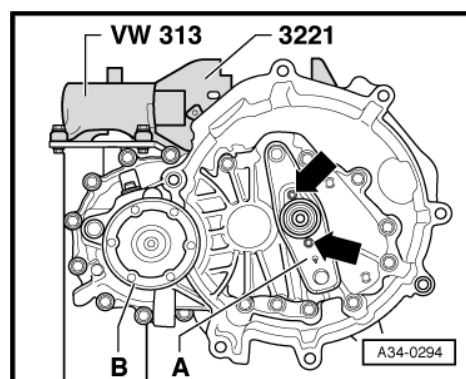
- ◆ Or two-arm puller - VAS 251 007- , or e.g. two-arm puller - Kukko 204/2-



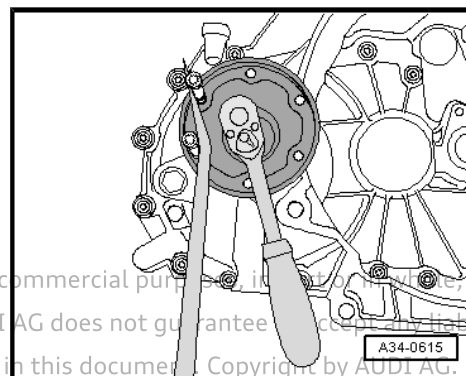
- ◆ Hexagon socket-head bolt - M8 x 15-
- ◆ Drip tray - V.A.G 1306-
- ◆ Or drip tray for workshop hoist - VAS 6208-
- ◆ Sealant
- ◆ For correct version, refer to ⇒ Electronic parts catalogue

Dismantling gearbox

- Gearbox removed
- Secure gearbox to assembly stand ⇒ [page 103](#) .
- Place used oil collection and extraction unit - VAS 6622A- below gearbox.
- Drain off gear oil.
- Remove clutch release lever -A- together with clutch release bearing and guide sleeve -arrows-.
- Remove securing bolt for flange shaft (left and right) -B-.



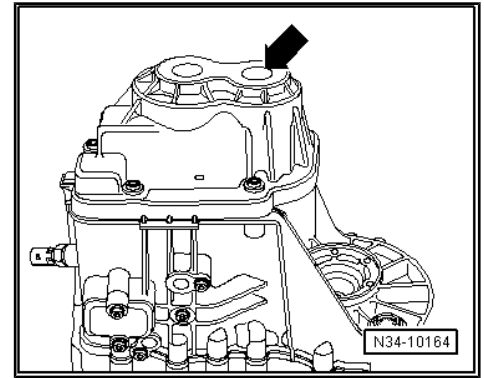
- To do so, screw two bolts into flange and counterhold flange shaft with tyre iron or other suitable lever.
- Pull out flange shaft (left and right) together with spring, thrust washer and tapered ring.



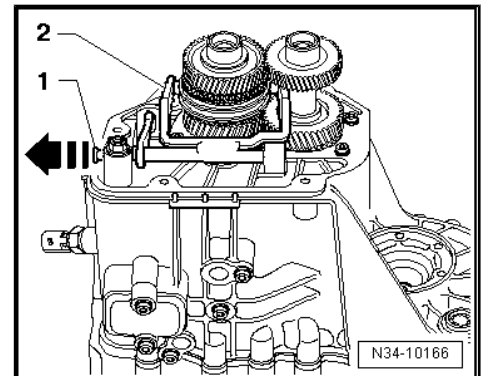
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- Unbolt gearbox housing cover -arrow- and pull off carefully.



- Pull out pivot pin -1- for 5th/6th gear selector fork -2- and remove selector fork.

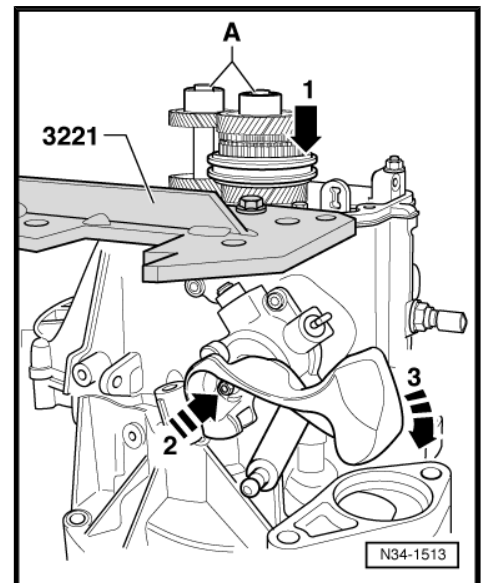


- Remove bolts -A- for inner bearing races on input and output shafts. To do this, engage 5th gear -arrow 1- and 1st gear -arrows 2 and 3-.
- The input and output shafts are both locked when these two gears are engaged. The two bolts can now be loosened.



Note

- ◆ If the shafts are not being renewed, clean remaining locking fluid out of tapped holes using a thread tap.
- ◆ Pull off 6th gear wheel using three-arm puller - VAS 251 203- or e.g. three-arm puller - Kukko 30/1- .
- ◆ If necessary, pull 6th gear wheel part of the way using two-arm puller - VAS 251 007- or e.g. two-arm puller - Kukko 204/2- until the spindle reaches the stop.
- ◆ . Then continue pulling it off using three-arm puller - VAS 251 203- or e.g. three-arm puller - Kukko 30/1- .



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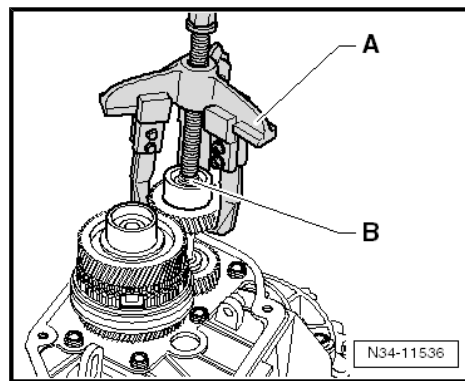
- Pull off 6th gear wheel and roller bearing inner race for output shaft.

A - Three-arm puller - VAS 251 203- , or e.g. three-arm puller - Kukko 30/1-

B - Hexagon socket head bolt - M8 x 15-

Pay attention to the correct sequence when pulling off the following components:

- 6th speed selector gear: Detach together with inner race for input shaft roller bearing.
- 5th/6th gear synchro-hub: Detach together with inner race for 6th gear needle bearing.
- Use puller - T10309A- for this procedure.



Detach 6th speed selector gear together with inner race for input shaft roller bearing.

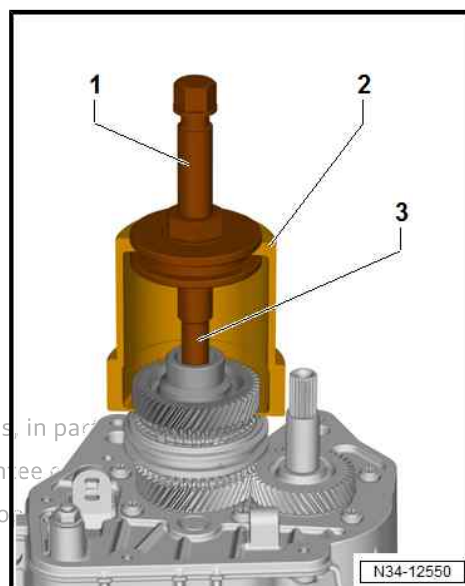
- First insert shell half - T10309/4A- -2-.
- Shell half must be positioned underneath 6th speed selector gear.



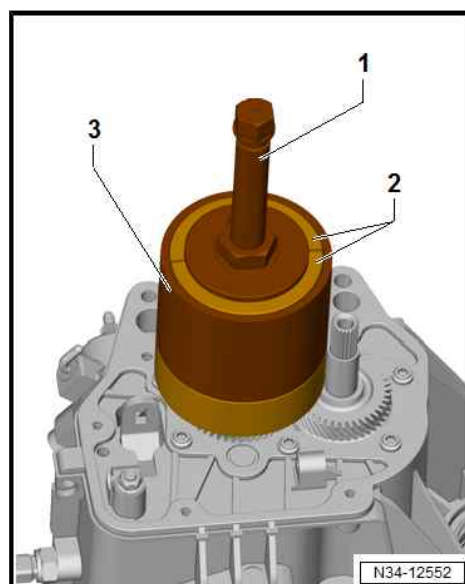
Note

A lot of force may be required for pulling off components. This is why adapter - T10309/4A- should be used.

- If necessary, press shell half into end position.
- Then position adapter - T10309/5- -3-.
- Position thread insert - T10309/3- -1- in shell half and tighten slightly.



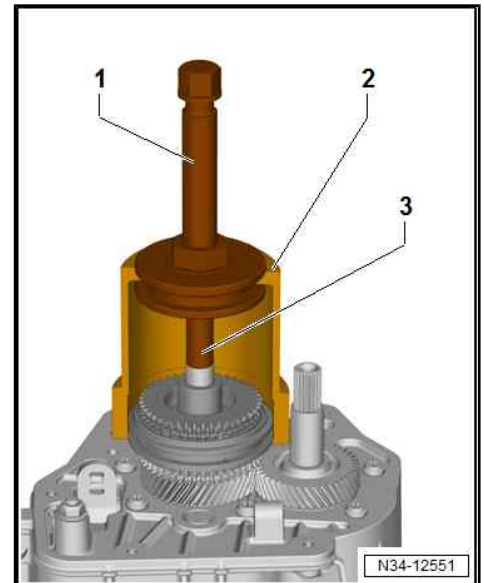
- Now fit second shell half - T10309/4A- and slide tube - T10309/2- -3- onto tool.





Then detach 5th/6th gear synchro-hub together with inner race for 6th gear needle bearing.

- First insert shell half - T10309/4A- -2-.
- Shell half must be positioned underneath synchro-ring.
- If necessary, press shell half into end position.
- Then position adapter - T10309/5- -3-.
- Position thread insert - T10309/3- -1- in shell half and tighten slightly.



- Now fit second shell half - T10309/4A- and slide tube - T10309/2- -3- onto tool.

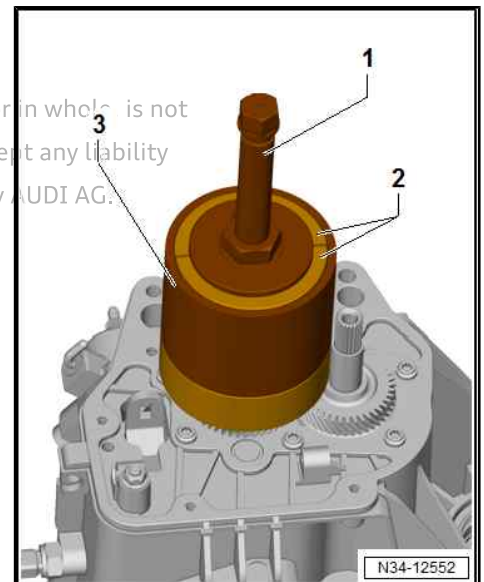
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Note

The 5th gear synchro-ring must always be renewed after removal.

- Remove 5th speed selector gear.





- Detach sleeve -2- and needle bearing -4-.
- Unscrew hexagon flange nut -5- for selector mechanism (reverse gear wheel mounting).
- Unscrew securing bolts -6- for bearing mounting for input and output shafts.

If 5th gear wheel can be removed by hand:

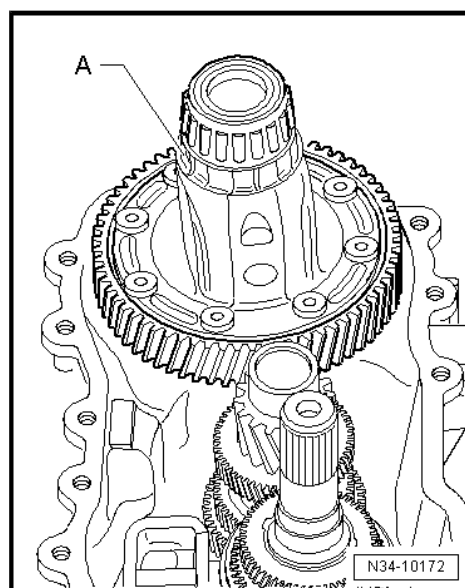
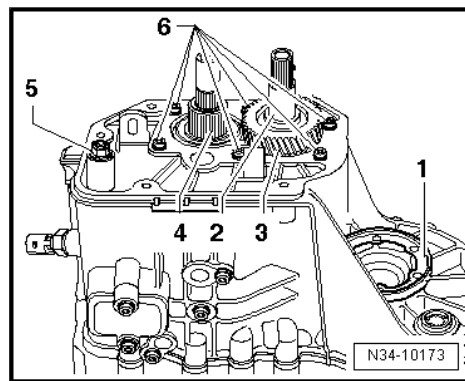
- Remove 5th gear wheel -3-.

If 5th gear wheel cannot be removed by hand:

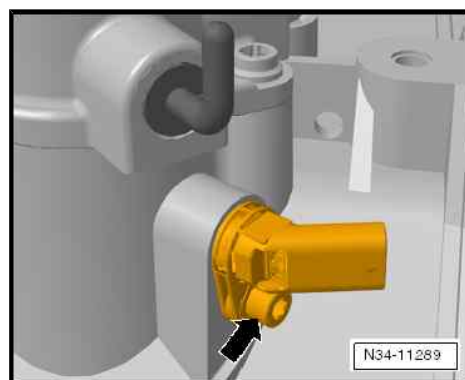
- 5th gear wheel -3- is pressed off at a later stage when removing bearing mounting for grooved ball bearings ⇒ [page 151](#).

All versions (continued):

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

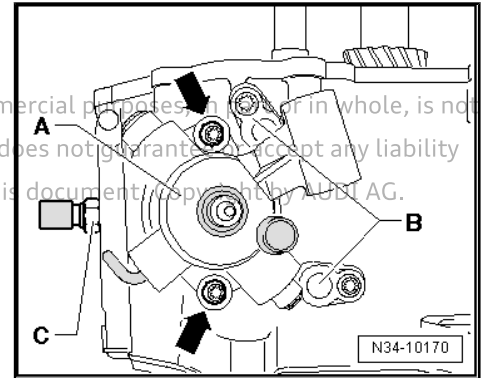


- Gearbox for vehicles with start/stop system: Remove gearbox neutral position sender - G701- -arrow-.





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

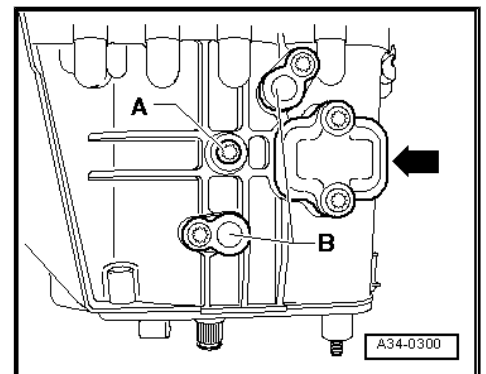


- Remove bolt -A- for securing reverse gear shaft.
- Remove pivot pins -B- from gearbox underside.



Note

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



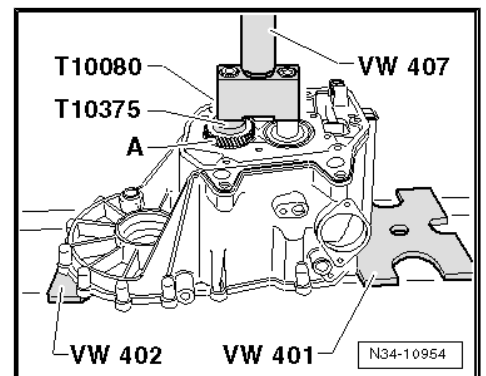
If 5th gear wheel could not be removed:

- Press out input and output shafts together with 5th gear wheel -A-, bearing mounting, selector mechanism (selector forks) and reverse gear wheel.



Note

- ◆ *Set gearbox housing down in such a way that dowel sleeves in gearbox housing do not become damaged.*
- ◆ *Make sure components do not drop out when being removed (get help from a second person if necessary).*





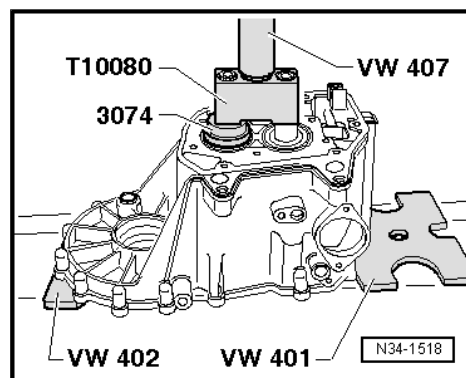
If 5th gear wheel could be removed:

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



Note

- ◆ Set gearbox housing down in such a way that dowel sleeves in gearbox housing do not become damaged.
- ◆ Make sure components do not drop out when being removed (get help from a second person if necessary).



All versions (continued):

- Press input and output shafts and 5th gear wheel out of bearing mounting and grooved ball bearings ⇒ [page 151](#) .
- Press input and output shafts out of bearing mounting and grooved ball bearings without 5th gear wheel ⇒ [page 151](#) .

Assembling gearbox

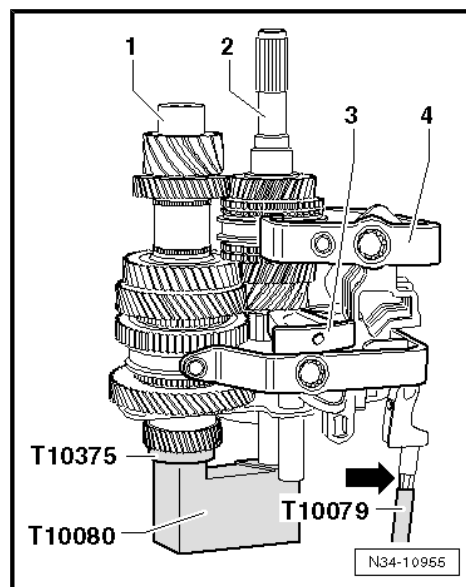


Note

- ◆ Pressing bearing mounting with grooved ball bearings onto input and output shafts ⇒ [page 155](#) .
- ◆ Pressing sleeve for 5th speed selector gear needle bearing onto input shaft ⇒ [page 155](#) .

If 5th gear wheel is located on output shaft:

- Place the input shaft -2- and output shaft -1- with bearing mounting/grooved ball bearings in thrust piece - T10080- .
- 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-.

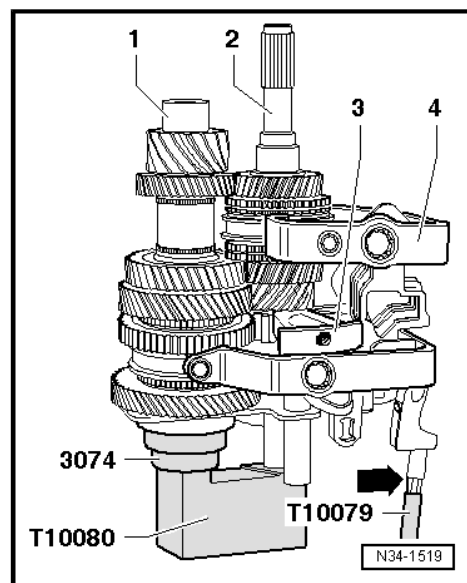


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If 5th gear wheel is not located on output shaft:

- Place the input shaft -2- and output shaft -1- with bearing mounting/grooved ball bearings in thrust piece - T10080- .
- 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-.



All versions (continued):

- Insert assembled components into gearbox housing. When doing so, run guide pin - T10079- into gearbox housing through hole for selector mechanism mounting.

- Unscrew guide pin - T10079- .

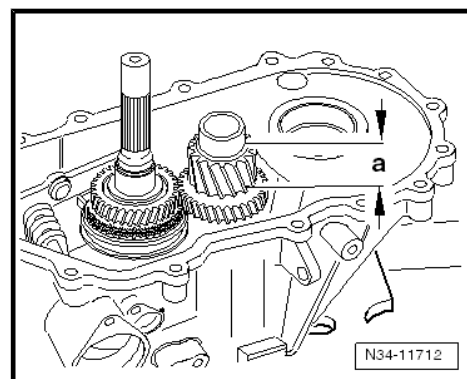
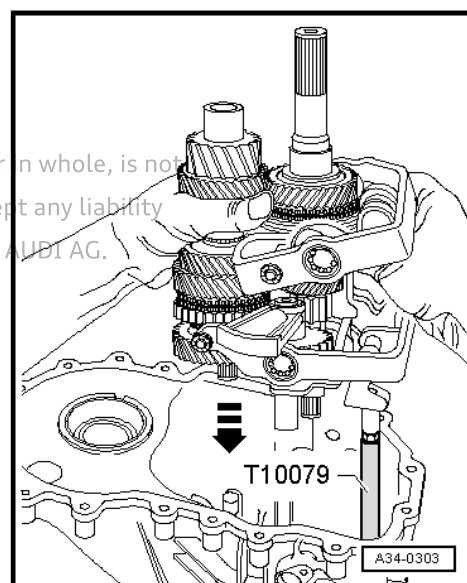
Before installation note the following:

- ◆ Selector forks must engage correctly in locking collars.
- ◆ Check dimension -a- on splines of output shaft.



Note

- ◆ Due to differences in the height of the teeth (dimension -a-), the output shafts of different gearboxes differ in length.
- ◆ It may be necessary to fit a shim - T10083/1- (3 mm thick) on the input shaft so that output shaft and input shaft can be pressed in evenly.
- ◆ Dimension -a- on teeth of output shaft must therefore be measured.

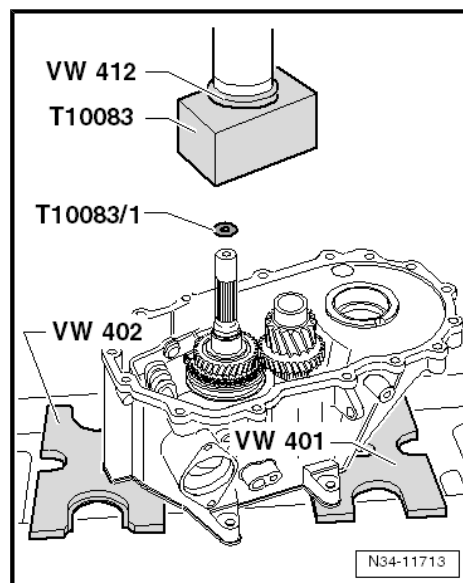


Dimension -a- = 30.6 mm

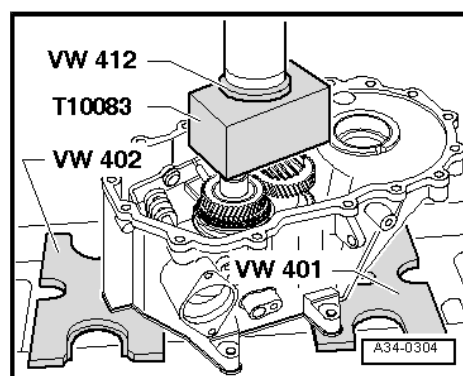
Place shim - T10083/1- on input shaft → next illustration.



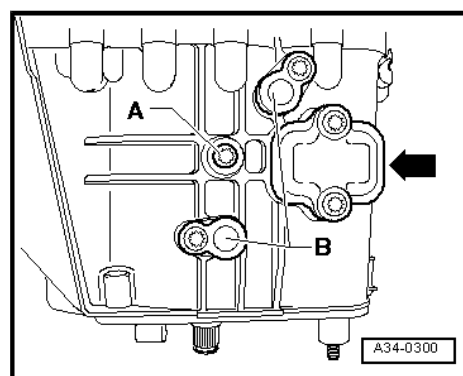
Placing shim - T10083/1- on input shaft, and carefully pressing in bearing mounting together with input and output shafts as far as stop



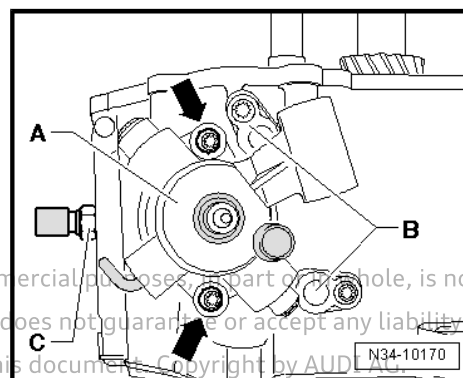
- Carefully press in bearing mounting together with input and output shafts as far as the stop.



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



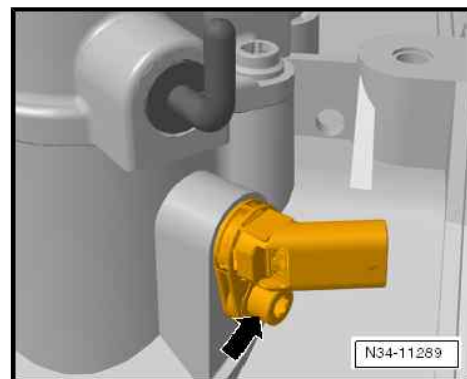
- Install pivot pins -B- on underside of gearbox.
- Set selector plates in neutral position.
- Apply sealant evenly to sealing surface of selector mechanism cover.
- Install selector shaft with selector mechanism cover -A-. Then tighten bolts -arrows-.
- Install reversing light switch - F4- -C-.



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- Gearbox for vehicles with start/stop system: Fit gearbox neutral position sender - G701- -arrow- and tighten securing bolt to specified torque ⇒ [Item 13 \(page 109\)](#) .



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



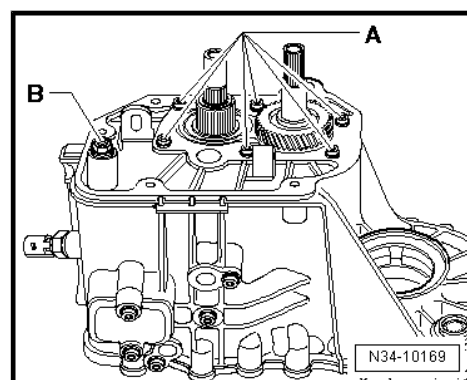
Note

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).

Note the following for 5th and 6th gear assembly:

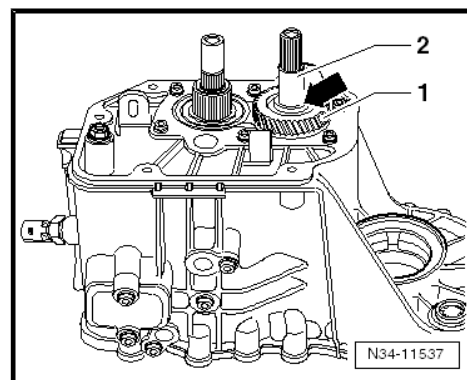
- Position pressure plate - VW 402- and thrust block - T10083- on hydraulic press .
- Then fit input and output shafts together with gearbox housing in thrust block - T10083- .



Installation position of 5th gear wheel

The high collar -arrow- points away from the gearbox housing.

Fit 5th gear wheel -1- and sleeve -2- (if removed by hand earlier).

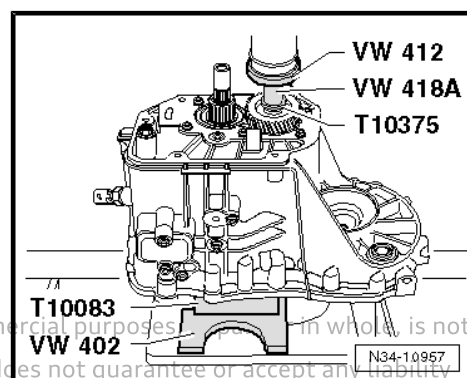


Pressing on 5th gear wheel (if pressed off earlier):

- Fit sleeve (-2- in previous illustration) onto 5th gear wheel.

All versions (continued):

- Install 5th speed selector gear with synchro-ring for 5th gear and needle bearing.

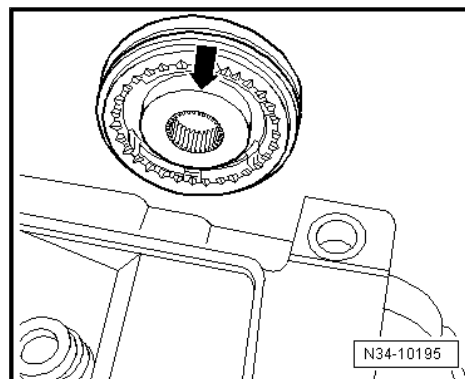


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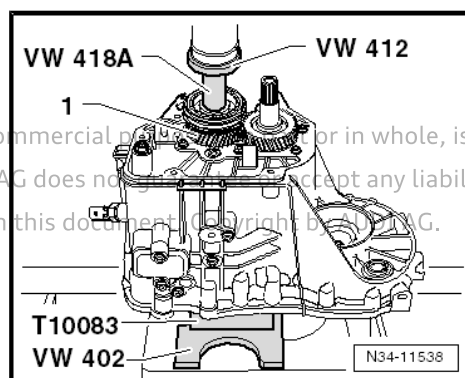
Installation position of 5th/6th gear synchro-hub/locking collar

The high collar -arrow- points to 5th gear and to gearbox housing.



- 5th speed selector gear -item 1- with synchro-ring fitted.
- Press on 5th/6th gear synchro-hub/locking collar using tube - VW 418 A- .

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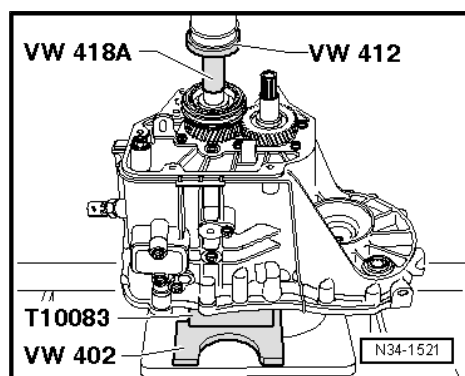
- Heat sleeve for 6th speed needle bearing to 100°C (maximum) and press on.



WARNING

Wear protective gloves.

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

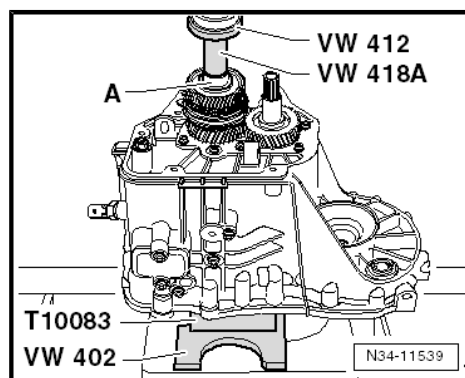


- Heat roller bearing inner race -A- to 100°C (maximum) and press onto input shaft.



WARNING

Wear protective gloves.





Installation position of 6th gear wheel:

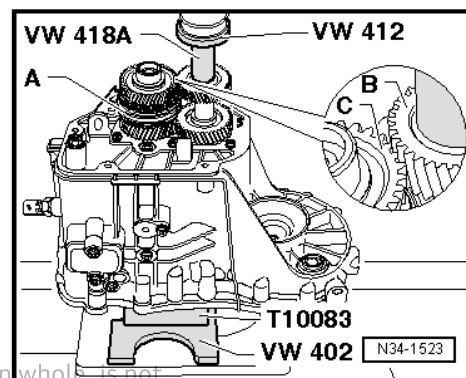
The higher collar faces the 5th gear wheel.

- Set locking collar -A- for 5th/6th gear to neutral position to allow 6th speed selector gear to turn while pressing on 6th gear wheel.



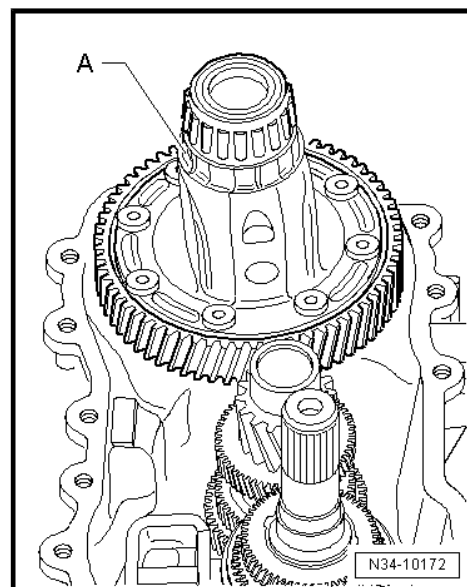
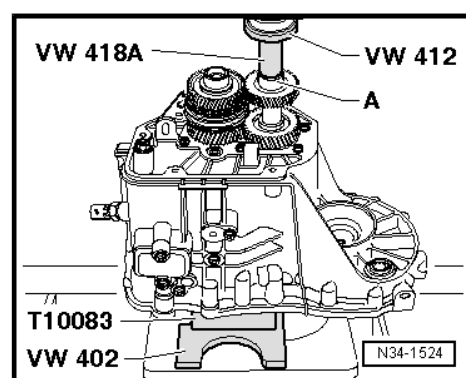
WARNING

Wear protective gloves.



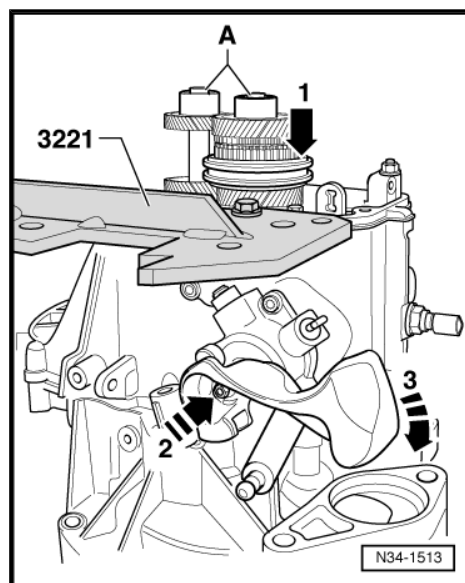
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- Heat 6th gear wheel to 100°C (maximum).
- Press on 6th gear wheel -B-, making sure that it meshes properly with 6th speed selector gear -C-.
- Heat roller bearing inner race -A- to 100°C (maximum) and press onto output shaft.
- Securing gearbox to assembly stand again ⇒ [page 103](#)
- Insert magnet in gearbox housing.
- Install differential -A-.
- Apply sealant evenly to sealing surface.
- Bolt clutch housing to gearbox housing.
- Turn the gearbox in the assembly stand so that the gearbox housing faces upwards.

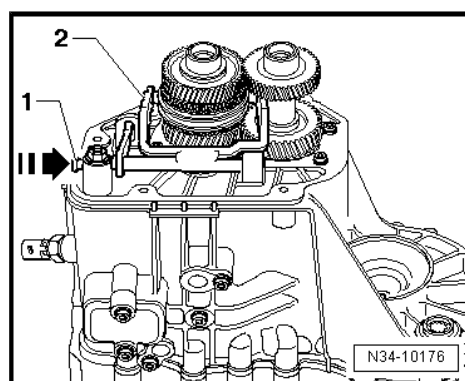




- Engage 2 gears -arrows 1- to -3- before tightening securing bolts -A-.



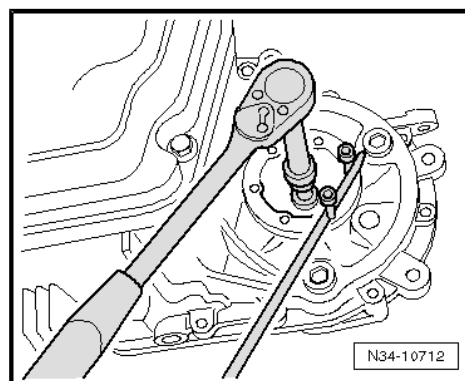
- Fit 5th/6th gear selector fork -2- and slide pivot pin -1- in onto stop in direction of -arrow-.
- Apply sealant evenly to sealing surface.
- Bolt on gearbox housing cover.



- Install both flange shafts with springs, thrust washers and tapered rings.
- Install clutch release lever together with release bearing and guide sleeve ⇒ [page 45](#) .

Tightening torques

- ◆ ⇒ [“7.5 Exploded view - gear cluster, differential and selector mechanism”, page 109](#)
- ◆ Gearbox housing to clutch housing
⇒ [“7.4 Exploded view - gearbox housing”, page 108](#)
- ◆ Gearbox housing cover
⇒ [“7.3 Exploded view - 5th and 6th gear”, page 106](#)
- ◆ Flange shaft to gearbox (countersunk bolt)
⇒ [“2.1 Exploded view - differential”, page 169](#)



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8 Gearbox housing, clutch housing

⇒ ["8.1 Exploded view - gearbox housing cover", page 135](#)

⇒ ["8.3 Exploded view - gearbox housing and clutch housing", page 138](#)

⇒ ["8.4 Servicing gearbox housing and clutch housing", page 140](#)

8.1 Exploded view - gearbox housing cover

1 - Bolt

- ☐ 2 Nm
- ☐ Tighten diagonally

2 - Bearing plate

- ☐ Secures roller bearings
- ☐ Installation position: indentations for countersunk head bolts point towards gearbox housing
- ☐ Not used with some gearboxes, in which case bolts are used for securing ⇒ [page 138](#)

3 - Roller bearing

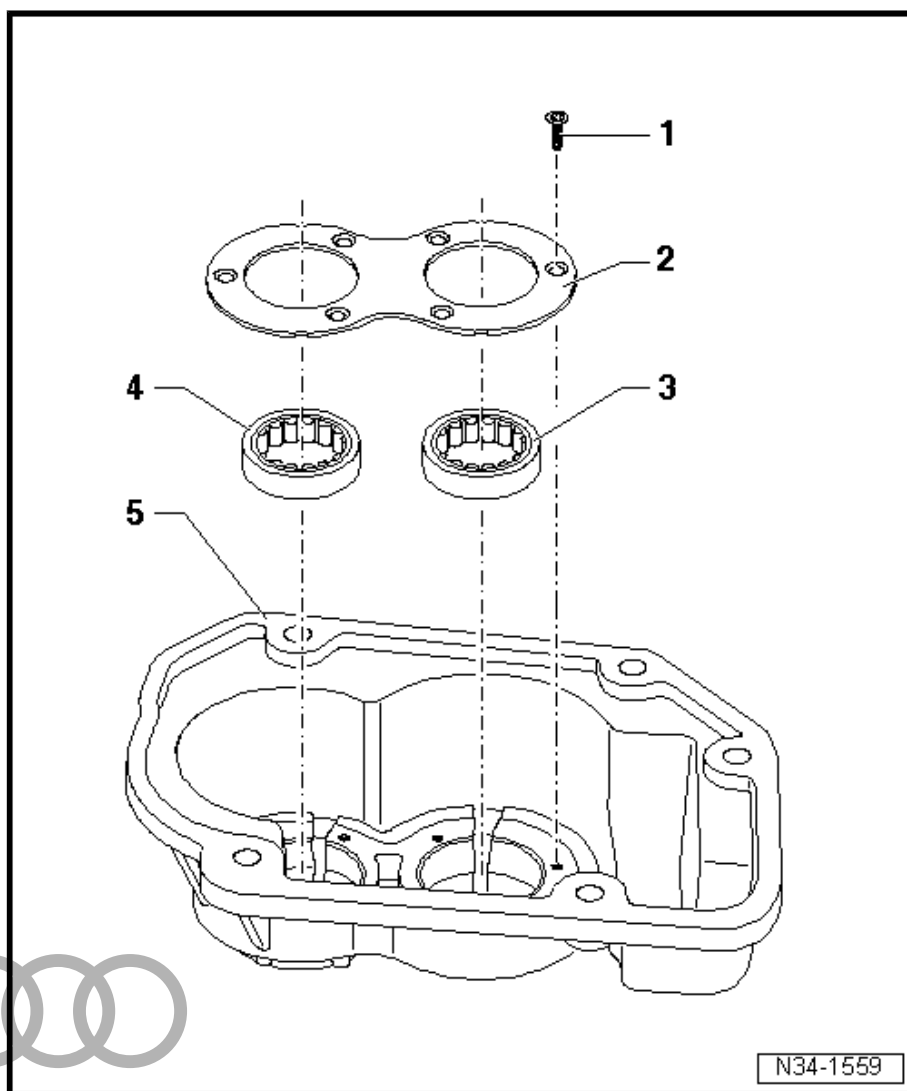
- ☐ For input shaft
- ☐ Do not interchange with roller bearing for output shaft
- ☐ Pulling out ⇒ [page 137](#)
- ☐ Pressing in ⇒ [page 137](#)
- ☐ Different methods of securing ⇒ [page 138](#)

4 - Roller bearing

- ☐ For output shaft
- ☐ Do not interchange with roller bearing for input shaft
- ☐ Pulling out ⇒ [page 137](#)
- ☐ Pressing in ⇒ [page 137](#)
- ☐ Different methods of securing ⇒ [page 138](#)

5 - Gearbox housing cover

- ☐ Detaching and attaching ⇒ [page 117](#)



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8.2 Servicing gearbox housing cover

Special tools and workshop
equipment required



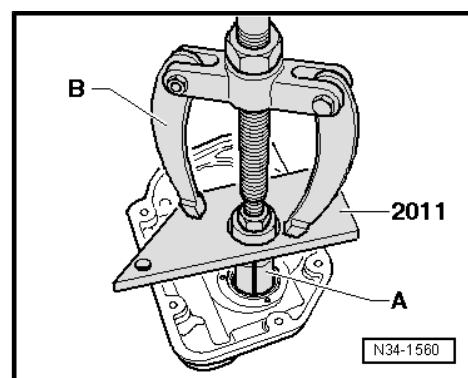
- ◆ Press tool - VW 412-
- ◆ Drift sleeve - 40-21-
- ◆ Support bridge - 2011-
- ◆ Hot air blower - V.A.G 1416-
- ◆ Not used: Tools 1-4
- ◆ Not required: torque wrench - V.A.G 1783-



- ◆ Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-



- ◆ Counter-support - VAS 251 623- , or e.g. counter-support - Kukko 22/2-



Pulling roller bearing out of gearbox housing cover

A - Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-

B - Counter-support - VAS 251 623- , or e.g. counter-support - Kukko 22/2-

Pressing roller bearing into gearbox housing cover

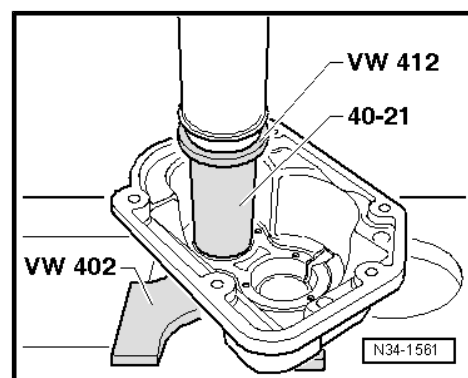
- Heat area round bearing seats in gearbox housing cover to approx. 100 °C using e.g. hot air blower - V.A.G 1416- .
- Insert roller bearing after heating housing and push into position under workshop press until heat exchange has taken place.



Note

Roller bearings must be pressed fully home into cover. Do not try to tighten via bolts on base plate.

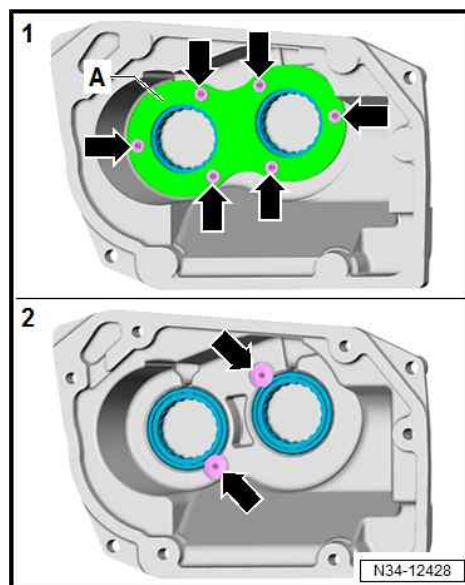
- Secure roller bearings.



**Different methods of securing roller bearings**

Cover has been adapted accordingly.

Retaining clip	Threaded holes in cover
1. - Secured with base plate -A- and countersunk head bolts M 4 x 14 -arrows-	6
2. - Secured with countersunk head bolts M 4 x 12 -arrows-	2

**8.3 Exploded view - gearbox housing and clutch housing****1 - Clutch housing**

- ☐ If renewed: adjust differential ⇒ [page 177](#)

2 - Input shaft oil seal

- ☐ Lever out with screwdriver
- ☐ Driving in ⇒ [page 142](#)

3 - Ball-head pin

- ☐ 20 Nm
- ☐ Lubricate with MoS₂ grease

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

- ☐ Can be renewed with gearbox in vehicle ⇒ [page 167](#)

5 - Sleeve

- ☐ For oil seal
- ☐ Removing ⇒ [page 142](#)
- ☐ Installing ⇒ [page 142](#)

6 - Bolt

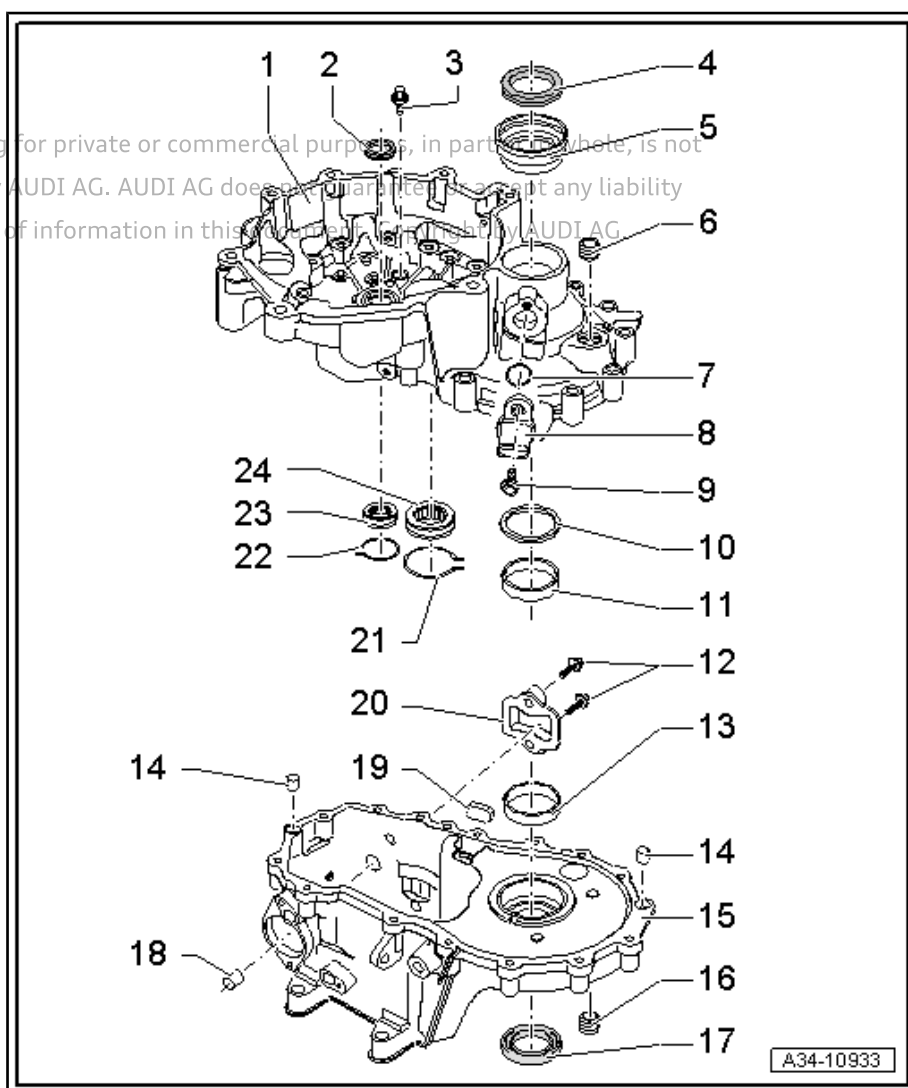
- ☐ For oil filler hole
- ☐ Tightening torque ⇒ [page 140](#)

7 - O-ring

- ☐ If fitted, always renew

8 - Plug**9 - Bolt**

- ☐ 5 Nm +90°
- ☐ Renew





10 - Shim

- ☐ For differential
- ☐ Determining thickness ⇒ [page 177](#)

11 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing in and out of clutch housing ⇒ [page 169](#)
- ☐ If renewed: adjust differential ⇒ [page 177](#)

12 - Bolt

- ☐ 5 Nm + 90°
 - ☐ Renew
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13 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out of and pressing into gearbox housing ⇒ [page 169](#)
- ☐ If renewed: adjust differential

14 - Dowel sleeve

15 - Gearbox housing

- ☐ If renewed: adjust differential ⇒ [page 177](#)

16 - Bolt

- ☐ For oil drain hole
- ☐ Tightening torque ⇒ [page 140](#)

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

- ☐ Can be renewed with gearbox in vehicle ⇒ [page 165](#)

18 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ [page 143](#)
- ☐ Driving in ⇒ [page 143](#)

19 - Magnet

- ☐ Held in place by joint surface of housing

20 - Cap

- ☐ Before tightening apply sealant to sealing surface

21 - Circlip

- ☐ Fit in groove on roller bearing ⇒ [Item 24 \(page 139\)](#)

22 - Circlip

- ☐ Fit in groove on roller bearing ⇒ [Item 23 \(page 139\)](#)

23 - Roller bearing

- ☐ For input shaft
- ☐ Pulling out and pressing in ⇒ [page 144](#)

24 - Roller bearing

- ☐ For output shaft
- ☐ Pulling out and pressing in ⇒ [page 156](#)

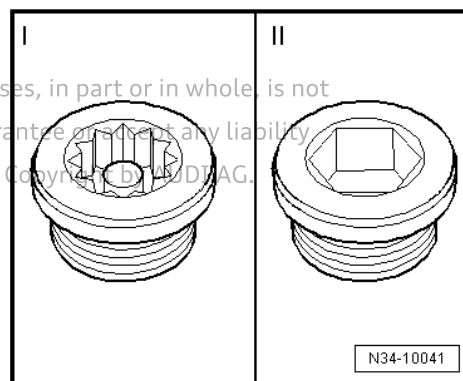


Different versions of oil filler/oil drain plug

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

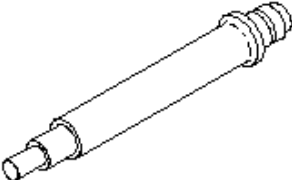
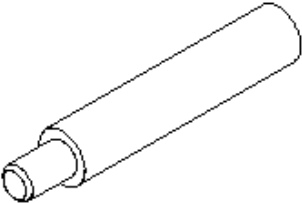
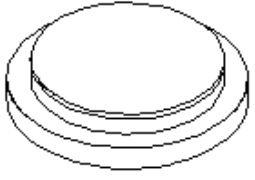
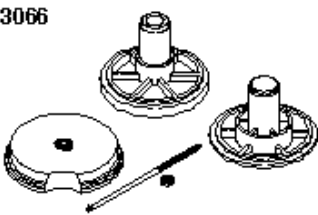
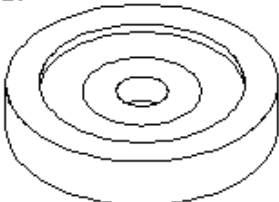
II - Oil filler/oil drain plug with hexagon socket - 30 Nm

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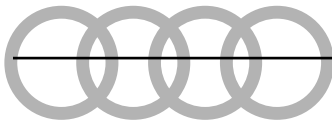


8.4 Servicing gearbox housing and clutch housing

Special tools and workshop equipment required

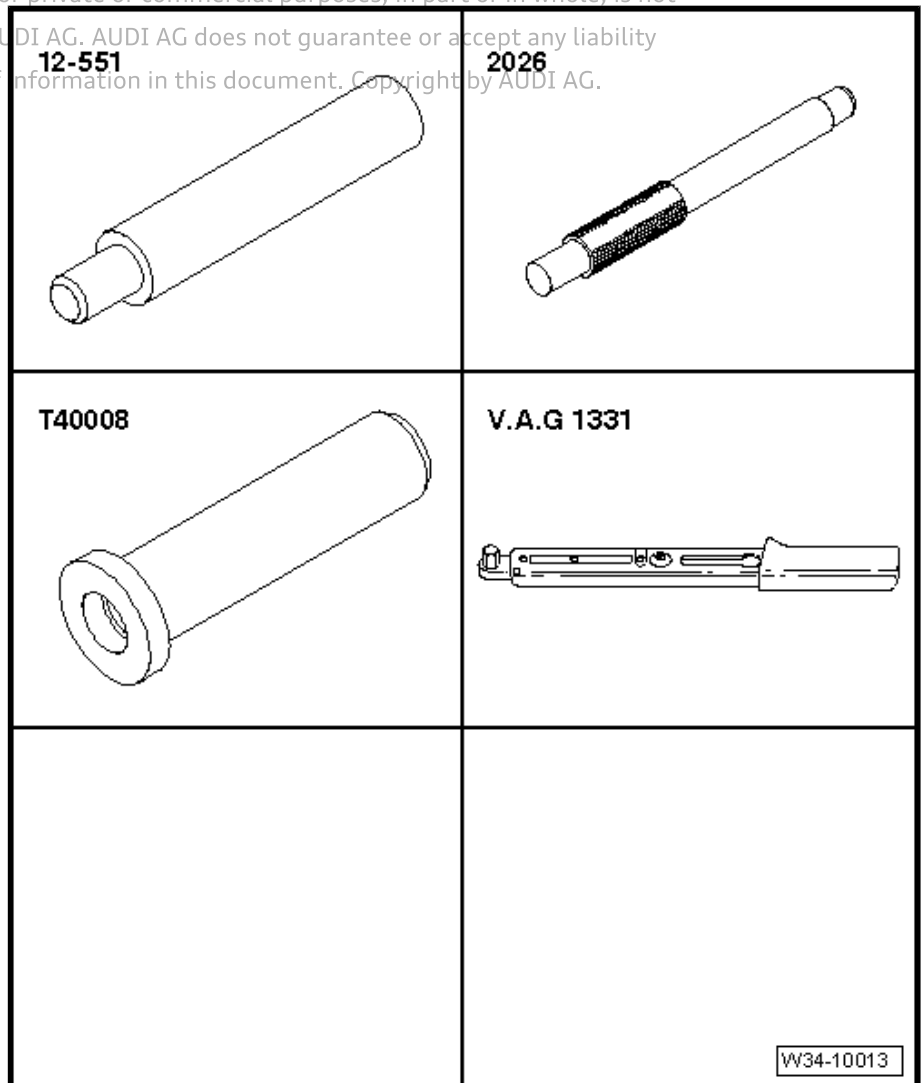
VW 408 A 	VW 472/2 
12-551 	30-555 
3066 	3124  G34-0009

- ◆ 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-

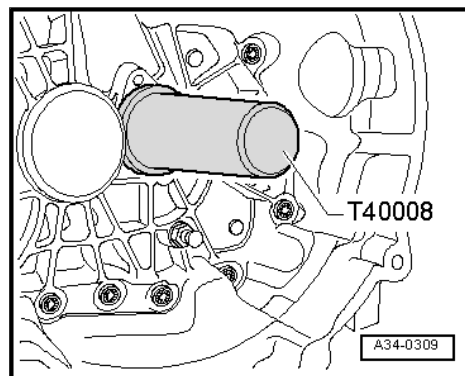
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- ◆ Centring mandrel - 12 - 551-
- ◆ Drift - 2026-
- ◆ Thrust piece - T40008-
- ◆ Torque wrench - V.A.G 1331-



- ◆ Puller - VAS 251 417- , or e.g. puller - Kukko 18/1-



- ◆ Splitter - VAS 251 409- , or e.g. splitter - Kukko 17/1-



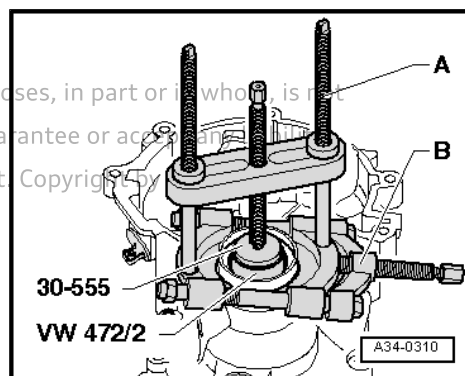
Driving in input shaft oil seal until flush

Pulling out oil seal sleeve

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

A - Puller - VAS 251 417- , or e.g. puller - Kukko 18/1-

B - Splitter - VAS 251 409- , or e.g. splitter - Kukko 17/1-



Drawing in oil seal sleeve

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

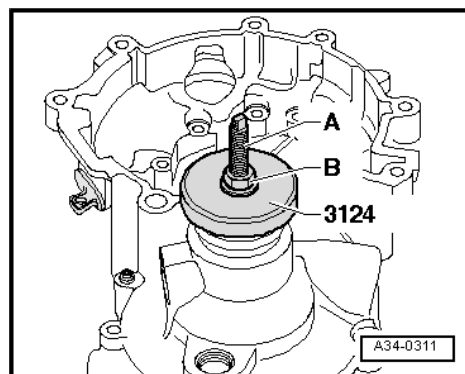
B - M12 nut with washer

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



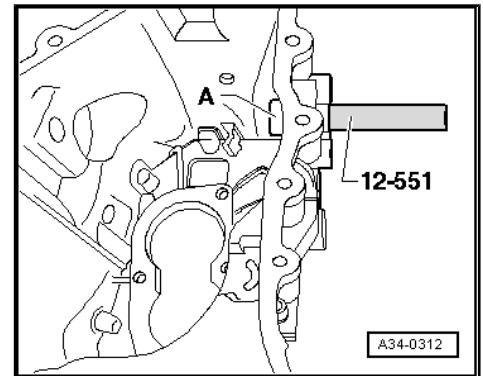
Note

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

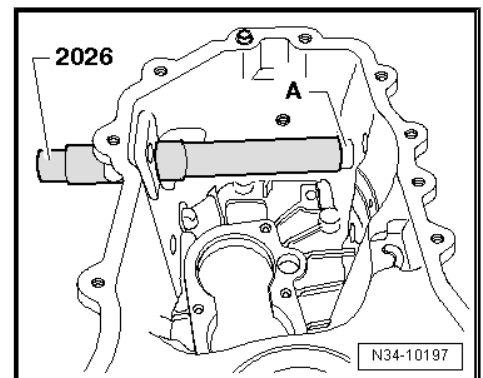




Driving out selector shaft sleeve -A-



Driving in selector shaft sleeve -A- to stop



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35 – Gears, shafts

1 Input shaft

⇒ [“1.1 Exploded view - input shaft”, page 144](#)

⇒ [“1.2 Dismantling and assembling input shaft”, page 147](#)

1.1 Exploded view - input shaft



Note

- ◆ When fitting new gear wheels or input shaft refer to technical data ⇒ [page 2](#) and ⇒ [Electronic parts catalogue](#).
- ◆ 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 - Bolt

- Tightening torque
⇒ [Item 9 \(page 106\)](#)

2 - Roller bearing inner race with thrust washer

- Do not interchange with roller bearing inner race for output shaft
- Removing and installing
⇒ [page 117](#)

3 - 6th speed selector gear

4 - 6th gear synchro-ring

- Checking for wear
⇒ [page 152](#)

5 - Needle bearing

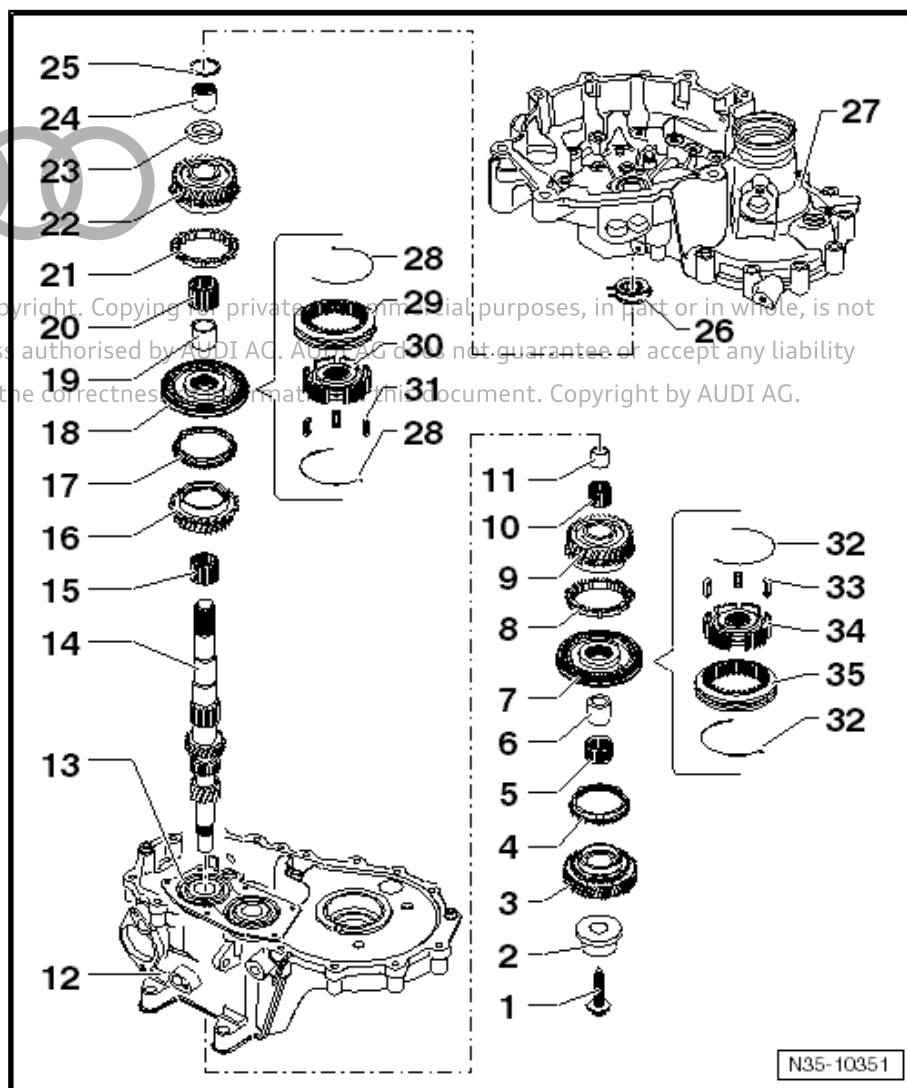
- For 6th gear
- One or two-piece, depending on version
⇒ [page 106](#)
- For correct version, refer to ⇒ [Electronic parts catalogue](#)
- Renew together with
⇒ [Item 6 \(page 144\)](#)

6 - Sleeve

- For 6th gear needle bearing
- Renew together with
⇒ [Item 5 \(page 144\)](#)
- Removing and installing
⇒ [page 117](#)

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

- Removing and installing ⇒ [page 117](#)
- Dismantling ⇒ [page 155](#)
- Assembling 5th/6th gear locking collar/synchro-hub ⇒ [page 155](#) and ⇒ [page 155](#)



N35-10351



- ☐ Installation position ⇒ [page 155](#)

8 - 5th gear synchro-ring

- ☐ Will be damaged when removed from input shaft
- ☐ Renew
- ☐ Checking for wear ⇒ [page 152](#)

9 - 5th speed selector gear

10 - Needle bearing

- ☐ For 5th gear
- ☐ Renew together with ⇒ [Item 11 \(page 145\)](#)

11 - Sleeve

- ☐ For 5th gear needle bearing
- ☐ Renew together with ⇒ [Item 10 \(page 145\)](#) .
- ☐ Press off with bearing mounting/grooved ball bearing ⇒ [page 151](#) .
- ☐ Pressing on ⇒ [page 155](#)

12 - Gearbox housing

- ☐ Servicing ⇒ [page 140](#)

13 - Bearing mounting with grooved ball bearings

- ☐ If bearing mounting is separated from gearbox housing, it must always be renewed
- ☐ Pressing off without 5th gear wheel ⇒ [page 151](#)
- ☐ Pressing off with 5th gear wheel ⇒ [page 151](#)
- ☐ Pressing on ⇒ [page 155](#)

14 - Input shaft

- ☐ Clean residual locking compound out of tapped hole in input shaft using a thread tap.

15 - Needle bearing

- ☐ For 3rd gear

16 - 3rd speed selector gear

17 - 3rd gear synchro-ring

- ☐ Checking for wear ⇒ [page 152](#)

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

- ☐ Press off with 3rd speed selector gear ⇒ [page 151](#)
- ☐ Dismantling ⇒ [page 152](#)
- ☐ Installation position: Locking collar/synchro-hub ⇒ [page 152](#)
- ☐ Assembling ⇒ [page 152](#)
- ☐ Pressing on ⇒ [page 153](#)

19 - Sleeve

- ☐ For 4th gear needle bearing
- ☐ Renew together with ⇒ [Item 20 \(page 145\)](#)
- ☐ Press off with 3rd speed selector gear ⇒ [page 151](#)
- ☐ Pressing on ⇒ [page 153](#)

20 - Needle bearing

- ☐ For 4th gear
- ☐ Renew together with ⇒ [Item 19 \(page 145\)](#)

21 - 4th gear synchro-ring

- ☐ Checking for wear ⇒ [page 152](#)

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22 - 4th speed selector gear

23 - Thrust washer

24 - Roller bearing inner race

- ☐ Pressing off ⇒ [page 151](#)

- ☐ Can also be pulled off ⇒ [page 151](#)

- ☐ Pressing on ⇒ [page 153](#)

25 - Circlip

- ☐ Determining thickness ⇒ [page 154](#)

26 - Roller bearing

- ☐ With circlip

- ☐ Pulling out ⇒ [page 150](#)

- ☐ Pressing in ⇒ [page 150](#)

- ☐ Installation position: Circlip in bearing faces towards input shaft

27 - Clutch housing

- ☐ Servicing ⇒ [page 140](#)

28 - Spring

- ☐ Installation position ⇒ [page 152](#)

29 - Locking collar for 3rd and 4th gear

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

31 - Locking pieces

- ☐ 3x

32 - Spring

- ☐ Installation position ⇒ [page 155](#)

33 - Locking pieces

- ☐ 3x

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

35 - Locking collar for 5th and 6th gear

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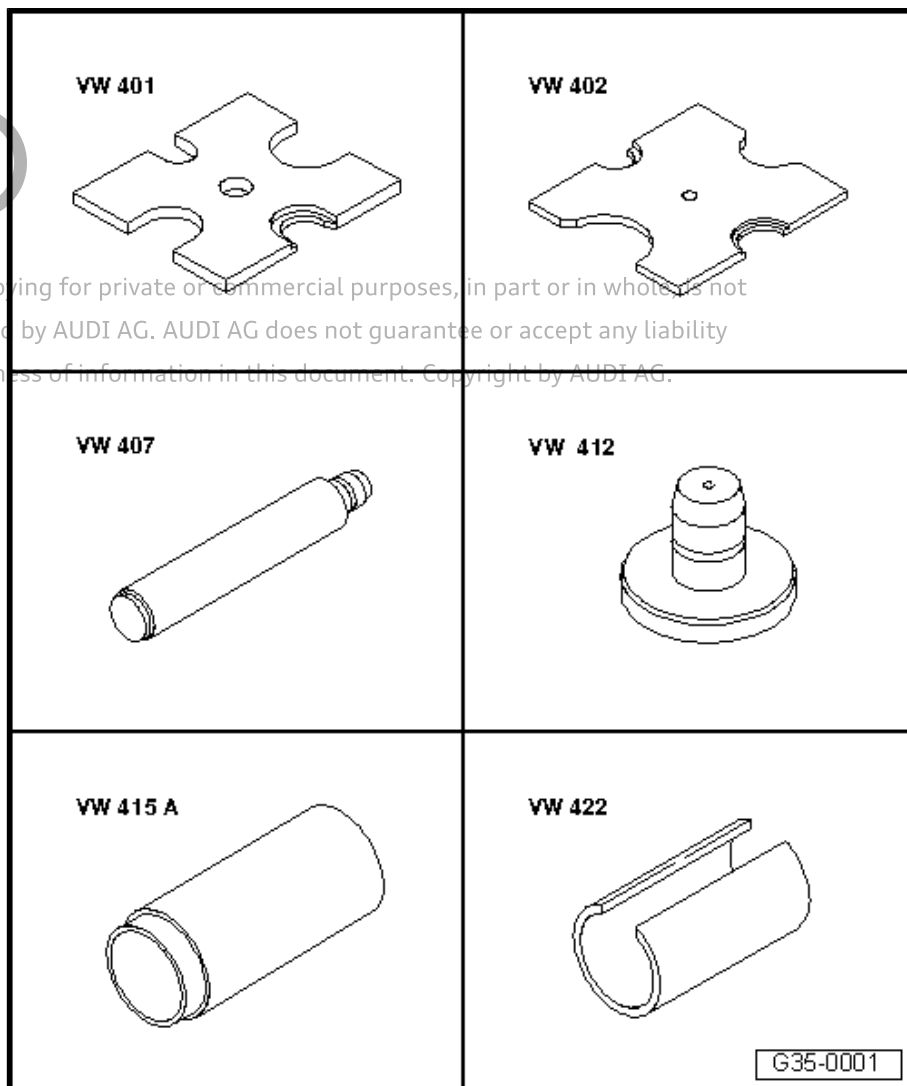


1.2 Dismantling and assembling input shaft

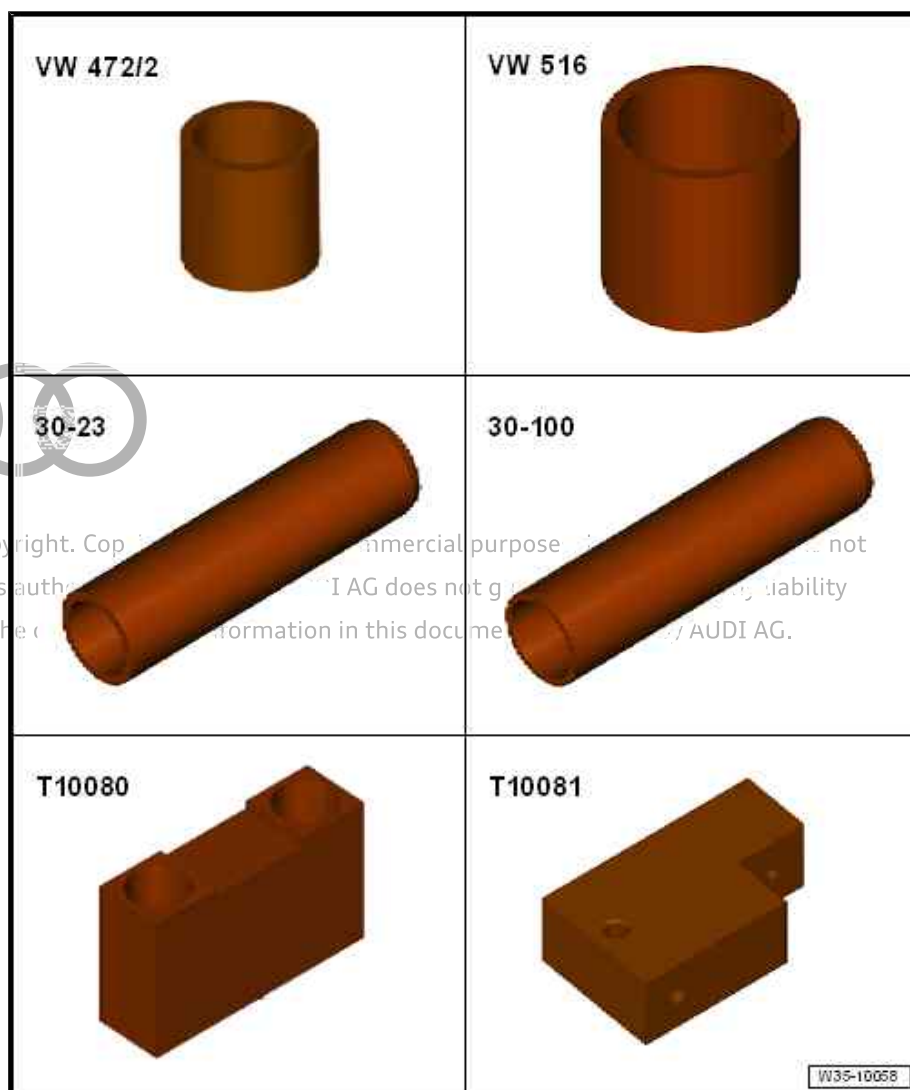
Special tools and workshop equipment required



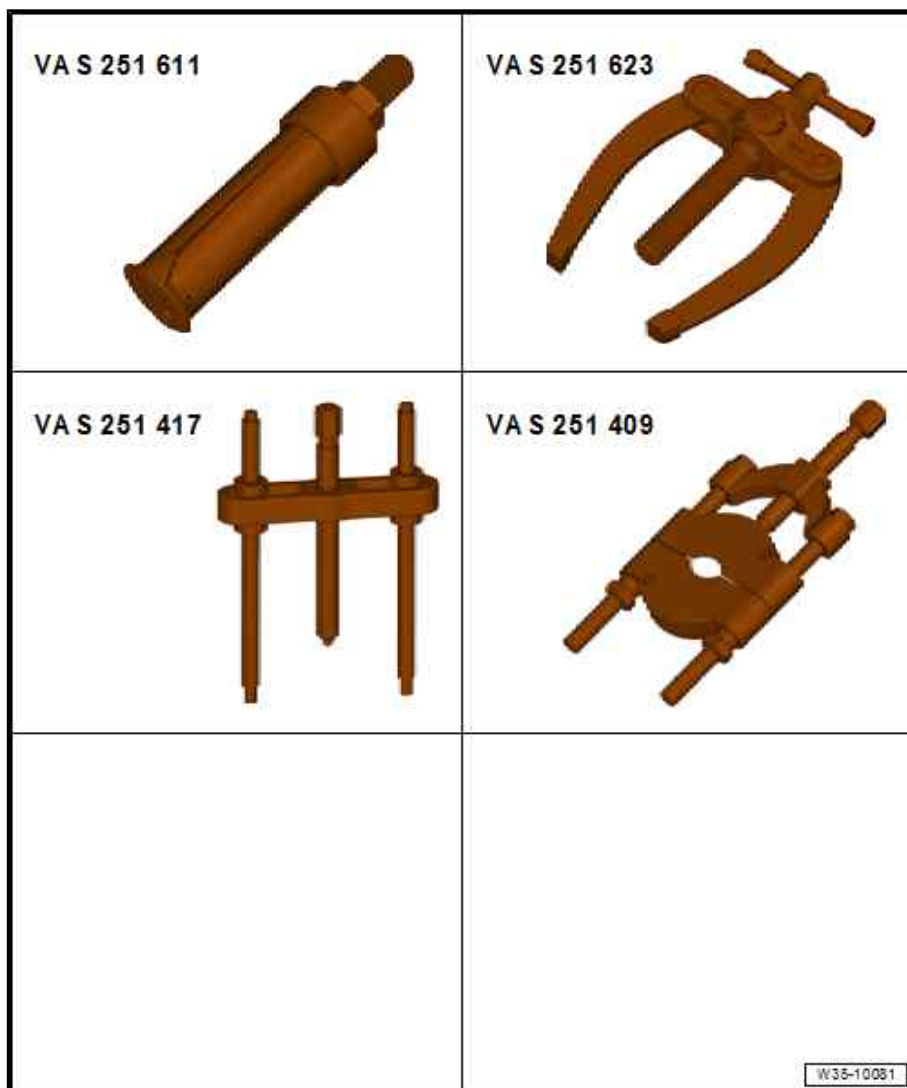
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- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 415 A-
- ◆ Tube - VW 422-



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



◆ Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-

◆ Counter-support - VAS 251 623- , or e.g. counter-support - Kukko 22/2-

◆ Puller - VAS 251 417- , or e.g. puller - Kukko 18/1-

◆ Splitter - VAS 251 409- , or e.g. splitter - Kukko 17/1-

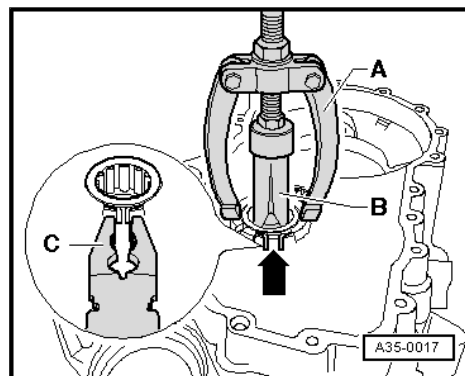
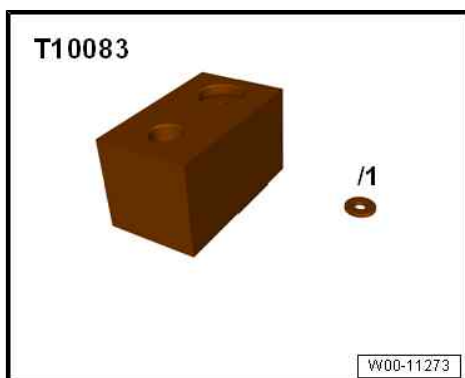
◆ Circlip pliers - VW 161 A-

◆ -Feeler gauge-

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- ◆ Thrust block - T10083-



- ◆ Washer - T10083/1-

- ◆ Thrust plate - T10084A-



Pulling roller bearing out of clutch housing

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

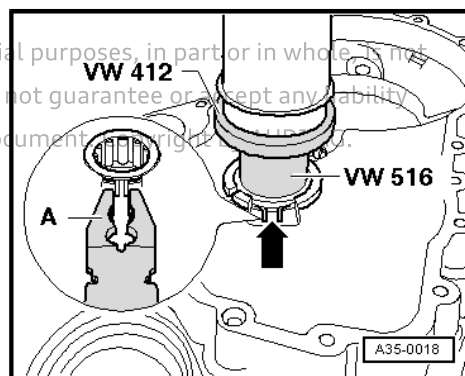
A - Counter-support - VAS 251 623- , or e.g. counter-support - Kukko 22/2-

B - Internal puller - VAS 251 611- , or e.g. internal puller - 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.

If 5th gear wheel -A- could not be removed by hand:

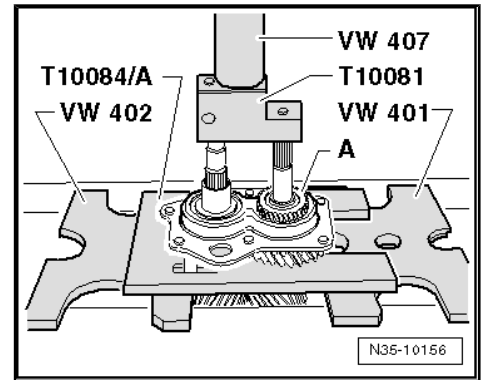




Pressing off bearing mounting with grooved ball bearings and 5th gear wheel -A-

- 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.

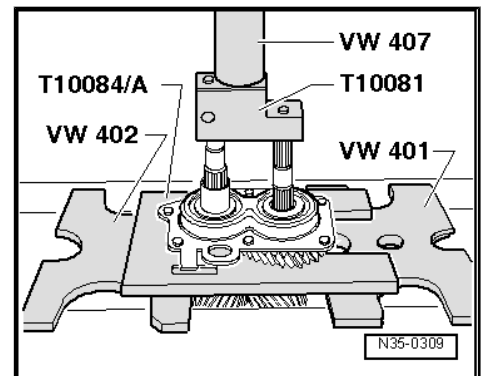
If 5th gear wheel could be removed by hand:



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.
- Remove circlip.

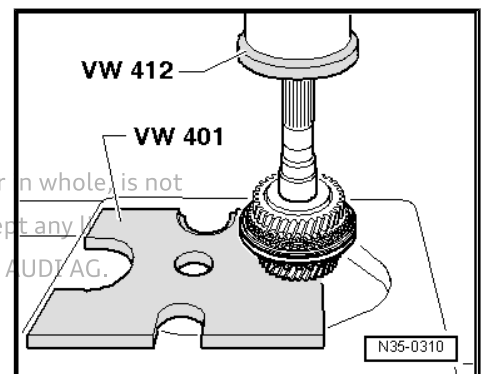
All versions (continued):



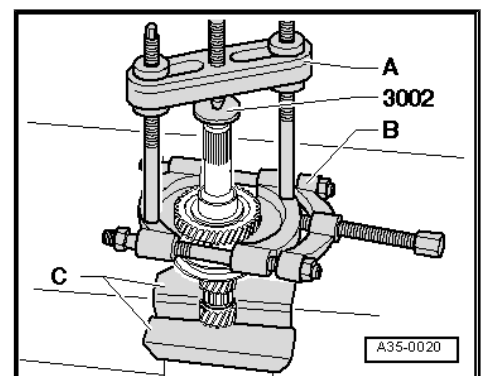
Pressing off roller bearing inner race together with: thrust washer, 4th speed selector gear with needle bearing, locking collar and synchro-hub for 3rd and 4th gear and 3rd speed selector gear

- Remove circlip.
- 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.

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

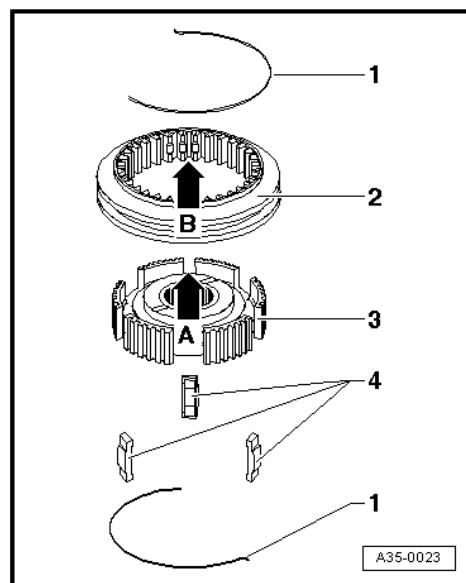




Dismantling and assembling locking collar and synchro-hub for 3rd and 4th gears

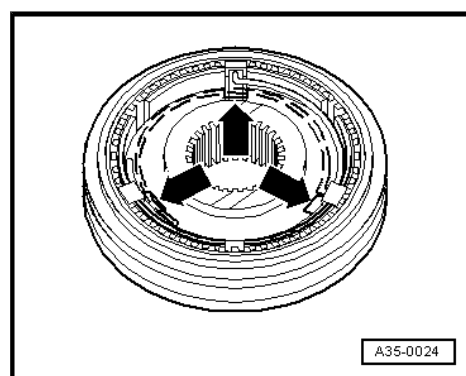
- 1 - Spring
- 2 - Locking collar
- 3 - Synchro-hub
- 4 - Locking piece
- Slide locking collar over synchro-hub.

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



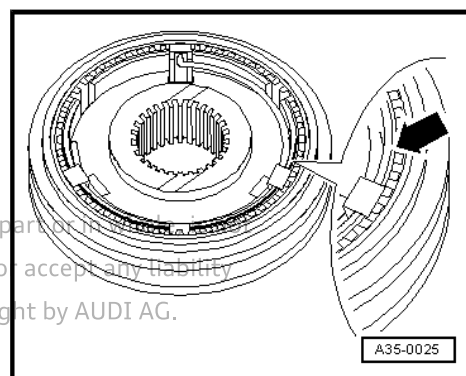
Assembling locking collar with synchro-hub for 3rd and 4th gears

- Locking collar is pushed over synchro-hub.
- 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.



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

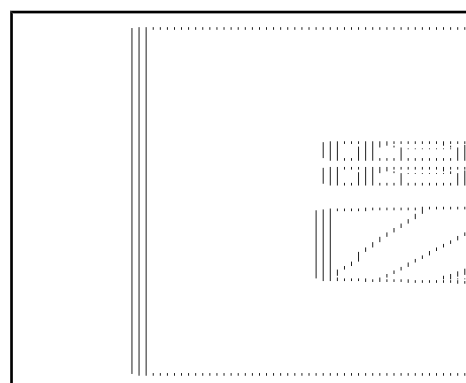
The groove on the top -arrow- points towards 4th gear.



Checking synchro-ring for wear

- Press synchro-ring onto cone on selector gear and measure gap -a- with a feeler gauge.

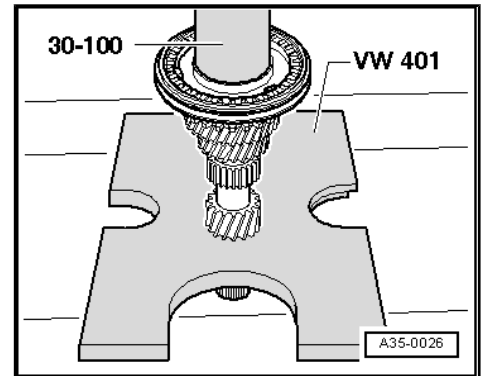
Gap -a-	Installation depth	Wear limit
3rd, 4th, 5th and 6th gear	1.1 ... 1.7 mm	0.5 mm





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

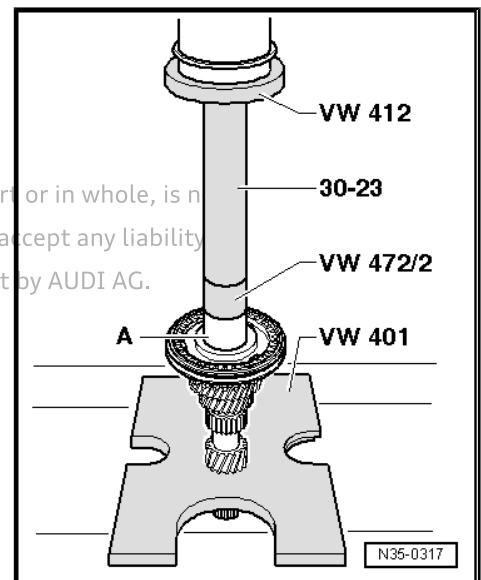
Installation position: higher collar faces 3rd speed selector gear



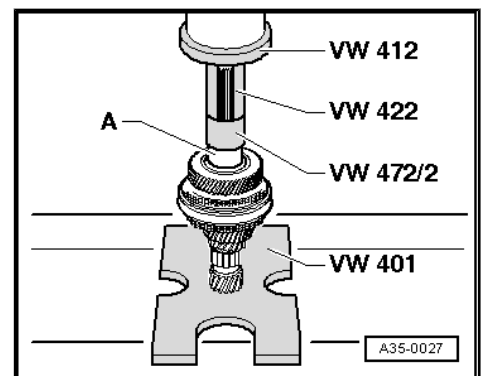
Pressing on sleeve -A- for 4th gear needle bearing

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

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Pressing on roller bearing inner race -A-



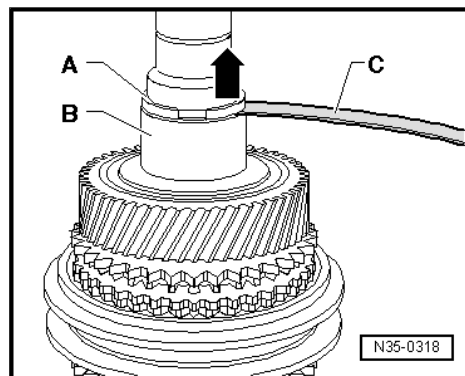


Determining thickness of circlip

- 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 required circlip from table and install. For part numbers, refer to ⇒ Electronic parts catalogue .

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



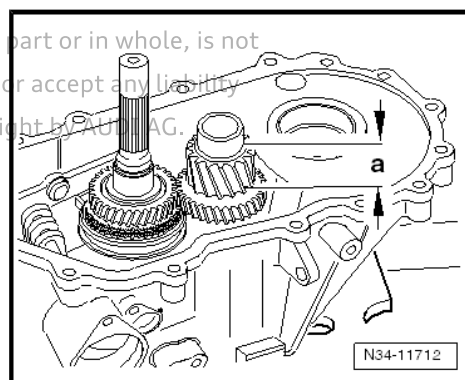
Pressing bearing mounting with grooved ball bearings onto input and output shafts



Note

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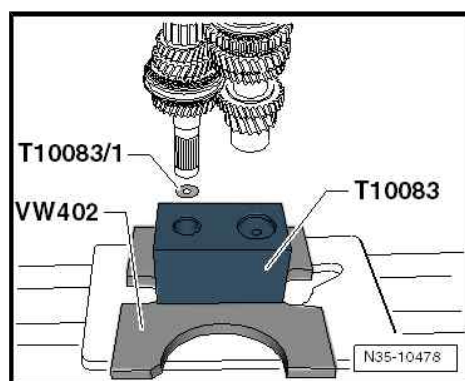
- ◆ Due to differences in the height of the teeth (dimension -a-), the output shafts of different gearboxes differ in length (shown here with shafts installed).
- ◆ To ensure that the bearing mounting is pressed evenly onto the shafts, the shafts must always be fitted evenly in the thrust block - T10083-.
- ◆ It may be necessary to fit a washer - T10083/1- (3 mm thick) in the hole provided for the input shaft (also see ⇒ [page 154](#)).
- ◆ Dimension -a- on teeth of output shaft must therefore be measured.



Dimension -a- = 30.6 mm

Insert washer - T10083/1- (see following illustration).

Inserting washer - T10083/1-





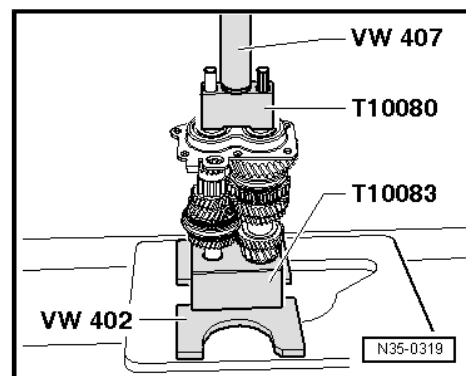
Pressing on bearing mounting with grooved ball bearing

- Heat bearing mounting to 100°C (maximum) before pressing on.



WARNING

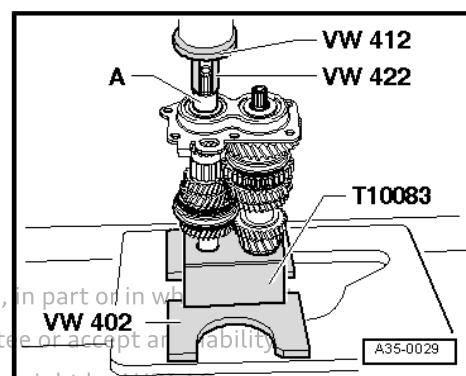
Wear protective gloves.



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



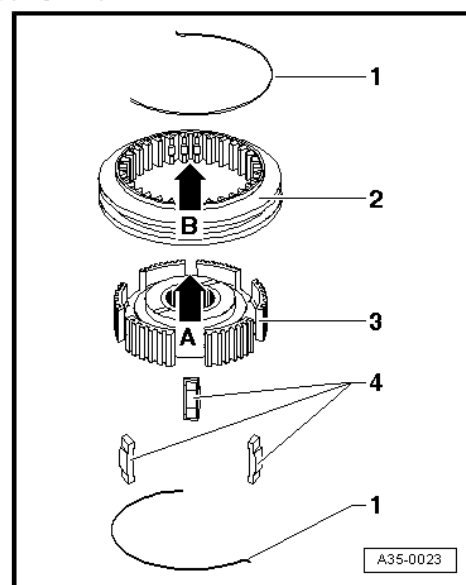
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Dismantling and assembling 5th/6th gear locking collar and synchro-hub

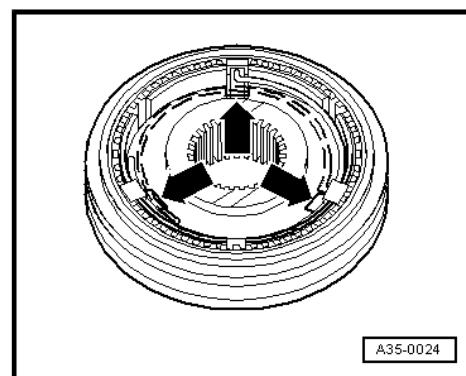
- 1 - Spring
 - 2 - Locking collar
 - 3 - Synchro-hub
 - 4 - Locking piece
- Slide locking collar over synchro-hub.

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



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

- Locking collar is pushed over synchro-hub.
- Insert locking pieces in the deeper recesses -arrows- and install springs 120° off-set.
- Angled end of spring must locate in hollow locking piece.





2 Output shaft

⇒ "2.1 Exploded view - output shaft", page 156

⇒ "2.2 Dismantling and assembling output shaft", page 159

2.1 Exploded view - output shaft



Note

- ◆ When fitting new gear wheels or output shaft refer to technical data ⇒ [page 2](#) and ⇒ *Electronic parts catalogue*.
- ◆ 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 - Clutch housing

- Servicing ⇒ [page 138](#)

2 - Roller bearing

- With circlip
- Pulling out ⇒ [page 160](#)
- Pressing in ⇒ [page 160](#)
- Installation position: the circlip in the bearing faces the output shaft

3 - 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

4 - 4th gear wheel

- Installation position: Collar faces 3rd gear ⇒ [page 161](#)

5 - Circlip

6 - Circlip

7 - 3rd gear wheel

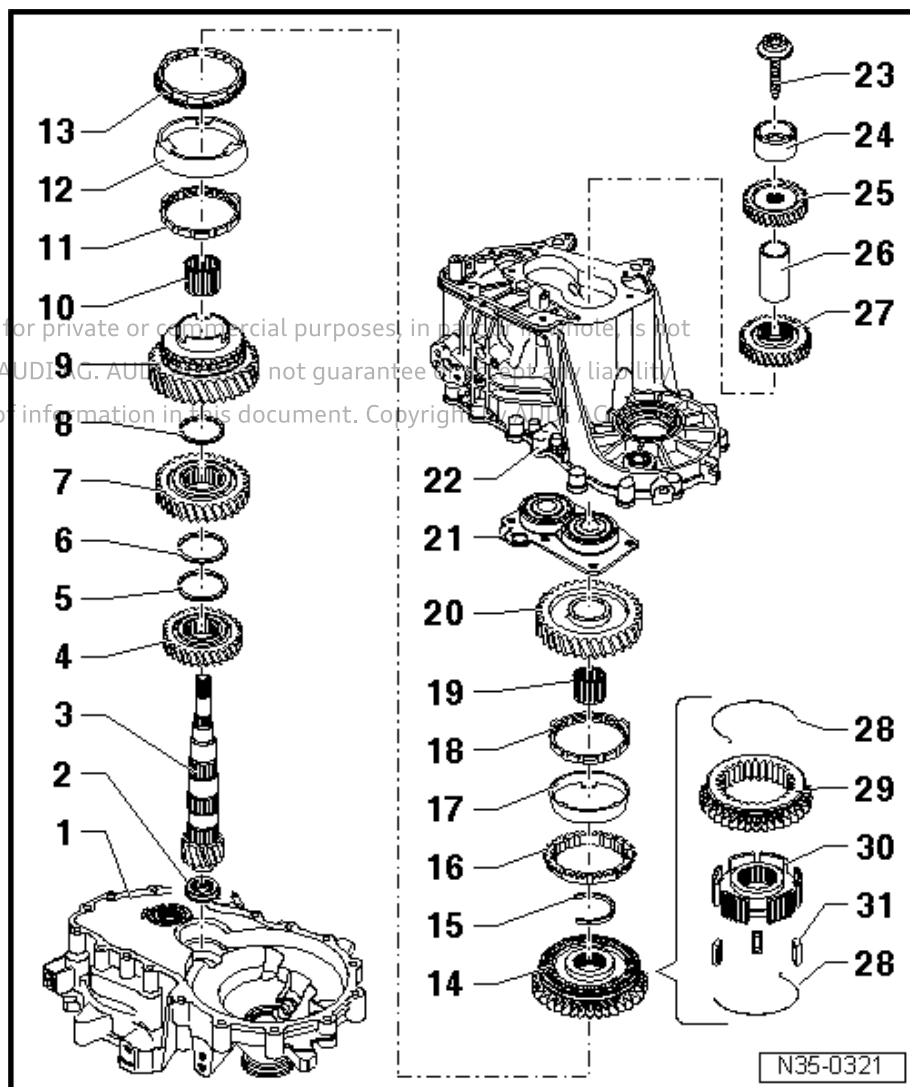
- Installation position: Collar faces 4th gear ⇒ [page 161](#)

8 - Circlip

9 - 2nd speed selector gear

10 - Needle bearing

- For 2nd gear





11 - Inner ring for 2nd gear

- ☐ Checking for wear ⇒ [page 161](#)
- ☐ Check lugs for scoring
- ☐ Installation position ⇒ [page 162](#)

12 - Outer ring for 2nd gear

- ☐ Fit on inner ring ⇒ [Item 11 \(page 157\)](#)
- ☐ Renew if scored or if there are visible traces of wear
- ☐ Installation position ⇒ [page 162](#)

13 - 2nd gear synchro-ring

- ☐ Checking for wear ⇒ [page 162](#)
- ☐ Installation position ⇒ [page 162](#)

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

- ☐ Press off together with 2nd speed selector gear after removing circlip ⇒ [Item 15 \(page 157\)](#) ⇒ [page 161](#)
- ☐ Dismantling ⇒ [page 162](#)
- ☐ Assembling locking collar/synchro-hub ⇒ [page 162](#) and ⇒ [page 163](#)
- ☐ Installation position ⇒ [page 162](#)
- ☐ Pressing on ⇒ [page 163](#)

15 - Circlip

- ☐ Pressing out ⇒ [page 161](#)
- ☐ Installing ⇒ [page 163](#)

16 - 1st gear synchro-ring

- ☐ Checking for wear ⇒ [page 162](#)
- ☐ Assemble so that the recesses engage on the locking pieces on the locking collar ⇒ [Item 14 \(page 157\)](#)

17 - Outer ring for 1st gear

- ☐ Insert in synchro-ring ⇒ [Item 16 \(page 157\)](#)
- ☐ Installation position
- ☐ Renew if scored or if there are visible traces of wear

18 - Inner ring for 1st gear

- ☐ Checking for wear ⇒ [page 161](#)
- ☐ Check lugs for scoring
- ☐ Installation position ⇒ [page 164](#)

19 - Needle bearing

- ☐ For 1st gear

20 - 1st speed selector gear

- ☐ Installation position ⇒ [page 164](#)

21 - Bearing mounting with grooved ball bearings

- ☐ If bearing mounting is separated from gearbox housing, it must always be renewed
- ☐ Pressing off without 5th gear wheel ⇒ [page 151](#)
- ☐ Pressing off with 5th gear wheel ⇒ [page 151](#)
- ☐ Pressing on ⇒ [page 155](#)

22 - Gearbox housing

- ☐ Servicing ⇒ [page 138](#)

23 - Bolt

- ☐ Removing and installing ⇒ [page 106](#)



24 - Roller bearing inner race

- ☐ Mark before removing
- ☐ Do not interchange with roller bearing inner race for input shaft
- ☐ Removing and installing ⇒ [page 117](#)

25 - 6th gear wheel

- ☐ Installation position: collar faces 5th gear wheel
- ☐ Removing and installing ⇒ [page 117](#)

26 - Sleeve

- ☐ Removing and installing ⇒ [page 117](#)

27 - 5th gear wheel

- ☐ Installation position: collar faces 6th gear wheel
- ☐ Removing and installing ⇒ [page 117](#)

28 - Spring

- ☐ Installation position ⇒ [page 163](#)

29 - Locking collar

30 - Synchro-hub

31 - Locking pieces

- ☐ 3x



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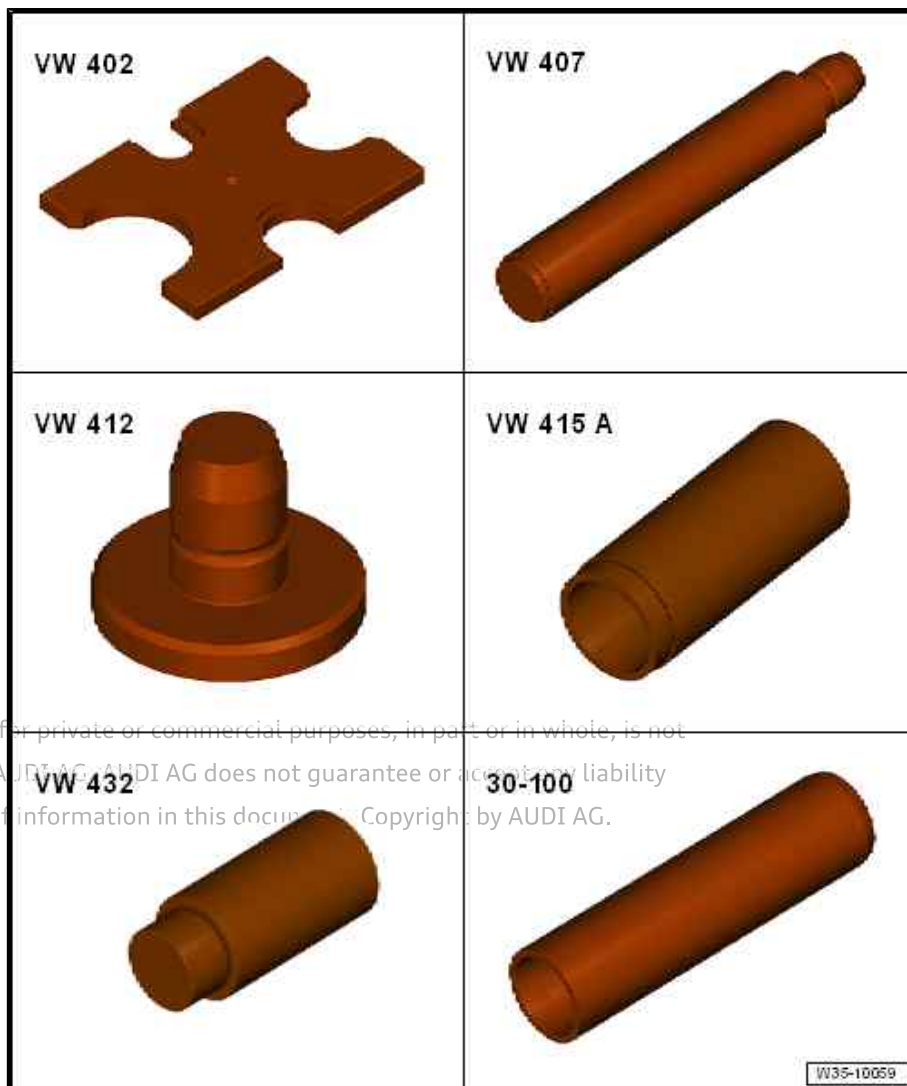


2.2 Dismantling and assembling output shaft

Special tools and workshop equipment required



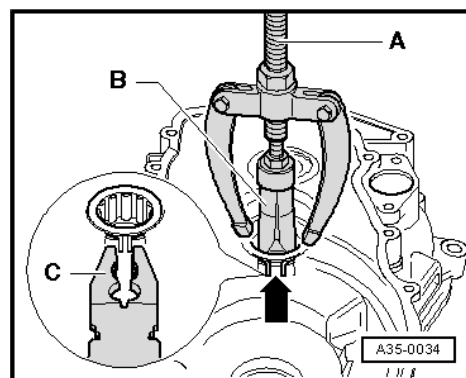
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- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 415 A-
- ◆ Thrust piece - VW 432-
- ◆ Drift sleeve - 30 - 100-



- ◆ Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-



- ◆ Counter-support - VAS 251 621- , or e.g. counter-support - Kukko 22/1-



Pulling roller bearing out of clutch housing

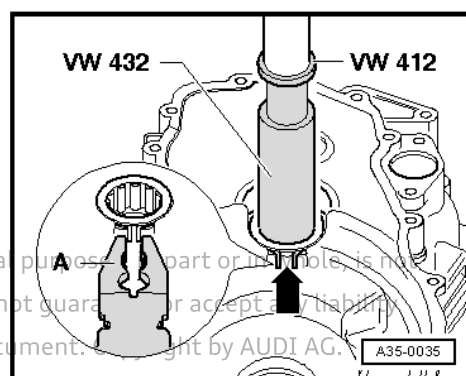
- When pulling out, compress circlip -arrow- for roller bearing using pliers -C-.

A - Counter-support - VAS 251 621- , or e.g. counter-support - Kukko 22/1-

B - Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-

Pressing roller bearing into clutch housing

- Support clutch housing using tube - VW 415 A- (not visible in diagram) 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.





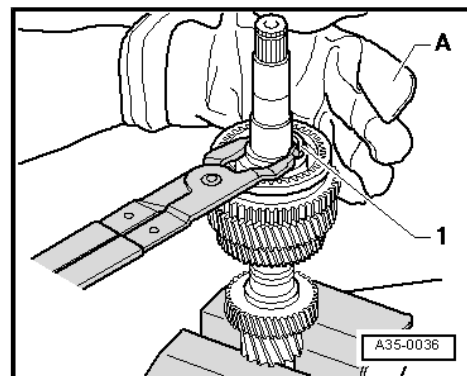
Removing circlip -1- from groove

A - Protective glove



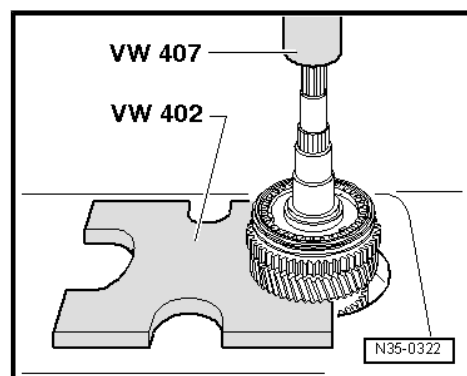
WARNING

Prevent circlip from springing off suddenly.



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

- After removing the circlip, press off 2nd speed selector gear and locking collar/synchro-hub together.



Installation position of 3rd and 4th gear wheel

- Fit 4th gear wheel -A- onto output shaft.

Installation position:

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

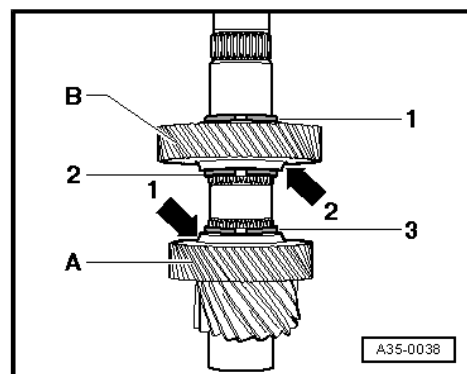
- Fit circlips -2- and -3-.

- Fit 3rd gear wheel -B- onto output shaft.

Installation position:

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

- Fit circlip -1-.

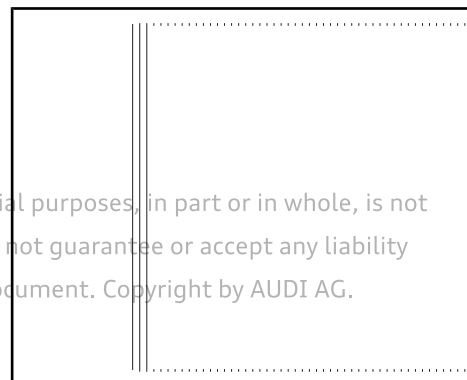


Checking 1st and 2nd gear inner ring for wear

- 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

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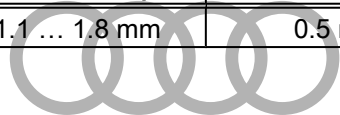




Checking 1st and 2nd gear synchro-ring, outer ring and inner ring for wear

- Press synchro-ring, outer ring and 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	1.1 ... 1.8 mm	0.5 mm



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Installation position of outer ring, inner ring and synchro-ring of 2nd gear

- Place inner ring -A- on 2nd speed selector gear.

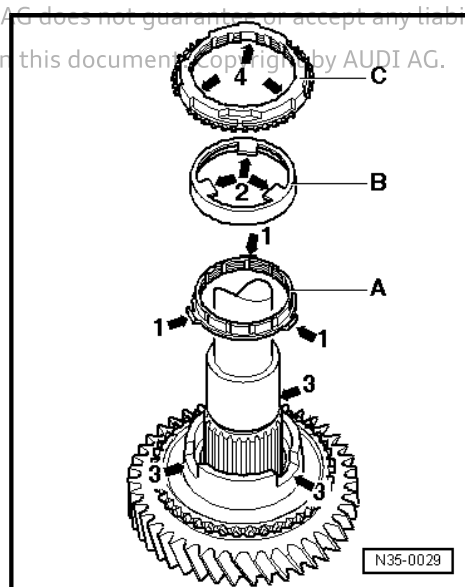
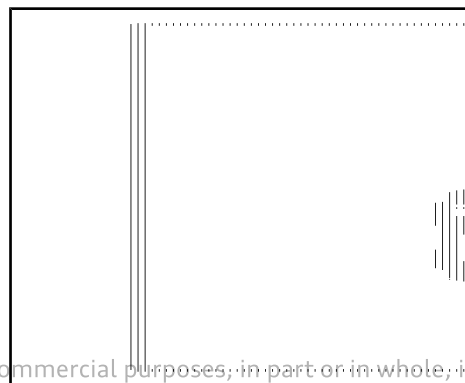
The angled tabs -arrow 1- point towards the outer ring -B-.

- Fit outer ring -B-.

The tabs -arrow 2- lock in the recesses -arrow 3- of the selector gear.

- Fit synchro-ring -C-.

The recesses -arrow 4- locate on the tabs -arrow 1- of the inner ring -A-.



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

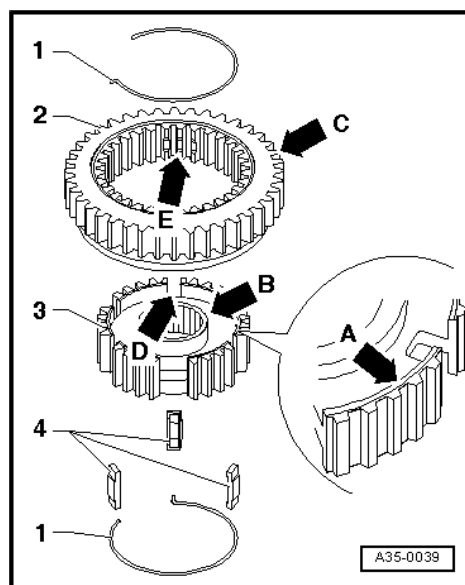
- 1 - Spring
- 2 - Locking collar
- 3 - Synchro-hub
- 4 - Locking piece

- 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-.

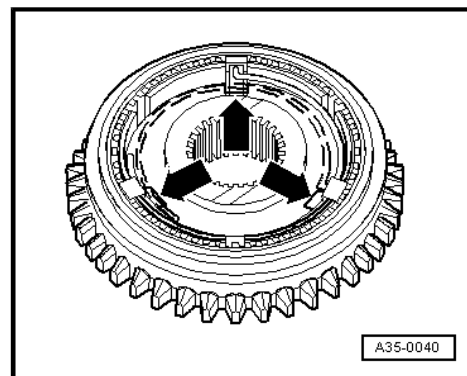
The deeper recesses -arrow D- for the locking pieces in the synchro-hub must align with the recesses -arrow E- in the locking collar.





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

- Locking collar is pushed over synchro-hub.
- Insert locking pieces in deeper recesses -arrows- and install springs so they are offset 120°. Angled end of spring must locate in hollow locking piece.

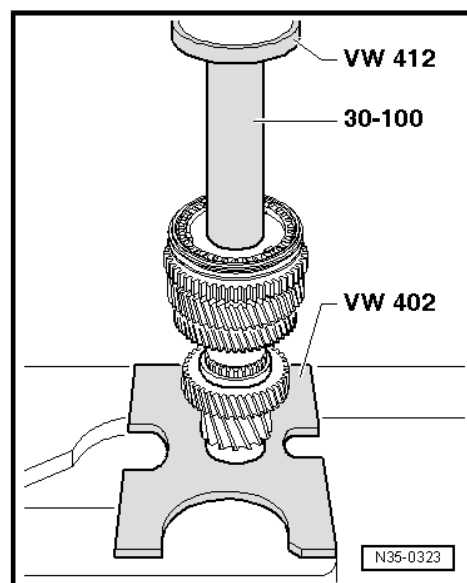


Pressing on 1st and 2nd gear locking collar/synchro-hub

Installation position:

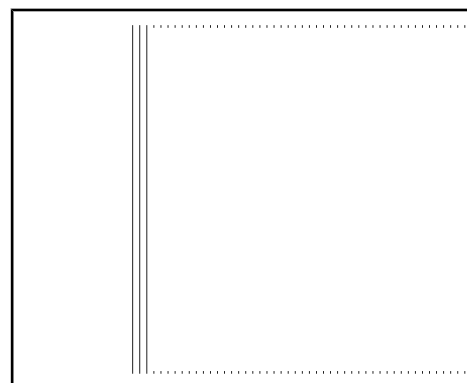
Groove for selector fork in locking collar points towards 1st gear; reverse gear splines point towards 2nd gear.

- Turn synchro-ring so that grooves align with locking pieces.



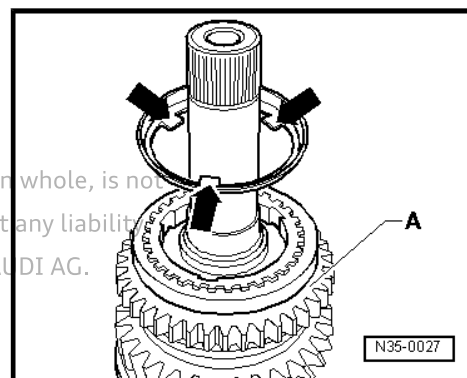
Inserting circlip

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



Installation position of outer ring for 1st gear

The lugs -arrows- face the gear teeth of the reverse gear -A-.

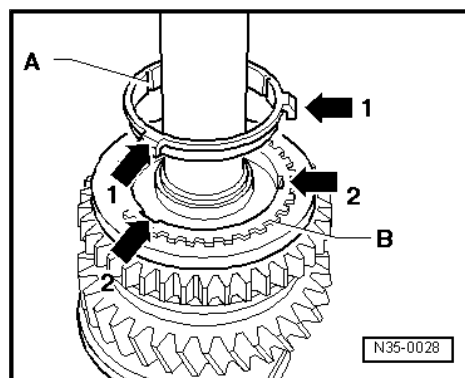


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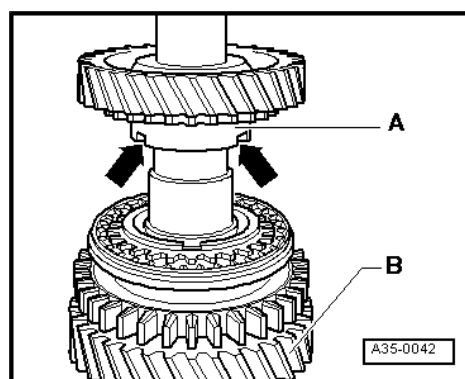
Installation position of 1st gear inner ring -A-

The lugs -arrow 1- locate in the recesses -arrow 2- in the synchro-ring -B-.



Installation position of 1st speed selector gear

The higher shoulder -A- faces towards 2nd gear -B-. The recesses in the shoulder -arrows- engage on the lugs on the outer ring
⇒ [page 163](#) .



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39 – Final drive - differential

1 Oil seals

⇒ [“1.1 Overview of fitting locations - oil seals”, page 165](#)

⇒ [“1.2 Renewing oil seal \(left-side\)”, page 165](#)

⇒ [“1.3 Renewing oil seal \(right-side\)”, page 167](#)

1.1 Overview of fitting locations - oil seals

1 - Oil seal

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

2 - Oil seal

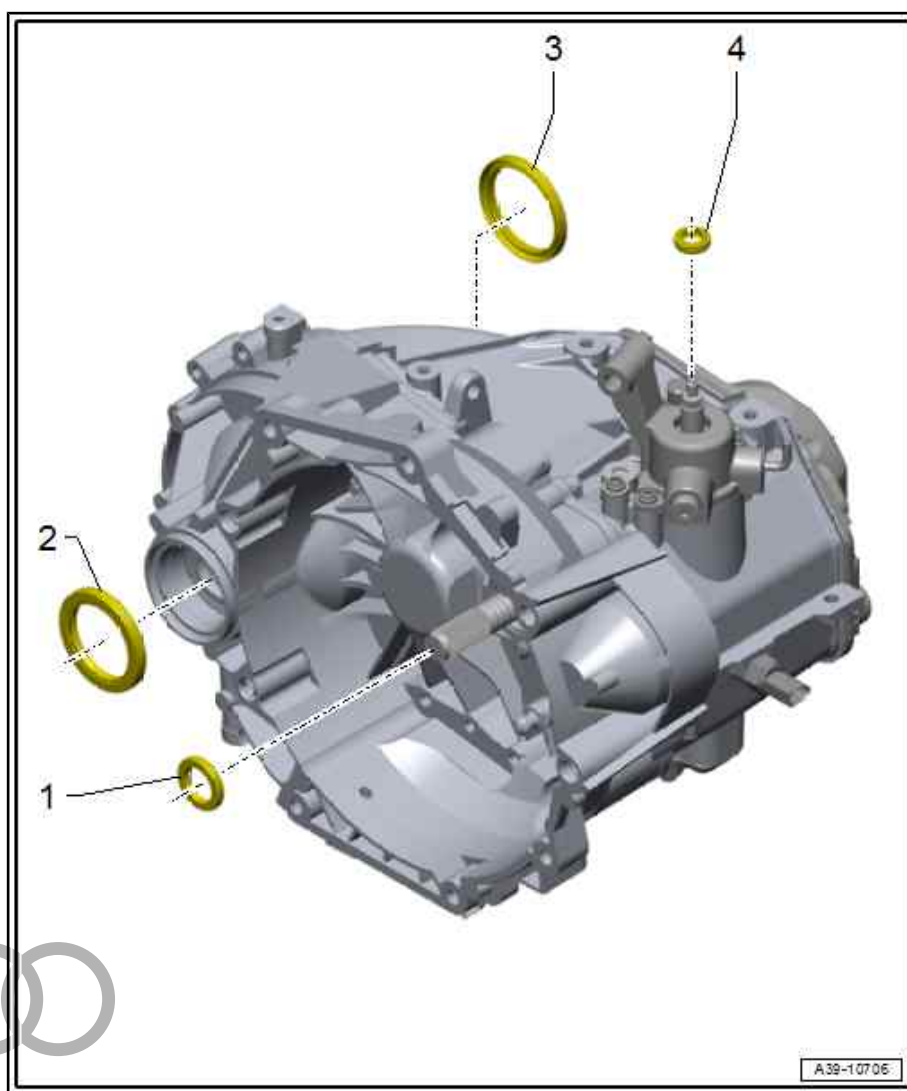
- ☐ For flange shaft (right-side)
- ☐ Renewing ⇒ [page 167](#)

3 - Oil seal

- ☐ For flange shaft (left-side)
- ☐ Renewing ⇒ [page 165](#)

4 - Oil seal

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

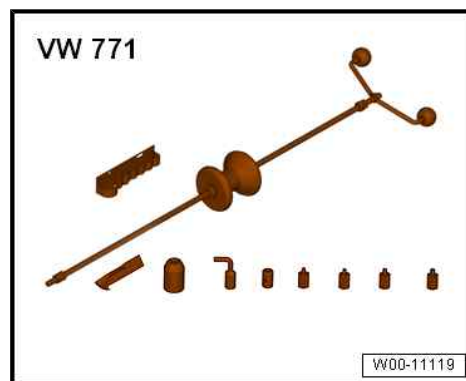


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1.2 Renewing oil seal (left-side)



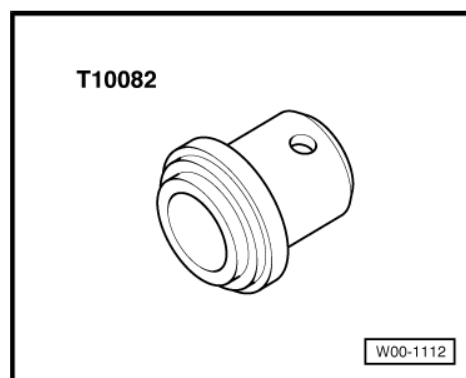
◆ Multi-purpose tool - VW 771-



◆ Extractor hook -VW 771/37-



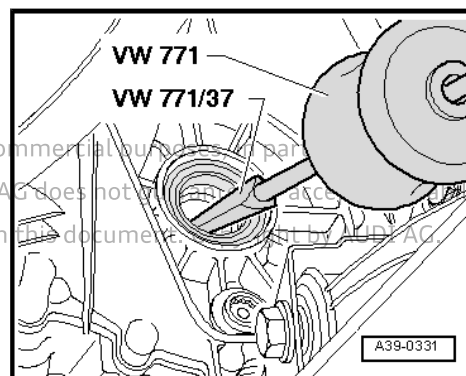
◆ Thrust piece - T10082-



◆ Sealing grease - G 052 128 A1-

Procedure

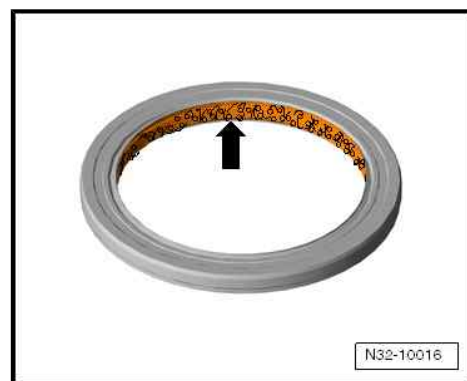
- Gearbox in vehicle
- Remove flange shaft (left-side) => [page 181](#).
- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and puller hook - VW 771/37-.



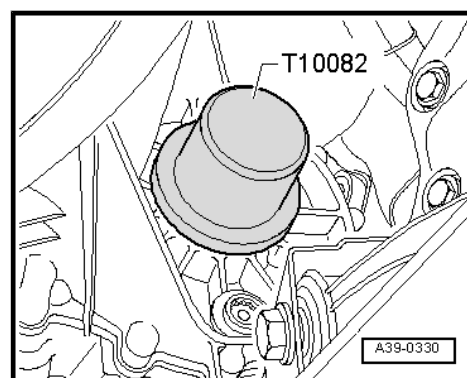
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- Lightly oil outer circumference of new oil seal.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



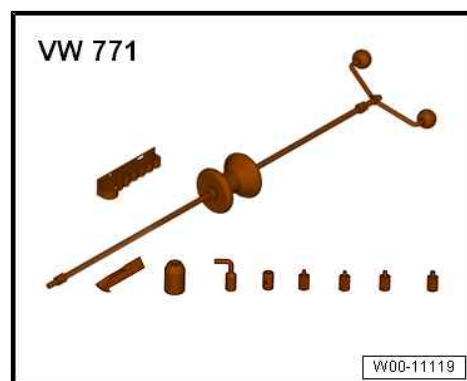
- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install flange shaft (left-side) ⇒ [page 181](#) .



1.3 Renewing oil seal (right-side)

Special tools and workshop equipment required

- ◆ Multi-purpose tool - VW 771-



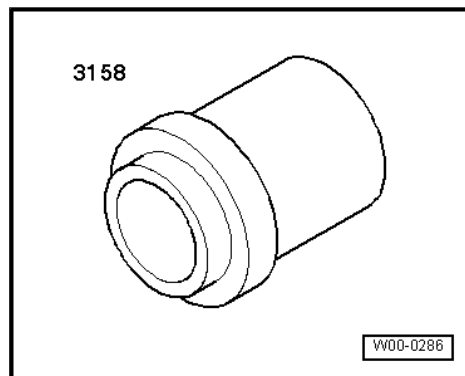
- ◆ Extractor hook -VW 771/37-



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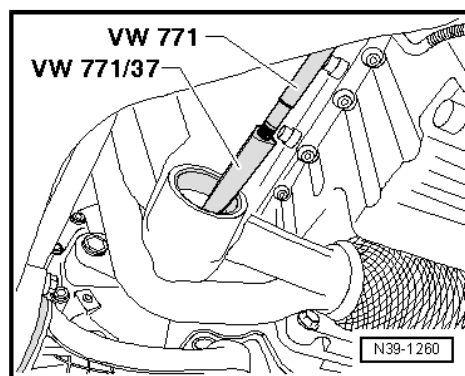
◆ Drift sleeve - 3158-



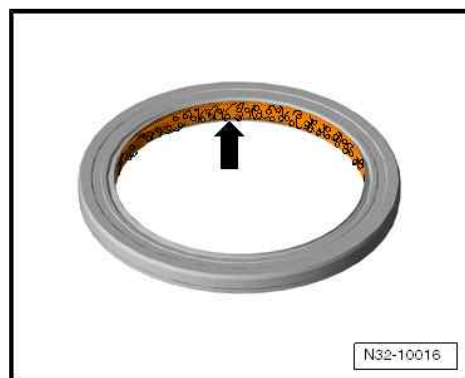
◆ Sealing grease - G 052 128 A1-

Procedure

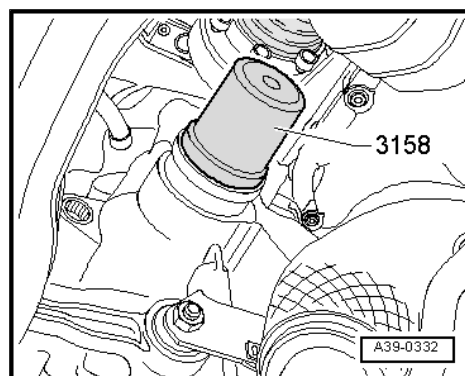
- Gearbox in vehicle
- Remove flange shaft (right-side) ⇒ [page 182](#)
- Pull out flange shaft oil seal using multi-purpose tool - VW 771- and puller hook - VW 771/37- .



- Lightly oil outer circumference of new oil seal.
- Pack space between sealing lip and dust lip -arrow- half full with sealing grease - G 052 128 A1- .



- Drive in new oil seal onto stop (take care to keep oil seal straight).
- Install flange shaft (right-side) ⇒ [page 182](#) .





2 Differential

⇒ ["2.1 Exploded view - differential", page 169](#)

⇒ ["2.2 Dismantling and assembling differential", page 171](#)

⇒ ["2.3 Adjusting differential", page 177](#)

⇒ ["2.4 Removing and installing flange shaft \(left-side\)", page 181](#)

⇒ ["2.5 Removing and installing flange shaft \(right-side\)", page 182](#)

2.1 Exploded view - differential



Note

- ◆ *Secure gearbox to assembly stand ⇒ [page 103](#).*
 - ◆ *Always renew both tapered roller bearings together.*
 - ◆ *Adjust differential if tapered roller bearings, differential cage, gearbox housing or clutch housing are renewed ⇒ [page 177](#).*
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1 - Countersunk bolt

- ☐ 25 Nm
- ☐ Screws into threaded piece
⇒ [Item 8 \(page 169\)](#)

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

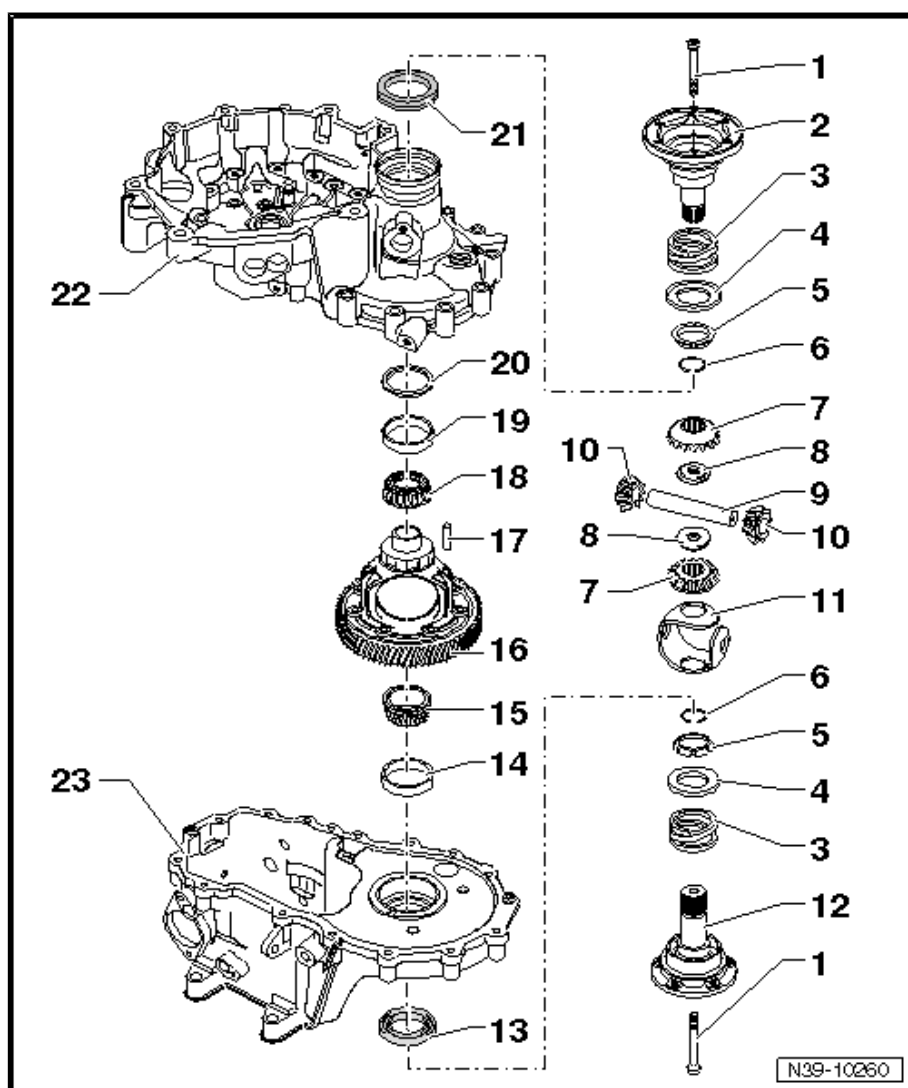
- ☐ Holds tapered ring, thrust washer and spring in position when flange shaft is removed

7 - Sun wheel

- ☐ Installing ⇒ [page 177](#)

8 - Threaded piece

- ☐ Installing ⇒ [page 177](#)





9 - Differential pinion

- ☐ To remove, shear off spring pin ⇒ [Item 17 \(page 170\)](#) ⇒ [page 177](#)
- ☐ Installing ⇒ [page 177](#)

10 - Planet pinion

- ☐ Installing ⇒ [page 177](#)

11 - One-piece thrust washer

- ☐ Lubricate with gear oil before installing

12 - Flange shaft (left-side)

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

- ☐ Can be renewed with gearbox in vehicle ⇒ [page 165](#)

14 - Tapered roller bearing outer race

- ☐ Pulling out ⇒ [page 174](#)
- ☐ Pressing in ⇒ [page 175](#)

15 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 175](#)
- ☐ Pressing on ⇒ [page 175](#)

16 - Differential cage

- ☐ With riveted final drive gear

17 - Spring pin

- ☐ Secures differential pinion pin
- ☐ Is sheared off on removal ⇒ [page 177](#)
- ☐ Installing ⇒ [page 177](#)

18 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 176](#)
- ☐ Pressing on ⇒ [page 176](#)

19 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 175](#)
- ☐ Pressing in ⇒ [page 176](#)

20 - Shim

- ☐ For differential
- ☐ Determining thickness ⇒ [page 177](#)

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

- ☐ Can be renewed with gearbox in vehicle ⇒ [page 167](#)

22 - Clutch housing

23 - Gearbox housing

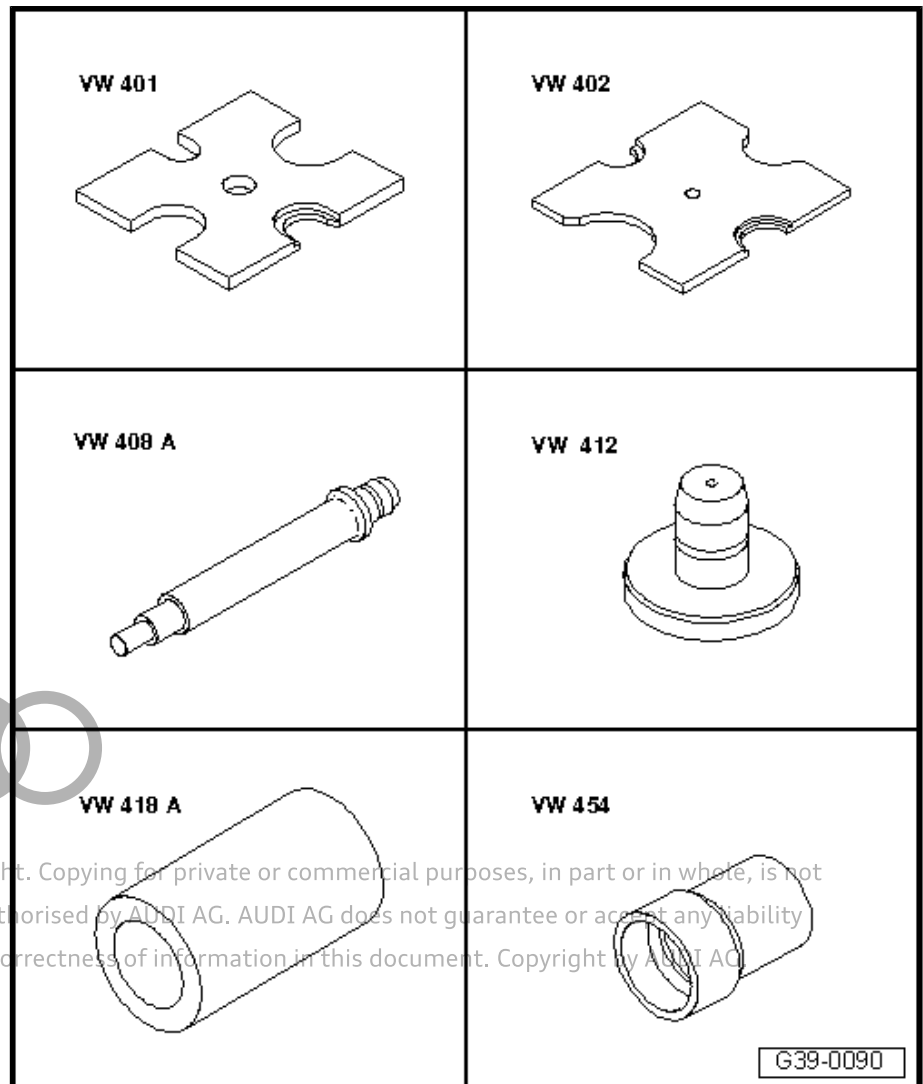


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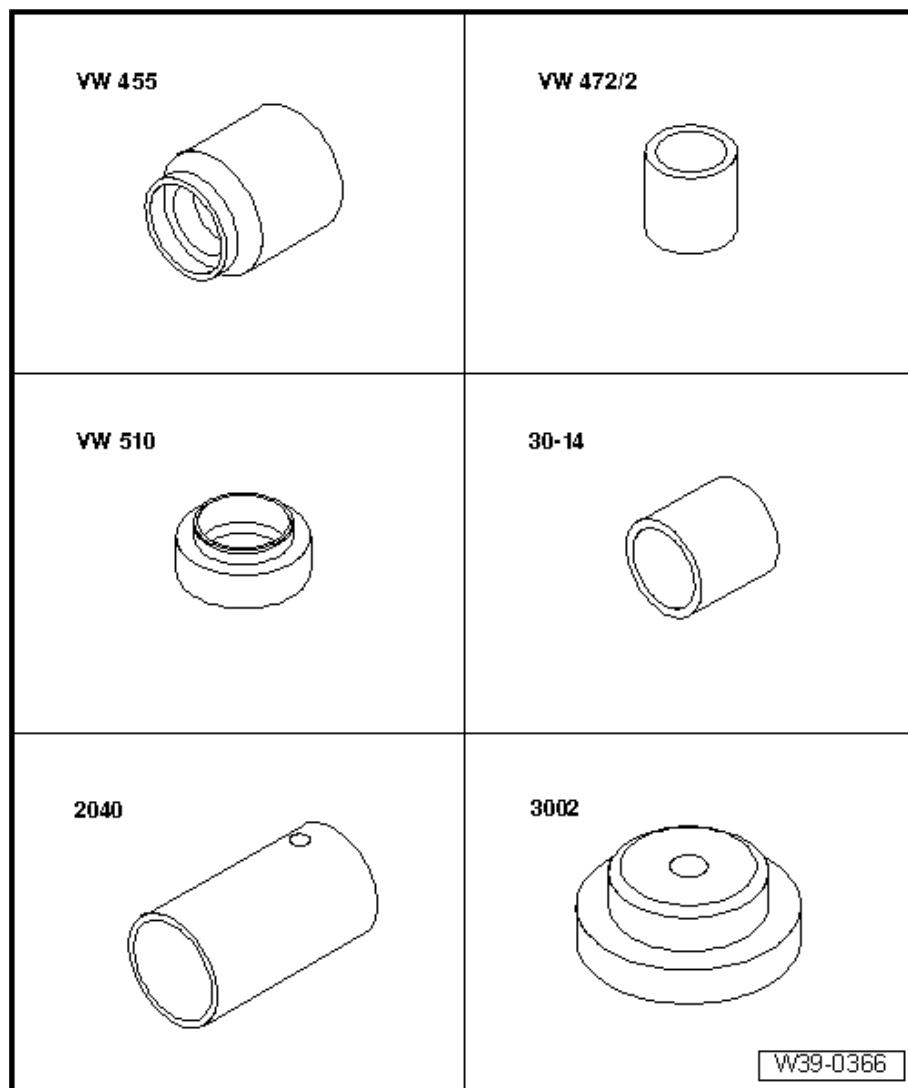


2.2 Dismantling and assembling differential

Special tools and workshop equipment required



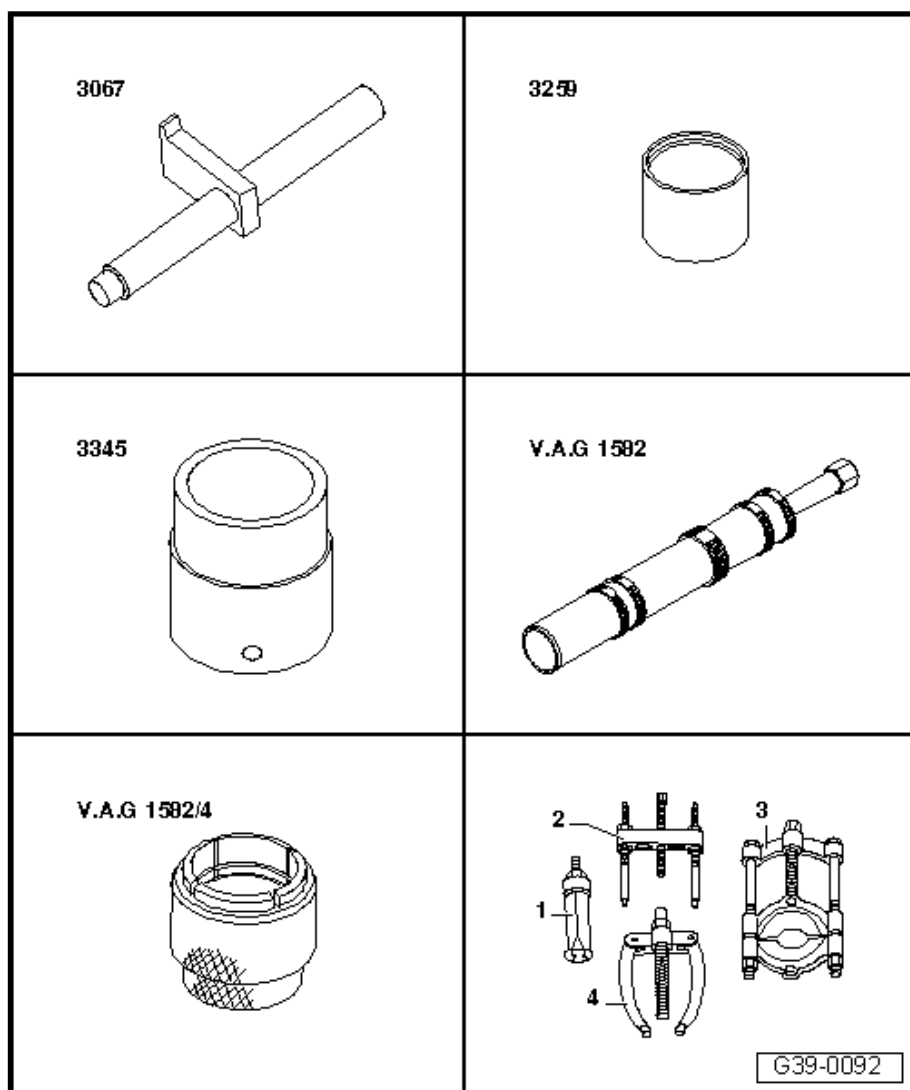
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408 A-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 418 A-
- ◆ Thrust piece - VW 454-



- ◆ Installing sleeve - VW 455-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Pressure washer - 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-
- ◆ Internal puller - VAS 251 615- -1-, or e.g. internal puller - Kukko 21/7-
- ◆ Counter-support - VAS 251 623- -4-, or e.g. counter-support - Kukko 22/2-

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30-205 	40-21 
V.A.G 1331 	V.A.G 1582/3 
	W39-0392

- ◆ Thrust plate - 30 - 205-
- ◆ Drift sleeve - 40 - 21-
- ◆ Torque wrench - V.A.G 1331- (5 ... 50 Nm)
- ◆ Adapter - V.A.G 1582/3-



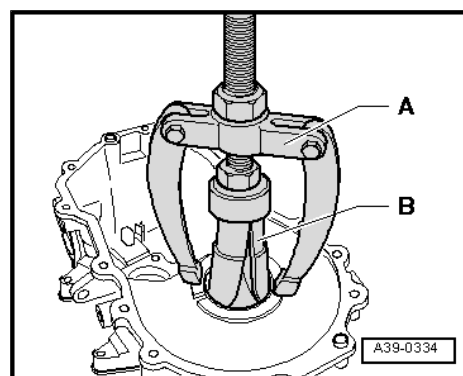
Note

- ◆ Heat tapered roller bearing inner races 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 177](#).

Pulling tapered roller bearing outer race out of gearbox housing

A - Counter-support - VAS 251 623- , or e.g. counter-support - Kukko 22/2-

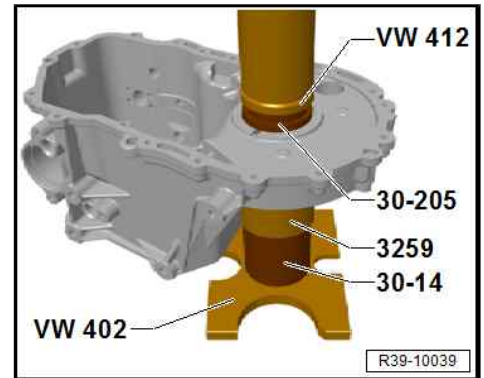
B - Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-





Pressing tapered roller bearing outer race into gearbox housing

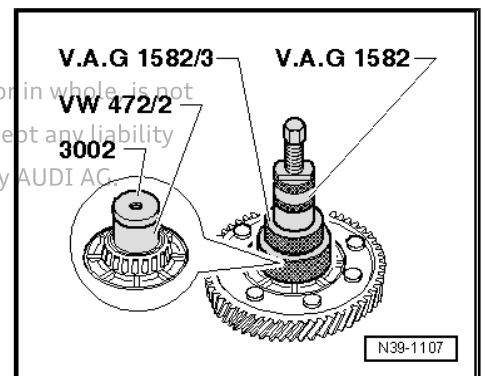
- Support gearbox housing with tube - 3259- directly below bearing mounting.



Pulling off tapered roller bearing inner race

- Before fitting puller, position spacer sleeve - VW 472/2- and thrust piece - 3002- on differential cage.

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Pressing on tapered roller bearing inner race

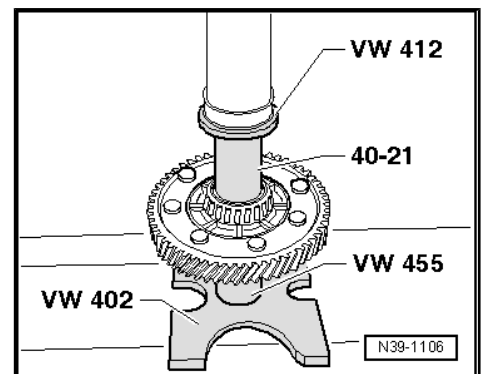


WARNING

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- .

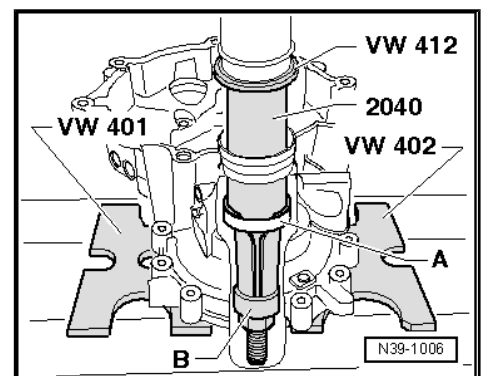
Shoulder of installing sleeve - VW 455- points to differential cage.



Pressing tapered roller bearing outer race -A- out of clutch housing

B - Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-

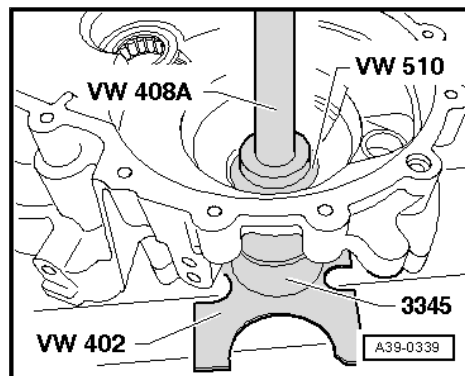
- Clamp internal puller firmly under tapered roller bearing outer race.





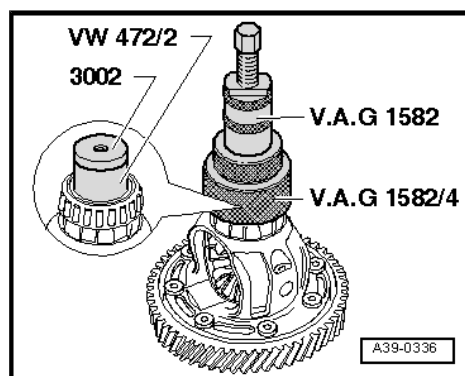
Pressing tapered roller bearing outer race into clutch housing

- Support clutch housing with tube for wheel bearing - 3345- 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.



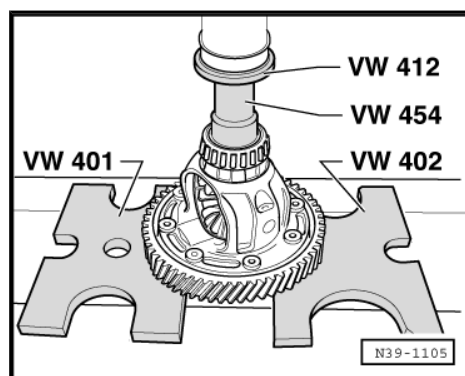
Pressing on tapered roller bearing inner race



WARNING

Wear protective gloves.

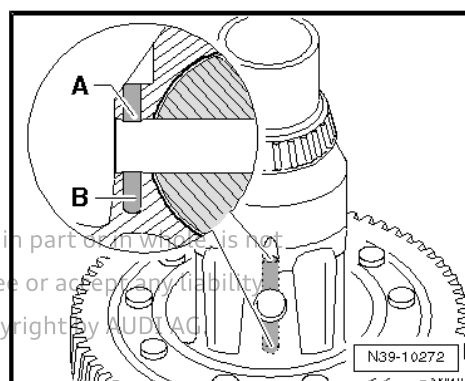
- Heat tapered roller bearing inner race to approx. 100°C before pressing on.



Allocation of differential cage to correct spring pin removal and installation procedure

The bore in the differential cage has been modified to accommodate the longer spring pin.

Bore	Length of spring pin (mm)	Spring pin	
-A-	24.0 (short spring pin)	Removing ⇒ page 177	Installing ⇒ page 177
-A- and -B-	36.0 (long spring pin)	Removing ⇒ page 177	Installing ⇒ page 177
Continuous	36.0 (long spring pin)	Removing ⇒ page 177	Installing ⇒ page 177

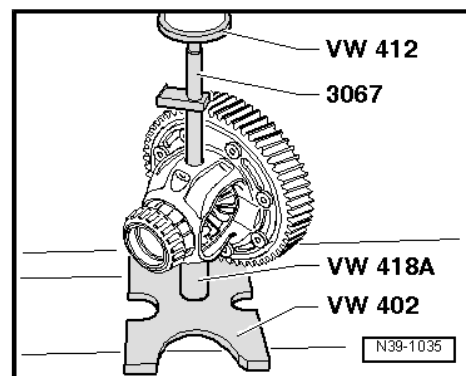




Pressing out differential pinion pin

The spring pin is sheared off when it is pressed out.

- Remove remaining part of spring pin from differential cage.



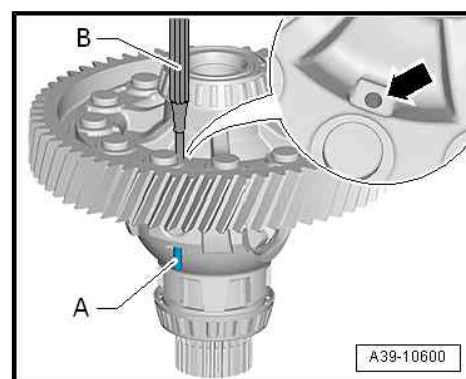
Removing long spring pin to remove differential pinion pin

- Drive spring pin -A- out of hole -arrow- in differential cage using a suitable punch -B- Ø 5 mm.



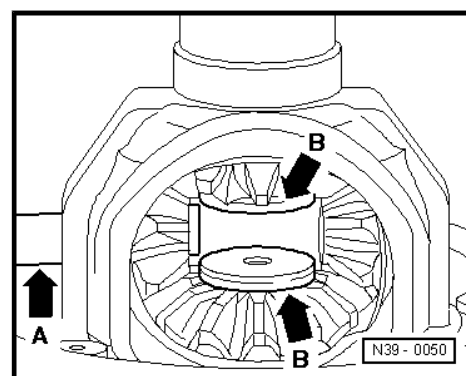
Note

If there is no hole -arrow- in the differential cage, shear off the spring pin ⇒ [page 177](#).



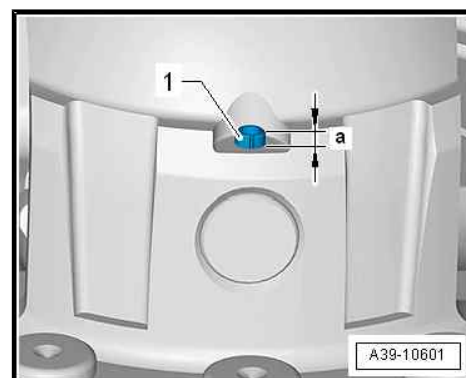
Installing differential bevel gears

- Lubricate one-piece thrust washer with gear oil and install.
- Install both sun wheels and secure (e.g. with flange shaft).
- Fit planet pinions (180° apart) and pivot into position.
- Push differential pinion pin -arrow A- in as far as first planet pinion.
- Fit threaded pieces -arrows B- in sun wheels.
- Drive differential pinion pin into final position and secure with spring pin.



Installing spring pin for differential pinion pin

- Align hole in differential pinion pin with drilling in differential cage.
- Use a punch to drive in spring pin -1- to dimension -a- = 2.5 mm.
- Spring pin -1- must not make contact with clutch housing.



2.3 Adjusting differential

The differential has to be readjusted when the following components are renewed:

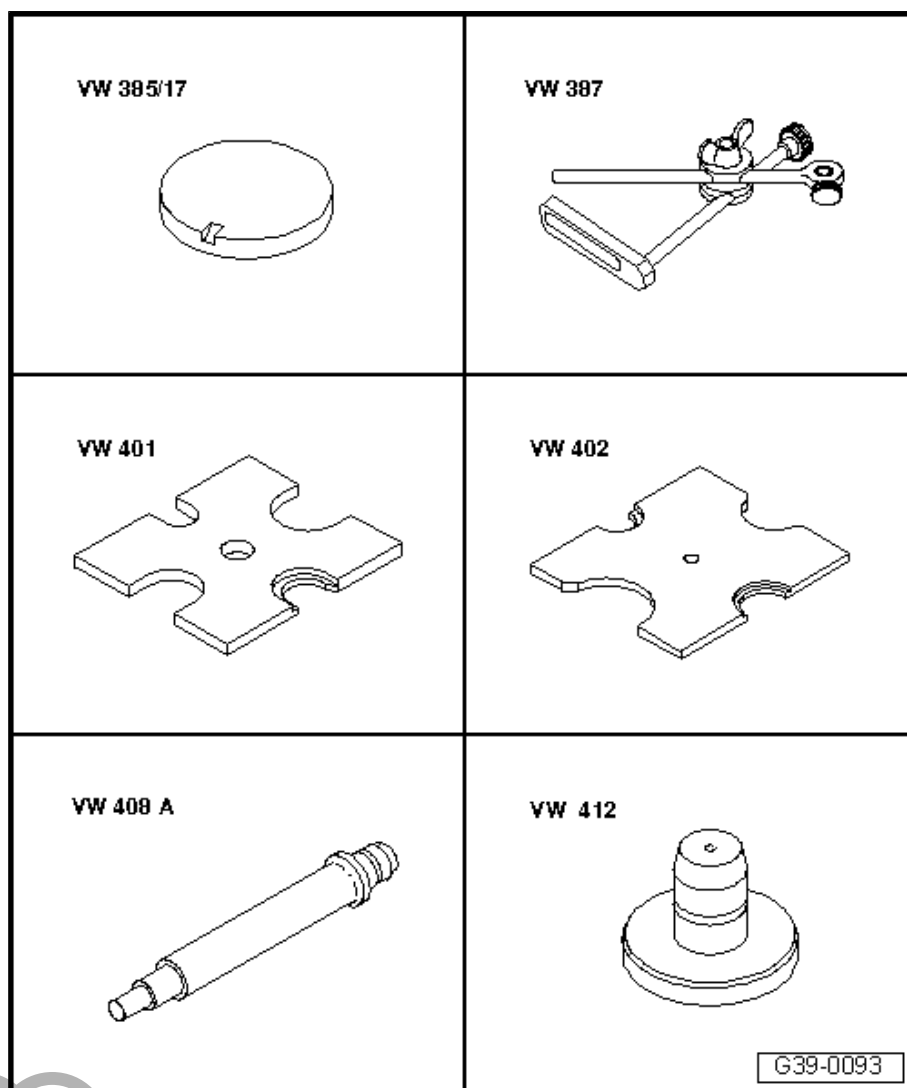
- ◆ Gearbox housing
- ◆ Clutch housing
- ◆ Differential cage



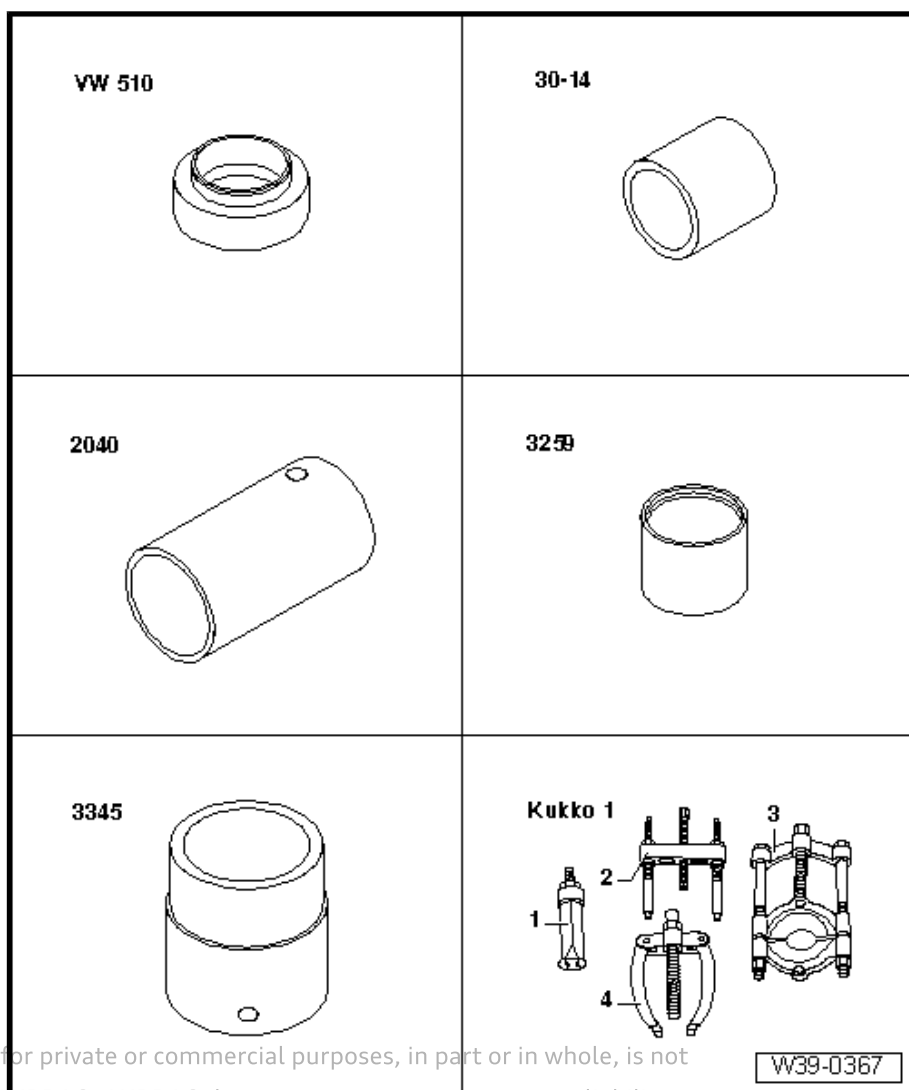
or the

- ◆ Tapered roller bearings for differential

**Special tools and workshop
equipment required**

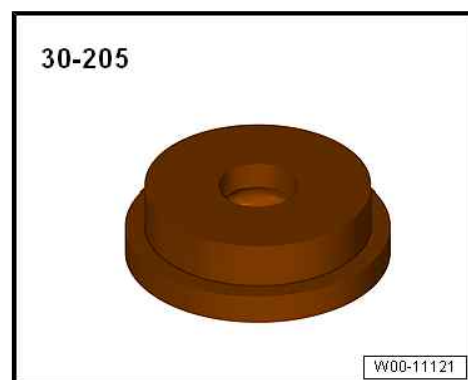


- ◆ Gauge plate - VW 385/17-
- ◆ Universal dial gauge bracket - VW 387-
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 408 A-
- ◆ Press tool - VW 412-



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- ◆ Pressure washer - VW 510-
- ◆ Tube - 30 - 14-
- ◆ Tube - 2040-
- ◆ Tube - 3259-
- ◆ Wheel bearing tube - 3345-
- ◆ Internal puller - VAS 251 615- -1-, or e.g. internal puller - Kukko 21/7-
- ◆ Thrust plate - 30 - 205-





◆ Dial gauge - VAS 6080-

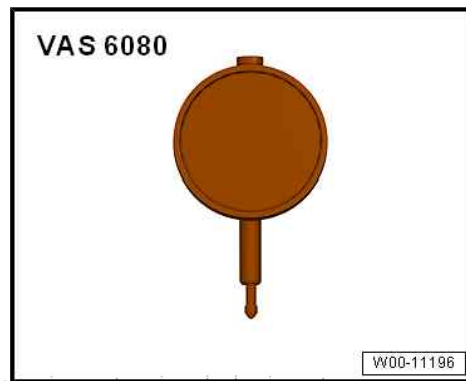


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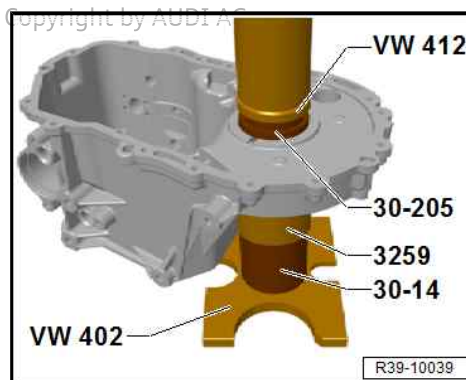
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- ◆ Dial gauge extension, 30 mm
- Pressing tapered roller bearing outer race into gearbox housing



- Press tapered roller bearing outer race, without shim, into clutch housing.
- Install differential in gearbox housing.
- Fit clutch housing in place and tighten 5 bolts to torque
⇒ [page 108](#).



- Attach dial gauge and set to "0" with a preload of 1 mm.

A - Dial gauge extension, 30 mm

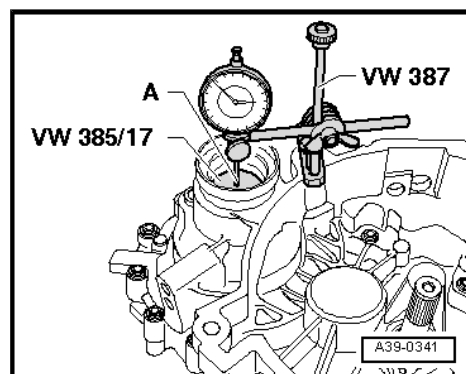
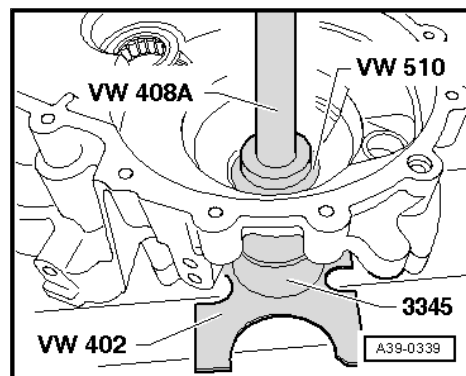
- Move differential up and down and read off and note play indicated on dial gauge. (1.50 mm in this example.)

Determining thickness of required shim:

The specified bearing preload is obtained by adding a constant figure (0.35 mm) to the reading indicated.

Example:

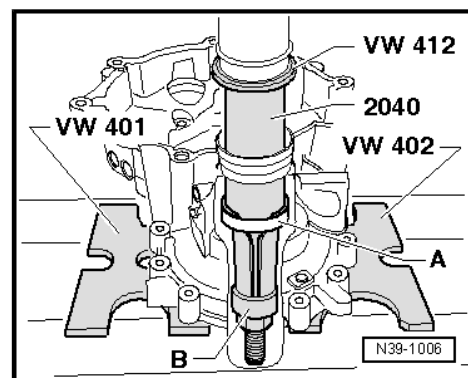
Measured value	1.50 mm
+ Preload (constant value)	0.35 mm
Thickness of shim =	1.85 mm





- Remove clutch housing and press out tapered roller bearing outer race -A-.

B - Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-



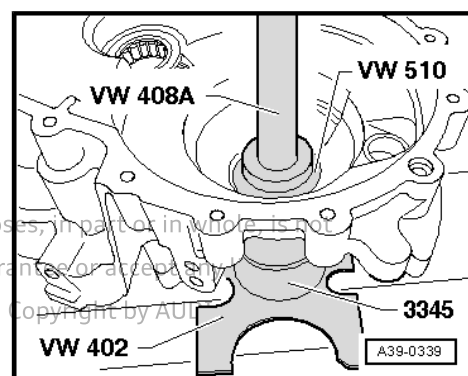
- Fit shim of determined thickness (in example, 1.85 mm). For part numbers, refer to ⇒ Electronic parts catalogue .

Different shim thicknesses make it possible to obtain the exact shim thickness required; if necessary, fit 2 shims.

- Press tapered roller bearing outer race into clutch housing again.

- Fit clutch housing in place and tighten bolts to torque

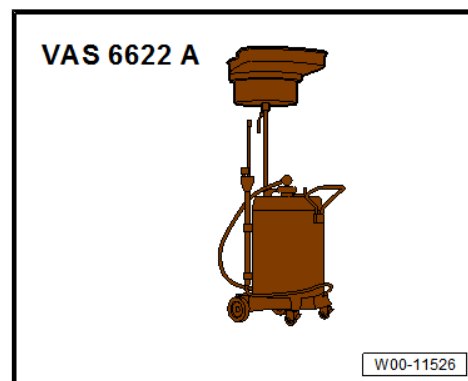
⇒ [page 108](#).



2.4 Removing and installing flange shaft (left-side)

Special tools and workshop equipment required

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

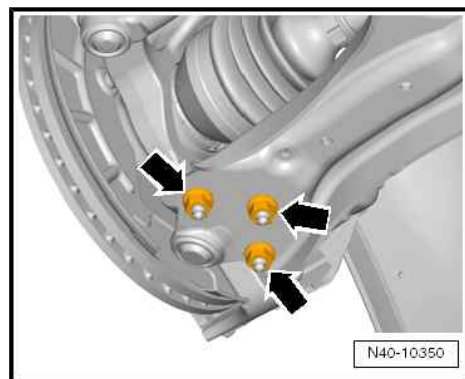


Removing

- Gearbox in vehicle
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Removing and installing noise insulation .
- Remove front wheel (left-side) ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres .
- Remove wheel housing liner (front left) ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liners; Removing and installing wheel housing liner (front) .
- Turn steering to the left.
- Unbolt drive shaft (left-side) from gearbox flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



- Remove nuts -arrows- securing swivel joint (left-side).
- Swivel wheel bearing housing (left-side) outwards. At the same time, pull out drive shaft (left-side) between subframe and gearbox.
- Swivel drive shaft (left-side) into wheel housing and secure to suspension strut with cord or similar. Do not damage paint on drive shaft.

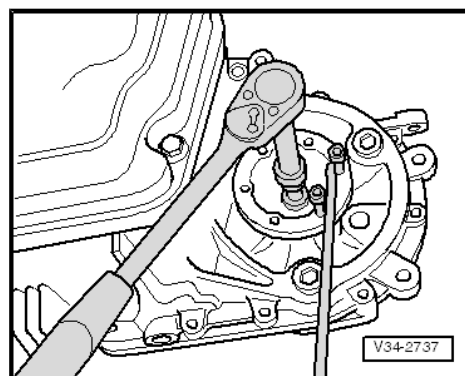


- Place used oil collection and extraction unit - VAS 6622A- below gearbox.
- Remove flange shaft securing bolt. To do this, screw two bolts into flange and counterhold flange shaft with tyre iron or other suitable lever.
- Pull out flange shaft together with spring, thrust washer and tapered ring.

Installing

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

- Push flange shaft in against spring pressure and secure with bolt.
- Check gearbox oil level in manual gearbox. If necessary, top up to bottom lip of filler hole ⇒ [page 98](#) .



Tightening torques

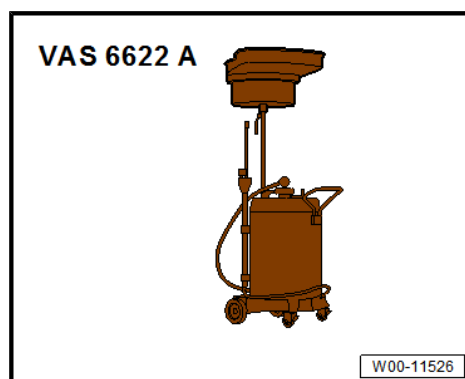
- ◆ ⇒ [“2.1 Exploded view - differential”, page 169](#)
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Lower wishbone, swivel joint; Exploded view - lower wishbone, swivel joint
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Exploded view - drive shaft
- ◆ ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres
- ◆ ⇒ 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

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2.5 Removing and installing flange shaft (right-side)

Special tools and workshop equipment required

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





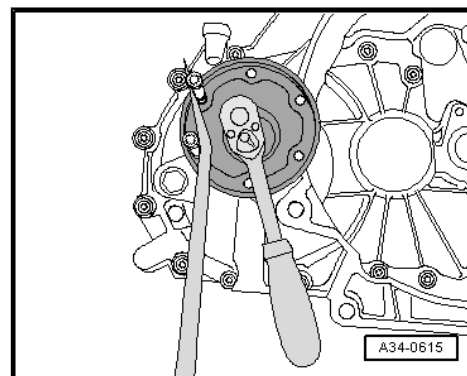
Removing

- 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 gearbox flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Tie up drive shaft as high as possible. Do not damage paint on drive shaft.
- Place used oil collection and extraction unit - V.A.G 1782- below gearbox.
- 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.

Installing

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

- Push flange shaft in against spring pressure and secure with bolt.
- Check gearbox oil level in manual gearbox. If necessary, top up to bottom lip of filler hole ⇒ [page 98](#) .



Tightening torques

- ◆ ⇒ ["2.1 Exploded view differential", page 169](#)
- ◆ ⇒ 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