

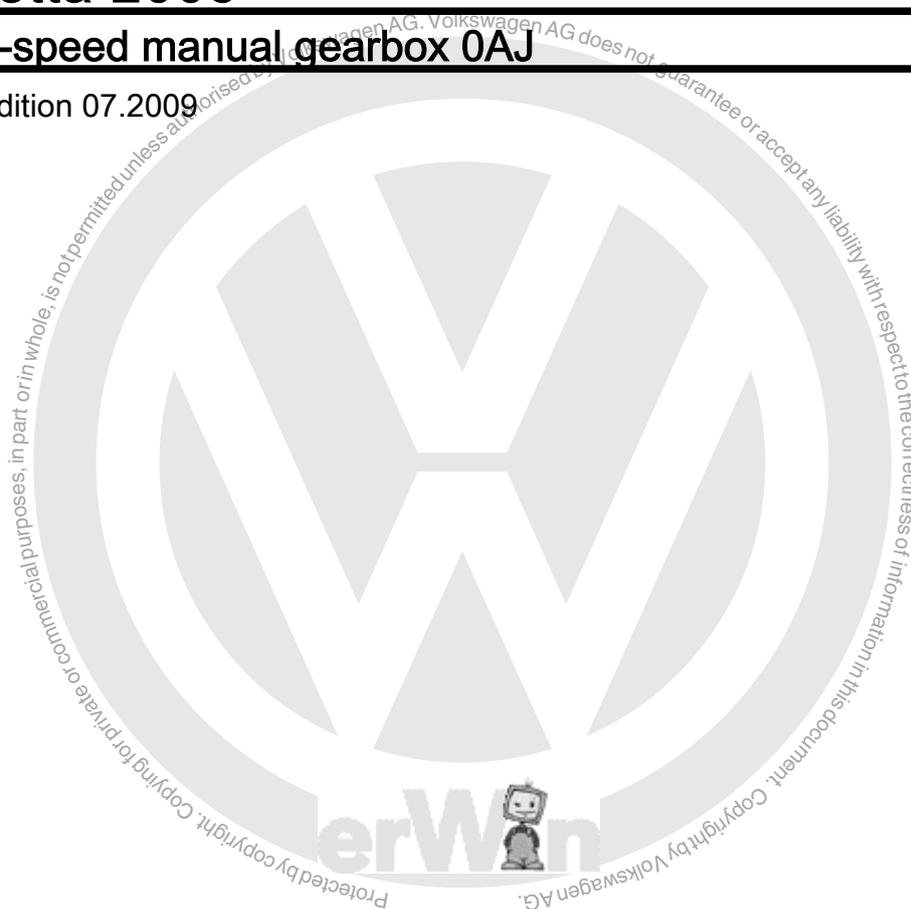


Workshop Manual

- Golf Variant 2007 ➤
- Golf Variant 2010 ➤
- Jetta 2005 ➤

6-speed manual gearbox 0AJ

Edition 07.2009





List of Workshop Manual Repair Groups

Repair Group

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



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

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00 – Technical data

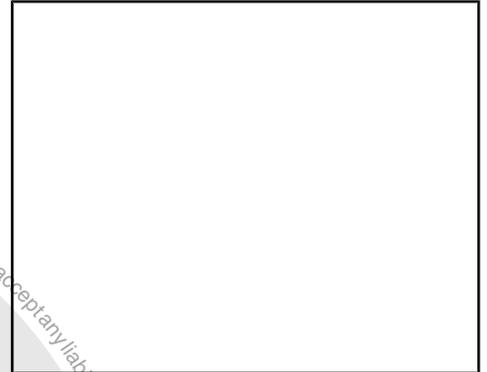
1 Gearbox identification

The 6-speed manual gearbox 0AJ is installed in the Jetta 2005 ▶ , in the Golf Variant 2007 ▶ and in the Golf Variant 2010 ▶ in conjunction with a 4-cylinder injection engine.

Allocation ⇒ [page 1](#) .

1.1 Location on gearbox

Code letters and date of gearbox manufacture -arrow-



Identification code and date of gearbox manufacture -arrow-

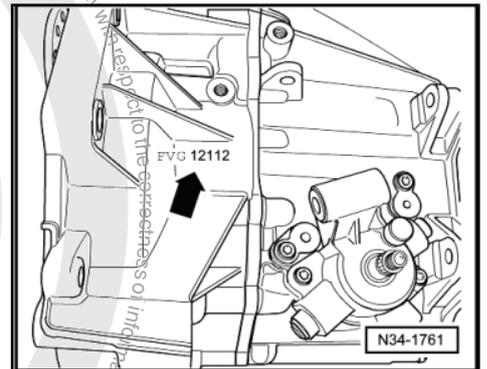
Example:	FVG	12	11	2
	Identification code	Day	Month	Year (2002) of manufacture

Additional data provide information about the production facility.



Note

The gearbox code also appears on the vehicle identification plates.



1.2 Identification code, assembly allocation and capacities

Manual gearbox		KRG		LHY	
Identification code		KRG		LHY	
Manufactured	from to	07.08		12.08	
Allocation	Model	Jetta 2005 ▶ and Golf Variant 2007 ▶		Jetta 2005 ▶ , Golf Variant 2007 ▶ and Golf Variant 2010 ▶	
	Engine	1.4 l - 90 kW		1.4 l - 90 kW	
Ratio Z1 : Z2	Final drive	73 : 18 = 4.056		73 : 18 = 4.056	
Capacity of manual gearbox		2.0 l		2.0 l	
Drive shaft flange Ø		100 mm		100 mm	

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

- ◆ Individual gear ratios



- ◆ Gear oil
- ◆ Clutch allocation



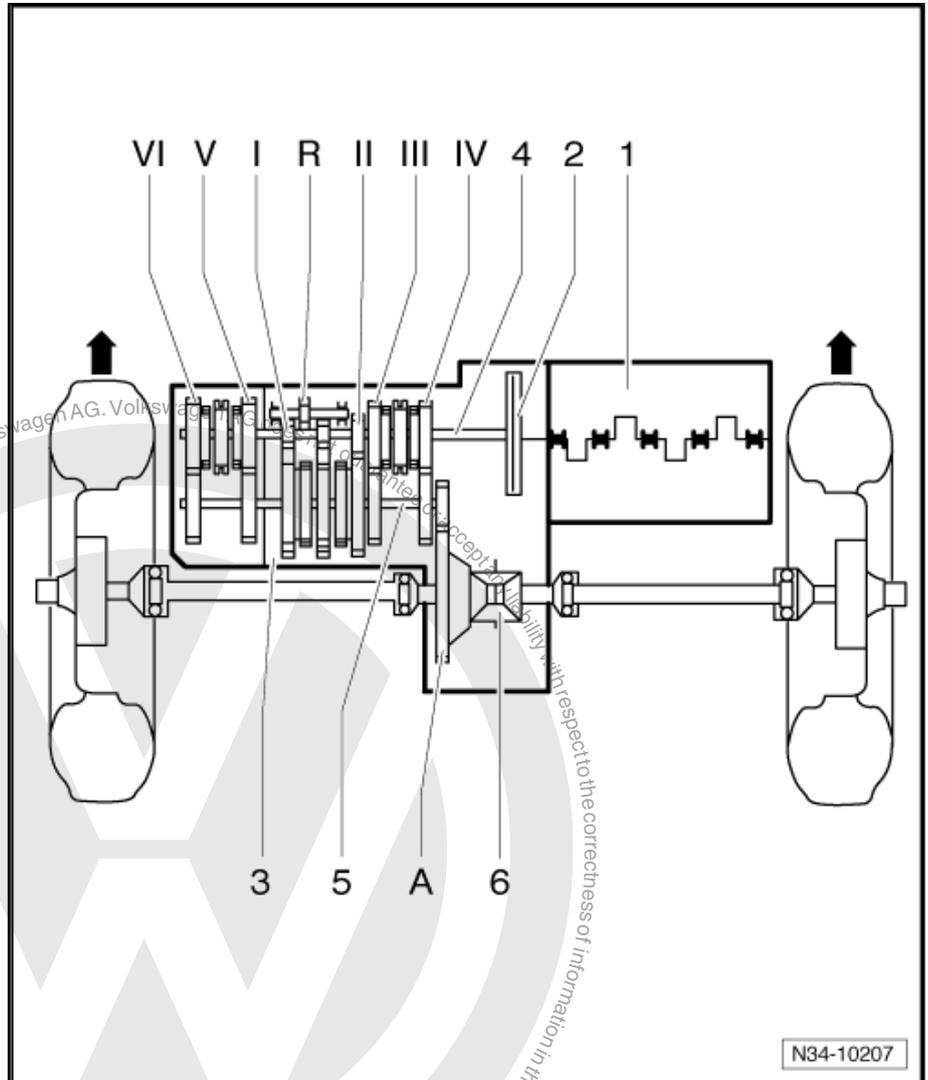


2 Overview - power transmission

Designation

-Arrows- indicate direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual gearbox
- 4 - Input shaft
- 5 - Output shaft
- 6 - Differential

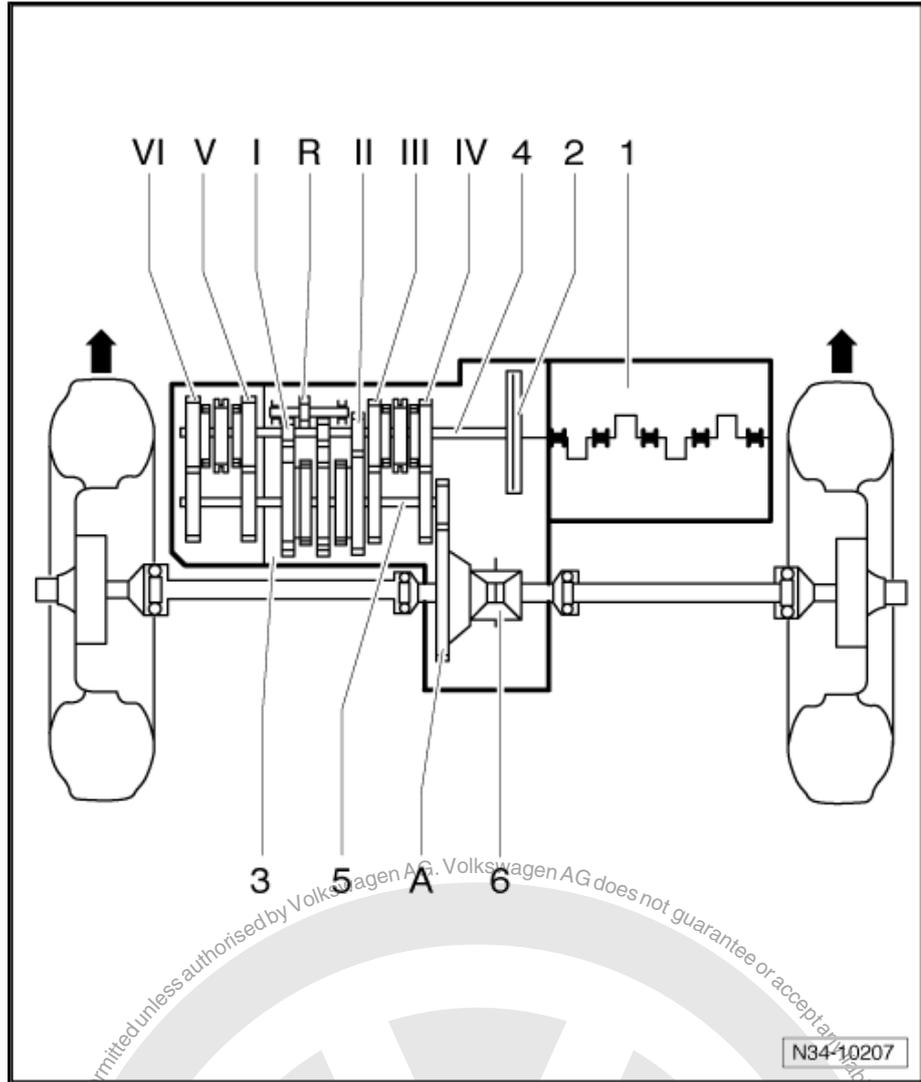


Gears

-Arrows- indicate direction of travel.



- I - 1st gear
- II - 2nd gear
- III - 3rd gear
- IV - 4th gear
- V - 5th gear
- VI - 6th gear
- R - Reverse gear
- A - Final drive





3 Calculating overall gear ratio "i"

Example:

	6th gear	Final drive
Drive gear	ZG ₁ = 49	ZA ₁ = 15
Driven gear	ZG ₂ = 38	ZA ₂ = 76

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

$$i_G = \text{Gear ratio} = ZG_2 : ZG_1 = 38 : 49 = 0.776$$

$$i_A = \text{Final drive ratio} = ZA_2 : ZA_1 = 76 : 15 = 5.067$$

$$i_{\text{total}} = \text{Overall ratio} = i_G \times i_A = 0.776 \times 5.067 = 3.932$$

1) Z₁ = No. of teeth on driving gear, Z₂ = No. of teeth on driven gear





4 General repair notes

To ensure perfect and successful gearbox repairs, the greatest care and cleanliness as well as the use of good and proper tools are essential. Of course, the basic rules for safety also apply during repair work.

A number of instructions generally applicable to the various repair procedures - which were previously repeated a number of times at various places in the workshop manual are summarised under the topic "components" ⇒ [page 6](#) . They apply to this workshop manual.

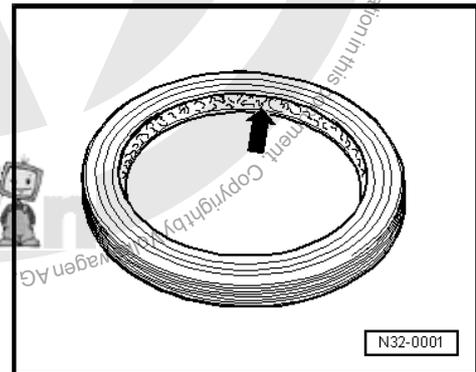
4.1 Components

4.1.1 Gearbox

- ◆ When installing the manual gearbox, ensure that the dowel sleeves between the engine and gearbox are correctly seated.
- ◆ When installing mounting brackets or waxed components, clean the contact surfaces. Contact surfaces must be free of wax and grease.
- ◆ Following installation, check gear oil level ⇒ [page 86](#) .
- ◆ Capacity ⇒ [page 1](#) .

4.1.2 O-rings, seals and gaskets

- ◆ Always renew O-rings, seals and gaskets.
- ◆ Before installing oil seal, half-fill space between sealing lips with sealing grease -G 052 128 A1- -arrow-.
- ◆ The open side of the oil seal faces the side with fluid filling.
- ◆ Following installation, check gear oil level ⇒ [page 86](#) .
- ◆ Lightly oil O-rings before installing; this prevents the rings being crushed when inserted.
- ◆ Thoroughly clean parting surfaces and apply sealant -AMV 188 200 03- .
- ◆ Apply sealant uniformly but not too thick.



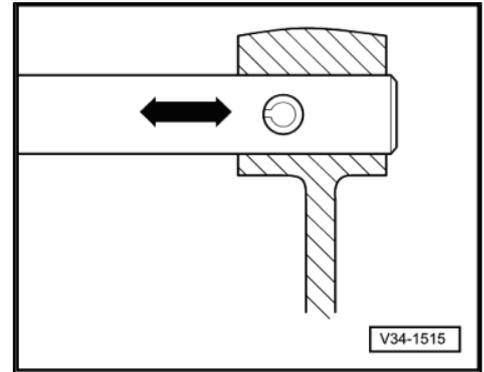
4.1.3 Sealant

- ◆ Thoroughly clean housing joint surfaces before applying sealing paste.
- ◆ Evenly apply a thin coat of sealing paste -AMV 188 200 03- .
- ◆ Breather holes must remain free of sealing paste.



4.1.4 Locking devices

- ◆ Always renew retaining rings which have been damaged or overstretched.
- ◆ Do not overstretch retaining rings.
- ◆ Retaining rings must locate properly in grooves.
- ◆ Renew spring pins. Installation position: slot longitudinal to line of force.



4.1.5 Nuts and bolts

- ◆ Loosen and tighten securing bolts and nuts for covers and housings diagonally.
- ◆ Do not cant especially delicate parts, such as clutch pressure plates. Loosen and tighten bolts and nuts in stages in a diagonal sequence.
- ◆ Torque settings are specified for uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts and nuts.
- ◆ Ensure with threaded connections that contact surfaces as well as nuts and bolts are re waxed only after assembly, if necessary.
- ◆ Threads of bolts secured with locking fluid must be cleaned with a wire brush. Then insert bolts with locking fluid AMV 185 100 A1.
- ◆ All threaded holes into which self-locking bolts are to be screwed must be cleaned of residual locking fluid using a thread chaser. Otherwise there is a danger of bolts shearing when subsequently being removed.

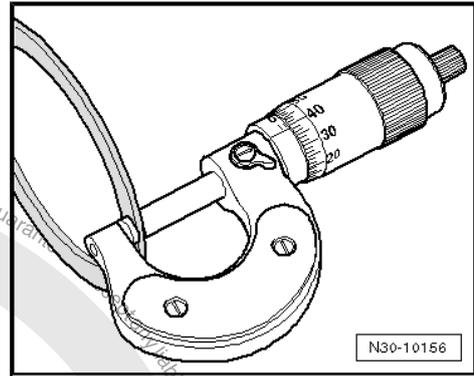
4.1.6 Bearings

- ◆ Install new tapered roller bearings as supplied and do not lubricate additionally.
- ◆ Install needle bearings with lettered side (thicker metal) towards fitting tool.
- ◆ Tapered roller bearings fitted to one shaft must be renewed as a set. Use same make of bearings.
- ◆ Heat bearing inner races to max. 100° C with the inductive heater VAS 6414- before installing.
- ◆ Do not interchange outer or inner bearing races of the same size. The bearings are matched in pairs.



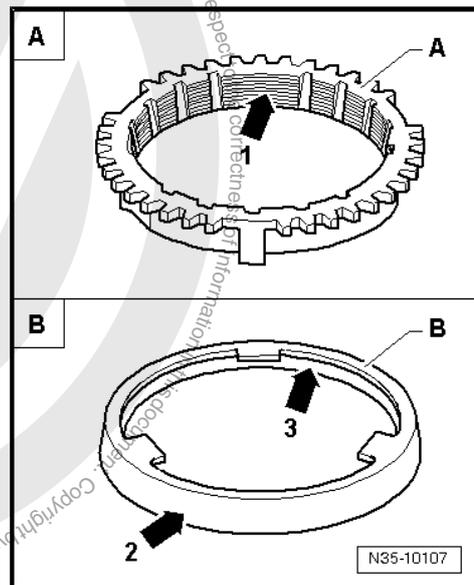
4.1.7 Shims

- ◆ Measure shims at several points with a micrometer. The various thicknesses make it possible to achieve the exact shim thickness required.
- ◆ Check for burrs and damage.
- ◆ Install only flawless shims.



4.1.8 Synchro-rings

- ◆ Do not interchange. When reusing synchro-rings, always fit to the same gear.
- ◆ Check for wear and renew if necessary.
- ◆ Check grooves -arrow 1- of synchro-ring -A- and inner ring for flat spots (worn grooves).
- ◆ If synchro-rings are coated, coating must not be damaged.
- ◆ If an intermediate ring -B- is installed, check the outer friction surface -arrow 2- and inner friction surface -arrow 3- of this intermediate ring for "scoring", "signs of abnormal wear" and "blue discolouration (due to overheating)".
- ◆ If the synchro-rings are coated, check cone of synchromeshed gear for "scoring" and "signs of abnormal wear".
- ◆ Moisten synchromesh mechanism with gear oil before installing.



4.1.9 Gear wheels

- ◆ Before installing, clean and heat with the inductive heater -VAS 6414- to maximum 100° C.

4.1.10 Synchromeshed gears

- ◆ After assembly, check synchromeshed gears for slight play, or for freedom of movement.

4.1.11 Clutch

- ◆ Ensure that the pressure plate does not cant: loosen and tighten bolts diagonally and in several gradual stages.
- ◆ If the clutch has burnt out, thoroughly clean the bell housing as well as the friction surface of flywheel with a cloth to reduce the smell of burnt linings.
- ◆ When removing gearbox, remove slave cylinder without disconnecting pipes.
- ◆ If the clutch slave cylinder is removed with the hydraulic line attached, do not depress clutch pedal. Otherwise the piston will be pressed out of the slave cylinder.

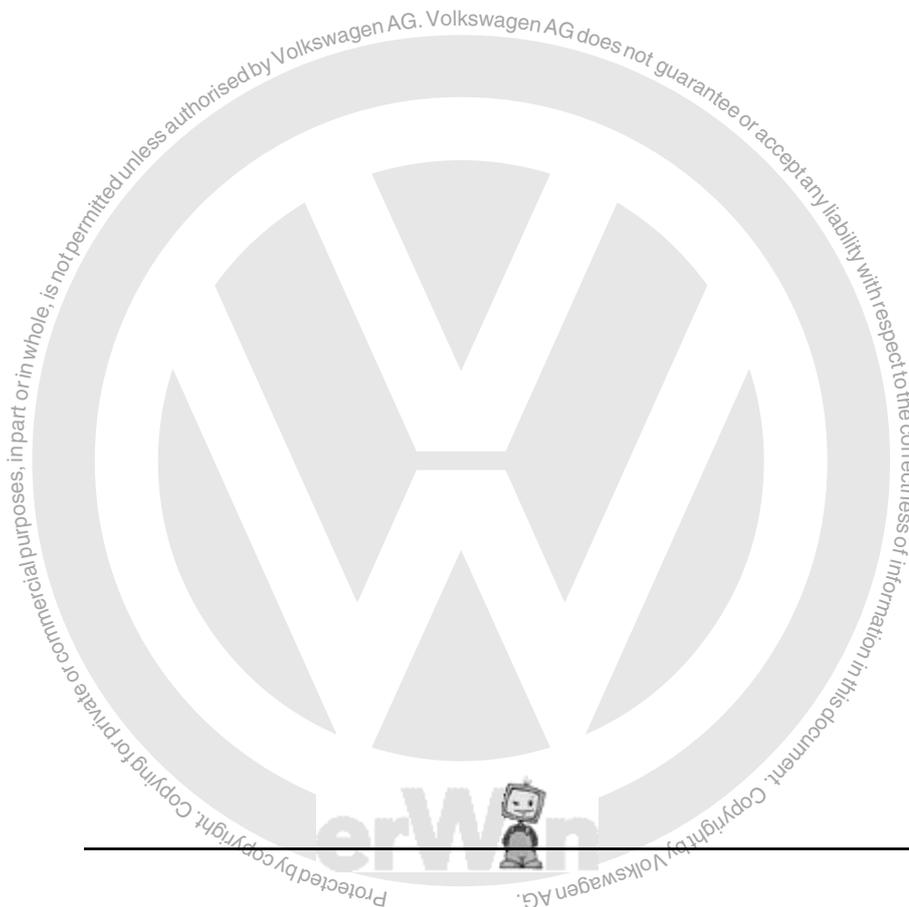


30 – Clutch

1 Fault finding, power transmission

Please note:

- ◆ ⇒ Fault finding, power transmission; Rep. Gr. 30 ; Complaints regarding clutch and clutch actuation
- ◆ ⇒ Fault finding, power transmission; Rep. Gr. 34 ; Complaints regarding selector mechanism





2 Repairing clutch mechanism

2.1 Overview



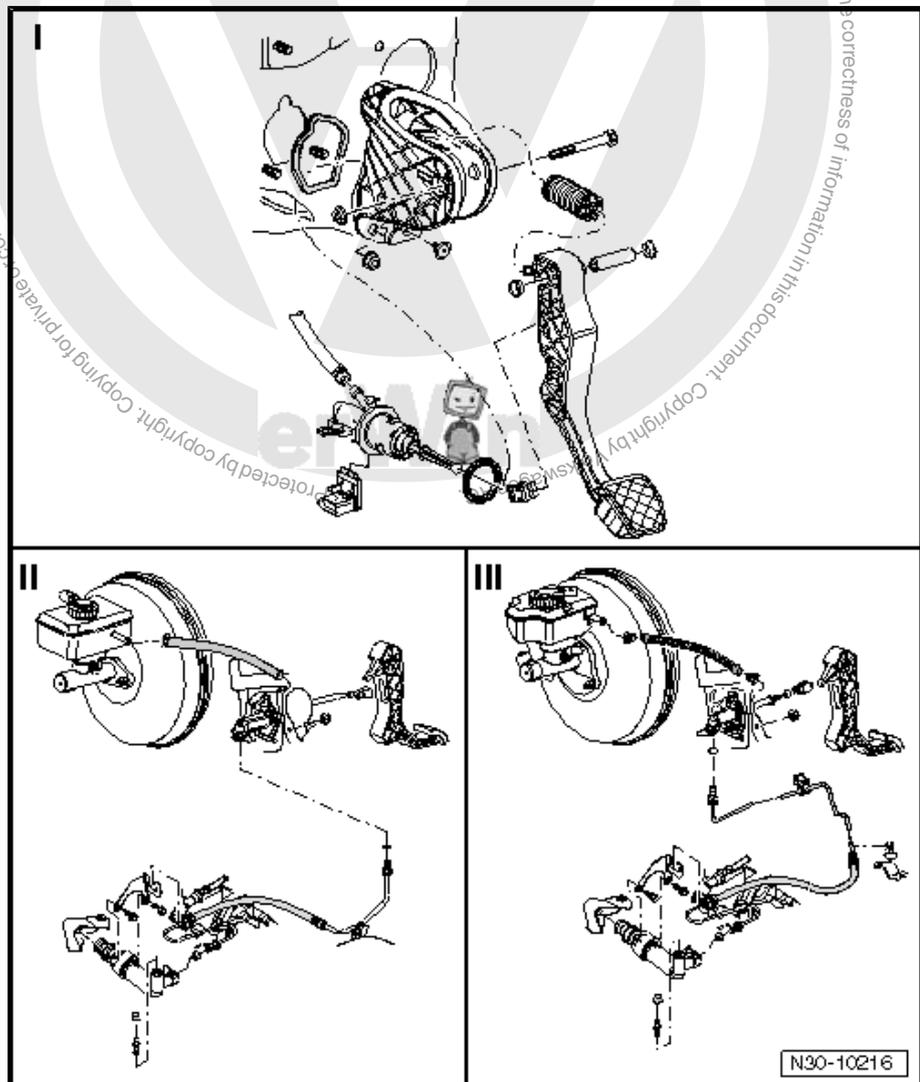
Note

- ◆ Before disconnecting battery, obtain code for radio units having anti-theft coding.
- ◆ With ignition switched off, disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- ◆ When reconnecting battery, refer to ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- ◆ Lubricate all bearings and contact surfaces with grease -G 000 450 02- .

I - Assembly overview - pedal cluster ⇒ [page 11](#)

II - Assembly overview - hydraulics (LHD vehicles) ⇒ [page 35](#)

III - Assembly overview - hydraulics (RHD vehicles) ⇒ [page 37](#)





- For mounting bracket on bulkhead
- Always renew

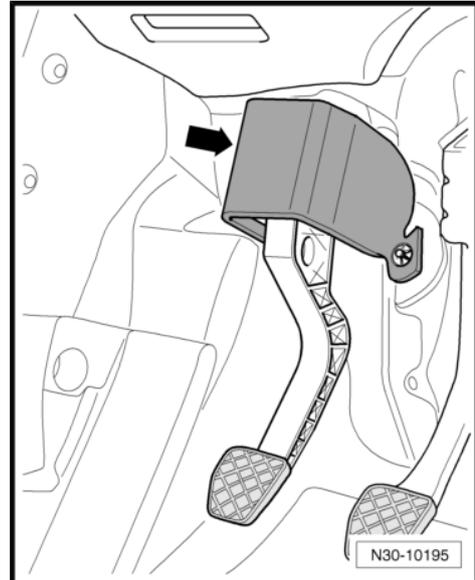
16 - Hexagon nut, 25 Nm

- Always renew

17 - Stop

- For clutch pedal

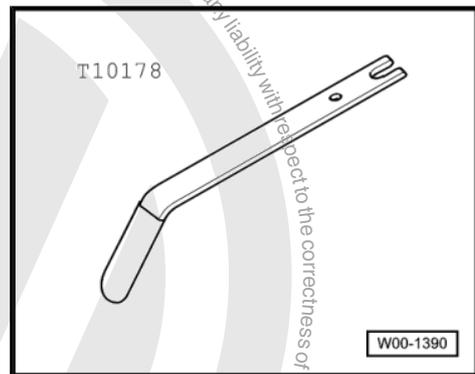
Mounting bracket with damping -arrows-



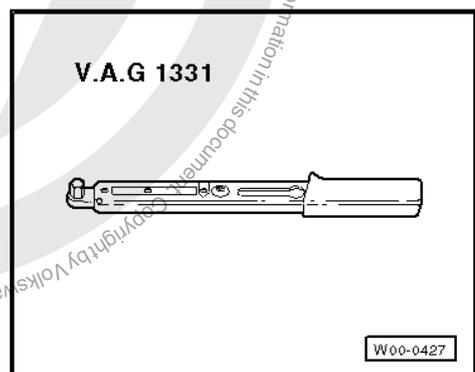
2.3 Removing and installing over-centre spring

Special tools and workshop equipment required

- ◆ Release tool -T10178-



Torque wrench -V.A.G 1331-





2.3.1 Removing

Vehicles with knee airbag



Note

The installation location of the knee airbag is above the pedal cluster.

- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery => Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

Continuation for all

- Push driver seat as far back as possible and put steering wheel in highest position.
- Remove trim and cover below trim on drive side => General body repairs, interior; Rep. Gr. 68 .

Vehicles with knee airbag

- Remove bracket for knee airbag together with crash bar => General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket.

Continuation for all

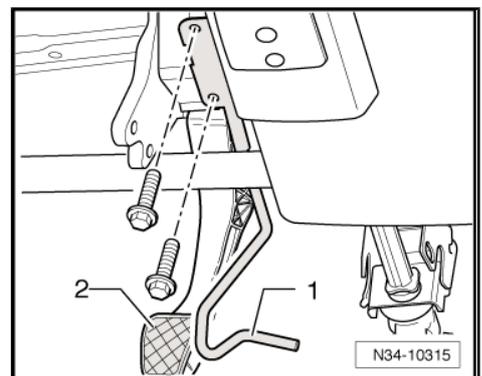
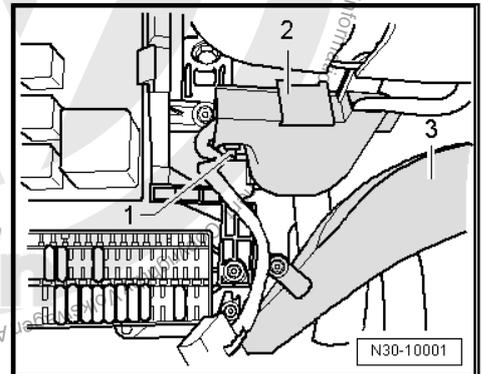
- Remove cable guide -2- from steering column.
- Remove footwell vent -3- => Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .

Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

Attachment with 2 bolts

- Remove crash bar -1- (2 bolts).

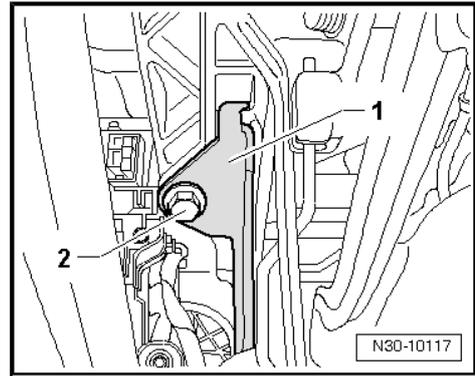




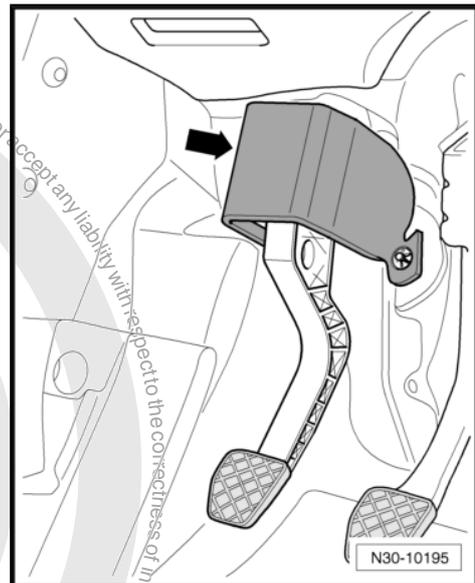
Attachment with 1 bolt

- Remove crash bar -1- (1 bolt -2-).

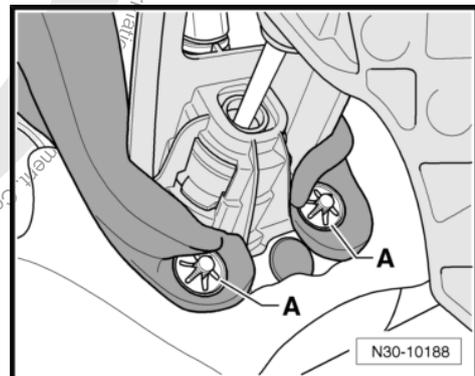
Continuation for all



If fitted, remove damping -arrow- from lower area of clutch pedal mounting bracket.

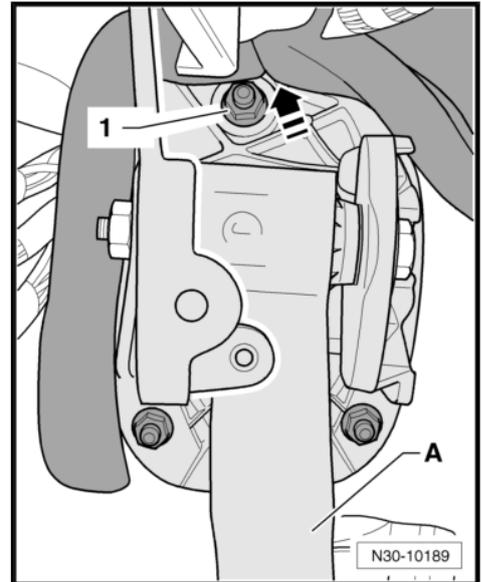


- To do this, remove lock washers -A- for damping.
- Pull off damping.





- Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.

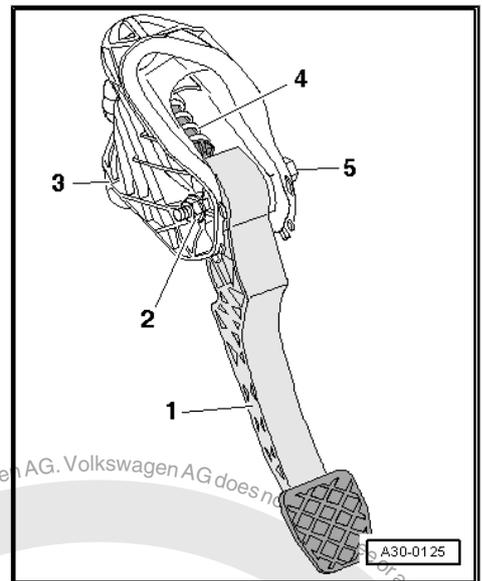


- Unbolt clutch pedal -1- from mounting bracket -3- by removing nut -2- and pulling out bolt -5-.

i Note

The clutch pedal remains hooked to operating rod of master cylinder.

- Swing clutch pedal down slightly and remove over-centre spring -4- from mounting bracket.



2.3.2 Installing

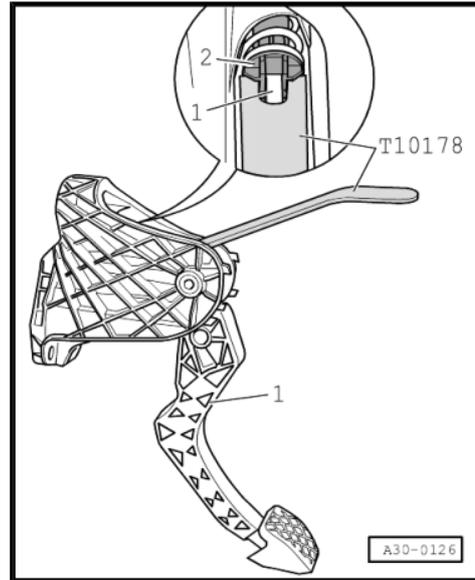
Install in the reverse order of removal, observing the following:

i Note

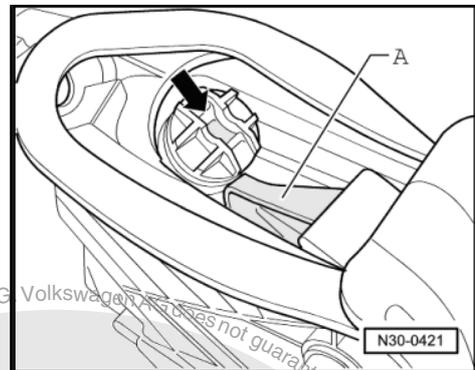
Renew self-locking nuts.



- Insert over-centre spring -2- in mounting bracket from above while holding end of spring with assembly tool -T10178- in installation position.



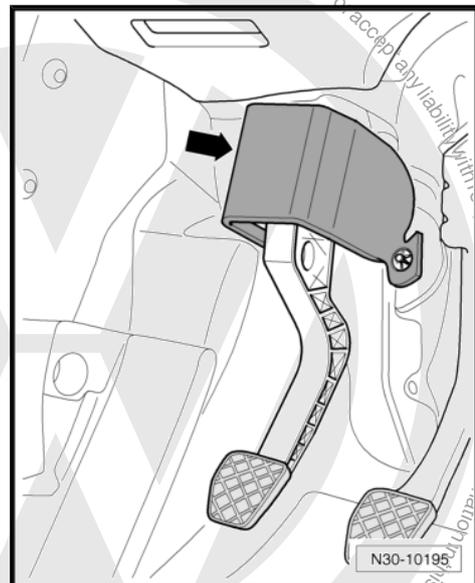
- Receptacle -arrow- for tip -A- of clutch pedal must stand vertically.
- Insert tip of clutch pedal in bearing recess of over-centre spring.
- Depress clutch pedal slightly, push bolt through and tighten self-locking nut to specified torque => [page 17](#) .



Some cars have damping -arrow- on the clutch pedal mounting bracket.

- Reinstall in original position.

Vehicles without knee airbag

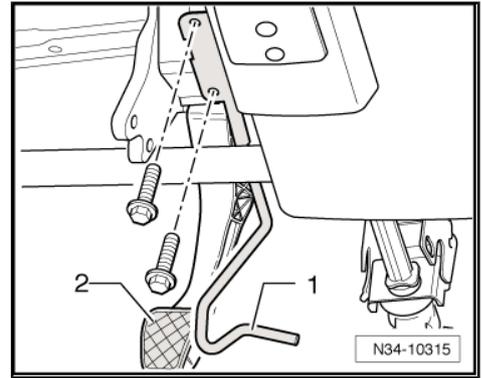




The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

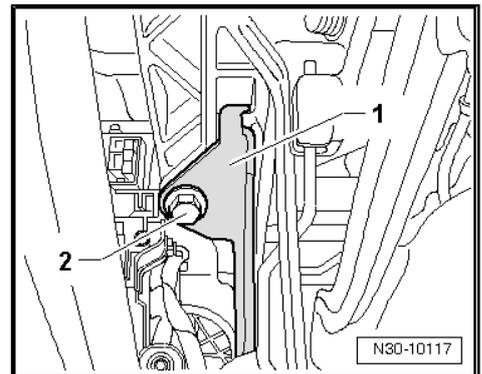
Attachment with 2 bolts

- Install crash bar -1- and tighten the 2 bolts to specified torque => [page 17](#) .



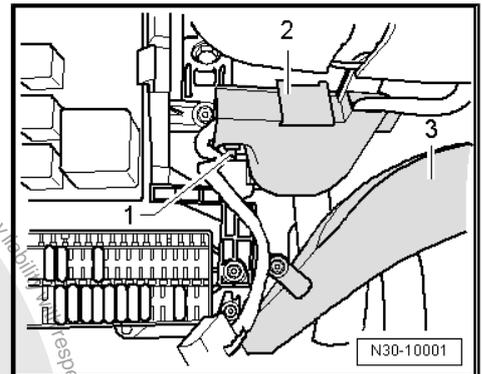
Attachment with 1 bolt

- Install crash bar -1- and tighten bolt -2- to specified torque => [page 17](#) .



Continuation for all

- Mount cable guide -2- on steering column.
- Install footwell vent -3- => Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .



Vehicles with knee airbag

- Install bracket for knee airbag together with crash bar => General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket .

Continuation for all

- Install trim and cover below trim on drive side => General body repairs, interior; Rep. Gr. 68 .
- Reconnect battery and perform work required after connecting battery => Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

2.3.3 Torque settings

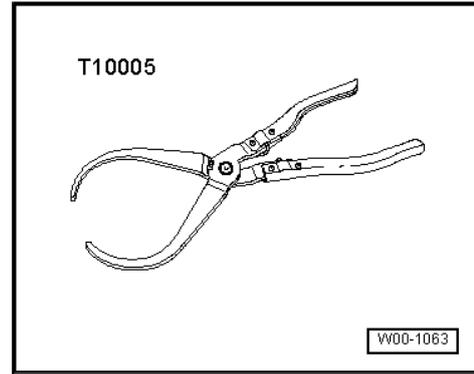
Component	Nm
Clutch pedal to mounting bracket ◆ Renew self-locking nuts	25
Crash bar to steering column mounting bracket (attachment with 2 bolts)	10
Crash bar to steering column mounting bracket (attachment with 1 bolt)	20
◆ Renew bolts for crash bar	

2.4 Removing and installing clutch pedal

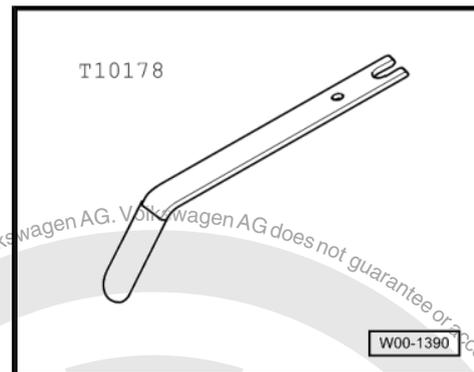
Special tools and workshop equipment required



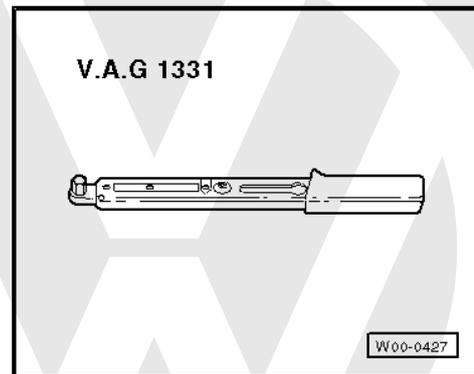
◆ Pliers -T10005-



◆ Release tool -T10178-



Torque wrench -V.A.G 1331-



2.4.1 Removing Vehicles with knee airbag



Note

The installation location of the knee airbag is above the pedal cluster.

- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

Continuation for all

- Push driver seat as far back as possible and put steering wheel in highest position.
- Remove trim and cover below trim on drive side ⇒ General body repairs, interior; Rep. Gr. 68 .



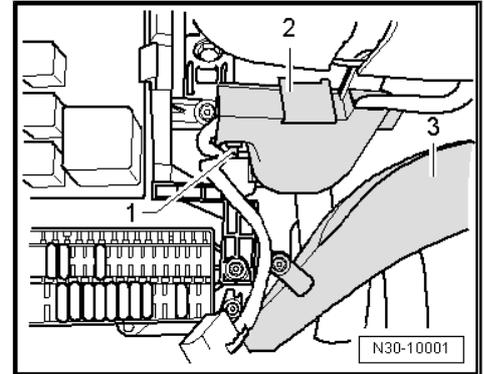
Vehicles with knee airbag

- Remove bracket for knee airbag together with crash bar => General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket .

Continuation for all

- Remove cable guide -2- from steering column.
- Remove footwell vent -3- => Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .

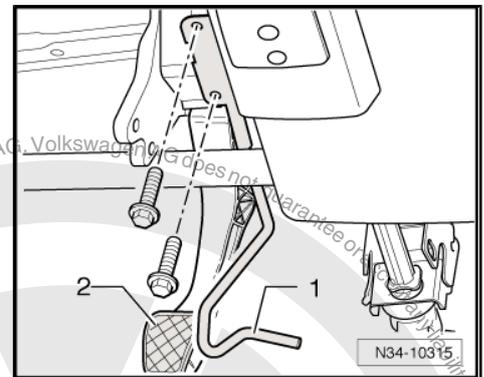
Vehicles without knee airbag



The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

Attachment with 2 bolts

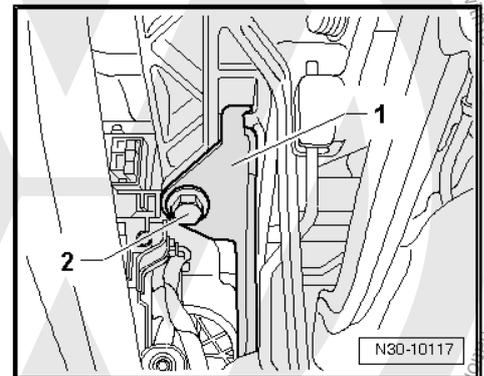
- Remove crash bar -1- (2 bolts).



Attachment with 1 bolt

- Remove crash bar -1- (1 bolt -2-).

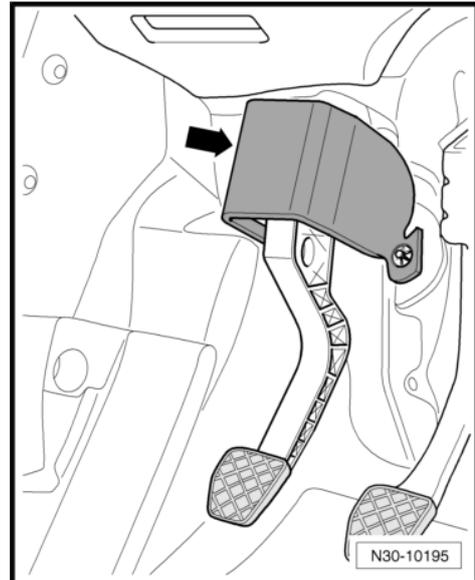
Continuation for all



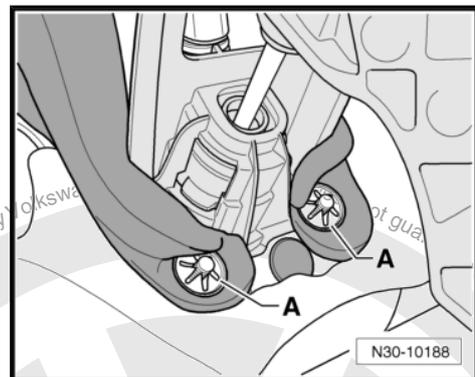
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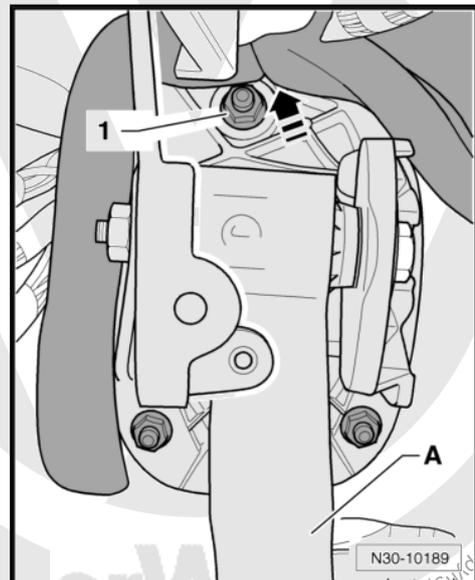
If fitted, remove damping -arrow- from lower area of clutch pedal mounting bracket.



- To do this, remove lock washers -A- for damping.
- Pull off damping.

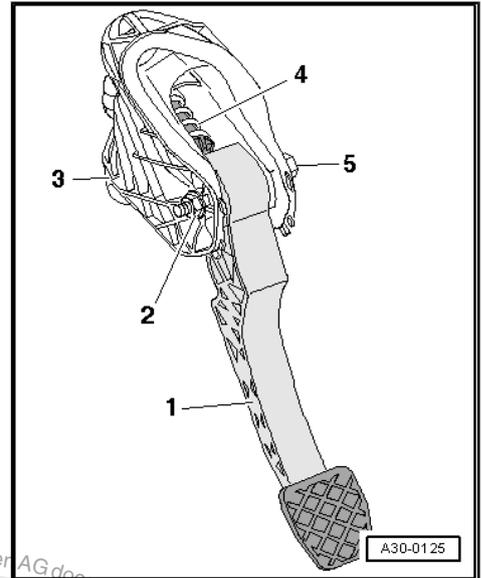


- Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.

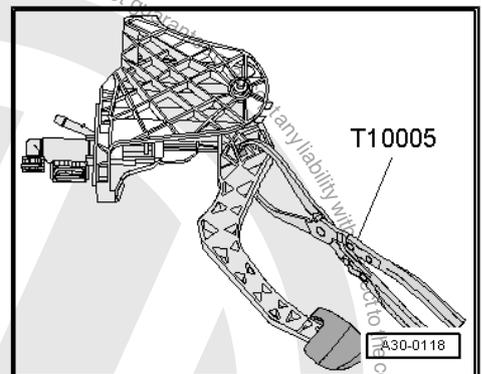




- Unbolt clutch pedal -1- from mounting bracket -3- by removing nut -2- and pulling out bolt -5-.
- Swing clutch pedal forward slightly and remove over-centre spring -4- from mounting bracket.



- Release clutch pedal from master cylinder with pliers - T10005- .
- Remove clutch pedal.



2.4.2 Installing

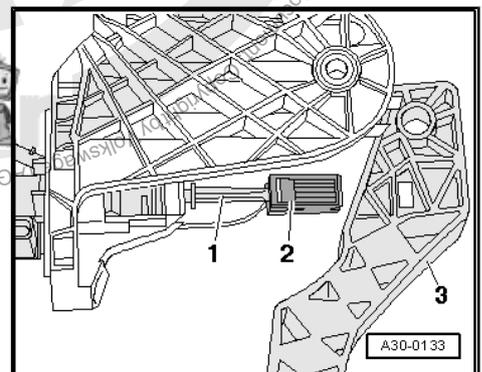
Install in the reverse order of removal, observing the following:



Note

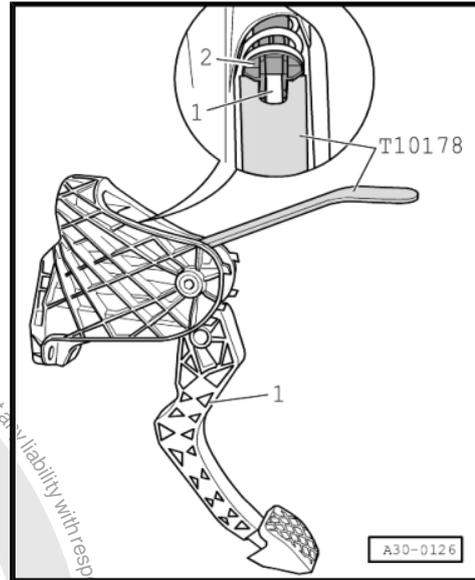
Renew self-locking nuts.

- Attach retainer -2- to master cylinder operating rod -1-.
- Press retainer into notch in clutch pedal -3- until it can be heard to engage.

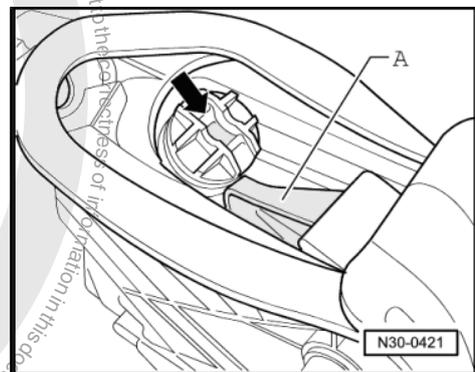




- Insert over-centre spring -2- in mounting bracket from above while holding end of spring with assembly tool -T10178- in installation position.



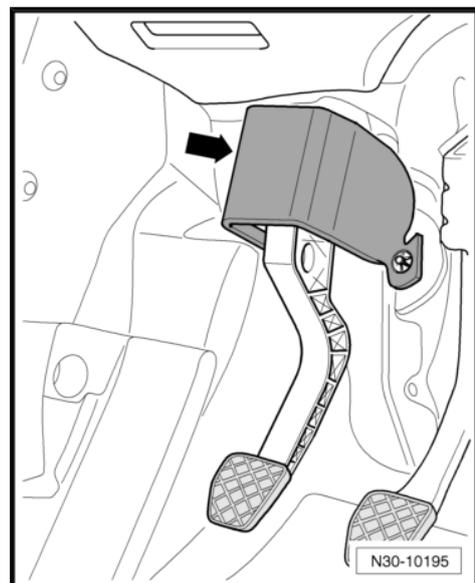
- Receptacle -arrow- for tip -A- of clutch pedal must stand vertically.
- Insert tip -A- of clutch pedal in bearing recess of over-centre spring.
- Depress clutch pedal slightly, push bolt through and tighten self-locking nut to specified torque => [page 23](#) .



Some cars have damping -arrow- on the clutch pedal mounting bracket.

- Reinstall in original position.

Vehicles without knee airbag

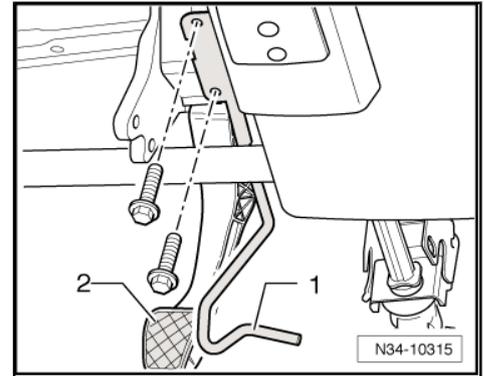




The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

Attachment with 2 bolts

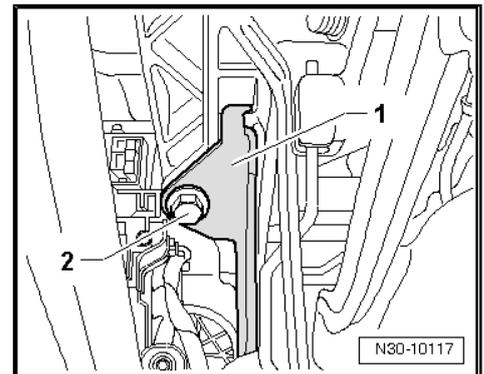
- Install crash bar -1- and tighten the 2 bolts to specified torque => [page 23](#) .



Attachment with 1 bolt

Continuation for all

- Install crash bar -1- and tighten bolt -2- to specified torque => [page 23](#) .

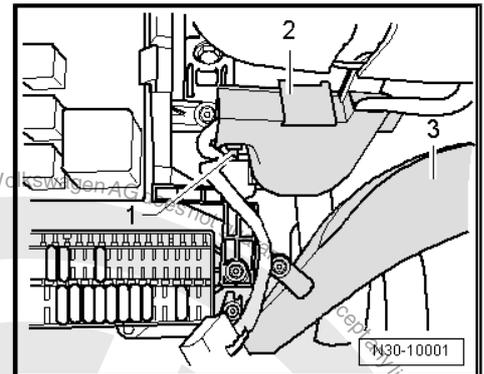


Continuation for all

- Mount cable guide -2- on steering column.
- Install footwell vent -3- => Heating, air conditioning; Rep. Gr. 80 ; Repairing heating

Vehicles with knee airbag

- Install bracket for knee airbag together with crash bar => General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket .



Continuation for all

- Install trim and cover below trim on drive side => General body repairs, interior; Rep. Gr. 68 .
- Reconnect battery and perform work required after connecting battery => Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

2.4.3 Torque settings

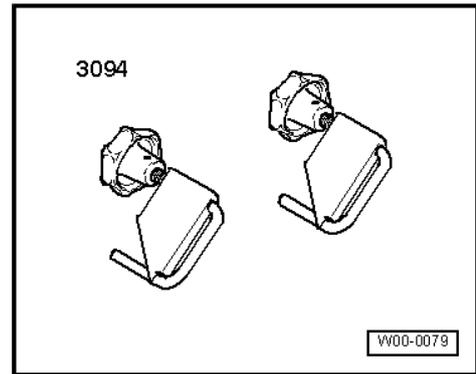
Component	Nm
Clutch pedal to mounting bracket ◆ Renew self-locking nuts	25
Crash bar to steering column mounting bracket (attachment with 2 bolts)	10
Crash bar to steering column mounting bracket (attachment with 1 bolts)	20
◆ Renew bolts for crash bar	

2.5 Removing and installing mounting bracket

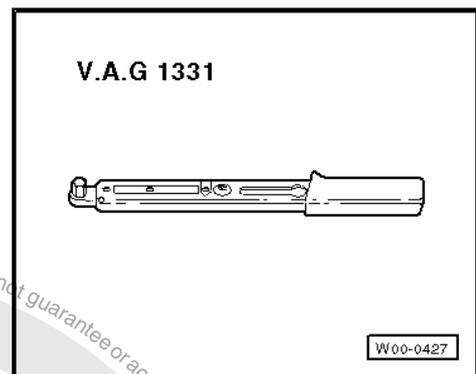
Special tools and workshop equipment required



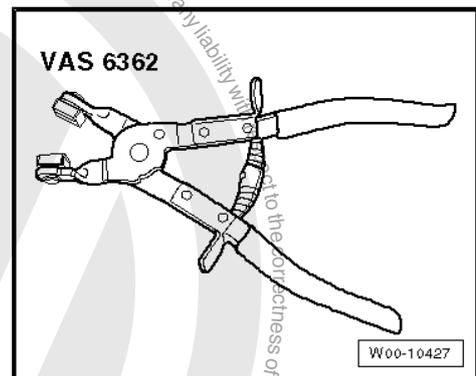
- ◆ Hose clamps to 25 mm -3094-



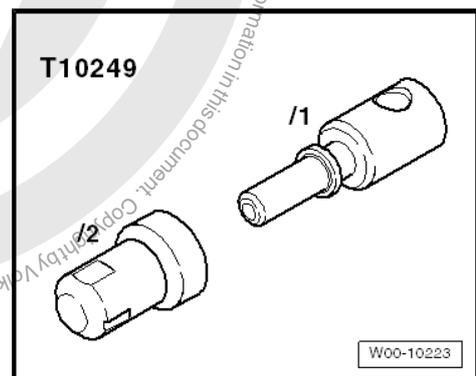
- ◆ Torque wrench -V.A.G 1331-



- ◆ Hose clip pliers -VAS 6362-



- ◆ Sealing tool -T10249-



2.5.1 Removing

Left-hand drive

- First check whether a coded radio is fitted. If so, obtain anti-theft code.

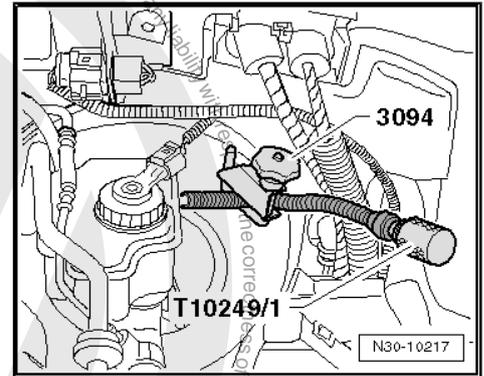


- With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- Remove complete air filter housing if it is located close to the battery ⇒ Rep. Gr. 24 ; Repairing injection system .
- Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .

Continuation for all

i Note

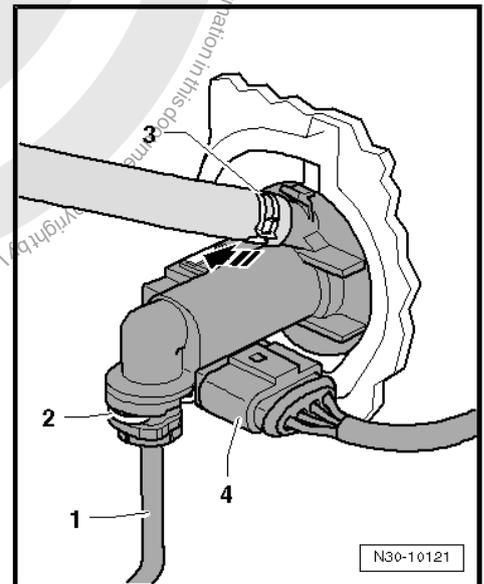
- ◆ *During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.*
- ◆ *Place a lint-free cloth under the master cylinder.*
- Clamp off supply hose to master cylinder using hose clamp -3094- .
- If necessary, loosen spring-type clip -3- with hose clip pliers -VAS 6362- and pull supply hose off master cylinder.
- In addition, seal supply hose with sealing tool -T10249/1- .
- Release securing clip -2- using screwdriver or pointed object and pull pipe/hose line -1- off master cylinder.
- Unclip clutch position sender -G476- from master cylinder -arrow- and remove with electrical connector attached -4-.



i Note

When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.

- Remove trim and cover below trim on drive side ⇒ General body repairs, interior; Rep. Gr. 68 .



Vehicles with knee airbag

i Note

The installation location of the knee airbag is above the pedal cluster.

- Remove bracket for knee airbag together with crash bar ⇒ General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket .

Continuation for all



- Remove cable guide -2- from steering column.
- Remove footwell vent -3- → Heating, air conditioning; Rep. Gr. 80 ; Repairing heating

Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

Attachment with 2 bolts

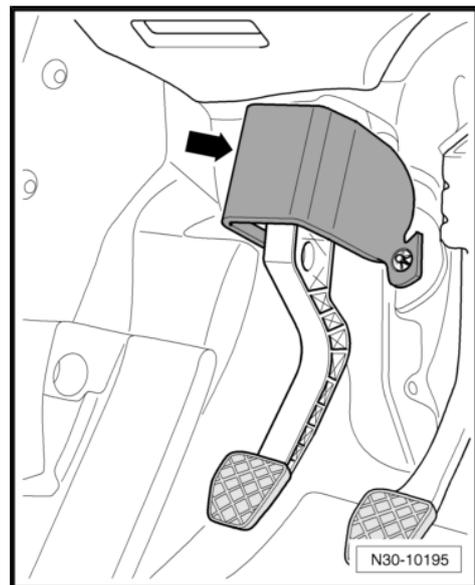
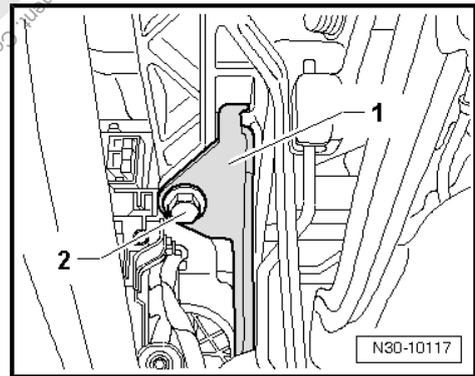
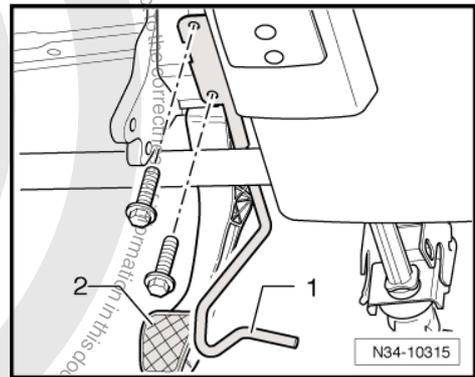
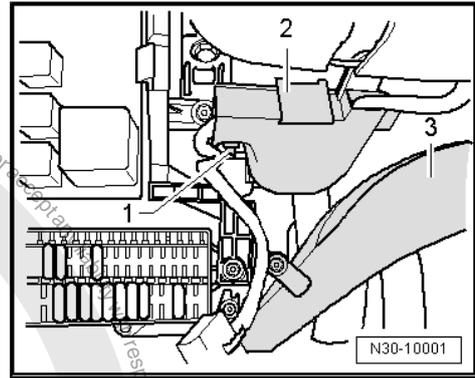
- Unbolt crash bar (2 bolts).

Attachment with 1 bolt

- Remove crash bar -1- (1 bolt -2-).

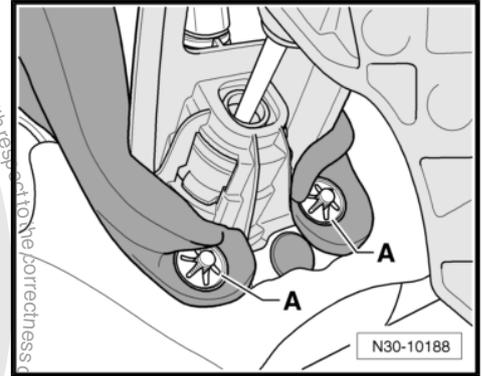
Continuation for all

If fitted, remove damping -arrow- from lower area of clutch pedal mounting bracket.

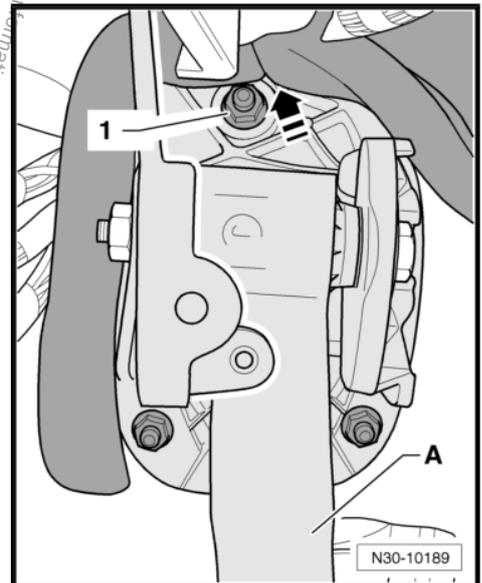




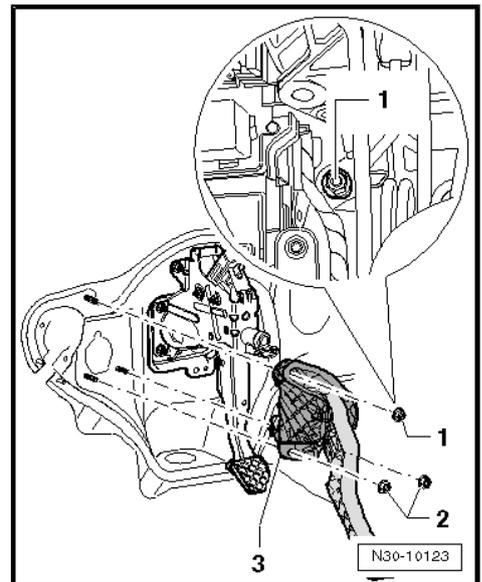
- To do this, remove lock washers -A- for damping.
- Pull off damping.



- Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.



- Remove securing nuts -1- and -2-.
- The upper securing nut -1- is accessible between the relay carrier and the steering column trim.
- Remove mounting bracket -3-.



2.5.2 Installing

Install in the reverse order of removal, observing the following:



Note

- ◆ Renew self-locking nuts.
- ◆ Renew hose clips.
- ◆ Allocate all components according to ⇒ *Electronic parts catalogue "ETKA"*.

Some cars have damping -arrow- on the clutch pedal mounting bracket.

Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways.

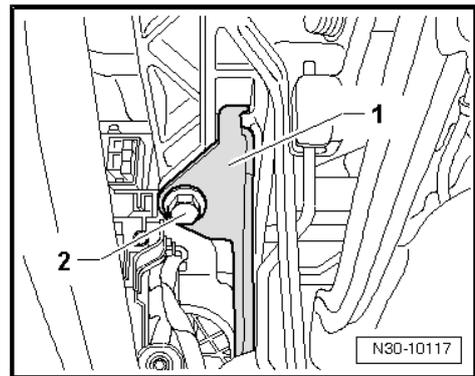
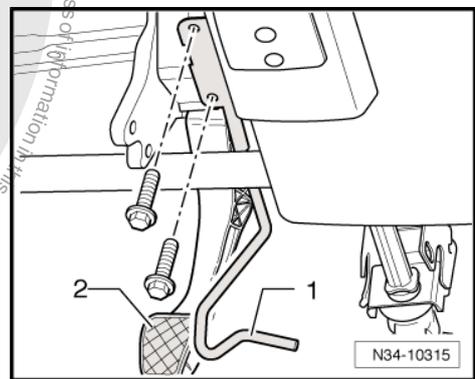
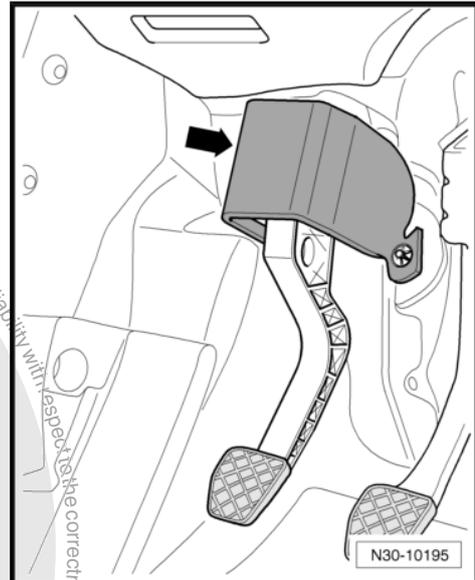
Attachment with 2 bolts

- Install crash bar -1- and tighten the 2 bolts to specified torque ⇒ [page 29](#).

Attachment with 1 bolt

- Install crash bar -1- and tighten bolt -2- to specified torque ⇒ [page 29](#).

Continuation for all





- Mount cable guide -2- on steering column.
- Install footwell vent -3- => Heating, Air conditioning; Rep. Gr. 80 ; Repairing heating; Removing and installing left footwell vent .

Vehicles with knee airbag

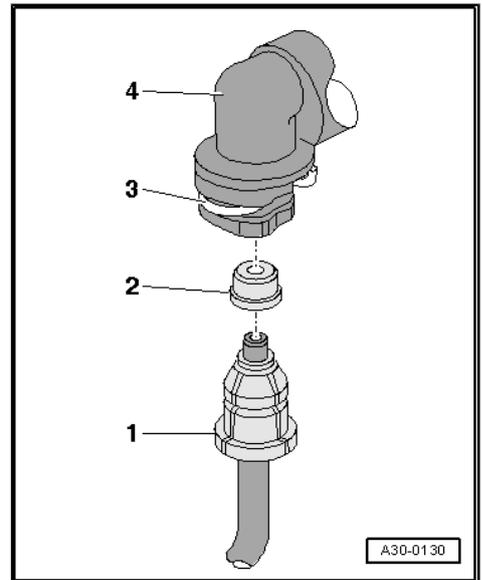
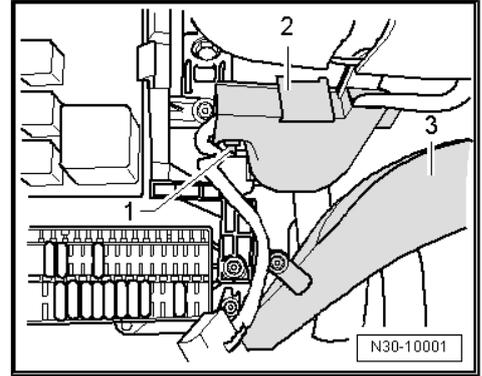
- Install bracket for knee airbag together with crash bar => General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket .

Continuation for all

- Install trim and cover below trim on drive side => General body repairs, interior; Rep. Gr. 68 .
- Push pipe/hose line or plastic line -1- with seal -2- onto connection of master cylinder -4- until securing clip -3- engages audibly.
- Test line by tugging on it.
- After removing hose clamp -3094- , return supply hose to its original shape, if necessary.
- Bleed clutch system => [page 40](#) .

Left-hand drive

- Install battery => Electrical system; Rep. Gr. 27.
- If removed, install complete air filter housing => Rep. Gr. 24 ; Repairing injection system .

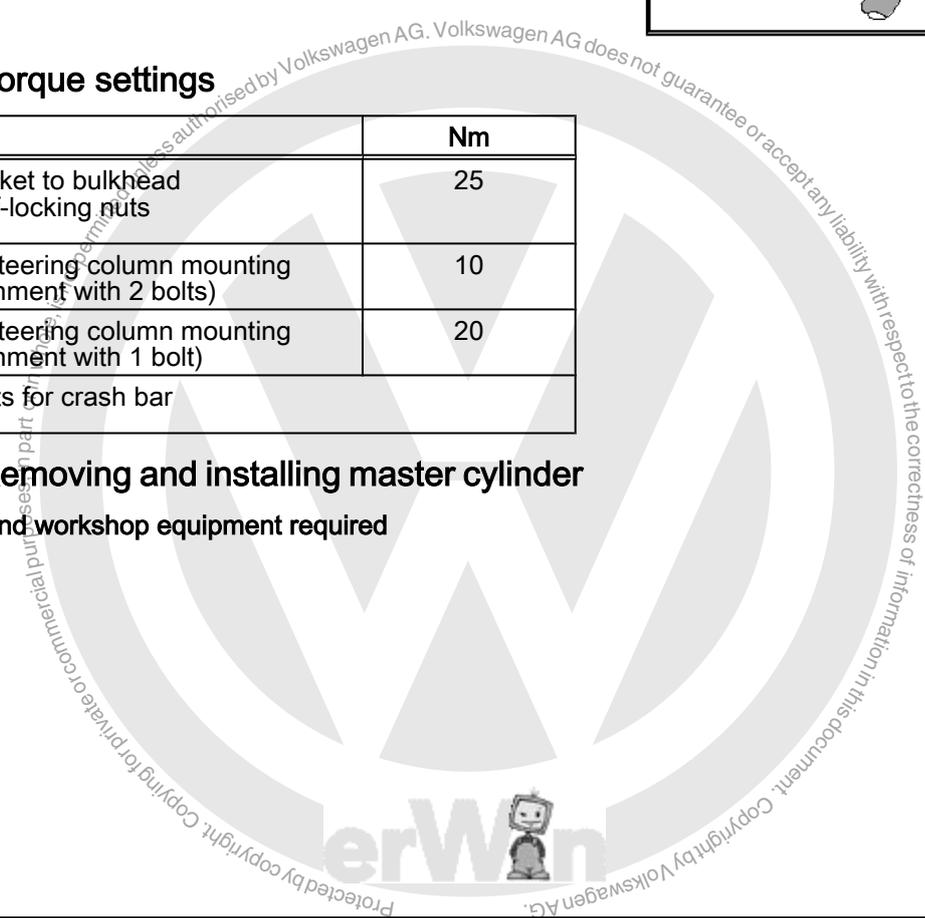


2.5.3 Torque settings

Component	Nm
Mounting bracket to bulkhead ◆ Renew self-locking nuts	25
Crash bar to steering column mounting bracket (attachment with 2 bolts)	10
Crash bar to steering column mounting bracket (attachment with 1 bolt)	20
◆ Renew bolts for crash bar	

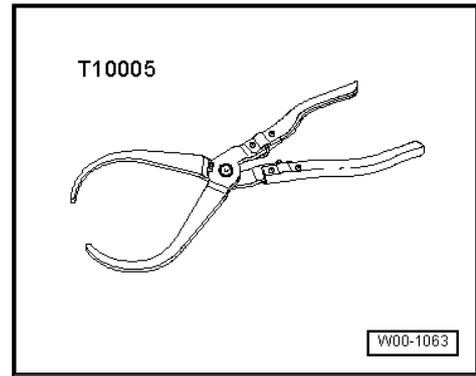
2.6 Removing and installing master cylinder

Special tools and workshop equipment required



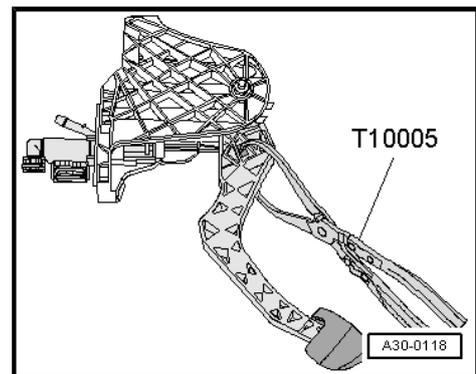


- ◆ Pliers -T10005-

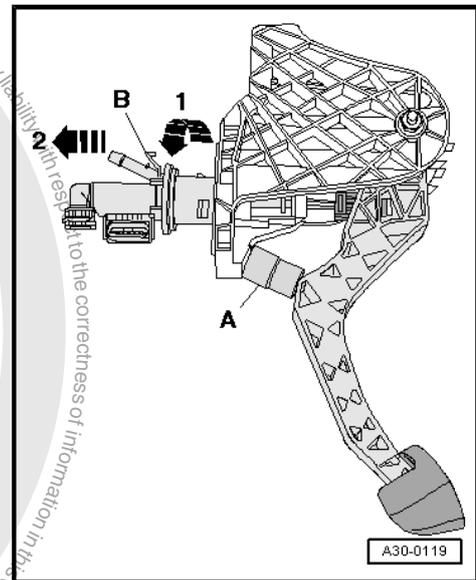


2.6.1 Removing

- Remove mounting bracket ⇒ [page 23](#) .
- Release retainer for master cylinder operating rod using pliers -T10005- .



- Insert spacer -A- between clutch pedal and stop and press clutch pedal to spacer.
- ◆ Length of spacer = about 40 mm (e.g. 1/2" socket).
- Release securing bar -B- and pull master cylinder out of mounting bracket -arrow 1- and -arrow 2-.

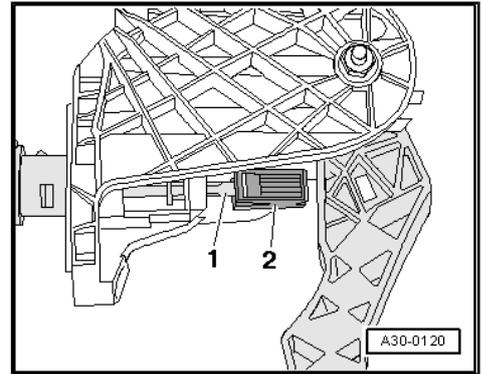


2.6.2 Installing

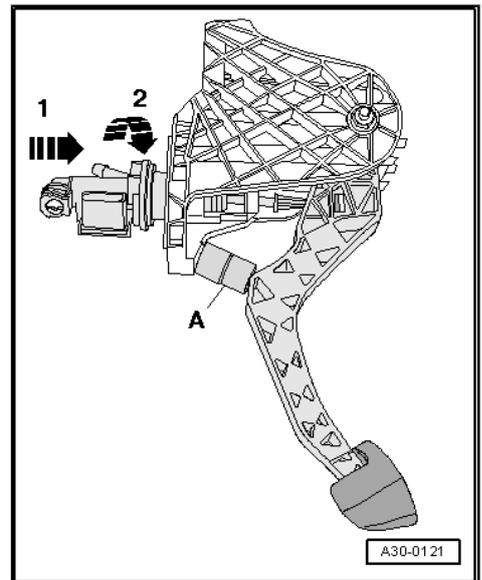
- Move clutch pedal to rest position at stop.



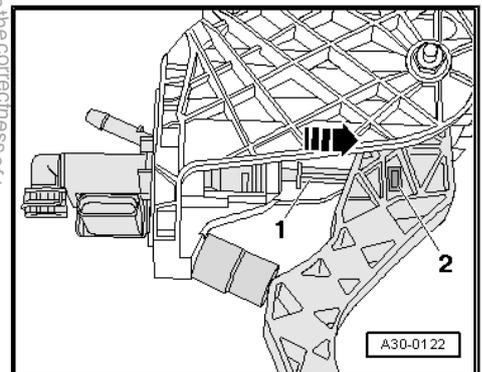
- Attach retainer -2- to master cylinder operating rod -1-.



- Insert spacer -A- between clutch pedal and stop and press clutch pedal to spacer.
- ◆ Length of spacer = about 40 mm (e.g. 1/2" socket).
- Engage master cylinder in mounting bracket -arrow 1- and -arrow 2-.



- Press master cylinder operating rod -1- in -direction of arrow- until retainer -2- engages audibly in clutch pedal.
- Install mounting bracket => [page 23](#) .

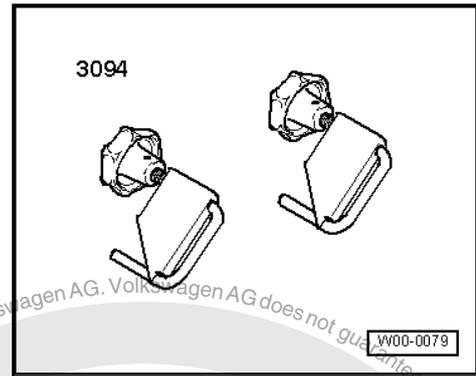


2.7 Removing and installing clutch position sender -G476-

Special tools and workshop equipment required



- ◆ Hose clamps to 25 mm Ø -3094-



2.7.1 Removing

LHD

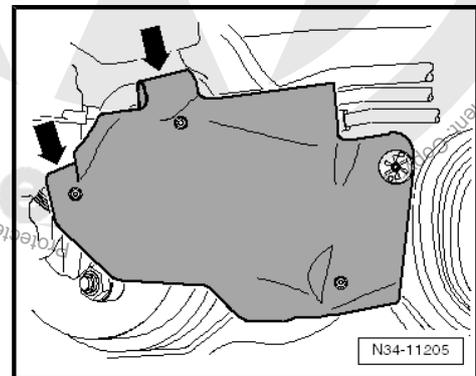
- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- Remove complete air filter housing if it is located close to the battery ⇒ Rep. Gr. 24 ; Repairing injection system .
- Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .

Right-hand drive

An insulation mat is installed in conjunction with some engines.

- Remove heat shield from pipe/hose line or plastic line -arrows-.

Continuation for all



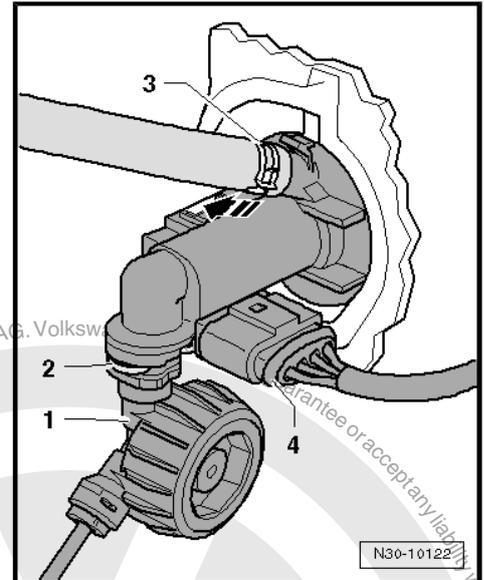


If a pipe/hose line or plastic line -1- with a round component is installed directly beneath the master cylinder, the pipe/hose line or plastic line must be removed.

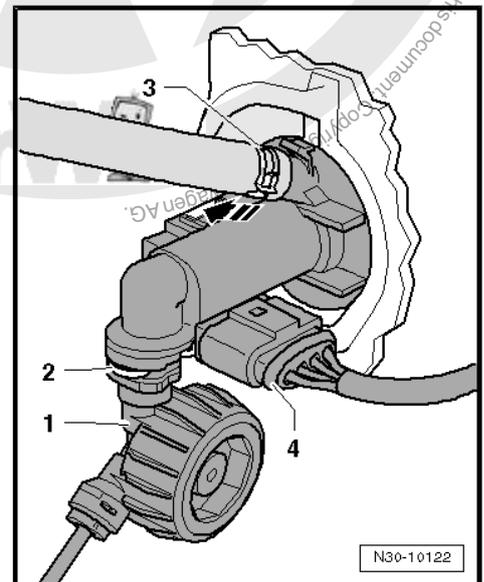
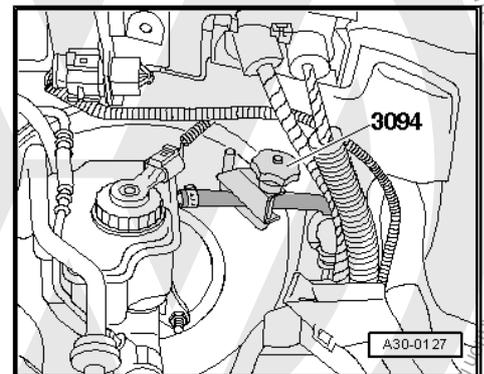
 Note

During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.

- Clamp off supply hose to master cylinder using hose clamp to 25 mm Ø -3094- .



- Release securing clip -2- with a screwdriver or pointed object and pull out of master cylinder to stop.
- Pull pipe/hose line or plastic line -1- out from master cylinder and seal hose.
- Disconnect electrical connector -4-.
- Unclip clutch position sender -G476- from master cylinder -arrow- and remove.



2.7.2 Installing

Install in the reverse order of removal, observing the following:



Note

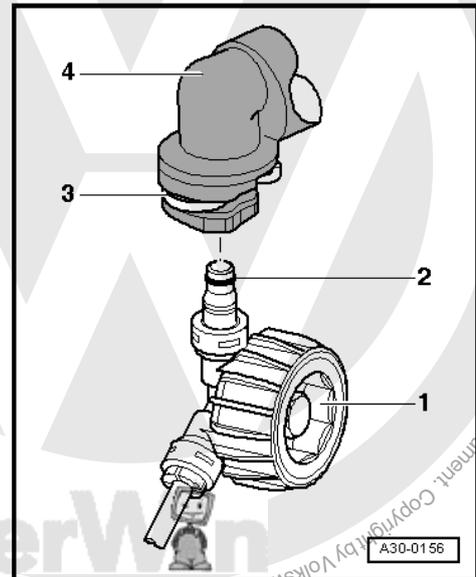
- ◆ *Renew hose clips.*
- ◆ *Allocate all components according to ⇒ Electronic parts catalogue "ETKA".*

If the pipe/hose line or plastic line was removed:

- Push pipe/hose line or plastic line -1- with seal -2- onto connection of master cylinder -4- until securing clip -3- engages audibly.
- Test pipe/hose line by tugging on it.
- After removing hose clamp -3094- , return supply hose to its original shape, if necessary.
- Bleed clutch system ⇒ [page 40](#) .

Left-hand drive

- Install battery tray and battery ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .
- If removed, install complete air filter housing ⇒ Rep. Gr. 24 ; Repairing injection system .





2.8 Assembly overview - hydraulics (LHD vehicles)

1 - Brake fluid reservoir

2 - Spring-type clip

- Not present

3 - Supply hose

- Made of plastic
⇒ [page 36](#)

4 - Master cylinder

- Removing and installing
⇒ [page 29](#)

5 - Clip

- Pull clip out to stop to remove or install hose
- Pulled out to side on some master cylinders

6 - Retainer

- To remove and install, separate master cylinder from clutch pedal
⇒ ["2.4 Removing and installing clutch pedal"](#),
[page 17](#)

7 - Clutch pedal

- Removing and installing
⇒ [page 17](#)

8 - Hexagon nut

- Note and torque setting
⇒ [Item 15 \(page 11\)](#)

9 - Seal / O-ring

- Pull onto line connection
- Insert with brake fluid
- Seals/O-rings are adapted to configuration of line connection ⇒ [page 36](#)
- Allocation ⇒ Electronic parts catalogue "ETKA"

10 - Pipe/hose or plastic line

- Allocation ⇒ Electronic parts catalogue "ETKA"
- To remove, remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

11 - Bracket

- Secured to body

12 - Seal / O-ring

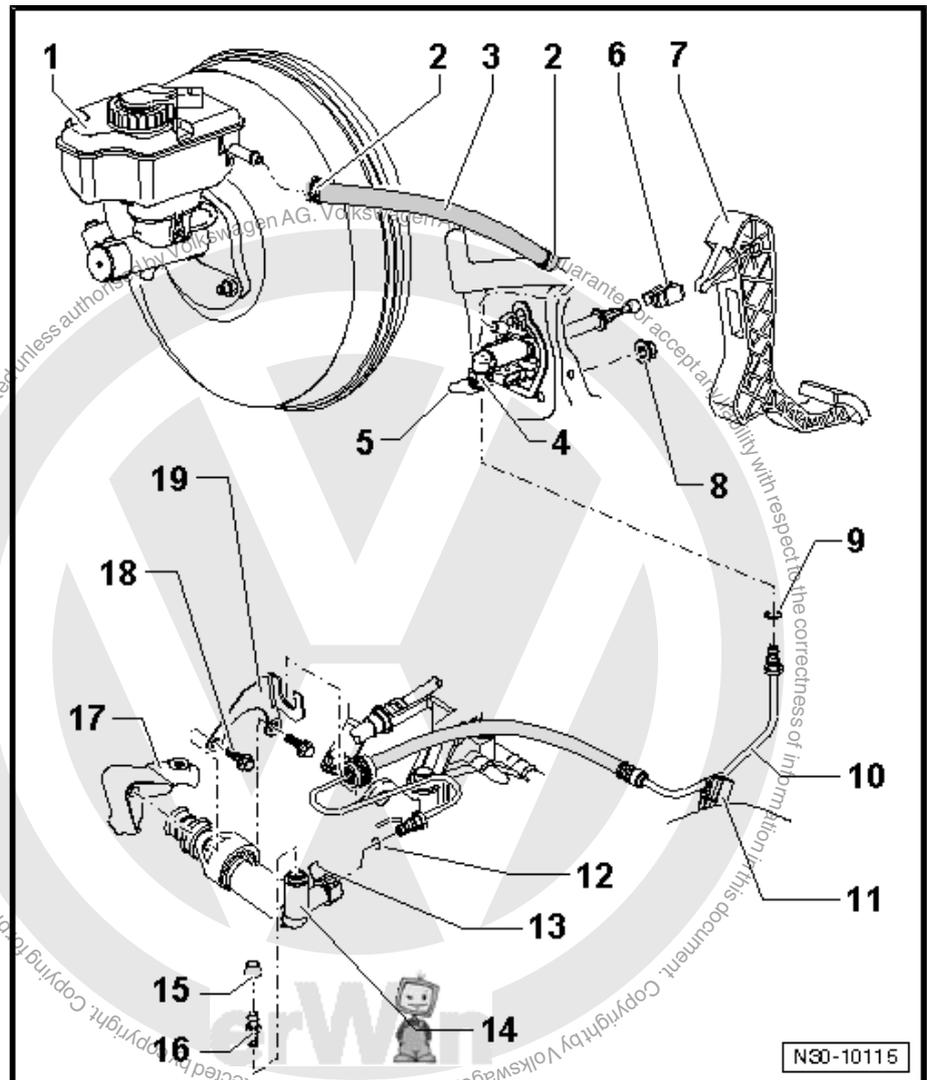
- Pull onto line connection
- Insert with brake fluid
- Seals/O-rings are adapted to configuration of line connection ⇒ [page 36](#)
- Allocation ⇒ Electronic parts catalogue "ETKA"

13 - Clip

- Pull out clip to stop to remove and install pipe/hose line or plastic line

14 - Slave cylinder

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





15 - Dust cap

16 - Bleed valve

- ❑ Bleeding clutch system ⇒ [page 40](#)

17 - Gearbox

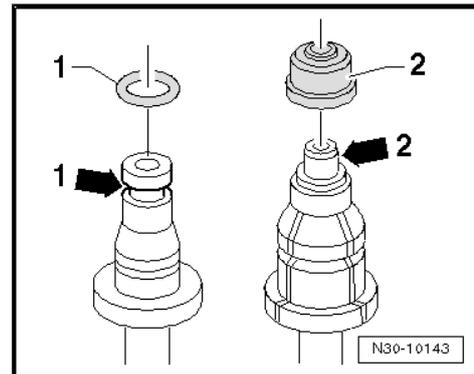
18 - Hexagon bolt

- ❑ Torque setting ⇒ [Item 9 \(page 42\)](#)

19 - Bracket

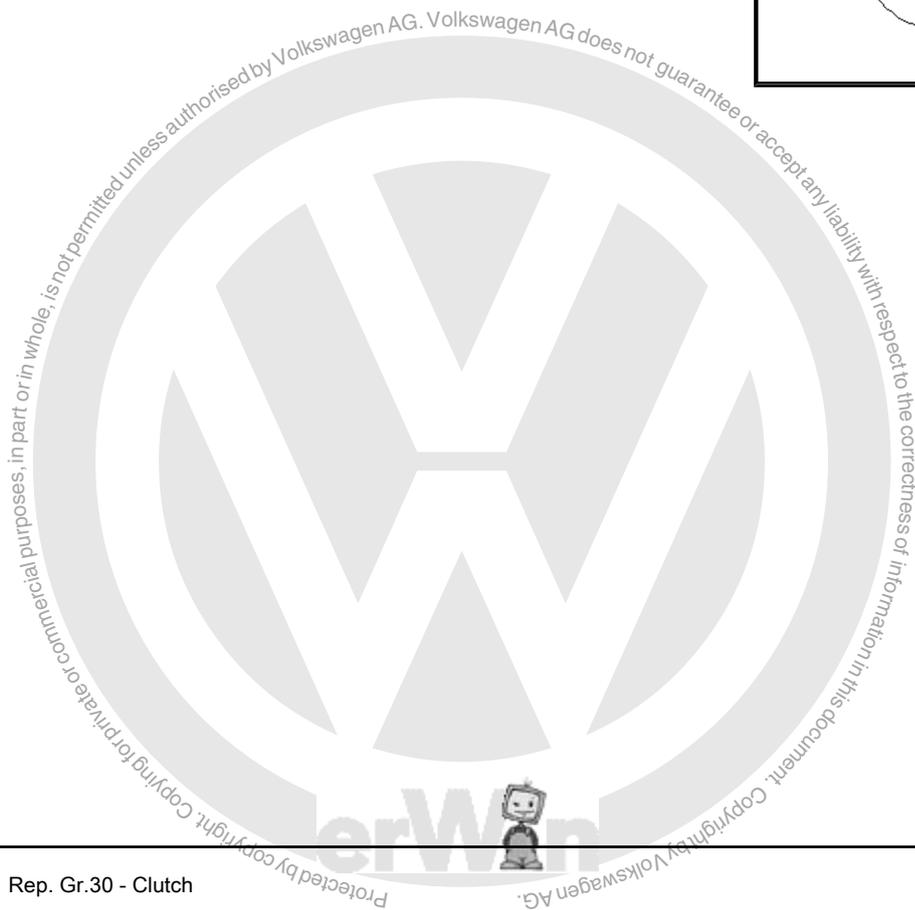
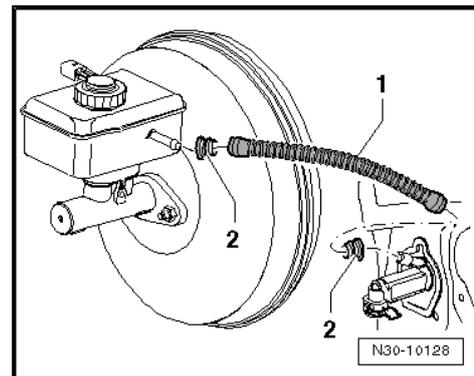
Seals and O-rings for pipe/hose lines or plastic lines

Item	Material of line connection
1	Line connection with circumferential groove -arrow 1-
2	Line connection with shoulder -arrow 2-



Supply hose -1- of plastic

- The seals -2- must be located in supply hose housing.





2.9 Assembly overview - hydraulics (RHD vehicles)

1 - Brake fluid reservoir

2 - Seal

- For plastic supply hose
- The seals must be located in supply hose

3 - Supply hose

- Made of plastic

4 - Master cylinder

- Removing and installing
⇒ [page 29](#)

5 - Clip

- Pull clip out to stop to remove or install pipe
- Pulled out to side on some master cylinders

6 - Seal / O-ring

- Pull onto line connection
- Insert with brake fluid
- Seals/O-rings are adapted to configuration of line connection
⇒ [page 36](#)
- Allocation ⇒ Electronic parts catalogue "ETKA"

7 - Retainer

- To remove and install, separate master cylinder from clutch pedal
⇒ [page 17](#)

8 - Clutch pedal

- Removing and installing
⇒ [page 17](#)

9 - Hexagon nut

- Note and torque setting: ⇒ [Item 15 \(page 11\)](#)

10 - Bracket

- Secured to body

11 - Pipe/hose or plastic line

- Allocation ⇒ Electronic parts catalogue "ETKA"
- To remove, remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

12 - Bracket

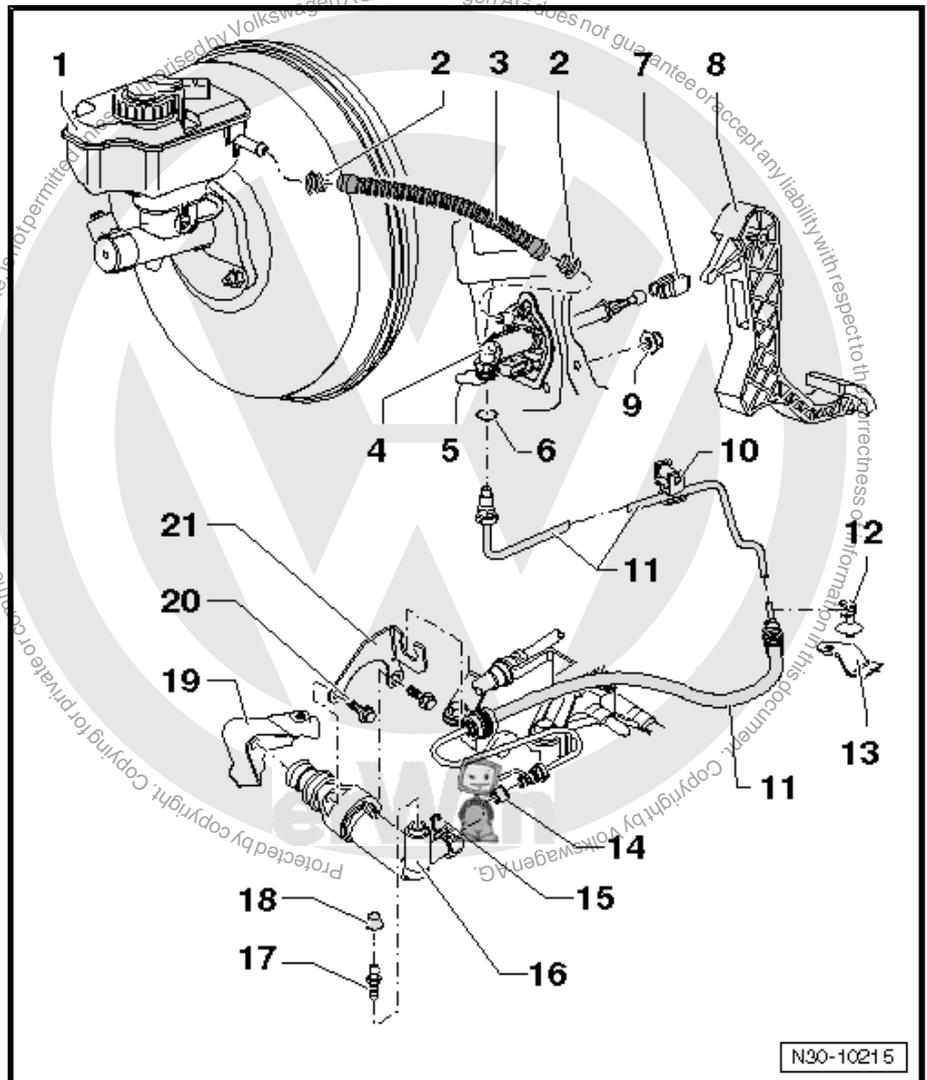
- Secured to retainer for ABS/EDL

13 - Bracket

- For ABS/EDL

14 - Seal / O-ring

- Pull onto line connection
- Insert with brake fluid
- Seals/O-rings are adapted to configuration of line connection ⇒ [page 36](#)





- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

15 - Clip

- ❑ Pull out clip to stop to remove and install pipe/hose line or plastic line

16 - Slave cylinder

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

17 - Bleed valve

- ❑ Bleeding clutch system ⇒ [page 40](#)

18 - Dust cap

19 - Gearbox

20 - Hexagon bolt

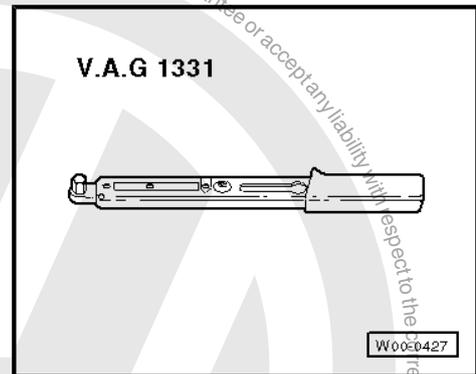
- ❑ Torque setting ⇒ [Item 9 \(page 42\)](#)

21 - Bracket

2.10 Removing and installing slave cylinder

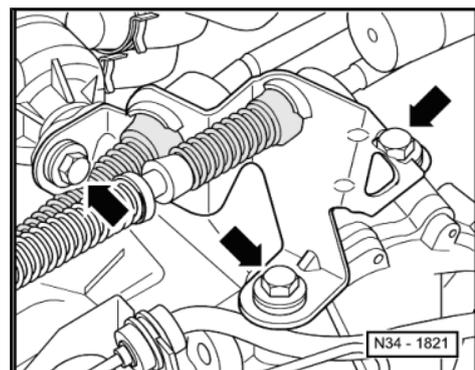
Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



2.10.1 Removing

- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- Remove complete air filter housing if it is located above slave cylinder ⇒ Rep. Gr. 24 ; Repairing injection system .
- Remove relay lever together with cable end-piece from gearbox ⇒ [page 59](#) .
- Remove gearbox selector lever -A- by removing nut -arrow 4-.
- Remove cable support bracket from gearbox -arrows-.
- Then raise and secure gear selector cable and gate selector cable.
- Place a lint-free cloth under slave cylinder.



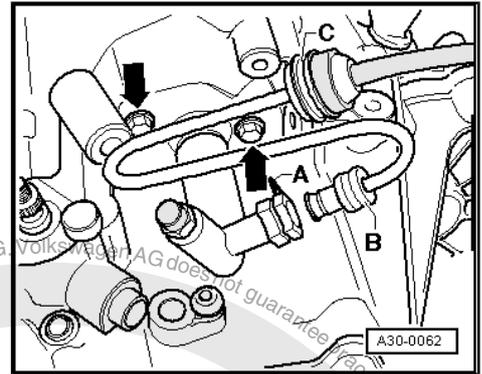


- Pull clip -A- for pipe/hose line or plastic line out of slave cylinder to stop.
- Pull pipe/hose line or plastic line out of retainer -C-.
- Pull pipe/hose line or plastic line -B- out of slave cylinder and seal opening.
- Unbolt slave cylinder -arrows- and remove.



Caution

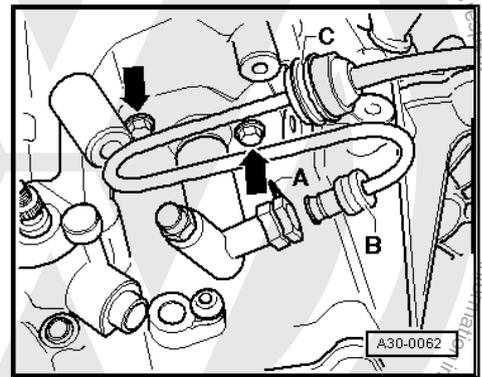
Do not operate clutch pedal any more.



2.10.2 Installing

Install in the reverse order of removal, observing the following:

- Install slave cylinder and tighten bolts -arrows- to specified torque ⇒ [Item 9 \(page 42\)](#) .
- Insert pipe/hose line or plastic line -B- into slave cylinder to stop.
- Push securing clip -A- into pipe/hose line or plastic line to stop.
- Test pipe/hose line by tugging on it.
- Press pipe/hose line or plastic line into retainer -C- to stop on gearbox.
- Bleed clutch system after installing slave cylinder ⇒ [page 40](#) .



Assembling selector mechanism ⇒ [page 61](#) .

Adjust selector mechanism ⇒ [page 66](#) .

- If removed, install complete air filter housing ⇒ Rep. Gr. 24 ; Repairing injection system .
- Connect battery earth ⇒ Electrical system; Rep. Gr. 27 ; Battery; Disconnecting and connecting battery .



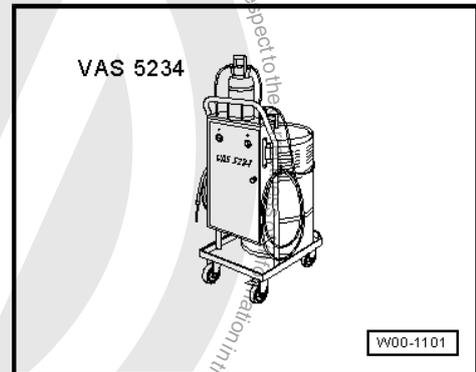
Protected by copyright. Copyright by Volkswagen AG.



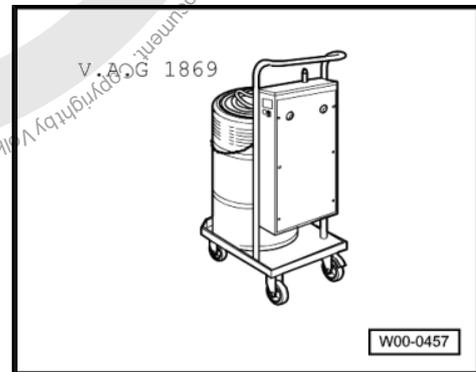
3 Bleeding clutch system

Special tools and workshop equipment required

- ◆ Brake filling and bleeding equipment -VAS 5234- or



- ◆ Brake filling and bleeding equipment -V.A.G 1869-



Note

Prefilling system is not necessary!

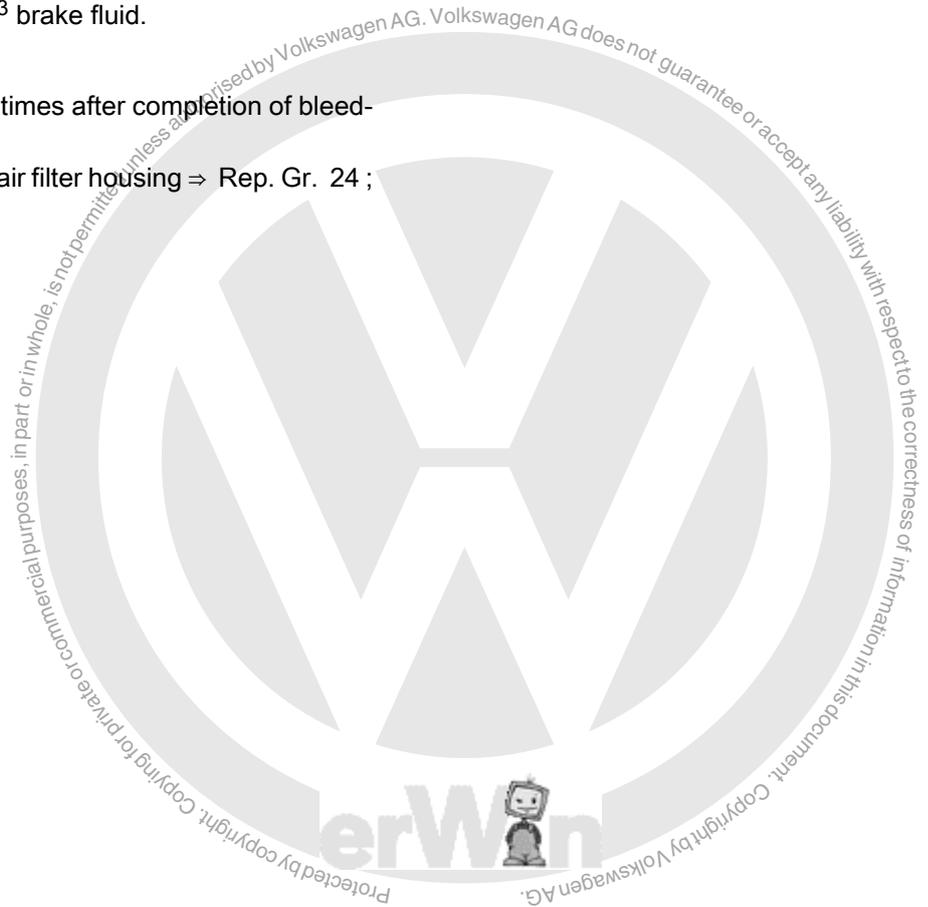
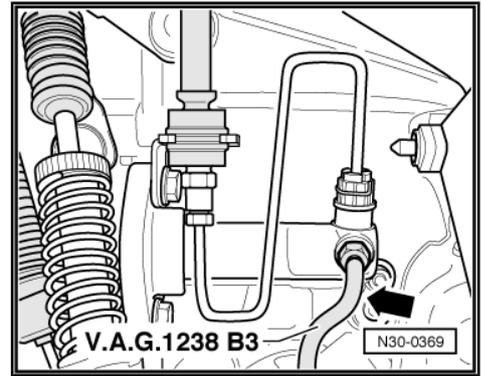
Specifications for brake fluid ⇒ Brake systems; Rep. Gr. 47 ;
Bleeding brake system .

- Remove complete air filter housing if it is blocking access to slave cylinder ⇒ Rep. Gr. 24 ; Repairing injection system .
- Connect brake filling and bleeding equipment -VAS 5234- or -V.A.G 1869- .



To bleed system, use 670 mm bleeder hose -V.A.G 1238/B3- if necessary.

- Connect bleeder hose to collector bottle of brake bleeding equipment.
- Connect bleeder hose to bleeder -arrow-.
- Pressurise system to 2 bar.
- Open bleeder valve.
- Bleed off about 100 cm³ brake fluid.
- Close bleeder valve.
- Rapidly operate pedal from stop to stop 10 to 15 times.
- Open bleeder valve.
- Bleed off an additional 50 cm³ brake fluid.
- Close bleeder valve.
- Depress clutch pedal several times after completion of bleeding process.
- If necessary, install complete air filter housing ⇒ Rep. Gr. 24 ;
Repairing injection system .





4 Repairing clutch release mechanism

4.1 Assembly overview - clutch release mechanism

1 - Release bearing

- Remove and install together with clutch release lever
⇒ [Item 3 \(page 42\)](#)
and guide sleeve
⇒ [Item 5 \(page 42\)](#)
- Removing and installing
⇒ [page 43](#)
- Do not wash out bearing; wipe only
- Renew noisy bearings

2 - Bolt, 5 Nm + turn 90° further

- Always renew

3 - Clutch release lever

- Remove and install together with release bearing
⇒ [Item 1 \(page 42\)](#) and guide sleeve
⇒ [Item 5 \(page 42\)](#)
- Removing and installing
⇒ [page 43](#)
- Remove old grease

4 - Retaining spring

- Secure to clutch release lever

5 - Guide sleeve

- Remove and install together with release bearing
⇒ [Item 1 \(page 42\)](#) and clutch release lever
⇒ [Item 3 \(page 42\)](#)

- Removing and installing ⇒ [page 43](#)

6 - Input shaft seal

- Lever out with a screwdriver
- Driving in ⇒ [page 109](#)

7 - Ball stud, 20 Nm

- Remove old grease
- Lubricate with clutch plate spline grease -G 000 100-

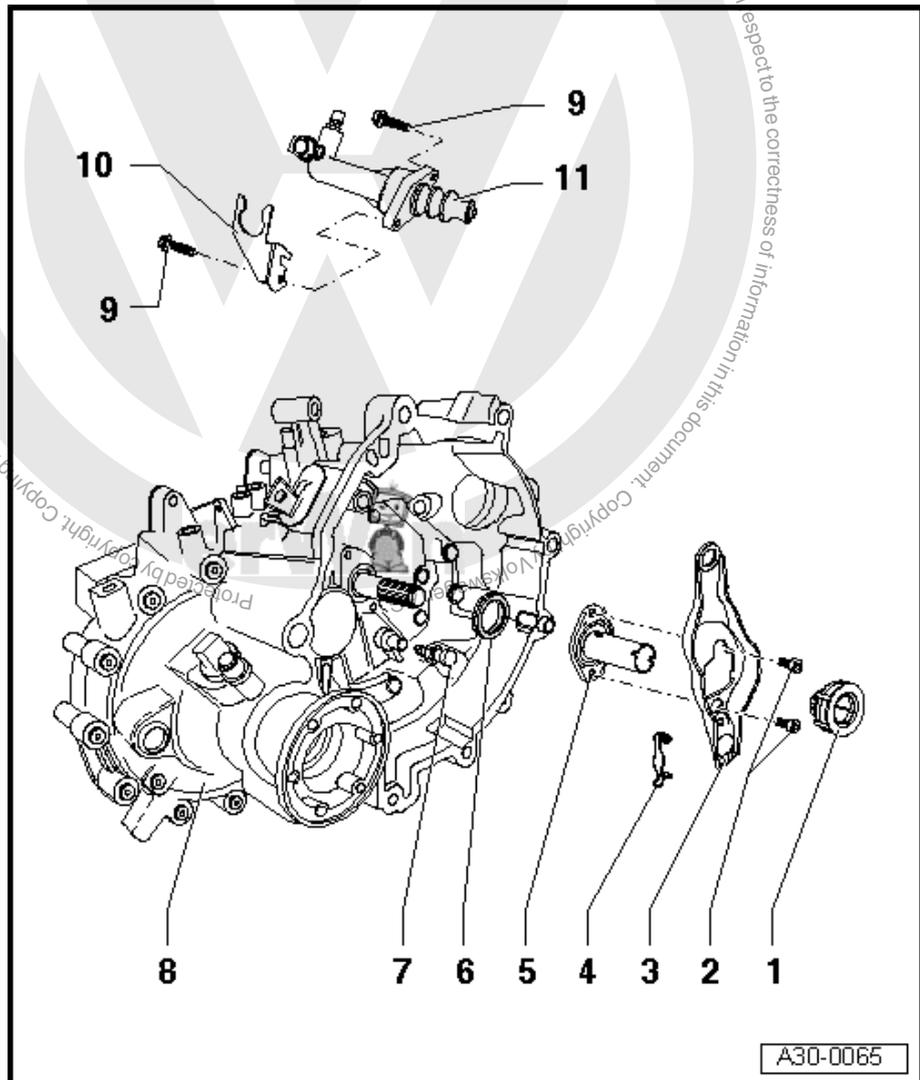
8 - Gearbox

9 - Hexagon bolt, 20 Nm

10 - Bracket

11 - Slave cylinder

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

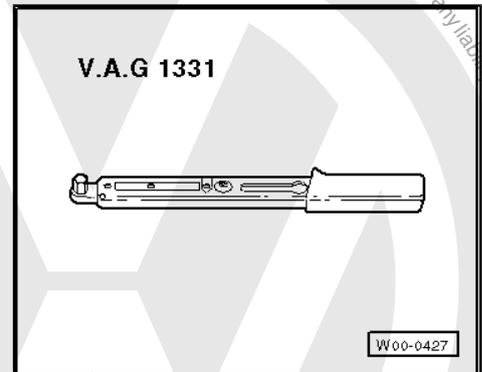




4.2 Removing and installing clutch release lever, release bearing and guide sleeve

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



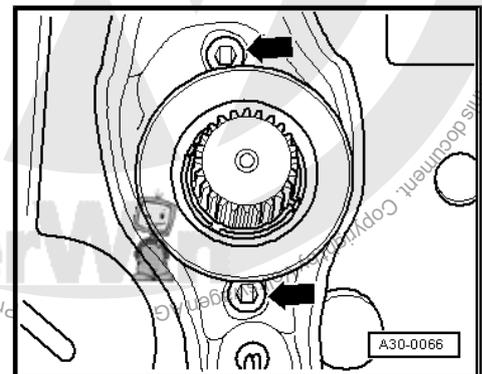
Removing and installing clutch release lever with release bearing and guide sleeve

- Remove bolts -arrows-.
- Pull clutch release lever with release bearing and guide sleeve off input shaft and ball stud.

Install in reverse order of removal.

- Retaining spring ⇒ [Item 4 \(page 42\)](#) must be hooked into clutch release lever.

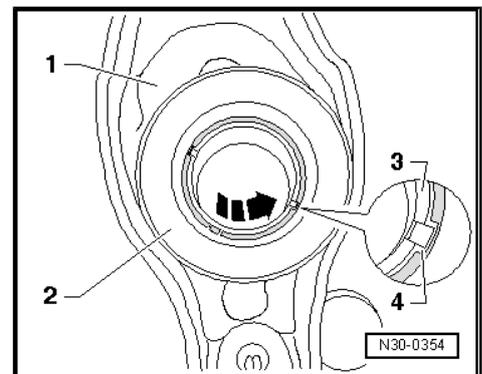
- ◆ Note and torque setting: ⇒ [Item 2 \(page 42\)](#)



Removing and installing guide sleeve

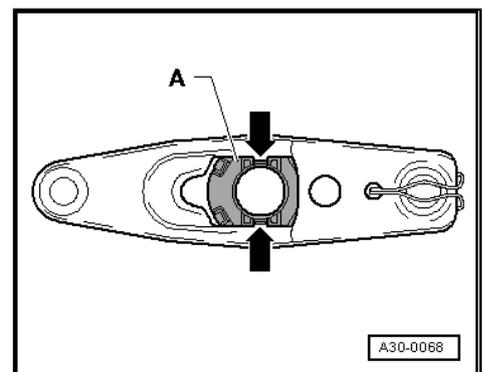
- Clutch release lever removed.
- Push guide sleeve -3- upwards out of release bearing -2-.
- Turn guide sleeve -3- about 90° in -direction of arrow- relative to release bearing -2- until locking lugs of guide sleeve align with grooves -4- of release bearing.
- Pull guide sleeve out of release bearing in this position.

Install in reverse order of removal.



Removing and installing release bearing

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

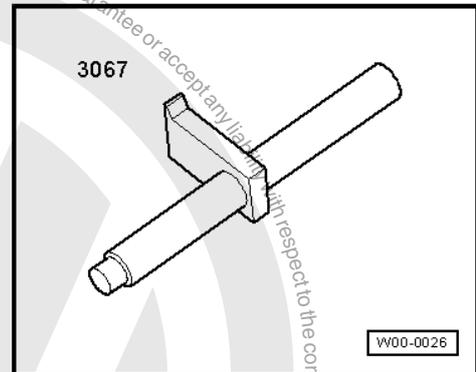




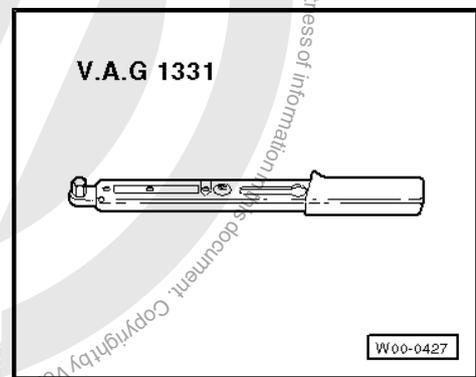
5 Repairing clutch

Special tools and workshop equipment required

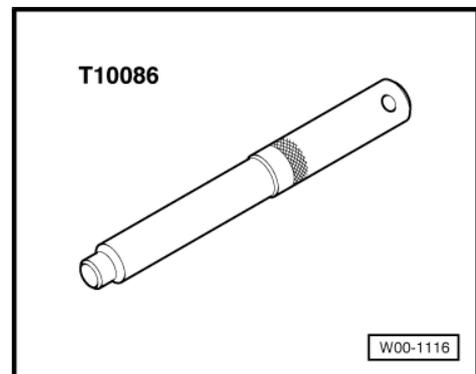
- ◆ Counterhold -3067-



- ◆ Torque wrench V.A.G 1331-



- ◆ Centring mandrel -T10086-



- ◆ Grease for clutch plate splines -G 000 100-
(Gearbox removed)



Note

- ◆ Check whether dowel sleeves for aligning engine and gearbox are fitted in cylinder block and install if necessary.
- ◆ If dowel sleeves are not fitted, difficulties shifting gears, clutch problems and possible noises from the gearbox (rattling of gears which are not engaged) could occur.
- ◆ Renew clutch plates and pressure plates with damaged or loose rivets.
- ◆ Allocation ⇒ Electronic parts catalogue "ETKA"



1 - Flywheel

- Ensure that centring pins fit tightly
- Contact surface for clutch lining must be free of grooves, oil and grease
- Removing and installing
⇒ Rep. Gr. 13

2 - Clutch plate

Allocation ⇒ Electronic parts catalogue "ETKA"

- Installation position: spring cage faces pressure plate.
- Centring ⇒ [page 45](#)
- Lightly grease splines



Note

3 - Thrust plate

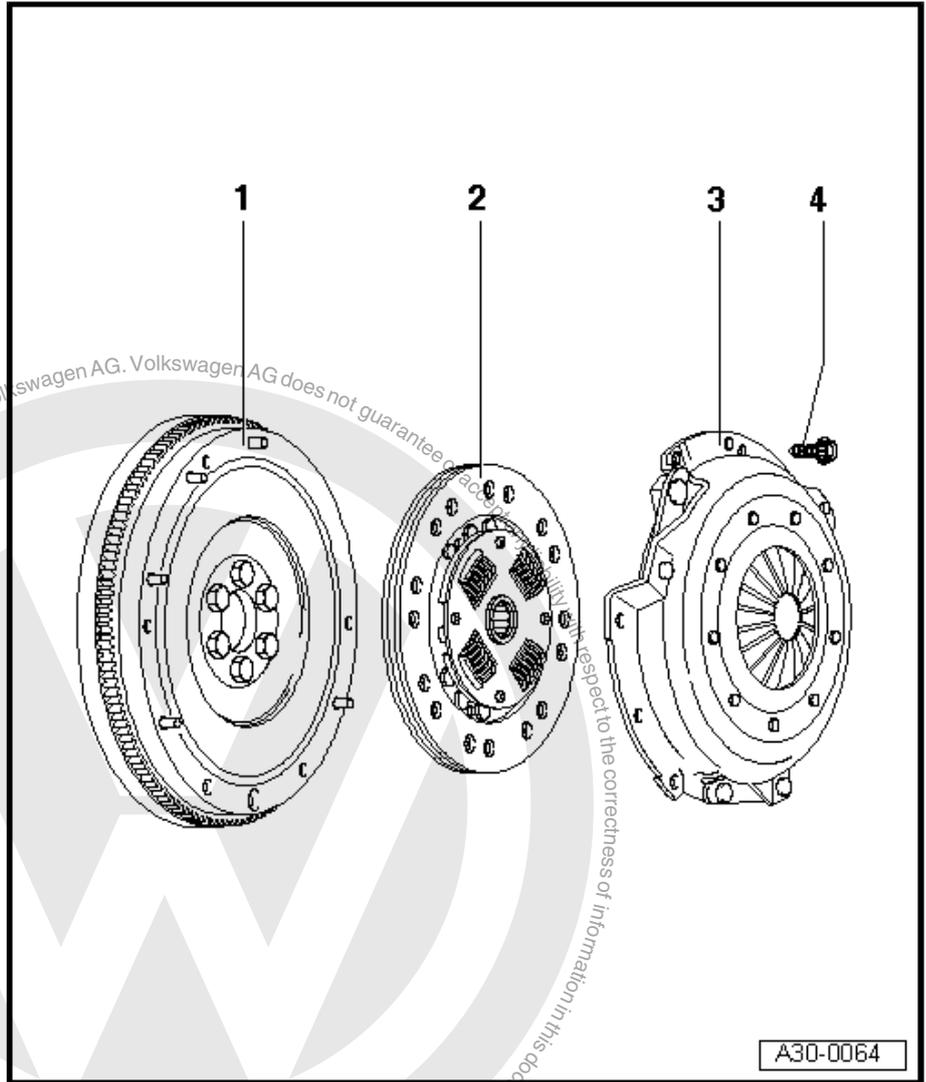
- Removing and installing
⇒ [page 45](#)
- Check ends of diaphragm spring
⇒ [page 46](#)



Note

4 - Bolt

- M6: 13 Nm
- M7: 20 Nm
- Allocation ⇒ Electronic parts catalogue "ETKA"
- Loosen or tighten diagonally in small steps



A30-0064

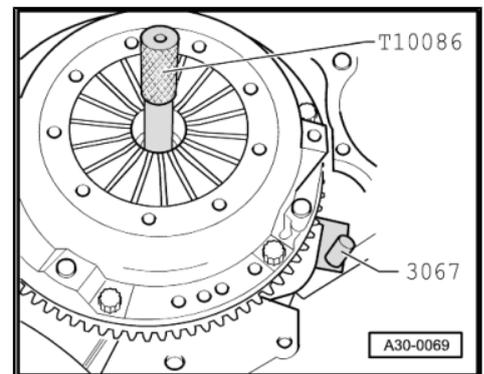
Centring clutch plate and removing and installing pressure plate

- Loosen and tighten bolts diagonally in small steps to prevent damage to thrust plate centring holes and flywheel centring pins.
- Reverse position of counterhold -3067- when removing.



Note

Pressure plate contact surface and clutch plate lining must make full contact with flywheel.

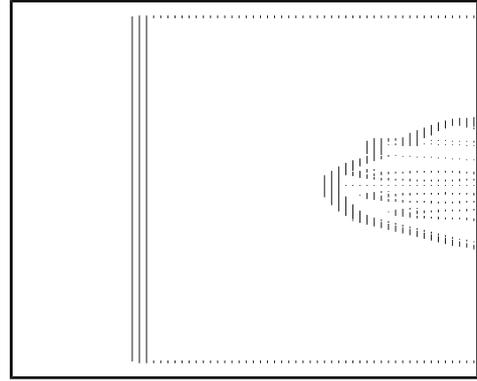


A30-0069



Checking ends of diaphragm spring -arrows-

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





34 – Controls, housing

1 Repairing selector mechanism

1.1 Installation position of selector mechanism

-Arrow A- Gear selection movement

-Arrow B- Gate selection movement

A - Gear selector cable

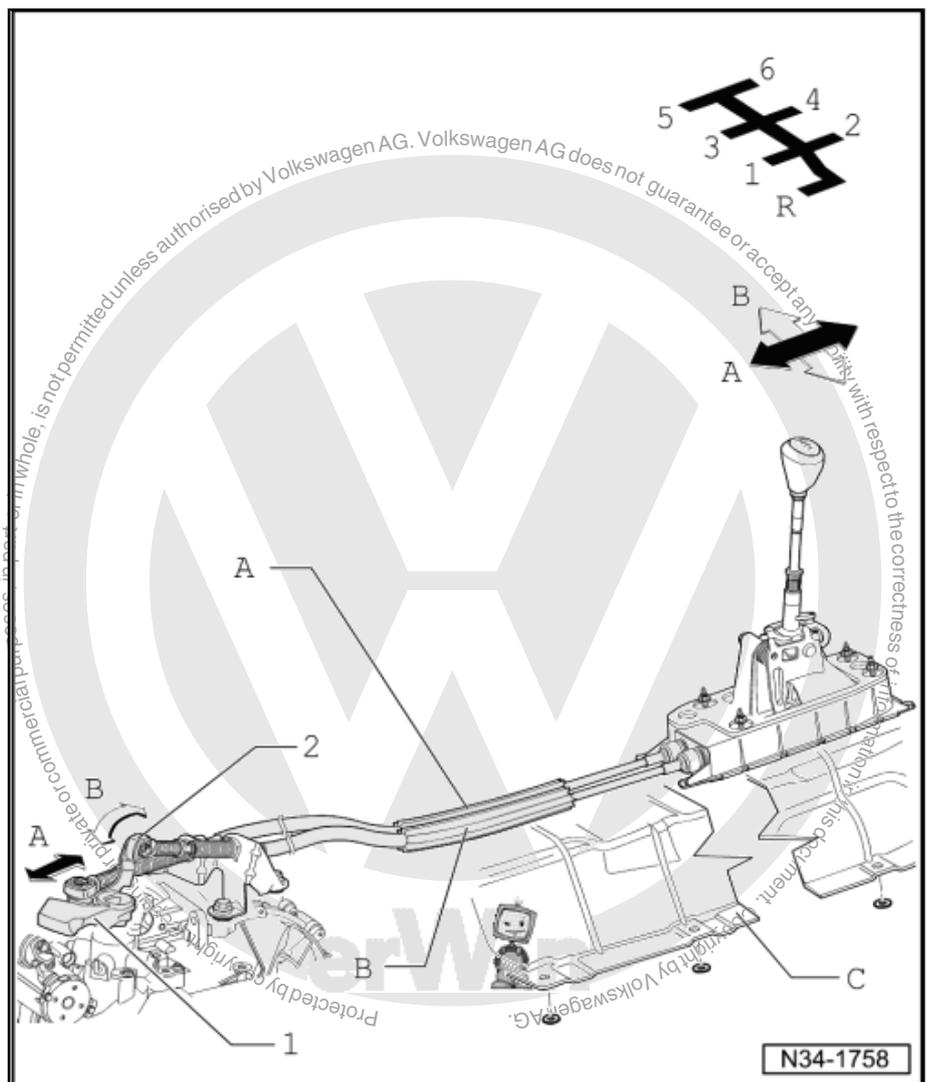
B - Gate selector cable

C - Heat shield

- Remove before removing selector mechanism.

1 - Gearbox selector lever

2 - Relay lever





1.2 Overview of selector mechanism



Note

- ◆ Note radio code for vehicles with coded radio.
- ◆ Before working on selector mechanism in engine compartment, disconnect earth strap from battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- ◆ When reconnecting battery, perform work required after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- ◆ For work on selector mechanism in engine compartment, remove complete air filter housing if it is located over selector mechanism ⇒ Rep. Gr. 24 .
- ◆ Remove selector mechanism to renew selector cables ⇒ [page 61](#) .
- ◆ Do not kink selector cables.

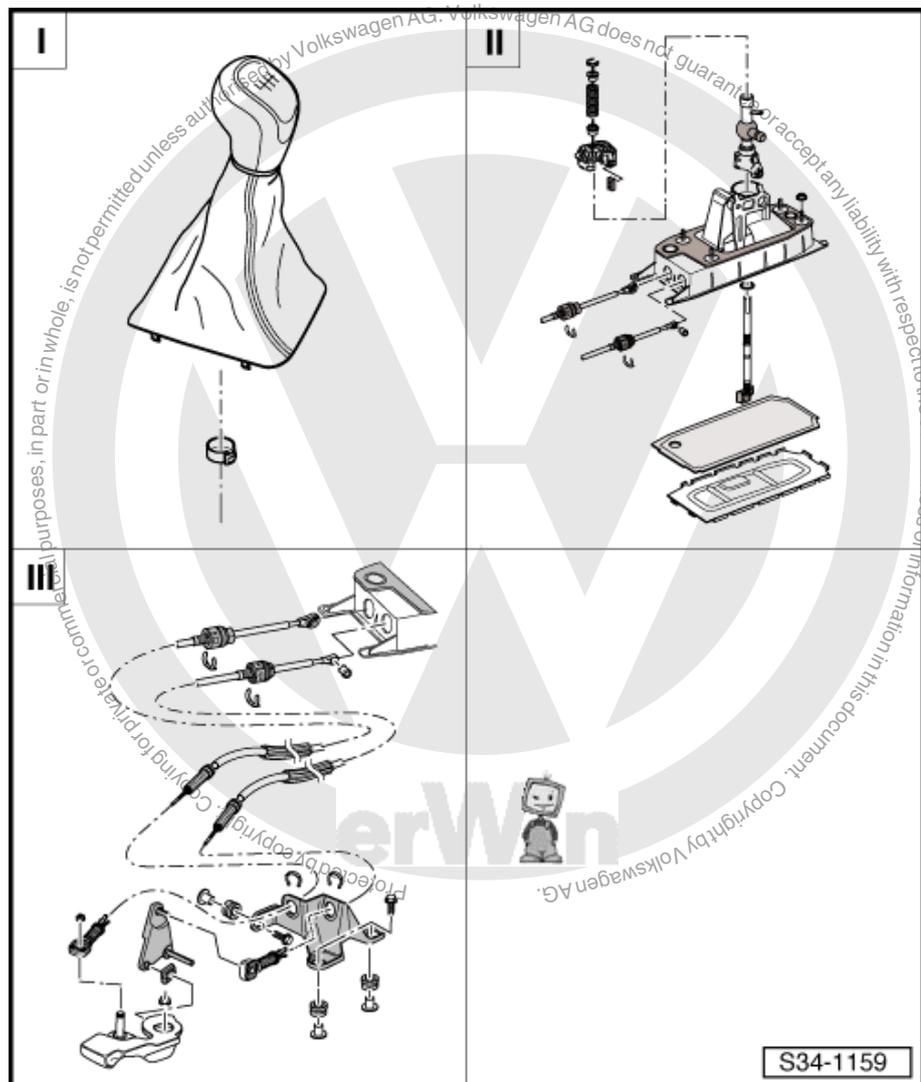
I - Assembly overview - gear knob and frame ⇒ [page 49](#)

II - Assembly overview - selector mechanism ⇒ [page 49](#)

III - Assembly overview - selector cables ⇒ [page 57](#)

Removing and installing selector mechanism ⇒ [page 61](#)

Adjusting selector mechanism ⇒ [page 66](#)





1.3 Assembly overview - gear knob and frame

1 - Emblem

- Can be carefully levered off gear knob of plastic or leather

2 - Gear knob

- With gaiter
- Gear knob and gaiter cannot be separated from one another
- Always renew together
- Removing and installing
⇒ [page 49](#)

3 - Clamp

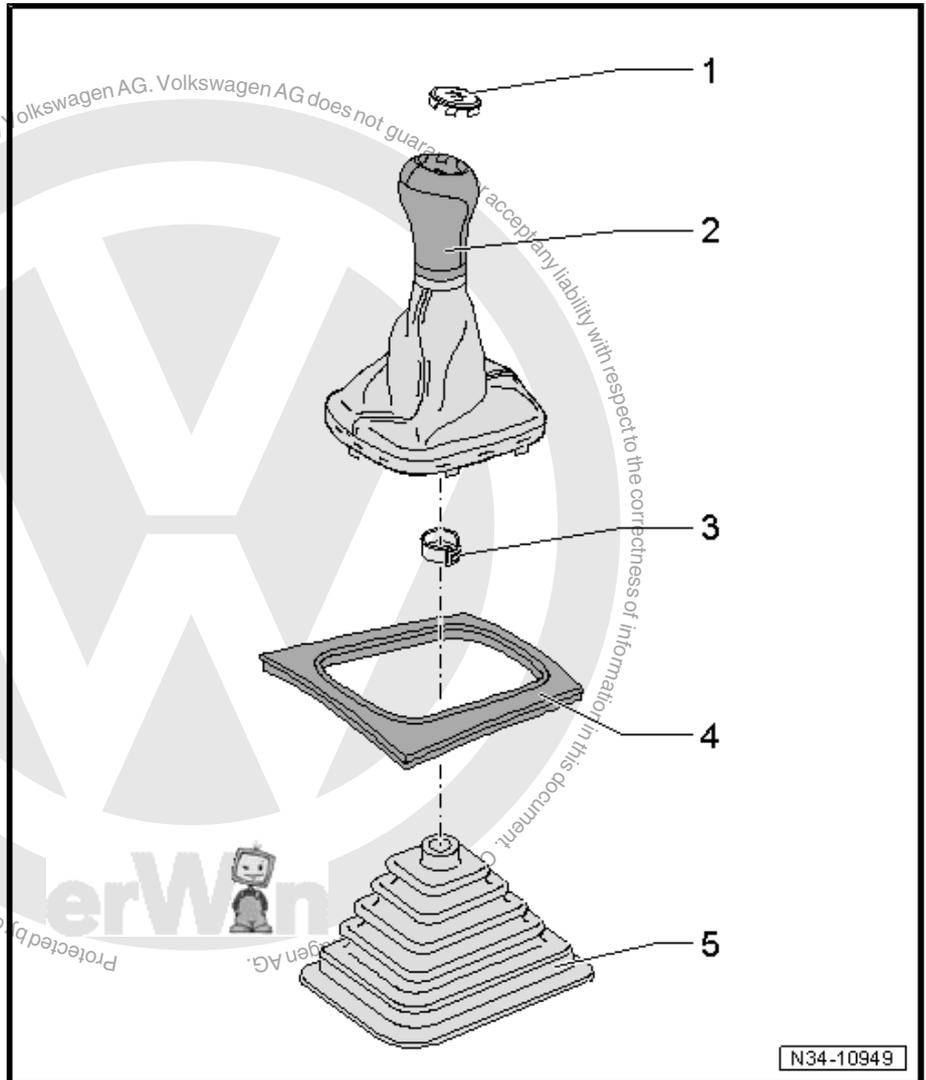
- For securing gear knob to gear lever
- Always renew
- Secure to gear knob using hose clip pliers - V.A.G 1275-

4 - Frame for centre console

- In some equipment versions, forms one part together with upper centre console

5 - Noise insulation

- Not fitted in all vehicles
- Arrow on noise insulation points in direction of travel
- Because the locking lugs are irregularly placed, noise insulation can be installed in only one position

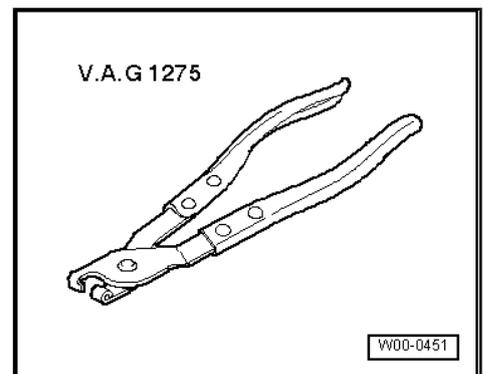


N34-10949

1.4 Removing and installing gaiter with gear knob and noise insulation

Special tools and workshop equipment required

- ◆ Hose clip pliers -V.A.G 1275-



V.A.G 1275

W00-0451



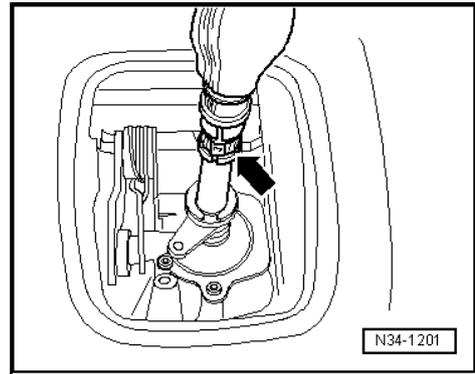
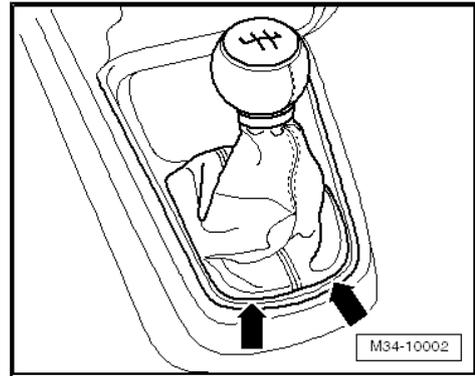
Removing

- Pull off, or carefully lever off, gaiter with centre console frame -arrows-.

Note

With some equipment variations, the gaiter must be levered off along the front section.

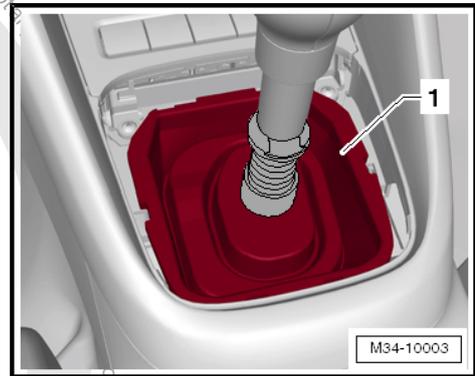
- Pull gaiter with frame upwards, inside out over gear knob.
- Open clamp -arrow- and pull off gear knob together with gaiter.
- Then pull off, or carefully lever off, centre console frame.



- Pull off noise insulation -1-.

Installing

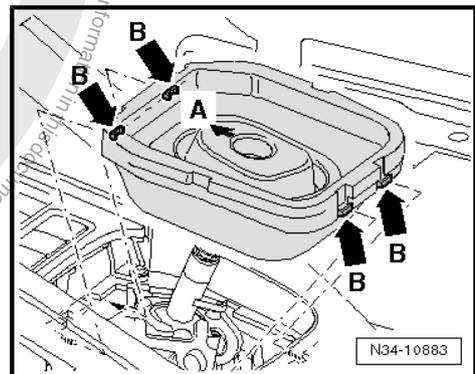
- First set noise insulation in place.



Installation position of noise insulation:

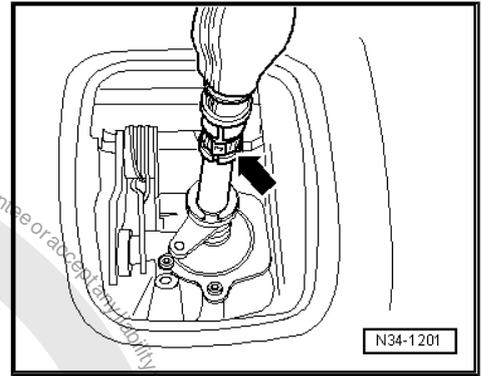
- -Arrow A- points in direction of travel.
- Catches -arrows B- must engage in centre console.
- If necessary, then press frame into centre console.
- Then turn gaiter inside out.

The gear knob must be pressed to stop.





- Install gear knob with gaiter and squeeze new clamp -arrow-together.
- Then press gaiter with frame into centre console or gaiter into frame.



1.5 Assembly overview - selector mechanism

Note

- ◆ Lubricate bearing points and sliding surfaces with grease -G 000 450 02- .
- ◆ Dismantling and assembling selector mechanism => [page 52](#) .

1 - Base plate

- Bend open tabs to remove
- Always renew

2 - Seal

- Always renew

3 - Selector lever

- Can be removed and installed with gear lever guide
=> [Item 15 \(page 52\)](#)
installed

4 - Damping washer

- Push onto gear lever up to stop -arrow-

5 - Securing clip

- Do not damage cables when removing
- Always renew

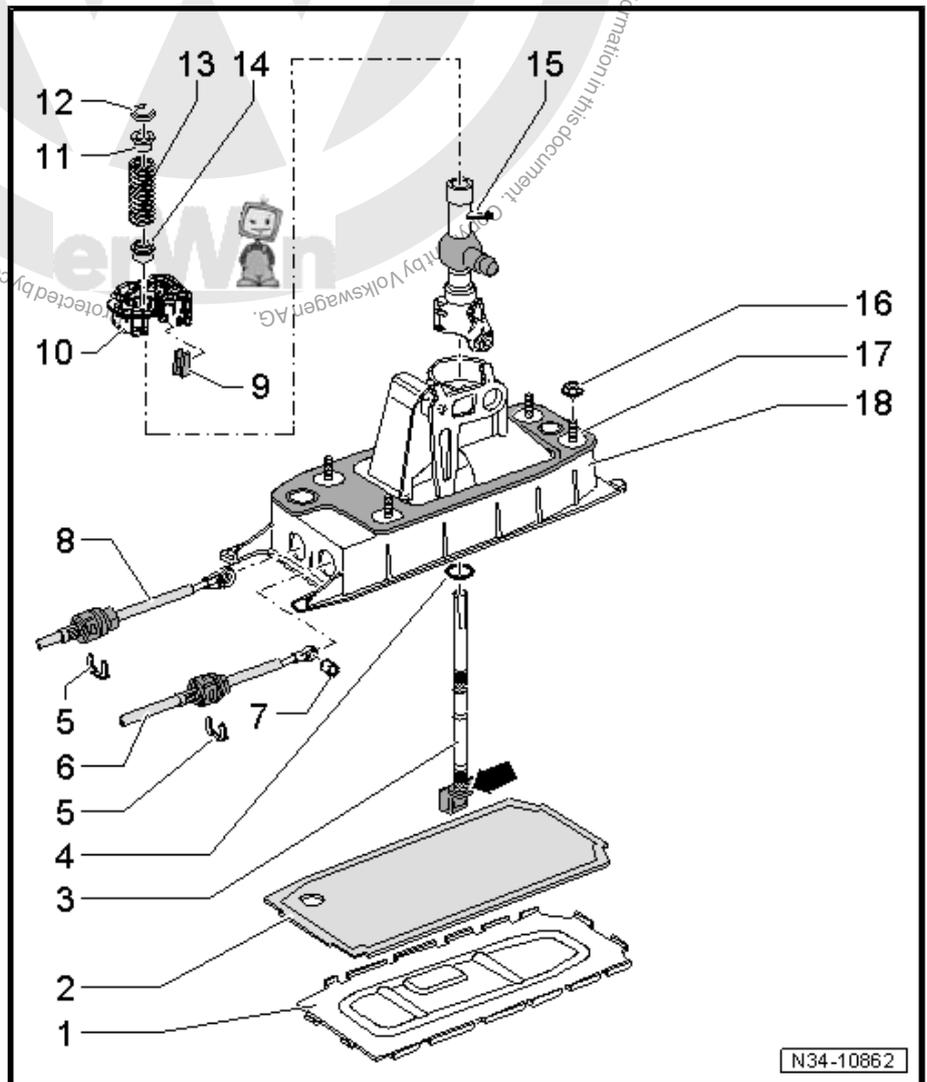
6 - Gate selector cable

- Lever off gate selector lever
- Press onto gate selector lever inside selector mechanism
- Installation position
=> [page 47](#)

7 - Bush

8 - Gear selector cable

- Lever off gear lever guide
- Press onto gear lever guide inside selector mechanism





- ❑ Installation position ⇒ [page 47](#)

9 - Damping

10 - Ball socket

- ❑ Will be damaged when removed.
- ❑ Always renew

11 - Bush

12 - Securing clip

- ❑ Removing and installing ⇒ [page 52](#)

13 - Compression spring

14 - Bush

15 - Gear lever guide

16 - Hexagon nut

- ❑ M8: 25 Nm
- ❑ M6: 8 Nm
- ❑ Qty. 4

17 - Seal

- ❑ Between selector housing and underbody
- ❑ Self-adhesive
- ❑ Bond to selector housing

18 - Selector housing

- ❑ With compression spring and gate selector lever
- ❑ Compression spring and gate selector lever cannot be removed

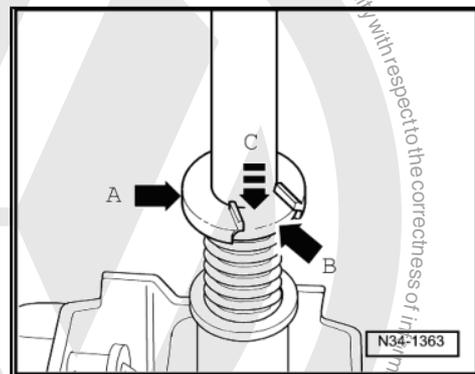
Removing and installing securing clip

- To remove or install securing clip -arrow A-, press spacer bush -arrow B- to stop -in direction of arrow C- using screwdriver and pull off securing clip.



Note

- ◆ Do not cant spacer bush when pushing down.
- ◆ Slot in gear lever for securing clip must be visible.
- ◆ Carefully release tension from spring.



1.5.1 Dismantling and assembling selector mechanism

Special tools and workshop equipment required

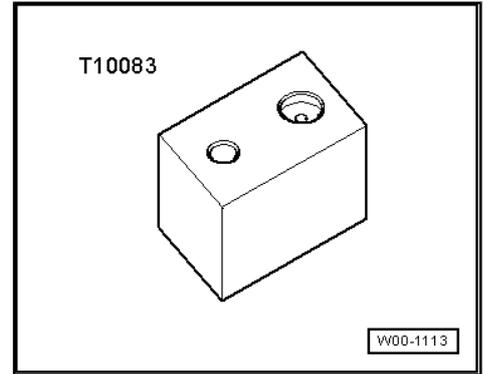




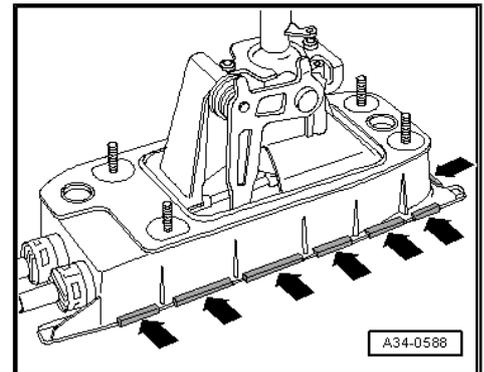
Thrust piece -T10083-

Dismantling

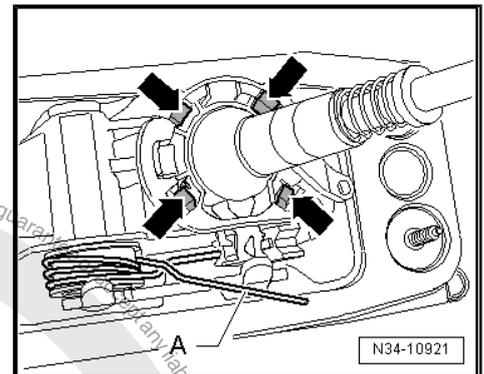
- Remove selector mechanism => [page 61](#) .



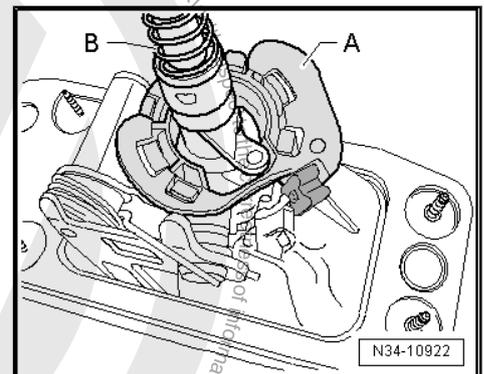
- Bend open tabs -arrows- of base plate for selector mechanism using screwdriver and remove base plate; (tabs in front area of base plate are not illustrated).
- Remove seal from selector housing.
- Remove gear and gate selector cables from selector housing => [page 65](#) .



- Lift upper end -A- of compression spring over tab of gate selector lever.
- Use screwdriver to press catches -arrows- of ball socket towards bearing ball of gear lever guide; break off catches if necessary.

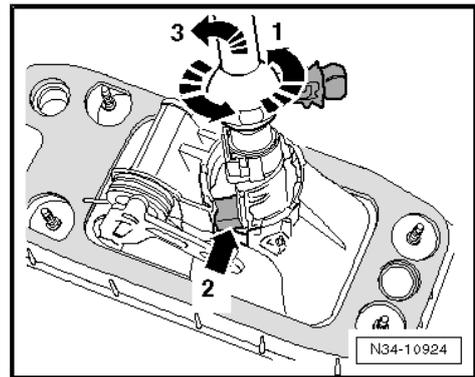
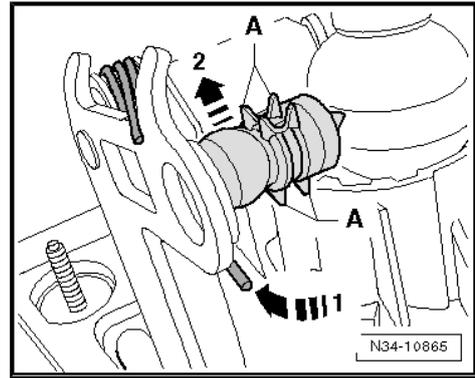


- Lever ball socket -A- with gear lever guide -B- out of selector housing.
- Then press ball socket off bearing ball of gear lever guide and remove it.





- Please pay attention to guides -A- during the further procedure.
 - They must not be broken off.
 - Lever lower end -arrow 1- of compression spring onto shoulder on gate selector lever as far as stop.
 - Now pull gear lever guide up to stop and pull ball stud out of gate selector lever -arrow 2-.
-
- Then turn gear lever guide in -direction of arrow 1-.
 - Pin -arrow 2- must be in notch in selector housing.
 - Then swing out gear lever guide with gear lever in -direction of arrow 3-.



Assembling

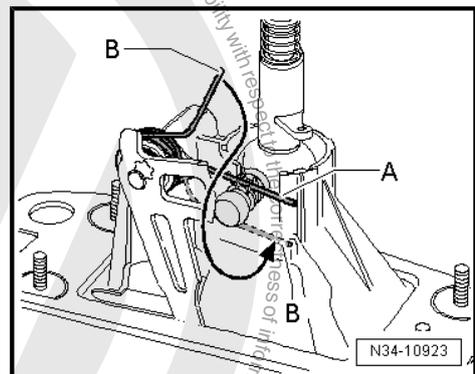
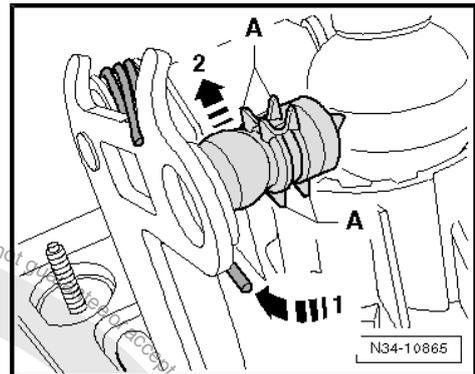


Caution

The lower end of the compression spring -arrow 1- can snap off the shoulder of the gate selector lever out of control during the further procedure.

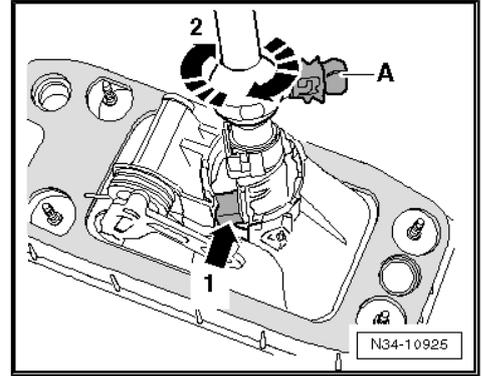
- Therefore, carefully press it down by shoulder of gate selector lever.
- The ends of the compression spring then become tensioned “diagonally” with a loud noise.

- Slacken ends -A- and -B- by turning both round to right.
- Ends -A- and -B- must point in opposite directions.

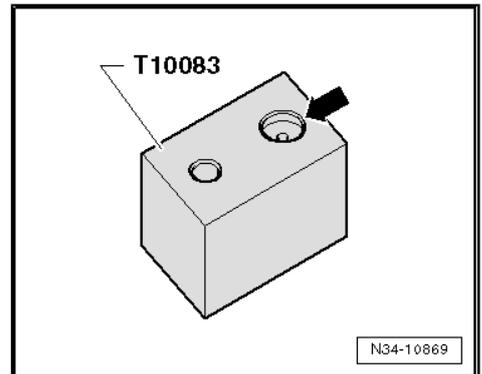




- Fit gear lever guide in selector housing.
- Pin -arrow 1- is still located in notch in selector housing.
- Turn gear lever guide in -direction of arrow 2- until ball stud -A- is located in notch in selector housing.



- Place selector housing with gear lever guide into larger recess -arrow- in thrust piece -T10083- .



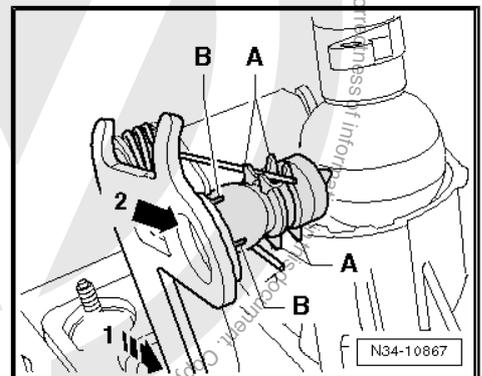
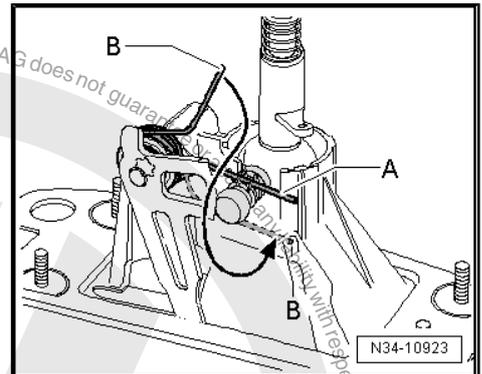
- The gear lever guide must project from the selector housing up to the stop.



Note

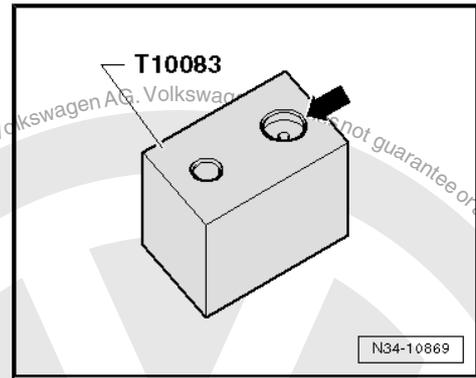
For clarity of illustration, only part of the gate selector lever is shown.

- Insert end -A- of compression spring into guide from above.
- Pull end -B- of compression spring downwards and insert it next to guide (in direction of ball joint).
- Carefully remove selector housing with gear lever guide from thrust piece -T10083- .
- Move gate selector lever back to stop (opposite from mounting holes for gear and gate selector cable) -arrow 1-.
- Grease ball stud.
- Press ball stud into gate selector lever -arrow 2-.
- Guides -A- and tabs -B- must be free of damage.

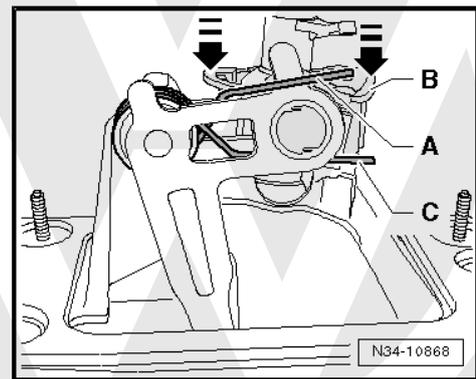




- Place selector housing with gear lever guide into larger recess -arrow- in thrust piece -T10083- .



- The gear lever guide must project from the selector housing up to the stop.
- Lift upper end -A- of compression spring over pin of gate selector lever.
- Use a new ball socket -B-.
- Grease ball socket and bearing ball of gear lever guide.
- Press ball socket onto bearing ball of gear lever guide up to stop.
- Remove selector housing from thrust piece -T10083- .
- Insert lower end -C- of compression spring into guide.
- Lift upper end -A- of compression spring over pin of gate selector lever into guide.
- Press ball socket into selector housing -arrows-.
- All 4 locking lugs must engage.
- Attach gear lever, gear selector cable, gate selector cable and base plate ⇒ [page 51](#) .
- Install selector mechanism ⇒ [page 61](#) .





1.6 Assembly overview - selector cables



Note

Lubricate bearing points and sliding surfaces with grease -G 000 450 02- .

1 - Gear selector cable

- Separate from gear lever guide in selector mechanism
- Press onto gear lever guide in selector mechanism
- Connect to cable end-piece
⇒ [Item 11 \(page 58\)](#)
- Installation position
⇒ [page 47](#)
- Removing and installing
⇒ [page 65](#)
- After installing, adjust selector mechanism
⇒ [page 66](#)

2 - Gate selector cable

- Separate from gate selector lever in selector mechanism
- Press onto gate selector lever in selector mechanism
- Connect to cable end-piece
⇒ [Item 10 \(page 57\)](#)
- Installation position
⇒ [page 47](#)
- After installing, adjust selector mechanism
⇒ [page 66](#)

3 - Bush for gate selector cable

4 - Selector housing

5 - Securing clip

- Always renew
- Do not damage cables when removing

6 - Hexagon bolt, 20 Nm

- Qty. 3
- For support bracket

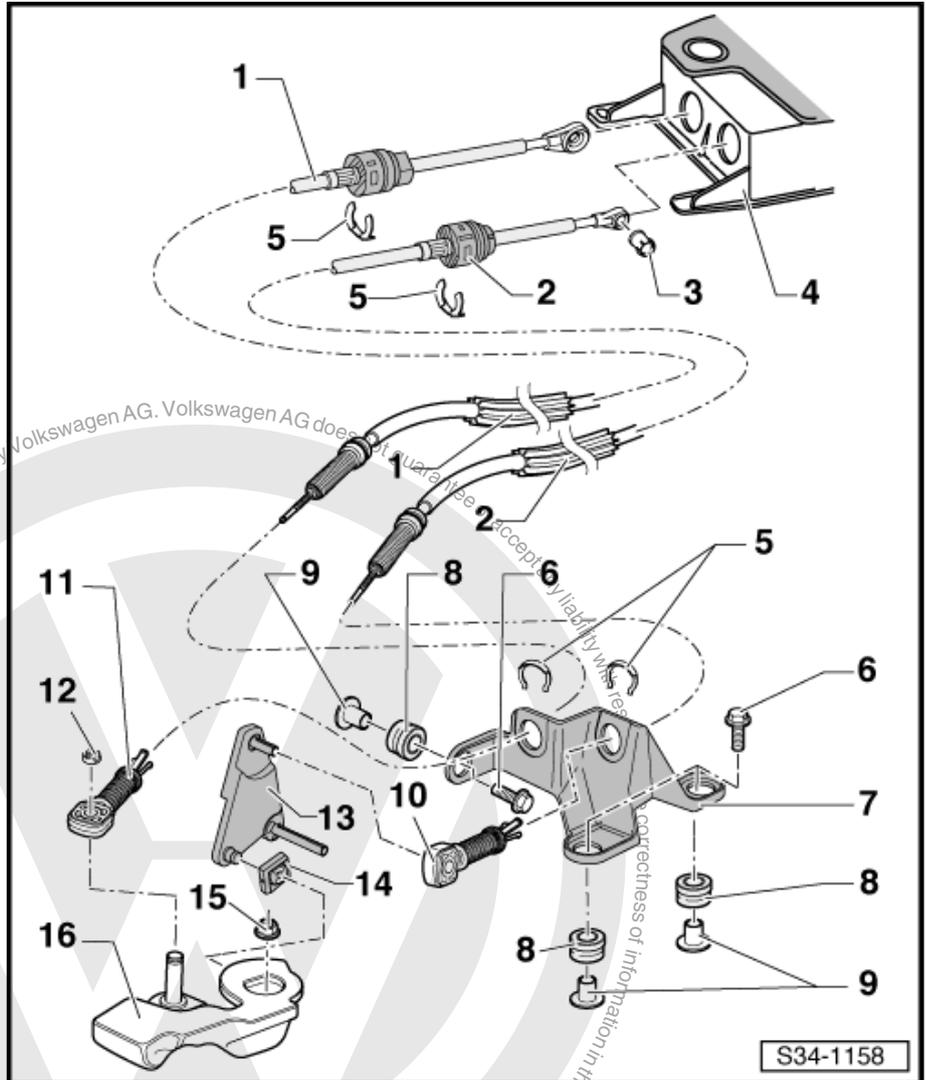
7 - Support bracket

- For selector cables

8 - Grommet

- Support bracket mounting on gearbox

9 - Spacer





10 - Cable end-piece

- For gate selector cable to relay lever
- Do not interchange; cable end-pieces for gate selector cable to relay lever and gear selector cable to gearbox selector lever are different
- After installing, adjust selector mechanism ⇒ [page 66](#)
- Remove and install together with relay lever ⇒ [Item 13 \(page 58\)](#) ⇒ [page 59](#)
- Remove from relay lever ⇒ [page 59](#)
- Press onto relay lever ⇒ [page 59](#)
- Allocation ⇒ [page 58](#)

11 - Cable end-piece

- For gear selector cable to gearbox selector lever
- After installing, adjust selector mechanism ⇒ [page 66](#)
- Do not interchange; cable end-pieces for gate selector cable to relay lever and gear selector cable to gearbox selector lever are different
- Allocation ⇒ [page 58](#)

12 - Securing clip

- Always renew ⇒ Electronic parts catalogue "ETKA"

13 - Relay lever

- Installation position ⇒ [page 59](#)
- After installing, adjust selector mechanism ⇒ [page 66](#)
- Remove and install together with cable end-piece ⇒ [Item 10 \(page 57\)](#) ⇒ [page 59](#)

14 - Shoe

15 - Hexagon nut, 23 Nm

- Self-locking
- Always renew

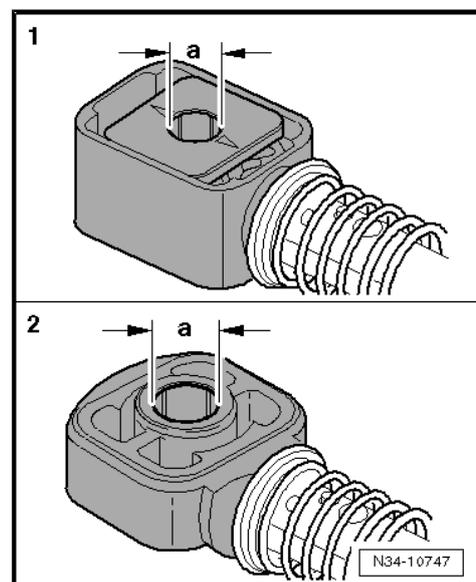
16 - Gearbox selector lever

- With damper weight
- Install so that master spline aligns with selector shaft ⇒ [page 59](#)
- Installation position ⇒ [page 59](#)
- After installing, adjust selector mechanism ⇒ [page 66](#)
- From 06.06, smaller diameter of support pin for cable end-piece ⇒ [page 59](#)

Allocation of cable end-pieces

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

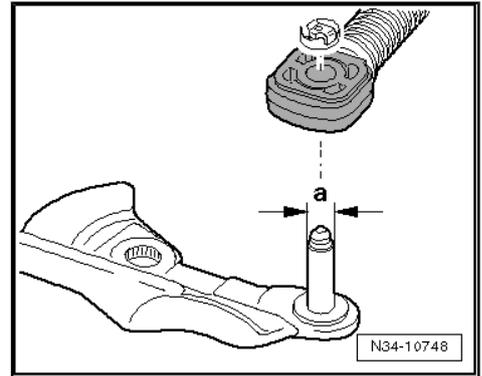
Cable end-piece for	Dimension "a"
1 - Gear selector cable to gearbox selector lever	8.5 mm
2 - Gate selector cable to relay lever ⇒ page 59	10 mm





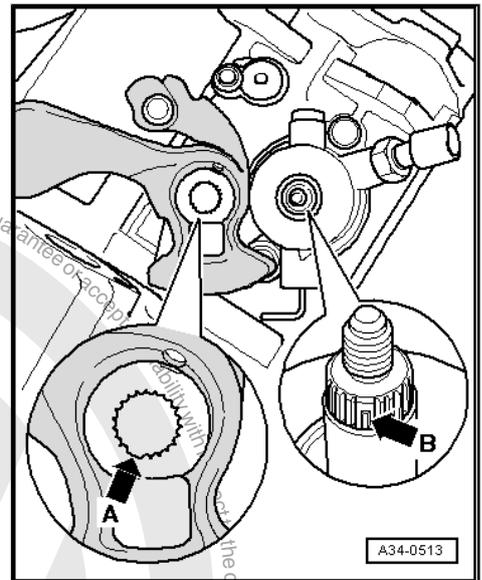
Diameter of pin for securing gear selector cable end piece

Support pin for gear selector cable end-piece	Dimension "a"
∅ of support pin	8.5 mm



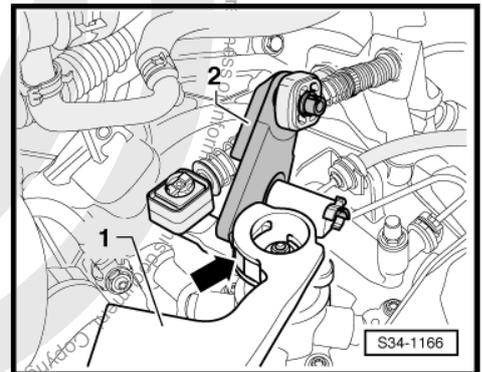
Installing gearbox selector lever

- When setting gearbox selector lever in place, ensure that gap in teeth -arrow A- is over the partial tooth on the selector shaft -arrow B-



Installation position of gearbox selector lever and relay lever

- 1 - Gearbox selector lever with damper weight
- 2 - Relay lever engages in guide rail of gearbox selector lever via shoe -arrow-



1.7 Removing cable end-piece from relay lever and installing

Removing and installing relay lever



Caution

To avoid damage to gate selector cable, separate cable end-piece from gate selector cable before removal.

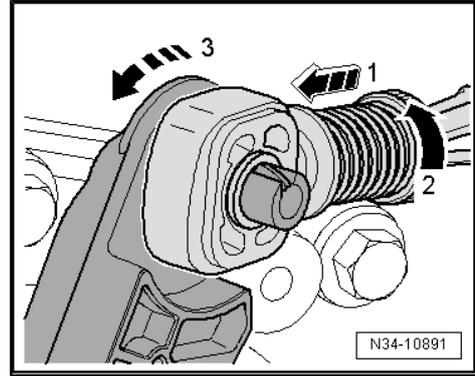
- Gearbox selector level is in neutral position.



- Pull locking mechanism forward to stop in -direction of arrow 1- and then lock by turning to left in -direction of arrow 2-.
- Then push relay lever forwards in -direction of arrow 3-.

Various means of securing the relay lever on the selector mechanism cover have been fitted.

- ◆ Relay lever with catch
- ◆ Relay lever with clip



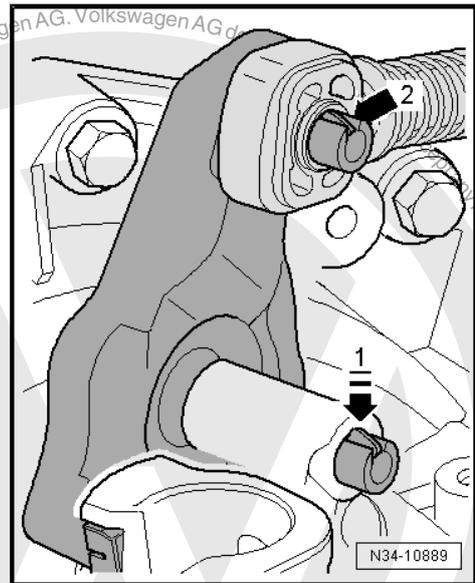
Relay lever secured with catch -arrow 1- on selector mechanism cover

- Carefully press down catch -arrow 1- to stop.
- Then move relay lever to and fro (direction of operation) in its bearing while carefully pulling out relay lever together with cable end-piece -arrow 2-.
- Remove the cable end-piece -arrow 2- only with the relay lever removed => [page 61](#) .

Note

Before fitting, lubricate bearing points and sliding surfaces with grease -G 000 450 02- .

- Press cable end-piece onto relay lever => [page 61](#) .
- Insert relay lever together with cable end-piece.
- Catch -arrow 1- secures relay lever.
- Cable end-piece must be located behind catch -arrow 2-



Relay lever -arrow 1- secured with clip on selector mechanism cover

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

Note

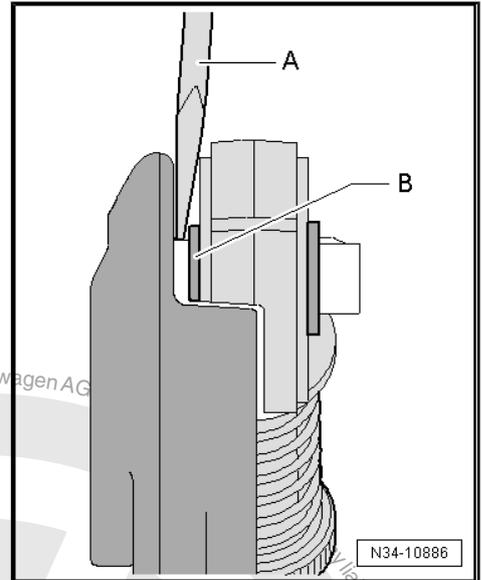
To fit, lubricate bearing points and sliding surfaces with grease -G 000 450 02- .





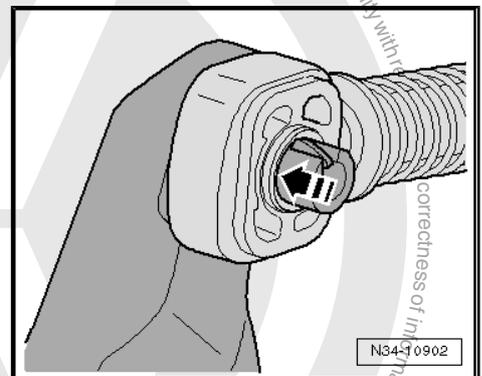
Levering cable end-piece for gate selector cable off relay lever

- Relay lever removed.
- Insert a flat-blade screwdriver -A- between bush -B- and relay lever.



Pressing on cable end-piece

- Relay lever removed.
- Cable end-piece may be pressed only onto bush -arrow-.
- Cable end-piece must move freely on relay lever.
- It must be located behind catch ⇒ [page 60](#) .



1.8 Removing and installing selector mechanism

1.8.1 Removing selector mechanism

Special tools and workshop equipment required

- ◆ Torque wrench -V.A.G 1331-



- ◆ Grease -G 000 450 02-
- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

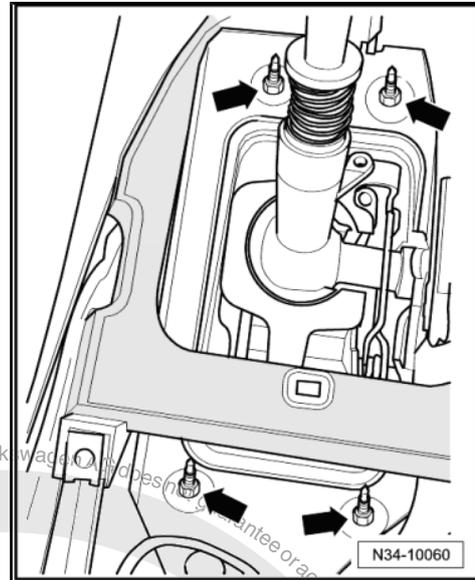


- Remove gaiter with selector lever knob and any noise insulation from frame for centre console => [page 49](#) .
- Remove centre console and securing bracket for centre console => General body repairs, interior; Rep. Gr. 68 ; Compartments, covers and trims .
- If present, remove interior monitoring sensor -G273- from rear securing nuts => Electrical system; Rep. Gr. 96 .
- Remove selector housing nuts -arrows-.
- Remove complete air filter housing => Rep. Gr. 24 ; Repairing injection system .

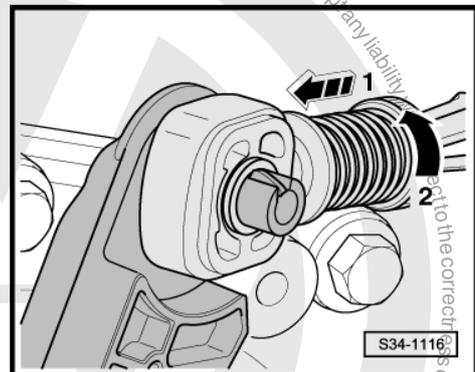


Caution

To avoid damage to gate selector cable, separate cable end-piece from gate selector cable before removal.



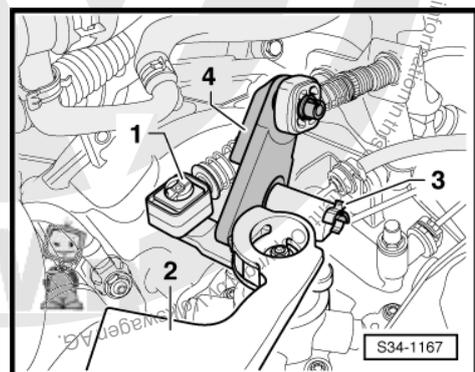
- Pull locking mechanism forward to stop in -direction of arrow 1- and then lock by turning to left in -direction of arrow 2-.



- Remove securing clip -1- for gear selector cable from gearbox selector lever -2-.
- Pull gear selector cable off pin of gearbox selector lever.

Relay lever -4- secured with clip -3- on selector mechanism cover

- Detach clip -3- from hole in relay lever and pull relay lever -4- together with cable end-piece out of selector mechanism cover.

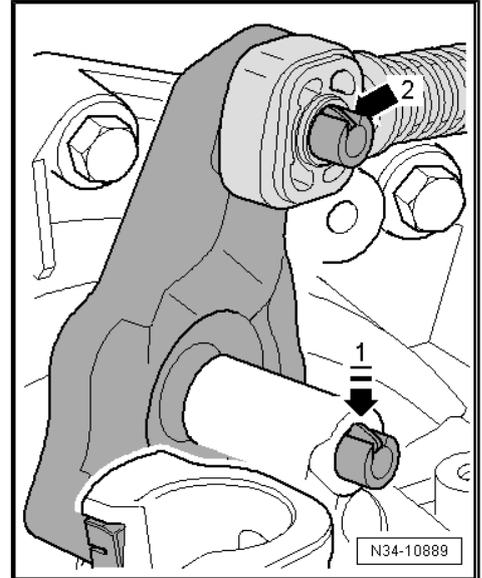




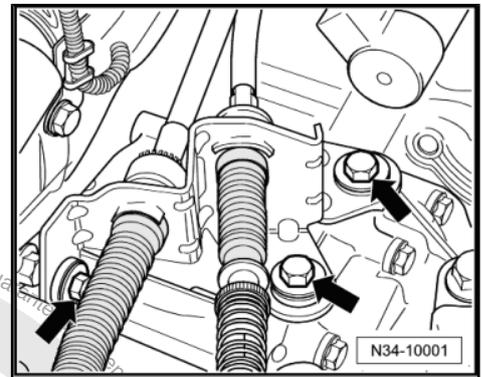
Relay lever secured with catch -arrow 1- on selector mechanism cover

- Carefully press down catch -arrow 1- to stop.
- Then move relay lever to and fro (direction of operation) in its bearing. Carefully pull out relay lever together with cable end-piece -arrow 2-.

Continued for all selector mechanisms



- Remove cable support bracket from gearbox -arrows-.
- Remove noise insulation => General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
- To remove selector mechanism, heat shield under selector mechanism and, if necessary, parts of exhaust system must be removed => Rep. Gr. 26 ; Parts of exhaust system .
- Swing down gear lever housing and remove with selector cables.



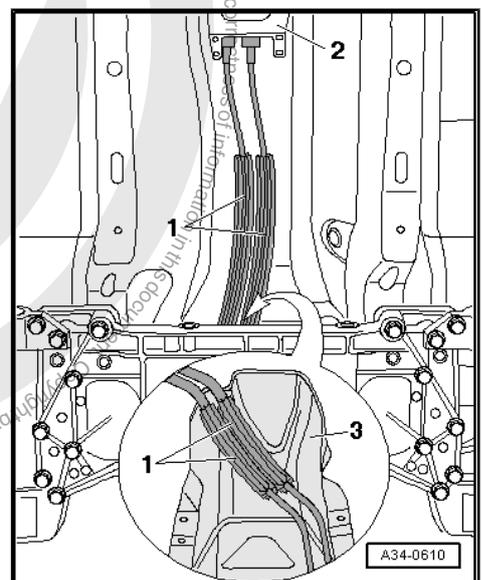
1.8.2 Installing selector mechanism

Install in the reverse order of removal, observing the following:

- Align selector housing parallel to body.
- Distance to body must be same on both sides.
- Secure selector housing => [Item 16 \(page 52\)](#) .
- Route cables -1- from selector mechanism -2- to gearbox as follows:
- Cables must lie parallel to each other and must not cross.
- Cables must be laid in the intended indentation in heat shield -3-.

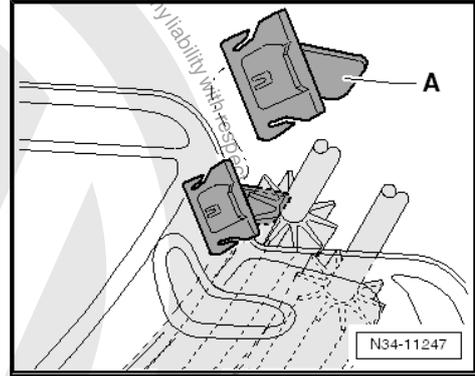
i Note

In the close-up, the heat shield is shown from above.



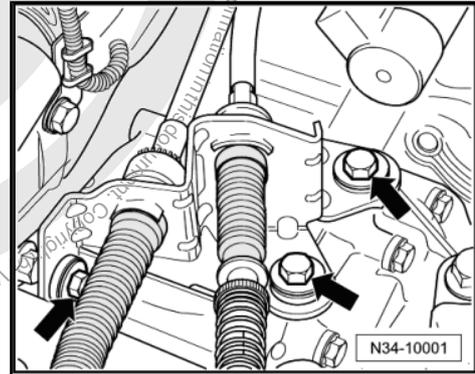


Clip -A- holds cables and heat shield together in position.



- Secure cable support bracket on gearbox -arrows- => [Item 6 \(page 57\)](#).

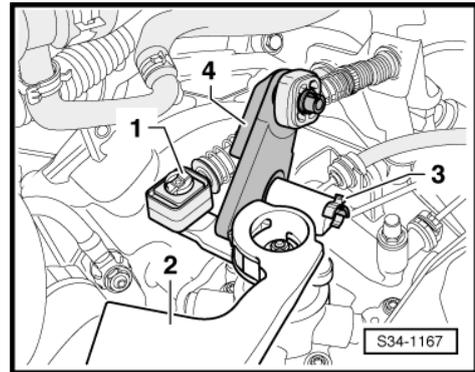
Allocation of cable end-pieces => [page 58](#)



- Spread a small amount of grease -G 000 450 02- on pin of gearbox selector lever -2-.
- Renew securing clip -1- each time after removing.
- Secure gear selector cable with new securing clip -1-.

Relay lever -4- secured with clip -3- on selector mechanism cover

- Spread a small amount of grease -G 000 450 02- on pin of relay lever.
- Insert relay lever -4- together with cable end-piece in selector mechanism cover and secure with clip -3-.



Relay lever secured with catch -arrow 1- on selector mechanism cover

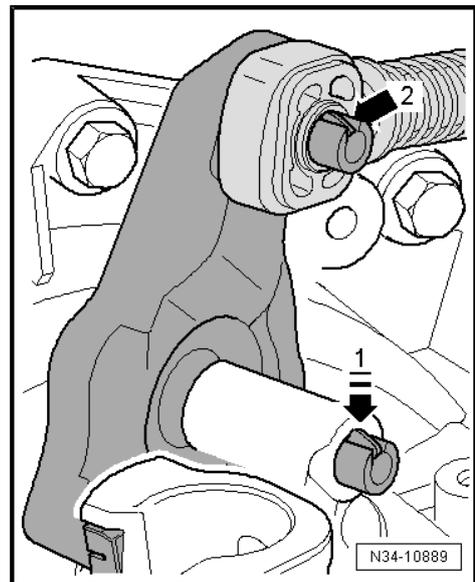
Note

To fit, lubricate bearing points and sliding surfaces with grease -G 000 450 02-.

- Insert relay lever together with cable end-piece -arrow 2-.
- Catch -arrow 1- secures relay lever.

Continued for all selector mechanisms

- Insert gate selector cable in cable end-piece.
- If present, set interior monitoring sensor -G273- on rear securing nuts => Electrical system; Rep. Gr. 96.
- Install centre console securing bracket and centre console => General body repairs, interior; Rep. Gr. 68 ; Compartments, covers and trims.

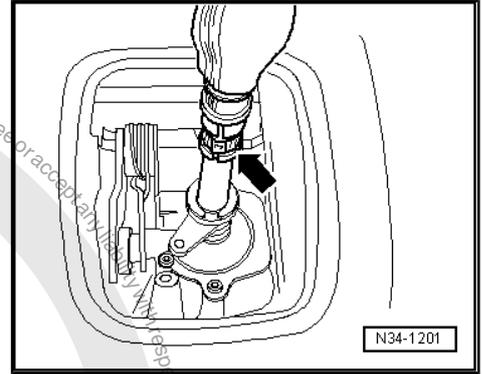




- Renew clamp -arrow-.
- Install gaiter with selector knob and, if present, noise insulation => [page 49](#) .
- Install heat shield and exhaust system => Rep. Gr. 26 ; Parts of the exhaust system .

Adjust selector mechanism => [page 66](#) .

- Install complete air filter housing => Rep. Gr. 24 ; Repairing injection system .
- Follow procedure after connecting battery => Electrical system; Rep. Gr. 27 ; Battery; Disconnecting and connecting battery .



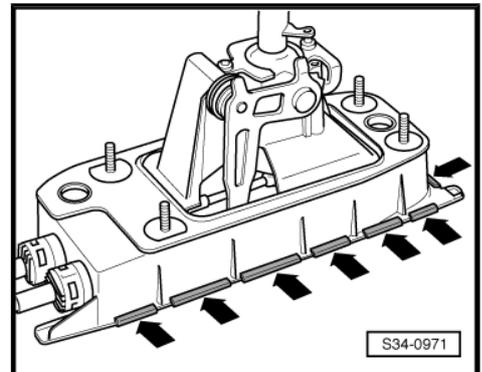
1.8.3 Torque settings

Component	Nm
Selector housing to body	Nuts M6 = 8 Nuts M8 = 25
Selector cables support bracket to gearbox	20

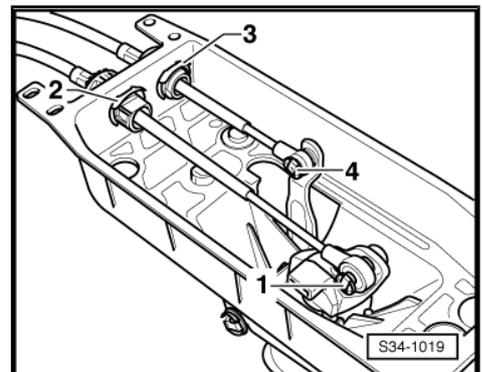
1.9 Removing and installing gear selector cable and gate selector cable

1.9.1 Removing

- Remove selector mechanism => [page 61](#) .
- Bend open tabs -arrows- of selector mechanism cover using a screwdriver and remove cover.
- Remove gasket.



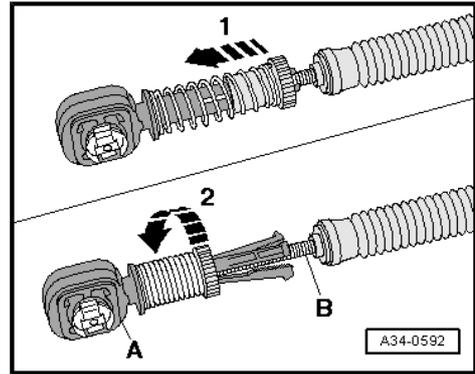
- Pull off securing clips -2 and 3-. (Securing clips -1 and 4- have been discontinued.) Lever gear selector cable off gear lever and gate selector cable off gate selector lever using a screwdriver.
- Pull gear selector cable and gate selector cable from selector housing.



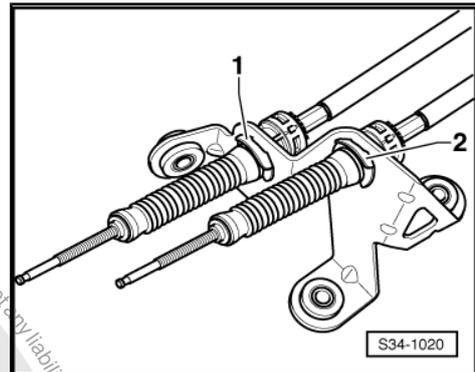


Release locks -A- for gear and gate selector cables -B- as follows:

- ◆ Push sliding sleeve forward to stop -arrow 1-.
- ◆ Turn sliding sleeve to right to stop -arrow 2- until it engages.
- Remove locking mechanism from Bowden cables.



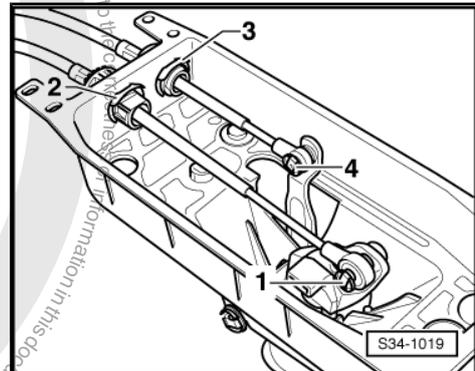
- Pull off securing clips -1- and -2-.
- Remove cable support bracket from Bowden cables.



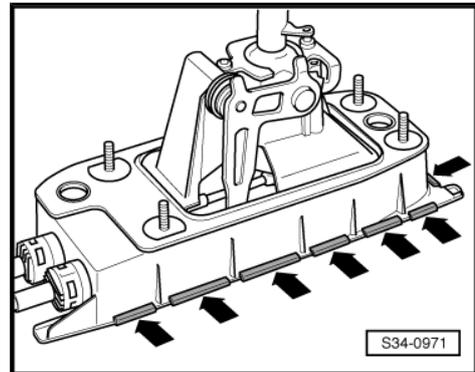
1.9.2 Installing

Install in the reverse order of removal, observing the following:

- Secure gear selector cable and gate selector cable to selector housing using securing clips -2 and 3-.
- Press gear selector cable onto gear lever and gate selector cable onto gate selector lever in selector housing. (Securing clips -1 and 4- have been discontinued.)



- Fit seal and secure selector mechanism cover by pressing down tabs -arrows-.
- Install selector mechanism ⇒ [page 63](#).
- Adjust selector mechanism ⇒ [page 66](#).

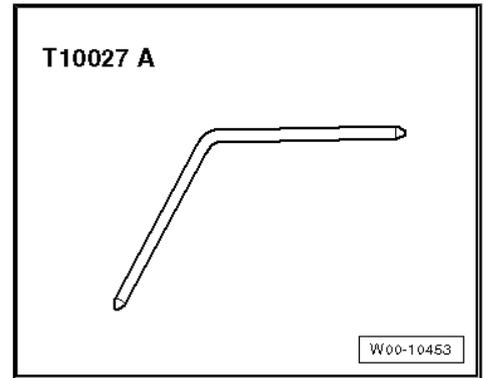


1.10 Adjusting selector mechanism

Special tools and workshop equipment required



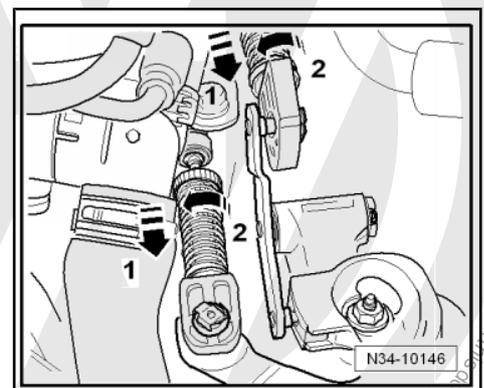
◆ Locking pin -T10027 A-



i Note

The following points are essential to ensure correct adjustment of selector mechanism:

- Gearbox, clutch and clutch mechanism must be in proper condition
- Selector mechanism must move freely
- Moving parts of selector mechanism and elements transferring force must be in proper condition
- Gearbox must be in neutral
- Remove air filter housing if angled rod for securing selector shaft and securing mechanism for gear selector cable and gate selector cable are not accessible → Rep. Gr. 24 ; Repairing injection system .
- Pull locking mechanisms on gate selector cable and gear selector cable end-pieces forward to stop -direction of arrow 1- and then turn to left to lock -direction of arrow 2-.

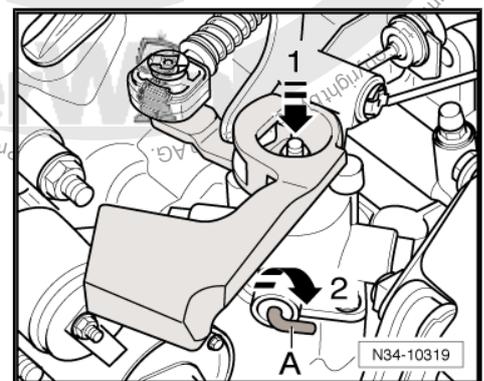


Secure selector shaft as follows:

- Press selector shaft down -direction of arrow 1-.
- While pressing down selector shaft, turn locking pin -A- in -direction of arrow 2- press it carefully in until it engages in selector shaft.
- Remove gaiter and any noise insulation from frame for centre console ⇒ [page 49](#) .

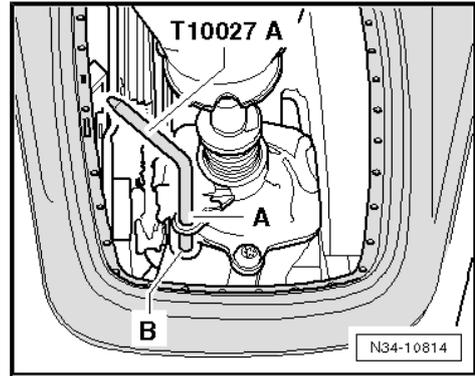
Now secure gear lever as follows:

- Move gear lever to neutral.

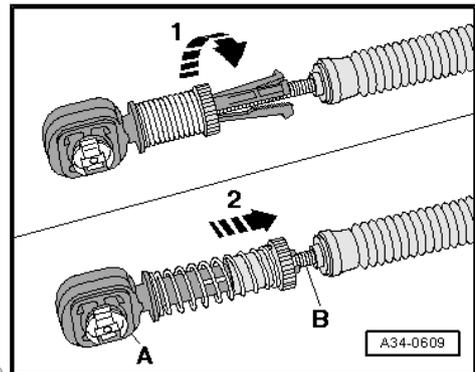




- Guide locking pin -T10027 A- through hole -A- into hole -B-.

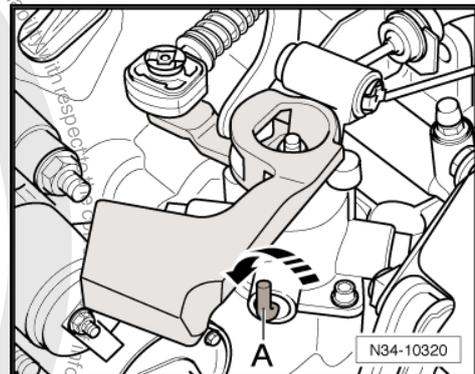


- Check that gate and selector cables -B- are inserted, free of tension, into locking devices -A-.
- Now turn locking mechanisms on gear selector cable and gate selector cable end pieces clockwise to stop -direction of arrow 1-.



The spring presses the locking mechanism into original position -direction of arrow 2-.

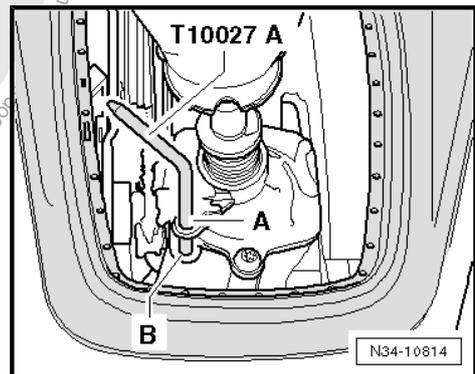
- Now turn angled rod -A- back to original position -direction of arrow-.



Note

The angled rod -A- must be pressed out of selector housing to stop and point straight up.

- Pull locking pin out of holes -A- and -B-.
- Install gaiter and, if present, noise insulation => [page 49](#) .
- Check that selector shaft moves freely.
- If removed, install complete air filter housing => Rep. Gr. 24 ; Repairing injection system .



1.10.1 Functional check

- With gearbox in neutral, gear lever must rest in gate for 3rd and 4th gear.
- Operate clutch.
- Select all gears several times. Pay particular attention to operation of reverse gear lock.



- If it continues to be difficult to engage a gear after repeated attempts, repeat adjustment procedure of selector mechanism
[⇒ page 66](#) .

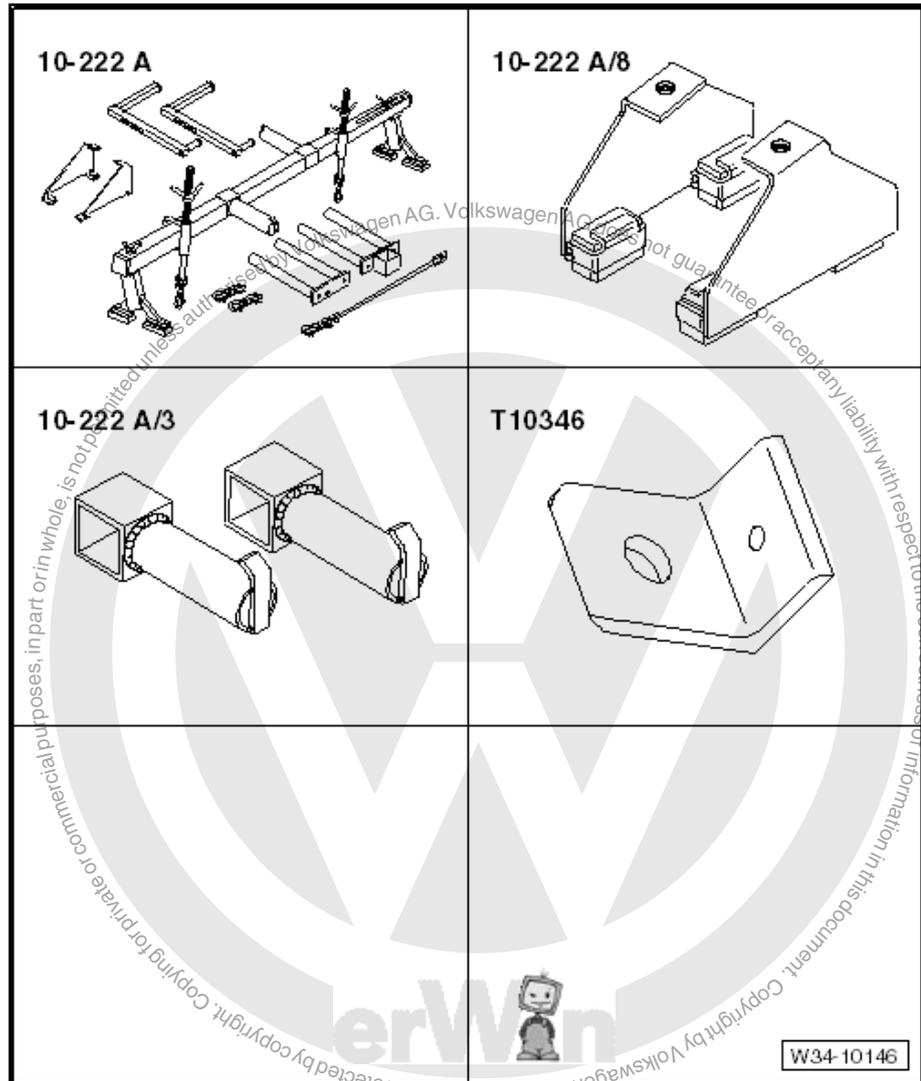




2 Removing and installing gearbox

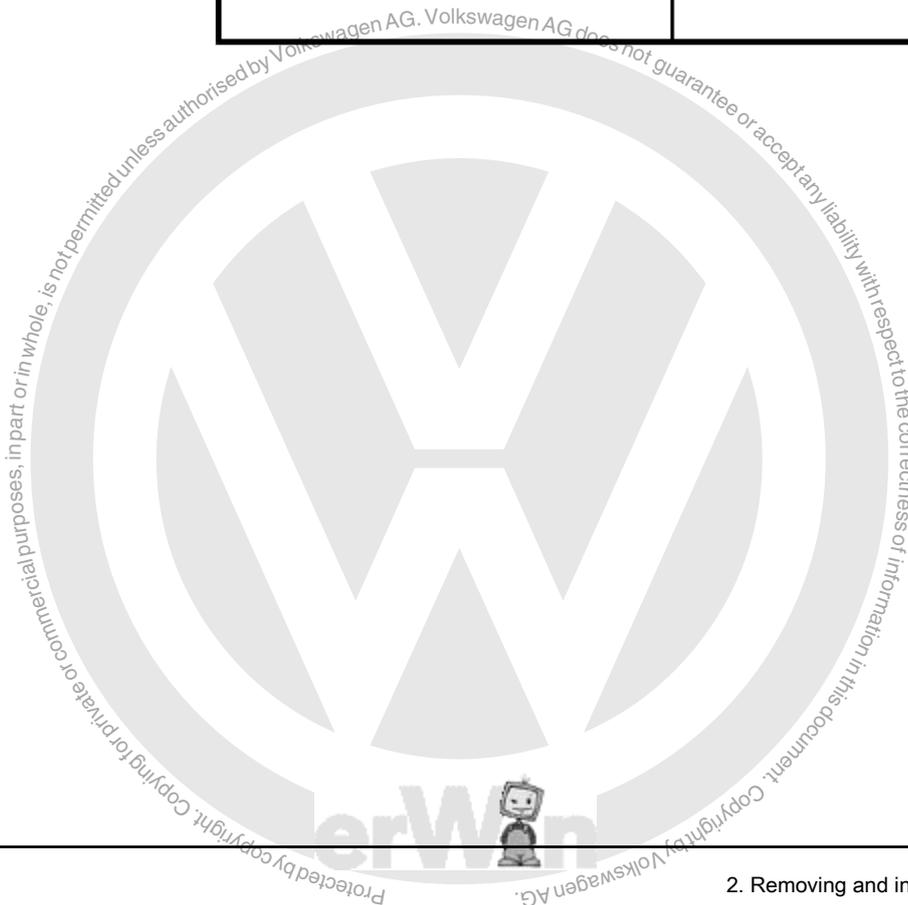
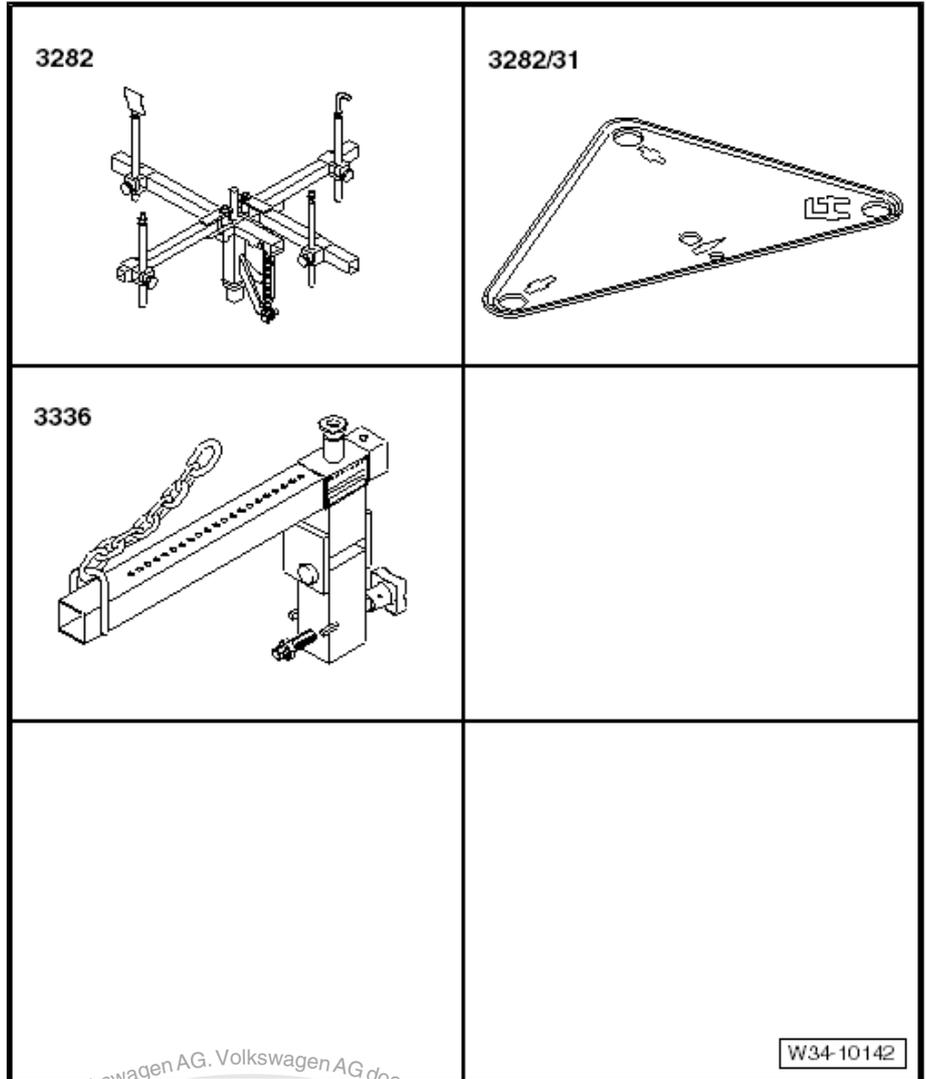
Special tools and workshop equipment required

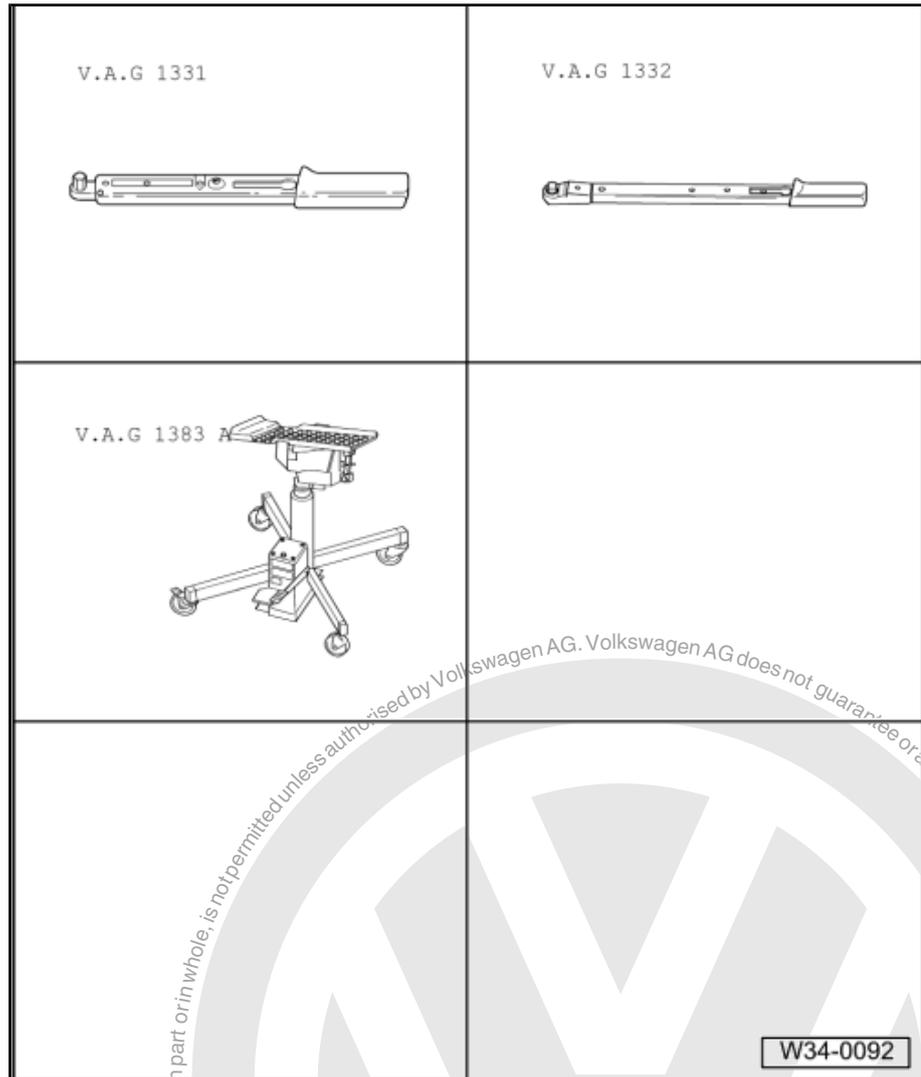
- ◆ Support bracket -10 - 222 A-
- ◆ Adapter -10 - 222 A /8-
- ◆ Adapter -10 - 222 A /3-
- ◆ Bracket -T10346-





- ◆ Gearbox support -3282-
- ◆ Adjustment plate -3282/31-
- ◆ Support elements for gearbox (determine when setting adjustment plate on gearbox support)
- ◆ Gearbox lifting tackle -3336- for transporting gearbox





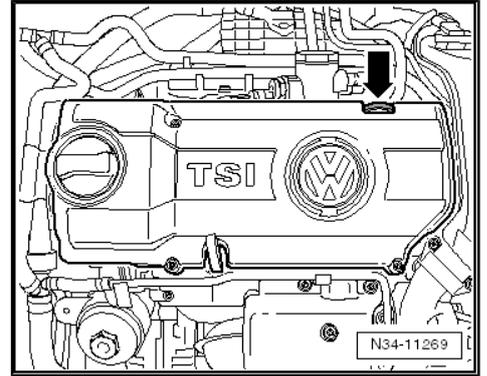
- ◆ Torque wrench -V.A.G 1331-
- ◆ Torque wrench -V.A.G 1332-
- ◆ Engine and gearbox jack -V.A.G 1383 A-
- ◆ Grease for clutch plate splines -G 000 100-
- ◆ Flange bolt M6 x 80

2.1 Removing gearbox

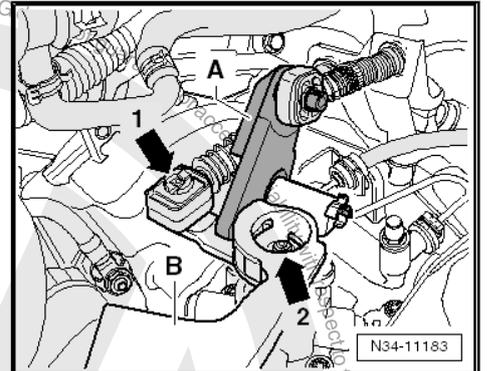
- First check whether a coded radio is fitted. If so, obtain anti-theft code.
- With ignition switched off, disconnect battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
- Remove complete air filter housing ⇒ Rep. Gr. 24 ; Repairing injection system .



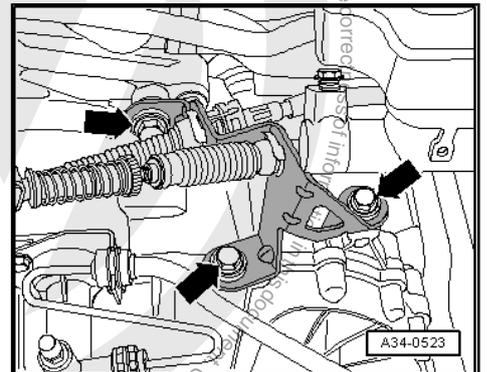
- Remove engine cover if lifting eye -arrow- is not accessible.
- Remove battery and battery tray => Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .



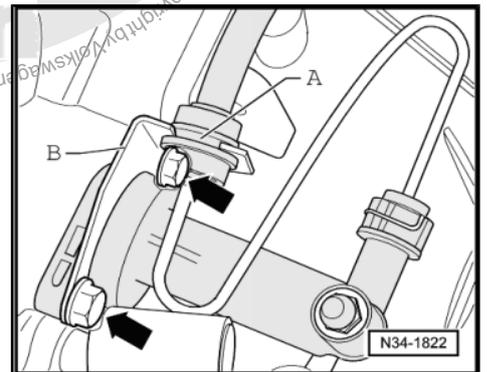
- Remove securing clip -arrow 1- for gear selector cable from gearbox selector lever -B-.
- Pull gear selector cable off pin.
- Remove relay lever -A- together with cable end-piece => [page 59](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.



- Remove cable support bracket from gearbox and lay to side -arrows-.
- Then raise and secure gear selector cable and gate selector cable.



- Pull line between master and slave cylinders -A- out of support -B-, if present, on gearbox.
- Remove slave cylinder -arrows-, lay to side and secure. Do not disconnect pipes.





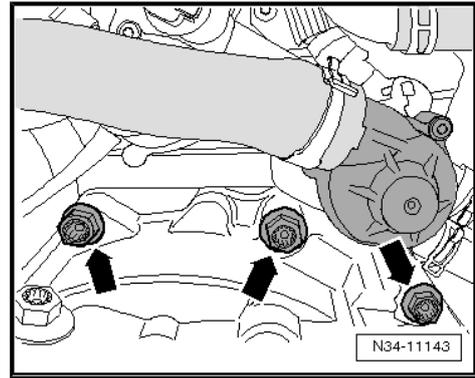
Caution

Do not operate clutch pedal any more.

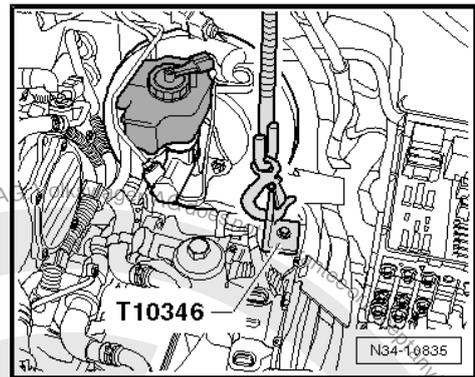
- Remove earth strap at upper securing bolt for starter or at subframe.

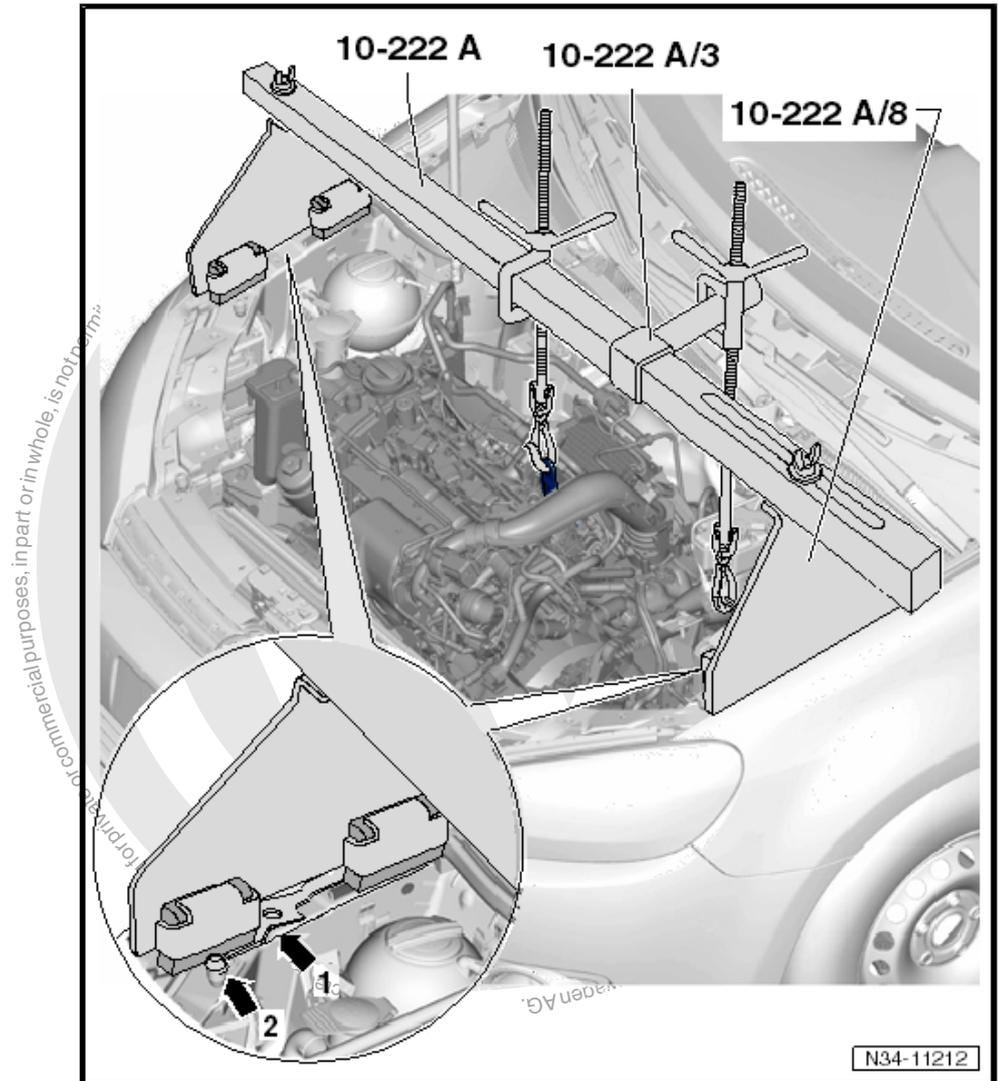


- Then remove upper securing bolt on starter.



- Remove upper engine/gearbox connecting bolts -arrows- (bolt heads may differ from depiction in figure).
- Bolt bracket -T10346- to rear of the three mounting holes for battery tray.
- To do this, use a collar bolt M6 x 80 or a securing bolt for battery tray.
- If there are hose and cable connections in area of engine support eye for support bracket -10 - 222 A- , remove these now.





- Set up support bracket -10-222 A- in front of bonnet support.
- Use:
 - ◆ Adapter -10 - 222 A /3-
 - ◆ Adapter -10 - 222 A /8-

Golf Variant 2010 ▶

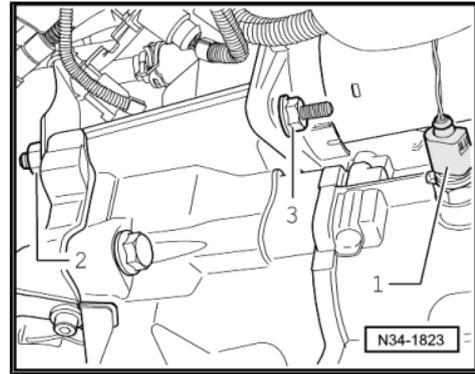
- Position adapter -10 - 222 A /8- :
 - On upper longitudinal carrier, directly before the elevation (-arrow 1-) next to bolt (-arrow 2-)

Continuation for all vehicles

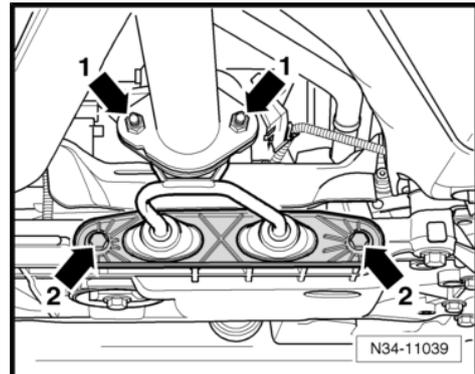
- Connect left support eye on engine to support bracket .
- Connect bracket -T10346- to support bracket .
- Take up weight of engine/gearbox assembly and support bracket on spindles.
- Raise vehicle.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
- Remove lower part of front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Wheel housing liner .



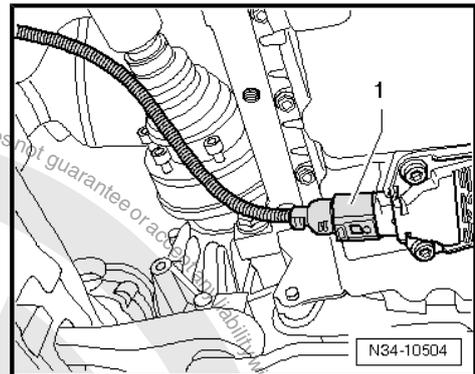
- Pull off connector -1- for reversing light switch -F4- .
- Remove nut -2- if present.
- Remove starter (bolt -3-) => Electrical system; Rep. Gr. 27 ; Starter .



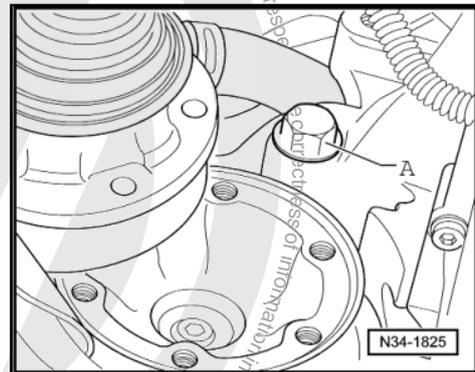
- Separate exhaust system -arrows 1- and remove exhaust pipe bracket from subframe -arrows 2- => Rep. Gr. 26 ; Parts of exhaust system .



- Pull connector -1- off oil level and oil temperature sender - G266- .
- Disconnect drive shafts from flange shafts, raise as high as possible and secure, being careful not to damage surface protection.

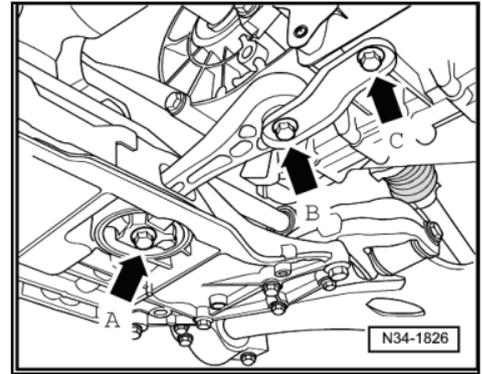


- Remove engine/gearbox connecting bolt -A- above right flange shaft.

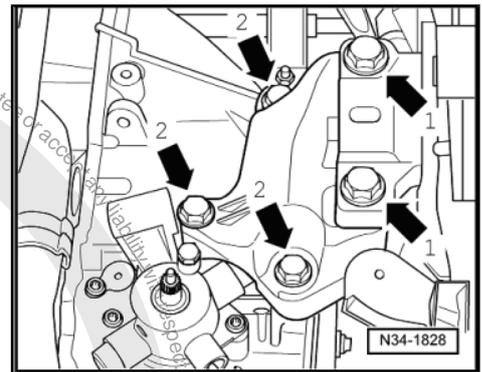




- Remove pendulum support.
First remove bolt -arrow A- and then bolts -B- and -C-.



- Remove hexagon bolts -arrows 1- for left assembly mounting from gearbox mounting.
- Tilt engine/gearbox assembly by lowering it via the spindle of support bracket -10-222 A- that is connected to engine.



i Note

Be careful of all lines when lowering gearbox.

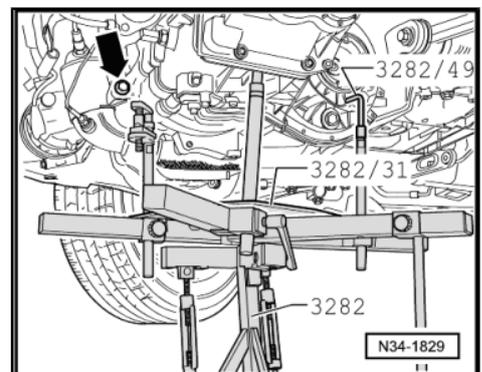
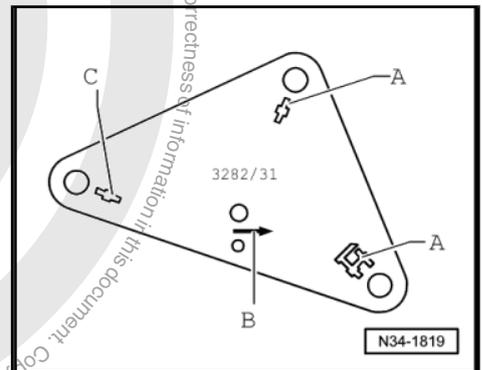
- Remove gearbox bracket by removing bolts -arrows 2-.

To remove gearbox "0AJ", set up gearbox support -3282- with adjustment plate -3282/31- .

- Insert gearbox support -3282- in engine and gearbox jack - V.A.G. 1383 A- .

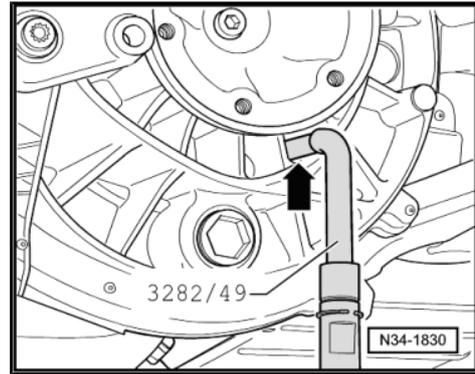
Fit adjustment plate -3282/31- on gearbox support -3282- (adjustment plate fits in only one position).

- Align arms of gearbox support according to holes in adjustment plate .
- Attach support elements -A- to adjustment plate as illustrated.
- Screw in support hook -3282/49- instead of support element -C-.
- Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel.
- Align adjustment plate parallel to gearbox.

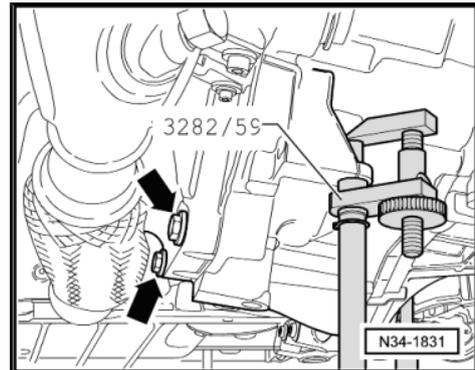




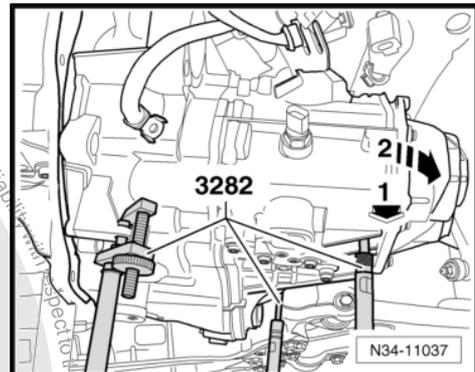
- Insert support hook -3282/49- in one of the recesses in differential below flange shaft -arrow-.
- Remove engine/gearbox connecting bolt (-arrow- in figure N34-1829 => [page 77](#)).
- Disconnect cable from Lambda probe => Rep. Gr. 21 ; Turbocharging/supercharging .



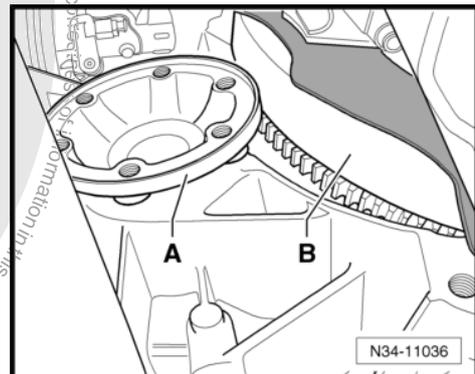
- Remove exhaust pipe => Rep. Gr. 26 ; Parts of exhaust system , so that lower bolts -arrows- can be removed.
- Have a second mechanic press engine forwards.
- Press gearbox off dowel sleeves.



- Press gearbox with 6th gear cover towards front -arrow 1- and turn it downwards slightly -arrow 2-.
- Observe intermediate plate on engine.



Then carefully guide gearbox with right flange shaft -A- past flywheel -B- and intermediate plate as shown.



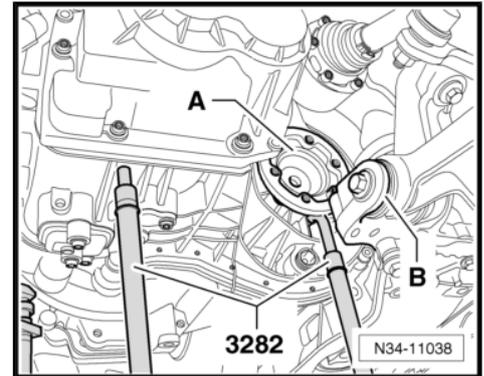


- Carefully guide left flange shaft -A- past subframe bracket -B- as shown.
- Lower gearbox being careful of subframe.

i Note

Be careful of all lines when lowering gearbox.

- When lowering gearbox, change position of gearbox using spindles of gearbox support -3282- .



2.2 Installing gearbox

i Note

Refer to procedure "Removing gearbox" for required special tools => [page 72](#) .

- All threaded holes into which self-locking bolts are to be screwed must be cleaned of residual locking fluid with a thread chaser.
- Always renew self-locking bolts and nuts.
- Check whether dowel sleeves for aligning engine and gearbox are fitted in cylinder block and install if necessary.

If dowel sleeves are not fitted, difficulties shifting gears, clutch problems and possible noises from the gearbox (rattling of gears which are not engaged) could occur.

- Ensure that intermediate plate is correctly seated on engine.
- Clean input shaft splines and apply thin coat of grease for clutch plate splines -G 000 100- .

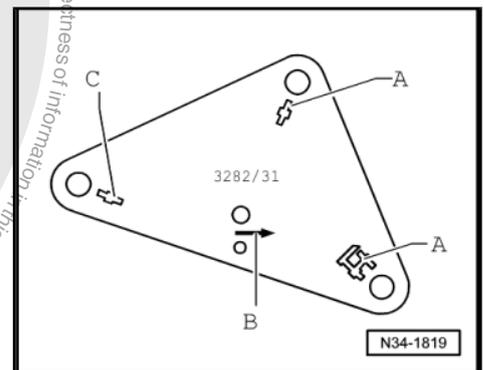
The clutch plate must slide easily to and fro on the input shaft.

To install gearbox "0AJ", set up gearbox support -3282- with adjustment plate -3282/31- .

- Insert gearbox support -3282- in engine and gearbox jack - V.A.G 1383 A- .

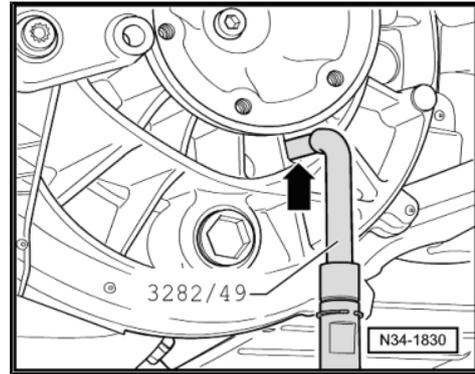
Fit adjustment plate -3282/31- on gearbox support -3282- (adjustment plate fits in only one position).

- Align arms of gearbox support according to holes in adjustment plate .
- Attach support elements -A- to adjustment plate as illustrated.
- Screw in support hook -3282/49- instead of support element -C-.
- Place gearbox on gearbox jack .

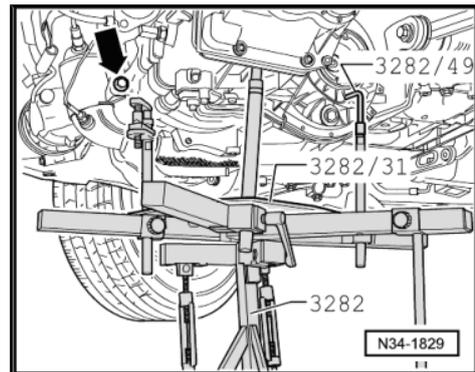




- Insert support hook -3282/49- in one of the recesses in differential below flange shaft -arrow-.



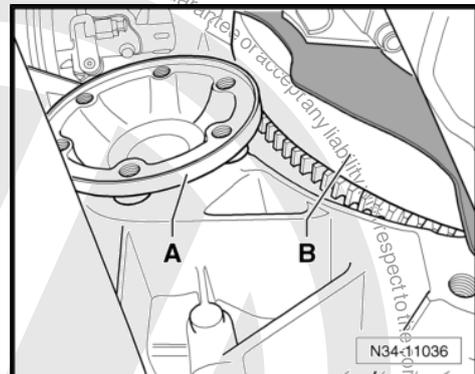
- Align adjustment plate and gearbox parallel to one another.
- Position gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel.
- Tilt gearbox using spindles of gearbox support -3282- near 6th gear.
- Have a second mechanic press engine forwards.
- Then raise gearbox carefully and guide past subframe.



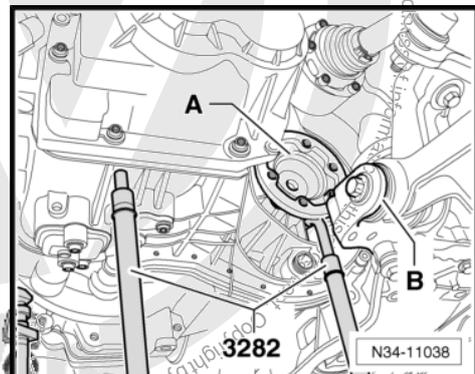
Note

Be careful of all lines when installing gearbox.

- Carefully guide gearbox with right flange shaft -A- past fly-wheel -B- and intermediate plate as shown.

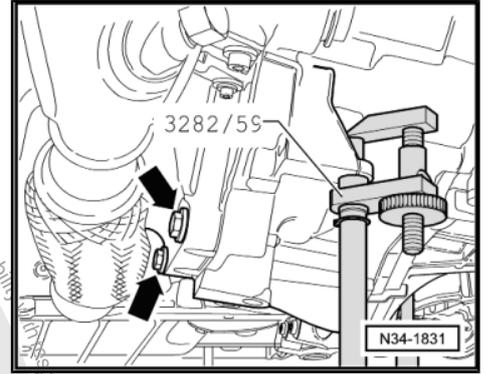


- Carefully guide left flange shaft -A- past subframe bracket -B- as shown.
- Turn gearbox to installation position.
- The gearbox must be aligned parallel to the engine.

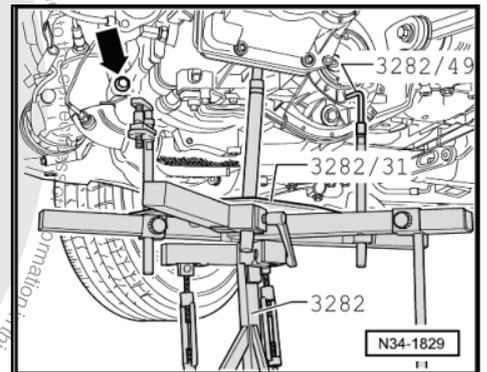




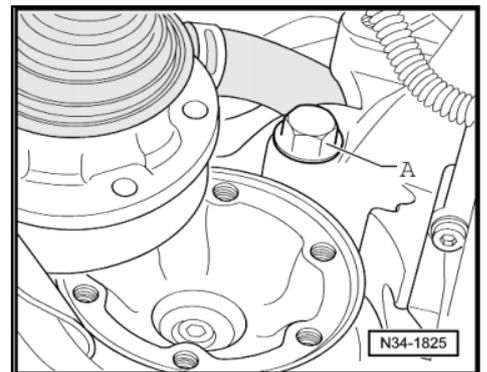
- Insert gearbox while screwing in bolts -arrow- and tighten to specified torque => [page 83](#) .



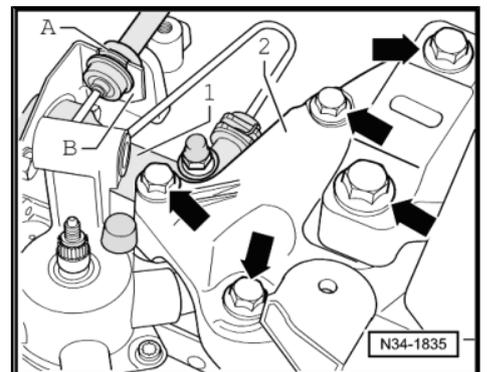
- Screw in connecting bolt for engine and gearbox -arrow- and tighten to specified torque => [page 83](#) .



- Then screw in lower connecting bolts for engine and gearbox -arrows- and tighten to specified torque => [page 83](#) .
- After all lower connecting bolts for engine and gearbox have been bolted on with specified torque, => [page 83](#) , remove gearbox jack from gearbox.
- Align engine and gearbox in installation position using spindle of support bracket -10 - 222 A- that is connected to engine.



- Install slave cylinder -1- and tighten bolts to specified torque => [Item 9 \(page 42\)](#) .
- Press pipe/hose line or plastic line -A- into retainer -B- on gearbox.
- Install left assembly mounting -2- using new hexagon bolts -arrows- and tighten to specified torque => [page 83](#) .



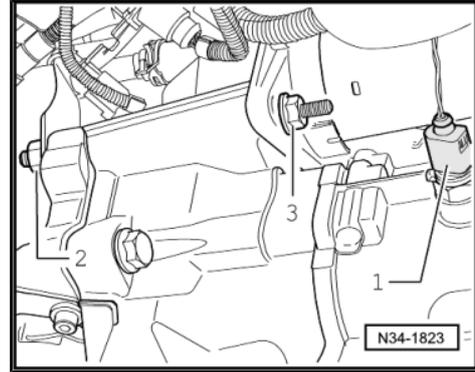
! **WARNING**

Do not remove support bracket -10 - 222 A- until the bolts securing the left and right assembly mountings have been tightened to specified torque.

- Screw in upper engine/gearbox securing bolts and tighten to specified torque => [page 83](#) .



- Install starter with bolt -3- and, if present, nut -2- ⇒ Electrical system; Rep. Gr. 27 ; Starter .
- Push connector -1- onto reversing light switch -F4- .



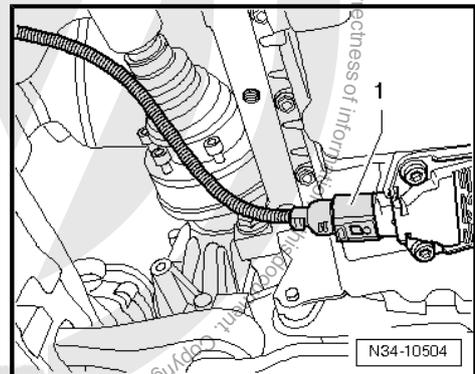
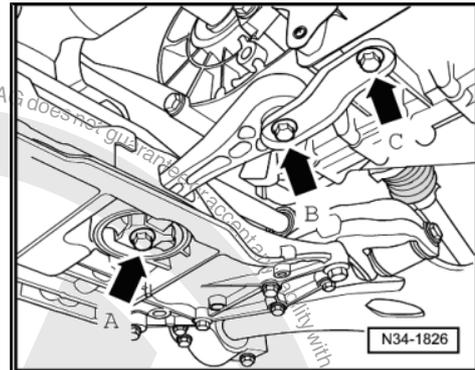
- Install pendulum support ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Assembly overview - Subframe, anti-roll bar, suspension links .
- Use new bolts for securing.



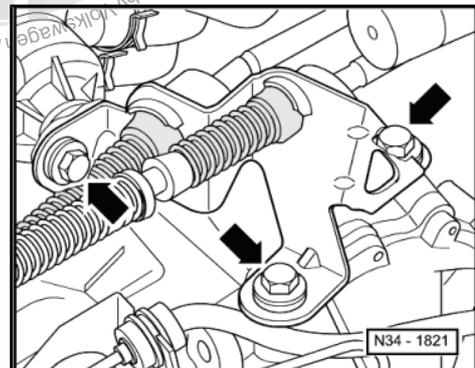
Note

Install engine and gearbox mounting free of tension ⇒ Rep. Gr. 10 ; Removing and installing engine .

- Reassemble exhaust system ⇒ Rep. Gr. 26 ; Parts of exhaust system .
- Attach drive shafts to gearbox ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
- Attach connector -1- to oil level and oil temperature sender - G266- .

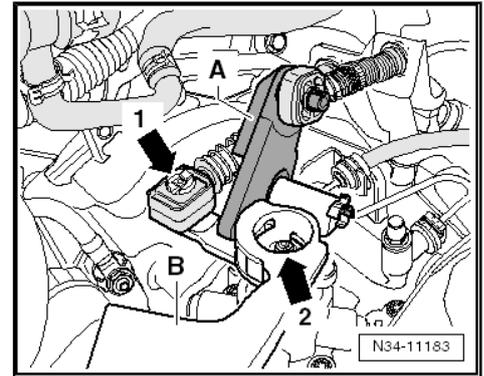


- Install cable support bracket on gearbox and tighten bolts -arrows- to specified torque ⇒ [page 57](#) .





- Install gearbox selector lever -A- ⇒ [page 59](#) and tighten nut -arrow 2- to specified torque ⇒ [Item 15 \(page 58\)](#) .
- Install relay lever -A- together with cable end-piece ⇒ [page 59](#) .
- Spread a small amount of grease -G 000 450 02- on pin of gearbox selector lever -B-.
- Connect gear selector cable to gearbox selector lever -arrow 1-.
- Adjust selector mechanism ⇒ [page 66](#) .
- Check gear oil ⇒ [page 86](#) .



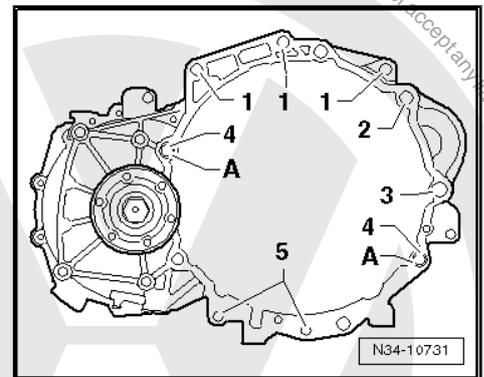
If the gearbox comes in contact with other components, repair surface protection the manufacturer-approved materials ⇒ Paint workshop manual .

- Install lower part of front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
- Install cover for engine and air filter housing ⇒ Rep. Gr. 24 ; Repairing injection system .
- Install battery tray and battery⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .
- Follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Disconnecting and connecting battery .

2.2.1 Torque settings

Gearbox to engine

Item	Bolt	Quantity	Nm
1	M 12 x 50	3	80
2	M 12 x 55 ◆ Additionally, starter to gearbox	1	80
3	M 12 x 150 ◆ Additionally, starter to gearbox	1	80
4	M 12 x 60	2	80
5	M 10 x 50	2	40



Item -A-: dowel sleeves for centring



Gearbox bracket to gearbox

- Renew bolts.

Bolts -arrows 2-

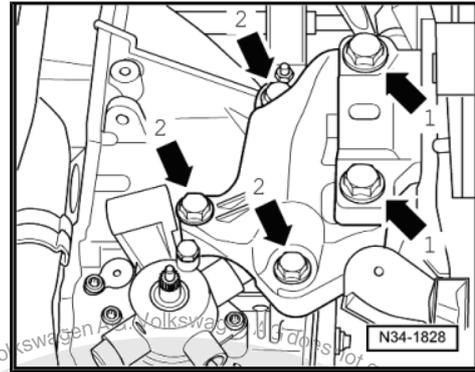
40 Nm + 90°

Construction of a Gearbox console

- Renew bolts.

Bolts -arrows 1-

60 Nm + 90°



Note

Install engine and gearbox mounting free of tension ⇒ Rep. Gr. 10 ; Removing and installing engine .

Pendulum support to subframe and gearbox ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Assembly overview - subframe, anti-roll bar, suspension links .

Drive shaft to flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .

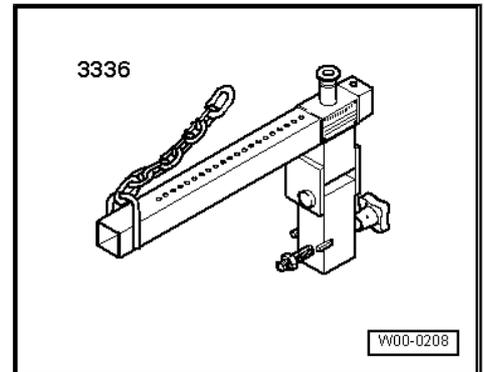
Exhaust system ⇒ Rep. Gr. 26 ; Parts of exhaust system .



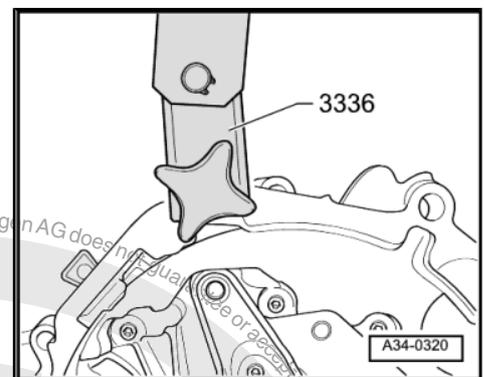
3 Transporting gearbox

Special tools and workshop equipment required

- ◆ Gearbox mounting support -3336-



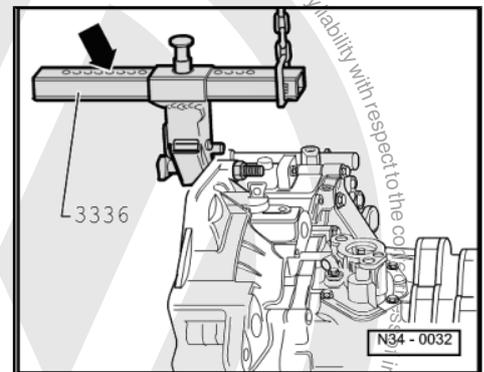
- Bolt gearbox lifting tackle -3336- to clutch housing.



- Adjust support beam on sliding piece using locking pin -arrow-.

No. of holes visible = 5

- Lift gearbox using workshop crane and gearbox lifting tackle -3336- .
- Set gearbox aside, for example in a transport container.

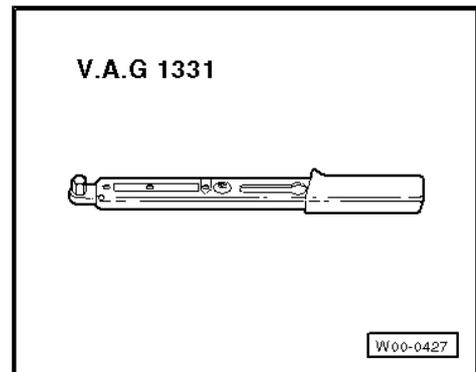




4 Checking gear oil

Special tools and workshop equipment required

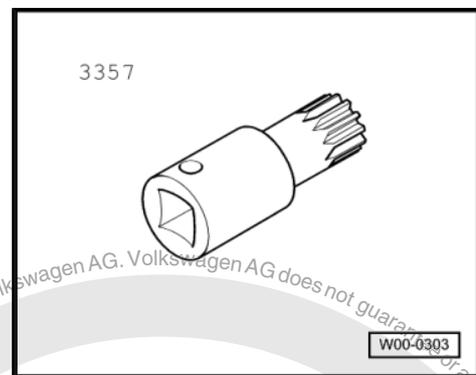
- ◆ Torque wrench -V.A.G 1331-



Multi-point bit -3357-

Gear oil ⇒ Electronic parts catalogue "ETKA" .

- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation; Assembly overview - noise insulation .



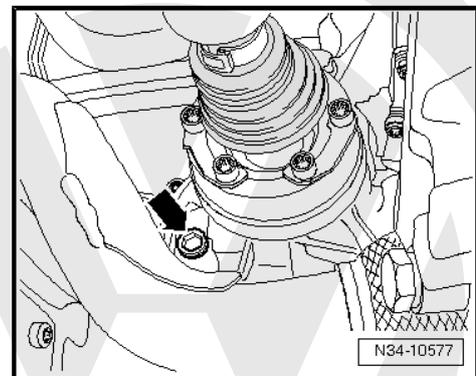
- To check gear oil, remove oil plug -arrow-.

Oil level is correct when gearbox is filled to lower edge of filler hole.

- Tighten bolt -arrow- to specified torque ⇒ [page 87](#) .

When filling with oil, note the following:

- Remove oil plug -arrow-.
- Fill with gear oil to lower edge of filler hole.
- Screw in plug -arrow-.
- Start engine, engage gear and allow gearbox to turn for approx. 2 minutes.
- Stop engine and remove plug -arrow-.
- Top up with gear oil to lower edge of filler hole.
- Tighten bolt -arrow- to specified torque ⇒ [page 87](#) .



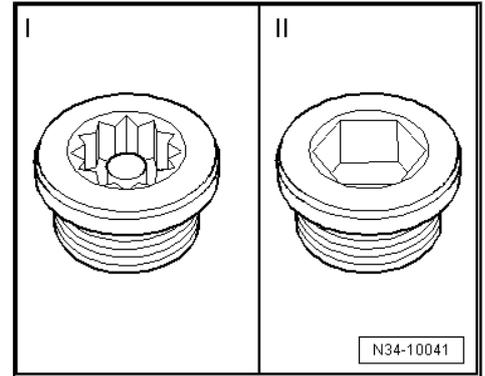


Various versions of oil filler and drain plugs

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

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

- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation; Assembly overview - noise insulation .

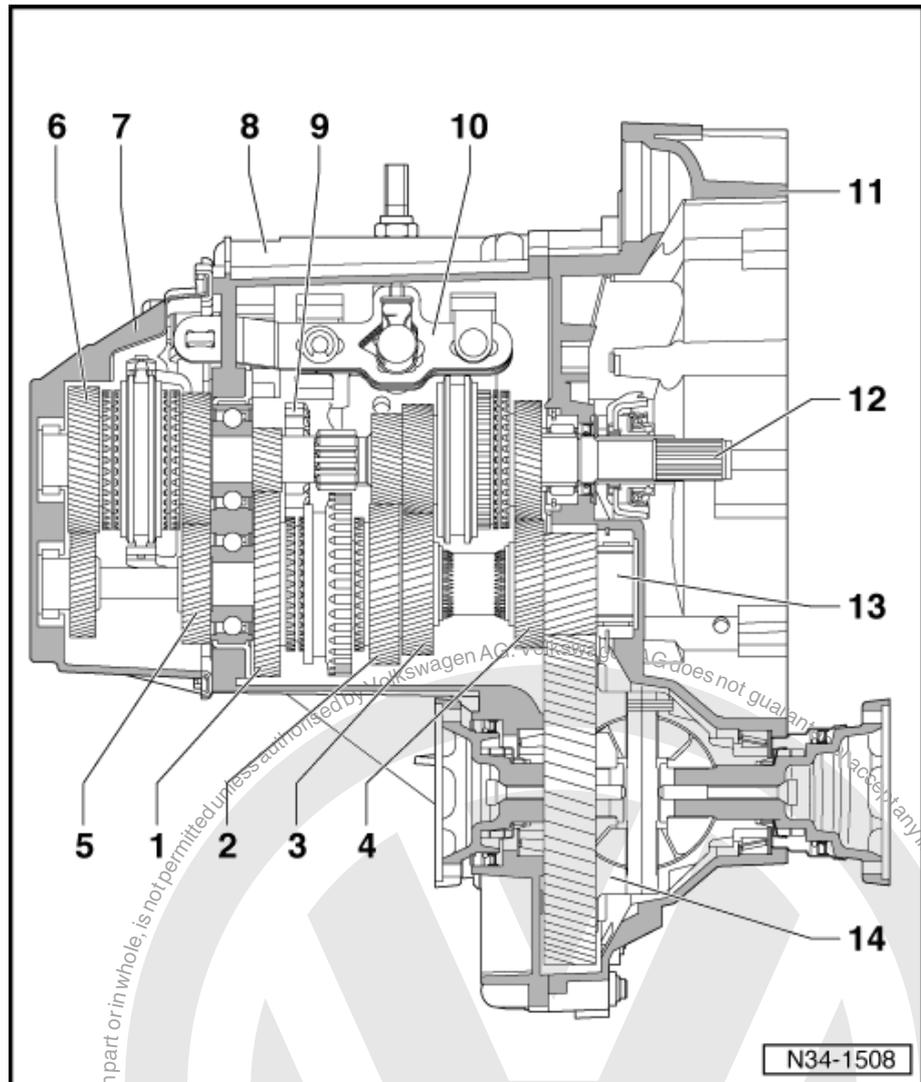




5 Dismantling and assembling gearbox

5.1 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
- 10 - Selector mechanism
 - (Selector forks)
- 11 - Clutch housing
- 12 - Input shaft
- 13 - Output shaft
- 14 - Differential





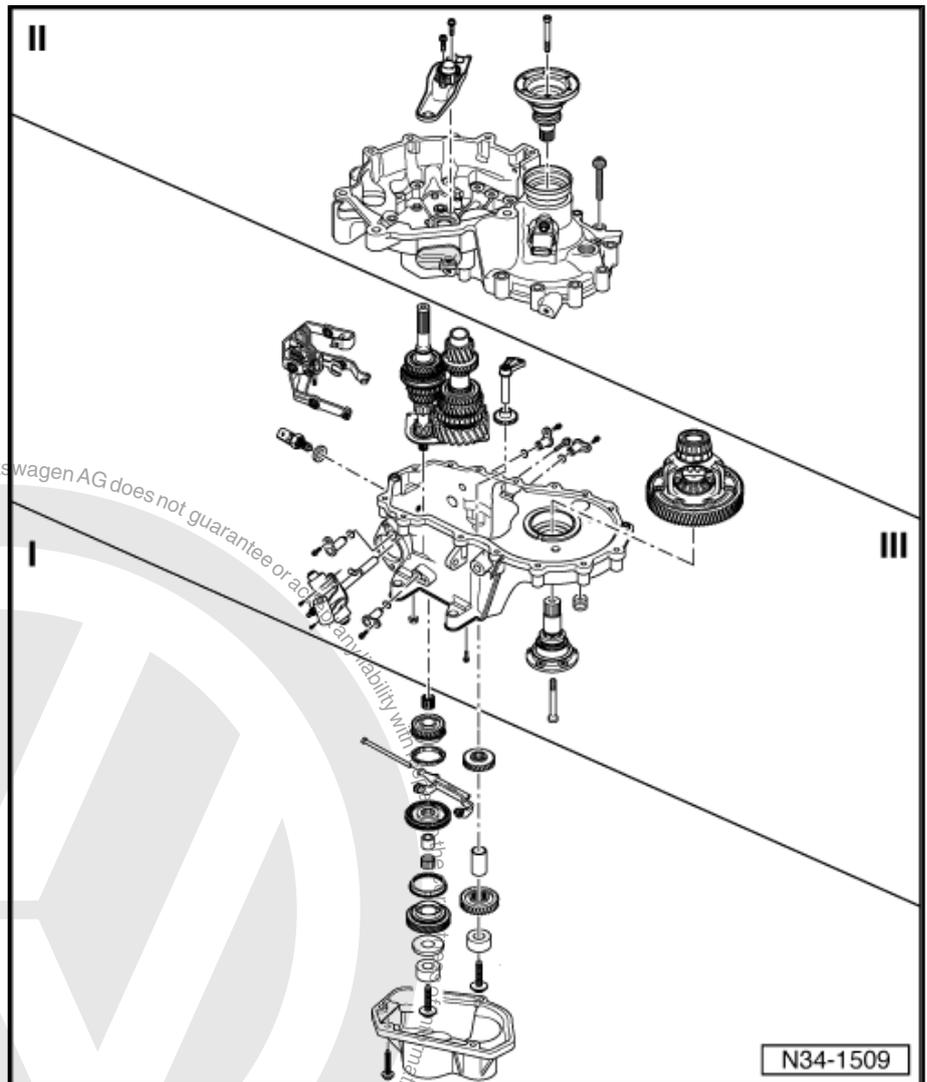
5.2 Assembly overview

I - Removing and installing cover for gearbox housing and 5th and 6th gears ⇒ [page 90](#)

II - Removing and installing clutch housing ⇒ [page 92](#)

III - Removing and installing input shaft, output shaft, differential, selector mechanism and selector forks ⇒ [page 93](#)

Dismantling and assembling procedure ⇒ [page 94](#)





5.3 Removing and installing cover for gearbox housing and 5th and 6th gear

1 - Gearbox housing

- Repairing ⇒ [page 107](#)

2 - Gear wheel for 5th gear

- Installation position ⇒ [page 103](#)
- Must be pressed off ⇒ [page 126](#) and on ⇒ [page 103](#) gearboxes for the 1.4 l engine

3 - Sleeve

4 - Gear wheel for 6th gear

- Installation position ⇒ [page 104](#)

5 - Cylindrical roller bearing inner race

- For output shaft
- Mark before removing
- Do not interchange with inner race for cylindrical roller bearing of input shaft
- Can be renewed individually

6 - Bolt

- M8: 30 Nm and then turn 90° further
- M10: 75 Nm and then turn 45° further.
- For output shaft
- Self-locking
- Always renew

7 - Gearbox housing cover

- With cylindrical roller bearings for input and output shafts
- Repairing ⇒ [page 110](#)

8 - Bolt, 5 Nm + turn 90° further

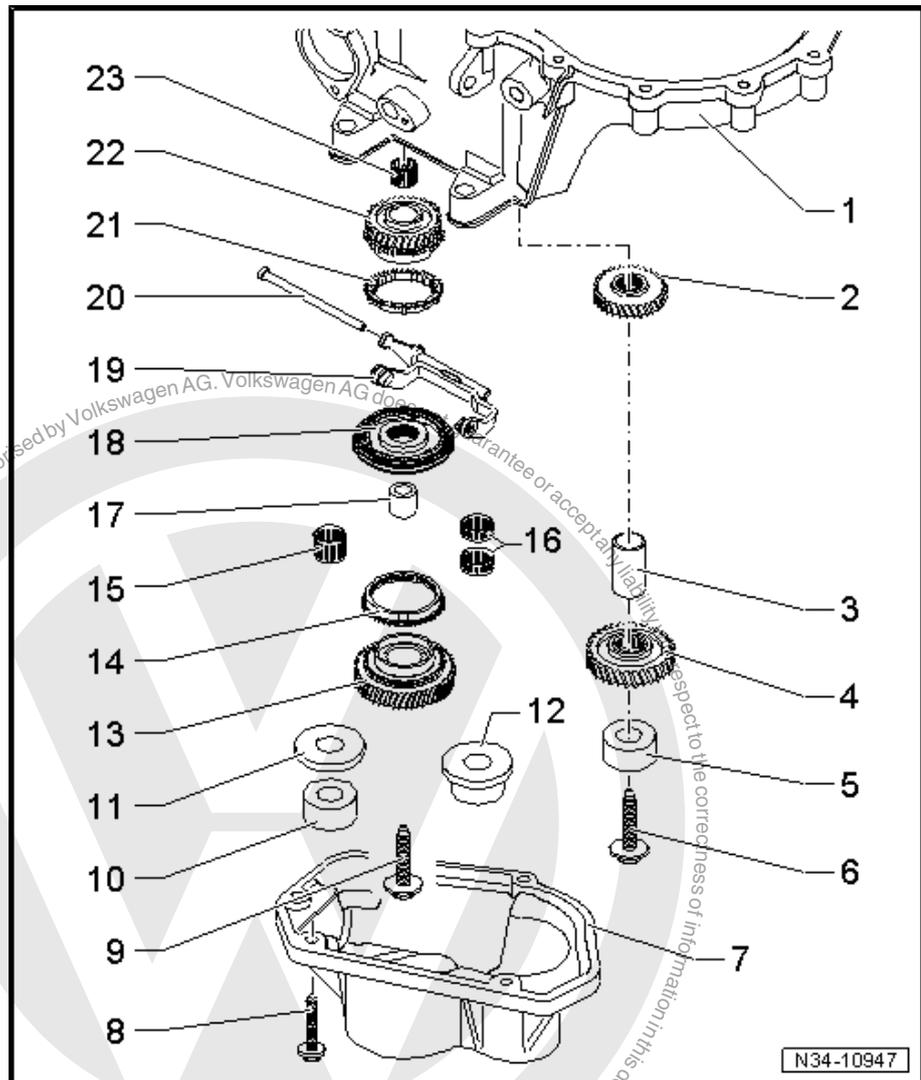
- Always renew

9 - Bolt

- M8: 30 Nm and then turn 90° further
- M10: 75 Nm and then turn 45° further.
- For input shaft
- Self-locking
- Always renew

10 - Cylindrical roller bearing inner race

- For input shaft
- Mark before removing
- Do not interchange with inner race for cylindrical roller bearing of output shaft
- Can be renewed individually





11 - Thrust washer

12 - Inner race for cylindrical roller bearing with thrust washer

- For input shaft
- Installed in some gearboxes
- Allocate according to ⇒ Electronic parts catalogue "ETKA"

13 - Synchronised gear for 6th gear

14 - Synchro-ring for 6th gear

15 - Needle bearing

- One-piece
- For 6th gear
- Allocate according to ⇒ Electronic parts catalogue "ETKA"
- Replace together with sleeve ⇒ [Item 17 \(page 91\)](#) .

16 - Needle bearing

- Two-part
- For 6th gear
- Installed in some gearboxes
- Allocate according to ⇒ Electronic parts catalogue "ETKA"
- Replace together with sleeve.

17 - Sleeve

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

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

- Dismantling and assembling ⇒ [page 121](#)

19 - Selector fork for 5th and 6th gears

20 - Pivot pin

- For 5th gear selector fork.

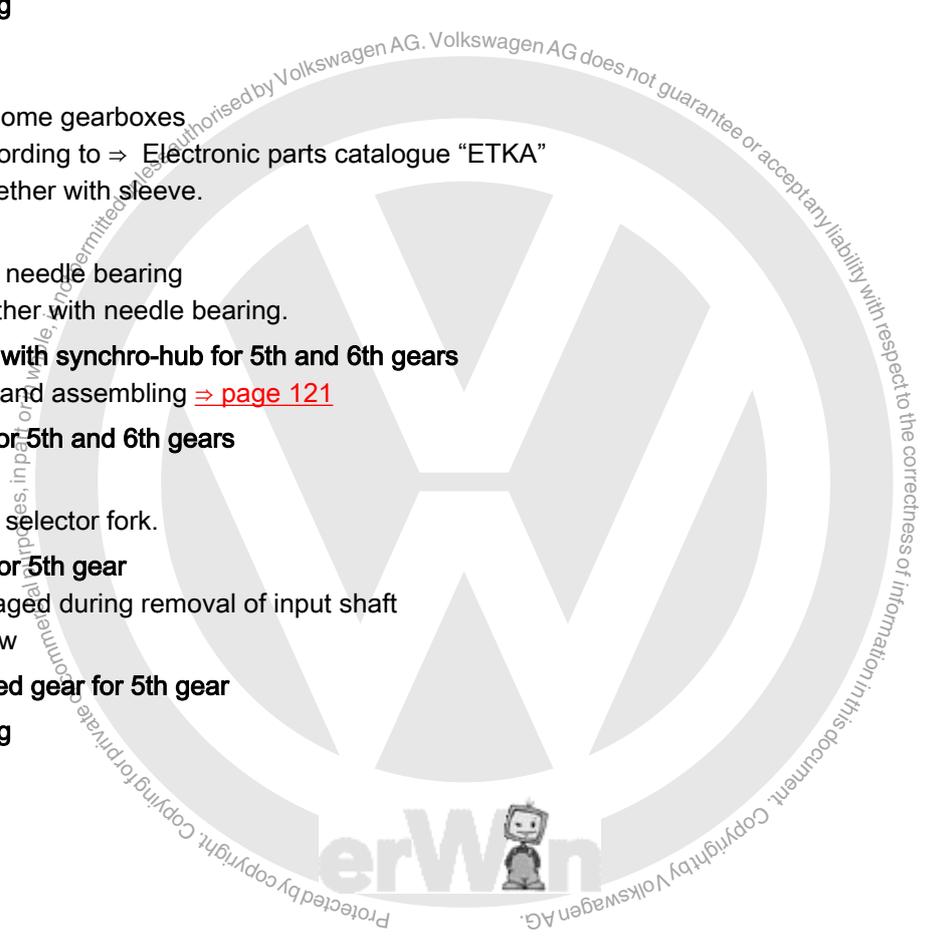
21 - Synchro-ring for 5th gear

- Will be damaged during removal of input shaft
- Always renew

22 - Synchronised gear for 5th gear

23 - Needle bearing

- For 5th gear





5.4 Removing and installing clutch housing

1 - Countersunk bolt, 25 Nm

2 - Flange shaft with compression spring

- Removing and installing
⇒ [page 94](#)
- Assembling
⇒ [page 142](#)

3 - Bolt, 5 Nm + turn 90° further

- Always renew

4 - Clutch housing

- Repairing ⇒ [page 107](#)

5 - Gearbox housing

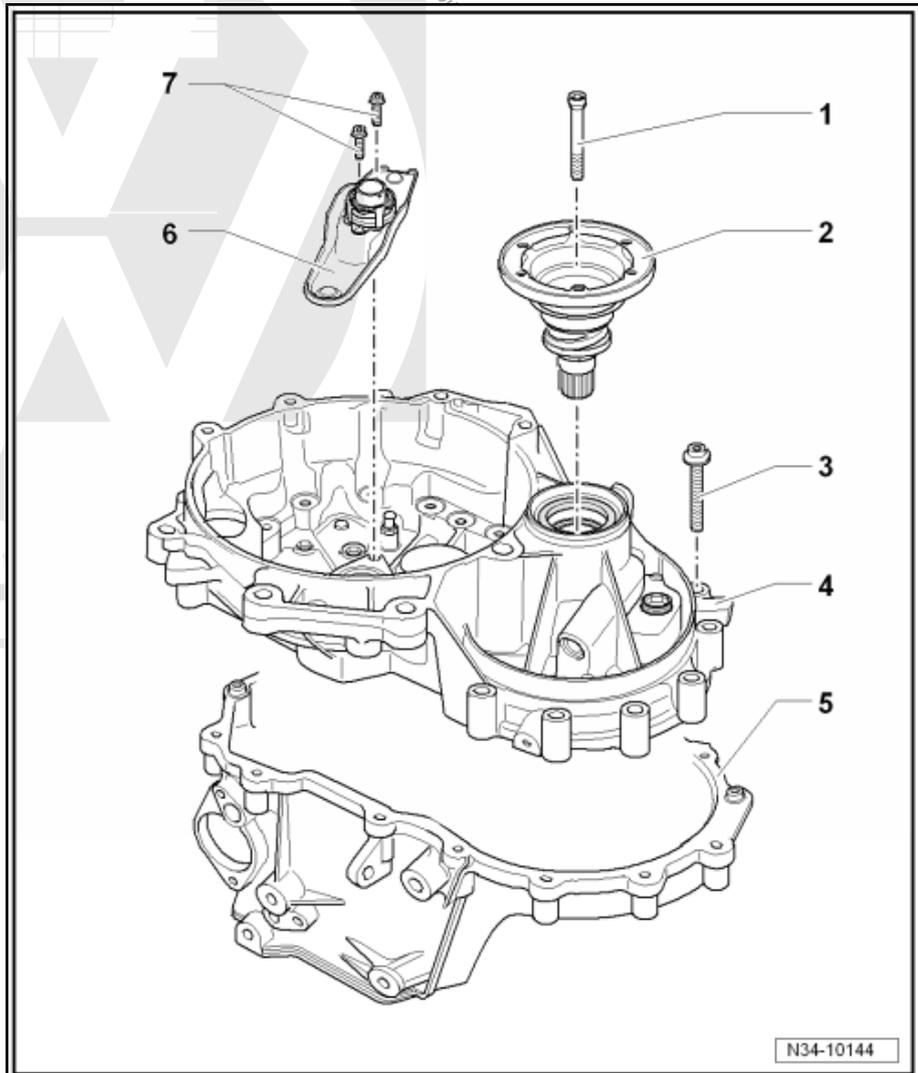
- Repairing ⇒ [page 107](#)

6 - Clutch release lever

- With guide sleeve and
release bearing
- Removing and installing
⇒ [page 43](#)

7 - Bolt

- Removing and installing
⇒ [Item 2 \(page 42\)](#)





5.5 Removing and installing input shaft, output shaft, differential, selector mechanism and selector forks

1 - Differential

- Dismantling and assembling ⇒ [page 142](#)

2 - Gearbox housing

- Repairing ⇒ [page 107](#)

3 - Oil drain plug, torque setting ⇒ [page 87](#)

4 - Flange shaft with compression spring

- Removing and installing ⇒ [page 94](#)
- Assembling, from ⇒ [page 142](#)

5 - Countersunk bolt, 25 Nm

6 - Bolt, 5 Nm + turn 90° further

- Self-locking
- Always renew
- To secure bearing mounting with deep groove ball bearing for input and output shafts ⇒ [Item 16 \(page 93\)](#).

7 - Hexagon flange nut, 23 Nm

- For selector mechanism ⇒ [Item 15 \(page 93\)](#).
- Self-locking
- Always renew

8 - O-ring

- Always renew

9 - Pivot pin

10 - Bolt, 5 Nm + turn 90° further

- Always renew

11 - Selector shaft with selector shaft cover

- (Selector unit)
- Repairing ⇒ [page 113](#)

12 - Bolt, 5 Nm + turn 90° further

- Always renew

13 - Reversing light switch -F4- , 20 Nm

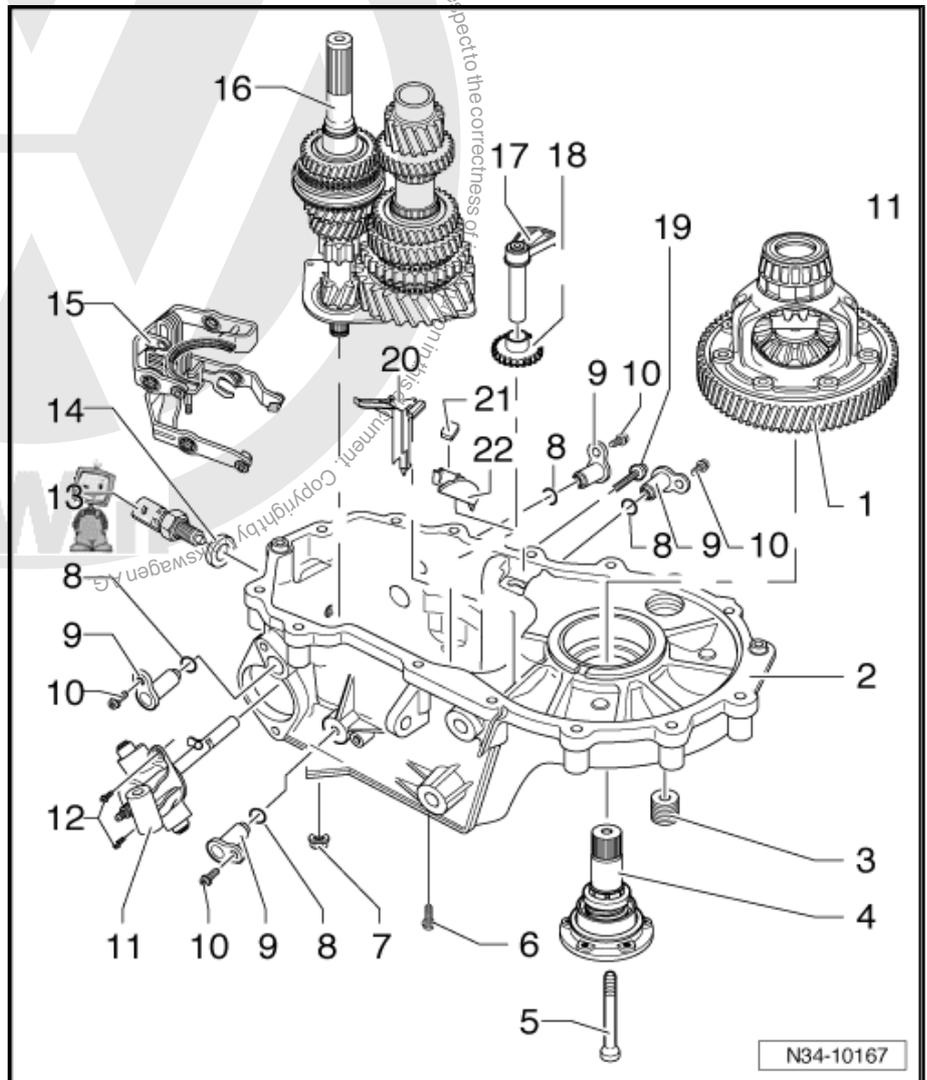
- Changed to captive seal shortly after introduction of gearbox.

14 - Seal

- Not fitted in all gearboxes.

15 - Selector mechanism

- (Selector forks)
- Repairing ⇒ [page 116](#)





16 - Input shaft and output shaft with bearing mounting and deep groove ball bearing

- If bearing mounting is separated from gearbox housing, then mounting must always be renewed.
- Pressing bearing support off and on: Dismantling and assembling input shaft ⇒ [Item 14 \(page 125\)](#)
- Dismantling and assembling input shaft ⇒ [page 121](#)
- Dismantling and assembling output shaft ⇒ [page 131](#)

17 - Reverse gear shaft

18 - Reverse gear

19 - Bolt, 25 Nm + turn 45° further

- Always renew
- For securing shaft for reverse gear

20 - Oil collector

21 - Magnet

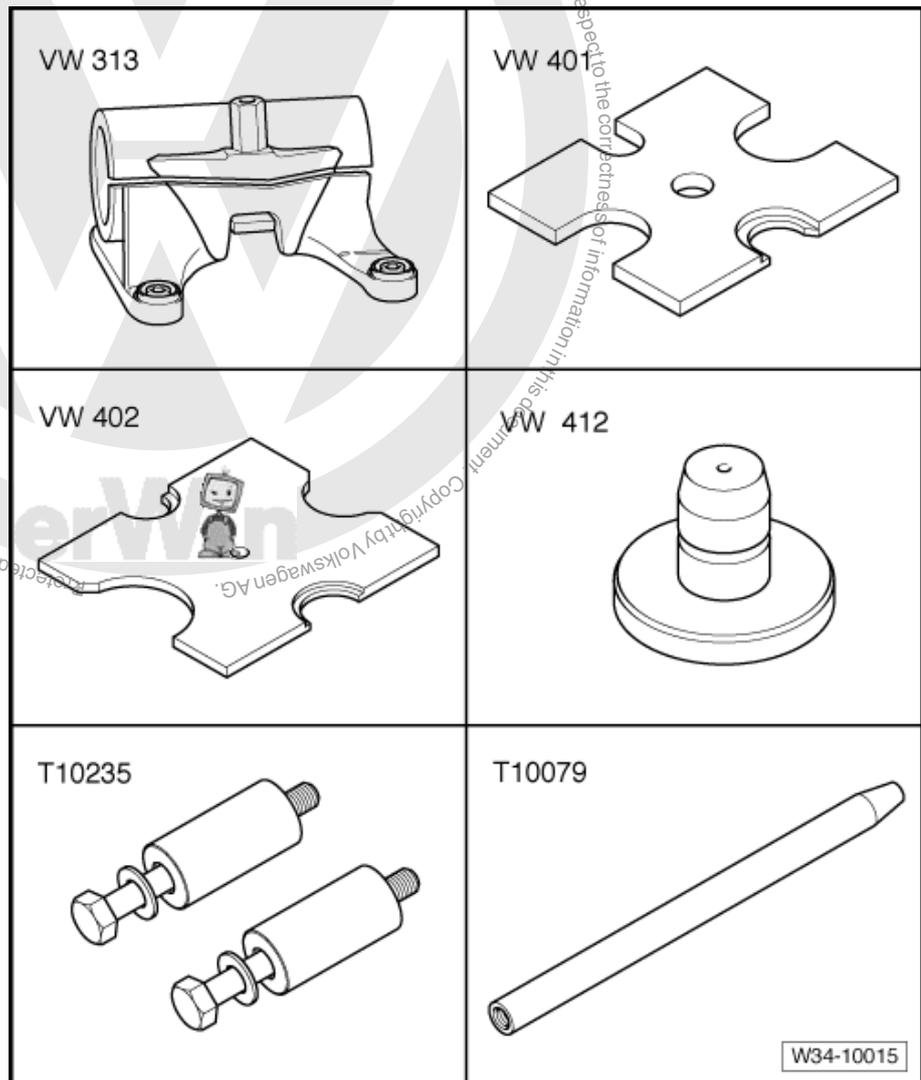
22 - Oil guide

5.6 Dismantling and assembling procedure

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

Special tools and workshop equipment required

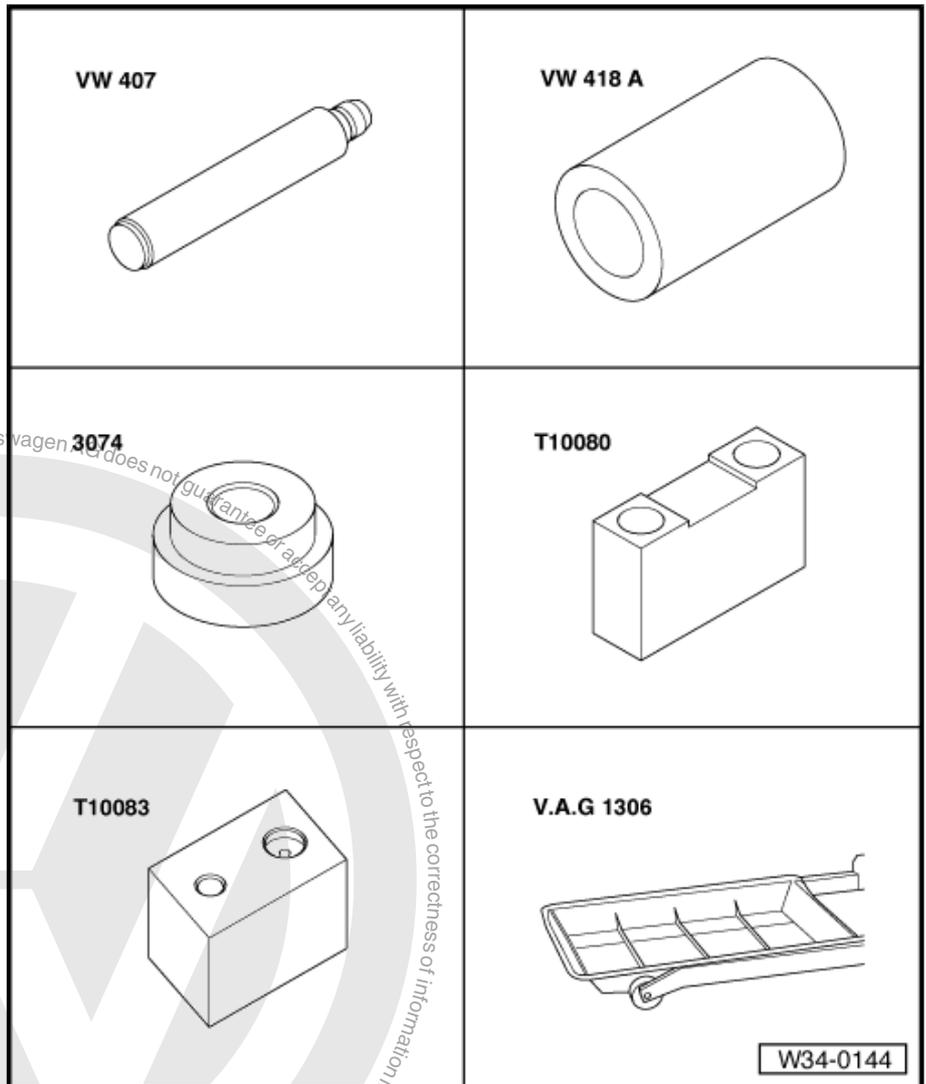
- ◆ Support clamp -VW 313-
- ◆ Thrust plate -VW 401-
- ◆ Thrust plate -VW 402-
- ◆ Press tool -VW 412-





◆ Adapter -T10235-

- ◆ Press tool -VW 407-
- ◆ Tube -VW 418 A-
- ◆ Thrust piece -T10080-
- ◆ Thrust piece -T10083-
- ◆ Drip tray -V.A.G 1306-

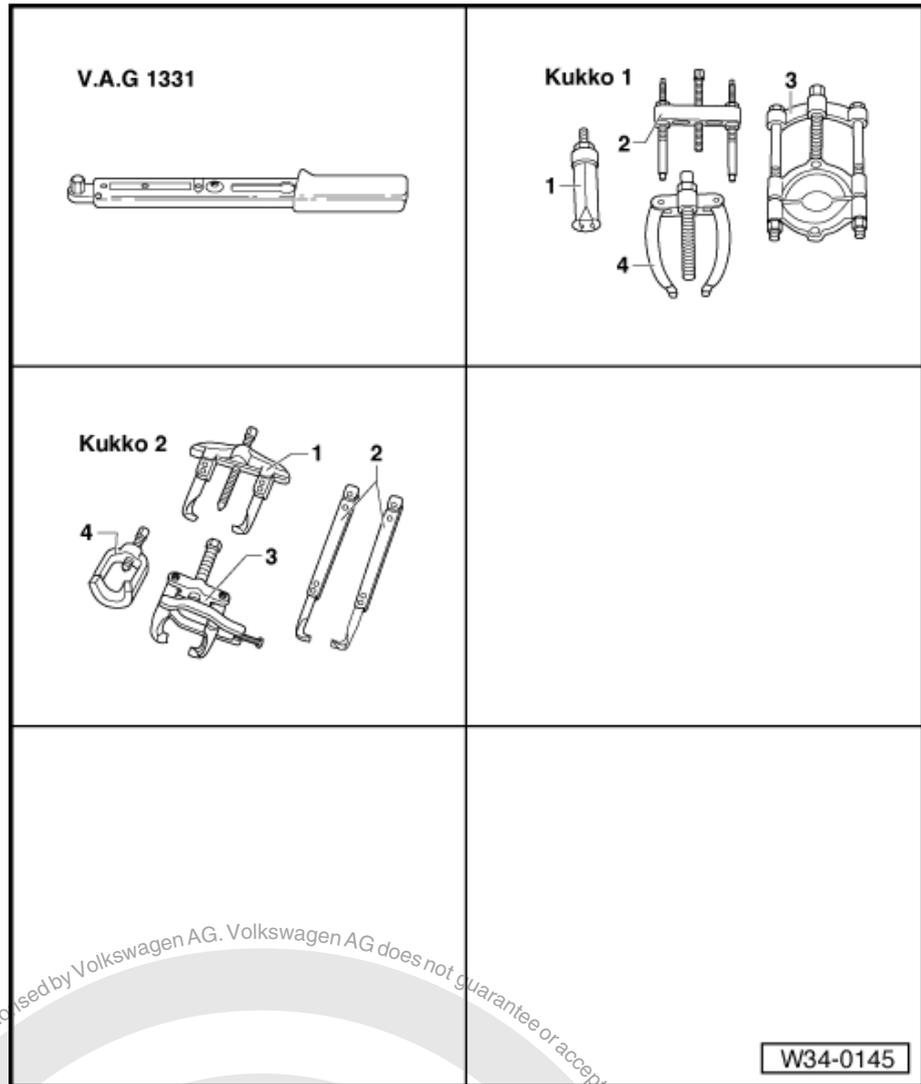


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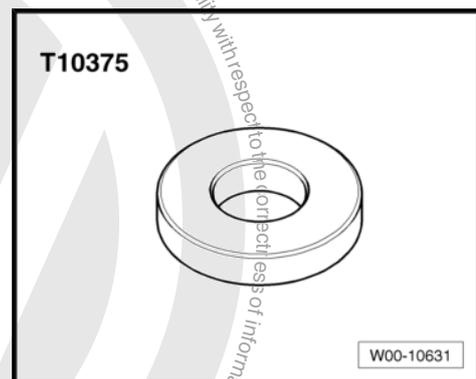




- ◆ Torque wrench -V.A.G 1331-
- ◆ -1- Two arm puller -Kukko 20/10-
- ◆ -2- Puller -Kukko 18/1-
- ◆ -3- Splitter -Kukko 17/1-
- ◆ Sealant -AMV 188 200 03-
- ◆ Hexagon socket head bolt - M8 x 15-

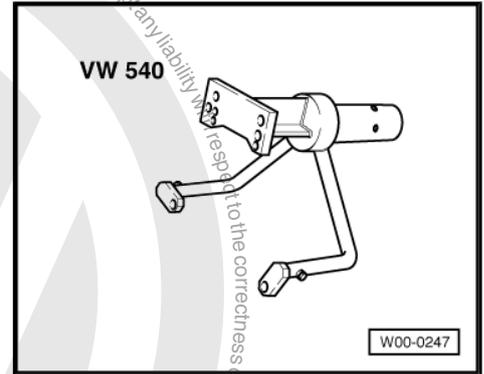


- ◆ Thrust pad -T10375-





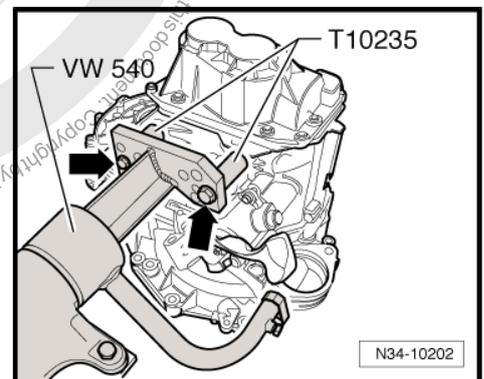
◆ Engine and gearbox support -VW 540-



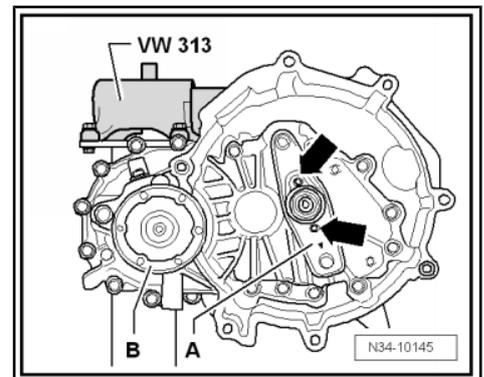
◆ Sealant -AMV 188 200 03-

5.6.1 Removing

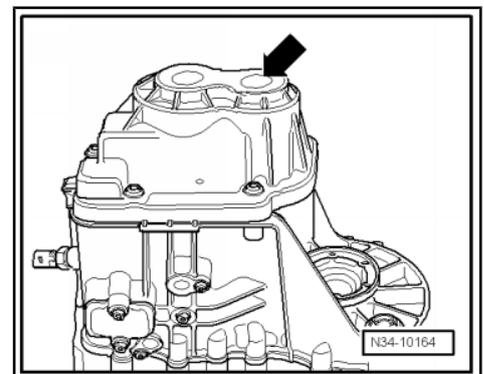
- Secure gearbox to repair stand Engine and gearbox support - VW 540- -arrows-
- Place drip tray -V.A.G 1306- underneath.
- Drain gear oil.



- Remove clutch release lever -A- together with release bearing and guide sleeve -arrows-.
- Remove right flange shaft securing bolt -B-.
- Screw two bolts into flange and counterhold flange shaft using a lever.
- Remove flange shaft along with spring, thrust washer and tapered ring.

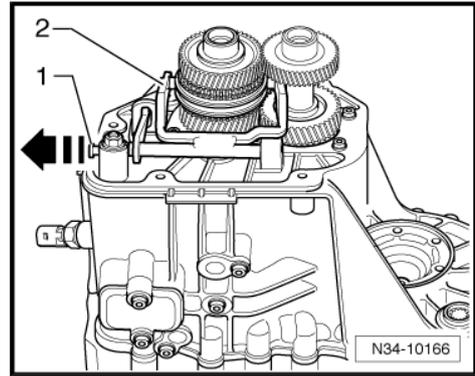


- Unbolt gearbox housing cover -arrow- and carefully pull it off.





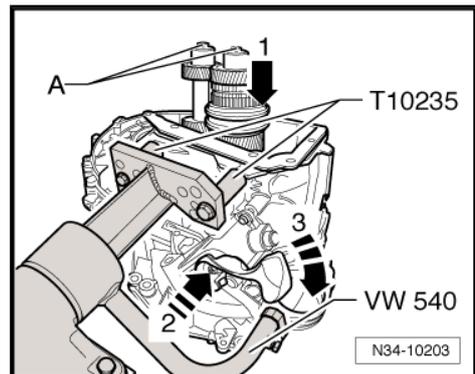
- Pull out pivot pin -1- for 5th and 6th gear selector fork -2- and remove selector fork.



- Remove bolts -A- for inner bearing races from input and output shafts, engaging 5th gear -arrow 1- and 1st gear -arrow 2- and -arrow 3-.
- Input shaft and output shaft are locked when both gears are engaged. Both bolts can now be loosened.

i Note

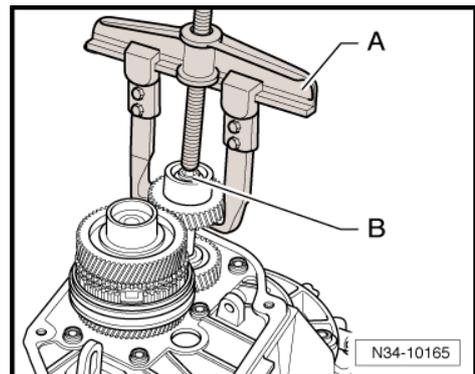
If shafts are not to be renewed, carefully clean residual locking material out of threaded holes using a thread chaser.



- Pull off gear wheel for 6th gear with inner race of cylindrical roller bearing for output shaft.

A - Two arm puller -Kukko 20/10-

B - Hexagon socket head bolt -M8 x 15-



- Tighten splitter -Kukko 17/1- -A- behind constant mesh teeth of synchromeshed gear for 6th gear (not dog teeth) -arrow-.

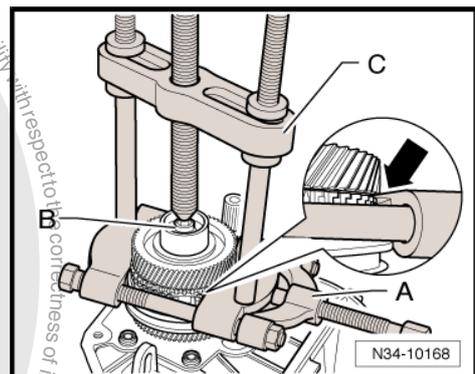
A - Splitter -Kukko 17/1-

B - Hexagon socket head bolt -M8 x 15-

C - Puller -Kukko 18/1-

- Pull off gear wheel for 6th gear with inner race of cylindrical roller bearing for input shaft and thrust washer.

- Remove locking collar for 5th and 6th gears with locking pieces.





- Tighten splitter -Kukko 17/1- -A- below synchro-ring for 5th gear -1-. This presses synchro-ring against synchro-hub -2-.

A - Splitter -Kukko 17/1-

B - Hexagon socket head bolt -M8 x 15-

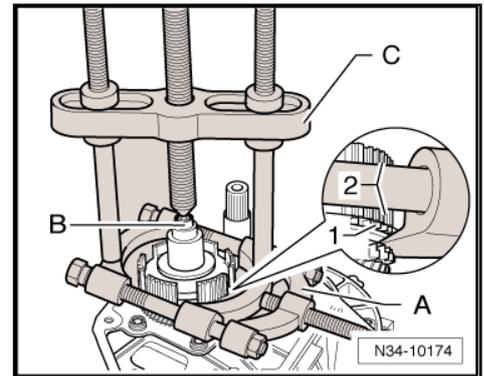
C - Puller -Kukko 18/1-

- Pull off synchro-hub for 5th and 6th gears with inner race for 6th gear needle bearing and 5th gear synchro-ring.



Note

The synchro-ring for 5th gear must always be renewed after it is pulled off.



- Remove flange shaft securing bolt by screwing two bolts into flange and counterholding flange shaft with a lever.

- Pull out flange shaft -1- with spring.

- Remove sleeve -2- and 5th gear synchro meshed gear with needle bearing -4-.

- Unscrew hexagon flange nut -5- for securing reverse gear selector mechanism.

- Remove bearing mounting securing bolts -6- from input and output shafts.

The gear wheel for 5th gear -3- will be pressed off later when the bearing support for the deep groove ball bearing => [page 126](#) .

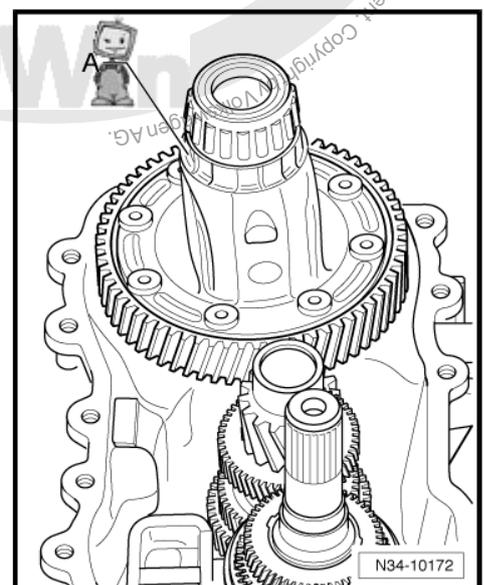
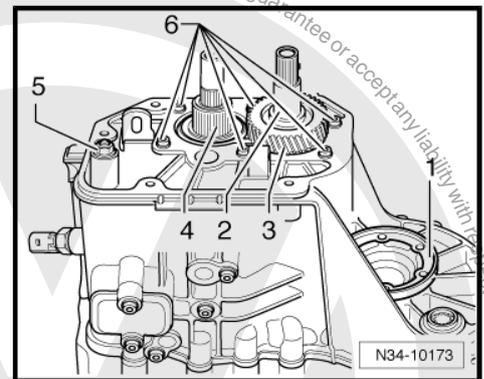
- Turn gearbox in support bracket so that clutch housing is upwards.

- Remove securing bolts from clutch housing side for securing clutch housing to gearbox housing.

- Remove clutch housing, if necessary carefully levering up all around along protruding housing flange and alternating between sides, being careful not to damage sealing surfaces.

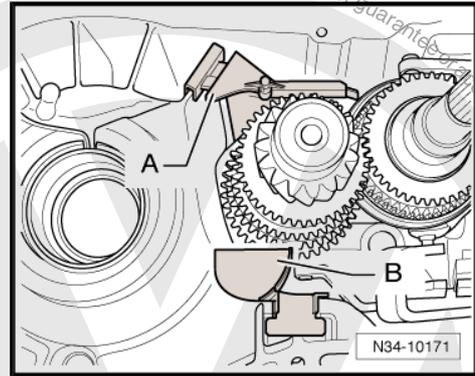
- Do not cant the clutch housing. This prevents damage to roller bearings and their bearing seats on the input and output shafts.

- Remove differential -A- from gearbox housing.

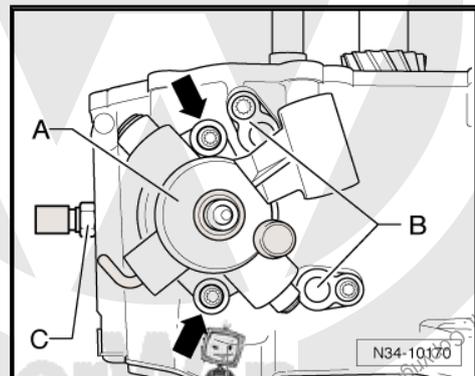




- Then remove oil collector -A- and oil guide -B- with magnet from gearbox housing.



- Remove selector shaft with selector cover -A-. Place selector shaft in neutral. Then remove bolts -arrows- and pull selector shaft out of gearbox housing.
- Remove pivot pins -B- located on underside of gearbox.
- Screw out reversing light switch -F4- -C-.

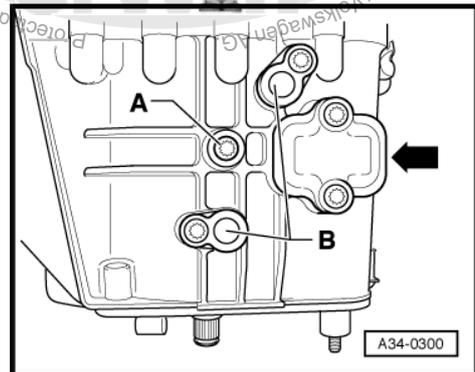


- Remove bolt -A- for securing reverse gear wheel shaft.
- Remove pivot pins -B- located on bottom of gearbox.



Note

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

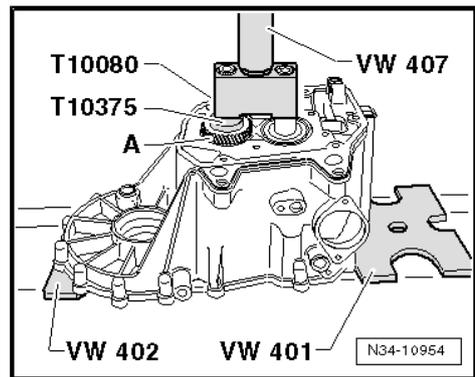


- Press out input shaft, output shaft with gear wheel for 5th gear -A-, bearing mounting, selector mechanism (selector forks) and reverse gear together.



Note

- ◆ Position gearbox housing so that dowel sleeves in the gearbox will not be damaged.
- ◆ When pressing out, get help from second mechanic to ensure components do not fall out.
- Press input and output shafts with deep groove ball bearing and, as appropriate, gear wheel for 5th gear off bearing mounting => [Item 14 \(page 125\)](#) .





5.6.2 Installing



Note

- ◆ If bearing mounting with deep groove ball bearing was removed, press onto input shaft and output shaft ⇒ [page 129](#) .
- ◆ If needle roller bearing sleeve for synchromeshed gear for 5th gear was removed, press onto input shaft ⇒ [page 129](#) .

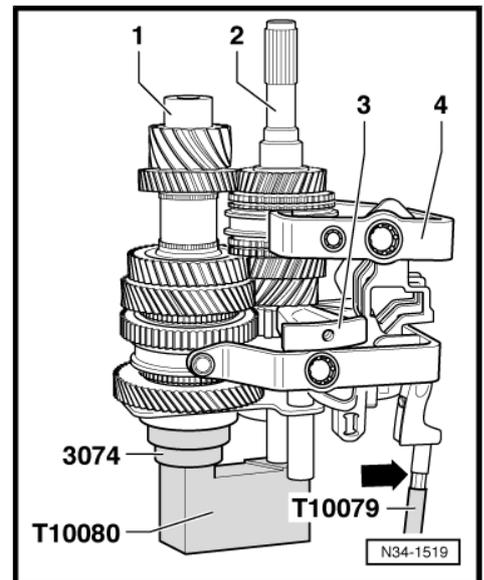
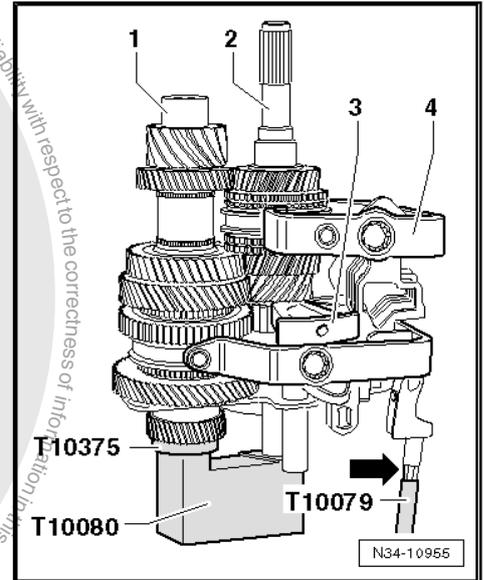
If gear wheel for 5th gear was not pressed off:

- Position assembled components, input shaft -2- and output shaft -1- with bearing mounting for deep groove ball bearing, in thrust piece -T10080- .
- Insert selector mechanism (selector forks) -4- in the shaft locking collars.
- Install reverse gear shaft -3- with reverse gear.
- Screw guide pin -T10079- onto stud (secures reverse gear) -arrow-.

If gear wheel for 5th gear was pressed off:

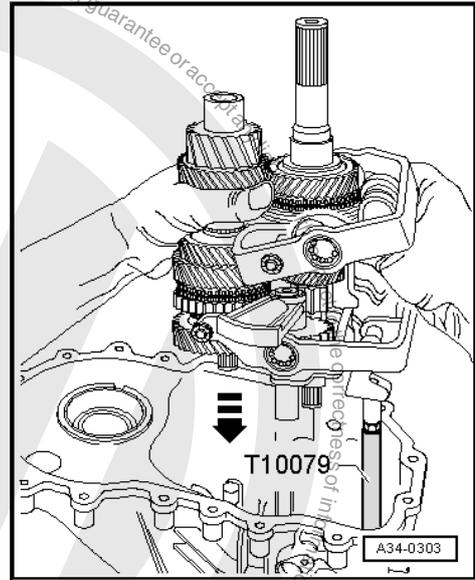
- Position assembled components, input shaft -2- and output shaft -1- with bearing mounting for deep groove ball bearing, in thrust piece -T10080- .
- Insert selector mechanism (selector forks) -4- in the shaft locking collars.
- Install reverse gear shaft -3- with reverse gear.
- Screw guide pin -T10079- onto stud (secures reverse gear) -arrow-.

Continuation for all

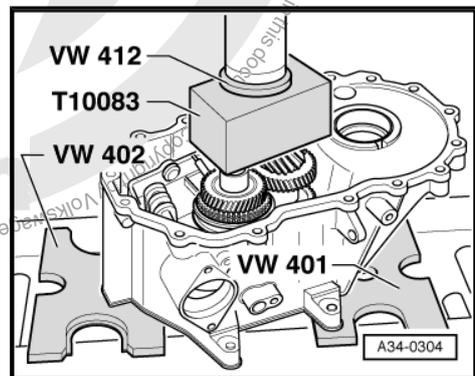




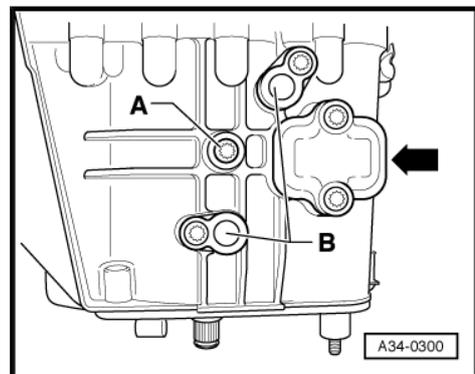
- Insert components together into gearbox while guiding guide pin -T10079- through hole to secure selector mechanism in gearbox housing.
- Remove guide pin -T10079-.
- Before pressing in bearing mounting, check selector forks are engaged correctly in locking collar.



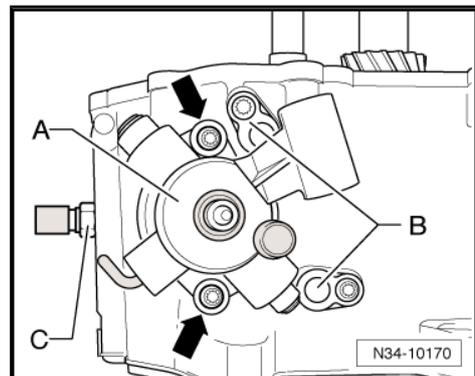
- Carefully press in bearing mounting together with input shaft and output shaft to stop.



- Install bolt -A- for securing reverse gear wheel shaft.
- Install pivot pin -B- in bottom of gearbox.



- Screw in reversing light switch -F4- -C-.
- Install pivot pin -B- in top of gearbox.
- Place selector plates in neutral.
- Apply sealant -AMV 188 200 03- evenly to sealing surface of selector mechanism cover.
- Install selector shaft with selector cover -A-. Then tighten bolts -arrows-.





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

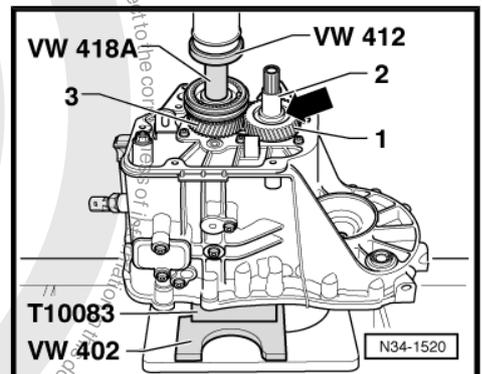
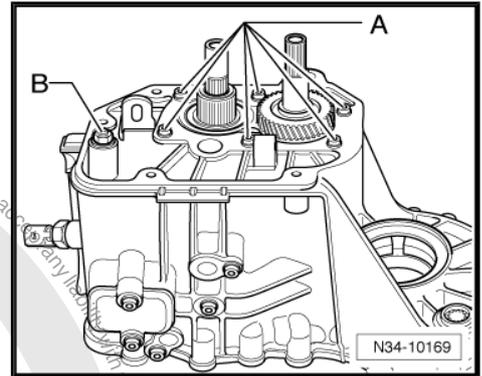
i Note

Tighten bolts to specified torque, working from centre outwards using alternate sequence.

- Tighten hexagon flange nut -B- for securing selector mechanism (selector forks).
- Insert input and output shafts together with gearbox housing into thrust block -T10083- .

Fitting position for pressing on gear wheel for 5th gear and 5th gear synchro-hub and locking collar:

The high shoulder -arrow- faces gearbox housing cover.

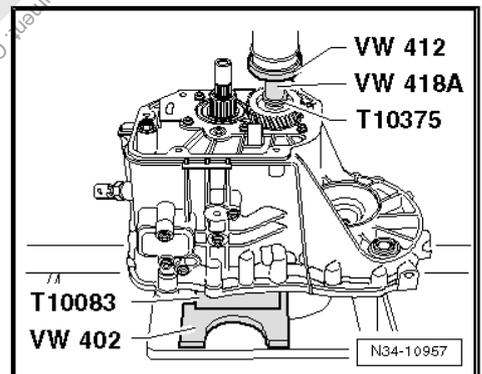


If gear wheel for 5th gear was pressed off:

- Press on gear wheel for 5th gear.
- Set sleeve on gear wheel for 5th gear => [page 103](#) item -2-.

Continuation for all

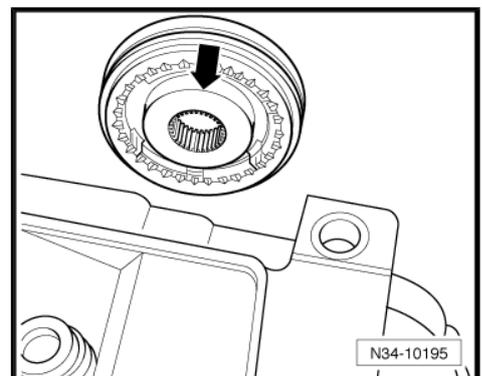
- Set 5th gear synchromeshed gear with needle bearing in place => [page 103](#) item -3-.
- Place 5th gear synchro-ring on synchromeshed gear.



Installation position, synchro-hub and locking collar for 5th and 6th gears

The high shoulder -arrow- faces 5th gear and gearbox housing.

- Press on synchro-hub and locking collar for 5th and 6th gear => [page 103](#) .





- Heat inner race for needle bearing for 6th gear to maximum 100° C and press on.



WARNING

Wear protective gloves!

- Install synchromeshed gear for 6th gear with needle bearing and synchro-ring.

- Set thrust washer -A- in place.



Note

- ◆ Do not interchange inner races of cylindrical roller bearings of input and output shafts.
- ◆ For some gearboxes, the thrust washer -A- and the inner race for the cylindrical bearing -B- are combined in one component.
- They can be pressed on together only.



WARNING

Wear protective gloves!

- Heat cylindrical roller bearing inner race -B- to maximum 100° C and press onto input shaft.

Installation position of gear wheel for 6th gear:

High collar faces sleeve.

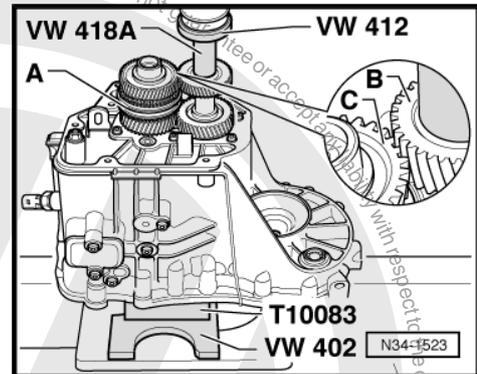
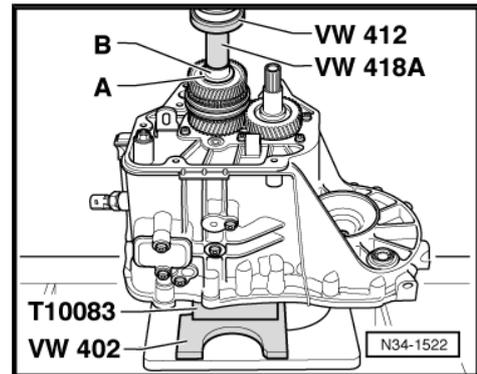
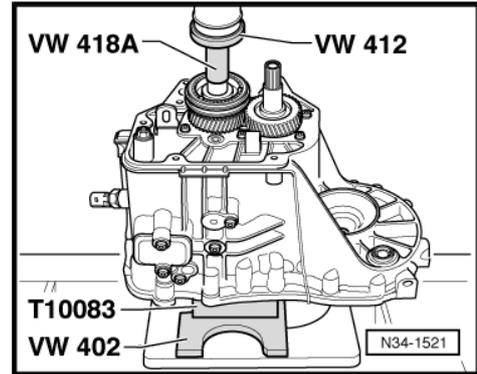
- Shift locking collar -A- for 5th and 6th gear to freewheel position to enable 6th gear synchromeshed gear to turn while gear wheel for 6th gear is being pressed on.



WARNING

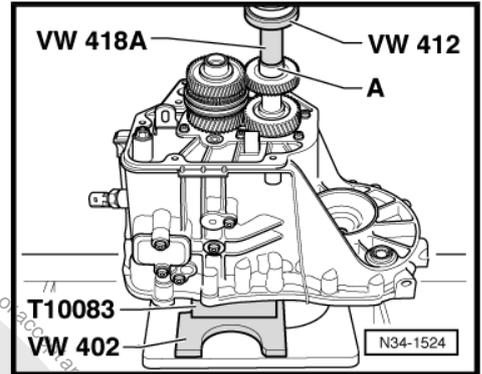
Wear protective gloves!

- Heat gear wheel for 6th gear to maximum 100° C.
- Press on gear wheel for 6th gear, being careful that teeth of gear wheel -B- and synchronised gear for 6th gear -C- mesh.

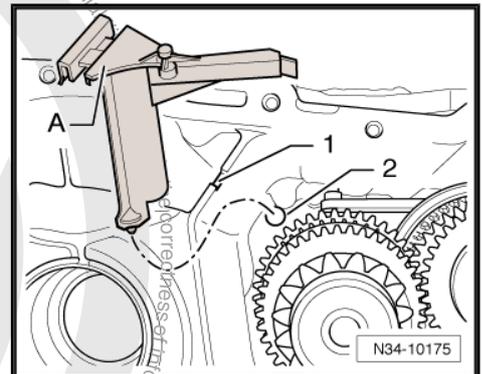




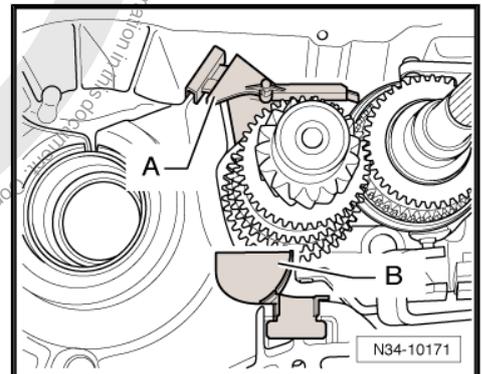
- Heat cylindrical roller bearing inner race -A- to maximum 100° C and press onto output shaft.



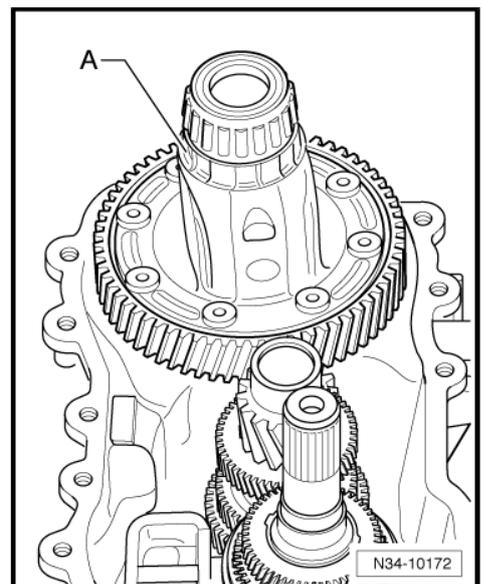
- Then insert oil collector -A- in notch -1- and in hole -2- of gearbox housing.



- Now insert oil guide -B- into gearbox housing.
- The magnet is inserted into the oil guide -B-.

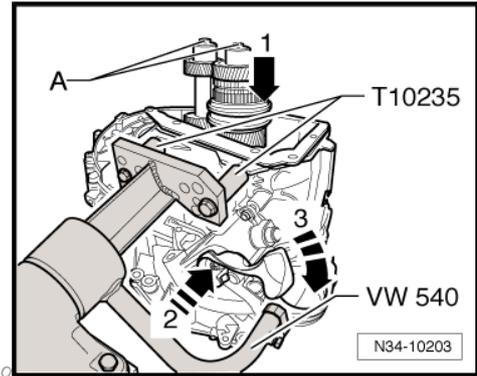


- Install differential -A-.
- Apply sealant -AMV 188 200 03- evenly to sealing surface.
- Secure clutch housing to gearbox housing.
- Turn gearbox in support bracket so that gearbox housing is upwards.

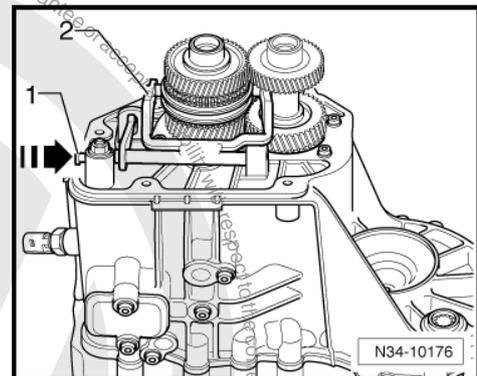




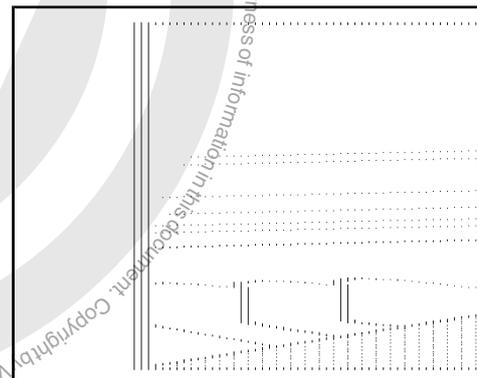
- Before tightening securing bolts -A-, engage 2 gears
-arrow 1- to -arrow 3-.



- Insert selector fork for 5th and 6th gears -2- and push pivot pin -1- in to stop -direction of arrow-.
- Apply sealant -AMV 188 200 03- evenly to sealing surface.
- Tighten 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 43](#) .

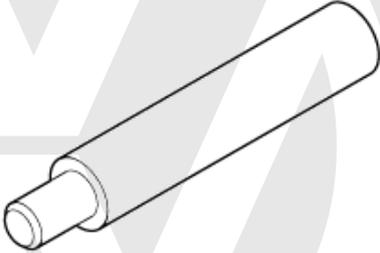
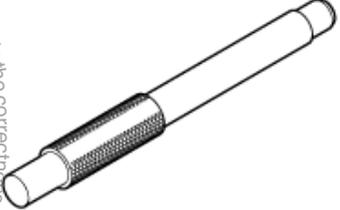
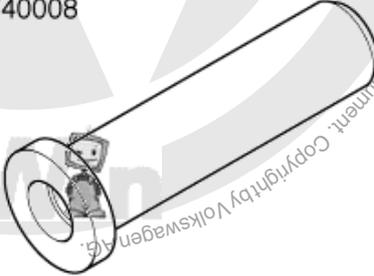




6 Repairing gearbox housing and clutch housing

Special tools and workshop equipment required

- ◆ Centring mandrel -12-551-
- ◆ Drift -2026-
- ◆ Thrust piece -T40008-
- ◆ Torque wrench -V.A.G 1331-
- ◆ Sealant -AMV 188 200 03-

<p>12-551</p> 	<p>2026</p> 
<p>T40008</p> 	<p>V.A.G 1331</p> 
	<p style="text-align: right;">W34-10013</p>



1 - Clutch housing

- If renewed, adjust differential ⇒ [page 148](#)

2 - Input shaft seal

- Lever out with a screwdriver
- Driving in ⇒ [page 109](#)

3 - Ball stud, 20 Nm

- Remove old grease
- Lubricate with clutch plate spline grease - G 000 100-

4 - Oil seal for right flange shaft

5 - Oil filler plug, torque setting ⇒ [page 86](#)

6 - Shim

- For differential
- Determining thickness ⇒ [page 148](#)

7 - Outer race of tapered roller bearing

- For differential
- Pressing out of and into clutch housing ⇒ [page 142](#)
- If renewed, adjust differential ⇒ [page 148](#)

8 - Bolt, 5 Nm + turn 90° further

- Always renew

9 - Outer race of tapered roller bearing

- For differential
- Pulling out of and pressing into clutch housing ⇒ [page 142](#)
- If renewed, adjust differential ⇒ [page 148](#)

10 - Dowel sleeve

- Qty. 2

11 - Gearbox housing

- If renewed, adjust differential ⇒ [page 148](#)

12 - Oil drain plug, torque setting ⇒ [page 86](#)

13 - Oil seal for left flange shaft

14 - Sleeve

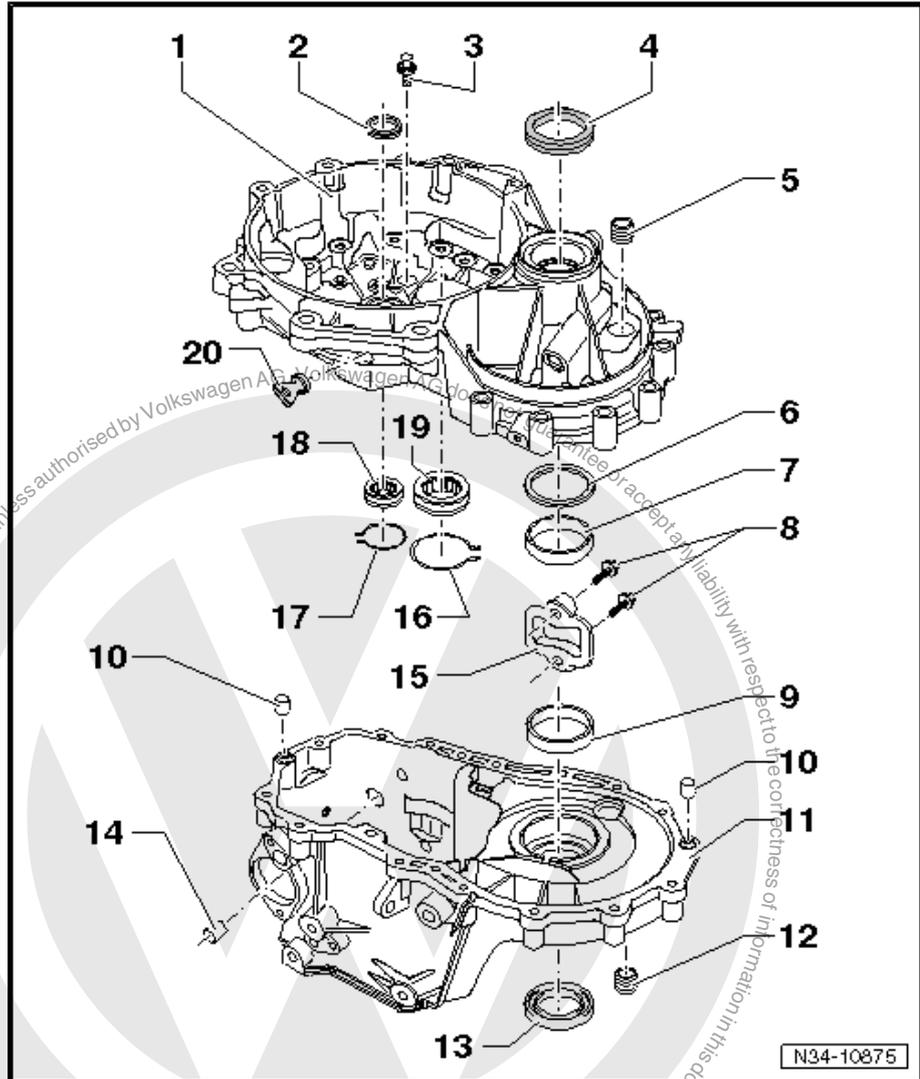
- For selector shaft
- Driving out ⇒ [page 109](#)
- Driving in ⇒ [page 109](#)

15 - Cover plate

- Apply sealant -AMV 188 200 03- before bolting on.

16 - Retaining ring

- Insert in groove of cylindrical roller bearing





17 - Retaining ring

- Insert in groove of cylindrical roller bearing

18 - Cylindrical roller bearing

- For input shaft
- Pulling out and pressing in ⇒ [page 121](#)

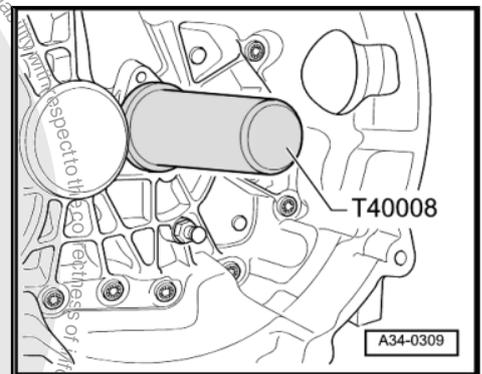
19 - Cylindrical roller bearing

- For output shaft
- Pulling out and pressing in ⇒ [page 131](#)

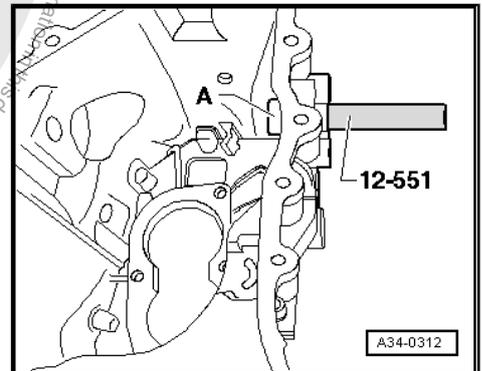
20 - Plug

- Present on some gearboxes
- Insert into hole in clutch housing.

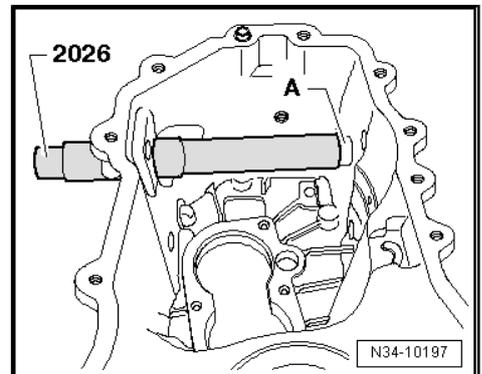
Driving in input shaft oil seal flush



Driving out selector shaft sleeve -A-



Driving in selector shaft sleeve -A- to stop

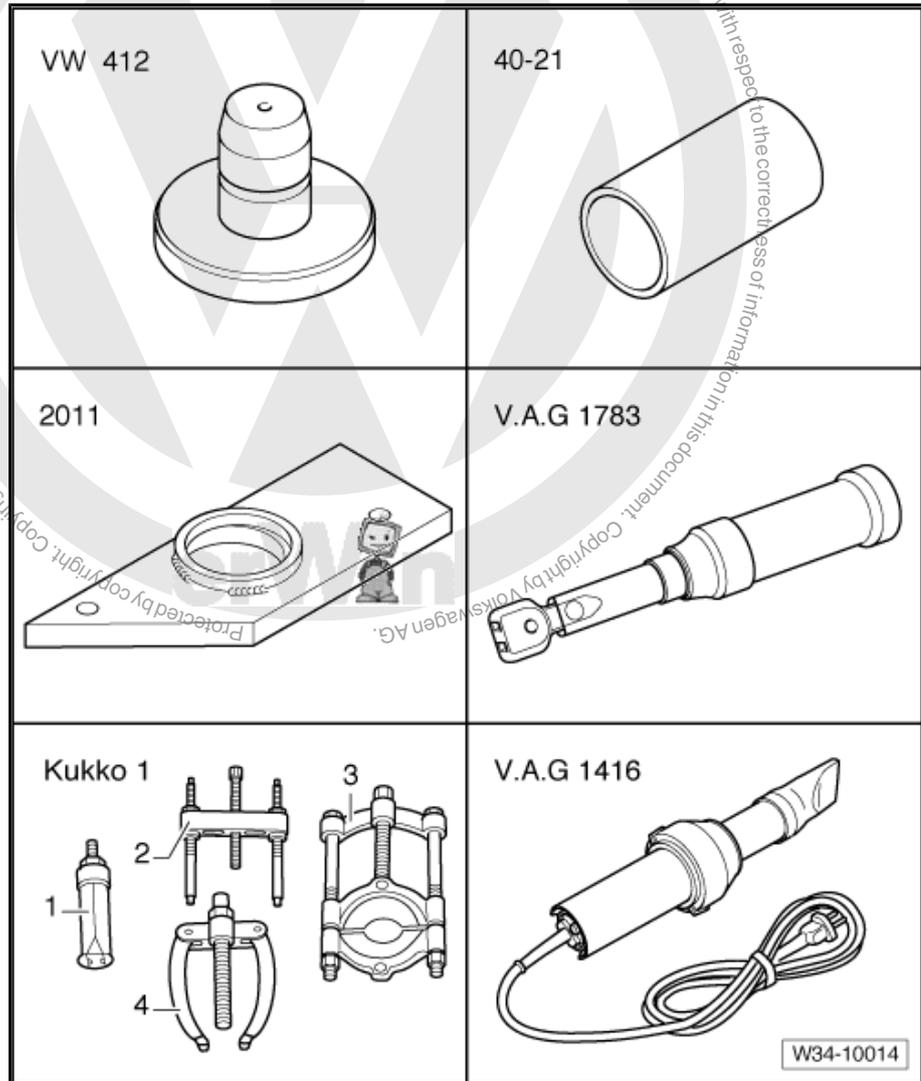




7 Repairing gearbox housing cover

Special tools and workshop equipment required

- ◆ Press tool -VW 412-
- ◆ Drift sleeve -40-21-
- ◆ Support bridge -2011-
- ◆ -1- Internal puller -Kukko 21/5-
- ◆ -4- Counterhold -Kukko 22/2-
- ◆ Hot air blower -V.A.G 1416-





**1 - Countersunk head bolt,
2 Nm**

- Tighten diagonally and alternately

2 - Mounting plate

- For cylindrical roller bearing
- Installation position: countersinks for counter-sunk head bolts face gearbox housing

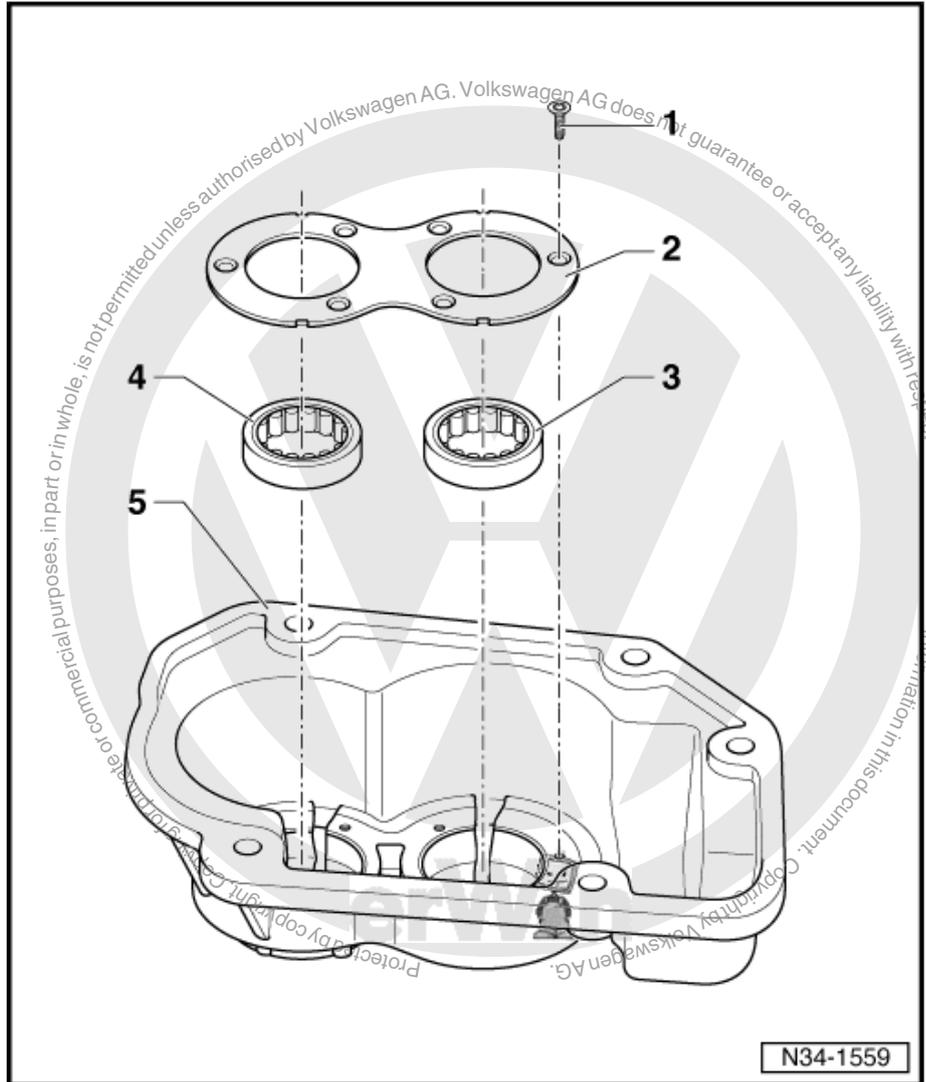
3 - Cylindrical roller bearing

- For input shaft
- Do not interchange with cylindrical roller bearing for output shaft
- Can be renewed individually
- Pulling out ⇒ [page 111](#)
- Pressing in ⇒ [page 112](#)

4 - Cylindrical roller bearing

- For output shaft
- Do not interchange with cylindrical roller bearing for input shaft
- Can be renewed individually
- Pulling out ⇒ [page 111](#)
- Pressing in ⇒ [page 112](#)

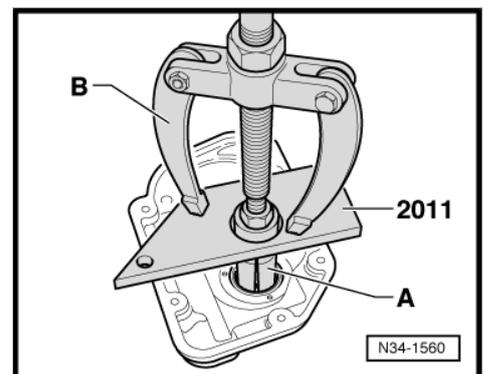
5 - Gearbox housing cover



Pulling cylindrical roller bearing out of gearbox housing cover

A - Internal puller, 28...37 mm , e.g. -Kukko 21/5-

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





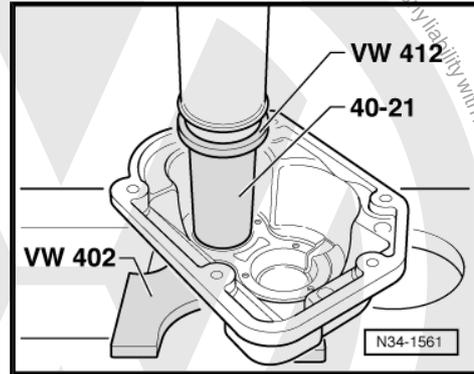
Pressing cylindrical roller bearing into gearbox housing cover

- Heat gearbox housing cover with hot air blower -V.A.G 1416- in vicinity of bearing seat to about 100° C.
- Insert cylindrical roller bearing in heated housing and press in using workshop press until heat exchange has taken place.



Note

Cylindrical roller bearings must be pressed into cover to stop. Do not use mounting plate to press bearings by tightening bolts.

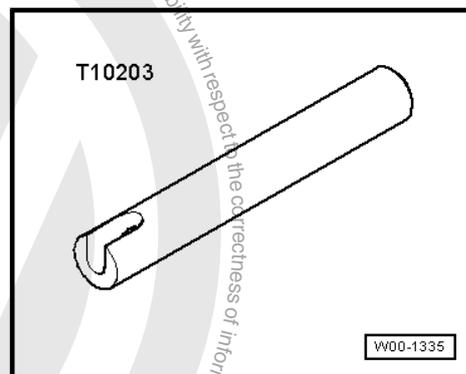




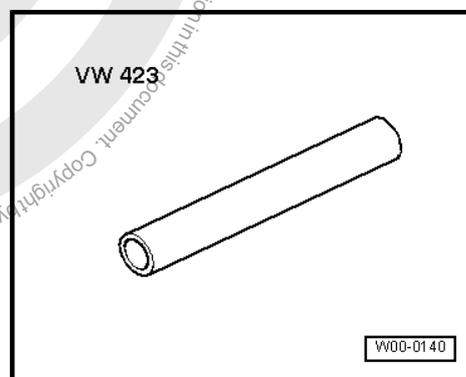
8 Repairing selector unit

Special tools and workshop equipment required

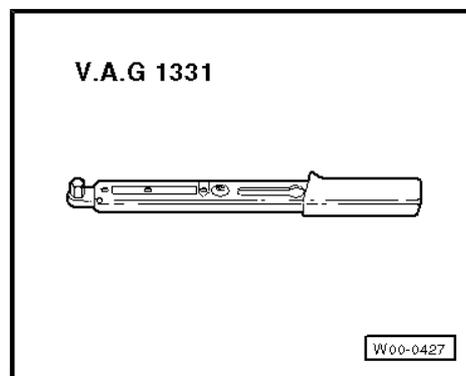
- ◆ Tube -T10203-



- ◆ Tube -VW 423-



- ◆ Torque wrench -V.A.G 1331-





1 - Sleeve

- For selector shaft
- Driving out ⇒ [page 109](#)
- Driving in ⇒ [page 109](#)

2 - Selector shaft with selector shaft cover

- Renew together

3 - Angled rod

- For adjusting selector mechanism
- Removing ⇒ [page 114](#)
- Driving in ⇒ [page 115](#)

4 - Relay lever

- Installation position ⇒ [page 59](#)

5 - Seal

- Lever out with a screwdriver
- Installing ⇒ [page 115](#)

6 - Cap

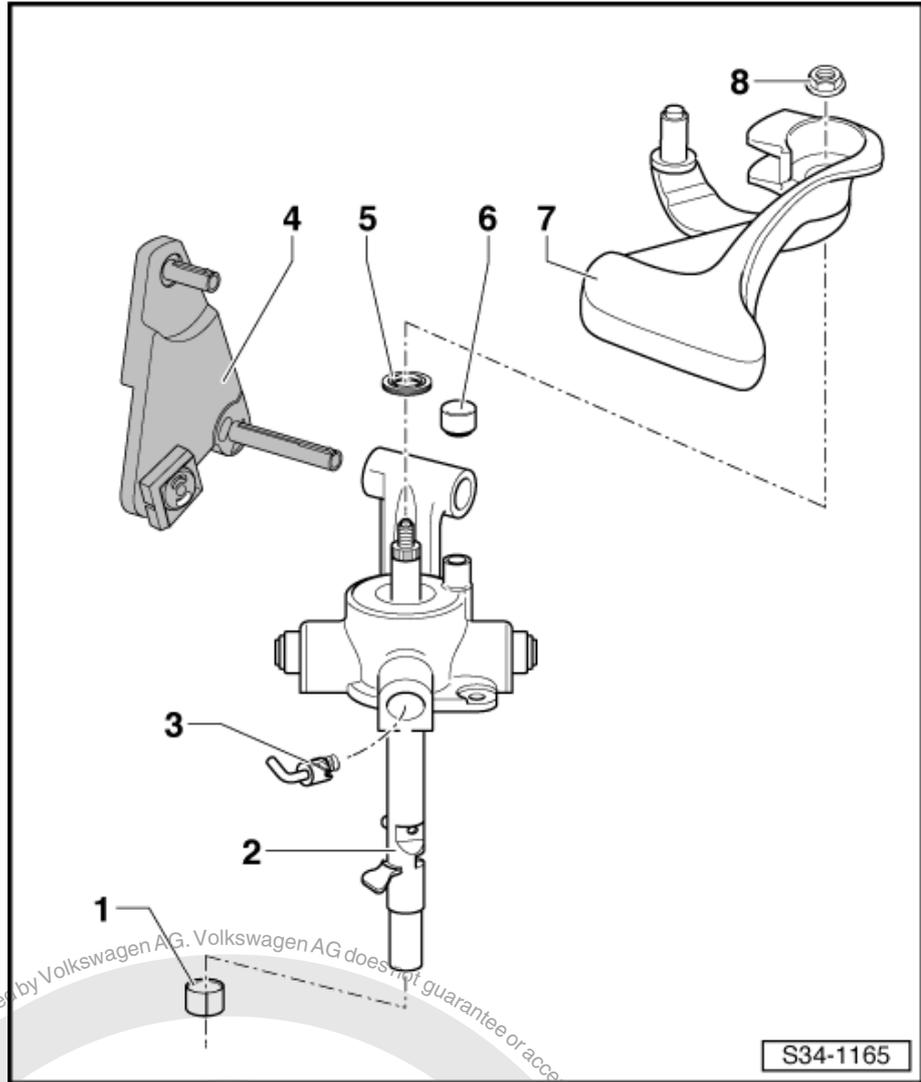
- For gearbox breather

7 - Gearbox selector lever

- Install so that master spline aligns with selector shaft
- Can be renewed with the selector mechanism installed
- Installation position ⇒ [page 59](#)

8 - Hexagon nut, 23 Nm

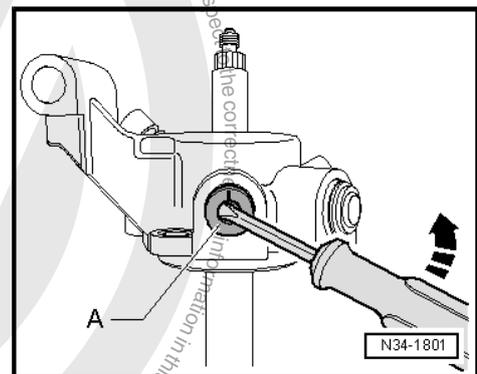
- Self-locking
- Always renew



S34-1165

Removing angled rod -A- from selector shaft cover

- Remove outer part of angled rod.
- Then carefully lever out angled rod using a screwdriver.



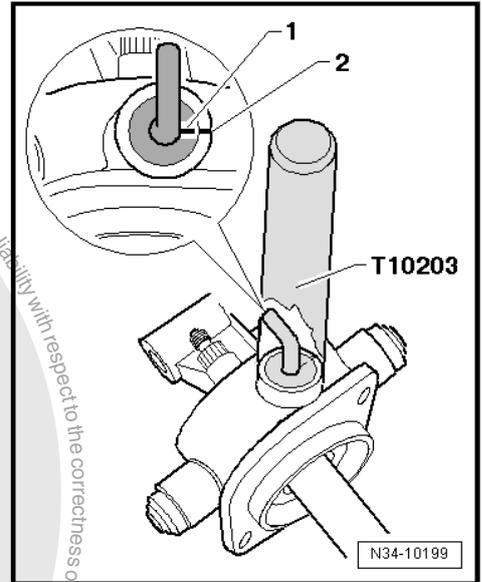
N34-1801



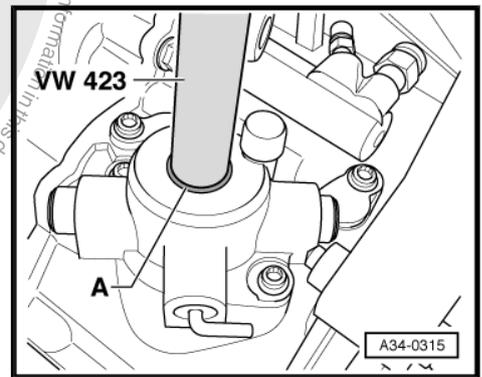
Drive angled rod -A- into selector shaft cover

Installation position:

Marking -1- aligns with marking -2- on selector cover.



Inserting oil seal -A- onto stop

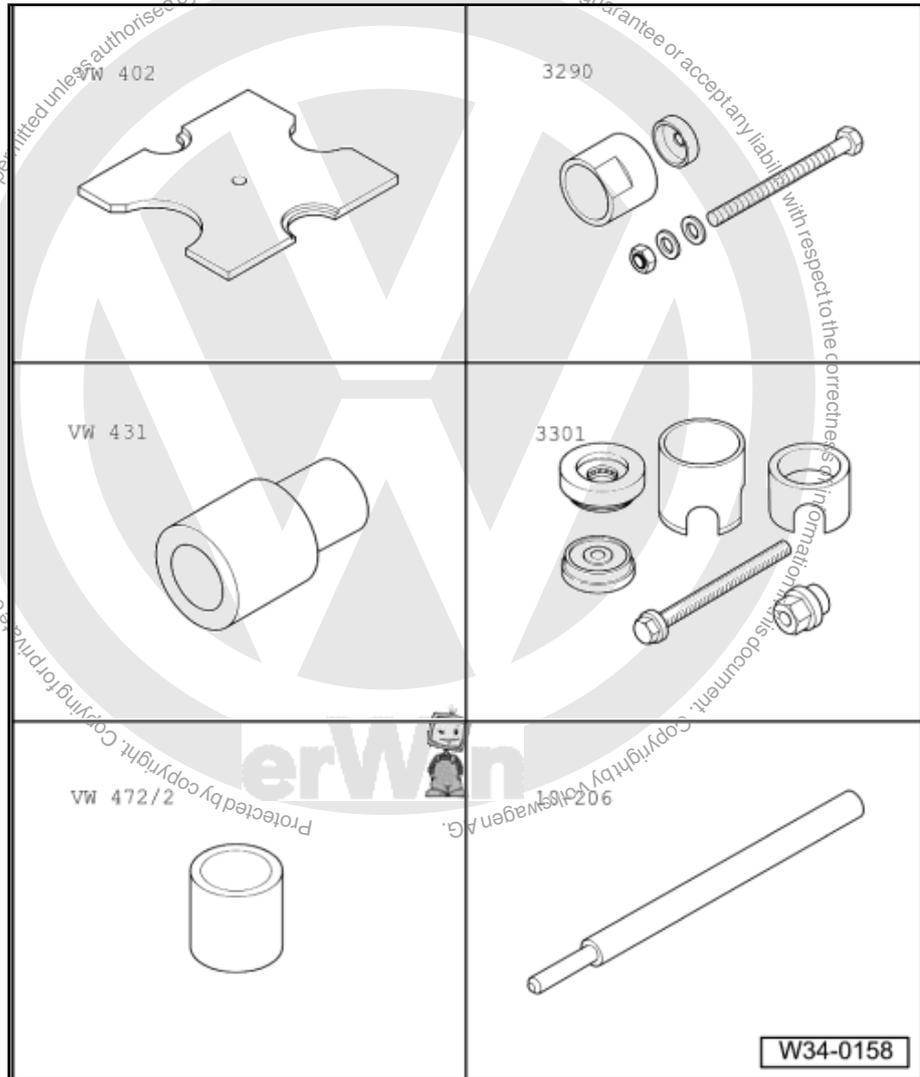




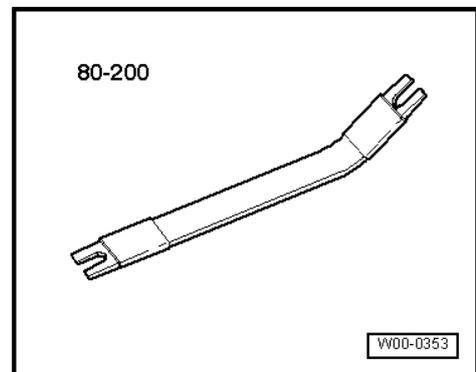
9 Dismantling and assembling selector forks

Special tools and workshop equipment required

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

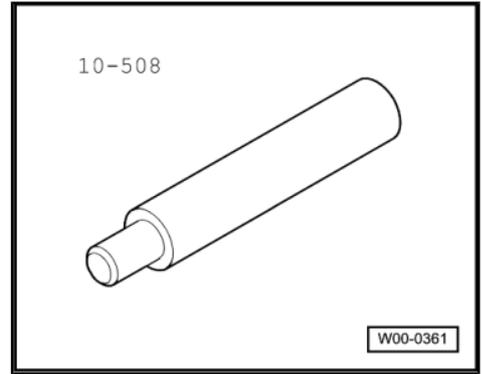


- ◆ Removal lever -80-200-

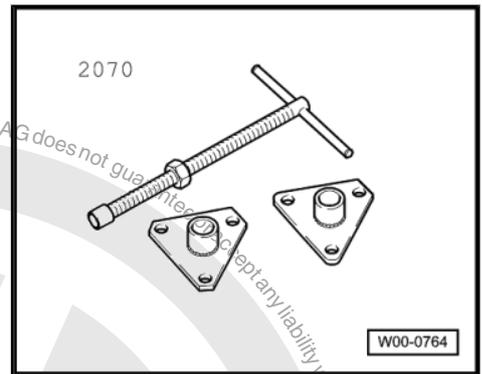




◆ Drift -10-508-



◆ Clamp -2070-



Note

It is not necessary to dismantle the selector fork group => [Item 1 \(page 118\)](#) in order to dismantle and assemble selector segments, lock washers and angular contact ball bearings.



1 - Selector fork group with selector plate

2 - Selector segment for 3rd and 4th gears

- Identification ⇒ [page 119](#)
- After installation, selector segment must still rotate freely

3 - Angular contact ball bearing

- Qty. 4
- Removing ⇒ [page 120](#)
- Press inner race into outer race ⇒ [page 120](#)
- Installing ⇒ [page 120](#)

4 - Lock washer

- Always renew
- Removing ⇒ [page 119](#)
- Installing ⇒ [page 119](#)

5 - Selector segment for 1st and 2nd gears

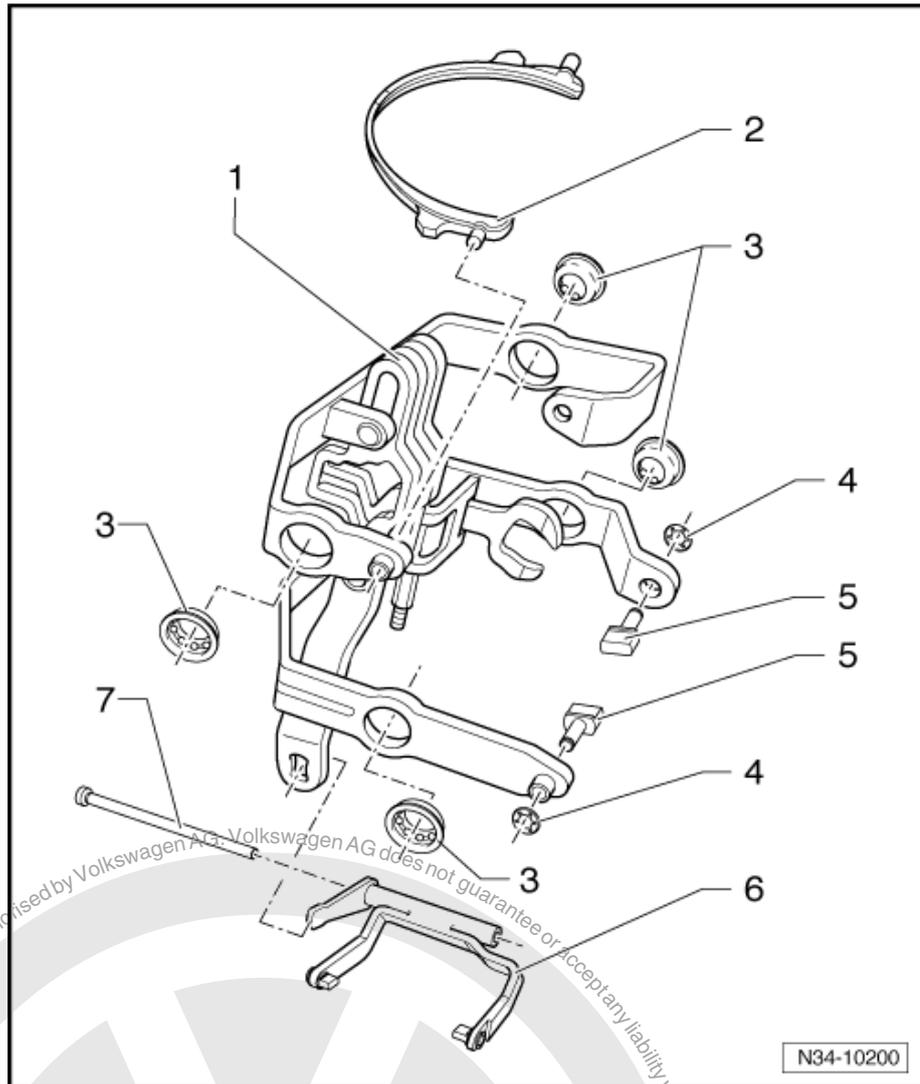
- Identification ⇒ [page 119](#)
- After lock washer is installed, segment must still rotate freely
- Selector fork with selector segment ⇒ [page 119](#)

6 - Selector fork for 5th and 6th gears with selector segments

- Selector segment is permanently connected to selector fork.
- Identification ⇒ [page 119](#)

7 - Pivot pin

- For selector fork for 5th and 6th gears



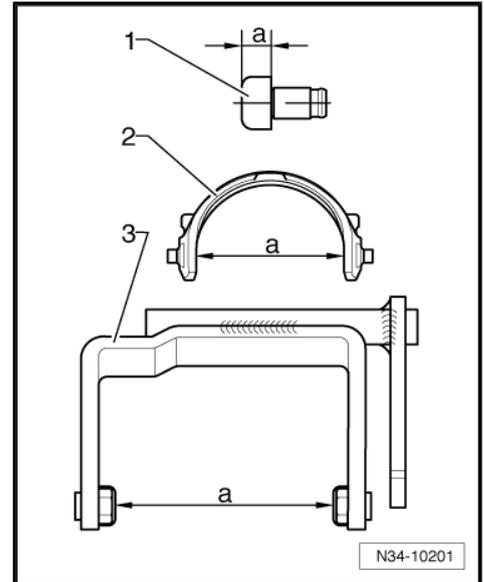
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Identification of selector segments and selector fork for 5th and 6th gear with selector segments

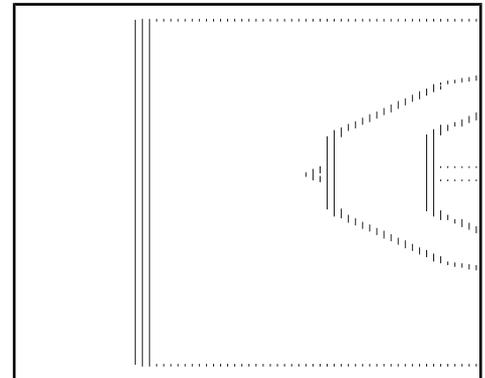
Dimension -a-

- 1 - Selector segment for 1st and 2nd gears = 10.2 mm
- 2 - Selector segment for 3rd and 4th gears = 78.6 mm
- 3 - Selector fork for 5th and 6th gears with selector segments = 79.5 mm



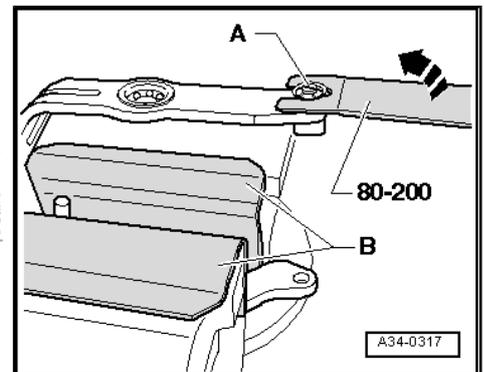
Selector fork for 1st and 2nd gears with selector segments

Dimension -a- = 75 mm



Removing lock washer

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



Installing lock washer

- Press lock washer into groove of selector segment using socket and spinner handle.

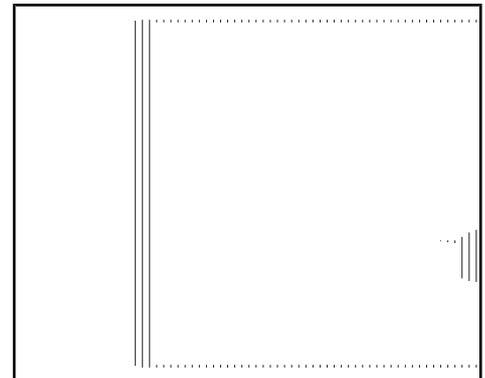


Note

After lock washer is installed, selector segment must still rotate freely.

A - Spinner handle with 10 mm socket

B - Protective jaw covers





Removing angular contact ball bearing



Note

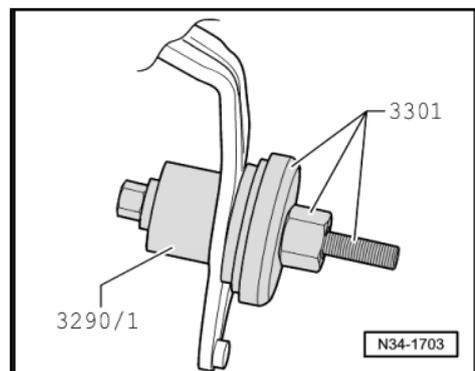
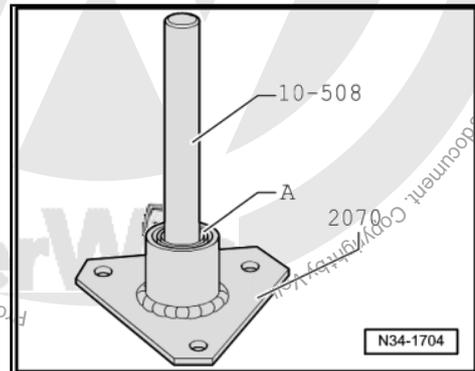
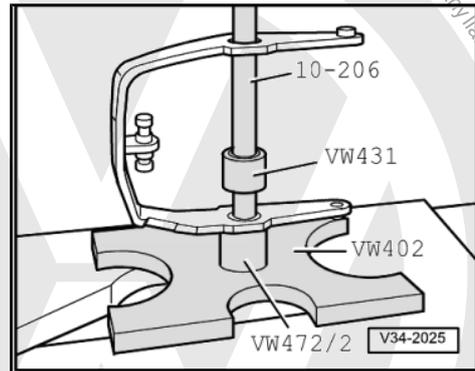
When removing and installing angular contact ball bearing, do not bend selector forks.

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

Inner race must engage in outer race.

Pulling angular contact ball bearing into selector fork to stop

Depression in thrust piece -3290/1- faces ball bearing.





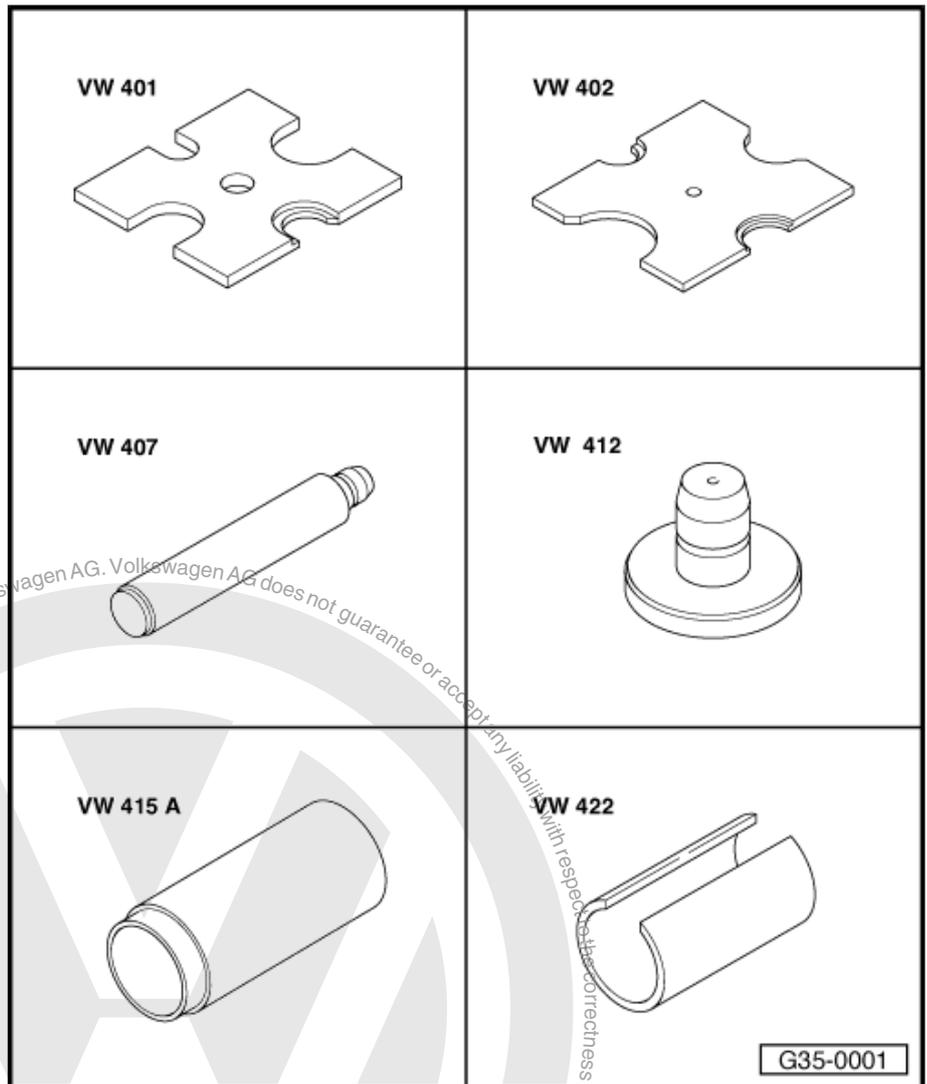
35 – Gears, shafts

1 Input shaft

1.1 Dismantling and assembling input shaft

Special tools and workshop equipment required

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

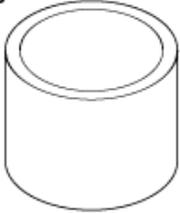
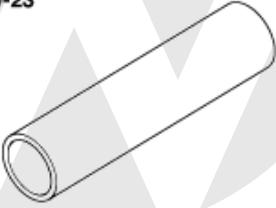
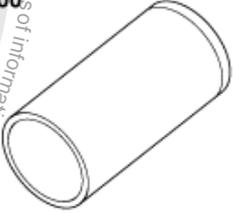
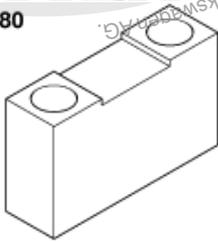
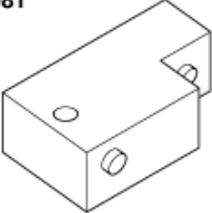


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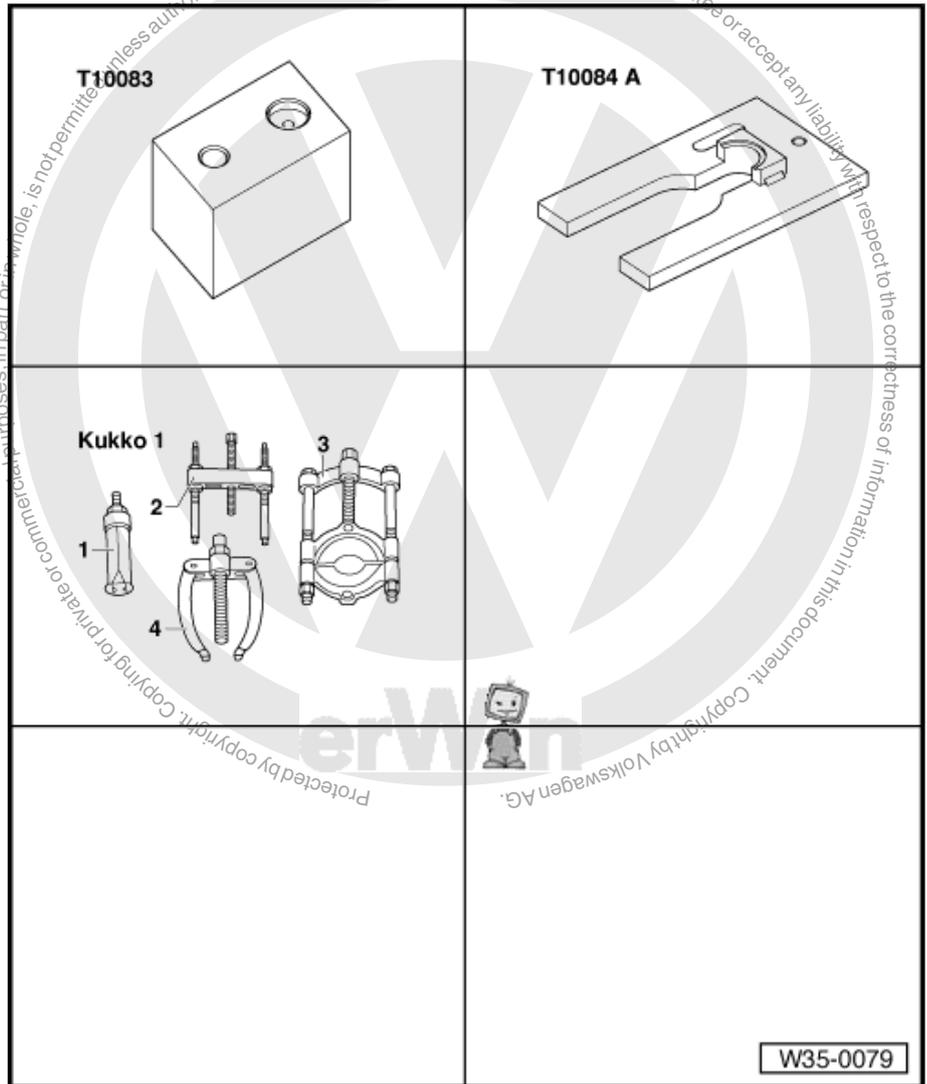


- ◆ Spacer sleeve -VW 472/2-
- ◆ Tube -VW 516-
- ◆ Drift sleeve -30-23-
- ◆ Drift sleeve -30-100-
- ◆ Thrust piece -T10080-
- ◆ Thrust piece -T10081-

<p>VW 472/2</p> 	<p>VW 516</p> 
<p>30-23</p> 	<p>30-100</p> 
<p>T10080</p> 	<p>T10081</p>  <p>W35-0077</p>



- ◆ Thrust piece -T10083-
- ◆ Thrust plate -T10084 A-
- ◆ -1- Internal puller -Kukko 21/5-
- ◆ -4- Counterhold -Kukko 22/2-



i Note

- ◆ *When installing new gear wheels or input shaft, consult technical data and → Electronic parts catalogue "ETKA".*
- ◆ *Install all bearings, synchromeshed gears and synchro-rings on input shaft with gear oil.*
- ◆ *Do not interchange synchro-rings. When reusing always fit to the original gear.*



1 - Bolt

- Removing and installing ⇒ [page 90](#)

2 - Cylindrical roller bearing inner race

- Combined with thrust washer ⇒ [Item 3 \(page 124\)](#) ⇒ [page 90](#)
- Mark before removing
- Do not interchange with inner race for cylindrical roller bearing of output shaft
- Can be renewed individually
- Removing and installing ⇒ [page 94](#)

3 - Thrust washer

- Combined with inner race of cylindrical roller bearing ⇒ [Item 2 \(page 124\)](#) ⇒ [page 90](#)

4 - Synchromeshed gear for 6th gear

5 - Synchro-ring for 6th gear

- Check for wear ⇒ [page 128](#)

6 - Needle bearing

- For 6th gear
- Renew together with ⇒ [Item 11 \(page 124\)](#)
- Two-part ⇒ [page 90](#)

7 - Sleeve

- For 6th gear needle bearing
- Renew together with ⇒ [Item 6 \(page 124\)](#)
- Removing and installing ⇒ [page 94](#)

8 - Locking collar with synchro-hub for 5th and 6th gears

- Removing and installing ⇒ [page 94](#)
- Dismantling ⇒ [page 130](#)
- Assembling locking collar and synchro-hub for 5th and 6th gears ⇒ [page 130](#) and ⇒ [page 130](#)
- Installation position ⇒ [page 130](#)

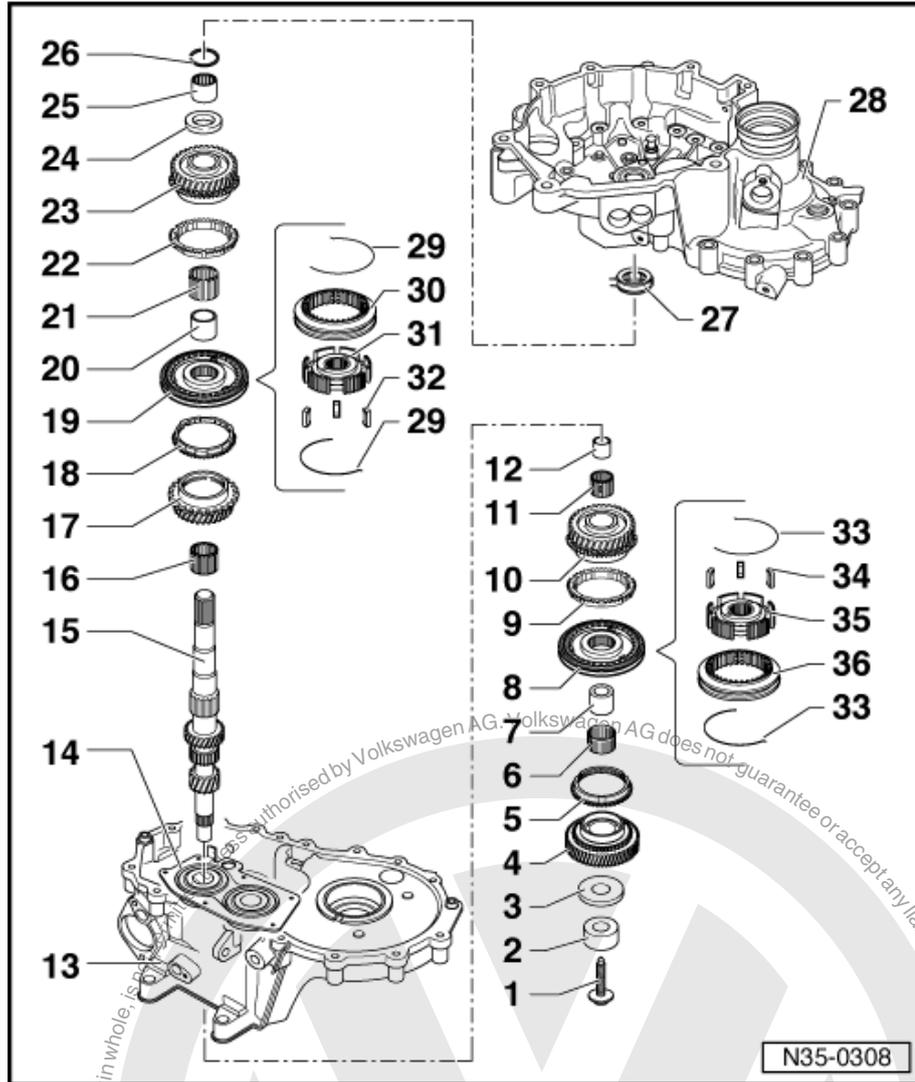
9 - Synchro-ring for 5th gear

- Will be damaged during removal of input shaft
- Always renew
- Check for wear ⇒ [page 128](#)

10 - Synchromeshed gear for 5th gear

11 - Needle bearing

- For 5th gear
- Renew together with ⇒ [Item 12 \(page 124\)](#)



N35-0308



12 - Sleeve

- For 5th gear needle bearing
- Renew together with ⇒ [Item 11 \(page 124\)](#)
- Press off with bearing mounting and deep groove ball bearing ⇒ [Item 14 \(page 125\)](#)
- Pressing on ⇒ [page 129](#)

13 - Gearbox housing

- Repairing ⇒ [page 107](#)

14 - Bearing mounting with deep groove ball bearing

- Renew deep groove ball bearing only together with bearing mounting
- If bearing mounting is separated from gearbox housing, then mounting must always be renewed.
- Gearbox for 1.4 l engine: press off with gear wheel for 5th gear ⇒ [page 126](#)
- Pressing on ⇒ [page 129](#)

15 - Input shaft

- Clean residual locking fluid from threaded hole in input shaft using a thread chaser.

16 - Needle bearing

- For 3rd gear

17 - Synchroneshed gear for 3rd gear

18 - Synchro-ring for 3rd gear

- Check for wear ⇒ [page 128](#)

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

- Press off with synchroneshed gear for 3rd gear ⇒ [page 127](#)
- Dismantling ⇒ [page 127](#)
- Installation position, locking collar and synchro-hub ⇒ [page 127](#)
- Assembling ⇒ [page 127](#)
- Pressing on ⇒ [page 128](#)

20 - Sleeve

- For 4th gear needle bearing
- Renew together with ⇒ [Item 21 \(page 125\)](#)
- Press off with synchroneshed gear for 3rd gear ⇒ [page 127](#)
- Pressing on ⇒ [page 128](#)

21 - Needle bearing

- For 4th gear
- Renew together with ⇒ [Item 20 \(page 125\)](#)

22 - Synchro-ring for 4th gear

- Check for wear ⇒ [page 128](#)

23 - Synchroneshed gear for 4th gear

24 - Thrust washer

25 - Cylindrical roller bearing inner race

- Pressing off ⇒ [page 127](#)
- Pressing on ⇒ [page 128](#)

26 - Retaining ring

- Renew
- Determining thickness ⇒ [page 129](#)

27 - Cylindrical roller bearing

- With retaining ring
- Pulling out ⇒ [page 126](#)



- Pressing in ⇒ [page 126](#)
- Installation position: retaining ring in bearing faces input shaft

28 - Clutch housing

- Repairing ⇒ [page 107](#)

29 - Spring

- Installation position ⇒ [page 127](#)

30 - 3rd and 4th gear locking collar

31 - 3rd and 4th gear synchro-hub

32 - Locking pieces (Qty. 3)

33 - Spring

- Installation position ⇒ [page 130](#)

34 - Locking pieces (Qty. 3)

35 - Synchro-hub for 5th and 6th gears

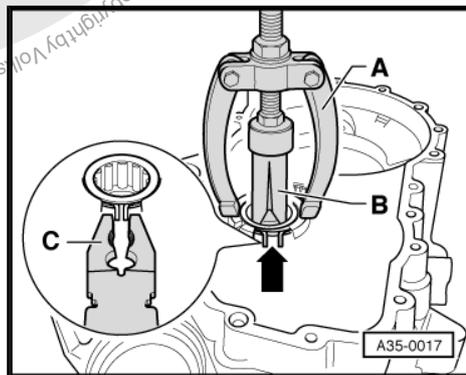
36 - Locking collar for 5th and 6th gears

Pulling cylindrical roller bearing out of clutch housing

- When pulling out, squeeze together retaining ring -arrow- of cylindrical roller bearing, using pliers -C-.

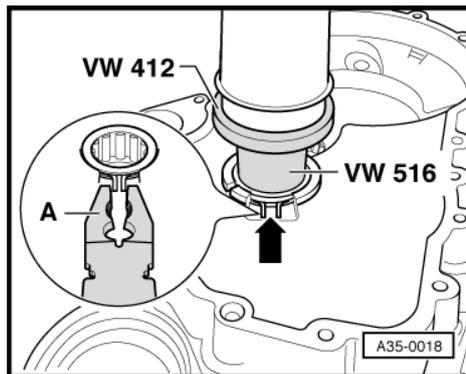
A - Counter support , e.g. -Kukko 22/1-

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



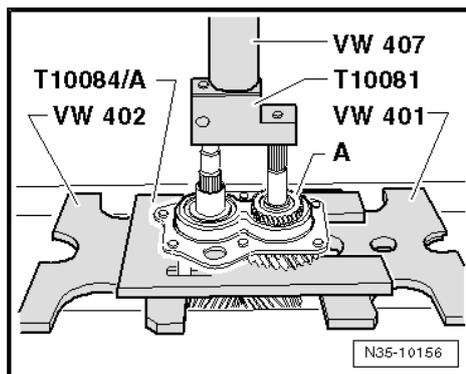
Pressing cylindrical roller bearing into clutch housing

- Support gearbox housing with tube -VW 415 A- (not visible in figure) directly below bearing support.
- When pressing in, squeeze together retaining ring -arrow- for cylindrical roller bearing using pliers -A-.
- Remove pliers before cylindrical roller bearing is in installation position. Retaining ring must engage in groove of clutch housing.



Pressing off bearing mounting with deep groove ball bearing and gear wheel for 5th gear -A-

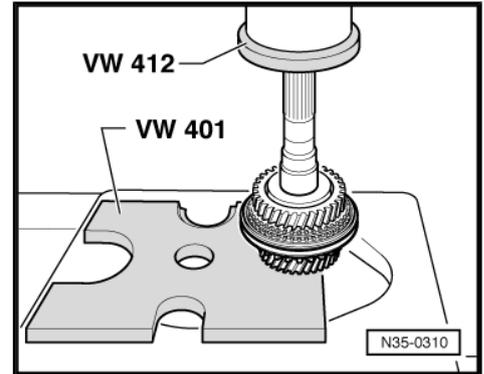
- Slide locking collar for 1st and 2nd gear towards 2nd gear.
- Then slide pressure plate -T10084 A- onto input shaft to stop from side.





Pressing off cylindrical roller bearing inner race

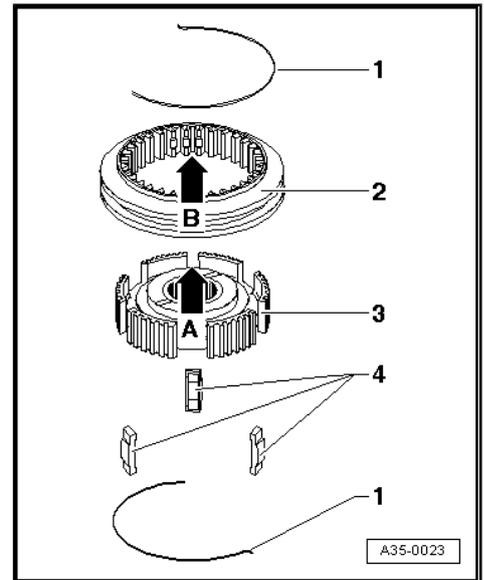
- Remove retaining ring.
- Press off cylindrical roller bearing inner race together with thrust washer, 4th gear synchromeshed gear with needle bearing, locking collar and synchro-hub for 3rd and 4th gear and 3rd gear synchromeshed gear.



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

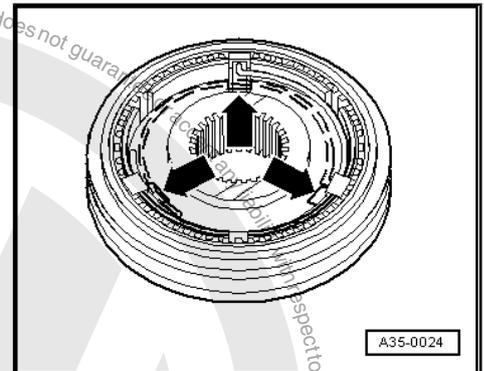
- 1 - Spring
 - 2 - Locking collar
 - 3 - Synchro-hub
 - 4 - Locking piece
- Slide locking collar over synchro-hub.

Deeper notches -arrow A- for locking pieces in synchro-hub and notches -arrow B- in locking collar must align.



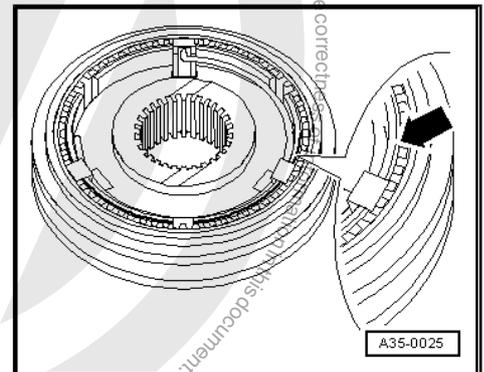
Assembling locking collar and synchro-hub for 3rd and 4th gears

- Locking collar has been pushed over synchro-hub.
- Insert locking pieces in deeper notches -arrows- and install springs offset 120°. Angled end of spring must locate in hollow locking piece.



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

Groove on top -arrow- faces 4th gear.

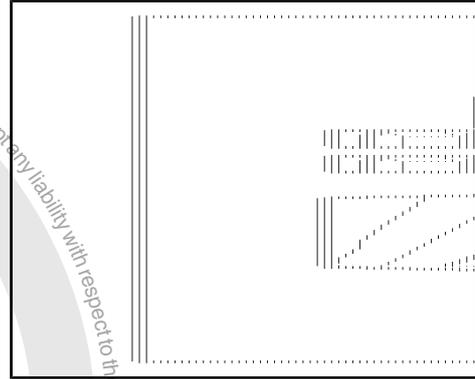




Checking synchro-ring for wear

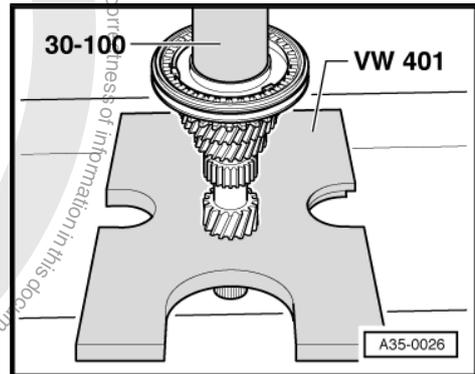
- Press synchro-ring onto cone of synchromeshed gear and measure gap -a- using feeler gauge.

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



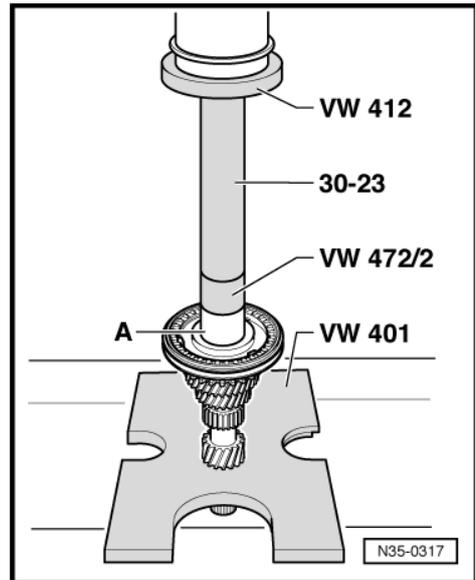
Pressing on synchro-hub with locking collar for 3rd and 4th gears

Installation position: wide collar faces synchromeshed gear for 3rd gear.

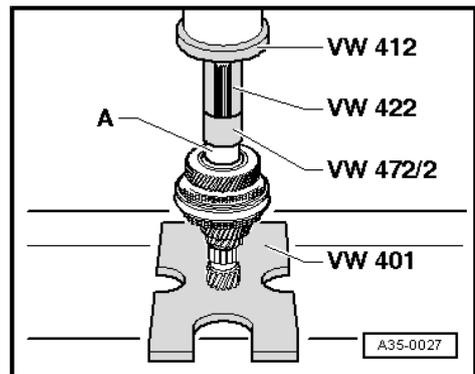


Pressing on sleeve -A- for 4th gear needle bearing

- After pressing on sleeve -A-, fit 4th gear needle bearing, synchromeshed gear for 4th gear and thrust washer.



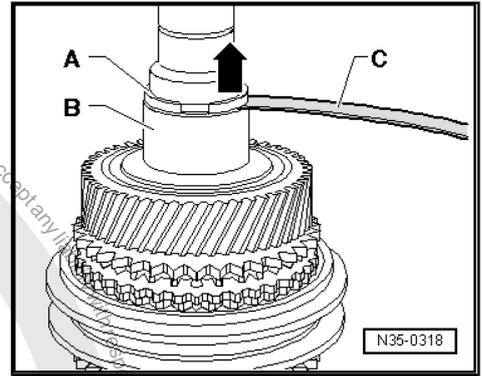
Pressing on inner race -A- for cylindrical roller bearing





Determining thickness of retaining ring

- Insert a 2.0 mm thick retaining ring -A- in groove of input shaft and press upwards -arrow-.
- Measure distance between inner race -B- and installed retaining ring -A- using feeler gauge -C-.
- Remove retaining ring used for measuring purposes.
- Determine retaining ring from table.



i Note

Allocate retaining rings according to → Electronic parts catalogue "ETKA".

The following retaining rings are available:

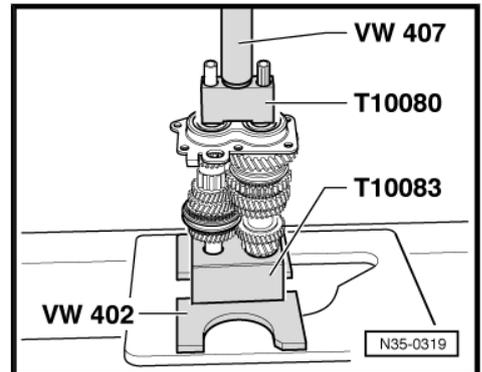
Measured value (mm)	Retaining ring thickness (mm)	Axial play (mm)
0.05...0.14	2.0	0.05...0.15
0.15...0.24	2.1	0.05...0.15
0.25...0.34	2.2	0.05...0.15
0.35...0.44	2.3	0.05...0.15
0.45...0.51	2.4	0.05...0.10

Pressing on bearing mounting with deep groove ball bearing

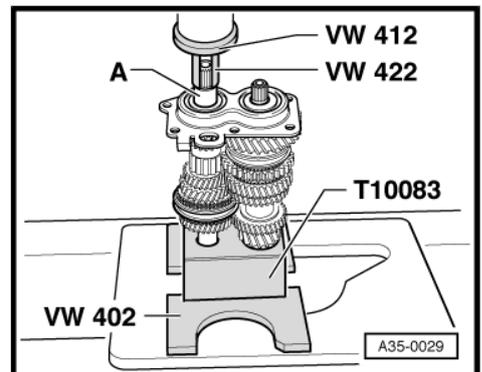
- Heat inner bearing mounting to approx. 100 °C before pressing on.

! **WARNING**

Wear protective gloves!



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

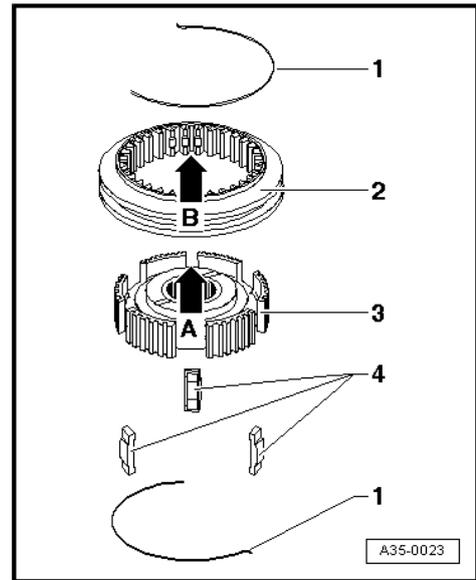




Dismantling and assembling locking collar and synchro-hub for 5th and 6th gears

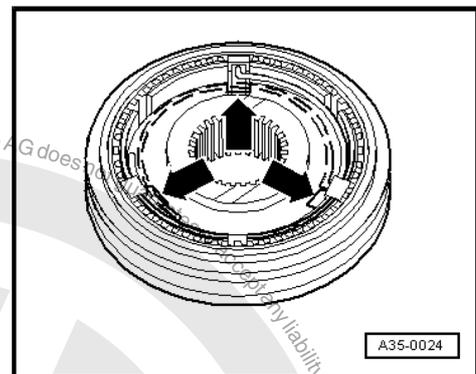
- 1 - Spring
 - 2 - Locking collar
 - 3 - Synchro-hub
 - 4 - Locking piece
- Slide locking collar over synchro-hub.

Deeper notches -arrow A- for locking pieces in synchro-hub and notches -arrow B- in locking collar must align.



Assembling locking collar and synchro-hub for 5th and 6th gears

- Locking collar has been pushed over synchro-hub.
- Insert locking pieces in deeper notches -arrows- and install springs offset 120°.
- Angled end of spring must locate in hollow locking piece.



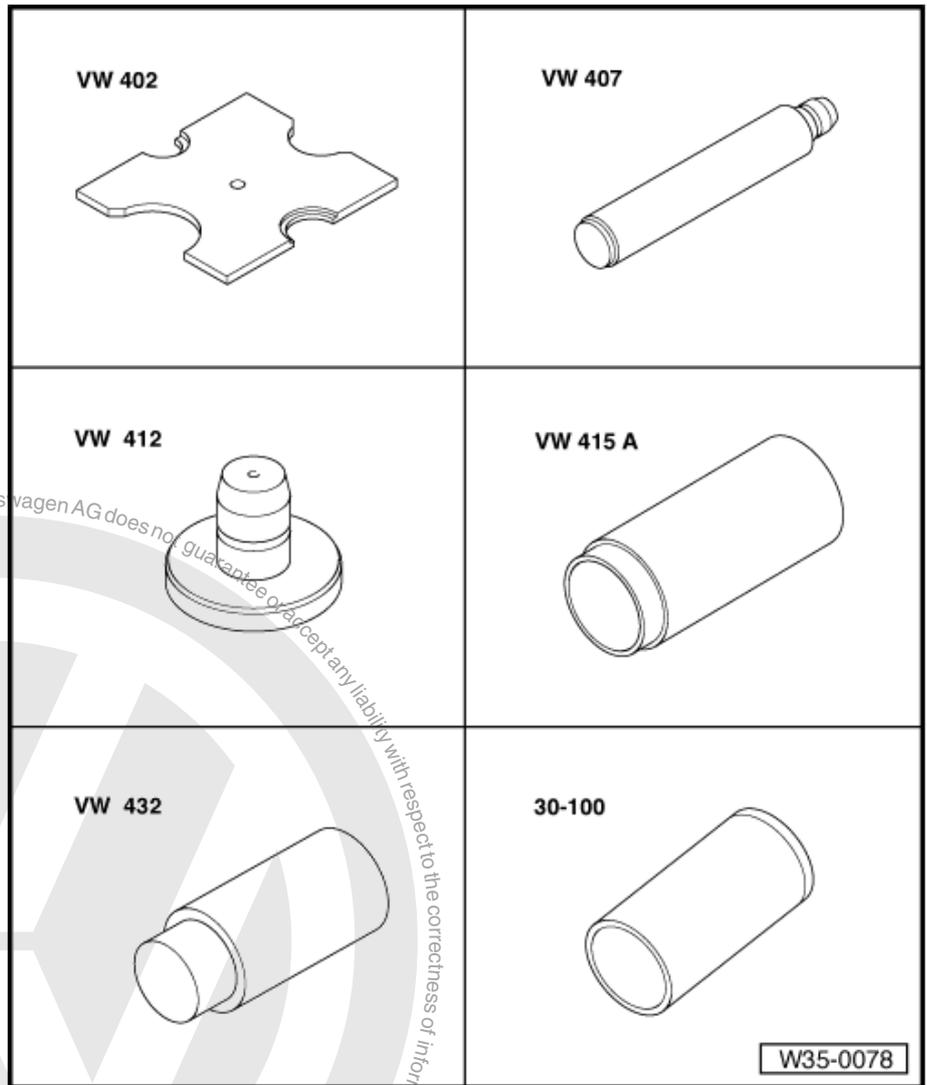


2 Output shaft

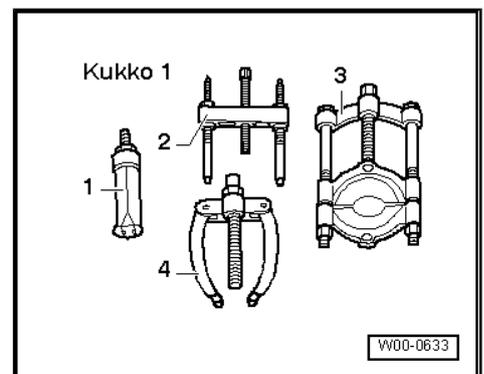
2.1 Dismantling and assembling output shaft

Special tools and workshop equipment required

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



- ◆ -1- Internal puller -Kukko 21/5-



- ◆ -4- Counterhold -Kukko 22/1-



Note

- ◆ When installing new gear wheels or final drive gear set, consult technical data ⇒ [page 1](#) and ⇒ *Electronic parts catalogue "ETKA"*.
- ◆ Install all bearings, synchromeshed gears and synchro-rings on output shaft with gear oil.
- ◆ Do not interchange synchro-rings. When reusing always fit to the original gear.

1 - Clutch housing

- Repairing ⇒ [page 107](#)

2 - Cylindrical roller bearing

- With retaining ring
- Pulling out ⇒ [page 134](#)
- Pressing in ⇒ [page 134](#)
- Installation position: retaining ring in bearing faces output shaft

3 - Output shaft

- If an inner race as bearing seat for cylindrical roller bearing ⇒ [Item 2 \(page 132\)](#) is present, it cannot be removed from output shaft
- Check bearing seat or inner race of cylindrical roller bearing for scoring and damage
- If cylindrical roller bearing inner race or bearing seat is damaged or scored, renew output shaft and cylindrical roller bearing together

4 - Gear wheel for 4th gear

- Installation position: shoulder faces 3rd gear ⇒ [page 135](#)

5 - Retaining ring

6 - Retaining ring

7 - Gear wheel for 3rd gear

- Installation position: shoulder faces 4th gear ⇒ [page 135](#)

8 - Retaining ring

9 - Synchromeshed gear for 2nd gear

10 - Needle bearing

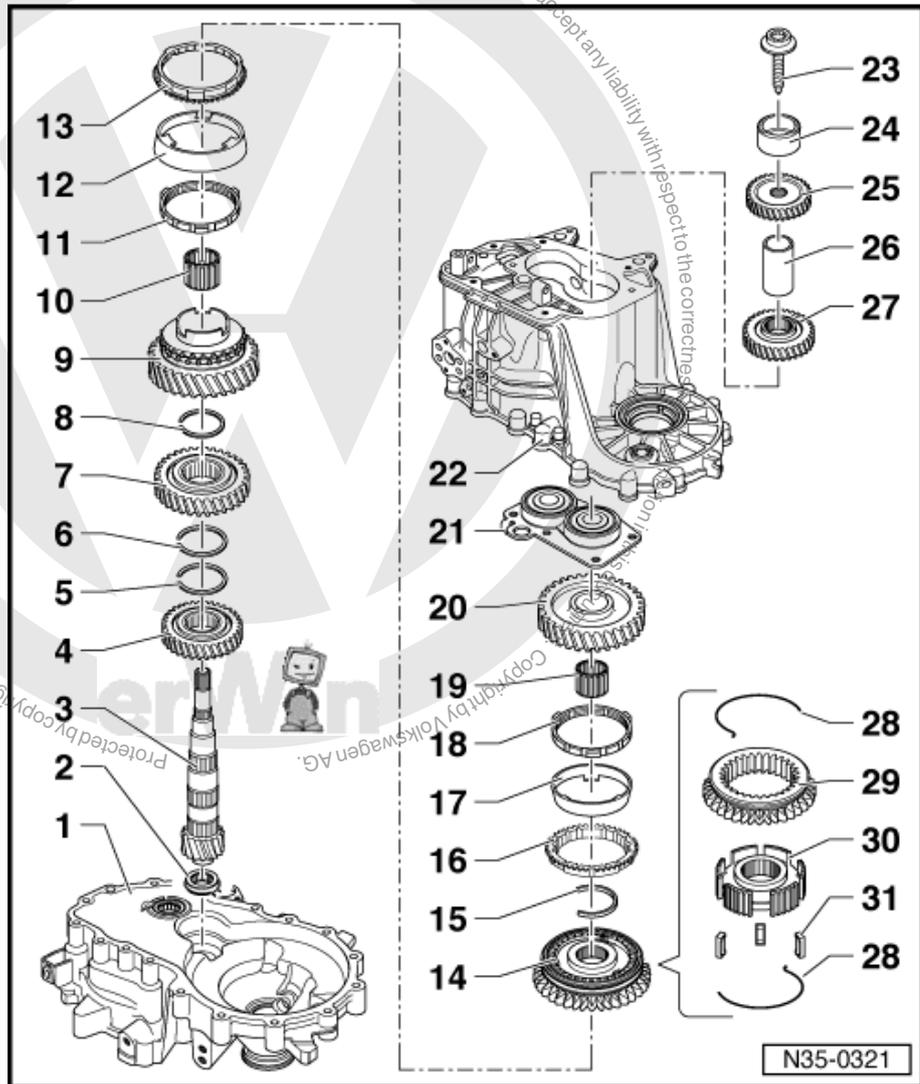
- For 2nd gear

11 - Bearing inner race for 2nd gear

- Check for wear ⇒ [page 135](#)
- Installation position ⇒ [page 136](#)

12 - Bearing outer race for 2nd gear

- Set on bearing inner race ⇒ [Item 11 \(page 132\)](#)





- Renew if scored
 - Installation position ⇒ [page 136](#)
- 13 - Synchro-ring for 2nd gear**
- Check for wear ⇒ [page 135](#)
 - Installation position ⇒ [page 136](#)
- 14 - Locking collar with synchro-hub for 1st and 2nd gears**
- After removing retaining ring ⇒ [Item 15 \(page 133\)](#) , press off with synchromeshed gear for 2nd gear ⇒ [page 135](#)
 - Dismantling ⇒ [page 136](#)
 - Assembling locking collar and synchro-hub ⇒ [page 136](#) and ⇒ [page 136](#)
 - Installation position ⇒ [page 136](#)
 - Pressing on ⇒ [page 137](#)
- 15 - Retaining ring**
- Pressing out ⇒ [page 134](#)
 - Installing ⇒ [page 137](#)
- 16 - Synchro-ring for 1st gear**
- Check for wear ⇒ [page 135](#)
 - Assemble so that notches engage in locking pieces of locking collar ⇒ [Item 14 \(page 133\)](#)
- 17 - Bearing outer race for 1st gear**
- Insert in synchro-ring ⇒ [Item 16 \(page 133\)](#) .
 - Installation position ⇒ [page 137](#)
 - Renew if scored
- 18 - Bearing inner race for 1st gear**
- Check for wear ⇒ [page 135](#)
 - Check lugs for scoring
 - Installation position ⇒ [page 137](#)
- 19 - Needle bearing**
- For 1st gear
- 20 - Synchromeshed gear for 3rd gear**
- Installation position ⇒ [page 138](#)
- 21 - Bearing mounting with deep groove ball bearing**
- Renew deep groove ball bearing only together with bearing mounting
 - If bearing mounting is separated from gearbox housing, then mounting must always be renewed.
 - Press off with gear wheel for 5th gear ⇒ [page 126](#)
 - Pressing on ⇒ [page 129](#)
- 22 - Gearbox housing**
- Repairing ⇒ [page 107](#)
- 23 - Bolt**
- Removing and installing ⇒ [page 90](#)
- 24 - Cylindrical roller bearing inner race**
- Mark before removing
 - Do not interchange with inner race for cylindrical roller bearing of input shaft
 - Can be renewed individually
 - Removing and installing ⇒ [page 94](#)
- 25 - Gear wheel for 6th gear**
- Installation position: collar faces sleeve
 - Removing and installing ⇒ [page 94](#)



26 - Sleeve

- ❑ Removing and installing ⇒ [page 94](#)

27 - Gear wheel for 5th gear

- ❑ Installation position ⇒ [page 103](#)
- ❑ Must be pressed off ⇒ [page 126](#) and on ⇒ [page 103](#) gearboxes for the 1.4 I engine

28 - Spring

- ❑ Installation position ⇒ [page 136](#)

29 - Locking collar

30 - Synchro-hub

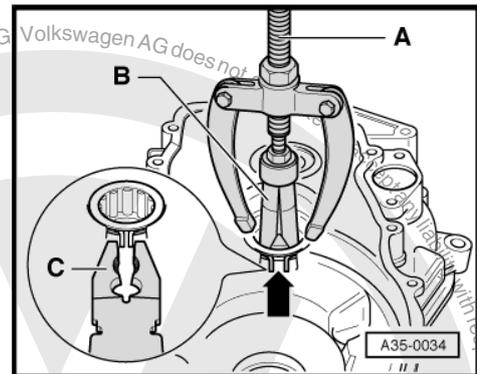
31 - Locking pieces (Qty. 3)

Pulling cylindrical roller bearing out of clutch housing

- When pulling out, squeeze together retaining ring -arrow- of cylindrical roller bearing, using pliers -C-.

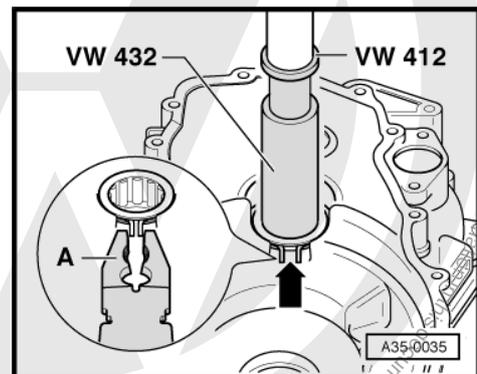
A - Counter support , e.g. -Kukko 22/1-

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



Pressing cylindrical roller bearing into clutch housing

- Support gearbox housing with tube -VW 415 A- (not visible in figure) directly below bearing support.
- When pressing in, squeeze together retaining ring -arrow- for cylindrical roller bearing using pliers -A-.
- Remove pliers before cylindrical roller bearing is in installation position. Retaining ring must engage in groove of clutch housing.



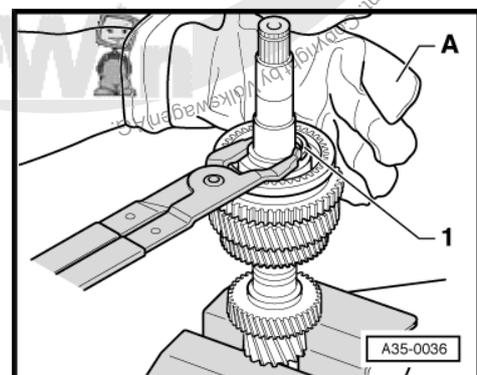
Pressing retaining ring -1- out of groove

A - Protective gloves



WARNING

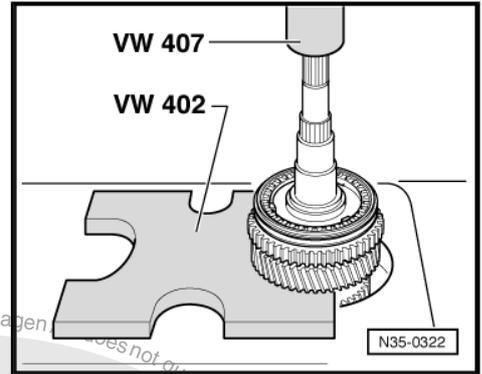
Ensure retaining ring does not spring out uncontrolled.





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

- After removing retaining ring, press off synchromeshed gear for 2nd gear together with locking collar and synchro-hub.



Installation position of 3rd gear and 4th gear

- Install gear wheel for 4th gear -A- on output shaft.

Installation position:

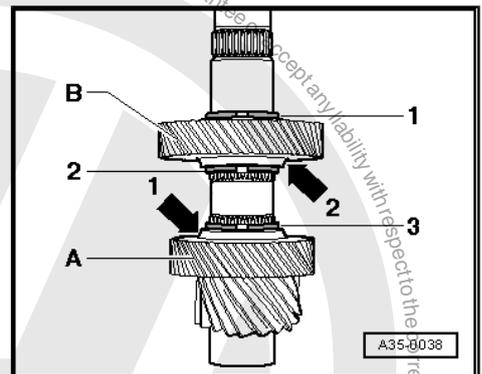
Collar -arrow 1- faces 3rd gear wheel -B-.

- Install retaining rings -2- and -3-.
- Install gear wheel for 3rd gear -B- on output shaft.

Installation position:

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

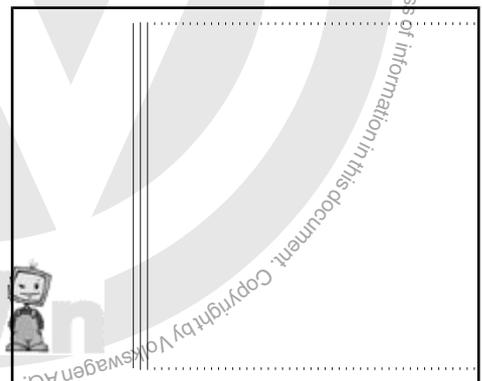
- Install retaining ring -1-.



Checking 1st and 2nd gear inner ring for wear

- Press inner ring onto cone of synchromeshed gear and measure gap "a" using a feeler gauge.

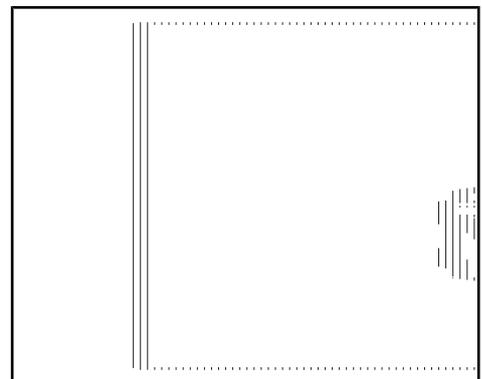
Gap "a"	Installation (new) dimension	Wear limit
1st and 2nd gears	0.75... 1.25 mm	0.3 mm



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

- Press synchro-ring, outer ring and inner ring onto cone of synchromeshed gear and measure gap "a" using a feeler gauge.

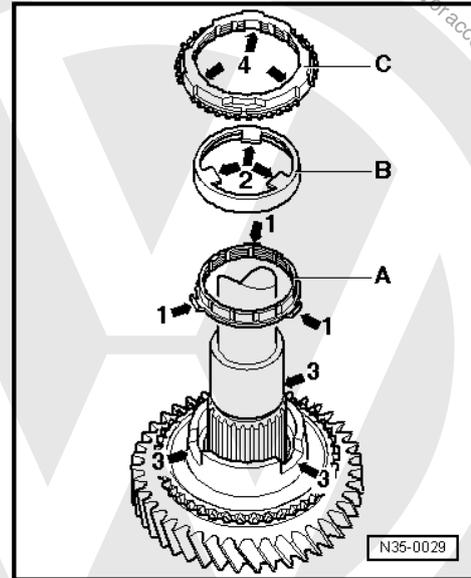
Gap "a"	Installation (new) dimension	Wear limit
1st and 2nd gears	1.2... 1.8 mm	0.5 mm





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

- Place inner ring -A- on synchromeshed gear for 2nd gear.
- Angled lugs -arrow 1- face outer ring -B-.
- Fit outer ring -B-.
- Lugs -arrow 2- engage in notches -arrow 3- of synchromeshed gear.
- Fit synchro-ring -C-.
- Notches -arrow 4- engage in lugs -arrow 1- of inner ring -A-.



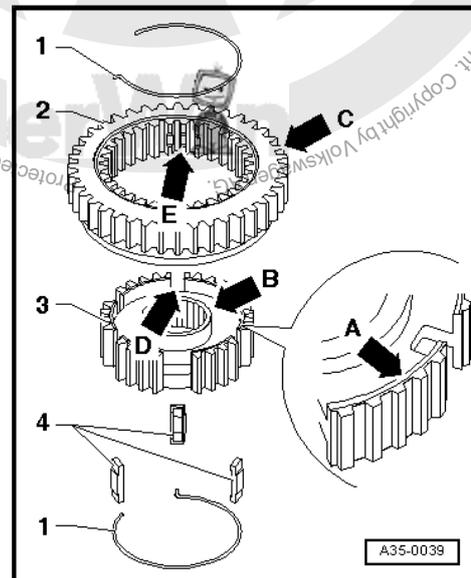
Dismantling and assembling locking collar and synchro-hub for 1st and 2nd gears

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

Installation position:

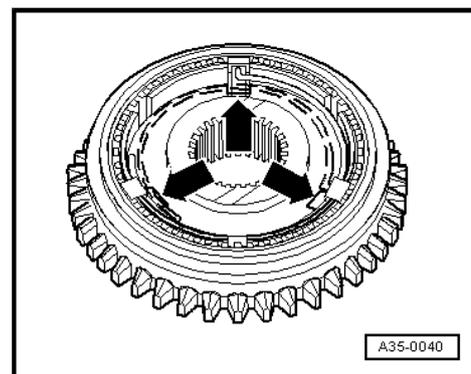
After assembly, the groove on the face -arrow A- and the higher shoulder -arrow B- of synchro-hub face outer splines of the locking collar -arrow C-.

Deeper notches -arrow D- for locking pieces in synchro-hub and notches -arrow E- in locking collar must align.



Assembling locking collar with synchro-hub for 1st and 2nd gears

- Locking collar has been pushed over synchro-hub.
- Insert locking pieces in deeper cut-outs -arrows- and install springs offset 120°. Angled end of spring must locate in hollow locking piece.



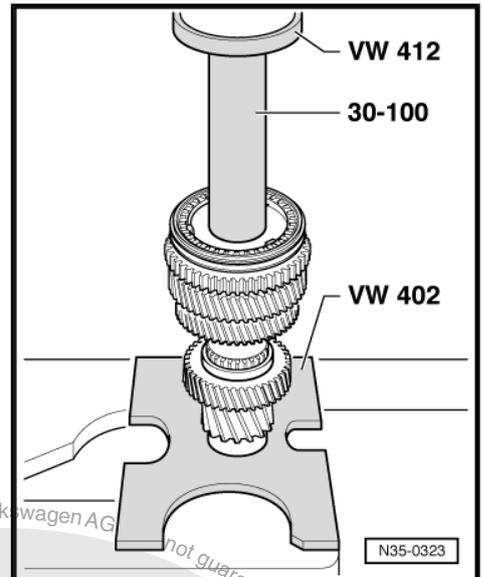


Pressing on locking collar and synchro-hub for 1st and 2nd gears

Installation position:

Groove in locking collar for selector fork faces 1st gear and teeth for reverse gear face 2nd gear.

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



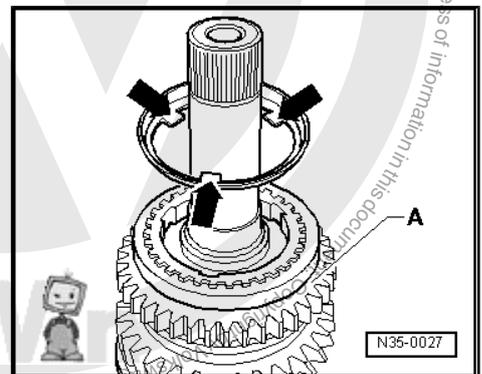
Fitting retaining ring

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



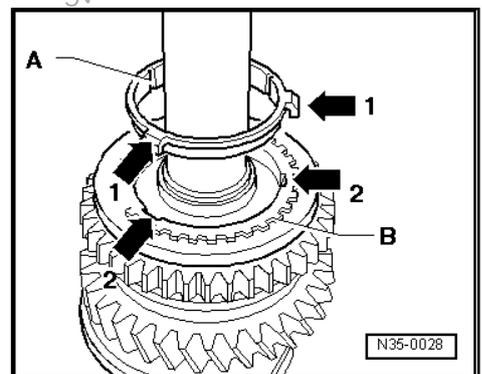
Installation position of 1st gear outer ring

Lugs -arrows- face towards reverse gear teeth.



Installation position of 1st gear inner ring -A-

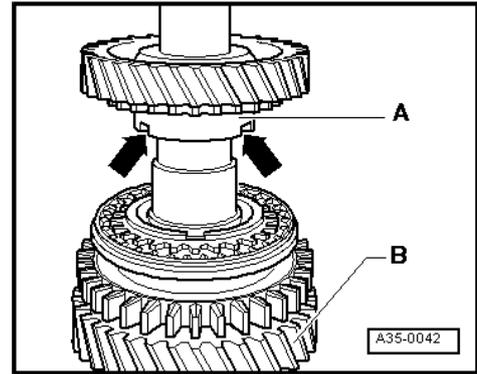
Lugs -arrow 1- engage in notches -arrow 2- in synchro-ring -B-.





Installation position of synchromeshed gear for 1st gear

Higher shoulder -A- faces 2nd gear -B-. Notches in shoulder
-arrows- engage in lugs of outer ring => [page 137](#) .





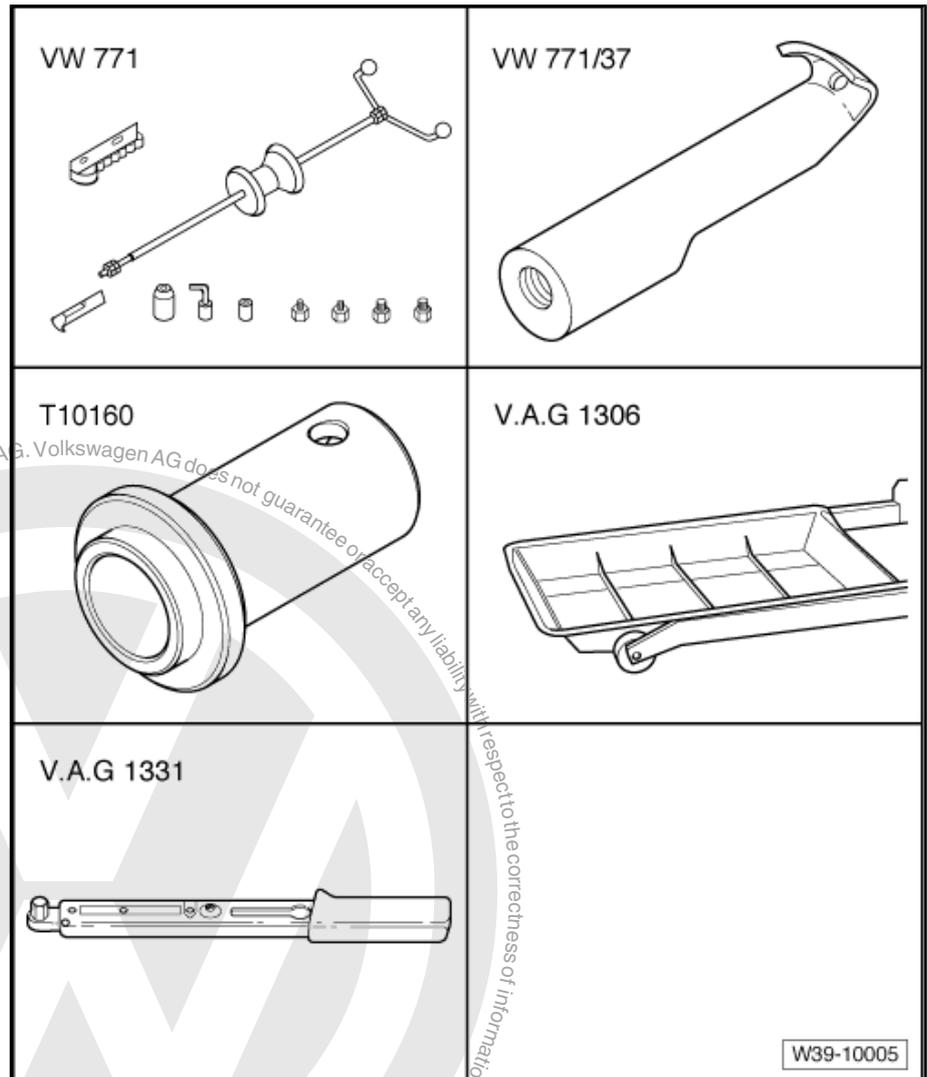
39 – Final drive - differential

1 Renewing flange shaft oil seals with gearbox installed

1.1 Renewing oil seal for left flange shaft

Special tools and workshop equipment required

- ◆ Multipurpose tool -VW 771-
- ◆ Puller hooks -VW 771/37-
- ◆ Thrust piece -T10160-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Sealing grease -G 052 128 A1-

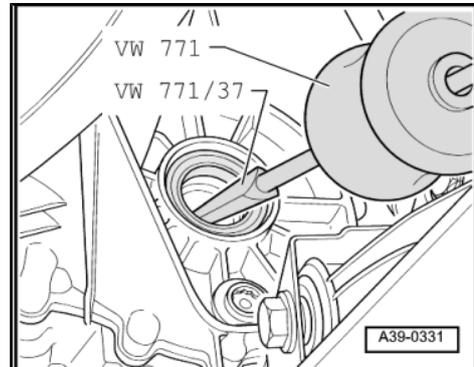


1.1.1 Removing

- Remove left wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
- Turn steering to left lock.
- Unbolt drive shaft from flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
- Raise drive shafts as high as possible and secure, taking care not to damage surfaces.

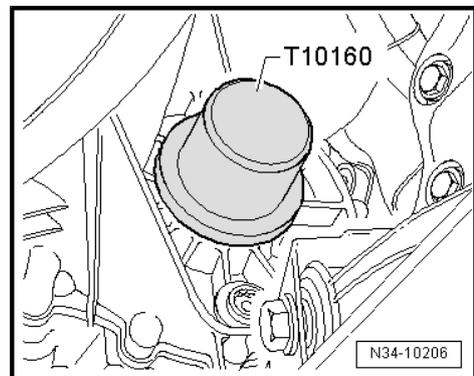


- Place drip tray under gearbox.
- Remove flange shaft securing bolt by screwing two bolts into flange and counterholding flange shaft with a lever.
- Pull out flange shaft with compression spring.
- Pull out flange shaft oil seal using multi-purpose tool -VW 771- and puller hooks -VW 771/37- .



1.1.2 Installing

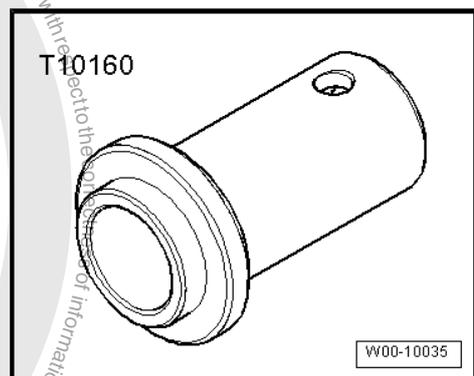
- Drive in new seal to stop, being careful not to cant seal.
- Half-fill space between sealing lip and dust lip with sealing grease -G 052 128 A1- .
- Insert flange shaft.
- Secure flange shaft using countersunk bolt and tighten to 25 Nm torque.
- Bolt drive shaft to flange shaft => Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
- Check gear oil level and top up to lower edge of oil filler hole if necessary => [page 86](#) .
- Install noise insulation => General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .



1.2 Renewing seal for right flange shaft

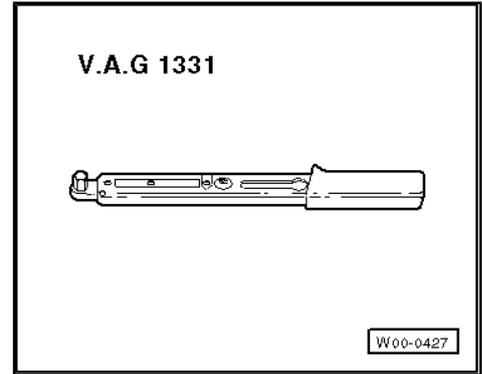
Special tools and workshop equipment required

- ◆ Thrust piece -T10160-





- ◆ Torque wrench -V.A.G 1331-



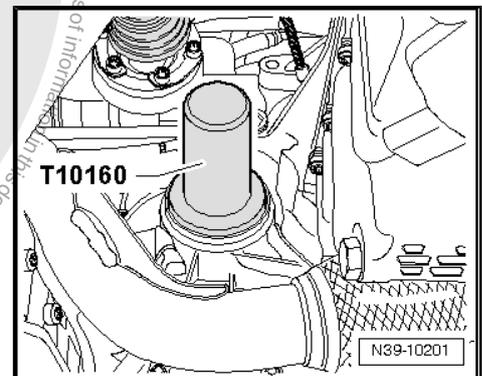
- ◆ Sealing grease -G 052 128 A1-

1.2.1 Removing

- Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
- Unbolt drive shaft from flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
- Raise drive shafts as high as possible and secure, taking care not to damage surfaces.
- Place drip tray under gearbox.
- Remove flange shaft securing bolt by screwing two bolts into flange and counterholding flange shaft with a lever.
- Pull out flange shaft with compression spring.
- Lever out flange shaft oil seal with assembly lever.

1.2.2 Installing

- Drive in new seal to stop, being careful not to cant seal.
- Half-fill space between sealing lip and dust lip with sealing grease -G 052 128 A1- .
- Insert flange shaft.
- Secure flange shaft using countersunk bolt and tighten to 25 Nm torque.
- Bolt drive shaft to flange shaft ⇒ Running gear, axles, steering, Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
- Check gear oil level and top up to lower edge of oil filler hole if necessary ⇒ [page 86](#) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .



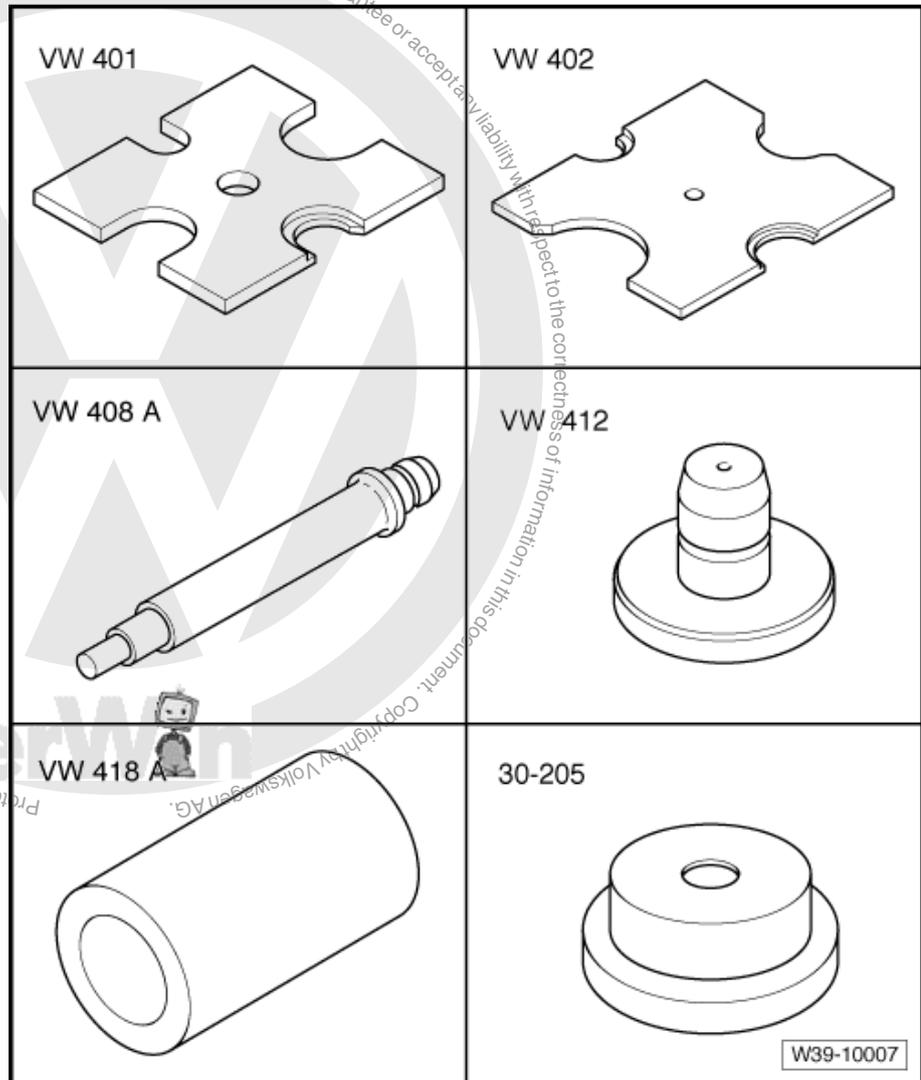


2 Differential

2.1 Dismantling and assembling differential

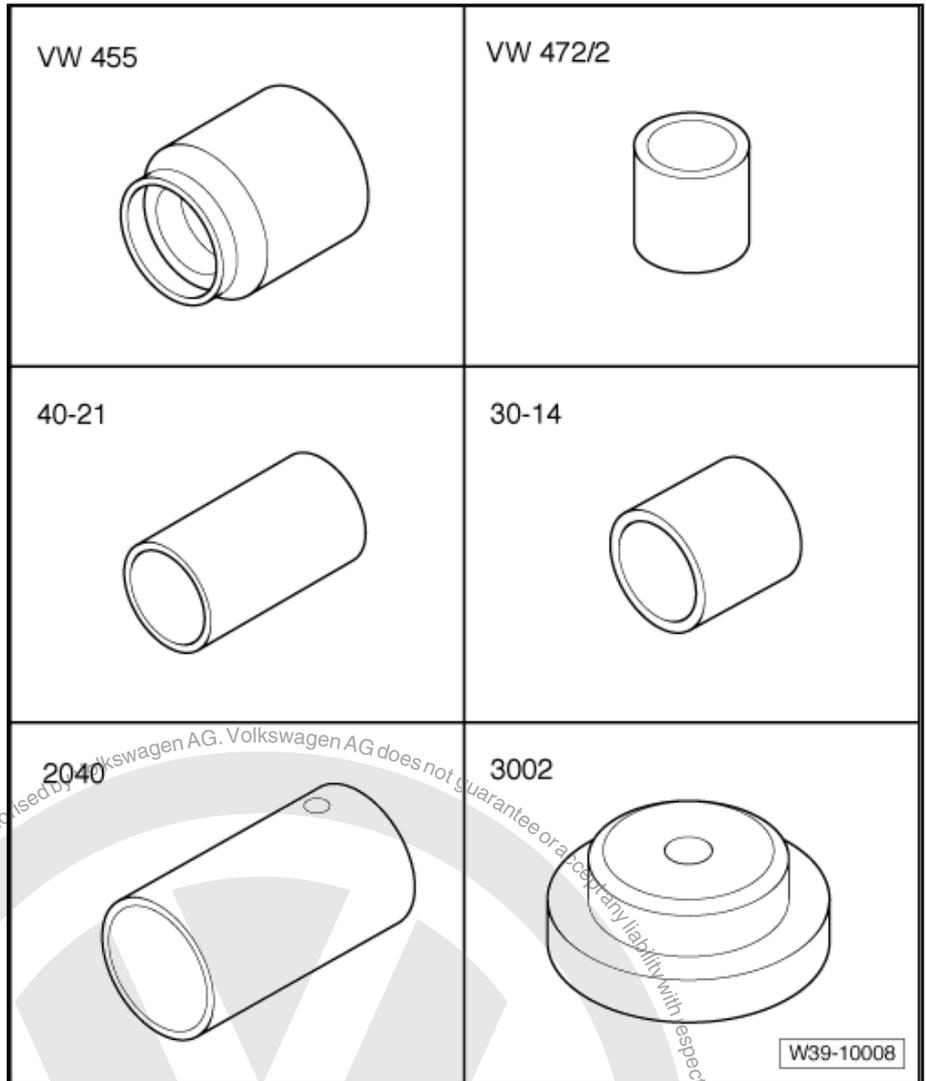
Special tools and workshop equipment required

- ◆ Thrust plate -VW 402-
- ◆ Thrust plate -VW 401-
- ◆ Press tool -VW 408 A-
- ◆ Press tool -VW 412-
- ◆ Tube -VW 418 A-
- ◆ Thrust plate -30-205-





- ◆ Installing sleeve -VW 455-
- ◆ Spacer sleeve -VW 472/2-
- ◆ Drift sleeve -40-21-
- ◆ Tube -30-14-
- ◆ Tube -2040-
- ◆ Thrust piece -3002-

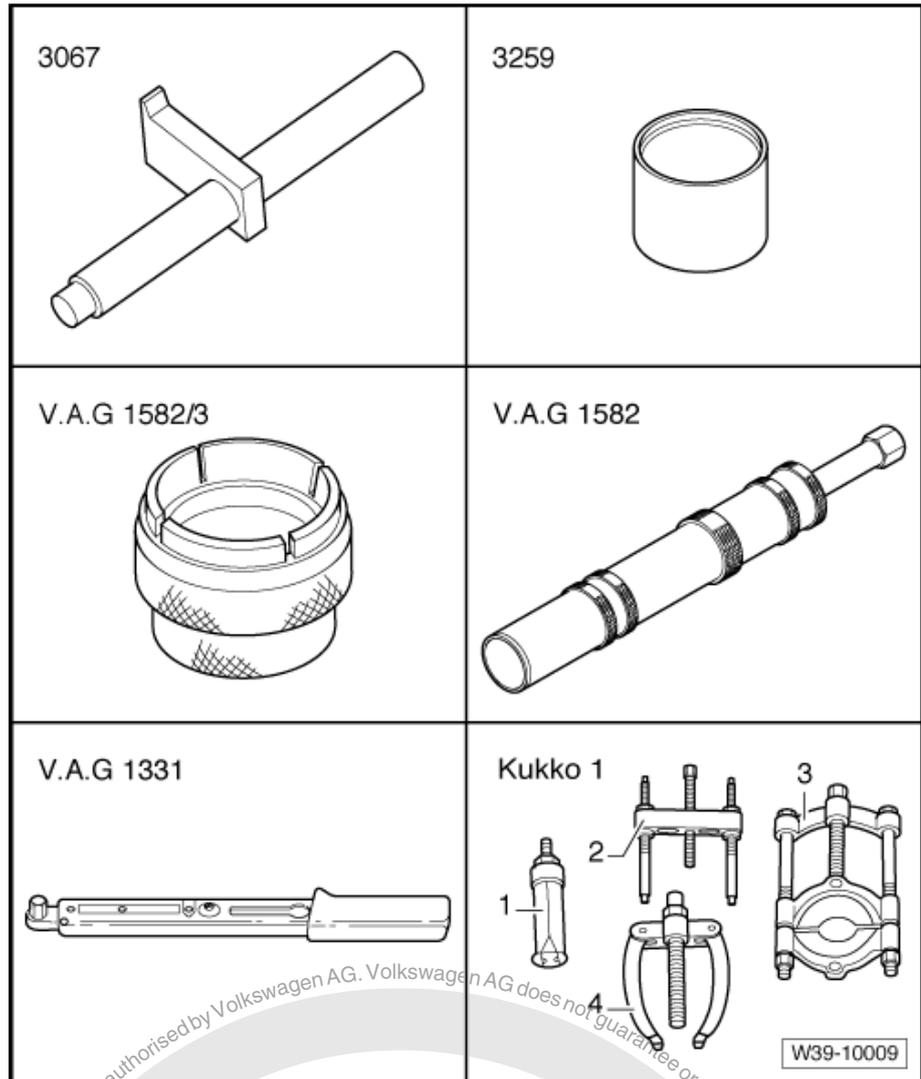


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- ◆ Counterhold -3067-
- ◆ Tube -3259-
- ◆ Tapered roller bearing puller -V.A.G 1582-
- ◆ Adapter -V.A.G 1582/3-
- ◆ -1- Internal puller -Kukko 21/7-
- ◆ -4- Counterhold -Kukko 22/2-



Note

- ◆ Heat tapered roller bearing inner races to 100 °C before installing.
- ◆ Always renew both tapered roller bearings together as a set.
- ◆ If tapered roller bearings, differential, gearbox housing or clutch housing is renewed, adjust differential ⇒ [page 148](#) .



1 - Countersunk bolt, 25 Nm

- Screw into threaded piece
⇒ [Item 8 \(page 145\)](#)

2 - Right flange shaft

3 - Compression spring for flange shaft

- Installed behind flange shafts

4 - Thrust washer

- Installation position: shoulder towards spring

5 - Tapered ring

- Installation position: taper towards differential cage

6 - Retaining ring

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

7 - Sun wheel

- Installing ⇒ [page 148](#)

8 - Threaded piece

- Installing ⇒ [page 148](#)

9 - Differential pinion pin

- To remove, shear off spring pin
⇒ [Item 17 \(page 145\)](#)
⇒ [page 147](#)
- Installing ⇒ [page 148](#)

10 - Planet pinion

- Installing ⇒ [page 148](#)

11 - One-piece thrust washer

- Coat with gear oil when installing

12 - Left flange shaft

13 - Oil seal for left flange shaft

- Renewing with manual gearbox installed ⇒ [page 139](#) .

14 - Outer race of tapered roller bearing

- Pulling out ⇒ [page 146](#)
- Pressing in ⇒ [page 146](#)

15 - Tapered roller bearing inner race

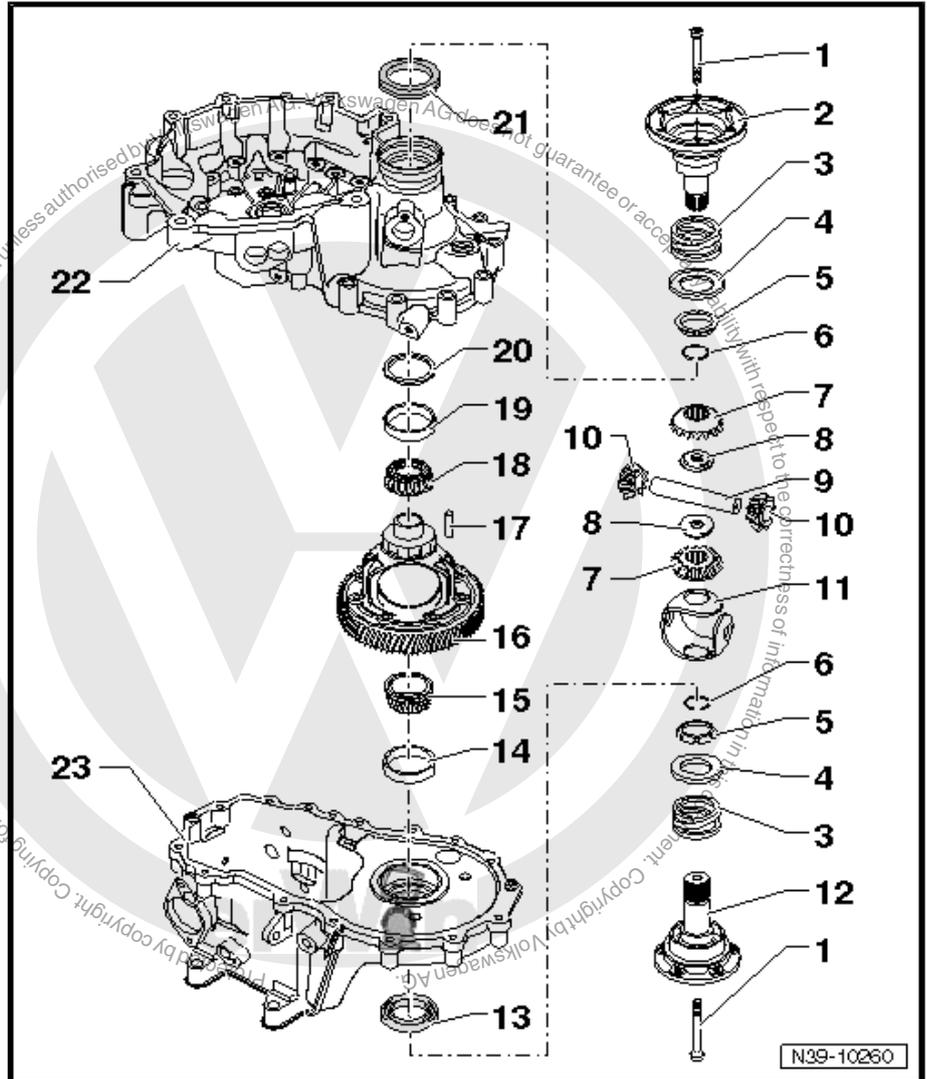
- Pulling off ⇒ [page 146](#)
- Pressing on ⇒ [page 147](#)

16 - Differential cage

- With final drive gear

17 - Spring pin

- For securing differential pinion pin
- Will be sheared off when removed ⇒ [page 147](#)





18 - Tapered roller bearing inner race

- Pulling off ⇒ [page 146](#)
- Pressing on ⇒ [page 147](#)

19 - Outer race of tapered roller bearing

- Pressing out ⇒ [page 147](#)
- Pressing in ⇒ [page 147](#)

20 - Shim

- For differential
- Determining thickness ⇒ [page 148](#)

21 - Oil seal for right flange shaft

- Renewing with manual gearbox installed ⇒ [page 140](#)

22 - Clutch housing

- Repairing ⇒ [page 107](#)

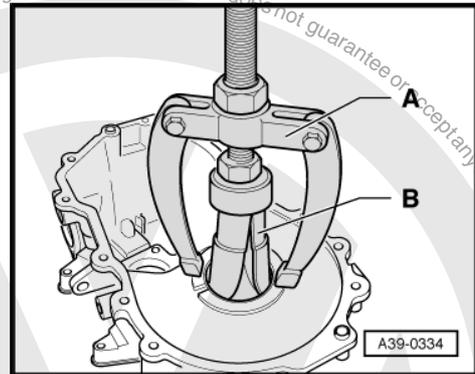
23 - Gearbox housing

- Repairing ⇒ [page 107](#)

Pulling outer race for tapered roller bearing out of gearbox housing

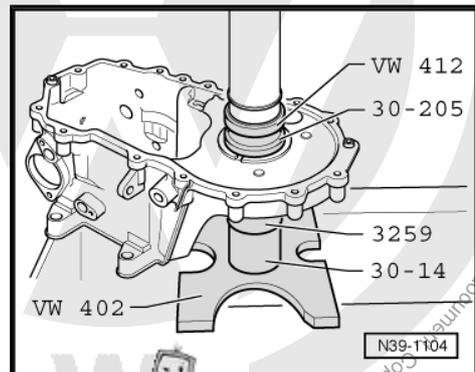
A - Counter support , e.g. -Kukko 22/2-

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



Pressing tapered roller bearing outer race into gearbox housing

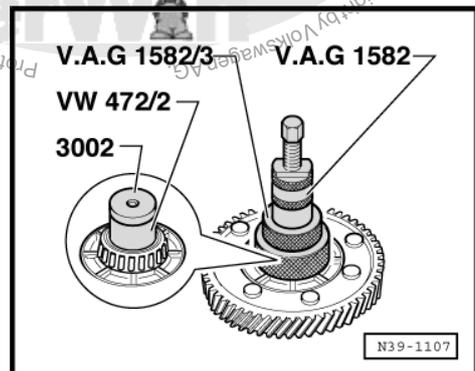
- Support gearbox housing with tube -3259- directly below bearing support.



Pulling off tapered roller bearing inner races

Note

Both tapered roller bearing inner races are pulled off the differential cage in the same way.





Pressing on tapered roller bearing inner races

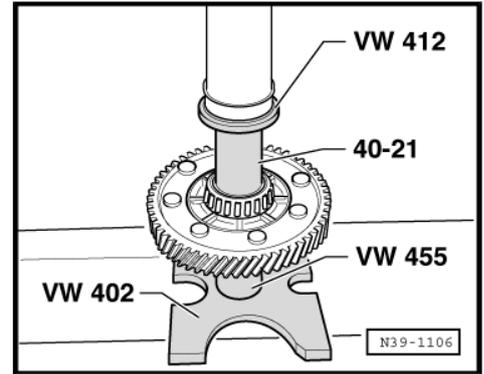
- Support inner race on opposite side using installing sleeve - VW 455- .

Shoulder of installing sleeve -VW 455- faces towards differential cage.



Note

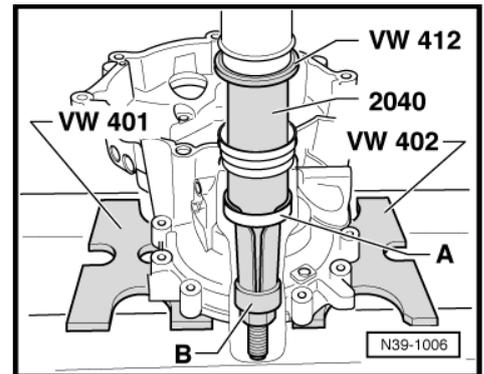
Both tapered roller bearing inner races are pressed onto the differential cage in the same way.



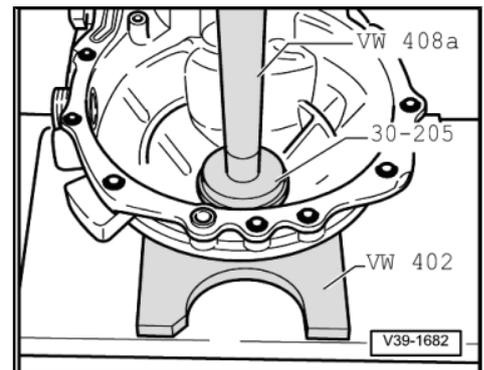
Pressing tapered roller bearing outer race -A- out of clutch housing

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

- Clamp internal puller securely behind tapered roller bearing outer race.



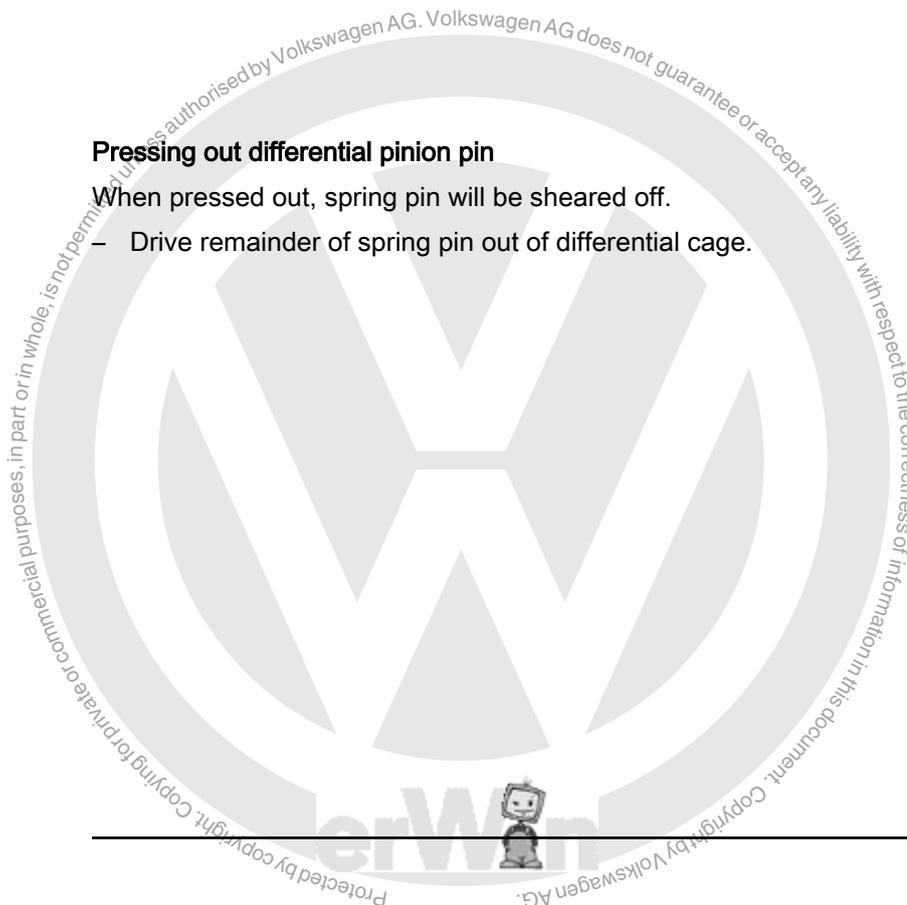
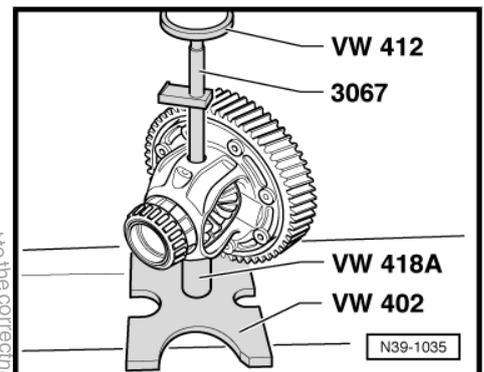
Pressing tapered roller bearing outer race into clutch housing



Pressing out differential pinion pin

When pressed out, spring pin will be sheared off.

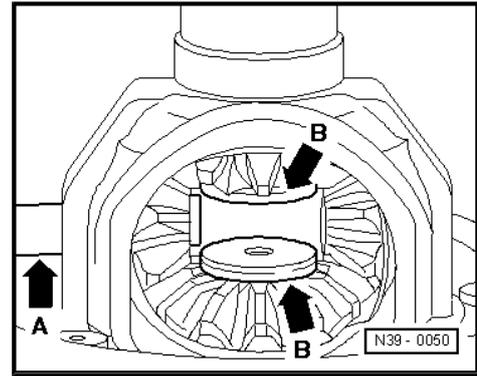
- Drive remainder of spring pin out of differential cage.





Installing differential bevel gears

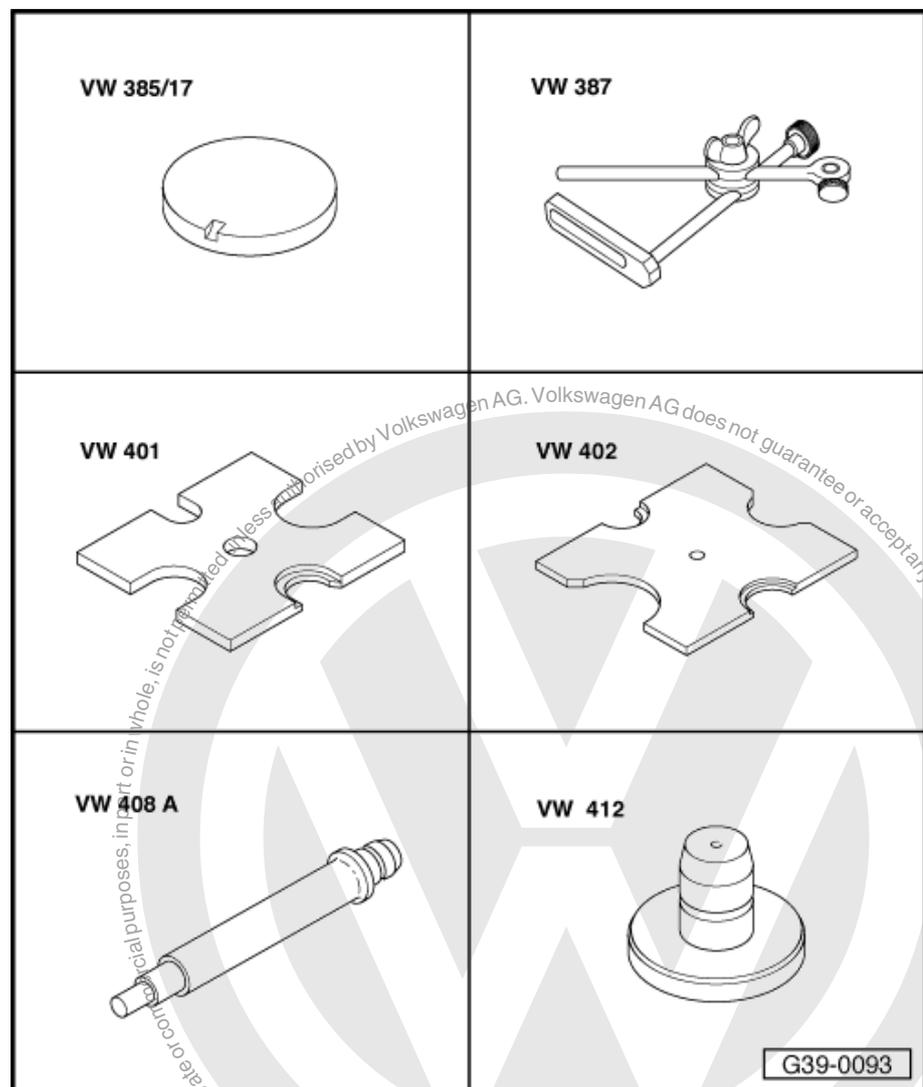
- Lubricate one-piece thrust washer with gear oil and install.
- Install both sun wheels and secure (e.g. with flange shaft).
- Insert planet pinions offset 180° and pivot into position.
- Press in differential pinion pin (-arrow A-) to first planet pinion.
- Place threaded pieces -arrows B- in sun gears.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



2.2 Adjusting differential

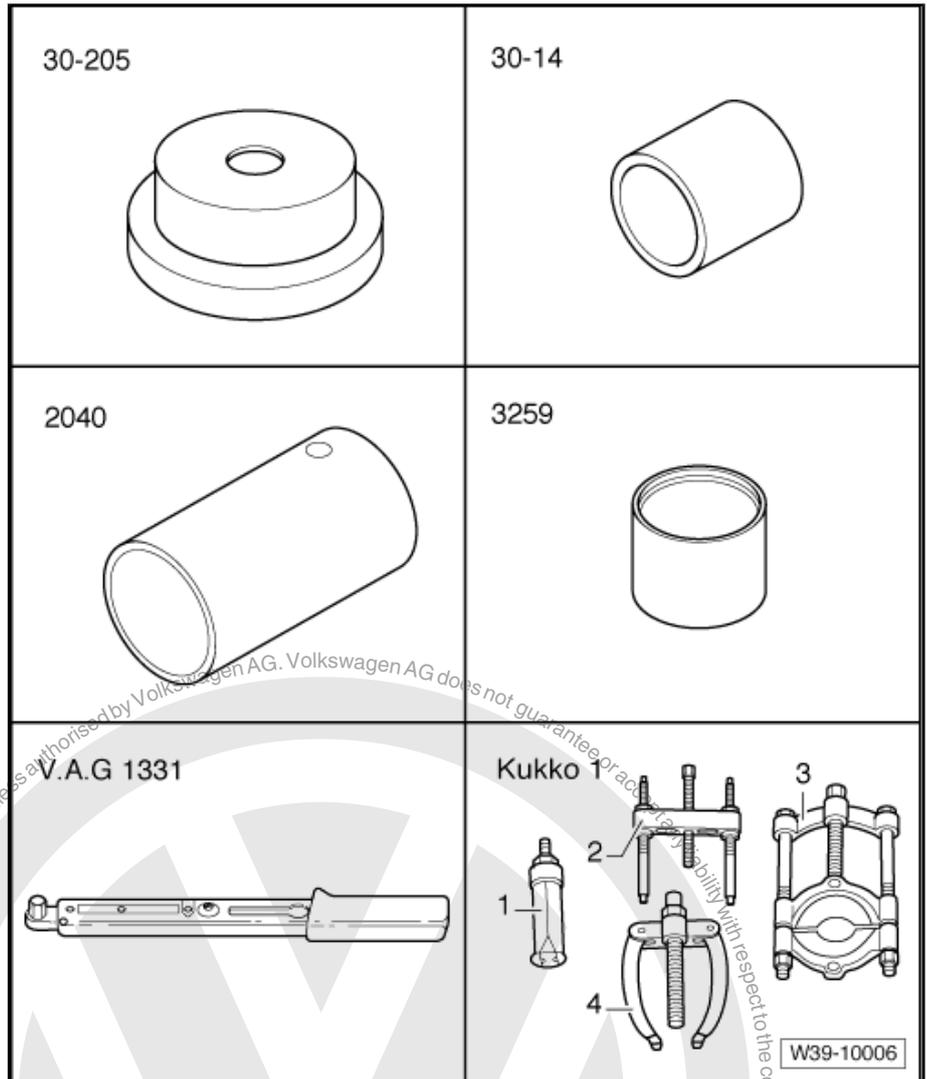
Special tools and workshop equipment required

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





- ◆ Thrust plate -30-205-
- ◆ Tube -30-14-
- ◆ Tube -2040-
- ◆ Tube -3259-
- ◆ Torque wrench - V.A.G 1331-
- ◆ -1- Internal puller -Kukko 21/7-
- ◆ Dial gauge



It is necessary to readjust the differential when the following components are renewed:

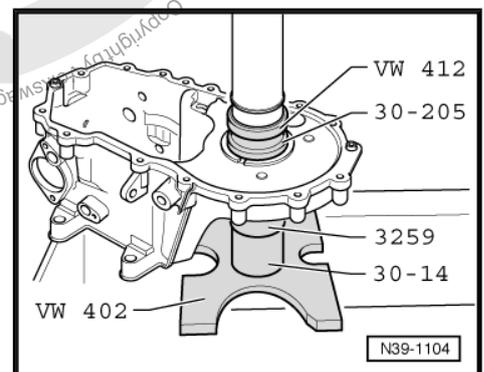
- ◆ Gearbox housing
 - ◆ Clutch housing
 - ◆ Differential cage
- or the
- ◆ Tapered roller bearing of differential

– Press tapered roller bearing outer race (gear wheel slide) into gearbox housing.



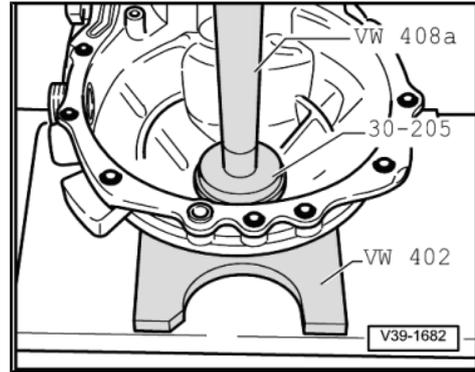
Note

Inner and outer tapered roller bearing races are paired. Do not interchange!

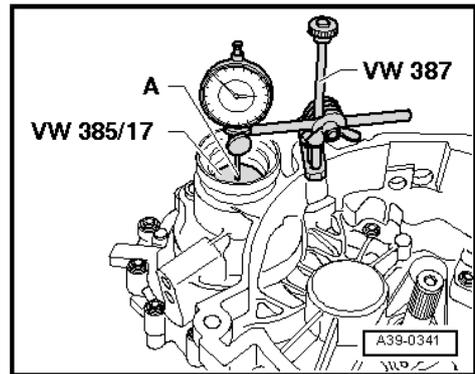




- Press tapered roller bearing outer race (opposite gear wheel) with no shim into gearbox housing.
- Insert differential in gearbox housing.
- Fit clutch housing and tighten 5 bolts to specified torque
⇒ [Item 3 \(page 92\)](#) .



- Attach dial gauge and set to "0" with 1 mm preload.
- A - 30 mm dial gauge extension
- Set dial gauge to "0" with 1 mm preload.
 - Move differential up and down. Read and note play indicated on dial gauge. (Example: 1.50 mm)



2.2.1 Determining thickness of shim

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

Example:

Measured value	1.50 mm
+ Preload (constant)	0.25 mm
Thickness of shim =	1.75 mm

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

B - Internal puller, 46...58 mm , e.g. -Kukko 217/-

- Allocate shim(s) using ⇒ Electronic parts catalogue "ETKA" .

The various thicknesses make it possible to achieve the exact shim thickness required.

If the size of shim required is larger than those listed in the ⇒ Electronic parts catalogue "ETKA" , insert two shims totalling the correct figure.

- Insert shim of calculated thickness (1.75 mm in example) and press tapered roller bearing outer race into clutch housing again.
- Fit clutch housing and tighten bolts to specified torque setting
⇒ [page 92](#) .

