



## Workshop Manual

Polo 2014 ➤

up! 2017 ➤

**5-speed manual gearboxes 02T and 0DF**

Edition 11.2018





## 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 Safety information

(VRL012445; Edition 11.2018)

⇒ [“1.1 Safety measures when working on vehicles with a start/stop system”, page 1](#)

#### 1.1 Safety measures when working on vehicles with a start/stop system



##### **WARNING**

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

- ◆ *Deactivate the start/stop system when working on vehicle. Switch off ignition.*
- ◆ *Switch on the ignition briefly only if required.*



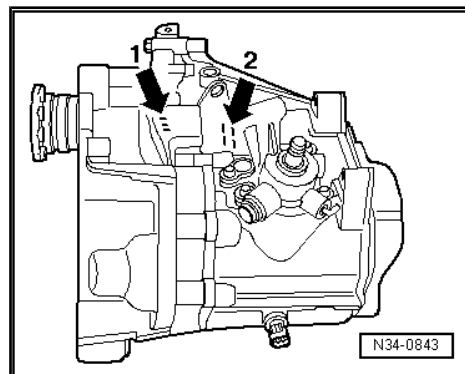
## 2 Identification

⇒ "2.1 Gearbox identification", page 2

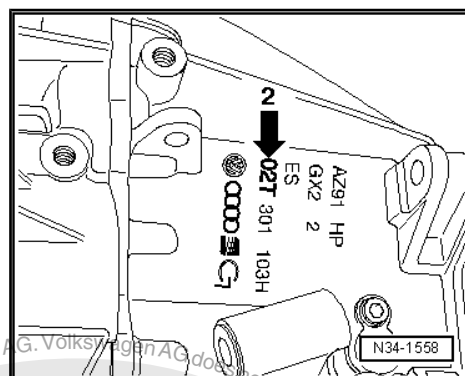
### 2.1 Gearbox identification

Manual gearbox 02T and manual gearbox 0DF

Code letters and production date -arrow 1- manual gearbox 02T and manual gearbox 0DF



Only manual gearbox 02T -arrow 2- ⇒ previous illustration



Continuation for all

Codes and production date of gearbox

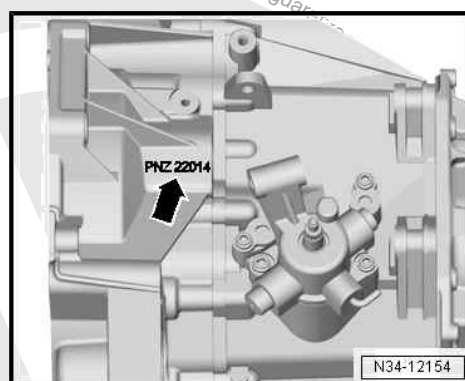
Example:	PNZ	22	01	4
	Codes	Day	Month	Year (2014) of manufacture

Additional data provide information about the production facility.



Note

The gearbox code is also included on the vehicle data stickers.





### 3 Technical data

⇒ [“3.1 Allocation gearbox - engine”, page 3](#) .

⇒ [“3.2 Capacities”, page 4](#) .

⇒ [“3.3 Calculation of gear ratios”, page 4](#) .

#### 3.1 Allocation gearbox - engine

⇒ [“3.1.1 Allocation gearbox - engine, Polo, manual gearbox 02T”, page 3](#)

⇒ [“3.1.2 Allocation gearbox - engine, Polo, manual gearbox 0DF”, page 3](#)

⇒ [“3.1.3 Allocation gearbox - engine, up!”, page 3](#)

##### 3.1.1 Allocation gearbox - engine, Polo, manual gearbox 02T

Manual gearbox		5-speed, 02T		
Codes		PNZ	PED	NJV
Manufactured	from to	01.14	01.14	08.14
Allocation	Engine	1.2 l - 66 kW	1.2 l - 66 kW	1.6 l - 66 kW
Ratio Z2 : Z1	Final drive	65 : 16 = 3.625	65 : 16 = 3.625	59 : 15 = 3.933
Drive shaft flange diameter		100 mm	100 mm	100 mm

Glean following data from ⇒ Electronic parts catalogue (ETKA) :

- ◆ Individual gear ratios
- ◆ Gear oil
- ◆ Clutch allocation

##### 3.1.2 Allocation gearbox - engine, Polo, manual gearbox 0DF

Manual gearbox		5-speed, 0DF	
Codes		QGL	QTS
Manufactured	from to	10.14 11.14	11.14
Allocation	Engine	1.0 l - 70 kW	1.0 l - 70 kW
Ratio Z2 : Z1	Final drive	58 : 16 = 3.625	58 : 16 = 3.625

Glean following data from ⇒ Electronic parts catalogue (ETKA) :

- ◆ Individual gear ratios
- ◆ Gear oil
- ◆ Clutch allocation

##### 3.1.3 Allocation gearbox - engine, up!

Manual gearbox		5-speed, 0DF	
Codes		QWH, TTB	
Manufactured	from to	05.16	



Manual gearbox	5-speed, 0DF		
Codes	QWH, TTB		
Allocation	Engine	1.0 l - 66 kW petrol engine	

Glean following data from ⇒ Electronic parts catalogue (ETKA) :

- ◆ Individual gear ratios
- ◆ Gear oil
- ◆ Clutch allocation

## 3.2 Capacities

Capacity of manual gearbox	2.1 l
----------------------------	-------

## 3.3 Calculation of gear ratios

Example:

	5th gear	Final drive
Drive gear	$ZG_1 = 46$	$ZA_1 = 24$
Driven gear	$ZG_2 = 33$	$ZA_2 = 70$

$$i = ZG_2 : ZG_1 \text{ } ^{1)}$$

$$i_G = \text{Gear ratio} = ZG_2 : ZG_1 = 33 : 46 = 0.717$$

$$i_A = \text{Final drive ratio} = ZA_2 : ZA_1 = 70 : 24 = 2.917$$

$$i_{\text{total}} = \text{overall ratio} = i_G \times i_A = 0.717 \times 2.917 = 2.091$$

1)  $Z_1$  = No. of teeth on driving gear,  $Z_2$  = No. of teeth on driven gear



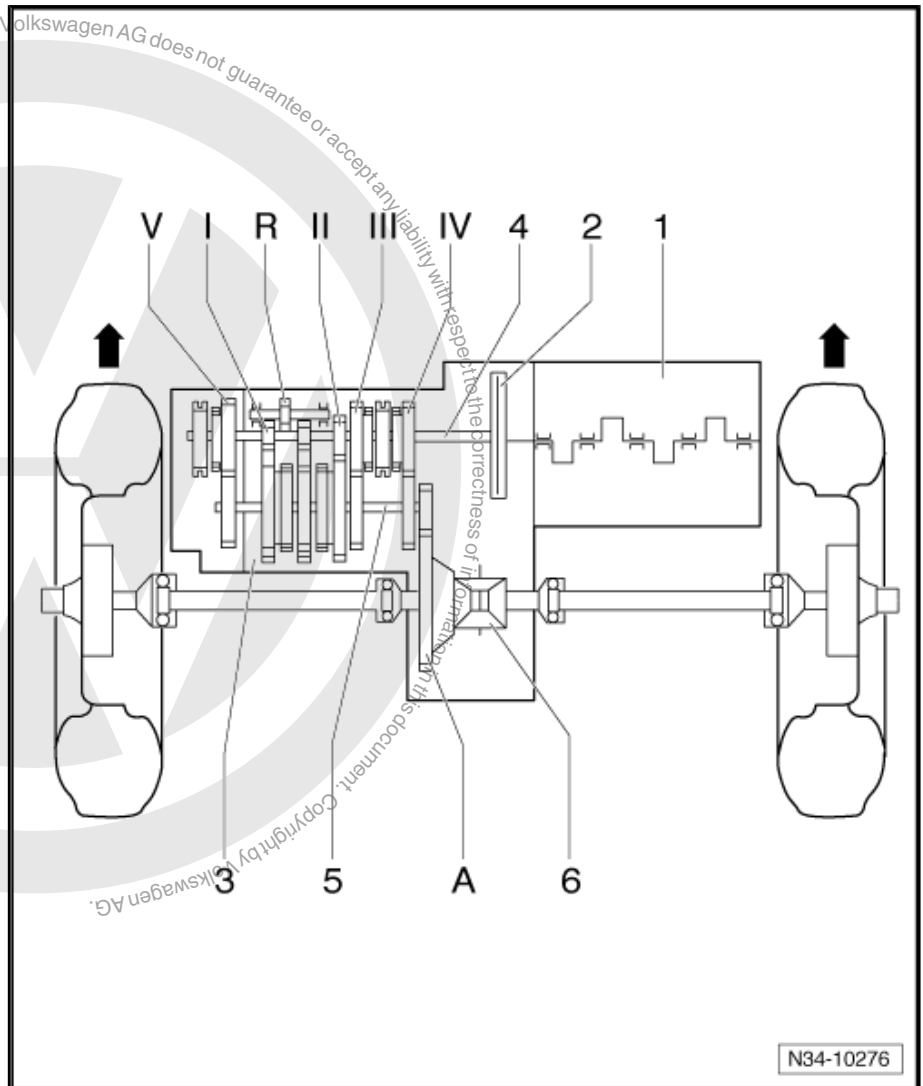


## 4 Overview - power transmission

Designation:

-Arrows- point in direction of travel.

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



Ratio

-Arrows- point in direction of travel.



I - 1st gear

II - 2nd gear

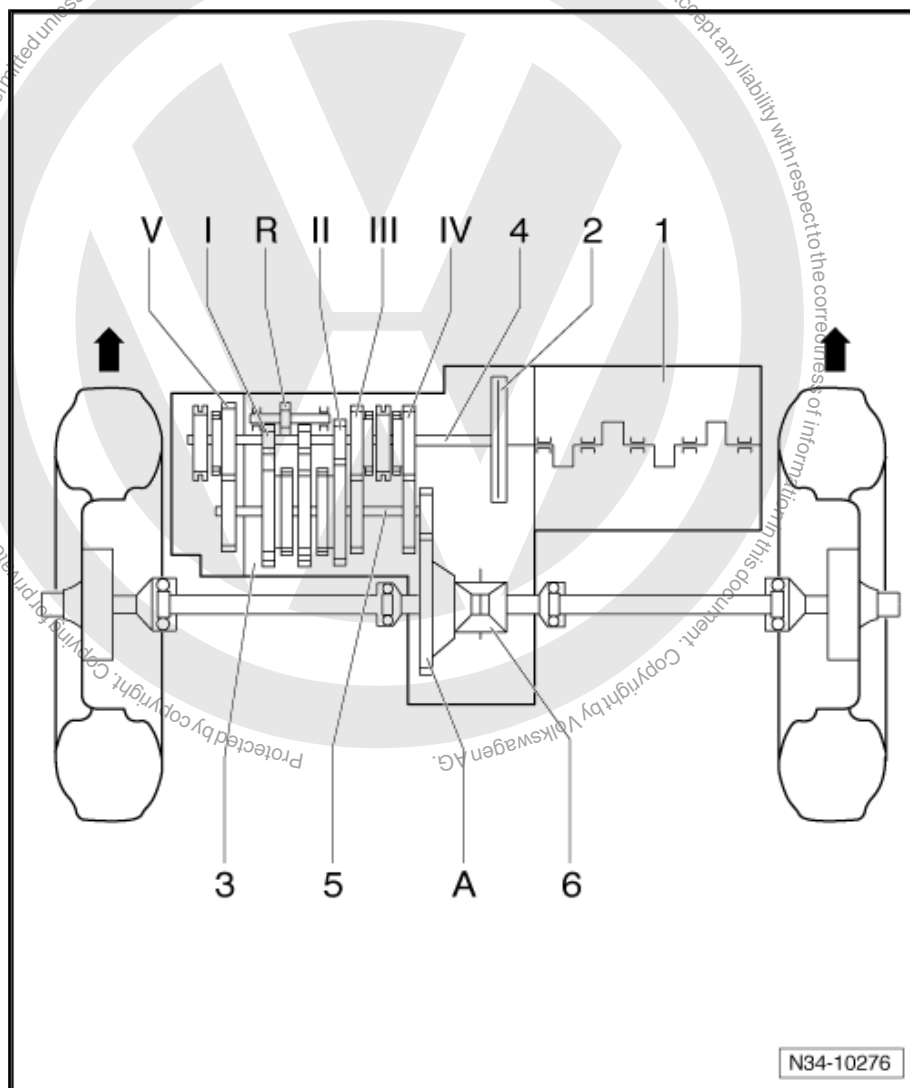
III - 3rd gear

IV - 4th gear

V - 5th gear

R - Reverse gear

A - Final drive





## 5 Electrical components

⇒ [“5.1 Overview of fitting locations - electrical components”, page 7](#)

### 5.1 Overview of fitting locations - electrical components

⇒ [“5.1.1 Overview of fitting locations – electrical components, manual gearbox, up!”, page 7](#)

⇒ [“5.1.2 Overview of fitting locations – electrical components, manual gearbox, Polo”, page 8](#)

⇒ [“5.1.3 Overview of fitting locations – electrical components, clutch mechanism, up!”, page 8](#)

⇒ [“5.1.4 Overview of fitting locations – electrical components, clutch mechanism, Polo”, page 9](#)

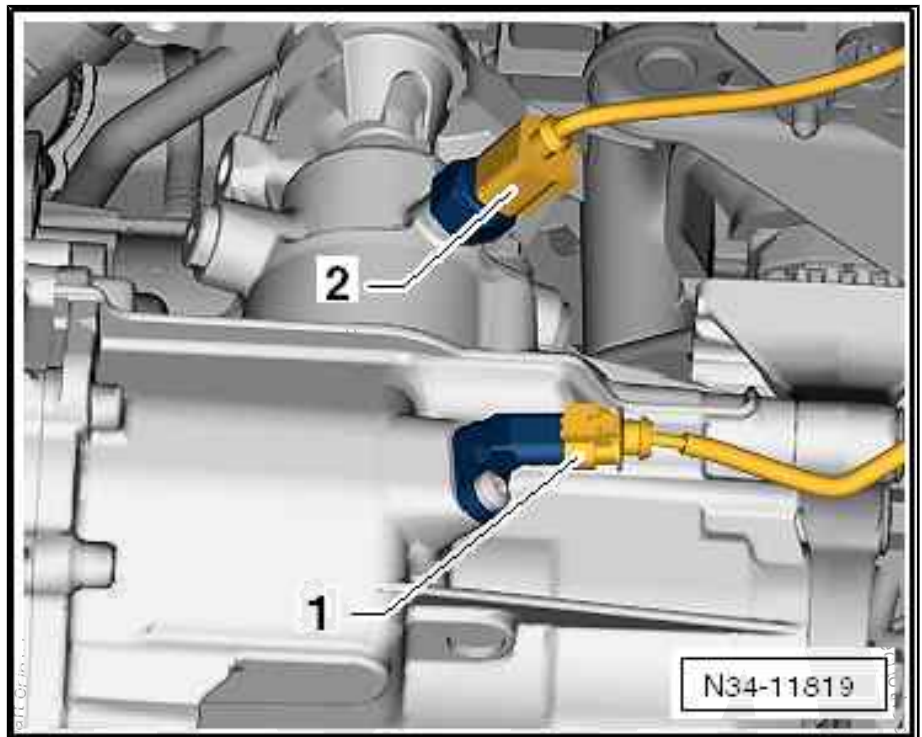
#### 5.1.1 Overview of fitting locations – electrical components, manual gearbox, up!

##### 1 - Gearbox neutral position sender - G701-

- ❑ Location: beneath selector unit
- ❑ Removing and installing  
⇒ [page 130](#)

##### 2 - Reversing light switch - F4-

- ❑ Installation location: on selector unit next to angled rod for securing selector shaft
- ❑ Removing and installing  
⇒ [page 130](#) and  
⇒ [page 131](#)





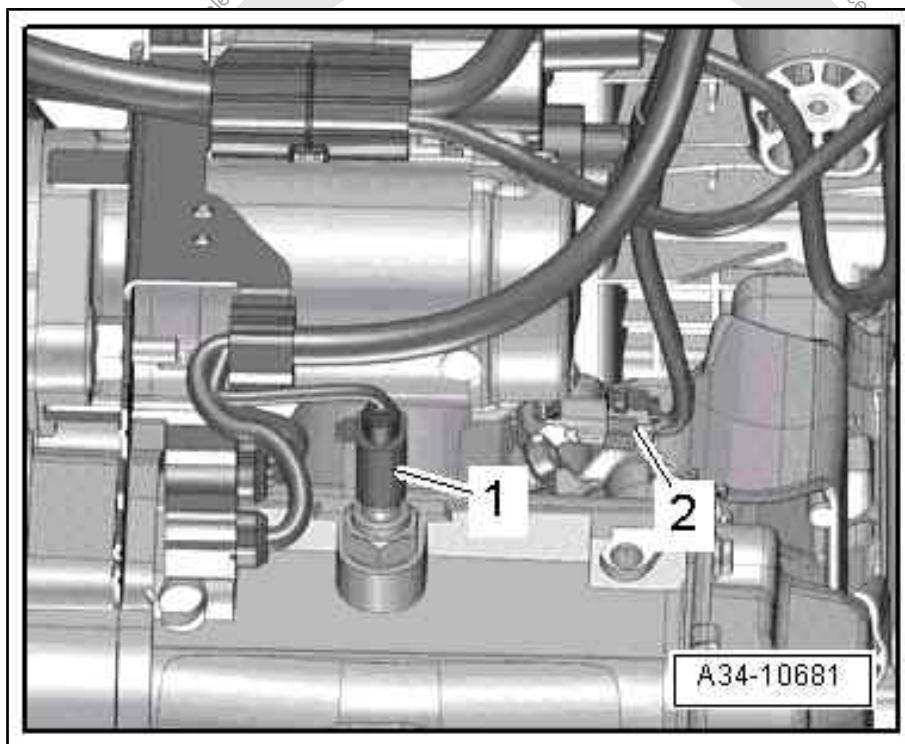
## 5.1.2 Overview of fitting locations – electrical components, manual gearbox, Polo

### 1 - Reversing light switch - F4-

- ❑ Installation location: below starter
- ❑ Removing and installing  
⇒ [page 130](#)

### 2 - Gearbox neutral position sender - G701-

- ❑ Fitting location: in area of selector unit beneath angled rod for securing selector shaft
- ❑ Removing and installing  
⇒ [page 130](#)



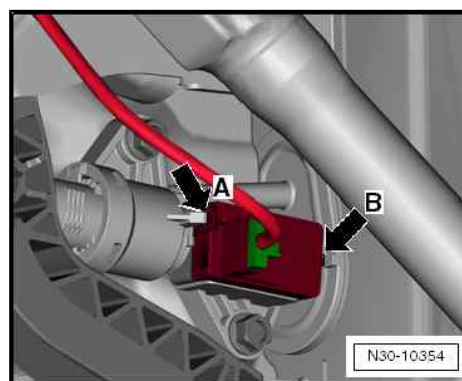
## 5.1.3 Overview of fitting locations – electrical components, clutch mechanism, up!

### Clutch position sender - G476-

Location: in passenger compartment on clutch master cylinder.

Held in position by retainer -arrow A- and -arrow B-

Removing and installing clutch position sender - G476-  
⇒ [page 49](#) .

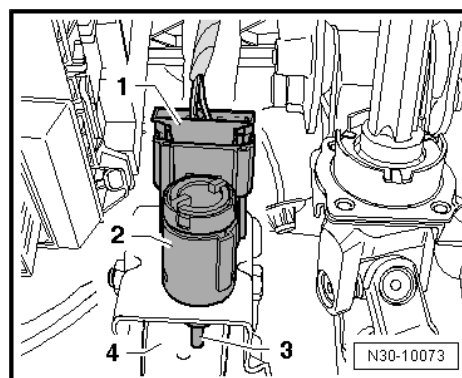


### Clutch pedal switch - F36- (item -2-)

Location: in passenger compartment on mounting bracket for clutch pedal

Connector -1- is connected; plunger -3- makes contact with clutch pedal -4-.

Removing and installing clutch pedal switch - F36- ⇒ [page 48](#)





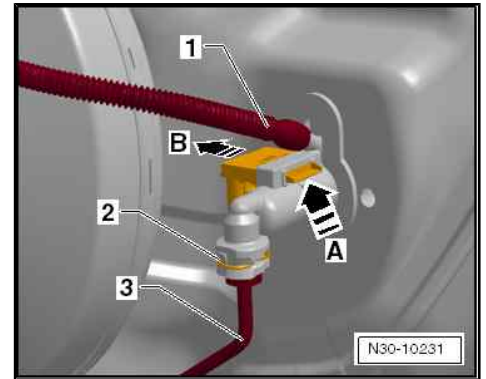
### 5.1.4 Overview of fitting locations – electrical components, clutch mechanism, Polo

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

Fitting location:

In engine compartment beneath supply hose -1- on clutch cylinder  
-2- above line -3-.

Removing and installing clutch position sender - G476-  
⇒ [page 49](#) .





## 6 Repair instructions

⇒ **"6.1 General repair instructions", page 10**

### 6.1 General repair instructions

To ensure flawless and successful gearbox repairs, the greatest care and cleanliness as well as the use of good and proper tools are essential. Also note the basic rules on safety when performing repair procedures.

A number of general notes on the individual repair procedures, which can otherwise be found in the relevant sections of the manual, are summarised here. They apply for this particular workshop manual.

#### Special tool

For a complete list of special tools used in this workshop manual, see ⇒ Electronic parts catalogue (ETKA) .

#### 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.
- ◆ Allocate bolts and other components using the ⇒ Electronic parts catalogue (ETKA) .
- ◆ After repairing the gearbox, fill with gear oil.

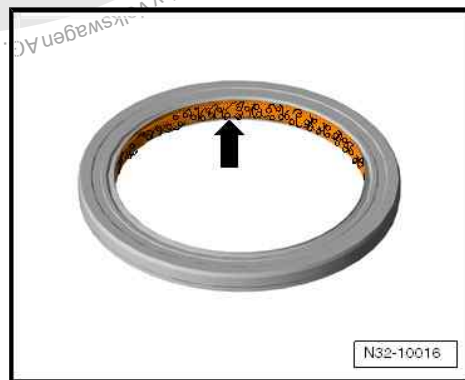
#### Gaskets and seals

After removing gaskets and seals, always inspect contact surfaces of housing and shaft for burrs resulting from removal or for other signs of damage.

- ◆ Thoroughly clean joint surfaces and apply sealant .
- ◆ Allocation ⇒ Electronic parts catalogue (ETKA)
- ◆ Before installing radial oil seals, half-fill space between sealing lips with sealing grease -arrow-.
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- ◆ The open side of the oil seals faces toward the side with fluid filling.
- ◆ Lightly oil O-rings before installing; this prevents the rings being crushed when inserted.

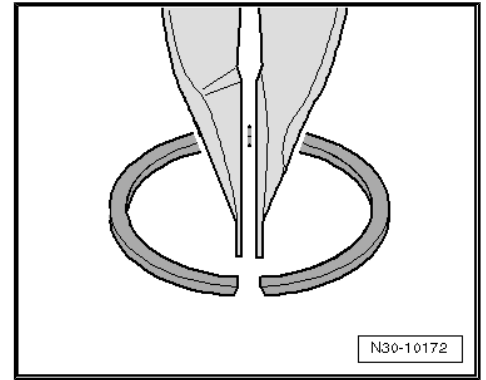
#### Sealant

- ◆ Thoroughly clean housing joint surfaces before applying sealant .
- ◆ Apply sealant uniformly and not too thickly.
- ◆ Allocation ⇒ Electronic parts catalogue (ETKA)
- ◆ Breather holes must remain free of sealant .



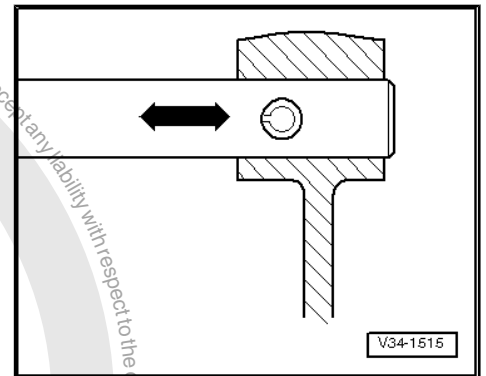


## Locking devices



- ◆ Renew retaining rings.
- ◆ Do not overstretch retaining rings.
- ◆ Retaining rings must locate properly in grooves.
- ◆ Renew spring pins. Installation position: slot must be in line with direction of force.

## Nuts and bolts



- ◆ Loosen and tighten securing bolts and nuts for covers and housings alternately and diagonally.
- ◆ Do not cant especially delicate parts, such as clutch pressure plates. Loosen and tighten bolts and nuts alternately and in stages.
- ◆ Specified torques given are for uncoiled nuts, bolts and screws.
- ◆ Renew self-locking bolts and nuts after each removal.
- ◆ Ensure with threaded connections that contact surfaces as well as nuts and bolts are rewaxed only after assembly, if necessary.
- ◆ Use a thread chaser to clear residual locking fluid from all threaded holes into which self-locking bolts are to be screwed. Otherwise there is a danger of bolts shearing when subsequently being removed.
- ◆ Check pitch of thread, to ensure correct thread chaser is used to clean threads and to ensure the threads are not damaged.

## Bearings

- ◆ Lubricate all bearings with gear oil before installing.
- ◆ 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 inner races to about 100 °C with the inductive heater - VAS 6414- before installing.
- ◆ Do not interchange outer or inner races of bearings of the same size. The bearings are matched in pairs.

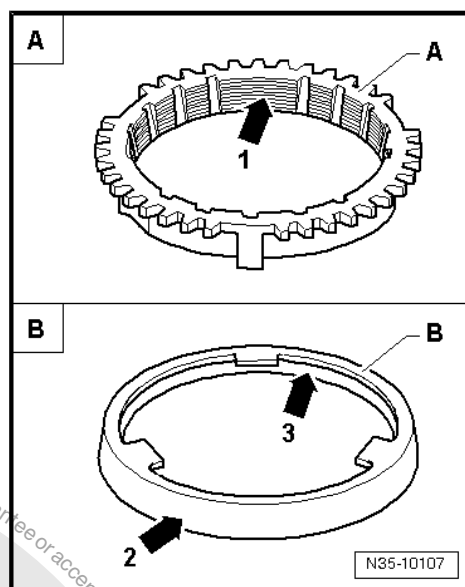
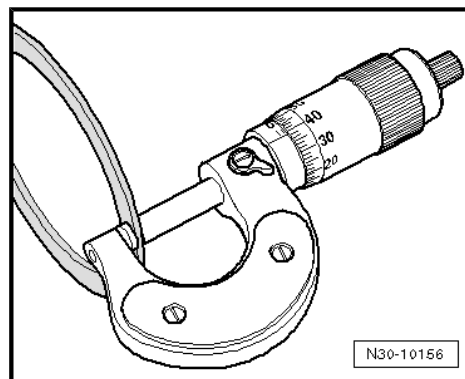


### Shims

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

### Synchro-rings

- ◆ Do not interchange them. When reusing synchro-rings, always fit to the same synchromeshed 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)«.
- ◆ Check the cone of the synchromeshed gear for »scoring« and »signs of abnormal wear«.
- ◆ Moisten synchromesh mechanism with gear oil before installing.



### Gears and synchro-hubs

- ◆ Clean before pressing on. Heat to a maximum of 100°C using inductive heater - VAS 6414- .
- ◆ Observe installation position

### Synchromeshed gears

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

### Clutch operation

Disconnect battery earth strap ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

When reconnecting battery, refer to ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

### Clutch

- ◆ Ensure that the pressure plate does not cant: loosen and tighten bolts alternately and diagonally and in several gradual stages.
- ◆ In order to reduce the smell of a burned clutch, the clutch housing as well as the stopping face of the flywheel must be thoroughly cleaned with a cloth.





## 30 – Clutch

### 1 Clutch operation

⇒ [“1.1 Overview of fitting locations – clutch mechanism”, page 13](#)

⇒ [“1.2 Assembly overview - pedal cluster”, page 16](#)

⇒ [“1.3 Assembly overview - clutch hydraulics”, page 20](#)

⇒ [“1.4 Assembly overview - clutch release mechanism”, page 24](#)

⇒ [“1.5 Removing and installing bearing bush”, page 25](#)

⇒ [“1.15 Checking clutch master cylinder and clutch slave cylinder”, page 49](#)

⇒ [“1.16 Removing and installing clutch position sender G476 ”, page 49](#)

⇒ [“1.7 Removing and installing over-centre spring”, page 28](#)

⇒ [“1.8 Removing and installing extension spring”, page 30](#)

⇒ [“1.6 Removing and installing clutch pedal”, page 26](#)

⇒ [“1.9 Removing and installing mounting bracket”, page 31](#)

⇒ [“1.10 Removing and installing clutch master cylinder”, page 38](#)

⇒ [“1.11 Removing and installing clutch slave cylinder”, page 40](#)

⇒ [“1.12 Removing and installing lines for clutch mechanism”, page 44](#)

⇒ [“1.13 Bleeding clutch mechanism”, page 47](#)

⇒ [“1.17 Repairing clutch release mechanism”, page 51](#)

#### 1.1 Overview of fitting locations – clutch mechanism

⇒ [“1.1.1 Overview of fitting locations – clutch mechanism, up!”, page 13](#)

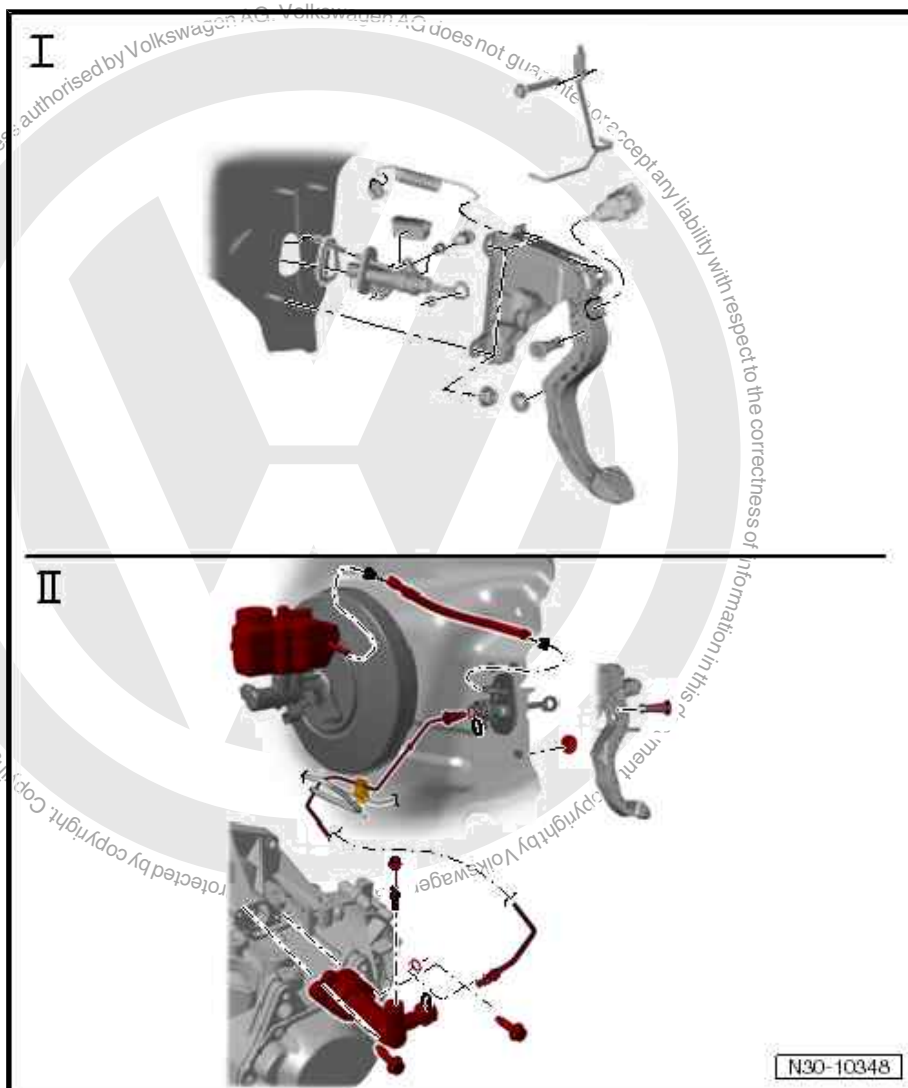
⇒ [“1.1.2 Overview of fitting locations – clutch mechanism, Polo”, page 15](#)

##### 1.1.1 Overview of fitting locations – clutch mechanism, up!



I -  
⇒ "1.2.1 Assembly overview –  
pedal cluster, up!", page 16

II -  
⇒ "1.3.1 Assembly overview –  
clutch hydraulics, up!",  
page 20





## 1.1.2 Overview of fitting locations – clutch mechanism, Polo

I -

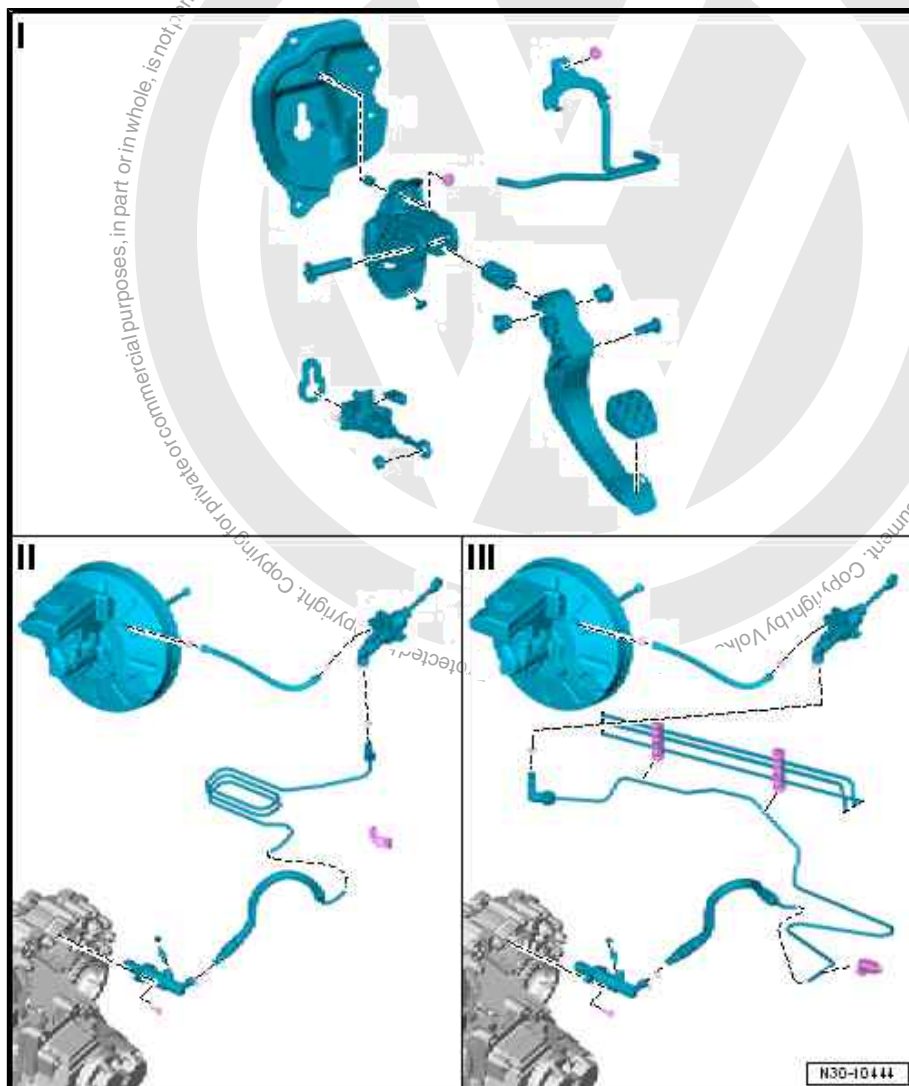
⇒ [“1.2.2 Assembly overview – pedal cluster, Polo”, page 18](#)

II -

⇒ [“1.3.2 Assembly overview – clutch hydraulics, Polo, LHD vehicles”, page 22](#)

III -

⇒ [“1.3.3 Assembly overview – clutch hydraulics, Polo, RHD vehicles”, page 23](#)





## 1.2 Assembly overview - pedal cluster

⇒ "1.2.1 Assembly overview – pedal cluster, up!", page 16

⇒ "1.2.2 Assembly overview – pedal cluster, Polo", page 18

### 1.2.1 Assembly overview – pedal cluster, up!

#### 1 - Bulkhead

- ☐ With support for mounting bracket and clutch master cylinder.

#### 2 - Seal

- ☐ Self-adhesive
- ☐ Renew after removing mounting bracket or clutch master cylinder
- ☐ Stick to clutch master cylinder.

#### 3 - Supply hose

- ☐ ⇒ [page 20](#)

#### 4 - Support

- ☐ fit into mounting bracket  
⇒ [page 30](#) Installing extension spring
- ☐ No specific installation position needs to be adhered to.

#### 5 - Clutch position sender - G476-

- ☐ Installed depending on version.
- ☐ Can be checked using  
⇒ Vehicle diagnostic tester in Guided Fault Finding mode
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing  
⇒ [page 49](#)

#### 6 - Spring

- ☐ Hooked into mounting bracket and into clutch pedal
- ☐ Removing and installing ⇒ [page 30](#)

#### 7 - Bush

- ☐ Qty. 2
- ☐ Chamfer -arrow- faces clutch master cylinder.
- ☐ Press in flush.

#### 8 - Bolt

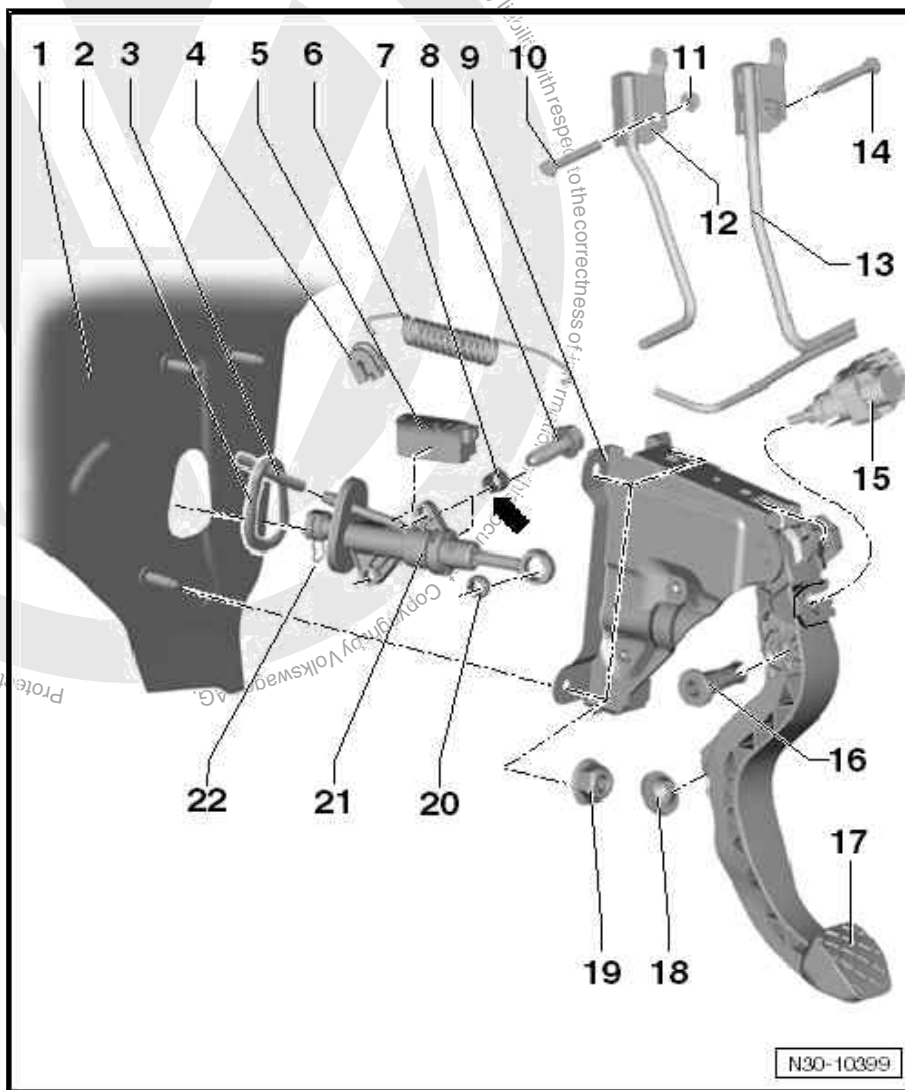
- ☐ 13 Nm

#### 9 - Mounting bracket with clutch pedal

- ☐ Removing and installing ⇒ [page 31](#)

#### 10 - Bolt

- ☐ LHD vehicles
- ☐ For crash bar on steering column





- ☐ 20 Nm

#### 11 - Hexagon nut

- ☐ LHD vehicles
- ☐ For crash bar on steering column

#### 12 - Crash bar

- ☐ LHD vehicles
- ☐ Attached to steering column
- ☐ Allocate components using ⇒ Electronic parts catalogue (ETKA)

#### 13 - Crash bar

- ☐ RHD vehicles
- ☐ Attached to steering column
- ☐ Allocate components using ⇒ Electronic parts catalogue (ETKA)

#### 14 - Bolt

- ☐ RHD vehicles
- ☐ For crash bar on steering column
- ☐ 20 Nm

#### 15 - Clutch pedal switch - F36-

- ☐ Installed depending on version.
- ☐ Allocate components using ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing ⇒ [page 48](#)

#### 16 - Pivot pin

- ☐ For plunger/clutch master cylinder
- ☐ Renew after removal

#### 17 - Cap

#### 18 - Buffer stop

- ☐ For clutch pedal

#### 19 - Hexagon nut

- ☐ Qty. 3
- ☐ Self-locking
- ☐ Renew after removal
- ☐ 25 Nm

#### 20 - Bearing bush

- ☐ Removing and installing ⇒ [page 25](#)

#### 21 - Clutch master cylinder

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

#### 22 - Clip

- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

## 1.2.2 Assembly overview – pedal cluster, Polo

### 1 - Clutch pedal

- ☐ Removing and installing  
⇒ [page 26](#)
- ☐ Do not grease

### 2 - Bearing bush

- ☐ Removing and installing  
⇒ [page 25](#)
- ☐ Do not grease

### 3 - Clutch master cylinder

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

### 4 - Clip

- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

### 5 - Seal

- ☐ Self-adhesive
- ☐ Renew after removing the clutch master cylinder.
- ☐ Glue onto clutch master cylinder

### 6 - Clutch position sender - G476-

- ☐ Can be checked using  
⇒ Vehicle diagnostic tester in Guided Fault Finding mode
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing  
⇒ [page 49](#)

### 7 - Pivot pin

- ☐ Renew after removal
- ☐ Do not grease

### 8 - Bulkhead

- ☐ With studs for securing mounting bracket and master cylinder

### 9 - Bush

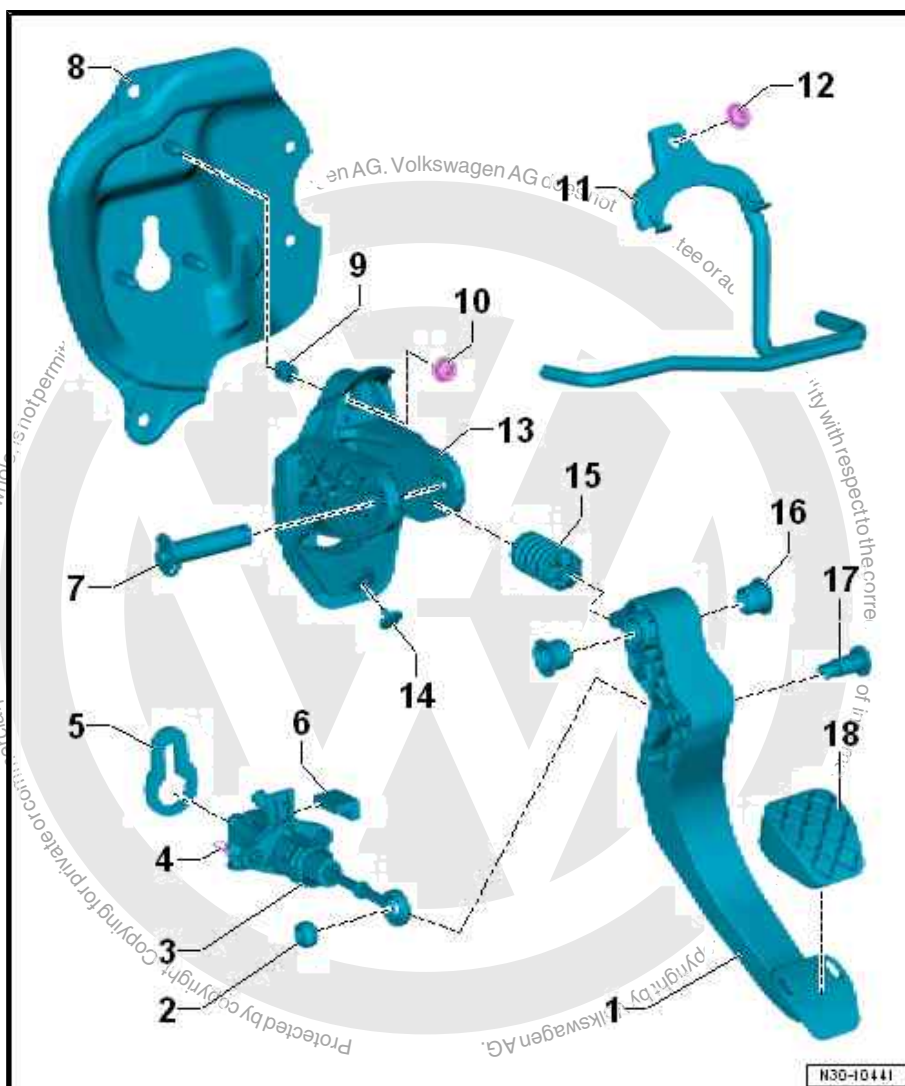
- ☐ For upper mounting hole in mounting bracket
- ☐ Bushes for lower mounting holes in mounting bracket are located in master cylinder

### 10 - Hexagon nut

- ☐ For securing mounting bracket and clutch master cylinder to plenum chamber bulkhead
- ☐ Qty. 3
- ☐ Self-locking
- ☐ Renew after removal
- ☐ 25 Nm

### 11 - Crash bar

- ☐ Secured to module carrier







- ☐ Allocate according to ⇒ Electronic parts catalogue (ETKA)

#### 12 - Hexagon nut

- ☐ For crash bar on module carrier
- ☐ Renew after removal
- ☐ 20 Nm

#### 13 - Mounting bracket

- ☐ For clutch pedal
- ☐ Removing and installing ⇒ [page 31](#)
- ☐ Using drift - VW 207- drive bushes for the studs used to fasten the mounting bracket onto the bulkhead, into the holes in the mounting bracket

#### 14 - Buffer stop

#### 15 - Over-centre spring or extension spring

- ☐ Grease support on mounting bracket
- ☐ For grease allocation, refer to ⇒ Electronic parts catalogue (ETKA) .
- ☐ Installed depending on version.
- ☐ Different versions exist; for correct version refer to ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing over-centre spring ⇒ [page 28](#)
- ☐ Removal and installation of extension spring are identical to removal and installation of over-centre spring ⇒ [page 28](#)

#### 16 - Bearing bush

- ☐ Do not grease

#### 17 - Pivot pin

- ☐ For plunger/clutch master cylinder
- ☐ Renew after removal
- ☐ Do not grease

#### 18 - Cap



## 1.3 Assembly overview - clutch hydraulics

⇒ [“1.3.1 Assembly overview – clutch hydraulics, up!”, page 20](#)

⇒ [“1.3.2 Assembly overview – clutch hydraulics, Polo, LHD vehicles”, page 22](#)

⇒ [“1.3.3 Assembly overview – clutch hydraulics, Polo, RHD vehicles”, page 23](#)

### 1.3.1 Assembly overview – clutch hydraulics, up!

#### 1 - Brake fluid reservoir

#### 2 - Supply hose

#### 3 - Seal

- ☐ If damaged, renew together with supply hose
- ☐ The seals must be located in supply hose

#### 4 - Clutch master cylinder

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

#### 5 - Clip

- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

#### 6 - Mounting bracket with clutch pedal

#### 7 - Pivot pin

- ☐ For plunger/clutch master cylinder

#### 8 - Hexagon nut

- ☐ ⇒ [page 16](#)

#### 9 - Seal / O-ring

- ☐ Renew if damaged
- ☐ Pull onto line connection
- ☐ Insert with brake fluid
- ☐ Seals/O-rings are adapted to material of line connection ⇒ [page 42](#)
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

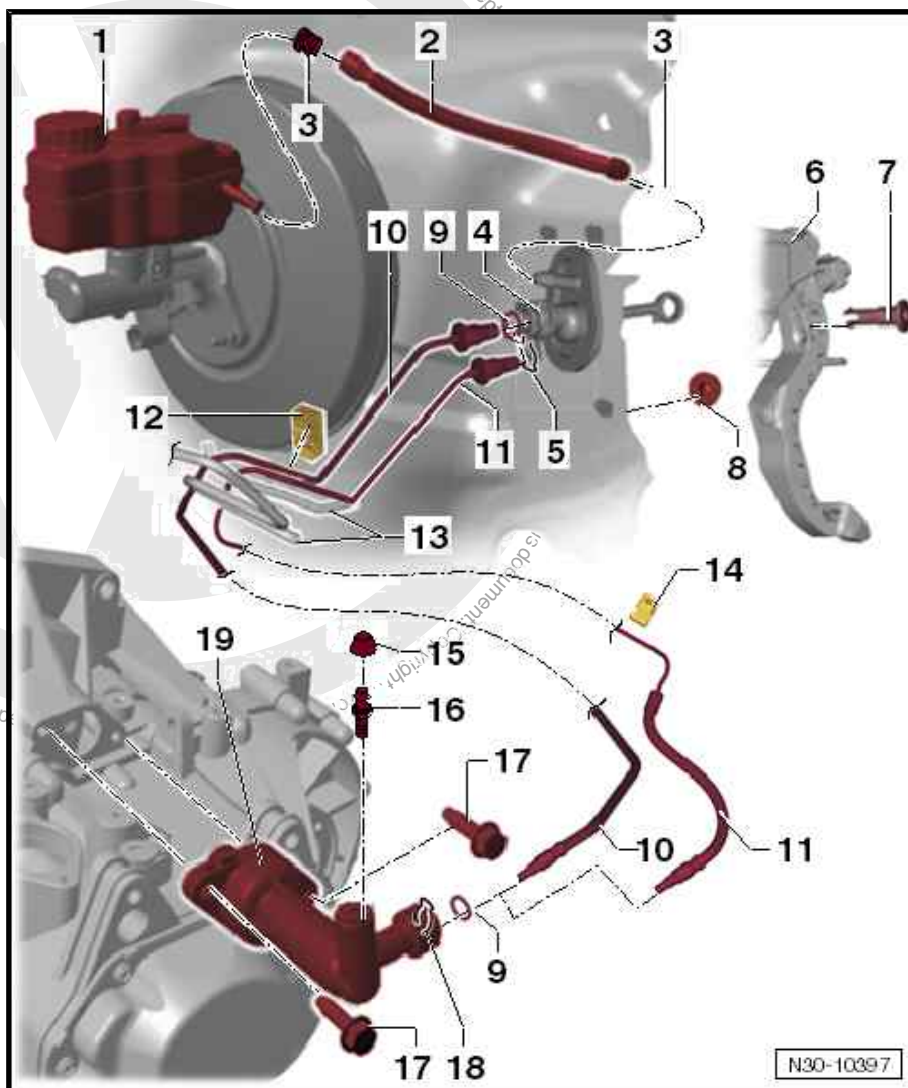
#### 10 - Pipe line

- ☐ Installed on left-hand drive vehicles as an alternative to pipe/hose line.
- ☐ Different lengths for LHD and RHD vehicles.
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

#### 11 - Pipe/hose line

#### 12 - Bracket

- ☐ Only LHD.
- ☐ Secured to body
- ☐ For brake lines, pipe line and pipe/hose line.
- ☐ Identifying differences between brackets for pipe line and pipe/hose line ⇒ [page 21](#) .







### 13 - Brake lines

- ☐ Various number
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

### 14 - Bracket

- ☐ Only RHD.
- ☐ Secured to body

### 15 - Dust cap

### 16 - Bleeder valve

- ☐ Bleeding clutch mechanism ⇒ [page 47](#)
- ☐ Specified torque ⇒ [page 47](#)

### 17 - Hexagon bolt

- ☐ ⇒ [page 24](#)

### 18 - Clip

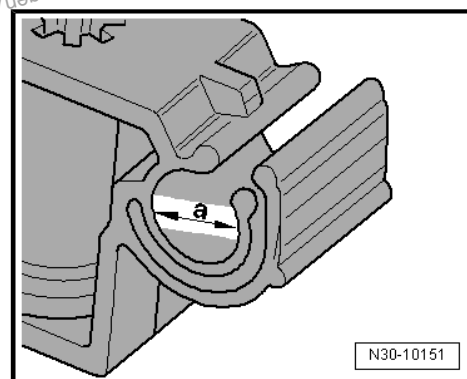
- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

### 19 - Clutch slave cylinder

- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing ⇒ [page 40](#)

LHD, identifying differences between brackets for pipe line and pipe/hose line

Dimension "a" mm	Line configuration
approx. 6	Pipe line
approx. 8	Pipe/hose line





## 1.3.2 Assembly overview – clutch hydraulics, Polo, LHD vehicles

### 1 - Hexagon bolt

- ❑ Specified torque  
⇒ [page 24](#)

### 2 - Bleeder valve

- ❑ Bleeding clutch mechanism ⇒ [page 47](#)
- ❑ Specified torque  
⇒ [page 47](#)

### 3 - Dust cap

### 4 - Supply hose

### 5 - Brake fluid reservoir

### 6 - Seals

- ❑ Must be fitted in supply hose
- ❑ If damaged, renew together with supply hose

### 7 - Clutch master cylinder

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

### 8 - Clip

- ❑ To remove pipe/hose line, pull out clip to stop
- ❑ Can be pressed in as far as stop before fitting line

### 9 - Seal / O-ring

- ❑ Renew if damaged
- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection  
⇒ [page 44](#)

- ❑ Allocation ⇒ Electronic parts catalogue (ETKA)

### 10 - Pipe/hose line

- ❑ Actual number of windings may vary from that shown in illustration
- ❑ Allocation ⇒ Electronic parts catalogue (ETKA)
- ❑ Removing and installing ⇒ [page 44](#)

### 11 - Bracket

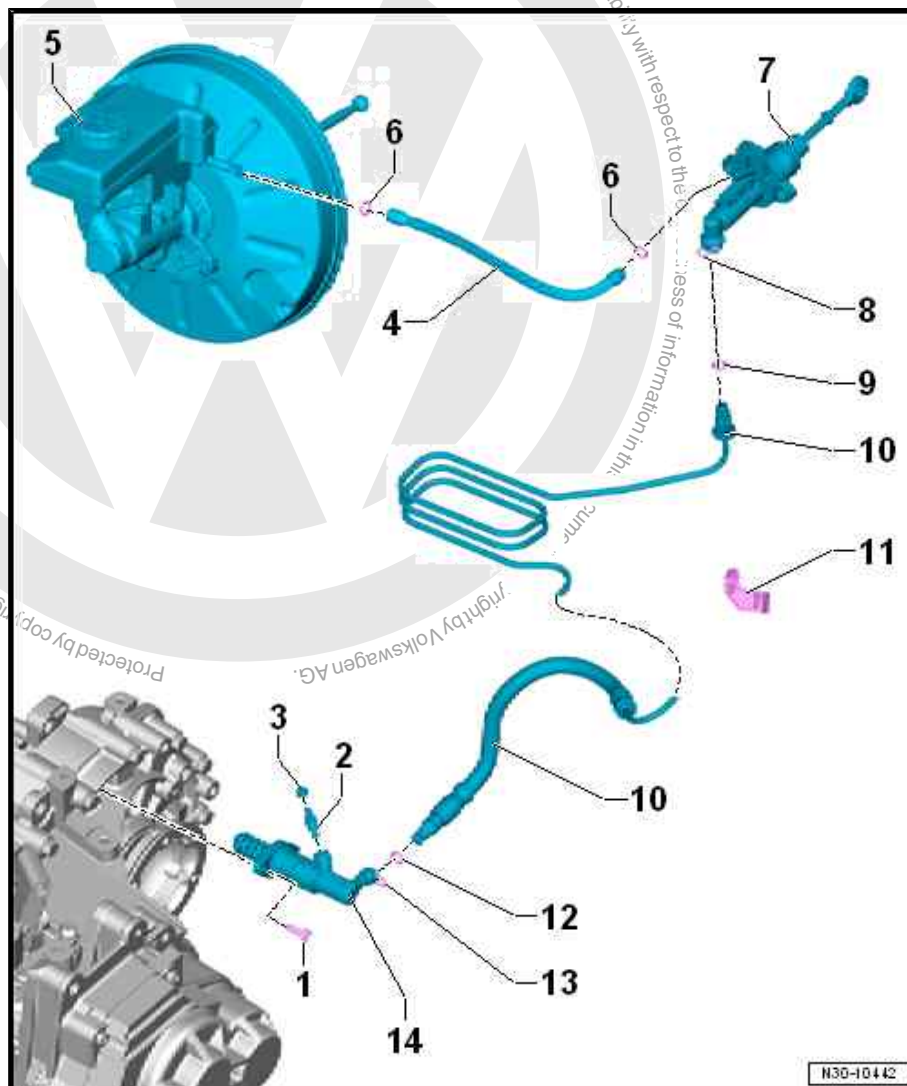
- ❑ Secured to body
- ❑ For pipe/hose line

### 12 - Seal / O-ring

- ❑ Renew if damaged
- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ [page 44](#)
- ❑ Allocation ⇒ Electronic parts catalogue (ETKA)

### 13 - Clip

- ❑ To remove pipe/hose line, pull out clip to stop





- ☐ Can be pressed in as far as stop before fitting line

#### 14 - Clutch slave cylinder

- ☐ Removing and installing ⇒ [page 40](#)

### 1.3.3 Assembly overview – clutch hydraulics, Polo, RHD vehicles

#### 1 - Hexagon bolt

- ☐ Specified torque  
⇒ [page 24](#)

#### 2 - Clutch slave cylinder

- ☐ Removing and installing  
⇒ [page 40](#)

#### 3 - Gearbox

#### 4 - Seal / O-ring

- ☐ Renew if damaged
- ☐ Pull onto line connection
- ☐ Insert with brake fluid
- ☐ Seals/O-rings are adapted to configuration of line connection  
⇒ [page 44](#)
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

#### 5 - Brake fluid reservoir

#### 6 - Seals

- ☐ Must be fitted in supply hose
- ☐ If damaged, renew together with supply hose

#### 7 - Supply hose

#### 8 - Clutch master cylinder

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

#### 9 - Clip

- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

#### 10 - Bracket

- ☐ Secured to body
- ☐ For brake lines and pipe/hose assembly

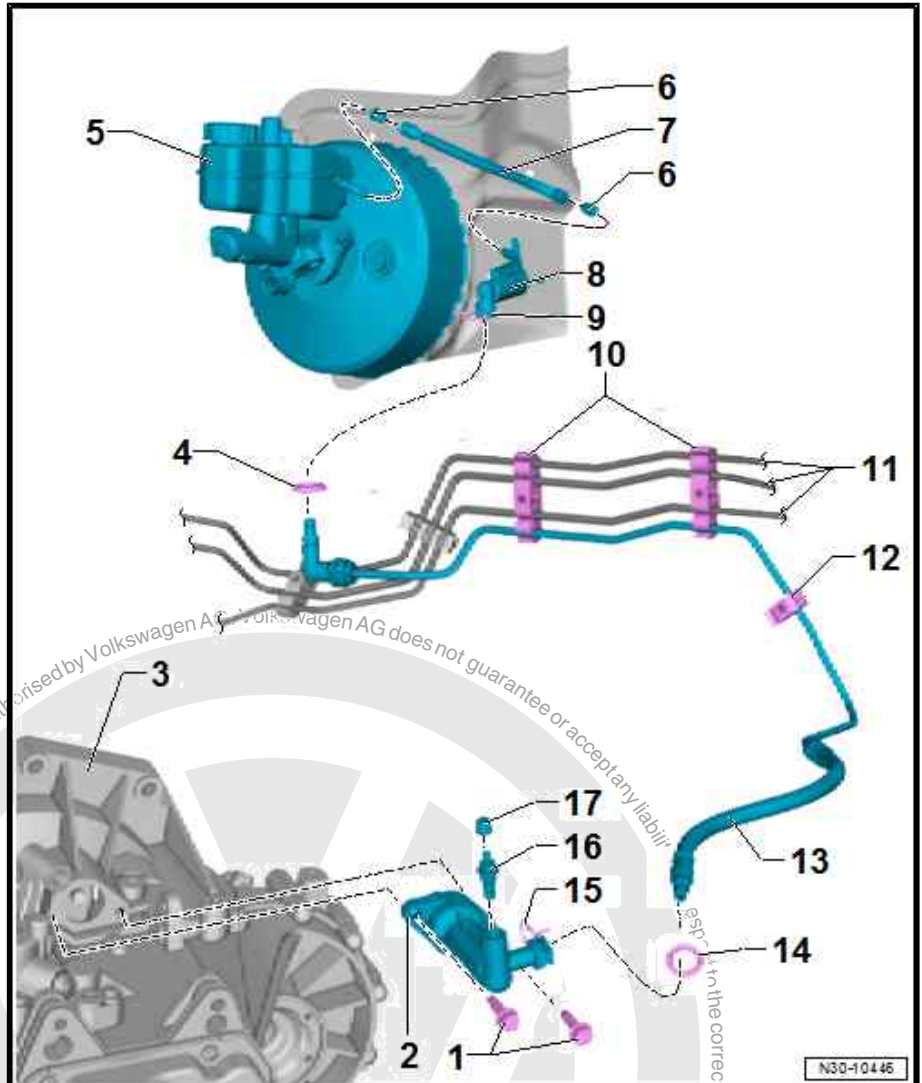
#### 11 - Brake lines

#### 12 - Bracket

- ☐ Secured to body
- ☐ For pipe/hose line

#### 13 - Pipe/hose line

- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)
- ☐ Removing and installing ⇒ [page 44](#)





#### 14 - Seal / O-ring

- ☐ Renew if damaged
- ☐ Pull onto line connection
- ☐ Insert with brake fluid
- ☐ Seals/O-rings are adapted to configuration of line connection ➔ [page 44](#)
- ☐ Allocation ➔ Electronic parts catalogue (ETKA)

#### 15 - Clip

- ☐ To remove pipe/hose line, pull out clip to stop
- ☐ Can be pressed in as far as stop before fitting line

#### 16 - Bleeder valve

- ☐ Bleeding clutch mechanism ➔ [page 47](#)
- ☐ Specified torque ➔ [page 47](#)

#### 17 - Dust cap

### 1.4 Assembly overview - clutch release mechanism

#### 1 - Release bearing

- ☐ Remove and install together with clutch release lever and guide sleeve ➔ [page 51](#)
- ☐ Do not wash out bearing; wipe only
- ☐ Renew noisy bearings

#### 2 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm +90°

#### 3 - Clutch release lever

- ☐ Remove and install together with clutch release bearing and guide sleeve ➔ [page 51](#)
- ☐ Remove old grease
- ☐ Grease contact surface of ball-head pin with grease for clutch plate splines
- ☐ Allocate grease using ➔ Electronic parts catalogue (ETKA)

#### 4 - Retaining spring

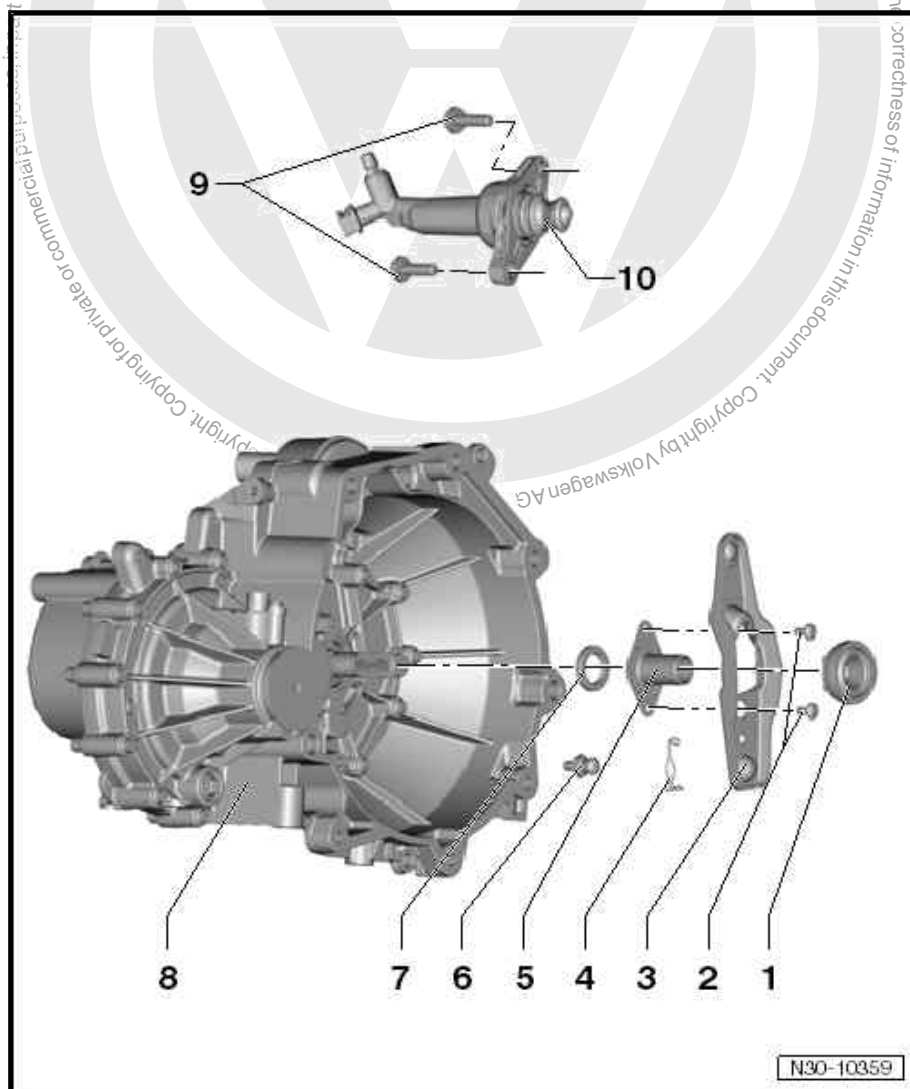
- ☐ Secure to clutch release lever

#### 5 - Guide bush

- ☐ Remove and install together with clutch release bearing and clutch release lever ➔ [page 51](#)

#### 6 - Ball-head pin

- ☐ Remove old grease
- ☐ Grease contact surface of ball-head pin with grease for clutch plate splines





- ❑ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- ❑ 20 Nm

## 7 - Input shaft seal

- ❑ Renew after removal ⇒ [page 176](#)

## 8 - Gearbox

## 9 - Hexagon bolt

- ❑ 20 Nm

## 10 - Clutch slave cylinder

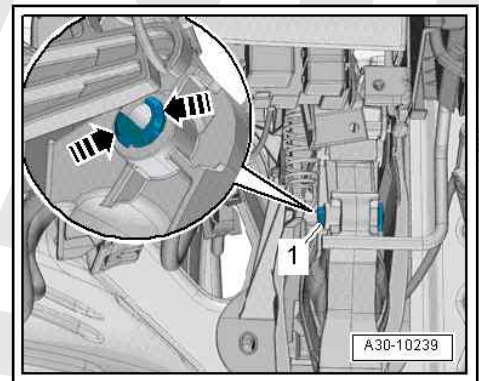
- ❑ Removing and installing ⇒ [page 40](#)

# 1.5 Removing and installing bearing bush

## Removing

Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery;  
Disconnecting and reconnecting battery .

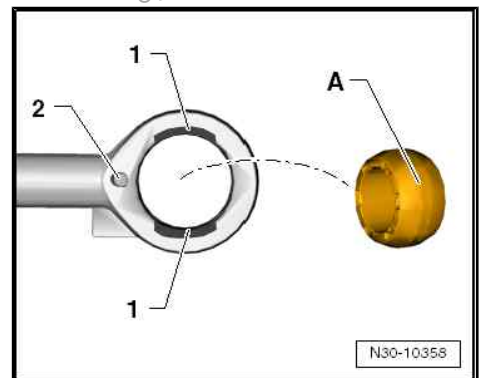
- Remove over-centre spring/extension spring ⇒ [page 28](#) .
- Compress catches -arrows- and take out pin -1- towards right side.
- Pull clutch pedal into passenger compartment as far as stop.
- Remove over-centre spring/extension spring.



- Turn plunger of clutch master cylinder so that recesses -1- or marking -2- become visible.

Ensure that recesses -1- and marking -2- point in same direction.

- Remove bearing bush -A- from recesses -1-.

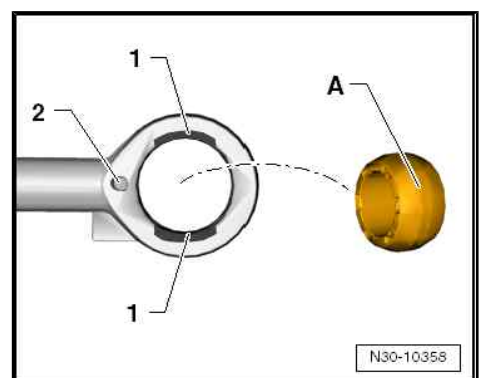


## Installing

- Turn plunger of clutch master cylinder so that recesses -1- or marking -2- become visible.

Ensure that recesses -1- and marking -2- point in same direction.

- Fit and swivel bearing bush -A- into recesses -1-.
- Install over-centre spring/extension spring ⇒ [page 28](#) , and connect plunger/clutch master cylinder to clutch pedal.
- Use new pivot pin.
- Connect battery ⇒ Electrical system; Rep. gr. 27 ; Battery;  
Disconnecting and connecting battery .







## 1.6 Removing and installing clutch pedal

⇒ [“1.6.1 Removing and installing clutch pedal, up!”, page 26](#)

⇒ [“1.6.2 Removing and installing clutch pedal, Polo, LHD vehicles”, page 26](#)

⇒ [“1.6.3 Removing and installing clutch pedal, Polo, RHD vehicles”, page 27](#)

### 1.6.1 Removing and installing clutch pedal, up!

The clutch pedal is removed and installed together with the mounting bracket ⇒ [page 31](#).

The clutch pedal stays fitted to the mounting bracket.

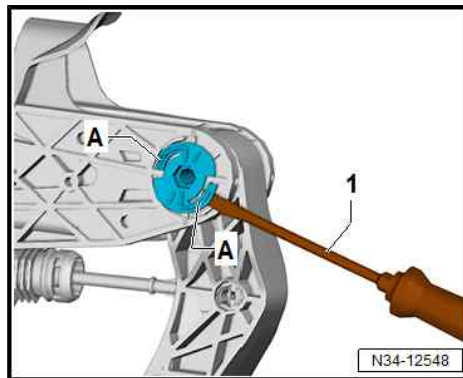
### 1.6.2 Removing and installing clutch pedal, Polo, LHD vehicles

#### Removing

- Move driver seat as far back as possible.
- Move steering wheel to uppermost position using the entire range of adjustment of the steering column.
- Remove over-centre spring/extension spring ⇒ [page 28](#).
- If installed in area of mounting bracket: remove onboard supply control unit - J519- ⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519-.

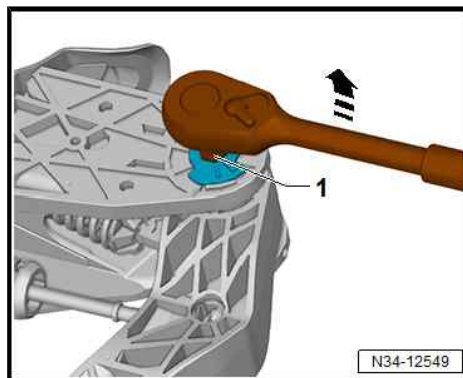
Remove pivot pin the for the clutch pedal as follows:

- Break off both locking devices -A- using a screwdriver -1-.



-1- 10 mm hexagon bit

- Turn bearing shaft for clutch pedal to left -arrow- as far as stop.
- Move clutch pedal slightly so that the pivot pin can be pulled out.

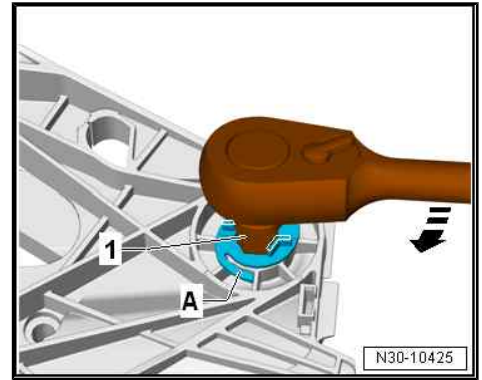




## Installing

Install in reverse order of removal, observing the following:

- 1- = 10 mm hexagon bit
- Renew pivot pin after removing.
- Depress clutch pedal slightly and push new pivot pin through to stop.
- Turn pivot pin to right to stop, -direction of arrow-.
- Locking devices -A- must audibly engage.
- Install over-centre spring/extension spring ➔ [page 28](#) .
- If removed beforehand: install onboard supply control unit - J519- ➔ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519- .



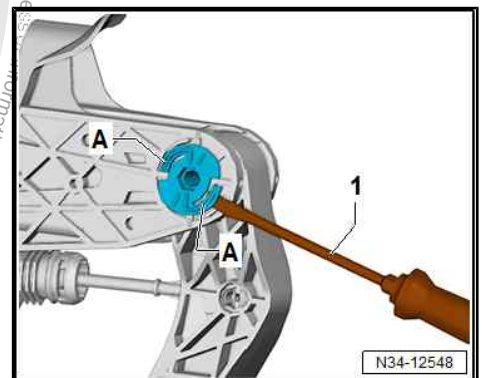
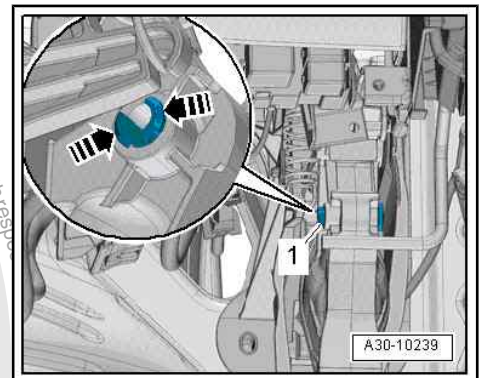
## 1.6.3 Removing and installing clutch pedal, Polo, RHD vehicles

### Removing

- Remove mounting bracket ➔ [page 31](#) .
- Compress fasteners -arrows-, and pull pivot pin -1- for plunger/ clutch master cylinder off towards right (shown in illustration with mounting bracket installed).
- Pull clutch pedal as far as stop.
- Remove over-centre spring/extension spring.

**Remove pivot pin the for the clutch pedal as follows:**

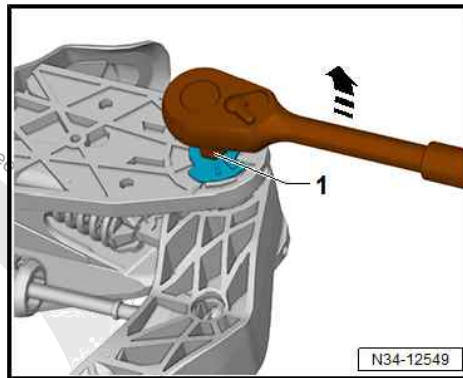
- Break off both locking devices -A- using a screwdriver -1-.





-1- = 10 mm hexagon bit

- Turn bearing shaft for clutch pedal to left -arrow- as far as stop.
- Move clutch pedal slightly so that the pivot pin can be pulled out.

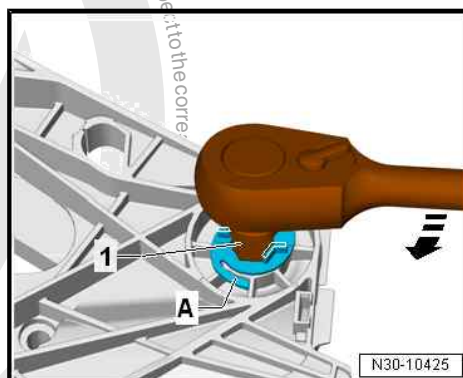


### Installing

Install in reverse order of removal, observing the following:

-1- = 10 mm hexagon bit

- Renew pivot pin after removing.
- Push new pivot pin through to stop.
- Turn pivot pin to right to stop, -direction of arrow-.
- Locking devices -A- must audibly engage.
- Install over-centre spring/extension spring ⇒ [page 28](#) .
- Install mounting bracket ⇒ [page 31](#) .



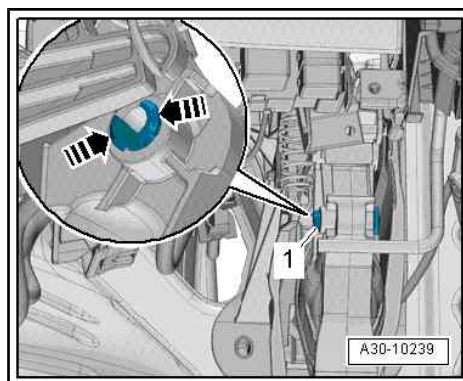
## 1.7 Removing and installing over-centre spring

### Removing

- Move driver seat as far back as possible.
- Move steering wheel to uppermost position using the entire range of adjustment of the steering column.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .
- Compress catches -arrows- and pull out pivot pin -1- for plunger/clutch master cylinder towards right side.
- Pull clutch pedal into passenger compartment as far as stop.
- Remove over-centre spring.

### Installing

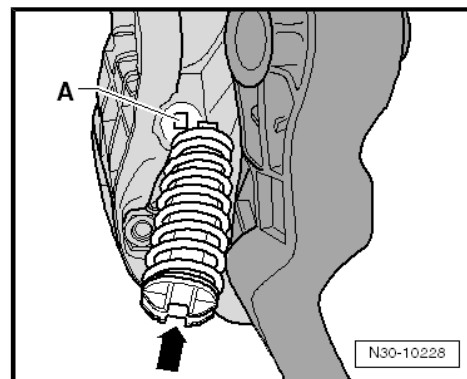
Install in reverse order of removal, observing the following:



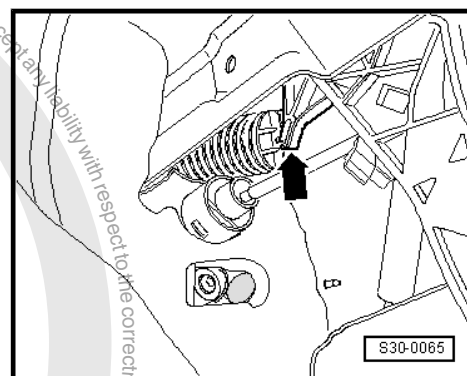




- Receptacle -arrow- for mounting pin of clutch pedal must be vertical.
- Insert over-centre spring from side and from below, adjacent to plunger of master cylinder and adjacent to clutch pedal, into support -A- in mounting bracket.

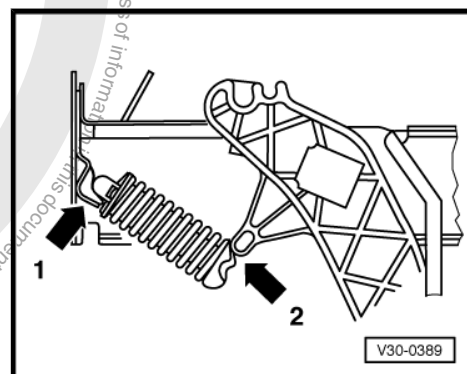


- Now position over-centre spring on mounting lug of clutch pedal -arrow-.

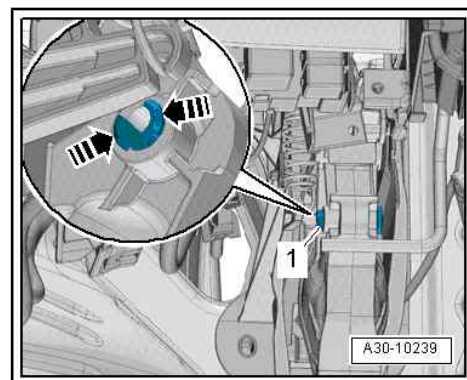


#### Note

- ◆ The over-centre spring must be located directly in the mounting -arrow 1- in the bearing bracket to be fitted correctly on the clutch pedal -arrow 2- (⇒ see also previous illustration).
- ◆ Otherwise, it will not be possible to install the pivot pin -1- for the plunger/clutch master cylinder (⇒ next illustration).



- Press clutch pedal in operating position, and push new pivot pin -1- for plunger/clutch master cylinder through to stop.
- Make sure that fasteners -arrows- of pivot pin -1- engage.
- Connect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .





## 1.8 Removing and installing extension spring

⇒ ["1.8.1 Removing and installing extension spring, up!", page 30](#)

⇒ ["1.8.2 Removing and installing extension spring, Polo", page 31](#)

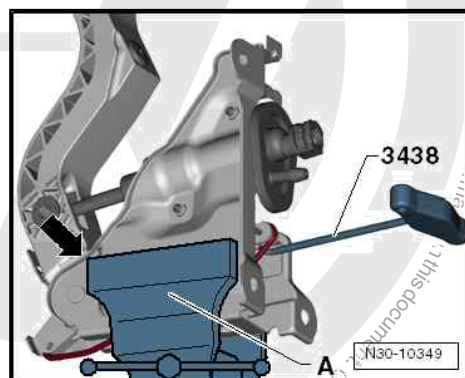
### 1.8.1 Removing and installing extension spring, up!

Special tools and workshop equipment required

- ◆ Hook - 3438-

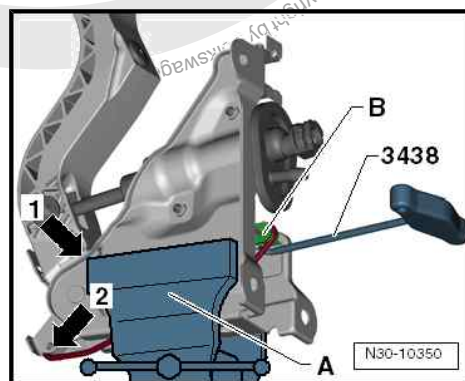
#### Removing

- Remove mounting bracket ⇒ [page 31](#) .
- Carefully clamp mounting bracket in a vice -A-.
- The mounting bracket -arrow 1- is secured in the vice by the edge in the front area.
- The edge ensures that the mounting bracket is not pulled out of the vice when removing the extension spring.
- Pull extension spring firmly out of support and remove.



#### Installing

- Remove mounting bracket ⇒ [page 31](#) .
- Carefully clamp mounting bracket in a vice -A-.
- The mounting bracket -arrow 1- is secured in the vice by the edge in the front area.
- The edge ensures that the mounting bracket is not pulled out of the vice when installing the extension spring.
- Install new support -B- for extension spring.
- Slightly grease following areas for extension spring:
- Mounting -B-
- Mounting on clutch pedal -arrow 2-
- Grease ⇒ Electronic parts catalogue (ETKA)
- Attach extension spring to support on clutch pedal. -Arrow 2-.
- Attach extension spring to support -B- on mounting bracket.





## 1.8.2 Removing and installing extension spring, Polo

Removal and installation of extension spring are identical to removal and installation of over-centre spring ➔ [page 28](#)

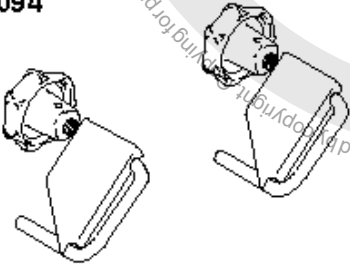
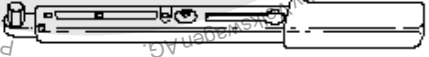
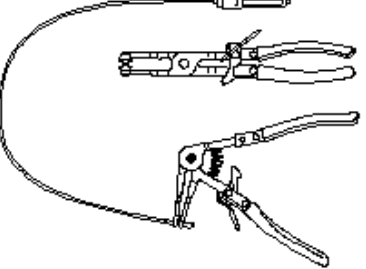
## 1.9 Removing and installing mounting bracket

➔ ["1.9.1 Removing and installing mounting bracket, up!", page 31](#)

➔ ["1.9.2 Removing and installing mounting bracket, Polo", page 34](#)

### 1.9.1 Removing and installing mounting bracket, up!

Special tools and workshop equipment required

<p><b>3094</b></p> 	<p><b>V.A.G 1331</b></p> 
<p><b>VAS 5024 A</b></p> 	
	<p>VW30-10004</p>

- ◆ Hose clamp - 3094-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Not required, spring-type clip pliers - VAS 5024 A-



Sealing tool - T10249-

### Removing

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

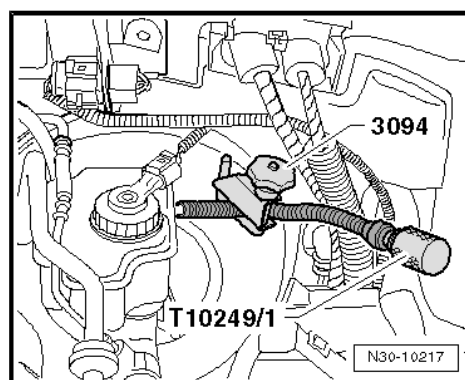
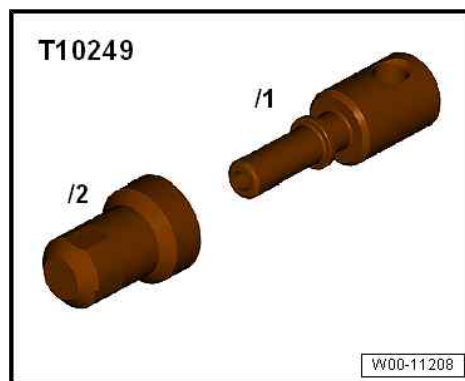
- Clamp off supply hose to clutch master cylinder using hose clamp - 3094- .



### Caution

#### *Risk of leaking brake fluid.*

- During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.
- Lay a lint-free cloth under clutch master cylinder.
- When performing work in the footwell, put cloths on the carpet to protect it from possible brake fluid spills.



- Disconnect supply hose -1- from clutch master cylinder.
- In addition to clamping off, it can also be sealed with sealing tool - T10249/1- (⇒ illustration above).
- Pull out clip for pipe/hose assembly -1- as far as stop and remove pipe/hose assembly ⇒ [page 42](#) .
- Remove driver side footwell cover ⇒ General body repairs, interior; Rep. gr. 68; Compartments/covers; Removing and installing dash panel end trim on driver side .

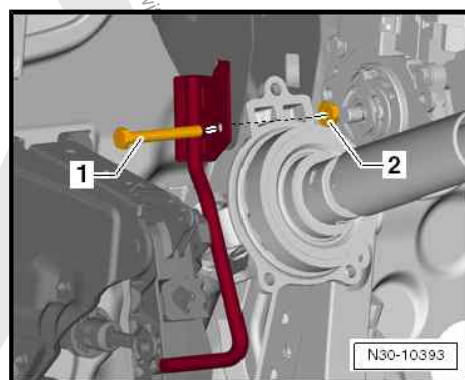
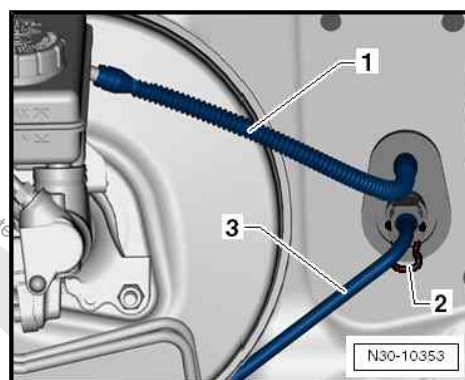
### Vehicles with clutch pedal switch - F36- .

- Remove clutch pedal switch - F36- ⇒ [page 48](#) .

### LHD vehicles

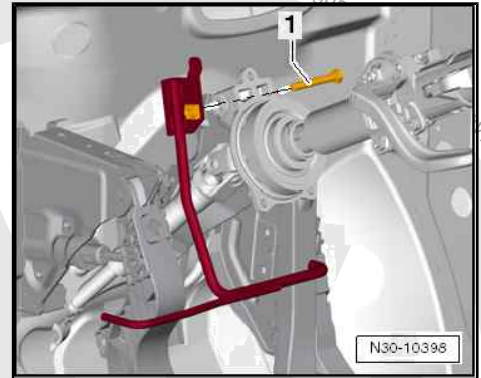
- Remove crash bar by unscrewing bolt -1-.

Note nut -2-.



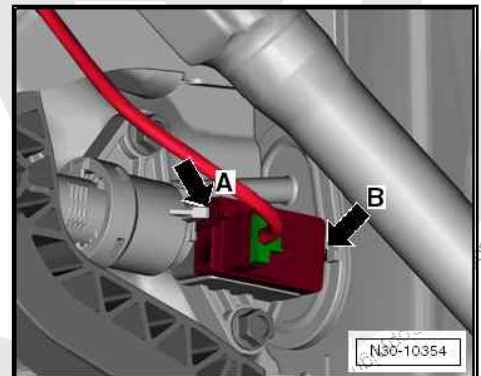
## RHD vehicles

- Remove crash bar by unscrewing bolt -1-.



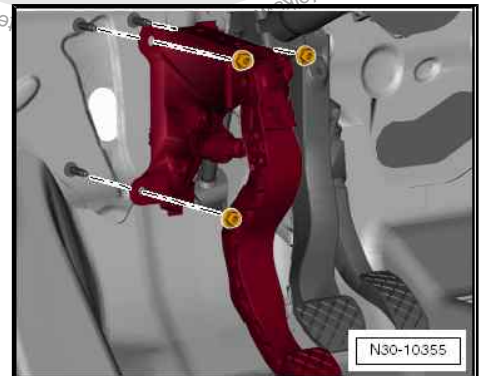
## Vehicles with clutch pedal sender - G476- :

- Unclip clutch position sender - G476- from clutch master cylinder -arrow A- and remove from fitting location -arrow B-.
- Remove clutch position sender - G476- with electrical connector connected.



## Continuation for all

- Unscrew securing nuts.
- Remove mounting bracket with clutch master cylinder.



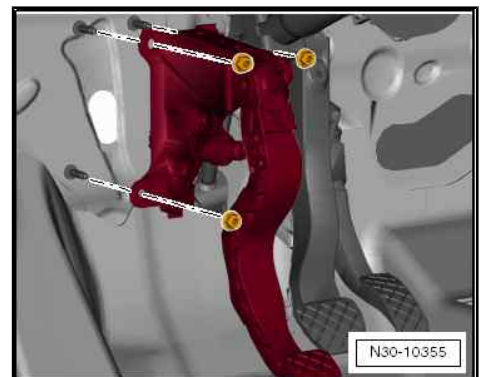
## Installing

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



### Note

- ◆ *Renew self-locking nut.*
- ◆ *Renew seal for clutch master cylinder after removing mounting bracket or clutch master cylinder ⇒ [Item 2 \(page 16\)](#) .*
- Tighten securing nuts for mounting bracket.



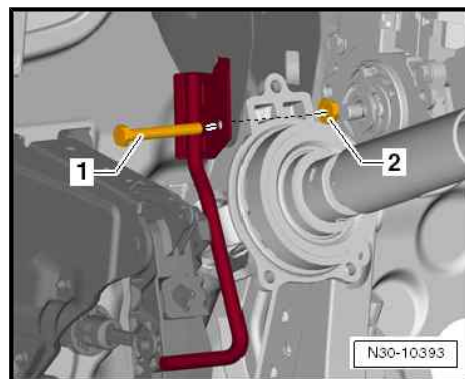




### LHD vehicles

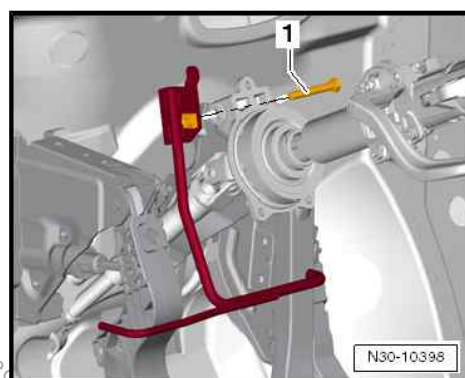
- Install crash bar; tighten bolt -1-.

Note nut -2-.



### RHD vehicles

- Install crash bar; tighten bolt -1-.



### Vehicles with clutch pedal sender - G476- :

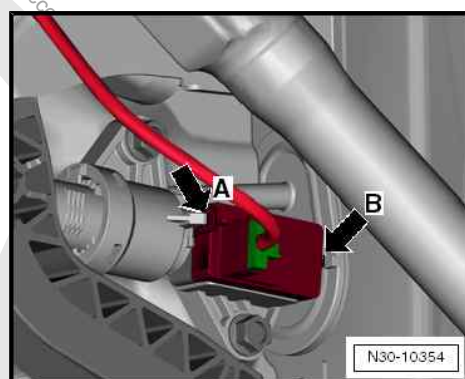
- Fit clutch position sender - G476- on clutch master cylinder into fitting location -arrow B- and clip it in -arrow A-.
- Test clutch position sender - G476- by tugging on it.

### Vehicles with clutch pedal switch - F36- .

- Install clutch pedal switch - F36- ➔ [page 48](#) .

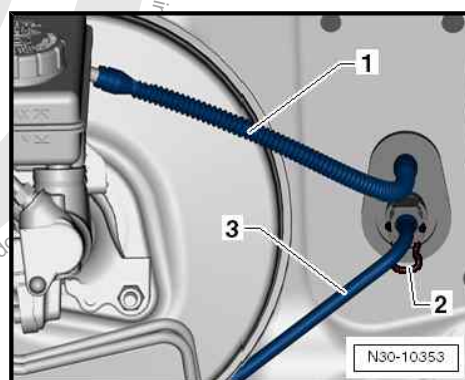
### Continuation for all

- Install driver side footwell cover ➔ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel end trim on driver side .
- After removing hose clamp - 3094- , supply hose -1- must be returned to its original position and shape.
- Press pipe -3- all the way in at master cylinder connection, and press securing clip -2- in all the way.
- Test line by tugging on it.
- Bleed clutch mechanism ➔ [page 47](#) .



### Specified torques

- ◆ For securing mounting bracket to plenum chamber bulkhead ➔ [page 16](#)
- ◆ Crash bar to steering column ➔ [page 16](#)

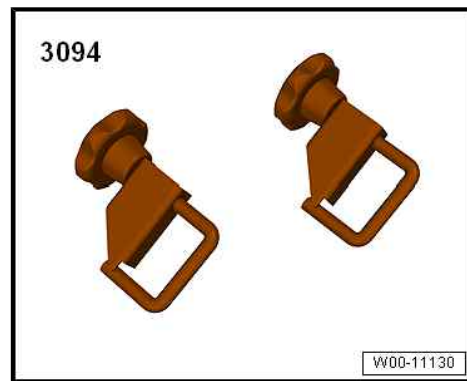


## 1.9.2 Removing and installing mounting bracket, Polo

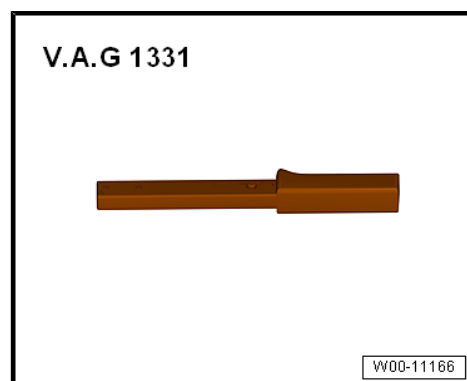
Special tools and workshop equipment required



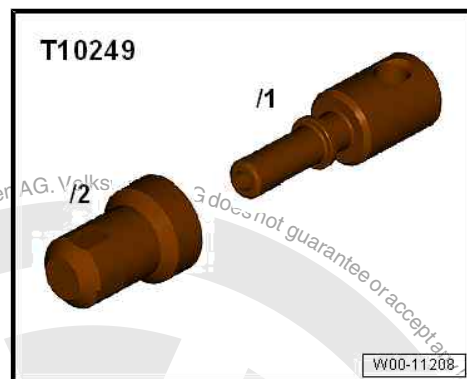
- ◆ Hose clamps to 25 mm - 3094-



- ◆ Torque wrench - V.A.G 1331-



- ◆ Sealing tool - T10249-



### Removing

- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery;  
Disconnecting and connecting battery .

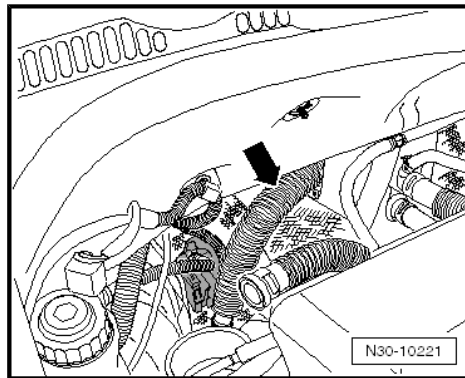
### LHD vehicles

- Unclip engine control unit from bracket on plenum chamber bulkhead without disconnecting electrical connector, and lay it to one side ⇒ Rep. gr. 24 ; Engine control unit .



## RHD vehicles

In some vehicles, master cylinder is located behind a line for air conditioning system -arrow-.

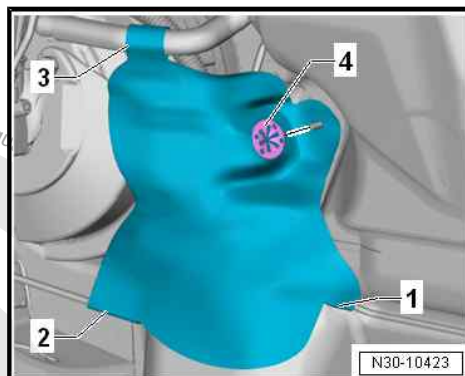


An insulation mat is installed in conjunction with some engines. Appearance may be different from that illustrated.

- Remove heat insulation mat. Note item -1 to 4-.

### Continuation for all

- Remove clutch position sender - G476- (without disconnecting connector) from master cylinder ➔ [page 49](#) .

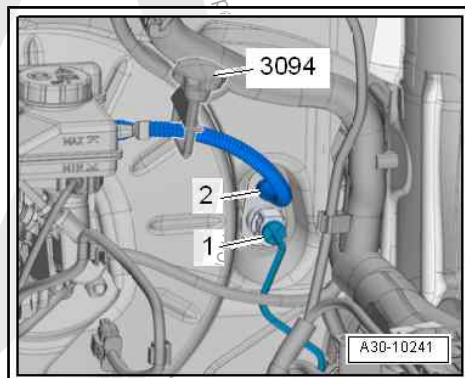


- Using hose clamp - 3094- , clamp off supply hose -2- to clutch master cylinder.



### Note

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



### Caution

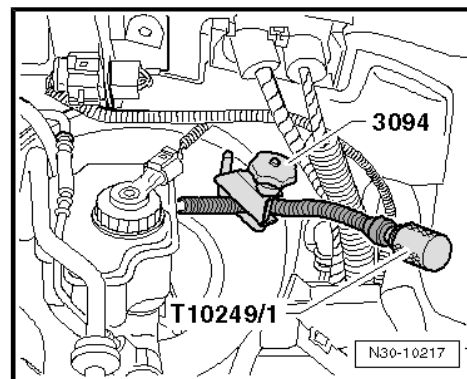
#### **Risk of leaking brake fluid.**

- ◆ *During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.*
- ◆ *Lay a lint-free cloth under clutch master cylinder.*





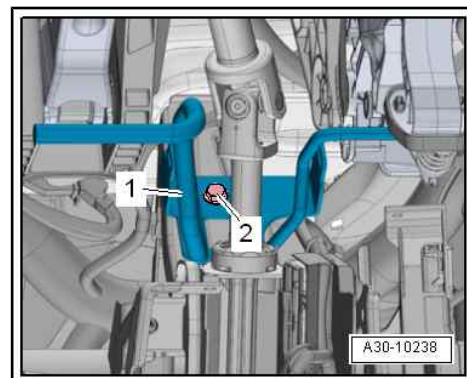
- In addition, for disconnecting, supply hose can be sealed with sealing tool - T10249/1- .
- Pull off supply hose -2- (⇒ previous illustration).
- Pull clip for pipe/hose assembly -1- all way out (⇒ previous illustration) and pull off pipe/hose assembly ⇒ [page 44](#) .
- Seal openings.



- Unscrew nut -2-, detach crash bar -1-, and push to one side.
- Remove following components if installed in area of mounting bracket:

Onboard supply control unit - J519- (do not disconnect connector)  
⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519-

Footwell vent on driver side ⇒ Heating, air conditioning; Rep. gr. 87 ; Air duct; Assembly overview – air duct and air distribution in passenger compartment

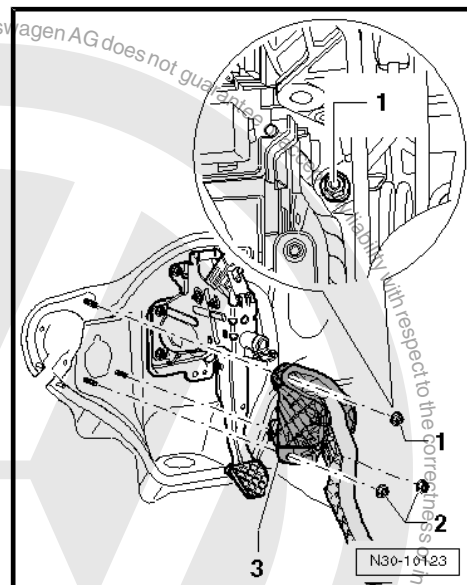


- Unscrew nuts -1- and -2-.
- Remove mounting bracket -3-.

### Installing

Install in reverse order of removal, observing the following:

- Renew self-locking nuts and seal for clutch master cylinder after removing.

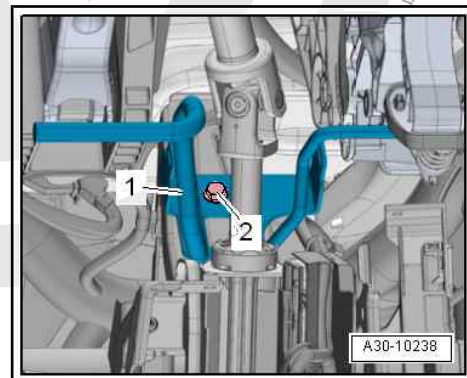


- Fit crash bar -1-, and tighten nut -2-.
- If removed beforehand, reinstall following components:

Onboard supply control unit - J519- ⇒ Electrical system; Rep. gr. 97 ; Control units; Removing and installing onboard supply control unit - J519-

Footwell vent on driver side ⇒ Heating, air conditioning; Rep. gr. 87 ; Air duct; Assembly overview – air duct and air distribution in passenger compartment

- Insert clutch position sender - G476- into master cylinder with electrical connector connected. Push it in as far as stop ⇒ [page 49](#) .

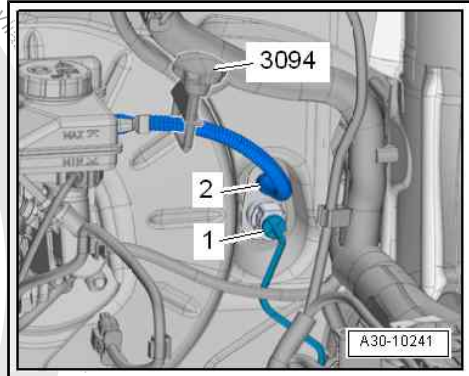




- Connect pipe/hose line -1- to connection ➔ [page 44](#) .
- Connect supply hose -2- at clutch master cylinder.
- After removing the hose clamp - 3094- , the supply hose must be returned to its original shape.

#### LHD vehicles

- Clip engine control unit with connector connected into bracket on plenum chamber bulkhead ➔ Rep. gr. 24 ; Engine control unit .

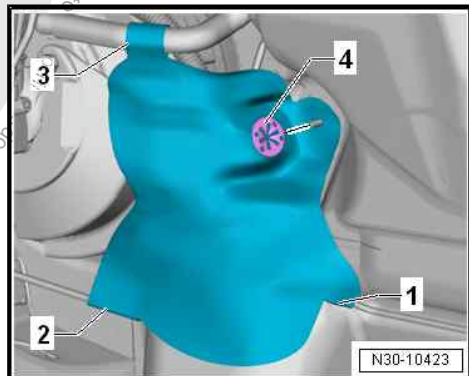


#### RHD vehicles

- If fitted, fold heat insulation mat in the sequence -1, 2, 3- around lines.
- Secure heat insulation mat with lock washer -4-.

#### Continuation for all

- Bleed clutch mechanism ➔ [page 47](#) .
- Install and/or connect battery ➔ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .



#### Specified torques

- ◆ For securing mounting bracket to plenum chamber bulkhead ➔ [page 16](#)
- ◆ Crash bar to module carrier ➔ [page 16](#)

## 1.10 Removing and installing clutch master cylinder

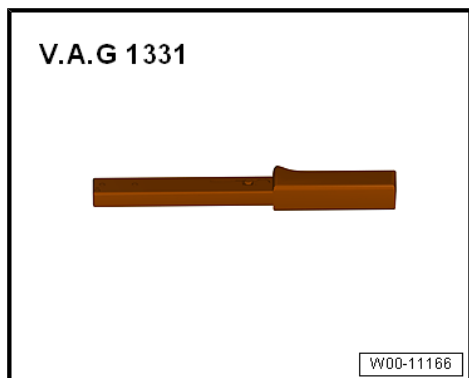
➔ ["1.10.1 Removing and installing clutch master cylinder, up!", page 38](#)

➔ ["1.10.2 Removing and installing clutch master cylinder, Polo", page 39](#)

### 1.10.1 Removing and installing clutch master cylinder, up!

#### Special tools and workshop equipment required

- ◆ Torque wrench - V.A.G 1331-



#### Removing

Remove mounting bracket with clutch master cylinder  
➔ [page 31](#) .



The figure shows installed mounting bracket with clutch master cylinder.

- Pull pivot pin -A- for plunger/clutch master cylinder in direction of -arrow 1- out of clutch pedal.
- Unscrew securing bolts -arrows 2- and remove clutch master cylinder from mounting bracket.
- Remove clutch master cylinder from mounting bracket.

#### Installing

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

- Renew seal for clutch master cylinder ➔ [Item 2 \(page 16\)](#) .
- Renew pivot pin -A- after removing.
- Pivot pin -A- must audibly engage in clutch pedal.
- Ensure proper engagement by carefully pulling pivot pin.
- Install clutch master cylinder to mounting bracket using securing bolts -arrows 2-.

Specified torque ➔ [page 16](#) .

Install mounting bracket with clutch master cylinder ➔ [page 31](#) .

#### Specified torques

- ◆ Clutch master cylinder to mounting bracket ➔ [page 16](#)

### 1.10.2 Removing and installing clutch master cylinder, Polo

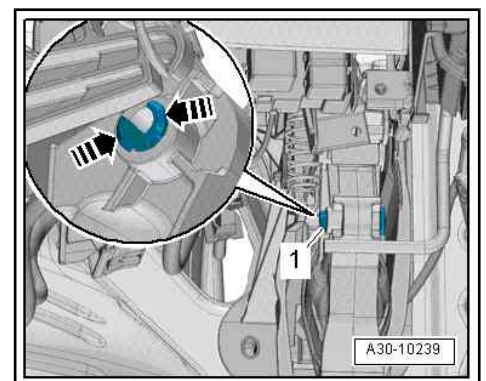
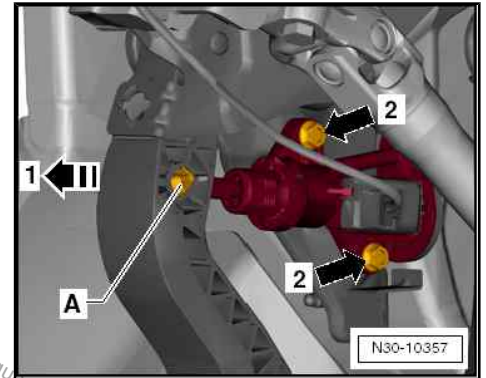


#### Note

- ◆ *Before replacing the clutch master cylinder due a suspected defect, use Guided Fault Finding ➔ Vehicle diagnostic tester.*
- ◆ *When performing work in the footwell, put cloths on the floor covering to protect it from possible brake fluid spills.*

#### Removing

- Remove mounting bracket with clutch master cylinder ➔ [page 31](#) .
- Compress fasteners -1- on pivot pin for plunger/clutch master cylinder -arrows- (shown in illustration with mounting bracket installed).



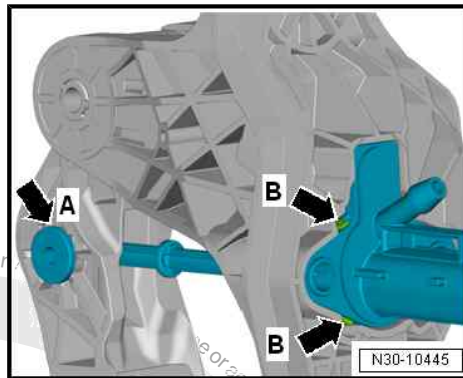


- Pull pivot pin for plunger/clutch master cylinder in direction of -arrow A- out of clutch pedal.

Clutch master cylinder is engaged in mounting bracket by means of catches -arrows B-.

- Release locking tabs -arrows B- from clutch master cylinder, and forcefully pull clutch master cylinder out of mounting bracket.

Illustration shows only 2 of 4 locking tabs -arrows B-



### Installing

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

- Renew pivot pin -arrow A- after removing.
- Pivot pin -arrow A- must audibly engage in clutch pedal.
- Ensure proper engagement by carefully pulling pivot pin.
- Engage clutch master cylinder in mounting bracket -arrows B-.
- Ensure proper engagement by carefully pulling clutch master cylinder.
- Install mounting bracket ➔ [page 31](#) .

## 1.11 Removing and installing clutch slave cylinder

➔ ["1.11.1 Removing and installing clutch slave cylinder, up!", page 40](#)

➔ ["1.11.2 Removing and installing clutch slave cylinder, Polo", page 42](#)

### 1.11.1 Removing and installing clutch slave cylinder, up!

**Special tools and workshop equipment required**

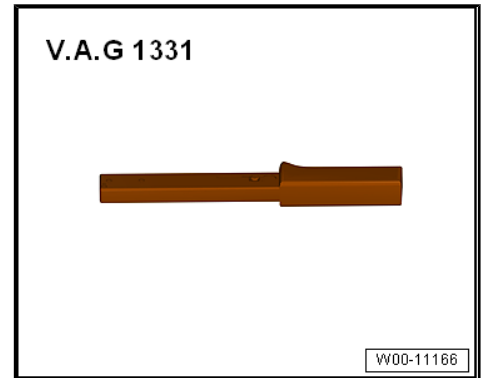
- ◆ Hose clamps to 25 mm - 3094-







- ◆ Torque wrench - V.A.G 1331-

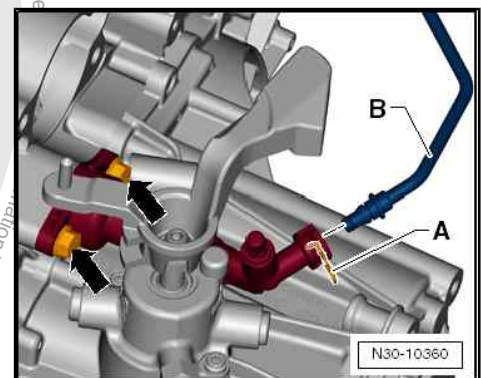


## Removing



### Note

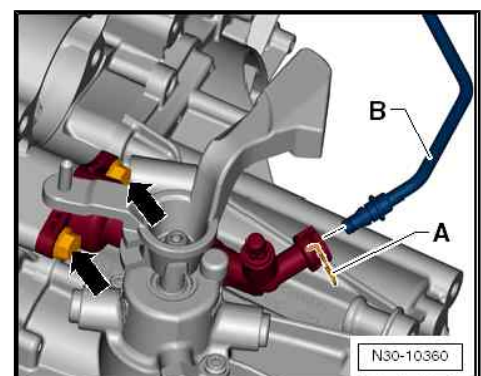
- ◆ *Before replacing the clutch slave cylinder due a suspected defect, you must first use Guided Fault Finding ⇒ Vehicle diagnostic tester.*
- ◆ *Make sure you do not depress the clutch pedal if the clutch slave cylinder is removed from the gearbox with the pipe/hose assembly still attached. Otherwise the piston will be pressed out of the clutch slave cylinder and thus destroyed.*
- If air filter prevents access to clutch slave cylinder, it must be removed ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Assembly overview - starter .
- Lay a lint-free cloth under clutch slave cylinder.
- Release clip -A- with a screwdriver and disconnect pipe/hose line -B- from connection.
- Pull pipe/hose line -B- out of clutch slave cylinder and seal openings.
- Remove bolts -arrows- and remove clutch slave cylinder.



## Installing

Install in reverse order of removal, observing the following:

- Insert clutch slave cylinder and tighten bolts -arrows-.
- Connect pipe/hose assembly -B- and secure with clip -A-.





## Disconnecting and connecting lines for clutch hydraulics

### Disconnecting

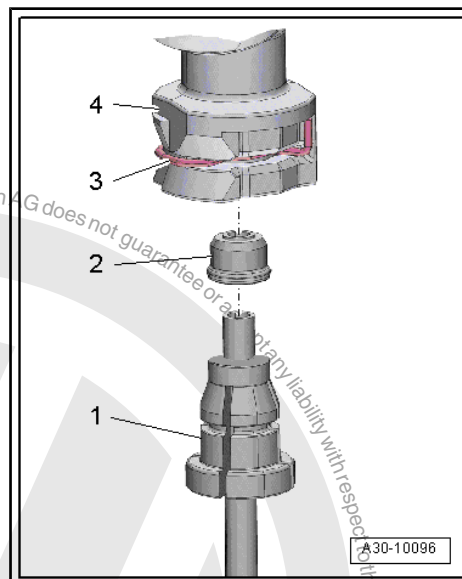
- Release clip -3- with a screwdriver and disconnect pipe/hose line -1- from connection -4-.

### Connecting



#### Note

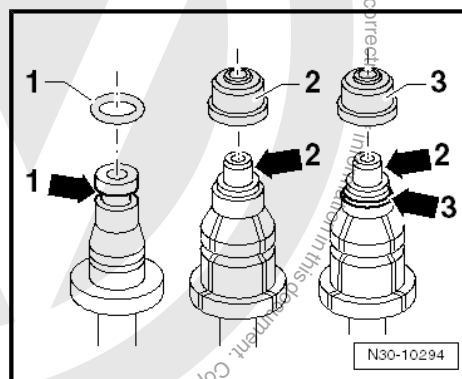
- ◆ *It is also possible to install an O-ring instead of the seal -2- ⇒ [page 42](#) .*
- ◆ *Renew seal -2- if damaged.*
- Press pipe/hose line -1- into connection -4- until clip -3- engages audibly.
- Test pipe/hose line by tugging on it.



### Seals and O-rings for pipe and hose lines

Item	Material of line connection
1	Line connection with circumferential groove -arrow 1-
2	Line connection with shoulder -arrow 2-
3	Line connection with shoulder -arrow 2- and circumferential groove -arrow 3-

- For line connection having circumferential groove -arrow 1- and -arrow 3-, a seal or O-ring must be set there.
- Bolt clutch slave cylinder to gearbox -arrows-.
- Insert pipe/hose assembly -B- into clutch slave cylinder as far as stop.
- Press in clip -A- to stop.
- Test line by tugging on it.
- Bleed clutch mechanism ⇒ [page 47](#) .
- Install starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Assembly overview - starter .
- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- If air filter has been removed, it must be reinstalled now ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .



### Specified torques

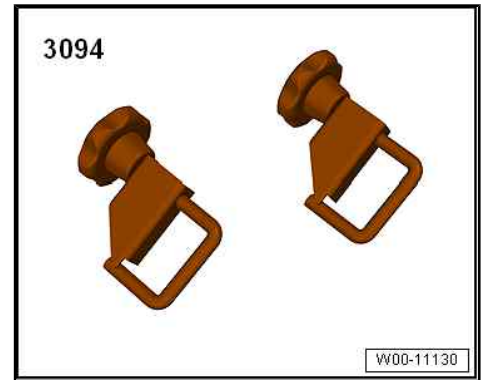
- ◆ Clutch slave cylinder to gearbox ⇒ [page 24](#)

## 1.11.2 Removing and installing clutch slave cylinder, Polo

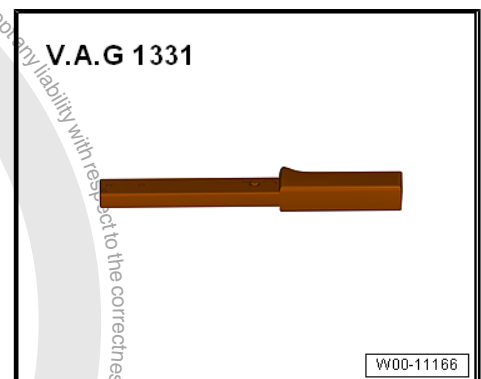
### Special tools and workshop equipment required



- ◆ Hose clamps to 25 mm - 3094-



- ◆ Torque wrench - V.A.G 1331-



## Removing



### Note

- ◆ *Before replacing the clutch slave cylinder due a suspected defect, you must first use Guided Fault Finding ⇒ Vehicle diagnostic tester.*
- ◆ *Make sure you do not depress the clutch pedal if the clutch slave cylinder is removed from the gearbox with the pipe/hose assembly still attached. Otherwise the piston will be pressed out of the clutch slave cylinder and thus destroyed.*

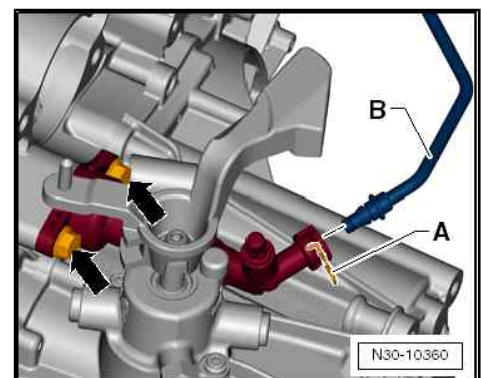
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .
- Lay a lint-free cloth under clutch slave cylinder.
- Release clip -A- with a screwdriver and disconnect pipe/hose line -B- from connection.
- Pull pipe/hose line -B- out of clutch slave cylinder and seal openings.
- Remove bolts -arrows- and remove clutch slave cylinder.



### Caution

***Risk of contamination due to brake fluid spill.***

- ◆ ***Do not operate clutch pedal after pipe/hose line has been disconnected.***

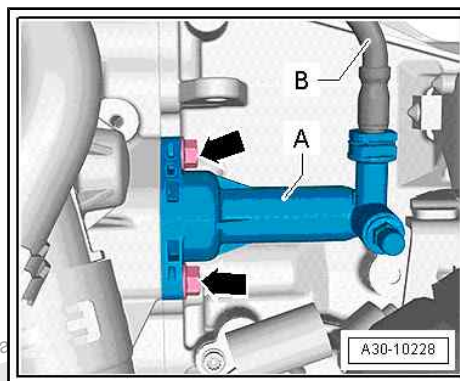




## Installing

Install in reverse order of removal, observing the following:

- Fit clutch slave cylinder -A- and secure with bolts -arrows-.
- Connect pipe/hose assembly -B-.



## Disconnecting and connecting lines for clutch hydraulics

### Disconnecting

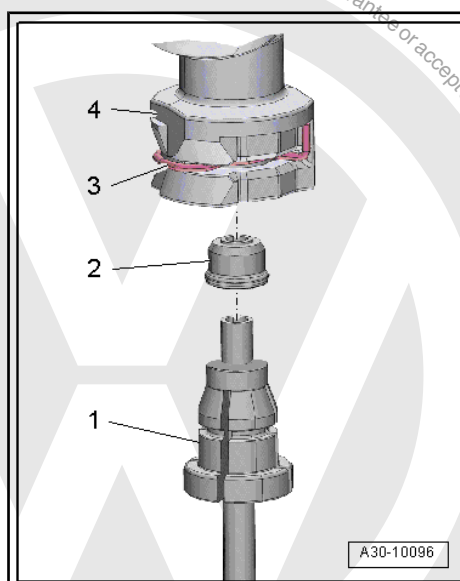
- Release clip -3- with a screwdriver and disconnect pipe/hose line -1- from connection -4-.

### Connecting



#### Note

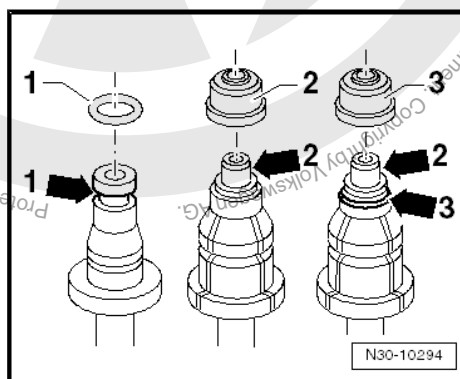
- ♦ *It is also possible to install an O-ring instead of the seal -2- ⇒ [page 44](#).*
- ♦ *Renew seal -2- if damaged.*
- Press pipe/hose line -1- into connection -4- until clip -3- engages audibly.
- Test pipe/hose line by tugging on it.



## Seals and O-rings for pipe/hose line or pipe line

Item	Material of line connection
1	Line connection with circumferential groove -arrow 1-
2	Line connection with shoulder -arrow 2-
3	Line connection with shoulder -arrow 2- and circumferential groove -arrow 3-

- For line connection having circumferential groove -arrow 1- and -arrow 3-, a seal or O-ring must be set there.
- Bleed clutch mechanism ⇒ [page 47](#).
- Connect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery.



### Specified torques

- ♦ Clutch slave cylinder to gearbox ⇒ [page 24](#)

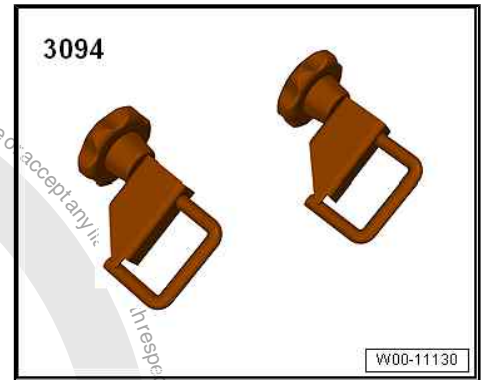
## 1.12 Removing and installing lines for clutch mechanism

### Special tools and workshop equipment required





- ◆ Hose clamps to 25 mm - 3094-



### Removing

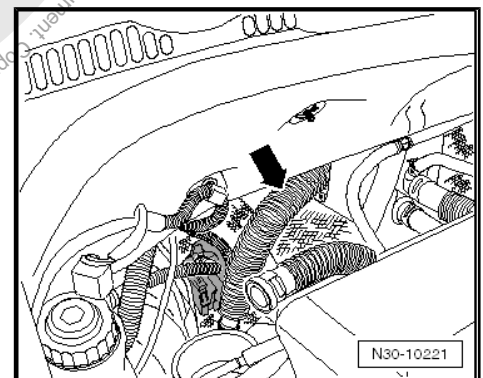
- Remove complete air filter housing if it prevents access to the lines for clutch mechanism ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery

### Polo, LHD vehicles

- Unclip engine control unit from bracket on plenum chamber bulkhead without disconnecting electrical connector, and lay it to one side ⇒ Rep. gr. 24 ; Engine control unit .

### RHD vehicles

In some vehicles, master cylinder is located behind a line for air conditioning system -arrow-



An insulation mat is installed in conjunction with some engines. Appearance may be different from that illustrated.

- Remove heat insulation mat. Note item -1 to 4-.

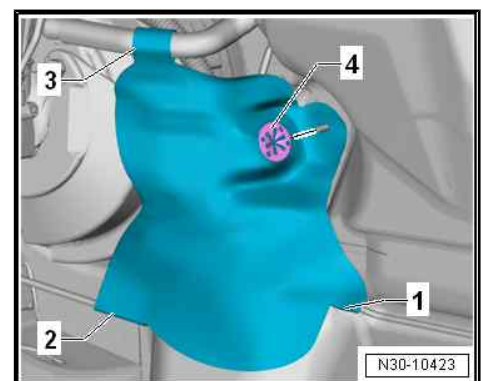
### Continuation for all



#### Caution

#### *Risk of leaking brake fluid.*

- ◆ *During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.*
- ◆ *Lay a lint-free cloth under clutch master cylinder.*





- Using hose clamp - 3094- , clamp off supply hose -2- to clutch master cylinder.



#### Note

- ♦ *Clamping off the supply hose with the hose clamp - 3094- will cause a permanent deformation.*
- ♦ *However, this does not damage the supply hose.*
- ♦ *After removing the hose clamp - 3094- , the supply hose must be returned to its original shape.*
- Pull out clip for pipe/hose line -1- as far as stop, and remove pipe/hose line.
- Seal openings.
- Pull out clip -A- as far as stop and pull off pipe/hose line -B-.
- Seal openings.



#### Note

- *-Arrows- can be disregarded.*
- Seal off open lines and connections if necessary with clean plugs from engine bung set - VAS 6122- .
- Move pipe/hose line clear and remove it.

#### Installing

Install in reverse order of removal, observing the following:

- Connect pipe/hose assembly -1- to clutch master cylinder and clutch slave cylinder.
- Test line by tugging on it.
- After removing the hose clamp - 3094- , the supply hose -2- must be returned to its original shape.

#### Polo, LHD vehicles

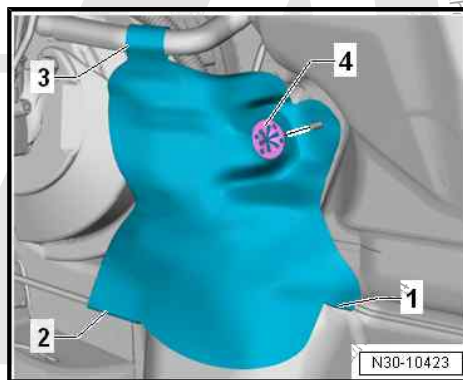
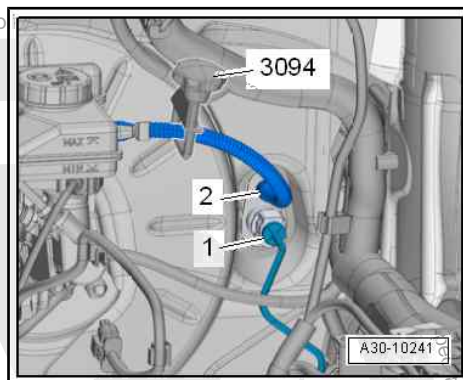
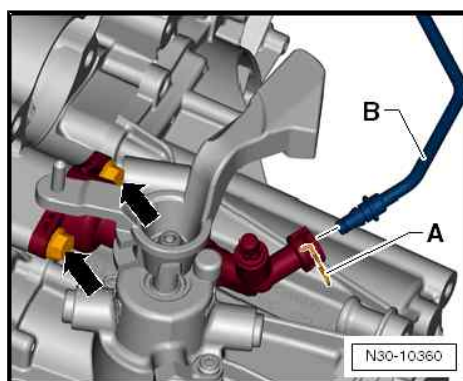
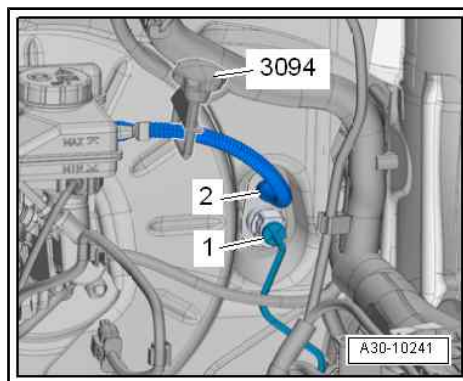
- Clip engine control unit with connector connected into bracket on plenum chamber bulkhead ➔ Rep. gr. 24 ; Engine control unit .

#### RHD vehicles

- If fitted, fold heat insulation mat in the sequence -1, 2, 3- around lines.
- Secure heat insulation mat with lock washer -4-.

#### Continuation for all

- Bleed clutch mechanism ➔ [page 47](#) .
- Install battery and battery tray ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Install complete air filter housing ➔ Rep. gr. 24 ; Air filter; Removing and installing air filter housing

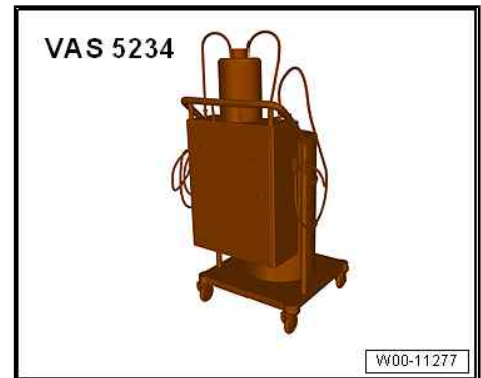




## 1.13 Bleeding clutch mechanism

### Special tools and workshop equipment required

- ◆ Brake filling and bleeding unit - VAS 5234-



### Note

- ◆ *The clutch system must always be bled after performing work on the hydraulic clutch mechanism.*
  - ◆ *When performing the following steps, make sure that no brake fluid escapes onto the gearbox.*
  - ◆ *Prefilling system is not necessary!*
  - ◆ *Before bleeding, fill brake fluid reservoir with brake fluid up to "max" marking.*
  - ◆ *Clutch pedal is at rest position, is not being depressed.*
  - ◆ *Brake fluid: Allocation ⇒ Electronic parts catalogue (ETKA) .*
- Remove complete air filter housing if it prevents access to bleeder valve (-arrow- in illustration below) ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .



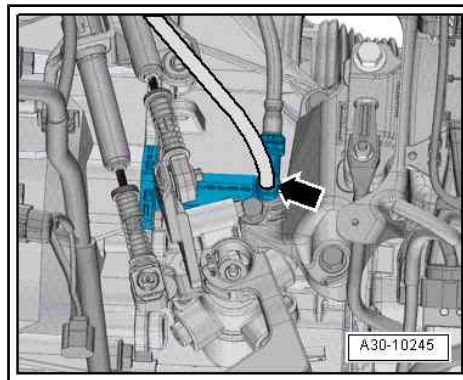
- Move clutch pedal back to its rest position.
- Remove protective cap from bleeder valve -arrow-.
- Connect brake filling and bleeding equipment .
- Connect bleeder hose to pressure hose of fluid collector bottle.

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

- Switch on brake filling and bleeding equipment .
- Working pressure 2.0 bar.
- Open bleeder valve.
- Allow about 100 cm<sup>3</sup> of brake fluid to flow out.
- Close bleeder valve.
- Rapidly operate pedal from stop to stop 10 to 15 times.
- Open bleeder valve.
- Allow another 50 cm<sup>3</sup> of brake fluid to flow out.
- Close bleeder valve.
- Switch off brake filling and bleeding equipment and relieve pressure completely from equipment.
- Depress clutch pedal several times after completion of bleeding process.

#### Specified torque:

Component	Nm
Bleeder valve	4.5



## 1.14 Removing and installing clutch pedal switch - F36-

To ensure sufficiently secure seating in mounting bracket for clutch pedal, clutch pedal switch - F36- may be installed only once.

### Removing

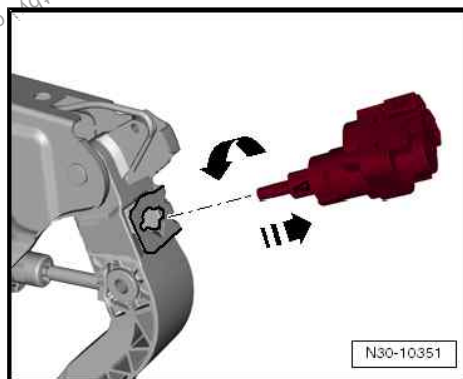
- Remove driver side footwell cover ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel end trim on driver side .
- Pull connector off clutch pedal switch - F36- .
- Turn clutch pedal switch - F36- on mounting bracket 45° in direction of -arrow- and pull out of support.

### Installing

- Grease plunger.
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

Clutch pedal switch - F36- is installed from passenger compartment.

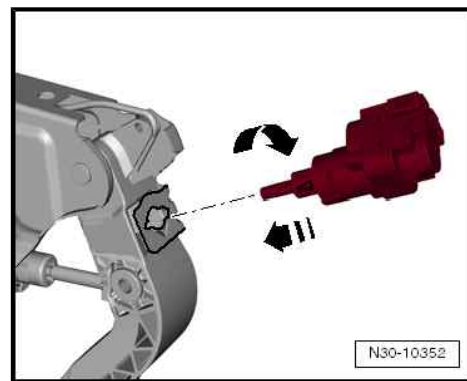
- Clutch pedal must always remain in rest position when clutch pedal switch - F36- is being installed. During entire installation procedure, clutch pedal is only allowed to be touched with plunger head of clutch pedal switch - F36- .







- Insert clutch pedal switch - F36- into mounting bracket support and turn 45° in direction of -arrow-.
- Push connector onto clutch pedal switch - F36- .
- Install driver side footwell cover ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments/covers; Removing and installing dash panel end trim on driver side .



## 1.15 Checking clutch master cylinder and clutch slave cylinder

Carry out Guided Fault Finding using ⇒ Vehicle diagnostic tester before renewing clutch master cylinder due to suspected fault.

## 1.16 Removing and installing clutch position sender - G476-

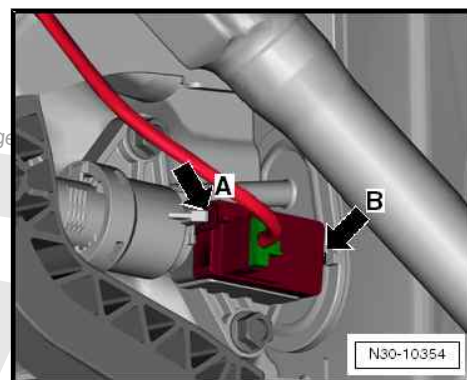
⇒ ["1.16.1 Removing and installing clutch position sender G476 , up!", page 49](#)

⇒ ["1.16.2 Removing and installing clutch position sender G476 , Polo", page 50](#)

### 1.16.1 Removing and installing clutch position sender - G476- , up!

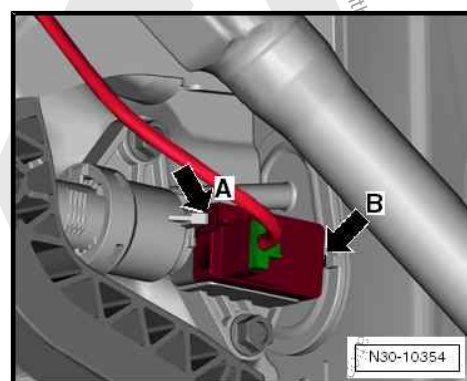
#### Removing

- Unclip clutch position sender - G476- from clutch master cylinder -arrow A- and remove from fitting location -arrow B-.
- Remove clutch position sender - G476- from master cylinder, and disconnect connector.



#### Installing

- Fit clutch position sender - G476- on clutch master cylinder into fitting location -arrow B- and clip it in -arrow A-.
- Test clutch position sender - G476- by tugging on it.
- Connect electrical connector.

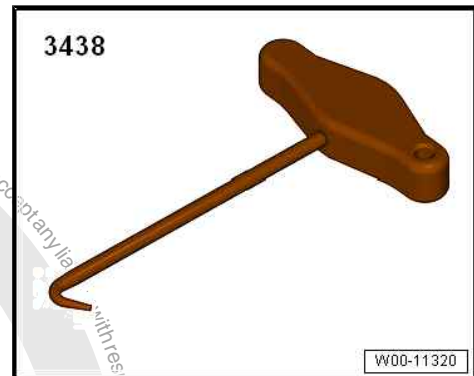




## 1.16.2 Removing and installing clutch position sender - G476- , Polo

Special tools and workshop equipment required

- ◆ Hook - 3438-



### Removing

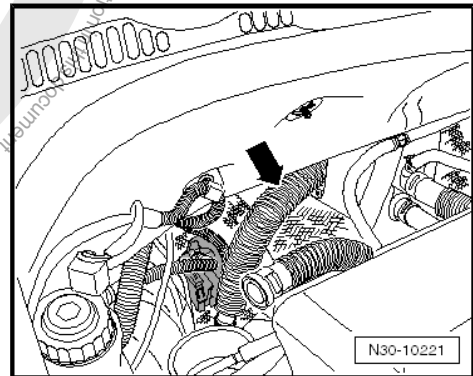
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery .

### LHD vehicles

- Unclip engine control unit from bracket on plenum chamber bulkhead without disconnecting electrical connector, and lay it to one side ⇒ Rep. gr. 24 ; Engine control unit .

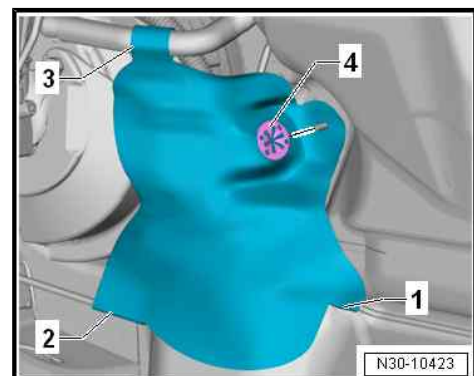
### RHD vehicles

In some vehicles, master cylinder is located behind a line for air conditioning system -arrow-.



An insulation mat is installed in conjunction with some engines. Appearance may be different from that illustrated.

- Remove heat insulation mat. Note item -1 to 4-.

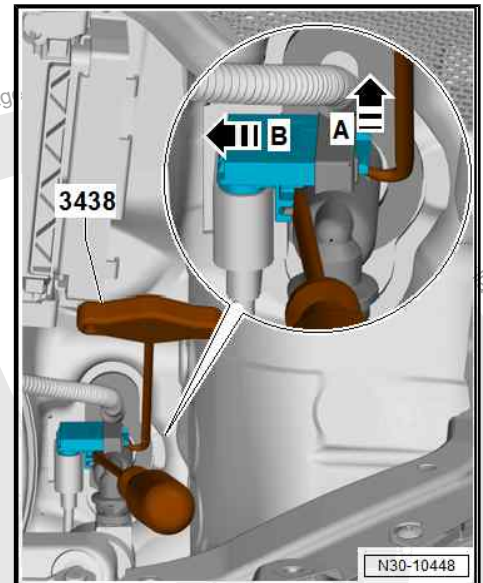






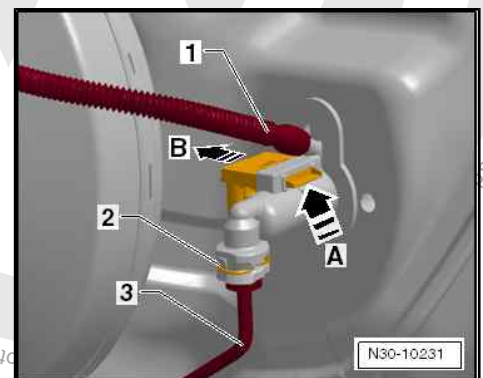
### Continuation for all

- Unclip clutch position sender - G476- on master cylinder -arrow A- and -arrow B-.
- Remove clutch position sender - G476- from master cylinder, and disconnect connector.



### Installing

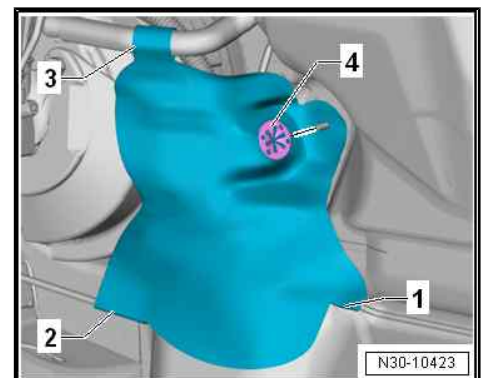
- Insert clutch position sender - G476- into master cylinder with electrical connector connected. Push it in as far as stop.
- Clutch position sender - G476- must clip in -arrow A-.
- To check, pull on clutch position sender - G476- -arrow B-.
- Disregard items -1, 2 and 3-.



- If fitted, fold heat insulation mat in the sequence -1, 2, 3- around lines.
- Secure heat insulation mat with lock washer -4-.

### LHD vehicles

- Clip engine control unit with connector connected into bracket on plenum chamber bulkhead ⇒ Rep. gr. 24 ; Engine control unit .

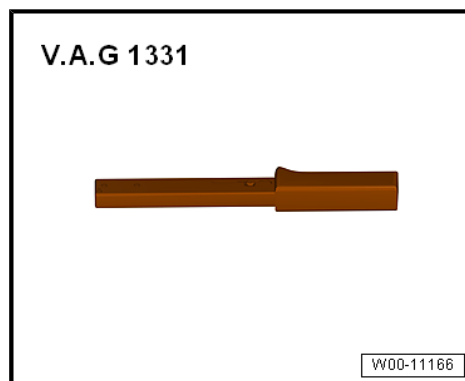


## 1.17 Repairing clutch release mechanism

Special tools and workshop equipment required



- ◆ Torque wrench - V.A.G 1331-



Grease for splines

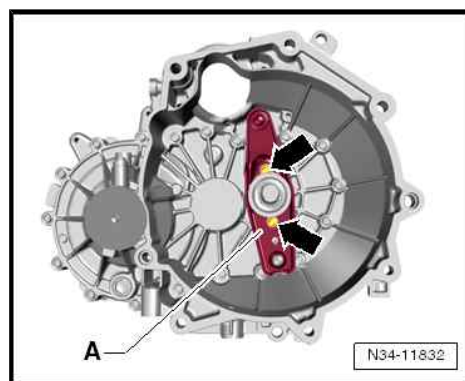
Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

### Removing and installing clutch release lever -A- with release bearing and guide sleeve

- Gearbox has been removed.
- Unscrew bolts -arrows-.
- Pull clutch release lever with release bearing and guide sleeve off input shaft and ball stud.

Install in reverse order of removal.

- Install gearbox ⇒ [page 100](#) .



### Specified torques

- Guide sleeve to gearbox ⇒ [page 24](#)

### Removing and installing guide sleeve from/to clutch release bearing

- Remove clutch release lever together with release bearing and guide sleeve ⇒ [page 52](#) .

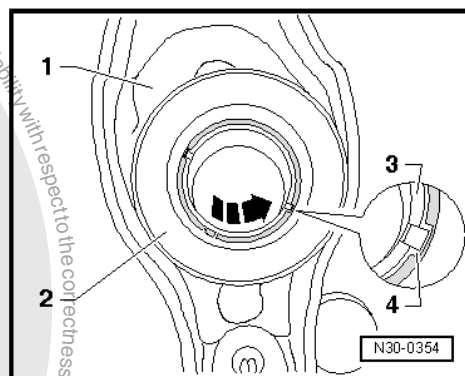
Push guide sleeve -3- upwards out of release bearing -2-.

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.

Install clutch release lever together with release bearing and guide sleeve ⇒ [page 52](#) .



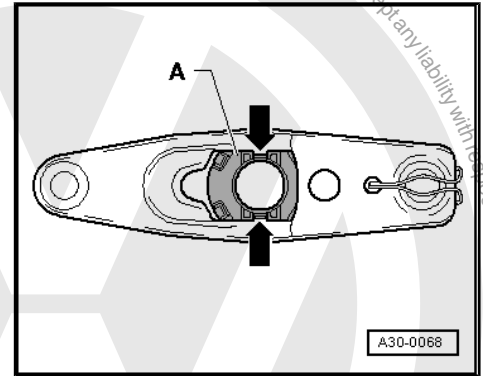


### Removing and installing release bearing

- Remove clutch release lever together with release bearing and guide sleeve ➔ [page 52](#) .
- 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 retaining lugs -arrows- engage.
- Grease contact surface for clutch release lever on ball-head pin with grease for clutch plate splines .

Allocate grease using ➔ Electronic parts catalogue (ETKA) .

- Install clutch release lever together with release bearing and guide sleeve ➔ [page 52](#) .





## 2 Clutch

⇒ ["2.1 Assembly overview - clutch", page 54](#)

⇒ ["2.2 Removing and installing clutch", page 55](#)

### 2.1 Assembly overview - clutch

#### 1 - Flywheel

- ☐ Removing and installing  
⇒ Rep. gr. 13 ; Cylinder  
block (gearbox end);  
Removing and installing  
flywheel .
- ☐ Ensure that centring  
pins fit tightly
- ☐ Keep contact surface for  
clutch lining free of  
grooves, oil and grease.

#### 2 - Clutch plate

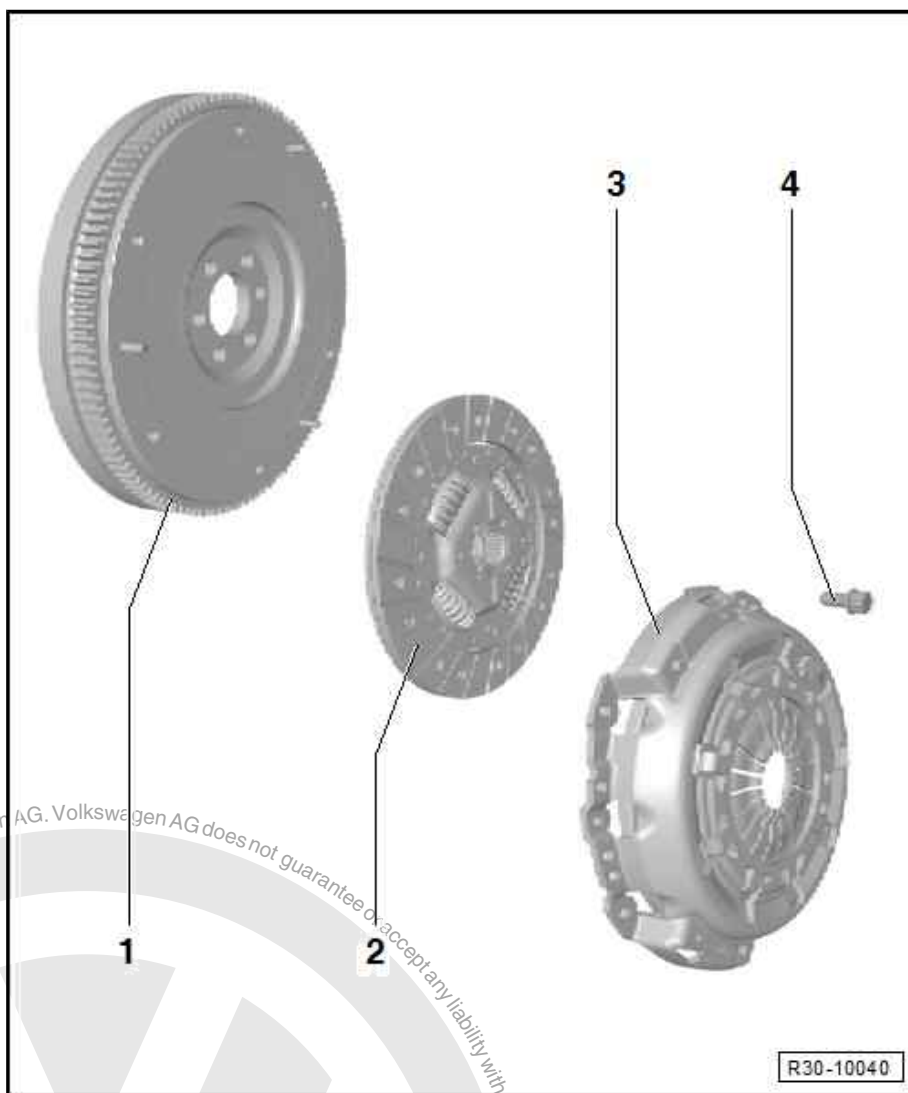
- ☐ Allocation ⇒ Electronic  
parts catalogue (ETKA)
- ☐ Centring ⇒ [page 55](#)

#### 3 - Thrust plate

- ☐ Removing and installing  
⇒ [page 55](#)
- ☐ Check ends of dia-  
phragm spring  
⇒ [page 56](#)
- ☐ Check spring connec-  
tions and riveted con-  
nections ⇒ [page 57](#) .

#### 4 - Bolt

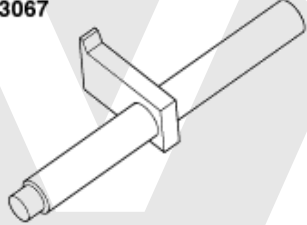
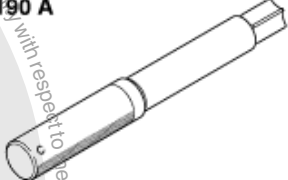

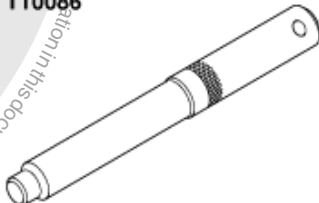
- ☐ Allocation ⇒ Electronic  
parts catalogue (ETKA)
- ☐ Loosen or tighten alter-  
nately and diagonally in  
small steps (1 full turn)
- ☐ M 6: 13 Nm
- ☐ M 7: 20 Nm





## 2.2 Removing and installing clutch

### Special tools and workshop equipment required

 <p><b>3067</b></p>	 <p><b>3190 A</b></p>
 <p><b>V.A.G 1331</b></p>	 <p><b>T10086</b></p>
	<p>W30-0027</p>

- ◆ Counter-hold tool - 3067-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Centring pin - 3190 A-
- ◆ For engines having a crankshaft of smaller diameter or having needle bearings in the crankshaft - ➔ [page 58](#) centring mandrel - T10086-
- ◆ Grease for splines
- ◆ Allocate grease using ➔ Electronic parts catalogue (ETKA) .

### Removing

- Gearbox is removed.



- Use counter-hold tool - 3067- to loosen bolts.

To prevent the pressure plate from becoming distorted during removal (causes clutch grab when driving off), always keep to the following procedure when unbolting the pressure plate:

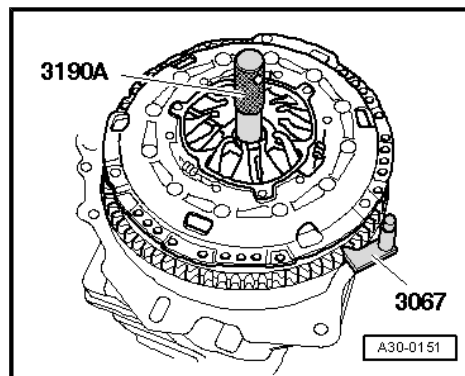
- Loosen all bolts alternately and diagonally in small steps (1 full turn).
- Remove pressure plate and clutch plate.

#### Installing



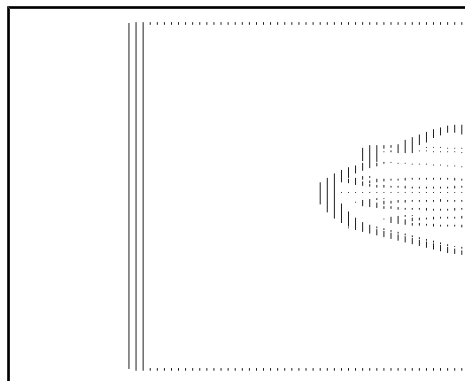
#### Note

- ♦ Select clutch pressure plate and pressure plate according to engine code and ⇒ Electronic parts catalogue (ETKA) .
  - ♦ Clean splines of drive shaft and, if the clutch plate has been used, clean the splines of the hub. Remove corrosion and apply a very thin coat of clutch plate spline grease to splines. Then, move the clutch plate back and forth on the drive shaft until the hub moves easily on the shaft. Remove excess grease.
  - ♦ Clutch pressure plates are protected against corrosion and greased. With the exception of the friction surface for the clutch plate, the clutch pressure plate must not be cleaned. Service life of clutch will otherwise be shortened considerably.
  - ♦ The friction surface of the clutch pressure plate and the flywheel must be cleaned (degreased) thoroughly.
  - ♦ If the clutch has burnt out, thoroughly clean the gearbox in the area of the clutch as well as parts of the engine facing the gearbox in order to reduce the smell of burnt linings.
  - ♦ Clutch plate linings must make full contact with flywheel and friction surface of clutch pressure plate. Only then insert securing bolts.
  - ♦ Tighten or loosen securing bolts alternately and diagonally in small steps (1 full turn) in order not to damage centring holes of pressure plate and centring pins of flywheel.
  - ♦ 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.
- Installation position of clutch plate: lettering "Getriebeseite" (gearbox end) or spring cage faces pressure plate.



#### Check ends of diaphragm spring

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

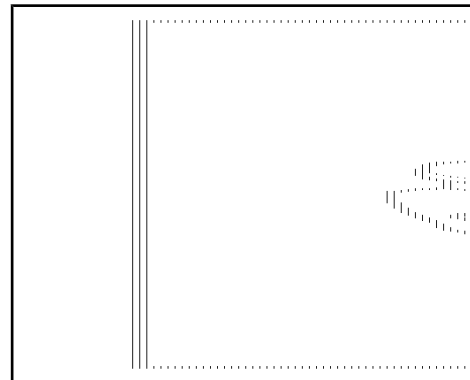






### Check spring connection and riveted fastenings.

- Check spring connection between thrust plate and cover for cracks and make sure rivet fastenings are seated tightly.
- If pressure plate has damaged springs or loose rivet connections -arrows-, it must be renewed.



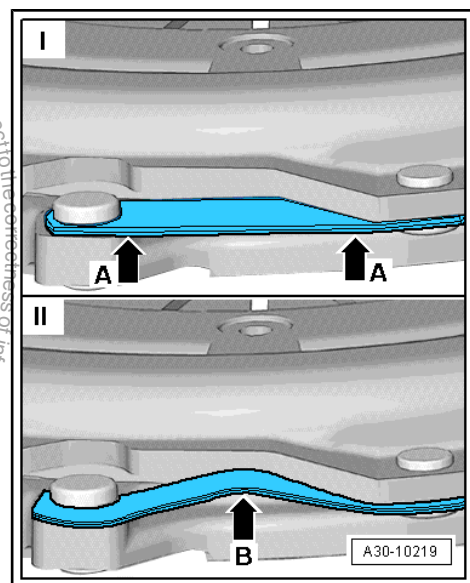
### Check extension springs and riveted connections

#### I - Extension springs OK.

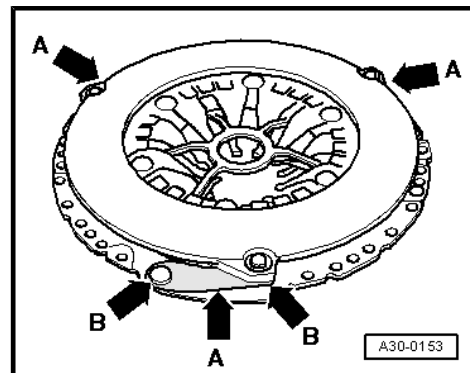
- Minor kinks on the outside area -arrows A- have series production status.

#### II - Extension springs damaged

- Renew clutch pressure plate if springs are broken or badly bent -arrow B-.
- Check spring connections -arrows A- for damage, and make sure that rivet joints -arrows B- are firmly seated.
- Renew clutch pressure plate if spring connections are broken or badly bent, or if riveting is loose.

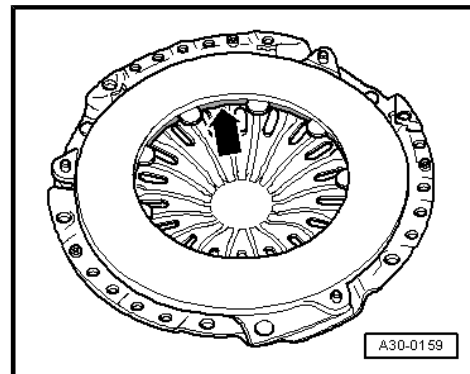


- Make sure rivet joints -arrows B- on all extension springs -arrows A- are firmly seated.
- Tighten all bolts one after another (clockwise) to final torque.
- Renew clutch pressure plate if riveting -arrow B- is loose.



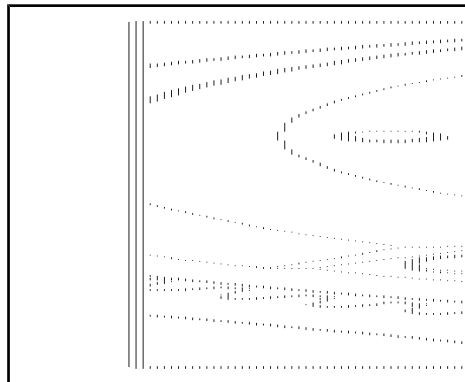
### Check metal ring.

- Check that metal ring in clutch pressure plate -arrow- is not damaged.
- Renew clutch pressure plate if metal ring is broken.

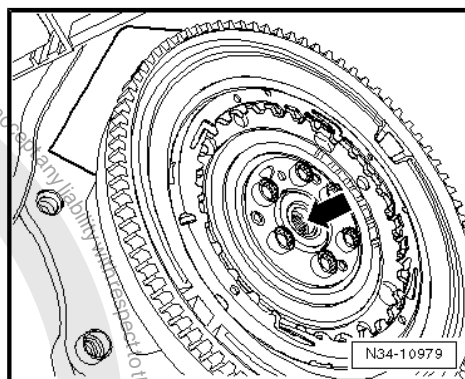




- To centre clutch plate, use centring mandrel - 3190 A- .



For engines having a crankshaft of smaller diameter -arrow- or having an needle bearing -arrow- in the crankshaft



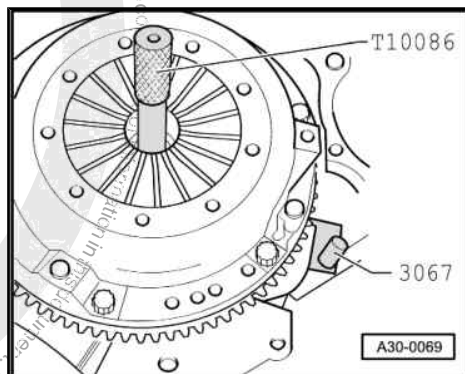
Centring clutch disc and removing and installing pressure plate for engines having a crankshaft of smaller diameter or having a needle bearing -arrow- in the crankshaft

Continuation for all

- Tighten all bolts alternately and diagonally in small steps (1 full turn).
- Install gearbox ⇒ [page 100](#) .

Specified torques

- ◆ Pressure plate to flywheel ⇒ [page 54](#) .





## 34 – Controls, housing

### 1 Selector mechanism

⇒ [“1.1 Installation position - selector mechanism”, page 59](#)

⇒ [“1.2 Assembly overview - gear knob and cover”, page 61](#)

⇒ [“1.3 Assembly overview - selector mechanism”, page 62](#)

⇒ [“1.4 Removing and installing gear knob”, page 65](#)

⇒ [“1.5 Removing and installing selector mechanism”, page 67](#)

⇒ [“1.6 Repairing selector mechanism”, page 71](#)

⇒ [“1.7 Adjusting selector mechanism”, page 74](#)

⇒ [“1.8 Checking selector mechanism”, page 78](#)

#### 1.1 Installation position - selector mechanism



##### Note

- ◆ *Disconnect battery before working on selector mechanism in engine compartment ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and connecting battery.*
- ◆ *Removing and installing selector mechanism ⇒ [page 67](#) .*

-Arrow A- indicates the gear selection movement and gear selector cable.

-Arrow B- indicates the gate selection movement and gear selector cable.



**A - Gear selector cable**

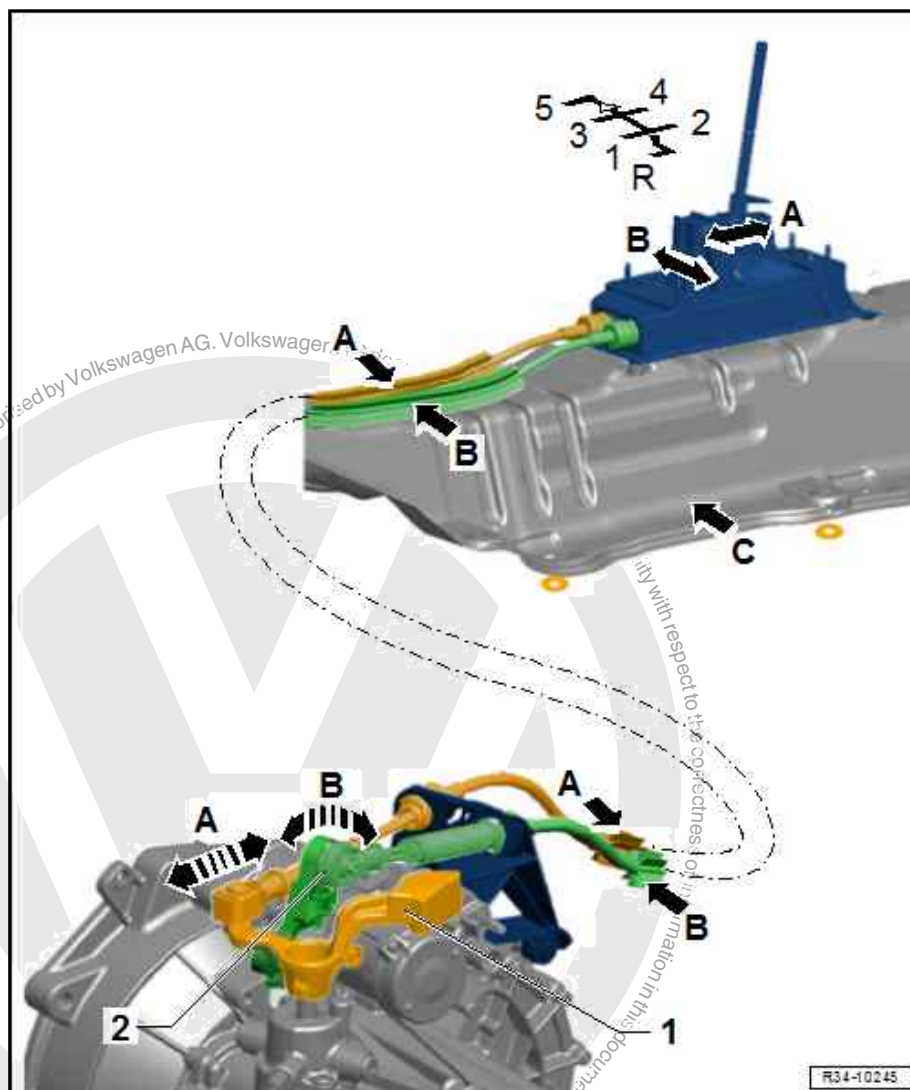
**B - Gate selector cable**

**C - Heat shield**

- ❑ Remove before removing selector mechanism.

**1 - Gearbox selector lever**

**2 - Relay lever**





## 1.2 Assembly overview - gear knob and cover

### 1 - Emblem

- ☐ Except for GT versions
- ☐ 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 65](#)

### 3 - Clip

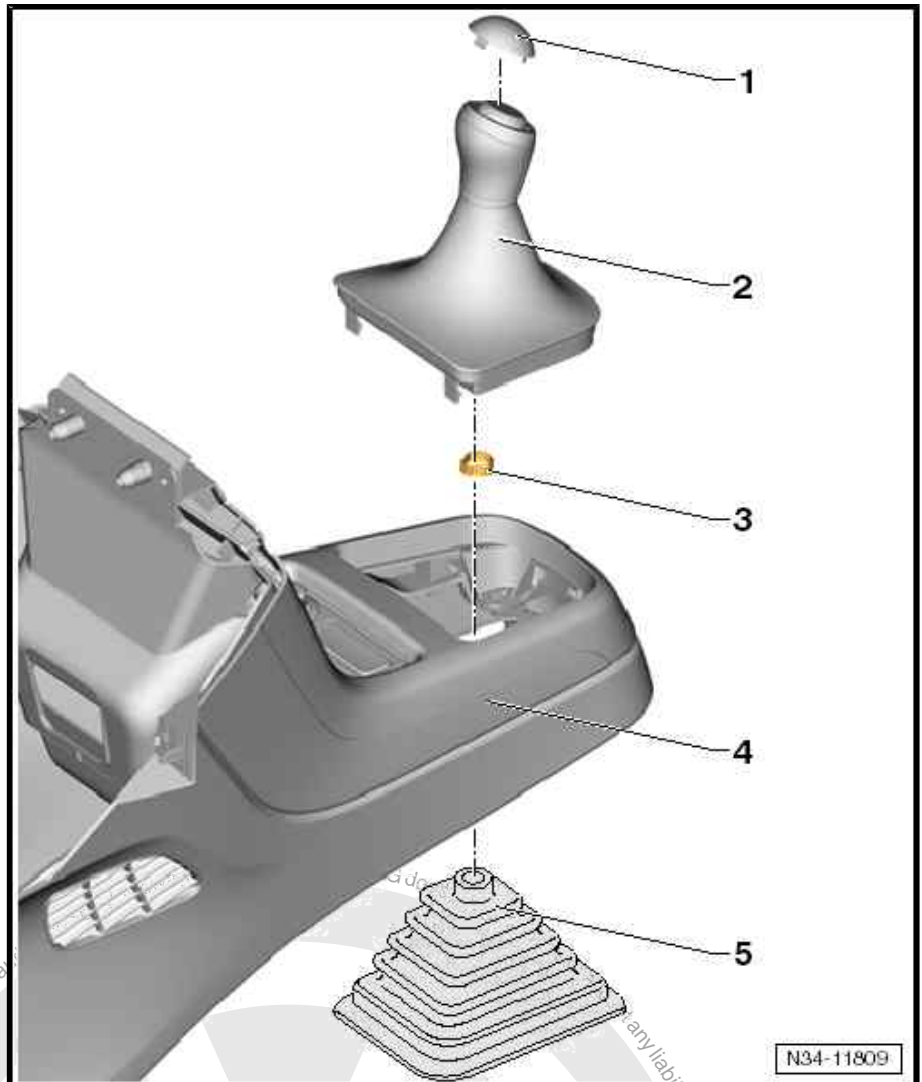
- ☐ For securing gear knob to gear lever
- ☐ Renew after removal
- ☐ Secure to gear knob using hose clip pliers - V.A.G 1275 A-

### 4 - Centre console cover

- ☐ Combined with upper part of centre console in one part
- ☐ Is an individual part in some equipment versions ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview – centre console

### 5 - Noise insulation

- ☐ Not fitted in all vehicles
- ☐ Arrow on noise insulation points in direction of travel
- ☐ Locking lugs are arranged at varying intervals
- ☐ Therefore it can be installed in only one position







## 1.3 Assembly overview - selector mechanism

⇒ ["1.3.1 Assembly overview - selector mechanism, up!", page 62](#)

⇒ ["1.3.2 Assembly overview - selector mechanism, Polo", page 64](#)

### 1.3.1 Assembly overview - selector mechanism, up!



#### Note

- ◆ Lubricate bearing positions and sliding surfaces.
- ◆ Allocate grease using ⇒ *Electronic parts catalogue (ETKA)*.

#### 1 - Selector shaft with selector shaft cover

#### 2 - Seal

- ☐ Renew after removal  
⇒ [page 148](#)

#### 3 - Slide block

#### 4 - Gate relay lever

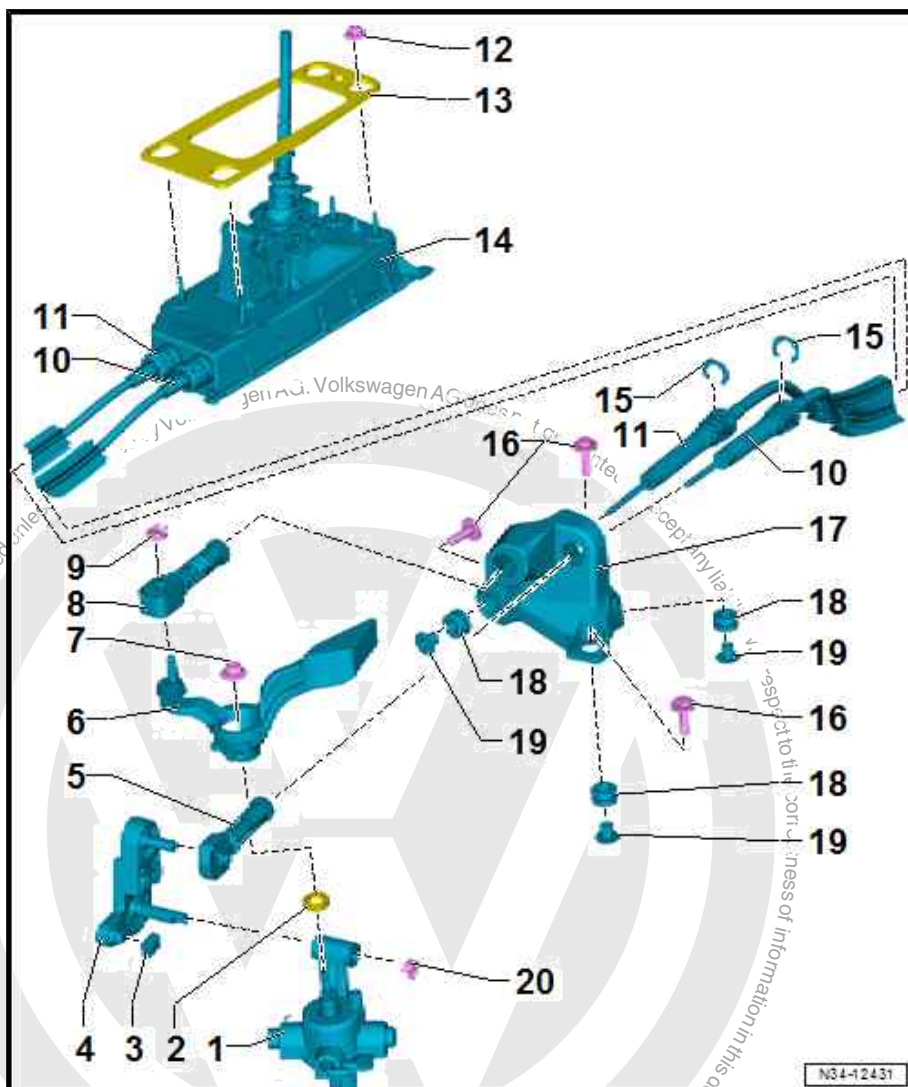
- ☐ Greasing ⇒ [page 73](#).
- ☐ Fitting position  
⇒ [page 73](#)
- ☐ After installing, adjust selector mechanism  
⇒ [page 74](#)
- ☐ Remove and install gate relay lever together with cable end-piece  
⇒ [page 71](#)

#### 5 - Cable end-piece

- ☐ For gate selector cable to relay lever
- ☐ After installing, adjust selector mechanism  
⇒ [page 74](#)
- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different
- ☐ Allocation ⇒ [page 73](#).
- ☐ Removing from gate relay lever ⇒ [page 72](#)
- ☐ Pressing onto gate relay lever ⇒ [page 72](#)

#### 6 - Gearbox selector lever

- ☐ Greasing ⇒ [page 73](#).
- ☐ Install so that master spline aligns with selector shaft ⇒ [page 74](#)
- ☐ Fitting position ⇒ [page 73](#)
- ☐ After installing, adjust selector mechanism ⇒ [page 74](#)







## 7 - Hexagon nut

- ☐ Specified torque ➔ [page 131](#)

## 8 - Cable end-piece

- ☐ For gear selector cable to gearbox selector lever
- ☐ After installing, adjust selector mechanism ➔ [page 74](#)
- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different
- ☐ Allocation ➔ [page 73](#) .

## 9 - Securing clip

- ☐ Renew after removal

## 10 - Gate change cable

- ☐ Connect to cable end-piece.
- ☐ Fitting position ➔ [page 59](#)

## 11 - Gear change cable

- ☐ Connect to cable end-piece.
- ☐ Fitting position ➔ [page 59](#)

## 12 - Hexagon nut

- ☐ Qty. 4
- ☐ M 6: 8 Nm
- ☐ M 8: 20 Nm

## 13 - Seal

- ☐ Between selector housing and underbody
- ☐ Renew selector housing after removing
- ☐ Self-adhesive
- ☐ Bond to selector lever housing

## 14 - Selector housing

## 15 - Securing clip

- ☐ Renew after removal
- ☐ Do not damage cables when removing
- ☐ Fitting position ➔ [page 74](#)

## 16 - Hexagon bolt

- ☐ Qty. 3
- ☐ For cable support bracket
- ☐ 20 Nm

## 17 - Cable support bracket

- ☐ Removing and installing ➔ [page 71](#)
- ☐ After installing, adjust selector mechanism ➔ [page 74](#)

## 18 - Grommet

- ☐ Qty. 3
- ☐ Cable support bracket mounting on gearbox

## 19 - Spacer

- ☐ Qty. 3

## 20 - Clip



## 1.3.2 Assembly overview - selector mechanism, Polo



### Note

- ◆ Lubricate bearing positions and sliding surfaces.
- ◆ Allocate grease using ⇒ *Electronic parts catalogue (ETKA)*.

#### 1 - Selector shaft with selector shaft cover

#### 2 - Seal

- ☐ Renew after removal  
⇒ [page 148](#)

#### 3 - Slide block

#### 4 - Gate relay lever

- ☐ Greasing ⇒ [page 73](#).
- ☐ Fitting position  
⇒ [page 73](#)
- ☐ After installing, adjust selector mechanism  
⇒ [page 74](#)
- ☐ Remove and install gate relay lever together with cable end-piece  
⇒ [page 71](#)

#### 5 - Cable end-piece

- ☐ For gate selector cable to relay lever
- ☐ After installing, adjust selector mechanism  
⇒ [page 74](#)
- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different
- ☐ Allocation ⇒ [page 73](#).
- ☐ Removing from gate relay lever ⇒ [page 72](#)
- ☐ Pressing onto gate relay lever ⇒ [page 72](#)

#### 6 - Gearbox selector lever

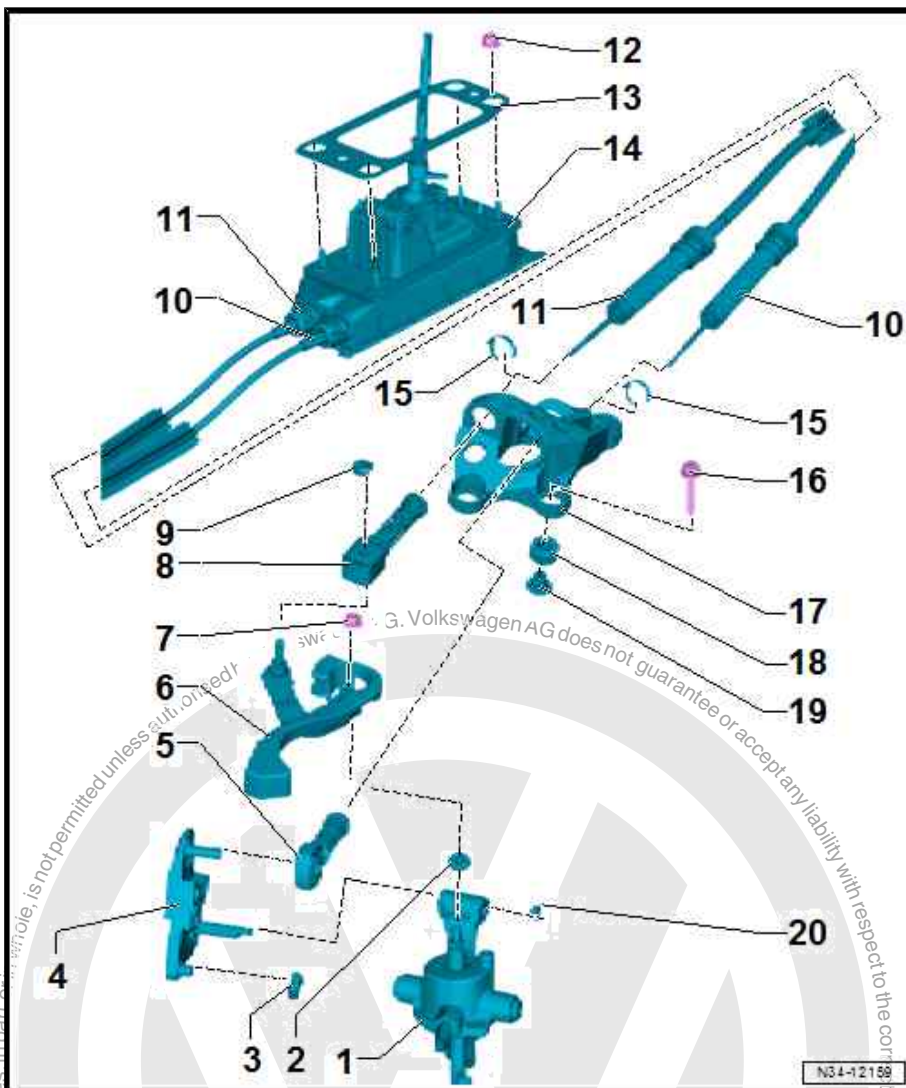
- ☐ Greasing ⇒ [page 73](#).
- ☐ Install so that master spline aligns with selector shaft ⇒ [page 74](#)
- ☐ Fitting position ⇒ [page 73](#)
- ☐ After installing, adjust selector mechanism ⇒ [page 74](#)

#### 7 - Hexagon nut

- ☐ Specified torque ⇒ [page 131](#)

#### 8 - Cable end-piece

- ☐ For gear selector cable to gearbox selector lever
- ☐ After installing, adjust selector mechanism ⇒ [page 74](#)





- ☐ Do not interchange; cable end-pieces securing gate selector cable to gate relay lever and gear selector cable to gearbox selector lever are different
- ☐ Allocation ⇒ [page 73](#) .

#### 9 - Securing clip

- ☐ Renew after removal

#### 10 - Gate change cable

- ☐ Connect to cable end-piece.
- ☐ Fitting position ⇒ [page 59](#)

#### 11 - Gear change cable

- ☐ Connect to cable end-piece.
- ☐ Fitting position ⇒ [page 59](#)

#### 12 - Hexagon nut

- ☐ Qty. 4
- ☐ M 6: 8 Nm
- ☐ M 8: 20 Nm

#### 13 - Seal

- ☐ Between selector housing and underbody
- ☐ Renew selector housing after removing
- ☐ Self-adhesive
- ☐ Bond to selector lever housing

#### 14 - Selector housing

#### 15 - Securing clip

- ☐ Renew after removal
- ☐ Do not damage cables when removing
- ☐ Fitting position ⇒ [page 74](#)

#### 16 - Hexagon bolt

- ☐ Qty. 3
- ☐ For cable support bracket
- ☐ 20 Nm

#### 17 - Cable support bracket

- ☐ Removing and installing ⇒ [page 71](#)
- ☐ After installing, adjust selector mechanism ⇒ [page 74](#)

#### 18 - Grommet

- ☐ Qty. 3
- ☐ Cable support bracket mounting on gearbox

#### 19 - Spacer

- ☐ Qty. 3

#### 20 - Clip

## 1.4 Removing and installing gear knob

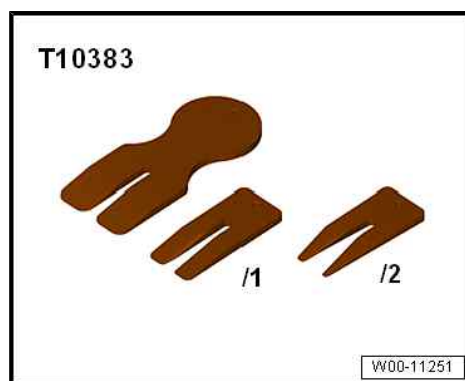
Special tools and workshop equipment required



- ◆ Hose clip pliers - V.A.G 1275 A-



- ◆ Wedges - T10383-

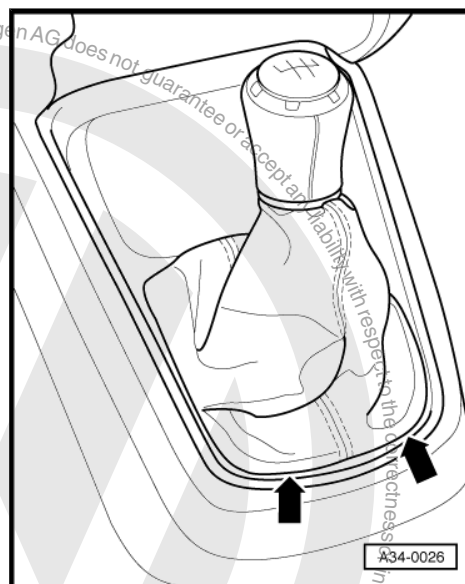


## Removing

- Cover centre console in area of gear lever boot with a cloth.

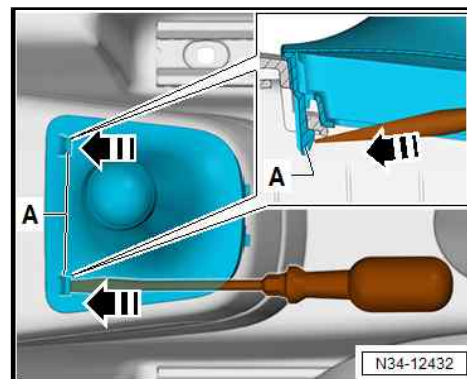
## up!

- Using wedge - T10383/1- , carefully lever off gear lever gaiter in rear area from centre console -arrows-





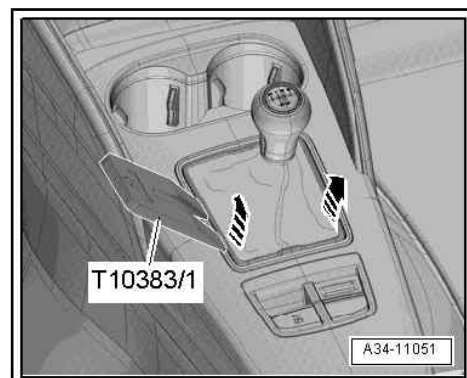
- Lift up gear lever boot slightly in rear area.
- Using a flat-bladed screwdriver, carefully push detents -A- in front area of gear lever boot in direction of -arrow-.
- Remove gear lever boot from centre console.



## Polo

Carefully insert lever. On some vehicles it might be helpful to begin »at front«.

- Using wedge - T10383- , carefully lever gear lever gaiter off centre console insert -arrows-.
- Alternatively, use removal wedge - 3409- to lever out gear lever gaiter.



## Continuation for all

- Pull gear lever gaiter upwards off gear knob.
- Open clamp -arrow- and pull off gear knob together with gear lever gaiter.

## Installing

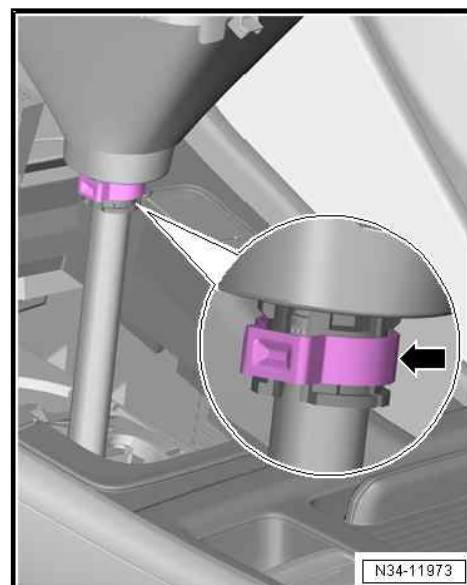
Install in reverse order of removal, observing the following:

- Press gear knob together with gear lever gaiter onto gear lever as far as stop.
- Secure gear lever knob to gear lever using clamp -arrow-. Use hose clip pliers - V.A.G 1275 A- to do this.

## up!

Install gear lever boot as follows:

- First, insert gear lever boot to stop in front area of centre console.
- Then engage gear lever boot to stop in rear area of centre console.



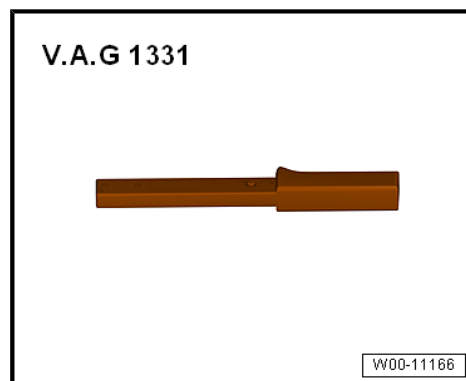
## 1.5 Removing and installing selector mechanism

Special tools and workshop equipment required





◆ Torque wrench - V.A.G 1331-



### Removing

- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .
- Remove gear lever gaiter with gear knob and any noise insulation from frame for centre console ⇒ [page 61](#) .

### up!

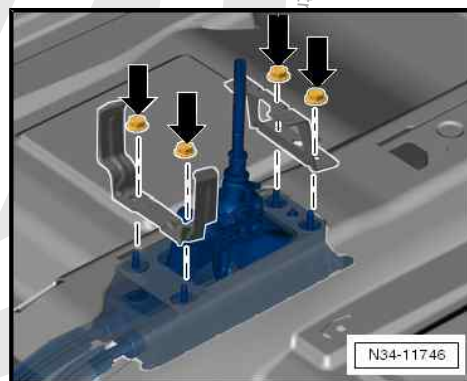
- Remove centre console insert ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console insert .
- Unbolt back of upper part of centre console ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Unbolt lower part of centre console in footwell ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .

### Polo

- Remove centre console with securing bracket ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview - centre console .

### Continuation for all

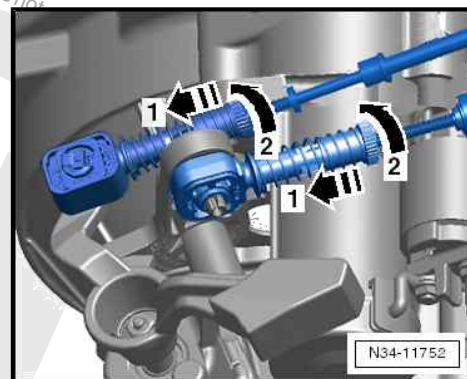
- Unscrew nuts -arrows- for selector housing and, if necessary, centre console securing bracket. To do this, carefully raise lower part of centre console.
- Lower selector housing.
- If fitted, remove insulation from selector housing ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Assembly overview - centre console
- Remove complete air filter housing if it is located over selector mechanism ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter .





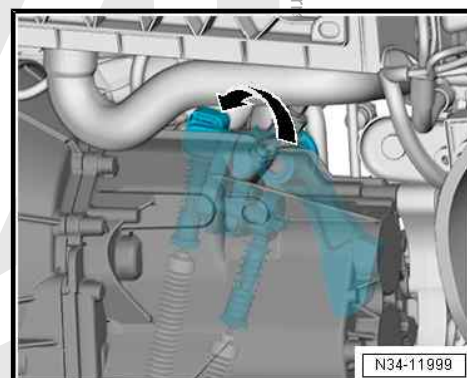


- Pull cable end-piece off gear selector cable and gate selector cable forward to stop in -direction of arrow 1- and then lock in -direction of arrow 2-.



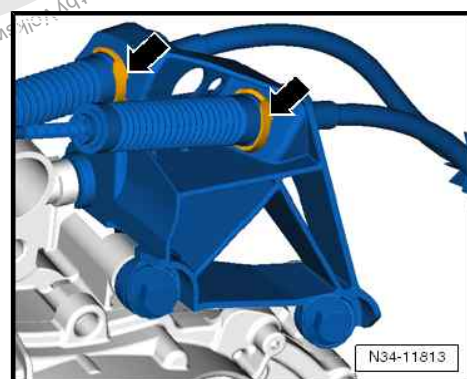
### up!

In some equipment versions, the gear selector cable is only accessible from beneath vehicle in -direction of arrow-.



### Continuation for all

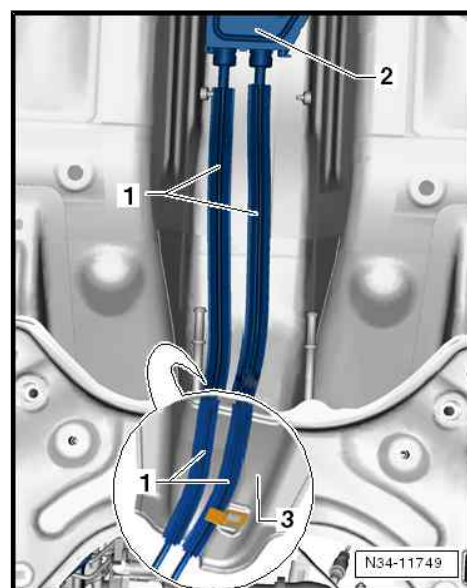
- Remove securing clips -arrows- for cables from cable support bracket.
- Detach heat shield ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .
- Swing down gear lever housing and remove with selector cables.



### Installing

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

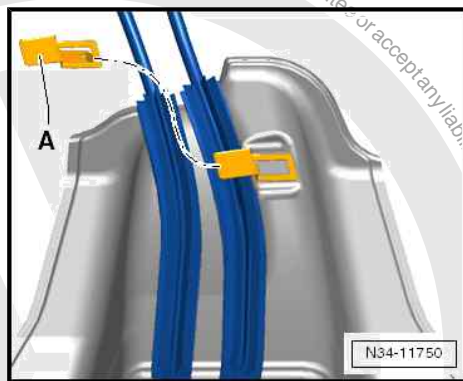
- Route Bowden cables -1- from selector mechanism -2- to gearbox as follows:
  - ◆ Cables must be routed parallel to one another as far as cable support bracket on gearbox.
  - ◆ Bowden cables must be laid in the intended indentation in heat shield -3-.





## up!

Clip -A- holds cables and heat shield in position (if applicable).

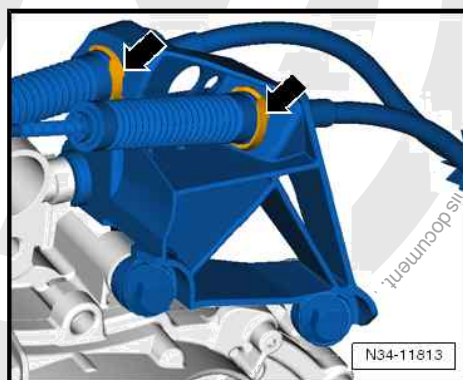


## Continuation for all

- Insert cables into cable end-pieces.

Install securing clips -arrows- for cables to cable support bracket.

- Align selector housing parallel to body.
- Distance to body must be same on both sides.
- Adjust selector mechanism ⇒ [page 74](#) .
- Install centre console and tighten bolts ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console .
- Install centre console insert ⇒ General body repairs, interior; Rep. gr. 68 ; Centre console; Removing and installing centre console insert .
- Install heat shield ⇒ General body repairs, exterior; Rep. gr. 66 ; Heat shields; Overview of fitting locations - heat shields .
- Assemble exhaust system free of tension ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Removing and installing front exhaust pipe .
- If removed, install complete air filter housing ⇒ Rep. gr. 24 ; Air filter, Removing and installing air filter housing .
- Connect battery and follow procedure after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery .



## Specified torques

Selector housing to body ⇒ [page 62](#) .



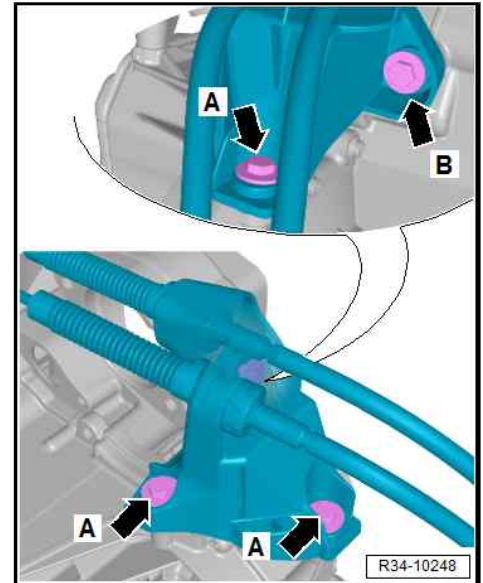
## 1.6 Repairing selector mechanism

up!

**Removing and installing cable support bracket on gearbox**

Bolts -arrow A- are accessible from engine compartment.

Bolt -arrow B- is accessible from beneath vehicle.

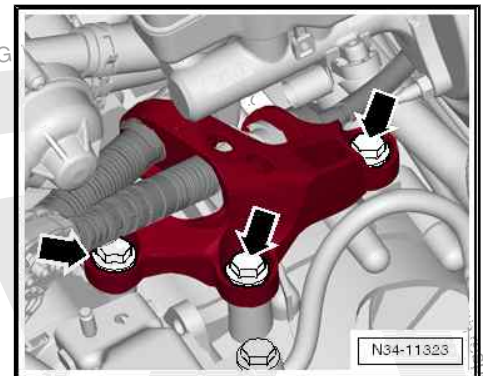


Polo

**Removing and installing cable support bracket on gearbox**

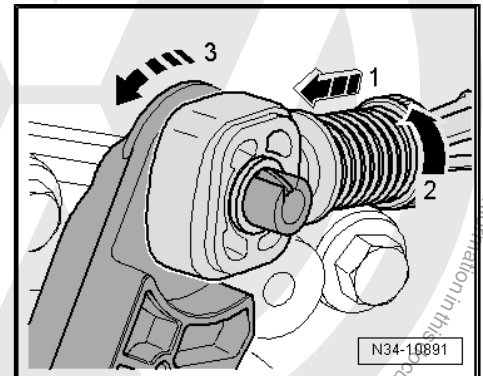
Bolts -arrow- are accessible from engine compartment.

Continuation for all



**Remove and install gate relay lever together with cable end-piece.**

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



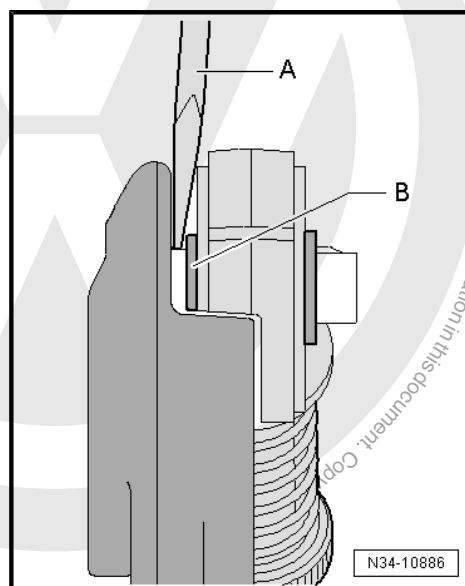


- Pull off clip -arrow 1- and remove gate relay lever together with cable end-piece.
- Cable end-piece must be located behind catch -arrow 2-.
- It is permissible to remove cable end-piece only after gate relay lever has been removed ⇒ [page 72](#) .
- Press cable end-piece onto gate relay lever ⇒ [page 72](#) .
- Insert gate relay lever together with cable end-piece as far as stop.
- The clip -arrow 1- secures gate relay lever.
- Ensure proper engagement of clip.
- Cable end-piece must be located behind catch -arrow 2-.



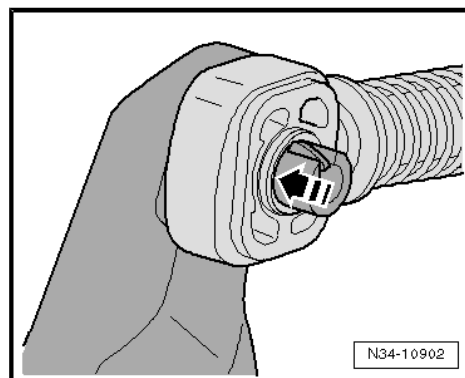
**With gate relay lever removed: levering cable end-piece for gate selector cable off gate relay lever**

- Fit a flat-bladed screwdriver between bush -B- and gate relay lever -A-.



**Pressing on cable end-piece**

- Gate relay lever is removed.
- Grease support pins for cable end-piece.
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- Cable end-piece may be pressed only onto bush -arrow-.
- Cable end-piece must move freely on gate relay lever.
- The cable end-piece must be located behind catch.
- Ensure proper engagement.

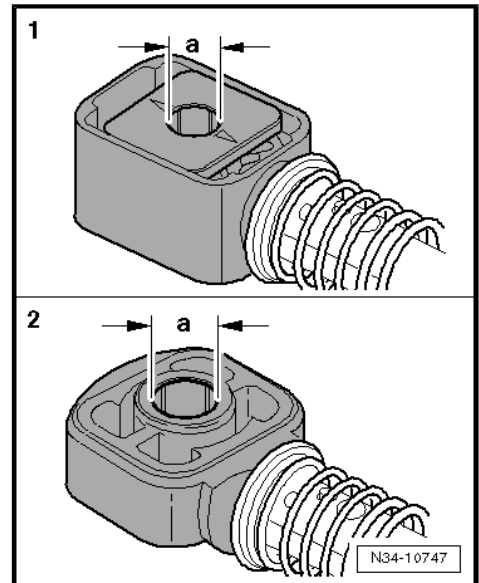




## Allocation of cable end-pieces

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

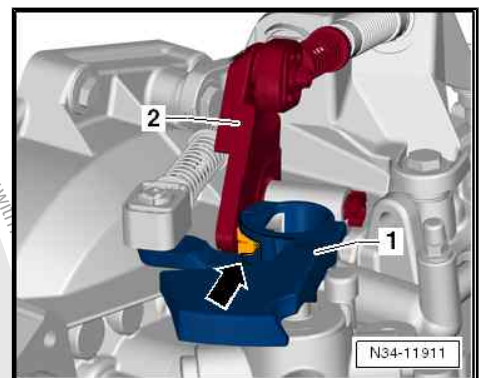
Cable end-piece for	Dimension "a"
-1- Gearbox selector cable to gearbox selector lever	8.5 mm
-2- Gate selector cable to gate relay lever	10 mm



## Installation position of gearbox selector lever/gate relay lever

1 - Gearbox selector lever

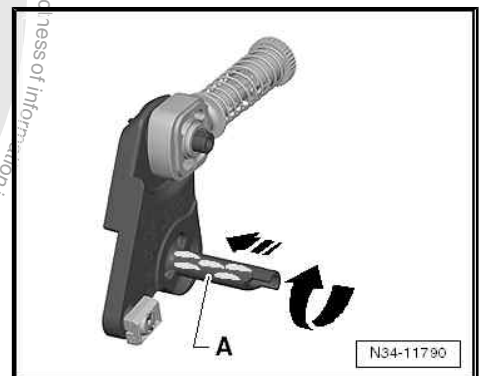
2 - Gate relay lever engages in guide rail of gearbox selector lever via shoe -arrow-.



## Gate relay lever: thoroughly grease following areas in particular prior to installation

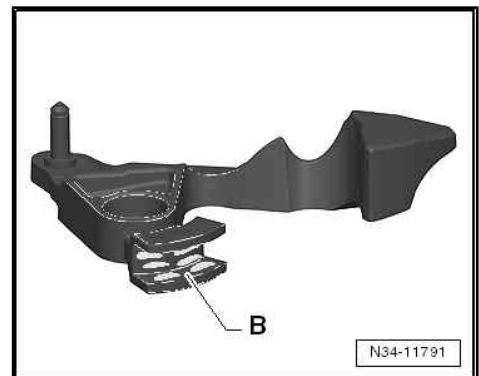
- Shaft -A- of gate relay lever -arrows-; amount of grease: 0.2 grams.

Allocate grease using ⇒ Electronic parts catalogue (ETKA) .



## Gearbox selector lever: thoroughly grease following areas in particular prior to installation

- Guide rail -B- of gearbox selector lever into which gate relay lever engages.
- Support pin for cable end-piece.
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- Illustration of gate relay lever and gearbox selector lever may differ from actual components.

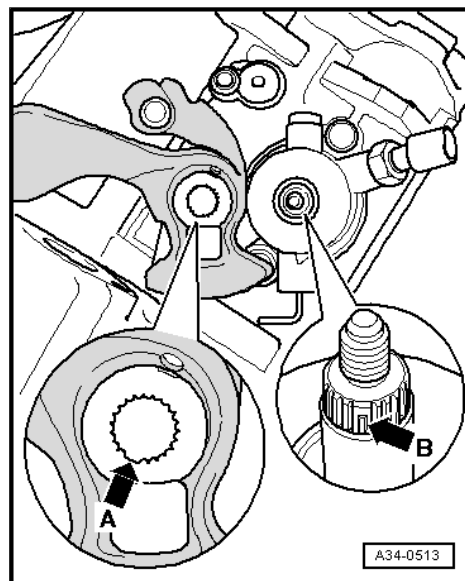




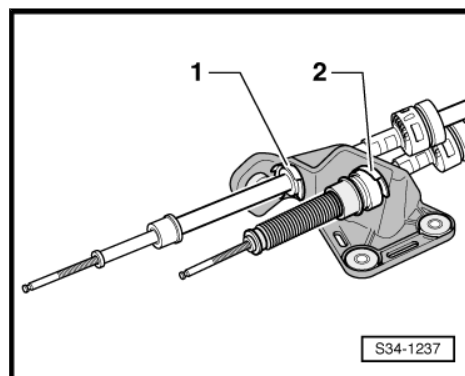


### Install gearbox selector lever

- When fitting the gearbox selector lever, ensure that the gap -arrow A- is aligned with the master spline -arrow B-.



Installation position of securing clips -1- and -2-.



## 1.7 Adjusting selector mechanism

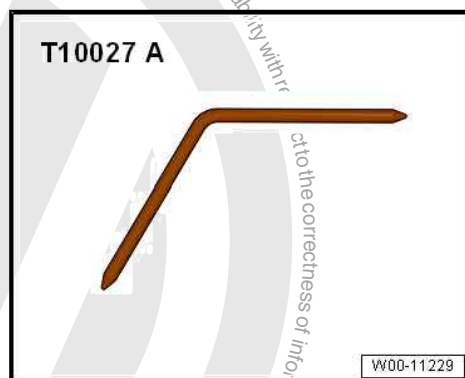
⇒ ["1.7.1 Adjusting selector mechanism, up!", page 74](#)

⇒ ["1.7.2 Adjusting selector mechanism, Polo", page 76](#)

### 1.7.1 Adjusting selector mechanism, up!

Special tools and workshop equipment required

- ◆ Pin - T10027A-



#### Prerequisites for adjustment

- Moving parts of selector mechanism and elements transferring force must be in proper condition.
- Selector mechanism must move freely.



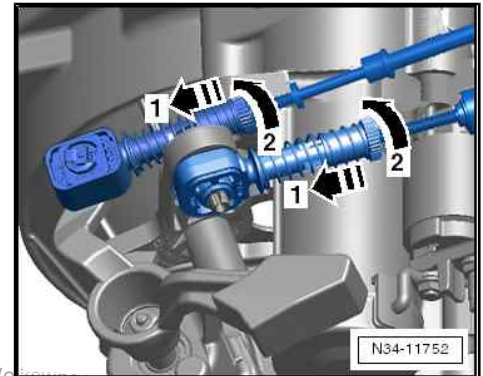


- Gearbox, clutch and clutch mechanism must be in proper condition.
- Gearbox must be in neutral.

Selector shaft must be secured in subsequent work step. This should be done beneath the vehicle.

#### Open cable end-pieces on gearbox:

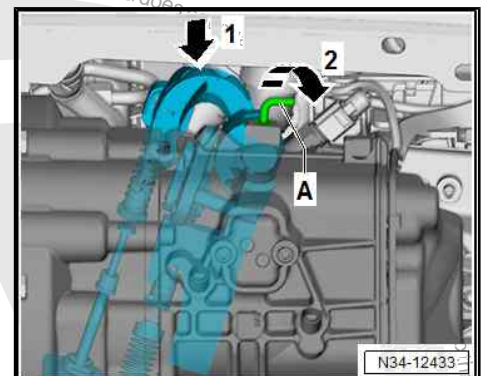
- Pull locking mechanisms on gate selector cable and gear selector cable end-pieces forward to stop -direction of arrow 1- and then turn to left to lock -direction of arrow 2-.
- It must be possible to push both cables into the locking mechanisms.



#### Move selector shaft in correct position for adjustment:

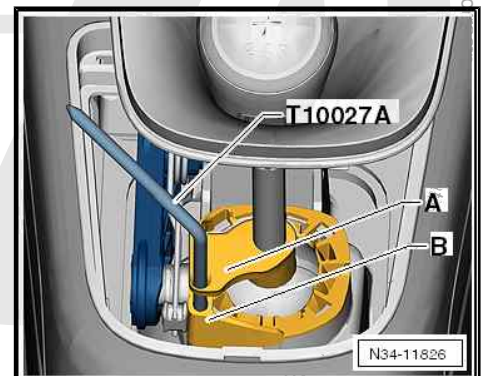
The selector shaft is secured beneath the vehicle.

- Press down selector shaft on gearbox selector lever in direction of -arrow 1-.
- While pressing down selector shaft, turn angled rod -A- in direction of -arrow 2-, and at the same time press it in until it engages in selector shaft.



#### Move gear lever in correct position for adjustment:

- Detach gear lever boot and, if necessary, noise insulation from centre console ➔ [page 65](#) .
- In neutral position, hold gear lever towards »left«.
- Push locking pin - T10027 A- through hole -A- into hole -B-.

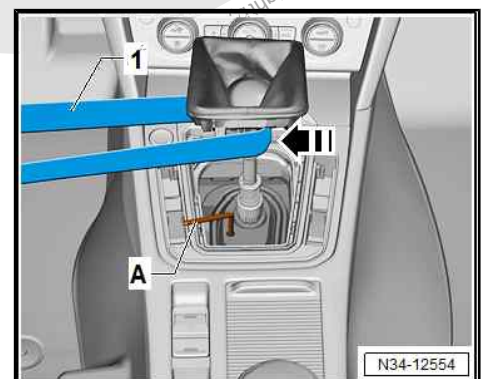


- Wrap left seat belt -1- around gear lever so that belt holds lever.

The gear lever is secured by the locking pin - T10027A- (-A-).

In addition, the seat belt presses the gear lever against the stop for 1st and 2nd gear -direction of arrow-.

This takes all »play out of the selector mechanism«.

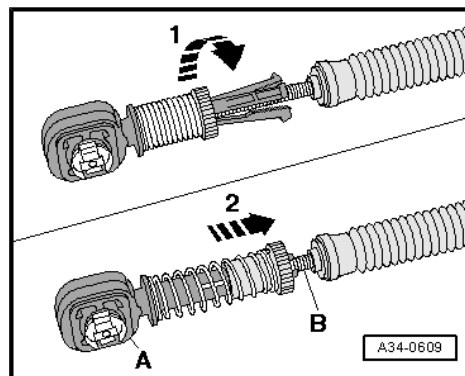




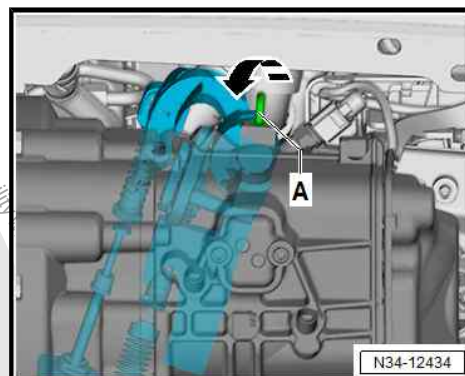
### Adjusting the selector mechanism:

- Gate and selector cables -B- must be inserted, free of tension, into locking elements -A-.
- Now turn locking mechanisms on gear selector cable and gate selector cable end pieces clockwise to stop -direction of arrow 1-.

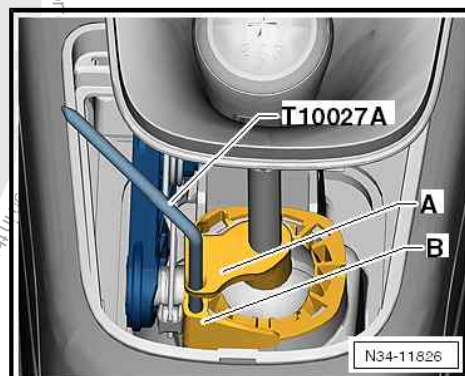
The spring presses the locking mechanism into original position -direction of arrow 2-.



- Now turn angled rod -A- back to original position in -direction of arrow-.
- During this procedure, angled rod -A- must be pressed out of gearbox.



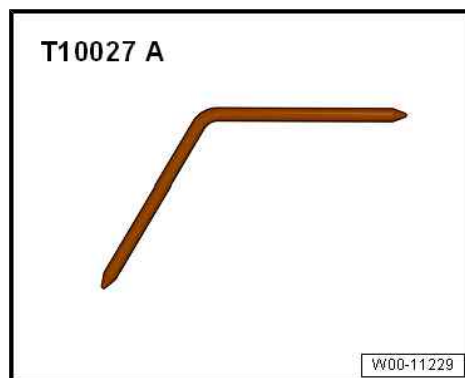
- Remove seat belt from selector lever.
- Pull locking pin out of holes -A- and -B-.
- Install gaiter and, if present, noise insulation ➔ [page 65](#).
- Check selector shaft can move freely.
- Check selector mechanism ➔ [page 78](#).



## 1.7.2 Adjusting selector mechanism, Polo

### Special tools and workshop equipment required

- ♦ Pin - T10027A-



### Prerequisites for adjustment

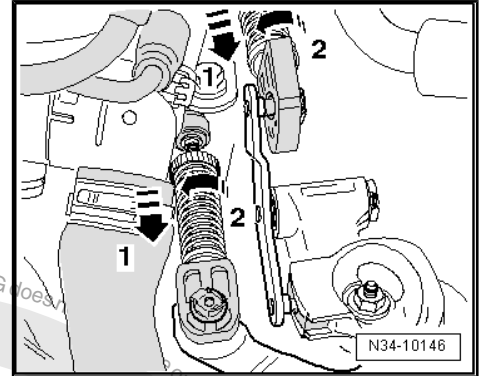
- Moving parts of selector mechanism and elements transferring force must be in proper condition.
- Selector mechanism must move freely.



- Gearbox, clutch and clutch mechanism must be in proper condition.
- Gearbox must be in neutral.
- Remove complete 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 ; Air filter; Removing and installing air filter housing .

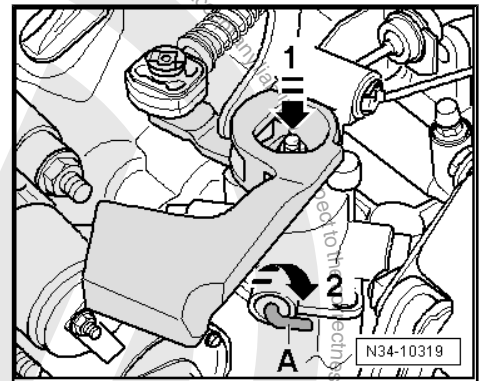
#### Open cable end-pieces on gearbox:

- 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-.
- It must be possible to push both cables into the locking mechanisms.



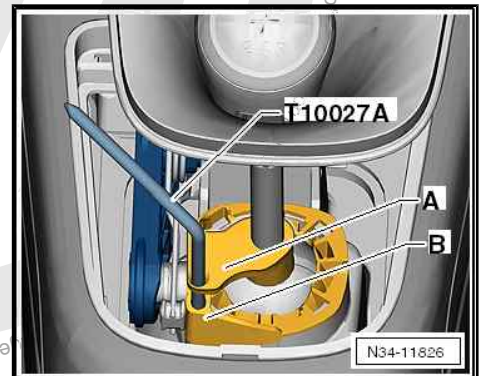
#### Move selector shaft in correct position for adjustment:

- Press selector shaft down in -direction of arrow 1-.
- While pressing down selector shaft, turn angled rod -A- in direction of -arrow 2-, and at the same time press it in until it engages in selector shaft.



#### Move gear lever in correct position for adjustment:

- Detach gear lever boot and, if necessary, noise insulation from centre console ⇒ [page 65](#) .
- In neutral position, hold gear lever towards »left«.
- Push locking pin - T10027 A- through hole -A- into hole -B-.

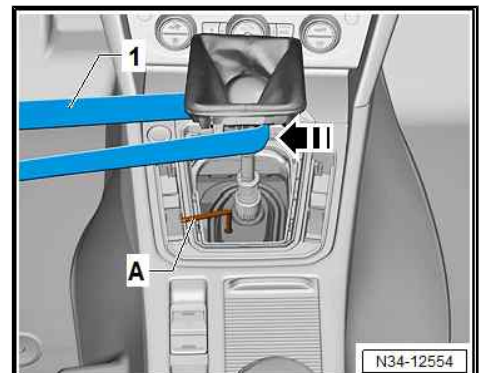


- Wrap left seat belt -1- around gear lever so that belt holds lever.

The gear lever is secured by the locking pin - T10027A- (-A-).

In addition, the seat belt presses the gear lever against the stop for 1st and 2nd gear -direction of arrow-.

This takes all »play out of the selector mechanism«.

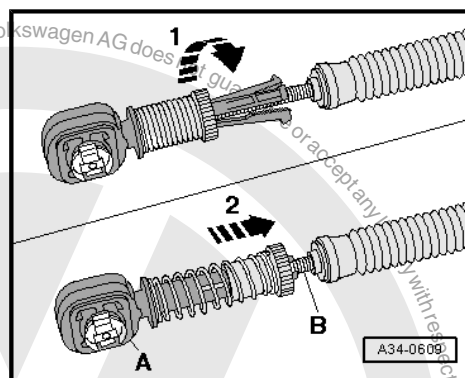




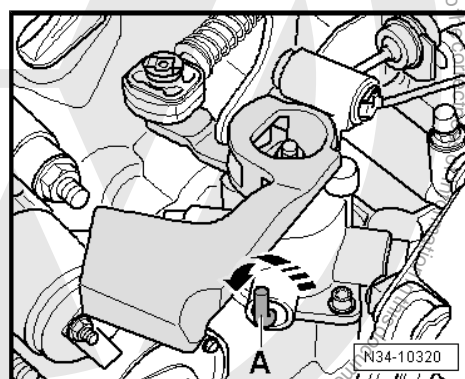
### Adjusting the selector mechanism:

- Gate and selector cables -B- must be inserted, free of tension, into locking elements -A-.
- Now turn locking mechanisms on gear selector cable and gate selector cable end pieces clockwise to stop -direction of arrow 1-.

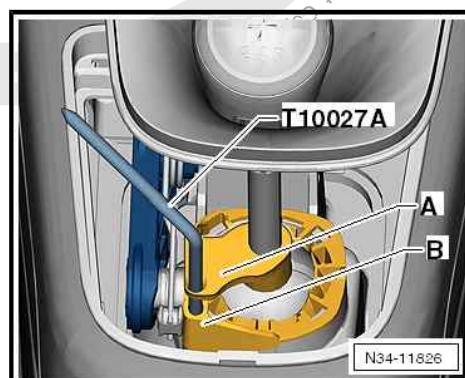
The spring presses the locking mechanism into original position -direction of arrow 2-.



- Now turn angled rod -A- back to original position in -direction of arrow-.
- The angled rod -A- must be pressed out of selector housing to stop and point straight up.



- Remove seat belt from selector lever.
- Pull locking pin out of holes -A- and -B-.
- Install gaiter and, if present, noise insulation ⇒ [page 65](#).
- Check selector shaft can move freely.
- Check selector mechanism ⇒ [page 78](#).
- If removed, install complete air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .



## 1.8 Checking selector mechanism

- With gearbox in neutral, gear lever must be in gear lever 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 74](#).





## 2 Removing and installing gearbox

⇒ [“2.1 Differentiating between gearboxes, Polo”, page 79](#)

⇒ [“2.2 Removing gearbox”, page 79](#)

⇒ [“2.3 Installing gearbox”, page 100](#)

⇒ [“2.4 Specified torques for gearbox”, page 110](#)

### 2.1 Differentiating between gearboxes, Polo

Manual gearbox 02T	With flange shafts	⇒ <a href="#">“7.1.1 Schematic overview - gearbox, manual gearbox 02T”, page 123</a>
Manual gearbox 0DF	Without flange shaft	⇒ <a href="#">“7.1.2 Schematic overview - gearbox, manual gearbox 0DF”, page 125</a>

### 2.2 Removing gearbox

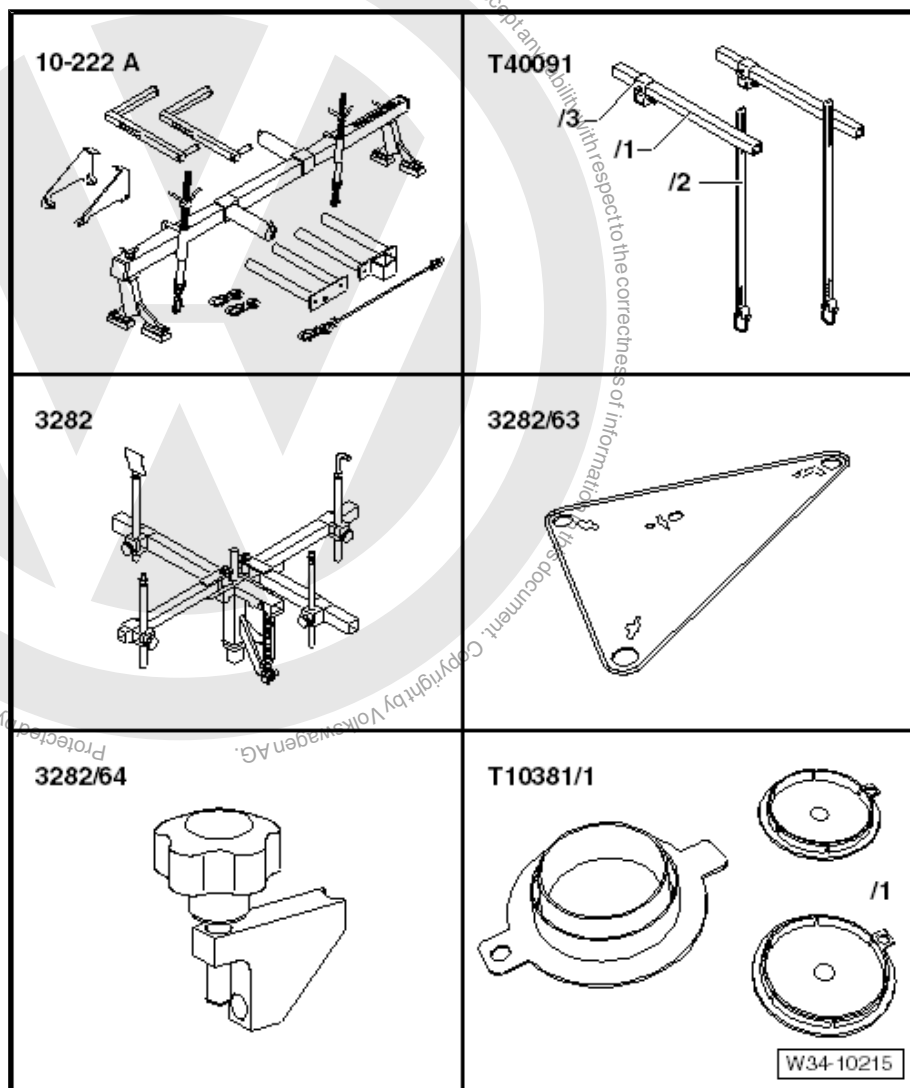
⇒ [“2.2.1 Removing gearbox, up!”, page 79](#)

⇒ [“2.2.2 Removing gearbox, Polo”, page 88](#)

#### 2.2.1 Removing gearbox, up!



### Special tools and workshop equipment required

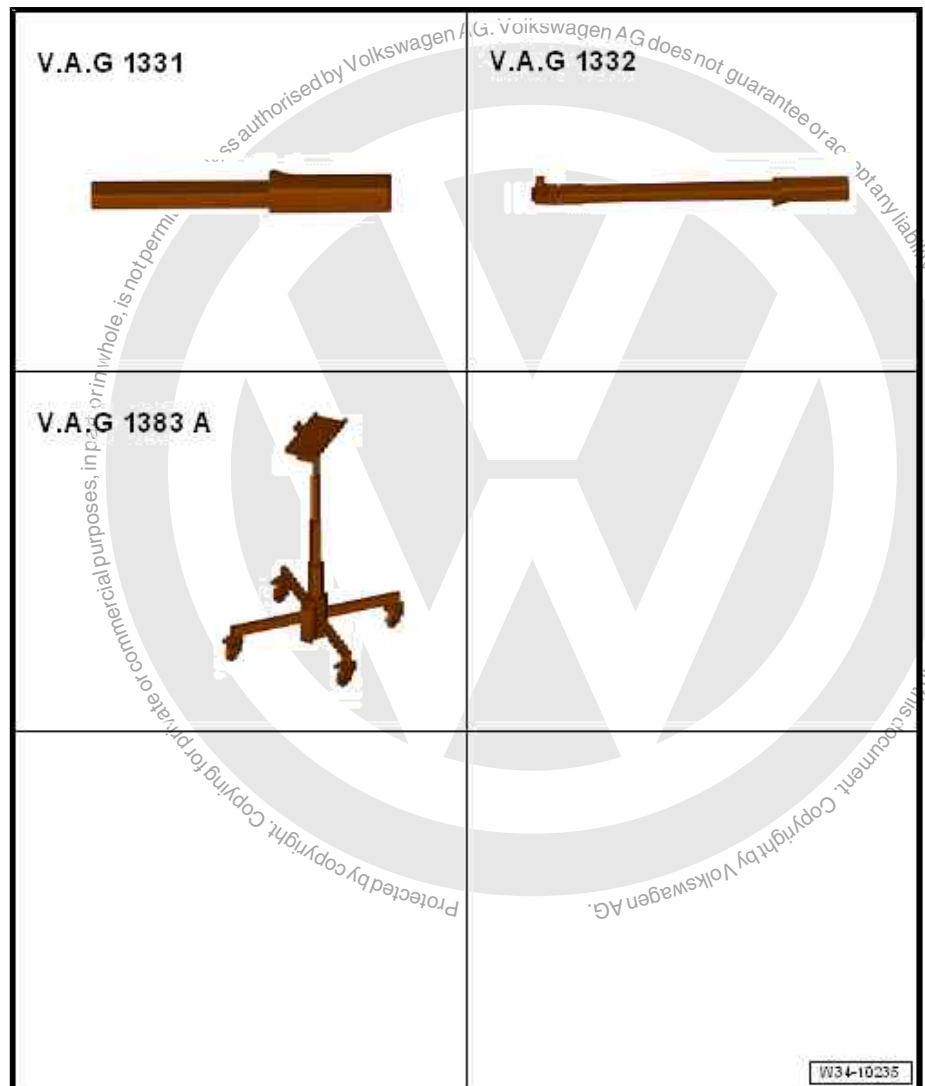
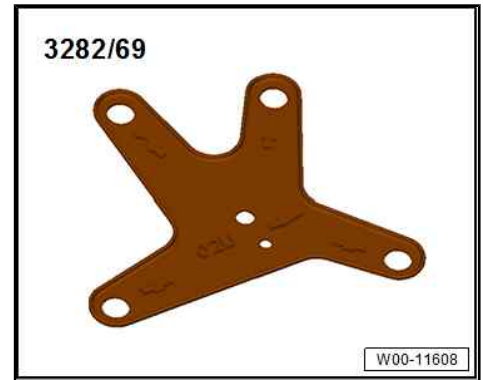


- ◆ Support - 10 - 222 A-
- ◆ Adapter - 10 - 222 A /31-1-
- ◆ Adapter - 10 - 222 A /31-2-
- ◆ Support - 10 - 222 A /31-3-
- ◆ Adapter - 10 - 222 A /31-5-
- ◆ Square tube - T40091/1-
- ◆ Joints - T40091/3-
- ◆ Gearbox support - 3282-
- ◆ Support elements for gearbox (determine when setting adjustment plate on gearbox support )
- ◆ Sealing cap - T10381/1-
- ◆ Not required adjustment plate - 3282/63-
- ◆ Not required: adapter - 3282/64-





- ◆ Adjustment plate - 3282/69-



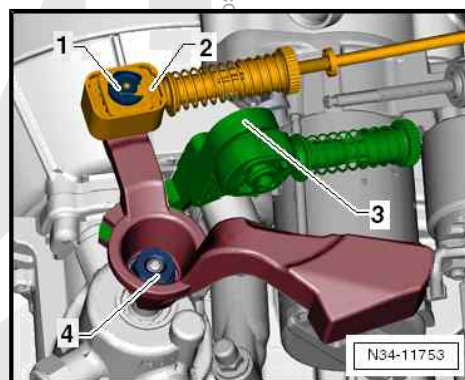
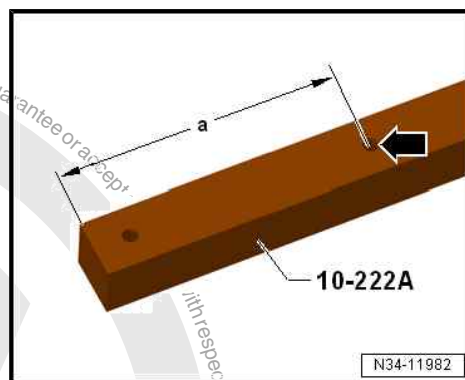
- ◆ Torque wrench - V.A.G 1331-
- ◆ Torque wrench - V.A.G 1332-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Or engine and gearbox jack - VAS 6931-



◆ Insert tool - T10509-

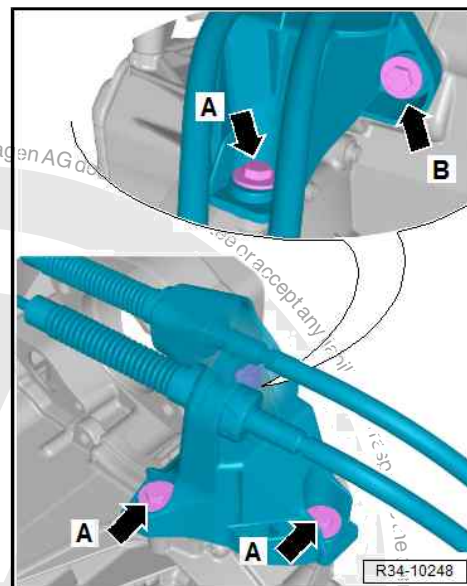


- ◆ Grease for splines
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- If support bracket - 10 - 222 A- does not yet have hole marked with -arrow-, then hole must subsequently be drilled into support bracket.
- Dimension -a- = 225 mm.
- Hole diam. = 12.5 mm.
- Disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Disconnecting and reconnecting battery .
- If located above engine lifting eyes, remove engine cover panel and air filter ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Remove securing clip -1- for gear selector cable -2- from gear-box selector lever.
- Pull gear selector cable off pin.
- Remove relay lever -3- together with cable end-piece ⇒ [page 71](#) .
- Remove gearbox selector lever by unscrewing nut -4-.





- Remove cable support bracket from gearbox.
- Bolts -arrow A- are accessible from engine compartment.  
Bolt -arrow B- is accessible from beneath vehicle.
- Tie up gear selector cable and gate selector cable.
  - Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Assembly overview - starter .

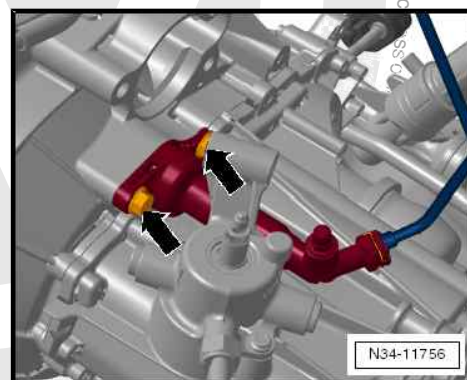


- Remove clutch slave cylinder -arrows-, lay to side and secure. Do not disconnect pipes.



#### Caution

***Do not operate clutch pedal any more.***

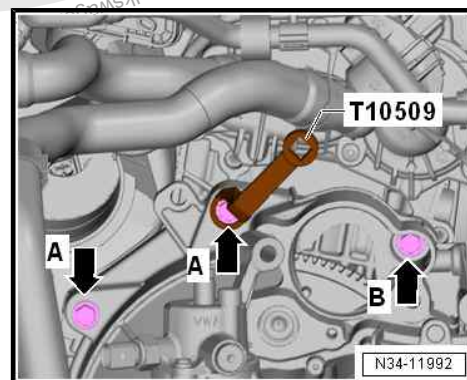


- Remove upper engine/gearbox securing bolts -arrows A- and -arrows B-.
- Loosen bolts -arrows A- if necessary using insert tool, 18 mm - T10509- .
- Install support bracket as follows:

Required material:

- ◆ Adapter - 10 - 222 A /31-1-
- ◆ Adapter - 10 - 222 A /31-2-
- ◆ Connector - T40091/3-
- ◆ Square tube - T40091/1-
- ◆ Support - 10 - 222 A /31-3-
- ◆ Adapter - 10 - 222 A /31-5-

**Install support bracket as follows:**





Adapter - 10 - 222 A /31-1- and adapter - 10 - 222 A /31-2- are placed onto suspension strut supports underneath plenum chamber cover.

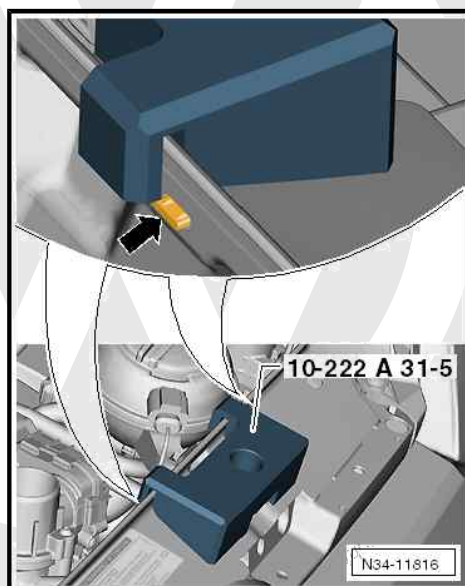
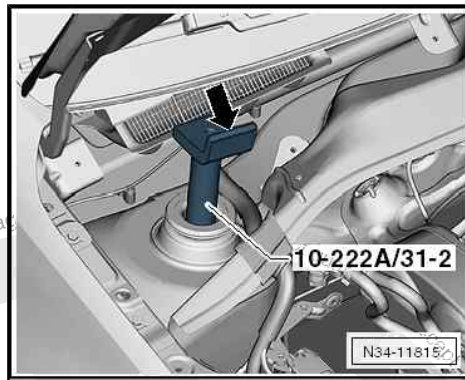
Therefore, remove following components:

- ◆ Wiper arms ⇒ Electrical system; Rep. gr. 92 ; Windscreen wiper system; Removing and installing wiper arms .
- ◆ Plenum chamber cover ⇒ General body repairs, exterior; Rep. gr. 50 ; Bulkhead; Removing and installing plenum chamber cover
- Fit adapter - 10 - 222 A /31-1- and adapter - 10 - 222 A /31-2- onto suspension strut supports.

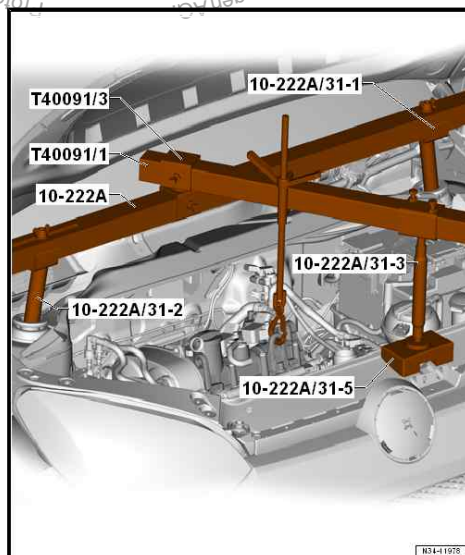
Angled pieces of adapters -arrow- point towards engine compartment.

- If fitted, pull bonnet seal off lock carrier.
- Position support - 10 - 222 A /31-5- above bonnet catch.

Correct position is between 2 lugs -arrow-.



- Slide connector - T40091/3- onto support bracket - 10-222 A- .
- Bolt support bracket - 10-222 A- to adapter - 10 - 222 A /31-1- and to adapter - 10 - 222 A /31-2- .
- Attach square tube - T40091/1- to support bracket - 10-222 A- .
- Fit square tube on support - 10 - 222 A /31-3- and adapter - 10 - 222 A /31-5- .
- Then attach spindle to front engine support eye.
- Take up weight of engine/gearbox assembly on spindle .

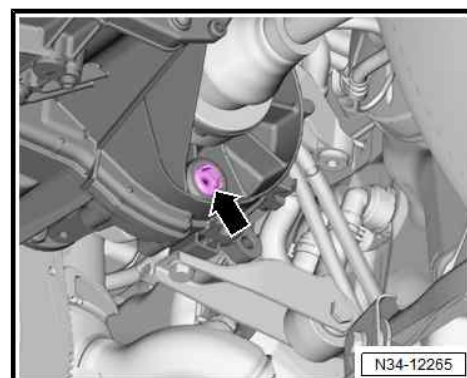
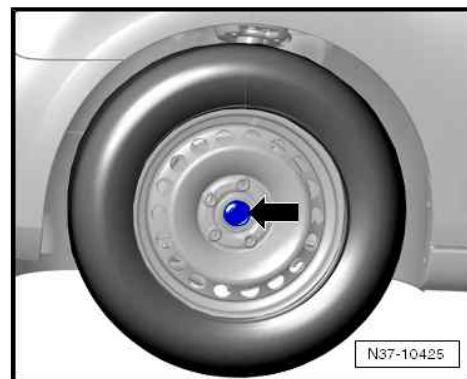




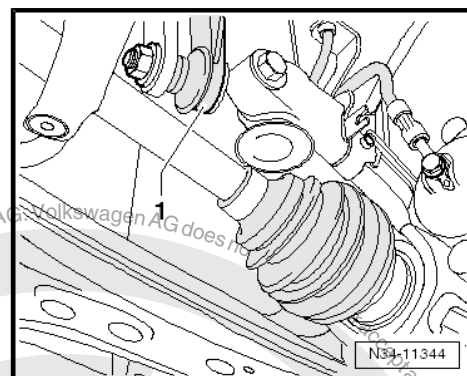


During subsequent work process, drive shafts with joint sections must be removed.

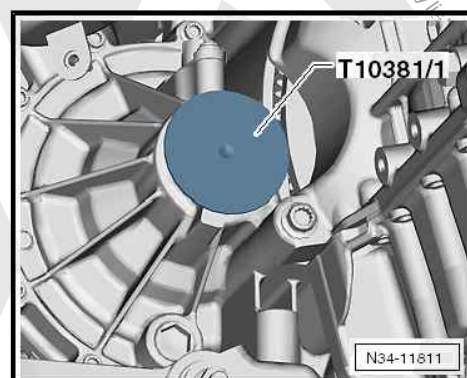
- Loosen securing nuts -arrow- for drive shafts ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- If fitted, remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview - front wheel housing liner .
- Cover pendulum support.
- Drain gearbox oil -arrow- ⇒ [page 115](#) .



- Remove coupling rod -1- from anti-roll bar on both sides ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .
- Press anti-roll bar upwards.

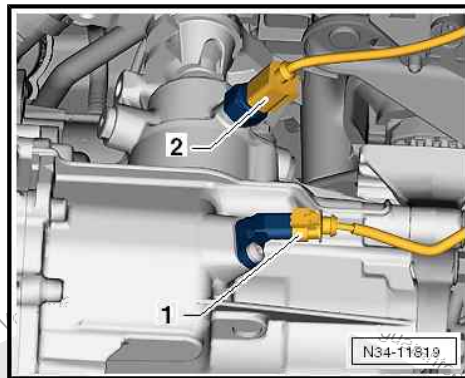


- Remove both drive shafts with joint sections ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Install sealing caps in gearbox.





- If fitted, disconnect electrical connectors:
- Pull connector -1- off gearbox neutral position sender - G701- .
- Pull connector -2- off reversing light switch - F4- .



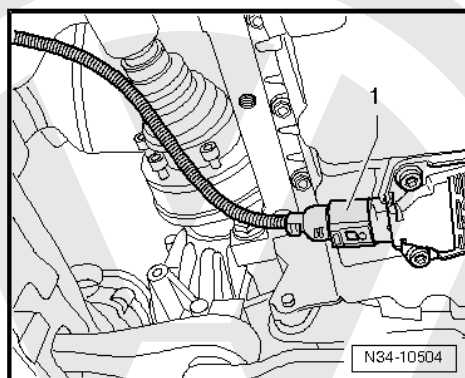
- Pull connector -1- off oil level and oil temperature sender - G266- .
- Detach exhaust system from subframe ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Assembly overview - silencer .



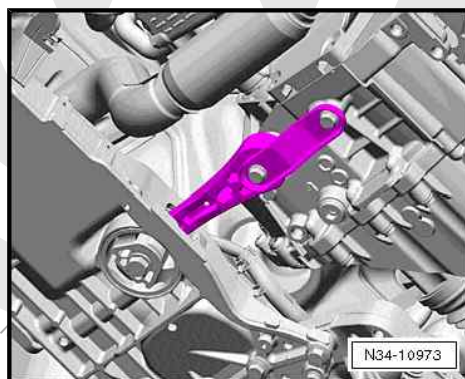
**Caution**

**Risk of damage to decoupling element.**

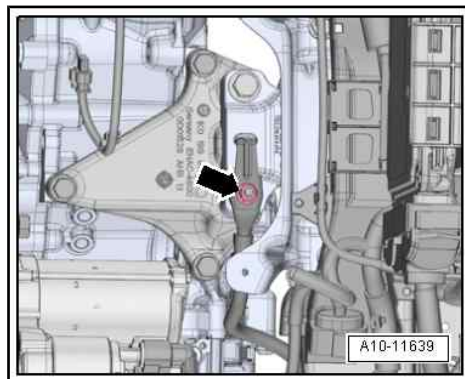
- ♦ **Observe ⇒ Rep. gr. 26 ; Emission control; Assembly overview - emission control .**



- Remove pendulum support.



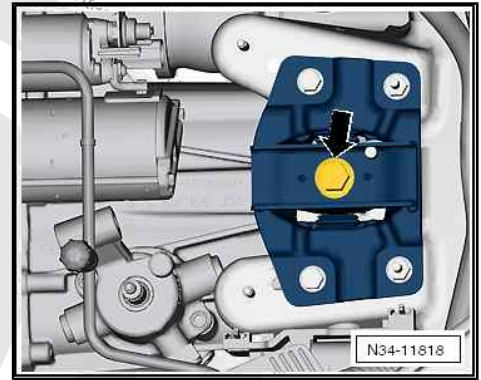
- If fitted, remove earth wire -arrow-.



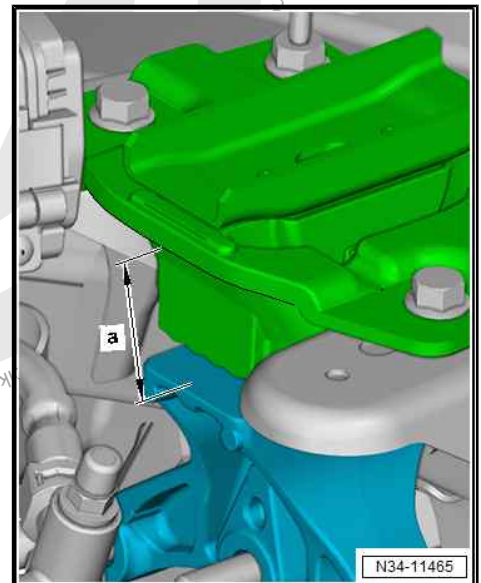




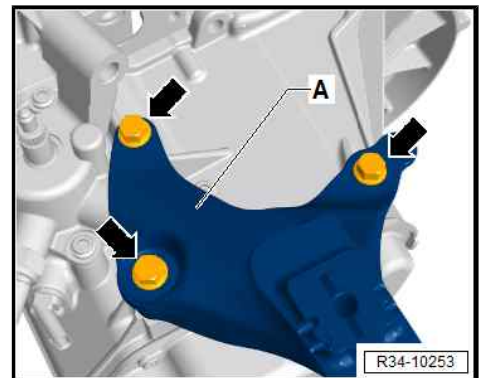
- Remove hexagon bolt -arrow- for left-hand assembly mounting from gearbox mounting.



- Lower engine/gearbox assembly via spindles of support bracket - 10-222 A- .
- Dimension -a- is about 90 mm



- Remove gearbox bracket -A- -arrows-.



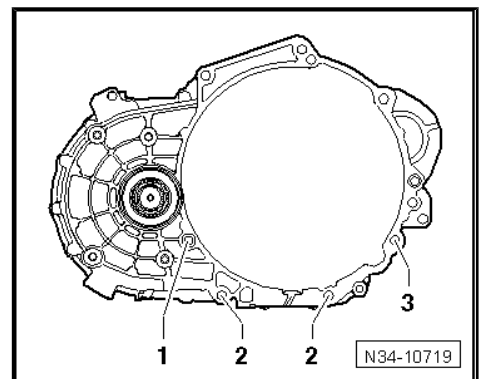
- Remove lower engine/gearbox connecting bolt -1-.



#### Note

*Loosen engine/gearbox connecting bolts -2- and -3-, and leave them installed just hand-tight.*

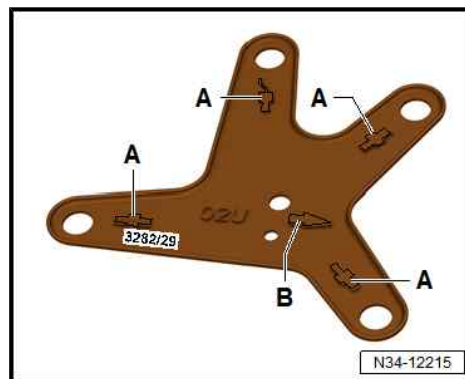
- Insert gearbox support - 3282- in engine and gearbox jack .





Gearbox support - 3282- is aligned with adjustment plate - 3282/69- for removal of gearbox.

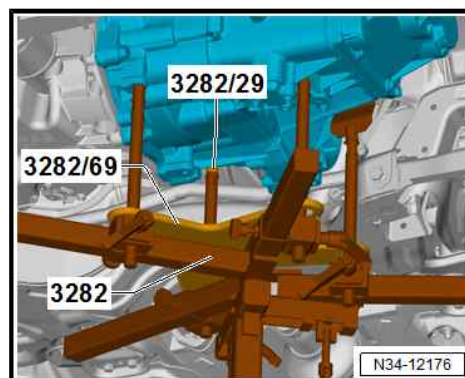
- Fit adjustment plate - 3282/69- on gearbox support - 3282- (adjustment plate fits in only one position).
- Screw in support elements -A- as illustrated on adjustment plate.



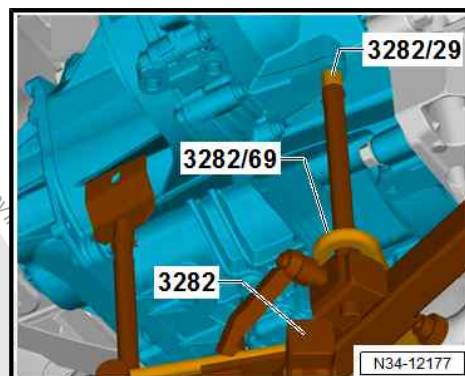
- Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel (⇒ previous illustration).

Rods holding the support elements should be flush with gearbox support - 3282- at bottom.

- Align adjustment plate parallel to gearbox.



- Then screw pin - 3282/29- into rear hole on gearbox for securing bolt of pendulum support.
- Remove engine/gearbox connecting bolts.
- Unscrew engine/gearbox connecting bolt above right drive shaft mounting.
- Carefully push engine forwards (with aid of 2nd mechanic).
- Carefully press gearbox off dowel sleeves.



Lower gearbox in area of 5th gear (-area A-) and in area of differential (-arrow B-) alternately using spindles of gearbox support - 3282- .

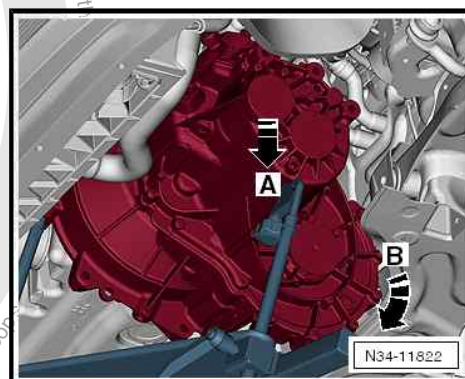
When lowering gearbox, change position of gearbox using spindles of gearbox support - 3282- (shown here with a different gearbox).



#### Note

*Please make sure that the coolant hose and electrical wiring retainer do not get caught on the gearbox.*

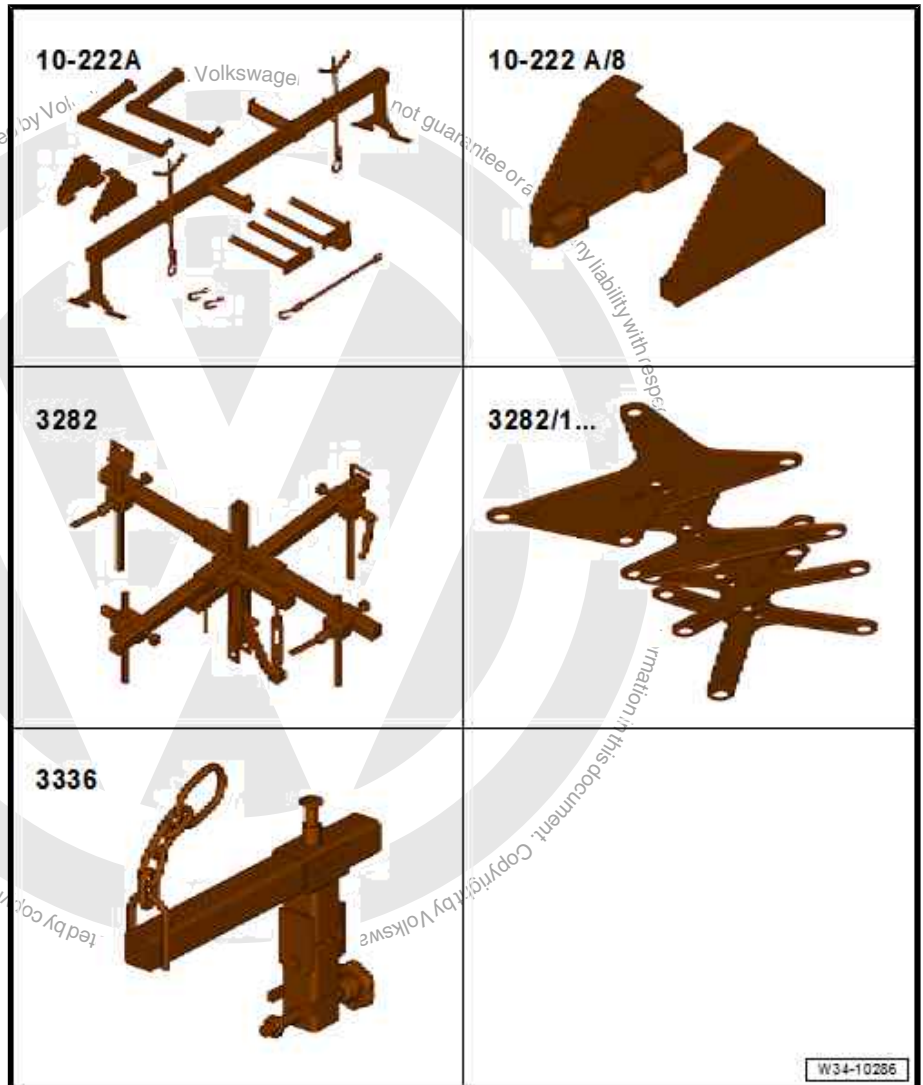
Install gearbox ➔ [page 100](#) .



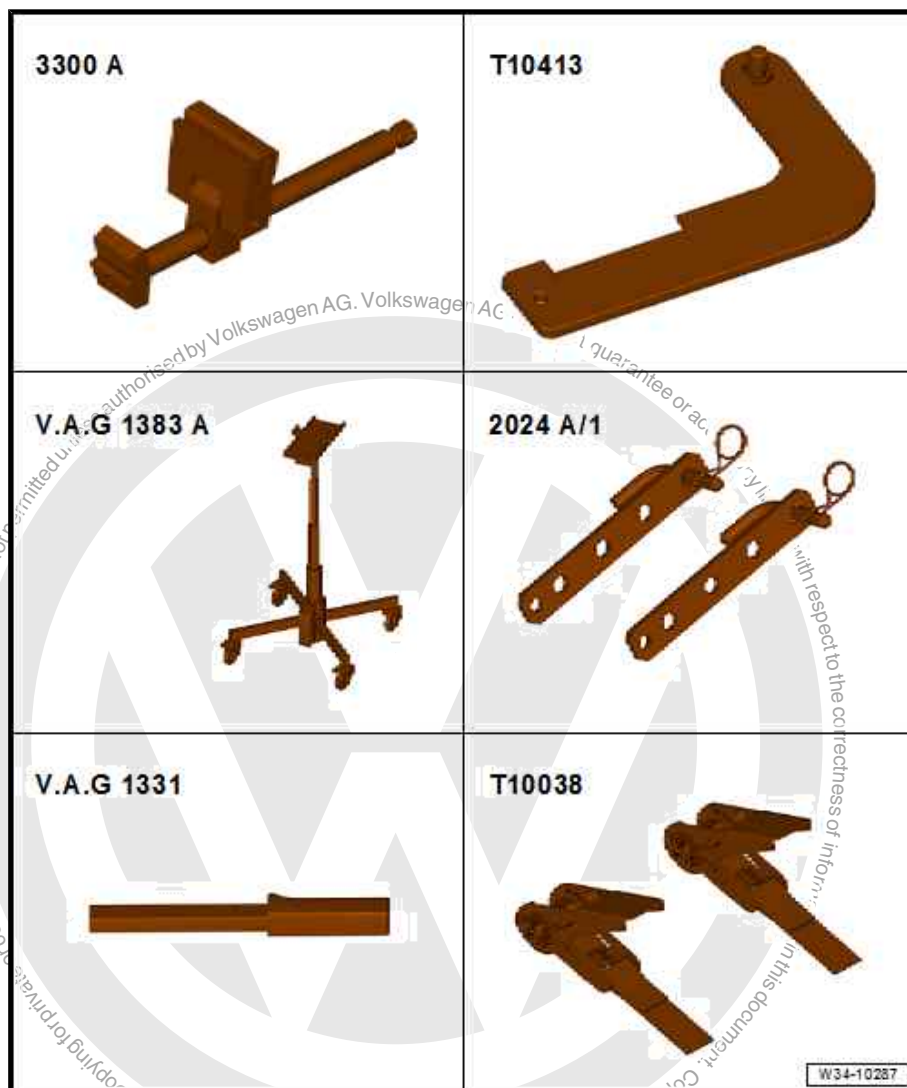
## 2.2.2 Removing gearbox, Polo



# Special tools and workshop equipment required



- ◆ Support - 10 - 222 A-
- ◆ Adapter - 10 - 222 A /8-
- ◆ Shackle - 10 - 222 A /12-
- ◆ Gearbox support - 3282-
- ◆ Adjustment plate - 3282/69-
- ◆ Support elements for gearbox (determine when setting adjustment plate on gearbox support )
- ◆ Gearbox lifting tackle - 3336- for transporting gearbox

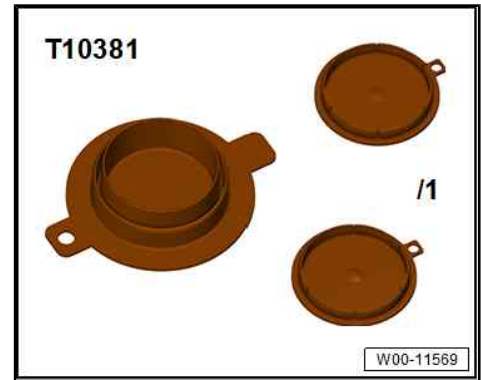


- ◆ Engine support - 3300 A-
- ◆ Support plate - T10413-
- ◆ Engine and gearbox jack - V.A.G 1383 A-
- ◆ Or engine and gearbox jack - VAS 6931-
- ◆ Lifting tackle - 2024 A-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Tensioning strap - T10038-
- ◆ Protective mat - VAS 531 003-
- ◆ Grease for splines
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .





## Manual gearbox 0DF

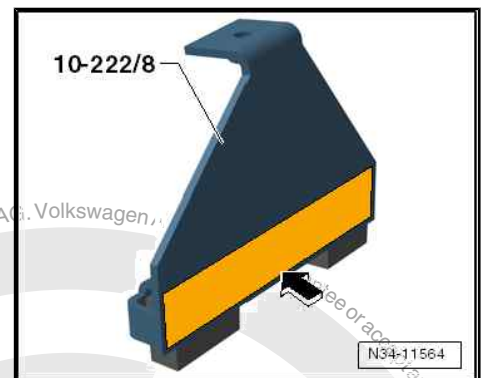


### ◆ Sealing cap - T10381/1-

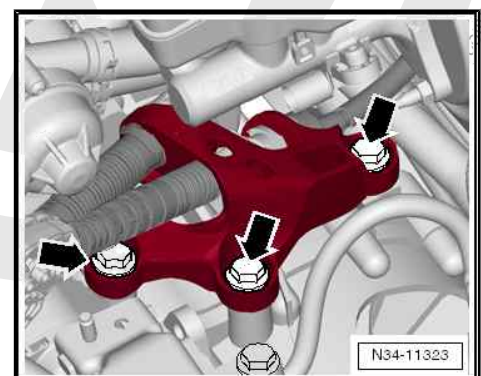
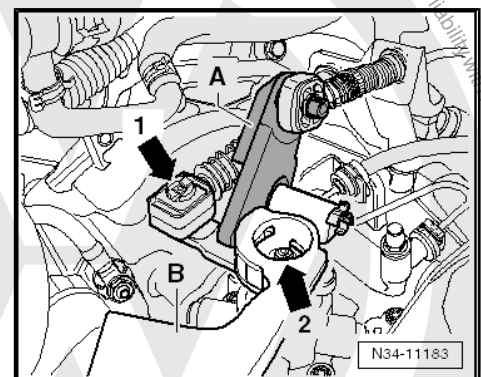
#### Continuation for all

At a later point, support bracket - 10-222 A- will be fitted onto longitudinal members with adapters - 10 - 222 A /8- .

- To prevent damage to edges of wings, cover bottom area of both adapters - 10 - 222 A /8- with self-adhesive fabric tape -arrow- ⇒ Electronic parts catalogue (ETKA chemical substances) .



- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Remove complete air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove securing clip -1- for gear selector cable from gearbox selector lever -B-.
- Remove gate relay lever -A- together with cable end-piece ⇒ [page 71](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.
- Unscrew bolts -arrows-, and tie up cable support bracket with cables.



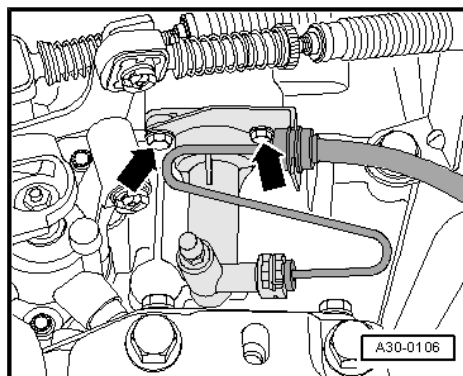


- Unscrew bolts -arrows- and place clutch slave cylinder to one side. Do not disconnect lines.



**Caution**

*Do not operate clutch pedal any more.*



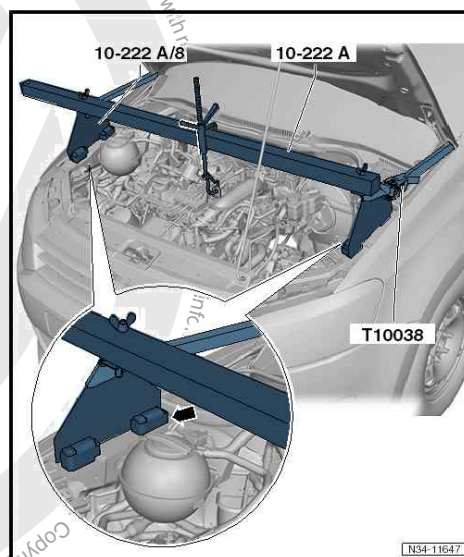
- Then remove upper securing bolt on starter.
- Then, disconnect cables from starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Removing and installing starter
- Remove upper engine/gearbox connecting bolts.
- If there are hose and cable connections in area of engine support eyes for support bracket - 10 - 222 A- , remove these now.
- Remove foam pieces or seal from upper edge of left and right wings ⇒ General body repairs, exterior; Rep. gr. 50 ; Wings; Assembly overview – wings .

**Vehicles with 3-cylinder engine**

- Set up support bracket - 10-222 A- behind bonnet support.

Required material:

- ♦ Adapter - 10 - 222 A /8-
- ♦ Tensioning strap - T10038-
- Fit both adapters - 10 - 222 A /8- so that they are located slightly below plenum chamber cover -arrow-.

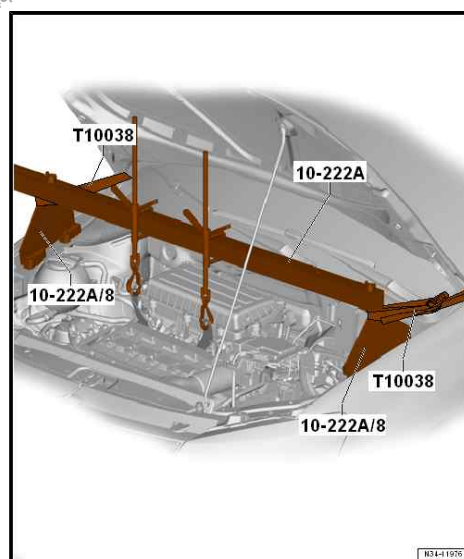


**Vehicles with 4-cylinder engine**

- Set up support bracket - 10-222 A- behind bonnet support.

Required material:

- ♦ Adapter - 10 - 222 A /8-
- ♦ Shackle - 10 - 222 A /12-
- ♦ Tensioning strap - T10038-
- If necessary, use shackle - 10 - 222 A /12- to attach left spindle.
- Fit both adapters - 10 - 222 A /8- so that they are positioned slightly below plenum chamber cover.

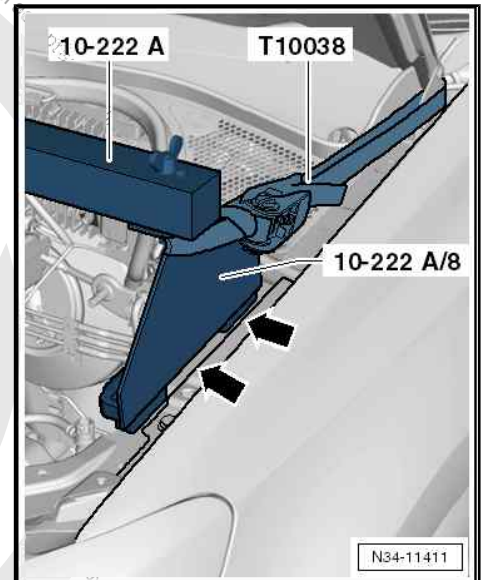






### Continuation for all

- Pay attention to paint on edges -arrows-.
- Secure both adapters - 10 - 222 A /8- with tensioning straps - T10038 .
- Tensioning straps must be guided past bonnet hinge/body as close as possible to bolted connection.
- Take up weight of engine/gearbox assembly on spindles.

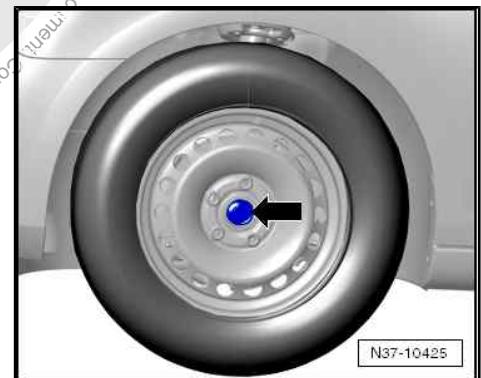


### Manual gearbox 0DF

The drive shafts are located directly in the gearbox

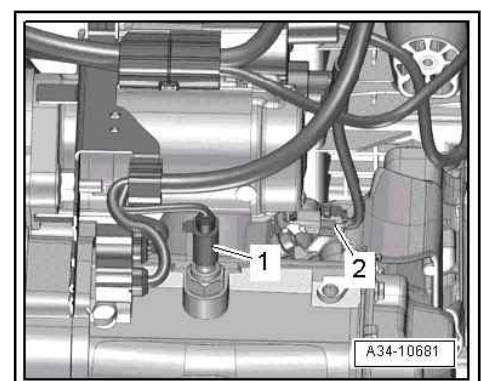
During subsequent work process, drive shafts with joint sections must be removed.

- With vehicle standing on its wheels, loosen front flange bolts -arrow- 90° at most, or wheel bearing will be damaged ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



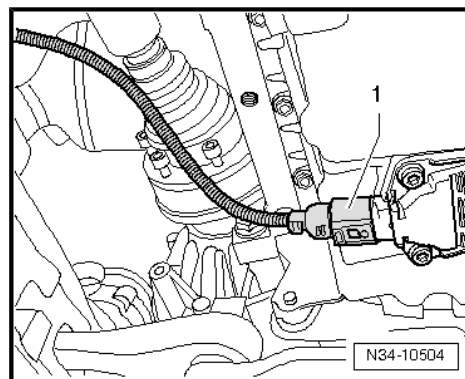
### Continuation for all

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Remove front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview - front wheel housing liner .
- If fitted, disconnect electrical connectors:
  - 1 - Reversing light switch - F4-
  - 2 - Gearbox neutral position sender - G701-

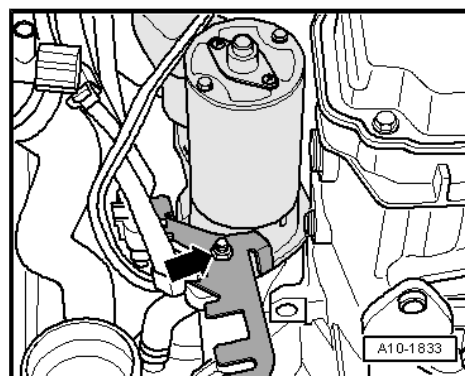




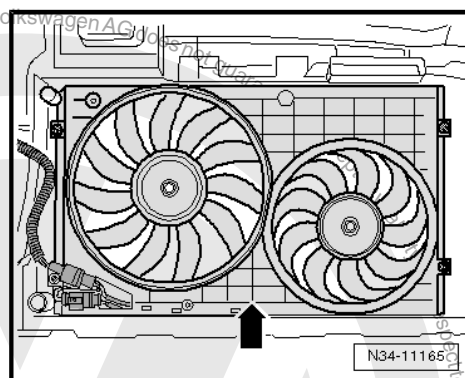
- Pull connector -1- off oil level and oil temperature sender - G266- .



- Remove nut -arrow- and remove retainer for electrical lines.
- Remove starter ⇒ Electrical system; Rep. gr. 27 ; Starter; Assembly overview - starter .
- If present, remove coolant hose bracket from engine.



- Remove radiator cowl with radiator fan -arrow- ⇒ Rep. gr. 19 ; Radiator, radiator fan; Assembly overview - radiator cowl and radiator fan .



- Place protective mat between radiator and engine.
- Separate exhaust system from engine and tie it up ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Assembly overview - silencer .



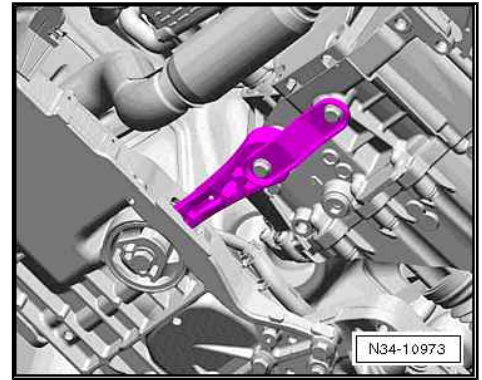
#### Caution

***Risk of damage to decoupling element.***

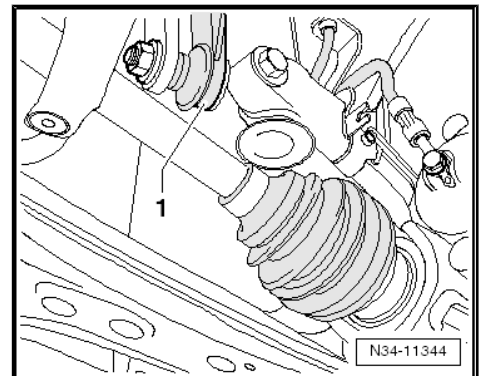
- ◆ ***Observe ⇒ Rep. gr. 26 ; Emission control; Assembly overview - emission control .***



- Remove pendulum support.

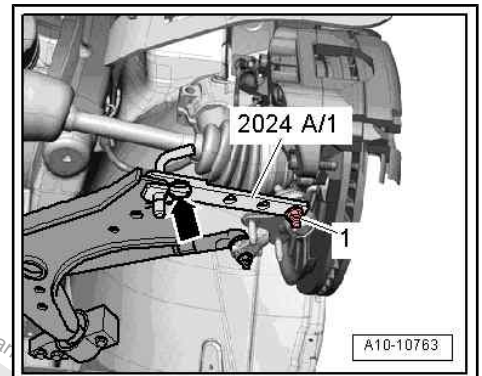


- Remove coupling rod -1- from anti-roll bar on both sides ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .
- Press anti-roll bar upwards.



### Manual gearbox 02T

- Remove drive shafts from flange shafts making sure not to damage surface protection ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- To free more space for working, swing suspension struts outwards, and support them with hooks -2024 A /1- as shown in illustration.



### WARNING

*Risk of accidents due to loose components of engine support.*

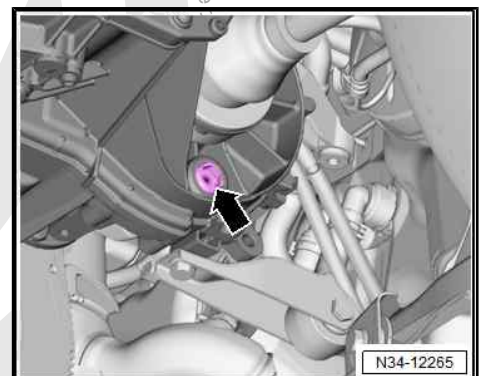
- ◆ *Secure locking pin and swivel joint with locating pin -arrow- and nut -1-.*

- Tie up drive shafts as high as possible making sure not to damage surface protection ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .

If left drive shaft is not tied up high enough, it will hinder removal of gearbox at a later point.

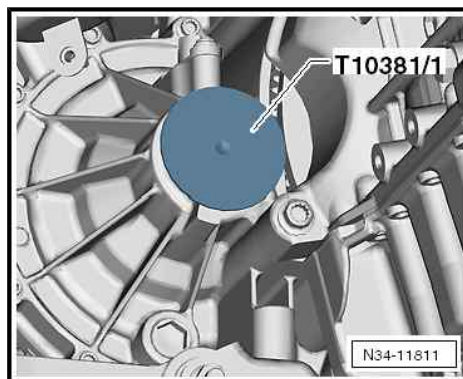
### Manual gearbox 0DF

- Drain gearbox oil -arrow- ⇒ [page 115](#) .



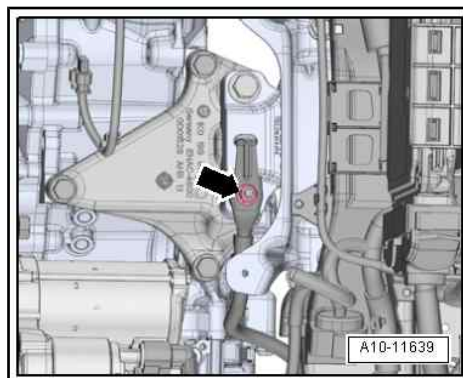


- Remove drive shafts with joint sections ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shafts; Removing and installing drive shafts .
- Install sealing caps in gearbox.



#### Continuation for all

- If fitted, remove earth wire -arrow-.



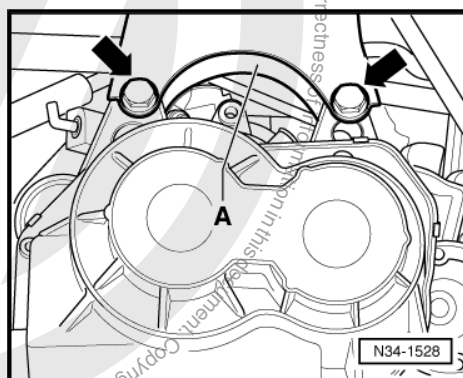
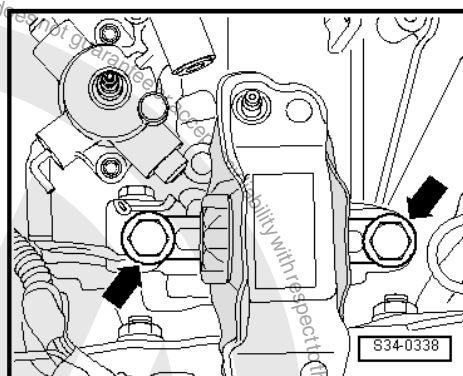
- Remove hexagon bolts -arrows- for left assembly mounting from gearbox mounting.
- Tilt engine and gearbox assembly by lowering spindles of support bracket - 10-222 A- .



#### Note

*Remove lines for lambda probe from plenum chamber bulkhead.  
Do not disconnect pipe/hose system.*

- Securing bolts -arrows- for gearbox bracket -A- must be accessible.
- Remove gearbox bracket -A- -arrows-.





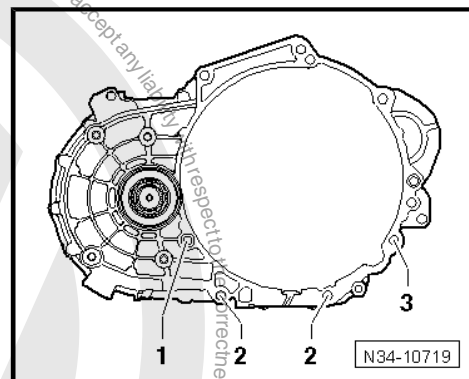


- Remove lower engine/gearbox connecting bolt -1-.

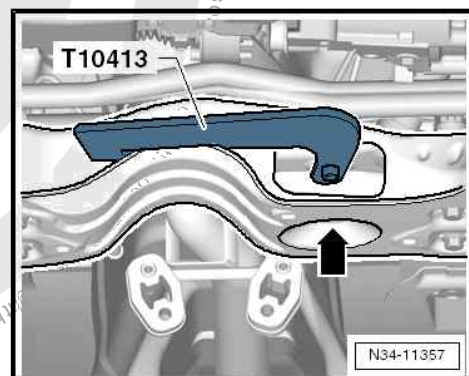


#### Note

*Loosen engine/gearbox connecting bolts -2- and -3-, and leave them installed just hand-tight.*



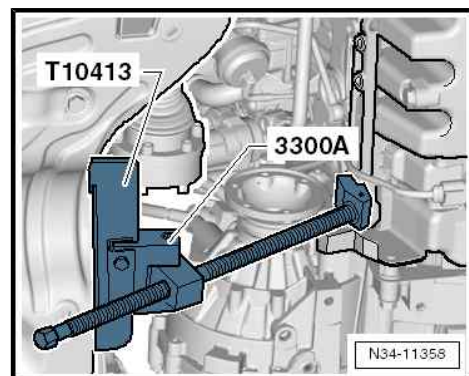
- Secure support plate - T10413- to subframe -arrow-.
- Secure engine support - 3300 A- to support plate - T10413- .



#### Vehicles with 4-cylinder engine

- Attach engine support to engine directly next to gearbox.

On some engines, the engine support - 3300 A- can be located directly next to the sump.

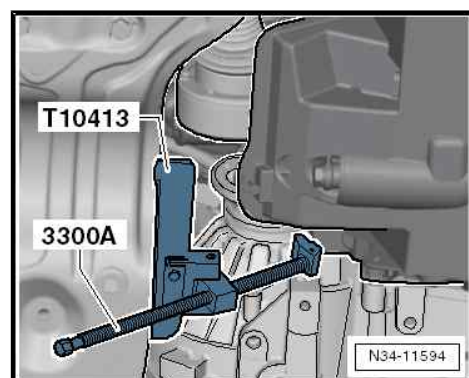


#### Vehicles with 3-cylinder engine

- Apply support to engine at the lower bolt hole for engine and gearbox.

#### Continuation for all

- Place cloth between engine support - 3300 A- and engine.
- Push engine forwards, taking care not to strike against radiator and observing coolant line to heat exchanger.
- Insert gearbox support - 3282- in engine and gearbox jack .

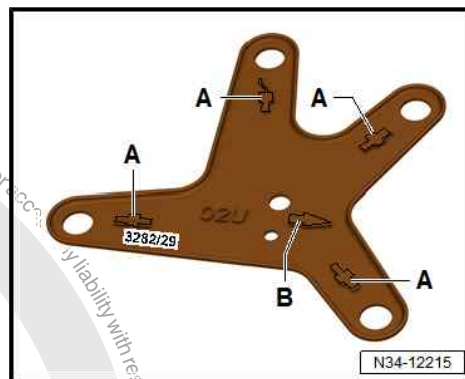






Gearbox support - 3282- is aligned with adjustment plate - 3282/69- for removal of gearbox.

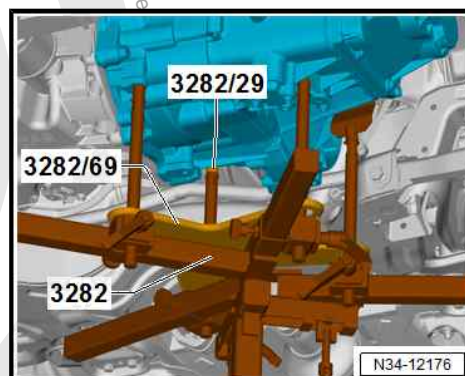
- Fit adjustment plate - 3282/69- on gearbox support - 3282- (adjustment plate fits in only one position).
- Screw in support elements -A- as illustrated on adjustment plate.



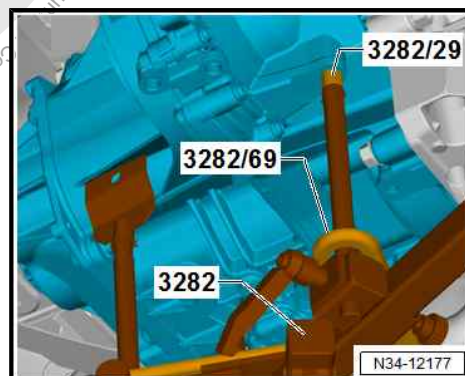
- Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel (⇒ previous illustration).

Rods holding the support elements should be flush with gearbox support - 3282- at bottom.

- Align adjustment plate parallel to gearbox.



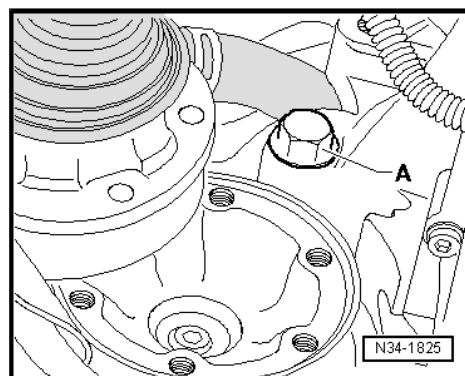
- Then screw pin - 3282/29- into rear hole on gearbox for securing bolt of pendulum support.



- Remove engine/gearbox connecting bolts.
- Unscrew engine/gearbox connecting bolt -A- above right flange shaft (⇒ illustration) or above the right drive shaft support.

The bolt head -A- may differ from the one shown in the diagram.

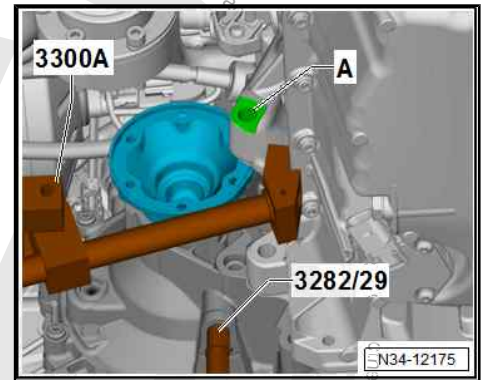
- Press gearbox off dowel sleeves.





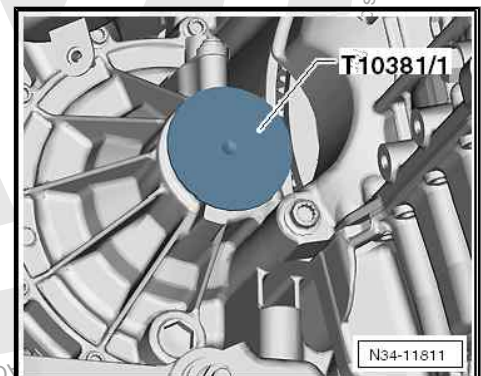
### Manual gearbox 02T

- Swing gearbox in area of differential upwards until right flange shaft is located in area of upper bolt hole -A- of engine.



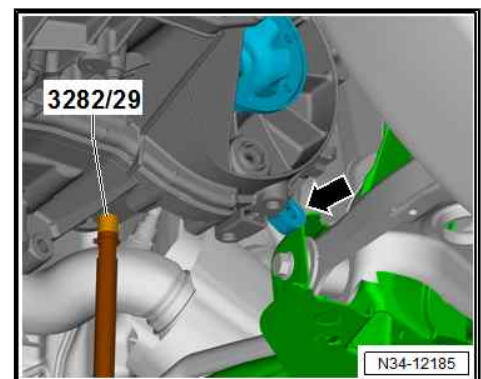
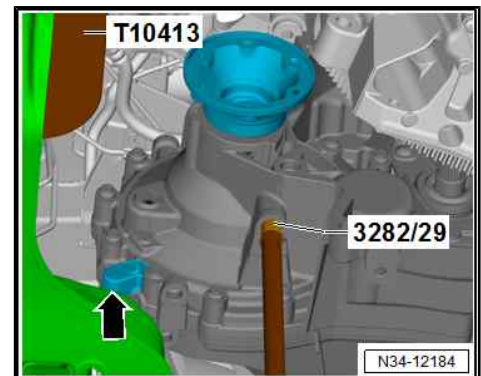
### Manual gearbox 0DF

- Swing gearbox in area of differential upwards until sealing cap - T10381/1- is near upper engine bolt hole -A- (⇒ previous illustration).



### Continuation for all

- Turn gearbox down slightly in area of 5th gear (sheet metal cover) using spindles of gearbox support - 3282- .
- Guide gearbox with differential -arrow- over subframe, and swing it out.
- Differential must face upwards.
- If necessary, turn gearbox further upwards near differential using spindles of gearbox support - 3282- .
- Carefully continue swinging gearbox out -arrow-, and lower it.
- When lowering gearbox, change position of gearbox using spindles of gearbox support - 3282- .



### Note

*Please make sure that the coolant hose and electrical wiring retainer do not get caught on the gearbox.*



## 2.3 Installing gearbox

⇒ "2.3.1 Installing gearbox, up!", page 100

⇒ "2.3.2 Installing gearbox, Polo", page 104

### 2.3.1 Installing gearbox, up!



#### Note

Refer to procedure "Removing gearbox" for required special tools  
⇒ page 79.

- If the gearbox is to be renewed, the gearbox selector lever and relay lever must be transferred to the new gearbox.
- All threaded holes into which self-locking bolts are to be screwed must be cleaned of residual locking fluid carefully with a thread tap.
- Clean input shaft splines and apply thin coat of grease for clutch plate splines.

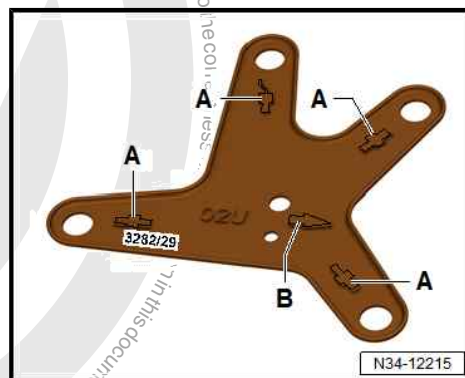
The clutch plate must slide easily to and fro on the input shaft.

- If no dowel sleeves for aligning engine and gearbox are fitted in cylinder block, 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.

Gearbox support - 3282- is aligned with adjustment plate - 3282/69- for installation of gearbox.

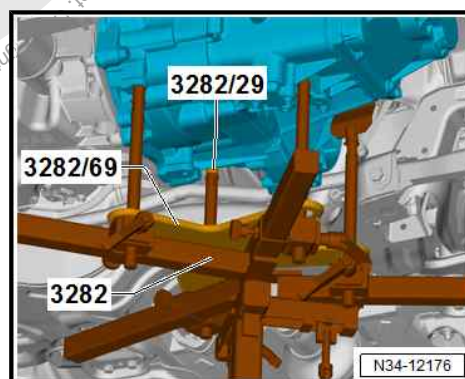
- Fit adjustment plate - 3282/69- on gearbox support - 3282- (adjustment plate fits in only one position).
- Screw in support elements -A- as illustrated on adjustment plate.



- Place gearbox on engine and gearbox jack.
- Align adjustment plate parallel to gearbox.

Rods holding the support elements should be flush with gearbox support - 3282- at bottom.

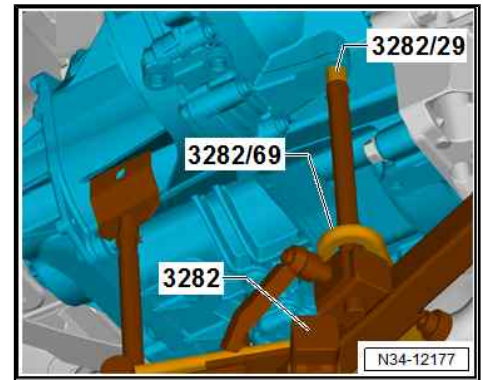
- Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel (⇒ previous illustration).







- Then screw pin - 3282/29- into rear hole on gearbox for securing bolt of pendulum support.
- Tilt gearbox further using spindles of gearbox support - 3282- .



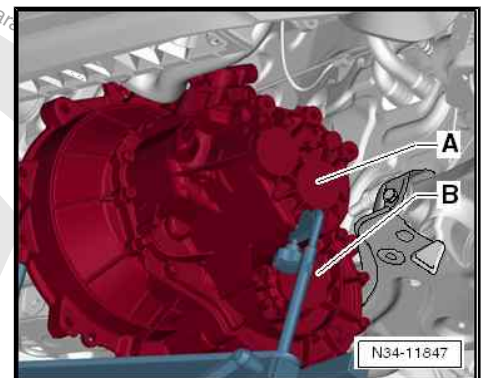
Gearbox points downwards in area of 5th gear -A- and in area of differential -B- (shown here with a different gearbox).

- Carefully push engine forwards (with aid of 2nd mechanic).
- Raise gearbox carefully and guide past subframe.

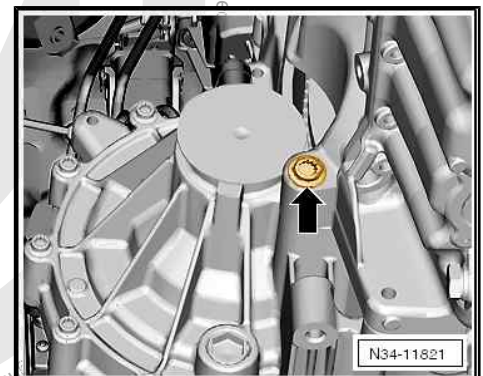


#### Note

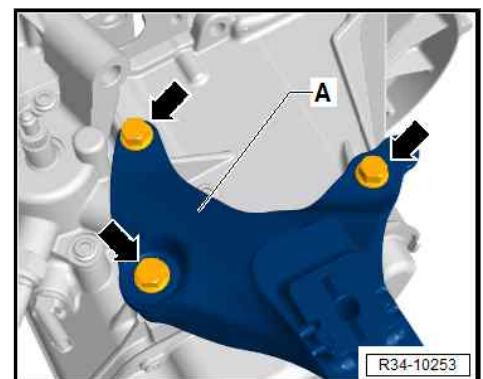
*Be careful of all lines when installing gearbox.*



- Line up gearbox and install.
- Screw in engine/gearbox connecting bolt -arrow- in area of right drive shaft seal ➔ [page 110](#) .
- Install lower engine/gearbox securing bolts ➔ [page 110](#) .
- After gearbox has been bolted to engine, remove engine and gearbox jack from gearbox.

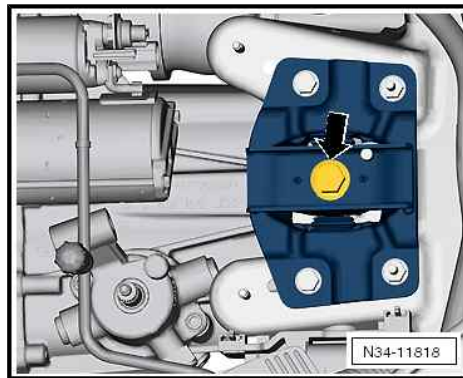


- Fit gearbox bracket -A- with new bolts ➔ [page 111](#) .

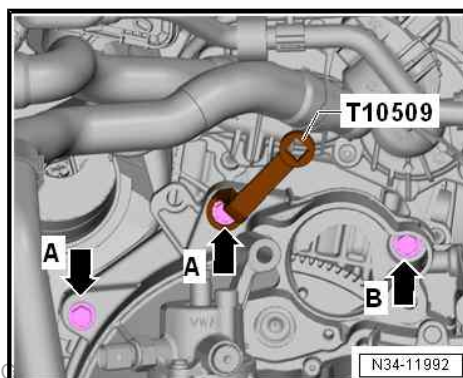




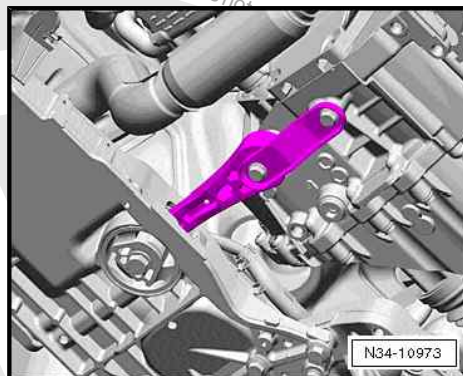
- Align engine and gearbox in installation position.
- Install new bolt -arrow- for left assembly mounting in gearbox mounting ⇒ [page 111](#) .
- Do not remove engine support bracket - 10 - 222 A- until all bolts securing the assembly mounting have been tightened to specified torque.
- If previously removed, fit bonnet seal to lock carrier.



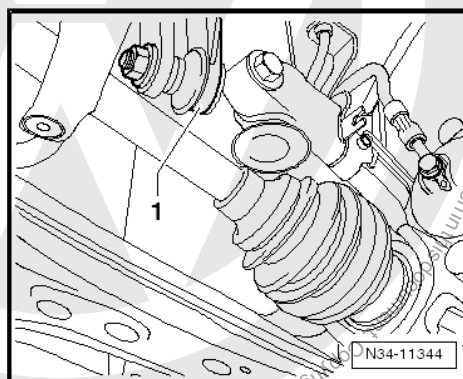
- Install upper engine/gearbox securing bolts -arrows A- and -arrows B- ⇒ [page 110](#) .
- Bolts -arrows A- can be tightened using insert tool, 18 mm - T10509- .
- Fit earth strap if necessary.



- Install pendulum support using new bolts ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview – assembly mountings .
- Install exhaust system ⇒ Rep. gr. 26 ; Emission control; Assembly overview – emission control .
- Fit drive shafts with joint sections ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .



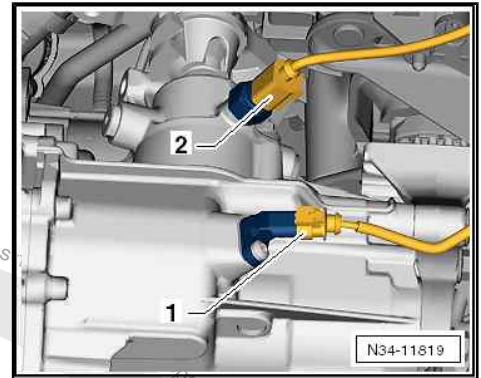
- Install coupling rod -1- to anti-roll bar on both sides ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .



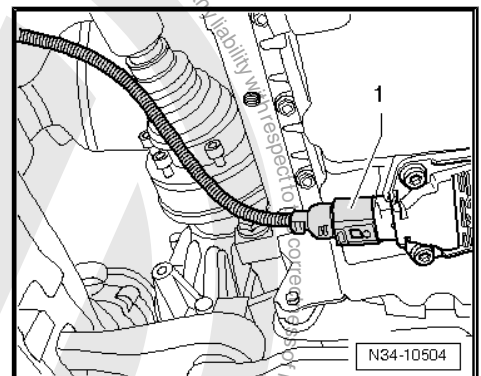




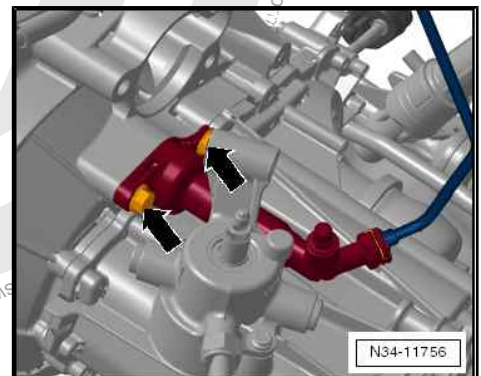
- If applicable, connect electrical connectors as follows:
- Fit connector -1- to gearbox neutral position sender - G701- .
- Fit connector -2- to reversing light switch - F4- .



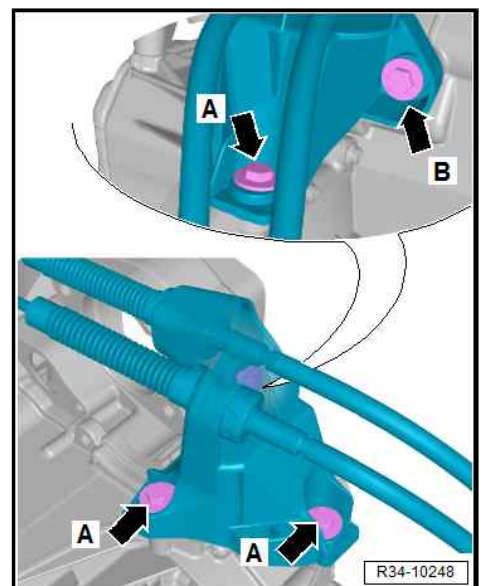
- Connect connector -1- to oil level and oil temperature sender - G266- .



- Install clutch slave cylinder -arrows- ➔ [page 24](#) .
- Install starter ➔ Electrical system; Rep. gr. 27 ; Starter; Assembly overview - starter .



- Install cable support bracket to gearbox ➔ [page 62](#) .
- Bolts -arrow A- are accessible from engine compartment.  
Bolt -arrow B- is accessible from beneath vehicle.

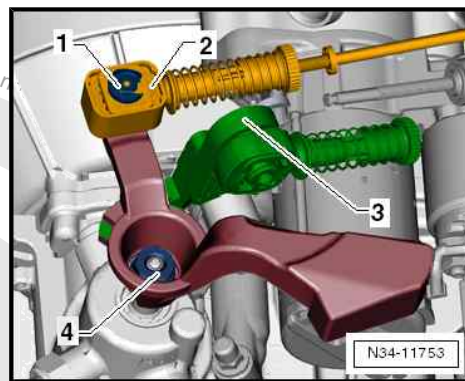




- Install gearbox selector lever and tighten hexagon nut -4- to specified torque ⇒ [page 62](#) .
- Install relay lever -3- together with cable end-piece ⇒ [page 71](#) .
- Spread a small amount of grease on pin of gearbox selector lever.

Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

- Attach gear selector cable -2- to gearbox selector lever.
- Install new clip -1-.
- Adjust selector mechanism ⇒ [page 74](#) .
- Fill with gear oil ⇒ [page 115](#) .
- If fitted, install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .
- Install battery ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Connect battery and follow procedure after connecting battery ⇒ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery .
- Install engine cover and air filter ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .



## 2.3.2 Installing gearbox, Polo



### Note

*For required special tools, refer to procedure “Removing gearbox” ⇒ [page 88](#) .*

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

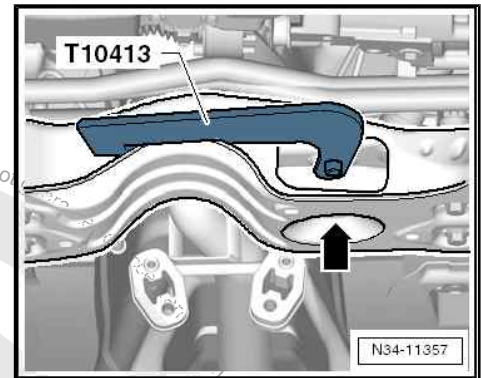
If dowel sleeves are not fitted, difficulties shifting gears, clutch problems and possible noises from the gearbox (rattling of gears which are not engaged) could occur.

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

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



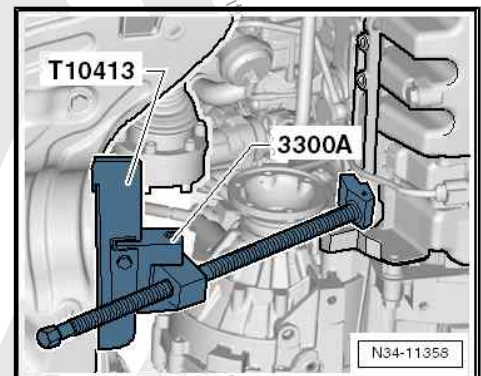
- Secure support plate - T10413- to subframe -arrow-.
- Secure engine support - 3300 A- to support plate - T10413- .



#### Vehicles with 4-cylinder engine

- Attach engine support to engine directly next to gearbox.

On some engines, the engine support - 3300 A- can be located directly next to the sump.

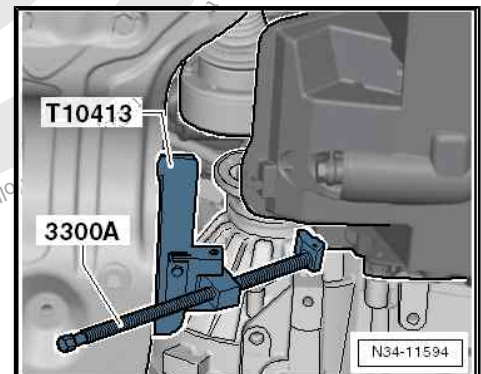


#### Vehicles with 3-cylinder engine

- Apply support to engine at the lower bolt hole for engine and gearbox.

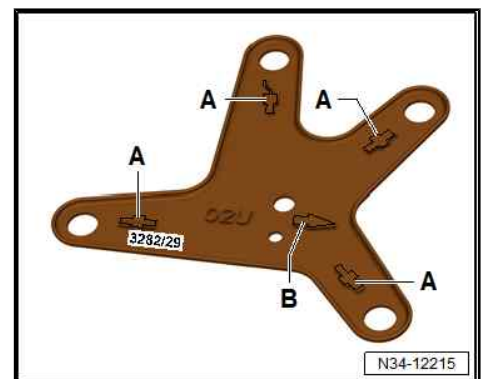
#### Continuation for all

- Place cloth between engine support - 3300 A- and engine.
- Push engine forwards, taking care not to strike against radiator and observing coolant line to heat exchanger.
- Insert gearbox support - 3282- in engine and gearbox jack .



Gearbox support - 3282- is aligned with adjustment plate - 3282/69- for installation of gearbox.

- Fit adjustment plate - 3282/69- on gearbox support - 3282- (adjustment plate fits in only one position).
- Screw in support elements -A- as illustrated on adjustment plate.

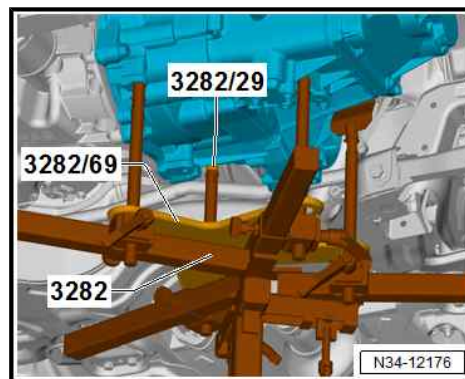




- Place gearbox on engine and gearbox jack .
- Align adjustment plate parallel to gearbox.

Rods holding the support elements should be flush with gearbox support - 3282- at bottom.

- Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel (⇒ previous illustration).

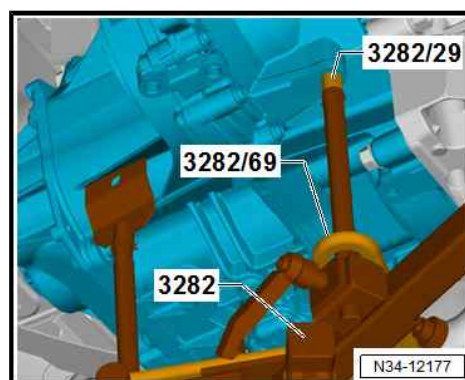


- Then screw pin - 3282/29- into rear hole on gearbox for securing bolt of pendulum support.
- Tilt gearbox further using spindles of gearbox support - 3282- .
- Differential area faces upwards.
- 5th gear area (sheet metal cover) faces downwards.
- Then carefully raise gearbox.

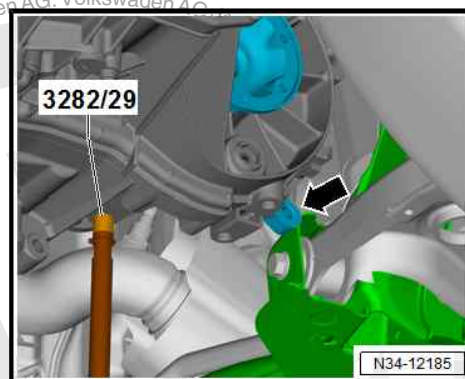


#### Note

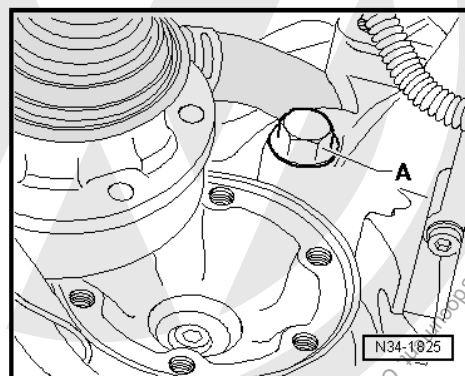
*Please make sure that the coolant hose and electrical wiring retainer do not get caught on the gearbox.*



- Guide gearbox with differential -arrow- over subframe.
- Swivel gearbox towards engine.
- Lift gearbox in area of 5th gear (sheet metal cover) using spindle of gearbox support - 3282- .
- Move gearbox into installation position using spindles of gearbox support - 3282- .
- Install lower engine/gearbox securing bolts ⇒ [page 110](#) .
- Remove engine support - 3300 A- and support plate - T10413- .



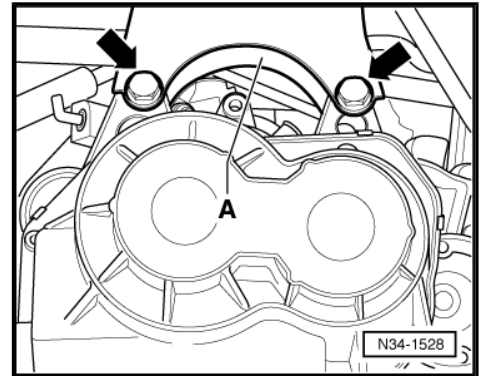
- Screw in engine/gearbox connecting bolt -A- above right flange shaft (⇒ illustration) or above the right drive shaft support ⇒ [page 110](#) .
- After gearbox has been bolted to engine, remove engine and gearbox jack from gearbox.



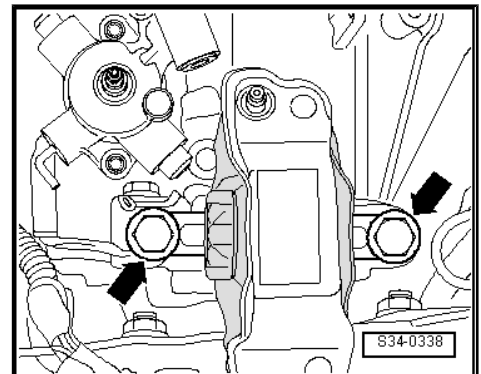




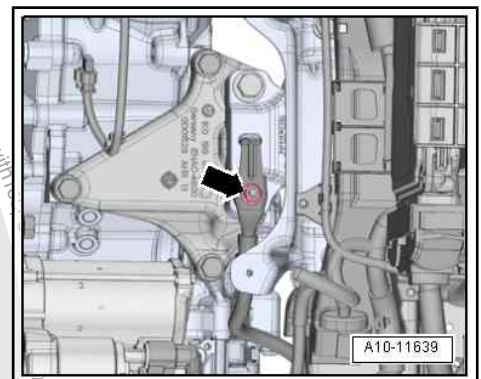
- Fit gearbox bracket -A- with new bolts -arrows-.
- Moisten bonded rubber mounting of left assembly mounting and upper section of gearbox bracket with assembly lubrication oil ⇒ Electronic Parts Catalogue (ETKA) .
- Align engine and gearbox in installation position.



- Install new bolts -arrows- for left assembly mounting in gearbox mounting.
- Do not remove engine support bracket - 10 - 222 A- until all bolts securing the assembly mounting have been tightened to specified torque.



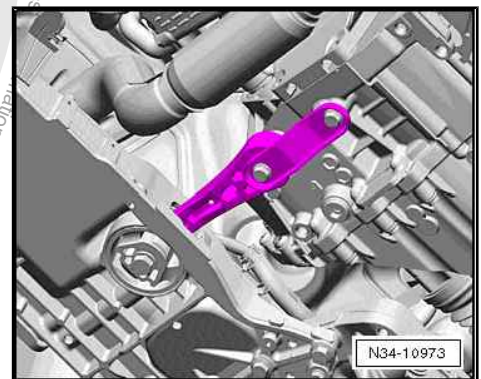
- If present, install earth wire -arrow-.
- Install upper engine/gearbox securing bolts.



- Install pendulum support using new bolts ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview – assembly mountings .

Check adjustment of assembly mountings ⇒ Rep. gr. 10 ; Assembly mountings; Checking adjustment of assembly mountings .

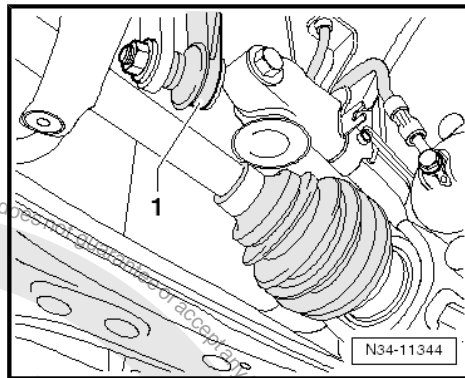
- Assemble exhaust system ⇒ Rep. gr. 26 ; Exhaust pipes/silencers; Assembly overview - silencer .
- Mount drive shafts with joint sections if necessary ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shafts; Removing and installing drive shafts .



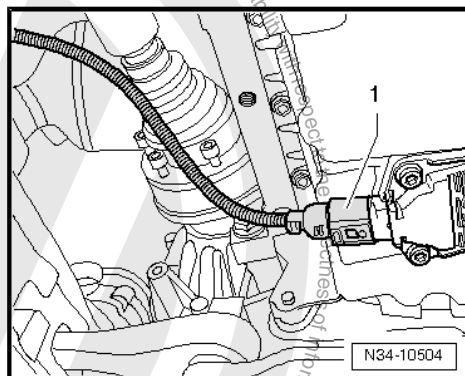




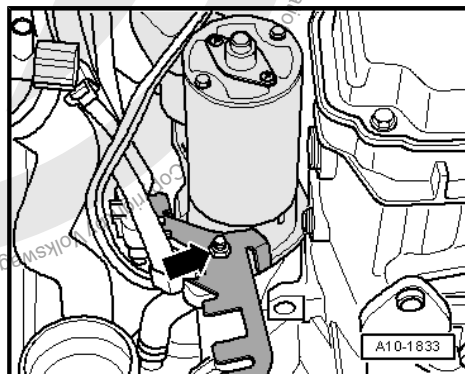
- Install coupling rod -1- to anti-roll bar on both sides ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .



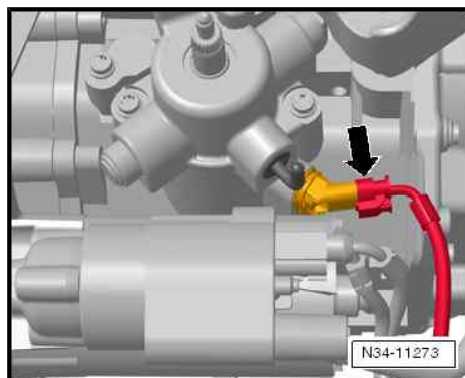
- Connect connector -1- to oil level and oil temperature sender - G266- .
- If removed beforehand, fit coolant hose bracket to engine.
- Check for correct installation position of vacuum hose for brake system. Fit vacuum hose, if necessary ⇒ Brake system; Rep. gr. 47 ; Brake servo/brake master cylinder .



- Install starter and retainer for electrical wiring -arrow- ⇒ Electrical system; Rep. gr. 27 ; Starter; Assembly overview – starter .
- Install clutch slave cylinder ⇒ [page 40](#) .

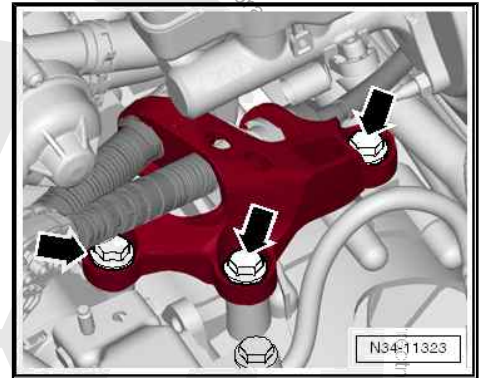


- Gearboxes for vehicles with start-stop system: join connector -arrow- to gearbox neutral position sender - G701- .

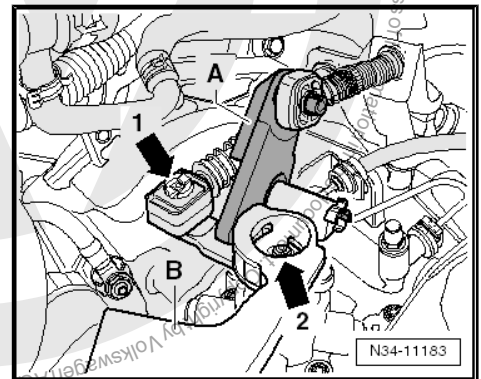




- Install cable support bracket on gearbox, and tighten bolts -arrows- ⇒ [page 62](#) .



- Install gearbox selector lever -B- ⇒ [page 62](#) .
- Tighten hexagon nut -arrow 2- ⇒ [page 131](#) .
- Install gate relay lever -A- together with cable end-piece ⇒ [page 62](#) .
- Spread small amount of grease on pin of gearbox selector lever -B-.
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- Attach gear selector cable to gearbox selector lever.
- Renew securing clip -arrow 1- after each removal.
- Adjust selector mechanism ⇒ [page 74](#) .
- Install battery tray, battery and battery cover ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Install air filter ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Install foam pieces or seal at upper edge of left and right wings ⇒ General body repairs, exterior; Rep. gr. 50 ; Wings; Assembly overview – wings .
- Check and fill with gear oil as needed ⇒ [page 115](#) .
- Install front left wheel housing liner ⇒ General body repairs, exterior; Rep. gr. 66 ; Wheel housing liner; Assembly overview – front wheel housing liner .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview - noise insulation .





## 2.4 Specified torques for gearbox

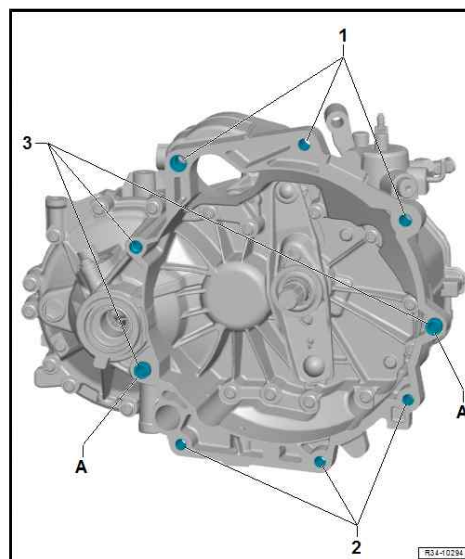
⇒ "2.4.1 Specified torques for gearbox, up!", page 110

⇒ "2.4.2 Specified torques for gearbox, Polo", page 110

### 2.4.1 Specified torques for gearbox, up!

Item	Bolt	Quantity	Nm
1	M12 × 60	3	80 • With insert tool T10509: »65 Nm«.
2	M10 × 55	3	40
3	M12 × 70	3	80

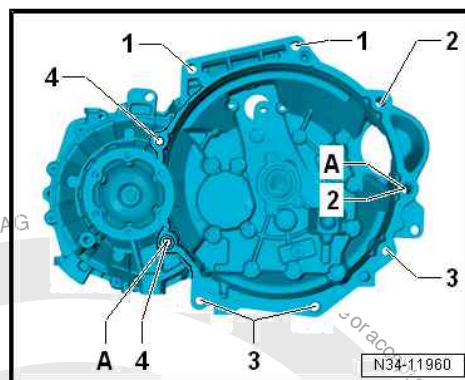
Item -A- for dowel sleeves for centring



### 2.4.2 Specified torques for gearbox, Polo

Item	Bolt	Quantity	Nm
1	M12 × 60	2	80
2	M12 × 150 ♦ Additionally, start- er to gearbox	2	80
3	M10 × 55	3	40
4	M12 × 70	2	80

Item -A- dowel sleeves for centring





### 3 Assembly mountings

⇒ ["3.1 Assembly overview - assembly mountings, up!", page 111](#)

⇒ ["3.2 Assembly overview - assembly mountings, Polo", page 112](#)

#### 3.1 Assembly overview - assembly mountings, up!

##### 1 - Engine mounting

- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 2 - Bolt

- ☐ Pendulum support to subframe
- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 3 - Pendulum support

- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 4 - Bolt

- ☐ Pendulum support to gearbox
- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 5 - Bolt

- ☐ Renew after removal
- ☐ Gearbox bracket to gearbox
- ☐ 40 Nm +90°

##### 6 - Gearbox bracket

##### 7 - Gearbox mounting

- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 8 - Bolt

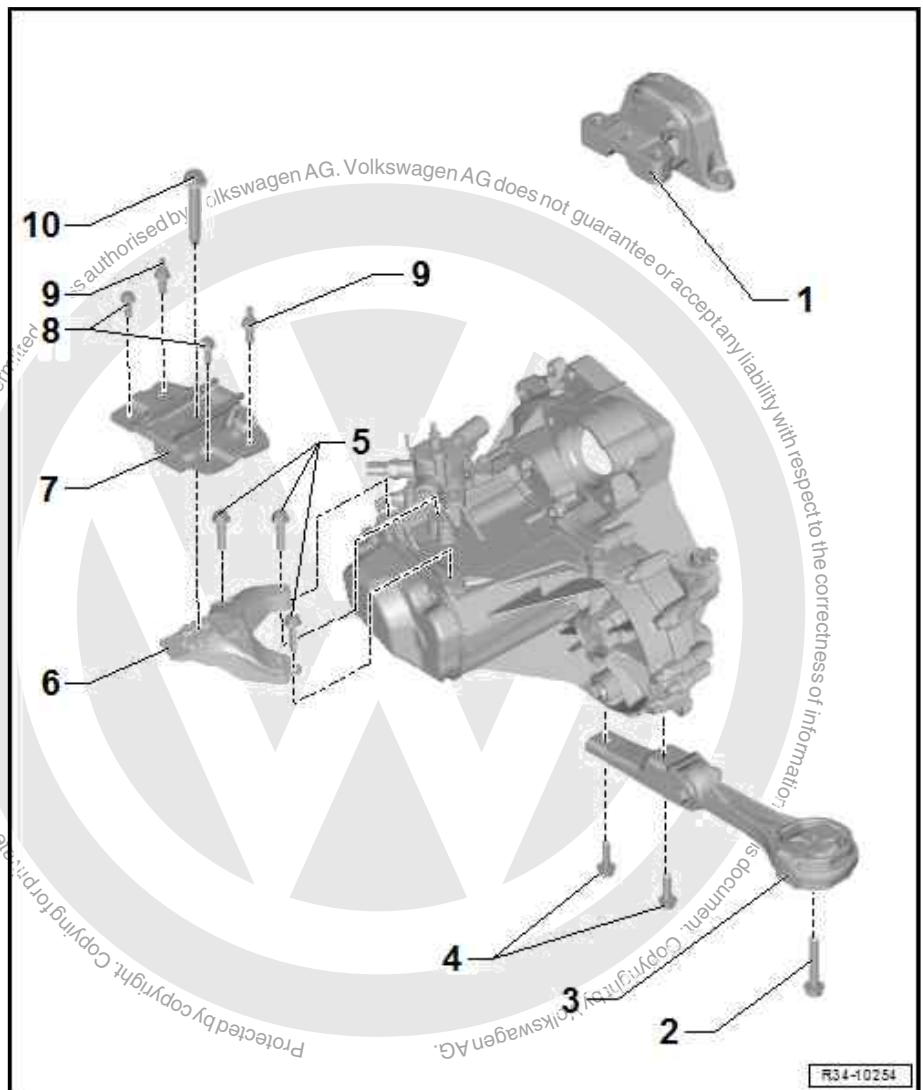
- ☐ Gearbox mounting to body
- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 9 - Bolt

- ☐ Gearbox mounting to body
- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

##### 10 - Bolt

- ☐ Renew after removal
- ☐ Gearbox bracket to gearbox mounting
- ☐ 60 Nm +180°





## 3.2 Assembly overview - assembly mountings, Polo

### 1 - Bolt

- ☐ Qty. 2
- ☐ Renew after removal
- ☐ Gearbox bracket to gearbox mounting
- ☐ 40 Nm +90°

### 2 - Bolt

- ☐ Gearbox mounting to body
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 3 - Gearbox mounting

- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 4 - Gearbox bracket

### 5 - Bolt

Qty. 2 (different from qty. shown in illustration)

⇒ [page 113](#)

- ☐ Renew after removal
- ☐ Gearbox bracket to gearbox
- ☐ 40 Nm +90°

### 6 - Pendulum support

- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 7 - Bolt

- ☐ Pendulum support to subframe
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 8 - Bolt

- ☐ Pendulum support to gearbox
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 9 - Engine mounting

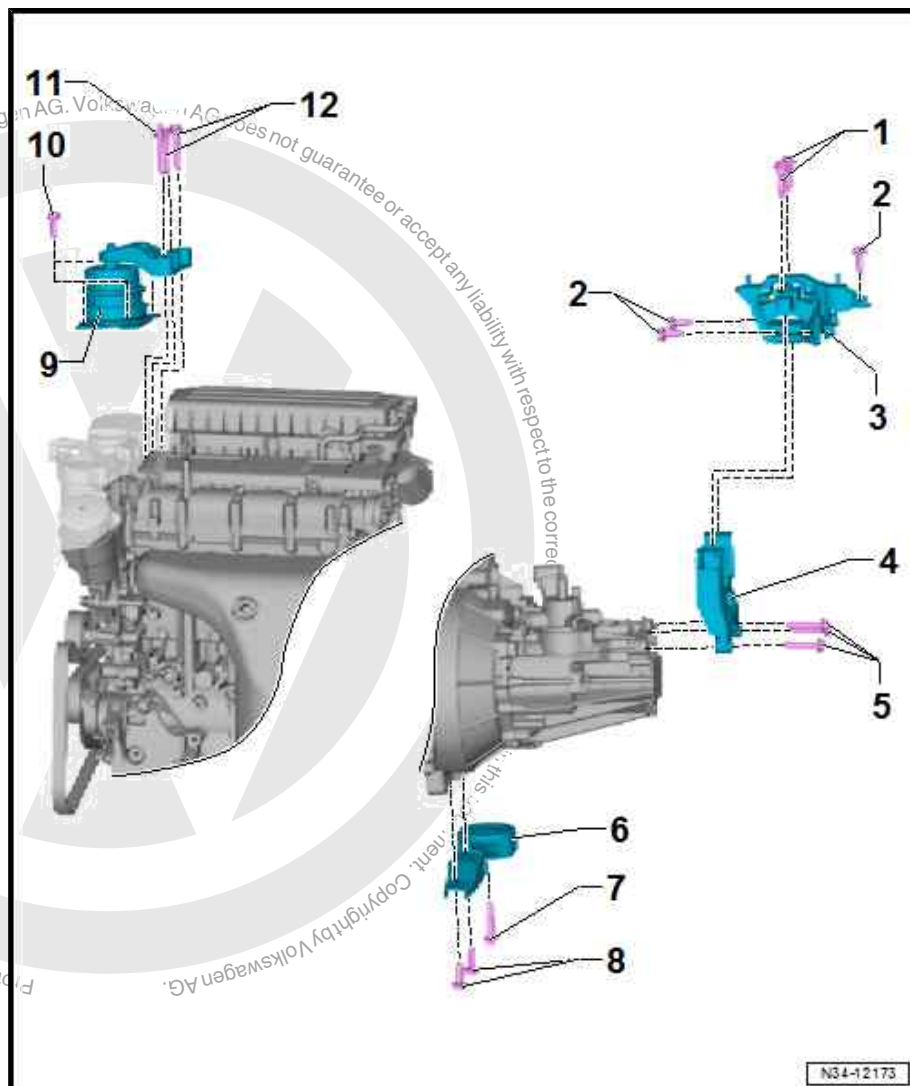
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 10 - Bolt

- ☐ Qty. 4
- ☐ Engine mounting to body
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### 11 - Bolt

- ☐ Engine mounting to engine
- ☐ ➔ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings





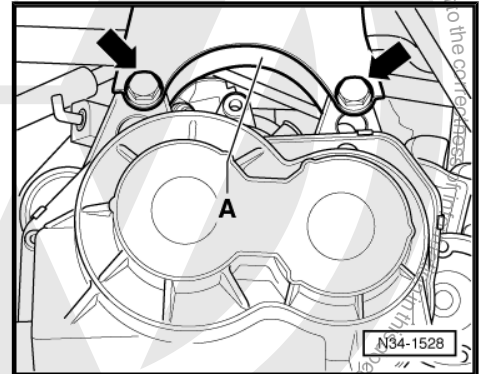


## 12 - Bolt

- ☐ Qty. 2
- ☐ Engine mounting to engine
- ☐ ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - assembly mountings

### Gearbox bracket -A- to gearbox

- Renew bolts.
- Tighten bolts by hand.
- Tighten bolt to specified torque ⇒ [Item 5 \(page 112\)](#) .



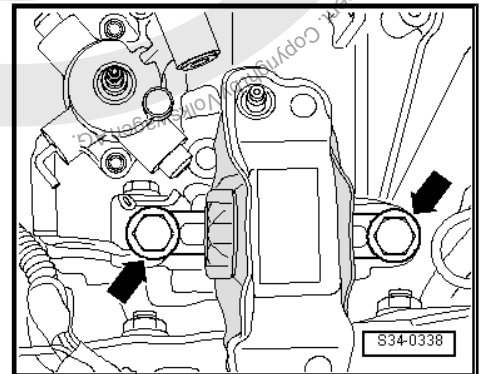
### Gearbox bracket to gearbox

- Renew bolts.
- Tighten bolts by hand.
- Tighten bolt to specified torque ⇒ [Item 1 \(page 112\)](#) .



#### Note

*Install engine and gearbox mountings without tension ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview - Assembly mountings .*

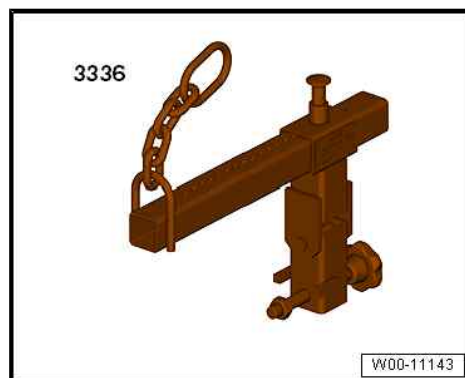




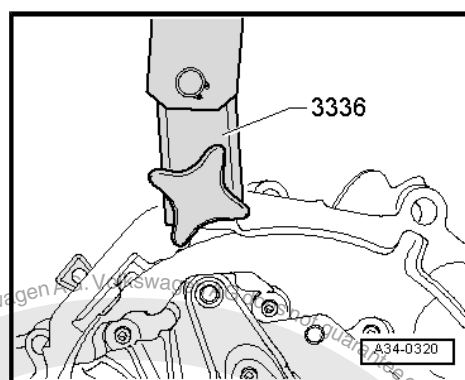
## 4 Transporting gearbox

### Special tools and workshop equipment required

- ◆ Gearbox lifting tackle - 3336-



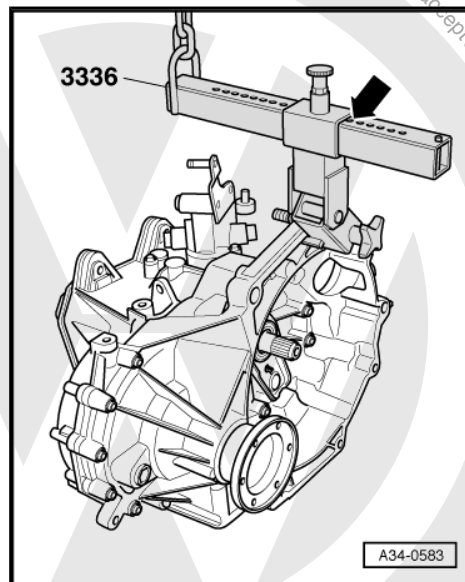
- Bolt gearbox lifting tackle - 3336- to clutch housing.



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

No. of holes visible = 6

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





## 5 Gear oil

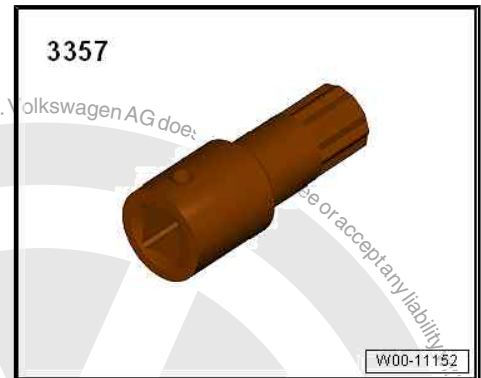
⇒ ["5.1 Checking gear oil level", page 115](#)

⇒ ["5.2 Draining and filling gear oil", page 116](#)

### 5.1 Checking gear oil level

#### Special tools and workshop equipment required

- ◆ Socket bit - 3357- for oil filler plug with multi-point socket head bolt



- ◆ Torque wrench - V.A.G 1331-

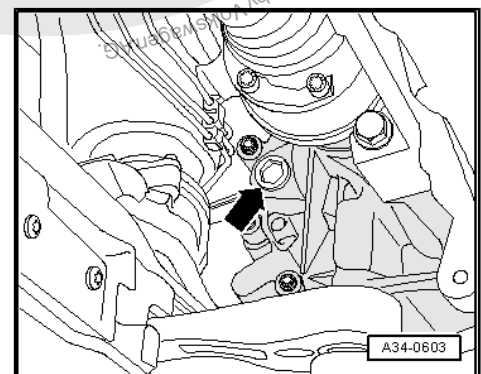


Gear oil ⇒ Electronic parts catalogue (ETKA)

- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- To check gear oil, remove oil plug -arrow-.

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

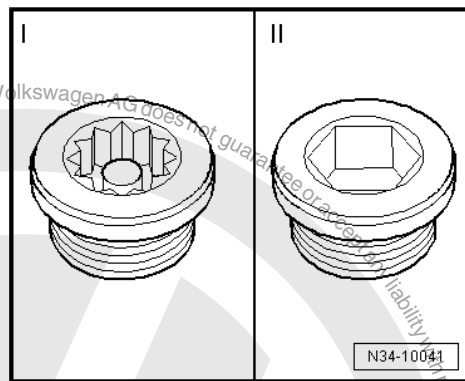
- If necessary, fill with gear oil to lower edge of filler hole.
- Tighten bolt -arrow-.





### Various versions of oil filler and drain plug

- I - Oil filler plug/oil drain plug with multi-point socket head, 25 Nm
- II - Oil filler plug/oil drain plug with hexagon socket head, 30 Nm
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .



## 5.2 Draining and filling gear oil

### Special tools and workshop equipment required

- ◆ Socket bit - 3357- for oil filler plug with multi-point socket head bolt



- ◆ Torque wrench - V.A.G 1331-

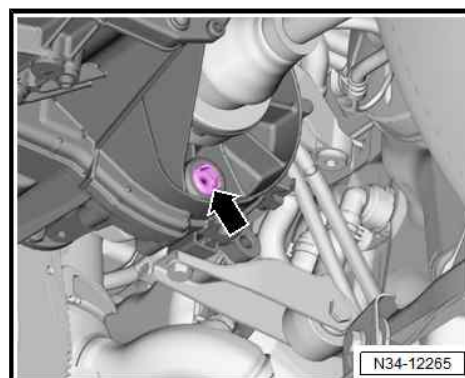


Gear oil ⇒ Electronic parts catalogue (ETKA) .

**Use a clean container with a scale and a 3.0-litre capacity to catch the gear oil when draining.**

**Drain gear oil -arrow-.- -**

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





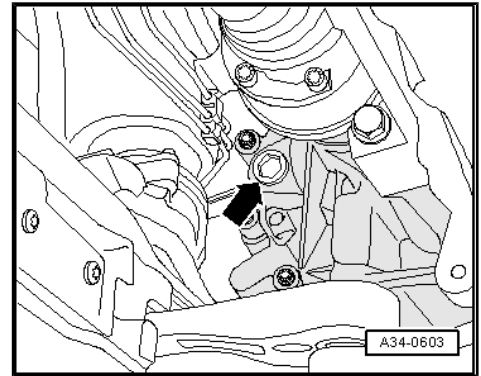
### Fill with gear oil

- Remove oil plug -arrow- to fill.
- If previous oil is clean, fill it into gearbox.

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

- If oil should get on gearbox and other components, remove it thoroughly.

**Specified torques ➔ [page 116](#)**







## 6      Securing to engine and gearbox support

⇒ [“6.1 Securing to engine and gearbox support, gearboxes for up!”, page 119](#)

⇒ [“6.2 Securing to engine and gearbox support, gearboxes for Polo”, page 121](#)

The gearbox is secured with bolts screwed into bolt holes for gearbox support.

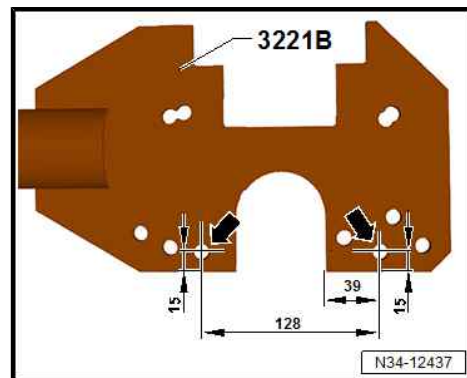
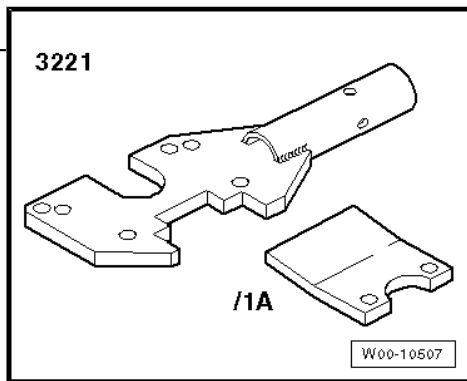




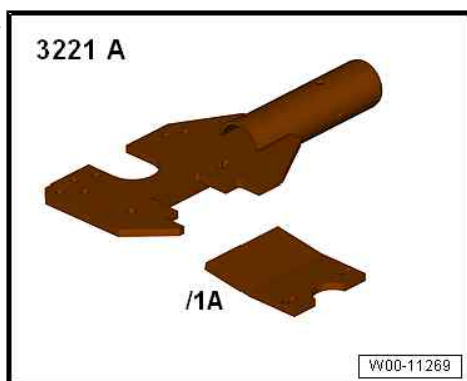
## 6.1 Securing to engine and gearbox support, gearboxes for up!

Special tools and workshop equipment required

- ◆ Gearbox support - 3221- (check and adjust as necessary  
⇒ [page 119](#) )



- ◆ Or gearbox support - 3221A- (check and adjust as necessary  
⇒ [page 119](#) )



- ◆ or gearbox support - 3221B-

- ◆ Support clamp - VW 313-

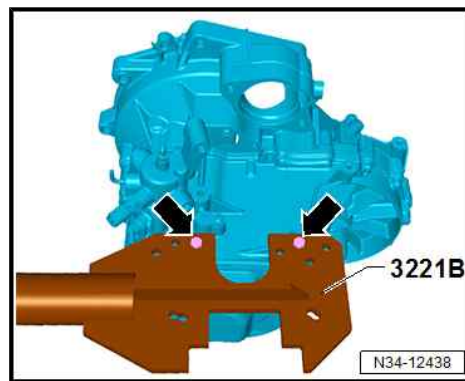


**Gearbox support - 3221-  
or gearbox support -  
3221A- (check and adjust as necessary)**

- If necessary, drill 11.0 mm diameter holes -arrows-.
- Then, mark gearbox support with -3221B- .



- Secure gearbox to gearbox support - 3221B- -arrows-.

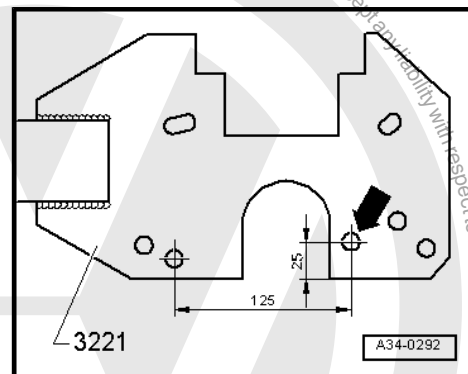
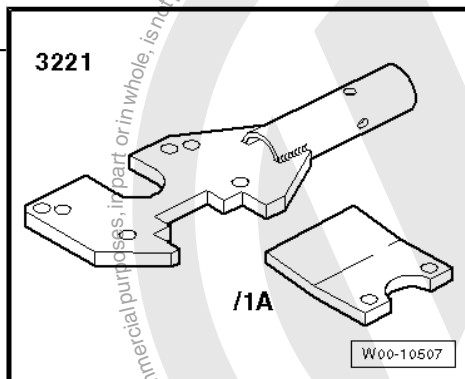




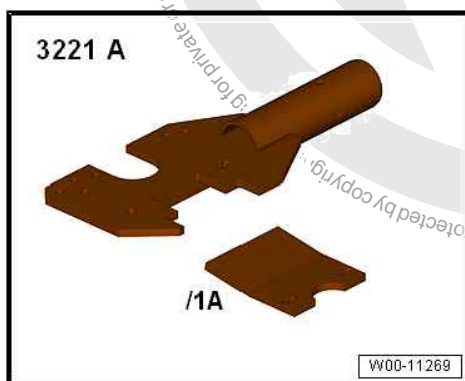
## 6.2 Securing to engine and gearbox support, gearboxes for Polo

### Special tools and workshop equipment required

- ◆ Gearbox support - 3221- (check and adjust as necessary  
⇒ [page 121](#) )



- ◆ or gearbox support - 3221A-



- ◆ or gearbox support - 3221B-

- ◆ Support clamp - VW 313-

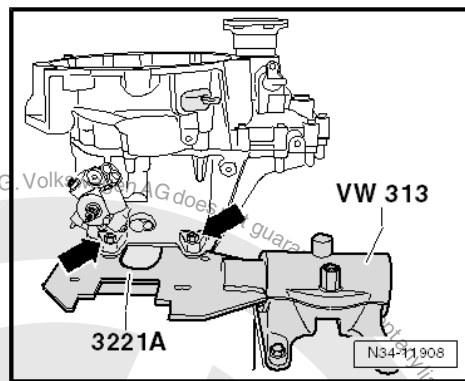


### Gearbox support - 3221- (check and adjust as necessary)

- If necessary, drill a hole with 11.0 mm in diameter -arrow-.
- Then, mark gearbox support - 3221- with -3221A- .



- Secure gearbox to gearbox support -arrows-.







## 7 Dismantling and assembling gearbox

⇒ [“7.1 Schematic overview - gearbox”, page 123](#)

⇒ [“7.2 Assembly overview - gearbox”, page 126](#)

⇒ [“7.3 Assembly overview - cover for gearbox housing and 5th gear”, page 127](#)

⇒ [“7.4 Assembly overview - clutch housing”, page 128](#)

⇒ [“7.5 Assembly overview - shafts, differential, selector mechanism”, page 130](#)

⇒ [“7.6 Assembly overview - selector unit”, page 131](#)

⇒ [“7.7 Assembly overview - selector forks”, page 134](#)

⇒ [“7.8 Removing and installing selector unit with gearbox installed”, page 135](#)

⇒ [“7.9 Repairing selector forks”, page 141](#)

⇒ [“7.10 Repairing selector unit”, page 145](#)

⇒ [“7.11 Renewing selector shaft seal”, page 148](#)

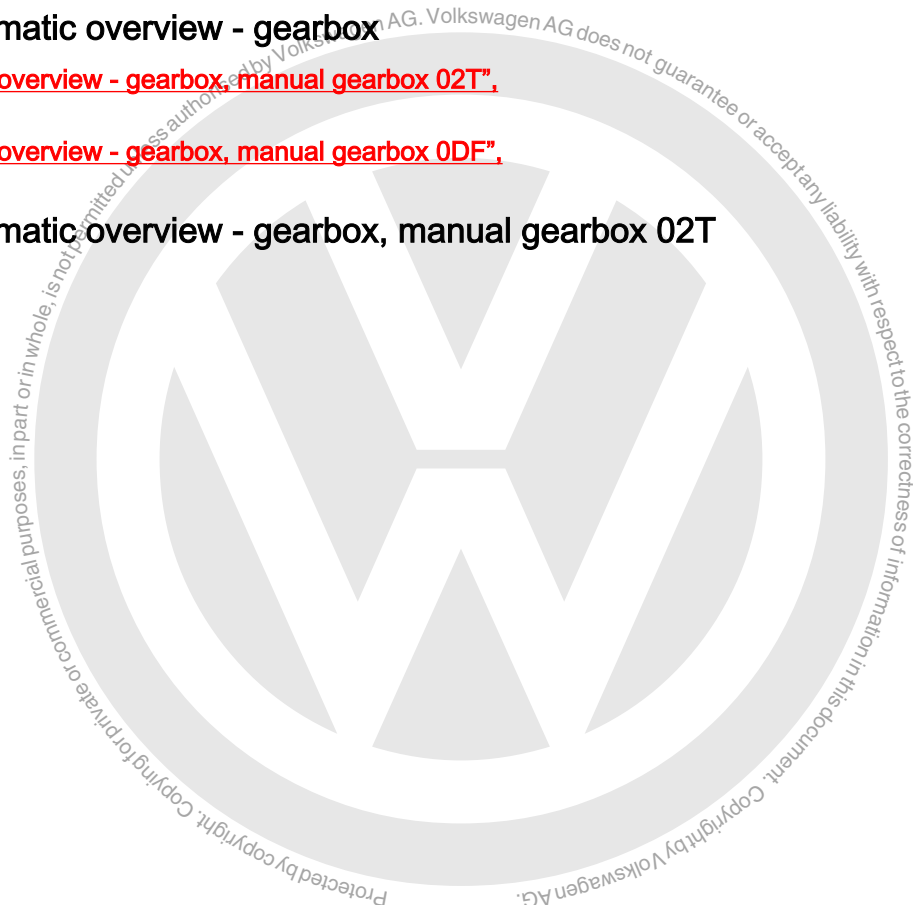
⇒ [“7.12 Dismantling and assembling gearbox”, page 149](#)

### 7.1 Schematic overview - gearbox

⇒ [“7.1.1 Schematic overview - gearbox, manual gearbox 02T”, page 123](#)

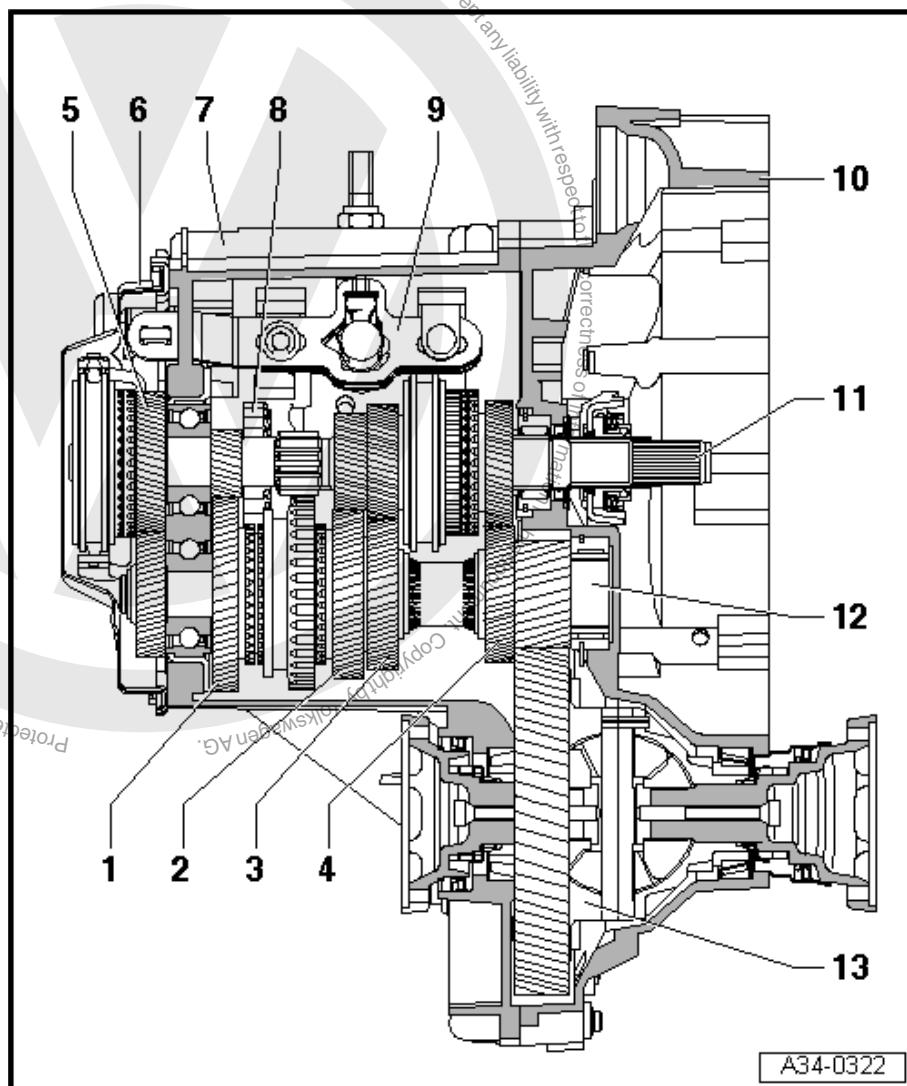
⇒ [“7.1.2 Schematic overview - gearbox, manual gearbox 0DF”, page 125](#)

#### 7.1.1 Schematic overview - gearbox, manual gearbox 02T





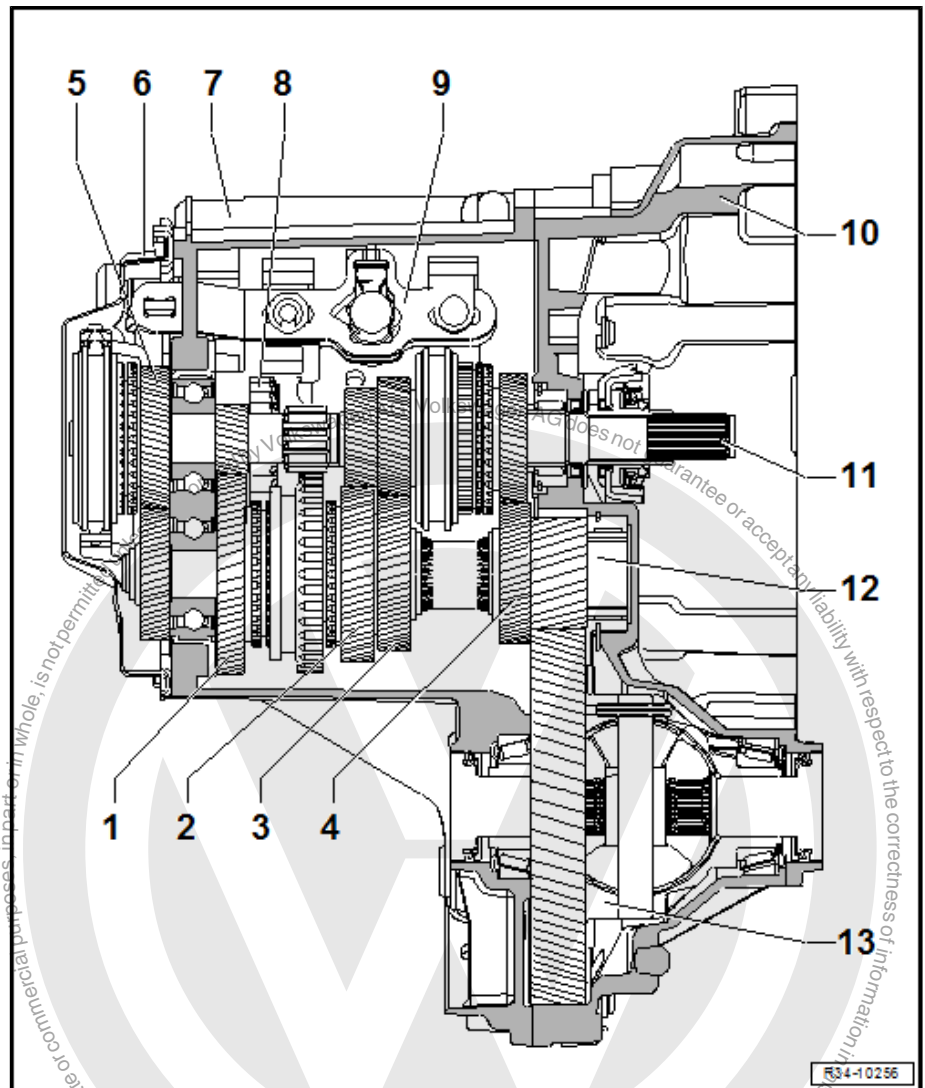
- 1 - 1st gear
- 2 - 2nd gear
- 3 - 3rd gear
- 4 - 4th gear
- 5 - 5th gear
- 6 - Gearbox housing cover
- 7 - Gearbox housing
- 8 - Reverse gear wheel
- 9 - Selector mechanism
  - (Selector forks)
- 10 - Clutch housing
- 11 - Input shaft
- 12 - Output shaft
- 13 - Differential





## 7.1.2 Schematic overview - gearbox, manual gearbox 0DF

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





## 7.2 Assembly overview - gearbox

I -  
⇒ [“7.3 Assembly overview - cover for gearbox housing and 5th gear”, page 127](#)

II -  
⇒ [“7.4 Assembly overview - clutch housing”, page 128](#)

III -  
⇒ [“7.5 Assembly overview - shafts, differential, selector mechanism”, page 130](#)

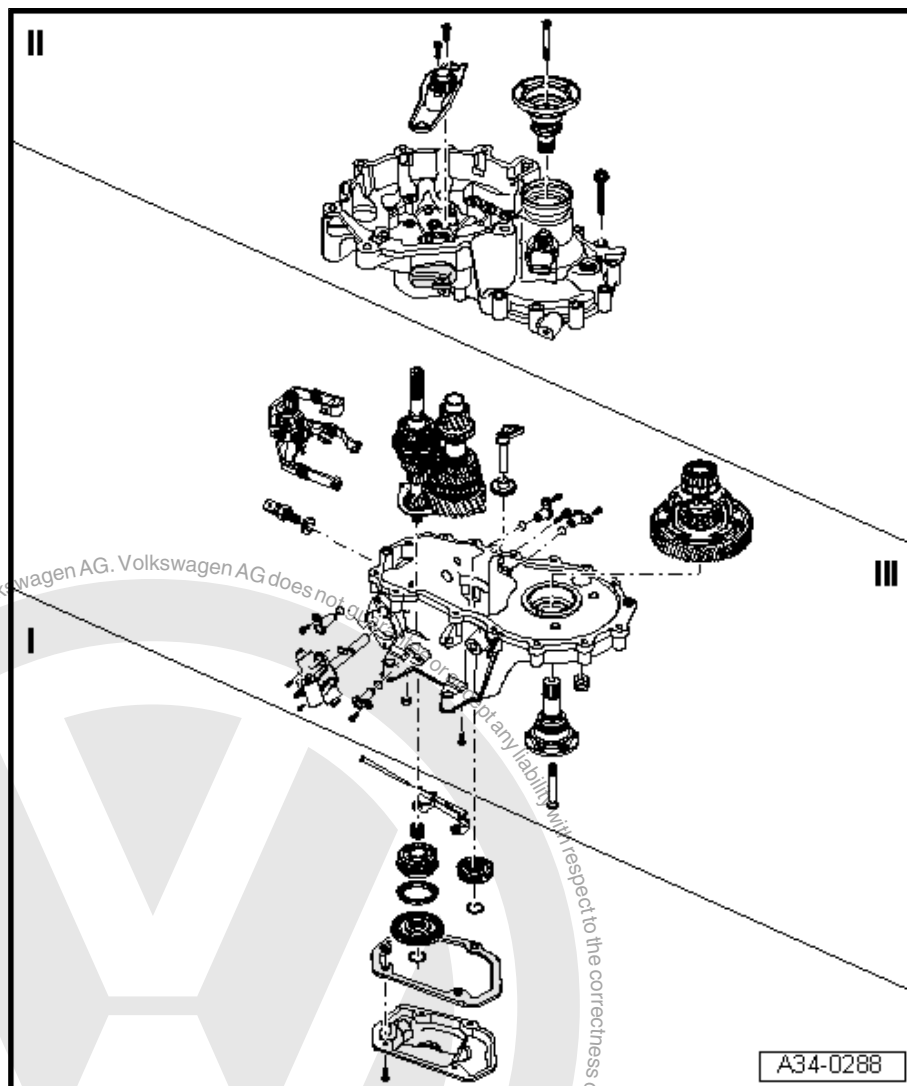
III -  
⇒ [“7.6 Assembly overview - selector unit”, page 131](#)

III -  
⇒ [“7.7 Assembly overview - selector forks”, page 134](#)

III -  
⇒ [“7.9 Repairing selector forks”, page 141](#)

III -  
⇒ [“7.10 Repairing selector unit”, page 145](#)

III -  
⇒ [“7.11 Renewing selector shaft seal”, page 148](#)





## 7.3 Assembly overview - cover for gearbox housing and 5th gear

### 1 - Gearbox housing

- ☐ Repairing ➔ [page 159](#)

### 2 - Gear wheel for 5th gear

- ☐ Removing and installing  
➔ [page 149](#)

### 3 - Retaining ring

- ☐ Renew after removal
- ☐ Determining thickness  
➔ [page 158](#)

### 4 - Seal

- ☐ Renew if damaged

### 5 - Gearbox housing cover



#### Note

*If gearbox housing cover is removed and installed with gearbox installed, check oil level and top up with gear oil ➔ [page 115](#).*

### 6 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

### 7 - Retaining ring

- ☐ Renew after removal
- ☐ Determining thickness  
➔ [page 158](#)

### 8 - Synchro-hub with locking collar and stop ring for 5-speed gearbox

- ☐ Dismantling and assembling ➔ [page 165](#)

### 9 - Synchro-ring for 5th gear

### 10 - Synchromeshed gear, 5th gear

### 11 - Needle bearing

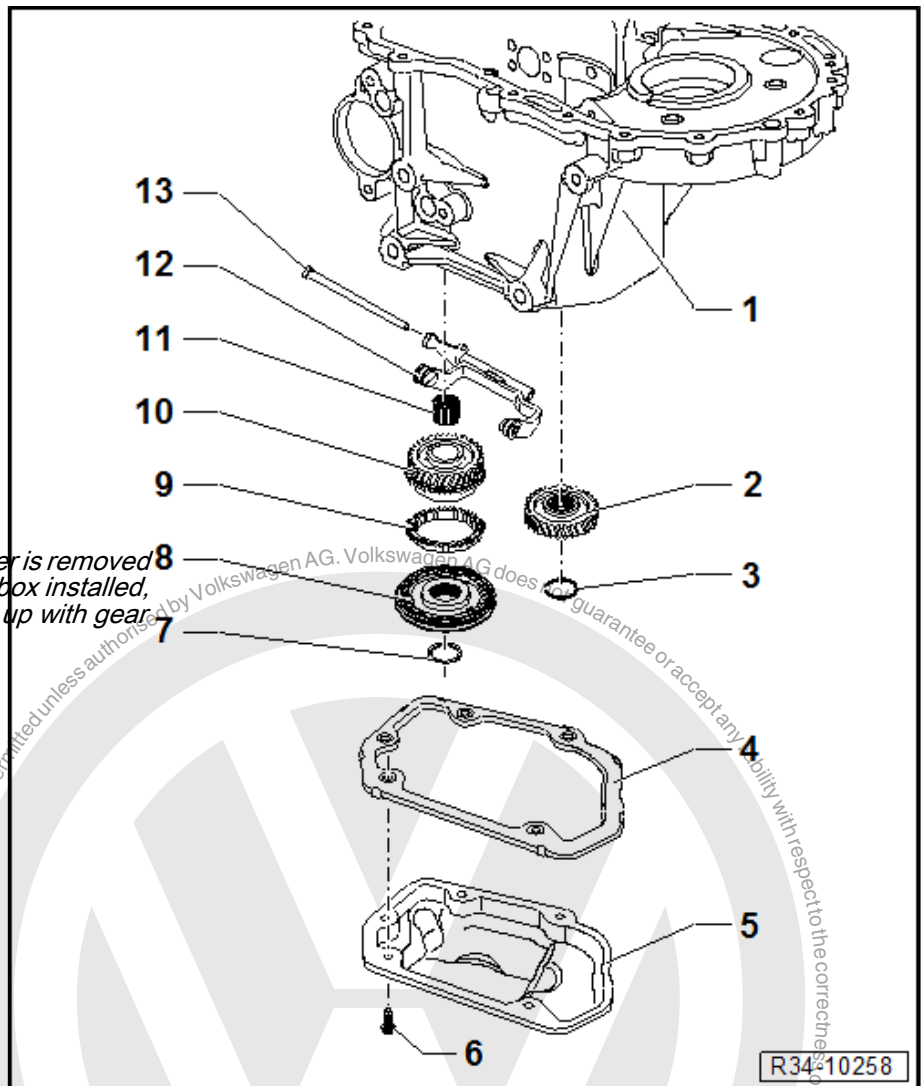
- ☐ For 5th gear

### 12 - 5th gear selector fork

- ☐ Repairing ➔ [page 141](#)

### 13 - Pivot pin

- ☐ for 5th gear selector fork.







## 7.4 Assembly overview - clutch housing

⇒ [7.4.1 Assembly overview - clutch housing, manual gearbox 02T](#), page 128

⇒ [7.4.2 Assembly overview - clutch housing, manual gearbox 0DF](#), page 129

### 7.4.1 Assembly overview - clutch housing, manual gearbox 02T

#### 1 - Countersunk bolt

- ☐ Specified torque  
⇒ [page 196](#)

#### 2 - Flange shaft with compression spring

- ☐ Removing and installing  
⇒ [page 149](#)
- ☐ Assembling  
⇒ [page 196](#)

#### 3 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

#### 4 - Clutch housing

- ☐ Repairing ⇒ [page 159](#)

#### 5 - Gearbox housing

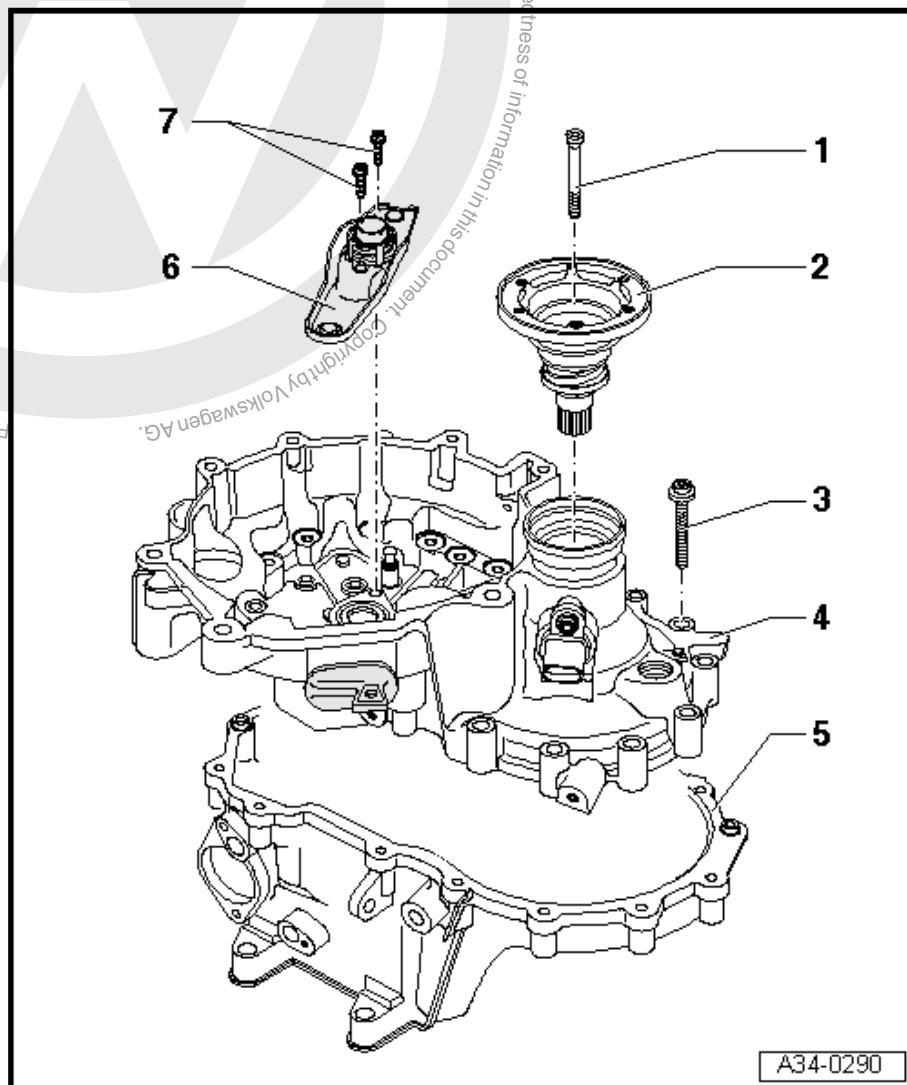
- ☐ Repairing ⇒ [page 159](#)

#### 6 - Clutch release lever

- ☐ With guide sleeve and release bearing
- ☐ Removing and installing  
⇒ [page 128](#)

#### 7 - Bolt

- ☐ Removing and installing  
⇒ [page 24](#)





## 7.4.2 Assembly overview - clutch housing, manual gearbox 0DF

### 1 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

### 2 - Clutch housing

- ☐ Repairing ➤ [page 159](#)

### 3 - Gearbox housing

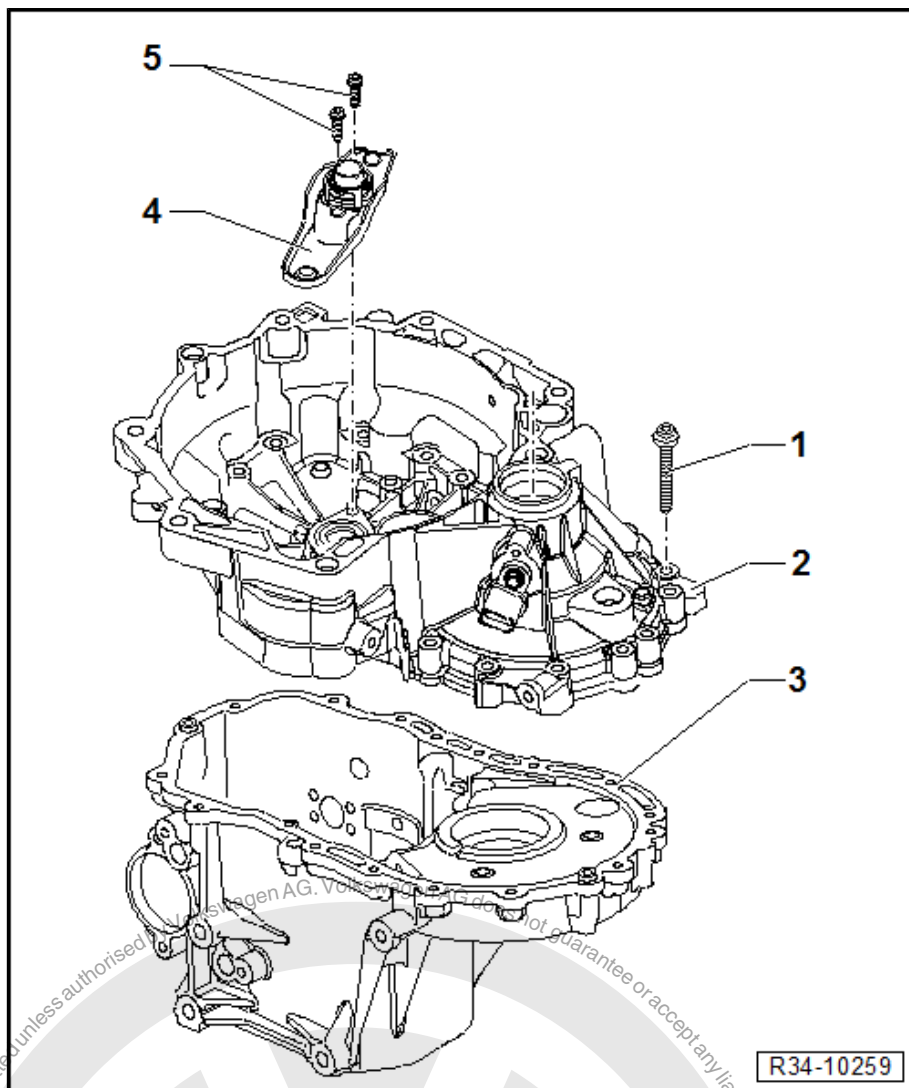
- ☐ Repairing ➤ [page 159](#)

### 4 - Clutch release lever

- ☐ With guide sleeve and release bearing
- ☐ Removing and installing ➤ [page 24](#)

### 5 - Bolt

- ☐ Removing and installing ➤ [page 24](#)





## 7.5 Assembly overview - shafts, differential, selector mechanism

### 1 - Differential

- ☐ Dismantling and assembling ➔ [page 196](#)

### 2 - Gearbox housing

- ☐ Repairing ➔ [page 159](#)

### 3 - Oil drain plug

- ☐ Specified torque ➔ [page 116](#)

### 4 - Flange shaft with compression spring

- ☐ Only manual gearbox 02T
- ☐ Removing and installing ➔ [page 149](#)
- ☐ Assembling ➔ [page 196](#)

### 5 - Countersunk bolt

- ☐ Only manual gearbox 02T
- ☐ Specified torque ➔ [page 196](#)

### 6 - Bolt

- ☐ Qty. 6
- ☐ Self-locking
- ☐ Renew after removal
- ☐ For securing bearing support for input and output shafts ➔ [Item 18 \(page 131\)](#)
- ☐ Bearing support (sheet metal version): 5 Nm and turn 90° further
- ☐ Bearing support (cast iron version): 8 Nm and turn 90° further

### 7 - Hexagon flange nut

- ☐ For selector mechanism
- ☐ Self-locking
- ☐ Renew after removal
- ☐ 23 Nm

### 8 - O-ring

- ☐ Renew after removal

### 9 - Pivot pin

### 10 - Bolt

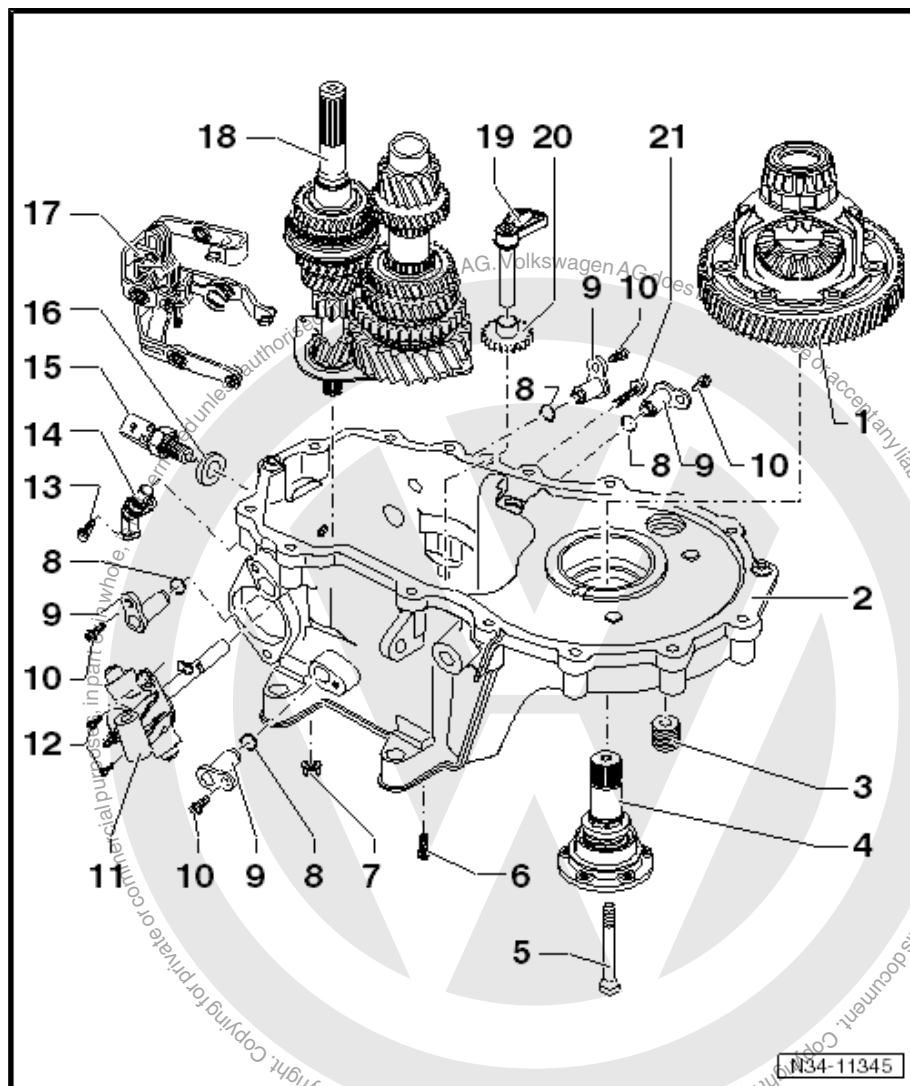
- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

### 11 - Selector unit

- ☐ (Selector shaft with selector shaft cover) ➔ [page 131](#)
- ☐ Removing and installing with gearbox installed ➔ [page 135](#)

### 12 - Bolt

- ☐ Renew after removal





- ☐ 5 Nm and turn 90° further

### 13 - Bolt

- ☐ 6 Nm

### 14 - Gearbox neutral position sender - G701-

- ☐ for vehicles with start/stop system

### 15 - Reversing light switch - F4-

- ☐ Switch without seal: clean thread of switch if necessary
- ☐ Switch without seal: install switch with sealant if necessary
- ☐ For allocation of sealant, refer to ⇒ Electronic parts catalogue (ETKA) .
- ☐ Switch with encapsulated seal: renew switch
- ☐ Switch with separate seal: renew seal
- ☐ Lightly coat lug with MoS<sub>2</sub> grease
- ☐ Polo - with gearbox installed: Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation; Assembly overview – noise insulation .
- ☐ Installation location up! : on selector unit ⇒ [page 131](#)
- ☐ 20 Nm

### 16 - Seal

- ☐ Not fitted in all gearboxes
- ☐ Renew after removal

### 17 - Selector mechanism

- ☐ (Selector forks)
- ☐ Repairing ⇒ [page 141](#)

### 18 - Input shaft and output shaft with bearing mounting and deep groove ball bearing

- ☐ If bearing support is separated from gearbox housing, the support must always be renewed
- ☐ Pressing bearing support off and on: Dismantling and assembling input shaft ⇒ [page 167](#)
- ☐ Dismantling and assembling input shaft ⇒ [page 167](#)
- ☐ Dismantling and assembling output shaft ⇒ [page 180](#)

### 19 - Reverse gear shaft

### 20 - Reverse gear wheel

- ☐ Note installation position ⇒ [page 149](#)

### 21 - Bolt

- ☐ Renew after removal
- ☐ For securing shaft for reverse gear
- ☐ M 6: 5 Nm and turn 90° further
- ☐ M 8: 25 Nm and turn 45° further

## 7.6 Assembly overview - selector unit

⇒ [“7.6.1 Assembly overview - selector unit, up!”, page 131](#)

⇒ [“7.6.2 Assembly overview - selector unit, Polo”, page 133](#)

### 7.6.1 Assembly overview - selector unit, up!



#### Note

- ◆ Lubricate bearing positions and sliding surfaces.
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

### 1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ Fig.  
⇒ [page 147](#)
- ☐ Driving in ⇒ [page 147](#)

### 2 - Selector shaft with selector mechanism cover and angled rod

- ☐ Renew selector shaft together with selector mechanism cover
- ☐ Removing and installing  
⇒ [page 135](#)
- ☐ Removing angled rod  
⇒ [page 147](#)
- ☐ Driving in angled rod  
⇒ [page 147](#)

### 3 - Reversing light switch - F4-

- ☐ Also refer to  
⇒ [Item 15 \(page 131\)](#) .
- ☐ Switch without seal: clean thread of switch if necessary
- ☐ Switch without seal: install switch with sealant if necessary
- ☐ For allocation of sealant, refer to ⇒ Electronic parts catalogue (ET-KA) .
- ☐ Switch with encapsulated seal: renew switch
- ☐ Switch with separate seal: renew seal
- ☐ Lightly coat lug with MoS<sub>2</sub> grease

### 4 - Clip

### 5 - Cap

- ☐ For gearbox breather

### 6 - Seal

- ☐ Renew after removal ⇒ [page 148](#)

### 7 - Gate relay lever

- ☐ Fitting position ⇒ [page 73](#)

### 8 - Gearbox selector lever

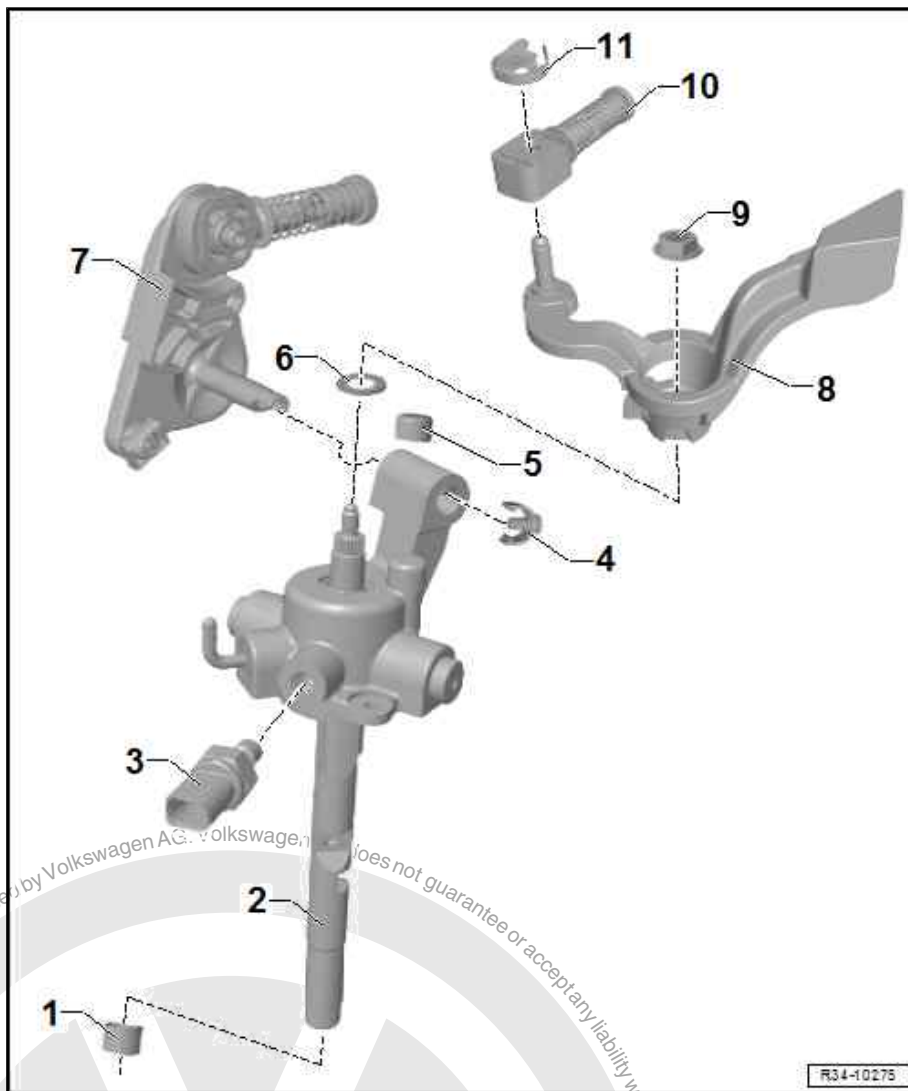
- ☐ Illustration may differ from original component
- ☐ Install so that master spline aligns with selector shaft
- ☐ Can be renewed with the selector mechanism installed
- ☐ Fitting position ⇒ [page 73](#)

### 9 - Hexagon nut

- ☐ Self-locking
- ☐ Renew after removal
- ☐ 23 Nm

### 10 - Cable end-piece

- ☐ For gear selector cable to gearbox selector lever







- ☐ ➤ [page 62](#)

## 11 - Securing clip

- ☐ Renew after removal

## 7.6.2 Assembly overview - selector unit, Polo



Note

- ◆ Lubricate bearing positions and sliding surfaces.
- ◆ Allocate grease using ➤ *Electronic parts catalogue (ETKA)*.

### 1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ➤ Fig. [⇒ page 147](#)
- ☐ Driving in ➤ [page 147](#)

### 2 - Selector shaft with selector shaft cover

- ☐ Renew together
- ☐ Removing and installing [⇒ page 139](#)

### 3 - Angled rod

- ☐ For adjusting selector mechanism
- ☐ Removing ➤ [page 147](#)
- ☐ Driving in ➤ [page 147](#)

### 4 - Gate relay lever

- ☐ Fitting position [⇒ page 73](#)

### 5 - Clip

### 6 - Seal

- ☐ Renew after removal [⇒ page 148](#)

### 7 - Cap

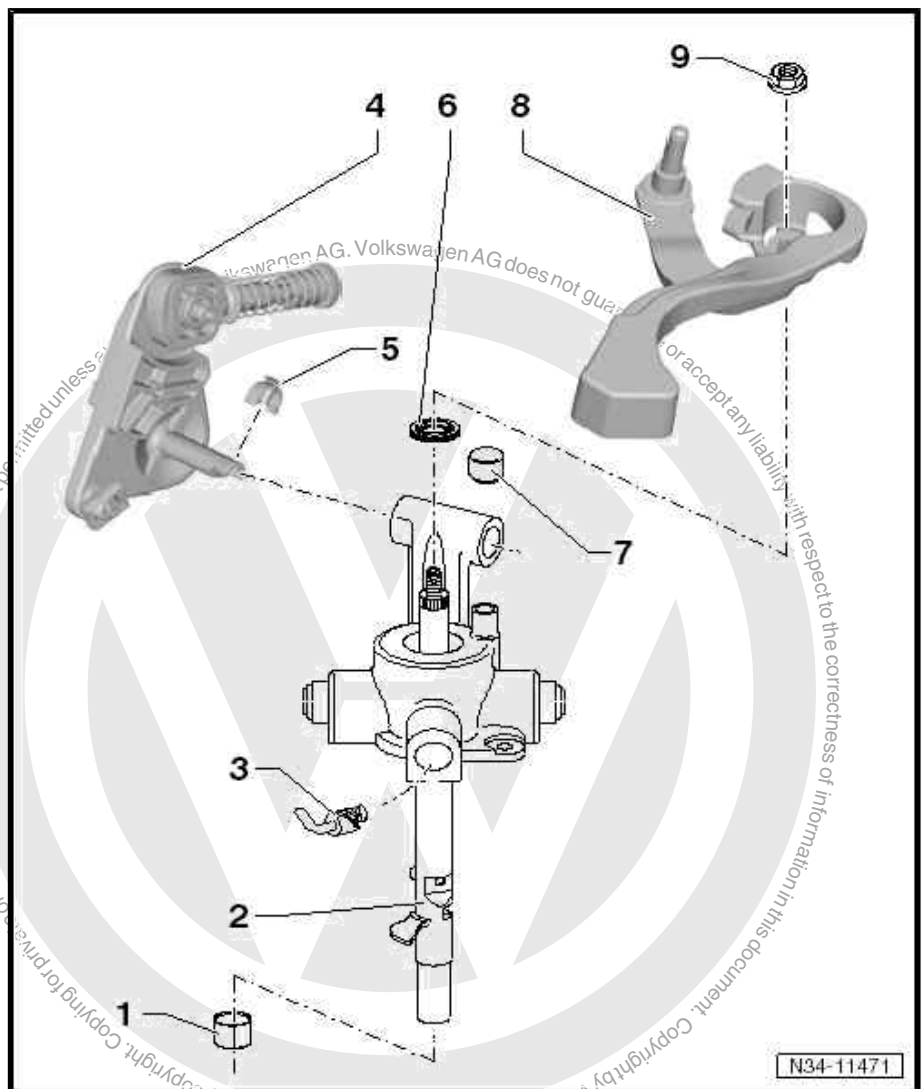
- ☐ For gearbox breather

### 8 - Gearbox selector lever

- ☐ Illustration may differ from original component.
- ☐ Install so that master spline aligns with selector shaft
- ☐ Can be renewed with the selector mechanism installed
- ☐ Fitting position ➤ [page 73](#)

### 9 - Hexagon nut

- ☐ Self-locking
- ☐ Renew after removal
- ☐ 23 Nm





## 7.7 Assembly overview - selector forks



### Note

*It is not necessary to dismantle the selector fork group in order to dismantle and assemble detent segments, lock washers and angular contact ball bearings.*

#### 1 - Selector fork group with selector plate

#### 2 - Selector segment for 3rd and 4th gear

- ☐ Identification ⇒ [page 143](#)
- ☐ After installation, selector segment must still rotate freely

#### 3 - Angular contact ball bearing

- ☐ Qty. 4
- ☐ Removing ⇒ [page 144](#)
- ☐ Press inner race into outer race ⇒ [page 145](#)
- ☐ Installing ⇒ [page 145](#)

#### 4 - Clamping washer

- ☐ Renew after removal
- ☐ Removing ⇒ [page 144](#)
- ☐ Installing ⇒ [page 144](#)

#### 5 - 1st/2nd gear selector segment

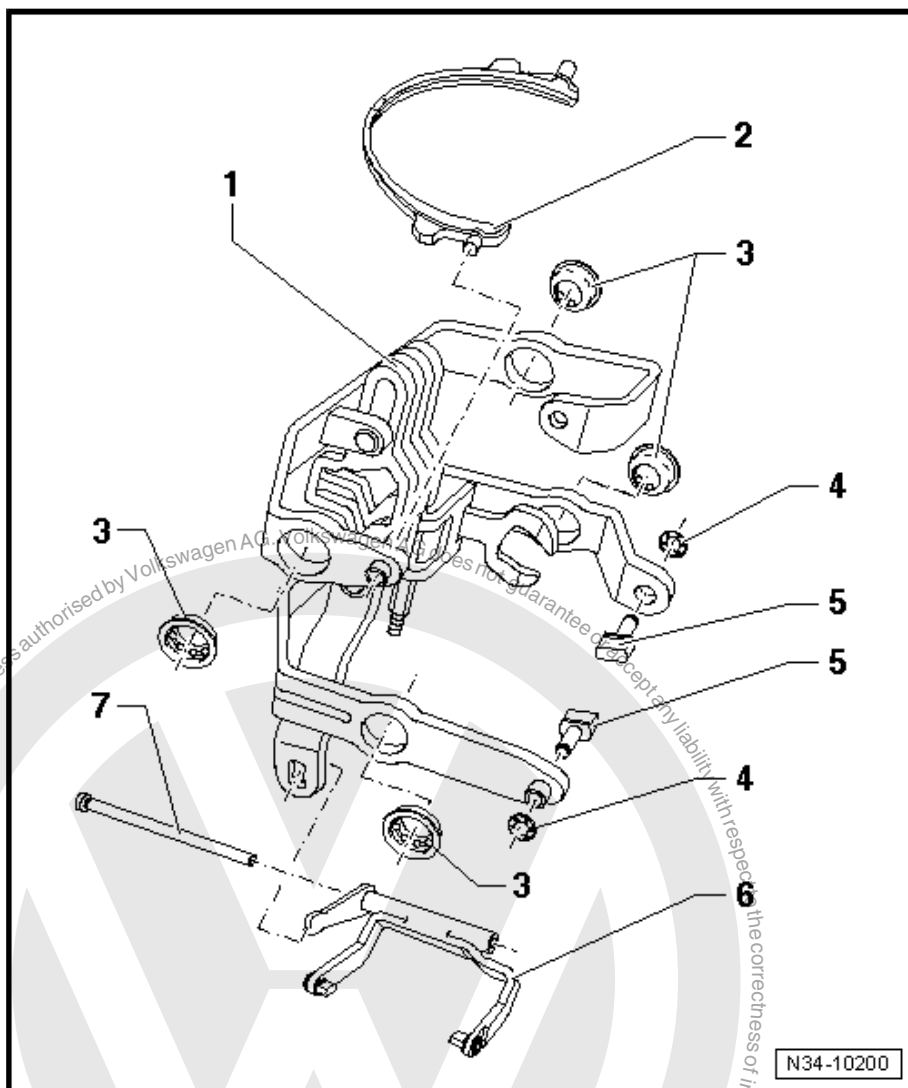
- ☐ Identification ⇒ [page 143](#)
- ☐ After lock washer is installed, segment must still rotate freely
- ☐ Selector fork with selector segment ⇒ [page 144](#)

#### 6 - 5th gear selector fork with selector segment

- ☐ Selector segment is permanently connected to selector fork.
- ☐ Identification ⇒ [page 143](#)

#### 7 - Pivot pin

- ☐ for 5th gear selector fork.





## 7.8 Removing and installing selector unit with gearbox installed

⇒ [“7.8.1 Removing and installing selector unit, up!”](#), page 135

⇒ [“7.8.2 Removing and installing selector unit, Polo”](#), page 139

### 7.8.1 Removing and installing selector unit, up!

Special tools and workshop equipment required

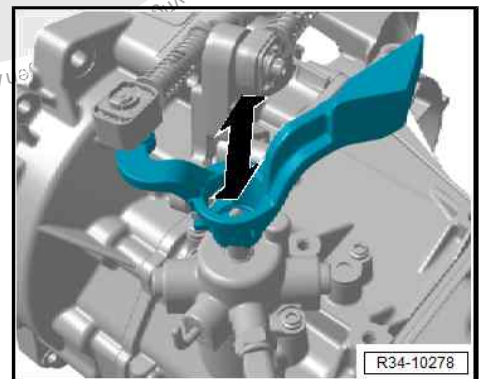
- ◆ Torque wrench - VAS 6583



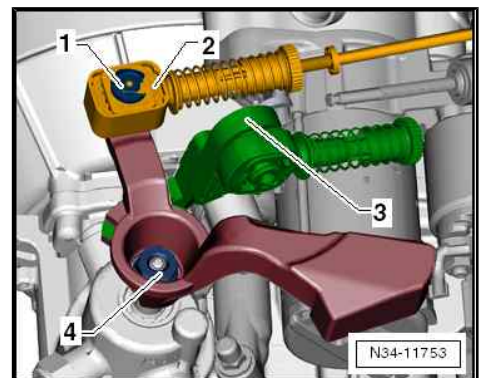
#### Removing

If installed above selector unit:

- Remove complete air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Gearbox in neutral position -arrows-.
- The angled rod for adjusting the selector mechanism must be disengaged

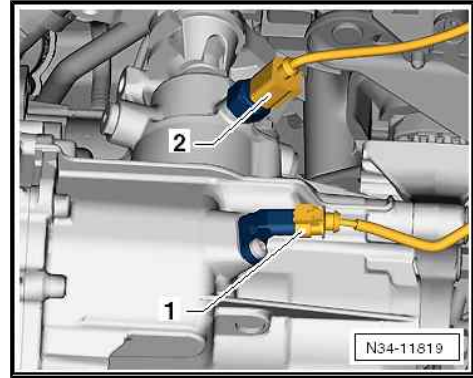


- Remove securing clip -1- for gear selector cable -2- from gear-box selector lever.
- Pull gear selector cable off pin.
- Remove relay lever -3- together with cable end-piece ⇒ [page 71](#) .
- Remove gearbox selector lever by unscrewing nut -4-.

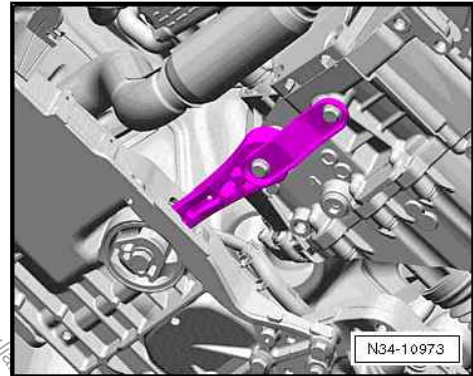




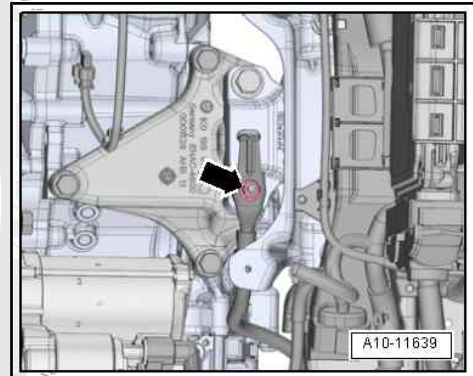
- Disconnect electrical connectors:
- If present: pull off connector -1- from gearbox neutral position sender - G701- .
- Pull connector -2- off reversing light switch - F4- .
- Remove gearbox neutral position sender - G701- -1-.
- Install support bracket - 10-222 A- ➔ [page 79](#) .



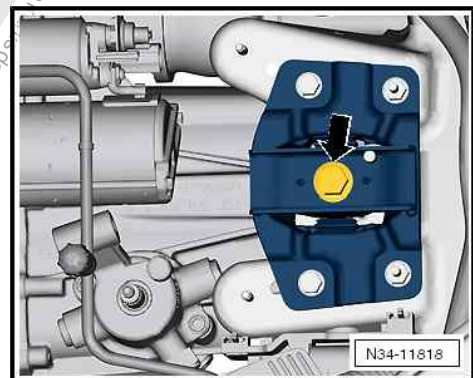
- Remove pendulum support.



- If fitted, remove earth wire -arrow- (illustration shows different gearbox).



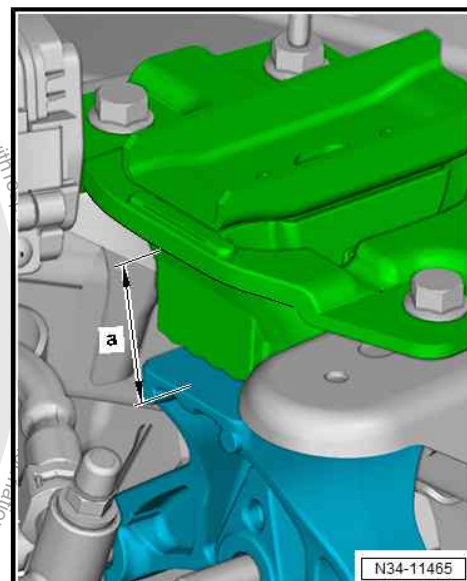
- Remove hexagon bolt -arrow- for left-hand assembly mounting from gearbox mounting.



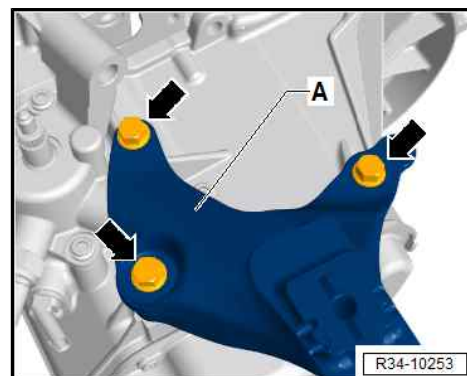




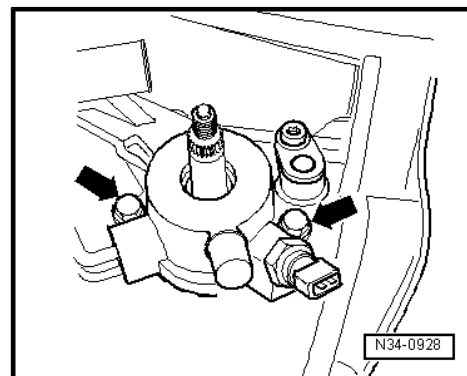
- Lower engine/gearbox assembly via spindles of support bracket - 10-222 A- .
- Make sure that drive shafts do not come into contact with surrounding components.
- Dimension -a- = approx. 50 mm



- Remove gearbox bracket -A- -arrows-.

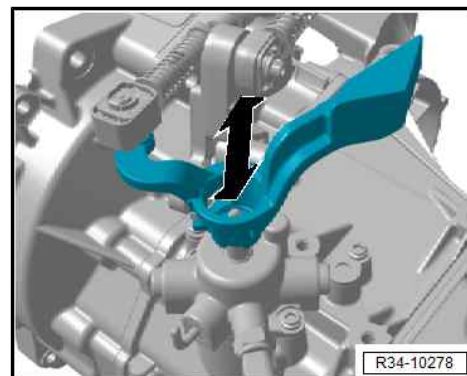


- Remove bolts -arrows-
- The adhesive effect of the sealant means that the selector unit needs to be pulled off forcibly. Be careful of the air conditioner lines where necessary.
- Clean all sealing surfaces.
- Cover gearbox.



### Installing

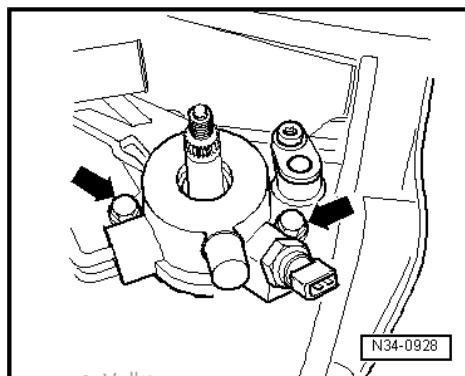
- The selector shaft is in the neutral position (shown here with the selector unit installed).
- Gearbox in neutral position
- All sealing surfaces are cleaned.
- Apply sealant evenly at several points to the sealing surfaces of the selector unit.



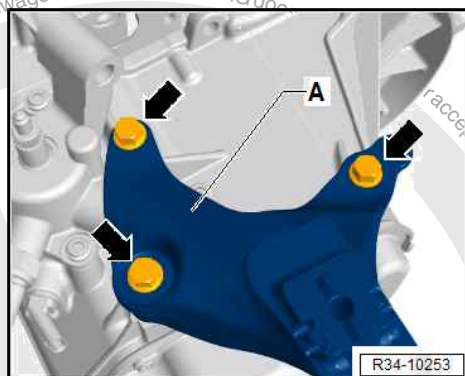




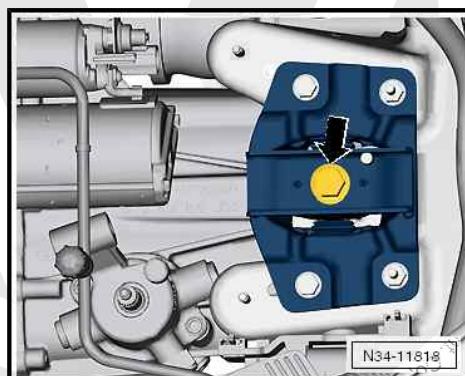
- Insert selector unit and tighten with new bolts -arrows-  
⇒ [page 130](#) .



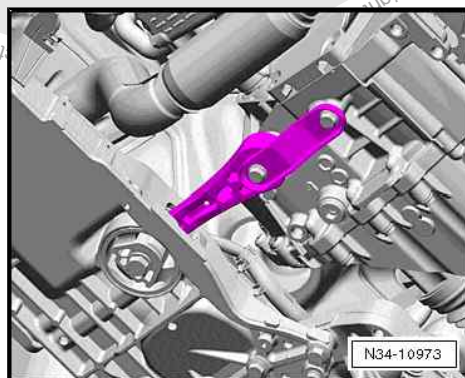
- Fit gearbox bracket -A- with new bolts ⇒ [page 111](#) .



- Align engine and gearbox in installation position.
- Install new bolt -arrow- for left assembly mounting in gearbox mounting ⇒ [page 111](#) .
- Do not remove engine support bracket -10 - 222 A- until all bolts securing the assembly mounting have been tightened to specified torque.

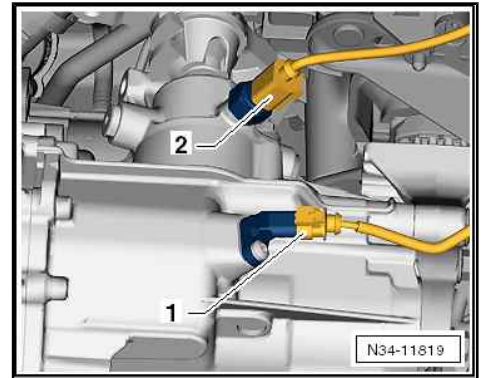


- Install pendulum support using new bolts ⇒ Rep. gr. 10 ; Assembly mountings; Assembly overview – assembly mountings .

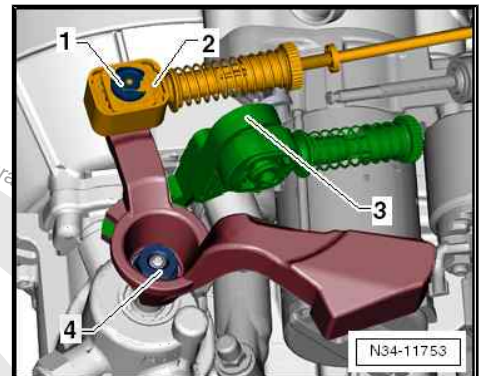




- If fitted, install gearbox neutral position sender - G701- -1- ➔ [page 130](#) .
- Fit electrical connectors:
- If present: fit connector -1- to gearbox neutral position sender - G701- .
- Fit connector -2- to reversing light switch - F4- .
- Slightly pull on connector to ensure it is properly engaged.



- Install gearbox selector lever ➔ [page 62](#) .
- Tighten hexagon nut -4- ➔ [page 131](#) .
- Install gate relay lever -3- together with cable end-piece ➔ [page 71](#) .
- Spread a small amount of grease on pin of gearbox selector lever.



Allocate grease using ➔ Electronic parts catalogue (ETKA) .

- Attach gear selector cable -2- to gearbox selector lever.
- Renew securing clip -1- after each removal.
- Adjust selector mechanism ➔ [page 74](#) .
- Install battery ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Connect battery and follow procedure after connecting battery ➔ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery .
- If removed, install engine cover panel and air filter ➔ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .

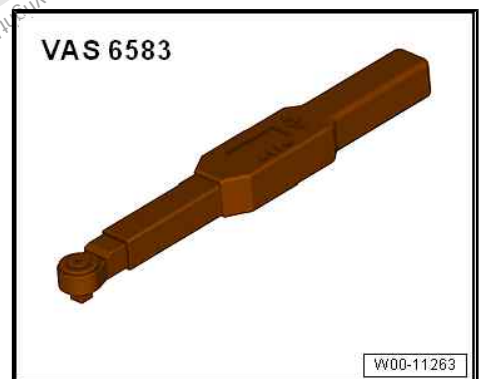
#### Specified torques

- ◆ Selector unit to gearbox ➔ [page 130](#)

### 7.8.2 Removing and installing selector unit, Polo

#### Special tools and workshop equipment required

- ◆ Torque wrench - VAS 6583-

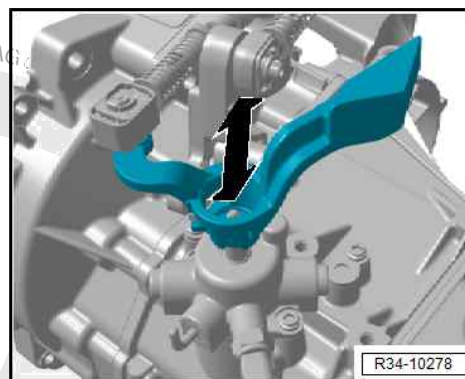




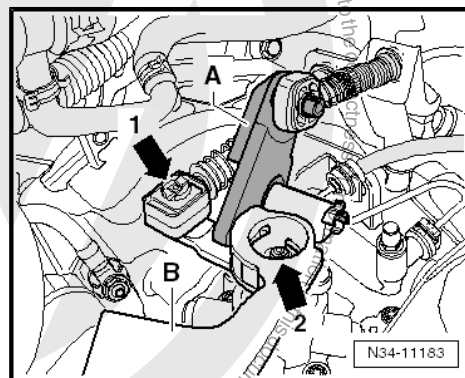
## Removing

### If installed above selector unit:

- Remove complete air filter housing ⇒ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .
- Remove battery and battery tray ⇒ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery tray .
- Gearbox in neutral position
- The angled rod for adjusting the selector mechanism must be disengaged



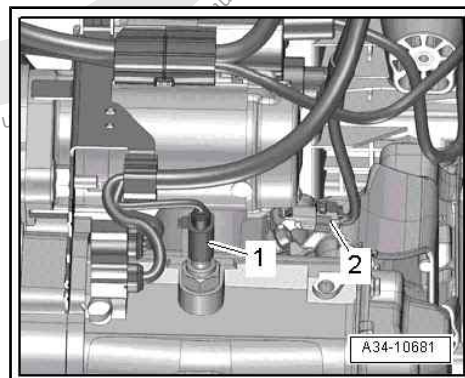
- Remove securing clip -1- for gear selector cable from gearbox selector lever -B-.
- Pull gear selector cable off pin.
- Remove gate relay lever -A- together with cable end-piece ⇒ [page 71](#) .
- Remove gearbox selector lever -B- by removing nut -arrow 2-.



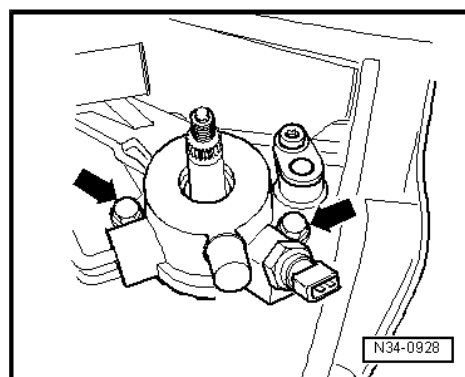
- Disconnect electrical connector:

Gearbox neutral position sender - G701 - 2-

Take no heed of reversing light switch - F4- -1-.



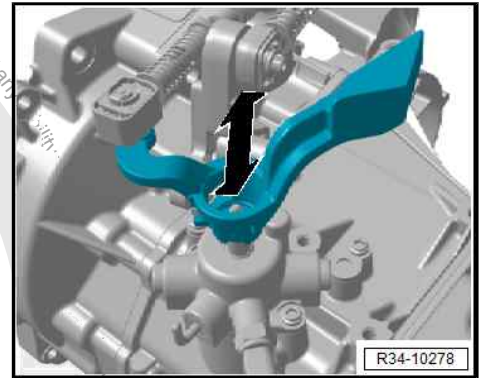
- Remove bolts -arrows-
- The adhesive effect of the sealant means that the selector unit needs to be pulled off forcibly. Be careful of the air conditioner lines where necessary.
- Clean all sealing surfaces.
- Cover gearbox.



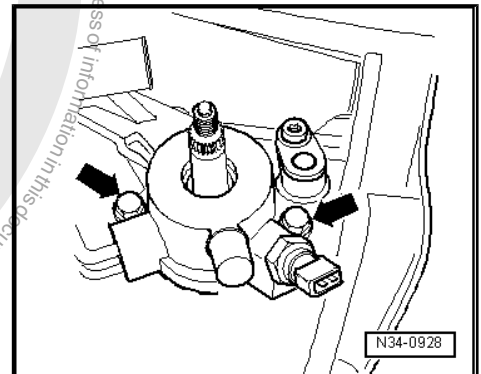


## Installing

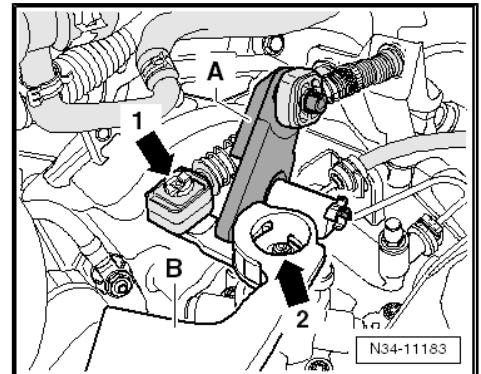
- The selector shaft is in the neutral position (shown here with the selector unit installed).
- Gearbox in neutral position
- All sealing surfaces are cleaned.
- Apply sealant evenly at several points to the sealing surfaces of the selector unit.



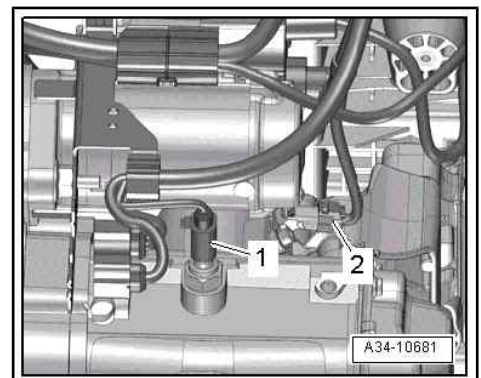
- Insert selector unit and tighten with new bolts -arrows- ➔ [page 130](#) .



- Install gearbox selector lever -B- ➔ [page 62](#) .
- Tighten hexagon nut -arrow 2- to specified torque ➔ [page 131](#) .
- Install gate relay lever -A- together with cable end-piece ➔ [page 71](#) .
- Spread small amount of grease on pin of gearbox selector lever -B-.
- Allocate grease using ➔ Electronic parts catalogue (ETKA) .
- Attach gear selector cable to gearbox selector lever.
- Renew securing clip -arrow 1- after each removal.
- Adjust selector mechanism ➔ [page 74](#) .



- Fit electrical connector:
- If present: fit connector -2- to gearbox neutral position sender - G701- .
- Slightly pull on connector to ensure it is properly engaged.
- Take no heed of connector -1- for reversing light switch - F4- .
- Install battery ➔ Electrical system; Rep. gr. 27 ; Battery; Removing and installing battery .
- Connect battery and follow procedure after connecting battery ➔ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery .
- If removed, install engine cover panel and air filter ➔ Rep. gr. 24 ; Air filter; Removing and installing air filter housing .



## Specified torques

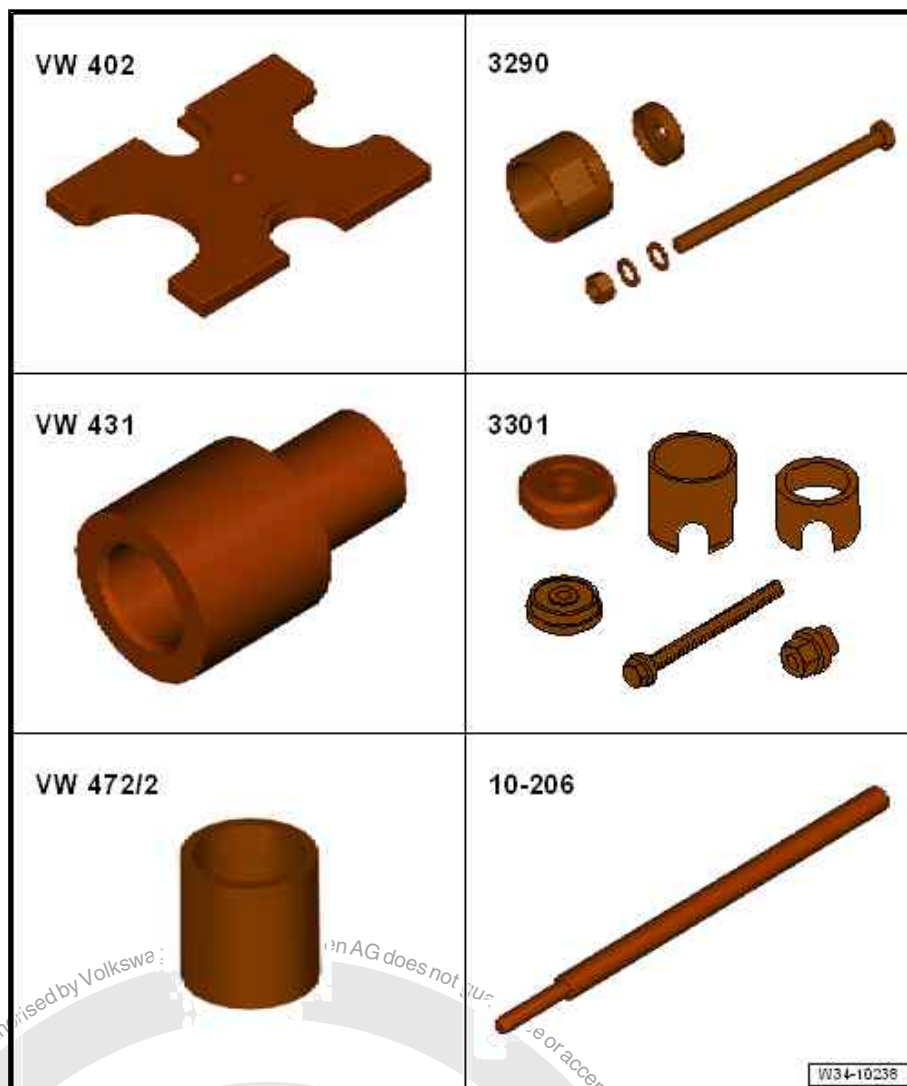
- ♦ Selector unit to gearbox ➔ [page 130](#)

## 7.9 Repairing selector forks





**Special tools and workshop  
equipment required**

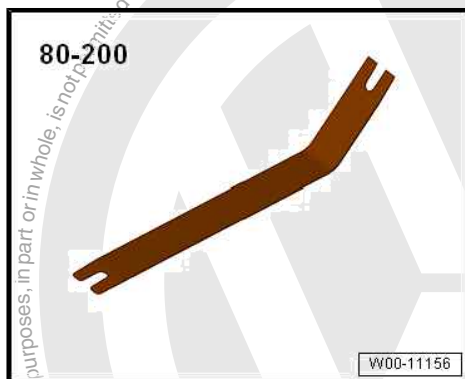


- ◆ Thrust plate - VW 402-
- ◆ Thrust piece - 3290/1-
- ◆ Assembly tool - 3301-
- ◆ Thrust piece - VW 431-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Drift - 10-206-

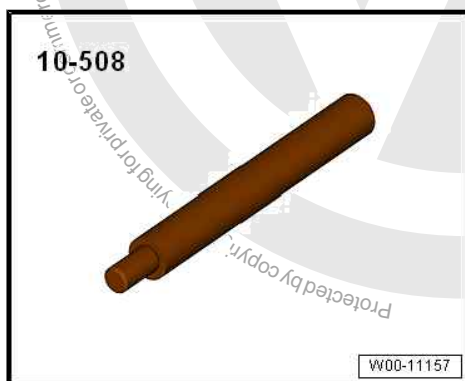




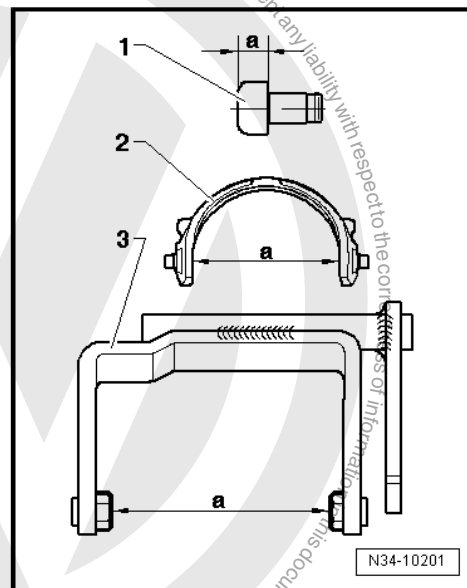
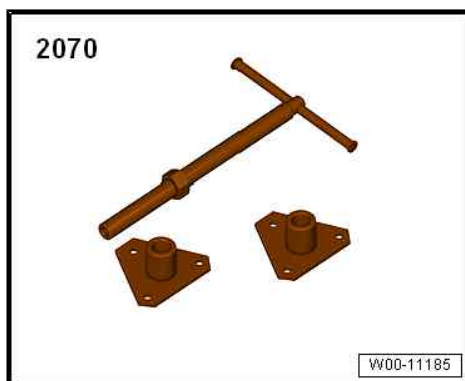
- ◆ Release lever - 80-200-



- ◆ Assembly mandrel - 10-508-



- ◆ Tensioning device - 2070-



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

#### Dimension -a-

- 1 - Selector segment for 1st and 2nd gears = 10.35 mm
- 2 - Selector segment for 3rd and 4th gears = 78.6 mm
- 3 - 5th gear selector fork with selector segments = 79.5 mm

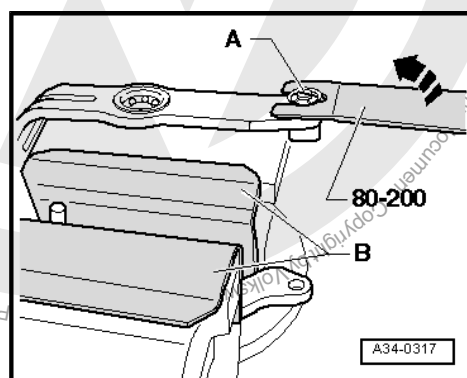
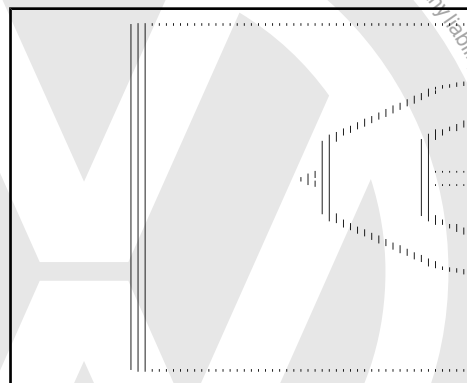


## Selector fork for 1st and 2nd gears with selector segments

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 detent segment using socket and spinner handle.

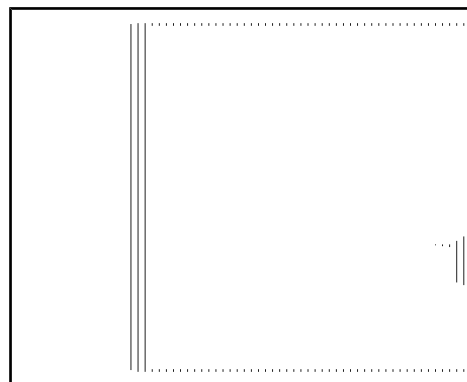


#### Note

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

A - Spinner handle with 10 mm socket

B - Protective jaw covers

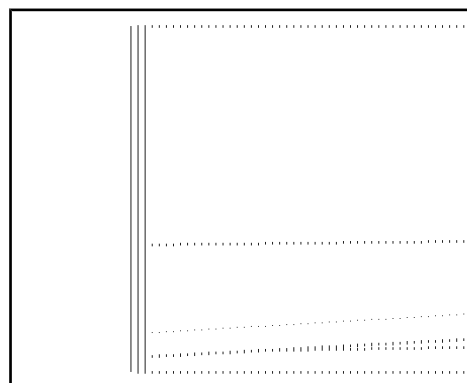


### Removing angular contact ball bearing



#### Note

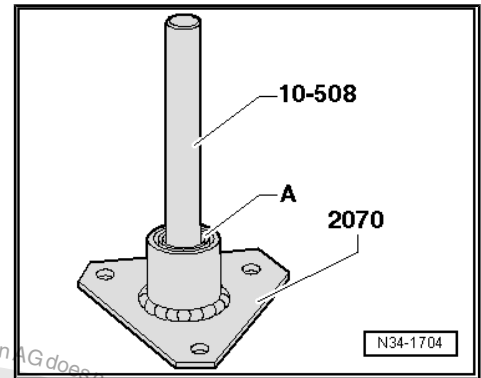
*When removing and installing angular contact ball bearing, do not bend selector forks.*





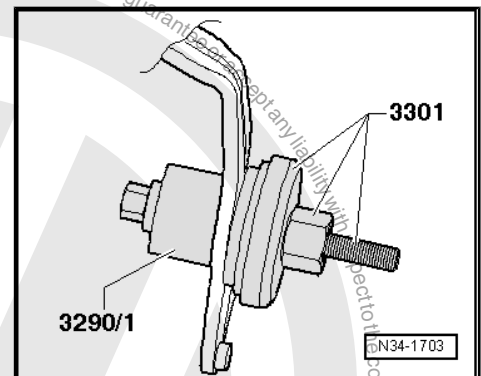
### Pressing inner race -A- of angular contact ball bearing into outer race

Inner race must engage in outer race.



### Pulling angular contact ball bearing into selector fork to stop

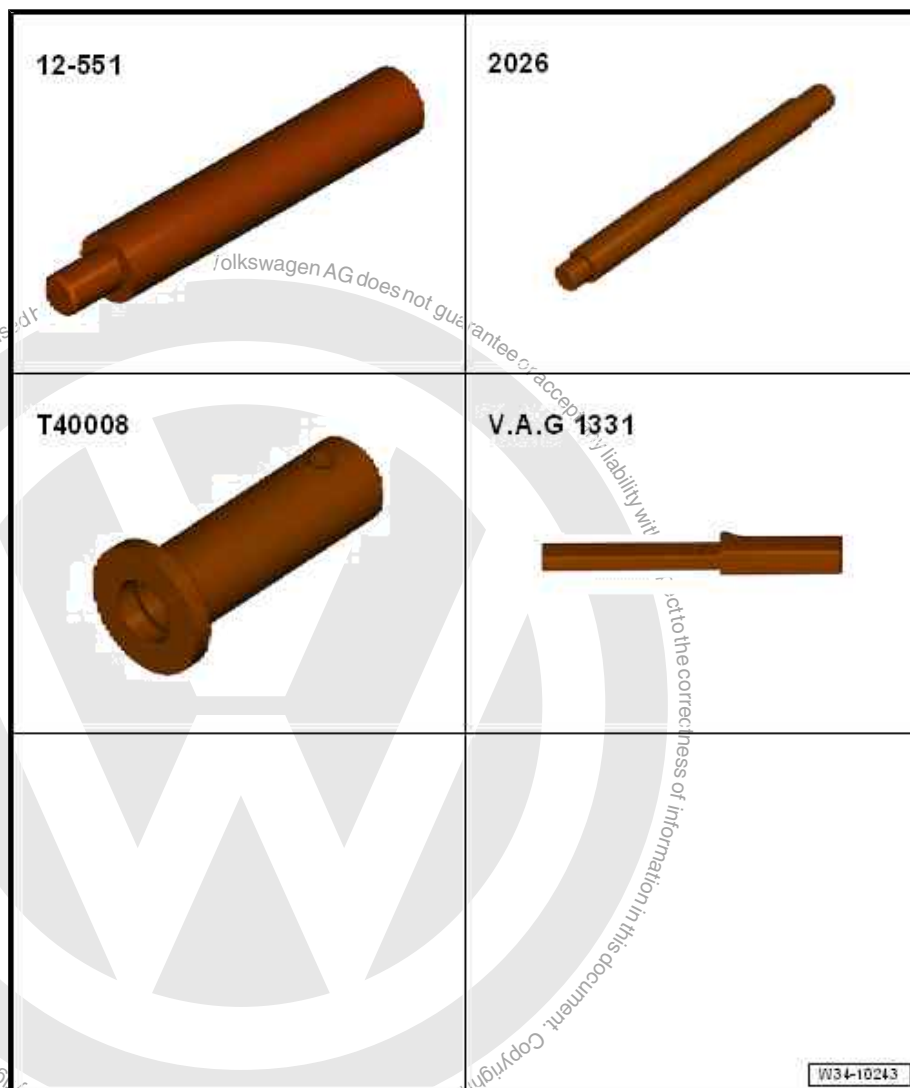
Depression in thrust piece - 3290/1- faces ball bearing.



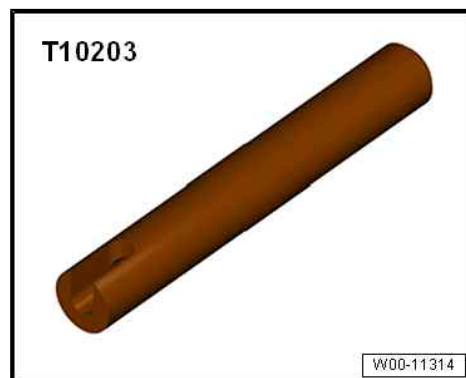
## 7.10 Repairing selector unit



**Special tools and workshop  
equipment required**



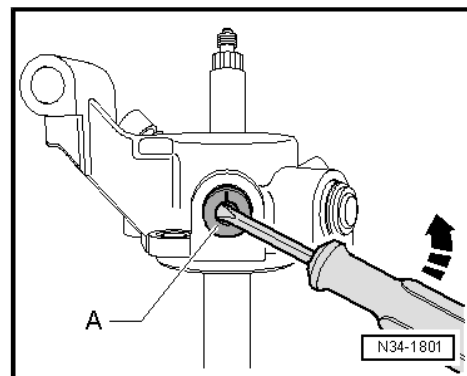
- ◆ Centring pin - 12-551-
- ◆ Drift - 2026-
- ◆ Thrust piece - T40008-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Sealant
- ◆ Allocation ⇒ Electronic parts catalogue (ETKA)
- ◆ Tube - T10203-
- Remove selector mechanism ⇒ [page 130](#) .





### Removing angled rod -A- from selector shaft cover

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

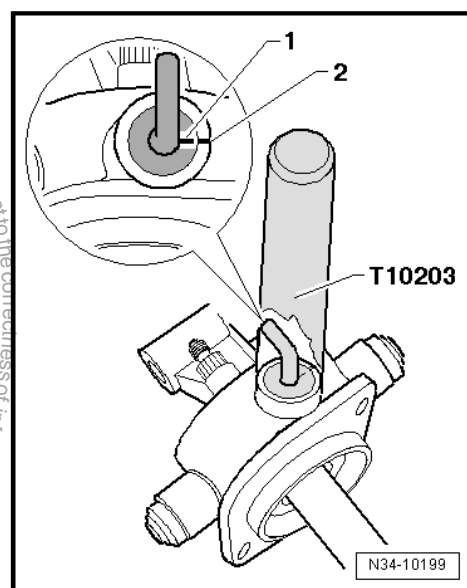


### Drive angled rod -A- into selector shaft cover

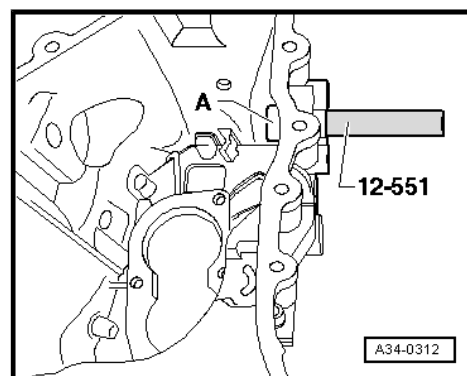
#### Installation position:

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

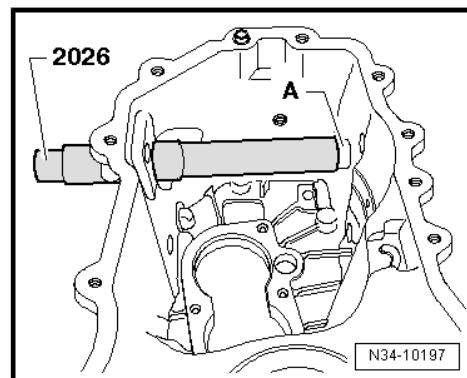
- Install selector mechanism ➔ [page 130](#) .



### Driving out selector shaft sleeve -A-



### Driving in selector shaft sleeve -A- to stop



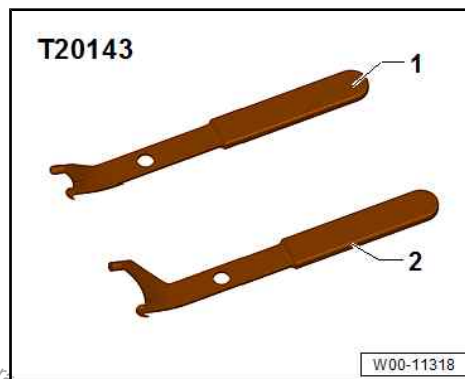




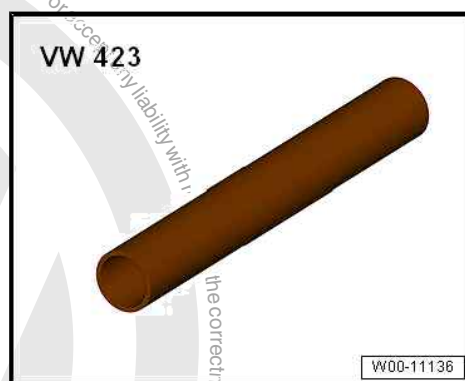
## 7.11 Renewing selector shaft seal

### Special tools and workshop equipment required

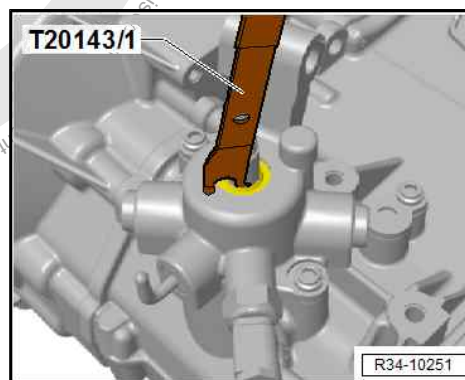
- ◆ Removal tool - T20143/1-



- ◆ Tube - VW 423-

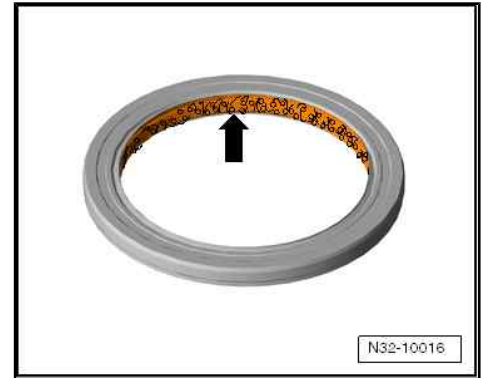


- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- Remove gearbox selector lever and gate relay lever  
⇒ [page 62](#) .
- Lever seal out using a screwdriver.
- or
- Lever seal out as shown.



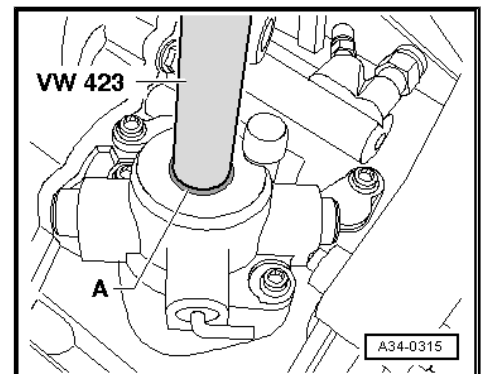


- Lightly oil outer circumference of new oil seal.
- Half-fill space between sealing lip and dust lip -arrow- with sealing grease .



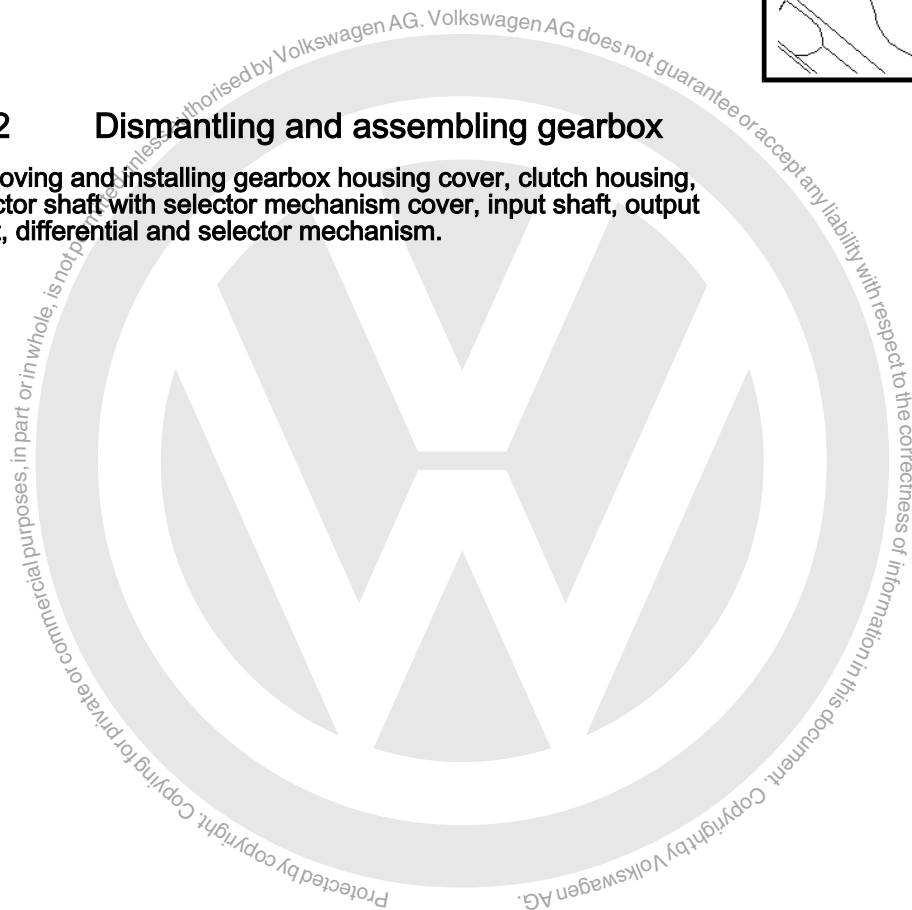
#### Inserting oil seal -A- onto stop

- Install gearbox selector lever and gate relay lever  
⇒ [page 62](#) .



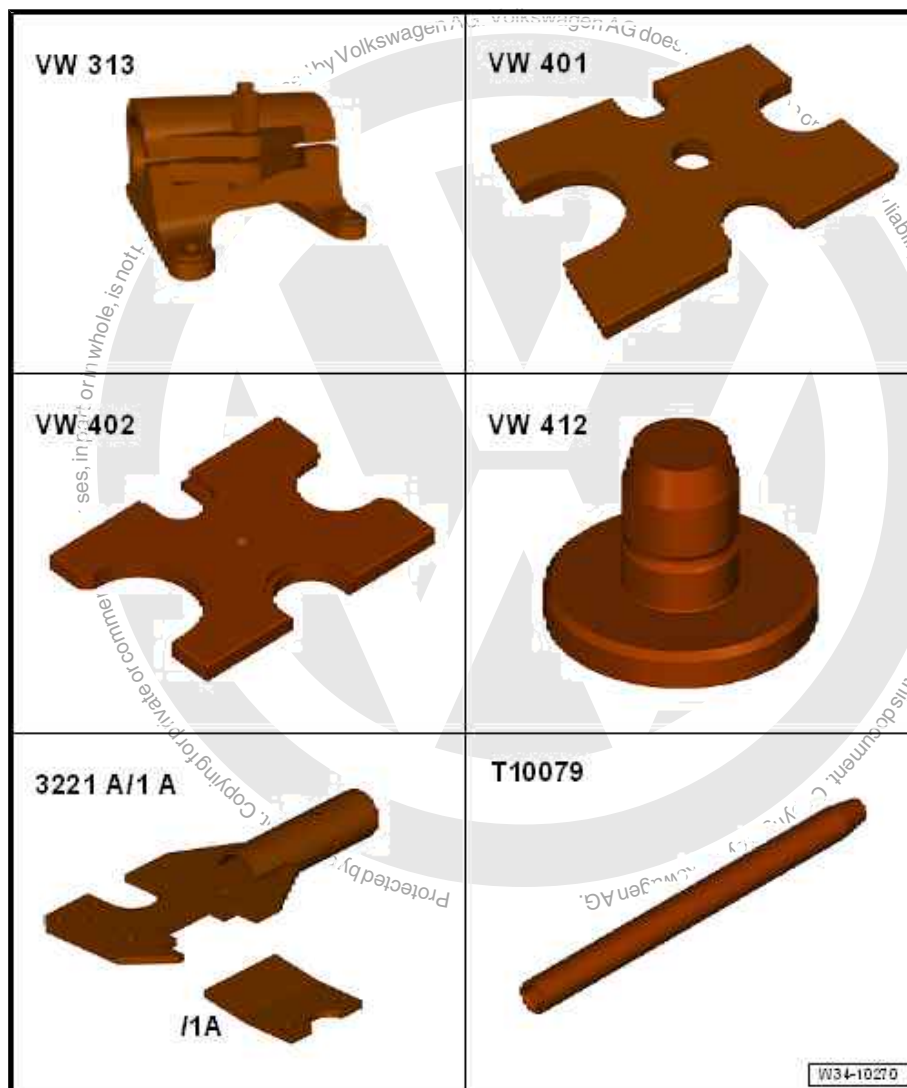
## 7.12 Dismantling and assembling gearbox

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

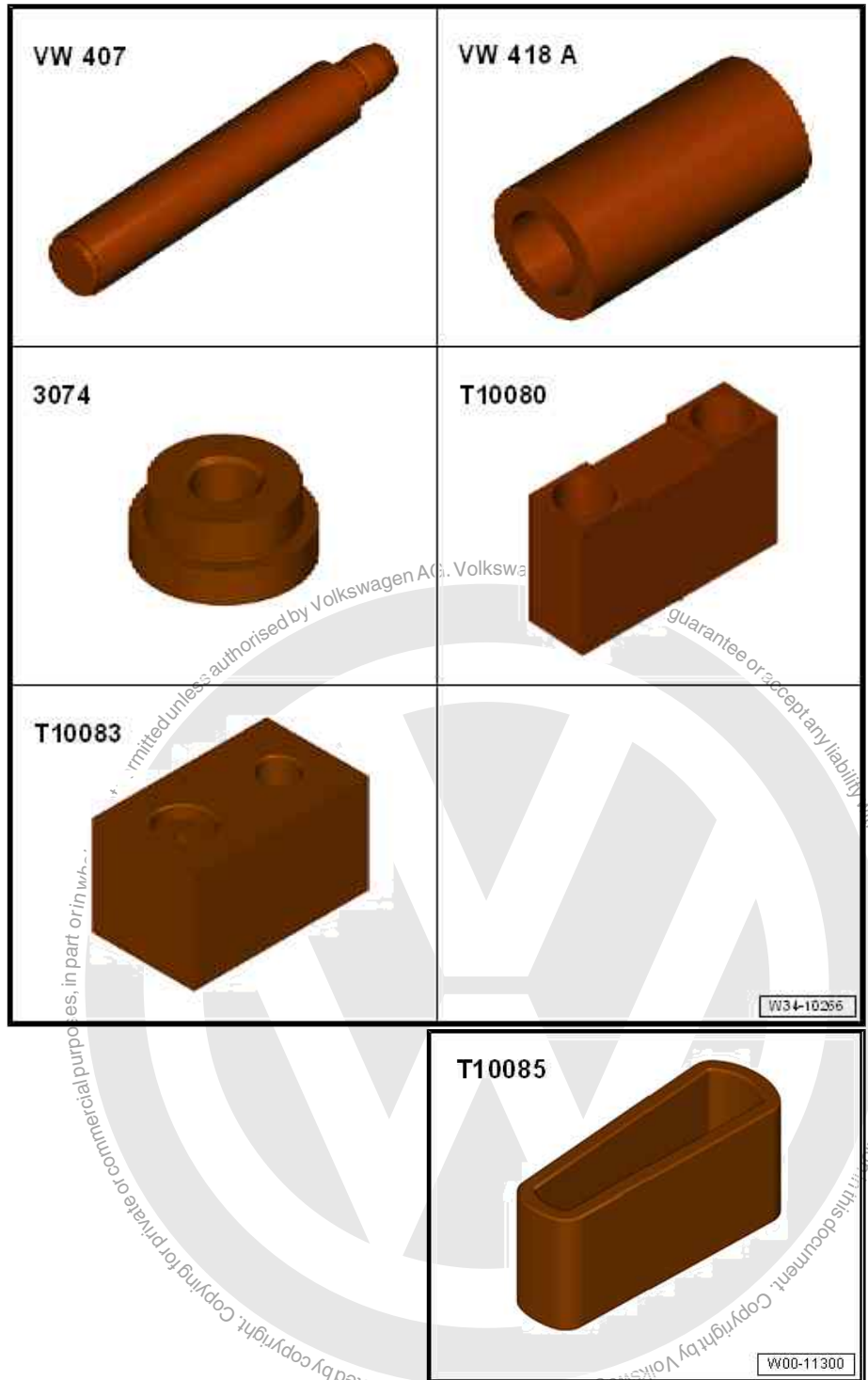




**Special tools and workshop  
equipment required**



- ◆ Support clamp - VW 313-
- ◆ Thrust plate - VW 401-
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 412-
- ◆ Gearbox support - 3221A-
- ◆ or gearbox support - 3221- (modifying ⇒ [page 119](#) )
- ◆ Guide pin - T10079-



- ◆ Not required: tube - VW 418 A-
- ◆ Press tool - VW 407-
- ◆ Thrust plate - 3074-
- ◆ Thrust piece - T10080-
- ◆ Thrust block - T10083-
- ◆ Shim - T10083/1-
- ◆ Drip tray - V.A.G 1306-



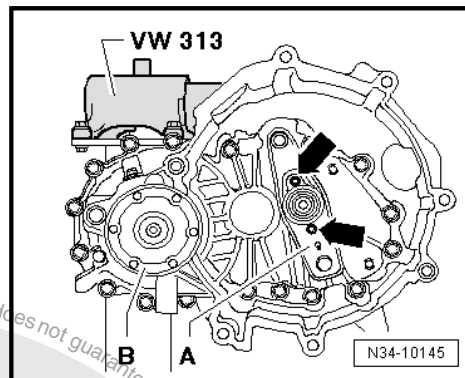
- ◆ or drip tray for workshop hoist - VAS 6208-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Thrust piece - T10085-
- ◆ Sealant
- ◆ Allocation ⇒ Electronic parts catalogue (ETKA)

### Dismantling gearbox

- Secure gearbox to engine and gearbox support ⇒ [page 118](#) .
- Remove clutch release lever -A- together with release bearing and guide sleeve -arrows-.

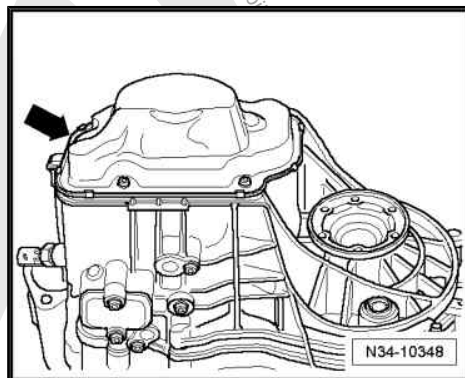
### Manual gearbox 02T

- Place drip tray underneath.
- Drain gear oil.
- Remove right flange shaft securing bolt -B-
- Screw 2 bolts into flange and counter hold flange shaft using a lever.
- Remove flange shaft along with spring, thrust washer and tapered ring.

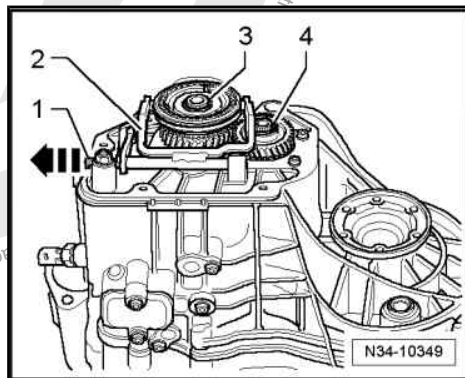


### Continuation for all

- Remove gearbox housing cover -arrow-.



- Pull out pivot pin -1- for 5th gear -2- and remove selector fork.
- Remove securing clip -3- for 5th gear synchro-hub.
- Remove retaining ring -4- for 5th gear wheel.
- Remove 5th gear synchro-hub and 5th gear wheel.







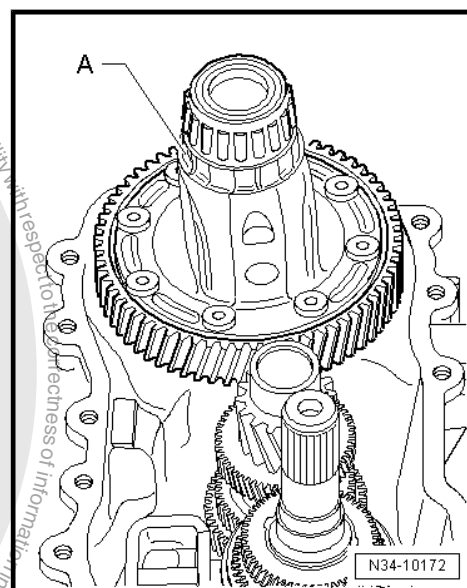
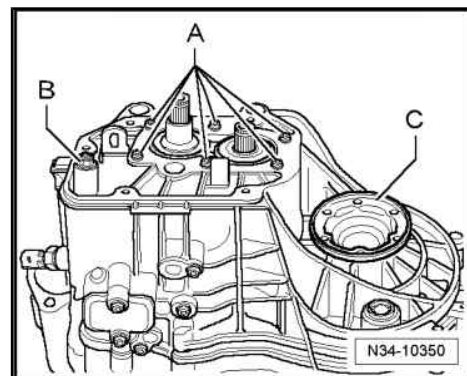
- Remove bearing mounting securing bolts -A- from input and output shafts.
- Unscrew hexagon collared nut -B- for securing reverse gear selector mechanism.

### Manual gearbox 02T

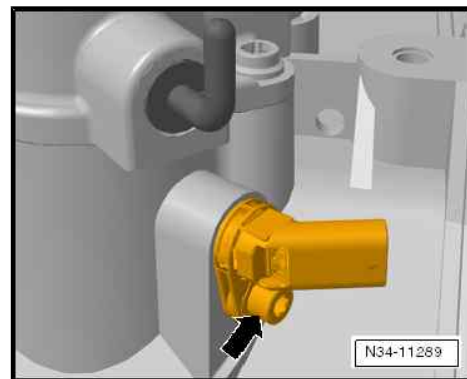
- Unscrew securing bolt for flange shaft -C- by screwing two bolts into flange and counter-holding flange shaft with a lever.
- Pull out flange shaft -C- with spring.

### Continuation for all

- 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 clutch housing in order to prevent damage to roller bearings and their bearing seats on the input and output shafts.
- Remove differential -A- from gearbox housing.



- If fitted on gearbox, remove gearbox neutral position sender -G701- -arrow-.

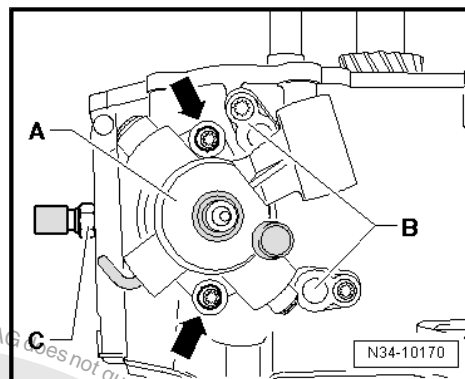




- Remove selector shaft with selector cover -A-. Place selector shaft in neutral. Then remove bolts -arrows- and pull selector shaft out of gearbox housing.
- Remove pivot pins -B- located on underside of gearbox.

#### Gearbox for Polo

- Screw out reversing light switch - F4- -C-.



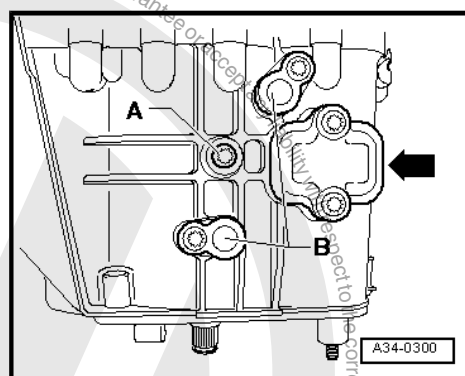
#### Continuation for all

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



#### Note

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

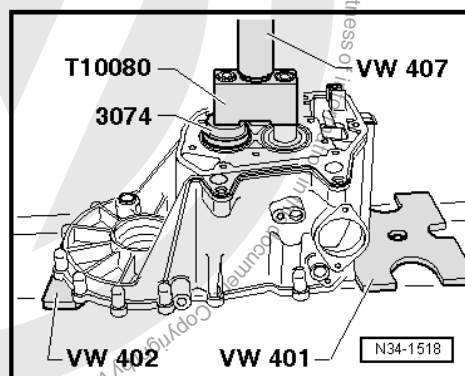


- Press out input shaft, output shaft with bearing mounting, selector mechanism (selector forks) and reverse gear together.



#### 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 shaft and output shaft off bearing mounting with deep groove ball bearing ➔ [page 171](#) .



#### Assembling gearbox



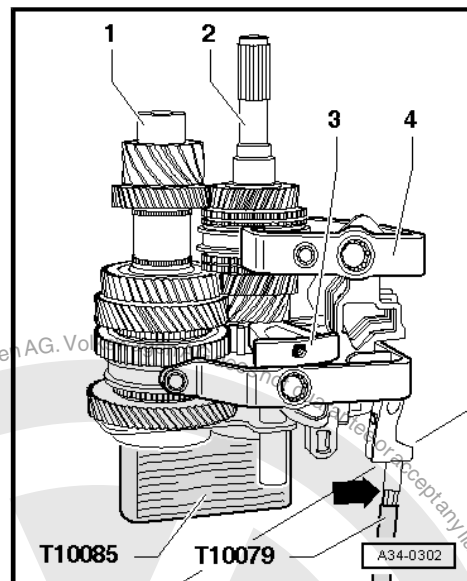
#### Note

- ◆ Press bearing mounting with deep groove ball bearing onto input shaft and output shaft ➔ [page 175](#) .
- ◆ Press needle roller bearing sleeve for synchromeshed gear for 5th gear onto input shaft ➔ [page 175](#) .



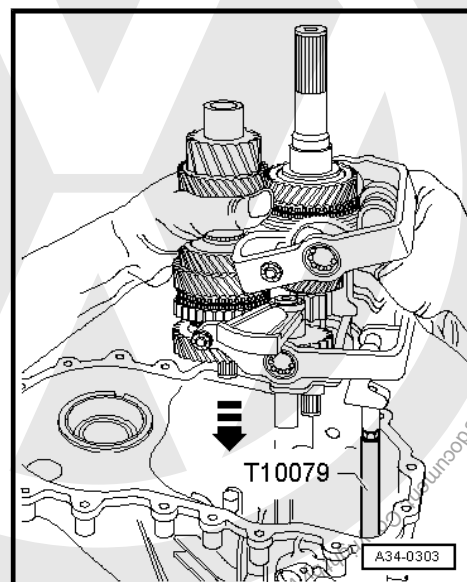
- Position assembled components, input shaft -2- and output shaft -1- with bearing mounting for deep groove ball bearing, in thrust piece - T10085- .
- Insert selector mechanism (selector forks) -4- in the shaft locking collars.
- Install reverse gear shaft -3- with reverse gear.

**Installation position of reverse gear wheel: smooth side points downwards, shoulder and »bevelled teeth« point to clutch end.**



- Screw guide pin - T10079- onto stud (secures reverse gear) -arrow-.
- Insert components together in gearbox housing. To do this, guide guide pin - T10079- through hole for attachment of selector mechanism in gearbox housing.
- Remove guide pin - T10079- .

**Note the following before pressing in:**

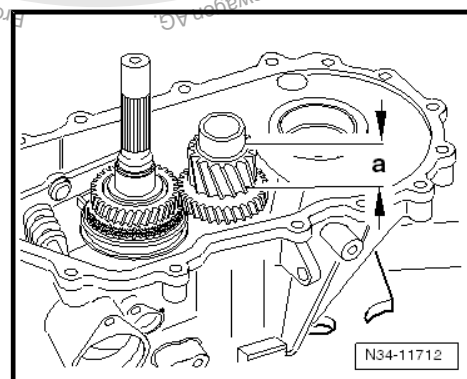


- ◆ Selector forks engage correctly in locking collars.
- ◆ Check dimension -a- for output shaft teeth.



#### Note

- ◆ Due to different spline heights, dimension -a-, output shafts of individual gearboxes have different lengths.
- ◆ A shim - T10083/1- (3 mm thick) may have to be fitted on the input shaft to ensure that the input shaft and the output shaft are always pressed in evenly.
- ◆ This is the reason why dimension -a- for output shaft teeth must be measured.

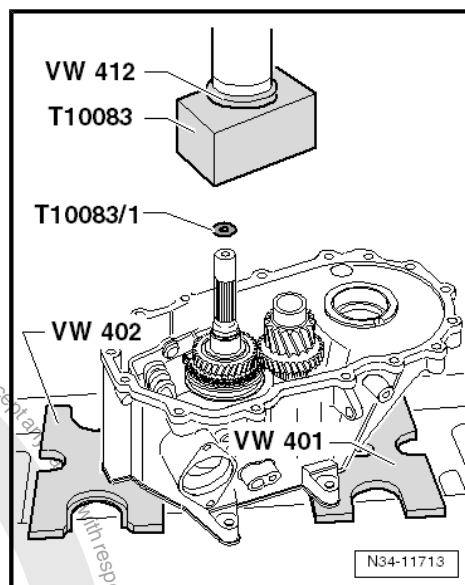


**Dimension -a- = 30.6 mm**

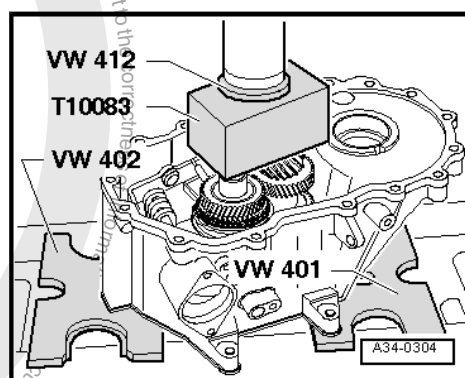
Fit washer - T10083/1- onto input shaft ➔ next figure.



Place shim - T10083/1- onto input shaft and carefully press in bearing mounting together with input shaft and output shaft to stop



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

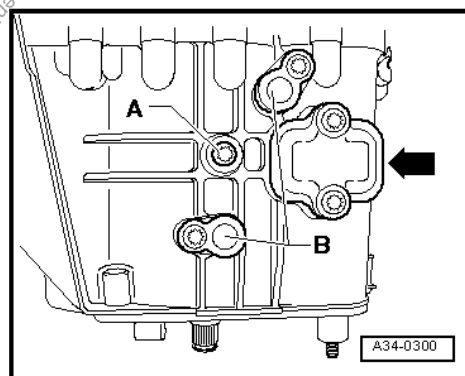


- Install bolt -A- for securing reverse gear wheel shaft.
- Install pivot pin -B- in bottom of gearbox.



#### Note

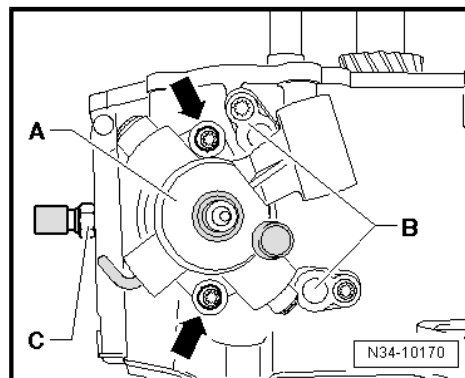
Cap -arrow- is fitted.



- Install pivot pin -B- in top of gearbox.
- To do this, move selector shaft to neutral position.
- Apply sealant evenly to sealing surface of selector mechanism cover.
- Install selector unit -A-. Then tighten bolts -arrows-.

#### Gearbox for Polo

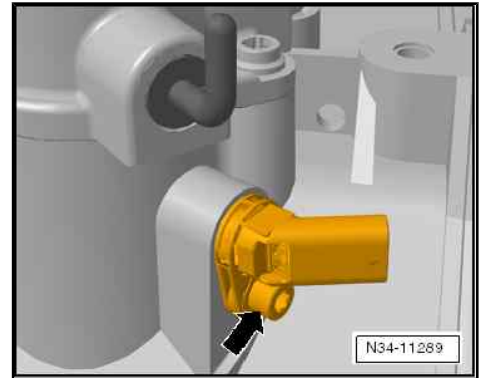
- Screw in reversing light switch - F4- -C-.





## Continuation for all

- If removed, insert gearbox neutral position sender - G701-  
-arrow- and tighten securing bolt to specified torque  
⇒ [page 130](#) .



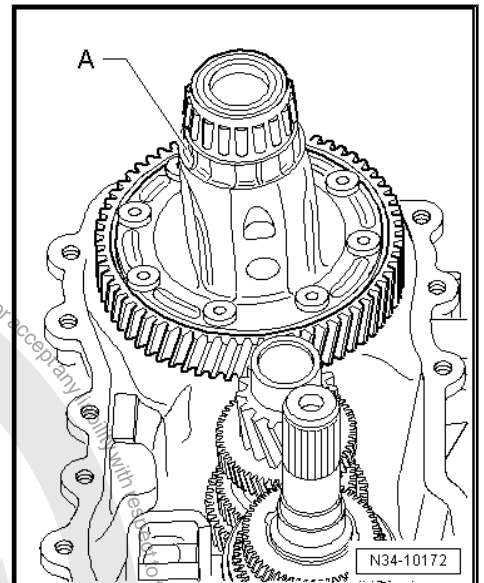
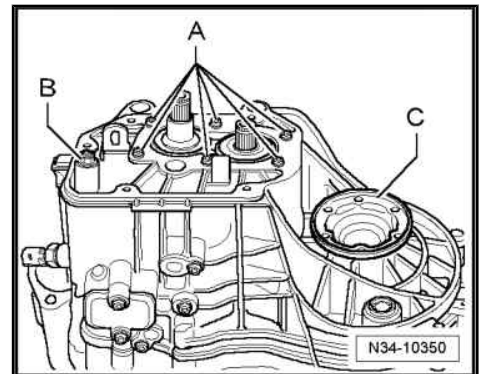
- Using new bolts -A-, tighten bearing mounting for input and output shafts.



### Note

*Tighten bolts to specified torque ⇒ [Item 6 \(page 130\)](#) , working from centre outwards using alternate sequence.*

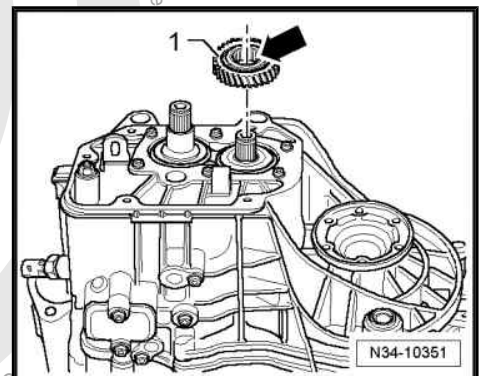
- Tighten hexagon flange nut -B- for securing selector mechanism (selector forks).
- Install differential -A-.
- Apply sealant evenly to sealing surface.
- Secure clutch housing to gearbox housing.
- Turn gearbox in support bracket so that gearbox housing is upwards.



## Installation position of gear wheel for 5th gear -1-:

The high shoulder -arrow- faces gearbox housing cover.

- Install gear wheel for 5th gear -1-.
- Install 5th gear synchromeshed gear with needle bearing.
- Place 5th gear synchro-ring on synchromeshed gear.
- Install 5th gear synchro-hub complete with locking collar and stop ring.
- Insert 5th gear selector fork -2- and push in pivot pin -1- to stop in direction of -arrow-.







### Determine new retaining ring -arrow-.

- Determine thickest possible retaining rings which will still fit for input shaft -3- and output shaft -4- and install them.

Available retaining rings ➔ Electronic Parts Catalogue (ETKA)

Thickness (mm)	
2.00	2.10
2.20	

- Install gearbox housing cover.

### Manual gearbox 02T

- Install both flange shafts with springs, thrust washers and tapered rings.

### Continuation for all

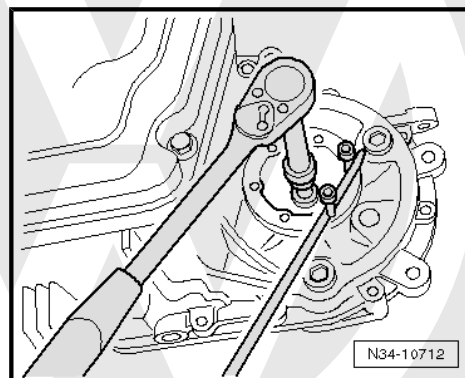
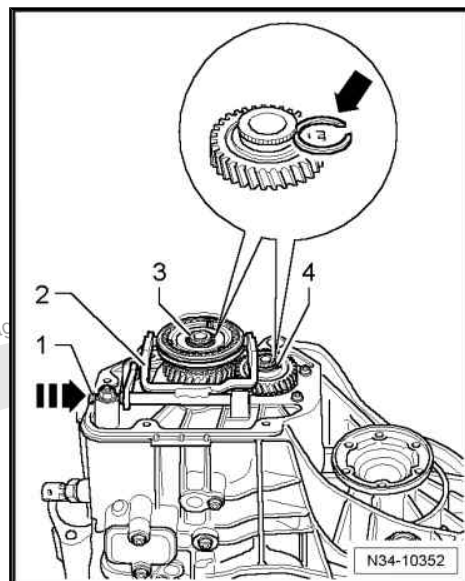
- Install clutch release lever together with release bearing and guide sleeve ➔ [page 51](#) .

### Specified torques

- ◆ ➔ ["7.5 Assembly overview - shafts, differential, selector mechanism", page 130](#)
- ◆ Gearbox housing to clutch housing  
➔ ["7.4 Assembly overview - clutch housing", page 128](#) .
- ◆ Gearbox housing cover  
➔ ["7.3 Assembly overview - cover for gearbox housing and 5th gear", page 127](#) .

### Manual gearbox 02T

- ◆ Flange shaft to gearbox (countersunk bolt)  
➔ ["2.1 Assembly overview - differential", page 196](#)





## 8 Gearbox housing, clutch housing

⇒ ["8.1 Assembly overview - gearbox housing and clutch housing", page 159](#)

⇒ ["8.2 Repairing clutch housing", page 163](#)

### 8.1 Assembly overview - gearbox housing and clutch housing

⇒ ["8.1.1 Assembly overview - gearbox housing and clutch housing, manual gearbox 02T", page 159](#)

⇒ ["8.1.2 Assembly overview - gearbox housing and clutch housing, manual gearbox 0DF", page 161](#)

#### 8.1.1 Assembly overview - gearbox housing and clutch housing, manual gearbox 02T

##### 1 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ Fig. [⇒ page 147](#)
- ☐ Driving in ⇒ [page 147](#)

##### 2 - Dowel sleeve

##### 3 - Solenoid

- ☐ Held in place by housing joint surface

##### 4 - Cap

- ☐ Apply sealant before bolting on.
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

##### 5 - Retaining ring

- ☐ Insert in groove of cylindrical roller bearing

##### 6 - Retaining ring

- ☐ Insert in groove of cylindrical roller bearing

##### 7 - Cylindrical roller bearing

- ☐ For input shaft
- ☐ Pulling out and pressing in ⇒ [page 165](#)

##### 8 - Cylindrical roller bearing

- ☐ For output shaft
- ☐ Pulling out and pressing in ⇒ [page 178](#)

##### 9 - Clutch housing

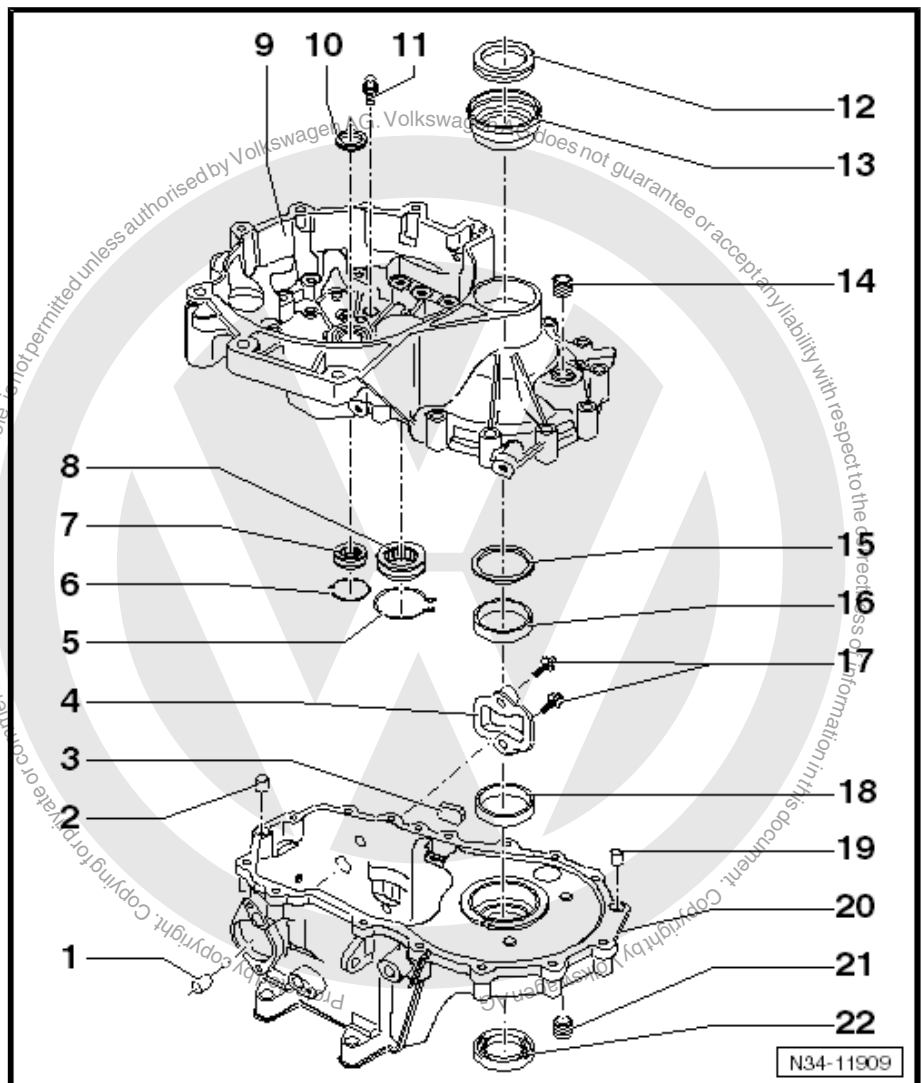
- ☐ If renewed, adjust differential ⇒ [page 206](#)

##### 10 - Input shaft seal

- ☐ Renew after removal ⇒ [page 176](#)

##### 11 - Ball-head pin

- ☐ Removing and installing ⇒ [page 24](#)



N34-11909



## 12 - Oil seal for right flange shaft

- ☐ Renew after removal ⇒ [page 191](#)

## 13 - Sleeve

- ☐ For oil seal.
- ☐ Renew after removal
- ☐ Removing and installing ⇒ [page 163](#)

## 14 - Hydraulic fluid filler plug

- ☐ Specified torque ⇒ [page 116](#)

## 15 - Shim

- ☐ For differential
- ☐ Determining thickness ⇒ [page 206](#)

## 16 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing out of and into clutch housing ⇒ [page 196](#)
- ☐ If renewed, adjust differential ⇒ [page 206](#)

## 17 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

## 18 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pulling out of and pressing into clutch housing ⇒ [page 196](#)
- ☐ If renewed, adjust differential ⇒ [page 206](#)

## 19 - Dowel sleeve

## 20 - Gearbox housing

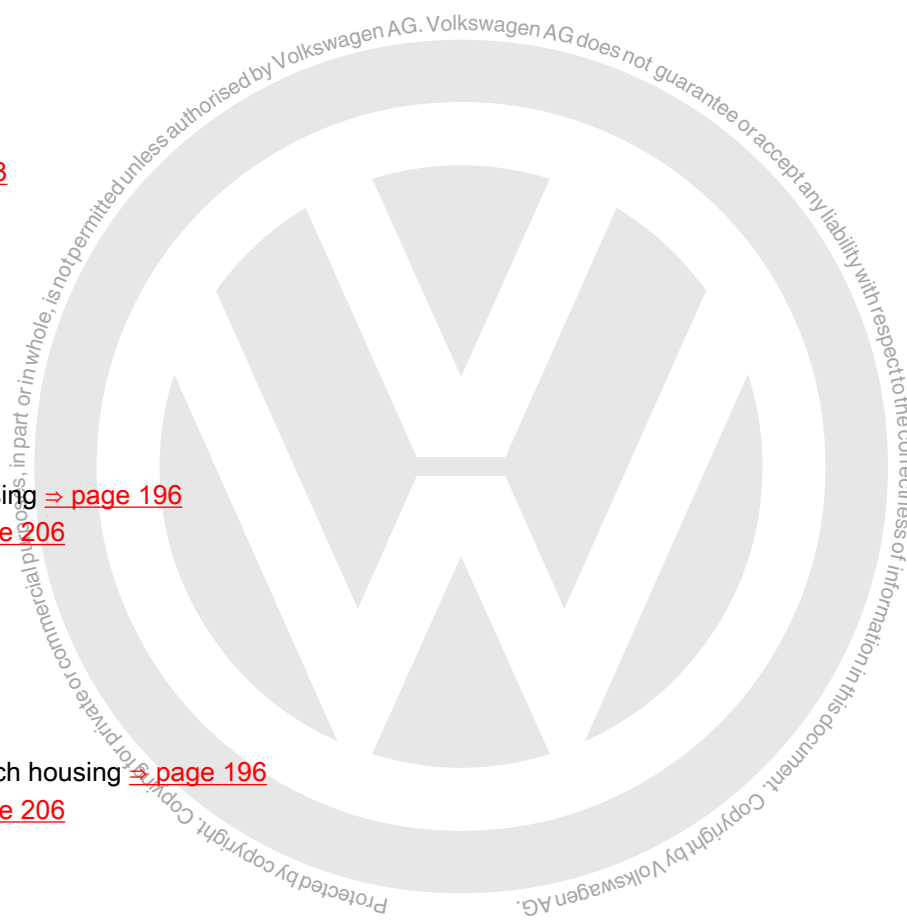
- ☐ If renewed, adjust differential ⇒ [page 206](#)

## 21 - Oil drain plug

- ☐ Specified torque ⇒ [page 116](#)

## 22 - Oil seal for left flange shaft

- ☐ Renew after removal ⇒ [page 187](#)





## 8.1.2 Assembly overview - gearbox housing and clutch housing, manual gearbox 0DF

### 1 - Clutch housing

- ☐ If renewed, adjust differential ⇒ [page 206](#)

### 2 - Input shaft seal

- ☐ Renew after removal  
⇒ [page 176](#)

### 3 - Ball-head pin

- ☐ Removing and installing  
⇒ [page 24](#)

### 4 - Seal for right drive shaft

- ☐ Renew after removal  
⇒ [page 193](#)

### 5 - Hydraulic fluid filler plug

- ☐ Specified torque  
⇒ [page 116](#)

### 6 - Seal

### 7 - Plug

### 8 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

### 9 - Baffle plate

- ☐ Installation position:  
⇒ [page 198](#)

### 10 - Shim

- ☐ For differential
- ☐ Determining thickness  
⇒ [page 206](#)

### 11 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing out of and into clutch housing ⇒ [page 196](#)
- ☐ If renewed, adjust differential ⇒ [page 206](#)

### 12 - Bolt

- ☐ Renew after removal
- ☐ 5 Nm and turn 90° further

### 13 - Tapered roller bearing outer race

- ☐ For differential
- ☐ Pressing out of and into clutch housing ⇒ [page 196](#)
- ☐ If renewed, adjust differential ⇒ [page 206](#)

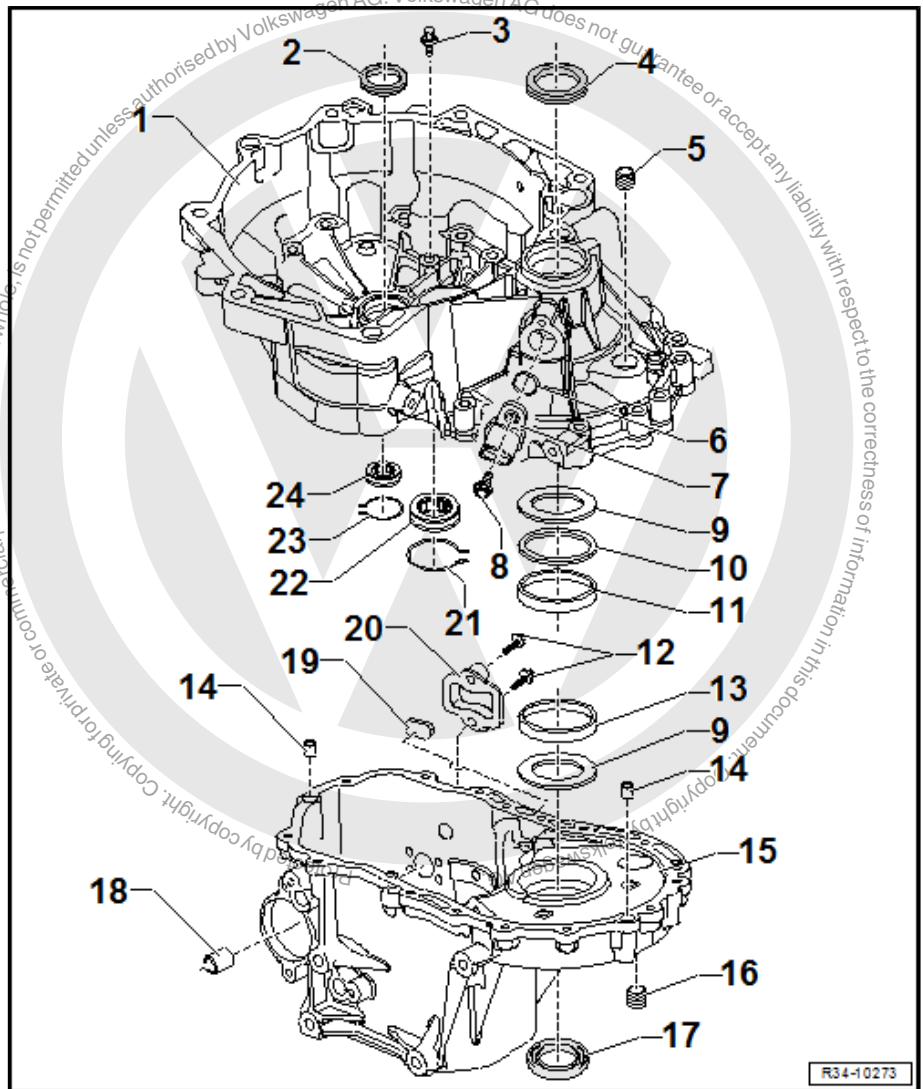
### 14 - Dowel sleeve

### 15 - Gearbox housing

- ☐ If renewed, adjust differential ⇒ [page 206](#)

### 16 - Oil drain plug

- ☐ Specified torque ⇒ [page 116](#)





#### 17 - Left drive shaft seal

- ☐ Renew after removal ⇒ [page 189](#)

#### 18 - Sleeve

- ☐ For selector shaft
- ☐ Driving out ⇒ Fig. ⇒ [page 147](#)
- ☐ Driving in ⇒ [page 147](#)

#### 19 - Solenoid

- ☒ Held in place by housing joint surface

#### 20 - Cap

- ☐ Apply sealant before bolting on.
- ☐ Allocation ⇒ Electronic parts catalogue (ETKA)

#### 21 - Retaining ring

- ☐ Insert in groove of cylindrical roller bearing

#### 22 - Cylindrical roller bearing

- ☐ For output shaft
- ☐ Pulling out and pressing in ⇒ [page 178](#)

#### 23 - Retaining ring

- ☐ Insert in groove of cylindrical roller bearing

#### 24 - Cylindrical roller bearing

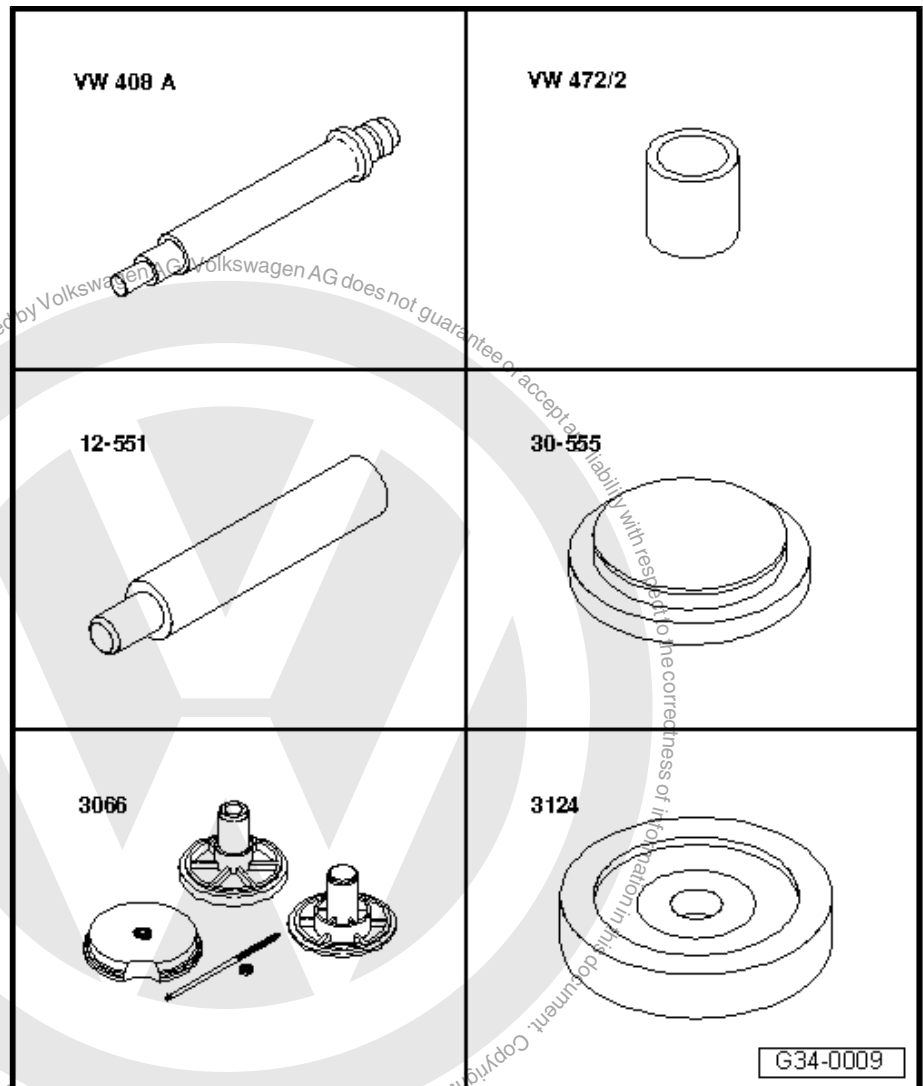
- ☐ For input shaft
- ☐ Pulling out and pressing in ⇒ [page 165](#)





## 8.2 Repairing clutch housing

Special tools and workshop equipment required



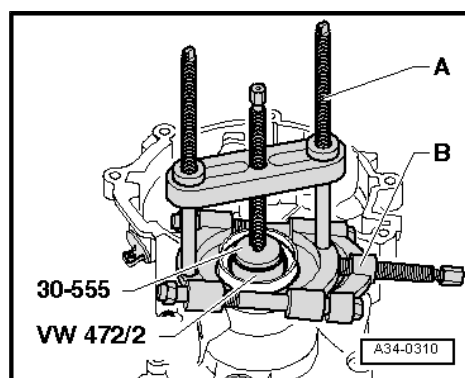
- ◆ Spacer sleeve - VW 472/2-
- ◆ Thrust piece - 30 - 555-
- ◆ Thrust piece - 3124-
- ◆ Spindle from assembly tool - 3066-
- ◆ Tools shown in illustration but not mentioned in text are not required.



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



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



#### Pulling out sleeve for seal

- Fit spacer sleeve - VW 472/2- and press tool - 30 - 555- onto differential.

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

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

#### Pulling in sleeve for seal

A - Screw spindle from assembly device - 3066- into threaded piece of differential.

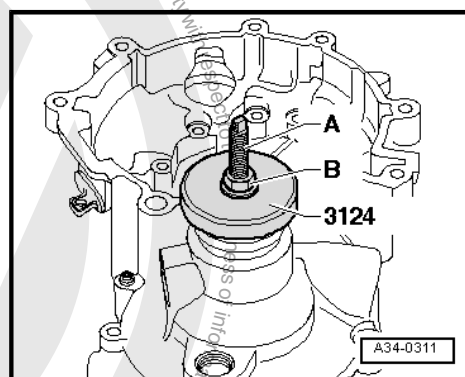
B - M12 nut with washer

- Pull in sleeve to stop using thrust piece - 3124- by turning nut -B-.



#### Note

*With gearbox dismantled, press sleeve in to stop using thrust piece - 3124- .*





## 35 – Gears, shafts

### 1 Input shaft

⇒ [“1.1 Assembly overview - input shaft”, page 165](#)

⇒ [“1.2 Dismantling and assembling input shaft”, page 167](#)

⇒ [“1.3 Renewing input shaft seal”, page 176](#)

#### 1.1 Assembly overview - input shaft



#### Note

- ◆ When installing new gears or new input shaft, refer to ⇒ *Electronic parts catalogue (ETKA) and technical data.*
- ◆ 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 - Retaining ring

- ☐ Renew after removal
- ☐ Determining thickness  
⇒ [page 174](#)

#### 2 - 5th gear locking collar with synchro-hub

- ☐ Removing and installing  
⇒ [page 149](#)
- ☐ Dismantling  
⇒ [page 175](#)
- ☐ Assembling 5th gear locking collar and synchro-hub ⇒ [page 176](#)
- ☐ Fitting position  
⇒ [page 175](#)

#### 3 - Synchro-ring for 5th gear

- ☐ Check for wear  
⇒ [page 172](#)

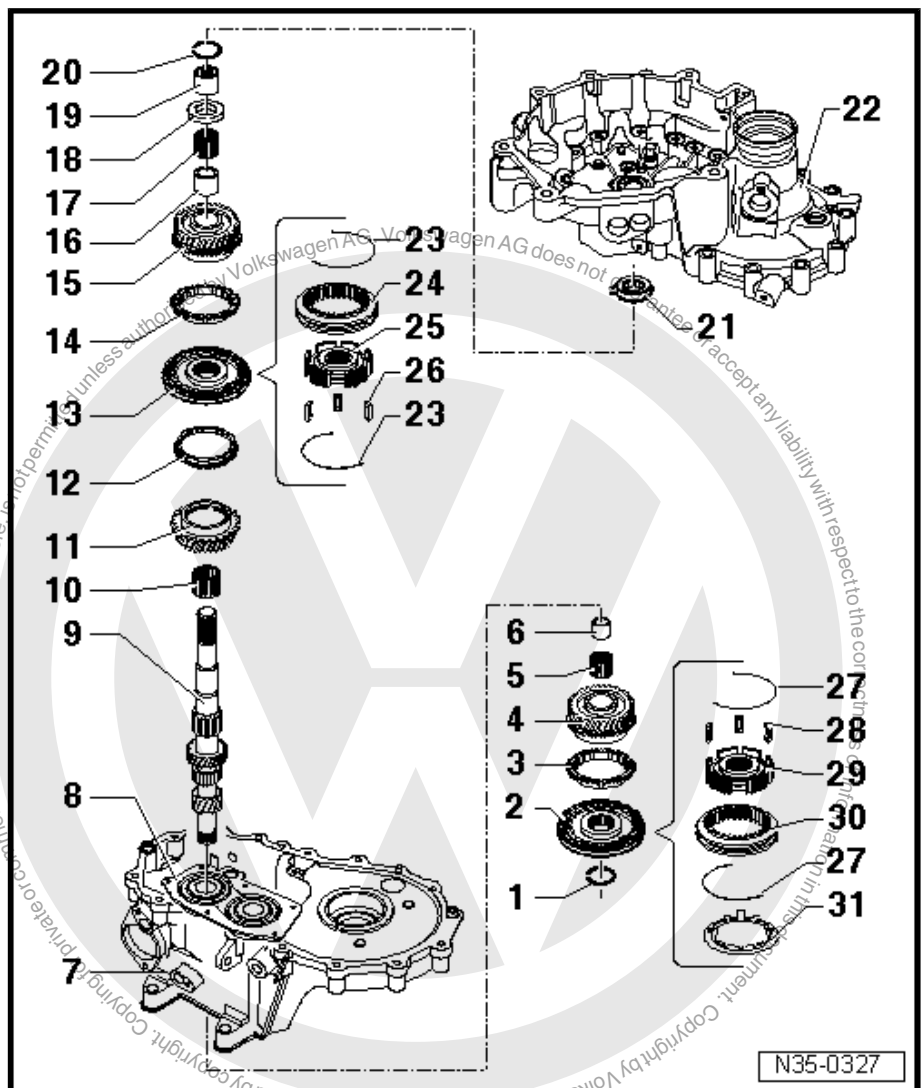
#### 4 - Synchromeshed gear, 5th gear

#### 5 - Needle bearing

- ☐ For 5th gear
- ☐ Renew together with sleeve

#### 6 - Sleeve

- ☐ For 5th gear needle bearing
- ☐ Renew together with needle bearing
- ☐ Press off with bearing support and deep groove ball bearing  
⇒ [page 171](#)
- ☐ Pressing on ⇒ [page 175](#)





## 7 - Gearbox housing

## 8 - Bearing mounting with deep groove ball bearing

- ☐ Renew deep groove ball bearing only together with bearing support
- ☐ If bearing support is separated from gearbox housing, the support must always be renewed
- ☐ Pressing off ⇒ [page 171](#)
- ☐ Pressing on, from ⇒ [page 174](#)

## 9 - Input shaft

## 10 - Needle bearing

- ☐ For 3rd gear

## 11 - Synchromeshed gear for 3rd gear

## 12 - Synchro-ring for 3rd gear

- ☐ Check for wear ⇒ [page 172](#)

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

- ☐ Press off with 3rd gear synchromeshed gear ⇒ [page 171](#)
- ☐ Dismantling ⇒ [page 172](#)
- ☐ Installation position, locking collar and synchro-hub ⇒ [page 172](#)
- ☐ Assembling ⇒ [page 172](#) .
- ☐ Pressing on ⇒ [page 173](#)

## 14 - Synchro-ring for 4th gear

- ☐ Check for wear ⇒ [page 172](#)

## 15 - Synchromeshed gear for 4th gear

## 16 - Sleeve

- ☐ For 4th gear needle bearing
- ☐ Renew together with needle bearing
- ☐ Pressing off ⇒ [page 171](#)
- ☐ Pressing on ⇒ [page 173](#)

## 17 - Needle bearing

- ☐ For 4th gear
- ☐ Renew together with sleeve

## 18 - Thrust washer

## 19 - Cylindrical roller bearing inner race

- ☐ Pressing off ⇒ [page 171](#)
- ☐ Pulling off is also possible ⇒ [page 171](#)
- ☐ Pressing on ⇒ [page 173](#)

## 20 - Retaining ring

- ☐ Renew
- ☐ Determining thickness ⇒ [page 174](#)

## 21 - Cylindrical roller bearing

- ☐ With retaining ring
- ☐ Removing ⇒ [page 170](#)
- ☐ Pressing in ⇒ [page 171](#) .
- ☐ Installation position: retaining ring in bearing faces input shaft

## 22 - Clutch housing

## 23 - Spring

- ☐ Fitting position ⇒ [page 172](#)





24 - 3rd and 4th gear locking collar

25 - 3rd and 4th gear synchro-hub

26 - Locking pieces (qty. 3)

27 - Spring

- ☐ Fitting position ⇒ [page 176](#)

28 - Locking pieces (Qty. 3)

29 - Synchro-hub for 5th gear

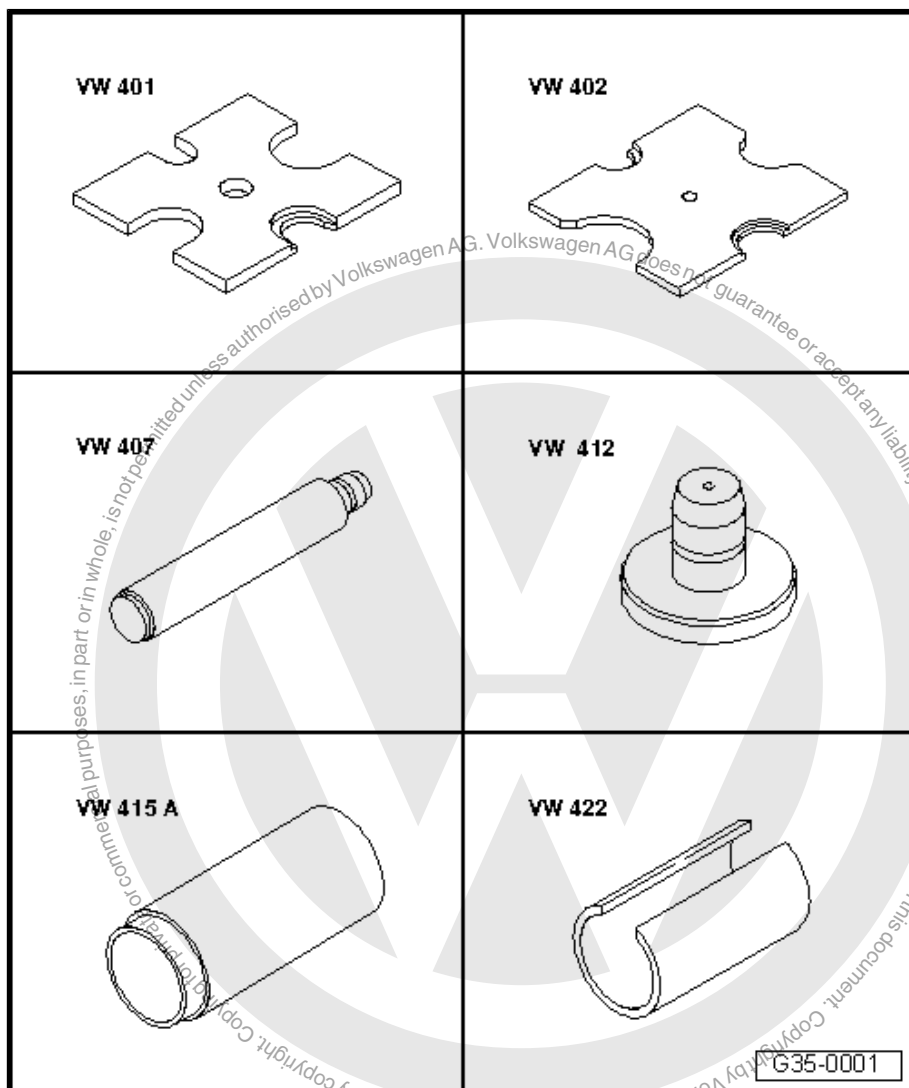
30 - Locking collar for 5th gear

31 - Stop ring

- ☐ Prevents locking pieces from drifting out
- ☐ Remove ⇒ [page 175](#)
- ☐ Installing ⇒ [page 176](#)

## 1.2 Dismantling and assembling input shaft

Special tools and workshop equipment required

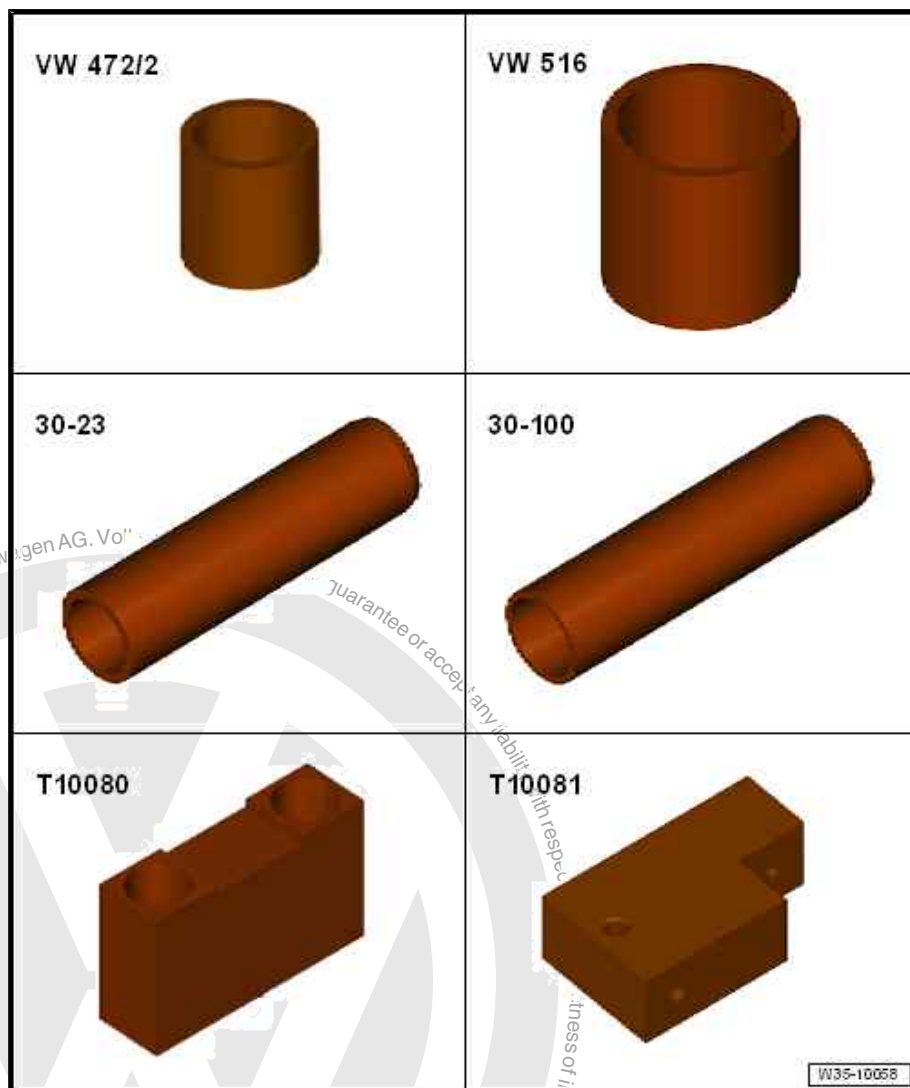


◆ Thrust plate - VW 401-

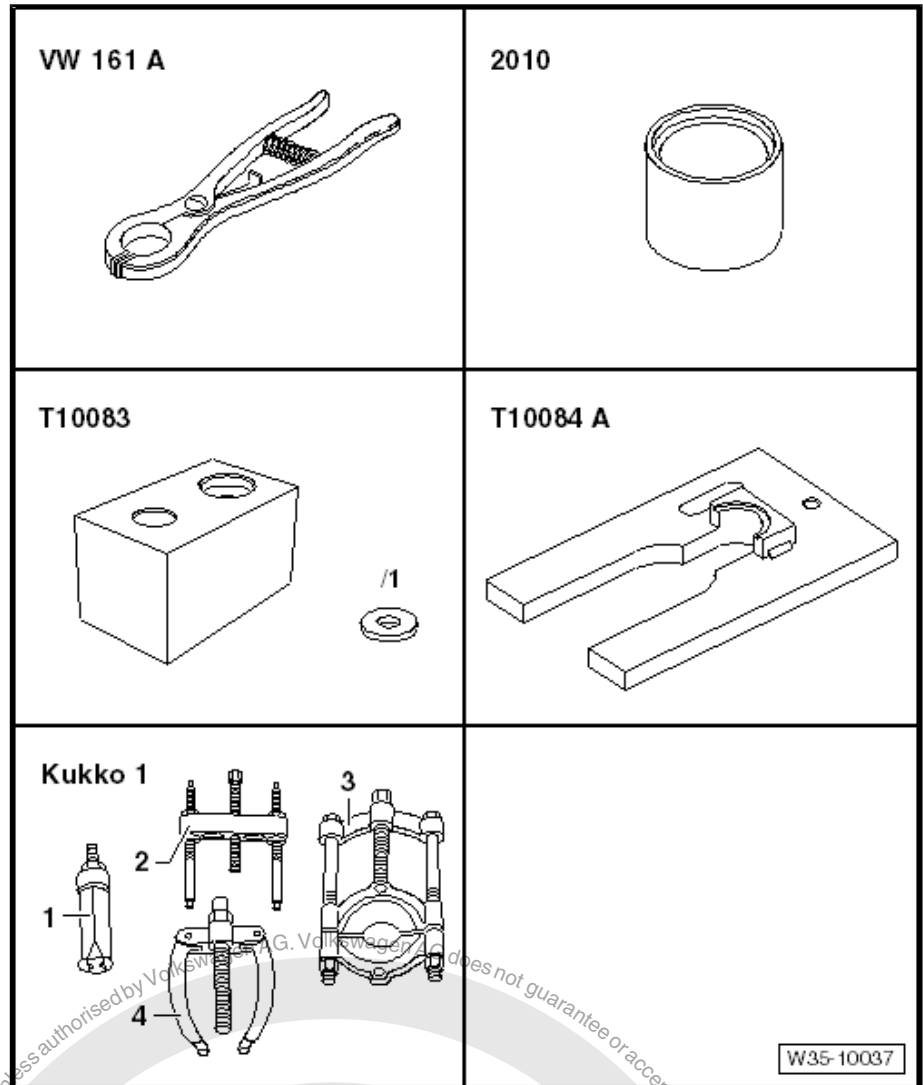




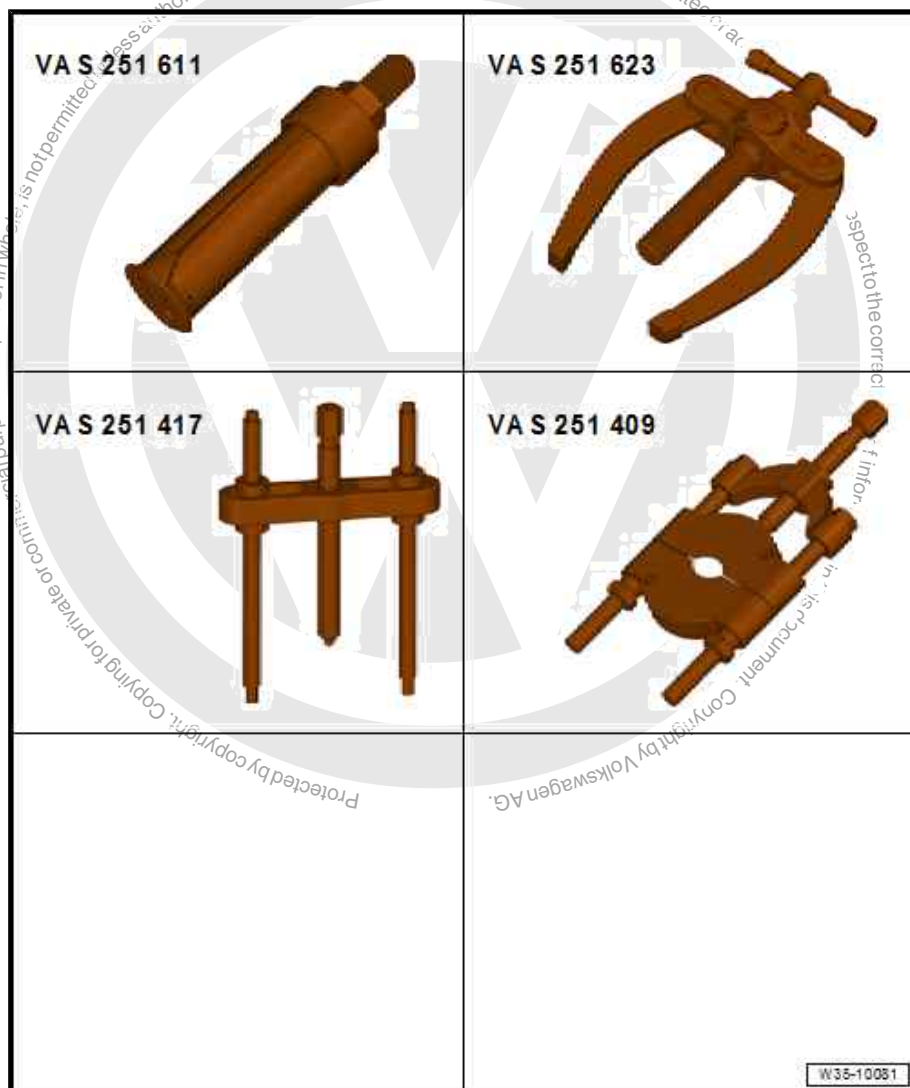
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-
- ◆ Tube - VW 415 A-
- ◆ Tube - VW 422-



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



- ◆ Circlip pliers - VW 161 A-
- ◆ Tube - 2010-
- ◆ Thrust block - T10083-
- ◆ Washer - T10083/1-
- ◆ Thrust plate - T10084A-
- ◆ -Feeler gauge-
- ◆ Not applicable: -Kukko1-



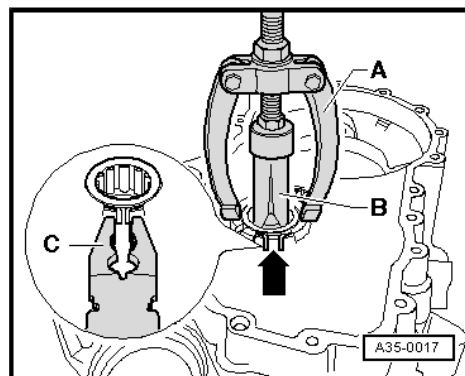
- ◆ Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-
- ◆ Counter support - VAS 251 623- , or e.g. counter support - Kukko 22/2-
- ◆ Puller - VAS 251 417- , or e.g. puller - Kukko 18/1-
- ◆ Splitter - VAS 251 409- or e.g. splitter - Kukko 17/1-

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

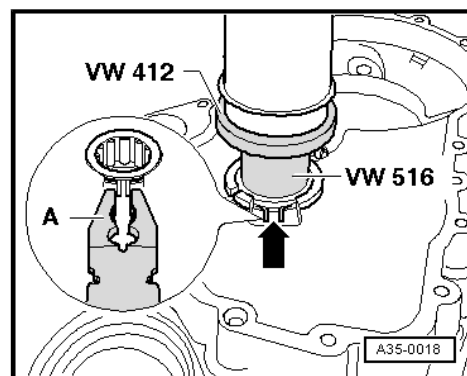
B - Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-





### Pressing cylindrical roller bearing into clutch housing

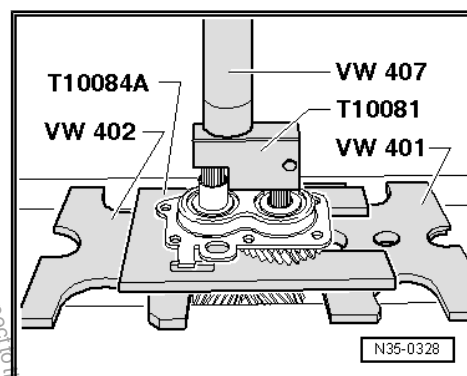
- Support gearbox housing with tube - VW 415 A- (not visible in figure) directly below bearing support.
- When pressing in, squeeze together retaining ring -arrow- for cylindrical roller bearing using pliers -A-.
- Remove pliers before cylindrical roller bearing is in installation position. Retaining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



### Pressing off bearing mounting with deep groove ball bearing

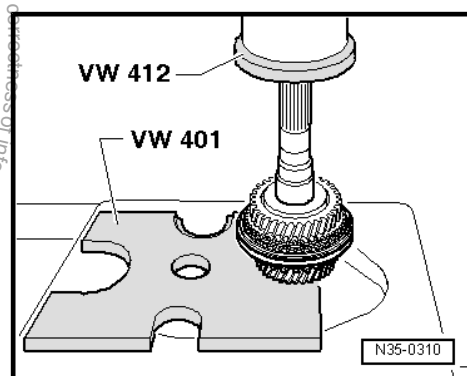
- Slide locking collar for 1st and 2nd gear towards 2nd gear.
- Then slide thrust plate - T10084/A- sideways onto input shaft to stop.

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



**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.**

- First remove retaining ring with snap ring pliers - VW 161 A- .



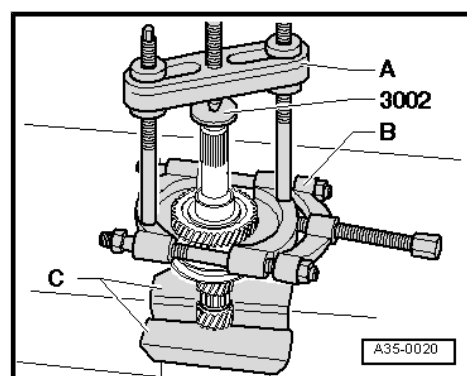
**Inner race for cylindrical roller bearing can also be pulled off together with synchromeshed gear for 4th gear only**

- First remove retaining ring with snap ring pliers - VW 161 A- .
- Position splitter -B- behind teeth of synchromeshed gear for 4th gear which engage in the other gear wheel (not dog teeth) and tension.

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

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

C - Protective jaw covers



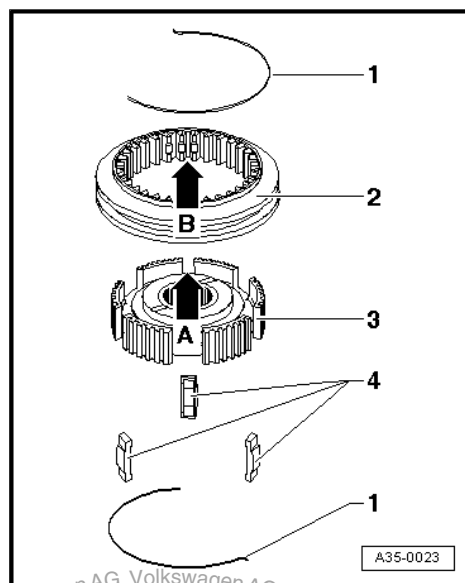


### Dismantling and assembling 3rd and 4th gear locking collar and synchro-hub

- 1 - Spring
- 2 - Sliding sleeve
- 3 - Synchro-hub
- 4 - Locking piece

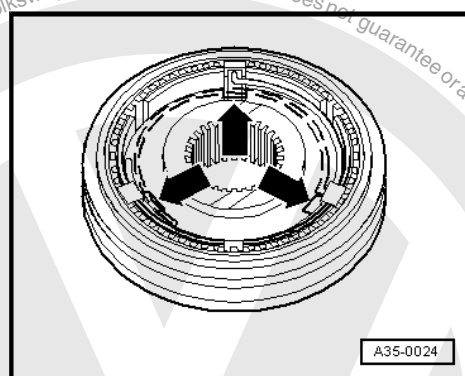
– Slide locking collar over synchro-hub.

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

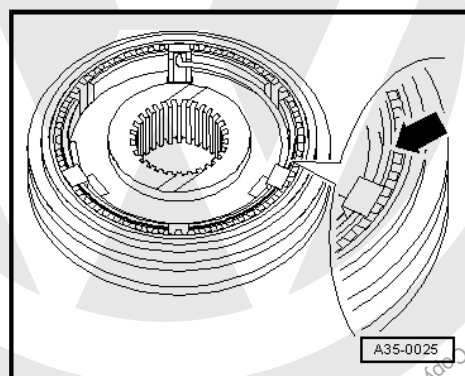
- Locking collar has been pushed over synchro-hub.
- Insert locking pieces in deeper notches -arrows- and install springs offset 120°. Angled end of spring must locate in hollow locking piece.



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

If present, groove on face -arrow- is towards 4th gear.

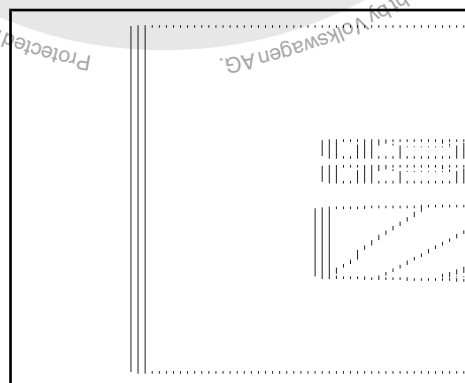
High collar faces 3rd gear.



### Checking synchro-ring for wear

- Press synchro-ring onto cone of synchromeshed gear and measure gap -a- using feeler gauge.
- Measure gap size -a- at 3 points offset by 120° using feeler gauge.
- Make a note of average value.

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

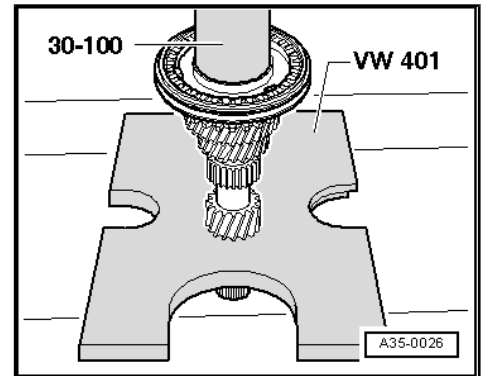






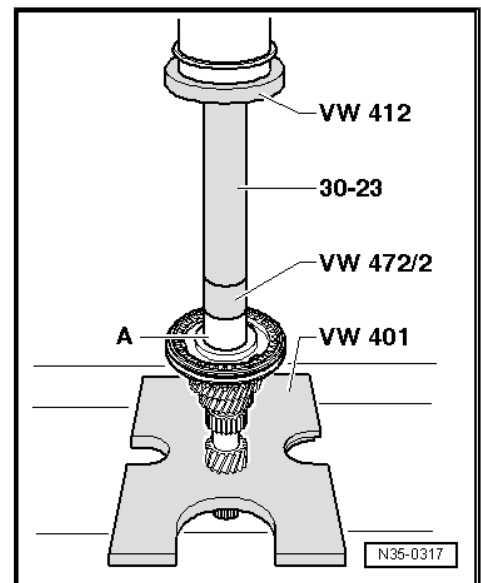
### Pressing on synchro-hub with locking collar for 3rd and 4th gears

If present, groove on face of locking collar faces towards 4th gear.  
High collar of synchro-hub faces 3rd gear.

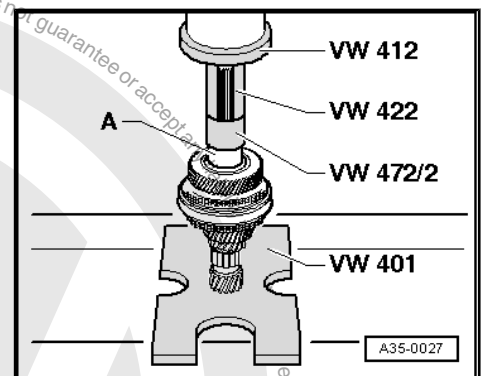


### Pressing on sleeve -A- for 4th gear needle bearing

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



### Pressing on inner race -A- for cylindrical roller bearing



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**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 (only used for measuring purposes).
- Determine retaining ring from table.

**Note**

Allocate retaining rings using ⇒ *Electronic parts catalogue (ET-KA)*.

The following securing clips 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

Press bearing mounting with deep groove ball bearing onto input shaft and output shaft.

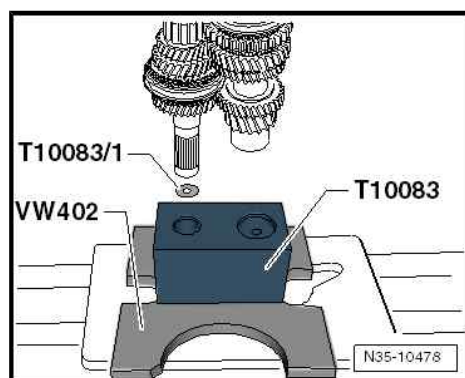
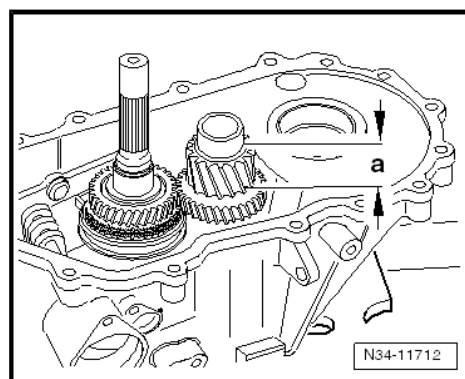
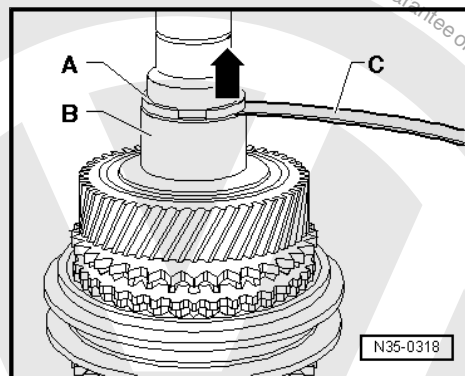
**Note**

- ◆ Due to different spline heights, dimension -a-, output shafts of individual gearboxes have different lengths (shown here with shafts installed).
- ◆ To ensure that bearing support is always evenly pressed onto shafts, it is necessary for shafts always to be inserted evenly into thrust block - T10083-.
- ◆ If necessary, insert a shim - T10083/1- (3 mm thick) into mounting hole for input shaft ⇒ [page 174](#).
- ◆ This is the reason why dimension -a- for output shaft teeth must be measured.

**Dimension -a- = 30.6 mm**

Insert shim - T10083/1- ⇒ next figure.

Fit shim - T10083/1- .





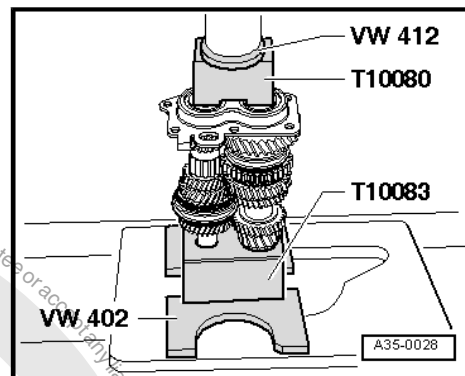
### Pressing on bearing support

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

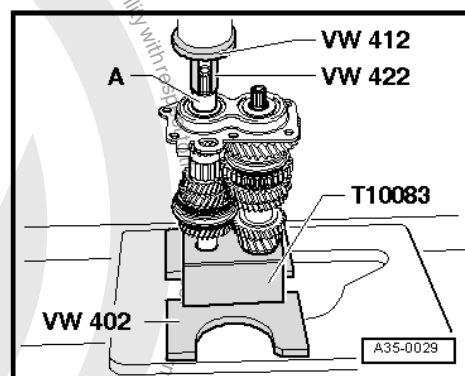


#### WARNING

*Wear protective gloves.*

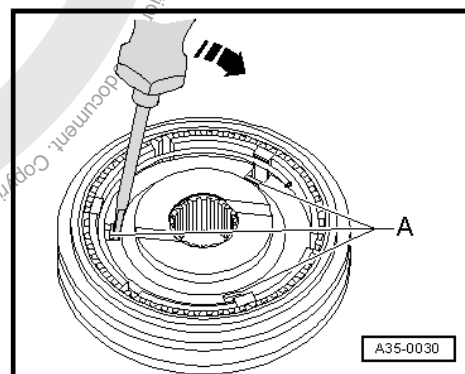


### Pressing on sleeve -A- for 5th gear needle bearing



### Removing stop ring

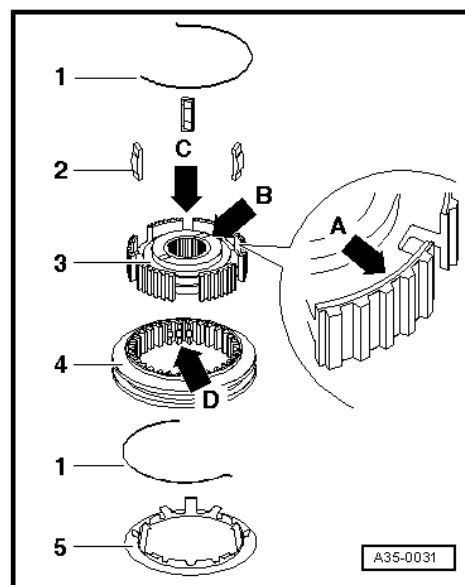
- Using a screwdriver, unclip hooks -A- of check ring from synchro-hub.



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

- 1 - Spring
  - 2 - Locking piece
  - 3 - Synchro-hub installation position: groove on face -arrow A- and wide shoulder -arrow B- must face 5th gear.
  - 4 - Sliding sleeve
  - 5 - Stop ring
- Slide locking collar over synchro-hub.

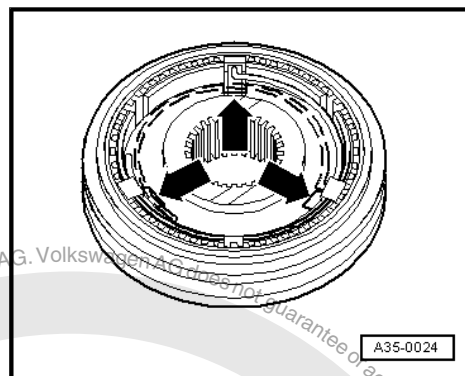
Deeper notches -arrow C- for locking pieces in synchro-hub and notches -arrow D- in locking collar must align.





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

- 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.

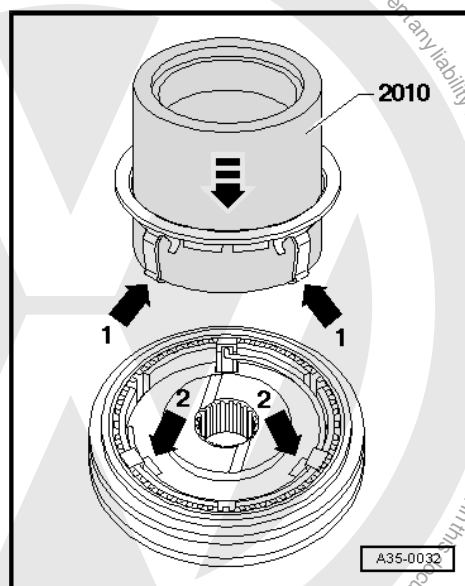


### Installing stop ring

- Press on stop ring using tube - 2010- .
- Insert stop ring together with tube - 2010- into 5th gear synchro-hub/locking collar (observe installation position ⇒ [page 175](#) ).

The hooks -arrow 1- lock in the recess -arrow 2- of the synchro-hub locking pieces.

- Press stop ring downwards until hooks engage.



## 1.3 Renewing input shaft seal

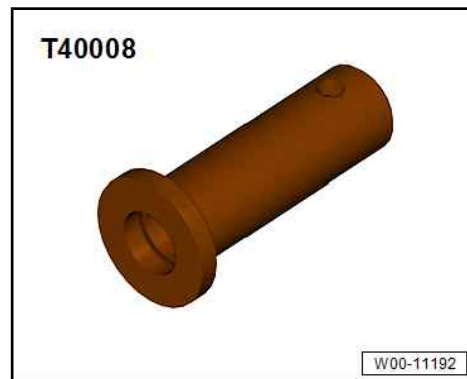
### Special tools and workshop equipment required

- ◆ Removal tool - T20143/1-





◆ Thrust piece - T40008-



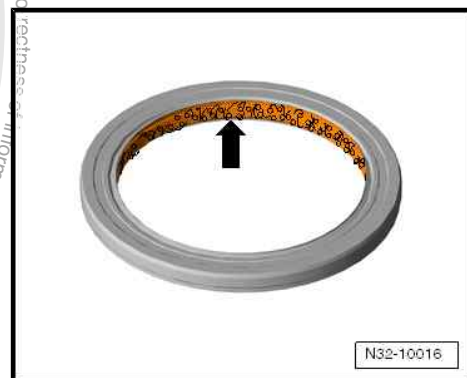
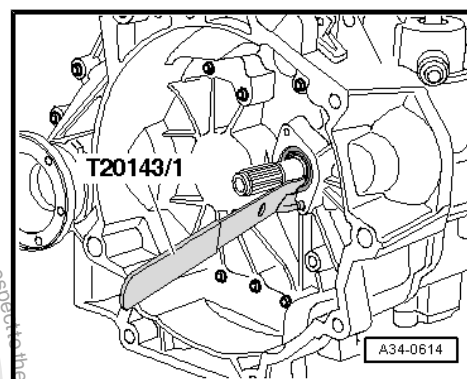
- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .
- Remove manual gearbox.
- Remove clutch release lever together with release bearing and guide sleeve ⇒ [page 51](#)
- Lever out input shaft seal.



**Note**

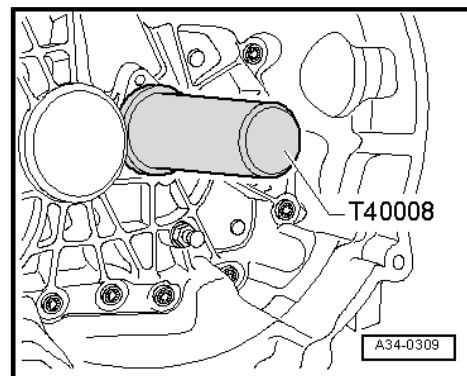
*Do not damage oil seal running surface on input shaft.*

- Half-fill space between sealing lip and dust lip of new seal with sealing grease .
- Lightly moisten outer circumference of oil seal with gear oil.



**Driving in input shaft oil seal flush**

- Install clutch release lever together with release bearing and guide sleeve ⇒ [page 51](#) .
- Install manual gearbox.





## 2 Output shaft

⇒ "2.1 Assembly overview - output shaft", page 178

⇒ "2.2 Dismantling and assembling output shaft", page 180

### 2.1 Assembly overview - output shaft



#### Note

- ◆ When installing new gears or new input shaft, refer to ⇒ *Electronic parts catalogue (ETKA) and technical data.*
- ◆ 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 159](#)

#### 2 - Cylindrical roller bearing

- ☐ With retaining ring
- ☐ Removing ⇒ [page 181](#)
- ☐ Pressing in  
⇒ [page 182](#).
- ☐ Installation position: retaining ring in bearing faces output shaft

#### 3 - Output shaft

- ☐ If an inner race as bearing seat for cylindrical roller bearing 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 182](#)

#### 5 - Retaining ring

- ☐ Renew after removal

#### 6 - Retaining ring

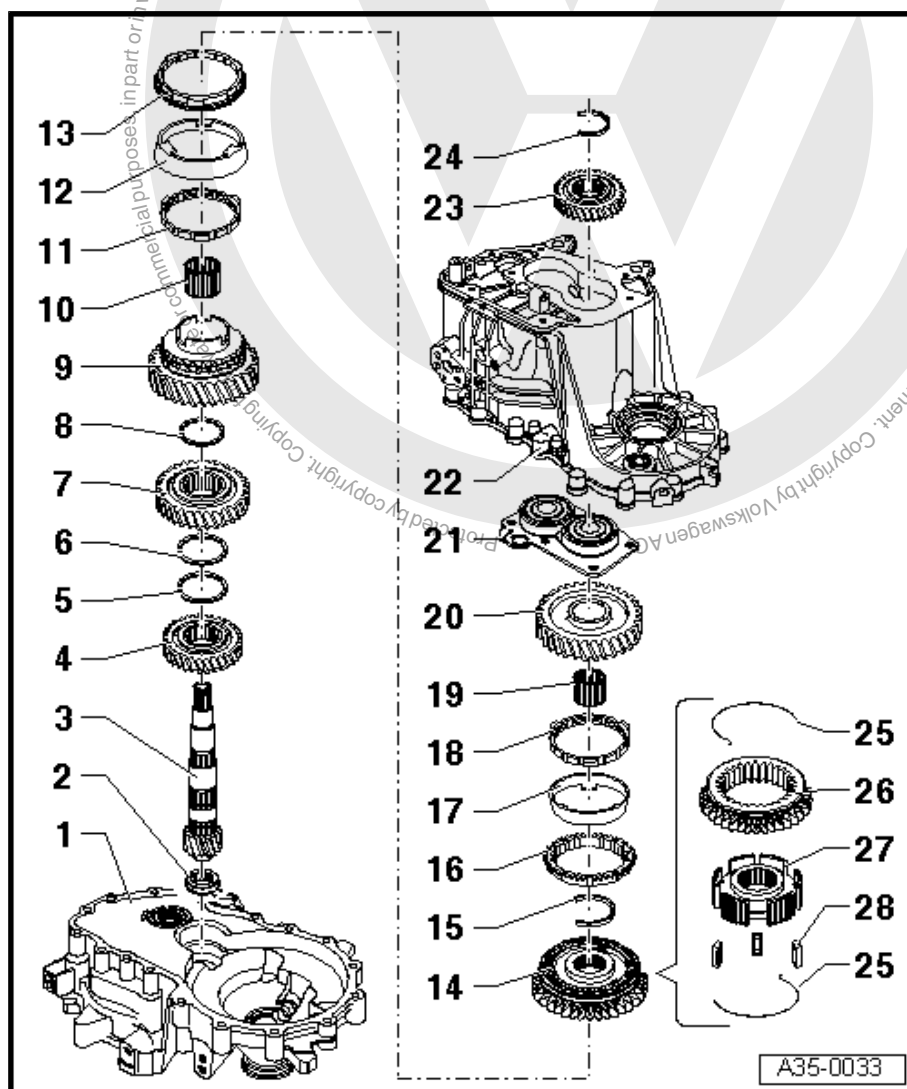
- ☐ Renew after removal

#### 7 - Gear wheel for 3rd gear

- ☐ Installation position: shoulder faces 4th gear ⇒ [page 182](#)

#### 8 - Retaining ring

- ☐ Renew after removal







## 9 - Synchromeshed gear, 2nd gear

### 10 - Needle bearing

- ☐ For 2nd gear

### 11 - Inner ring for 2nd gear

- ☐ Check lugs for scoring
- ☐ Fitting position ⇒ [page 183](#)
- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)

### 12 - Outer bearing race for 2nd gear

- ☐ Fitting position ⇒ [page 183](#)
- ☐ Renew if scored
- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)

### 13 - Synchro-ring for 2nd gear

- ☐ Fitting position ⇒ [page 183](#)
- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)

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

- ☐ After removing retaining ring, press off with 2nd gear synchromeshed gear ⇒ [page 182](#)
- ☐ Dismantling ⇒ [page 183](#)
- ☐ Assembling locking collar and synchro-hub ⇒ [page 183](#) and ⇒ [page 184](#)
- ☐ Fitting position ⇒ [page 183](#)
- ☐ Pressing on ⇒ [page 184](#)

### 15 - Retaining ring

- ☐ Pressing out ⇒ [page 182](#)
- ☐ Installing ⇒ [page 184](#)

### 16 - Synchro-ring for 1st gear

- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)
- ☐ Assemble so that notches engage in locking pieces of locking collar.

### 17 - Outer ring for 1st gear

- ☐ Check for scoring or signs of abnormal wear
- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)
- ☐ Fitting position ⇒ [page 184](#)
- ☐ Insert in synchro-ring

### 18 - Inner ring for 1st gear

- ☐ Check lugs for scoring
- ☐ Checking synchro-ring, outer ring and inner ring together for wear ⇒ [page 183](#)
- ☐ Fitting position ⇒ [page 185](#)

### 19 - Needle bearing

- ☐ For 1st gear

### 20 - Synchromeshed gear, 1st gear

- ☐ Fitting position ⇒ [page 185](#)

### 21 - Bearing mounting with deep groove ball bearing

- ☐ Renew deep groove ball bearing only together with bearing mounting
- ☐ If bearing support is separated from gearbox housing, the support must always be renewed
- ☐ Pressing off ⇒ [page 171](#)
- ☐ Pressing on ⇒ [page 174](#)

### 22 - Gearbox housing

- ☐ Repairing ⇒ [page 159](#)



### 23 - Gear wheel for 5th gear

- ❑ Installation position: shoulder faces gearbox housing cover ⇒ [page 157](#)
- ❑ Removing and installing ⇒ [page 149](#)

### 24 - Retaining ring

- ❑ Renew after removal
- ❑ Determining thickness ⇒ [page 158](#)

### 25 - Spring

- ❑ Fitting position ⇒ [page 184](#)

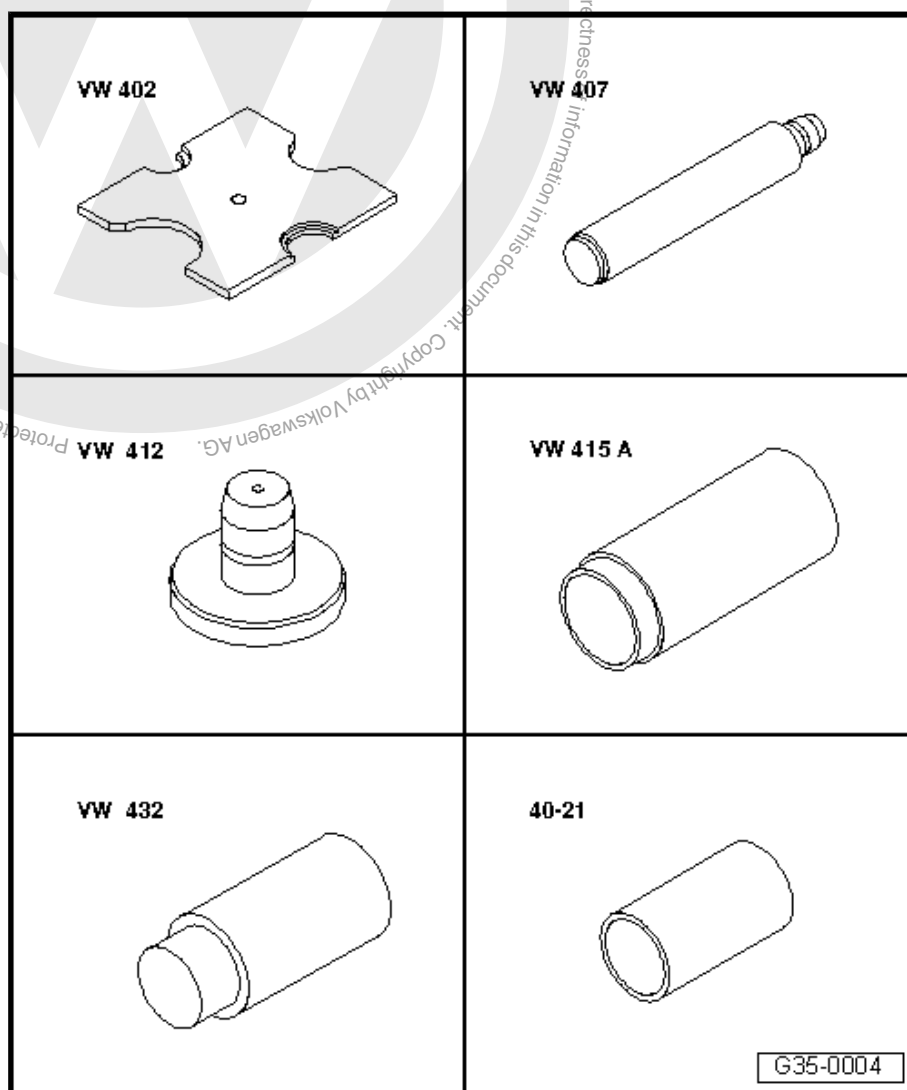
### 26 - Sliding sleeve

### 27 - Synchro-hub

### 28 - Locking pieces (qty. 3)

## 2.2 Dismantling and assembling output shaft

Special tools and workshop  
equipment required



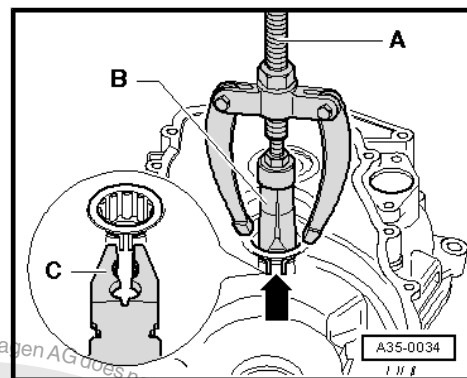
- ◆ Thrust plate - VW 402-
- ◆ Press tool - VW 407-
- ◆ Press tool - VW 412-



- ◆ Tube - VW 415 A-
- ◆ Thrust piece - VW 432-
- ◆ Drift sleeve - 40 - 21-
- ◆ Internal puller - VAS 251 611- , or e.g. internal puller - Kukko 21/5-



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



### Pulling cylindrical roller bearing out of clutch housing

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

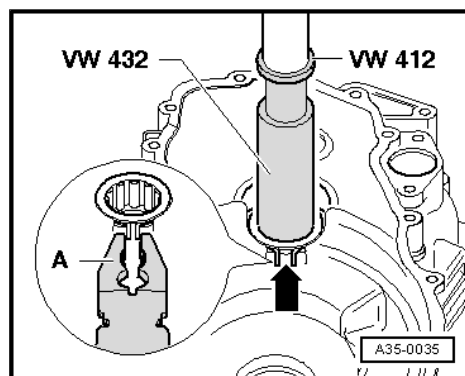
A - Counter support - VAS 251 621- , or e.g. counter support - Kukko 22/1-

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



### Pressing 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.



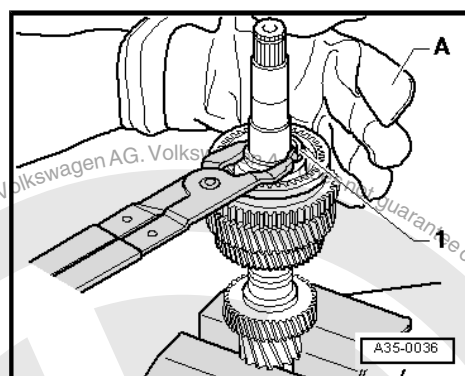
### Pressing retaining ring -1- out of groove

A - Protective gloves



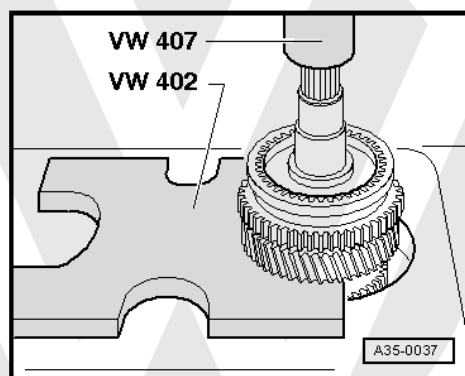
#### WARNING

*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:

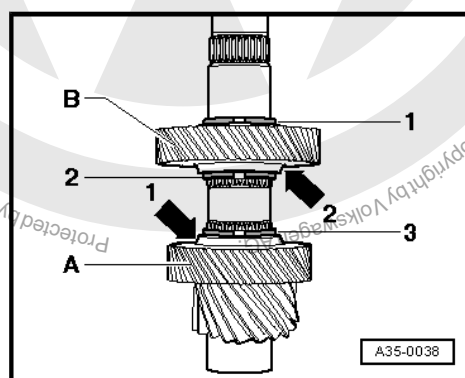
Collar -arrow 1- faces 3rd gear wheel -B-.

- 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 synchro-ring, outer ring and inner ring together for wear

- Place synchro-ring, outer ring and inner ring on cone of synchromeshed gear.
- »While pressing«, measure gap size -a- at 3 points offset by 120° using feeler gauge.
- Make a note of average value.

Gap "a"	Installation dimension	Wear limit
1st and 2nd gears	1.1 - 1.8 mm	0.5 mm



#### Note

Always renew inner ring, outer ring and synchro-ring together.

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

- Place inner ring -A- on 2nd gear synchromeshed gear.

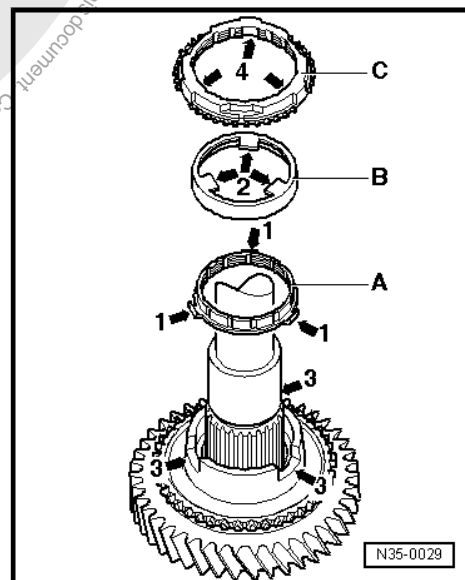
Angled lugs -arrow 1- face outer ring -B-.

- 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 race -A-.



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

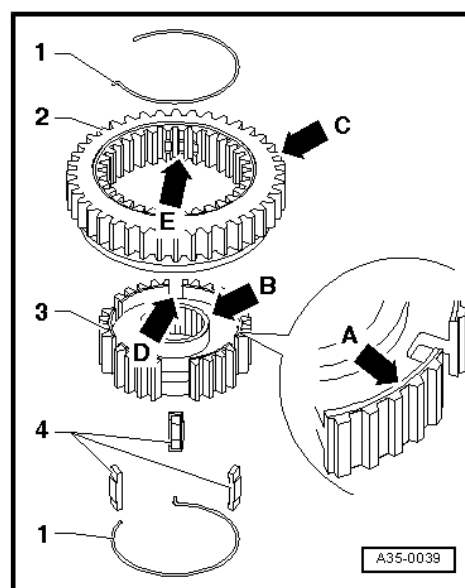
- 1 - Spring
- 2 - Sliding sleeve
- 3 - Synchro-hub
- 4 - Locking piece

- 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-.

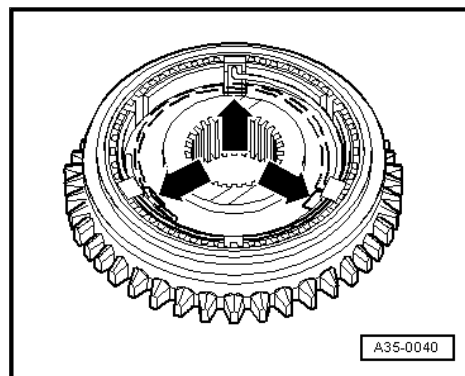
Deeper notches -arrow D- for locking pieces in synchro-hub and notches -arrow E- in locking collar must align.





### 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.

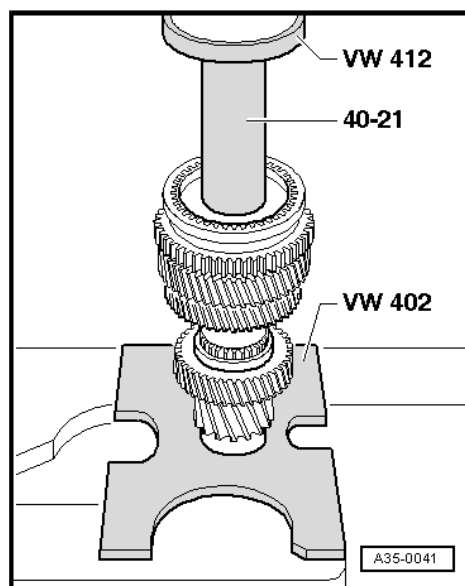


### Pressing on locking collar and synchro-hub for 1st and 2nd gears

#### Installation position:

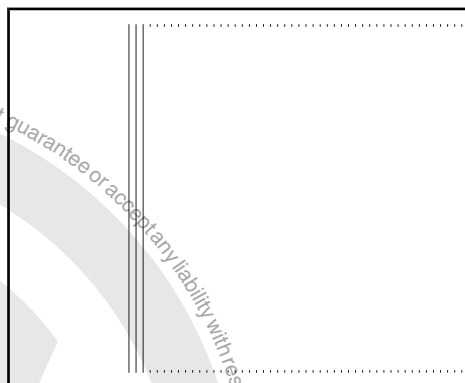
Groove in locking collar for selector fork faces 1st gear and teeth for reverse gear face 2nd gear.

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



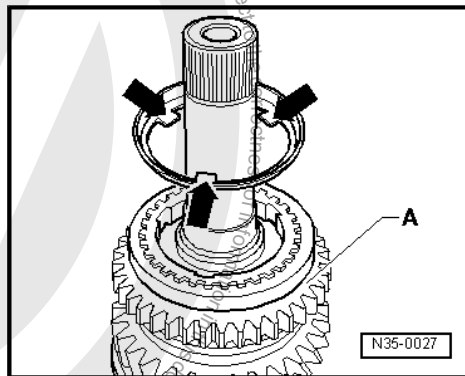
### Fitting retaining ring

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



### Installation position of 1st gear outer ring

Lugs -arrows- face towards reverse gear teeth.

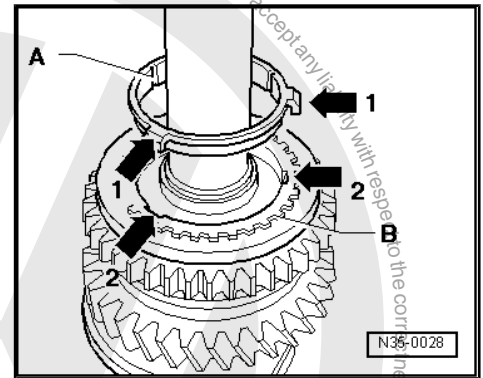






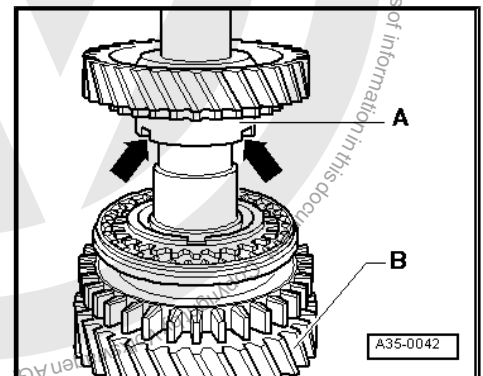
### Installation position of 1st gear inner ring -A-

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 184](#) .





## 39 – Final drive - differential

### 1 Oil seals

⇒ [“1.1 Overview of fitting locations - seals”, page 186](#)

⇒ [“1.2 Renewing left seal”, page 187](#)

⇒ [“1.3 Renewing right oil seal”, page 191](#)

#### 1.1 Overview of fitting locations - seals

##### 1 - Seal

- ☐ For input shaft
- ☐ Renew after removal  
⇒ [page 176](#)

##### 2 - Seal

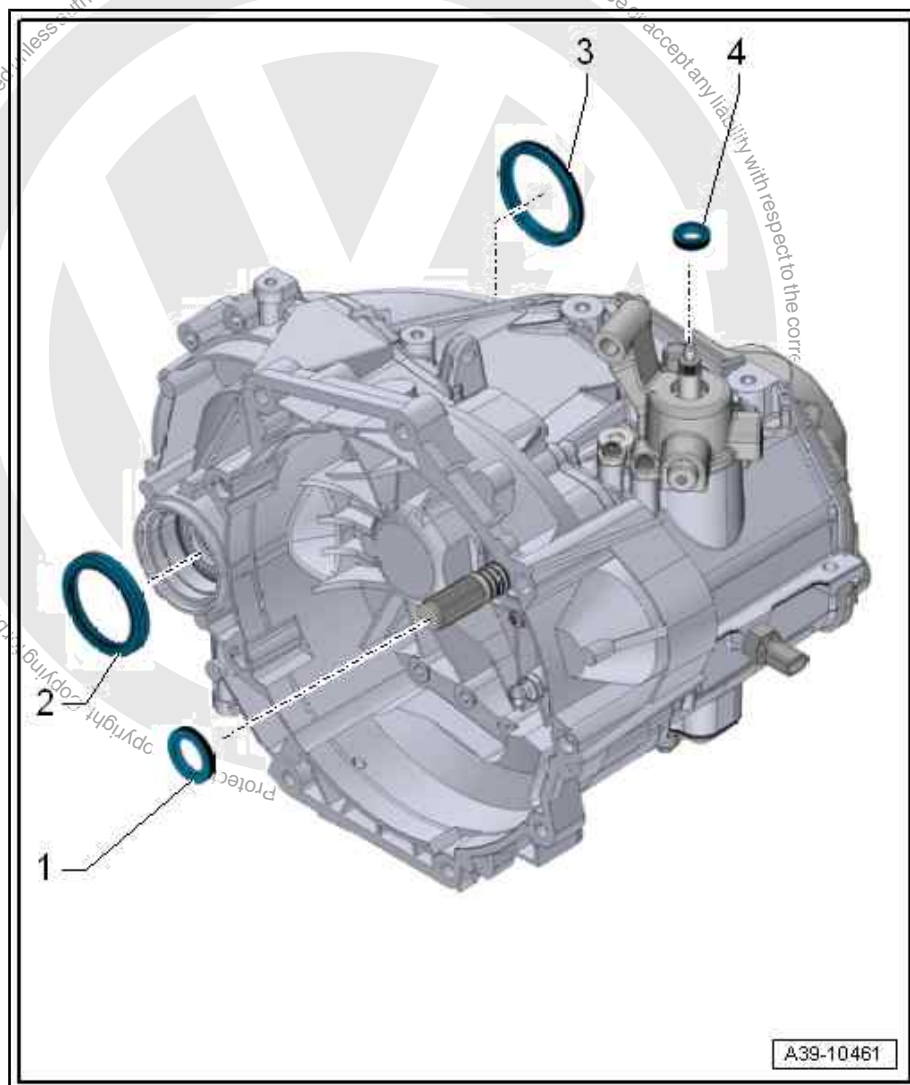
- ☐ Manual gearbox 02T:  
for right flange shaft
- ☐ Manual gearbox 0DF:  
for right flange shaft
- ☐ Renew after removal  
⇒ [page 191](#)

##### 3 - Seal

- ☐ Manual gearbox 02T:  
for left flange shaft
- ☐ Manual gearbox 0DF:  
for left flange shaft
- ☐ Renew after removal  
⇒ [page 187](#)

##### 4 - Seal

- ☐ For selector shaft
- ☐ Renew after removal  
⇒ [page 148](#)





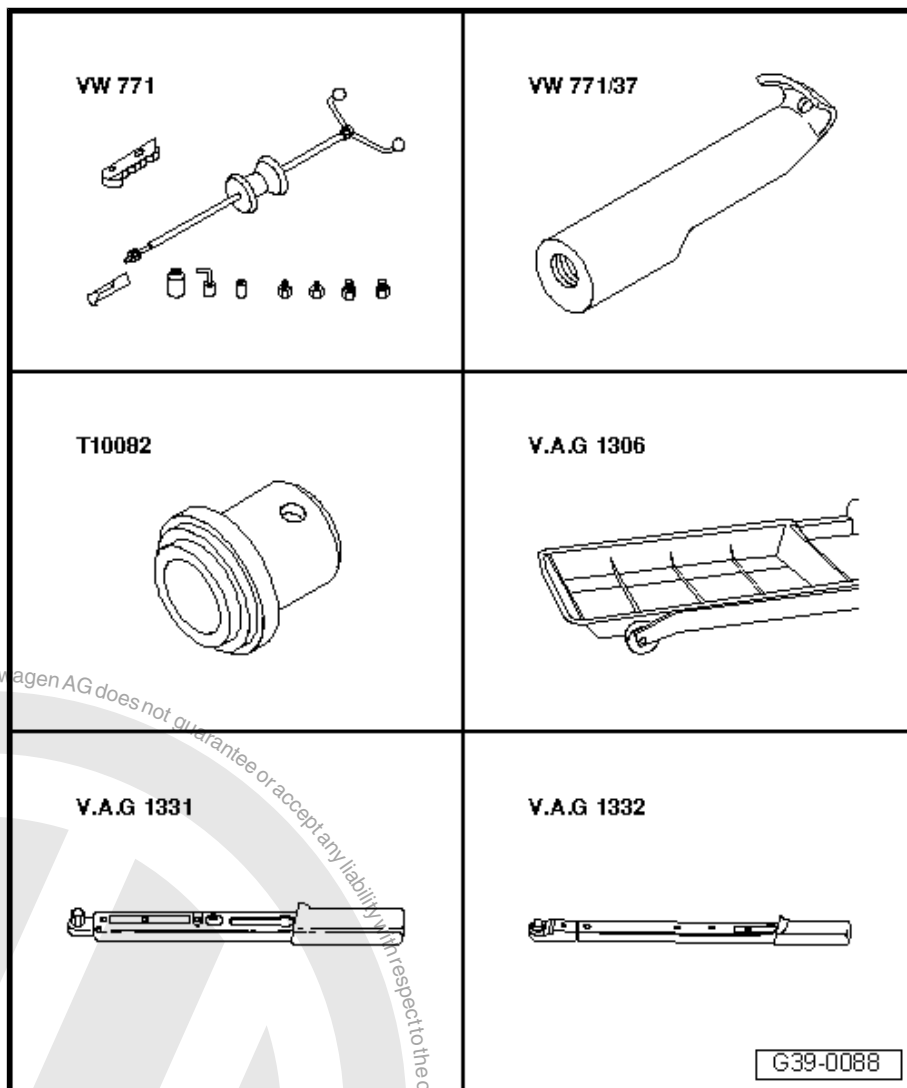
## 1.2 Renewing left seal

⇒ ["1.2.1 Renewing oil seal for left flange shaft, manual gearbox 02T", page 187](#)

⇒ ["1.2.2 Renewing oil seal for left flange shaft, manual gearbox 0DF", page 189](#)

### 1.2.1 Renewing oil seal for left flange shaft, manual gearbox 02T

Special tools and workshop equipment required

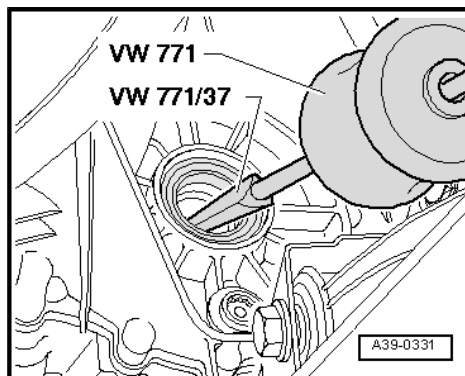
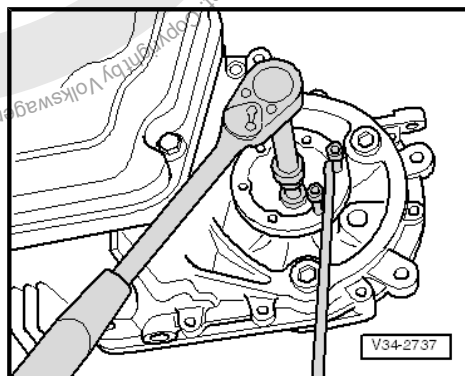
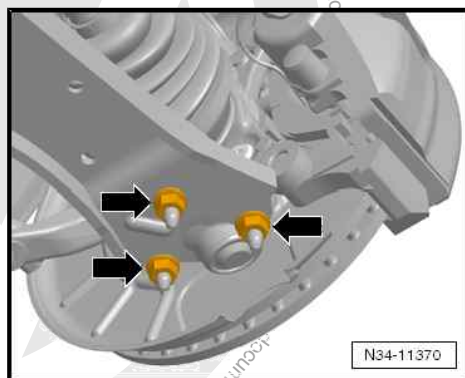
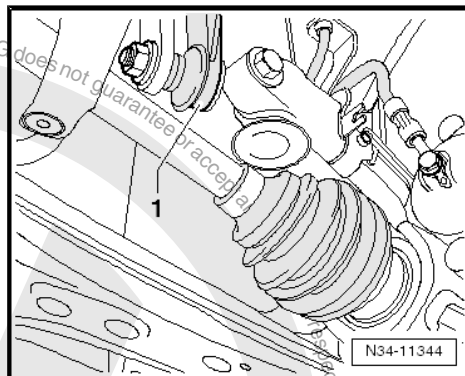


- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor hook - VW 771/37-
- ◆ Thrust piece - T10082-
- ◆ Drip tray - V.A.G 1306-
- ◆ or drip tray for workshop hoist - VAS 6208-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .



## Removing

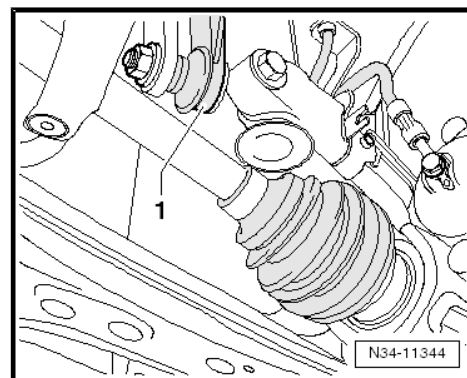
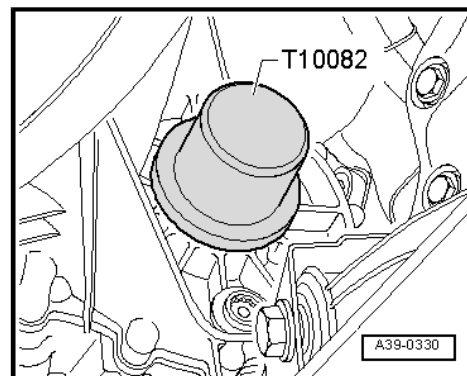
- Remove wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- Turn steering to left lock.
- Unbolt drive shaft from flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Remove coupling rod -1- from anti-roll bar ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .
- Unscrew nuts -arrows- for swivel joint on suspension link ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Swing wheel bearing housing outwards.
- Pull out left drive shaft between subframe and gearbox.
- When doing this, guide drive shaft into wheel housing and secure to suspension strut with wire. Take care not to damage paint on drive shaft in the process.
- Place drip tray under gearbox.
- Remove flange shaft securing bolts. Screw 2 bolts into flange and counter hold flange shaft using a lever.
- Pull out flange shaft with compression spring.
- Remove flange shaft oil seal.





## 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 .
  - Insert flange shaft.
  - Press flange shaft against gearbox and secure.
- 
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
  - Install coupling rod -1- ⇒ Running gear, axles, steering; Rep. gr. 40 ; Subframe; Assembly overview – subframe .
  - Check gear oil level and top up to lower edge of oil filler hole if necessary ⇒ [page 115](#) .
  - Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
  - Attach wheel ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres; Specified torque for wheel bolts .



## Specified torques

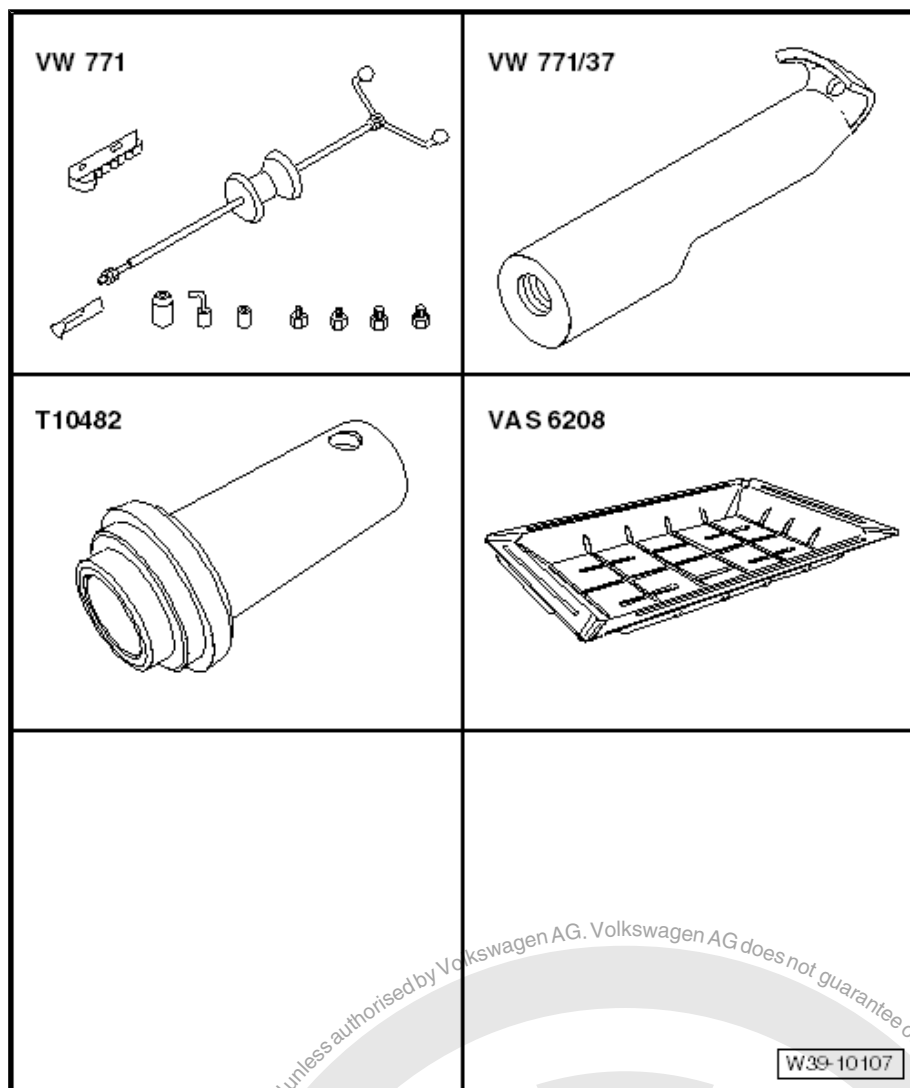
- ◆ Flange shaft to gearbox ⇒ [page 196](#)

## 1.2.2 Renewing oil seal for left flange shaft, manual gearbox 0DF





**Special tools and workshop  
equipment required**



- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor hook - VW 771/37-
- ◆ Thrust piece - T10482-
- ◆ Drip tray - V.A.G 1306-
- ◆ or drip tray for workshop hoist - VAS 6208-
- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

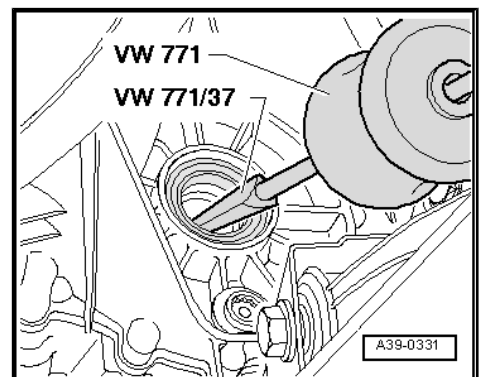
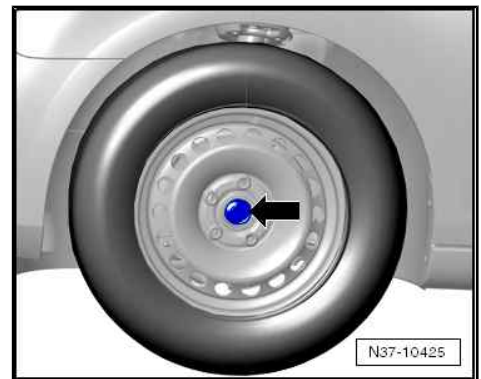




## Removing

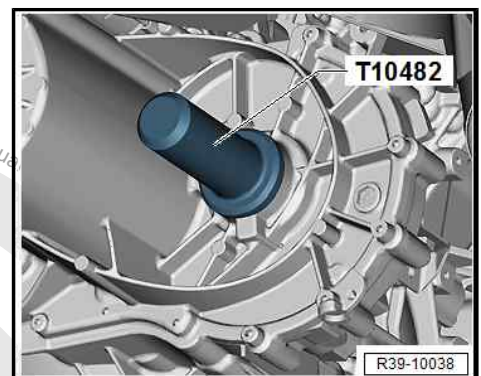
The drive shaft must be removed in a later step.

- With vehicle standing on its wheels, loosen front flange bolt -arrow- 90° at most, or wheel bearing will be damaged ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Remove wheel.
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- Place drip tray under gearbox.
- Remove drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Pull out drive shaft seal.



## 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 .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Check gear oil level and top up to lower edge of oil filler hole if necessary ⇒ [page 115](#) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- Attach wheel ⇒ Running gear, axles, steering; Rep. gr. 44 ; Wheels, tyres; Specified torque for wheel bolts .



## 1.3 Renewing right oil seal

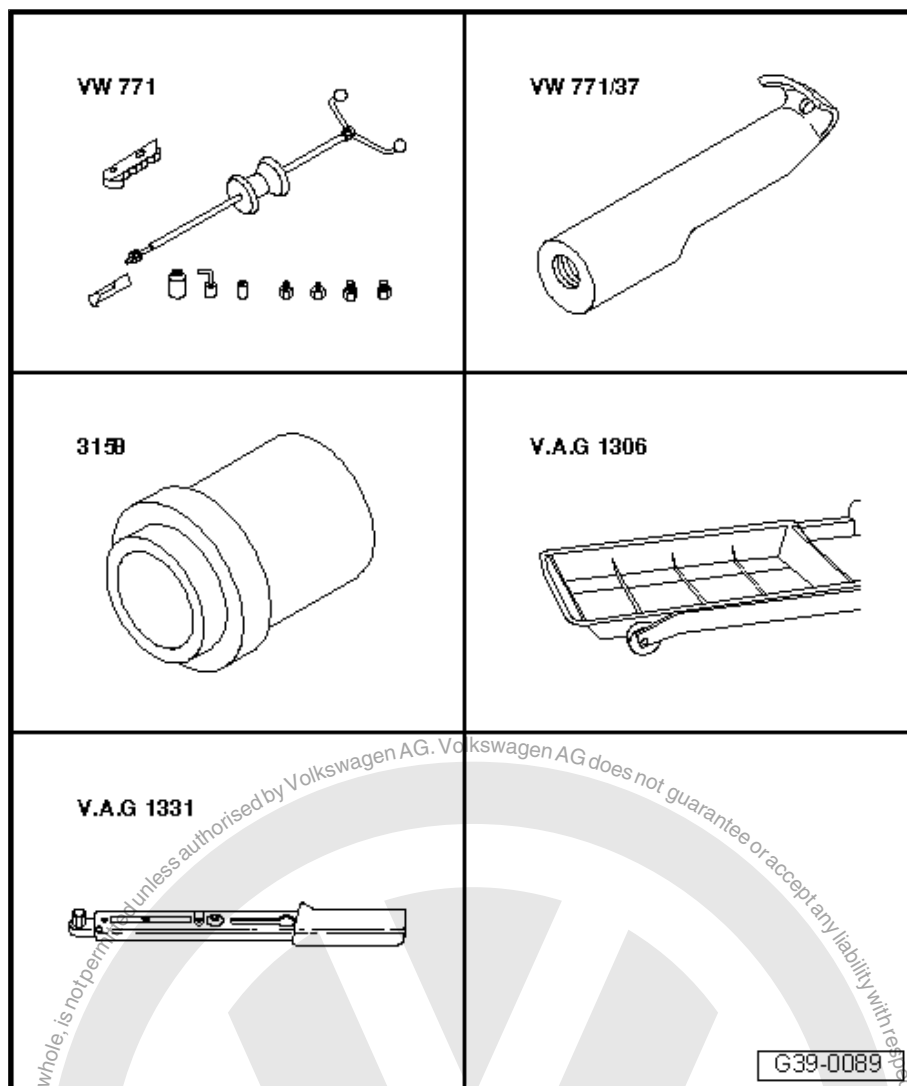
⇒ ["1.3.1 Renewing oil seal for right flange shaft, manual gearbox 02T", page 191](#)

⇒ ["1.3.2 Renewing oil seal for right flange shaft, manual gearbox 0DF", page 193](#)

### 1.3.1 Renewing oil seal for right flange shaft, manual gearbox 02T



### Special tools and workshop equipment required



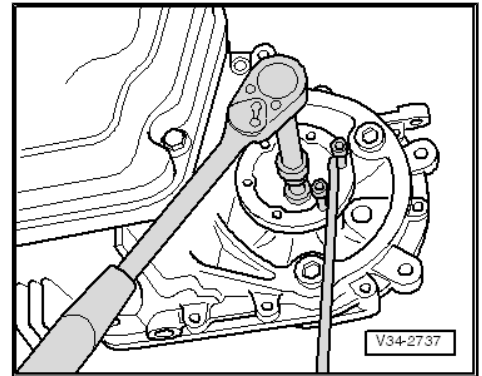
- ◆ Multi-purpose tool - VW 771-
- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor hook - VW 771/37-
- ◆ Drift sleeve - 3158-
- ◆ Drip tray - V.A.G 1306-
- ◆ or drip tray for workshop hoist - VAS 6208-
- ◆ Torque wrench - V.A.G 1331-
- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

### Removing

- Remove noise insulation ⇒ General body repairs, exterior, Rep. gr. 66 ; Noise insulation .
- Turn steering to right to full lock.
- Unbolt drive shaft from flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Raise drive shaft as high as possible and secure, taking care not to damage surfaces.



- Place drip tray under gearbox.
- Remove flange shaft securing bolts. Screw 2 bolts into flange and counter hold flange shaft using a lever.
- Pull out flange shaft with compression spring. If necessary, unscrew engine/gearbox securing bolt in area of flange shaft.

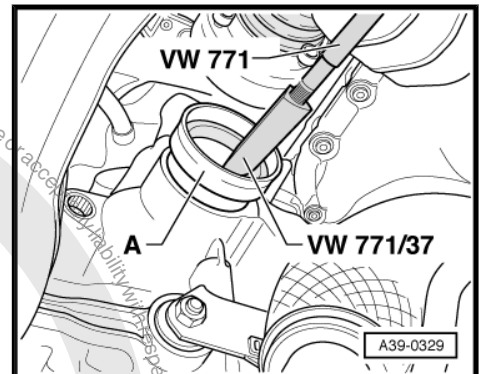


- Remove flange shaft oil seal.



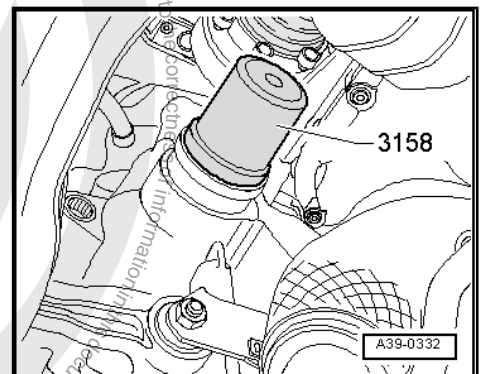
#### Note

- ◆ Do not damage sleeve -A-. Otherwise, leaks will occur.
- ◆ Renew sleeve if damaged ⇒ [page 164](#) and ⇒ [page 164](#).



#### 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.
- Insert flange shaft.
- Press flange shaft against gearbox and secure.
- If removed, reinstall engine/gearbox connecting bolt in area of flange shaft ⇒ [page 110](#).
- Install drive shaft to flange shaft ⇒ Running gear, axles, steering; Rep. gr. 40; Drive shaft; Removing and installing drive shaft.
- Check gear oil level and top up to lower edge of oil filler hole if necessary ⇒ [page 115](#).
- Install noise insulation ⇒ General body repairs, exterior, Rep. gr. 66; Noise insulation.



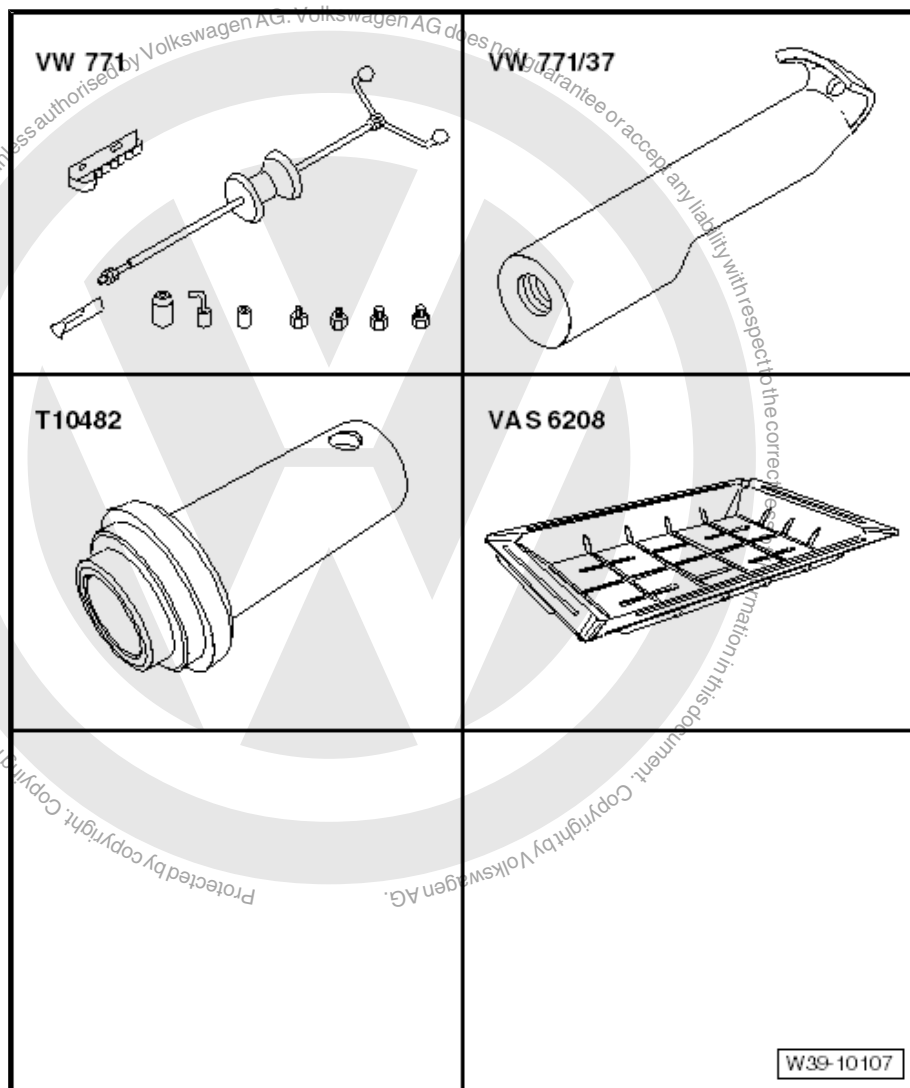
#### Specified torques

- ◆ Flange shaft to gearbox ⇒ [page 196](#)

### 1.3.2 Renewing oil seal for right flange shaft, manual gearbox 0DF



### Special tools and workshop equipment required



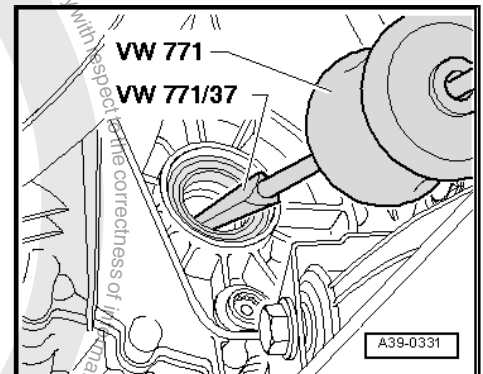
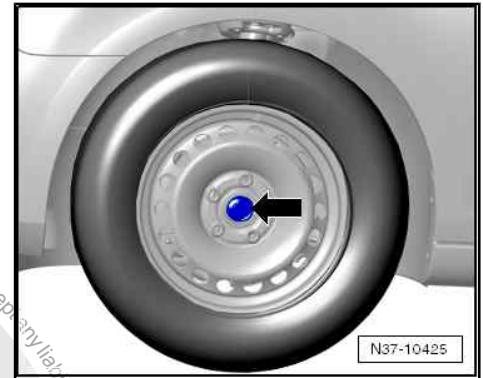
- ◆ Multi-purpose tool - VW 771-
- ◆ Extractor hook - VW 771/37-
- ◆ Thrust piece - T10482-
- ◆ Drip tray - V.A.G 1306-
- ◆ or drip tray for workshop hoist - VAS 6208-
- ◆ Sealing grease
- ◆ Allocate grease using ⇒ Electronic parts catalogue (ETKA) .



## Removing

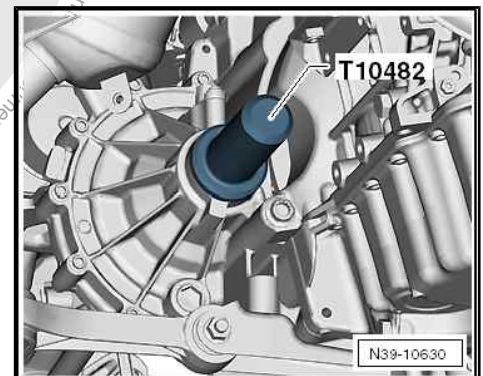
The drive shaft must be removed in a later step.

- With vehicle standing on its wheels, loosen front flange bolt -arrow- 90° at most, or wheel bearing will be damaged ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Remove noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .
- Place drip tray under gearbox.
- Remove drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shaft .
- Pull out drive shaft seal.



## 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 .
- Install drive shaft ⇒ Running gear, axles, steering; Rep. gr. 40 ; Drive shaft; Removing and installing drive shafts.
- Check gear oil level and top up to lower edge of oil filler hole if necessary ⇒ [page 115](#) .
- Install noise insulation ⇒ General body repairs, exterior; Rep. gr. 66 ; Noise insulation .





## 2 Differential

⇒ "2.1 Assembly overview - differential", page 196

⇒ "2.2 Dismantling and assembling differential", page 199

⇒ "2.3 Adjusting differential", page 206

### 2.1 Assembly overview - differential

⇒ "2.1.1 Assembly overview - differential housing, manual gear-box 02T", page 196

⇒ "2.1.2 Assembly overview - differential housing, manual gear-box 0DF", page 198

#### 2.1.1 Assembly overview - differential housing, manual gearbox 02T

##### 1 - Countersunk bolt

- ☐ Renew after removal
- ☐ 25 Nm

##### 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 - Left flange shaft

##### 8 - Oil seal for left flange shaft

- ☐ Renew after removal  
⇒ page 187

##### 9 - Tapered roller bearing outer race

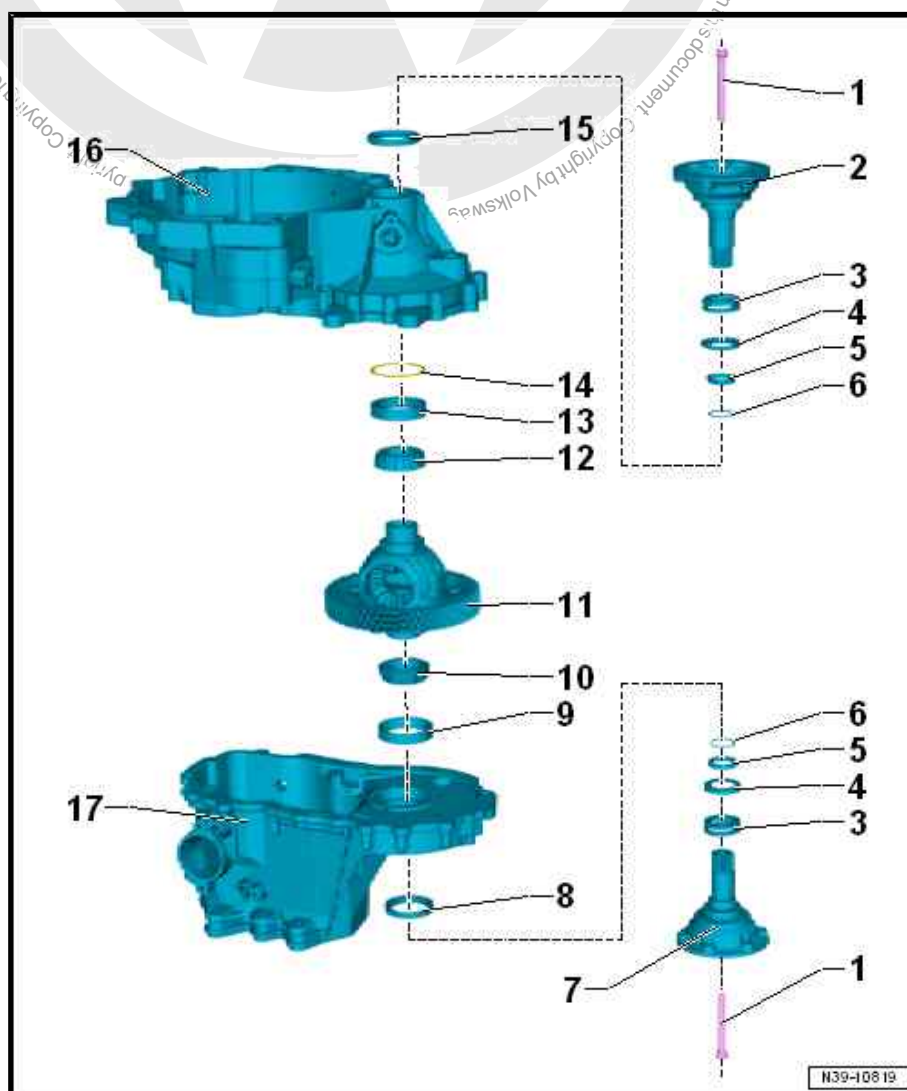
- ☐ Removing ⇒ page 203
- ☐ Pressing in  
⇒ page 203 .

##### 10 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ page 203
- ☐ Pressing on ⇒ page 204

##### 11 - Differential cage

- ☐ With differential bevel gears, one-piece thrust washer, differential pinion pin and final drive gear
- ☐ Removing differential bevel gears, one-piece thrust washer and differential pinion pin ⇒ page 206
- ☐ Installing differential bevel gears, one-piece thrust washer and differential pinion pin ⇒ page 206







## 12 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 205](#)
- ☐ Pressing on ⇒ [page 205](#)

## 13 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 204](#) .
- ☐ Pressing in ⇒ [page 204](#) .

## 14 - Shim

- ☐ For differential
- ☐ Determining thickness ⇒ [page 206](#)

## 15 - Oil seal for right flange shaft

- ☐ The seal is located in a sleeve  
⇒ [“8.1.1 Assembly overview - gearbox housing and clutch housing, manual gearbox 02T”, page 159](#)
- ☐ Renew seal after each removal ⇒ [page 191](#)
- ☐ Renew sleeve after each removal ⇒ [page 163](#)

## 16 - Clutch housing

- ☐ ⇒ [“8 Gearbox housing, clutch housing”, page 159](#)

## 17 - Gearbox housing

- ☐ ⇒ [“8 Gearbox housing, clutch housing”, page 159](#)



## 2.1.2 Assembly overview - differential housing, manual gearbox 0DF

### 1 - Left drive shaft seal

- ☐ Renew after removal  
⇒ [page 189](#)

### 2 - Gearbox housing

- ☐ ⇒ "8 Gearbox housing, clutch housing", [page 159](#)

### 3 - Baffle plate

- ☐ Renew after removal
- ☐ Shoulder points away from housing

### 4 - Tapered roller bearing outer race

- ☐ Removing ⇒ [page 203](#)
- ☐ Pressing in ⇒ [page 203](#)

### 5 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 203](#)
- ☐ Pressing on ⇒ [page 204](#)

### 6 - Differential

- ☐ With final drive gear

### 7 - Tapered roller bearing inner race

- ☐ Pulling off ⇒ [page 205](#)
- ☐ Pressing on ⇒ [page 205](#)

### 8 - Tapered roller bearing outer race

- ☐ Pressing out ⇒ [page 204](#)
- ☐ Pressing in ⇒ [page 204](#)

### 9 - Shim

- ☐ For differential
- ☐ Determining thickness ⇒ [page 206](#)

### 10 - Baffle plate

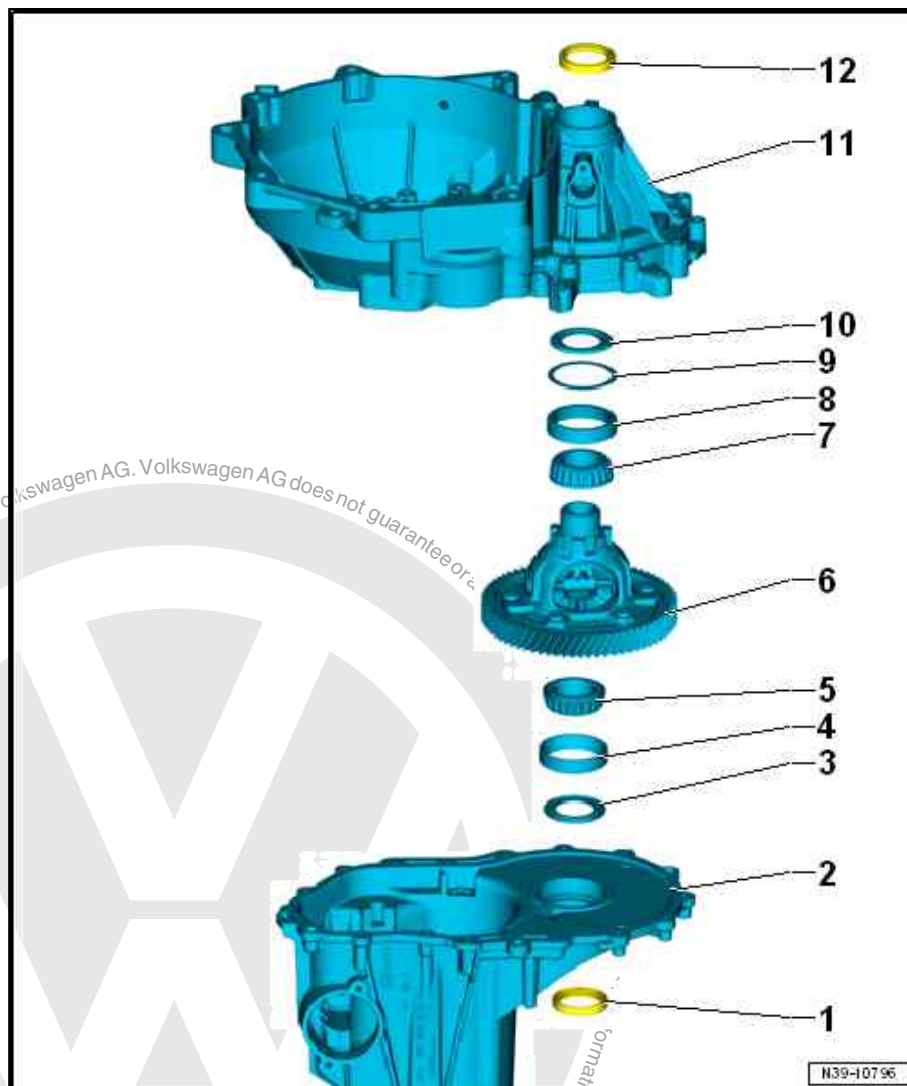
- ☐ Renew after removal
- ☐ Shoulder points away from housing

### 11 - Clutch housing

- ☐ ⇒ "8 Gearbox housing, clutch housing", [page 159](#)

### 12 - Seal for right drive shaft

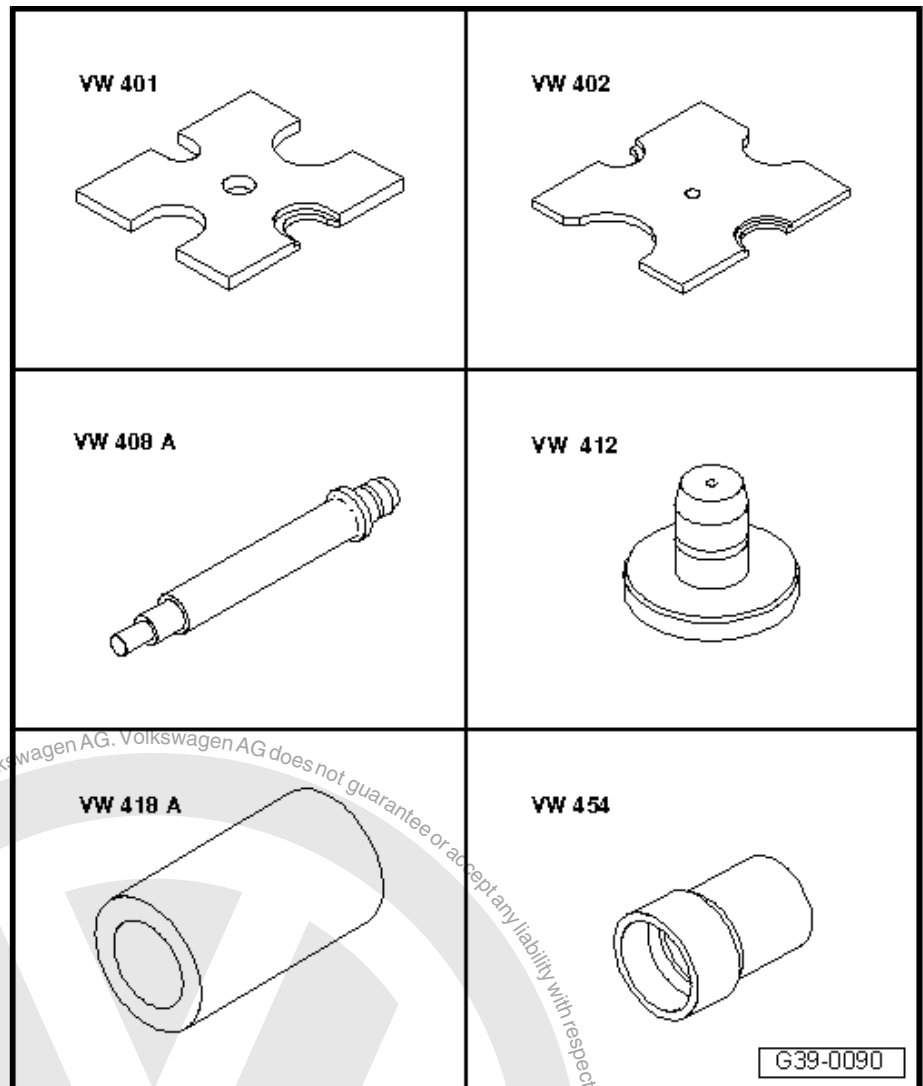
- ☐ Renew after removal ⇒ [page 193](#)



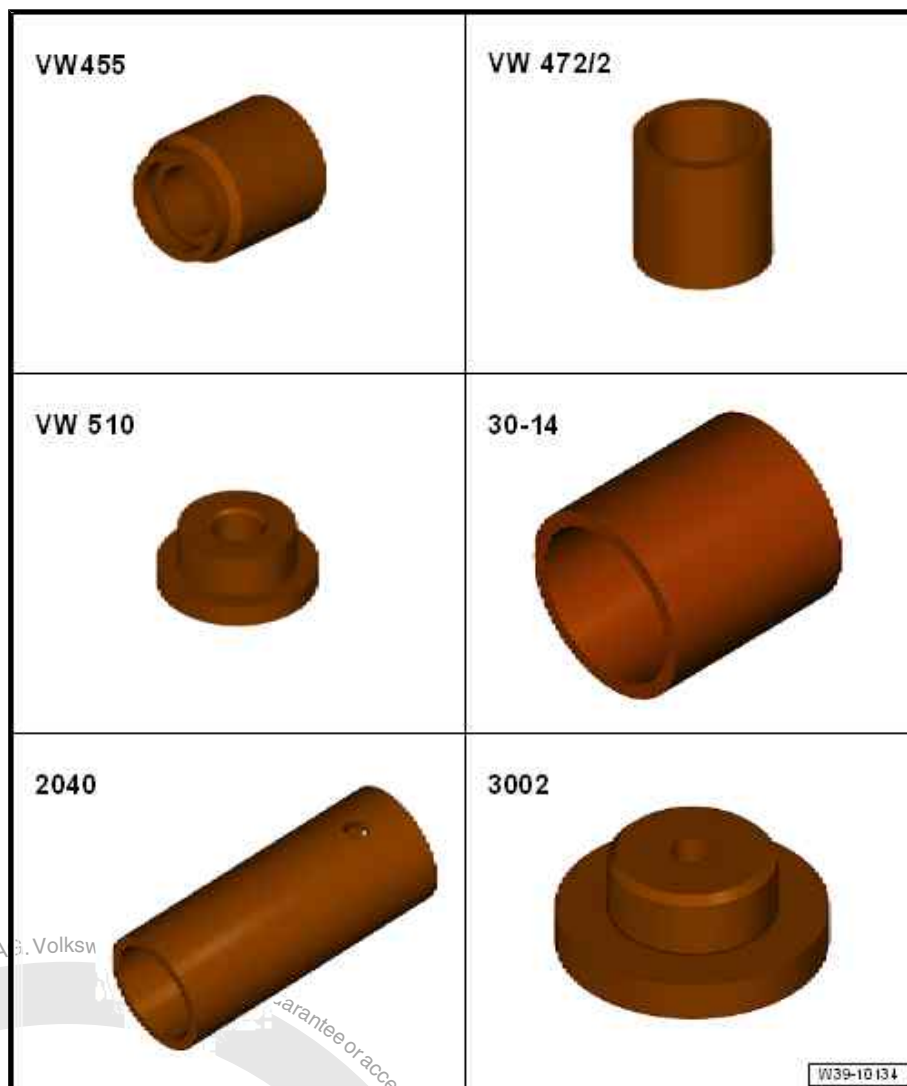


## 2.2 Dismantling and assembling differential

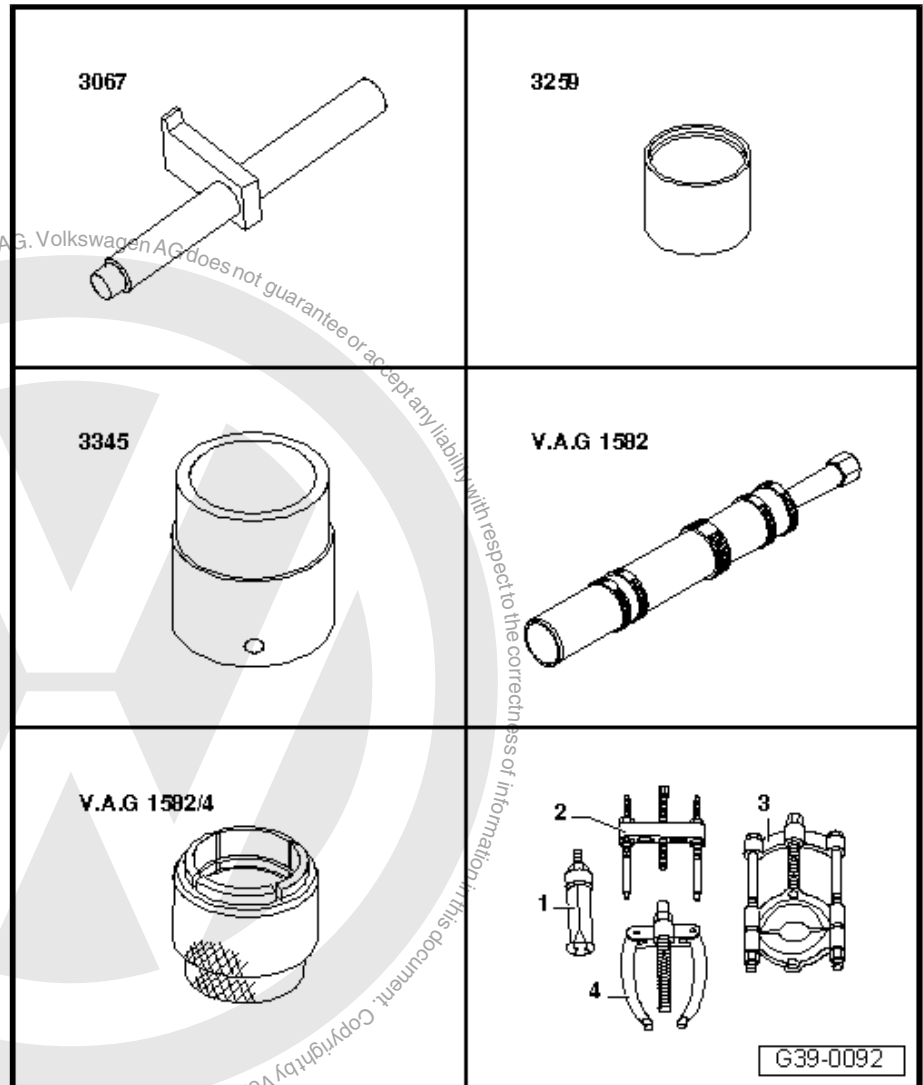
Special tools and workshop  
equipment required



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



- ◆ Installing sleeve - VW 455-
- ◆ Spacer sleeve - VW 472/2-
- ◆ Thrust plate - VW 510-
- ◆ Tube - 30 - 14-
- ◆ Tube - 2040-
- ◆ Thrust piece - 3002-

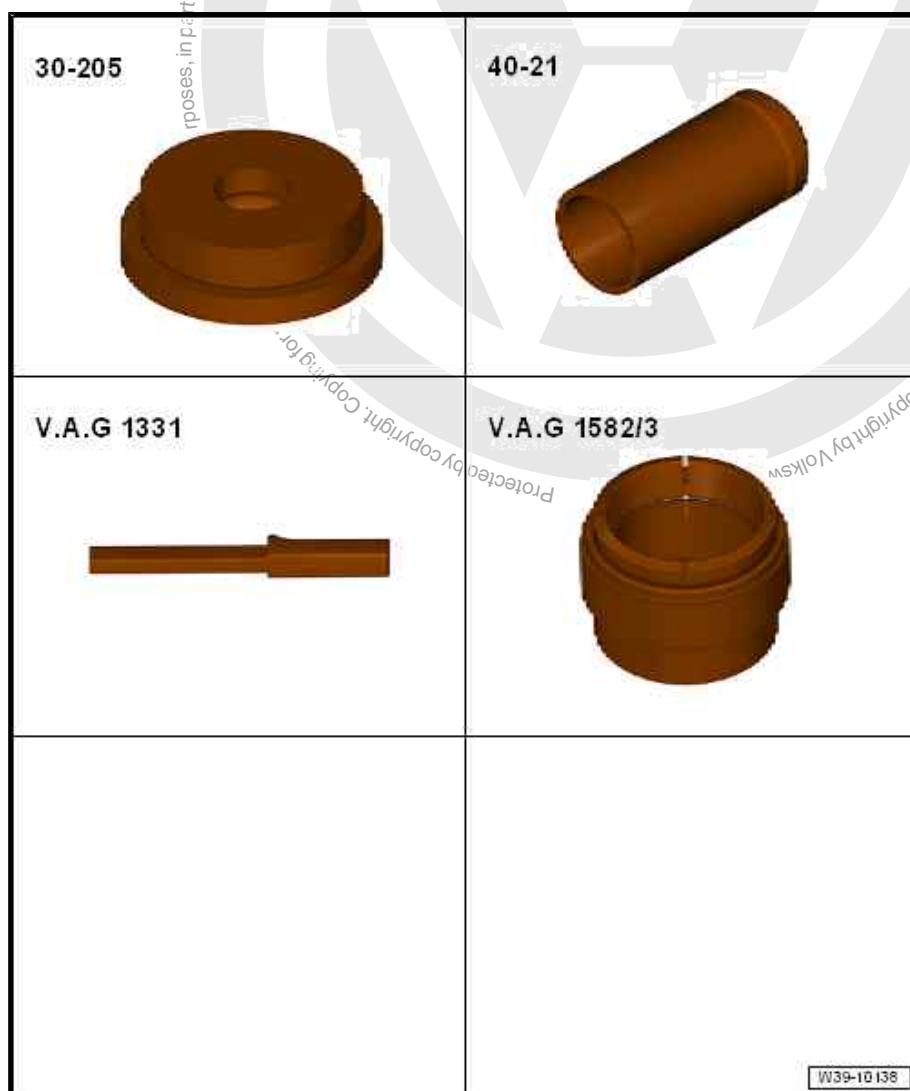


- ◆ Counter-hold tool - 3067-
- ◆ Tube - 3259-
- ◆ Tube for wheel bearing - 3345-
- ◆ Tapered roller bearing puller - V.A.G 1582-
- ◆ Grip tool - V.A.G 1582/4-
- ◆ Do not apply: tools 1-4
- ◆ Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-





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



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





#### 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 cage, gearbox housing or clutch housing is renewed, adjust differential ➔ [page 206](#).

#### Pulling outer race for tapered roller bearing out of gearbox housing

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

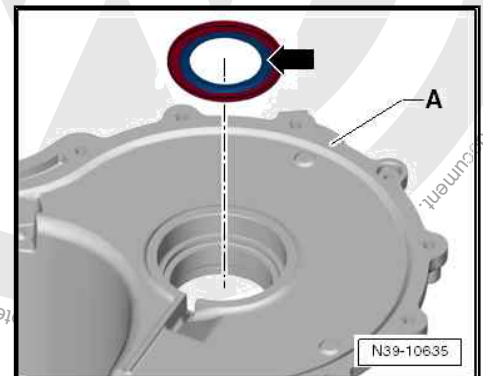
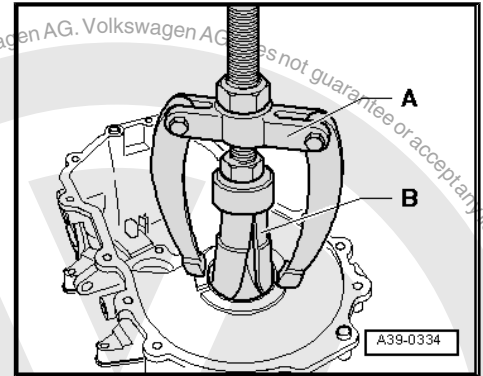
B - Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-

#### Manual gearbox 0DF

#### Insert new baffle plate

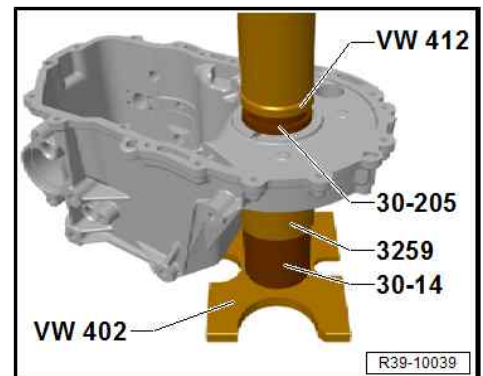
Installation position: shoulder -arrow- faces away from housing  
-A-

Continuation for all

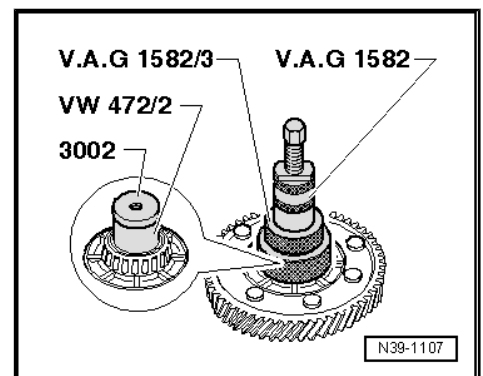


#### Pressing tapered roller bearing outer race into gearbox housing

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



#### Pulling off tapered roller bearing inner races





## Pressing on tapered roller bearing inner races



### WARNING

*Wear protective gloves.*

- Heat inner tapered roller bearing race to approx. 100 °C before pressing on.
- Support inner race on opposite side using installing sleeve - VW 455- .

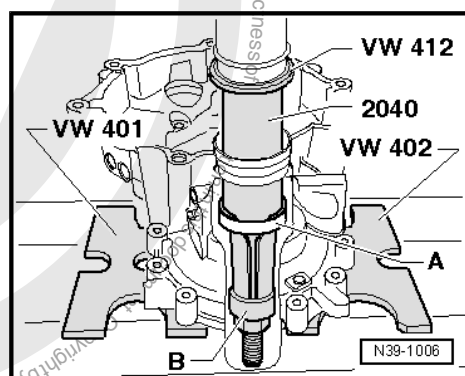
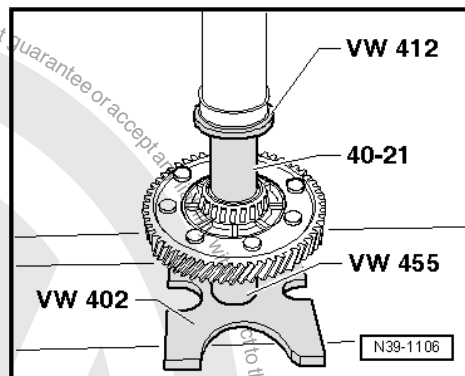
Shoulder of installing sleeve - VW 455- faces towards differential cage.

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

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

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

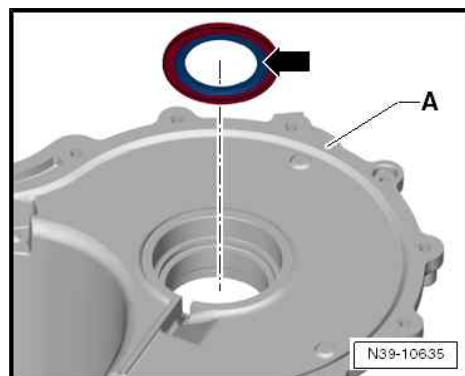
## Manual gearbox 0DF



## Insert new baffle plate (shown here in conjunction with gearbox housing)

Installation position: shoulder -arrow- faces away from housing -A-

Continuation for all



## Pressing tapered roller bearing outer race into clutch housing

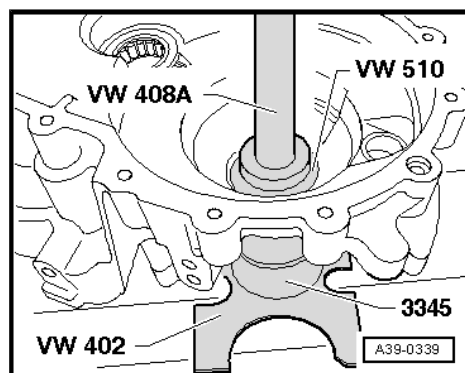
### Manual gearbox 02T

- Support clutch housing with wheel bearing tube - 3345- directly below bearing mounting.

### Manual gearbox 0DF

- Set clutch housing directly on pressure plate - VW 402-

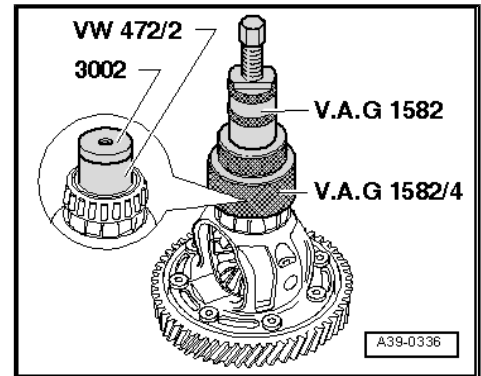
Continuation for all





### Pulling off tapered roller bearing inner race

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



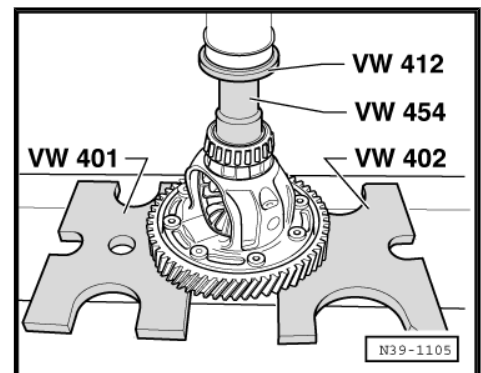
### Pressing on tapered roller bearing inner race



#### WARNING

*Wear protective gloves.*

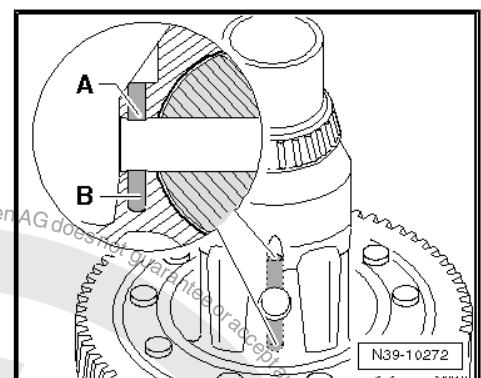
- Heat inner tapered roller bearing race to approx. 100 °C before pressing on.



### Allocation of differential cage for removing and installing spring pin

The hole in the differential cage was modified for the longer spring pin.

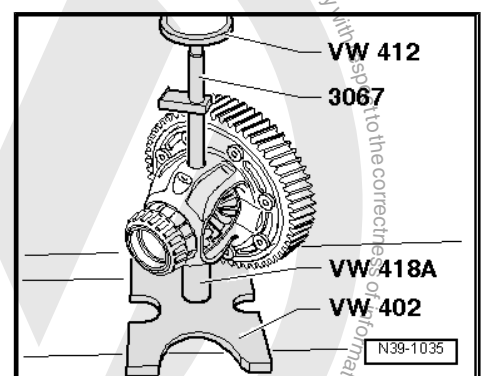
Bore	Length of spring pin (mm)	Clamping sleeve	
-A-	24.0 (short spring pin)	Removing ⇒ <a href="#">page 205</a>	Installing ⇒ <a href="#">page 206</a>
-A- and -B-	36.0 (long spring pin)	Removing ⇒ <a href="#">page 205</a>	Installing ⇒ <a href="#">page 206</a>
Through-hole	36.0 (long spring pin)	Removing ⇒ <a href="#">page 206</a>	Installing ⇒ <a href="#">page 206</a>



### Pressing off differential pinion pin, and shearing off spring pin

When pressed out, spring pin will be sheared off.

- Remove remainder of spring pin from differential cage.





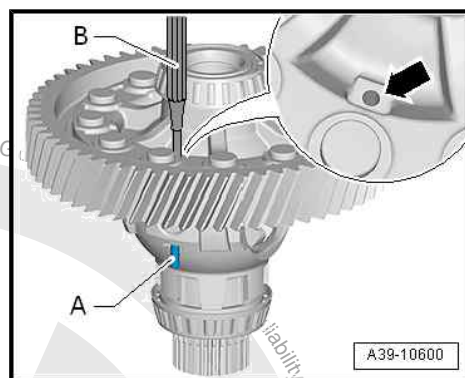
### Removing long spring pin to remove differential pinion pin

- Drive spring pin -A- out of hole -arrow- in differential housing using a 5 mm diameter drift -B-.



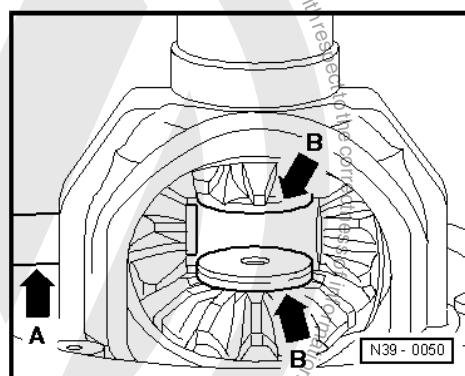
#### Note

If there is no hole -arrow- in the differential cage, shear off the spring pin ⇒ [page 205](#).



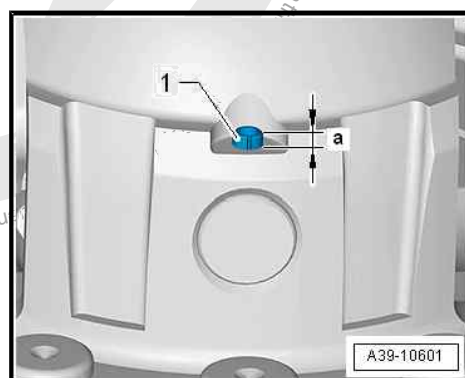
### Installing differential bevel gears

- Lubricate one-piece thrust washer with gear oil and install.
- Install both sun wheels and secure (e.g. with flange shaft).
- Insert both 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.



### Installing spring pin for differential pinion pin

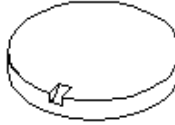
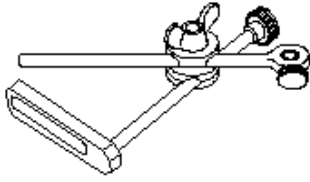
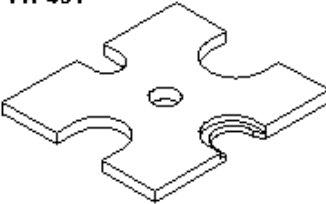
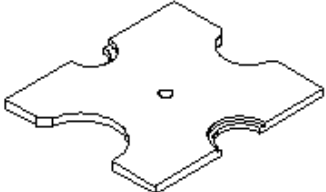
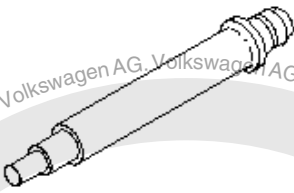
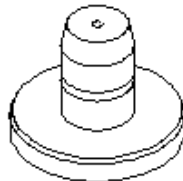
- Align hole in differential pinion pin with hole in differential cage.
- Using a drift, drive in spring pin -1- until a dimension -a- of 2.5 mm is attained.
- Spring pin -1- must not touch clutch housing.



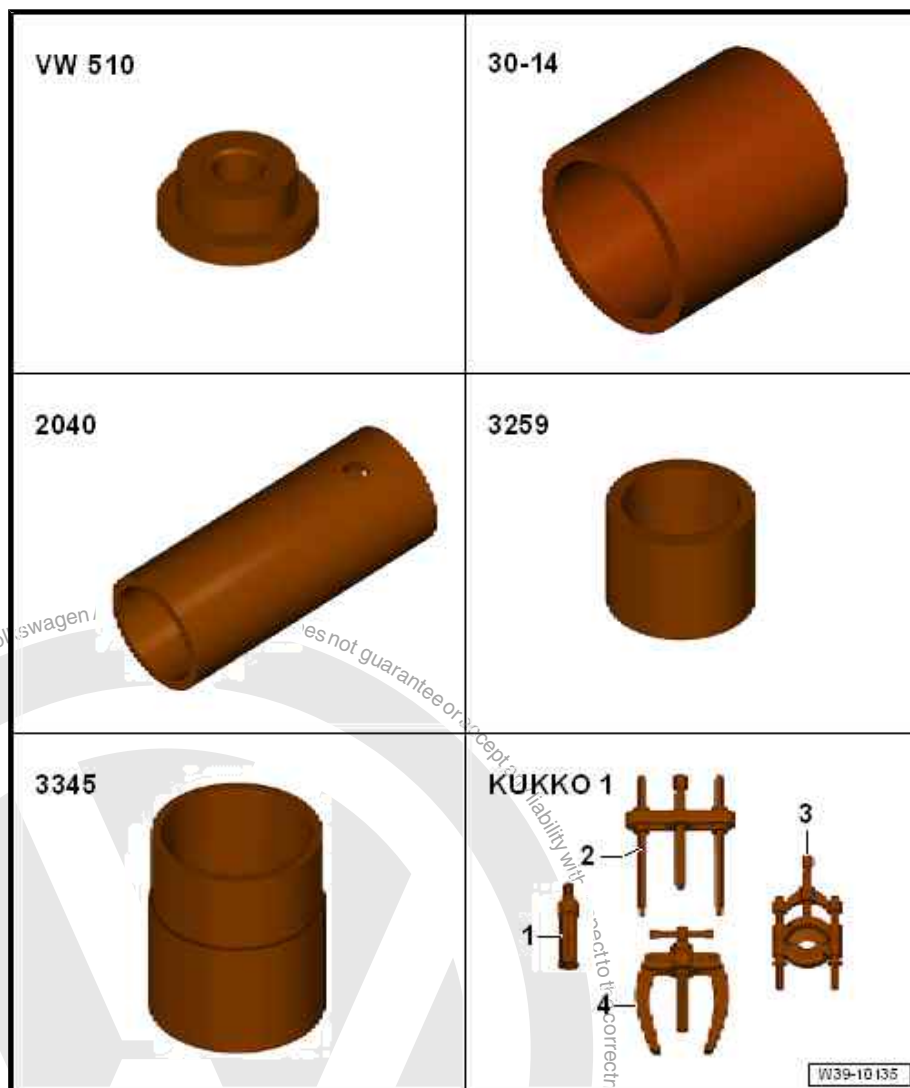
## 2.3 Adjusting differential



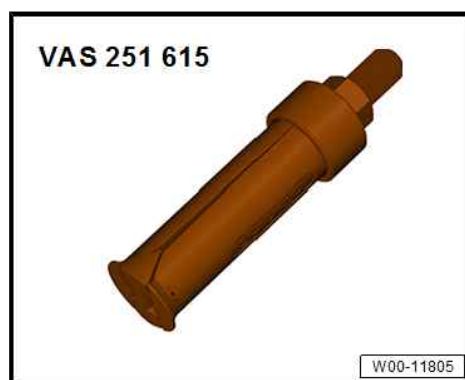
**Special tools and workshop equipment required**

<p><b>VW 385/17</b></p> 	<p><b>VW 387</b></p> 
<p><b>VW 401</b></p> 	<p><b>VW 402</b></p> 
<p><b>VW 408 A</b></p> 	<p><b>VW 412</b></p>  <p>G39-0093</p>

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



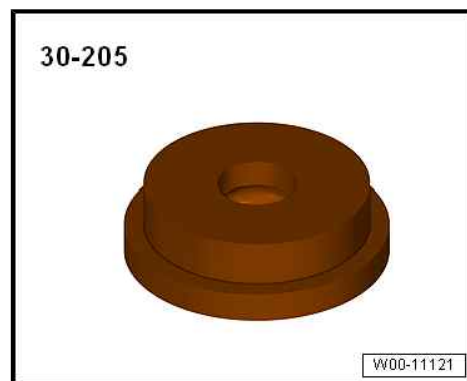
- ◆ Thrust plate - VW 510-
- ◆ Tube - 30 - 14-
- ◆ Tube - 2040-
- ◆ Tube - 3259-
- ◆ Tube for wheel bearing - 3345-
- ◆ Not applicable: -Kukko1-
- ◆ Internal puller - VAS 251 615- , or e.g. internal puller - Kukko 21/7-







- ◆ Thrust plate - 30 - 205-



- ◆ Torque wrench - V.A.G 1331-
- ◆ Dial gauge - VAS 6080A-

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

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

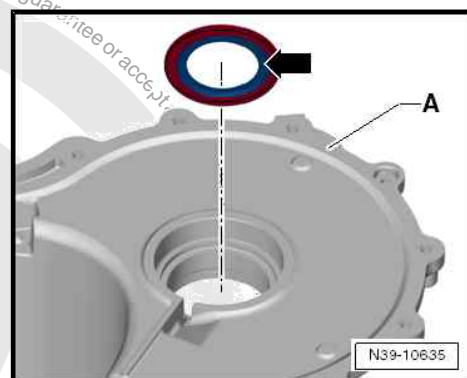
or the

- ◆ Tapered roller bearing of differential

#### Manual gearbox 0DF

#### Insert new baffle plate

Installation position: shoulder -arrow- faces away from housing  
-A-



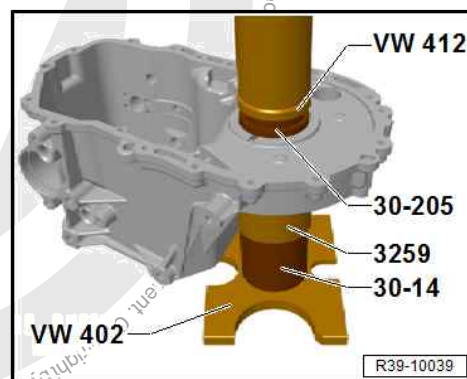
#### Continuation for all

- Pressing 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 side) without shim into clutch housing; for manual gearbox 0DF, without baffle plate as well.

#### Manual gearbox 02T

- Support clutch housing with wheel bearing tube - 3345- directly below bearing mounting.

#### Manual gearbox 0DF

- Set clutch housing directly on pressure plate - VW 402-

#### Continuation for all

- Insert differential in gearbox housing.
  - Fit clutch housing and tighten the 5 bolts.
  - 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 for bearing.
  - Move differential up and down. Read and note play indicated on dial gauge (example: 1.50 mm)

#### 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)	0.35 mm
Thickness of shim =	1.85 mm

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

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

- 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.

#### Manual gearbox 0DF

Insert new baffle plate (shown here in conjunction with gearbox housing)

Installation position: shoulder -arrow- faces away from housing  
-A-

#### Continuation for all

- Insert correct shim (in example 1.85 mm) and press tapered roller bearing outer race into clutch housing again.
- Bolt clutch housing to gearbox housing.

#### Specified torques

- ◆ Gearbox housing to clutch housing ⇒ [page 128](#)

