Workshop Manual

Golf Variant 2007 ➤
Golf Variant 2010 ➤
Jetta 2005 ➤
Jetta 2011 ➤

5-speed manual gearbox 0A4

Edition 04.2010

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

List of Workshop Manual Repair GroupsList of Workshop Manual Repair GroupsList of Workshop Manual Repair Groups

Repair Group

00 - Technical data

30 - Clutch

34 - Controls, housing

35 - Gears, shafts

39 - Final drive - differential

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

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

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

Copyright © 2010 Volkswagen AG, Wolfsburg

Contents

Protected by copyright. Copyright by Volkswagen AG.
Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.
Any unauthorised use, duplication or publication, in whole or in part, for commercial purposes is prohibited.

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

00 – Technical data

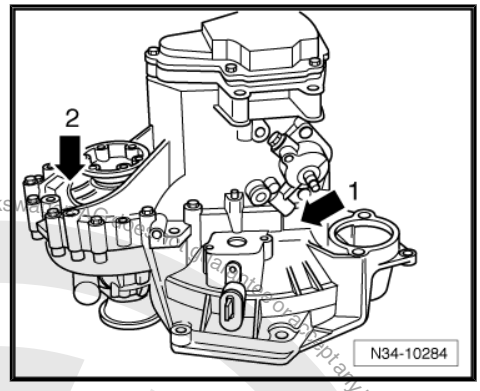
1 Gearbox identification

The 5-speed manual gearbox 0A4 is installed in the Jetta 2005 ‣, Bora 2006 ‣, Golf Variant 2007 ‣, Bora Sportwagen 2008 ‣, Golf Variant 2010 ‣ and Jetta 2011 ‣ in conjunction with a 4-cylinder engine.

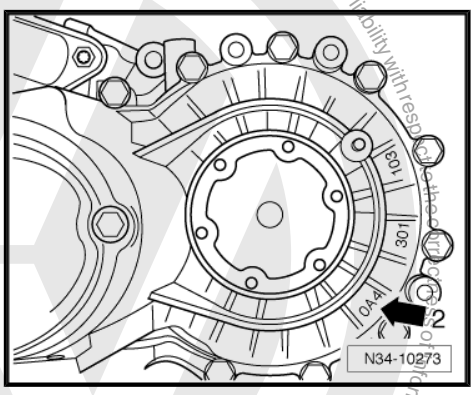
Allocation ⇒ page 2 .

1.1 Location on gearbox

Codes and production date -arrow 1- manual gearbox 0A4 -arrow 2-

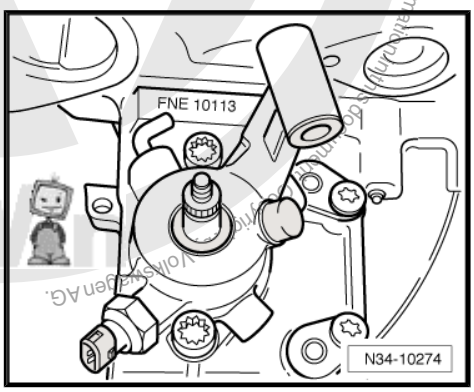


Manual gearbox 0A4 -arrow 2-



Codes and production date of gearbox

Example:	FNE	10	11	3
	I	I	I	I
	I	I	I	I
	Identification code	Day	Month	Year (2003) of manufacture



Additional data provide information about the production facility.

Note

The gearbox code also appears on the vehicle identification plates.

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

1.2 Identification code, assembly allocation and capacities

Manual gearbox		5-speed 0A4		
Identification code		**FNE**	**GQQ**	**HGR**
Manufactured	from to	05.05 05.05	05.05 08.06	05.05 08.06
Allocation	Model	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸
	Engine	1.9 l - 77 kW turbo diesel	1.9 l - 74 kW turbo diesel 1.9 l - 77 kW turbo diesel	2.5 l - 110 kW
Ratio Z1 : Z2	Final drive	61 : 18 = 3.389	61 : 18 = 3.389	62 : 17 = 3.647
Capacity of manual gearbox (gearbox completely dismantled)		1.9 l	1.9 l	1.9 l
Capacity of manual gearbox ⇒ page 112 (gearbox partially dismantled)		1.7 l	1.7 l	1.7 l
Drive shaft flange ∅		100 mm	100 mm	100 mm

- The following data can be found in the ⇒ Electronic parts catalogue “ETKA” .
  - ♦ Individual gear ratios
  - ♦ Specification for gear oil
  - ♦ Allocation of clutch plate and pressure plate

Manual gearbox		5-speed 0A4		
Identification code		**HDR**	**GTB**	**JCT**
Manufactured	from to	01.05 08.06	05.05 05.05	05.06
Allocation	Model	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸
	Engine	2.0 l - 85 kW	2.5 l - 110 kW	2.5 l - 110 kW
Ratio Z1 : Z2	Final drive	62 : 17 = 3.647	62 : 17 = 3.647	62 : 17 = 3.647
Capacity of manual gearbox (gearbox completely dismantled)		1.9 l	1.9 l	1.9 l
Capacity of manual gearbox ⇒ page 112 (gearbox partially dismantled)		1.7 l	1.7 l	1.7 l
Drive shaft flange ∅		100 mm	108 mm	108 mm

- The following data can be found in the ⇒ Electronic parts catalogue “ETKA” .
  - ♦ Individual gear ratios
  - ♦ Specification for gear oil
  - ♦ Allocation of clutch plate and pressure plate

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

Manual gearbox		5-speed 0A4		
Identification code		**JCR**	**JCU**	**KBL**
Manufactured	from to	05.06	05.06	12.06
Allocation	Model	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸ Golf Variant 2010 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸
	Engine	1.9 l - 74 kW turbo diesel 1.9 l - 77 kW turbo diesel	2.0 l - 85 kW	1.9 l - 77 kW turbo diesel
Ratio Z1 : Z2	Final drive	61 : 18 = 3.389	72 : 17 = 4.235	61 : 18 = 3.389
Capacity of manual gearbox (gearbox completely dismantled)		1.9 l	1.9 l	1.9 l
Capacity of manual gearbox ⇒ page 112 (gearbox partially dismantled)		1.7 l	1.7 l	1.7 l
Drive shaft flange ∅		108 mm	100 mm	100 mm

- The following data can be found in the ⇒ Electronic parts catalogue “ETKA” .
- ♦ Individual gear ratios
- ♦ Specification for gear oil
- ♦ Allocation of clutch plate and pressure plate

Manual gearbox		5-speed 0A4		
Identification code		**LHW**	**LUB**	**KPF**
Manufactured	from to	02.09	08.09	04.10
Allocation	Model	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸ Golf Variant 2010 ▸ Jetta 2011 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸ Golf Variant 2010 ▸ Jetta 2011 ▸	Jetta 2005 ▸, Bora 2006 ▸ Golf Variant 2007 ▸ Bora Sportwagen 2008 ▸ Golf Variant 2010 ▸ Jetta 2011 ▸
	Engine	1.6 l - 77 kW turbo diesel	1.6 l - 77 kW turbo diesel	2.5 l - 125 kW
Ratio Z1 : Z2	Final drive	62 : 17= 3.647	62 : 17= 3.647	62 : 17= 3.647
Capacity of manual gearbox (gearbox completely dismantled)		1.9 l	1.9 l	1.9 l
Capacity of manual gearbox ⇒ page 112 (gearbox partially dismantled)		1.7 l	1.7 l	1.7 l
Drive shaft flange ∅		100 mm	100 mm	100 mm

- The following data can be found in the ⇒ Electronic parts catalogue “ETKA” .
- ♦ Individual gear ratios
- ♦ Specification for gear oil
- ♦ Allocation of clutch plate and pressure plate

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

Manual gearbox		5-speed 0A4		
Identification code		**KQM**		
Manufactured	from to	06.10		
Allocation	Model	Jetta 2005 ‣, Bora 2006 ‣ Golf Variant 2007 ‣ Bora Sportwagen 2008 ‣ Golf Variant 2010 ‣ Jetta 2011 ‣		
	Engine	2.0 l - 81 kW turbo diesel		
Ratio Z1 : Z2	Final drive	61 : 18 = 3.389		
Capacity of manual gearbox (gearbox completely dismantled)		1.9 l		
Capacity of manual gearbox ⇒ page 112 (gearbox partially dismantled)		1.7 l		
Drive shaft flange ∅		100 mm		

- The following data can be found in the ⇒ Electronic parts catalogue “ETKA” .
- ♦ Individual gear ratios
- ♦ Specification for gear oil
- ♦ Allocation of clutch plate and pressure plate

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

2 Overview - power transmission

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

Designation

-Arrows- indicate direction of travel.

1 - Engine

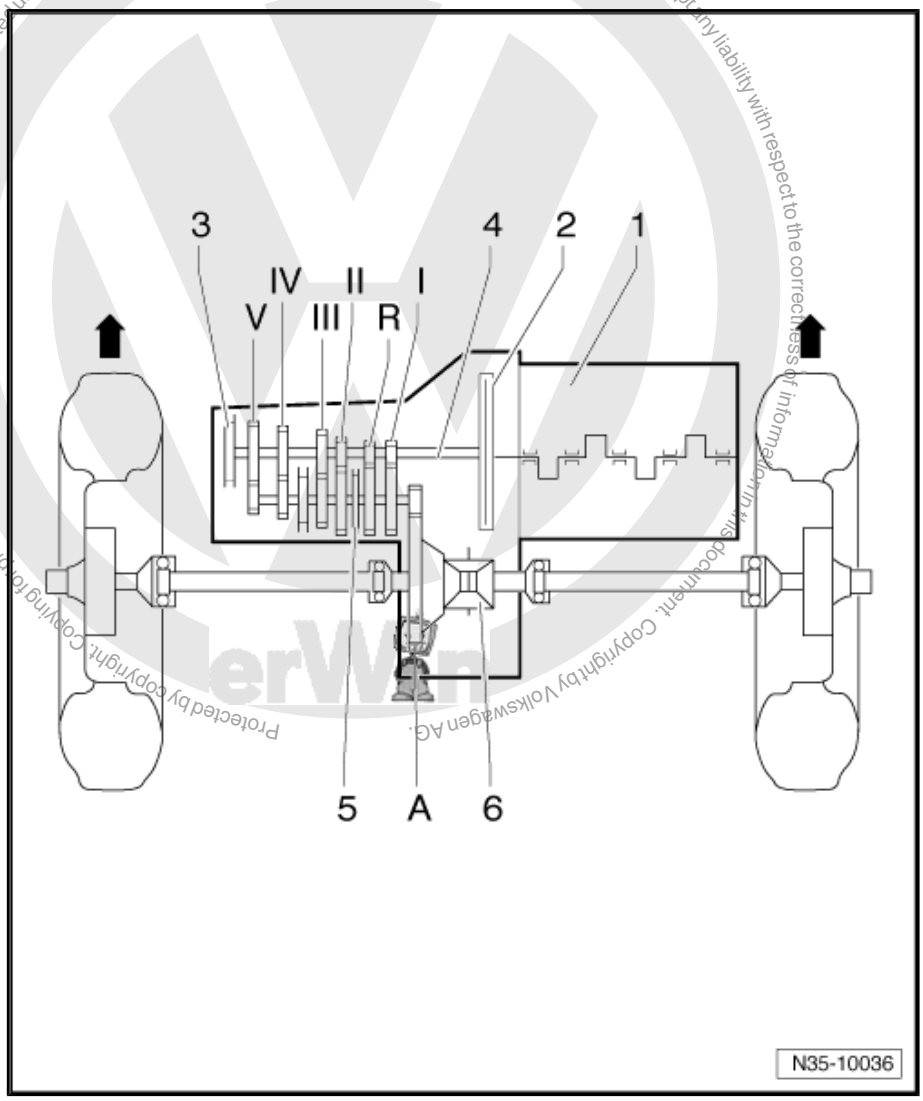
2 - Clutch

3 - Manual gearbox

4 - Input shaft

5 - Output shaft

6 - Differential



Ratio

-Arrows- indicate direction of travel.

I - 1st gear

II - 2nd gear

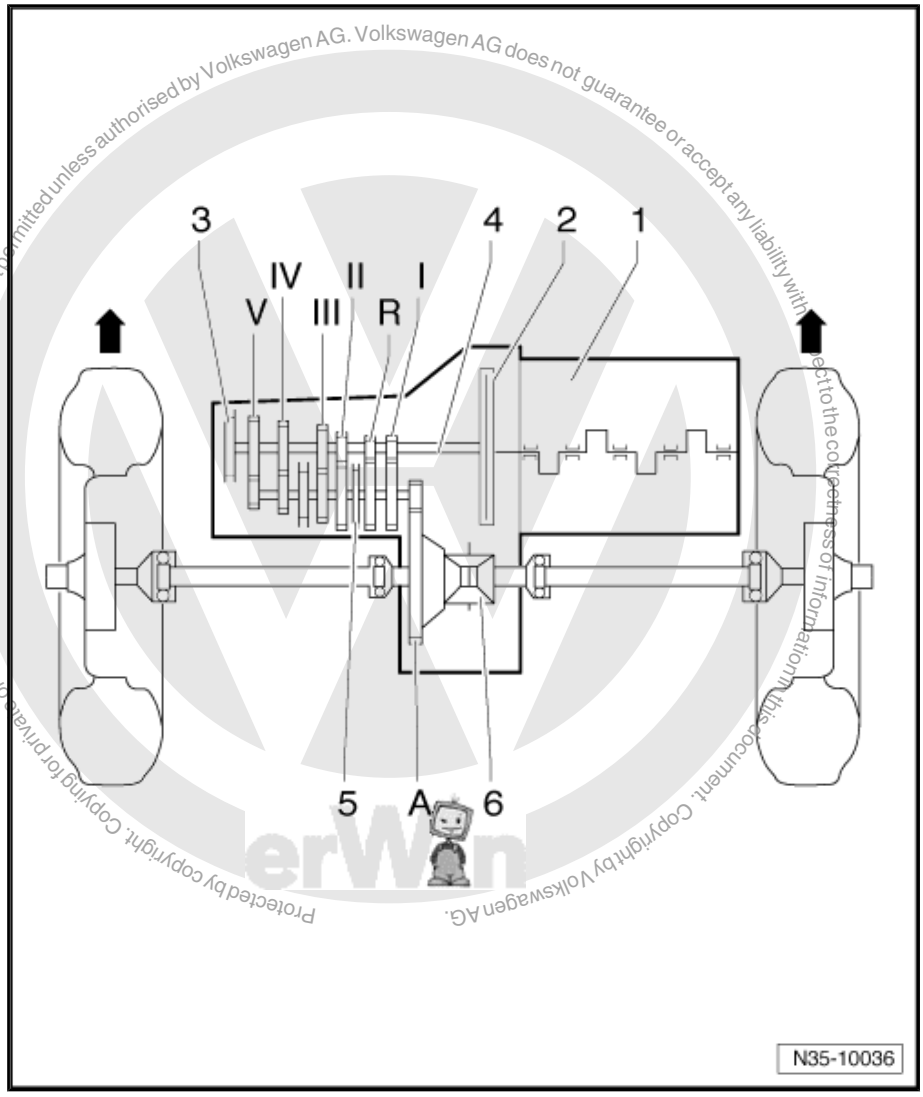
III - 3rd gear

IV - 4th gear

V - 5th gear

R - Reverse gear

A - Final drive



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

3 Calculating overall gear ratio “i”

Example:

	5th gear	Final drive
Drive gear	$ZG_1 = 39$	$ZA_1 = 18$
Driven gear	$ZG_2 = 29$	$ZA_2 = 61$

$i = Z_2 : Z_1$ 1)

i_G = Gear ratio = $ZG_2 : ZG_1 = 29 : 39 = 0.744$

i_A = Final drive ratio = $ZA_2 : ZA_1 = 61 : 18 = 3.389$

i_{total} = Overall ratio = $i_G \times i_A = 0.744 \times 3.389 = 2.521$

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

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

4 General repair notes

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

A number of instructions generally applicable to the various repair procedures - which were previously repeated a number of times at various places in the workshop manual are summarised under the topic “components” ⇒ page 8 . They apply to this workshop manual.

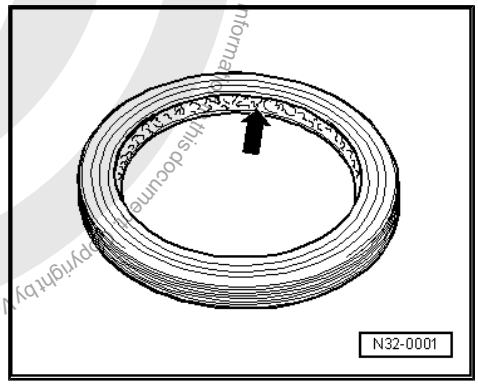
4.1 Components

4.1.1 Gearbox

- When installing the manual gearbox, ensure that the dowel sleeves between the engine and gearbox are correctly seated.
- When installing mounting brackets or waxed components, clean the contact surfaces. Contact surfaces must be free of wax and grease.
- Allocate bolts and other components using ⇒ Electronic parts catalogue “ETKA”.
- Capacity ⇒ page 2
- If the gearbox is repaired, fill with gear oil.

Capacity, gearbox completely dismantled	Gearbox capacity, gearbox partially dismantled ⇒ page 112
1.9 l	1.7 l

4.1.2 O-rings, seals, gaskets and sealants

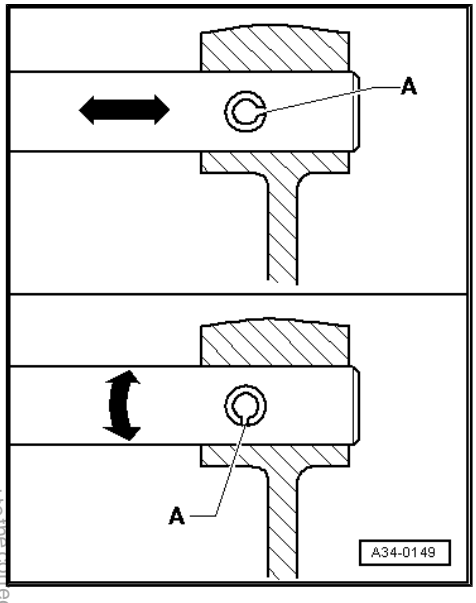


- Thoroughly clean housing joint surfaces before applying sealant .
- Apply sealant -AMV 188 200 03- uniformly but not too thick.
- Renew O-rings, seals and gaskets.
- After removing gaskets and seals, always inspect contact surface of housing or shaft for burrs resulting from removal or for other signs of damage.
- Before installing radial shaft seals, lightly oil outer diameter and half-fill space between sealing lips -arrow- with sealing grease -G 052 128 A1- .
- The open side of the oil seal faces the side with fluid filling.
- Press in new oil seals so that sealing lip does not contact the shaft in the same place as the old seal (make use of insertion depth tolerances).
- Lightly oil O-rings before installing; this prevents the rings being crushed when inserted.
- After renewing seals and gaskets, check oil level in gearbox and replenish if necessary ⇒ page 112 .

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

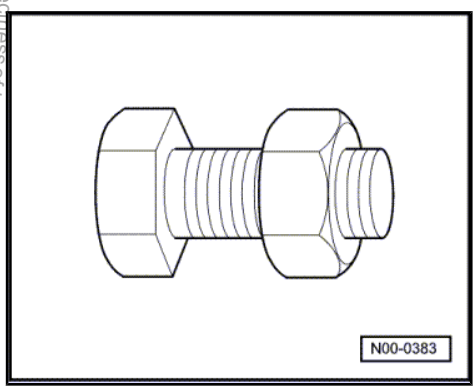
4.1.3 Locking devices

- Do not overstretch retaining rings.
- Always renew retaining rings which have been damaged or overstretched.
- Retaining rings must locate properly in grooves.
- Renew spring pins. Installation position: slit -A- should be in line with the line of force -arrow-.



4.1.4 Nuts and bolts

- Loosen nuts or bolts in the order opposite to the tightening sequence.
- Securing bolts and securing nuts which secure covers and housings should be loosened and tightened diagonally in stages if no tightening sequence is specified.
- Do not cant especially delicate parts, such as clutch pressure plates. Loosen and tighten bolts and nuts in stages in a diagonal sequence.
- Torque settings are specified for unoiled bolts and nuts.
- Always renew self-locking bolts and nuts.
- Threads of bolts secured with locking fluid must be cleaned with a wire brush. Then insert bolts with locking fluid - AMV 185 101 A1- .
- Threaded holes into which self-locking bolts or bolts coated with locking fluid are screwed, must be cleaned (e.g. with a thread chaser). Otherwise there is a danger of bolts shearing when subsequently being removed.

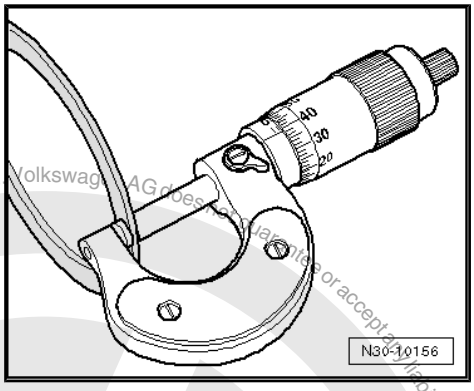


4.1.5 Bearings

- Install needle bearings with lettered side (thicker metal) towards fitting tool.
- Lubricate all gearbox bearings with gear oil before installing.
- 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.

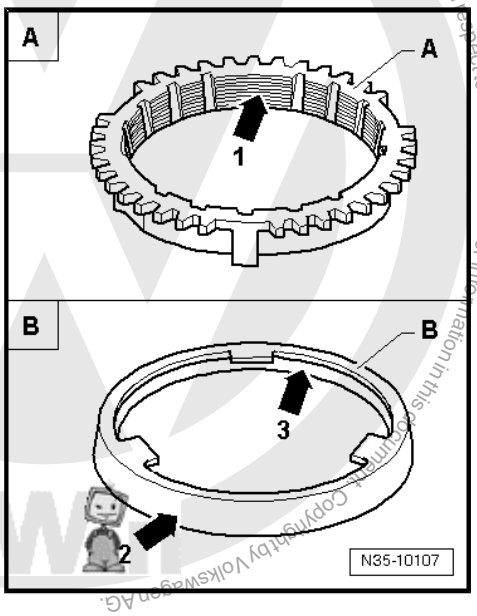
Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any commercial use or distribution of the data to commercial enterprises, in part or in whole, is not permitted unless authorised by Volkswagen AG.

4.1.6 Shims



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

4.1.7 Synchro-rings



- Do not interchange. 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” and “signs of abnormal wear”.
- Check the cone of the synchromeshed gear for “scoring” and “signs of abnormal wear”.
- Moisten synchromesh mechanism with gear oil before installing.

4.1.8 Gears, synchro-hubs, inner races for needle bearings

- Heat inner races for needle bearings to about 100° C with the inductive heater -VAS 6414- before installing.
- Heat synchro-hub with inductive heater -VAS 6414- to approx. 100 °C before installing. Press in to stop when installing so there is no axial clearance.
- Heat gears with inductive heater -VAS 6414- to approx. 100 ° C before installing. Press in to stop when installing so there is no axial clearance.
- Observe installation position.

4.1.9 Synchromeshed gears

- After assembly, check synchromeshed gears of 1st through 5th gear for slight play, or for freedom of movement.

4.1.10 Clutch

- When removing gearbox, remove slave cylinder without disconnecting pipes.
- If the clutch slave cylinder is removed with the hydraulic line attached, do not depress clutch pedal. Otherwise the piston will be pressed out of the slave cylinder.

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

- Ensure that the pressure plate does not cant: loosen and tighten bolts diagonally and in several gradual stages.
- If the clutch has burnt out, thoroughly clean the clutch housing as well as the friction surface of flywheel with a cloth to reduce the smell of burnt linings.

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

30 – Clutch

1 Fault finding, power transmission

– Refer to ⇒ Fault finding, power transmission; Rep. Gr. 30 ; Complaints about clutch and clutch mechanism and ⇒ Fault finding, power transmission; Rep. Gr. 34 ; Complaints about selector mechanism .

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

2 Repairing clutch mechanism

2.1 Overview

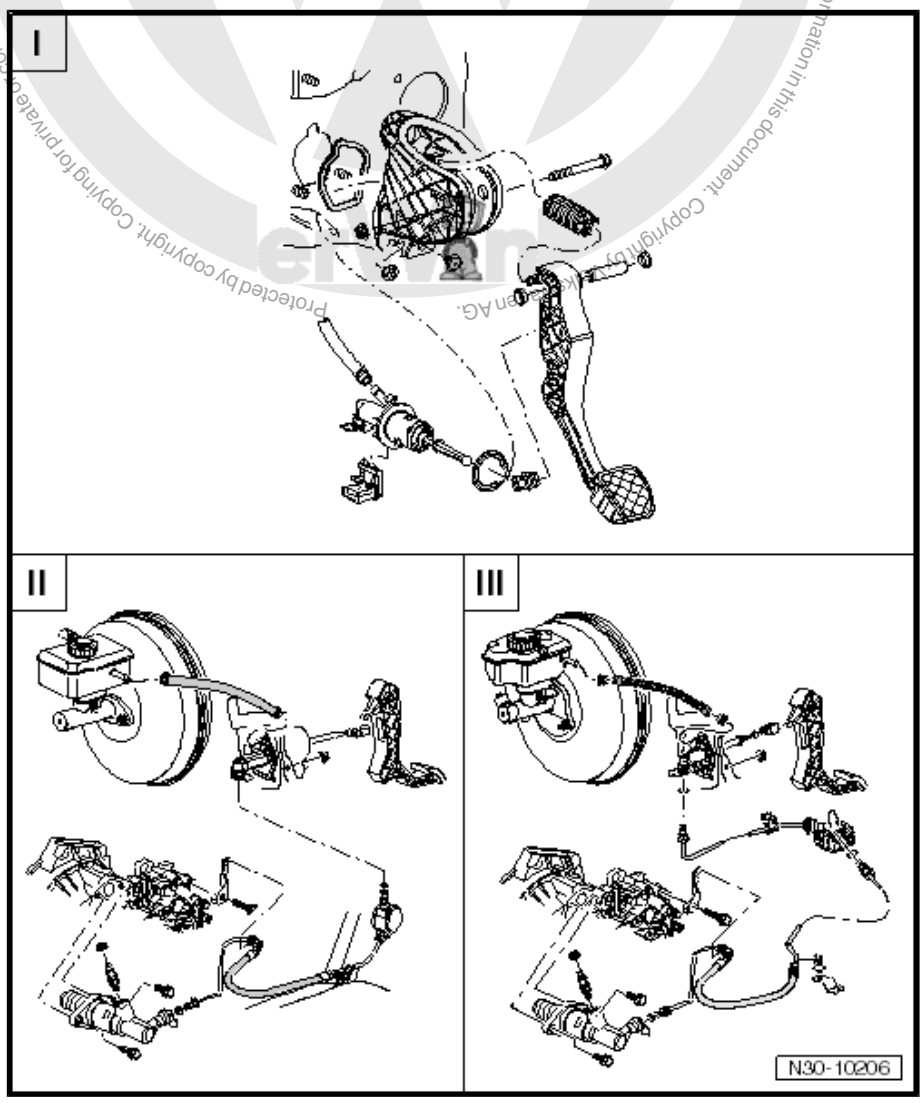
Note

- *Before disconnecting battery, obtain code for radio having anti-theft coding.*
- *With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .*
- *If reconnecting battery, follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .*
- *Grease all bearing points and contact surfaces. Allocate grease according to ⇒ Electronic parts catalogue "ETKA" .*

I - Assembly overview - pedal cluster ⇒ page 14

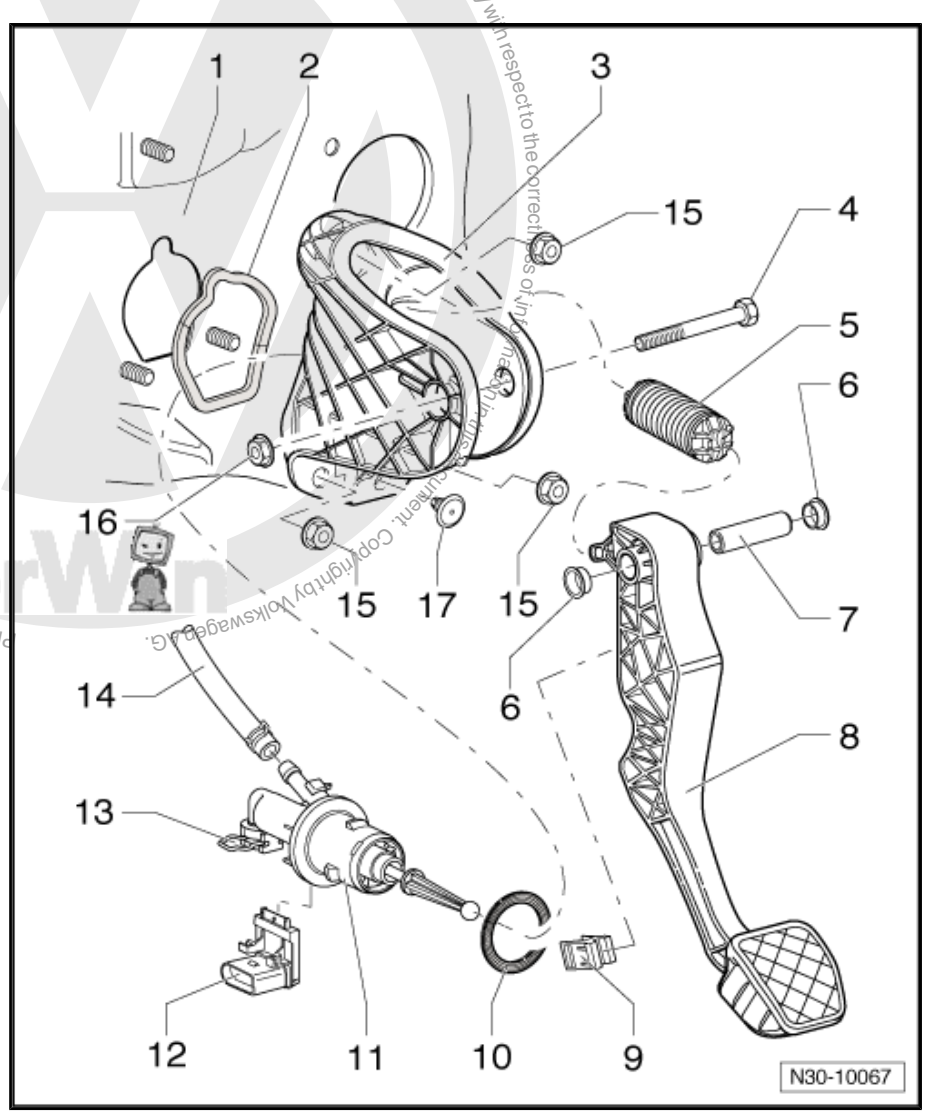
II - Assembly overview - hydraulics (LHD) ⇒ page 37

III - Assembly overview - hydraulics (RHD) ⇒ page 39



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

2.2 Assembly overview - pedal cluster



1 - Bulkhead
- ❑ With support for mounting bracket

2 - Seal
- ❑ Always renew
- ❑ Between mounting bracket and bulkhead
- ❑ Self-adhesive
- ❑ Bond to mounting bracket

3 - Mounting bracket
- ❑ For mounting clutch pedal
- ❑ Is provided with damping in some equipment variants ⇒ page 15
- ❑ Removing and installing ⇒ page 25

4 - Bolt

5 - Over-centre spring
- ❑ Removing and installing ⇒ page 15

6 - Bearing bush

7 - Pivot pin

8 - Clutch pedal
- ❑ Removing and installing ⇒ page 20

9 - Retainer
- ❑ To remove and install, separate master cylinder from clutch pedal ⇒ page 20

10 - Seal
- ❑ Always renew
- ❑ Between master cylinder and mounting bracket

11 - Master cylinder
- ❑ Removing and installing after removal of mounting bracket ⇒ page 25

12 - Clutch position sender -G476-
- ❑ Removing and installing ⇒ page 33
- ❑ Can be checked in “guided fault finding” of vehicle diagnosis, testing and information system -VAS 5051- .
- ❑ The clutch position sender -G476- is identified as clutch pedal switch -F36- in “guided fault finding”.

13 - Clip
- ❑ Pull out clip to stop to remove and install pipe/hose line

14 - Supply hose
- ❑ Rubber
- ❑ From 12.05, plastic ⇒ page 38

15 - Hexagon nut, 25 Nm
- ❑ Self-locking

- ❑ Qty. 3
- ❑ For mounting bracket to bulkhead
- ❑ Always renew

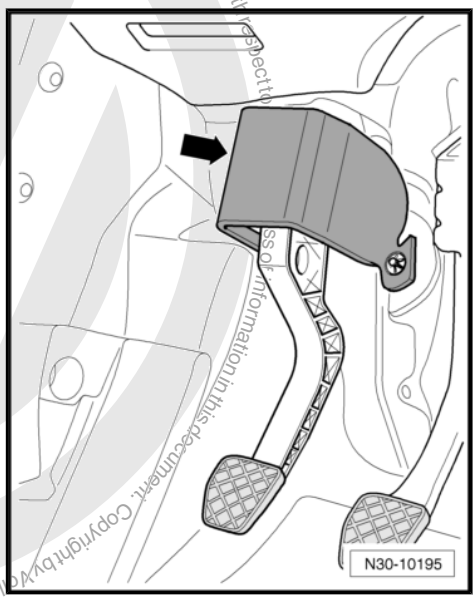
16 - Hexagon nut, 25 Nm

- ❑ Always renew

17 - Stop

- ❑ For clutch pedal

Mounting bracket with damping -arrows-

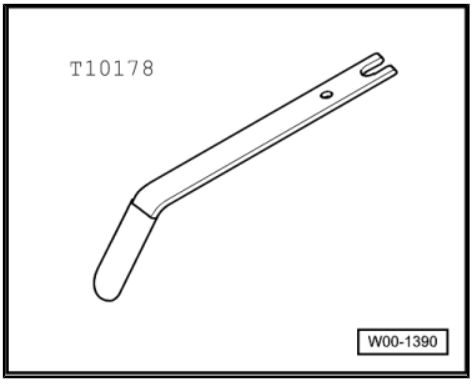


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

2.3 Removing and installing over-centre spring

Special tools and workshop equipment required

- ♦ Release tool -T10178-



2.3.1 Removing

Carry out procedure as follows:

Vehicles with knee airbag

Note

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

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

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

Continuation for all

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

Vehicles with knee airbag

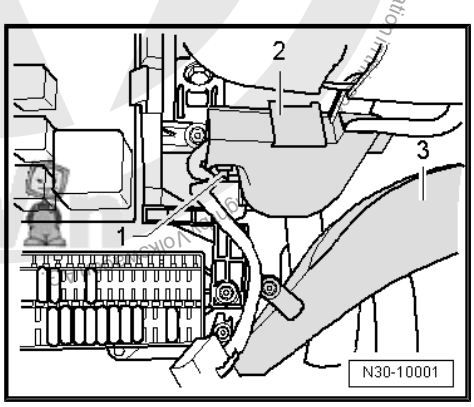
– Remove bracket for knee airbag together with crash bar ⇒ General body repairs, interior; Rep. Gr. 69 ; Airbag; Removing and installing knee airbag bracket.

Continuation for all

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

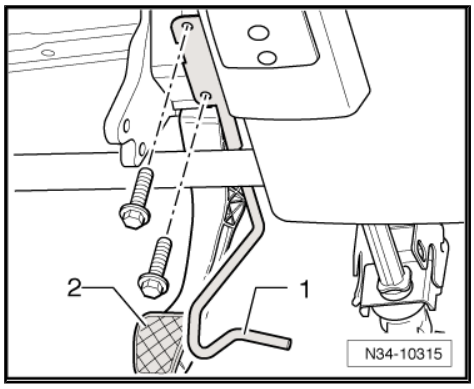
Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways. Crash bar may look different from as shown in following illustrations.



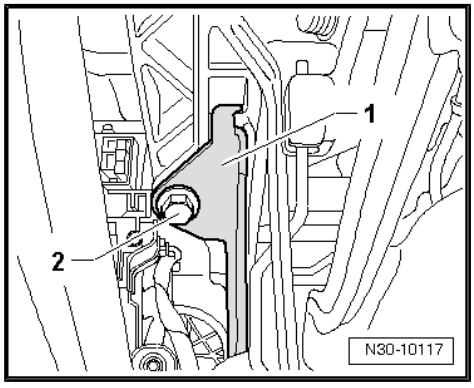
Attachment with 2 bolts

– Remove crash bar -1- (2 bolts).

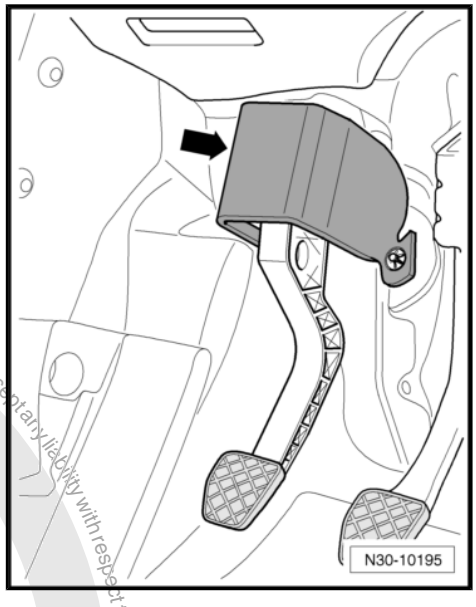


Attachment with 1 bolt

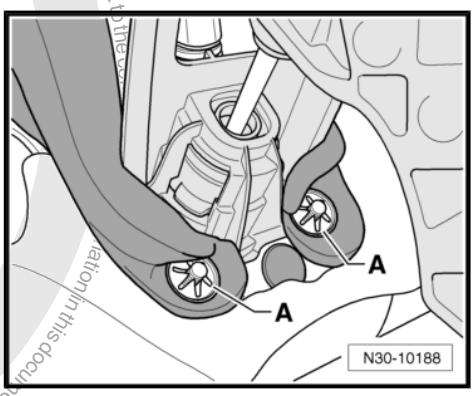
– Remove crash bar -1- (1 x bolt -2-).



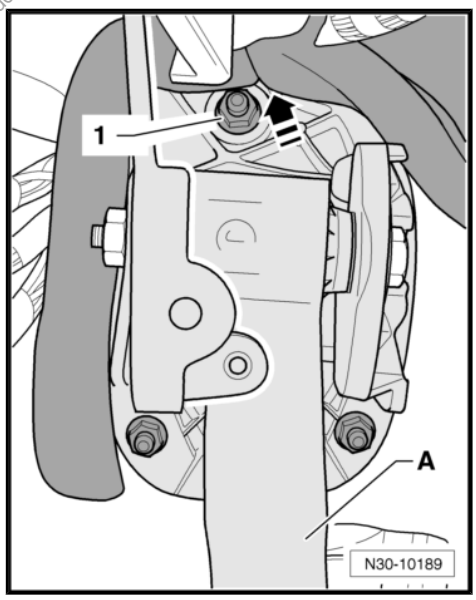
– If fitted, remove damping -arrow- from lower area of clutch pedal mounting bracket.



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

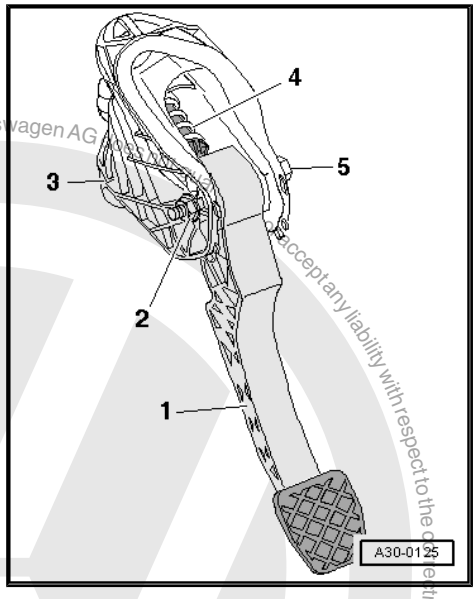


– Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.



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

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



Note

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

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

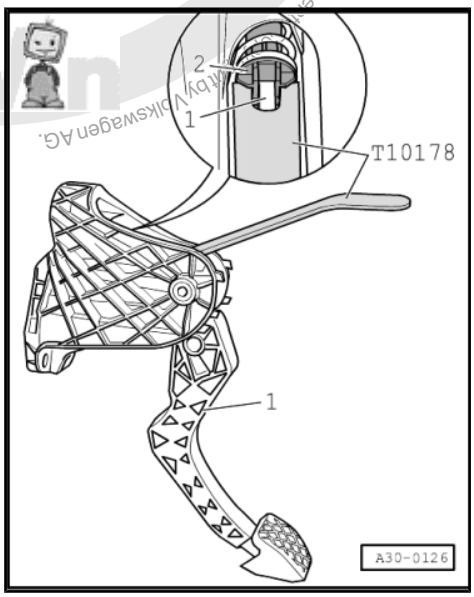
2.3.2 Installing

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

Note

Renew self-locking nuts.

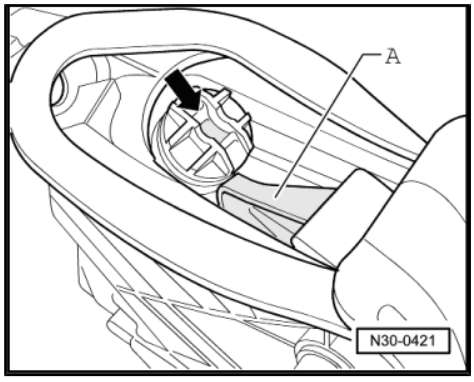
– Insert over-centre spring -2- in mounting bracket from above while holding end of spring with assembly tool -T10178- in installation position.



- Receptacle -arrow- for tip -A- of clutch pedal must stand vertically.

– Insert tip of clutch pedal in bearing recess of over-centre spring.

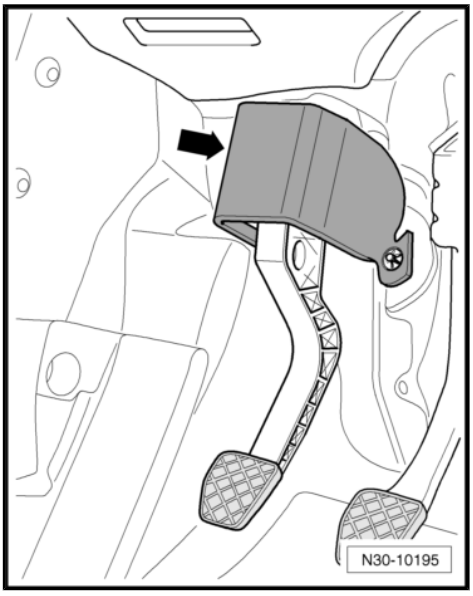
– Depress clutch pedal slightly, push bolt through and tighten self-locking nut to specified torque ⇒ page 20 .



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

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

– Return this to installation position.

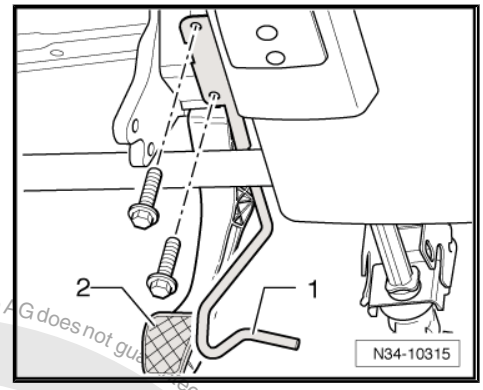


Vehicles without knee airbag

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

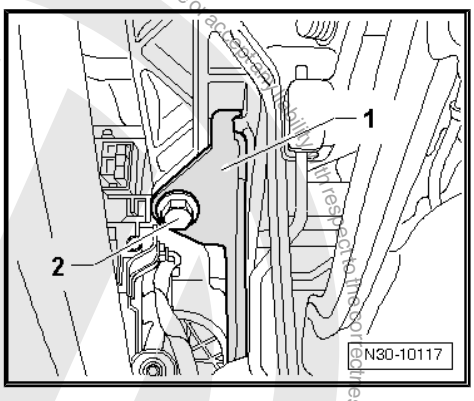
Attachment with 2 bolts

– Install crash bar -1- and tighten 2 bolts to specified torque ⇒ page 20 .



Attachment with 1 bolt

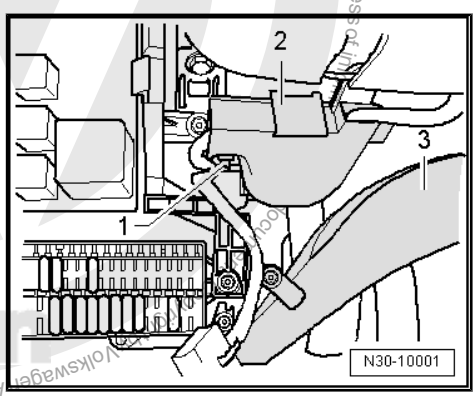
– Install crash bar -1- and tighten bolt -2- to specified torque ⇒ page 20 .



Continuation for all

– Mount cable guide -2- on steering column.

– Install footwell vent -3- ⇒ Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .



Vehicles with knee airbag

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

Continuation for all

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

– If disconnected, connect battery ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

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

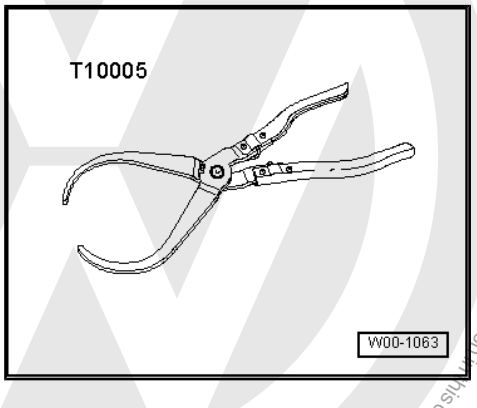
2.3.3 Specified torques

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

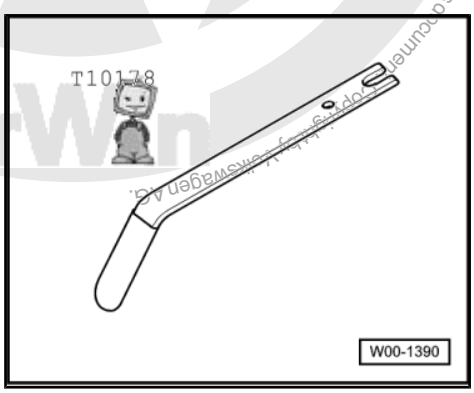
2.4 Removing and installing clutch pedal

Special tools and workshop equipment required

♦ Pliers -T10005-



♦ Release tool -T10178-



2.4.1 Removing

Carry out procedure as follows:

Vehicles with knee airbag

Note

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

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

– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

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

Continuation for all

– Push driver seat as far back as possible and move steering wheel to highest position.

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

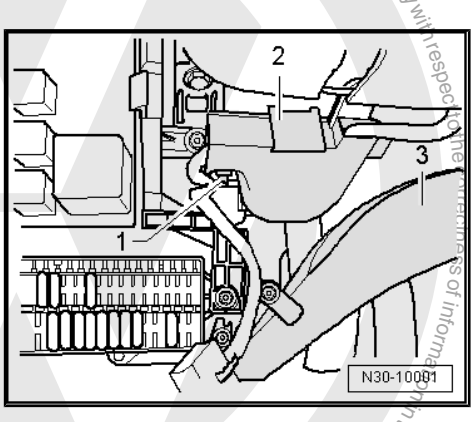
Vehicles with knee airbag

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

Continuation for all

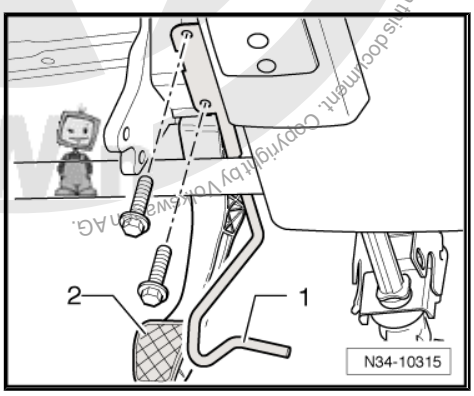
– Remove cable guide -2- from steering column.

– Remove footwell vent -3- ⇒ Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .



Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways. Crash bar may look different from as shown in following illustrations.



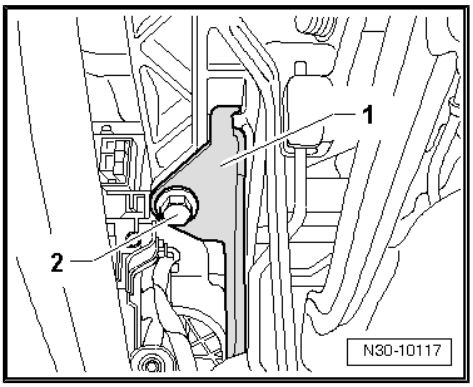
Attachment with 2 bolts

– Remove crash bar -1- (2 bolts).

Attachment with 1 bolt

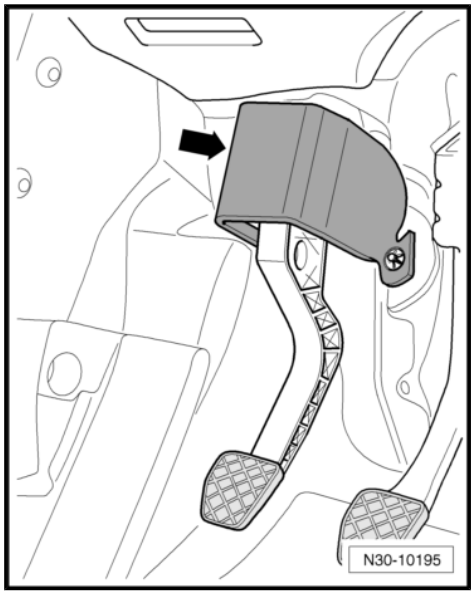
– Remove crash bar -1- (1 x bolt -2-).

Continuation for all

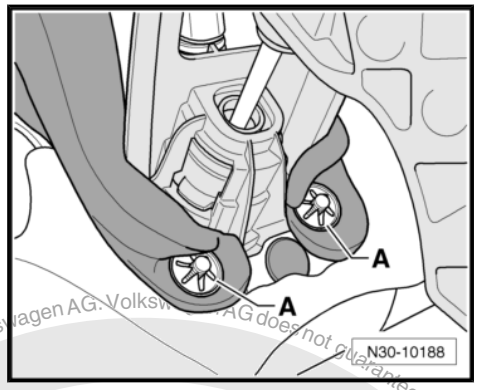


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

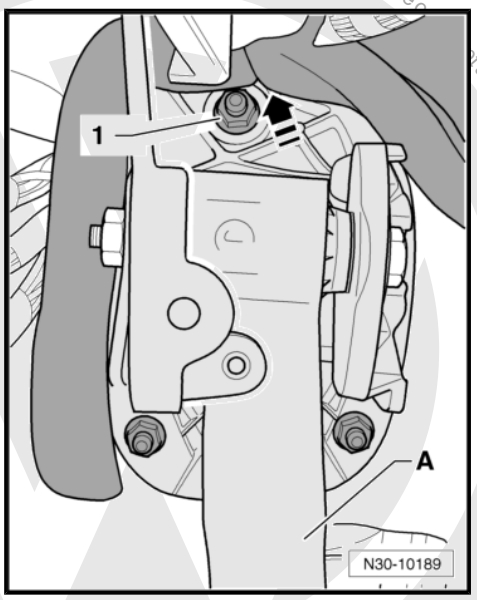
– If fitted, remove damping -arrow- from lower area of clutch pedal mounting bracket.



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

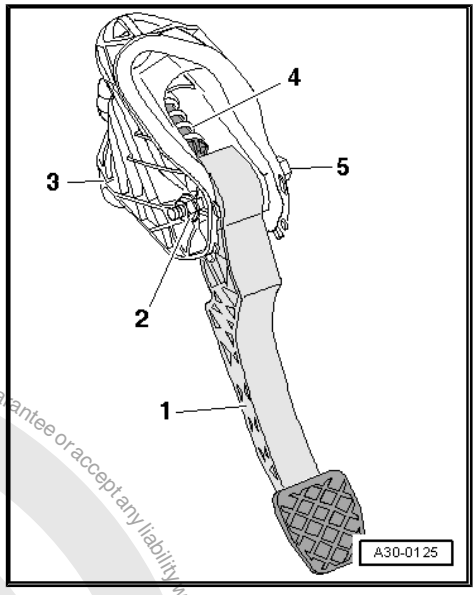


– Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.

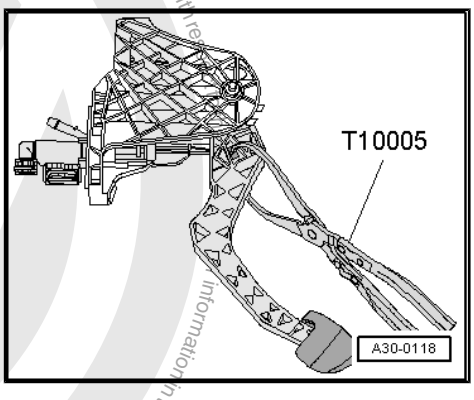


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

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



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



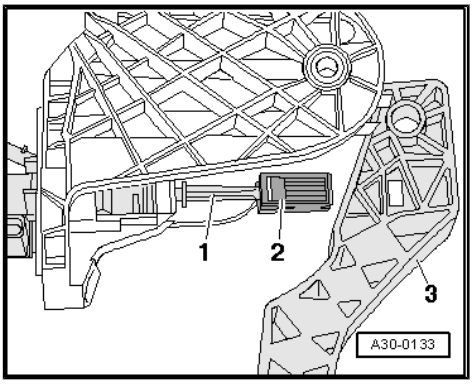
2.4.2 Installing

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

Note

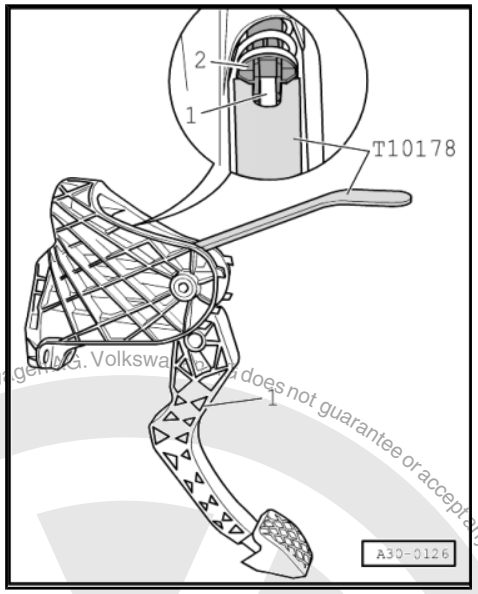
Renew self-locking nuts.

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



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

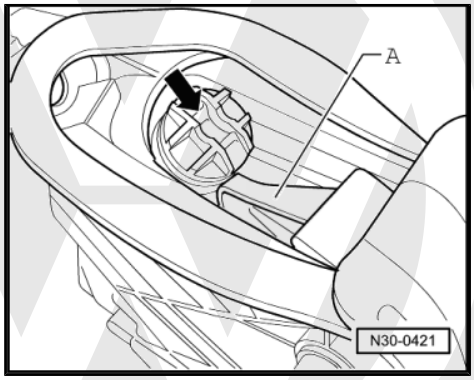
– Insert over-centre spring -2- in mounting bracket from above while holding end of spring with assembly tool -T10178- in installation position.



- Receptacle -arrow- for tip -A- of clutch pedal must stand vertically.

– Insert tip -A- of clutch pedal in bearing recess of over-centre spring.

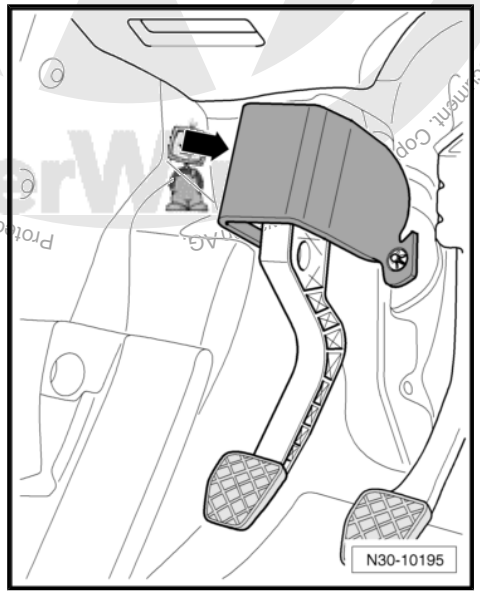
– Depress clutch pedal slightly, push bolt through and tighten self-locking nut to specified torque ⇒ page 25 .



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

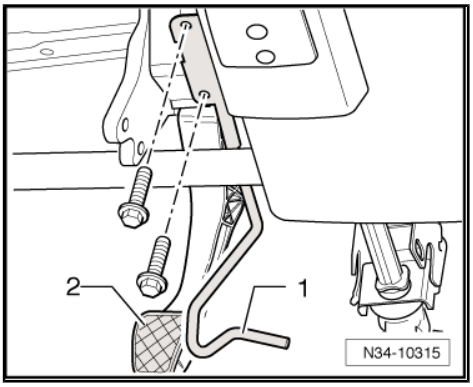
– Return this to installation position.

Vehicles without knee airbag



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

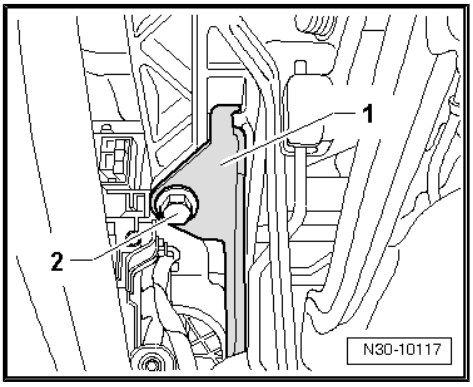
The crash bar -1- in front of clutch pedal -2- may be secured in different ways.



Attachment with 2 bolts

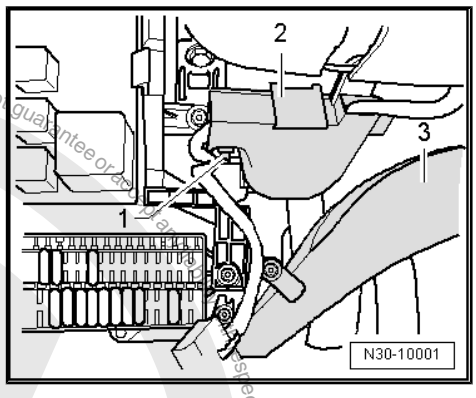
– Install crash bar -1- and tighten 2 bolts to specified torque ⇒ page 25 .

Attachment with 1 bolt



– Install crash bar -1- and tighten bolt -2- to specified torque ⇒ page 25 .

Continuation for all



– Mount cable guide -2- on steering column.

– Install footwell vent -3- ⇒ Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .

Vehicles with knee airbag

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

Continuation for all

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

– If disconnected, connect battery ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

2.4.3 Specified torques

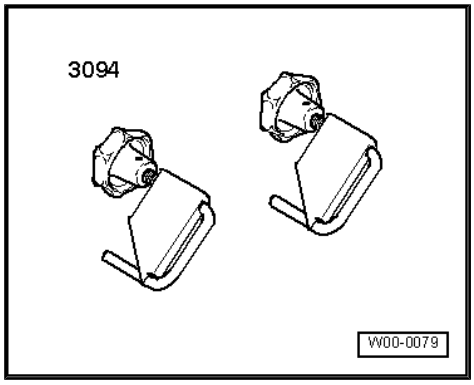
Component	Nm
Clutch pedal to mounting bracket ♦ Renew self-locking nuts	25
Crash bar to steering column mounting bracket (attachment with 2 bolts)	10
Crash bar to steering column mounting bracket (attachment with 1 bolts)	20
♦ Renew bolts for crash bar	

2.5 Removing and installing mounting bracket

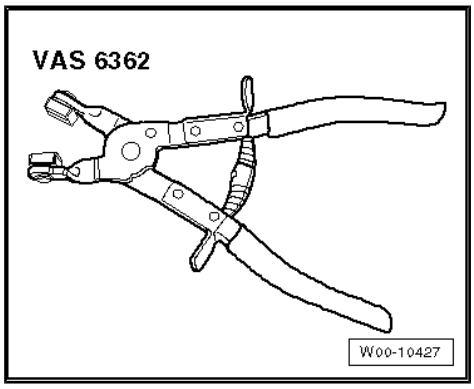
Special tools and workshop equipment required

Protected by Copyright. Copyright by Volkswagen AG. Any unauthorised use, reproduction or publication of this part is not permitted without the prior written consent of Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

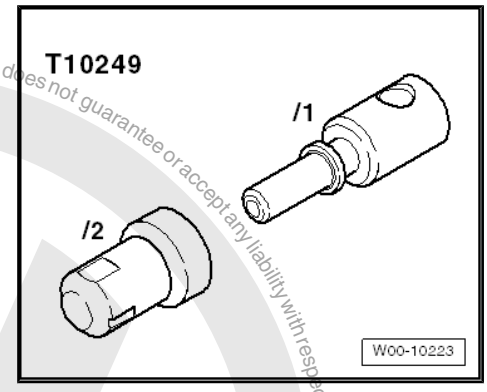
- Hose clamps to 25 mm Ø -3094-



- Hose clip pliers -VAS 6362-



- Sealing tool -T10249-



2.5.1 Removing

Carry out procedure as follows:

LHD

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

– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

– Remove complete air filter housing if it is near battery ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

– Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .

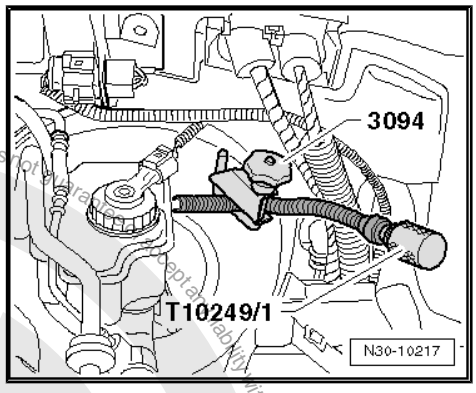
Protected by copyright. Copyright by Volkswagen AG. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.

Continuation for all

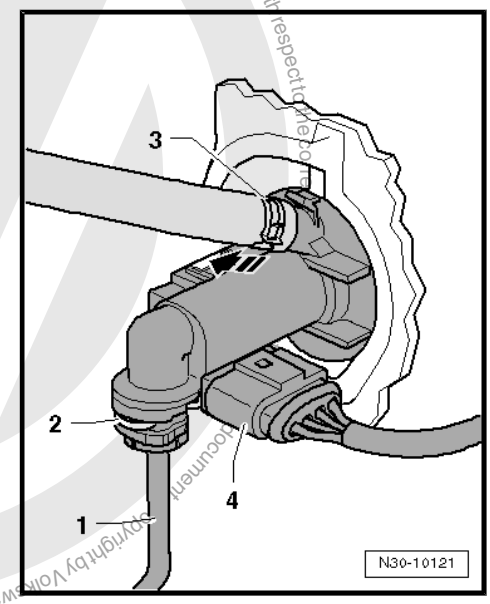
Note

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

– Clamp off supply hose to master cylinder with hose clamps up to ∅ 25 mm -3094- .



– If present, loosen spring-type clip -3- with hose clip pliers -VAS 6362- and pull supply hose off master cylinder.
– In addition, for disconnecting, you can close it with the sealing tool -T10249/1- (⇒ figure above).
– Release securing clip -2- using screwdriver or a pointed object and pull pipe/hose line or plastic line -1- off master cylinder.
– Unclip clutch position sender -G476- from master cylinder -arrow- and remove with electrical connector attached -4-.



Note

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

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

Vehicles with knee airbag

Note

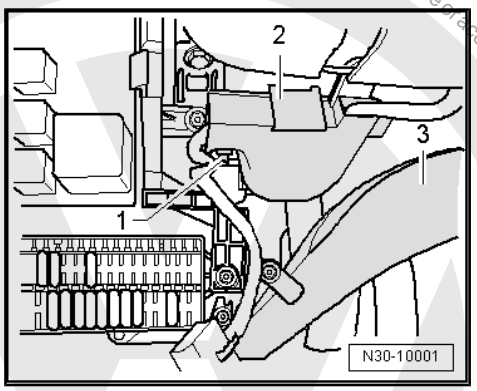
The installation location of the knee airbag is above the pedal cluster.

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

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

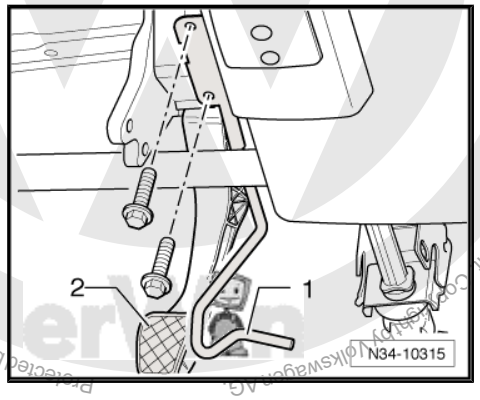
– Remove cable guide -2- from steering column.

– Remove footwell vent -3- ⇒ Heating, air conditioning; Rep. Gr. 80 ; Repairing heating .



Vehicles without knee airbag

The crash bar -1- in front of clutch pedal -2- may be secured in different ways. Crash bar may look different from as shown in following illustrations.

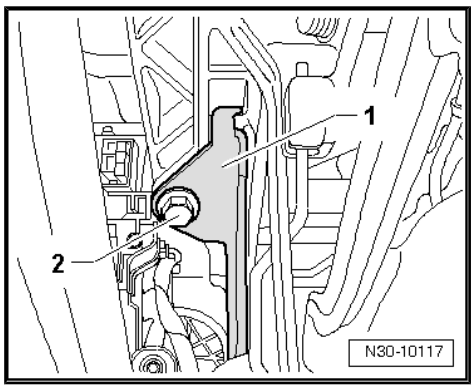


Attachment with 2 bolts

– Remove crash bar (2 bolts).

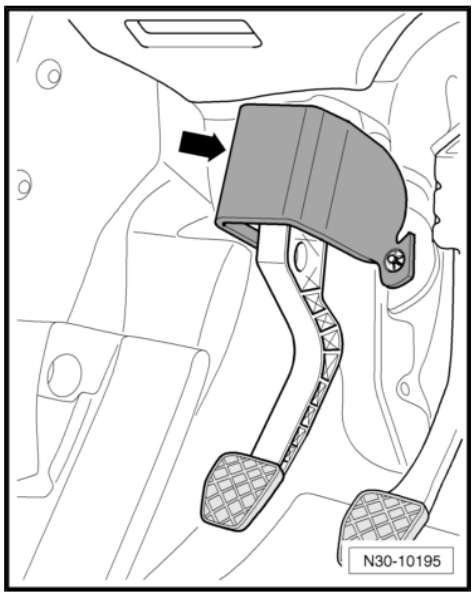
Attachment with 1 bolt

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



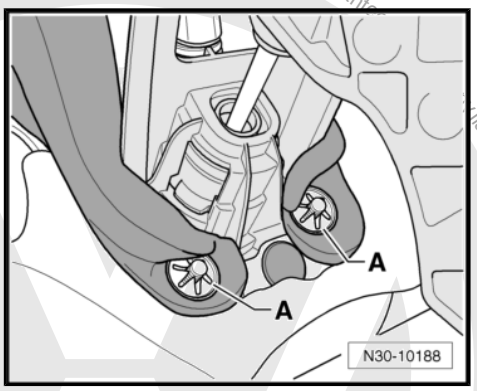
Continuation for all

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

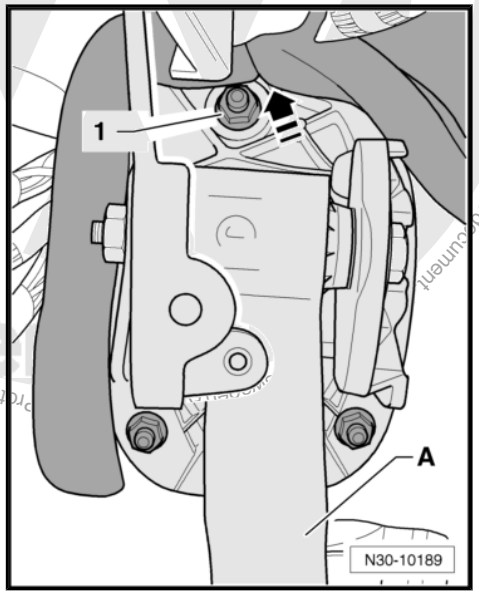


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

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



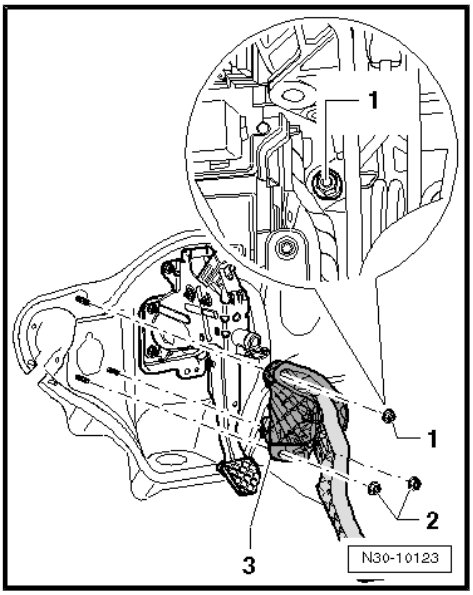
– Push damping upwards in area of upper securing nut -1- above clutch pedal -A- in -direction of arrow-.



– Remove securing nuts -1- and -2-.

The upper securing nut -1- is accessible between the relay carrier and the steering column trim.

– Remove mounting bracket -3-.

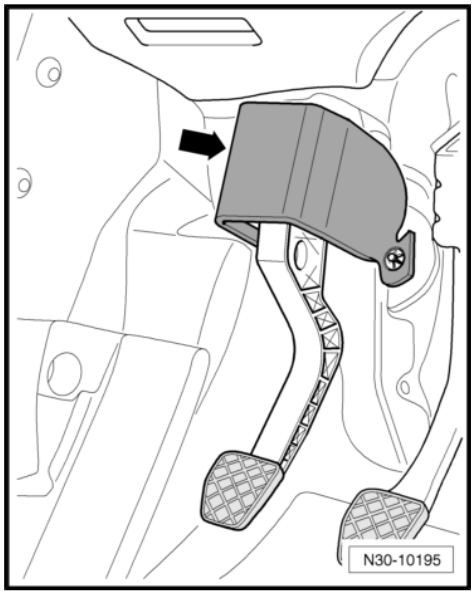


2.5.2 Installing

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

Volkswagen Aktiengesellschaft. Volkswagen does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. All rights reserved. Transmitted or reproduced for private and commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

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

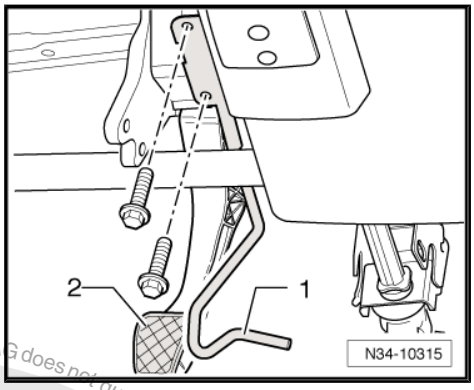


Note

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

Vehicles without knee airbag

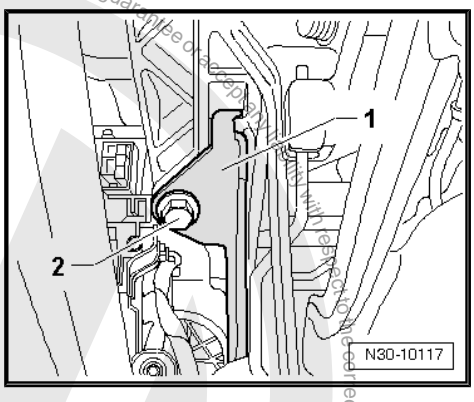
The crash bar -1- in front of clutch pedal -2- may be secured in different ways.



Attachment with 2 bolts

– Install crash bar -1- and tighten 2 bolts to specified torque ⇒ page 31 .

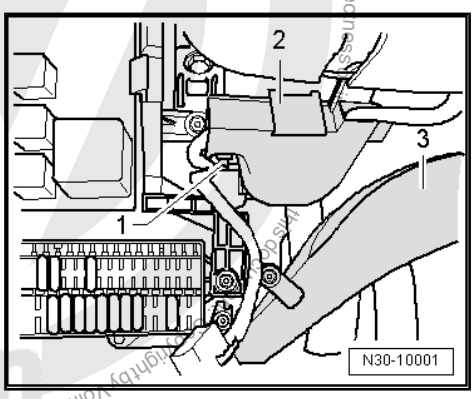
Attachment with 1 bolt



– Install crash bar -1- and tighten bolt -2- to specified torque ⇒ page 31 .

Continuation for all

– Mount cable guide -2- on steering column.



– Install footwell vent -3- ⇒ Heating, Air conditioning; Rep. Gr. 80 ; Repairing heating; Removing and installing left footwell vent .

Vehicles with knee airbag

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

Continuation for all

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

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

– Push pipe/hose line or plastic line -1- with seal -2- onto connection of master cylinder -4- until securing clip -3- engages audibly.

– Test line by tugging on it.

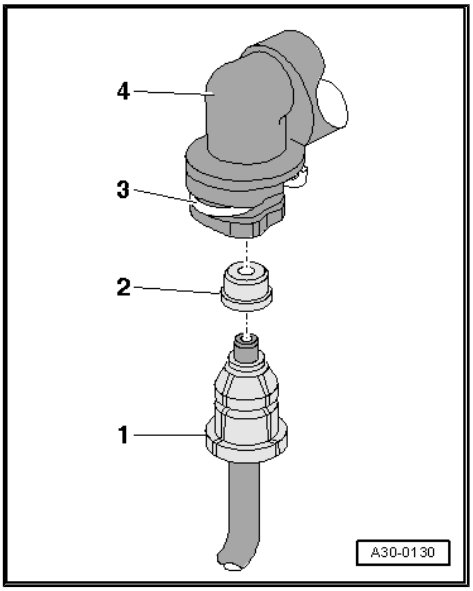
– After removing hose clamp up to ∅ 25 mm -3094- , return supply hose to its original contour, if necessary.

– Bleed clutch system ⇒ page 42 .

LHD

– Install battery ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing .

– If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .



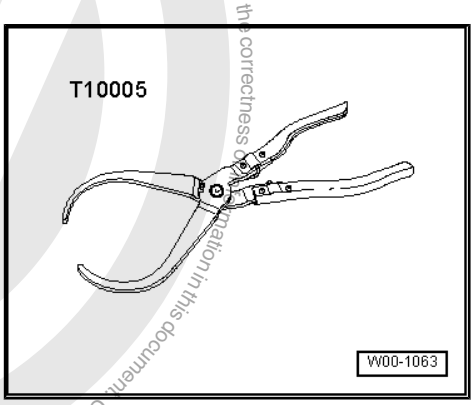
2.5.3 Specified torques

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

2.6 Removing and installing master cylinder

Special tools and workshop equipment required

♦ Pliers -T10005-



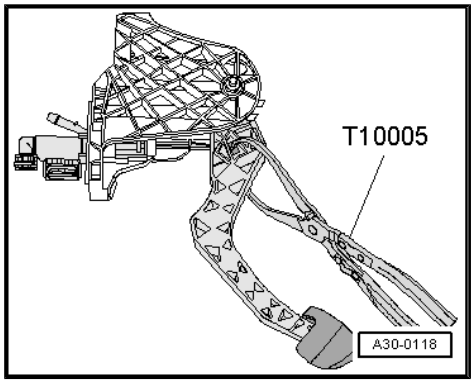
2.6.1 Removing

Carry out procedure as follows:

– Remove mounting bracket ⇒ page 25 .

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

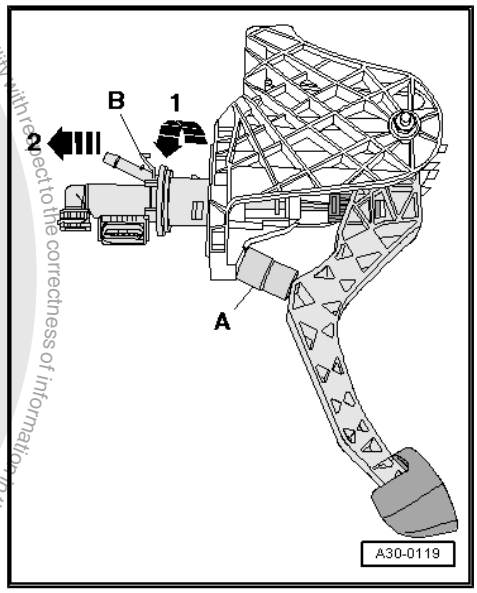
– Release retainer for master cylinder operating rod using pliers -T10005- .



– Place spacer -A- between clutch pedal and stop and press clutch pedal to spacer.

♦ Length of spacer = about 40 mm (e.g. $^1/_2$" socket)

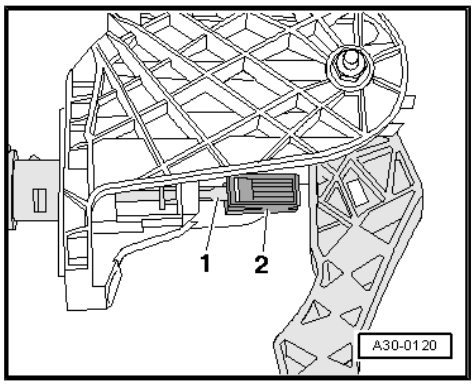
– Release securing bar -B- and pull master cylinder out of mounting bracket -arrow 1- and -arrow 2-.



2.6.2 Installing

• Move clutch pedal to stop at rest position.

– Secure retainer -2- to master cylinder operating rod -1-.

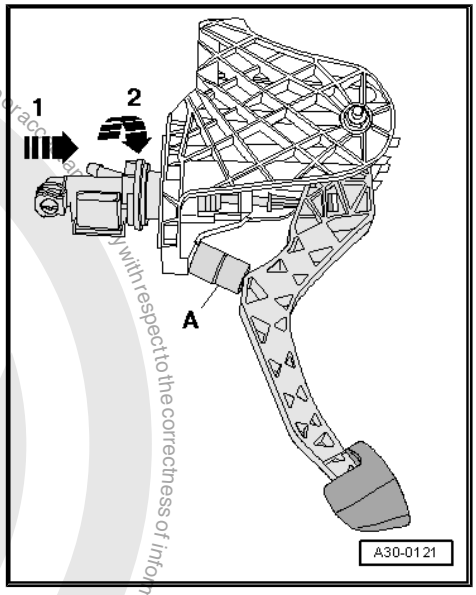


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Place spacer -A- between clutch pedal and stop and press clutch pedal to spacer.

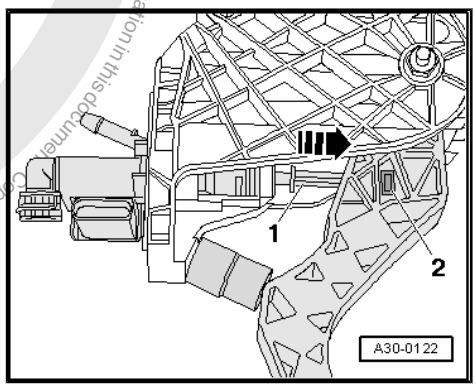
♦ Length of spacer = about 40 mm (e.g. $^1/_2$" socket)

– Engage master cylinder in mounting bracket -arrow 1- and -arrow 2-.



– Press master cylinder operating rod -1- in -direction of arrow- until retainer -2- engages audibly in clutch pedal.

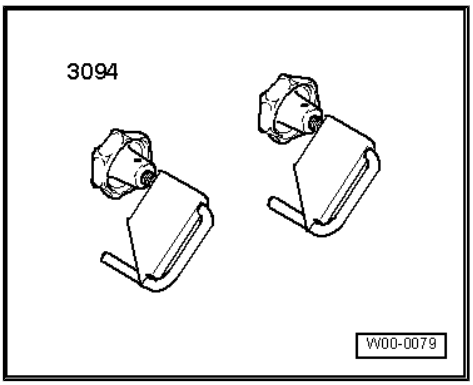
– Install mounting bracket ⇒ page 25 .



2.7 Removing and installing clutch position sender -G476-

Special tools and workshop equipment required

♦ Hose clamps -3094-



2.7.1 Removing

Carry out procedure as follows:

LHD

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

– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

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

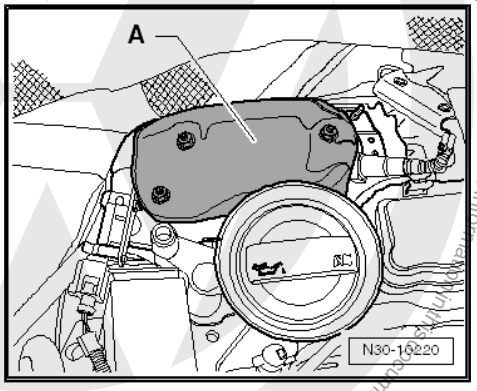
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Remove complete air filter housing if it is near battery ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
– Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .

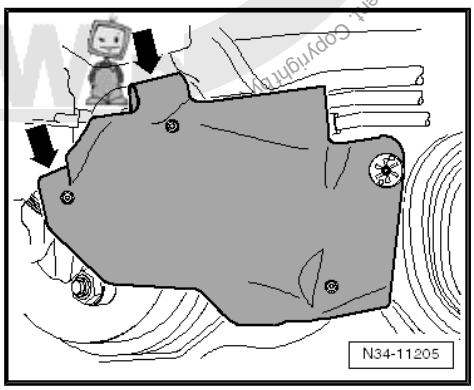
Right-hand drive

– In vehicles with particle filter, remove shielding -A- from particle filter ⇒ Rep. Gr. 26 ; Parts of exhaust system; Assembly overview - front exhaust pipe with particle filter .

An insulation mat is installed in conjunction with some engines.



– Remove the insulation mat from the hose/pipe line -arrows-.

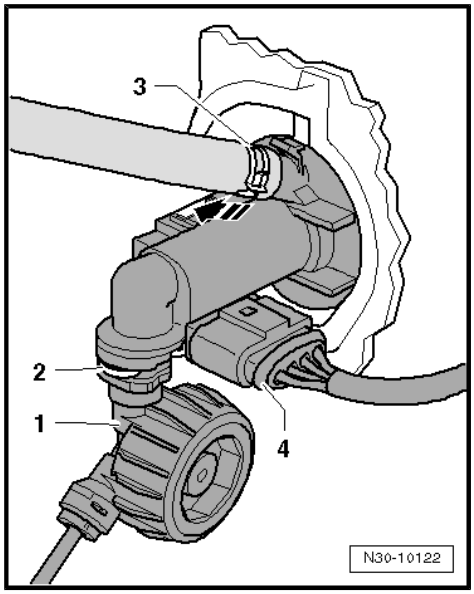


Continuation for all

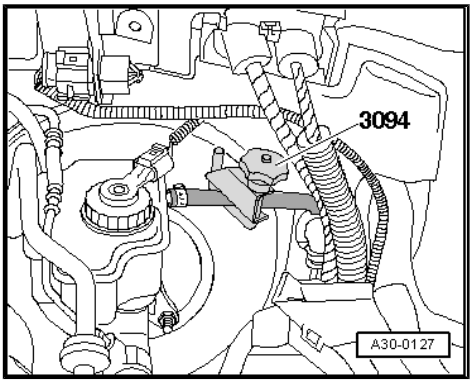
If a pipe/hose line -1- with a round component is installed directly beneath the master cylinder, the pipe/hose line must be removed.

Note

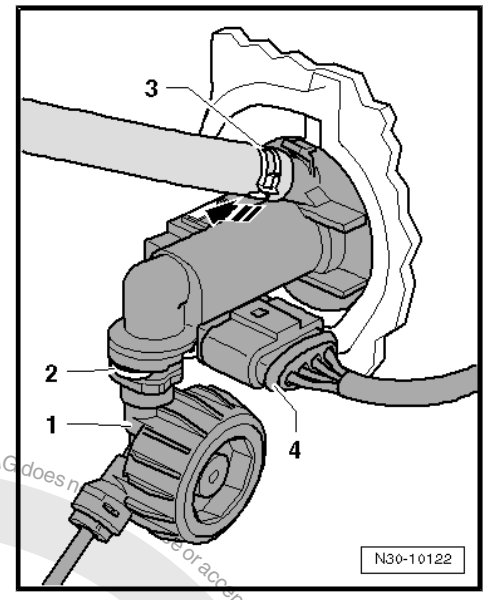
During the following work, ensure that no brake fluid lands on longitudinal member or gearbox. If this does happen, clean the affected areas thoroughly.



– Clamp off supply hose to master cylinder with hose clamps up to ∅ 25 mm -3094- .



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



2.7.2 Installing

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

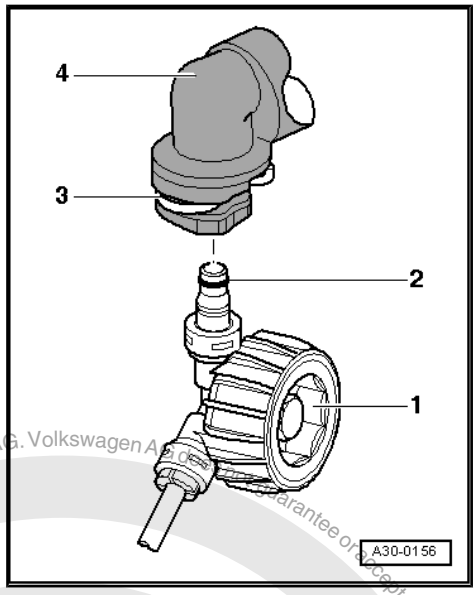
Note

Allocate all components according to ⇒ Electronic parts catalogue "ETKA".

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

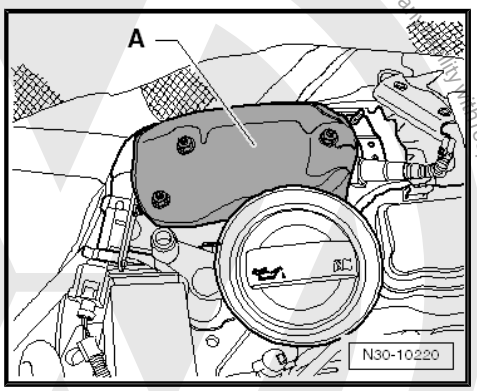
If the pipe/hose line was removed

- Push pipe/hose line -1- or plastic line with seal -2- onto connection of master cylinder -4- until securing clip -3- engages audibly.
- Test pipe/hose line by tugging on it.
- After removing hose clamp up to ∅ 25 mm -3094- , return supply hose to its original contour, if necessary.
- Bleed clutch system ⇒ page 42 .



Right-hand drive

- In vehicles with particle filter, mount shielding -A- on particle filter ⇒ Rep. Gr. 26 ; Parts of exhaust system; Assembly overview - front exhaust pipe with particle filter .

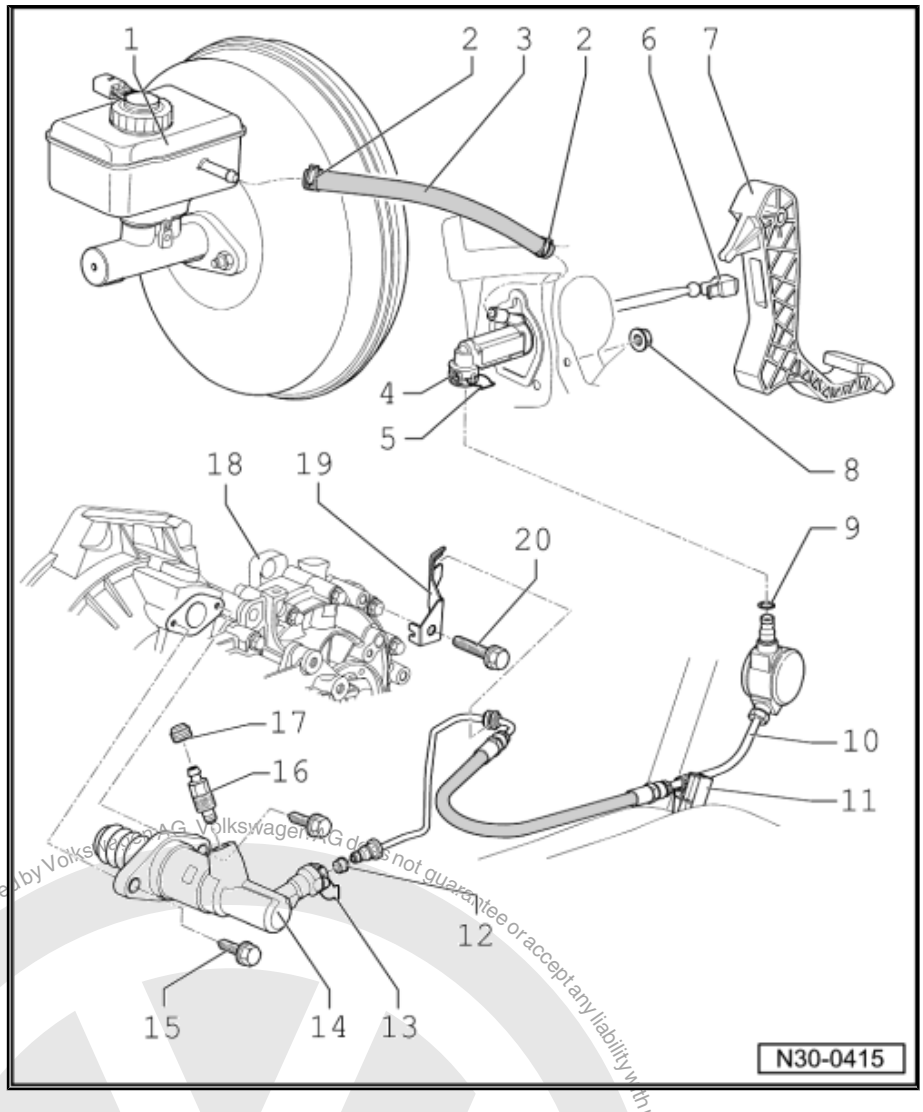


LHD

- Install battery tray and battery⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .
- If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
- Connect battery and follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

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

2.8 Assembly overview - hydraulics (LHD)



1 - Brake fluid reservoir

2 - Spring-type clip

- ❑ Not fitted in all vehicles

3 - Supply hose

- ❑ Rubber
- ❑ From 12.05, plastic ⇒ page 38

4 - Master cylinder

- ❑ Removing and installing ⇒ page 31

5 - Clip

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

6 - Retainer

- ❑ To remove and install, separate master cylinder from clutch pedal ⇒ page 20

7 - Clutch pedal

- ❑ Removing and installing ⇒ page 20

8 - Hexagon nut, 25 Nm

- ❑ Self-locking
- ❑ Qty. 3
- ❑ For mounting bracket to bulkhead
- ❑ Always renew

9 - Seal / O-ring

- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ page 38
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

10 - Pipe/hose line

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

11 - Bracket

- ❑ Secured to body

12 - Seal / O-ring

- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ page 38
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

13 - Clip

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

Protected by copyright. Copyright by Volkswagen AG.
Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.
Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.
Any unauthorised use, duplication or publication of this document in whole or in part is not permitted unless authorised by Volkswagen AG.

14 - Slave cylinder

- ❑ Removing and installing ⇒ page 40

15 - Hexagon bolt, 20 Nm

16 - Bleeder valve

- ❑ Bleeding clutch system ⇒ page 42

17 - Dust cap

18 - Gearbox

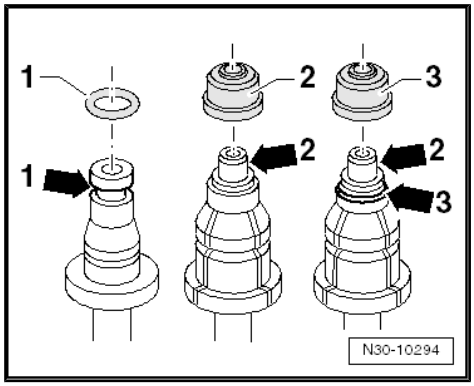
19 - Bracket

20 - Hexagon bolt, 20 Nm

Seals and O-rings for pipe and hose lines

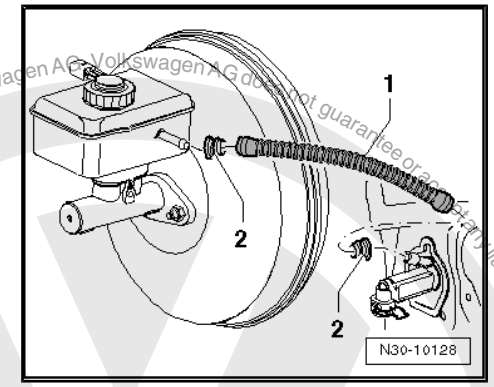
Item	Material of line connection
1	Line connection with circumferential groove -arrow 1-
2	Line connection with shoulder -arrow 2-
3	Line connection with shoulder -arrow 2- and circumferential groove -arrow 3-

- For line connection having circumferential groove -arrow 1- and -arrow 3-, a seal or O-ring must be set there.



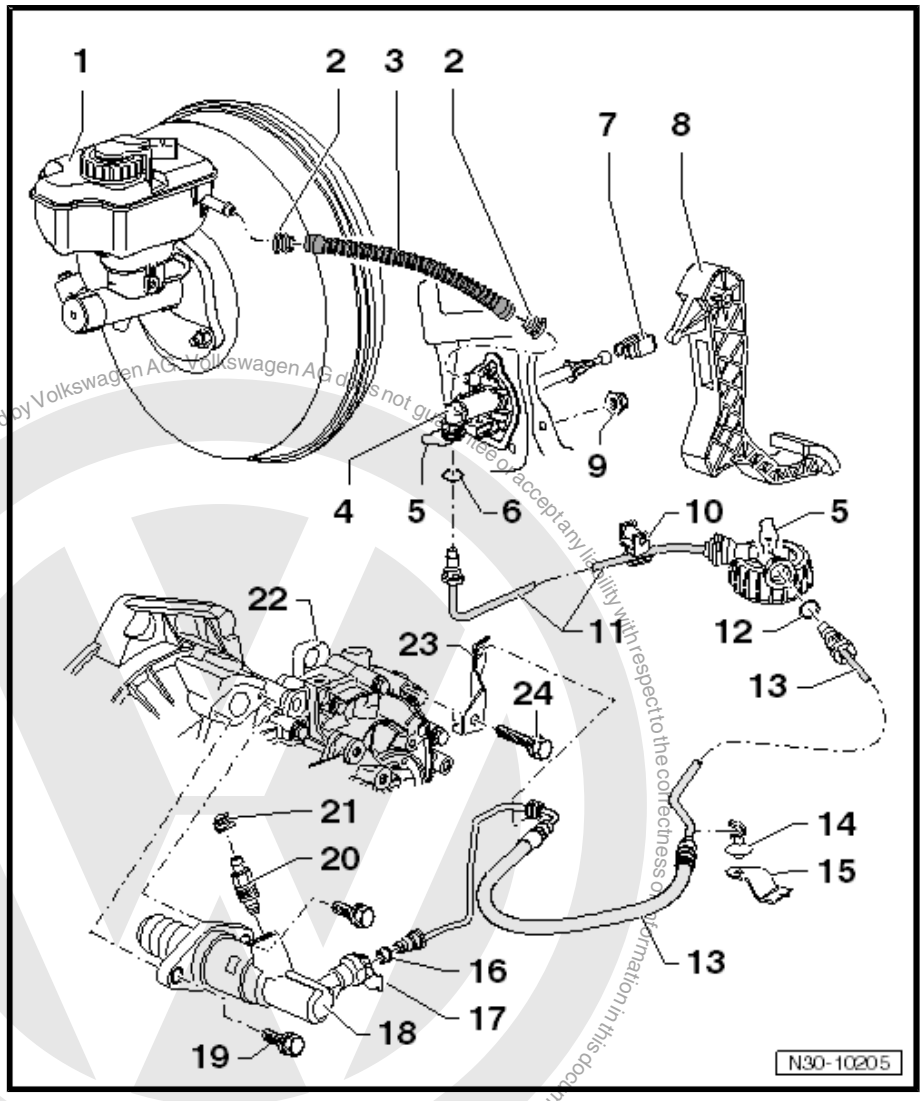
Supply hose -1- of plastic

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



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

2.9 Assembly overview - hydraulics (RHD)



1 - Brake fluid reservoir

2 - Seal

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

3 - Supply hose

- ❑ Rubber
- ❑ From 12.05, plastic ⇒ page 38

4 - Master cylinder

- ❑ Removing and installing ⇒ page 31

5 - Clip

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

6 - Seal / O-ring

- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ page 38
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

7 - Retainer

- ❑ To remove and install, separate master cylinder from clutch pedal ⇒ page 20

8 - Clutch pedal

- ❑ Removing and installing ⇒ page 20

9 - Hexagon nut, 25 Nm

- ❑ Self-locking
- ❑ Qty. 3
- ❑ For mounting bracket to bulkhead
- ❑ Always renew

10 - Bracket

- ❑ Secured to body

11 - Pipe line

- ❑ Pipe and hose/pipe line ⇒ Item 13 (page 40) may be in one piece
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ To remove, remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

12 - Seal / O-ring

- ❑ Pipe ⇒ Item 11 (page 39) and hose/pipe line may be in one piece
- ❑ Pull onto line connection
- ❑ Insert with brake fluid

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

- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ page 38
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

13 - Pipe/hose line

- ❑ Pipe ⇒ Item 11 (page 39) and hose/pipe line may be in one piece
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ To remove, remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

14 - Bracket

- ❑ Secured to retainer for ABS/EDL

15 - Bracket

- ❑ For ABS/EDL

16 - Seal / O-ring

- ❑ Pull onto line connection
- ❑ Insert with brake fluid
- ❑ Seals/O-rings are adapted to configuration of line connection ⇒ page 38
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”

17 - Clip

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

18 - Slave cylinder

- ❑ Removing and installing ⇒ page 40

19 - Flange bolt, 20 Nm

20 - Bleeder valve

- ❑ Bleeding clutch system ⇒ page 42

21 - Dust cap

22 - Gearbox

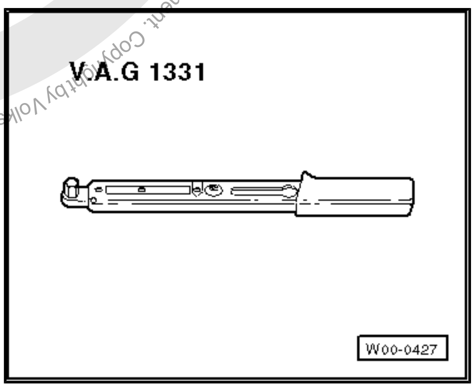
23 - Bracket

24 - Hexagon bolt, 20 Nm

2.10 Removing and installing slave cylinder

Special tools and workshop equipment required

- ♦ Torque wrench -V.A.G 1331-



2.10.1 Removing

Carry out procedure as follows:

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

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

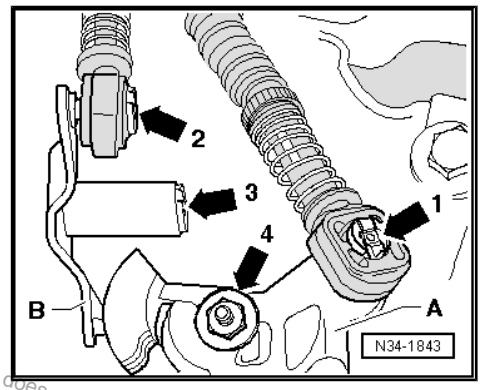
– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
– Remove complete air filter housing if it is near slave cylinder ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
– Remove securing clip -arrow 1- for gear selector cable from gearbox selector lever -A-.
– Pull gear selector cable off pin.

Metal relay lever

– Remove securing clip -arrow 2- for gate selector cable from relay lever -B-.
– Pull gate selector cable from pin.
– Pull securing clip -arrow 3- off relay lever -B- and remove relay lever.

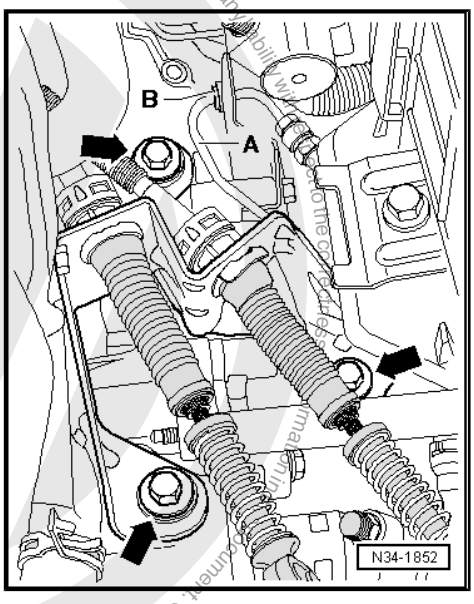
Plastic relay lever

– Remove relay lever together with cable end-piece from gearbox ⇒ page 73 .

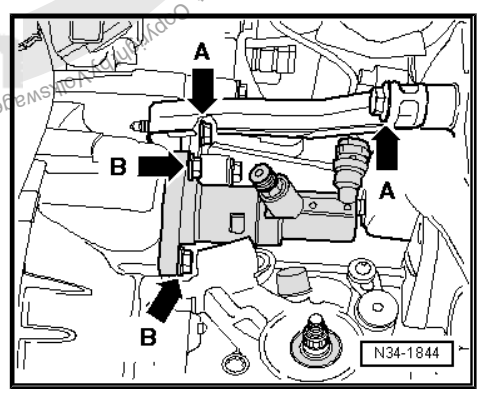


Continuation for all

– Remove gearbox selector lever -A- by removing nut -arrow 4-.
– Remove cable support bracket from gearbox -arrows-.
– Then tie up gear selector cable and gate selector cable.
– Remove retainer -B- from gearbox and pull off from pipe/hose line -A-.



– Then remove gearbox support -arrow A-.
– Lay a lint-free cloth under slave cylinder.
– Pull clip for pipe/hose line out of slave cylinder to stop.
– Pull pipe/hose line out of slave cylinder and seal opening.
– Remove slave cylinder -arrows B-.



Caution

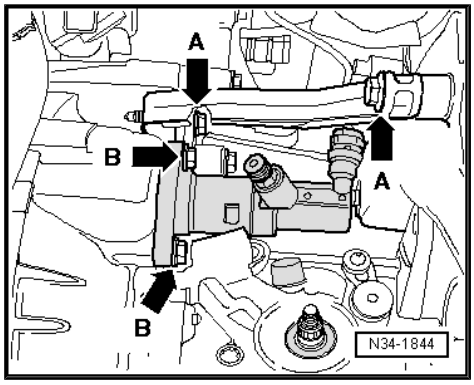
Do not operate clutch pedal any more.

2.10.2 Installing

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

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

– Install slave cylinder and tighten bolts -arrows B- to specified torque.
– Insert pipe/hose line into slave cylinder to stop.
– Push securing clip into pipe/hose line to stop.
– Test pipe/hose line by tugging on it.
– Then mount gearbox support -arrow A-.
– Bleed clutch system after installing slave cylinder ⇒ page 42 .



Assembling selector mechanism ⇒ page 70 .

Adjust selector mechanism ⇒ page 80 .

– If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
– Connect battery earth ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and reconnecting battery .

2.10.3 Specified torques

Slave cylinder to gearbox ⇒ Item 9 (page 45)

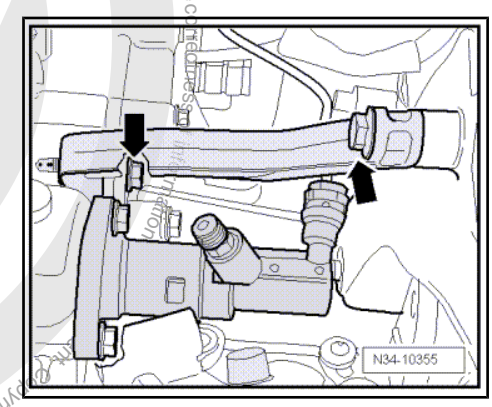
Gearbox selector lever to selector shaft ⇒ Item 18 (page 71) .

Selector cable support bracket to gearbox ⇒ Item 6 (page 70)

Gearbox support to gearbox bracket and gearbox:

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

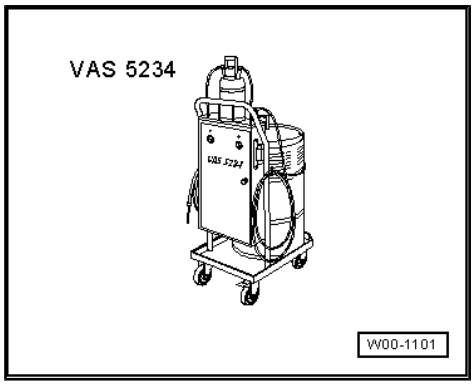
Bolts -arrows-	20 Nm + 90°



2.11 Bleeding clutch system

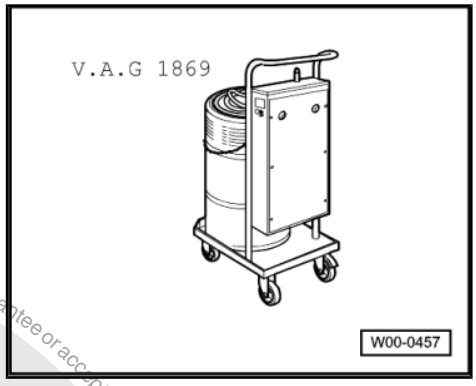
Special tools and workshop equipment required

♦ Brake filling and bleeding equipment -VAS 5234- or



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

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



Note

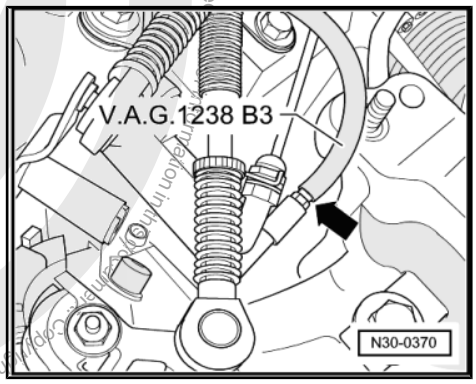
Prefilling system is not necessary!

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

Carry out procedure as follows:

– Remove complete air filter housing if it blocks access to bleeder valve -arrow- ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

– Connect brake filling and bleeding equipment -VAS 5234- or -V.A.G 1869- .



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

– Connect bleeder hose to collector bottle of brake bleeding equipment.

– Connect bleeder hose to bleeder valve -arrow-.

– Pressurise system to 2 bar.

– Open bleeder valve.

– Allow about 100 cm^3 of brake fluid to flow out.

– Close bleeder valve.

– Rapidly operate pedal from stop to stop 10 to 15 times.

– Open bleeder valve again.

– Allow another 50 cm^3 of brake fluid to flow out.

– Close bleeder valve.

– Depress clutch pedal several times after completion of bleeding process.

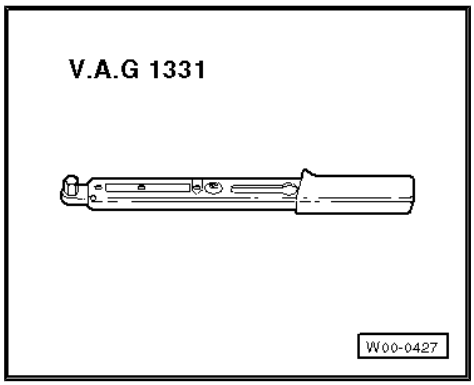
– If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

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

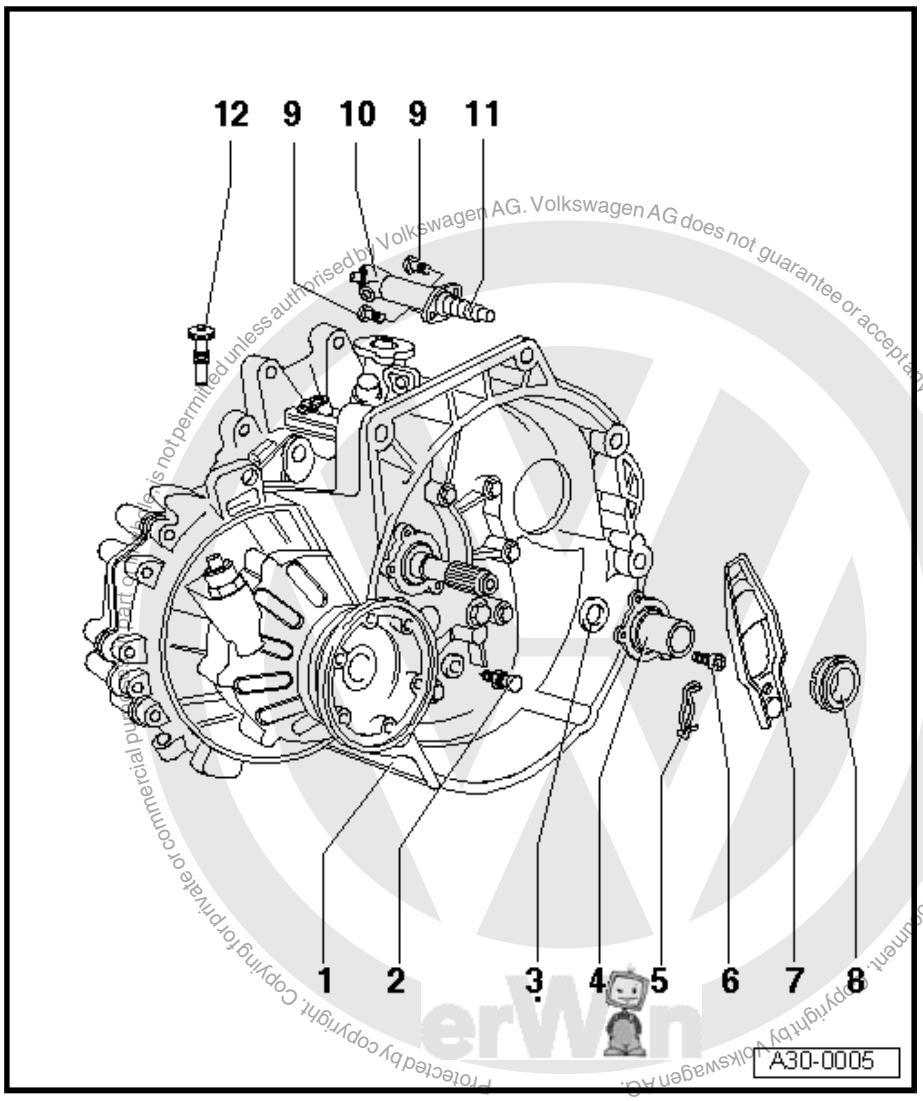
3 Repairing clutch release mechanism

Special tools and workshop equipment required

- Torque wrench -V.A.G 1331-



- Grease for clutch plate splines -G 000 100-



1 - Gearbox

2 - Ball stud, 25 Nm

- ❑ To remove and install, remove gearbox
- ❑ Remove old grease from contact surface of clutch release lever
- ❑ Grease with clutch plate spline grease - G 000 100- .

3 - Input shaft seal

- ❑ To remove and install, remove gearbox
- ❑ Renewing ⇒ Item 12 (page 143)

4 - Guide sleeve

- ❑ To remove and install, remove gearbox
- ❑ With vulcanised O-ring
- ❑ If O-ring is damaged, renew guide sleeve and O-ring together

5 - Retaining spring

- ❑ To remove and install, remove gearbox
- ❑ Secure to clutch release lever

6 - Socket head bolt, 20 Nm

7 - Clutch release lever

- ❑ To remove and install, remove gearbox
- ❑ Remove and install together with release bearing ⇒ page 45 .
- ❑ Remove old grease

8 - Release bearing

- ❑ To remove and install, remove gearbox

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

- ❑ Do not wash out bearing; wipe only
- ❑ Renew noisy bearings
- ❑ Removing from and inserting in clutch release lever ⇒ page 45
- ❑ Lubricate contact surfaces of release lever with MoS_2 grease.

9 - Flange bolt, 20 Nm

10 - Slave cylinder

- ❑ Removing and installing ⇒ page 40

11 - Plunger

12 - Assembly bolt

- ❑ Secures clutch release lever when gearbox is installed.
- ❑ Remove after gearbox has been installed.

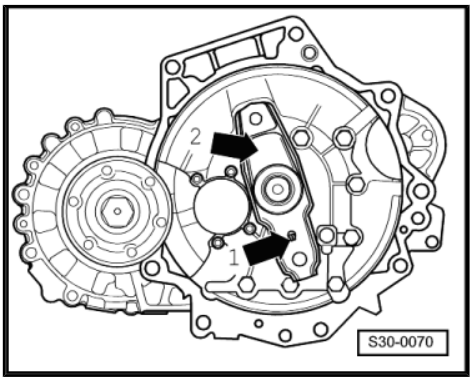
Note

Removing and installing release lever together with release bearing

– Unhook spring -arrow 1-.

– Pull off release lever -arrow 2- and release bearing.

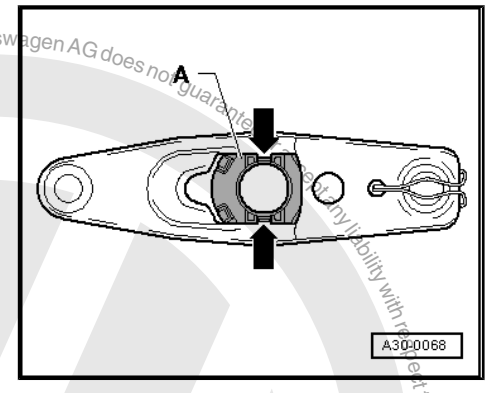
– Install in reverse order of removal.



Removing and installing release bearing

– Press together locking lugs -arrows- on back of clutch release lever and remove release bearing -A- from clutch release lever.

– To install, press release bearing -A- into clutch release lever until locking lugs -arrows- engage.

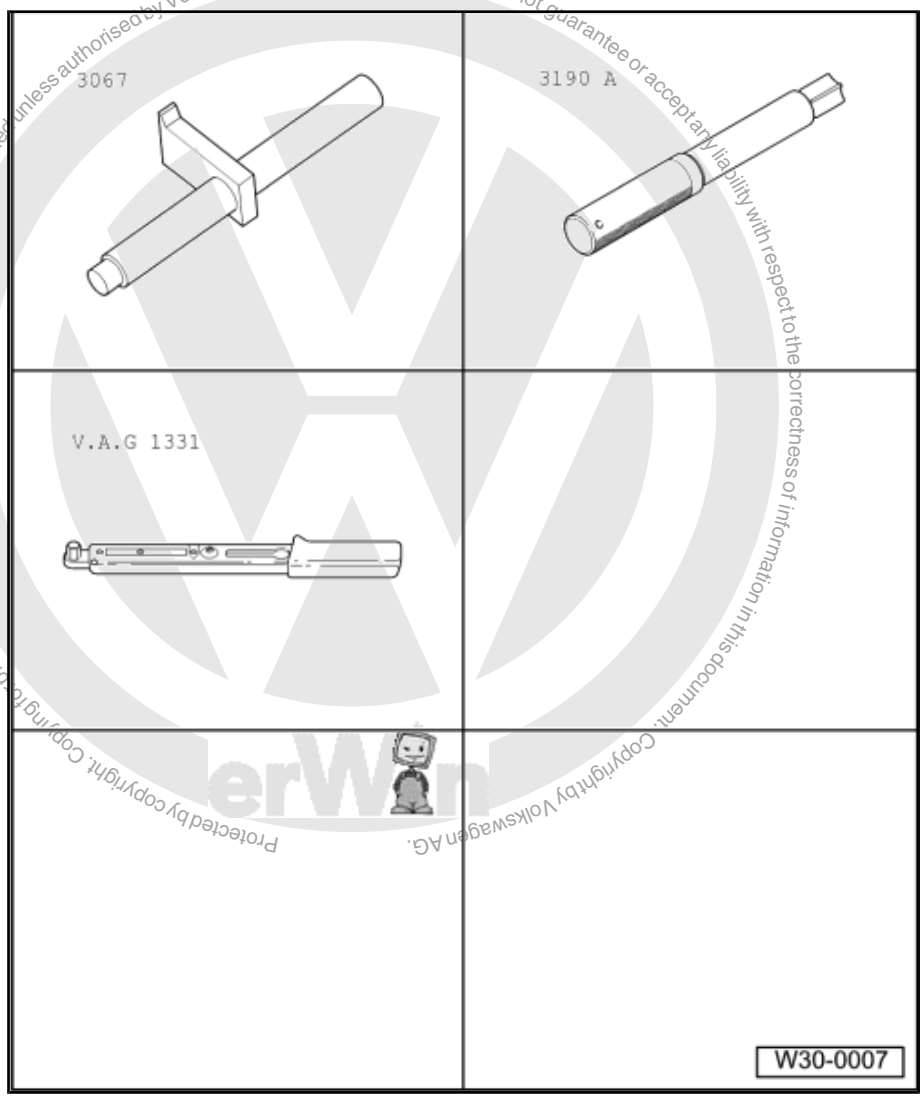


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

4 Repairing clutch, in conjunction with dual-mass flywheel

Special tools and workshop equipment required

- Counterhold -3067-
- Centring mandrel -3190 A-
- Torque wrench -V.A.G 1331-
- Grease for clutch plate splines -G 000 100-



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

4.1 Determining clutch manufacturer

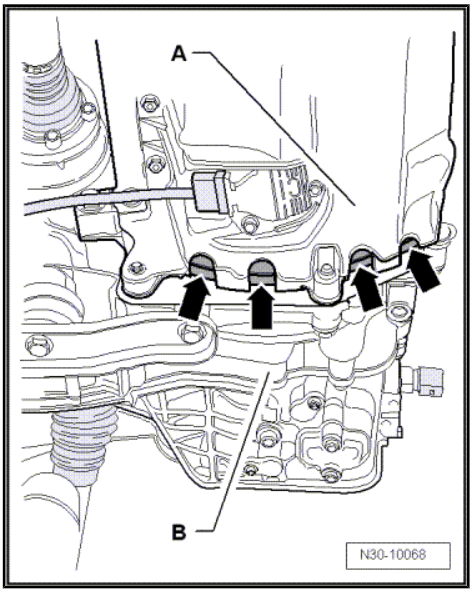
A clutch manufactured by either “Sachs” or “LuK” may be installed.

The make of the clutch can be determined as follows with the clutch installed:

– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

Some notches -arrows- are located in lower region of sump between engine -A- and gearbox -B-.

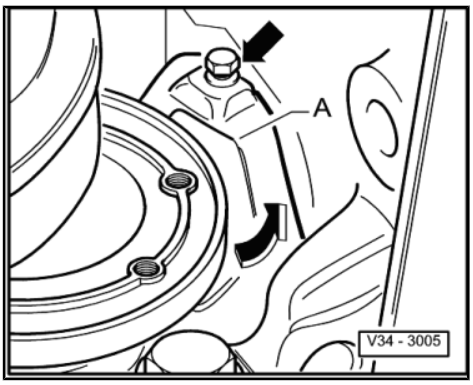
– Check outer contour of flywheel through these notches.



– In addition, a small cover plate -A- can be removed to enable inspection of flywheel's outer contour.

Round outer contour -arrows- = Sachs clutch = -A-

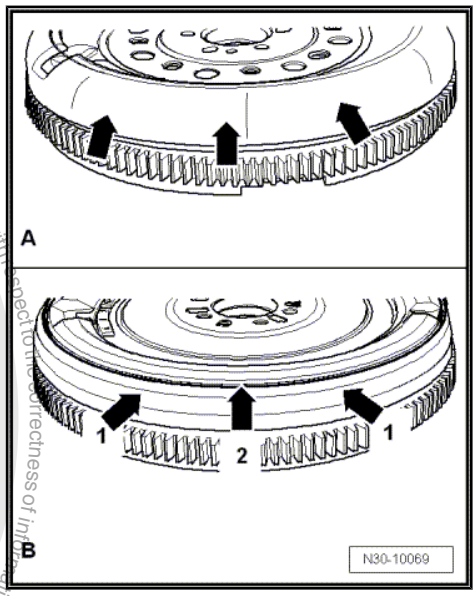
– Removing and installing Sachs clutch ⇒ page 48 .



– Repairing Sachs clutch ⇒ page 50 .

Outer contour with edges -arrows 1- and, in addition, a circumferential crease -arrow 2- = LuK clutch = -B-

or

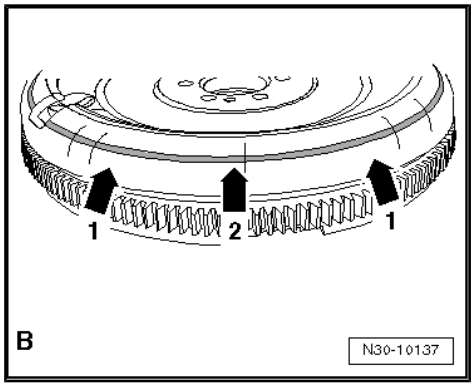


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Rounded outer contour -arrows 1- and a circumferential crease -arrow 2- = LuK clutch = -B-

– Removing and installing LuK clutch ⇒ page 50 .

– Repairing LuK clutch ⇒ page 53 .



4.2 Removing and installing Sachs clutch

4.2.1 Removing

– Remove gearbox.

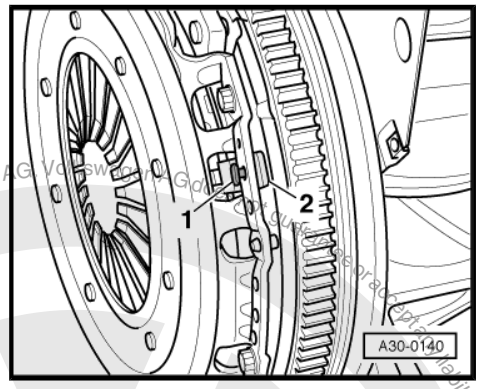
– Use counter-hold tool -3067- to loosen bolts.

– Loosen bolts in small steps and diagonally.

• As bolts are removed, stop -2- with pin -1- must loosen.

– If stop does not loosen: Press bolt towards two-piece flywheel.

– Remove pressure plate and clutch plate.



4.2.2 Installing

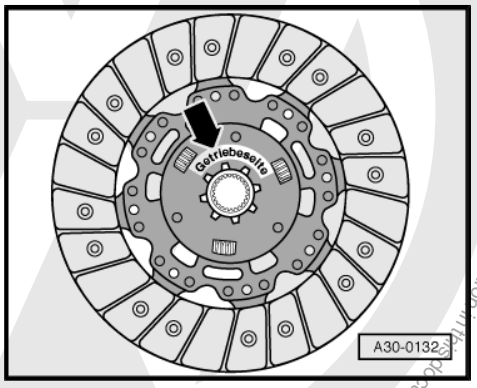
Install in the reverse order of removal, observing the following:

Note

♦ *Renew pressure plate and clutch plate together only. Select clutch plate and pressure plate according to engine code and ⇒ Electronic parts catalogue "ETKA" .*

♦ *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.*

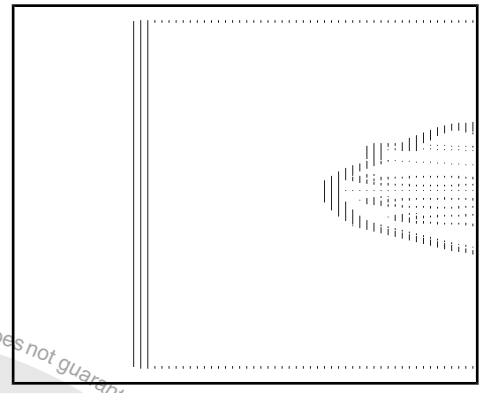


Installation position of clutch plate

• Lettering "Getriebeseite" (gearbox side) faces gearbox.

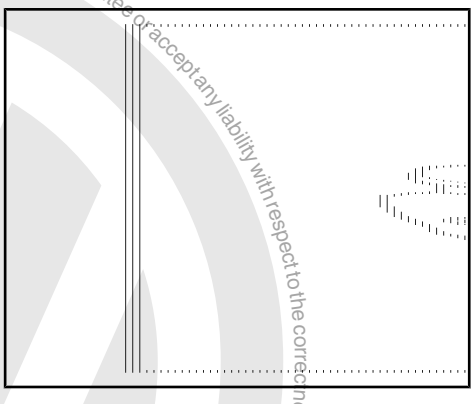
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Checking ends of diaphragm spring



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

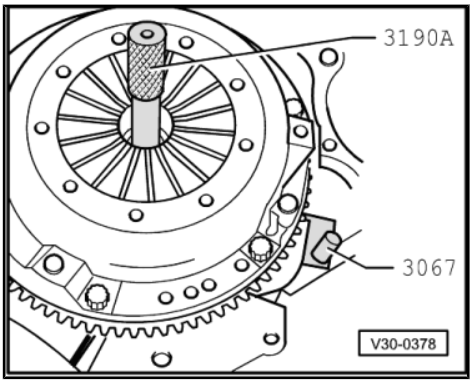
Checking spring connections and riveted connections



– Check spring connections between thrust plate and cover for cracks and make sure rivet fastenings are seated tightly.

Note

- *Renew clutch plates and pressure plates with damaged or loose rivet connections.*
- *Always renew pressure plate and clutch plate together.*
- *Select clutch plate and pressure plate according to engine code and ⇒ Electronic parts catalogue "ETKA".*
- *If clutch has burnt out, thoroughly clean clutch housing, flywheel and parts of engine facing gearbox to reduce smell of burnt linings.*
- *Clean input shaft splines and, on used clutch plate, hub splines. Remove corrosion and apply only a very thin coat of clutch plate spline grease -G 000 100- to splines. Then move clutch plate to and fro on input shaft until hub moves freely on shaft. Remove excessive grease.*
- *Pressure plates are protected against corrosion and greased. Clean contact surface only. Otherwise, the service life of the clutch will be considerably reduced.*
- *Pressure plate contact surface and clutch plate lining must make full contact with flywheel. Only then insert securing bolts.*



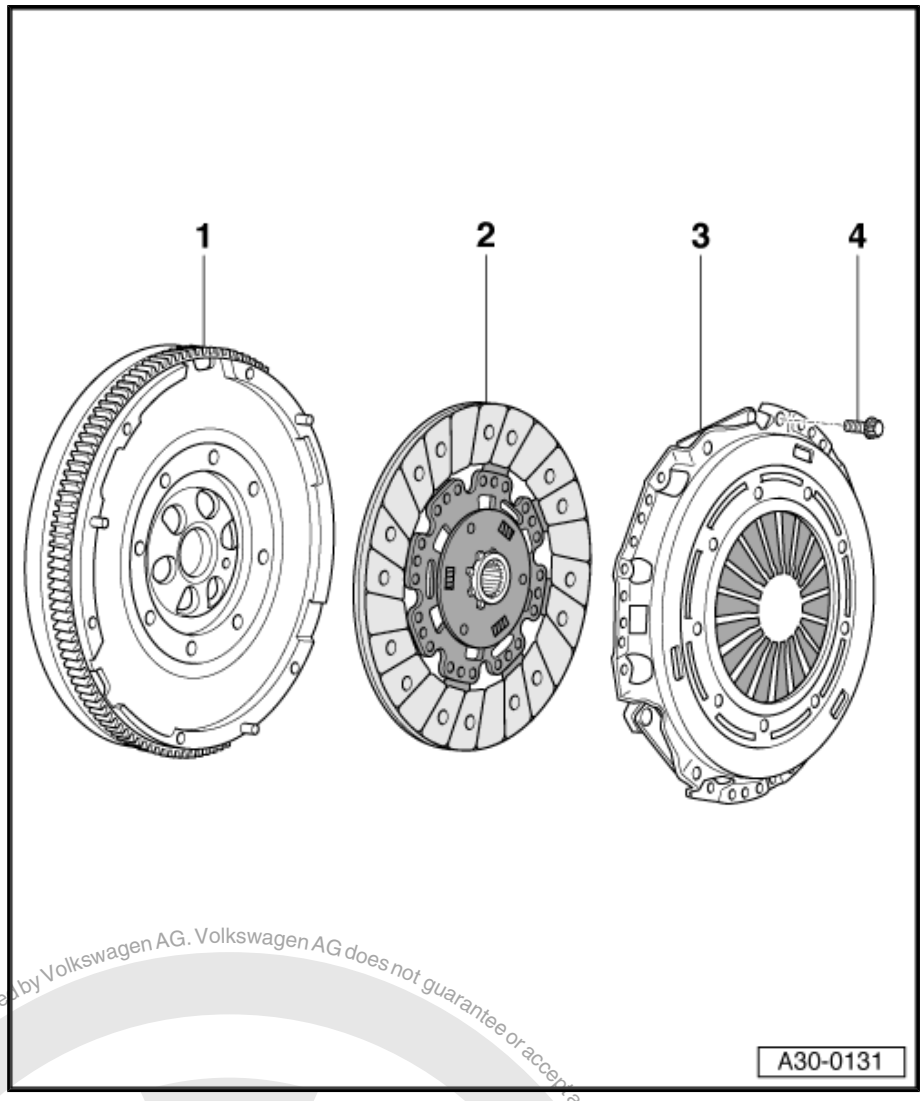
– Reverse position of counterhold tool -3067- when installing.
– Put pressure plate onto centring pins.
– To centre clutch plate, use centring mandrel -3190 A- .
– Tighten all bolts evenly by hand until bolt heads contact pressure plate.
– Tighten bolts in small steps diagonally in order not to damage centring holes of pressure plate and centring pins of dual-mass flywheel.

Torque setting: ⇒ Item 4 (page 50) .

– Install gearbox.

Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Volkswagen AG, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

4.3 Repairing Sachs clutch



1 - Dual-mass flywheel

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

2 - Clutch plate

- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ Removing and installing ⇒ page 48
- ❑ Renew only together with pressure plate
- ❑ Installation position ⇒ page 48

3 - Pressure plate

- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ With adjusting mechanism
- ❑ Removing and installing ⇒ page 48
- ❑ Check ends of diaphragm spring ⇒ page 49
- ❑ Check spring connections and riveted connections ⇒ page 49 .
- ❑ Renew only together with clutch plate.

4 - M6 bolt, 13 Nm, M7 bolt, 20 Nm

- ❑ Loosen or tighten diagonally in small steps

4.4 Removing and installing LuK clutch

4.4.1 Removing

– Remove gearbox.

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

– Loosen bolts in small steps and diagonally.

– Remove pressure plate and clutch plate.

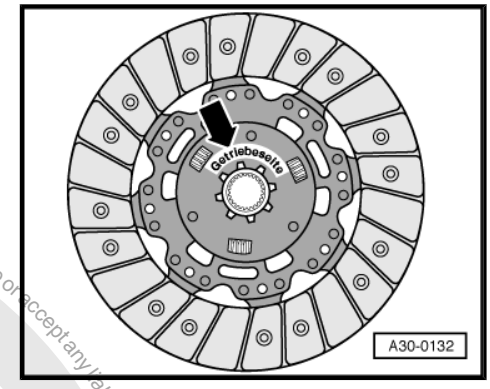
4.4.2 Installing

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

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

Note

- *Renew pressure plate and clutch plate together only. Select clutch plate and pressure plate according to engine code and ⇒ Electronic parts catalogue "ETKA".*
- *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.*

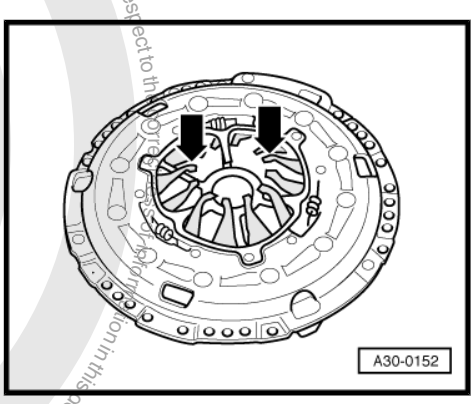


Installation position of clutch plate

- Lettering "Getriebeseite" (gearbox side) faces gearbox.

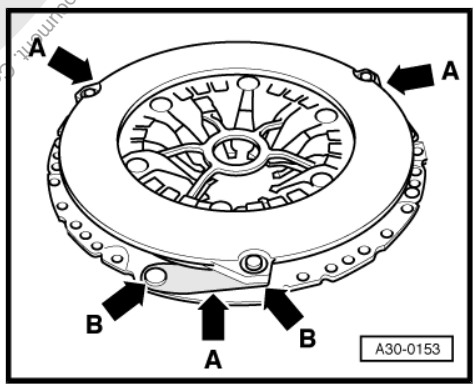
Checking ends of diaphragm spring

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



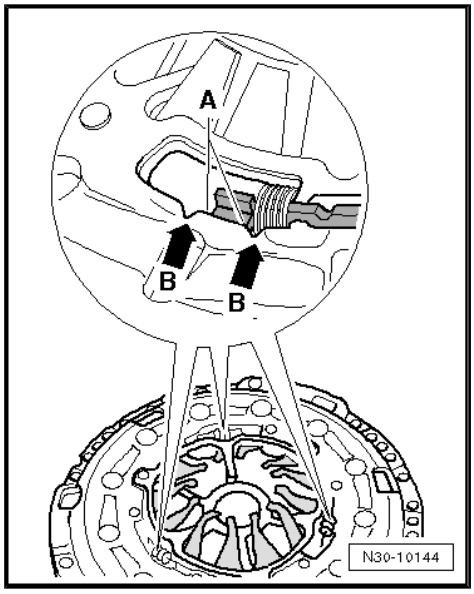
Checking spring connections and riveted connections

– Check spring connections -arrows A- for damage and riveted connections -arrows B- for secure seating.



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

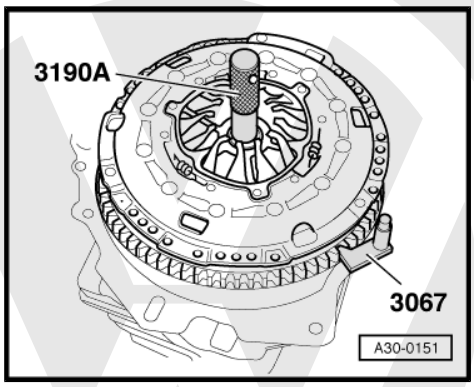
Checking position of adjusting mechanism with new pressure plates only



- Both edges -A- of the adjuster ring must be located between the two notches -arrows B-.
- If the adjuster ring takes up a different position in new pressure plates, the pressure plate and clutch plate are not allowed to be installed.
- The adjuster ring may take up a position outside the notches in used clutches.

Note

- *Renew clutch plates and pressure plates with damaged or loose rivet connections.*
- *Renew pressure plate and clutch plate together only.*
- *Select clutch plate and pressure plate according to engine code and ⇒ Electronic parts catalogue "ETKA" .*
- *If clutch has burnt out, thoroughly clean clutch housing, flywheel and parts of engine facing gearbox to reduce smell of burnt linings.*
- *Clean input shaft splines and, on used clutch plate, hub splines. Remove corrosion and apply only a very thin coat of clutch plate spline grease -G 000 100- to splines. Then move clutch plate to and fro on input shaft until hub moves freely on shaft. Remove excessive grease.*
- *Pressure plates are protected against corrosion and greased. Clean contact surface only. Otherwise, the service life of the clutch will be considerably reduced.*
- *Pressure plate contact surface and clutch plate lining must make full contact with flywheel. Only then insert securing bolts.*



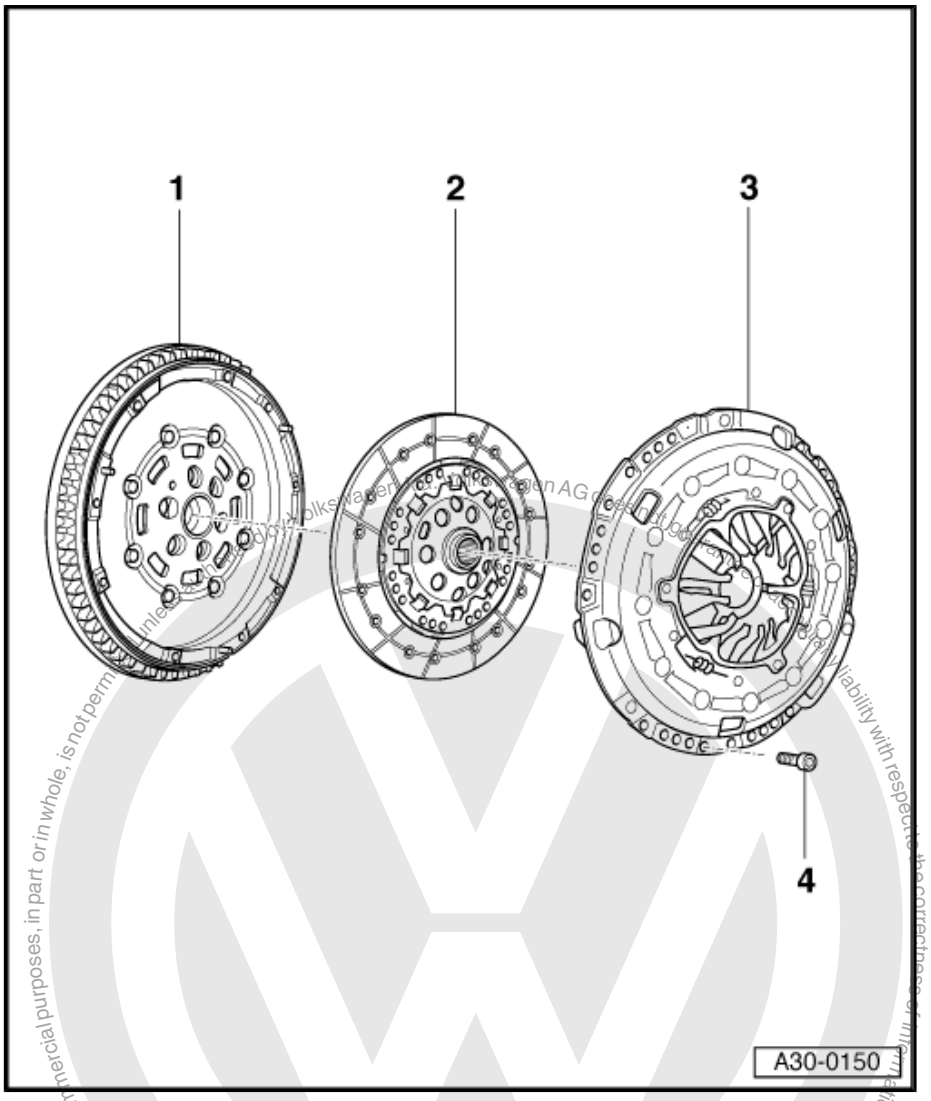
– Reverse position of counterhold tool -3067- when installing.
– Put pressure plate onto centring pins.
– To centre clutch plate, use centring mandrel -3190 A- .
– Tighten all bolts evenly by hand until bolt heads contact pressure plate.
– Tighten bolts in small steps diagonally in order not to damage centring holes of pressure plate and centring pins of dual-mass flywheel.

Torque setting: ⇒ Item 4 (page 53) .

– Install gearbox.

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

4.5 Repairing LuK clutch



1 - Dual-mass flywheel

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

2 - Clutch plate

- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ Removing and installing ⇒ page 50
- ❑ Renew only together with SAC pressure plate.
- ❑ Installation position: ⇒ page 51 .

3 - SAC pressure plate

- ❑ SAC means “self-adjusting clutch”
- ❑ Renew only together with clutch plate.
- ❑ Allocation ⇒ Electronic parts catalogue “ETKA”
- ❑ Removing and installing ⇒ page 50
- ❑ Check ends of diaphragm spring ⇒ page 51
- ❑ Checking spring connections and riveted connections ⇒ page 51
- ❑ Checking position of adjusting mechanism with new pressure plates only ⇒ page 52

4 - M6 bolt, 13 Nm, M7 bolt, 20 Nm

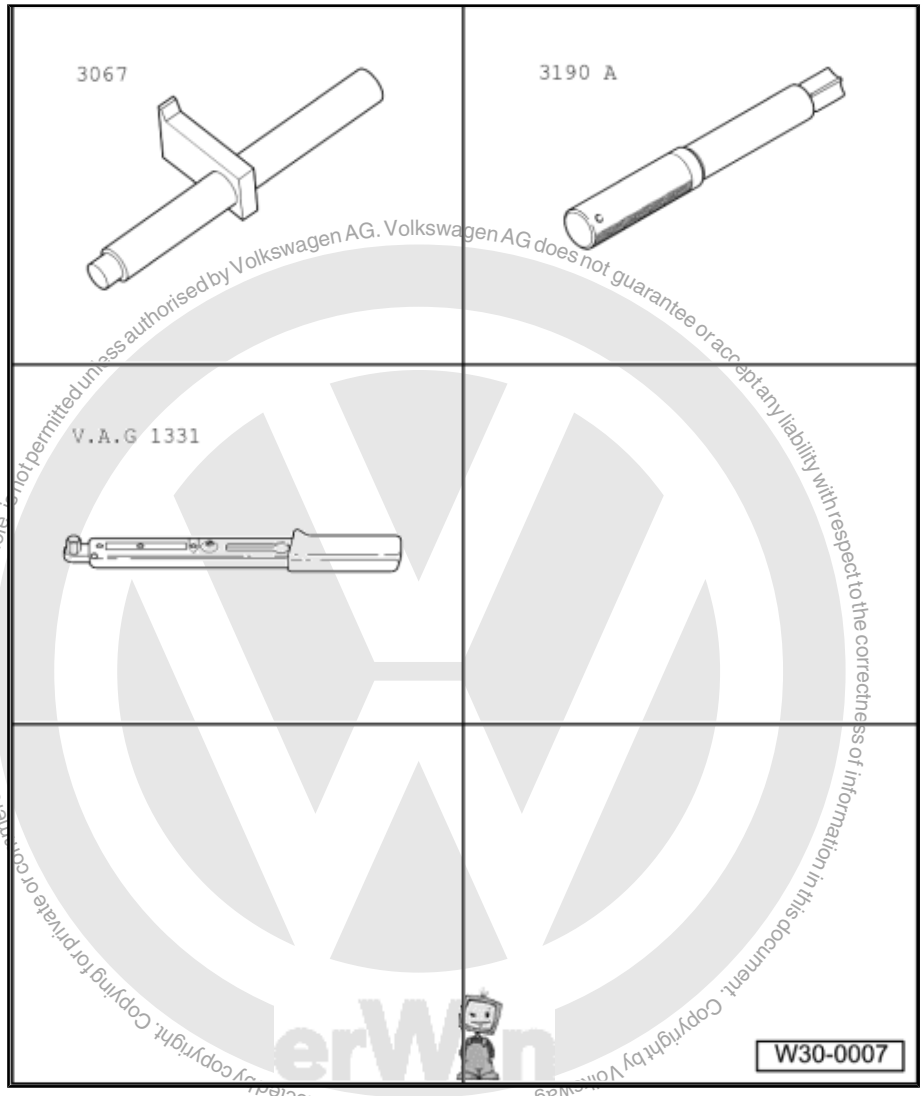
- ❑ Loosen or tighten diagonally in small steps

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

5 Repairing clutch, in conjunction with one-piece flywheel

Special tools and workshop equipment required

- Counterhold -3067-
- Centring mandrel -3190 A-
- Torque wrench - V.A.G 1331-
- Clutch plate spline grease - G 000 100-



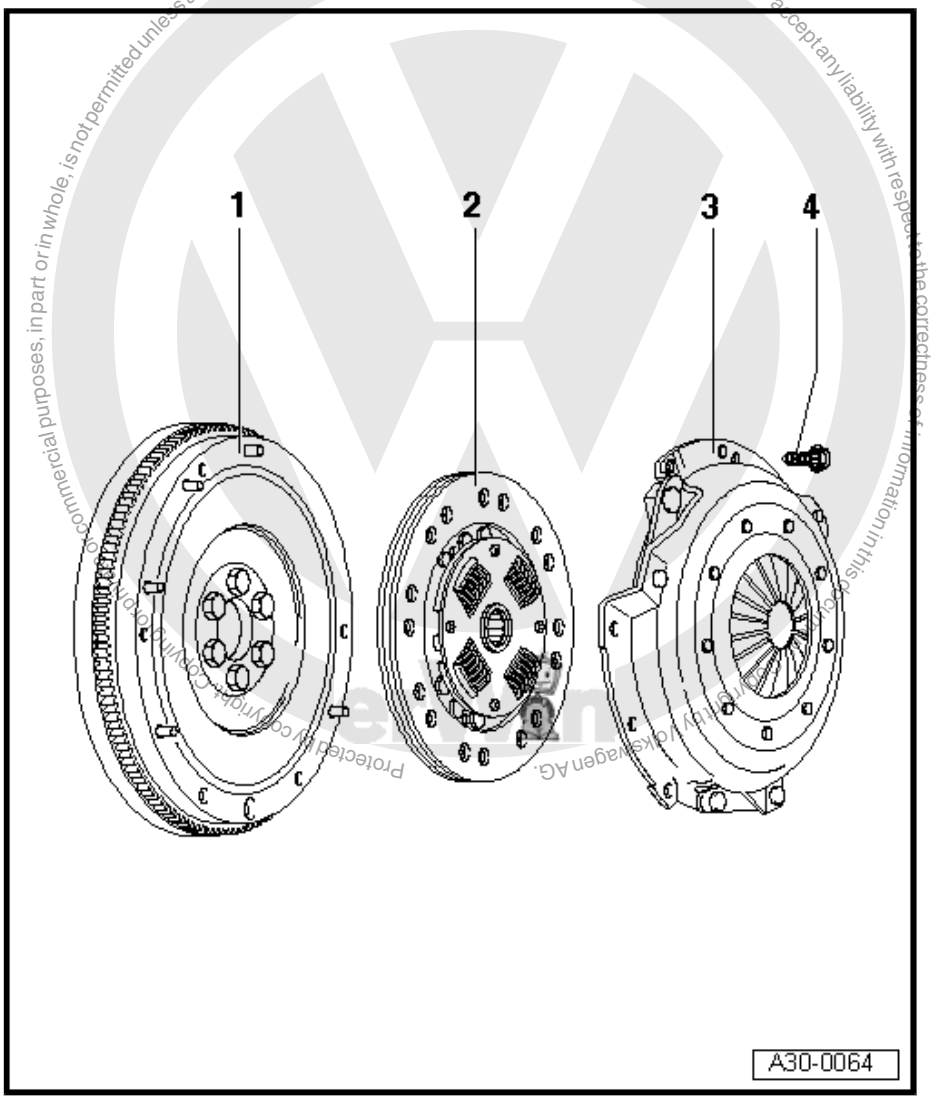
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

(Gearbox removed)

Note

- *Renew clutch plates and pressure plates with damaged or loose rivets.*
- *Select clutch plate and pressure plate according to ⇒ Electronic parts catalogue "ETKA" and engine codes.*
- *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.*

Protected by copyright. Copyright © Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this repair manual, to the extent permitted by law. Commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG.



1 - Flywheel

- ❑ Removing and installing ⇒ Rep. Gr. 13
- ❑ 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”
- ❑ Installation position: spring cage faces pressure plate
- ❑ Centring ⇒ page 55
- ❑ Lightly grease splines

Note

3 - Pressure plate

- ❑ Removing and installing ⇒ page 55
- ❑ Check ends of diaphragm spring ⇒ page 56
- ❑ Check spring connections and riveted connections ⇒ page 56 .

Note

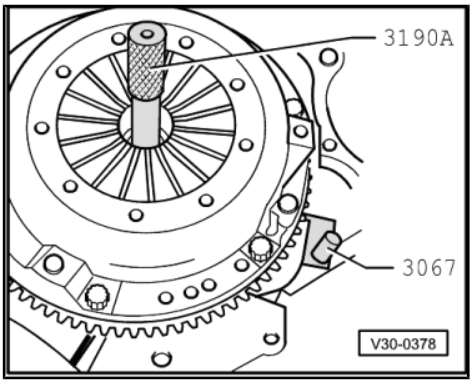
4 - M6 bolt, 13 Nm, M7 bolt, 20 Nm

- ❑ Allocate according to ⇒ Electronic parts catalogue “ETKA” .
- ❑ Loosen or tighten diagonally and in steps

Centring clutch plate and removing and installing pressure plate

– Loosen or tighten bolts diagonally in stages.

– Reverse position of counterhold -3067- when removing.

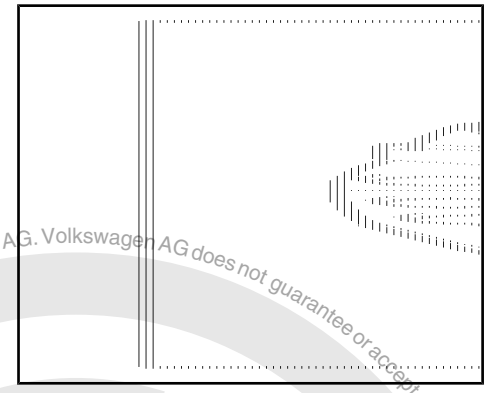


Note

Pressure plate contact surface and clutch plate lining must make full contact with flywheel. Tighten bolts diagonally and evenly to prevent damage to the centring holes in the pressure plate housing and the centring pins in the flywheel.

Checking ends of diaphragm spring

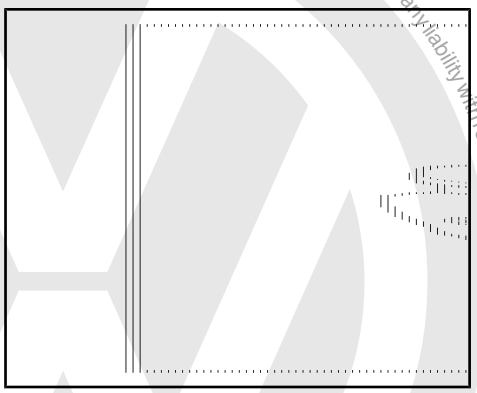
- Wear up to half the thickness of the diaphragm spring is permitted.



Checking spring connections and riveted connections

– Check spring connections between thrust plate and cover for cracks and make sure rivet fastenings are seated tightly.

- A pressure plate with damaged spring connections or with loose rivet connections -arrows- must be renewed.



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

34 – Controls, housing

1 Fault finding, power transmission

– Refer to ⇒ Fault finding, power transmission; Rep. Gr. 30 ; Complaints about clutch and clutch mechanism and ⇒ Fault finding, power transmission; Rep. Gr. 34 ; Complaints about selector mechanism .

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

2 Repairing selector mechanism

2.1 Installation position of selector mechanism

Arrow -A- Gear selection movement

Arrow -B- Gate selection movement

A - Gear selector cable

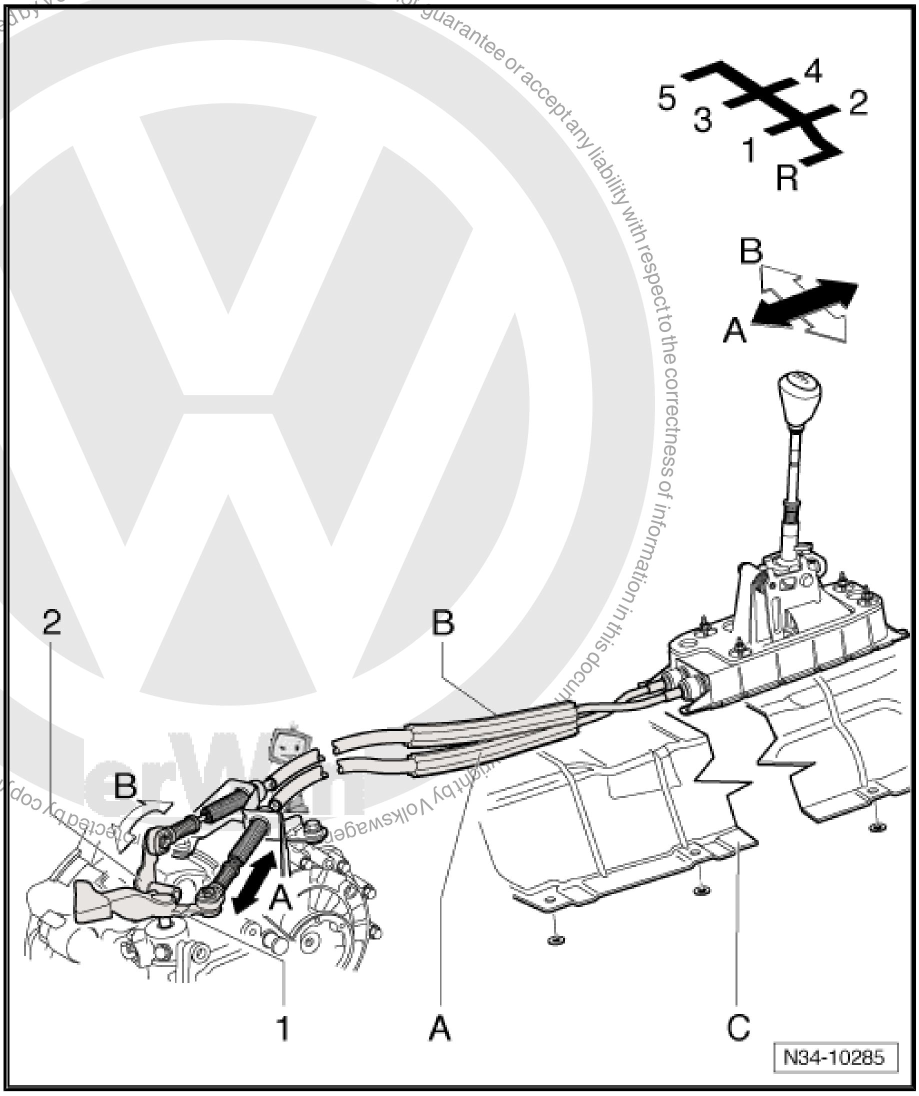
B - Gate selector cable

C - Heat shield

❑ Remove before removing gear selector mechanism

1 - Gearbox selector lever

2 - Relay lever



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

2.2 Overview of selector mechanism

Note

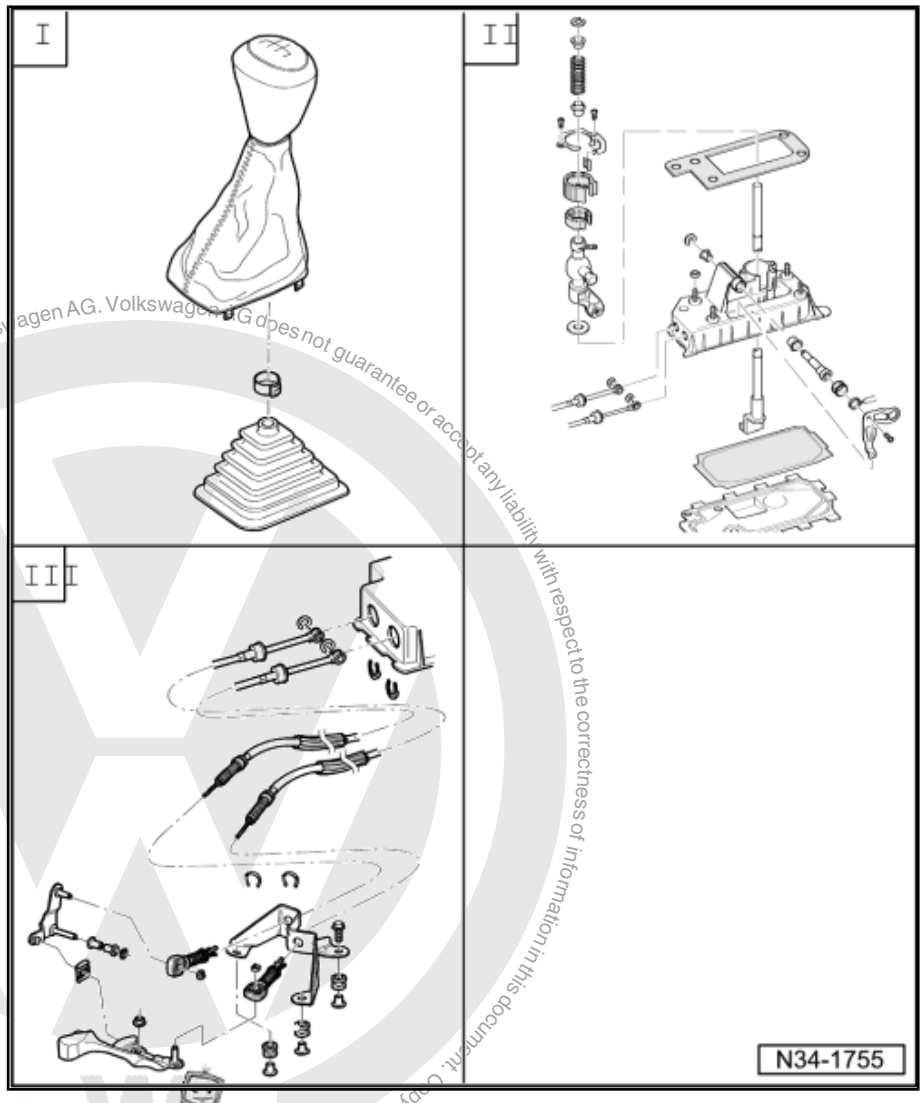
- *Note radio code for vehicles with coded radio.*
- *Before working on selector mechanism in engine compartment, disconnect earth strap from battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .*
- *When reconnecting battery, perform work required after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .*
- *To work on selector mechanism in engine compartment, remove complete air filter housing if it is located over selector mechanism ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .*
- *Remove selector mechanism to renew selector cables ⇒ page 75 .*
- *Do not kink selector cables.*

I - Removing and installing gear knob and cover ⇒ page 61

II - Repairing gear lever and selector housing (through 10.06) ⇒ page 63

II - Repairing gear lever and selector housing (from 11.06) ⇒ page 65

III - Assembly overview - removing and installing selector cables ⇒ page 70



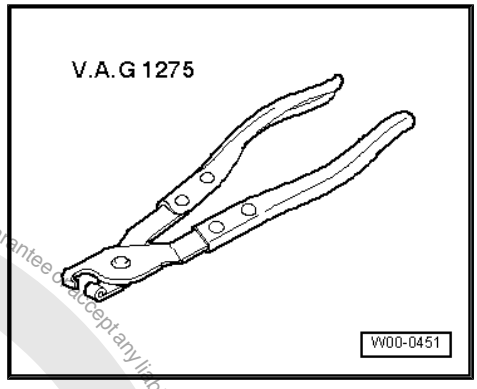
Removing and installing selector mechanism ⇒ page 75

Adjust selector mechanism ⇒ page 80 .

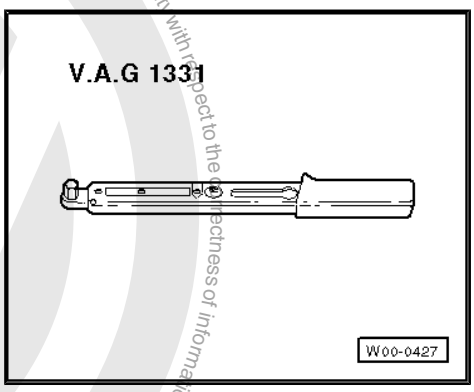
Special tools and workshop equipment required

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

- Hose clip pliers -V.A.G 1275-



- Torque wrench -V.A.G 1331-



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

2.3 Removing and installing selector lever knob and cover

1 - Emblem

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

2 - Gear knob

- ❑ With gaiter
- ❑ Gear knob and gaiter cannot be separated from one another
- ❑ Always renew together
- ❑ Removing and installing ⇒ page 61

3 - Clamp

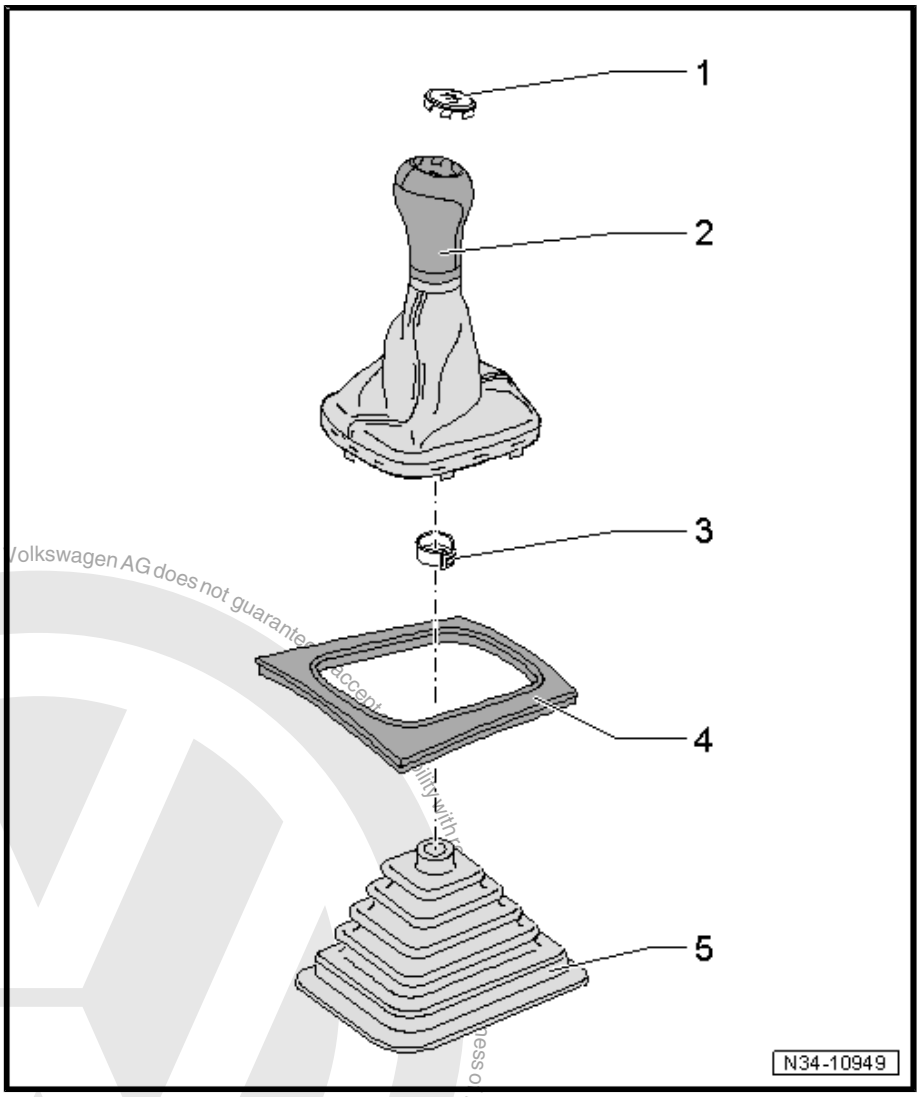
- ❑ For securing gear knob to gear lever
- ❑ Secure to gear knob ⇒ Item 2 (page 61) using hose clip pliers -V.A.G 1275-
- ❑ Always renew

4 - Centre console cover

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

5 - Noise insulation

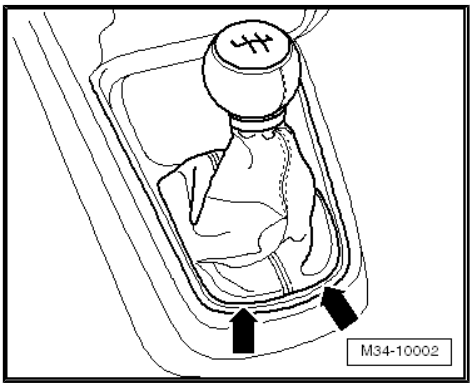
- ❑ Not fitted in all vehicles
- ❑ Arrow on noise insulation points in direction of travel
- ❑ Locking lugs are arranged at varying intervals
- ❑ Therefore it can be installed in only one position



2.4 Removing and installing gaiter with gear knob and noise insulation

Carry out procedure as follows:

– Pull or carefully prise gaiter with centre console cover upwards out of centre console -arrows-.



Note

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

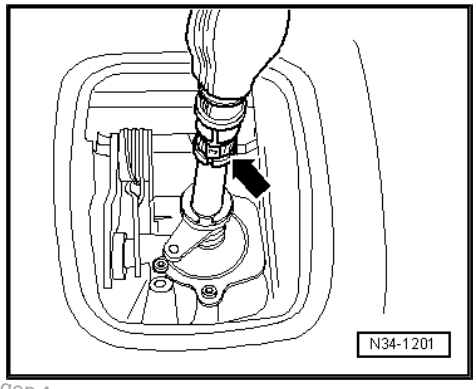
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Pull gaiter with centre console cover upwards, inside out over gear knob.

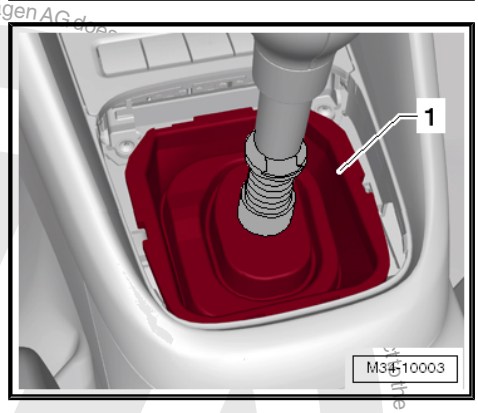
– Open clamp -arrow- and pull off gear knob together with gaiter.

In some versions, centre console cover remains in the centre console.

– If necessary, pull or carefully price off centre console cover.



– Pull off noise insulation -1-.



2.4.1 Installing

– First insert noise insulation.

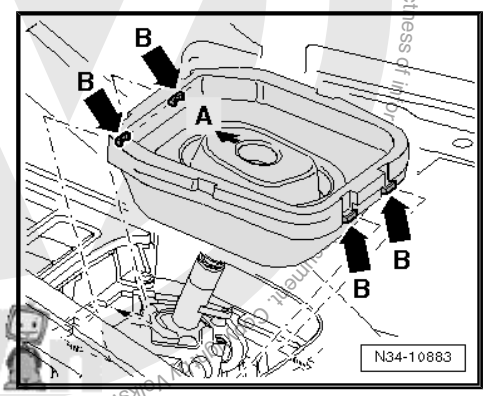
Installation position of noise insulation

- -Arrow A- points in direction of travel.
- Catches -arrows B- must engage in centre console.

– If necessary, press centre console cover into centre console.

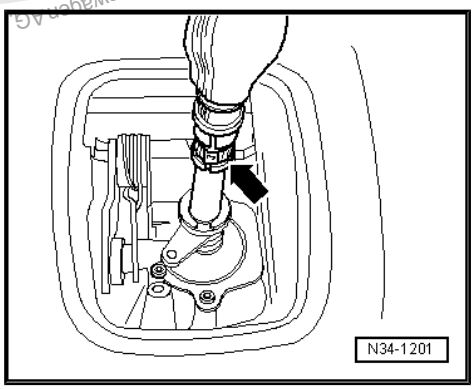
– Then turn gaiter inside out.

The gear knob must be pressed to stop.



– Install selector lever knob with cover and gaiter and squeeze new clamp -arrow- together.

– Then press gaiter with cover into centre console or press gaiter into cover.



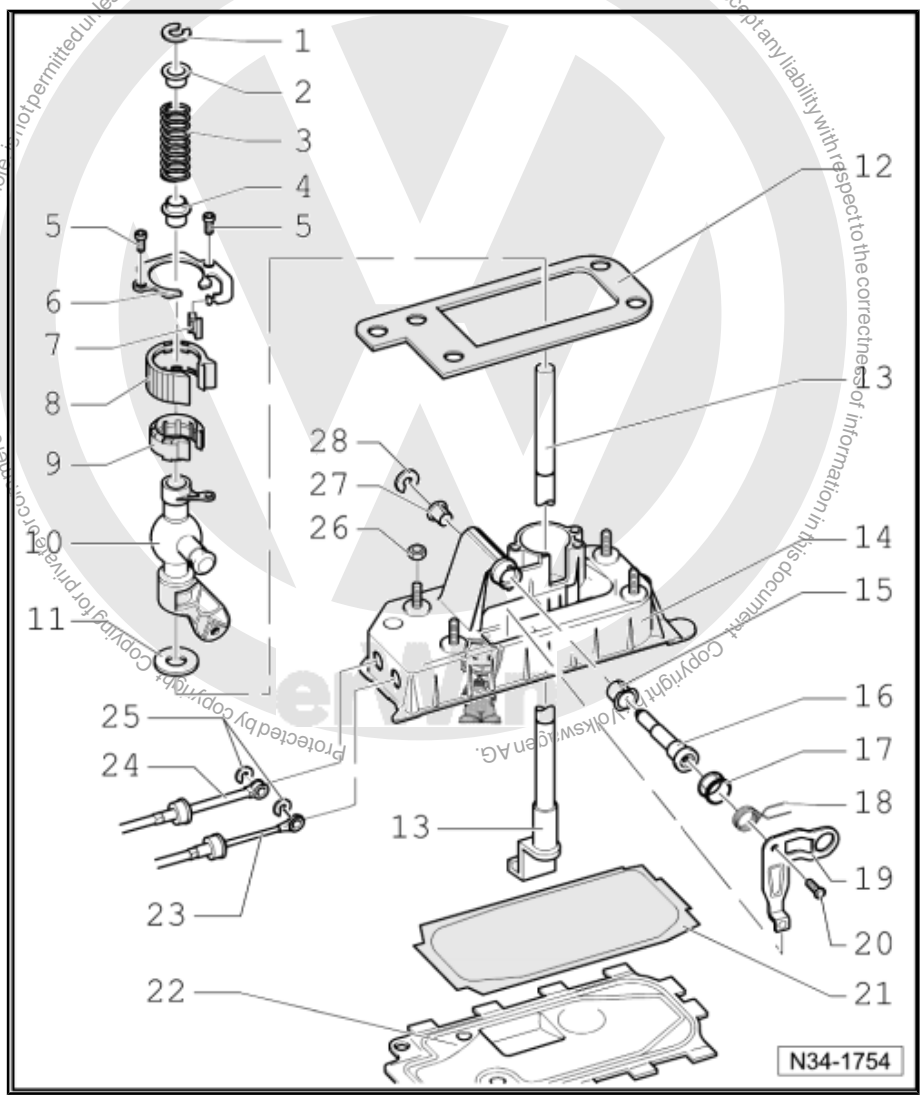
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

2.5 Repairing gear lever and selector housing (through 10.06)

Note

Lubricate bearing positions and sliding surfaces. Allocate grease according to ⇒ Electronic parts catalogue "ETKA".

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



1 - Securing clip
- ❑ Removing and installing ⇒ page 64

2 - Bush

3 - Compression spring

4 - Bush

5 - Torx bolt, 5 Nm

6 - Cover

7 - Damping

8 - Damping

9 - Ball socket

10 - Gear lever guide

11 - Damping washer

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

13 - Selector lever

14 - Selector lever housing

15 - Bearing bush

16 - Pivot pin

17 - Guide bush

18 - Compression spring
- ❑ Installing ⇒ page 64

19 - Gate selector lever

20 - Torx bolt, 5 Nm

21 - Seal
- ❑ Always renew

22 - Base plate
- ❑ Bend open tabs to remove
- ❑ Always renew

23 - Gate selector cable
- ❑ On gate selector lever
- ❑ Removing and installing ⇒ page 64

24 - Gear selector cable
- ❑ Removing from and attaching to gear lever guide ⇒ page 64

25 - Securing clip

- ❑ Always renew

26 - Hexagon nut

- ❑ M 8: 25 Nm
- ❑ M 6: 8 Nm
- ❑ Qty. 4

27 - Bearing bush

- ❑ Fits in one position only

28 - Securing clip

- ❑ Always renew

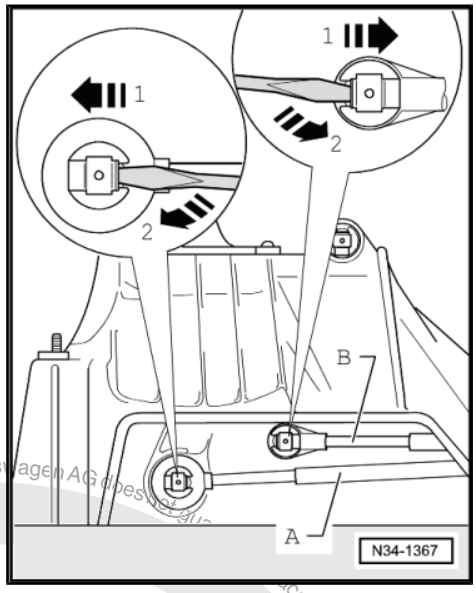
Removing and installing gate and gear selector cables

– Remove securing clip from gear selector cable -A- and gate selector cable -B-.

To do this, raise tab using screwdriver -arrow 1- and press off securing clip -arrow 2-.

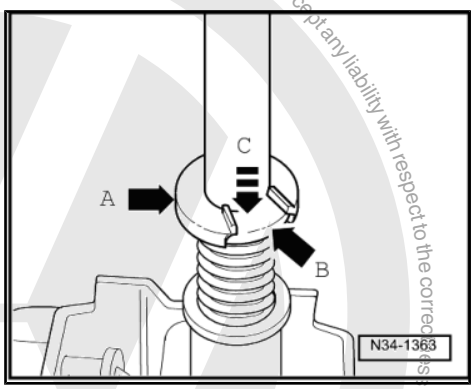
– Remove gear selector cable -A- from gear lever retainer.

– Remove gate selector cable -B- from retainer of gate selector lever.



Removing and installing securing clip

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



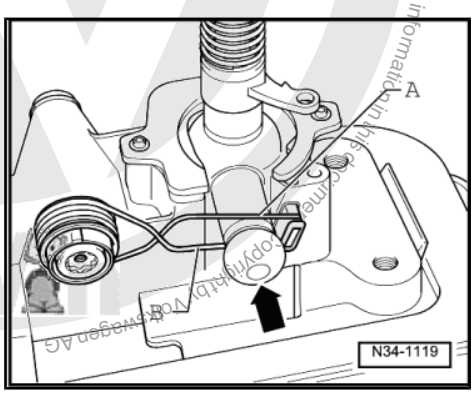
Note

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

Installing compression spring

– Insert compression spring so that extension -A- lies on top of pin -arrow-.

– Then pull extension -B- down so that it sits below pin -arrow-.

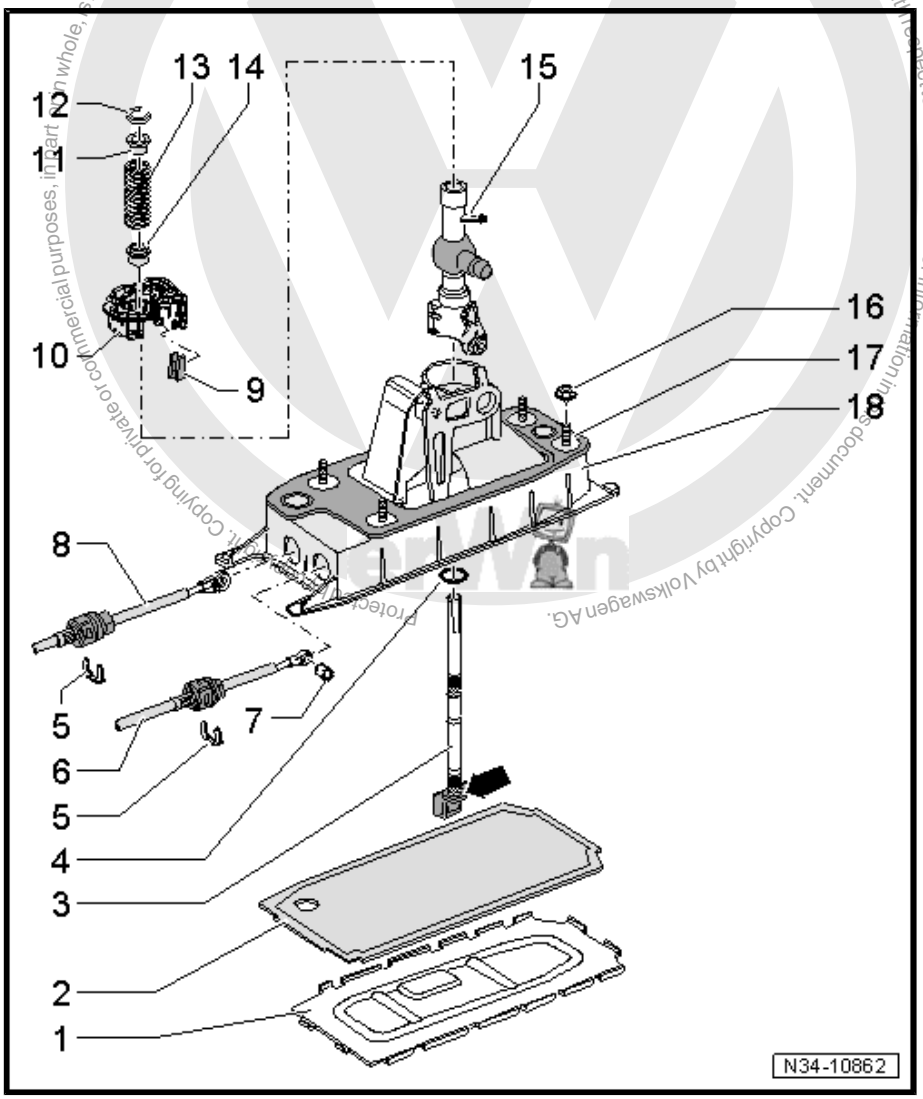


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not accept any liability with respect to the correctness of information in this document.

2.6 Repairing gear lever and selector housing (from 11.06)

Note

- *Lubricate bearing positions and sliding surfaces. Allocate grease according to ⇒ Electronic parts catalogue "ETKA".*
- *Dismantling and assembling selector mechanism ⇒ page 66 .*



1 - Base plate
- ❑ Bend open tabs to remove
- ❑ Always renew

2 - Seal
- ❑ Always renew

3 - Selector lever
- ❑ Can be removed and installed with gear lever guide ⇒ Item 15 (page 66) installed

4 - Damping washer
- ❑ Push onto gear lever up to stop -arrow-

5 - Securing clip
- ❑ Do not damage cables when removing
- ❑ Always renew

6 - Gate selector cable
- ❑ Lever off gate selector lever
- ❑ Press onto gate selector lever inside selector mechanism
- ❑ Installation position ⇒ page 58

7 - Bush

8 - Gear selector cable
- ❑ Lever off gear lever guide
- ❑ Press onto gear lever guide inside selector mechanism
- ❑ Installation position ⇒ page 58

9 - Damping

10 - Ball socket
- ❑ Will be damaged when removed
- ❑ Always renew

11 - Bush

12 - Securing clip
- ❑ Removing and installing ⇒ page 64

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

13 - Compression spring

- ❑ Removing and installing ⇒ page 64

14 - Bush

15 - Gear lever guide

16 - Hexagon nut

- ❑ M 8: 25 Nm
- ❑ M 6: 8 Nm
- ❑ Qty. 4

17 - Seal

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

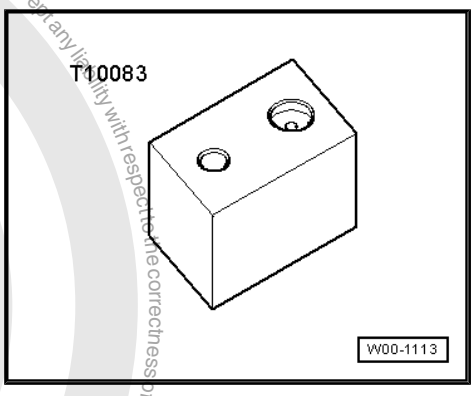
18 - Selector lever housing

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

2.6.1 Dismantling and assembling selector mechanism

Special tools and workshop equipment required

- ♦ thrust piece -T10083-



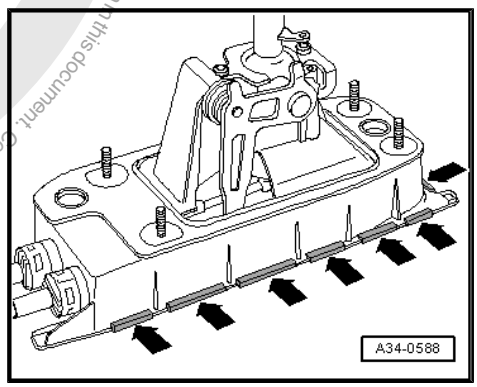
Carry out procedure as follows:

– Remove selector mechanism ⇒ page 75 .

– Bend open tabs -arrows- of selector mechanism base plate using a screwdriver and remove base plate. Tabs in front area of base plate are not illustrated.

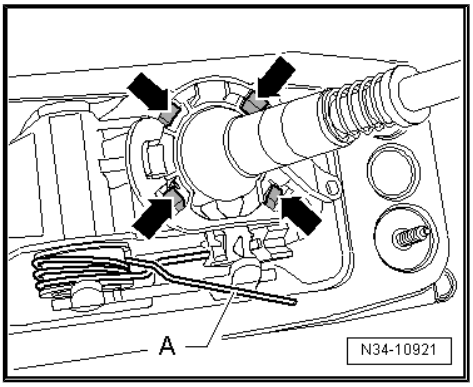
– Remove seal from selector housing.

– Remove gear selector cable and gate selector cable from selector housing ⇒ page 78 .

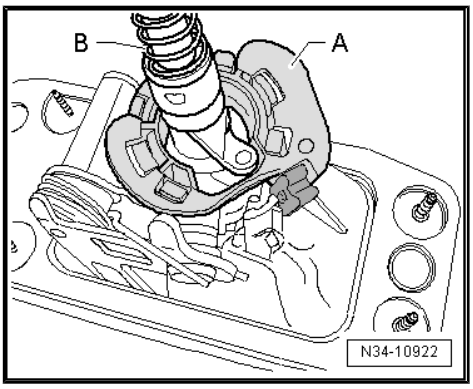


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

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

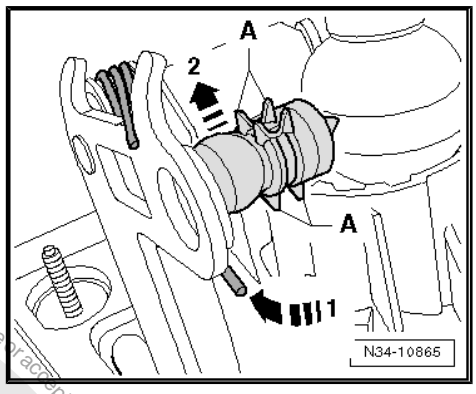


– Lever ball socket -A- with gear lever guide -B- out of selector housing.
– Then press ball socket off bearing ball of gear lever guide and remove it.

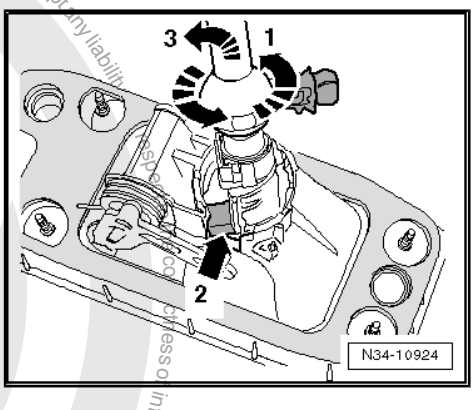


• Please pay attention to guides -A- during the further procedure.
• They must not be broken off.

– Lever lower end -arrow 1- of compression spring onto shoulder on gate selector lever as far as stop.
– Now pull gear lever guide up to stop and pull ball stud out of gate selector lever -arrow 2-.



– Then turn selector lever in -direction of arrow 1-.
• Pin -arrow 2- must be in notch in selector housing.
– Then swing out gear lever guide with gear lever in -direction of arrow 3-.



Assembling selector mechanism

Caution

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

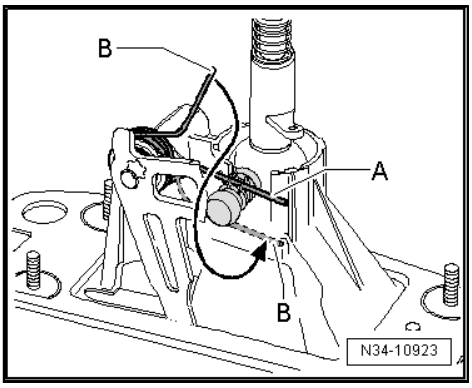
– Therefore, carefully press lower end off shoulder of gate selector lever.

The ends of the compression spring then become tensioned “diagonally” with a loud noise.

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

– Slacken ends -A- and -B- by turning both round to right.

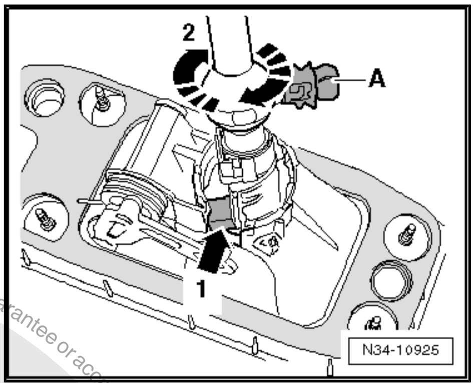
• Ends -A- and -B- must point in opposite directions.



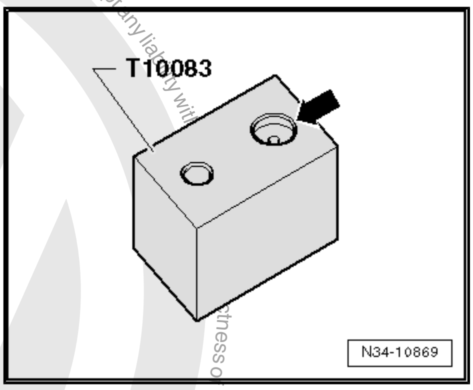
– Insert selector lever into selector housing.

• Pin -arrow 1- is still located in notch in selector housing.

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



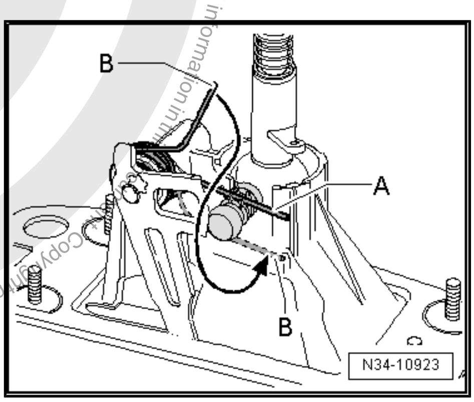
– Place selector housing with gear lever guide into larger recess -arrow- in thrust piece -T10083- .



Note

To ensure that the selector housing with gear lever guide can be inserted in the thrust piece , first remove gear lever, if necessary.

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



Note

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

– Insert end -A- of compression spring into guide from top.

– Pull end -B- of compression spring down and insert it next to guide (towards ball head).

• Please pay attention to guides (⇒ figure above) during the further procedure.

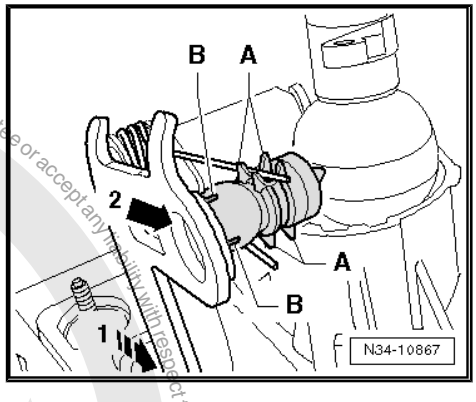
• They must not be broken off.

– Carefully remove selector housing with gear lever guide from thrust piece -T10083- .

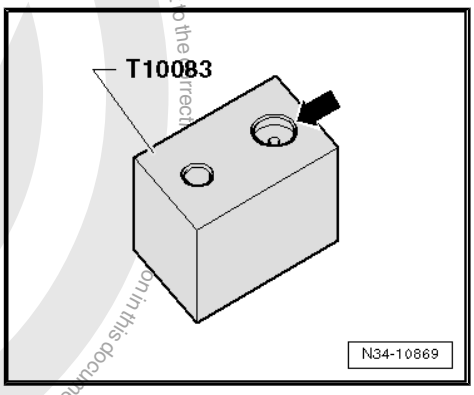
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Move gate selector lever back to stop, opposite from mounting holes for gear and gate selector cable, -arrow 1-.
– Grease ball-head pin.
– Press ball-head pin into gate selector lever -arrow 2-.

• Guides -A- and tabs -B- are not allowed to be damaged.



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



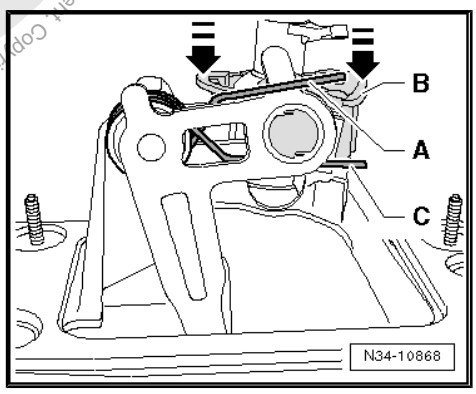
• The gear lever guide must project from the selector housing up to the stop.
– Lever upper end -A- of compression spring over pin of gate selector lever.

• Use a new ball socket -B-.

– Grease ball socket and bearing ball of selector lever guide.
– Push ball socket onto bearing ball of selector lever guide to stop.
– Remove selector housing from thrust block -T10083- .
– Insert lower end -C- of compression spring into guide.
– Lever upper end -A- of compression spring over pin of gate selector lever into guide.
– Push ball socket into selector housing -arrows-.

• All locking lugs must clip in.

– Mount selector lever, gear selector cable, gate selector cable and base plate ⇒ page 65 .
– Install selector mechanism ⇒ page 75 .

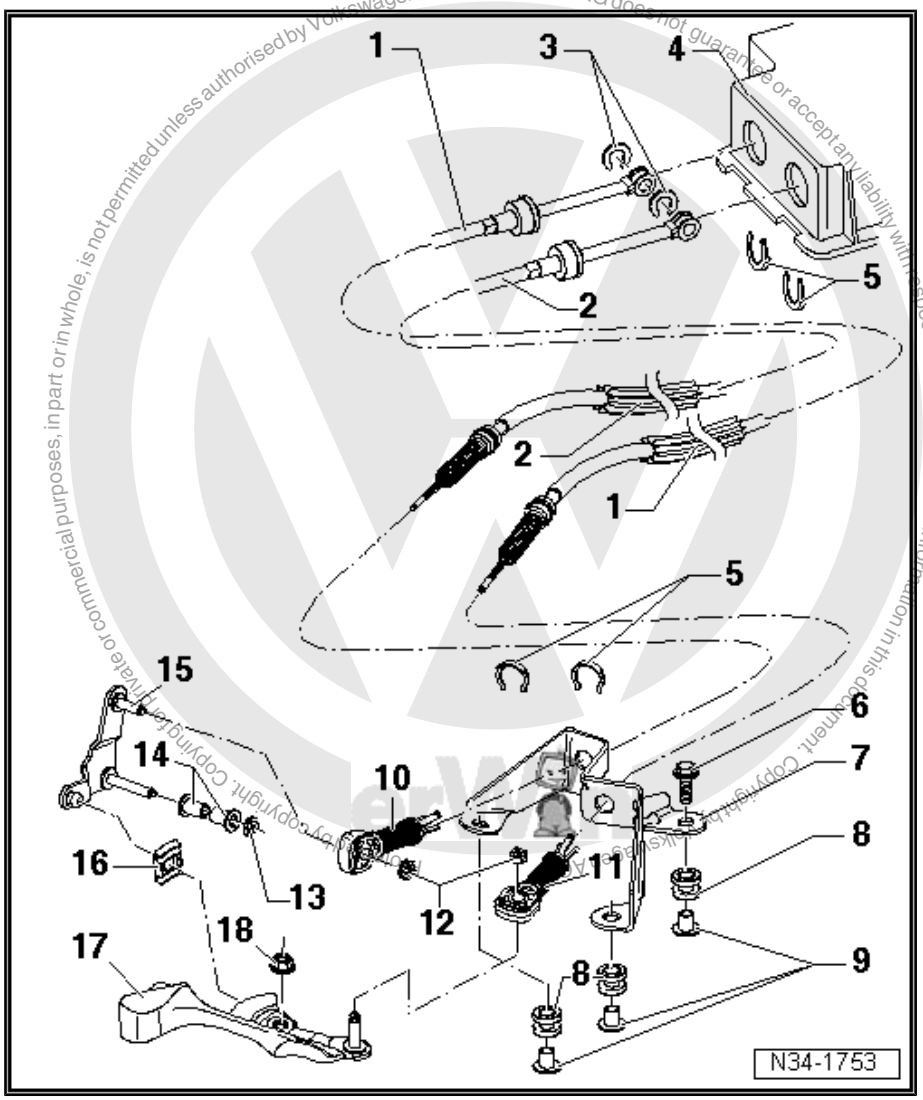


Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

2.7 Assembly overview - removing and installing selector cables

Note

Lubricate bearing positions and sliding surfaces. Allocate grease according to ⇒ Electronic parts catalogue "ETKA".



1 - Gear selector cable

- ❑ Connect to cable end-piece ⇒ Item 11 (page 71)
- ❑ Installation position ⇒ page 58
- ❑ Use cable tie to fix onto gate selector cable ⇒ page 73
- ❑ Removing and installing ⇒ page 78
- ❑ From 11.06, modified attachment to gear lever inside selector mechanism ⇒ Item 8 (page 65)

2 - Gate selector cable

- ❑ Connect to cable end-piece ⇒ Item 10 (page 71)
- ❑ Installation position ⇒ page 58
- ❑ Use cable tie to fix onto gear selector cable ⇒ page 73
- ❑ Removing and installing ⇒ page 78
- ❑ From 11.06, modified attachment to gate selector lever inside selector mechanism ⇒ Item 6 (page 65)

3 - Securing clip

- ❑ Always renew
- ❑ Discontinued in selector mechanisms from 11.06 ⇒ page 65

4 - Selector lever housing

5 - Securing clip

- ❑ Always renew
- ❑ Do not damage cables when removing

6 - Hexagon bolt, 20 Nm

- ❑ Qty. 3
- ❑ For cable support bracket

7 - Cable support bracket

- ❑ May be made from plastic or metal

8 - Grommet

- ❑ Cable support bracket mounting on gearbox

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

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

9 - Spacer

10 - Cable end-piece

- ❑ For gate selector cable to relay lever
- ❑ After installing, adjust selector mechanism ⇒ page 80
- ❑ Do not interchange; cable end-pieces for gate selector cable to relay lever and gear selector cable to gearbox selector lever are different
- ❑ For metal relay lever, secured with securing clip ⇒ Item 12 (page 71)
- ❑ From 05.07, fitted in conjunction with plastic relay lever ⇒ page 73
- ❑ Removing from plastic relay lever ⇒ page 73
- ❑ Pressing onto plastic relay lever ⇒ page 73
- ❑ Allocation ⇒ page 72

11 - Cable end-piece

- ❑ For gear selector cable to gearbox selector lever
- ❑ After installing, adjust selector mechanism ⇒ page 80
- ❑ Do not interchange; cable end-pieces for gate selector cable to relay lever and gear selector cable to gearbox selector lever are different
- ❑ Allocation ⇒ page 72

12 - Securing clip

- ❑ Always renew
- ❑ Not required for plastic relay lever

13 - Securing clip

- ❑ Always renew
- ❑ Not required for plastic relay lever

14 - Bearing bush

- ❑ Not required for plastic relay lever

15 - Relay lever

- ❑ Installation position ⇒ page 72
- ❑ After installing, adjust selector mechanism ⇒ page 80
- ❑ May be made from plastic or metal
- ❑ Metal relay lever is mounted in bearing bush ⇒ Item 14 (page 71) and secured with securing clip ⇒ Item 13 (page 71)
- ❑ From 05.07, plastic relay lever
- ❑ Remove and install plastic relay lever together with cable end-piece ⇒ page 73
- ❑ Bearing bushes and securing clip not required for plastic relay lever

16 - Shoe

17 - Gearbox selector lever

- ❑ With damper weight
- ❑ Install so that master spline aligns with selector shaft
- ❑ Installation position ⇒ page 72
- ❑ After installing, adjust selector mechanism ⇒ page 80
- ❑ From 06.06, smaller diameter of support pin for cable end-piece ⇒ page 72

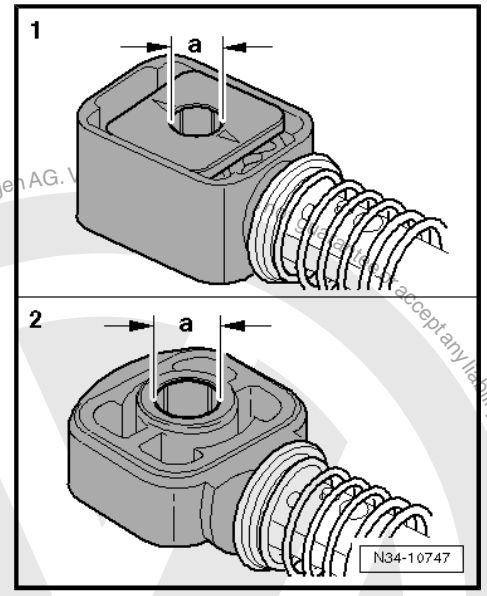
18 - Hexagon nut, 23 Nm

- ❑ Self-locking
- ❑ Always renew

Allocation of cable end-pieces

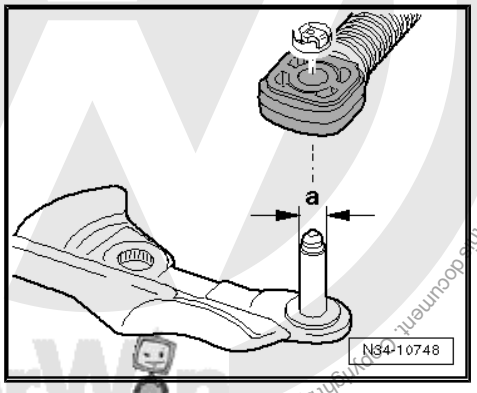
The holes in the cable end-pieces have different diameters.

Cable end-piece for	Dimension “a”
1 - Gear selector cable to gearbox selector lever from 06.06	8.5 mm
2 - Gear selector cable to gearbox selector lever through 05.06	10 mm
2. - Gate selector cable to metal relay lever	8 mm
2. - Gate selector cable to plastic relay lever ⇒ page 73	10 mm



From 06.06, smaller diameter of support pin for gear selector cable end-piece

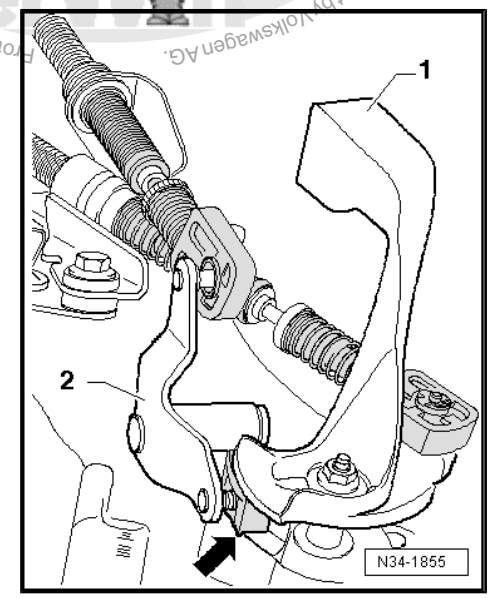
Support pin for gear selector cable end-piece	Dimension “a”
Through 05.06	10 mm
From 06.06	8.5 mm



Installation position of gearbox selector lever and relay lever

1 - Gearbox selector lever with damper weight

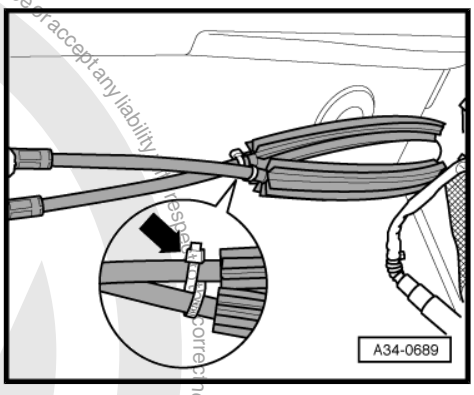
2 - Relay lever engages in guide rail of gearbox selector lever via shoe -arrow-.



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

Fitting position of cable tie for cables

– Wind cable tie -arrow- around the selector cables in a figure eight and secure them as shown in figure.



2.8 Plastic relay lever

From 05.07, relay lever is made from plastic. 2 versions may be installed.

- Relay lever with catch
- Relay lever with clip

Comply with the following during removal and installation work:

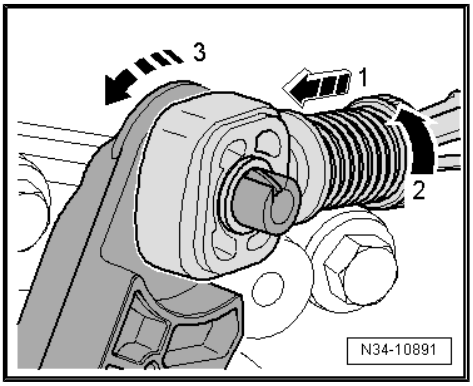
- To remove relay lever, first separate cable end-piece from gate selector cable.

This will avoid damage to the gate selector cable.

Carry out procedure as follows:

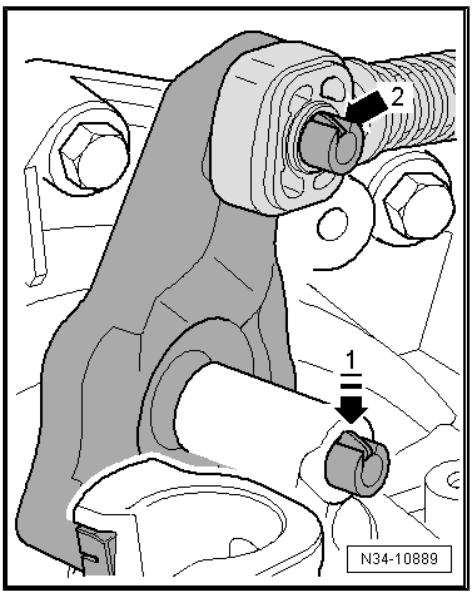
– Pull locking mechanism forward to stop in -direction of arrow 1- and then lock by turning to left in -direction of arrow 2-.

– Then push relay lever forwards (-direction of arrow 3-).



Relay lever with catch -arrow 1-

– Press catch -arrow 1- down to stop and remove relay lever together with cable end-piece. Move relay lever in operating direction.



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

Relay lever with clip -arrow 1-

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

Continuation for all

- Cable end-piece must be located behind catch -arrow 2-.
- Only remove cable end-piece with relay lever removed ⇒ page 75 .

Note

♦ *When installing, lubricate bearing positions and sliding surfaces.*

♦ *Allocate grease using ⇒ Electronic parts catalogue (ETKA) .*

– Press cable end-piece onto relay lever ⇒ page 75 .

– Install relay lever together with cable end-piece to stop.

Relay lever with catch -arrow 1-

- Catch -arrow 1- secures relay lever.
- Ensure proper engagement.
- Cable end-piece must be located behind catch -arrow 2-.

Relay lever with clip -arrow 1-

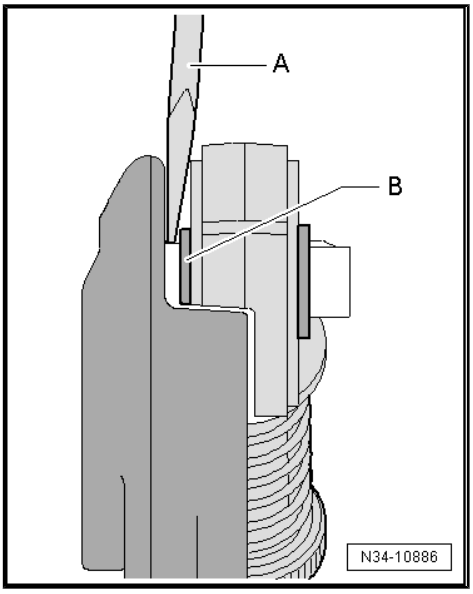
- Clip -arrow 1- secures relay lever.
- Ensure proper engagement of clip.
- Cable end-piece must be located behind catch -arrow 2-.

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

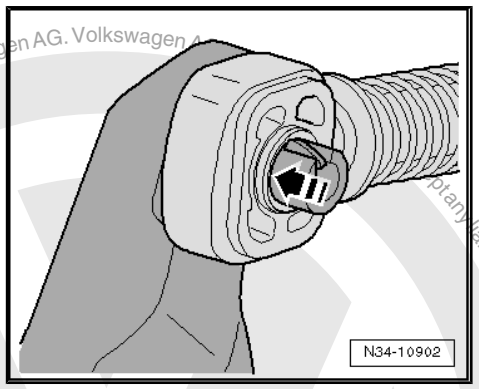
Levering gate selector cable end-piece off plastic relay lever

- Relay lever has been removed.

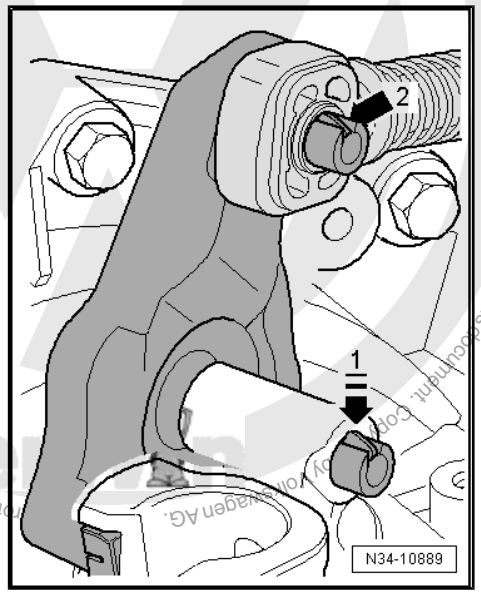
– Insert a flat-blade screwdriver -A- between bush -B- and relay lever.



Pressing on cable end-piece



- Relay lever has been removed.
- Cable end-piece may be pressed only onto bush -arrow-.
- Cable end-piece must move freely on relay lever.
- It must be located behind catch -arrow 2-.



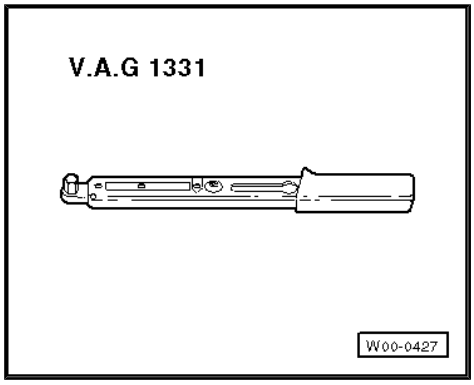
2.9 Removing and installing selector mechanism

2.9.1 Removing

Special tools and workshop equipment required

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

♦ Torque wrench -V.A.G 1331-



Carry out procedure as follows:

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

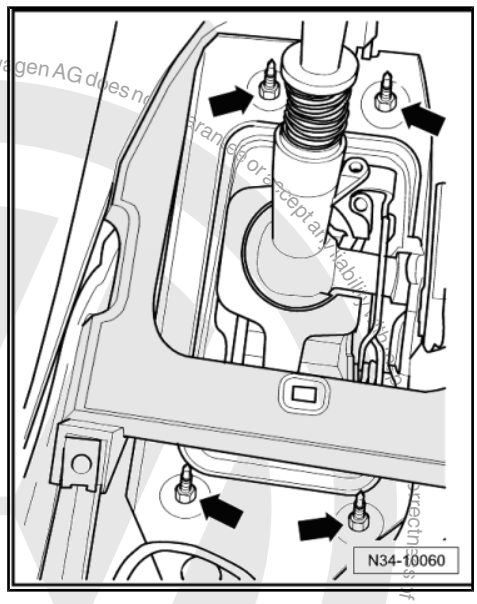
– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

– Remove gaiter with selector knob and noise insulation ⇒ page 61 .

– Remove centre console and securing bracket for centre console ⇒ General body repairs, interior; Rep. Gr. 68 ; Compartments, covers and trims .

– Remove selector housing nuts -arrows-.

– Remove complete air filter housing if it is over selector mechanism ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .



– Remove securing clip -3- for gear selector cable from gearbox selector lever -1-.

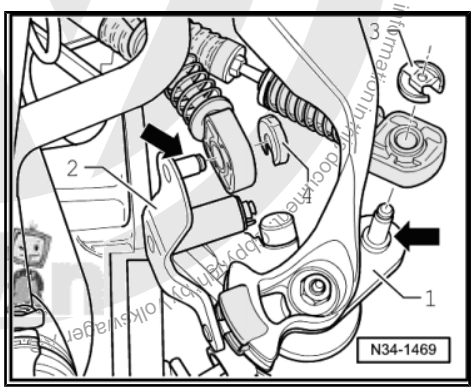
– Pull gear selector cable off pin.

Metal relay lever

– Remove securing clip -4- for gate selector cable from relay lever -2-.

– Pull gate selector cable from pin.

Plastic relay lever



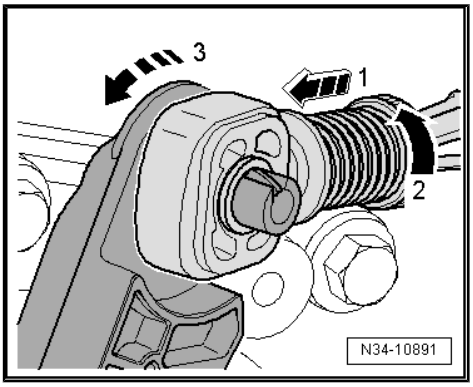
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Releasing cable end-piece from gate selector cable

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

– Then push relay lever forwards (-direction of arrow 3-).

Continued for all selector mechanisms



– Remove cable support bracket from gearbox -arrows-; if necessary, unclip pipe/hose -A- from bracket -B- first.

– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

– Remove tunnel cross member ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

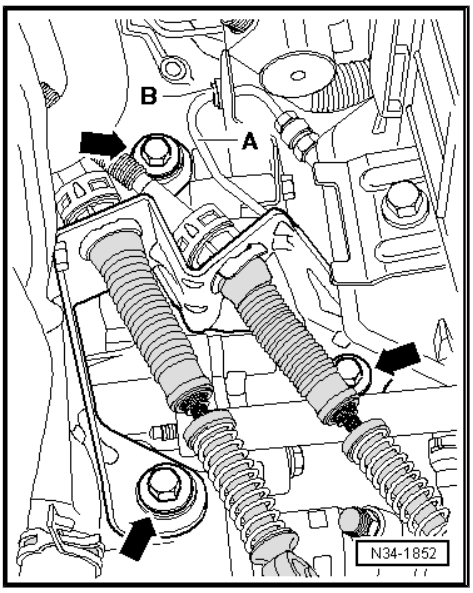
– Separate front exhaust system at double clamp and detach from subframe ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

– Unhook exhaust system ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

– Remove underbody panels ⇒ General body repairs, exterior; Rep. Gr. 50 .

– Remove heat shield beneath selector mechanism.

– Swing selector housing down and remove with selector cables.



2.9.2 Installing

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

– Align selector housing parallel to body.

• Distance to body must be same on both sides.

– Secure selector housing ⇒ Item 26 (page 64) or ⇒ Item 16 (page 66) .

– Route cables -1- from selector mechanism -2- to gearbox as follows:

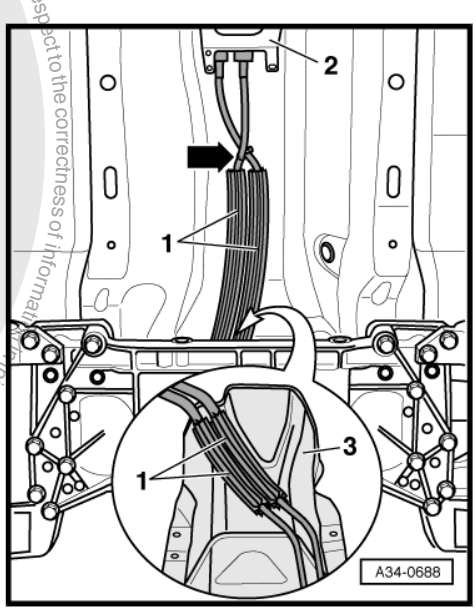
♦ After cables cross over -arrow-, they must be routed parallel to one another as far as cable support bracket on gearbox.

♦ Make sure that cable tie -arrow- for securing cables is installed correctly. Installation position ⇒ page 73 .

♦ Cables must be laid in the intended indentation in heat shield -3-.

Note

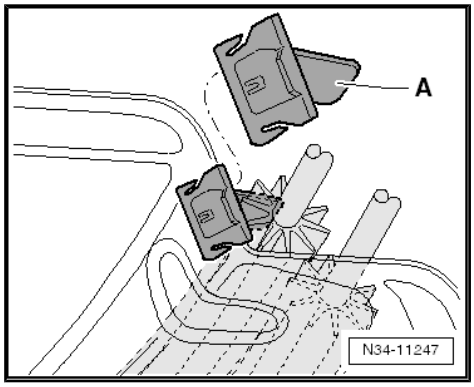
In the close-up, the heat shield is shown from above.



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

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

– Install cable support bracket on gearbox and tighten bolts to specified torques ⇒ Item 6 (page 70) .



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

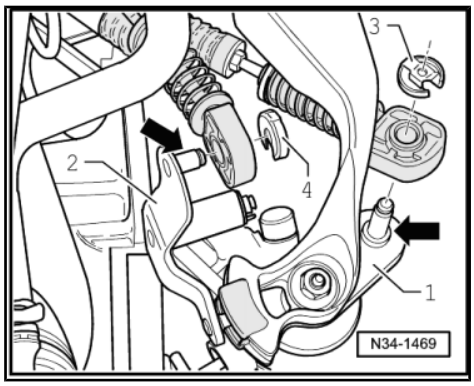
Allocation of cable end-pieces ⇒ page 72

– Spread a small quantity of grease on pins -arrows- of gearbox selector lever -1- and of relay lever -2-.

• Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

– Renew securing clips -3- and, for metal relay lever, securing clip -4- each time they are removed.

– Secure gear selector cable with securing clip -3- and gate selector cable, if necessary with securing clip -4-.



Cable end-piece to plastic relay lever

– Mounting relay lever together with cable end-piece ⇒ page 73 .

– Insert gate selector cable in cable end-piece.

Continued for all selector mechanisms

– Install centre console ⇒ General body repairs, interior; Rep. Gr. 68 ; Compartments, covers and trims .

– Install gaiter with selector knob and noise insulation ⇒ page 61 .

– Install heat shield beneath selector mechanism. If removed, reinstall underbody panels ⇒ General body repairs, exterior; Rep. Gr. 50 .

– Assemble exhaust system free of tension and attach tunnel cross member ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

Adjust selector mechanism ⇒ page 80 .

– If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system

– Follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

2.10 Removing and installing gear selector cable and gate selector cable

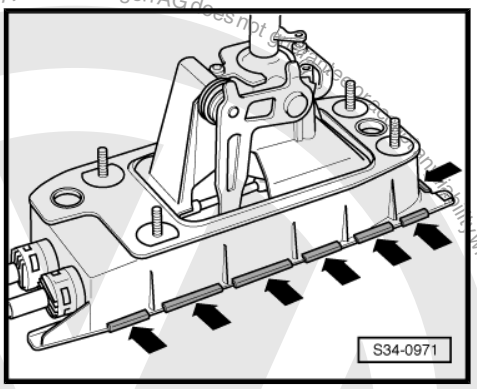
2.10.1 Removing

Carry out procedure as follows:

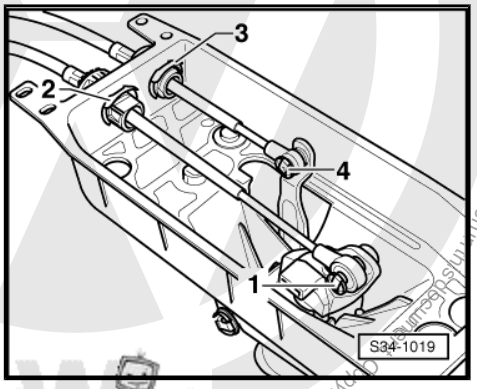
– Remove selector mechanism ⇒ page 75 .

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

– Bend open tabs -arrows- of selector mechanism cover using a screwdriver and remove cover.
– Remove gasket.

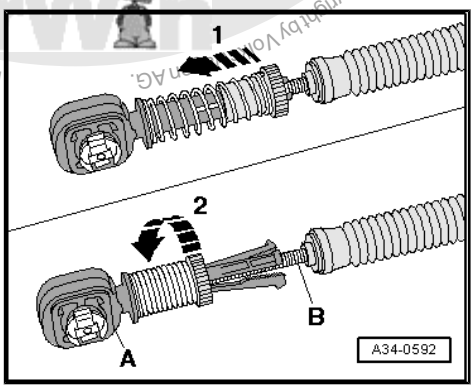


– Pull off securing clips -2 and 3-. Securing clips -1 and 4- are no longer present. Prise gear selector cable off gear lever and gate selector cable off gate selector lever with e.g. a screwdriver if necessary.
– Pull gear selector cable and gate selector cable from selector housing.

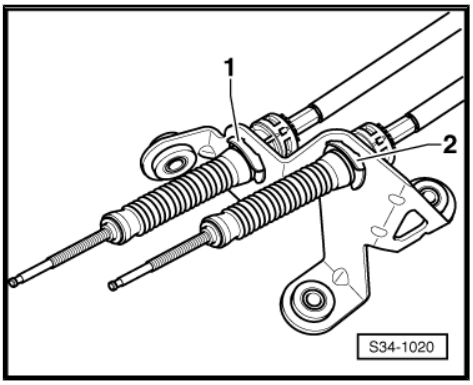


Release locks -A- for gear and gate selector cables -B- as follows:

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



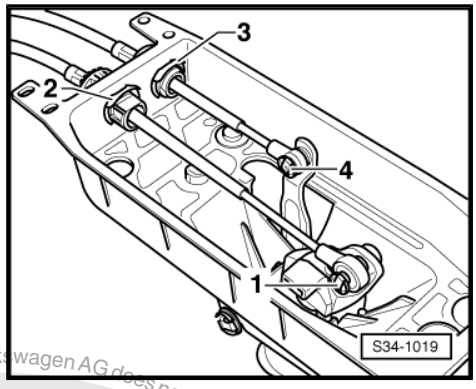
– Pull off securing clips -1- and -2-.
– Remove cable support bracket from Bowden cables.



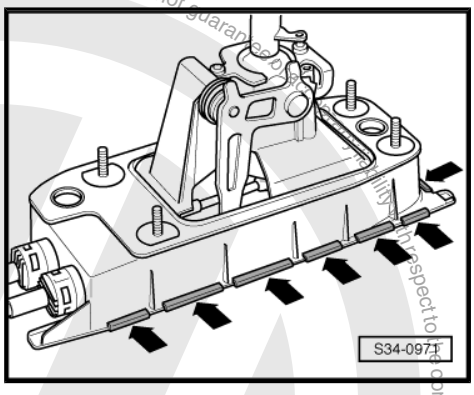
2.10.2 Installing

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

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



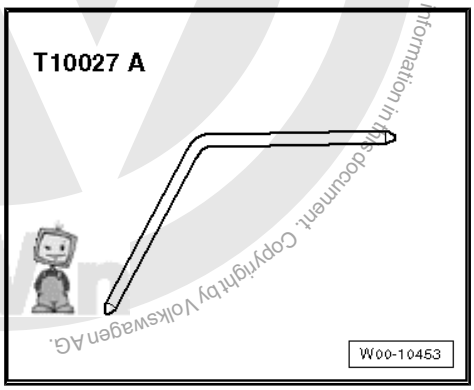
– Fit seal and secure selector mechanism cover by pressing down tabs -arrows-.
– Install selector mechanism ⇒ page 77.
– Adjust selector mechanism ⇒ page 80 .



2.11 Adjusting selector mechanism

Special tools and workshop equipment required

♦ Locking pin -T10027 A-



Note

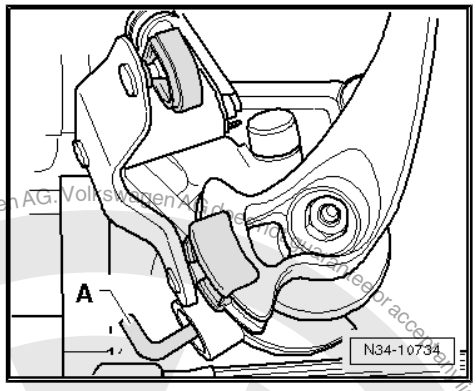
♦ *The following points are essential to ensure correct adjustment of selector mechanism:*
♦ *Moving parts of selector mechanism and elements transferring force must be in proper condition.*
♦ *Selector mechanism must move freely.*
♦ *Gearbox, clutch and clutch mechanism must also be in proper condition.*

• Gearbox must be in neutral.

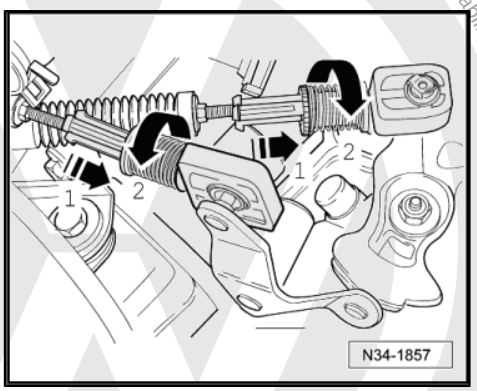
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Carry out procedure as follows:

– Remove complete air filter housing if bracket -A- to secure gear selector cable and gate selector cable are not accessible ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

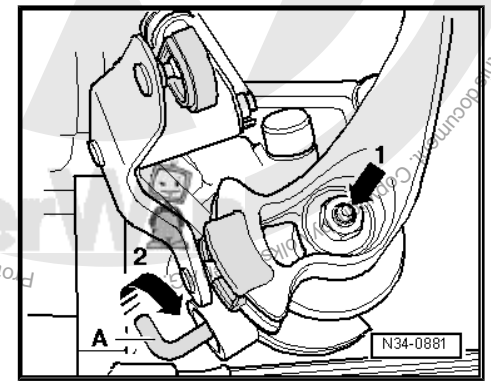


– Pull locking mechanisms on gate selector cable and gear selector cable end-pieces forward to stop -direction of arrow 1- and then turn to left to lock -direction of arrow 2-.



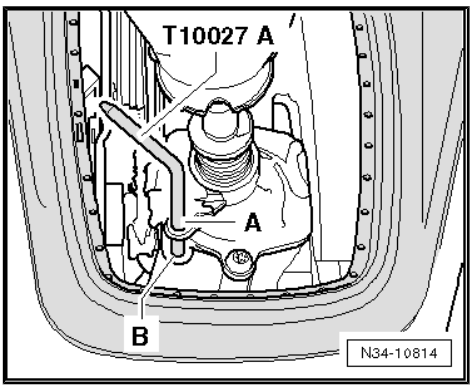
Secure selector shaft as follows:

– Press selector shaft down in -direction of arrow 1-.
– While pressing down selector shaft, turn angled rod -A- in -direction of arrow 2- upwards and at the same time press it in until it engages in selector shaft.
– Remove gaiter with selector knob and cover ⇒ page 61.
– If noise insulation is present, remove it.



Secure selector lever as follows:

– Select neutral using gear lever.
– Guide locking pin -T10027 A- through hole -A- into hole -B-.

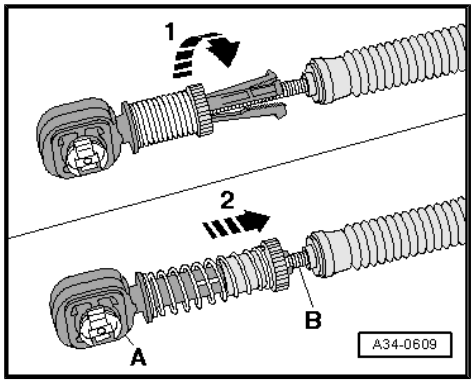


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

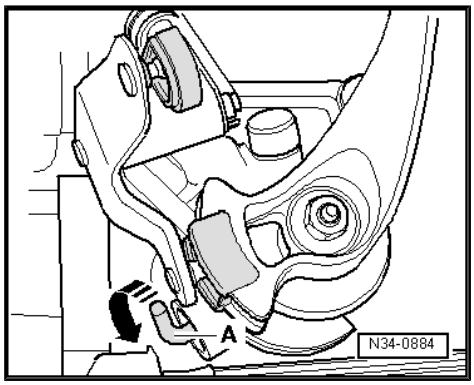
- Gate and selector cables -B- must be inserted, free of tension, into locking devices -A-.

– Now turn locking mechanisms on gear selector cable and gate selector cable end pieces clockwise to stop -direction of arrow 1-.

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

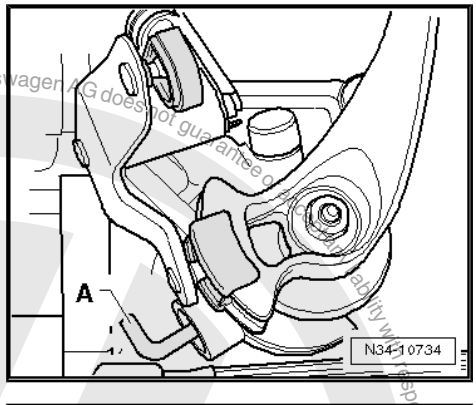


– Then turn angled rod -A- back to original position in -direction of arrow-.

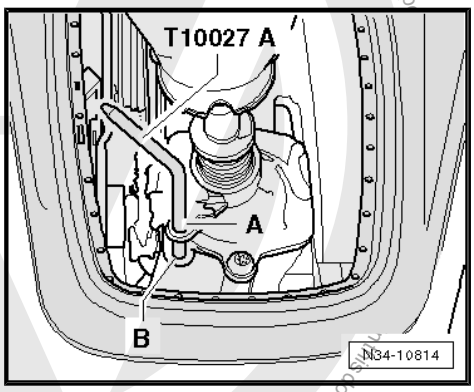


Note

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



– Pull locking pin out of holes -A- and -B-.
– If noise insulation was present, install it.
– Install gaiter with selector knob and cover ⇒ page 61 .
– Check selector shaft can move freely.
– If removed, install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .



2.11.1 Functional check

- With gearbox in neutral, selector lever must rest in selector lever gate for 3rd and 4th gear.

– Operate clutch.
– Select all gears several times. Pay particular attention to operation of reverse gear lock.

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

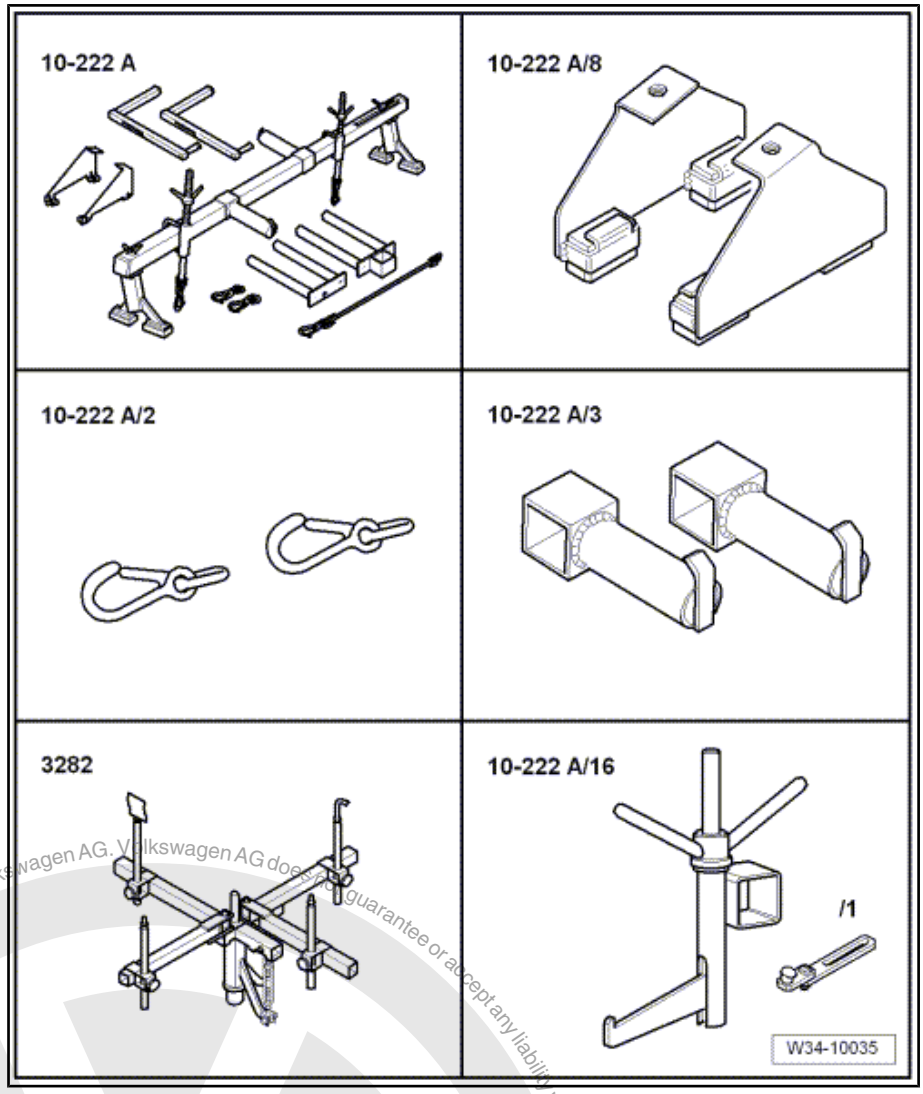
– If it continues to be difficult to engage a gear after repeated attempts, repeat adjustment procedure of selector mechanism ⇒ page 80 .

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

3 Removing and installing gearbox, Jetta 2005 ▸, Bora 2006 ▸, Golf Variant 2007 ▸, Bora Sportwagen 2008 ▸, Golf Variant 2010 ▸

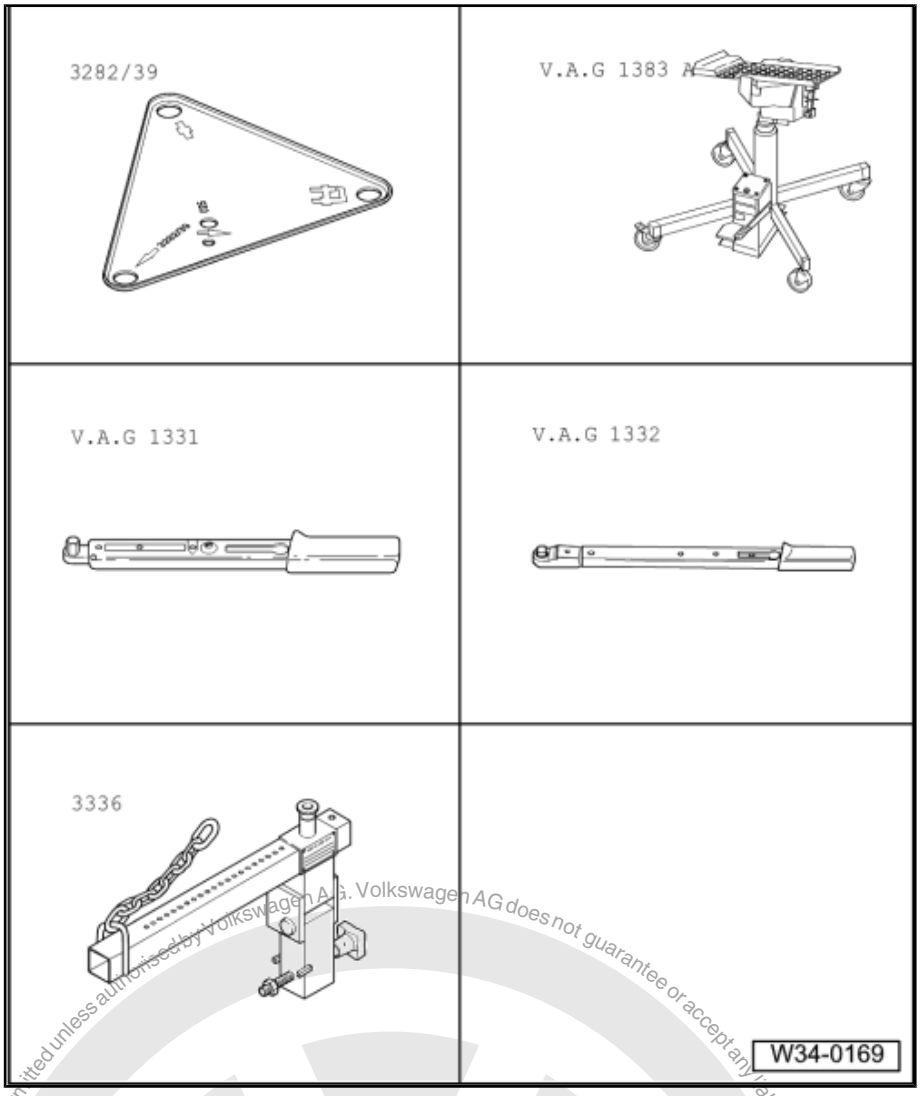
Special tools and workshop equipment required

- Support bracket -10 - 222 A-
- Adapter -10 - 222 A /8-
- Hook - 10 - 222 A /2-
- Adapter -10 - 222 A /3-
- Gearbox support -3282-
- Adapter -10 - 222 A /16-

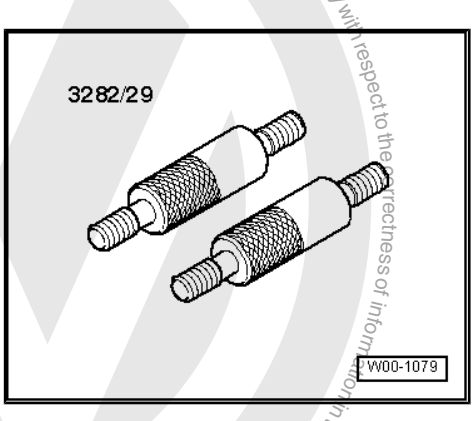


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Adjustment plate -3282/39-
- Support elements for gearbox (determine when setting adjustment plate on gearbox support)
- Engine and gearbox jack -V.A.G 1383A-
- Torque wrench -V.A.G 1331-
- Torque wrench -V.A.G 1332-
- Gearbox mounting support -3336-
- Grease for clutch plate splines -G 000 100-
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .



- Pin -3282/29-



3.1 Removing gearbox

Carry out procedure as follows:

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

– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

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

– Remove engine cover if engine lifting eye arrow -10 - 222 A- is not accessible.
– Remove complete air filter housing if it is near battery ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
– Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .
– Remove securing clip -arrow 1- for gear selector cable from gearbox selector lever -A-.
– Pull gear selector cable off pin.

Metal relay lever

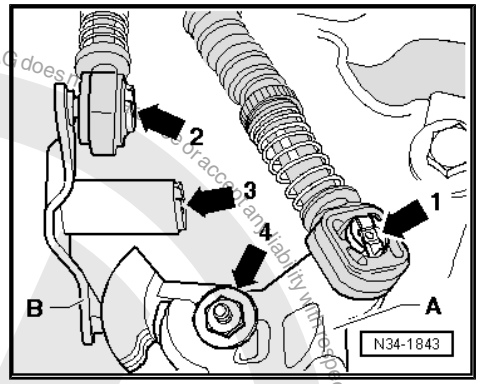
– Remove securing clip -arrow 2- for gate selector cable from relay lever -B-.
– Pull gate selector cable from pin.
– Pull securing clip -arrow 3- off relay lever -B- and remove relay lever.

Plastic relay lever

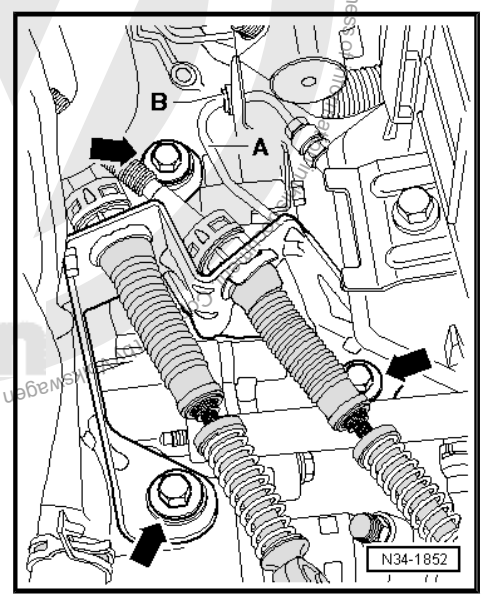
– Removing relay lever together with cable end-piece ⇒ page 73 .

Continuation for all

– Remove gearbox selector lever -A- by removing nut -arrow 4- (⇒ previous figure).



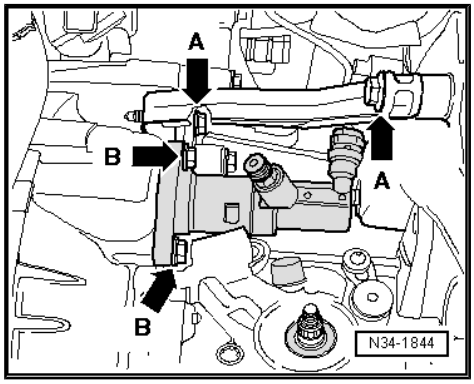
– Remove cable support bracket from gearbox -arrows-.
– Then tie up gear selector cable and gate selector cable.
– Remove retainer -B- from gearbox and pull off from pipe/hose line -A-.



– Then remove gearbox support -arrow A-.
– Remove slave cylinder -arrow B-, lay to side and secure with wire. Do not disconnect pipes.

Caution

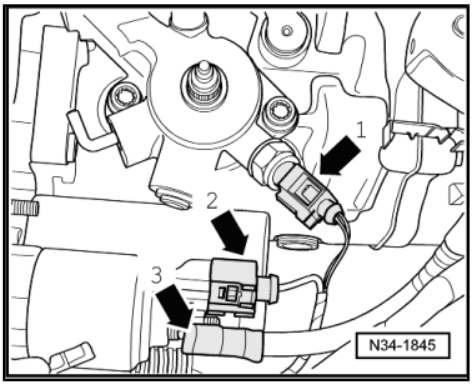
Do not operate clutch pedal any more.



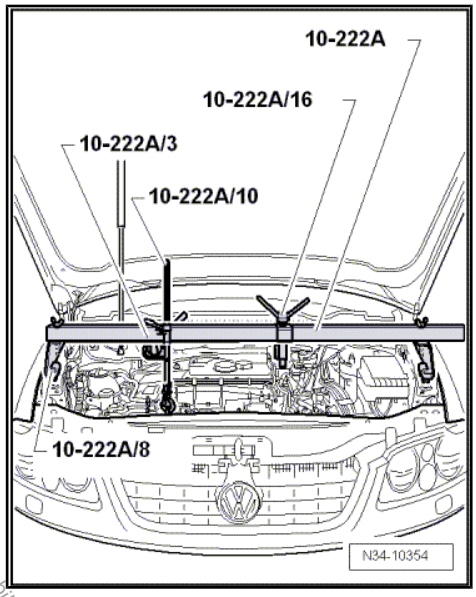
– Remove earth strap at upper engine/gearbox connecting bolt.

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

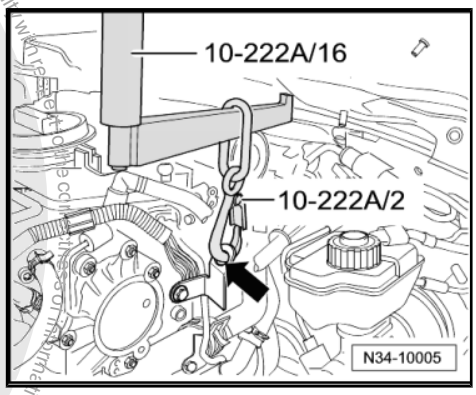
– Pull connector -arrow 1- off reversing light switch -F4- .
– Now remove connector -arrow 2- and wire -arrow 3- from starter.
– Then remove upper securing bolt on starter.
– Remove upper engine/gearbox connecting bolts.
– If there are hose and cable connections in area of engine support eye for support bracket -10 - 222 A- , remove these now.



– Set up support bracket -10 - 222 A- together with adapters -10 - 222 A /8- , adapter -10 - 222 A /3- and adapter -10 - 222 A / 16- before gas strut for bonnet.
– Attach hook -10 - 222 A /10- at front right of engine.

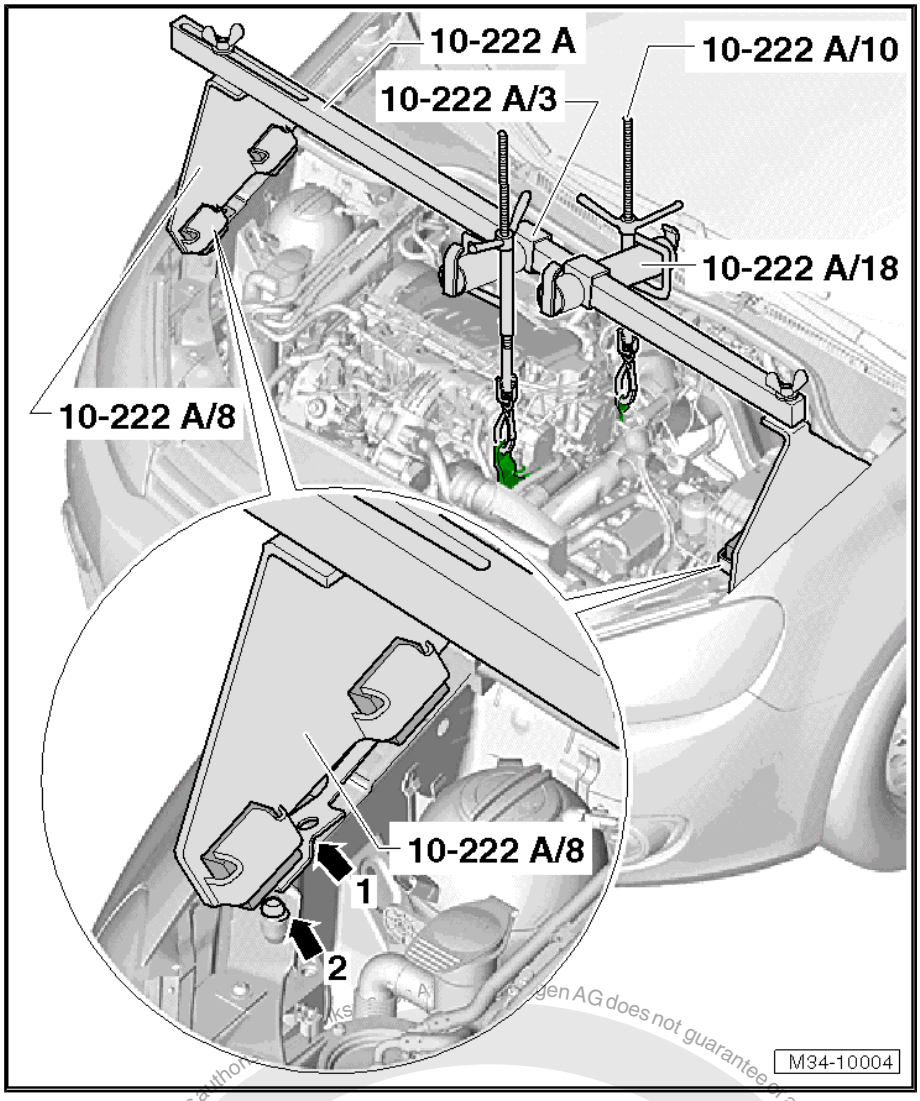


– Attach additional hook -10 - 222 A /2- to rear left of engine -arrow-.
– Then connect hook -10 - 222 A /2- using adapter -10 - 222 A / 16- .



Vehicles with 1.6 l - 77 kW engine

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



– Set up support device -10 - 222 A- .
– Use:
♦ Adapter -10 - 222 A /3-
♦ Adapter -10 - 222 A /8-
♦ Hook -10 - 222 A /10-
♦ Adapter -10 - 222 A /18-
• Place adapters -10 - 222 A /8- on upper longitudinal carrier, directly before the raised portion (-arrow 1-) next to bolt (-arrow 2-).
– Attach spindle and hooks -10 - 222 A /10- in left engine support eye.

Continuation for all vehicles

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

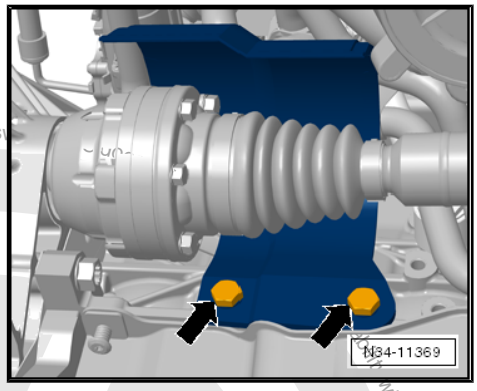
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Then remove all lines from gearbox.

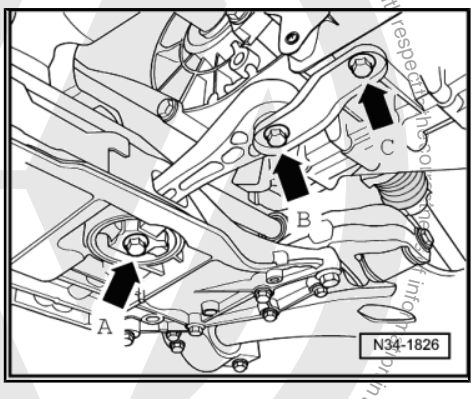
– Separate exhaust system at double clamp and unbolt exhaust pipe bracket from subframe ⇒ Rep. Gr. 26 ; Exhaust system .

– If present, remove heat shield above right drive shaft -arrows-.

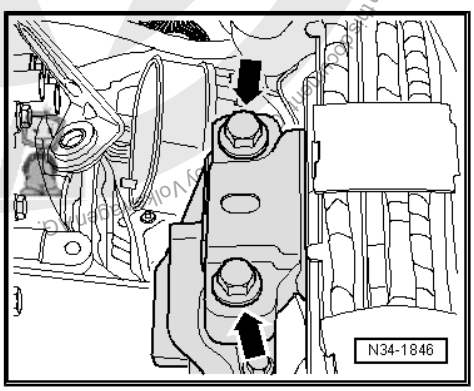
– Disconnect drive shafts from flange shafts and tie up as high as possible, being careful not to damage surface protection.



– Remove pendulum support -arrows A-, -B- and -C-.



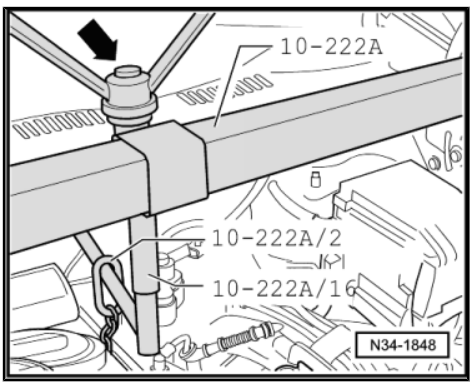
– Remove hexagon bolts -arrows- for left assembly mounting from gearbox mounting.



– Tilt engine/gearbox assembly by lowering it via spindles of support bracket -10 - 222 A- .

Note

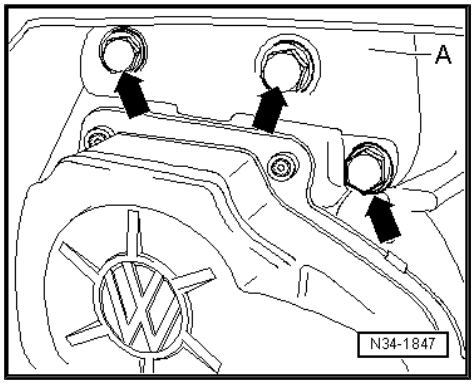
- *Lower threaded spindle of adapter -10 - 222 A /16- using winged nut, but not more than until spindle is flush with nut -arrow-.*
- *Vehicles with 1.6/77 kW diesel engine, lower engine/gearbox assembly via spindles and hooks -10 - 222 A /10- .*
- *Be careful of all lines when lowering gearbox.*



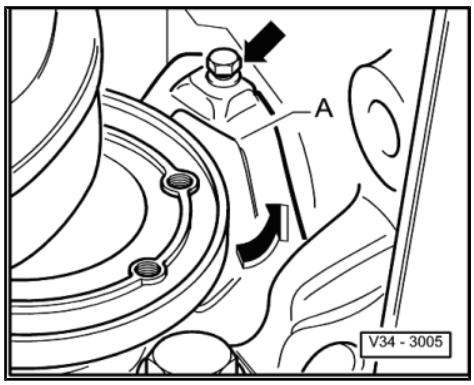
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volks

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

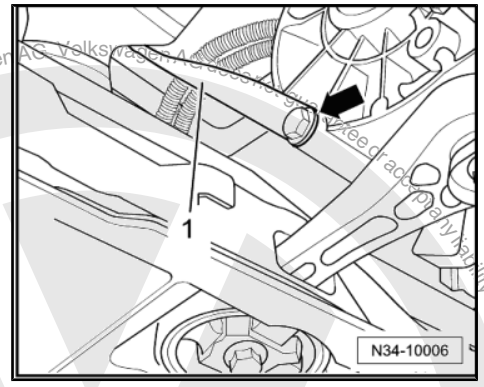
– Remove gearbox bracket -A- -arrows-.



– If small cover plate -A- for flywheel behind the right flange shaft -arrows- is installed, remove it.



– Remove exhaust system strut -1- from gearbox -arrow-.



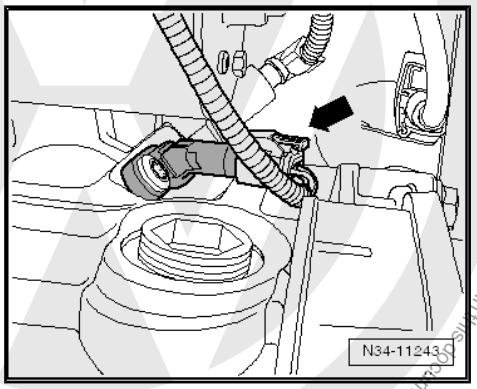
– Gearboxes for vehicles with start-stop system: pull connector -arrow- from gearbox neutral position sender -G701- .

– Remove starter ⇒ Electrical system; Rep. Gr. 27 ; Starter .

To remove gearbox “0A4”, set up gearbox support -3282- with adjustment plate -3282/39- .

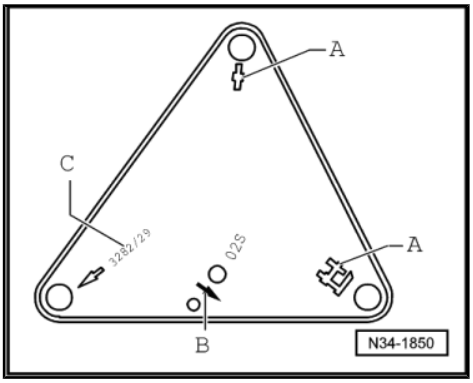
– Insert gearbox support -3282- in engine and gearbox jack -V.A.G 1383A- .

– Align arms of gearbox support according to holes in adjustment plate .

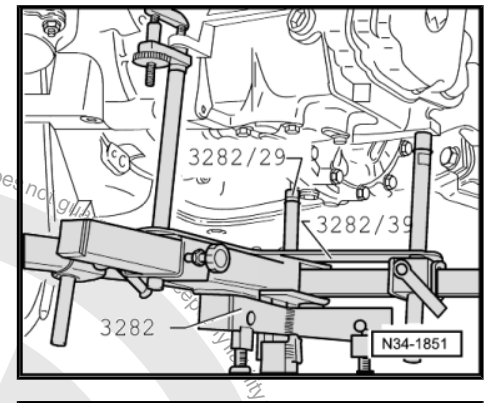


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

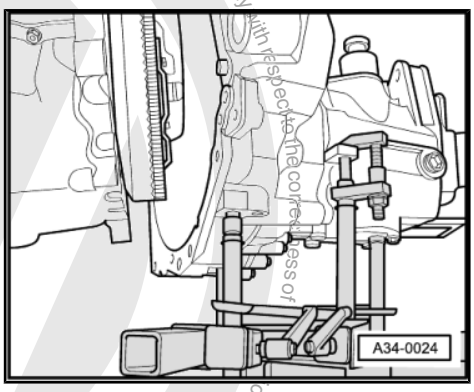
– Screw in support elements -A - and -C- on adjustment plate as shown.
– Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel.



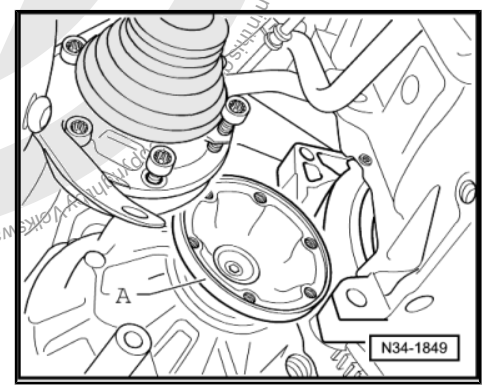
– Align adjustment plate parallel to gearbox and lock safety support on gearbox.
– Then screw pin -3282/29- into hole on gearbox for securing bolt of pendulum support.
– Remove lower engine/gearbox connecting bolts.



– Press gearbox off dowel sleeves and carefully swing towards subframe.
– Turn to lower gearbox in area of differential.
– Have a second mechanic push engine forwards slightly.



– Carefully lower gearbox, guiding right-hand flange shaft -A- past intermediate plate and flywheel as shown.
– When lowering gearbox, change position of gearbox using spindles of gearbox support -3282- .



Note

Be careful of all lines when lowering gearbox.

3.2 Installing gearbox

Note

Refer to procedure "Removing gearbox" for required special tools ⇒ page 84 .

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

Observe the following table on the subject of “checking and topping up gear oil”.

“Checking and topping up gear oil”				
		“No”	“Yes”	“Yes”
Gearbox	Original part	X		
	No oil loss	X		
	Completely dismantled		X Before installation ⇒ Item 3 (page 143) Oil capacity ⇒ page 2	
	Partially dismantled • (Gearbox housing and clutch housing were not separated.)			X After installation ⇒ page 112

Carry out procedure as follows:

– All threaded holes into which self-locking bolts are to be screwed must be cleaned of residual locking fluid carefully with a thread chaser.

– Always renew self-locking bolts and nuts.

– Check whether dowel sleeves for aligning engine and gearbox are fitted in cylinder block and install if necessary.

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

– Ensure that intermediate plate is correctly seated on engine.

– Clean input shaft splines and apply thin coat of grease for clutch plate splines -G 000 100- .

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

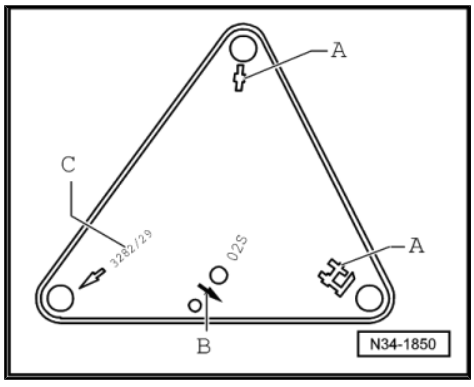
To install gearbox “0A4”, set up gearbox support -3282- with adjustment plate -3282/39- .

– Align arms of gearbox support according to holes in adjustment plate .

– Screw in support elements -A - and -C- (pin -3282/29-) on adjustment plate as shown.

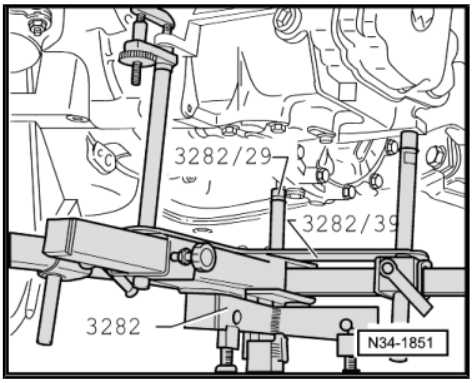
– Place gearbox on engine and gearbox jack .

– Align adjustment plate and gearbox parallel to one another.

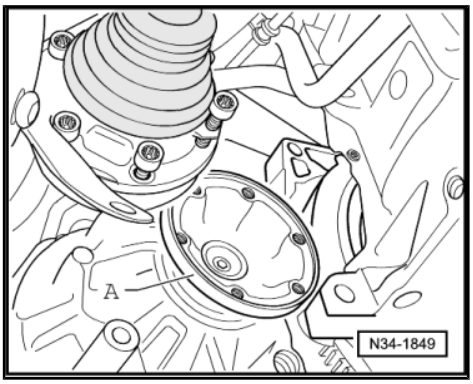


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

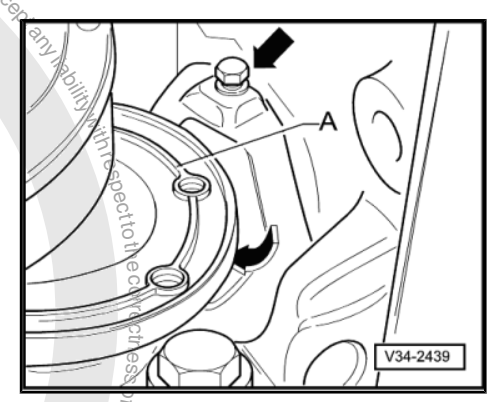
– Screw pin -3282/29- into hole on gearbox for securing bolt of pendulum support.
– Position engine and gearbox jack under vehicle. -Arrow B- on adjustment plate points in direction of vehicle travel.
– Using spindles of gearbox support -3282- , tilt gearbox downwards in vicinity of differential.
– Have a second mechanic push engine forwards slightly.



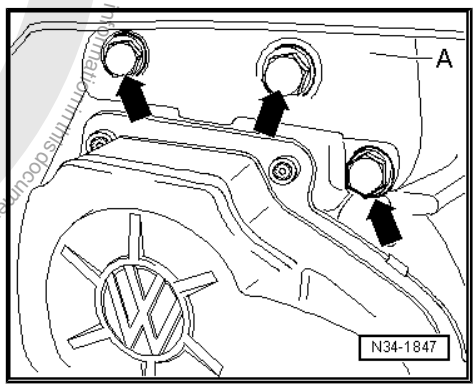
– Then carefully raise gearbox, guiding with right flange shaft -A- past flywheel and intermediate plate as shown.
– Using spindles of gearbox support -3282- , tilt gearbox upwards in vicinity of differential.
– Lift gearbox by engine.
• The engine must still be pushed forwards (2nd mechanic).
– Align gearbox to engine and join.
– Screw in lower engine/gearbox securing bolts and tighten to specified torque ⇒ page 96 .
– After gearbox has been bolted to engine, remove engine and gearbox jack from gearbox.



– If small cover plate had been installed behind the right-hand flange shaft -A-, install it -arrows-.
– Screw in upper engine/gearbox securing bolts and tighten to specified torque ⇒ page 96 .



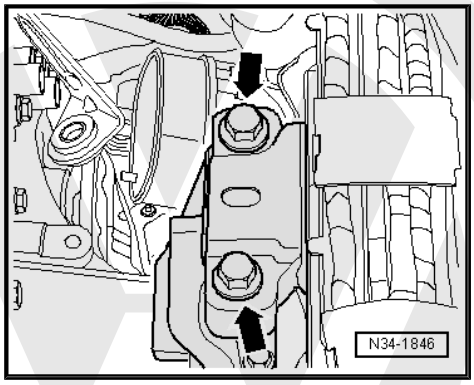
– Install bracket -A- on gearbox using new hexagonal bolts -arrows- and tighten to specified torque ⇒ page 96 .



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

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

– Align engine and gearbox in installation position using both spindles of support bracket -10 - 222 A- .
– Install new bolts -arrows- for left assembly mounting in gearbox mounting and tighten to specified torque ⇒ page 96 .



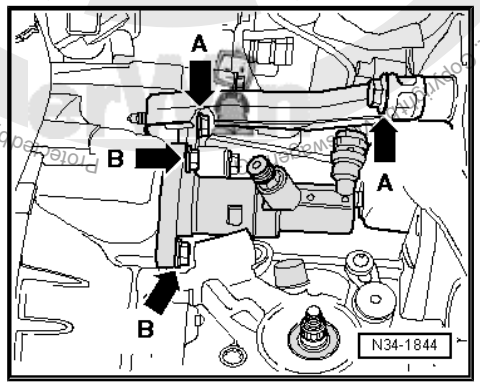
WARNING

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

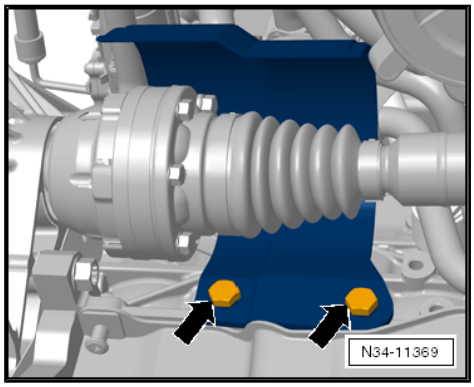
Note

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

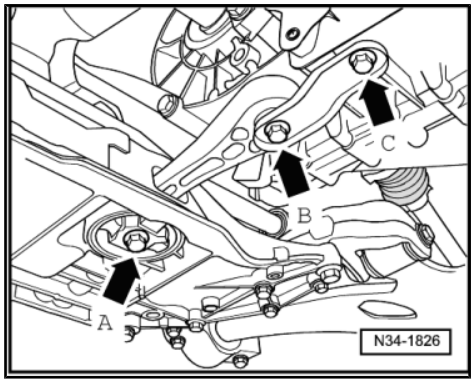
– Install slave cylinder and tighten bolts -arrows B- to specified torque ⇒ Item 15 (page 38) .
– Then install gearbox support -arrow A- and tighten to specified torque ⇒ page 96 .
– Attach drive shafts to gearbox ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing front suspension .



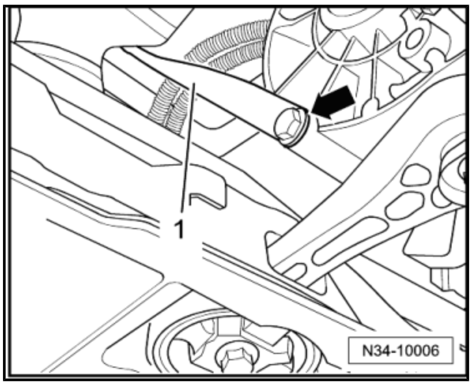
– Install drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



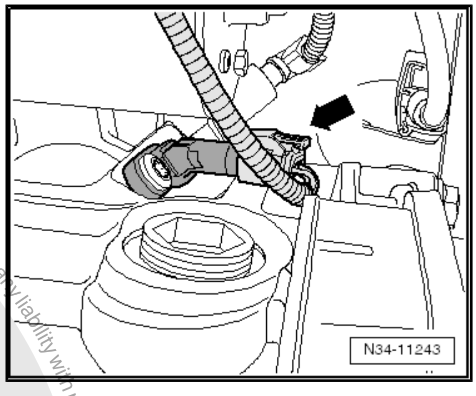
– Install pendulum support with new bolts -arrows A-, -B- and -C- ⇒ Running gear, axles, steering ; Rep. Gr. 40 ; Repairing front suspension .
– Assemble exhaust system and attach exhaust system bracket to subframe ⇒ Rep. Gr. 26 ; Exhaust system .



– Bolt exhaust system strut -1- onto gearbox and tighten bolt -arrow- to specified torque ⇒ Rep. Gr. 26 ; Exhaust system .



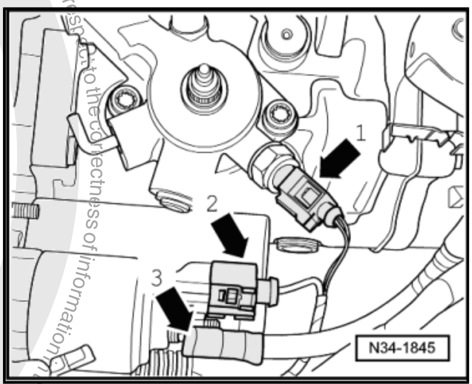
– Gearboxes for vehicles with start-stop system: join connector -arrow- to gearbox neutral position sender -G701- .



– Push connector -1- onto reversing light switch -F4- .

– Install starter, push on connector -arrow 2- and bolt on wire -arrow 3- ⇒ Electrical system; Rep. Gr. 27 ; Starter .

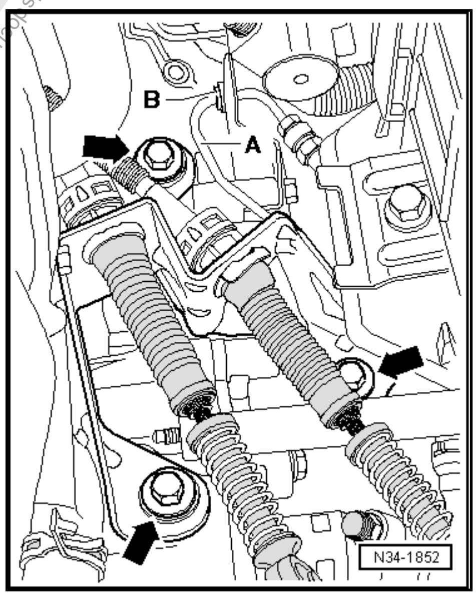
– Install earth strap at upper engine/gearbox connecting bolt.



– Attach retainer -B- to gearbox

– Press pipe/hose line -A- into retainer -B- on gearbox.

– Install cable support bracket on gearbox and tighten bolts -arrows- to specified torque ⇒ Item 6 (page 70) .



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

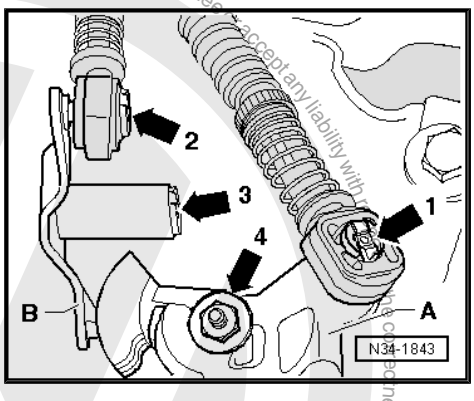
– Install gearbox selector lever -A-.

– Tighten hexagon nut -arrow 4- to specified torque ⇒ Item 18 (page 71) .

– Spread a small amount of grease on pin of gearbox selector lever -A-.

Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

– Connect gear selector cable to gearbox selector lever -arrow 1-.



Metal relay lever

– Install relay lever -B- and secure with securing clip -arrow 3-.

– Spread a small amount of grease on pin of relay lever -B-.

Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

– Connect gate selector cable to relay lever -arrow 2-.

Plastic relay lever

– Installing relay lever together with cable end-piece ⇒ page 73 .

Continuation for all

– Adjust selector mechanism ⇒ page 80 .

– Install battery tray, battery cover and battery ⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .

– Mount engine cover and install air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

– Connect battery; follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

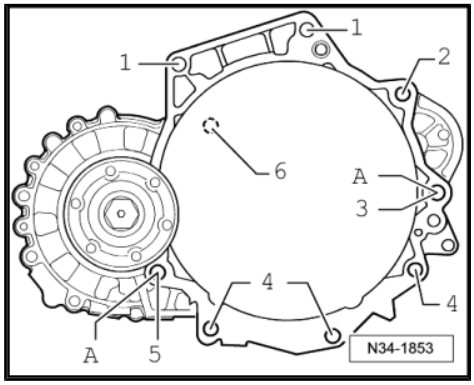
– Install lower part of front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Wheel housing liner .

– Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

3.2.1 Torque settings

Gearbox on petrol engine

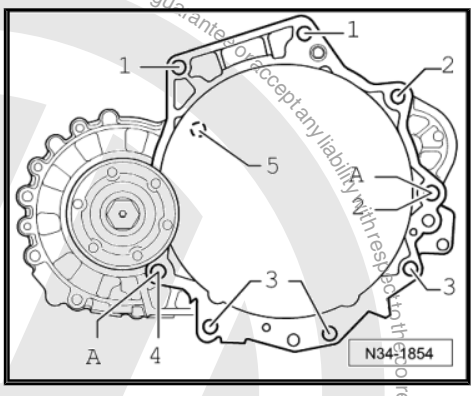
Item	Bolt	Quantity	Nm
1	M12 x 65	2	80
2	M12 x 150 ♦ Additionally, starter to gearbox	1	80
3	M12 x 165 ♦ Additionally, starter to gearbox	1	80
4	M10 x 50	3	40
5	M12 x 85	1	80
6	M6 x 8 ♦ Small flywheel cover plate	1	10



Item -A- dowel sleeves for centring

Gearbox to diesel engine

Item	Bolt	Quantity	Nm
1	M12 x 55	2	80
2	M12 x 150 ♦ Additionally, starter to gearbox	2	80
3	M10 x 50	3	40
4	M12 x 60	1	80
5	M6 x 8 ♦ Small flywheel cover plate	1	10

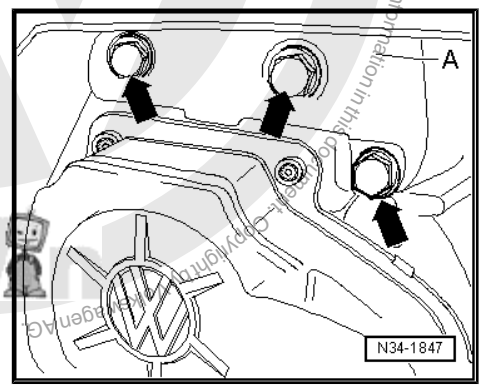


Item -A- dowel sleeves for centring

Gearbox bracket -A- to gearbox

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

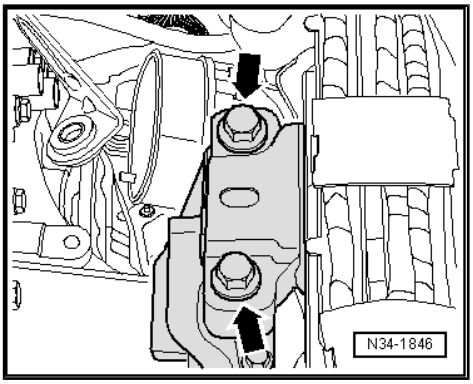
Bolts -arrows- 40 Nm + 90°



Gearbox mounting to body

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

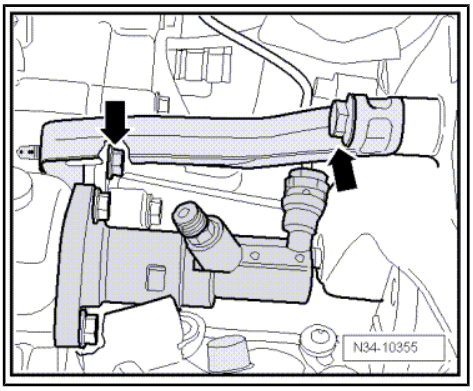
Bolts -arrows- 60 Nm + 90°



Gearbox support to gearbox bracket and gearbox

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

Bolts -arrows- 20 Nm + 90°



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

4 Removing and installing gearbox, Jetta 2011 ▸

Removing gearbox, Jetta 2011 with 2.5 l - 125 kW engine
⇒ page 98

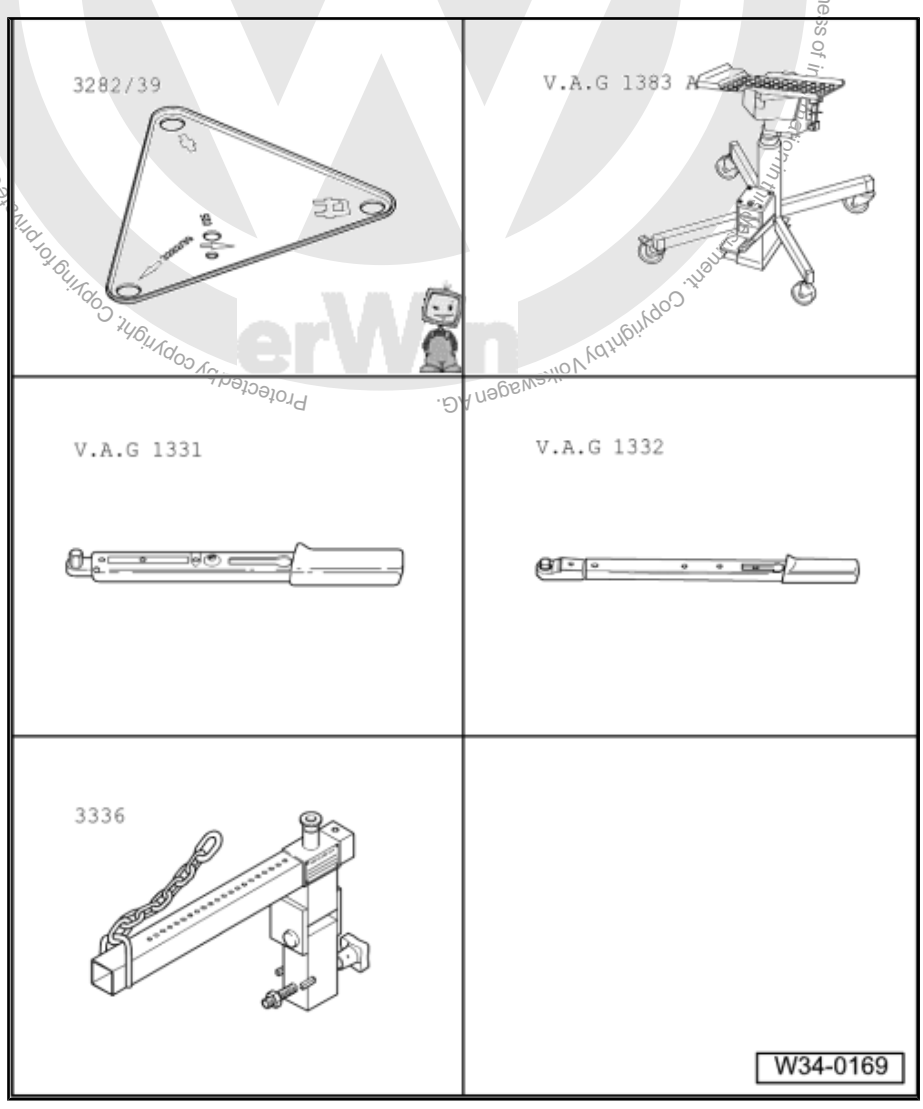
Installing gearbox, Jetta 2011 with 2.5 l - 125 kW engine
⇒ page 104

Torque settings ⇒ page 109

4.1 Removing gearbox, Jetta 2011 with 2.5 l - 125 kW engine

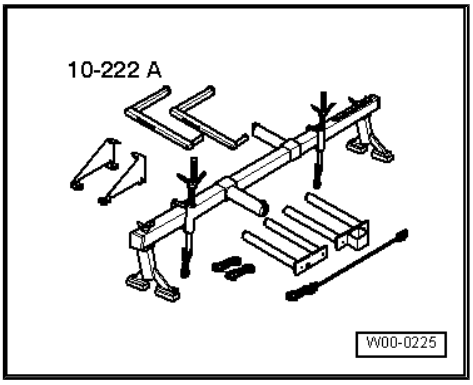
Special tools and workshop equipment required

- Adjustment plate -3282/39-
- Support elements for gearbox (determine when setting adjustment plate on gearbox support)
- Engine and gearbox jack - V.A.G 1383A-
- Torque wrench -V.A.G 1331-
- Torque wrench -V.A.G 1332-
- Gearbox mounting support -3336-
- Grease for clutch plate splines -G 000 100-
- Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

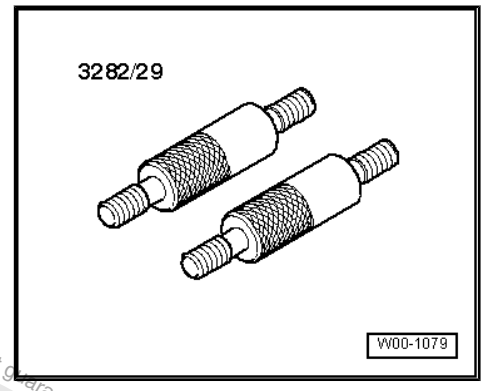


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information. Copyright by Volkswagen AG.

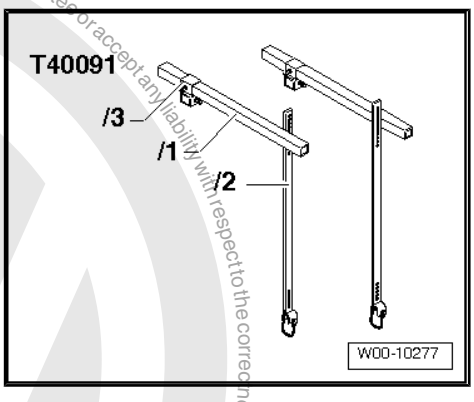
- Support bracket -10 - 222 A-



- Pin -3282/29-



- Engine support basic set -T40091-



Carry out procedure as follows:

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

– With ignition switched off, disconnect battery earth strap ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .

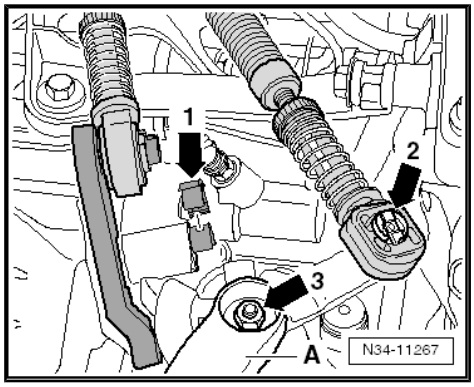
– Remove engine cover and air filter ⇒ Rep. Gr. 24 ; Repairing injection system .

– Remove battery and battery tray ⇒ Electrical system; Rep. Gr. 27 ; Battery; Removing and installing battery .

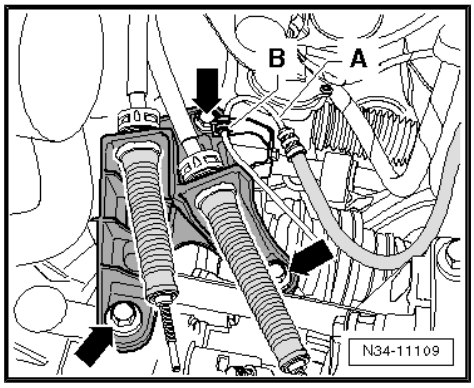
– Release end-piece from gate selector cable ⇒ page 73.

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

– Pull off clip -arrow 1- and remove relay lever together with cable end-piece.
– Remove securing clip -arrow 2- for gear selector cable from gearbox selector lever -A-.
– Pull gear selector cable off pin.
– Remove gearbox selector lever -A- by removing nut -arrow 3-.



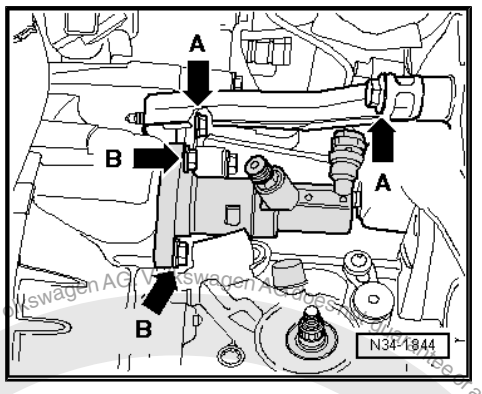
– Remove cable support bracket from gearbox -arrows-.
– Then tie up gear selector cable and gate selector cable.
– Remove retainer -B- from gearbox and pull off from pipe/hose line -A-.



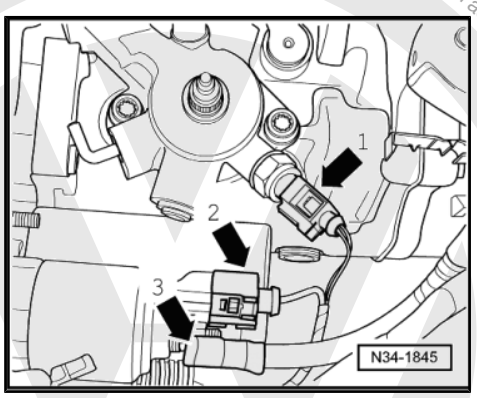
– Then remove gearbox support -arrow A-.
– Remove slave cylinder -arrow B-, lay to side and secure with wire. Do not disconnect pipes.

Caution

Do not operate clutch pedal any more.



– Pull connector -arrow 1- off reversing light switch -F4-.
– Now remove connector -arrow 2- and wire -arrow 3- from starter.
– Remove earth strap at upper engine/gearbox connecting bolt.
– Then remove upper securing bolt on starter.
– Remove upper engine/gearbox connecting bolts.
– Remove plenum chamber cover ⇒ Rep. Gr. 50 ; Plenum chamber cover; Removing and installing plenum chamber cover .



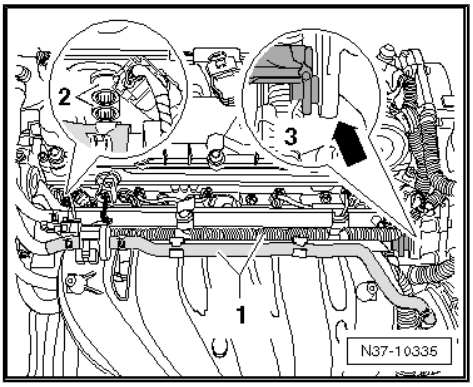
To support engine and gearbox:

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

– Remove cables -1- from transportation bracket -3-.

– Unbolt transportation bracket -3- from engine -2- and pull out of eye -arrow-.

– Attach a shackle -10 - 222 A /12- in “this” eye.



– Position support bracket -10 - 222 A- and support engine/ gearbox. Do not raise.

1 - -T40091 /3-

2 - -T40091 /1-

3 - -10-222 A /31-1-

4 - -10-222 A /12-

5 - -10-222 A /31-4-

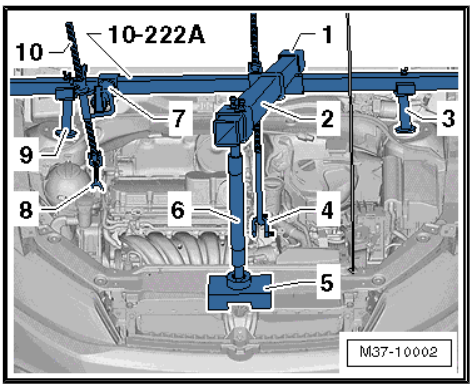
6 - -10-222 A /31-3-

7 - -10-222 A /3-

8 - -10-222 A /7-

9 - -10-222 A /31-2-

10 - -10-222 A /10-



– Extend right hook -10 - 222 A /10- -no. 10- with adapter -10 - 222 A /7- -no. 8-.

The hook faces downwards and will later be hooked into the engine block.

– Raise vehicle and remove front left wheel.

– Remove noise insulation tray.

– Remove front left wheel housing liner ⇒ Rep. Gr. 66 ; Wheel housing liner; front wheel housing liner .

For vehicles with power steering

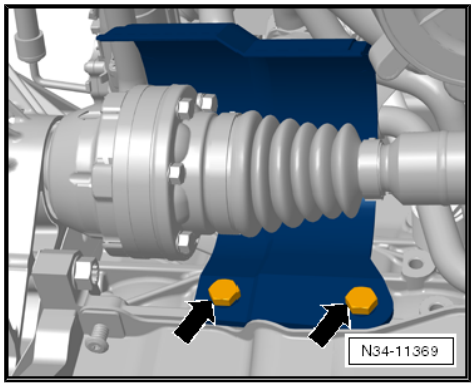
– Remove brackets with power assisted steering line from gearbox.

Continuation for all vehicles

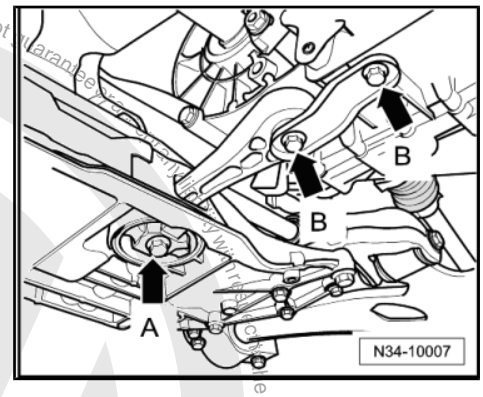
– Separate exhaust system at double clamp and remove exhaust pipe bracket from subframe ⇒ Rep. Gr. 26 ; Removing and installing parts of exhaust system .

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

– If present, remove heat shield above right drive shaft -arrows-.
– Remove drive shafts from flange shafts, raise as high as possible and secure. Do not damage the surface protection ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Removing and installing drive shafts .
– If present, unbolt retainer from lower starter bolt.
– Remove lower securing bolt from starter and remove starter ⇒ Rep. Gr. 27 ; Removing and installing starter .



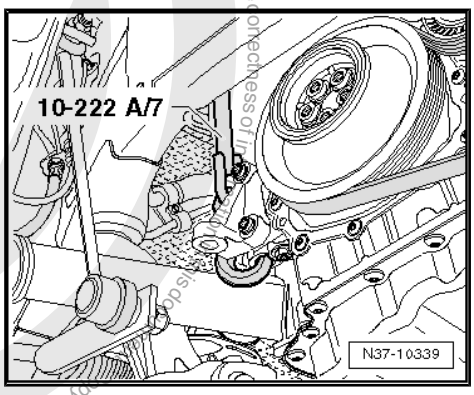
– Remove pendulum support, first bolt -A- and then bolts -B-.



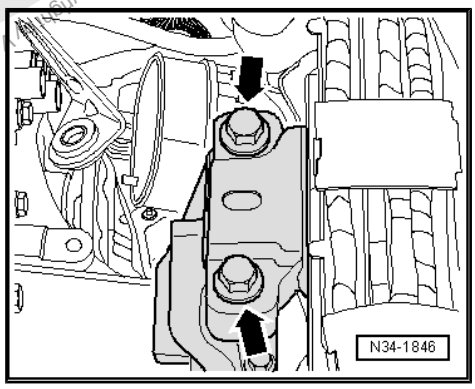
– Hook adapter -10 - 222 A /7- into engine block.

Tighten right spindle one turn (more is not necessary).

– Support engine and gearbox with left spindle. Do not raise.



– Remove hexagon bolts -arrows- for left assembly mounting from gearbox mounting.
– Tilt engine/gearbox assembly by lowering it via spindles of support bracket -10 - 222 A- .
• Securing bolts -arrows- for gearbox bracket -A- must be accessible.



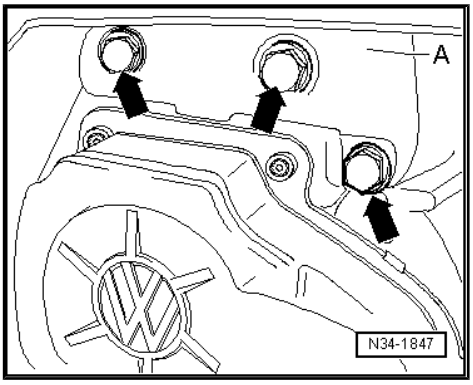
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee the correctness of any information.

– Remove gearbox bracket -A- -arrows-.

To remove gearbox “0A4”, set up gearbox support -3282- with adjustment plate -3282/39- .

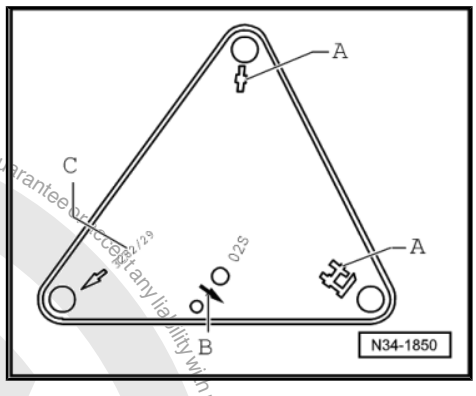
– Insert gearbox support -3282- in engine and gearbox jack -V.A.G 1383A- .

– Align arms of gearbox support according to holes in adjustment plate .



– Screw in support elements -A - and -C- on adjustment plate as shown.

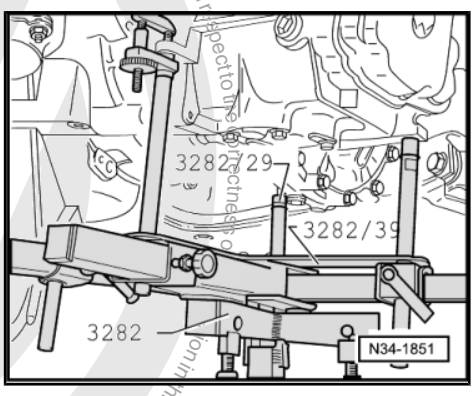
– Position engine and gearbox jack under vehicle. Arrow -B- on adjustment plate points in direction of vehicle travel.



– Align adjustment plate parallel to gearbox and lock safety support on gearbox.

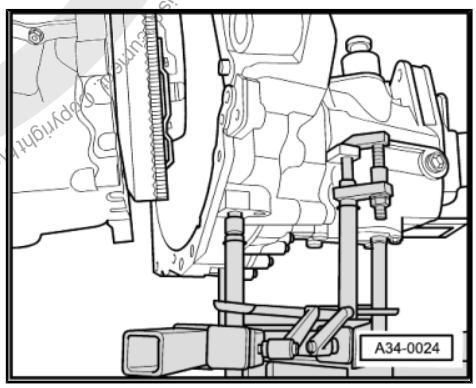
– Then screw pin -3282/29- into hole on gearbox for securing bolt of pendulum support.

– Remove lower engine/gearbox connecting bolts.



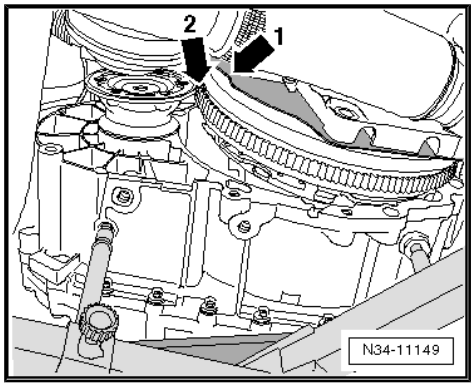
– Press gearbox off dowel sleeves and carefully swing towards subframe.

– Have a second mechanic push engine forwards slightly.



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

– The guide right flange shaft -arrow 2- past recess -arrow 1-.
– Lower gearbox carefully.
– Guide right flange shaft past flywheel.
– When lowering gearbox, guide it past power assisted steering line and past subframe.
– When lowering gearbox, change position of gearbox using spindles of gearbox support -3282- .



Note

Be careful of all lines when lowering gearbox.

4.2 Installing gearbox, Jetta 2011 with 2.5 l - 125 kW engine

Note

Refer to procedure "Removing gearbox" for required special tools ⇒ page 98 .

Observe the following table on the subject of "checking and topping up gear oil".

"Checking and topping up gear oil"				
		"No"	"Yes"	"Yes"
Gearbox	Original part	X		
	No oil loss	X		
	Completely dismantled		X Before installation ⇒ Item 3 (page 143) Oil capacity ⇒ page 2	
	Partially dismantled • (Gearbox housing and clutch housing were not separated.)			X After installation ⇒ page 112

Carry out procedure as follows:

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

Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any unauthorised use, duplication or distribution of this document, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

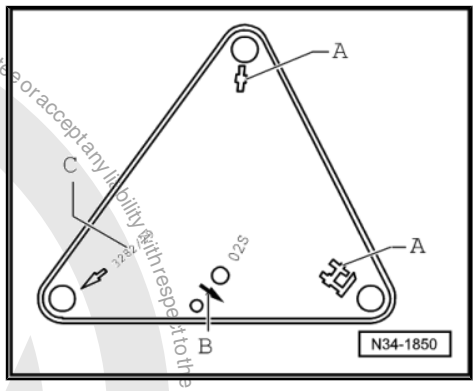
If dowel sleeves are not fitted, difficulties shifting gears, clutch problems and possible noises from the gearbox (rattling of gears which are not engaged) could occur.

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

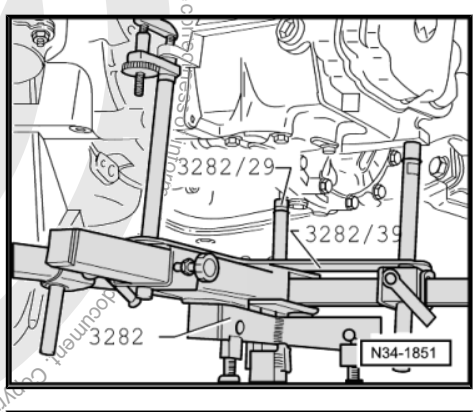
The clutch plate must slide easily to and fro on the input shaft.

To install gearbox “0A4”, set up gearbox support -3282- with adjustment plate -3282/39- .

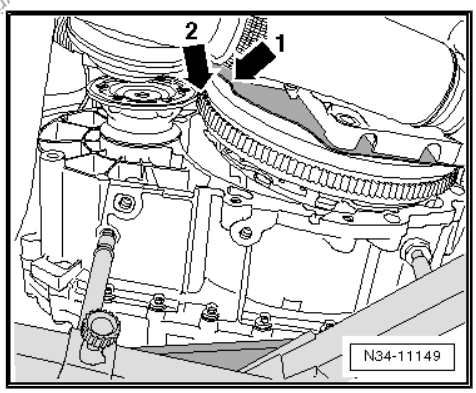
– Align arms of gearbox support according to holes in adjustment plate .
– Screw in support elements -A- and -C- (pin -3282/29-) on adjustment plate as shown.
– Place gearbox on engine and gearbox jack .
– Align adjustment plate and gearbox parallel to one another.



– Screw pin -3282/29- into hole on gearbox for securing bolt of pendulum support.
– Position engine and gearbox jack under vehicle. -Arrow B- on adjustment plate points in direction of vehicle travel.
– Carefully raise gearbox whilst watching out for power steering line.
– Have a second mechanic push engine forwards slightly.

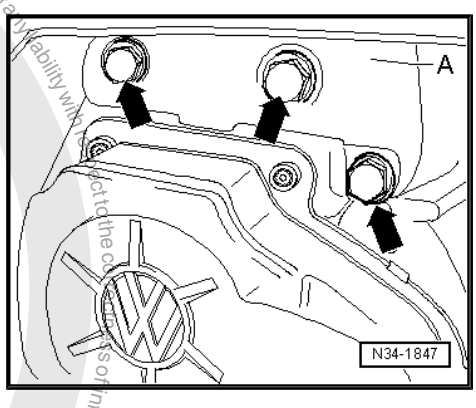


– Guide right flange shaft past flywheel -arrow 2- and left flange shaft past subframe.
– Then guide right flange shaft past recess -arrow 1-.
• The engine must still be pushed forwards (2nd mechanic).
– Align gearbox to engine and join.
– Screw in lower engine/gearbox securing bolts and tighten to specified torque ⇒ page 109 .
– After gearbox has been bolted to engine, remove engine and gearbox jack from gearbox.
– Screw in upper engine/gearbox securing bolts and tighten to specified torque ⇒ page 109 .

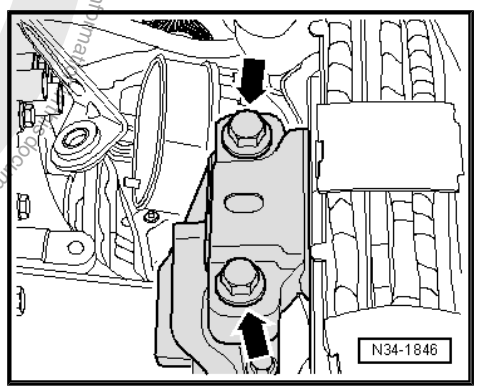


Protected by Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Install bracket -A- on gearbox using new hexagonal bolts -arrows- and tighten to specified torque ⇒ page 109 .



– Align engine and gearbox in installation position using both spindles of support bracket -10 - 222 A- .
– Install new bolts -arrows- for left assembly mounting in gearbox mounting and tighten to specified torque ⇒ page 109 .



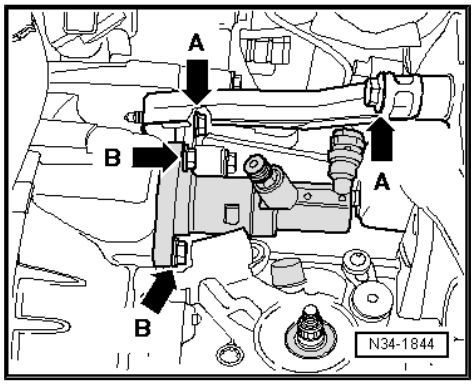
WARNING

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

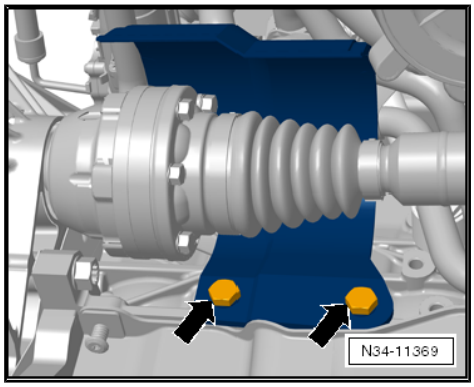
Note

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

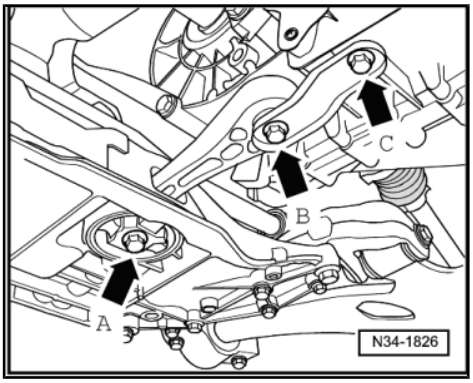
– Install slave cylinder and tighten bolts -arrows B- to specified torque ⇒ Item 15 (page 38) .
– Then install gearbox support -arrows A- and tighten to specified torque ⇒ page 96 .
– Attach drive shafts to gearbox ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing front suspension .



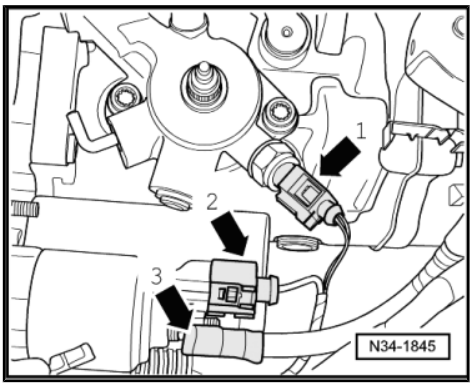
– Install drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



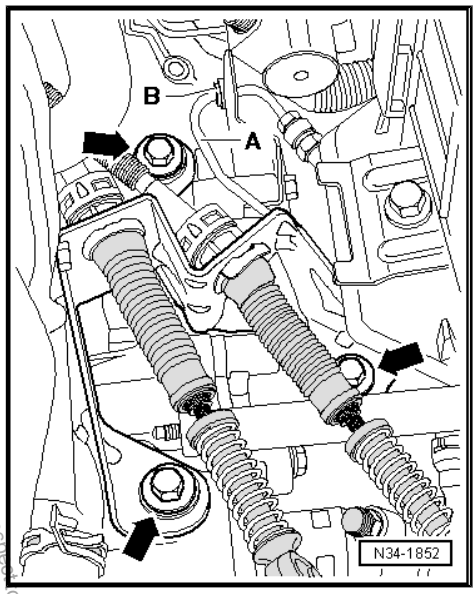
– Install pendulum support with new bolts -arrows A-, -B- and -C- ⇒ Running gear, axles, steering ; Rep. Gr. 40 ; Repairing front suspension .
– Assemble exhaust system and attach exhaust system bracket to subframe ⇒ Rep. Gr. 26 ; Exhaust system .



– Push connector -1- onto reversing light switch -F4- .
– Install starter, push on connector -arrow 2- and bolt on wire -arrow 3- ⇒ Electrical system; Rep. Gr. 27 ; Starter .
– Install earth strap at upper engine/gearbox connecting bolt.

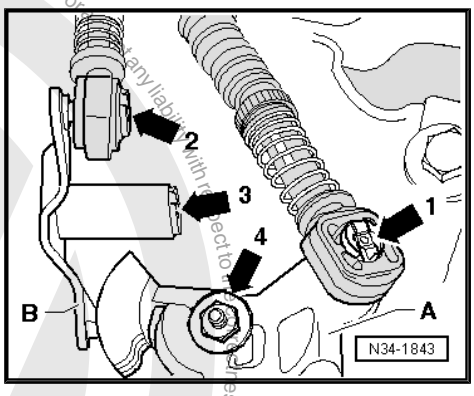


– Attach retainer -B- to gearbox
– Press pipe/hose line -A- into retainer -B- on gearbox.
– Install cable support bracket on gearbox and tighten bolts -arrows- to specified torque ⇒ Item 6 (page 70) .



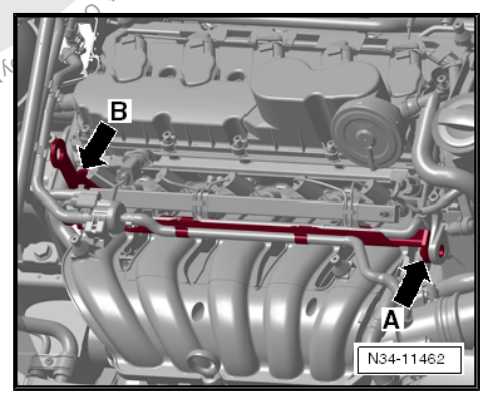
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Install gearbox selector lever -A-.
– Tighten hexagon nut -arrow 4- to specified torque ⇒ Item 18 (page 71) .
– Spread a small amount of grease on pin of gearbox selector lever -A-.



Allocate grease using ⇒ Electronic parts catalogue (ETKA) .

– Connect gear selector cable to gearbox selector lever -arrow 1-.
– Renew securing clip -arrow 2- each time after removing.
– Installing relay lever together with cable end-piece ⇒ page 73 .
• Clip -arrow 1- secures relay lever
• Ensure proper engagement of clip.
– Connect gate selector cable with cable end-piece.
– Adjust selector mechanism ⇒ page 80 .
– Remove shackle -10-222 A /12- from engine.



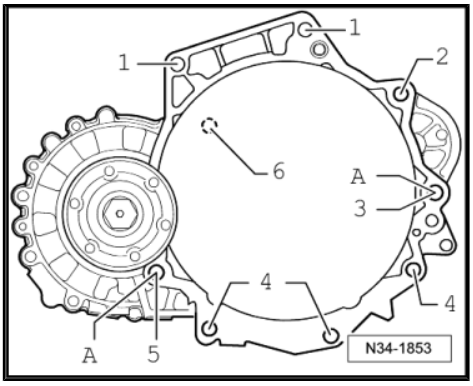
– Insert transport eye into retaining eye of engine -arrow A- and screw it tight -arrow B- ⇒ Rep. Gr. 15 ; Cylinder head, valve gear .
– Install plenum chamber cover ⇒ Rep. Gr. 50 ; Plenum chamber cover; Removing and installing plenum chamber cover .
– Install battery tray and battery⇒ Electrical system; Rep. Gr. 27 ; Removing and installing battery .
– Install engine cover and air filter ⇒ Rep. Gr. 24 ; Repairing injection system .
– Connect battery and follow procedure after connecting battery ⇒ Electrical system; Rep. Gr. 27 ; Disconnecting and connecting battery .
– Install front left wheel housing liner ⇒ Rep. Gr. 66 ; Wheel housing liner; front wheel housing liner .
– Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

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

4.2.1 Torque settings

Gearbox to engine

Item	Bolt	Quantity	Nm
1	M12 x 65	2	80
2	M12 x 170 ♦ Additionally, starter to gearbox	1	80
3	M12 x 170 ♦ Additionally, starter to gearbox	1	80
4	M10 x 65	3	40
5	M12 x 95	1	80
6	M6 x 8 ♦ Small flywheel cover plate (not present here)	1	10

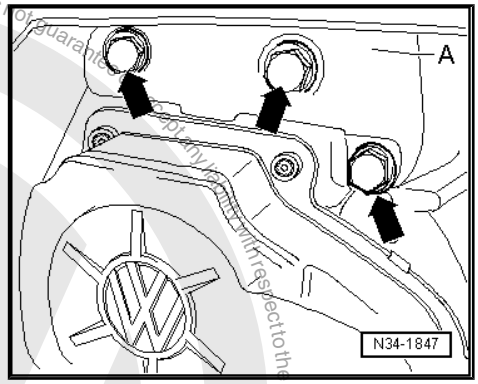


Item -A- dowel sleeves for centring

Gearbox bracket -A- to gearbox

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

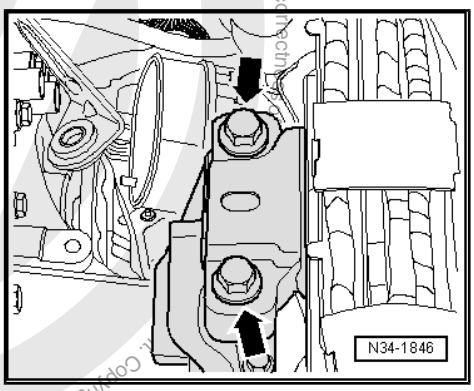
Bolts -arrows- 40 Nm + 90°



Gearbox mounting to body

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

Bolts -arrows- 60 Nm + 90°



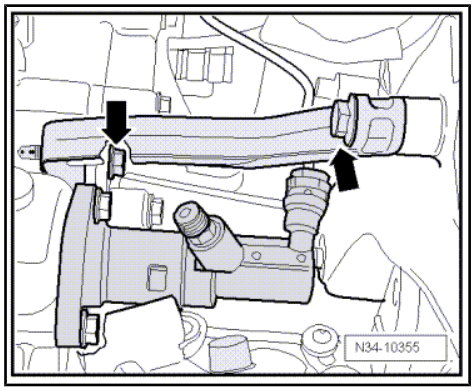
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Gearbox support to gearbox bracket and gearbox

– Renew bolts.
– Screw in all bolts hand-tight.
– Tighten bolts to specified torque.

Bolts -arrows-	20 Nm + 90°

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

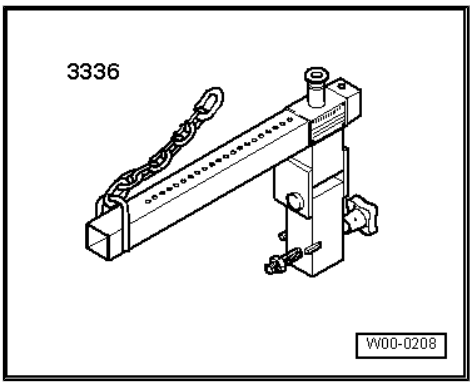


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

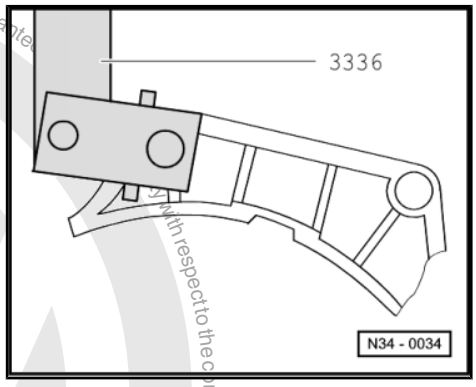
5 Transporting gearbox

Special tools and workshop equipment required

- Gearbox mounting support -3336-

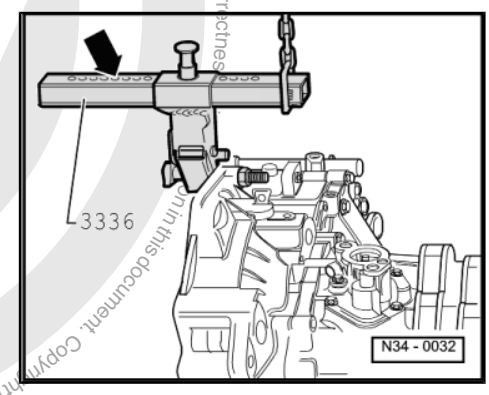


– Bolt gearbox lifting tackle -3336- to clutch housing.



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

Number of holes visible = 5.



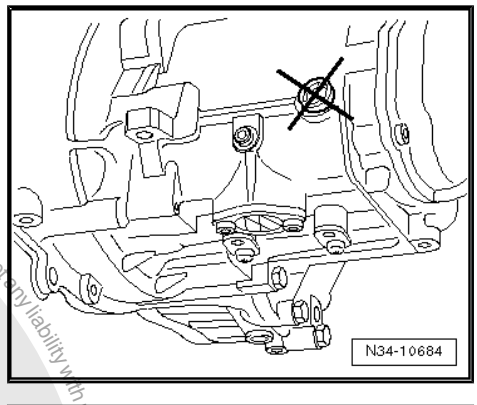
– Lift gearbox using workshop crane and gearbox lifting tackle -3336- .

– Set gearbox aside, for example in a transport container.

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

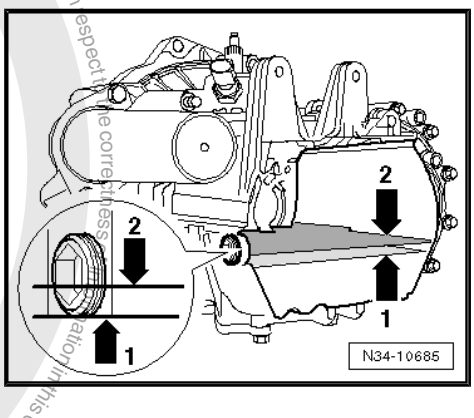
6 Checking and topping up gear oil

It is not possible to check the gear oil level by unscrewing the oil filler plug.



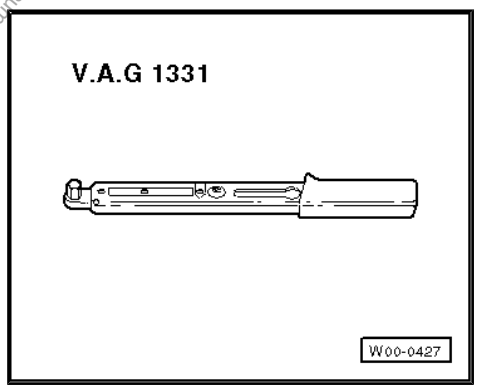
The angle of the engine/gearbox unit means the lower edge of the fill hole -arrow 1- is below the oil level -arrow 2-.

The oil level in the gearbox can only be checked by completely draining the gear oil and then refilling:



Special tools and workshop equipment required

- Torque wrench -V.A.G 1331-



- Hose (approx. 600 mm long, external diameter 10 mm) with funnel, commercially available.

6.1 Preparation

Gearbox oil specification ⇒ Electronic parts catalogue “ETKA” .

– Remove complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .

– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

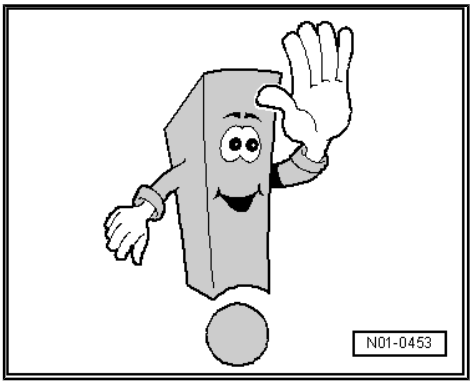
Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Commercial purposes, in part or in full, are not permitted.

Clean gearbox.

Caution

To drain gear oil, a pivot pin for the selector forks in the gearbox must be removed.

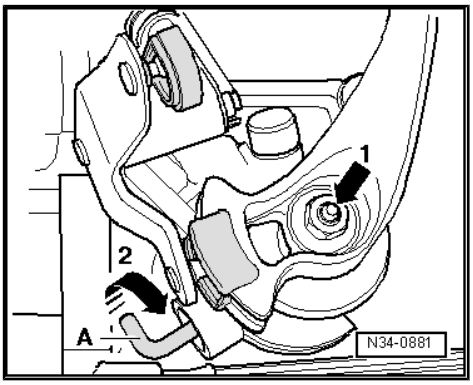
To prevent the positions of the selector forks from being changed, e.g. due to accidental operation of the selector mechanism, the selector shaft must be locked in position.



Secure selector shaft as follows:

– Press selector shaft down in -direction of arrow 1-.

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



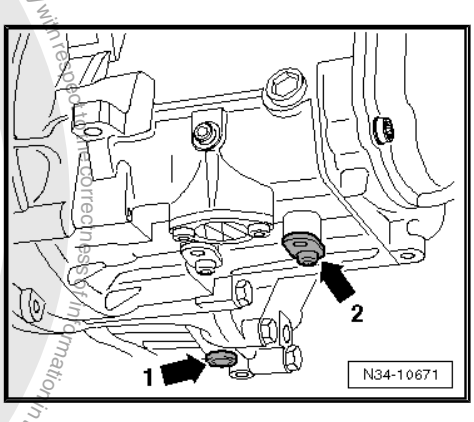
6.2 Draining gear oil

Use a clean container with a scale and a 3-litre capacity to catch the oil which runs out.

• Selector shaft is locked in place ⇒ page 113 .

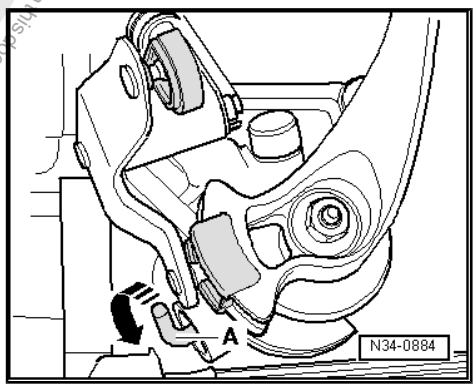
– Drain gear oil by removing oil drain plug -arrow 1- and pivot pin -arrow 2-.

– Install pivot pin -arrow 2- with a new O-ring ⇒ Item 5 (page 118) .



– Screw in oil drain plug -arrow 1- ⇒ Item 17 (page 144) .

– Now turn angled rod -A- back to original position -direction of arrow- so that selector shaft can move again.

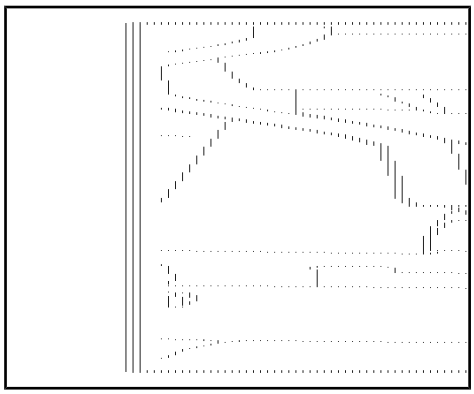


Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any unauthorised use, in whole or in part, for commercial purposes, is prohibited.

6.3 Filling with gear oil

Top up gear oil in container to 1.7 l.

Gearbox oil specification ⇒ Electronic parts catalogue “ETKA” .



- Remove reversing light switch -F4- -arrow-.
- Connect a hose (approx. 600 mm long, external diameter 10 mm) with a funnel, commercially available.
- Insert hose into mounting hole of reversing light switch -F4- (2nd mechanic) and pour in gear oil.
- Install reversing light switch -F4- -arrow- again ⇒ Item 2 (page 148) .
- Check function of selector mechanism ⇒ page 82 .
- Install complete air filter housing ⇒ Rep. Gr. 23 ; Repairing diesel direct injection system or ⇒ Rep. Gr. 24 ; Repairing injection system .
- Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

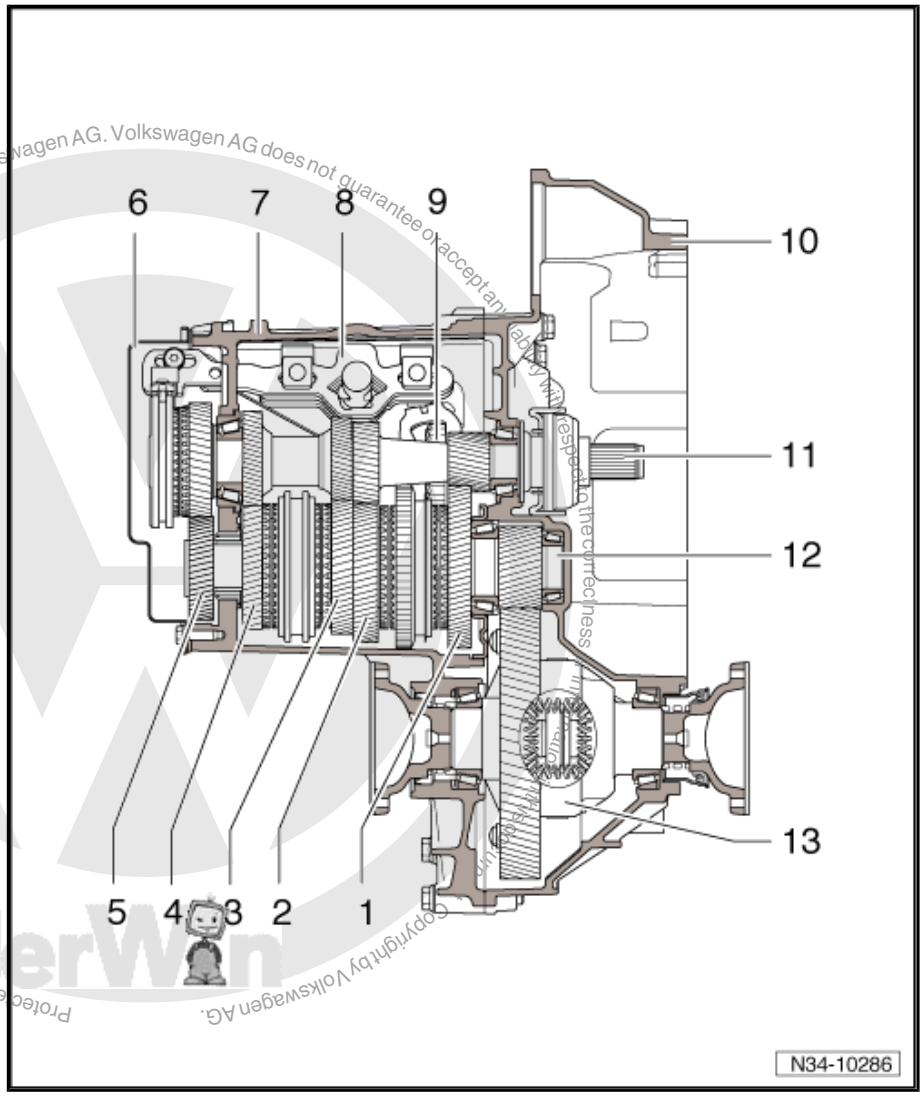
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

7 Dismantling and assembling gearbox

7.1 Overview - gearbox

1 - 1st gear
2 - 2nd gear
3 - 3rd gear
4 - 4th gear
5 - 5th gear
6 - Gearbox housing cover
7 - Gearbox housing
8 - Selector mechanism
- ❑ (Selector forks)

9 - Reverse gear wheel
10 - Clutch housing
11 - Input shaft
12 - Output shaft
13 - Differential



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

7.2 Assembly overview

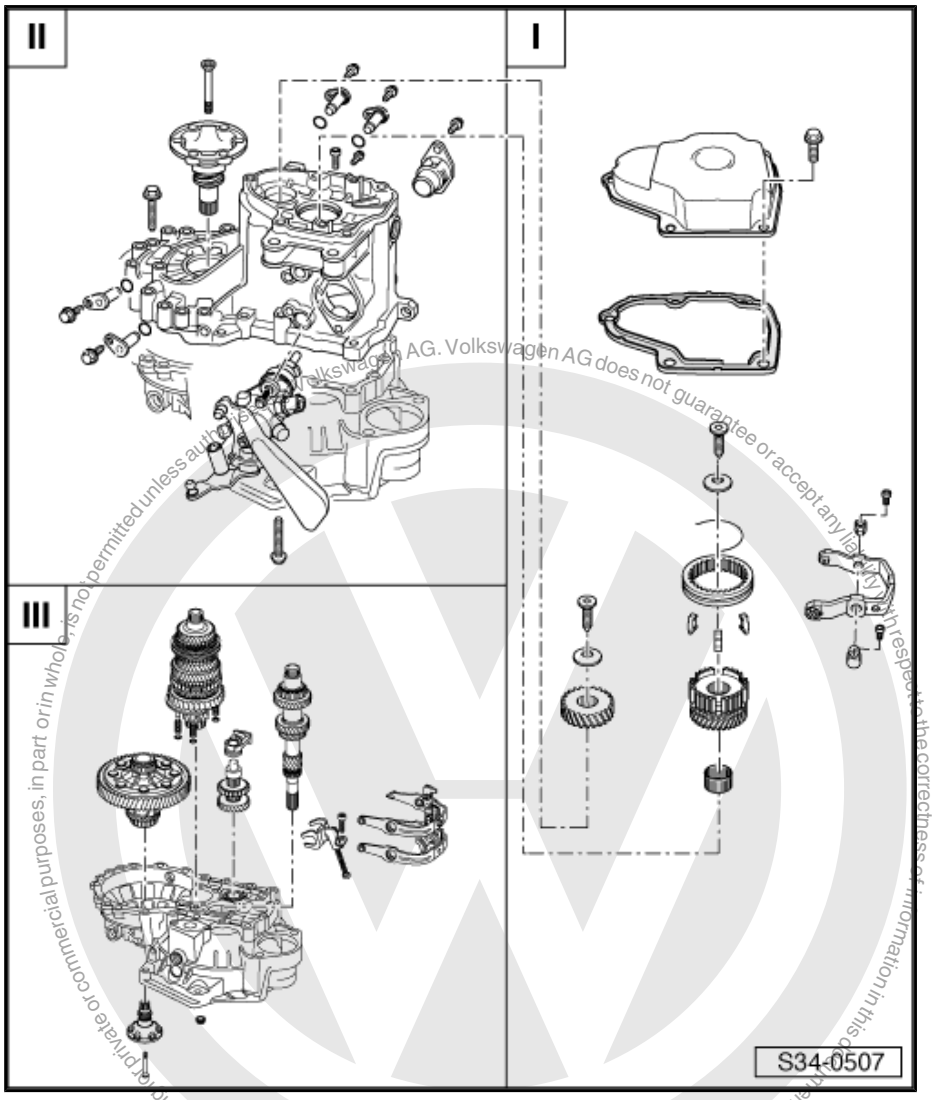
Assembly sequence - removing and installing cover for gearbox housing and 5th gear ⇒ page 120 .

Assembly sequence - Dismantling and assembling gearbox completely ⇒ page 126 .

I - Removing and installing cover for gearbox housing and 5th gear ⇒ page 117 .

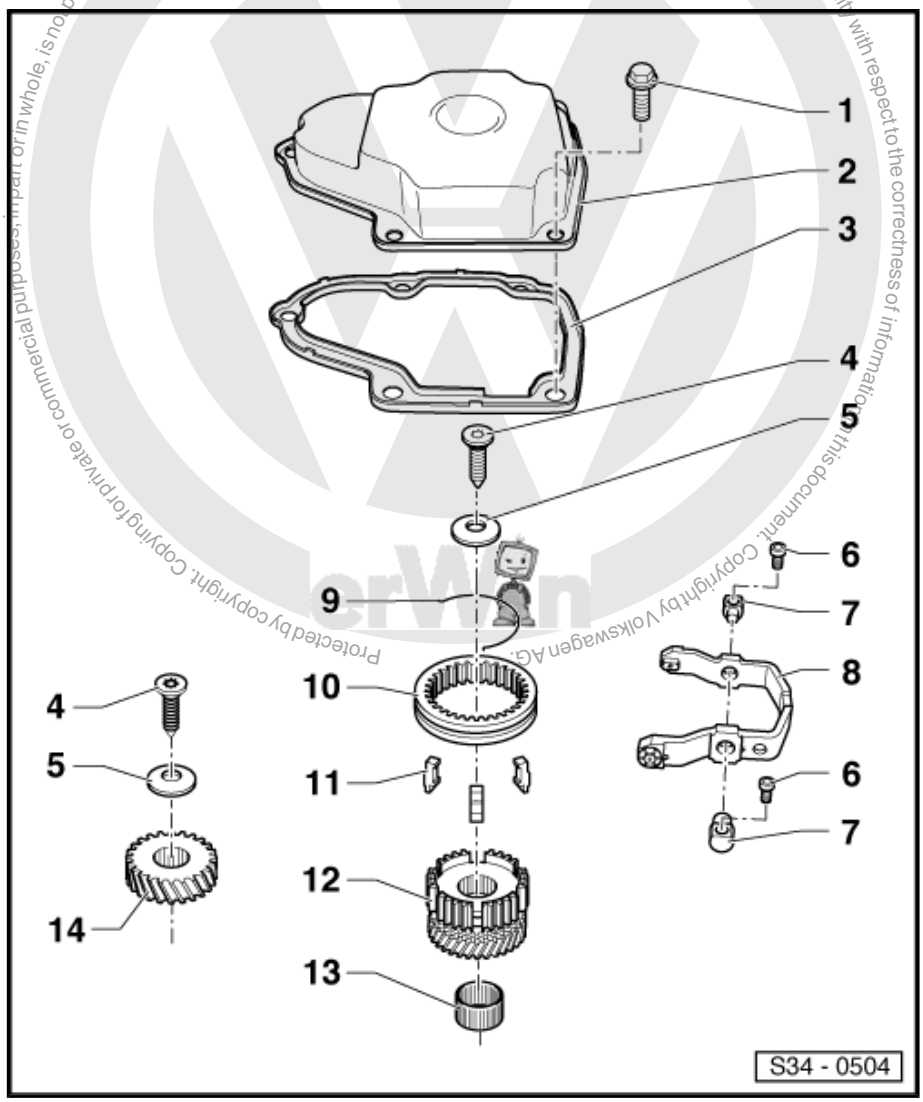
II - Removing and installing gearbox housing and selector mechanism ⇒ page 118

III - Removing and installing input shaft, output shaft, differential and selector forks ⇒ page 119



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

7.3 Removing and installing cover for gearbox housing and 5th gear



1 - Bolt, 18 Nm

- ❑ For gearbox housing cover.

2 - Gearbox housing cover

Note

3 - Seal

4 - Bolt, 80 Nm + turn 90° further

- ❑ Always renew
- ❑ Fitted section of bolt head holds dished spring washer in position
- ❑ Clean residual locking fluid from threaded holes for synchro-hub securing bolts and 5th gear wheel with a thread chaser. Otherwise the bolts may shear.

5 - Dished washer

- ❑ Installing ⇒ page 139

6 - Socket head bolt, 25 Nm

- ❑ For pivot pin to gearbox housing

7 - Pivot pin

8 - 5th gear selector fork

- ❑ Dismantling and assembling ⇒ page 150
- ❑ Adjusting ⇒ page 140

9 - Spring

- ❑ Version with bent ends.
- ❑ Installing ⇒ page 162

10 - Locking collar for 5th gear

- ❑ Installation position ⇒ page 162
- ❑ Adjusting ⇒ page 140

11 - Locking pieces (Qty. 3)

- ❑ Installation position ⇒ page 161

12 - Synchro-hub with synchromeshed gear and synchronizing ring for 5th gear

- ❑ Pull off together with gearbox housing ⇒ page 126
- ❑ Pull off individually ⇒ page 120
- ❑ Dismantling and assembling ⇒ page 162

13 - Needle bearing

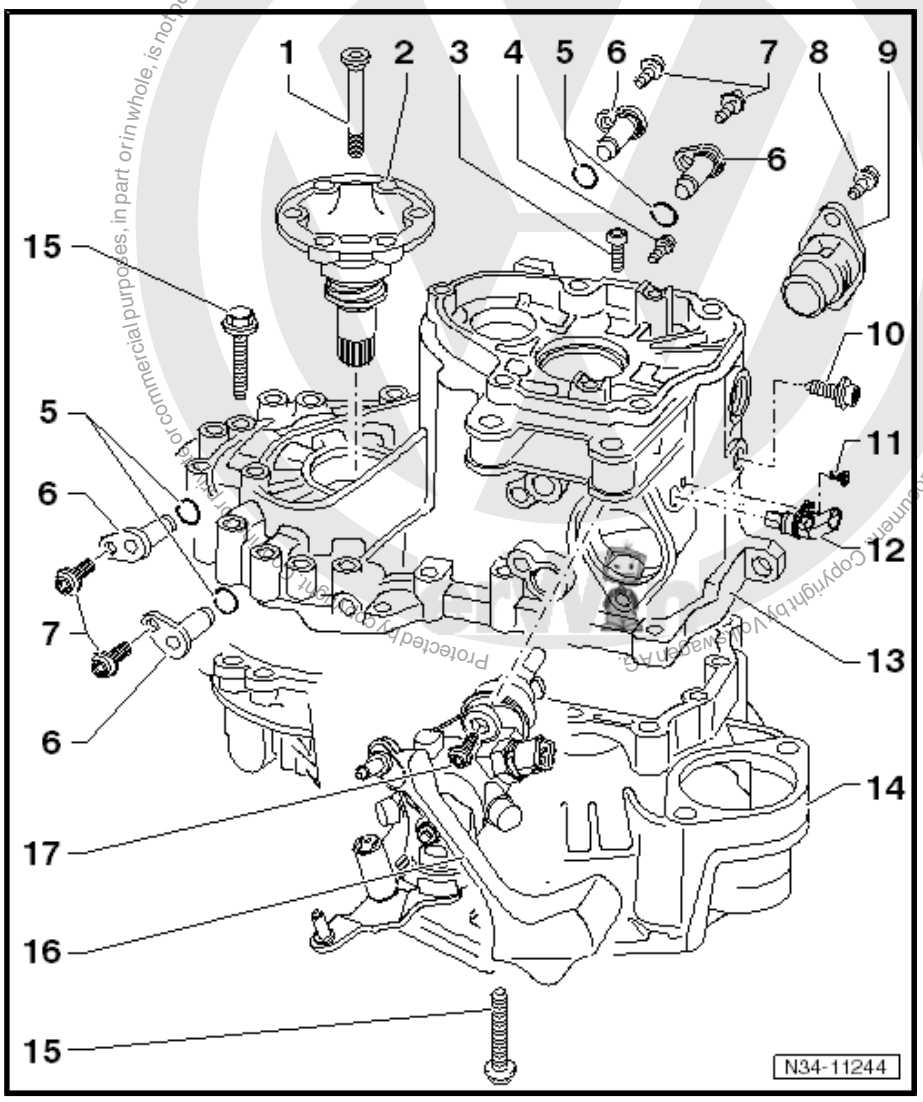
14 - Gear wheel for 5th gear

- ❑ Pull off together with gearbox housing ⇒ page 126
- ❑ Pull off individually ⇒ page 120

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

- ❑ Installation position ⇒ page 137

7.4 Removing and installing gearbox housing and selector mechanism



1 - Countersunk bolt, 25 Nm

2 - Flange shaft with compression spring

- ❑ Removing and installing ⇒ page 187
- ❑ Assembling ⇒ page 196

3 - Torx socket head bolt, 25 Nm

- ❑ For reverse shaft support
- ❑ Self-locking
- ❑ Always renew

4 - Torx socket head bolt, 30 Nm

- ❑ For reverse shaft support
- ❑ Self-locking
- ❑ Always renew

5 - O-ring

- ❑ Always renew

6 - Pivot pin

7 - Bolt, 25 Nm

8 - Bolt, 25 Nm

9 - Cover plate

10 - Multi-point socket head bolt 25 Nm

- ❑ For reverse shaft support
- ❑ Always renew

11 - Bolt, 5 Nm

12 - Gearbox neutral position sender -G701-

- ❑ for vehicles with start/stop system

13 - Gearbox housing

- ❑ Pull off together with 5th gear ⇒ page 126
- ❑ Repairing ⇒ page 141 .

14 - Clutch housing

- ❑ Repairing ⇒ page 141 .

15 - Hexagon bolt, 25 Nm and turn 90° further

- ❑ Always renew

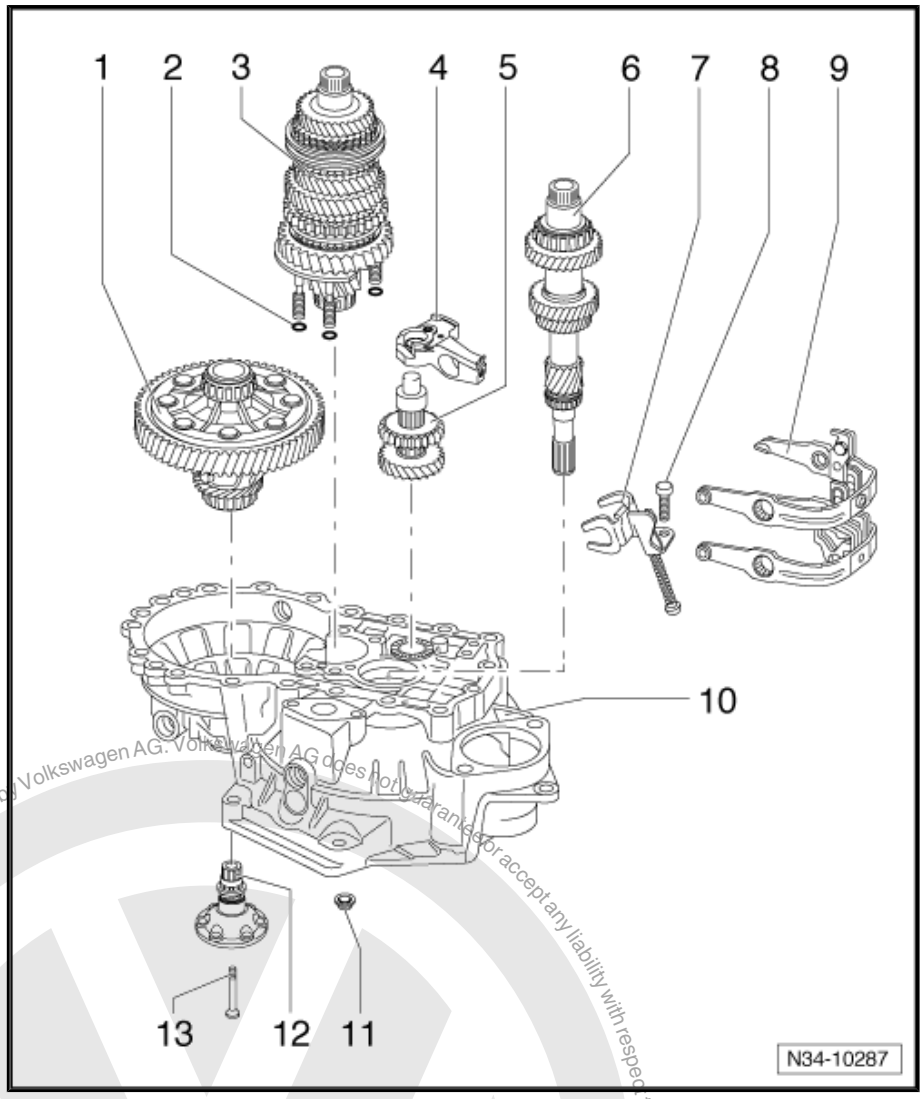
16 - Selector shaft with selector shaft cover

- ❑ (Selector unit)
- ❑ Repairing ⇒ page 147 .

17 - Multi-point socket head bolt 25 Nm

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

7.5 Removing and installing input shaft, output shaft, differential and selector forks



1 - Differential
- ❑ Dismantling and assembling ⇒ page 196

2 - Seal
- ❑ Qty. 4
- ❑ Always renew

3 - Output shaft
- ❑ Dismantling and assembling ⇒ page 167

4 - Reverse shaft support
- ❑ Dismantling and assembling ⇒ page 184

5 - Reverse shaft
- ❑ Dismantling and assembling ⇒ page 184

6 - Input shaft
- ❑ Dismantling and assembling ⇒ page 155

7 - Selector fork for reverse gear
- ❑ Dismantling and assembling ⇒ page 150
- ❑ Installation position ⇒ page 134

8 - Torx socket head bolt, 25 Nm

9 - Selector mechanism
- ❑ (Selector forks)
- ❑ Dismantling and assembling ⇒ page 150

10 - Clutch housing
- ❑ Repairing ⇒ page 141 .

11 - Hexagon nut, 25 Nm and then turn 90° further
- ❑ 4 nuts for bearing support
- ❑ Always renew

12 - Flange shaft with compression spring
- ❑ Removing and installing ⇒ page 187
- ❑ Assembling ⇒ page 196

13 - Countersunk bolt, 25 Nm

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

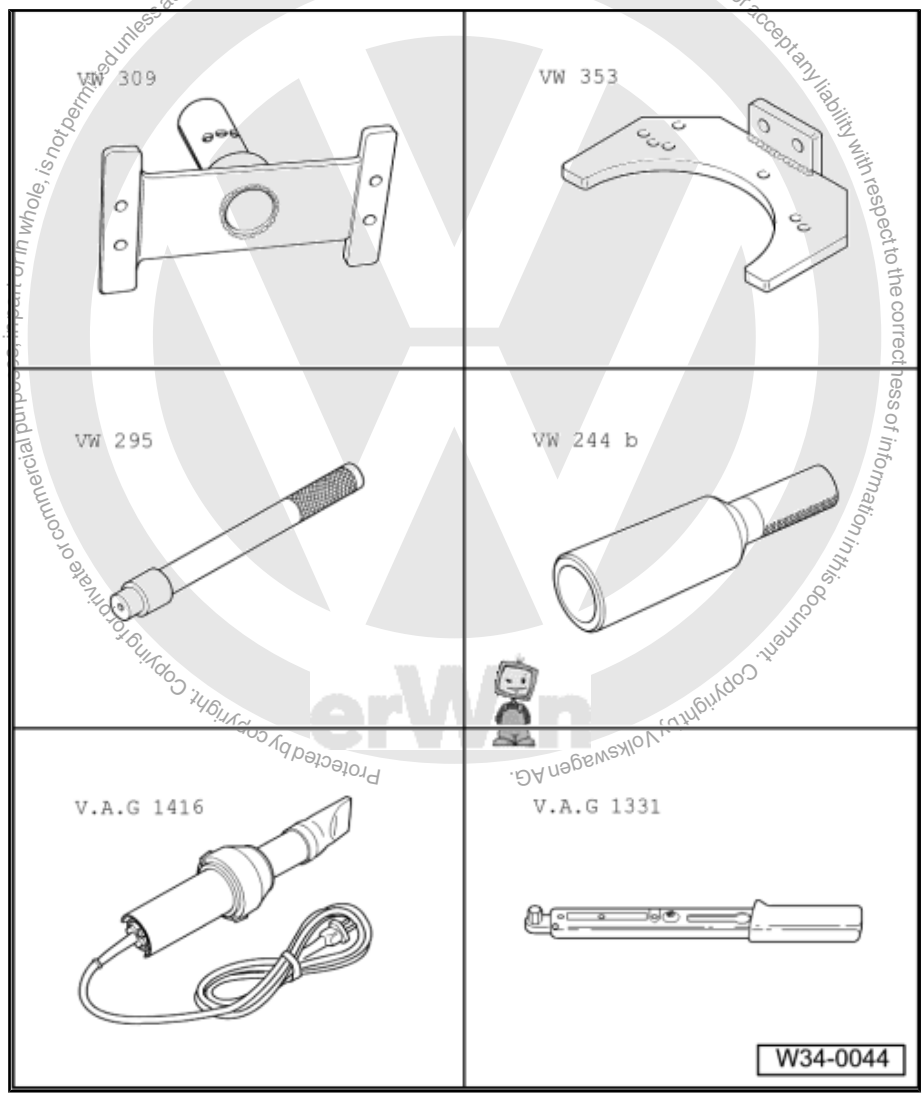
7.6 Assembly sequence - removing and installing cover for gearbox housing and 5th gear

Note

- *Follow the working procedure described below if only the 5th gear has to be removed:*
- *There is no requirement to drain gear oil for this procedure. The gearbox must be positioned with the cover side uppermost when the cover for the gearbox housing is removed.*
- *If the gearbox housing has to be removed, follow the working procedure: Dismantling and assembling gearbox completely* ⇒ page 126 .

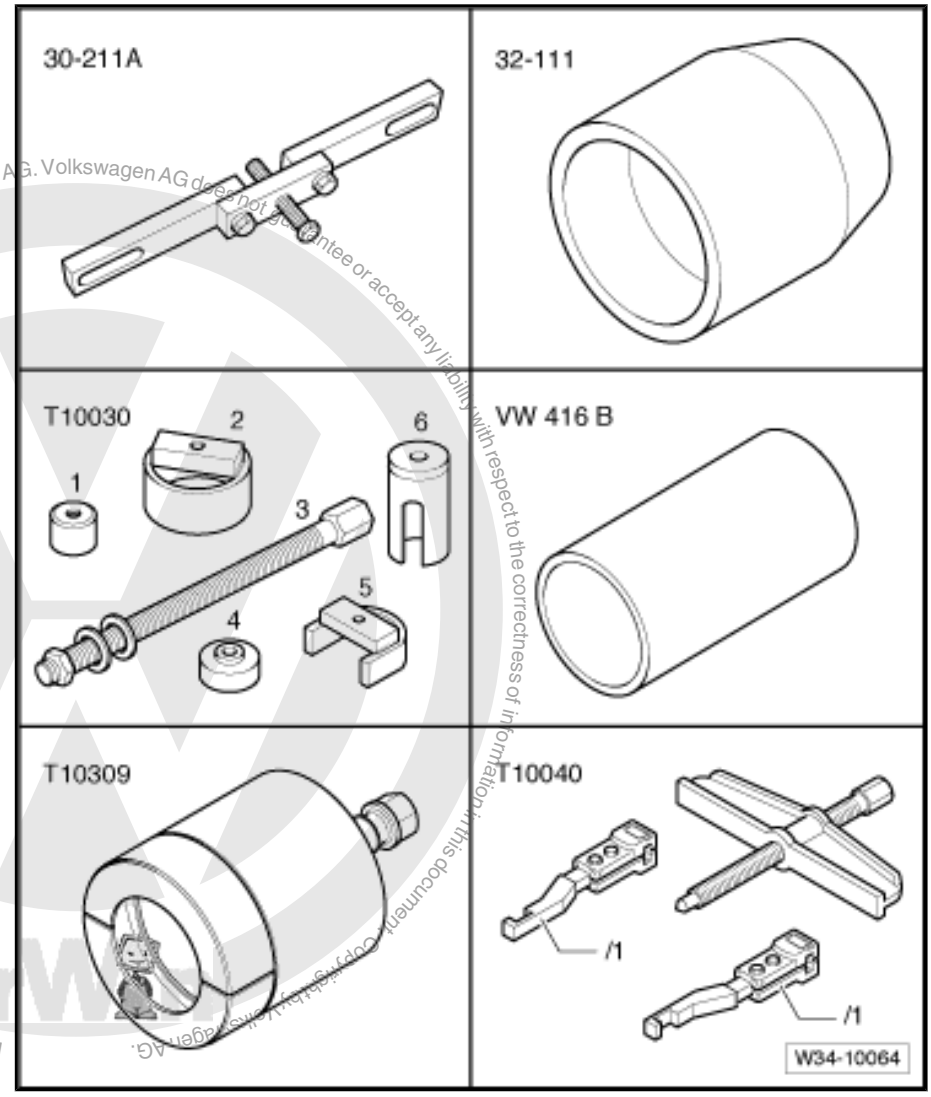
Special tools and workshop equipment required

- Support plate -VW 309-
- Gearbox support -VW 353-
- Drift -VW 295-
- Drift sleeve -VW 244 B-
- Hot air blower -V.A.G 1416-
- Torque wrench -V.A.G 1331-
- -Zweiarmabzieher Kukko 20-10-
- -Stehbolzen M 8 x 100 mm-



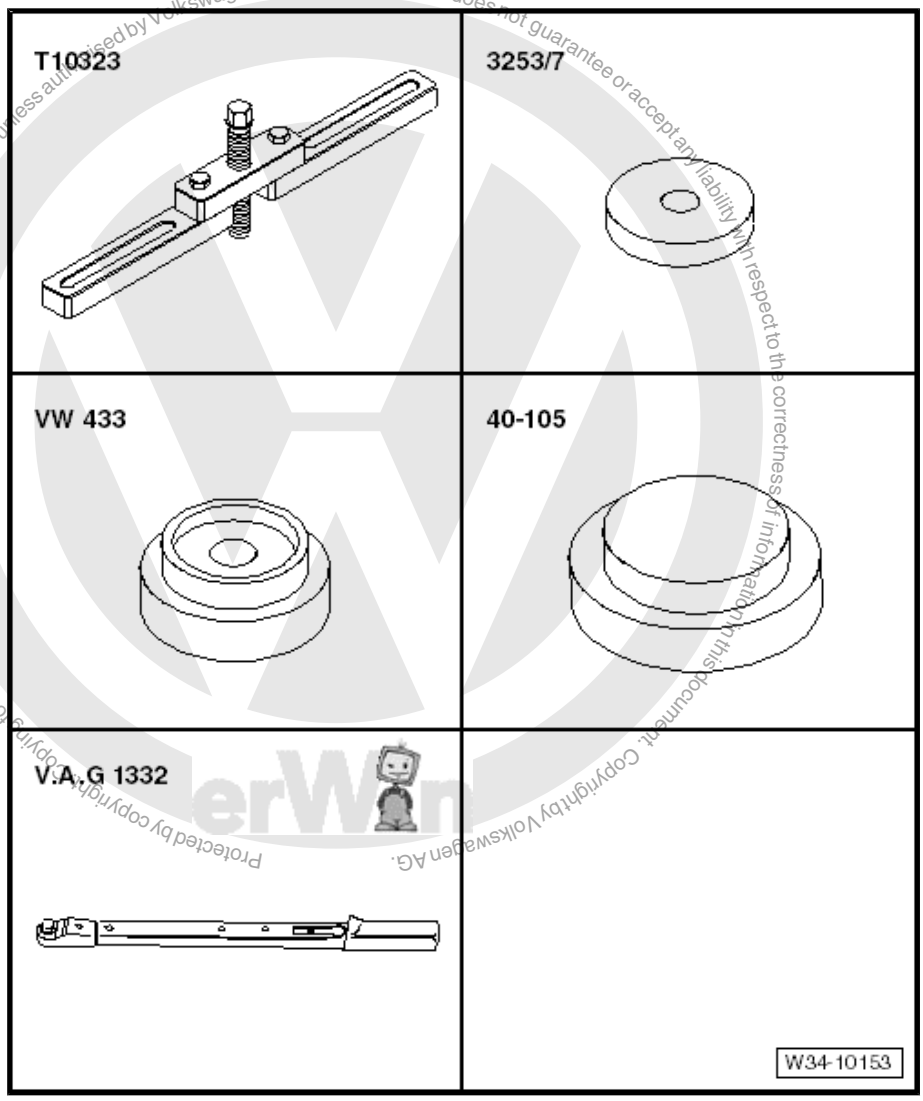
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Support bridge -30-211A-
- Thrust piece -32 - 111-
- Thrust piece from assembly tool -T10030/4-
- Tube -VW 416 B-
- Puller -T10309-
- Two arm puller -T10040-
- With puller hooks -T10040/2A-
- Thrust piece -T10040/3-



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

- Support device -T10323-
- Assembly tool -3253/7-
- Thrust piece -VW 433-
- Thrust plate -40 - 105-
- Torque wrench -V.A.G 1332-



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

7.6.1 Removing cover for gearbox housing and 5th gear

Carry out procedure as follows:

– Remove clutch release lever and release bearing ⇒ page 44 .

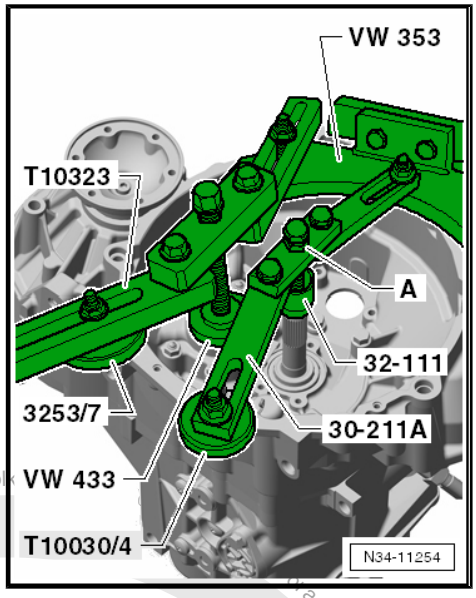
- Bearings of input shaft and output shaft must not be damaged when 5th gear is removed and installed.
- Therefore, following tools must be mounted for support at this stage during attachment of gearbox to gearbox support -VW 353- :

Underneath input shaft:

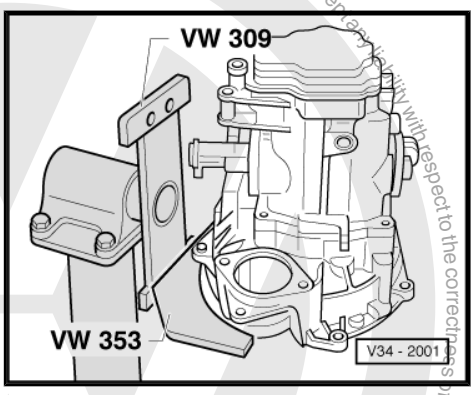
- ♦ Support bridge -30-211A-
- ♦ Thrust piece -32 - 111-
- ♦ Thrust piece -T10030/4-
- The input shaft can be supported by the thrust piece -32 - 111- only at a later point.

Underneath bearing support for output shaft:

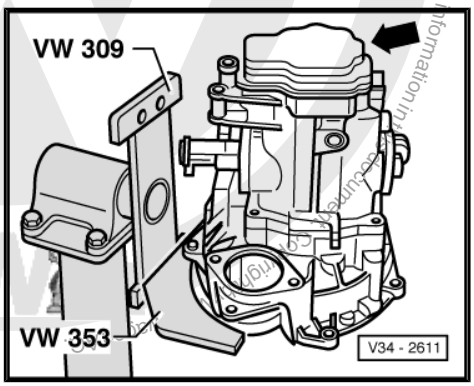
- ♦ Support device -T10323-
- ♦ Assembly tool -3253/7-
- ♦ Thrust piece -VW 433-



– Secure gearbox on gearbox support -VW 353- .



– Remove gearbox housing cover -arrow-.

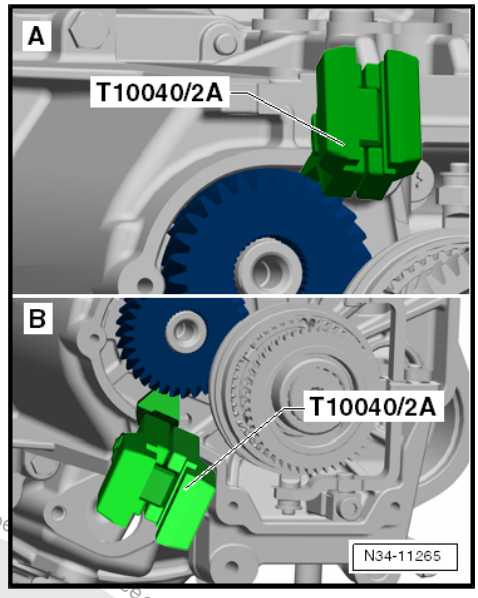


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Check whether puller hooks -T10040/2A- can be inserted correctly under 5th gear wheel.

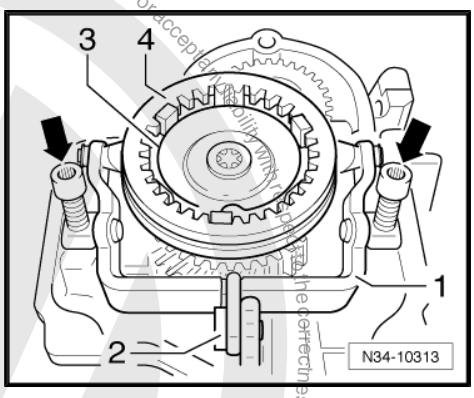
Puller hooks -T10040/2A- cannot be inserted correctly.	
-A- Puller hooks -T10040/2A- make contact too soon with: ♦ gearbox housing wall ♦ ribs in gearbox housing under 5th gear wheel	Removal of “synchro-hub for 5th gear”, “gear wheel for 5th gear” and “gearbox housing” “together” ⇒ page 126
-B- Puller hooks -T10040/2A- come into contact with ribs in gearbox housing below 5th gear wheel.	

Puller hooks -T10040/2A- cannot be inserted correctly.
5th gear can be removed separately ⇒ page 124

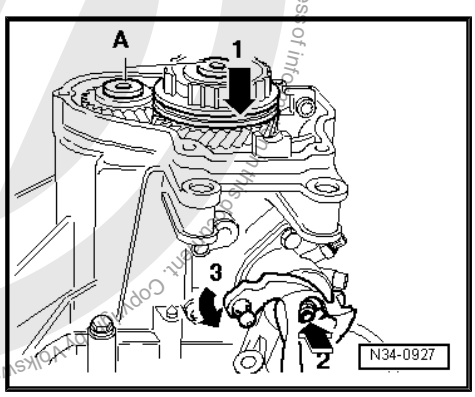


Removing 5th gear separately

– Cover openings in gearbox housing using a cloth.
– Move selector fork -1- to neutral position.
– Remove bolt -2- with selector fork for 5th gear.
– Then remove both bolts -arrows- for pivot pins.
– Pull out pivot pin.
– Remove 5th gear selector fork.
– Spring -3- and locking collar -4- do not need to be removed.



– Remove bolts -A- for synchro-hub and gear wheel for 5th gear. To do this, engage 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.
– Input shaft and output shaft are locked when both gears are engaged. Synchro-hub and gear wheel cannot turn. Both bolts can now be loosened.



Note

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

Pull off synchro-hub for 5th gear together with locking collar and locking pieces. Use puller -T10309- to do this.

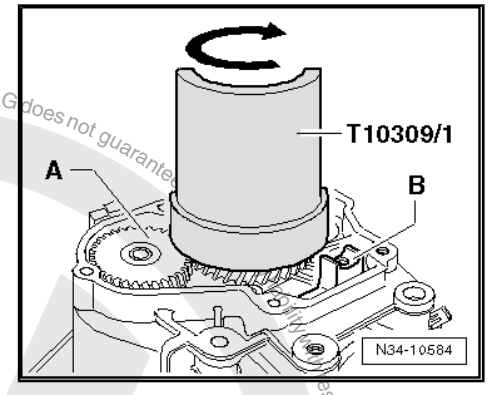
– First set half sleeve -T10309/1- between 5th gear wheel -A- and support for selector fork for 5th gear -B-.

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

- Half sleeve -T10309/1- must be positioned beneath synchro-ring.

– If necessary, half sleeve must be pressed to end position.

– Turn half sleeve -T10309/1- to opposite side -direction of arrow-.



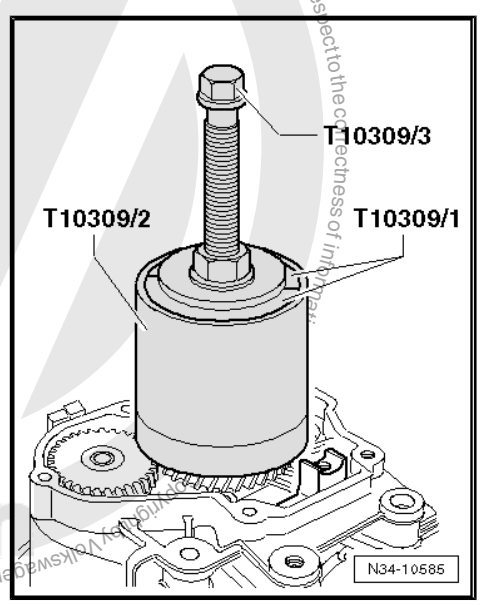
– Set threaded insert -T10309/3- in half shell .

– Fit second half shell -T10309/1- now and set tube -T10309/2- onto assembly.

– After pulling off synchro-hub, examine for damage.

– Renew 5th gear synchro-ring.

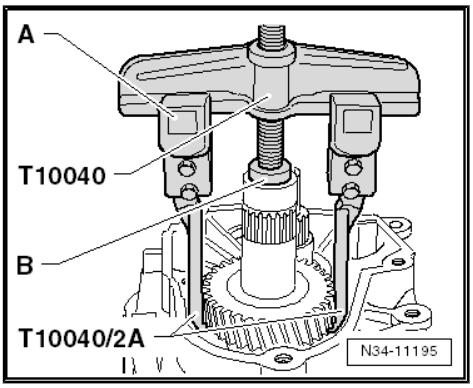
– Remove 5th gear synchromeshed gear with needle bearing.



– Pull off gear wheel for 5th gear (here shown on a different gearbox).

– First insert puller hook -A-.

B - Thrust plate -40 - 105- or hexagon bolt M10 x 20, 17 mm AF



Note

- *When pulling off gear wheel, ensure that hooks do not bend outwards. After pulling off 5th gear wheel, examine for damage.*
- *Heat gear wheel slightly with hot air blower -V.A.G 1416- if necessary.*

7.6.2 Installing cover for gearbox housing and 5th gear

Install 5th gear ⇒ page 137 .

– Install cover for gearbox housing and tighten bolts to specified torques ⇒ page 117 .

– Fit clutch release lever and release bearing ⇒ page 44 .

– Fill with gear oil ⇒ page 92 .

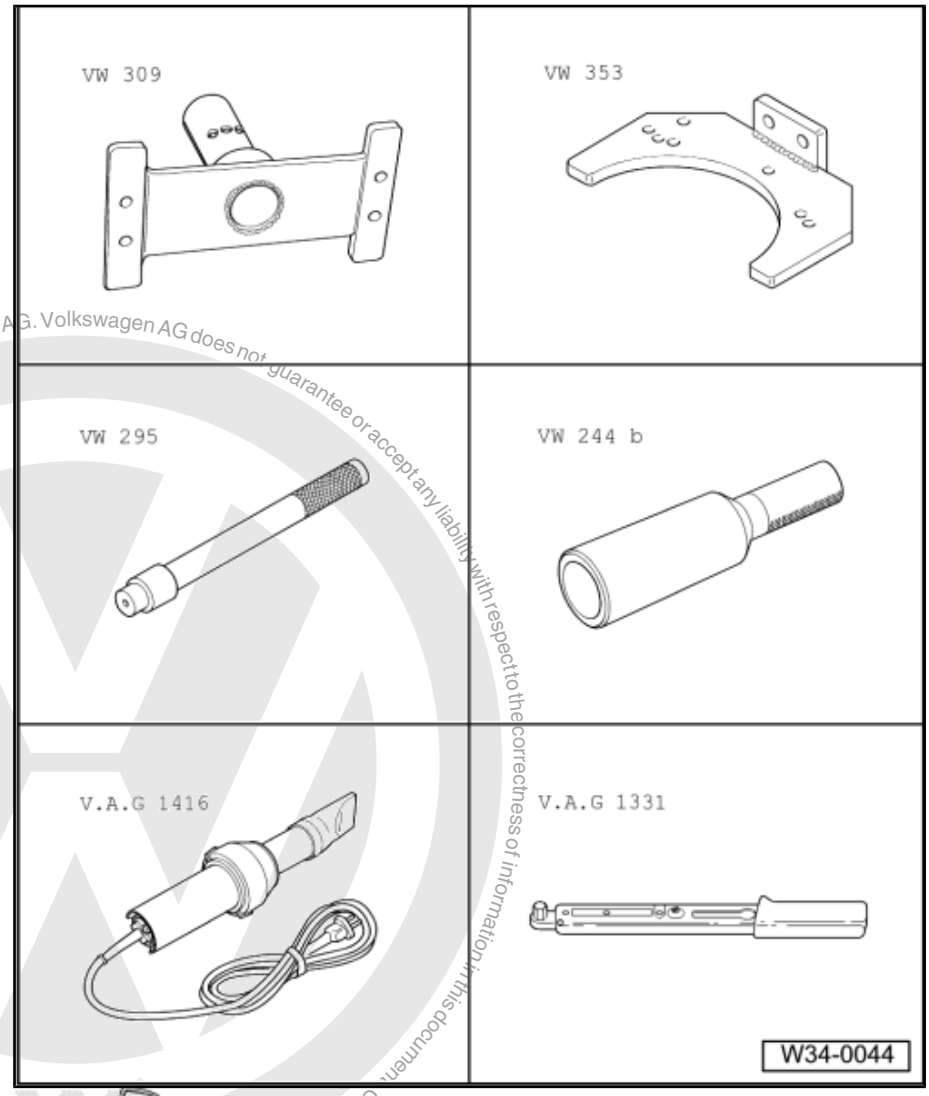
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information.

7.7 Assembly sequence - Dismantling and assembling gearbox completely

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

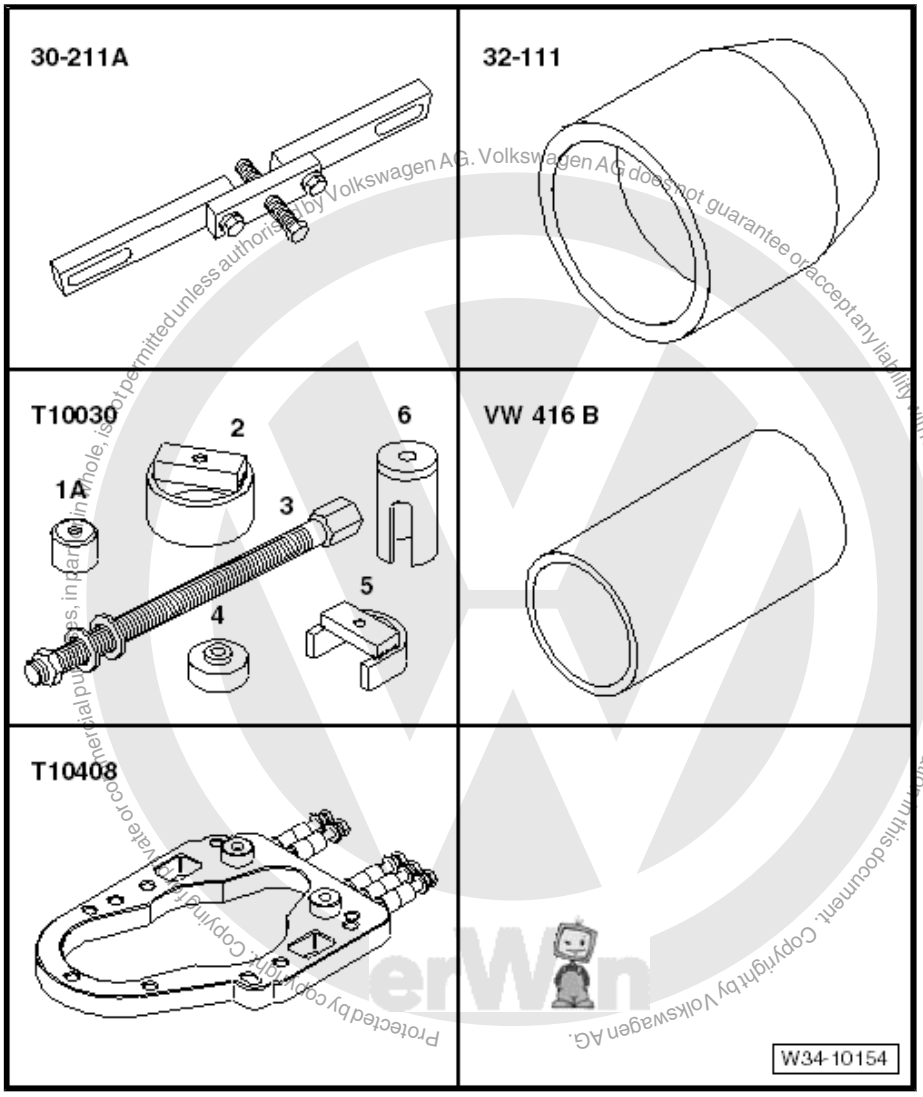
Special tools and workshop equipment required

- Support plate -VW 309-
- Gearbox support -VW 353-
- Drift -VW 295-
- Drift sleeve -VW 244 B-
- Hot air blower -V.A.G 1416-
- Torque wrench -V.A.G 1331-
- -Stehbolzen M 8 x 100 mm-



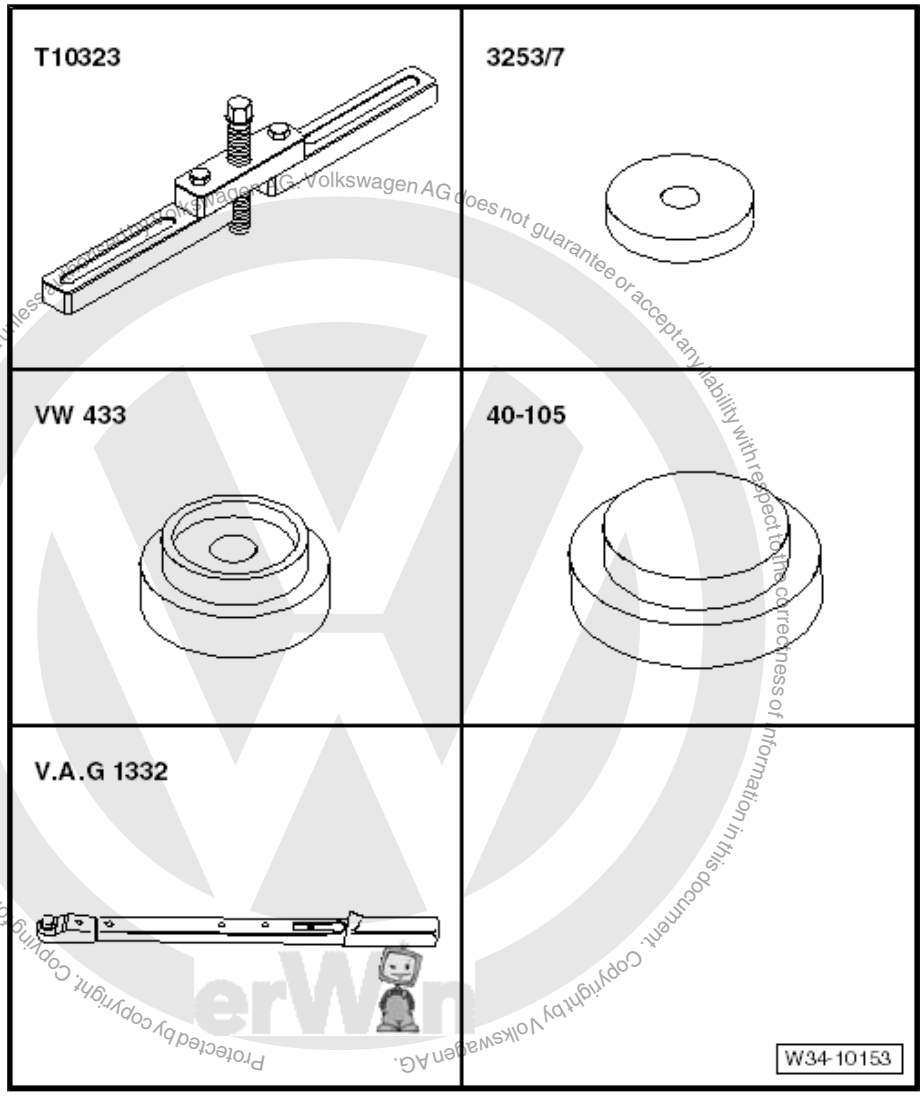
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Support bridge -30-211A-
- Thrust piece -32 - 111-
- Thrust piece from assembly tool -T10030/4-
- Tube -VW 416 B-
- Puller -T10408-
- Thrust pieces -T10408/2-

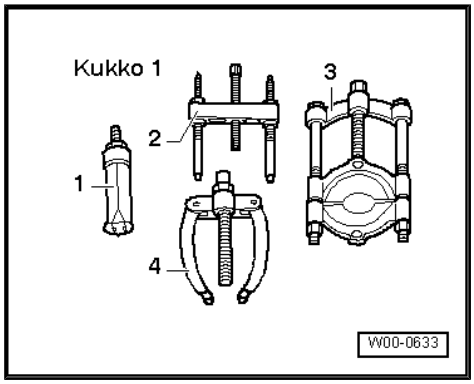


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Support device -T10323-
- Assembly tool -3253/7-
- Thrust piece -VW 433-
- Thrust plate -40 - 105-
- Torque wrench -V.A.G 1332-

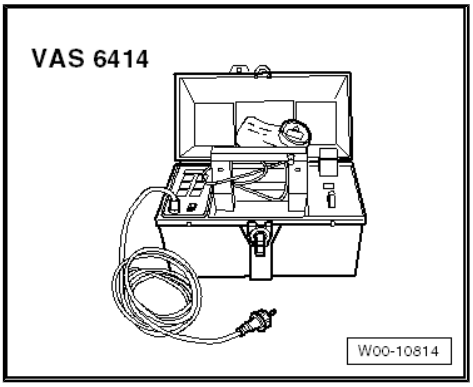


- Mounting -2 Kukko 18/1- (Qty. 2)



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

- Inductive heater -VAS 6414-



- Sealant -AMV 188 200 03-
- Hexagon bolts M 7 x 35 with washers (form part of puller -T10408-)

7.7.1 Dismantling gearbox

Carry out procedure as follows:

– Remove clutch release lever, release bearing and guide sleeve ⇒ page 44 .

- Bearings of input shaft and output shaft must not be damaged when 5th gear is removed and installed.
- Therefore, following tools must be mounted for support at this stage during attachment of gearbox to gearbox support -VW 353- :

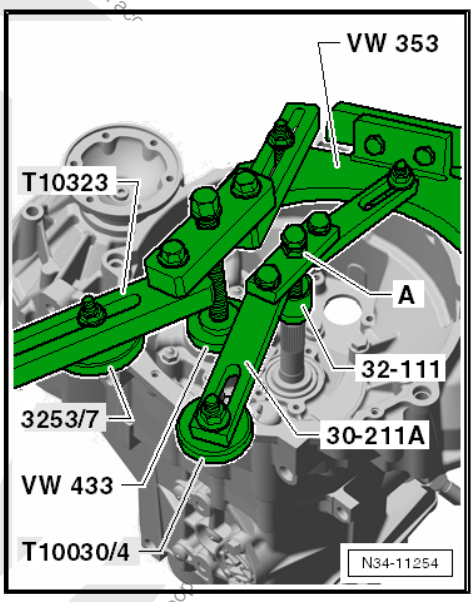
Underneath input shaft:

- Support bridge -30-211A-
- Thrust piece -32 - 111-
- Thrust piece -T10030/4-

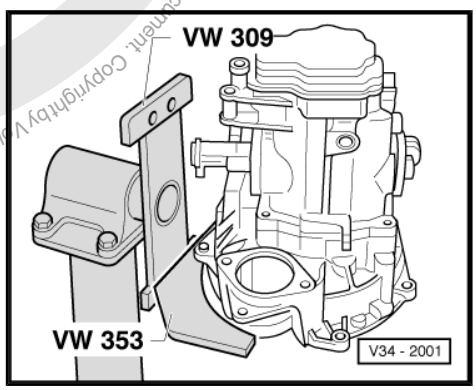
– Lock bolt of support bridge -30-211A- with nut -A-.

Underneath bearing support for output shaft:

- Support device -T10323-
- Assembly tool -3253/7-
- Thrust piece -VW 433-

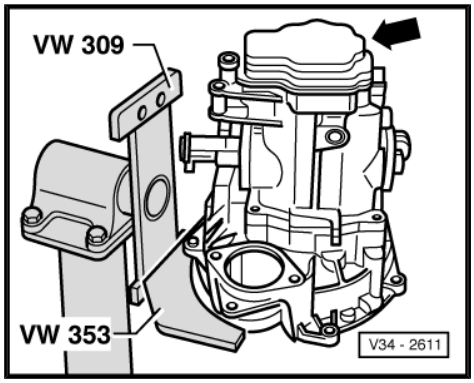


– Secure gearbox on gearbox support -VW 353- .
– Place drip tray underneath.
– Remove oil filler plug and oil drain plug.
– Drain gear oil.



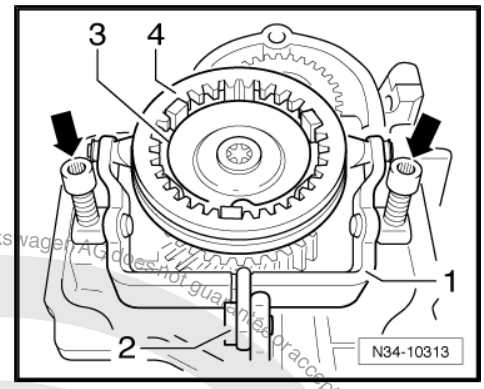
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Remove gearbox housing cover -arrow-.

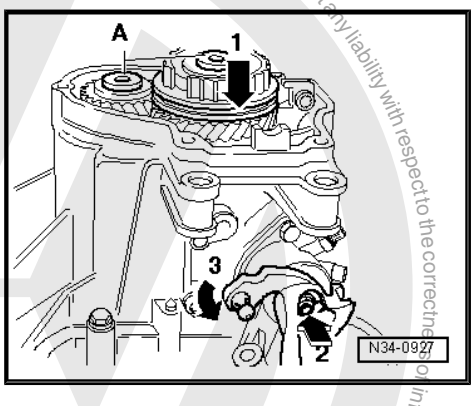


Remove selector fork for 5th gear as follows:

– Cover openings in gearbox housing using a cloth.
– Move selector fork -1- to neutral position.
– Remove bolt -2- with selector fork for 5th gear.
– Then remove both bolts -arrows- for pivot pins.
– Pull out pivot pin.
– Remove 5th gear selector fork.
– Spring -3- and locking collar -4- do not need to be removed.



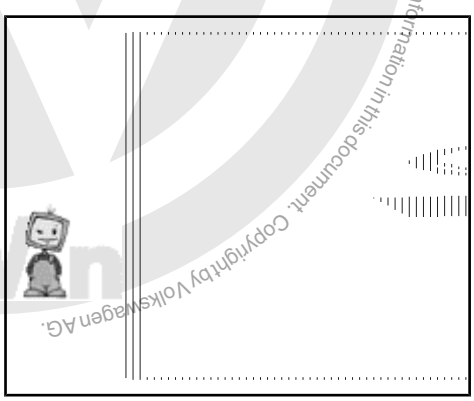
– Remove bolts -A- for synchro-hub and gear wheel for 5th gear. To do this, engage 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.
– Input shaft and output shaft are locked when both gears are engaged. Synchro-hub and gear wheel cannot turn. Both bolts can now be loosened.



Note

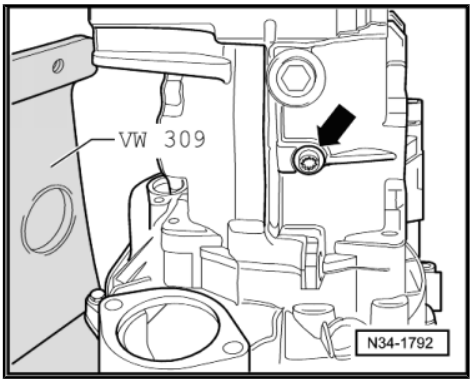
If shafts are not to be renewed, carefully clean residual locking material out of threaded holes using a thread chaser.

– Remove both bolts -arrows- for reverse shaft support bracket.

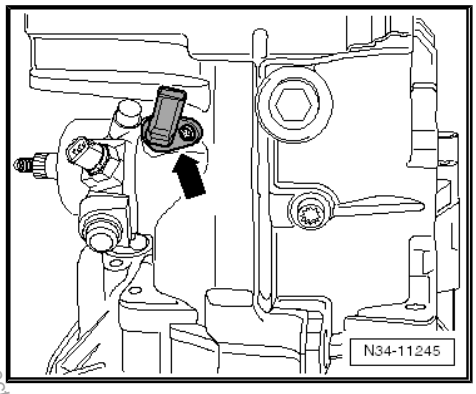


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

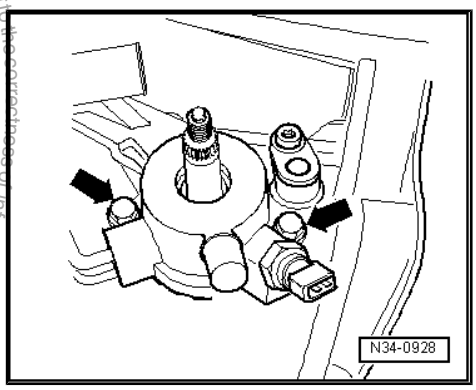
– Now remove 3rd bolt -arrow- for reverse shaft support bracket.



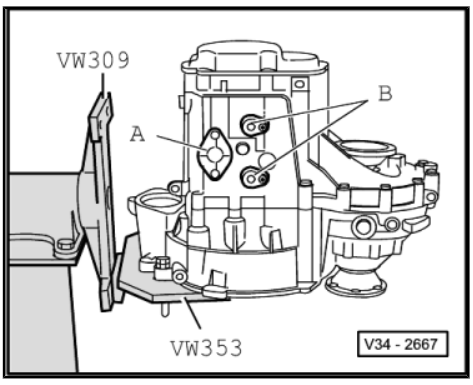
– Gearboxes for vehicles with start-stop system: remove gearbox neutral position sender -G701- -arrow-.



– Remove selector shaft with selector mechanism cover, placing selector shaft in neutral position. Then remove bolts -arrows- and pull selector shaft out of gearbox housing.

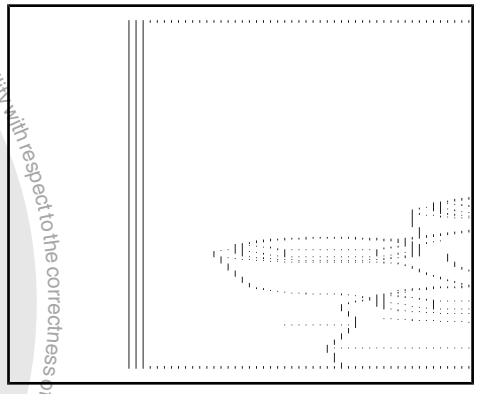


– Remove cover plate -A- and pivot pins -B- from underside of gearbox.

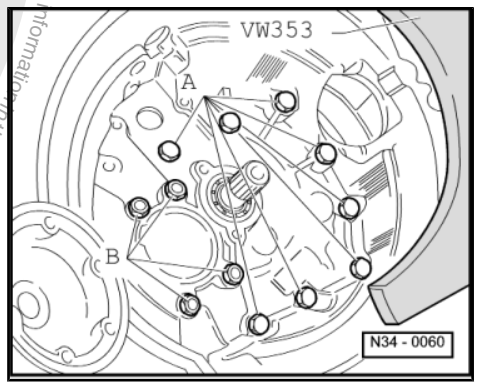


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Remove pivot pins -A- on top side of gearbox and securing bolts -B- for gearbox housing to clutch housing in area of differential.



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

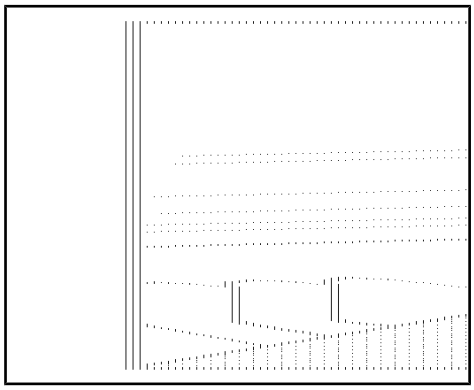


Note

Do not remove nuts -B- for output shaft bearing support.

– Remove both flange shafts.

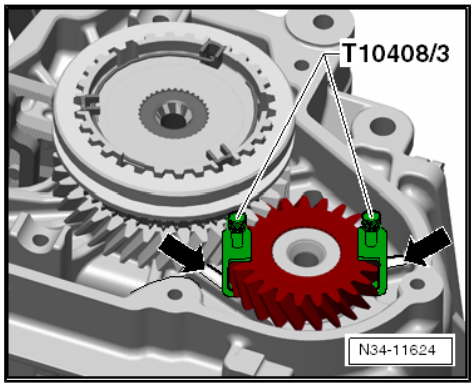
– Remove flange shafts together with springs, thrust washers and tapered rings.



Pull off following components together with gearbox housing:

- Synchro-hub for 5th gear
- Gear wheel for 5th gear

- Both grips -T10408/3- must be secured on gear wheel for 5th gear.
- The grips must always be positioned above the two housing ribs, which are located opposite each other -arrows-.



Note

- *There is a needle bearing beneath the gear wheel for 5th gear.*
- *Secure the grips so that the needle bearing does not come in contact with the gear wheel for 5th gear when the gearbox housing is pulled off.*

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

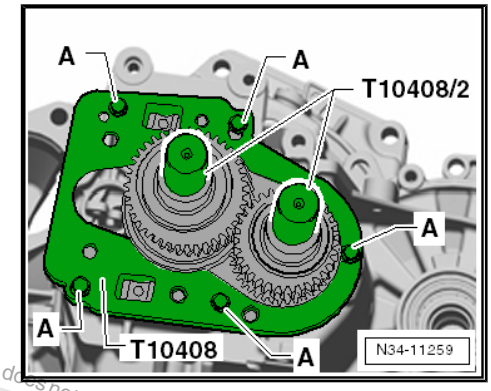
Use puller -T10408- in conjunction with following special tools:

- ♦ Thrust pieces -T10408/2-
- ♦ Grips -T10408/3-
- ♦ Puller Kukko 18/1 (Qty. 2)

– Use bolts -A- to screw puller -T10408- into threaded holes for gearbox housing cover.

A - Hexagon bolts M7 x 35 with washers

Torque setting 18 Nm

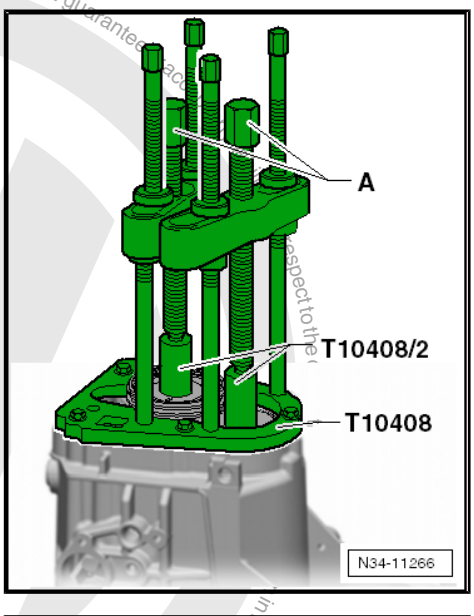


– Place pressure pieces -T10408/2- onto shafts.

– Mount pullers Kukko 18/1 .

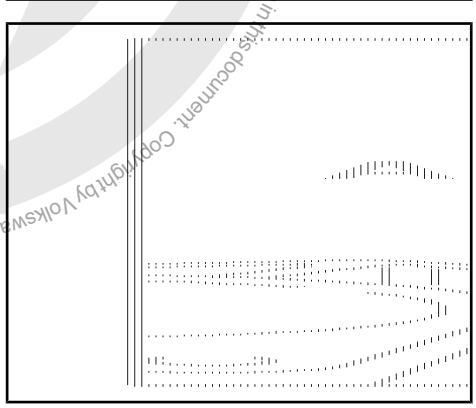
– Pull off 5th gear synchro-hub, 5th gear wheel and gearbox housing by alternately tightening spindles -A- ($^1/_2$ turn).

– Heat gear wheel for 5th gear slightly with hot air blower - V.A.G 1416- if necessary.

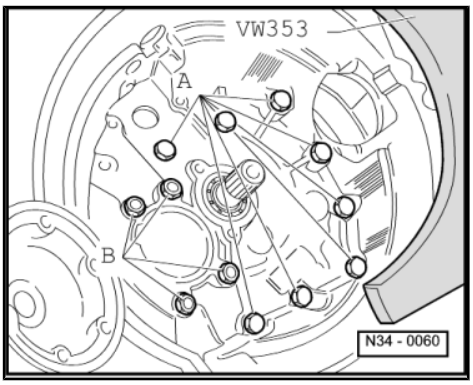


– Remove selector forks -A- together with selector plates.

– Unbolt reverse gear selector mechanism -B-.

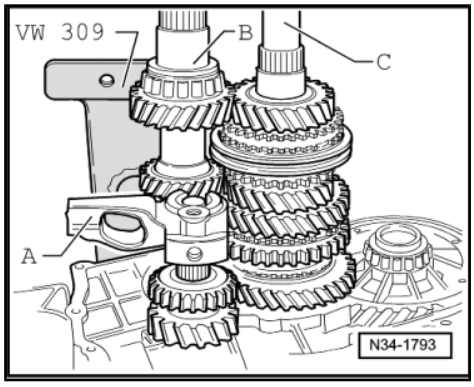


– Remove nuts -B- for output shaft bearing support.



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

– Remove reverse gear -A-, input shaft -B- and output shaft -C- one after the other from clutch housing.
– Remove differential.



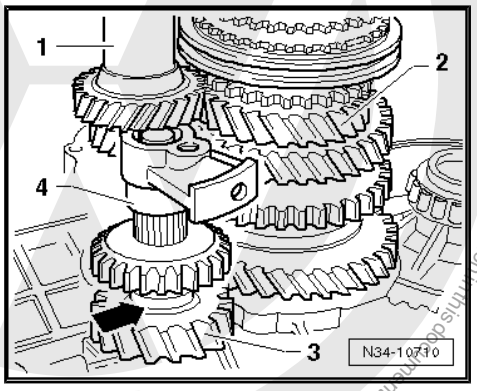
7.7.2 Assembling gearbox

– Install differential.
– Always renew sealing rings -arrows- for output shaft bearing support.

Note

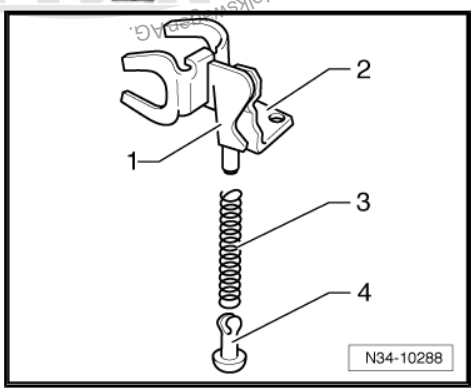
The figure shows only 3 of the 4 sealing rings.

– Insert input shaft -1- and output shaft -2- together.
– Tighten nuts for output shaft bearing support to specified torque ⇒ Item 11 (page 119) .
– Place reverse gear wheel -3- on needle bearing in clutch housing.



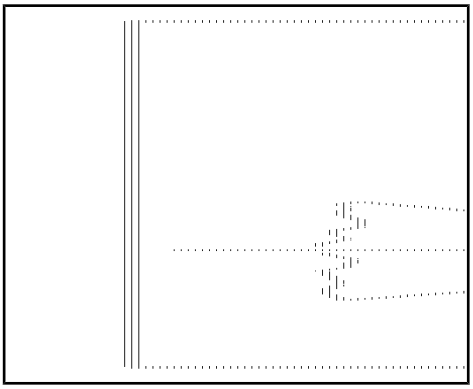
The shoulder -arrow- faces away from the clutch housing.

– Check that reverse shaft -4- is complete ⇒ page 184 ; do not yet fit reverse shaft support to reverse shaft.
– Fit reverse shaft into clutch housing.
– Clean locking fluid from all threaded holes in reverse shaft support; a thread chaser may be used.
– Install reverse shaft support.
– Attach reverse gear selector fork -1- with support for reverse gear selector fork -2-, spring -3- and sliding piece -4-.



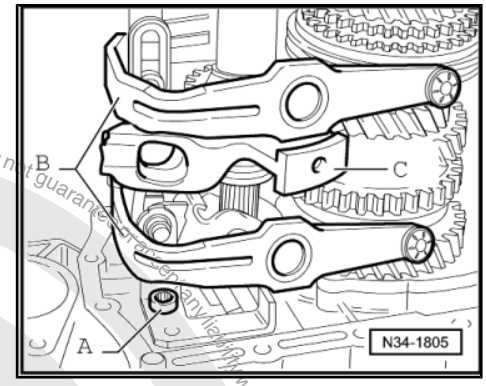
Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any unauthorised use, duplication or passing on to third parties is not permitted unless authorised by Volkswagen AG.

Installation position, reverse gear

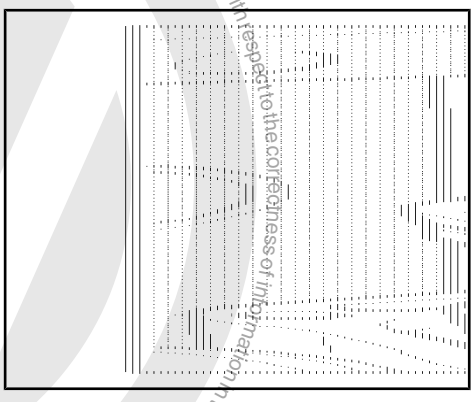


– Bolt on reverse gear selector mechanism -A-.
– Install selector forks -B- together with selector plates.

Reverse gear support -C- is located in front of selector plates.



– Screw M8 x 100 mm stud -A- into reverse shaft support so that shaft is aligned after gearbox housing is fitted.
– Align selector plates.



Note

The selector segments must be positioned in the grooves on the locking collars.

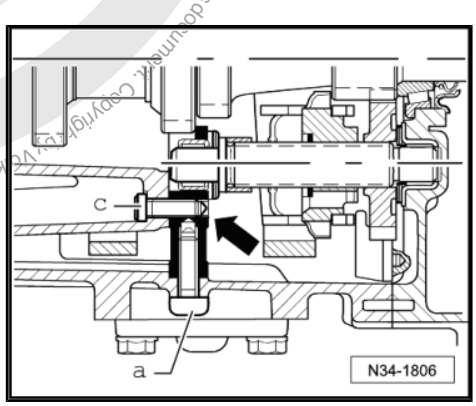
– Apply sealant -AMV 188 200 03- evenly to sealing surface of clutch housing.
– Fit gearbox housing.

Install reverse shaft support bolts -arrow- as follows:

– Install bolt -a-.
– Remove stud -A- (⇒ figure above).
– Install bolt -c-.

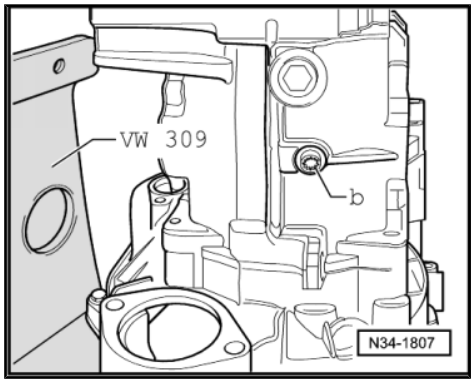
Tightening sequence:

– Tighten bolt -a- to 30 Nm.

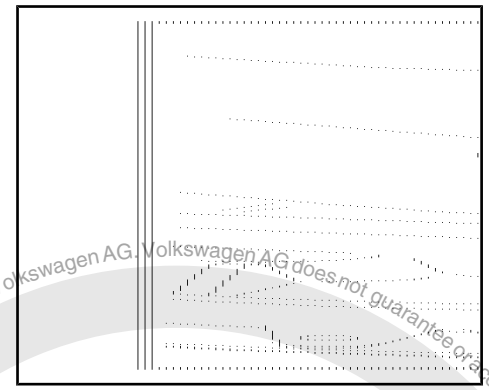


Protected by copyright. Copying for private or commercial purposes, in part or whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

– Tighten bolt -b- to 25 Nm.
– Tighten bolt -c- (⇒ figure below) to 25 Nm.

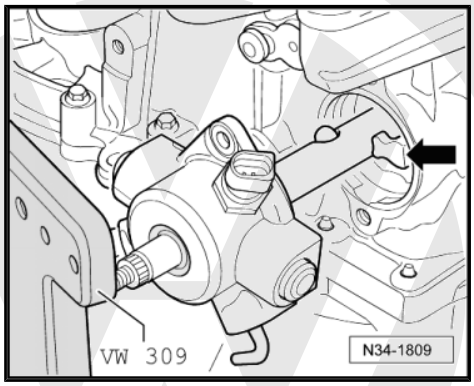


– Install pivot pin -arrow- for selector forks. Do this by aligning selector mechanism with a screwdriver so that respective pivot pin can be installed.
– Apply sealant -AMV 188 200 03- evenly to sealing surface of cover plate.
– Fit selector shaft cover.

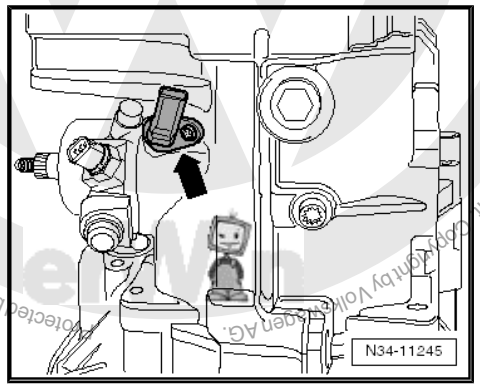


Install selector shaft with selector shaft cover plate as follows:

– Place selector plates in neutral.
– Apply sealant -AMV 188 200 03- evenly to sealing surface of selector mechanism cover.
– Move selector shaft to neutral.
– Position selector shaft so that selector finger -arrow- is inserted in selector plates.
– Bolt on selector shaft cover to specified torque ⇒ Item 17 (page 118) .

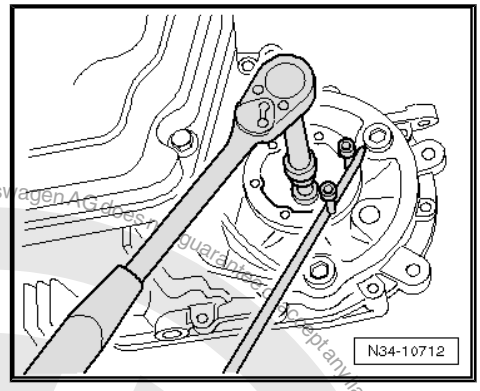


– Gearboxes for vehicles with start-stop system: fit gearbox neutral position sender -G701- -arrow- and tighten securing bolt to specified torque ⇒ Item 11 (page 118) .



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

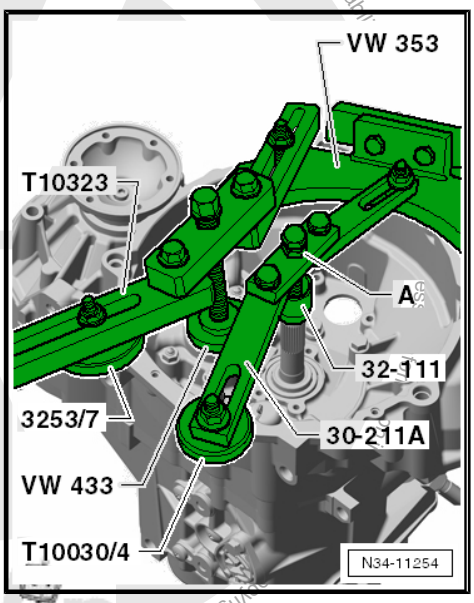
– Install both flange shafts with compression springs, thrust washers and tapered rings ⇒ page 187 .



7.7.3 Installing 5th gear

- Ensure that support bridge -30-211A- and support device -T10323- are attached.

– Lock bolt of support bridge -30-211A- with nut -A-.



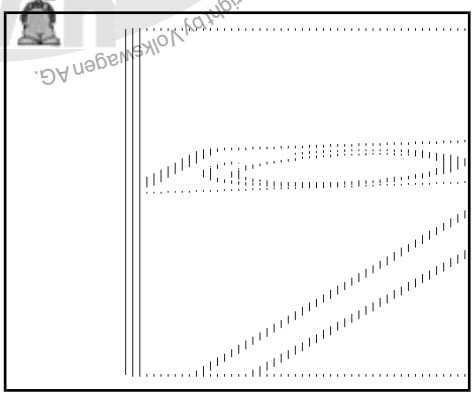
Installation position, 5th gear wheel

The circumferential groove -arrow- faces gearbox housing.

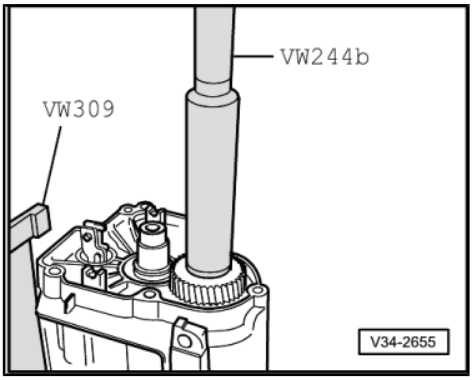
– Heat gear wheel for 5th gear to about 100 °C with inductive heater -VAS 6414- before installing.

WARNING

Wear protective gloves!



– Drive on gear wheel for 5th gear.

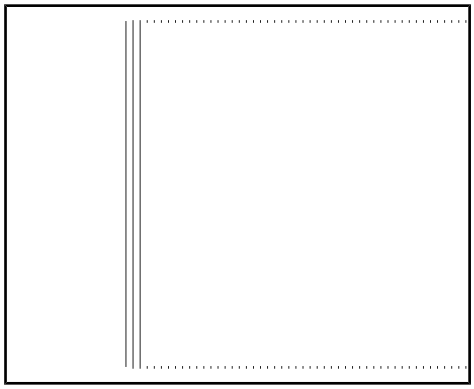


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability

Checking 5th gear synchro-ring

– Before installing synchromeshed gear and synchro-ring for 5th gear, press synchro-ring onto cone of synchromeshed gear and measure gap -a- with a feeler gauge.

Gap -a-	Installation (new) dimension	Wear limit
5th gear	1.1 … 1.7 mm	0.5 mm



– Install 5th gear synchromeshed gear with needle bearing.

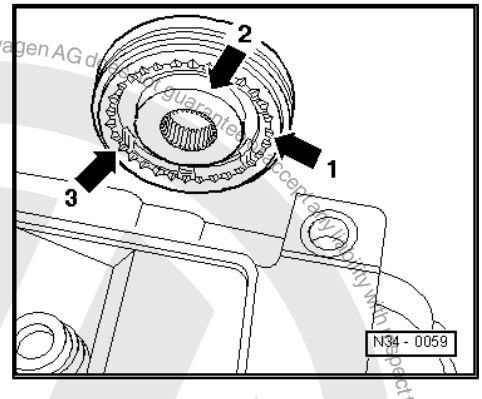
– Place 5th gear synchro-ring on synchromeshed gear.

– If synchro-hub and locking collar for 5th gear are dismantled, assemble before installing ⇒ page 162 .

Installation position 5th gear synchro-hub and locking collar

The pointed teeth of the locking collar -arrow 1- and the high shoulder of the synchro-hub -arrow 2- face the gearbox housing.

The synchro-hub supports -arrow 3- align with the cast locking pieces of the 5th gear synchro-ring (⇒ page 138 , bottom).



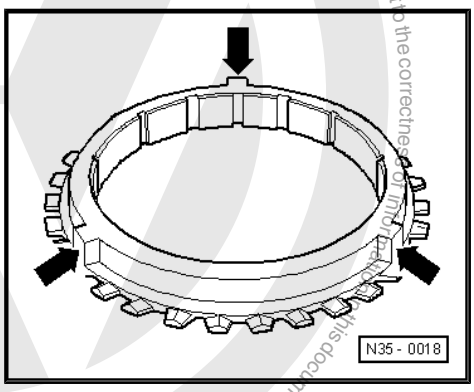
5th gear synchro-ring with cast locking pieces

– Cover all openings in gearbox housing with a cloth to prevent foreign bodies from entering gearbox.

– Heat 5th gear synchro-hub to about 100 °C with inductive heater -VAS 6414- before installing.

WARNING

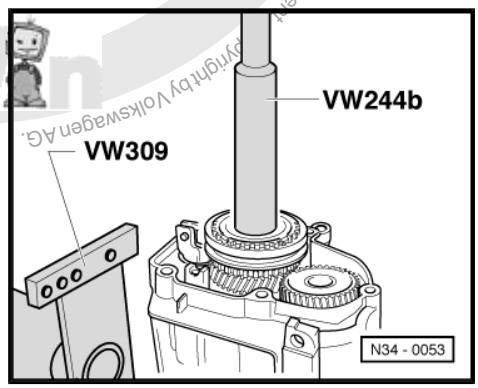
Wear protective gloves!



– Drive on 5th gear synchro-hub.

Note

When driving on, ensure that synchro-ring moves freely.

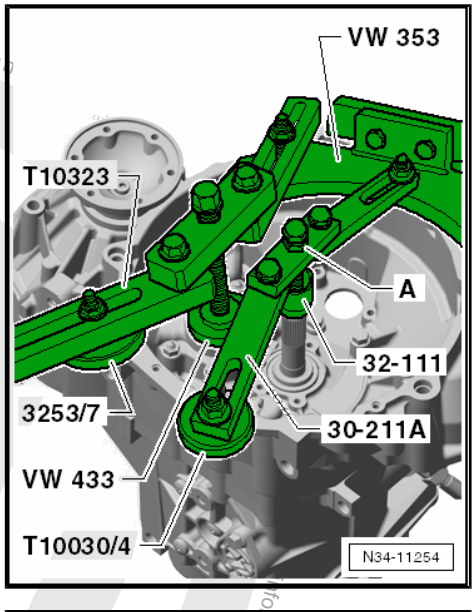


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.

– Unfasten support for drive shaft.
– Clean residual locking fluid from threaded holes for synchro-hub securing bolts and 5th gear wheel with a thread chaser.

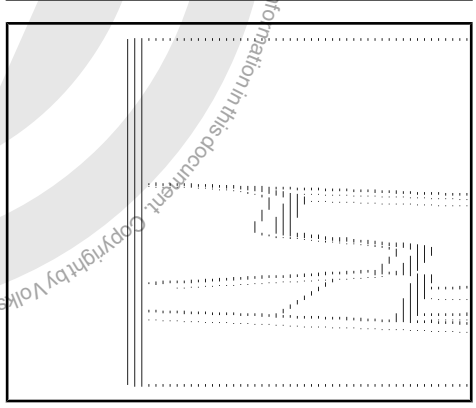
Otherwise the bolts may shear.

– Screw in securing bolts for synchro-hub and gear wheel for 5th gear.

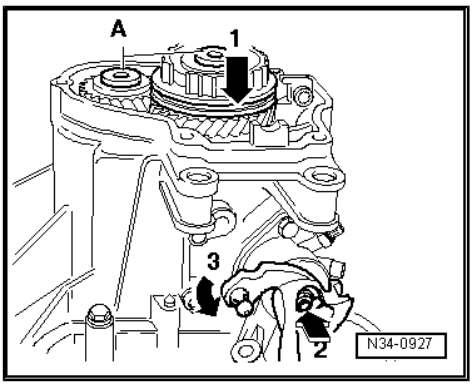


Installation position of dished springs for securing bolts for gear wheel and synchro-hub for 5th gear

The outer circumference -arrows- faces 5th gear.

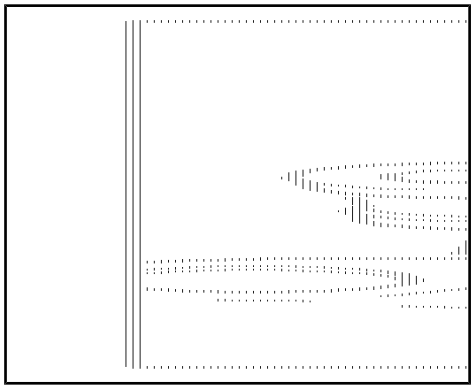


– Tighten bolts -A- for synchro-hub and 5th gear wheel to specified torque ⇒ Item 4 (page 117) . To do this, engage 5th gear -arrow 1- and 1st gear -arrows 2- and -3-.
– Input shaft and output shaft are locked when both gears are engaged. Synchro-hub and gear wheel cannot turn. Now both bolts can be tightened.
– Install 5th gear selector fork.



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

Adjusting 5th gear



– Engage 5th gear. Loosen bolt -1-. Press locking collar and selector jaw in -direction of arrow-. Then tighten bolt -1- to 25 Nm.

• Check measurement: It must not be possible to slide a 0.2 mm feeler gauge between locking collar and gear wheel. If necessary, repeat adjustment.

– Disengage 5th gear. Locking collar must now be in the neutral position. Synchro-ring must move freely.

– Shift through all gears.

– Install gearbox housing cover ⇒ page 117 .

– Fit release bearing guide sleeve ⇒ page 44 .

– Fit clutch release lever and release bearing ⇒ page 44 .

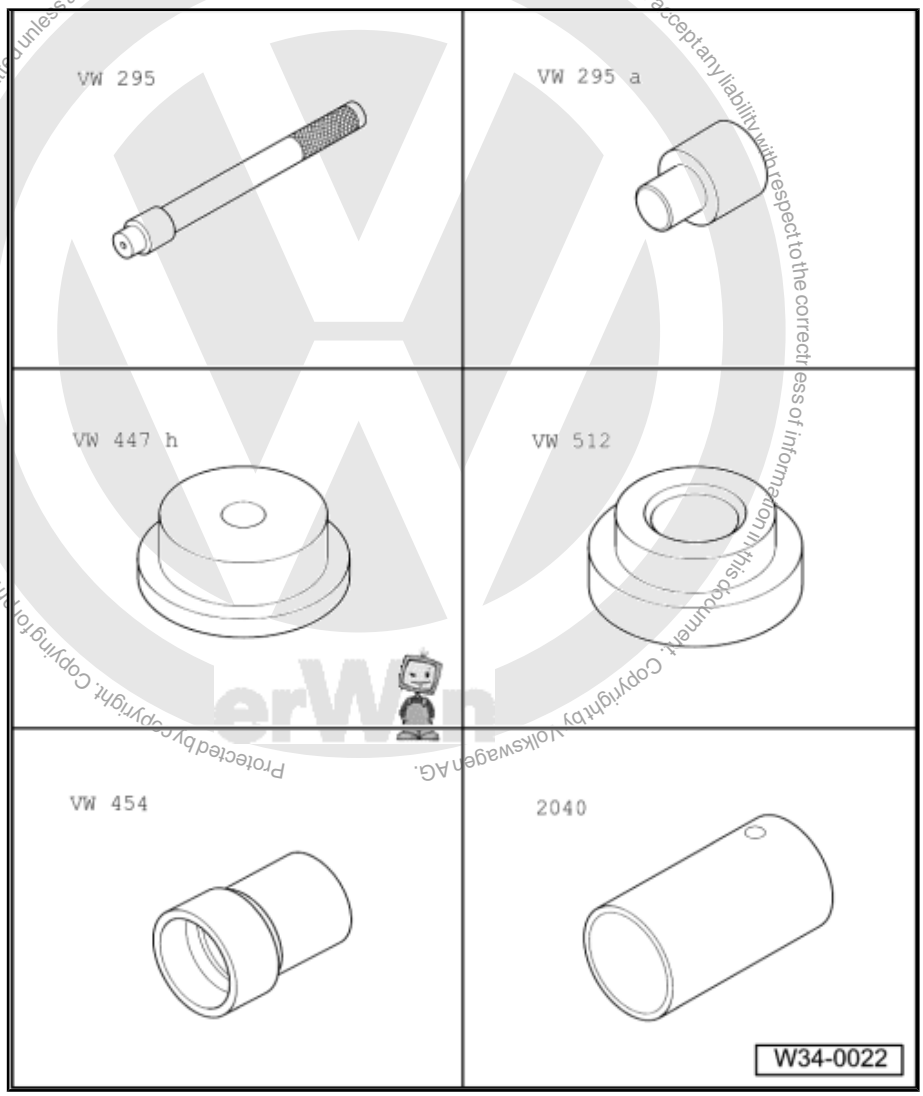
– Fill with gear oil ⇒ page 92 .

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

8 Repairing gearbox housing and clutch housing

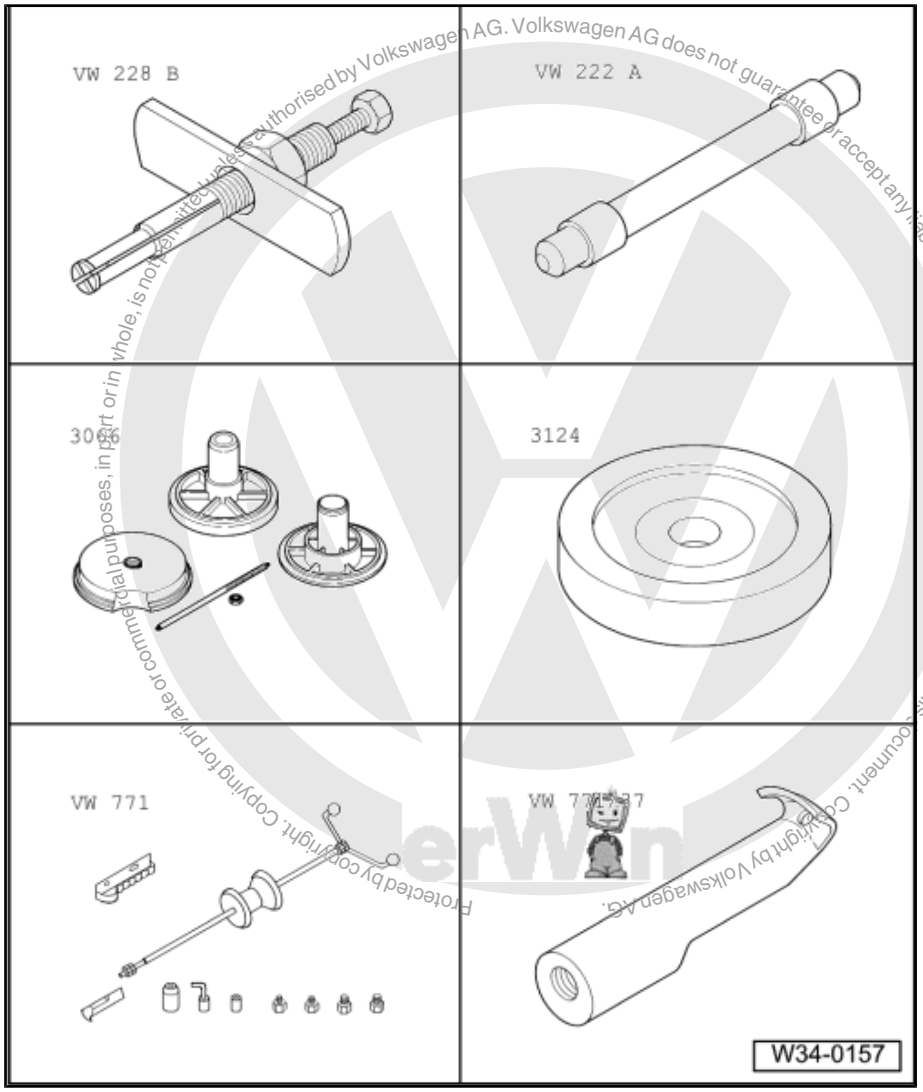
Special tools and workshop equipment required

- Drift -VW 295-
- Adapter -VW 295 A-
- Thrust pad -VW 447 H-
- Thrust pad -VW 512-
- Tube -2040-
- Thrust piece -VW 454-

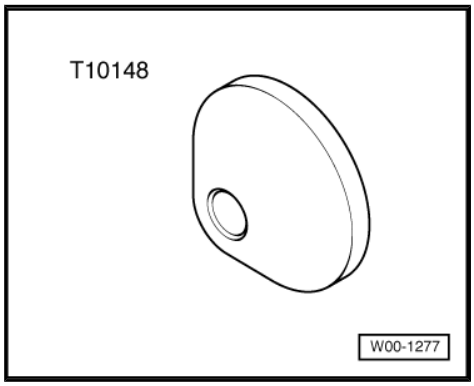


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

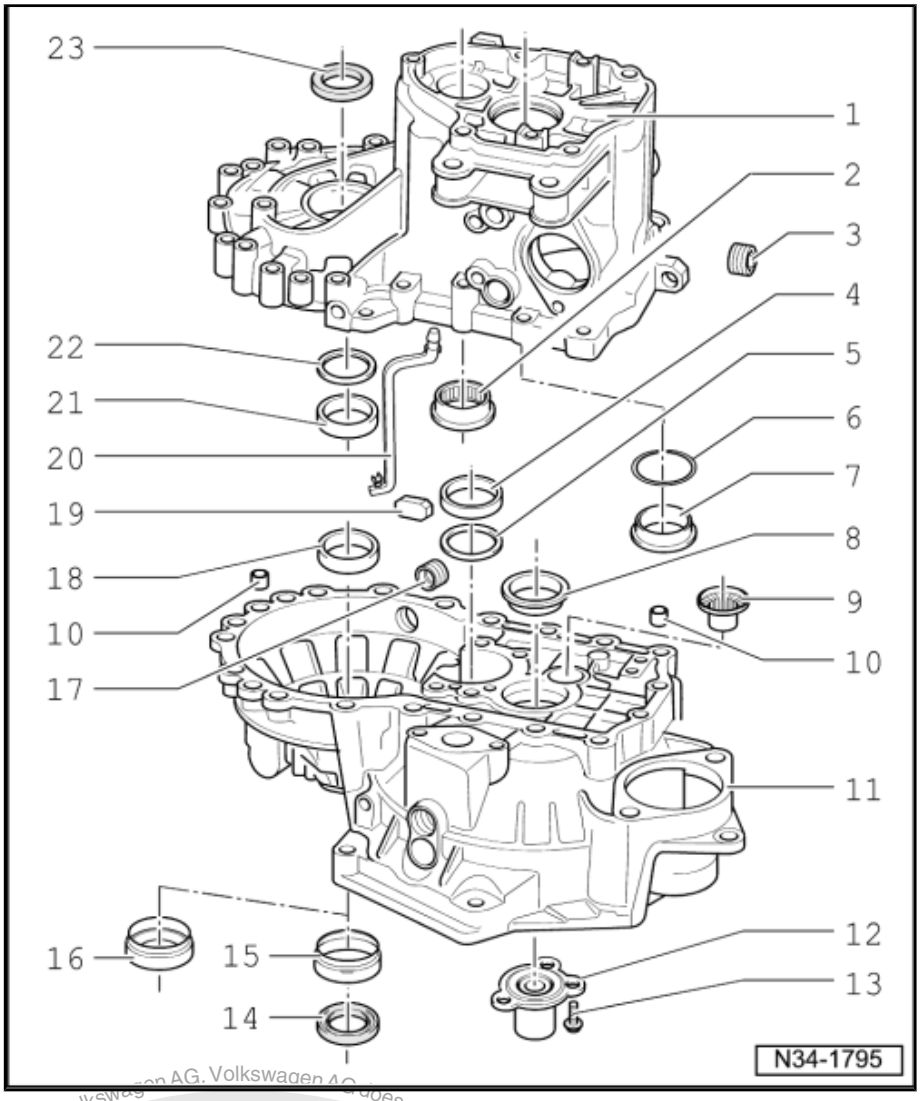
- Puller -VW 228 B- (is not required for this gearbox)
- Drift -VW 222 A- (not required with this gearbox)
- Assembly device -3066- (Spindle from assembly device)
- Thrust piece -3124- (for two-part seal and sleeve)
- Multipurpose tool -VW 771- (for one-piece seal and sleeve)
- Extractor hooks - VW 771/37- (for one-piece seal and sleeve)



- Multipurpose tool -T10148- (for one-piece seal and sleeve)



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



1 - Gearbox housing

- ❑ If renewed: adjust input shaft and differential ⇒ page 195

2 - Needle bearing

- ❑ For output shaft
- ❑ Removing ⇒ page 144
- ❑ Installing and securing ⇒ page 145 .

3 - Oil filler plug, 35 Nm

- ❑ The oil level cannot be checked by removing the oil filler plug.
- ❑ If the gearbox was dismantled, it must be filled prior to installation

Capacity ⇒ page 2 .

4 - Tapered roller bearing outer race

- ❑ For output shaft
- ❑ Removing and installing ⇒ page 167
- ❑ If replaced: Adjust output shaft ⇒ page 180 .

5 - Shim

- ❑ For output shaft
- ❑ Adjustment overview ⇒ page 195

6 - Shim

- ❑ For input shaft
- ❑ Adjustment overview ⇒ page 162

7 - Tapered roller bearing outer race

- ❑ For input shaft
- ❑ Removing and installing ⇒ page 155
- ❑ If renewed: adjust input shaft ⇒ page 162

8 - Tapered roller bearing outer race

- ❑ For input shaft
- ❑ Removing and installing ⇒ page 155
- ❑ If renewed: adjust input shaft ⇒ page 162

9 - Needle bearing

- ❑ Removing and installing ⇒ page 184

10 - Dowel sleeve

- ❑ Qty. 2

11 - Clutch housing

- ❑ When renewing, ⇒ adjustment overview ⇒ page 195

12 - Guide sleeve

- ❑ With input shaft seal and vulcanised O-ring
- ❑ Driving out oil seal ⇒ page 145 .
- ❑ Driving in oil seal ⇒ page 145 .

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

- ❑ Remove guide sleeve to change oil seal
- ❑ If O-ring is damaged, renew guide sleeve and O-ring together

13 - Socket head bolt, 20 Nm

14 - Seal

- ❑ Renewing ⇒ page 189

15 - Sleeve

- ❑ For seal ⇒ Item 14 (page 144) .
- ❑ Removing ⇒ page 145
- ❑ Installing ⇒ page 146

16 - One-piece seal and sleeve

- ❑ If seal is damaged, renew seal and sleeve together
- ❑ Removing ⇒ page 146
- ❑ Installing ⇒ page 146

17 - Oil drain plug, 35 Nm

18 - Tapered roller bearing outer race

- ❑ For differential
- ❑ Removing and installing ⇒ page 196
- ❑ If renewed, adjust differential ⇒ page 204

19 - Magnet

- ❑ Held in place by housing joint surface

20 - Oil collector

- ❑ Installing oil collector in gearbox housing ⇒ page 146

21 - Tapered roller bearing outer race

- ❑ For differential
- ❑ Removing and installing ⇒ page 196
- ❑ If renewed, adjust differential

⇒ page 204

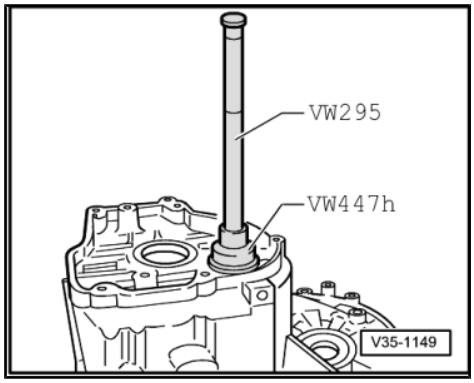
22 - Shim

- ❑ For differential
- ❑ Adjustment overview ⇒ page 195

23 - Seal

- ❑ Renewing ⇒ page 187

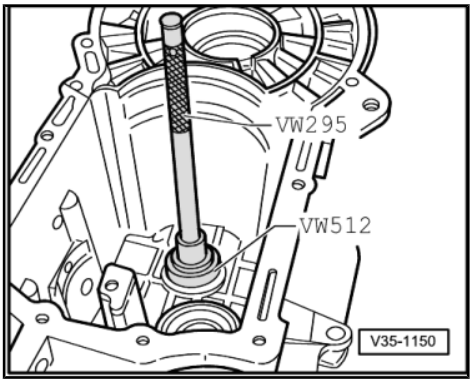
Driving out needle roller bearing



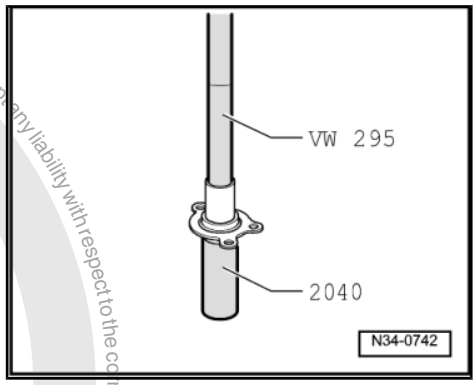
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Driving needle bearing in to stop

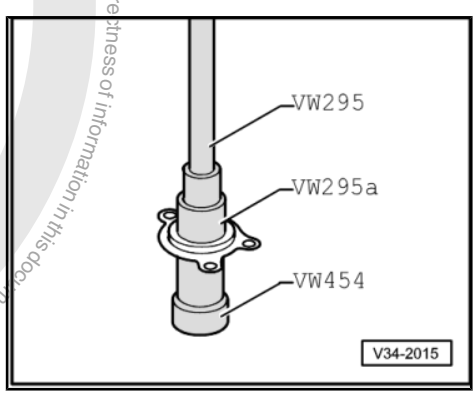
– Secure needle bearing in gearbox housing at 3 points (120° offset) using a punch.



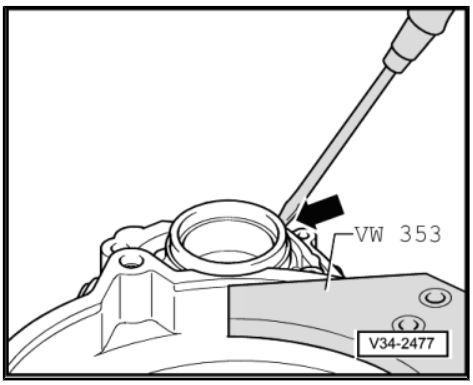
Driving oil seal out of guide sleeve



Driving oil seal into guide sleeve to stop



Levering out sleeve -arrow- using screwdriver

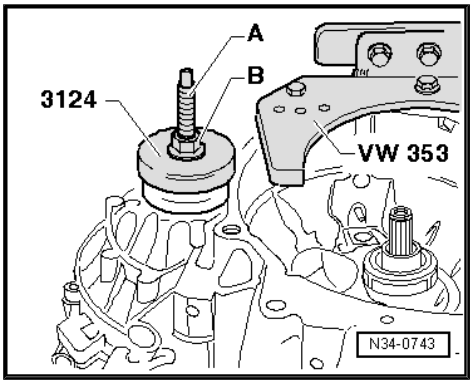


Printed by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.
Copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen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

Pulling in sleeve

– Screw spindle -A- of assembly tool -3066- into threaded piece of differential.

– Pull sleeve in to stop using thrust piece -3124- by turning nut -B-.



Note

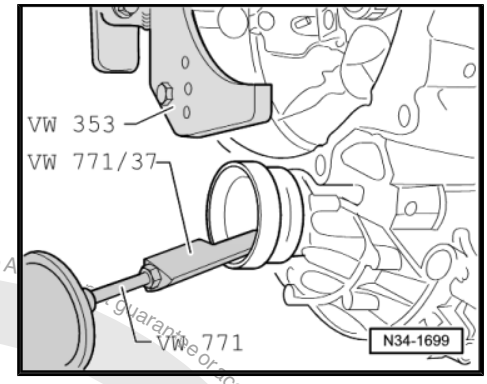
With gearbox dismantled, press sleeve in to stop using thrust piece -3124- .

Pulling out sleeve and seal

There is a shoulder in the inner diameter of the sleeve.

– To pull out seal and sleeve, apply extractor hooks -VW 771/37- behind shoulder in sleeve.

– Press extractor hooks -VW 771/37- forcefully into sleeve while pulling.

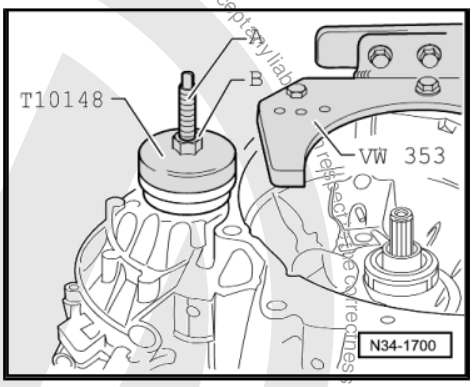


Pulling in sleeve and seal

– Clean seat for seal in gearbox.

– Screw spindle -A- of assembly tool -3066- into threaded piece of differential.

– Pull sleeve in to stop using thrust piece -T10148- by turning nut -B-.

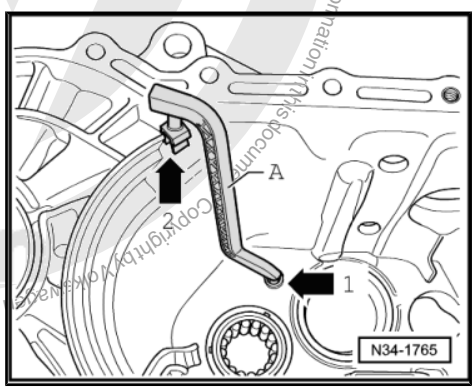


Note

With gearbox dismantled, press sleeve in to stop using thrust piece -T10148- .

Installing oil collector -A- in gearbox housing

– Insert oil collector in hole -arrow 1- and groove -arrow 2- simultaneously.

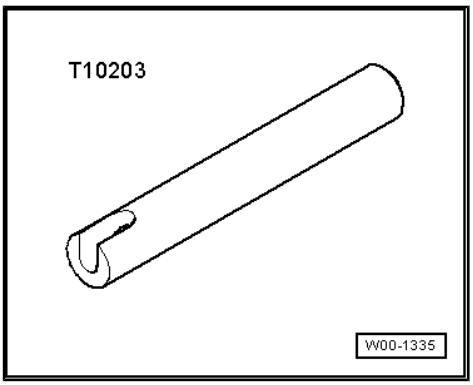


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

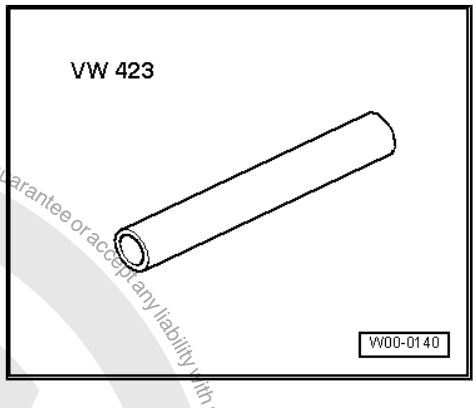
9 Repairing selector unit

Special tools and workshop equipment required

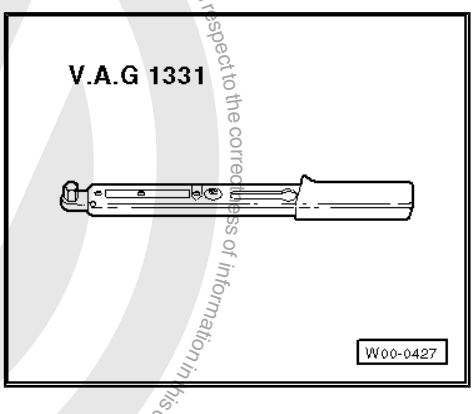
- Tube -T10203-



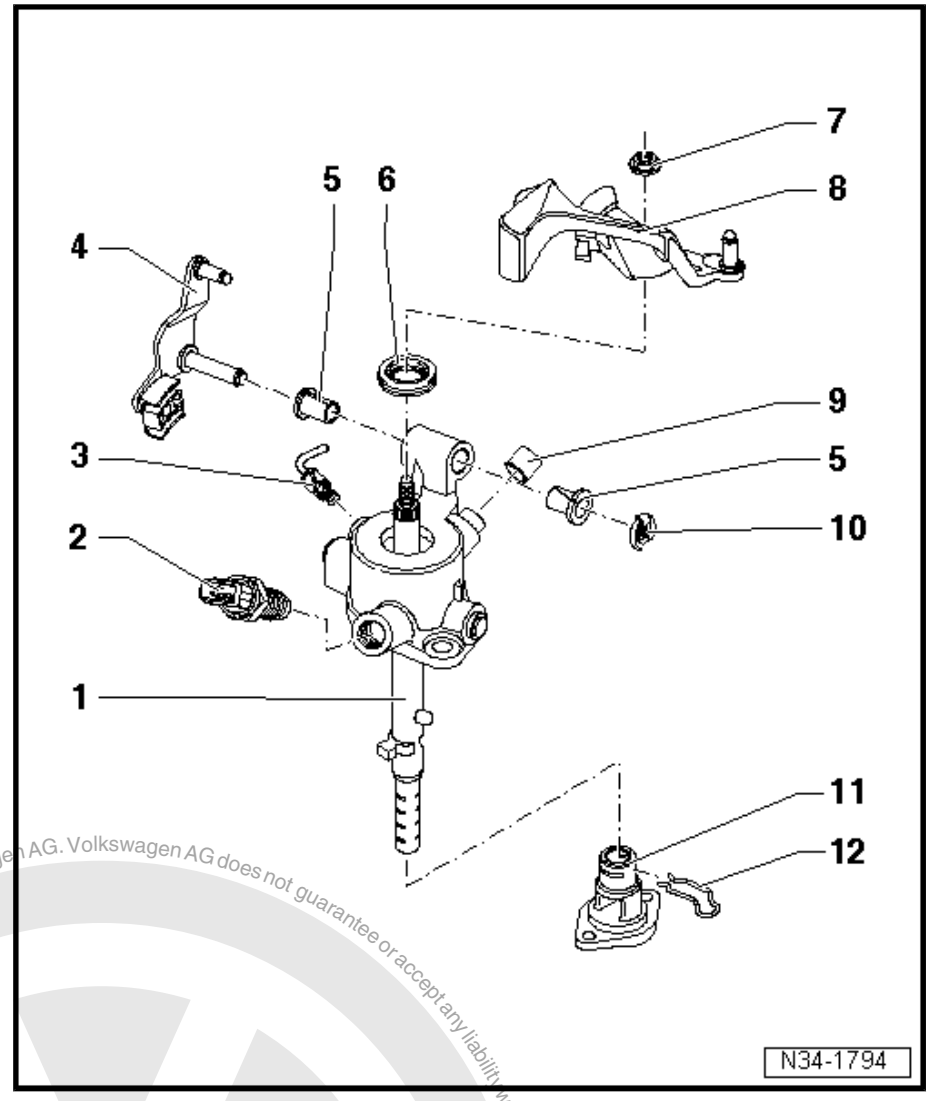
- Tube -VW 423-



- Torque wrench -V.A.G 1331-



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



1 - Selector unit

- Consists of selector shaft and selector shaft cover
- Components cannot be separated from each other

2 - Reversing light switch -F4-

- Tighten to 20 Nm
- Lightly coat lug with MoS_2 grease

3 - Angled rod

- For adjusting selector mechanism
- Removing ⇒ page 149
- Pressing in ⇒ page 149

4 - Relay lever

- Installation position ⇒ page 72
- From 05.07, plastic relay lever ⇒ page 73

5 - Bearing bush

- Not required for plastic relay lever

6 - Seal

- Lever out with a screwdriver
- Installing ⇒ page 149

7 - Hexagon nut, 23 Nm

- Self-locking
- Always renew

8 - Gearbox selector lever

- Install so that master spline aligns with selector shaft
- Can be renewed with the selector mechanism installed
- Installation position ⇒ page 72

9 - Cap

- For gearbox breather

10 - Securing clip

- Always renew
- Not required for plastic relay lever

11 - Cover plate

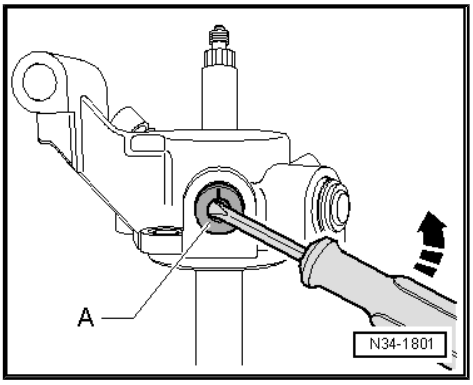
12 - Spring

- Not installed in all gearboxes.
- Reinstall if part of original equipment.

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

Removing angled rod -A- from selector shaft cover

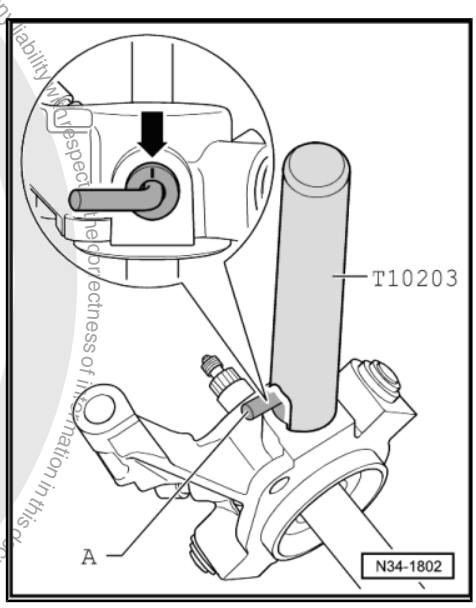
– Remove outer part of angled rod.
– Then carefully remove angled rod using a screwdriver.



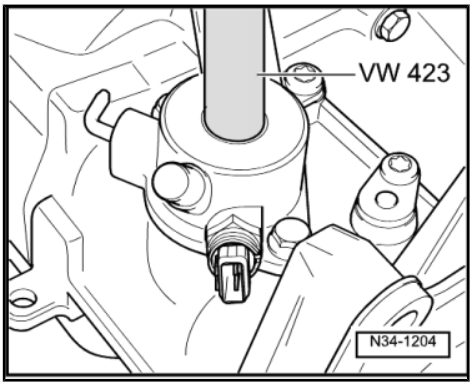
Pressing angled rod -A- into selector shaft cover

Installation position:

Marking -arrow- points to upper part of selector shaft.



Inserting oil seal to stop

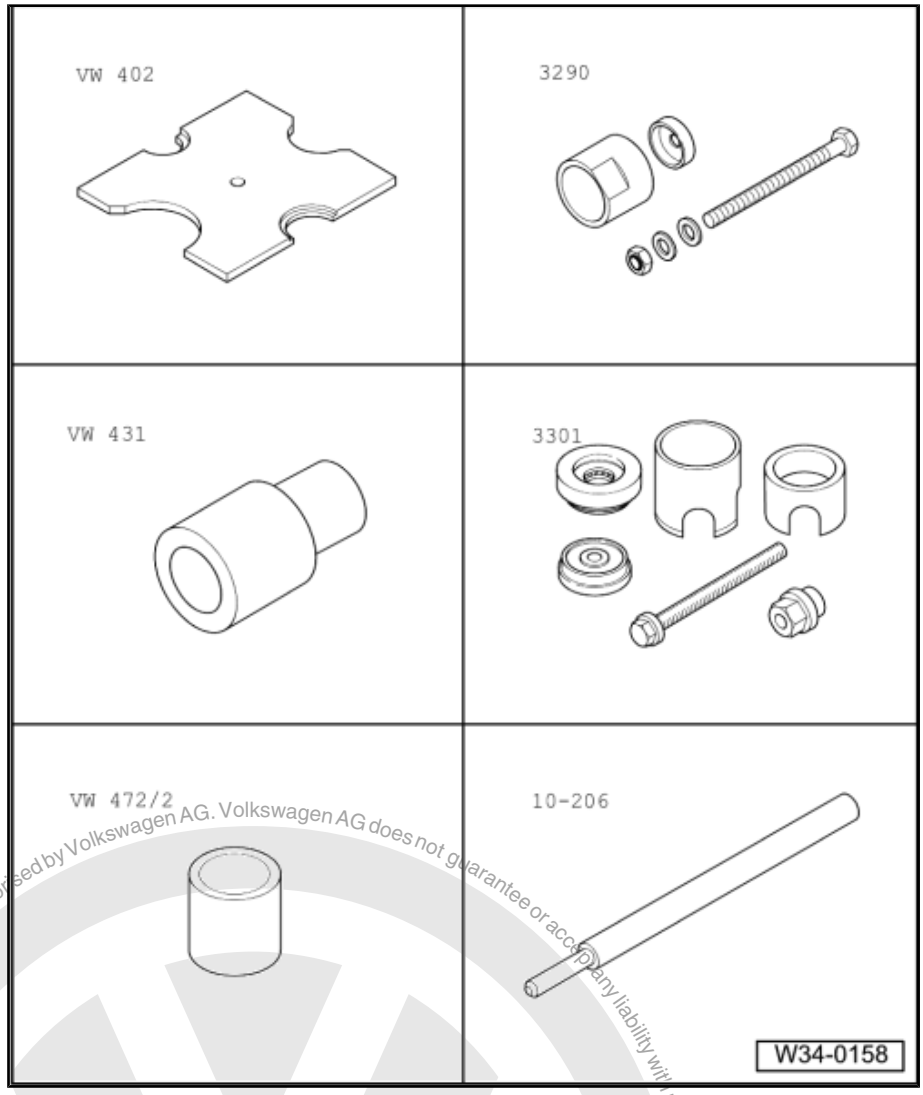


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

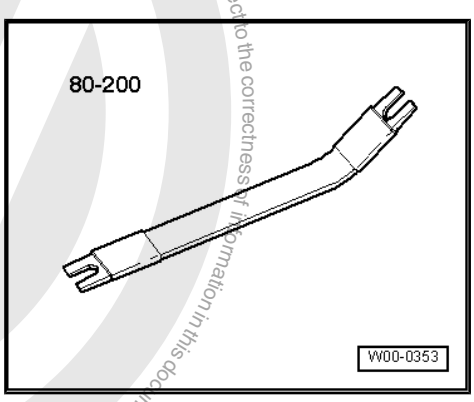
10 Dismantling and assembling selector forks

Special tools and workshop equipment required

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

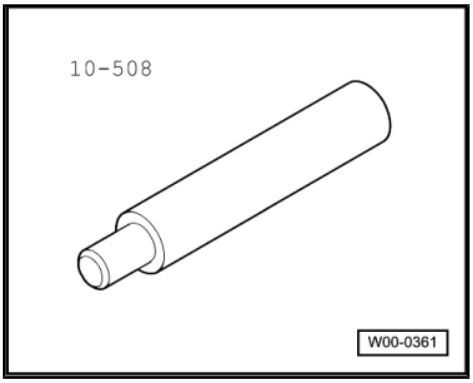


- Removal lever -80–200-

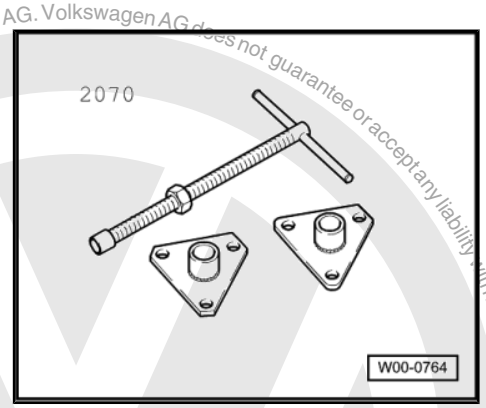


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Drift -10 - 508-



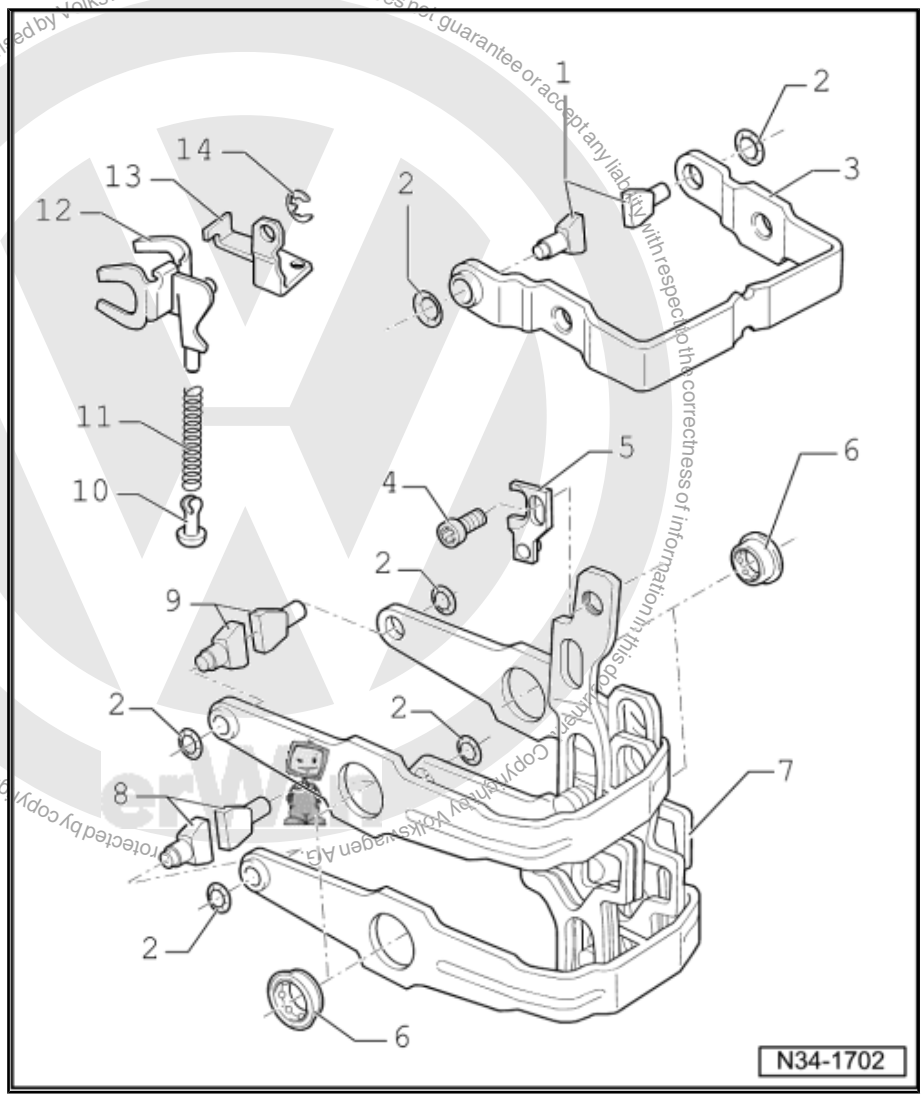
- Clamp -2070-



Note

It is not necessary to dismantle the selector fork group (⇒ Item 7 (page 152)) in order to remove and install selector segments, lock washers and angular contact ball bearings.

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



1 - 5th gear selector segment

- ❑ Identification ⇒ page 153
- ❑ After lock washer is installed, selector segment must still rotate freely.

2 - Lock washer

- ❑ Always renew
- ❑ Removing ⇒ page 153
- ❑ Installing ⇒ page 153

3 - 5th gear selector fork

- ❑ Adjusting ⇒ page 140

4 - Bolt, 25 Nm

5 - 5th gear selector jaw

6 - Angular contact ball bearing

- ❑ Qty. 4
- ❑ Removing ⇒ page 153
- ❑ Press inner race into outer race ⇒ page 154
- ❑ Installing ⇒ page 154

7 - Selector fork group with selector plate

8 - 1st/2nd gear selector segment

- ❑ Identification ⇒ page 153
- ❑ After lock washer is installed, segment must still rotate freely

9 - Selector segment for 3rd and 4th gear

- ❑ Identification ⇒ page 153
- ❑ After lock washer is installed, segment must still rotate freely

10 - Sliding piece

11 - Spring

12 - Selector fork for reverse gear

13 - Support for reverse gear selector fork

14 - Retaining ring

Volkswagen AG - Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any use of this document which is not permitted without the explicit authorization by Volkswagen AG, is prohibited. This applies in particular to copying, processing, translating, storage and processing in electronic systems and programs.

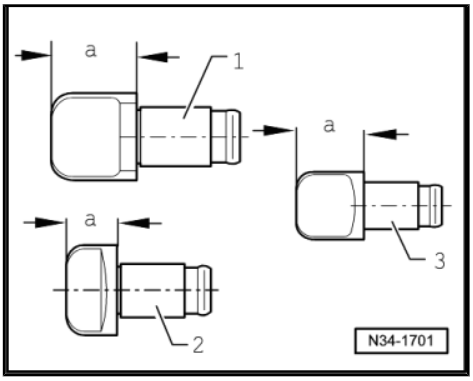
Identifying selector segments

Dimension -a-

1 - 1st and 2nd gear selector segments = 11.4 mm

2 - 3rd and 4th gear selector segments = 7.7 mm

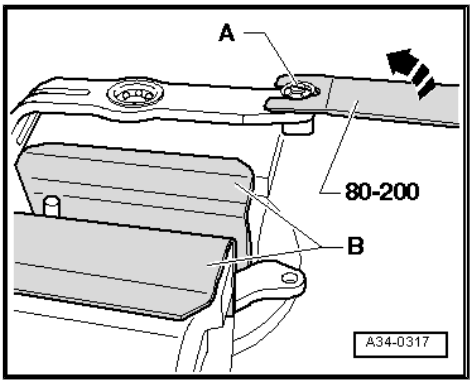
3 - 5th gear selector segments = 12.1 mm



Removing lock washer

– Clamp selector fork in vice with protective jaw covers -B-.

– Lever off lock washer -A- in -direction of arrow-.



Installing lock washer

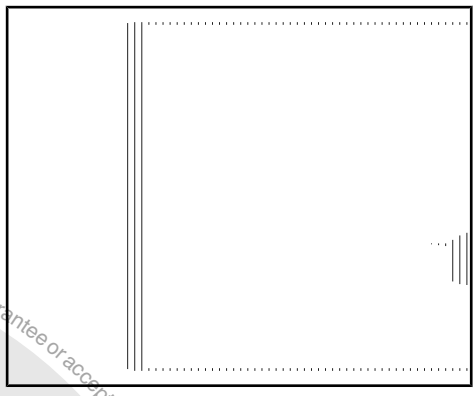
– Press lock washer into groove of selector segment using socket and spinner handle.

Note

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

A - Spinner handle with 10 mm socket

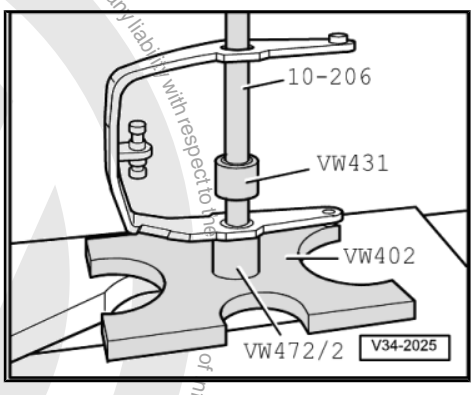
B - Protective jaw covers



Removing angular contact ball bearing

Note

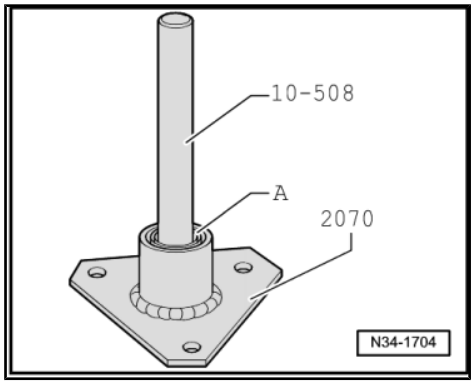
When removing and installing angular contact ball bearing, do not bend selector forks.



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

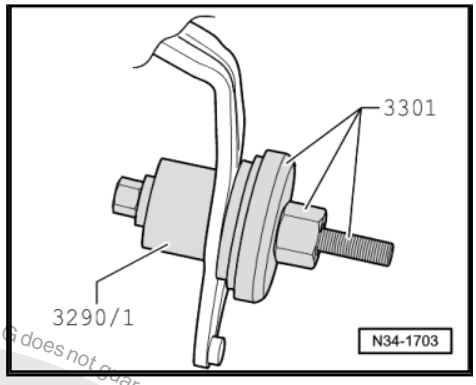
Pressing inner race -A- of angular contact ball bearing into outer race

Inner race must engage in outer race.



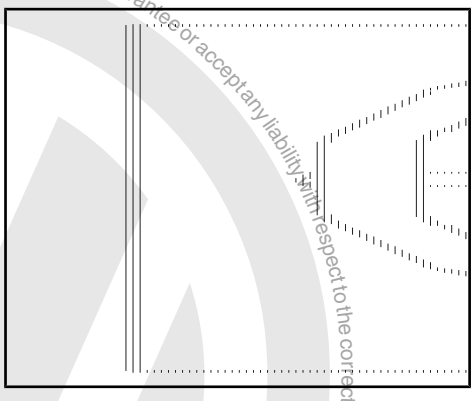
Pulling angular contact ball bearing into selector fork to stop

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



Selector fork with selector segments installed

	Dim. -a- (mm)
1st/2nd gear selector fork	87,2 … 87,4
3rd/4th gear selector fork	93,6 … 93,8



Selector segment assignment ⇒ page 153 .

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

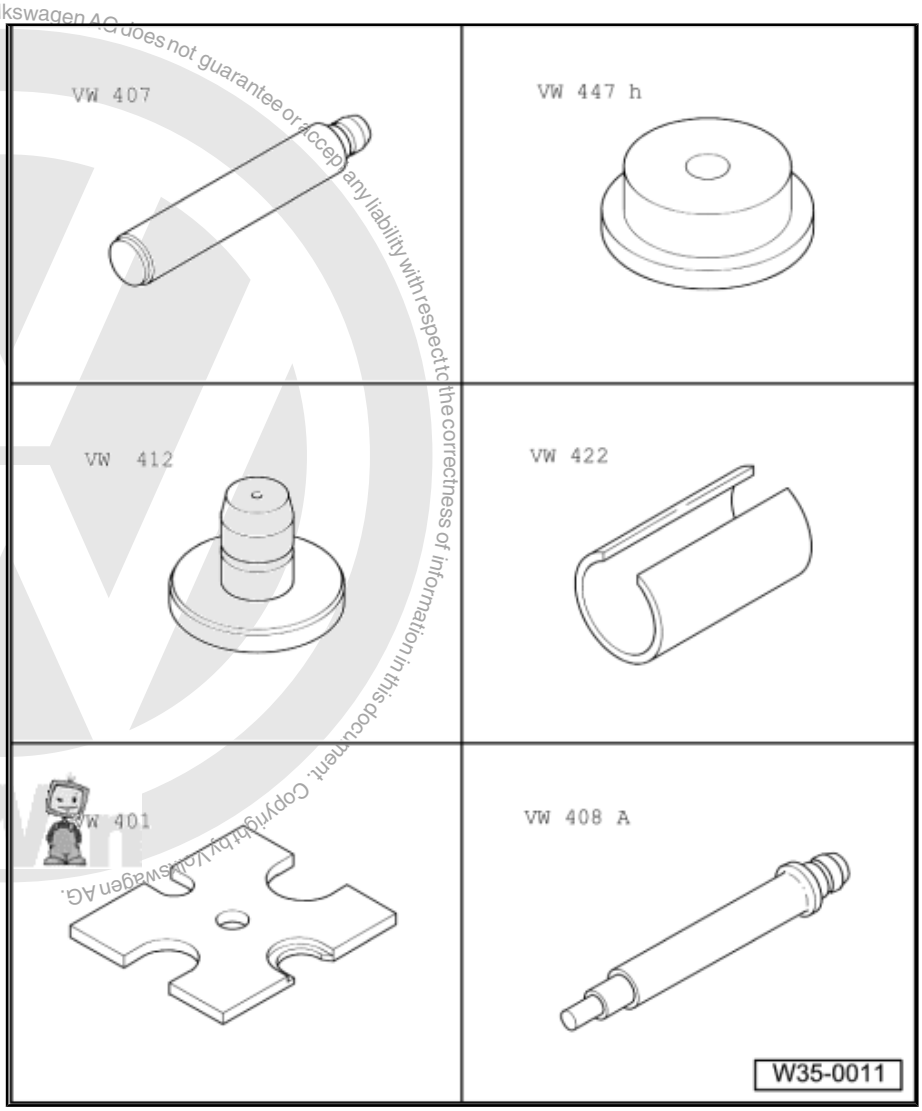
35 – Gears, shafts

1 Input shaft

1.1 Dismantling and assembling input shaft

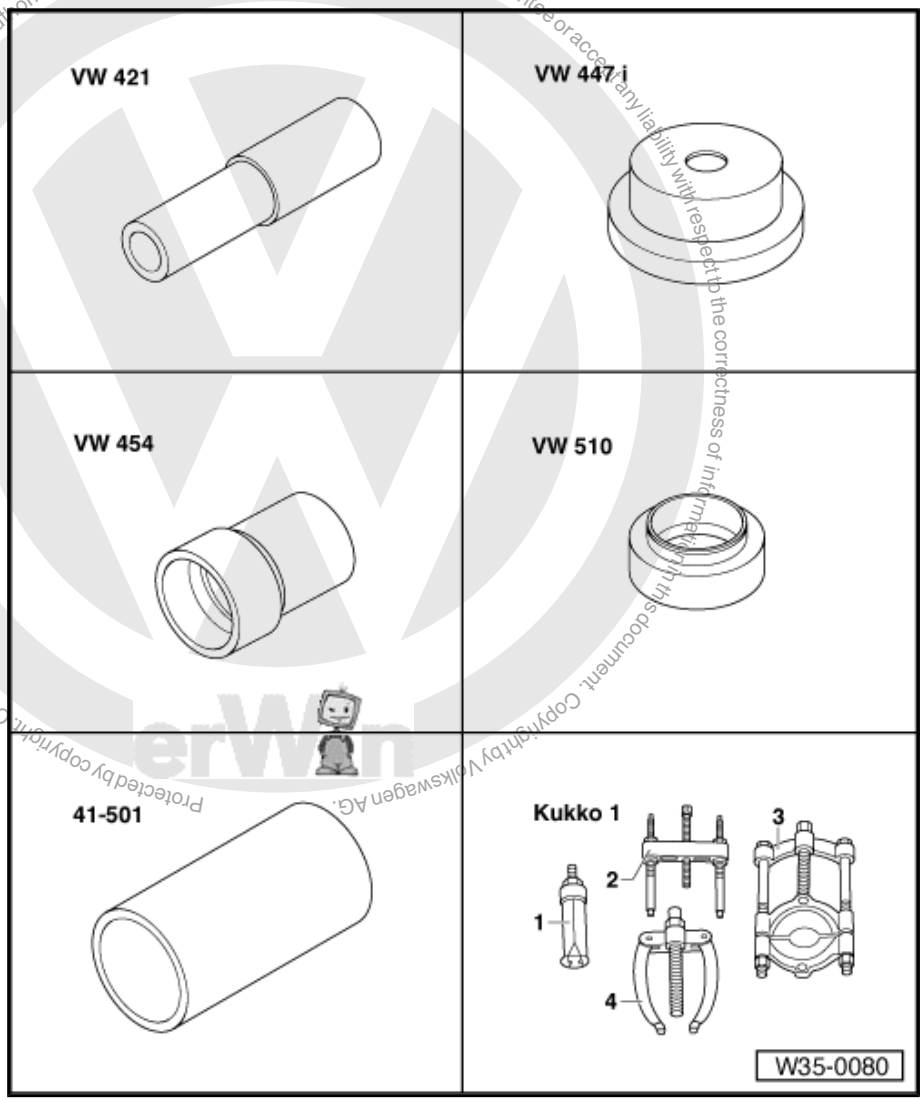
Special tools and workshop equipment required

- Press tool -VW 407-
- Thrust pad -VW 447 H-
- Press tool -VW 412-
- Tube -VW 422-
- Pressure plate -VW 401-
- Pressure plate -VW 402-
- Press tool -VW 408 A-

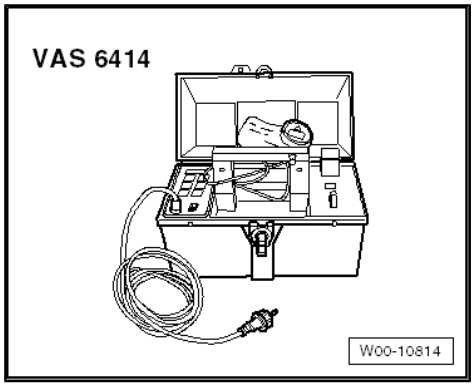


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Tube -VW 421-
- Thrust piece -VW 454-
- Thrust pad -VW 447 i-
- Thrust pad -VW 510-
- Drift sleeve -41-501-
- -3- Splitter -Kukko 17/1-



- Inductive heater -VAS 6414-



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

Note

- *When installing new gear wheels or input shaft, consult technical data ⇒ page 2 and ⇒ Electronic parts catalogue "ETKA" .*
- *If the position of the tapered roller bearings is affected when parts are exchanged, the input shaft must be readjusted. See adjustment overview ⇒ page 195 .*
- *Always renew both tapered roller bearings together as a set.*
- *Heat inner races, gear wheels and synchro-hubs to about 100 °C with the inductive heater -VAS 6414- before installing. Wear protective gloves to do this.*

1 - Clutch housing

2 - Tapered roller bearing outer race

- ❑ Pressing out ⇒ page 158
- ❑ Pressing in ⇒ page 159

3 - Tapered roller bearing inner race

- ❑ Pressing off ⇒ page 159
- ❑ Pressing on ⇒ page 159

4 - Input shaft

- ❑ Adjusting ⇒ page 162

5 - Gear wheel for 3rd gear

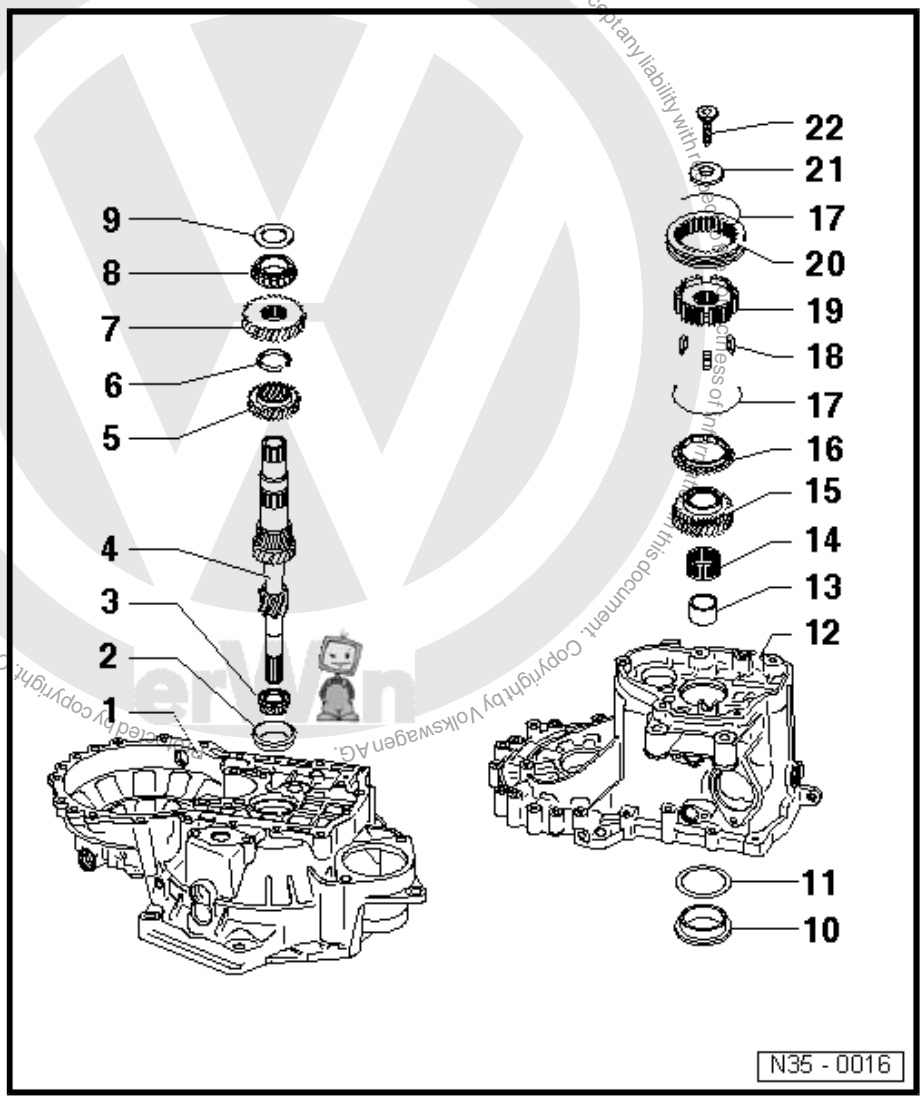
- ❑ Installation position: shoulder faces 4th gear
- ❑ Pressing off ⇒ page 160
- ❑ Pressing on ⇒ page 160

6 - Retaining ring

- ❑ Always renew

7 - Gear wheel for 4th gear

- ❑ Pressing off with tapered roller bearing inner race and sleeve ⇒ page 159
- ❑ Pressing on ⇒ page 160
- ❑ Collar faces 3rd gear



8 - Tapered roller bearing inner race

- ❑ Pressing off with 4th gear wheel and sleeve ⇒ page 159 .
- ❑ Pressing on ⇒ page 160

9 - Thrust washer

10 - Tapered roller bearing outer race

- ❑ Pressing out ⇒ page 161
- ❑ Pressing in ⇒ page 161

Volkswagen AG does not guarantee or accept any liability with respect to this document. Copyright by Volkswagen AG.

11 - Shim

- ❑ Determining thickness ⇒ page 162

12 - Gearbox housing

13 - Sleeve

- ❑ For needle bearing
- ❑ Press off with gear wheel for 4th gear and tapered roller bearing inner race ⇒ page 159
- ❑ Pressing on ⇒ page 161
- ❑ Set thrust washer ⇒ Item 9 (page 157) in place before installing

14 - Needle bearing

- ❑ For 5th gear

15 - Synchromeshed gear for 5th gear

16 - Synchro-ring for 5th gear

- ❑ With cast locking pieces ⇒ page 138
- ❑ Check for wear ⇒ page 138

17 - Spring

- ❑ Installation position ⇒ page 162
- ❑ After gearbox construction date 05 11 1: Bent ends on spring ⇒ page 162

18 - Locking pieces (Qty. 3)

- ❑ Installation position ⇒ page 161

19 - Synchro-hub for 5th gear

- ❑ Pull off individually ⇒ page 120
- ❑ Pull off together with gearbox housing ⇒ page 126 .

20 - Locking collar for 5th gear

- ❑ Pull off with synchro-hub for 5th gear ⇒ Item 19 (page 158) .

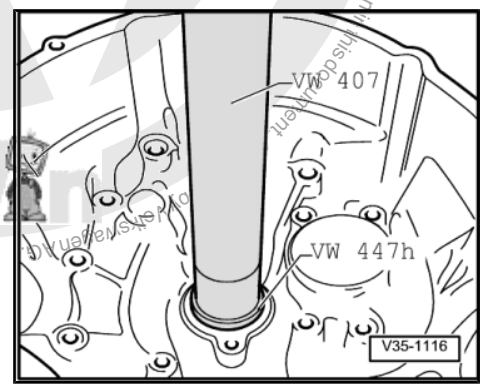
21 - Dished washer

- ❑ Installation position ⇒ page 139

22 - Bolt ⇒ Item 4 (page 117)

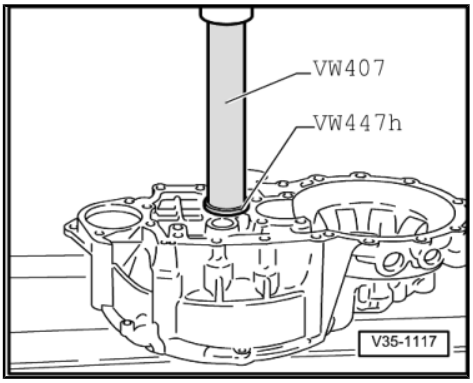
- ❑ Always renew
- ❑ Fitted section of bolt head holds dished spring in position ⇒ page 139

Pressing out tapered roller bearing outer race



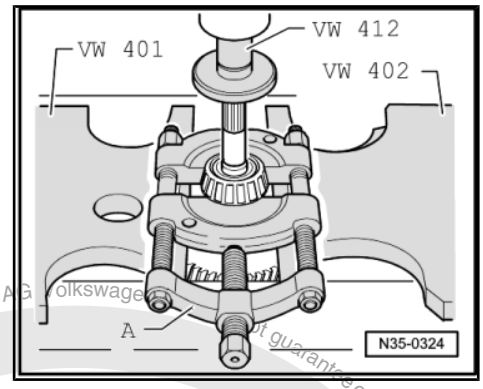
Protected by copyright. Copying for private or commercial purposes, in part or whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.

Pressing in tapered roller bearing outer race

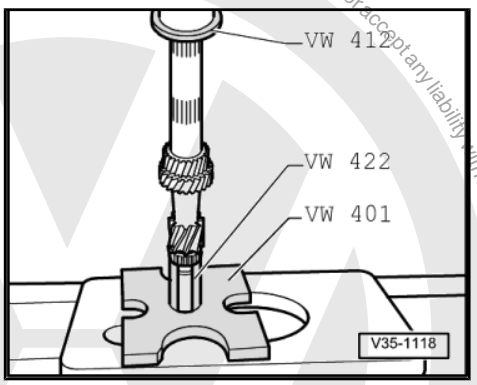


Pressing off tapered roller bearing inner race

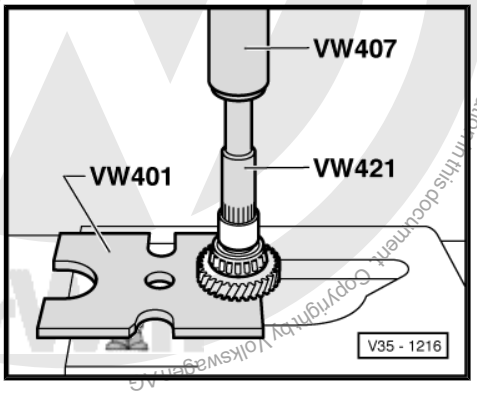
A - Splitter 12 … 75 mm -Kukko 17/1-



Pressing on tapered roller bearing inner race



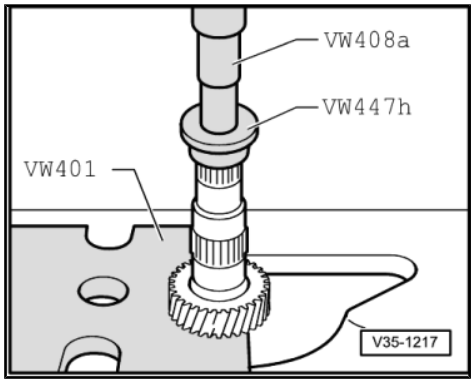
Pressing off gear wheel for 4th gear with tapered roller bearing and sleeve



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

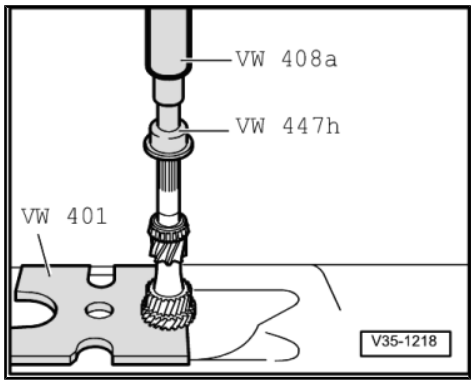
Pressing off gear wheel for 3rd gear

– First remove retaining ring.



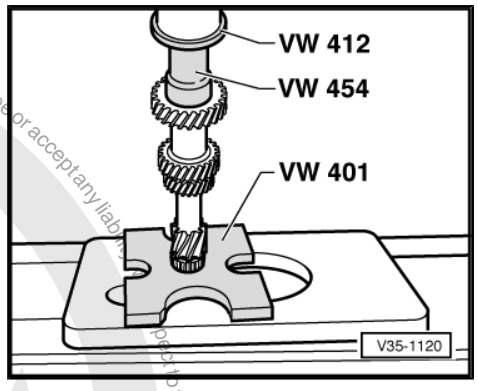
Pressing on gear wheel for 3rd gear

Installation position: Shoulder faces 4th gear.

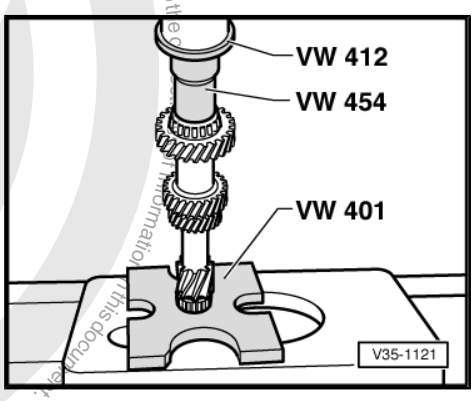


Pressing on gear wheel for 4th gear

Installation position: Shoulder faces 3rd gear

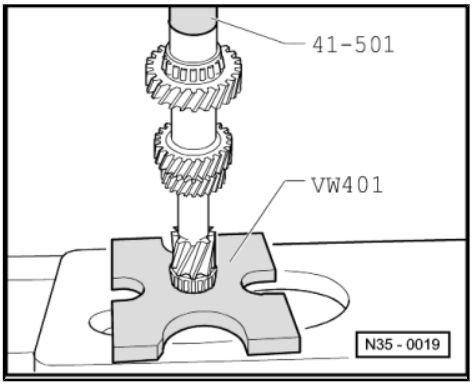


Pressing on tapered roller bearing inner race

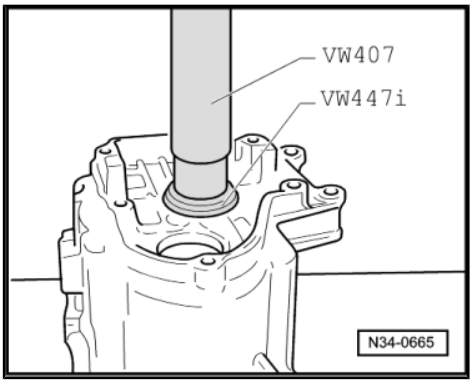


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Pressing on sleeve for 5th gear needle bearing

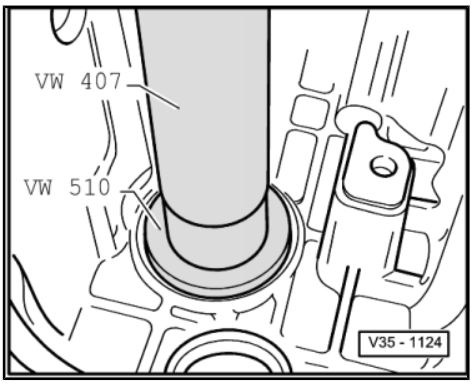


Pressing out tapered roller bearing outer race



Pressing in tapered roller bearing outer race

- Install with shim after adjusting input shaft.



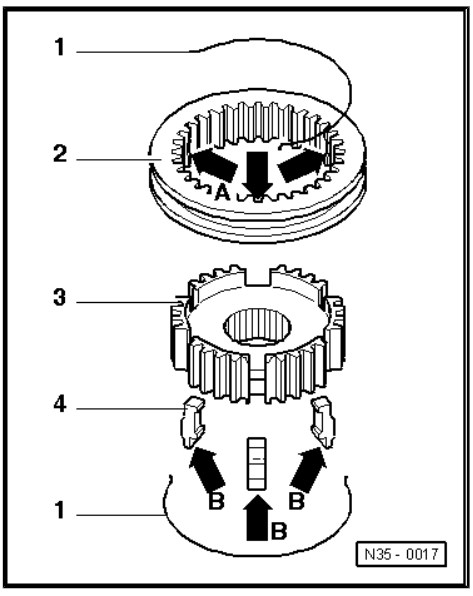
5th gear synchronization

1 - Springs for lock pieces

2 - Locking collar with 3 recesses -arrows A- for the locking pieces -item 4-

3 - Synchro-hub

4 - Locking pieces - installation position: thin extension -arrow B- faces the pointed teeth of the locking collar -2-

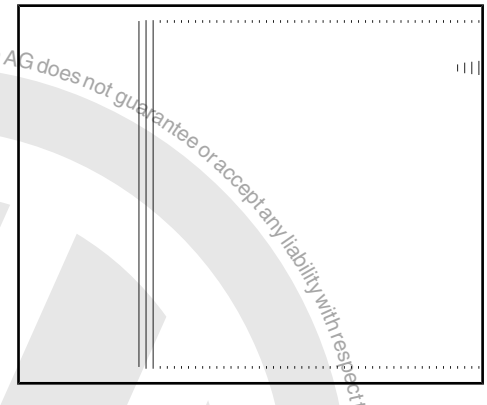


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.
Copyright by Volkswagen AG.

Assembling 5th gear locking collar/synchro-hub

– Slide locking collar over synchro-hub.

Pointed teeth -A- and shoulder -B- of synchro-hub face in same direction. The recesses for the locking pieces in locking collar and synchro-hub must be aligned (⇒ page 161).



– Insert locking pieces (installation position ⇒ page 161).

– Install springs offset by 120°, below shoulder -C-. Springs must seat with angled ends in front of locking pieces -arrows-.

Note

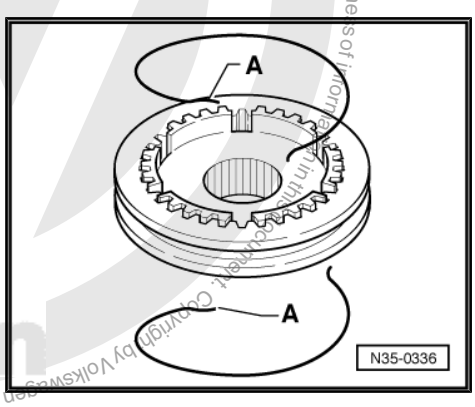
Note installation of springs when locking pieces are hollow ⇒ page 162 .

Installing springs with bent ends -A-

These springs are installed on both sides.

– Spring are installed only in conjunction with locking pieces which are hollow on the inner side.

– Insert locking pieces (installation position ⇒ page 161).



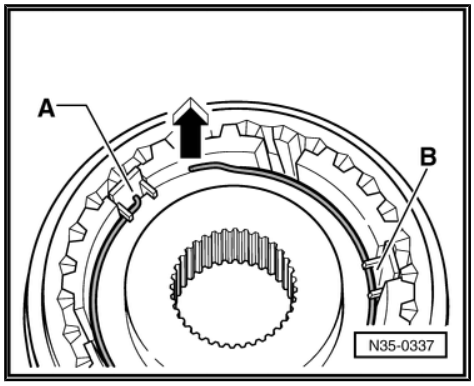
Installation position of springs

– Install springs offset 120°.

– Angled end -A- of spring must locate in hollow locking piece.

It must be located under shoulder -B- of locking piece.

Bent ends always face away from synchro-hub -direction of arrow-.



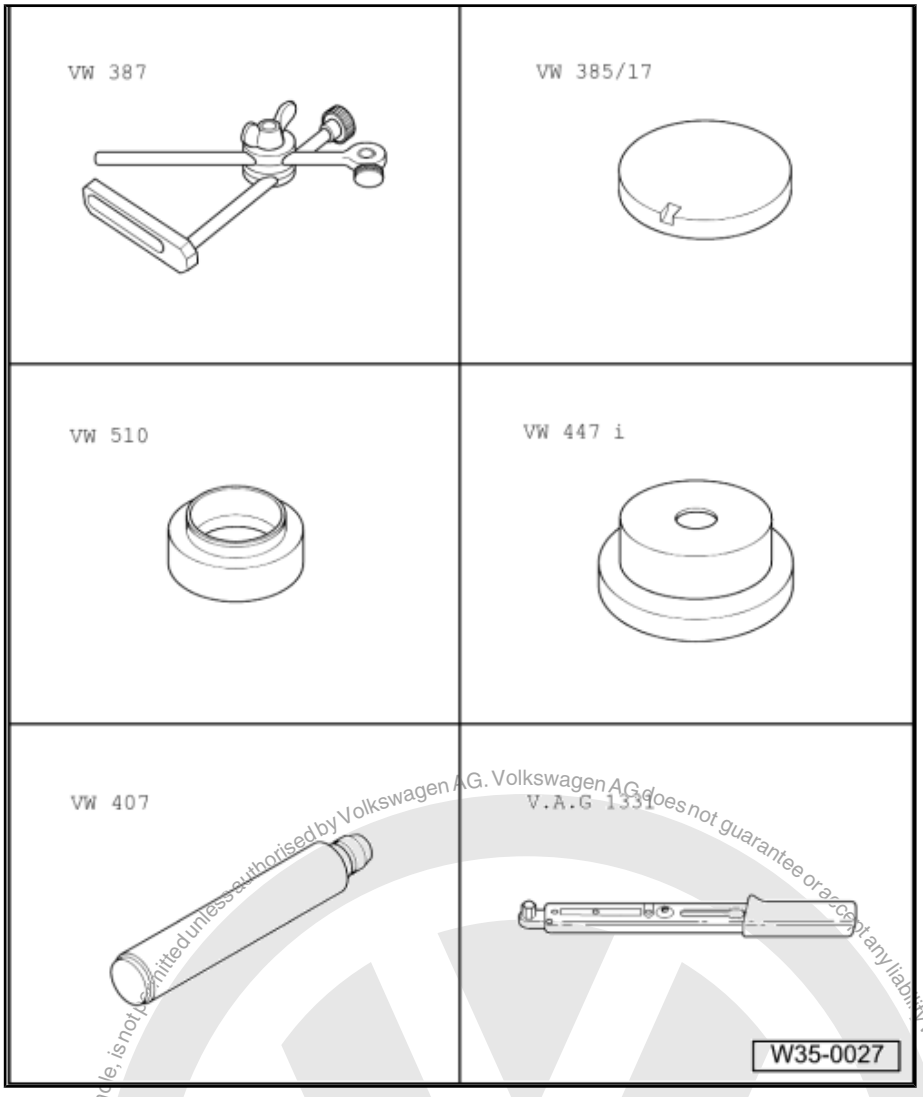
1.2 Adjusting input shaft

(Determining input shaft shim)

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

Special tools and workshop equipment required

- Universal dial gauge bracket -VW 387-
- End dimension plate -VW 385/17-
- Thrust pad -VW 510-
- Thrust pad -VW 447 i-
- Press tool -VW 407-
- Torque wrench -V.A.G 1331-
- Dial gauge



It is necessary to readjust the input shaft only when the following components are renewed:

- Gearbox housing
- Clutch housing
- Input shaft
- Gear wheel for 4th gear

or the

- Tapered roller bearing

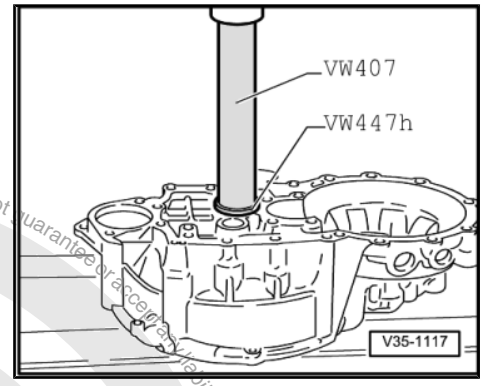
Adjustment overview ⇒ page 195

Requirement:

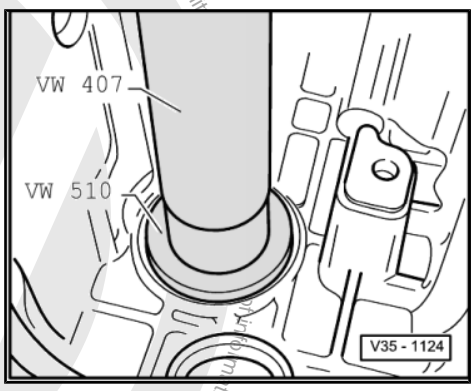
- Sealing surfaces of clutch and gearbox housings must be free of sealant.

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

– Press tapered roller bearing outer race into gearbox housing to stop.



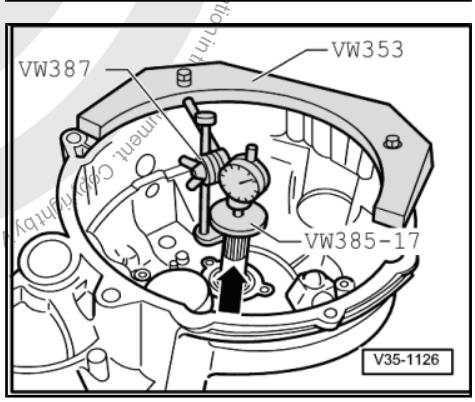
– Press tapered roller bearing outer race without shim into gearbox housing to stop.
– Install input shaft in clutch housing and set gearbox housing in place. Tighten hexagon head bolts to 25 Nm and then turn 90° further.



– Fit measuring appliance and dial gauge in clutch housing.
– Before taking any measurements, rotate input shaft to allow bearings to settle. Set dial gauge to “0” with 1 mm preload.

Note

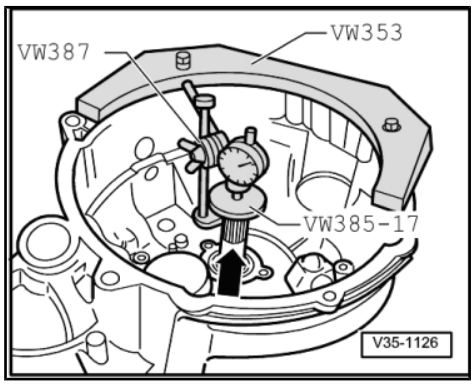
This step must be repeated for each subsequent measurement, or the dial gauge will not return to the starting position.



– Press input shaft in direction of dial gauge -direction of arrow-.
– Read and note play on dial gauge (example: 1.21 mm).

Note

Dial gauge does not return to original position.



1.2.1 Determining thickness of shim

Example:

Bearing play, measured value	Thickness of shim according to table
1.21 mm	1.175 mm

Table of shims

Bearing play	Shim
Measured value (mm)	**Thickness (mm)**
0.671 ... 0.699	0.650
0.700 ... 0.724	0.675
0.725 ... 0.749	0.700
0.750 ... 0.774	0.725
0.775 ... 0.799	0.750
0.800 ... 0.824	0.775
0.825 ... 0.849	0.800
0.850 ... 0.874	0.825
0.875 ... 0.899	0.850
0.900 ... 0.924	0.875
0.925 ... 0.949	0.900
0.950 ... 0.974	0.925
0.975 ... 0.999	0.950
1.000 ... 1.024	0.975
1.025 ... 1.049	1.000
1.050 ... 1.074	1.025
1.075 ... 1.099	1.050
1.100 ... 1.124	1.075
1.125 ... 1.149	1.100
1.150 ... 1.174	1.125
1175 ... 1.199	1.150
1.200 ... 1.224	1.175
1.225 ... 1.249	1.200
1.250 ... 1.274	1.225
1.275 ... 1.229	1.250
1.300 ... 1.324	1.275
1.325 ... 1.349	1.300
1.350 ... 1.374	1.325
1.375 ... 1.399	1.350
1.400 ... 1.424	1.375
1.425 ... 1.449	1.400
1.450 ... 1.474	1.425
1.475 ... 1.499	1.450
1.500 ... 1.524	1.475
1.525 ... 1.549	1.500
1.550 ... 1.574	1.525
1.575 ... 1.599	1.550
1.600 ... 1.624	1.575
1.625 ... 1.649	1.600
1.650 ... 1.674	1.625
1.675 ... 1.699	1.650
1.700 ... 1.724	1.675

Note

Allocate shims according to ⇒ Electronic parts catalogue "ETKA".

– Remove input shaft and press outer race of tapered roller bearing out of gearbox housing using thrust plate -VW 447 i- .

– Insert shims of determined thickness, thickest shim first.

If the size of shim required is larger than those listed in the table, insert two shims totalling the correct figure.

– Press outer race of tapered roller bearing together with the shim (1.175 mm in example) into gearbox housing using thrust pad -VW 510- .

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

– Set gearbox housing in place and tighten hexagon head bolts to 25 Nm and then turn 90° further.

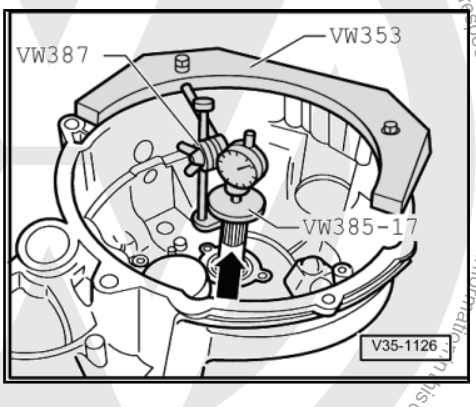
1.2.2 Carrying out check measurement

– Set up measuring appliance and dial gauge.

– Rotate input shaft so that tapered roller bearings settle.

– Press input shaft in -direction of arrow-.

– Bearing play should be min. 0.01 … max. 0.09 mm.



Note

If the bearing play cannot be measured, but input shaft play is perceptible and the input shaft turns freely, the adjustment is acceptable.

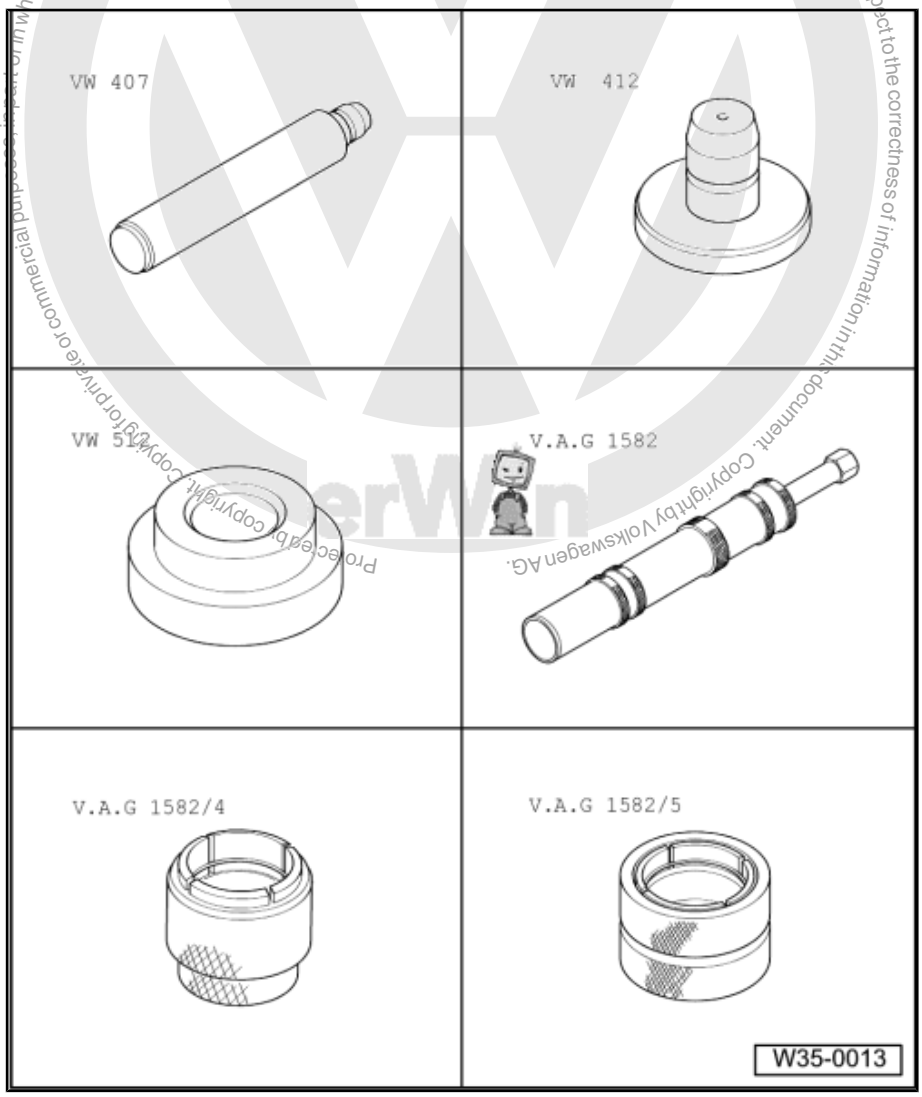
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

2 Output shaft

2.1 Dismantling and assembling output shaft

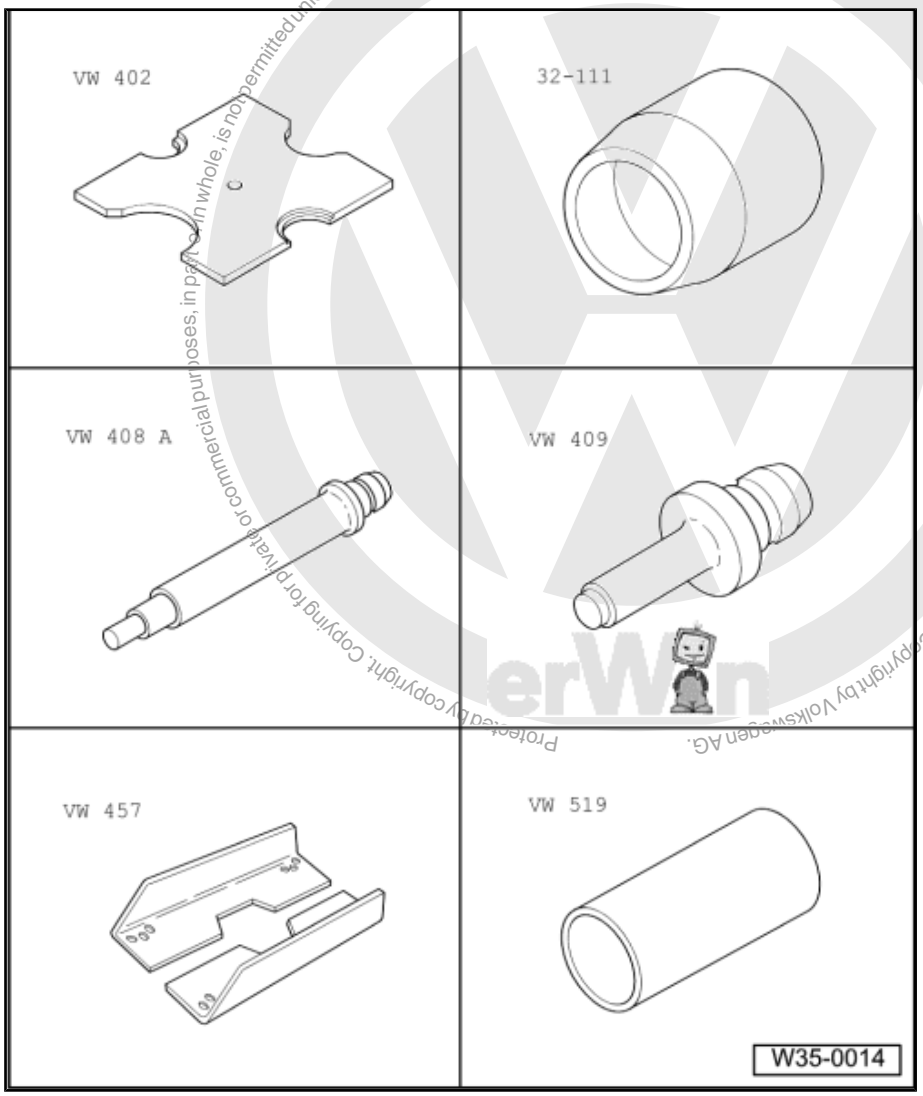
Special tools and workshop equipment required

- Press tool -VW 407-
- Press tool -VW 412-
- Thrust pad -VW 512-
- Tapered roller bearing puller -V.A.G 1582-
- Adapter -V.A.G 1582/4-
- Adapter -V.A.G 1582/5-



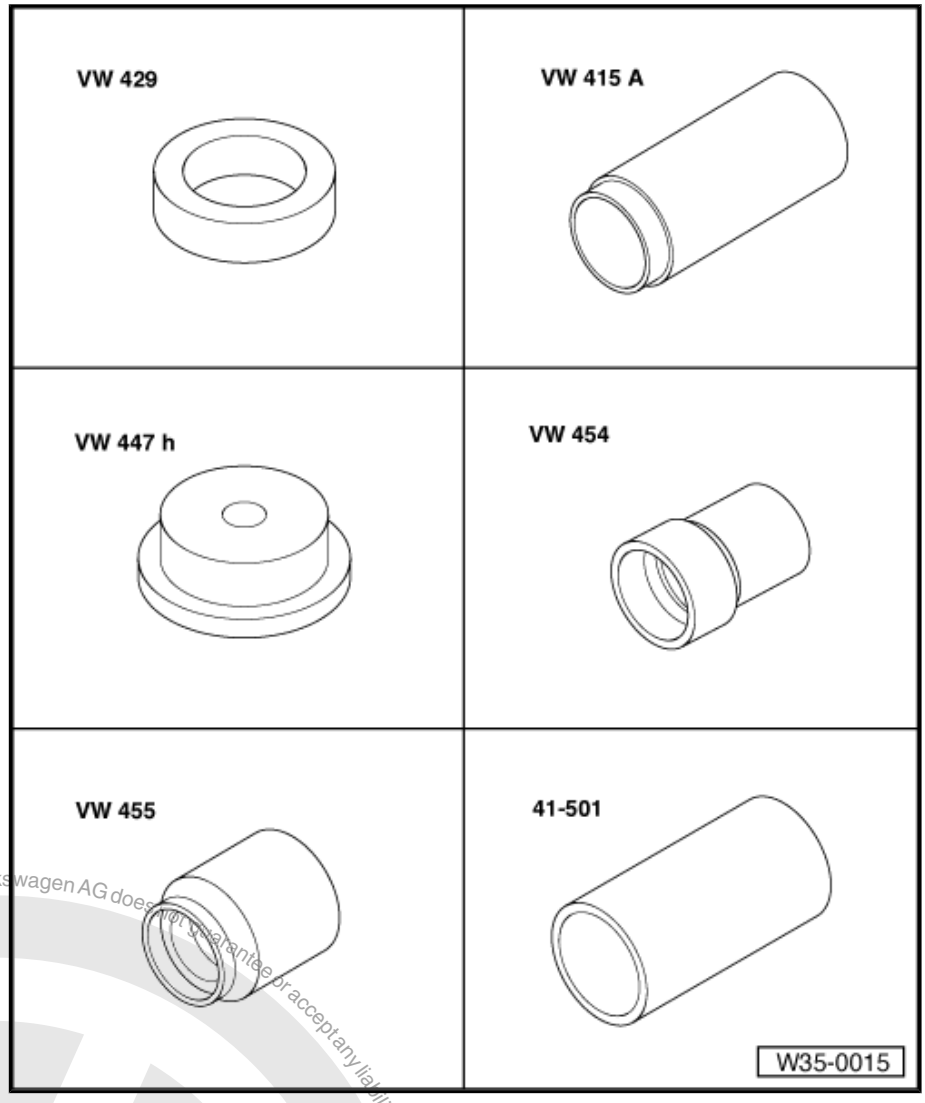
Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen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

- Pressure plate -VW 402-
- Thrust piece -32 - 111-
- Press tool -VW 408 A-
- Press tool -VW 409-
- Support rails -VW 457-
- Tube -VW 519-

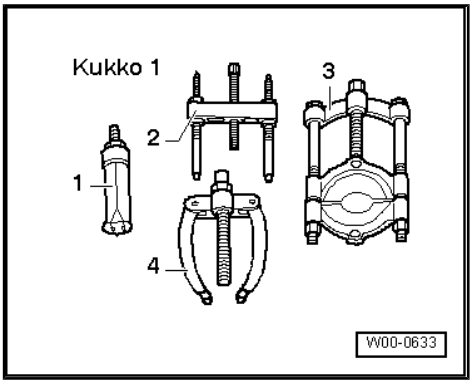


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Thrust ring -VW 429-
- Tube -VW 415 A-
- Thrust pad -VW 447 H-
- Thrust piece -VW 454-
- Installing sleeve -VW 455-
- Drift sleeve -41-501-



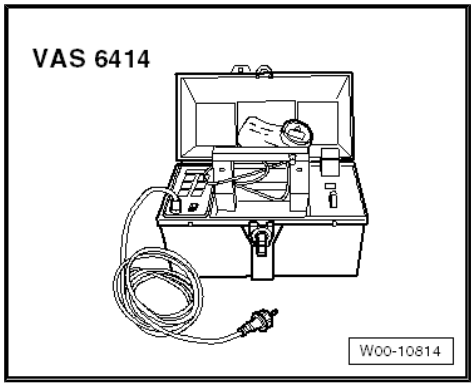
- -1- Internal puller -Kukko 21/6-



- -3- Splitter -Kukko 17/2-
- -4- Counter support -Kukko 22/2-

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

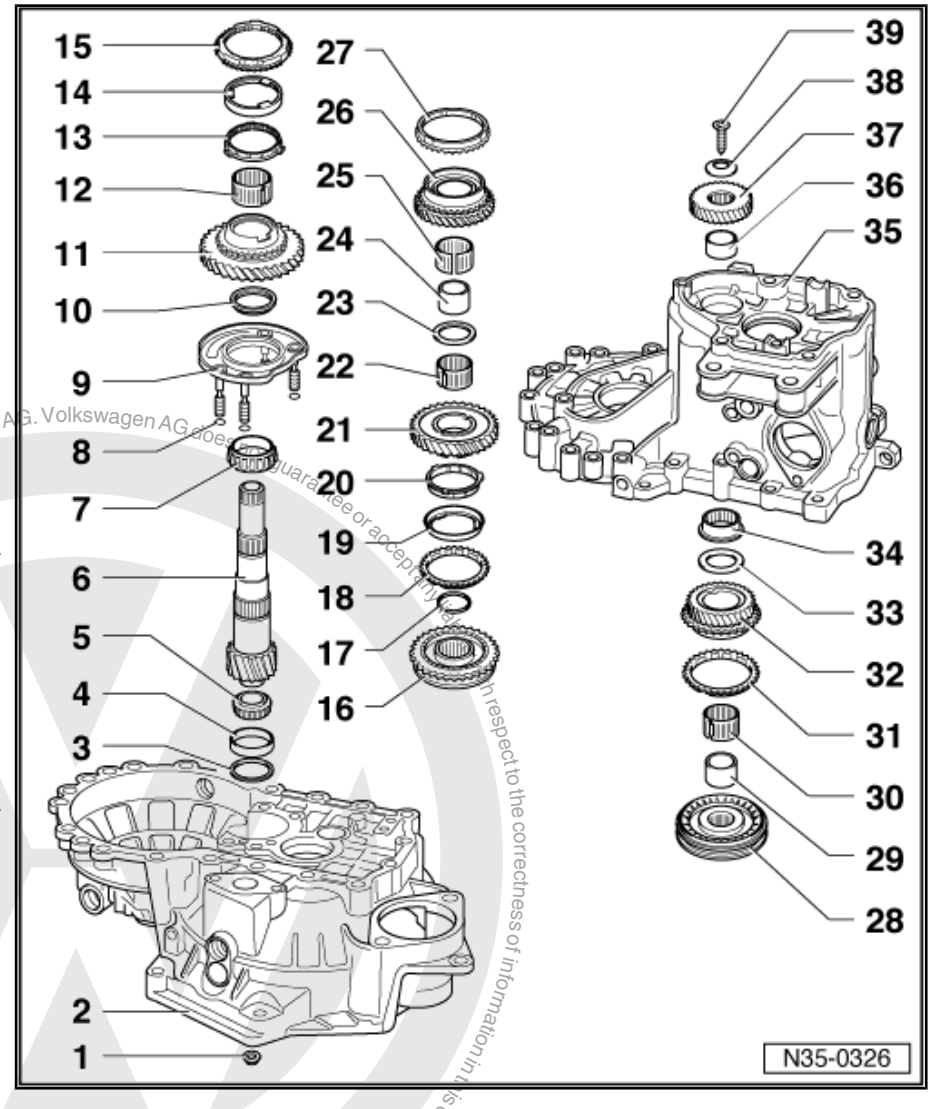
- Inductive heater -VAS 6414-



Note

- *The output shaft is dismantled as follows: position separating device under 2nd gear synchromeshed gear ⇒ Item 21 (page 172) and press off as described in ⇒ page 174 . Remove retaining ring ⇒ Item 17 (page 172) . Then press off locking collar with synchro-hub for 1st and 2nd gear as described in ⇒ page 174 .*
- *When installing new gears or new input shaft, refer to ⇒ Electronic parts catalogue "ETKA" and technical data ⇒ page 2 .*
- *Always renew both tapered roller bearings together as a set.*
- *Heat inner races, gear wheels and synchro-hubs to about 100 °C with the inductive heater -VAS 6414- before installing. Wear protective gloves to do this.*

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



1 - Hexagon nut, 25 Nm and then turn 90° further

- ❑ 4 nuts for bearing support
- ❑ Always renew

2 - Clutch housing

3 - Shim

- ❑ For output shaft
- ❑ Adjustment overview ⇒ page 195

4 - Small tapered roller bearing outer race

- ❑ Removing ⇒ page 173
- ❑ Pressing in ⇒ page 173

5 - Tapered roller bearing inner race small

- ❑ Pulling off ⇒ page 174
- ❑ Pressing on ⇒ page 174

6 - Output shaft

- ❑ Adjusting ⇒ page 180

7 - Tapered roller bearing inner race large

- ❑ Pulling off ⇒ page 175
- ❑ Pressing on ⇒ page 175

8 - Seal

- ❑ Place sealing rings (Qty. 4) on bearing support bolts
- ❑ Always renew

9 - Bearing support

- ❑ With large tapered roller bearing outer race and bolts
- ❑ Change outer race only together with large tapered roller bearing and bearing support

10 - Thrust washer

- ❑ Shoulder of thrust washer faces tapered roller bearing

11 - Synchromeshed gear for 1st gear

12 - Needle bearing

- ❑ For 1st gear

13 - Synchro-ring

- ❑ (Inner ring for 1st gear)
- ❑ Installation position ⇒ page 175
- ❑ Check for wear ⇒ page 175
- ❑ Check lugs for scoring

14 - Outer ring for 1st gear

- ❑ Installation position ⇒ page 175
- ❑ Check for wear ⇒ page 176
- ❑ Renew if scored

Protected by copyright. Copyright by Volkswagen AG.
Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.
Protected by copyright. Copyright by Volkswagen AG.

15 - Synchro-ring for 1st gear

- ❑ Installation position ⇒ page 175
- ❑ Check for wear ⇒ page 176

16 - Locking collar with synchro-hub for 1st and 2nd gears

- ❑ Pull off together with bearing support ⇒ page 174 after removing retaining ring ⇒ Item 17 (page 172)
- ❑ Dismantling ⇒ page 176
- ❑ Assembling locking collar and synchro-hub ⇒ page 176 , ⇒ page 176 and ⇒ page 177
- ❑ Installation position ⇒ page 177
- ❑ Pressing on ⇒ page 177

17 - Retaining ring

18 - Synchro-ring for 2nd gear

- ❑ Check for wear ⇒ page 176
- ❑ Assemble so that notches engage in locking pieces of locking collar ⇒ Item 16 (page 172)

19 - Outer ring for 2nd gear

- ❑ Insert in synchro-ring ⇒ Item 18 (page 172) .
- ❑ Installation position ⇒ page 177
- ❑ Renew if scored

20 - Synchro-ring

- ❑ (Inner ring for 2nd gear)
- ❑ Check for wear ⇒ page 176
- ❑ Check lugs for scoring
- ❑ Installation position ⇒ page 178

21 - Synchromeshed gear for 2nd gear

- ❑ Installation position ⇒ page 178

22 - Needle bearing

- ❑ For 2nd gear

23 - Thrust washer

24 - Sleeve for 3rd gear needle bearing.

- ❑ Pressing off with synchromeshed gear for 2nd gear ⇒ page 174
- ❑ Pressing on ⇒ page 178

25 - Needle bearing

- ❑ For 3rd gear

26 - Synchromeshed gear for 3rd gear

27 - Synchro-ring for 3rd gear

- ❑ Check for wear ⇒ page 178

28 - Locking collar with synchro-hub for 3rd and 4th gears

- ❑ Press off with 2nd gear synchromeshed gear ⇒ Item 21 (page 172) and 3rd gear ⇒ Item 26 (page 172) ⇒ page 174 .
- ❑ Dismantling ⇒ page 179
- ❑ Assembling locking collar and synchro-hub ⇒ page 179 , ⇒ page 179 and ⇒ page 179
- ❑ Installation position, locking collar and synchro-hub ⇒ page 179
- ❑ Pressing on ⇒ page 180

29 - Sleeve

- ❑ For 4th gear needle bearing
- ❑ Press off with 3rd and 4th gear ⇒ Item 28 (page 172) locking collar and synchro-hub ⇒ page 174 .
- ❑ Pressing on ⇒ page 180

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

30 - Needle bearing

- ❑ For 4th gear

31 - Synchro-ring for 4th gear

- ❑ Check for wear ⇒ page 178

32 - Synchromeshed gear for 4th gear

33 - Thrust washer

34 - Needle bearing

- ❑ For output shaft
- ❑ Removing and installing ⇒ Item 2 (page 143)

35 - Gearbox housing

36 - Sleeve

- ❑ For output shaft needle bearing
- ❑ Pressing off ⇒ page 174
- ❑ Pressing on ⇒ page 180

37 - Gear wheel for 5th gear

- ❑ Pull off individually ⇒ page 120
- ❑ Pull off together with gearbox housing ⇒ page 126 .

38 - Dished washer

- ❑ Installation position ⇒ page 139

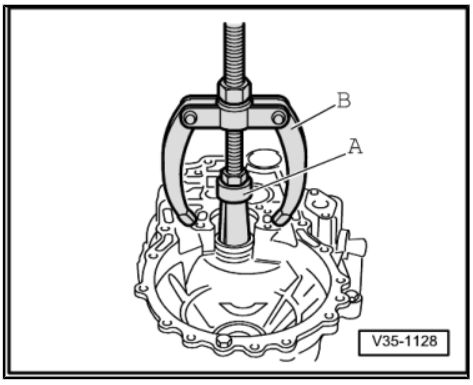
39 - Bolt ⇒ Item 4 (page 117)

- ❑ Always renew
- ❑ Removing and installing ⇒ page 126

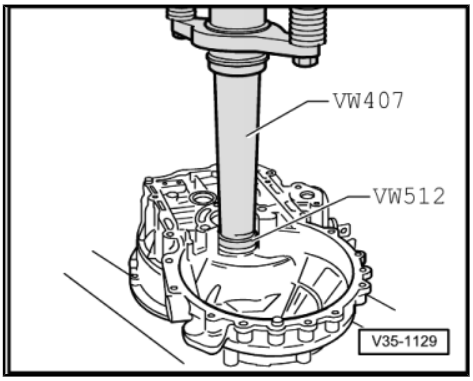
Pulling out small tapered roller bearing outer race

A - Internal puller, 37 … 46 mm , e.g. -Kukko 21/6-

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



Pressing in small tapered roller bearing outer race

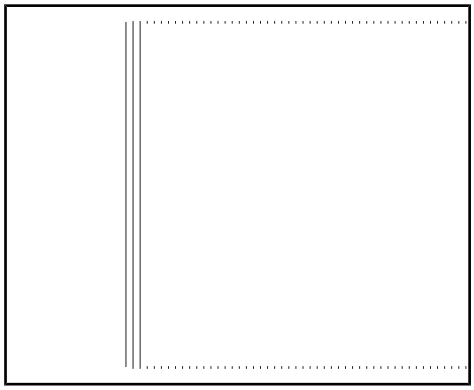


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

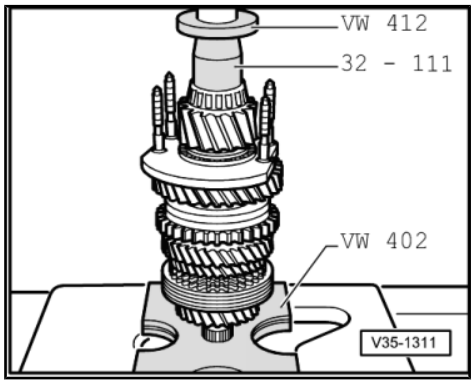
Pulling off small tapered roller bearing inner race

A - Vice with protective jaw covers

– Fit adapter and tighten behind bearing rollers, then turn bearing and retighten gripping device.



Pressing on small tapered roller bearing inner race



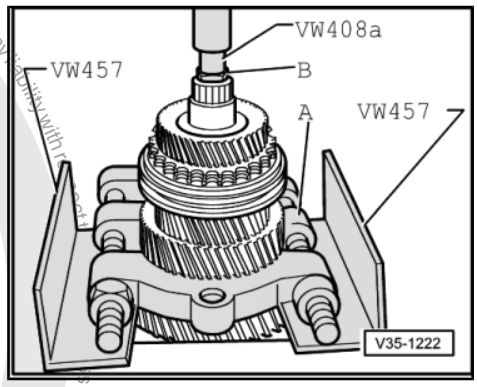
Pressing off 3rd and 4th gear synchro-hub and locking collar, 2nd, 3rd and 4th gear synchromeshed gears with sleeve for gearbox housing needle bearing

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

B - Hexagon bolt M10 x 20, 17 mm AF

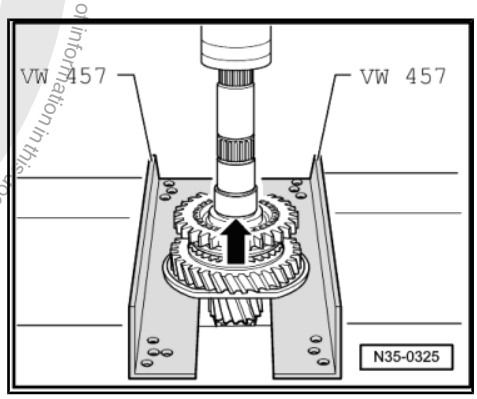
Note

Support splitter so that the 1st and 2nd gear locking collar is not pulled off at the same time.



Pressing off locking collar with synchro-hub and bearing support

– First remove retaining ring -arrow-.

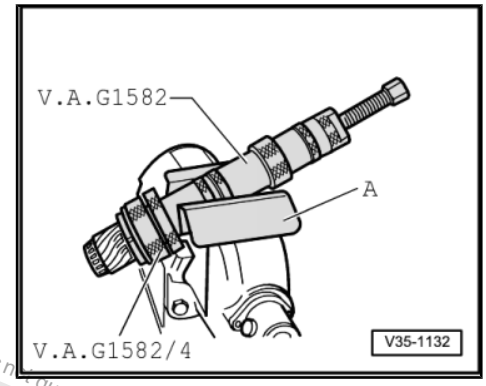


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Pulling of large tapered roller bearing inner race

-A- Vice jaw protectors

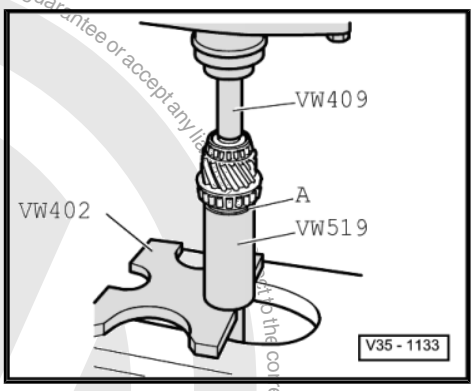
– Before fitting puller, insert a M10 × 20 hexagon bolt in the output shaft drilling.



Pressing on large tapered roller bearing inner race

-A- Thrust washer

– Fit thrust washer before pressing on inner race. Shoulder faces inner race.



Installation position of outer ring, inner ring and synchro-ring for 1st gear

– Place inner ring -A- on synchromeshed gear for 1st gear.

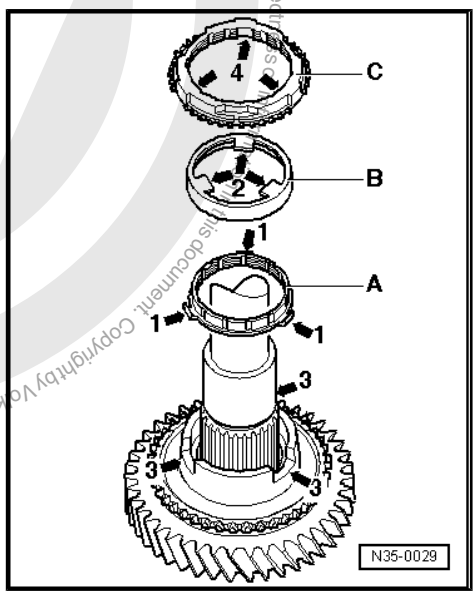
Angled lugs -arrows 1- face outer ring -B-.

– Fit outer ring -B-.

Lugs -arrows 2- engage in notches -arrows 3- of synchromeshed gear.

– Fit synchro-ring -C-.

Notches -arrows 4- engage in lugs -arrows 1- of inner ring -A-.



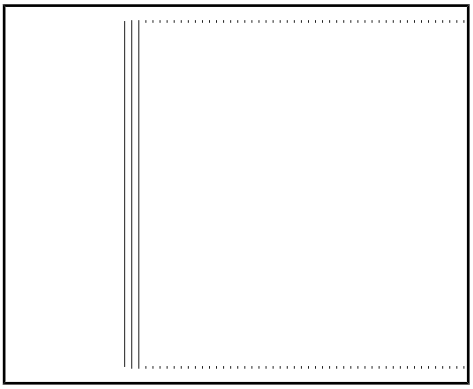
Note

If components are not to be renewed, ensure that they are matched with their original gears.

Checking 1st and 2nd gear inner ring for wear

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

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

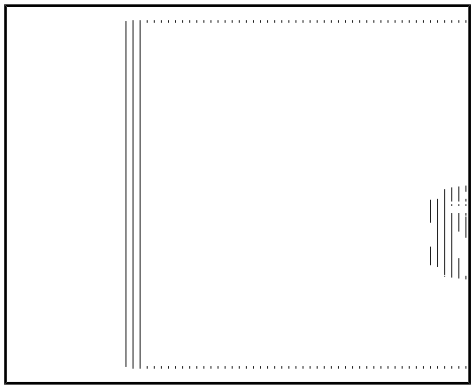


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

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

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

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



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

1 - Spring

Allocate springs according to ⇒ Electronic parts catalogue “ETKA” .

Installation with hollow locking pieces ⇒ page 176 .

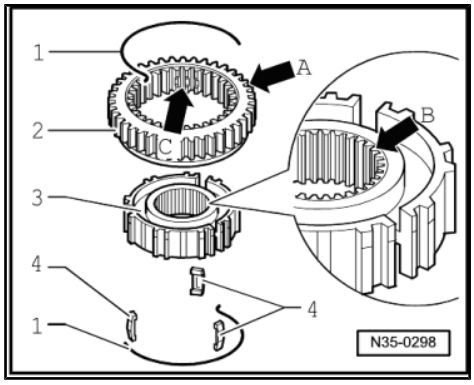
Installation with solid locking pieces ⇒ page 177 .

2 - Locking collar

3 - Synchro-hub

4 - Locking piece

Allocate locking pieces according to ⇒ Electronic parts catalogue “ETKA” .



Collar is equally wide on both sides of synchro-hub.

The collar has a chamfer on one side -arrow B-.

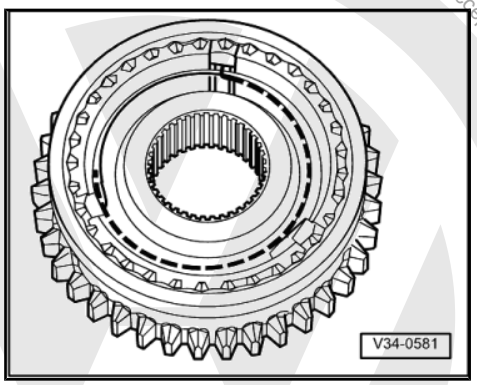
Chamfer on collar of synchro-hub and outer teeth of locking collar -arrow A- face in same direction after assembly.

Notches -arrow C- in synchro-hub and sliding collar for locking pieces must align.

Assembly of 1st and 2nd gear locking collar and synchro-hub with hollow locking pieces

- Locking collar has been pushed over synchro-hub.

– Insert locking pieces and install springs offset 120°. Angled end of spring must locate in hollow locking piece.

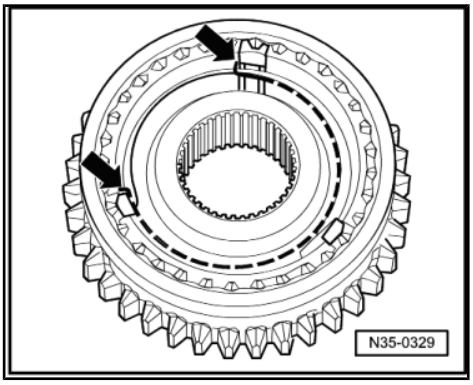


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Assembly of 1st and 2nd gear locking collar and synchro-hub with solid locking pieces

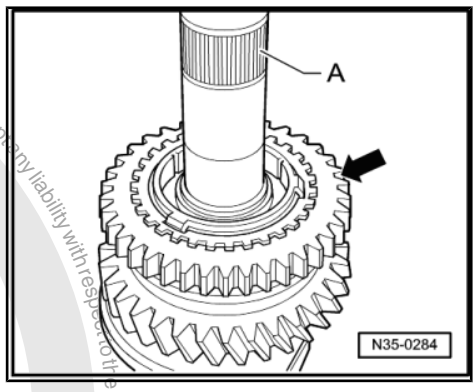
- Locking collar has been pushed over synchro-hub.

– Insert locking pieces and install springs offset 120°. Springs must seat with angled ends in front of locking pieces -arrows-.



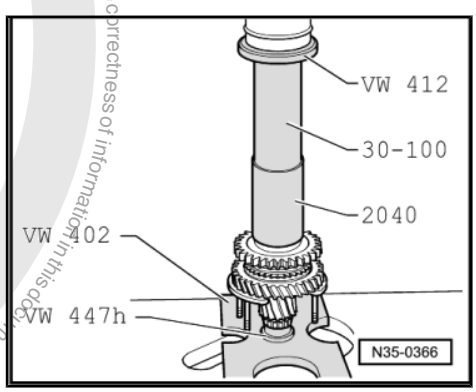
Installation position of locking collar with synchro-hub for 1st and 2nd gears

Teeth of locking collar -arrow- face splines for 3rd and 4th gear synchro-hub -A-.



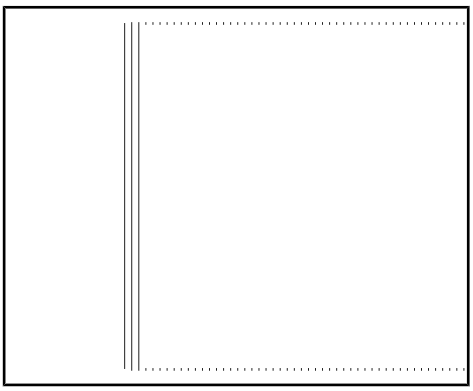
Pressing on locking collar and synchro-hub for 1st and 2nd gears

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



Installation position of 2nd gear outer ring

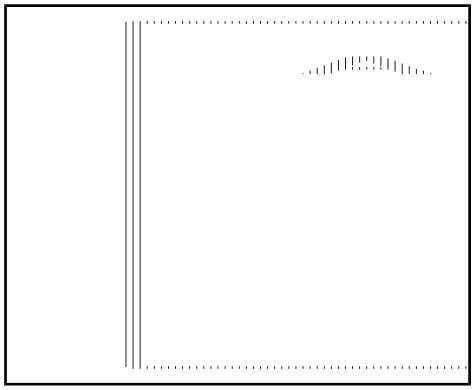
Lugs -arrows- face 1st gear -A-.



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

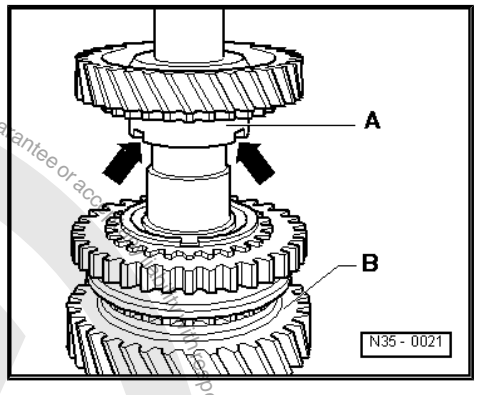
Installation position of synchro-ring (2nd gear inner ring) -A-

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

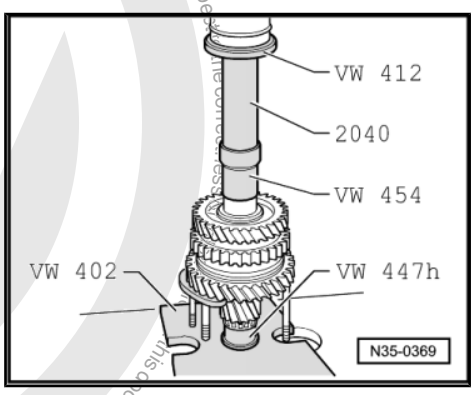


Installation position of synchromeshed gear for 2nd gear

Higher shoulder -A- faces 1st gear -B-. Notches in shoulder -arrows- engage in lugs of outer ring ⇒ page 177 .



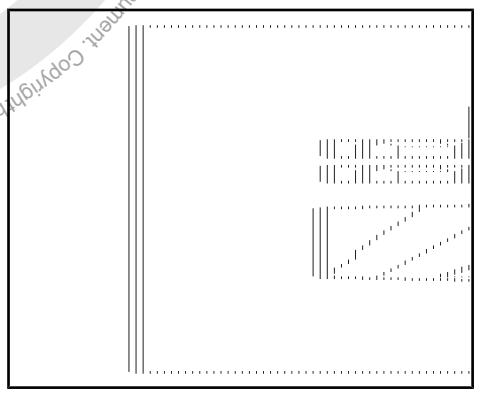
Pressing on sleeve for 3rd gear needle bearing



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

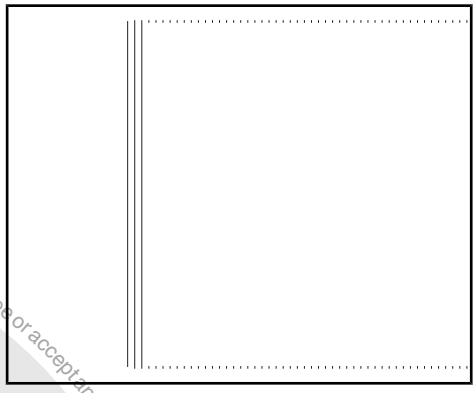
– Press synchro-ring onto cone of synchromeshed gear and measure gap -a- using feeler gauge.

Gap -a-	Installation (new) dimension	Wear limit
3rd gear 4th gear	1.0...1.7 mm 1.0...1.7 mm	0.5 mm



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

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



1 - Spring

Allocate springs according to ⇒ Electronic parts catalogue “ETKA” .

Installation with hollow locking pieces ⇒ page 179 .

Installation with solid locking pieces ⇒ page 179 .

2 - Locking piece

Allocate locking pieces according to ⇒ Electronic parts catalogue “ETKA” .

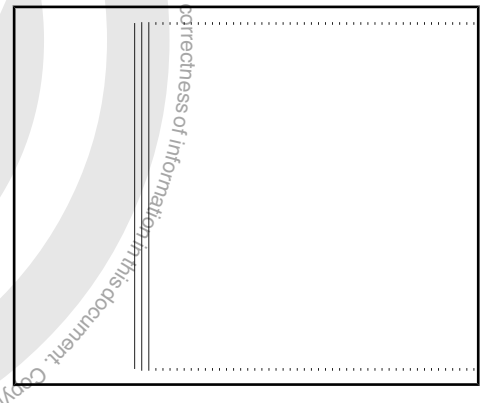
3 - Locking collar

4 - Synchro-hub

– Slide locking collar over synchro-hub.

Notches for locking pieces in synchro-hub and locking collar must align.

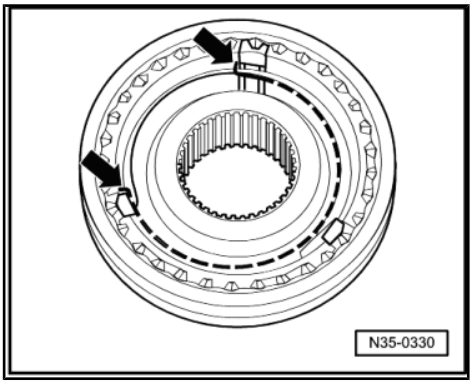
Assembly of 3rd and 4th gear locking collar and synchro-hub with hollow locking pieces



Locking collar has been pushed over synchro-hub.

– Insert locking pieces and install springs offset 120°. Angled end of spring must locate in hollow locking piece.

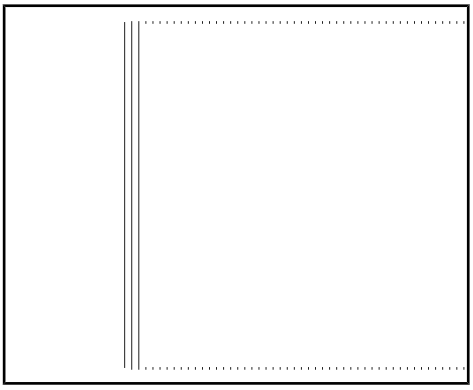
Assembly of 3rd and 4th gear locking collar and synchro-hub with solid locking pieces



- Locking collar has been pushed over synchro-hub.

– Insert locking pieces and install springs offset 120°. Springs must seat with angled ends in front of locking pieces -arrows-.

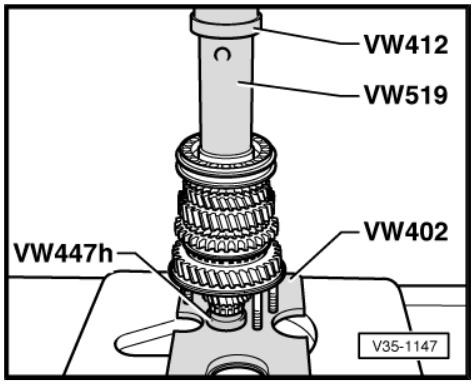
Installation position of locking collar with synchro-hub for 3rd and 4th gears



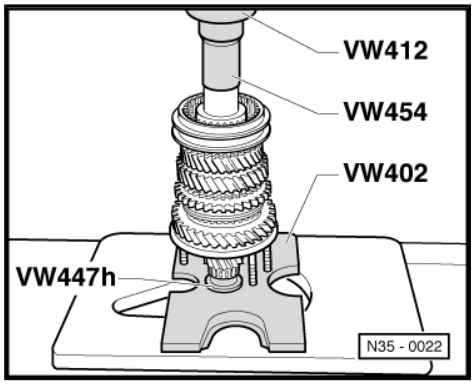
Chamfer -arrow- faces 4th gear.

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

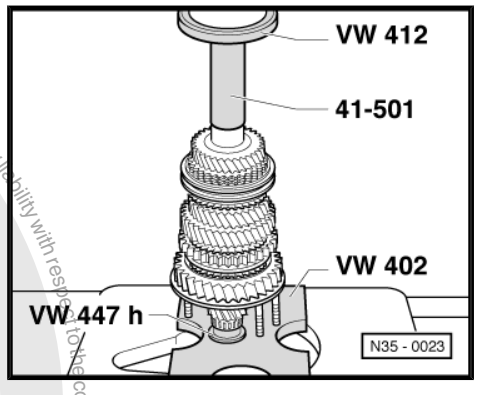
Pressing on synchro-hub with locking collar for 3rd and 4th gears



Pressing on sleeve for 4th gear needle bearing



Pressing on sleeve for output shaft needle bearing



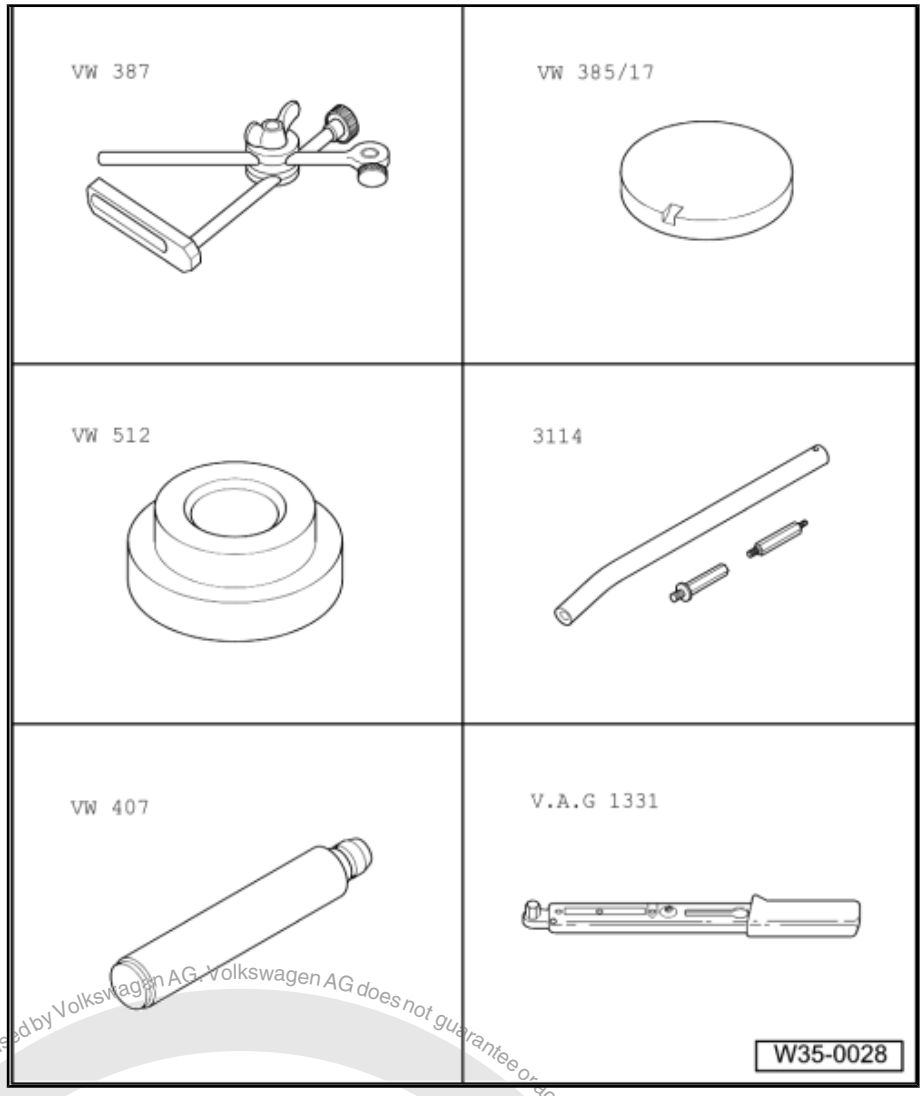
2.2 Adjusting output shaft

(Determining shim for output shaft)

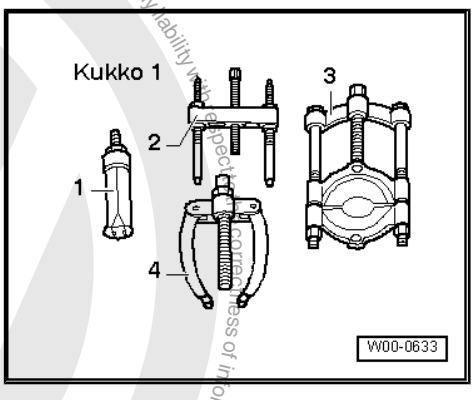
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Special tools and workshop equipment required

- Universal dial gauge bracket -VW 387-
- End dimension plate - VW 385/17-
- Thrust pad -VW 512-
- Straightening tool -3114/2-
- Press tool -VW 407-
- Torque wrench - V.A.G 1331-
- Dial gauge



- -1- Internal puller -Kukko 21/6-



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

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

- Output shaft
- Clutch housing

or

- Tapered roller bearing

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

Adjustment overview ⇒ page 195

Requirement:

- Sealing surfaces of clutch and gearbox housings must be free of sealant.

Carry out procedure as follows:

– Press small tapered roller bearing outer race together with a 0.65 mm thick shim into clutch housing to stop ⇒ page 173 .

– Insert output shaft and tighten nuts for bearing support to 25 Nm, then turn 90° further.

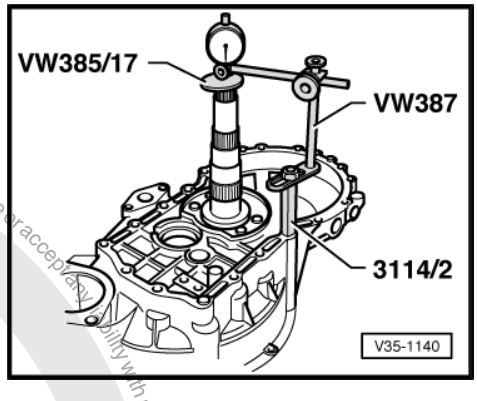
– Turn output shaft 20 to 30 times in one direction.

Note

- *The shaft must be turned in one direction so that the rollers of the tapered roller bearing settle in one direction.*
- *It is necessary to turn the shaft 20 to 30 times to achieve this.*
- *Otherwise the resulting reading will be incorrect.*

– Set up dial gauge (3 mm measuring range) and set to “0”with 1 mm preload.

– Move output shaft up and down and note dial gauge reading (example: 0.20 mm).



2.2.1 Determining thickness of shim

The specified bearing preload is obtained by adding a constant preload figure (0.10 … 0.15 mm) to the reading obtained and the thickness of the shim installed.

Example:

Installed shim	0.65 mm
+ Measured value	0.20 mm
+ Preload (constant)	0.15 mm
Shim thickness	1.00 mm

Example:

Bearing play = (0.65 mm shim plus determined measured value)	Thickness of shim according to table
0.850 mm	1.000 mm

– Remove output shaft and pull out small tapered roller bearing outer race ⇒ page 173 .

Protected by copyright. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any unauthorised use, in whole or in part, is not permitted unless authorised by Volkswagen AG.

Table of shims

Bearing play = (0.65 mm shim plus determined measured value)	Shim thickness (mm)
0.650	0.750
0.660 … 0.689	0.800
0.690 … 0.739	0.850
0.740 … 0.789	0.900
0.790 … 0.839	0.950
0.840 … 0.889	1.000
0.890 … 0.939	1.050
0.940 … 0.989	1.100
0.990 … 1.039	1.150
1.040 … 1.089	1.200
1.090 … 1.139	1.250
1.140 … 1.189	1.300
1.190 … 1.239	1.350
1.240 … 1.289	1.400
1.290 … 1.339	1.450
1.340 … 1.389	1.500
1.390 … 1.429	1.550

Note

Allocate shims according to ⇒ Electronic parts catalogue "ETKA".

– Insert shims of determined thickness, thickest shim first.

• If the previously used 0.65 mm shim is to be reinstalled, check it for damage.

If the size of shim required is larger than those listed in the table, insert two shims totalling the correct figure.

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

– Press in small tapered roller bearing outer race together with the correct shim (in example 1.00 mm) ⇒ page 173 and install output shaft. Tighten bearing support nuts in clutch housing to 25 Nm and then turn 90° further.

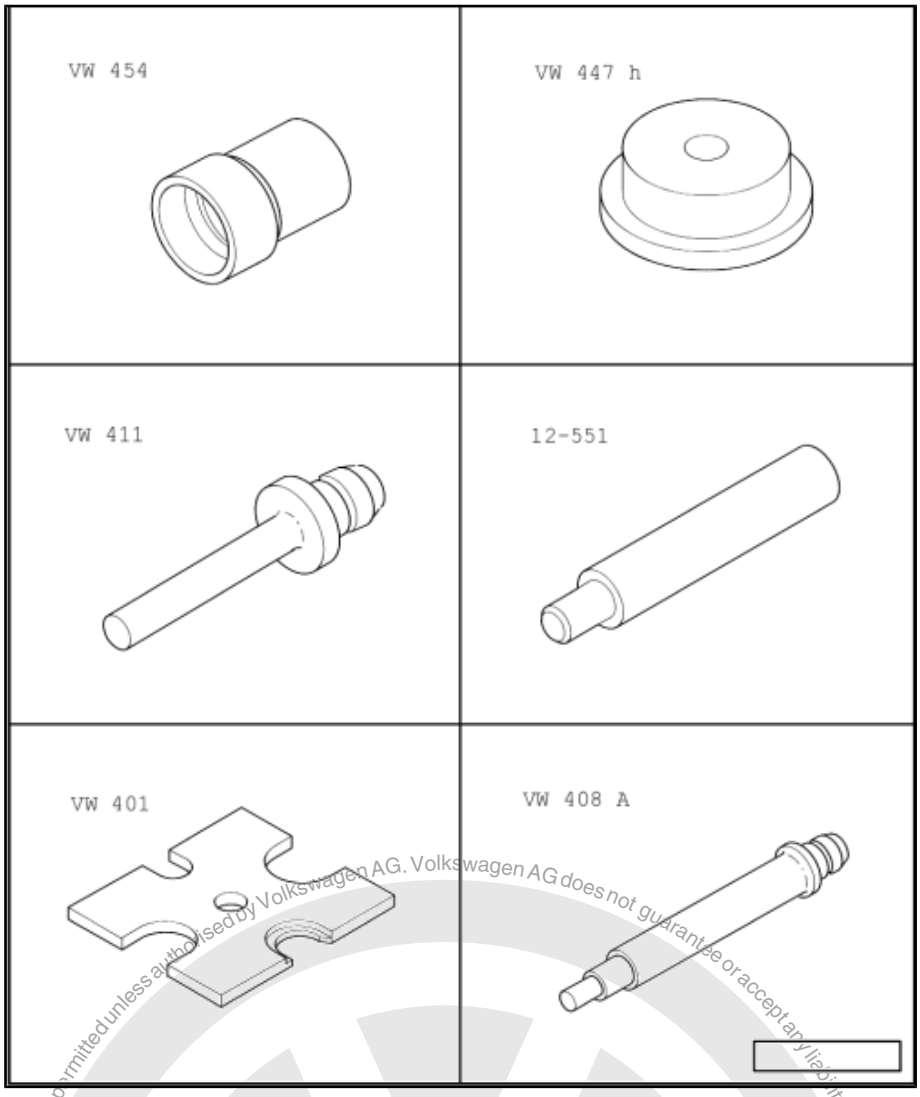
Protected by copyright. Copyright by Volkswagen AG. Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document.

3 Reverse shaft

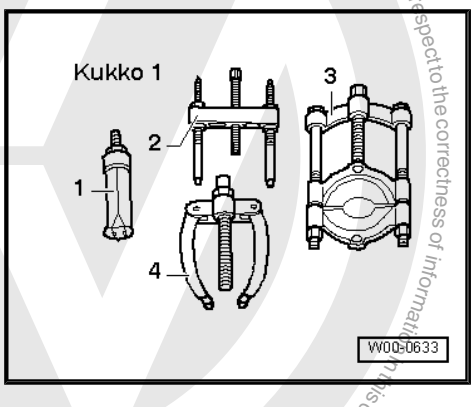
3.1 Dismantling and assembling reverse shaft

Special tools and workshop equipment required

- Thrust piece -VW 454-
- Thrust pad -VW 447 H-
- Press tool -VW 411-
- Centring mandrel -12 - 551-
- Pressure plate -VW 401-
- Press tool -VW 408 A-



- -1- Internal puller -Kukko 21/2-



- -4- Counter support -Kukko 22/1-

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

Note

After dismantling, always renew needle bearing in clutch housing and reverse shaft support.

1 - Clutch housing

2 - Needle bearing

- ❑ Pulling out ⇒ page 185
- ❑ Pressing in ⇒ page 186

3 - Reverse gear wheel

4 - Retaining ring

- ❑ Always renew after removing.

5 - Synchromeshed gear for reverse gear

- ❑ Remove retaining ring before renewing.
- ❑ Shoulder faces reverse gear wheel

6 - Reverse shaft

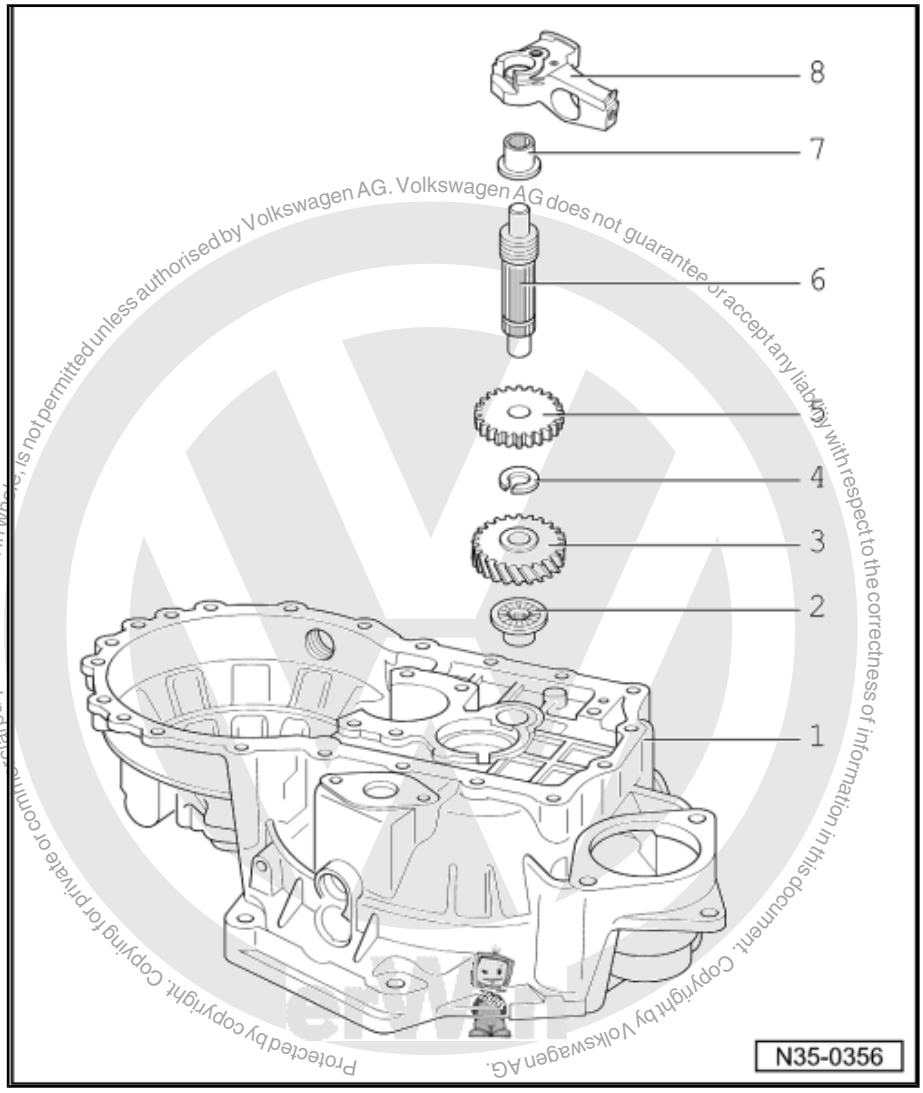
- ❑ Removing ⇒ page 126

7 - Needle bearing

- ❑ Pressing out ⇒ page 186
- ❑ Pressing in ⇒ page 186

8 - Reverse shaft support

- ❑ Removing and installing ⇒ page 126

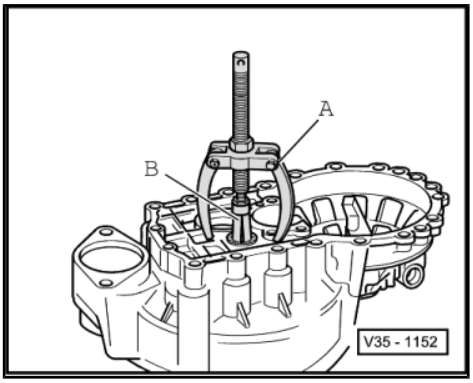


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

Pulling needle bearing out of clutch housing

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

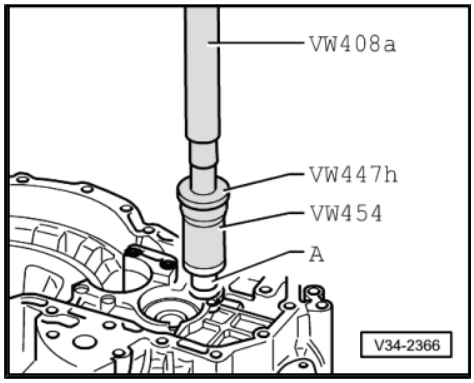
B - Internal puller, 14.5 … 18.5 mm , e.g. -Kukko 21/2-



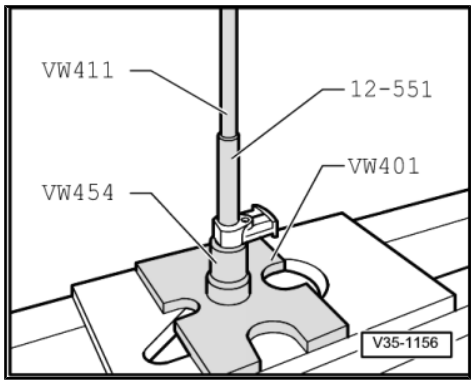
Note

The needle bearing is destroyed during removal and must be renewed.

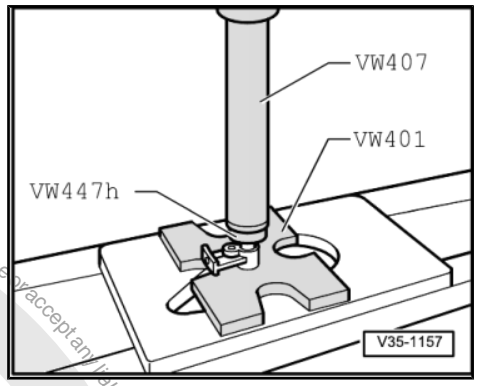
Pressing needle bearing -A- into clutch housing



Pressing needle bearing out of reverse shaft support



Pressing needle bearing into reverse shaft support



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

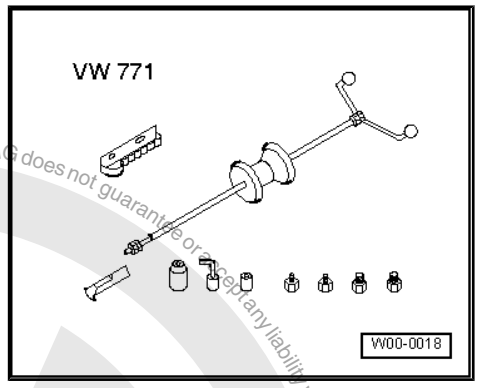
39 – Final drive - differential

1 Renewing flange shaft oil seals with gearbox installed

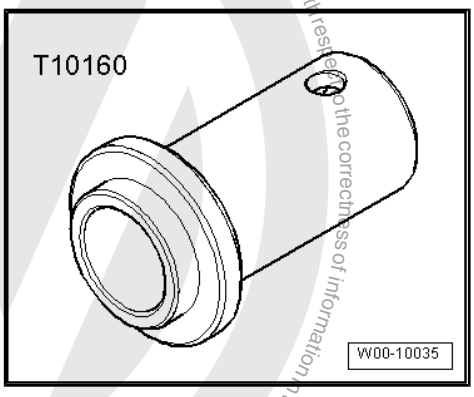
1.1 Renewing oil seal for left flange shaft

Special tools and workshop equipment required

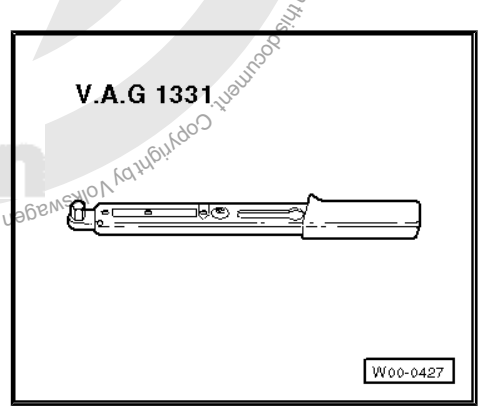
- Multipurpose tool -VW 771-



- Thrust piece -T10160-



- Torque wrench -V.A.G 1331-



1.1.1 Removing

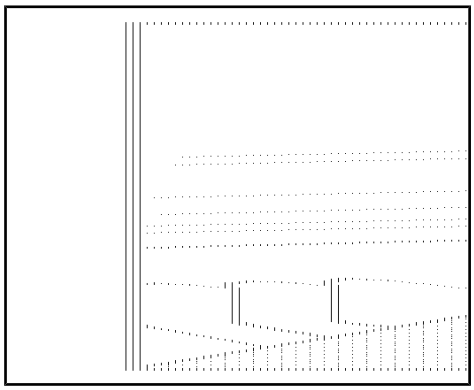
Carry out procedure as follows:

– Remove left wheel.

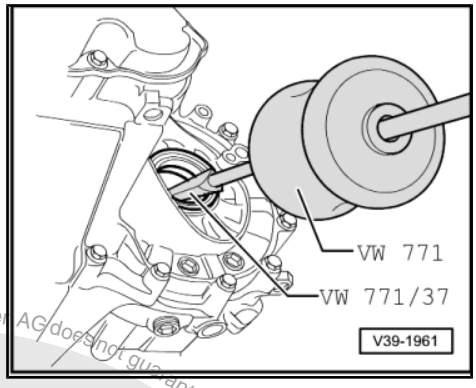
– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

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

– Remove lower part of front left wheel housing liner or front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Wheel housing liner .
– Turn steering to left lock.
– Disconnect drive shaft from flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
– Raise drive shaft as high as possible and secure. Take care not to damage paint on drive shaft in the process.
– Place drive tray under gearbox.
– Remove flange shaft securing bolt by screwing 2 bolts into flange and counterholding flange shaft with a lever.
– Pull out flange shaft with compression spring.

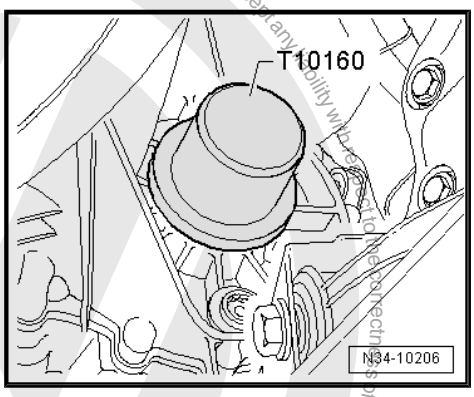


– Pull out flange shaft oil seal using multipurpose tool -VW 771- and puller hooks -VW 771/37- .



1.1.2 Installing

– Drive in new seal to stop, being careful not to cant seal.
– Half-fill space between sealing lip and dust lip with sealing grease -G 052 128 A1- .
– Insert flange shaft.
– Secure flange shaft with countersunk bolt.
– Attach drive shafts to gearbox ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .
– Check gear oil ⇒ page 112 .
– Install lower part of front left wheel housing liner or front left wheel housing liner ⇒ General body repairs, exterior; Rep. Gr. 66 ; Wheel housing liner .
– Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .
– Install wheel ⇒ Running gear, axles, steering; Rep. Gr. 44 ; Torque settings for mounting wheels .



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

1.1.3 Torque setting

Flange shaft to gearbox (countersunk bolt)
⇒ Item 12 (page 199)

1.2 Distinguishing seals for right flange shaft

The seal -1- for the right flange shaft is located in a sleeve -2-.

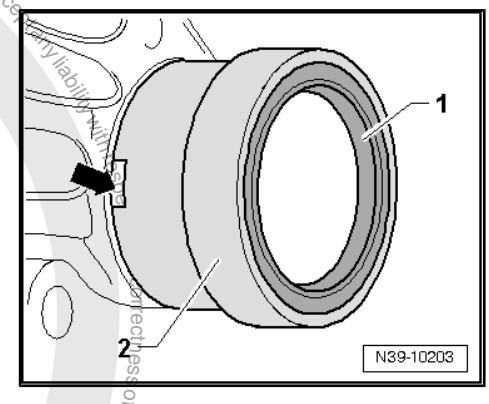
There are different versions.

Seal -1- and sleeve -2- are two parts. Identification: notches along circumference of sleeve -arrow-.

Renew seal ⇒ page 189 .

Seal -1- and sleeve -2- are one piece. Identification: no notches in sleeve.

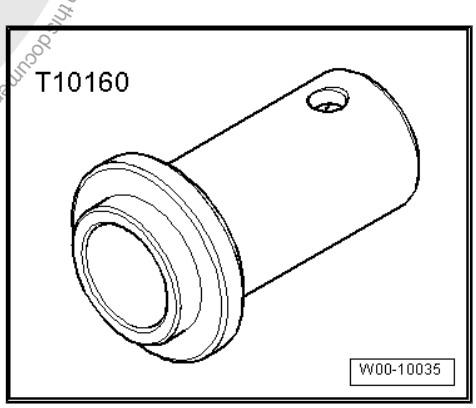
Renew seal and sleeve together ⇒ page 192 .



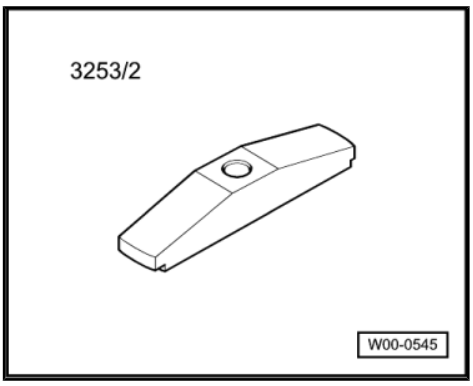
1.3 Renewing seal (two-part seal and sleeve for right flange shaft)

Special tools and workshop equipment required

- Thrust piece -T10160-

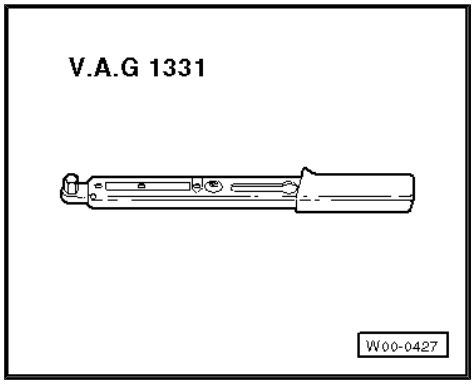


- Assembly tool -3253/2-



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

♦ Torque wrench -V.A.G 1331-



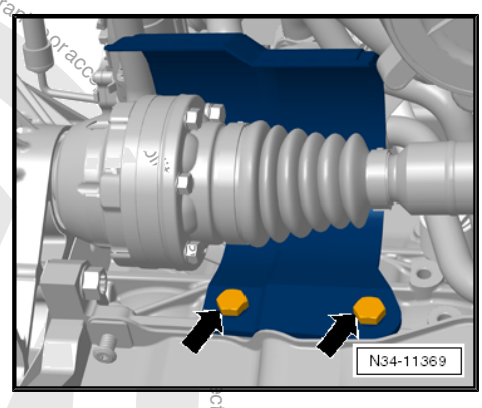
1.3.1 Removing

Carry out procedure as follows:

– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

– Turn steering to right to full lock.

– Remove drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .

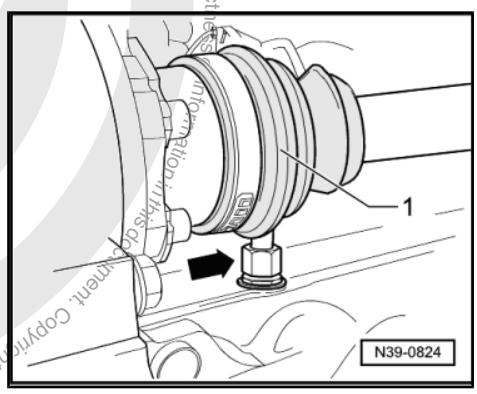


– Disconnect drive shaft -1- from flange shaft.

– Tie up drive shaft as high as is possible. Take care not to damage paint on drive shaft in the process.

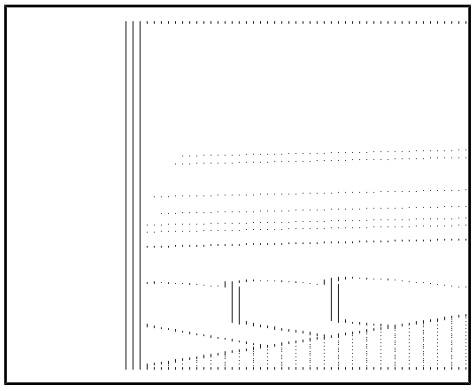
– Place drip tray under gearbox and engine.

– If present, unbolt turbocharger oil return line from engine -arrow- ⇒ Rep. Gr. 21 ; Charge air system for turbocharger, Removing and installing turbocharger with add-ons .



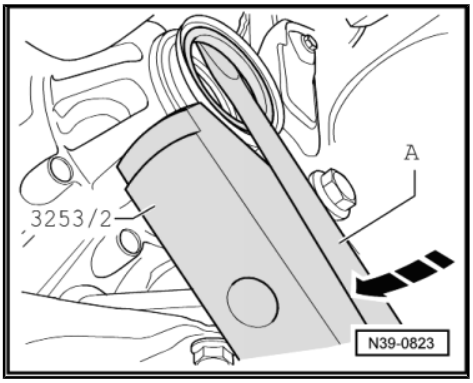
– Remove flange shaft securing bolt by screwing 2 bolts into flange and counterholding flange shaft with a lever.

– Pull out flange shaft with compression spring.



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

– Lever out seal using a screwdriver -A-. Support screwdriver on assembly tool -3253/2- when doing this.



Note

- *Do not damage sleeve. Otherwise, leaks will occur.*
- *Replace sleeve if damaged ⇒ page 145 .*

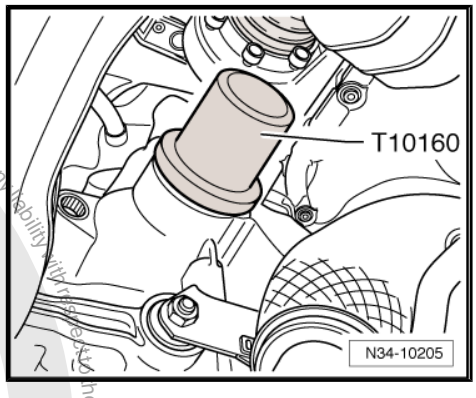
1.3.2 Installing

– Drive in new seal to stop, being careful not to cant seal.

– Half-fill space between sealing lip and dust lip with sealing grease -G 052 128 A1- .

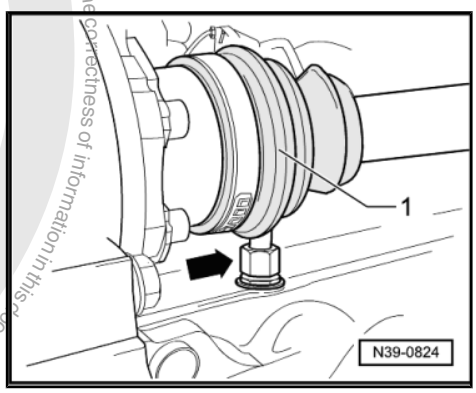
– Insert flange shaft.

– Secure flange shaft with countersunk bolt.



– If turbocharger oil return line was unbolted from engine, bolt it on again now -arrow- ⇒ Rep. Gr. 21 ; Charge air system for turbocharger; Removing and installing turbocharger with ancillaries .

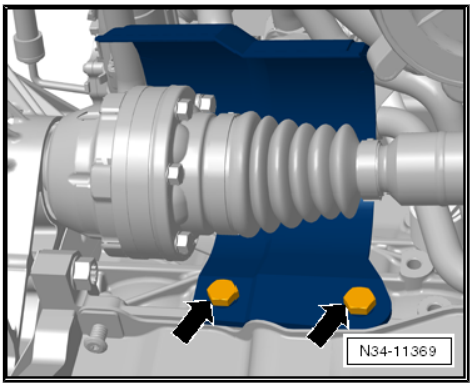
– Bolt drive shaft -1- to flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .



– Install drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .

– Check and top up gear oil ⇒ page 112 .

– Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

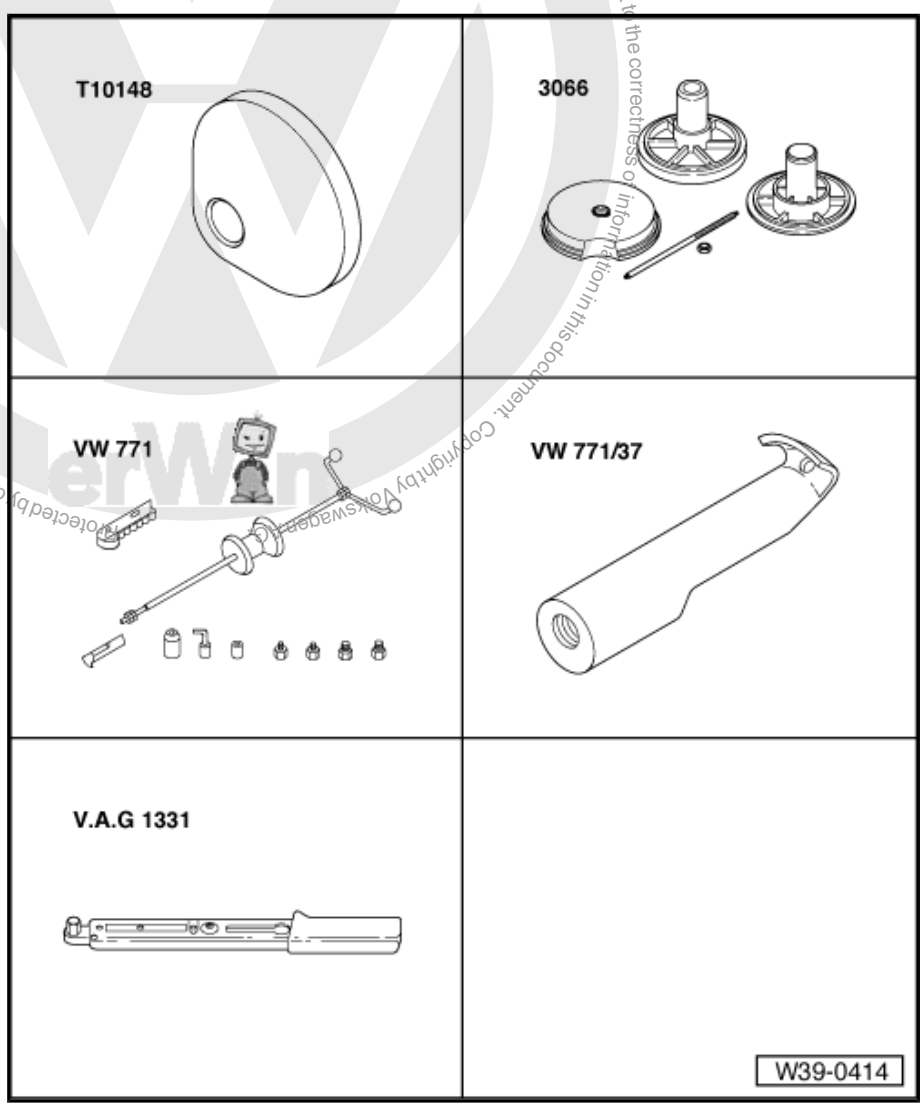


Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG.

1.3.3 Torque setting

Flange shaft to gearbox (countersunk bolt)
⇒ Item 12 (page 199)

1.4 Renewing seal and sleeve together (one-piece seal and sleeve for right flange shaft)



Special tools and workshop equipment required

- Thrust piece -T10148-
- Spindle from assembly tool -3066-
- Multipurpose tool -VW 771-
- Puller hooks -VW 771/37-
- Torque wrench -V.A.G 1331-
- Drip tray

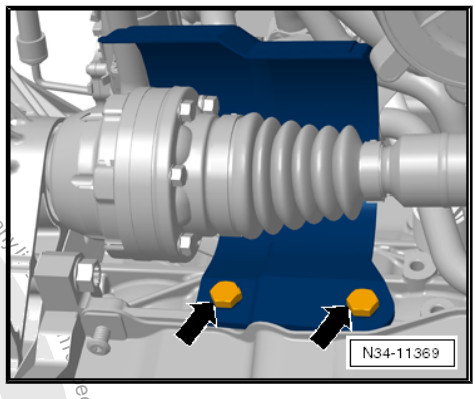
1.4.1 Removing

Carry out procedure as follows:

– Remove noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

– Turn steering to right to full lock.

– Remove drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .

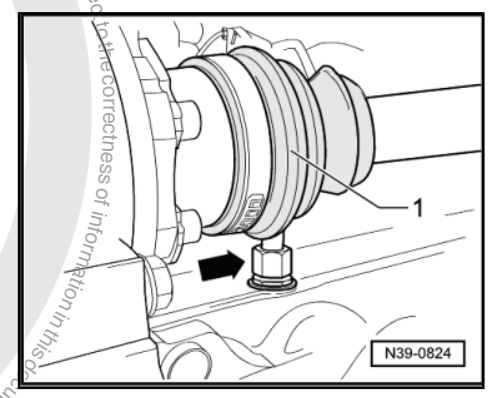


– Disconnect drive shaft -1- from flange shaft.

– Tie up drive shaft as high as is possible. Take care not to damage paint on drive shaft in the process.

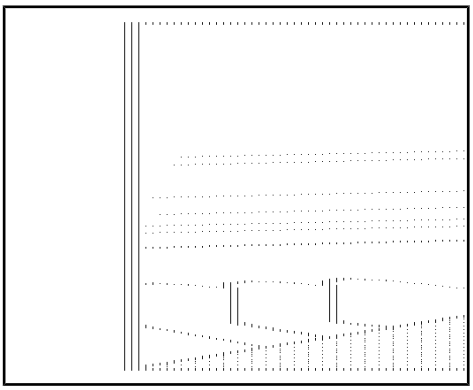
– Place drip tray under gearbox and engine.

– If present, unbolt turbocharger oil return line from engine -arrow- ⇒ Rep. Gr. 21 ; Charge air system for turbocharger, Removing and installing turbocharger with add-ons .



– Remove flange shaft securing bolt by screwing 2 bolts into flange and counterholding flange shaft with a lever.

– Pull out flange shaft with compression spring.

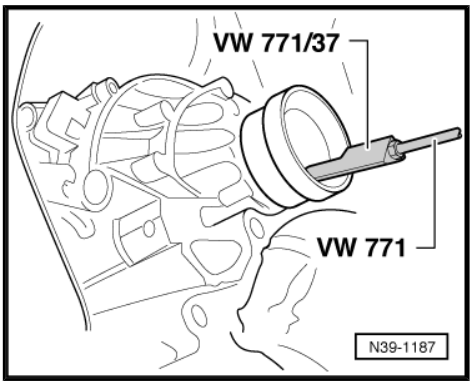


– Pull out seal and sleeve together.

There is a shoulder in the inner diameter of the sleeve.

– Apply puller hook -VW 771/37- directly behind shoulder in sleeve.

– Press extractor hooks -VW 771/37- forcefully into sleeve while pulling.



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

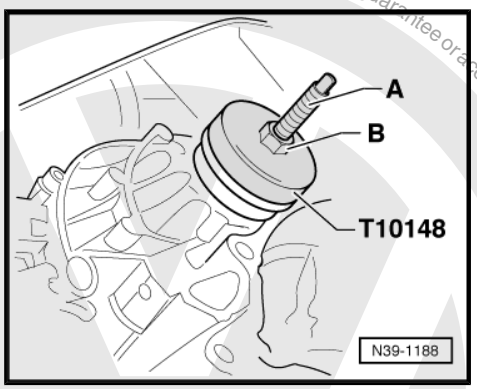
1.4.2 Installing

– Clean seat for seal in gearbox.

– Pull in seal and sleeve together.

A - Screw spindle of assembly tool -3066- into threaded piece of differential.

B - Nut M12



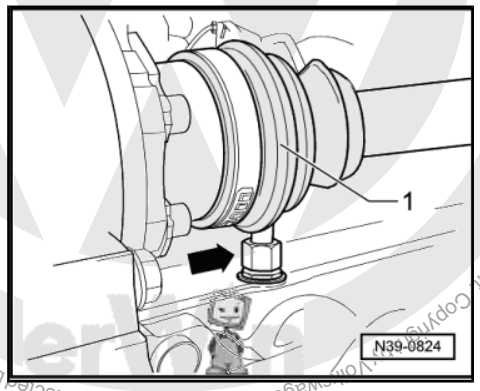
– Pull in seal with sleeve to stop using thrust piece -T10148- by turning nut -B-.

– Half-fill space between sealing lip and dust lip with sealing grease -G 052 128 A1- .

– Insert flange shaft.

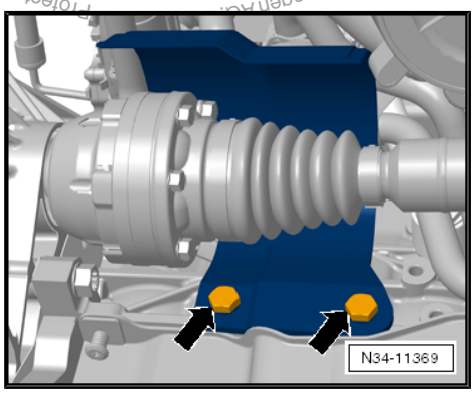
– Secure flange shaft with countersunk bolt.

– If turbocharger oil return line was unbolted from engine, bolt it on again now -arrow- ⇒ Rep. Gr. 21 ; Charge air system for turbocharger; Removing and installing turbocharger with ancillaries .



– Bolt drive shaft -1- to flange shaft ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shaft; Removing and installing drive shafts .

– Install drive shaft heat shield, if present -arrows- ⇒ Running gear, axles, steering; Rep. Gr. 40 ; Repairing drive shafts; Removing and installing drive shafts .



– Check and top up gear oil ⇒ page 112 .

– Install noise insulation ⇒ General body repairs, exterior; Rep. Gr. 50 ; Noise insulation .

1.4.3 Torque setting

Flange shaft to gearbox (countersunk bolt)
⇒ Item 12 (page 199)

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

2 Adjustment overview

Note

If repairs have been carried out to the gearbox, it is necessary to adjust the input shaft, output shaft or differential only if components have been renewed which have a direct effect on the adjustment of the gearbox. To prevent unnecessary adjustments, refer to the following table:

		To be adjusted:		
		Input shaft ⇒ page 162	Output shaft ⇒ page 180	Differential ⇒ page 204
Parts renewed:	Gearbox housing	x		x
	Clutch housing	x	x	x
	Input shaft	x		
	Output shaft		x	
	Differential cage			x
	Input shaft tapered roller bearing	x		
	Tapered roller bearing for output shaft		x	
	Tapered roller bearing for differential			x
	Gear wheel for 4th gear	x		

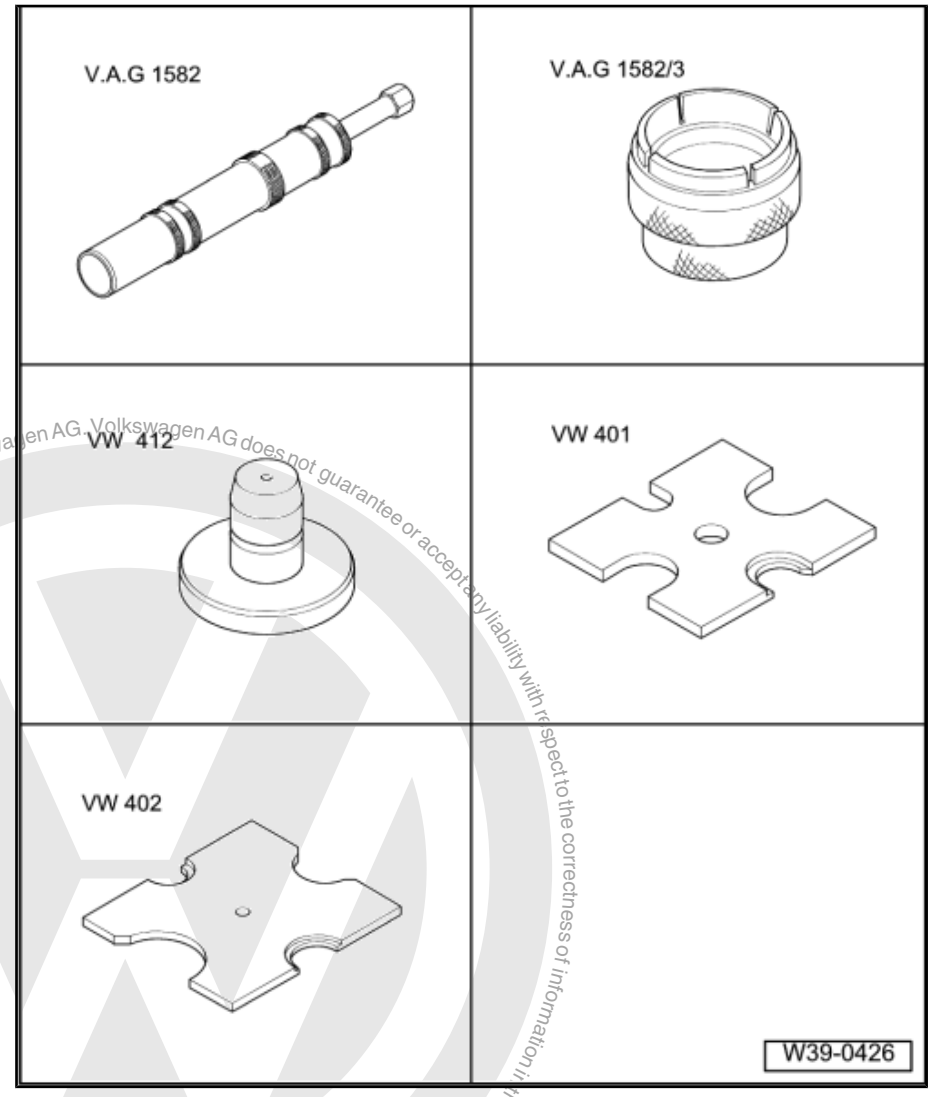
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

3 Differential

3.1 Dismantling and assembling differential

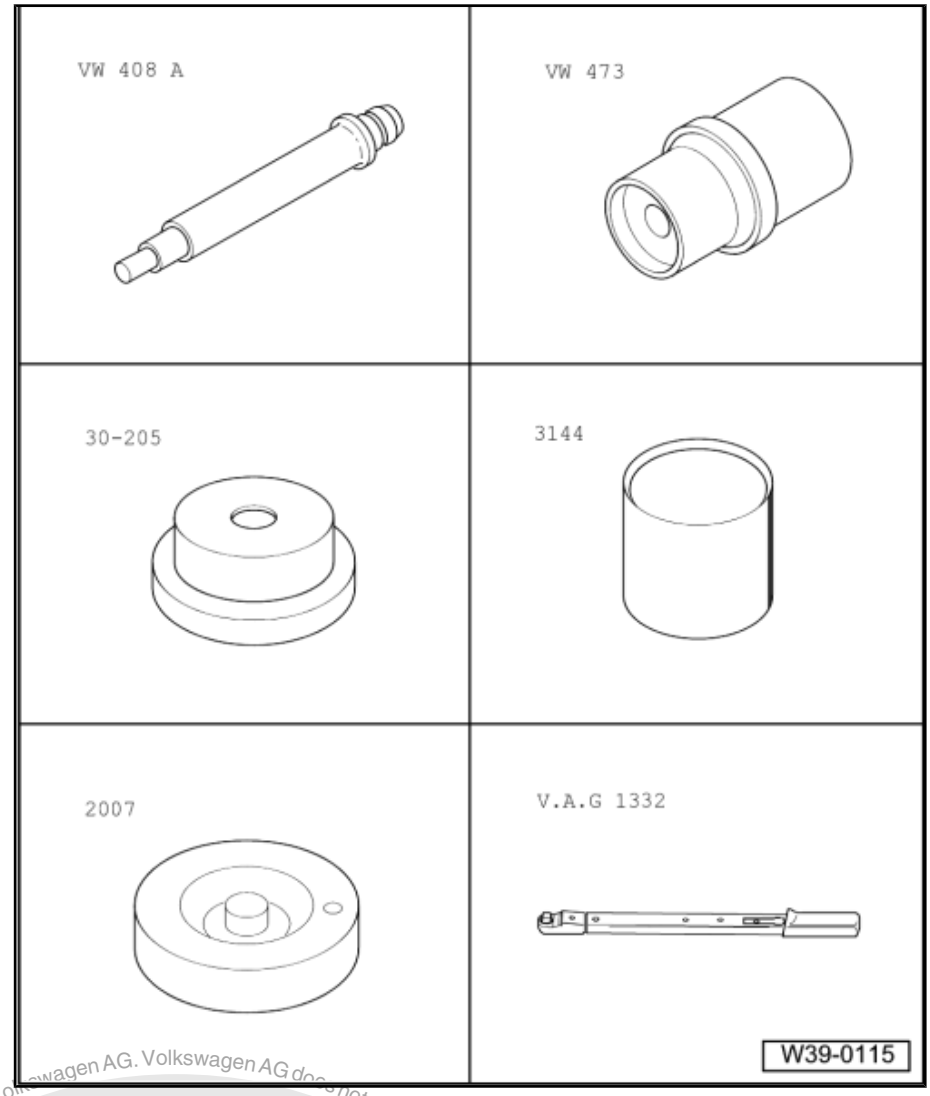
Special tools and workshop equipment required

- Tapered roller bearing puller -V.A.G 1582-
- Adapter -V.A.G 1582/3-
- Press tool -VW 412-
- Pressure plate -VW 401-
- Pressure plate -VW 402-

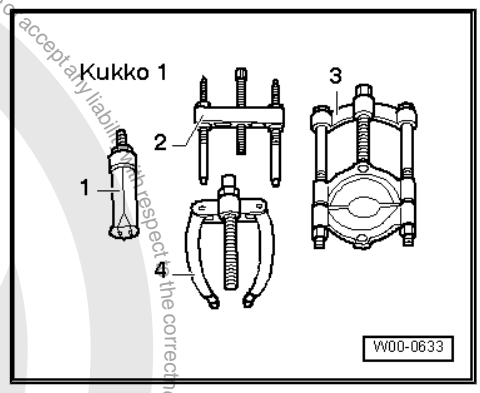


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG.

- Press tool -VW 408 A-
- Thrust piece -VW 473-
- Thrust plate -30 - 205-
- Sleeve -3144-
- Thrust piece -2007-
- Torque wrench -V.A.G 1332-



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

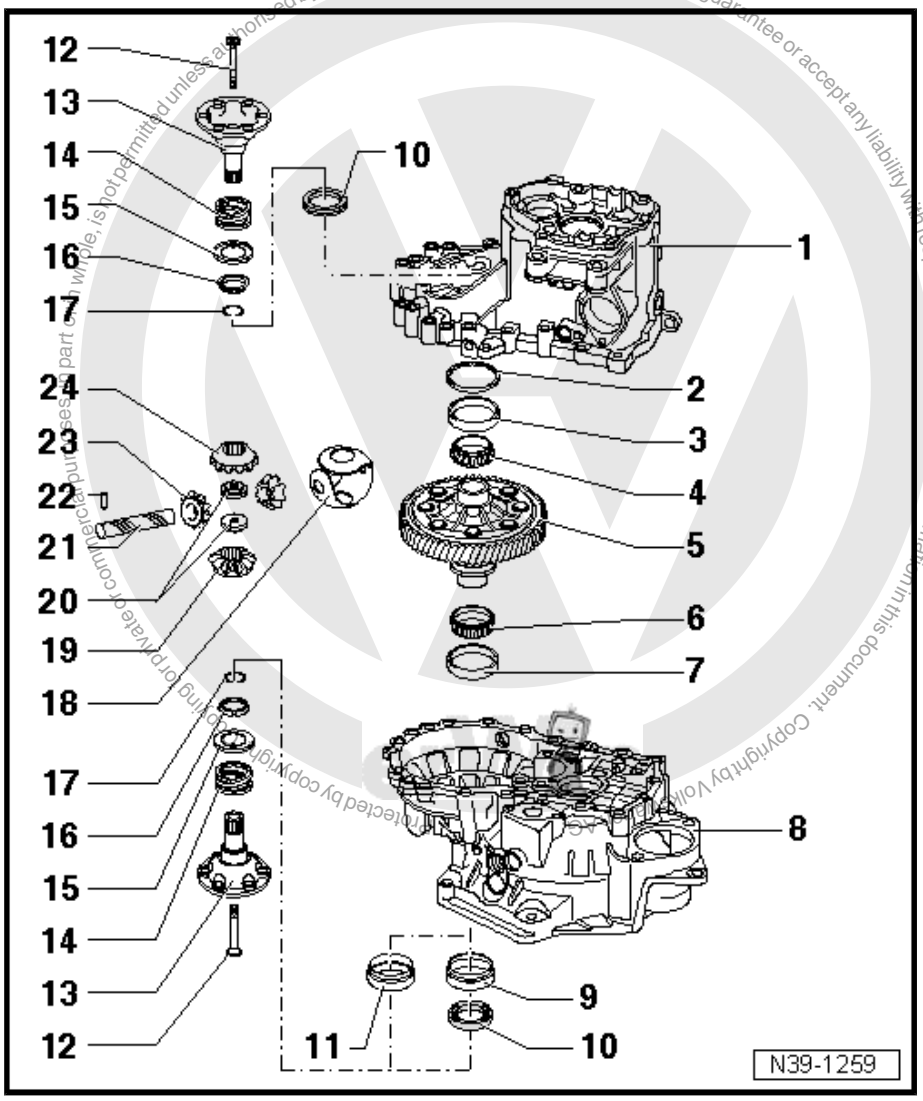


- -4- Counter support -Kukko 22/2-

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

Note

- *Heat tapered roller bearing inner races to about 100 °C with the inductive heater -VAS 6414- before installing. Wear protective gloves when doing this.*
- *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 195 .*



1 - Gearbox housing

2 - Shim

- ❑ For differential
- ❑ Determining thickness ⇒ page 204

3 - Tapered roller bearing outer race

- ❑ Pulling out ⇒ page 201
- ❑ Pressing in ⇒ page 201

4 - Tapered roller bearing inner race

- ❑ Pulling off ⇒ page 200
- ❑ Pressing on ⇒ page 200

5 - Differential cage

- ❑ With final drive gear
- ❑ Differential cage adapted to one-piece thrust washer ⇒ page 202
- ❑ Hole for spring pin adapted to length of spring pin ⇒ page 201
- ❑ Allocate according to ⇒ Electronic parts catalogue “ETKA” .

6 - Tapered roller bearing inner race

- ❑ Pulling off ⇒ page 200
- ❑ Pressing on ⇒ page 200

7 - Tapered roller bearing outer race

- ❑ Pressing out ⇒ page 200
- ❑ Pressing in ⇒ page 200

8 - Clutch housing

9 - Sleeve

- ❑ To support oil seal ⇒ Item 10 (page 198) .
- ❑ Removing and installing ⇒ page 141

10 - Seal

- ❑ Renewing oil seal for left flange shaft with gearbox installed ⇒ page 187
- ❑ Renewing seal for right flange shaft with gearbox installed (two-part seal and sleeve for right flange shaft) ⇒ page 189

Copyright by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by Volkswagen AG. Any unauthorized use, duplication or publication of this document in whole or part is not permitted unless authorized by Volkswagen AG.

11 - One-piece seal and sleeve

- ❑ If seal is damaged, renew seal and sleeve together ⇒ page 192

12 - Countersunk bolt, 25 Nm

- ❑ Screw into threaded piece ⇒ Item 20 (page 199)

13 - Flange shaft

- ❑ Removing and installing ⇒ page 187

14 - Compression spring for flange shaft

- ❑ Installed behind flange shafts

15 - Thrust washer

- ❑ Installation position ⇒ page 203

16 - Tapered ring

- ❑ With grooves to engage in thrust washer
- ❑ Installation position: taper towards differential cage

17 - Retaining ring

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

18 - One-piece thrust washer

- ❑ Coat with gear oil when installing
- ❑ One-piece thrust washer has shoulder in some gearboxes ⇒ page 202

19 - Large differential bevel gear

- ❑ Installing ⇒ page 203

20 - Threaded piece

- ❑ Installing ⇒ page 203

21 - Differential pinion pin

- ❑ Removing in conjunction with shorter spring pin ⇒ page 202
- ❑ Removing in conjunction with longer spring pin ⇒ page 202
- ❑ Installing ⇒ page 203

22 - Spring pin

- ❑ For securing differential pinion pin
- ❑ Spring pins of different lengths have been installed
- ❑ Spring pin identification ⇒ page 201
- ❑ Removing and installing short spring pin ⇒ page 202
- ❑ Long spring pin is sheared off when removed ⇒ page 202
- ❑ Installing long spring pin ⇒ page 202

23 - Small differential bevel gear

- ❑ Installing ⇒ page 203

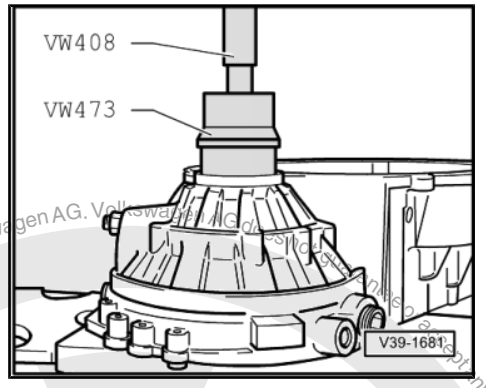
24 - Large differential bevel gear

- ❑ Installing ⇒ page 203

Protected by copyright. Copyright by Volkswagen AG.

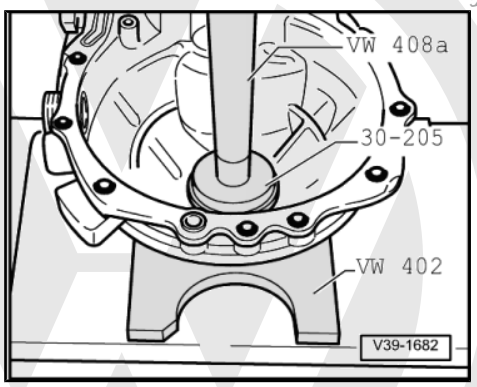
Pressing tapered roller bearing outer race out of clutch housing

– First remove seating sleeve for flange shaft seal.



Pressing tapered roller bearing outer race into clutch housing

No shim is installed in the clutch housing end.

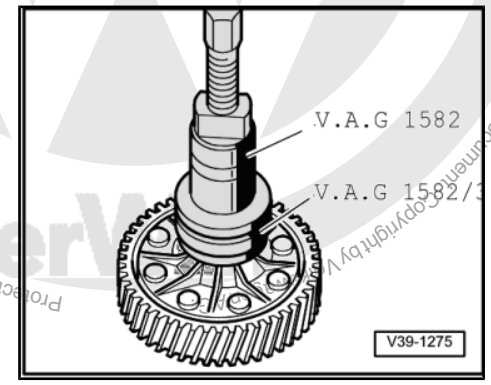


Pulling off tapered roller bearing inner race

– Before fitting extractor, position thrust plate -40 - 105- on differential cage.

Note

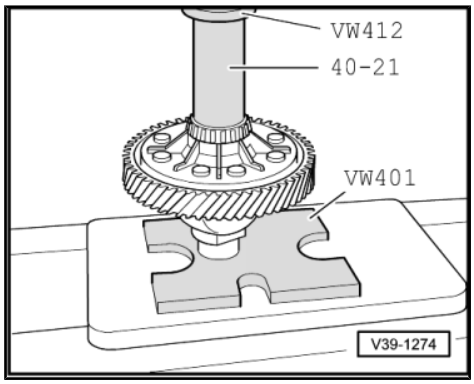
Both tapered roller bearing inner races are pulled off the differential cage in the same way.



Pressing on tapered roller bearing inner race

Note

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

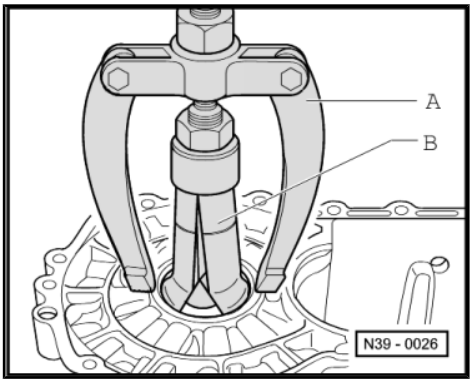


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by Volkswagen AG. Volkswagen AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by VW

Pulling outer race for tapered roller bearing out of gearbox housing

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

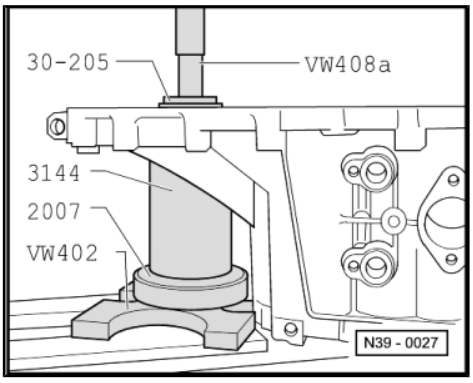
B - Internal puller, 46 … 58 mm , e.g. -Kukko 21/7-



Pressing tapered roller bearing outer race into gearbox housing

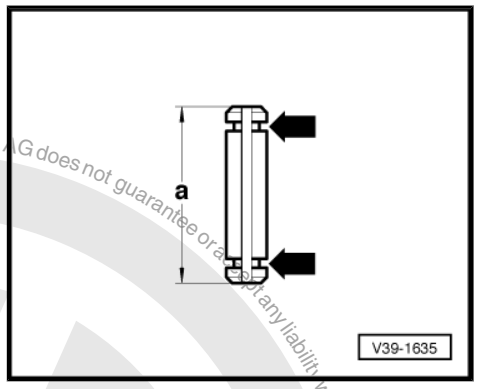
– Fit shim under outer race.

– Support gearbox housing directly below bearing mounting using sleeve -3144- .



Spring pin identification

Dim. “a” mm	Identification
28.5 (short spring pin) Removing and installing ⇒ page 202	Circumferential groove -arrows-
36.0 (long spring pin), Removing ⇒ page 202 , Installing ⇒ page 202	No circumferential groove

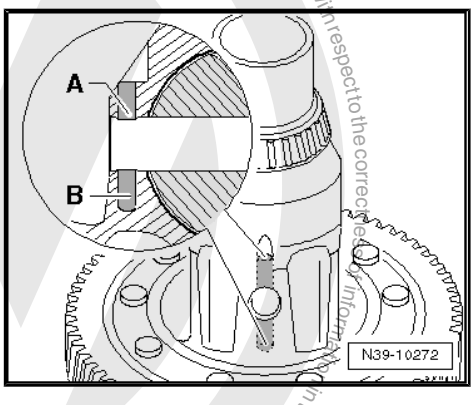


Allocation of differential cages

– Check hole for spring pin in differential cage.

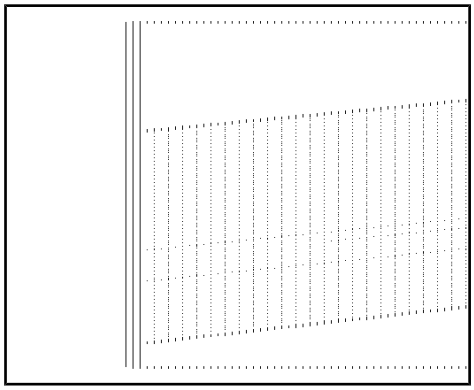
The hole in the differential cage was modified for the longer spring pin.

Hole	Length of spring pin (mm)
-A-	28.5 (short spring pin)
-A- and -B-	36.0 (long spring pin)



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

Removing and installing spring pin with circumferential groove (short spring pin)



Removing

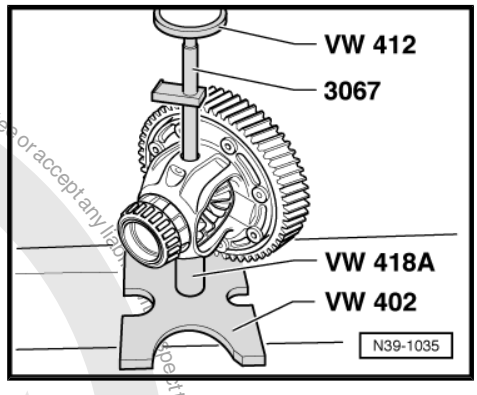
– Cover tapered roller bearing inner race and speedometer drive gear to avoid possible damage and ingress of metal particles.

– Drive out spring pin with chisel, inserting chisel into circumferential groove.

Installing

– Drive into differential cage to stop.

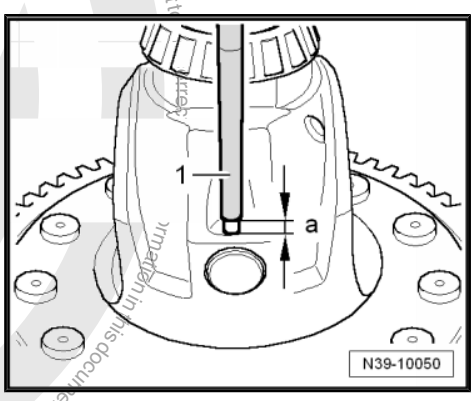
Removing spring pin without circumferential groove (long spring pin): pressing out differential pinion pin



When pressed out, spring pin will be sheared off.

– Drive remainder of spring pin out of differential cage.

Installing spring pin without circumferential groove (long spring pin)

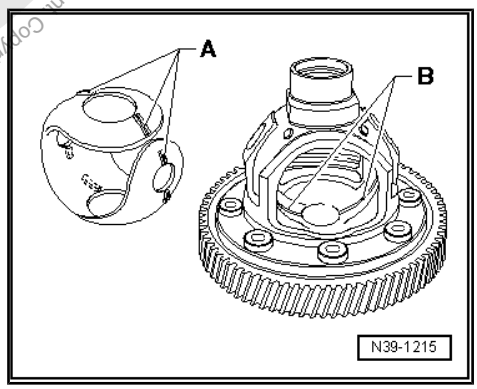


– Align hole in differential pinion pin with hole in differential cage.

– Drive in new spring pin with drift -1- until dimension -a- = 3.0 mm is attained.

• The spring pin must not come in contact with gears with differential cage installed.

In some gearboxes, the one-piece thrust washer has a shoulder -A- near the holes



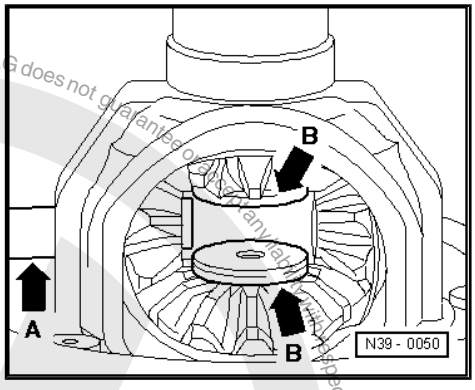
In this case, the differential cage has a circumferential groove -B-.

– Lubricate one-piece thrust washer with gear oil and install.

– Install one-piece thrust washer so that it engages in groove -B- in differential cage.

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

Installing differential bevel gears and differential pinion pin

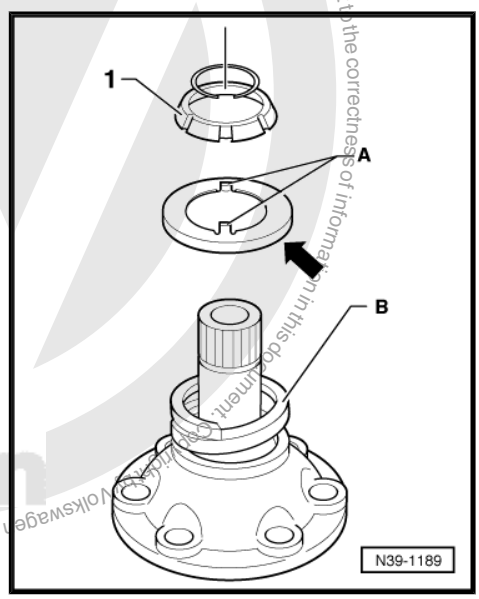


– Lubricate one-piece thrust washer with gear oil and install.
– Install both sun wheels and secure (e.g. with flange shaft).
– Insert planet pinions offset 180° and pivot into position.
– Press in differential pinion pin (-arrow A-) to first planet pinion.
– Place threaded pieces -arrows B- in sun gears.

Installation position: shoulder to sun gear

– Drive differential pinion pin into final position and secure with spring pin.

Installation position of thrust washer for tapered ring -1-.



The shoulder -arrow- points towards spring -B-.

Some gearboxes have lugs -A-.

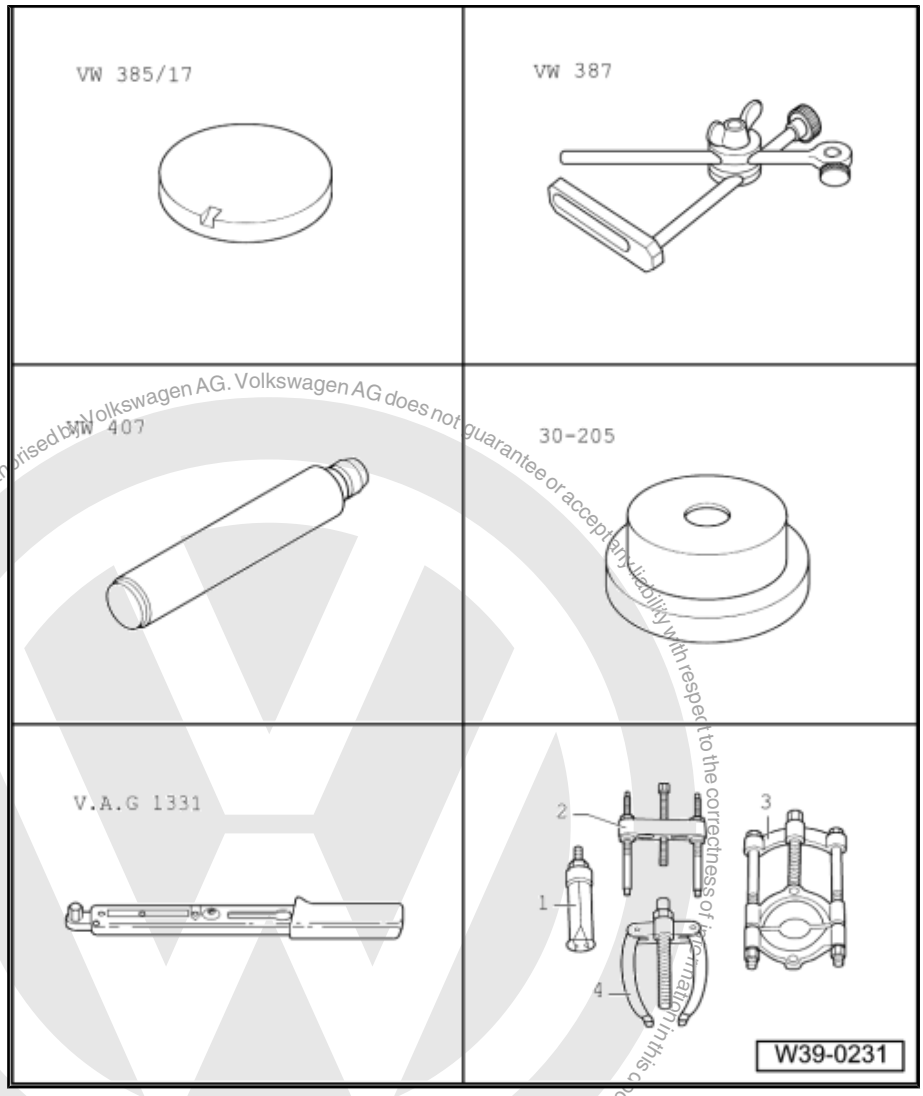
Lugs -A- face tapered ring -1-.

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

3.2 Adjusting differential

Special tools and workshop equipment required

- Universal dial gauge bracket -VW 387-
- End dimension plate - VW 385/17-
- Press tool -VW 407-
- Thrust plate -30 - 205-
- Torque wrench - V.A.G 1331-
- -1- Internal puller -Kukko 21/7-
- -4- Counter support -Kukko 22/2-
- Dial gauge



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

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

Adjustment overview ⇒ page 195 .

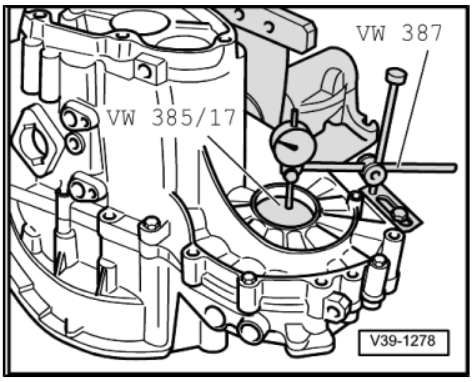
Carry out procedure as follows:

– Press tapered roller bearing outer race without shim into gearbox housing using thrust piece -30 - 205- ⇒ page 201 .

Note

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

– Press outer race of tapered roller bearing into clutch housing using thrust plate -30 - 205- ⇒ page 200 .
– Fit differential into clutch housing.
– Set gearbox housing in place and tighten 5 bolts to 25 Nm.
– Attach dial gauge and set to “0” with 1 mm preload.
– Move differential up and down. Read and note play indicated on dial gauge. (Example: 0.70 mm.)



3.2.1 Determining thickness of shim

The specified bearing preload is obtained by adding a constant value for preload (0.25 mm) to the reading obtained.

Example:

Measured value	0.70 mm
+ Preload (constant)	0.25 mm
Thickness of shim =	0.95 mm

Example:

Bearing play, measured value	Thickness of shim according to table
0.70 mm	0.95 mm

Table of shims

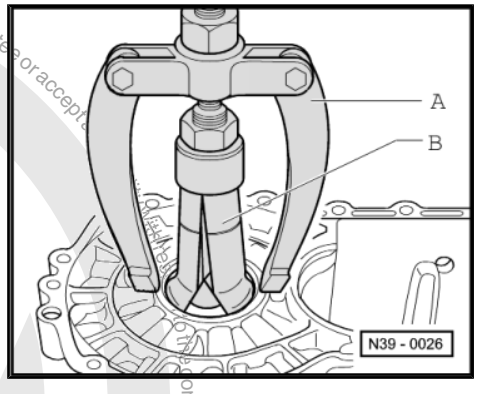
Bearing play	Shim
bearing clearance (mm)	Thickness (mm)
0.303 … 0.449	0.650
0.450 … 0.499	0.700
0.500 … 0.549	0.750
0.550 … 0.599	0.800
0.600 … 0.649	0.850
0.650 … 0.699	0.900
0.700 … 0.749	0.950
0.750 … 0.799	1.000
0.800 … 0.849	1.050
0.850 … 0.899	1.100
0.900 … 0.949	1.150
0.950 … 0.999	1.200
1.000 … 1.049	1.250
1.050 … 1.099	1.300
1.100 … 1.149	1.350
1.150 … 1.199	1.400

Note

Allocate shims according to ⇒ Electronic parts catalogue “ETKA”.

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

– Remove gearbox housing and pull tapered roller bearing outer race from gearbox housing.



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

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

– Insert shims of determined thickness, thickest shim first.

If the size of shim required is larger than those listed in the table, insert two shims totalling the correct figure.

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

– Press in outer race of tapered roller bearing again ⇒ page 201 and bolt gearbox housing tight.

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