



Service

Workshop Manual

Golf Variant 2007 >

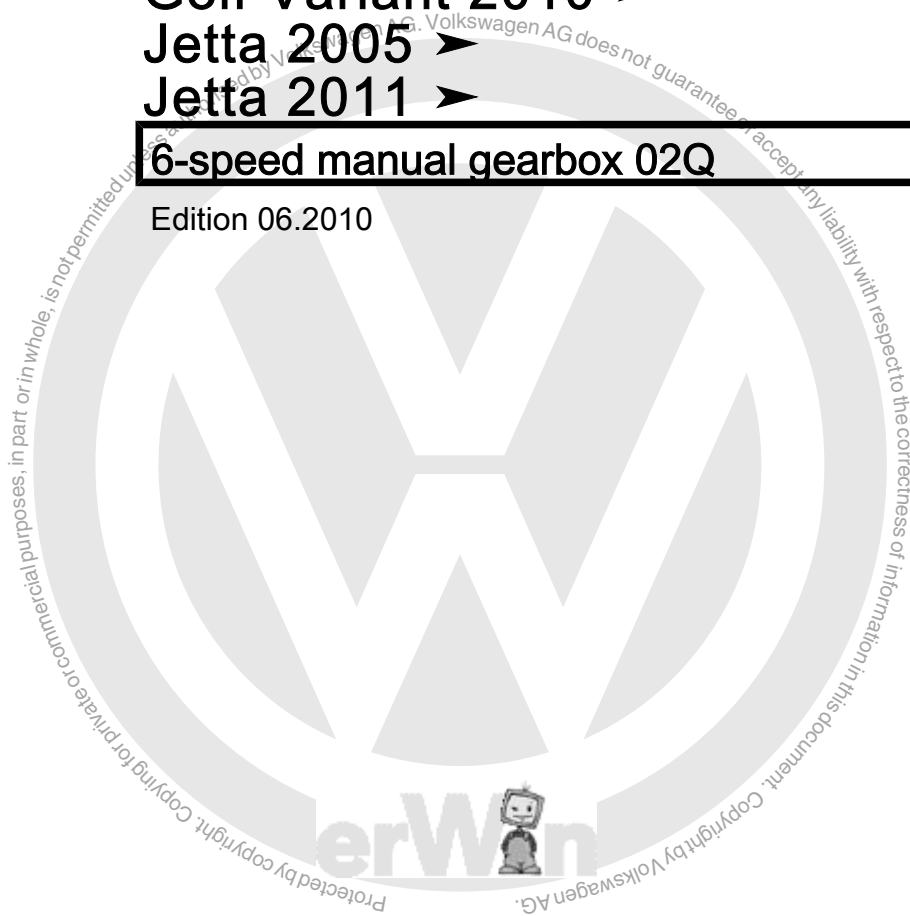
Golf Variant 2010 >

Jetta 2005 >

Jetta 2011 >

6-speed manual gearbox 02Q

Edition 06.2010





List of Workshop Manual Repair Groups

Repair Group

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



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



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00 – Technical data

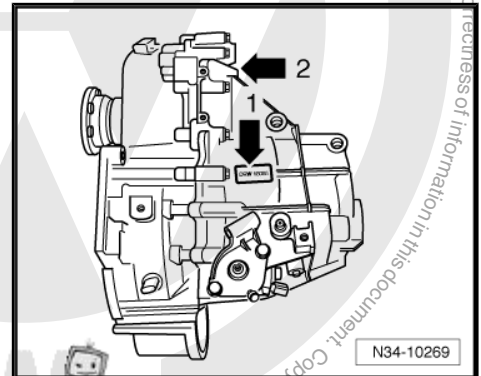
1 Gearbox identification

The 6-speed manual gearbox 02Q is installed in the Jetta 2005 ▶ , in the Golf Variant 2007 ▶ , in the Golf Variant 2010 ▶ and in the Jetta 2011 ▶ in conjunction with a 4-cylinder engine.

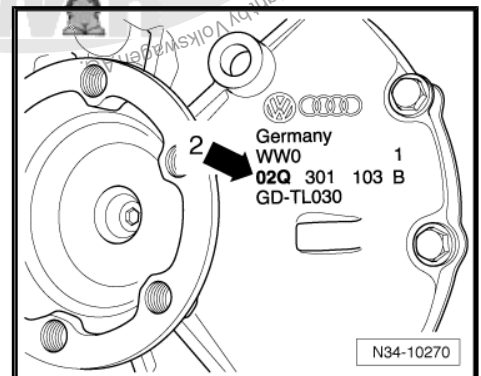
Allocation ⇒ [page 1](#)

1.1 Location on gearbox

Code letters and date of manufacture -arrow 1- manual gearbox 02Q -arrow 2-



Manual gearbox 02Q -arrow 2-



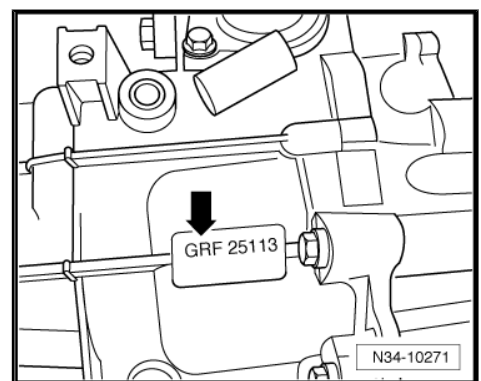
Identification code and date of gearbox manufacture -arrow-

Example:	GRF	25	11	3
	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.



1.2 Identification code, assembly allocation and capacities

Manual gearbox		6-speed 02Q		
Identification code		GRF	GVT	GXC
Manufactured	from	05.05	05.05	07.06
	to	11.05	11.05	07.06



Manual gearbox		6-speed 02Q		
Identification code		GRF	GVT	GXC
Allocation	Model	Jetta 2005 ▶ Golf Variant 2007 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶
	Engine	2.0 l - 103 kW turbo diesel	2.0 l - 147 kW turbo FSI	2.0 l - 125 kW turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	71 : 18 = 3.944	71 : 18 = 3.944
	Final drive II ²⁾	69 : 25 = 2.760	71 : 23 = 3.087	71 : 23 = 3.087
Capacity of manual gearbox		2.3 l	2.3 l	2.3 l
Drive shaft flange Ø		107 mm	107 mm	107 mm
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> The following data can be found in the ⇒ Electronic parts catalogue „ETKA“ . <ul style="list-style-type: none"> ◆ Individual gear ratios ◆ Specification for gear oil ◆ Allocation of clutch plate and pressure plate 				

Manual gearbox		6-speed 02Q		
Identification code		HDV	HVS	KNQ
Manufactured	from	05.05	07.06	02.08
	to			11.08
Allocation	Model	Jetta 2005 ▶ Golf Variant 2007 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶	Golf Variant 2007 ▶
	Engine	2.0 l - 96 kW turbo diesel 2.0 l - 100 kW turbo diesel 2.0 l - 103 kW turbo diesel	2.0 l - 125 kW turbo diesel	1.9 l - 77 kW turbo diesel 1.6 l - 77 kW turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684	72 : 17 = 4.235
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917	72 : 22 = 3.273
Capacity of manual gearbox		2.3 l	2.3 l	2.3 l
Drive shaft flange Ø		107 mm	107 mm	107 mm
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> The following data can be found in the ⇒ Electronic parts catalogue „ETKA“ <ul style="list-style-type: none"> ◆ Individual gear ratios ◆ Specification for gear oil ◆ Allocation of clutch plate and pressure plate 				

Manual gearbox		6-speed 02Q		
Identification code		KNS	KNU	KNY
Manufactured	from	11.07	11.07	02.08
	to	10.08	02.09	10.08
Allocation	Model	Jetta 2005 ▶ Golf Variant 2007 ▶ Golf Variant 2010 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶	Jetta 2005 ▶



Manual gearbox		6-speed 02Q		
Identification code		KNS	KNU	KNY
Engine		2.0 l - 100 kW turbo diesel 2.0 l - 103 kW turbo diesel	2.0 l - 147 kW 2.0 l - 155 kW	2.0 l - 125 kW turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	71 : 18 = 3.944	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	71 : 23 = 3.087	70 : 24 = 2.917
Capacity of manual gearbox		2.3 l	2.3 l	2.3 l
Drive shaft flange Ø		107 mm	107 mm	107 mm
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> 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		6-speed 02Q		
Identification code		KRM	KXZ	KZS
Manufactured	from to	05.07 07.10	05.09	05.09
Allocation	Model	Jetta 2005 ▶ Golf Variant 2010 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶	Jetta 2005 ▶ Golf Variant 2007 ▶ Jetta 2011 ▶
	Engine	2.0 l - 103 kW turbo diesel	2.0 l - 125 kW turbo diesel	2.0 l - 155 kW 2.0 l - 147 kW
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917	70 : 24 = 2.917
Capacity of manual gearbox		2.3 l	2.3 l	2.3 l
Drive shaft flange Ø		107 mm	107 mm	107 mm
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> 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		6-speed 02Q		
Identification code		LHD	LNN	NFN
Manufactured	from to	10.08	06.09	05.09
Allocation	Model	Jetta 2005 ▶ Golf Variant 2007 ▶ Golf Variant 2010 ▶ Jetta 2011 ▶	Golf Variant 2010 ▶	Jetta 2005 ▶
	Engine	2.0 l - 100 kW turbo diesel	1.6 l - 77 kW turbo diesel	2.0 l - 125 kW turbo diesel
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	72 : 17 = 4.235	70 : 19 = 3.684



Manual gearbox	6-speed 02Q		
Identification code	LHD	LNN	NFN
Final drive II ²⁾	69 : 25 = 2.760	72 : 22 = 3.273	70 : 24 = 2.917
Capacity of manual gearbox	2.3 l	2.3 l	2.3 l
Drive shaft flange Ø	107 mm	107 mm	107 mm
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> 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	6-speed 02Q		
Identification code	NFP	MDL	
Manufactured	from	05.10	11.09
	to		
Allocation	Model	Golf Variant 2010 ▶	Jetta 2011 ▶
	Engine	2.0 l - 103 kW turbo diesel	2.0 l - 155 kW
Ratio: Z ₂ : Z ₁	Final drive I ¹⁾	69 : 20 = 3.450	70 : 19 = 3.684
	Final drive II ²⁾	69 : 25 = 2.760	70 : 24 = 2.917
Capacity of manual gearbox	2.3 l	2.3 l	
Drive shaft flange Ø	107 mm	107 mm	
<p>1) Final drive for 1st to 4th gears 2) Final drive for 5th and 6th gears and reverse gear</p> <ul style="list-style-type: none"> 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 			

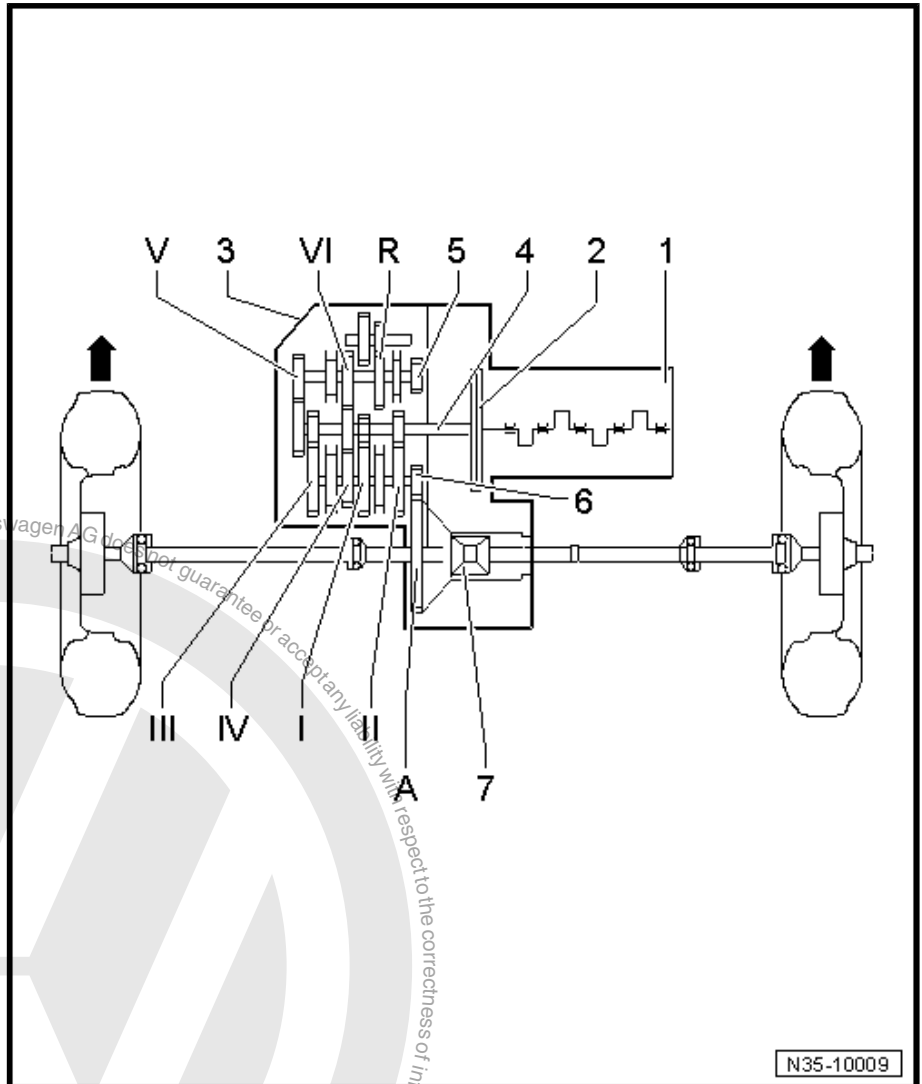


2 Overview - power transmission

Designation

-Arrows- indicate direction of travel.

- 1 - Engine
- 2 - Clutch
- 3 - Manual gearbox
- 4 - Input shaft
- 5 - Output shaft for 5th, 6th and reverse gears
- 6 - Output shaft for 1st through 4th gears
- 7 - Differential

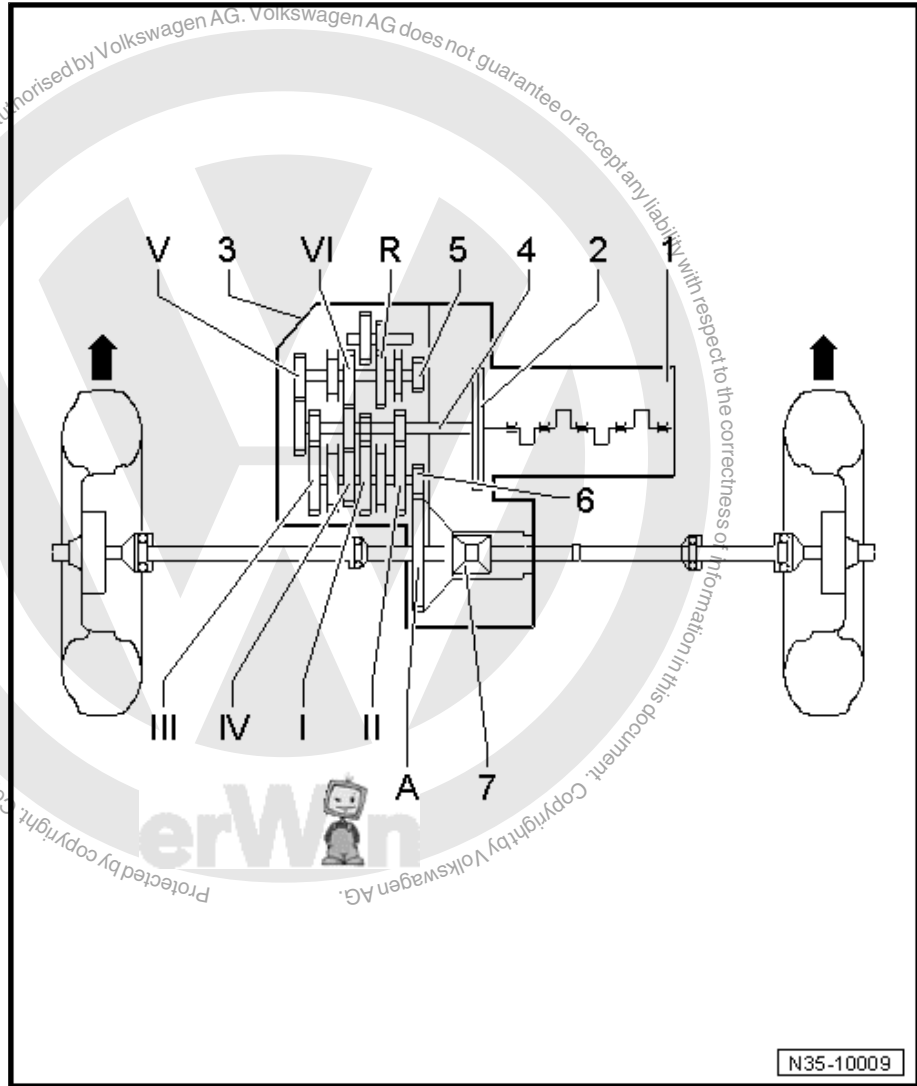


Gears

-Arrows- indicate direction of travel.



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





3 Calculating overall gear ratio „i“

Example:

	6th gear	Final drive
Drive gear	ZG ₁ = 43	ZA ₁ = 25
Driven gear	ZG ₂ = 35	ZA ₂ = 69

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

$$i_G = \text{Gear ratio} = ZG_2 : ZG_1 = 35 : 43 = 0.814$$

$$i_A = \text{Final drive ratio} = ZG_2 : ZG_1 = 69 : 25 = 2.760$$

$$i_{\text{total}} = \text{Overall ratio} = i_G \times i_A = 0.814 \times 2.760 = 2.247$$

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





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 Contact corrosion!

- ◆ The gearbox housing and clutch housing are made of a magnesium alloy.
- ◆ Bolts and other components in direct contact with the gearbox have a surface matched to it.
- ◆ If the incorrect components (bolts, nuts, washers and so on) are used, contact corrosion will develop. The gearbox housing and clutch housing will be damaged.
- ◆ Always install parts listed in the ⇒ Electronic parts catalogue „ETKA“ .

4.2 Special tools

For a complete list of special tools used in this workshop manual, see ⇒ Workshop equipment and special tools .

4.3 Components

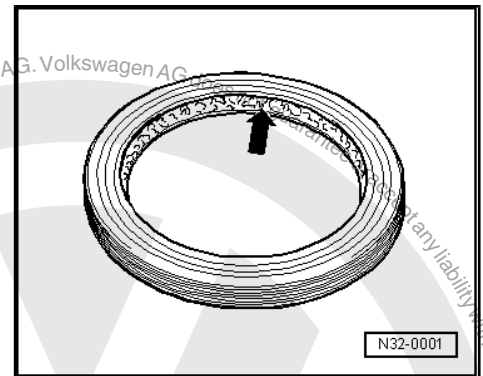
4.3.1 Gearbox

- ◆ 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“ .
- ◆ Following installation, check gear oil level ⇒ [page 126](#) .
- ◆ Capacity ⇒ [page 1](#) .



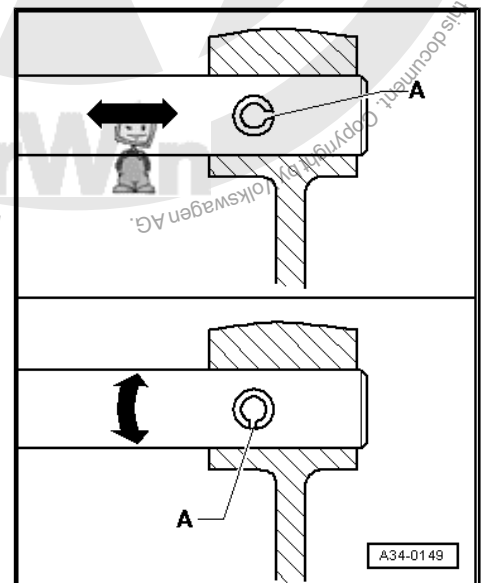
4.3.2 O-rings, seals, gaskets and sealants

- ◆ Thoroughly clean housing joint surfaces before applying sealant .
- ◆ Apply sealant -AMV 188 200 03- uniformly but not too thick.
- ◆ Always renew O-rings, seals and gaskets.
- ◆ When seals have been removed, check contact surface on housings or shafts for burrs and damage and rectify as necessary.
- ◆ 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 126](#) .



4.3.3 Locking devices

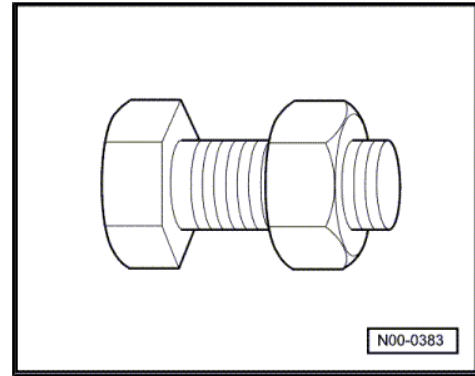
- ◆ Do not overstretch retaining rings.
- ◆ Always renew retaining rings which have been damaged or overstretched.
- ◆ Retaining rings must locate properly in grooves.
- ◆ Renew spring pins. Installation position: slit -A- should be in line with the line of force -arrow-.





4.3.4 Nuts and bolts

- ◆ Loosen and tighten securing bolts and nuts for covers and housings diagonally.
- ◆ Do not cant especially delicate parts, such as clutch pressure plates. Loosen and tighten bolts and nuts in stages in a diagonal sequence.
- ◆ Torque settings are specified for uncoiled bolts and nuts.
- ◆ Always renew self-locking bolts and nuts.
- ◆ Ensure with threaded connections that contact surfaces as well as nuts and bolts are rewaxed only after assembly, if necessary.
- ◆ Threads of bolts secured with locking fluid must be cleaned with a wire brush. Then insert bolts with locking fluid - AMV 185 101 A1- .
- ◆ Clean threaded holes in which self-locking bolts or bolts with locking fluid have been inserted, e.g. with a thread chaser. Otherwise there is a danger that the bolts may shear when removed again.

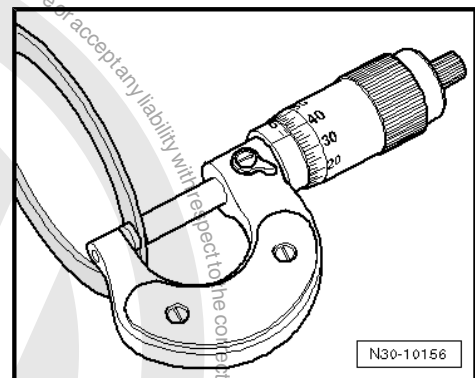


4.3.5 Bearings

- ◆ 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.

4.3.6 Shims

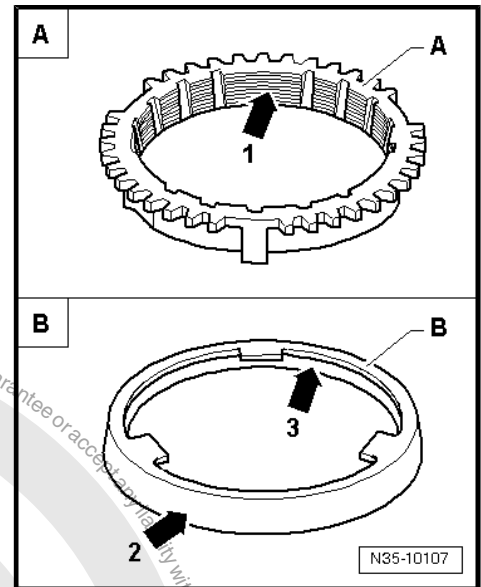
- ◆ Measure shims at several points with a micrometer. The various thicknesses make it possible to achieve the exact shim thickness required.
- ◆ Check for burrs and damage.
- ◆ Install only flawless shims.





4.3.7 Synchro-rings

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



4.3.8 Gears, synchro-hubs, inner races for synchromeshed gears

- ◆ Heat inner races for synchromeshed gear 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.

4.3.9 Synchromeshed gears

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

4.3.10 Clutch

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



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





2 Repairing clutch mechanism

2.1 Overview

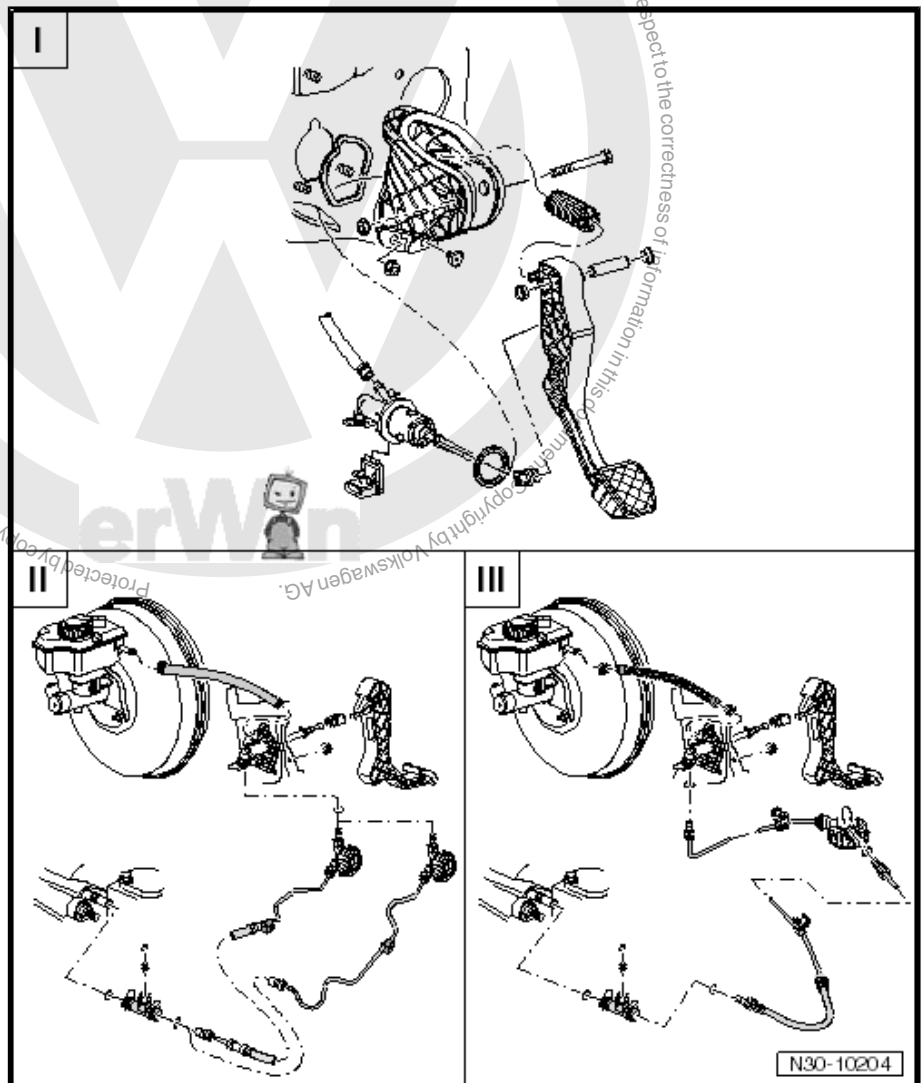
Note

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

I - Assembly overview - pedal cluster ⇒ [page 14](#)

II - Assembly overview - hydraulics (LHD) ⇒ [page 34](#)

III - Assembly overview - hydraulics (RHD) ⇒ [page 36](#)





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 23](#)

4 - Bolt

5 - Over-centre spring

- Removing and installing ⇒ [page 15](#)

6 - Bearing bush

7 - Pivot pin

8 - Clutch pedal

- Removing and installing ⇒ [page 19](#)

9 - Retainer

- To remove and install, separate master cylinder from clutch pedal ⇒ [page 19](#)

10 - Seal

- Always renew
- Between master cylinder and mounting bracket

11 - Master cylinder

- Removing and installing after removal of mounting bracket ⇒ [page 29](#)

12 - Clutch position sender -G476-

- Removing and installing ⇒ [page 30](#)
- Can be checked using „guided fault finding“ of vehicle diagnostic tester
- The clutch position sender -G476- is identified as clutch pedal switch -F36- in „guided fault finding“

13 - Clip

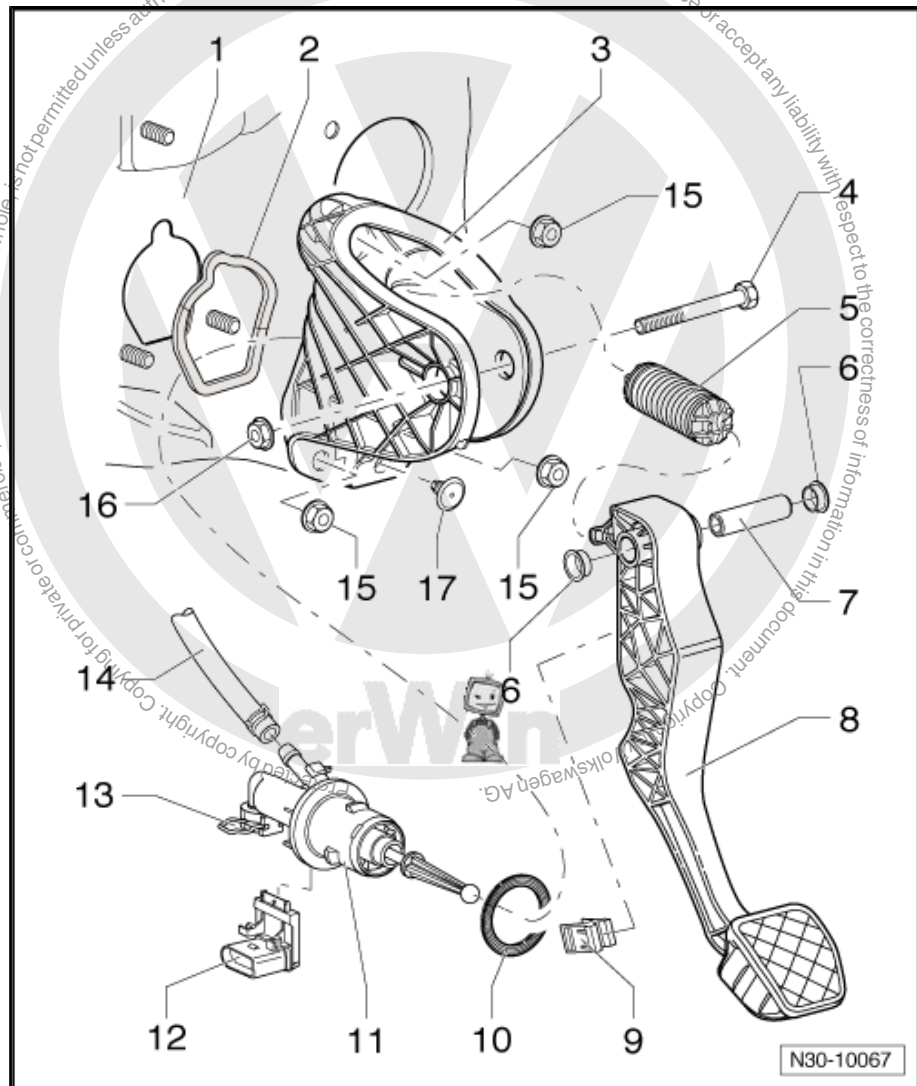
- Pull out clip to stop to remove and install pipe/hose line

14 - Supply hose

- Rubber
- From 12.05, plastic ⇒ [page 35](#)

15 - Hexagon nut, 25 Nm

- Self-locking





- Qty. 3
- For mounting bracket on bulkhead
- Always renew

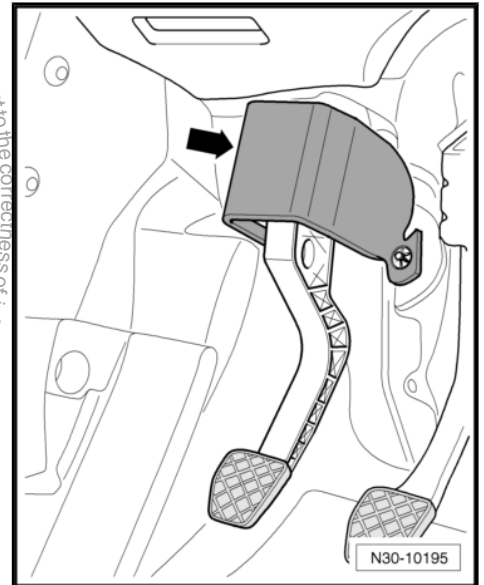
16 - Hexagon nut, 25 Nm

- Always renew

17 - Stop

- For clutch pedal

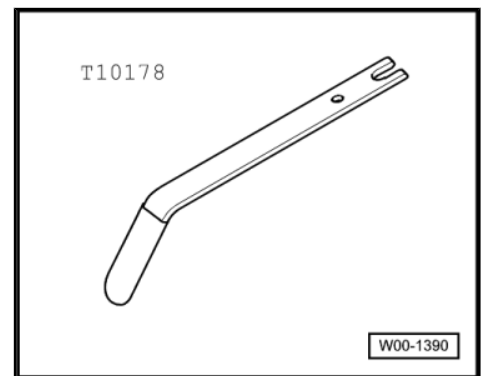
Mounting bracket with damping -arrows-



2.3 Removing and installing over-centre spring

Special tools and workshop equipment required

- ◆ Release tool -T10178-



2.3.1 Removing

Vehicles with knee airbag



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

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



- With ignition switched off, disconnect battery ⇒ Electrical system; Rep. gr. 27 ; Disconnecting and connecting battery .

Continuation for all

- Push driver seat as far back as possible and put steering wheel in highest position.
- Remove driver side footwell cover and driver side left trim panel ⇒ General body repairs, interior; Rep. gr. 68 ; Compartments, covers and trim panels .

Vehicles with knee airbag

- Remove bracket for knee airbag together with crash bar ⇒ Interior equipment; Rep. gr. 69 ; Airbag; Removing and installing knee airbag bracket .

Vehicles without knee airbag

- Remove crash bar -1- from in front of clutch pedal by removing nuts -2-.

Continuation for all

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

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

