

Audi 100 1991 ➤

Automatic Gearbox 01F 4WD

Gearbox ID	CBE	CBF	CEZ	CDE	CNT	CRH	CRF	CRG	CJD
	CYS								

Edition 11.1996

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

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

Audi 100 1991 ➤

Automatic Gearbox 01F 4WD

Repair Group

00 - Technical data

32 - Torque converter

37 - Controls, Housing

38 - Gears, Control

39 - Rear final drive, Differential



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

Contents

00 - Technical data	1
1 Identification of gearbox	1
1.1 Identification of gearbox	1
2 Code letters, assembly allocation, ratios and equipment	2
2.1 Code letters, assembly allocation, ratios and equipment	2
3 Identification of rear final drive	4
3.1 Identification of rear final drive	4
4 Code letters, assembly allocation and ratios	5
4.1 Code letters, assembly allocation and ratios	5
5 Capacities	6
5.1 Capacities	6
6 Repair instructions	7
6.1 Repair instructions	7
 32 - Torque converter	 10
1 Torque converter	10
1.1 Torque converter	10
1.2 Identification of torque converter	10
1.3 Checking torque converter	11
1.4 Draining torque converter	11
1.5 Renewing oil seal for torque converter	12
1.6 Installing torque converter	12
 37 - Controls, Housing	 14
1 Servicing shift mechanism	14
1.1 Servicing shift mechanism	14
1.2 Checking ignition key removal lock	14
1.3 Checking shift mechanism	14
1.4 Dismantling and assembling shift mechanism	15
1.5 Adjusting selector lever cable	24
1.6 Removing, installing and adjusting locking cable	27
2 Checking gearbox	29
2.1 Checking gearbox	29
2.2 Checking shift points	29
2.3 Checking stall speed	29
2.4 Measuring main pressure	29
2.5 Fault finding table for "4-speed automatic gearbox"	29
3 Removing and installing gearbox	29
3.1 Removing and installing gearbox	29
3.2 Securing gearbox to repair stand	38
3.3 Removing and installing left gearbox support	39
4 Checking or changing ATF	42
4.1 Checking or changing ATF	42
4.2 Checking ATF level	42
4.3 Changing ATF or topping up after repairs	47
5 Gearbox with shift elements	49
5.1 Gearbox with shift elements	49
5.2 Gearbox schematic diagram	49
5.3 Position of shift elements	51
6 Dismantling and assembling gearbox	52
6.1 Dismantling and assembling gearbox	52
6.2 Rules for cleanliness when working on automatic gearbox	52



6.3	Removing and installing ATF pipes	52
6.4	Removing and installing ATF pipes, 5-cylinder engine	53
6.5	Removing and installing ATF pipes, 6-cylinder engine	57
6.6	Cleaning ATF pipes and oil cooler	59
6.7	Removing and installing multi-function switch -F125	60
6.8	Adjusting multi-function switch -F125	61
38	- Gears, Control	64
1	Removing and installing oil pan, oil strainer and valve body	64
1.1	Removing and installing oil pan, oil strainer and valve body	64
1.2	Removing and installing oil pan	64
1.3	Removing and installing oil strainer	65
1.4	Removing and installing wiring harness in gearbox	65
1.5	Removing and installing valve body	66
1.6	Renewing internal oil pipe	68
2	Dismantling and assembling ATF pump	69
2.1	Dismantling and assembling ATF pump	69
39	- Rear final drive, Differential	78
1	Removing and installing speedometer sender -G22 and drive wheel for speedometer sender	78
1.1	Removing and installing speedometer sender -G22 and drive wheel for speedometer sender	78
2	Gear oil in front final drive	79
2.1	Gear oil in front final drive	79
2.2	Checking oil level in front final drive	79
2.3	Changing gear oil in front final drive or filling after repairs	80
3	Servicing front final drive	80
3.1	Servicing front final drive	80
3.2	Renewing oil seal for right flange shaft	87
3.3	Renewing right oil seal for input shaft	89
3.4	Renewing oil seal for left flange shaft	92
3.5	Renewing left oil seal for input shaft	95
3.6	Renewing oil seals for drive pinion shaft	97
4	Servicing intermediate drive for front final drive	99
4.1	Servicing intermediate drive for front final drive	99
4.2	Removing and installing front intermediate drive with transfer gearbox	106
4.3	Dismantling front intermediate drive	114
4.4	Renewing ATF breather	117
4.5	Renewing oil seals in front intermediate drive	118
5	Gear oil in transfer gearbox	120
5.1	Gear oil in transfer gearbox	120
5.2	Checking oil level in transfer gearbox	120
5.3	Changing gear oil in transfer gearbox or filling after repairs	121
6	Servicing transfer gearbox and rear intermediate drive	122
6.1	Servicing transfer gearbox and rear intermediate drive	122
6.2	Removing and installing vibration damper on transfer gearbox	130
6.3	Renewing oil seal for rear flange shaft	131
6.4	Sealing cover plate of transfer gearbox	133
6.5	Removing and installing transfer gearbox	134
6.6	Renewing oil seals in transfer gearbox	137
6.7	Renewing gasket for housing end cover for rear intermediate drive	139
6.8	Dismantling rear intermediate drive	141
6.9	Checking axial clearance of Torsen differential and adjusting	142
7	Servicing propshaft	147
7.1	Servicing propshaft	147

7.2	Removing and installing propshaft	148
7.3	Adjusting propshaft	152
7.4	Balancing propshaft/flange on rear final drive	156
8	Checking oil level in rear final drive	160
8.1	Checking oil level in rear final drive	160
9	Replacing oil seal and grooved ball bearing for propshaft flange	161
9.1	Replacing oil seal and grooved ball bearing for propshaft flange	161
9.2	Measuring and marking radial run-out at flange for propshaft	172
10	Removing and installing oil seals for flange shafts	173
10.1	Removing and installing oil seals for flange shafts	173
10.2	Renewing right flange shaft oil seal	173
10.3	Renewing left flange shaft oil seal	176
11	Removing and installing rear final drive	180
11.1	Removing and installing rear final drive	180
12	Dismantling and assembling rear final drive	190
12.1	Dismantling and assembling rear final drive	190
12.2	Assembly overview	190
12.3	Removing and installing differential together with differential lock	193
12.4	Removing and installing differential (version without differential lock)	198
12.5	Dismantling and assembling differential	204
12.6	Removing and installing drive pinion	215
13	Servicing differential lock mechanism, vehicles > 05.94	224
13.1	Servicing differential lock mechanism, vehicles > 05.94	224
13.2	Removing and installing switch for differential lock	224
13.3	Routing of pipes and hoses	225
13.4	Removing and installing vacuum unit	228
13.5	Dismantling and assembling differential lock	230
13.6	Adjusting left flange shaft	236
14	Adjusting drive pinion and crown wheel	237
14.1	Adjusting drive pinion and crown wheel	237
14.2	Adjustment and markings of final drive set	238
14.3	Recommended sequence for readjusting final drive set	238
14.4	Adjustment overview	239
14.5	Position of shims	240
15	Adjusting drive pinion	240
15.1	Adjusting drive pinion	240
16	Adjusting crown wheel	247
16.1	Adjusting crown wheel	247



Audi 100 1991 ➤

Audi Automatic Gearbox 01F 4WD - Edition 11.1996

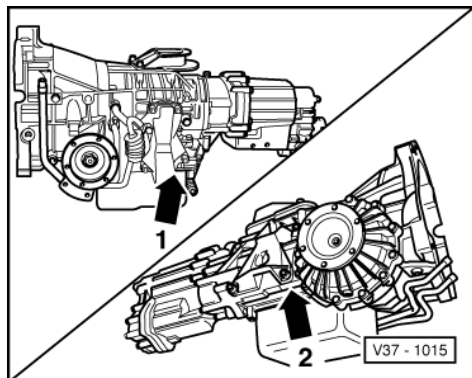


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

00 - Technical data

1 - Identification of gearbox

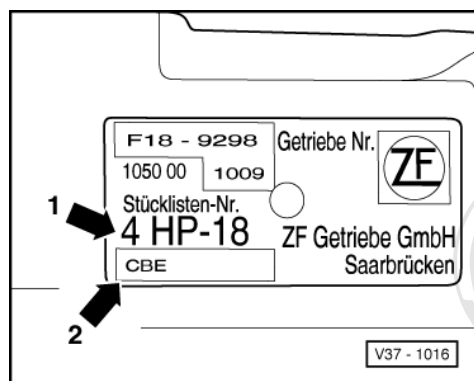
1.1 - Identification of gearbox



The "4-speed automatic gearbox 01F 4WD" is installed in the Audi 100 1991 ä in combination with the 5 and 6-cylinder engine. Allocation=>Technical data, page 2.

Location on gearbox

-> The code letters of the automatic gearbox 01F 4WD are provided on the data plate below the left gearbox support -arrow 1- and below the right gearbox support -arrow 2-.



-> Code letters -arrow 2- and designation of automatic gearbox 01F 4WD -arrow 1-.

Note:

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

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



2 - Code letters, assembly allocation, ratios and equipment

2.1 - Code letters, assembly allocation, ratios and equipment

Automatic gearbox, four wheel drive

Automatic gearbox		01F.4	01F.4	01F.5	01F.5
Gearbox	Code letters	CBF 1)	CRG2)4)	CDE 1)	CRH2)4)
	Manufactured from to	01.92 03.94 3)	04.94 -	11.92 03.94	04.94 -
Torque converter	Code letters	Z11	Z11	Q12	Q12
Ratios	1st gear	2.580	2.580	2.580	2.580
	2nd gear	1.407	1.407	1.407	1.407
	3rd gear	1.000	1.000	1.000	1.000
	4th gear	0.742	0.742	0.742	0.742
	Reverse gear	2.882	2.882	2.882	2.882
Allocation	Model	Audi 100 1991 ▶ (S4)	Audi 100 1991 ▶ (S6)	Audi 100 1991 ▶	Audi 100 1991 ▶ (A6)
	Engine	2.2 l - 169 kW	2.2 l - 169 kW	2.6 l - 110 kW	2.6 l - 110 kW

- 1) With ATF filler pipe.
- 2) Without ATF filler pipe.
- 3) 02.92 ▶: Modified procon-ten mounting.
- 4) Without procon-ten mounting.

Gearbox		Code letters	CBF	CRG	CDE	CRH
Intermediate drive for front final drive	No. of teeth	Input gear	27	27	27	27
		Intermediate gear	33	33	35	35
	Ratio	Output gear	34	34	36	36
		Ratio	1.259	1.259	1.333	1.333
Intermediate drive for rear final drive	No. of teeth	Input gear	37	37	37	37
		Output gear	39	39	39	39
	Ratio	Ratio	1.054	1.054	1.054	1.054
		Ratio	1.054	1.054	1.054	1.054
Front final drive	No. of teeth	Drive pinion	12	12	12	12
		Crown wheel	39	39	39	39
	Ratio	Ratio	3.250	3.250	3.250	3.250
Rear final drive allocation	Code letters		AET	CKL	AXS AAT	CKF

Automatic gearbox		01F.3	01F.3	01F.3	01F.3
Gearbox	Code letters	CBE 1)	CEZ 1)	CNT 1)	CRF2)4)
	Manufactured from to	10.91 03.92 3)4)	01.92 3)5) 07.93	08.93 03.94	04.94 10.95
Torque converter	Code letters	F11	F11	F11	F11
Ratios	1st gear	2.580	2.580	2.580	2.580

Automatic gearbox		01F.3	01F.3	01F.3	01F.3
2nd gear		1.407	1.407	1.407	1.407
3rd gear		1.000	1.000	1.000	1.000
4th gear		0.742	0.742	0.742	0.742
Reverse gear		2.882	2.882	2.882	2.882
Allocation	Model	Audi 100 1991 ▶	Audi 100 1991 ▶	Audi 100 1991 ▶	Audi 100 1991 ▶ (A6)
	Engine	2.8 l - 128 kW	2.8 l - 128 kW	2.8 l - 128 kW	2.8 l - 128 kW

- 1) With ATF filler pipe.
- 2) Without ATF filler pipe.
- 3) 02.92 ▶ Modified precon-ten mounting.
- 4) Without precon-ten mounting.
- 5) For USA: 01.92 ▶ 07.93, for Rest of World 03.93 ▶ 07.93

Gearbox	Code letters	CBE	CEZ	CNT	CRF
Intermediate drive for front final drive	No. of teeth				
	Input gear	27	27	27	27
	Intermediate gear	33	33	33	33
	Output gear	34	34	34	34
	Ratio	1.259	1.259	1.259	1.259
Intermediate drive for rear final drive	No. of teeth				
	Input gear	37	37	37	37
	Output gear	39	39	39	39
	Ratio	1.054	1.054	1.054	1.054
Front final drive	No. of teeth				
	Drive pinion	12	12	12	12
	Crown wheel	39	39	39	39
	Ratio	3.250	3.250	3.250	3.250
Rear final drive allocation	Code letters	AET	AET	AET	CKL

Automatic gearbox		01F.3	01F.5	01F.3
Gearbox	Code letters	CYS2)4)	CJD2)4)5)	CYS2)4)
	Manufactured from to	10.95 -	08.94 -	10.95 -
Torque converter	Code letters	F11	F11	F11
Ratios	1st gear	2.580	2.580	2.580
	2nd gear	1.407	1.407	1.407
	3rd gear	1.000	1.000	1.000
	4th gear	0.742	0.742	0.742
	Reverse gear	2.882	2.882	2.882
Allocation	Model	Audi 100 1991 ▶ (A6)	Audi 100 1991 ▶ (A6)	Audi 100 1991 ▶ (A6)
	Motor	2.8 l - 128 kW	2.8 l - 128 kW	2.8 l - 142 kW

- 2) Without ATF filler pipe.
- 4) Without precon-ten mounting.
- 5) Only USA

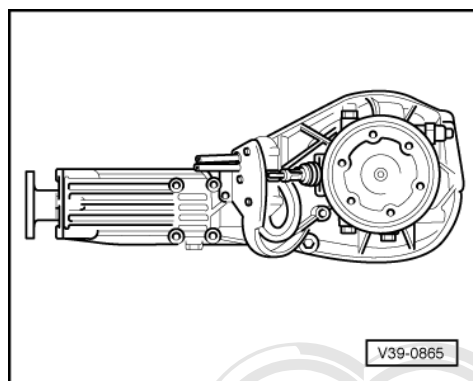


Gearbox	Code letters		CYS	CJD	CYS
Intermediate drive for front final drive	No. of teeth	Input gear	27	27	27
		Intermediate gear	33	35	33
		Output gear	34	36	34
	Ratio		1.259	1.333	1.259
Intermediate drive for rear final drive	No. of teeth	Input gear	37	37	37
		Output gear	39	39	39
	Ratio		1.054	1.054	1.054
Front final drive	No. of teeth	Drive pinion	12	12	12
		Crown wheel	39	39	39
	Ratio		3.250	3.250	3.250
Rear final drive allocation	Code letters		CKL	AAT6) CKF	CKL

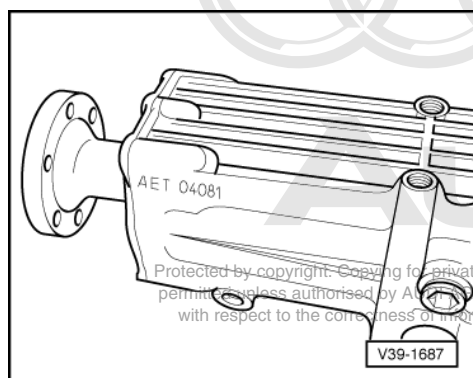
6) ➤07.95

3 - Identification of rear final drive

3.1 - Identification of rear final drive



-> The final drive 017 is allocated to the automatic gearbox 01F 4WD. Allocation=>page 5.



-> Code letters and date of manufacture of rear final drive

Example:	AET	04	08	1

Example:	AET	04	08	1
	Code letters	Day	Month	Year (1991) of manufacture

Note:

The code letters of the rear final drive are also given on the vehicle data stickers.

4 - Code letters, assembly allocation and ratios

4.1 - Code letters, assembly allocation and ratios

Rear final drive

Rear final drive		017		
Final drive	Code letters	AAT 1)	AET 1)	AXS 1)
	Manufactured from to	07.93 03.94 2)	10.91 03.94 3)	11.92 07.93
Ratios	Final drive Z2 : Z1 = i	37 : 9 = 4.111	35 : 9 = 3.889	37 : 9 = 4.111
Allocation	Model	Audi 100 1991 ►	Audi 100 1991 ► (S4)	Audi 100 1991 ►
	Engine	2.6 l - 110 kW 2.8 l - 128 kW (USA)	2.2 l - 169 kW 2.8 l - 128 kW	2.6 l - 110 kW
Automatic gearbox 01F 4WD allocation	Code letters	CDE CJD	CBF CBE CEZ CNT	CDE

- 1) With mechanical differential lock
- 2) USA: 7.94 ► 07.95
- 3) USA: ► 07.94

Rear final drive		017	
Final drive	Code letters	CKF	CKL
	Manufactured from to	04.94 -	04.94 -
Ratios	Final drive Z2 : Z1 = i	37 : 9 = 4.111	35 : 9 = 3.889
Allocation	Model	Audi 100 1991 ► (A6)	Audi 100 1991 ► (A6, S6)
	Engine	2.6 l - 110 kW 2.8 l - 128 kW 4)	2.2 l - 169 kW 2.8 l - 128 kW 2.8 l - 142 kW
Automatic gearbox 01F 4WD allocation	Code letters	CRH CJD	CRG CRF CYS

- 4) Only USA



5 - Capacities

5.1 - Capacities

Planetary gearbox

Capacities	Planetary gearbox	Automatic gearbox
Initial filling	7.0 l	01F 4WD
Change	approx. 2.7 l ¹⁾	
Lubricant	VW ATF G 052 162 ..	

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

- 1) Change intervals.

=> Maintenance Manual, Description of work; Automatic gearbox; Changing ATF

VW ATF G 052 162 .. is transparent and yellowish. It is available as a replacement part in the following container sizes:

- ♦ 0.5 ltr. - Part No. G 052 162 A1
- ♦ 1.0 ltr. - Part No. G 052 162 A2

Notes:

- ♦ For vehicles from 07.95 ➤ only VW ATF with Part No. G 052 162 .. (colour: transparent/yellow) may be used.
- ♦ For vehicles ➤ 06.95 remaining stock of ATF Dexron may be used up. Thereafter also use ATF with Part No. G 052 162 .. (colour: transparent/yellow).
- ♦ It is not permitted to use additives.

Checking or changing ATF=>page **42** .

Front final drive

Capacities	Front final drive	Automatic gearbox
Initial filling	approx. 0.7 l	01F 4WD
Oil change	Filled for life No change	
Lubricant	Gear oil SAE 75 W 90 G 052 145 (synthetic oil)	

Gear oil SAE 75 W 90 G 052 145 .. (synthetic oil) is available as a spare part in the following container sizes:

- ♦ 0.5 l - Part No. G 052 145 A1
- ♦ 1.0 l - Part No. G 052 145 A2

Checking oil level in front final drive=>page **79** .

Transfer gearbox

Capacities	Transfer gearbox	Automatic gearbox
Initial filling	1.02 l	01F 4WD
Change	Filled for life, no oil change	

Capacities	Transfer gearbox	Automatic gearbox
Lubricant	Gear oil SAE 75 W 90 G 052 145 (synthetic oil)	

Gear oil SAE 75 W 90 G 052 145 .. (synthetic oil) is available as a spare part in the following container sizes:

- ◆ 0.5 l - Part No. G 052 145 A1
- ◆ 1.0 l - Part No. G 052 145 A2

Checking oil level in transfer gearbox=>page **120** .

Rear final drive

Capacities	Rear final drive	Rear axle
Initial filling	1.7 l	017
Change	Filled for life, no oil change	
Lubricant	Gear oil SAE 75 W 90 G 052 145 (synthetic oil)	

Gear oil SAE 75 W 90 G 052 145 .. (synthetic oil) is available as a spare part in the following container sizes:

- ◆ 0.5 l - Part No. G 052 145 A1
- ◆ 1.0 l - Part No. G 052 145 A2

Checking oil level in rear final drive=>page **160** .

6 - Repair instructions

6.1 - Repair instructions

The maximum possible care and cleanliness and proper tools are essential to ensure satisfactory and successful gearbox repairs. The usual basic safety precautions also naturally apply when carrying out vehicle repairs.

A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in the Workshop Manual, are summarised here. They apply to this Workshop Manual.

Special tools

For a complete list of special tools used in this Workshop Manual

=> Booklet; Special tools, Workshop equipment

Gearbox

- ◆ Do not run the engine or tow the vehicle if the oil sump is removed or if the ATF has been drained from the gearbox.
- ◆ When exchanging the automatic gearbox, check the following fluid levels and top-up if necessary: ATF in planetary gearbox=>page **6** .
- ◆ When exchanging the rear final drive, check the oil level in the rear final drive and top-up if necessary=>page **6** .
- ◆ If the gearbox is removed from the vehicle, secure the torque converter to prevent it from dropping out.
- ◆ Thoroughly clean all connections and the surrounding area before disconnecting.
- ◆ Before installing the gearbox, check the installed dimension of the torque converter => page **12** .
- ◆ When installing gearbox, ensure that the dowel sleeves are fitted correctly.



- ♦ Place removed parts on a clean surface and cover over. Use sheeting and paper. Do not use fluffing cloths!
- ♦ If repairs cannot be completed immediately and components are left open, cover the components carefully or fit plugs as required.
- ♦ Install only clean parts: do not remove replacement parts from their wrapping until you are ready to install them.
- ♦ Observe rules for cleanliness when working on automatic gearbox => page 52 .

O-rings, seals, gaskets

- ♦ Always renew O-rings, seals and gaskets.
- ♦ After removing gaskets and seals, always inspect the contact surface on the housing or shaft for burrs resulting from removal or for other signs of damage.
- ♦ When installing oil seals, lightly coat outer edge and sealing lips with vaseline.
- ♦ Coat O-rings with vaseline before installing; this prevents the rings from being crushed when inserting.
- ♦ Only use vaseline in small quantities. Other lubricants can cause malfunctions in the hydraulic actuator elements in the gearbox.
- ♦ The open side of the oil seals faces toward the side with fluid filling.
- ♦ After installing, check fluid levels in all affected areas and top-up if necessary: ATF in planetary gearbox=>page 6 .

Locking elements

- ♦ Do not over-stretch circlips; renew if necessary.
- ♦ Circlips must be properly seated in the base of the groove.

Nuts, bolts

- ♦ Slacken the bolts in reverse sequence to the specified tightening sequence.
- ♦ Nuts and bolts which secure covers and housings should be slackened and tightened crosswise in stages if no tightening sequence is specified.
- ♦ Renew self-locking nuts.
- ♦ The threads of bolts which are secured by a locking fluid should be cleaned with a wire brush. Then apply AMV 185 101 A1 when inserting.
- ♦ The tightening torques **stated apply to non-oiled nuts and bolts**.

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

Bearings

- ♦ Install needle bearings with the lettering on the bearing (the side with thicker metal) facing towards the drift or other tool used for installing.
- ♦ Lubricate bearings with gear oil or ATF, depending on fitting location.
- ♦ The taper roller bearings for the drive pinion and the differential in the rear final drive are of the low-friction type. Do not additionally oil new taper roller bearings before performing friction torque measurements. These bearings have already been lubricated with a special oil for this purpose by the manufacturer.
- ♦ Do not interchange the outer or inner races of bearings of the same size.
- ♦ Always replace the taper roller bearings on one shaft together and use new bearings from a single manufacturer.
- ♦ Heat inner races of taper roller bearings to approx. 100 °C before installing. Press in onto stop when installing so there is no axial clearance.

Shims

- ♦ Use a micrometer to measure the shims at several points. Different tolerances make it possible to obtain the exact shim thickness required.
- ♦ Inspect for burrs and signs of damage. Install only shims which are in perfect condition.

Valve body

- ♦ Renew the valve body if any of the selector elements are scorched.

Self-diagnosis

- ♦ Before performing repairs to the automatic gearbox, determine the cause of the fault as precisely as possible using the self-diagnosis.



=> Automatic gearbox 01F and 01K self-diagnosis; Repair Group 01; Performing self-diagnosis Performing self-diagnosis



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



32 - Torque converter

1 - Torque converter

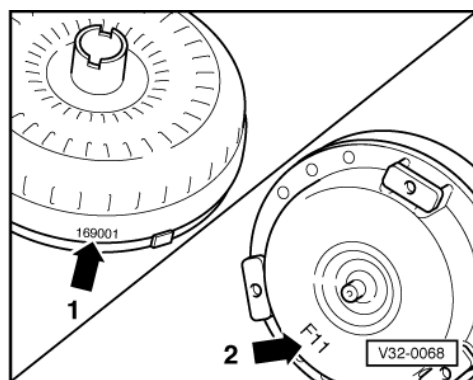
1.1 - Torque converter

Before installing gearbox, check torque converter installation dimensions => page 12 .

Notes:

- ♦ Observe rules for cleanliness when working on automatic gearbox => page 52 .
- ♦ General repair instructions=>page 7 .
- ♦ Coat oil seals thinly with Vaseline. Other lubricants will cause malfunctions in the hydraulic actuator elements in the gearbox.

1.2 - Identification of torque converter



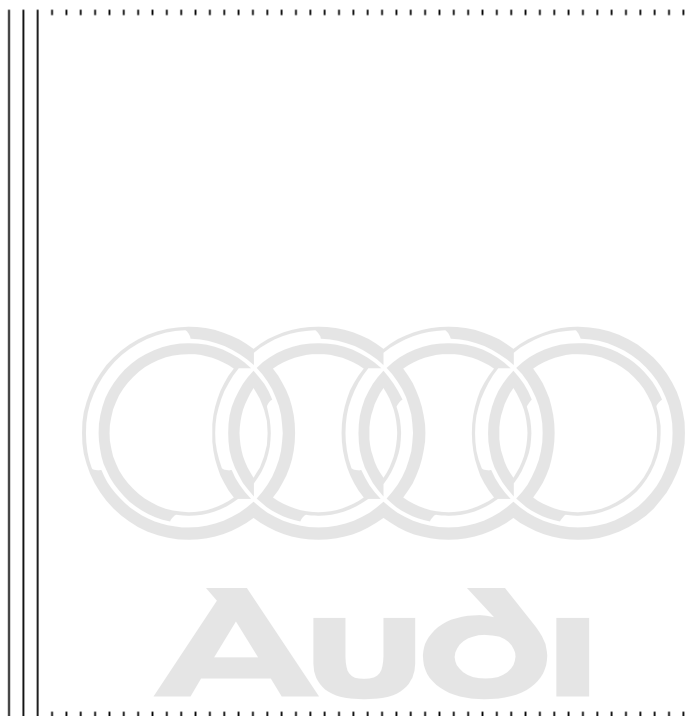
-> There are different torque converters. The identification is provided on the circumference -arrow 1- and on the side of the torque converter facing the engine -arrow 2-.

Allocation of torque converter/gearbox=>from page 2 .



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

1.3 - Checking torque converter

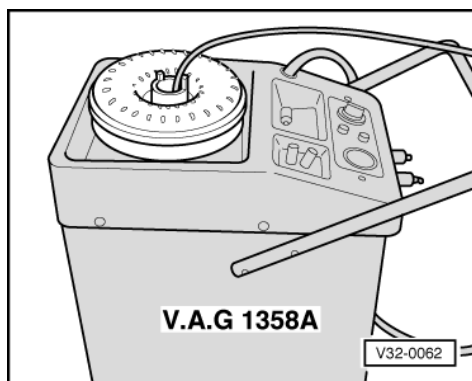


- -> Check the hub of the torque converter for signs of wear - arrow -

Note:

The torque converter is welded together and must be replaced as a complete unit if it is damaged or defective.

1.4 - Draining torque converter

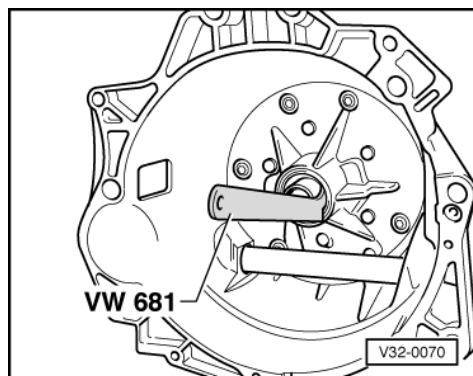


If there is dirt in the ATF resulting from internal wear, or if the gearbox is being overhauled, the torque converter must be drained.

- -> Extract ATF from torque converter with oil extractor V.A.G 1358 A and probe V.A.G 1358 A/1.

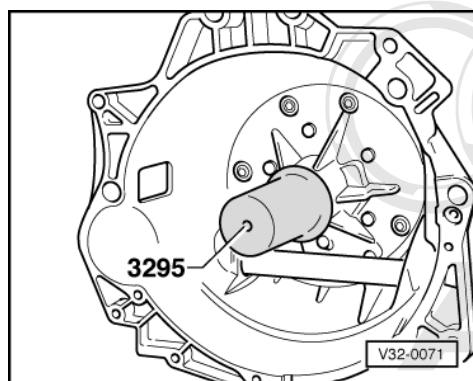
1.5 - Renewing oil seal for torque converter

The following special tools and test units are required for this work:



- ♦ Extractor lever VW 681
- ♦ Thrust piece 3295

- Remove gearbox=>page 29 .
- Remove torque converter.
- Mount gearbox on assembly stand=>page 38 or place on a flat surface.
- -> Remove torque converter oil seal with oil seal extractor lever VW 681.



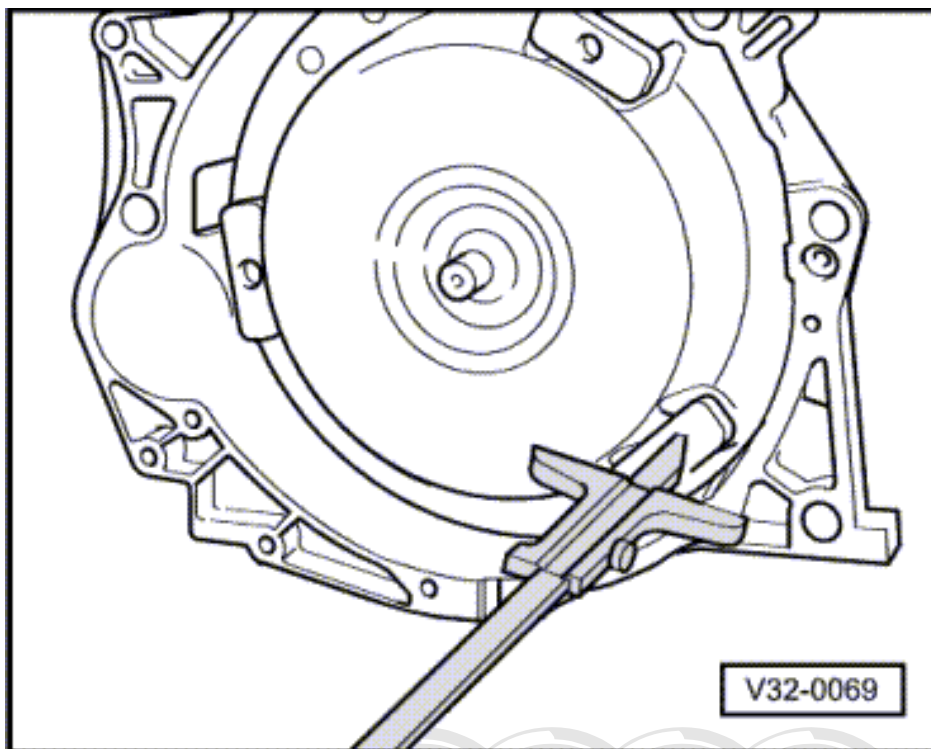
Notes:

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

- ♦ The open side of the oil seal faces towards the gearbox.
- ♦ Before installing, thinly coat outer circumference and oil seal sealing lip with Vaseline.
- -> Drive in torque converter oil seal with thrust piece 3295 until thrust piece reaches stop.

1.6 - Installing torque converter

- Press torque converter hub through oil seal as far as first stop.
- Lightly press torque converter inwards and turn until slots on torque converter hub engage in drive lugs on ATF pump gear and torque converter slides in a noticeable distance.



Installed depth

-> When the torque converter is correctly inserted, the distance between the surface of the securing eyes and the surface of the torque converter bell housing is at least 19 mm.

If the torque converter is not inserted correctly, this distance will be approximately 14 mm and the freewheel support will not be fully seated.

Important!

If the torque converter is incorrectly inserted, the driver of the torque converter or the ATF pump will be severely damaged when the gearbox is attached to the engine.

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



37 - Controls, Housing

1 - Servicing shift mechanism

1.1 - Servicing shift mechanism

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

Warning!

Before working on engine when it is running, move selector lever into position "P" and apply handbrake.

1.2 - Checking ignition key removal lock

- Shift selector lever to "P" position and turn ignition key to end position (ignition off). It must only be possible to remove ignition key with selector lever in position "P".
- Pull ignition key out. Selector lever cannot be shifted out of "P" position.

1.3 - Checking shift mechanism

Selector lever in "P" position and ignition switched on:

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of "P" position. Solenoid for selector lever lock blocks selector lever.

- Brake pedal depressed:

Solenoid for selector lever lock releases selector lever. It is possible to shift into a driving gear. Shift selector lever from "P" through "R, N, D, 3, 2, 1" slowly and check that selector lever display in dash panel corresponds to selector lever position.

Selector lever in "N" position and ignition switched on:

- Brake pedal not depressed:

Selector lever is locked and cannot be shifted out of "N" position. Solenoid for selector lever lock blocks selector lever.

- Brake pedal depressed:

Solenoid for selector lever lock releases selector lever. It is possible to shift into a driving gear.

Notes:

- ♦ The starter must not operate in the selector lever positions "1", "2", "3", "D" and "R".
- ♦ When travelling at speeds above 5 km/h and shifting into selector lever position "N", solenoid for selector lever lock must not engage and block selector lever. Selector lever can be shifted into a driving gear.
- ♦ When travelling at speeds below 5 km/h (almost stopped) and shifting into selector lever position "N", solenoid for selector lever lock must not engage until after approx. 1 sec. Selector lever cannot be shifted out of "N" position until brake pedal is depressed.

1.4 - Dismantling and assembling shift mechanism

The following work is necessary before dismantling the shift mechanism:

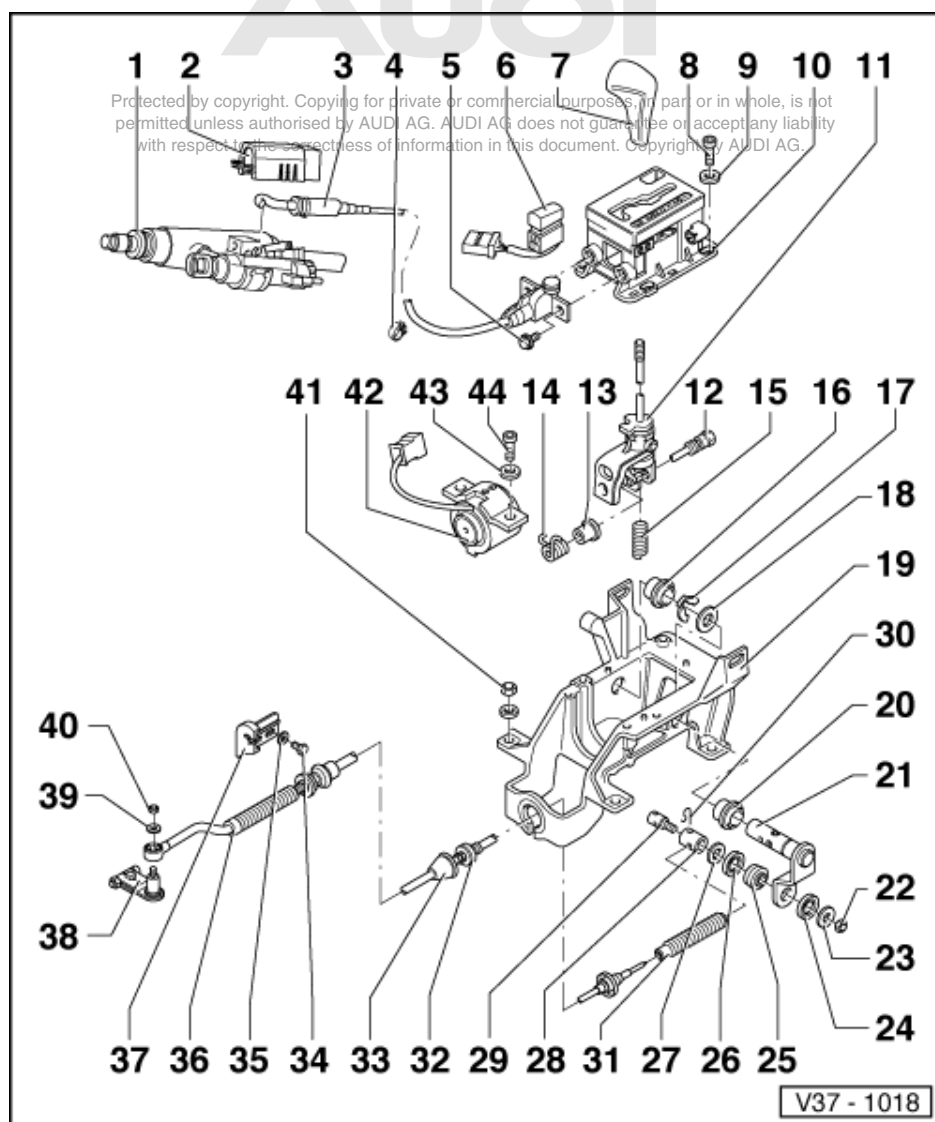
- ♦ To work on selector housing (shift gate), remove solenoid for selector lever lock or front centre console locking cable.

=> General Body Repairs; Repair Group 70; Dash panel; Removing and installing front centre console. Dash panel Removing and installing front centre console.

- ♦ When replacing locking cable, also remove steering wheel and dash panel insert

=> Electrical System; Repair Group 90; Dash panel insert; Removing and installing dash panel insert Dash panel insert Removing and installing dash panel insert

- ♦ The entire selector mechanism is removed upwards.



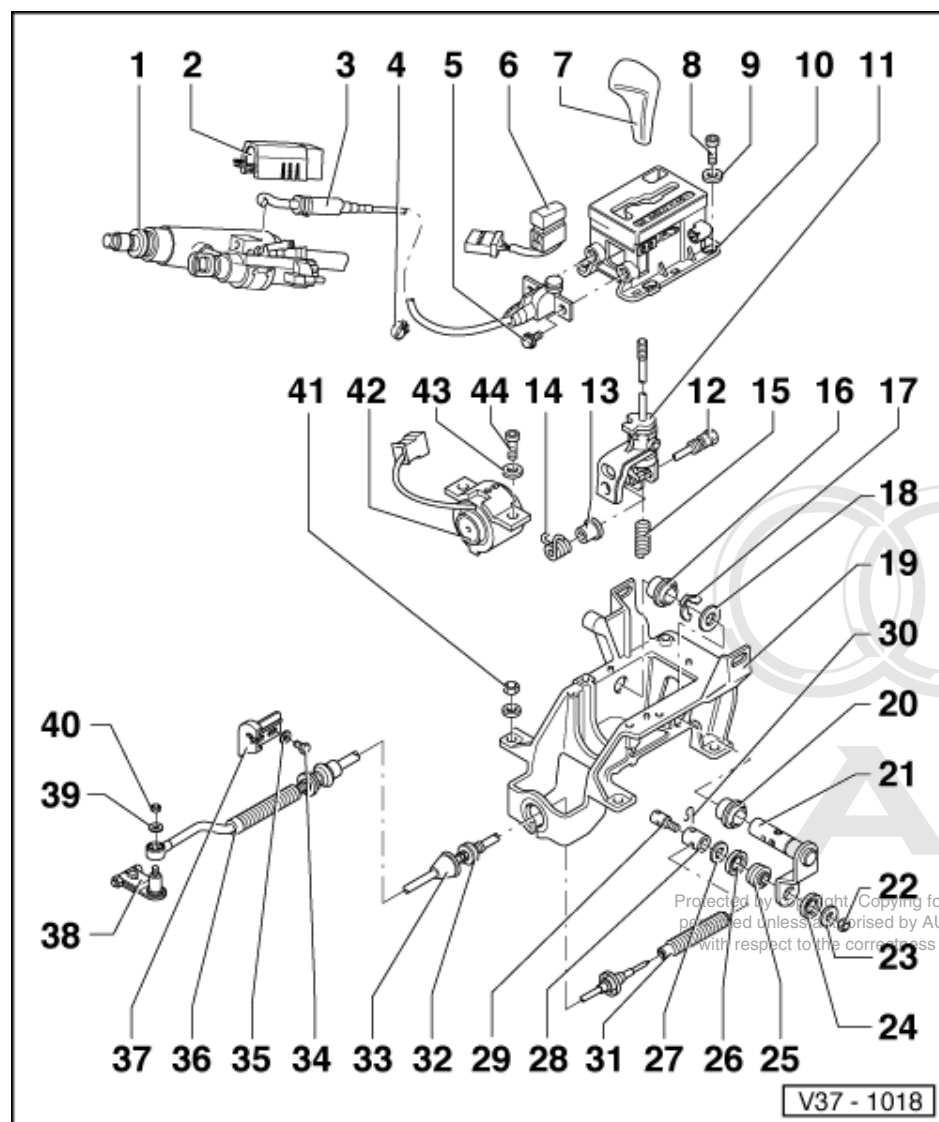
1 Ignition/starter switch

2 Cover cap

3 Locking cable

- ♦ To remove and install, remove centre console, steering wheel and dash panel insert
- ♦ Removing and installing
=>page 27
- ♦ Do not kink

- ♦ Adjusting => page 28
- 4 Clip
 - ♦ Securing=>Removing, installing and adjusting locking cable, page 27
- 5 Bolt - 10 Nm



6 Program switch -E122

- ♦ Discontinued on gearbox with DSP

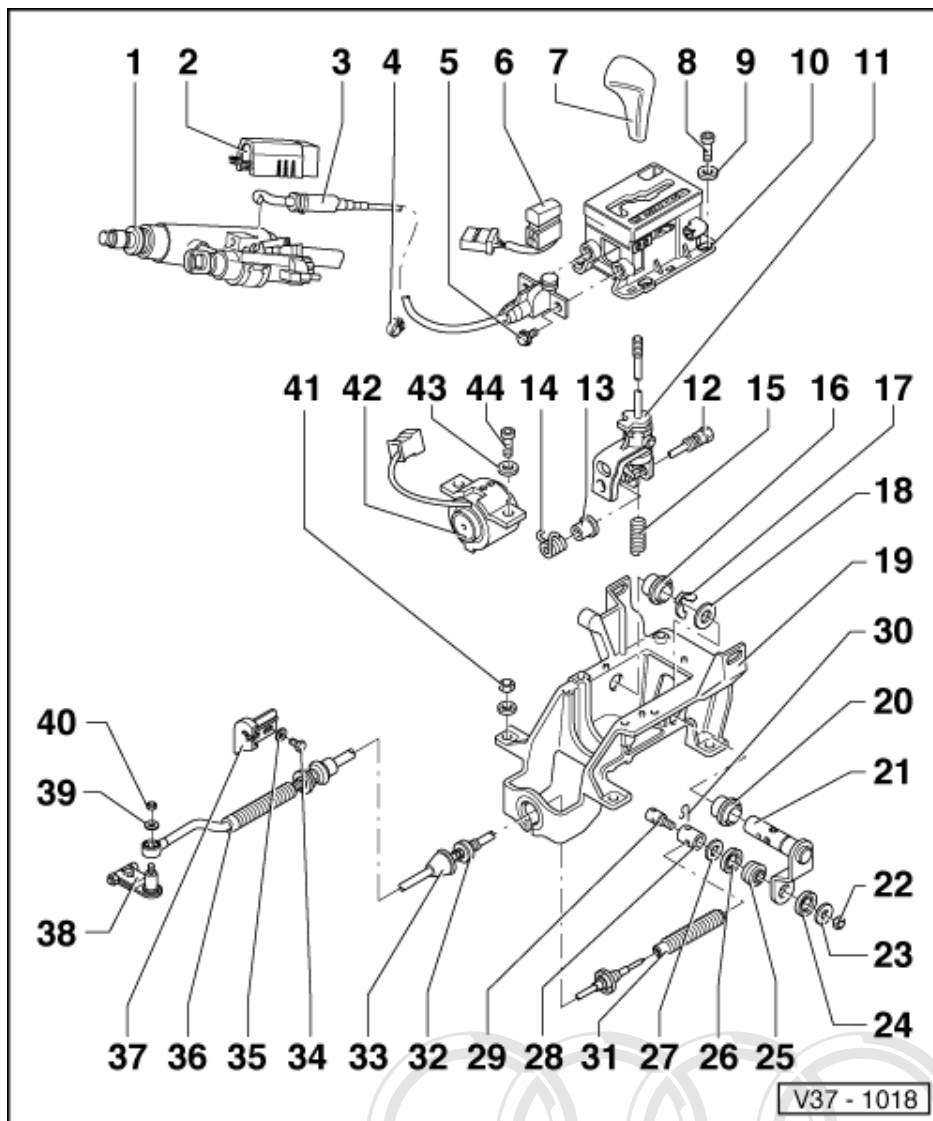
7 Selector lever handle

8 Bolt - 10 Nm

9 Washer

10 Selector housing (shift gate)

- ♦ Before removing selector housing, unbolt locking cable from selector housing
- ♦ Install selector housing after adjusting selector lever lock solenoid -N110
- ♦ Aligning=>Fig. 2



11 Selector lever

- ♦ With clevis to lock selector lever in positions "P" and "N" and mechanism to release ignition key in position "P" via locking cable
- ♦ Checking distance between selector lever and selector lever lock solenoid -N110
=>Fig. 1

12 Guide pin - 22 Nm

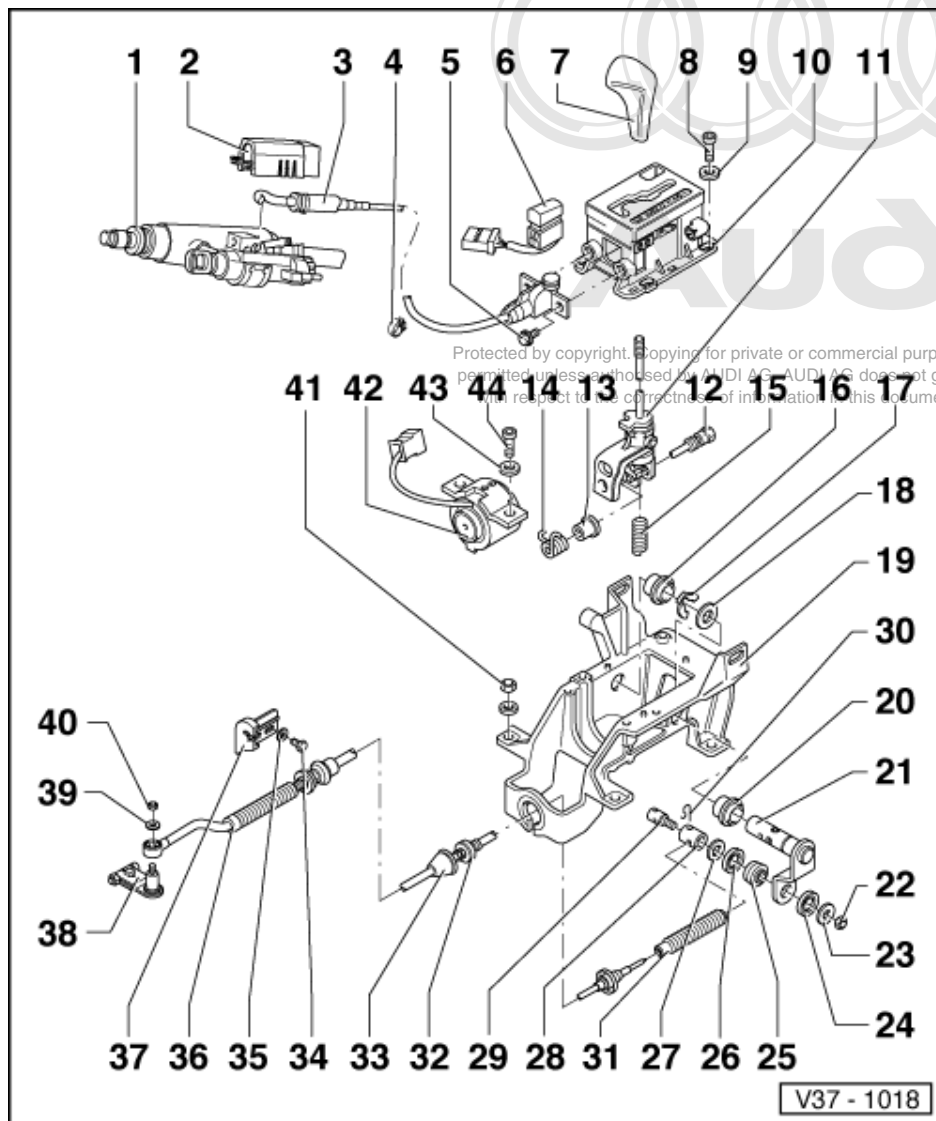
- ♦ Install after fitting compression spring -Item 15 -

13 Bush

- ♦ For torsion spring -Item 14 -

14 Torsion spring

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



15 Compression spring

- ♦ Insert into selector lever before installing guide pin -Item **12** -

16 Bush

- ♦ Grease with G 000 660 after installing

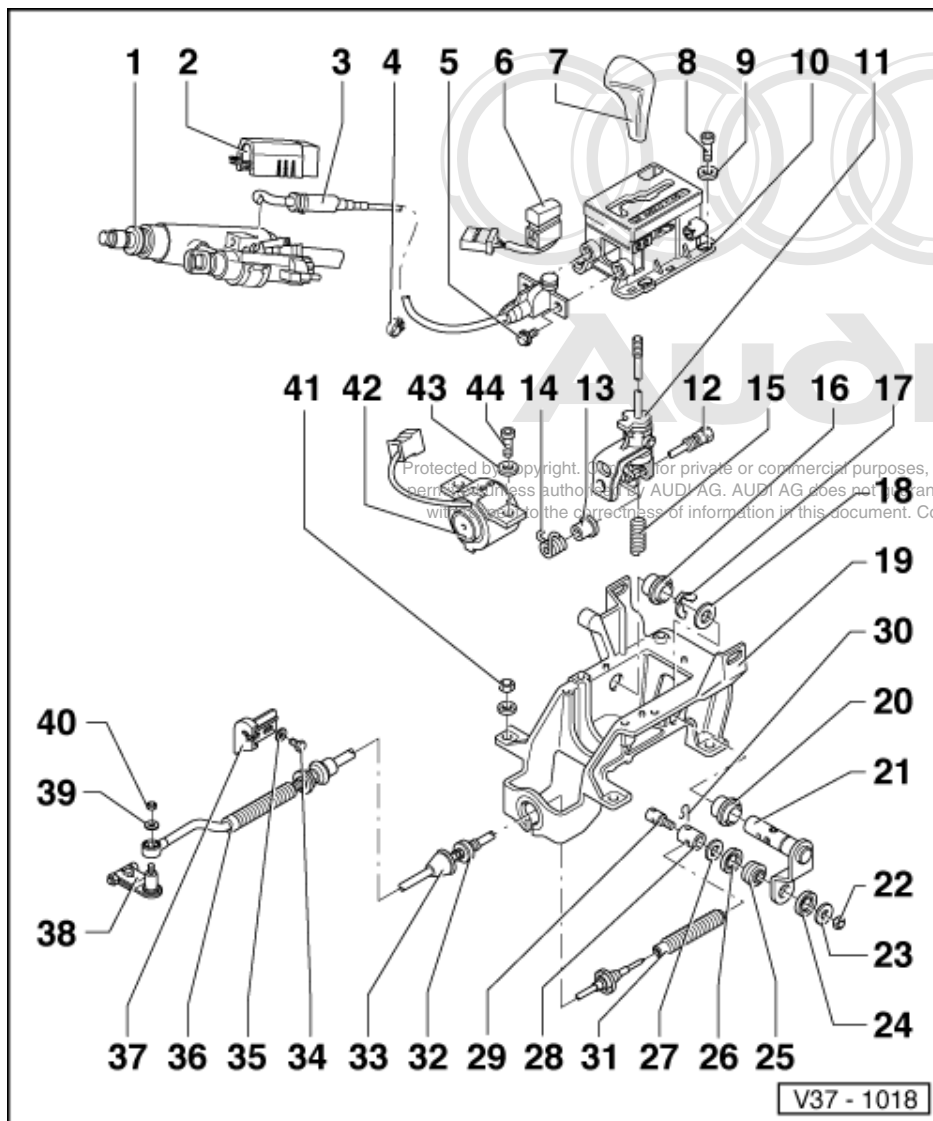
17 Lock washer

- ♦ Install after fitting lever for shift mechanism -Item **21** -

18 Washer

19 Mounting bracket for shift mechanism

- ♦ Before installing mounting bracket for shift mechanism, fit a washer (18 x 6.1 x 2) on each of the two studs at the front



20 Bush

- ♦ Grease with G 000 660 after installing

21 Lever for shift mechanism

22 Nut - 4 Nm

23 Washer

24 Sleeve

25 Bush

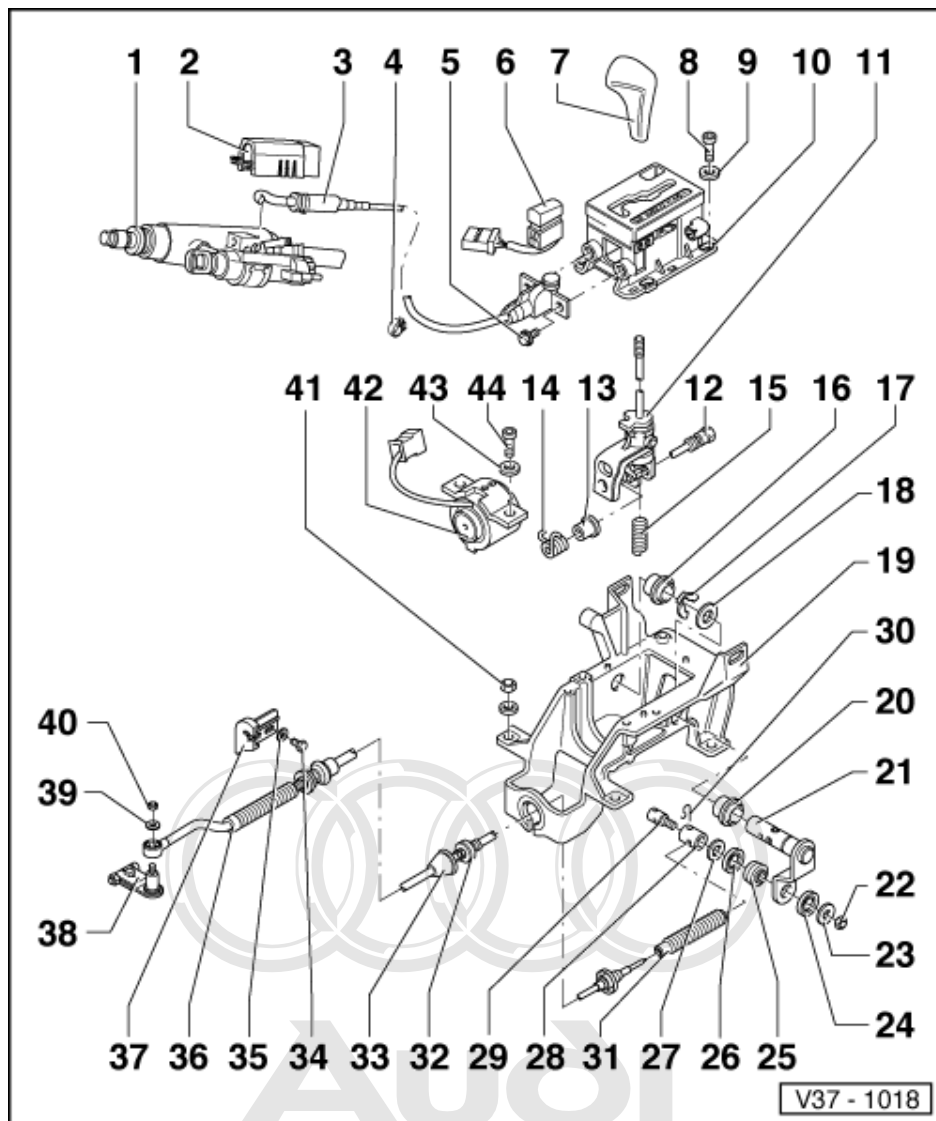
- ♦ Insert into lever for shift mechanism -Item **21** -

26 Sealing collar

27 Washer

28 Clamp

- ♦ For selector lever cable



29 Clamping pin

- ♦ For selector lever cable

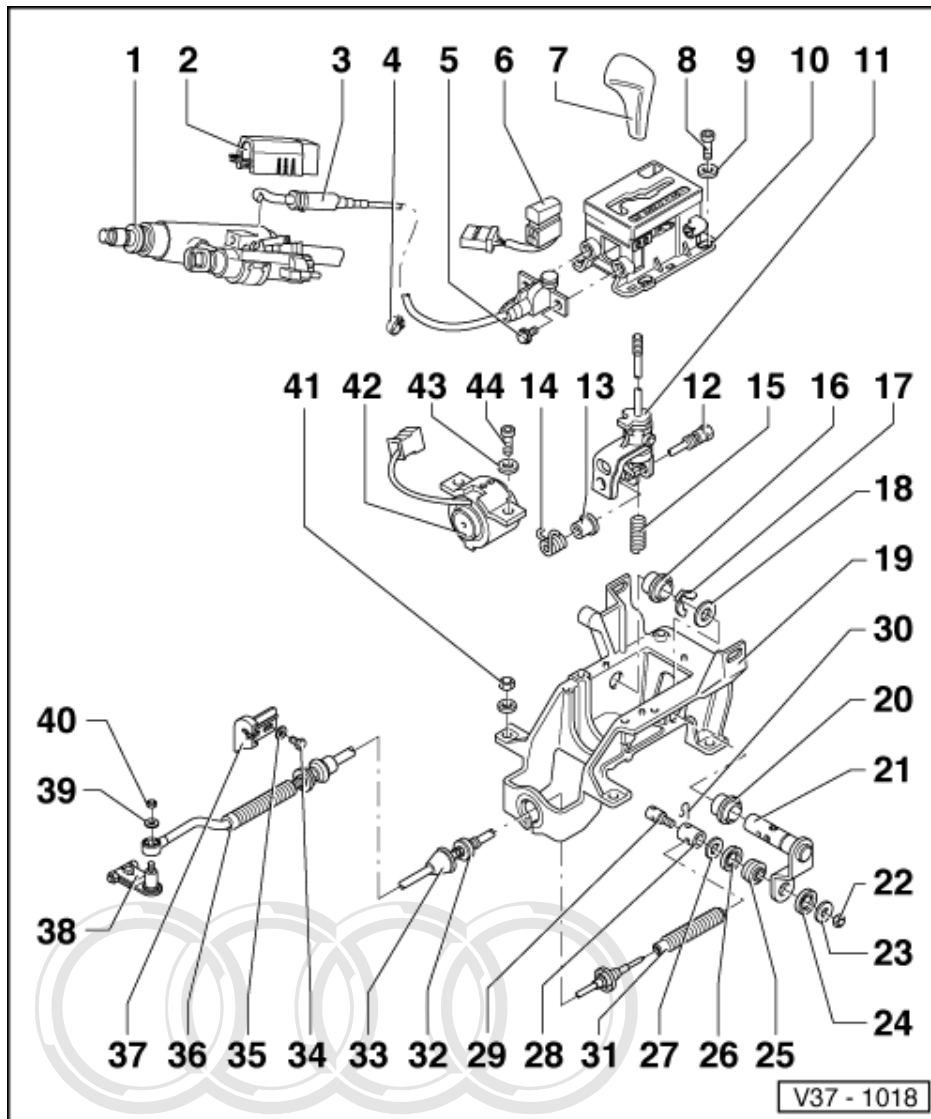
30 Spring clip

31 Rear bellows

- ♦ Replace if damaged
- ♦ Check for proper seating

32 Selector lever cable

- ♦ With guide and bush
- ♦ Tighten bolts on cable attachments to 12 Nm
- ♦ Ensure guide tube is properly secured
- ♦ Do not bend or kink selector lever cable
- ♦ Grease bearing for selector lever cable on gearbox selector lever with G 000 660



- ◆ Ensure that bellows for selector lever cable is fitted correctly, otherwise water can enter selector lever cable assembly
- ◆ Adjusting=>page 25

33 Grommet

- ◆ Replace if damaged

Protected by copyright. No reproduction for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

34 Bolt - 23 Nm

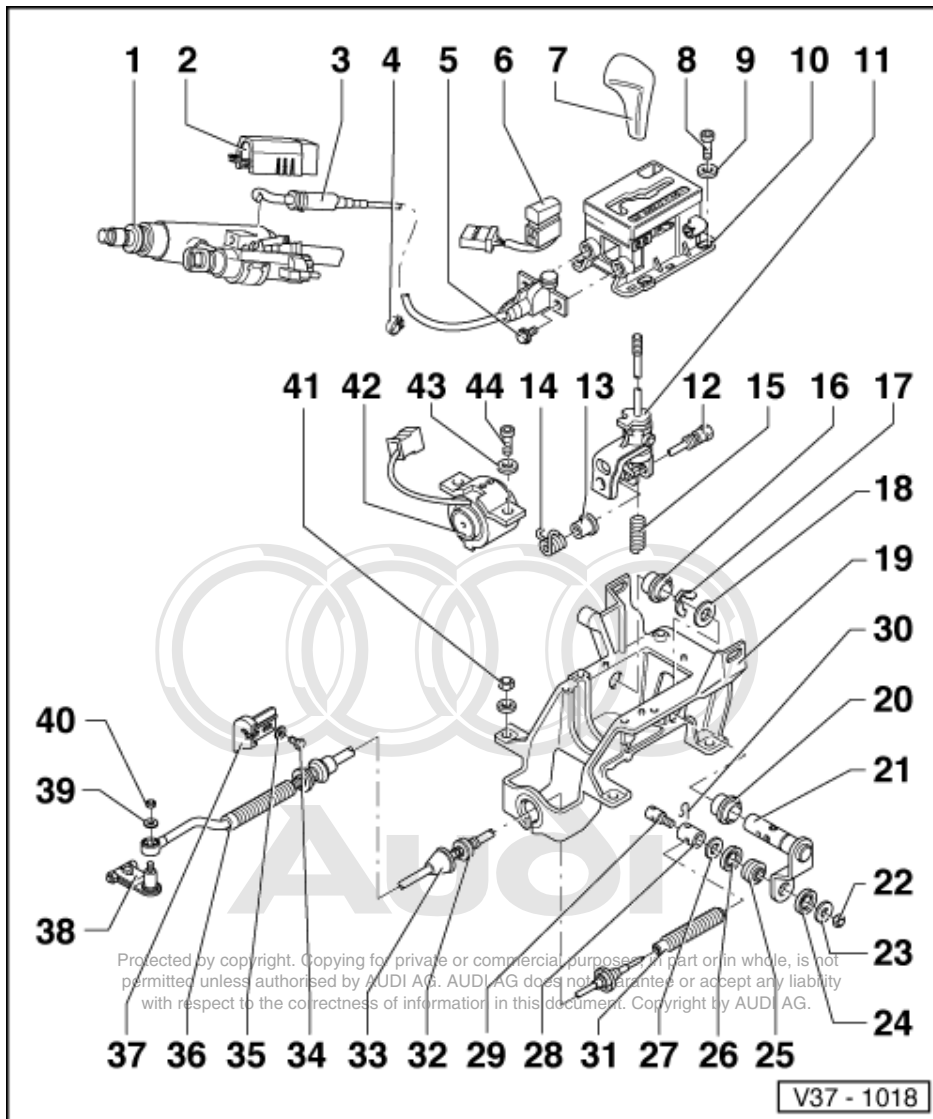
35 Washer

36 Bellows

- ◆ If bellows is damaged, renew selector lever cable

37 Support bracket

- ◆ For selector lever cable
- ◆ On gearbox



38 Gearbox selector lever

- ♦ Grease bearing for selector lever cable with G 000 660

39 Washer

- ♦ Installation position: shoulder towards selector lever cable
- ♦ Grease shoulder with G 000 660

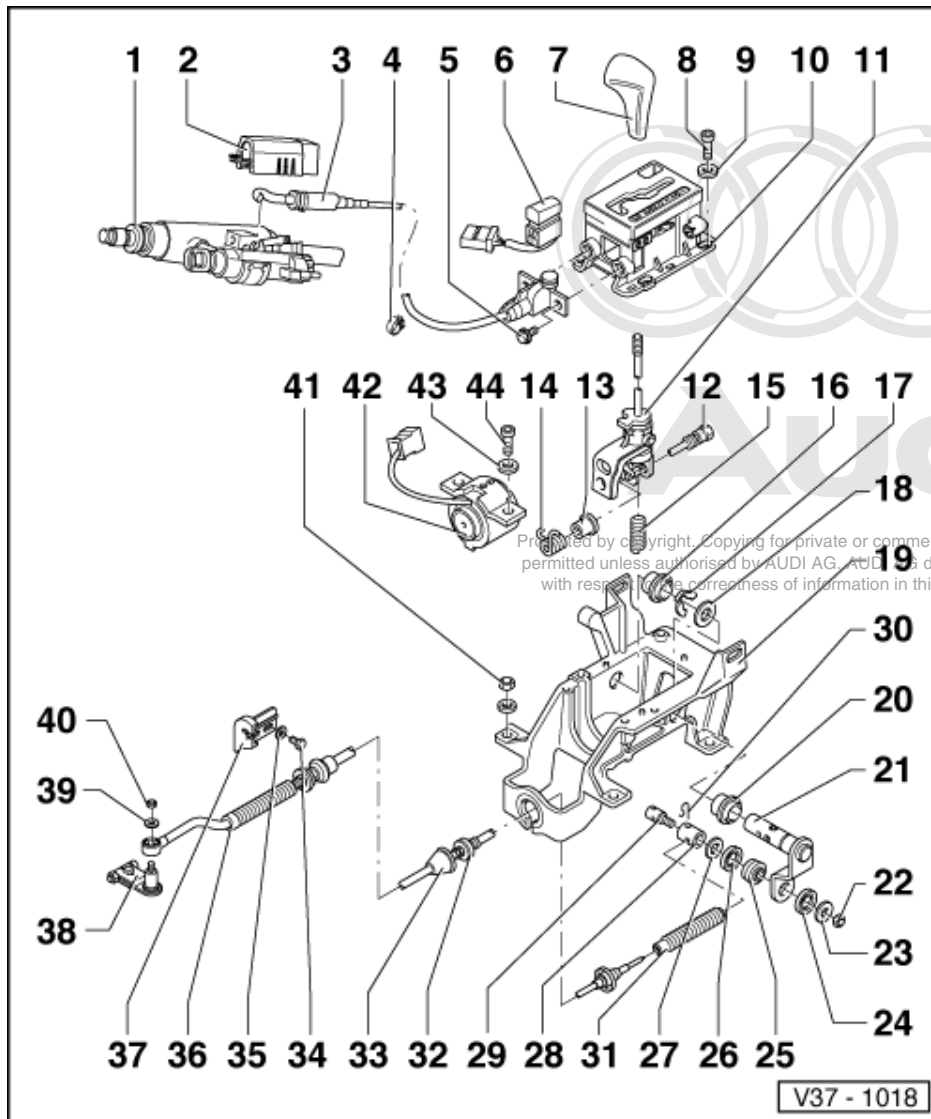
40 Nut - 8 Nm

41 Nut - 10 Nm

42 Magnet for selector lever lock N110

- ♦ Checking using self-diagnosis

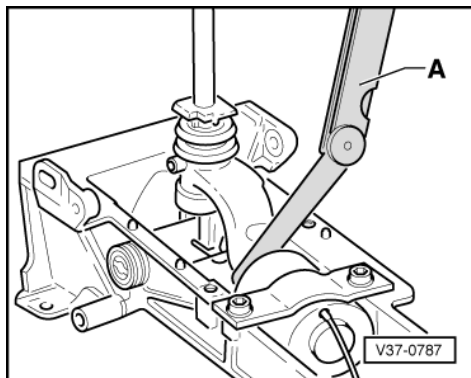
=> Automatic gearbox 01F and 01K, Self-diagnosis; Repair Group 01; Performing self-diagnosis Performing self-diagnosis



- ♦ Installing:
- Press solenoid with locking mechanism in axial direction against mounting bracket for shift mechanism, and tighten solenoid securing bolts
- After installing shift mechanism, switch on ignition. The solenoid blocks the selector lever in position "P" and position "N". The selector lever can be moved out of positions "P" and "N" when the brake pedal is pressed
- Checking clearance between selector lever and solenoid
=>Fig. 1.

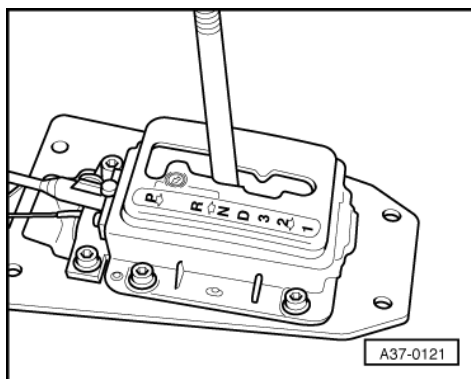
43 Washer

44 Bolt - 10 Nm



-> Fig.1 Checking clearance between selector lever and solenoid for selector lever lock -N110

- With selector lever in position "R", measure clearance between selector lever and selector lever lock solenoid using a feeler gauge -A-.
- Specification: 0.6 - 1.4 mm
- Adjust clearance if necessary by moving solenoid in holes in mounting bracket.

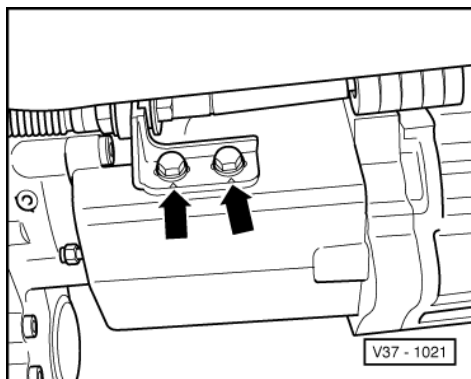


-> Fig.2 Aligning selector housing with selector lever

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

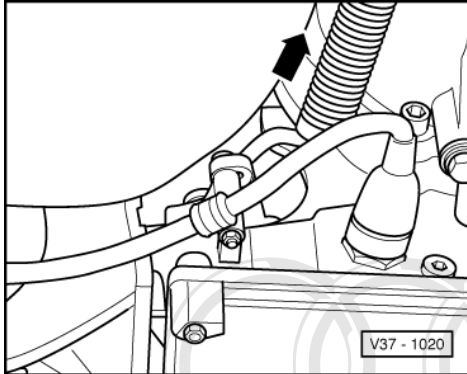
- After installing selector lever lock solenoid, align bottom hole of clevis centrally with solenoid and energise solenoid.
- Fit selector housing (shift gate) in position. Selector lever should now be aligned with position "N" on selector housing.
- After tightening selector housing mountings, shift selector lever through all positions and check that it reaches end stops at "P" and "1".

1.5 - Adjusting selector lever cable



A - Selector lever cable only disconnected at gearbox

- Shift selector lever to position "P".
- -> Loosen bolts -arrows- on support bracket of selector lever cable until the support bracket can be moved.



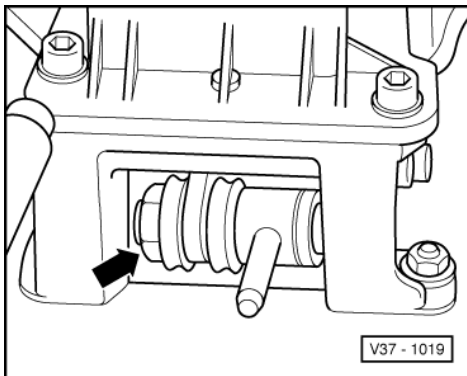
- -> Also move gearbox selector lever to position "P" (rear stop). To do this, pull selector lever cable towards rear -arrow-.
- Check that selector lever cable is routed without tension.
- Tighten bolts on support bracket of selector lever cable to 25 Nm.

Note:

If the elongated holes of the support bracket are not sufficient to align the selector lever cable tension-free, perform selector lever cable adjustment as described under "B".

- Checking selector mechanism=>page 14

B - Selector lever cable only disconnected at selector lever



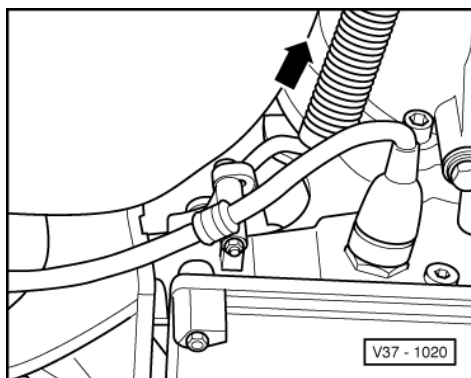
- Front centre console removed.

=> General Body Repairs; Repair Group 70; Dash panel; Removing and installing front centre console Dash panel Removing and installing front centre console

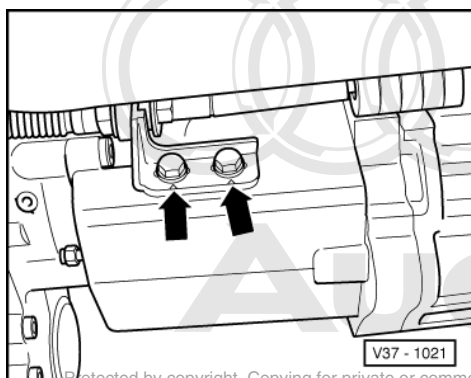
- Footwell vent removed.

=> Heating, Air Conditioning System; Repair Group 80; Servicing heater Servicing heater

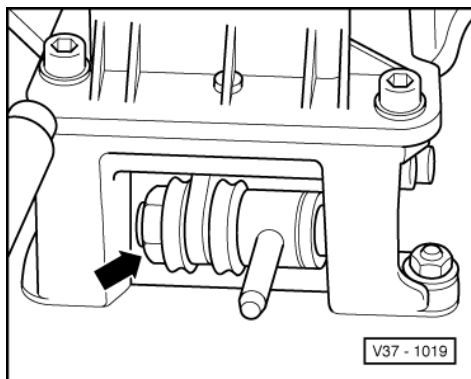
- Move selector lever into position "P".
- -> Loosen nut -arrow- on clamping pin of selector lever cable.



- ➔ Also move gearbox selector lever into position "P" (rear stop). To do this, pull selector lever cable towards rear -arrow-.
- Check that selector lever cable is routed without tension.



- ➔ Check that marks -arrow- on support bracket of selector lever cable align with centre of mounting bolts and align if necessary.



- ➔ Tighten nut -arrow- on clamping pin of selector lever cable (20 Nm).
- Check selector mechanism=>page 14 .

Note:

If the selector lever display -Y5 in the dash panel insert does not agree with the selector lever position, repeat adjustments or adjust multi-function switch -F125

=>page 61 .

1.6 - Removing, installing and adjusting locking cable

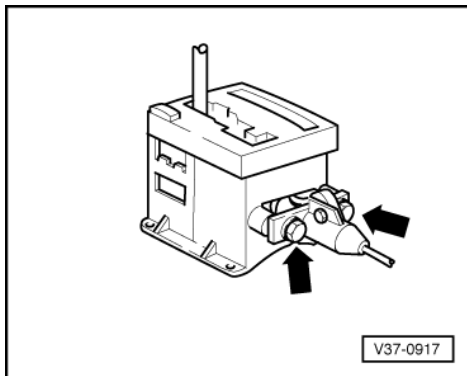
Note:

Adjust locking cable after securing locking cable to ignition/starter switch (=> page 28), and then secure to selector housing.

Removing

- Remove front centre console.

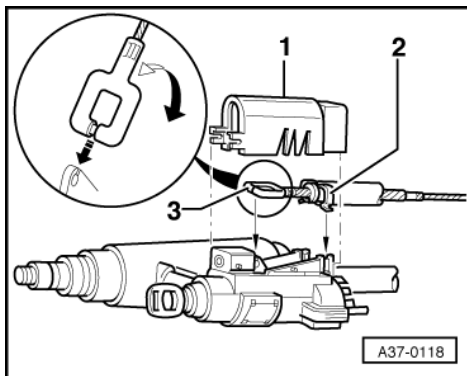
=> General Body Repairs; Repair Group 70; Dash panel; Removing and installing front centre console Dash panel Removing and installing front centre console



- Remove steering wheel and dash panel insert.

=> Electrical System; Repair Group 90; Dash panel insert; Removing and installing dash panel insert Dash panel insert Removing and installing dash panel insert

- Move selector lever into position "N".
- -> Slacken hexagon bolts -arrows-.



- -> Take off cap -1-.
- Release spring clip -2-.
- Turn end of locking cable -3- up through about 90° and pull up and out of retaining eye on ignition/starter switch.

Note:

Do not kink the locking cable when turning it upwards.

- Remove spring clip for locking cable on air duct and remove locking cable.

Installing

- Insert locking cable into top of retaining eye on ignition/starter switch (flat parts of locking cable and retaining eye must be aligned) and turn locking cable down through about 90°.

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

- Insert spring clip.

Note:

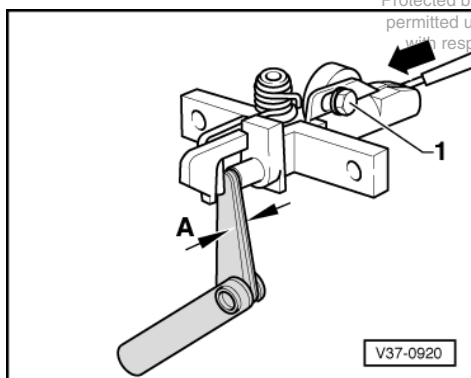
The spring clip must be engaged properly, otherwise the cap cannot be fitted.

- Fit cap on ignition/starter switch.

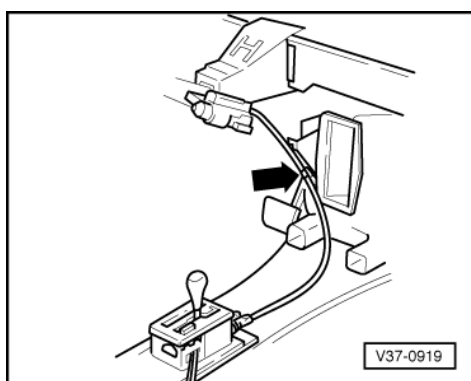
Adjusting**Note:**

The adjustment of the locking cable is performed in the installed position.

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



- -> Unscrew bolt -1-.
- Turn key in ignition/starter switch to "ignition on" position.
- Locate locking cable support bracket on selector housing (shift gate) and secure in position for bolting on.
- Insert feeler gauge -A- (1.5 mm) between locking arm and locking pin.
- Adjust locking cable by moving in direction of arrow so that locking pin is pushed against feeler gauge.
- Tighten bolt in this position to 10 Nm.
- Turn key in ignition/starter switch several times backwards and forwards between "ignition on" and "ignition off" positions.
- Check gap between locking pin and locking arm once again.
 - Specification: 1.2 - 1.7 mm
- Move selector lever into position "N".
- Install locking cable on selector housing (shift gate).
- Ensure that locking cable is not kinked.



- -> For left-hand drive vehicles, secure locking cable with cable clip -arrow- on heater housing.
- On right-hand drive vehicles, secure locking cable to steering column console with cable clamp.

Checking function:

- Move selector lever into position "P" and turn ignition key to "ignition off" position:

- The selector lever should be locked in position "P".
- It should be possible to withdraw the ignition key.
- Turn ignition key to "ignition on" position and shift selector lever out of "P" to one of the other positions. Turn ignition key back to "ignition off" position, press down selector lever and shift to position "P". Keep selector lever pressed down and shift it back to one of the other positions:
- It should not be possible to withdraw the ignition key.

2 - Checking gearbox

2.1 - Checking gearbox

Notes:

- ◆ Always perform self-diagnosis as a first step when tracing the cause of faults.

=> Automatic Gearbox 01F and 01K Self-Diagnosis; Repair Group 01; Performing self diagnosis Performing self diagnosis

- ◆ Only check the automatic gearbox according to the procedure described in the "Fault-finding, Transmission" binder if the fault cannot be found and rectified using self-diagnosis.

2.2 - Checking shift points

=> "Fault Finding. Power Transmission" Binder

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

2.3 - Checking stall speed

=> "Fault Finding. Power Transmission" Binder

2.4 - Measuring main pressure

=> "Fault finding. Power Transmission" Binder

2.5 - Fault finding table for "4-speed automatic gearbox"

=> "Fault finding. Power Transmission" Binder

3 - Removing and installing gearbox

3.1 - Removing and installing gearbox

The following special tools and test units are required for this work:

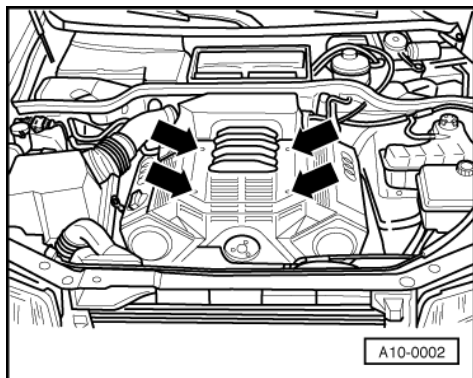
- ◆ Support bar 10-222 A with supports 10-222 A1
- ◆ Bar 2024 A/2



- ♦ Gearbox mounting 3282 with adjustment plate 3282/13
- ♦ Engine/gearbox support V.A.G 1383 A

Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off, disconnect battery earth strap.



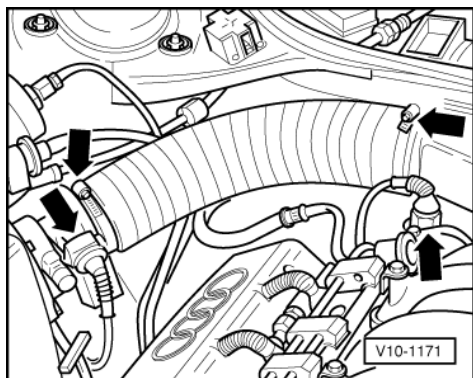
- Pull speedometer connector off gearbox.

Vehicles with 5-cylinder engine:

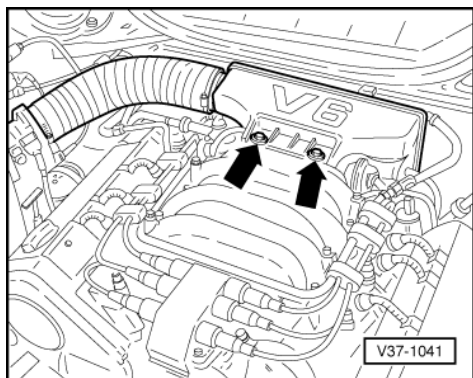
- Remove cover above fuel rail.

Vehicles with 6-cylinder engine:

- -> Remove engine cover panel -arrows-.



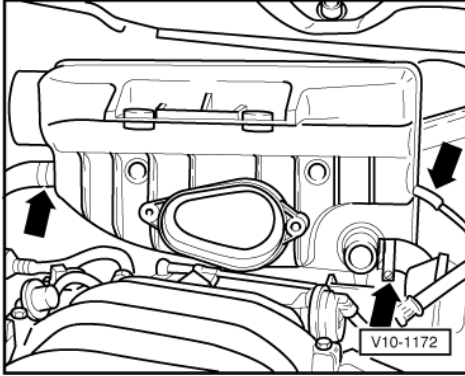
- -> Remove air duct between air mass meter and intake manifold -top arrows-.



- -> Unscrew bolts securing intake silencer -arrows-.



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



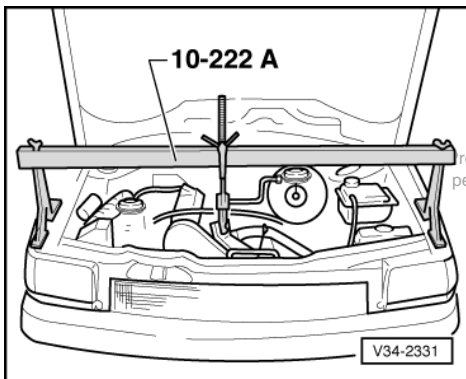
- -> Pull off the two crankcase breathers and the vacuum hose -arrows-.
- Push intake silencer to rear and then lift out.

Vehicles with divided filler pipe:

- Loosen top ATF filler pipe and pull out.
- Then seal lower filler pipe with a cloth.

All models

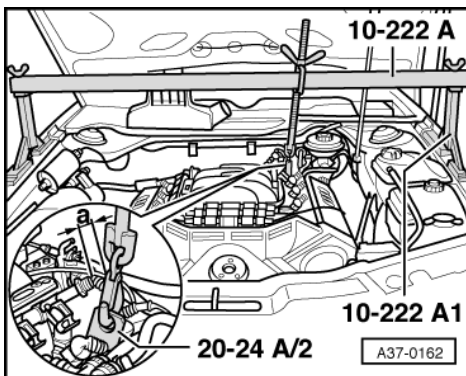
- Remove the engine/gearbox connecting bolts accessible from above.



Vehicles with 5-cylinder engine:

- -> Set up engine support bracket 10-222 A on wing mounting flanges and take up weight of engine using spindle.

Vehicles with 6-cylinder engine:



- Pull off spark plug connector in front of rear left engine lifting point.
- -> Bolt bar 20-24 A/2 onto rear left engine lifting point.



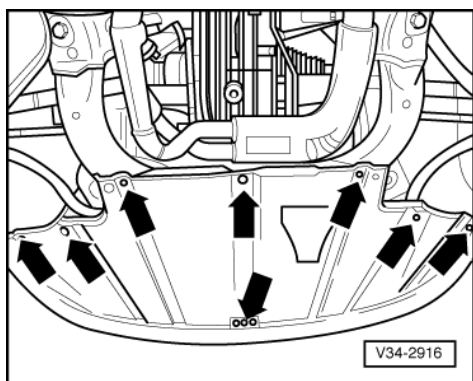
- Set up engine support bracket 10-222 A with supports 10-222 A1 on wing mounting flanges.

Note:

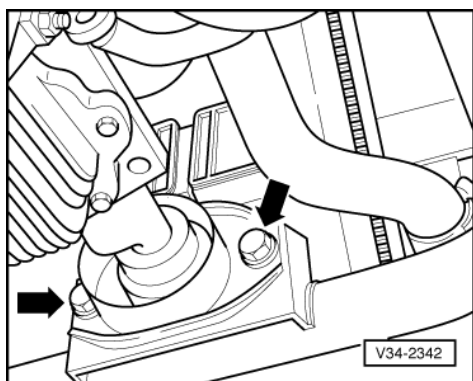
Make sure there is enough clearance -a- between the hook of the engine support bracket and the fuel rail. If necessary, remove the fuel rail.

- Take up weight of engine on spindle.

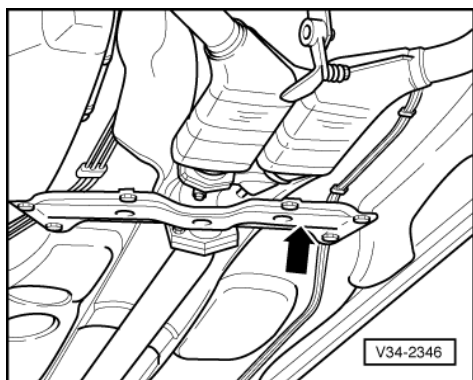
All models



- -> Remove noise insulation -arrows-.



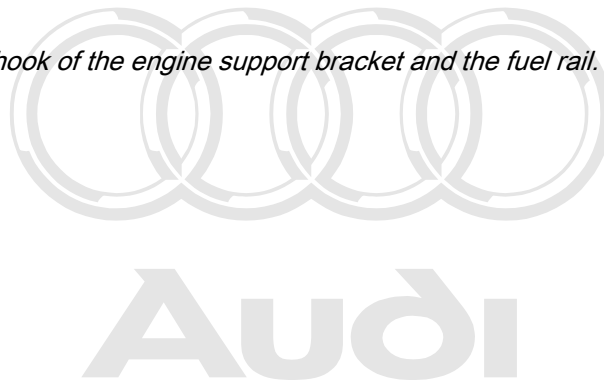
- -> Remove securing bolts for torque reaction support -arrows-.



- -> Remove front cross member below exhaust system -arrows-.

Vehicles with 5-cylinder engine:

- Remove complete exhaust system with front exhaust pipe



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

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

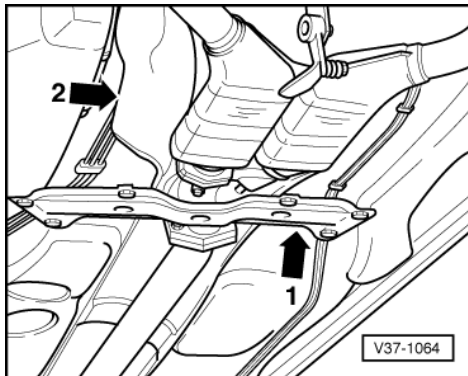
Vehicles with uprated cooling system:

- Remove entire exhaust system.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK



All models

- -> Remove heat shield -arrow 2-.
- Remove heat shield for left drive shaft.
- Disconnect drive shafts from gearbox and tie up.
- Remove starter.

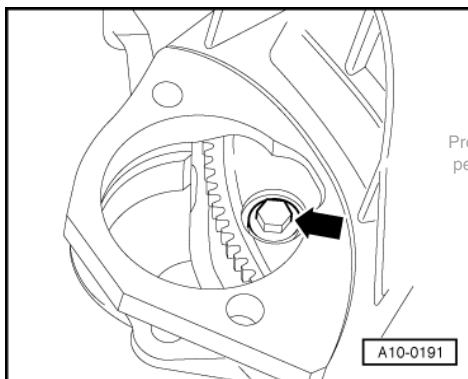
Note:

For vehicles with 6-cylinder engine, loosen alternator and take off ribbed V-belt to remove starter motor.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 13; Dismantling and assembling engine; Removing and installing ribbed V-belt Dismantling and assembling engine Removing and installing ribbed V-belt

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 13; Dismantling and assembling engine; Removing and installing ribbed V-belt Dismantling and assembling engine Removing and installing ribbed V-belt

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 13; Dismantling and assembling engine; Removing and installing ribbed V-belt Dismantling and assembling engine Removing and installing ribbed V-belt



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

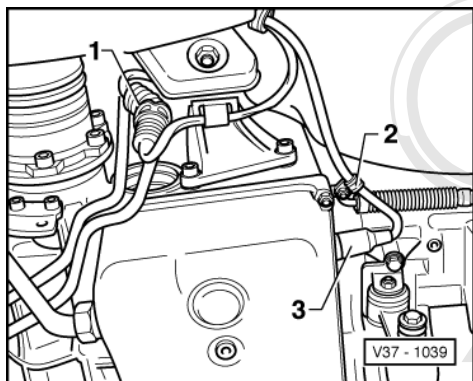


- -> Remove the 3 torque converter bolts through the opening of the removed starter motor (turn crankshaft 1/3 turn for each).

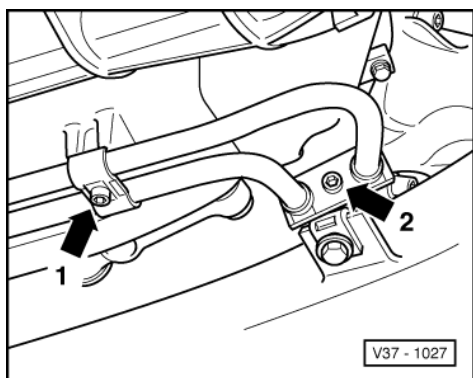
Note:

To loosen the torque converter bolts, brace the central bolt of the belt pulley or the vibration damper (depending on engine version).

- Remove propshaft=>page 148 .



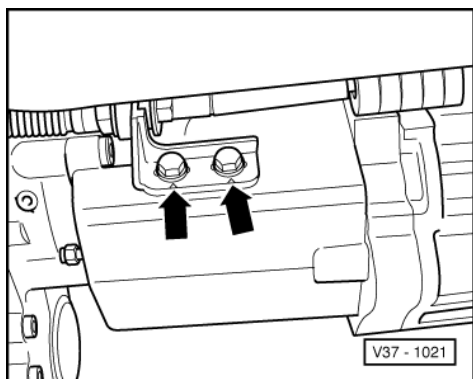
- -> Unplug connector -1- for multi-function switch -F125 and unclip wiring near gearbox support.
- Remove wiring retainer -2-.
- Loosen bayonet connector of 8-pin connector -3- by turning to left and separate connector from gearbox.



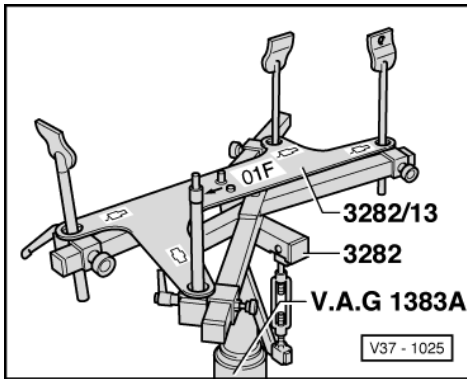
- -> Unbolt retainer for ATF pipe -arrow 1-.
- Disconnect ATF pipe to cooler at connector block -arrow 2-.

Note:

When installing ATF pipes, renew O-rings and coat new O-rings thinly with Vaseline.



- -> Remove bolts -arrows- of support bracket for selector lever cable.

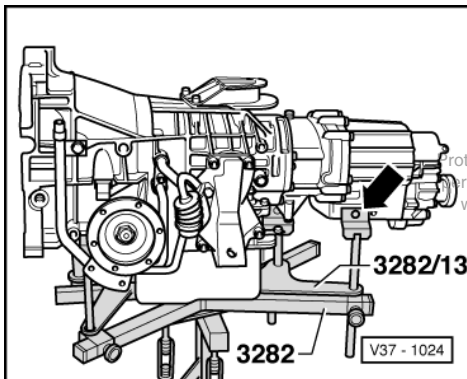


- -> Assemble gearbox mounting 3282 to remove automatic gearbox 01F with adjustment plate 3282/13 and place on support V.A.G 1383 A.

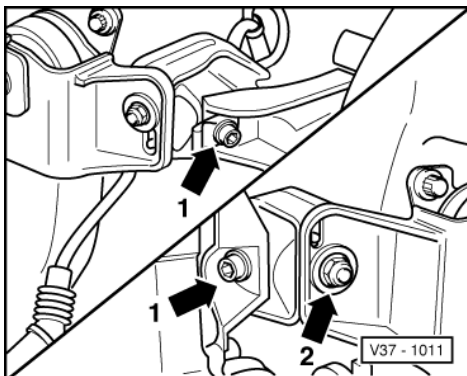
Note:

The symbols on the adjustment plate indicate the mounts required for the automatic gearbox 01F, and the arrow points in the direction of travel.

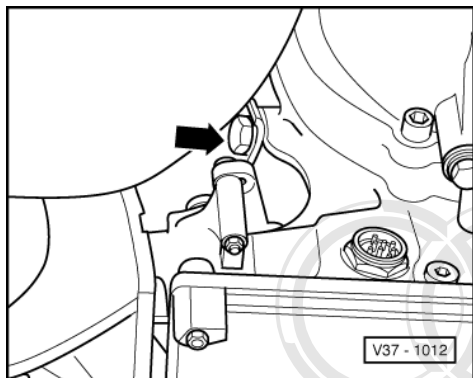
- Place gearbox support V.A.G 1383 A with gearbox mounting 3282 underneath gearbox and support gearbox.



- -> Secure gearbox on gearbox mounting 3282. Do this by bolting bracket with bolt from selector lever cable support bracket onto gearbox -arrow-.



- -> Remove securing nut for right-hand bonded rubber mounting on sub-frame -arrow 2-.
- Unbolt left and right-hand gearbox support at bonded rubber mounting -arrow 1-.
- Lower gearbox slightly.
- Unbolt selector lever cable at selector lever shaft.



Vehicles ä 05.94 (with procon-ten):

- -> Remove securing bolt for cable retainer (procon-ten) -arrow-.
- Unhook cable retainer on gearbox and push upwards with cables.

All models

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

- Remove all lower engine/gearbox connecting bolts
- Press gearbox off engine and lower carefully.

Notes:

- ♦ For vehicles with 5-cylinder engines, push up retainer for water pipe on upper engine/gearbox connecting bolt before pressing off gearbox.
- ♦ Press torque converter off drive plate when removing gearbox.
- Secure the torque converter to prevent it from dropping out.

Installing

- Install in reverse order.
- Before installing gearbox, make sure that torque converter is inserted into gearbox properly =>page 12 .
- Before installing gearbox, make sure that dowel sleeves are correctly seated on cylinder block.
- Make sure that no wiring or pipes are trapped when bringing engine and gearbox together.
- Always replace self-locking nuts and bolts.
- Always replace seals and O-rings.
- Installing propshaft=>page 150 .
- Adjusting propshaft=>page 152 .
- Adjusting selector lever cable=>page 25 .
- Installing exhaust system

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

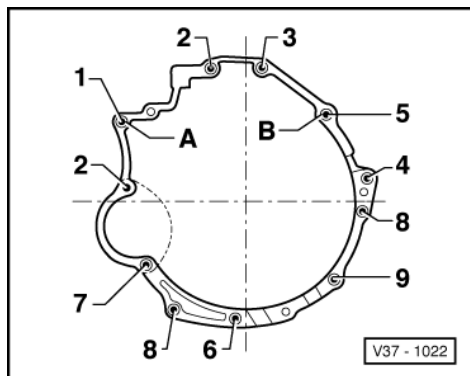
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

- Checking oil level in final drive of automatic gearbox=>page 79 .

- Check ATF level => page 42 .

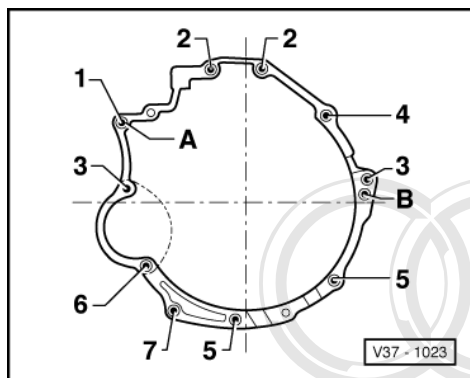
Tightening torques



-> Securing engine/gearbox, 5-cylinder engine

Item No.	Bolt	Qty	Nm
1	M12 x 50	1	65
2	M12 x 67	2	65
3	M12 x 75	1	65
4	M12 x 80	1	65
5	M12 x 110	1	65
6	M10 x 38	1	45
7	M10 x 70	1	45
8	M8 x 40	2	25
9	M8 x 60	1	25

A, B: centring sleeves



-> Securing engine/gearbox, 6-cylinder engine

Item No.	Bolt	Qty	Nm
1	M12 x 50	1	65
2	M12 x 67	2	65
3	M12 x 80	2	65
4	M12 x 100	1	65
5	M10 x 38	2	45
6	M10 x 70	1	45



7	M8 x 40	1	25
---	---------	---	----

A, B: centring sleeves

Component	Nm
Torque converter to drive plate	85
Drive shaft to flange shaft/drive flange M10	80
Gearbox support to gearbox	40
Gearbox support to bonded rubber mounting	40
Support bracket for selector lever cable to gearbox	23
Cable retainer for procon-ten to gearbox	40
Cross member to body	25
Torque reaction support to body	45
Bonded rubber mounting to sub-frame M10	40
Cover to fuel rail	10
Heat shield for drive shaft to retainer	25
ATF filler pipe to oil pan	40

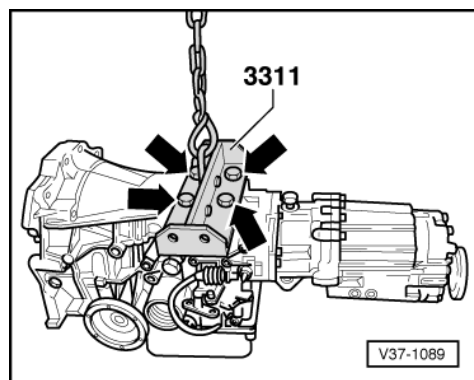
Note:

Tightening torques for retainer for ATF pipes=>from page 53.

3.2 - Securing gearbox to repair stand

The following special tools and test units are required for this work:

- ♦ Bracket 3311 for vehicles ä 05.94 (with procon-ten)
- ♦ Bracket 3457 for vehicles 06.94 ä
- ♦ Holding plate VW 309
- ♦ VW 313
- ♦ Workshop crane V.A.G 1202 A

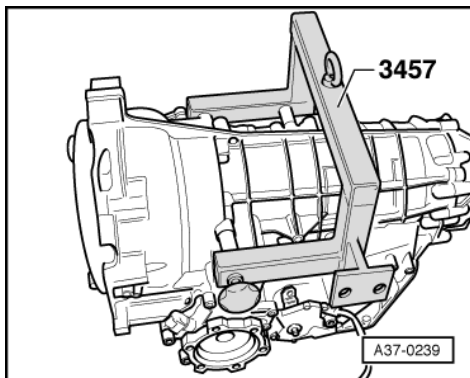


Vehicles ä 05.94 (with procon-ten):

- -> Bolt bracket 3311 to gearbox -arrows-.

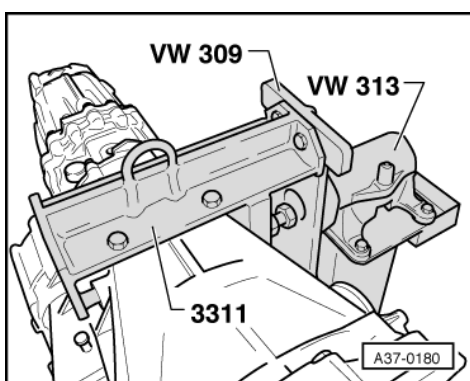


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Vehicles 06.94 ä:

- -> Bolt bracket 3457 to gearbox.



All models

- Attach plate VW 309 to support clamp VW 313.
- -> Lift gearbox with workshop crane V.A.G 1202 A on bracket 3311 or 3457 and attach plate VW 309.

3.3 - Removing and installing left gearbox support

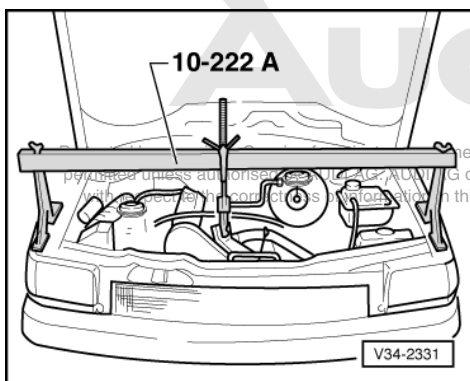
The following special tools and test units are required for this work:

- ♦ Support bar 10-222 A with supports 10-222 A1
- ♦ Bracket 2024 A/2

Removing

Vehicles with 5-cylinder engine:

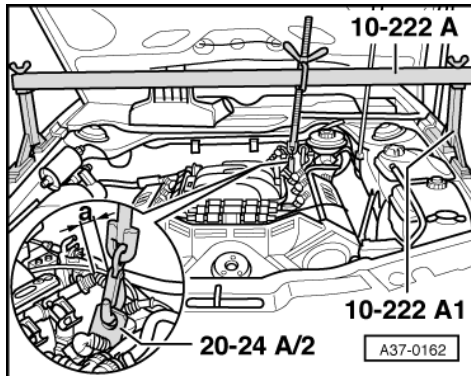
- Remove cover over fuel rail.



- -> Install support bar 10-222 A on wing mounting flanges and take up weight of engine using spindle.

Vehicles with 6-cylinder engine:

- Pull off spark plug connector in front of rear left engine lifting eye.



- -> Secure bracket 2024 A/2 with bolt on rear left engine lifting eye.
- Install support bar 10-222 A with supports 10-222 A1 on wing mounting flanges.

Note:

Make sure there is sufficient clearance -a- between the support bar hooks and the fuel rail, and remove fuel rail if necessary.

- Take up weight of engine using spindle.

All models

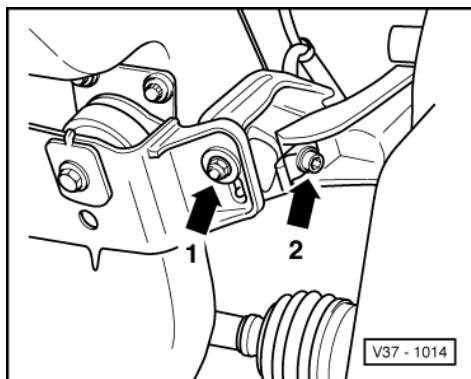
- Remove catalytic converters

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

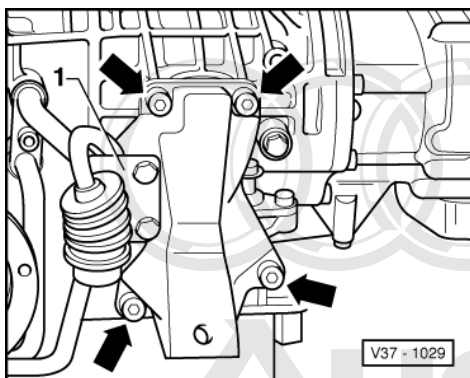
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK



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

- -> Remove securing nut for left-hand bonded rubber mounting on sub-frame -arrow 1-.
- Unbolt left-hand gearbox support at bonded rubber mounting -arrow 2-.
- Unplug connector for multi-function switch -F125.



- -> Unscrew bracket for connector of multi-function switch -1-.
- Unscrew gearbox support securing bolts -arrows- and take off gearbox support.

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

Illustration shows gearbox removed.

Installing

- Install in reverse order.
- Installing catalytic converters

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine(5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

Tightening torques

Component	Nm
Gearbox support to gearbox	40
Bracket for connector to gearbox support	10
Gearbox support to bonded rubber mounting	40
Bonded rubber mounting to sub-frame M10	40
Cover to fuel rail	10



4 - Checking or changing ATF

4.1 - Checking or changing ATF

4.2 - Checking ATF level

Requirements for test:

- Gearbox not in emergency running mode.
- Vehicle in horizontal position.
- Selector lever at position "P", engine idling.
- Air conditioner and heating must be switched off.

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

Notes:

- ♦ For vehicles from 07.95 ➤ only VW-ATF with Part No. G 052 162 .. (colour: transparent/yellow) may be used and it is not permitted to use additives.
- ♦ For vehicles ➤ 06.95, remaining stock of ATF Dexron may be used up. Thereafter also use ATF with Part No. G 052 162 .. (colour: transparent/yellow).

Container sizes:

- ♦ 0.5 l - Part No. G 052 162 A1
- ♦ 1.0 l - Part No. G 052 162 A2

Notes:

- ♦ The ATF level will vary according to the temperature of the ATF.
- ♦ If the ATF level is checked when the ATF temperature is too low, this will result in overfilling.
- ♦ If the ATF level is checked when the ATF temperature is too high, this will result in underfilling.
- ♦ Overfilling or underfilling will impair the function of the gearbox.
- ♦ The ATF temperature can be checked using fault reader V.A.G 1551.

Checking ATF temperature

- Connect fault reader V.A.G 1551, enter address word "02 Gearbox electronics" and advance until "Select function XX" is indicated on display

=> Automatic Gearbox 01F and 01K Self-Diagnosis; Repair Group 01; Performing self-diagnosis Performing self-diagnosis

- Press keys 0 and 8 for "Read measured value block" and confirm entry with Q key.

Vehicles with 2.8 l - 128 kW ä approx. 09.92:

-> Indicated on display:

Read measured value block
Enter display group number xx

- Press key 0 twice for display group number 00.
- Confirm entry with Q key.

-> Indicated on display:

Read measured value block	00
1 2 3 4 5 6 7	
8 9	

- Read off ATF temperature in display zone 1.

Notes:

- ◆ The display is only accurate if the temperature shown is above 40°C.
- ◆ Subtract 50 from displayed value to calculate ATF temperature in°C.

Vehicles with 2.8 l - 128 kW approx. 09.92 ä, 2.2 l - 169 kW, 2.6 l - 110 kW with 55-pin control unit:

-> Indicated on display:

Read measured value block
Enter display group number XXX

- Press key 0 twice and key 4 for display group number 004.
- Confirm entry with Q key.

-> Indicated on display:

Read measured value block 4
1 2 3 4

- Read off ATF temperature in display zone 4.

Vehicles with 88-pin control unit (Model year 96 ä; Introduced gradually):

-> Indicated on display:

Read measured value block
Enter display group number XXX

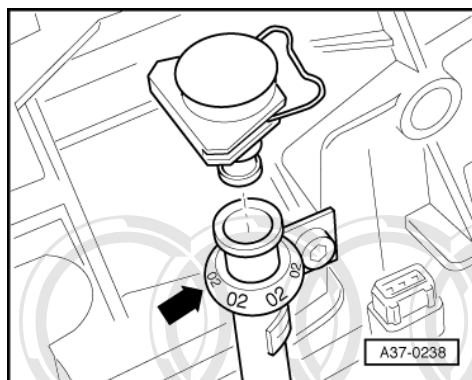
- Press key 0 twice and key 4 for display group number 004.
- Confirm entry with Q key.

-> Indicated on display:

Read measured value block 4
1 2 3 4

- Check ATF temperature shown in display zone 1.

Check ATF level and top up as required.



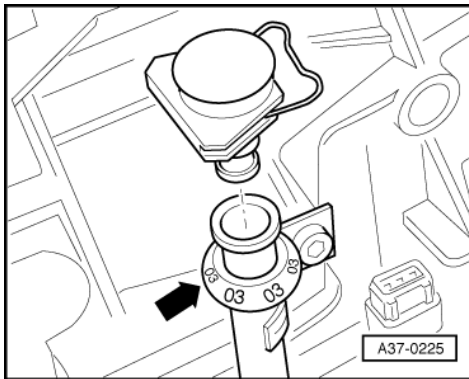
Vehicles 11.93ä 05.94:

- -> For the following vehicles, check ATF level using dipstick marked "02":
 - All vehicles with 6-cylinder engine.
 - Audi S4 vehicles up to Vehicle Identification No. 4A RN 033 426 (ä about 11.93)

Note:

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

Vehicles requiring "02" dipstick have "02" marked on ATF filler pipe -arrow-.

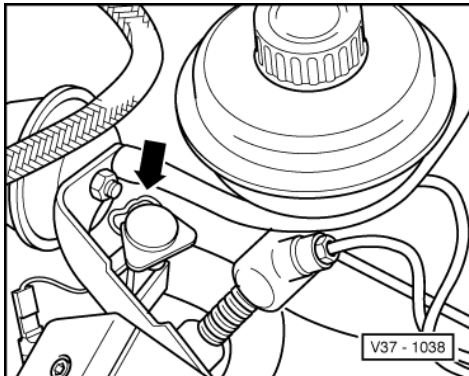


- -> For the following vehicles, check the ATF level using the dipstick marked "03":
- Audi S4 vehicles from Vehicle Identification No. 4A RN 033 427 onwards (about 11.93 ä)

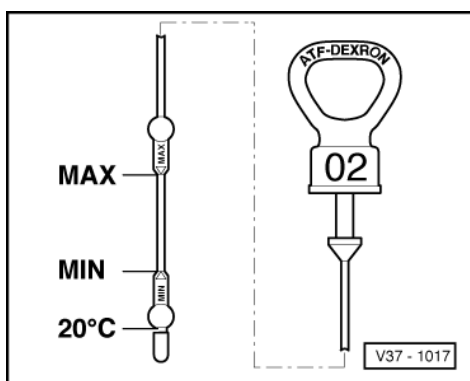
Note:

Vehicles requiring "03" dipstick have "03" marked on ATF filler pipe -arrow-.

- Shift selector lever to position "P" and allow engine to run at idling speed.



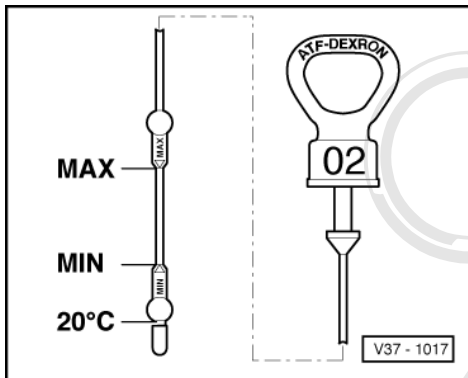
- Read off ATF temperature in measured value block for relevant gearbox version=>from page 42 .
- -> Pull sealing cap -arrow- off ATF filler pipe.



- Check ATF level when cold with dipstick "02" or "03"=>page 43 .
- When ATF is cold, pull out dipstick and clean with a lint-free cloth, then reinsert into ATF filler pipe up to stop and pull out again.
- -> Fluid level must extend up to 20°C marking.
- Top up ATF through ATF filler pipe with clean funnel if necessary.
- Allow engine to continue to run at idling speed.



- When ATF temperature reaches approx. 70°C, pull out dipstick again, wipe off, reinsert up to stop and pull out again.



-> Fluid level must be between MIN and MAX markings.

- ATF level too low:
 - Top up ATF through ATF filler pipe using clean funnel.
 - With engine running and vehicle stationary, select all selector lever positions.
 - Check ATF level again at test temperature.
- ATF level too high:
 - Extract excess ATF with oil extraction unit V.A.G 1358 A and probe 1358/A 1

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

=> Operating instructions; V.A.G 1358 A oil extraction unit

Note:

Switch off engine to extract ATF.

- Check ATF level again at test temperature.
- Press→key on V.A.G 1551.
- Press keys 0 and 6 for "End output" and confirm with Q key.

Notes:

- ♦ The ATF must be checked before it reaches a temperature of 90 °C. If necessary, let the ATF cool down.
- ♦ The MIN and MAX markings on the ATF dipstick are for an ATF temperature of 80 °±10°C (i.e. the ATF level should be between the MIN and MAX markings within this temperature range).

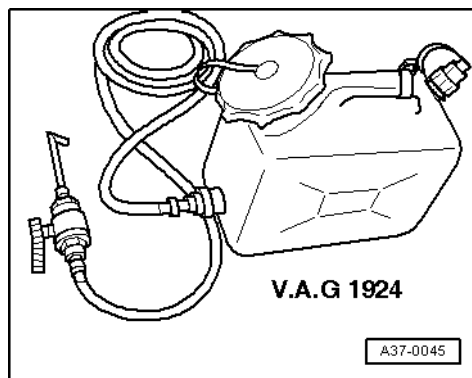
Vehicles 06.94 11.93ä:

Notes:

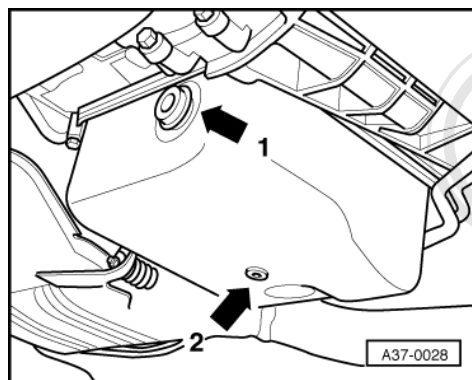
- ♦ The ATF level is checked at the ATF inspection plug.
- ♦ If the ATF level is correct, a small amount of fluid will come out at the ATF inspection plug when ATF temperature is between 35 ° and 45 °C 1) (the fluid level will rise slightly as the temperature increases).

1)50°C for tropical countries

Warning!
Wear eye protection.



- -> Secure reservoir of ATF filling system V.A.G 1924 at the highest possible point on the vehicle.
- Place container under the gearbox.



- -> When an ATF temperature of 35°C is reached, open ATF inspection plug -arrow 1- and drain off excess ATF if necessary.
- If ATF comes out at the inspection plug before the ATF has reached a temperature of 40 °C, the ATF level is correct.

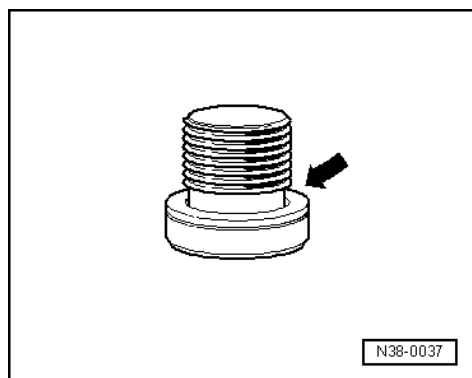
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

Note:

The ATF inspection plug must be screwed in again before the ATF reaches a temperature of 45 °C1).

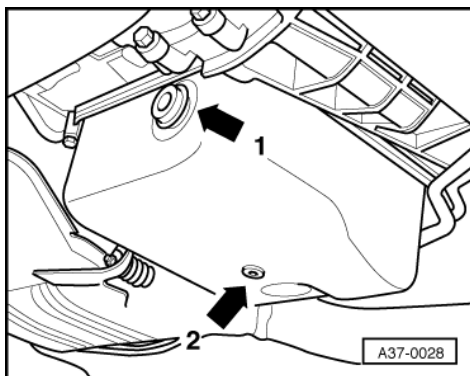
1)50°C for tropical countries

- If no ATF runs out at ATF inspection plug before ATF reaches 40°C, top up ATF with filler hook from V.A.G 1924 until ATF comes out at the ATF inspection plug.



- -> Always renew seal -arrow- for ATF inspection plug.
- Screw in ATF inspection plug (60 Nm).
- Press => key on V.A.G 1551.
- Press keys 0 and 6 for "End output" and confirm with Q key.

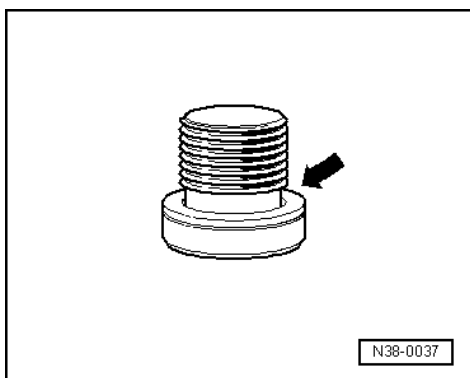
4.3 - Changing ATF or topping up after repairs



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

Notes:

- ◆ Observe environmental requirements for disposal.
- ◆ The engine must not be started and the vehicle must not be towed if there is no ATF in the gearbox!
- Place container under the gearbox.
- -> Remove ATF drain plug -arrow 2- and drain ATF.



- -> Always renew seal -arrow- for ATF drain plug.
- Screw in ATF drain plug (35 Nm).

Vehiclesä 05.94:

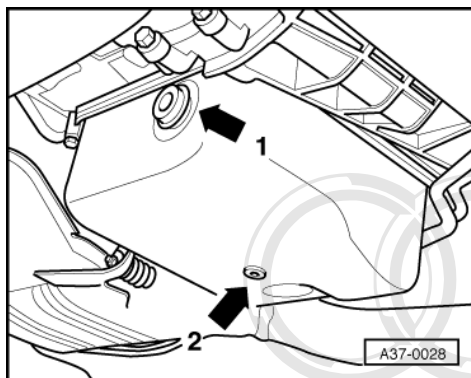
- First fill with approx. 2.7 l ATF using a funnel.
- Start engine and select all selector lever positions (P, R, N, D, 3, 2, 1) with brake pedal depressed and engine running at idling speed, whereby each selector position must be retained for 2 - 3 seconds.
- Allow engine to run at idling speed with selector lever in position "P" and handbrake applied.
- Measure the ATF level using the ATF dipstick.
- Use a lint-free cloth to wipe the ATF dipstick clean.
- When ATF is cold, level must extend up to 20°C marking.
- Allow engine to continue running at idling speed.
- Check and top up ATF level=>page 42.

Note:

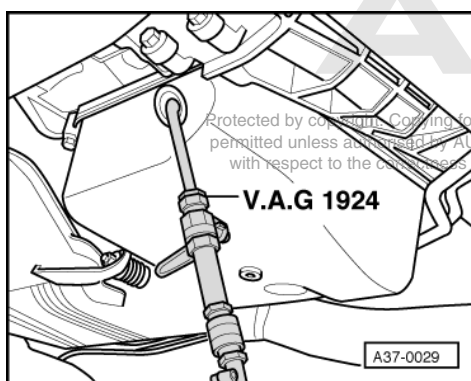
Observe all notes and test conditions for "Checking ATF level".



Vehicles 06.94ä:



- -> Unscrew ATF inspection plug -arrow 1-.



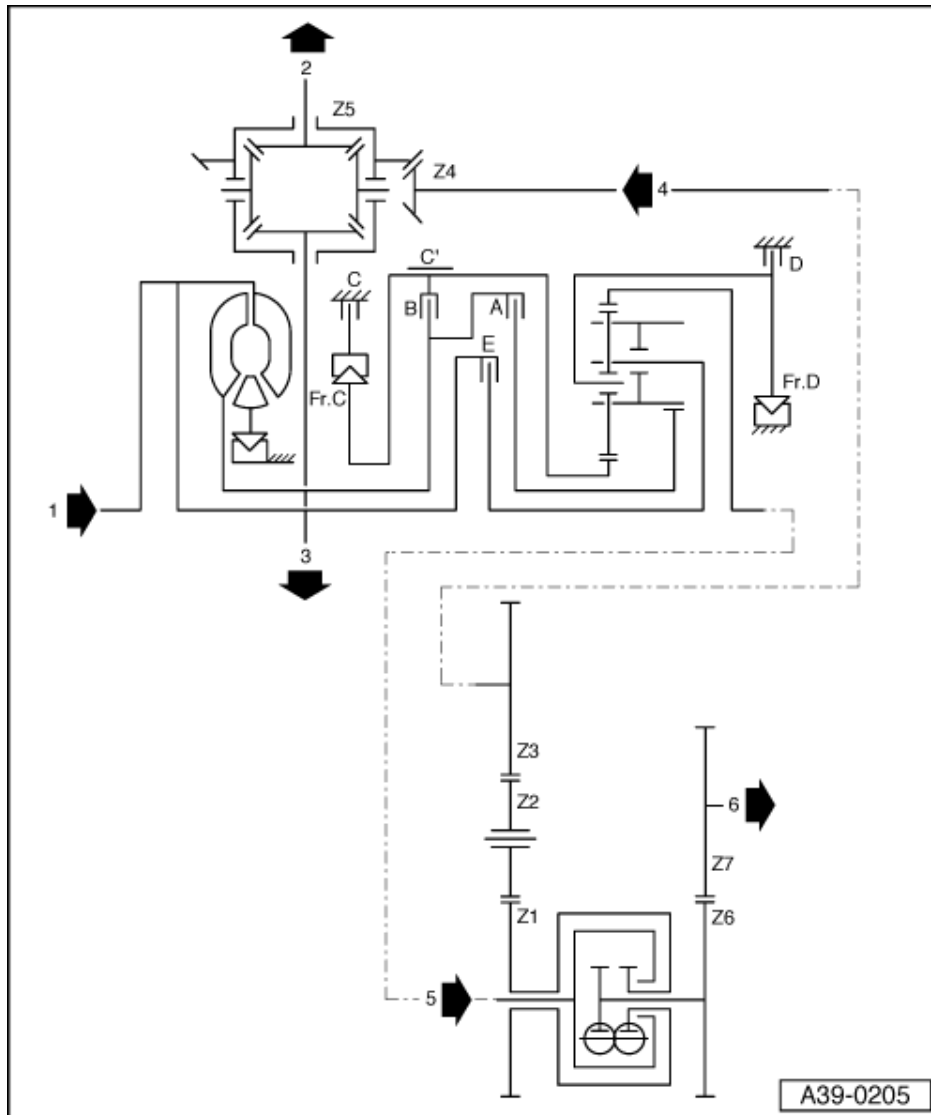
- -> Top up ATF with filler hook from V.A.G 1924 until ATF comes out at ATF inspection plug.
- Move selector lever to position "P", start engine and allow to run at idling speed.
- With engine running, top up ATF again until ATF comes out of ATF inspection plug.
- With brake pedal depressed, select all selector lever positions (P, R, N, D, 3, 2, 1) with engine running at idling speed, whereby each selector position must be retained for 2 - 3 seconds.
- Then check and top up ATF level => from page 42 .

Note:

Observe all notes and test requirements as for "Checking ATF level".

5 - Gearbox with shift elements

5.1 - Gearbox with shift elements



5.2 - Gearbox schematic diagram

A = Clutch A

B = Clutch B

E = Clutch E

C = Brake C

C' = Brake C'

D = Brake D

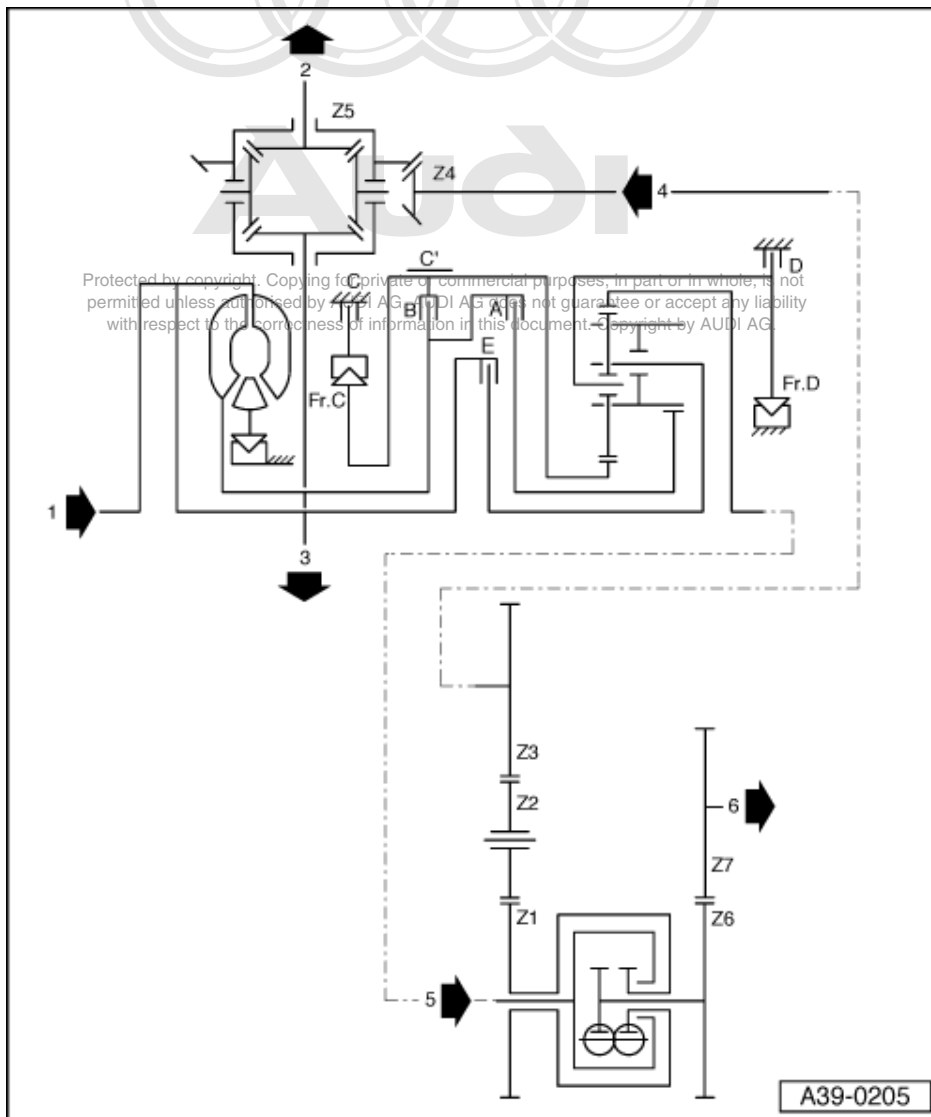


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



Fr.C = Freewheel C

Fr.D = Freewheel D



Z1 - Z3 = Front intermediate drive

Z4, Z5 = Front final drive

Z6, Z7 = Rear intermediate drive

Ratios=>from page 2

Power flow:

- Arrow 1 - from engine
- Arrow 2 - to front right wheel
- Arrow 3 - to front left wheel
- Arrow 4 - from Torsen differential via intermediate drive for front final drive to front final drive
- Arrow 5 - to Torsen differential
- Arrow 6 - from Torsen differential via intermediate drive for rear final drive to rear final drive

5.3 - Position of shift elements

Notes:

- ◆ Always perform self-diagnosis first before performing gearbox repairs

=> Automatic Gearbox 01F and 01K Self-Diagnosis; Repair Group 01; Performing self-diagnosis Performing self-diagnosis

- ◆ To help deal with complaints regarding poor acceleration and performance or general malfunctions, the following tables show which shift elements are operated in the individual gears. This will give an indication of which shift elements are not working properly.

Solenoid valve logic						
Selector lever position	Gear	Solenoid valves				Main pressure regulator
		-N88	-N89	-N90	-N91	
P	-	-	x	x	-	x
R	Reverse gear	-	-	-	-	x
N	-	-	x	x	-	x
D	1st gear	-	x	-	-	x
D	2nd gear	x	x	-	-	x
D	3rd gear	x	-	-	-	x
D	4th gear	-	-	-	-	x
2	1st gear	-	x	-	x	x
1	1st gear	-	x	-	-	x
D	3rd - 4th gear overlap	(x)	-	-	-	x
D	4th - 3rd gear overlap	(x)	-	- x -	-	x
-	Emergency running programme	-	-	-	-	-

x = Component active
- = Component inactive

(x) = Component active depending on driving state (overlap)

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

Clutch logic									
Selector lever position	Gear	Clutch			Brake			Freewheel	
		A	B	E	C	C'	D	Fr.C	Fr.D
P	-	-	-	-	-	-	-	-	-
R	Reverse gear	-	x	-	-	-	x	-	-
N	-	-	-	-	-	-	-	-	-
D	1st gear	x	-	-	-	-	-	-	x
D	2nd gear	x	-	-	x	x	-	x	-
D	3rd gear	x	-	x	x	-	-	-	-
D	4th gear	-	-	x	x	x	-	-	-
2	1st gear	x	-	-	-	-	x	-	x
1	1st gear	x	-	-	-	-	x	-	x
D	3rd - 4th gear overlap	(x)	-	x	x	(x)	-	-	-
D	4th - 3rd gear overlap	(x)	-	x	x	(x)	-	-	-



Clutch logic									
-	Emergency programme	x	-	-	x	x	-	-	-

x = Component active
- = Component inactive
(x) = Component active depending on driving state (overlap)

6 - Dismantling and assembling gearbox

6.1 - Dismantling and assembling gearbox

6.2 - Rules for cleanliness when working on automatic gearbox

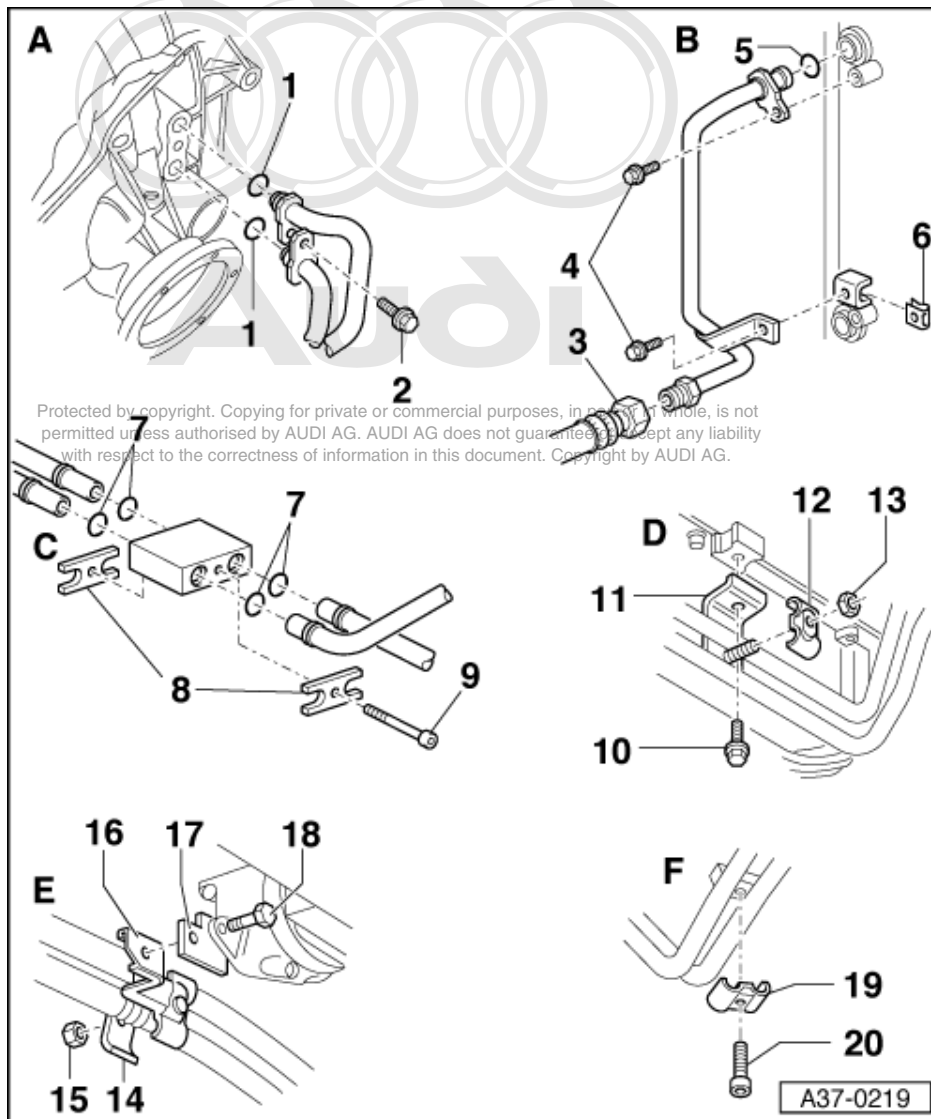
- ♦ Thoroughly clean the connection points and the surrounding area before disconnecting.
- ♦ Place removed parts on a clean surface and cover over. Use sheeting or paper. Do not use fluffing cloths!
- ♦ Carefully cover over or plug opened components if repairs are not carried out immediately.
- ♦ Install only clean parts: do not remove replacement parts from their wrapping until just before installing.
- ♦ Always replace O-rings, seals and gaskets.
- ♦ Coat O-rings with Vaseline before installing to prevent the rings from being crushed when inserting.
- ♦ Always use Vaseline only in small amounts. Other greases will cause malfunctions in controls of hydraulic gearbox.
- ♦ After installing, check following fluid levels and top up if necessary: ATF in planetary gearbox=>page 6 .

6.3 - Removing and installing ATF pipes

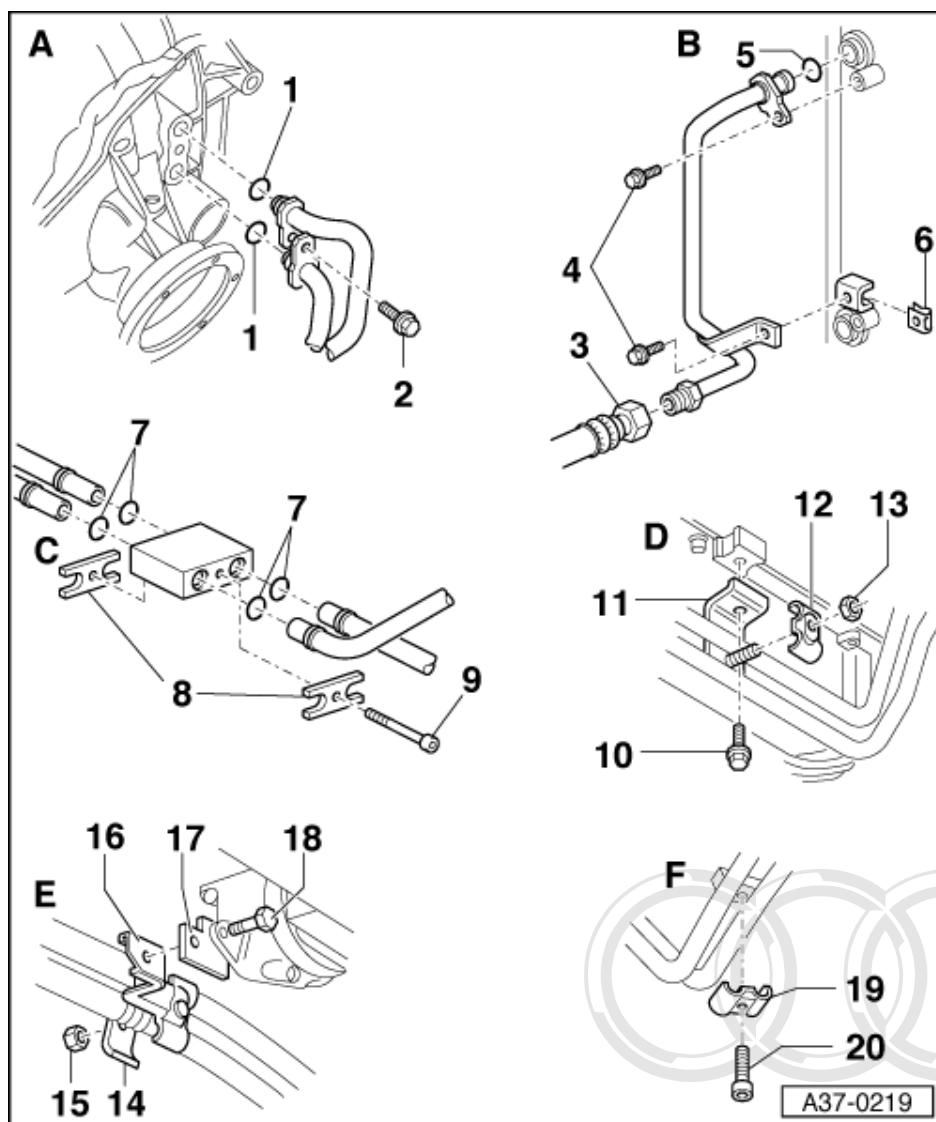
Notes:

- ♦ Rules for cleanliness when working on automatic gearbox=>page 52 .
- ♦ General repair instructions=>page 7 .
- ♦ Coat O-rings thinly with Vaseline. Other lubricants will cause malfunctions in controls of hydraulic gearbox.
- ♦ Push ATF pipes into gearbox or cooler as far as possible by hand and then screw on.

6.4 - Removing and installing ATF pipes, 5-cylinder engine



- A - Securing ATF pipe to gearbox
- B - Securing ATF pipe to ATF cooler
- C - Connecting ATF pipe to ATF pipe
- D - Securing ATF pipe to side of engine
- E - Securing front ATF pipe
- F - Securing rear ATF pipe

**1 O-ring**

- ◆ Always renew
- ◆ Coat thinly with Vaseline to insert

2 Bolt - 20 Nm

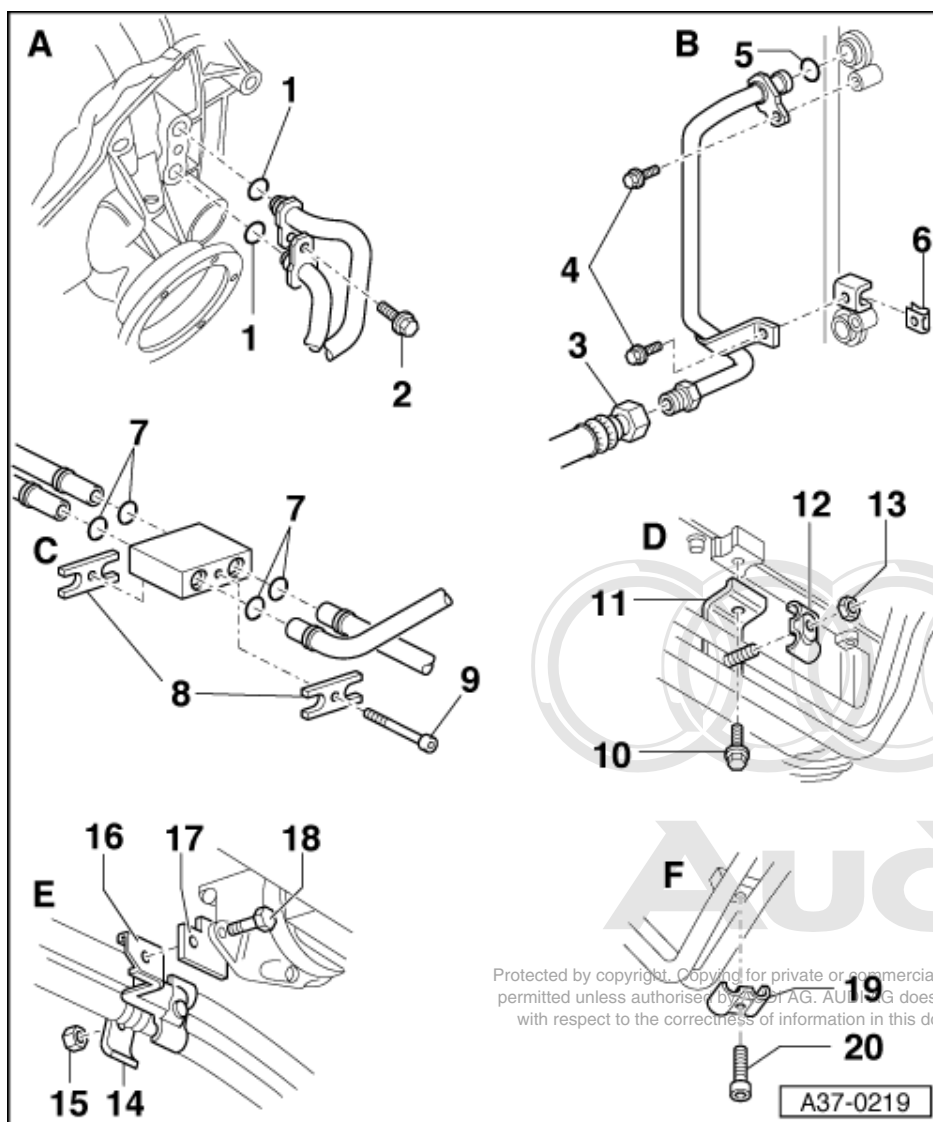
- ◆ Do not tighten until pipe is completely inserted

3 Union nut - 30 Nm**4 Bolt - 5 Nm****5 O-ring**

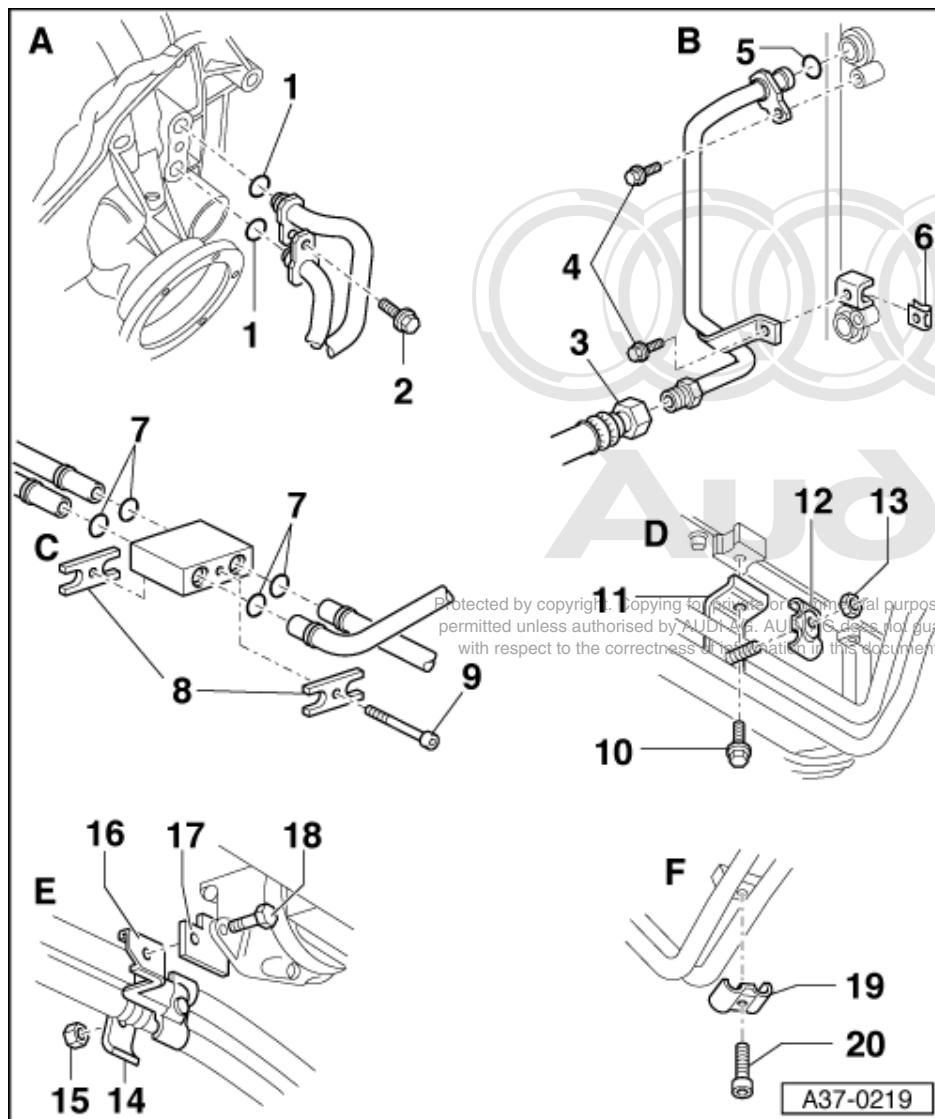
- ◆ Always renew
- ◆ Coat thinly with Vaseline to insert

6 Plate nut

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

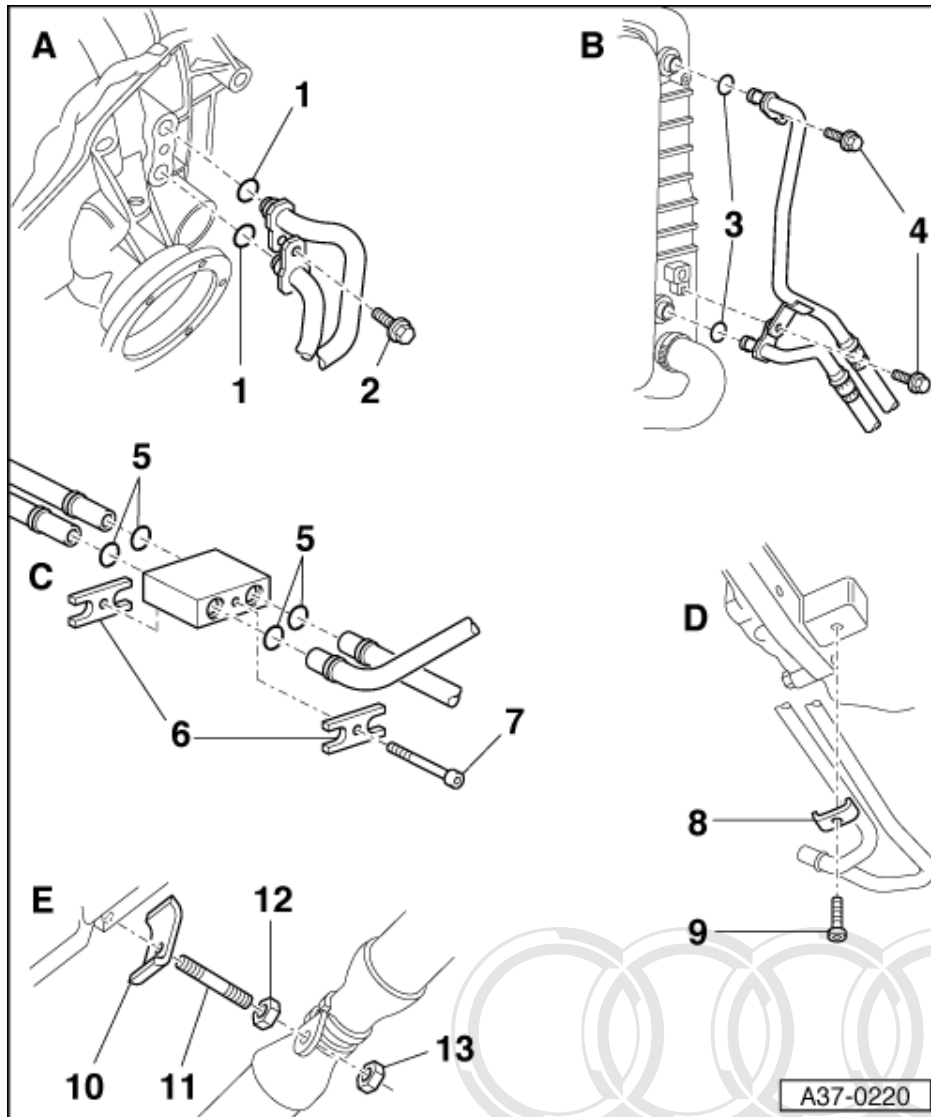


- 7 O-ring**
- ♦ Always renew
 - ♦ Coat thinly with Vaseline to insert
- 8 Retainer**
- 9 Bolt - 20 Nm**
- ♦ Do not tighten until pipes are completely inserted
- 10 Bolt - 25 Nm**
- 11 Bracket**
- 12 Clamp**
- 13 Nut - 10 Nm**
- 14 Clamp**
- 15 Nut - 10 Nm**



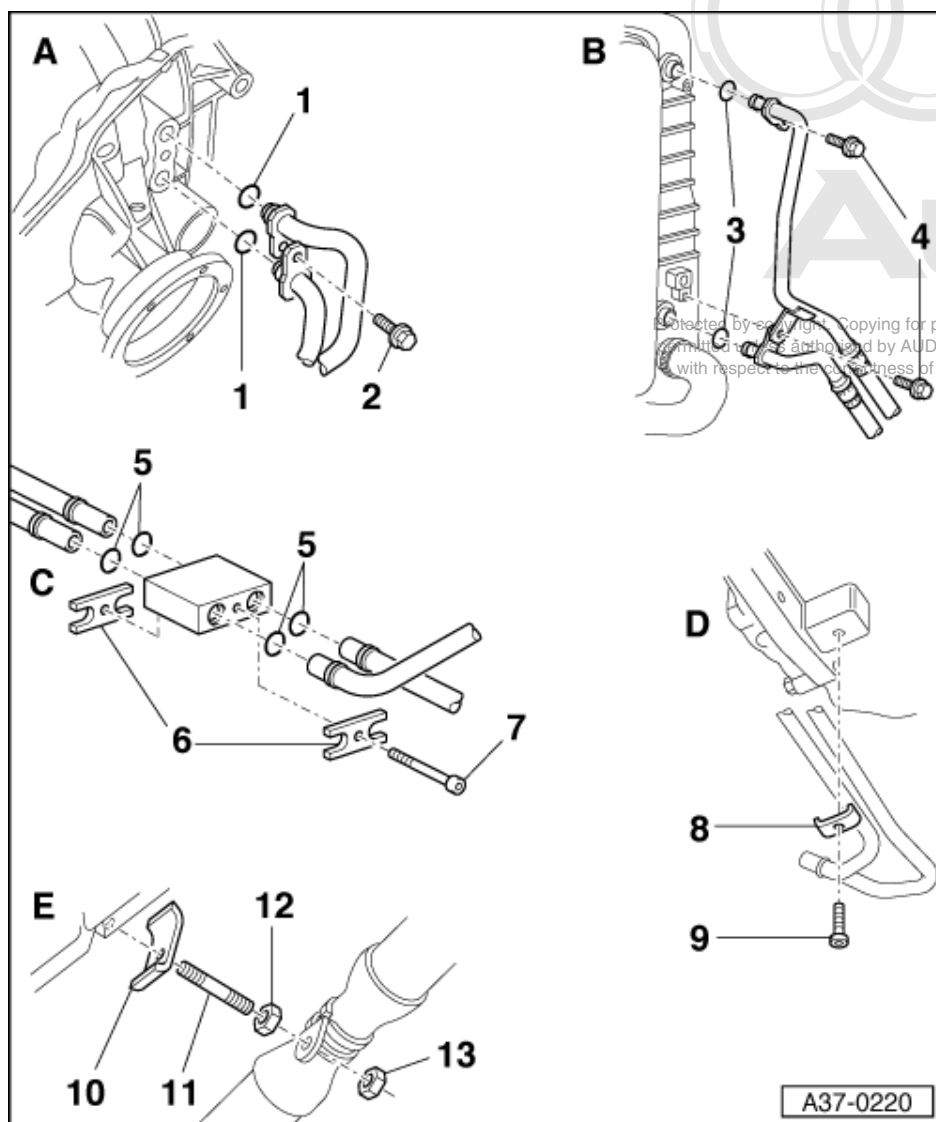
- 16 Bracket
- 17 Intermediate plate
- 18 Bolt - 25 Nm
- 19 Clamp
- 20 Bolt - 5 Nm

6.5 - Removing and installing ATF pipes, 6-cylinder engine

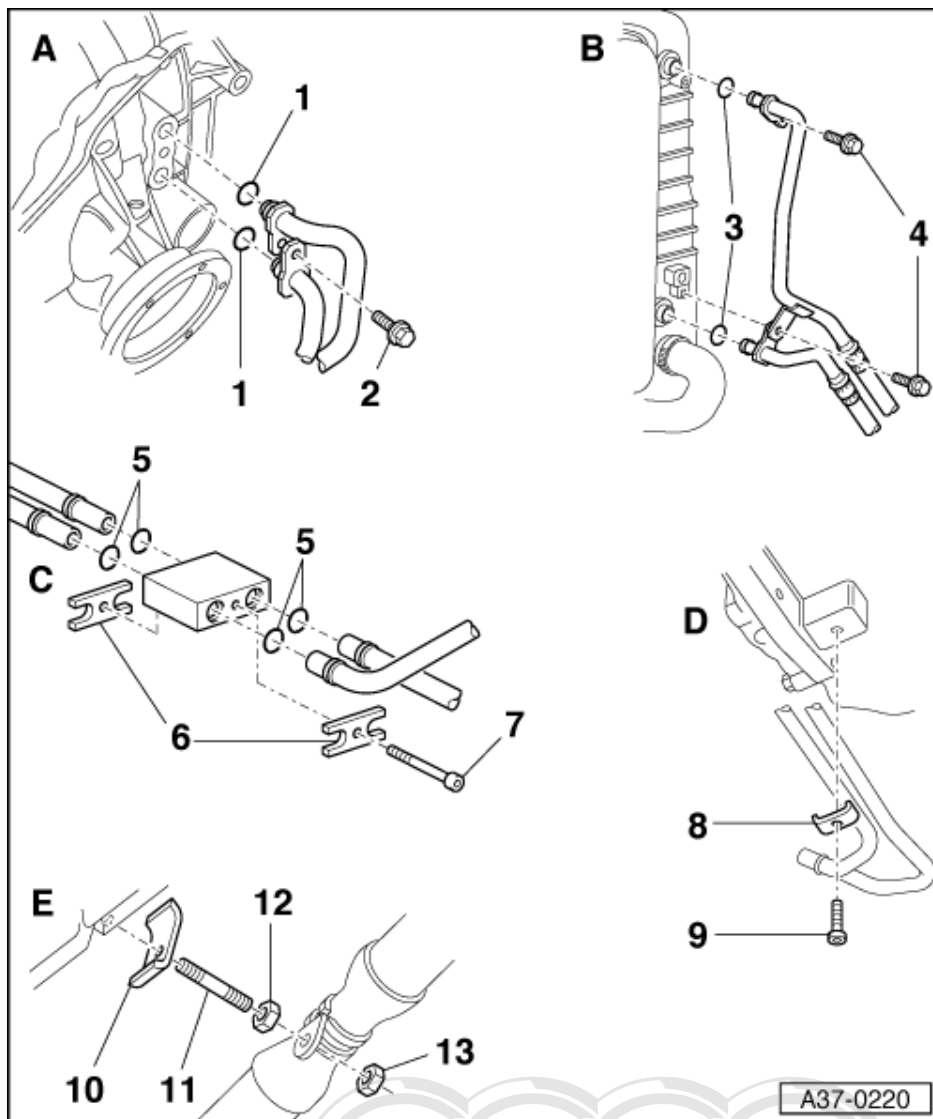


- A - Securing ATF pipe to gearbox
- B - Securing ATF pipe to cooler
- C - Connecting ATF pipe to ATF pipe
- D - Securing rear ATF pipe
- E - Securing ATF pipe to side of engine

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



- 1 O-ring**
 - ♦ Always renew
 - ♦ Coat thinly with Vaseline to insert
- 2 Bolt - 20 Nm**
 - ♦ Do not tighten until pipes are completely inserted
- 3 O-ring**
 - ♦ Always renew
 - ♦ Coat thinly with Vaseline to insert
- 4 Bolt - 5 Nm**
- 5 O-ring**
 - ♦ Always renew
 - ♦ Coat thinly with Vaseline to insert



- 6 Retainer
7 Bolt - 20 Nm
♦ Do not tighten until pipes are completely inserted
8 Clamp
9 Bolt - 5 Nm
10 Clamp
11 Threaded stud
12 Nut - 5 Nm
13 Nut - 5 Nm

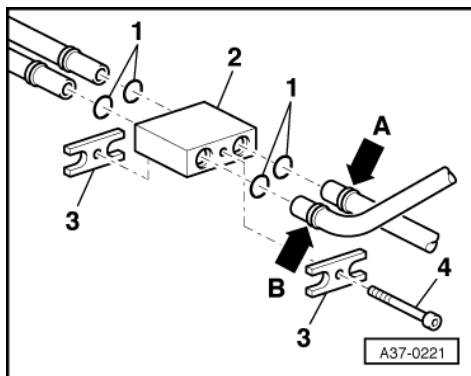
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability for the content of this document. Copyright by AUDI AG.

6.6 - Cleaning ATF pipes and oil cooler

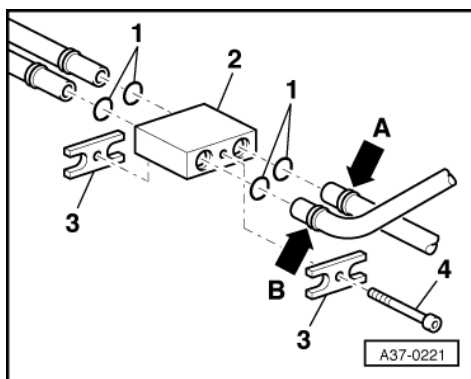
Notes:

- ♦ Observe notes for "Removing and installing ATF pipes"=>page 52 .
- ♦ Before fitting a replacement gearbox, always blow through the ATF cooler and ATF pipes with compressed air (not more than 10 bar).

Warning!
Wear eye protection.



- Unbolt brackets for ATF pipes =>from page 53 .
- -> Remove bolt -4- and take off retainer -3-.
- Pull ATF pipes leading to oil cooler -arrow A- and -arrow B- out of connector block -2-.
- Place a hose with a diameter of about 18 mm onto ATF pipe -A- and secure with hose clamp. Place the other end of the hose in a suitable container.



- -> Use a compressed air gun to blow into ATF pipe -B- a few times.
- Switch hose from ATF pipe -A- to ATF pipe -B- and repeat procedure.
- Renew all O-rings -1-.
- Secure ATF pipes again. Tightening torques=>from page 53 .

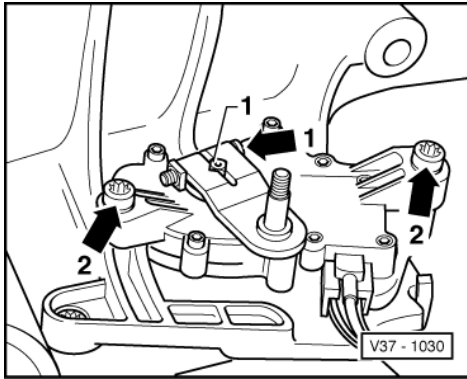
Notes:

- ♦ Coat O-rings thinly with Vaseline. Other lubricants will cause malfunctions in controls of hydraulic gearbox.
- ♦ Do not tighten bolt -4- until pipes are completely inserted (20 Nm).

6.7 - Removing and installing multi-function switch -F125

Removing

- Remove left-hand gearbox support=>page 39 .
- Disconnect selector lever cable from selector shaft lever.



- -> Completely remove clamping bolt -arrow 1- for lever and pull lever off selector shaft -1-.
- Remove securing bolts of multi-function switch -arrows 2- and pull multi-function switch off selector lever.

Installing

- Move selector shaft with an 8 mm AF open jaw spanner in opposite direction of travel into position "P" (up to stop).
- From this position move selector shaft back two detents into position "N".
- Fit multi-function switch on selector shaft.

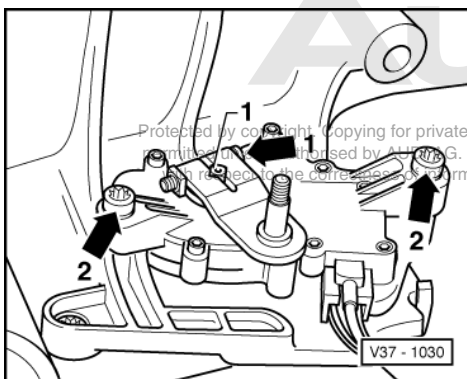
Note:

The multi-function switch can only be fitted on the selector shaft in one position.

- Only screw in securing bolts so far that multi-function switch can still be moved within elongated holes.
- Adjusting multi-function switch=>page 61 .

6.8 - Adjusting multi-function switch -F125

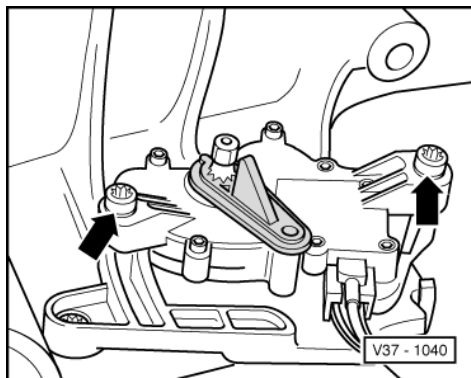
- Remove left-hand gearbox support
=>page 39 .



- Disconnect selector lever cable from selector lever shaft.
- -> Completely remove clamping bolt -arrow 1- for lever and pull lever off selector shaft.
- Move selector shaft -1- with an 8 mm AF open jaw spanner in opposite direction of travel into position "P" (up to stop).
- From this position move selector shaft back two detents into position "N".

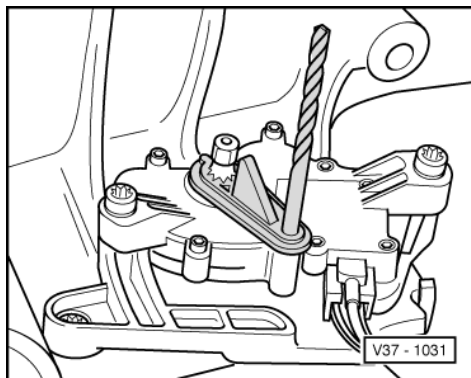
Note:

The multi-function switch can be adjusted with adjusting tool 0 501 311 626 (only supplied as a spare part with multi-function switch) or with assembly device 3338.

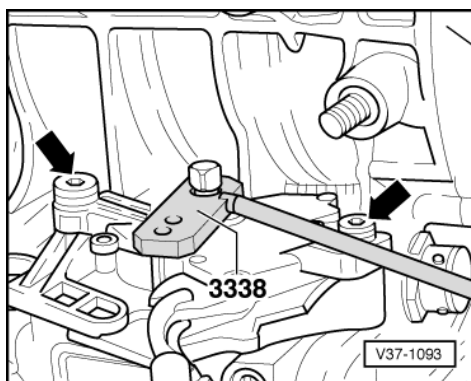


Adjusting with adjusting tool

- -> Fit adjusting tool on selector shaft.
- Loosen securing bolts for multi-function switch -arrows-.



- -> Turn multi-function switch until hole in adjusting tool aligns with adjustment on multi-functions switch and can be fixed with a pin or 4 mm dia. drill.
- Tighten securing bolts for multi-function switch (8 Nm).
- Remove adjusting tool and pin or drill.



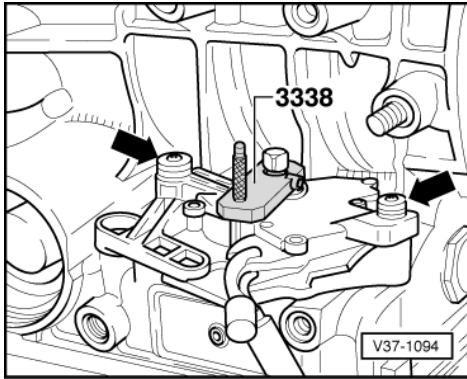
Adjusting with adjustment appliance 3338

- -> Fit adjustment appliance 3338 on selector shaft and tighten its fixing screw with a small screwdriver.

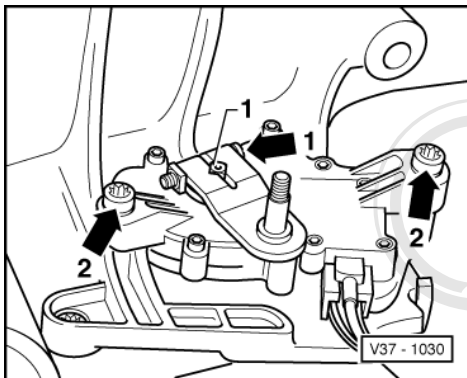
Note:

Check before fixing that the adjustment appliance lies flat on the multi-function switch; unscrew the fixing screw slightly first if necessary.

- Loosen securing bolts of multi-function switch -arrows-.



- -> Turn multi-function switch until hole in adjustment appliance 3338 aligns with adjustment point on multi-function switch and can be fixed with pin of adjustment appliance 3338.
- Tighten securing bolts -arrows- of multi-function switch (8 Nm).
- Remove adjustment appliance.



Installing

- -> Fit lever on selector shaft -1- and tighten clamping bolt -arrow 1- (8 Nm).
- Tighten selector level cable on selector shaft (9 Nm).
- Reconnect connector for multi-function switch.
- Relieve weight of engine at support bar.
- Adjust selector lever cable=>page 25 .

Note:

If the selector lever display in the dash panel insert does not agree with the selector lever position after repeated adjustment to the selector lever cable and the multi-function switch, renew the multi-function switch=>page 60 .

- Take up weight of engine again at support bar.
- Install left-hand gearbox support=>page 41 .

38 - Gears, Control

1 - Removing and installing oil pan, oil strainer and valve body

1.1 - Removing and installing oil pan, oil strainer and valve body

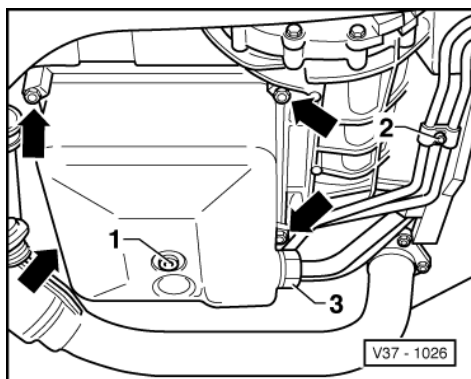
Warning!
Do not run engine or tow vehicle with oil pan removed or when there is no ATF in the gearbox.

Notes:

- ♦ Always replace valve body if it has collected dirt or if it is defective.
- ♦ Observe rules for cleanliness when working on automatic gearbox => page 52 .
- ♦ General repair instructions=>page 7 .
- ♦ Coat O-rings and oil seals thinly with Vaseline. Other greases will cause malfunctions in controls of hydraulic gearbox.

1.2 - Removing and installing oil pan

Removing



- Place container under the gearbox.
- -> Unscrew ATF drain plug -1- and drain off ATF.
- Disconnect ATF filler pipe -3- from oil pan if necessary.
- Remove clamp -2- for ATF pipe.
- Loosen securing nuts -arrows- with spacers using diagonal sequence.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Clean abrasion off magnets in oil pan (for trapping metal particles) if necessary.
- Renew gasket for oil pan.
- Renew O-ring on ATF filler pipe, coat thinly with Vaseline and insert.
- Always renew seal for ATF drain plug.
- Top up ATF => page 47 .

Tightening torques

Component		Nm
Oil pan to gearbox	M6	6

Component		Nm
ATF drain plug to oil pan	M14	35
ATF filler pipe to oil pan	M24	40
ATF filler pipe to gearbox	M8	23
ATF filler pipe to engine (6-cylinder engine)	M6	9

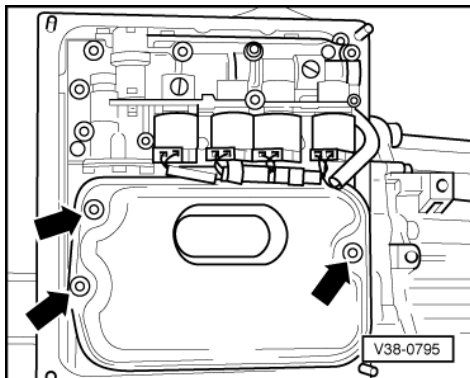
Note:

Tightening torques for retainer for ATF pipes=>from page 53 .

1.3 - Removing and installing oil strainer

Removing

- Remove oil pan => page 64 .



- -> Unscrew bolts on oil strainer -arrows-.
- Pull oil strainer off valve body.

Installing

- Renew O-ring on oil strainer.
- Coat seal on intake shoulder of oil strainer thinly with Vaseline.
- Install oil strainer.
- Install oil pan=>page 64 .
- Fill up with ATF => page 47 .

Tightening torque

Component		Nm
Oil strainer to valve body	M6	8

1.4 - Removing and installing wiring harness in gearbox

Note:

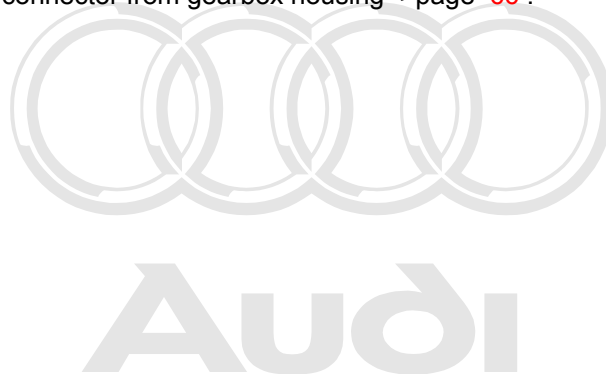
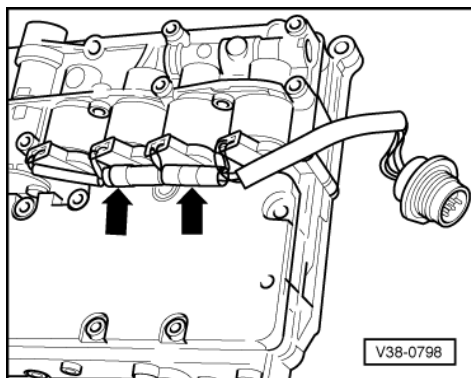
Observe rules for cleanliness when working on automatic gearbox=>page 52 .

Removing

- Remove oil pan=>page 64 .
- Remove oil strainer=>page 65 .

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

- Remove valve body to release wiring harness connector from gearbox housing=>page 66 .



- -> Take wiring harness out of retainer -arrows-
- Remove retainer securing bolt (between two arrows) and take off retainer.
- Lever out retaining lugs of connector on solenoid valves with a small screwdriver and pull connector off.

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

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Connect connector of new wiring harness to relevant solenoid valves.

Note:

The retaining lugs must engage.

- Fit retainer on valve body and install securing bolt.
- Hook wiring harness into retainer.
- Install valve body=>page 66 .

Tightening torque

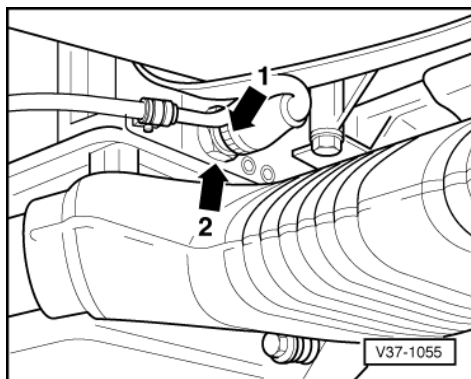
Component		Nm
Bolt for wiring harness retainer	M5	6

1.5 - Removing and installing valve body

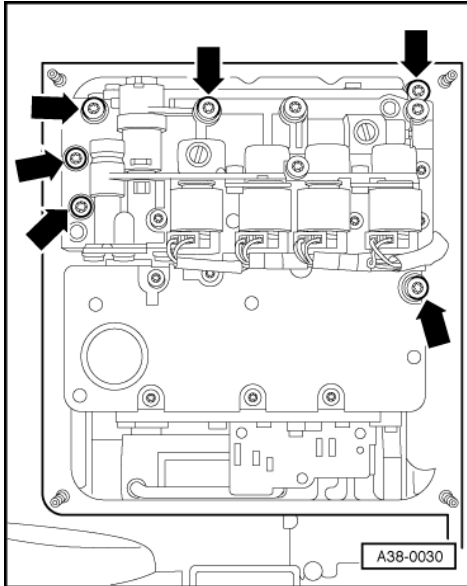
Notes:

- ♦ Always replace valve body if it has collected dirt or if it is defective.
- ♦ General repair instructions=>page 7 .
- ♦ Observe rules for cleanliness when working on automatic gearbox => page 52 .

Removing



- -> Loosen bayonet connector of 8-pin connector -arrow 1- by turning anti-clockwise and unplug connector from gearbox.
- Slacken union nut -arrow 2-.
- Remove oil pan => page 64 .
- Remove oil strainer => page 65 .



- -> Unscrew securing bolts -arrows- on valve body and take out valve body together with wiring harness.

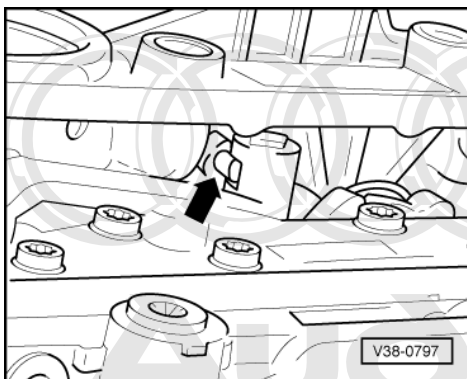
Notes:

- ◆ Only slacken the securing bolts indicated in the illustration -arrows-.
- ◆ If other bolts are slackened, this may affect the functioning of the valve body or the valve body may come apart.
- ◆ The bolts have different lengths; check that they are fitted correctly.
- Remove valve body from gearbox, at the same time guide out connector for wiring harness.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Coat O-rings of wiring harness connector thinly with Vaseline.
- Insert wiring harness connector into gearbox housing and screw on union nut.

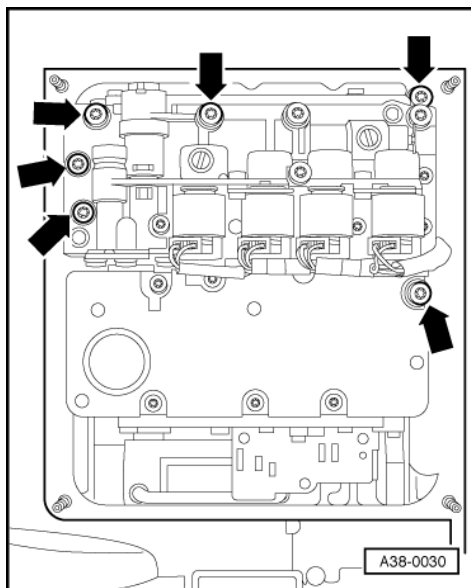


- -> Fit valve body without using force while inserting pin of detent plate into groove of selector slide -arrow-.

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

Note:

The multi-function switch -F125 must be at position "P" (park) (rearmost position).



- -> First, tighten bolts securing valve body -arrows- hand-tight.
- Then tighten bolts for valve body to final tightening torque using diagonal sequence.
- Renew O-ring on oil strainer.
- Install oil strainer => page 65 .
- Install oil pan=>page 64 .

Tightening torques

Component		Nm
Union nut to wiring harness	M26	20
Valve body to gearbox housing (diagonal sequence)	M8	8
Oil strainer to valve body	M6	8

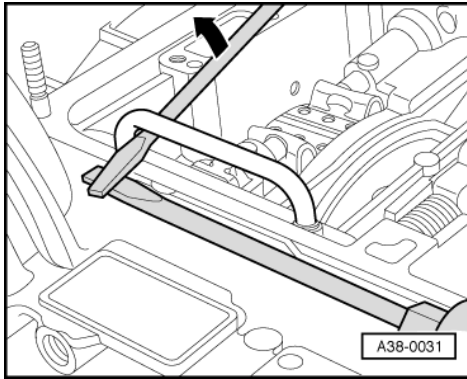
1.6 - Renewing internal oil pipe

Notes:

- ♦ Defective seating of the internal oil pipe allows ATF to enter the differential, this overfills and oil escapes out of the differential gearbox breather.
- ♦ Always fit a new oil pipe after removing.
- ♦ The oil pipe may only be inserted using installing tool 3321. Otherwise there is a danger that the pipe will deform, causing leaks.

Removing

- Remove valve body => page 66 .



- -> Lever internal oil pipe off gearbox housing using a screwdriver (apply pressure evenly).

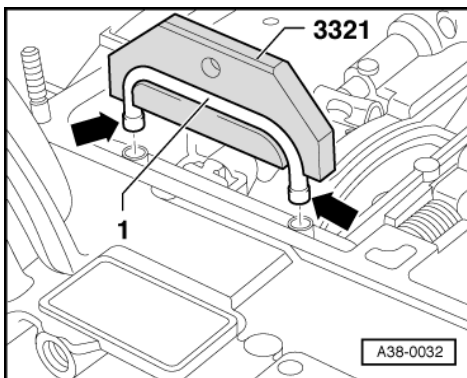
Note:

Do not damage the sealing surface of the oil pan when pressing the oil pipe off. Use a second screwdriver as a support base as necessary.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Allow oil to drain completely out of hole for oil pipe.
- Degrease hole for oil pipe.



- -> Insert oil pipe -1- in installing tool 3321.
- Coat ends of oil pipe -arrows- with locking fluid AMV 185 101 A1.
- Drive oil pipe into gearbox housing with light blows of a plastic hammer on installing tool 3321.

Notes:

- ♦ Open side of installing tool 3321 faces towards outer wall of gearbox.
- ♦ Ensure that oil pipe is kept straight; knock both ends in evenly.
- Fill up with ATF => page 47 .
- Check oil level in front final drive=>page 79 .

2 - Dismantling and assembling ATF pump

2.1 - Dismantling and assembling ATF pump

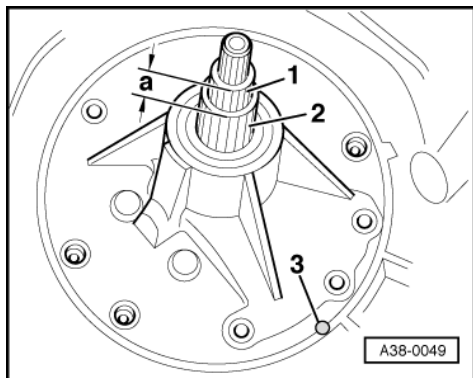
Notes:

- ♦ Up to gearbox number 7971, the ATF pump may leak at its outer circumference. This is because the groove for the O-ring is too deep. From gearbox manufacturing date 16.2.93 the design of the groove was modified.

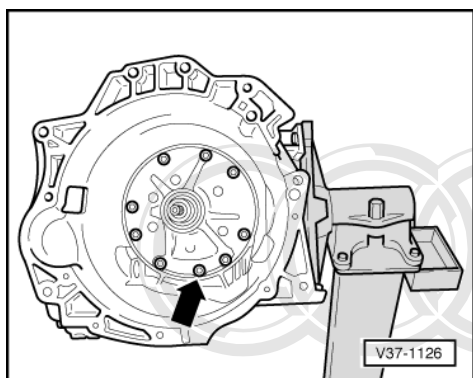
- ♦ If the pump elements of the ATF pump are defective, it only makes sense to renew the ATF pump if the clutches are not damaged. Always check for clutch wear before repairing the ATF pump.
- ♦ General repair instructions=>page 7 .
- ♦ Rules for cleanliness before working on automatic gearbox
=>page 52 .

Removing

- Remove gearbox=>page 29 .



- Secure gearbox to repair stand=>page 38 .
- Drain ATF=>page 47 and check ATF for clutch lining particles when doing so.
- Pull off torque converter.
- Remove input shaft from front final drive
=>page 95 .
- -> Measure dimension -a- between turbine shaft -1- and stator shaft -2- as shown in illustration and note (approx. 18 mm).



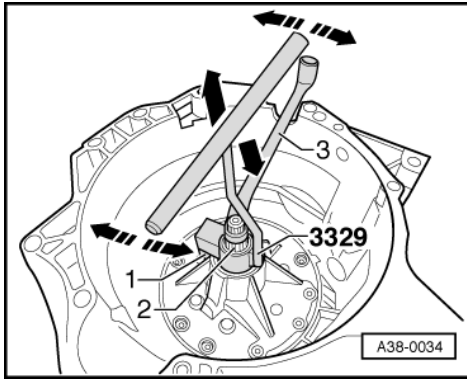
- Check if ATF pump and gearbox housing in area of -Item 3- lie approximately at same height (± 0.5 mm), otherwise measure height difference at this point and note.

Note:

Both of these dimensions must be achieved before tightening the ATF pump securing bolts when installing.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

- -> Loosen all securing bolts -arrow- of ATF pump using diagonal sequence and remove.

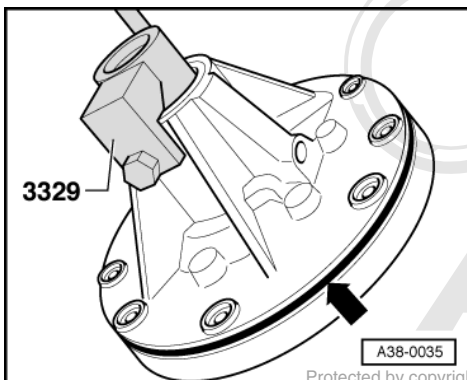


- -> Fit assembly aid 3329 to remove ATF pump and clamp securely -1-.

Note:

When removing the ATF pump, it is absolutely necessary that the turbine shaft -2- is held down. Otherwise parts of the planetary gearbox will be pulled out as well, and the gearbox must be replaced complete.

- Loosen ATF pump:
 - Turn ATF pump several times approx. 30° to left and right without lifting until ATF pump noticeably moves easier.
- Press down on turbine shaft -2- with a ring spanner -3- and lift out ATF pump by turning in alternate direction.

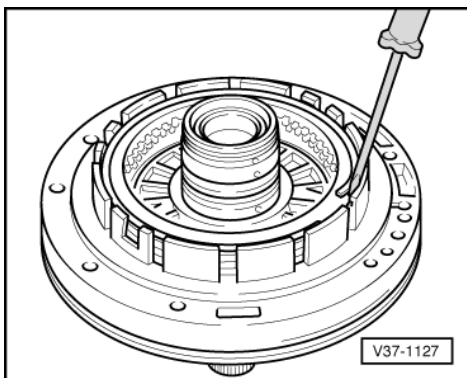


- -> Always renew O-ring -arrow-.

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

Note:

If only the O-ring on the outer circumference of the ATF pump is to be renewed, the ATF pump can be reinstalled=>page 73.

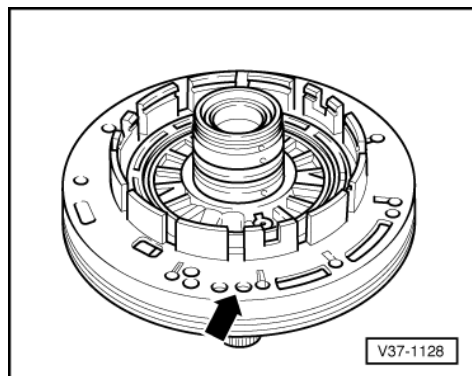


- -> Lever circlip for plates of brake "C" out of groove in intermediate plate.
- Take out end plate, lined plates, outer plates and dished spring. When doing this, note the sequence.

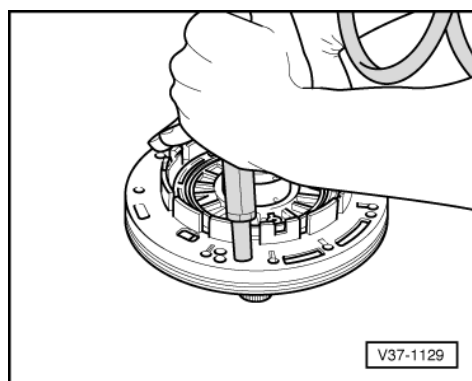


Note:

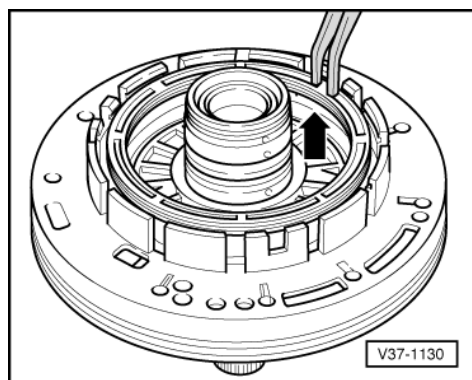
Check plates for wear and damage caused by heat.



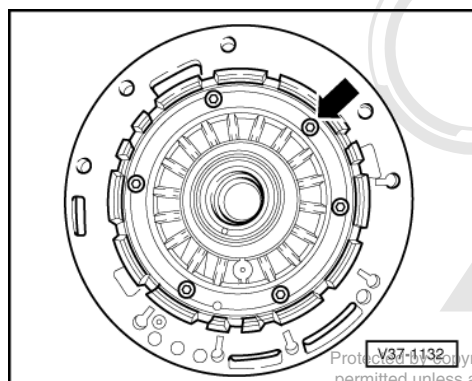
- -> Place compressed air gun over hole -arrow- in intermediate plate.



- -> Lift piston with compressed air.

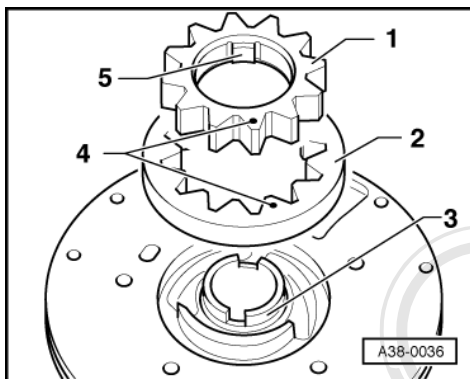


- -> Take out piston.



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

- -> Remove securing bolts -arrow-, separate intermediate plate from ATF pump.

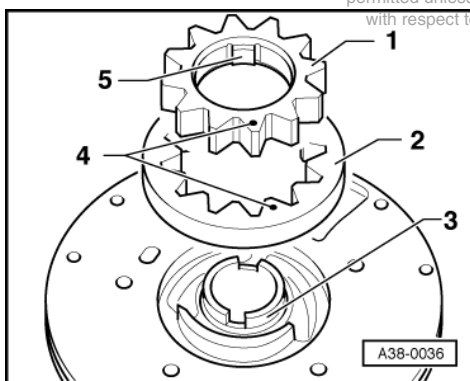


- -> Take out pump gear -1- and internal gear -2-.
- Check pump gear and internal gear for signs of scoring and damage caused by heat and renew entire ATF pump if necessary.
- Take off spacer -3-.

Installing

Installation is carried out in the reverse order, when doing this note the following:

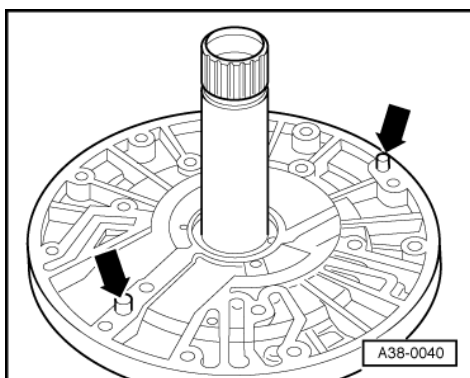
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



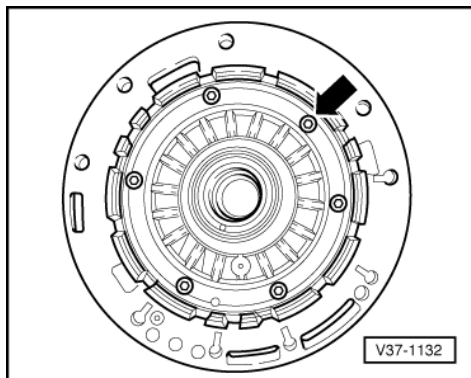
- -> Insert spacer -3- in ATF pump.
- Insert pump gear -1- and internal gear -2- with marking -4- facing upwards.

Note:

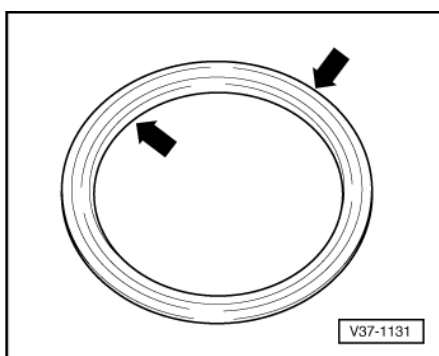
The lug -5- of the pump gear must engage in the cut-out of the spacer.



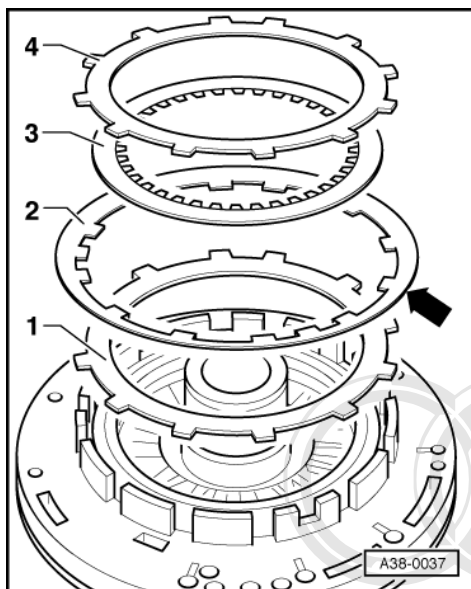
- -> Check that both dowel pins -arrows- in the intermediate plate are seated correctly.



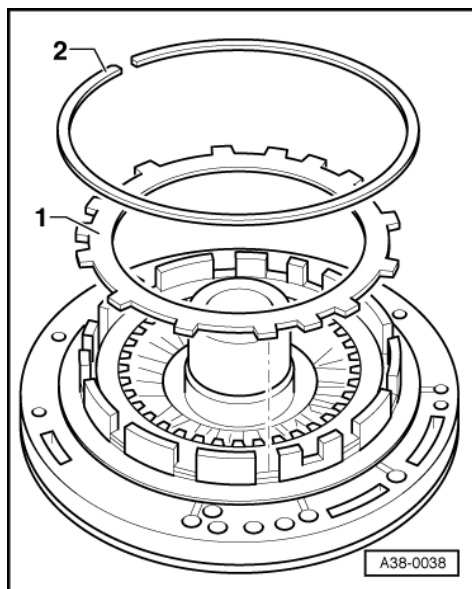
- -> Tighten intermediate plate to ATF pump using diagonal sequence (10 Nm).
- Check ease of movement of pump gear and pump internal gear by turning spacer.



- -> Check O-ring of piston "C" and renew if necessary.
- Coat O-rings of piston "C" thinly with Vaseline and press piston into intermediate plate.



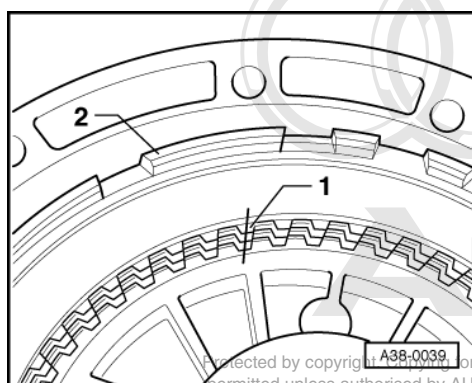
- -> Insert first outer plate-1- (of steel) into intermediate plate.
- Insert dished spring -2- so that outer edge -arrow- is raised off intermediate plate.
- Insert lined plate -3-.
- Then insert alternately all remaining outer plates -4- and lined plates.



- -> End plate -1- (thicker outer plate with more retaining lugs) is inserted last.
- Insert circlip -2-.

Note:

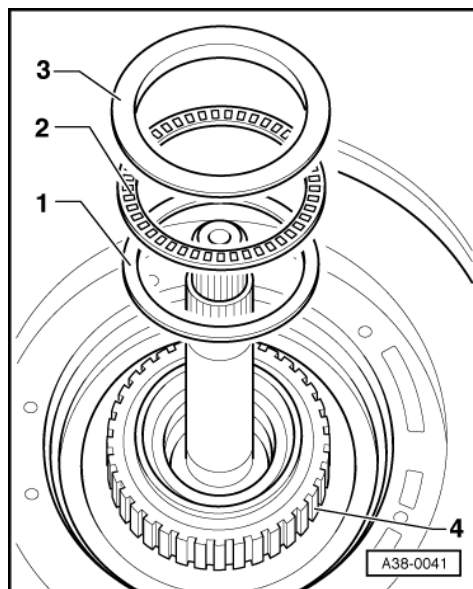
Do not replace circlip with a circlip of another thickness.



- -> Align lined plates centrally to intermediate plate -2-. Also align retaining lugs -1- of lined plates over one another.

Note:

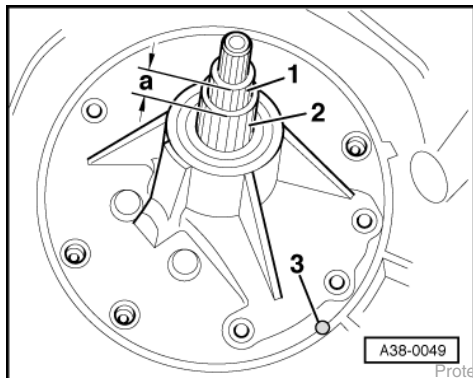
This alignment is necessary to ensure that all the lined plates are guided onto the outer teeth of the freewheel (of the 2nd gear) when the ATF pump is inserted.



- -> Insert shim -1-, axial needle bearing -2- and angled disc -3- that may have been removed during dismantling.

Notes:

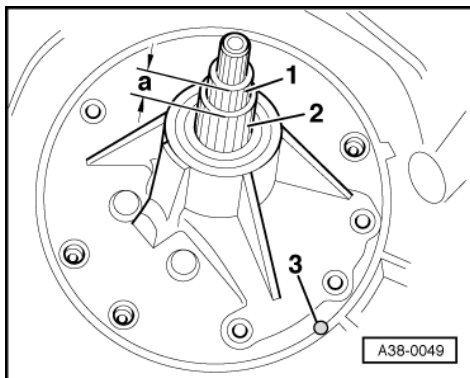
- ♦ Do not replace shim with a shim of another thickness.
- ♦ Insert angled disc with shoulder facing downwards.
- Fit O-ring onto outer circumference of ATF pump and coat thinly with Vaseline.
- Insert ATF pump without jolting or turning from above as far as possible onto outer splines -4- of freewheel (the 2nd gear) with assembly aid 3329.



- -> Check that ATF pump and gearbox housing in area of -Item 3- are approximately at the same height (± 0.5 mm), compare with height difference noted when dismantling if necessary.
- If the correct measurement is not obtained, turn ATF pump slightly (approx. 2°) while pressing down.

Notes:

- ♦ If the ATF pump cannot be brought into its prescribed installation position even after turning it slightly several times, press down on the turbine shaft, remove the ATF pump (see notes=>page 69) and realign the lined plates. Then reinsert the ATF pump.
- ♦ Lined plates which have shifted out of position cannot slide into the outer teeth of the freewheel, i.e. the ATF pump cannot achieve its prescribed installation position.

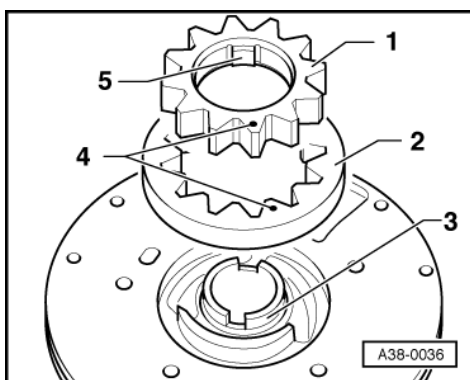


- -> Measure dimension -a- between turbine shaft -1- and stator shaft -2- and compare with measurements noted during removal.

Note:

If assembled correctly, the ATF pump will lie "sprung" against the gearbox housing and the measurements noted during removal can be achieved before tightening the securing bolts.

- Insert securing bolts for ATF pump with new O-rings.
- Check torque converter oil seal and renew if necessary=>page 12 .



- -> Before inserting torque converter, ensure that cut-out of spacer -3- engages in lug -5- of pump gear -1-.
- Top up ATF=>page 47 .

Tightening torques

Component		Nm
ATF pump to gearbox	M6	10
Intermediate plate to pump	M6	10



39 - Rear final drive, Differential

1 - Removing and installing speedometer sender -G22 and drive wheel for speedometer sender

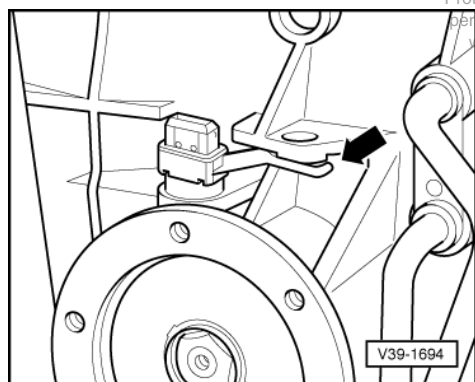
1.1 - Removing and installing speedometer sender -G22 and drive wheel for speedometer sender

- Gearbox installed

Removing and installing speedometer sender -G22

Note:

Fitting location=>Item **85**.



Removing

- Pull connector off speedometer sender -G22.
- -> Press sender retainer -arrow- down, turn sideways and pull sender out upwards.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Renew O-ring for sender.
- Fit sender with multi-purpose grease.

Removing and installing drive wheel for speedometer sender -G22

Note:

Fitting location=>Item **87**.

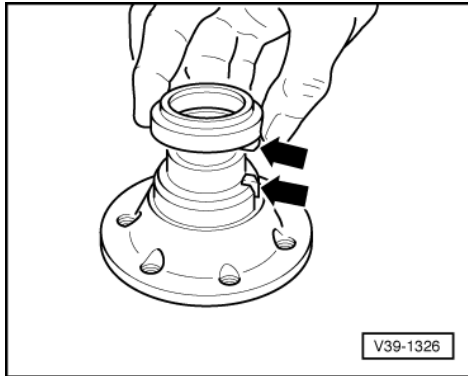
Removing

- Remove left flange shaft and oil seal=>page **92**.
- Pull drive wheel off flange shaft.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Apply multi-purpose grease to face of new magnetic ring and fit onto flange shaft.



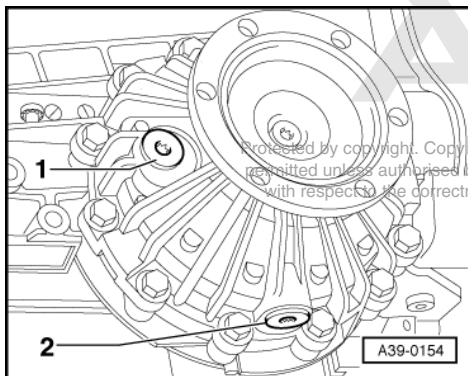
Note:

-> The lugs of the drive wheel must engage in the cut-outs of the flange shaft.

2 - Gear oil in front final drive

2.1 - Gear oil in front final drive

2.2 - Checking oil level in front final drive

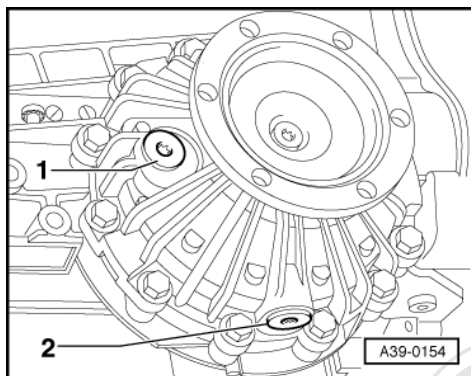


- -> Remove oil filler plug -arrow 1-.
 - Specification: oil level should be up to the bottom of the hole.
- Top up oil as necessary.
 - Specification=>page 6
- Always fit a new seal on oil filler plug.
- Screw in oil filler plug.

Tightening torque

Component	Nm
Oil filler plug	50

2.3 - Changing gear oil in front final drive or filling after repairs



- Place drip tray underneath.
- -> Remove oil drain plug -arrow 2- and drain gear oil.
- Always renew seal for oil drain plug.
- Screw in oil drain plug.
- Remove oil filler plug -arrow 1-.
- Fill slowly with gear oil.
 - Specification: oil level should be up to the bottom of the hole
 - Specification=>page 6
- Always renew seal for oil filler plug.
- Insert oil filler plug.

Tightening torques

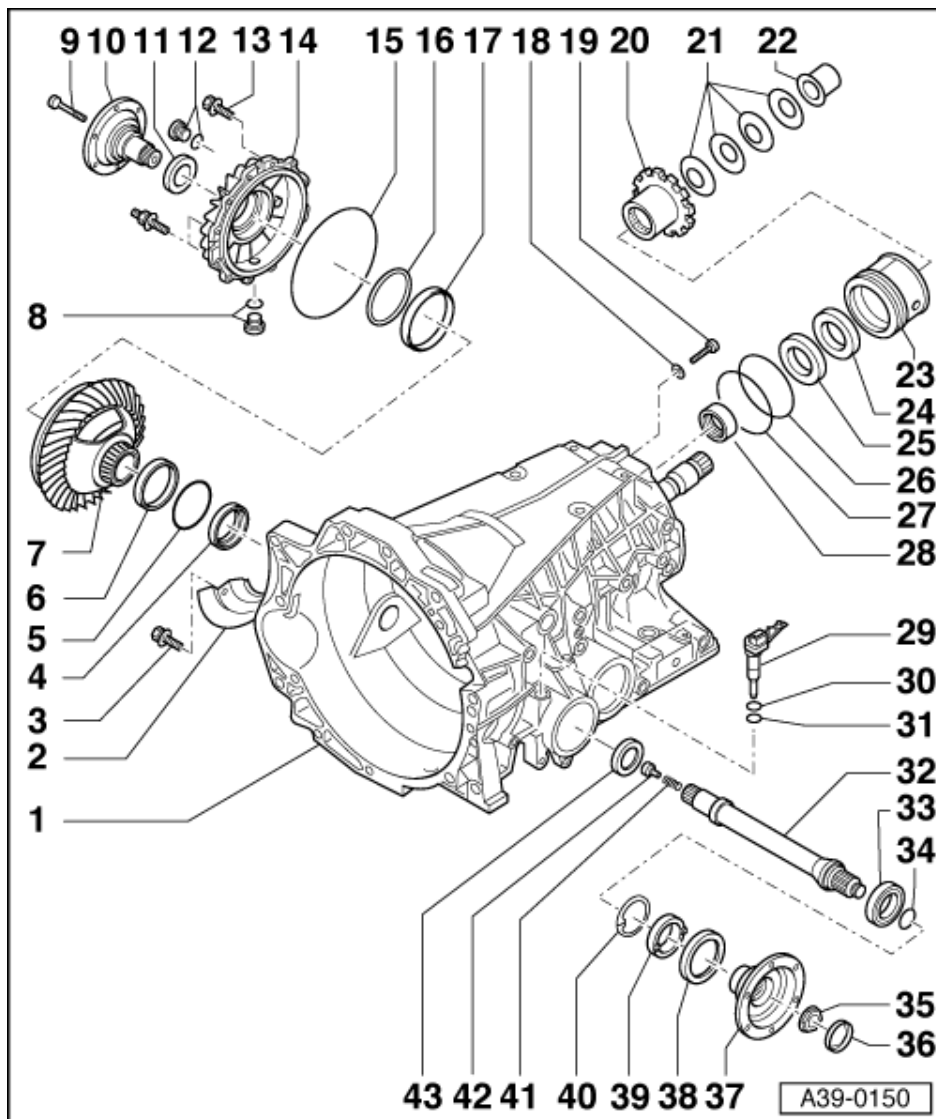
Component	Nm
Oil drain plug	50
Oil filler plug	50

3 - Servicing front final drive

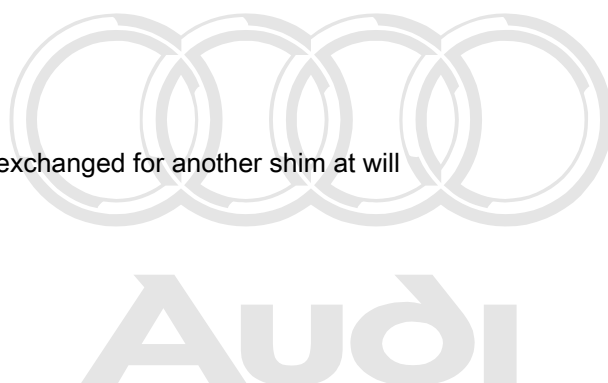
3.1 - Servicing front final drive

Notes:

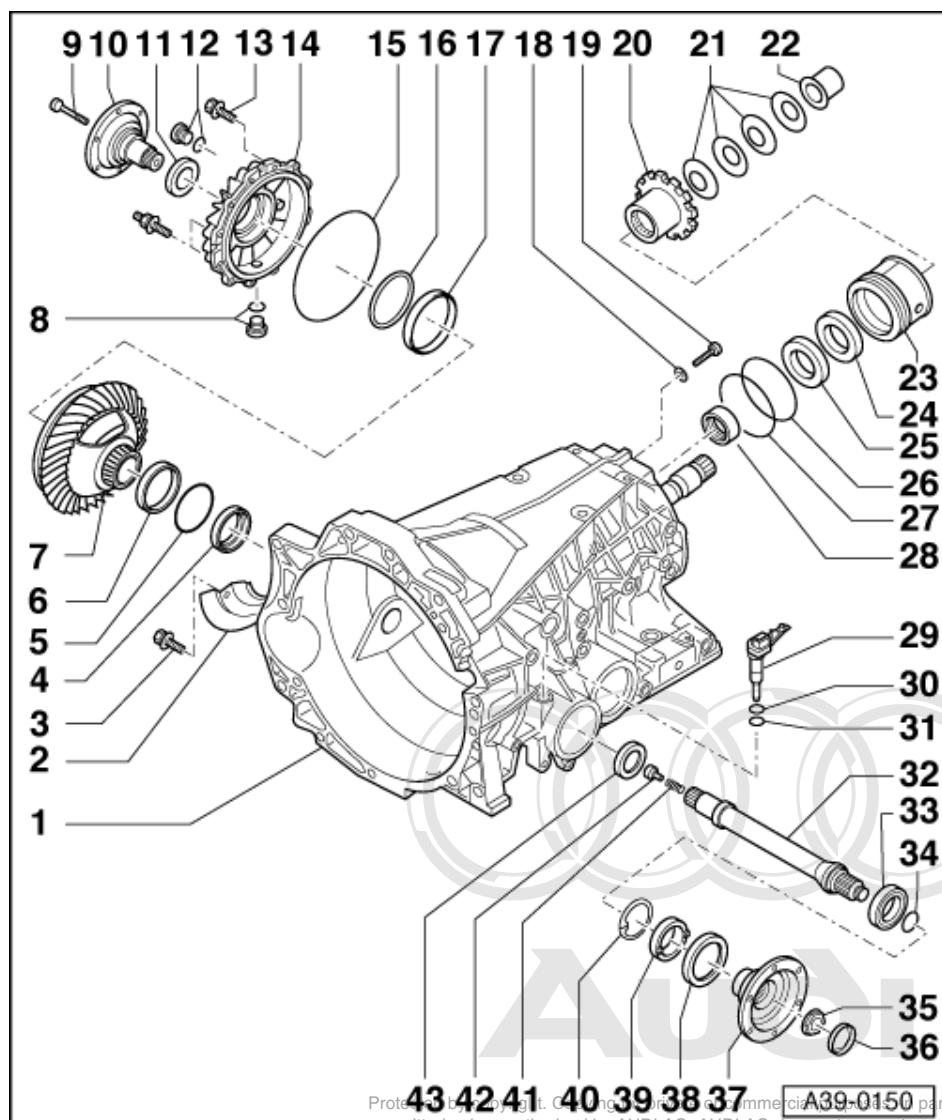
- ♦ The components shown in the following illustrations can be removed with the gearbox installed.
- ♦ Observe the rules for cleanliness when working on the automatic gearbox=>page 52 .
- ♦ General repair instructions=>page 7 .
- ♦ Coat O-rings and oil seals thinly with Vaseline. Other greases will cause malfunctions in the controls of the hydraulic gearbox.
- ♦ Do not interchange the inner or outer races of bearings of the same size.



- 1 Gearbox housing
- 2 Baffle plate
- 3 Bolt - 8 Nm
 - ◆ Qty. 2
- 4 Sealing ring
 - ◆ Renewing=>page 89
- 5 Shim
 - ◆ Behind bearing race
 - ◆ Is determined by measurement and cannot be exchanged for another shim at will
- 6 Bearing outer race
 - ◆ Remove and install by hand
- 7 Differential housing
 - ◆ With taper roller bearing

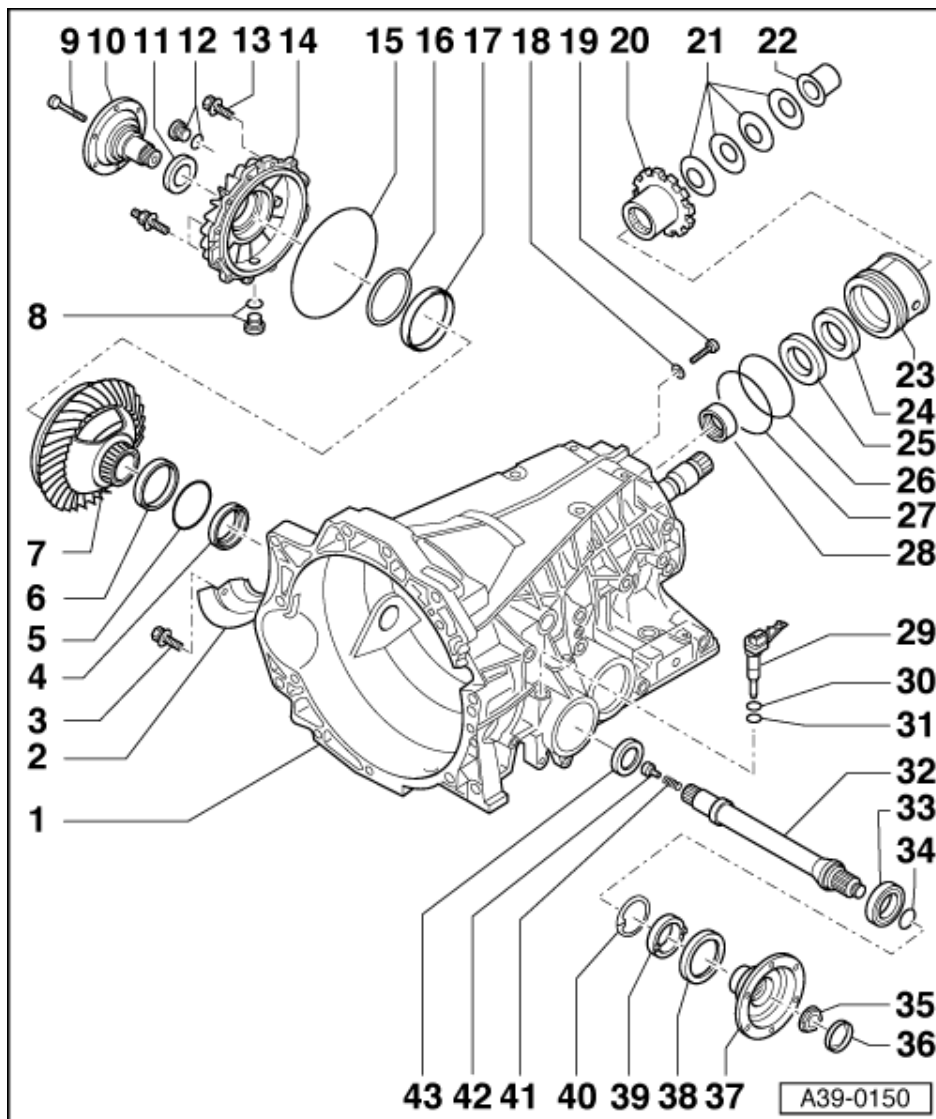


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



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

- 8 Oil drain plug - 50 Nm**
 - ♦ With seal
- 9 Bolt - 25 Nm**
- 10 Flange shaft**
 - ♦ Renewing=>page 87
- 11 Seal**
 - ♦ Renewing=>page 87
- 12 Oil filler plug - 50 Nm**
 - ♦ For checking oil level
 - ♦ With seal
- 13 Bolt - 23 Nm**
 - ♦ Qty. 12
 - ♦ For securing -Item 14 -
- 14 Differential cover**



15 O-ring

- ◆ Renewing=>page 89
- ◆ Fit with Vaseline

16 Shim

- ◆ Behind bearing race
- ◆ Is determined by measurement and cannot be exchanged for another shim at will

17 Bearing outer race

18 Washer

19 Bolt - 23 Nm

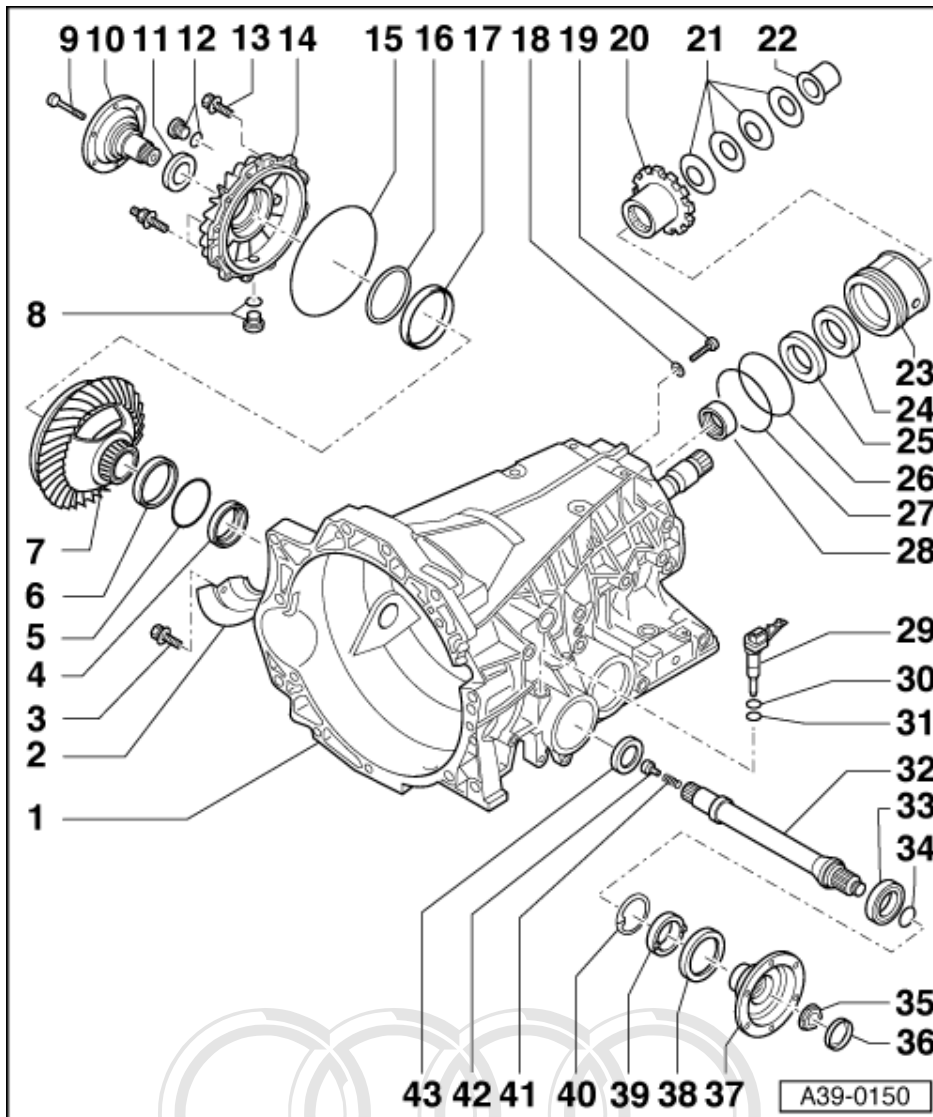
- ◆ For locking element for
-Item 23 -

20 Parking lock gear

21 Dished spring

- ◆ Qty. 4
- ◆ Always insert 2 springs facing against one another

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

**22 Bush****23 Intermediate sleeve**

- ♦ Renewing=>page 97

24 Seal

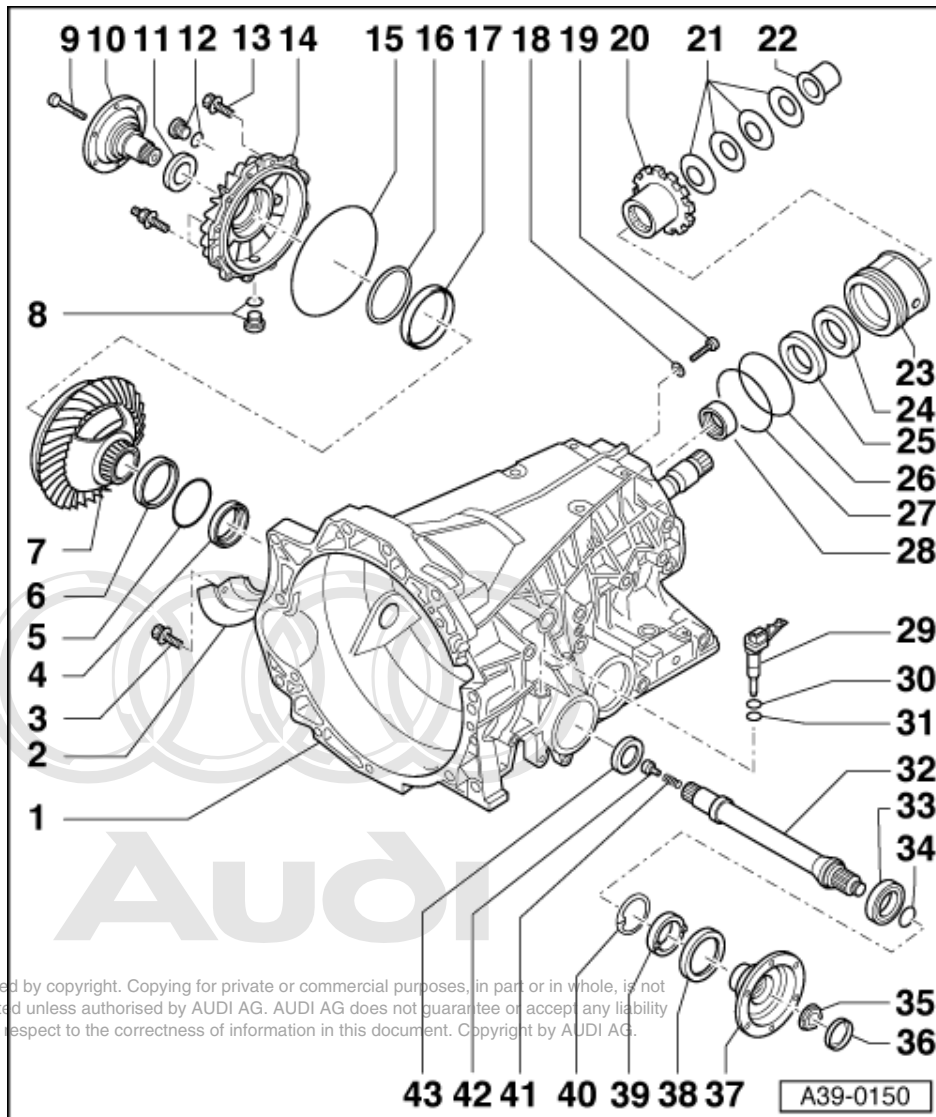
- ♦ For ATF side
- ♦ Only renew together with -Item 97

25 Seal

- ♦ For gear oil side
 - ♦ Only renew together with -Item 97
- Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

26 O-ring

- ♦ Only renew together with -Item 97
- ♦ Fit with Vaseline



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

27 O-ring

- ♦ Only renew together with -Item **97**
- ♦ Fit with Vaseline

28 Nut (special) - 120 Nm

- ♦ Renewing=>page **97**

29 Speedometer sender -G22

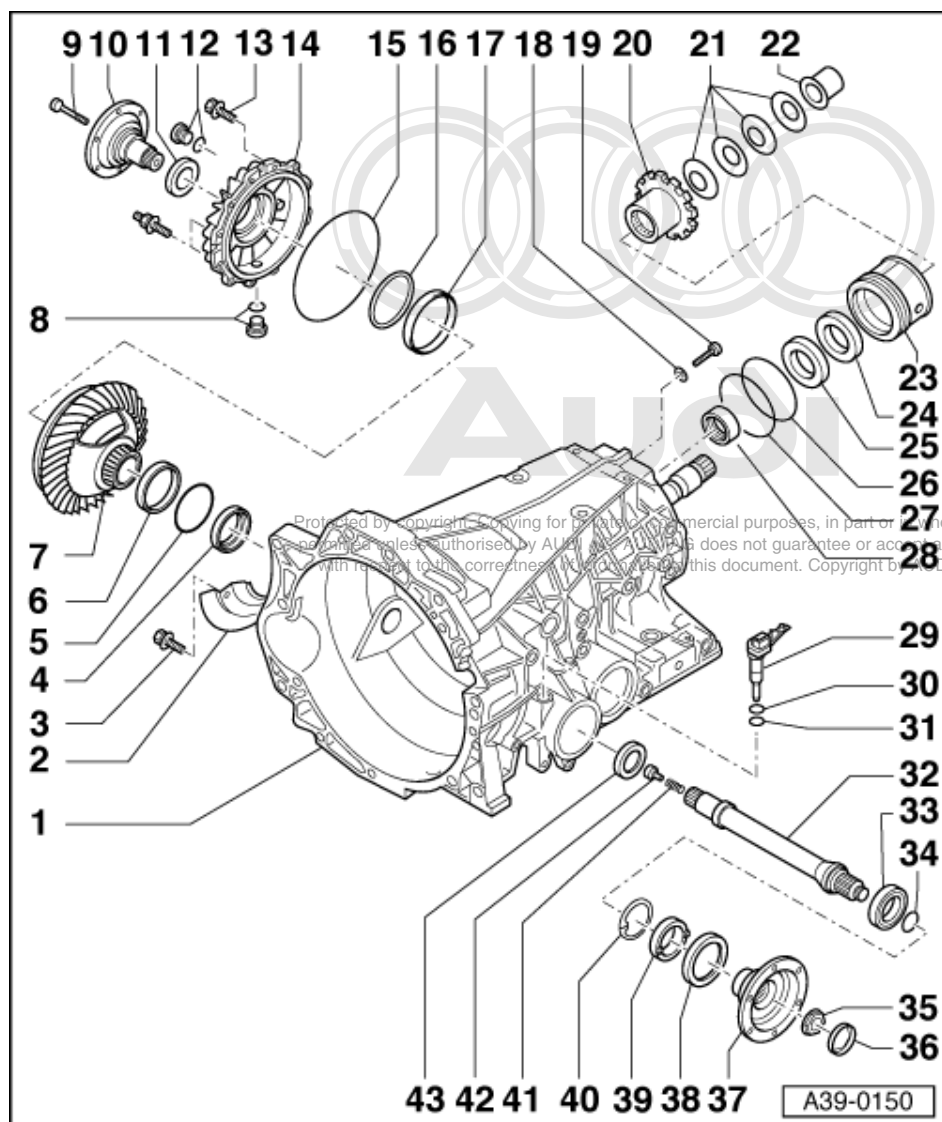
- ♦ Removing and installing =>page **78**

30 O-ring

- ♦ Fit with Vaseline

31 O-ring

- ♦ Fit with Vaseline



32 Input shaft

- ♦ Removing and installing
=>page 95

33 Bearing

- ♦ Fit filled with multi-purpose grease

34 Circlip

- ♦ For -Item 33 - on -Item 32 -

35 Nut - 25 Nm

36 Securing plate

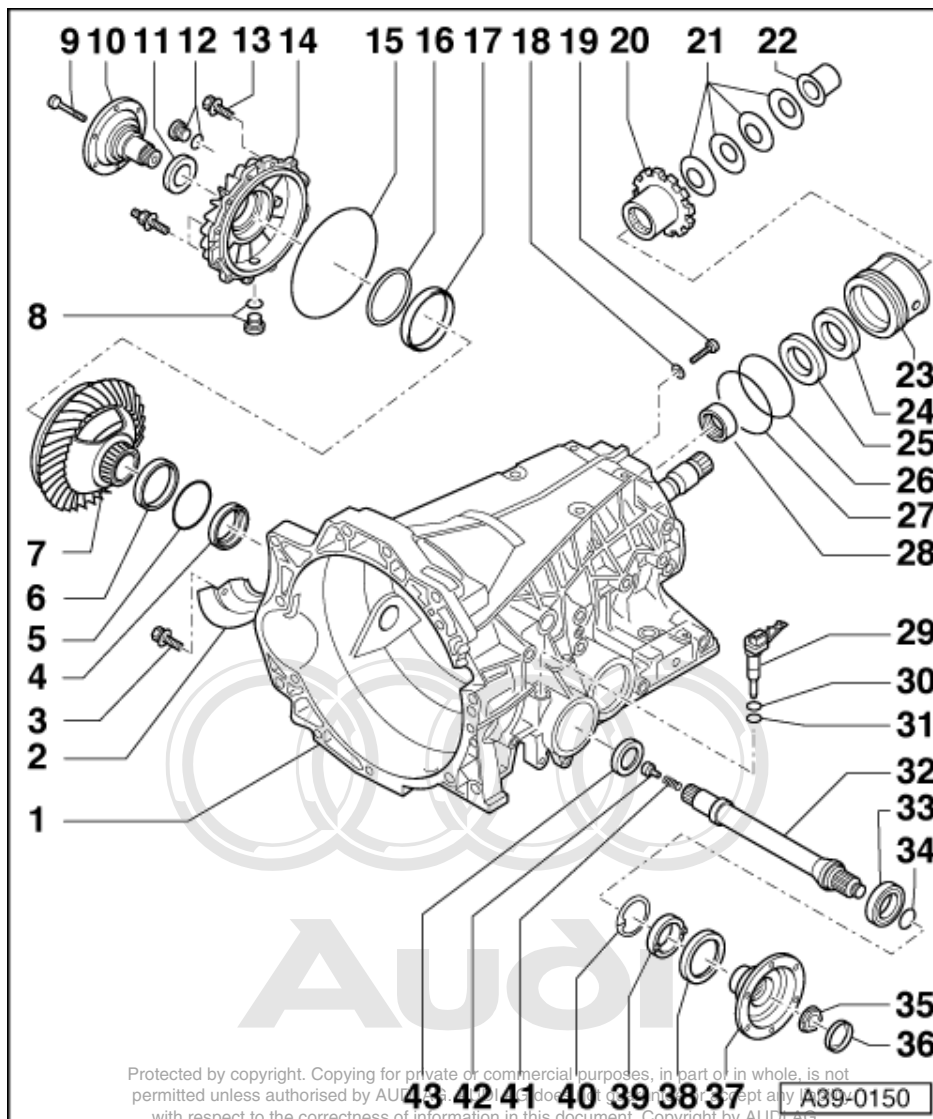
- ♦ For -Item 35 -
- ♦ Renewing=>page 92

37 Left-hand flange shaft

- ♦ Removing and installing
=>page 92

38 Seal

- ♦ Renewing=>page 92



39 Drive gear

- ♦ For speedometer sender -G22
- ♦ Removing and installing
=>page 78

40 Circlip

- ♦ For -Item 33 - in gearbox housing

41 Spring

42 Thrust pin

43 Seal

- ♦ Renewing=>page 95

3.2 - Renewing oil seal for right flange shaft

Removing

- Remove right front wheel.
- Remove right front exhaust pipe.

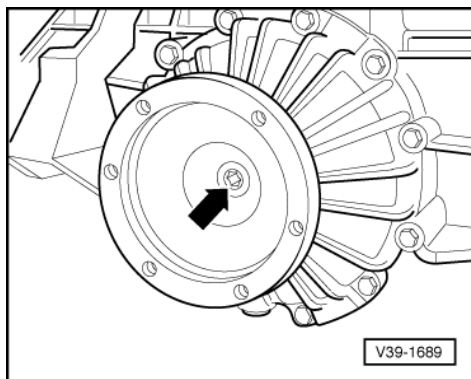


=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; B - Vehicles with four wheel drive Removing and installing exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; C - Vehicles with four wheel drive Removing and installing exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

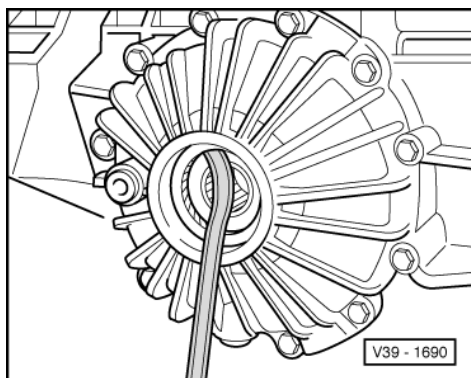


- Unbolt right-hand drive shaft from flange shaft

=> Running Gear, 4WD; Repair group 40; Removing and installing drive shaft Removing and installing drive shaft

- -> Remove centre bolt -arrow- for right flange shaft by screwing two bolts into flange shaft and bracing with a suitable lever.
- Place a drip tray underneath.
- Pull out right flange shaft.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written consent of Audi AG. Audi AG does not accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Lever out oil seal of right flange shaft with a suitable lever.

Note:

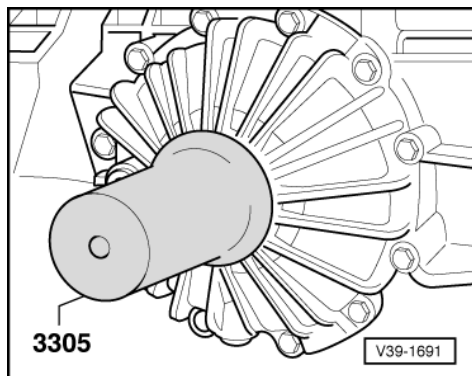
For vehicles with a 5-cylinder engine, lever out seal from above.

Installing

Installation is carried out in the reverse order, when doing this note the following:

Notes:

- ♦ The open side of the oil seal faces toward the gearbox.



- ♦ Moisten outer circumference and sealing lip of oil seal with gear oil or coat thinly with Vaseline.
- -> Drive in oil seal for right flange shaft using thrust piece 3305 until thrust piece contacts stop.
 - The oil seal must be inserted at the same depth in the housing all round.
 - Check oil level in front final drive of automatic gearbox=>page 79 .

Tightening torques

Component		Nm
Right flange shaft to gearbox	M8	25
Drive shaft to flange shaft	M10	77

3.3 - Renewing right oil seal for input shaft

The following special tools and test units are required for this work:

- ♦ Kukko 21/5
- ♦ Multi-purpose tool VW 771
- ♦ Press piece 3322

Removing

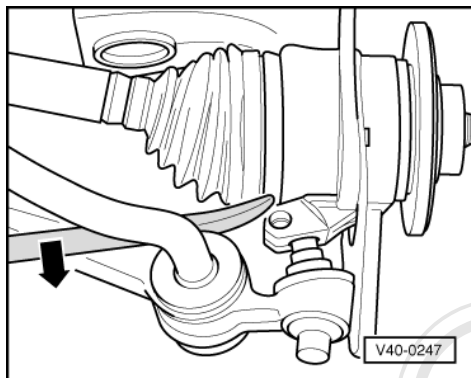
- Remove front right wheel.
- Remove right front exhaust pipe.

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; B - Vehicles with four wheel drive Removing and installing exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; C - Vehicles with four wheel drive Removing and installing exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK



- -> Disconnect track control arm and guide link from right suspension strut and swing to side.

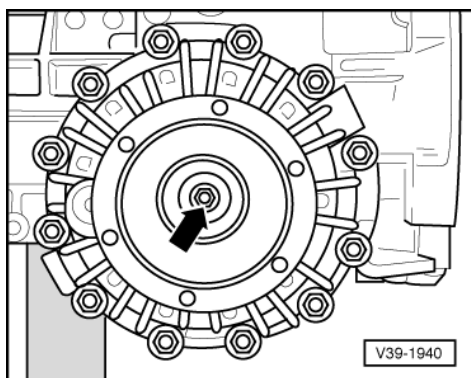
=> Running Gear 4WD; Repair Group 40; Removing and installing front suspension strut Removing and installing front suspension strut

- Remove right drive shaft.

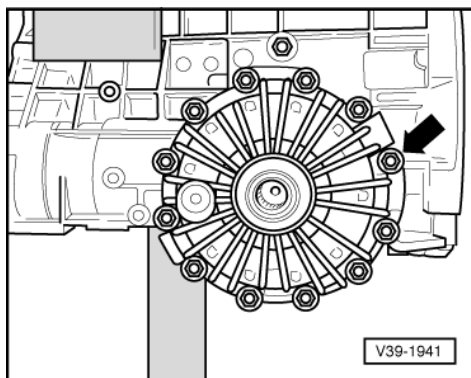
=> Running Gear 4WD; Repair Group 40; Removing and installing drive shaft Removing and installing drive shaft

- Place a drip tray underneath.
- Drain gear oil in front final drive=>page 80

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



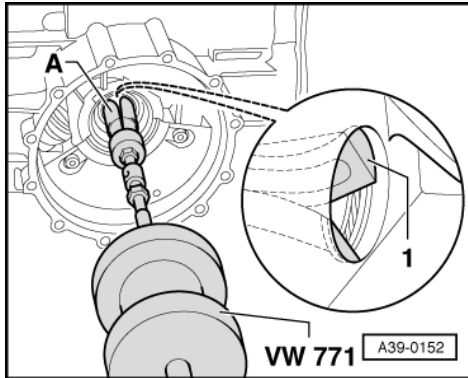
- -> Remove centre bolt -arrow- for right flange shaft by screwing two bolts into flange shaft and bracing with a suitable lever.
- Place a drip tray underneath.
- Pull out right flange shaft.



- -> Loosen securing bolts -arrow- for differential cover using diagonal sequence and remove bolts.
- Remove differential cover.

Notes:

- ◆ Secure the differential against falling out when removing the differential cover.
- ◆ Do not interchange the bearing outer races and shims in the differential cover and gearbox housing.
- Take out differential with inner race of taper roller bearing.
- Remove input shaft=>page 95 .

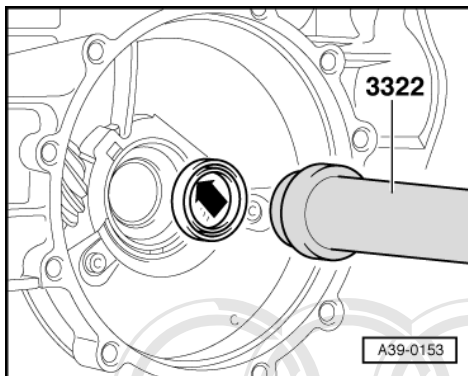


- -> Assemble Kukko 21/5 -A- and multi-purpose tool VW 771 as shown in illustration and pull out oil seal.

Note:

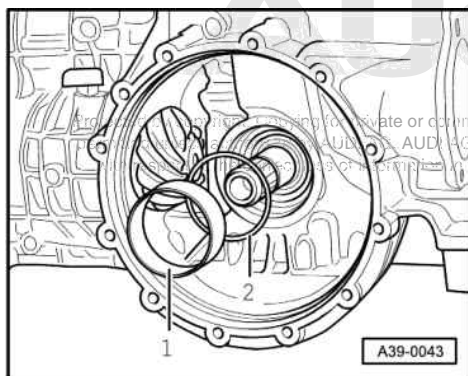
When attaching make sure that the extractor hooks -1- of Kukko 21/5 only contact the oil seal and do not rest on the gearbox housing.

Installing



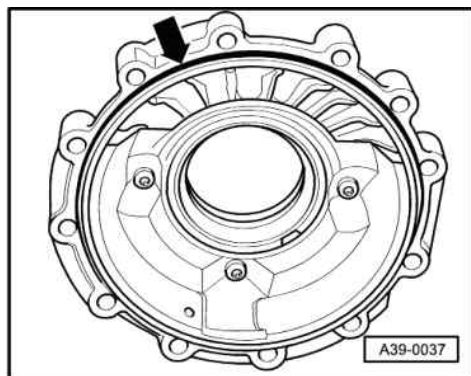
Installation is carried out in the reverse order, when doing this note the following:

- Moisten outer circumference and sealing lips of oil seal with gear oil or coat thinly with Vaseline.
- Check oil seal seat in gearbox housing for damage and rework if necessary.
- -> Slide on new oil seal with sealing lip -arrow- facing thrust piece 3322.
- Drive on oil seal up to stop.

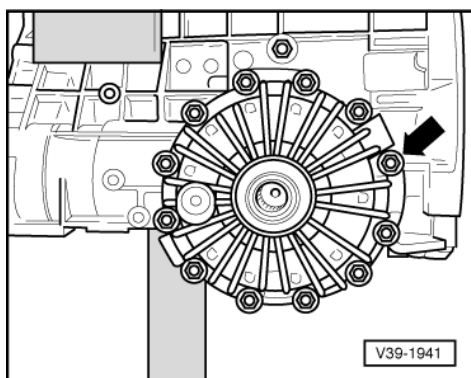


This document is not to be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or by any information storage or retrieval system, without the prior written permission of Audi AG. Audi AG does not guarantee or accept any liability for the accuracy or completeness of the information contained in this document. Copyright by Audi AG.

- -> Insert shim -2- and bearing outer race for differential -1- into housing up to stop by hand. Keep parts straight when installing.



- -> Renew O-ring -arrow- and coat with Vaseline.
- Insert shim and bearing outer race into differential cover if they have fallen out.
- Insert differential into gearbox housing.



- -> Fit differential cover and tighten securing bolts -arrow- using diagonal sequence.
- Fill front final drive of automatic gearbox with gear oil and check oil level=>page 80 .

Tightening torques

Component		Nm
Differential cover to gearbox housing	M8	23
Right flange shaft to gearbox	M8	25
Drive shaft to flange shaft	M10	77
Drive shaft to wheel hub collar bolts 1)	M16	190 + 90°2)
Track control arm to suspension strut 1)		55

1) Renew bolts/nuts

2) 90° is the same as a quarter turn

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

3.4 - Renewing oil seal for left flange shaft

Removing

- Remove front left wheel.

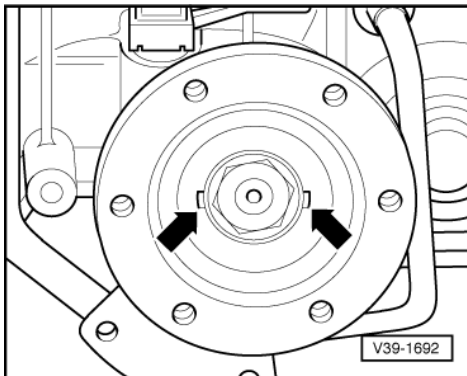
- Remove left front exhaust pipe.

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; B - Vehicles with four wheel drive Removing and installing exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing exhaust system; C - Vehicles with four wheel drive Removing and installing exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

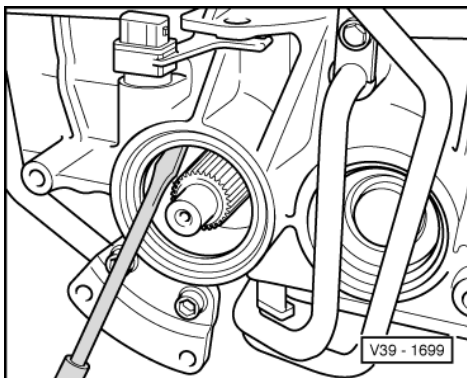


- Unbolt left drive shaft from flange shaft.

=> Running Gear 4WD; Repair Group 40; Removing and installing drive shaft Removing and installing drive shaft

- -> Bend up locking plate -arrows- of collar nut with a screwdriver and take off.
- Unscrew collar nut for flange shaft. To loosen the collar nut, screw two bolts into flange shaft and brace with a suitable lever.
- Pull out flange shaft.

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



- -> Lever out oil seal for flange shaft with a screwdriver.

Note:

Support screwdriver only on input shaft.

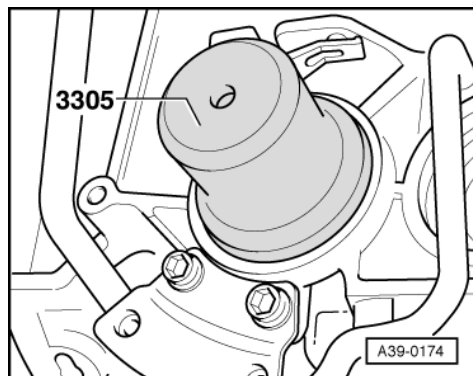
- Pull out drive wheel for speedometer sender -G22.



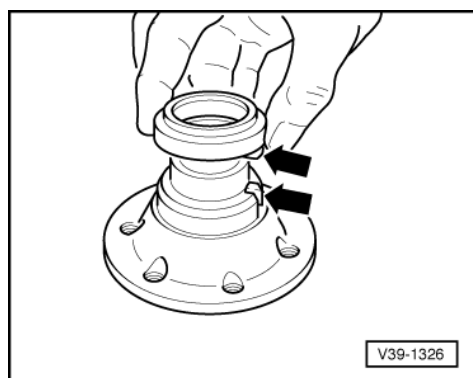
Installing

Installation is carried out in the reverse order, when doing this note the following:

- Moisten outer circumference and sealing lips of oil seal with gear oil or coat thinly with Vaseline.



- -> Check oil seal seat in gearbox housing for damage and rework if necessary.
- The open side of the oil seal faces the gearbox.
- Drive oil seal for left flange shaft in up to stop of special tool using thrust piece 3305 or 3171.
- The oil seal must be inserted at the same depth in the housing all round.



- Apply multi-purpose grease to inner face of magnetic ring and fit onto flange shaft.

Note:

-> The lugs of the drive wheel must engage in the cut-outs of the flange shaft -arrows-.

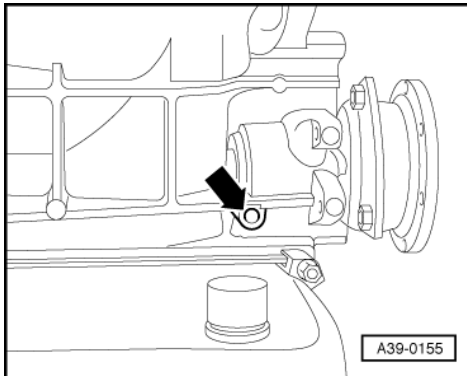
- Secure flange shaft with collar nut and lock with new locking plate.

Tightening torques

Component		Nm
Left flange shaft to gearbox	M20	100
Drive shaft to flange shaft	M10	77

3.5 - Renewing left oil seal for input shaft

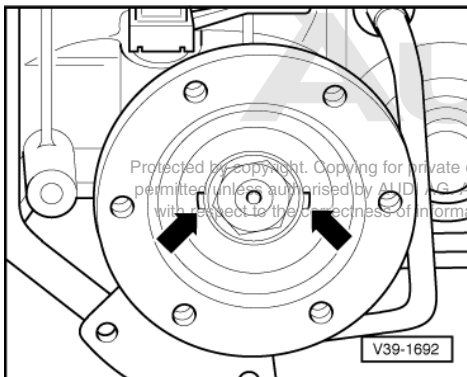
The following special tools and test units are required for this work:



- ◆ Lever VW 681
- ◆ Thrust piece 3323

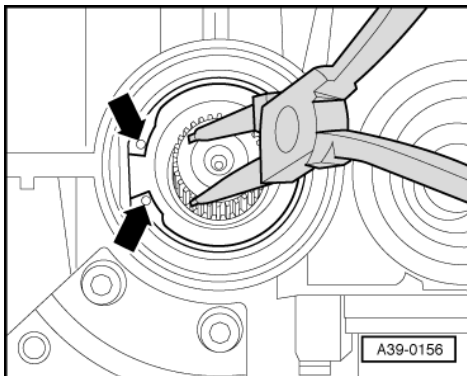
Note:

-> Under the left flange shaft on the gearbox housing there is an oil-leak inspection hole -arrow- for the left oil seal of the input shaft. If the left oil seal is defective, there is a possibility that grease will leak out. If ATF or gear oil leaks out, check the ATF pump, the torque converter or the right oil seal of the input shaft for leaks.



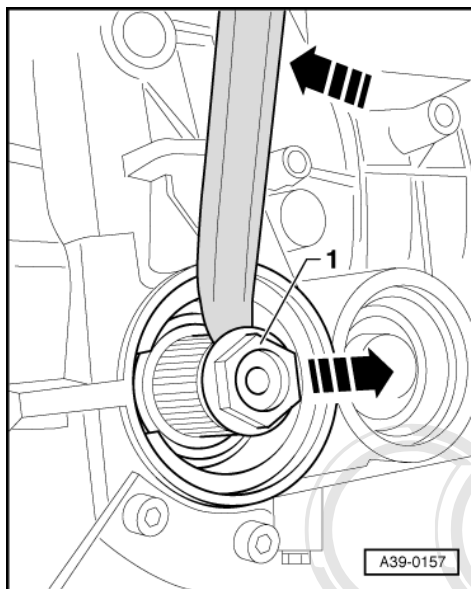
Removing

- -> Remove left flange shaft with drive wheel and oil seal=>page 92 .
- Remove speedometer sender -G22=>page 78 .



- -> Remove circlip for bearing -arrows-.

- Place a drip tray underneath.

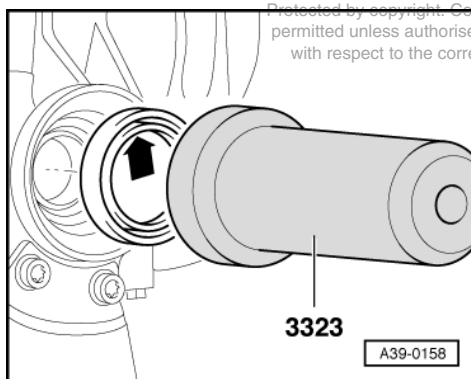


- -> Screw collar nut -1- onto input shaft and lever input shaft out with a suitable lever.
- Pull out left oil seal with lever VW 681.

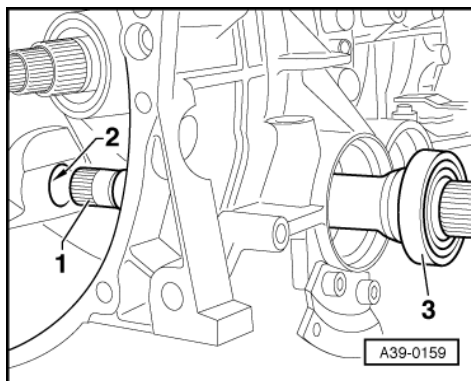
Installing

Installation is carried out in the reverse order, when doing this note the following:

- Check oil seal seat in gearbox housing for damage and rework if necessary.
- Moisten outer circumference and sealing lips of oil seal with gear oil or thinly coat with Vaseline.



- -> Slide on new oil seal with sealing lip -arrow- facing thrust piece 3323.
- Drive oil seal in up to stop with thrust piece 3323.
- Check seat of thrust pin and spring on right-hand end of input shaft=>-Item 87 .



- -> Check right-hand end -1- of input shaft for burrs and rework if necessary.
- Fill bearing -3- with multi-purpose grease.
- Carefully guide input shaft into hole -2- in gearbox housing.

Notes:

- ◆ Shown in illustration with gearbox removed and without torque converter.
- ◆ The oil seal near hole -2- can be damaged if the input shaft is guided in carelessly=>from page 80 .
- Check oil level in front final drive of automatic gearbox=>page 79 .

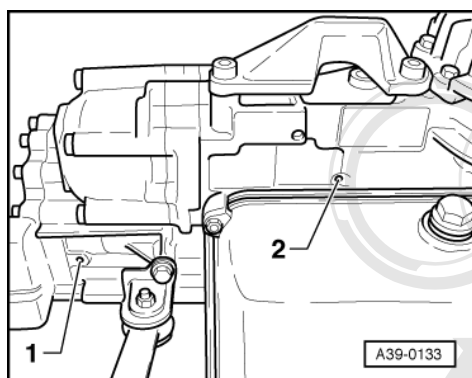
Tightening torques

Component		Nm
Left flange shaft to gearbox	M20	100
Drive shaft to flange shaft	M10	77

3.6 - Renewing oil seals for drive pinion shaft

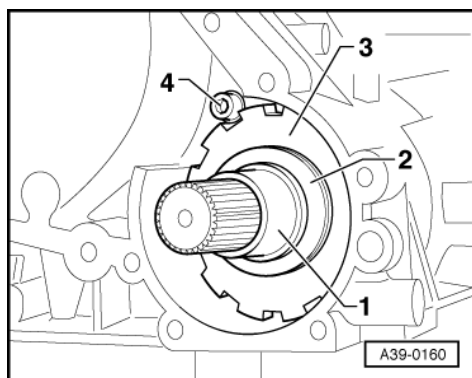
The following special tools and test units are required for this work:

- ◆ Kukko 20/10
- ◆ Special tool V182
- ◆ Pin spanner with brace 3328
- ◆ Open jaw spanner insert V.A.G 1923
- ◆ Press disc 3062
- ◆ Pipe for wheel bearing 3345



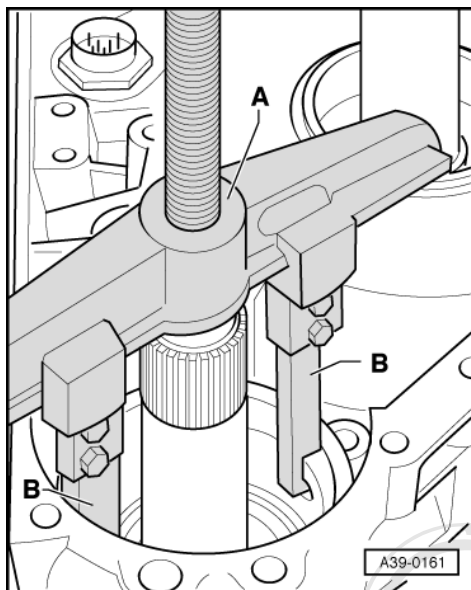
Notes:

- ◆ -> On the lower right of the housing there is an oil leak inspection hole -2- for the seals (two oil seals and two O-rings) of the intermediate sleeve that separates the gear oil side from the ATF side.
- ◆ If leaks occur, renew the entire intermediate sleeve with seals, check nut (on which the oil seals run) for scoring and renew if necessary.



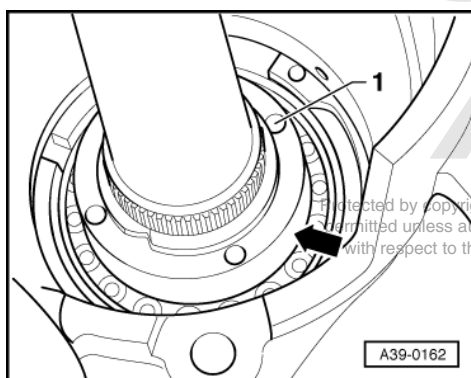
Removing

- Remove front intermediate drive=>page 106 .
- -> Remove sleeve -1-, dished springs -2- and parking lock wheel -3-.
- Remove bolt -4- with washer.

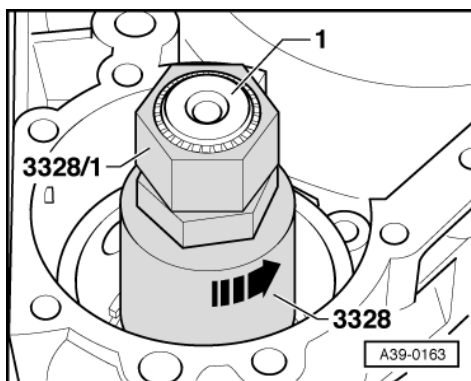


- -> Pull out intermediate sleeve.

A - Kukko 20/10
B - Special tool V182



- -> Check outer circumference -arrow- of nut for scoring and renew if necessary.
- Removing nut:
 - Insert pins of pin spanner 3328 into holes -1- of nut.



- -> Fit brace 3328/1 onto splines of drive pinion shaft -1-.
- Loosen nut by turning pin spanner 3328 anti-clockwise and bracing with brace 3328/1.

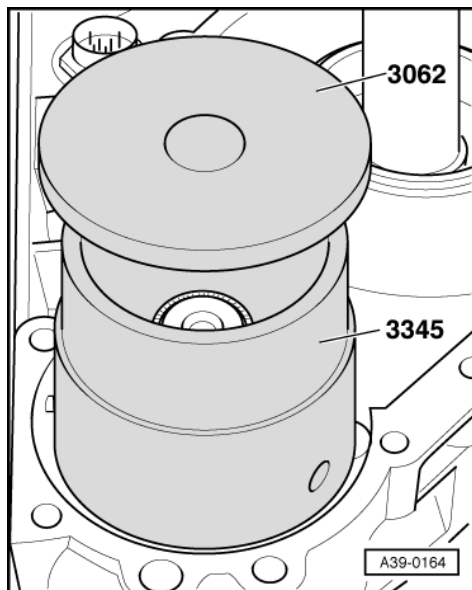
Note:

To turn pin spanner 3328, use the 38 mm open jaw spanner insert V.A.G 1923.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Coat O-rings and sealing lips of intermediate sleeve thinly with Vaseline.
- Insert new intermediate sleeve as far as possible by hand.



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

- -> Fit larger outer diameter of pipe for wheel bearing 3345 centred on intermediate sleeve.
- Fit press disc 3062 on pipe for wheel bearing 3345 centred and drive intermediate sleeve in up to stop with light blows of a rubber head hammer.
- Insert parking lock wheel with step towards drive pinion. In each case insert two dished springs so that their outer circumferences touch each other. Insert sleeve with shoulder facing towards drive pinion.
- Check oil level in front final drive of automatic gearbox=>page 79 .

Tightening torques

Component		Nm
Nut for drive pinion shaft	M40	120
Bolt for securing intermediate sleeve	M8	23

4 - Servicing intermediate drive for front final drive

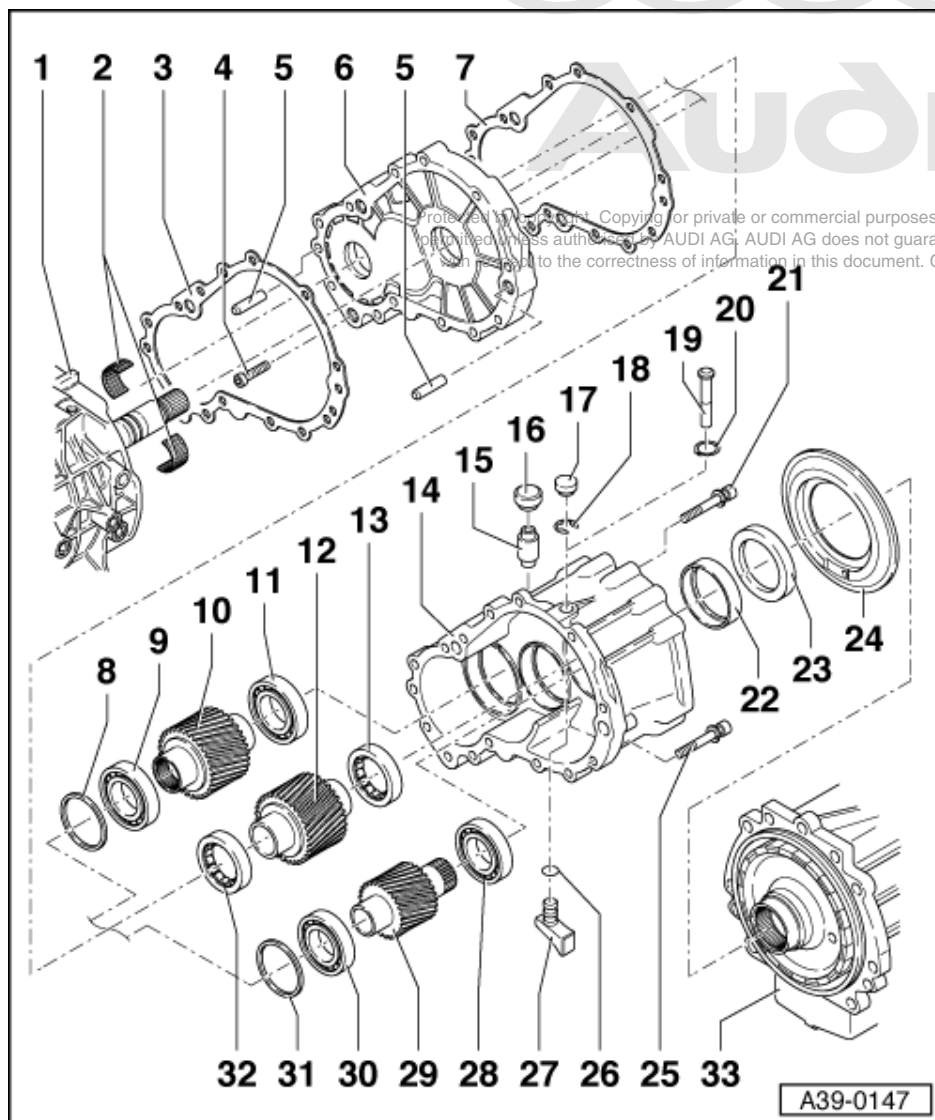
4.1 - Servicing intermediate drive for front final drive

Notes:

- ◆ General repair instructions=>page 7 .
- ◆ Ratios=>from page 2 .
- ◆ Do not pull off bearing inner races and bearing cages that have been pressed onto the spur gears. Do not pull out bearing outer races that have been pressed into the housing.
- ◆ Do not interchange the position of spur gears, their bearings and shims, as the bearings and shims are set to one another and are run in.

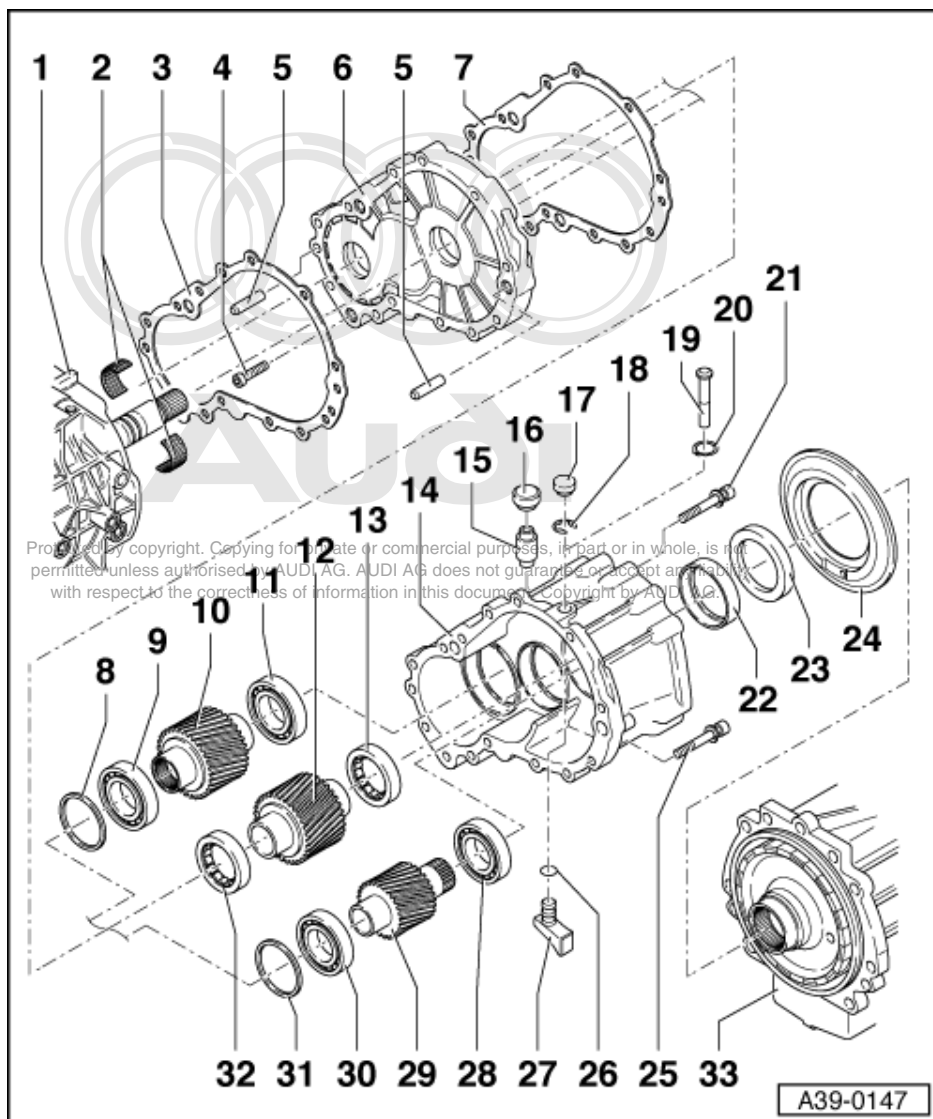


- ♦ The spur gears, bearings, intermediate flange or housing of the front intermediate drive cannot be renewed individually, as this changes the bearing preload of the spur gears. If one of these components is damaged, the entire front intermediate drive must be renewed.
- ♦ If the front intermediate drive is renewed, the axial clearance for the Torsen differential must be checked and if necessary adjusted=>page 142.



- 1 Automatic gearbox
- 2 Needle roller bearing
 - ♦ Split
- 3 Gasket
 - ♦ Renewing=>from page 106
- 4 10 Nm
 - ♦ Qty. 3
 - ♦ For securing intermediate flange -Item 6 - to housing for intermediate drive -Item 14 -
- 5 Fitted pin
 - ♦ Qty. 2
 - ♦ For locating -Item 1 -, -Item 14 - and -Item 6 - together
- 6 Intermediate flange
 - ♦ Do not renew individually
 - ♦ Removing and installing

=>page 114



7 Gasket

- ◆ Renewing=>page 114

8 Shim

- ◆ Rear bearing race for bearing preload
- ◆ Is determined by measurement and cannot be exchanged for another shim at will

9 Taper roller bearing

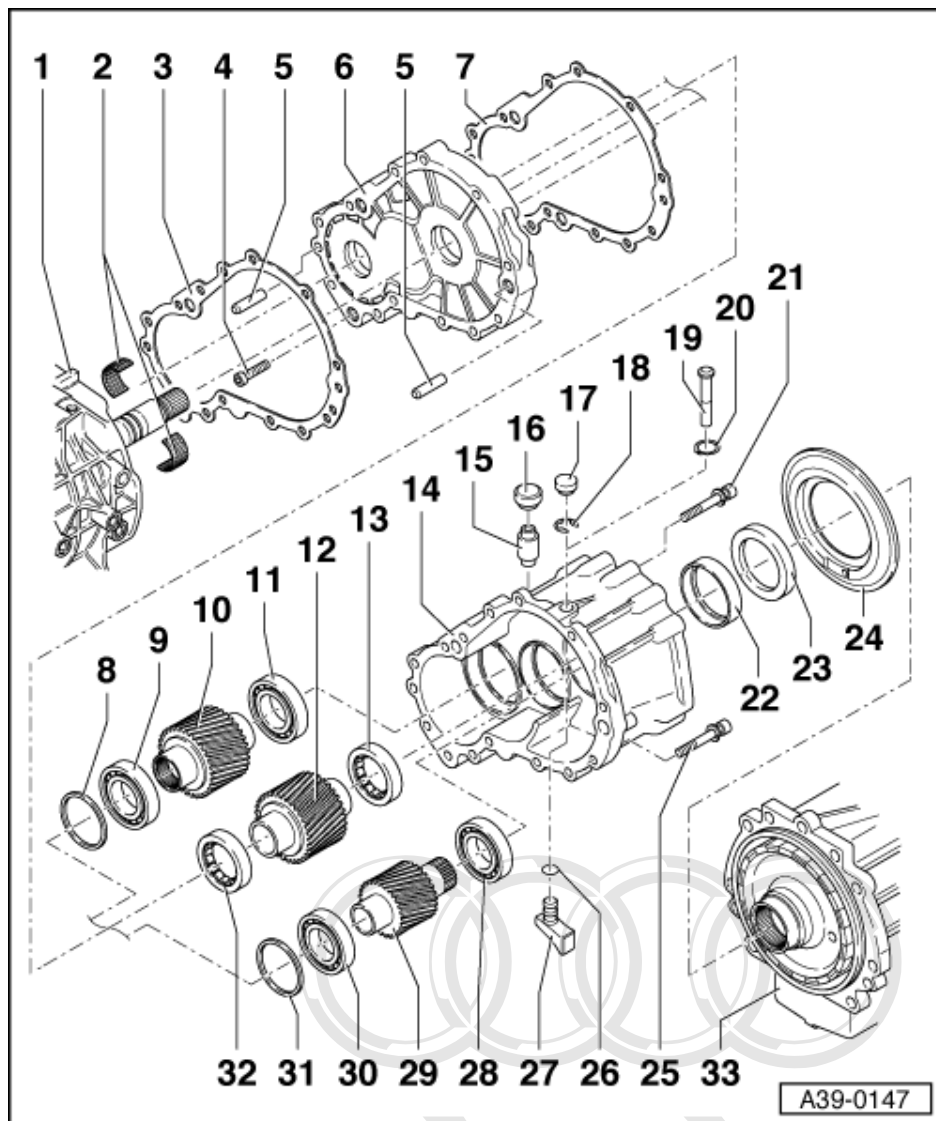
- ◆ Do not change allocation

10 Output gear

- ◆ For front intermediate drive
- ◆ Do not renew individually
- ◆ Removing and installing
=>page 114

11 Taper roller bearing

- ◆ Do not change allocation



12 Intermediate gear

- ◆ For front intermediate drive
- ◆ Do not renew individually
- ◆ Removing and installing

=>page 114

13 Cylinder roller bearing

- ◆ Do not change allocation

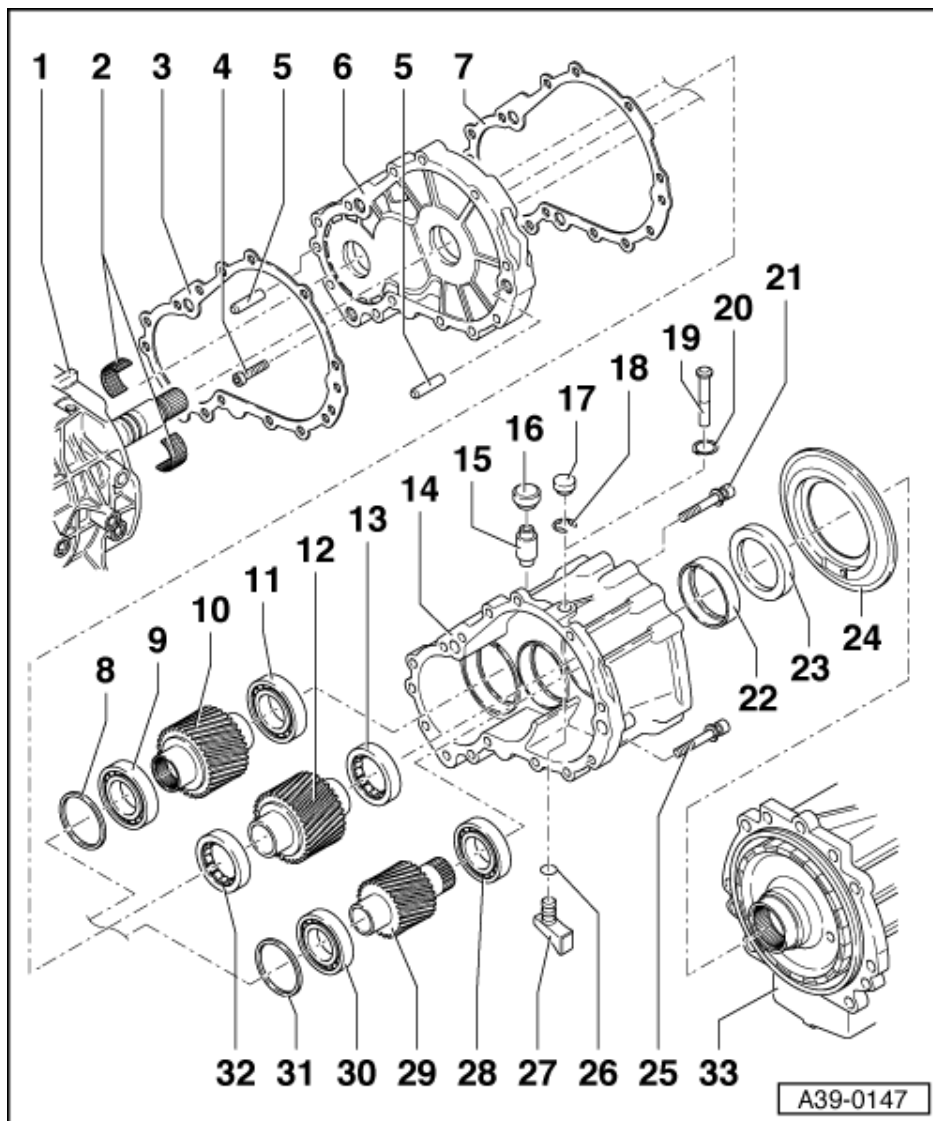
14 Housing for intermediate drive

- ◆ Do not renew individually
- ◆ Removing and installing

=>page 114

15 Breather

- ◆ For transfer gearbox (gear oil side)
- ◆ To renew, pull off upwards and heat gearbox housing quickly with hot air blower if necessary



16 Cap

- ♦ For breather -Item **15** -

17 Cap

- ♦ For breather -Item **27** -

18 Circlip

- ♦ For breather -Item **27** -

19 Breather

- ♦ For ATF side
- ♦ New steel version with cap
- ♦ Renewing=>page **117**

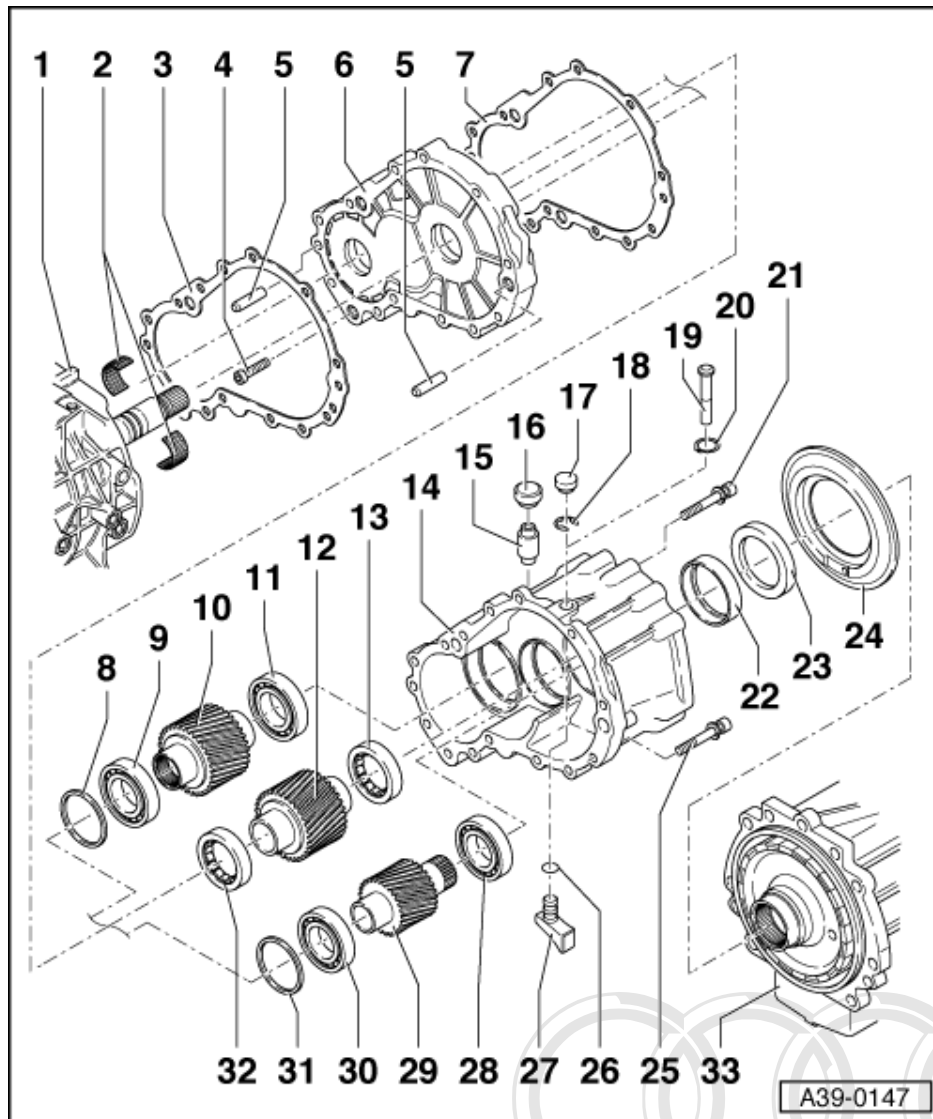
20 Circlip

- ♦ For breather -Item **19** -

21 Bolt - 23 Nm

- ♦ Qty. 6
- ♦ For securing transfer gearbox to intermediate drive

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

**22 Seal**

- ♦ For ATF side
- ♦ Renewing=>page 118

23 Seal

- ♦ For gear oil side
- ♦ Renewing=>page 118

24 Baffle plate

- ♦ Only remove for cleaning, pull out evenly at circumference

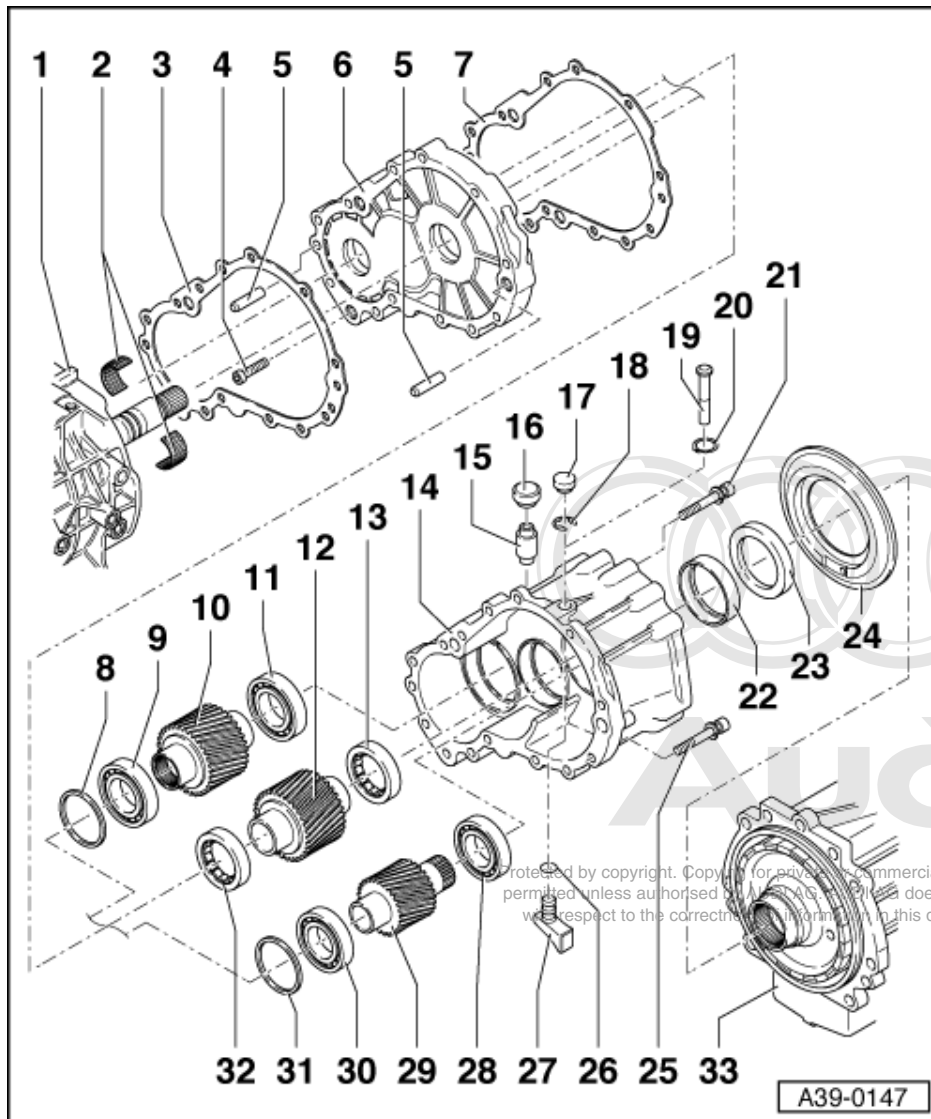
25 Bolt - 23 Nm

- ♦ Qty. 7
- ♦ For securing transfer gearbox to front of gearbox housing

26 O-ring

- ♦ Always renew

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



27 Breather

- ◆ For ATF side
- ◆ Older version with plastic cap
- ◆ Renewing=>page 117

28 Taper roller bearing

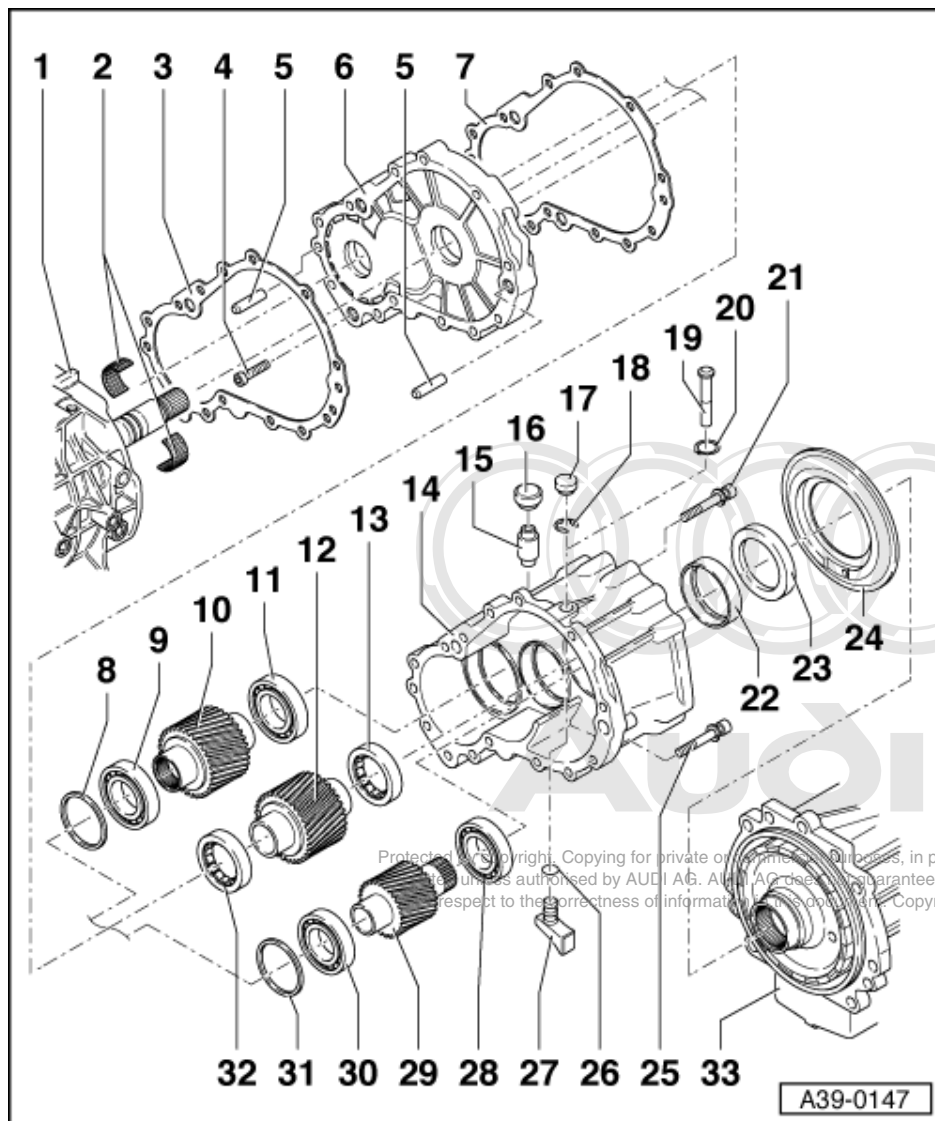
- ◆ Do not change allocation

29 Drive gear

- ◆ For front intermediate drive
- ◆ Do not renew individually
- ◆ Removing and installing
=>page 106

30 Taper roller bearing

- ◆ Do not change allocation



31 Shim

- ◆ Behind bearing race
- ◆ For bearing preload
- ◆ Is determined by measurement and cannot be exchanged for another shim at will

32 Cylinder roller bearing

- ◆ Do not change allocation

33 Transfer gearbox

- ◆ Removing and installing
=>page 106
- ◆ Servicing=>page 122

4.2 - Removing and installing front intermediate drive with transfer gearbox

Note:

The front intermediate drive can only be removed and installed together with the transfer gearbox.

The following special tools and test units are required for this work:

- ◆ Support bar 10-222 A with supports 10-222 A1
- ◆ Bracket 2024 A/2

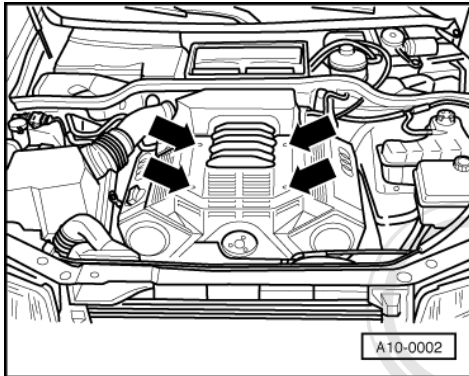
- ♦ Guide rods 3327

Removing

- Obtain radio code on vehicles with coded radio.
- With ignition switched off disconnect battery earth strap.

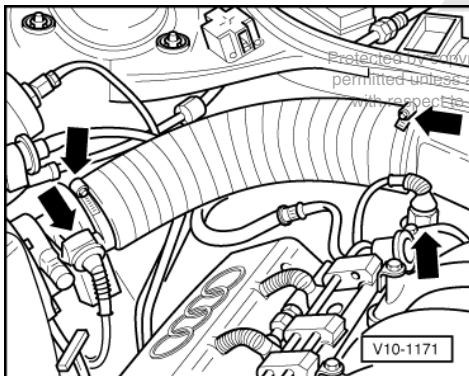
Vehicles with 5-cylinder engine:

- Remove gearbox=>page 37-19 and fit onto repair stand=>page 38 .
- Further procedure=>from page 112 .

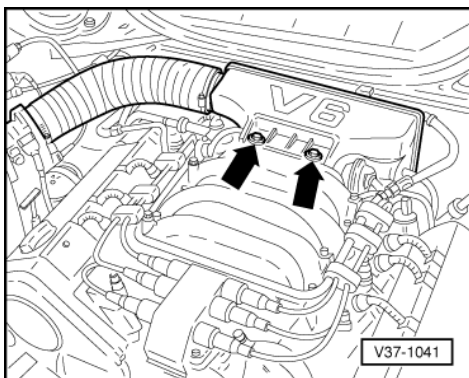


Vehicles with 6-cylinder engine:

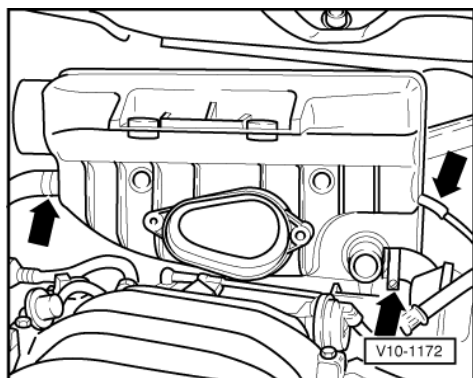
- -> Remove engine cover -arrows-.



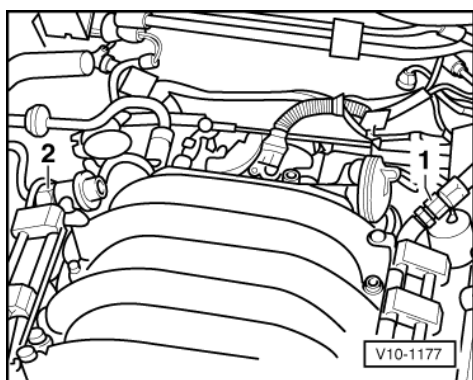
- -> Remove air guide hose between air mass meter and intake manifold -upper arrows-.



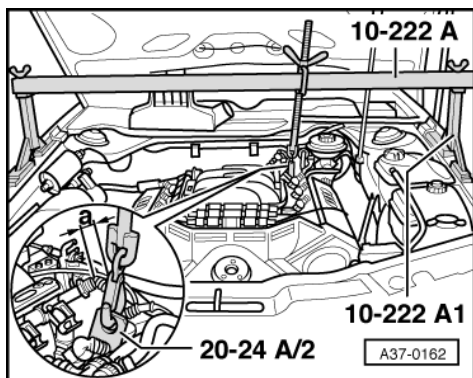
- -> Remove securing screws -arrows- for intake silencer.



- -> Pull off both crankcase breathers and vacuum hose -arrows-.
- Push intake silencer toward rear and then lift off upwards.



- -> Separate fuel supply line -1- from fuel rail and seal off line ends with suitable plugs.
- Pull off spark plug connector in front of rear left engine lifting eye.



- -> Secure bracket 2024 A/2 with bolt to rear left engine lifting eye.
- Assemble support bar 10-222 A with supports 10-222 A1 and fit onto wing mounting flanges.

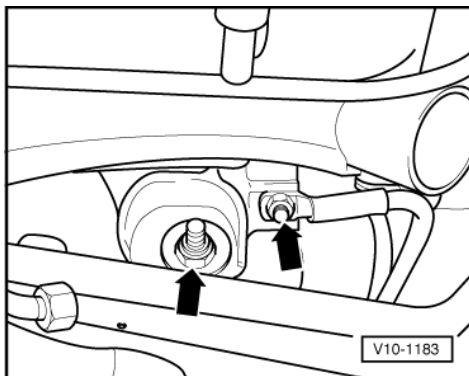
Note:

Ensure there is sufficient clearance -a- between the support bar hooks and the fuel rail, and remove the fuel rail if necessary.

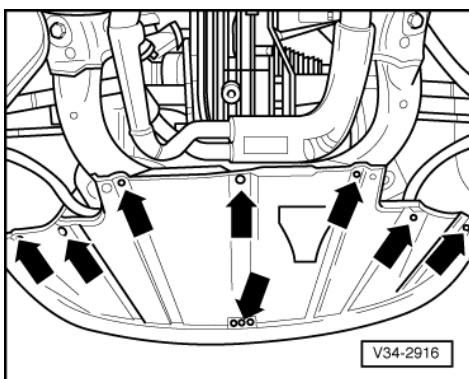
- Take up weight of engine using spindle.



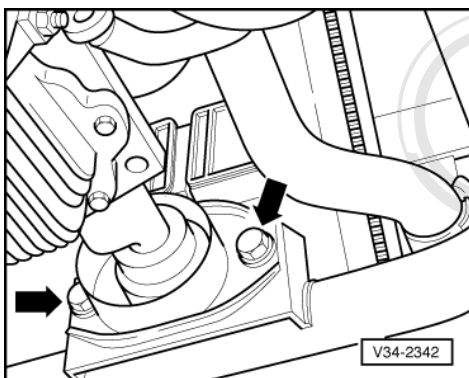
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without prior written permission by AUDI AG. AUDI AG does not guarantee or accept any liability for errors or omissions. The information in this document is subject to change without notice. Copyright by AUDI AG.



- -> Loosen nuts -left-hand arrow- on both engine mountings by approx. 3 turns.

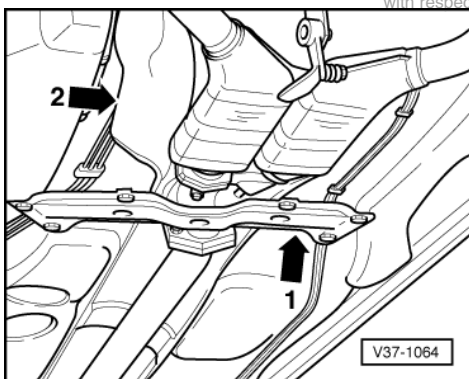


- -> Remove noise insulation -arrows-.



- -> Remove securing bolts for torque reaction support -arrows-.

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



- -> Remove front cross member -arrow 1- below exhaust system.

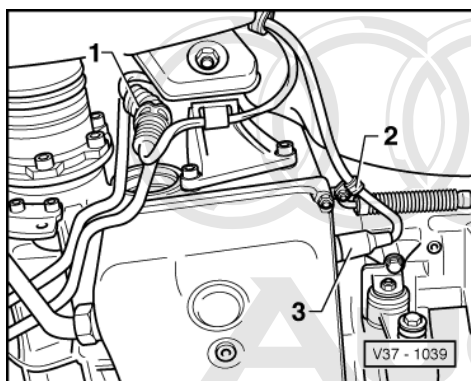
- Remove left and right front exhaust pipes with catalytic converter and intermediate pipe.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

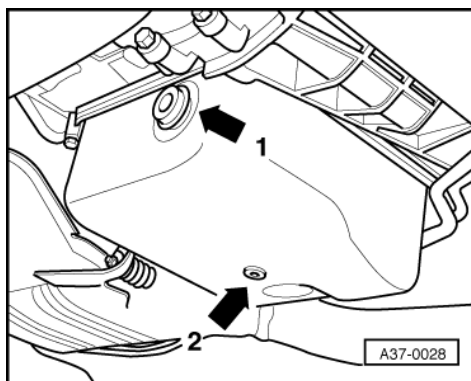
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

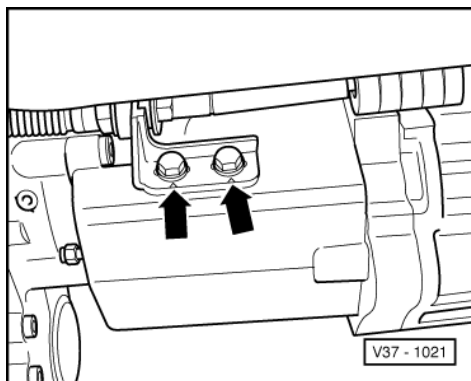
- Remove heat shield -arrow 2-.



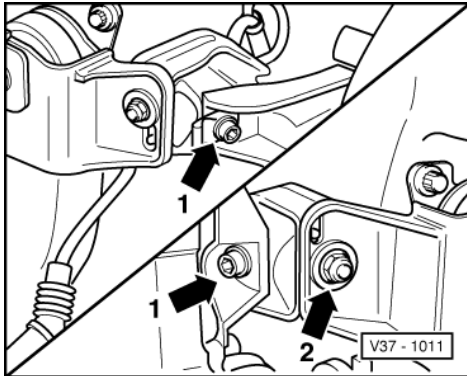
- -> Separate connector -1- for multi-function switch -F125 and unclip wiring at gearbox support.
- Remove wiring retainer -2-.
- Loosen bayonet connector of 8-pin connector -3- by turning to left and unplug connector from gearbox.



- Place container under the gearbox.
- -> Unscrew ATF drain plug -arrow 2- and drain ATF.



- -> Remove bolts -arrows- of support bracket for selector lever cable.



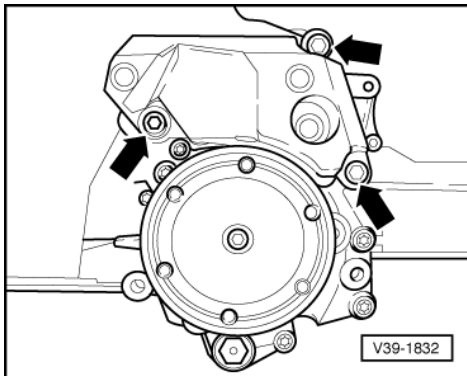
- -> Loosen securing bolt -arrow 2- without removing and then remove securing bolt -arrow 1- of left and right-hand gearbox supports at bonded rubber mounting.

Note:

This will drop the rear end of the gearbox approx. 50 mm.

- Disconnect selector lever cable at gearbox selector lever=>page 20 .
- Remove heat shield for propshaft from housing end cover=>page 150 .
- Unbolt propshaft from gearbox flange and tie up on constant velocity joint=>from page 147 .

Note:



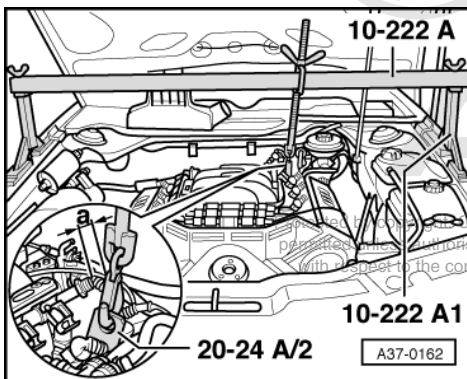
Do not bend propshaft more than 25°, otherwise the universal joint could be damaged.

- -> Unbolt vibration damper -arrows- and pull off towards rear.

Note:

The vibration damper is also located with a dowel pin.

- Check that all wiring from gearbox to vehicle has been detached. Unplug or unclip wiring connections if necessary.

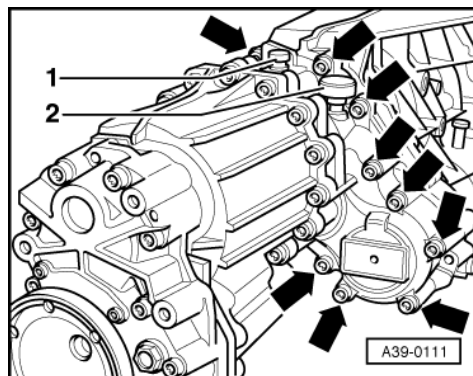


Copying for private or commercial purposes, in part or in whole, is not permitted without the written permission of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

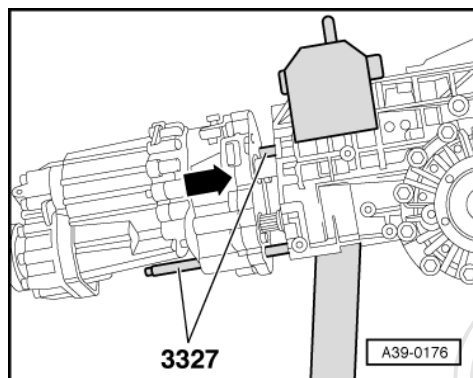
- -> Turn spindle of support bar 10-222 A1 until rear edge of gearbox has lowered approx. 150 mm.

Note:

Make sure that the throttle valve unit, wiring and hose connections are not damaged. Remove the wiring and hoses if necessary.



- -> To secure the front intermediate drive, loosen two bolts 5 turns only. Completely unscrew all remaining bolts.



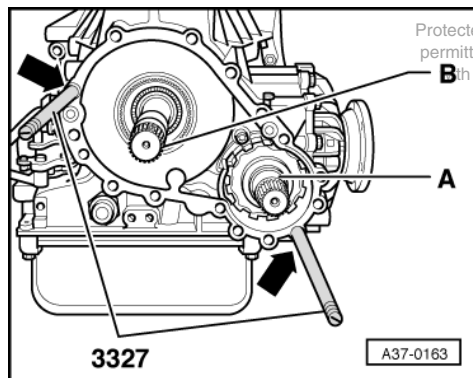
- -> Screw guide rods 3327 through bolt holes of automatic gearbox housing.
- Remove remaining bolts.

Note:

The guide rods 3327 are necessary to prevent damage to oil seals when removing and installing.

- Carefully pull off intermediate drive with transfer gearbox towards rear (opposite direction of arrow).

Notes:



- ♦ -> On the output shaft -B- there are two needle bearing halves that fall out when pulling off the transfer gearbox.
- ♦ Always hold down the rear end of the transfer gearbox, as otherwise gear oil will run out.

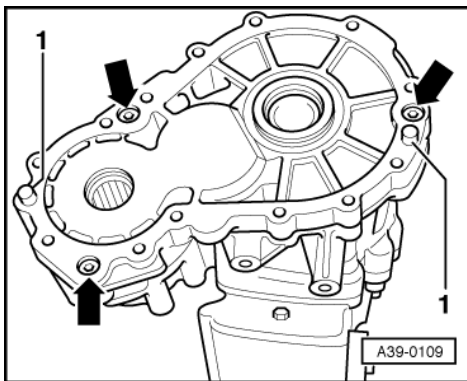
- ♦ The gear oil in the transfer gearbox has additives mixed in at the factory which are not available for normal after-sales service.
- Secure sleeve, dished springs and parking lock wheel (pushed onto drive pinion shaft -A-) against falling out.

Installing

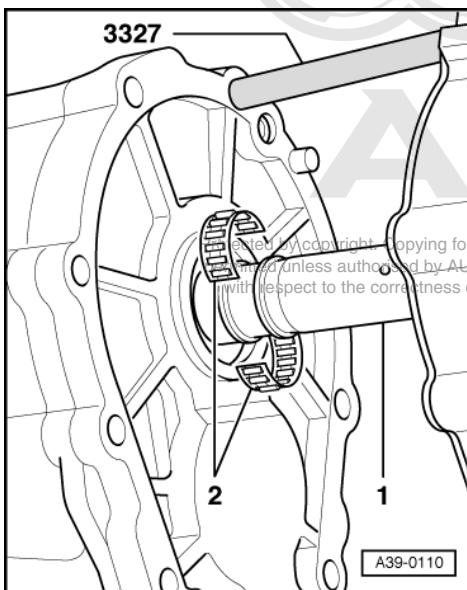
Installation is carried out in the reverse order, when doing this note the following:

Notes:

- ♦ The vibration damper must lie flush on the contact surface.
- ♦ Always renew self-locking bolts.
- ♦ Tighten the securing bolts of the vibration damper evenly.
- ♦ If the front intermediate drive or its components are renewed, the axial clearance for the Torsen differential must be checked and adjusted if necessary=>page 142 .
- Check sealing surfaces of housing for damage.



- Coat new gaskets thinly with Vaseline, place on sealing surface of housing and secure.
- -> Before assembling the intermediate drive, ensure dowel pins -1- in intermediate flange are seated correctly. Dowel pins locate intermediate flange to housing of automatic gearbox and intermediate drive.
- If sleeve, dished springs and parking lock wheel have inadvertently been pulled off drive pinion shaft:
 - Insert parking lock wheel with step toward drive pinion.
 - Insert two dished springs in each case so that their outer circumferences touch each other.
 - Insert sleeve with shoulder towards drive pinion.



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

- -> Carefully slide transfer gearbox (assembled complete with intermediate drive) with guide rods onto output shaft -1- and fix both needle bearing halves -2- on output shaft with Vaseline.

Notes:

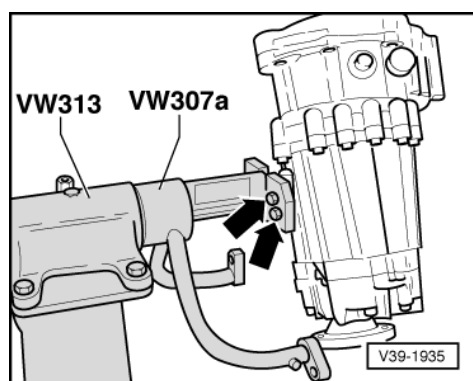
- ♦ Do not damage the splines of the input shaft and drive pinion shaft and the Torsen differential when fitting the complete intermediate drive. Turn the propshaft flange or both front wheels until the splines mesh and slide together (to do this, shift the selector lever out of position "P" to release the parking lock).
- ♦ The complete transfer gearbox can only be assembled by hand until there is a 3 mm gap to the gearbox housing of the automatic gearbox. The dished springs on the drive pinion shaft are preloaded when assembling further. Use bolts to close housing gap evenly and tighten bolts to final torque using diagonal sequence.
- Adjust selector lever cable=>page 25 .
- Check oil level in transfer gearbox=>page 120 .
- Bolt propshaft to gearbox flange=>page 150 .
- Renew gasket between propshaft and gearbox flange. To do this, pull off protective foil and stick gasket onto gearbox flange. Replenish grease for constant velocity joint if necessary.
- Fill with ATF and check ATF level=>page 47 .

Tightening torques

Component		Nm
Front intermediate drive to housing of M8 automatic gearbox		23
Vibration damper to gearbox	M8	15 + 90°1)
Propshaft to gearbox	M8	55
Heat shield for propshaft to gearbox	M8	23
Support bracket for selector lever cable to gearbox	M8	23
Selector lever cable to gearbox selector lever	M6	10
Cross member to body	M8	23
Gearbox support to sub-frame	M10	40
Gearbox support to bonded rubber mounting	M10	40
Engine support to engine mounting	M10	45

1) 90° is the same as a quarter turn

4.3 - Dismantling front intermediate drive

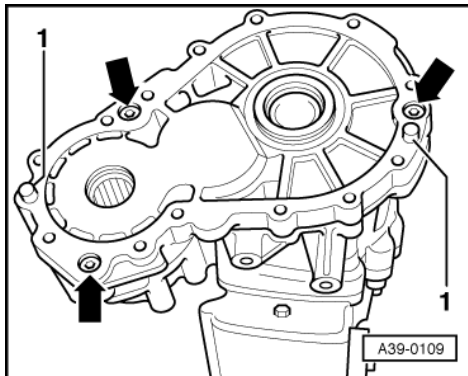


- Remove front intermediate drive=>page 106 .
- -> Bolt transfer gearbox to bracket VW 307a with two M8 bolts -arrows-.

Note:

Always hold down rear end of transfer gearbox, as otherwise gear oil leaks out.

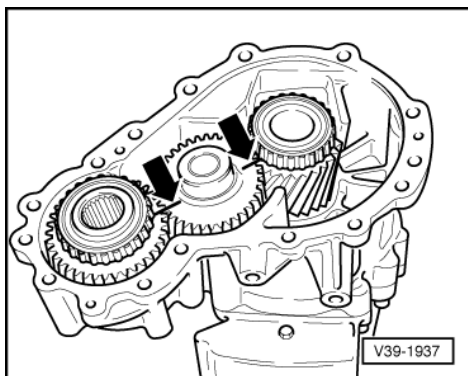
- Pull gasket off flange surface.



- -> Remove 3 Torx bolts -arrows-.
- Lever intermediate flange evenly off housing of intermediate drive upwards using a suitable lever on webs cast onto side, and place on a clean work bench.

Note:

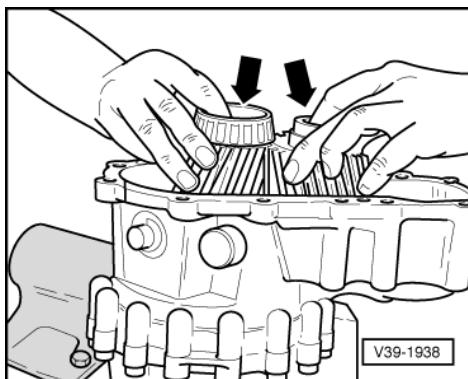
Do not damage housing sealing surfaces.



- -> Mark relative positions of all spur gears -arrows-.

Notes:

- ◆ The position of the spur gears, their bearings and shims must not be interchanged.
- ◆ Damaged spur gears must not be reinstalled. In this case renew the entire intermediate drive.



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



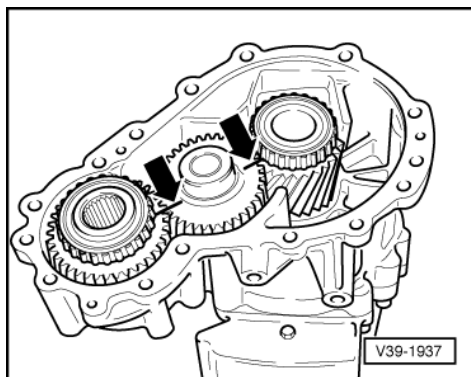
- -> First remove the lower spur gear and then both upper spur gears together -arrows-.
- Pull gasket off gearbox flange.

Installing

Installation is carried out in the reverse order, when doing this note the following:

Note:

If the front intermediate drive or any of its components have been renewed, the axial clearance for the Torsion differential must be checked and adjusted if necessary=>page 142.

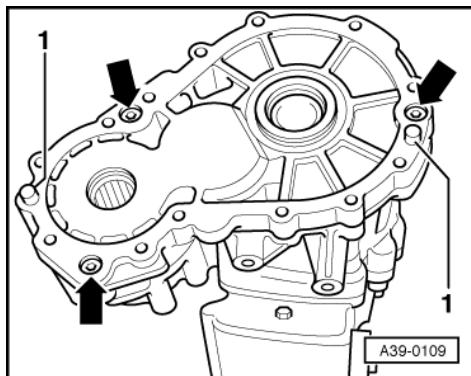


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- Check sealing surfaces of housing for damage.
- -> Insert spur gears with markings -arrows- facing upwards.

Notes:

- ♦ The position of the spur gears, their bearings and shims must not be interchanged.
- ♦ Damaged spur gears must not be reinstalled. In this case renew the entire intermediate drive.
- Coat new gaskets thinly with Vaseline, place on sealing surfaces of housing and secure.

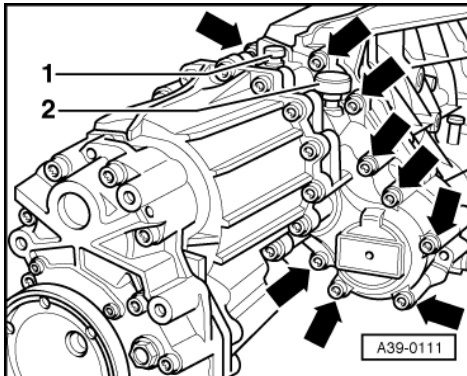


- -> Before assembling intermediate drive, ensure dowel pins -1- in intermediate flange are seated properly. Dowel pins locate intermediate flange to housing of automatic gearbox and intermediate drive.

Tightening torque

Component	Nm
Intermediate flange to housing of intermediate M6 drive (Torx)	8

4.4 - Renewing ATF breather



-> ATF breather -1- sits on top of intermediate drive housing.

Note:

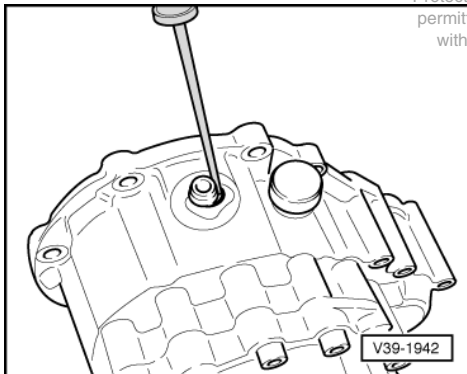
If ATF leaks out of the breather in intermediate drive housing even when the oil level is correct, the factory installed plastic ATF breather must be changed for the new steel version ATF breather. In addition, if the gearbox has an ATF filler pipe and dipstick, change the oil pan for the new version with oil overflow hole=>page 64.

Removing

- Remove front intermediate drive=>page 106.
- Dismantle front intermediate drive=>page 114.
- Remove procon-ten cable retainer and cable arrester.

=> General Body Repairs; Repair Group 68; Servicing procon-ten system Audi 100 ä 05.94 or Servicing procon-ten system Audi S4 ä 05.94 Servicing procon-ten system Audi 100 ä 05.94 or Servicing procon-ten system Audi S4 ä 05.94

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

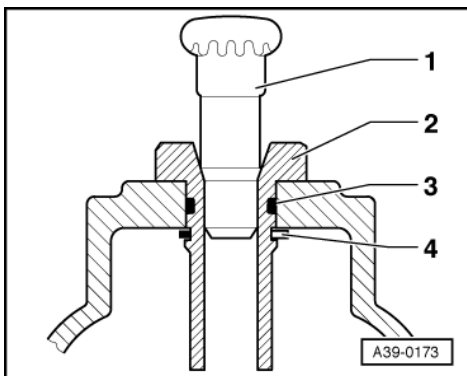


- -> Pull cap off ATF breather and lever out circlip with a screwdriver.
- Drive out breather inwards together with plastic cover.

Installing

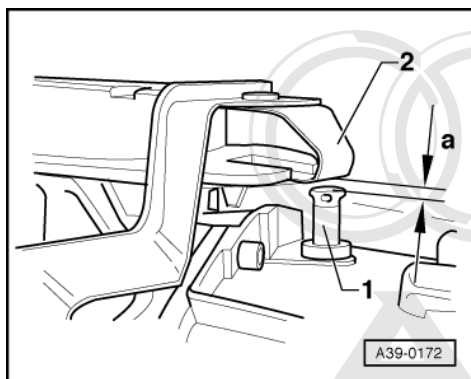
Installation is carried out in the reverse order, when doing this note the following:

- Check breather seating hole in gearbox end cover for damage.



- -> Coat O-ring -3- on adapter thinly with Vaseline to prevent damage when installing.
- Insert new aluminium adapter -2- from outside.
- Lock aluminium adapter with circlip -4-.
- Drive in new breather -1- up to stop with light blows of a plastic head hammer.
- Install procon-ten cable retainer and cable arrester.

=> General Body Repairs; Repair Group 68; Servicing procon-ten system Audi 100 ä 05.94 or Servicing procon-ten system Audi S4 ä 05.94 Servicing procon-ten system Audi 100 ä 05.94 or Servicing procon-ten system Audi S4 ä 05.94

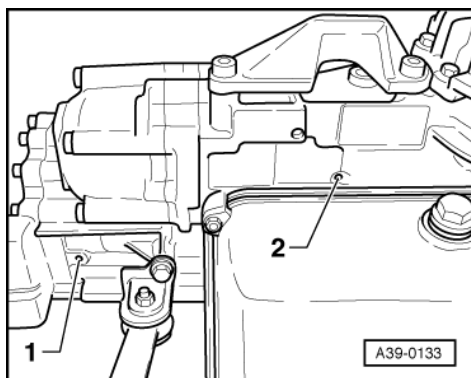


Note:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

-> After installing, the distance -a- between the ATF breather 1 and the procon-ten cable retainer 2 may not be less than 0.5 mm, i.e. the cable retainer must not press on the top of the ATF breather. Carefully drive the ATF breather slightly further inwards with a rubber headed hammer or bend the cable bracket slightly upwards if necessary.

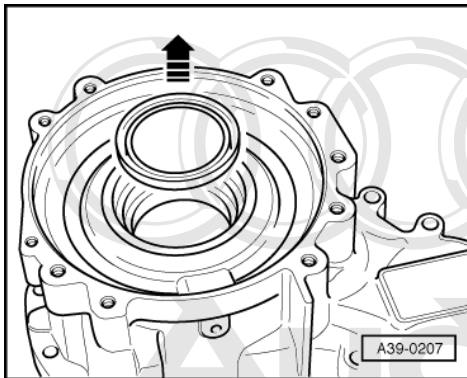
4.5 - Renewing oil seals in front intermediate drive



Notes:

- ♦ -> On the lower housing of the intermediate drive there is an oil leak inspection hole -1- for the four oil seals that separate the gear oil side from the ATF side.
- ♦ If oil leaks out of the oil-leak inspection hole, renew both oil seals in the front intermediate drive as well as both oil seals in the transfer gearbox=>page 137 .

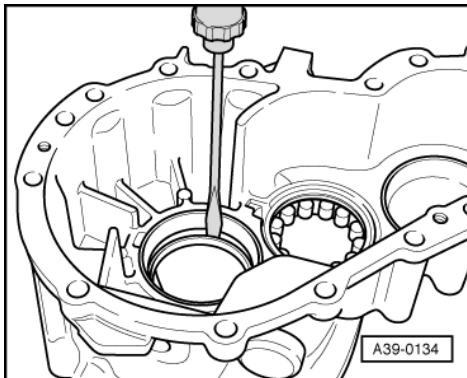
Removing



- Remove transfer gearbox=>page 134 .

Oil seal for gear oil side:

- -> Pull out oil seal -arrow- towards transfer gearbox using a suitable hook.



Oil seal for ATF side:

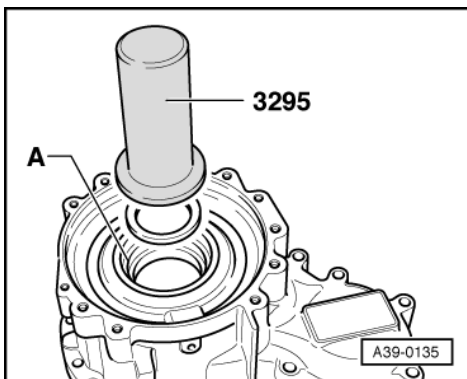
Note:

The oil seal for the gear oil side must be removed to renew the oil seal for the ATF side.

- -> Drive oil seal out towards transfer gearbox with a large screwdriver.

Installing

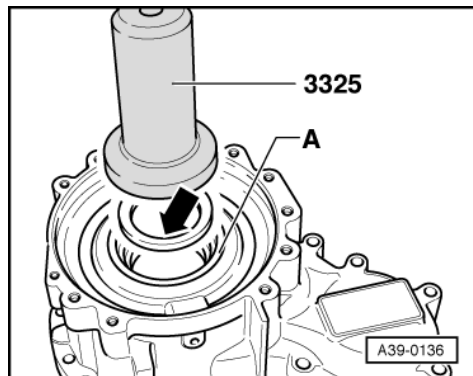
Installation is carried out in the reverse order, when doing this note the following:





Oil seal for ATF side:

- -> Check oil seal seat and contact surface -A- for press piece in housing for damage and rework if necessary.
- Coat outer circumference and sealing lip of oil seal thinly with Vaseline.
- Fit oil seal on press piece 3295 so that sealing lip faces towards housing.
- Drive in oil seal up to stop of press piece using press piece 3295.



Oil seal for gear oil side:

- -> Check oil seal seat and contact surfaces -A- for press piece in housing for damage and rework if necessary.
- Coat outer circumference and sealing lip of oil seal thinly with Vaseline.
- Fit oil seal on press piece 3325 so that sealing lip -arrow- faces towards press piece.
- Drive in oil seal up to stop of press piece using press piece 3325.

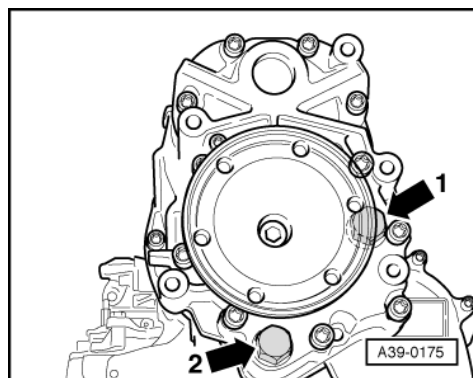
5 - Gear oil in transfer gearbox

5.1 - Gear oil in transfer gearbox

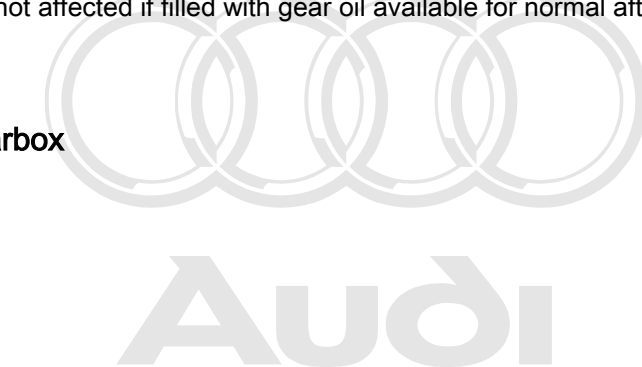
Notes:

- ♦ The gear oil in the transfer gearbox has additives mixed in at the factory which are not available for normal after-sales service. The gear oil should therefore only be drained if it is absolutely necessary for repairs.
- ♦ The service life of the transfer gearbox is not affected if filled with gear oil available for normal after-sales service.

5.2 - Checking oil level in transfer gearbox



- Depending on engine version, remove cross member below exhaust system and front exhaust pipe.
- -> Remove oil filler plug -arrow 1-.
- Specification: oil level up to lower edge of oil filler hole.
- Top up gear oil if necessary.



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

- Specification=>page 6 .
- Always renew seal for oil filler plug.
 - Insert oil filler plug.

Tightening torques

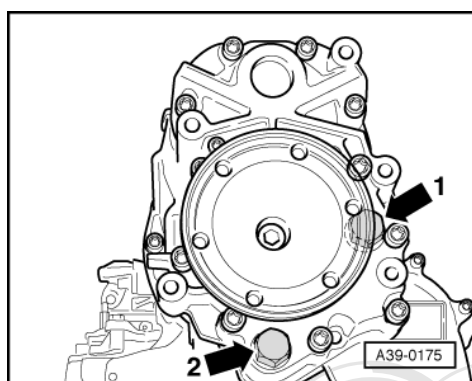
Component		Nm
Oil filler plug	M16	30
Cross member to body	M8	23

5.3 - Changing gear oil in transfer gearbox or filling after repairs

- Depending on engine version, remove cross member below the exhaust system and front exhaust pipe.

Draining gear oil

- Place drip tray underneath.



- -> Remove oil drain plug -arrow 2- and drain gear oil.
- Always renew seal for oil drain plug.
- Install oil drain plug.

Tightening torque

Component		Nm
Oil filler plug	M16	30
Oil drain plug	M18	40

Filling with gear oil

A - Transfer gearbox was not removed (e.g. after removing and installing flange shaft)

- permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.
- Remove oil filler plug.
 - Fill with gear oil up to lower edge of oil filler hole. Specification and quantity=>page 6 .
 - Always fit a new seal on oil filler plug.
 - Screw in oil filler plug.
 - Depending on engine version, cross member below exhaust system and front exhaust pipe must be installed for test drive, removed again for subsequent check of oil level and then reinstalled afterwards.
 - Carry out road test (vehicle should be driven for 15 minutes).

Note:

During the road test oil flows into the output cup and Torsen differential, causing the oil level in the transfer gear housing to drop.

- Check oil level in transfer gearbox=>page 120 .



B - Transfer gearbox was removed and dismantled

- Fill 200 ml gear oil into output cup.
- Assemble transfer gearbox and install
=>page 135 .
- Unscrew oil filler plug.
- Fill transfer gearbox with 820 ml of gear oil.
- Always fit a new seal on oil filler plug.
- Screw in oil filler plug.

Note:

It is not necessary to check the oil level at this stage.

Tightening torques

Component		Nm
Oil filler plug	M16	30
Cross member to body	M8	23

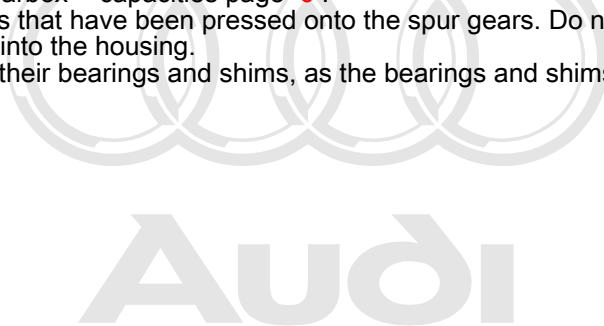
6 - Servicing transfer gearbox and rear intermediate drive

6.1 - Servicing transfer gearbox and rear intermediate drive

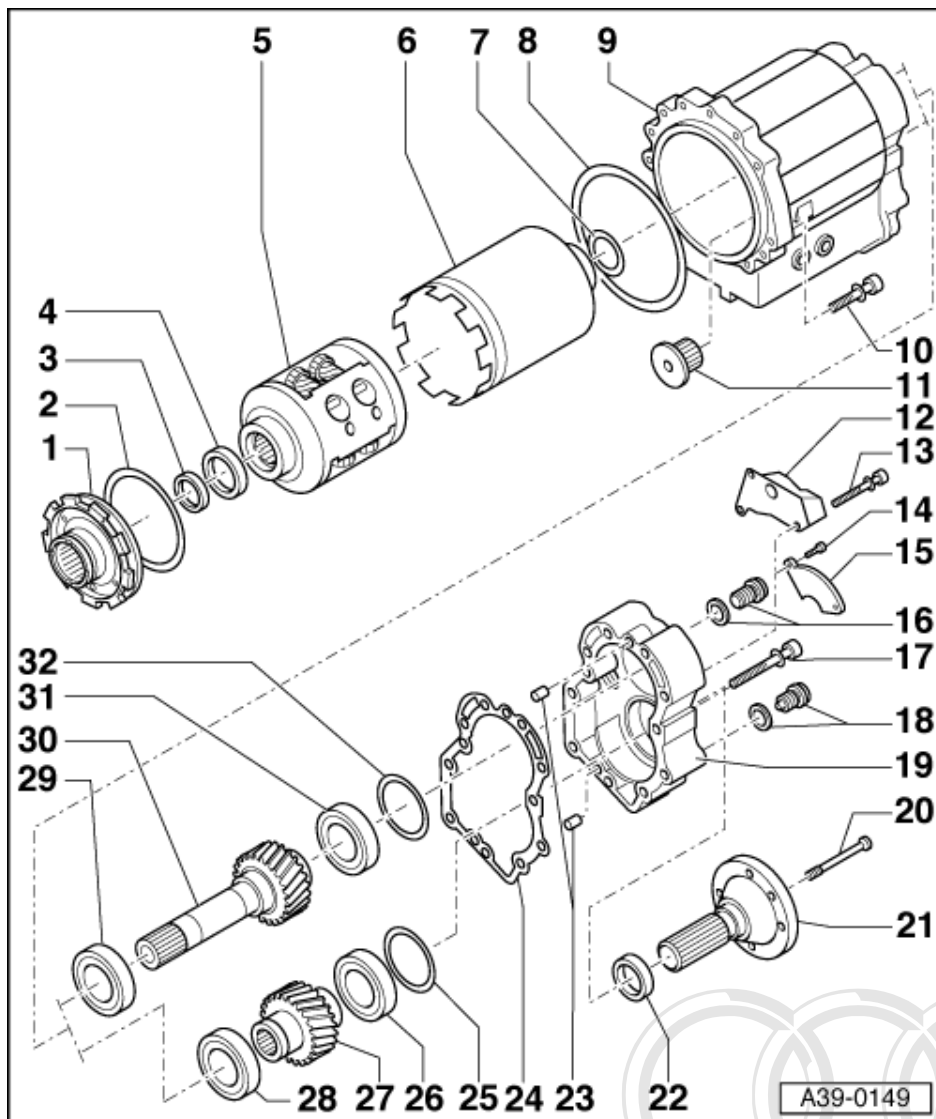
Do not run engine when transfer gearbox has been taken off or when there is not gear oil in transfer gearbox, and do not tow vehicle.

Notes:

- ♦ General repair instructions=>page 7 .
- ♦ Ratios=>from page 2 .
- ♦ The gear oil in the transfer gearbox has additives mixed in at the factory which are not available through normal after-sales service. The gear oil should therefore only be drained if it is absolutely necessary for repairs. If it is required to fill or top up the transfer gearbox=>capacities page 6 .
- ♦ Do not pull off bearing inner races and bearing cages that have been pressed onto the spur gears. Do not pull out bearing outer races that have been pressed into the housing.
- ♦ Do not interchange the position of the spur gears or their bearings and shims, as the bearings and shims are set to each other and are run-in.



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



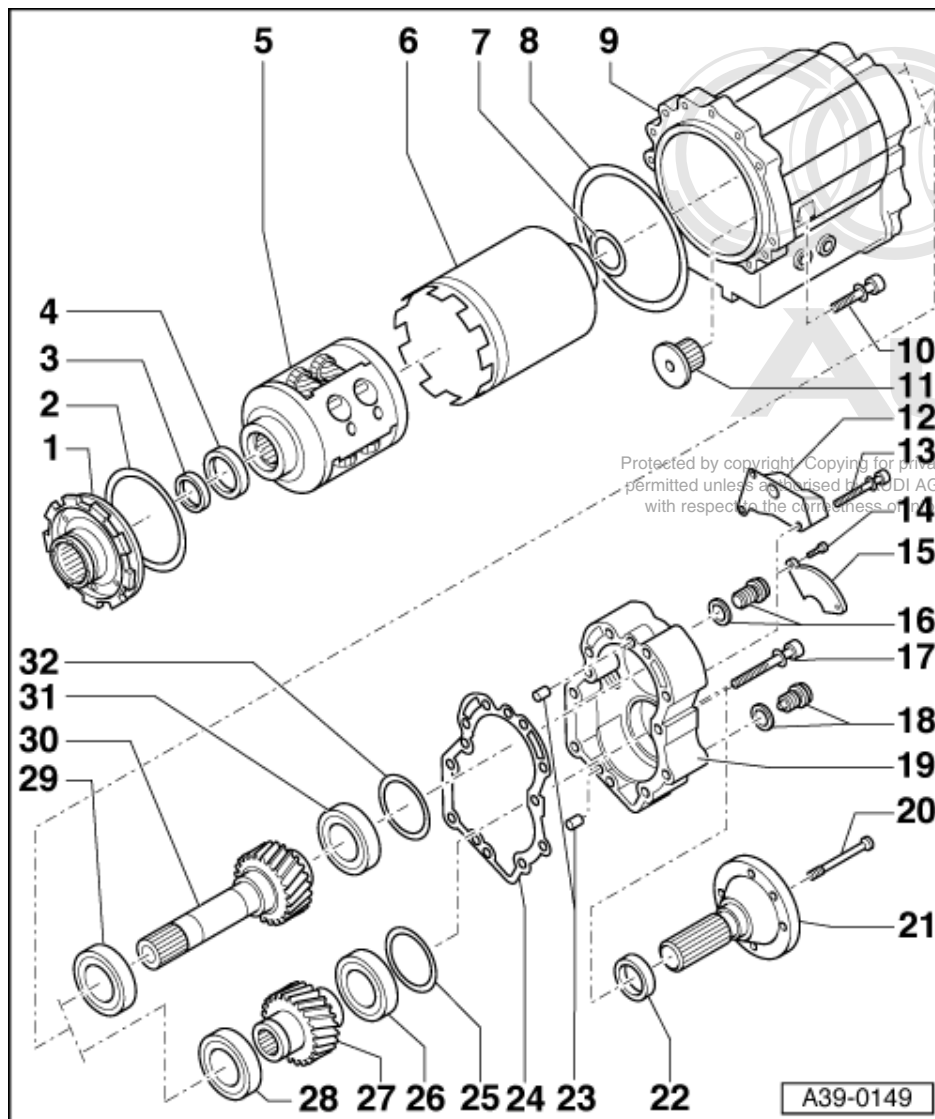
Notes:

- ♦ The spur gears, bearings, housing end cover (Item 19) or housing of the transfer gearbox (Item 9) cannot be renewed individually, as this changes the bearing preload of the spur gears. If one of the components is damaged, the complete rear intermediate drive must be renewed.
- ♦ If the rear intermediate drive, or Items 142.

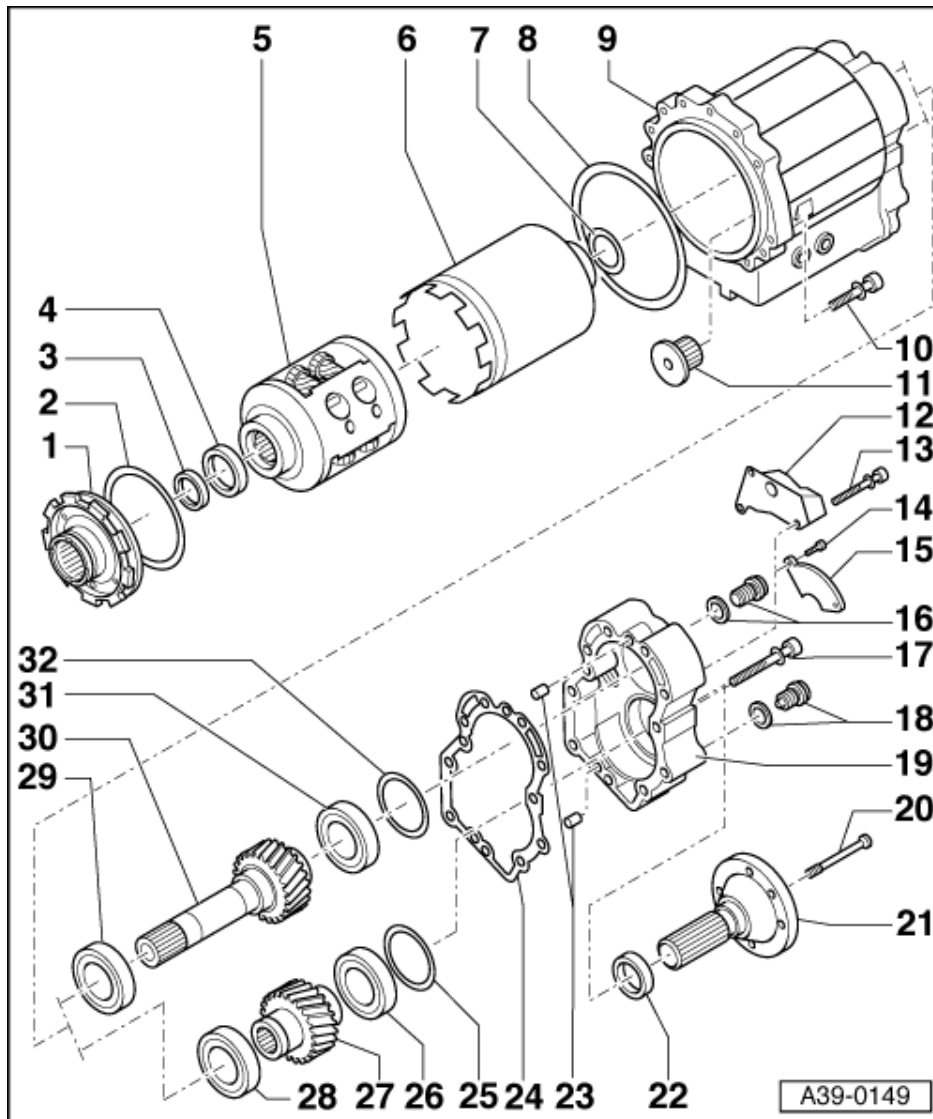
1 Hub

- ♦ Removing and installing
=>page 134

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



- 2 O-ring
 - ♦ Always renew=>page 134
- 3 Seal
 - ♦ For ATF side
 - ♦ Renewing=>page 137
- 4 Seal
 - ♦ Renewing=>page 137
- 5 Torsen differential
 - ♦ Removing and installing
=>page 134
- 6 Output cup
 - ♦ Removing and installing
=>page 134
- 7 Thrust washer
 - ♦ Adjusting=>page 142



8 O-ring

- ♦ Always renew=>page 134

9 Housing for transfer gearbox

- ♦ Do not renew individually
- ♦ Removing and installing =>page 134

10 Bolt - 23 Nm

- ♦ Qty. 13
- ♦ For securing -Item 9 - to front intermediate drive

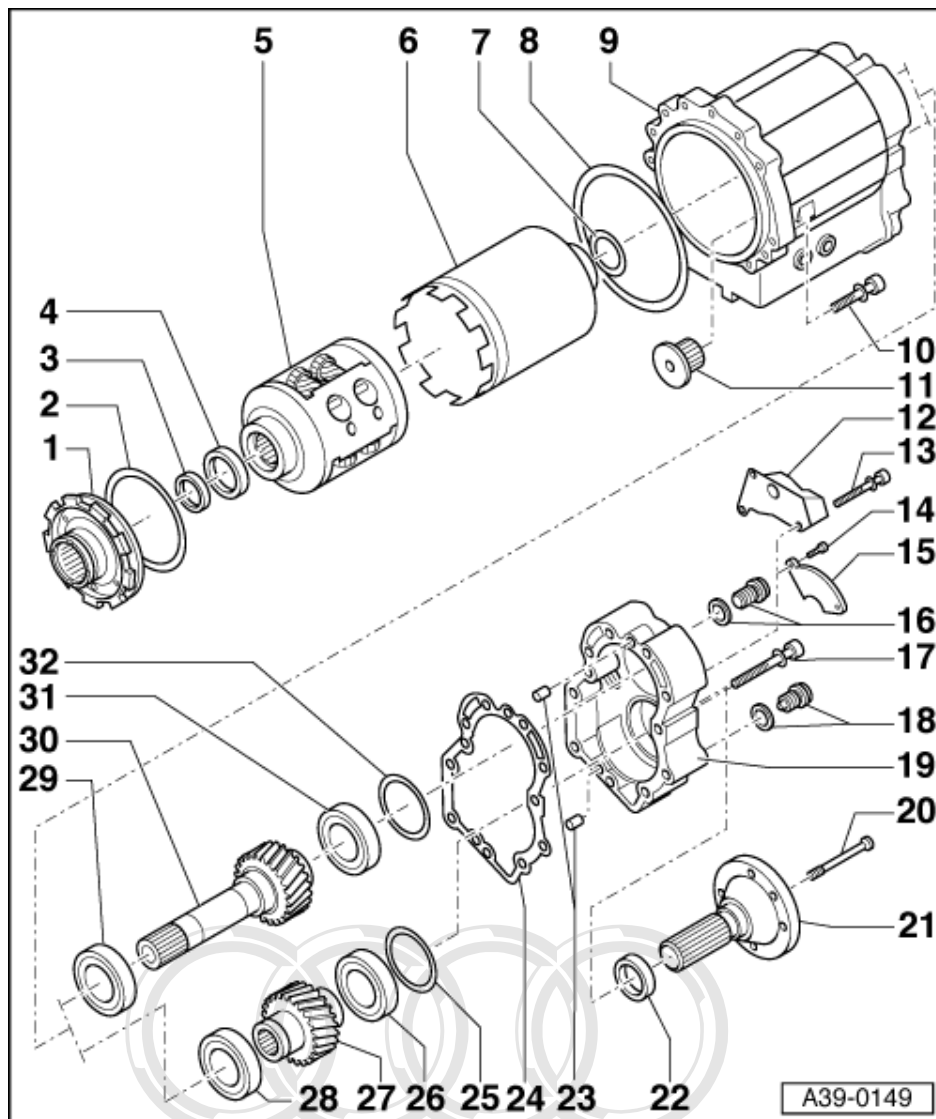
11 Clamping nut

- ♦ For securing flange shaft -Item 21 -

12 Vibration damper

- ♦ Removing and installing =>page 130

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



13 15 Nm +1/4turn (90°) further

- ◆ Qty. 3
- ◆ For securing -Item 12- to -Item 19 -

14 Bolt - 5 Nm

- ◆ Qty. 2
- ◆ For securing -Item 15 - to -Item 19 -

15 Cover plate

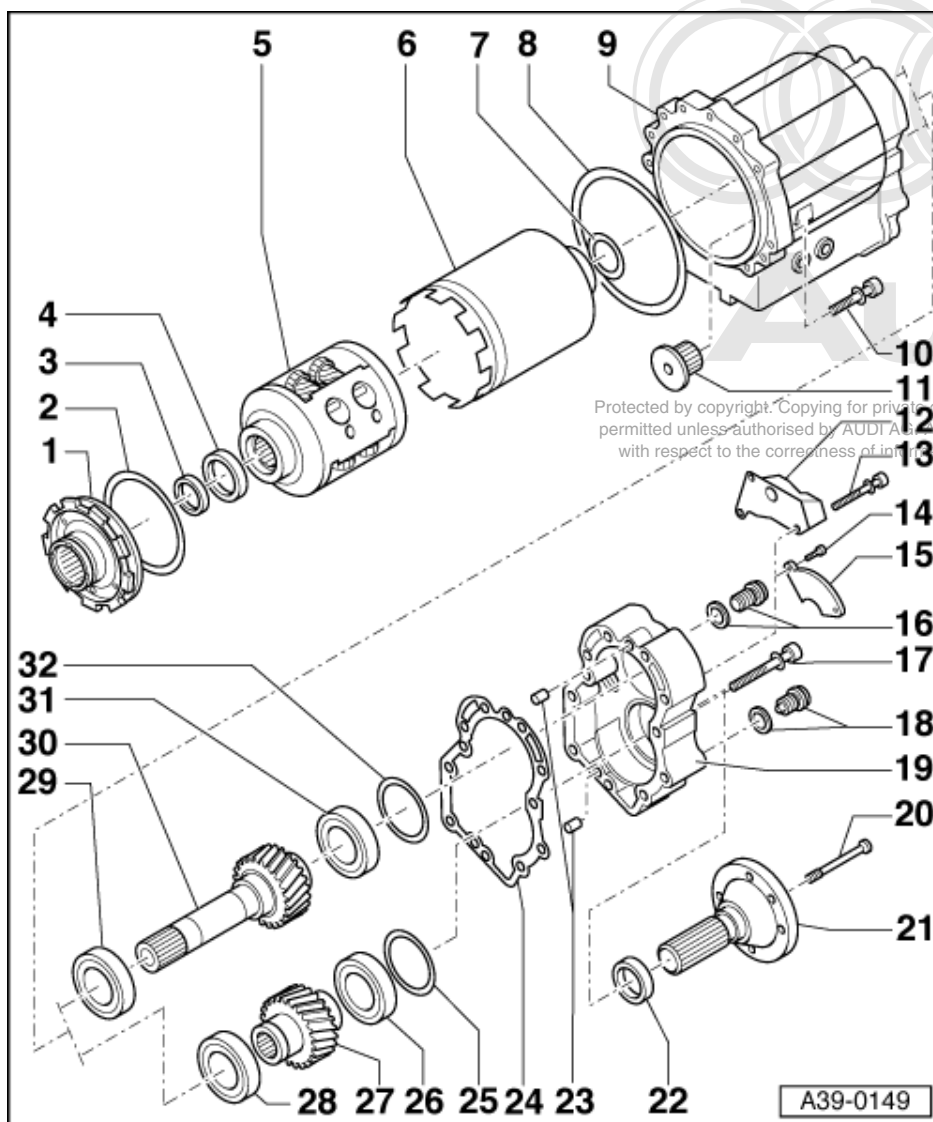
- ◆ Sealing=>page 133

16 Oil filler plug - 30 Nm

- ◆ With seal

17 Bolt - 23 Nm

- ◆ Qty. 12
- ◆ For securing -Item 19 - to -Item 9 -



18 Oil drain plug - 40 Nm

- ♦ With seal

19 Housing end cover

- ♦ Do not renew individually
- ♦ Removing and installing
=>page 139

20 Bolt - 25 Nm

- ♦ For securing -Item 21 - to
-Item 11 -

21 Flange shaft

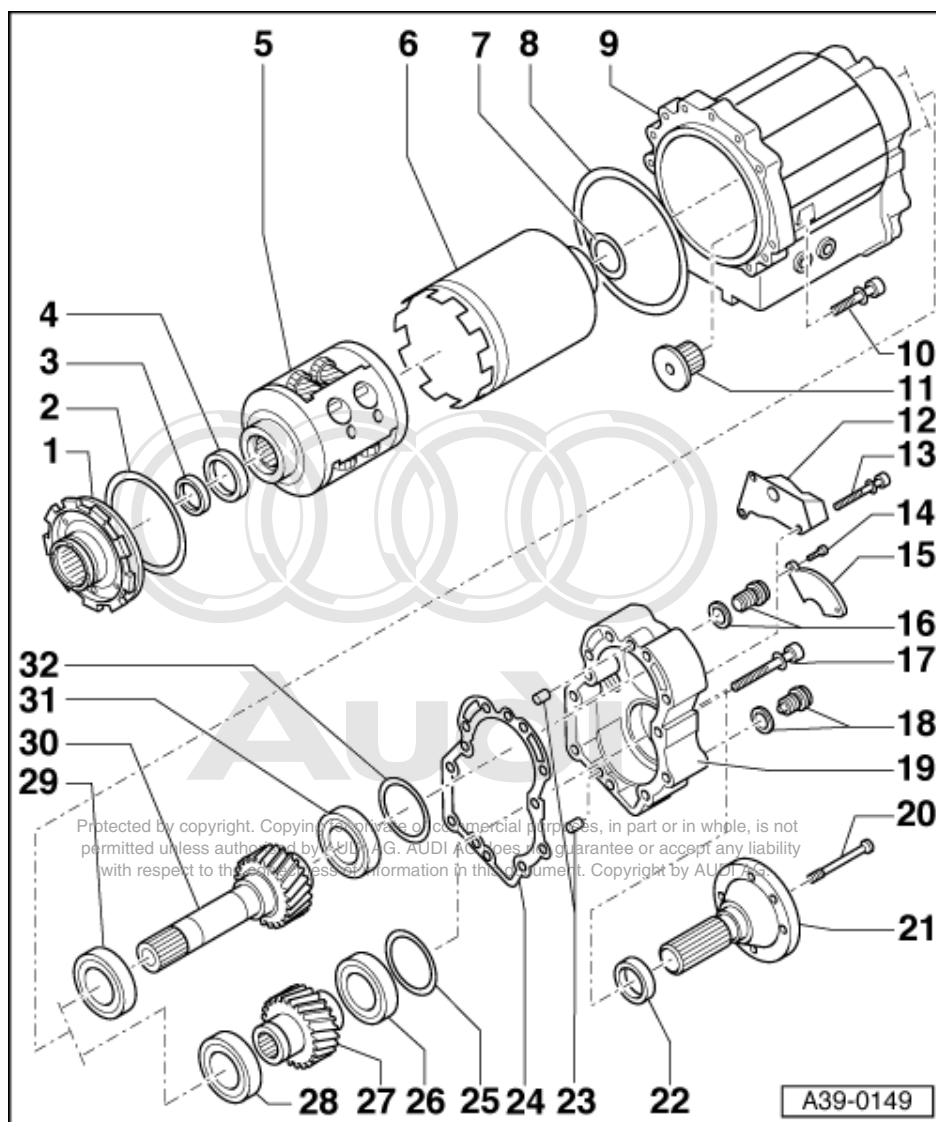
- ♦ Removing and installing
=>page 131

22 Seal

- ♦ Renewing=>page 131

23 Fitted pin

- ♦ Qty. 2
- ♦ For locating -Item 19 -



24 Gasket

- ◆ Renewing=>page 139

25 Shim

- ◆ Behind bearing race
- ◆ Bearing preload
- ◆ Is determined by measurement and cannot be exchanged for another shim at will

26 Taper roller bearing

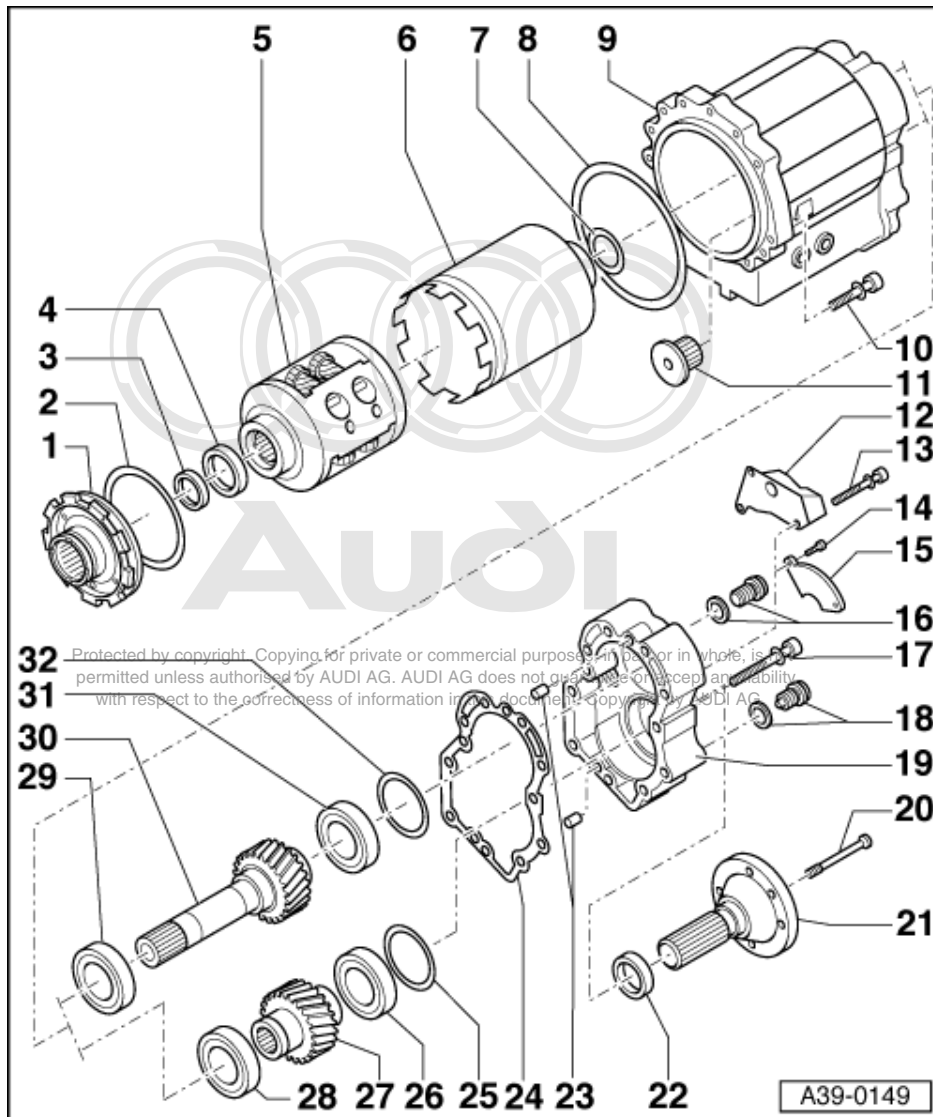
- ◆ Do not change allocation

27 Output gear

- ◆ Do not renew individually
- ◆ Removing and installing
=>page 141

28 Taper roller bearing

- ◆ Do not change allocation



29 Taper roller bearing

- ◆ Do not change allocation

30 Drive gear with rear axle shaft

- ◆ Do not renew individually
- ◆ Removing and installing
=>page 141

31 Taper roller bearing

- ◆ Do not change allocation

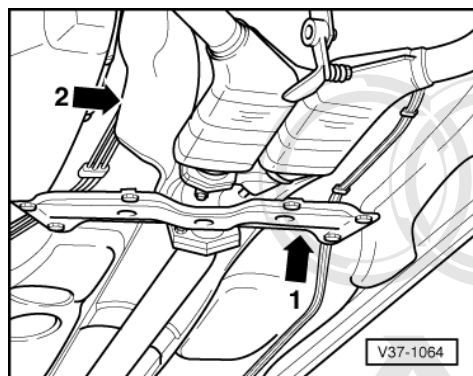
32 Shim

- ◆ Behind bearing race
- ◆ Bearing preload
- ◆ Is determined by measurement and cannot be exchanged for another shim at will



6.2 - Removing and installing vibration damper on transfer gearbox

Removing



- -> Remove front cross member -arrow 1- below exhaust system.

Vehicles with 5-cylinder engine:

- Remove left and right centre exhaust pipes.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the prior written consent of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

Vehicles with 6-cylinder engine:

- Remove left and right exhaust pipe with catalytic converter and intermediate pipe.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

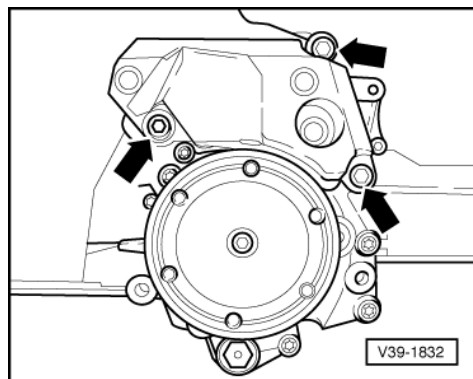
=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

All models

- Remove propshaft heat shield from housing end cover
=>page 150 .
- Unbolt propshaft from gearbox flange and tie up on constant velocity joint=>from page 147 .

Note:

Do not bend propshaft more than 25°, otherwise the universal joint could be damaged.



- -> Unbolt securing bolts of vibration damper -arrows- and pull vibration damper off to rear.

Note:

Vibration damper is additionally located by a dowel pin.

Installing

Installation is carried out in the reverse order, when doing this note the following:

Notes:

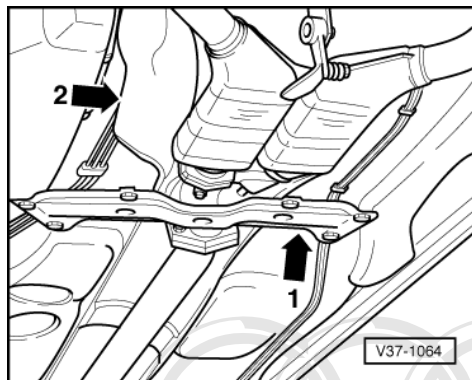
- ♦ The vibration damper must lie flush on contact surface.
 - ♦ Always renew self-locking bolts.
 - ♦ Tighten the securing bolts of the vibration damper evenly.
- Bolt propshaft to gearbox flange=>page **150** .

Tightening torques

Component		Nm
Vibration damper to gearbox	M8	15 + 90°1)
Propshaft to gearbox	M8	55
Heat shield for propshaft to gearbox	M8	23
Cross member to body	M8	23

- 1) 90° is the same as a quarter turn

6.3 - Renewing oil seal for rear flange shaft



Removing

- -> Remove front cross member -arrow 1- below exhaust system.

Vehicles with 5-cylinder engine:

- Remove left and right centre exhaust pipes.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

Vehicles with 6-cylinder engine:

- Remove left and right exhaust pipes with catalytic converter and intermediate pipe.

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the written permission of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



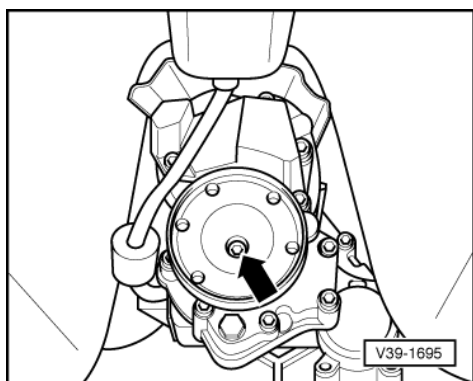
=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

All models

- Remove heat shield for propshaft -arrows-.

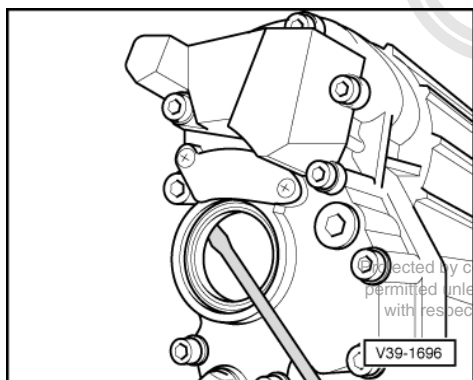


- Unbolt securing bolts for propshaft to rear final drive, lift propshaft clear and tie in place.

Note:

Do not bend propshaft more than 25°, otherwise the universal joint could be damaged.

- -> Remove securing bolt -arrow- by screwing two bolts into flange shaft and bracing with a suitable lever.
- Pull flange shaft off to rear.

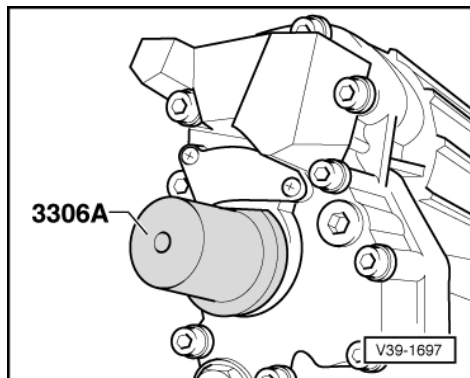


- -> Lever oil seal out with a suitable screwdriver.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Check oil seal seat and housing surface in area of oil seal seat for damage and rework if necessary.
- Coat outer circumference and sealing lip of oil seal thinly with Vaseline.
- Slide oil seal onto press piece 3306 A so that sealing lip faces towards gearbox.



- -> Drive in oil seal up to stop of press piece using press piece 3306 A.
- Bolt propshaft to gearbox flange=>page 150 .

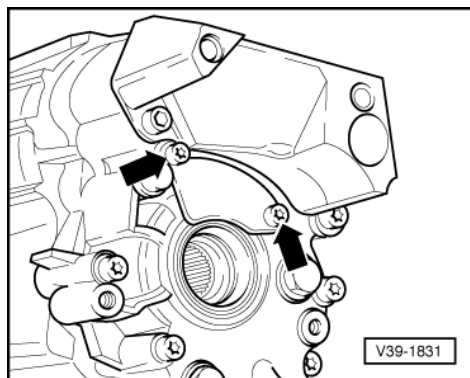
Tightening torques

Component		Nm
Rear flange shaft to gearbox		25
Propshaft to gearbox	M8	55
Heat shield for propshaft to gearbox	M8	23
Cross member to body	M8	23

6.4 - Sealing cover plate of transfer gearbox

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

Removing



- Remove rear flange shaft=>page 131 .
- Check rear flange shaft and oil seal for damage and renew if necessary=>page 131 .
- -> Remove both bolts -arrows- and take off cover plate.

Installing

Installation is carried out in the reverse order, when doing this note the following:

- Clean sealing surfaces and coat on one side with sealing compound D 454 300 A2.
- Fit bolts with locking compound D 185 400 A2.

Tightening torques

Component	Nm
Rear flange shaft to gearbox	25

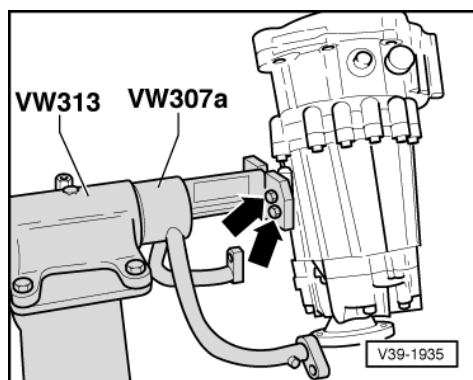


Component	Nm
Cover plate to gearbox end cover	5

6.5 - Removing and installing transfer gearbox

Removing

- Remove front intermediate drive=>page 106 .

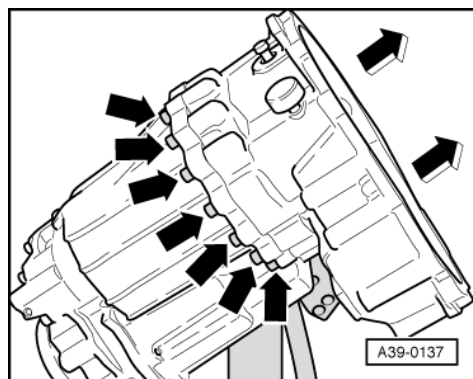


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

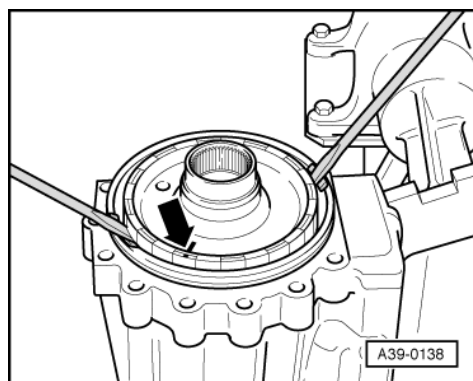
- Dismantle front intermediate drive=>page 114 .
- -> Bolt transfer gearbox to bracket VW 307a using two M8 bolts -arrows-.

Notes:

- ♦ Always hold down the rear end of the transfer gearbox, as otherwise gear oil will run out.
- ♦ The gear oil in the transfer gearbox has additives mixed in at the factory which are not available for normal after-sales service.



- -> Remove securing bolts -left-hand arrows- of housing for front intermediate drive/transfer gearbox.
- Pull off housing for front intermediate drive evenly -right-hand arrows-.

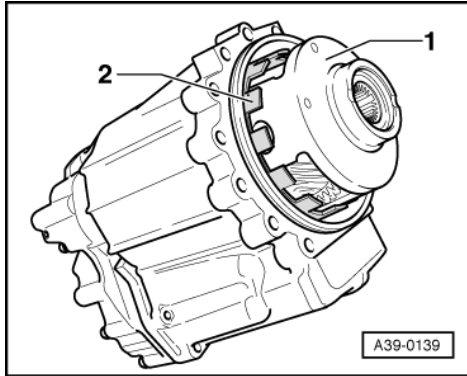


- -> Mark position of hub relative to output cup -arrow-.

Note:

The position of the hub to the output cup must not be changed, as both have run in with each other.

- Lift hub upwards using two large screwdrivers, protecting housing sealing surface against damage when doing so.



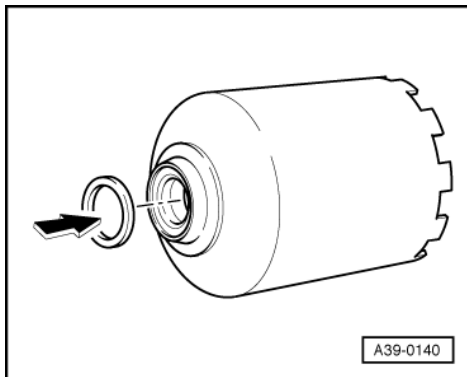
- -> Pull out Torsen differential -1-.
- Pull output cup -2- out with thrust washer.

Installing

Installation is carried out in the reverse order, when doing this note the following:

Note:

If the transfer gearbox or its components (hub, output cup, Torsen differential, housing or thrust washer) are replaced, the axial clearance for the Torsen differential must be checked and adjusted if necessary=>page 142 .



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

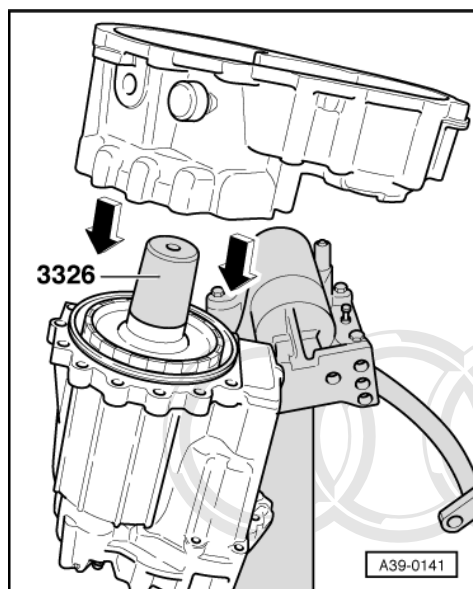
- -> Fix thrust washer on output cup with Vaseline and insert together on rear axle shaft up to stop.
- Pour 200 ml of gear oil into output cup (see notes on topping up gear oil with transfer gearbox removed and dismantled=>page 121 .

Note:

The thrust washer can slip out of the cut-out in the output cup if not inserted carefully. This alters the axial clearance of the Torsen differential.

- Check both oil seals in hub for damage and renew if necessary=>page 137 .

- Insert O-ring=>-Item **124** into hub with Vaseline.

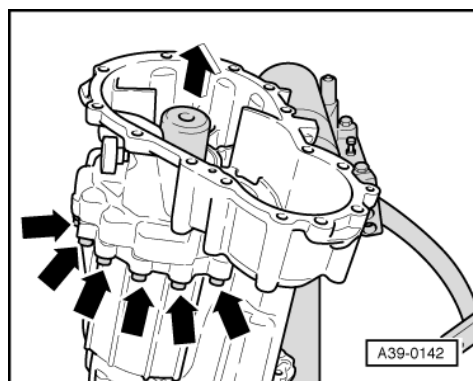


- Insert O-ring=>-Item **125** into groove on flange of transfer gearbox with Vaseline.
- -> Fit guide sleeve 3326 onto hub.
- Fit housing for intermediate drive onto transfer gearbox.

Note:

Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability

The guide sleeve 3326 is required to protect the two oil seals in the housing for the intermediate drive from being damaged.

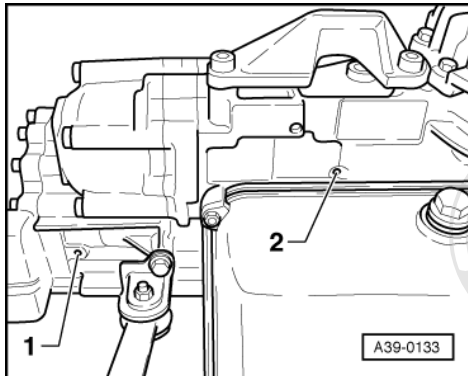


- -> Screw securing bolts -lower arrows- for housing for intermediate drive into transfer gearbox by hand and tighten to final torque using diagonal sequence.
- Pull guide sleeve 3326 off upwards.

Tightening torque

Component		Nm
Intermediate drive to transfer gearbox	M8	23

6.6 - Renewing oil seals in transfer gearbox

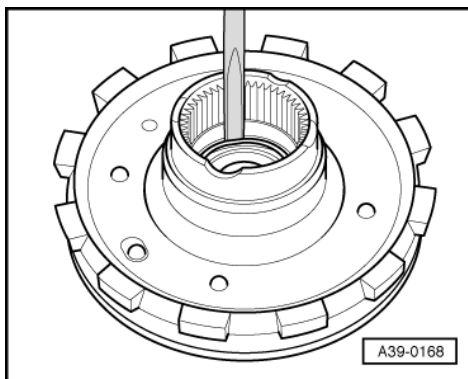


Note:

- ♦ -> At the bottom on the housing of the intermediate drive there is an oil-leak inspection hole -1- for the four oil seals that separate the gear oil side from the ATF side.
- ♦ If oil leaks out of the oil-leak inspection hole, both oil seals in the front intermediate drive and both oil seals in the transfer gearbox must be renewed=>page 118.

Copyright © 1996 Audi AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

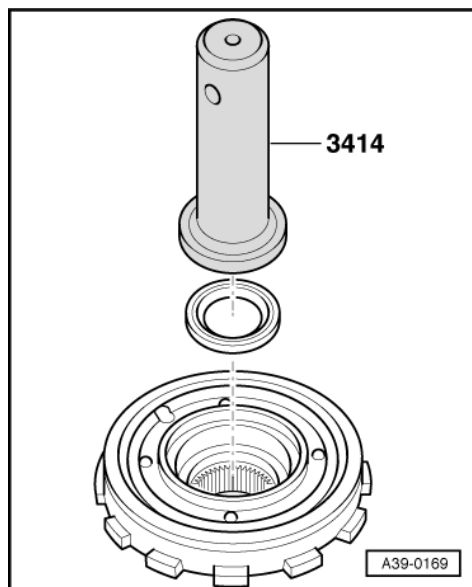
Removing



- Remove front intermediate drive=>page 106 .
- Dismantle front intermediate drive=>page 114 .
- Remove hub=>Removing transfer gearbox, page 134 .
- -> Place screwdriver behind sealing lip and drive out both oil seals uniformly towards the bottom.

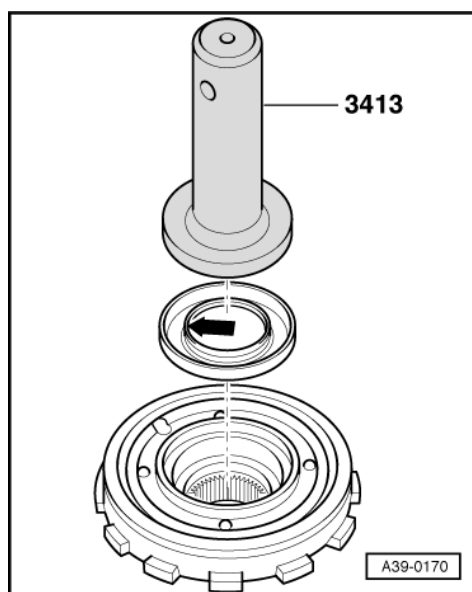
Installing

Installation is carried out in the reverse order, when doing this note the following:



Installing oil seal for ATF side:

- Check oil seal seat and contact surfaces of press piece for damage and rework if necessary.
- Coat outer circumference and sealing lip of oil seal thinly with Vaseline.
- -> Fit oil seal on press piece 3414 so that sealing lip faces towards hub.
- Drive in oil seal up to stop of press piece using press piece 3414.



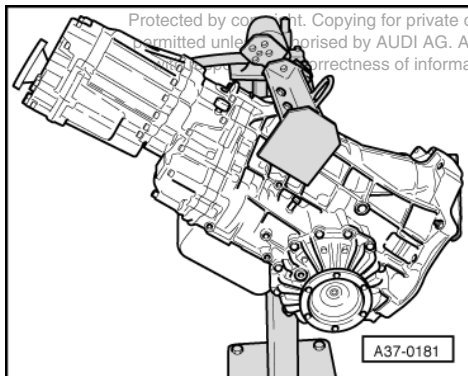
Installing oil seal for gear oil side:

- Check oil seal seat and contact surfaces of press piece for damage and rework if necessary.
- Coat outer circumference and sealing lip of oil seal thinly with Vaseline.
- -> Fit oil seal on press piece 3413 so that sealing lip -arrow- faces towards press piece.
- Drive in oil seal up to stop of press piece using press piece 3413.

6.7 - Renewing gasket for housing end cover for rear intermediate drive

Notes:

- ◆ This work can be performed with the gearbox installed by detaching the propshaft from the gearbox and draining the gear oil from the transfer gearbox.
- ◆ This work can also be performed with the transfer gearbox removed (complete with front intermediate drive and rear intermediate drive). Bolt the transfer gearbox to bracket VW 307 A with two M8 bolts=>page 115 and drain gear oil.
- ◆ For clarity the following work sequence illustrations show a complete gearbox that has been removed. The gear oil need not be drained to do this.

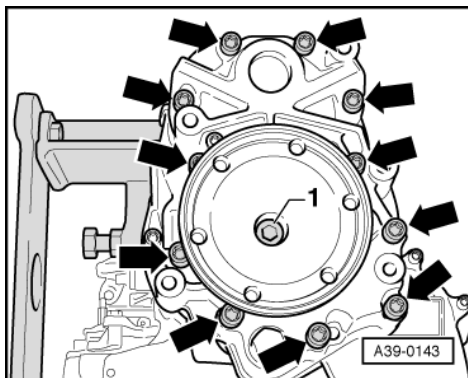


Removing

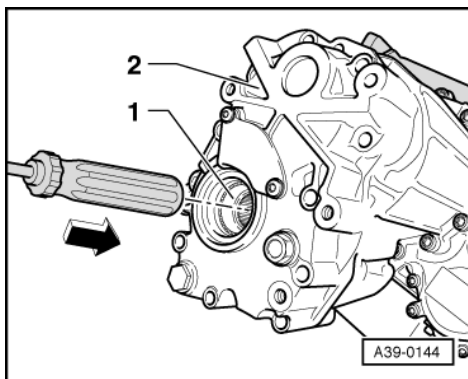
- Secure gearbox to repair stand=>page 38 .
- -> Turn rear of gearbox approx. 45° upwards.

Note:

Always hold the rear of the transfer gearbox up, as otherwise oil will run out.



- -> Remove securing bolt -1- by screwing two bolts into flange shaft and bracing with a suitable lever.
- Pull flange shaft off to rear.
- Remove securing bolts -arrows- of housing end cover.

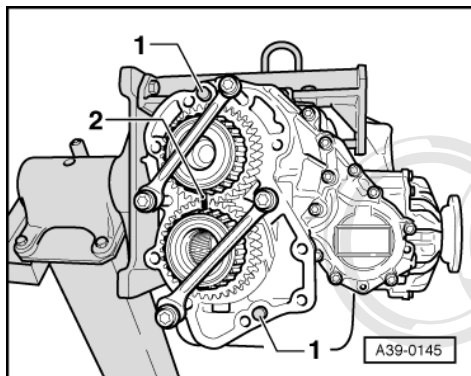




- -> Press lower spur gear -1- with blunt end of wooden or plastic rod (e.g. screwdriver handle) in direction of arrow towards transfer gearbox and pull off housing end cover -2- evenly towards rear.

Note:

The spur gears must be held continuously in their bearing seats (towards the transfer gearbox). Otherwise the clamping nut=>-Item 134 to enable the clamping nut to be reinserted in the lower spur gear.



- -> Secure both spur gears against falling out. The illustration shows one of the possibilities for securing the spur gears.

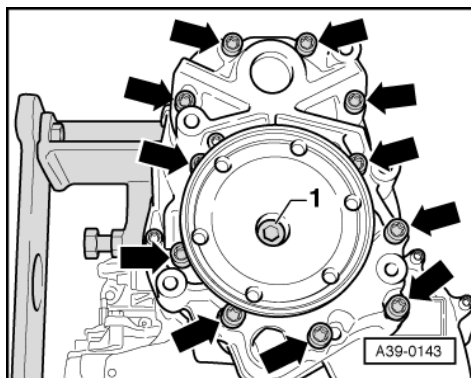
Installing

Installation is carried out in the reverse order, when doing this note the following:

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

Notes:

- ♦ The position of the spur gears, their bearings and shims must not be interchanged.
- ♦ Damaged spur gears may not be reinstalled. In this case, renew the entire intermediate drive.
- Coat new gaskets thinly with Vaseline, place on sealing seat surface of housing and secure.
- Before assembling intermediate drive, ensure dowel pins -1- are seated properly.



- -> Pull housings together evenly with securing bolts -arrows- and tighten bolts to final tightening torque using diagonal sequence.
- Check oil seal for rear flange shaft and renew if necessary=>page 131 .
- Check oil level in transfer gearbox=>page 120 .
- Renew gasket between propshaft and gearbox flange by pulling off protective foil and sticking onto gearbox flange. Replenish grease for constant velocity joint if necessary.

Tightening torques

Component		Nm
Rear flange shaft to gearbox		25
Housing end cover to housing for transfer gearbox	M8	23

Component		Nm
Propshaft to gearbox	M8	55
Heat shield for propshaft to gearbox	M8	23

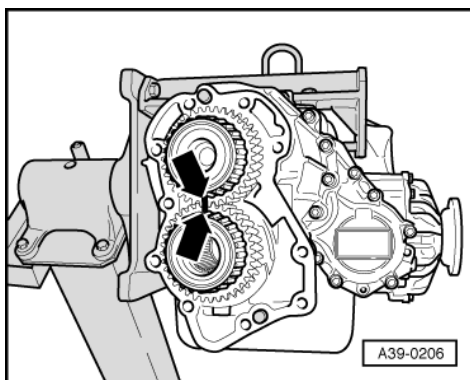
6.8 - Dismantling rear intermediate drive

Notes:

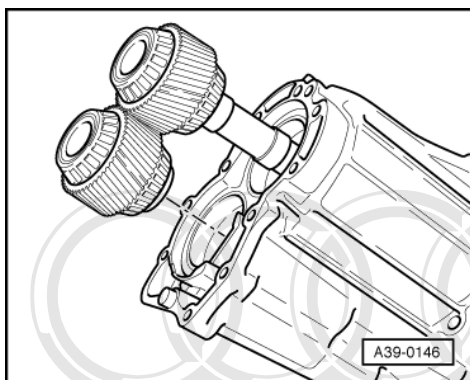
- ◆ The position of the spur gears, their bearings and shims must not be interchanged.
- ◆ Do not take the bearing outer races and shims out of the housing.
- ◆ Do not pull the bearing inner races off the spur gears.

Removing

- Remove front intermediate drive=>page 106 .
- Dismantle front intermediate drive=>page 114 .
- Remove transfer gearbox=>page 134 .



- Remove housing end cover for rear intermediate drive=>page 139 .
- -> Mark both spur gears of the rear intermediate drive -arrows-.



- -> Take out both spur gears (with thrust washer for output cup if necessary).

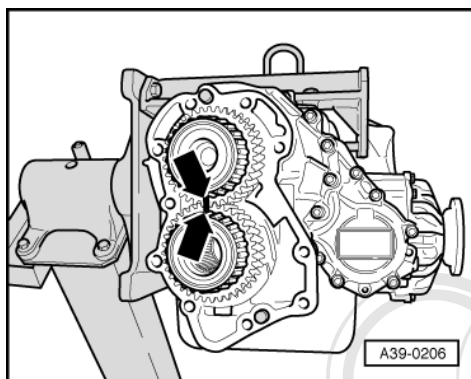
Note:

The thrust washer for the output cup must not be exchanged for another, as its thickness will influence the axial clearance of the Torsen differential=>Checking axial clearance of Torsen differential and adjusting, page 142 .

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

Installing

Installation is carried out in the reverse order, when doing this note the following:



- Check sealing surfaces of the housing for damage.
- -> Insert spur gears so that marking -arrows- is visible.

Note:

Damaged spur gears may not be reinstalled. In this case, renew the entire intermediate drive.

6.9 - Checking axial clearance of Torsen differential and adjusting

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

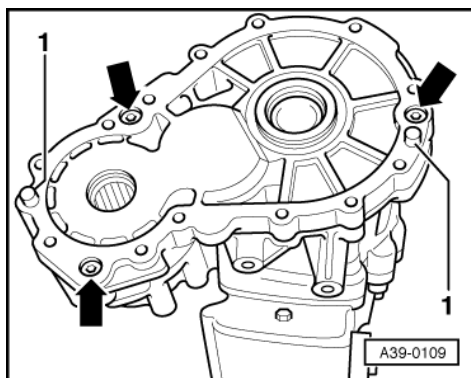
Note:

The Torsen differential axial clearance must be checked and readjusted if necessary when the front intermediate drive, the Torsen differential, the rear intermediate drive or parts of these assemblies (e.g. housing, bearings, gears, shims) are renewed.

The following special tools and test units are required for this work:

- ♦ Depth gauge (with digital display and at least a 220 mm wide contact surface if possible).
- ♦ Micrometer (measuring range: 0 - 25 mm)

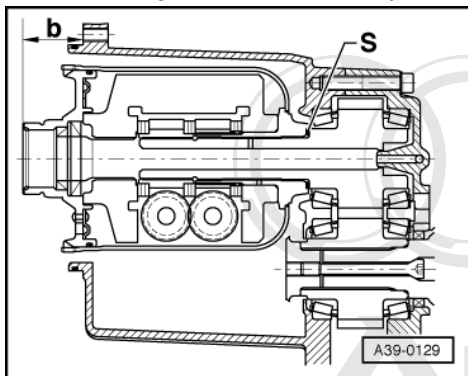
Checking axial clearance of Torsen differential



- Remove front intermediate drive=>page 106 .
- Dismantle front intermediate drive=>page 114 .
- Unbolt transfer gearbox from front intermediate drive=>page 134 .
- Insert input gear=>-Item 105 with bearing into housing of front intermediate drive.
- -> Fit intermediate flange=>-Item 100 with prescribed tightening torque to housing of front intermediate drive.

Note:

The transfer gearbox must be separated from the front intermediate drive.



-> The axial clearance "c" of the Torsen differential is checked with the thrust washer "S" of the output cup installed.

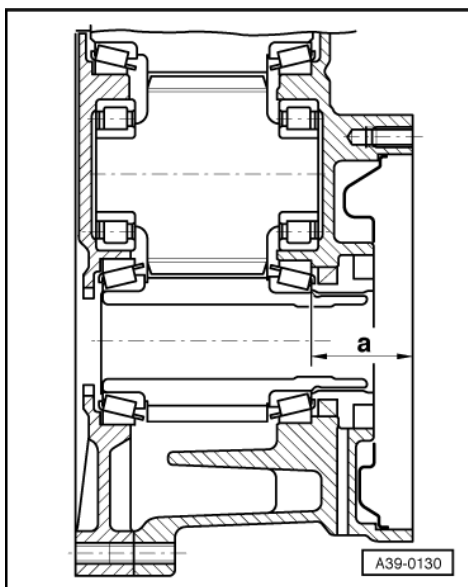
Formula:

"c" = "a" - "b"

a = measured value => page 143

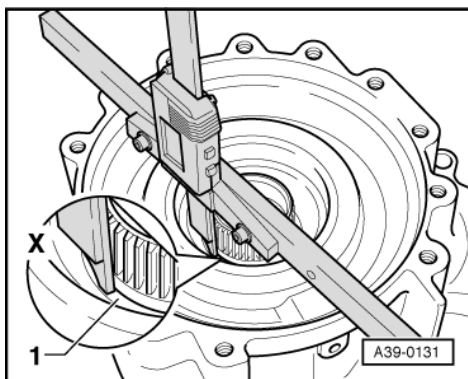
b = measured value => page 144

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



-> Determining dimension "a"

- Check flange joint of intermediate drive to transfer gearbox for damage to ensure a smooth contact surface for depth gauge.





- -> Place tip of depth gauge onto bearing inner race -1- of input gear.
- Measure at 4 different points on the bearing race and note measured values.

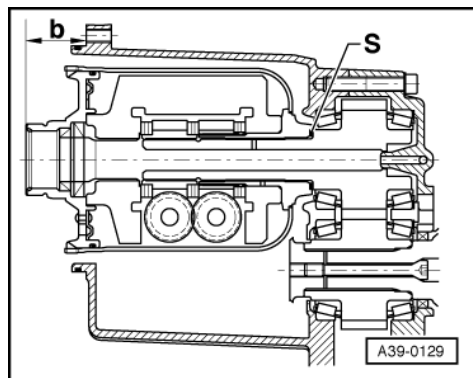
Note:

If the 4 measured values differ from each other by more than 0.10 mm, the installation of the input pinion or the contact surface for the depth gauge on the housing is not in order. Rectify problem and repeat measurements.

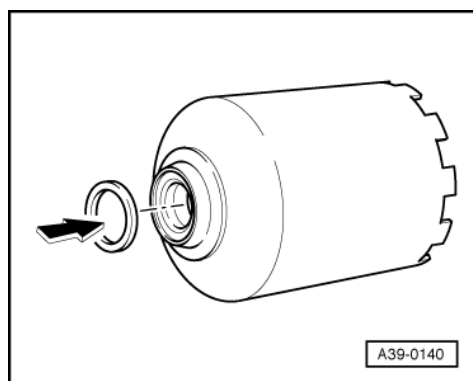
- Add the four measured values together and divide by four.

Example:	
1st measured value	41.35 mm
+ 2nd measured value	41.32 mm
+ 3rd measured value	41.39 mm
+ 4th measured value	41.33 mm
= Sum of measured values	165.39 mm

- Result: the average dimension "a" is $165.39 \text{ mm} / 4 = 41.35 \text{ mm}$



-> Determining dimension "b"



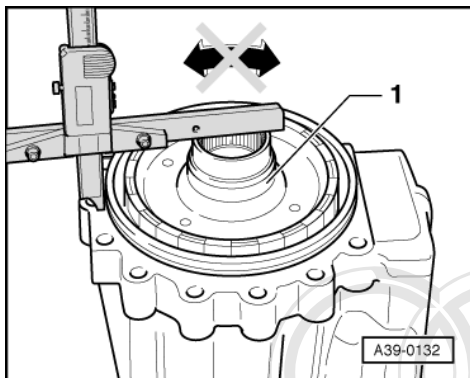
- -> Check seat of thrust washer "S" for output cup.
- Secure thrust washer on output cup with Vaseline and insert together up to stop on rear axle shaft.

Note:

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

The thrust washer can slip out of the cut-out in the output cup if not inserted carefully. This will alter the axial clearance of the Torsen differential.

- Place transfer gearbox on workbench so that hub is pointing exactly upwards.



- -> Check flange and hub -1- for damage to ensure a smooth contact surface for depth gauge.

Notes:

- ◆ Do not load the hub in the direction of the arrows when measuring, as otherwise the measurement will be falsified.
- ◆ Do not place the contact surface of the depth gauge in the recesses on the hub.
 - Measure at 4 different points and note measured values.
- Add the four measured values together and divide by four.

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

Example:	
1st measured value	40.70 mm
+ 2nd measured value	40.80 mm
+ 3rd measured value	40.75 mm
+ 4th measured value	40.78 mm
= Sum of measured values	163.03 mm

- Result: the average dimension "b" is $163.03 \text{ mm} / 4 = 40.76 \text{ mm}$

Determining axial play "c" of Torsen differential

Formula:	
"c" = average dimension "a" - average dimension "b"	

Example:	
average dimension "a"	41.35 mm
- average dimension "b"	40.76 mm
= Value "c"	0.59 mm

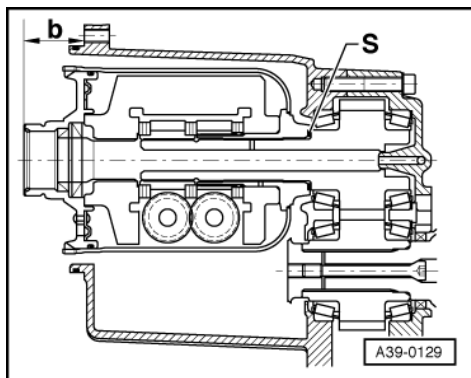
Axial clearance specification: 0.2 - 0.7 mm

- Result: in the example shown, the determined axial clearance for the Torsen differential (value "c") is, with thrust washer "S" installed, within the permissible tolerances.

If the determined axial clearance is outside the permissible tolerances, the axial clearance must be adjusted=>page 146 .

If the determined axial clearance is within the permissible tolerances, install Torsen differential=>page 147 .

Adjusting axial clearance for Torsen differential



-> The axial clearance for the Torsen differential is set with different thicknesses of thrust washer "S" of the output cup.

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

- Determine axial clearance "c" for Torsen differential=>page 142 .
- Remove thrust washer "S".
- Measure thickness of previously removed thrust washer "S" using a micrometer and note thickness.

Note:

When readjusting the axial clearance "c", aim for a specification of 0.5 mm.

Determining thickness of new thrust washer "S"

Formula:	
Determined axial clearance "c" of Torsen differential	
- Specification for axial clearance "c"	
+ Thickness of previous thrust washer "S"	
= Thickness of new thrust washer "S"	

Example:	
Determined axial clearance "c" of Torsen differential	0.95 mm
- Specification for axial clearance "c"	0.50 mm
+ Thickness of previous thrust washer "S"	2.00 mm
= Thickness of new thrust washer "S"	2.45 mm

- Determine thrust washer(s) from table. Part numbers

=> Parts catalogue

Note:

Select the relevant thrust washer that is closest to the thickness of the new thrust washer. Example: if 2.45 mm is determined, use a thrust washer with a thickness of 2.50 mm.

- Measure new thrust washer at several points on circumference with a micrometer.
- Install new thrust washer and check axial clearance of Torsen differential=>page 142 .

Installing

Installation is carried out in the reverse order, when doing this note the following:

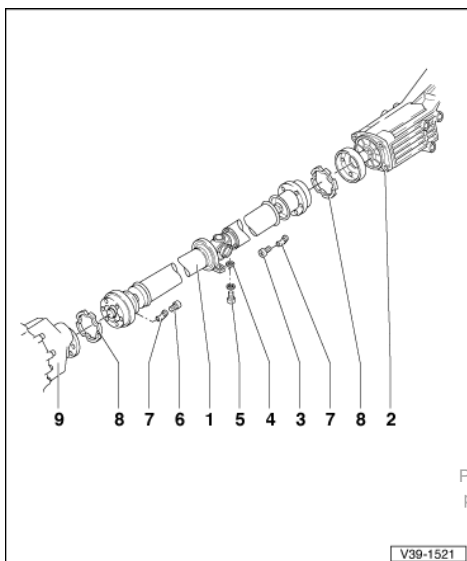
- Assemble front intermediate drive=>page 116 .
- Install transfer gearbox=>page 135 .
- Install front intermediate drive=>page 113 .

7 - Servicing propshaft

7.1 - Servicing propshaft

Notes:

- ◆ Do not bend the propshaft more than 25 ° at the central joint, otherwise the universal joint will be damaged.
- ◆ Only store and transport propshaft extended.
- ◆ Observe General repair instructions=>page 7 .
- ◆ No repair work can be carried out on the propshaft with the exception of removing, installing and adjusting.
- ◆ If the propshaft is only detached at the gearbox or from rear final drive then the propshaft is to be tied up or supported at the constant velocity joint.
- ◆ Work on the propshaft should be carried out on a twin column hoist.
- ◆ If complaints are received (noises, vibrations), it is essential to check whether correct adjustment of the propshaft rectifies the fault before replacing the propshaft.
- ◆ After removing the propshaft from the rear final drive, the additional balance disc (thick washer) that may be located between the base plate and the bolt head must not be reinstalled. Always renew all flange bolts after dismantling.
- ◆ The front and rear propshaft halves may not be separated or renewed individually. Both parts are balanced together.



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

- 1 Propshaft**
 - ◆ Adjusting => page 152
- 2 Rear final drive**
- 3 Bolt - 55 Nm**
 - ◆ Qty. 6
 - ◆ Self-locking
 - ◆ Always renew
- 4 Shims**
 - ◆ Adjusting propshaft
=> page 152

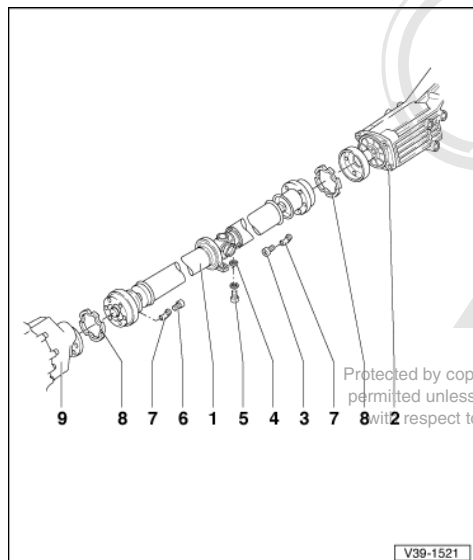


5 Bolt - 23 Nm

- ◆ Qty. 2

6 Bolt - 55 Nm

- ◆ Qty. 6
- ◆ Self-locking
- ◆ Always renew



7 Packing plate

- ◆ Qty. 3
- ◆ Packing plates of varying thicknesses may have been fitted if the propshaft has been balanced. Mark installation positions before removing and observe when installing

8 Gasket

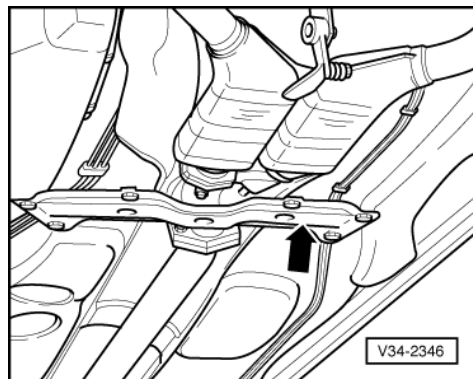
- ◆ Always renew
- ◆ Pull off protective foil and stick self-adhesive side onto flange shaft

9 Automatic gearbox

7.2 - Removing and installing propshaft

Removing

- Observe notes => page 147 .



- -> Unbolt front cross-piece -arrow- below exhaust system.

Vehicles with 5-cylinder engine:

- Remove exhaust system (rearward of front exhaust pipe)

=> 5-cylinder injection engine, (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

Vehicles with 6-cylinder engine:

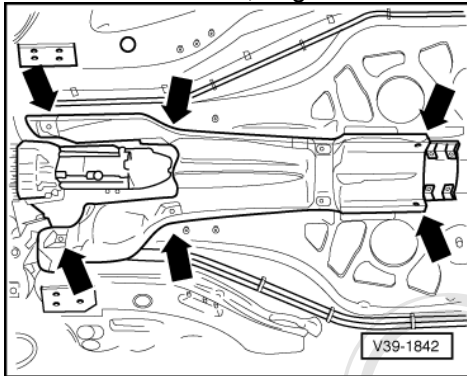
- Remove entire exhaust system.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B

- Vehicles with four wheel drive

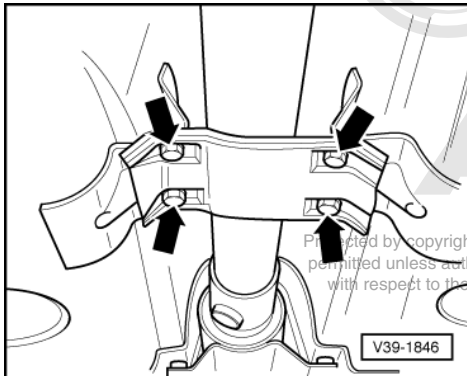
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

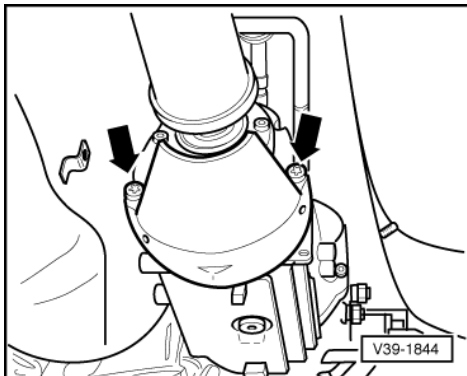


All models

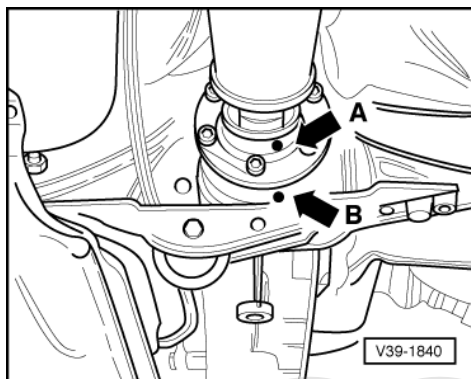
- -> Unbolt heat shield below propshaft -arrows-.



- -> Remove cross-piece (with heat shield, if fitted) below propshaft -arrows-.



- -> Remove heat shield for propshaft -arrows- from housing end cover.

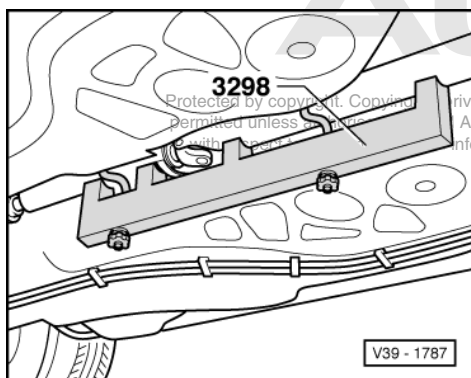


- -> Mark position of propshaft flange -arrow A- relative to rear final drive -arrow B- with coloured marking if not already marked.
- Loosen securing bolts of both propshaft flanges and mark packing plates.

Note:

Packing plates of varying thicknesses may have been fitted if the propshaft has been balanced. Mark installation positions before removing and observe when installing.

- Loosen securing bolts of centre propshaft mounting slightly.



- -> Attach assembly device 3298 and tighten plastic nuts.

Note:

Never fit assembly device onto balance plates.

- Remove securing bolts of flange on automatic gearbox and on rear final drive as well as securing bolts of centre propshaft mounting.
- Slide propshaft together towards automatic gearbox. The constant velocity joints can be moved in an axial direction.
- Guide out propshaft with assembly device past rear final drive.

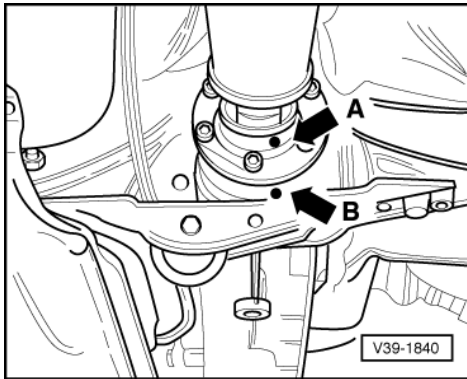
Note:

Do not bend propshaft at centre joint when transporting and storing.

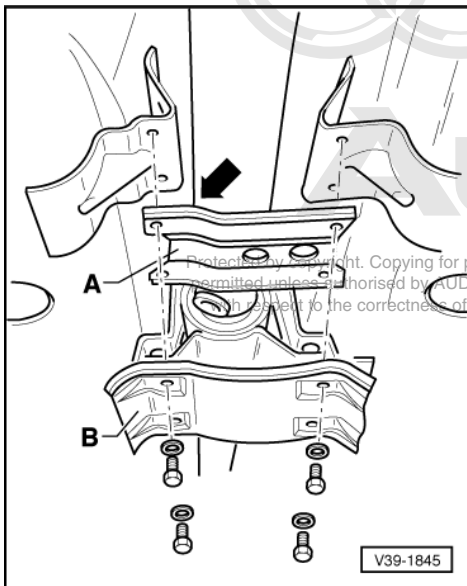
Installing

Installation is carried out in the reverse order, when doing this note the following:

Notes:



- ◆ -> To prevent imbalance, the flanges of the propshaft -arrow A- and the rear final drive -arrow B- must be installed so that the coloured markings align.
- ◆ Renew gasket between propshaft and input or output shaft (pull off protective foil and stick onto flange shaft).
- ◆ After removing the propshaft, it is important to clean any remaining locking compound out of the threads in the flange shafts on the gearbox and rear final drive. If this is neglected, the new bolts can seize when they are screwed in and shear off later if they have to be removed.
- ◆ The threaded holes can be cleaned with a thread tap.
- ◆ After removing the propshaft from the rear final drive, the additional balance disc (thick washer) that may be located between the lock plate and the bolt head must not be reinstalled. Always renew all flange bolts after dismantling.
- ◆ Renew propshaft bolts (self-locking).
- ◆ Observe marking of packing plates when installing.
- Adjust propshaft after installing => page 152 .



- -> Note installation position of cross-piece -A- (and heat shield -B-, if fitted) below propshaft.
- The stepped edge -arrow- should be on the left (seen in direction of travel).
- Install exhaust system tension-free.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B
- Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

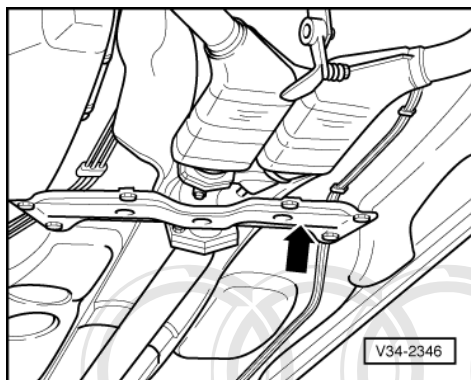
=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

Tightening torques

Component	Nm
Propshaft to gearbox (output flange) M8	55
Propshaft to final drive (input flange) M8	55
Propshaft centre mounting to body	23
Propshaft heat shield to gearbox	25
Cross member with heat shield to body	25
Front cross member below exhaust system to body	25
Catalytic converter to front exhaust pipe	25
Catalytic converter to bracket	25

7.3 - Adjusting propshaft

Adjustments should be carried out with care, because a badly adjusted propshaft is often the cause of vibration and droning.



- -> Remove front cross member below exhaust system -arrow-.

Vehicles with 5-cylinder engine:

- Remove exhaust system rearwards of front exhaust pipe.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

Vehicles with 6-cylinder engine:

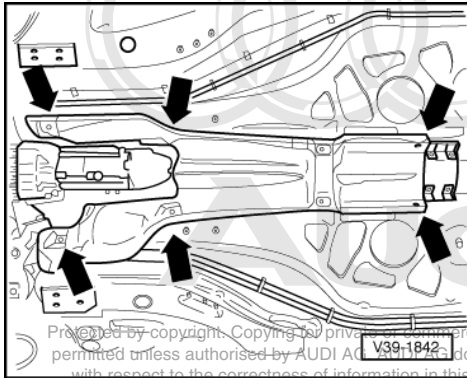
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of the information in this document. Copyright by AUDI AG.

- Remove entire exhaust system.

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

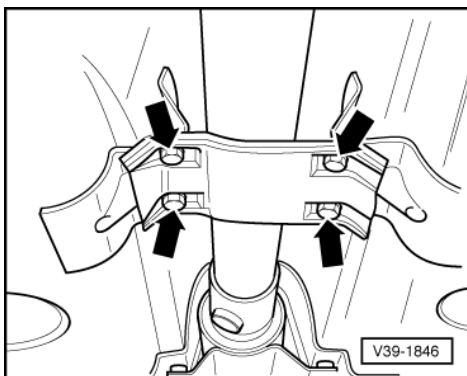
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

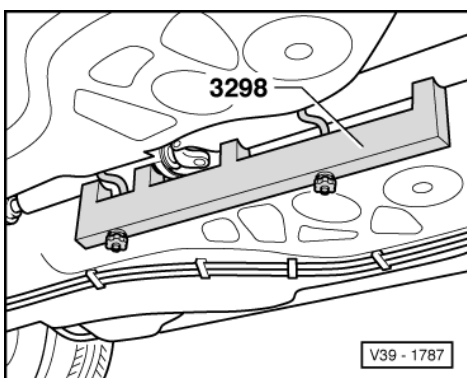


All models

- -> Remove heat shield below propshaft -arrows-.



- -> Remove cross member with heat shield (if fitted) below propshaft -arrows-.
- Loosen securing bolts of centre propshaft mounting slightly.



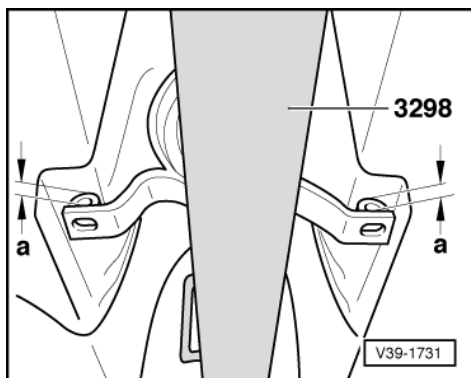
- -> Attach assembly device 3298 and tighten plastic nuts.

Note:

Never fit assembly device onto balance plates.

- Remove securing bolts and shims from centre mounting.

Propshaft height adjustment



- Assembly device 3298 mounted on propshaft.
- Align centre propshaft mounting so that the dimension -a- on left-hand side is the same as dimension -a- on right-hand side.
- -> Measure dimension -a-.
- Determine shim(s) from table. Part numbers

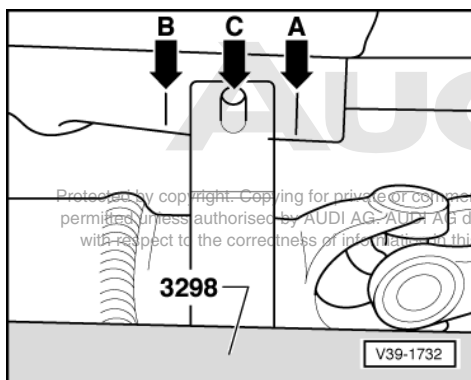
=> Parts catalogue

The following shims are available

Dimension -a- (mm)	Shim thickness (mm)
0 - 3.0	-
3.1 - 5.0	2
5.1 - 7.0	4
7.1 - 9.0	6
9.1 - 11.0	8
11.1 - 13.0	10

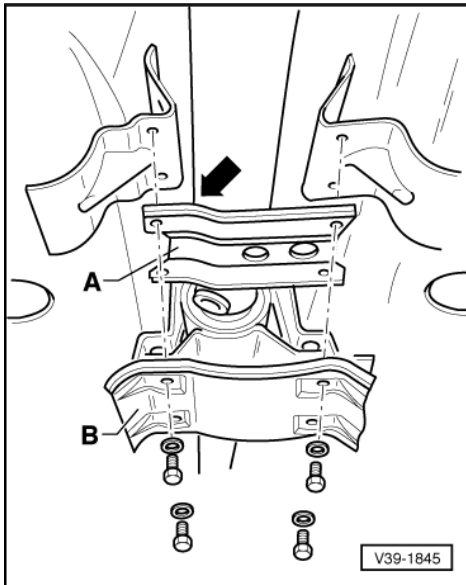
- Install the correct shims on both sides.

Aligning propshaft longitudinally



- Assembly device 3298 mounted on propshaft.
- -> Slide propshaft with assembly device to rear onto stop.
- Mark position of centre mounting on body -arrow A-.
- Slide propshaft with assembly device forwards onto stop.
- Mark position of centre mounting on body -arrow B-.
- Align propshaft -arrow C-.

- The centre mounting must be positioned centrally between the markings -A- and -B-
- Install securing bolts of propshaft centre mounting and previously determined shims and tighten.
- Remove assembly device.

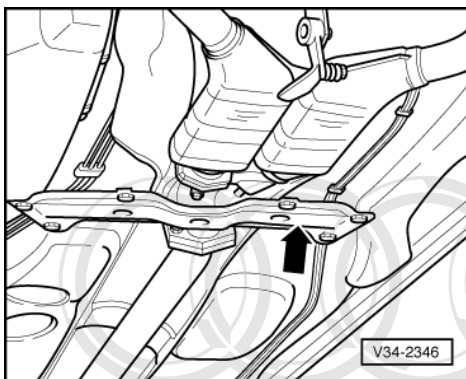


- -> Remove cross-piece -A- (with heat shield -B-, if fitted) below propshaft -arrows-.
- The stepped edge -arrow- should be on the left (seen in direction of travel).
- Install heat shield above propshaft=>page 153 .
- Install exhaust system free of stress.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive



=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

- -> Fit front cross-piece below exhaust system.

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



Tightening torques

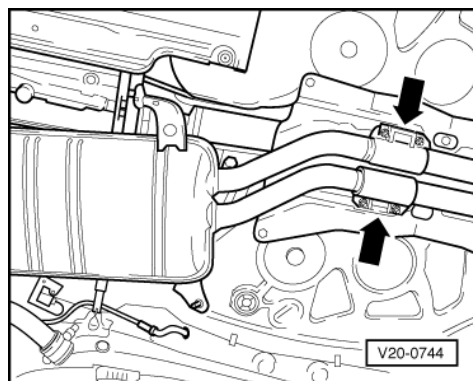
Component	Nm
Propshaft centre mounting to body	23
Cross member with heat shield to body	25
Front cross-piece below exhaust system to body	25

7.4 - Balancing propshaft/flange on rear final drive

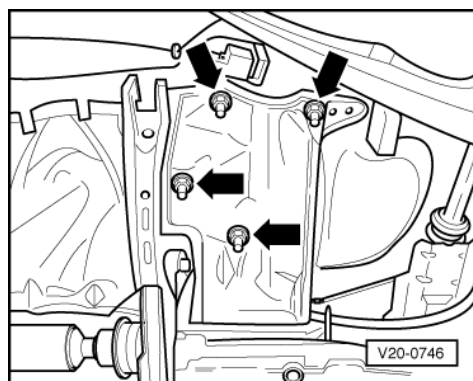
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Notes:

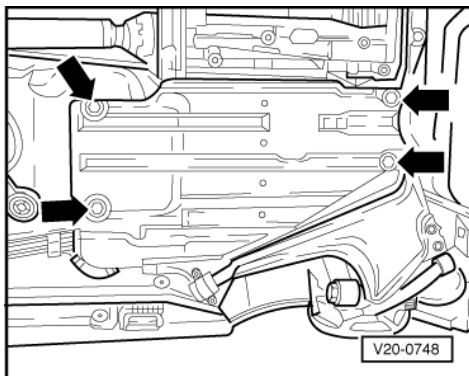
- ♦ Balancing can be performed to eliminate humming and droning noises and must be performed with extreme care.
- ♦ Check the propshaft and flange for damage.
- ♦ Observe notes=>page 147 .
- ♦ The propshaft must have been adjusted at the centre mounting and aligned longitudinally =>page 152 .
- ♦ If humming and droning noises still occur at speeds of between 160 and 200 km/h (100 to 125 mph) after adjusting the propshaft, balance the propshaft/flange on the rear final drive as described in the following.
- ♦ Renew the packing plates after performing measurements according to the table=>page 158 .



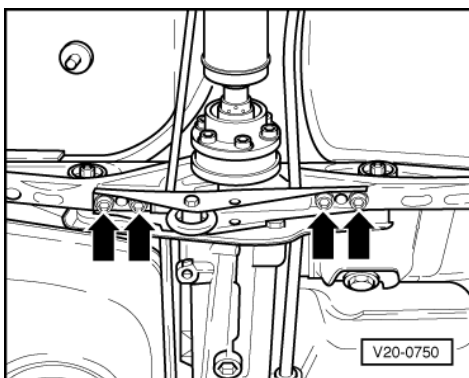
- -> Separate exhaust system at double pipe clamp -arrows-.
- Unhook main and rear silencers from retainers.



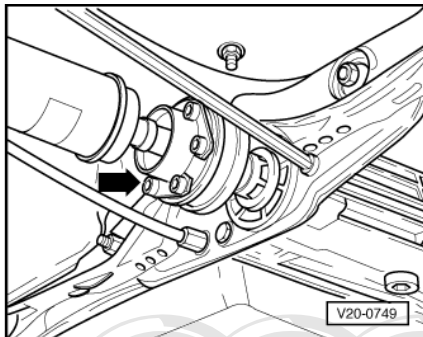
- -> Unbolt heat shield behind cross piece I -arrows-.



- -> Remove cover for fuel tank -arrows-.



- -> Remove brace -arrows-.



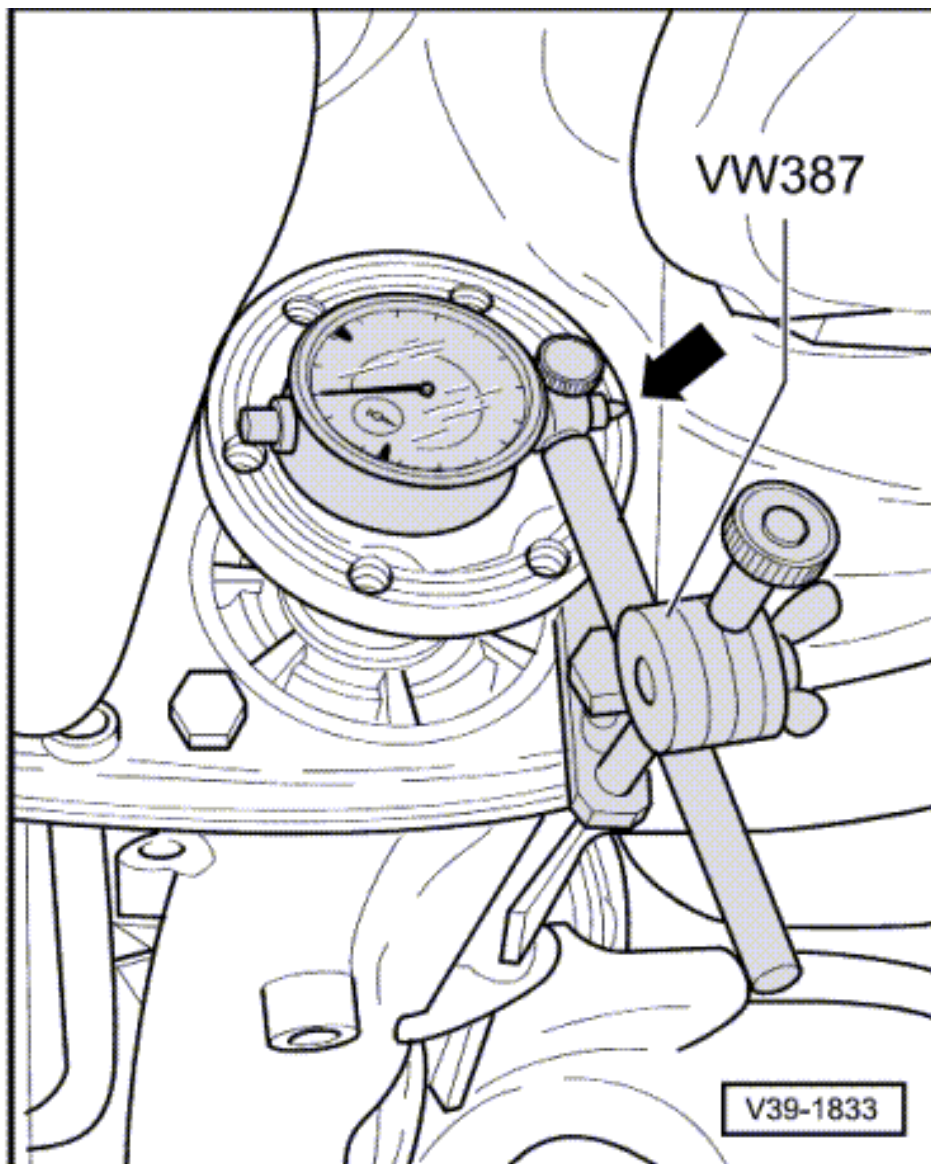
- -> Remove securing bolts for propshaft on rear final drive.
- Lift propshaft clear and tie in place.

Notes:

- ◆ Only lower the propshaft sufficiently to allow radial run-out measurements on the drive flange.
- ◆ Do not bend the propshaft more than 25 ° at the central joint, otherwise the universal joint will be damaged.



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



- -> Secure universal dial gauge retainer VW 387 with dial gauge on bolted joint of cross member/final drive.
- Position dial gauge on ground circumference in propshaft flange -arrow- and set to "0" with preload of 1 mm.
- Turn differential via both rear wheels (left and right flange shafts) in one direction until the flange on the rear final drive completes one rotation.
- Mark position of greatest radial run-out on flange exterior (corresponds to greatest distance from axis of rotation).
- Remove old mark on flange shaft.

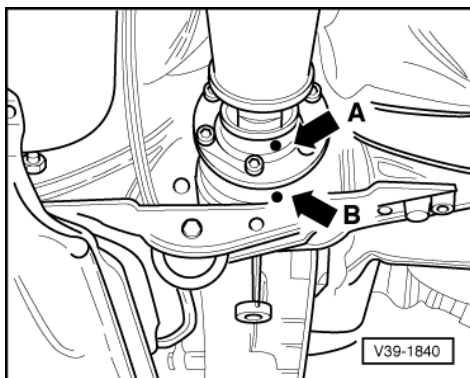
Available balancing weights (packing plates)

Select packing plates from table. Part numbers

=> Parts catalogue

Run-out (mm)	Propshaft without coloured mark or with green coloured mark		Propshaft with yellow coloured mark	
	Weight class	Weight (g)	Weight class	Weight (g)
mm				
0.00 - 0.01	4	9.2	2	7.6
0.02 - 0.03	5	10.0	3	8.4
0.04 - 0.05	6	10.8	4	9.2

Run-out (mm)	Propshaft without coloured mark or with green coloured mark		Propshaft with yellow coloured mark	
0.06 - 0.07	7	11.6	5	10.0
0.08 - 0.09	8	12.4	6	10.8
0.10 - 0.11	9	13.2	7	11.6
0.12 - 0.13	10	14.0	8	12.4
0.14 - 0.15	11	14.8	9	13.2



Note:

The propshaft balancing set consists of 3 packing plates with different coloured marks (1 yellow and 2 white packing plates).

- Install propshaft balancing set:
 - -> Bolt propshaft to rear final drive.
 - Mark on propshaft -arrow A- must align with determined radial run-out mark on final drive flange -arrow B-
 - Install determined packing plate (with yellow coloured mark) opposite largest radial run-out.
 - Distribute remaining 2 packing plates with white coloured marks (weight class 5) to remaining bolts.
- Perform remainder of installation in reverse sequence.

Note:

It is essential that the residues of locking fluid are cleaned out of the threads in the flange on the rear final drive after removing the propshaft. Otherwise there is a danger that new bolts will seize and then shear when removing them again.

- Install exhaust system tension-free.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

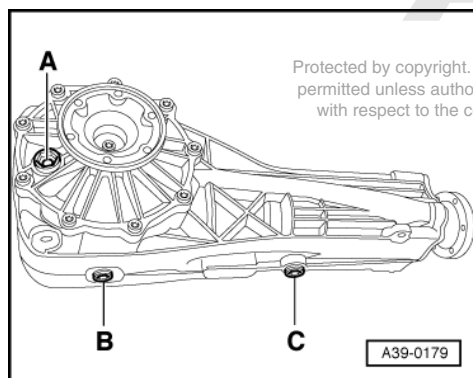


Tightening torques

Component	Nm
Propshaft to final drive (input flange) M8	55
Centre propshaft mounting to body	23
Brace to cross member	55
Cross member II to rear final drive	45
Cover for fuel tank	20

8 - Checking oil level in rear final drive

8.1 - Checking oil level in rear final drive



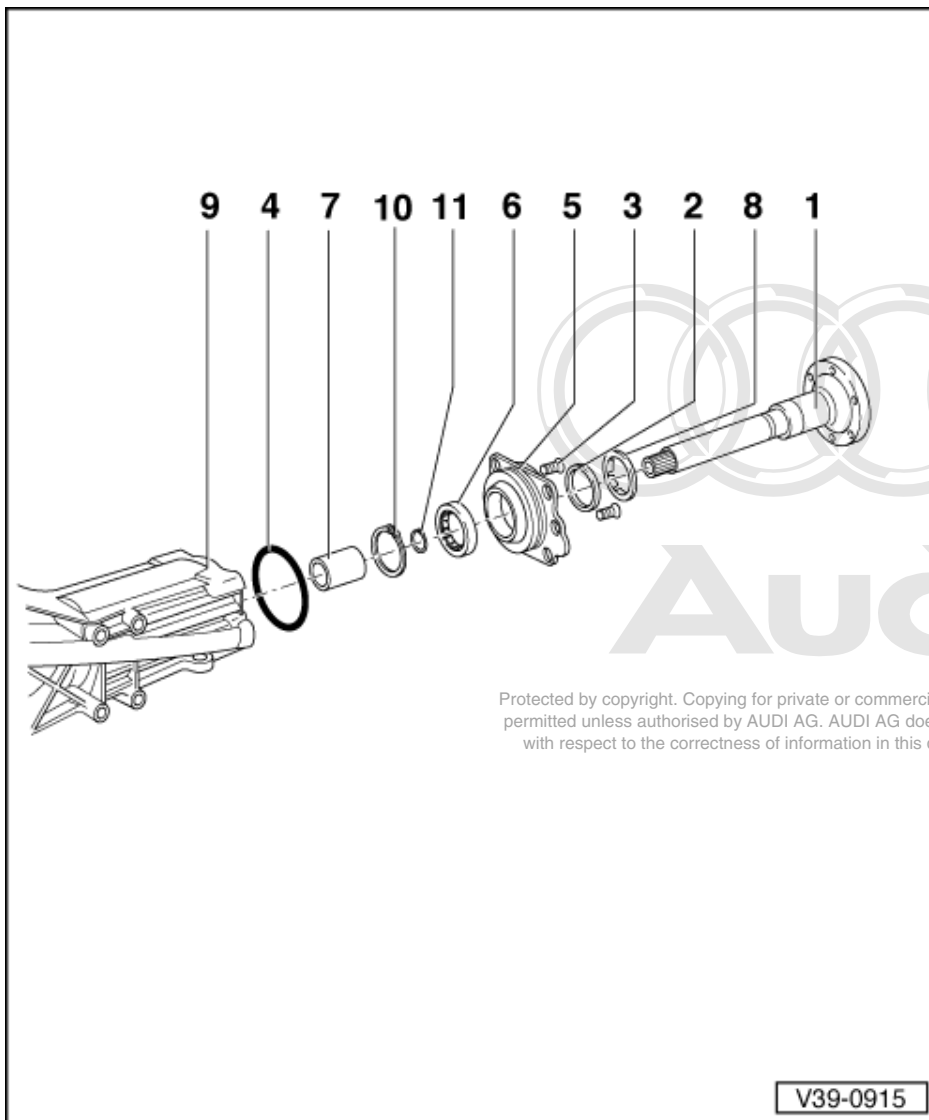
- -> Unscrew oil filler plug -arrow A-.
- Specification: oil level up to bottom lip of filler hole.
- Top up oil if necessary. Specification => page 5 .
- Screw in oil filler plug.

Tightening torque

Component	Nm
Oil filler plug	25

9 - Replacing oil seal and grooved ball bearing for propshaft flange

9.1 - Replacing oil seal and grooved ball bearing for propshaft flange



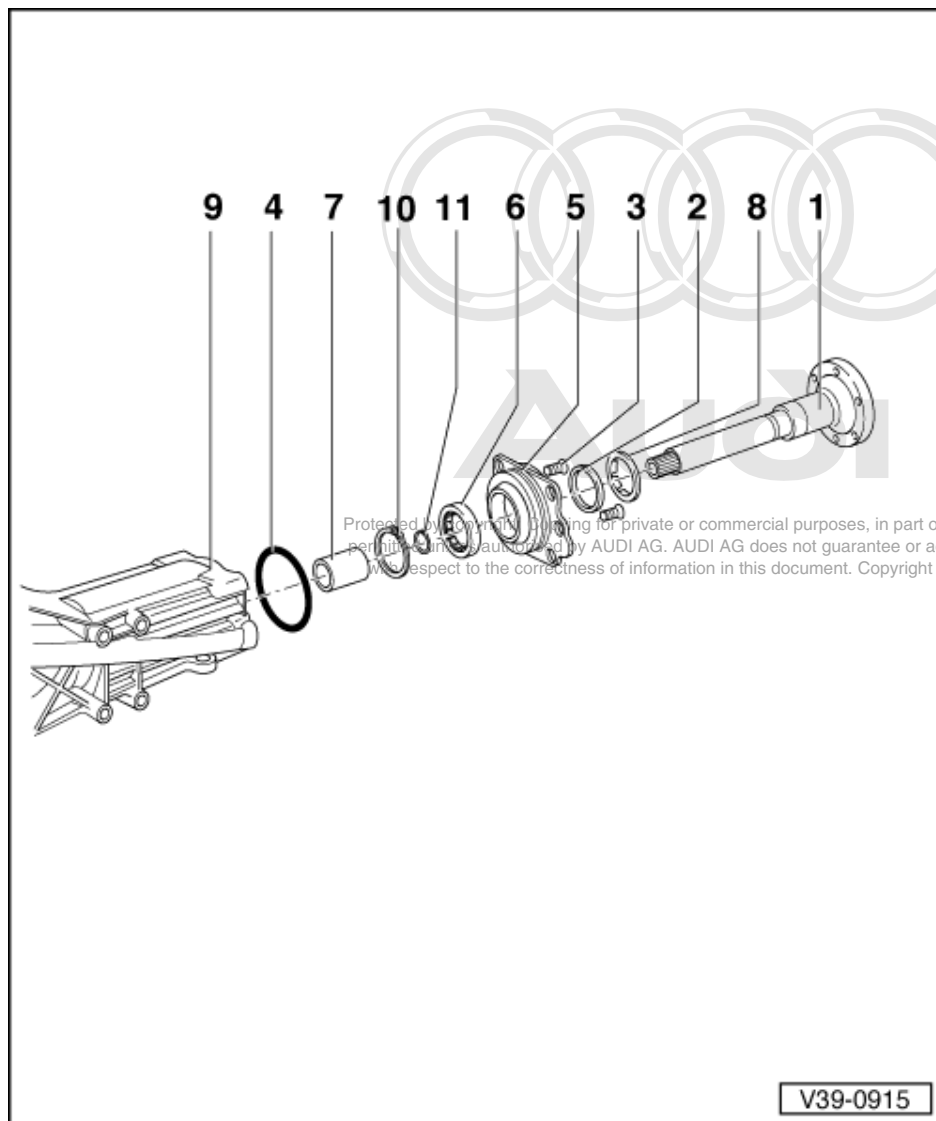
Note:

The oil seal and grooved ball bearing can be replaced with the rear final drive installed; just lower the final drive.

1 Flange shaft

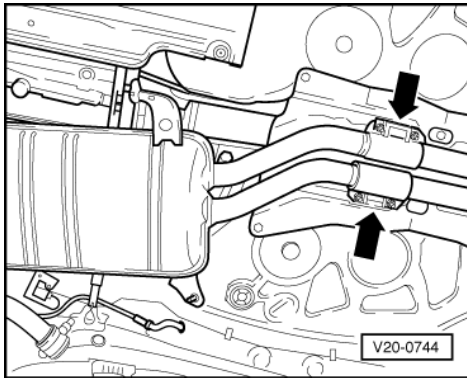
- ♦ Note position in relation to propshaft, mark if necessary
- ♦ Always renew gasket between flange shaft and propshaft by pulling off protective foil and sticking gasket onto flange shaft

2 Gasket



- 3 Countersunk bolt - 25 Nm**
- 4 O-ring**
 - ♦ Always renew
- 5 Cover**
- 6 Grooved ball bearing**
- 7 Collar**
- 8 Plastic ring**
- 9 Rear final drive housing**
- 10 Large circlip**
- 11 Small circlip**

Removing



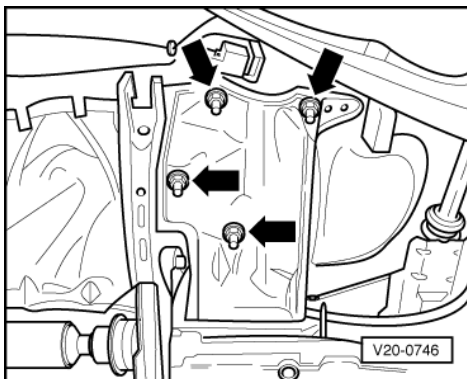
- -> Remove double pipe clamps -arrows- and remove rear section of exhaust system.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

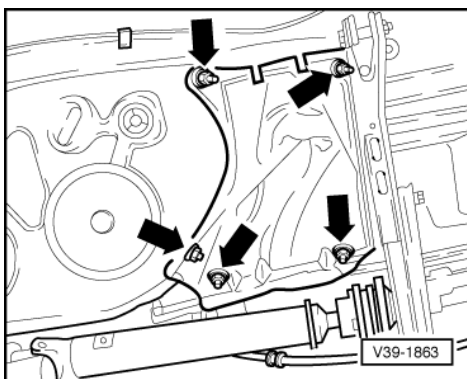
=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

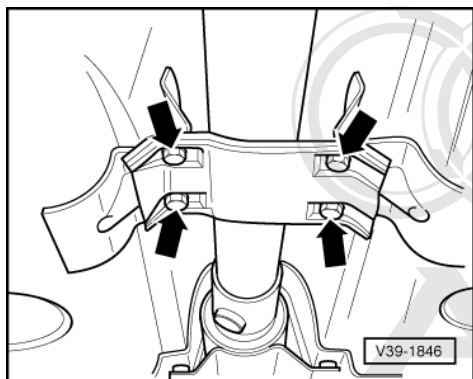


- -> Unbolt heat shield behind cross piece I -arrows-.



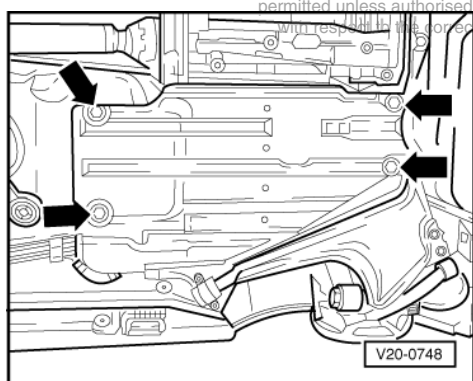
- -> Unbolt heat shield in front of cross member I

-arrows-.

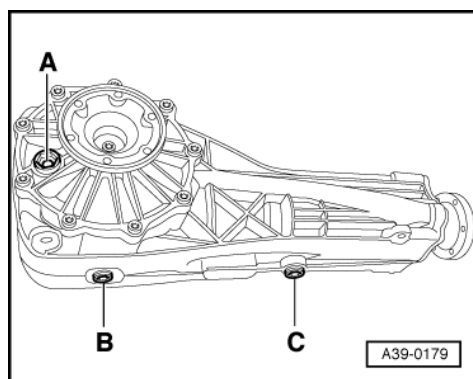


- -> Remove cross member with heat shield below propshaft -arrows-.

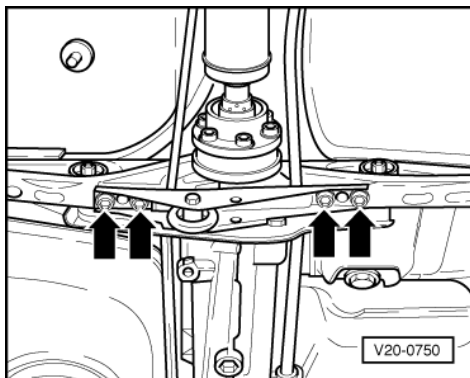
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



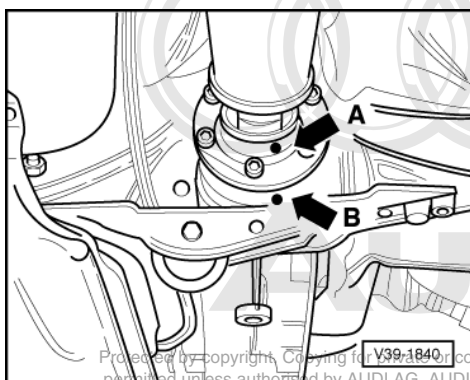
- -> Unbolt fuel tank cover panel -arrows-.



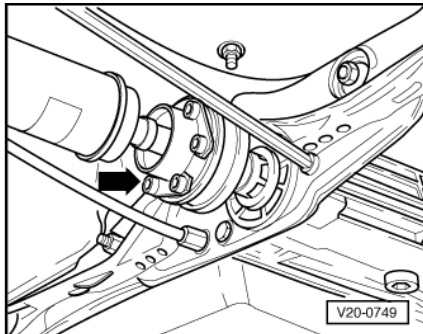
- Place drip tray underneath.
- -> Unscrew oil drain plugs -B- and -C- and drain off gear oil.



- -> Unbolt brace -arrows-.



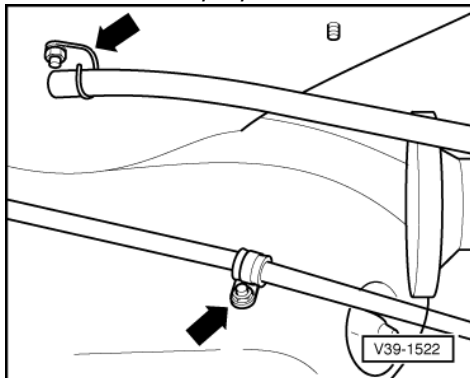
- -> If no marks are present, mark position of propshaft flange -A- relative to rear final drive -B- with coloured marking.



- -> Unscrew bolts securing propshaft to rear final drive.
- Lift propshaft clear and tie in place.

Note:

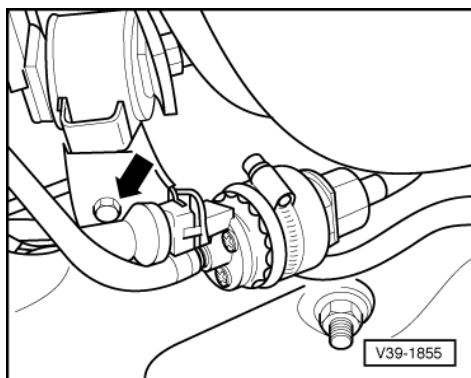
Do not bend the propshaft more than 25 °, otherwise the universal joint could be damaged.



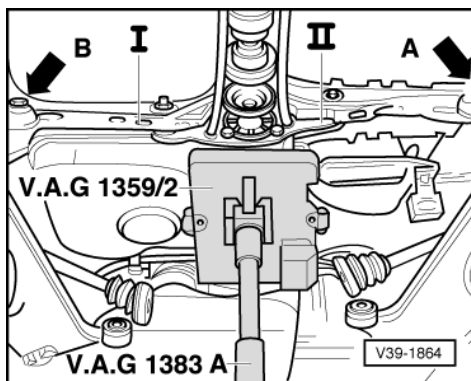


- -> Unbolt retainers for handbrake cables -arrows-.
- Slacken adjuster nut for handbrake cables and disengage cables at compensating bar

=> Running Gear, 4WD; Repair Group 46; Servicing handbrake Servicing handbrake



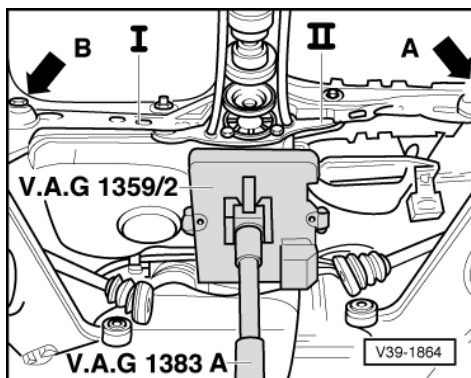
- -> Vehicles with auxiliary heater: unbolt retainer for metering pump -arrow-.



- -> Support final drive with gearbox jack V.A.G 1383 A and V.A.G 1359/2.
- Secure final drive with a strap.
- Carefully pull handbrake cables through eyes of cross member II to rear.
- Loosen bolt -arrow A- for cross member I.

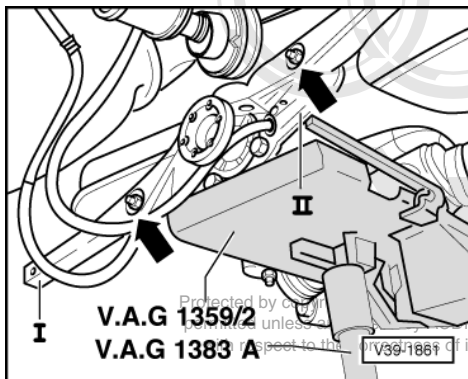
Note:

Do not slacken the bolts securing the rear final drive.

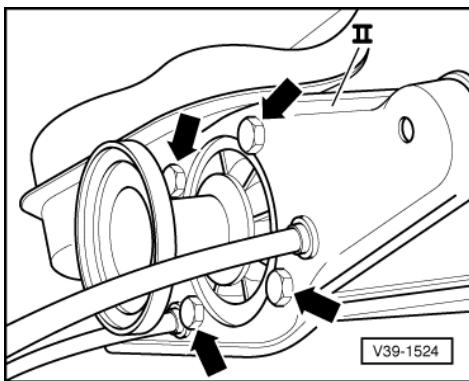


- -> Remove bolt -arrow B- for cross member I and lower final drive carefully using gearbox jack.
- Vehicles with mechanical differential lock ä 05.94: unclip wire for differential lock indicator switch from retainer (above the final drive).

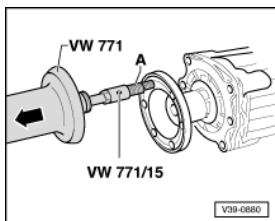
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



- -> Unbolt cross member II from cross member I
- arrows-
- Lift cross member I clear and tie in place.

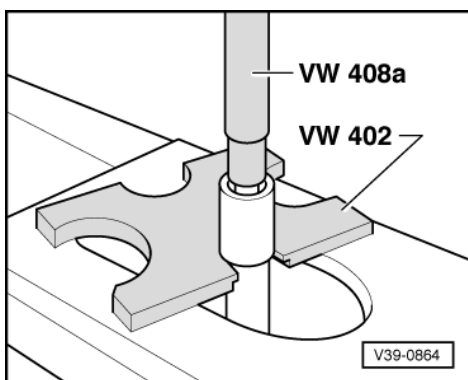


- -> Unbolt cross member II from final drive -arrows- and lift out over flange shaft of final drive.

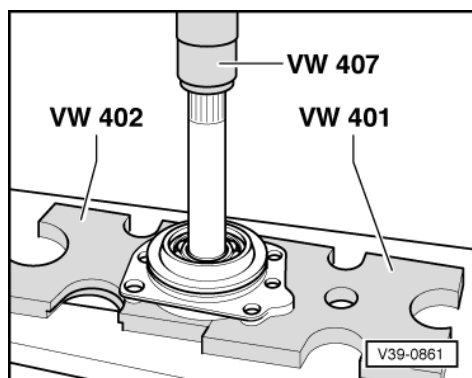


- -> Unbolt cover for final drive and pull out together with flange shaft.

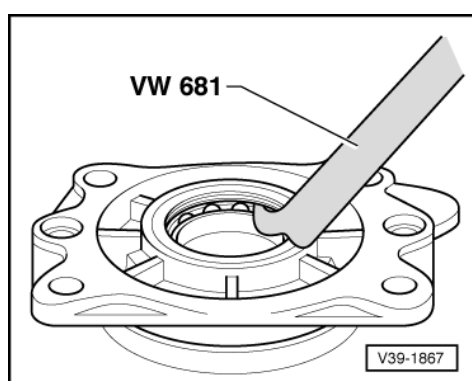
A - M8/M10 stud



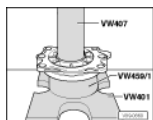
- -> Press off collar.



- Take off small circlip (in front of grooved ball bearing).
- -> Press out flange shaft.

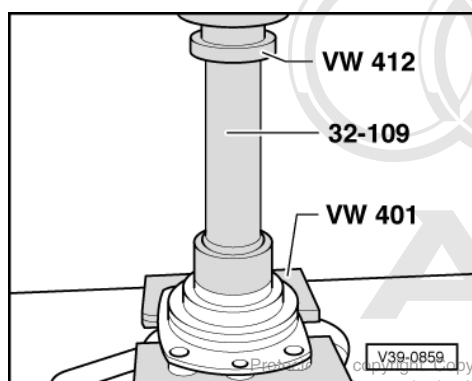


- -> Press out oil seal.
- Clean seat for oil seal.



- Remove large circlip from cover.
- -> Press out grooved ball bearing.

Installing

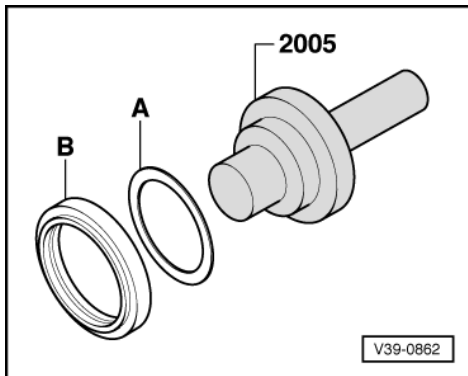


Installation is carried out in the reverse order.

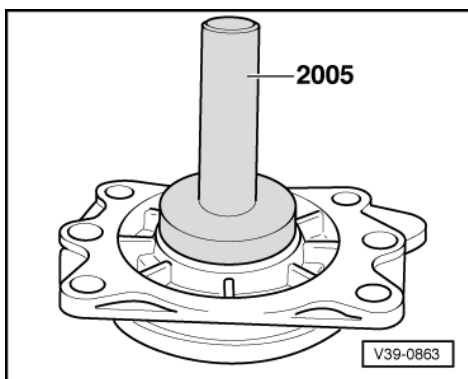
Note:

Always replace self-locking nuts and bolts.

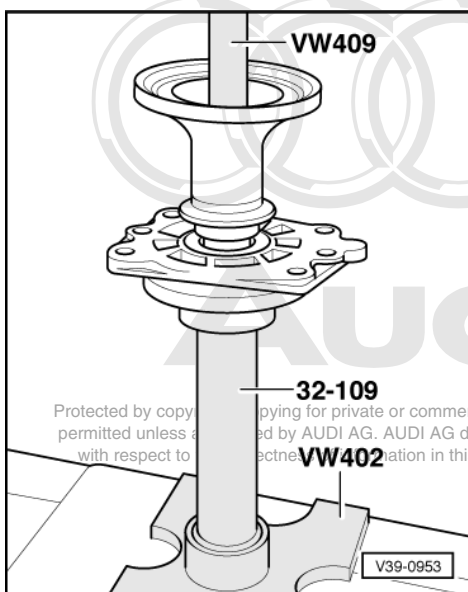
- -> Press in grooved ball bearing.
- Insert large circlip into cover.



- -> Fit new seal -B- and shim -A- Part No. 016 311 391 P (1.05 mm thick) onto punch 2005.
- Thoroughly clean seat for oil seal in cover.
- Lubricate outer circumference of seal with gear oil.

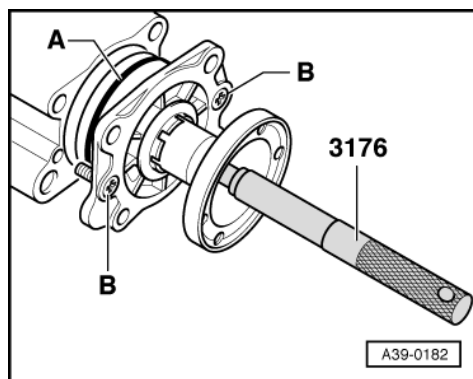


- -> Drive in flange shaft seal and shim onto stop using punch 2005.
- Fill space between sealing lip and dust lip with multi-purpose grease.

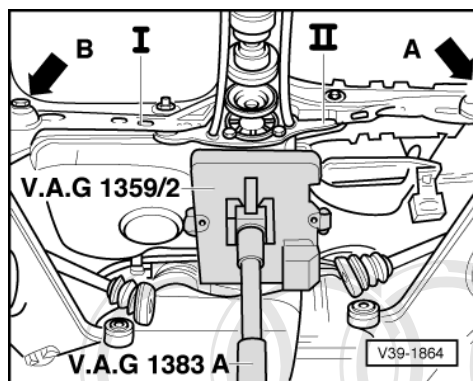


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorized by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of the information in this document. Copyright by AUDI AG.

- Fit plastic ring onto flange shaft => page 162 , -Item 8 -.
- -> Press in flange shaft.
- Fit small circlip.
- Fit collar and drive into place using plastic-headed hammer.



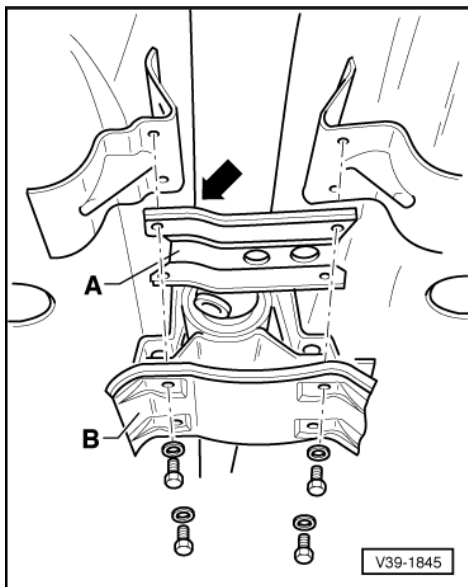
- -> Always fit new O-ring -A- and lubricate lightly before inserting.
- Drive in the flange shaft and the cover using centring mandrel 3176.
- Tighten countersunk bolts -B- to 25 Nm.



- -> Bolt cross member II onto final drive.
- Bolt cross member I onto cross member II and body.
- Vehicles with auxiliary heater: install bracket with metering pump.
- Install bracket for handbrake cables.
- Engage handbrake cables in compensating bar and adjust handbrake

=> Running Gear, 4WD; Repair Group 46; Servicing handbrake. Servicing handbrake.

- Top up gear oil in rear final drive and check oil level => page 160 .
- Measure radial run-out at flange shaft and mark position => page 172 .
- Renew gasket on flange shaft and secure propshaft. Observe notes on installing=>page 150 .
- Bolt on locking part.
- Install cover for fuel tank.



- -> Fit cross member and heat shield below propshaft.
 - The stepped edge -arrow- should be on the left (seen in direction of travel)
- Install heat shields in front of and behind cross member I.
- Install exhaust system free of stress

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

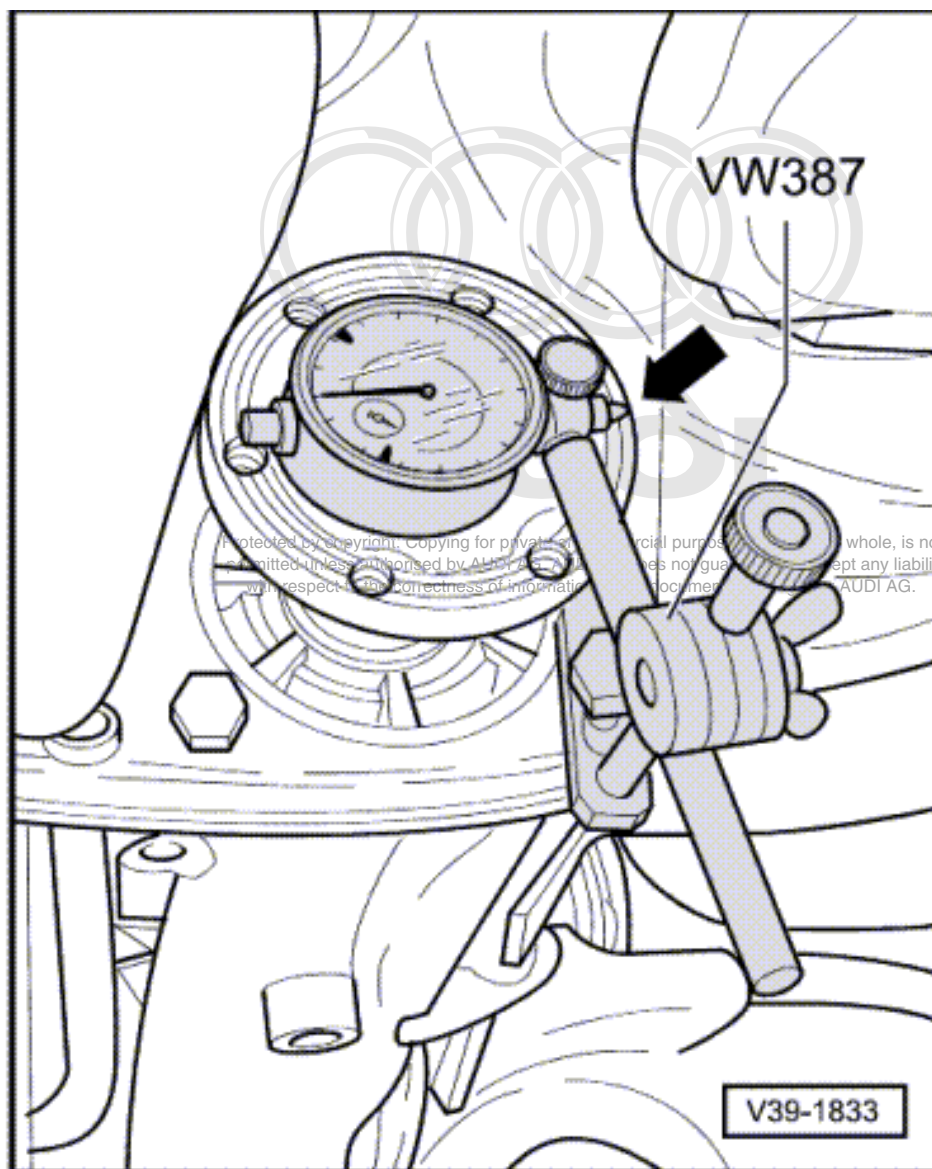
Tightening torques

Component	Nm
Oil drain plug/ oil filler plug	25
Cover to rear final drive	25
Cross-piece II to rear final drive	45
Cross-piece I to cross member II	45
Cross-piece I to body	45
Brace to cross member I	55
Metering pump retainer to body 1)	25
Propshaft to flange shaft M8	55
Fuel tank cover panel to body	20
Cross-piece and heat shield to body	25
Double pipe clamp to exhaust system	40

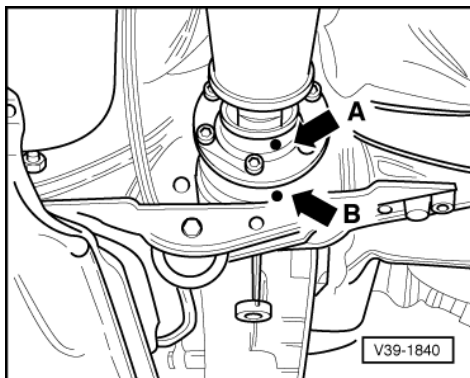
1) Vehicles with auxiliary heater

9.2 - Measuring and marking radial run-out at flange for propshaft

Notes:



- ◆ The radial run-out at the flange shaft must always be measured if the flange shaft has been removed.
- ◆ The radial run-out can be measured when rear final drive is installed but the propshaft must be disconnected at rear final drive.
Observe notes => page 147 .
- -> Secure universal dial gauge retainer VW 387 with dial gauge to cross member/final drive bolted joint.
- Position dial gauge on ground circumference -arrow- in propshaft flange and set to "0" with a preload of 1 mm.
- Turn differential via both rear wheels (left and right flange shaft) at same time in one direction until the propshaft flange has turned once completely.
- Mark the position of greatest radial run-out on flange exterior (equates to greatest distance from rotational axis).

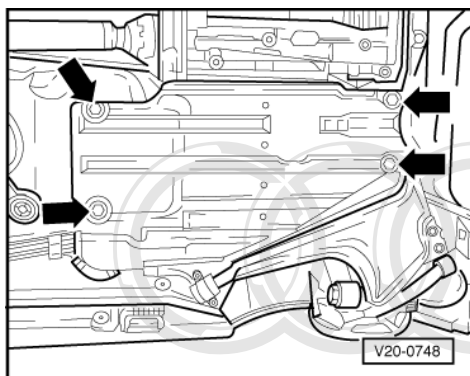


- Remove old mark on flange shaft.
- -> Install propshaft.
 - Mark on propshaft joint -A- must align with new mark on flange shaft -B-
- Observe notes on installing propshaft
=>page 150 .

10 - Removing and installing oil seals for flange shafts

10.1 - Removing and installing oil seals for flange shafts

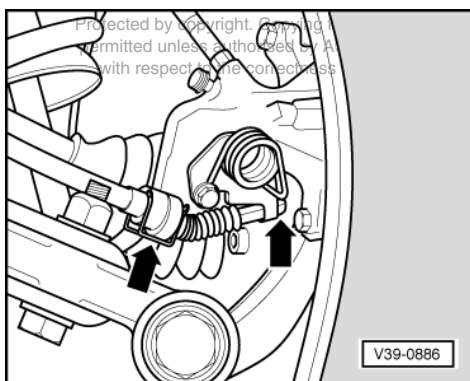
10.2 - Renewing right flange shaft oil seal



- Rear final drive installed

Removing

- -> Unbolt fuel tank cover panel -arrows-.

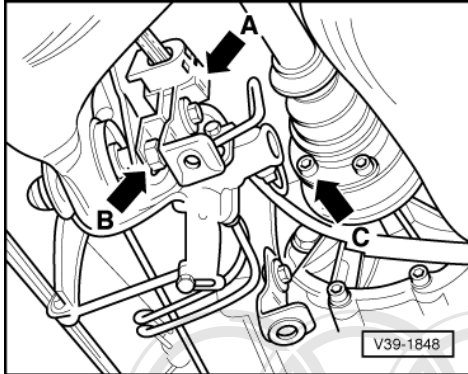


Protected by Copyright. Copying, reproduction, or distribution for commercial purposes, in part or in whole, is not permitted unless authorized by Audi AG. Audi AG does not guarantee or accept any liability for the content of this document. Copyright by AUDI AG.

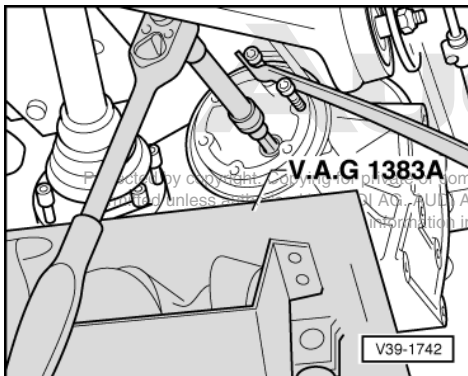
- -> Disengage handbrake cable at right brake caliper
-arrows-.

Note:

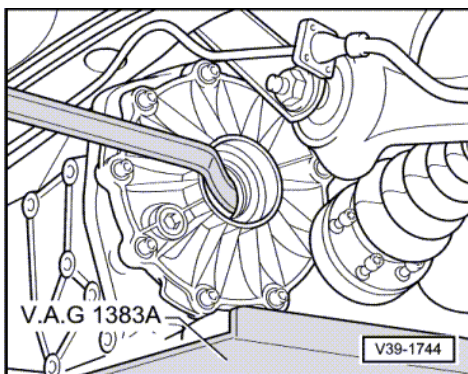
When detaching the handbrake cable, make sure the plastic sleeve on the cable is not damaged.



- -> Push handbrake cable out of retainer -arrow A-.
- Unbolt trapezoidal link from cross member -arrow B- and lower carefully using gearbox support V.A.G 1383 A.
- Disconnect drive shaft from flanged shaft -arrow C- and set down.



- -> Remove flange shaft. To loosen the securing bolt, screw two bolts into flange shaft and brace with a suitable lever.
- Place oil drip tray underneath and pull out flange shaft.

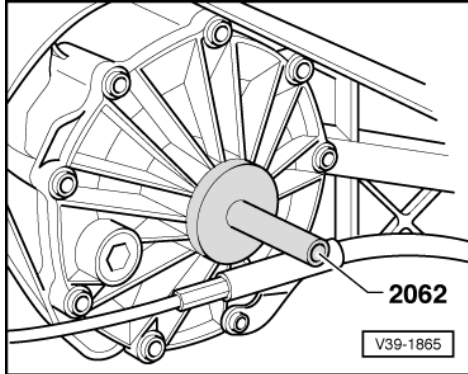


- -> Lever out flange shaft oil seal using a suitable lever.
- Clean seat for oil seal.

Installing

Installation is carried out in the reverse order, when doing this note the following.

- Lubricate outer circumference of oil seal with gear oil.
- Fill space between sealing lip and dust lip with multi-purpose grease.



- -> Install oil seal onto stop with drift 2062, do not cant seal when doing this.
- Insert drive shaft.
- Screw in cone-head bolt to secure flange shaft.
- Renew gasket between drive shaft and flange shaft by pulling off protective foil and stick gasket onto flange shaft.
- Bolt on drive shaft

=> Running Gear, 4WD; Repair Group 42; Removing and installing drive shaft, suspension strut, track control arm, wheel bearing housing, coupling link and anti-roll bar; Removing and installing drive shaft Removing and installing drive shaft, suspension strut, track control arm, wheel bearing housing, coupling link and anti-roll bar Removing and installing drive shaft

- Bolt trapezoidal link onto cross member

=> Running Gear, 4WD; Repair Group 42; Servicing trapezoidal link; Removing and installing trapezoidal link Servicing trapezoidal link Removing and installing trapezoidal link

- Hook handbrake cable onto brake caliper and push into retainer.
- Install cover for fuel tank.
- Top-up gear oil in rear final drive and check oil level => page 160.

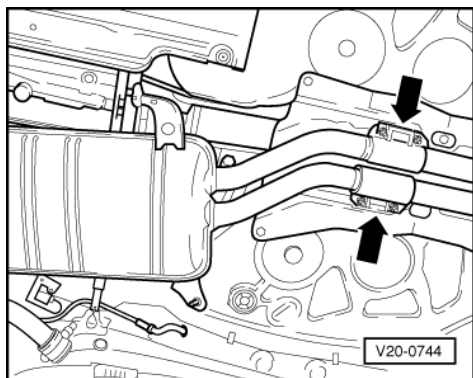
This document is not to be copied or reproduced for commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

Tightening torques

Component	Nm
Flange shaft to final drive M8	10 + 90°
Drive shaft to flange shaft M10	80
Trapezoidal link to cross member	85 2)
Cover plate for fuel tank to body	20

- 1) 90° is a quarter turn
- 2) Replace self-locking nuts

10.3 - Renewing left flange shaft oil seal



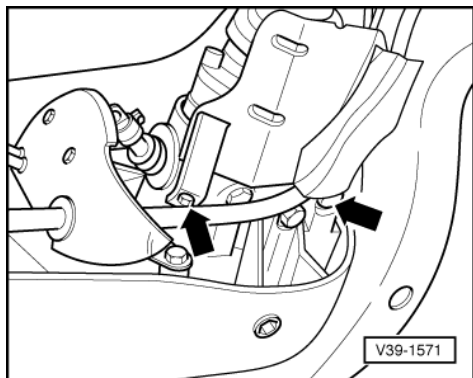
- Rear final drive installed

- -> Remove double pipe clamps -arrows- and separate exhaust system.

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

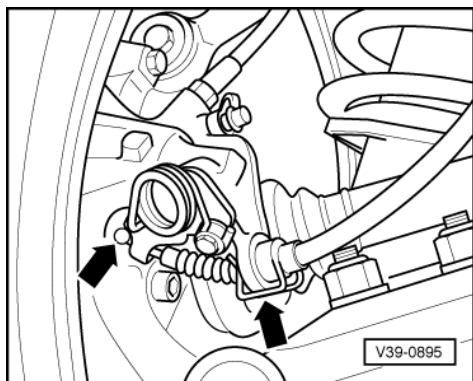
=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive



=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

- Detach main silencer and rear silencer from mounting straps.

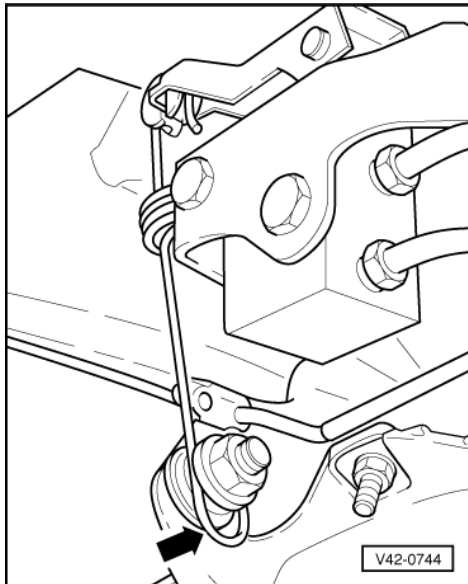
- -> Unbolt cover plate for drive shaft -arrows-.



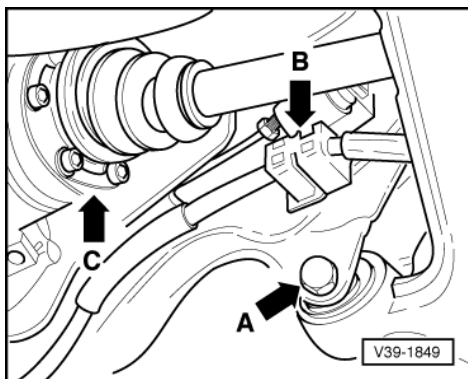
- -> Unhook handbrake cable from left brake caliper -arrows-

Note:

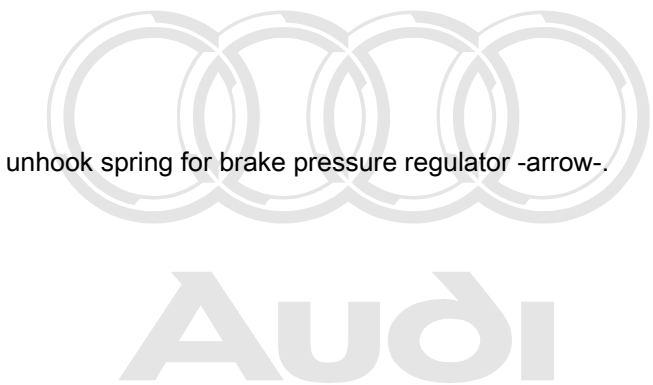
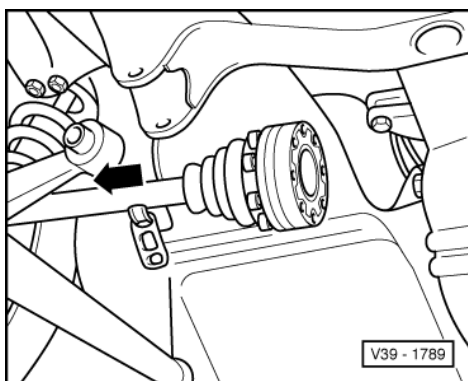
When detaching the handbrake cable, make sure the plastic sleeve on the cable is not damaged.



- -> Vehicles without self-levelling suspension: unhook spring for brake pressure regulator -arrow-



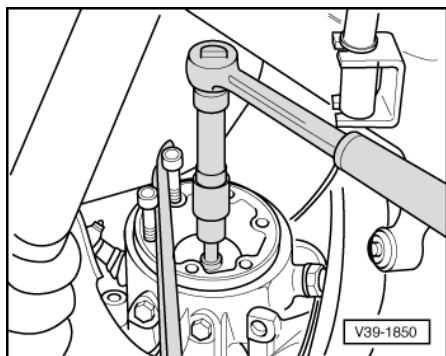
- -> Unbolt trapezoidal link from cross member -arrow A- and lower carefully using engine/gearbox jack V.A.G 1383 A.
- Push handbrake cable out of retainer -arrow B-.
- Unbolt drive shaft from flange shaft -arrow C-.



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



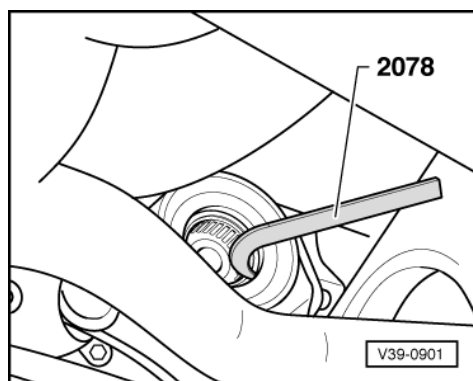
- -> Press trapezoidal link outwards -arrow- and move drive shaft down and clear.



- Place a drip tray underneath.
- -> Remove flange shaft. To loosen the securing bolt, screw two bolts into the flange shaft and brace with a lever.
- Pull out flange shaft using the bolts already screwed in.

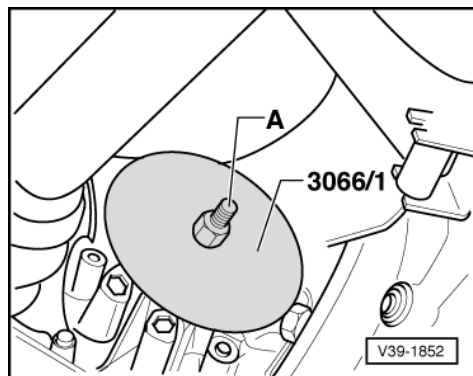
Note:

On vehicles ▶ 05.94 with mechanical differential lock, there is a shim between the flange shaft and the differential. This shim must be re-fitted when installing.



- -> Lever out flange shaft oil seal using a suitable lever.
- Clean seat for oil seal.

Installing



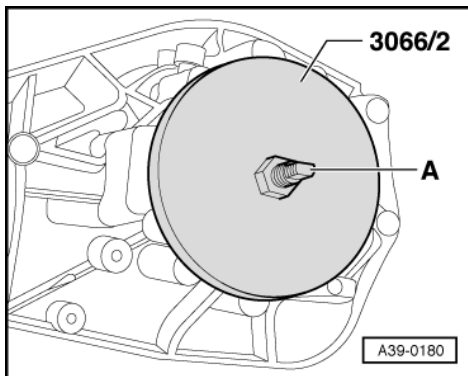
Installation is carried out in the reverse order, when doing this note the following.

- Lubricate outer circumference of seal with gear oil.
- Fill space between sealing lip and dust lip with multi-purpose grease.
- -> Screw stud -A- of assembly tool 3066 into differential.



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

Vehicles with differential lock:



- Place oil seal on thrust plate 3066/1 and install as far as stop using stud and hexagon nut from 3066.

Vehicles without differential lock:

- -> Install seal as far as stop using stud and thrust plate 3066/2.
- Insert drive shaft.

Note:

On vehicles ▶ 05.94 with mechanical differential lock, there is a shim between the flange shaft and the differential. This shim must be re-fitted when installing.

- Screw in cone-head bolt to secure flange shaft.
- Renew gasket between drive shaft and flange shaft by pulling off protective foil and stick gasket onto flange shaft.
- Bolt on drive shaft

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

=> Running Gear, 4WD; Repair Group 42; Removing and installing drive shaft, suspension strut, track control arm, wheel bearing housing, coupling link and anti-roll bar; Removing and installing drive shaft Removing and installing drive shaft, suspension strut, track control arm, wheel bearing housing, coupling link and anti-roll bar Removing and installing drive shaft

- Bolt trapezoidal link onto cross member

=> Running Gear, 4WD; Repair Group 42; Servicing trapezoidal link; Removing and installing trapezoidal link Servicing trapezoidal link Removing and installing trapezoidal link

- Vehicles without self-levelling suspension: hook in spring for brake pressure regulator.
- Adjust and check brake pressure regulator

=> Running Gear, 4WD; Repair Group 47; Testing and adjusting brake pressure regulator Testing and adjusting brake pressure regulator

- Hook handbrake cable onto brake caliper and push into retainer.
- Install cover for drive shaft.
- Top-up gear oil in rear final drive and check oil level => page 160 .
- Install exhaust system free of stress

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive



=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, Engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, Engine code ACK

Tightening torques

Component	Nm
Flange shaft to final drive M8	10 + 90°
Drive shaft to flange shaft M10	80
Trapezoidal link to cross member M12	85 2)
Cover plate for drive shaft	25
Double pipe clamp to exhaust system	40

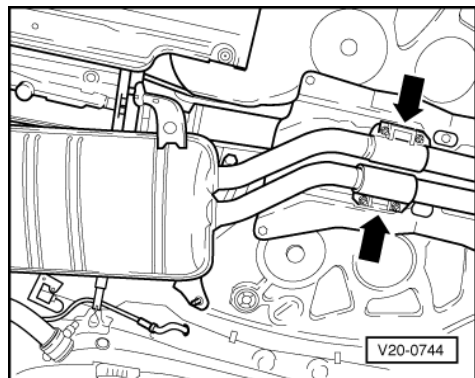
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted without the express written authorisation of AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

- 1) 90° is a quarter turn
- 2) Replace self-locking nuts

11 - Removing and installing rear final drive

11.1 - Removing and installing rear final drive

Removing



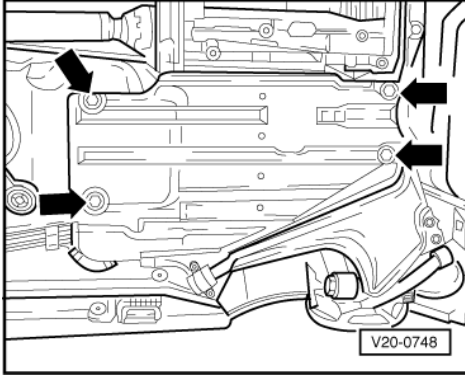
- -> Remove double pipe clamps -arrows- and remove rear section of exhaust system

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

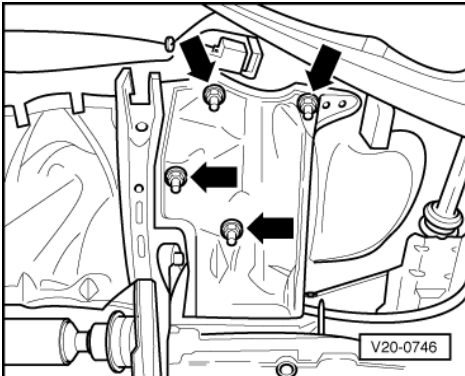
=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

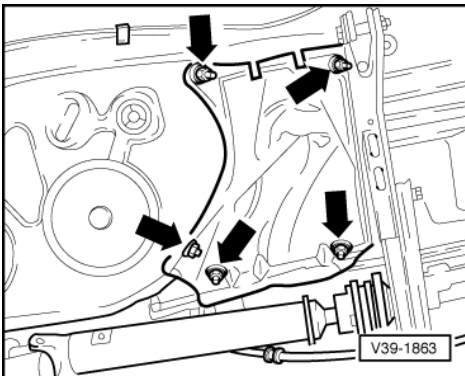
=> 6-Zylinder-Motor (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK



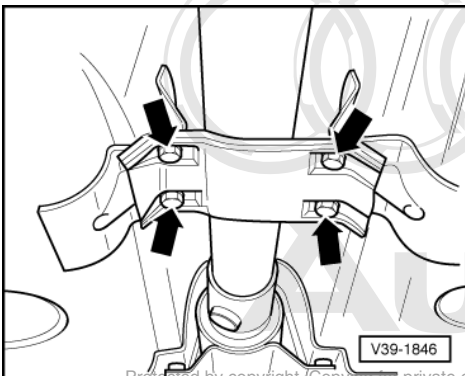
- -> Unbolt cover panel for fuel tank -arrows-.



- -> Unbolt heat shield behind cross member I -arrows-.

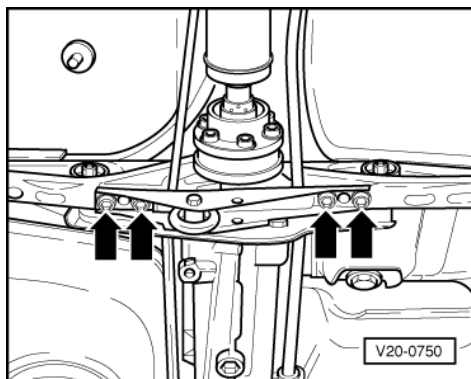


- -> Unbolt heat shield in front of cross member I -arrows-.

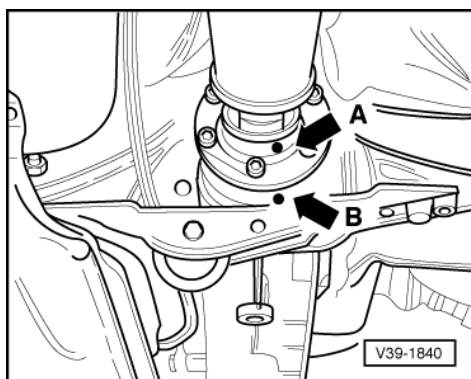


- -> Unbolt cross member (with heat shield, if fitted) below propshaft

-arrows-.



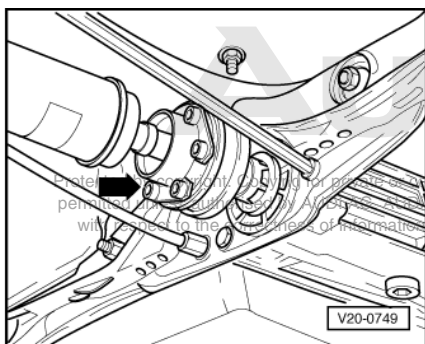
- -> Unbolt brace -arrows-.



- -> Mark position of propshaft flange -arrow A- relative to rear final drive -arrow B- with coloured mark if no mark is present.

Note:

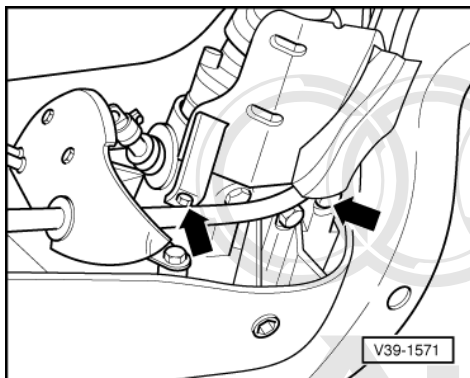
If the propshaft has been balanced, packing plates of differing thicknesses may be installed. Mark positions before removing, and re-install in the same positions.



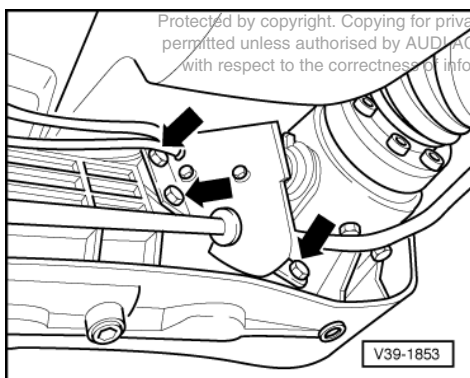
- -> Remove bolts securing propshaft to rear final drive.
 - Lift propshaft clear and tie in place.

Note:

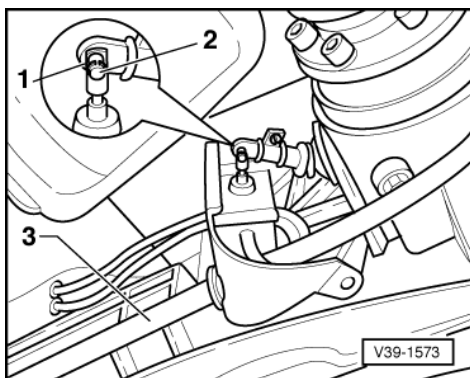
Do not bend propshaft more than 25°, otherwise the universal joint could be damaged.



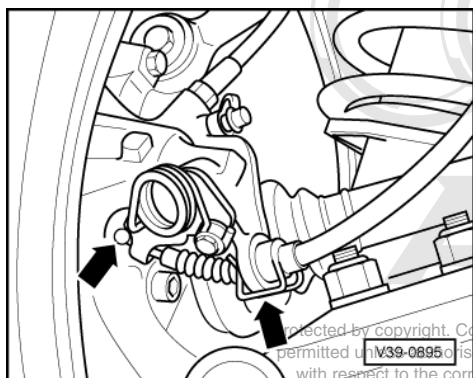
- -> Unbolt cover plate for left drive shaft -arrows-.



- -> Vehicles with mechanical differential lock ä 05.94: Unbolt bracket for vacuum unit on rear final drive - arrows-.



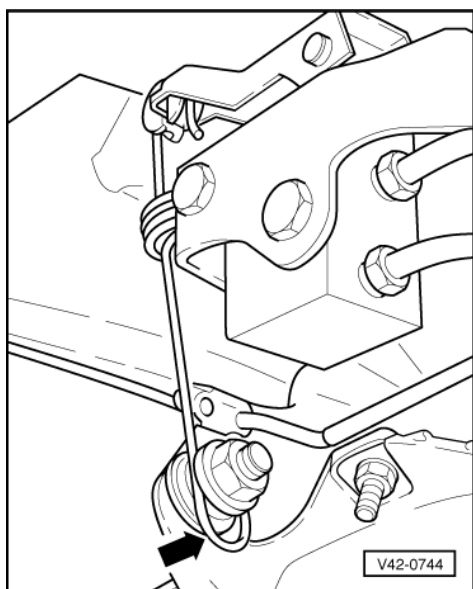
- -> Release securing clip -1-.
- Push connector pin between vacuum unit and selector fork -2- upwards.
- Pull handbrake cable -3- and rubber grommet out of retainer plate.
- Vehicles with mechanical differential lock ä 05.94: Unclip cable for differential lock warning switch.



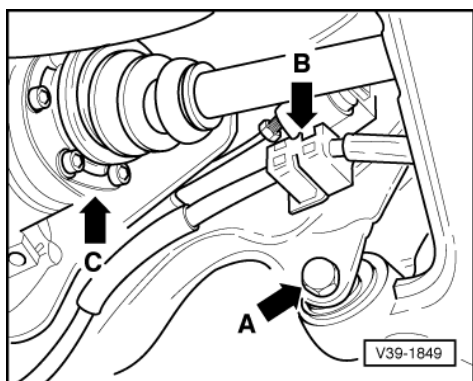
- -> Disengage handbrake cable at left brake caliper -arrows-.

Note:

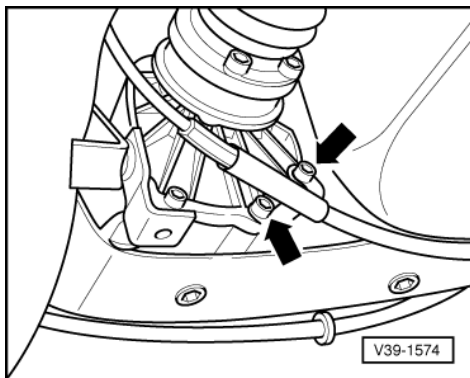
When detaching the handbrake cable, make sure the plastic sleeve on the cable is not damaged.



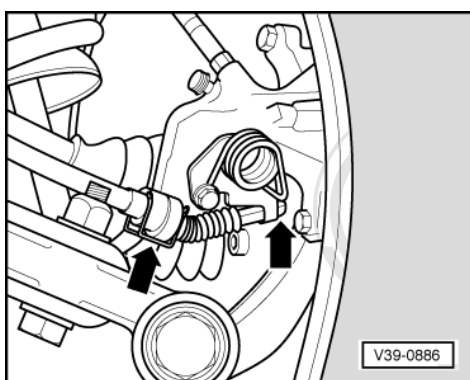
- -> Vehicles without self-levelling suspension: unhook spring for brake pressure regulator -arrow-.



- -> Push left handbrake cable out of retainer -arrow B-.
- Unbolt left drive shaft -arrow C- from flange shaft and tie up.



- -> Unbolt right-hand retainer for handbrake cable
-arrows- from rear final drive.

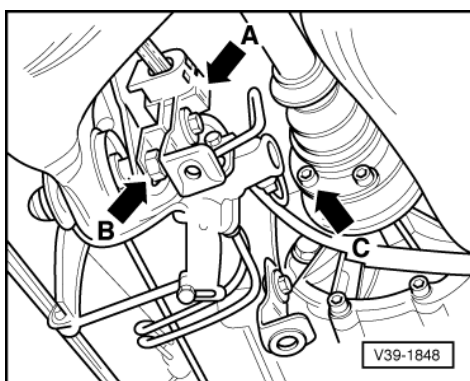


- -> Unhook handbrake cable from right brake caliper
-arrows-.

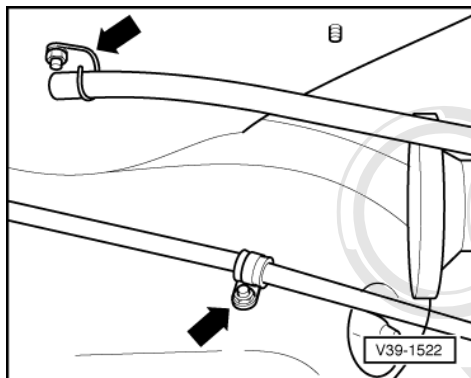
Note:

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

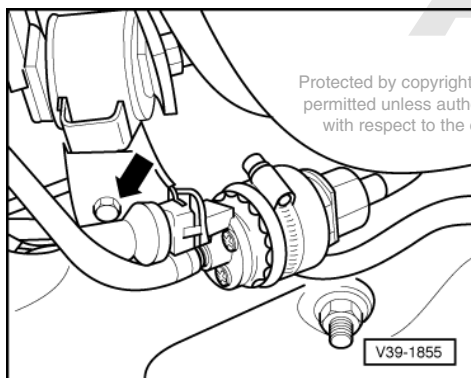
When detaching the handbrake cable, make sure the plastic sleeve on the cable is not damaged.



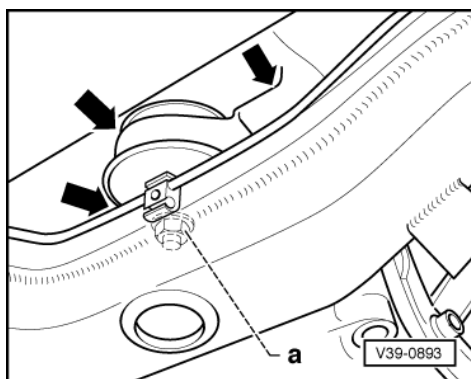
- -> Push handbrake cable out of right-hand retainer -arrow A-.
- Unbolt right drive shaft -arrow C- from flange shaft and put down.



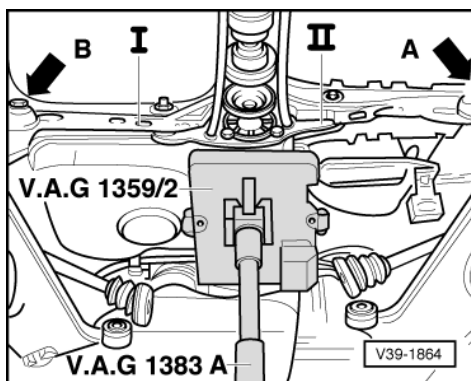
- -> Unbolt retainers for handbrake cables -arrows-.



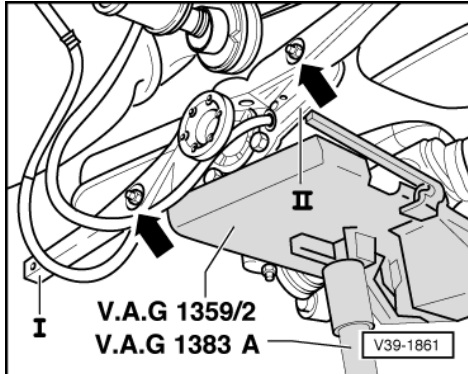
- -> Vehicles with auxiliary heater: unbolt retainer for metering pump -arrow-.



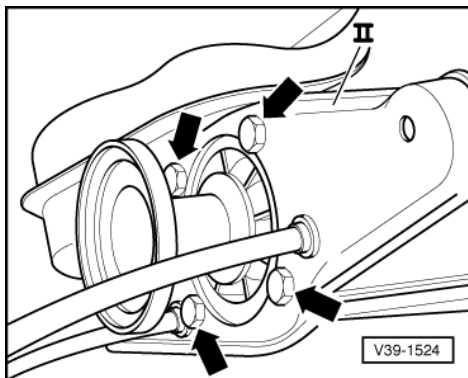
- Support final drive with gearbox support V.A.G 1383 A and V.A.G 1359/2.
- Secure final drive with a strap.
- -> Loosen nut for final drive mounting -a- on rear cross member and remove 3 bolts -arrows-.



- Carefully pull handbrake cables through eyes of cross member II to rear.
- -> Remove bolts (arrows -A- and -B-) for cross member I.
- Lower final drive slightly on gearbox jack.
- Vehicles with mechanical differential lock ä 05.94: unclip wire for differential lock indicator switch from retainer (above the final drive).



- -> Unbolt cross member I from cross member II -arrows-.
- Tie cross member I clear.

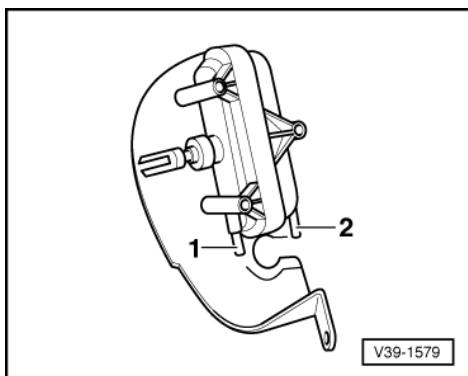


- -> Unbolt cross member II from final drive -arrows- and lift out over flange shaft of final drive.
- Pull final drive towards the front and lower slowly together with rear final drive mounting.

Note:

When lowering the final drive, pull it towards the left to clear the fuel tank.

Installing



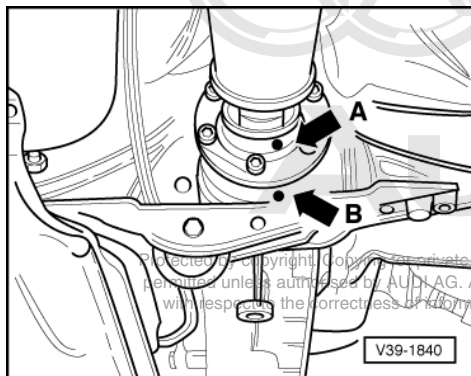


Installation is carried out in the reverse order, when doing this note the following.

- -> Colour coding of vacuum hoses:
 - Yellow hose to connection -1-
 - Blue hose to connection -2-

Notes:

- ♦ Always renew self-locking nuts.
- ♦ It is essential that the residues of locking fluid are cleaned out from the threaded holes in flange shaft on the rear final drive after removing the propshaft. Otherwise there is a danger that new bolts will seize and then shear when removing them again.



- ♦ The threaded holes can be cleaned with a thread tap.
 - ♦ Renew gaskets on flange shafts (pull off protective foil and stick onto flange shaft).
 - ♦ -> To prevent imbalance, the flanges must be installed so that the coloured marks align -arrows A and B-. Installing propshaft=>page 147 .
 - ♦ After removing the propshaft from the rear final drive, the additional balance disc (thick washer) that may be located between the base plate and the bolt head must not be reinstalled.
 - ♦ Renew propshaft bolts (self-locking).
 - ♦ Observe markings of packing plates when reinstalling.
- Top up gear oil in rear final drive and check oil level => page 160 .
 - Install exhaust system free of stress

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

=> 6-cylinder engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

Tightening torques

Component	Nm
Cross member II to rear final drive	45
Cross member I to cross member II	45
Cross member I to body	45
Final drive support/final drive mounting to rear final drive	45

Component	Nm
Final drive mounting to rear final drive	45
Brace to cross member I	55

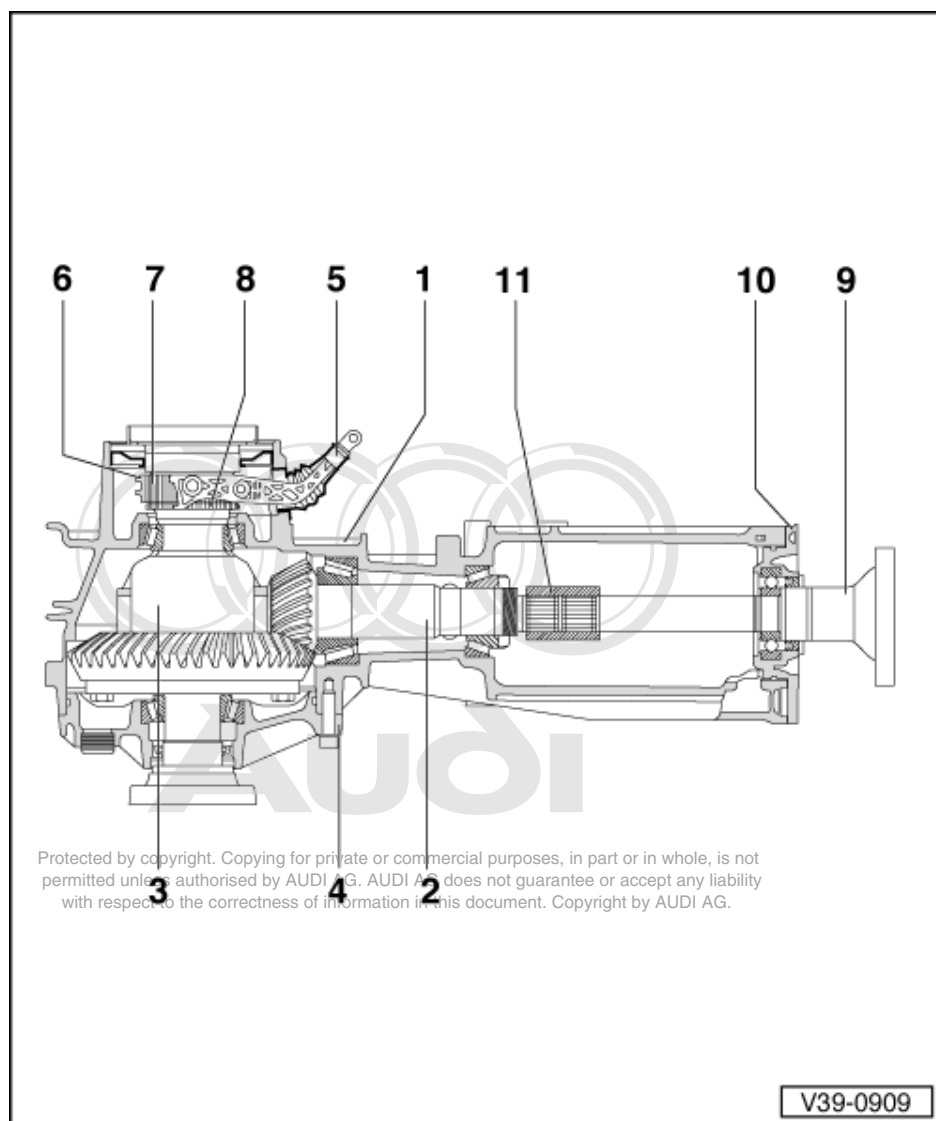
Component	Nm
Trapezoidal link to cross member M12	85 1)
Flange shaft to final drive M8	10 + 90° 2)
Drive shaft to flange shaft M10	80
Cross member and heat shield to body	25
Drive shaft cover plate to rear final drive	25
Vacuum unit bracket to rear final drive	25
Retainer for handbrake cable	25
Metering pump retainer to body 3)	25
Propshaft to rear final drive	55
Cross member and heat shield to body	25
Fuel tank cover panel to body	20
Double pipe clamp to exhaust system	40
Oil drain plug/ oil filler plug	25

- 1) Replace self-locking nuts
- 2) 90° is a quarter turn
- 3) Vehicles with auxiliary heater

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

12 - Dismantling and assembling rear final drive

12.1 - Dismantling and assembling rear final drive



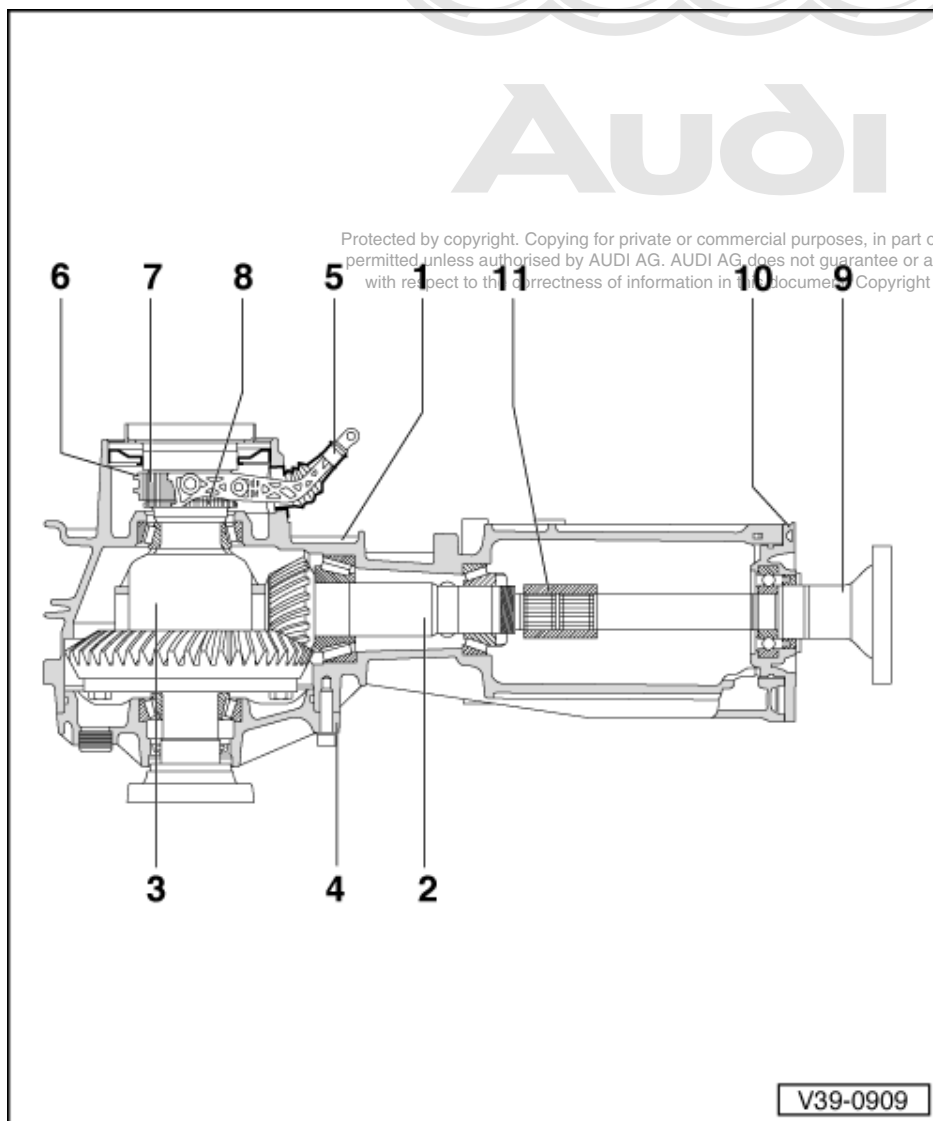
12.2 - Assembly overview

Note:

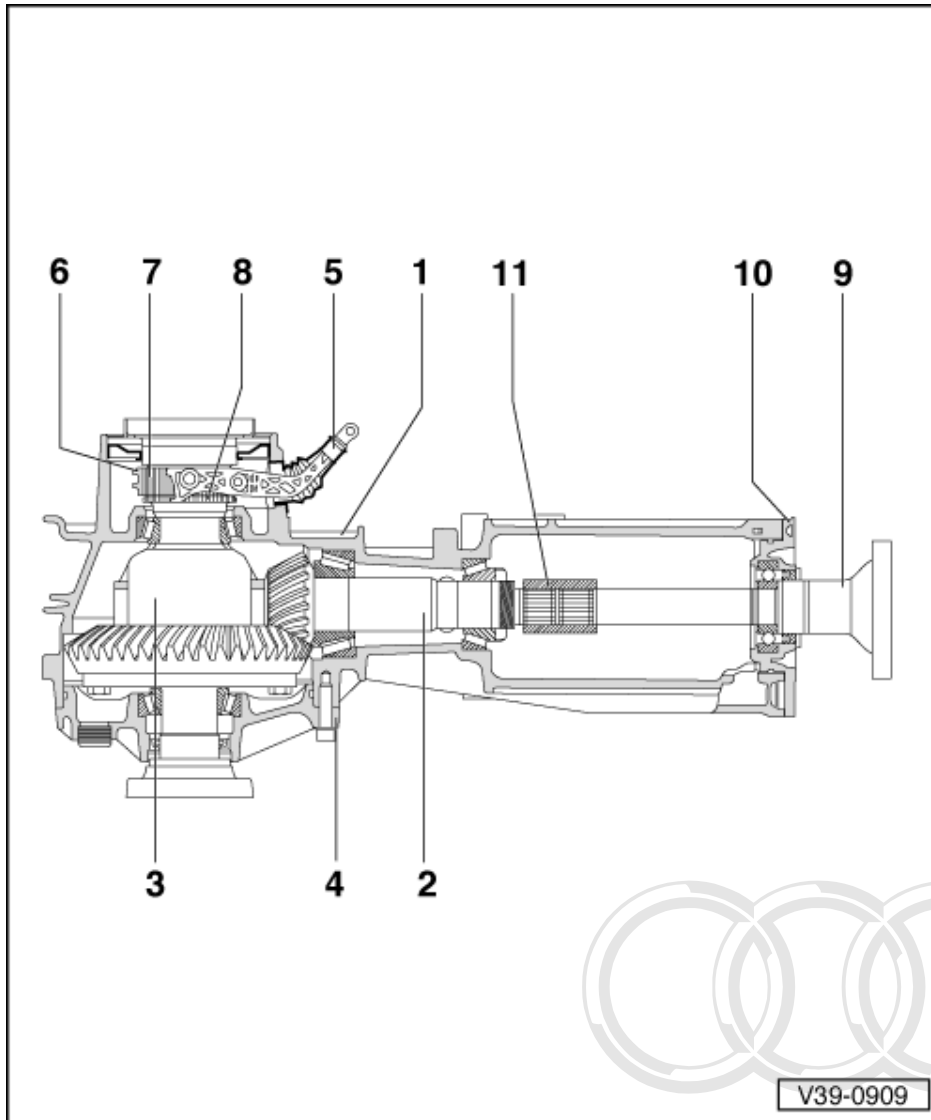
Vehicles 06.94 ➤ do not have a mechanical differential lock for the rear final drive. The following components are therefore not fitted:

- Selector fork -Item 5 -
- Locking collar -Item 6 -
- Synchro-hub -Item 7 -
- Clutch body for differential lock

-Item 8 -



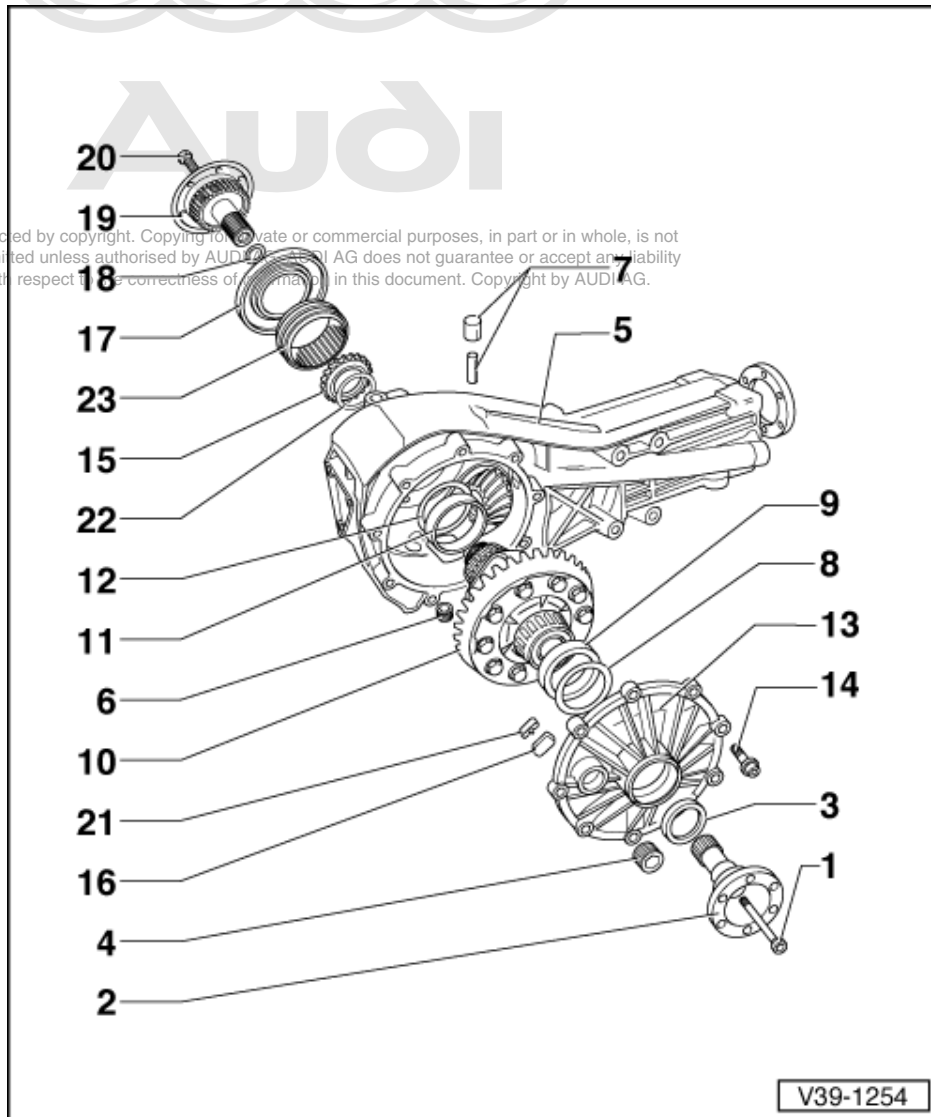
- 1 Final drive housing
- 2 Drive pinion
 - ♦ Paired with crown wheel
 - ♦ Removing and installing
=> page 215
- 3 Differential with crown wheel
 - ♦ Must be removed before dismantling drive pinion
 - ♦ Crown wheel is mated to drive pinion
 - ♦ Removing and installing
=> page 193
 - ♦ Dismantling and assembling
=> page 204
- 4 Cover for final drive



- 5 Selector fork
- 6 Locking collar
- 7 Synchro-hub
- 8 Clutch body for differential lock
- 9 Flange for propshaft
 - ◆ Removing and installing
=>page 217
- 10 Cover for final drive
- 11 Sleeve

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

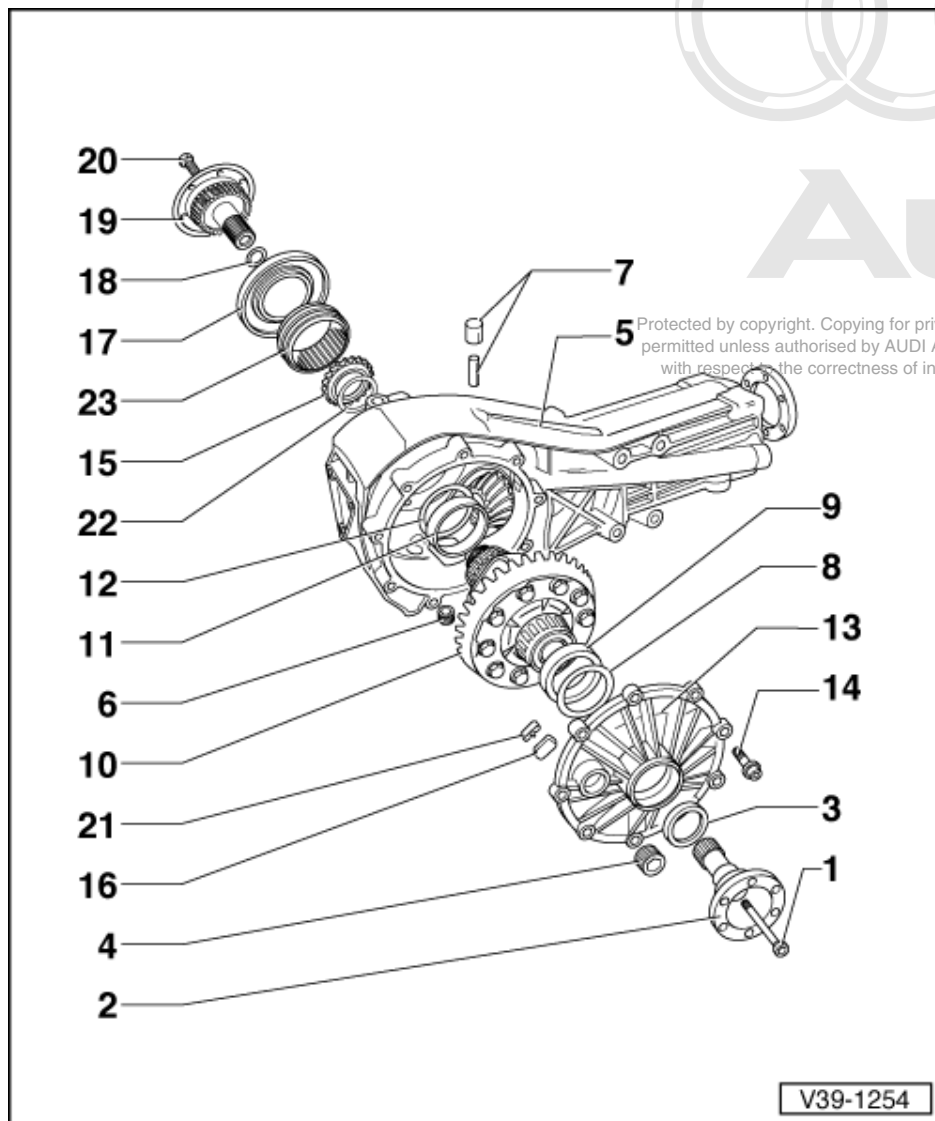
12.3 - Removing and installing differential together with differential lock



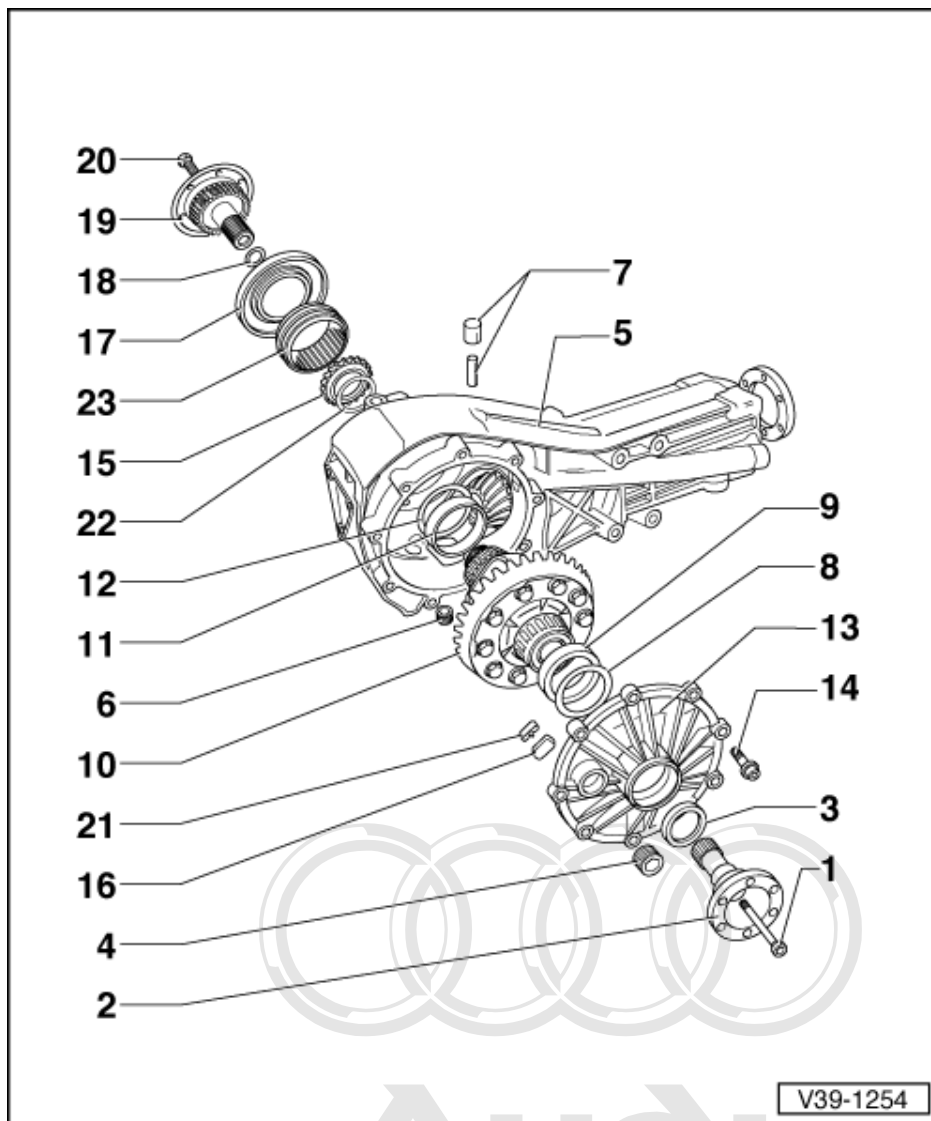
Notes:

- ◆ Secure final drive on a repair stand => page 202 .
- ◆ General repair instructions
=>page 7
- ◆ Adjustments are required when replacing components marked 1) =>adjustment overview page 239 .

- 1 Taper-head bolt M8
-10 Nm + 1/4 turn (90°) further
- 2 Flange shaft, right
 - ◆ Removing => page 203
- 3 Seal, right
 - ◆ Removing=> page 174
 - ◆ Drive in with 2062 as far as stop=>page 175



- 4 Oil filler plug - 25 Nm
- 5 Final drive housing 1)
 - ♦ With drive pinion
 - ♦ Removing and installing drive pinion => page 215
- 6 Oil drain plug - 25 Nm
- 7 Breather
 - ♦ Insertion depth=>Fig. 1
- 8 Shim "S1"
 - ♦ Note thickness
 - ♦ Adjustment overview
=>page 239
- 9 Outer race for small taper roller bearing 1)
 - ♦ Driving out and driving in
=>Fig. 214



10 Differential with crown wheel 1)

- ♦ Removing => page 202
- ♦ Dismantling and assembling
=> page 204

11 Outer race for large taper roller bearing 1)

- ♦ Removing and driving in
=> Fig. 214

12 Shim "S2"

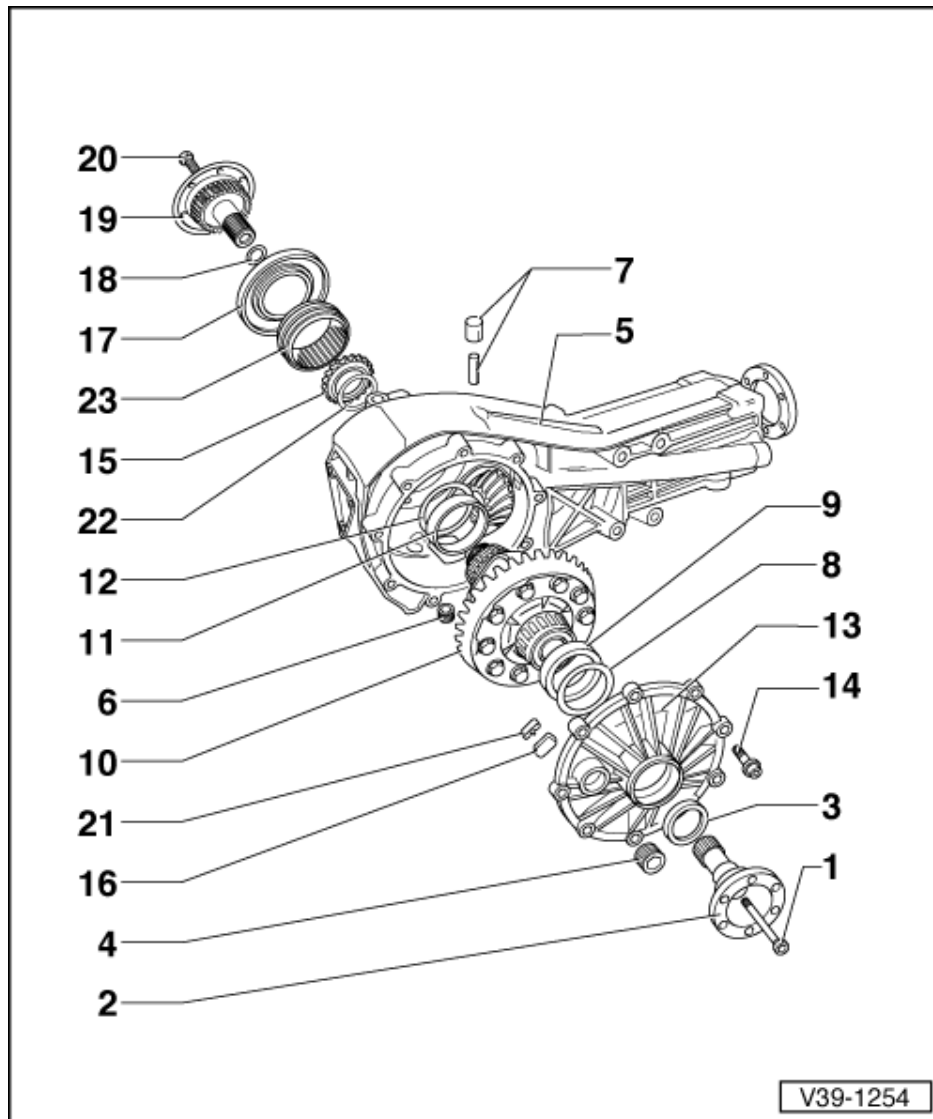
- ♦ Note thickness
- ♦ Adjustment overview
=> page 239

13 Cover for final drive 1)

- ♦ Seal with sealing paste
AMV 188 200 03
- ♦ Installation position: magnet towards the bottom

14 Bolt - 25 Nm

- ♦ Qty. 8



15 Clutch body for differential lock

- ♦ Installation position =>Fig. 236

16 Magnet

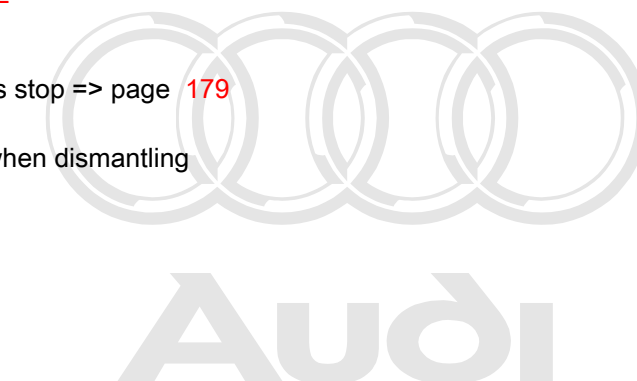
- ♦ Installation position => Fig. 2

17 Seal, left

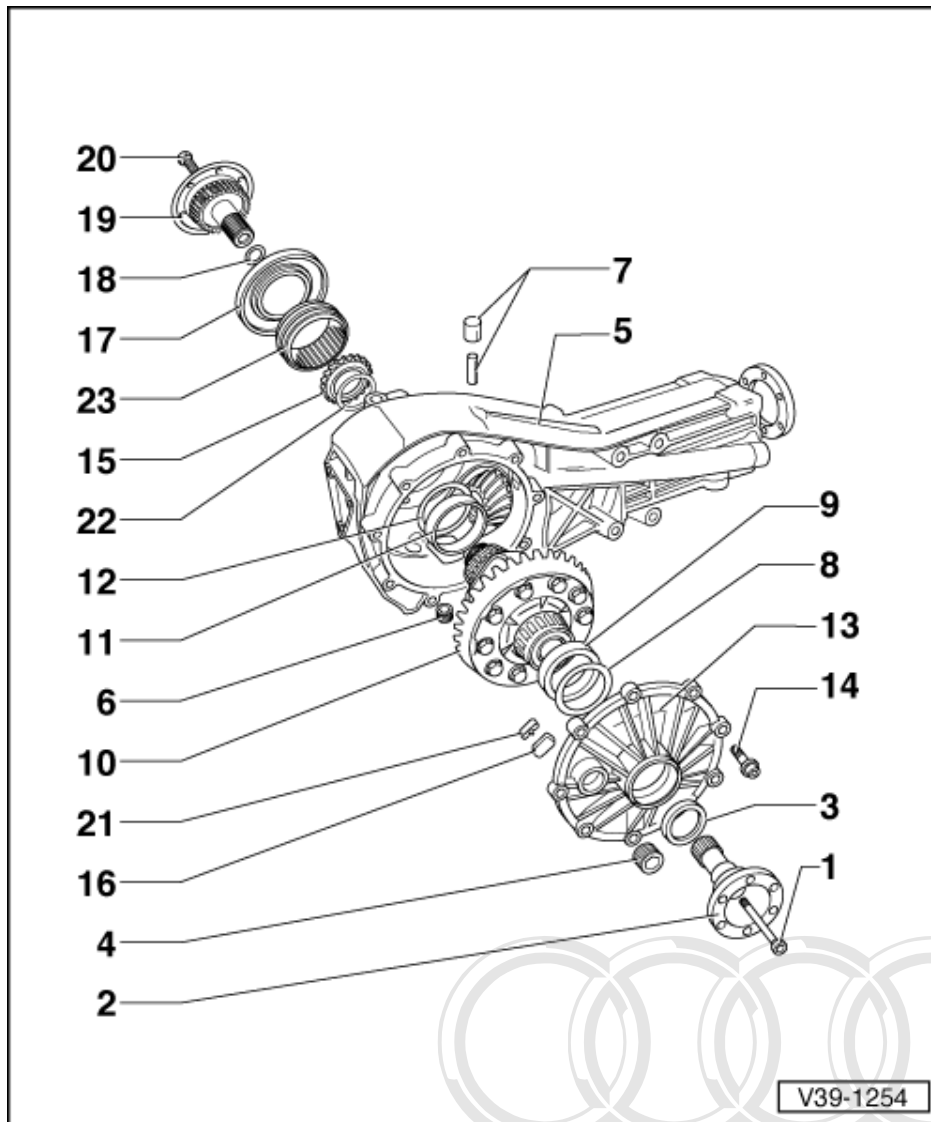
- ♦ Levering out=>page 178
- ♦ Drive in with 3066/1 as far as stop => page 179

18 Shim for flange shaft

- ♦ Take care not to lose shim when dismantling
- ♦ Determining thickness
=> page 236
- ♦ Adjustment overview
=> page 239



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



19 Flange shaft, left

- ♦ Removing => page 203
- ♦ Adjusting => page 236

20 Taper head bolt M8 - 10 Nm + 1/4 turn (90°) further

21 Clip for magnet

- ♦ Installation position => Fig. 2
- ♦ Always renew

22 Shim for clutch body

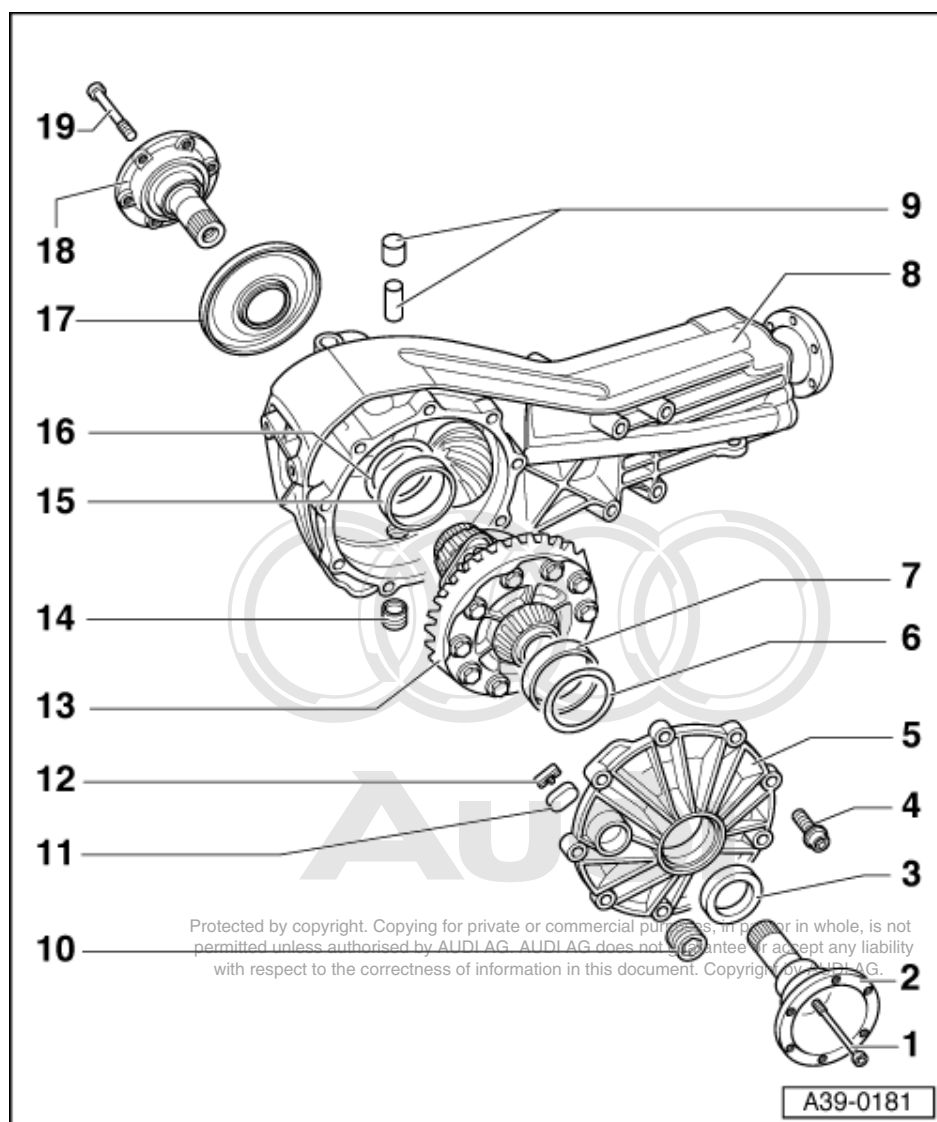
- ♦ Determining thickness
=> Fig. 236

23 Locking collar

- ♦ Installation position: shoulder towards clutch body
- ♦ Remove and install together with selector fork

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

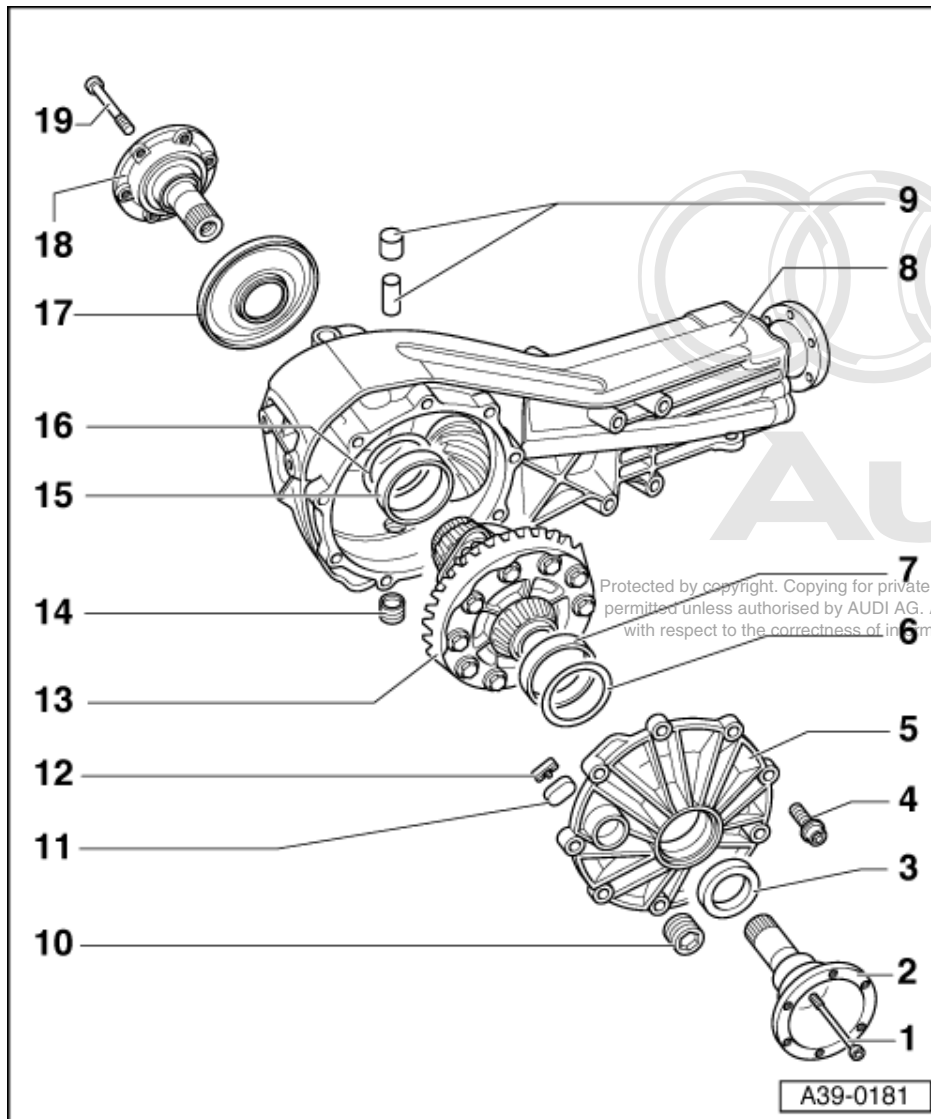
12.4 - Removing and installing differential (version without differential lock)



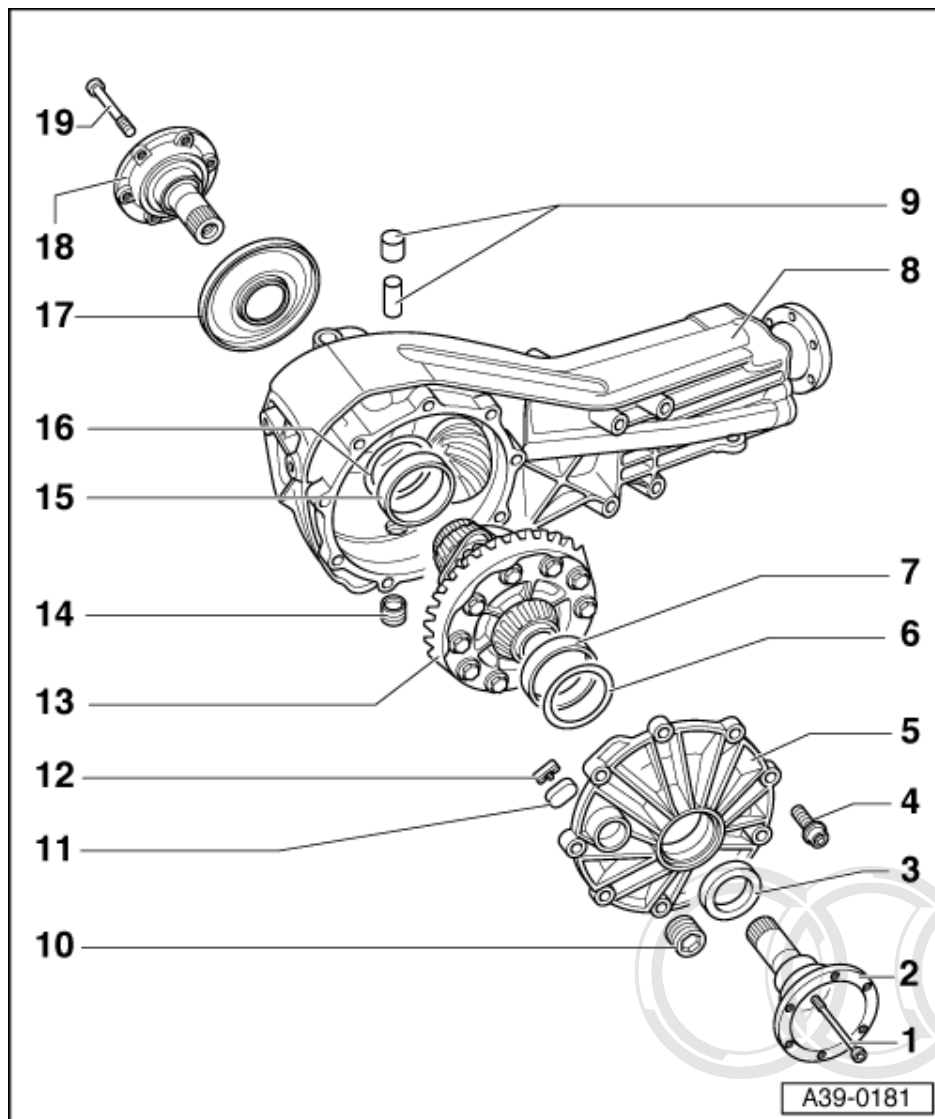
Notes:

- ♦ Clamping final drive in repair stand=>page 202 .
- ♦ General repair instructions
=>page 7
- ♦ Adjustments are required when renewing components marked 1)=>Adjustment overview page 239 .

- 1 Taper head bolt M8
10 Nm + 1/4 turn (90°) further
- 2 Flange shaft
 - ♦ Removing => page 203



- 3 Seal, right
 - ♦ Levering out=>page 174
 - ♦ Drive in with 2062 as far as stop =>page 175
- 4 Bolt - 25 Nm
- 5 Cover for final drive 1)
 - ♦ Seal with gasket paste AMV 188 200 03
 - ♦ Installation position: magnet towards the bottom
- 6 Shim "S1"
 - ♦ Note thickness
 - ♦ Adjustment overview
=>page 239
- 7 Outer race for small taper roller bearing 1)
 - ♦ Driving out and driving in
=>Fig. 214



8 Final drive housing 1)

- ◆ With drive pinion
- ◆ Removing and installing drive pinion => page 215

9 Breather

- ◆ Insertion depth=> Fig. 1

10 Oil filler plug - 25 Nm

11 Magnet

- ◆ Installation position => Fig. 2

12 Clip for magnet

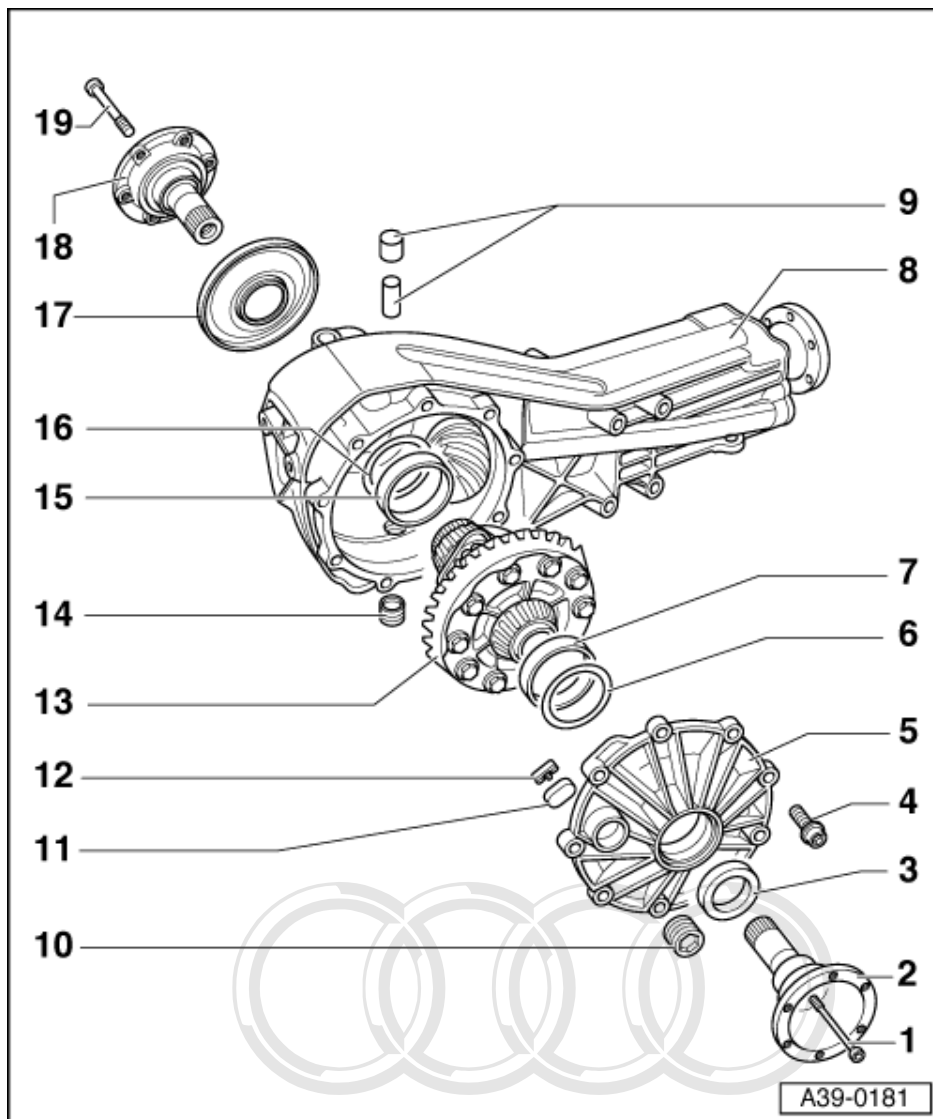
- ◆ Installation position => Fig. 2
- ◆ Always renew

13 Differential with crown wheel 1)

- ◆ Removing => page 202

14 Oil drain plug - 25 Nm

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



15 Outer race for large taper roller bearing 1)

- ♦ Driving out and driving in
=> Fig. 214

16 Shim "S2"

- ♦ Note thickness
- ♦ Adjustment overview
=>page 239

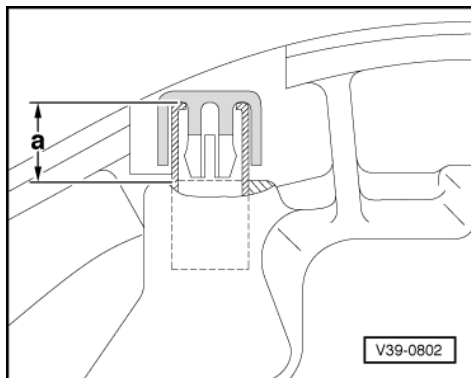
17 Seal, left

- ♦ Removing => page 173
- ♦ Drive in with 3066/2 as far as stop => page 179

18 Flange shaft

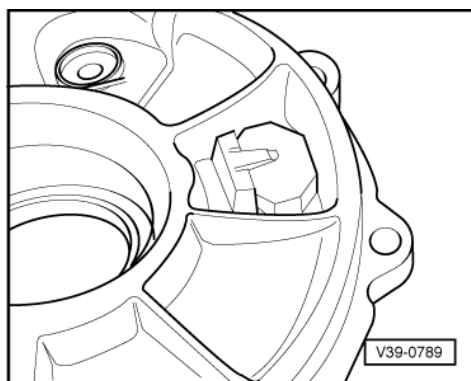
- ♦ No adjustment necessary
- ♦ Removing=>page 203
- ♦ Installing =>page 203

19 Taper-head bolt M8 - 10 Nm + 1/4 turn (90°) further



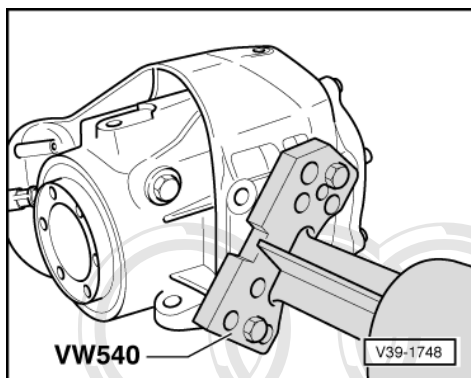
-> Fig.1 Insertion depth for breather sleeve

- ♦ Dimension a = 13 mm



-> Fig.2 Installation position of magnet

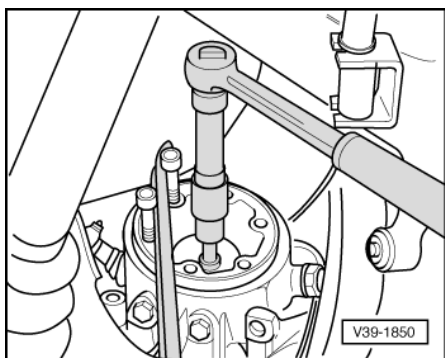
- Always fit new clip when performing repairs.



Removing

- Rear final drive removed
- -> Secure complete rear final drive on a repair stand with bracket VW 540.
- Place drip tray underneath to collect oil.
- Drain gear oil.

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



- -> Remove left and right-hand flange shafts.
- To loosen the securing bolt, screw two bolts into the flange shaft and brace with a lever.
- Mark flange shafts (left and right) and pull out.
- Remove clutch body for differential lock (if fitted) => page 230. Selector fork and locking collar do not have to be removed.
- Unscrew securing bolts from cover for final drive.
- Take cover for final drive off axle housing and remove differential.

Installing

Installation is carried out in the reverse order, when doing this note the following:

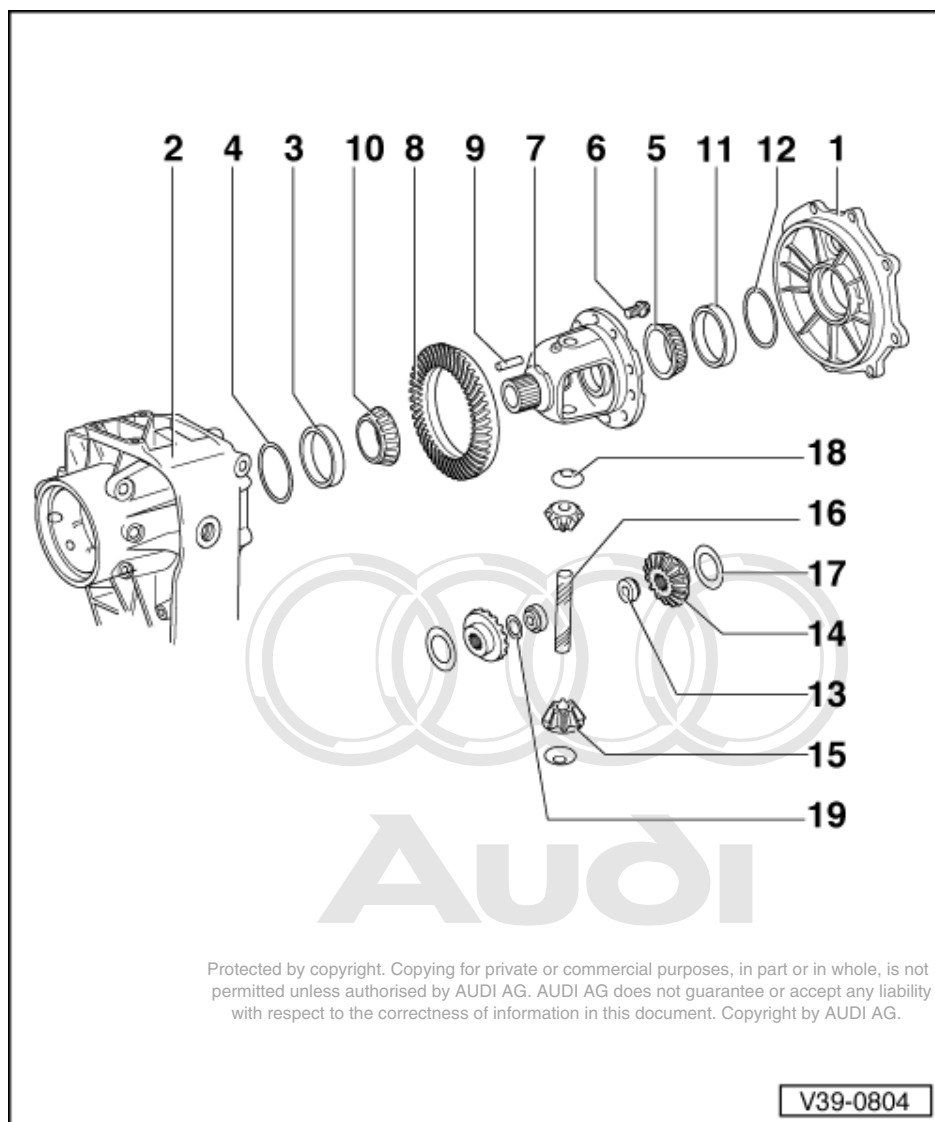
- Insert differential.
- Clean sealing surface and coat with sealing paste AMV 188 200 03.
- Fit final drive cover on axle housing and tighten bolts in diagonal sequence.
- If applicable, install clutch body for differential lock with appropriate shim => page 230.
- Fill space between sealing and dust lips with multi-purpose grease.
- Fit flange shafts and tighten.

Notes:

- ♦ On vehicles with a differential lock there is a shim between the differential and the right flange shaft => page 236.
- ♦ This adjustment is only required if the left flange shaft, the differential housing or the differential bevel gears are being replaced.
- Top up gear oil in rear final drive and check oil level => page 160.



12.5 - Dismantling and assembling differential

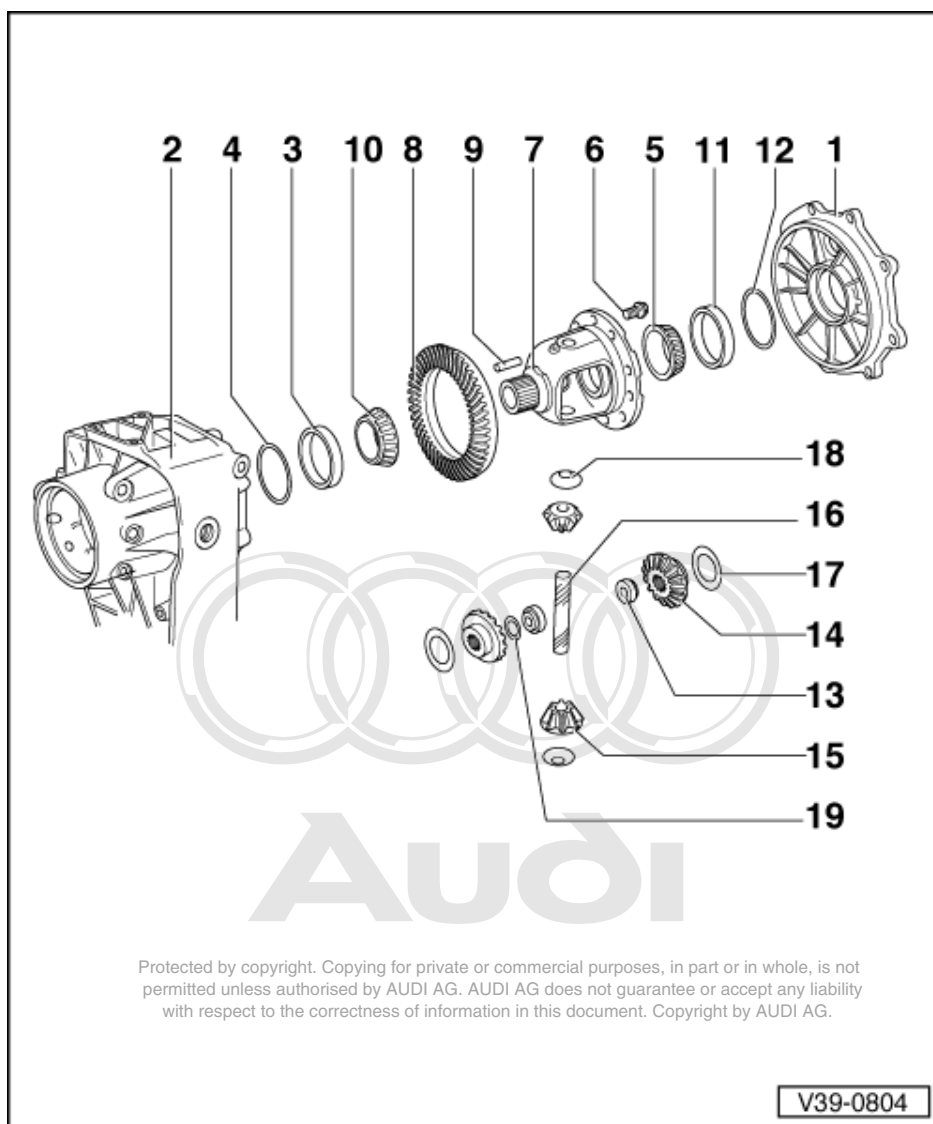


Notes:

- ♦ General repair instructions
=>page 7
- ♦ Replace both taper roller bearings of the differential together. Use same make if possible.
- ♦ Adjustments are required when replacing components marked 1) =>adjustment overview page 239 .

1 Cover for final drive 1)

2 Final drive housing 1)



3 Outer race for large taper roller bearing 1)

- ♦ Driving out => Fig. 9
- ♦ Driving in => Fig. 10

4 Shim "S2"

- ♦ Note thickness
- ♦ Adjustment overview
=> page 239

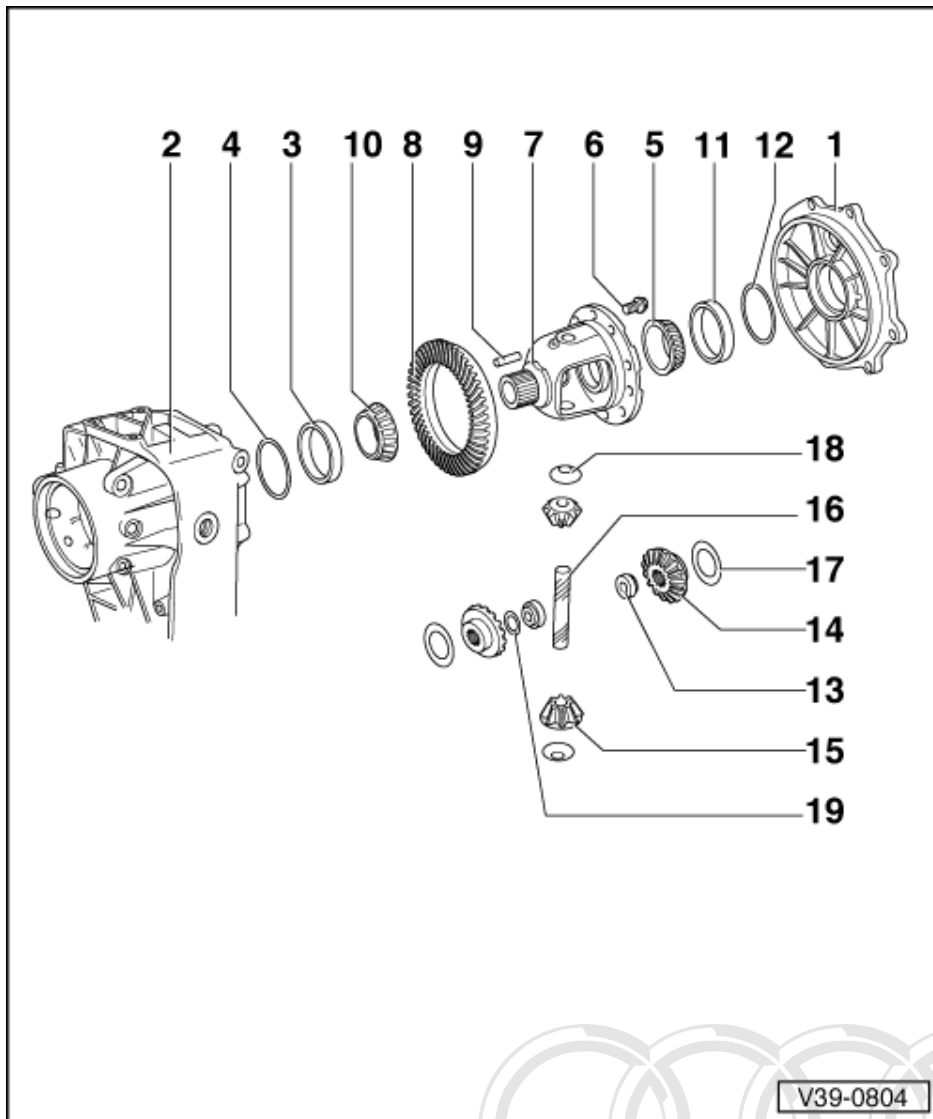
5 Inner race for small taper roller bearing 1)

- ♦ Pulling out => Fig. 2
- ♦ Pressing in => Fig. 4

6 Crown wheel bolt

- ♦ Always renew
- ♦ Use only original-make bolts
- ♦ Counter hold, then tighten using diagonal sequence to 60 Nm and then turn 45° further

V39-0804



7 Differential housing 1)

8 Crown wheel 1)

- ◆ Paired with drive pinion (final drive set)
- ◆ Drive off differential housing with a drift => Fig. 5
- ◆ Installing => Fig. 6
- ◆ Heat crown wheel to 100 °C when installing

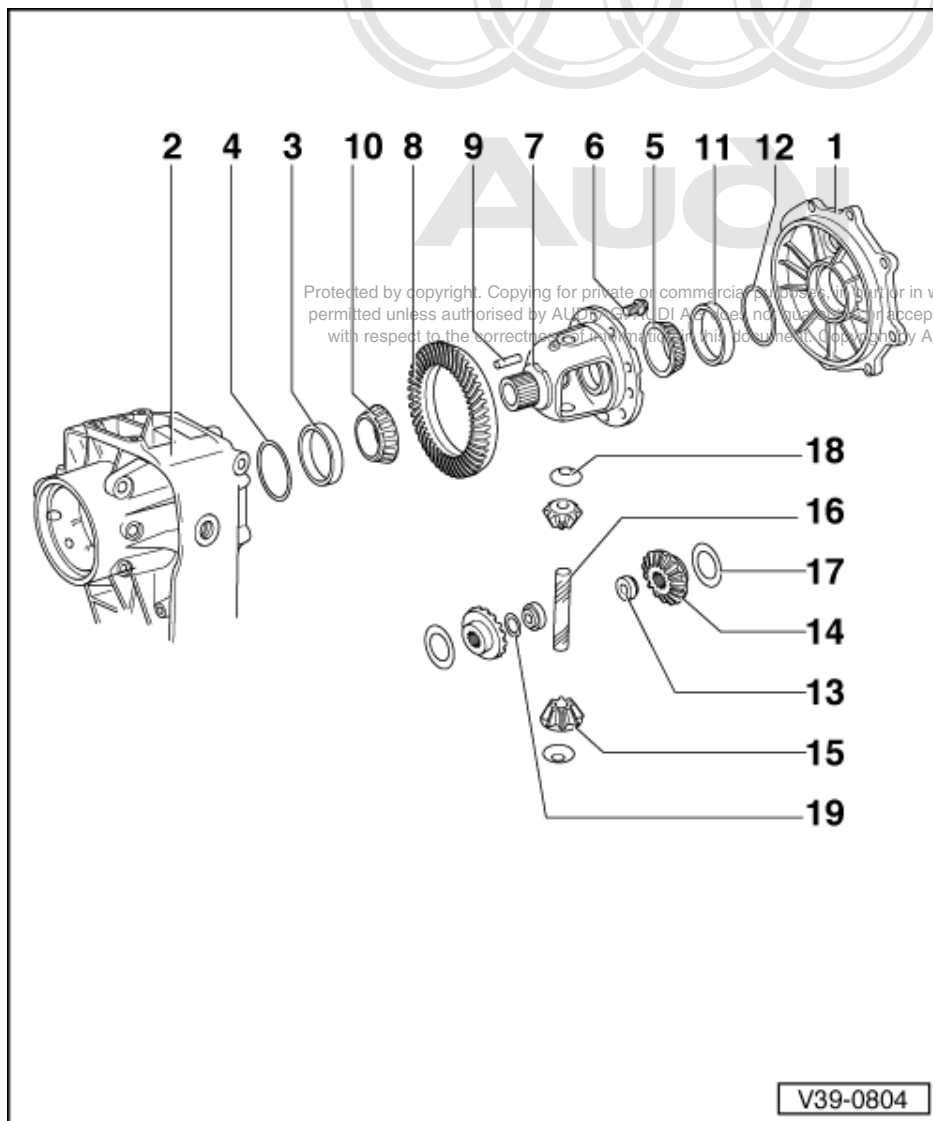
9 Spring pin

- ◆ Drive in flush

10 Inner race for large taper roller bearing 1)

- ◆ Pulling off => Fig. 1
- ◆ Pressing on => Fig. 3

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



11 Outer race for small taper roller bearing 1)

- ♦ Driving out => Fig. 11
- ♦ Pressing in => Fig. 12

12 Shim "S1"

- ♦ Note thickness
- ♦ Adjustment overview
=> page 239

13 Threaded piece

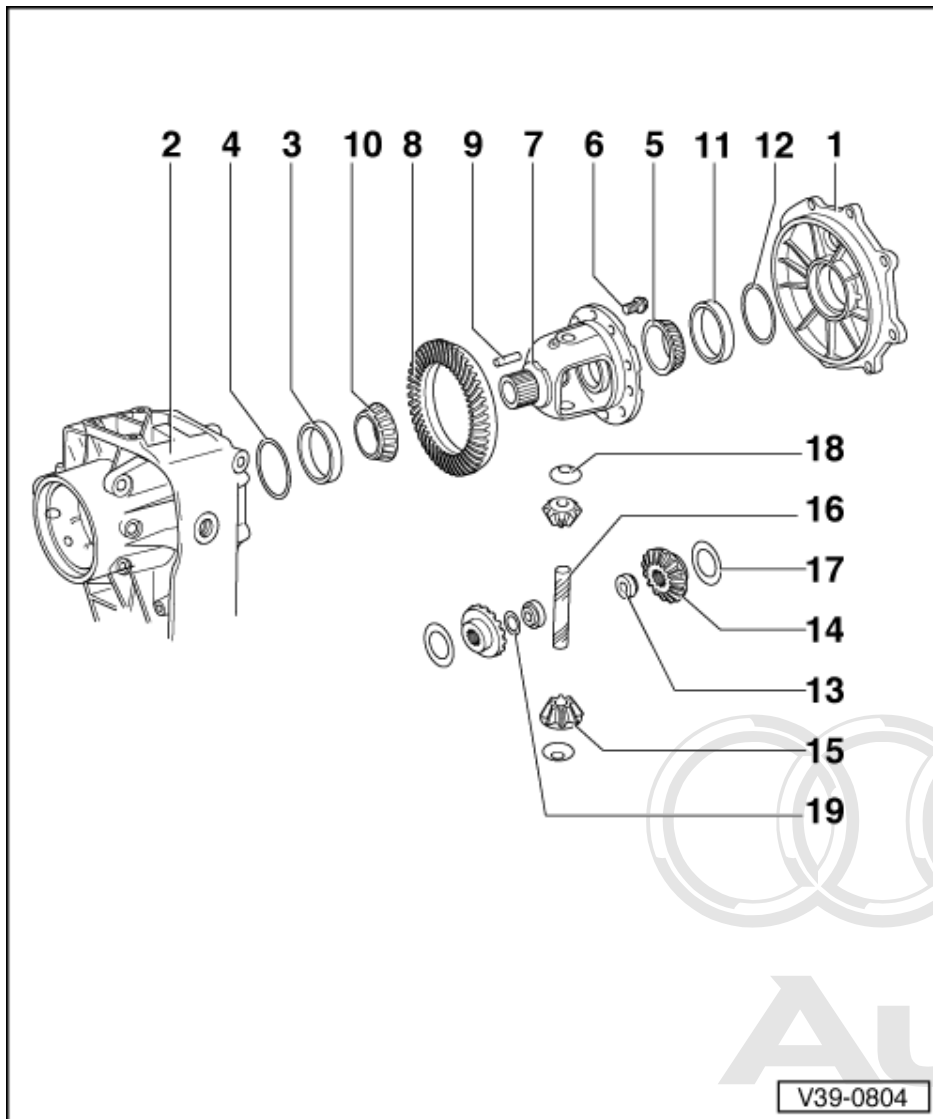
14 Sun wheels

- ♦ Installing => Fig. 7
- ♦ Adjusting => Fig. 8

15 Planet wheels

- ♦ Installing => Fig. 7

V39-0804



V39-0804

16 Shaft for planet wheels

- ◆ Drive out with a drift
- ◆ Drive in carefully so that the thrust washers are not damaged
- ◆ Secure with spring pin

17 Shim

- ◆ Re-determining thickness
=>Fig. 8

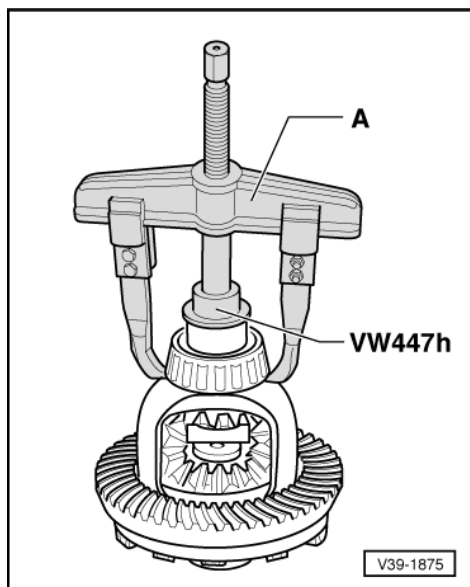
18 Thrust washer

- ◆ Check for cracks and chipping

19 Shim for flange shaft

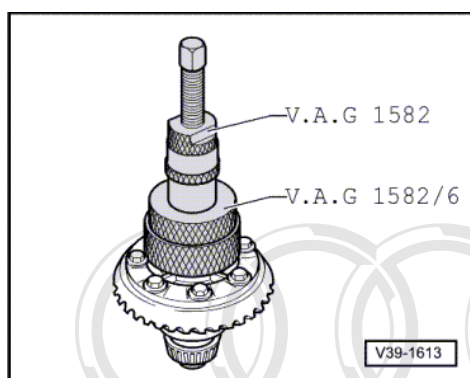
- ◆ Take care not to lose shim when dismantling
- ◆ Determining thickness
=> page 236
- ◆ Adjustment overview
=> page 239

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



-> Fig.1 Pulling off inner race for large taper roller bearing

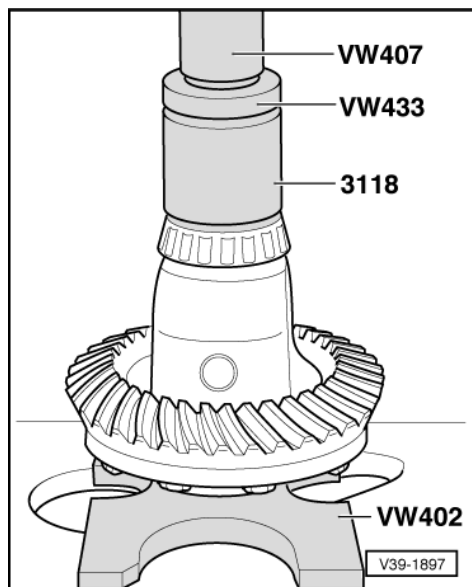
- Before applying puller, fit thrust plate VW 447 h on differential housing.
- A - Two-arm puller, e.g. Kukko 20/10



-> Fig.2 Pulling off inner race for small taper roller bearing

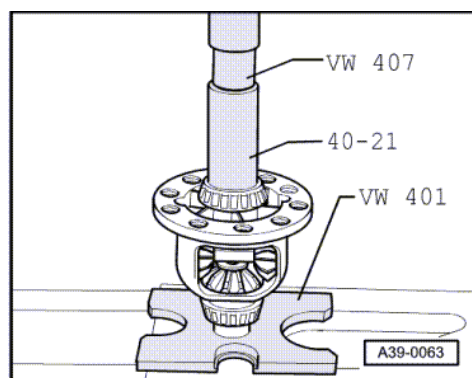
- Fit thrust plate 40-105 onto differential housing before fitting puller.

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



-> Fig.3 Fitting inner race for large taper roller bearing

- Heat bearing to approx. 100 °C and press home.

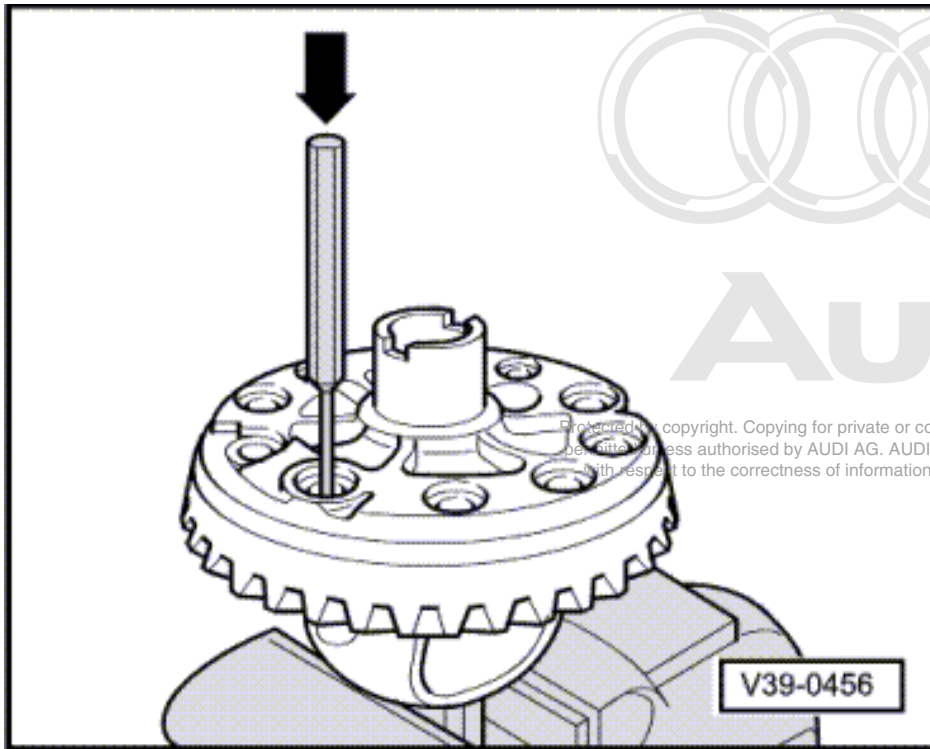


-> Fig.4 Fitting inner race for small taper roller bearing

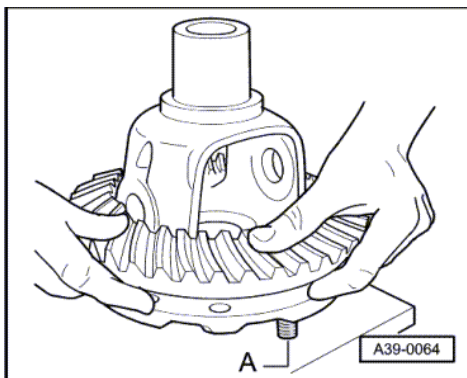
- Heat bearing to approx. 100 °C and press home.



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

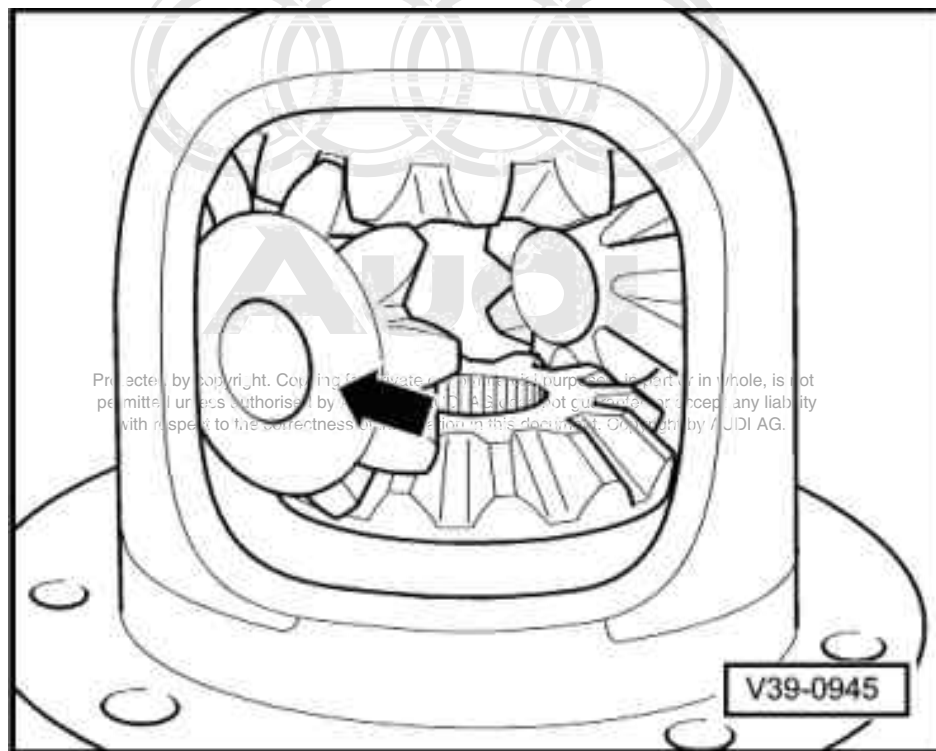


-> Fig.5 Driving crown wheel off housing



-> Fig.6 Installing crown wheel

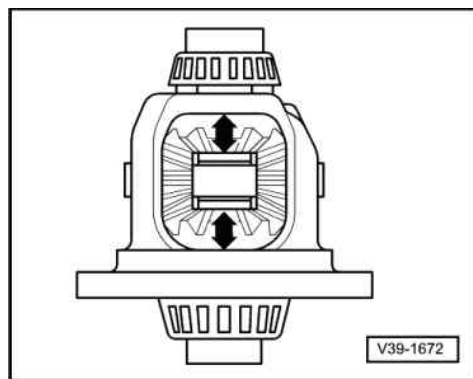
- Use 2 centring pins -A- (local manufacture) as a guide.
- Heat crown wheel to approx. 100 °C and install.



Protected by copyright. Copying for private use without purpose of export or in whole, is not permitted unless authorised by Audi AG. Audi AG does not guarantee or accept any liability with respect to the correctness of the information in this document. Copyright by AUDI AG.

-> Fig.7 Installing differential bevel gears

- Insert sun wheels with correct shims => Fig. 8 .
- Insert planet wheels spaced 180° apart (stick thrust washers on with a small amount of grease) and rotate into position -arrow-.
- Position thrust washers so that they align with holes in differential.
- Insert threaded pieces.
- Drive in shaft and secure with spring pin.



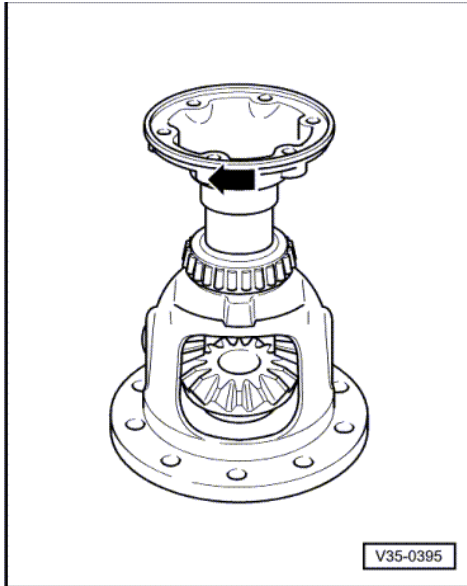
-> Fig.8 Adjusting differential bevel gears

- Insert sun wheels with thinnest shims (0.5 mm).
- Insert planet wheels with thrust washers and press in shaft.

Note:

Do not now interchange bevel gears and thrust washers.

- Press planet wheels outwards and check play of sun wheels by hand -arrows-.



- Adjust play by inserting an appropriate shim.
- Specification: max. 0.10 mm

Note:

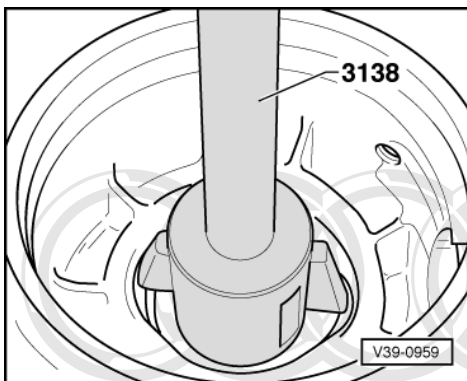
-> The adjustment is also correct if no further play is perceptible, although it is still possible to rotate the differential bevel gears -arrow-.

- Determine shim from table. Part numbers

=> Parts catalogue

Available shims

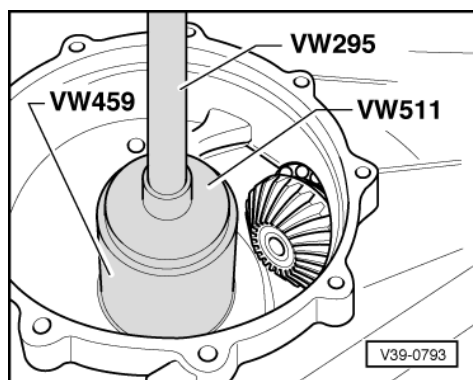
Shim thickness (mm)		
0.50	0.70	0.90
0.60	0.80	1.00



-> Fig.9 Driving outer race for large taper roller bearing out of final drive housing

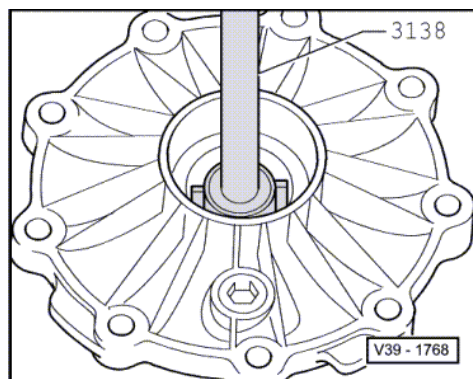
Note:

When removing, there is a possibility that the shim(s) will be damaged.
Permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.10 Driving outer race for large taper roller bearing into final drive housing

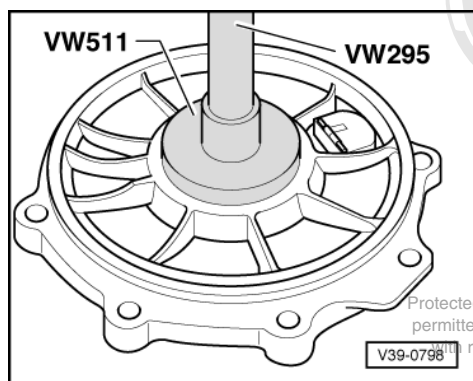
- Position outer race using VW 295 and light even blows with a hammer.
- Then drive in onto stop as shown in illustration.



-> Fig.11 Driving outer race for small taper roller bearing out of cover

Note:

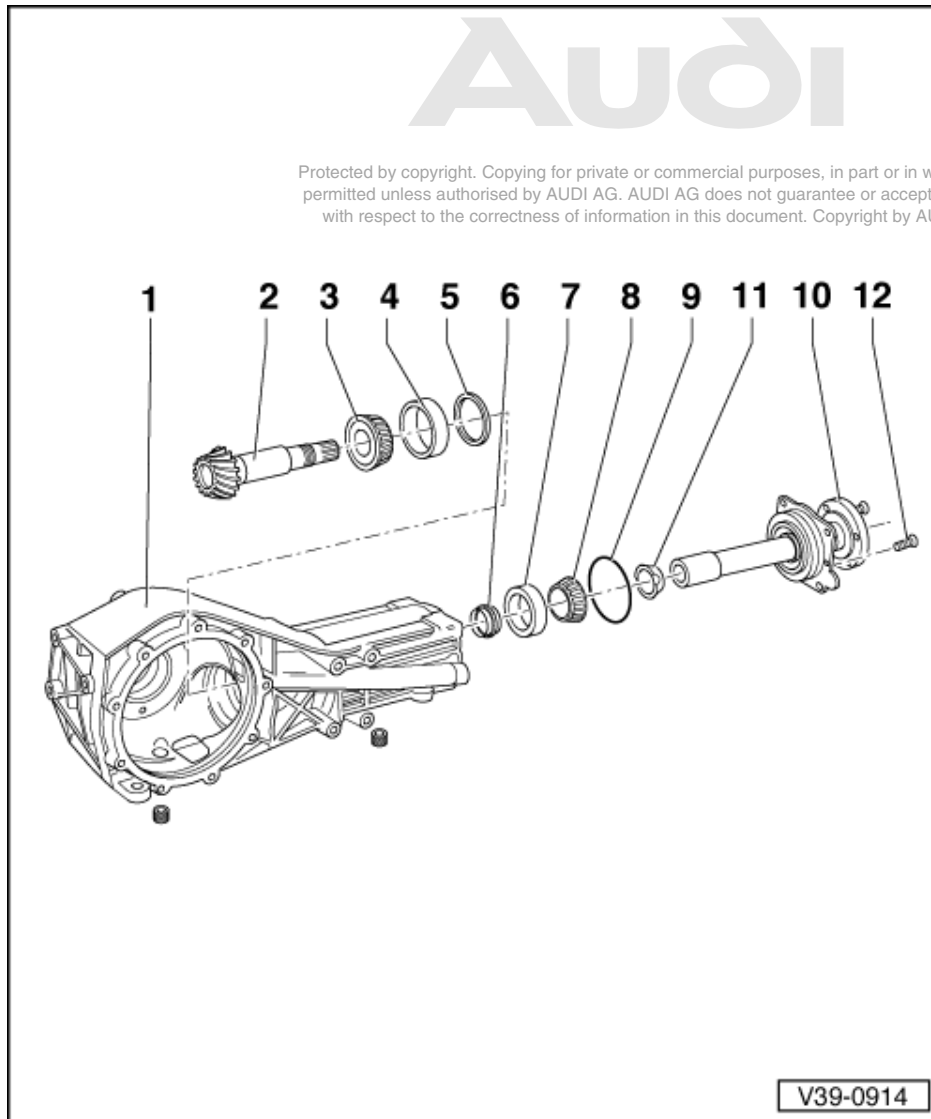
When removing, there is a possibility that the shim(s) will be damaged.



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

-> Fig.12 Pressing outer race for small taper roller bearing into cover

12.6 - Removing and installing drive pinion



Notes:

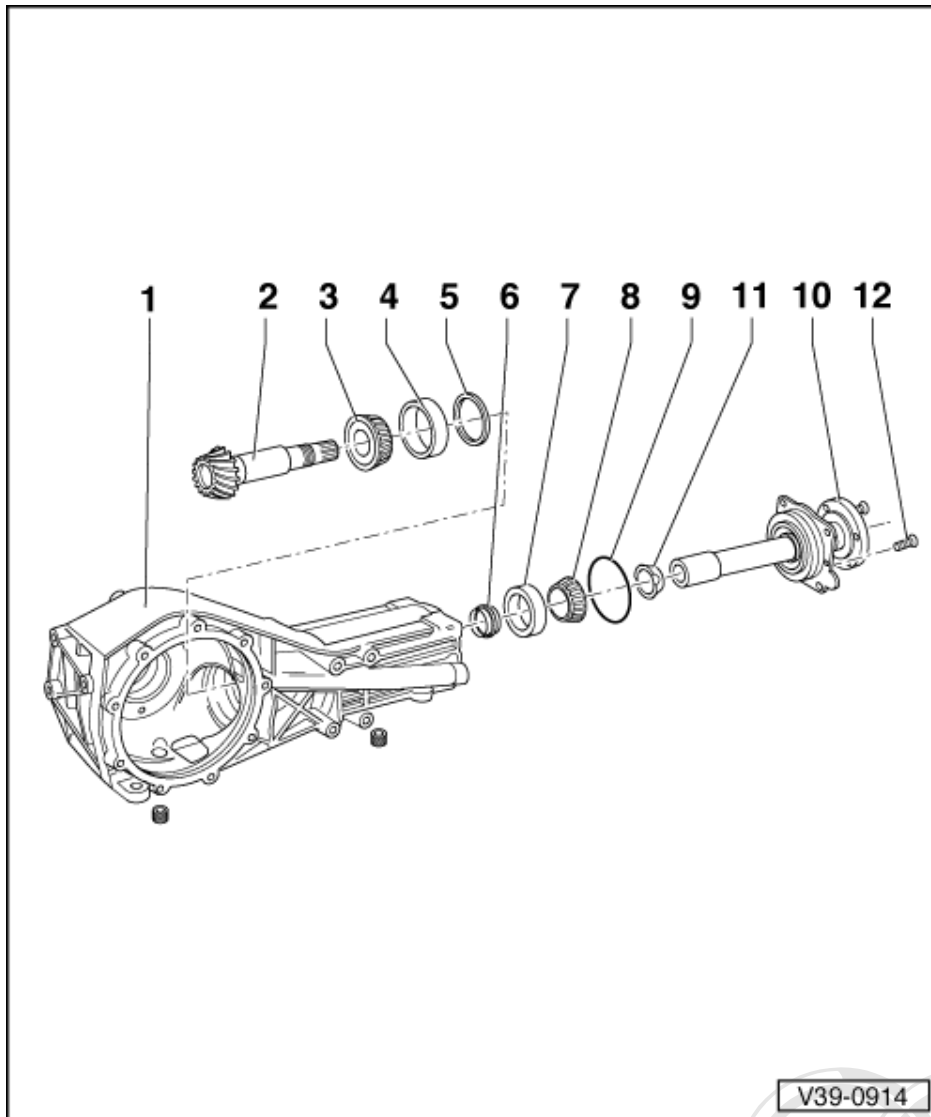
- ♦ General repair instructions
=>page 7
- ♦ Clamping final drive in repair stand=>Fig. 1 .
- ♦ Renew both taper roller bearings together. Use bearings made by same manufacturer if possible.
- ♦ Removing differential
=> page 193 .
- ♦ Adjustments are required when replacing components marked 1)
=> Adjustment overview, page 239 .

1 Cover for final drive 1)

2 Drive pinion 1)

- ♦ Paired with crown wheel

- ◆ Replace only in conjunction with crown wheel



3 Inner race for large taper roller bearing 1)

- ◆ Pulling off => Fig. 8
- ◆ Pressing on => Fig. 9

4 Outer race for large taper roller bearing 1)

- ◆ Driving out => Fig. 7
- ◆ Pulling in => Fig. 10

5 Shim "S3"

- ◆ Note thickness
- ◆ Adjustment overview
=>page 239

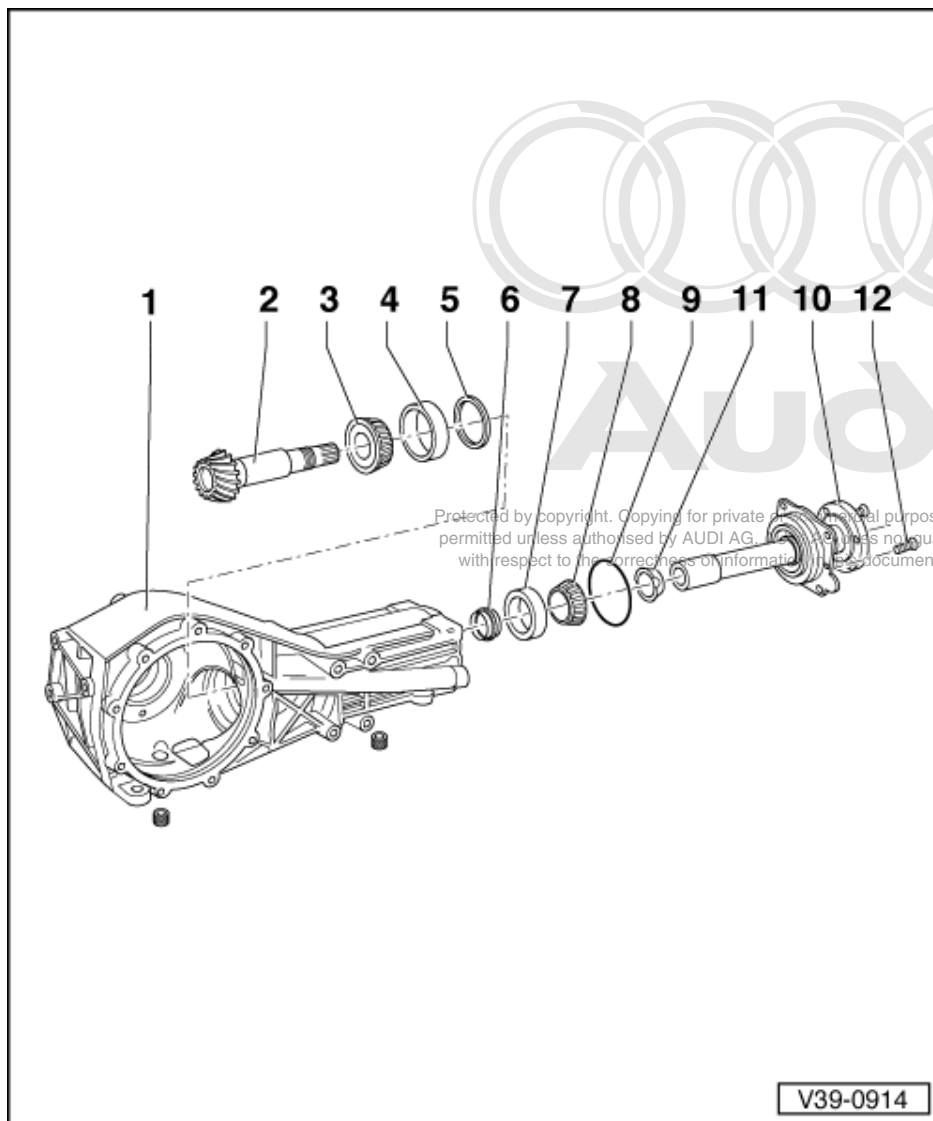
6 Spacer sleeve 1)

- ◆ Always renew

7 Outer race for small taper roller bearing 1)

- ◆ Pulling out => Fig. 6
- ◆ Pressing in => Fig. 11

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



8 Inner race for small taper roller bearing 1)

- ◆ Pressing out drive pinion
=>Fig. 5
- ◆ Installing => Fig. 12

9 O-ring

- ◆ Always renew

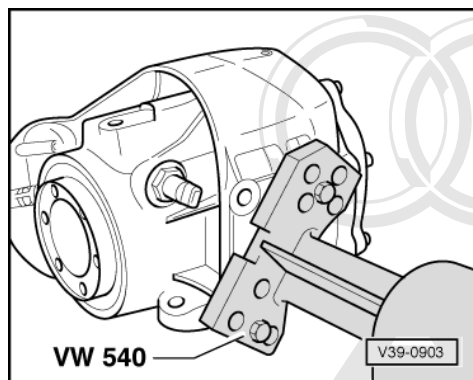
10 Flange for propshaft and cover for final drive

- ◆ Removing => Fig. 2
- ◆ Installing => Fig. 17
- ◆ Measuring radial run-out
=> page 172

11 Drive pinion nut

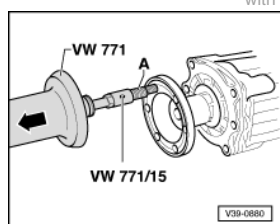
- ◆ Loosening and tightening=>Fig. 3 and Fig. 4
- ◆ Tightening => Fig. 14
- ◆ Measuring frictional torque
=>Fig. 15
- ◆ Locking =>Fig. 16

12 Countersunk bolt - 25 Nm



-> Fig.1 Clamping final drive in repair stand

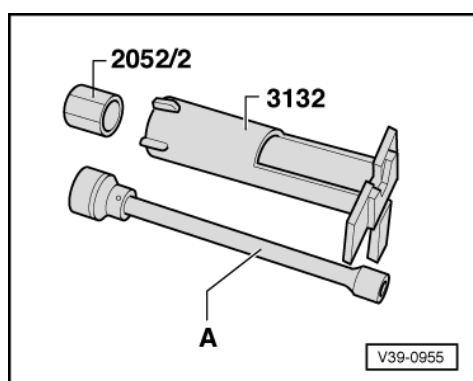
Copyright by Audi AG. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.



-> Fig.2 Pulling cover for final drive together with flange for propshaft off drive pinion

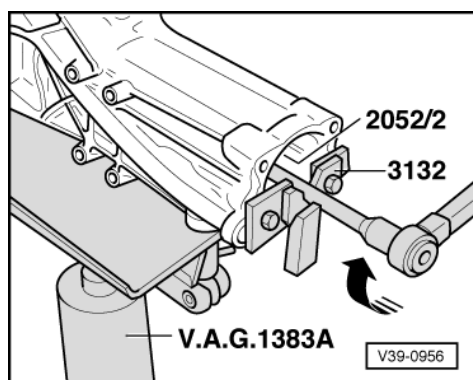
A - Bolt M8/M10

- Unscrew 2 countersunk bolts in cover.



-> Fig.3 Tools for loosening and tightening drive pinion nuts

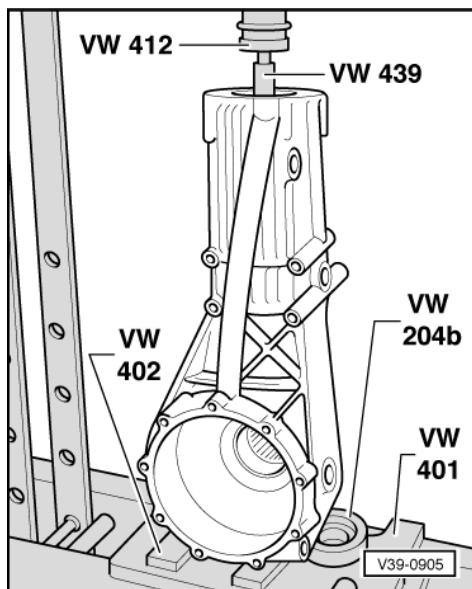
A - Extension piece and socket attachment (32 mm A/F)



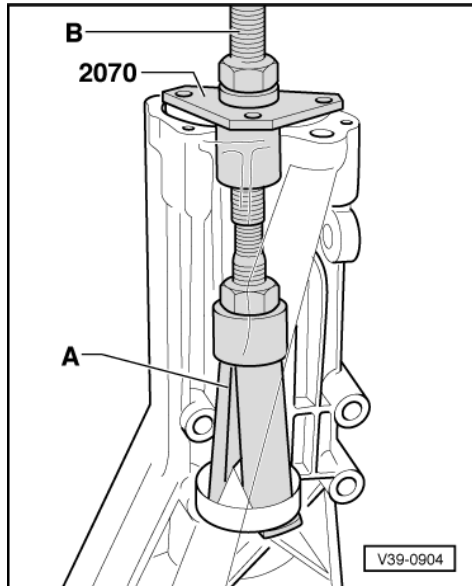
-> Fig.4 Loosening and tightening drive pinion nut

Note:

The final drive must be supported (e.g. with V.A.G 1383 A) when loosening and tightening the drive pinion nut, as otherwise the threaded holes in the housing may be damaged.

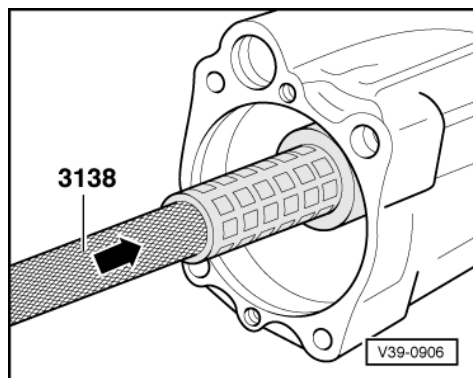


-> Fig.5 Pressing drive pinion out of inner race for small taper roller bearing



-> Fig.6 Pulling out outer race for small taper roller bearing

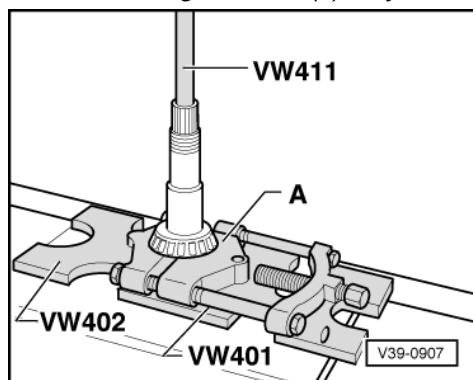
- A - Internal puller, e.g. Kukko 21/7, 46 - 56 mm
- B - Spindle from brace tool Kukko 22/1



-> Fig.7 Driving out outer race for large taper roller bearing

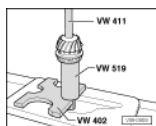
Note:

When removing, the shim(s) may be damaged.



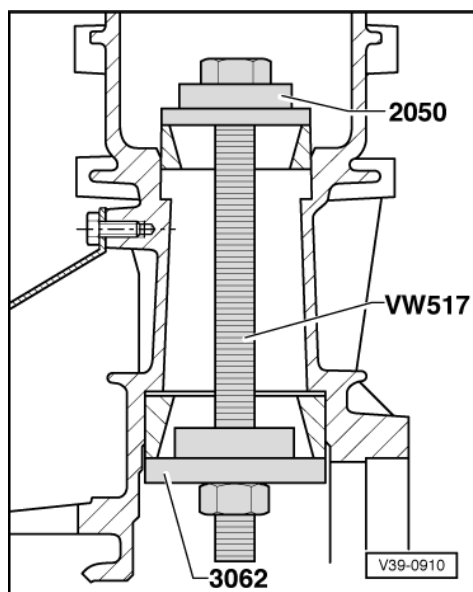
-> Fig.8 Pressing inner race for large taper roller bearing off drive pinion

A - Separating device, e.g. Kukko 17/2, 22 - 115 mm



-> Fig.9 Pressing inner race for large taper roller bearing onto drive pinion

- Heat bearing to approx. 100 °C place on and press home.



Audi

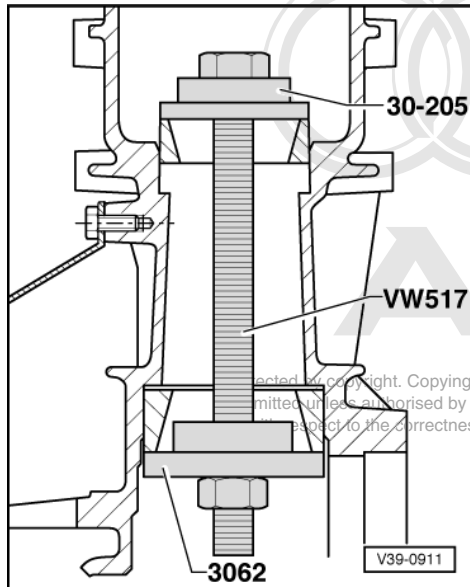
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> Fig.10 Pulling in outer race for large taper roller bearing

- Insert predetermined shim "S3" for drive pinion
=>page 239 .

Note:

Thoroughly oil bearing race and bearing seat in housing.

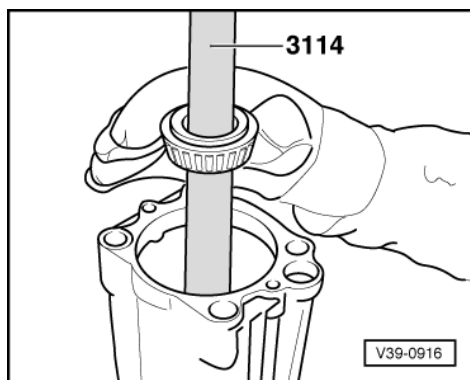


-> Fig.11 Pressing in outer race for small taper roller bearing

- Ensure that outer bearing race is level all round before pressing in.

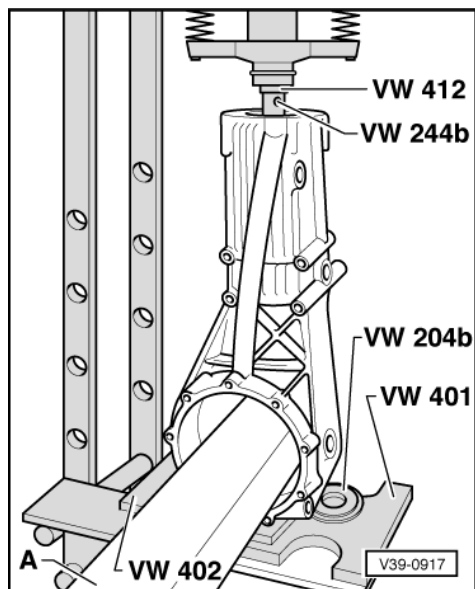
Note:

Thoroughly oil bearing race and bearing seat in housing.



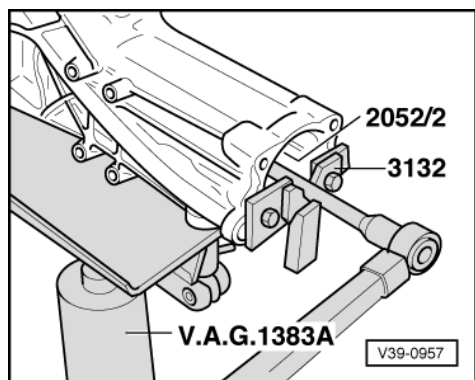
-> Fig.12 Fitting inner race for small taper roller bearing onto drive pinion

- Insert drive pinion with new spacer sleeve.
- Heat inner race for small taper roller bearing to approx. 100 °C.
- Press drive pinion up, fit rod 3144 centred onto drive pinion and insert inner race for taper roller bearing.



-> Fig.13 Pressing home taper roller bearing

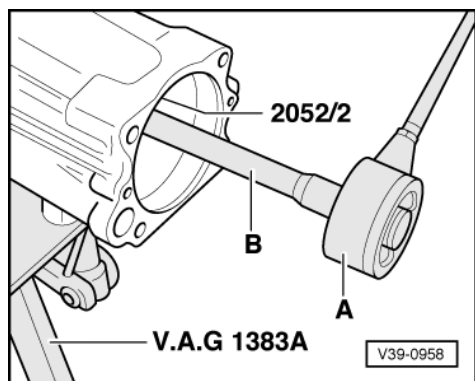
A - Wooden block to support drive pinion.



-> Fig.14 Tightening drive pinion nut and setting frictional torque

Notes:

- ♦ Only increase tightening torque slowly and read-off frictional torque frequently. If the specified frictional torque is exceeded, the spacer sleeve must be replaced and the adjustment repeated. It is not possible to reuse a spacer sleeve that has been excessively compressed.
- ♦ The final drive must be supported (e.g. with V.A.G 1383 A) when tightening the drive pinion nut, otherwise the threaded holes in the housing will be damaged.



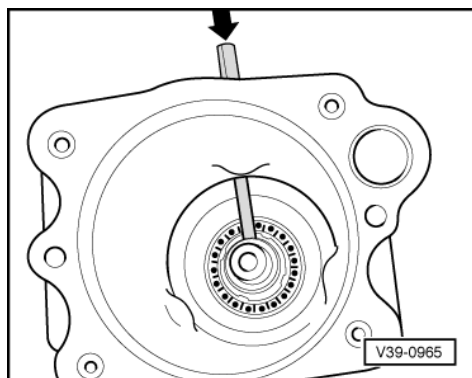
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

-> **Fig.15 Measuring frictional torque**

- A - Torque gauge, commercially available,
0 - 600 Ncm
- B - Extension with 32 mm socket

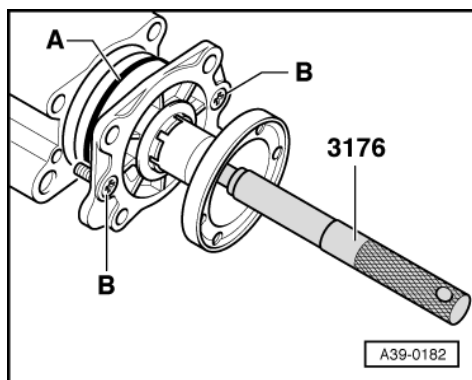
- The following frictional torques should be set:

New bearings	Used bearings
250 - 300 Ncm	30 - 60 Ncm



-> **Fig.16 Locking drive pinion nut**

- Insert punch through oil drain hole and peen drive pinion nut.



-> **Fig.17 Installing flange for propshaft with cover for final drive**

- Fit new O-ring -A- in cover and lubricate lightly.
- Drive in flange shaft and the cover using centring mandrel 3176.
- Tighten countersunk bolts -B- to 25 Nm.

Note:

The radial run-out at flange for propshaft must always be measured and marked => page 172 .



13 - Servicing differential lock mechanism - vehicles > 05.94

13.1 - Servicing differential lock mechanism - vehicles > 05.94

Note:

There is no mechanical differential lock for the rear final drive in vehicles 06.94 ➤.

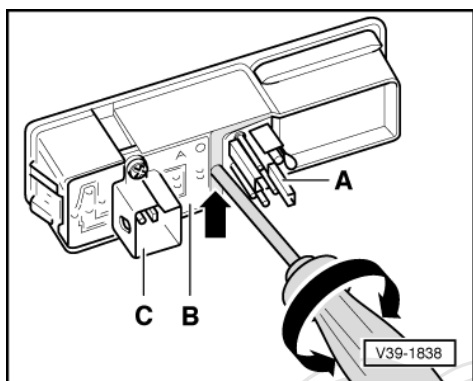
13.2 - Removing and installing switch for differential lock

Notes:

- ♦ The switch for the differential lock is in a panel in the cover on the centre console.
- ♦ Checking function of switch for differential lock

=> Current Flow Diagrams, Electrical Fault Finding and Fitting locations; December 1990 ä 1992; Fault Finding Programme No. 2

- Carefully lever switch and panel away from cover.
- Disconnect wiring.

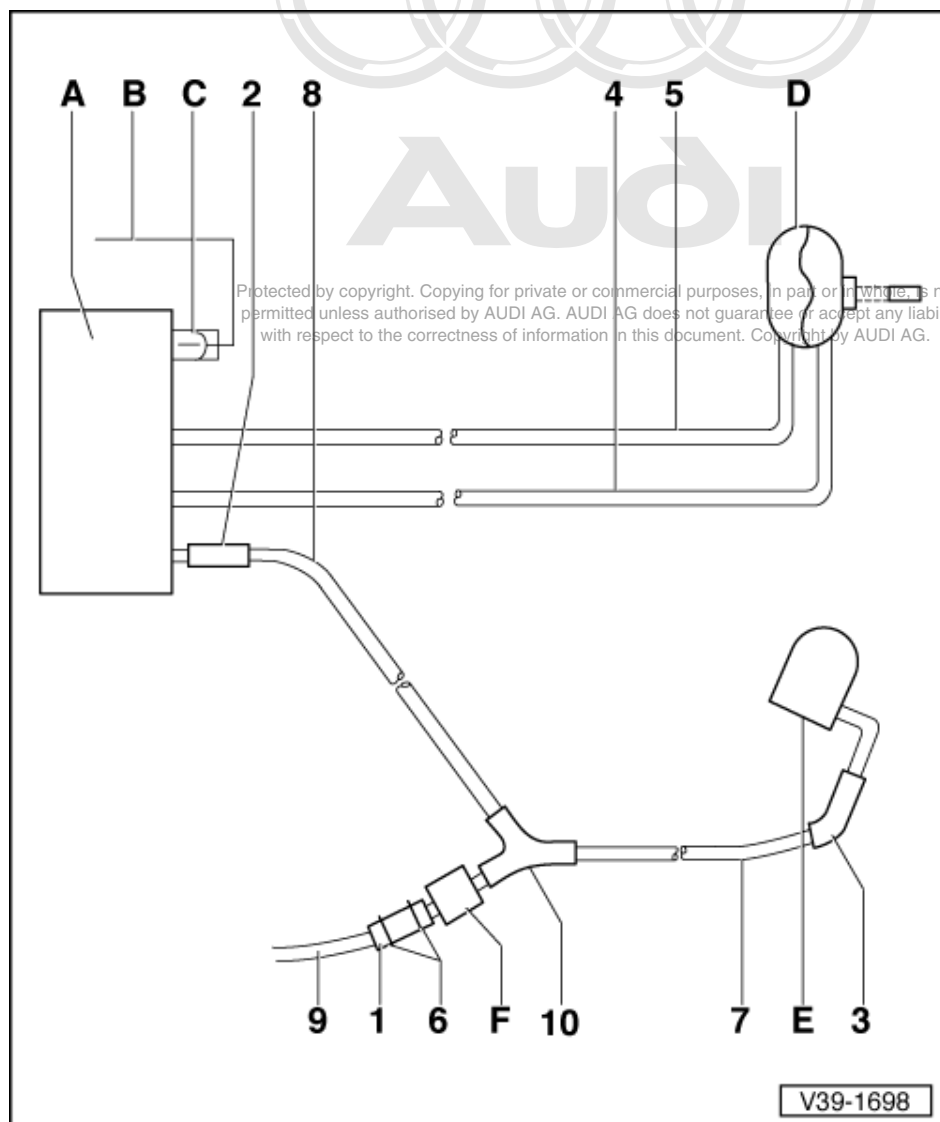


- -> Insert a small screwdriver between switch -A- and conductor plate -B- -arrow-.
- Lever switch out of front catch by turning screwdriver.
- Take switch out of trim panel.
- Conductor plate -B- can be removed from trim panel together with plug housing -C-.

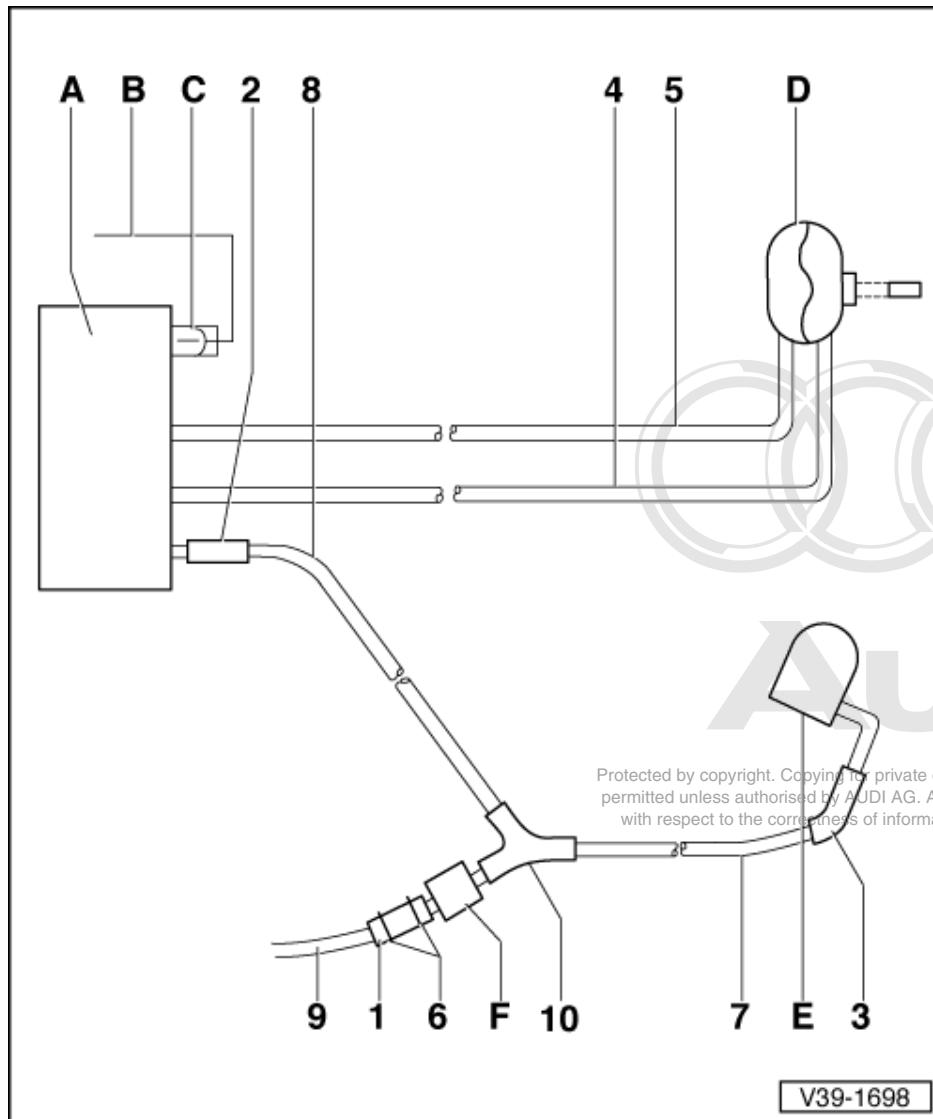


Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

13.3 - Routing of pipes and hoses



- A - Differential lock control unit**
- J187**
- ♦ Below rear seat
- B - Electrical wiring**
- ♦ To switch for differential lock mechanism and speedometer
- C - Connector**
- ♦ On control unit -J187
- D - Vacuum unit**
- ♦ On rear final drive



E - Vacuum reservoir

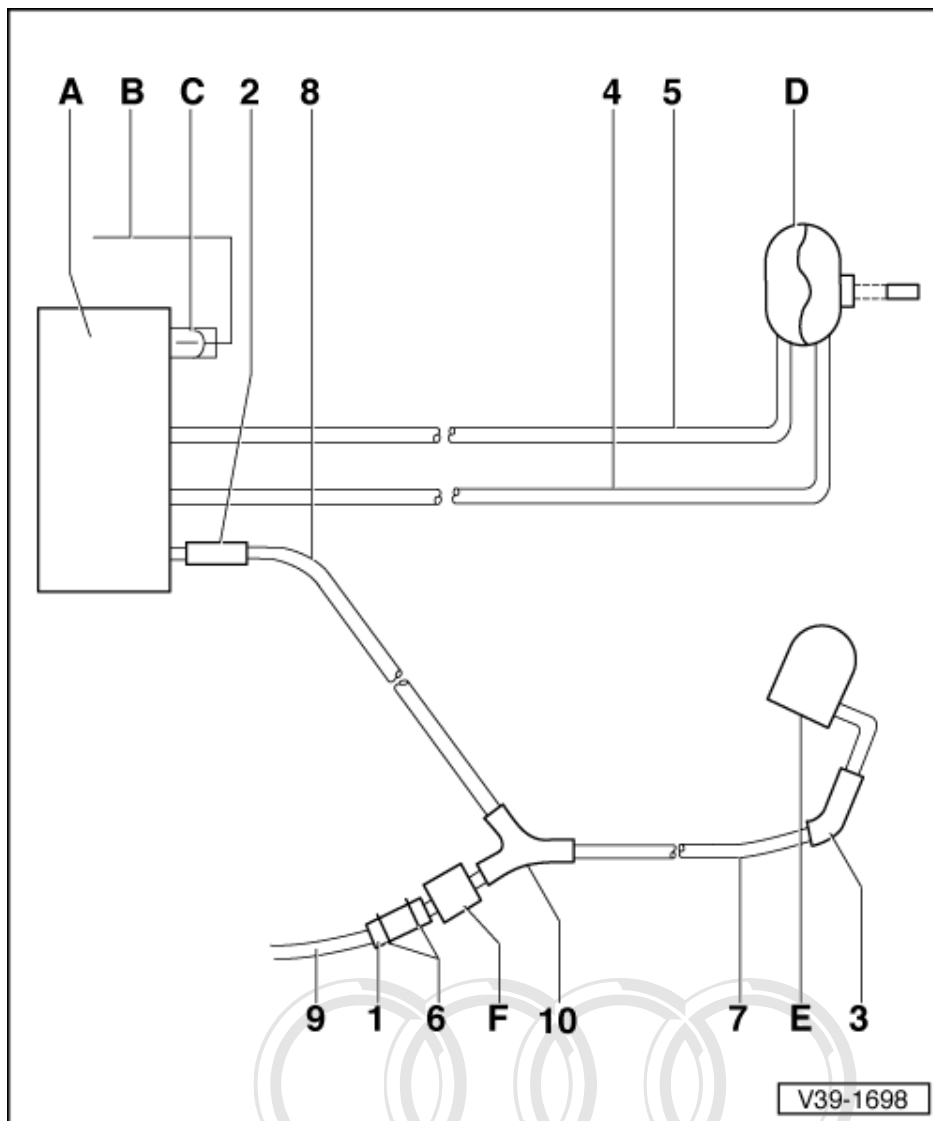
- ◆ Installation position in saloon: at top left of luggage compartment, below hinge for boot lid. To remove, detach luggage compartment trim
- ◆ Installation position in Avant: near rear left wheel housing, accessible via cover

F - Non-return valve

- ◆ Below rear seat

Note:

The hoses and pipes supplied as replacement parts are only available in one colour. When installing, cut the hose or pipe to the right length and attach adhesive tape of the appropriate colour, or mark the hose or pipe as necessary.



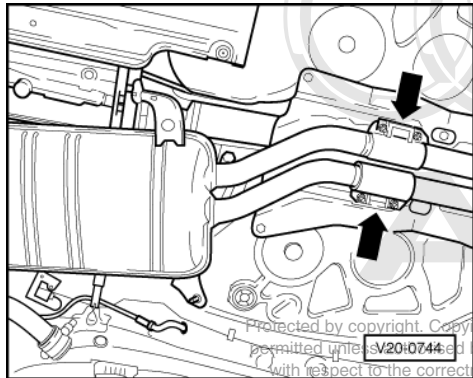
Hoses			
No.	Length (mm)	Colour	Qty.
1	45	black	1
2	45	black	1
3	510/350 1)	grey	1
4	850	yellow	1
5	820	blue	1
6	Hose clamps		2

Pipes 4 x 1			
No.	Length	Colour	Qty.
7	1200 mm	red	1
8	720 mm	purple	1
9 2)	2830 mm	black	1
10	Connecting piece (under rear seat)		1

1) Avant only

- 2) Pipe from engine/ brake servo

13.4 - Removing and installing vacuum unit



- Final drive installed

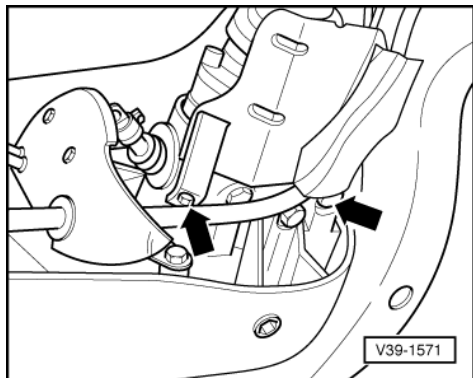
Removing

- -> Remove double pipe clamps -arrows- and separate exhaust system

=> 5-cylinder injection engine (4-valve, Turbo), Mechanics; Repair Group 26; Removing and installing parts of exhaust system Removing and installing parts of exhaust system

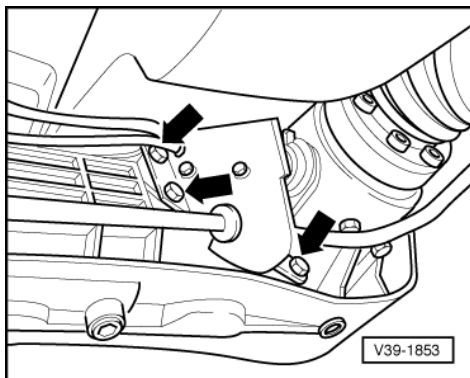
=> 6-cylinder injection engine (2.6 l engine, 2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; B - Vehicles with four wheel drive Removing and installing parts of exhaust system B - Vehicles with four wheel drive

=> 6-cylinder injection engine (2-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; C - Vehicles with four wheel drive Removing and installing parts of exhaust system C - Vehicles with four wheel drive

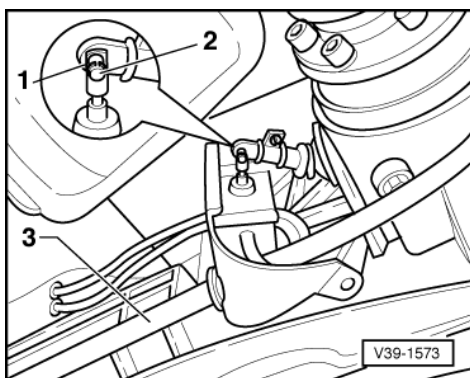


=> 6-cylinder injection engine (5-valve), Mechanics; Repair Group 26; Removing and installing parts of exhaust system; Vehicles with four wheel drive, engine code ACK Removing and installing parts of exhaust system Vehicles with four wheel drive, engine code ACK

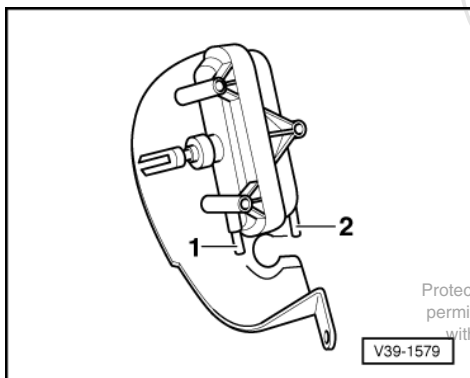
- Disengage main silencer and rear silencer from mountings.
- -> Unbolt cover plate for left drive shaft -arrows-.



- -> Unbolt bracket with vacuum unit from rear final drive -arrows-.



- -> Release securing clip -1-.
- Push connector pin between vacuum unit and selector fork -2- upwards.
- Pull handbrake cable -3- and rubber grommet out of bracket.
- Pull vacuum hoses off vacuum unit - note colour coding.
- Unbolt vacuum unit from console.



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

Installing

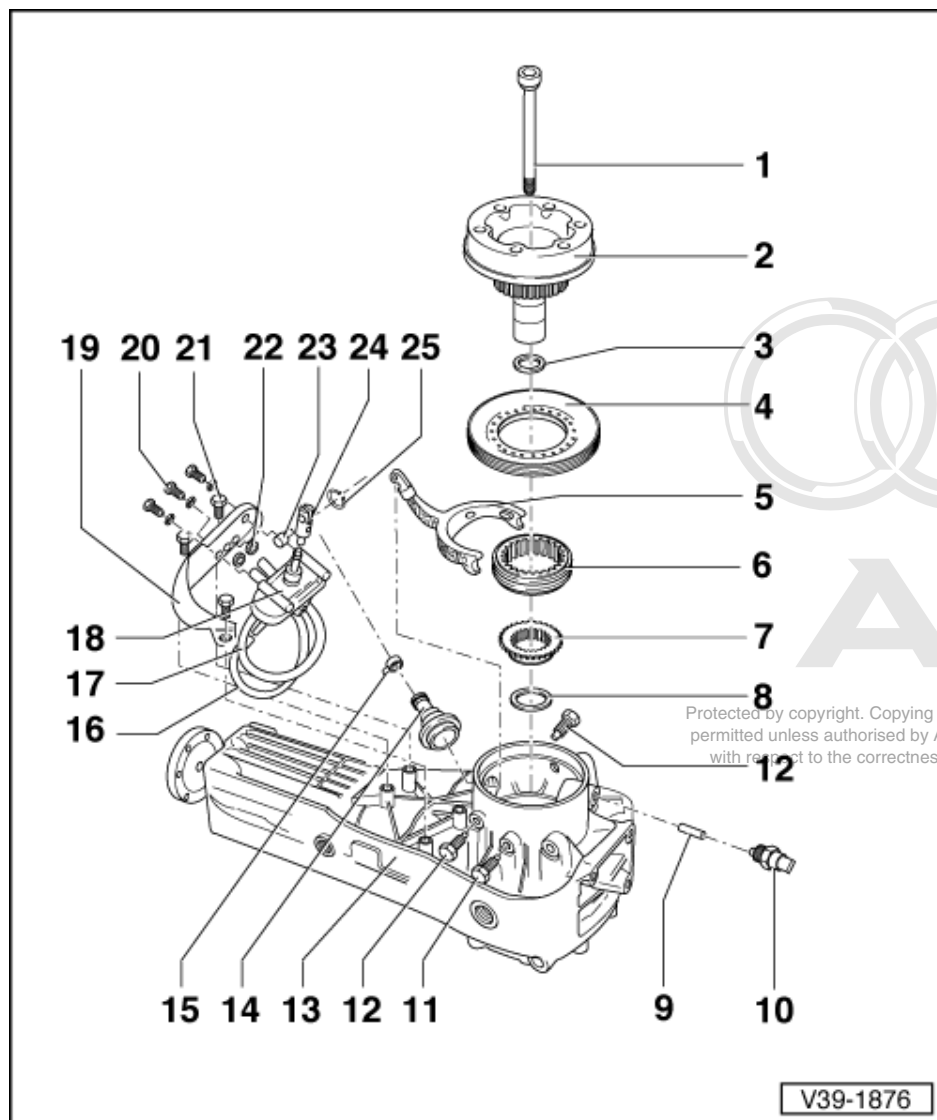
- -> Note colour coding of vacuum hoses:
 - Yellow hose to connection -1-
 - Blue hose to connection -2-
- Adjust clevis on vacuum unit => page 235 .

Tightening torques

Component	Nm
Vacuum unit to bracket	3.5
Bracket to rear final drive	25

Component	Nm
Cover plate to rear final drive	25
Double clamp on exhaust system	40

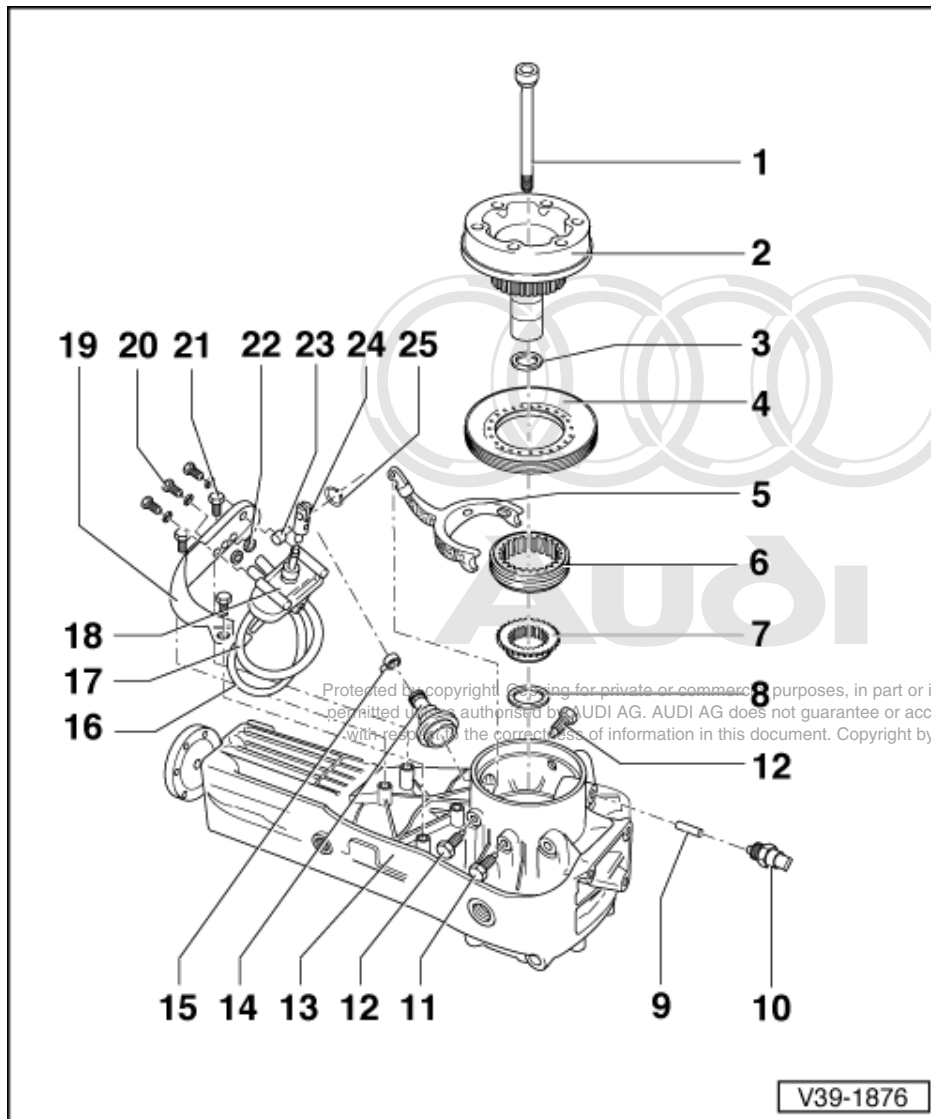
13.5 - Dismantling and assembling differential lock



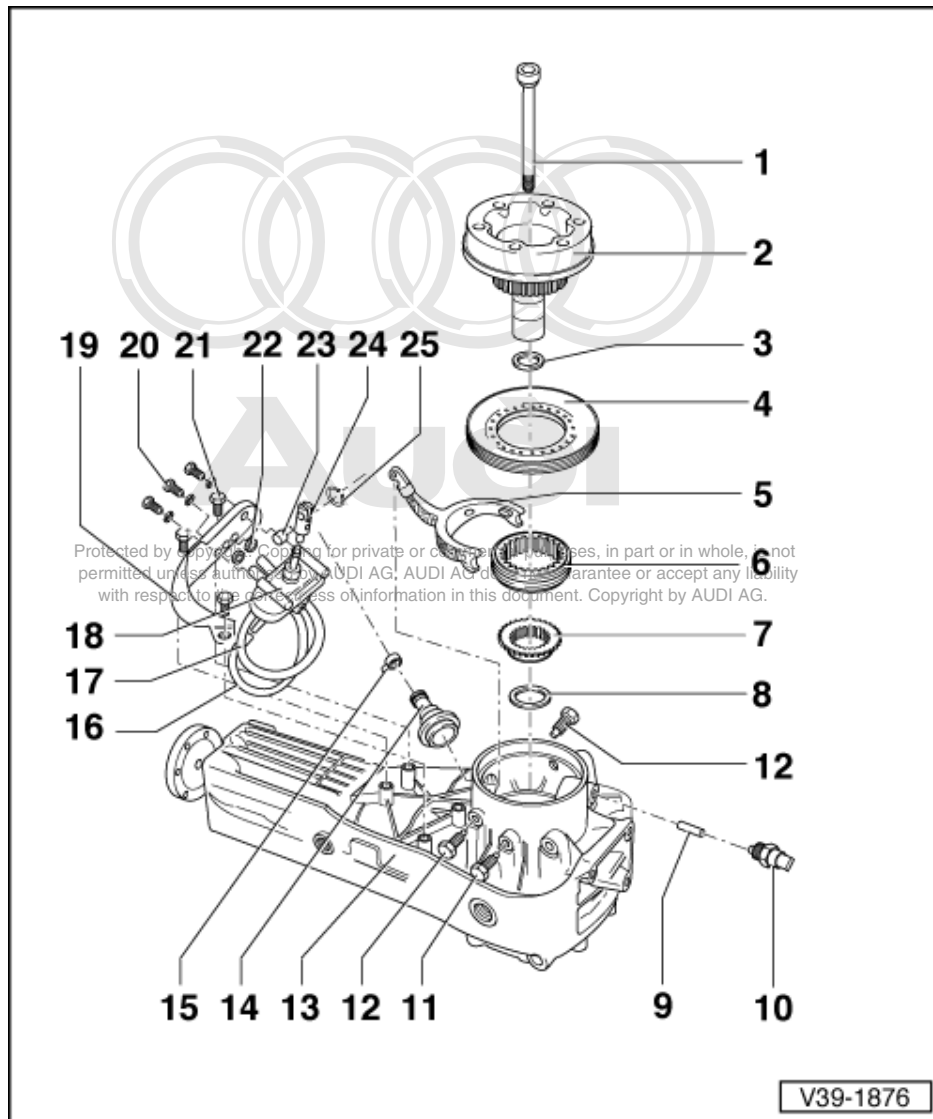
Notes:

- ♦ Can be dismantled with final drive installed
- ♦ The differential lock in the rear final drive can be engaged at speeds up to 25 km/h via a control unit. It is disengaged automatically at speeds above 25 km/h.
- ♦ Fault finding for the differential lock

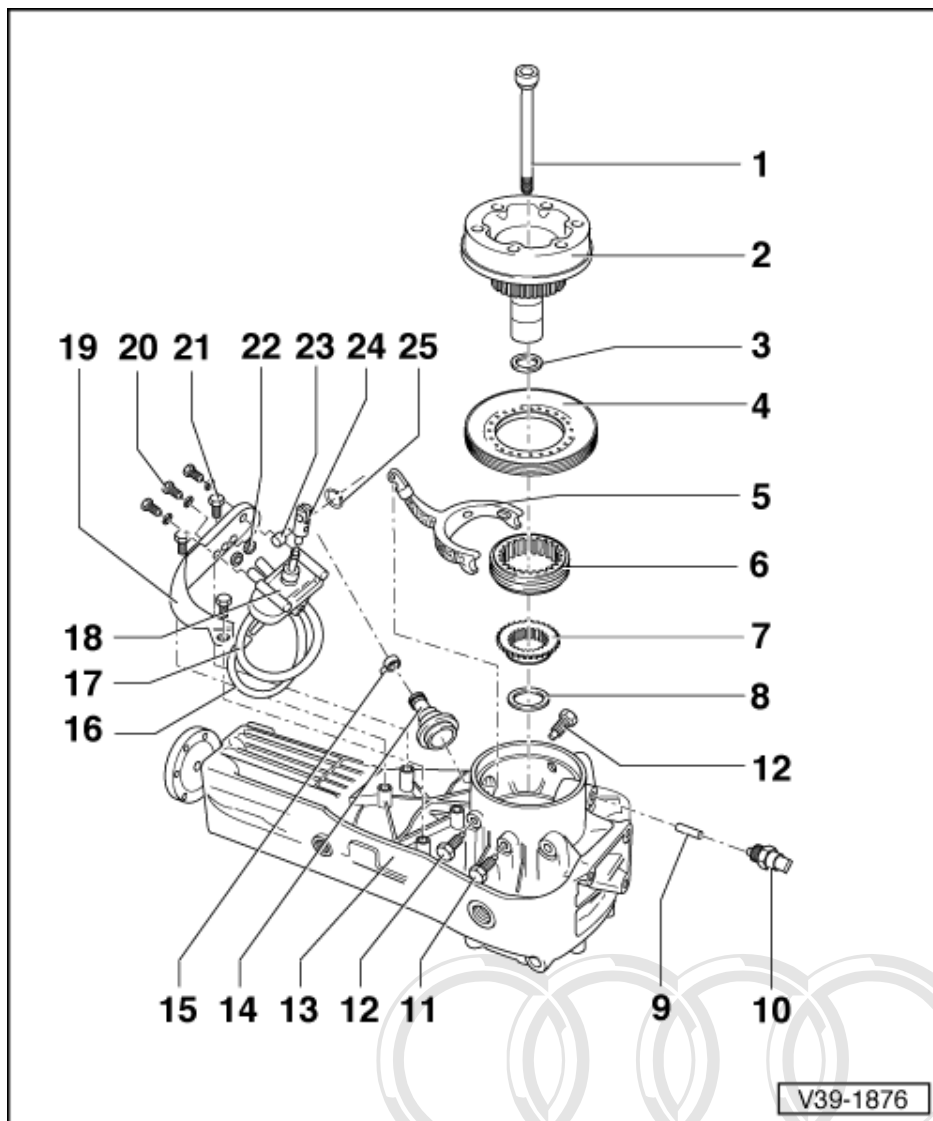
=> Current Flow Diagrams, Electrical Fault Finding and Fitting Locations; December 1990 ä 1992; Fault Finding Programme No. 2



- 1 Taper-head bolt M8
10 Nm + 1/4 turn (90°) further
- 2 Flange shaft
- 3 Shim for flange shaft
 - ♦ Take care not to lose shim when dismantling
 - ♦ Determining thickness
=>page 236
- 4 Seal
 - ♦ Always renew
 - ♦ Removing and installing
=>page 176
- 5 Selector fork
 - ♦ Remove and install together with locking collar



- 6 Locking collar**
- ♦ Installation position: shoulder faces towards clutch body
 - ♦ Remove and install together with selector fork
- 7 Clutch body for differential lock**
- ♦ Installation position =>Fig. 1
- 8 Shim for clutch body**
- ♦ Determining thickness
=>Fig. 2
- 9 Extension pin**
- ♦ For differential lock switch
- 10 Differential lock switch**
- 42 Nm
- 11 Trunnion bolt - 35 Nm**
- ♦ Stop for selector fork



12 Trunnion bolt - 35 Nm

- ◆ Guide for selector fork

13 Rear final drive

14 Bellows

- ◆ To remove/install bellows, first remove bracket and vacuum unit => page 229

15 Clamp

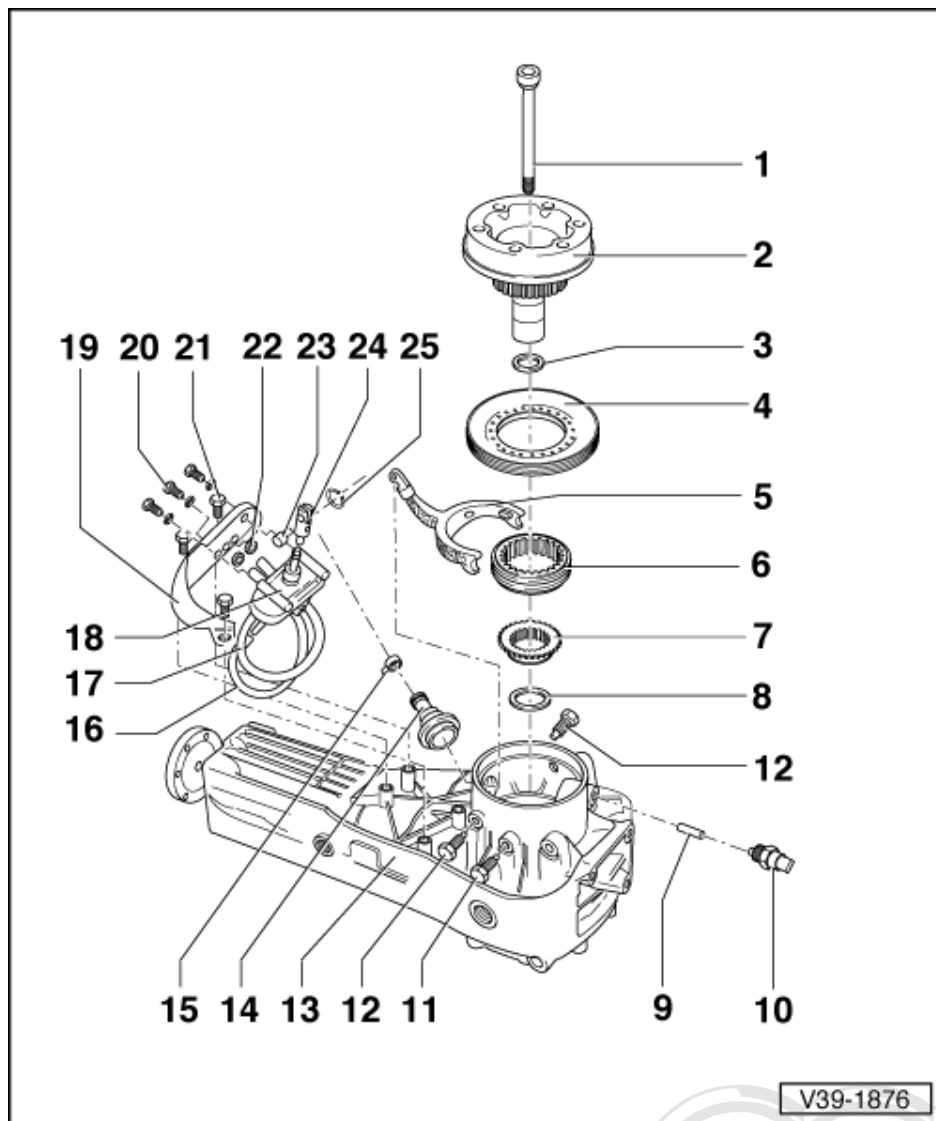
- ◆ Secures bellows to selector fork

16 Vacuum hose (blue)

- ◆ Fit onto inner connection on vacuum unit

17 Vacuum hose (yellow)

- ◆ Fit onto outer connection on vacuum unit



18 Vacuum unit

- ♦ Removing and installing
=> page 228

19 Bracket

- ♦ For vacuum unit

20 Bolt - 3.5 Nm

- ♦ Qty. 3
- ♦ With corrugated washer
- ♦ Secures vacuum unit to bracket

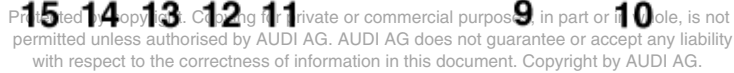
21 Bolt - 25 Nm

- ♦ Qty. 3
- ♦ Secures bracket to final drive

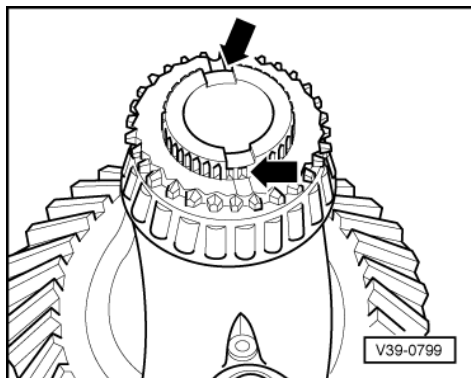
22 Grommet

- ♦ Qty. 2

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



- ◆ Fit onto pin

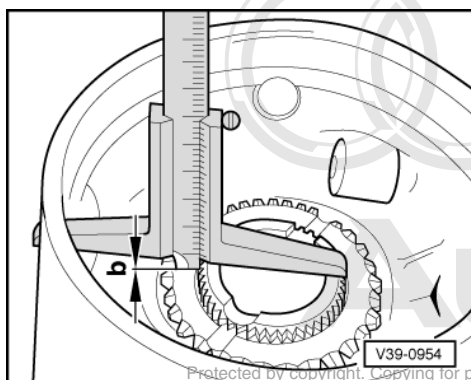


-> Fig.1 Installation position of clutch body

Note:

Shown in illustration with differential removed.

Oil grooves -arrows- on differential and clutch body must be aligned.



-> Fig.2 Determining thickness of shim

- Measure distance -b-.
- Select required shim from table. Part numbers

=> Parts catalogue

Distance -b-	Shim thickness (mm)
0.00 - 4.10	no shim
4.11 - 4.40	0.3
4.41 - 4.70	0.6
4.71 - 4.90	0.9

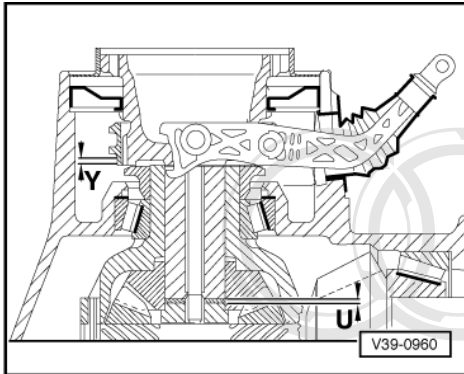
13.6 - Adjusting left flange shaft

Notes:

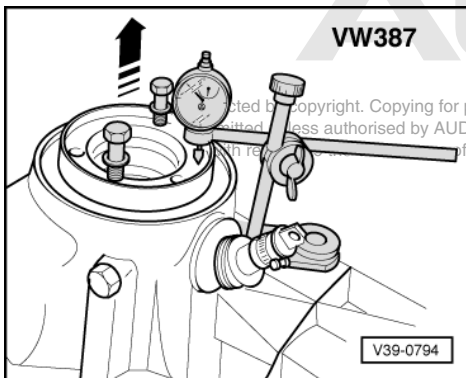
- ♦ This adjustment is only required if the left flange shaft, the differential housing or the differential bevel gears are being replaced.

- ♦ The purpose of the adjustment is to obtain a clearance (-Y-) of 0.2 - 0.5 mm between flange shaft and differential housing. This is necessary to ensure free running and reliable operation of the differential lock.

Determining shim "u"



- -> Measure clearance -y- between flange shaft and differential housing as follows:



- -> Secure dial gauge to rear final drive with universal dial gauge bracket VW 387.
- Press flange shaft in towards differential. Apply dial gauge to flange shaft and set to "0" with 1 mm preload.
- Pull out flange shaft in direction of arrow, and read off the clearance indicated.
 - Specification: 0.2 - 0.5 mm
- If clearance is too small, install correspondingly thicker shims; if clearance is too large, install correspondingly thinner shims.
- Select required shims from table. Part numbers

=> Parts catalogue

Available shims

Shim thickness (mm)		
0.3	0.6	0.9

14 - Adjusting drive pinion and crown wheel

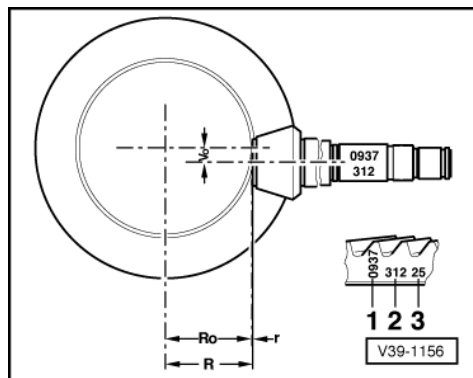
14.1 - Adjusting drive pinion and crown wheel

General notes:

- ♦ Careful adjustment of the drive pinion and crown wheel is important for the service life and smooth running of the final drive. For this reason, the drive pinion and crown wheel are matched together during manufacture, and checked to ensure a good mesh pattern and quiet running in both directions of rotation. The position of quietest running is found by moving the drive pinion in an axial direction and at the same time lifting the crown wheel out of the zero-play mesh position by the amount necessary to maintain the backlash within the specified tolerance.

- The object of the adjustment is to reproduce the setting for quietest possible running, as obtained on the test machine in production.
- The deviation "r" in relation to the master gauge "Ro" is measured for the final drive sets supplied as replacement parts and marked on the outer circumference of the crown wheel. The final drive set (drive pinion and crown wheel) may only be replaced together as a matched pair.
- Observe the general repair instructions for taper roller bearings and shims.

14.2 - Adjustment and markings of final drive set



Service final drive sets

- 1 = "0937" indicates Oerlikon final drive set with a ratio of 37 : 9
- 2 = No. of matched pair (312): final drive set
- 3 = Dimension "r" related to the master gauge of the special test machine used during production. Dimension "r" is always stated in 1/100 mm
Example: "25" indicates $r = 0.25$ mm
- Ro = Length of master gauge used on special test machine
"Ro" = 53.15 mm
- R = Actual distance between crown wheel axis and face of drive pinion at the point of quietest running for this final drive set
 $R = Ro + r$
- Vo = Hypoid offset

14.3 - Recommended sequence for readjusting final drive set

The following work sequence is recommended to save time when the drive pinion and crown wheel have to be adjusted:

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

- 1.) Determine total shim thickness "Stotal" for "S1" + "S2" for the specified preload for taper roller bearings for differential.
- 2.) Determine total shim thickness "S3" to reproduce the installation position for the drive pinion determined on the test machine in production.
- 3.) Distribute total shim thickness "Stotal" for "S1" + "S2" so that the specified backlash exists between crown wheel and drive pinion.

Note:

Overview of components and shims => page 240.

14.4 - Adjustment overview

Note:

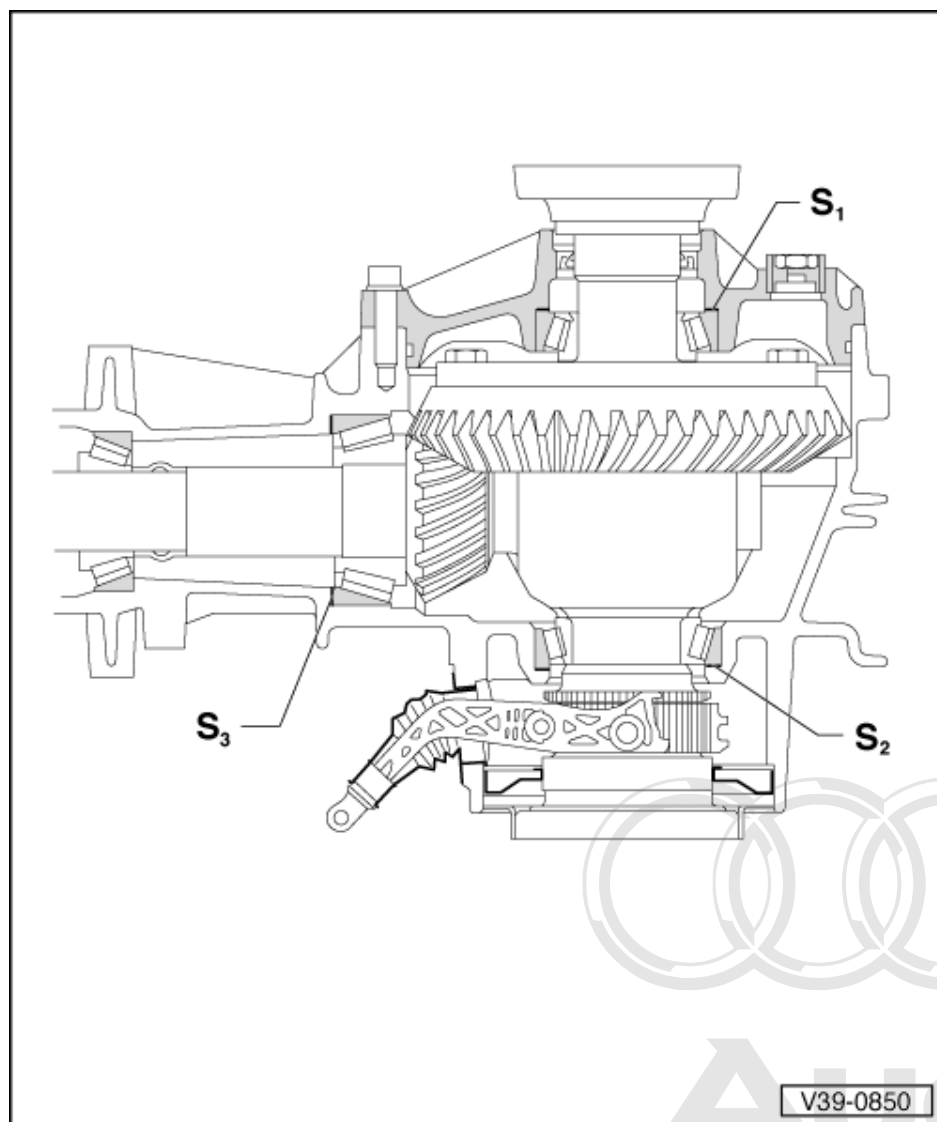
If repairs have been carried out on the final drive it is only necessary to adjust the drive pinion or final drive set if components have been renewed which have a direct effect on the adjustments of the final drive. Refer to the following table to avoid unnecessary adjustments:

Part renewed: ▼	To be adjusted:			
	Crown wheel "S1"+"S2" 1) => page 247	Drive pinion "S3" 1) via deviation "r" => page 240	Backlash 0.12 - 0.22 mm => page 250	Left flange shaft Only for final drive with differ- ential lock => page 236
Final drive housing	X	X	X	
Differential housing	X		X	X
Taper roller bearing for drive pinion		X	X	
Taper roller bearings for differential	X		X	
Final drive set 2)	X	X	X	
Cover for final drive	X		X	
Flange shaft				X
Differential bevel gears				X

- 1) Shims; installation position => page 240.
- 2) Drive pinion and crown wheel; only renew together.

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

14.5 - Position of shims



Note:

Adjustment overview when renewing individual components of final drive => page 239

- S1 - Adjustment shim for crown wheel in cover for final drive
- S2 - Adjustment shim for crown wheel in final drive housing
- S3 - Adjustment shim for drive pinion in final drive housing

15 - Adjusting drive pinion

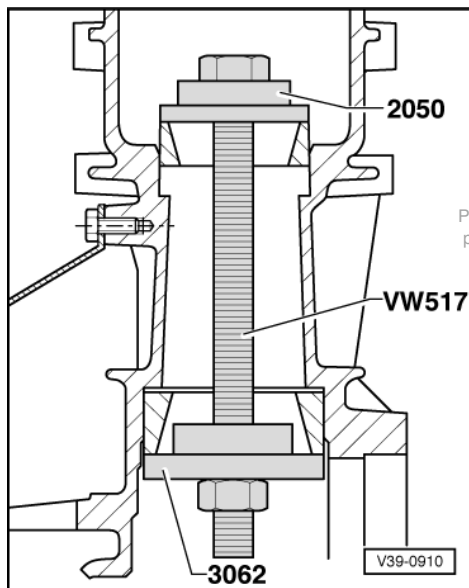
15.1 - Adjusting drive pinion

Notes:

- ♦ Before adjusting drive pinion, adjust crown wheel (determine total shim thickness "Stotal" for shims "S1" + "S2" => page 247).
- ♦ Re-adjustment of the drive pinion is only necessary if the final drive set, taper roller bearing for drive pinion or housing for final drive is replaced

=>page 239 .

Determining total shim thickness "Stotal" for shims "S3" + "S4"



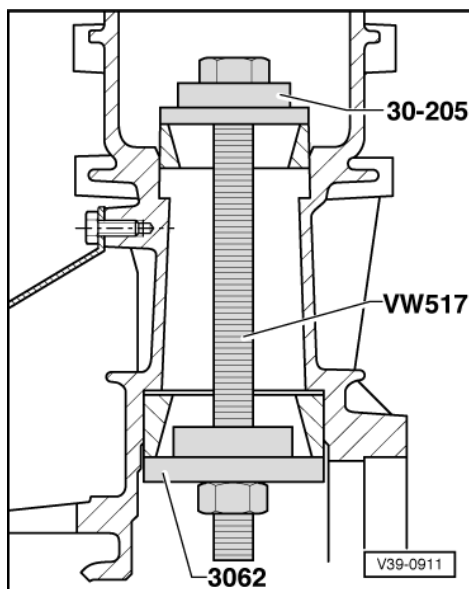
Protected by copyright. Copying for private or commercial purposes, in part or in whole, is not permitted unless authorised by AUDI AG. AUDI AG does not guarantee or accept any liability with respect to the correctness of information in this document. Copyright by AUDI AG.

(Setting preload of taper roller bearing for drive pinion)

- Secure final drive on a repair stand.
- -> Pull outer race for large taper roller bearing into housing without shim.

Note:

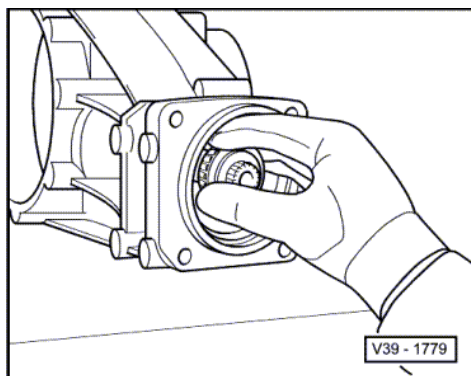
Thoroughly oil bearing race and bearing seat in housing.



- -> Pull outer race for small taper roller bearing into housing.

Note:

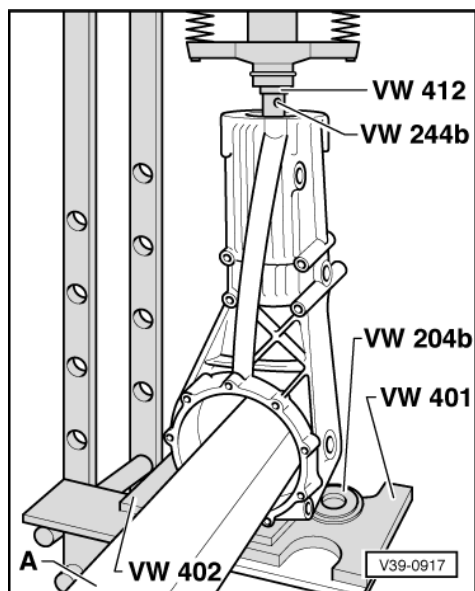
Thoroughly oil bearing race and bearing seat in housing.



- -> Insert drive pinion without spacer sleeve.
- Heat inner race for taper roller bearing to approx. 100 °C and fit onto drive pinion.

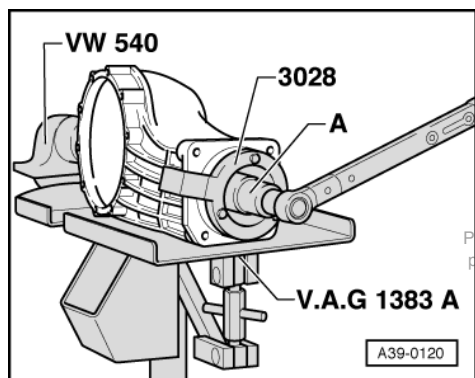
Note:

Only install spacer sleeve for final frictional torque measurement (after determining shim "S3").



- -> Press taper roller bearing fully home.

A - Wooden block used to support drive pinion



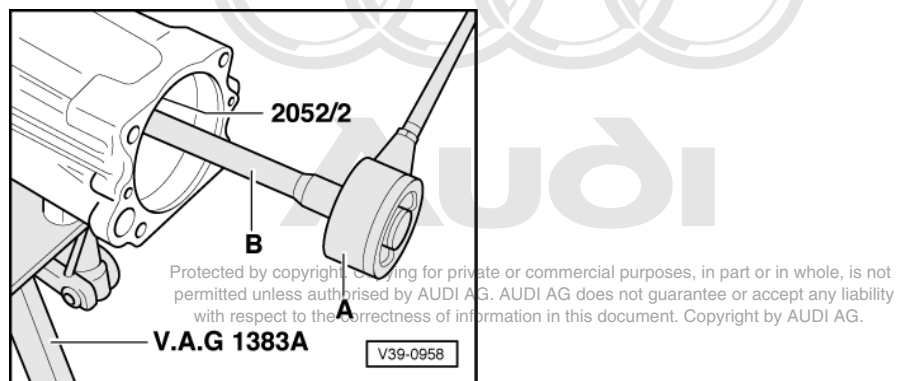
- -> Tighten drive pinion nut until the following friction torque is obtained.

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

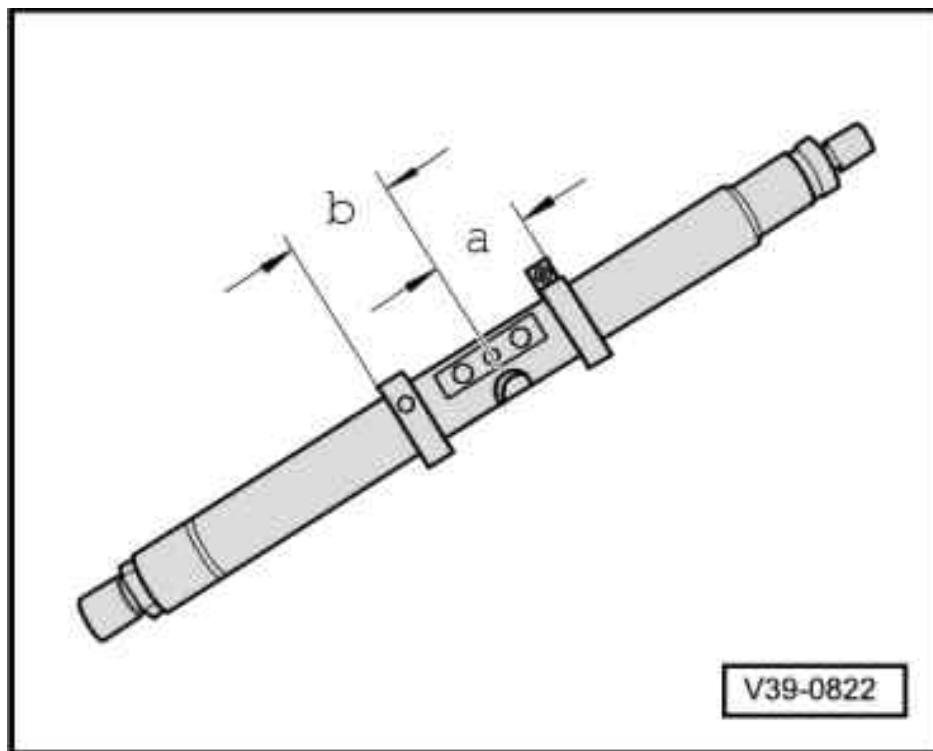
New bearings	Used bearings
250 - 300 Ncm	30 - 60 Ncm

Note:

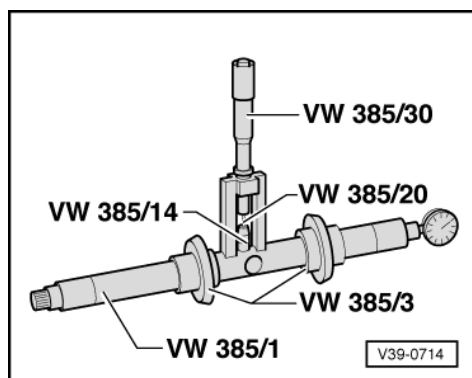
The final drive must be supported (e.g. with V.A.G 1383 A) when tightening the drive pinion nut, otherwise the threaded holes in the housing will be damaged.



- A - -> Torque gauge, commercially available,
0 - 600 Ncm
- B - Extension with 32 mm socket



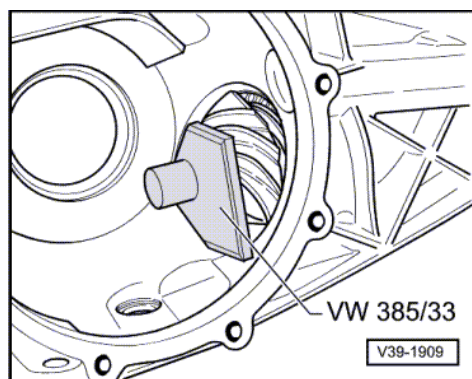
- -> Set adjustment ring of universal mandrel VW 385/1.
 - Distance "a" = 75 mm
- Set sliding adjustment ring.
 - Distance "b" = 35 mm



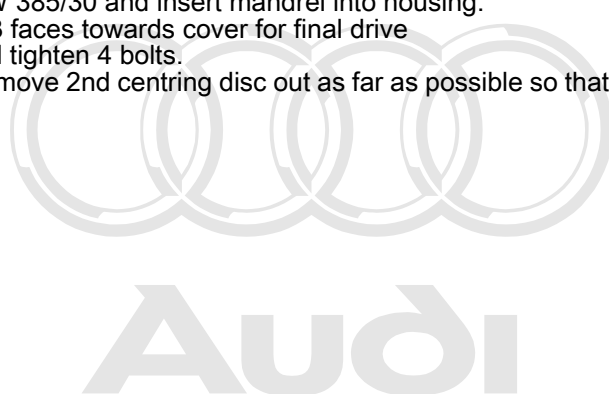
- -> Assemble universal mandrel as illustrated:
 - Dial gauge extension VW 385/20 = 3 mm long
- Set universal master gauge VW 385/30.
 - Ro = 53.15 mm
- Set dial gauge (3 mm measuring range) to "0" with 2 mm preload.

Note:

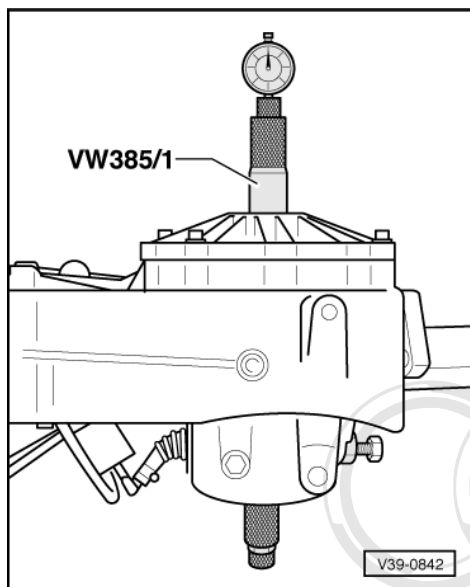
Before performing following measurements turn drive pinion at least five turns in both directions, so that the taper roller bearings settle. Otherwise a false reading will be obtained.



- -> Place end measuring plate VW 385/33 onto drive pinion head.
- Remove master gauge VW 385/30 and insert mandrel into housing.
 - The centring disc 385/3 faces towards cover for final drive
- Fit cover for final drive and tighten 4 bolts.
- Using the adjustable ring, move 2nd centring disc out as far as possible so that the mandrel can still just be turned by hand.



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



Determining measurement "e"

- -> Turn mandrel until the dial gauge point touches the end measuring plate on drive pinion head, then measure maximum deflection (return point). The measured value is dimension "e" (in red scale).
- Measurement in following example:
"e" = 1.60 mm

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

Note:

Dimension "e" is required to determine thickness of shim "S3".

- After removing universal mandrel, check once again whether the dial gauge reads "0" with 2 mm preload when master gauge VW 385/30 is in place - otherwise repeat the measurement.

Determining shim thickness "S3"

Formula:

$$\text{"S3"} = \text{"e"} - \text{"r"}$$

e = determined value

r = deviation (tolerance) marked on crown wheel in 1/100 mm

Example:

Determined value "e"	1.60 mm
- Deviation (tolerance) "r"	0.42 mm
= Thickness of shim "S3"	1.18 mm

- Determine shim(s) from table. Part numbers

=> Parts catalogue

The following shims are available for "S3"

Shim thickness (mm) 1)		
0.95	1.15	1.35
1.00	1.20	1.45
1.05	1.25	1.50



Shim thickness (mm) 1)		
1.10	1.30	1.55

1) Using the shim tolerance variations it is possible to find the exact shim thickness required, insert two shims if necessary.

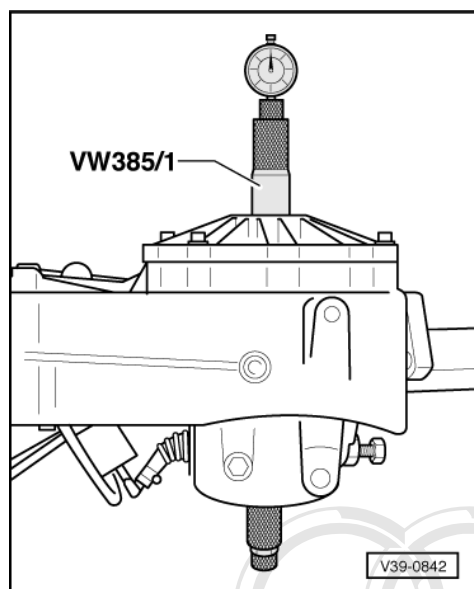
- Remove universal mandrel.
- Remove drive pinion and outer race for large taper roller bearing and reinstall with determined shim(s) and spacer sleeve => page 215 .
- Insert inner race for small taper roller bearing and tighten drive pinion nut until specified frictional torque is achieved => page 215 .

Note:

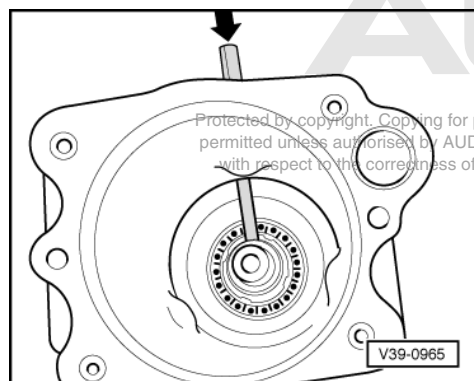
Increase tightening torque slowly and check friction torque at regular intervals. If the specified friction torque is exceeded, the spacer sleeve must be renewed. A spacer sleeve which has been compressed too far cannot be reused.

- Set to following frictional torques:

New bearings	Used bearings
250 - 300 Ncm	30 - 60 Ncm

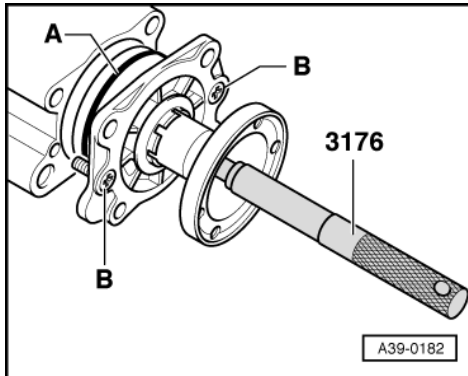
**Performing check measurement****Checking dimension "r"**

- Turn drive pinion at least 5 turns in both directions.
- -> Insert universal mandrel and perform check measurement.
- If the shims have been correctly selected, the dial gauge should now show the value of "r" as marked on the crown wheel, reading anti-clockwise in the red scale, within a tolerance of ± 0.04 mm.



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

- -> Peen drive pinion nut by applying a punch through the oil drain hole.



- -> Always fit new O-ring -A- and lubricate lightly before inserting.
- Install flange for propshaft and cover for final drive.
- Drive in flange shaft with drift 3176.
- Tighten 2 countersunk bolts -B- for cover to 25 Nm.
- Measure radial run-out at flange for propshaft and mark=>page 172 .

16 - Adjusting crown wheel

16.1 - Adjusting crown wheel

(Adjusting differential)

Repairs after which the crown wheel must be adjusted => page 239 .

Determining total shim thickness "Stotal" for shims "S1" + "S2"

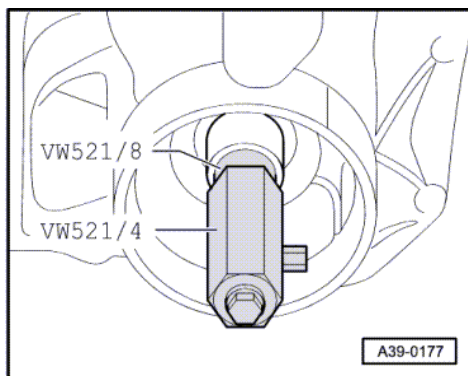
(Setting preload of taper roller bearings for differential)

- Drive pinion removed or crown wheel dismantled from differential housing
- Remove seal and left and right differential outer races for taper roller bearings and take out shims => page 214 .
- Drive left outer race for taper roller bearing for differential (housing side) with shim "S2" into final drive housing => Page 213 . For measurement purposes an "S2*" shim 1.00 mm thick (2 shims, 1 of 0.80 mm and 1 of 0.20 mm).

Note:

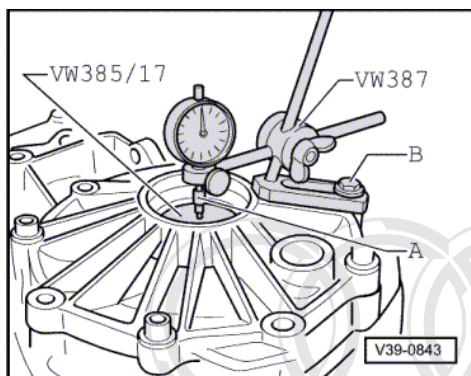
For measurement purposes a shim "S2" of 1.0 mm is initially inserted which will be designated "S2" in the following. After determining the backlash "S2*" will be replaced by the correct "S2".*

- Drive outer race for right-hand taper roller bearing for differential (cover side) without shim in onto stop => page 214 .





- Insert differential into housing. The crown wheel is positioned on the right side (cover side).
- Fit cover and tighten bolts to 25 Nm.
- -> Install special tools VW 521/4 and 521/8 onto housing side in differential housing.
- Turn cover side of differential housing upwards.
- Turn differential 5 turns in both directions to settle the taper roller bearing.

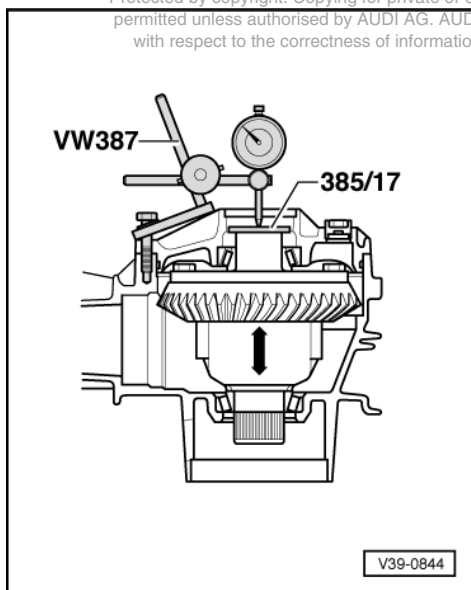


- Place measuring plate VW 385/17 onto differential.
- -> Assemble measuring tools.

A - Dial gauge extension approx. 30 mm long
B - Hexagon bolt M8 x 45

- Set dial gauge extension onto centre of plate.
- Set dial gauge (3 mm measuring range) to "0" with 1 mm preload.

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



- -> Lift differential without turning; read off play on dial gauge and note.
- Measurement in following example: 0.50 mm

Note:

If the measurement has to be repeated, the differential must be turned five turns in each direction again so that the taper roller bearings settle.

Formula:

"Stot." = "S2*" + measurement + bearing preload

Example:

Inserted shim(s) "S2*"	1.00 mm
------------------------	---------

Example:	
+ Measured value	0.50 mm
+ Bearing preload (constant)	0.30 mm
= Total shim thickness "Stotal" for shims "S1" + "S2"	1.80 mm

Determining thickness of shim "S1"

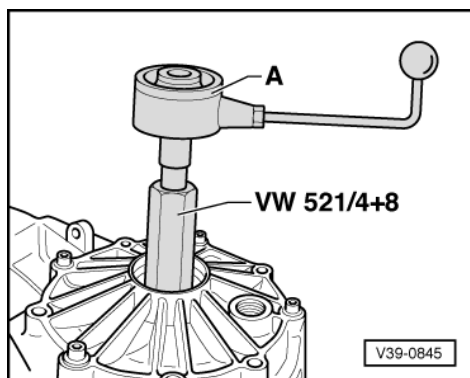
Notes:

- ♦ The preliminary adjustment shim "S1*" will be replaced with the final shim "S1" after determining the backlash.
- ♦ The total shim thickness "Stotal" remains the same.

Formula:	
"S1"	= "Stotal" - "S2"

Example:	
Total shim thickness "Stotal" for shims "S1" + "S2"	1.80 mm
- Inserted shim(s) "S2"	1.00 mm
= Thickness of shim "S1"	0.80 mm

- Determine shim(s) from table => page **251** .



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

Measuring frictional torque (check)

- Drive pinion removed
 - Differential fitted with shims "S1*" and "S2"
- -> Fit torque gauge 0 - 600 Ncm -A- onto differential.
 - Read off frictional torque.

Frictional torque specifications:

New bearings	Used bearings
250 - 300 Ncm	30 - 60 Ncm

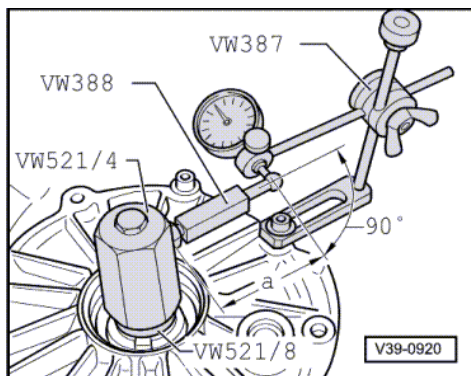
Note:

*If the final drive set (drive pinion and crown wheel) is being re-adjusted, the adjustment of the drive pinion should be performed now, and the adjustment checked => page **240** .*

Adjusting backlash

(Positioning crown wheel in final drive housing)

- Drive pinion with shim "S3" installed
- Differential with shims "S1*" + "S2*" installed
- Insert differential in final drive housing, install cover and tighten all bolts to 25 Nm.



- Turn differential 5 turns in both directions to settle the taper roller bearings.
- -> Assemble measuring equipment.
- Use dial gauge extension VW 382/10 (6 mm flat).
- Set measuring lever VW 388 to dimension "a" = 60 mm.
- Determine play between the teeth flanks as follows:
 - Turn crown wheel until it makes contact with a tooth flank (end of backlash travel).
 - Set dial gauge to "0" with 1 mm preload.
 - Turn crown wheel back until lying against an opposite tooth flank (backlash).
 - Read off backlash and note value.
 - Turn crown wheel through 90° and repeat measurements a further 3 times.

Note:

If the individual measurements differ by more than 0.06 mm from each other, the installation of the crown wheel or the final drive set itself is not correct. Check installation, replace final drive set if necessary.

Determining average backlash

Example:	
1st measurement	0.28 mm
+ 2nd measurement	0.30 mm
+ 3rd measurement	0.30 mm
+ 4th measurement	0.28 mm
= Sum of measured values	1.16 mm

- Result: the average backlash is $1.16 : 4 = 0.29$ mm

Determining thickness of shim "S2"

Formula:	
"S2"	= "S2*" - backlash + lift

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

Example:	
Inserted shim "S2"	1.00 mm
- Average backlash	0.29 mm
+ Lift (constant)	0.15 mm

Example:		
= Thickness of shim "S2"		0.86 mm

- Determine shim from table. Part numbers

=> Parts catalogue

The following shims are available for "S2"

Shim thickness (mm) 1)		
0.15	0.60	1.50
0.20	0.65	1.65
0.25	0.80	
0.55	1.35	

1) Using the shim tolerance variations it is possible to find the exact shim thickness required, insert two shims if necessary.

Determining thickness of shim "S1"

Formula:		
"S1"	=	"Stotal" - "S2"

Example:		
Total shim thickness "Stotal" for "S1" + "S2"		1.80 mm
- Thickness of shim "S2"		0.86 mm
= Thickness of shim "S1"		0.94 mm

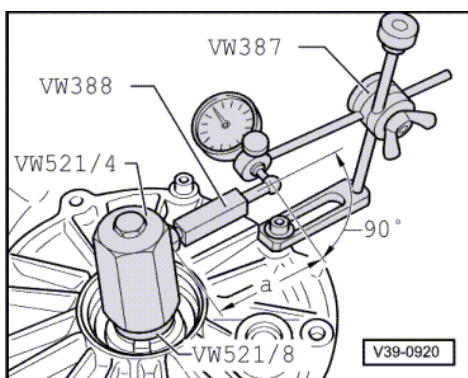
- Determine shim(s) from table. Part numbers

=> Parts catalogue

The following shims are available for "S1"

Shim thickness (mm) 1)		
0.15	0.50	1.50
0.20	0.80	
0.25	1.00	

1) Using the shim tolerance variations it is possible to find the exact shim thickness required, insert two shims if necessary.





-> Performing check measurement

- Drive pinion with shim "S3" installed
- Differential with shims "S1" + "S2" installed
- Turn differential 5 turns in both directions so that the taper roller bearings settle.
- Measure backlash four times on circumference.
 - Specifications: 0.12 - 0.22 mm

Notes:

- ♦ If the backlash lies outside the tolerances, the adjustments must be repeated, but the total shim thickness "Stotal" must remain unchanged.
- ♦ The individual measurements must not differ by more than 0.06 mm from each other.



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