

Audi A3 1997 ➤

5-gear manual gearbox 02C four wheel drive/final drives

Gearbox ID	EAJ	EHQ	EUL	FEW	FEX				
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Edition 11.1998

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

Audi A3 1997 ➤

5-gear manual gearbox 02C four wheel drive/final drives

Repair Group

00 - Technical data

01 - Self-diagnosis, Electrical check

39 - Final drive, Differential rear



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

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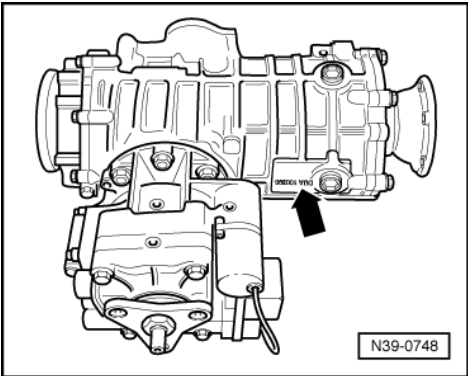
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00 - Technical data

1 - Rear final drive identification

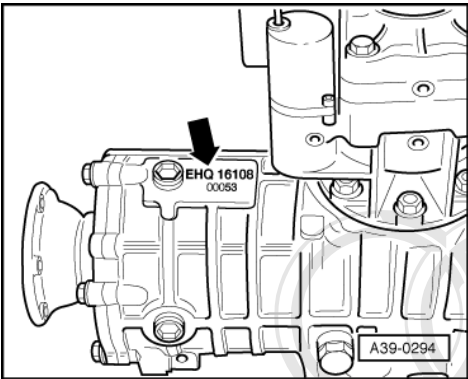
1.1 - Rear final drive identification

Final drive 02D is assigned to the manual gearbox 02C, FWD.



Allocation => Page 2 .

-> Location on rear final drive



-> Code letters and manufacturing data for rear final drive:

Example:	EHQ	16	10	8
	Code letters	Day	Month	Year (1998)
				of manufacture

Additional data are production-related



1.2 - Code letters, mechanical unit assignment, transmission ratios, capacities

Rear final drive		02D		
Code letters		EHQ	EUL	
Production	from to	10.98 09.99	05.99	
Allocation	Model	Audi A3 1997 ä 1.8 l -110 kW	Audi A3 1997 ä 1.8 l -110 kW	
	Engine			
Ratio: Z2 : Z1	Angle drive front / rear	17 : 27 x 27 : 17 = 1.00	17 : 27 x 27 : 17 = 1.00	
Capacity in final drive		1.0 litres		
Specification		Gear oil G50 SAE 75W90 (synthetic oil)		
Capacity in Haldex clutch		0.42 litres		
Exchange capacity in Haldex clutch		0.25 litres		
Specification		High performance oil for Haldex clutch G 052 175 A1		
Drive shaft flange ø		100 mm	100 mm	
Assignment of manual gearbox Code letters		EAJ	EAJ	

With gearbox code EUL modified control unit for Haldex clutch. Insertion is carried out infinitely.

Manual gearbox		5 gear 02C 4WD		
Code letters		EAJ		
Production	from to	10.98		
Allocation	Model	Audi A3 1997 ä 1.8 l -110 kW		
	Engine			
Ratio: Z2 : Z1	Final drive	63 : 16 = 3.938		
	1. gear	33 : 10 = 3.300		
	2. gear	35 : 18 = 1.944		
	3. gear	34 : 25 = 1.360		
	4. gear	35 : 34 = 1.029		
	5. gear	36 : 43 = 0.837		
	6. gear	-		
	Reverse gear	17 : 10 x 36 : 20 = 3.060		
	Speedometer	13 : 22 = 0.591		

Code letters	EAJ		
Capacity	2.4 l		
Specification	Gear oil G50 SAE 75W90 (synthetic oil)		
Clutch mechanism	hydraulic		
Clutch plate dia.	219 mm1)		
Drive shaft flange ø	108 mm		
Overall ratio in top gear	3,297		

Assignment of rear final drive Code letters	EHQ EUL		
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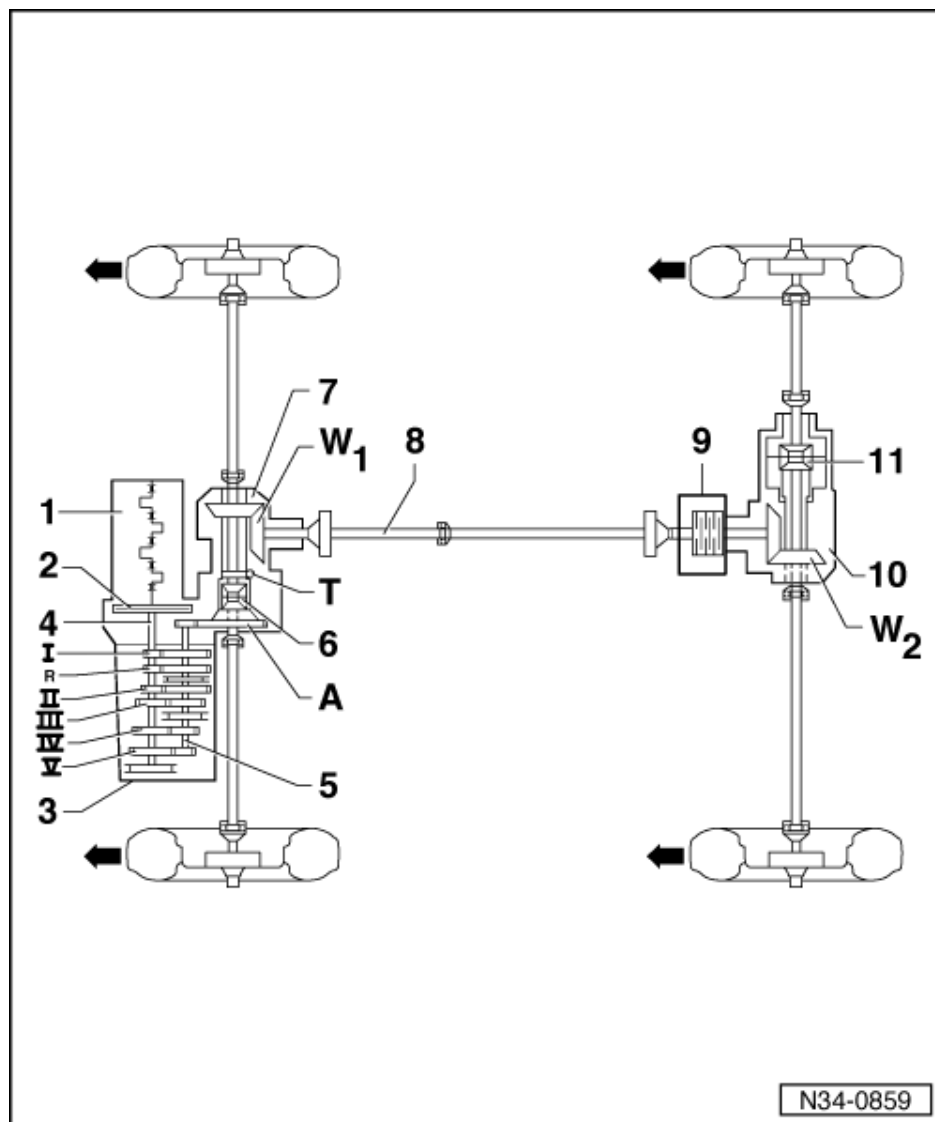
Note:

- 1) With dual-mass flywheel

2 - Transmission layout

2.1 - Transmission layout

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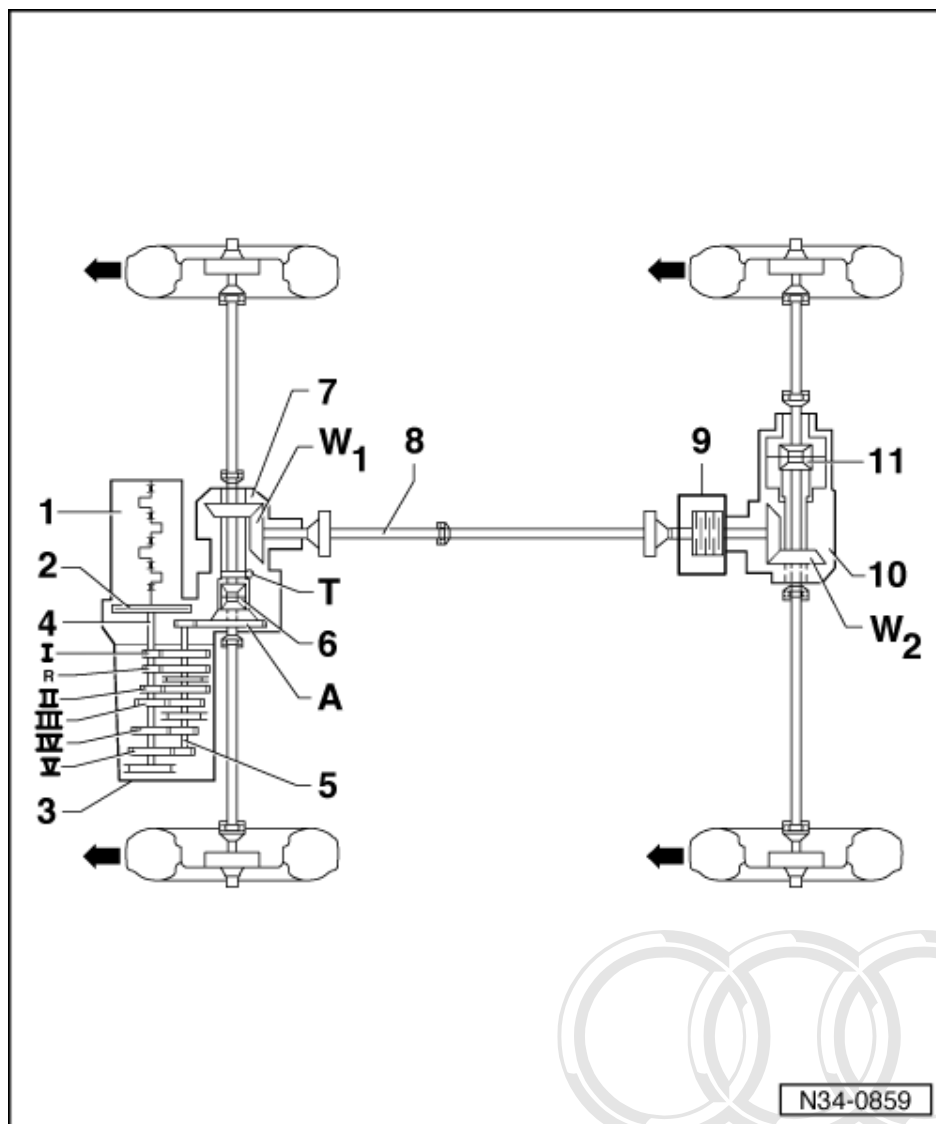
Designation

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



- 7 Angle drive
- 8 Propshaft
- 9 Haldex clutch
- 10 Rear final drive
- 11 Differential

Arrows in direction of travel



Ratio

I	- 1. gear
II	- 2. gear
III	- 3. gear
IV	- 4. gear
V	- 5. gear
R	- Reverse gear
A	- Final drive
T	- Speedometer drive
W1	- Front angle drive

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W2 - Rear angle drive

Arrows in direction of travel

3 - General repair instructions

3.1 - General 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.

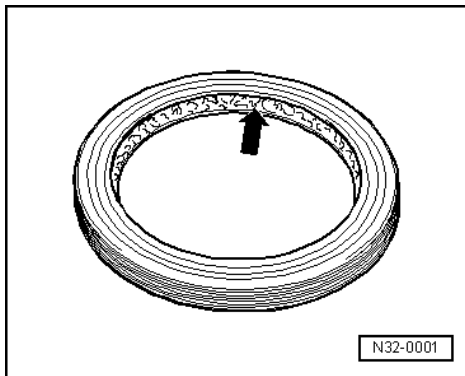
A number of generally applicable instructions for individual repair operations, which are otherwise mentioned at various points in the Workshop Manual, are summarised here. They apply to this Workshop Manual.

Gearbox

- ◆ When changing the rear final drive check gear oil and oil for the Haldex clutch and top up, if necessary.
- ◆ When changing the angle drive top up gear oil.
- ◆ Capacity and Specification =>Page 2.
- ◆ When assembling mounting bracket as well as waxed components clean contact surfaces. Contact surfaces must be free of wax and grease.

O-rings, seals, gaskets

- ◆ Always replace O-rings,, sealing rings and gaskets.
- ◆ Thoroughly clean separation surfaces.

Before installing:

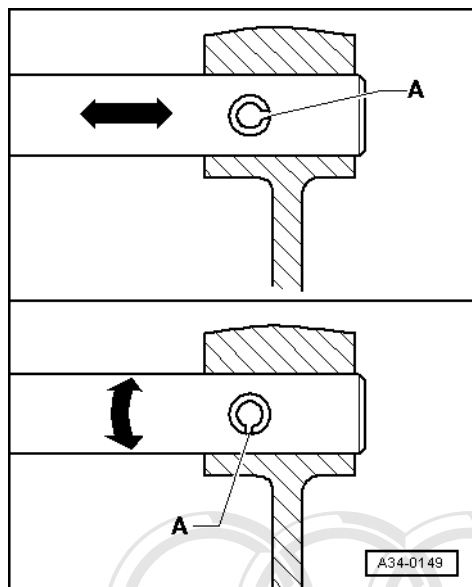
- ◆ -> Before installing radial shaft oil seals, lightly oil outer circumference and fill space between sealing lips - arrow- with grease.
- ◆ The open side of the oil seals faces toward the side with fluid filling.

After installation:

- ◆ Checking gear oil level in rear final drive
=> Page 121.
- ◆ Check oil level in Haldex clutch => Page 122.

Locking elements

- ◆ Do not over-stretch circlips.
- ◆ Always renew circlips which have been damaged or over-tensioned.
- ◆ Circlips must be properly seated in the base of the groove.



- ♦ -> Renew spring pins. Fitting location: Slot -A- longitudinal to line of force -arrow-.

Nuts, bolts

- ♦ Nuts and bolts which secure covers and housings should be slackened and tightened diagonally.
- ♦ Parts which are particularly sensitive must not be tilted and loosened or tightened diagonally in stages.
- ♦ The tightening torques stated apply to non-oiled nuts and bolts.
- ♦ Replace self-locking bolts and nuts.
- ♦ Ensure with all screw connections that contact surfaces as well as bolts and nuts are only waxed after assembly, if necessary.

Mounting

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- ♦ Attach the needle bearing with the written side (greater plate thickness) to the installing tool.
- ♦ Lubricate all bearings in gearbox with gear oil when installing.
- ♦ Always replace the taper roller bearings on one shaft together and use new bearings from a single manufacturer.
- ♦ Heat inner races to approx. 100 °C before installing.
- ♦ Do not interchange the outer or inner races of bearings of the same size. The bearings are paired.

Einstellscheiben

- ♦ Check thickness of shims by measuring at several points with a micrometer. Different tolerances make it possible to obtain exact adjustment shim thickness required.
- ♦ Check for burrs and damage.
- ♦ Install only shims which are in perfect condition.

01 - Self-diagnosis, Electrical check

1 - Self diagnosis, electrical test

1.1 - Self diagnosis, electrical test

1.2 - Safety precautions

To prevent injuries to persons and/or damage to the fuel injection and ignition system, the following must be noted:

- ♦ Always switch off the ignition before connecting or disconnecting measuring instruments and testers.
- ♦ In the case of some tests, a fault may be recognised and stored by the control unit. At the end of all tests and repairs, therefore, the fault memory should be interrogated and, if necessary, erased.

Note the following points if testers and measuring instruments have to be used during a road test:

- ♦ Testers and measuring instruments must always be secured to the rear seat and operated by a 2nd person from this location.

If test equipment were operated from the front passenger seat, the person sitting there could be injured if the front passenger airbag were triggered in the event of an accident.

Important:

Secure fault reader V.A.G 1551 or the vehicle diagnosis, measuring and information system VAS 5051 on rear seat only and operate from there.

1.3 - Function of self-diagnosis

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Central component of the 4WD is the electronically, hydraulically controlled Haldex clutch.

Advantages:

- ♦ Permanent 4WD from 400 rpm engine speed
- ♦ Short response of Haldex clutch
- ♦ Individual adaptation of 4WD in all driving situations
- ♦ No tensioning when taking corners very tight

Additionally required information

- ♦ Self-study program no. 206

Control unit overview

There are two different types of control units for the 4WD -J492.

- ♦ Up to 04.99 no control units are able to perform diagnosis. In case of problems with these vehicles the electrical test must be carried out completely => Page 29 .



- ♦ From 05.99 onwards all control units are able to perform diagnosis. This new generation of control units with modified software can only be recognised through the part no. of the control unit.

Allocation of control unit

=> Replacement parts catalogue

The following description of the self diagnosis only refers to vehicles with the new control unit generation (from 05.99 onwards).

Functions of control unit for 4WD

Due to the control units being connected with each other via a Data BUS line all the memories of the control units installed in the vehicle must be interrogated when starting the fault finding.

This is carried out with the "Automatic test sequence" which is activated with key function 00.

During this it must be checked whether a possibly stored fault has any influence over the Haldex clutch.

The self - diagnosis relates to the electrical/electronic part of the Haldex clutch, i.e. it only registers faults (e.g. supply voltage too small) via the electrical connection to the control unit.

The control unit recognises faults during the vehicle operation and stores them in a fault memory => -Fault table-from Page **22**. This information remains intact even when battery voltage fails.

Faults which only occur sporadically are printed off with the remark "sporadic fault". These faults are shown with "/SP" on the display. Causes for the sporadic faults could be, for example, a loose connection or a short-term open circuit. However, if the fault does no longer occur after 10 vehicle starts and driving operations with faults which concern the Data BUS system or with 50 vehicle starts and driving operations with other faults this fault is erased in the fault memory (fault counter) with the exception of the fault "control unit defective".

The stored faults can be read with the fault reader V.A.G 1551, vehicle system tester V.A.G 1552 or with the new tester VAS 5051 => Page **21**.

The information displayed uses a fault table to indicate possible causes and their appropriate repair measures

After one or more faults are corrected the fault memory must be erased => Page **24**.

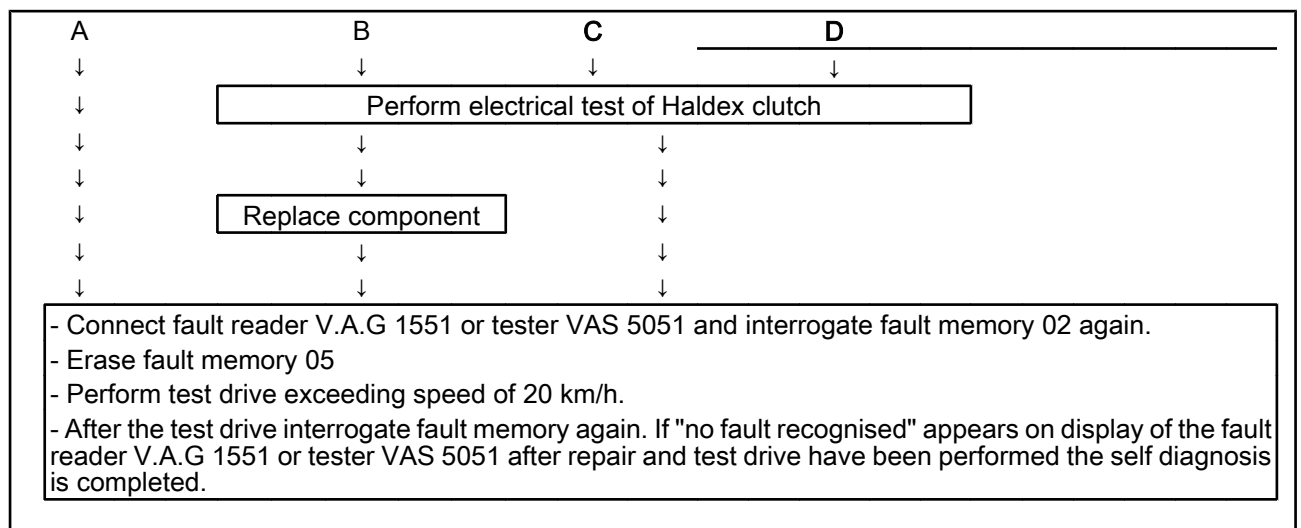
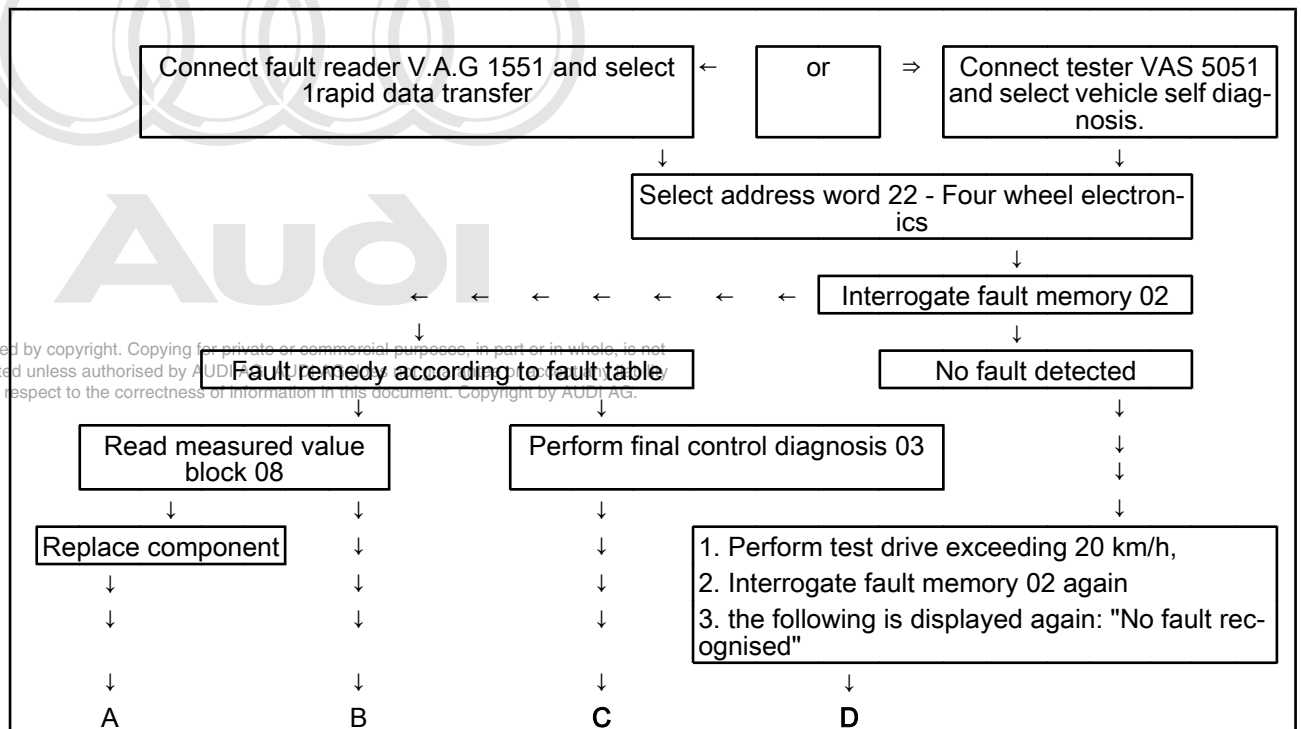
Note:

General information about self diagnosis can be found in the operating instructions for the fault reader V.A.G 1551, fault system tester V.A.G 1552 or the new tester VAS 5051.

1.4 - Technical data of self-diagnosis

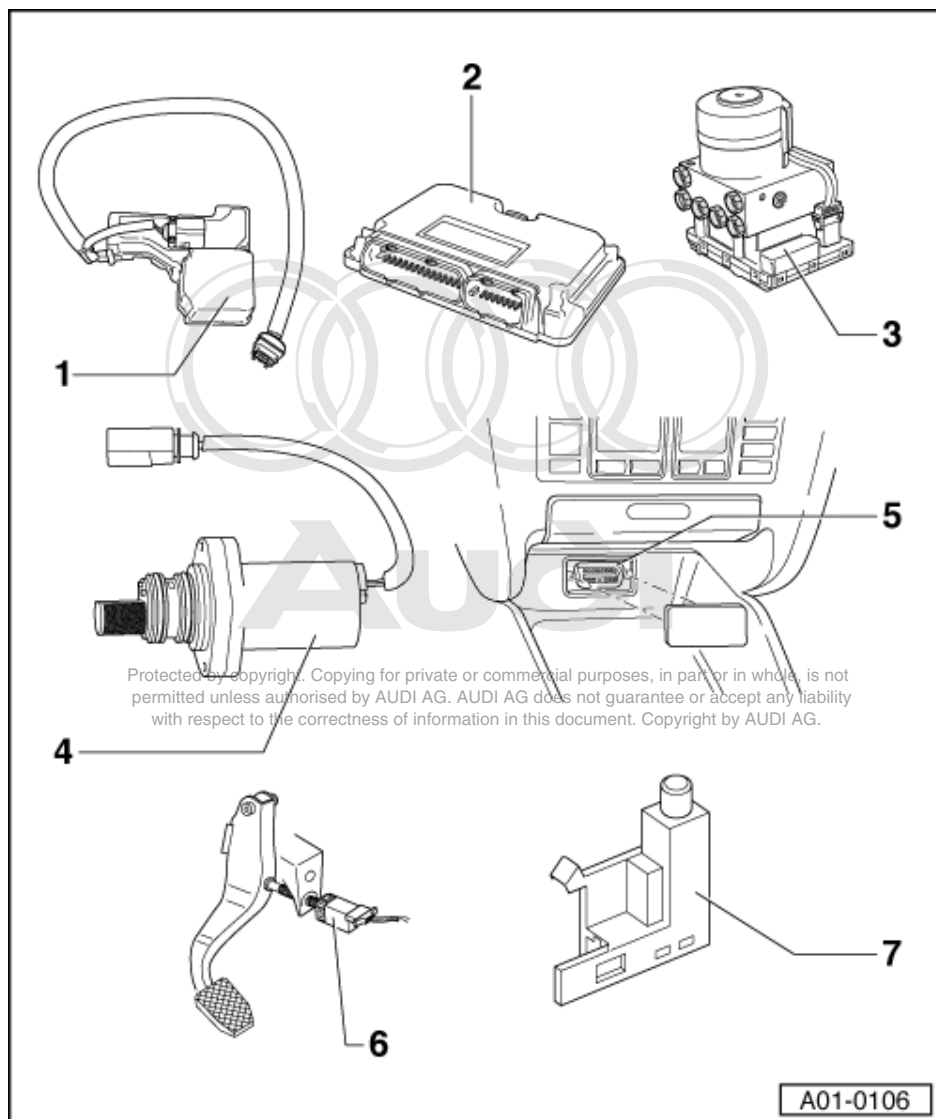
Memory	
-Permanent memory	yes
Data output	
- Rapid data transfer	yes
Data transfer between control units via:	
- Data BUS	yes
Final control diagnosis	yes
Basic setting	no
Encoding control unit	no
Reading measured value block	yes
Electric/electronic components and installation locations	=> Page 10

1.5 - Fault finding with fault reader V.A.G 1551 or with tester VAS 5051 on "Haldex clutch" (indicator)



2 - Electric/electronic components and installation locations

2.1 - Electric/electronic components and installation locations



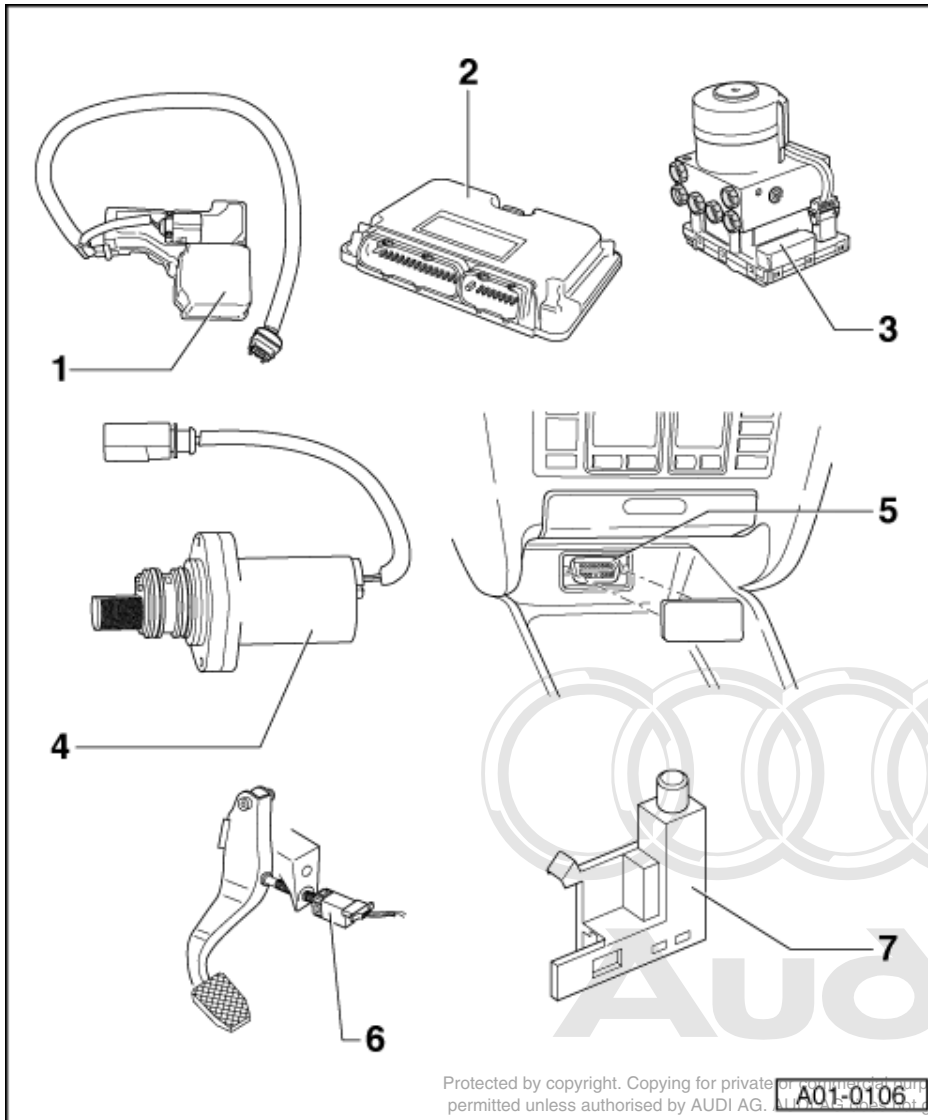
1 Control unit for Four Wheel drive -J492

- ◆ Fitting location => Fig. 1
- ◆ Is one unit together with positioning motor for oil pressure -V184 and the hydraulic temperature sender -G271
- ◆ From 05.99 onwards testing is carried out with self-diagnosis => Page 7
- ◆ Removing and installing => Page 14

2 Engine control unit

- ◆ Fitting location => Fig. 3
- ◆ The following signals are sent via the Data BUS to the four wheel drive control unit -J492:
 - Engine speed
 - accelerator pedal position
 - Engine torque
- ◆ Removing and installing

=> Motronic injection and ignition system (4 cylinder Turbo); Repair Group 24; Servicing Motronic injection system; Replacing engine control unit Servicing Motronic injection system Replacing engine control unit



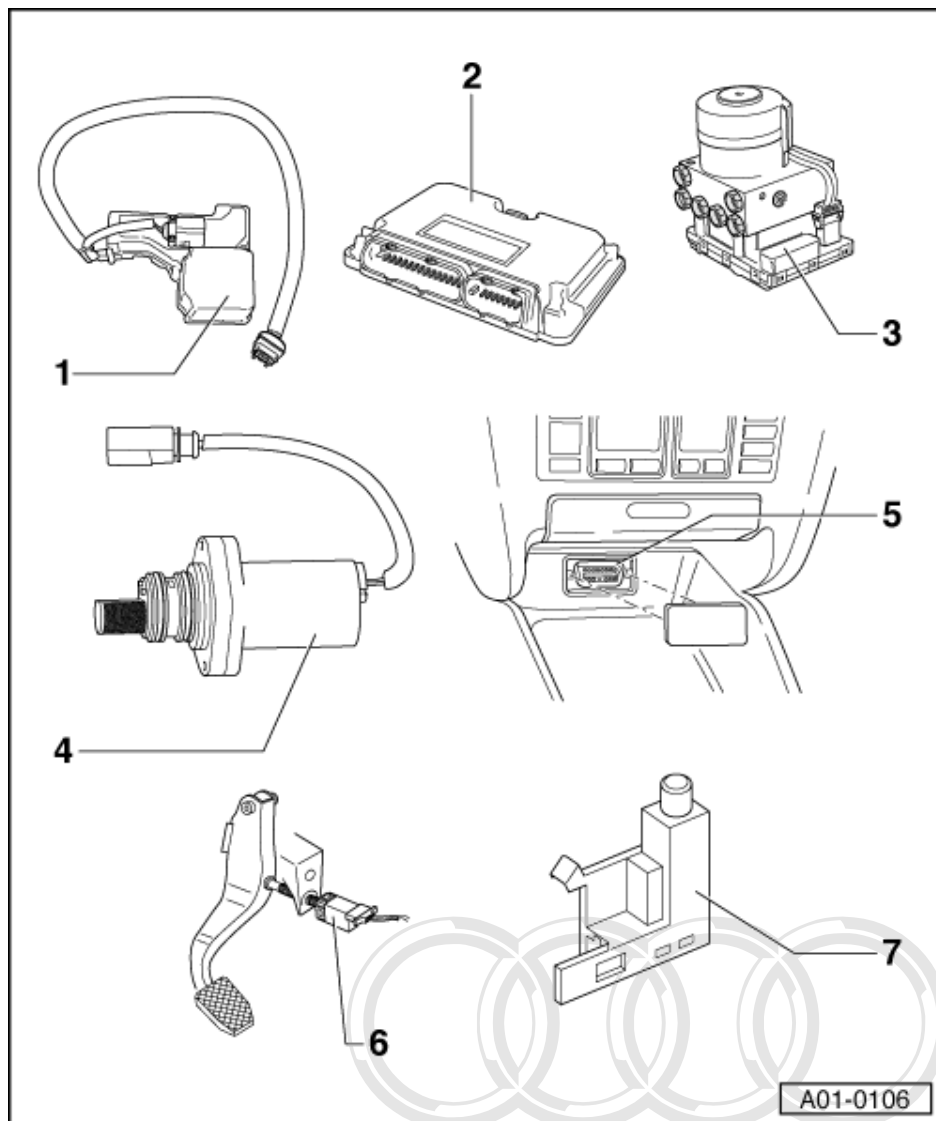
3 ABS control unit -J104

- ◆ Location: at hydraulic unit on left-hand side of engine compartment.
- ◆ Following signals are sent via the Data BUS to the four wheel drive control unit -J492:
 - Wheel speed figures
 - Longitudinal acceleration
 - Brake operation
- ◆ Removing and installing

=> Running gear; Repair group 45; Electrical/Electronic components and fitting locations; Servicing hydraulic control unit Electrical/Electronic components and fitting locations Servicing hydraulic control unit

4 Pump for Haldex clutch -V181

- ◆ Fitting location => Fig. 2
- ◆ May be checked in final control diagnosis => Page 29
- ◆ Removing and installing => Page 15



5 Diagnostic socket

- ◆ Location: Located in centre console below ashtray

6 Brake light switch -F

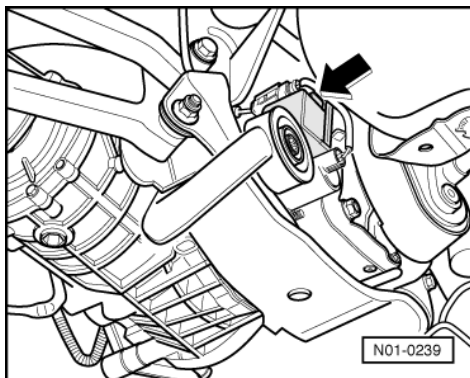
- ◆ Location: At brake pedal
- ◆ May be checked in measured value block => Page 29
- ◆ Removing and installing

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=> Running gear; Repair Group 45: Electrical/electronic components and fitting locations Electrical/electronic components and fitting locations

7 Handbrake warning switch -F9

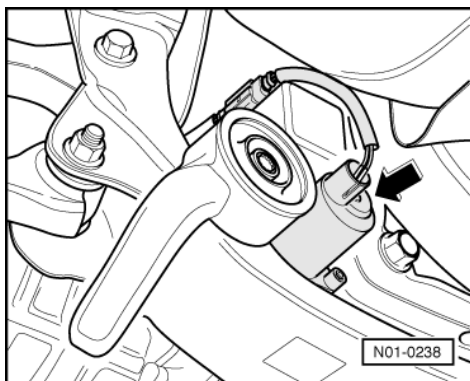
- ◆ Fitting location => Fig. 4
- ◆ May be checked in measured value block => Page 29



-> Fig.1 Control unit for four-wheel drive -J492

Location: The control unit (arrow) is located on the rear final drive on the front right-hand side.

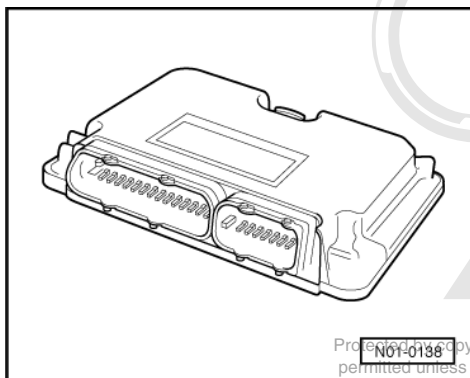
Removing and installing => Page 14



-> Fig.2 Pump for Haldex clutch -V181

Location: The pump for the Haldex clutch (arrow) is located on the rear final drive in the front right-hand side underneath the control unit.

Removing and installing => Page 15



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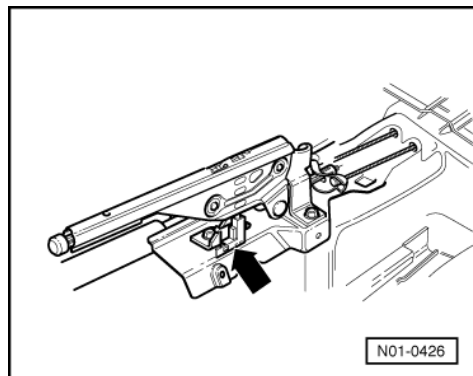


-> Fig.3 Engine control unit

Location: The control unit is located in the plenum chamber.

Removing and installing control unit

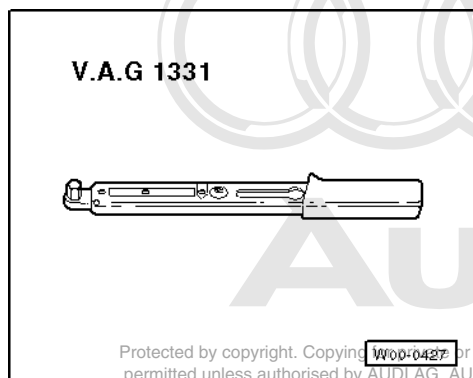
=> Motronic injection and ignition system (4 cylinder Turbo); Repair Group 24; Servicing Motronic injection system; Replacing engine control unit Servicing Motronic injection system Replacing engine control unit



-> Fig.4 Switch for handbrake control -F9

Location: The switch (arrow) is located on the handbrake lever.

2.2 - Removing and installing four-wheel drive control unit -J492

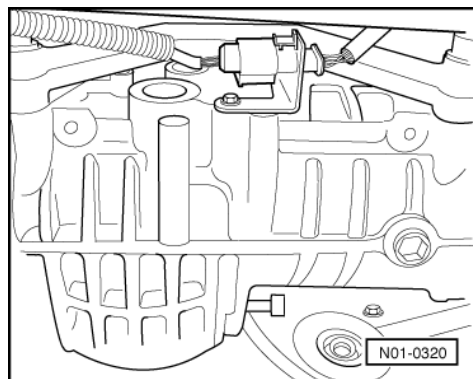


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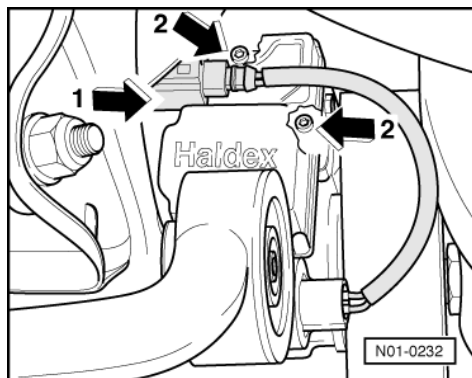
Special tools and workshop equipment required

- ♦ V.A.G 1331 Torque wrench

Removing

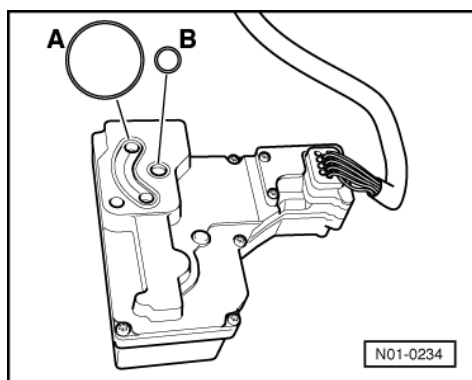


- Switch off ignition.
- -> Unplug connector from rear final drive.



- -> Unplug connector for pump for Haldex clutch (arrow 1).
- Position container underneath final drive.
- Remove bolts (arrows 2).
- Remove control unit.

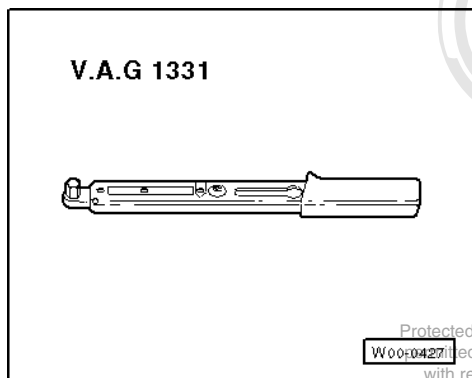
Installing



Installation is carried out in the reverse order to removal, noting the following:

- -> Replace O-rings -A- and -B-.
- Tighten bolts to 6 Nm.
- Check oil level in Haldex clutch => Page 124 .

2.3 - Removing and installing pump for Haldex clutch -V181

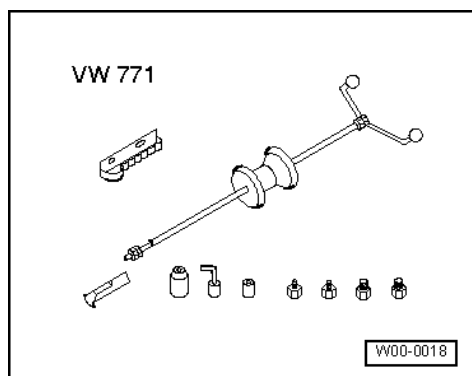


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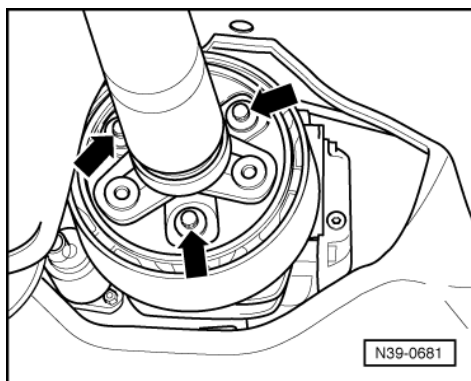
Special tools and workshop equipment required

- ♦ V.A.G 1331 Torque wrench

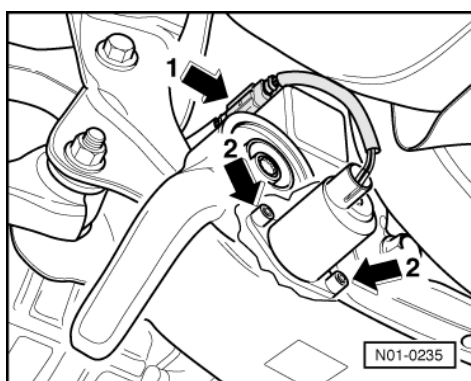


- ♦ VW 771 Multi-purpose tool

Removing



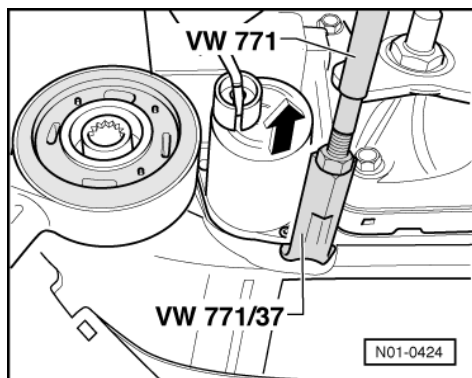
- Switch off ignition.
- -> Unscrew rear prop shaft with disc coupling and oscillation damper from rear final drive (arrows) and carefully press forward => Page **75**.



- -> Unplug connector for pump for Haldex clutch (arrow 1).
- Position container underneath final drive.
- Remove bolts (arrows 2).



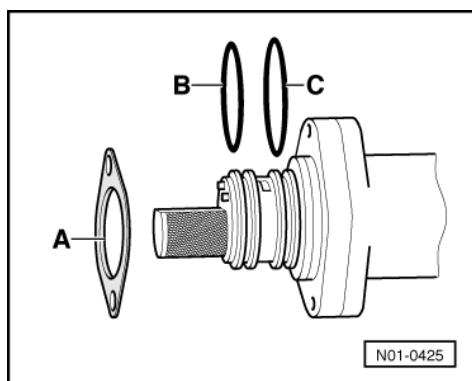
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- Then turn pump slightly to the right.
- -> Pull pump out (direction of arrow).

Installing

Installation is carried out in the reverse order to removal, noting the following:



- -> Replace seal-A-.
- Replace O-rings -B- and -C-.
- Note the different diameters:
 - ◆ $\varnothing$ O-ring -B- = 31.5 mm
 - ◆ $\varnothing$ O-ring -C- = 33 mm
- Press pump in until limit stop.
- Tighten bolts to 6 Nm.
- Check oil level in Haldex clutch => Page 124 .

3 - Performing the self-diagnosis

3.1 - Performing the self-diagnosis

Note:

The following description only refers to vehicles with the new control unit generation (from 05.99 onwards) => Page 7 ..

3.2 - Self-diagnosis test prerequisites

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- Function of Haldex clutch OK, checking
=> Page 39-42.
- Oil level of Haldex clutch OK, checking



=> Page **123**.

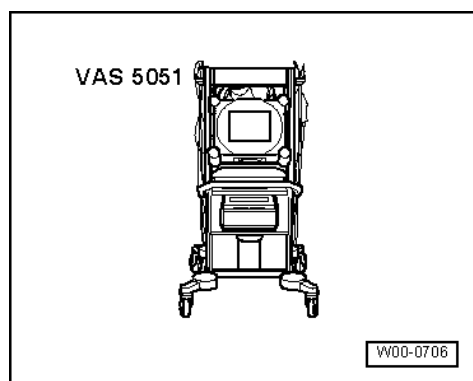
- All fuses are OK according to current flow diagram (remove fuses from fuse holder to check).
- Supply voltage OK (at least 10.0 V).
- Brake light OK

3.3 - Connect fault reader

All functions which have been carried out with the V.A.G 1551 so far can also be carried out with the new tester VAS 5051 in operation mode "Vehicle self-diagnosis".

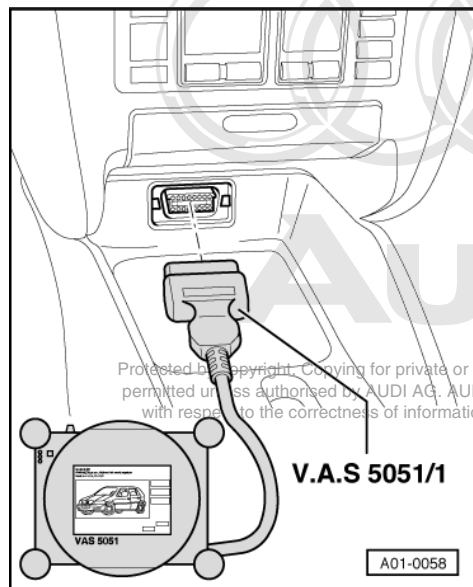
=> Operating instructions of connecting vehicle diagnosis, measurement and information system VAS 5051

Connect VAS 5051



Special tools and workshop equipment required

- ♦ VAS 5051 vehicle diagnosis, measurement and information system
- ♦ Diagnostic wire VAS 5051/1 or VAS 5051/3



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- Remove cover from diagnostic connection.
- -> Connect tester VAS 5051 to diagnostic connector with diagnostic wire VAS 5051/1 or VAS 5051/3 with ignition switched off.
- Switch ignition on.

Select operating mode:

- Press switch area "Vehicle self-diagnosis" on display.

Select vehicle system:

- Press onto switch area "22 four wheel electronics" on display.

Select diagnostic function:

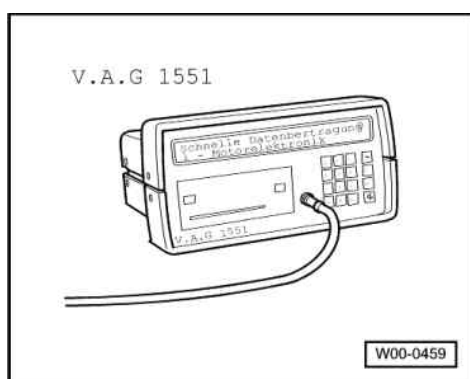
At this point all diagnostic functions are available.

- On display press onto switch area for required function.
- For further procedure see repair sequences

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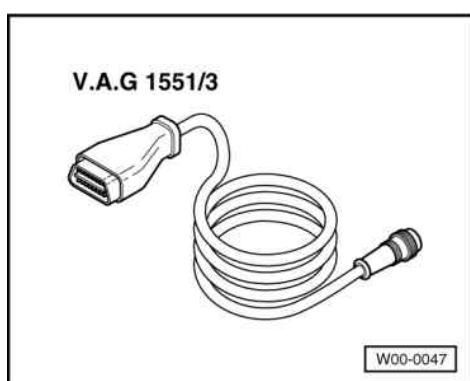
The following test sequences are described for fault reader V.A.G 1551.

Connect V.A.G 1551.



Special tools and workshop equipment required

- ♦ V.A.G 1551 fault reader



- ♦ V.A.G 1551/3 or 1551/3A adapter lead

Note:

The vehicle system tester V.A.G 1552 can be used instead of the fault reader V.A.G 1551, however a print out is not possible.

**Work sequence**

- With ignition switched off connect V.A.G 1551 with cable V.A.G 1551/3 to diagnostic connectors.

-> Display:

```
V.A.G      SELF DIAGNOSIS      HELP
1 - Rapid data transfer 1)
1 - Flash code output 1)
```

1) displayed alternately

Notes:

- ♦ If no display appears check voltage supply to diagnostic plug according to fault finding program:

=> Current Flow Diagrams, Electrical Fault Finding and Fitting Locations

- ♦ If the displays shown during the operating sequence do not appear in the display:

=> Fault reader operating instructions

- ♦ If "fault in data transfer" is displayed due to input error disconnect wire from fault reader, reconnect and perform operating steps again.

- Operate fault reader, taking into account the information on the display:
- Switch ignition on.
- Switch on printer with the Print -key (indicator lamp in key lights up).
- Press key -1- for "Rapid data transfer" operating mode.

-> Display:

```
Rapid data transfer      HELP
Enter address word      XX
```

- Press keys -2- and -2-; 22 enters the address word of the vehicle system to be tested.

-> Display:

```
Rapid data transfer      Q
22 - Four-wheel electronics
```

- Confirm entry with Q key.

-> The following display is shown:

```
02D900554B      HALDEX LSC ECC      0006
□
```

- ♦ Control unit identification number,

e. g. 02D900554B

Allocation of control unit

=> Replacement parts catalogue

- ♦ the system description (HALDEX LSC)
- ♦ the software version of control unit (0006)

- Press => key.

-> Indicated on display (function selection, e.g. 02- Interrogate fault memory)

```
Rapid data transfer HELP
Select function XX
```

- For further procedure see repair sequences.

3.4 - Overview of function selection

	Page
00 - Automatic test sequence	22
01 - Check control unit version	18
02 - Interrogate fault memory	21
03 - Final control diagnosis	25
05 - Erase fault memory	24
06 - End of output	24
08 - Reading measured value block	27

3.5 - Interrogate fault memory

All functions which have been carried out with the V.A.G 1551 so far can also be carried out with the new tester VAS 5051.

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-> Display:

```
Rapid data transfer    HELP
Select function XX
```

- Press keys -0- and -2-; use 02 to enter function "Erase fault memory".

-> Display:

```
Rapid data transfer    Q
02 - Interrogate fault memory
```

- Confirm entry with Q key.

-> The display shows the number of stored faults or "No fault detected!".

```
X      fault(s) detected
```

- Press => key.
- Press =>key.

The stored faults are displayed and printed out one after the other.

- With the fault message printed out eliminate fault according to fault table, page 22 .

As with "no fault detected" the program returns to its initial position when the => key is pressed.

-> Display:

```
Rapid data transfer    HELP
Select function      XX
```

- End output (function 06) => Page 24 .
- Switch off ignition and detach diagnostic connector.

Operating sequence when fault is recognised:

1. Eliminate fault according to fault table, Page 22
2. Interrogate fault memory (function 02)



3. Erase fault memory (function 05).
4. End output (function 06)
5. Test drive vehicle
6. Interrogate fault memory again

3.6 - Automatic test sequence

All fault memory contents of the control units are interrogated with the automatic test sequence.

- Switch ignition on.

-> Display:

V.A.G	SELF DIAGNOSIS	HELP
1 -	Rapid data transfer 1)	
1 -	Flash code output 1)	

1) displayed alternately

- Press key -1- for "Rapid data transfer" operating mode.
- Switch on printer with the Print-key (indicator lamp in key lights up).

-> Display:

Rapid data transfer	HELP
Select function	xx

- Press key -0- twice; enter function "Interrogate automatic test sequence" with 00.
- Confirm entry with Q key.

Following this all control unit identifications with possible entries from their fault memories appear in the display.

3.7 - Fault table

Notes on fault table

- ♦ As the control units are connected via a Data Bus line the fault finding procedure has to always be initiated with "Automatic Test sequence" with the key combination 0 and 0 on all control units present in the vehicle. Through this all control units present in the vehicle are interrogated for their possible faults.
- ♦ To follow are all the possible faults, with the corresponding 5 digit code numbers, that can be detected by the four-wheel drive control unit -J492 and printed out by the V.A.G 1551 or VAS 5051.
- ♦ Fault code in operating mode "Rapid data transfer" is printed out only with printer of V.A.G 1551 switched on.
Example: Fault code (5-digit) 65535
- ♦ When using program card 7.0, a further number (123) is printed out on right next to fault code. This figure illustrates the type of fault which is also described in words underneath the components concerned. There is no explanation of this 3-digit figure in the table. The type of fault is their meaning. It is written underneath the component.
- ♦ Before replacing components indicated as being faulty, check all the relevant connectors, wiring and earth connections using the current flow diagram => binder current flow diagrams, fault finding electrics and installation locations.
- ♦ When repair has been performed, the fault memory must always be interrogated again with fault reader V.A.G 1551 or tester and erased.
- ♦ Perform test drive exceeding 20 km/h.
- ♦ After the test drive interrogate fault memory again.

V.A.G 1551 printer	Possible causes of fault	Fault remedy
No faults detected	If "No faults detected" appears after performing repairs, the self diagnosis is completed. If the Haldex clutch does not function properly despite "No fault recognised" appearing in the display proceed as follows: 1. Perform test drive exceeding 20 km/h, 2. Interrogate fault memory again, if there is still no fault stored; 3. Perform electrical test fully => Page 29	
00453 Function limitation due to over temp.	- Mechanical fault in Haldex clutch	- Read measured value block =>Page 29 , Test step 5.

V.A.G 1551 printer	Possible causes of fault	Fault remedy
00526 Brake light switch -F Implausible signal	- Open circuit or short to earth/positive between control unit -J492 and brake light switch -F - Brake light switch -F defective	- Check lines and plug-in connections according to current flow diagram Read measured value block =>Page 27 ; Display group number 001 If necessary, replace brake light switch -F => Running gear; Repair Group 45; Electrical/electronic components and fitting locations Electrical/electronic components and fitting locations
00532 Power supply Signal too low	- Open circuit or short circuit to earth or positive Battery flat	- Read measured value block =>Page 27 ; Display group number 002 Check lines and plug-in connections according to current flow diagram Battery charging => Electrical system; Repair Group 27; Battery; Charging battery Battery; Charging battery

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V.A.G 1551 printer	Possible causes of fault	Fault remedy
00532 Power supply Signal too high	- Voltage regulator -C1- for generator defective - Battery overcharged	- Read measured value block =>Page 27 ; Display group number 002 Check alternator => "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder
01043 Control unit: wrong software version	- Incorrect control unit fitted	- Replace control unit -J492 =>Page 14
01155 Clutch Mechanical fault	- Mechanical fault in Haldex clutch	- Carry final control diagnosis =>Page 29 , Test step 5.

V.A.G 1551 printer	Possible causes of fault	Fault remedy
01312 Data bus drive defective	- Open circuit, short to positive or earth or loose contact in wiring.	- Use current flow diagram to check for open circuit or short circuit Read fault memory of all control units connected to Data BUS and, if necessary, erase faults Perform "Electrical check" =>Page 29 , Test step 4.



V.A.G 1551 printer	Possible causes of fault	Fault remedy
01314 Engine control unit No communication	- Reception of data from engine control unit via Data BUS line not OK	- Read measured value block =>Page 29 , Test step 4.

V.A.G 1551 printer	Possible causes of fault	Fault remedy
01314 Engine control unit Read out fault memory	- Fault entry into engine control unit	- Read out fault memory of engine control unit and eliminate fault, if necessary. => Repair Group 10; of corresponding engine code number
01316 Brake control unit No communication	- Reception of data from ABS control unit via Data BUS line not OK	- Read measured value block =>Page 29 , Test step 4.
65535 Control unit faulty	Control unit for Four Wheel drive -J492 defective	- Replace control unit -J492 =>Page 14

3.8 - Erasing fault memory, ending output

All functions which have been carried out with the V.A.G 1551 so far can also be carried out with the new tester VAS 5051.

Preconditions:

- Fault memory interrogated => Page 21 .
- All faults rectified

1. Erase fault memory

- Press => key.

-> Display:

```
Rapid data transfer    HELP
Select function XX
```

- Press keys -0- and -5- (use 05 to enter function "Erase fault memory").

-> Display:

```
Rapid data transfer    Q
05 Erase fault memory
```

- Confirm entry with Q key.

-> Display:

```
Rapid data transfer
Fault memory is erased
```

- Press => key.

-> Display:

```
Rapid data transfer HELP
Select function XX
```

-> If this display appears:

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Important:
Fault memory has not been interrogated

- ♦ Observe test sequence exactly: First interrogate fault memory then erase it.

2. End of output

- Press keys -0- and -6- to end output.

-> Display:

Rapid data transfer Q
06 - End output

- Confirm entry with Q key.

-> Display:

Rapid data transfer HELP
Select function XX

- Switch off ignition.
- Disconnect fault reader V.A.G 1551.

3.9 - Final control diagnosis

All functions which have been carried out with the V.A.G 1551 so far can also be carried out with the new tester VAS 5051.

Notes:

- ♦ Vehicle must be raised so that wheels can rotate freely (2. mechanic necessary).
- ♦ Final control diagnosis is possible after ignition is switched on or after starting of engine.
- ♦ With a road speed greater than 30 km/h the function is automatically ended due to safety reasons.
- ♦ The -C- key can be used to exit from the test sequence at any time.
- ♦ To select other functions => Page 21 after final control diagnosis ignition must be switched off and on again, afterwards reselect address word 22 - four-wheel electronics.

Test sequence

- Connect fault reader V.A.G 1551 and select control unit for four-wheel drive with engine running (address word 22) => Page 18.

-> Display:

Rapid data transfer HELP
Select function XX

- Press keys 0 and 3 (03 selects the "Final control diagnosis" function).

-> Display:

Rapid data transfer Q
03 - Final control diagnosis

- Confirm entry with Q key.

-> Display:

Final control diagnosis -
Preload pump off

- Voltage supply for pump -V181 (pump is not controlled).
- Ignore display.

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- Press ⇒ key.

-> Display:

Final control diagnosis -
Pre-load pump on

- Pump for Haldex clutch -V181 must start.

If the pump does not run:

- Perform "Electrical check" =>Page 29 , Test step 5.
- Press ⇒ key.

-> Display:

Final control diagnosis -
Four-wheel drive clutch separated

- Apply handbrake.
- Operate clutch pedal and engage 1. gear.
- Start driving slowly; only front wheels must turn.

With deviations:

- Perform "Electrical check" =>Page 29 , Test step 5.
- Operate clutch pedal.
- Press ⇒ key.

-> Display:

Final control diagnosis -
Four-wheel drive clutch closed

- Again start driving in 1. gear with handbrake pulled. The rear wheels must noticeably push against the handbrake.

Note:

This activation can possibly lead to engine standstill.

With deviations:

- Perform "Electrical check" =>Page 29 , Test step 5.
- Press ⇒ key.

-> Display:

Final control diagnosis -
Pre-fill pump off

- Pump -V181 stopped.
- Press ⇒ key.

-> Display:

Function is unknown or cannot
be carried out at the moment

- Press ⇒ key to end final control diagnosis.

-> Display:

Rapid data transfer HELP
Select function XX

- To repeat the final control diagnosis the ignition must be switched off and on again and then function 03 Final control diagnosis must be reselected.



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- End output (function 06) => Page 24 .

3.10 - Reading measured value block

All functions which have been carried out with the V.A.G 1551 so far can also be carried out with the new tester VAS 5051.

The control unit can transfer a considerable amount of test data. This test data delivers information about the condition of the system and the sensors connected. In many cases the transferred test data can be used to support the fault finding and rectification. As this test data cannot be evaluated at the same time it has been divided into individual display groups which can be selected via the display group numbers.

Note:

Note the following points if testers and measuring instruments have to be used during a road test:

- ◆ Testers and measuring instruments must always be secured to the rear seat and operated by a 2nd person from this location.
- ◆ If test equipment were operated from the front passenger seat, the person sitting there could be injured if the front passenger airbag were triggered in the event of an accident.
- Connect fault reader V.A.G 1551 and select control unit for four-wheel electronics (address word 22) with ignition switched on => Page 18 .

-> Display:

```
Rapid data transfer      HELP
Select function XX
```

- Press keys 0 and 8 (08 initiates "Reading measured value block" function).

-> Display:

```
Rapid data transfer      Q
08 - Reading measured value block
```

- Confirm entry with Q key.

-> Display:

```
Reading measured value block
Enter display group number XXX
```

- Enter display group number => Overview of selectable display group number, Page 27 .
- Confirm entry with Q key.

```
Read measured value block      1
□ 1   □ 2   □ 3   □ 4
```

-> The measured value block always contains 4 display fields -arrows- (if necessary, in physical values).
Decoding of values 1 to 4 in the individual display fields => Test table, Page 28 .

List of available group numbers

Display group no.	Display zone	Designation
001	1	Brake light switch
	2	Switch for handbrake controls
	3	Not used
	4	Not used
002	1	Power supply
	2	Oil temperature of Haldex clutch



Display group no.	Display zone	Designation
125	3	Not used
	4	Not used
	1	Data BUS for engine
	2	Data BUS for ABS
	3	Not used
	4	Not used

3.11 - Test table with measured values

Reading measured value block	1 ⇒	Display group no. 001
not operated	not operated	◀ indicated on display
Not used Switch for handbrake control: - Not operated ⇒ Handbrake not operated - Operated ⇒ handbrake engaged With deviations: Perform "Electrical check" =>Page 29 , Test step 3. Brake light switch: - Not operated ⇒ Brake pedal not operated - Operated ⇒ Brake pedal operated With deviations: Perform "Electrical check" =>Page 29 , Test step 2.		

Reading measured value block	2 ⇒	Display group no. 002
12,5 V	25 oC	◀ indicated on display
Not used Oil temperature of Haldex clutch - With ignition on (engine not running, cooled down): approx. ambient temperature If a temperature is displayed which deviates strongly from the ambient temperature of the sender control unit -J492 must be replaced => Page 14 . Power supply - 10..0,140,5 V: With deviations: Perform "Electrical check" =>Page 29 , Test step 1.		

Reading measured value block	125 ⇒	Display group no. 125
Engine	ABS	◀ indicated on display
1	1	
Not used Data BUS for ABS - 1 ⇒Data BUS connection is present. - 0 ⇒Data BUS connection is not present. Data BUS for engine - 1 ⇒Data BUS connection is present. - 0 ⇒Data BUS connection not present.1)		

1) The following fault causes may be present:

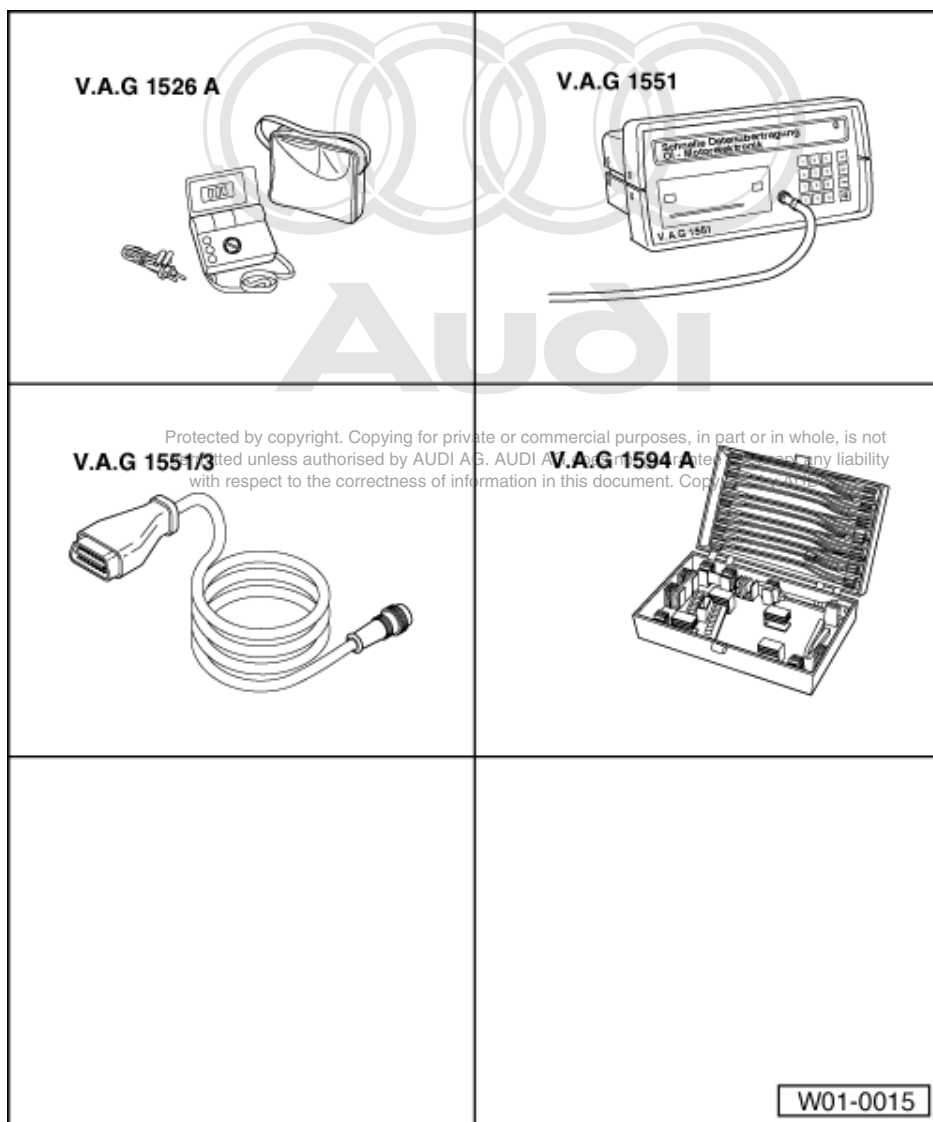
Data BUS connection to engine control unit or ABS control unit open or Data BUS lines are exchanged, perform Electrical test => Page 29 , test step 4.

Wrong engine control unit or ABS control unit installed.

*Wrong coding in engine control unit or ABS control unit.
Engine control unit or ABS control unit defective.*

4 - Electrical test of Haldex clutch

4.1 - Electrical test of Haldex clutch



Special tools, testers and auxiliary equipment required

- ◆ V.A.G 1526 A hand-held multimeter
- ◆ V.A.G 1551 fault reader
- ◆ V.A.G 1551/3 line
- ◆ V.A.G 1594 A Tester set

Additionally required information

- ◆ "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

The test steps => Page **30** are only valid for:

- ◆ Vehicles whose self-diagnosis does not point out the fault source. Then the complete electrical test must be worked through.



- ♦ Vehicles whose self-diagnosis directly points out the fault source. Only perform test steps recommended in the fault table (targeted approach).

Test requirements

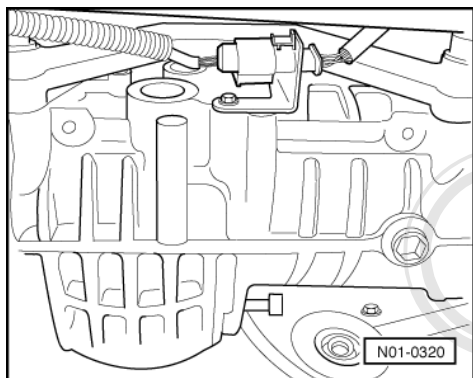
- Function of Haldex-clutch OK, checking => Pages 39-42.
- Oil level of Haldex clutch OK, checking
=> Page **123**.
- All fuses are OK according to current flow diagram (remove fuses from fuse holder to check).
- Supply voltage OK (at least 10.0 V).
- Brake light OK

Overview of test steps

Component to be tested	
Supply voltage to control unit -J 492	- Perform test step 1
Function of brake light switch -F	- Perform test step 2
Function of handbrake warning switch -F9	- Perform test step 3
Testing of Data BUS lines	- Perform test step 4
Function of pump for Haldex clutch -V181 and Function of positioning motor for oil pressure -V184	- Perform test step 5

Perform electrical test

- Switch ignition off for all test steps.

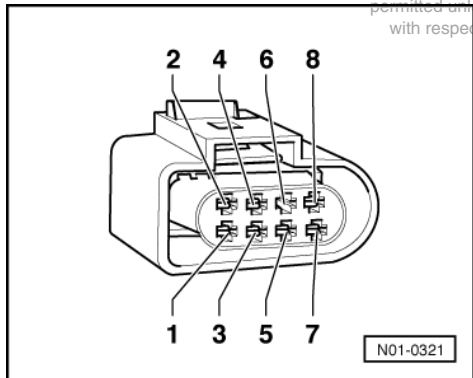


- Raise vehicle.
- -> Unplug connector from rear final drive.

Note:

Use hand-held multimeter V.A.G 1526 A and auxiliary lines from V.A.G 1594 A.

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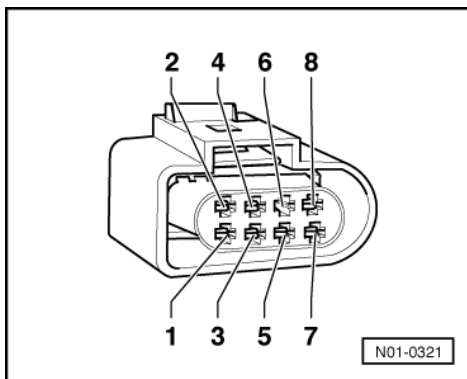


-> Contact assignment of connector

- 1 - Supply voltage (up to 05.99: Terminal X; from 05.99 onwards: (terminal 15))
- 2 - Earth (terminal 31)
- 3 - Positive connection terminal 54 (brake light, brake light switch)
- 4 - Switch for handbrake control -F9
- 5 - K-wire of diagnosis
- 6 - Not used
- 7 - Data-BUS connection with engine control unit and ABS control unit (CAN -low)
- 8 - Data-BUS connection with engine control unit and ABS control unit (CAN -high)

Test step 1

The supply voltage from control unit -J492 is checked.



- Activate 20 V measuring range.
- Switch ignition on.
- -> Measure on disconnected connector between contact 1 and contact 2 (earth).

Specification: Battery voltage

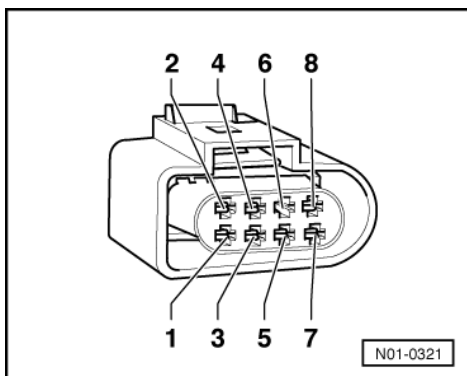
Specification is not reached: Use circuit diagram to check and repair wiring.

=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

- Switch off ignition.

Test step 2

Function of brake light switch -F is checked.



- Activate 20 V measuring range.
- Switch ignition on.
- -> Measure at disconnected connector between contact 3 and contact 2 (earth).

Specification: lower than 0.5 V

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- brake pedal.

Specification: Battery voltage

Specifications are not achieved: Use circuit diagram to repair wiring.

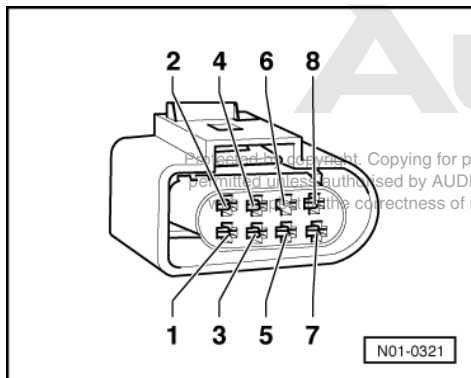
=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

Specifications are not yet achieved: Replace brake light switch -F

=> Running gear; Repair Group 01; Electrical/electronic components and fitting locations; Adjust brake light switch. Electrical/electronic components and fitting locations Adjust brake light switch.

Test step 3

The function of switch for handbrake control -F9 is checked.



- Activate 20 V measuring range.
- Switch ignition on.
- -> Measure on disconnected connector between contact 4 and contact 2 (earth).

Specification: greater than 6 V

- Apply handbrake.

Specification: lower than 0.5 V

Specifications are not achieved: Check wiring to dash panel insert (T32a/13) with reference to open wiring or short to positive.

=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

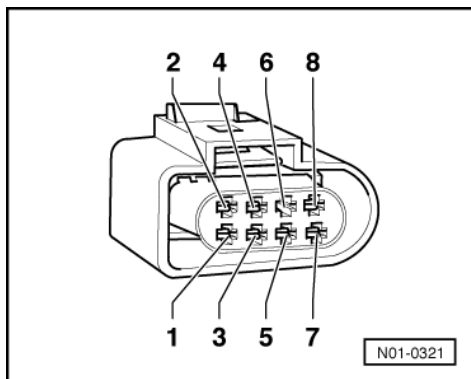
Specifications are not yet achieved: Check wiring from contact T32/1 (dash panel insert) via fuse to terminal 15.

If no fault was detected the switch for handbrake control -F9 must be replaced.

=> Running gear; Repair group 46

Test step 4

Function of Data BUS lines are checked.



- Switch on measuring range 20 k ω .
- -> Measure at disconnected connector between contact 7 and contact 2 (earth) as well as contact 8 and contact 2 (earth).

Specification: all greater than 300 ω

If the specification is not achieved (Data BUS line has short to earth):

- Use circuit diagram to check and repair wiring.

=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

If the specified values are attained:

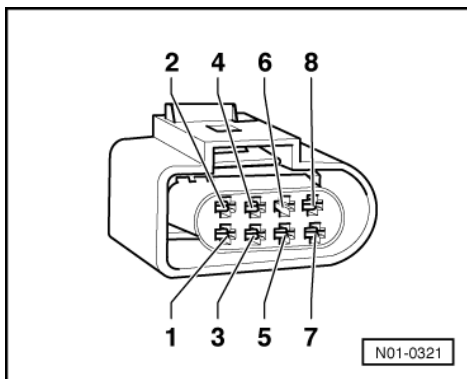
- Measure resistance between contact 7 and contact 2 as well as between contact 8 and contact 1.

Specification: all greater than 300 ω

If the specification is not achieved (Data BUS line has short to battery positive):

- Use circuit diagram to repair wiring.

=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder



If the specified values are attained:

- Switch on measuring range 200 ω
- -> Measure on disconnected connector between contact 7 and contact 8.

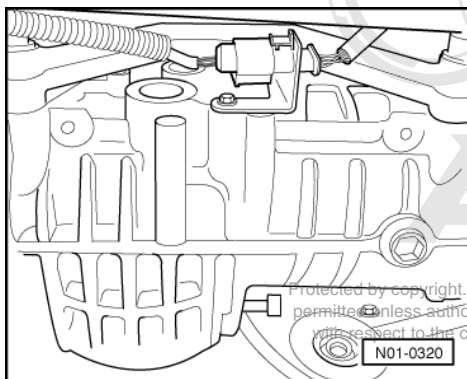
Specification: 60 ... 72 ω

If the specification is not obtained:

- Replace engine control unit.

=> Motronic injection and ignition system (4 cylinder Turbo); Repair Group 24; Servicing Motronic injection system; Replacing engine control unit Servicing Motronic injection system Replacing engine control unit

Test step 5



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Checked are the function of the pump for Haldex clutch -V181 and function of positioning motor for oil pressure -V184.

- -> Connect connector for control unit -J492.
- Apply handbrake.
- Start the vehicle.
- Operate clutch pedal and engage 1. gear.
- Start driving slowly. The rear wheels must noticeably push against handbrake.

Note:

Operate clutch pedal slowly, otherwise engine will stop.

If no pushing of rear wheels against handbrake is noticeable:

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- ♦ Check connection (double) of pump V181 and wiring according to current flow diagram.

=> "Current Flow Diagrams, Electrical Fault-finding and Fitting Locations" binder

- ♦ If no fault could be detected then positioning motor for oil pressure -V184 is defective.

Note:

Positioning motor for oil pressure -V184 is integrated into four-wheel drive control unit.

If no pushing of rear wheels against handbrake is noticeable:

- Operate clutch pedal and connect fault reader V.A.G 1551 with engine running => Page 18 .
- Select address word 03 for brake electronics.

-> The display on the fault reader V.A.G 1551 will show the control unit identification code.

1J0 907 379 L	ABS	20 IE CAN
V008	□	
Coding 03604	WSC	XXXXX

- After control unit has reacted again start driving in 1. gear with handbrake engaged.

Only front wheels may turn.

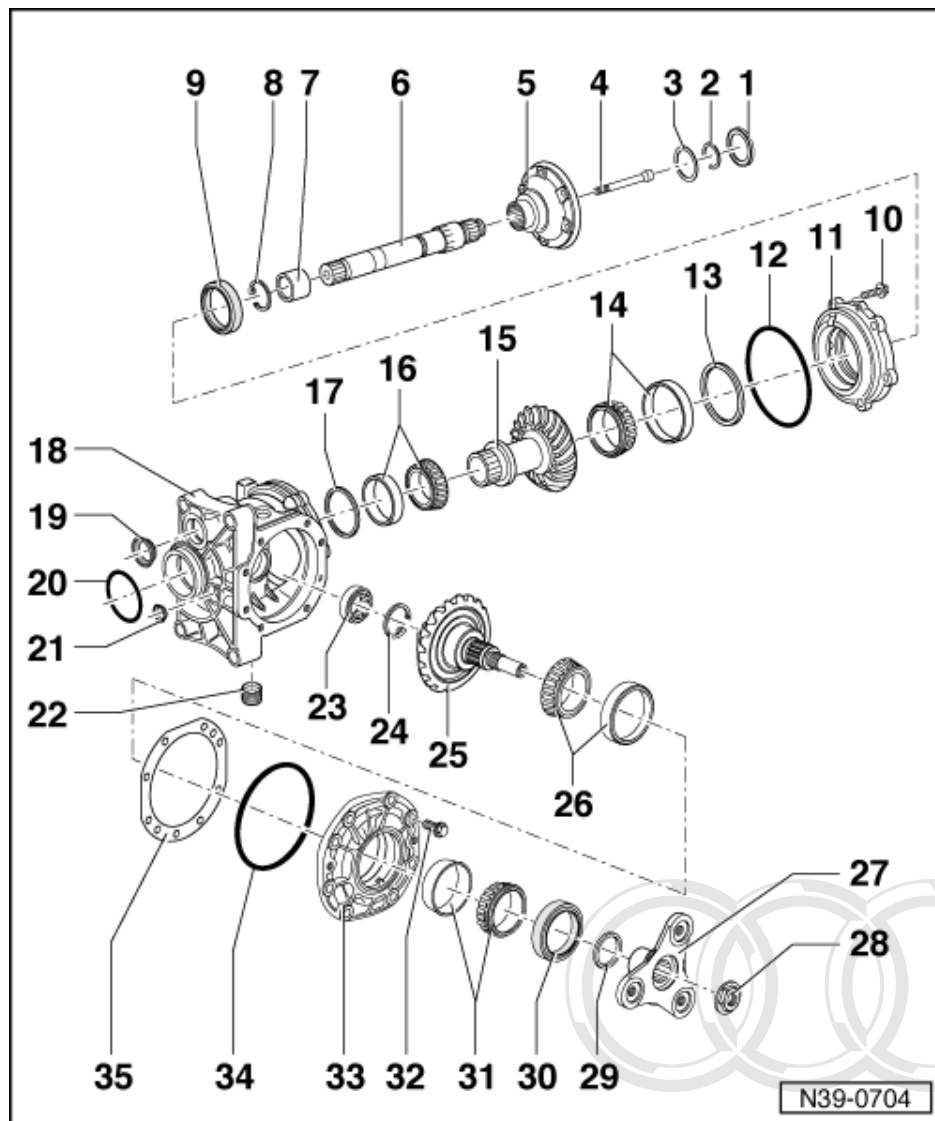
If the rear wheels still push against the handbrake then four-wheel drive control unit is defective.

- Replace control unit for four-wheel drive -J492 => Page 14 .

39 - Final drive, Differential rear

1 - Dismantling and assembling angle drive

1.1 - Dismantling and assembling angle drive



1.2 - Assembly overview

Assembly sequence => Page 44

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- 1) Adjustments are required if these components are replaced
=> Page 61

1 Cap

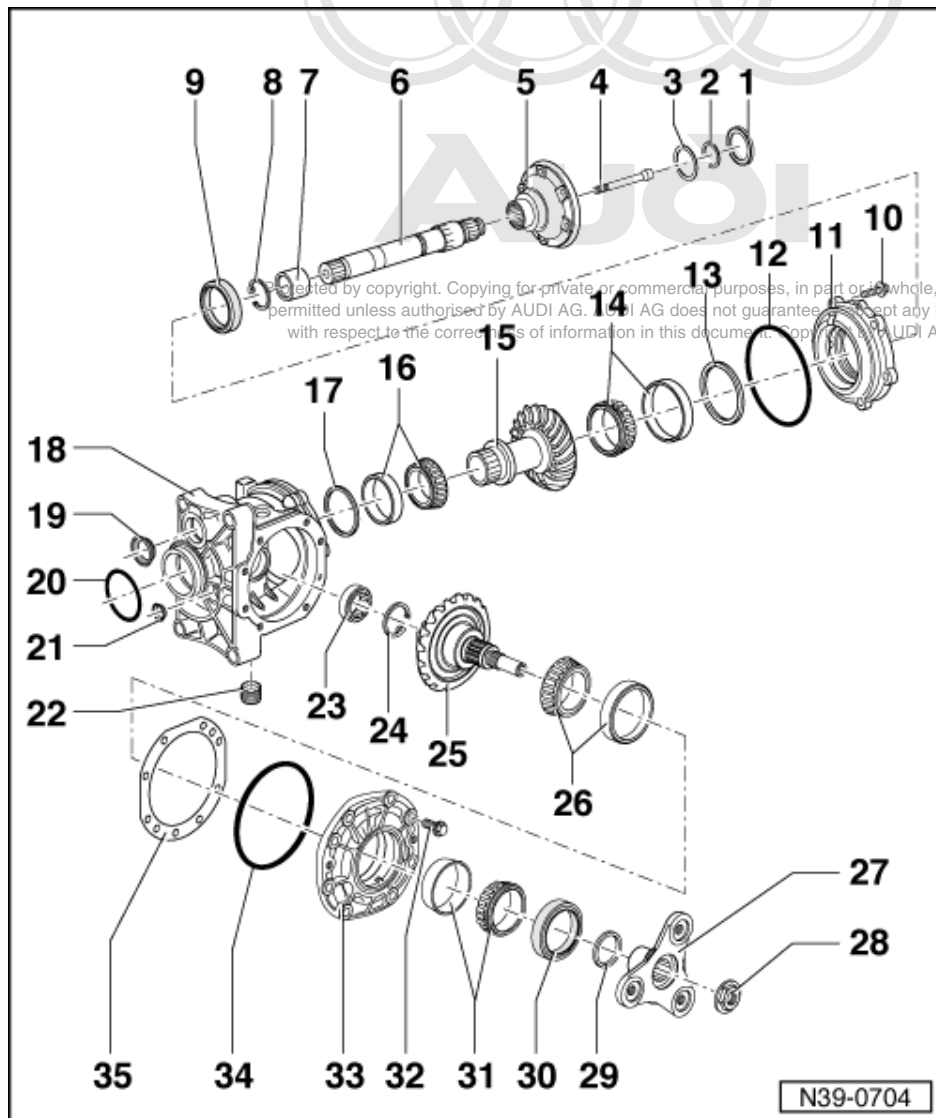
- ◆ Destroyed during removal
- ◆ Always replace

2 Locking ring

- ♦ Always replace

3 Dished washer

- ♦ Taper points toward circlip



4 Cone head bolt, 25 Nm

- ♦ Drive shaft and drive piece/balancing drive

5 Drive flange

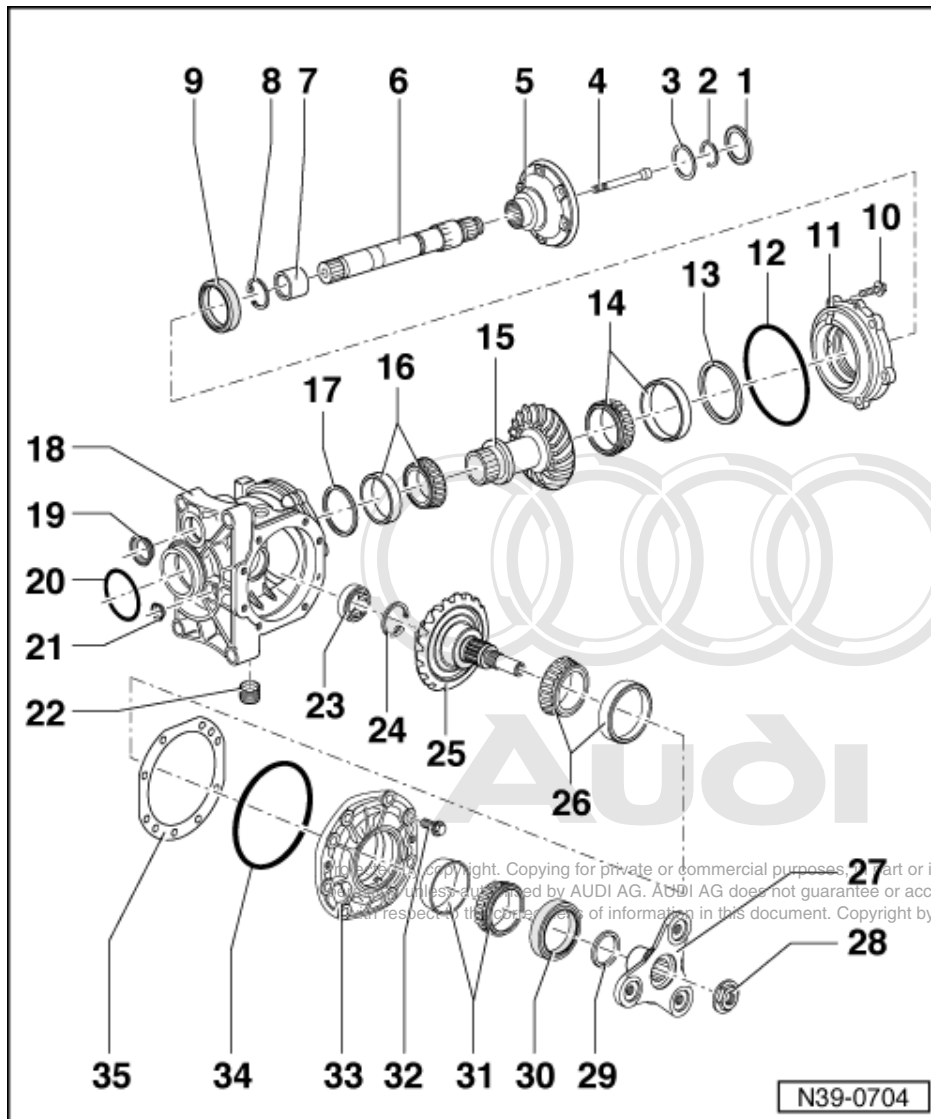
- ♦ Lever out with drive shaft (Pos. 6)
- ♦ Pressing off=> Page 55
- ♦ Pressing on =>Page 39-26

6 Output shaft

- ♦ Lever out with drive flange (Pos. 5) from angle drive housing
- ♦ Pressing drive flange on and off => Page 55

7 Roller sleeve (polygon bearing)

- ♦ Replacing => Page 57 .

**8 Locking ring**

- ◆ Always replace

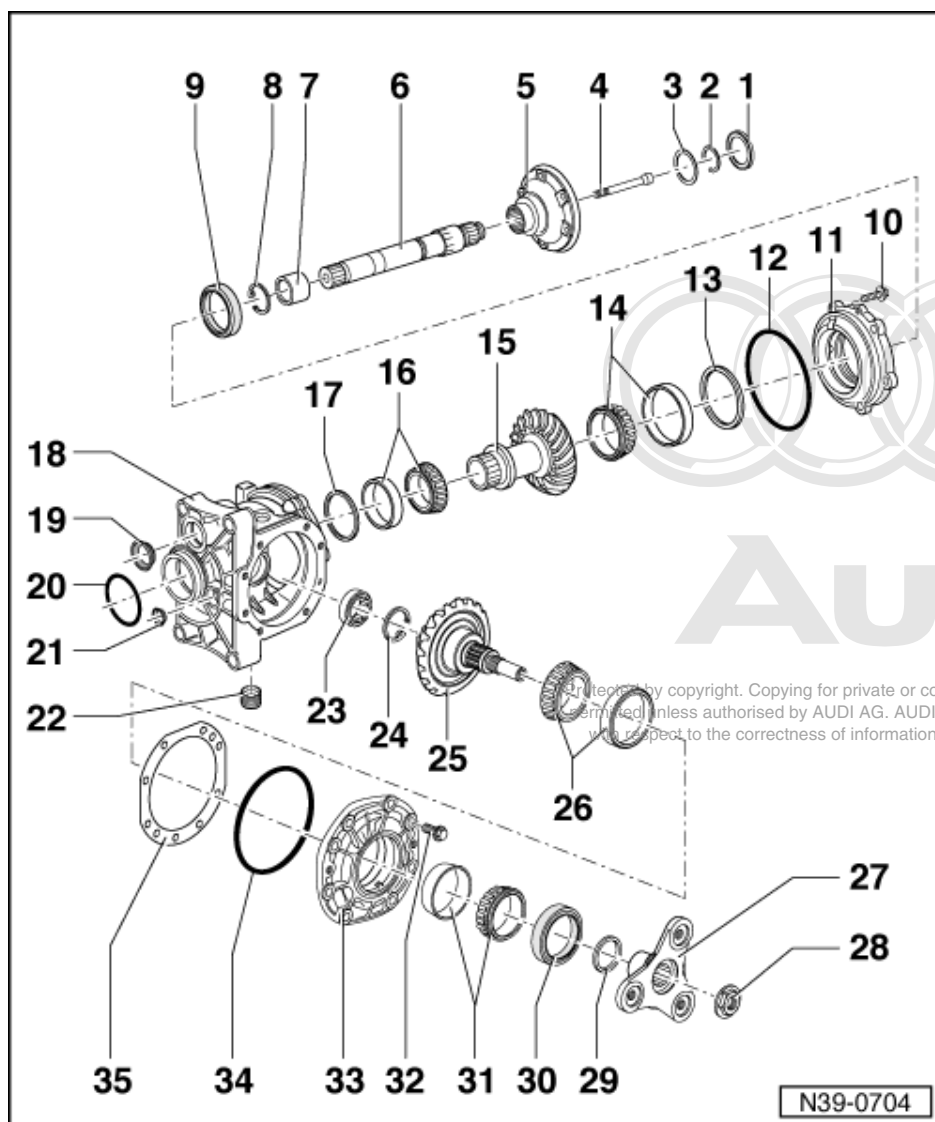
9 Sealing ring

- ◆ Lever out with assembly lever
- ◆ Drive home using fitting sleeve VW 3158
- ◆ Replace with gearbox installed

=> 5-gear manual gearbox 02C, four-wheel drive/gearbox; Rep.-Gr. 39; Replacing sealing rings for left flange shaft or right drive flange (gearbox installed) Replacing sealing rings for left flange shaft or right drive flange (gearbox installed)

10 Bolt, 25 Nm**11 Cover1)**

- ◆ Removing => Page 50
- ◆ Do not tilt when installing, tighten securing bolts diagonally in stages

**12 O-ring**

- ◆ Always replace
- ◆ must rest in circumferential groove

13 Adjustment shim S1

- ◆ Note thickness
- ◆ Adjustment overview
=> Page 61

14 Large taper bearing for bearing/head taper wheel1)

Inner ring:

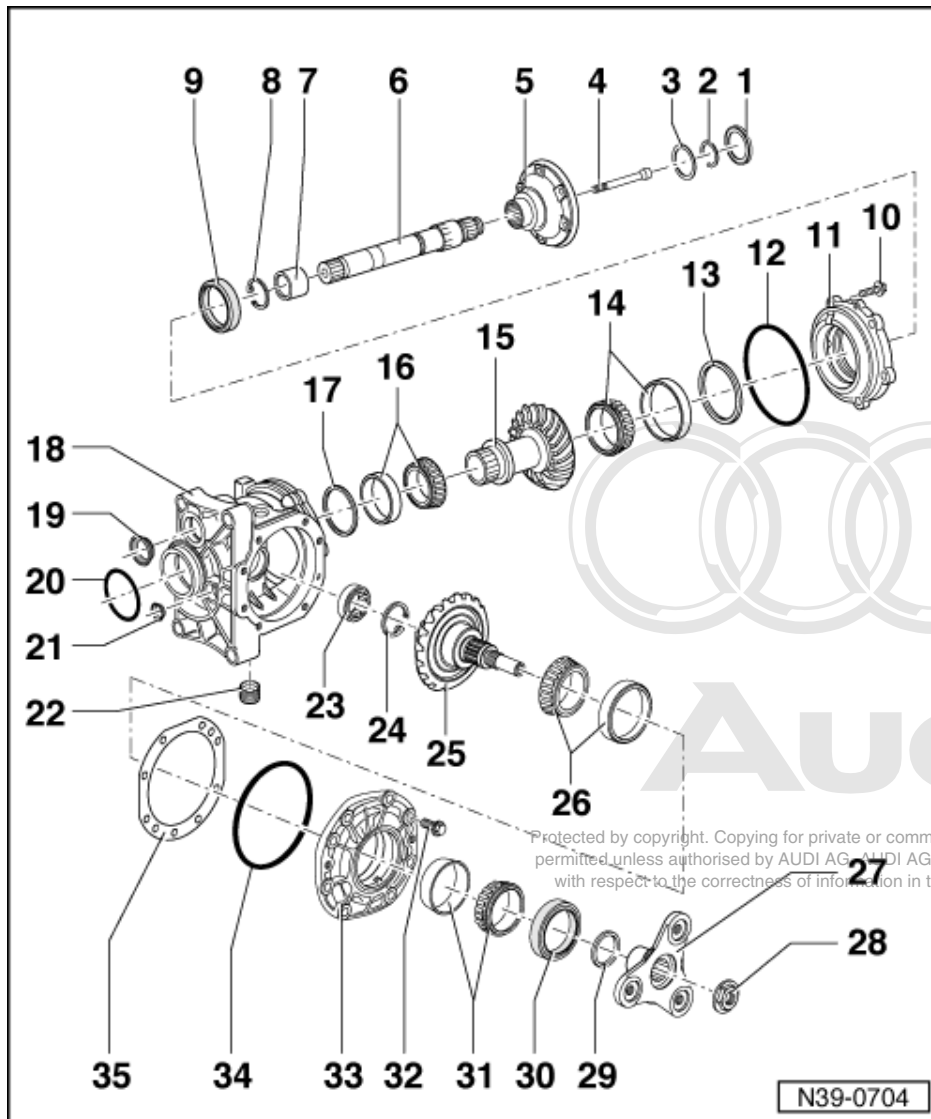
- ◆ Pulling off=> Page 51
- ◆ Pressing on =>Page 53

Outer ring:

- ◆ Pressing out => Page 51
- ◆ Pressing in =>Page 53

15 Head taper wheel with drive shaft1)

- ◆ is paired with shaft taper head (Pos. 25)
- ◆ Cannot be pressed off the drive shaft
- ◆ Adjusting =>Page 71

**16 Small taper bearing for bearing/head taper wheel1)**

Inner race:

- ♦ Pressing off=> Page 51
- ♦ Pressing on =>Page 53

Outer race:

- ♦ Pressing out => Page 51
- ♦ Pressing in =>Page 53

17 Adjustment shim S2

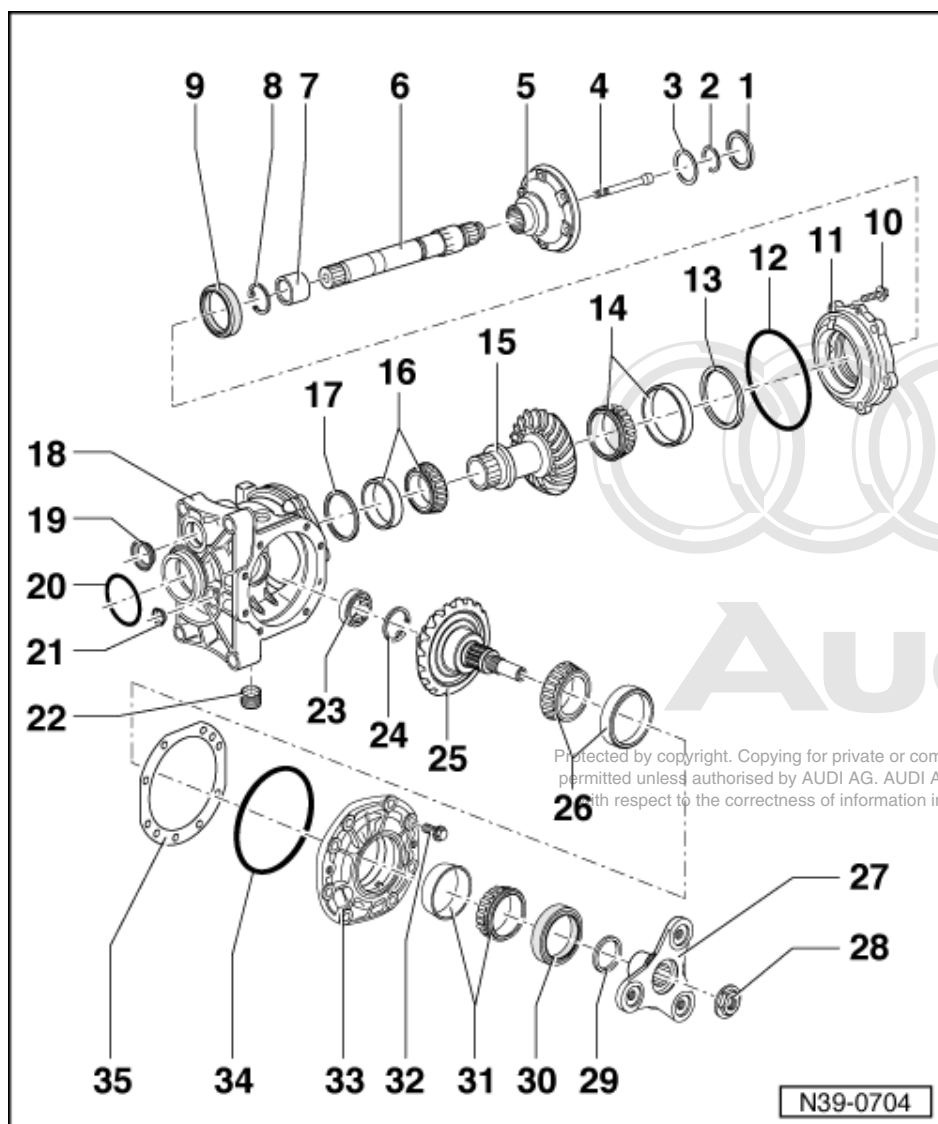
- ♦ Note thickness
- ♦ Adjustment overview
=> Page 61

18 Final drive housing 1)

- ♦ Drain off oil, then clamp angle drive into assembly bracket with gearbox bracket 3221 => from Page 44

19 Sealing ring

- ♦ Always replace
- ♦ Install with stage side into final drive housing

**20 O-ring**

- ♦ Always replace

21 Sealing ring

- ♦ Always replace
- ♦ Install with stage side into final drive housing

22 Oil drain plug, 20 Nm

- ♦ With magnet

23 Roller sleeve

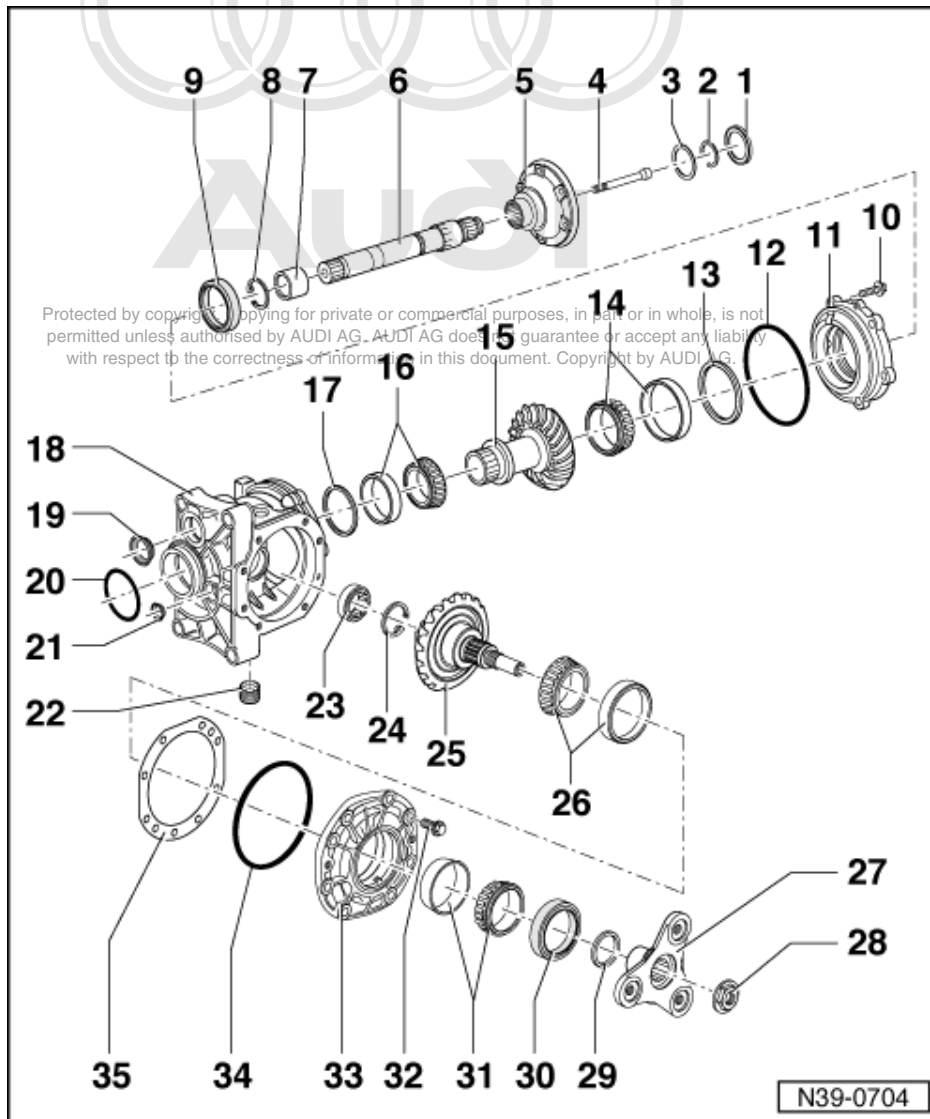
- ♦ Pulling out => Page 52
- ♦ Pressing in => Page 52

24 Locking ring

- ♦ Always replace

25 Shaft taper wheel1)

- ♦ Is mated to head taper wheel.
- ♦ Adjusting => Page 64

**26 Large taper bearing for shaft taper wheel1)**

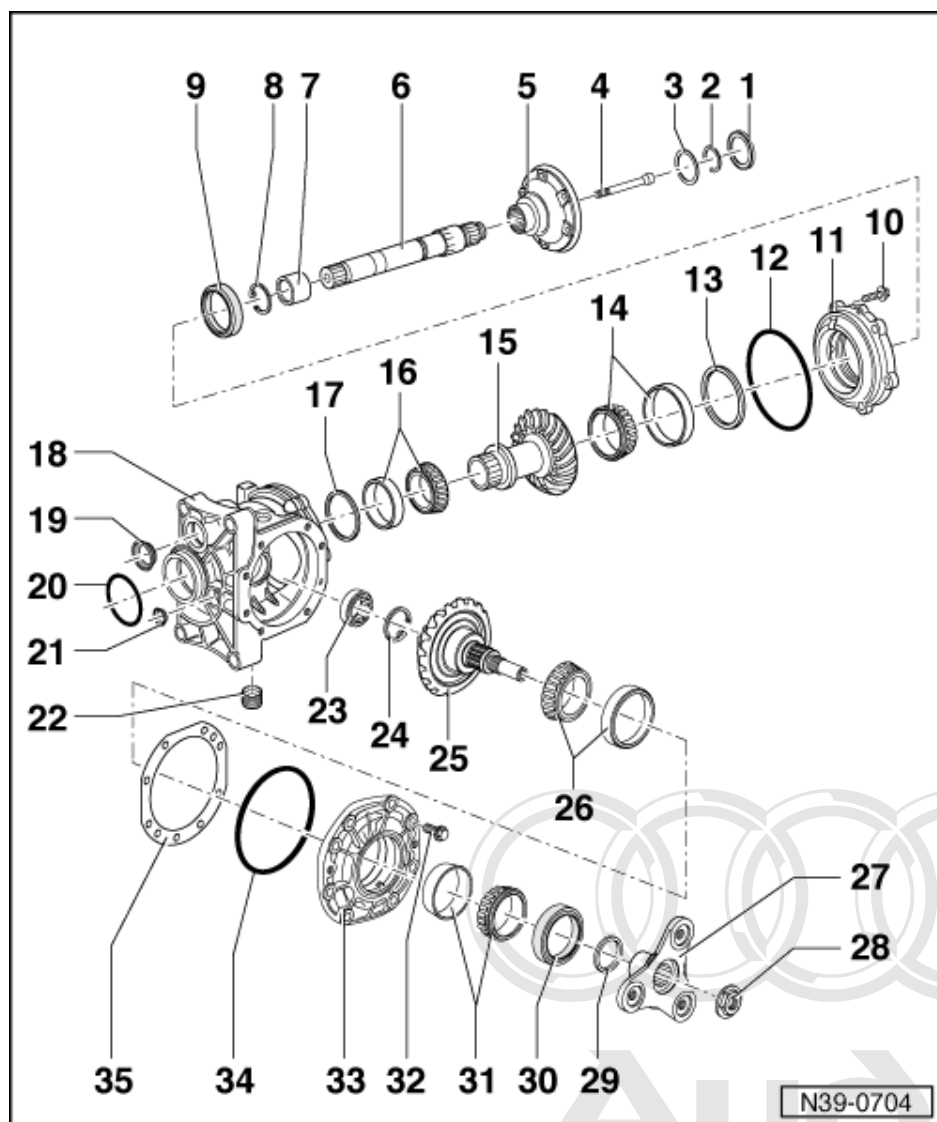
- Inner race:
 - ♦ Pulling off => Page 50
 - ♦ Pressing on => Page 54
- Outer race:
 - ♦ Pulling out => Page 49
 - ♦ Pressing in => Page 54

27 Drive flange1)**28 Hexagon nut, 350 Nm**

- ♦ Unbolt => Page 48
- ♦ Screwing on => Page 55
- ♦ Always replace
- ♦ Coat with gearbox oil when installing

29 Adjustment shim S4

- ♦ Note thickness
- ♦ Adjustment overview
=> Page 61
- ♦ Attach to shaft taper wheel (Pos. 25) before assembly of sealing ring (Pos. 19) and before insertion of inner race for the small taper roller bearing (Pos. 31)

**30 Sealing ring**

- ◆ Replace only with angle drive removed

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=> 5-gear manual gearbox 02C, four-wheel drive/gearbox, Rep.-Gr. 39; Replacing sealing rings for drive flange angle drive (angle drive removed) Replacing sealing rings for drive flange angle drive (angle drive removed)

31 Small taper bearing for shaft taper wheel1)

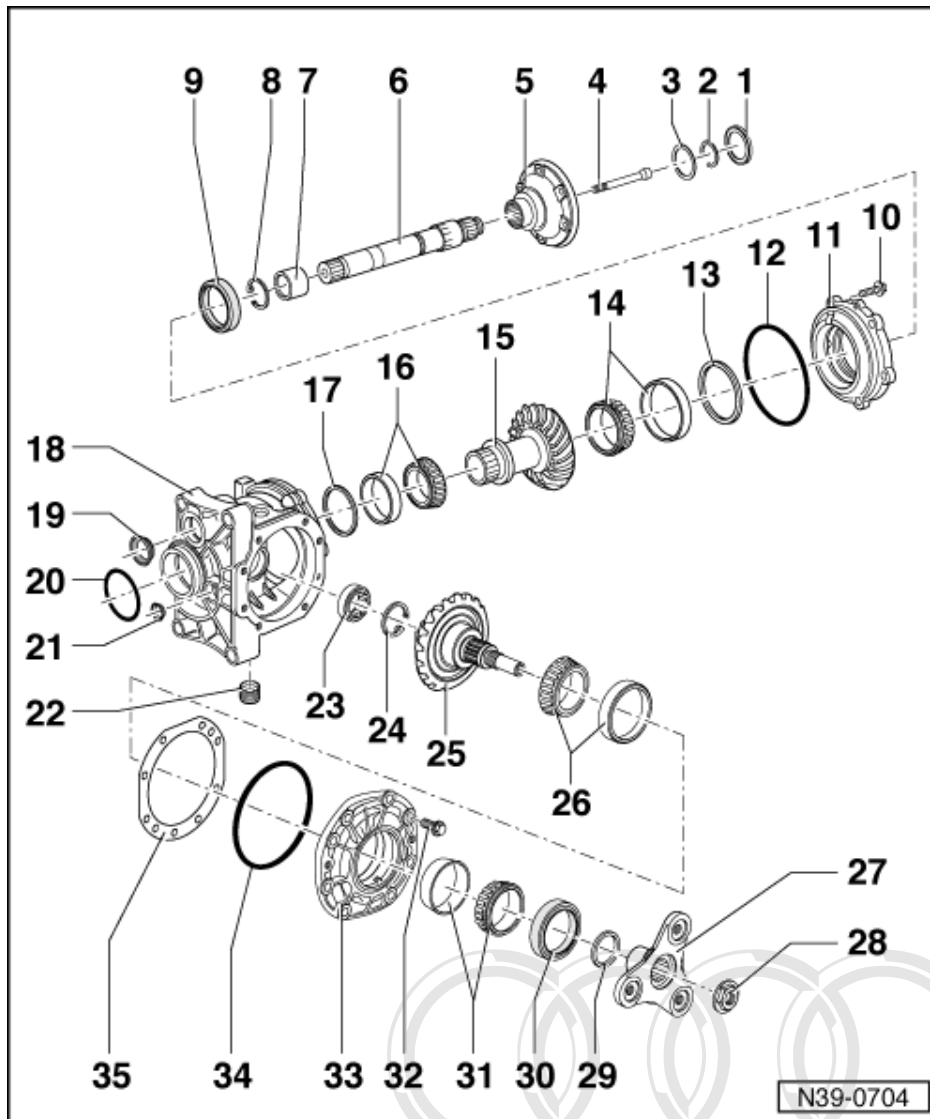
Outer race:

- ◆ Pressing out => Page 49
- ◆ Pressing in => Page 54

Inner race:

- ◆ Insert into outer race

32 Bolt, 25 Nm

**33 Pinion housing1)**

- ◆ Removing =>Page 49
- ◆ Installing =>Page 54 .
- ◆ Do not tilt when installing, tighten securing bolts diagonally in stages

34 O-ring

- ◆ Always replace
- ◆ Must rest in circumferential groove

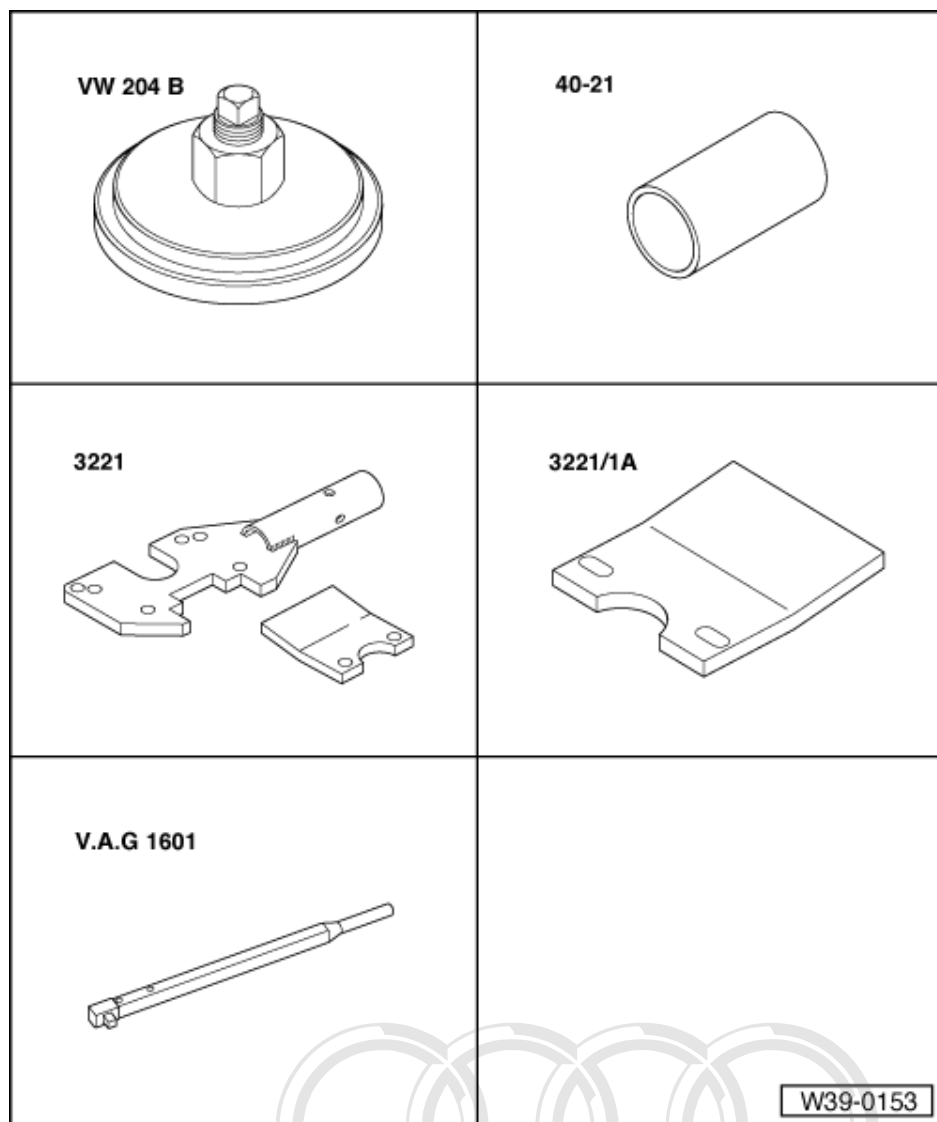
35 Adjustment shim S3

- ◆ Note thickness
- ◆ Adjustment overview
=> Page 61

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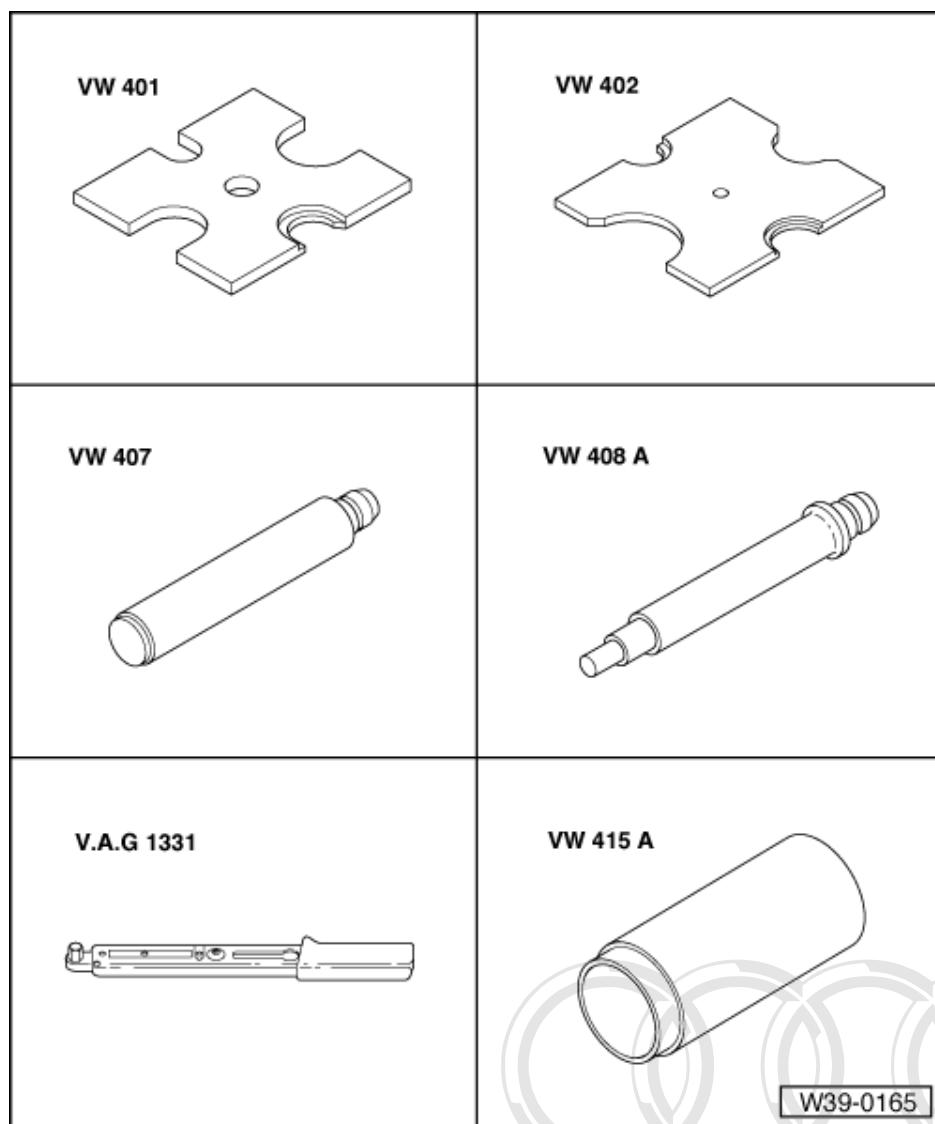
1.3 - Dismantling and assembling sequence



Special tools and workshop equipment required

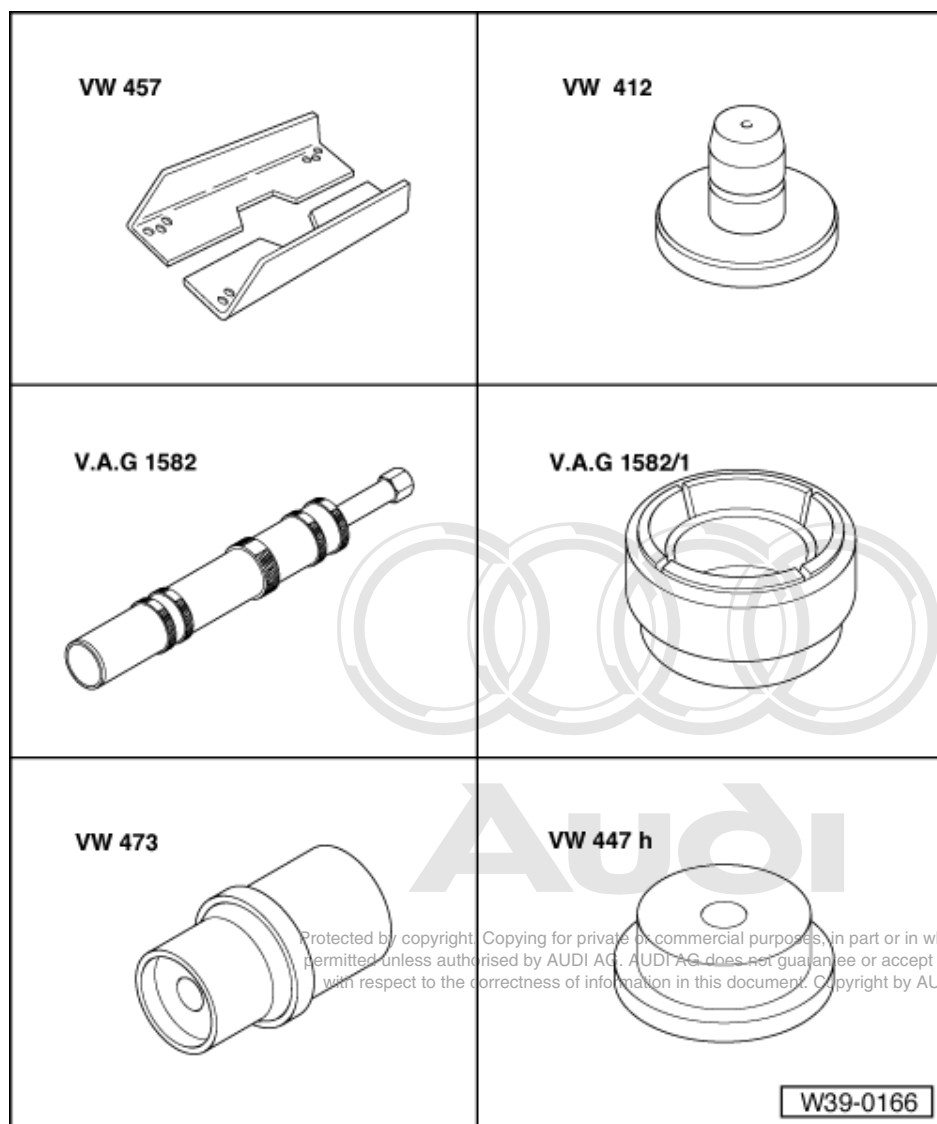
- ♦ VW 204 B Installing tool for crankshaft seal
- ♦ 40-21 Thrust sleeve
- ♦ 3221 gearbox bracket
- ♦ 3221/1A stop plate
- ♦ V.A.G 1601 Torque wrench

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**Special tools and workshop equipment required**

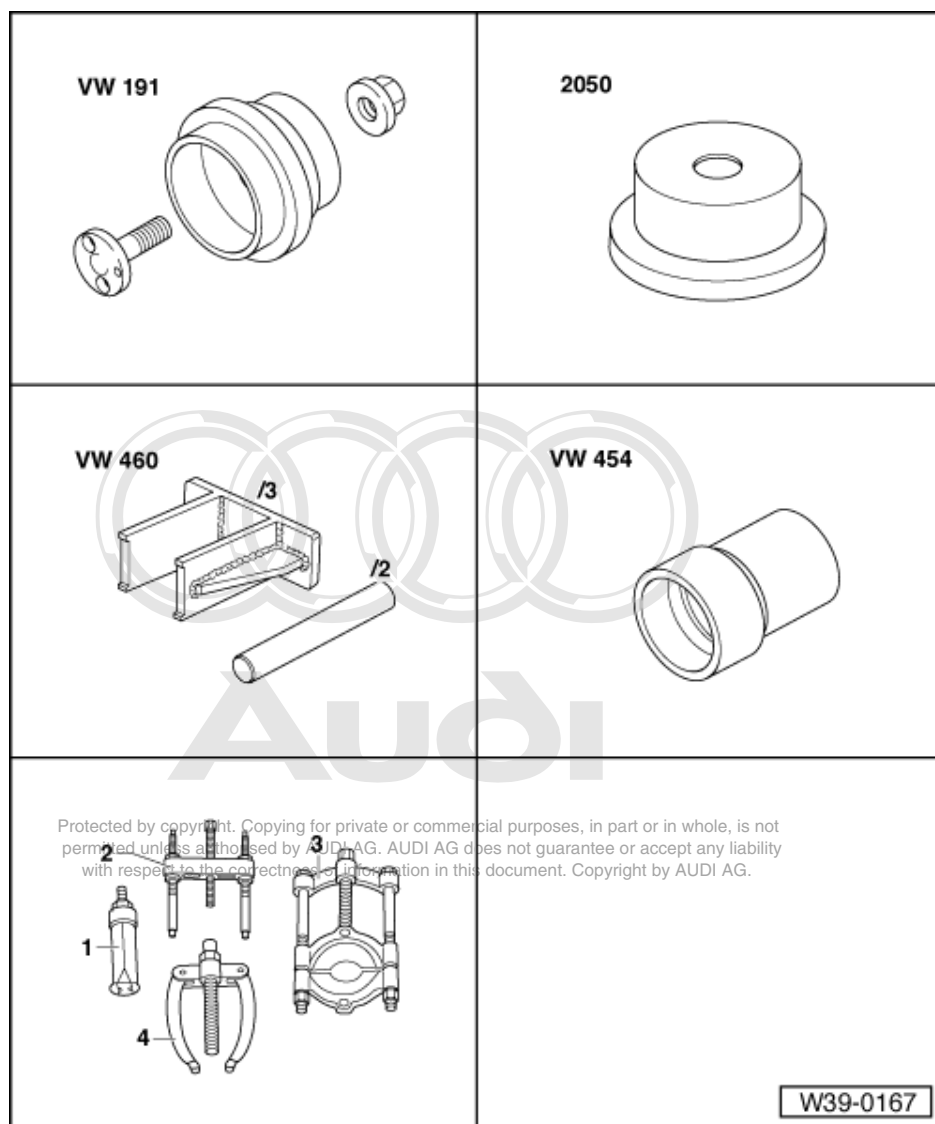
- ◆ VW 401 Thrust plate
- ◆ VW 402 Thrust plate
- ◆ VW 407 Thrust tool
- ◆ VW 408 A Pressure tool
- ◆ VW 415 A Tube
- ◆ V.A.G 1331 Torque wrench

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Special tools and workshop equipment required

- ♦ VW 457 Mounting rails
- ♦ VW 412 Thrust tool
- ♦ V.A.G 1582 Puller
- ♦ V.A.G 1582/1 Grip piece
- ♦ VW 473 Thrust piece
- ♦ VW 447 H Thrust plate

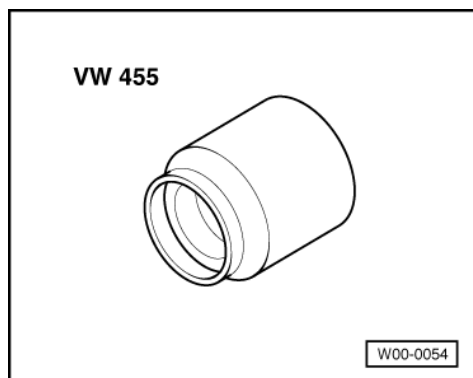


Special tools and workshop equipment required

- ◆ VW 191 Pulling device for crankshaft sealing ring
- ◆ 2050 Thrust piece
- ◆ Drift VW 460/2
- ◆ VW 454 Thrust piece
- ◆ 1 - Internal puller Kukko 21/3
- ◆ 1 - Internal puller Kukko 21/7
- ◆ 1 - Internal puller Kukko 21/8
- ◆ 3 - Kukko 17/1 Separating tool
- ◆ 3 - Kukko 17/2 Separating tool
- ◆ 4 - Kukko 22/1 Counter support
- ◆ 4 - Kukko 22/2 Counter support



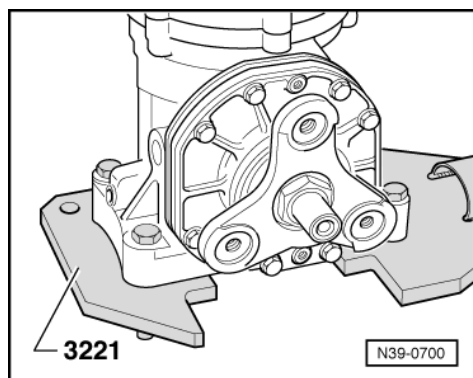
Special tools and workshop equipment required



- ♦ VW 455 Pressing-on sleeve

Dismantling angle drive

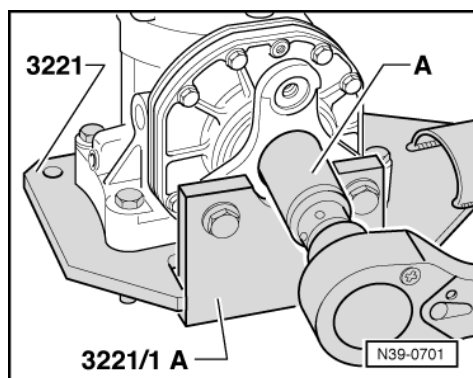
- Drain gear oil.



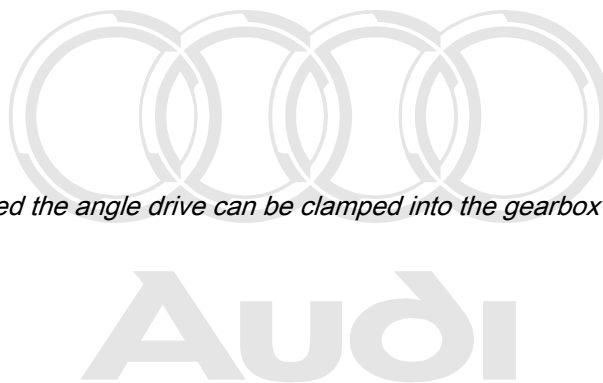
- -> Clamp angle drive into gearbox bracket.

Note:

If the hexagon nut for the drive flange is not to be loosened the angle drive can be clamped into the gearbox bracket 2004 to perform assembly works.

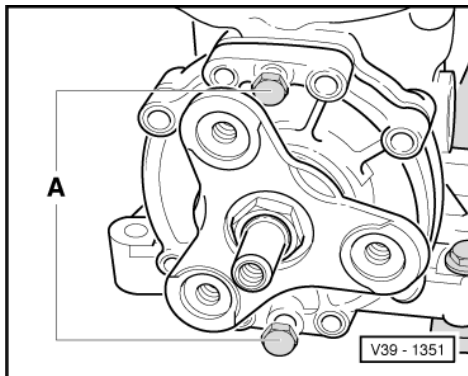


- -> Unscrew hexagon bolt for drive flange.
- A - socket attachment for drive 3/4 inch
- Remove drive flange.



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- Lever out sealing ring with screwdriver.
- Remove inner race for small taper bearing/shaft taper wheel.



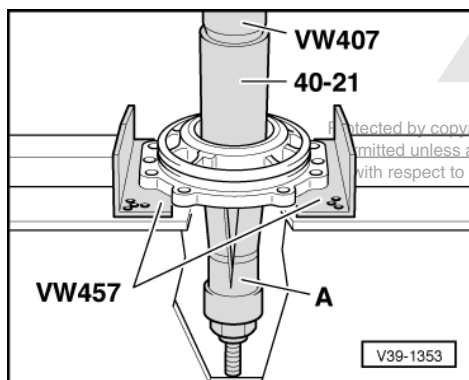
- -> Remove pinion housing.

Screw in hexagon bolts -A- evenly so that pinion housing does not tilt.

Note:

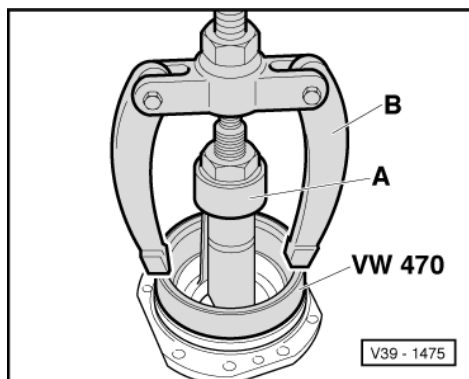
The pinion housing can also be removed and installed with mounted drive flange.

- Remove adjustment shim S3



- -> Press out outer race for small taper roller bearing from pinion housing

A - Internal extractor 46 ... 58 mm, e.g. Kukko 21/7

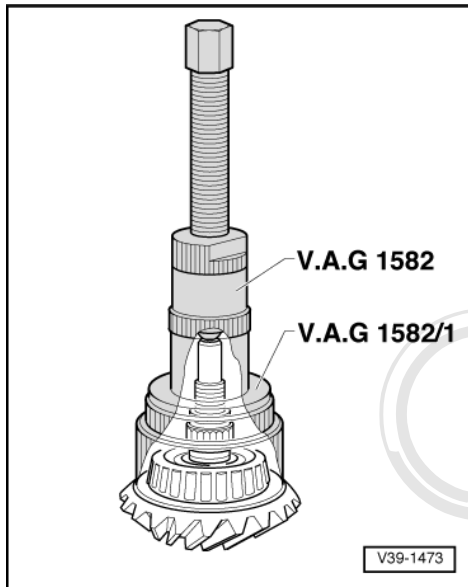


- -> Pull out outer race for greater taper roller bearing from pinion housing.

A - Internal extractor 46 ... 58 mm, e.g. Kukko 21/7



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

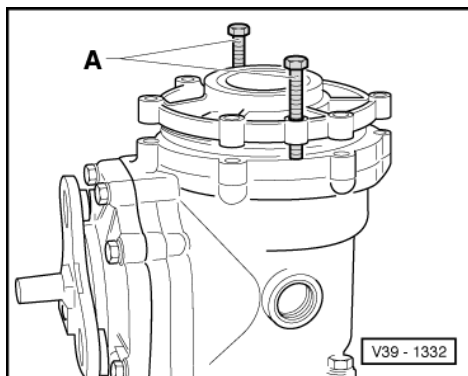


- Remove shaft taper wheel with adjustment shim S4.
- -> Pull off inner race for greater taper roller bearing from shaft taper wheel.

Attach gripper piece and tension well behind rollers of bearing. Then turn bearing and retighten gripper piece.

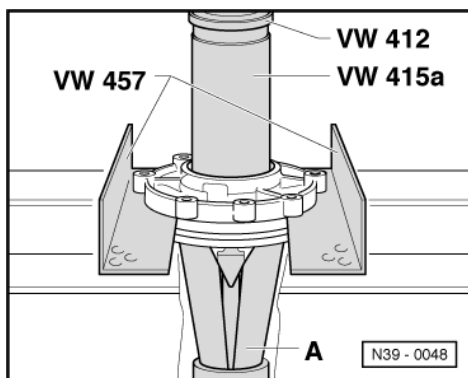
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- If the sealing ring has to be replaced then it must be levered out now.



- -> Remove cover.

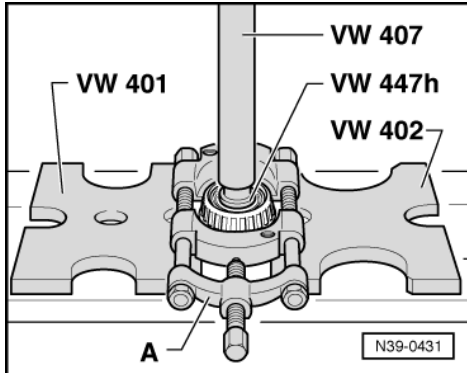
Screw in hexagon bolts -A- evenly so that cover does not tilt.



- -> Press out outer race for greater taper roller bearing from cover.

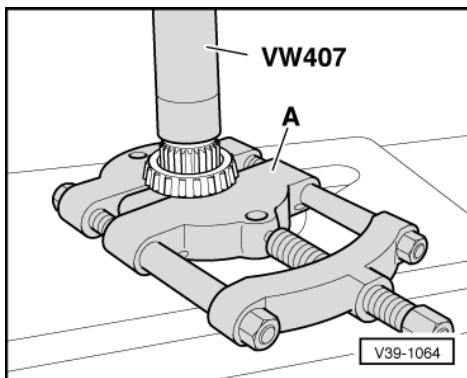
A - Internal puller 56..0.70 mm, e.g. Kukko 21/8

- Remove head taper wheel with input shaft.



- -> Press off inner race for greater taper roller bearing from head taper wheel.

A - Separating device 22 ... 115 mm, e.g. Kukko 17/2

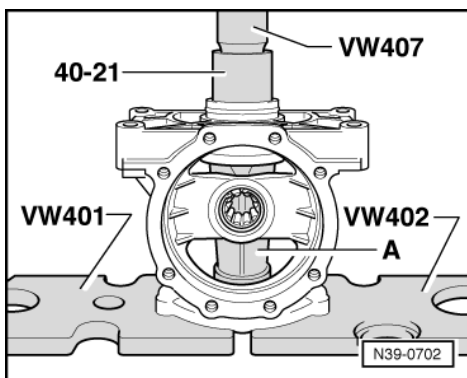


- -> Press off inner race for small taper roller bearing from drive shaft

A - Separating device 22 ... 115 mm, e.g. Kukko 17/2

Note:

The inner race can be pulled off with taper roller bearing puller V.A.G 1582 and gripper piece V.A.G 1582/3; first position differential pressure regulator 40-105 onto drive shaft.



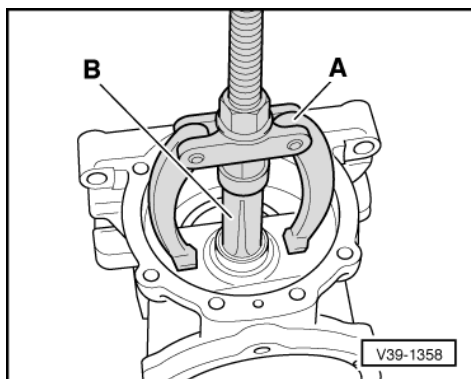
- -> Press out outer race for small taper roller bearing from final drive housing

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A - Internal extractor 46 ... 58 mm, e.g. Kukko 21/7

- Remove circlip for roller sleeve from final drive housing.

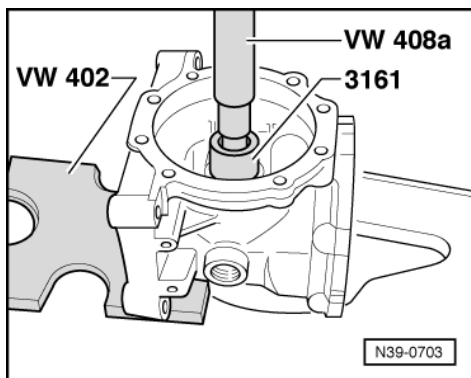


- -> Pull out roller sleeve from final drive housing.

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

B - Internal extractor 13 ... 23 mm, e.g. Kukko 21/3

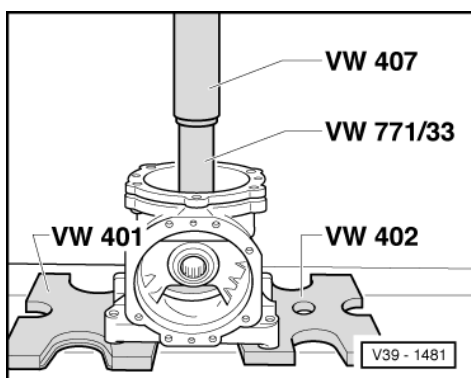
Assemble angle drive



- -> Press roller sleeve into final drive housing.

The description points towards pressing-in tool.
Carefully press in until stop.

- Insert new circlips into final drive housing.



- -> Press in outer race for small taper roller bearing into final drive housing

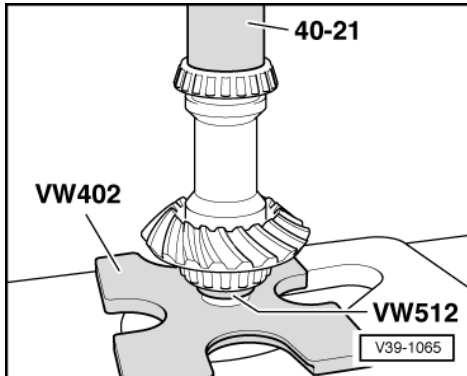


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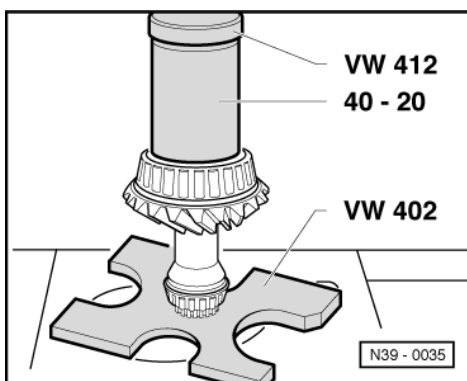
Beforehand insert adjustment shim S2

Note:

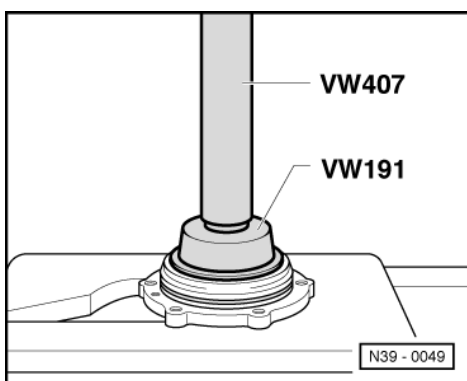
Interrupt pressing procedure as soon as possible so that tube VW 711/33 can be placed onto the entire circumference of the outer race.



- -> Press on inner race for small taper roller bearing onto drive shaft.



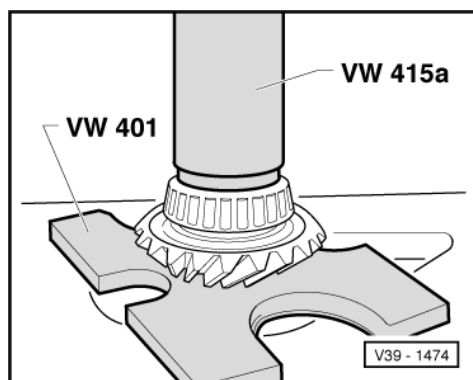
- -> Press on inner race for greater taper roller bearing onto head taper wheel.
- Insert head taper wheel with input shaft into final drive housing.



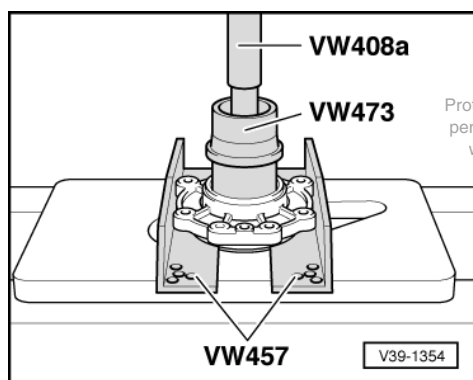
- -> Insert adjustment shim S1 into cover and press in outer race for great taper roller bearing.
- Install cover with new O-ring.

Note:

Do not tilt when installing, tighten securing bolts diagonally in stages

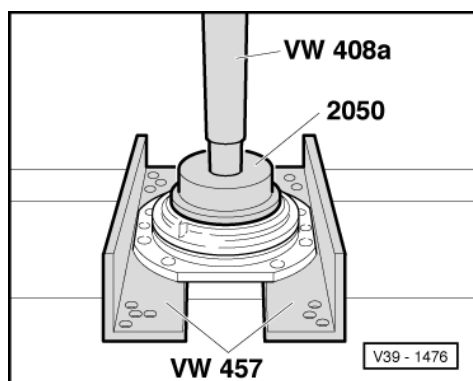


- -> Press on inner race for greater taper roller bearing onto shaft taper wheel.
- Insert shaft taper wheel with adjustment shim S4 into final drive housing.



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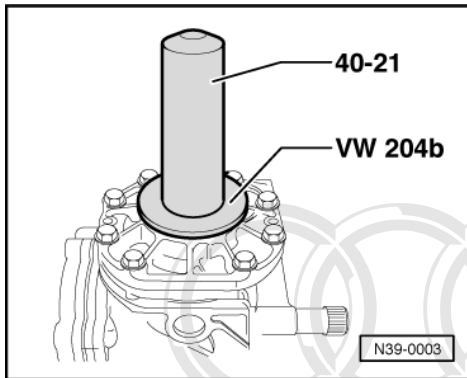
- -> Press in outer race for small taper roller bearing into pinion housing



- -> Press in outer race for small taper roller bearing into pinion housing
- Position adjustment shim S3 on final drive housing.
- Insert pinion housing with new O-ring.

Notes:

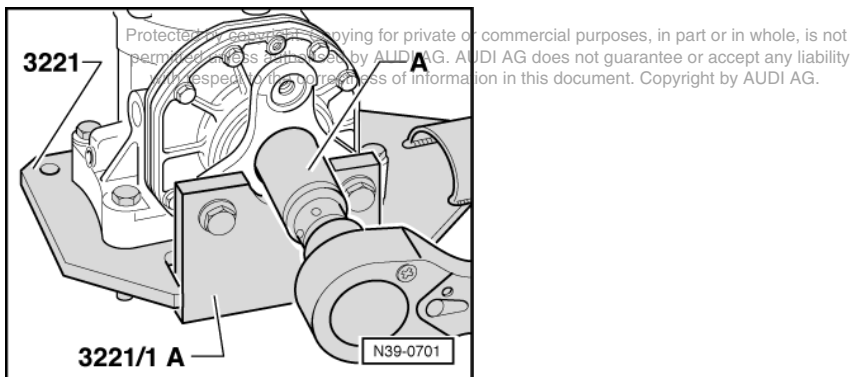
- ♦ Do not tilt when installing, tighten securing bolts diagonally in stages
- ♦ The pinion housing can also be removed and installed with mounted drive flange.
- Insert small inner race/taper roller bearing for shaft taper wheel.



- -> Drive in sealing ring for drive flange until it is flush.

- Insert drive flange.

The thread of the hexagon nut for the drive flange and the shaft taper wheel must be dirt free.

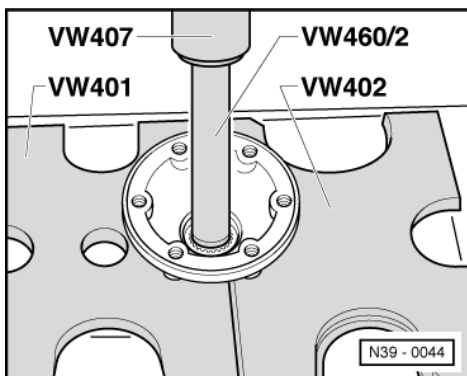


- -> Bolt on hexagon nut for drive flange with tightening torque.

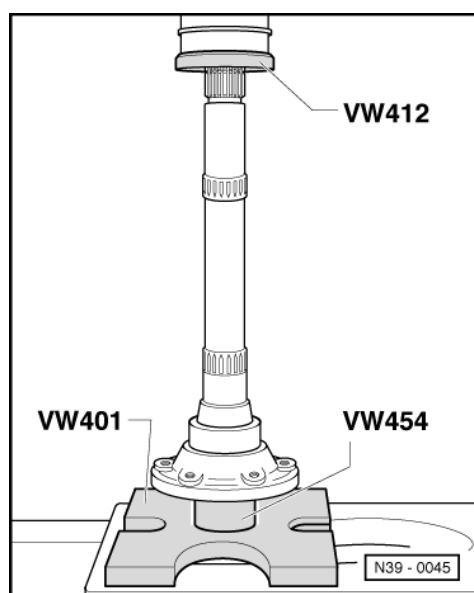
A - socket attachment for 3/4 inch drive

- Drive in new sealing ring for gear flange/input shaft until limit stop.

=> 5-gear manual gearbox 02C, four-wheel drive/gearbox; Rep.-Gr. 39; Replacing sealing rings on the right (gearbox installed) Replacing sealing rings on the right (gearbox installed)



- -> Press off drive flange from output shaft.



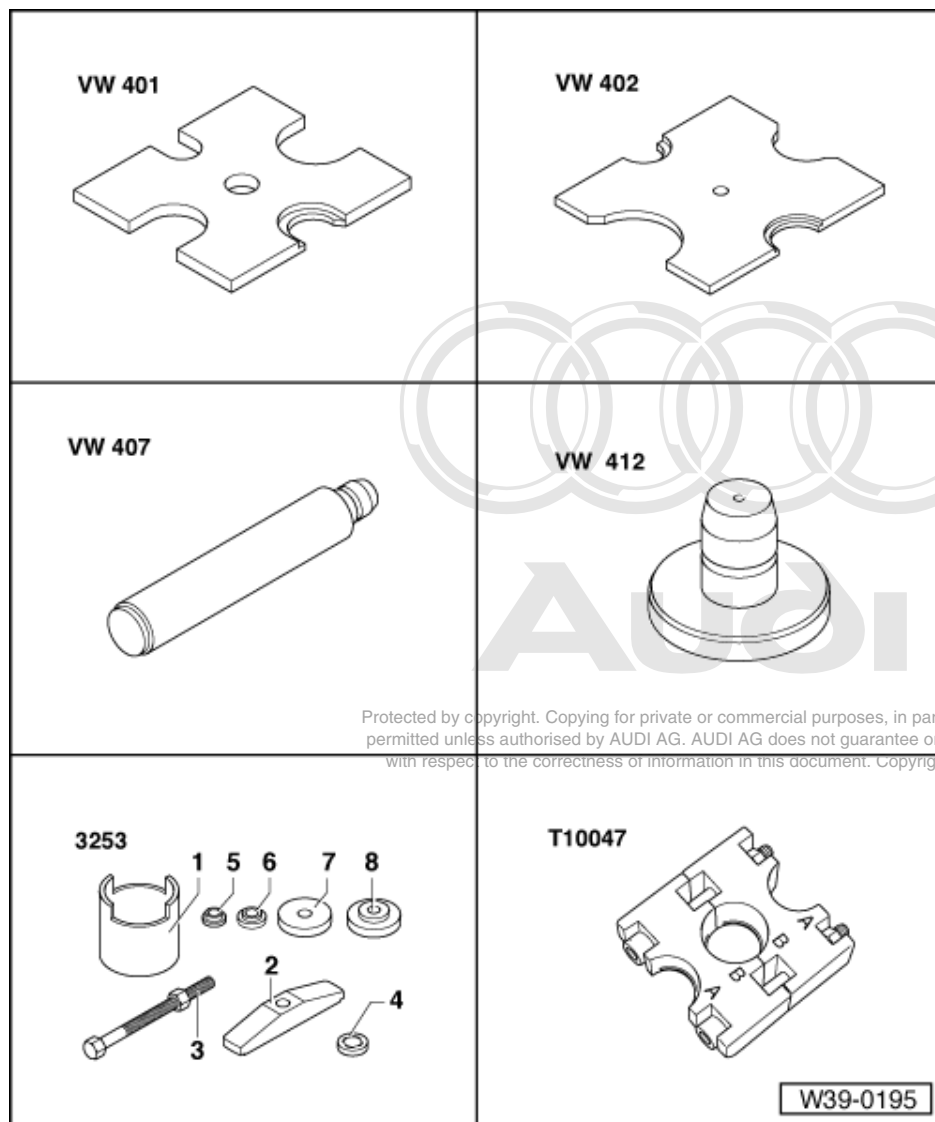
- -> Press drive flange onto output shaft.



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2 - Replace needle bearing (polygon bearing) for output shaft/drive flange on right-hand side

2.1 - Replace needle bearing (polygon bearing) for output shaft/drive flange on right-hand side

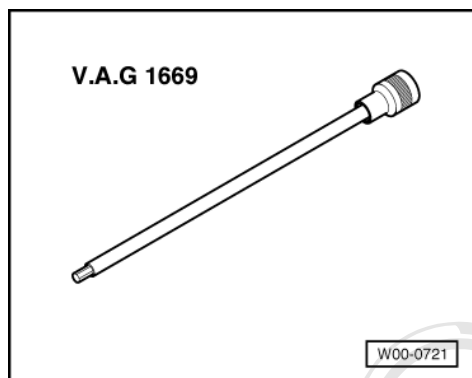


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Special tools and workshop equipment required

- ♦ VW 401 Thrust plate
- ♦ VW 402 Thrust plate
- ♦ VW 407 Thrust tool
- ♦ VW 412 Thrust tool
- ♦ 3253/5 Assembly device
- ♦ T10047 Assembly device

Special tools, testers and auxiliary equipment required



- ♦ V.A.G 1669 Socket set A/F 6 mm
- ♦ Brake fluid collector

Additionally required information

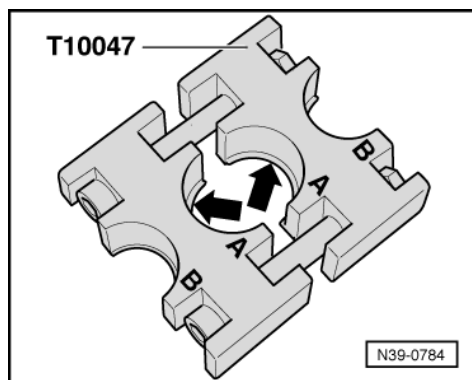
- ♦ Repair instructions Audi A3 1997 ä Running gear

Removing

- Only loosen drive shaft/wheel hub nut when vehicle is standing on its wheels.
- Remove drive shaft

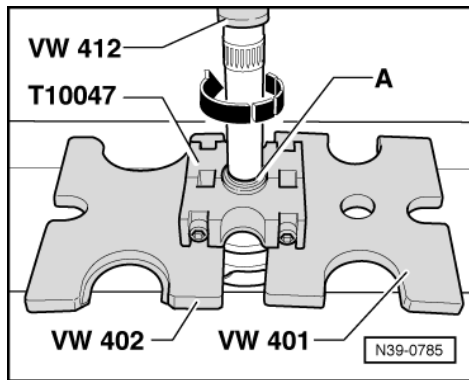
=> Running gear; Repair Group 40: Servicing drive shaft Servicing drive shaft

- Remove cap by piercing cap centre with a screwdriver and levering out.
- Place container under the gearbox.
- Remove bolt for right-hand output shaft with V.A.G 1669 or socket attachment 6 mm (commercially available).
- Carefully lever out gear shaft/output shaft with assembly lever.



-> Now assemble assembly device T10047 as follows:

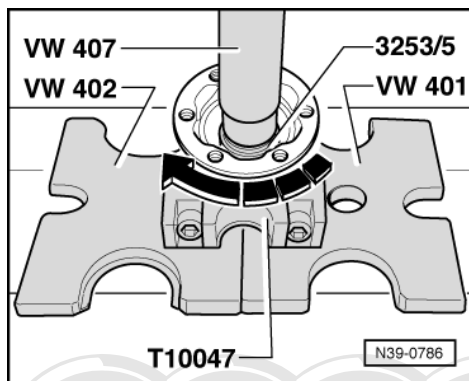
- Arrange both parts of the device so that the markings "A" point towards each other.
- The shoulders (arrows) must be underneath the bearing.
- Now bolt both halves together until limit stop.



- -> Lever off circlip -A- for the bearing.
- In order not to damage the running surface of the bearing on the shaft it must be turned during the press procedure (arrow).

Installing

Install assembly device T10047 => Fig. N39-0784 on Page 58 .



- -> In order not to damage the running surface of the bearing on the shaft it must be turned during the press procedure (arrow).
- Secure bearing with new circlip.
- Carefully drive in gear flange/output shaft, turn whilst doing so.
- Attach gear flange/output shaft with taper head bolt.
- Press in new locking cap.
- Install drive shaft.

=> Running gear; Repair group 40; Servicing drive shaft Servicing drive shaft

- Screw nut (self-securing) onto gear shaft and only tighten on vehicles which are standing on their wheels.

=> Running gear; Repair group 40; Servicing drive shaft Servicing drive shaft

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- Check gear oil in gearbox with angle drive

=> 5-gear manual gearbox 02C, four wheel drive/gearbox, Checking; Repair group 34; gear oil in gear with angle drive gear oil in gear with angle drive

Tightening torques

Gear flange/output shaft to gearbox (tapered bolt)	25 Nm
Drive shaft to flange shaft	40 Nm

3 - Adjust shaft and head taper wheel (final drive)

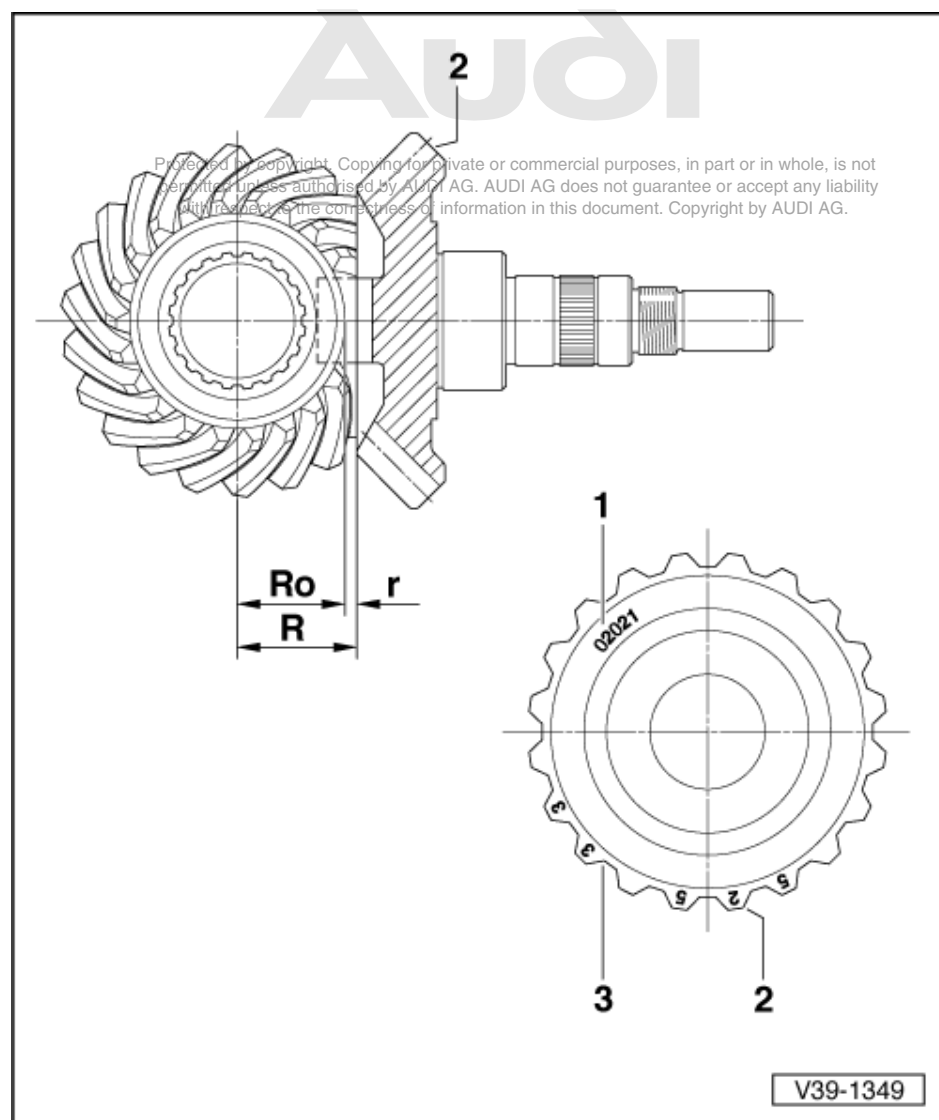
3.1 - Adjust shaft and head taper wheel (final drive)

3.2 - General notes

Careful adjustment of the drive pinion is important for the service life and smooth running of the angle drive set. Therefore shaft taper wheels and head taper wheels are paired up during manufacturing and are checked with a tester for good positioning of carrier pattern and low noise emission. The position of the extreme outer smooth running is achieved by axial deviation of shaft taper wheel whereby the backlash moves within the predetermined tolerance.

Deviation "r" with reference to the master gauge "Ro" is stored on the head taper wheel. Change gear set (shaft and head taper wheel) only as a pair!

3.3 - Adjusting and marking of gear sets



1 Marking "02021" indicates Oerlikon gear set with transmission ratio 20:21.

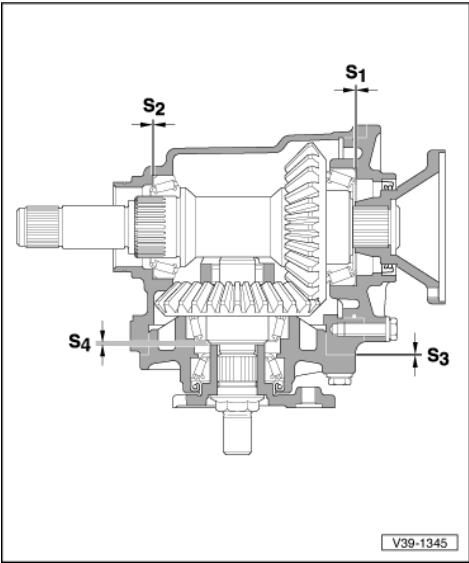
2 Gear set pairing number (525).

3 Deviation (tolerance) "r" is based on the test machine master gauge used in production. The deviation "r" is always given in 1/100 mm. Example: "33" means
r = 0,33 mm

Ro - Length of test machine master gauge used. "Ro" = 36,20 mm

R - Actual dimension between head taper wheel drive and face of shaft taper wheel at point with quietest running for this gear set.

3.4 - Position of shims



- S1 - Adjustment shim for friction torque/taper roller bearing head taper wheel
- S2 - Adjustment shim for friction torque and positioning of head taper wheel
- S3 - Adjustment shim for shaft taper wheel
- S4 - Adjustment shim for friction torque/taper roller bearing head taper wheel

3.5 - Adjustment overview (angle drive)

Note:

If repairs have been carried out on the gearbox it is only necessary to adjust shaft taper wheel, head taper wheel or the complete gear set when parts are replaced which directly influence the adjustment of the final drive. To eliminate unnecessary adjustments observe following table:

		To adjust:	
		Shaft taper wheel (S3 and S4) using deviation "r" => Page 64	Head taper wheel (S1 and S2) => Page 71 .
Part renewed:	Final drive housing	X 1)	x
	Cap		x2)
	Final drive (Shaft and head taper wheel with input shaft)	x	x
	Taper roller bearing for shaft taper wheel	x	
	Taper roller bearing for head taper wheel		x
	Pinion housing	x	

Drive flange	x3)	
--------------	-----	--

- 1) Only S3 =>Page 68 . The shaft taper wheel is removed together with pinion housing. Adjustment shim S4 remains unchanged.
- 2) Only S1 over previously measured total friction torque.
- 3) Only S4 over differential measurement =>Page 62 .

3.6 - Recommended sequence for adjusting gear set

When shaft taper wheel and head taper wheel have to be adjusted In the interests of a rational sequence, keep to the following order:

1. Adjust shaft taper wheel (S3 and S4)

- Determine thickness of adjustment shim "S4" and insert. This adjusts the pretension of the taper roller bearing for the shaft taper wheel.
- Determine thickness of adjustment shim "S3" and insert. This fixates the shaft taper wheel axially in such a way that the measure from centre of head taper wheel to front of shaft taper wheel corresponds to the installation dimension "R" calculated during production.
- Perform control measurement for S3.

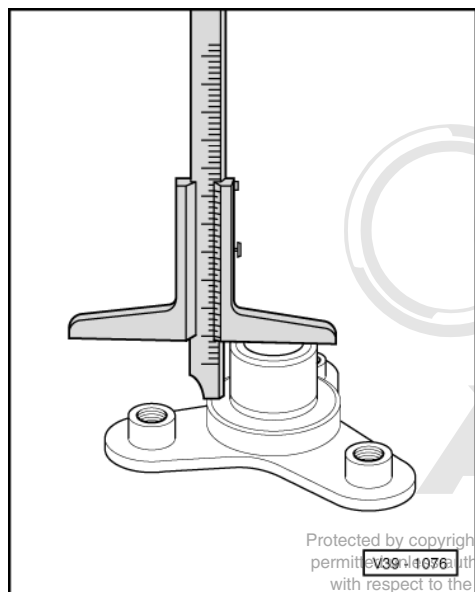
2. Adjust head taper wheel (S1 and S2)

- Adjust pretension of taper roller bearing for head taper wheel via Stotal and friction torque.
- Adjusting backlash Select thickness of shims "S1" and "S2" so that the prescribed backlash between shaft taper wheel and head taper wheel exists.
- Control of backlash

The object of the adjustment is to reproduce the setting for quietest possible running, as obtained on the test machine in production. Maximum care and cleanliness are essential for achieving good results when performing repairs and taking measurements.

3.7 - Determine adjustment shim "S4" again when replacing output flange.

This adjustment is only necessary when output flange is replaced. It is meant to redetermine pretension of taper roller bearing for shaft taper wheel.



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- -> Measure length of shaft at old and new output flange and determine difference.

Example:	
Old drive flange	25,80 mm
New drive flange	25.60 mm
Difference	0.20 mm

If the new drive flange is longer then install a adjustment shim S4 which is thinner by the difference.

If the old drive flange is longer then install a adjustment shim S4 which is thicker by the difference.

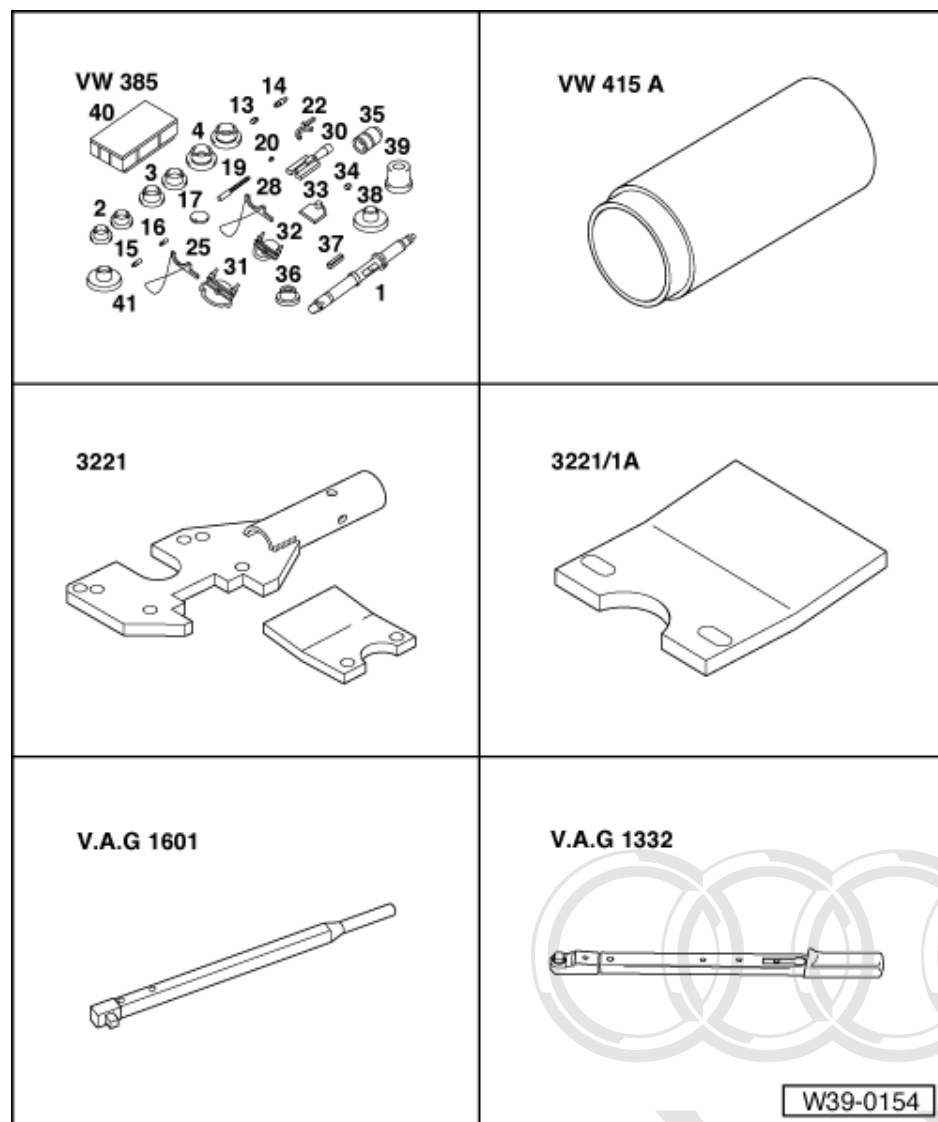
The following adjustment shims are available:

Thickness (mm)	Parts Nos.
0.65	02C 409 280
0.70	02C 409 280A
0.75	02C 409 280B
0.80	02C 409 280C
0.85	02C 409 280D
0.90	02C 409 280E
0.95	02C 409 280F
1.00	02C 409 280G
1.05	02C 409 280H
1.10	02C 409 280J
1.15	02C 409 280K
1.20	02C 409 280L
1.25	02C 409 280M
1.30	02C 409 280N
1.35	02C 409 280P
1.40	02C 409 280Q

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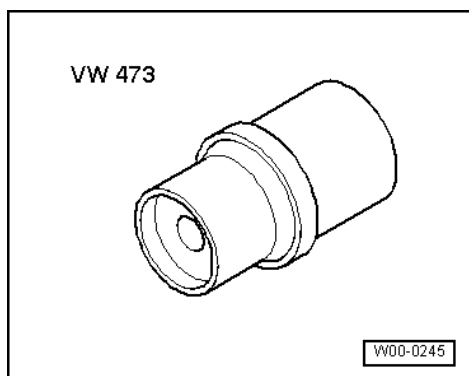
3.8 - Adjust shaft taper wheel



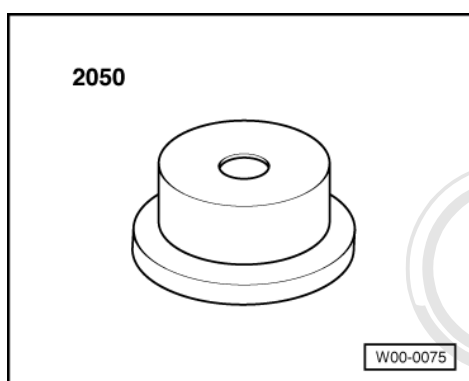
Special tools and workshop equipment required

- ♦ VW 385 Universal measuring tool
- ♦ VW 415 A Tube
- ♦ 3221 gearbox bracket
- ♦ 3221/1A stop plate
- ♦ V.A.G 1601 Torque wrench
- ♦ V.A.G 1332 Torque wrench

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Special tools and workshop equipment required

- ♦ VW 473 Thrust piece



- ♦ 2050 Thrust piece

Readjustment of the shaft taper wheel is required if

- ♦ Final drive housing
- ♦ Taper roller bearing for shaft taper wheel
- ♦ Final drive

or the

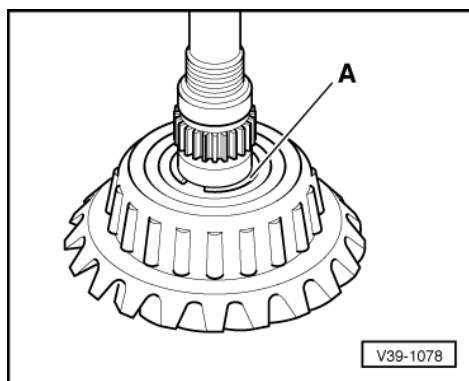
- ♦ Pinion housing

are renewed.

Adjustment overview =>Page **61**

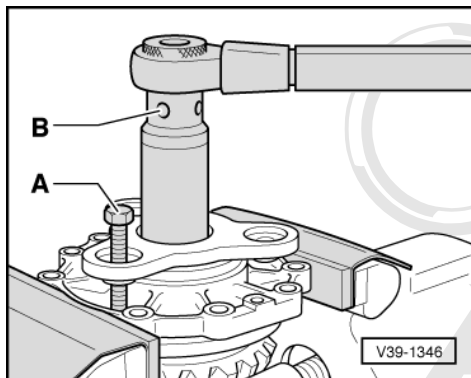
Determining adjustment shim "S4" thickness

- Press in outer race of great taper roller bearing for shaft taper wheel into pinion housing with thrust piece 2050.



- Press in outer race of great taper roller bearing for shaft taper wheel into pinion housing with thrust piece VW 473.
- Press on inner race of great taper roller bearing onto shaft taper wheel with tube piece VW 415 a.
- -> Attach A - soldering wire $\varnothing 1.5$ mm instead of adjustment shim S4.

- Insert shaft taper wheel.

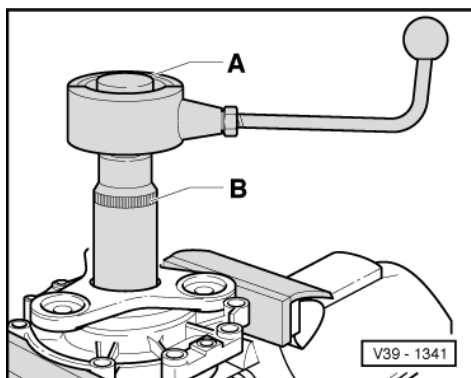


- Insert inner race of small taper roller bearing and drive flange and attach hexagon nut.
- -> A - Screw in hexagon bolt M10 as support bracket.

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B - socket attachment

- Tighten hexagon nut to 20 Nm, screw back hexagon nut -A- or screw out completely.



- -> Measure friction torque
- A-Torque gauge, commercially available, 0 ...600 Ncm
- B-Socket attachment
- If necessary, increase tightening torque until the predetermined friction torque occurs.

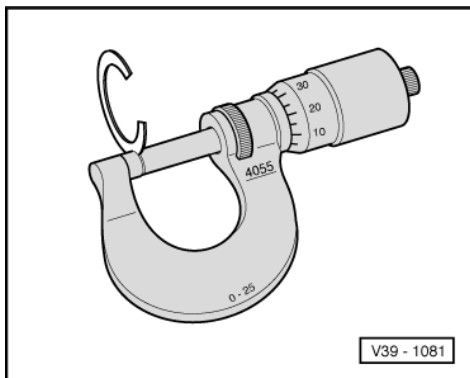
Note:

Increase tightening torques only slowly and read friction torque several times; if the predetermined friction torque is exceeded the soldering wire must be replaced and the adjustment must be repeated.

Set to following frictional torques:

New bearings	Used bearings 1)
100 ... 240 Ncm	30 50 Ncm

1)with at least 50 km service

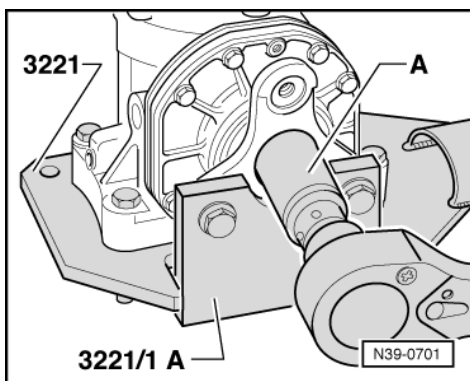


- Remove shaft taper wheel and carefully remove crushed soldering wire.
- -> Measure thickness of soldering wire on a well crushed spot - without shoulder -.
- Select adjustment shim(s) of same thickness.

The following adjustment shims are available:

Thickness (mm)	Part Nos.
0.65	02C 409 280
0.70	02C 409 280A
0.75	02C 409 280B
0.80	02C 409 280C
0.85	02C 409 280D
0.90	02C 409 280E
0.95	02C 409 280F
1.00	02C 409 280G
1.05	02C 409 280H
1.10	02C 409 280J
1.15	02C 409 280K
1.20	02C 409 280L
1.25	02C 409 280M
1.30	02C 409 280N
1.35	02C 409 280P
1.40	02C 409 280Q

- Insert adjustment shim S4 and install shaft taper wheel.



- -> Insert hexagon nut with gear oil and tighten to 350 Nm.

A - socket attachment for drive 3/4 inch

Perform control measurement - check friction torque

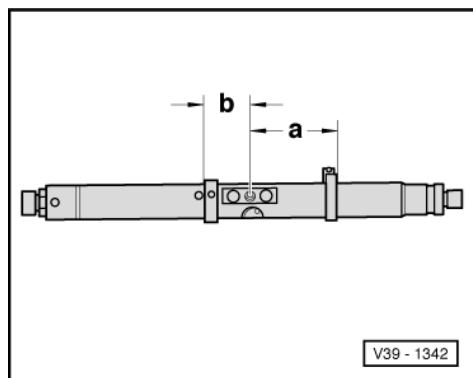
Friction torques =>Page 66

If necessary, correct with a thinner (more friction torque) or thicker (less friction torque) adjustment shim S4

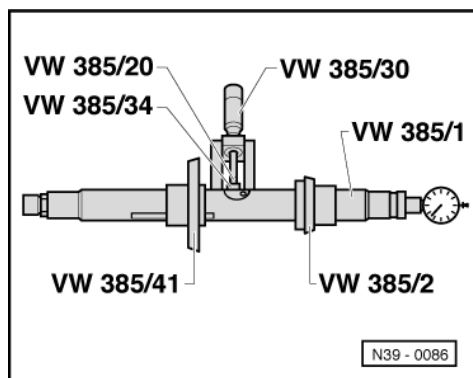


Determine thickness of adjustment shim "S3

- Insert pinion housing with shaft taper wheel and inserted adjustment shim S4.
- Do not insert O-ring.



- -> Set universal mandrel VW 385/1 setting ring to dimension $a = 75 \text{ mm}$.
- Adjust moveable setting ring to measure $b = 32 \text{ mm}$.

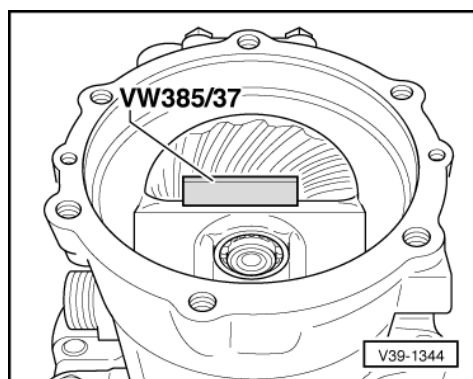


- -> Arrange universal mandrel as illustrated.
Dial gauge extension VW 385/20 = 3 mm long.

Set universal master gauge VW 385/30 to

Adjust $R_o = 36.20 \text{ mm}$.

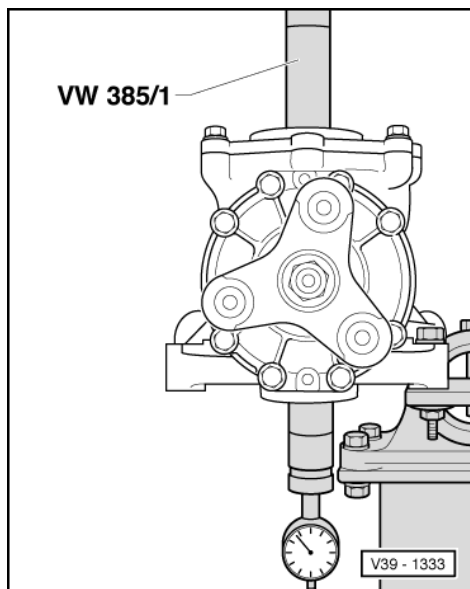
- Set measuring clock to Zero with 3 mm pre-tension.



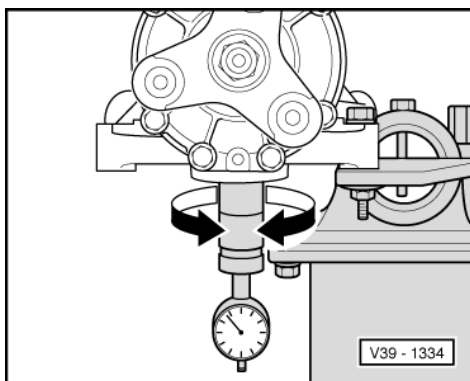
- -> Mount final measuring plate onto head of shaft taper wheel.



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- -> Insert universal mandrel.
- Attach cover and tighten hexagon nuts.
- Use sliding setting ring to pull centring disc outwards until mandrel can still just be turned by hand.



- -> Measure dimension "e".
Turn mandrel until the dial gauge point touches the final measuring plate on pinion shaft head, then measure maximum deflection (return point). The measured value is dimension "e" (in red scale). Example: 0.47 mm
- Remove universal mandrel.

Note:

Finally, check again that the dial gauge returns to "0" with master gauge VW 385/30 at 3 mm preload, otherwise repeat measurement.

Determining thickness adjustment shim "S3"

$$S3 = e + r$$

e - Determined value (max. deviation)
r - Dimension (given on head taper wheel in 1/100 mm)

Example:

Measured dial gauge value "e"	0.47 mm
dimension "r" written onto head taper wheel	+ 0.33 mm
wheel	



Adjustment shim thickness "S3"	= 0.80 mm
--------------------------------	-----------

The following adjustment shims are available:

Thickness (mm)	Parts Nos.
0.65	02C 409 114L
0.70	02C 409 114M
0.75	02C 409 114N
0.80	02C 409 114P
0.85	02C 409 114Q
0.90	02C 409 114R
0.95	02C 409 114S
1.00	02C 409 114T
1.05	02C 409 114AA
1.10	02C 409 114AB
1.15	02C 409 114AC
1.20	02C 409 114AD

- Remove pinion housing with shaft taper wheel.
- Install determined adjustment shim S3

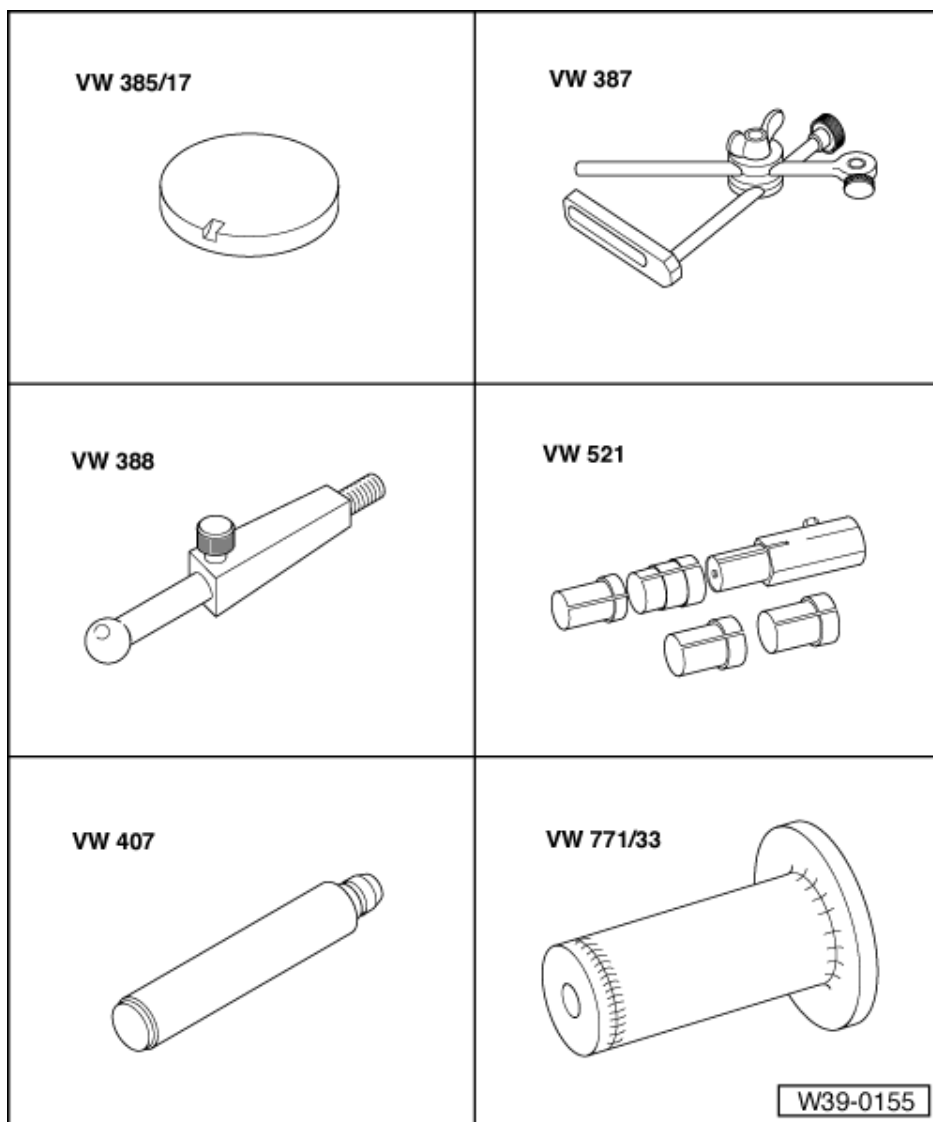
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Perform check measurement - checking dimension "R"

Insert universal mandrel and measure dimension "R".

If the correct adjustment shims have been selected the measuring clock must now indicate the dimension mark "r" reading anti-clockwise (on red scale) within a tolerance of +0.04 mm.

3.9 - Adjusting head taper wheel

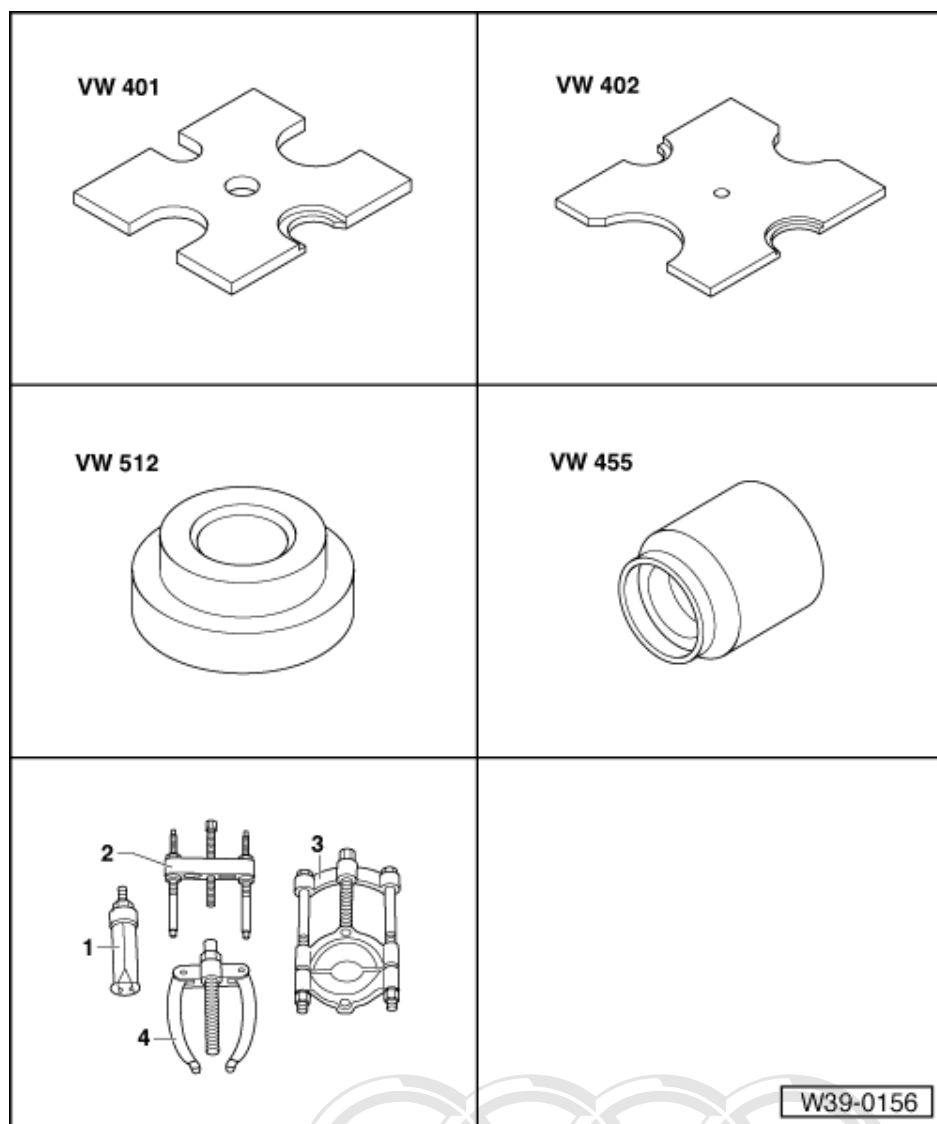


Special tools and workshop equipment required

- ◆ VW 385/17 End measuring plate
- ◆ VW 387 Universal dial gauge holder
- ◆ VW 388 Test lever, adjustable
- ◆ VW 521 Adjustment tool for crown wheel
- ◆ VW 521/7 Adjustment tool for crown wheel
- ◆ VW 407 Thrust tool
- ◆ VW 771/33 tube

Audi

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Special tools and workshop equipment required

- ♦ VW 401 Thrust plate
- ♦ VW 402 Thrust plate
- ♦ VW 512 Thrust plate
- ♦ VW 455 Pressing-on sleeve
- ♦ 1 - Internal puller Kukko 21/7
- ♦ Dial gauge

Readjustment of the pinion shaft is required if

- ♦ Final drive housing
- ♦ Cap
- ♦ Taper roller bearing for head taper wheel/drive shaft

or

- ♦ Final drive

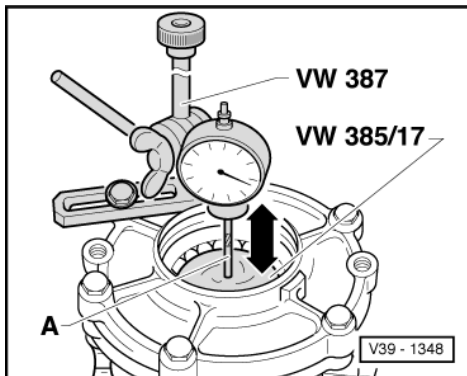
are renewed.

Adjustment overview =>Page 61

Adjusting pretension of taper roller bearing for head taper wheel (friction torque)

Shaft taper wheel is removed.

- Insert 1.2 mm adjustment shim (part no. 113 517 211 A) into seat of outer race for small taper roller bearing (S2-Page).
- Press in outer race =>Page 53
- Insert head taper wheel/drive shaft with taper roller bearing.
- Attach cover with outer race for large taper roller bearing without O-ring, without sealing ring for gear flange and without adjustment shim S1
- Press head taper wheel/drive shaft towards cover and turn eight times.
- Press head taper wheel/drive shaft towards outer race for small taper roller bearing and turn eight times.



- -> Mount dial gauge (2 mm pretension)
A - Dial gauge extension 30 mm
- Moving head taper wheel/drive shaft up and down (direction of arrow)
- Read clearance on dial gauge and determine Stotal

Example:

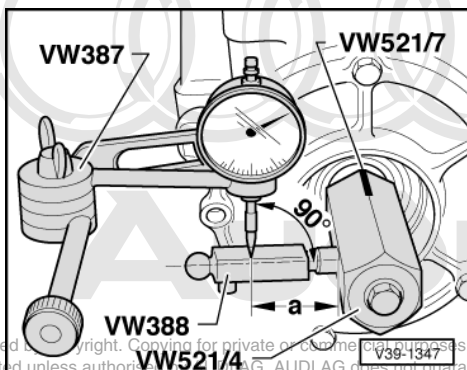
Adjustment shim	1.20 mm
+ Pressure (constant value)	0.30 mm
+ Clearance (read off dial gauge)	0.35 mm
Stotal"	1.85 mm

Stotal instead of 1.20 mm thick adjustment shim and check bearing pre tension over friction torque.

Determining adjustment shim thickness S2 (adjust backlash)

Pinion shaft housing installed with shaft taper wheel and S3

Head taper wheel/drive shaft on S2-side with Stotal Example: 1.85 mm) installed Friction torques for bearing head taper wheel/drive shaft and shaft taper wheel must be correct.



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- -> Fit measuring tools.
- Dial gauge extension approx. 25 mm long
- Dimension a = 39 mm
- Screw in measuring lever VW 388 so that dial gauge extension is in a right angle to measuring surface



- Turn in head taper wheel/drive shaft until stop. Set dial gauge to Zero, turn back head taper wheel/drive shaft and read off backlash. Note value.
- Loosen clamping screw of spring pin and repeat measuring procedure three times after turning the head taper wheel/drive shaft for 90°. Add the four measured values together and calculate average backlash..

Calculating average backlash**Example:**

1. measurement	1.25 mm
+ 2. measurement	1.24 mm
+ 3. measurement	1.25 mm
+ 4. measurement	1.26 mm
Total	5.00 mm

Centre backlash = 5.00 mm: 4
= 1.25 mm.

Note:

The ratio backlash to deviation head taper wheel/drive shaft corresponds approximately to a ratio of 1:1. Therefore the determined centre backlash can be used directly for the calculation of S2

Determining adjustment shim thickness S2

S2 =	Insert adjustment shim (Stotal)
-	Average backlash
+	Lift (constant)

Lift = 0.20 mm

Example:	
Shims installed	1.85 mm
- Average backlash	1.25 mm
	0.60 mm
+ Lift (constant)	0.20 mm
S2 =	0.80 mm

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The following adjustment shims are available:

Thickness (mm)	Part Nos.
0.15	113.517.201A
0.20	113.517.202A
0.30	113.517.203A
0.40	113.517.204A
0.50	113.517.205A
0.60	113.517.206A
0.70	113.517.207A
0.80	113.517.208A
0.90	113.517.209A
1.00	113.517.210A
1.20	113.517.211A

- Install determined adjustment shim S2 instead of Stotal.

If size of adjustment shim required is larger than those listed in table, insert two shims amounting to correct value.

- Different tolerances make it possible to obtain exact adjustment shim thickness required.
- Press outer race in again and insert head taper wheel/drive shaft.

Determining adjustment shim thickness S1

$$S1 = \text{Stotal} - S2$$

Example:

$$S1 = 1.85 \text{ mm} - 0.80 \text{ mm}$$

$$S1 = 1.05 \text{ mm}$$

The following adjustment shims are available:

Thickness (mm)	Part Nos.
0.70	02C 409 247P
0.75	02C 409 247Q
0.80	02C 409 247R
0.85	02C 409 247S
0.90	02C 409 247T
0.95	02C 409 247AA
1.00	02C 409 247AB
1.05	02C 409 247AC
1.10	02C 409 247AD
1.15	02C 409 247AE
1.20	02C 409 247AF
1.25	02C 409 247AG
1.30	02C 409 247AH
1.35	02C 409 247AJ

- Insert determined adjustment shim S1

If size of adjustment shim required is larger than those listed in table, insert two shims amounting to correct value.

- Different tolerances make it possible to obtain exact adjustment shim thickness required.
- Press outer race in again.
- Mount cover.

Perform control measurement - measuring backlash

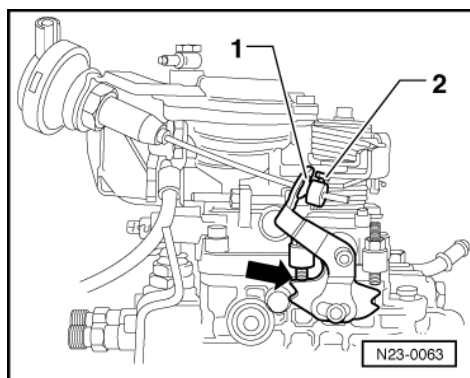
- It must be 0.15...0.25 mm.

4 - Removing and installing propshaft

4.1 - Removing and installing propshaft

Work on the prop shaft should be carried out on a two-column vehicle hoist.

Notes:

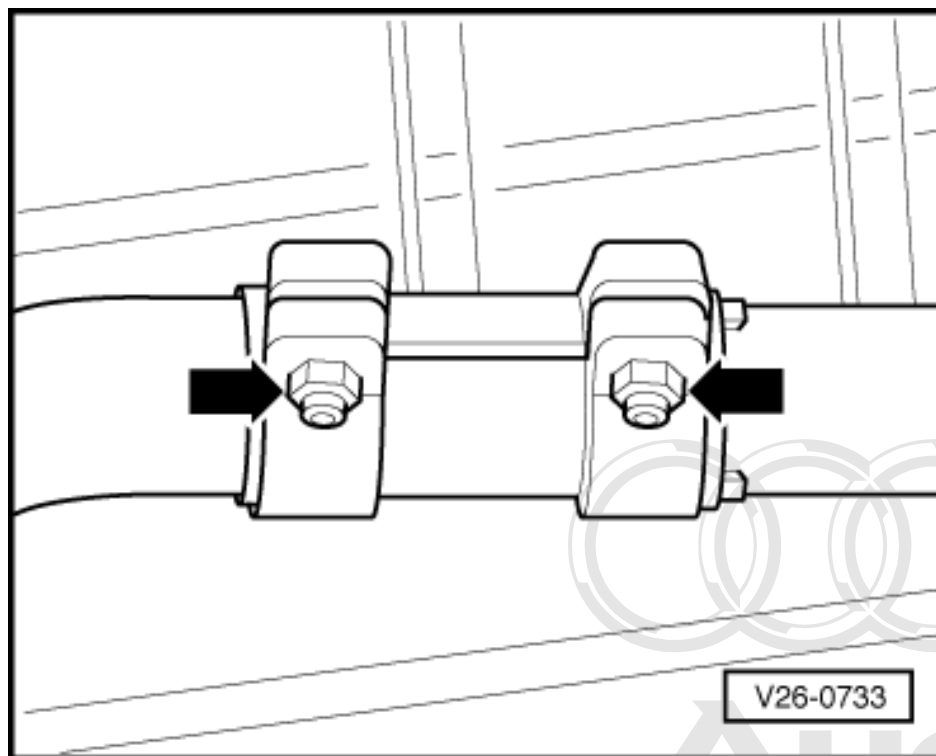




- ♦ Prior to removal mark the position of all parts in relation to each other. Reinstall in the same positions otherwise the imbalance will be excessive; the bearings could be damaged and humming noises may occur.
- ♦ Do not bend prop shaft, store only store and transport extended.

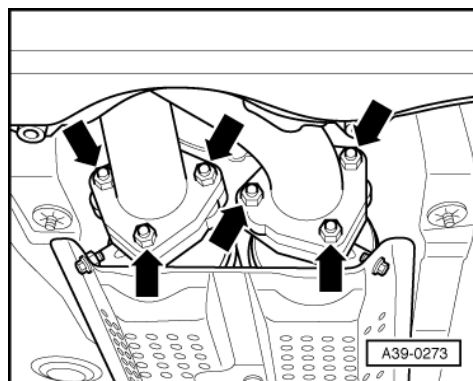
Removing

- -> Remove noise insulation in centre -arrows-.



- -> Slacken clamp -arrows- on exhaust system and disconnect exhaust pipe.
- Unbolt bracket on the rear right-hand side for exhaust system.
- Detach exhaust system from brackets.

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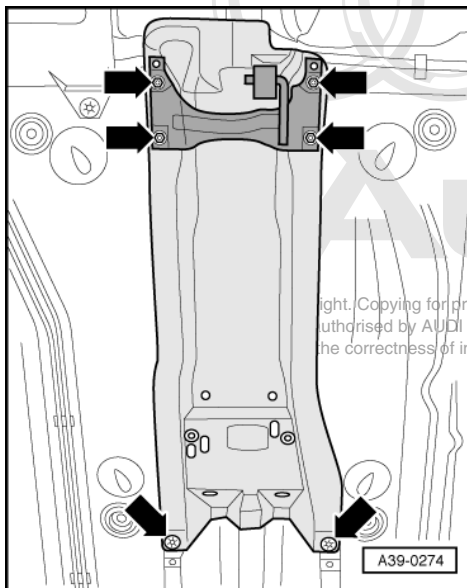


- -> Unscrew catalytic converters from exhaust pipe -arrows-.

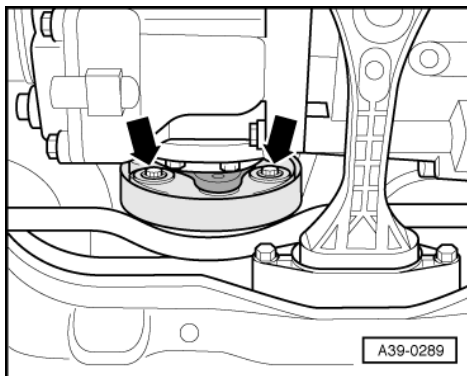
Note:

The isolating element in exhaust system must not be bent more than 10° to avoid damage..

- Where present unscrew mounting for exhaust system from subframe.



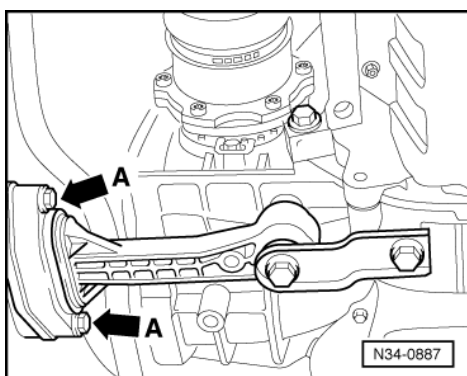
- -> Unscrew centre heat shield and bracket for exhaust system -arrows-.



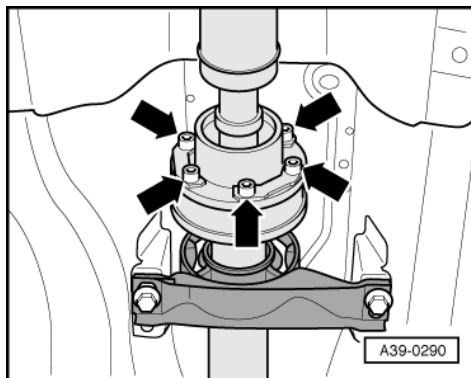
- -> Unscrew prop shaft from disc coupling at angle drive -arrows-.

Note:

Counterhold with a lever on triangle flange when loosening the bolts.



- -> Unscrew pendulum support from subframe -arrows A-.



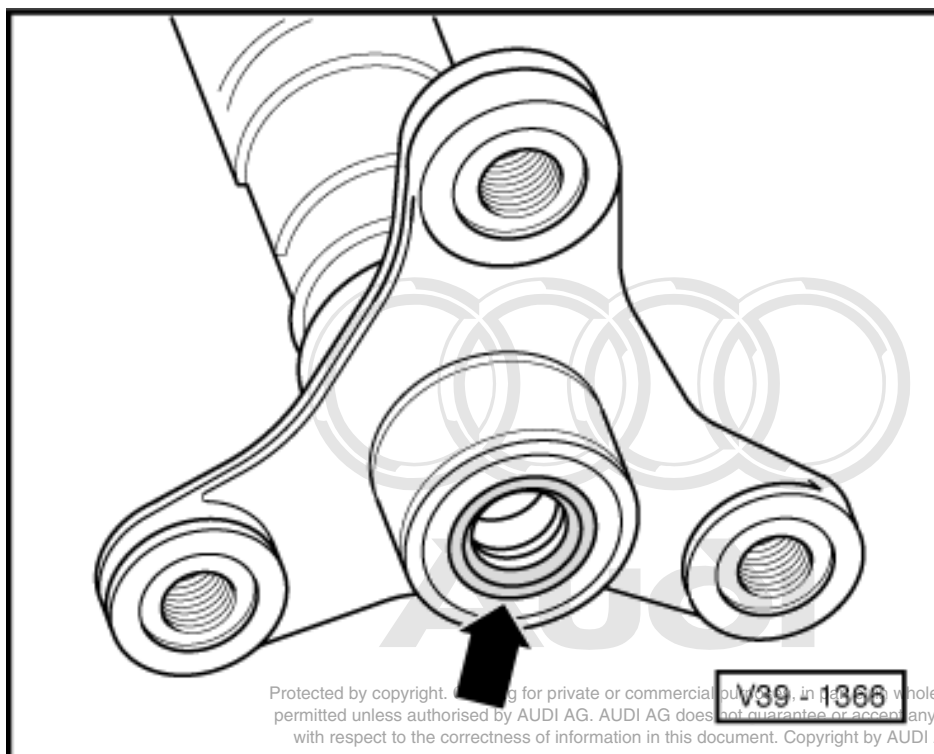
- -> Disconnect front prop shaft tube from rear prop shaft tube -arrows-.
- Press front prop shaft tube towards the front and swivel out from flange of rear prop shaft tube.

Note:

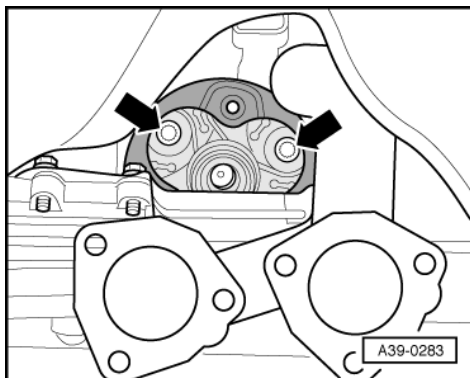
Take care when swivelling out that the front prop shaft tube is pushed downwards as little as possible.

- Carefully pull front prop shaft tube from centralising pin.

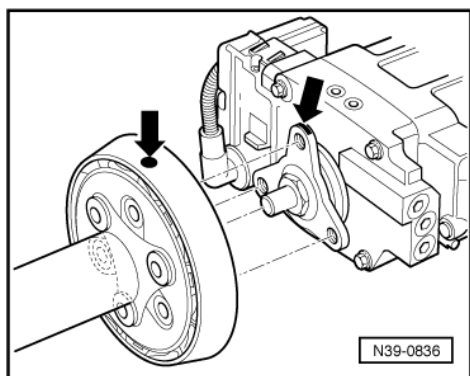
Notes:



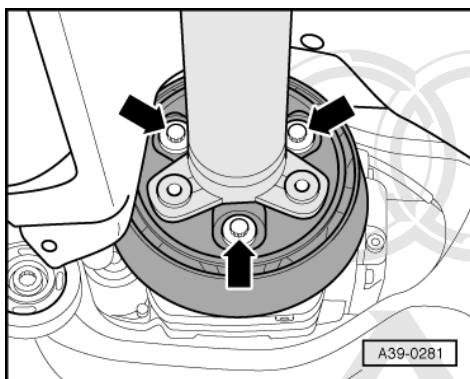
- ♦ -> The sealing ring -arrow- in flange of propshaft must not be damaged. When sealing ring is damaged prop shaft must be replaced.
- ♦ Pull off prop shaft horizontally from guide pin.
- Swivel front prop shaft tube downwards and remove.



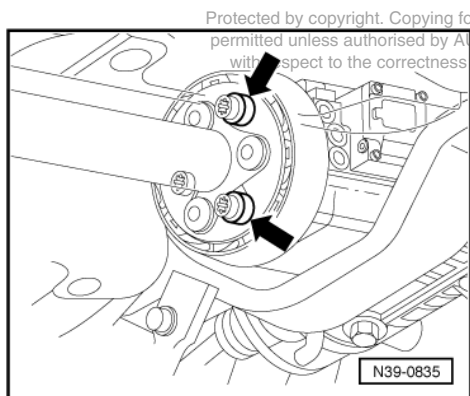
- -> Unscrew disc coupling from angle drive flange -arrows-.



- -> Check whether there is a factory marking (coloured dot) on disc coupling and on flange of Haldex clutch -arrows-. If not, mark position of disc coupling and flange at Haldex clutch in relation to each other -arrows-.



- -> Unscrew rear prop shaft tube with disc coupling and oscillation damper from rear final drive -arrows-.



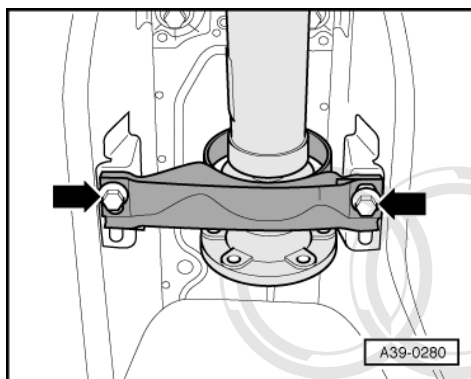
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-> As of 06.99 alignment plates and new securing bolts for the prop shaft were inserted into flange of Haldex clutch -arrows-.

Notes:

- ♦ Up to two of these new securing bolts can be assembled with one alignment plate.
- ♦ The new securing bolts have an internal hexagonal head.



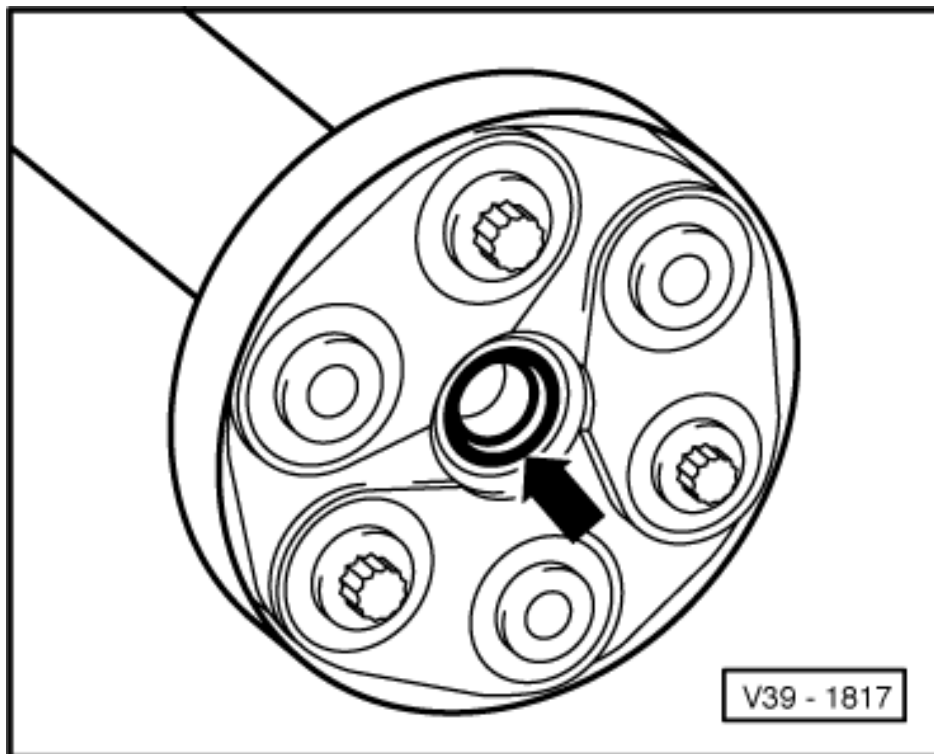
- -> Unscrew centre bearing of prop shaft from vehicle -arrows-.
- Carefully pull off rear prop shaft tube from centralising pin.

Notes:

- ♦ Disc coupling and oscillation damper cannot be separated from each other.
- ♦ Do not tilt propshaft when removing, pull off centralising pin horizontally. Sealing ring/centralising sleeve (=> Page 78) must not be damaged, otherwise propshaft must be replaced.

Installing

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

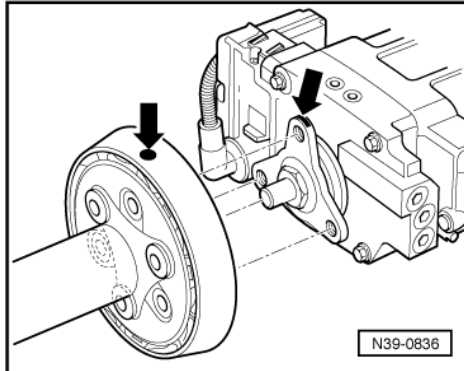


- ♦ Install all parts of prop shaft which are marked in relation to each other in the same position.

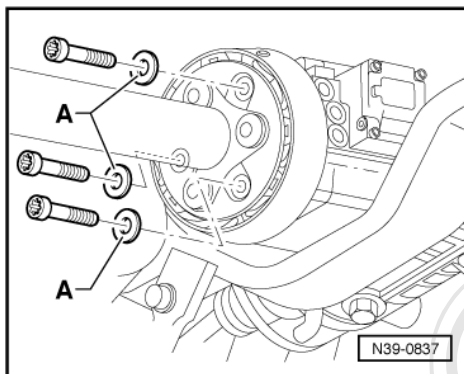
Notes:

- ♦ -> Sealing rings - arrow- in the flanges of the prop shaft must not be damaged when removing and installing. When sealing ring is damaged prop shaft must be replaced.
- ♦ Slide prop shaft horizontally onto the appropriate guide pin.

Fitting location:



- ♦ Three protruding sleeves at the gear flange or rear final drive flange and prop shaft flange grip into the input borings of the adjustment shims.
 - ♦ The open side of the heat shield at the front disc coupling towards angle drive.
- -> Attach prop shaft to the flange of the Haldex clutch so that the markings -arrows- are in a line



- -> The alignment plates built in since 06.99 must not be installed anymore and must always be replaced by packing plates -A-.

Allocation of packing plates => Spare part catalogue

Install centre bearings stress-free.

- Align centre bearing in its longitudinal borings so that the prop shaft or the centre bearing is not tensioned.
- Only tighten bolts of centre bearing on bodyworks after installing prop shaft.
- Stress free alignment of exhaust system

=> 4-cylinder Engine (5-valve turbo) Mechanics; Repair Group 26; Removing and installing exhaust system parts, Stress-free alignment of exhaust system Removing and installing exhaust system parts, Stress-free alignment of exhaust system

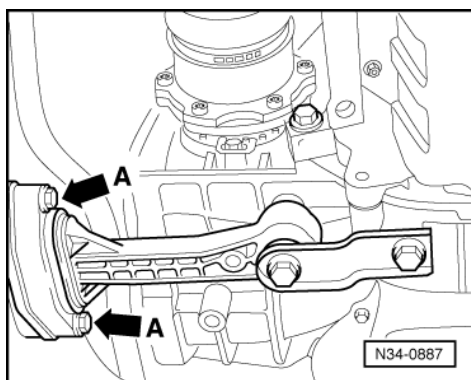
Notes:

If humming noises occur during driving observe the following:

- ♦ Unscrew prop shaft with disc coupling from flange of Haldex clutch and screw in again one boring further
- ♦ If the humming noises can still be heard the prop shaft must be moved again by one boring.



Tightening torques

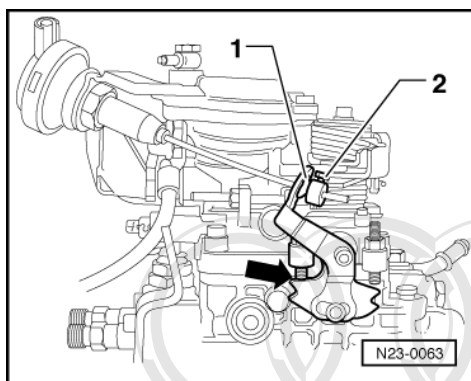


Component	Nm
Bolts -A- for pendulum support	20 + 90o1)2)
Centre bearing on bodyworks	25
Front onto rear prop shaft tube	40
Disc coupling on rear final drive	60
Disc coupling on prop shaft	60
Disc coupling on angle drive	60

- 1) 90o corresponds to a quarter turn
- 2) Renew bolts

4.2 - Removing and installing front disc coupling

Work on the prop shaft should be carried out on a two-column vehicle hoist.



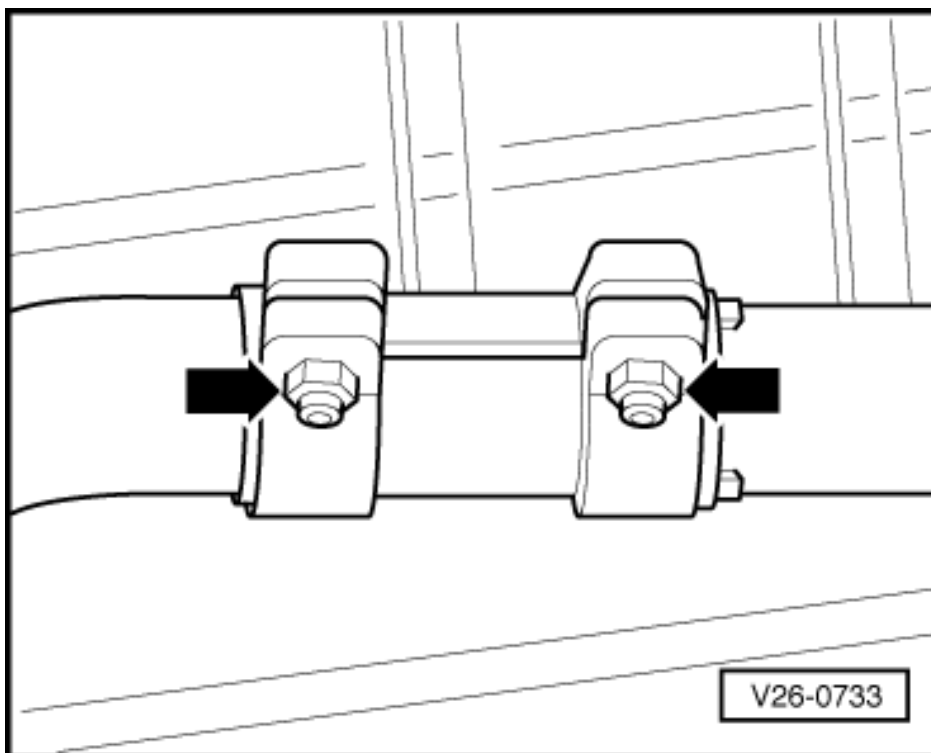
Note:

Prior to removal mark the position of all parts in relation to each other. Reinstall in the same positions otherwise the imbalance will be excessive; the bearings could be damaged and humming noises may occur.

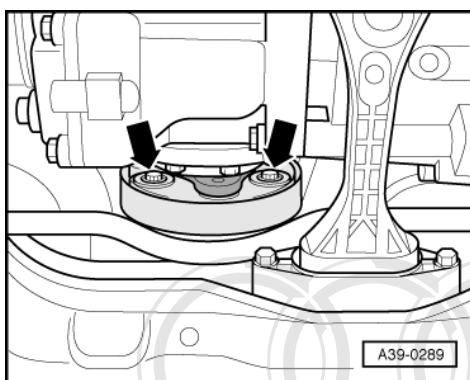
Removing

- ➔ Remove noise insulation in centre - arrows -

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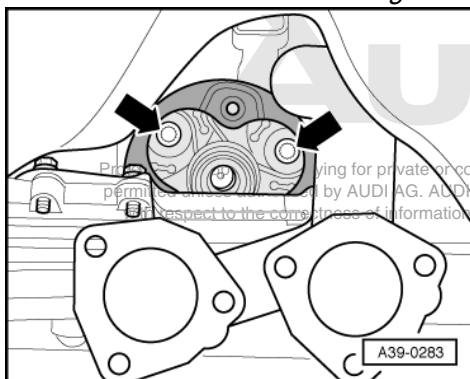
- -> Slacken clamp -arrows- on exhaust system and disconnect exhaust pipe.
- Unscrew bracket on the rear right-hand side for exhaust system.
- Detach exhaust system from brackets.
- Where present unscrew mounting for exhaust system from subframe.



- -> Unscrew prop shaft from gear disc at angle drive -arrows-.

Note:

Counterhold with a lever on triangle flange when loosening the bolts.



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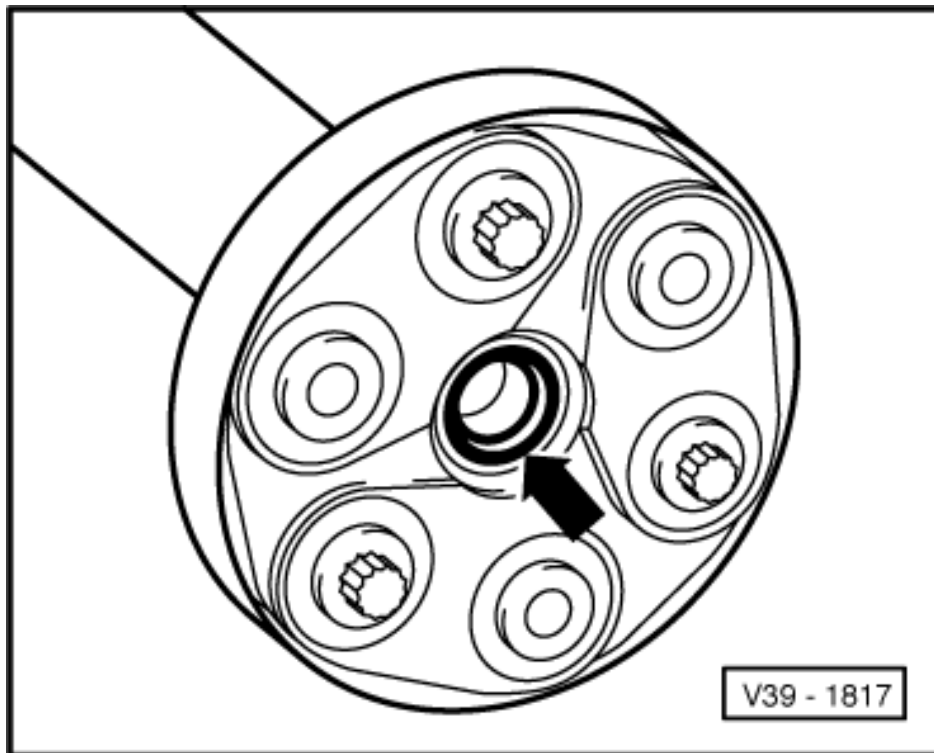
- -> Unscrew disc coupling from flange of angle drive -arrows-.

Note:

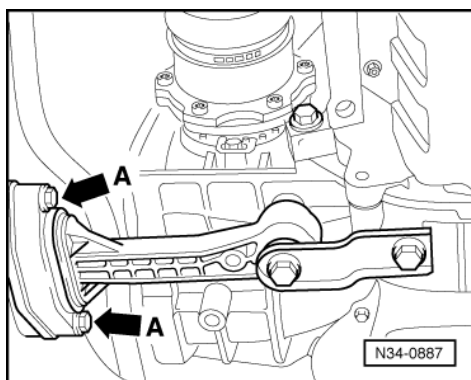
Disc coupling is shown in illustration with engine removed.

- Press front prop shaft tube as far as possible towards the rear.

Notes:



- ♦ -> The sealing ring -arrow- in flange of propshaft must not be damaged. When sealing ring is damaged prop shaft must be replaced.
- ♦ Pull off prop shaft horizontally from guide pin.



- -> Unscrew pendulum support from subframe -arrows A-.
- Carefully press engine/gearbox forward.
- Now carefully remove disc coupling.



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Installing

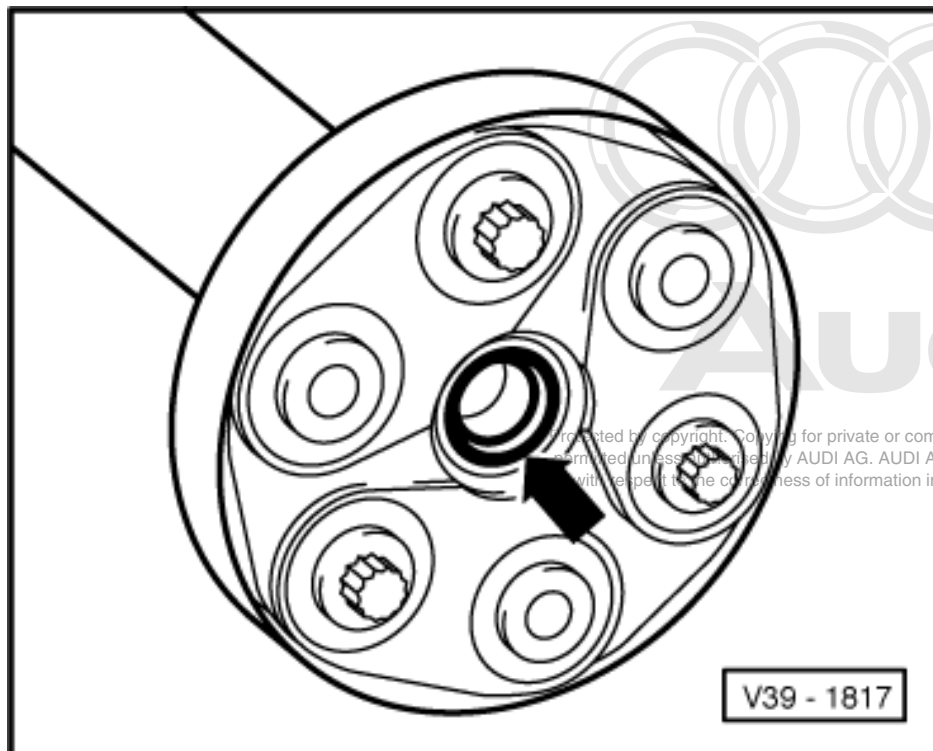
Installation is carried out in the reverse order, when doing this note the following:

- ◆ Install all parts of the prop shaft marked in relation to each other in the same position.

Fitting location of front disc coupling:

- ◆ The open side of the heat shield at the disc coupling points towards angle drive.
- ◆ Three protruding sleeves at the disc coupling and the prop shaft flange grip into the input borings of the disc couplings.

Notes:

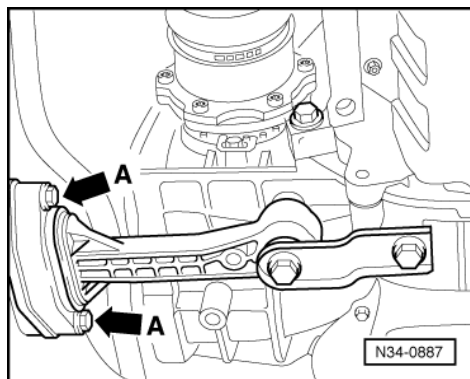


- ◆ -> The sealing ring -arrow- in flange of propshaft must not be damaged. When sealing ring is damaged prop shaft must be replaced.
- ◆ Slide prop shaft horizontally onto the appropriate guide pin.

- Stress free alignment of exhaust system

=> 4-cylinder Engine (5-valve turbo), Mechanics; Repair Group 26; Removing and installing exhaust system parts, Stress-free alignment of exhaust system Removing and installing exhaust system parts, Stress-free alignment of exhaust system

Tightening torques





Component	Nm
Bolts -A- for pendulum support	20 + 90o(1)2)
Disc coupling on prop shaft	60
Disc coupling on angle drive	60

- 1) 90o corresponds to a quarter turn
- 2) Renew bolts

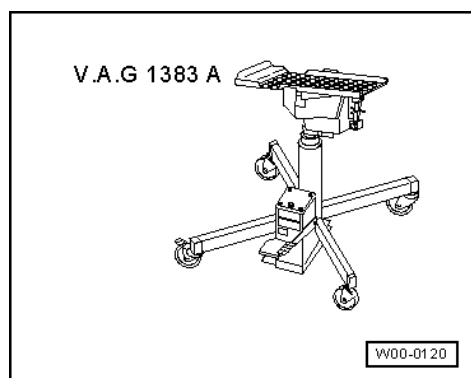
4.3 - Removing and installing rear disc coupling

Work on the prop shaft should be carried out on a two-column vehicle hoist.

Notes:

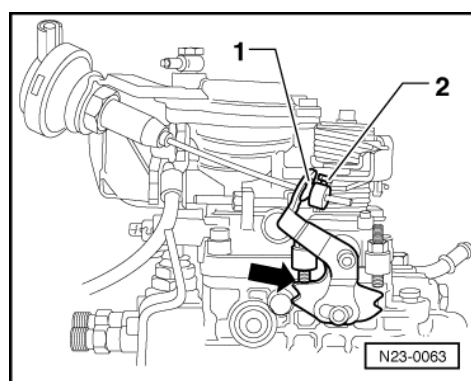
- ♦ Prior to removal mark the position of all parts in relation to each other. Reinstall in the same positions otherwise the imbalance will be excessive; the bearings could be damaged and humming noises may occur.
- ♦ Do not bend prop shaft, only store and transport extended.

Special tools and workshop equipment required

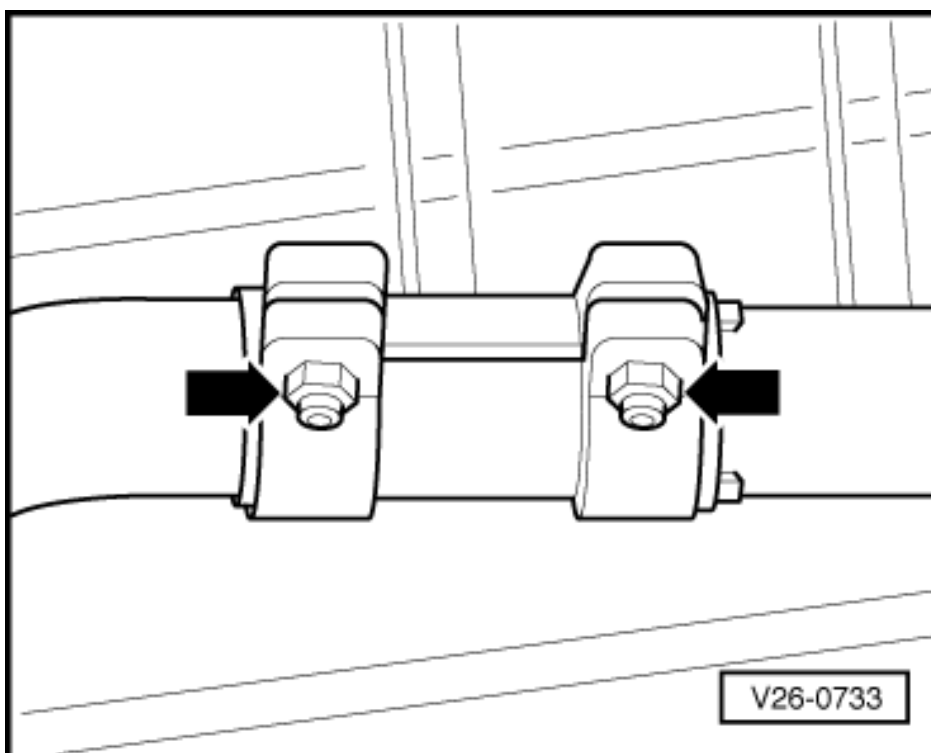


- ♦ Engine/gearbox lifter V.A.G 1383 A

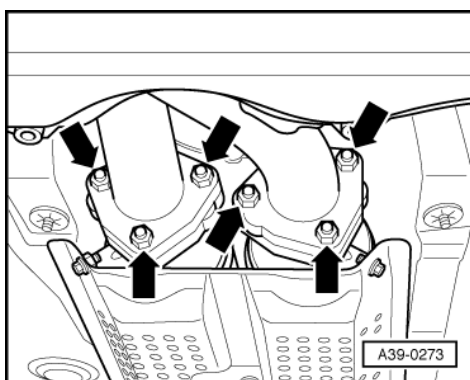
Removing



- -> Remove noise insulation in centre -arrows-.



- -> Slacken clamp -arrows- on exhaust system and disconnect exhaust pipe.
- Unscrew bracket on the rear right-hand side for exhaust system.
- Detach exhaust system from brackets.



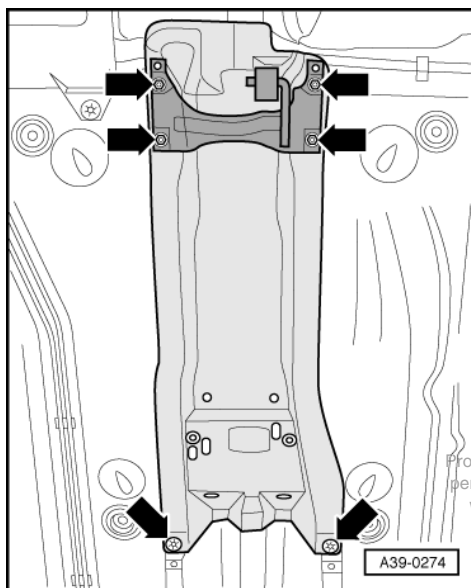
- -> Unscrew catalytic converters from exhaust pipe -arrows-.

Note:

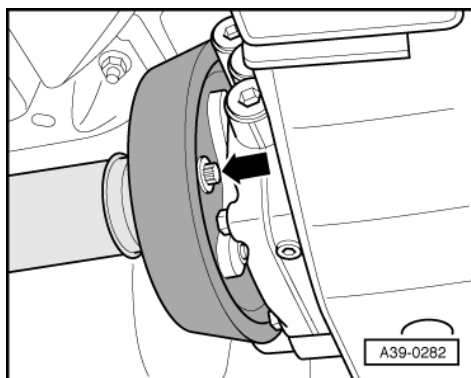
The isolating element in exhaust system must not be bent more than 10° to avoid damage.

- Where present unscrew mounting for exhaust system from subframe.

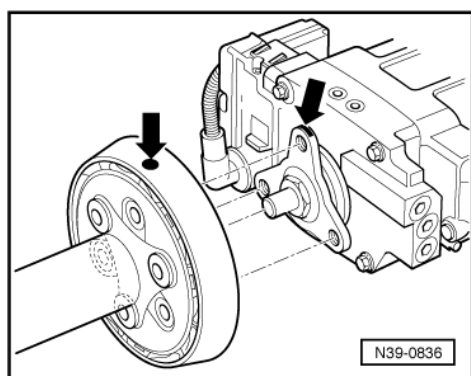
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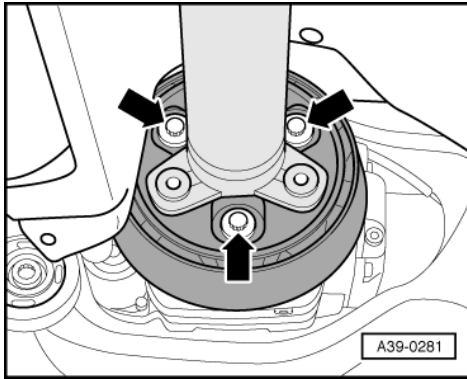
- -> Unscrew centre heat shield and bracket for exhaust system -arrows-.



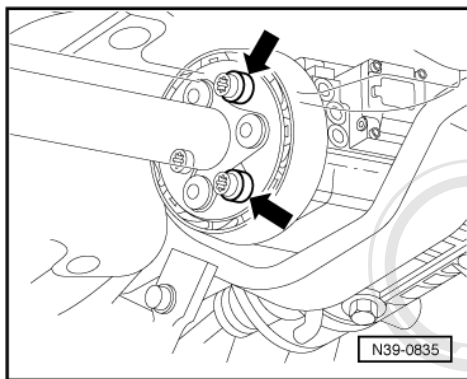
- -> Unscrew prop shaft from disc coupling (only one of the three bolts can be seen here -arrow-).



- -> Check whether there is a factory marking (coloured dot) on gear disc and on flange of Haldex clutch - arrows-. If not, mark position of disc coupling and flange at Haldex clutch in relation to each other -arrows-.



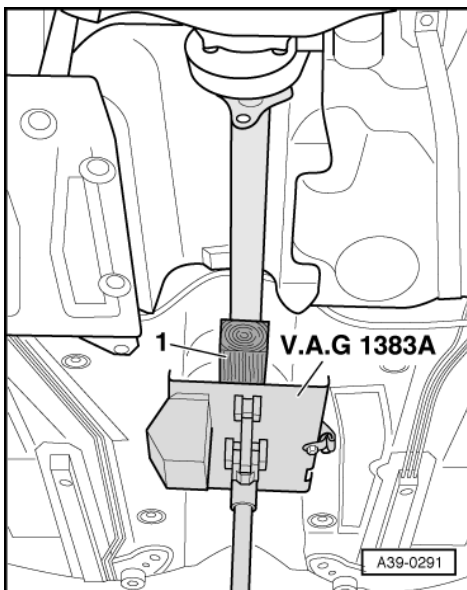
- -> Then unscrew disc coupling from rear final drive (arrows).



-> From 06.99 alignment plates and new securing bolts for the prop shaft were inserted into flange of Haldex clutch -arrows-.

Notes:

- ◆ Up to two of these new securing bolts can be assembled with one alignment plate.
- ◆ The new securing bolts have an internal hexagonal head.

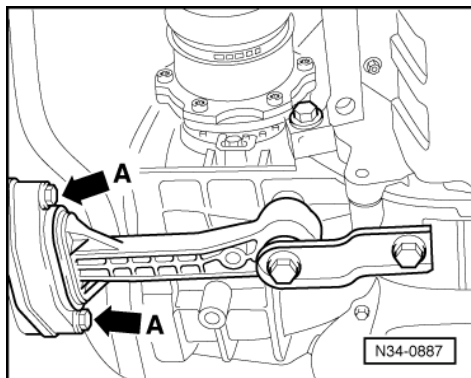


- -> Support the rear prop shaft tube with the engine/gearbox lifter V.A.G 1383 A and an attached wooden block -1- behind the centre bearing.

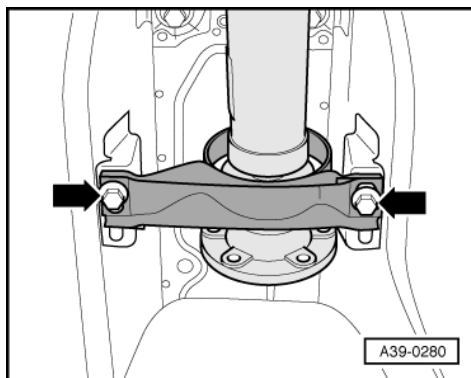


Notes:

- ◆ Secure prop shaft with belt against falling.
- ◆ Do not bend prop shaft, store and transport extended only.



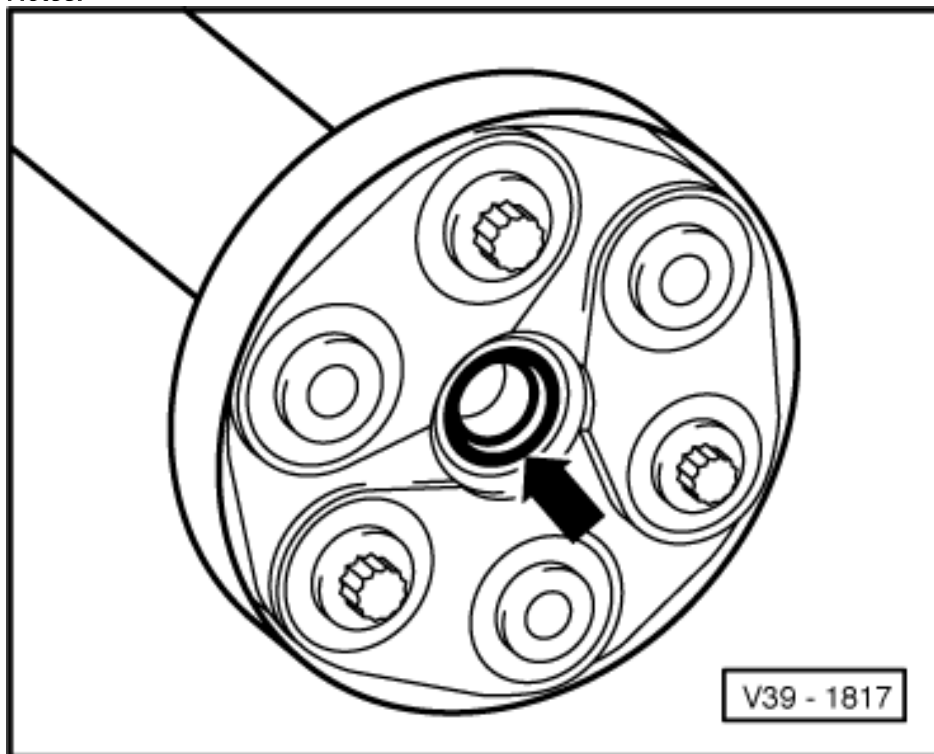
- -> Unscrew pendulum support from subframe -arrows A-



- -> Unscrew centre bearing of prop shaft from vehicle.

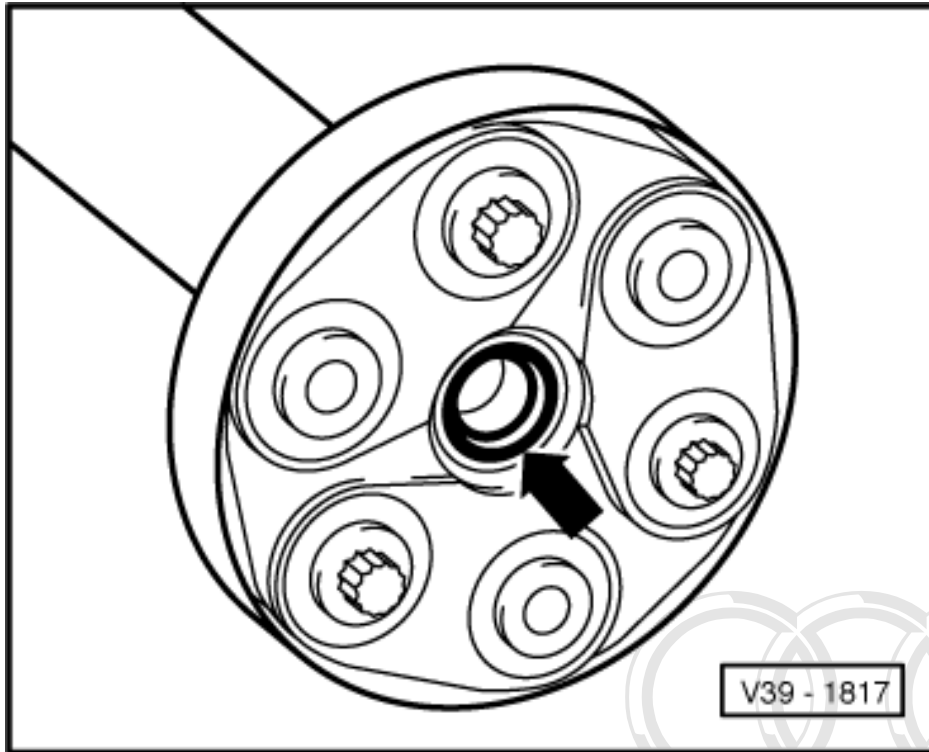
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Notes:



- ◆ -> The sealing ring -arrow- in flange of propshaft must not be damaged. If sealing ring is damaged prop shaft must be replaced.
- ◆ Pull off prop shaft horizontally from guide pin.
- Carefully press engine/gearbox forward.
- Then push rear prop shaft tube towards front until the disc coupling can be taken off.

Installing



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

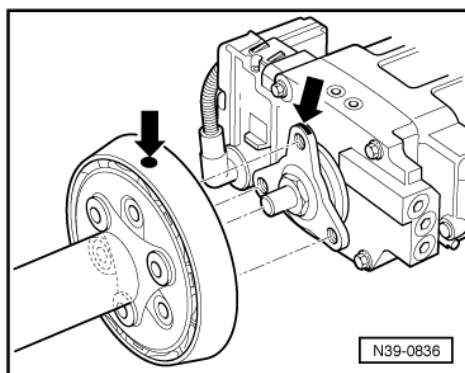
- ◆ Install all parts of the prop shaft marked in relation to each other in the same position.

Notes:

- ◆ -> The sealing ring -arrow- in flange of propshaft must not be damaged. If sealing ring is damaged prop shaft must be replaced.
- ◆ Slide prop shaft horizontally onto the appropriate guide pin.

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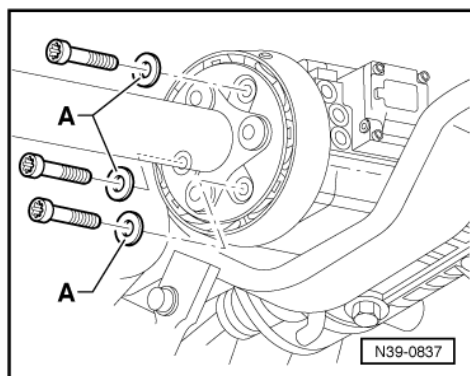
Fitting location of rear disc coupling



- ◆ Three protruding sleeves at the disc coupling and the prop shaft flange grip into the input borings of the disc couplings.



- -> Attach prop shaft to the flange of the Haldex clutch so that the markings -arrows-are in a line



- -> The alignment plates built in since 06.99 must not be installed anymore and must always be replaced by packing plates -A-.

Allocation of packing plates =>Spare part catalogue

Install centre bearings stress-free.

- Align centre bearing in its longitudinal bearings so that the prop shaft or the centre bearing is not stressed.
- Only tighten bolts of centre bearing of structure after installing prop shaft.
- Stress free alignment of exhaust system

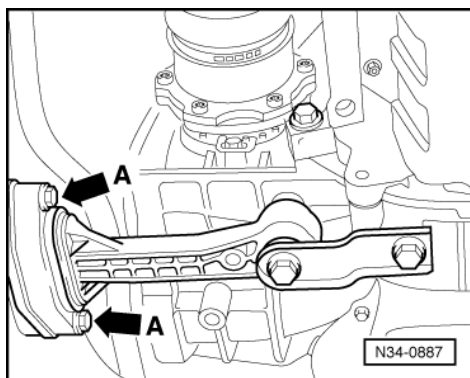
=> 4-cylinder Engine (5-valve turbo), Mechanics; Repair Group 26; Removing and installing exhaust system parts, Stress-free alignment of exhaust system Removing and installing exhaust system parts, Stress-free alignment of exhaust system

Notes:

If humming noises occur during driving observe the following:

- ♦ Unscrew prop shaft with disc coupling from flange of Haldex clutch and screw in again one boring further.
- ♦ If the humming noises can still be heard the prop shaft must again be screwed in one boring further.

Tightening torques



Component	Nm
Bolts -A- for pendulum support	20 + 90o1)2)
Centre bearing on bodyworks	25
Disc coupling on rear final drive	60
Disc coupling on prop shaft	60

- 1) 90o corresponds to a quarter turn

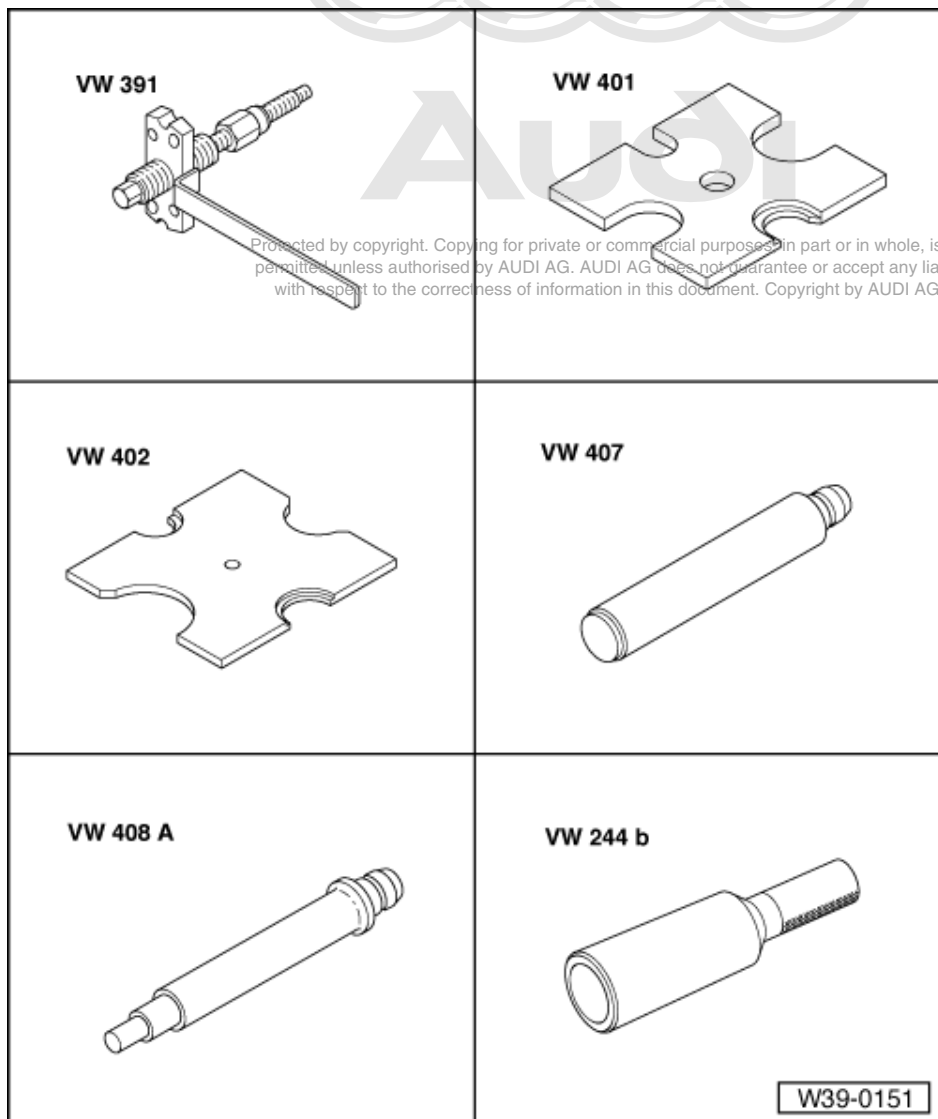


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2) Renew bolts

5 - Servicing propshaft

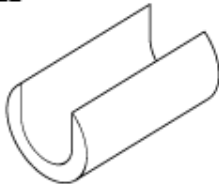
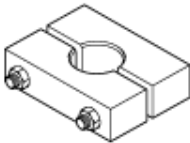
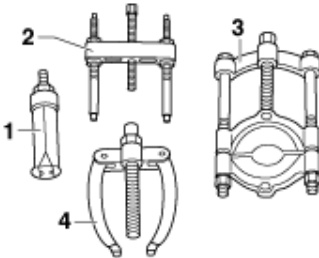
5.1 - Servicing propshaft



Special tools and workshop equipment required

- ◆ VW 391 Drive shaft fitting appliance
- ◆ VW 401 Thrust plate
- ◆ VW 402 Thrust plate
- ◆ VW 407 Thrust tool
- ◆ VW 408 A Pressure tool
- ◆ VW 454 Thrust piece

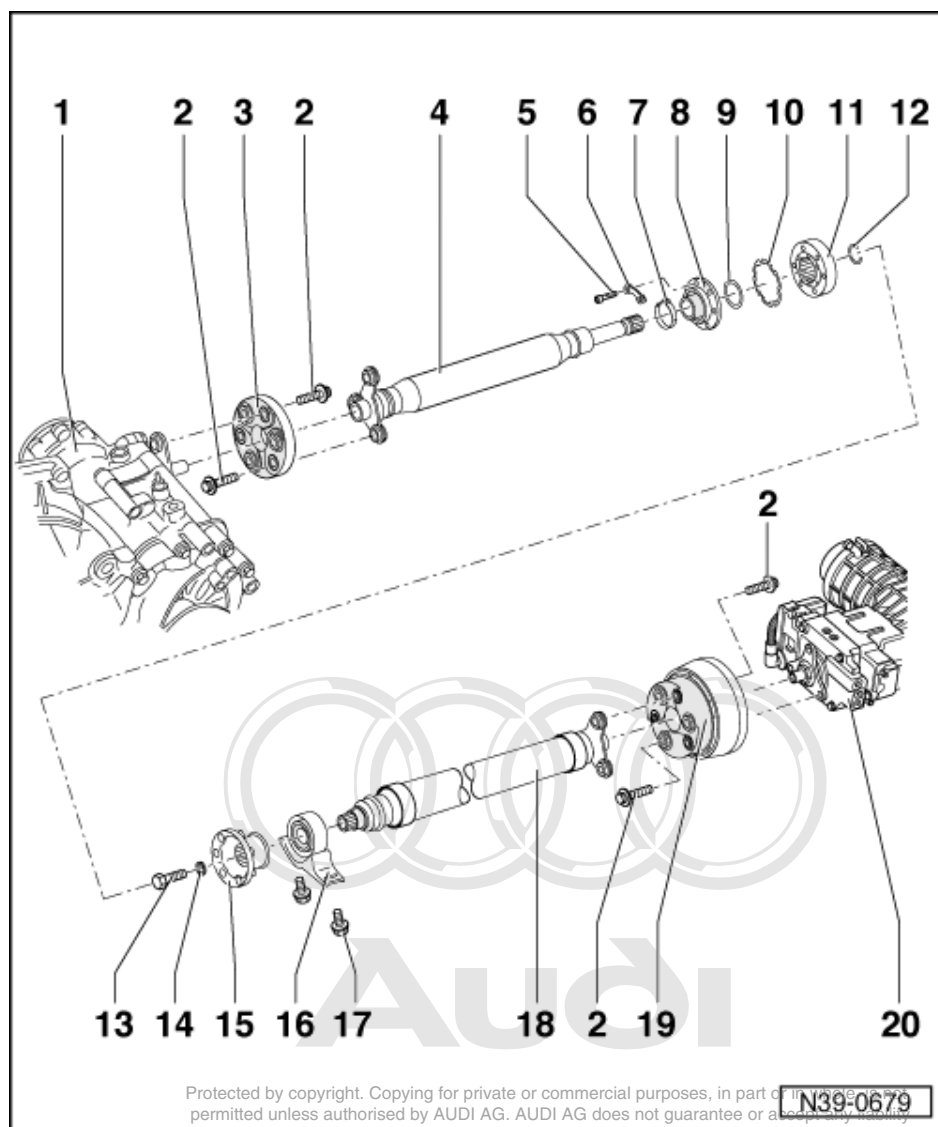


VW 522 	40-204 A 
V.A.G 1275 	V.A.G 1331 
VW 161 A 	 W39-0152

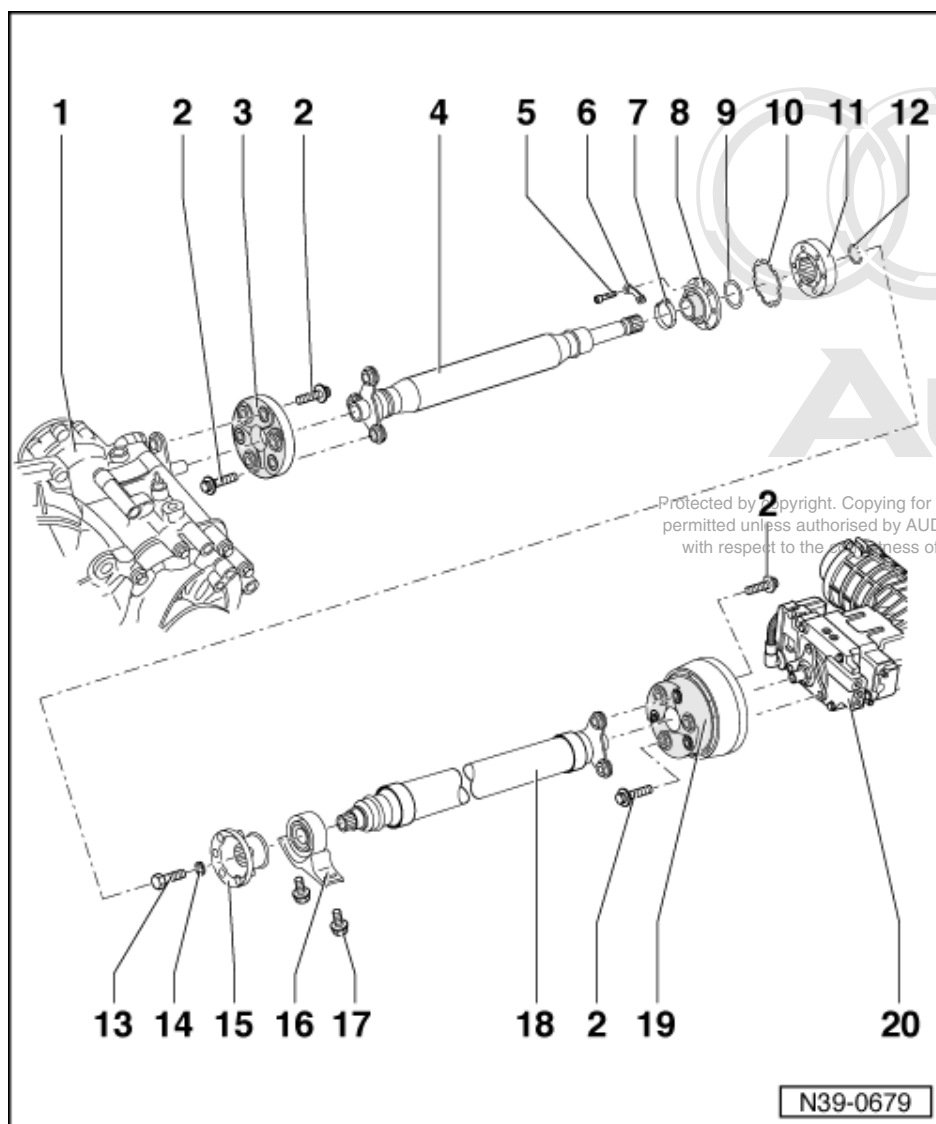
- ♦ VW 522 Support sleeve
- ♦ 40-204 A Tensioner
- ♦ V.A.G 1275 Pliers
- ♦ V.A.G 1331 Torque wrench
- ♦ VW 161 A Pliers
- ♦ 2 - Kukko 18/0 puller
- ♦ 3 - Kukko 17/1 Separating tool



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**Notes:**

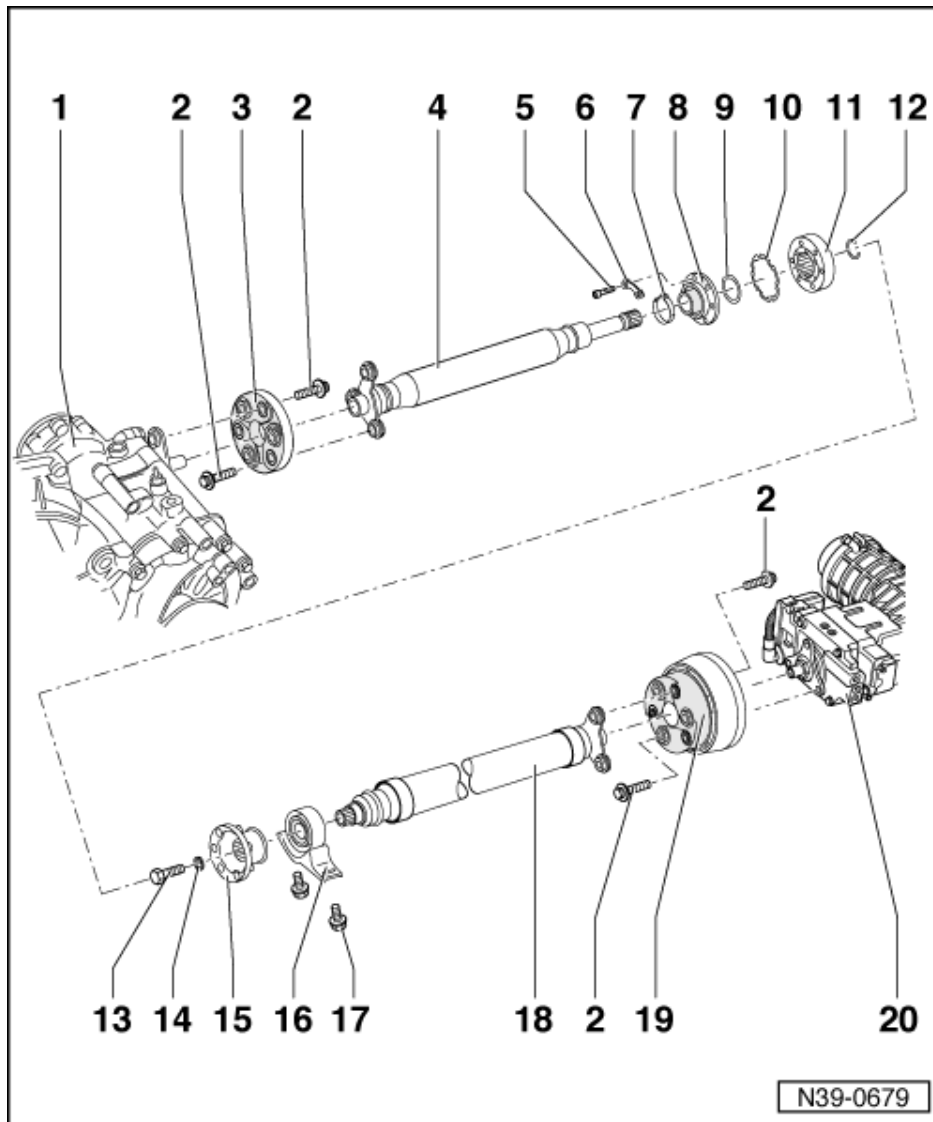
- ◆ In order to achieve smooth running as much as possible only the complete propshaft is balanced during manufacturing. The balancing of the complete propshaft or the individual propshaft tubes cannot be carried out with workshop tools. Therefore always replace the complete prop shaft when the front or rear prop shaft is damaged.
- ◆ Do not bend prop shaft, store and transport extended only.
- ◆ Prior to removal mark the position of all parts in relation to each other. Reinstall in the same positions otherwise the imbalance will be excessive; the bearings could be damaged and humming noises may occur.

**1 Manual gearbox with angle drive****2 Collared screw bolt with hexagon, 60 Nm**

- ♦ Alteration:
As of 06.99 there are new securing bolts with internal hexagon, only for drive washer on rear final drive.
- ♦ Up to two new securing bolts can be assembled with one balancing plate instead of one packing plate.
- ♦ After removal of the prop shaft the balancing plates are replaced with series packing plates => Page 75

3 Drive washer with heat shield

- ♦ Fitting location => Fig. 85
- ♦ Removing and installing => Page 82

**4 Prop shaft tube, front**

- ◆ Do not damage centring sleeve and sealing ring in centre of flange when removing and installing =>Page 80

5 Cheese-head bolt, 40 Nm**6 Adjustment shim****7 Clip**

- ◆ Tensioning => Fig. 3

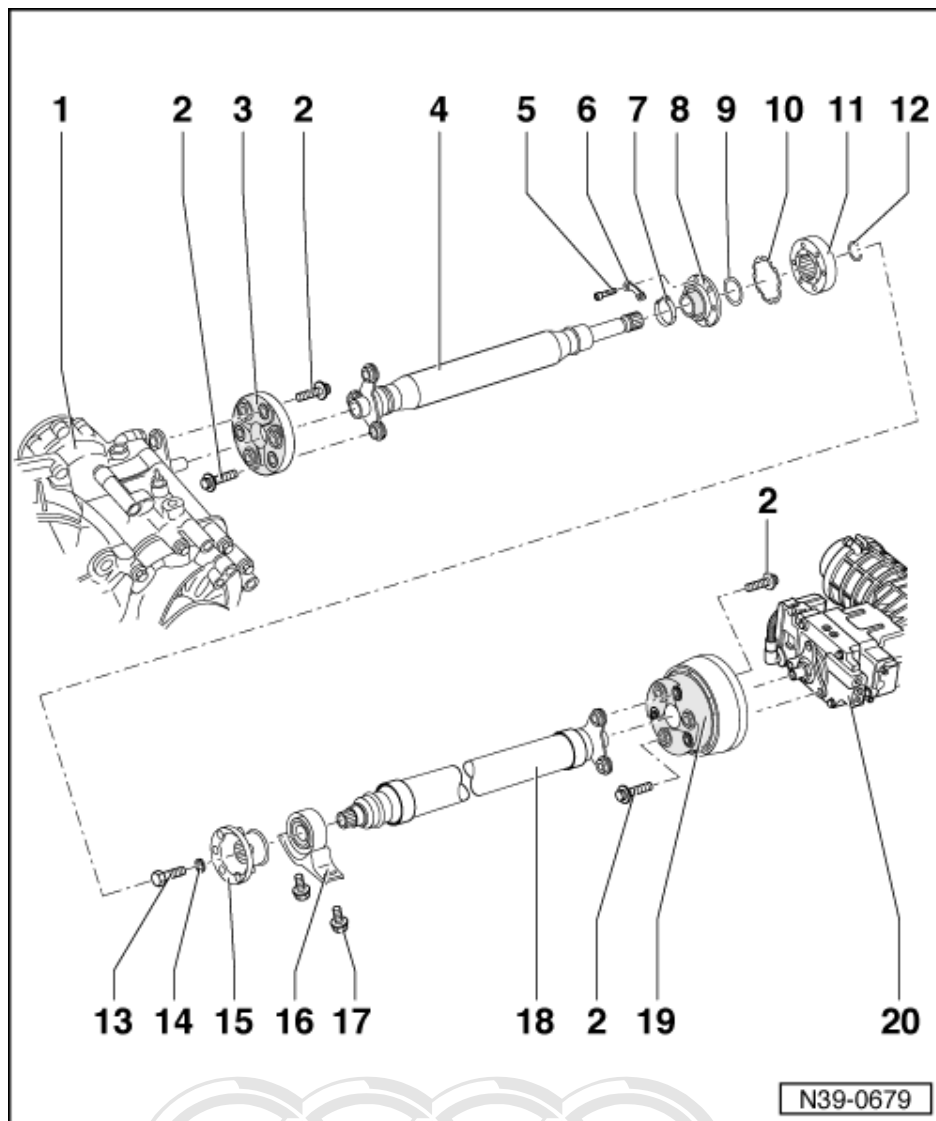
8 CV joint boot

- ◆ before pressing off inner constant velocity joint drive off with drift
- ◆ check for damages

9 Dished washer

- ◆ geared at internal diameter
- ◆ Fitting location: larger diameter rests on balancing drive

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10 Gasket

- ◆ Replace; pull off protective sheet and bond into joint.

11 Constant velocity joint

- ◆ Pressing off => Fig. 1
- ◆ Pressing on => Fig. 2
- ◆ Grease filling: Press 25 g G-6.3 grease from each side (in total 50 g) into drive. Regrease joint, if necessary, when replacing the protective boot

12 Locking ring

- ◆ Replace
- ◆ Compress in and out with ring pliers VW 161 a

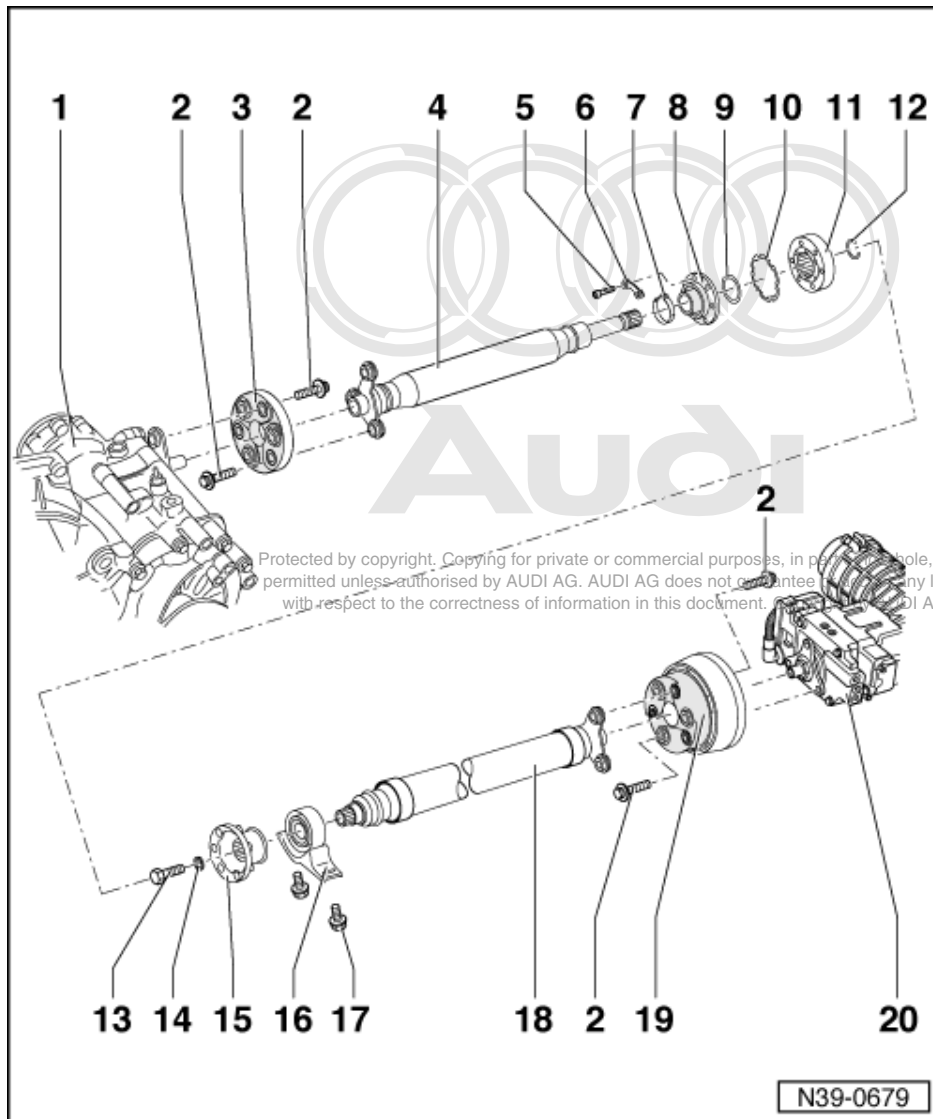
13 Hexagon bolt, 45 Nm

14 Washer

- ◆ Always replace

15 Flange

- ◆ Pulling off => Fig. 4
- ◆ Pulling on => Fig. 5

**16 Centre support bracket**

- ♦ Pulling off => Fig. 6
- ♦ Fitting location => Fig. 7 .
- ♦ Driving on => Fig. 8

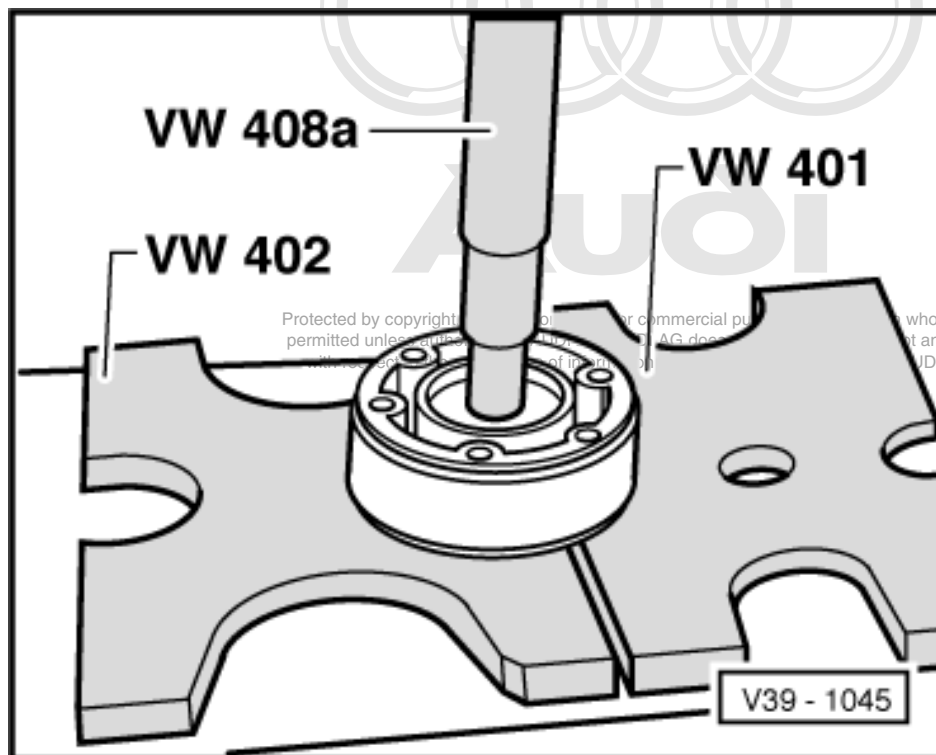
17 Bolt, 25 Nm**18 Prop shaft tube, rear**

- ♦ Do not damage centring sleeve and sealing ring in centre of flange when removing and installing => Page 80

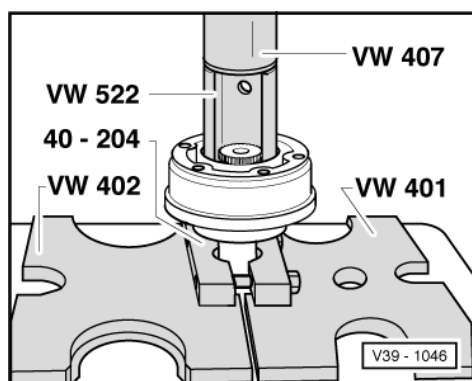
19 Disc coupling with oscillation damper

- ♦ Removing and installing => Page 86

20 Rear final drive

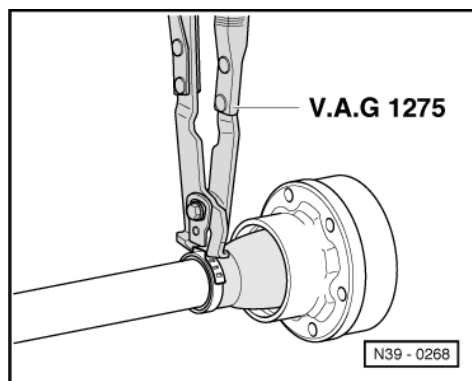


-> Fig.1 Pressing off inner constant velocity joint



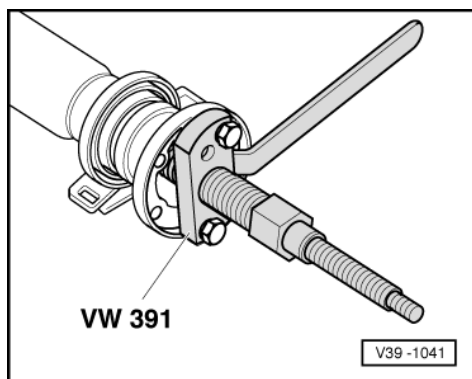
-> Fig.2 Pressing on inner constant velocity joint

- Carefully press on.
- Tighten wrench 40 - 204, prop shaft must not be pressed down in the clamp as this causes paint damage.
- If necessary, remove paint damages as follows:
Remove grease residues with nitro thinner L 001 600.
2-Apply component acrylic paint ALN 769 041 with hardener ALZ 009 001.

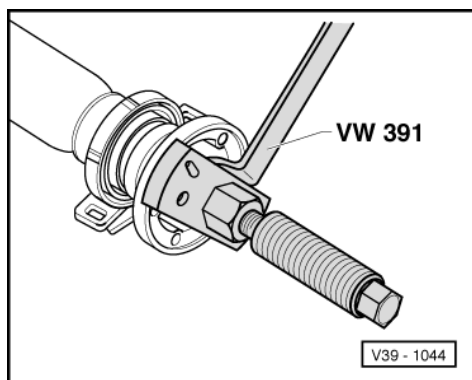


-> Fig.3 Tensioning clamp

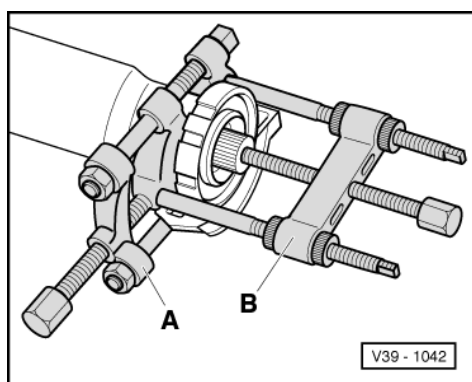
In case of repair allocate clamp with spare part catalogue.



-> Fig.4 Pulling off flange



-> Fig.5 Pulling on flange



-> Fig.6 Pulling off centre flange

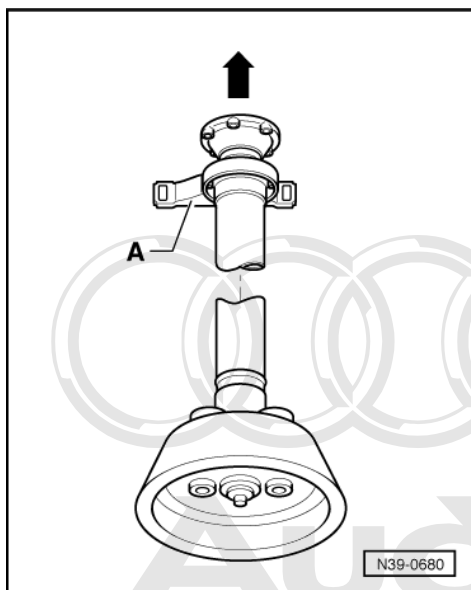
- The rubber guide of the centre bearing must be cut and the metal cover removed.

A - Separating tool 12...75 mm e.g. Kukko 17/1



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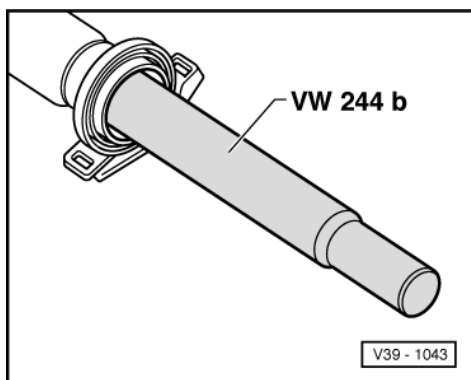
B - Puller, e.g. Kukko 18/0



-> Fig.7 Fitting location of centre bearing

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The longer web -A- faces drive direction (arrow) towards the left



-> Fig.8 Pushing on centre flange

- Drive on centre bearing until limit stop.

6 - Check Haldex clutch for function

6.1 - Check Haldex clutch for function

- Drive vehicle with the front wheels onto the roller test stand.

Important:

Keep space in front of vehicle free. Perform test very carefully to avoid damages.

- 1. Engage gear and drive off slowly.

- If the vehicle has not been pushed out off the test bay with an engine speed 1500 rpm there is a defect at the Haldex clutch.

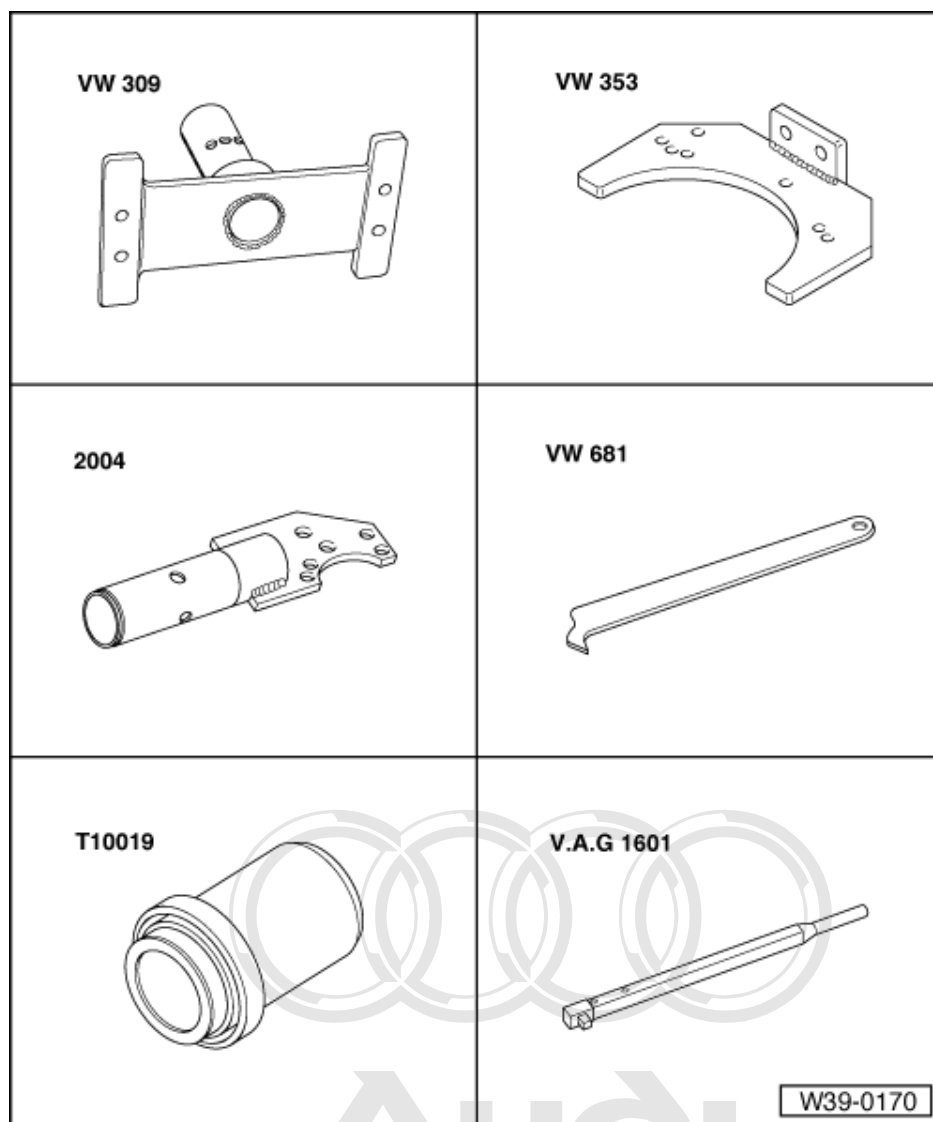
Note:

The Haldex clutch is blocked due to the driven front wheels and the standing rear wheels. This means that the rear wheels are also driven.

Only with engine speeds which are just above the idling speed and with 1. gear engaged the Haldex clutch can absorb the speed differences for a short time without blocking.

7 - Replace sealing ring for flange/prop shaft at rear final drive (final drive removed)

7.1 - Replace sealing ring for flange/prop shaft at rear final drive (final drive removed)

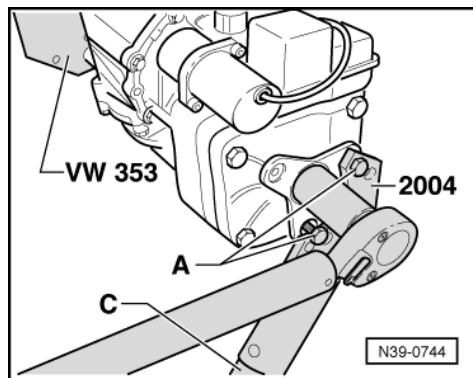


Special tools and workshop equipment required

- ◆ VW 309 Holding plate
- ◆ VW 353 gearbox bracket (change => Page 120)
- ◆ 2004 gearbox bracket
- ◆ VW 681 Moving lever



- ♦ T10019 thrust piece
- ♦ V.A.G 1601 Torque wrench
- ♦ Brake fluid collector

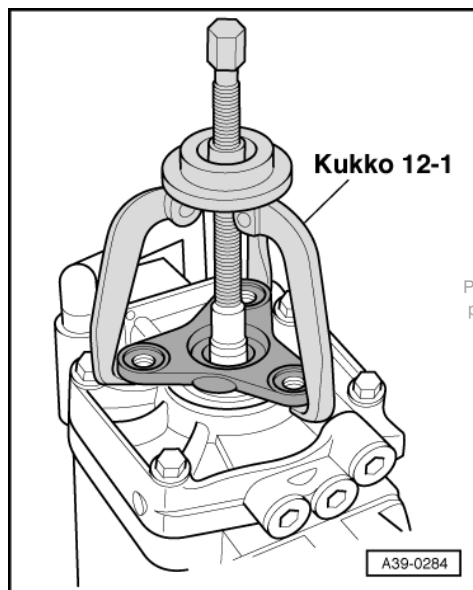


Removing

- Secure rear final drive to repair stand => Page 120 .
- Position container underneath final drive.
- -> Unscrew hexagon nut for the flange / prop shaft.

A - Hexagon bolts M8 x 20

Note:

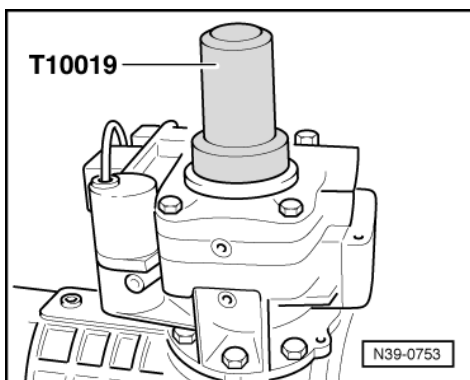


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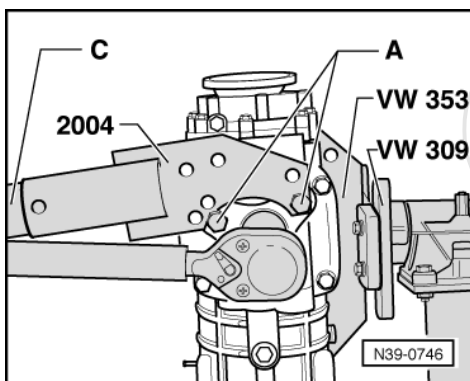
When loosening the hexagon nut counterhold flange/prop shaft via the tube piece -C- with special tool 2004 (2. mechanic).

- -> Pull off flange of propshaft. When difficulties are encountered use three-arm puller, e.g. Kukko 12-1.
- Pull seal out with lever VW 681.

Installing



- -> Drive in new sealing ring flush.
- Fill space between sealing and dust lips with multipurpose grease.
- Install flange / prop shaft.



- -> Insert new hexagon nut with locking fluid D 000 600 and tighten to 220 Nm.

A - Hexagon bolts M8 x 20

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Note:

When loosening the hexagon nut counterhold flange/prop shaft via the tube piece -C- with special tool 2004 (2. mechanic).

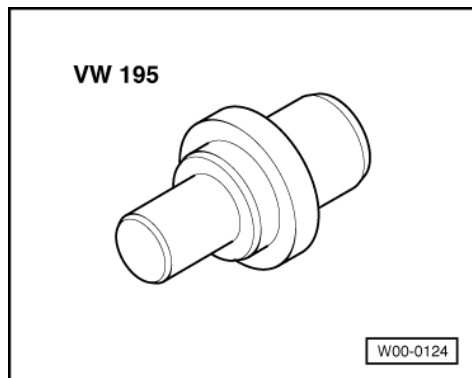
- Install rear final drive => Page 118 .
- Top up oil level in Haldex clutch => Page 122 .



8 - Replacing sealing rings for flange shaft or drive flange

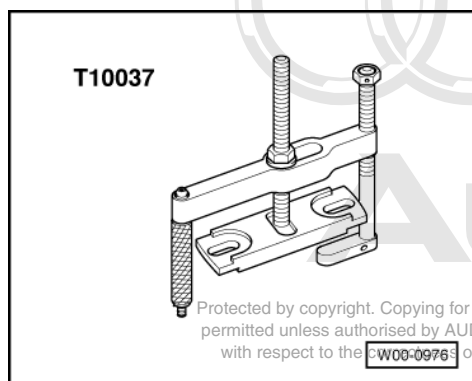
8.1 - Replacing sealing rings for flange shaft or drive flange

8.2 - Replacing seal for left-hand drive flange



Special tools and workshop equipment required

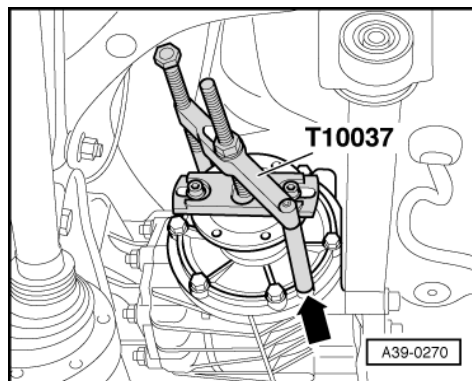
- ♦ Drift VW 195



- ♦ Special tool T10037
- ♦ Brake fluid collector

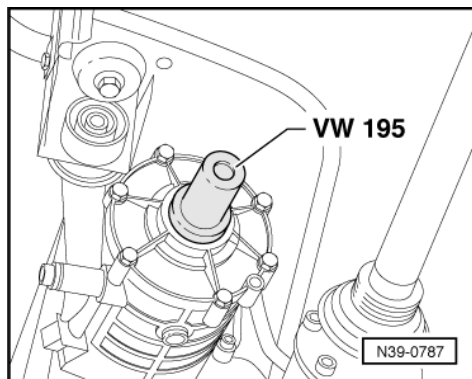
Removing

- Disconnect left drive shaft and tie to lower transverse link.



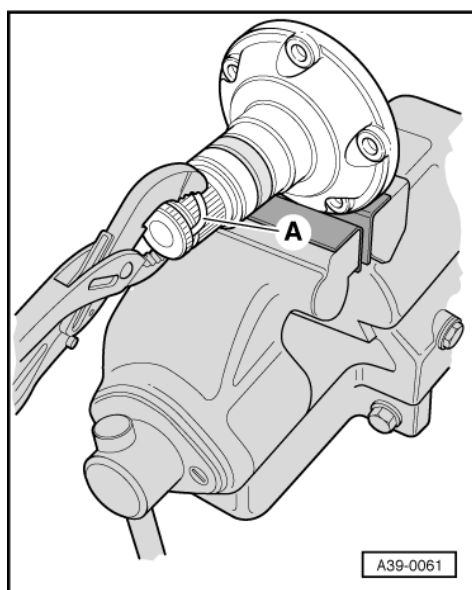
- Position container underneath final drive.
- -> Remove the flange shaft, to do this screw the lower support of puller T10037 into the housing (arrow).
- Lever out sealing ring with tyre lever.

Installing



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- -> Drive in new sealing ring with special tool VW 195 until limit stop.
- Fill space between sealing and dust lips with multipurpose grease.
- Clamp drive shaft/output shaft in vice using soft jaws.



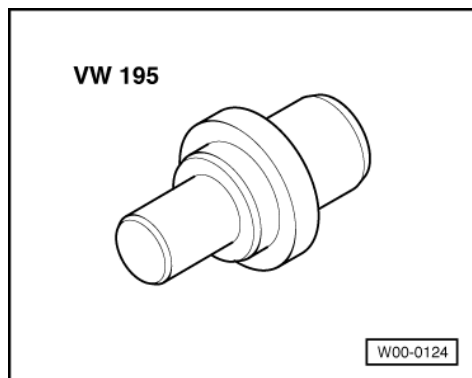
- -> Press circlip with new circlip -A- out of groove of output shaft.
- Drive in drive flange/output shaft with plastic hammer.
- Replace seal for drive flange/drive shaft (pull off protective foil and bond seal into drive).
- Connect drive shaft.
- Checking gear oil level in rear final drive
=> Page 121 .

Tightening torque

Component	Nm
Drive shaft to flange shaft	40

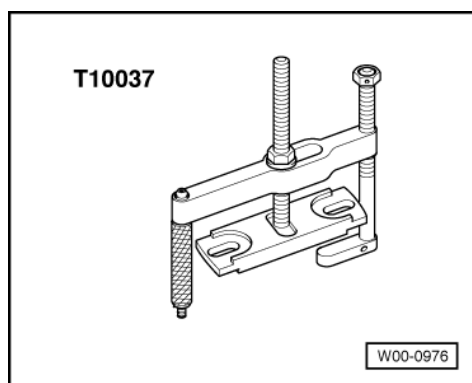
8.3 - Replacing oil seal for flange shaft, right

- Final drive installed



Special tools and workshop equipment required

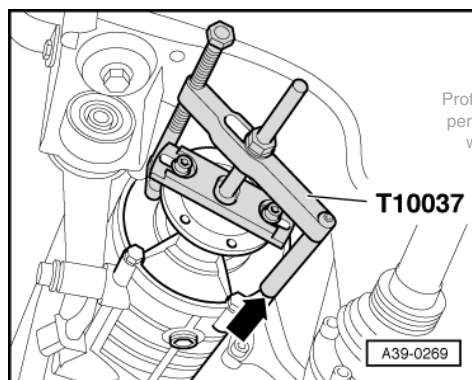
- ♦ Drift VW 195



- ♦ Special tool T10037
- ♦ Brake fluid collector

Removing

- Disconnect right drive shaft and tie down between the upper and lower transverse link.

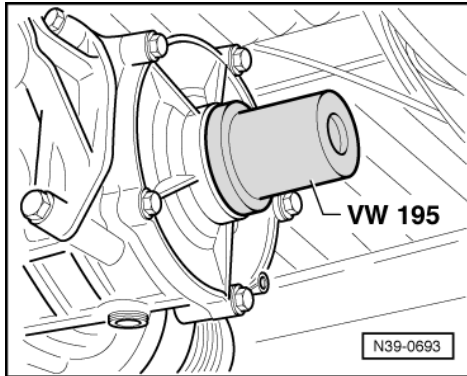


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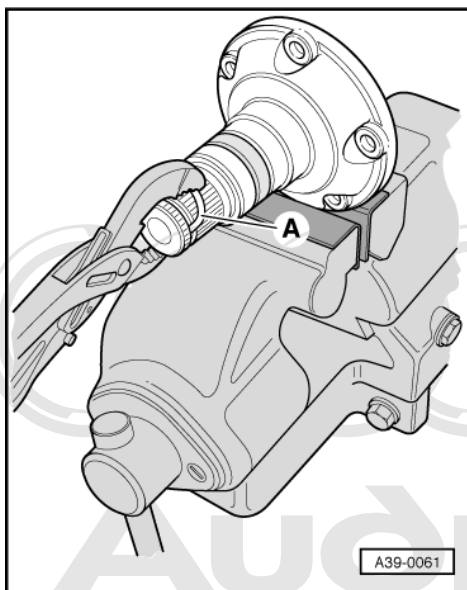
- Position container underneath final drive.
- -> Remove the flange shaft, to do this screw the lower support of puller T10037 into the housing (arrow).
- Lever out sealing ring with tyre lever.

Installing

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



- -> Drive in new sealing ring with special tool VW 195 until limit stop.
- Fill space between sealing and dust lips with multipurpose grease.
- Clamp flange shaft in vice using soft jaws.



- -> Press circlip with new circlip -A- out of groove of flange shaft.
 - Drive in flange shaft with plastic hammer.
 - Replace seal for drive flange/drive shaft (pull off protective foil and bond seal into drive).
 - Connect drive shaft.
 - Check gear oil level in rear final drive
- => Page 121 .

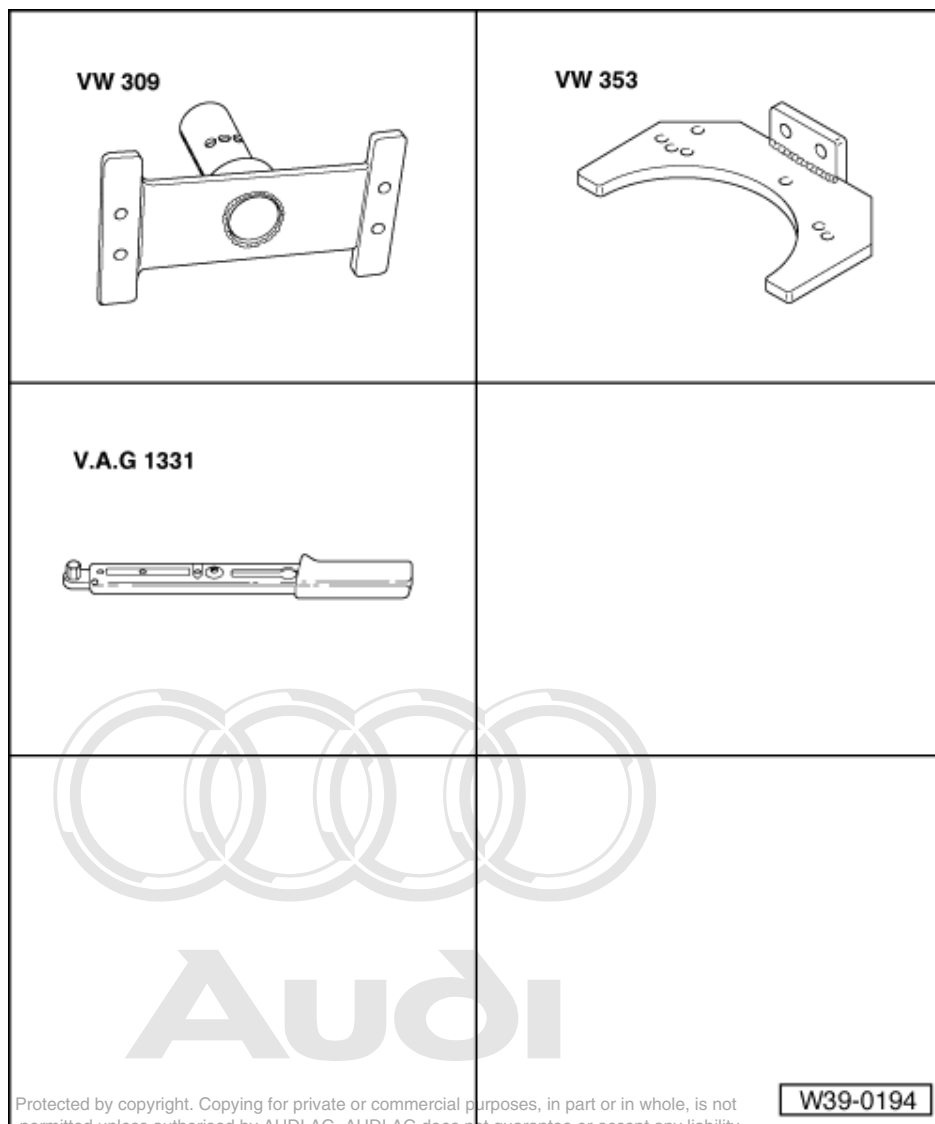
Tightening torque

Component	Nm
Drive shaft to flange shaft	40



9 - Replacing O-rings in rear final drive.

9.1 - Replacing O-rings in rear final drive.

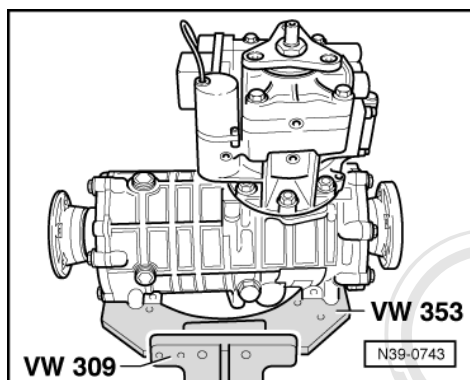


9.2 - Replacing O-ring for pinion shaft housing/Haldex clutch (final drive removed)

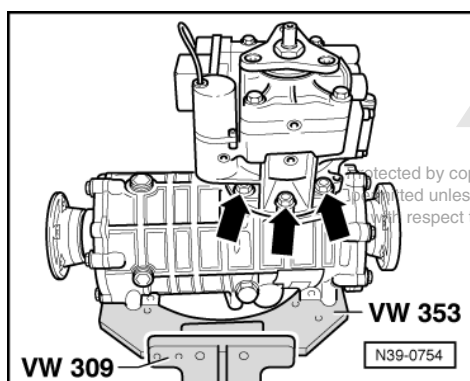
Special tools and workshop equipment required

- ♦ VW 309 Holding plate
- ♦ VW 353 gearbox bracket (change => Page 120)
- ♦ V.A.G 1331 Torque wrench

Removing



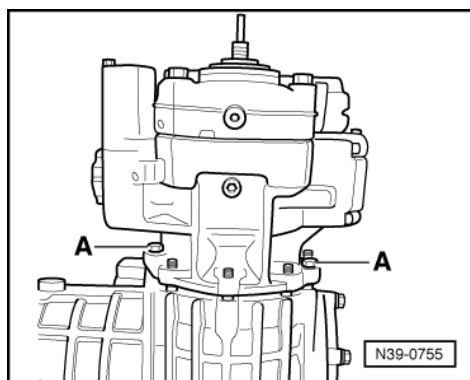
- -> Secure final drive on a repair stand.



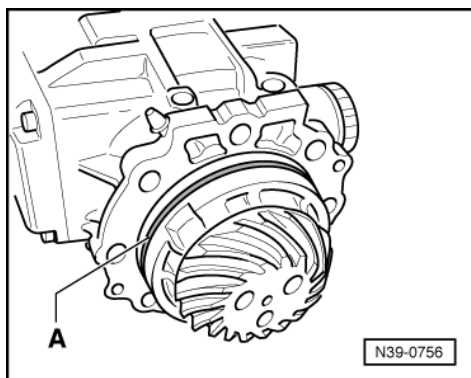
- -> Now unscrew all securing bolts for the pinion shaft housing (arrows).

Note:

Illustration only shows 3 nuts.



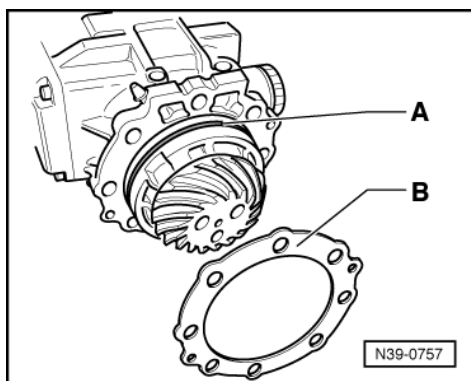
- -> Remove pinion shaft housing; whilst doing this screw in hexagon bolts -A- evenly so that housing does not tilt.



- -> Then remove O-ring -A-.

Installing

Installation is carried out in the reverse order to removal, noting the following:



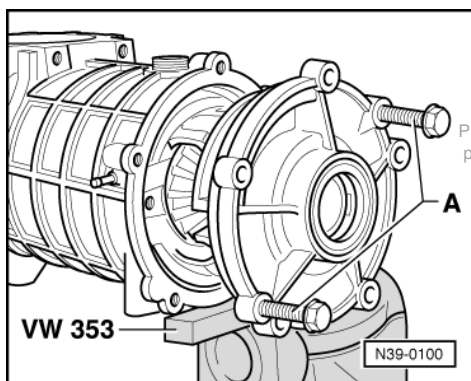
- -> Insert O-ring -A- with gear oil.
- Reinsert adjustment shim(s) -B- with the same thickness.
- Check gear oil level in rear final drive
=> Page 121 .
- Top up oil level in Haldex clutch => Page 122 .

Tightening torque

Pinion shaft housing at rear final drive housing 45 Nm

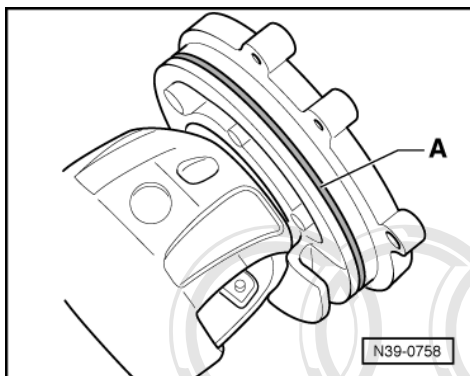
9.3 - Replace O-rings for the cover/rear drive housing (final drive installed)

Removing



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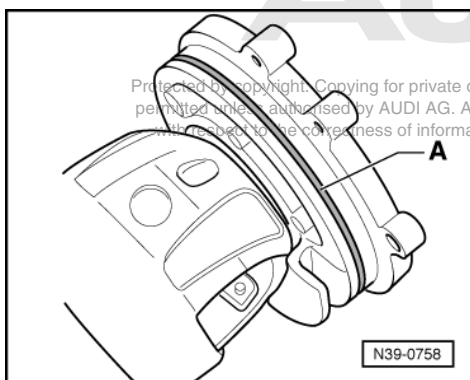
- Drain gear oil.
- Remove left flange shaft or right drive flange => Page 106 .
- -> Remove right or left cover; whilst doing so tighten bolts -A- evenly so that cover does not tilt.
- Remove right cover together with differential.



- -> Then remove O-ring -A-.

Installing

Installation is carried out in the reverse order to removal, noting the following:



- -> Insert O-ring -A- with gear oil.
- Top up oil to lower edge of filler hole.
- Check gear oil level in rear final drive
=> Page 121 .

Tightening torque

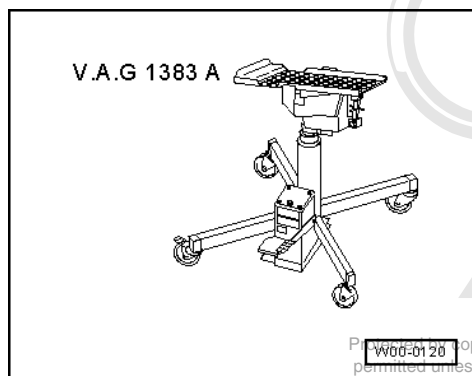
Cover at final drive housing	25 Nm
------------------------------	-------



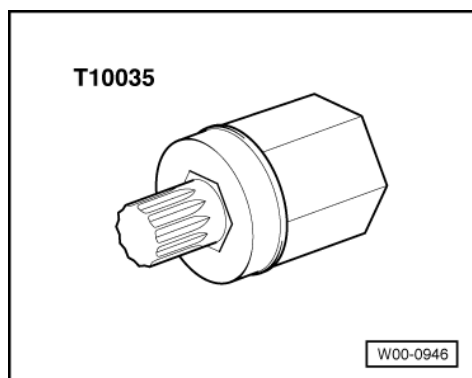
10 - Removing and installing rear final drive

10.1 - Removing and installing rear final drive

Special tools and workshop equipment required

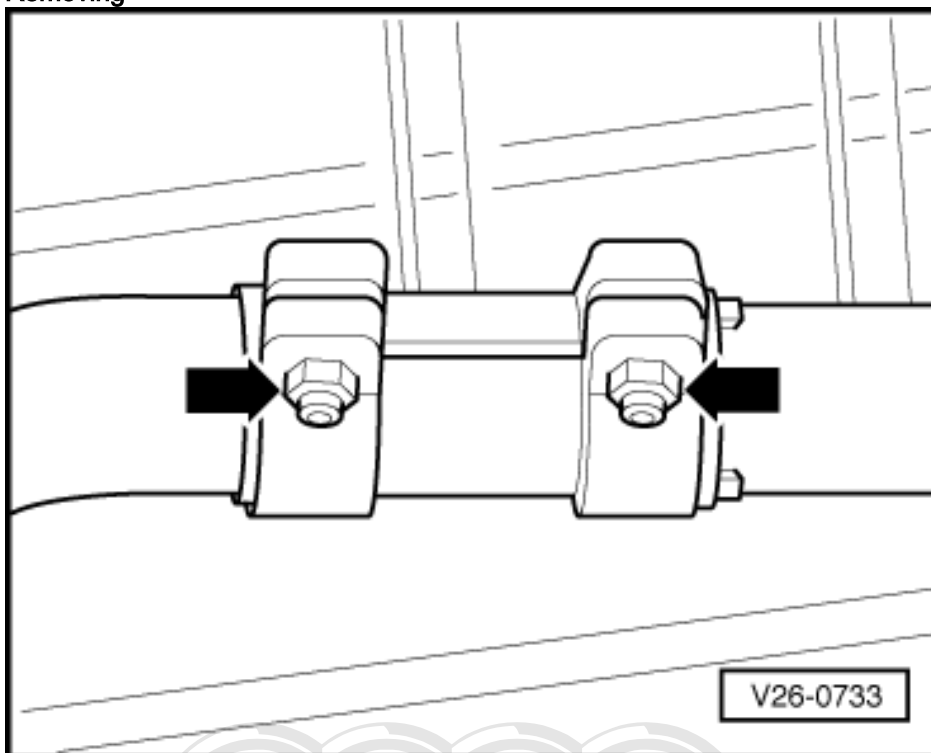


- ♦ Engine/gearbox lifter V.A.G 1383 A



- ♦ Special tool T10037

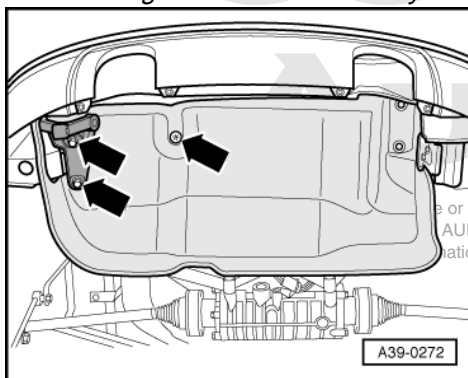
Removing



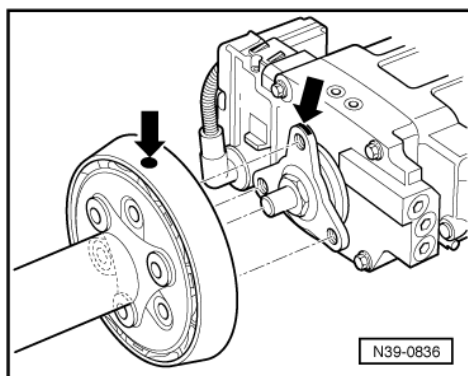
- -> Slacken clamp -arrows- on exhaust system and disconnect exhaust pipe.
- Unscrew bracket on the rear right-hand side for exhaust system.
- Detach exhaust system from brackets.

Note:

The isolating element in exhaust system must not be bent more than 10° to avoid damage.

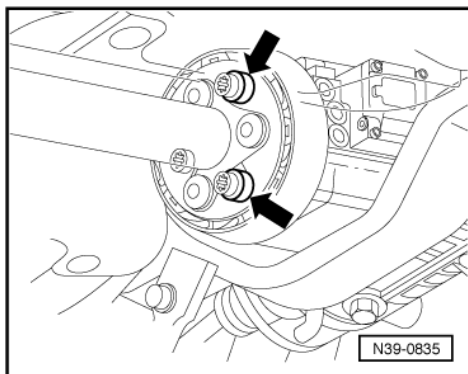


- -> Unscrew rear heat shield and bracket for exhaust system -arrows-.





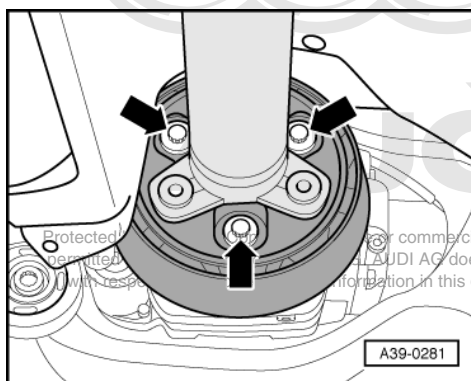
- -> Check whether there is a factory marking (coloured dot) on disc coupling and on flange of Haldex clutch -arrows-. If not, mark position of disc coupling and flange at Haldex clutch in relation each other -arrows-.



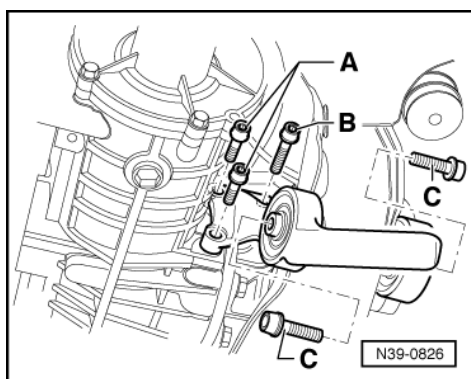
-> From 06.99 alignment plates and new securing bolts for the prop shaft were inserted into flange of Haldex clutch -arrows-.

Notes:

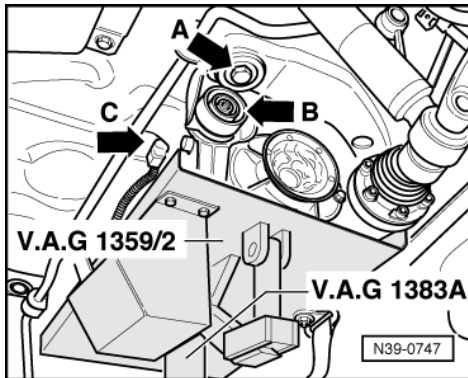
- ♦ Up to two of these new securing bolts can be assembled with one alignment plate.
- ♦ The new securing bolts have an internal hexagonal head.



- -> Unscrew rear prop shaft tube with disc coupling and oscillation damper from rear final drive -arrows-.
- Then disconnect right drive shaft and tie down between the upper and lower transverse link.
- Disconnect left drive shaft and tie to lower transverse link.



- -> Unscrew securing bolts of front mounting bracket- final drive (arrows).
- Unscrew mounting bracket- final drive from subframe with socket attachment T10035.

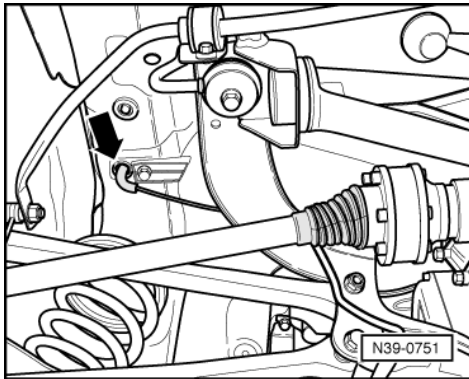


- -> Position gearbox jack V.A.G 1383 A with universal bracket V.A.G 1359/2 underneath final drive only and secure final drive.
- Remove left and right bolts of the rear subframe -arrow A-.
- Remove left and right bolts of the rear mounting bracket for the final drive -arrow B-

Note:

Illustration only shows one of the two securing bolts.

- Pull off connector from connection of Haldex clutch -arrow C-.



- -> Pull out vent tubes on left and right from the bracket -arrow-.

Note:

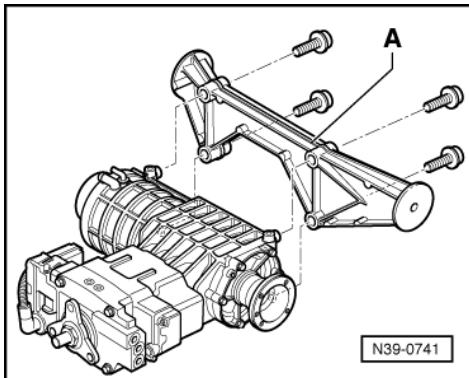
Illustration only shows left vent tube.

- Lower final drive slightly and carefully pull out with the gearbox jack V.A.G 1383 A from the rear subframe; whilst doing so hold onto the rear prop shaft end.
- Place prop shaft onto heat shield face downwards.

Note:

Do not bend prop shaft, only store extended.

- Lower final drive.

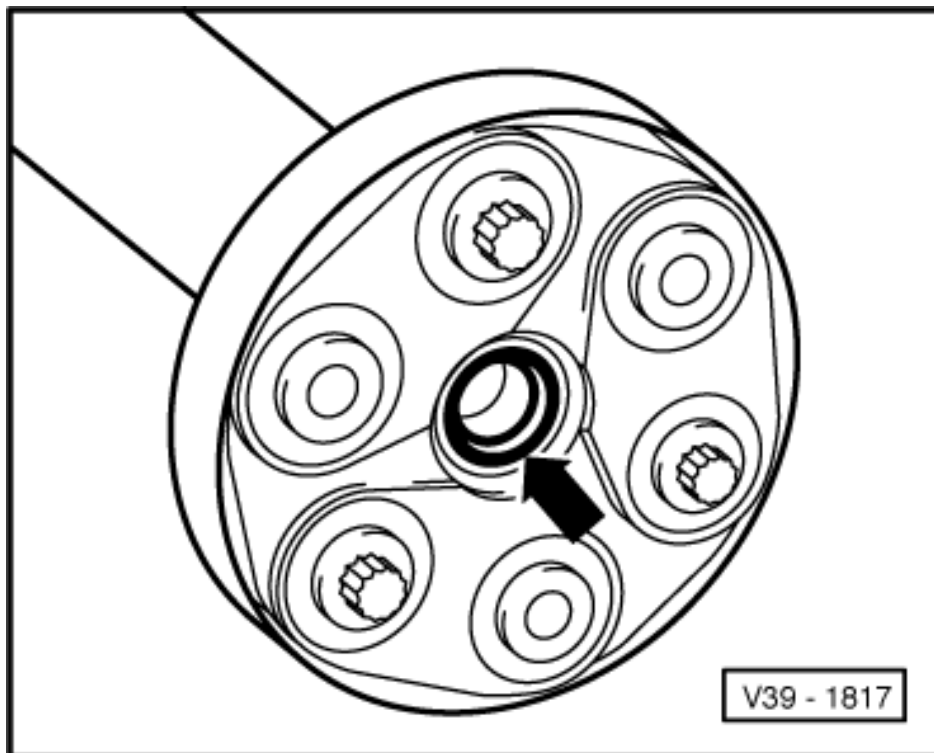


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- -> If the final drive is to be replaced or be clamped into the assembly bracket it must be unscrewed from the mounting bracket -A-

Installing

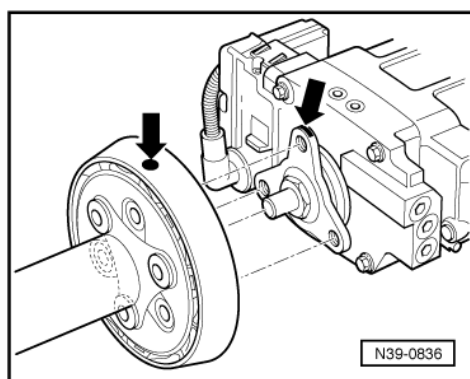


Installation is carried out in the reverse order, when doing this note the following:

- ♦ Install all parts of the prop shaft marked in relation to each other in the same position.

Notes:

- ♦ -> The sealing ring -arrow- in flange of propshaft must not be damaged. The sealing ring is damaged prop shaft must be replaced.
- ♦ Push prop shaft horizontally onto the guide pin of the final drive (2. mechanic).



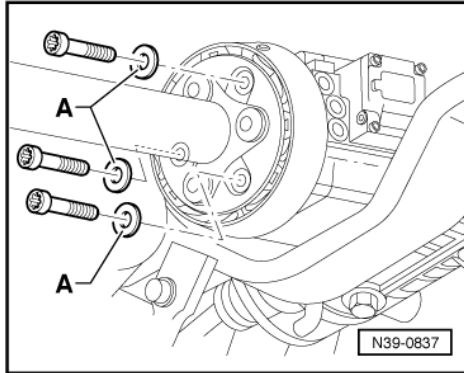
Fitting location:

- ♦ Three protruding sleeves at the gear flange or rear final drive flange and prop shaft flange grip into the input borings of the shims.

- -> Attach prop shaft to the flange of the Haldex clutch so that the markings -arrows- are in a line



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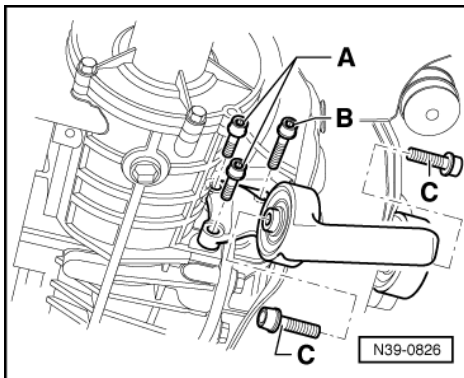


- -> The alignment plates built in since 06.99 must not be installed anymore and must always be replaced by packing plates -A-.

Allocation of packing plates => Spare part catalogue

- Tighten rear subframe with the new bolts to the bodyworks:

=> Running gear; Repair Group 42; Servicing final drive Servicing final drive



- -> Observe the different securing bolts of front mounting bracket - final drive.

Bolts -A-	M10 x 40
Bolt -B-	M10 x 55

- Stress free alignment of exhaust system

=> 4-cylinder Engine (5-valve turbo), Mechanics; Repair Group 26; Removing and installing exhaust system parts, Stress-free alignment of exhaust system Removing and installing exhaust system parts, Stress-free alignment of exhaust system

- Top up gearbox oil => Page 121 .

Notes:

If humming noises occur during driving observe the following:

- ◆ Unscrew prop shaft with disc coupling from flange of Haldex clutch and screw in again one boring further.
- ◆ If the humming noises can still be heard the prop shaft must again be screwed one boring further.

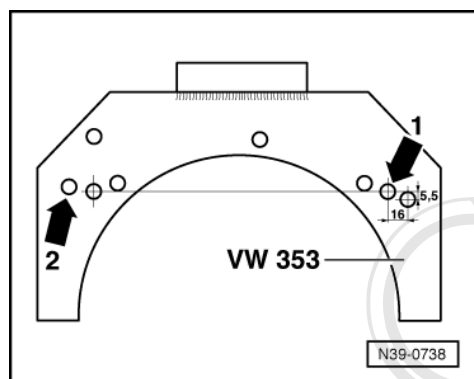
Tightening torques

Component	Nm
Rear final drive on front mounting bracket (bolts -A- and -B-)	40 + 450



Rear final drive on rear mounting bracket	60
Front and rear mounting bracket at rear sub-frame	60
Propshaft on rear final drive	60
Drive shaft to flange shaft	40

10.2 - Attaching rear final drive to engine stand



Special tools and workshop equipment required

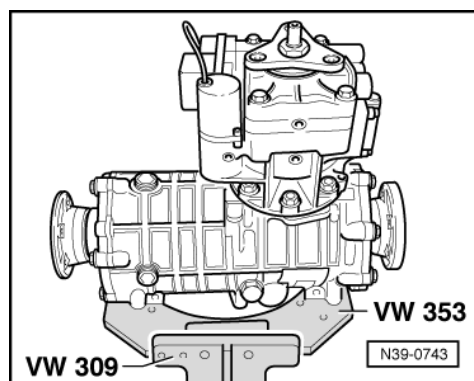
- ♦ Special tool VW 353

Modify gearbox support VW 353

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-> To secure rear final drive at repair stand the gearbox bracket VW 353 must be modified.

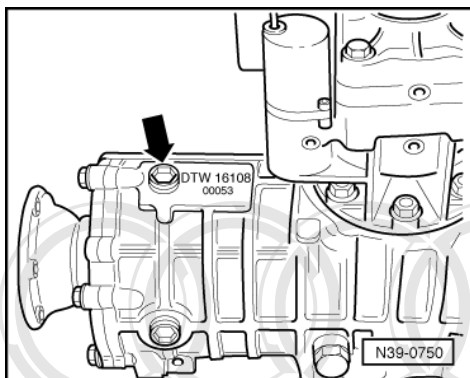
- Drill boring (arrow 1) in distances of 16 mm or 5.5 mm, as shown in illustration.
- Drill a hole of 15 mm $\varnothing$ (arrow 1) into gearbox bracket.



- Expand boring (arrow 2) to 15 mm $\varnothing$ (arrow 2).
- -> Secure final drive on a repair stand.

11 - Checking gear oil level in rear final drive

11.1 - Checking gear oil level in rear final drive



- -> Unscrew oil filler plug (arrow) to check oil level.
- Specification: oil level up to lower edge of filler hole
- Top up with gear oil, if necessary: Specification => from Page 2 .
- Fit oil filler plug.

Tightening torque

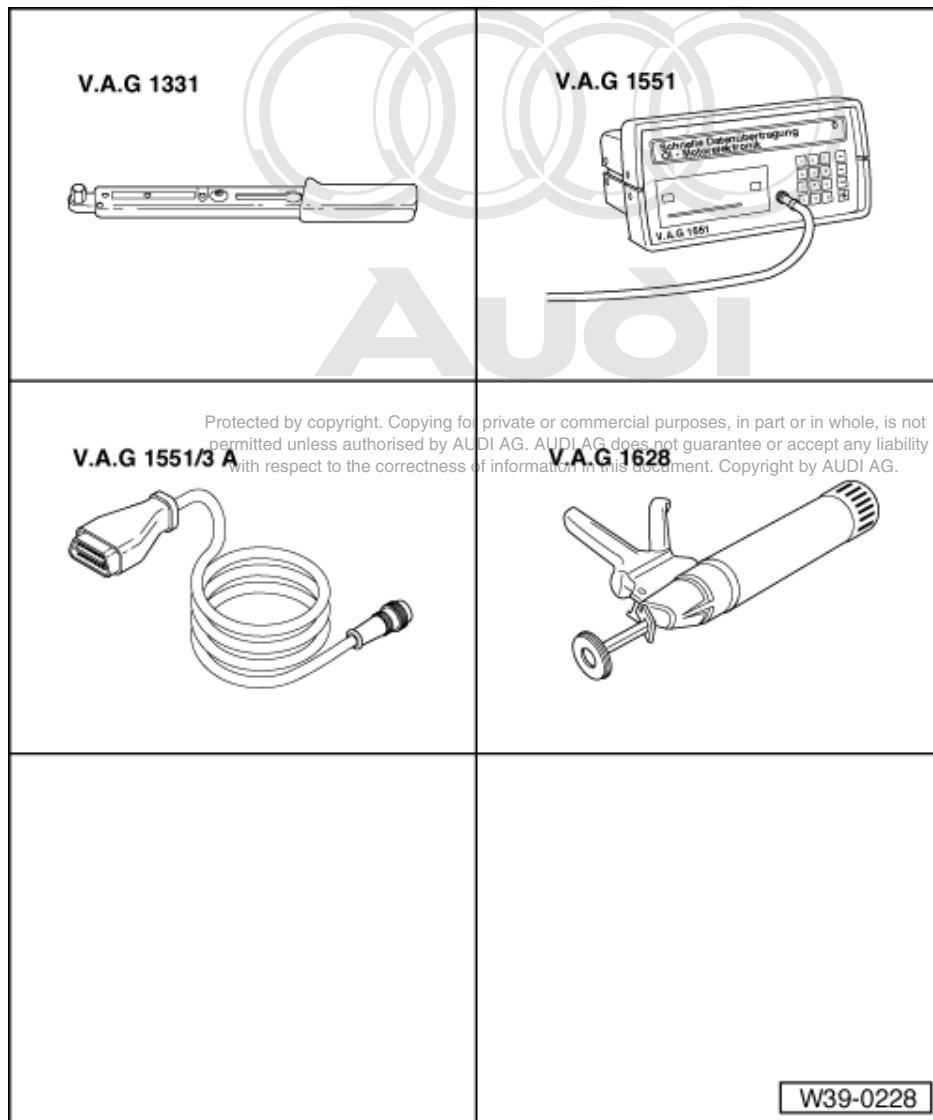
Component	Nm
Oil filler plug	25

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12 - Checking oil level in Haldex clutch or change oil

12.1 - Checking oil level in Haldex clutch or change oil

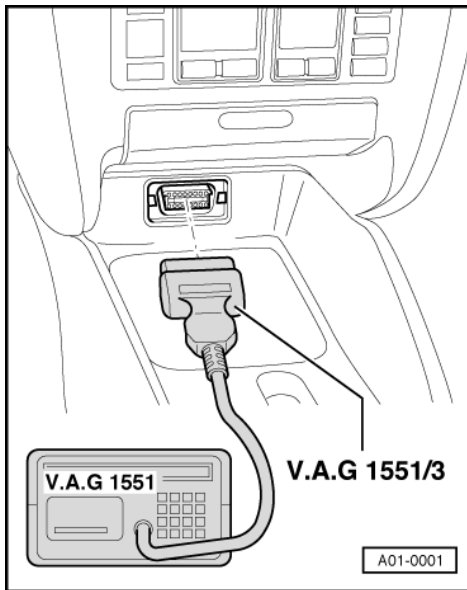


Special tools and workshop equipment required

- ♦ V.A.G 1331 Torque wrench
- ♦ V.A.G 1551 fault reader
- ♦ V.A.G 1551/3 line
- ♦ V.A.G 1628 Hand cartridge gun
- ♦ High performance for Haldex clutch

Container 0.25 l litre -Part No. G 052 175 A1

12.2 - Checking oil level in Haldex clutch



- Switch ignition off.
- -> Connect vehicle diagnosis, measurement and information system VAS 5051 with diagnostic cable VAS 5051/1. Alternatively, connect fault reader V.A.G 1551 with diagnostic cable V.A.G 1551/3A.

Note:

The diagnostic connection is located behind a cover in the storage compartment in the front centre console.

Important:

- ◆ When driving the vehicle for measurement and test purposes, always secure the vehicle diagnosis, measurement and information system VAS 1551 or fault reader V.A.G 1551 to the rear seat and operate it from there.
- ◆ Pay attention to the safety precautions => Page 7

- Select address word 22 for four wheel electronics with ignition on.
- Initiate function 08 for reading measured value block and select display group number 002.

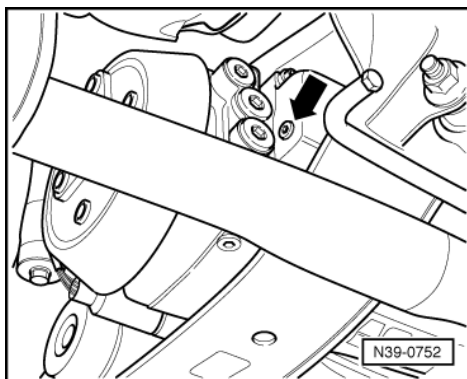
If the temperature is not shown select display group number 001.

-> Display:

Read measured value block	001
00000000	00000000 36 oC 11.7
V	

The third display zone shows the ATF temperature.

- The ATF temperature must be 20 ... 40 oC
- The ATF temperature can be achieved by driving warm.





- -> Unscrew bolt for oil check (arrow).

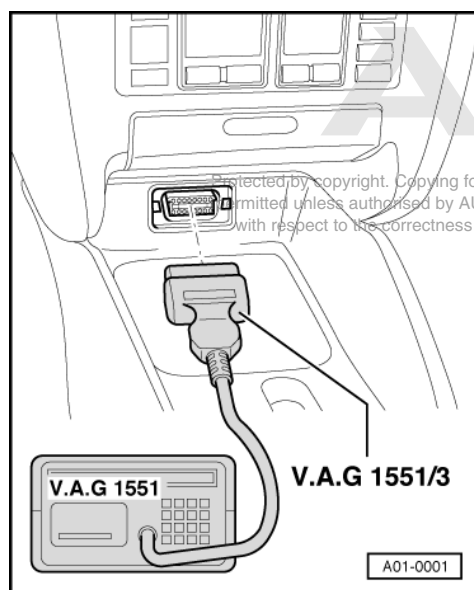
The oil level is correct when the Haldex clutch is topped up to the lower edge control boring or up to a minimum of approx. 3 mm underneath lower edge control boring.

- Fit plug (arrow).
- If oil level is incorrect then the oil in the Haldex clutch must be changed => Page 124 .

Tightening torque

Component	Nm
Oil check bolt	30

12.3 - Changing oil level in Haldex clutch



- Switch ignition off.
- -> Connect vehicle diagnosis, measurement and information system VAS 5051 with diagnostic cable VAS 5051/1. Alternatively, connect fault reader V.A.G 1551 with diagnostic cable V.A.G 1551/3A.

Note:

The diagnostic connection is located behind a cover in the storage compartment in the front centre console.

Important:

- ♦ When driving the vehicle for measurement and test purposes, always secure the vehicle diagnosis, measurement and information system VAS 1551 or fault reader V.A.G 1551 to the rear seat and operate it from there.
- ♦ Pay attention to the safety precautions => Page 7

- Select address word 22 for four wheel electronics with ignition on.
- Initiate function 08 for reading measured value block and select display group number 002.

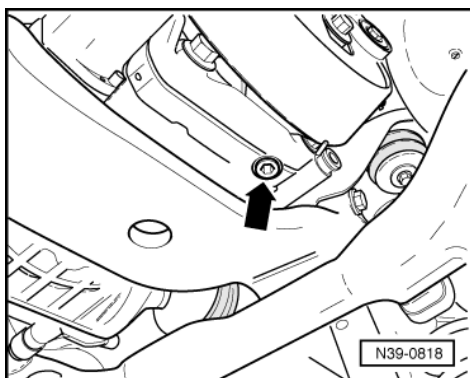
If the temperature is not shown select display group number 001.

-> Display:

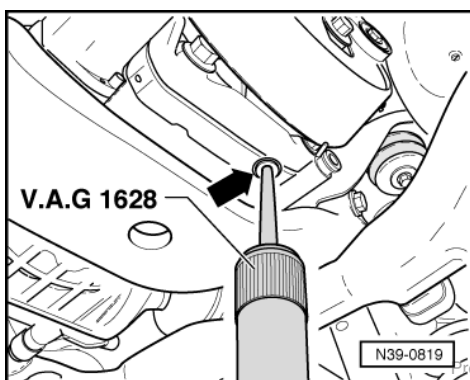
Read measured value block	001		
00000000	00000000	36 oC	11.7
V			

The third display zone shows the ATF temperature.

- The ATF temperature must be 20 ... 40 oC
- The ATF temperature can be achieved by warming up the engine.



- Position container underneath.
- -> Unscrew oil drain plug (arrow) and drain oil completely.
- Insert cartouche with 0.25 litre oil into hand pressure pistol V.A.G 1628.
-



- -> Insert hand pressure gun V.A.G 1628 vertically into oil drain boring (arrow).
- Pump oil completely into Haldex clutch.
- Step down hand pressure gun V.A.G 1628 and screw in drain plug with new sealing ring immediately.

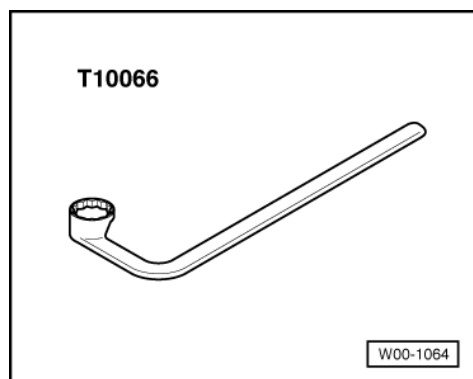
Tightening torque:

Component	Nm
Oil drain plug	15

- Check oil level in Haldex clutch => Page 122 .



12.4 - Changing oil filter for Haldex clutch

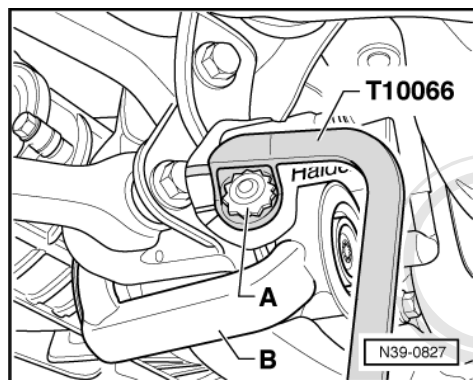


Special tools and workshop equipment required

- ♦ T10066 Wrench

Removing

- Place drip tray underneath.



- -> Loosen oil filter with wrench T10066 and unscrew.

Fitting location: The oil filter -A- is on the right-hand vehicle side and is covered by the subframe near the front mounting bracket -B-.

Installing

- Coat sealing of new oil filter with oil for Haldex clutch.
- Screw in oil filter -A- and tighten with T10066.
- Check oil level in Haldex clutch => Page 124 .

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